

IBM Infoprint Manager for Windows NT and
Windows 2000



Infoprint Manager: Procedures

Version 1 Release 1

IBM Infoprint Manager for Windows NT and
Windows 2000



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Version 1 Release 1

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October 4, 2001

About this publication

This publication is a compilation of all of the existing Infoprint Manager procedures and FastPaths.

Audience

This publication can be used by all users of Infoprint Manager for Windows NT and Windows 2000 environments.

- **Part 1. Administrator Procedures** is primarily intended for print administrators and users who need to install and configure Infoprint Manager. It provides conceptual information and procedures for setting up Infoprint Manager.
 - **Part 2. Operator and User Procedures** is primarily intended for print room operators who have to manage printers and print jobs, and for other users who submit jobs to be printed. It provides conceptual information and procedures for working with Infoprint Manager on a daily basis.
 - **Part 3. Infoprint Manager Fast Paths** is primarily intended for print administrators and operators. It provides step-by-step procedures for some of the common tasks that operators must perform regularly.
-

Most Recent Information

This document is available on the World Wide Web from the IBM Printing Systems website at <http://www.ibm.com/printers>.

IBM® will update the web version of this document regularly. You can download it in **PDF** format by going to the IBM Printing Systems website at <http://www.ibm.com/printers> and clicking on the Infoprint Manager link (under **Resources For**), then selecting the IBM Infoprint Manager for Windows NT and Windows 2000 link. On the product home page, select **Product Library** from the drop-down list in the right-hand navigation bar, and then click the **Infoprint Manager: Procedures** link under the **Publications** heading.

October 4, 2001

Part 1. Administrator Procedures

October 4, 2001

Chapter 1. Migrating from PSF for OS/2

Important Information for PSF for OS/2 Users

If you are replacing your PSF for OS/2 system with IBM Infoprint Manager for Windows NT and Windows 2000, you must be aware of the following differences between the two products.

- Infoprint Manager does not support SNA printers or IBM model 3820 printers.
- The Upload-n-Print function of PSF for OS/2 (the direct submission of print jobs from LAN applications to host-attached printers) is not available in Infoprint Manager.
- If you currently use the Distributed Print Function (DPF) of PSF for OS/2, the resource files you use for printing are in Intelligent Printer Data Stream (IPDS) format. If you plan to use the DPF function of Infoprint Manager, you can still use those resources. However, if you want to switch to MVS Download for your host printing, you will need to use the Advanced Function Presentation (AFP) versions of those files on the Windows NT/Windows 2000 system that Infoprint Manager is installed on. You can find the AFP versions on your host system.
- If you currently submit print jobs to PSF for OS/2 from a Netware server, you can submit them to Infoprint Manager as well. However, the netware.exe feature of Infoprint Manager can only accept jobs from a Netware server running version 4.1 or higher. If you currently use netware.cmd in PSF for OS/2, you already have the correct version of Netware. If you use nwqinfo.dll or nwpsf2.exe in PSF for OS/2, you will need to upgrade your Netware server.

DPF in Infoprint Manager

The DPF function of Infoprint Manager replicates almost all of the features that were available in DPF in PSF for OS/2, with three important differences. The most important differences between the two versions are the communications protocol they use, the way you configure the print spool, and the interfaces you use to manage the system.

Communications protocol

In Infoprint Manager, the DPF host receiver emulates a TCP/IP printer instead of an SNA printer.

Spool configuration

The spool configuration in Infoprint Manager is much more versatile than it was in PSF for OS/2. In PSF for OS/2, each host receiver had its own spool and print queue. In addition, if you wanted to accept print from the LAN, you had to configure a separate spool. Refer to Figure 1 on page 4 for an illustration.

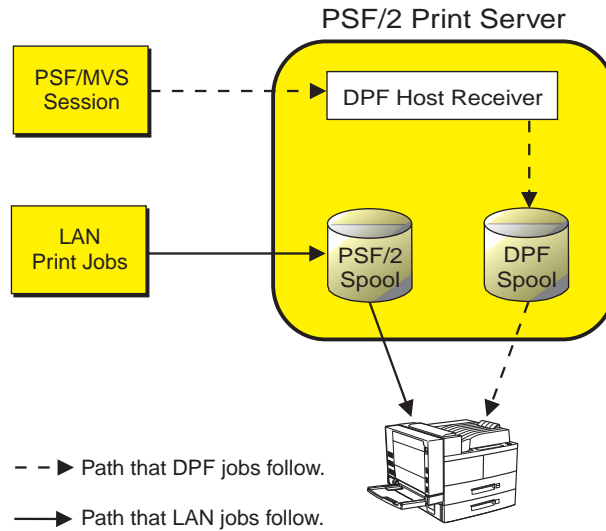


Figure 1. Job flow in PSF for OS/2 Print Server for DPF and LAN print jobs

In Infoprint Manager, the DPF host receiver submits print jobs to an Infoprint Actual Destination (AD). The AD routes the job through the Logical Destination (LD) associated with it, which places the job in the queue. The job eventually returns to the AD where it started and is sent to the printer. Different DPF host receivers can submit jobs to the same AD, which means they are all sent to the same LD and queue. LAN print jobs (and jobs from other host print methods) can use the same ADs, LDs, and queues as well. Refer to Figure 2 for an illustration.

