

Customer Tips

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...for the user

Inserting PCL Commands into an ASCII Print Job

Purpose

Some Xerox multifunction devices are installed in an environment that submits ASCII text files as print jobs. Because the ASCII file contains no Printer Control Language (PCL) commands, the print job is unable to use some multifunction device options such as landscape, duplex and staple.

This document describes how to use Windows NT 4.0 or Novell NetWare 3.x/4.x/5.x to configure a special print queue for printing from a source that does not use a printer driver, for example, a mainframe or an AS/400 system. After the host is configured to use the server's print queue, you can configure the queue to add PCL commands to the print job so that it can use the multifunction device's printing options.

This document contains the following sections:

Windows NT 4.0

Describes how to add PCL commands to a Windows NT 4.0 print queue using a Separator Page file.

Novell NetWare

- Describes how to use PRINTDEF and PRINTCON in NetWare 3.x and 4.x.
- Describes how to use NWADMIN in NetWare 4.x and 5.x.

Appendix

Describes LPR printing in a Windows NT 4.0 environment.

This document contains examples for using PCL commands to enable landscape mode, duplex printing, stapling and banner sheet. For further reference, see the "Additional Information" section at the end of this document to obtain the following:

- *PDL Reference Guide for the DC 240/255/265 ST/L and the DC 490/480/470/460*
- *PDL Reference Guide for the DC 340/332/230/220 ST/LP and the DC 440/432/425/420 ST/LP*
- *PDL Reference Guide for the DC 555/545/535*

This document applies to these Xerox products:

x	WC Pro 32/40 Color
x	WC Pro 65/75/90
x	WC Pro 35/45/55
x	WC M35/M45/M55
x	DC 555/545/535
x	DC 490/480/470/460
x	DC 440/432/425/420
x	DC 340/332
x	DC 265/255/240
x	DC 230/220
	DCCS 50

Windows NT 4.0

Overview

This section describes how to configure a Windows NT print queue with a customized separator page file. For this example, the print jobs are sent via Line Printer Remote (LPR) printing, the protocol many mainframe environments use for printing. See the "Appendix" at the end of this document for more information about setting up LPR on your Windows NT 4.0 server.

The separator page file is a feature of Windows NT 4.0 workstation and server. For detailed information about separator page files see:

- Microsoft Knowledge Base Article #Q102712, *How to Create Custom Separator Page Files*
- Microsoft Knowledge Base Article #Q131714, *Custom PCL Separator File Example*
- *Microsoft Windows NT Server Resource Guide*
- *Windows NT Advanced Server Concepts and Planning Guide*

Use Notepad to create the custom separator page file. A single character on the first line defines the character to use as the separator page escape character. This escape character is not the same as the PCL escape character. The examples in this section use the back-slash (\) as the separator page escape character.

Note: Each line must start with the designated escape character and the separator commands must be in Hex format.

Configuring a Custom Separator Page

Follow these instructions to create a custom separator page file. The separator page file contains PCL commands to add to print jobs. The PCL commands are added to any job directed to the printer, so send only mainframe or other appropriate print files to this queue.

1. Open Notepad and create the custom separator page using one of the following examples:

To Achieve Landscape Orientation:

```
\
\H1B\L%-12345X
\H1B\LE
\H1B\L&l 10
\
```

The following table explains the syntax elements used above:

Syntax	Explanation
\	Designates the separator page escape character for this file.
\H1B	PCL escape command in Hex.
\L	A separator command that prints all the characters following it until another separator escape code is encountered.
%-12345X	The Universal Exit/Start of PJI command.
\H1B\LE	The element that generates a PCL escape character and then passes the Reset command to the interpreter.
\H1B\L&l 10	The element that generates a PCL escape character and then passes the PCL command for Landscape (&l 10) to the interpreter.

