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## Chapter 23. Working with transforms

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### Understanding transforms and the configurable transform subsystem

#### Transforms

*Transforms* are Infoprint objects (like queues and destinations) that you create and configure in Infoprint Manager. Transforms receive data in a particular format or formats, process the data in some way, and output the changed data. When you create a transform, you have complete control over what data format or formats it operates on and what type of processing it does. The processing that the transform performs can be anything from simply copying the data to a different place on disk, to filtering the data stream that the transform receives (for example, to remove a particular PostScript order), to transforming the data to a completely different format (for example, converting PCL to AFP).

When you create a transform, you specify several things, including:

- **Input data format**

The data stream that is sent to the transform. The input data format is what the transform uses to determine whether or not it has any work to do. If you send a PostScript job through a transform that has its input data stream set only to **PCL**, the job will bypass the transform without being changed at all. You can set the transform to accept multiple input data formats.

- **Transform options**

The program or command that actually does the work of the transform; what happens during the *processing* stage. The transform options can be system commands (such as **copy**), programs provided with Infoprint Manager (such as **ps2afp**), or your own custom transform programs (for example, **mypclfixup**).

When you create a transform, you specify the complete command line needed to invoke this program or command. Within this command line, you can also specify various *substitution variables*, place holders which Infoprint Manager replaces with a value when Infoprint Manager runs the transform. For example, if you include `%i` in the line, Infoprint Manager will replace it with the name of the file that the transform receives; if you include `%o`, it will be replaced with the name of the file that the transform puts the changed data into.

- **Output data format**

The data stream that results from the transform. You can only specify one output data format.

In addition, you can specify whether or not you want the file that the transform produces to be printed. If the transform doesn't submit the file to be printed (for example, if the transform completes its processing and saves the file to a different location), it is called a *terminating transform*.

#### Transform sequences

Transforms do not do anything by themselves. They remain inactive until you associate them with an actual destination as a transform sequence. A *transform sequence* is an attribute of an actual destination that contains an ordered list of transforms. Every job that is submitted to that actual destination is sent through that list of transforms in the order specified before it is printed.

**Note:** If you include a terminating transform in a transform sequence, it must be the last transform in the sequence.

### Transform sequence example

You want to define an actual destination that will copy AFP versions of all print jobs sent to it into a directory on your Infoprint Manager server system. This directory is used as an archive of AFP versions of print jobs that may need to be viewed later.

To accomplish this, you use the Infoprint Manager Administration GUI to create these three transforms:

1. **transps**

You set the input data format to PostScript, the Transform options to use ps2afp, and the output data format to MODCA-P (Mixed Object Document Content Architecture).

2. **transpcl**

You set the input data format to PCL, the Transform options to use pcl2afp, and the output data format to MODCA-P.

3. **saveafp**

You set the input data format to AFP, the Transform options to issue a **copy** command, and the output data format to MODCA-P. In addition, you make this a terminating transform by selecting **Transform only** in the **Create Transform** dialog.

Then, create an actual destination that you want to perform the transform sequence. When the Printer Creation wizard asks if you want to change the configuration for the printer, select yes, then click the **Configuration** tab to define the transform sequence as follows:

1. transps
2. transpcl
3. saveafp

**Note:** If you already have the destination created, open the properties notebook for that actual destination and click the **Configuration** tab to define the transform sequence.

Now, when you send a job to this actual destination, the following sequence of actions occurs:

1. **transps** checks to see if the incoming data is PostScript. If it is PostScript, **transps** transforms the data into AFP using ps2afp. If it is not PostScript, **transps** does nothing.
2. **transpcl** checks to see if the incoming data is PCL. If it is PCL, **transpcl** transforms it to AFP using pcl2afp. If it is not PCL, **transpcl** does nothing.
3. **saveafp** copies the AFP file produced by either of the above steps into a specific directory.
4. Since **saveafp** is a terminating transform, the job is not printed but is marked complete at this point.

For more details on transform objects and transform sequences, see the Administration Procedures “Working with Infoprint Manager transform programs” on page 181 and “Configuring data stream transform sequences” on page 191.

## Netware.exe

Netware.exe is one of the transform programs that is included with Infoprint Manager. This program extracts the user ID and job information from the header of PostScript print jobs that are submitted from a Netware server, then strips that header off the job and creates a new header that prints correctly from Infoprint Manager. Netware.exe is a terminating transform, but not because it stores its output in another file. It is a terminating transform because the last step of the program is to issue a **pdpr** command, which submits the job to a logical destination to be printed.

**Note to PSF for OS/2 users:** Netware.exe provides the same function that was available through `netware.cmd` in PSF for OS/2.

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## Working with Infoprint Manager transform programs

Infoprint Manager provides transform programs for the following data streams:

- Printer control language (PCL)
- PostScript
- Portable document format (PDF)
- Tag image file format (TIFF)
- Joint photographic experts group (JPEG)
- Graphic interchange format (GIF)
- Line (ASCII, both formatted and unformatted)
- Double Byte text stream

The transforms convert the incoming data stream into the Advanced Function Presentation (AFP) format.

When a job in any of these formats is submitted to print on a PSF printer, Infoprint Manager automatically invokes the appropriate transform. You can also run the transforms from the **Command Prompt** window without printing the generated output. You may find this useful if you intend to print the job later. You can also use these transforms in transform objects and transform-sequences associated with actual destinations. For more information on this function, see “Configuring data stream transform sequences” on page 191. Jobs print more quickly if they have already been transformed.

Most transforms have flags or option keywords that you can use to specify processing information. For a list of the flags or options and values for each transform, refer to the *Infoprint Manager: Reference*. Configuration files, environment variables, and user-exit programs allow you to specify processing information for Infoprint Manager to use when it invokes the transform automatically. You can also use configuration files and environment variables instead of typing flags on the command line whenever you run a transform.

This topic consists of the following procedures:

- “Customizing the PCL, PostScript, and PDF transforms” on page 182
- “Customizing the TIFF, JPEG, and GIF transforms” on page 183
- “Working with the transform for line data” on page 185
- “Working with the transform for double byte text streams” on page 189

**Note:** For information about the fonts used with the double-byte (**db2afp**) transform, refer to “Working with Infoprint fonts” on page 197.

## Customizing the PCL, PostScript, and PDF transforms

You can customize the transforms for PCL, PostScript, and PDF data by specifying values in the transform configuration files. Table 16 shows the default configuration files that Infoprint Manager provides.

In the table, *install\_path* is the directory that Infoprint Manager is installed in. If you don't know the install path, you can find it in the **Management Console**. Open the Management Console, click **Edit -> Change Service Configuration** and find the **Install path** field.

You can either modify these files or create your own.

Table 16. Infoprint Manager transforms and configuration files

Data Stream	Transform	Configuration File	Daemon Configuration File
PCL	pcl2afp	<i>install_path</i> \pcl2afp\pcl2afp.cfg	<i>install_path</i> \pcl2afp\pcl2afpd.cfg
PostScript	ps2afp	<i>install_path</i> \ps2afp\ps2afp.cfg	<i>install_path</i> \ps2afp\ps2afpd.cfg
PDF	pdf2afp	<i>install_path</i> \ps2afp\ps2afp.cfg	<i>install_path</i> \ ps2afp\ps2afpd.cfg

The PostScript and PDF transforms use the same default configuration files.

### Sample configuration file

The following is an example of a configuration file for the PostScript and PDF transforms. The configuration file for the PCL transform is similar.

```
# ps2afp configuration file
# KEYWORD                ps2afp FLAG          PURPOSE
#####                  #####
port = 8251               # -P                which TCP\IP port to use
server = 127.0.0.1       # -S                server to connect with
ps_job_timeout = 20     # -j                maximum number of minutes
                        #                  to process PostScript job
ps_server_timeout = 20  # -s                maximum number of minutes
                        #                  server waits between jobs
ps_width = 8.5i          # -w                width of generated image
ps_length = 11i         # -l                length of generated image
ps_x_offset = 0i        # -x                left and right margins
ps_y_offset = 0i        # -y                top and bottom margins
ps_resolution = 600     # -r                resolution of printer
ps_output_type = I01_G4 # -a                type of AFP image to
                        #                  generate
```

The configuration file uses keyword equivalents of the transform flags. Refer to *Infoprint Manager: Reference* for the keywords and values that you can specify in the configuration file.

### Daemon configuration files

The PCL, PostScript, and PDF transforms all require a daemon to be running before you can use them. The **pcl2afpd** daemon manages the PCL interpreter portion of the **pcl2afp** transform. The **ps2afpd** daemon manages the PostScript interpreter portion of the **ps2afp** and **pdf2afp** transforms. For more information about these daemons, refer to *Infoprint Manager: Reference*.

Each daemon, like the corresponding transform, uses a configuration file. The daemon configuration file can contain the same keywords as the transform

configuration file (except **server**), plus some keywords that control the operation of the daemon. Refer to the *Infoprint Manager: Reference* for the daemon keywords.

### Hierarchy of transform options

Infoprint Manager assigns a hierarchy to its use of flags and configuration file information when it runs the PCL, PostScript, or PDF transform program. The following lists the order in which Infoprint Manager uses flags and information specified in configuration files:

1. Any values you specify on the command line, including values in the configuration file you specify with the **-C** flag.

Infoprint commands process flags from left to right. If you enter the same flag more than once, Infoprint Manager uses the last occurrence of the flag to determine the value to use. For example, if you issue the following command:

```
ps2afp -Cconfig.file -r240 -r300 myfile.ps
```

the **ps2afp** command transforms the file using 300-pel resolution. Infoprint Manager ignores the resolution value specified in the configuration file `config.file` as well as the first **-r240** flag and value.

2. Values specified in the **pcl2afp.cfg** or **ps2afp.cfg** configuration file in the current directory, if one exists and if you issue the transform command directly. Infoprint Manager ignores values in the current directory if you invoke the transform command indirectly by submitting a job to print.
3. Values specified in the **pcl2afp.cfg** or **ps2afp.cfg** configuration file in your home directory, if one exists.
4. Values specified in the default transform command configuration file named in "Sample configuration file" on page 182.
5. Values specified in a customized configuration file identified with the **-C** flag of the **pcl2afpd** or **ps2afpd** command when the transform daemon started.
6. Values specified in the default transform daemon configuration file named in "Sample configuration file" on page 182.
7. Default values that are built into Infoprint Manager. These are the same as the transform defaults except that the default PostScript or PDF output type is an IM1 uncompressed image.

## Customizing the TIFF, JPEG, and GIF transforms

You can customize the transforms for TIFF, JPEG, and GIF data by specifying values in the transform configuration files. Table 17 shows the default configuration files that Infoprint Manager provides. You can either modify these files or create your own.

Table 17. Default TIFF, JPEG, and GIF Transform Configuration Files

Data Stream	Transform	Configuration Files
TIFF	tiff2afp	<i>install_path</i> \tiff2afp\tiff2afp.cfg <i>install_path</i> \tiff2afp\tiff2afp.3160cfg <i>install_path</i> \tiff2afp\tiff2afp.3900cfg
JPEG	jpeg2afp	<i>install_path</i> \jpeg2afp\jpeg2afp.cfg <i>install_path</i> \jpeg2afp\jpeg2afp.3160cfg <i>install_path</i> \jpeg2afp\jpeg2afp.3900cfg



Table 17. Default TIFF, JPEG, and GIF Transform Configuration Files (continued)

Data Stream	Transform	Configuration Files
GIF	gif2afp	install_path\gif2afp\gif2afp.cfg install_path\gif2afp\gif2afp.3160cfg install_path\gif2afp\gif2afp.3900cfg

Infoprint uses the .3160cfg and .3900cfg configuration files to transform documents that have been submitted to print on an IBM Infoprint 60 printer or IBM Infoprint 4000 laser printer respectively.

### Sample configuration file

The following is an example of a configuration file for the TIFF transform. The configuration files for the JPEG and GIF transforms are similar.

```
a=iocal0
choice=full
cmp=g4
ms=5120
msf=0.01
nosniff=yes
noterm=yes
v=yes
pagetype=page
r=600
x=0
y=0
```

The configuration file uses options in the same format as the transform options that you specify on the command line, except that command line options begin with a dash (-). Refer to the *Infoprint Manager: Reference* for the options and values that you can specify in the configuration file.

### Hierarchy of transform options

Infoprint Manager assigns a hierarchy to its use of options and configuration-file information when it runs the TIFF, JPEG, or GIF transform program. The following lists the order in which Infoprint uses command-line options and information specified in configuration files:

1. Any values you specify on the command line, including values in the configuration files you specify with the **-C** option.

Infoprint Manager commands process options from left to right. If you enter the same option more than once, Infoprint Manager uses the last occurrence of the flag to determine the value to use. For example, if you specify the following command:

```
tiff2afp -Cconfig.file -r240 -r300 myfile.tif
```

the tiff2afp command transforms the file using 300-pel resolution. Infoprint Manager ignores the resolution value specified in the configuration file config.file and the first -r240 flag and value.

2. Values specified in the default transform command configuration file named in Table 17 on page 183.
3. Default values that are built into Infoprint Manager. These are the same as the transform defaults.



## Working with the transform for line data

Infoprint Manager includes a line-data transform program that transforms line data into the Advanced Function Presentation (AFP) data stream. Converting the line data allows you to print it on high-speed AFP printer devices.

The **line2afp** command and its keywords are a subset of the AFP Conversion and Indexing Facility (ACIF) **acif** command. When you use this transform and if errors occur, you may receive some error messages that make references to ACIF.

This section describes the following:

- “What is line data?”
- “What are ANSI and machine carriage controls?” on page 186
- “What are variable-length and fixed-length files?” on page 187
- “How does the imageout keyword affect processing?” on page 188
- “Customizing the line data transform” on page 188

### What is line data?

Line data is simply unformatted data; data with few or no embedded control characters to create font changes, page breaks, and so on. The term line data can cover a variety of data streams, such as:

- Traditional line printer format, also called *1403 format*
- Unformatted ASCII files without escape sequences
- DBCS (double-byte character set) ASCII files generated for an IBM 5577 or 5587.

#### Notes:

1. The **line2afp** transform does not handle DBCS ASCII files. For this type of input, use the **db2afp** transform.
2. ACIF accepts EBCDIC DBCS line data files that use SOSI (shift-out/shift-in) characters. ACIF must be coded with the **PRMODE** control statement set to SOSI1, SOSI2 or SOSI3, as documented in the *ACIF User's Guide*.

Line data is typically created by an application program. For example, an application might produce a bank statement that has line data indicating an account's daily balance.

The Infoprint line-data transform lets you format the following kinds of data with a page definition and form definition for printing on Infoprint-managed printer devices:

- S\370 line-mode data

This type of line data was originally designed for a 1403 printer, is typically generated on a S\370 host processor, and is usually EBCDIC characters with embedded control characters (carriage control, table reference characters, and so on). This type of line data can have double-byte code points and shift in\shift out controls.

- Mixed-mode data

S\370 line-mode data embedded with certain AFP structured fields (for example, **Include Page Segment**)

- Single-byte ASCII data with no embedded control characters except for newlines.
- Single-byte ASCII data that contains ANSI carriage-control characters, table-reference characters, or both.
- Single-byte ASCII data that contains carriage returns and form feed controls, if you specify the `asciinp` or `asciinpe` user-exit program.

When you transform the line-data job, you must specify a page definition and a form definition. For more information about the page definitions and form definitions available to you, refer to the *Infoprint Manager: Reference*. For more information about associating page definitions and form definitions with jobs, refer to the online help in the Infoprint Manager Administration GUI.

**Notes:**

1. You cannot use the line-data transform when printing files containing Proprinter ASCII.
2. When the **line2afp** command processes any unrecognized or unsupported keyword, **line2afp** issues a message, ignores the keyword, and continues processing any remaining keywords. The **line2afp** command then stops processing.
3. Infoprint Manager also lets you transform and print DBCS ASCII data and DBCS EUC data without a page definition. For more information, see the **db2afp** command in the *Infoprint Manager: Reference*.

**What are ANSI and machine carriage controls?**

In many environments (including IBM mainframes and most minicomputers), printable data normally contains a carriage control character. The carriage control character acts as a vertical tab command to position the paper at the start of a new page, at a specified line on the page, or to control skipping to the next line. The characters can be one of two types: ANSI carriage control or machine carriage control.

**ANSI carriage control characters:** The most universal carriage control is ANSI, which consists of a single character that is a prefix for the print line. The standard ANSI characters are listed in Table 18.

*Table 18. ANSI carriage controls*

ANSI	Action
space	Single space the line and print.
0	Double space the line and print.
-	Triple space the line and print.
+	Do not space line and print.
1-9	Skip to a vertical position on the page as defined by a vertical tab record ( which is either printer- or system-dependent) or by a Page Definition.
A,B,C	Skip to a vertical position on the page as defined by a vertical tab record ( which is either printer- or system-dependent) or by a Page Definition.

All ANSI control characters perform the required spacing before the line prints. Using **line2afp** command keywords and values, ANSI controls may be encoded in EBCDIC (**cctype=a**) or in ASCII (**cctype=z**).

**Machine carriage control characters:** Machine carriage controls were originally the actual hardware control commands for IBM printers, and are often used on non-IBM systems. Machine controls are binary values, not symbols. They are not represented as characters in any encoding and, therefore, machine controls cannot be translated. Some typical machine controls are listed in Table 19.

*Table 19. Machine carriage control characters*

Machine	Action
X'09'	Print the line and single space

Table 19. Machine carriage control characters (continued)

Machine	Action
X'11'	Print the line and double space
X'19'	Print the line and triple space
X'01'	Print the line (do not space)
X'0B'	Space one line immediately (do not print)
X'89'	Print the line, then skip to channel 1 (top of form)
X'8B'	Skip to channel 1 immediately (do not print)

Machine controls print before performing any required spacing. There are many more machine control commands than ANSI.

Carriage controls may be present in a file or not, but if you want to use carriage controls at all, every record in the file must contain a carriage control. If the file contains carriage controls but the **line2afp** command keyword and value **cc=no** is specified, the carriage controls are treated as printing characters. If no carriage controls are specified, the file prints as though it were single spaced.

### What are variable-length and fixed-length files?

The line-data transform program needs to know two things about a file in order to transform it:

- The length of each print record
- The kind of carriage control used

Some files contain information in each record that describes the record length; these are called variable-length files. Other files require an external definition of length; these are called fixed-length files.

MO:DCA structured fields are treated as a special case. All such structured fields are self-identifying and contain their own length. They do not need to contain a length prefix to be correctly interpreted, but are also processed correctly if the length prefix is present.

**Variable-length and fixed-length files:** Variable-length files may use a length prefix, which means they contain a prefix that identifies the length of the record in the file. Each record contains a field that gives the length of the record. If the record contains a length, that length must be a prefix for each record and it must be a 16-bit binary number that includes the length of the 2-byte length prefix. Use the **fileformat=record** keyword and value to identify files with length prefixes.

Variable-length files may use either a separator or a delimiter to indicate the end of a record, instead of using a length prefix. All of the bytes up to, but not including, the delimiter are considered part of the record. For compatibility with other systems, the default record separator for the **line2afp** command is X'0A'. Files created under Windows NT use carriage return/linefeed (X'0D0A') for a delimiter. You must specify **fileformat=stream,(newline=X'0D0A')** to process files created using Windows NT.

Infoprint Manager reads the first six bytes and tests for all ASCII characters (code points from X'00' to X'7F') to determine if a file is encoded in ASCII or EBCDIC. If no non-ASCII characters are found, the line-data transform program assumes that the file uses the ASCII **newline** character, X'0A'. Remember that for files created by

Windows NT, you should code `newline=X'0D0A'`, as shown above, instead of accepting the default. Otherwise, the transform assumes the file uses the EBCDIC **newline** character, `X'25'`. Because an input file can misguide the line-data transform, a set of rules has been established to determine how the transform processes the file.

Table 20.

Data Type	Newline Character
All EBCDIC	EBCDIC <code>X'25'</code>
All EBCDIC	ASCII <code>X'0D0A'</code> or <code>X'0A'</code> <sup>1</sup>
All ASCII	EBCDIC <code>X'25'</code> <sup>1</sup>
All ASCII	ASCII <code>X'0D0A'</code> or <code>X'0A'</code>
<p><b>1:</b> These combinations are possible only if a file contains a prefix with a string that indicates a different code set than actually exists.</p> <ul style="list-style-type: none"> <li>• For EBCDIC data with ASCII newlines, use <code>X'0320202020200A'</code> as the first seven bytes of the file.</li> <li>• For ASCII data with EBCDIC newlines, use <code>X'03404040404025'</code> as the first seven bytes of the file.</li> </ul>	

**Fixed-length files:** Fixed-length files contain records that are all the same length. No other separators or prefixes or self-identifying information exists that indicates the record length. You must know the record length and use the **fileformat=record, nnn** keyword and value, where *nnn* represents the length of each record.

### How does the **imageout** keyword affect processing?

The line-data transform converts image formats (IM1) in the input file, in overlays, and in page segments to uncompressed IOCA format, if **line2afp imageout=ioca** keyword and value is specified (the default). An uncompressed IOCA image may use a significantly higher number of bytes than an IM1 image and may take more processing time to convert, especially for shaded or patterned areas. Although IOCA is the MO:DCA-P standard for image data, and some data stream receivers may require it, all products may not accept IOCA data. All software products from the IBM Printing Systems do, however, accept IOCA data as well as IM1 image data.

If you are using non-IBM Printing Systems products, you may want to specify **imageout=asis**.

### Customizing the line data transform

Infoprint Manager provides several sample programming exits to assist you in customizing the line-data transform. Use of the programming exits is optional. You specify the names of the exit programs with the **inpexit**, **outexit**, and **resexit** keywords. Each of these keywords is described in the *Infoprint Manager: Reference*.

Infoprint Manager provides the following sample exits:

`install_path\exits\acif\apkinp.c`

Input record exit

`install_path\exits\acif\apkout.c`

Output record exit

`install_path\exits\acif\apkres.c`

Resource exit

In addition, Infoprint Manager provides the following user input record exits to translate line-data data streams:

*install\_path\exits\acif\apka2e.c*

Converts the ASCII stream data into the EBCDIC stream data.

*install\_path\exits\acif\asciinp.c*

Converts unformatted ASCII data that contains carriage returns and form feeds into a record format that contains ANSI carriage control characters. This exit encodes the ANSI carriage control character in byte 0 of every record.

*install\_path\exits\acif\asciinpe.c*

Converts unformatted ASCII data into a record format as does *asciinp.c*, and then converts the ASCII stream data into EBCDIC stream data.

The C language header file for all line-data transform exit programs is provided in the *install\_path\exits\acif\apkexits.h* directory, and the build rules for the line-data transform user exits reside in *install\_path\exits\acif\exit\_program*.

For more information about compiling user exit programs, refer to “Configuring data stream transform sequences” on page 191.

## Working with the transform for double byte text streams

Infoprint Manager includes the **db2afp** transform, a program that transforms both double-byte character set (DBCS) ASCII and Extended UNIX Code (EUC) files into the Advanced Function Presentation (AFP) data stream.

This section describes the following:

- “What are DBCS ASCII and EUC?”
- “What font resources are needed to print DBCS ASCII and EUC?”
- “Determining what code page your print jobs use and setting the correct environment variable” on page 190

### What are DBCS ASCII and EUC?

In ideographic languages like Japanese, Chinese, and Korean, there are thousands of characters. All of these characters cannot be represented with a single byte of information because a single byte only accommodates 256 characters. Therefore, at least one more byte of information is required.

In DBCS ASCII files, each ideographic character is exactly two bytes. In EUC files, each ideographic character may be two, three, or four bytes, depending on the EUC implementation and language. Single-byte ASCII characters may be mixed in with DBCS and EUC characters.

Infoprint Manager for Windows supports printing DBCS ASCII files in the Japanese and Traditional Chinese languages, which can contain formatting controls for the IBM 5577 or 5587 printers. Infoprint Manager for Windows also supports printing EUC files in the Japanese, Traditional Chinese, and Korean languages, but you must submit those jobs from a UNIX or AIX workstation. EUC files cannot contain any formatting control characters.

### What font resources are needed to print DBCS ASCII and EUC?

You can use the **db2afp** command to transform DBCS ASCII and EUC files that use the following code pages:

- 932 (Japanese PC)

- 950 (Traditional Chinese PC)
- 33722 or eucJP (Japanese EUC)
- 964 or eucTW (Traditional Chinese EUC)
- 970 or eucKR (Traditional Korean EUC)

**Note:** Code page 938 (Traditional Chinese PC) is not supported on Windows NT or Windows 2000. If your files use code page 938, you cannot use Infoprint Manager for Windows to print them.

Your Infoprint Manager server must be able to access the appropriate DBCS fonts when you print the transformed files. DBCS fonts are available for the MVS, VM, Windows NT, Windows 2000, and AIX operating systems as separately orderable licensed programs. To make the fonts available on your Infoprint Windows NT or Windows 2000 system, you must ensure that you have installed the fonts on your system and then make the double-byte fonts known to Infoprint Manager for Windows.

For more information on setting up font resources to print DBCS fonts, refer to “Fonts for printing DBCS ASCII and EUC” on page 200.

### Determining what code page your print jobs use and setting the correct environment variable

Before you transform a print job, you need to determine what code page it uses, then set the PSFDBLANG environment variable to that code page. If the job was created on an AIX or a Windows workstation, you can determine the code page that the job uses by finding out what code page is active on that system. On the system that the job was created on, open a **Command Prompt** window and type:

```
chcp
then press Enter. The system responds with
Active code page: xxx
```

where *xxx* represents a three- to five-digit number. Use this number to set the PSFDBLANG environment variable by following the steps below.

1. On your Infoprint Manager server system, click the Windows **Start** button and select **Settings ->Control Panel**.

**Note:** If you have more than one Infoprint Manager server system, you need to set this environment variable on all of the servers that contain actual destinations that will use the **db2afp** transform.

2. In the Control Panel window, double-click the **System** icon.
3. In the **System Properties** dialog, click the **Environment** tab.
4. In the **Variable** field, type PSFDBLANG.
5. In Table 21, locate the **Code Page Value** that you got from your system above.

Table 21. Code pages and their associated PSFDBLANG values

Code Page Value	PSFDBLANG Value	Language
932	J	Japanese PC
950	T	Traditional Chinese PC
33722 or eucJP	JE	Japanese EUC
964 or eucTW	CE	Traditional Chinese EUC
970 or eucKR	KE	Traditional Korean EUC

6. Find the **PSFDBLANG Value** that corresponds to that code page and type it in the **Value** field of the **System Properties** dialog.

**Note:** The PSFDBLANG Value is case sensitive. Be sure to type it in all caps.

7. Click **OK**.

The **db2afp** command assumes that all jobs use this code page as long as you do not specify either the **-i** flag or the **-e** flag when running the command from a **Command Prompt** window.

---

## Configuring data stream transform sequences

Infoprint Manager allows you to create a sequence for transforming print data before the system sends it to a printer. This provides users with a feature similar to the configurable transform sequences that you could create in PSF/2 using the **XFMLTR** utility.

You can create a transform sequence through the **Infoprint Manager Administration GUI** (for more specific information refer to the online help topic in the Infoprint Administration GUI titled *Server and transform tasks*). The transform sequence can be used for any print data processing, such as storing and forwarding print data, removing PostScript controls from a print file before sending it to an actual destination for printing, or viewing a file prior to printing it.

This section consists of the following topics:

- “Creating a transform object”
- “Defining a transform sequence” on page 193
- “Using the netware print program” on page 195

### Creating a transform object

To define a data stream transform object from the **Infoprint Manager Administration GUI** that takes an AFP input file and copies it to a file location on the hard drive without printing the output, use the following procedure:

1. Start the **Infoprint Manager Administration GUI**.
2. Click the **Server** menu, and select **Transform -->Create**.
3. In the **Create Transform** dialog, fill in the fields as shown in Figure 55 on page 192. These values create a transform that copies AFP input data to an `\afp` folder on a specific drive.

**Note:** Command attributes are provided so you can see how this transform could be created from the command line.



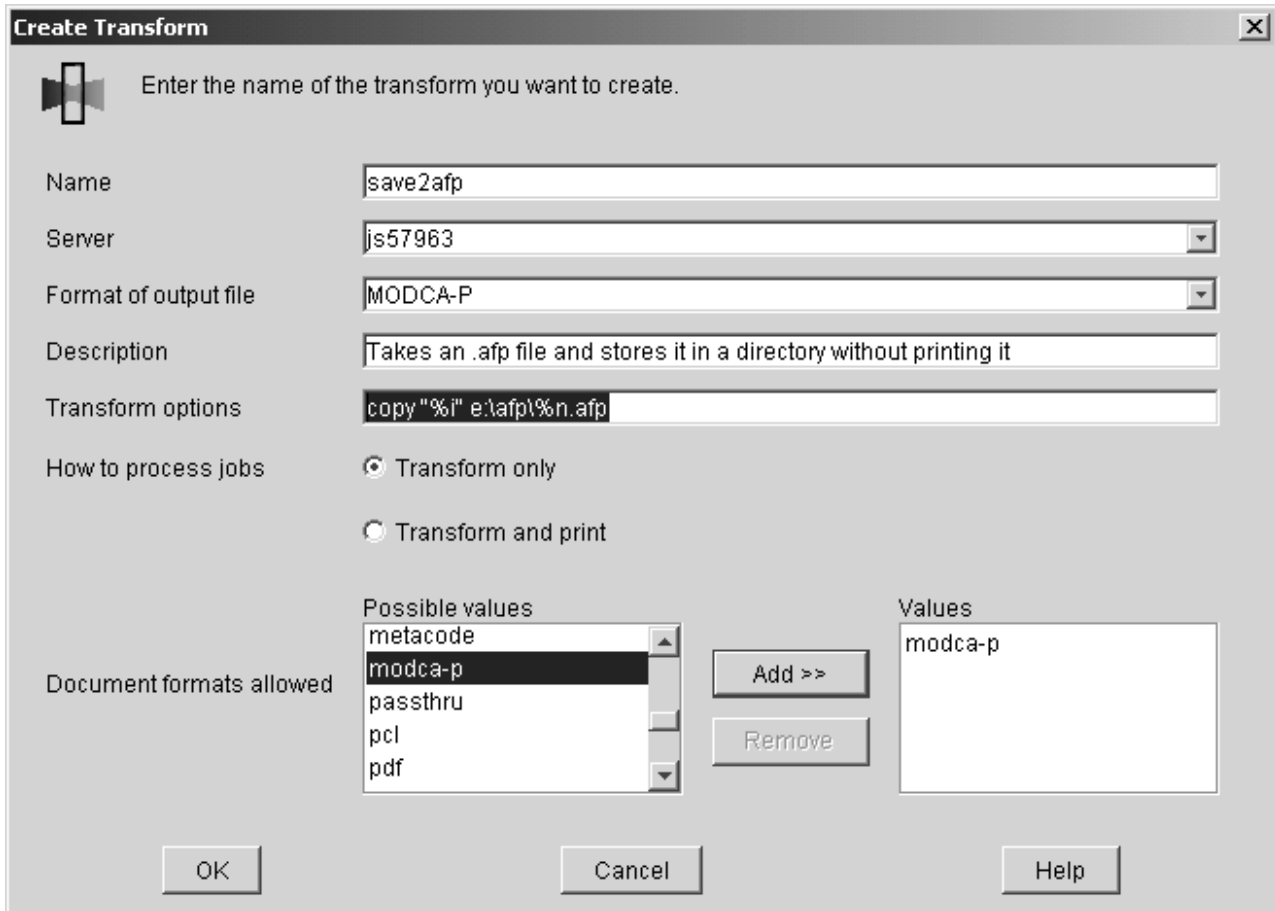


Figure 55. Create Transform dialog: define a transform that copies an AFP file to a directory without printing it

4. Click **OK**.

Infoprint Manager saves the transform under the name you provided in the **Name** field so that you can see its values by selecting **Transform-->Properties** from the **Servers** menu.