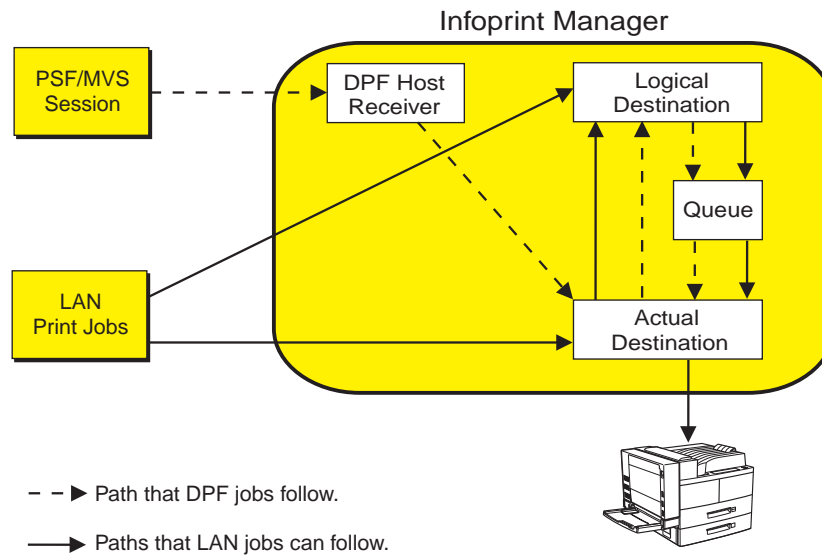


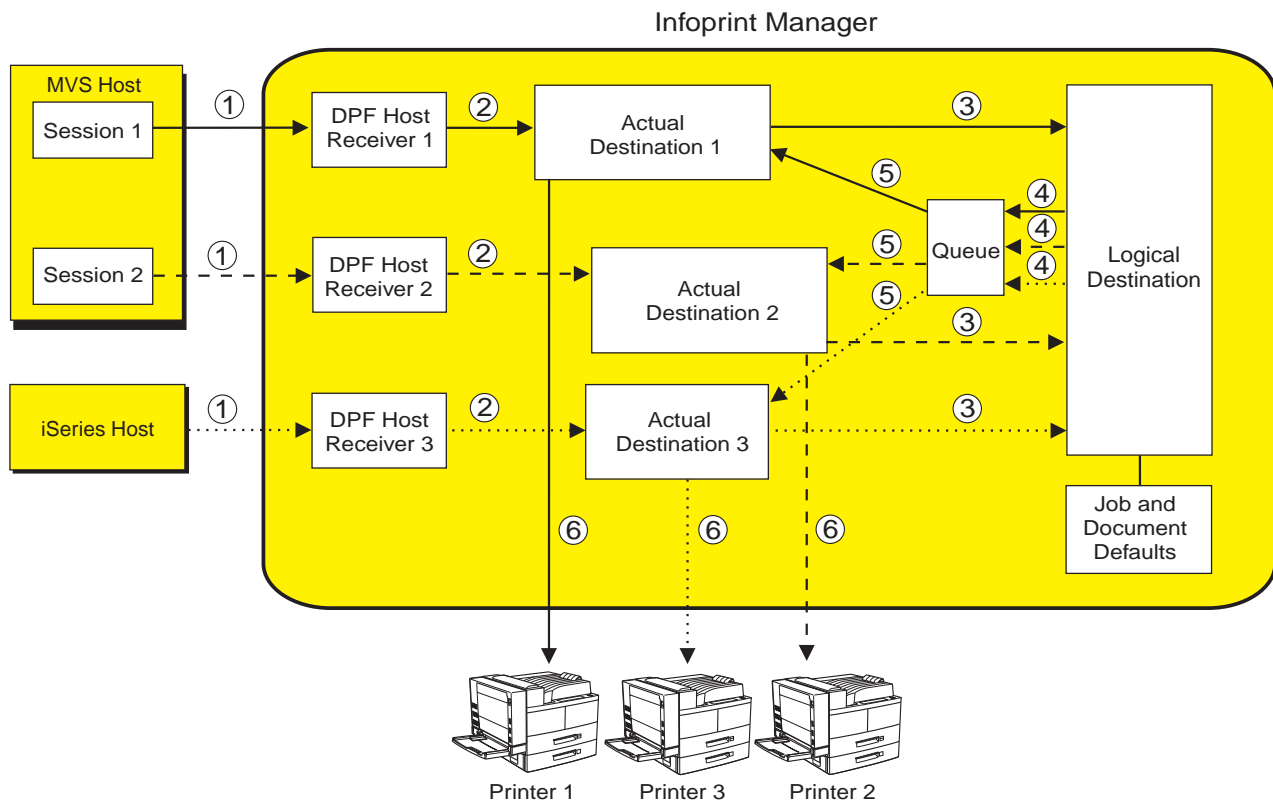
Figure 2. Job flow in Infoprint Manager for DPF and LAN print jobs

Because the DPF host receivers submit jobs directly into the Infoprint Manager print flow (not to their own queues), you have much more flexibility when you plan your configuration. In fact, you can use any of the configurations described in .

Figure 3 on page 5 shows an example of how you can set up the Default model in a DPF environment. In this case, three host sessions connect to three host receivers.

Each host receiver submits its jobs to a different AD, but all three ADs share one LD and queue. For all three host sessions, the print job follows this path:

1. The host system connects to the DPF host receiver and downloads the print job.
2. The DPF host receiver submits the job to the AD that is associated with it.
3. The ADs forward their jobs to the LD, which applies any default attributes that you have set to the jobs. In this case, all three ADs forward their jobs to the same LD, so the same defaults are applied to all jobs.
4. The LD sends the job to the queue.
5. The queue sends each job back to the AD that it started in.
6. The ADs submit the jobs to the printers that they represent.



- - -> Path that DPF jobs from MVS session 1 follow.
- > Path that DPF jobs from MVS session 2 follow.
-> Path that DPF jobs from iSeries host follow.

Figure 3. Infoprint Manager print flow using the default model with multiple DPF host receivers

Again, you can use any of the configuration models with DPF. The most important points to remember when you consider different configurations are:

- The DPF host receiver must submit jobs to the AD, not to the LD.
- Multiple host receivers can point to the same AD. (So multiple host systems can submit jobs to the same AD.)
- An AD can only forward jobs to one LD.
- Multiple ADs can send jobs to the same printer. However, this is an advanced configuration and is only really applicable in specific environments. If you think

you need to create multiple ADs for one printer, consult with your IBM Service representative for additional information.

Interfaces

In Infoprint Manager, you use the Management Console to create and monitor DPF host receivers and the DPF Resources database. You use the Infoprint Manager Administration GUI and the Infoprint Manager Operations GUI to manage actual destinations, queues, and jobs (once the host receiver has submitted them).

IPDS support

DPF in Infoprint Manager will support the same level of IPDS that DPF in PSF for OS/2 supported. As a result, the following IPDS functions will **not** be available if you print using DPF:

- Media source selection in LCC
- Logical page and object area coloring
- All finishing operations
- All presentation fidelity control
- Saved pages
- Select medium modifications
- Set media size
- End Persistent Nack mode
- Local date and time stamps on AR command (save resources)
- Outline fonts (LF1 or LF3)
- Symbol sets (resident or downloaded)
- N-up (Basic and Advanced)
- Cut sheet emulation
- Extended overlays (~ 32K active)
- Extended page segments (~ 32k active)
- Microfilm devices (Anacomp)
- All object containers (Color mapping tables, Infoprint 2000 setup files, TIFF, EPS, e-mail & fax setup files)
- Printer setup IDs
- Output bin selection
- Page scaling
- Multiple printer resolution (for example, Auto printer resolution mode)
- Manage IPDS dialog

Collecting Information from your PSF for OS/2 System

Preparing your PSF for OS/2 system

Before you start to collect information and move resources to your Windows system, it is recommended that you apply the most recent CSD and the latest ALL20 (interim CSD) to your PSF for OS/2 system. Applying this service level makes your AFP resources more accessible, which help to make the process of changing over to Infoprint Manager for Windows NT and Windows 2000 easier. To download the latest service, go to:

<ftp://ftp.software.ibm.com/printers/products/psfos2/service>

In the list that appears, find the most recent CSD and its readme file, and the latest ALL20. Apply these updates to all of your PSF for OS/2 systems.