To Staple Print Jobs:

You must use a PJL command instead of a PCL command to indicate stapling to a multifunction device. Enclose PJL commands with the `XRXbegin` and `XRXend` commands. See the PDF reference guides for more information.

```
\
\H1B\L%-12345X
\L@PJL COMMENT XRXbegin
\L@PJL COMMENT OID_ATT_FINISHING OID_VAL_FINISHING_STAPLE;
\L@PJL COMMENT XRXend
\L@PJL ENTER LANGUAGE=PCL
\H1B\LE
\
```

To Print Duplex (long edge binding):

```
\
\H1B\L%-12345X
\H1B\LE
\H1B\L&|1S
\
```

To Print Duplex (short edge binding):

```
\
\H1B\L%-12345X
\H1B\LE
\H1B\L&|2S
\
```

To Enable a Banner Page:

```
\
\H1B\L%-12345X
\L@PJL COMMENT XRXbegin
\L@PJL COMMENT OID_ATT_START_SHEET OID_VAL_JOB_SHEET_FULL;
\L@PJL COMMENT XRXend
\L@PJL ENTER LANGUAGE=PCL
\H1B\LE
\
```

Multiple Commands:

To add multiple options to a print job, combine commands in a single separator page file. The following example outputs a duplex (long edge binding) and stapled job in landscape orientation.

```
\
\H1B\L%-12345X
\L@PJL COMMENT XRXbegin
\L@PJL COMMENT OID_ATT_FINISHING OID_VAL_FINISHING_STAPLE;
\L@PJL COMMENT XRXend
\L@PJL ENTER LANGUAGE=PCL
\H1B\LE
\H1B\L&|1O
\H1B\L&|1S
\
```

Other valid PCL commands are available in the Document Centre PDL guides.

2. Save the file with a `.SEP` extension in the `C:\WINNT\SYSTEM32` folder.

3. Configure the print queue to use the separator page.
 - a. Select [**Start: Settings: Printers**].
 - b. Right-click on the Document Centre that receives your print jobs.
 - c. Select [**Properties**].
 - d. Select the General tab.
 - e. Select [**Separator Page**].
 - f. Select [**Browse**].
 - g. Select the .SEP file you created.
 - h. Select <**OK**>.
 - i. Select <**OK**> again.

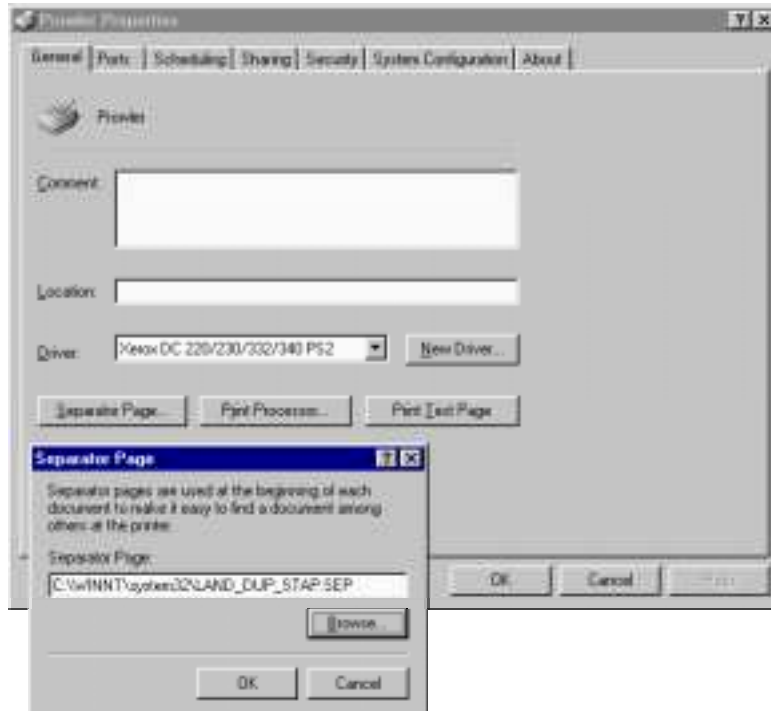


Figure 1: Configure Separator Page to Print Queue

Send a Test Job to the Document Centre from a Remote Workstation

After you create a custom separator page file and assign it to the queue, test the queue to ensure it is processing jobs correctly. This print queue should not service print jobs from any client that does not want to use the custom separator page commands.

Windows NT

To test from Windows NT 4.0:

1. Ensure that LPR is running on the workstation.
2. Open a command prompt.
3. Enter the following command using this syntax:

```
lpr -S <IP ADDRESS> -o1 -P <printername> <filename>
```

Example: `lpr -S 192.168.10.250 -o1 -P pclprintq testjob.txt`

In Windows NT you may use the `NET USE` command to assign a networked printer queue residing on a Windows NT server or workstation to an available LPT port. This is useful for submitting jobs from MS-DOS based applications running on your workstation or network.

