System Administrator Guide

workcentre
PRO 421

Table of Contents

1 *About This Guide*

Thank you for purchasing the *WorkCentre Pro 421*. The *WorkCentre Pro 421* is designed for ease of use, but to use your machine to its fullest potential, take some time to read the User Documentation.

Finding Information in the System Administrator's Guide

The System Administrator's Guide contains the following sections:

- Table of Contents

  Use the Table of Contents to find topics easily.

- About This Guide - Chapter 1

  Describes the information in this System Administrator's Guide.

- Network Setup - Chapter 2

  Describes how to make the WorkCentre Pro 421 available across a network.

- Remote Configuration - Chapter 3

  Provides information on external facilities provided to let you configure the printer remotely.

- Glossary - Chapter 4

- Index

  Refer to the Index to locate specific information.

Related Information Sources

Information available for the *WorkCentre Pro 421* consists of:

- This *WorkCentre Pro 421 System Administrator's Guide*

- The *WorkCentre Pro 421 User Guide*

- The *WorkCentre Pro 421 Quick Start Guide*

- The *WorkCentre Pro 421 Customer training CD*

2 Network Setup

This chapter provides information on the settings that can be made to enable the machine to reside on a network.

NOTE: In the Netware environment only, these settings can all be made remotely using CentreWare.

The process is in three parts:

1. The printer needs to be configured for the network.
2. The network need to be configured for the printer.
3. The printer driver needs to be installed and configured on each workstation with access to the printer.

These procedures are all described in this chapter.

Before you start

Before starting please read the following information.

1. Print a Menu Map to help you navigate to the locations you need to set up (see *"Printing a menu map" on page 2-2*).
2. Print a status page to help you configure the printer driver (see *"Printing a status page" on page 2-2*).
3. Print an NIC status page to help you configure the printer for the network (see *"Printing an NIC status page" on page 2-2*).
4. Collect all of the information that you require to set up the network. This includes addresses and protocol information.
5. The installation procedures assume that the WorkCentre Pro 421 is being installed on an existing, operational network.

Printing a menu map

To print the menu map:

1. Press the Machine Status button.
2. Highlight [Menu map] and press the [Enter] key.
   The WorkCentre Pro 421 will print the menu map.

Printing a status page

To print the status page:

1. Press the Machine Status button.
2. Highlight [Default settings] and press the [Enter] key.
3. Highlight [Printer defaults] and press the [Enter] key.
4. Highlight [Test print] and press the [Enter] key.
5. Highlight [Status print] and press the [Enter] key.
   The WorkCentre Pro 421 will print the status page.

Printing an NIC status page

To print the NIC status page:

1. Press the Machine Status button.
2. Highlight [Default settings] and press the [Enter] key.
3. Highlight [Printer defaults] and press the [Enter] key.
4. Highlight [Test print] and press the [Enter] key.
5. Highlight [NIC status print] and press the [Enter] key.
   The WorkCentre Pro 421 will print the NIC status page.

Configuring the printer

The printer needs to be configured to allow other users on the network to communicate with it. The settings set the TCP/IP and Novell characteristics. Apple Talk networks can be connected to the Windows environment using CentreWare. In future you will be able to configure the printer to be able to reside on a UNIX-based network.

Setting the TCP/IP parameters

For the machine to be available as a resource on the network, a number of parameters may need to be set up. These are the configuration protocol, IP address, subnet mask, default gateway and the host name. The settings for these will depend on the specific requirements of the network and changes should only be made in consultation with the network administrator.

NOTE: Each part of a TCP/IP address should be right-justified and padded with zeros to make up three digits. For example, 192.168.10.7 should be entered as 192.168.010.007.

To set up the TCP/IP parameters:

1. Connect the WorkCentre Pro 421 to your network outlet or cable.
2. If you have not yet done so, print a Menu Map to help you navigate to the locations you need to set up.
3. Press the Machine Status button.
4. Highlight [Initial setup] and press the [Enter] key.
5. Highlight [Network] and press the [Enter] key.
6. Highlight [TCP/IP] and press the [Enter] key.

> Choose [Bootp/DHCP] and press the [Enter] key.

```
TCP/IP
01. Bootp/DHCP              ▲
02. IP address
03. Subnet mask            ▼
```
```
    04. Default gateway
```

> Choose [Enable] to enable the protocol and press the [Enter] key.

> You can choose [Disable] to disable the protocol.

```
Bootp/DHCP
01. Enable                 ▲
02. Disable
                           ▼
```

NOTE: With Bootp/DHCP enabled, the network server will automatically assign an IP address to the printer.

7. Highlight [IP address] and press the [Enter] key.

    This allows you to enter the IP address for the Workstation.

> Use the numeric buttons to enter the IP address and press the [Enter] key.

```
IP address
                           ▲

192.168.010.007            ▼
```

8. Highlight [Subnet mask] and press the [Enter] key.

    This allows you to enter the address of the subnet mask for the Workstation, if required.

> Use the numeric buttons to enter the subnet mask address and press the [Enter] key.

```
Subnet mask .........................
                                    ▲

255.255.255.000                     ▼
```

9. Highlight [Default gateway] and press the [Enter] key.

   This allows you to enter the address of the default gateway for the Workstation.

> Use the numeric buttons to enter the default gateway address and press the [Enter] key.

```
Default gateway .......................
                                    ▲

192.168.010.012                     ▼
```

10. Press the [Exit] button to return to the Network setup menu entry.

11. Highlight [Done] and press the [Enter] key.

    The WorkCentre Pro 421 will reboot and print a Configuration Sheet in approximately 3 minutes.

12. Check the settings on the Configuration Sheet against the information that was entered.

Setting Novell parameters

For a Novell network, you will need to set whether or not you are using the IPX/SPX protocol and choose the network frame type.

To set up the Novell parameters:

1. Connect the WorkCentre Pro 421 to your network outlet or cable.
2. If you have not yet done so, print a Menu Map to help you navigate to the locations you need to set up.
3. Press the Machine Status button.
4. Highlight [Initial setup] and press the [Enter] key.
5. Highlight [Network] and press the [Enter] key.
6. Highlight [Novell settings] and press the [Enter] key.

➢ Choose [IPX/SPX protocol] and press the [Enter] key.

```
Novell settings
01. IPX/SPX protocol          ▲
02. Frame type

                              ▼
```

7. Highlight [IPX/SPX protocol] and press the [Enter] key.

   This allows you to enable or disable the IPX/SPX protocol.

➢ Choose [Enable] to enable the protocol and press the [Enter] key.

➢ You can choose [Disable] to disable the protocol.

```
IPX/SPX protocol
01. Enable                    ▲
02. Disable

                              ▼
```

8. Highlight [Frame type] and press the [Enter] key.

    This allows you to set the network Frame Type.

➢ Choose the Frame Type required or [Auto] to allow the machine to determine the Frame Type and press the [Enter] key.

Frame type
1. Auto   ▲
2. 802.2
3. 802.3   ▼

4. Ethernet II
5. Ethernet SNAP

9. Press the [Exit] button to return the Network setup menu entry.

10. Highlight [Done] and press the [Enter] key.

    The WorkCentre Pro 421 will reboot and print a Configuration Sheet in approximately 3 minutes.

11. Check the settings on the Configuration Sheet against the information that was entered.

Setting Apple Talk parameters

The printer can be configured for an Apple Talk network where the client workstation is operating under Windows using CentreWare but it must be enabled from the printer.

To enable up the Apple Talk network:

1. Connect the WorkCentre Pro 421 to your network outlet or cable.

2. If you have not yet done so, print a Menu Map to help you navigate to the locations you need to set up.

3. Press the Machine Status button.

4. Highlight [Initial setup] and press the [Enter] key.

5. Highlight [Network] and press the [Enter] key.

6. Highlight [Apple talk] and press the [Enter] key.

> Choose [Apple talk protocol] and press the [Enter] key.

```
Apple talk
01. Apple talk protocol            ▲

                                   ▼
```

7. Highlight [Apple talk protocol] and press the [Enter] key.

   This allows you to enable or disable the Apple talk protocol.

> Choose [Enable] to enable the protocol and press the [Enter] key.

> You can choose [Disable] to disable the protocol.

```
Apple talk protocol
01. Enable                         ▲
02. Disable

                                   ▼
```

8. Highlight [Done] and press the [Enter] key.

   The WorkCentre Pro 421 will reboot and print a Configuration Sheet in approximately 3 minutes.

9. Check the settings on the Configuration Sheet against the information that was entered.

Configuring the network

Configuring the network will vary according to the kind of network to which are installing. The choices are:

➢ Novell Netware (see *"Configuring Netware" on page 2-10*)

➢ Windows Peer-to Peer Printing (see *"Printing in a Windows peer-to peer environment" on page 2-44*)

➢ TCP/IP (see *"Configuring TCP/IP" on page 2-53*)

The procedures for configuring the printer on the network are described in the appropriate network documentation.

Setup with CentreWare

The CentreWare software supplied on your Printer Management Software CD will provide you with the quickest and easiest method for installing your printer on a network. See *"Using CentreWare" on page 3-2*.

Configuring Netware

This section explains how to install the WorkCentre Pro 421 using:

- PCONSOLE with NetWare 3.2
- PCONSOLE with NetWare 4.x Bindery Services (there is no bindery function in Version 5.x)
- NWADMIN with NetWare 4.x and 5.x Directory Services
- MAP or a Web browser to access parameters for NetWare
- Standard NetWare utilities to change the configuration

NOTE: These instructions assume that your NetWare environment is set up correctly according to the Novell documentation.

Configuring NetWare 3.2

Before configuring NetWare, use MAP or a Web browser to determine if the WorkCentre Pro 421 has the name you want — either the default name or a user-defined name.

NOTE: Novell recommends upgrading to 4.2 and no longer supports versions lower than 3.2.

The general procedure for configuring the WorkCentre Pro 421 for NetWare is as follows. Refer to the relevant sections in this chapter for detailed information.

1. Use PCONSOLE to select the file server you want to use
2. Create the print queues
3. Specify the WorkCentre Pro 421 as a print server
4. Configure the print server and printer
5. Assign the print queues
6. Set Notify options

NOTE: You must have supervisor privileges to configure the queue. When you are finished, turn the printer off and on again. The printer prints a status page that lists the file servers attached to it and the queues it services.

Before you begin:

➢ Verify that you have supervisor privileges on the file servers on which you are entering the WorkCentre Pro 421 print server and queue.

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

Using PCONSOLE to select a file server

1. Log in as a supervisor or ADMIN.
2. At the command prompt, enter the PCONSOLE command.
3. Choose Change Current File Server from the Available Options menu.

   A list of file servers is displayed.
4. Select the file server on which you want to install the print server. If the name of the file server you want is not displayed, type h to display a list of file servers.
5. Log in to the file server.
6. Press the Esc key to return to the Available Options menu.

Creating print queues

A print server takes the print jobs from queues and sends them to the printer. The print server must be assigned to at least one print queue on the file server.

If the print queue that you want the WorkCentre Pro 421 to service already exists, and you know the name of this queue, enter the Print Server Name (see *"Entering the print server name" on page 2-12*).

If you do not know the name of the queue or it does not exist, create a queue.

To create a queue:

1. In PCONSOLE, choose Print Queue Information from the Available Options menu.

   A list of existing queues is displayed.
2. Press the Insert key.
3. Enter the name of the queue.
4. Press the Esc key to return to the Available Options menu.

Entering the print server name

1. In PCONSOLE, choose Print Server Information from the Available Options menu.

   A list of existing print servers is displayed.

2. Press the Insert key.

   The New Print Server Name box is displayed.

3. Enter the name of the print server.

   On the printer status sheet, the print server name will appear under NetWare information.

NOTE: You can change the print server name using the MAP utility or a Web browser.

Configuring the print server

1. In PCONSOLE, choose the print server name from the Print Servers list.

   The Print Server Information menu is displayed.

2. Choose Print Server Configuration from the menu.

3. Choose Printer Configuration.

   The Configured Printers menu appears. Since this is a new Print Server entry, all printers are labelled "Not Installed."

4. Choose Printer 0.

   The Printer 0 Configuration screen appears with a title of "Printer 0."

5. To change the name that the print server uses in its messages in the Notify list to users, select Name and enter a name.

   This name helps you identify the printer — for example, XEROX_WC421.

6. Choose Type.

   A list of printer types is displayed.

7. In the list of printer types, choose Remote Other/Unknown.

   This creates default entries in the other fields. These defaults are usually optimal, so do not change them without specific knowledge of the effects.

8. Press the Esc key and save your changes. Then continue to press Esc to return to the Print Server Configuration menu. If you have finished the configuration, save your changes and exit from PCONSOLE.

Assigning print queues to the printer

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

NOTE: Do not assign the same queue to two different print servers. If a queue is assigned to multiple print servers, print jobs might not go to the intended printer.

To assign print queues to the printer:

1. In PCONSOLE, choose Queues Serviced By Printer from the Print Server Configuration menu.
2. Choose the printer name from the list of defined printers.

    The Available Queues list for the printer is displayed.
3. Choose the queue you want and then assign a priority level from 1 to 10 (where 1 is the highest priority. It is also the default).

    The queue is displayed on the list for the printer.

    You can press Enter again to assign additional queues.
4. When you finish assigning queues, press the Esc key and save your changes. Then continue to press Esc to return to the Print Server Configuration menu. If you have finished the configuration, save your changes and exit from PCONSOLE.

Setting up notify options for the printer

You can specify users or groups of users that are notified if a problem occurs when a print job is sent to the printer. The print server supports the enhanced Notify options for printers, including informing users when the WorkCentre Pro 421:

➢ Is off-line, jammed, opened, or out of paper

➢ Requires a manual paper feed or a form change

➢ Has had an engine failure

If the print server services queues on multiple file servers, you must set up a Notify list for each file server.

To configure the Notify options:

1. In PCONSOLE, choose Notify List for Printer on the Print Server Configuration menu.

2. Choose the printer from the Defined Printers list.

3. Press Enter to view a list of Notify Candidates.

4. Select the user or group from the list.

5. Set the First and Next intervals in the Notify Intervals screen by entering a number for each interval.

    The First interval is the number of seconds the network waits before it notifies candidates about a print job problem. The Next interval specifies how often, in seconds, candidates are notified.

6. After entering the intervals, press the Esc key and save your changes. Then continue to press Esc to return to the Print Server Configuration menu. If you have finished the configuration, save your changes and exit from PCONSOLE.

Installing the print server on multiple file servers

To install the print server on more than one file server, perform the procedures previously described for each file server. You must use the same name and password (or no password) on all file servers. You can set the password for the WorkCentre Pro 421 using MAP. If you use a password, specify it on each file server using the Change Password option on the Print Server Information menu of the PCONSOLE utility.

A hop is an intermediate connection in a string of connections linking two network devices. For example, on a network, some data packets must go through several routers before reaching their final destination. Each time a packet is forwarded to the next router, a hop occurs. The more hops, the longer it takes the data to go from the source to the destination.

A tick is 1/100 of a second for the WorkCentre Pro 421 (Novell has a different value). Propagation delay is the time it takes for the data to travel through the network, from the source to the destination.

At startup, the WorkCentre Pro 421 automatically searches for and attaches to the file servers that are no more than four hops away and that have no more than eight ticks propagation delay. For extremely large or complex networks, this allows a bounded search time on startup.

If the print server must attach to file servers beyond this range, or if you want to accelerate start up by eliminating the need to search all file servers within the four hops/eight ticks radius, enter the name of the file server operating with the print server in the Print Server Configuration of a primary file server. The primary file server is a server close to the printer and contains a list of file servers that it services. The primary file server can be any file server within the four hops/eight ticks propagation time limits but ideally is as close as possible to the print server. Once the print server locates the primary file server and the list of file servers to be serviced, the automatic search stops and the print server goes directly to those file servers listed (and to no others).

Setting up a primary file server

1. Log in to the server you want to designate as the primary server and run PCONSOLE on that server.
2. Choose File Server To Be Serviced from the Print Server Configuration menu.
3. Press the Insert key to display the Available File Servers list.
4. Select the name of each file server to be serviced and press Enter to add it to the list.
5. When the list is complete, press Esc to return to the menu.
6. Install the WorkCentre Pro 421 on each primary file server.

Setting up preferred file servers

You can specify a preferred file server on the WorkCentre Pro 421. If a preferred file server is listed, the WorkCentre Pro 421 attaches to this identified file server instead of initiating the automatic search. If the preferred file server is also a primary file server (for example, there are file servers listed under File Servers to Be Serviced), the WorkCentre Pro 421 connects directly to these file servers.

NOTE: The Preferred File Server applies only to bindery-based queues. There is no effect on NDS queues.

Configuring NetWare Bindery emulation

NetWare 4.x can operate in two modes:

➢ NetWare Directory Services (NDS)

➢ Bindery Services Emulation

For NDS, refer to *"NDS and the WorkCentre Pro 421" on page 2-19*.

These services run simultaneously and transparently to each other. You can configure the WorkCentre Pro 421 to operate with Bindery Services Mode only or to operate under NDS. When configured under NDS, the WorkCentre Pro 421 also services older file servers operating in Bindery Mode.

NOTE: If the WorkCentre Pro 421 is not properly set up for NDS and the Bindery Services Mode is not running, the WorkCentre Pro 421 cannot find its file servers. The status page then indicates the NetWare protocol is not active.

Confirming Bindery context

Before installing the WorkCentre Pro 421 on a Novell NetWare 4.x server in Bindery Emulation Mode, check that the server has a Bindery Context (name for the server in Bindery Services Mode). If the server does not have a Bindery Context, you can install the WorkCentre Pro 421 in NDS mode. If the WorkCentre Pro 421 must be installed in Bindery Emulation Mode, the server must have a Bindery Context.

1. At the system console on the 4.x server, enter the load install command.

2. Choose Maintenance/Selective Install from the menu.

3. Choose NCF Files Options from the menu.

4. Choose Edit AUTOEXEC.NCF from the menu.

5. Search the file to see if you have a statement similar to the following:

    SET BINDERY CONTEXT=0U=context

    where context is the name of your file server context. If this string is not present, you can enter it in the autoexec.ncf file.

6. If you entered a new string in autoexec.ncf, then at the

console prompt, enter the SET BINDERY CONTEXT statement that you entered in the file.

NOTE: The command at the console prompt takes effect immediately. The definition in autoexec.ncf takes effect when the server is restarted.

Configuring in Bindery mode with PCONSOLE

Once you confirm the server has Bindery Context, use the following procedures to configure the WorkCentre Pro 421.

To configure the WorkCentre Pro 421 with PCONSOLE:

1. Log in as a supervisor or ADMIN.
2. At the command prompt, enter the PCONSOLE command.
3. Press the F4 key to switch to Bindery mode.

NOTE: If you receive a message asking you to log in to a server with Bindery connections, the server you are attached to does not have Bindery Mode enabled. Follow the *"Confirming Bindery context" on page 2-17* or log in to a server with Bindery Services activated.

---

4. Choose Quick Setup from the Available Options list.
5. Use Quick Setup to connect your print server, print queue, and printer correctly. You can modify these later if necessary.
6. Select Print Server and press F3 or Insert to modify the entry.
7. Enter the name of the print server in the Print Server field.

    The print server name appears under Novell Network Information on the Status and Configuration report. The default name is the WorkCentre Pro 421 serial number (six digits with a three-letter prefix).
8. Enter a name in the New Printer field.
9. Enter a name in the New Print Queue field.
10. In the Printer Type field, choose Other/Unknown from the list of printer types.
11. When you are finished, press Esc to save the configuration.
12. Repeat steps 5 through 11 for each file server that the print

server services.

To view, add, delete, or modify print servers or queues after the initial setup, select either Print Queues or Print Servers on the Available Options menu.

NDS and the WorkCentre Pro 421

NDS offers a more advanced approach to network management than previous NetWare versions. It stores and tracks all network objects. As a rule, all NetWare 4.x and 5.x servers must have NDS loaded in order to function. In this way, every 4.x or 5.x server is a directory server, because it services named directory objects such as printers, print servers, and print queues. With the appropriate privileges, you can create a print server object which, once configured in its context (or location) on the network, eliminates the cumbersome setup of print servers on every network server. NDS provides true enterprise networking based on a shared network database rather than an individually defined physical site. The result is greatly improved print server setup and management.

The Directory Information Base (DIB) stores information about servers and services, users, printers, gateways, and so on. It is a distributed database, allowing access to data anywhere on the network wherever it is stored. NetWare versions earlier than 4.x provide the same data found in the DIB, but the NetWare Bindery stores the data. The DIB was designed with more flexible access and more specific security; moreover, since it is distributed, it was designed to be partitioned. The DIB uses an object-oriented structure rather than the flat-file structure of the Bindery, and offers network-oriented access rather than the server-oriented access found in the Bindery.

The DIB is backward-compatible with the NetWare Bindery through Bindery Emulation Mode. *"Configuring NetWare Bindery emulation" on page 2-17* describes Print Server Operation with a NetWare 4.x system in Bindery Emulation Mode. When Bindery Emulation is enabled, Directory Services accept Bindery requests and respond as if a Bindery exists on the NetWare server being accessed. Information obtained from the Bindery query may not be stored in the server because the DIB is a partitioned and distributed database. Even though the 4.x server is not operating from a Bindery, the applications making Bindery requests do not know the difference.

You can use NWADMIN to configure the printer in NDS. Before you can print, NDS must be set up as described in the following sections and the WorkCentre Pro 421 must be set up with NDS Context and Tree. See *"Configuring the WorkCentre Pro 421" on page 2-23*.

The following sections describe using NWADMIN to create printer, print server, and print queue objects. You can assign or associate these objects with each other. You can keep Bindery resources on any server on NetWare 4.x if you include a SET statement in your autoexec.ncf file.

Alternatively, you can use PCONSOLE to set up static information about print servers, such as the queues to service and whom to notify in the event of a problem. Refer to the NetWare documentation for more information about the use of PCONSOLE for NDS.

Creating the printer object

1. Start NWADMIN. (For example, double-click the NWADMIN icon in the NetWare Tools group.)

   The NetWare Administrator window opens.

2. Choose Object>Browse.

   Your directory tree is displayed.

3. Select the Organizational Unit or Organization where you want to create the printer in the Directory Tree, and choose Object>Create.

   The New Object windows appears.

4. In the Class of New Object list, choose Printer and click OK.

5. When the Create Printer window appears, enter a value in the Printer Name field and click Create.

Creating the print server object

To create a print server object:

1. In NWADMIN, choose Object>Browse.
2. Select the Organizational Unit where you want to create the print server in the directory tree and choose Object>Create.
3. In the New Object window, scroll down the Class of New Object list, choose Print Server and click OK.
4. When the Create Printer window appears, enter a value in the Print Server Name field and click Create.

Creating the print queue object

1. Start NWADMIN.
2. Choose Object>Browse.
3. Select the Organizational Unit where you want to create the print queue in the directory tree and choose Object>Create.
4. In the New Object window, scroll down the Class of New Object list, choose Print Queue and click OK.
5. In the Create Print Queue window, click Directory Service Queue, enter values for Print Queue Name and Print Queue Volume, and click Create.

    If you do not know the Print Queue Volume name (the hard drive you are accessing), click the icon to the right of the volume field. The Select Object window opens with the volume listed in Objects. If the volume is not listed, scroll through the Directory Context items to find the volume where you want the queue to reside.
6. Click the object (hard drive) of your choice.

    The object appears in the Selected Object field.
7. Click OK and then click Create.

Assigning the printer object

1. In NWADMIN, choose Object>Browse.
2. In the NWADMIN directory tree, double-click the printer object previously created.

   The Printer window opens.
3. Click Assignments and then click Add.
4. When the Select Object window opens, find the print queue object just created and select it.
5. Click OK.

   The print queue just created appears in the Print Queues list in the Printer window.
6. Click OK.

Assigning print server object

1. In NWADMIN, choose Object>Browse.
2. In the NWADMIN directory tree, double-click the print server object you just created.

   The Print Server window opens.
3. Click Assignments and then click Add.
4. When the Select Object window opens, select the printer object just created in the Objects list and click OK.

   The printer (with its context) appears in the Printers list.
5. Click OK.

Checking assignments

1. In NWADMIN, choose Object>Browse.
2. In the NWADMIN directory tree, double-click the print queue object.

   The Print Queue window opens.
3. Click Assignments.

   If you configured the print queue and printer correctly, they will appear in the proper boxes in the Print Queue window.
4. Click Cancel.