In the **Transform options** field, you can use a series of substitution variables to provide special options for the transform sequences. Infoprint Manager substitutes various strings for these variables when it generates the actual command to execute. These substitution variables are described in Table 22.

Table 22. Transform substitution variables

Transform options Substitution Variables	Meaning
%i	The name of the input file to transform.
%o	The name of the file in which to store the output of the transform. <b>Note:</b> If this is a non-terminating transform, data must be stored in the file named by %o.
%e	The name of the file in which to store any transform information or error messages. If anything is written to this file, it is logged in the Infoprint Manager server log.

Table 22. Transform substitution variables (continued)

Transform options Substitution Variables	Meaning
%j	The name of the original print file, minus the path (from the <b>document-file-name</b> attribute). <b>Note:</b> This should only be used to construct another name, such as a temporary file.
%n	The name of the original print file, minus the path and minus the extension (from the <b>document-file-name</b> attribute). <b>Note:</b> This should only be used to construct another name, such as a temporary file
%d	A text string that represents the document format of the input file. This value may be: <ul style="list-style-type: none"> <li>• <b>ASCII</b> for ASCII line data.</li> <li>• <b>AFPDS</b> for Advanced Function Presentation data</li> <li>• <b>PCL</b> for Printer Control Language data</li> <li>• <b>PS</b> for PostScript data</li> </ul>
%p	The value of the <b>destination-pass-through</b> attribute.
%q	The actual destination (printer) that performs the transform.
%#	The job-identifier.

## Defining a transform sequence

To associate a data stream transform sequence with an actual destination from the **Infoprint Manager Administration GUI**, use the following procedure:

1. Select the printer that you want to send the job to.
2. Click **Printer-->Properties** to open the **Printer Properties** notebook for the selected printer.
3. In the **Printer Properties** notebook, click the **Configuration** tab.

The data stream transforms that this printer can use are listed in the **Transforms to use** field.

**Note:** If you can't see the **Transforms to use** field, click **Show more**.

4. Use the **Add** and **Remove** buttons to specify the transforms in the sequence that they should be run in the **Values** field.

For example, you might want to create a two-step transform sequence that first runs the **postscriptxform** transform and then saves a copy of the generated AFP data in c:\afp \\*.afp. To accomplish this task, the **Values** field would contain the following:

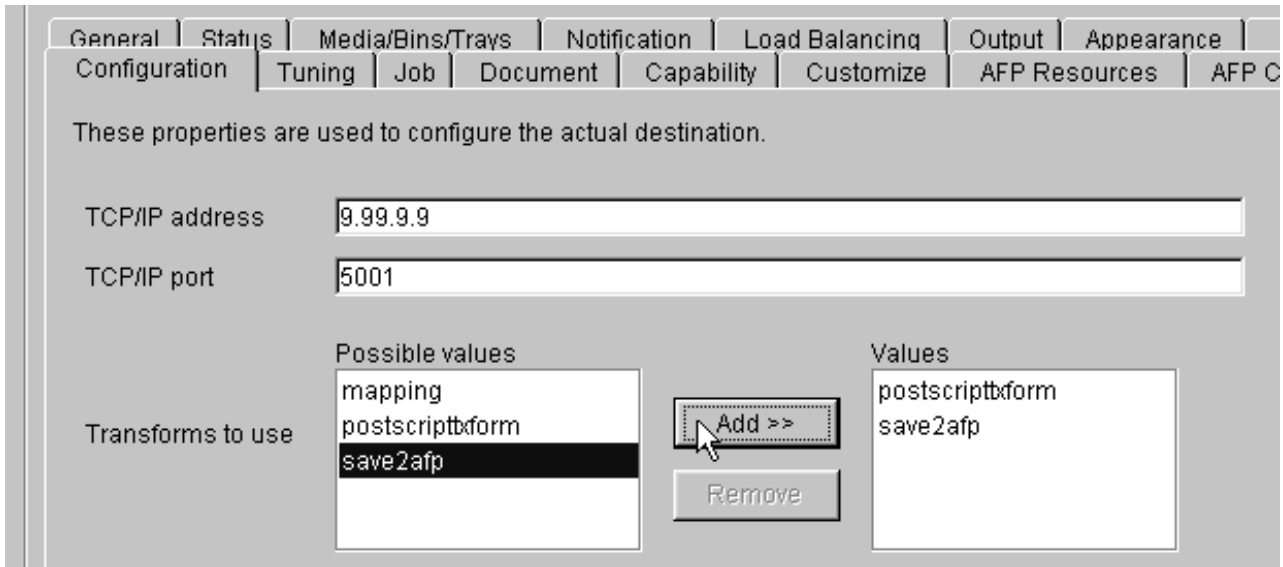


Figure 56. Printer Properties notebook: Transforms to use

where **postscriptxform** is a transform object with the following values:

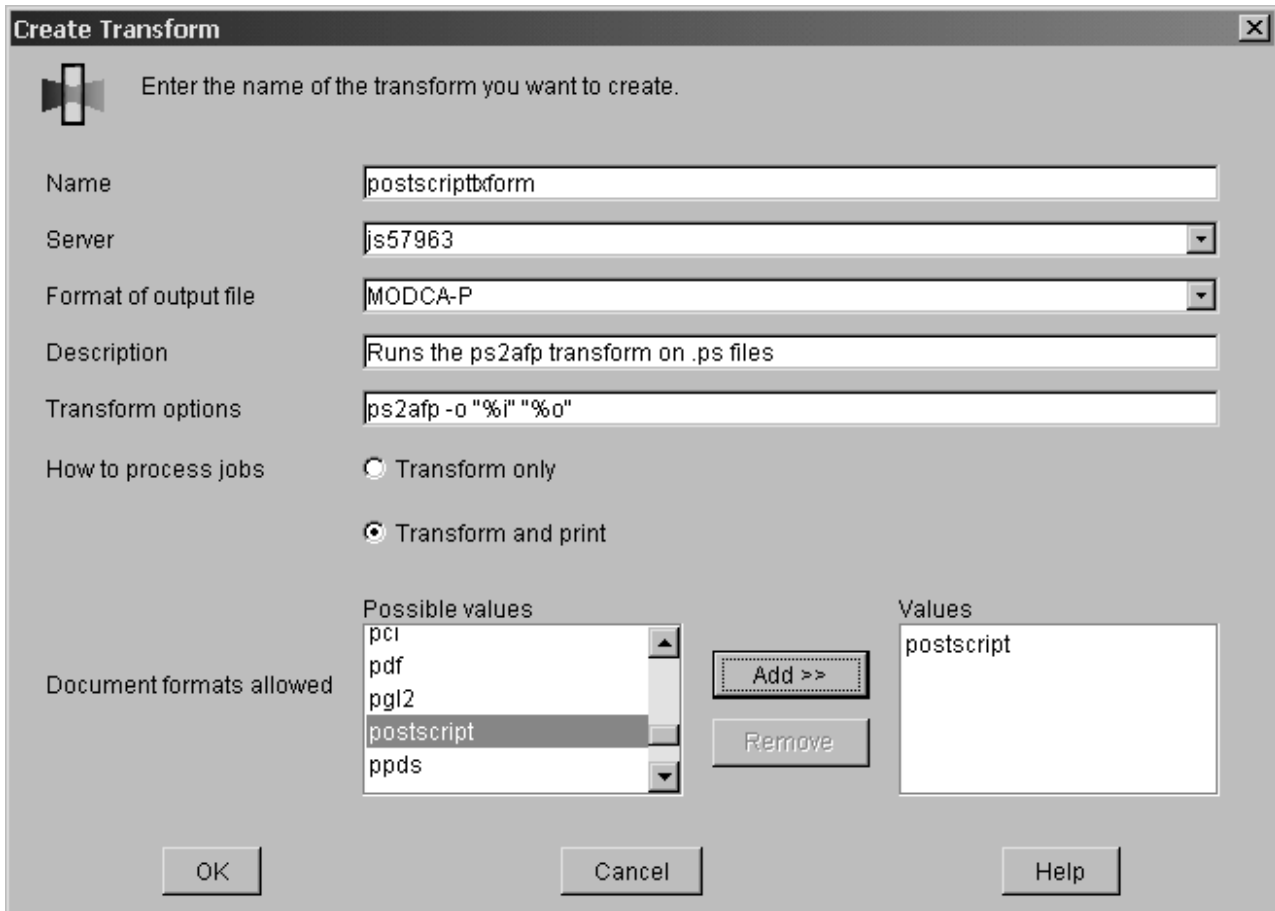


Figure 57. Create Transform dialog: Create a transform that converts PostScript data into AFP

5. You could also create a one-step transform sequence that sends output to a customized program (residing on the **D** drive in the `tools\my_ps_filer` folder)

that removes PostScript controls from a file to simplify printing at a particular destination. If this transform were named ps2remv, it might contain the following values:

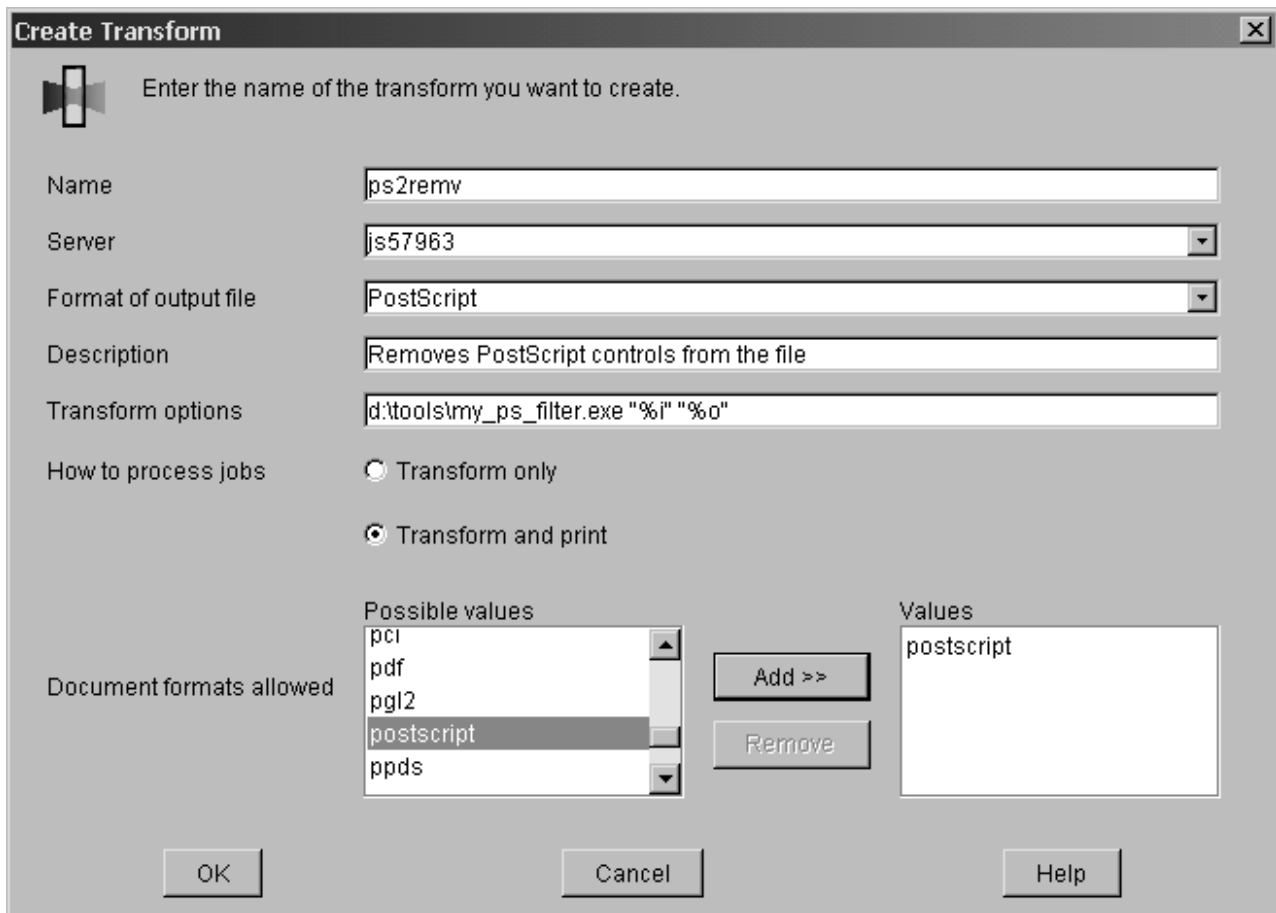


Figure 58. Create Transform dialog: Create a transform that removes the PostScript controls from a file

6. When you have entered the transforms in the correct sequence, click **Apply** to associate this transform sequence with the selected printer.

If you prefer to use the command line, you can use the following Infoprint commands from an MS/DOS window with **transform** objects:

- **pdcreate**
- **pddelete**
- **pdset**
- **pdls**

For more information about the attributes in creating transform sequences, refer to the **Attributes for Transforms** topic in **Chapter 7. Infoprint Object Attributes of the Infoprint Manager: Reference**.

## Using the netware print program

From a **Command Prompt** window on an Infoprint Manager for Windows NT or Windows 2000 server, you can submit Netware Version 4 Release 1 jobs to an Infoprint Manager printer. The command removes the Netware-generated

Postscript header and submits the job for printing by using the **JobName** and **JobOwner** parameter values from the original header.

To submit a Netware-generated job, type the following in a Command Prompt window, substituting the italicized terms with the appropriate values as described below.

*netwareinput\_name output\_file\_name log\_dest\_name*

*input\_file*

The fully-qualified name of the file from Netware 4.1 with a Postscript header.

*output\_file*

The fully-qualified name of the file from Netware 4.1 without the Postscript header (after the transform has run).

*log\_dest\_name*

The name of the Infoprint Manager logical destination that the job is submitted to after the Postscript header has been removed.

The following example submits a PostScript file from Netware (%i) to be transformed into file without the PostScript header (%o), which is then submitted to a logical destination called **happyprinter1**.

```
netware %i %o happyprinter1
```

---

## Chapter 24. Working with fonts and global resource identifiers

---

### Working with Infoprint fonts

This topic describes the fonts required for printing different data formats. It also describes what you must do so that Infoprint can use them. This material covers the following font topics:

- “Fonts for printing transformed PostScript and PDF data”
- “Fonts for printing DBCS ASCII and EUC” on page 200
- “Fonts for printing line data” on page 201

#### Fonts for printing transformed PostScript and PDF data

The Infoprint PostScript transform program uses Type 1 outline fonts when transforming PostScript and PDF files. Infoprint includes the IBM Type 1 outline fonts and these fonts are installed in the *install\_path* \ps\fonts path during installation. If you have other Type 1 outline fonts, you can also use them with the transform program.

*install\_path* indicates the path where you have installed Infoprint Manager. You can view that path from the **Management Console for Infoprint Manager Server** by clicking on the **Edit -> Service Configuration** path and checking the **Install path** field.

**Note:** When Infoprint runs the PostScript transform program during job submission, it can search other directories for fonts.

The following section contains the following topics:

- “Font mapping files”
- “Specifying font substitution through initialization files” on page 199

#### Font mapping files

A font-mapping file identifies the file names of the Type 1 outline fonts on the Windows NT or Windows 2000 operating system. The Infoprint PostScript transform program requires at least one font-mapping file. Infoprint installs the default font-mapping file, **fonts.map** in the *install\_path*\ps path during installation. If you have other Type 1 outline fonts installed on your system, you can create additional font-mapping files to define their names.

**Creating a PostScript font mapping file:** When you create your own font-mapping files, consider that:

- You can create more than one font-mapping file.
- At least one font-mapping file must contain the Courier font. The PostScript transform program substitutes Courier for any missing fonts.

Use the Infoprint **mkfntmap** command to create a font-mapping file for use with the Infoprint PostScript transform program. You specify one or more input files containing Type 1 outline fonts and a name for the font-mapping file.

For example, to use the input file FontFile and create a font-mapping file named **font.map**, enter:

```
mkfntmap FontFile >font.map
```

**Using font-mapping files with the ps2afp or pdf2afp command:** By default, Infoprint uses the **fonts.map** font-mapping file when you issue the **ps2afp** or the **pdf2afp** command; you do not have to specify the name of the default font-mapping file with the command.

To use font-mapping files that you have created when you issue the **ps2afp** command, you must do the following:

- Enter the path and name of the font-mapping file as the value of the **ps\_font\_map\_files** keyword in the transform daemon configuration file, which is named **ps2afpd.cfg** and located in the *install\_path*\ps2afp\ folder (for more information on this topic, see “Customizing the PCL, PostScript, and PDF transforms” on page 182). For performance reasons, this is the recommended method. You can specify more than one font-mapping file, if necessary. Separate the font-mapping files with colons.

For example, to specify the font-mapping files **font1.map** and **font2.map**, enter the following:

```
ps_font_map_files=c:\path\font1.map; c:\path\font2.map
```

- Enter the path and name of the font-mapping file as the value of the **ps\_font\_map\_files** transform command configuration file. Use the same syntax as described for entering the value in the transform daemon configuration file. Using this method can result in significant performance degradation.
- Specify the font-mapping file, including its path name, from the command line using the **-F** flag of the **ps2afp** or the **pdf2afp** command. You can specify multiple files using multiple **-F** flags; Infoprint concatenates them from left-to-right (first entered to last entered) in that order:

```
ps2afp -F c:\path\font.map -F C:\path2\font2.map
```

This method can also result in degraded performance.

- If the path to the font mapping file contains blanks, you must surround the qualified pathname in double-quotes:

```
ps2afp -F"D:\Program Files\IBM Printing Systems\ps\fonts.map"
```

Do not enclose a path that contains spaces in quotes(""); the transform will fail with invalid font mapping file errors.

- If you want to specify two mapping files in a command, you must ensure that each file's full pathname is specified, as in the following examples:

```
ps2afp -F"D:\Program Files\IBM Printing Systems\ps\font1.map; D:\Program Files\IBM Printing Systems\ps\font2.map"
```

```
ps2afp -F"D:\Program Files\IBM Printing Systems\ps\font1.map"  
-F"D:\Program Files\IBM Printing Systems\ps\font2.map"
```

- If you do not specify a drive letter, but expect the transform to find a mapping file using a relative path, the default drive is based on the *install\_path* because that is where the **ps2afp** executables reside.

If your file is on the **D:** drive, the command line is on the **C:** drive, and the product is installed on the **E:** drive, Infoprint attempts to use the **E:\samp1.map** font mapping file:

```
C:\> ps2afp -out.afp -F\samp1.map d:\incoming.ps
```

However, if you specify the following command, Infoprint attempts to use the **C:\ps\files\samp1.map** font mapping file:

```
C:\ps\files> ps2afp -out.afp -F\samp1.map d:\incoming.ps
```



If you create your own font mapping file -- either by using the **mkfntmap** command or manually -- and the path to the fonts contains blanks, the font mapping file needs to double-quote the paths as well. For example, if your fonts reside in **E:\Program Files\IBM Printing Systems\ps\fonts** , the font-mapping file could have any of the following variations:

**PATH:**

```
"E:\Program Files\IBM Printing Systems\ps\fonts"
```

**FONT:**

```
AvantGarde-Book AvantGarde-Book
```

**FONT**

```
AvantGarde-Book "E:\Program Files\IBM Printing Systems\ps\fonts\AvantGarde-Book"
```

**Note:** You can use either the **ps2afp -F** or the **pdf2afp -F** command flag or the **ps\_font\_map\_files** keyword in the transform command configuration file to specify a font-mapping file. If the value from those three sources is different than that specified in the transform daemon configuration file, the transform daemon restarts the PostScript interpreter so that the new value for the font-mapping file takes effect for that one job. However, restarting the PostScript interpreter decreases performance, because the interpreter is restarted again with the font-mapping file in the configuration file for the very next PostScript job.

### Specifying font substitution through initialization files

You can issue specific PostScript commands to specify whether printers substitute fonts for those defined in job tickets that are neither inline with the job nor resident on the printer. To perform this task, modify the **UserInit** file that is located in the `\install_path\ps` file system.

To ensure that fonts not inline with the job or resident on your printer substitute Courier fonts to allow the job to print, specify the following in the **UserInit** file:

```
%!  
  
turnFontSubstitutionOn
```

To ensure that fonts not inline with the job or resident on your printer do not print, specify the following in the **UserInit** file:

```
%!  
  
turnFontSubstitutionOff
```

**Note:** For your convenience, IBM has provided a sample **UserInit** file in the `\install_path\ps path` (used by the IBM Infoprint 4000 PostScript transform) and in the `\install_path\ps path` (used by the IBM Infoprint 60 PostScript transform): `UserInit.turnFontSubstitutionOn.sample`.

You can use Notepad or your text editor of choice to rename and use this **UserInit** file at your installation.

## Fonts for printing DBCS ASCII and EUC

In ideographic languages, like Japanese, Chinese, and Korean, there are thousands of characters. A single byte of information cannot represent all of these characters because a single byte only accommodates 256 characters. Therefore, at least one more byte of information is required.

For DBCS ASCII files, each ideographic character is either one byte or two bytes for each character. For Extended UNIX Code (EUC) files, each ideographic character may be two, three, or four bytes, depending on the EUC implementation and language. Single-byte ASCII characters may be mixed in with DBCS ASCII and EUC characters.

Infoprint supports printing DBCS ASCII and EUC files in the following formats:

- DBCS ASCII files in the Japanese and Traditional Chinese languages, which can contain formatting controls for the IBM 5577 or 5587 printers.
- EUC files in the Japanese, Traditional Chinese, and Korean languages. EUC files cannot contain any formatting control characters.

The following section contains the following topics on printing with DBCS Fonts::

- Fonts required to print a double-byte transformed file
- Installing DBCS fonts on Windows NT and Windows 2000
- Setting up font resources for DBCS ASCII and EUC printing
- Printing Japanese DBCS messages at the end of a job

### Fonts required to print a double-byte transformed file

You can use the `db2afp` transform command to transform input files that use the following code pages:

- Japanese PC (code page IBM-932)
- Japanese EUC (code page IBM-eucJP)
- Traditional Chinese PC (code page IBM-950)
- Traditional Chinese EUC (code page IBM-eucTW)
- Korean EUC (code page IBM-eucKR)

The transformed files contain font references to the double-byte character set. You set the character set and code page you want by either setting the **PSFDBLANG** environment variable or using the **default-character-mapping** default document attribute defined in the *Infoprint Manager: Reference*. When using the **default-character-mapping** default document attribute, you must also specify `document-format=debs-ascii` for each applicable document or default document.

To set the **PSFDBLANG** environment variable, refer to the **Determining what code page your print jobs use and setting the correct environment variable** section in "Working with Infoprint Manager transform programs" on page 181.

After you have used the `db2afp` command to transform DBCS ASCII and EUC files into AFP data stream files, you must have access to DBCS fonts when you print the transformed files. The DBCS fonts for Japanese, Traditional Chinese, and Korean are available on the *AFP Font Collection*, which is a separately orderable feature of Infoprint Manager.

## Installing DBCS fonts on Windows NT and Windows 2000

To make the fonts available to Infoprint on your system once you have the licensed programs, you can either use the Windows NT or Windows 2000 licensed programs to install the fonts, or copy the fonts to a particular directory on your Windows NT or Windows 2000 system.

## Setting up font resources for DBCS ASCII and EUC printing

To print the transformed files that contain font references to the double-byte character set, you must make the double-byte fonts known to Infoprint through one of the following methods:

- Create a **resource-context** object that identifies the location of the double-byte fonts and associate the **resource-context** object with a default-document object and an Infoprint logical destination. Using this method makes the fonts known to Infoprint for any job submitted to the logical destination associated with the default-document object. For this procedure, see Chapter 13, “Creating a new resource-context object” on page 95.
- Add the drives and specific folders to the search path for actual destinations using the following procedure from the **Infoprint Administration GUI**:
  1. From the **Infoprint Administration GUI** main window, highlight the actual destination.
  2. From the main menu, select the **Printer-->Properties** path to open the selected printers’ **Printer Properties** window.
  3. From the **Printer Properties** window, select the **Document PSF Resources** tab.
  4. From the **Document PSF Resources** tab, you can specify the fully-qualified path where the double-byte fonts reside in the **Location of Resources** field.

This makes the fonts known to Infoprint for any job processed by this actual destination.

## Printing Japanese DBCS fonts at the end of a job

You can have DBCS messages print in Japanese at the end of each DBCS print job. As with printing any DBCS jobs, you must have already installed the appropriate DBCS fonts on your system, and your printer must be DBCS-enabled. Also, you must have installed the font from the *AFP Font Collection – Japanese Fonts* CD-ROM to support printing the Japanese DBCS message page. If you have installed this prerequisite and can print DBCS output in Japanese, this support is enabled and messages print in Japanese automatically.

Please note that if you do not install the appropriate fonts, Infoprint Manager defaults to printing the appropriate message in English.

## Fonts for printing line data

When you specify a coded font name with the **chars** keyword of the **line2afp** command or with the **chars** document attribute, the font name is limited to four characters, excluding the two-character prefix.

The following table provides a list of the IBM Expanded Core Fonts for use with unformatted ASCII input data. Infoprint stores these coded fonts in the *install\_path*\fontlib path. There are copies of the eight-character names that correspond to the six-character names that reside in the same location.

For the names of other coded fonts, refer to *IBM AFP Fonts: Font Summary*.

Table 23. IBM Expanded Core Fonts

Type Family	Point Size	Coded Font Name	Short Name (for chars keyword)
Courier	7	X0423072	X04272
Courier	8	X0423082	X04282
Courier	10	X0423002	X04202
Courier	12	X04230B2	X042B2
Courier	14	X04230D2	X042D2
Courier	20	X04230J2	X042J2
Helvetica	6	X0H23062	X0H262
Helvetica	7	X0H23072	X0H272
Helvetica	8	X0H23082	X0H282
Helvetica	10	X0H23002	X0H202
Helvetica	11	X0H230A2	X0H2A2
Helvetica	12	X0H230B2	X0H2B2
Helvetica	14	X0H230D2	X0H2D2
Helvetica	16	X0H230F2	X0H2F2
Helvetica	18	X0H230H2	X0H2H2
Helvetica	20	X0N230J2	X0N2J2
Helvetica	24	X0N230N2	X0N2N2
Helvetica	30	X0H230T2	X0H2T2
Helvetica	36	X0H230Z2	X0H2Z2
Times New Roman	6	X0N23062	X0N262
Times New Roman	7	X0N23072	X0N272
Times New Roman	8	X0N23082	X0N282
Times New Roman	9	X0N23092	X0N292
Times New Roman	10	X0N23002	X0N202
Times New Roman	11	X0N230A2	X0N2A2
Times New Roman	12	X0N230B2	X0N2B2
Times New Roman	14	X0N230D2	X0N2D2
Times New Roman	16	X0N230F2	X0N2F2
Times New Roman	18	X0N230H2	X0N2H2
Times New Roman	20	X0N230J2	X0N2J2
Times New Roman	24	X0N230N2	X0N2N2
Times New Roman	30	X0N230T2	X0N2T2
Times New Roman	36	X0N230Z2	X0N2Z2

---

## Working with global resource identifiers

Infoprint can identify the fonts required for a job, access AFP font files that are installed on or NFS-mounted to your Windows system, and download the appropriate fonts to an Infoprint-managed printer device. However, some Infoprint printers can use fonts that are resident in the printer, which saves the time it takes to download these fonts. Because the font files on the Windows system do not share the same names as the printer-resident fonts, Infoprint uses global resource identifiers (GRIDs) to map the system-resident fonts to the printer-resident fonts.

### Uses of GRID files

GRID files contain preassigned mappings that you can modify to map system-resident font file names to printer-resident font identifiers. These preassigned mappings include both single-byte character set (SBCS) and double-byte characters set (DBCS) outline fonts.

If you have a printer that supports outline fonts, you can use the GRID files to map raster character-set names to outline font global identifiers.

GRID files also support Mixed Object Document Content Architecture for Presentation (MO:DCA-P) files that specify fonts using GRIDs rather than character-set names. You can customize the GRID files to define which fonts Infoprint uses when the data stream of the job specifies GRIDs.

### GRID files that come with Infoprint Manager

Infoprint Manager provides four GRID files that you can customize to use with the types of printer devices that you have and the types of jobs that you print. These files are **charset.grd.sample**, **codepage.grd.sample**, **cpgid.grd.sample**, and **fgid.grd.sample**, and they are installed in the `<install path>\grid` directory. Descriptions of each file are provided below.

#### **charset.grd.sample**

Specifies which printer-resident fonts are activated for the character-set names found within the data stream of the job.

This file maps the font character-set name to a:

- Font global identifier (**fgid**)
- Graphic character set global identifier (**gcsgid**)
- Font width
- Vertical size value
- Set of font attributes (bold, italic, and doublewide)

Figure 59 shows an example of the format of a line in the character set sample file.

```
# FCS name -> fgid gcsgid width vsize attr #
#-----#
C0L00GSC 398 - 96 120 - # GOTHIC CONDENSED 1
```

Figure 59. Sample File for a Character Set

#### **codepage.grd.sample**

Specifies which printer-resident fonts are activated for the code page names found within the data stream of the job.

This file maps a code page to the:

- Code page global identifier (**cpgid**)

- Graphic character set global identifier (**gcsgid**)

Figure 60 shows an example of the format of a line in the code page sample file.

```
# code page name -> cpgid gcsgid #
#-----#
      T1000038          38   123 # US-ASCII Character Set      1
```

Figure 60. Sample File for a Code Page

### **fgid.grd.sample**

Specifies which font character set Infoprint should download when substituting for a global resource identifier that it finds in the data stream of the job.