1. At the command prompt, type `NET USE` and press **<Enter>**.
2. All networked devices attached to your workstation are displayed.
3. To attach LPT1 to a networked printer on a Windows NT system, use the following syntax:

```
NET USE LPT1: \\<server>\<printer>
```

Example: `NET USE LPT1: \\NTSERVER\DC332`

Example: `NET USE LPT1: \\192.168.10.250\DOCENTRE`

UNIX

From any UNIX workstation or via a telnet session, type the command syntax as follows:

```
lp -d <IP ADDRESS> : <printername> <filename>
```

Example: `lp -d 192.168.10.250:pclprintq testjob.txt`

Novell NetWare

You can also use NetWare to create a print queue to add PCL commands to a print job. NetWare 3.x/4.x does not provide native LPR printing. You must purchase the NetWare LPR Gateway or some other mainframe print gateway for NetWare. Once the LPR gateway is working correctly, use the following instructions to create a print definition file and apply it to a print queue.

Note that in Netware 4.x, you have the choice of using either `PRINTDEF/PRINTCON` or Netware Administrator to define your print queue properties.

Novell Netware 3.x and 4.x Using PRINTDEF and PRINTCON

NetWare 3.x/4.x provides two utilities to create a custom printer definition and apply the definition to a printer queue. These utilities are `PRINTDEF` and `PRINTCON`. Use `PRINTDEF` to define the commands you wish to use, then run `PRINTCON` to select the commands you want to use and assign them to a print queue.

You must have a mapped search drive to the `\SYS\PUBLIC` directory to run these utilities.

PRINTDEF

Use the Printer Definition Utility (PRINTDEF) to create the commands that you need later in this procedure. You should determine what commands you need and define them here. If you plan to use PJP commands, such as those required to enable a banner or staple a job, you need a <CR><LF> (Carriage Return/Line Feed) command following each command. Therefore, ensure that you create enough <CR><LF> commands for each PJP command including the XRXbegin and XRXend PJP commands.

1. Select **[Start: Run: Browse]**. Navigate to the drive mapped to the \PUBLIC directory.
2. Select printdef.exe and select **[Open]**, then <OK> to run PRINTDEF. (You can also run PRINTDEF at a command prompt.)

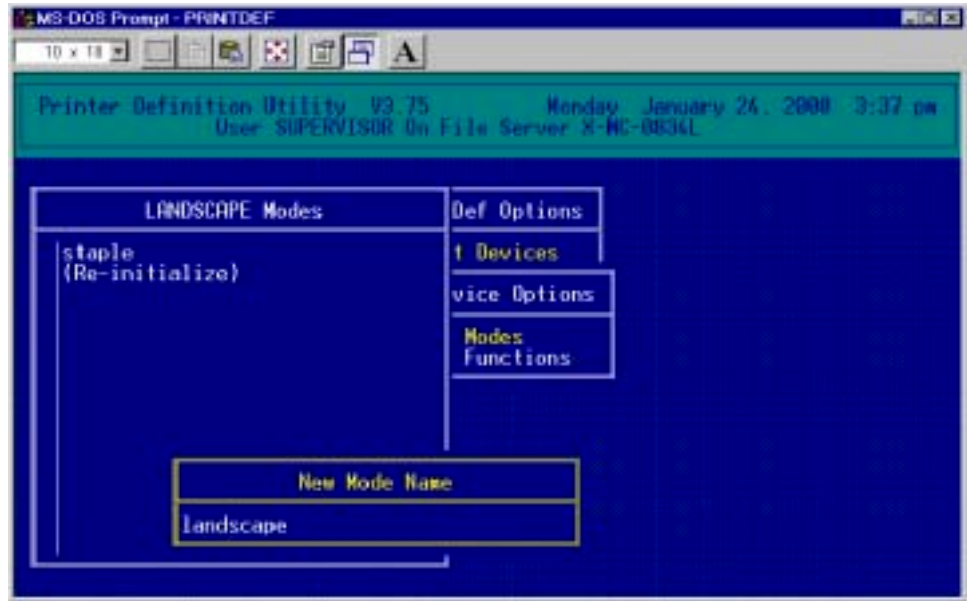


Figure 2: Printer Definition Utility (PRINTDEF)

3. Select **[Print Devices]**.
4. Select **[Edit Print Devices]**.
5. Press **[Insert]** to create a new print device and name it.
6. Select the device you just created and press **[Enter]**.
7. Select **[Device Functions]**.
8. To create new functions, press **[Insert]**. Type in a descriptive name and press **[Enter]**. Enter the PCL control sequence then press **[Enter]**.