Setting up and resetting the printer

After completing the NWADMIN configuration, you must set up and reset (power cycle) the printer before you can begin printing.

Configuring the WorkCentre Pro 421

Use the MAP utility or a Web browser to:

➢ Define the context and tree of the Print Server

➢ Change the Print Server name

➢ Set a password

➢ Modify scan and frame search parameters

➢ Set values for Bindery Mode

To configure the WorkCentre Pro 421:

1. Access the setup pages for the WorkCentre Pro 421 using MAP or a Web browser.

2. Once you have accessed the Network Administration pages or the Main Menu, choose Setup NetWare under Protocols.

3. Confirm that there is a check mark in the Enable NetWare option. If necessary, put a checkmark in that option.

4. Optionally, enter a name in the Print Server Name field.

    To use the default name, leave the field blank.

    The default name is the WorkCentre Pro 421 serial number (six digits with a three-letter prefix). This is also the default name of the printer in peer-to-peer mode.

NOTE: If you make any changes, you will be prompted for a password. The default password is sysadm.

5. Optionally, to secure the WorkCentre Pro 421 with a password, enter a password in the Print Server Password field and again in the Password Retype field.

If you are using a password, use the same password for all bindery-based and NDS-based Print Server entries.

If you enter a password, you must also enter the same password in the password field on your file server setup using PCCONSOLE or NWADMIN.

6. For Bindery emulation, enter the name of a preferred bindery-based file server in the Preferred File Server field.

The Preferred File Server entry applies only for Bindery- or Bindery Emulation-based operations. See *"Setting up preferred file servers" on page 2-16* for the significance of a Preferred File Server. The Print Server must be configured on the preferred file server. Incorrect setup of a Preferred File Server can interfere with NetWare printing.

7. If the Print Server operates under Novell Directory Services, enter a Context and Preferred NDS Tree in the appropriate fields.

Be sure to give the whole context, whether typed or typeless, and do not begin your context path with a leading period.

An example of a typed context name is ou=standard.ou=organization_1.

(If you do not know your tree, open a DOS command box and enter the whoami command.)

An example of a typeless context name is organization_1.

You must use a typeless context if the WorkCentre Pro 421 is on the same network segment as the file server.

8. Enter the time intervals, in seconds, in which the Print Server will scan the queues that it services in the Print Queue Scan Rate field.

The default scan rate is once per second.

9. If your network uses multiple frame types for Novell, you can bias the frame search to the desired type by setting the radio button next to the designation under Ethernet Frame Type.

   The WorkCentre Pro 421 normally monitors the network to determine which frame type is used for Novell. When it recognizes a type, it assumes the same frame type. Once it selects a frame type, the WorkCentre Pro 421 only operates over that Novell frame type. Monitoring normally starts looking for IEEE 802.3, then Ethernet II, then 802.3 SNAP, and so on.

10. If you are operating in NDS mode only, you can disable Bindery Mode on the Print Server by putting a checkmark in the Disable Bindery checkbox.

    If you disable Bindery Mode, the WorkCentre Pro 421 does not support Print Servers on a Bindery file server.

11. Once you have selected all desired settings and entered the desired NetWare information, click Accept Settings to save this information in the WorkCentre Pro 421 NVRAM.

    If you have not entered the WorkCentre Pro 421 Management password previously during this session, you must enter it in the appropriate space before clicking Accept Settings.

The values you entered do not take effect until the WorkCentre Pro 421 is reset or power cycled. You can reset from MAP or the Web browser by returning to the home page or Network Administration page, and clicking Reset under System, and then clicking Reset Unit. Alternatively, you can power cycle the printer. The new NetWare values are now in effect.

Using the Novell PCONSOLE utility

You can use the PCONSOLE utility to:

- ➢ • Attach and select a file server
- ➢ • Select or delete queues for the print server
- ➢ • Set up the Notify function

See the *NetWare Print Server Manual* for detailed information on this utility.

NOTE: You must have Supervisor privileges to perform many PCONSOLE operations.

Changing the file server

1. Log in to the file server and run PCONSOLE on that server.
2. Choose Change Current File Server from the Available Options menu.
3. Press the Insert key to display the available file servers.
4. Select the file server you want.
5. Enter your username.

   If the username requires a password, the Password screen appears. Enter the password.

   The name of the file server appears in the status header at the top of the PCONSOLE window.

Changing print queues

When you print a file, your system sends the file to a print queue. The print server assigned to that queue extracts the print job and sends it to the assigned printer. If a print server services queues on multiple file servers, you must assign queues to the printer on each file server.

To change the print queues:

1. Log in to the file server and run PCONSOLE on that server.
2. Choose Print Servers from the Available Options menu.
3. Select the print server you want.
4. Choose Printers from the Print Server Information window.

5. Select the printer you want.

6. In the Configuration menu for that printer, choose Print Queues Assigned.

7. Select a queue from the list.

8. Select the priority for the print queue.

   The highest priority queue is 1 (which is the default); the lowest is 10.

9. Press Esc and save all changes.

Setting up a notify list

You can specify users or groups of users that are notified if a problem occurs when a print job is sent to the printer. The print server supports the enhanced Notify options for printers, including informing users when the printer:

➢ Is off-line, jammed, opened, or out of paper

➢ Requires a manual paper feed or a form change

➢ Has had an engine failure

If the print server services queues on multiple file servers, you must set up a Notify list for each file server.

To set up a Notify list:

1. Log in to the file server and run PCONSOLE on that server.

2. Choose Print Servers from the Available Options menu.

3. Select the print server you want.

4. Choose Printers from the Print Server Information window.

5. Select the printer you want.

6. In the Configuration menu for that printer, choose Notification and press Enter.

7. Press the Insert key to get a list of available options.

   The Notify Candidates screen appears.

8. Select the notification candidate you want.

   The Notify Interval screen appears.

9. Enter the notify intervals you want.

    The First interval is the time the network waits before it notifies users about a print job problem. The Next interval specifies how often users are notified.

10. Press Esc and save all changes.

Configuring NetWare Distributed Print Services (NDPS)

NetWare Enterprise Print Services is a Novell software solution built on the Novell Distributed Print Services (NDPS) architecture. NDPS is an advanced printing architecture that can be run on either an IPX or an IP network. NDPS over IP is the native printing approach for NetWare 5.x systems.

NDPS is not yet implemented on printer resident print servers. Instead, a NetWare server includes a gateway that translates between NDPS and a printer-supported protocol or protocols. Gateways exist for PSERVER on IPX, for LPD, and for raw binary sockets printing on IP. Some gateways support NDPS configuration and status information capabilities using SNMP.

The following sections describe the NDPS configuration using Novell-supplied gateways. For networks running NDS over IPX, the gateways use the NetWare PSERVER function implemented on the printer NICs. For networks using IP, the Novell-supplied gateway uses the printer LPD capability. Novell is developing an NDPS gateway for printers implementing the IPP protocol; update information on how to set this up will be provided when the capability is released and verified with these printers.

Creating NDPS manager

An NDPS Manager provides a platform for Printer Agents that reside on the server. An NDPS Manager must be created as an object in the NDS tree before you can create server-based Printer Agents. This procedure is necessary regardless of the gateway or underlying network protocol used.

To create an NDPS Manager object:

1. In NetWare Administrator, select the container where you want the NDPS Manager object to reside.

2. Choose Object>Create>NDPS Manager.

    The Create NDPS Manager dialog box opens.

3. Type a name in the NDPS Manager Name field.

4. Browse for the Resident Server where you want this manager assigned.

This can be any server in the current NDS tree in which you have installed NDPS. This will be the only server on which you will be able to load this NDPS Manager. The NDPS Manager will store its database on a volume of this server.

Configuring an NDPS gateway for IPX

The Novell NDPS is compatible with queue-based NetWare printing technologies. The following procedure describes how to set up and configure NDPS to interface with the printer via queue-based printing.

Prerequisites

➢ Install the Xerox NDPS Gateway. To obtain the Xerox Gateway and documentation go to www.xerox.com and enter "NDPS" in the search field. Select the item returned from the search "Novell Distributed Print Services(NDPS)".

➢ The print queue you want to reference must already exist.

➢ On a Novell 4.x or 5.x network using IPX, install the printer and the print server.

➢ If you need 3.x or bindery-based printing compatibility, see *"Bindery reference queues" on page 2-32*.

Configuring queue-based printers

1. In NetWare Administrator, select the container where you want the NDPS Manager object to reside.
2. Choose Object>Create>NDPS Printer.

   The Create NDPS Printer dialog box opens.
3. Type a name in the NDPS Printer Name field.
4. In the Printer Agent Source field, select Create a New Printer Agent and click Create.

   The Create Printer Agent dialog box opens.
5. Confirm the Printer Agent name (default is the name of the new printer you are creating) and browse to select the NDPS Manager you want to assign it to.

6. In the Gateway Types window, select the Novell Printer Gateway.

    The Novell PDS dialog box opens.

7. Configure the Novell PDS by selecting the Printer Type and Port Handler Type and click OK.

    The Configure Novell Port Handler configuration wizard opens.

8. In the Connection Type field, click Forward Jobs to a Queue and then click the [Next] button. (The Port Type options are grayed out when you select the Queue connection type.)

    A screen with the Queue Name and Queue User Name fields appears.

9. Provide the queue name and queue user name.

    Browse for the target print queue. If no queues are listed, no queues exist in the current context. Browse the tree to find a queue in a different context. The queue you select must exist in the current tree; otherwise, you will need to create a "bindery reference queue" in your own container to allow access to the actual queue. See *"Bindery reference queues" on page 2-32*.

NOTE: The user you specify may need to log in to the server on which this queue resides. This user must have full rights to manage this queue.

---

10. Click Finish.

    The Select Printer Drivers dialog box opens.

11. Select the printer driver for each client operating system.

    When users install this printer, these drivers will be automatically downloaded to their workstations.

    If you choose a Windows 3.x driver but not a Windows 95 or Windows NT driver, a 16-bit driver will be selected. Normally this does not create problems.

    If the driver you need is not listed, rather than adding the driver to the RMS, you can choose [None] from the top of each list. Users will then be asked to provide a disk with the appropriate driver the first time they install this printer on their workstations.

12. Click Continue.

    The main browser window appears with your new controlled-access printer listed.

Bindery reference queues

Novell suggests that you upgrade all of your printers to NDPS as soon as possible. However, you may still want to provide your users with access to queue-based printing resources for a variety of reasons. While connecting to queue-based printers controlled by NetWare 4 or NetWare 5 servers in the current NDS tree can be accomplished directly when you configure a Printer Agent, you may need to create one or more "bindery reference queues" to provide access to printers controlled by a NetWare 3 file server or printers controlled by a NetWare 4 or NetWare 5 server in a different NDS tree.

A bindery reference queue serves as a pointer to a real NetWare queue on both types of servers. After you have created a bindery reference queue to point to a real bindery queue on a target server, you can then configure a Printer Agent to send jobs to that queue just as you would if the queue actually resided on a NetWare 4.x or NetWare 5.x server in the same tree.

The following section explains how to accomplish this procedure using NetWare Administrator.

NOTE: If a bindery reference queue already exists, you can use it with NDPS with no modification. A new reference queue object does not need to be created in NDS.

Prerequisites

Before you can create a bindery reference queue, the following requirements must be met:

➢ The print queue you want to reference must already exist on the server you want to point to.

➢ A bindery object of the same name as the one you are using must exist on that server and must have rights to the print queue you are referencing.

Configuring Bindery reference queues

1. In NetWare Administrator, select the container where you want the reference queue to reside.

2. Choose Object>Create.

    The New Object dialog box opens.

3. Select Print Queue.

    The Create Print Queue dialog box opens.

4. Select Reference a Bindery Queue. (Notice that the dialog box changes when you select this option.)

5. If you want to assign a bindery reference queue name different from the queue's name on the legacy server, enter the reference name in the Print Queue Name field.

    If you do not want to assign a different reference name, leave the field blank.

6. Browse for a bindery server and queue.

    The Network Server and Queue dialog box opens.

7. Click List Only Attached Servers to specify whether you want this option turned on or off.

    To see a list of all available servers, turn off this option. Select the name of the server you want to attach to. Log in to this server at the prompt.

8. Double-click the server you want to use.

    A list of queues available on that server appears in the Queues list. If you are not attached, you must authenticate to that server.

NOTE: To complete this procedure, you must have rights to the print queue you are referencing and a bindery object of the same name as the one you are using must exist on that server. If no queue names appear, no queues have been defined on that server.

9. Select the queue for which you want to create a reference and click OK.

    The Create Print Queue dialog box opens again.

10. Click Create.

    The bindery reference queue now appears in your NDS tree.

11. Return to Step 10 of the procedure for configuring a queue-based printer as a controlled-access printer (see *"Configuring queue-based printers" on page 2-30*).

Now that this queue is created, you can configure a Printer Agent to service jobs from a queue or to submit jobs to a queue.

Configuring the queue-based printer option at the server console

1. Do the steps described in *"Creating public-access printers in NetWare administrator" on page 2-37*.

2. Choose Connection Type>Queue-Based Printer.

   The Port Handler Configuration: Queue-Based Printing Mode screen appears.

3. Select Distinguished Queue Name, press Enter, and type an existing queue name. This is the name of the print queue where you want the Printer Agent to place jobs.

   If you press Enter or Insert again, you can browse the network tree to search for a queue.

4. Highlight User Name, press Enter or Insert, and type the name of the user who will manage the queue just specified.

   To browse the network tree for a valid user, press Enter or Insert.

5. Click Accept and Exit.

   The Printer Agent with its associated Print Device Subsystem (PDS) and Port Handler string are then loaded. The Port Handler configuration utility closes and control returns to the NDPS Manager.

Configuring an NDPS gateway for IP

Configuring remote printers running in lpr mode

NOTE: LPR mode works only if TCP/IP is configured correctly. See the documentation on configuring TCP/IP on a NetWare server.

1. From the browser's Object menu for the organization or organizational unit, choose Create.

    The New Object dialog box opens.

2. Choose Object>Create>NDPS Manager.

    The Create NDPS Manager dialog box opens.

3. Type a name of your choice in the Printer Name field.

4. At the Printer Agent Source field, select Create a New Printer Agent and click Create.

    The Create Printer Agent dialog box opens.

5. Confirm the Printer Agent name (default is the name of the new printer you are creating) and browse to select the NDPS Manager you want to assign it to.

6. In the Gateway Types window, select the Xerox Gateway.

    The Configure Novell PDS dialog box opens.

7. Configure the Novell PDS by selecting the Printer Type and Port Type. Then click OK.

    The Configure Novell Port Handler configuration wizard appears.

8. Configure the Connection Type as Remote (LPR on IP) and click the [Next] button.

9. Enter the IP address of your host and click Finish.

10. Select the printer driver for each client operating system.

    When users install this printer, these drivers will be automatically downloaded to their workstations.

    If you choose a Windows 3.x driver but not a Windows 95 or Windows NT driver, a 16-bit driver will be selected. Normally this does not create problems.

    If the driver you need is not listed, rather than adding the driver to the RMS, you can choose [None] from the top of each list. Users will then be asked to provide a disk with the appropriate driver the first time they install this printer on their workstations.

11. Click Continue.

    The main browser window appears with your new controlled-access printer listed.

Using the remote printer lpr/TCPIP option at the server console

At the server console, you can create a Printer Agent to represent a printer attached to one of the following:

➢ A workstation or a remote file server

➢ Directly to the network, running in lpr mode in a TCP/IP environment and for which no gateway is available

A Printer Agent configured in this mode will emulate a legacy print server (PServer Emulation), and will no longer require the pserver.nlm file.

1. Perform the steps described in *"Creating public-access printers in NetWare administrator" on page 2-37*.

2. Choose Connection Type ->Remote Printer LPR/TCPIP.

    The Port Handler Configuration: Remote Printer LPR/ TCPIP Mode screen appears.

3. Choose IP Host, select Host Type, and provide the information requested.

4. Click Accept and Exit.

    The Printer Agent with its associated Print Device Subsystem and Port Handler string are then loaded. The Port Handler configuration utility closes and control returns to the NDPS Manager.

Public-access printers and controlled-access printers

Creating public-access printers in NetWare administrator

1. Double-click the NDPS Manager object you will be using to control this Printer Agent.

2. In the Identification page for the NDPS Manager object you want to use, choose the Printer Agent List and click New.

   The Create Printer Agent dialog box opens.

3. Type the name of the printer in the NDPS Printer Name field.

4. At the Gateway Types window, select the Novell Printer Gateway.

   The Novell PDS dialog box opens.

5. Configure the Novell PDS by selecting the Printer Type and Port Handler Type and click OK.

6. Select the printer driver for each client operating system.

   When users install this printer, these drivers will be automatically downloaded to their workstations.

   If you choose a Windows 3.x driver but not a Windows 95 or Windows NT driver, a 16-bit driver will be selected. Normally this does not create problems.

   If the driver you need is not listed, rather than adding the driver to the RMS, you can choose [None] from the top of each list. Users will then be asked to provide a disk with the appropriate driver the first time they install this printer on their workstations.

7. Click Continue.

   The new Printer Agent will now appear in the Printer Agent List window.

Converting public-access printers to controlled-access printers

To take full advantage of the security and management features provided by NDS, you may want to convert public-access printers to controlled-access printers.

For example, if you have used a third-party gateway to get a printer up and running immediately (plug-and-print), the gateway automatically creates a public-access printer. Later, you may want to convert that printer to a controlled-access printer. The following procedure explains how to convert a public-access printer to controlled-access.

Prerequisites

To create a controlled-access printer on your network, you must meet the following prerequisites:

➢ Have at least Read, Write, Modify, and Create rights for the destination container where its associated Printer object will reside

➢ Be designated as a manager of the NDPS Manager that will control this Printer Agent

➢ Have a Broker running

➢ Have an NDPS Manager object

➢ Have a public-access printer created

Procedure

1. In NetWare Administrator, select the container where you want the printer to reside.

2. Choose Object>Create>NDPS Printer.

   The Create NDPS Printer dialog box opens.

3. Type a name in the Printer Name field.

4. In the Printer Agent Source field, select Public Access Printer.

5. When the Select Public Access Printers list appears, click Create.

   A warning message appears saying that all clients will need to reinstall this printer after it is converted.

6. Click OK.

7. Select the public-access printer you want to convert to a controlled-access printer and click OK.

8. Click Create.

NOTE: Novell NetWare Client 4.7 for Windows NT displays a transport error when you try to add an NDPS Manager or an Agent using Netware Admin. This problem does not exist with Client 4.6 for Windows NT.

Adding NDPS printers from Windows clients

Once an NDPS printer had been created, you can add it to the available printer resources of Windows clients as follows.

To add a printer from a Windows NT 4.x workstation:

1. Choose Start>Settings>Printers.
2. Double-click Add Printer.
3. Select Network Print Server and click the [Next] button.
4. Select NDPS Printers, find the name of your printer, and click OK.
5. Finish your printer configuration.

NetWare troubleshooting

Troubleshooting for the Windows-based PC consists of both hardware and software procedures.

The steps in each of these procedures should eliminate cabling, communication, and connection problems associated with direct-connected ports.

Complete one of these procedures (based on the type of port being used), then run a test print from your software application. If the job prints, no further system troubleshooting will be necessary.

Requirements

➢ You are operating a Windows-based system with the CentreWare software and at least one print driver installed.

➢ You are a NetWare Network Administrator OR administrative person with ADMIN/SUPERVISOR or ADMIN/SUPERVISOR EQUIVALENT login rights to the NetWare Server(s) servicing the WorkCentre Pro 421.

➢ The instructions for these troubleshooting tasks assume a base knowledge of NetWare.

NetWare troubleshooting quick check

1. Verify that the printer is plugged in, turned on, and connected to an active network.
2. Verify that the printer is receiving network traffic by monitoring the LEDs on the back of the printer. When the printer is connected to a functioning network receiving traffic, its link LED will be green, and its orange traffic LED will be flashing rapidly.
3. Verify that the client is logged into the network and printing to the correct print queue. Also verify that the user has access to the WorkCentre Pro 421 queue.
4. Verify that the WorkCentre Pro 421 NetWare print queue exists, is accepting jobs, and has a Print Server attached. If not, try using Setup Wizard in CentreWare to reconfigure the print queue.
5. Print out a Configuration Sheet. Verify that Printer Server is enabled. Try setting the frame type to the frame type your NetWare Server is using.
6. For Bindery only verify that the Primary Server is set. (Primary Server should have been set during initial queue setup and installed using CentreWare.) If it is not set, use CentreWare to set it and reset the printer.

NOTE: Setting the Primary Server is extremely important on large networks.

7. If the above quick checks fail to fix the printing problem, contact Xerox Customer Service.

Novell NetWare troubleshooting step-by-step

The steps in this procedure should eliminate cabling, communication, and connection problems associated with network connected printers.

The steps are divided into two groups:

➢ Hardware Step-by-Step

➢ Software Step-by-Step

Software Step-by-Step assumes that you are connected to a Novell NetWare network with a Windows OS loaded on the client workstation.

Complete both of these procedures, then run a test print from your software application. If the job prints, no further system troubleshooting will be necessary.

Novell NetWare hardware step-by-step

1. Check LED activity on the printer. Link (green) LED should be ON whenever it is connected to an active network. Traffic (orange) LED should flicker with data reception.

2. Verify cable connections. If possible, substitute a new cable or connectors from a known good system or printer.

3. Check the port to which your printer is attached. Connect a known good network device to it and test.

4. Print a Configuration Sheet from your printer.

5. Review the Connectivity Settings and check for these things:

    •   **NetWare is enabled.**

    •   **Frame Type matches the frame type of the desired fileserver.**

    •   **PDL is set to your desired PDL (PostScript or PCL 5e) or to Auto.**

    •   **Primary Server (for NetWare 3.1X only) is set to the name of the server which serves the print queue you have assigned to the WorkCentre Pro 421.**

    •   **NDS Tree (for NetWare 4.1X NDS and later) is set for the correct NDS tree name.**

    •   **NDS Context (for NetWare 4.1X NDS and later) is set for the correct NDS Context.**

    •   **Print Server (PServer) Name is set for the name selected for this WorkCentre Pro 421 to act as a print server.**

    •   **Novell Mode is correctly set.**

6. If any changes are made, reset the printer from the Control Panel and allow two minutes for the printer to reattach to

the desired fileserver.

7. Print out another Configuration Sheet to verify the items you modified were set and retained.

Novell NetWare software step-by-step

1. Verify that CentreWare and a WorkCentre Pro 421 driver have been loaded on the workstation.

   In Windows 95/98, WindowsNT 4.0 or Windows 2000, double click on My Computer (you may have changed this name). Open the Printers folder to verify that there is an entry for the type of printer you installed.

2. Launch the CentreWare software.

   In Windows 95/98, WindowsNT 4.0 or Windows 2000, click on the Start button and slide the highlight up to the Programs entry. In the next fold-out window, slide the highlight up or down until you reach the CentreWare entry. Release the mouse button to launch.

3. If the desired printer's name appears, your printer is communicating through the network. Select the desired printer. If a communications error message appears, your printer is not able to communicate with your workstation. Verify your printer's settings, then return to this procedure.

4. With the printer still selected, select the Printer drop-down menu and highlight the Advanced Setup entry.

5. Under this menu will be a sub-menu for NetWare. Select this option.

6. When the Advanced Setup dialog appears, verify the information contained on this screen against the information contained on the Configuration Sheet. Check for *both* of these items:

    •   **Primary Server has the server name listed on the Configuration Sheet.**

    •   **Check the queue name the WorkCentre Pro 421 is set to service. If necessary, create a new queue to test the printer.**

    •   **If your printer is configured to service both NDS and Bindery mode queues, make sure the Primary Server is not in the NDS tree the printer is configured for.**

7. Exit this window and select the Tools drop-down menu.

8. Select the Send File... menu item.

9. When the dialog box appears, select the proper directory and file for downloading. Be sure this is a known good file with no errors.

10. Click OK to download the file to your printer.

11. Check the printer to verify that the print job has printed. If the job has not printed, check the Novell Menu settings on the Configuration Sheet.

12. At the CentreWare main screen, select the Printer drop-down menu. Highlight the Properties entry.

13. Once Properties is selected, highlight Connections.

14. Select the Network Card Tab. A new dialog box is brought to the front and displays information about frame type and connectors.

15. Be certain the printer is enabled and the connector and frame type are correct.

16. If any changes are made, reset the printer from the Control Panel and allow two minutes for the printer to reattach to the desired fileserver.