This file maps the following to a font character set (FCS) name:

- A font global identifier (**fgid**)
- A graphic character set global identifier (**gcsgid**)
- A font width
- A vertical size value

Figure 61 shows an example of the format of a line in the font global identifier sample file.

```
# fgid gcsgid width vsize -> FCS name #
#-----#
      3           0   144   240 C0E0DE10 # DELEGATE 12 POINT  1
```

Figure 61. Sample File for a Global Identifier

### **cpgid.grd.sample**

Specifies which code page Infoprint should download when substituting for a global resource identifier that it finds in the data stream of the job.

This file maps a code page global identifier and a graphic character set global identifier to a code page name. Figure 62 shows an example of the format of a line in the code page identifier sample file.

```
# cpgid gcsgid -> code page name #
#-----#
      29           0      T1V10871 # OLD ICELANDIC      1
```

Figure 62. Sample File for a Code Page Identifier

For a detailed explanation of how the different types of identifiers combine to produce fonts, see *AFP Fonts: Font Summary*.

If you have a job that specifies a font that is not resident on your printer, you can use the GRID files to map the missing font to one with the same point size that does reside on your printer. To understand what resident fonts your printer device has, consult both your printer documentation and *Advanced Function Presentation: Printer Information*.

## **Infoprint search order for GRID files**

Infoprint searches the following directories, in the order shown, for GRID files:

1. An internal list that matches the **charset.grd.sample** file.
2. <install path>\grid

3. `<install path>\var\psf\printername`, where *PrinterName* is the name of a valid Infoprint actual destination.

**Note:** When the same mapping is found in one of these files, Infoprint uses the last one.

When you install Infoprint Manager, sample GRID files are installed in the `<install path>\grd` directory. You can maintain a central location for new or modified GRID files for specific printers by storing files in the `<install path>\var\psf\PrinterName` directory.

If you are mapping raster fonts to outline fonts, you can map multiple names to the same GRID part so that different sized fonts can apply to your print job.

**Notes:**

1. The new or modified GRID files you create have the same names as the sample files except that you delete **.sample** from each file name.
2. After creating or modifying GRID files, you must shut down and restart the physical printer represented by *PrinterName* for the changes in the file to take effect.

## Understanding the general syntax rules and allowable values for GRID files

To tailor the Infoprint-supplied GRID files for your own system needs, you need to understand the general syntax rules for the four GRID files and the allowable values for the fields within the files.

### Syntax rules that apply to all types of GRID files

GRID files are simple ASCII text files that you can modify using any standard text editor. The following rules apply to all of the GRID files.

- No line in the file can contain more than 255 characters
- Fields within a line must be separated with one or more delimiters (spaces)
- The pound sign (#) indicates the start of a comment, which causes Infoprint to ignore the remainder of that line
- A dash (-), indicates the absence of a particular value, for which Infoprint substitutes a zero (0)
- An asterisk (\*) indicates that a wildcard value (any numeric decimal) is accepted.
- Infoprint ignores blank lines and extraneous fields

### Allowable values for the charset.grd file

You can specify the following values for fields in the GRID file for a character set for a font:

#### *fgid*

Identifies the character set identifier for the font. Specify a numeric value from 1 to 65534 or enter a dash, -, if you want to disable the mapping of this character set to GRID values.

#### *gcsgid*

Identifies a global identifier for the font. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no **gcsgid**. If you specify an asterisk (\*), Infoprint issues an error message.



*width*

Identifies the width specified in the character set. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no width. If you specify an asterisk (\*), Infoprint issues an error message.

*vertical\_size*

Identifies the vertical size specified in the character set. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no vertical size. If you specify an asterisk (\*), Infoprint issues an error message.

*attribute\_field*

Indicates the attributes of the character set. Specify a lowercase b (bold), i (italic), d (doublewide), or enter a dash (-) to specify no attribute.

### **Allowable values for the codepage.grd file**

You can specify the following values for fields in the GRID file for a code page for a font:

*cpgid*

Identifies the code page identifier for the font. Specify a numeric value from 1 to 65534 or enter a dash (-) if you want to disable the mapping of this character set to GRID values.

*gcsgid*

Identifies a global identifier for the code page. Specify a numeric value from 0 to 65534 or enter a dash (-) to specify no **gcsgid**. If you specify an asterisk (\*), Infoprint issues an error message.

### **Allowable values for the fgid.grd file**

You can specify the following values for fields in the GRID file for a font global identifier:

*fgid*

Identifies the global identifier for the font. Specify a numeric value from 1 to 65534 or enter an asterisk (\*) to indicate a wildcard value. If you specify a dash (-), Infoprint issues an error message.

*gcsgid*

Identifies the global identifier for the font. Specify a numeric value from 0 to 65534 or enter an asterisk (\*) to indicate a wildcard value. If you specify a dash (-), Infoprint issues an error message.

*width*

Identifies the number of characters per horizontal inch. Specify a numeric value from 1 to 65534 or enter an asterisk (\*) to indicate a wildcard value. If you specify a dash (-), Infoprint issues an error message.

*vertical\_size*

Identifies the vertical size of the font. Specify a numeric value from 1 to 65534 or enter an asterisk (\*) to indicate a wildcard value. If you specify a dash (-), Infoprint issues an error message.

### **Allowable values for the cpgid.grd file**

You can specify the following values for fields in the GRID file for a code page global identifier:

*cpgid*

Identifies code page identifier for the font. Specify a numeric value from 1 to 65534.

*gcsgid*

Identifies the global identifier for the font. Specify a numeric value from 0 to 65534 or enter an asterisk (\*) to indicate a wildcard value. If you specify a dash (-), Infoprint issues an error message.

## Modifying GRID files

The following section describes the two ways you can modify GRID files to support the printer devices and types of jobs in your production printing environment.

**Note:** If you are using Infoprint Manager to print from either the IBM 6404 Line Matrix printer, the IBM 6408 Line Matrix printer, or the 6408 Line Matrix printer in both native and 4234 emulation mode, you must modify both the **charset.64xx.grd** and the **codepage.64xx.grd** files as described in “Modifying the charset and codepage GRID files” and “Modifying the FGID and CPGID GRID files” on page 208.

### Modifying the charset and codepage GRID files

You can avoid having Infoprint download fonts by adding font entries that map the font character set or code page that is most referenced in jobs to a global identifier for a resident font.

For example, if many of your jobs specify the Prestige 10 point font, which is character set C0S0PR10, and that font is not resident on your IBM 3812 printer diskette, you can map the Prestige 10 point font to a similar font that does reside on your IBM 3812 printer diskette. In the following procedure, you map the Gothic 10 point font, character set C0D0GT10, that is a printer-resident font to the Prestige 10 point font.

Perform the following steps:

1. Open the file `<install path>\grd\charset.grd.sample` in a text editor such as Notepad.
2. Select **File** -> **Save as** . Rename the file **charset.grd** and save it into the `<install path>\var\psf\PrinterName` directory, where *PrinterName* is the name of the Infoprint actual destination representing the 3812 printer device.
3. Edit the **charset.grd** file you just created. Copy the following line for the Gothic 10 point printer-resident font:  

```
C0D0GT10 40 - 144 240 # GOTHIC TEXT 10
```
4. Change the first entry in the copied line (in the **FCS name** column) to the character set identifier of the Prestige 10 point font that you want to map to the Gothic 10 point font. You can change the comment at the end of the copied line to identify the mapping change you are making.  

```
C0S0PR10 40 - 144 240 # PRESTIGE 10 mapped to GOTHIC TEXT 10
```
5. Search the remainder of the **charset.grd** file to ensure that it contains no other C0S0PR10 entries. A later entry of the same character set would replace the entry you just made.
6. Save your changes and close the file.

If you print many jobs that specify the personal computer ASCII codepage for Iceland, T1000861, but that codepage is not resident on your printer diskette, you can map codepage T1000861 to a similar codepage that does reside on your printer diskette, the personal computer multilingual codepage for ASCII data, T1000850.

Perform the following steps:

1. Open the file `<install path>\grd\codepage.grd.sample` in a text editor such as Notepad.
2. Select **File** -> **Save as** . Rename the file `codepage.grd` and save it into the `<install path>\var\psf\PrinterName` directory, where *PrinterName* is the name of the Infoprint actual destination representing the 3812 printer device.
3. Edit the `codepage.grd` file you just created and copy the following line for the personal computer multilingual codepage for ASCII data:  

```
T1000850      850      980 # PC MULTILINGUAL
```
4. Change the first entry in the copied line (in the **code page name** column) to the codepage identifier of the personal computer ASCII codepage for Iceland font that you want to map to the multilingual codepage. You can change the comment at the end of the copied line to identify the mapping change you are making.  

```
T1000860      850      980 # ICELAND MAPPED TO MULTILINGUAL
```
5. Search the remainder of the `codepage.grd` file to ensure that it contains no other T1000860 entries. A later entry of the same character set would replace the entry you just made.
6. Save your changes and close the file.

### Modifying the FGID and CPGID GRID files

You can add new entries to map your GRID data to the resident fonts in your printer by modifying either the `fgid.grd.sample` file or the `cpgid.grd.sample` file. If you have a printer that does not support the outline font technology (such as the IBM 3835 Advanced Function Printer), IBM recommends that you map all the *CZnnnn* entries to raster font character-set names. If you do not create this mapping, Infoprint issues an error message and does not print the job.

For example, if you wanted to map the Times New Roman Latin 1 character set to the raster version, follow these steps.

1. Open the file `<install path>\grd\fgid.grd.sample` in a text editor such as Notepad.
2. Select **File** -> **Save as** . Rename the file `fgid.grd` and save it into the `<install path>\var\psf\PrinterName` directory, where *PrinterName* is the name of the Infoprint actual destination representing the printer device.
3. Edit the file that you just created and copy the following line:  

```
2308  2039 * *  CZN200      # Times New Roman Latin1
```
4. Change the entry in the **FCS name** column to CON20000.  

```
2308  2039 * *  CON20000   # Raster version of TNR Latin 1
```
5. Save your changes and close the file.

After this substitution, Infoprint prints jobs that specify the font character-set name CZN200 and that processed on the physical printer for which you made the change using the raster version of the font. The CZN200 character set now maps to:

- An FGID of 2308
- A GCSGID of 2039
- A vertical size of 65535
- A width of 0

**Note:** For more information about the different values available for font character sets and code pages, see "IBM Font Interchange Information" in *IBM Data Stream and Object Architectures Mixed Object Document Content Architecture Reference*.

Because the IBM 3835 Advanced Function Printer does not support any resident outline fonts, the **fgid.grd.sample** file maps the **FGID** and the **GCSGID** back to the **C0N20000** character set. Then, Infoprint searches the resource library search path to locate the **C0N20000** character for downloading with the job.

To modify the **cpgid** file so that the personal computer ASCII codepage for Iceland maps to the multilingual codepage for ASCII data as described in “Modifying the charset and codepage GRID files” on page 207, perform the following steps:

1. Open the file **<install path>\grd\fgid.grd.sample** in a text editor such as Notepad.
2. Select **File -> Save as** . Rename the file **cpgid.grd** and save it into the **<install path>\var\psf\PrinterName** directory, where *PrinterName* is the name of the Infoprint actual destination representing the printer device.
3. Edit the **cpgid.grd** file you just created and copy the following line for the personal computer multilingual codepage for ASCII data:  
850 980 T1000850 # PC MULTILINGUAL
4. Change the first entry in the copied line, in the **cpgid** column, to the codepage identifier of the personal computer ASCII codepage for Iceland font that you want to map to the multilingual codepage. You can change the comment at the end of the copied line to identify the mapping change you are making.  
861 980 T1000850 # ICELAND MAPPED TO MULTILINGUAL
5. Search the remainder of the **cpgid.grd** file to ensure that it contains no other 861 entries. A later entry of the same character set would replace the entry you just made.
6. Save your changes and close the file.

**Verifying the GRID files:** During physical printer initialization, Infoprint examines the contents of the GRID files. If Infoprint detects any syntax errors, it reports an error condition and fails to enable the physical printer. To correct these errors, you must edit the GRID files that fail. For information on what files, lines, or fields are in error, you must access the GRID **error.log** file for the physical printer, which is located in **<install path>\var\psf\PrinterName**.

## Preventing Infoprint from using GRID files

If you have a 300-pel printer but you print 240-pel jobs, the printer-resident fonts may have different line spacings and endings in the printed output. For some types of billing statements, these line endings are inappropriate. You can solve this problem by preventing Infoprint from using the GRID files, which in turn keeps Infoprint from using printer-resident fonts.

1. Rename your customized GRID files. For example, open Windows Explorer and navigate to the **<install path>\var\psf\PrinterName** directory, where *PrinterName* is the Infoprint actual destination that you don't want to use GRID files with. Find the **charset.grd** file and right-click it. From the pop-up menu, select **Rename** and change the name to **charset.grd.bak**.
2. Open the file **<install path>\grd\charset.grd.sample** in a text editor such as Notepad.
3. Select **File -> Save as** . Rename the file **charset.grd** and save it into the same **<install path>\var\psf\PrinterName** directory that you were working with in step 1.
4. Edit the **charset.grd** file and place a dash (-) in the **fgid** column.
5. Save your changes and close the file.

6. Open the file `<install path>\grd\codepage.grd.sample` in a text editor such as Notepad.
7. Select **File -> Save as** . Rename the file **codepage.grd** and save it into the same `<install path>\var\psf\PrinterName` directory that you were working with in step 1.
8. Edit the copied **codepage.grd** file and place a dash (-) in the **cpgid** column.
9. Save your changes and close the file.

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## Chapter 25. Setting up interoperating environments

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### Understanding interoperating environments

When you install an Infoprint Manager server, the install process creates a namespace for that server. The *namespace* is a directory structure where Infoprint Manager stores the location information of all of your Infoprint objects, including the server itself, queues and destinations, and the Access Control Lists (ACLs) used by Infoprint Manager Security. On a Windows system, the namespace is located by default at <install path>\var\pddir, where <install path> is the directory that you installed Infoprint Manager in.

If you install a second Infoprint Manager server on another system on your network, that server will create its own namespace and the two servers will operate entirely independent of each other. In some cases, however, you may want your servers to be able to work together. To make Infoprint Manager servers work together, you set up an *interoperating environment* in which two or more Infoprint Manager servers share the same namespace. The namespace resides on one of the servers and the other servers are granted permissions that allow them to use that directory.

In Infoprint Manager for Windows, Version 2, Release 1, you should only set up two or three servers to interoperate (not four or more). Those servers can all be installed on Windows NT systems, all on Windows 2000 systems, or on a combination of Windows NT and Windows 2000 systems. In addition, if you have Infoprint Manager for AIX, it can be one of the three interoperating servers as well.

When configuring Infoprint Manager servers to support interoperability, ensure that the following two rules are followed:

1. Each Infoprint Manager server must be accessible by all other Infoprint Manager servers using the same IP address.  
For example, if **Server1** is an Infoprint Manager AIX server with an IP address of 9.99.155.122, then all other Infoprint Manager servers (whether Windows NT, Windows 2000, or AIX servers) must use 9.99.155.122 to access **Server1**.
2. The IP address for each Infoprint Manager server must be the address that is identified for the first (or primary) network card that is defined to that server.

For information and instructions on setting up interoperating environments, refer to “Setting up a print environment with multiple Windows NT or Windows 2000 servers” on page 213 and “Configuring for interoperability on an Infoprint AIX server” on page 246.

### Reasons for setting up an interoperating environment

Not every printing system needs multiple Infoprint servers. In fact, in many environments one Infoprint server is adequate. However, in print environments that do very high volume printing or that print in remote locations (for example, a main office with branch offices in different parts of the city), interoperating Infoprint servers may provide important benefits:

- Interoperating servers are much more scalable than single servers.

- If your print volume increases and you find that you need more processing power or memory to be able to meet the demand, you can add a second server. However, by making the servers interoperate, you still only have one printing system to administer.
- If your business expands and you add another office, you can add another server to the namespace. You'll have to define any new printers that you add to the network, but you won't have to redefine existing printers or move resources again to be able to use them from the new location.
- Interoperating servers allow you to distribute print server functions across systems.  
Remote locations can have their own local servers, but you can administer them from a central location.

## Multiserver configuration examples

There are various ways to set up multiple Infoprint Manager servers and have them work together. Below are some example configurations and the benefits they provide.

**Note:** For information and specific instructions about setting up your Infoprint Manager servers so that they share one namespace, refer to "Setting up a print environment with multiple Windows NT or Windows 2000 servers" on page 213.

- **Install two Infoprint Manager servers in the same physical location.**  
One of the servers contains all of the Infoprint print queues and logical destinations, and the other contains all of the actual destinations. In this setup, you balance processing between the two systems by spooling and scheduling on one system and transforming and printing on the other.
- **Install one Infoprint Manager server in the main office and one in each branch office.**  
The namespace resides on the Infoprint Manager server in the main office, and the other two servers are set up to share it. All three servers have logical destinations, queues, and actual destinations defined in them, and the users submit their print jobs to their local server. About 90% of the time, the servers handle local print jobs, so it makes sense for each location to have its own server. However, several times each week, the main office generates reports that are needed at the branches. Instead of printing the reports and sending them across town or faxing several hundred pages to each office, they simply send the print job to printers at the branch offices. If necessary, the branch offices can do the same thing.  
In addition, because of the common namespace, the system administrator can monitor all of the servers from a central location; if there's a problem at one of the branches, he can investigate it from the main office.

## Important issues in interoperating environments

Before you set up an interoperating environment, consider these issues.

- **Which system should contain the namespace?**  
The namespace does not contain large volumes of data (so it doesn't have to reside on the system with the most disk space) and it doesn't move a lot of data across the network. However, because all of the other servers will rely on the namespace server, it must be available and reliable. Put the namespace on the system that is the most available (always running) and most reliable (doesn't have to be rebooted often).



- **Infoprint Manager Security**

All of the information that Infoprint Manager Security uses to protect your printing system (groups and Access Control Lists (ACLs)) is stored in the namespace. When you share the namespace, the groups and ACLs that you set on the namespace server apply to all of the servers; the groups and ACLs that you set on the other servers before they joined the common namespace disappear. As a result, you should wait until you have the interoperating environment set up before you set up any security on the systems.

- **Printer drivers**

If you are setting up an interoperating environment with mixed operating systems (for example, two Windows NT systems and one Windows 2000 system), make sure that the printer drivers you choose work correctly in both environments.

---

## Setting up a print environment with multiple Windows NT or Windows 2000 servers

Some print environments require more than one Infoprint Manager server to handle their print management. If you are installing and configuring more than one Infoprint Manager for Windows NT and Windows 2000 server in your print environment, this topic will tell you what you need to do to make those servers work together.

When you install Infoprint Manager, the install process creates a namespace for that server. The *namespace* is a directory structure where Infoprint Manager stores the location information of all of your Infoprint objects, including the server itself, queues and destinations, and the Access Control Lists (ACLs) used by Infoprint Manager Security. On a Windows system, the namespace is located by default at <install path>\var\pddir, where <install path> is the directory that you installed Infoprint Manager in.

If you install a second Infoprint Manager server on another system on your network, that server will create its own namespace and the two servers will operate entirely independent of each other. In some cases, however, you may want your servers to be able to work together. To make Infoprint Manager servers work together, you set up an *interoperating environment* in which two or more Infoprint Manager servers share the same namespace. The namespace resides on one of the servers (the *namespace server*) and the other servers (the *non-namespace servers*) are granted permissions that allow them to use that directory.

With Infoprint Manager for Windows, Version 2, Release 1, you should only set up two or three servers to interoperate (not four or more). Those two or three servers can all be installed on Windows NT systems, all on Windows 2000 systems, or on a combination of Windows NT and Windows 2000 systems. In addition, if you have Infoprint Manager for AIX, it can be one of the three interoperating servers as well.

If you want Infoprint Manager for Windows NT and Windows 2000 and Infoprint Manager for AIX servers to work together, refer to “Configuring for interoperability on an Infoprint AIX server” on page 246

**Notes:**

1. You can only install one Infoprint Manager server on a given Windows NT or Windows 2000 workstation or server.
2. For your Infoprint Manager servers to work together, they must all operate in the same domain.

3. If your users will be submitting jobs directly to actual destinations, the actual destination and the associated queue and logical destination must be on the same server.
4. Once you have your multi-server system running, if the system that one of your non-namespace servers is installed on shuts down or is restarted, that Infoprint Manager server will not restart automatically when the system restarts, even if you have that option selected in the Management Console. You must open the Management Console for that server and start it manually.
5. You must set up each of your Infoprint Manager servers so that all of the other Infoprint Manager servers can access them using the same IP address. For example, Ipserv1 sometimes uses the IP address 9.99.155.122 and other times uses 9.89.214.162, depending upon the machine that is trying to connect to it. Ipserv2 and Ipserv3 must be able to access Ipserv1 through the same one of those addresses; if Ipserv2 uses 9.99.155.122 to access Ipserv1, Ipserv3 must use 9.99.155.122 as well.
6. If you have more than one network adapter card in the system that Infoprint Manager runs on, the other Infoprint Manager systems must be able to access the system through the IP address that corresponds to the first (or primary) network card in the system.

## Configuration example

The recommended way to set up interoperating Windows servers is to create one domain user account and let all of the Infoprint Manager services use it as their login account. The steps below describes how to set up this type of configuration.

**Note:** It is possible to configure your system so that each Infoprint Manager service has its own domain user account. If you want set up this alternate configuration, you can follow the same basic instructions. However, in step 4 on page 215, you would create a domain user for each server. Then, when you assign user rights and set up sharing in subsequent steps, you must make sure you use the same user and password consistently on each system.

Follow these steps to have your Infoprint Manager services share a namespace and a log in account.

1. *Install all of your Infoprint Manager servers.*

Follow the installation instructions in *Infoprint Manager for Windows: Getting Started*. When you are finished, your servers will be operating independently.

2. *Stop all of your Infoprint Manager servers.*

On each system that an Infoprint Manager server runs on, open the Infoprint Manager Management Console and select **File** → **Stop Server**.

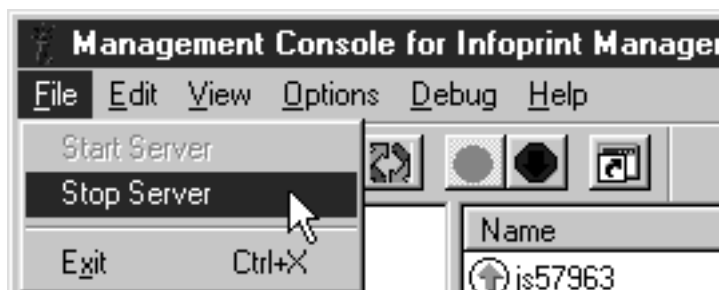


Figure 63. Management Console: Stop Infoprint Manager server

3. *Decide which server you want to use as the namespace server.*

It is highly recommended that you choose your most reliable server to be the namespace server since any disruption of service in the namespace server has an impact on all of the servers in the configuration.

4. *Set up the common domain user account that the servers will run under.*

**Windows NT**

- a. Log on to the domain that your Infoprint Manager servers operate in as a domain administrator.
- b. Click the Windows Start Button and select **Administrative Tools (Common) -> User Manager for Domains**.

**Note:** The common user account must be a domain account, not a local user account. Be sure you create the account with **User Manager for Domains**, not the **User Manager** for the local system. If **User Manager for Domains** does not appear in your Start menu, you may have to create this user on the Windows server that is the Primary Domain Controller (PDC) for your domain.

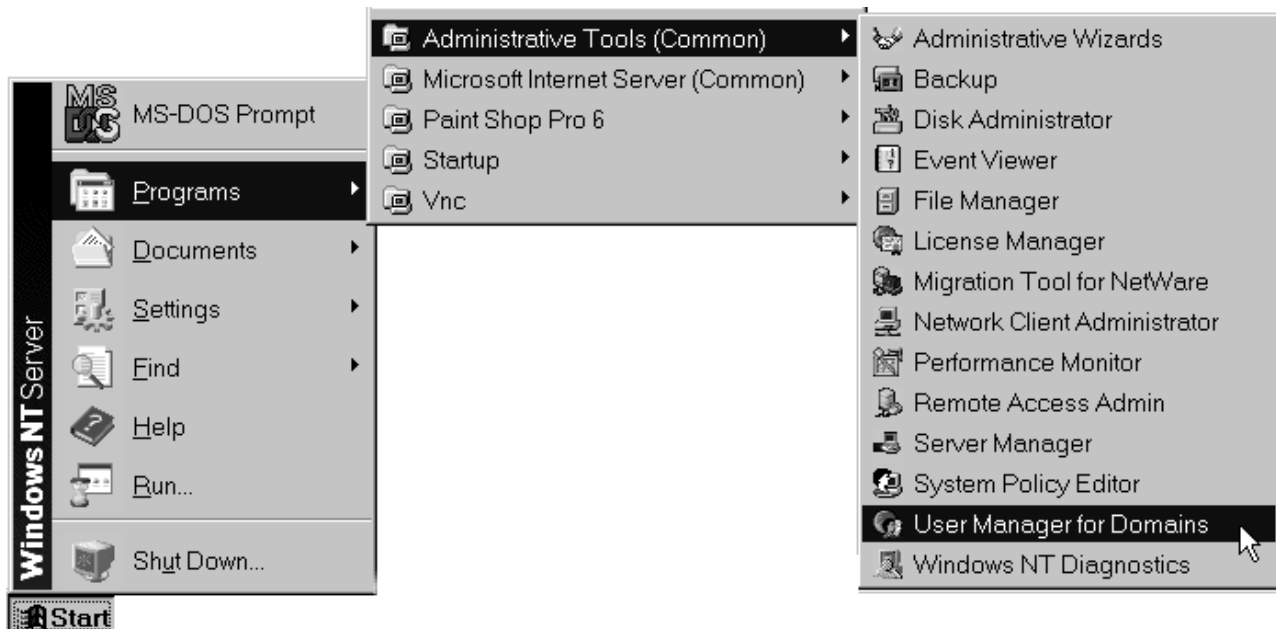


Figure 64. Open User Manager for Domains

c. In the User Manager window, select **User** → **New User**.



Figure 65. Open New User

d. In the New User dialog, do the following:

- Type a name for this user account.
- Type a password in both of the password fields.
- Select the **Password never expires** checkbox so you don't have to change the password and update all of your servers on a regular basis, and clear all of the others.
- Click **Groups**.

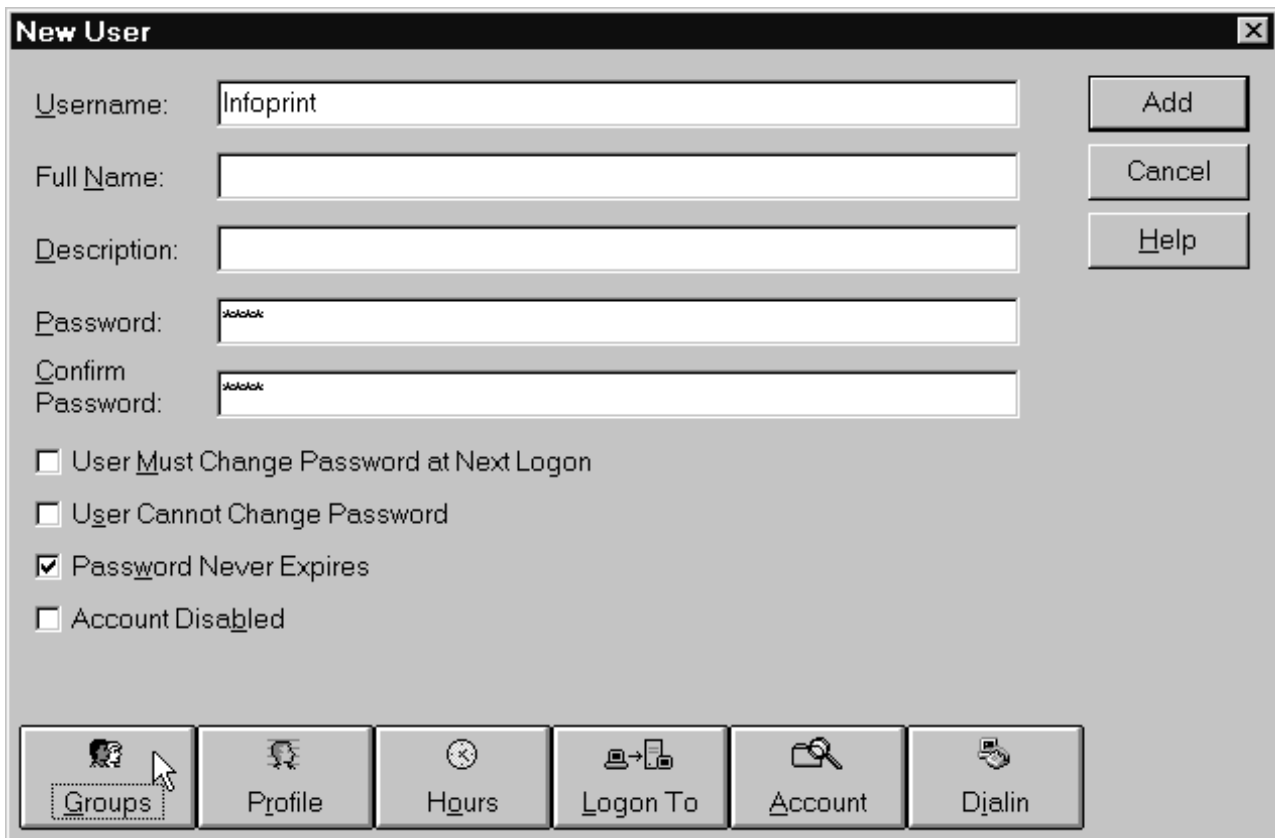


Figure 66. Create new user dialog

e. In the Group Memberships dialog:

- Find **Domain Admins** in the **Not member of** list and click to select it.