Note: If you only use PSF Direct in PSF for OS/2, are planning to only use the PSF Direct function of Infoprint Manager, and you never used the OS/2 spools for printing, you do not need to apply these updates.

Moving AFP Resources

Any AFP resources that you used with PSF for OS/2 can be used with Infoprint Manager for Windows NT and Windows 2000. If you have AFP resources that you would like to continue to use in your Infoprint Manager environment, use this procedure to move those files.

Note: If you currently use Distributed Print Facility (DPF), your jobs use IPDS versions of your resources, not AFP versions. If you plan to use the DPF function in Infoprint Manager, you do not have to move those resources. Your host system will download them to Infoprint Manager with your print jobs.

1. Make a list of your AFP resource files and where they are stored.
 - a. Navigate to the **PSF2\SYSTEM** directory on your OS/2 system.
 - b. Find all of the files that end in **.GRP**.

These files are flat text files that list all of your resources and information about them. You can open these files in a text editor or print them to see the contents. When you open or print any of the files, you will see six columns of data. From left to right, the columns list:

 - Resource name
 - Group that the resource belongs to
 - Type of resource
 - Date of the resource
 - Time of the resource
 - Path and file name of the resource
 - c. Print all of the files that end in **.GRP** so you can refer to them later.

You will need to move all of the resources that are listed to your Windows system.
2. If you have any resources defined outside of the resource library (for example, if any of your PSF for OS/2 device definitions include explicit paths to resources), add those resource files to your list. Follow these steps to find these resources:
 - a. Open the PSF for OS/2 Control Panel.
 - b. Highlight a printer.
 - c. Select **Profile** —> **Change**—> **Default Options**.
 - d. Look at the entry in the **Default Search Order** field.

If there is a directory path listed, there are resources in that directory and they are all used. Make note of that directory path; you will need to move all of the resources in that directory to your Windows system.
 - e. Close the dialog.
 - f. Repeat this process for each of your printers.
3. On the Windows system that your Infoprint Manager server is installed on, create a directory to store your AFP resource files in.

Important: Do not create this directory as a subdirectory of your Infoprint Manager <install path> directory. If you place them in the <install path> directory and you ever have to uninstall Infoprint

Manager, your resources may be removed during the uninstall process. It is safer to store your resources outside of the install path. The default <install path> directory is: C:\Program Files\IBM Printing Systems.

4. Copy all of the resource files that you found into the directory you just created on your Windows system.

You can move the files however you like, but the easiest way is to use the File Transfer Protocol (FTP).

Important: When you FTP your resources from your OS/2 system to your Windows system, be sure to send it as *binary* data, not as *ASCII* data.

5. Create a resource context object that points to this directory. For instructions on completing this task, refer to the Administration Procedure “Creating a New Resource-Context Object” on page 108.
6. Once you have created Infoprint *actual destinations* to replace your PSF for OS/2 printers, start the Infoprint Manager Administration GUI and open the properties notebook for one of your actual destinations. Click the **PSF Resources** tab and type the path to the directory you created in step 3 in the **Location of Resources** field. Click **OK** to close the properties notebook. Refer to the online help for additional information.

Mapping PSF for OS/2 printer definitions to Infoprint Manager destination types

When you created printer devices in PSF for OS/2, you chose from six attachment types: Communication, Parallel, TCP/IP, Channel, PSA, and None. In Infoprint Manager, some of these attachment types have equivalents and some do not. To recreate your print environment in Infoprint Manager, you will need to do two things:

1. Print the printer summary for each of your PSF for OS/2 printer devices so you can use that information when you create new destinations in Infoprint Manager.
2. Determine which Infoprint Manager destination types you want to replace your PSF for OS/2 printer devices with.

Once you have completed these steps, refer to the *IBM Infoprint Manager for Windows NT and Windows 2000: Getting Started* for additional information about Infoprint Manager destination types and instructions for creating them.

Printing printer summaries

1. Open the PSF for OS/2 Control Panel.
2. Highlight a printer.
3. Select **Profile** —> **Summary**.
4. In the dialog that opens, click **Print**.
5. Close the dialog.
6. Repeat this process for each of your printers.

Determining which Infoprint Manager destination types to replace your PSF for OS/2 printer devices with

Descriptions of the six PSF for OS/2 printer device types are provided below. If there is an equivalent or near-equivalent destination type in Infoprint Manager, it is listed. If there is no equivalent, refer to the *IBM Infoprint Manager for Windows*

NT and Windows 2000: Getting Started, and the Administration Procedures to select a destination type that will fit your needs.

Communication: The communication attachment type allowed you to communicate with printers on a Synchronous Data Link Control (SDLC) or SNA 6.2 network using IBM Communications Manager for OS/2 or IBM Communications Server for OS/2. This attachment type has no equivalent in Infoprint Manager.

Parallel: The parallel attachment type allowed you to attach printers directly to a parallel or serial port on a PC. In Infoprint Manager, the closest equivalents are PSF Other-driver printers and PSF command printers.

TCP/IP: TCP/IP-attached printers in PSF for OS/2 received data over the TCP/IP network. You can replace them with TCP/IP-attached PSF printers in Infoprint Manager.

Note: There are two ways to create PSF TCP/IP printers in Infoprint Manager. If you will be using PSF Direct in your Infoprint environment, and you will **only** be using PSF Direct to submit jobs to a particular destination, use the Management Console to create a PSF Direct only (TCP/IP) destination. In any other case (for example, if the destination will be receiving jobs from both PSF Direct and your LAN), use the Infoprint Manager Administration GUI to create a PSF TCP/IP printer.

Channel: Channel-attached printers in PSF for OS/2 allowed you to send jobs to printers through the S/370 Channel Emulator/A adapter (a microchannel adapter). The server systems that Infoprint Manager for Windows NT and Windows 2000 runs on do not support this adapter card. However, Infoprint Manager does support channel-attached printing using the IBM 4159 Model 001 S/390 Parallel Channel Emulator Card (a PCI adapter). Contact your IBM customer service representative to obtain this card.