17. Run a test print again. If the test print does not print, contact Xerox Customer Service.

Printing in a Windows peer-to peer environment

This section describes:

➢ Windows IPX Peer-to-Peer Printing, including preparing for the installation, installing, operating, setting up printing, and adding printers.

Windows IP Peer-to-Peer printing allows Windows 95/98/ME or NT 4 workstations to print to WorkCentre Pro 421 printers without an intervening server.

WorkCentre Pro 421
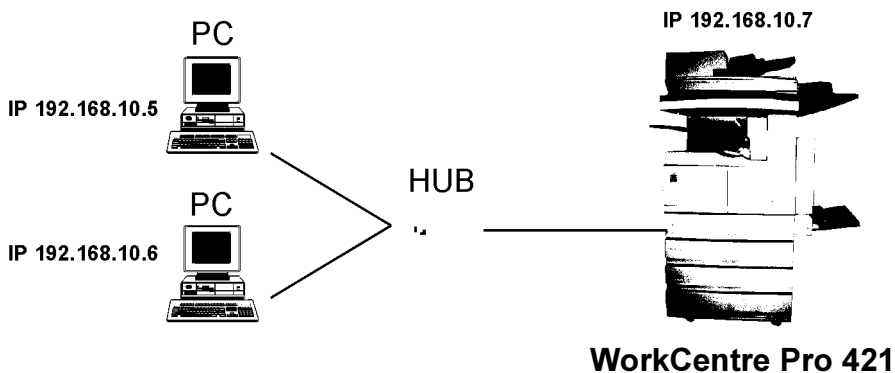
Introduction and preparation

The Peer-to-Peer implementation uses the TCP/IP protocol provided with Windows 95/98/ME or Windows NT. The Xerox TCP/IP Port Monitor establishes a direct connection with the printer.

When configuring the network capabilities for the Windows computer, you must include the TCP/IP Protocol.

To include TCP/IP after the initial Windows installation, from within Windows choose Settings>Control Panel>Network from the Start menu. You will also need the Windows CD-ROM.

For more detailed information on TCP/IP setup and printing, see *"Configuring TCP/IP" on page 2-53*.

NOTE: TCP/IP operation must remain enabled on the WorkCentre Pro 421. The WorkCentre Pro must be assigned a valid IP address in relation to the client PC's. For example, in the diagram on the previous page, the client PC's have an IP address of 192.168.10.5 and 192.168.10.6, the WorkCentre Pro has an IP address of 192.168.10.7.

If you are moving the WorkCentre Pro 421 from a site that had active TCP/IP to a site that does not, you should disconnect the WorkCentre Pro 421 from its existing network. Ascertain the network setting requirements for the new site, reconfigure the WorkCentre Pro 421 then connect the WorkCentre Pro 421 to the new site.

Print Driver Installation

You must first install your WorkCentre Pro 421 printer drivers before adding the Xerox TCP/IP Port Monitor software. read the note below and then refer to *"Installing and configuring the printer driver" on page 2-94*.

NOTE: When installing the printers drivers you will be required to select local printer or network printer, you must select local printer. You will be required to select a port to be used by this printer, at this point you can select FILE: or LPT1: You will change the printer port after installing the XEROX TCP/IP Port Monitor.

Xerox TCP/IP port monitor installation

1. Insert the WorkCentre Pro 421 Printer Driver CD.

2. When the opening screen is displayed, choose Additional Software Utilities and then double click the TCP/IP Port Monitor.
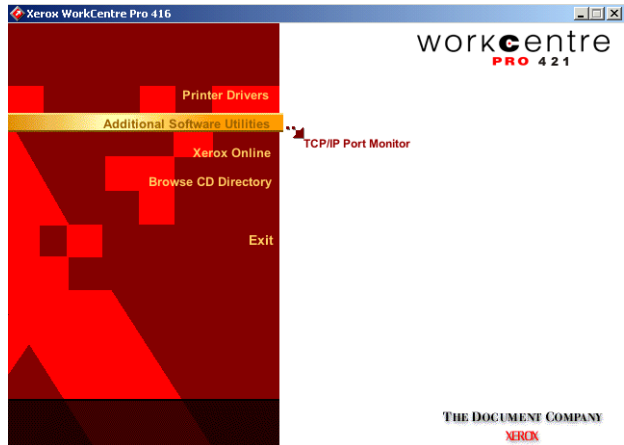
The Xerox TCP/IP Port Monitor Setup dialog is displayed.
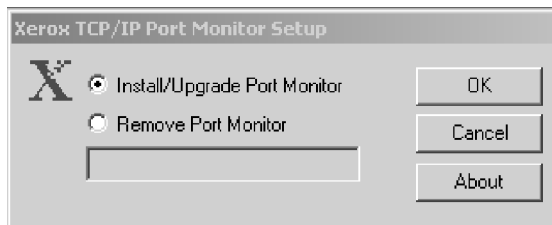
3. Ensure that the Install/Upgrade Port Monitor option is selected and click OK.

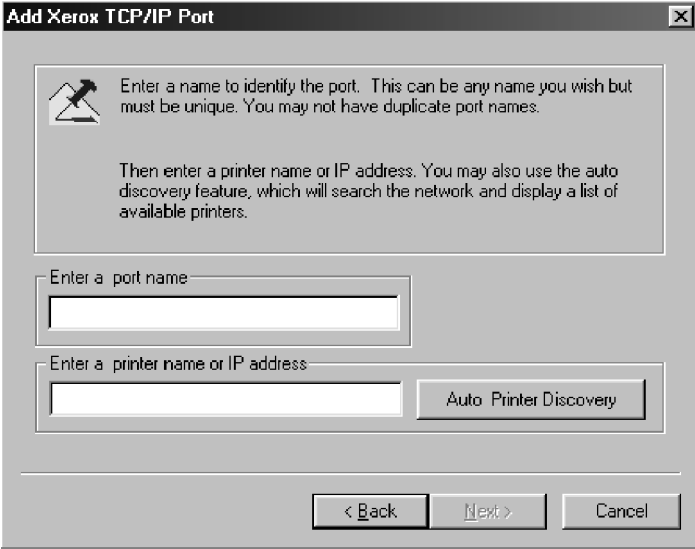4. Click OK once the software is successfully installed.

Configuring the printer port for Windows 95/98/ME
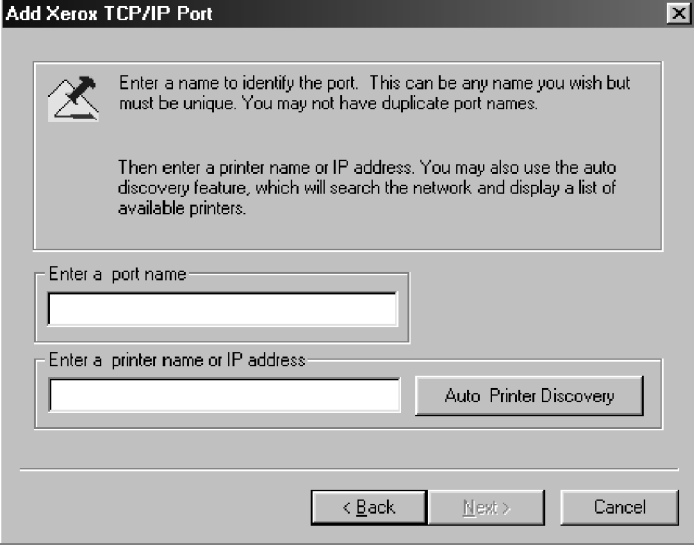
1. Choose **Settings>Printers** from the Start menu.
2. Click on the WorkCentre Pro 421 printer icon and choose Properties from the right mouse button menu.
3. Click the Details tab.
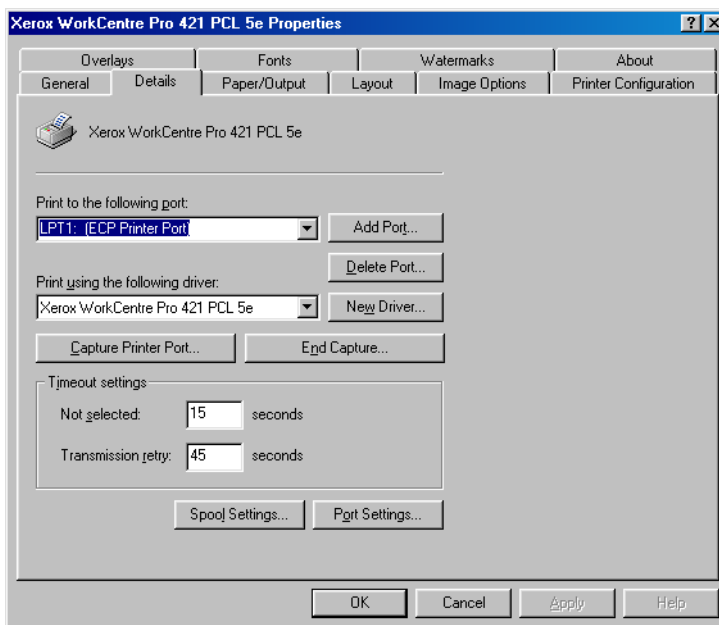
4. Click [Add Port].

    The Add Port dialog is displayed.
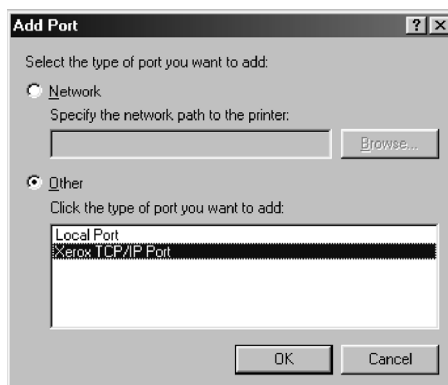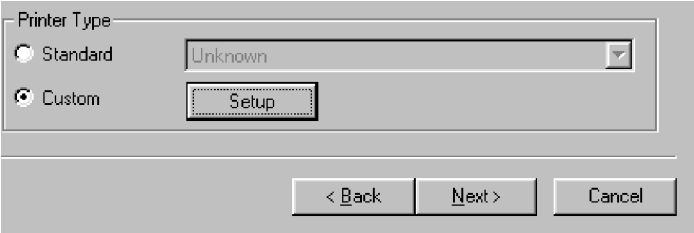
5. Make sure Other option is selected and highlight Xerox TCP/IP Port.
6. Click OK.

    The TCP/IP Printer Port Wizard screen is displayed.
7. Click the [Next] button.

Add Xerox TCP/IP Port

Enter a name to identify the port. This can be any name you wish but must be unique. You may not have duplicate port names.

Then enter a printer name or IP address. You may also use the auto discovery feature, which will search the network and display a list of available printers.
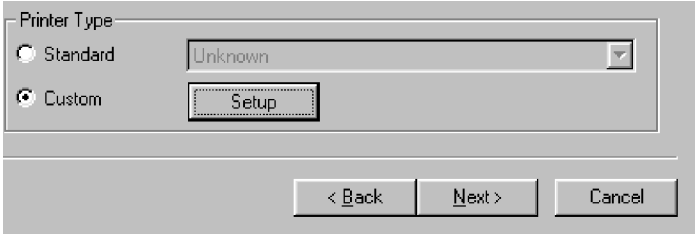
Enter a port name

Enter a printer name or IP address

Auto Printer Discovery

< Back | Next > | Cancel

8. Enter the name by which you want to identify the port.
9. If you know the printer name or TCP/IP address of the WorkCentre Pro 421 enter it. Otherwise, click the [Auto Printer Discovery] button to display a list of available printers on the network and double click the required printer from the list.
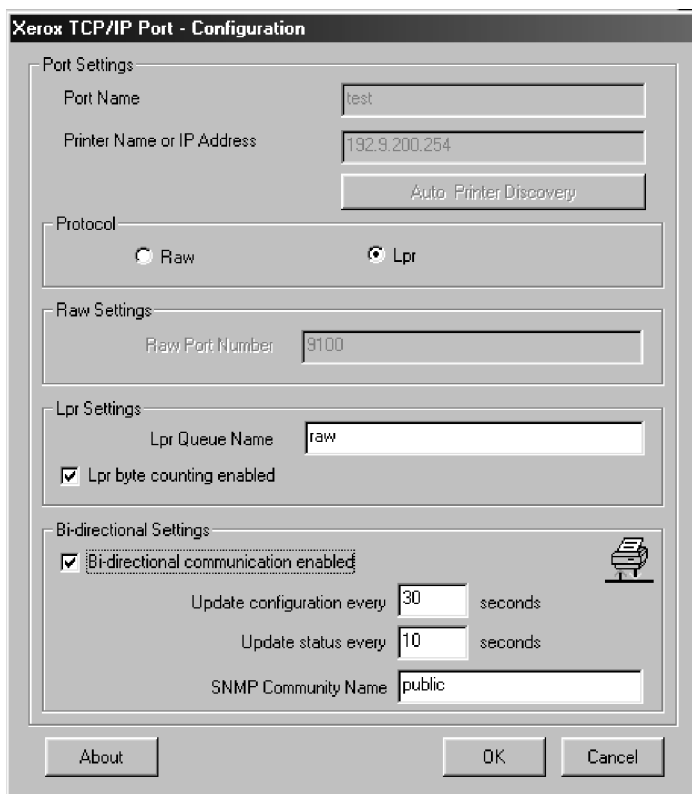
    The Printer Type dialog is displayed.

Printer Type

○ Standard | Unknown ▼

● Custom | Setup
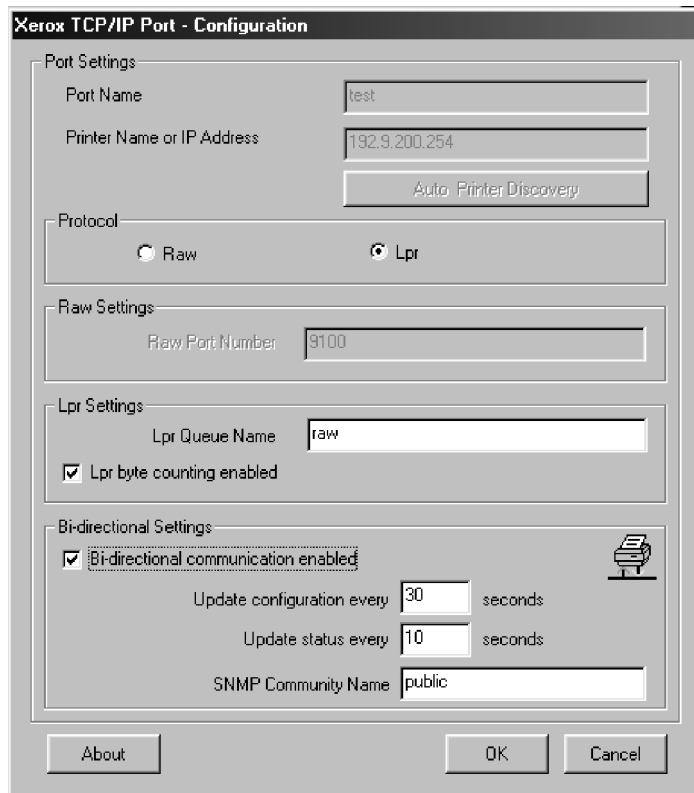
< Back | Next > | Cancel

10. Select the Custom option and click the [Setup] button.

The Port Configuration screen is displayed.

Xerox TCP/IP Port - Configuration

Port Settings

Port Name   test

Printer Name or IP Address   192.9.200.254

                                   Auto Printer Discovery

Protocol

    ○ Raw   ● Lpr

Raw Settings

Raw Port Number   9100

Lpr Settings

Lpr Queue Name   raw

☑ Lpr byte counting enabled

Bi-directional Settings

☑ Bi-directional communication enabled

Update configuration every   30   seconds

Update status every   10   seconds

SNMP Community Name   public

About   OK   Cancel

11. Check the Select Bi-directional communication enabled box.

12. Click OK to complete the Xerox TCP/IP Port installation.

Configuring the printer port for Windows NT 4

1. Choose **Settings>Printers** from the Start menu.

2. Click on the WorkCentre Pro 421 printer icon and choose Properties from the right mouse button menu.

3. Click the Ports tab.
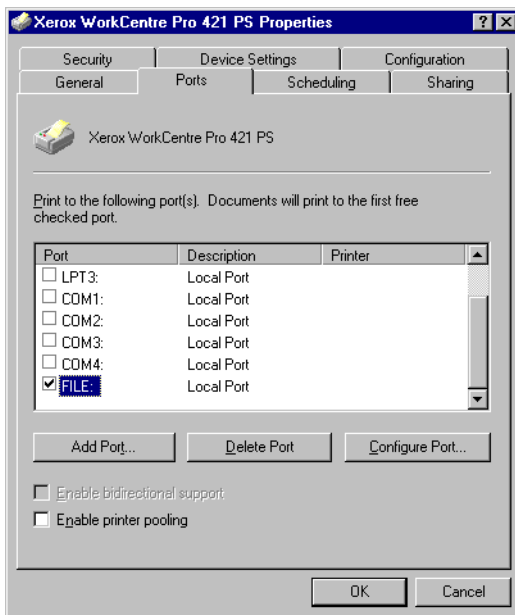
4. Click the [Add Port] button.

   The printer ports dialog is displayed.

5. Double click Xerox TCP/IP Port.

   The TCP/IP Printer Port Wizard screen is displayed.

6. Click the [Next] button.

The TCP/IP Printer Port Wizard screen is displayed.

Add Xerox TCP/IP Port

Enter a name to identify the port. This can be any name you wish but must be unique. You may not have duplicate port names.

Then enter a printer name or IP address. You may also use the auto discovery feature, which will search the network and display a list of available printers.

Enter a port name

Enter a printer name or IP address

Auto Printer Discovery

< Back   Next >   Cancel

7. Enter the name by which you want to identify the port.

8. If you know the printer name or TCP/IP address of the WorkCentre Pro 421 enter it. Otherwise, click the [Auto Printer Discovery] button to display a list of available printers on the network and double click the required printer from the list.

The Printer Type dialog is displayed.

Printer Type

○ Standard   Unknown

● Custom   Setup

< Back   Next >   Cancel

9. Select the Custom option and click the [Setup] button.

The Port Configuration screen is displayed.

10. Check the Select Bi-directional communication enabled box.

11. Click OK to complete the Xerox TCP/IP Port installation.

Configuring TCP/IP

This section describes configuring the WorkCentre Pro 421 and your network for use with TCP/IP communication in various environments.This includes:

 ➢ Installing in a Windows environment

 ➢ Dynamic Host Configuration Protocol (DHCP)

 ➢ Windows Internet Name Service (WINS)

 ➢ FTP printing

 ➢ Printing on UNIX-based systems, including Linux

 ➢ Running Telnet

 ➢ Using the Internet Printing Protocol (IPP)

The WorkCentre Pro 421 TCP/IP capability also operates with lpr spoolers on other systems, and with spooler/supervisor capabilities that communicate raw print jobs to the TCP/IP port.

The IP Peer-to-Peer redirector provided with the WorkCentre Pro 421 uses this TCP/IP port. The default port number is 10001 but can be changed by using Telnet or SNMP or by accessing the WorkCentre Pro 421 HTML pages with MAP or a Web browser. For information on using Telnet, see *"Running Telnet" on page 2-88*.

Installing in a Windows environment

Several versions and variations of Windows can be used on NetWare and TCP/IP networks, as well as in a native Windows network. This flexibility provides you with various options for setting up the network printing system even though this WorkCentre Pro 421 does not support NetBEUI.

If the Windows workstations are connected to a NetWare network, configure the printer interfaces for NetWare and use standard Windows and NetWare utilities to provide access to the printer. See *"Configuring Netware" on page 2-10*.

If you are not using NetWare, you can access the printer using TCP/IP.

If you are using Windows 95/98 or Windows NT 4.x, you can also use the WorkCentre Pro 421 Peer-to-Peer capability described in *"Printing in a Windows peer-to peer environment" on page 2-44.*

Installing TCP/IP on Windows

Windows NT and Windows 95/98/ME/2000 come with TCP/IP and lpr capabilities, although these must be installed when the unit is configured. You must install the TCP/IP Protocol, Simple TCP/IP Services, and Microsoft TCP/IP Printing prior to entering the network printer on the workstation.

Once lpr is installed on a Windows system and you have allowed printer sharing, other workstations can use the printer through the Microsoft Windows Network without having to have separate lpr queues installed on each workstation.

Setting up the WorkCentre Pro 421

1. Power up the printer.
2. Configure the WorkCentre Pro 421 for the network. See *"Configuring the printer" on page 2-3*

Keep the status sheet handy for the Ethernet (MAC) address. It shows that TCP/IP is enabled but that the IP address is not configured.

If the WorkCentre Pro 421 already has an IP address, these procedures do not work. However, you can use Telnet to access the WorkCentre Pro 421 and change the IP parameters (see *"Running Telnet" on page 2-88*).

Assigning an IP address

The WorkCentre Pro 421 must be given an IP address and routing information to be used with TCP/IP. To do this:

➢ If you have a NetWare connection, use MAP

➢ Otherwise, use arp (see *"Using arp" on page 2-55*) or BootPL32 (see *"Using BootPL32" on page 2-56*)

Using arp

The WorkCentre Pro 421 must be on the same network segment as the workstation you are using to configure it.

To assign an IP Address with arp:

1. Open a DOS command box and enter the following command:

   ping psc-ip-address

   where psc-ip-address is the IP address you want to use for the WorkCentre Pro 421. The request should time out with no response (which indicates that the address is unused).

2. Enter the following command.

   ping ip-address

   where ip-address is any valid IP address on your network. The identified unit should reply.

3. After the response, enter the following command.

   arp -s psc-ip-address mac-address

   where psc-ip-address is the IP address of the WorkCentre Pro 421 and mac-address is its MAC address.

   The entry should be accepted.

4. Enter the ping command from Step 1 again. The request should time out.

5. Let the WorkCentre Pro 421 reset itself.

   The WorkCentre Pro 421 generates a status page that should include the entered IP address.

6. When the WorkCentre Pro 421 is up again, re-issue the ping command from Step 1. Continue until you get a reply.

NOTE: This enters only the IP address. For other IP parameters, use Telnet (see *"Running Telnet" on page 2-88*) or use MAP or a Web browser.

Using BootPL32

Using BootPL32, you can specify the IP address and other IP parameters on TCP/IP.

The bootpl32.exe program uses the BootP protocol. The WorkCentre Pro 421 must be on the same network segment as the workstation you are using to configure it. The TCP/IP stack must be installed and operating. The system cannot be operating as an active DHCP Server.

To assign an IP address with BootPL32:

1. Reset the WorkCentre Pro 421.

NOTE: The WorkCentre Pro 421 issues the BootP request for a finite period of time. The Printer must be reset by switching it off then on in order for this program to work.

2. Choose Start>Run.
3. Enter bootpl32.exe and click OK.
4. Choose Admin>Configure.

    The BootP Parameters window appears.

5. Enter the following information.

    - IP Address you want to assign to the WorkCentre Pro 421

    - Subnet Mask (Make sure this matches what you are using on your subnet. If you are unsure of the correct subnet mask ask the system administrator.

    - Default Gateway (IP address of your router or leave blank)

    - Hardware Address of the WorkCentre Pro 421 - listed on the status sheet as the Ethernet address (for example, 00:40:af:13:c9:f0)

NOTE: Use colons as delimiters, as shown on the status sheet, rather than the dashes Windows uses.

6. Click Go and wait about 5 minutes.

    The WorkCentre Pro 421 should recycle and produce a status sheet showing the IP parameters you have just entered. If the status page does not print, check the Hardware Address entry in the BootP Parameters window.

7. Choose Admin>Verify.

    A message should appear stating that the unit is active. If you do not get this message, check the status sheet to see if TCP/IP is enabled.

    When you get a response that your unit is active, you should be able to use ping and Telnet to access the WorkCentre Pro 421.

Setting other IP parameters

The WorkCentre Pro 421 provides for a setup connection through the standard Telnet port. To make changes to a unit with factory default settings, you must log in as the system administrator. You can change this password using Telnet (see *"Running Telnet" on page 2-88*).

To set up IP and lpr parameters:

1. Use Telnet to access the WorkCentre Pro 421.

    The default login and password are both sysadm.