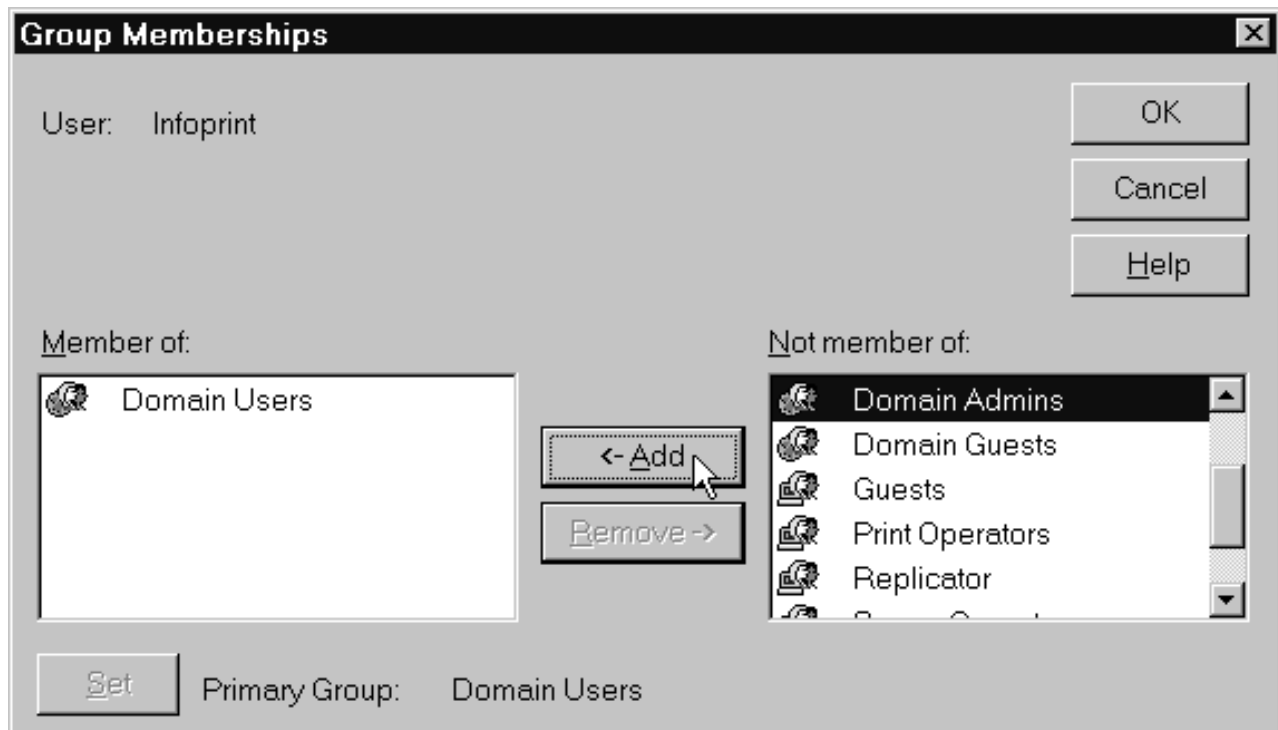


Figure 67. Add user to group

- Click <- Add.
- Select **Domain Admins** in the **Member of** list and click **Set**.

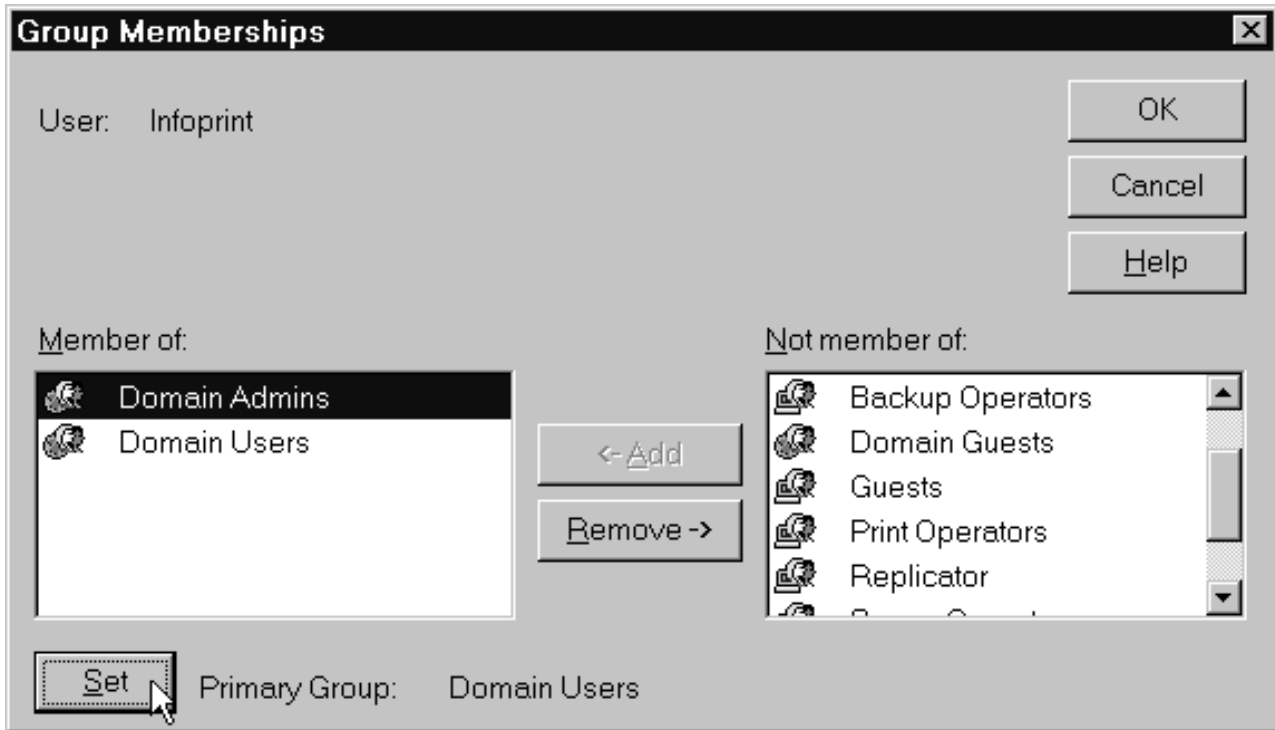


Figure 68. Reset Primary Group

- Click **OK**.
- f. In the New User dialog, click **Add** to create this user.
- g. Click **Close** to dismiss the dialog.
- h. Verify that the user you just created appears in the list of users in the User Manager window, then close it.

#### Windows 2000

- a. Log on to the domain that your Infoprint Manager servers operate in as a domain administrator.
- b. Click the Windows **Start** button and select **Program -> Administrative Tools -> Active Directory Users and Computers**.
- c. In the left pane of the **Active Directory Users and Computers** window, find the **Users** item.
- d. Right-click the **Users** directory and select **New -> User** from the pop-up menu.



Figure 69. Directory Users and Computers: New User

- e. In the first dialog of the **New Object – User** wizard, type a name for this user in the **Full name** and the **User logon name** fields.

**Note:** You do not have to fill in the other name fields.



**New Object - User**

Create in: ipm.penn.boulder.ibm.com/Users

First name:  Initials:

Last name:

Full name:

User logon name:  @ipm.penn.boulder.ibm.com

User logon name (pre-Windows 2000):

< Back   Next >   Cancel

Figure 70. New Object: User

- f. Click **Next**.
- g. In the second dialog of the **New Object – User** wizard, enter a password for this user. It is recommended that you select the **Password never expires** check box so you do not have to change the password and update all of your servers on a regular basis, and clear all of the others.



Figure 71. New Object: User 2

- h. Click **Next** to verify the settings for the user and complete the wizard.
- i. Once you have created the user, right-click the user in the right pane of the **Active Directory Users and Computers** window and select **Add members to a group** from the pop-up menu.

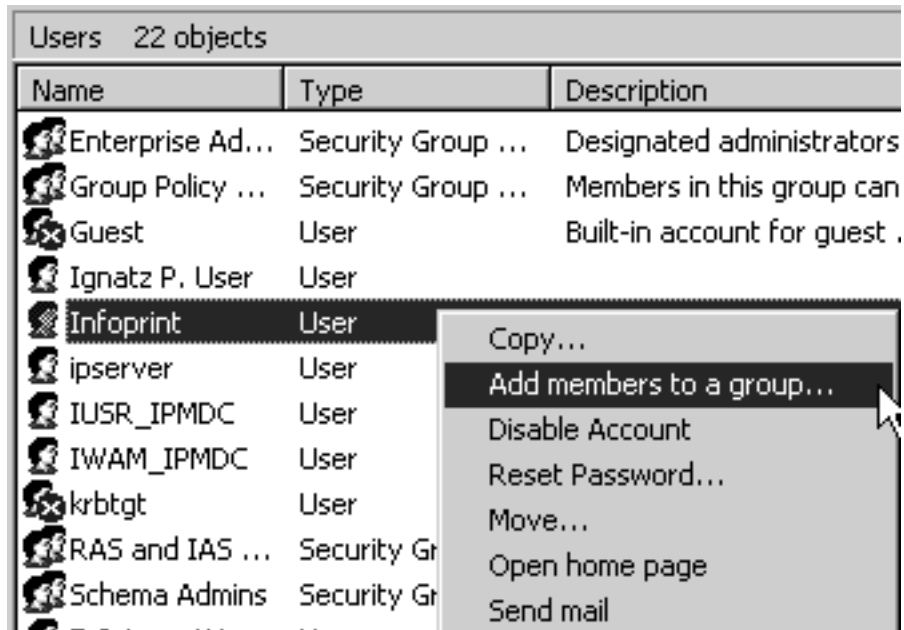


Figure 72. Add Members to a Group

- j. In the **Select Group** dialog, find and select the Domain Administrators (or Domain Admins) group. Click **OK** to add your user to the group.

**Note:** You can leave the **Name** field blank.

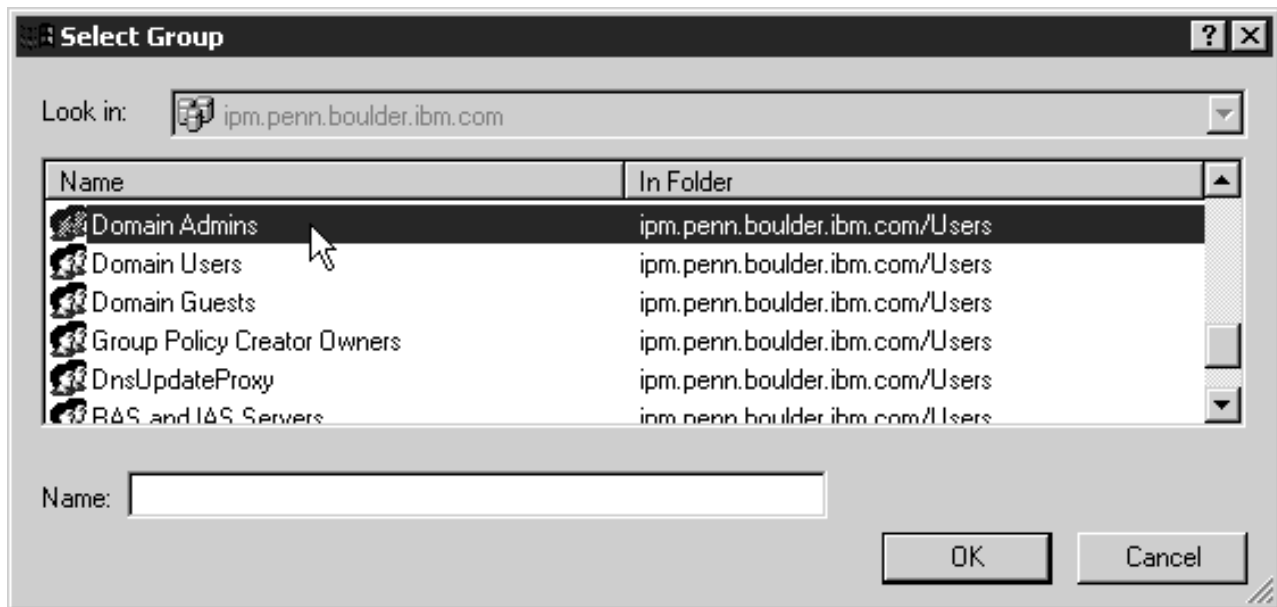


Figure 73. Select Group

5. *Grant the appropriate user rights to the new domain user on all of the systems that Infoprint Manager is installed on.*

**Windows NT**

- a. Log on to one of the systems as a user who is a member of the Domain Administrators group.

- b. Start the User Manager for that system by clicking the Windows Start button and selecting **Programs -> Administrative Tools -> User Manager**.
- c. In the **User Manager**, select **Policies -> User Rights**.



Figure 74. Local User Manager: Policy menu

- d. In the **User Rights Policy** dialog, select the **Show Advanced User Rights** checkbox, then select **Act as part of the operating system** in the **Right** drop-down list and click **Add**.

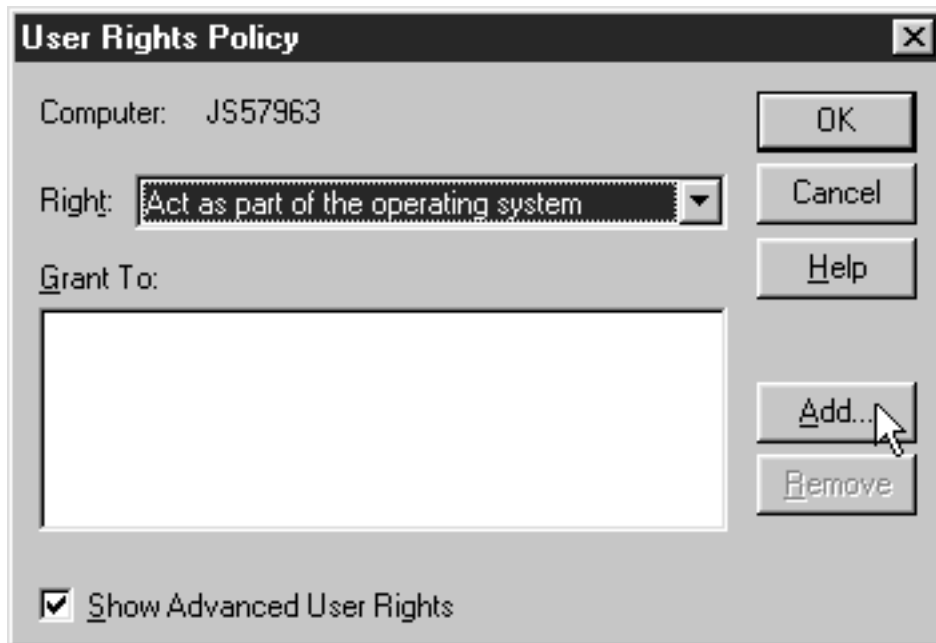


Figure 75. Local User Manager: User Rights Policy

- e. In the **Add Users and Groups** dialog, select the domain that your Infoprint Manager system operates in from the **List names from** drop-down list and click **Show Users**.

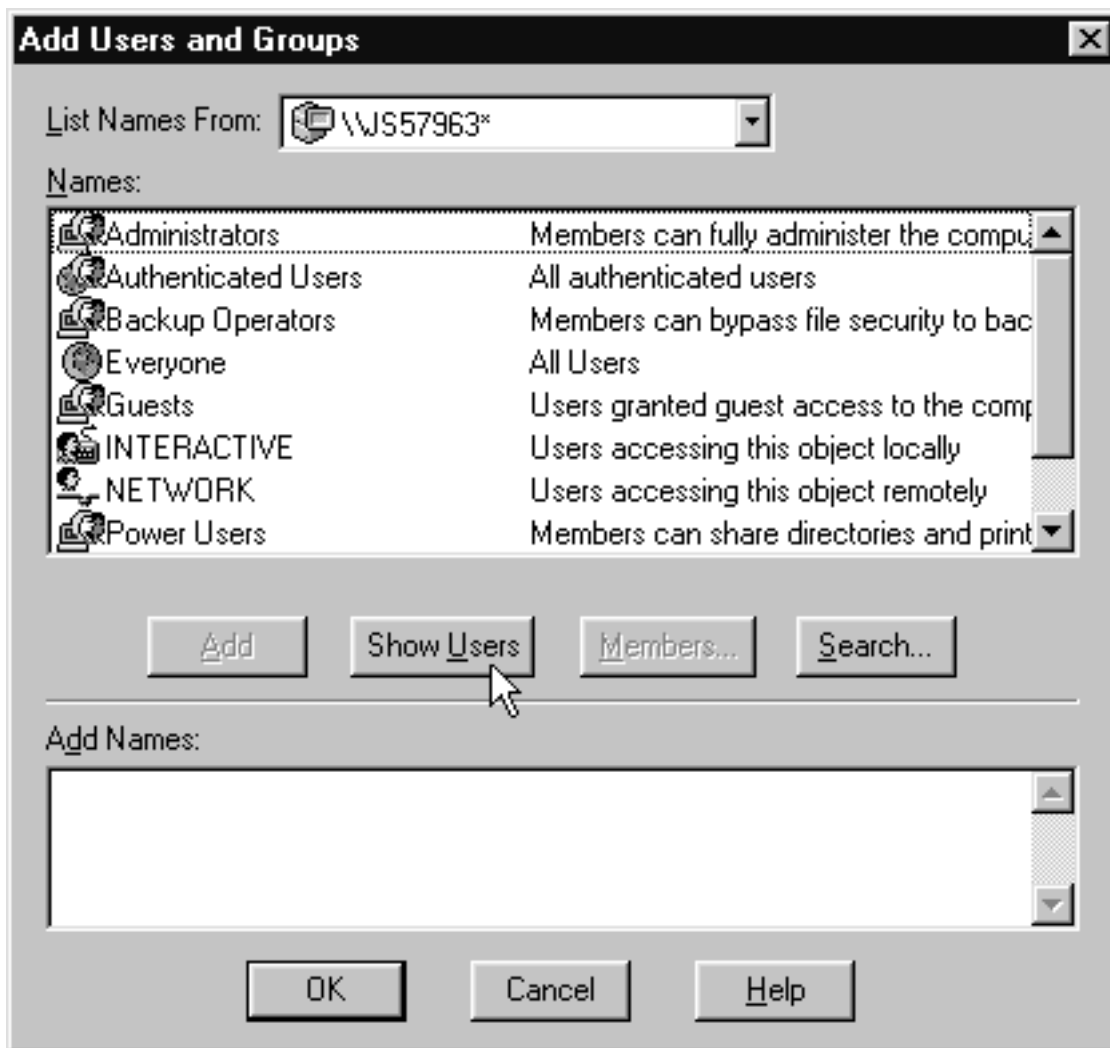


Figure 76. Local User Manager: Add Users and Groups

- f. Find the domain user that you created in step 4 on page 215 in the **Names** box, and select it, then click **Add**. The domain user name will appear in the **Add Names** box.
- g. Click **OK**.
- h. Repeat from step 5d on page 223 for two other rights: **Create permanent shared objects** and **Log on as a service**.
- i. Repeat from step 5a on page 222 on all of the other systems that Infoprint Manager runs on.

#### Windows 2000

- a. Log on to one of the systems as a user who is a member of the Domain Administrators group.
- b. Click the Windows **Start** button and select **Settings** —> **Control Panel**.
- c. In the **Control Panel** window, double-click the **Administrative Tools** icon.
- d. In the **Administrative Tools** window, double-click the **Local Security Policy** icon.

- e. In the right pane of the **Local Security Settings** Window, double-click **Local policies**.

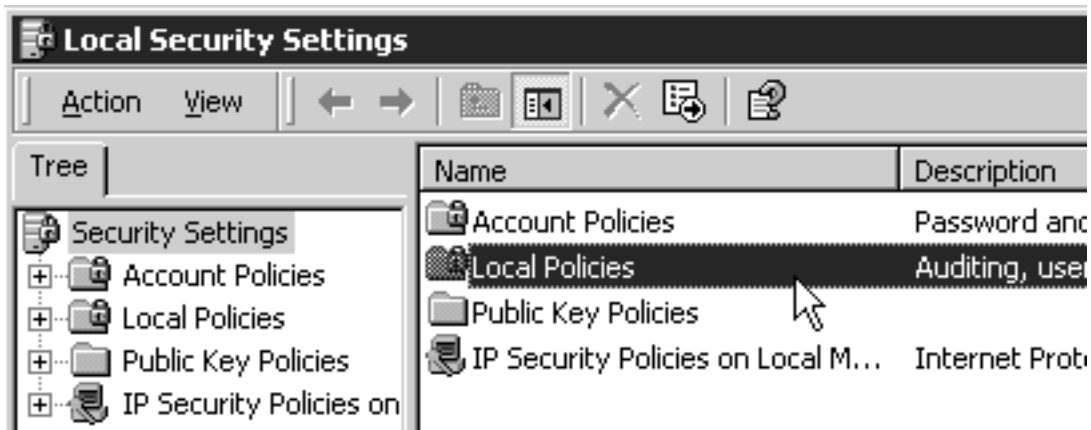


Figure 77. Local Policies

- f. Double-click **User Rights Assignment** in the right pane.



Figure 78. User Rights Assignment

- g. In the list of user rights, select **Act as part of the operating system** and double click it.
- h. In the **Local Security Policy Setting** dialog, click **Add**.

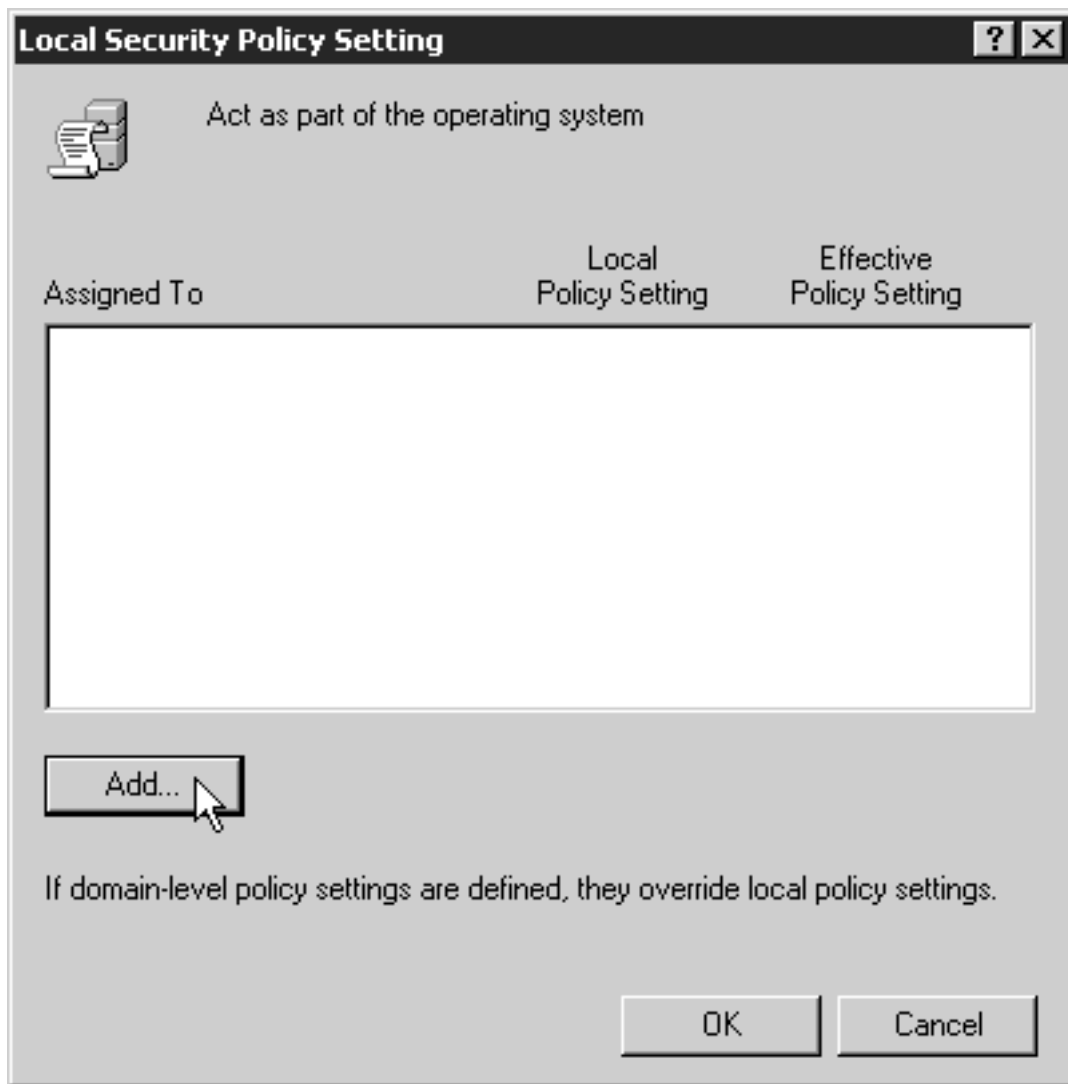


Figure 79. Local Security Policy Setting

- i. In the **Select Users or Groups** dialog, click the arrow on the drop-down list box and select the domain that your Infoprint Manager servers exist in.



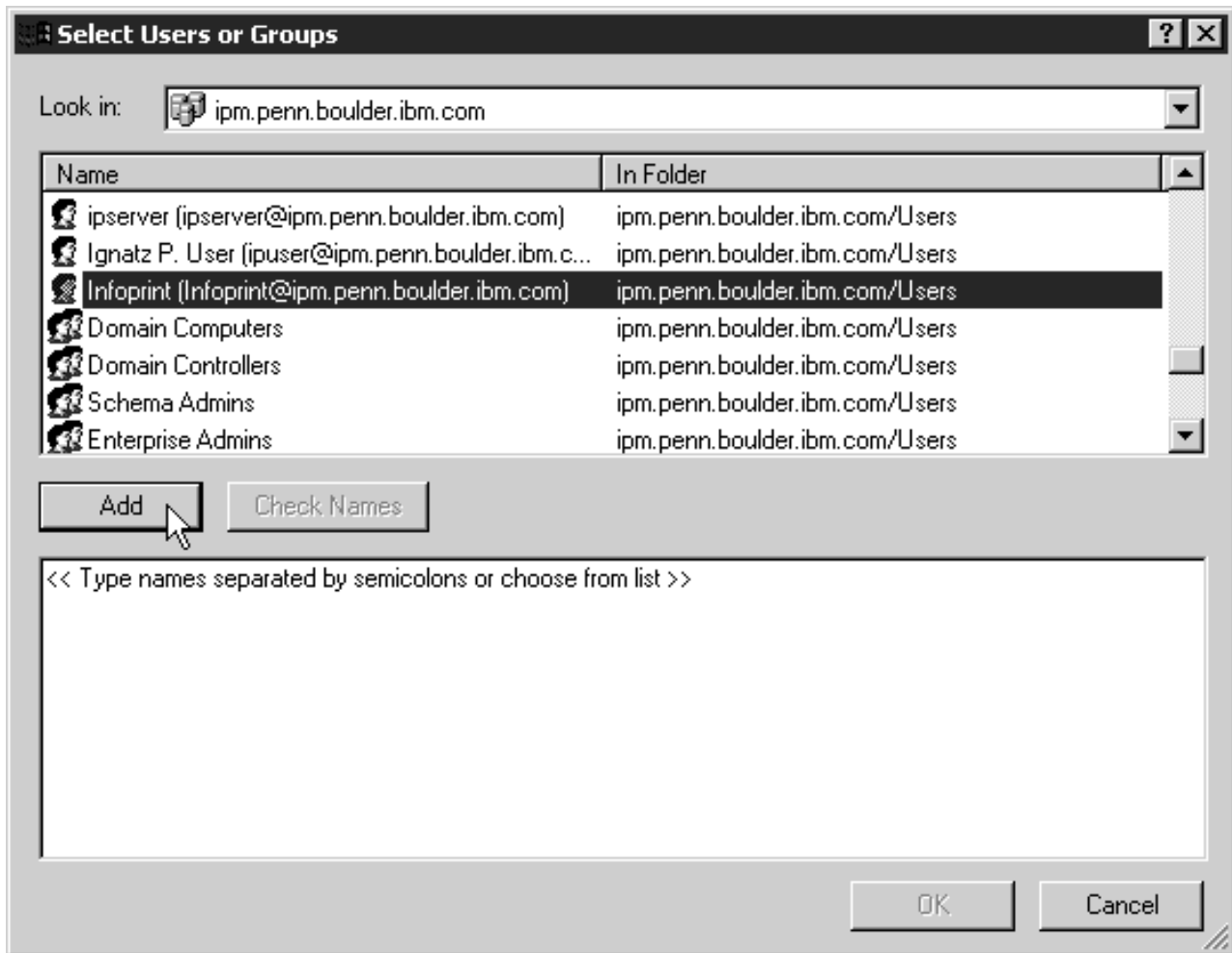


Figure 80. Select Users or Groups

- j. Find and select the domain user you created, and click **Add**.
- k. Click **OK** in the **Select Users or Groups** dialog.
- l. Click **OK** in the **Local Security Policy Setting** dialog.
- m. Repeat from step 9g on page 225 for two other user rights: **Create permanent shared objects** and **Log on as a service**.
6. *Set up sharing for the namespace directory on the namespace server.*
  - a. Log on to the namespace server.
  - b. Open the Infoprint Manager Management Console and select **Edit — >Service Configuration**.

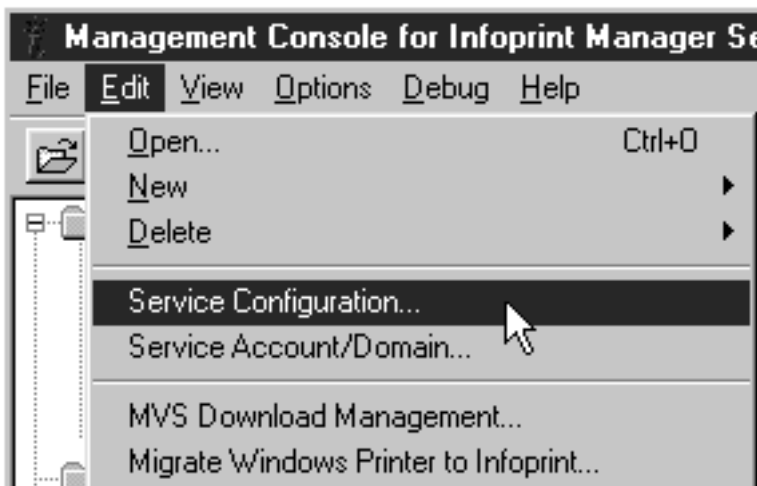


Figure 81. Management Console: Edit menu

- c. Make note of the directory listed in the **Base namespace path** field. The path will be <install path>\var\pddir.

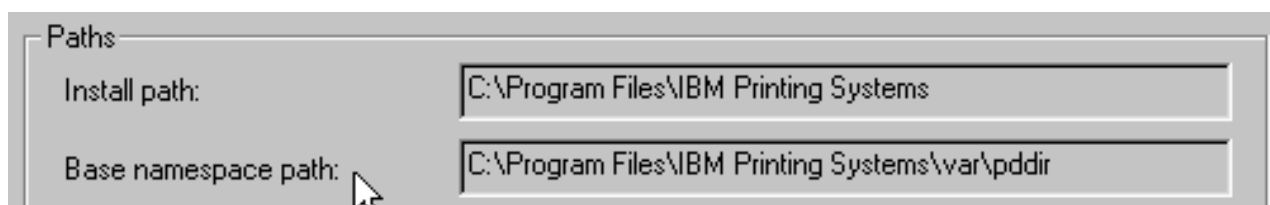


Figure 82. Management Console: Service Configuration- Base namespace path

- d. Open Windows NT/2000 Explorer and navigate to that directory.
- e. Right-click the folder for that directory and select **Sharing...** from the pop-up menu.