Once you have the card, you can find instructions for installing it in the *IBM Infoprint Manager for Windows NT and Windows 2000: Getting Started*. Then, you can create a channel-attached PSF printer in Infoprint Manager to replace your channel device.

Note: There are two ways to create PSF channel printers in Infoprint Manager. If you will be using PSF Direct in your Infoprint environment, and you will **only** be using PSF Direct to submit jobs to a particular destination, use the Management Console to create a PSF Direct only (channel) destination. In any other case (for example, if the destination will be receiving jobs from both PSF Direct and your LAN), use the Infoprint Manager Administration GUI to create a PSF channel printer.

PSA: The PSA attachment type in PSF for OS/2 could be used to attach a number of printers through an IBM Micro Channel Print Service Adapter. Because no support is currently available for this adapter under Windows, these printers must be attached to the Infoprint Manager server in a different way.

It is recommended that you change all of your PSA printers to be PSF TCP/IP attached printers in Infoprint Manager. To make this change, you must purchase an i-data 7913 IPDS Printer LAN Attachment, a device that is assigned a TCP/IP address on your network and is connected to the printer itself using a coaxial cable.

None: The None attachment type has no equivalent in Infoprint Manager. You can use the Configurable Transform Subsystem in Infoprint Manager to simulate many of the tasks that you used the None attachment type for, such as terminating transforms. Infoprint Manager does not, however, allow you to redirect IPDS output to fax software as you could using the AIN3DNOP secondary in PSF for OS/2.

Preparing for host-to-server communication

Using PSF Direct

If you are currently using PSF Direct for your host printing and plan to continue to use PSF Direct in Infoprint Manager, you will not need to change any of the configuration on your host system. You will, however, have to install IBM SecureWay Communications Server for Windows NT version 6.01 or higher and all of its APARs (JR13453, JR13599, and JR14098), and then configure it to match the IBM Communications Manager for OS/2 or IBM Communications Server for OS/2 on your existing PSF for OS/2 system.

Note: IBM SecureWay Communications Server for Windows NT version 6.01 does not run on Windows 2000. If you are running your Infoprint Manager server on a Windows 2000 system, IBM SecureWay Communications Server for Windows NT version 6.1 is recommended.

In addition, you will have to create new PSF Direct host receivers in Infoprint Manager that match the host receiver configurations on your existing PSF for OS/2 system. You can collect the information you need from the system that you have PSF for OS/2 installed on.

Collecting Communications Manager/Communications Server configuration information:

When you created your PSF for OS/2 configuration on your OS/2 system, a file with the suffix .NDF was created and stored in the CMLIB subdirectory where Communications Manager/Communications Server was installed. This file contains the configuration information for Communications Manager/Communications Server. It is usually named BASIC.NDF, but the name may have been changed.

One .NDF file is created for each configuration; you are interested in the one that corresponds to the current active configuration. If you are not sure what your current active configuration is, follow these steps to find out:

1. Find the Communications Manager or Communications Server folder on your OS/2 system.
2. Double-click the Setup icon.
3. Make note of the configuration listed in the default file; it is the current active configuration.
4. Close Setup.

Once you know your current active configuration, find all of the files that end in .NDF in your CMLIB directory, and print the one that corresponds to the current active configuration.

The .NDF file is roughly equivalent to the .acg file that is created on your Windows NT/Windows 2000 system when you install and configure SecureWay Communications Server. The .acg file is stored in <comm server install directory>\ibmcs\private on your Windows system, where <comm server install directory> is the directory that you installed SecureWay Communications Server

in. Once you have installed SecureWay Communications Server, it is a good idea to locate the .acg file on your Windows system and compare it to the .NDF from your OS/2 system. If there are discrepancies, you can go back and fix the configuration.

Collecting PSF Direct host receiver configuration information: You will need to collect the following information about each of your PSF Direct host receivers:

- LU alias name
- Inactivity timer value
- Device busy timer value
- Device name

Follow the procedure below to find the information you need. Since there is no way to print the information, you will need to write it down to use when you set up your Infoprint Manager system.

1. Open your PSF/2 folder.
2. Double-click the **PSF/2 PSF Direct** icon.
3. In the dialog that opens, highlight a receiver.
4. On the menu bar, select **Receiver**—>**Change**.
5. Make note of the configuration information listed in the dialog.
6. Repeat from step 3 for each receiver.

Using DPF

If you are currently using DPF for your host printing and plan to continue to use DPF in Infoprint Manager, you will need to create new DPF host receivers in Infoprint Manager that match the host receiver configurations on your existing PSF for OS/2 system. You can collect the information you need from the system that you have PSF for OS/2 installed on.

Collecting DPF receiver configuration information: Use the following procedure to collect the configuration information you will need for your DPF host receivers. Since there is no way to print the information, you will need to write it down to use when you set up your Infoprint Manager system.

1. Open your PSF/2 folder.
2. Double-click the **PSF/2 Distributed Print Function** icon.
3. In the **DPF Spool Manager** window, highlight a receiver.
4. With the receiver highlighted, select **Spool** —> **Setup queue**.
5. Make note of the **Logical unit alias** and the value of the **Inactivity timer**.

Note: When you re-create this receiver in Infoprint Manager, you won't need to use the LU alias, because the connection between the host and the server is TCP/IP instead of SNA. However, the LU alias may help you determine where the connection was coming from on the host. When you reconfigure the host system to use TCP/IP instead of SNA, you will need to know which connection corresponds to which DPF Host Receiver so that you can complete the configuration correctly.

6. If **Save resources** or **Obtain printer characteristics at start up** is selected, make note of that too.
7. Close the window.
8. With the same receiver highlighted, select **Receiver** —> **Set up**.
9. Write down which **Device**, **Classes**, and **Forms** that are highlighted.
10. In the **PSF/2 system pages** box, note which boxes are checked, if any.

11. In the **Class set up** box, you will need to select each class and see if any of the defaults have changed, and write them down. The default values for all of the classes are:

- **Copies:** 1
- **Start page:** 1
- **Disposition:** Print

The defaults are the same in Infoprint Manager.

12. Close the dialog.

13. Repeat this process for each DPF receiver.

Migrating custom transform exits

Note: You cannot use the Infoprint Manager transforms or any transform exits with DPF print jobs.

The ability to create and use custom transforms to modify an output stream is a powerful feature of PSF for OS/2. Infoprint Manager provides powerful PostScript and PCL transforms to automatically perform many tasks that custom transform exit programs performed under PSF for OS/2. However, there still may be occasions when customized processing is needed.

To allow this type of customization, the Infoprint Manager server supports *transform objects*. One or more transform objects may be associated with an actual destination. Each transform object is associated with a dynamic link library (DLL) that performs the transform.