2. Turn off the protocols you are not using (Option 3).

3. Set up the subnet mask and default gateway for the WorkCentre Pro 421, if applicable (Option 1).

4. Exit, save, and reset the WorkCentre Pro 421.

Alternatively, you can set up IP and lpr parameters by accessing the WorkCentre Pro 421 HTML pages with MAP or a Web browser (see Chapter 3, Monitoring the WorkCentre Pro 421). The password to change parameters with the HTML pages is the same as the Telnet password.

Setting up lpr on Windows NT

1. Choose **Settings>Printers** from the Start menu.
2. Double click Add Printer.

   The Add Printer wizard appears.
3. Choose the My Computer option and click the [Next] button.
4. Click Add Port. A list of printer ports is displayed.
5. Select LPR Port in the list of ports and click New Port. The Add LPR Compatible Printer window appears.
6. Enter the IP address of the WorkCentre Pro 421 in the Name or address of server providing lpd field.
7. Enter a name for the printer in the name of printer or printer queue on that server field.
8. Click OK.
9. Click [Close] then [Next].
10. If the driver is available then choose it. If not click [Have disk] and browse to the driver.

    This can be found on the Printer driver/documentation CD at **Install>(OS)>(PDL)>(Language)** folder, where:

    • **OS is the operating system of the workstation, Windows 9x, Windows 2000, Windows xp or Windows NT.**
    • **PDL is the Print Description Language, PCL or PostScript.**
    • **Language is the language in which the driver functions.**
11. Choose the XW421 driver and click the [OK] button.

    The files are copied to the hard disk and the installation completes.
12. Click the [Next] button.
13. Change the printer name, if required and click the [Next] button.
14. Choose Shared or Not Shared according to your requirements. If you are not sure, choose Not Shared.
15. Click the [Next] button then the [Finish] Button.
16. Configure the printer. See *"Configuring the printer" on page 2-99*.

Setting up lpr Windows 2000

1. Choose **Settings>Printers** from the Start menu.

2. Click Add Printer.

   The Add Printer wizard appears. Click the [Next] button to proceed.

3. Choose the Local Printer option and click the [Next] button.

4. Choose Create a New Port and select LPR Port from the drop-down list.

5. Click the [Next] button.

6. Enter the IP address of the WorkCentre Pro 421 in the Name or address of server providing lpd field.

7. Enter a name for the printer in the name of printer or printer queue on that server field.

8. Click OK.

9. Click [Close] then [Next].

10. If the driver is available then choose it. If not click [Have disk] and browse to the driver.

    This can be found on the Printer driver/documentation CD at **Install>(OS)>(PDL)>(Language)** folder, where:

    - **OS is the operating system of the workstation, Windows 9x, Windows 2000, Windows xp or Windows NT.**
    - **PDL is the Print Description Language, PCL or PostScript.**
    - **Language is the language in which the driver functions.**

11. Choose the XW421 driver and click the [OK] button.

    The files are copied to the hard disk and the installation completes.

12. Click the [Next] button.

13. Change the printer name, if required and click the [Next] button.

14. Choose Shared or Not Shared according to your requirements. If you are not sure, choose Not Shared.

15. Click the [Next] button then the [Finish] Button.

16. Configure the printer. See *"Configuring the printer" on page 2-99*.

Dynamic Host Configuration Protocol (DHCP)

Dynamic Host Configuration Protocol (DHCP) is a service that provides a method for assigning and maintaining IP addresses. The WorkCentre Pro 421 obtains IP information from this service.

There are two user-defined variables related to the DHCP function:

➢ DHCP enable

➢ Use IP info in NVRAM

These variables are accessible in the TCP section of Network Administration, in the HTML pages.

If DHCP is not enabled:

➢ The WorkCentre Pro 421 makes no DHCP requests under any circumstances.

➢ If the WorkCentre Pro 421 does not have an IP address stored, or if "Use IP info in NVRAM" is OFF, the WorkCentre Pro 421 issues BootP requests.

If DHCP is enabled:

➢ The WorkCentre Pro 421 makes DHCP requests when the WorkCentre Pro 421 is reset or on powerup, provided that the WorkCentre Pro 421 does not have an IP address stored or that "Use IP info in NVRAM" is OFF. These DHCP requests are in addition to BootP requests.

➢ If the WorkCentre Pro 421 has an IP address in NVRAM and "Use IP info in NVRAM" is ON, the WorkCentre Pro 421 uses the IP information from NVRAM and there is no DHCP activity on the part of the WorkCentre Pro 421.

The factory default is DHCP enabled and "Use IP info in NVRAM" set ON. In this case, the WorkCentre Pro 421 issues DHCP requests if it does not already have IP identification information stored in NVRAM.

NOTE: If DHCP is enabled and the WorkCentre Pro 421 is in the default mode, you must establish a permanent lease or reservation for the WorkCentre Pro 421 in the DHCP server. If you do not do this, the same address might be given out to another host.

Windows Internet Name Service (WINS/DHCP)

Windows Internet Name Service (WINS) allows a device, such as your print server, to register a NetBIOS name such as the WorkCentre Pro 421 serial number (six digits with a three-letter prefix) along with its current IP address (for example, 192.168.10.7). A client that wants to contact the printer uses the WINS server to match the NetBIOS name with an IP address. Most users find it easier to remember the NetBIOS name for the printer rather than its IP address.

Using WINS with your print server

To use WINS with your Print Server, enter the IP address of the WINS Server on the TCP/IP configuration screen. You can access this screen with a Web browser or MAP utility.

Configuring the WINS server

You can configure your DHCP Server to automatically provide WINS Server information to the print server, or you can use the print server's TCP/IP Configuration Menu to manually enter the necessary information. Refer to your DHCP Server's documentation for further information on automatic configuration through the DHCP Server.

To manually configure your print server to work with the WINS server:

1. Assign an IP address to the print server.

    To assign the address, you can use MAP, Address Resolution Protocol (arp), DHCP, Reverse Address Resolution Protocol (rarp), or BootP.

2. Run your Web browser - Internet Explorer or Netscape Navigator.

3. Choose File>Open.

   The Open dialog box opens.

4. Enter the print server's IP address to access the print server's TCP/IP Configuration Menu.

5. Choose TCP/IP Configuration from the main menu.

   The NetBIOS Name for the print server is shown on this screen. The default name is the WorkCentre Pro 421 serial number (six digits with a three-letter prefix) unless you have previously configured a name for the print server with DHCP.

6. Optionally, enter a new NetBIOS name (15 characters or less).

7. If you have previously configured a DHCP Server to provide the print server with the IP address of the Primary WINS Server, the address is shown on the TCP/IP Configuration Menu. Otherwise, enter the IP address of the Primary NetBIOS Name Server here.

8. Optionally enter the IP address of a Secondary NetBIOS Name Server as well. If you have configured your DHCP Server to provide the address of a Secondary WINS Server to the print server, the address fields are automatically completed for you.

9. Reboot the printer/print server.

   The printer's status page now shows that the print server has successfully registered with the WINS server. The checkboxes labelled "Primary Server Logged in" and "Secondary Server Logged in" on the TCP/IP Configuration Menu now indicate any WINS Servers with which the print server has registered.

   Normally, the print server automatically renews its registration with the WINS Server before its lease expires.

FTP printing

FTP printing using Netscape

FTP printing with Netscape requires Navigator 2.0 or higher.

To print from Netscape:

1. Connect to the port you want to send the print job to on your print server.

2. Enter the following command.

   ftp://PORT1@dest-srvr-addr

   where dest-srvr-addr is the IP address of the print server to which you want to send the print job.

3. Run Netscape.

4. Choose File>Upload File and specify the file, or drag and drop the file to your browser window and click OK.

NOTE: FTP printing does not support selecting multiple file names. Only one user can be logged on to a port at any particular time.

Printing from an FTP client

1. Open a DOS Command window and enter the following command.

   ftp dest-srvr-addr

   where dest-srvr-addr is the IP address of the print server to which you want to send the print job.

2. Enter port1 as the login name.

3. Enter port1 as the password.

4. Enter the following command.

   put filename

   where filename is the file you want to print.

UNIX printing

The WorkCentre Pro 421 can support UNIX TCP/IP printing in the following modes:

➢ Host-based lpd where a supplied line printer daemon is run on one or more workstations and print data is communicated to the WorkCentre Pro 421 through a TCP/IP port

➢ Printer-based lpd where the printer appears as a host running a line printer daemon

In general, printer-based lpd is easiest to use on BSD UNIX systems, requiring an entry in the printcap file once the WorkCentre Pro 421 has its IP information. Some UNIX-based systems have restrictions on support of remote lpd/lpr printers, requiring that the host-based lpd/lpr approach be used.

For many operating systems, you choose host-resident printing or print server-resident printing. Each mode has certain advantages:

➢ The host-resident method can print the username and filename on its banner page; the print server-resident method prints a banner page with the host name.

➢ The print server-resident method requires you to configure the printer only one time - when you install the print server. The host-resident method requires a printing daemon installed on each host you want to be able to print jobs.

NOTE: The WorkCentre Pro 421 also operates with other host-resident print supervisor/spooler programs that present a print image to the printer over a TCP/IP port. You can change the base TCP/IP port number through Telnet (see *"Running Telnet" on page 2-88*) or with MAP or a Web browser. Keep in mind that the actual port is always one higher than the base port number. The status and configuration page indicates the actual port number.

Between the host-based and printer-based TCP/IP printing capabilities, the WorkCentre Pro 421 works with:

➢ All UNIX-based systems that support lpd/lpr

➢ System V Rel. 4 (on 386 platforms)

➢ ULTRIX RISC 4.3 or 4.4

➢ OSF/1 2.0 or 3.0

➢ Solaris:

    - Version 1.1.3 (SunOS 4.1.3)

    - Version 2.3 (SunOS 5.3)

    - Version 2.4 or 2.5

➢ HP-UX Series 700 or 800 Versions 9.01 or 10.0

➢ IBM AIX 3.2.5

➢ SCO UNIX 3.2

➢ AS/400

The TCP/IP directory also includes source code that you can recompile into host-based code for configuring on other System V platforms.

Configuring the IP address on the WorkCentre Pro 421

Regardless of the printing mode selected, the WorkCentre Pro 421 must be given IP address and routing parameters. You can configure the IP address for the WorkCentre Pro 421 in one of the following ways:

➢ Using MAP, as described in Chapter 3, Monitoring the WorkCentre Pro 421

➢ Using the Internet Boot Protocol (BootP)

➢ Using the Reverse Address Resolution Protocol (rarp) capability (Ethernet II frame type only)

➢ Using arp and ping

For each method, you need to provide the Ethernet address of the WorkCentre Pro 421. The Ethernet address is the 12-character code that appears under Network Address on the configuration status report each time the printer is turned on.

You can use the BootP, rarp, or ping procedures only when the Print Server is in its factory default state (no IP information entered.) After the Print Server has an IP address, you can change the IP address, subnet mask, and default gateway by using Telnet, MAP, or a Web browser.

Using BootP

The BootP daemon is a native TCP/IP option for configuring the IP address of a diskless network device.

To communicate the IP address:

1. Turn off the printer.
2. Log in as superuser on a host on the same subnet as the print server.

   If the server resides on another subnet, complete this procedure to store the IP address in the print server. Reconnect the print server anywhere on the network, and then change the IP address by using Telnet (see *"Running Telnet" on page 2-88*) or by using MAP or a Web browser.

3. Find the Ethernet address of the WorkCentre Pro 421.

   The address is printed on the configuration status report each time you turn the printer on.

4. Edit the hosts file (usually /etc/hosts) or use NIS or DIS to add the IP address and WorkCentre Pro 421's node name. Check with your network administrator for the IP address.

   For example, a printer named printfast with an IP address of 192.168.10.7 has the following entry.

   192.168.10.7 printfast

5. Stop the BootP daemon if it is running.

6. Edit the /etc/BOOTP file and add the following information:

nic_host:\

:ht = hardware_type:\

:ha = ethernet_address:\

:ip = ip_address:\

:sm = subnet_mask:\

:gw = gateway_address:

For example, for an RFC 1048 system:

printfast:\

:ht = ether:\

:ha = 0040AF03AF6E:\

:ip = 192.168.10.7:\

:sm = 255.0.0.0:\

:gw = 192.168.10.6:\

If you are running with a more recent BootP implementation, such as on SCO UNIX, add:

:vm = rfc1048:

The same information uses the following format on an RFC 951system.

host	htype	haddr	iaddr	bootfile
printfast	1	00:40:af:03:af:6e	192.168.10.7	defaultboot

7. Start the BootP daemon by entering the bootpd -s command.

8. Check the printer to verify that the WorkCentre Pro 421 is connected to the network and turn on the printer.

Wait until the printer powers up and finishes initializing to allow enough time for the IP address to become known and to be saved in non-volatile memory.

The WorkCentre Pro 421 should reinitialize itself.

9. After the WorkCentre Pro 421 has reinitialized, use the ping command to verify that the print server obtained its IP address.

For example:

ping 192.168.10.7

If the server has the address, the result is a confirmation message such as:

192.168.10.7 is alive

10. Remove or comment out your changes to the /etc/BOOTP file.

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

Using the Reverse Address Resolution Protocol (rarp)

The Reverse Address Resolution Protocol (rarp) allows network devices to query a server for their IP addresses on start up. For this procedure, there needs to be a workstation with a rarp server.

To store the IP address:

1. Turn off the printer.

2. Log in as superuser on a host on the same subnet as the print server.

   If the server resides on another subnet, complete this procedure to store the IP address in the print server. Reconnect the print server anywhere on the network and change the IP address.

   To make the change, you can use Telnet (see *"Running Telnet" on page 2-88*) or use MAP or a Web browser.

3. Find the Ethernet address of the WorkCentre Pro 421.

   The address is printed on the configuration status report when you power on the printer.

4. Edit the hosts file (usually /etc/hosts) or use NIS or DIS to add the IP Address and WorkCentre Pro 421's node name. See the network administrator for the IP address.

   For example, a print server with the name of printfast has the following entry:

   192.168.10.7 printfast

5. Edit the /etc/ethers file or use NIS or DIS to add the Ethernet address.

   For example, in the case of the printfast server with an Ethernet address of 00:40:c8:00:00:ff, enter the following:

   0:40:c8:0:0:ff printfast

6. If the rarp daemon is running, stop and restart it. Then verify that the daemon is running.

7. Check the printer to make sure the print server is connected to the network. Turn on the printer.

   Wait until the printer powers up and finishes initializing to allow enough time for the IP address to become known and to be saved in non-volatile memory. The Printer should then reset itself.

8. After the WorkCentre Pro 421 has reset, use the ping command to verify that the print server obtained its IP

address. For example:

ping 192.168.10.7

If the server has the address, the result is a confirmation message such as:

192.168.10.7 is alive

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

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

Using arp to enter an IP address

1. Turn off the printer.

2. Log in as superuser on a host on the same subnet as the print server.

   If the server resides on another subnet, complete this procedure to store the IP address in the print server. Reconnect the print server anywhere on the network and change the IP address.

   To make the change, you can use Telnet (see *"Running Telnet" on page 2-88*) or use MAP or a Web browser.

3. Find the Ethernet address of the WorkCentre Pro 421.

   The address is printed on the configuration status report each time you turn the printer on.

4. Edit the hosts file (usually /etc/hosts) or use NIS or DIS to add the IP address and print server's node name. See the network administrator for the IP address.

   For example, a print server with the name of printfast has the following entry:

   192.168.10.7 printfast

5. Add an entry to the arp cache for the Print Server's IP address and Ethernet address.

   For example:

   arp -s 192.168.10.7 0:40:c8:0:0:ff

6. Check the printer to see that the Print Server is connected to the network. Turn on the printer.

7. Use the ping command to verify that the WorkCentre Pro 421 is running on the network. You can enter the IP address or the print server name.

    For example, entering the IP address:

    ping 192.168.10.7

    Or, entering the print server name:

    ping printfast

    The WorkCentre Pro 421 does not respond to this ping command but reads its IP address from the packets.

8. Turn the printer off and restart it. Then repeat Step 7 (send the ping command again) to verify that the print server obtained its IP address.

    If the server has the address, the result is a confirmation message such as:

    192.168.10.7 is alive

9. Remove the entry from the arp cache. Enter the Print Server either by its IP address or by its name.

    For example:

    arp -d 192.168.10.7

    or:

    arp -d printfast

Printing with lpd/lpr

The lpd/lpr commands are an implementation of the standard UNIX line printer daemon which lets you print across a TCP/IP network without installing software on your workstation and with all filtering and banners done by the WorkCentre Pro 421. Remote printing uses the same commands (lpr, lpq, lpc) as local printing.

The process begins when the lpr call finds a printer on a remote system by looking at the remote (rm) entry in the /etc/printcap file for that printer. The lpr handles a print job for a remote printer by opening a connection with the lpd/lpr process on the remote system and sending the data file (followed by the control file containing control information for this job) to the remote system. The printer-based lpd then filters the data and prints the job according to information contained in the control file and its own printcap file.

The WorkCentre Pro 421 lpd recognizes the format of certain printer emulations and filters the data, if possible, so the data can be printed on the printer type you specify.

To tell the WorkCentre Pro 421 lpd the type of printer attached to it, do one of the following:

➢ Accept the default port setting (PCL, PostScript, and other)

➢ Change the listed emulations by using Telnet, MAP, or a Web browser

The following sections give specific lpd/lpr setup instructions for various systems.

Printing on a BSD remote printer

To set up a remote printer on the host that sends jobs to WorkCentre Pro 421 using printer-resident lpd, add an entry to the /etc/printcap file on your host for each printer you use:

1. Open the /etc/printcap file.

2. Enter the name of the WorkCentre Pro 421 as the remote host and PORT1 as the remote printer name. A typical printcap entry is:

   printer_name\

   :lp=:\

   :rm=remote_host:\

   :rp=PORT1:\

   :sd=/usr/spool/lpd/printer_name:

   This entry sends jobs spooled at /usr/spool/lpd/ printer_name to the printer designated printer_name, to be printed at PORT1 (the internal connection to the printer) of the WorkCentre Pro 421 designated as remote_host. (All printcap entries must begin with a tab except the one on the first line.)

3. Use mkdir to create the spooler directory. For example:

   mkdir /usr/spool/lpd/printer_name

4. To print using the spooler, use the lpr command as follows:

   lpr-P printer_name file_name

Printing on an AIX version 2.5 remote printer

To set up a remote printer on the host that sends jobs using the WorkCentre Pro 421's lpd:

1. At the prompt, enter the following command to run the System Management Interface Tool (SMIT):

    #smit spooler

2. When a window opens, select Manage Remote Printers.

3. When a menu appears, select Client Services, then select Remote Printer Queues, and then select Add a Remote Queue.

4. When a window opens, change the values shown to configure the WorkCentre Pro 421. The values displayed are default values. You must replace the short and long form filter values with the values shown in the following table.

Input Requested	Example	Description of Input Data
Name of queue to add	print1	Name of local printer
Queue destination host	printfast	WorkCentre Pro 421 IP hostname
Short form filter	/usr/lpd/bsdshort	Required value
Long form filter	/usr/lpd/bsdlong	Required value
Name of remote printer queue	PORT1	WorkCentre Pro 421
Name of device to add	print1	Name of local queue

5. After you have entered all values, press Enter. Now you can print.

Printing on AIX 4.0

1. Run SMIT Printer.

2. Select Print Spooling.

3. Select Add a Print Queue.

4. Select Remote.

5. Use Standard Processing.

6. Assign a queue name.

7. Use the host address of the WorkCentre Pro 421 for the Remote System.

8. For the queue on the remote system, use PORT1.

9. Optionally, add a description.

10. Press Enter to generate.

11. Test your printer by executing the following command:

    lp -d queue_name file_name

Printing on an HP-UX remote printer

To set up a remote printer on the host that sends jobs to a WorkCentre Pro 421 using the Printer lpd:

1. At the prompt, type sam.

2. When a window appears, choose Printer/Plotter Manager.

3. When the menu appears, choose List printer and plotters.

4. When a list appears, select Actions in the title bar.

5. From the pull-down menu, choose Add Remote Printer.

6. When a window appears, add values to configure WorkCentre Pro 421.

   For example:

Input Requested	Example	Description of Input Data
Printer Name	myprinter	Name to be used in lp command
Remote System Name	fastprint	WorkCentre Pro 421 hostname as in /etc/hosts
Remote Printer Name	PORT1	lpd queue name

7. At the bottom of the screen, select Remote Printer is on BSD system from the choices available and click OK.

8. Use the ping command to test communications:

   ping ip-address

   where ip-address is the IP address of the WorkCentre Pro 421.

   If the server has the address, the result is a confirmation message such as:

   192.168.10.7 is alive.

Printing on AS/400

When create (CRTOUTQ) or modify (WRKOUTQ) the output queue description, there are several fields that must be defined for the WorkCentre Pro 421 to function properly as a remote printer device.

To define the fields for the WorkCentre Pro 421:

1. When prompted for the remote system, type INTNETADR so the AS/400 recognizes the device as an IP device.

2. Enter the following:

    - Port must be PORT1.

    - Connection type must be IP.

    - Internet address must be the IP address of the WorkCentre Pro 421 device.

    - Destination type must be OTHER.

3. When prompted for transforming SCS to ASCII, type YES to allow the AS/400 to do the character translation.

4. For the manufacturer type and model, specify the print driver that goes with your printer.

Printing on ULTRIX RISC or OSF1

You can set up ULTRIX 4.3 RISC or OSF1 remote printers on the host that sends jobs to a WorkCentre Pro 421, as follows:

1. At the prompt, enter the lprsetup command.

2. Select add.

3. Enter a name for your printer.

4. At the "Do you want more information on specific printer types?" prompt, press Enter.

    A list of ULTRIX-supported printers appears.

5. Enter remote.

6. Enter a printer synonym (alias).

7. Optionally, designate a spooler directory.

8. Designate PORT1 as the remote system printer name.

9. You are asked to enter the name of a printcap symbol from a displayed list. Type Q and press Enter.

Your configuration appears. For example:

Printer #7 Symbol	Type	Representative Value
lp (line printer)	STR	
rm (remote host)	STR	Printer Server Card_host
rp (remote printer)	STR	PORT1
sd (spooler directory)	STR	/usr/spool/lpd7

10. When prompted whether these values are final, type Y or N and press Enter.

11. Add comments to the printcap file and press Enter.

    For example, you can type a comment like, "Tom's printer down the hall."

12. Select exit to save your configuration and press Enter.

Printing on SCO UNIX remote printers

You can set a remote printer on the host that sends jobs to a WorkCentre Pro 421 using lpd as follows:

1. At the prompt, enter the mkdev rlp command.

NOTE: You cannot run mkdev rlp twice. If you have additional printers to be configured, use the rlpconf command.

2. You are now asked a series of questions. Respond as follows (shown in bold type):

Please enter a printer name: **lprprinter1**

Is lprprinter1 a remote printer or a local printer? **R**

Enter remote host name: **lprprinter**

Confirm the information you entered: **Y**

Confirm the preceding connection as your system default: **Y**

Enter another printer name or quit setup: **Q**

3. If necessary, stop and restart your remote daemon.

4. Using a line editor of your choice, edit the /etc/printcap file and change the:rp=entry to PORT1.

Printing on System V release 4 or Solaris 2.3 (or earlier)

If your system recognizes the lpsystem command, you can use lpd/lpr. The admintool is another option, if your system supports it.

NOTE: The following must be executed from the Bourne Shell. To enter the Bourne Shell, use the SH e command.

To install lpsystem, enter the following commands:

```
lpsystem -t bsd ip_address
lpadmin -p local_print_name -s remote_host_name!PORT1
enable local_print_name
accept local_print_name
```

where local_print_name is the WorkCentre Pro 421 host name in the /etc/hosts file. Your system may want the IP address instead of the remote host name.

Printing on Linux

1. Start x terminal.

2. At the command prompt, enter the printtool command.
   The Red Hat Print System Manager window opens.

3. Click the Add button.
   The Add Printer Entry window opens.

4. Choose Remote Unix (lpd) Queue and click OK.
   The Edit Remote Unix Queue Entry window opens.

5. Enter the following:

   - The printer name

   - The spooler directory (typically, /usr/spool/lpd/prntr-name)

   - The IP address of the WorkCentre Pro 421 (in the Remote Host field)

   - PORT1 (in In the Remote Queue field)

   - An input filter (optional)

   When you finish, click OK.