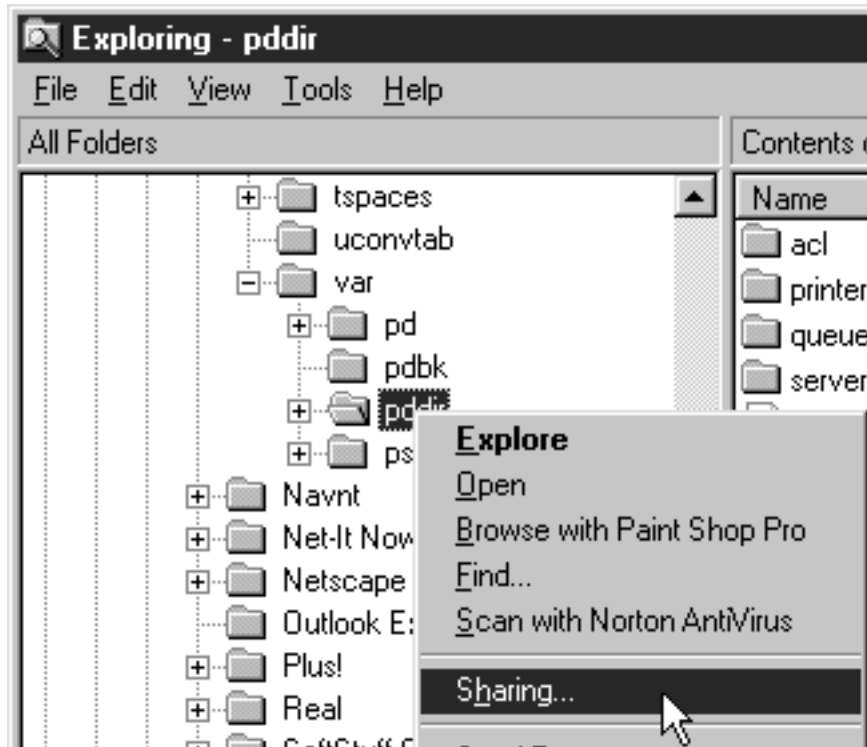


Figure 83. Sharing item

f.

**On Windows NT:**

- 1) In the dialog that opens, select **Shared as**, and verify that **pddir** appears in the **Share Name** text box.

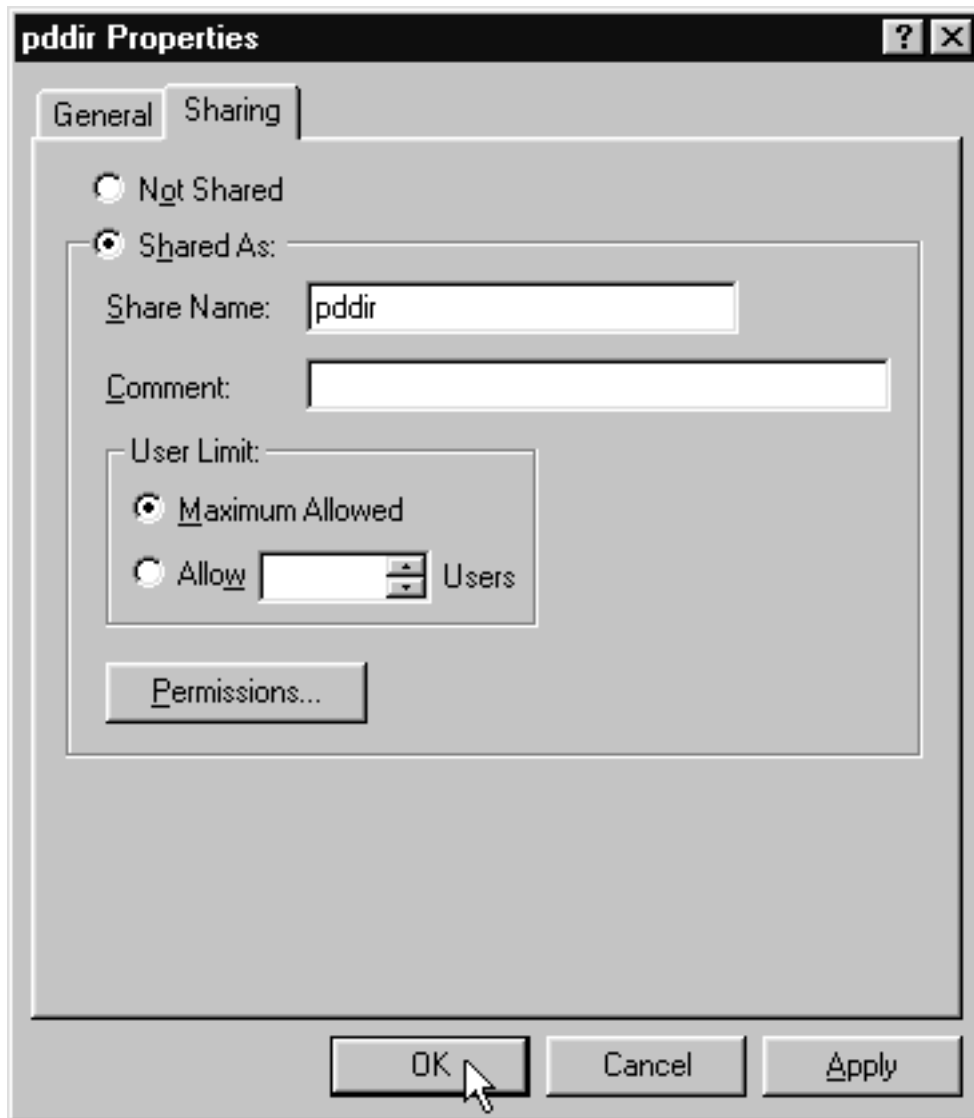


Figure 84. Shared as

- 2) Click **Permissions**.
- 3) In the **Access through Share Permissions** dialog, click **Add**.

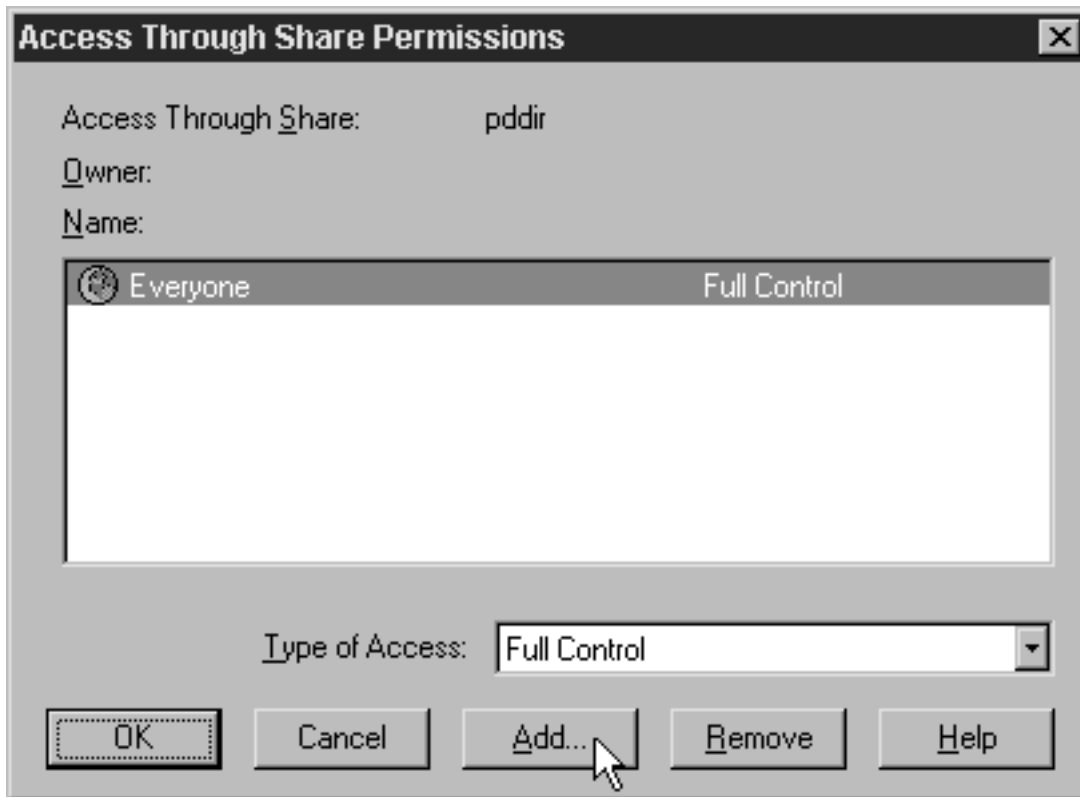


Figure 85. Access through Share Permissions dialog

- 4) In the **Add Users and Groups** dialog, select the correct domain from the **List Names From** drop-down list and select **Domain Admins** in the **Names** box.

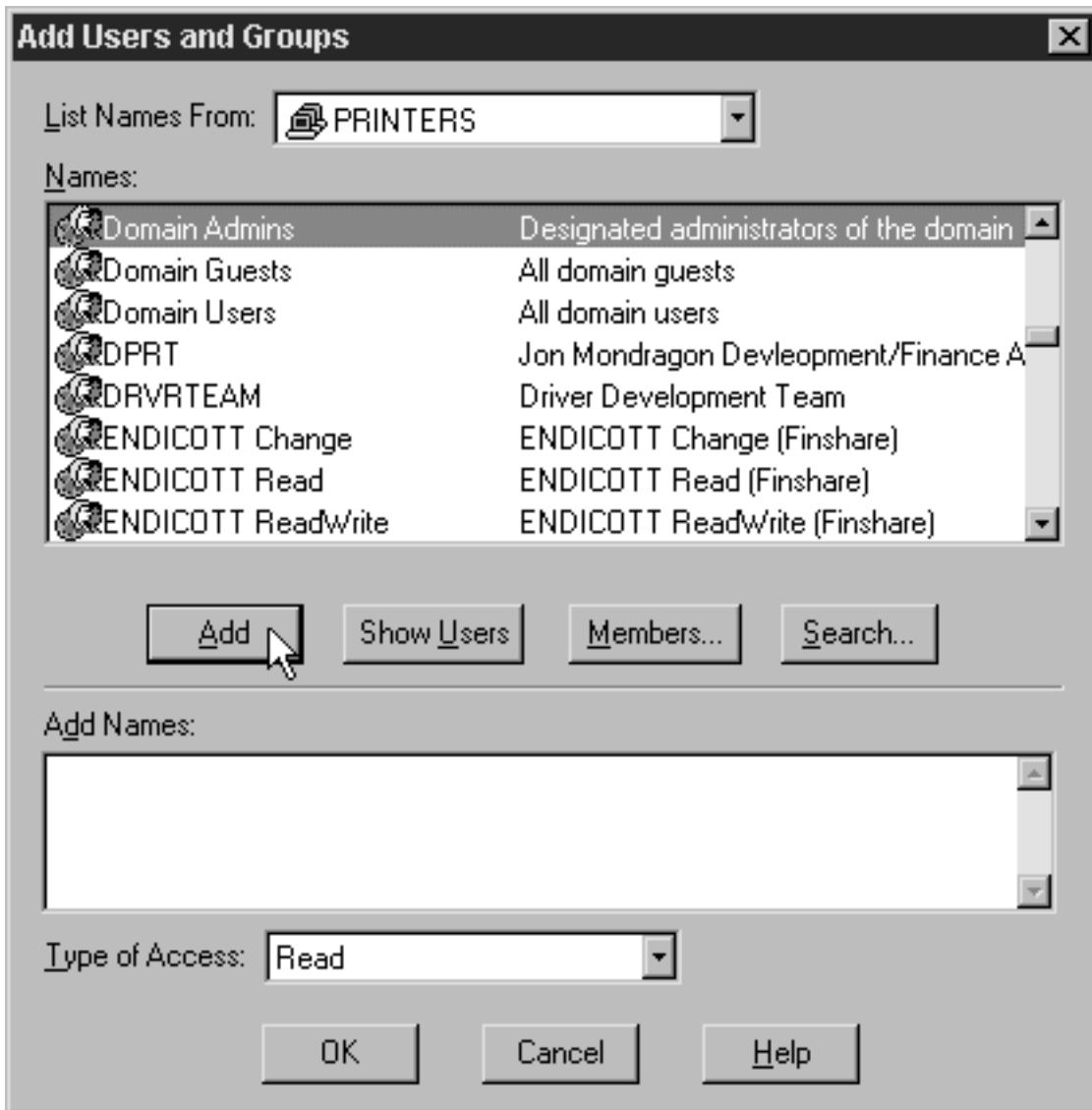


Figure 86. Add Users and Groups dialog

5) Click **Add**.

**Note:** You may want to add the local administrators group to the list as well.

6) Select **Full Control** from the **Type of Access** drop-down list.

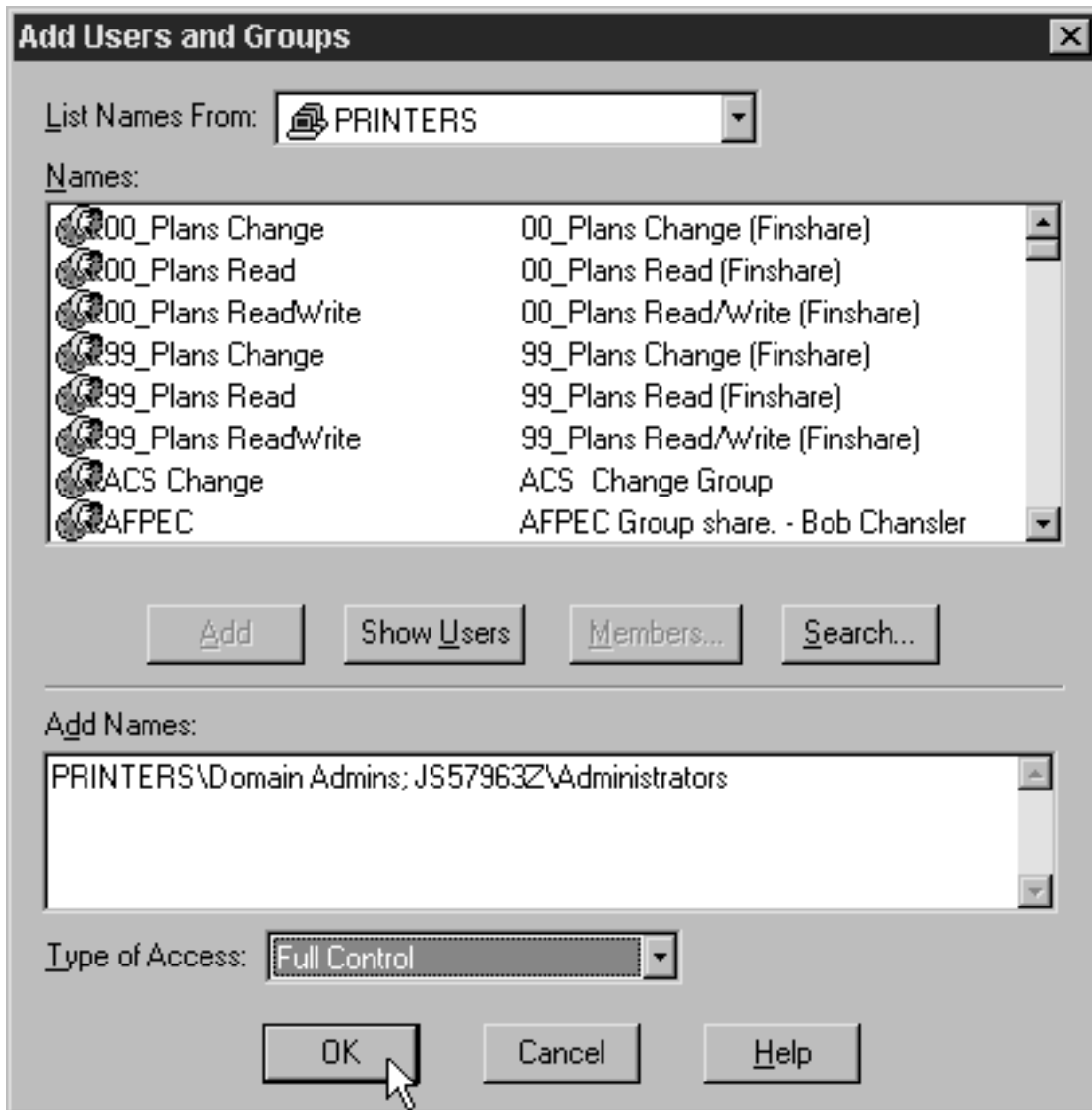


Figure 87. Change level of control

- 7) Click **OK**.
- 8) In the **Access through Share Permissions** dialog, select the **Everyone** group and click **Remove**.



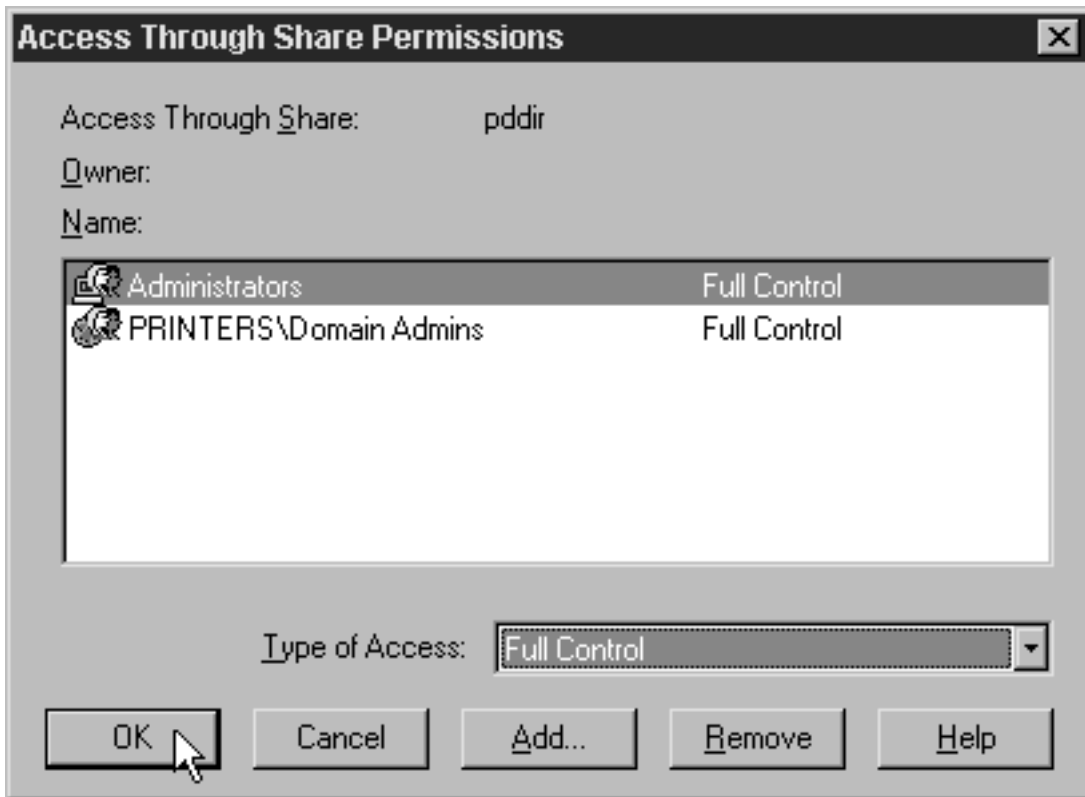


Figure 88. Finish assigning permissions

9) Click **OK**.

**Windows 2000:**

1) In the dialog that opens, select **Share this folder**, and verify that **pddir** appears in the **Share Name** text box.

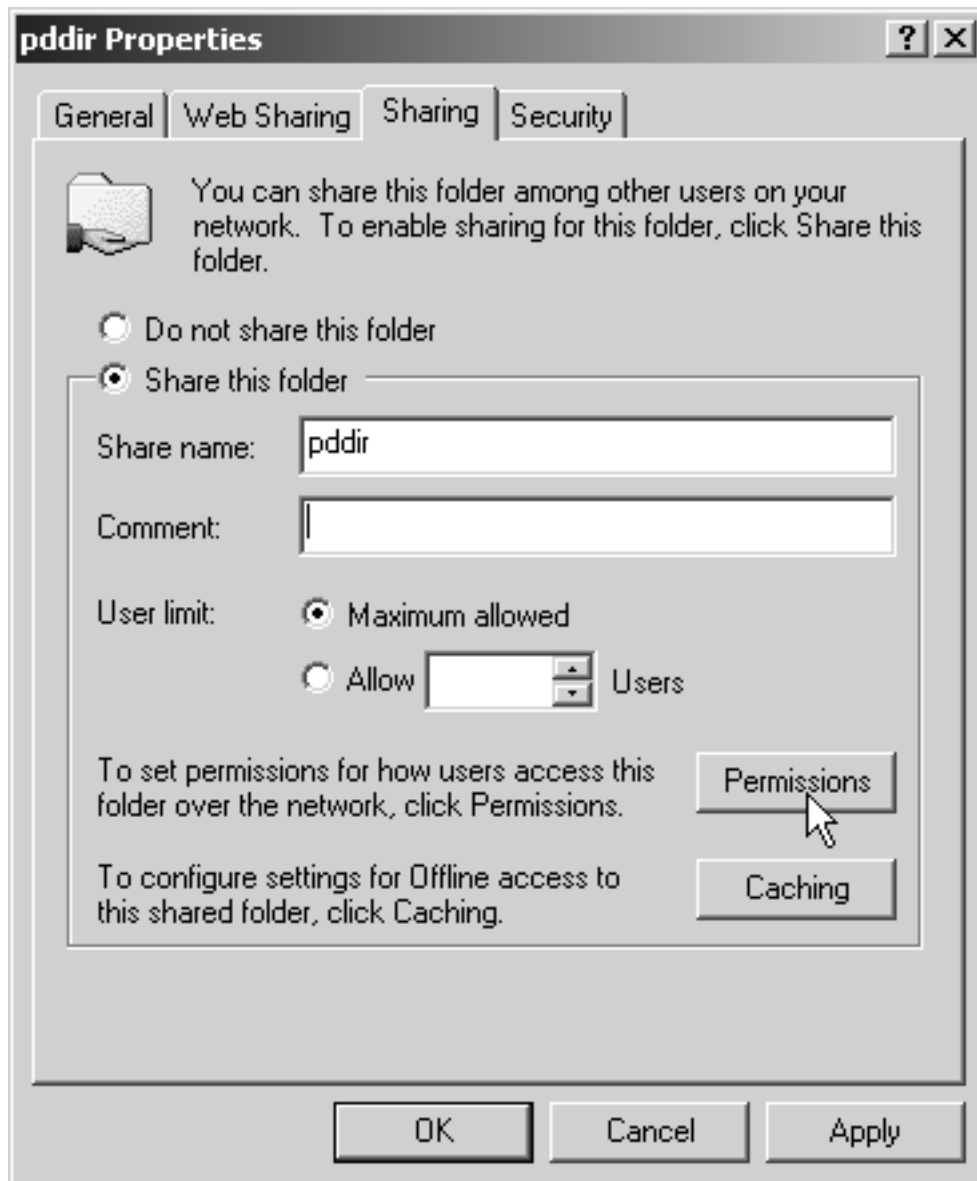


Figure 89. Share Namespace folder

- 2) Click **Permissions**.
- 3) In the **Permissions for pddir** dialog, click **Add**.

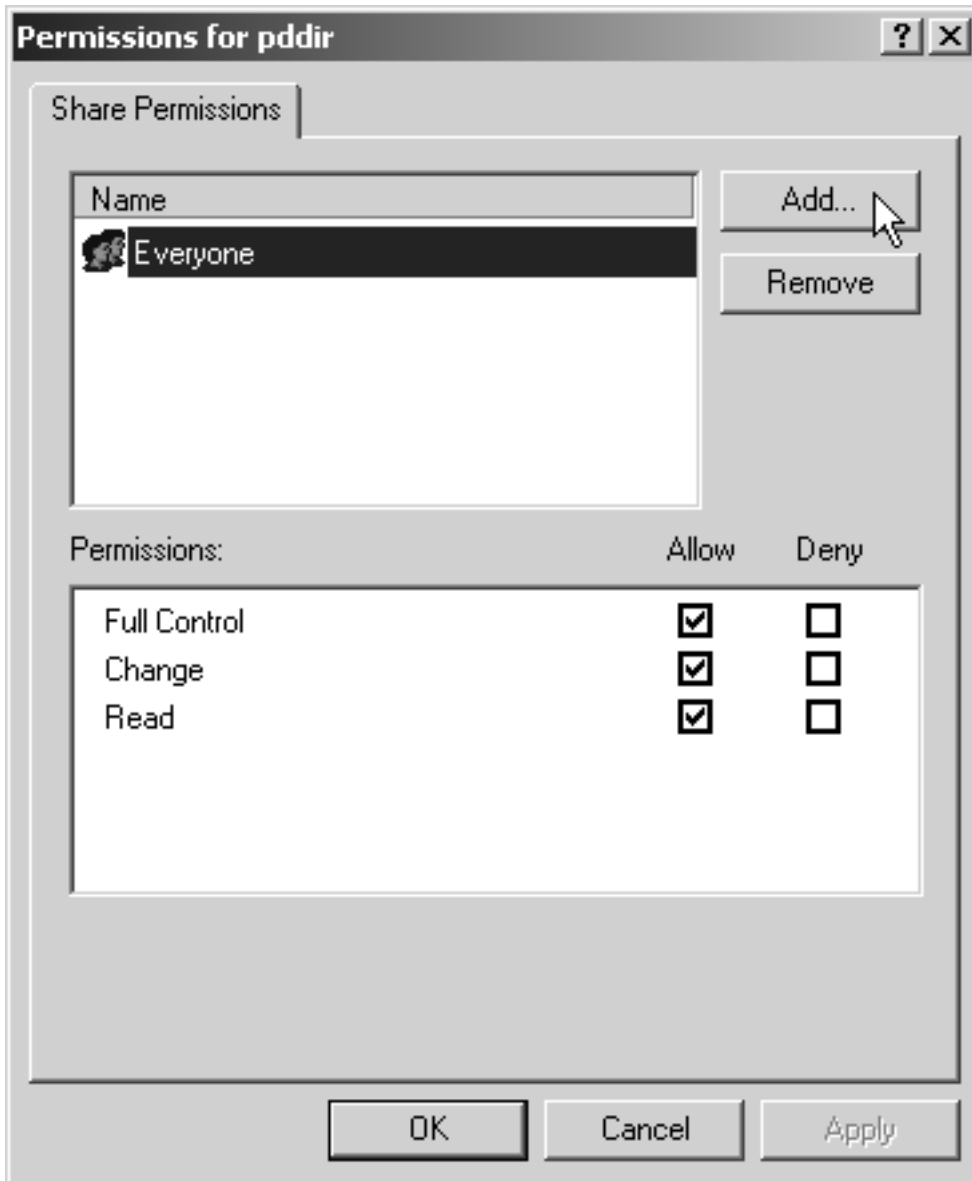


Figure 90. Check permissions on folder

- 4) In the **Select Users, Computers, or Groups** dialog, select the correct domain from the **Look in** drop-down list and find **Domain Admins** in the **Names** box.

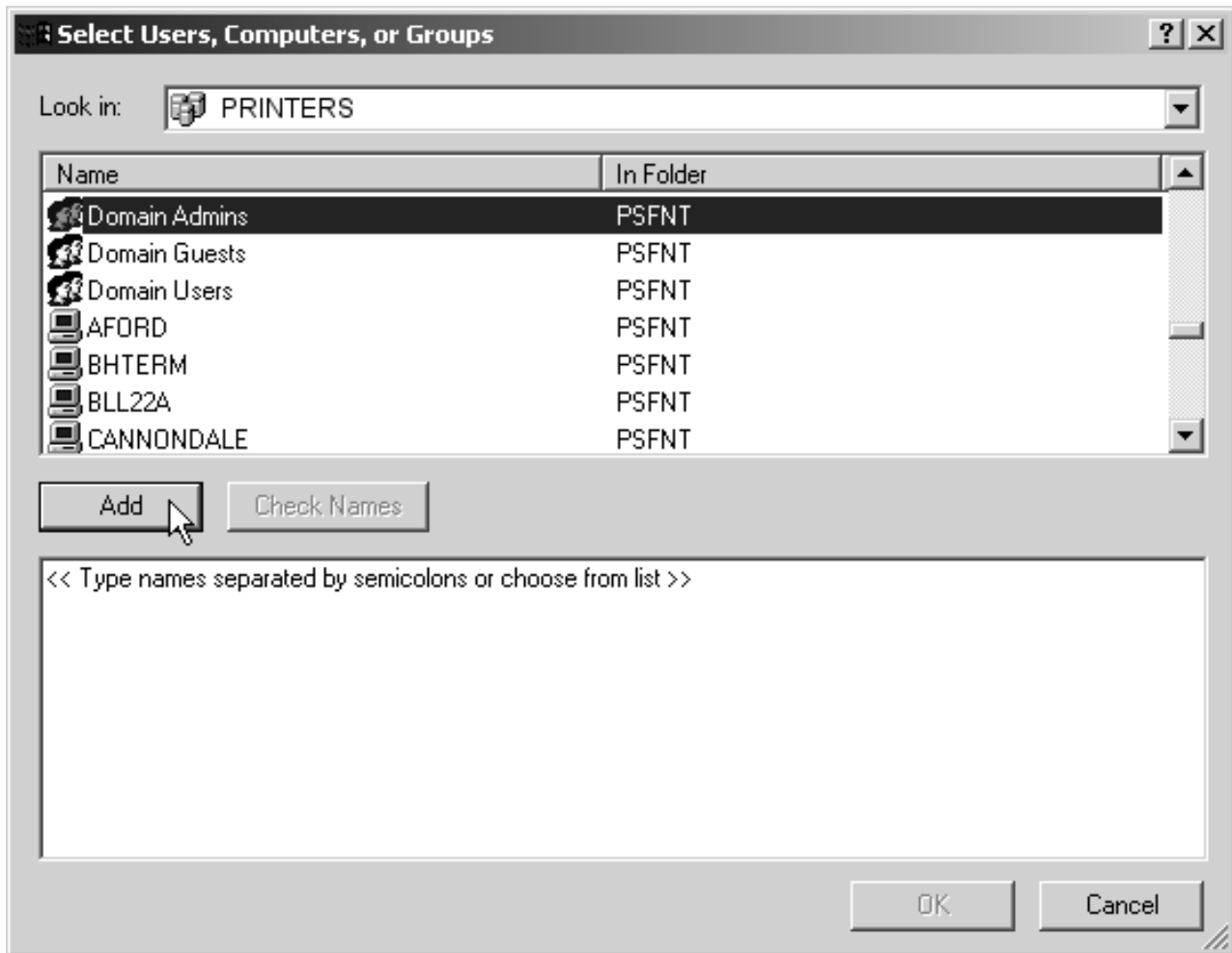


Figure 91. Add Domain Admins to list

- 5) Click **Add**.