To make the creation of transform objects easier, Infoprint Manager ships with the Infoprint Command Line Transform, a DLL roughly equivalent to the XFMFLTR feature that shipped with PSF for OS/2. Using the Infoprint Command Line Transform frees you from having to implement a complete DLL yourself. Instead, you implement your transform as batch files, scripts, or executables. Arguments to this underlying code are passed using control sequences similar to those used in PSF for OS/2 with XFMFLTR.

The process of migrating your PSF for OS/2 custom transform exits should be straightforward. You probably used XFMFLTR with PSF for OS/2. In this case, you should simply modify your OS/2[®] batch files, scripts, and executables to run under Windows NT. Then use the Infoprint Command Line Transform to access these migrated programs through a transform object. If you used a customized DLL under PSF for OS/2, migrate the DLL to a standalone executable. Access this executable through the Infoprint Command Line Transform.

Note: Infoprint Manager does not support customized Windows DLLs for transform exit functions. To apply custom transform exits, use the Infoprint Command Line Transform.

Use the Infoprint Manager Administration GUI to create transform objects and associate them with actual destinations.

For additional information on creating and customizing transforms, refer to these Administration Procedures:

- “Understanding Transforms and the Configurable Transform Subsystem” on page 233

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|

- “Working with Infoprint Manager Transform Programs” on page 235
- “Configuring Data Stream Transform Sequences” on page 245

Chapter 2. Installing Supported Hardware

Using Multiple Network Adapter Cards

If you are concerned that your local area network (LAN) may not have enough bandwidth to handle the additional traffic that installing additional printers can create, you can create a secondary network that is essentially dedicated to driving printers. To set up this configuration, the system that your Infoprint Manager server resides on will have to have two network adapter cards installed in it, one for each network. Print data comes into the Infoprint Manager server over the LAN and is transferred to the secondary network to be printed.

When you set up the secondary network, keep the following points in mind:

- In the system that your Infoprint Manager server resides on, the primary network adapter card should be the one that connects to your existing network.
- In the system that your Infoprint Manager server resides on, the secondary network adapter card connects to a network that contains **only** printers. This network is isolated; no IP forwarding is recommended.
- The IP addresses for printers on the secondary network must not be resolvable on the primary network.

It is recommended that you use private IP addresses for your secondary network card and your printers, for example, addresses that follow either of these formats:

- Class A IP address: 10.xx.xxx.xxx
- Class B IP address: 192.168.xxx.xxx
- In the properties for the secondary network adapter card, you should not set a Default Gateway, DNS, or WINS. If these fields are filled in when you configure the card, clear the default values.
- On the printers that you connect to the secondary network, do not specify a Default Gateway. If you must specify a Default Gateway, enter the IP address of the secondary network adapter card.

Using the i-data 7913 IPDS Printer LAN Attachment

The i-data 7913 IPDS Printer LAN Attachment is a hardware protocol converter that communicates between Infoprint and a coaxial or twinaxial IPDS printer device. You can use the i-data 7913 IPDS Printer LAN Attachment to connect this type of printer to any LAN-attached workstation. The i-data 7913 IPDS Printer LAN Attachment requires TCP/IP communications protocols and runs on either an IBM token-ring network or an Ethernet LAN. You must install one i-data 7913 IPDS Printer LAN Attachment for each coaxial or twinaxial IPDS printer device that you plan to install, and you must install and configure each unit separately.

In order to use the 7913, you must also configure and start a bootp daemon on a system somewhere in your TCP/IP network. The bootp daemon initializes the i-data 7913 IPDS Printer LAN Attachment with the TCP/IP address information that it uses to communicate over the network. bootp daemons are available for most operating systems; AIX and OS/2 provide bootp daemons in their base TCP/IP packages. If you have an AIX or OS/2 system that can run the bootp daemon on your network, you can use it. Instructions for configuring and starting the bootp daemon on both of those systems are provided in this chapter. The base

Windows TCP/IP does not include a bootp daemon, but versions are available from Microsoft and other vendors as extensions to the base TCP/IP package. You can install one of those products using the documentation provided by the other vendors.

Once you have installed and tested the i-data 7913 IPDS Printer LAN Attachment and the bootp daemon, you can define it to Infoprint Manager as a PSF TCP/IP-attached printer. Create this actual destination using the Infoprint Manager Administration GUI.

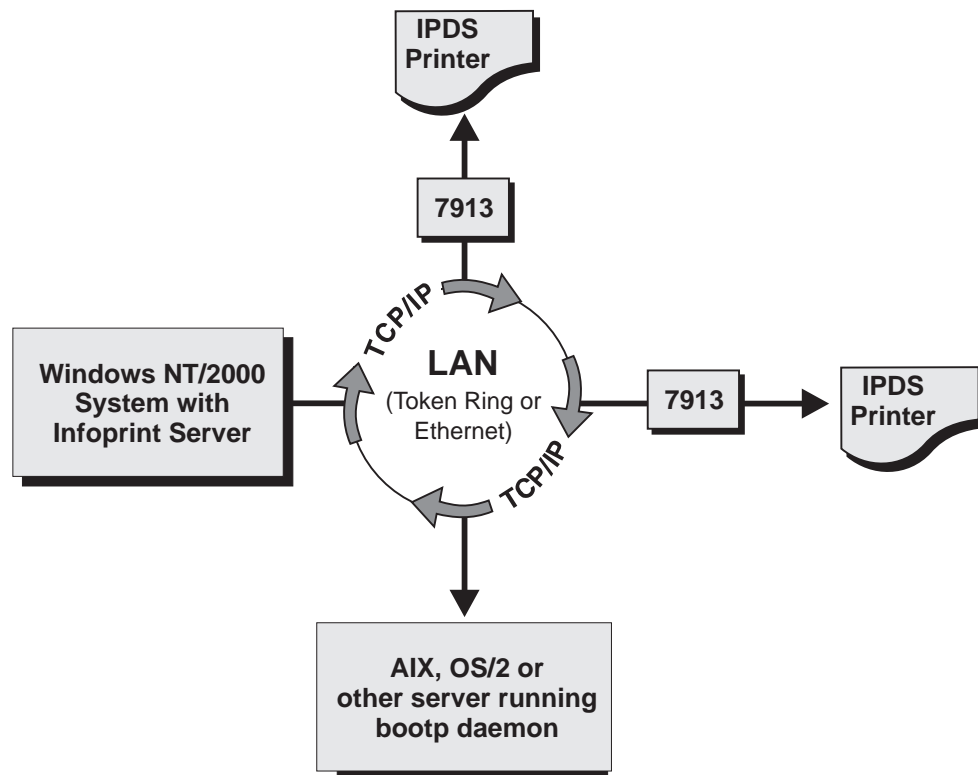


Figure 4. i-data 7913 IPDS Printer LAN Attachment in a TCP/IP LAN Environment

How the i-data 7913 IPDS Printer LAN Attachment fits into network configurations

Use the configuration in Figure 5 on page 17 for an TCP/IP network with the **bootp** daemon installed on another server. Normally, the server must belong to the same subnetwork as the i-data 7913 IPDS Printer LAN Attachment.