6. Restart the daemon by choosing lpd>Restart lpd in the Print Server Manager.

Setting up a printcap file

Use the following command to set up a printcap file on SCO, IRIX, Linux, or any BSD system:

prntr-name:lp=:rm=ip-addr:rp=PORT1:sd/usr/spool/lpd/prntr-name

where prntr-name is the name of the printer and ip-addr is the IP address of the WorkCentre Pro 421.

After entering the command, you must shut down and restart the lpd daemon.

Installing TCP/IP for WorkCentre Pro 421 (no lpd/lpr)

The TCP/IP directory provided with the WorkCentre Pro 421 includes install scripts for various UNIX systems. This section describes how to install TCP/IP printing to the WorkCentre Pro 421 on any of the following operating systems:

➢ ULTRIX RISC 4.3

➢ System V Rel. 4

➢ Solaris (1.x, 2.x)

➢ SCO UNIX

➢ OSF1

➢ AIX

➢ HP-UX

After you have loaded the IP information onto the WorkCentre Pro 421, the following steps are necessary for Host-Side TCP/IP printing:

1. Load the print server software on your workstation. It is a tar file in the TCP/IP directory.

2. Run the appropriate installation script, if available.

3. Complete the configuration for your operating system.

Installing the software

The following procedures are only necessary if you are using the supplied host-based lpr capability. Installing the software is not necessary if you are using printer-based lpr.

1. Log in as superuser to the system that spools directly to the print server.

2. Insert the print server's CD-ROM in the host drive.

3. Go to the directory in which you want to install the software. If necessary, create the directory. For example:

   mkdir /usr/PSC_install

NOTE: If you already have a WorkCentre Pro 421 printer at your site and are now installing another one, delete the files in the installation directory (not /usr/nic). If these files remain, they can prevent the installation of a subsequent print server.

4. Use the tar command to load the software from the CD-ROM. Choose your UNIX version from the following table or if your version is not shown, consult the manpages or check with your system administrator.

Operating System	tar Command Example
BSD, ULTRIX, AIX, or SCO	tar -xvf/dev/rfd0
System V	tar -xvf/dev/rdsk/f13ht
System V/Solaris 2.3	tar -xvf/dev/rdiskette

NOTE: The device name varies depending on the computer and its peripheral designations. The first BSD floppy device is typically called rfd0.

5. After performing the tar command, the system displays a list of WorkCentre Pro 421 files copied. Go to the specific section for your system for instructions on running the installation script.

Selecting filters using a script

There are certain options for executing the script on various systems.

One question that the install script asks is whether the printer is a PostScript printer. If you answer No, the install script uses an input filter (infilter) that supplies CR/LF translation to print ASCII files on a PCL printer.

If you answer Yes, your printcap file references psfilter, which offers easy ASCII-to-PostScript conversion. Normal PostScript format files are not affected. Proprietary and public domain filters are available for broader filtering capabilities.

Selecting filters manually

The WorkCentre Pro 421 comes with an input filter called psfilter and an output filter called psbanner to print PostScript banners.

You may want to change infilter or outfilter entries in the /etc/printcap file. The following is a sample printcap entry using these filters:

```
print_name | WorkCentre Pro 421 printer:\
        :lp=/dev/nic/printer_name:\
        :if=/usr/nic/psfilter:\
        :of=/usr/nic/psbanner:\
        :sd=/usr/spool/printer_name:
```

(All printcap entries must be begin with a tab except the one on the first line.)

Printing on Solaris V.1, OSF1, and ULTRIX 4.3

1. Enter the nicinst command to run the installation script.

    The script automatically downloads the correct WorkCentre Pro 421 utilities for your particular system and prompts you for information as needed.

2. At the prompts, enter the node name entered in /etc/hosts and the printer name.

    Your screen now displays the information you provided to the install script. You are asked to OK this configuration. Type Yes or No and press Enter.

3. At the prompt, "Is this printer PostScript?" type Yes or No and press Enter.

4. The script creates a printcap entry for the printer just configured. The screen displays the entry and asks if you want the script to append it to your printcap file. (See below for a sample printcap file.)

Type Yes or No and press Enter. If you type No, you can manually edit the file.

In your printcap file, be sure not to change the name of the device given to the Printer in Step 2. You must reference the same:lp entry you wrote on the lp command line of the printcap file. For example:

printer_name | WorkCentre Pro 421 printer:\

:lp=/dev/printer_name:\

:if=/usr/nic/infilter:\

:sd=/usr/spool/printer_name:

(All printcap entries must be begin with a tab except the one on the first line.)

The script creates a spooler directory in /usr/spool and starts the daemon for the newly configured printer. It also displays the path used in case you need to restart the daemon.

/usr/nic/lpr_print /dev/nic/printer_name node_name 10001 &

5. Run the ps command to view all your lpd/lpr processes:

ps -ax | grep lpd

6. Kill all lpd/lpr processes. (Note that this stops all printing.)

kill -9 process_id

7. Restart the daemon:

/usr/lib/lpd

You are prompted to configure additional printers.

8. Type Yes or No and press Enter.

9. Use the ping command to test communications:

ping ip-address

where ip-address is the IP address of the WorkCentre Pro 421.

If the server has the address, the result is a confirmation message such as:

192.168.10.7 is alive.

Printing on HP-UX

1. Enter the nicinst command to run the installation script.

    The script automatically downloads the correct WorkCentre Pro 421 utilities for your particular system and prompts you for information as needed.

2. At the prompts, enter the node name entered in /etc/hosts and the printer name.

    At the prompt asking for the printer name, enter the desired printer name and press Enter.

    Your screen now displays the information you provided to the install script. You are asked to OK this configuration.

3. Type Yes or No and press Enter.

    The script starts the daemon for the newly configured printer automatically. It also displays the path used in case you need to restart the daemon. For example:

    /usr/nic/lpr_print /dev/nic/printer_name node_name 10001 &

When the installation script is complete, you must configure the printer and make it known to the lp system. The HP-UX lp system uses the lpadmin command to configure a printer (there is no printcap file).

To configure the printer, use the following commands:

lpadmin -p printer_name -v /dev/nic/printer_name

enable printer_name

accept printer_name

You can also use other options for the lpadmin command. See your system documentation for details.

NOTE: The printer name must be the same as the one you entered during the WorkCentre Pro 421 installation.

Hewlett-Packard supplies the same program as an alternative to configure the printer. When using sam, enter everything as if the printer were directly connected to /dev/lprprinter/printer_name.

Hewlett-Packard supplies ASCII-to-PostScript filters and the system invokes them automatically if you define the content type of the printer as PostScript. The HP-UX lp system also supplies interface scripts that produce PostScript banners. Use the lpfilter command to define new filters and content types if necessary.

Printing on System V, Solaris V.2, or Rel. 4 386

The WorkCentre Pro 421 solution uses a network direct filter called nicfilter which the system invokes directly from the printer interface file.

To load the software, create a /usr/nic directory and use the tar command to copy the TCP/IP software to this directory.

To install and print on System V, Solaris V.2, or Rel. 4 386:

1. Go to the /usr/nic directory by entering the following command:

   cd /usr/nic

2. Enter the nicinst command to run the installation script.

   The script automatically downloads the files for your particular system to the /usr/nic directory, and prompts you for information as needed.

3. Enter the following command to copy the default interface to the /usr/nic directory:

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

NOTE: Using this default interface is generally sufficient for generic or routine printing of most PostScript, PCL, and ASCII files. To use a printer-specific interface other than the default interface script (named standard), you must have a copy of that printer interface edited and installed in the /usr/nic directory.

---

4. Go to the /usr/nic directory and using a text editor, edit the port1_interface file.

5. Search for FILTER=0 and insert the following line above or below the # FILTER=0${LPCAT} section of the file. Remark out (using the # sign) any other FILTER entries in this section of the file.

   FILTER=”/usr/nic/infilter| /usr/nic/nicfilter node-name 10001”

   The node-name must be the same as in the /etc/hosts file.

   For information on optional arguments, see the System V Release 4 System Administration Manual

6. Save the file and close the editor.

7. To configure the host-side printer using lpadmin, enter the following command:

    lpadmin -p printer-name -v /dev/null -i /usr/nic/port1_interface

    NOTE: lpadmin configures the printer name and associates it with a given device and printer interface program. The /etc/printcap file is not part of this configuration method.

8. Initialize the printer by entering the following commands:

    enable printer_name

    accept printer_name

9. Test your printer by entering the following commands:

    lp -d queue_name /etc/hosts

    lpstat printer_name

Printing on SCO UNIX

Installation and setup is similar for HP-UX and SCO UNIX systems. The WorkCentre Pro 421 solution uses a network direct filter called nicfilter which the system invokes directly from the printer interface file.

After completing software download in section 7.6.3.1 Installing the Software, you must configure the printer and make it known to the lp system. Follow the steps below:

1. Enter the nicinst command to run the installation script.

    The script automatically downloads the correct WorkCentre Pro 421 utilities for your particular system and prompts you for information as needed.

2. When asked to select your system, choose one of the following options:

    1) AT&T/SVR4; 386

    2) SCO UNIX System V

    3) None of the above

    Type 1, 2, or 3, and press Enter.

3. At the prompt asking for the node name of the WorkCentre Pro 421, enter the name assigned in the /etc/hosts file.

4. At the prompt asking for the printer name, enter the desired printer name.

   Your screen now displays the information you provided to the install script. You are asked to OK this configuration.

5. Type Yes or No, and press Enter.

6. At the prompt, "Is this printer PostScript?" type Yes or No and press Enter.

   The script starts the daemon for the newly configured printer automatically. It also displays the path used in case you need to restart the daemon. For example:

   /usr/nic/lpr_print /dev/nic/printer_name node_name 10001 &

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

The SCO UNIX lp system uses the lpadmin command to configure a printer (there is no printcap file). To configure the printer, use the following commands:

lpadmin -p printer_name -v /dev/nic/printer_name

enable printer_name

accept printer_name

You can also use other options for the lpadmin command. See your operating system documentation for details. Note that the printer name must be the same as the one you entered during WorkCentre Pro 421 installation.

SCO supplies the sam program as an alternative to configure the printer. When using sam, enter everything as if the printer were directly connected to /dev/lprprinter/printer_name.

The software installed with your SCO system can satisfy most of your printing needs. SCO supplies ASCII-to-PostScript filters and the system invokes them automatically if you define the content type of the printer as PostScript. The SCO UNIX lp system also supplies interface scripts that produce PostScript banners. Use the lpfilter command to define new filters and content types, if necessary.

Printing on AIX RISC System/6000

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

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

Configuring a WorkCentre Pro 421 printer on an AIX system approximates configuration of a local printer as closely as possible. The only difference is that the physical device associated with your WorkCentre Pro 421 printer must be a named pipe used by the print daemon to route data to the WorkCentre Pro 421.

To add a printer to your system:

1. Enter the nicinst command to run the installation script.

    The script automatically downloads the correct WorkCentre Pro 421 utilities for your particular system and prompts you for information as needed.

2. At the prompts, enter the node name entered in /etc/hosts and the printer name.

    Your screen now displays the information you provided to the install script. You are asked to OK this configuration. Type Yes or No and press Enter.

3. Configure a virtual printer. For the physical device enter the printer_name (that is, the same printer name chosen during install).

4. Shut down qdaemon by entering the following command:

    stopsrc -s qdaemon

5. Edit /usr/lpd/qconfig to change the special file for the printer_name device from /dev/printer_name to /dev/nic/ printer_name.

6. Restart the qdaemon by entering the following command:

    startsrc -s qdaemon

The installation script then creates the named pipe and starts the print daemon using the information you supplied. Since the AIX System Management Interface Tool (smit) does not accept a named pipe as a printer device, the installation script also creates a null device in /dev/printer_name.

Using virtual printer commands

You can add virtual printers through SMIT or by using the mkvirprt command, entering the device name printer_name for configuration purposes. During this process you also select a particular printer type for the new printer, which inherits the set of predefined attributes for that printer type. In most cases, this set of attributes is sufficient, but it can be changed through SMIT or by using the chvirprt command. If you need more extensive changes on your printer, refer to the AIX RISC System/6000 documentation.

After the virtual printer has been added, there is a stanza in the /usr/lpd/qconfig file for device printer_name that looks like the following:

printer_name:

file=/dev/printer_name

backend=/usr/lpd/piobe

Edit the file and change file=/dev/printer_name to file=/dev/nic/printer_name.

Output spooled on the virtual printer as defined above, goes to the named pipe and is routed to the WorkCentre Pro 421. Before you edit the files listed above, make sure the following daemon is running:

/usr/nic/lpr_print /dev/nic/printer_name node_name 10001 &

Using AIX print commands

The lp command on AIX works slightly differently from other System V Rel. 4 systems. To print on AIX, you can use the following lp commands:

lp -d queue_name file_name

lp -d queue_name:device_name file_name

Running Telnet

The Telnet utility uses the standard remote terminal protocol to configure the IP address, lpd/ lpr printers, and other parameters on your system. You have the same functionality with Telnet as with accessing the WorkCentre Pro 421 HTML pages with MAP or a Web browser.

Use the following guidelines to run Telnet:

➢ Typically you make selections from menus by toggling between one choice or another, by selecting/deselecting or enabling/disabling an item.

➢ Press Enter when not selecting an item. This returns you to a previous menu.

➢ If you do not make a menu selection for two minutes, you get a two-minute warning that within two more minutes your Telnet session ends. This ensures that no one user leaves a session idle for too long.

Making the connection and accessing the main menu

1. In the **Start>Run** dialog or at the DOS prompt, type the following command:

   telnet ip-address

   where ip-address is the IP address of the WorkCentre Pro 421.

2. When the login prompt appears, type guest if you are interested in only browsing the menus, or type sysadm if you want to change the configuration.

3. When the password prompt appears, again type guest or sysadm.

   The main menu is displayed. This utility lets you change the IP parameters, lpd/lpr printers, protocols, and password, and lets you restore to factory defaults.

4. Type the number for the parameter you want to check or change and press Enter.

   1. IP Parameters

   2. LPD Printers

   3. Protocols

   4. Restore Factory Defaults

   5. Change Password

   E. Exit

5. To end your Telnet session, type E at the Main Menu.

   If you have made any changes you are prompted to either Save Changes and Exit or Exit Without Saving Changes. Choose the appropriate option and press Enter.

NOTE: To get online help in Telnet, type ? (question mark).

Configuring IP parameters

Although the WorkCentre Pro 421 must have an IP address before a Telnet connection can be made, you can use the Telnet utility to change the address or the other IP parameters. The Printer automatically initiates a soft reset when it senses the IP address change.

NOTE: This breaks the Telnet connection. Therefore, you should make all other desired changes before changing the IP address.

To configure IP parameters:

1. At the main menu, type 1 and press Enter to display the IP Parameters menu.

2. Type 1 again and press Enter.

   The IP Address submenu is displayed:

1. IP Address	192.168.10.7
2. Subnet Mask	255.255.255.0
3. Default Gateway	192.168.10.12
4. Base Port Number	10000

3. Type the number for the parameter you want to change and press Enter.

Selecting printer languages

Selection 2 in the main menu lets you designate the emulations (printer interpreter languages) that the printer supports. This lets the resident lpd/lpr modify files intended for other emulations so they can be printed. The menu also allows you to enable or disable banners attached to lpd/lpr handled jobs.

The emulation choices are:

➢ Printer Control Language (PCL)

➢ PostScript (PS)

➢ ASCII (simple text)

➢ Other (any print job not recognized as PCL, PS, or ASCII)

The file modifications and conditions are:

Print Server Setup	Job detected as	Action
PCL, (PostScript)	ASCII	<CR> changed to <CR><LF>
PostScript	PCL, Other	PostScript header added
not PostScript	PostScript	Job discarded
PostScript	ASCII	PostScript header added, <CR> changed to <CR><LF>
PCL, PS, ASCII	any	No action

To select the printer language:

1. To access the LPD Printers menu, type 2 and press Enter. For a unit at factory default, the following menu appears.

LPD Printers	
1. Printer 1	PCL PS OTHER
2. Banners	DISABLED

2. To change the set of emulations, type 1 and press Enter. The following options are displayed.

Printer 1	PCL PS OTHER
1. PCL	
2. PS	
3. ASCII	
4. OTHER	

3. To delete an emulation, select the number opposite the language listed and press Enter.

4. From the LPD Printers menu, type 2 to toggle Banners between Enabled/Disabled.

Enabling/disabling network protocols

To enable network protocols, type 3 at the main menu.

You are given the choice of disabling either NetWare or AppleTalk since both network OSs are enabled by default. For example, to disable Appletalk, type 2 and press Enter.

Restoring factory defaults

When you need to restore factory defaults on your print server, type 4 at the Main Menu and press Enter. All NVRAM stored parameters are returned to their factory default values. The factory default values do not take effect until you exit the Telnet program or the unit is powered off and on.

Changing a password

1. Type 5 at the main menu.

2. Type up to eight characters at the New Password query and press Enter.

3. Retype the same characters at the Retype New Password query and press Enter.

4. Choose the Save Changes and Exit option.

Once you have set your password, the sysadm password is no longer valid.

NOTE: There is a single maintenance access password to the WorkCentre Pro 421. You use this password with Telnet or when accessing the WorkCentre Pro 421 HTML pages with MAP or a Web browser.

Exiting Telnet

1. Type E at the main menu.

If you have made any changes, the exit menu is displayed:

```
Exit

1. Save Changes and Exit

2. Save Changes and Reset

3. Exit Without Saving Changes
```

2. Choose an exiting option and press Enter.

Using the Internet Printing Protocol (IPP)

Setting up a printer with IPP

Before you set up a printer with IPP configuration on Windows ME or 2000, install the Microsoft IPP Client (WPNPINS.EXE). This can be found on the Windows CD and is installed as standard with Windows 2000. WPNPINS.EXE is not supplied with Windows 95/98 or Windows NT.

To set up a printer for IPP printing:

1. Assign an IP address to your print server.
2. Reset the print server.
3. Use the ping command to make sure the print server responds.

Setting up the IPP functions of the printer

You can set up the IPP functions of the printer by using MAP or a Web browser. For IPP printing, your workstation must have an IPP client installed (either from Microsoft or a third-party).

To configure the printer for printing:

1. Choose Start>Settings>Printers.

2. Click Add Printer.

   The Add Printer wizard appears. Click the [Next] button to proceed.

3. Choose the Network Printer option and click the [Next] button.

4. On the Locate Your Printer screen, select Connect to a printer on the Internet or on your intranet and type the correct printer path.

   The format is:

   URL: http://ip-addr/:631/Print

   where ip-addr is the IP address of the printer. For example:

   URL: http://192.168.10.7:631/Print

NOTE: Your printer port number is listed on the NIC Status Page next to the Internet Printing Protocol.

5. Click the [Next] button and finish printer setup.

   For example, select the appropriate printer type.

6. Perform a Test Print from your printer and check the printer for the test page.

   The printer configuration is complete.

Installing and configuring the printer driver

The printer driver will need to be installed at each workstation that will use it. There are four ways in which you can install the driver:

➢ Using the setup program on the CD.

➢ Adding a printer.

➢ Using CentreWare

➢ From the Windows NT, Windows 2000 or Windows xp network server.

Once installed, you will need to configure the printer at each of workstations where you installed the driver.

Installing from the CD

1. Insert the Printer driver/documentation CD into the CD drive.

2. Installation should start automatically but, if not, choose Run from the Start menu, browse to the CD drive, double click on Setup32 and click OK to start the installation process.

3. Click on the Language required.

4. Click Printer Drivers and click on Install WorkCentre Pro 421 Printer Drivers.

   The installation starts.

5. Read the welcome screen and click the [Next] button.

6. Read the License Agreement and click [Yes] to accept the terms of the license.

7. Read the ReadMe text displayed and click the [Next] button.

8. Choose whether you want to continue with the installation or download the latest printer driver from the internet and click the [Next] button.

9. Choose Network or Local Printer from the Select Connection screen according to your connection type and click the [Next] button.

10. Enter the Network path or browse and select the required

path from the list and click the [Next] button.

11. Click the [Typical] button.

12. Click the [Next] button to clear the Information screen.

    The files are copied to the hard disk and the installation completes.

13. Click the [Finish] button to complete the installation of the printer driver.

14. Close the opening dialog.

15. Configure the printer (see *"Configuring the printer" on page 2-99*).

Adding a network printer (Windows 95/98/ME)

1. Choose **Settings>Printers** from the Start menu.

    The Printers dialog is displayed.

2. Double click on [Add Printer].

    The Install Wizard starts.

3. Click the [Next] button.

4. Choose Network Printer and click the [Next] button.

5. Enter the Network path or click on the [Browse] button, and locate the printer.

6. Choose whether or not you want to print from MS-DOS programs and click the [Next] button.

    At this point the driver may be downloaded from the network server and the installation completed.

7. Otherwise, click the [Have Disk...] button.

8. Insert the Printer driver/documentation CD in the CD drive.

9. Browse to the location of the driver. On the CD this is to be found in the **Install>(OS)>(PDL)>(Language)** folder, where:

    • **OS is the operating system of the workstation, Windows 9x, Windows 2000, Windows xp or Windows NT.**

    • **PDL is the Print Description Language, PCL or PostScript.**

    • **Language is the language in which the driver functions.**

10. Choose the XW421 driver and click the [OK] button.

The files are copied to the hard disk and the installation completes.

Click the [Finish] button.

11. Configure the printer (see *"Configuring the printer" on page 2-99*).

Adding a network printer (Windows NT)

1. Choose **Settings>Printers** from the Start menu.

The Printers dialog is displayed.

2. Double click on [Add Printer].

3. Choose Network Printer and click the [Next] button.

4. Choose the network path and click OK.

5. Choose whether or not you want to print from MS-DOS programs and click the [Next] button.

At this point the driver may be downloaded from the network server and the installation completed.

6. Otherwise, click the [Have Disk...] button.

7. Insert the Printer driver/documentation CD in the CD drive.

8. Browse to the location of the driver. On the CD this is to be found in the **Install>(OS)>(PDL)>(Language)** folder, where:

   • **OS is the operating system of the workstation, Windows 9x, Windows 2000, Windows xp or Windows NT.**

   • **PDL is the Print Description Language, PCL or PostScript.**

   • **Language is the language in which the driver functions.**

9. Choose the XW421 driver and click the [OK] button.

The files are copied to the hard disk and the installation completes.

Click the [Finish] button.

10. Configure the printer (see *"Configuring the printer" on page 2-99*).

Adding a network printer (Windows 2000)

1. Choose **Settings>Printers** from the Start menu.

   The Printers dialog is displayed.

2. Double click on [Add Printer].

3. Choose Network Printer and click the [Next] button.

4. Choose the network path and click OK.

5. Find the printer in the directory. Either type the printer name or click the [Next] button to browse for the appropriate printer name (this is the recommended procedure).

6. Choose whether or not you want to print from MS-DOS programs and click the [Next] button.

   At this point the driver may be downloaded from the network server and the installation completed.

7. Otherwise, click the [Have Disk...] button.

8. Insert the Printer driver/documentation CD in the CD drive.

9. Browse to the location of the driver. On the CD this is to be found in the **Install>(OS)>(PDL)>(Language)** folder, where:

   • **OS is the operating system of the workstation, Windows 9x, Windows 2000, Windows xp or Windows NT.**

   • **PDL is the Print Description Language, PCL or PostScript.**

   • **Language is the language in which the driver functions.**

10. Choose the XW421 driver and click the [OK] button.

    The files are copied to the hard disk and the installation completes.

    Click the [Finish] button.

11. Configure the printer (see *"Configuring the printer" on page 2-99*).

Adding a network printer (Windows xp)

1. Choose **Control Panel>Printers and Faxes** from the Start menu.

   The Printers and faxes dialog is displayed.

2. Double click on [Add Printer].

   The Add Printer Wizard is displayed.

3. Click the [Next] button.

4. Choose A network printer or a printer attached to another computer and click the [Next] button.

5. Specify the printer to connect to and click the [Next] button.

   You can browse the network for the printer, enter the network printer name or enter a URL where the printer can be found (this is the recommended procedure).

6. Choose whether or not you want to print from MS-DOS programs and click the [Next] button.

   At this point the driver may be downloaded from the network server and the installation completed.

7. Otherwise, click the [Have Disk...] button.

8. Insert the Printer driver/documentation CD in the CD drive.

9. Browse to the location of the driver. On the CD this is to be found in the **Install>(OS)>(PDL)>(Language)** folder, where:

   • **OS is the operating system of the workstation, Windows 9x, Windows 2000, Windows xp or Windows NT.**

   • **PDL is the Print Description Language, PCL or PostScript.**

   • **Language is the language in which the driver functions.**

10. Choose the XW421 driver and click the [OK] button.

    The files are copied to the hard disk and the installation completes.