**Note:** You may want to add the local Administrators group to the list as well.

- 6) Click **OK**.
- 7) In the **Permissions for pddir** dialog, select **Domain Admins** in the **Name** box, and make sure **Full Control** is allowed in the **Permissions** box.

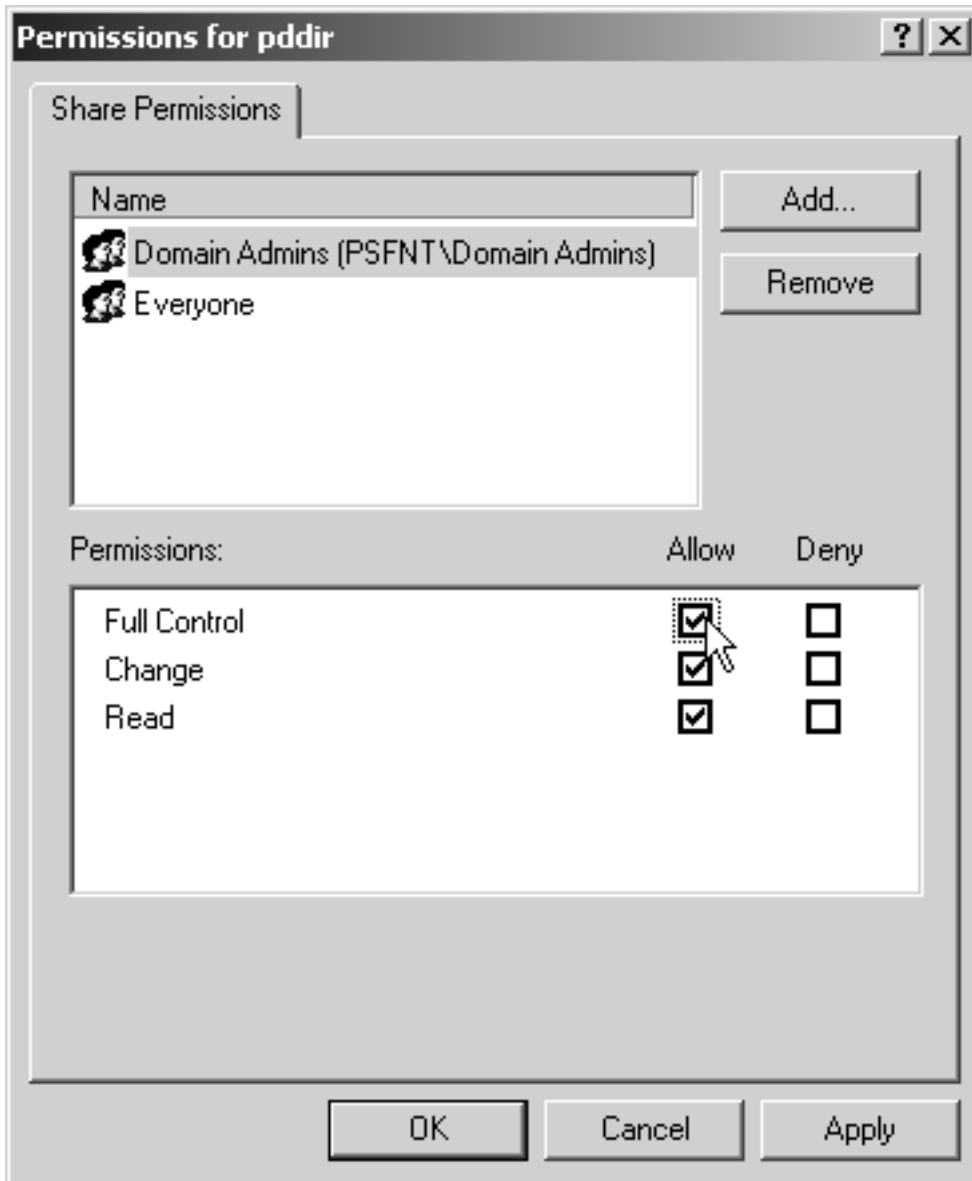


Figure 92. Give Domain Admins Full Control

- 8) Remove the **Everyone** group from the **Name** box and click **OK**.

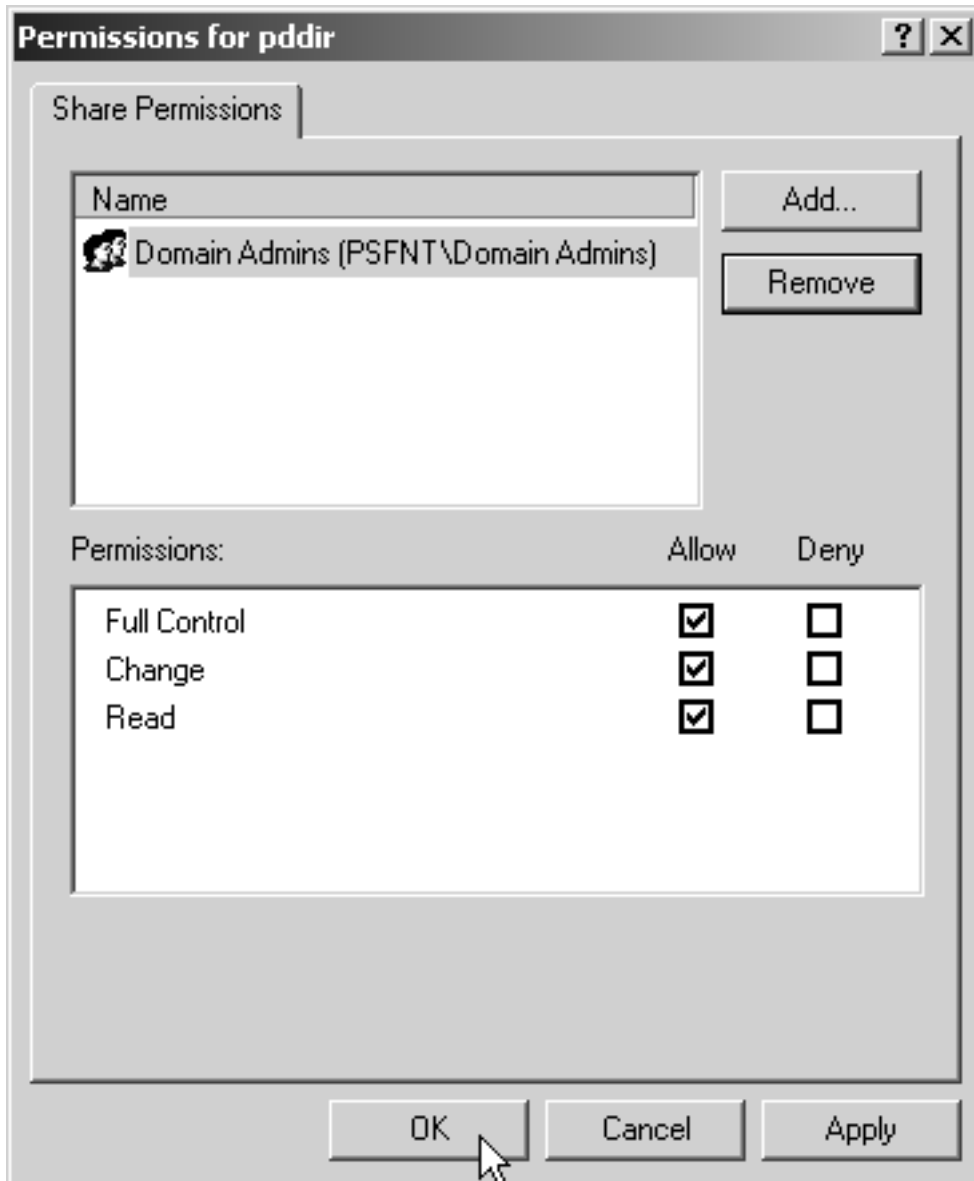


Figure 93. Finish assigning permissions

7. *Map the connections to the namespace directory on all of the other servers.*
  - a. Log on to one of your non-namespace systems as a user who is an administrator on that system.
  - b. Open Windows NT/2000 Explorer and select **Tools** —> **Map Network Drive**.

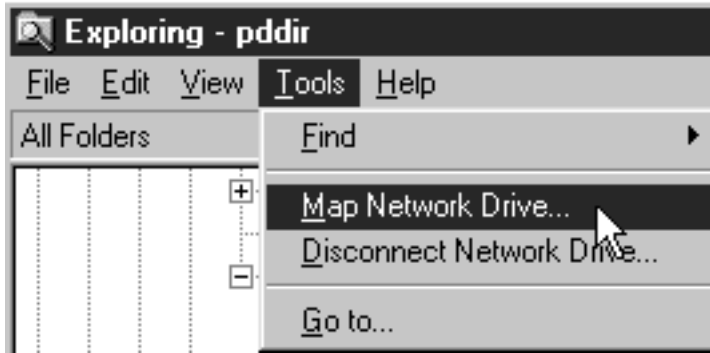


Figure 94. Map network drive

- c. Specify the user and password to use.

**Windows NT**

- 1) In the **Map Network Drive** dialog,
  - a) In the **Drive** field, select a drive letter that you are not currently using.
  - b) In the **Path** field, type the Universal Naming Convention (UNC) name of the directory you shared on the namespace server in this format: `\\namespaceserver\sharename`.

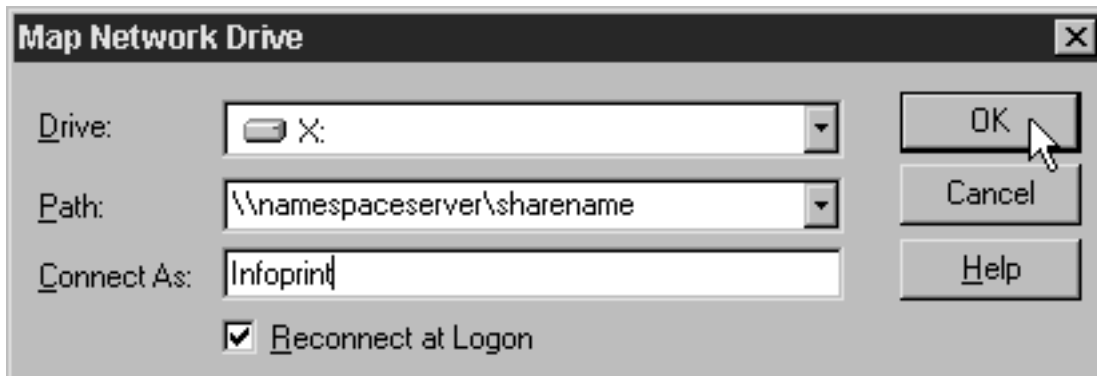


Figure 95. Map to

- 2) Type the user that you created in step 4 on page 215 in the **Connect as** field, and select **Reconnect at logon**.
- 3) Click **OK**. A dialog will open and will ask you to enter the password for this user.
- 4) Type the password that you set for this user in step 4 on page 215, and click **OK**.

**Windows 2000**

- 1) In the **Map Network Drive** dialog, select a drive letter that you are not currently using from the drop-down menu in the **Drive** field.





Figure 96. Map Network Drive

- 2) In the **Folder** field, type the Universal Naming Convention (UNC) name of the directory you shared on the namespace server in this format: `\\namespaceserver\sharename`.
- 3) Select **Reconnect at logon**.
- 4) Click the **Connect using a different user name** link.
- 5) In the **Connect As** dialog, type the user name and password that you created in step 4 on page 215.

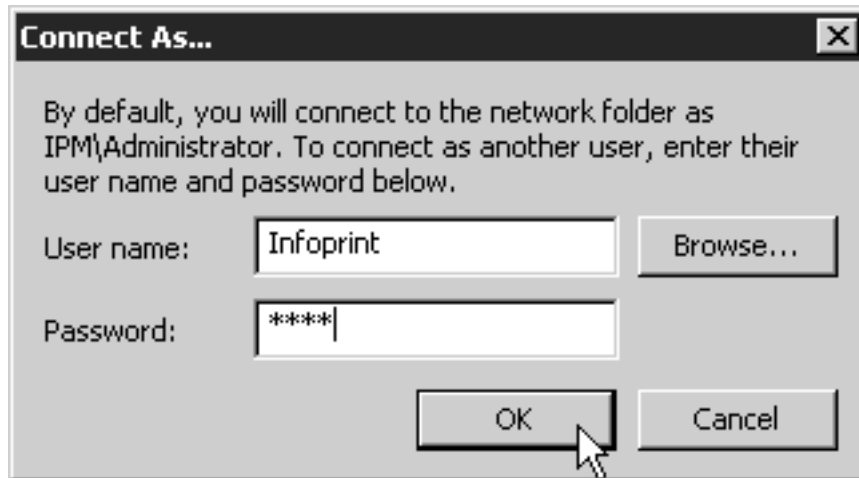


Figure 97. Connect As

- 6) Click **OK** in the **Connect As** dialog.
- 7) Click **Finish** in the **Map Network Drive** dialog.
- d. Repeat on all of your Infoprint Manager systems except the namespace system.
8. *Set up each Infoprint Manager server to use the new user account and namespace.*

**On the namespace system**

- a. Log on as a user who is a member of the Administrators group.
- b. Open the Management Console and select **Edit** —> **Service Account/Domain**.

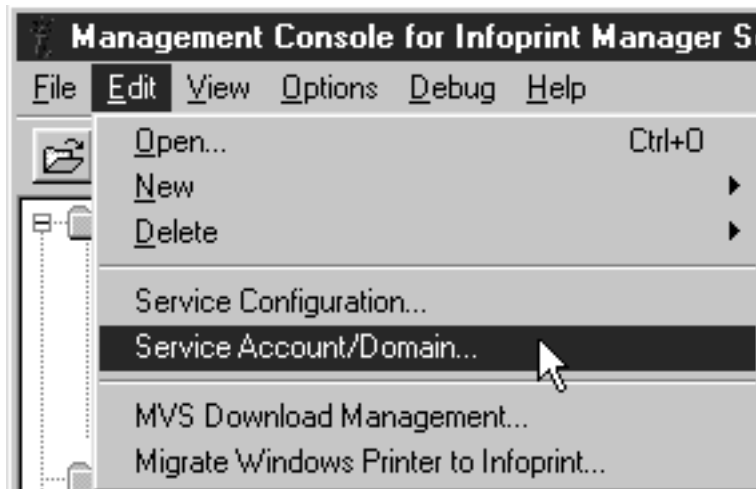


Figure 98. Management Console: Edit menu: Service account/domain

- c. Enter the name of the domain that the Infoprint Manager servers are installed in and the user name and password from step 4 on page 215.

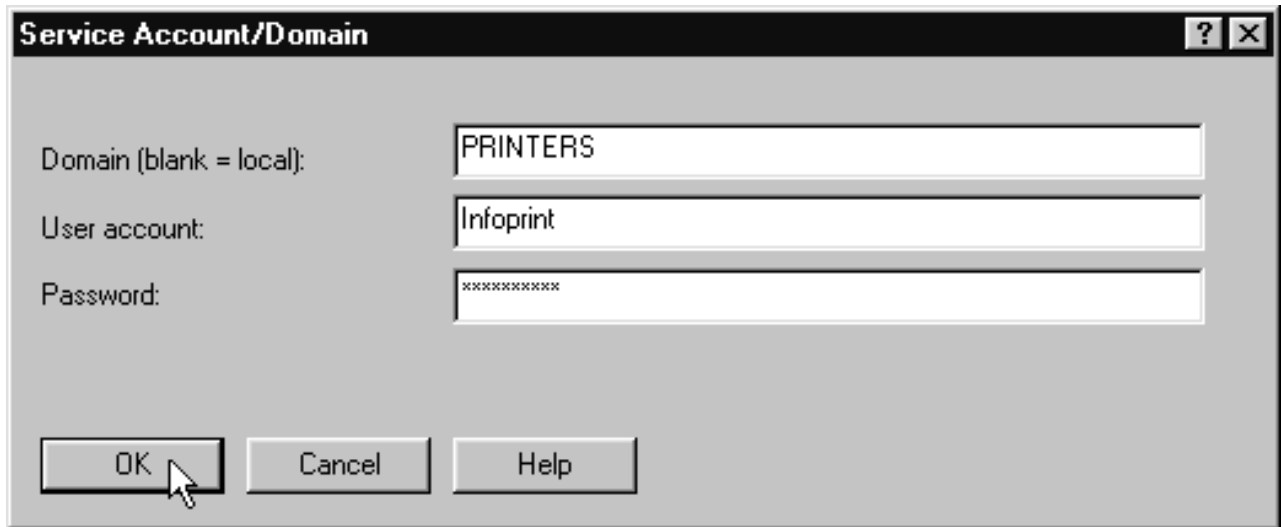


Figure 99. Change Service Account/Domain

- d. Click **OK**.

**On the other systems**

- a. Log on as a user who is a member of the Administrators group.
- b. Open the Management Console and select **Edit** → **Service Account/Domain**.

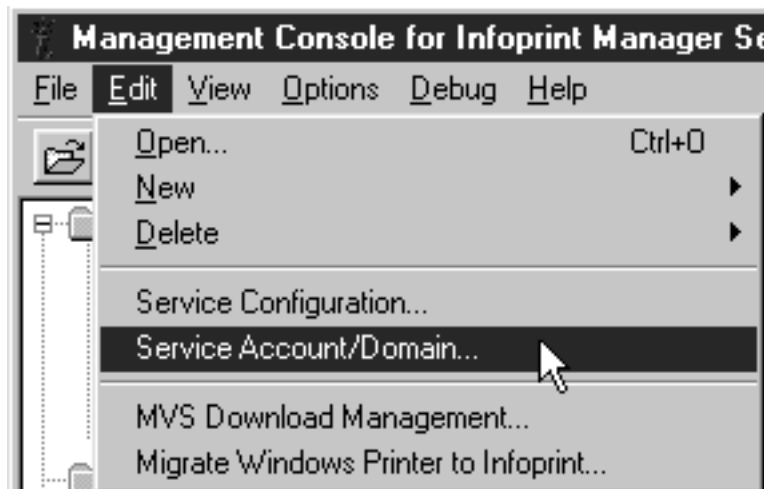


Figure 100. Management Console: Edit menu: Service account/domain

- c. Enter the name of the domain that the Infoprint Manager servers are installed in and the user name and password from step 4 on page 215.

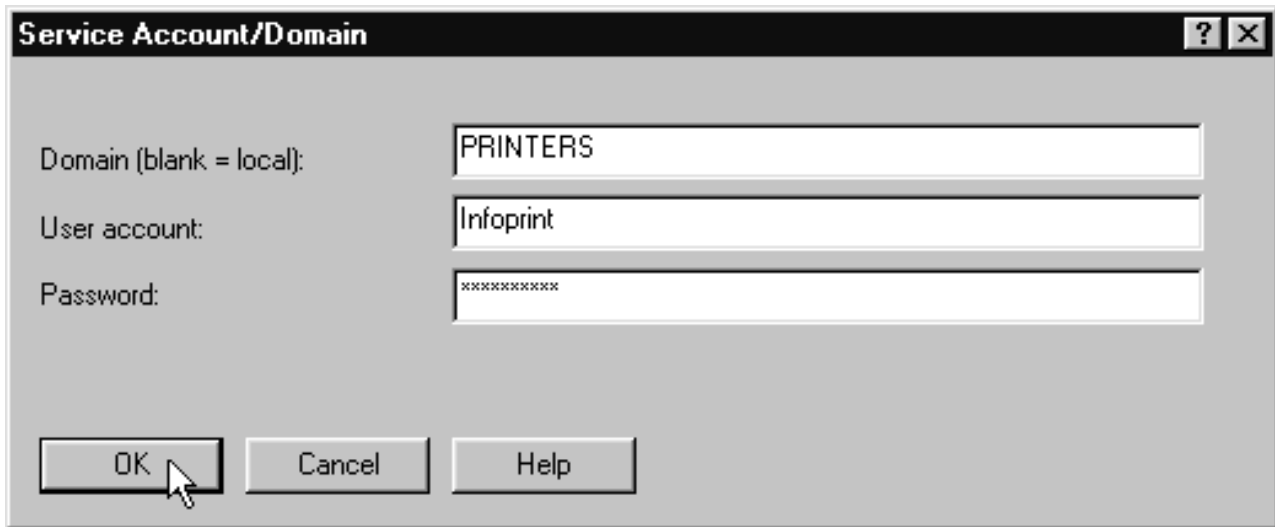


Figure 101. Change Service Account/Domain

- d. Click **OK**.
- e. Select **Edit** → **Service Configuration**.

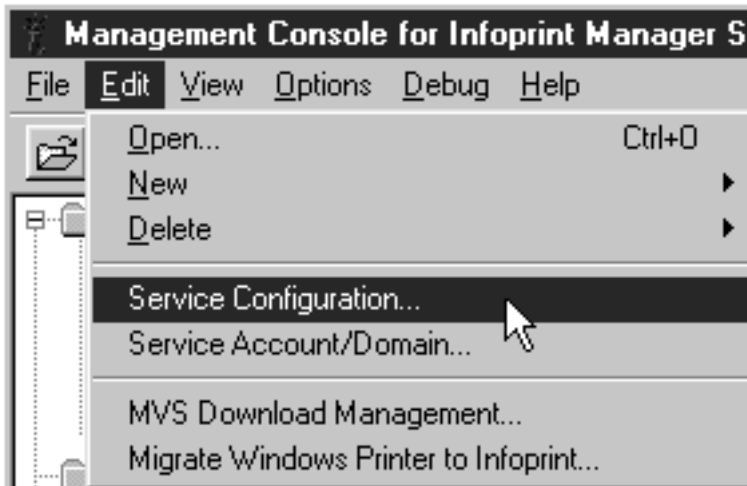


Figure 102. Management Console: Edit menu: Service Configuration

- f. Clear the **Base namespace path** field and type the drive letter that you mapped to the namespace in step 7 on page 239 followed by a colon.

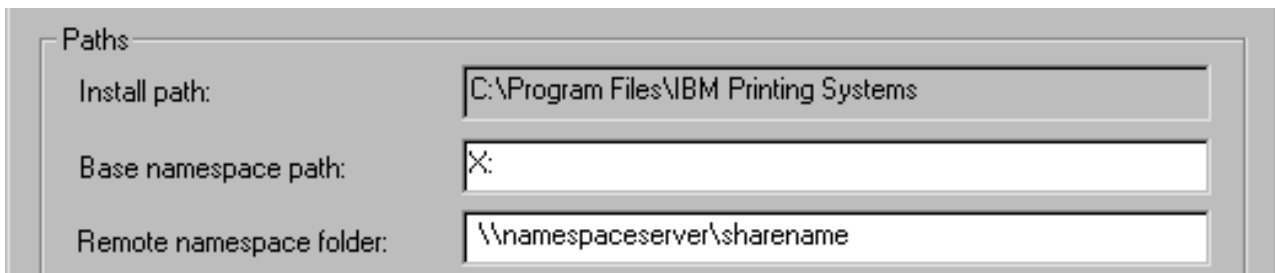


Figure 103. Management Console: Service Configuration: Change paths

- g. In the **Remote namespace folder** field, type the Universal Naming Convention (UNC) name of the directory you shared on the namespace server in this format: `\\namespaceserver\sharename`.
  - h. Click **OK**.
  - i. Repeat on all of the other non-namespace Infoprint Manager server systems.
9. **Disable all of the Infoprint Manager Notification servers except the one on your namespace system.**
- A notification server was installed and started with each of your Infoprint Manager servers. Now that the namespace is shared, however, you only need to run one. To disable the notification servers, do the following on each system except your namespace system.
- a. In the Management Console, select **Edit -> Service Configuration**.

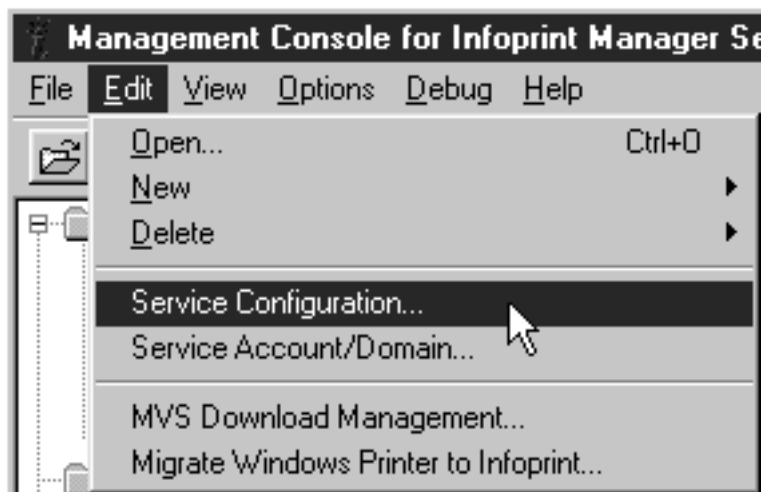


Figure 104. Management Console: Edit menu: Service Configuration

- b. In the **Settings** group box, clear the **Run notification server on this system** checkbox.

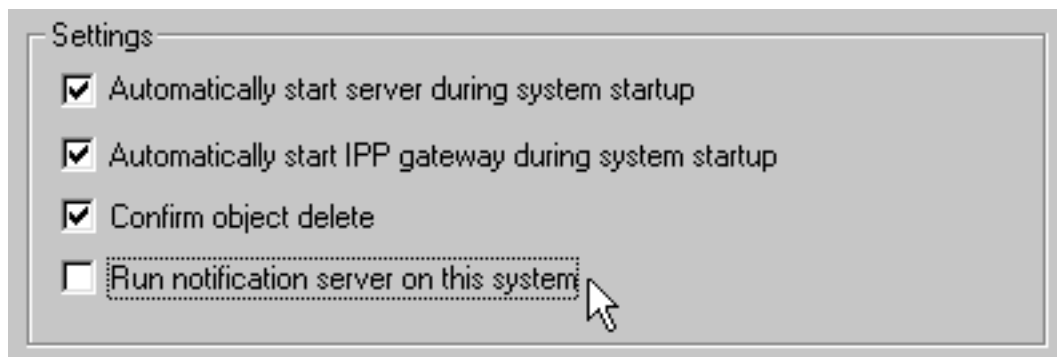


Figure 105. Management Console: Service Configuration: Disable notification

- c. Click **OK**.
  - d. Repeat on all of your non-namespace systems.
10. **Restart all of the Infoprint Manager servers.**

On each system that the Infoprint Manager server runs on, open the Management Console and select **File -> Start Server**.



Figure 106. Management Console: Start Infoprint server

11. *Verify that all of the servers now share the namespace.*

- a. Log on to your namespace system.
- b. Start the Infoprint Manager Administration GUI.
- c. Select **Server -> Show all servers**.

You should see a list of all of the servers that are using the namespace. If any of the servers that you configured to use this namespace do not appear, stop the servers and check the settings that you changed in step 7 on page 239 for that server.

12. *Configure Infoprint Manager Security.*

Use the Management Console on the namespace server to set up security for your printing system. See the **Managing Security** Administration topic and the online help in the Management Console for more information on administering security groups and Access Control Lists (ACLs).

**Note:** Because Access Control Lists (ACLs) are shared across the namespace, the ACLs for your namespace server now apply to all of the servers.

---

## Configuring for interoperability on an Infoprint AIX server

By performing the following set of procedures on both an Infoprint AIX server and an Infoprint Windows NT or Windows 2000 workstation, you can configure Infoprint Manager to support interoperability between Infoprint AIX servers and Infoprint Windows NT or Windows 2000 servers.

When configuring Infoprint Manager servers to support interoperability, ensure that the following two rules are followed:

1. Each Infoprint Manager server must be accessible by all other Infoprint Manager servers using the same IP address.  
For example, if **Server1** is an Infoprint Manager AIX server with an IP address of 9.99.155.122, then all other Infoprint Manager servers (whether Windows NT, Windows 2000, or AIX servers) must use 9.99.155.122 to access **Server1**.
2. The IP address for each Infoprint Manager server must be the address that is identified for the first (or primary) network card that is defined to that server.
3. All printer objects (whether logical destination, actual destination, or queue) must have unique names if they are used by interoperating Infoprint servers.

If the printer objects do not possess unique names, you may have trouble viewing them through the **Infoprint Manager GUI** from a non-namespace server.

Please note that the Infoprint Manager LPD service for Windows NT and the multiserver setup cannot be run together, because the multiserver setup requires that Windows NT Services for UNIX be installed on your server. Windows NT Services for UNIX uses Microsoft Window's TCP/IP printing service, which is an LPD service. Because the Windows LPD and Infoprint LPD services both use the same port, only one LPD service can be run at a time. LPD service for AIX can still be used however, by submitting jobs with the **lpr** command to actual destinations on the AIX server. The **lpr** command can also still be used as before with Windows printer destinations (just not Infoprint Manager printers).

## Setting up the Infoprint AIX server for interoperability

Perform the following procedures on your Infoprint AIX server to prepare for interoperability with an Infoprint Windows NT or Windows 2000 server. The following presumes that you have installed Infoprint Manager for AIX Version 4 Release 1 on your AIX server and have logged onto the server as **root**.

### Starting NFS and connecting the AIX secondary server

1. Open a dterm window and type: `/etc/rc.nfs` to either start the NFS daemon or ensure that it has been started.
2. Open a dterm window, type `smi t`. The following screen displays.