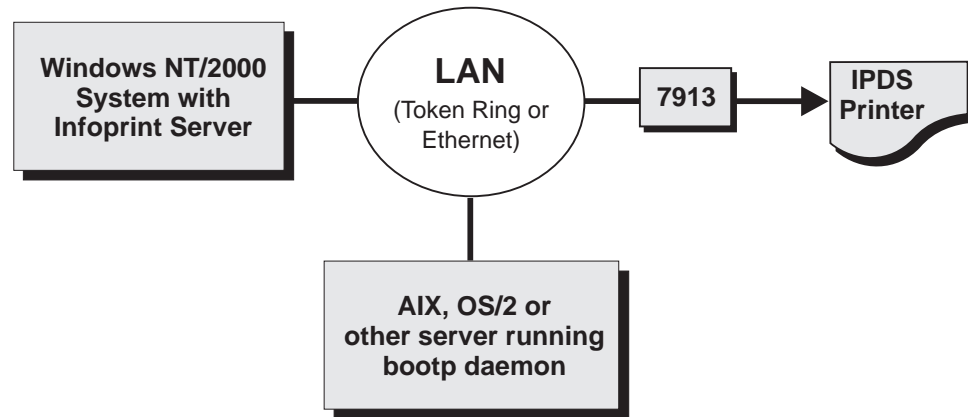


Figure 5. Network Configuration for Separate Internet Protocol Hosts

Prerequisite tasks

Before you begin to install the i-data 7913 IPDS Printer LAN Attachment, you must satisfy the following conditions:

- ___ 1. You have one i-data 7913 IPDS Printer LAN Attachment for each IBM coaxial or twinaxial printer that you plan to install. You can order the 7913 unit as a printer feature.

The following printers require the i-data 7913 IPDS Printer LAN Attachment:

- IBM 3112 Page Printer Model 001
- IBM 3116 Page Printer Models 001, 002, and 003
- IBM 3112 Page Printer Model 001
- IBM 3812 Page Printer Model 2 with feature 3190 or 3192
- IBM 3816 Page Printer Models 01D and 01S with feature 7653 or 7654
- IBM 3912 Page Printer Models AS1 and NS1
- IBM 3916 Page Printer Models AS1 and NS1
- IBM 3930 Page Printer Models 02D and 02S
- IBM Laser Printer 4028 Models AS1 and NS1, including support for the 4028 with magnetic ink character recognition (MICR), Request for Price Quotation (RPQ) S02177
- IBM 6400 Line Matrix Printer (all models)
- IBM 6408 Line Matrix Printer Model CTA

Note: Infoprint Manager does not support twinaxial connections for this printer device.

- IBM 6412 Line Matrix Printer Model CTA

Note: Infoprint Manager does not support twinaxial connections for this printer device.

- ___ 2. You have installed IBM Infoprint Manager for Windows NT and Windows 2000, Version 1, Release 1 or higher.
- ___ 3. You have either an IBM token-ring network or an Ethernet LAN installed and operating.
- ___ 4. For each i-data 7913 IPDS Printer LAN Attachment that you plan to install, you have obtained the following information from your network administrator:
 - Internet Protocol (IP) address

- Subnet mask
- Gateway address

The bootp daemon

You must configure and start the **bootp** daemon on a Windows system in your TCP/IP network. The **bootp** daemon initializes the i-data 7913 IPDS Printer LAN Attachment.

How the bootp daemon works

The TCP/IP **bootp** daemon supports one or more i-data 7913 IPDS Printer LAN Attachments. When you start an i-data 7913 IPDS Printer LAN Attachment, it broadcasts an initialization request to all systems on the LAN. The **bootp** daemon searches the **/etc/bootptab** file and returns information that defines the i-data 7913 IPDS Printer LAN Attachment within the network.

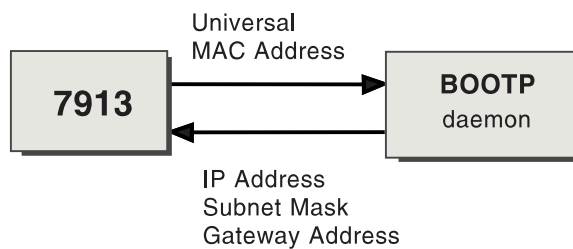


Figure 6. Data Flow between the i-data 7913 IPDS Printer LAN Attachment and the bootp Daemon

Figure 6 shows the exchange of the following data:

Universal medium access control (MAC) address

The universal MAC address is unique for each i-data 7913 IPDS Printer LAN Attachment. It is printed on the side panel of the i-data 7913 IPDS Printer LAN Attachment and defined in the hardware. The i-data 7913 IPDS Printer LAN Attachment broadcasts its universal MAC address when it starts. The **bootp** daemon uses the universal MAC address to find the i-data 7913 IPDS Printer LAN Attachment in the **bootptab** file.

IP address

The IP address is the full address of the i-data 7913 IPDS Printer LAN Attachment as defined to the network. This address must be unique for each i-data 7913 IPDS Printer LAN Attachment.

Subnet mask

The subnet mask is a bit template that indicates which part of the IP address represents the network. A 1 in the subnet mask indicates that the corresponding bit in the IP address is part of the network address; a 0 indicates that it is not. For example, if the IP address is 9.99.12.137 and the subnet mask is 255.255.255.0, the network address is 9.99.12.0.

Gateway address

The gateway address is the address of the system that routes data to other networks.

Filling out the bootp configuration worksheet

Before you begin to modify the **/etc/bootptab** file, fill out a **bootp** configuration worksheet for each i-data 7913 IPDS Printer LAN Attachment.