    Click the [Finish] button.

11. Configure the printer (see *"Configuring the printer" on page 2-99*).

Configuring the printer

Configuring the printer will vary according to the operating system used. For ease of use and clarity, the procedures are separated into:

➢ Windows 95/98/ME

➢ Windows NT

➢ Windows 2000

➢ Windows xp

NOTE: Context sensitive help can be obtained for any field by clicking in the field and pressing [F1] or by pointing to a button, clicking the right mouse button and choosing "What's This?". Tool Tips will be displayed for many of the options a short while after pointing to the item.

Windows 95/98/ME

1. Print out a status page to see the installed options (see *"Printing a status page" on page 2-2*)

2. Choose **Settings>Printers** from the Start menu.

    The Printers dialog is displayed.

3. Point to the Xerox WorkCentre Pro 421 icon, click the right mouse button and choose properties from the menu or choose Properties from the File menu.

4. The Properties dialog is displayed with the General tab open.

    The General tab lets you enter any relevant comments, generate a separator page to be inserted between jobs or print a test page.
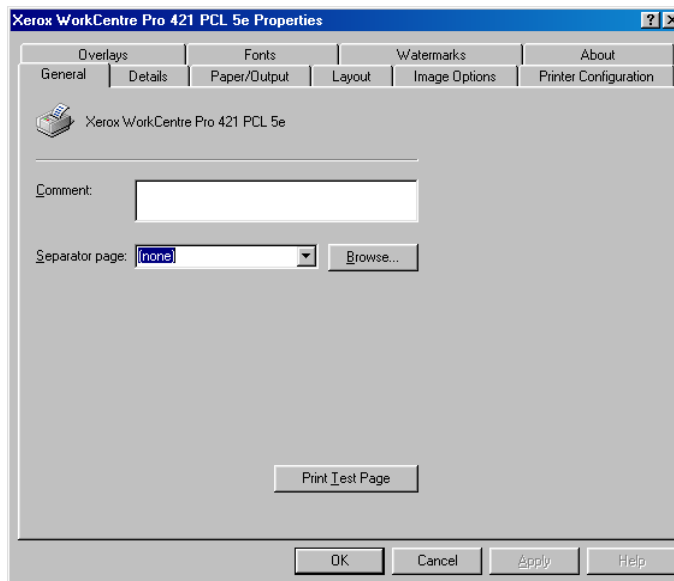
This dialog has ten other tabs used to configure the printer.

NOTE: At installation, it is important to configure the printer options or they will not be available to application programs. It is also important to define the default settings for the paper in the printer and for how the printed output will be delivered.

5. Click the Printer Configuration tab.

The Printer Configuration tab is used to configure the installed options in order to make them available to users. Check the status page previously printed to see which options have been installed.
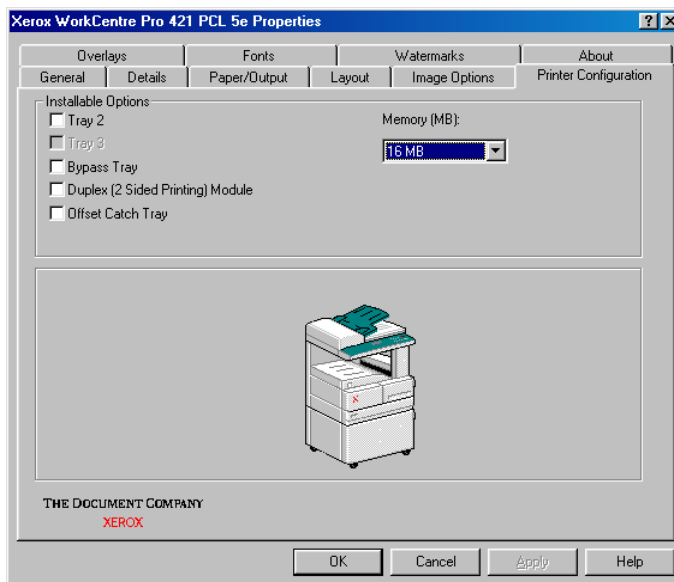
6. Check the boxes relating to the options installed on the WorkCentre Pro.

7. Click the Paper/Output tab

   The Paper Output tab lets you determine how the job will be printed.
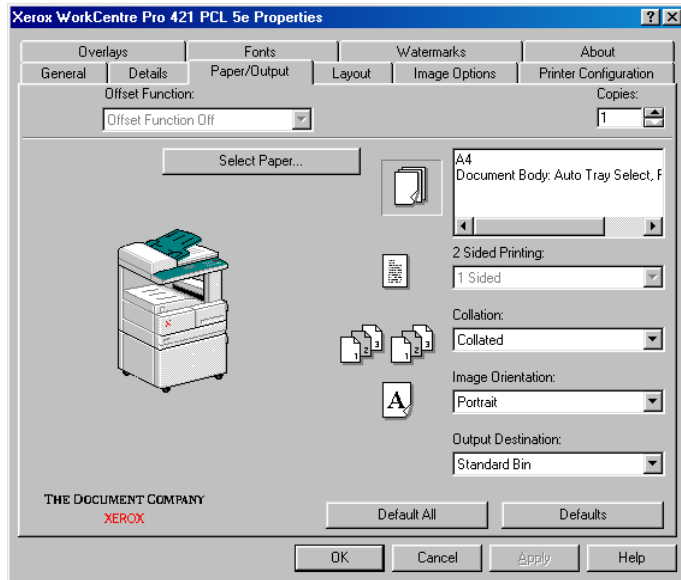
8. Choose the default Output functions required.

9. Make changes to the remaining tabbed pages as required. Refer to the on-line help for details.

Each of these are described below.
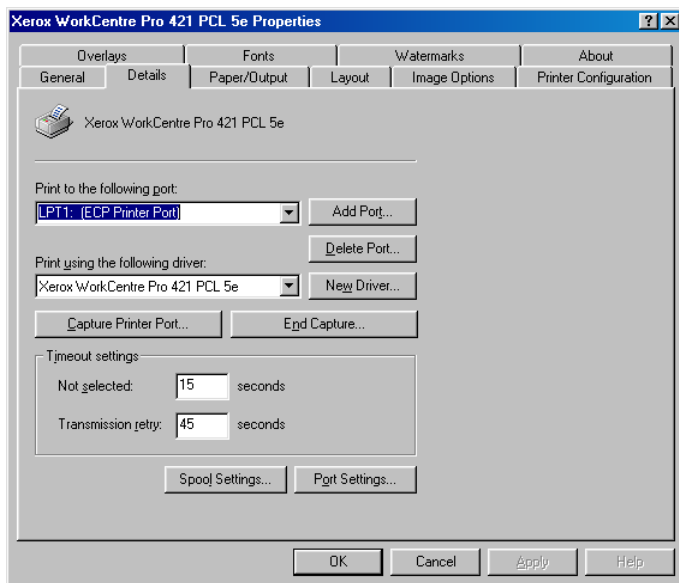
The Details tab lets you change the connection and driver details for the printer.
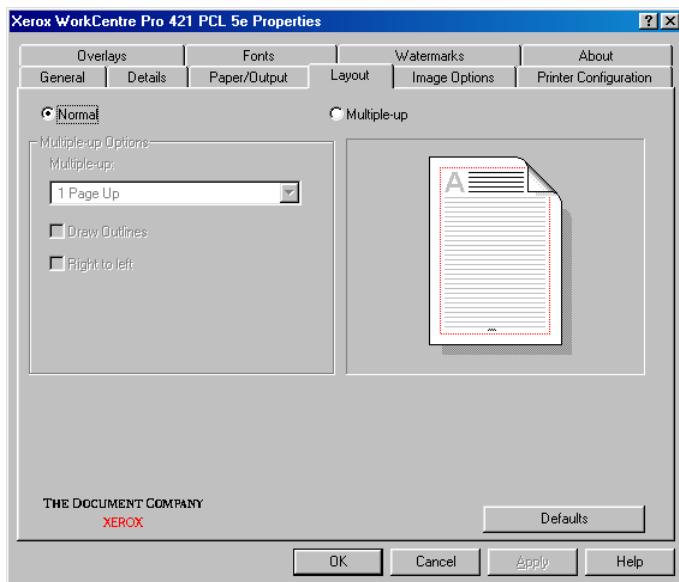
The Layout tab is used to determine how a job will be imposed on the paper (PostScript only).
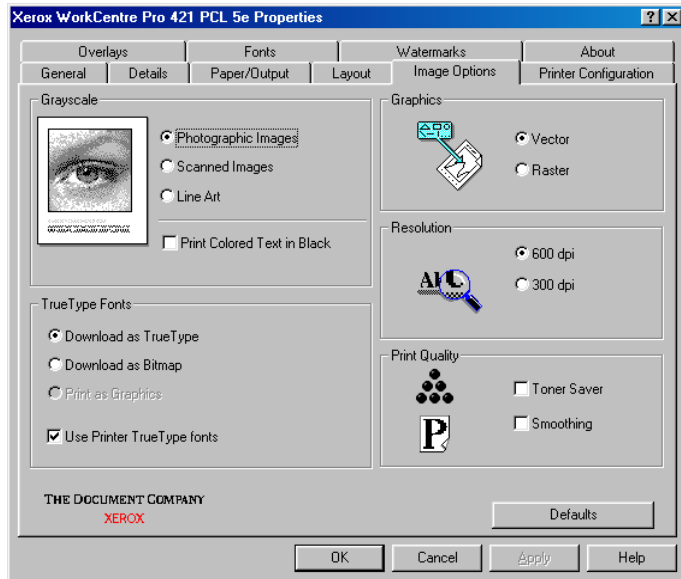
The Image Options tab lets you determine the output quality for individual job components.
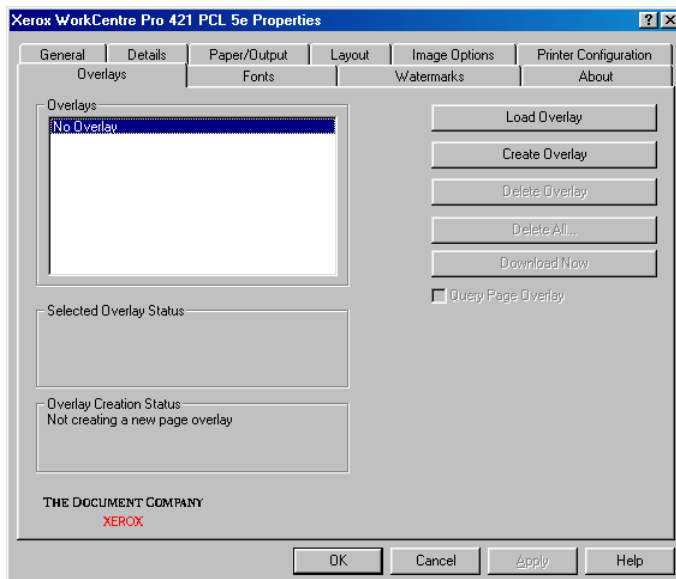
The Overlays tab lets you manage the overlays that will be applied to a print job when selected.

Xerox WorkCentre Pro 421 PCL 5e Properties					? X
General	Details	Paper/Output	Layout	Image Options	Printer Configuration
Overlays		Fonts		Watermarks	About

Xerox WorkCentre Pro 421 PCL 5e on LPT1:

```
No fonts installed
```

Move

Copy

Delete

Edit

○ Permanent
○ Temporary

Add Fonts...   Copy Fonts to New Port...   Print Font Listing

Status
To install new fonts, click on the [Add fonts] button.

OK   Cancel   Apply   Help

The Fonts tab lets you manage the fonts that will be downloaded to your printer.

Xerox WorkCentre Pro 421 PCL 5e Properties					? X
General	Details	Paper/Output	Layout	Image Options	Printer Configuration
Overlays		Fonts		Watermarks	About

Watermark
[None]

Add   Update   Delete

☐ On First Page Only
☑ Transparent Text
☐ As Outline Only

Content
Text:

Gray Scale: 0

Angle: +0°
-90°   0°   +90°

Fonts...

Position (from center)
◉ inches   ○ mm

y: 0.00

x: 0.00

Center

OK   Cancel   Apply   Help
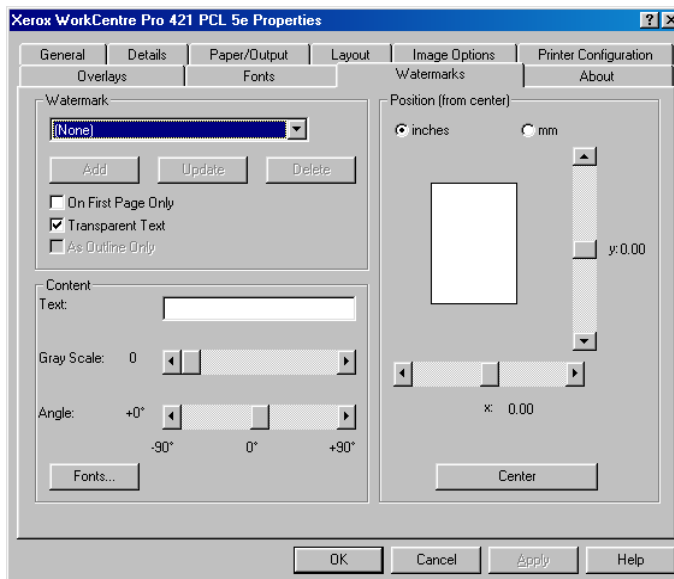
The Watermarks tab lets you choose and position a watermark that will be applied to your printed jobs.
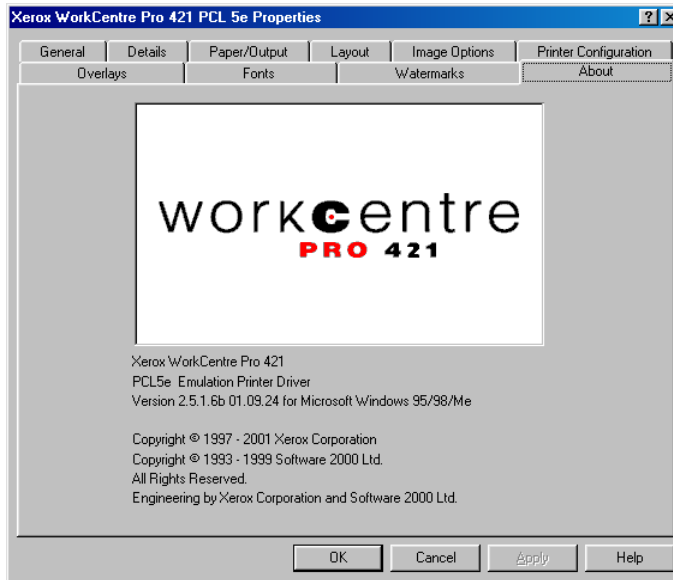
The About tab provides information about the printer driver.

10. Click the [Apply] button to save your configuration.
11. Click the [OK] button to close the dialog.

Windows NT

Configuring the printer for Windows NT requires you to set the Printer Properties and the Document Defaults.

NOTE: At installation, it is important to configure the printer options or they will not be available to application programs. This is carried out under printer properties. It is also important to define the default settings for the paper in the printer and for how the printed output will be delivered.

Setting the printer properties

1. Print out a status page to see the installed options (see *"Printing a status page" on page 2-2*)

2. Choose **Settings>Printers** from the Start menu.

   The Printers dialog is displayed.

3. Point to the Xerox WorkCentre Pro 421 icon, click the right mouse button and choose Properties from the menu or choose properties from the File menu.

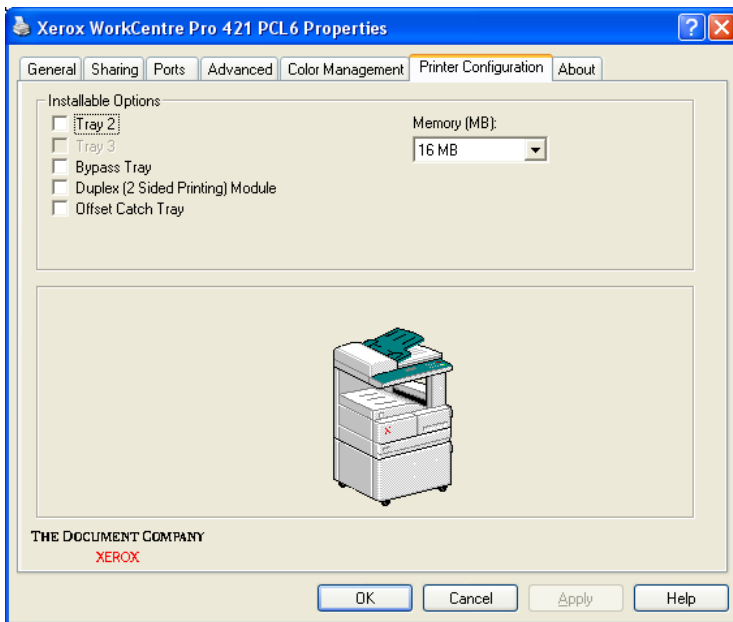4. The Properties dialog is displayed with the General tab open.

   The General tab lets you enter any relevant comments, state the physical location of the printer, choose or load a new driver generate a separator page to be inserted between jobs or print a test page.

This dialog has six other tabs used to configure the printer.

5. Click the Printer Configuration tab.

   The Printer Configuration tab is used to configure the installed options in order to make them available to users. Check the status page previously printed to see which options have been installed.

6. Check the boxes relating to the options installed on the WorkCentre Pro.

7. Make changes to the remaining tabbed pages as required. Refer to the on-line help for details.

    Each of these are described below.

The Ports tab lets you choose the ports to print to. You can add a new port, delete an existing port and configure a port from this tab.
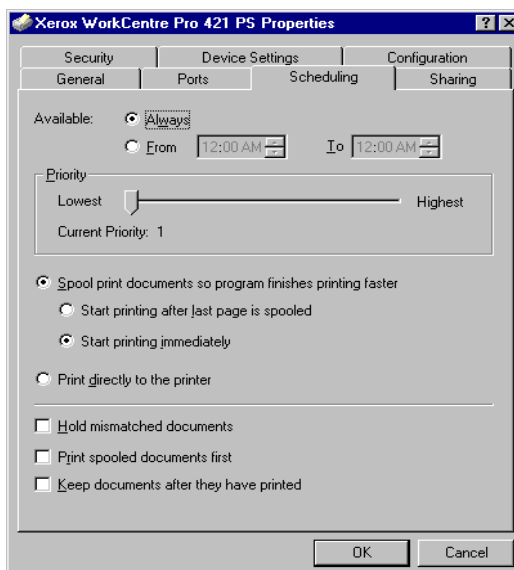
The Scheduling tab is used to determine how jobs will be scheduled to the printer.
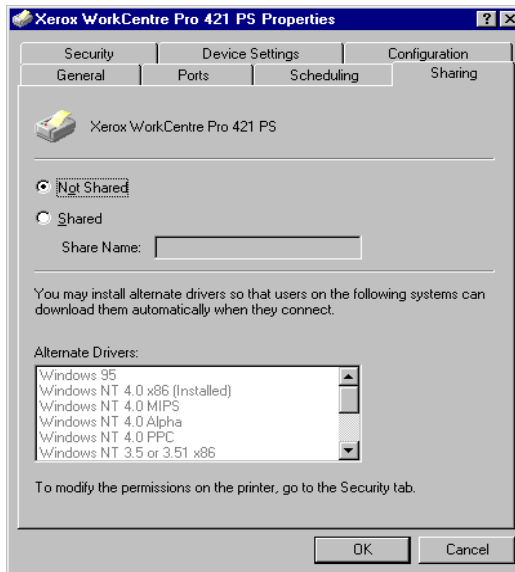
The Sharing Options tab lets you set the printer to be shared or not shared across the network.
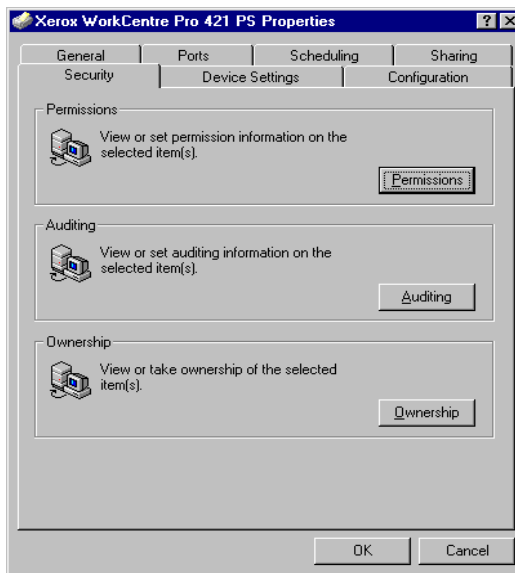
The Security tab lets you manage the security aspects of the printer.
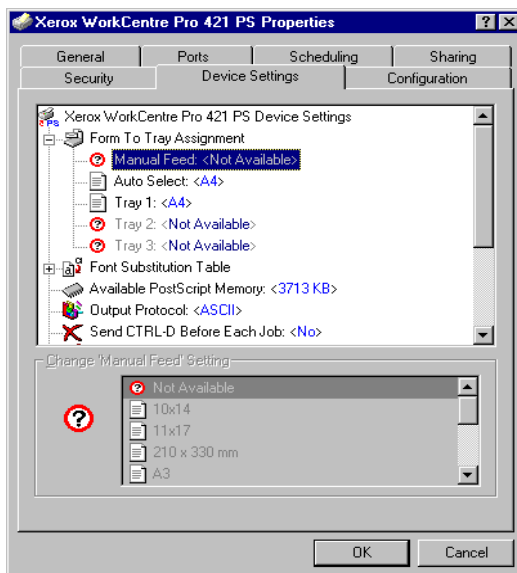
The Device settings tab lets you manage the forms and fonts that will be downloaded to your printer.

8. Click the [OK] button to close the dialog.

Setting the document defaults

1. Print out a status page to see the installed options (see *"Printing a status page" on page 2-2*)

2. Choose **Settings>Printers** from the Start menu.

    The Printers dialog is displayed.

3. Point to the Xerox WorkCentre Pro 421 icon, click the right mouse button and choose Document defaults from the menu or choose Document Defaults from the File menu.

4. The Default Document Properties dialog is displayed with the Page Setup tab open.

    The Page Setup tab lets you determine the default print settings that will be used by the printer.
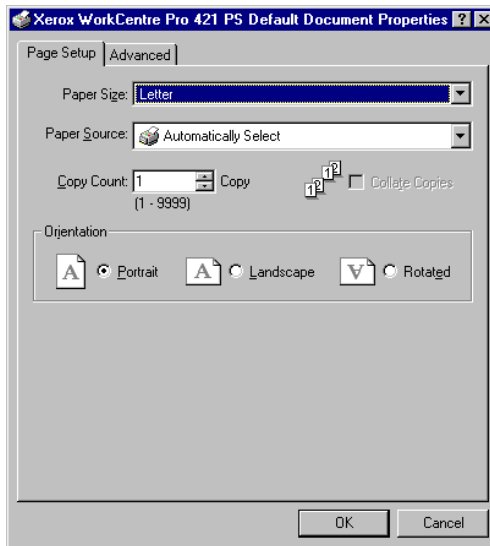
This dialog has one other tab used to configure the advanced settings for the printer.

5. Click the Advanced tab.

The Advanced tab is used to configure the WorkCentre Pro.
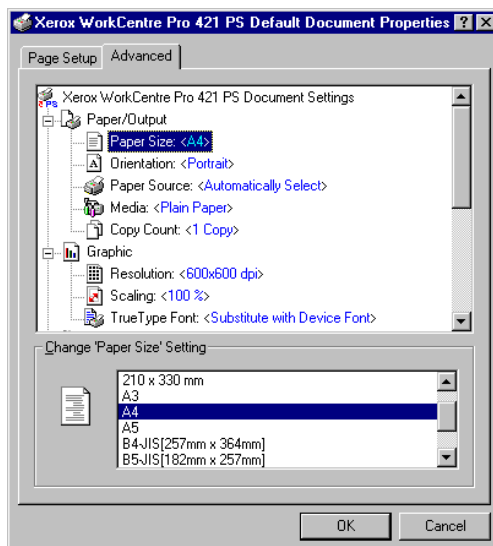
6. Click the [OK] button to close the dialog.