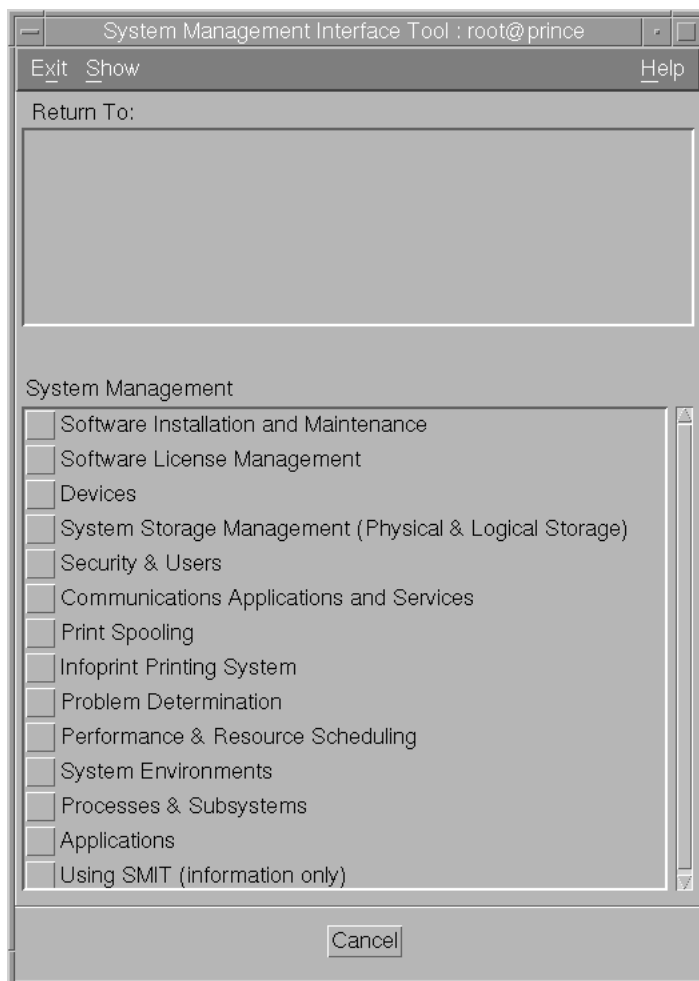


Figure 107. Main SMIT Panel

- From this panel, specify the **Infoprint Printing System-->Infoprint Utilities-->Configure Secondary Servers (NFS)-->Link from Primary Server to Secondary Server** path.
- Specify both the host name and the IP address of the Infoprint Windows server with which you intend to interoperate for the **Secondary Server Host Name** and the **Secondary Server IP Address** fields respectively. For example, `wserv1` and `9.99.193.120` represent the Infoprint Windows server in the pop-up panel displayed below:

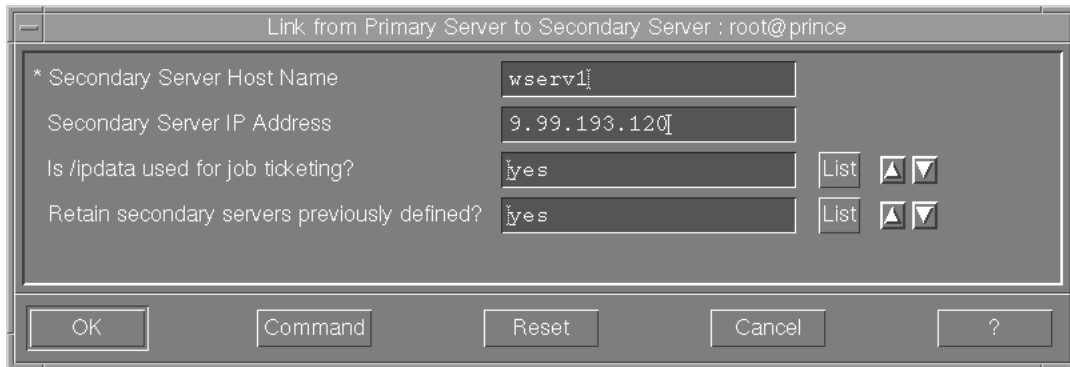


Figure 108. Link from Primary to Secondary Server Panel

You should specify `no` for the **Is /ipdata used for job ticketing?** field, unless you are using this AIX Infoprint Manager server with AIX Fast Connect to allow for file sharing with an Infoprint Submit Windows client for preflighting jobs and saving RIPed files.

You should also allow the **Retain secondary server previously defined?** field to default to `yes` if you have more than one Infoprint server functioning as a secondary server.

- Once verified, click **OK**, and then click **Done**.
- Return to the first SMIT panel displayed in step 2.

### Adding users to and modifying permissions for FST security groups

- Set up the FST Security groups on your AIX server by taking the **Infoprint Printing System-->Security-->Groups-->Show Group** path. From the **Single Select List** pop-up dialog, you should see the following three groups: `acl_admin`, `admin`, and `oper`.
- Once you have verified the existence of these two groups, you should ensure that users in the `admin` group can issue all the Infoprint `pd*` commands. From SMIT, take the **Infoprint Printing System-->Security-->Access Control-->Access Control for Operations-->Show Access Control List** path.
- From the **Single Select List** pop-up dialog, highlight each command and ensure that `GROUP:admin: r--` displays for each command.

If a particular `pd` command does not show `admin` group read authority, use the SMIT **Infoprint Printing System-->Security-->Access Control-->Access Control for Operations-->Change Access Control List** path to specify `GROUP:admin` in the **Users or Groups** field of the **Change Access Control List** panel for that `pd` command. Note that the `admin` group requires only read authority for each `pd` command.



Note that you may have to perform the preceding task only if migrating from an Infoprint Manager 3.1 system or earlier. If you have installed Infoprint Manager 3.2 on a "clean" machine, the **admin** group will have read authority for all **pd** commands by default.

4. Once complete, return to the first SMIT panel displayed in step 2.
5. Take the **Infoprint Printing System-->Security-->Groups-->Add Users to a Group** path. Then specify `acl_admin` for the **Group Name** field. Enter the name of the Windows administrative user you normally log in to the Infoprint Manager for Windows server machine as for the **User or Users to Add** field.  
For the remainder of this procedure we will refer to this Windows administrative user as `ipmwinadmin*`. Note that `ipmwinadmin` must be followed by an asterisk (\*) to account for the fully-qualified host name. (For example, `ipmwinadmin@ipmwinservermachine.boulder.ibm.com`)  
From the **Add Users to a Group** panel, specify `admin` for the **Group Name** field. Enter the name of the Windows administrative user you normally log in to the Infoprint Manager for Windows server machine as for the **User or Users to Add** field. Note that you do not have to perform this step for the `oper` group.
6. Once complete, click OK to ensure the changes take effect and return to the first SMIT panel displayed in step 2.

Now you can proceed to either "Setting up the `idwinadmin` id on an NT domain controller" or "Setting up the `idwinadmin` id on a Windows 2000 domain controller", depending upon the base operating system of your Windows server.

### Setting up the `idwinadmin` id on an NT domain controller

On the Windows NT domain controller server for the domain where your servers reside, perform this task to ensure that the Infoprint Manager Windows servers can access the namespace.

1. Log on to the Primary Domain Controller for the domain that your Infoprint Manager servers operate in as a domain administrator.
2. From the **Start** menu, access the **Programs-->Administrative Tools-->User Manager for Domains** path.
3. From the **User Manager for Domains** window, access the **User** menu and choose **New User**.
4. In the **user name** field enter `ipwinadmin` and in the **password** field type a password value.

IBM recommends that you select **Password never expires** so you don't have to change the password and update all of your servers on a regular basis.

5. Click on the **Groups** button and make sure that `ipwinadmin` is a member of the Domain Admin group and that its primary group is set to Domain Admin.
6. Click **OK**.
7. Click **Add**.

### Setting up the `idwinadmin` id on a Windows 2000 domain controller

On the Windows 2000 domain controller server for the domain where your servers reside, you must perform this task to ensure that the Infoprint Manager Windows servers can access the namespace.

1. Log on to the Primary Domain Controller for the domain that your Infoprint Manager servers operate in as a domain administrator.
2. From the **Start** menu, access the **Programs-->Administrative Tools-->Computer Management** path.

3. From the **Computer Management** window, click the plus (+) sign next to the **Local Users and Groups** list.
4. Click the **Users** folder and choose **New User** from the **Action** pull down menu at the top.
5. In the **User name** field type `ipwinadmin`. In the **Password** and **Confirm Password** fields type a password value.  
IBM recommends that you select **Password never expires** so you don't have to change the password and update all of your servers on a regular basis.
6. Click the **Create** button and close the dialog (it will be prompting you to add another user's information).
7. From the **User** window, open the `ipwinadmin` that you just finished creating by double-clicking on the list item.
8. Click on the **Member Of** tab, click **Add**, then double-click **Administrators**.
9. Click **OK**.
10. Click **OK** a second time to finish.

### Creating the 'ntuser' ID on the Infoprint AIX server

The following procedure creates the example `ntuser` ID that the Infoprint Windows NT or Windows 2000 server will use to share and manage namespace directories and files that reside on the Infoprint AIX server.

1. Specify SMIT and take the **Security & Users-->Users-->Add a User** path.
2. On the Add a User panel, specify `ntuser` as the **User NAME** field value, specify `printq` for the **Primary GROUP** field, `printq,system` as the **Group SET** field, and `/home/ntuser` for the **HOME directory** field.

Change the **File Creation UMASK** field value to `003`

Ensure the **Login AUTHENTICATING Grammar** field is either blank or specifies `compat` (if SMIT will not process the command without an entry in this field).

Ensure the **Password REGISTRY** field value specifies `files` and take the default for all other fields.

3. Click **OK** to save the changes and exit the SMIT interface.
4. Login to the server as **root** and set the initial password.
5. Login as `ntuser` with the initial password, then change the password to `ntuser`.

### Ensuring correct AIX file permissions for interoperability

1. Log on to the server as **root**.
2. From a `dterm` window, type `cd /var/pddir/default_cell`.
3. Ensure that all the files residing in this directory have the correct permissions to be read by the Infoprint Windows server by typing `chmod -R 774 * .`
4. Ensure that all the files residing in this directory belong to the correct group by typing `chgrp -R printq * .`

If these last two steps have been performed correctly, entering an `ls -l` at the command line should display the following permissions and group values:

```
drwxrwxr-- 3 root      printq      512      ....      acl
drwxrwxr-- 3 root      printq      512      ....      printers
drwxrwxr-- 2 root      printq      512      ....      queues
drwxrwxr-- 2 root      printq      512      ....      servers
-rwxrwxr-- 1 root      printq      4        ....      version
```

5. Complete your preparations on the Infoprint AIX server by logging in as `ntuser` and specifying a password of `ntuser`. Remember this password, as you will need it later in this procedure.

Once you have completed these steps, the Infoprint AIX server is ready for interoperability.

## Configure Windows NT servers for interoperability

Some print environments require more than one Infoprint Manager server to handle their print management. If you are adding one or more Infoprint Manager for Windows NT and Windows 2000 servers to your print environment, this topic will tell you what you need to do to make those servers work with the Infoprint Manager AIX Version 3.2 server.

### Notes:

1. In an interoperating environment that includes an AIX server and NT servers, the namespace will reside on the AIX server.
2. You can only install one Infoprint Manager server on a given Windows NT or Windows 2000 workstation or server.
3. If your users will be submitting jobs directly to actual destinations, the actual destination and the associated queue and logical destination must be on the same server.
4. Once you have your multi-server system running, if one of your NT servers shuts down or is restarted, that Infoprint Manager server will not restart automatically when the system restarts. You must open the Management Console for that server and start it manually.
5. The following instructions refer specifically to Windows NT systems.

### Setting up interoperating Windows NT servers

The Windows administrator should use the following procedure on the Infoprint Windows NT or Windows 2000 server to configure for communication with the Infoprint AIX server. For a detailed description of the Windows NT Domain configuration process, refer to "Setting up a print environment with multiple Windows NT/2000 servers" on the web at

<ftp://ftp.software.ibm.com/printers/specs/multint.pdf>.

1. Install all of the Infoprint Manager for NT servers as described in *Getting Started*. When you are finished, your servers will all be operating independently.
2. On each system that an Infoprint Manager server runs on, open the Infoprint Manager Management Console and click **File --> Stop Server**.

## Installing MS Services for UNIX on the Infoprint Windows servers

You must perform the following task on each Windows NT or Windows 2000 server:

1. Using the CD-ROM, install Microsoft Windows NT Services for UNIX from the "Add-on Pack for MicroSoft Windows NT Workstation and Server 4.0" at Version 1.0 or higher.
2. Reboot each Infoprint Windows NT or Windows 2000 server.

## Setting up the common account for Infoprint Windows servers on an NT domain controller

On the Windows NT domain controller server for the domain where your servers reside, you must create the domain account that all the Infoprint Windows NT or Windows 2000 servers will run under. Perform this task to ensure that the Windows servers can access the namespace.

1. Log on to the Primary Domain Controller for the domain that your Infoprint Manager servers operate in as a domain administrator.
2. From the **Start** menu, access the **Programs-->Administrative Tools-->User Manager for Domains** path.
3. From the **User Manager for Domains** window, access the **User** menu and choose **New User**.
4. In the **user name** field enter **ntuser** and in the **password** field type the **ntuser** password from step 4 of the Ensuring Correct AIX File Permissions for Interoperability procedure.  
IBM recommends that you select **Password never expires** so you don't have to change the password and update all of your servers on a regular basis.
5. Click on the **Groups** button and make sure that **ntuser** is a member of the Domain Admin group and that its primary group is set to Domain Admin.
6. Click **OK**.
7. Click **Add**.

## Setting up the common account for Infoprint Windows servers on a 2000 domain controller

On the Windows 2000 domain controller server for the domain where your servers reside, you must create the domain account that all the Infoprint Windows NT or Windows 2000 servers will run under. Perform this task to ensure that the Infoprint Manager Windows servers can access the namespace.

1. Log on to the Primary Domain Controller for the domain that your Infoprint Manager servers operate in as a domain administrator.
2. From the **Start** menu, access the **Programs-->Administrative Tools-->Computer Management** path.
3. From the **Computer Management** window, click the plus (+) sign next to the **Local Users and Groups** list.
4. Click the **Users** folder and choose **New User** from the **Action** pull down menu at the top.
5. In the **User name** field type **ntuser**. In the **Password** and **Confirm Password** fields type the **ntuser** password from step 4 of the Ensuring Correct AIX File Permissions for Interoperability procedure.  
IBM recommends that you select **Password never expires** so you don't have to change the password and update all of your servers on a regular basis.
6. Click the **Create** button and close the dialog (it will be prompting you to add another user's information).
7. From the **User** window, open the **ntuser** that you just finished creating by double-clicking on the list item.
8. Click on the **Member Of** tab, click **Add**, then double-click **Administrators**.
9. Click **OK**.
10. Click **OK** a second time to finish.

## Grant appropriate user rights to the domain user on all Infoprint Manager Windows NT servers

To ensure that the Windows NT Infoprint Manager servers can run as a Windows service using the domain userid `ntuser`, you must ensure that this userid has the proper level of authority on each Windows NT Infoprint Manager server system.

1. Log on to the Infoprint Windows NT or Windows 2000 servers as `ipmwinadmin`.
2. Use the local User Manager to give the domain user (`ntuser`) that you created in step 4 the following user rights on that system:
  - a. Act as part of the operating system
  - b. Create permanent shared objects
  - c. Log on as a service

### Note:

Click the **Advanced User Rights** check box to see these rights.

- d. Repeat this process on all of the Infoprint Manager Windows NT or Windows 2000 servers.

## Grant appropriate user rights to the domain user on all Infoprint Manager Windows 2000 servers

To ensure that the Windows 2000 Infoprint Manager servers can run as a Windows service using the domain userid `ntuser`, you must ensure that this userid has the proper level of authority on each Windows 2000 Infoprint Manager server system.

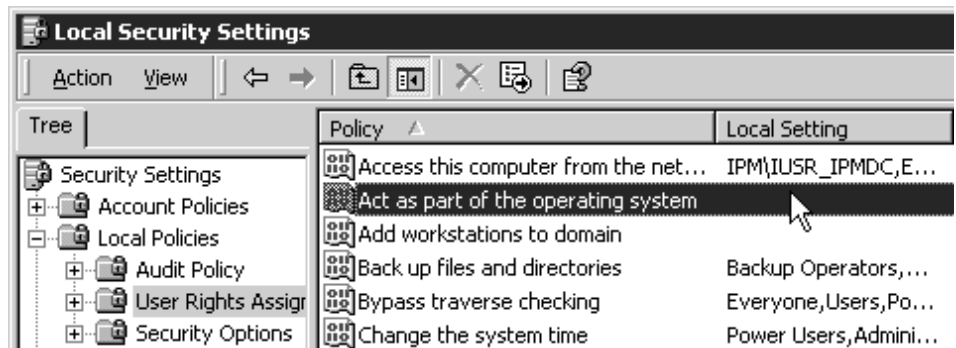
1. Log on to one of the systems as a user who is a member of the Domain Administrators group.
2. Click the Windows **Start** button and select **Settings --> Control Panel**.
3. In the **Control Panel** window, double-click the **Administrative Tools** icon.
4. In the **Administrative Tools** window, double-click the **Local Security Policy** icon.
5. In the right pane of the **Local Security Settings** Window, double-click **Local policies**.



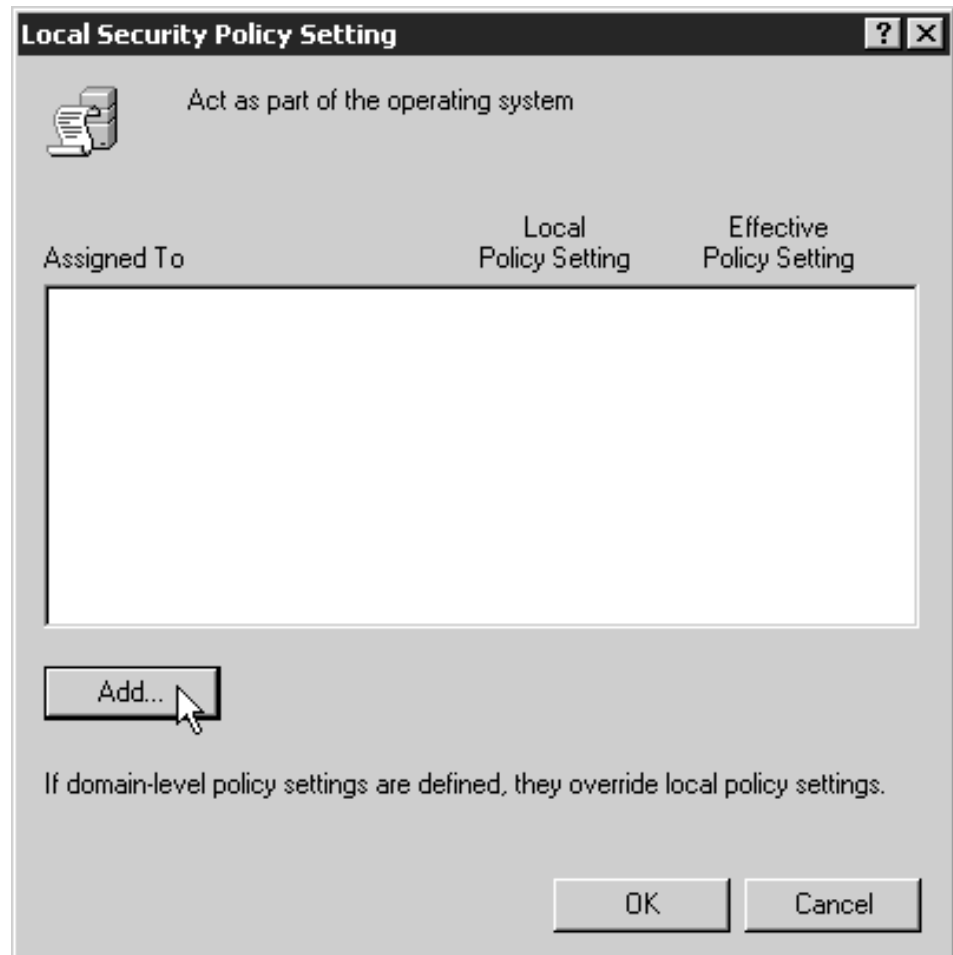
6. Double-click **User Rights Assignment** in the right pane.



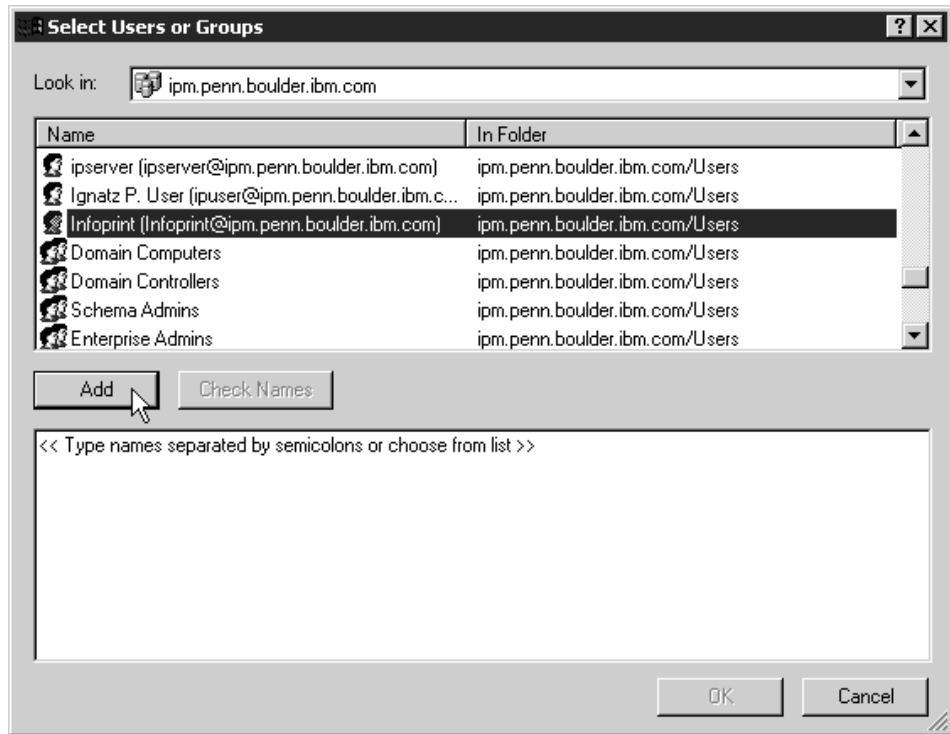
7. In the list of user rights, select **Act as part of the operating system** and double click it.



8. In the **Local Security Policy Setting** dialog, click **Add**.



9. In the **Select Users or Groups** dialog, click the arrow on the drop-down list box and select the domain that your Infoprint Manager servers exist in.



Find and select the domain user you created, and click **Add**.

10. OTF command in the **Select Users or Groups** dialog.
11. OTF command in the **Local Security Policy Setting** dialog.
12. Repeat from step 7 on page 254 for two other user rights: **Create permanent shared objects** and **Log on as a service**.

### Configuring the NFS client to access the namespace

The following NFS client configuration will need to be performed on each Infoprint Manager for Windows NT or Windows 2000 server that will access the namespace on the AIX Infoprint Manager server machine.

1. Log on to the Windows Infoprint Manager server as the domain user `ntuser` who was created in the Setting Up the Common Account for Infoprint Windows Servers on the Domain Controller procedure above.
2. From the **Start** menu, access the **Settings—>Control Panel** path, and double-click **Client for NFS** to configure the NFS client to access the namespace.
3. Click the **Authentication** tab:
  - a. Enter `ntuser` in the **User Name** field.
  - b. Enter the Infoprint AIX password for `ntuser` (the one you set up in step 4 the Ensuring Correct AIX File Permissions for Interoperability procedure) in the **Password** field.
  - c. Click the **PCNFSD Server** radio button and type in the name of an Infoprint Manager AIX server.
4. Click the **Filenames** tab and set values as follows:

<b>Preserve Case (no conversion)</b>	check
<b>Generate Unique Names for Existing Files with Mixed Case Filenames</b>	unchecked



Match Filenames Exactly  
Match Filenames Ignoring Case

check  
uncheck

5. Click **OK**.
6. When you receive the pop-up dialog box that says NFS Login Successful , click **YES**.  
If you do not receive this message, go back to the **Authentication** tab and ensure that the ID and password match those set up in the final step of the Ensuring Correct AIX File Permissions for Interoperability procedure.
7. Log off the Windows Infoprint Manger server as the domain user ntuser and log on to the Windows Infoprint Manger server as the ipmwinadmin user.
8. Repeat steps 2 through 6 from above.

### Verifying access to the AIX namespace that allows interoperability on Windows NT

From each Infoprint Windows NT, you must verify that you have access to the namespace on the Infoprint AIX server. You can do this by mapping a network drive (as ntuser with the ntuser password from step 4 of the Ensuring Correct AIX File Permissions for Interoperability procedure) from the Windows NT server to the shared namespace on the Infoprint AIX server.

1. From the Map Network Drive window, use the **Path** field to specify:

```
\\aix_servername\var\pddir\default_cell
```

where *aix\_servername* is the name of the Infoprint AIX server.

2. Next, specify ntuser in the **Connect as** field. A dialog box will open asking for a password associated with ntuser. Specify the ntuser password from step 4 of the Ensuring Correct AIX File Permissions for Interoperability procedure in the **Password** field.
3. Click **OK** and the **NFS Client** window opens.
4. Click **OK** again. A small notification window should appear that says NFS Login Successful.  
Since the NFS Client was set up in the section Configuring the NFS Client to Access the Namespace, click **OK**.
5. Click **Yes** to accept the current login and **OK** to map the drive.  
If the drive mapped correctly, a new window should open to the mapped drive's contents, and the **NFS client** and **Map Network Drive** windows should be gone.

### Verifying access to the AIX namespace that allows interoperability on Windows 2000

From each Infoprint Windows 2000 server, you must verify that you have access to the namespace on the Infoprint AIX server. You can do this by mapping a network drive (as ntuser with the ntuser password from step 4 of the Ensuring Correct AIX File Permissions for Interoperability procedure) from the Windows 2000 server to the shared namespace on the Infoprint AIX server.

1. From the main Windows view, right click the **My Network Places** icon, choose **Map Network Drive**. In the dialog, use the **Folder** field to specify:

```
\\aix_servername\var\pddir\default_cell
```

where *aix\_servername* is the name of the Infoprint AIX server.

2. Check the **Reconnect at Login** check box.
3. Click on the **Connect Using Different User Name** link.

4. A dialog box will open asking for a username and password associated with ntuser. Specify the ntuser password from step 4 of the Ensuring Correct AIX File Permissions for Interoperability procedure in the **Password** field.
5. Click **OK** and the **NFS Client** window opens.
6. Click **OK** again. A small notification window should appear that says NFS Login Successful.  
Since the NFS Client was set up in the section Configuring the NFS Client to Access the Namespace, click **OK**.
7. Click **Yes** to accept the current login and **Finish** to map the drive.  
If the drive mapped correctly, a new window should open to the mapped drive's contents, and the **NFS Client** and **Map Network Drive** windows should be gone.

### Configuring the 'ntuser' ID for interoperability on the Infoprint Windows servers

Ensure that you complete the following procedure on all Infoprint NT servers.

**Note:** Once this procedure is completed, ensure that you perform all namespace administration from the Management Console on the Infoprint Windows server, not the Infoprint AIX server.

On all Windows NT or Windows 2000 servers, do the following:

1. Log on as user ipmwinadmin .
2. From the **Start** menu, click on the **Programs—>Infoprint Manager—>Management Console** path.
3. Stop the server by either clicking the **Stop** toolbar button or clicking **File—>Stop Server**.
4. Access the **Edit—>Service Account/Domain** path.
5. Specify the NT domain name in the **Domain** field, the account you created during step 4 of Setting up Interoperating Windows NT servers in the **User account** field, and the password in the **Password** field.
6. Click **OK**.  
**Note:** A notification server was installed with each of your Infoprint Manager servers. However, now that the namespace is shared, you only need to run one of them . The notification server must be run on the namespace server. Disable all but one of the Infoprint Manager Notification servers.
7. Click on the **Edit—>Service Configuration** path.
8. In the **Settings** group box, clear both the **Run notification server on this system** and **Run Infoprint Manager LPD service** check boxes.
9. Clear the **Base namespace path** field and type the drive letter that you want to use to link to the namespace followed by a colon (for example, type x:). Use the same drive letter that you used when mapping the network drive in step 4 of the Setting up Interoperating Windows NT servers procedure.
10. In the **Remote namespace folder** field, enter the Universal Naming Convention (UNC) name of the shared directory on the namespace server in this format: `\\namespacerver\sharename`. The sharename of the namespace on an AIX server is `default_cell`. For this example, `\\prince\var\pddir\default_cell` .
11. Click **OK**.
12. Restart all of the Infoprint Manager NT servers by selecting **File —> Start Server** on each Management Console.

13. Verify that all of the servers are now sharing the namespace.
  - Log on to any one of the machines that holds an Infoprint Manager server, open a command prompt.
  - Start the Infoprint Manager Administration GUI.
  - Click on **Server—>Show All Servers**.

You should see a list of all of the servers that are using the namespace. If any of them do not appear, stop the servers and check the settings that you changed in step 7 for that server.

### **Verifying the authority of the ipwinadmin ID**

Use the following procedure to verify that the ipwinadmin id has permission to both modify security groups and issue all the Infoprint **pd\*** commands.

1. Verify that the Infoprint servers are interoperating by performing step 13 of Configuring the 'ntuser' ID for Interoperability on the Infoprint Windows Servers.
2. Ensure that you created a user named ipwinadmin in the domain in either the "Setting up the idwinadmin id on an NT domain controller" on page 249 or the "Setting up the idwinadmin id on a Windows 2000 domain controller" on page 249 procedure.
3. Log on to the Infoprint Windows server as user ipwinadmin.
4. From the **Start** menu, click on the **Programs—>Infoprint Manager—>Management Console** path.
5. From the left pane, click on the **Security** item.
6. Double-click on **Groups** item.
7. From the Groups view in the right pane, highlight the **acl\_admin** item and choose **open** from the drop-down menu.
8. Click on the **Add...** button.
9. In the **Add Member to Group** dialog, type ipwinadmin\* in the field provided. In the **Groups** view, you should be able to see ipwinadmin listed in the **Members** column for the **admin** group.
10. From the Groups view in the right pane, highlight the **admin** item and choose **open** from the drop-down menu.
11. Click on the **Add...** button.
12. In the **Add Member to Group** dialog, type ipwinadmin\* in the field provided. In the **Groups** view, you should be able to see ipwinadmin listed in the **Members** column for the **admin** group.
13. Log on to the Infoprint Windows server as ipwinadmin.  
You should be able to create and modify security groups and issue all the Infoprint **pd\*** commands.



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## Chapter 26. Submitting specialized print jobs

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### Submitting PSF printer input to a PCL or PPDS printer

In addition to AFP printing, Infoprint Manager for Windows NT and Windows 2000 allows you to submit PSF printer input data to PCL and PPDS printers as well.

When you use the Create Printer wizard in the **Infoprint Administration GUI** to create a printer object that will send jobs to a PCL or PPDS printer, you must specify the path for the command in the **Printer command** field. For example, by default the `lpr` command is located at `c:\winnt40\system32\lpr.exe`. Because Infoprint Manager does not search the **PATH** environment variable for the command, you must either add that directory to the **PATH** for that system or specify the entire path of the command, as in the following example:

```
c:\winnt40\system32\lpr -P printername -S servername
```

If you need to specify a file name in the command in a location other than at the end of the command, you must include the text-string **-IPMF-** in the command string. You can only specify one **-IPMF-** text-string in a print command, as in the example below:

```
e:\usrapp\copyit -IPMF- /b e:\tmp
```

where `copyit` represents a user-written application for moving either the PCL or PPDS file that Infoprint Manager generated to the specified directory (in this case, `\tmp` on the `e` drive), and giving it a unique name.