Table 1. *bootp Configuration Worksheet*

Parameter	Where to Find the Value	Value
Name	Any name that identifies the i-data 7913 IPDS Printer LAN Attachment	
Network type (token ring or Ethernet)	System administrator	
Ring speed (token-ring only)	System administrator	
Universal MAC address	Side panel of the i-data 7913 IPDS Printer LAN Attachment	
IP address	System administrator	
Subnet mask	System administrator	
Gateway address	System administrator	
Printer type (twinaxial or coaxial)	Printer documentation	

Editing the bootp configuration file

bootp daemons use a text configuration file, usually named `bootptab`. On AIX, this file resides in the `/etc` filesystem. On OS/2, the file is placed in the `/etc` subdirectory under the install path for the TCP/IP product (usually in `/tcpip/etc`). Existence and location of the configuration file on Windows system depend upon the TCP/IP extension that you selected.

The **bootp configuration** file contains a separate entry with configuration information for each i-data 7913 IPDS Printer LAN Attachment. To configure this file, edit it and add the values from Table 1. You must have **Administrator** authority to edit the **bootp configuration** file.

Figure 7 shows an example of a simple **bootp configuration** file. There are entries for two i-data 7913 IPDS Printer LAN Attachments with the same subnet mask and gateway address.

```
P4028: ht=6: ha=00036EFFFFFF: ip=9.9.12.137:-
      sm=255.255.255.0: gw=9.99.12.254:
P3812: ht=6: ha=00036E00049F: ip=9.9.12.138:-
      sm=255.255.255.0: gw=9.99.12.254:
```

Figure 7. A Simple *bootptab* File

The keywords and fields in Figure 7 are as follows:

EntryName

A name of your choice that identifies the entry. This name has no meaning to the system.

ht=HostHardwareType

Enter **6** for a token ring network or **ethernet** for an Ethernet LAN. This keyword must precede the **ha** keyword.

ha=HostHardwareAddress

The universal MAC address of the i-data 7913 IPDS Printer LAN Attachment.

ip=IPAddress

The IP address of the i-data 7913 IPDS Printer LAN Attachment.

sm=SubnetMask

The subnet mask for the IP address.

gw=GatewayAddress

The gateway address for the network.

: Delimiter indicating the end of a value.

- Continuation character indicating that the entry continues on the next line.

Figure 8 shows a more complex way to describe the same **bootp** configuration as in Figure 7 on page 19. The file begins with a global entry for the subnet mask used by all i-data 7913 IPDS Printer LAN Attachments. An entry for the gateway address points to the subnet mask entry. In turn, each entry for an i-data 7913 IPDS Printer LAN Attachment points to the gateway address entry. This style is convenient to use when many i-data 7913 IPDS Printer LAN Attachments share the same subnet mask and gateway address. If the gateway address changes, you need to update only one entry.

```
# Global entry with information that every host uses
global.lan:-
    sm=255.255.255.0:

# Subnet entry with gateway address
subnetida.trlan:-
    tc=global.lan: gw=9.99.12.254:

# Entries for 7913 units
P4028: tc=subnetida.trlan: ht=6: ha=00036EFFFFFF:-
    ip=9.9.12.137:

P3812: tc=subnetida.trlan: ht=6: ha=00036E00049F:-
    ip=9.9.12.138:
```

Figure 8. A More Complex bootptab File

In addition to the keywords you saw in Figure 7 on page 19, Figure 8 contains the following keywords:

tc=template

A pointer to another entry that contains addressing information.

Comment character

Running the bootp daemon

Once the bootptab configuration file has been edited to include the TCP/IP network information for each of your i-data 7913 IPDS Printer LAN Attachment, follow instructions specific to your operating system to start the bootp daemon. The daemon can be configured to be controlled by the inet superdaemon by adding the bootp daemon to the list of services that the inet daemon controls. The bootp daemon may also be started manually from a command line at boot time if you want to maintain control over the daemon.

If you do not want to maintain an active bootp daemon on your network, the i-data 7913 IPDS Printer LAN Attachment allows you to load default network information into the device; the 7913 automatically uses this information if no bootp daemon responds to the address request within the timeout period (usually

about two minutes). Follow the detailed instructions provided with your 7913 to modify your bootptab configuration file to force the network information into the device. You will still have to temporarily start a bootp daemon to initially load the network information into each 7913, but once the information is loaded, the bootp daemon will only be required if you want to change network information for a specific i-data 7913 IPDS Printer LAN Attachment, if you wanted to add an additional 7913 to your network, or if you needed to load updated microcode into existing i-data 7913 IPDS Printer LAN Attachments.

Instructions for setting up the bootp daemon on AIX and OS/2 systems follow.

Setting up the bootp daemon on AIX: After you have configured the **bootp configuration** file, you must set up and start the **bootp** daemon on AIX. Follow these steps:

1. Log on as **root**.
2. Add the following lines to the **/etc/services** file if they are not already present:


```
bootps  67/udp  # bootp server port
bootpc  68/udp  # bootp client port
```
3. Use *one* of the following methods to start the **bootp** daemon:
 - To have the **inetd** super-daemon start the **bootp** daemon, follow these steps:
 - a. Add the following line to the **/etc/inetd.conf** file if it is not already present:


```
bootps dgram udp wait root /etc/bootpd bootpd
```
 - b. On the AIX command line, enter the following commands so that the **inetd** super-daemon can recognize the update:


```
inetimp
refresh -s inetd
```
 - To start the **bootpd** daemon manually, follow these steps:
 - a. Verify that the **/etc/inetd.conf** file does not include a line that controls the **bootpd** daemon. If necessary, comment out or delete the line and refresh the **/etc/inetd.conf** file.
 - b. On the AIX command line, enter one of the following commands:


```
bootpd -s
```

or

```
bootpd -s -d -d -d -d -d
```

The **-s flag** indicates that the **inetd** super-daemon does not control the **bootpd** daemon. Each **-d** flag displays an additional amount of debugging information. You can specify the **-d** flag up to five times.

Setting up the BOOTP daemon under OS/2: To use the BOOTP daemon under OS/2, the **SERVICES** file in the **ETC** directory (**tcPIP/etc/services**) must contain the following entries:

```
sbootp  67/udp  # bootp server
cbootp  68/udp  # bootp client
```

To test the **BOOTPD** command, enter the following from an OS/2 command line:

```
bootpd -d -d -d -d -d
```

where:

- -d displays debugging information, such as hardware address. Each additional -d increases the amount of debugging information displayed. You can specify -d up to five times.

When you are satisfied that the BOOTPD command is working correctly, you can add the command to your startup procedure.

Add the BOOTPD command to the /tcpip/bin/tcpstart.cmd file (assuming that TCP/IP was installed in the tcpip subdirectory). If the BOOTPD and the 7913 are on the same LAN segment (no bridges), enter the following:

```
start BOOTPD
```

If the BOOTP daemon and the 7913 are on different LAN segments (bridges required), enter the following:

```
start BOOTPD -b
```

Configuring a twinaxial printer

If you are using the i-data 7913 IPDS Printer LAN Attachment to connect a twinaxial printer, set the **Station address** to **0** at the printer device.