Windows 2000

Configuring the printer for Windows 2000 requires you to set the Printer Properties and the Printing Preferences.

NOTE: At installation, it is important to configure the printer options or they will not be available to application programs. This is carried out under printer properties. It is also important to define the default settings for the paper in the printer and for how the printed output will be delivered.

Setting the printer properties

1. Print out a status page to see the installed options (see *"Printing a status page" on page 2-2*)

2. Choose **Settings>Printers** from the Start menu.

   The Printers dialog is displayed.

3. Point to the Xerox WorkCentre Pro 421 icon, click the right mouse button and choose Properties from the menu or choose properties from the File menu.

4. The Properties dialog is displayed with the General tab open.

   The General tab lets you enter any relevant comments, state the physical location of the printer, choose or load a new driver generate a separator page to be inserted between jobs or print a test page.

This dialog has seven other tabs used to configure the printer.

5. Click the Configuration tab.

The Configuration tab is used to configure the installed options in order to make them available to users. Check the status page previously printed to see which options have been installed.
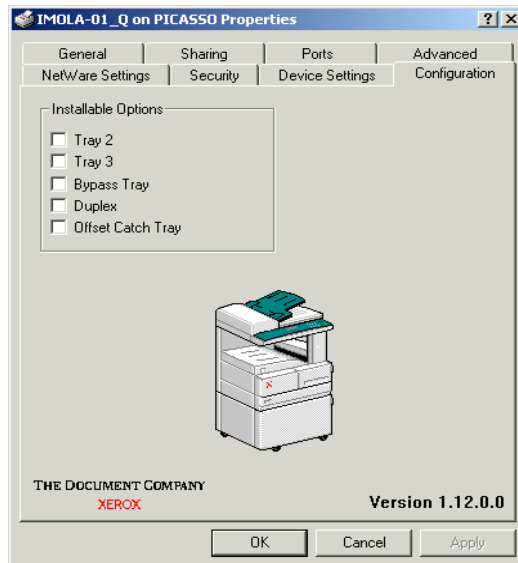
6. Check the boxes relating to the options installed on the WorkCentre Pro.

7. Make changes to the remaining tabbed pages as required. Refer to the on-line help for details.

Each of these are described below.
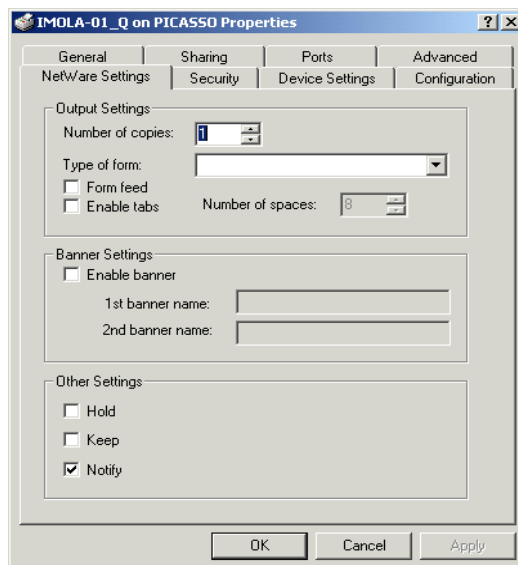
The Netware Settings tab lets you set default values for copies, forms, banners and what happens after processing.
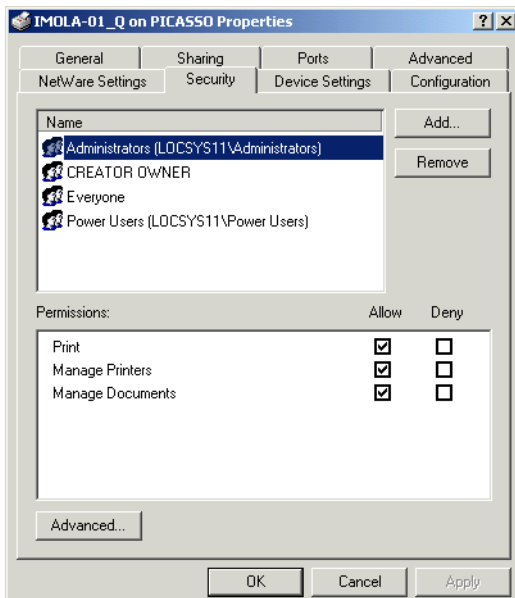
The Security tab lets you manage the security aspects of the printer.

From this tab you can click the [Advanced] button to set a number of printer defaults.
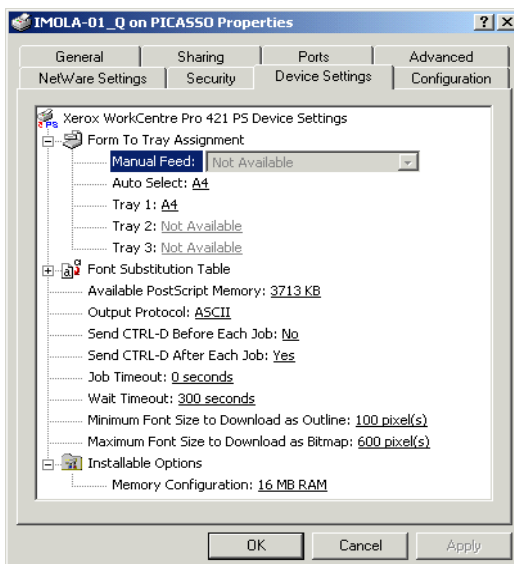
The Device settings tab lets you manage the forms and fonts that will be downloaded to your printer.
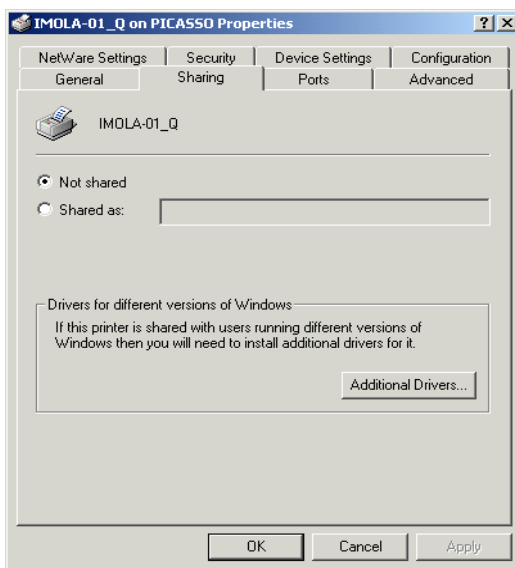
The Sharing Options tab lets you set the printer to be shared or not shared across the network.
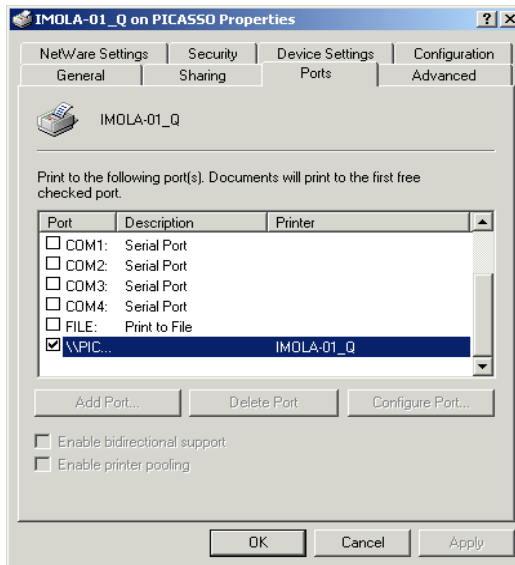
The Ports tab lets you choose the ports to print to. You can add a new port, delete an existing port and configure a port from this tab.
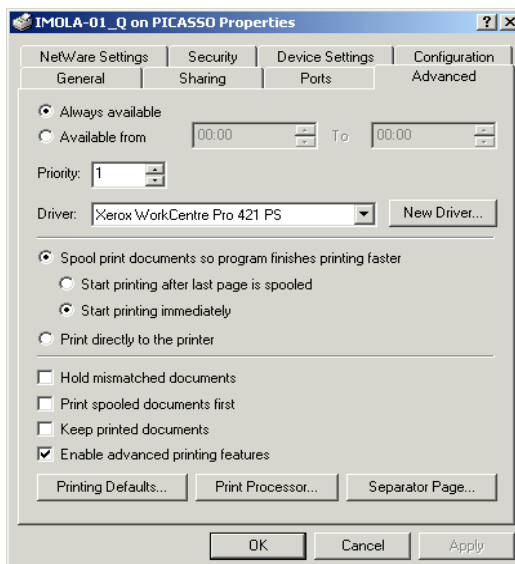
The Advanced tab is used to determine how jobs will be scheduled and spooled to the printer.

8. Click the [OK] button to close the dialog.

Setting the printing preferences

1. Print out a status page to see the installed options (see *"Printing a status page" on page 2-2*)

2. Choose **Settings>Printers** from the Start menu.

   The Printers dialog is displayed.

3. Point to the Xerox WorkCentre Pro 421 icon, click the right mouse button and choose Printing Preferences from the menu or from the File menu.

4. The Printing Preferences dialog is displayed with the Layout tab open.

   The Layout tab lets you determine the default rotation and number of pages to be printed.
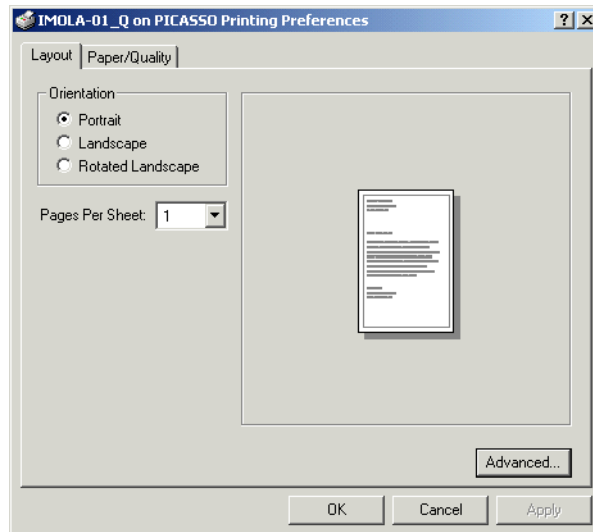
From this tab you can click the [Advanced] button to set a number of printer defaults.

This dialog has one other tab used to configure the advanced settings for the printer.

5. Click the Paper Quality tab.

The Paper Quality tab is used to determine the default tray selection and type of media that this contains.
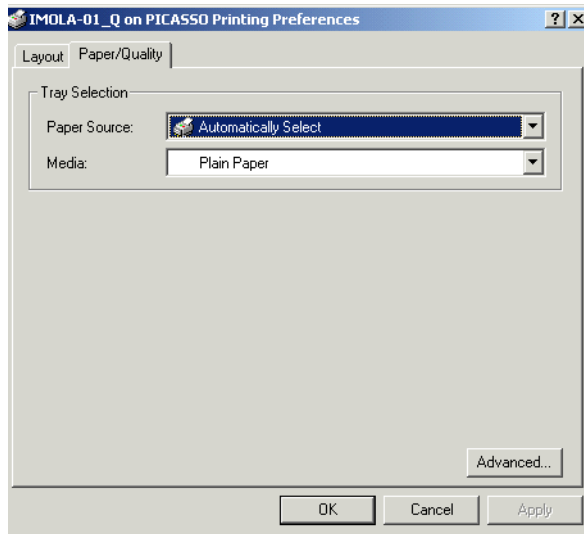
6. Click the [OK] button to close the dialog.

Windows xp

Configuring the printer for Windows xp requires you to set the Printer Properties and the Printing Preferences.

NOTE: At installation, it is important to configure the printer options or they will not be available to application programs. This is carried out under printer properties. It is also important to define the default settings for the paper in the printer and for how the printed output will be delivered.

Setting the printer properties

1. Print out a status page to see the installed options (see *"Printing a status page" on page 2-2*)
2. Choose **Control Panel>Printers and Faxes** from the Start menu.

    The Printers dialog is displayed.
3. Point to the Xerox WorkCentre Pro 421 icon, click the right mouse button and choose [Properties] from the menu or

choose properties from the File menu.

4. The Properties dialog is displayed with the General tab open.

   The General tab lets you enter any relevant comments, state the physical location of the printer, choose or load a new driver generate a separator page to be inserted between jobs or print a test page.

This dialog has six other tabs used to configure the printer.

5. Click the Printer Configuration tab.

   The Printer Configuration tab is used to configure the installed options in order to make them available to users. Check the status page previously printed to see which options have been installed.

6. Check the boxes relating to the options installed on the WorkCentre Pro.

7. Make changes to the remaining tabbed pages as required. Refer to the on-line help for details.

Each of these are described below.

The Sharing tab lets you set the printer to be shared or not shared across the network.
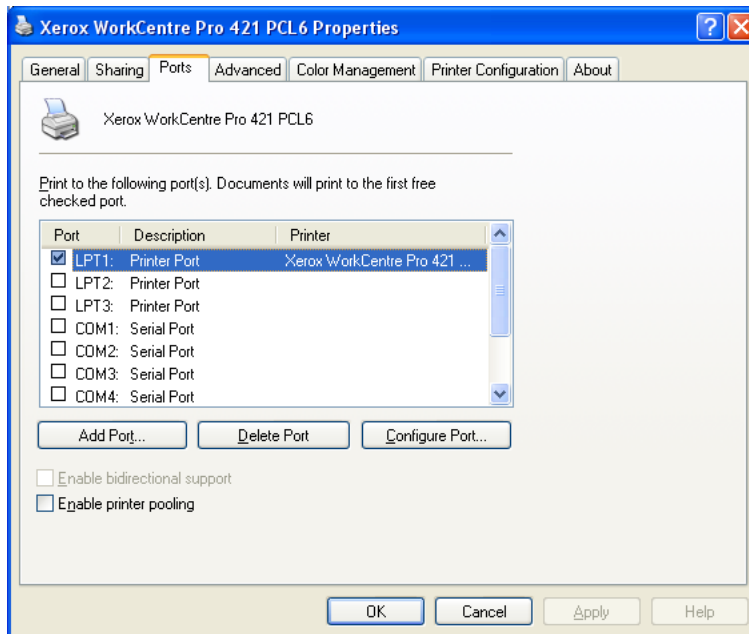
The Ports tab lets you choose the ports to print to. You can add a new port, delete an existing port and configure a port from this tab.
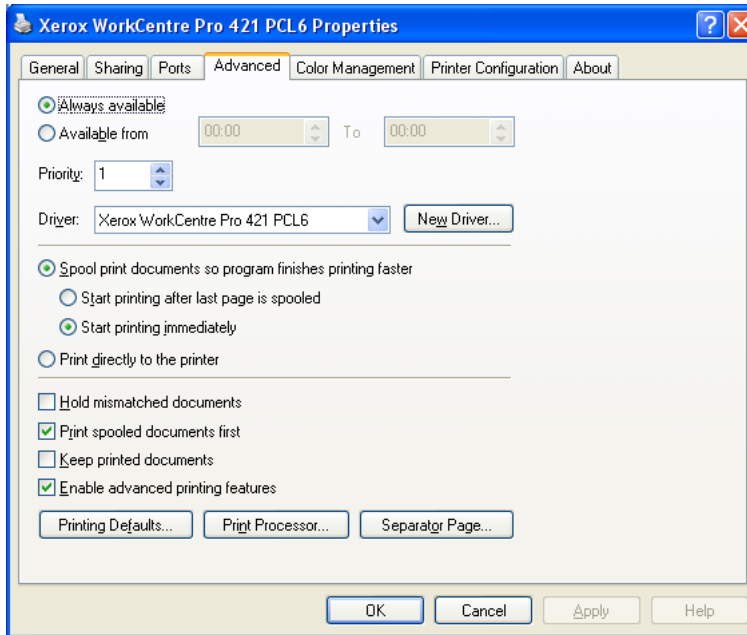
The Advanced tab lets you determine how jobs will be scheduled and spooled to the printer and manage all aspects of printing. Pressing the Printing Defaults button will give rise to a multiple tabbed page which allows you to:

- **set spooling requirements**
- **how the paper will be output**
- **how the image will be laid out on the page**
- **set a number of image options**
- **define watermarks**
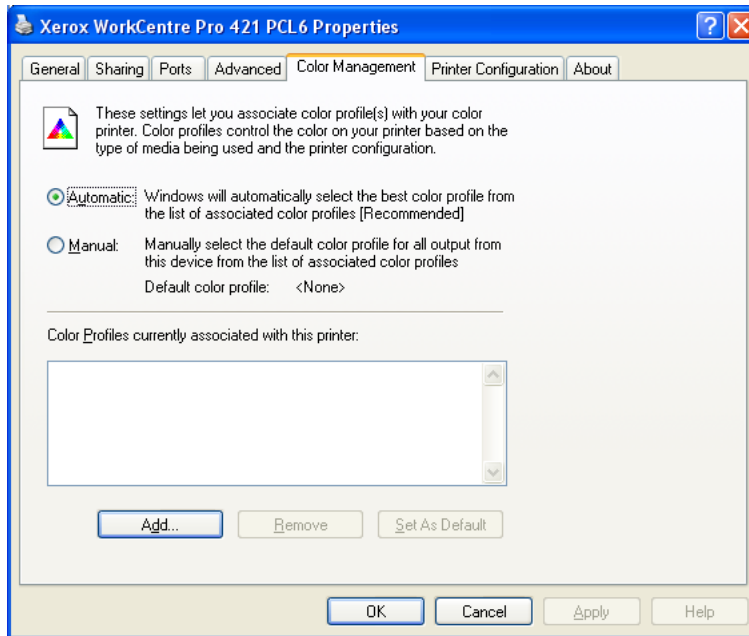
The Color Management tab is used to determine the appropriate color profile to be used.

8. Click the [OK] button to close the dialog.

Making a test print from a workstation

1. Make sure that the driver is installed and configured on every workstation that will be sending jobs to the WorkCentre Pro 421 (see *"Installing and configuring the printer driver" on page 2-94*).

2. Open a document on a client workstation.

3. Select the WorkCentre Pro 421 as the printer to which you want to send the selected document.

4. Print the document on the WorkCentre Pro 421 and verify that it prints correctly.

5. Repeat the test for all workstations that will be sending jobs to the WorkCentre Pro 421.

3   Remote Configuration

This chapter provides information on external facilities provided to let you configure the printer remotely.

There are three external facilities provided:

1. CentreWare
2. CentreWare Internet Services
3. Xerox PrinterMap

The procedures are described in this chapter.

Using CentreWare

Xerox CentreWare is the easy-to-use group device discovery and management software for Xerox printers and multiple-vendor devices with embedded web servers. Thanks to the ease of point-and-click navigation, you will be able to install, connect, and configure Xerox network devices immediately and quickly. Xerox CentreWare makes use of the Microsoft Management Console (MMC) as the framework for interface functionality. Xerox CentreWare has Electronic Help available at all times by simply pressing Fl or clicking the Help button.

The CentreWare software for the WorkCentre Pro 421, communicates through the Network connection.

For information concerning CentreWare, refer to the Online Help feature or the documentation found on the CentreWare CD. If you prefer, a User Guide in several languages is provided in pdf form on the Printer Management software CD in the \Doc\ folder. Please take a minute to examine this software. You will be pleasantly surprised at how easy the installation of your printer on your network can be.

Advanced setup in Bindery Mode or for NDS (NetWare Directory Services) network

The Advanced Setup option of CentreWare gives you an additional tool to control how your printers are configured in your Novell NetWare network environment. This tool is only necessary for connecting your printer to more than one file server or queue.

Netware (NDPS/ NEPS) Novell Distributed Print Services™

In order to access Xerox printers in this environment you will need the Xerox Gateway software installed on your system. The latest version of the Xerox Gateway Software is available on the Xerox Web site, www.xerox.com

Instruction are available on the web site on how to install your printer for use with NDPS. They are contained in the CentreWare for NDPS User Guide.

Using CentreWare Internet Services

CentreWare Internet Services is an interactive service that uses Internet technology to extend the capabilities of your WorkCentre Pro 421. An HTTP server application developed by Xerox is resident, on your network-enabled WorkCentre Pro 421. This HTTP server provides access to advanced services for the installation, configuration, and management of your WorkCentre Pro 421.

The features of CentreWare Internet Services can be accessed through client-resident software interfaces such as Netscape Navigator or Microsoft Internet Explorer version 3 x, or later, browsers. A browser allows users access to a WorkCentre Pro 421 on a network through the HTTP server by using the TCP/IP protocol.

You will need to access information in all of the chapters of this document, to initially select options, and change others as desired.

To perform administrative tasks, you must have access to your network and possess System Administrator (Admin) rights for the WorkCentre Pro 421. In addition, you should refer to the User and this guide for more information about your printer. You may also need information from sources provided by network and client workstation vendors.

System Administrators with proper Admin rights can perform the following activities using Internet Services:

➢ Cause the WorkCentre Pro 421 to print status and test pages.

➢ Monitor the status of the WorkCentre Pro 421 and the network.

➢ Configure the network setting on the WorkCentre Pro 421.

➢ Reset the WorkCentre Pro 421 parameters and change the access password.

➢ Go to internet links providing support and assistance.

➢ Access Help and Documentation information for your printer.

Accessing CentreWare Internet Services

To gain access to the WorkCentre Pro 421 from a workstation:

1. Start your network browser.

2. Enter the printer's IP address as the URL (Universal Resource Locator) in your browser's Address or Location field.

    The IP address is printed on the Status page.

    The WorkCentre Pro 421 Home page is displayed.
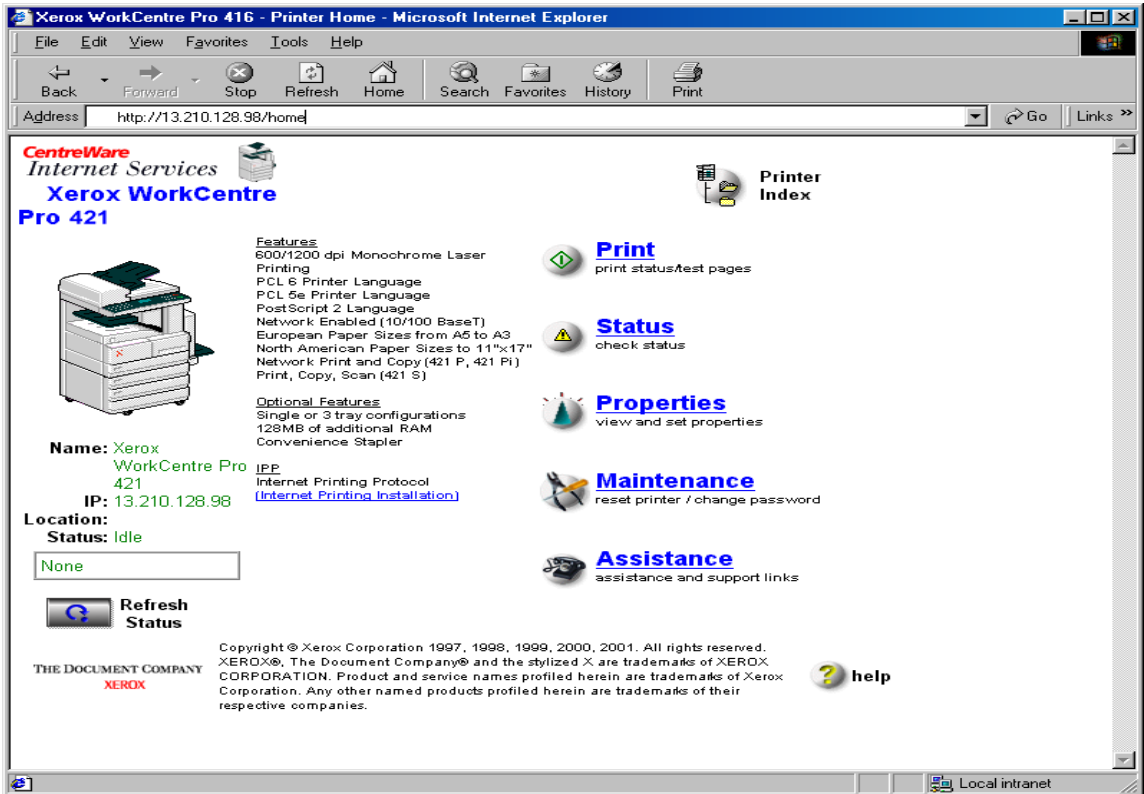
Click to access the CentreWare Internet Services on-line user documentation.