The temporary file name used to store either the PCL or PPDS data generated by Infoprint Manager is substituted into the command wherever the **-IPMF-** text-string is located.

**Note:** The dashes (-) on either side of the **-IPMF-** text-string are part of the syntax and cannot be omitted.

### Setting up PCL tray mappings

Follow these steps to map the input trays requested in the AFP data stream to the input trays on your PCL printer:

1. Determine the AFP bin number and PCL bin number for each input tray.  
Table 24 shows the default bin numbers associated with some standard names for input trays.

Table 24. Default bin mappings

Input tray name	AFP bin number	PCL bin number
alternate	3	5
bottom	2	4
envelope	65	6
manual	100	2
top	1	1

If these mappings are not appropriate for your printer, reverse the process described in “Determining bin mappings” on page 264. In this case, the AFP bin number is the bin number in the data stream and the PCL bin number is the bin number used by the printer.

2. Open the Infoprint Manager GUI.
3. Click the printer that you want to set up trays on.
4. From the **Media/Bins/Trays** tab of the Actual Destination Properties notebook, in the **Media ready** table, select **Add** to define a new tray or **Modify** to change an existing one. You can define up to 15 trays.
5. Complete the following fields:

**Input bin number**

This field specifies the AFP bin number.

**Media ready**

This field shows the medium loaded in the input tray. The drop-down list allows you to select from all media supported by the printer.

**Input tray name**

This field shows the name associated with the input tray. Standard names for PCL input trays are:

**alternate**  
**envelope**  
**lower**  
**manual**  
**upper**

Formerly, these were the only names allowed. You can now use any name you like, subject to these restrictions:

- Manual trays must have the string **manual** somewhere in the name, in any combination of upper and lower case, for example, transparentMANUALa4. You can define multiple manual trays.
- Envelope trays must have the string **envelope** somewhere in the name, in any combination of upper and lower case, for example, Number10Envelope. You can define multiple envelope trays.

**Tray number**

This field specifies the PCL bin number.

**Duplex**

This field specifies whether two-sided printing is possible from this input tray.

6. Click **OK**.

To make your changes take effect, you must now stop and restart PSF, the printer, or both. Follow the steps corresponding to your job submission method.

- If you use PSF Direct to submit jobs:
  1. On your *host* system, stop PSF.
  2. Restart your host PSF. The changes you made are registered when the host PSF restarts.
- If you use DPF to submit jobs:
  1. On your *host* system, stop PSF.
  2. In the Infoprint Manager GUI, click the printer to select it, then choose **Printer -> Stop**.

**Note:** If you don't see **Stop** on the Printer menu, use **Add/Remove Menu Items** to add it.

3. Open the Management Console and click the DPF Host Receivers item in the left pane.
  4. Click the DPF Host Receiver that feeds this printer to select it.
  5. Click **Actions**—> **Obtain Printer Characteristics**.
  6. Go back to the Infoprint Manager GUI and start the printer again.
  7. Restart the host PSF.
- If you use any other method to submit jobs:
    1. In the Infoprint Manager GUI, click the printer to select it, then choose **Printer** -> **Stop**.

**Note:** If you don't see **Stop** on the Printer menu, use **Add/Remove Menu Items** to add it.

2. In the **Stop command** dialog, select **Shut down** and click **OK**.
3. Select **Printer** -> **Enable** to restart the printer.

---

## Printing PCL or PostScript to PSF destinations: specifying which paper bin to use

In general, when you submit a print job through a PCL or PostScript driver, you can use the printer options to specify which input paper bin you want the printer to use. For example, if you know that white 8.5 x 11 inch paper is always loaded in bin one and letterhead is always in bin two, you can select bin one when you want to print a draft and bin two when you're ready to print a real letter.

When you send PCL or PostScript print jobs to a PSF Destination in Infoprint Manager, the data stream is transformed into Advanced Function Presentation (AFP) before it is printed. By default, most PCL jobs that are transformed use paper bin one, regardless of the bin you specify. Transformed PostScript jobs default to letter-sized paper if no other options are specified, and look for a bin that contains that size paper; they either print on paper from the first bin that contains the right size or fail because they don't find the right paper.

If you want the transform program to check for your bin selection and include it in the AFP data that is sent to the printer, you must specify mappings between the PCL and PostScript bins and the AFP bins. The transform will use your mappings to convert the bin number it finds in the PCL or PostScript into an AFP bin number. You can configure Infoprint Manager so that you can specify up to 20 different input paper bins. For information about how to figure out which PCL and PostScript bins map to which AFP bins, refer to "Determining bin mappings" on page 264.

After you have figured out the bin mappings, select the option below that most resembles your situation and follow the related procedure.

- If you only have one printer with multiple paper bins OR if you can use the same mappings for all of your printers, refer to "Editing configuration files" on page 269.
- If you have more than one printer with multiple paper bins AND you want to use different mappings for all of them, refer to "Creating a transform with bin mappings" on page 270.

Be aware that you cannot specify bin mappings and finishing options (such as stapling) on the same job. In addition, you cannot specify bin mappings if you are printing booklets (with or without integrated covers) or side-by-side copies (multiple copies of the same page on one sheet of paper).

## Determining bin mappings

### PCL printing

When you submit a print job through a PCL print driver and select a paper bin to print from, the driver generates a bin number and puts it into the data stream. Unfortunately, different drivers generate different bin numbers for the same bin. For example, one driver might make "Tray 1" equal to bin 4 and "Auxiliary tray" equal to bin 2, while another driver makes "Tray 1" equal to bin 1 and "Auxiliary tray" equal to bin 8. To add more difficulty, the generated PCL bin numbers can range from 0 to 59. While most drivers use low numbers (0 through 10), keep in mind the other possibilities.

During the transformation from PCL to AFP, Infoprint Manager takes the bin number that the driver generated and compares it to the bin mappings you set. The `pcl2afp` transform inserts the AFP bin number that you assigned and sends the job to the destination you requested. The printer prints the job on paper from the bin you chose. As a result, it is essential that all of the users who submit jobs to a given Infoprint Manager printer use the same driver. If they do not, the mappings you set up will not work correctly for them.

The first challenge for you in setting up the mappings is determining what bin number the PCL driver places in the data stream. For various IBM printers, the drivers actually generate the same bin numbers. If you are using the PCL5e driver for an IBM Network Printer 12, Network Printer 17, Network Printer 24, Infoprint 20, Infoprint 21, Infoprint 32, or Infoprint 40, the numbers listed in Table 25 are placed in the data stream.

Table 25. IBM PCL5e Bin numbers

Tray (what you select in Device Settings)	PCL bin number (what the driver puts in data stream)
Automatically Select	0
Tray 1	1
Manual feed paper	2
Manual feed envelope	3
Auxiliary tray	4
Tray 2	5
Envelope feeder or Envelope tray	6
Tray 3	7
Tray 4	8
Tray 5 or 2000 sheet input tray	9

If you are using a different driver, the documentation that came with your printer may provide these numbers; look for a section on the PCL driver. Alternatively, if you are able to capture the PCL data that is sent to a specific bin in your printer, you can look for the bin number in the data stream. In some cases, however, it might be just as easy to use trial and error to determine the correct mappings. Again, keep in mind that PCL bin numbers can range from 0 to 59.



The second challenge is in determining the AFP bin numbers that correspond to your printer. AFP bin numbers range from 1 to 255, and are not standard from printer to printer. Some printers have hard-coded bin numbers; each bin on the printer actually has a number written on it. In other cases, the AFP bin numbers are more difficult to discover. In fact, the numbering scheme for some printers changes completely when you add one of the optional paper bins. Still other printers allow you to change the bin numbers yourself. As a result, it is difficult to predict exactly what the AFP bin numbers for your printers are. However, there are some guidelines that you can use.

- Most AFP paper bins use numbers 1 through 10, with 1 being the biggest, topmost, or bottommost bin.
- Envelope feeders/bins start at number 65 and can go up to 69.
- The manual feed tray is usually number 100.

If you are printing to IBM printers, the best place to find the default numbering schemes for each printer is the *IPDS and SCS Technical Reference* and the *IPDS Handbook for printers that use the AFCCU*, both of which are available from the IBM Printing Systems website at <http://www.ibm.com/printers>. (Select **Support** on the left-hand navigation bar, then look under **Online Service and Support**, find the **Manuals and Publications** link. The *IPDS and SCS Technical Reference* is located under **Distributed Printers-Network Printer Technical References**, and the *IPDS Handbook for printers that use the AFCCU* is under **Print on Demand and Production Printers- IPDS Technical References**.

If you find the AFP bin numbers for your printer in this documentation, be aware that the number is written in hexadecimal notation. You must convert the number to decimal before you put it in the mapping file. In addition, the numbers that are listed are the machine numbers, not the numbers the software requires (they're the *IPDS* bin numbers, not the *AFP* bin numbers). After you convert the number to decimal, add 1 to it to get the number that you should put in the mapping file.

For example, if you have a printer with three paper bins and a manual feed bin, you could do the following.

1. On the system that your Infoprint Manager server runs on, install the PCL driver that you plan to use. The easiest way to install the driver is by using the Windows **Add printer** wizard to create a printer that uses that driver.
2. Using the Management Console, create a Windows gateway printer that uses the driver you just installed and has a PSF printer as its target destination.
3. Click the Windows **Start** button and select **Settings**—>**Printers** to open the **Printers** window.
4. Right-click the Windows gateway printer you just created and select **Properties** from the pop-up menu.
5. Click the **Device Settings** tab to show the printer options that are available for this driver. For example, some drivers show a list of "paper trays" and allow you to select a paper size for each one.
6. Make sure that all of the paper trays you plan to use are activated and have the correct size paper selected.
7. Click **OK** to close the dialog and make the settings take effect.
8. Determine which method you will be using to map bins:
  - If you only have one printer with multiple paper bins OR if you can use the same mappings for all of your printers, refer to "Editing configuration files" on page 269.

- If you have more than one printer with multiple paper bins AND you want to use different mappings for all of them, refer to “Creating a transform with bin mappings” on page 270.
9. Follow the appropriate procedure.
- When you have to enter PCL and AFP bin numbers, start with the guidelines above and create some logical mappings, such as the ones shown in table Table 26 for an Infoprint 20.

Table 26. Sample mapping table for an Infoprint 20

Tray selection	PCL bin number	AFP bin number
Tray 1	1	1
Tray 2	5	2
Tray 3	7	3
Manual feed tray	2	100
Envelope tray 1	6	60
Envelope tray 2	4	61

Complete the procedure.

10. Load each paper bin (including the manual feed bin) with a different kind, color, or specially marked paper.
11. Submit a test job to each bin and see which paper it prints on. Keep track of your results and use them to change the mappings to meet your configuration.
12. Once you have the mappings worked out correctly, tell your users the following information:
  - How to create a connection to this Windows gateway printer from their workstations.
  - What options to set in the device settings.
  - What kind of paper is in each bin.
  - How to print to each bin.

## PostScript printing

PostScript drivers use different methods to determine what paper bin to print a job on. Some drivers allow you to select which paper tray you want the paper to come from. When you submit a job, the driver sends a number to the printer to ask for the corresponding tray. Other drivers allow you to select different paper options (such as size, color, or weight). When you submit a print job, these options are sent with the print job and are used to determine which paper bin to use (paper size is the only option that you have to set for this function to work).

When you configure Infoprint Manager correctly, it will work with either type of driver. There are three steps involved in performing this configuration:

1. “Gathering paper tray information”
2. “Identifying paper trays to Infoprint Manager” on page 268
3. “Testing tray mappings” on page 268

**Gathering paper tray information:** The first step in configuring Infoprint Manager is to figure out :

- How many paper trays does your printer have?
- What is the AFP bin number for each tray?

Guidelines for figuring out the bin numbers are provided below.

- What kind of paper will you be loading into each tray?

At a minimum, you should know what size paper will go in each tray. If you need to, you can also specify a color or weight of the paper.

Use this chart to record your data.

Table 27. Paper bin information

AFP bin number (in decimal notation)	Paper tray on printer	Paper loaded
100	Manual feed tray	

There is trial and error work involved in figuring out the correct bin numbers. AFP bin numbers range from 1 to 255, and are not standard from printer to printer. Some printers have hard-coded bin numbers; each bin on the printer actually has a number written on it. In other cases, the AFP bin numbers are more difficult to discover. In fact, the numbering scheme for some printers changes completely when you add one of the optional paper bins. Still other printers allow you to change the bin numbers yourself. As a result, it is nearly impossible to predict exactly what the AFP bin numbers for your printers are. However, there are some guidelines that you can use.

- Most AFP paper bins use numbers 1 through 10, with 1 being the biggest, topmost, or bottommost bin.
- Envelope feeders/bins start at number 65 and can go up to 69.
- The manual feed tray is usually number 100.

If you are printing to IBM printers, the best place to find the default numbering schemes for each printer is the *IPDS and SCS Technical Reference* (S544-5312) and the *IPDS Handbook for printers that use the AFCCU* (G544-3895), both of which are available from the IBM Printing Systems website at <http://www.ibm.com/printers>. (Select **Support** on the left-hand navigation bar, then look under **Online Service and Support**, find the **Manuals and Publications** link. The *IPDS and SCS Technical Reference* (S544-5312) is located under **Distributed Printers- Network Printer Technical References**, and the *IPDS Handbook for printers that use the AFCCU* (G544-3895) is under **Print on Demand and Production Printers- IPDS Technical References**.

**Important:** If you find the AFP bin numbers for your printer in this documentation, be aware that the number is written in hexadecimal notation. You must convert the number to decimal before you put it in the mapping file. In addition, the numbers that are listed are the machine numbers, not the numbers the software requires (they're the *IPDS* bin numbers, not the *AFP* bin numbers). After you convert the number to decimal, add 1 to it to get the number that you should put in the mapping file.

**Identifying paper trays to Infoprint Manager:** Once you have the chart filled in with your first attempt at mappings, you can move to the second step: identifying all of the bins to Infoprint Manager.

By default, Infoprint Manager assumes that all PostScript printers have only one paper tray. When you identify the trays, you let Infoprint Manager know how many there really are. Then, when you submit a job, you can choose any one of them.

You identify the paper bins to Infoprint Manager either in the configuration file or in the transform you create. In this step, you will determine the syntax that you will be able to use in either place. The general syntax of the identification statement is:

```
inputX=(size,type=xxx,weight=xxx,color=xxx),inputX=(size,
type=xxx,weight=xxx,color=xxx)
```

Where the following conditions apply:

- Each `inputX` corresponds to a different paper tray. You should have as many `inputX` entries as you have paper trays. Separate them with commas, no spaces.
- The `X` in each `inputX` is replaced with the **AFP bin number** from Table 27 on page 267 for each tray.
- Size is the only required paper attribute. Replace the word `size` with the size of the paper that will be in the tray, such as **letter**, **legal**, **8.5x11i**, or **A4**.
- Other paper attributes can be specified or left out entirely.

All of the following are valid identification statements:

```
input1=(letter),input2=(legal),input100=(letter)
input1=(8.5x11i,color=blue),input2=(8.5x11i,color=yellow),
input3=(11x17i),input100=(8.5x11i)
input1=(A4,color=white),input2=(A4,color=blue),input3=(A4,color=yellow),
input65=(C5),input100=(A4,type=letterhead)
```

Write out your identification statement before moving on to the next step.

**Testing tray mappings:** Once you have your identification statement created, you can test your mappings to make sure they are correct. The following procedure explains one way to verify the mappings.

1. On the system that your Infoprint Manager server runs on, install the PostScript driver that corresponds to your printer. The easiest way to install the driver is by using the Windows **Add printer** wizard to create a printer that uses that driver. After you create the printer, you can delete it; the driver will still be installed.
2. Using the Management Console, create a Windows gateway printer that uses the driver you just installed and has a PSF printer as its target destination.
3. Click the Windows **Start** button and select **Settings**—>**Printers** to open the **Printers** window.
4. Right-click the Windows gateway printer you just created and select **Properties** from the pop-up menu.
5. Click the **Device Settings** tab to show the trays and options that are available.
6. If your driver lists the paper trays that are available, activate them and select paper sizes for each one. Set the options to match your identification statement.
7. Click **OK** to close the dialog and make the settings take effect.

8. Determine which method you will be using to map bins:
  - If you only have one printer with multiple paper bins OR if you can use the same mappings for all of your printers, refer to “Editing configuration files”.
  - If you have more than one printer with multiple paper bins AND you want to use different mappings for all of them, refer to “Creating a transform with bin mappings” on page 270.
9. Follow the appropriate procedure.
 

When you have to change the configuration file or enter the command that your transform will use, replace the `inputX=...` statement with your identification statement from “Identifying paper trays to Infoprint Manager” on page 268, and complete the procedure.
10. Load each paper bin (including the manual feed bin) with a different kind, color, or specially marked paper.
11. Test your settings by submitting print jobs to each bin of the Windows gateway printer and making sure that it prints on the correct paper. If a job does not print on the correct paper, adjust your AFP bin numbers and input numbers as necessary.
12. Tell your users the following information.
  - How to create a connection to this Windows gateway printer from their workstations.
  - What options to set in the device settings.
  - What kind of paper is in each bin.
  - How to print to each bin.

## Editing configuration files

There are five configuration files that come with the Infoprint Manager PCL to AFP and PostScript to AFP transforms. For the PCL transform, they are: `pcl2afp.cfg` and `pcl2afpd.cfg`. For the PostScript transform they are: `ps2afp.cfg`, `ps2afpd.cfg` (used with Infoprint 3000 and Infoprint 4000 printers), and `3160d.cfg` (used with all other IPDS printers). You only need to edit one of these files per data stream, depending on the printer you send your jobs to and the following considerations.

- Edit `pcl2afpd.cfg`, `ps2afpd.cfg`, or `3160d.cfg` if you want everyone to use the same mappings. This method is recommended.
- Edit `pcl2afp.cfg` or `ps2afp.cfg` if different people have to use different mappings.

Follow these steps to edit the appropriate file.

1. On the system that your Infoprint Manager server is installed on, locate the file. It should be in the `<install path>\pcl2afp` or the `<install path>\ps2afp` directory.
2. Open the file in a text editor such as Notepad.
 

At the bottom of the file, you will see blocks of instructions and sample commands.
3. Modify the file according to the instructions in the file.
 

Choose one of the options and uncomment that line, then enter your mapping numbers. If you are using the `ps2afp` transform, replace the `inputX=...` portion of the `device_controls` line with your identification statement from “Identifying paper trays to Infoprint Manager” on page 268.
4. Save the file.

**Note:** It is recommended that you save a copy of your changes in a directory outside of the Infoprint Manager install path so that you have a copy in case you ever have to re-install or apply service to Infoprint Manager.

5. Close the file.
6. Restart the computer to have the new settings take effect.
7. Tell your users what kind of paper is in each bin and how to print to each of them.

## Creating a transform with bin mappings

You can use the Infoprint Manager transforms to process print jobs with different options, including which paper bins to use. First, you create a transform using the Infoprint Manager Administration GUI, specifying an input data stream and an output datastream. Then, you associate it with one or more printers. When you send a print job to that printer, your transform checks to see if the file is the datastream that needs to be transformed. If it does, the transform converts the file as you specified; if it is not, the transform passes the file to the logical destination. As a result, if you don't want to use the same bin mappings for all of your printers, you can create several different transforms, all with different mappings. Then, associate each transform with whichever printer or printers you want.

**Note:** If you will be sending both PCL and PostScript jobs to the same printer, you can create two transform objects (one that accepts PCL and one that accepts PostScript) and associate them both with that printer.

Follow these steps to create a transform that maps PCL/PostScript bins to AFP bins.

1. In the Infoprint Manager Administration GUI, click the **Server** menu and select **Transform -> Create**.
2. In the **Create transform** dialog, fill in the fields:
  - **Name:** Type a name for the transform.
  - **Server:** Choose the correct Infoprint Manager server.
  - **Format of output file:** Select **MODCA-P**.
  - **Description:** Type a description that will help you remember which printer uses this transform.
  - **Transform options:** The command line that will execute when the transform runs.

If this transform accepts PCL, type:

```
pcl2afp -o "%o" "%i" -device  
'plex,inputX=(pcl_bin=Z),inputX=(pcl_bin=Z)'
```

Replacing the Xs with the number of the AFP bin (on the printer) and Zs with the number of the PCL bin. You can specify up to 20 mappings.

If this transform accepts PostScript, type:

```
ps2afp -o "%o" "%i" -device  
'plex,inputX=(size,type=xxx,color=xxx,weight=nnn),  
inputX=(size,type=xxx,color=xxx,weight=nnn)'
```

Replace the inputX=... portion of the command with your identification statement from "Identifying paper trays to Infoprint Manager" on page 268.

- Select **Transform and print**.
- **Document formats allowed:** The data stream that your transform accepts. Select **PCL** or **PostScript** and add it to the allowed values.
- Click **OK**.



3. Select the printer that you want to associate this transform with and open its properties notebook.
4. Click the **Configuration** tab.
5. Find the **Transforms to use** field.
6. Select the transform you just created in the **Possible values** box and add it to the **Values** box.
7. Click **Apply**.
8. Click the **Document** tab.
9. Find the **Formats allowed** section and look in the **Values** box. Make sure that **modca-p** and either **pcl** or **PostScript** are listed.
10. Click **OK**.
11. Tell your users what kind of paper is in each bin and how to print to each of them.

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## Sending print jobs to Infoprint Manager for Windows from an AIX system

To send print jobs from an AIX system to Infoprint Manager for Windows, you need to set up an appropriate Line Printer client (LPR) on the AIX system and an appropriate Line Printer Daemon (LPD) on the Windows system. If you want to use the advanced printing options (such as `formdef` and `pagedefs`) that Infoprint Manager provides, you must use **lprafp** on your AIX system and the Infoprint Manager LPD on your Windows system.

**lprafp** is a version of LPR that allows you to use `-o` options to specify advanced print options when you submit jobs to Infoprint Manager. You can download an **lprafp** sample code package (including a compiled version of the code that can be used on AIX version 4.3.3 and higher) from the IBM Printing Systems website at <http://www.ibm.com/printers>. IBM Printing Systems does not provide support for the package.

The Infoprint Manager LPD is installed and activated with your Infoprint Manager for Windows server. It is the only LPD that properly processes the `-o` options that **lprafp** submits. If you use a different LPD (such as *TCP/IP Print Services*, the LPD that is shipped with the Windows operating system), the `-o` options that you send will be lost.

**Note:** The LPD supplied with the Windows operating system (TCP/IP Print Services) does support a `-o` option, but it is not the same. This `-o` option specifies the binary option.

For additional information about the Infoprint Manager LPD, refer to Chapter 19, "Using the Infoprint Manager line printer daemon (LPD)" on page 147.

If you use the Infoprint Manager LPD, you will only be able to LPR print jobs to Infoprint Manager destinations, not to Windows printers. If you use a different LPD, you will only be able to LPR to Windows printers. To submit a job to Infoprint Manager, you will have to set up a Windows gateway printer.

If you cannot use **lprafp** and/or the Infoprint Manager LPD, you can use the standard LPR and a different LPD to submit jobs from an AIX system to your Infoprint Manager for Windows system. However, you will not be able to use advanced print options.

**Important:**

1. Do not use this procedure if you have Infoprint Manager for AIX installed on your AIX system. If you have Infoprint Manager for AIX installed, you should use the Infoprint Manager AIX Client to submit print jobs from AIX systems to your Infoprint Manager servers. In addition, you should consider setting up an interoperating environment so your Infoprint Manager servers can work together.

For additional information on interoperability, refer to "Configuring for interoperability on an Infoprint AIX server" on page 246

2. When you issue the **lpr** command, you must specify the option that designates *binary* or *already-formatted* data. For example, on AIX you must use the **-l** (lower case "L") option on the **lpr**.

To submit jobs from an AIX system to your Infoprint Manager for Windows system, you must complete two tasks:

- "Verify that the Infoprint Manager LPD is running"
- "Install and configure lprafp"

## Verify that the Infoprint Manager LPD is running

1. On the system that your Infoprint Manager server runs on, open the Infoprint Manager Management Console.
2. Select **Edit** → **Service Configuration**.
3. In the **Service Configuration** dialog, find **Run Infoprint Manager LPD service** check box.
  - If the box is checked, the Infoprint Manager LPD is already running. Click **Cancel** to dismiss the dialog.
  - If the box is not checked, click **Cancel** and continue with step 4.
4. In the Management Console, select **File** → **Stop Server**.
5. After the Infoprint Manager server has stopped, click **Edit** → **Service Configuration** again.
6. Click the **Run Infoprint Manager LPD service** check box to select it.
7. Click **OK**.
8. Select **File** → **Start Server** to restart the Infoprint Manager server.

## Install and configure lprafp

The lprafp sample code package is available for free download from the IBM Printing Systems website at <http://www.ibm.com/printers>. Use this procedure to locate and install the package.

**Note:** The compiled version of lprafp for AIX will only run on AIX 4.3.3 and above. If you have a lower version, you must use a different LPR client and will not be able to use advanced printing options.

1. Navigate to <http://www.ibm.com/printers> in your web browser.
2. Under **Resources for**, click **Infoprint Manager**.
3. On the Infoprint Manager Family Home Page, click **Infoprint Manager for Windows**.
4. On the Infoprint Manager for Windows home page, select **Downloads** from the list under **Product Resources**.
5. On the Downloads page, find **lprafp** and click to download.
6. Use a zip utility to unzip the package.



7. Open the README file and follow the instructions for installing the package on a UNIX system. Skip steps 4 & 5 of the instructions, because you will be using the already compiled version of lprafp.

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## Printing from ERP applications

You can send PostScript or PCL output from your ERP software to Infoprint Manager to be printed. If your ERP software resides on a Windows system, you should submit the jobs through a Windows gateway printer. If your ERP software resides on an AIX system and you do not have Infoprint Manager for AIX installed, you should use the lprafp Line Printer Client (LPR) and the Infoprint Manager Line Printer Daemon (LPD).

## Submitting ERP print jobs from a Windows system

### Defining the Windows gateway printer

Your ERP print jobs will be submitted to a Windows gateway printer that is associated with the appropriate PostScript or PCL driver for your printer. Follow these steps to define your Windows gateway printer:

1. Create or select an Infoprint actual destination that will accept the data stream that you will be sending to the printer (PostScript, PCL, or AFP).  
This actual destination can be almost any type of Infoprint printer (Passthrough, BSD, IPP, PSF) that you can create using the Infoprint Manager Administration GUI. If you don't want to use the default queue and logical destination, create them and associate the actual destination with them.
2. Install the appropriate PostScript or PCL printer driver on the system that your Infoprint Manager server resides on.
  - If you will be sending PostScript data to an AFP printer, you can use the IBM Network Printer 17 driver, which you can download from the IBM Printing Systems website.
  - Otherwise, you can install and use the driver that came with your printer.

Follow these steps to install the driver on your system.

- a. Insert the CD or disk containing the driver into the correct drive.
- b. Start the Windows **Add Printer** wizard and create a local printer. When you have to select a port, select FILE:.
- c. When the wizard gives you a list of manufacturers and printers, select either the IBM Network Printer 17 or the driver that came with your printer.
- d. Finish the wizard without printing a test page or making this printer the default.

Once you finish the wizard, you can delete this printer; the driver will still be installed.

3. Open the Management Console and create a Windows gateway printer.  
In the **Target destination** field, select the destination that you created or chose in 1. In the **Windows driver name** field, select the driver that you installed in 2. Remember the **Share name** that you choose; you will need it later. Refer to the Management Console online help for additional information.

## Adding the Windows gateway printer to the system you want to print from

Once the Windows gateway printer is created, you can add it to the desktop of the system that you want to print from. Then you will be able to submit your print jobs directly to it. Follow this procedure to add the Windows gateway printer to the desktop.

1. Use the **Add Printer** wizard to add the Windows gateway printer to your desktop as a network printer. When you are prompted for the name of the printer to connect to, find or enter the **Share name** of the Windows gateway printer you created. Finish the wizard.
2. Once the connection to the Windows gateway printer is created, you can print to it just as you would to any other printer.

## Submitting ERP print jobs from an AIX system

If your ERP software resides on an AIX system, and you don't have Infoprint Manager for AIX installed, you need to set up an appropriate Line Printer client (LPR) on the AIX system and an appropriate Line Printer Daemon (LPD) on the Windows system. If you want to use the advanced printing options (such as `formdef` and `pagedefs`) that Infoprint Manager provides, you must use **lprafp** on your AIX system and the Infoprint Manager LPD on your Windows system.

**lprafp** is a version of LPR that allows you to use `-o` options to specify advanced print options when you submit jobs to Infoprint Manager. You can download an **lprafp** sample code package (including a compiled version of the code that can be used on AIX version 4.3.3 and higher) from the IBM Printing Systems website at <http://www.ibm.com/printers>. IBM Printing Systems does not provide support for the package.

The Infoprint Manager LPD is installed and activated with your Infoprint Manager for Windows server. It is the only LPD that properly processes the `-o` options that **lprafp** submits. If you use a different LPD (such as *TCP/IP Print Services*, the LPD that is shipped with the Windows operating system), the `-o` options that you send will be lost.

**Note:** The LPD supplied with the Windows operating system (*TCP/IP Print Services*) does support a `-o` option, but it is not the same. This `-o` option specifies the binary option.

For additional information about the Infoprint Manager LPD, refer to Chapter 19, "Using the Infoprint Manager line printer daemon (LPD)" on page 147.

If you use the Infoprint Manager LPD, you will only be able to LPR print jobs to Infoprint Manager destinations, not to Windows printers. If you use a different LPD, you will only be able to LPR to Windows printers. To submit a job to Infoprint Manager, you will have to set up a Windows gateway printer.

If you cannot use **lprafp** and/or the Infoprint Manager LPD, you can use the standard LPR and a different LPD to submit jobs from an AIX system to your Infoprint Manager for Windows system. However, you will not be able to use advanced print options.

### **Important:**

1. Do not use this procedure if you have Infoprint Manager for AIX installed on your AIX system. If you have Infoprint Manager for AIX installed, you should use the Infoprint Manager AIX Client to submit print jobs from AIX systems to

your Infoprint Manager servers. In addition, you should consider setting up an interoperating environment so your Infoprint Manager servers can work together.

For additional information on interoperability, refer to “Configuring for interoperability on an Infoprint AIX server” on page 246

2. When you issue the **lpr** command, you must specify the option that designates *binary* or *already-formatted* data. For example, on AIX you must use the -l (lower case “L”) option on the **lpr**.

To submit ERP jobs from an AIX system to Infoprint Manager for Windows, you must complete the two tasks listed in “Sending print jobs to Infoprint Manager for Windows from an AIX system” on page 271.