To create a library of commands that enable multifunction device features, enter the following control sequences and give them appropriate names.

Name	Control Sequence
BEGIN PCL	<ESC>%-12345X
ENTER LANGUAGE PCL	@PJL ENTER LANGUAGE=PCL
RESET PCL	<ESC>E
CRLF1	<CR><LF>
CRLF2	<CR><LF>
CRLF3	<CR><LF>
CRLF4	<CR><LF>
CRLF5	<CR><LF>
CRLF6	<CR><LF>
XRXbegin	@PJL COMMENT XRXbegin
XRXend	@PJL COMMENT XRXend
STAPLE ON 1	@PJL COMMENT OID_ATT_FINISHING
STAPLE ON 2	<SP>OID_VAL_FINISHING_STAPLE;
BANNER ON 1	@PJL COMMENT OID_ATT_START_SHEET
BANNER ON 2	<SP>OID_VAL_JOB_SHEET_FULL;
OUTPUT TO STACKER	<ESC>&l 12G
LANDSCAPE	<ESC>&l 10
DUPLEX-SEB	<ESC>&l 2S
DUPLEX-LEB	<ESC>&l 1S
FORM FEED	<FF>

Notes:

- For NetWare 3.x, the Staple and Banner control sequences are split in two parts to accommodate PRINTDEF's limitation of 50 characters. The <SP> command (space) is inserted before the second half of the control sequence to ensure it functions properly with the first half when the commands are later merged. Novell 4.x does not have this limitation so there is no need to split the command.
 - <CR><LF> (Carriage Return/Line Feed) is required after each non-<ESC> command.
9. Press **[Escape]** and select **[Yes]** to save each function. When finished, your list of functions should look similar to the following example:



Figure 3: Example Functions List

Note: Other valid PCL commands are available in the Document Centre PDL reference guides.

10. Press **<Escape>** to view the Device Options menu again.
11. Select **[Device Modes]**. Use the commands you just entered to create a Mode that adds functions to your print jobs.
12. Press **<Insert>** to create a new Mode and give it a name (for example, "LANDSCAPE").
13. Select the Mode you just created.
14. Press **<Insert>** to add functions. You should see all the functions you created earlier in this procedure.
15. Add functions by selecting them from the list, then press **<Insert>** again.
16. The following examples show control sequences for multifunction device functions that you may wish to apply to an ASCII print job.

To Achieve Landscape Orientation:

```
<ESC>%-12345X
<ESC>E
<ESC>&I 10
```

To Print Duplexed (long edge binding):

```
<ESC>%-12345X
<ESC>E
<ESC>&I 1S
```

To Print Duplexed (long edge binding), Stapled and Landscape:

```
<ESC>%-12345X
<CR><LF>
@PJL COMMENT XRXbegin
<CR><LF>
@PJL COMMENT OID_ATT_FINISHING
<SP>OID_VAL_FINISHING_STAPLE;
<CR><LF>
@PJL COMMENT XRXend
<CR><LF>
@PJL ENTER LANGUAGE=PCL
<CR><LF>
<ESC>E
<ESC>&I 10
<ESC>&I 1S
```

} **Note:** No **<CR><LF>** is needed between these two lines since this is one PDL comment over 50 characters.

Note: **<CR><LF>** is required after each PDL command.

To Enable a Banner Page:

```
<ESC>%-12345X
<CR><LF>
@PJL COMMENT XRXbegin
<CR><LF>
@PJL COMMENT OID_ATT_START_SHEET
<SP>OID_VAL_JOB_SHEET_FULL;
<CR><LF>
@PJL COMMENT XRXend
<CR><LF>
@PJL ENTER LANGUAGE=PCL
<ESC>E
```

17. When complete, press **<Escape>** until you are prompted to exit PRINTDEF. Select **[Save Data Base]** then **[EXIT]** to save your changes.