Click to refresh the screen after changes have been made.

The CentreWare Internet Services home page for the WorkCentre Pro 421 is divided into the following application pages, or tabs:

➢ Print

➢ Status

➢ Properties

➢ Maintenance

➢ Assistance.

Print page

1. Click ![icon] from the home page or click the [print] tab from any other page. The print page is displayed.
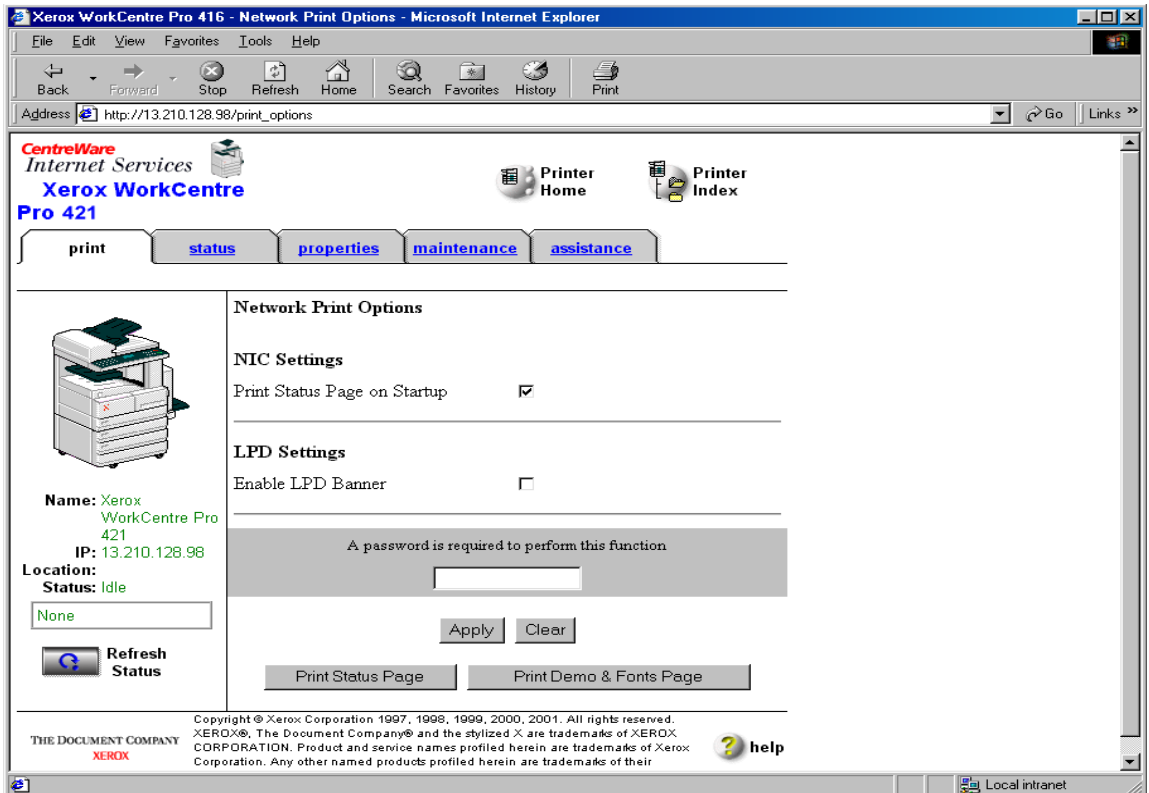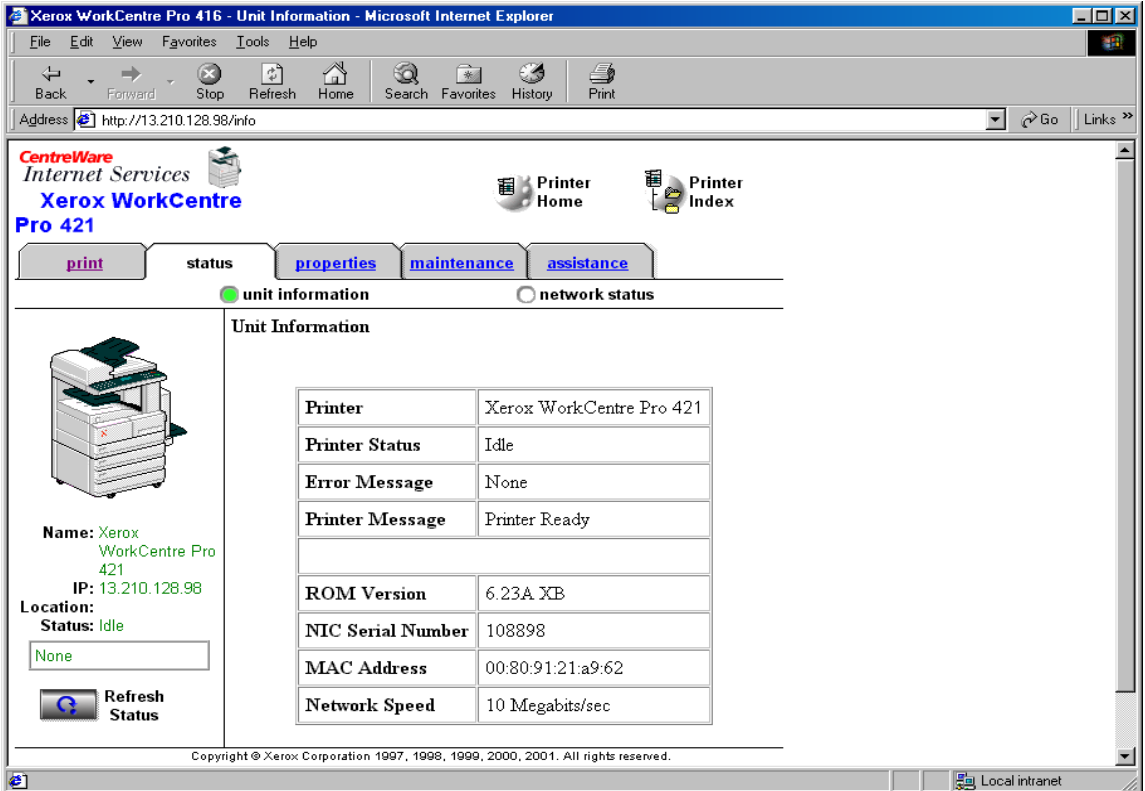
From here you can cause the WorkCentre Pro 421 to print a status page on start up, insert an LPD banner sheet between jobs and print a status page or test page.

2. Enter your password. The default password is "sysadm"

   A. Check the Print Options boxes.

   B. Click the [Clear] button to clear any settings made.

   C. Click the [Apply] button to apply your print options.

   D. Click [Print Status Page] or [Print test Page] to submit this job to the WorkCentre Pro 421.

3. If the page is automatically refreshed, reset the network interface to implement the changes (see *"Maintenance page" on page 3-11* for details).

Status page

1. Click ⚠ from the home page or click the [status] tab from any other page. The status page is displayed.
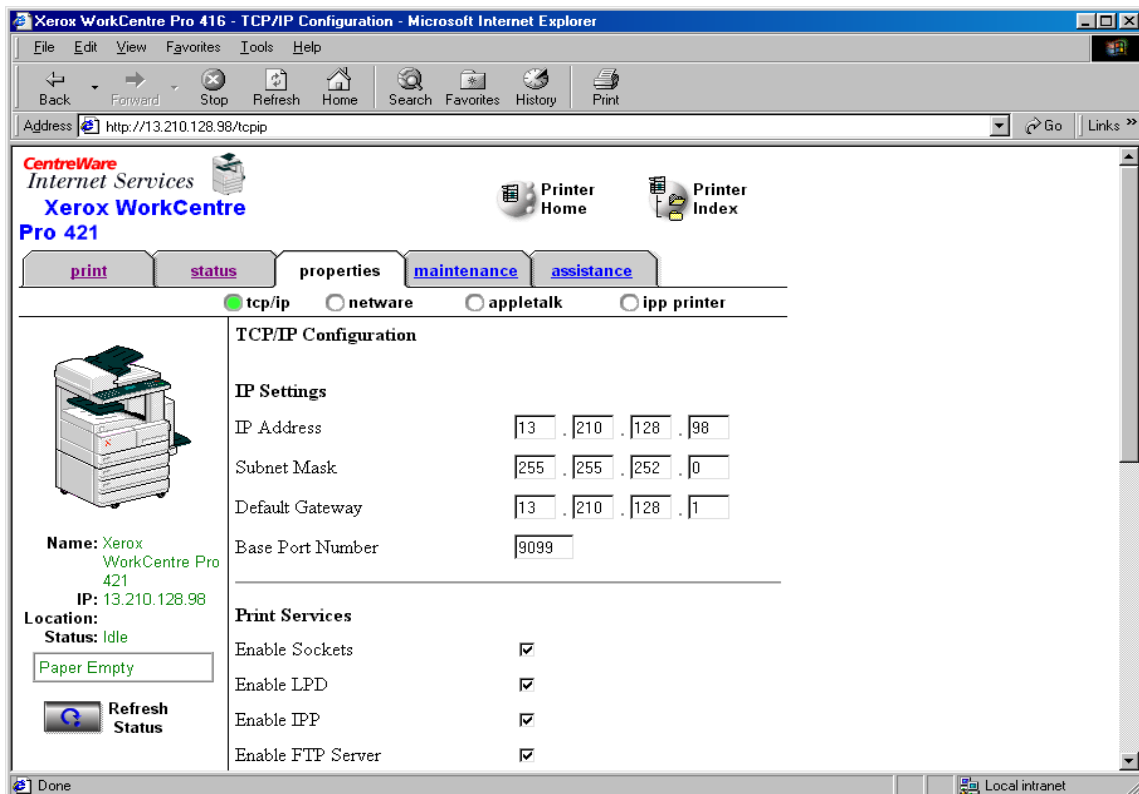
The Status page, or tab, provides information on the status of the WorkCentre Pro 421 or the network.

2. Click the appropriate radio button in order to view the status information that you require.

Properties page

1. Click ![icon] from the home page or click the [properties] tab from any other page. The properties page is displayed.

This page is used to set or change the TCP/IP, Netware, Appletalk or IPP Printer properties for the WorkCentre Pro 421.

2. Enter your password. The default password is "sysadm"

3. Click the appropriate radio button.

4. Enter or change the information displayed as required.

5. Click the [Clear] button to clear any settings made.

6. Click the [Apply] button to apply your new settings.

NOTE: For IPP Printer, you can restore the factory defaults by clicking on the [Restore Factory Defaults] button.

7. If the page is automatically refreshed, reset the network interface to implement the changes (see *"Maintenance page" on page 3-11* for details).

Maintenance page

1. Click ![icon] from the home page or click the [maintenance] tab from any other page. The maintenance page is displayed.
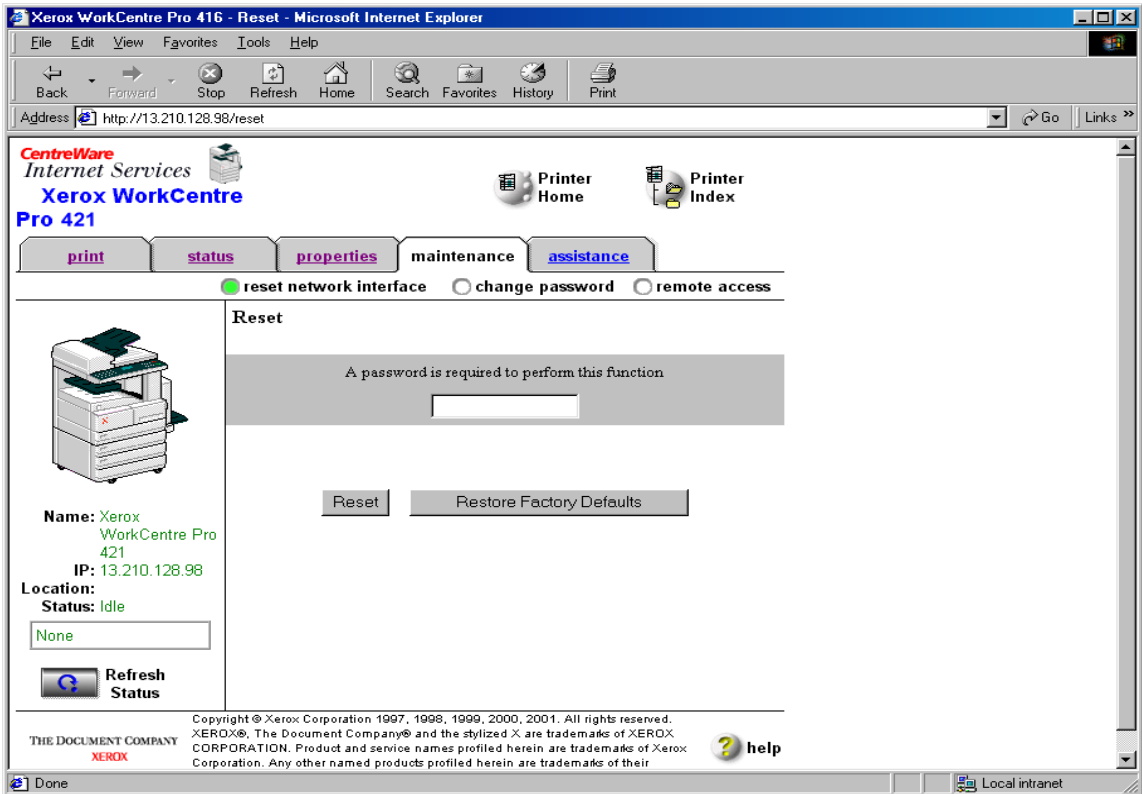
The Maintenance page, or tab lets you reset the network interface, reset the factory defaults, change your password or disable remote maintenance access.

The Reset button lets you reset the print server to allow newly set parameter values to take effect. Reset does not re-initialize the interface with the printer. The network interface, however, is fully re-initialized.

Most of the settings done through the web pages change values in non-volatile memory, but do not change the currently used values. When a setting is made, requiring a reset to take effect, has been accepted by the network interface, the displayed page will be refreshed automatically indicating that the printer should be reset for the change to take effect. In general, all desired changes should be made before resetting the printer network interface.

For the Network Interface:

A.   Click the [reset network interface] radio button.

B.   Enter your password. The default password is "sysadm"

C.   Click the [Reset] button to reset the network interface or the [Restore Factory Defaults] button to reconfigure the printer to its original settings.

NOTE: Restoring the factory defaults is useful when you move the WorkCentre Pro 421 and need to reconfigure the network interface.

To change your password:

A.   Click the [change password] radio button.

B.   Enter your old password.

C.   Enter a new password.

D.   Retype the new password to confirm it.

E.   Click the [Clear] button to cancel the process.

F.   Click the [Apply] button to set your new password.

To disable remote maintenance access:

A.   Click the [remote access] radio button.

B.   Enter your password. The default password is "sysadm"

C.   Click the [Disable] button to prevent remote maintenance access.

NOTE: Remote maintenance access can only be restored by resetting the network interfaces factory defaults from the printer's front panel.

Assistance page

1. Click ![printer icon] from the home page or click the [assistance] tab from any other page. The assistance page is displayed.
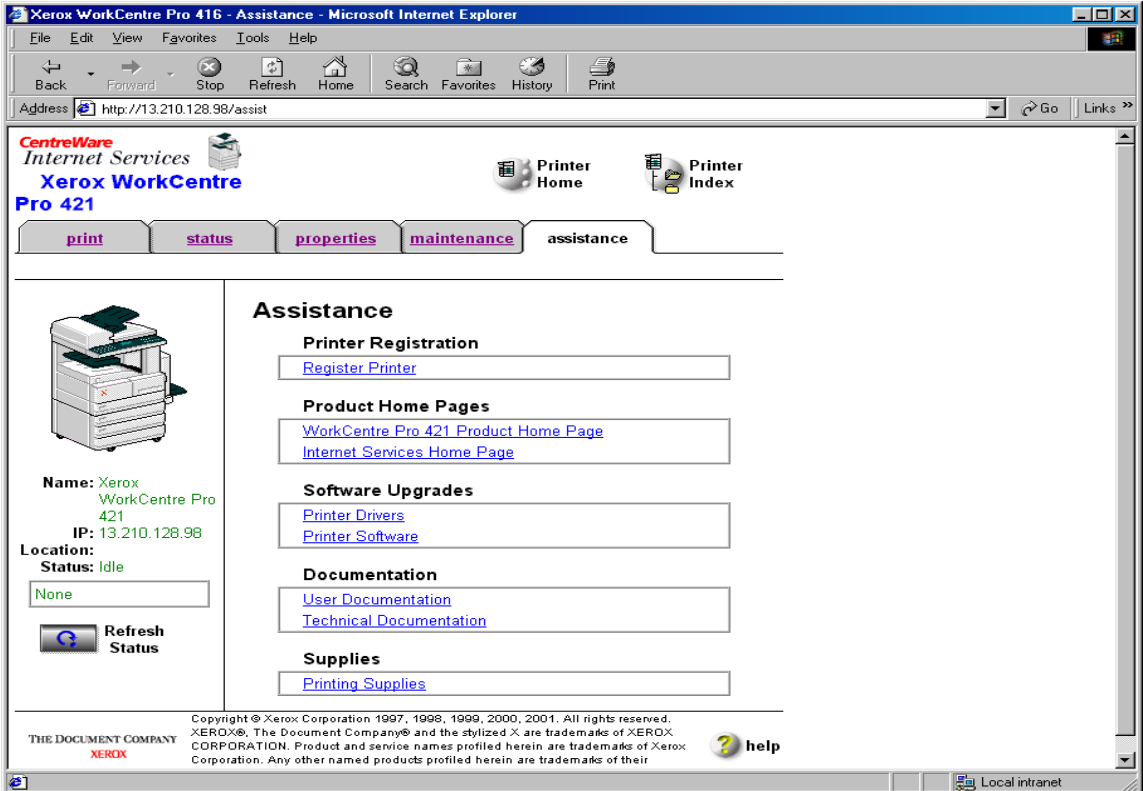
The Assistance page, or tab, provides a listing of links to websites that can be accessed directly from this page.

The links include:

- The ability to register the WorkCentre Pro 421.

- A link to your WorkCentre Pro 421 product home page, or pages.

- Links to printer driver and printer software upgrade sites.

- Links to access the product documentation.

2. Click the appropriate link.

Using Xerox PrinterMap

Xerox PrinterMap is an administrative and management software platform providing access to a heterogeneous printer environment at the enterprise level. PrinterMap delivers expanded capacity for network personnel by giving the operator a graphical topology, and granting easy access to status and report information for every SNMP-enabled enterprise network printer.

Plug-ins for Unicentre and Tivoli are provided with this software.

Xerox PrinterMap has Electronic Help available at all times by simply pressing Fl or clicking the Help button.

4   Glossary

10Base2	A cable used for networking. It is a coaxial cable consisting of a centre wire and a shield separated by an insulating material. It is commonly called "thinnet".
10BaseT	A cable used for networking that transfers data at 10 Mega-bits per second. It is also called "twisted-pair" because it is comprised of two insulated wires twisted together. 10BaseT cable can be shielded or unshielded. Shielded cable provides more protection from noise than unshielded cable.
100BaseT	A cable similar to 10BbaseT that transfers data at 100 Mega-bits per second. It is also called fast Ethernet.
ASCII	An acronym for **A**merican **S**tandard **C**ode for **I**nformation **I**nterchange. A coding scheme that assigns numeric values to letters, numbers, punctuation, and certain other characters.
DHCP	An acronym for **D**ynamic **H**ost **C**onfiguration **P**rotocol. A protocol allowing the principal parameters of network devices (including IP Addresses) to be configured by central DHCP servers.
Driver	Software that is loaded on the client workstation that prepares data to be sent to or received from the. Also called a "printer driver". The drivers are designed specifically for this Xerox device.
Ethernet	Network transport technology commonly used to send data from one node to another.
Ethernet Address	The Ethernet Address is a unique address that identifies a device on a network. The Ethernet Address is built into the device when it is manufactured. The Ethernet Address consists of six bytes of information and is expressed as hexadecimal numbers with the bytes separated by colons. (Example: 00:00:08:D4:05:14)
File Server	A network environment in which the nodes communicate with a file server, and not directly with other nodes. NetWare 3.12 and Banyan VINES are file server networking products.

Frame	A group of data sent through the network. Also called a "packet" or a "message". There are several different types of frames. The data is arranged differently in different types of frames. Nodes on a network must be set up for the same Frame Type in order to communicate.
Gateway Address	The Gateway Address is the IP Address of the gateway, or router, that the will be used to access devices on other subnets.
IEEE	An acronym for **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers. This is an organization of engineering and electronics professionals notable for developing the IEEE 802 standards for the physical and data-link layers of local area networks, following the ISO Open Systems Interconnection (OSI) model.
Internetwork Packet Exchange	*See* IPX.
IP	*See* TCP/IP
IP Address	*See* TCP/IP
IPX	**I**nternetwork **P**acket **E**xchange. IPX is part of NetWare. It routes packets to the correct node and to the correct process within the node.
ISO	An acronym for **I**nternational **S**tandards **O**rganization. An international organization that specifies network standards. The ISO developed the Open Systems Interconnection (OSI) model.
LAN	An acronym for **L**ocal **A**rea **N**etwork. This is a network that serves a relatively small area, such as one building, and does not require telecommunications services to reach all of the nodes. *See also* WAN.
Local Area Network	*See* LAN.
Message	*See* Frame.
NCP	*See* NetWare Core Protocol.
NetWare	A network operating system from Novell. Clients log onto one or more file servers which provide services such as mail, printing, and filing.
NetBIOS/NetBEUI	A peer-to-peer networking system using the NetBEUI protocol.
NetBIOS/IP	A peer-to-peer networking system using the IP protocol.
NetWare Core Protocol	A protocol used by a NetWare client to request services from a NetWare server.
Node	A device on a network that has an address and can send and/or receive data to and from other devices on the network.
Packet	*See* Frame.

PCL	An acronym for **P**rinter **C**ontrol **L**anguage, which is used by Hewlett-Packard. This is a set of commands that tell a printer and printer driver how to print a document.
PCL5e	A Hewlett-Packard Printer Control Language (PCL) that was the first version of PCL to support bi-directional communication between printer and computer.
PDL	An acronym for **P**age-**D**escription **L**anguage. This refers to a programming language, such as PostScript, that is used to describe output to a printer or a display device, which then uses the instructions from the PDL to construct text and graphics to create the required page image.
Peer-to-Peer	A network environment in which the nodes communicate directly with other nodes. Windows for Workgroups, NetWare Lite, and Macintosh System 7 are examples of peer-to-peer networking products.
Print driver	*See* Driver.
Protocol	The rules that control the transmitting and receiving of data.
Queue	A place where jobs are stored temporarily, while they are waiting to be processed. A print queue will hold several print jobs. A printer that is attached to the print queue will print the jobs one at a time.
RJ45	A connector used to connect a 10BaseT cable to a device.
Router	A device that directs network packets to the segment of the network for which the packet is intended, and excludes packets that are not intended for a segment. Routers reduce unnecessary network traffic and control access to segments of the network.
Sequenced Packet Exchange	*See* SPX.
SPX	An acronym for **S**equenced **P**acket **E**xchange. SPX is part of NetWare. It ensures that packets are received in the correct order and that there are no errors.
Subnet Mask	There are approximately 4.3 billion different addresses in the IP Address range of 000.000.000.000 to 255.255.255.255. These addresses can be divided into smaller, and much more manageable subnetworks, or subnets. The Subnet Mask identifies which part of the IP Address contains the Subnet Address and which part contains the host (or device) address.

TCP/IP	An acronym for **T**ransmission **C**ontrol **P**rotocol / **I**nternet **P**rotocol. TCP/IP is a set of communications protocols that is supported by a variety of computer platforms. TCP controls the data transfer and IP controls the routing of the data. The IP Address is a unique address that identifies a device in a network. The IP Address has to be set by the System Administrator. The IP Address consists of four bytes of information and is expressed as decimal numbers with the bytes separated by dots. (Example: 13.1.188.2)
Thinnet	*See* 10Base2.
Twisted-pair	*See* 10BaseT.
WAN	An acronym for **W**ide **A**rea **N**etwork. This is a network that serves a relatively large area, such as buildings in different cities and requires telecommunications services to reach all the nodes. *See also* LAN.
Wide Area Network	*See* WAN.

Index