PRINTCON

The Configure Print Jobs utility (PRINTCON) configures a print queue to use a Device and a Mode created earlier with PRINTDEF.

1. Select **[Start: Run: Browse]**. Navigate to the `\PUBLIC` directory.
2. Select `printcon.exe`, then select **[Open]** and then **<OK>** to run PRINTCON. (You can also run PRINTCON from a command prompt.)
3. Select **[Edit Print Job Configurations]**.
4. Press **[Insert]** to create a new print job configuration. PRINTCON for Netware 4.x, may ask you to select a private or public database. Select **[Public Database]**. Enter the new name of the Print Job Configuration and press **<Enter>**.
5. Select the Print Job Configuration you just created.
6. Use the arrow and enter keys to browse for the print queue you wish to use.
7. Browse to the Device you created in PRINTDEF, and press **<Enter>**.
8. Browse to the Mode you created in PRINTDEF, and press **<Enter>**.
9. When finished, press **<Escape>** and save the changes.
10. Press **<Escape>** again. From the Available Options menu, select **[Select Default Print Job Configuration]**.
11. Select the Print Job Configuration you created. If Netware 4.x asks you to select a Private or Public Database, select **[Public Database]**. Public Default appears in the column next to the Print Job Configuration you just created. Press **[Escape]** twice to exit PRINTCON.
12. Send an ASCII test job to the print queue via NPRINT or PCONSOLE to ensure that the characteristics defined in PRINTDEF take effect.



Figure 4: Sample PRINTCON Screen

Novell NetWare 4.x and 5.x Using NetWare Administrator

If you have NetWare 4.x or 5.x you can use NetWare Administrator to enter the PCL commands and assign them to a print queue.

1. Use ADMIN privileges to log into a workstation.

2. From Windows, open Netware Administrator, which is typically located in:
`\\SERVER_NAME\SYS\PUBLIC\NWADMN3X.EXE` for Netware 4.x or
`\\SERVER_NAME\SYS\PUBLIC\WIN32\NWADMN32.EXE` for Netware 5.x.

Right-click on the context in which the desired printer queue resides and select **[Details]**.

3. Select **[Print Devices]**.
4. Select **[Create]**.
5. Provide a name and select **<OK>**.
6. Select the device you created from the list and select **[Modify]**.
7. Select **[Create Function]**.

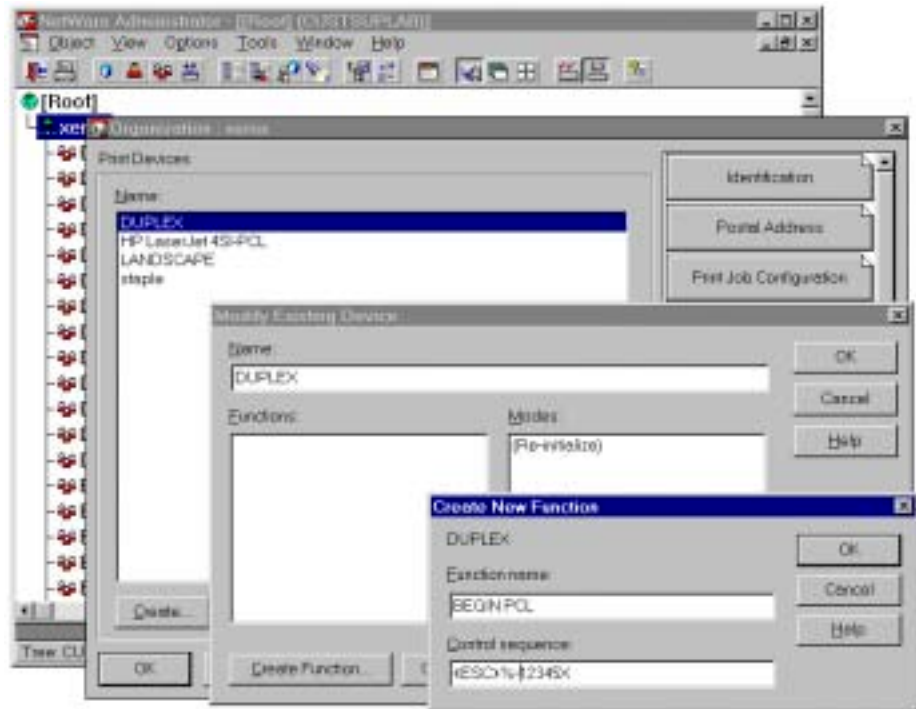


Figure 5: Creating New Functions in NetWare Administrator

8. Enter the following control sequences and give them appropriate names:

Name	Control Sequence
BEGIN PCL	<ESC>%-12345X
ENTER LANGUAGE PCL	@PJL ENTER LANGUAGE=PCL
RESET PCL	<ESC>E
CRLF1	<CR><LF>
CRLF2	<CR><LF>
CRLF3	<CR><LF>
CRLF4	<CR><LF>
CRLF5	<CR><LF>
CRLF6	<CR><LF>
XRXbegin	@PJL COMMENT XRXbegin
XRXend	@PJL COMMENT XRXend
STAPLE ON	@PJL COMMENT OID_ATT_FINISHING OID_VAL_FINISHING_STAPLE;
BANNER ON	@PJL COMMENT OID_ATT_START_SHEET OID_VAL_JOB_SHEET_FULL;
OUTPUT TO STACKER	<ESC>&l 12G
LANDSCAPE	<ESC>&l 10
DUPLEX-SEB	<ESC>&l 2S
DUPLEX-LEB	<ESC>&l 1S
FORM FEED	<FF>

Note: Other valid PCL commands are available in the Document Centre PDL guides. See the "Additional Information" section at the end of this document.

9. After you have entered the control sequences, select [**Create Mode**].
10. Give the Mode a descriptive name (for example, "LANDSCAPE") and select <OK>.
11. Highlight the Mode you just created and select [**Modify**].
12. Add items from the Device Functions list to the Mode Functions list. You should see all the functions you previously created.
13. The following examples show control sequences for multifunction device functions that you may wish to apply to an ASCII print job.

To Achieve Landscape:

```
<ESC>%-12345X
<ESC>E
<ESC>&I 10
```

Duplexed (long edge binding):

```
<ESC>%-12345X
<ESC>E
<ESC>&I 1S
```

Duplexed (long edge binding), Stapled and Landscape:

```
<ESC>%-12345X
<CR><LF>
@PJL COMMENT XRXbegin
<CR><LF>
@PJL COMMENT OID_ATT_FINISHING OID_VAL_FINISHING_STAPLE;
<CR><LF>
@PJL COMMENT XRXend
<CR><LF>
@PJL ENTER LANGUAGE=PCL
<CR><LF>
<ESC>E
<ESC>&I 10
<ESC>&I 1S
```

Banner Page On:

```
<ESC>%-12345X
<CR><LF>
@PJL COMMENT XRXbegin
<CR><LF>
@PJL COMMENT OID_ATT_START_SHEET OID_VAL_JOB_SHEET_FULL;
<CR><LF>
@PJL COMMENT XRXend
<CR><LF>
@PJL ENTER LANGUAGE=PCL
<ESC>E
```

14. Select <OK> twice.

Now assign the PCL commands you entered to a print queue.

1. Select [**Print Job Configuration**].
2. Select [**New**].
3. In the Print Job Name field, give the new configuration a name (see figure 6).
4. Browse to the Printer/Queue to which you want to assign this configuration.
5. Open the Device pull down menu and select the device you created.

6. Open the Mode pull down menu and select the Mode you created and select **<OK>**.
7. Highlight the Print Job Configuration you just created and select **[Default]**.
8. Select **<OK>**.
9. Send an ASCII test job to the print queue via NPRINT or PCONSOLE to ensure that the characteristics defined the Print Job Configuration take effect.

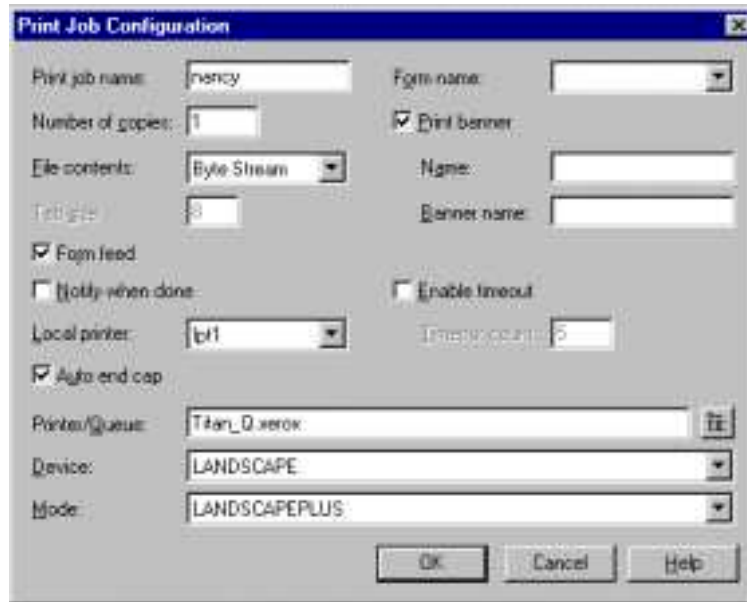


Figure 6: Print Job Configuration Window

Appendix - LPR Printing on Windows NT 4.0

This section describes how to configure the Windows NT 4.0 environment to accept Line Printer Remote (LPR) print jobs, the protocol that many mainframe environments use for printing. The first section provides instructions to enable LPR in Windows NT 4.0. The second section provides instructions for enabling the NT Server as an LPR print host. The third section provides instructions for creating an LPR print queue.

Enable the LPR Port

Follow these instructions if the NT 4.0 server is not currently configured for TCP/IP printing:

1. Right click on Network Neighborhood and select **[Properties]**.
2. Select **[Services]**.
3. Select **[Add]**.
4. Select **[Microsoft TCP/IP]** printing.
5. Select **<OK>**.
6. You may be prompted to insert the Windows NT CD-ROM at this point, or browse to the directory on your hard drive where the Windows NT installation files reside (for example, C:\i386).
7. Select **[Yes]** to reboot the computer.

Start TCP/IP Print Services

Follow these instructions to enable to NT 4.0 server to act as an LPR print host:

1. Select [**Start: Settings: Control Panel**].
2. Select [**Services**].
3. Highlight the TCP/IP Print Server.
4. Select [**Start up**].
5. Under Startup Type, select [**Automatic**].
6. Select <**OK**>.
7. Select [**Start**].
8. Select [**Close**].

Install a Shared Printer on a Windows NT Workstation or Server

Follow these instructions to create an LPR connection to the printer and then share the printer for other users:

1. Select [Start: Settings: Printers].
2. Double Click [**Add Printer**].
3. Select [My Computer].
4. Select [**Add Port**].
5. Select [LPR Port: New Port].
6. Enter the IP address of the Document Centre in the top field, tab to the next field and enter in lower case "lp" as the printer name.
7. Select <**OK**>.
8. Select [**Close**].
9. Ensure that the port you created is checked, and the IP address is correct.
10. Select [**Next**] and install the Document Centre driver (if not already in the OEM list).
11. Share the Document Centre and give it a unique name that is eight characters or less.
12. Print the test page to ensure correct installation.

Additional Information

Refer to the following Web sites:

Multifunction device PDL reference guides are available at:

<http://www.xerox.com/DocumentCentreFamily/Tips>

From the Microsoft Knowledge Base, article # Q102712 - *How to Create Custom Separator Page Files*

<http://support.microsoft.com/support/kb/articles/Q102/7/12.asp>

From the Microsoft Knowledge Base, article # Q131714 - *Custom PCL Separator File Example*

<http://support.microsoft.com/support/kb/articles/Q131/7/14.asp>

Novell's support web site

<http://support.novell.com>

Xerox Customer Service welcomes feedback on all documentation - send feedback via e-mail to: USA.DSSC.Doc.Feedback@mc.usa.xerox.com.

You can reach Xerox Customer Support at 1-800-821-2797 (USA), TTY 1-800-855-2880 or at <http://www.xerox.com>.

Other Tips about Xerox multifunction devices are available at the following URL:

<http://www.xerox.com/DocumentCentreFamily/Tips>.

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