Note: You cannot use the CANCEL button on a twinaxial printer to cancel print jobs.

Setting the controls for the i-data 7913 IPDS Printer LAN Attachment

There are two models of the i-data 7913 IPDS Printer LAN Attachment, each with different controls:

- Model 03 for IBM token-ring networks
- Model 04 for Ethernet LANs

You must set the controls before you attach the i-data 7913 IPDS Printer LAN Attachment to the printer or to the network.

DANGER

Disconnect the i-data 7913 IPDS Printer LAN Attachment from the electrical outlet before setting the controls.

Model 03 for IBM token-ring networks

Figure 9 on page 23 shows the i-data 7913 IPDS Printer LAN Attachment Model 03 for IBM token-ring networks.

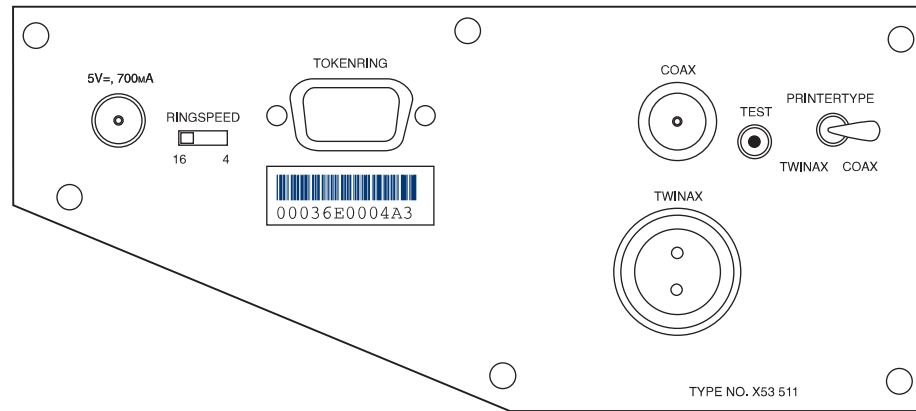


Figure 9. i-data 7913 IPDS Printer LAN Attachment Model 03 for IBM Token-Ring Networks

To set the controls on this model, follow these steps:

1. Disconnect the i-data 7913 IPDS Printer LAN Attachment from the electrical outlet.
2. Set the **RINGSPEED** switch to the speed of the token ring: **4** or **16** megabits per second. You can find out the speed from your system administrator.
Attention: If the **RINGSPEED** switch is not set correctly, the LAN may malfunction.
3. Set the **PRINTERTYPE** switch to **COAX** for an IBM coaxial printer or **TWINAX** for an IBM twinaxial printer.

Model 04 for ethernet LANs

Figure 10 shows the i-data 7913 IPDS Printer LAN Attachment Model 04 for Ethernet LANs.

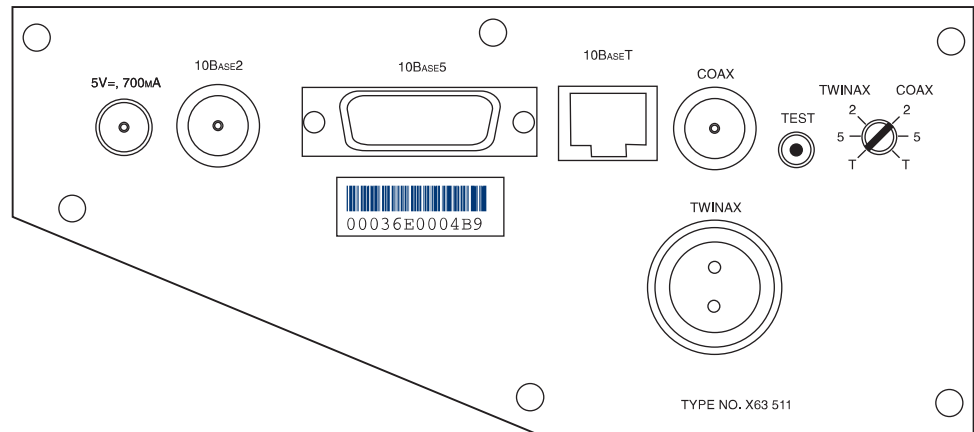


Figure 10. i-data 7913 IPDS Printer LAN Attachment Model 04 for Ethernet LANs

To set the controls on this model, follow these steps:

1. Disconnect the i-data 7913 IPDS Printer LAN Attachment from the electrical outlet.
2. Set the **TWINAX/COAX** rotary switch to one of the following positions:
COAX 2
10base2 to coax
COAX 5
10base5 to coax

COAX T

10baseT to coax

TWINAX 2

10base2 to twinax

TWINAX 5

10base5 to twinax

TWINAX T

10baseT to twinax

Attaching the i-data 7913 IPDS Printer LAN Attachment

Attach the i-data 7913 IPDS Printer LAN Attachment by cabling it to the token ring or LAN and to the printer. For coaxial printers, you must also install the ferrite cable block shipped with the i-data 7913 IPDS Printer LAN Attachment. The ferrite cable block reduces electrical interference.

Note: Cables are not provided with the i-data 7913 IPDS Printer LAN Attachment or with Infoprint Manager.

1. Unplug the i-data 7913 IPDS Printer LAN Attachment.
2. Use a LAN connection cable to attach the i-data 7913 IPDS Printer LAN Attachment to the token ring or LAN.
3. Use a coaxial or twinaxial connection cable to attach the i-data 7913 IPDS Printer LAN Attachment to the printer.
4. For coaxial printers, clamp the ferrite cable block to the coaxial cable. Position the ferrite cable block about 10 centimeters (4 inches) from the i-data 7913 IPDS Printer LAN Attachment.

Starting the i-data 7913 IPDS Printer LAN Attachment

To start the i-data 7913 IPDS Printer LAN Attachment, follow these steps:

1. Turn on the printer device.
2. Plug the i-data 7913 IPDS Printer LAN Attachment power cable into an electrical outlet.

The **POWER** light goes on. Several seconds later, the **LAN** light blinks. When the **bootp** daemon initializes the i-data 7913 IPDS Printer LAN Attachment, the **LAN** light changes from blinking to steady.

Note: If no bootp daemon responds within the timeout limit, the i-data 7913 IPDS Printer LAN Attachment uses default network information that it has stored internally, if it is available. If no default information has been stored, the 7913 device will remain unavailable to your network.

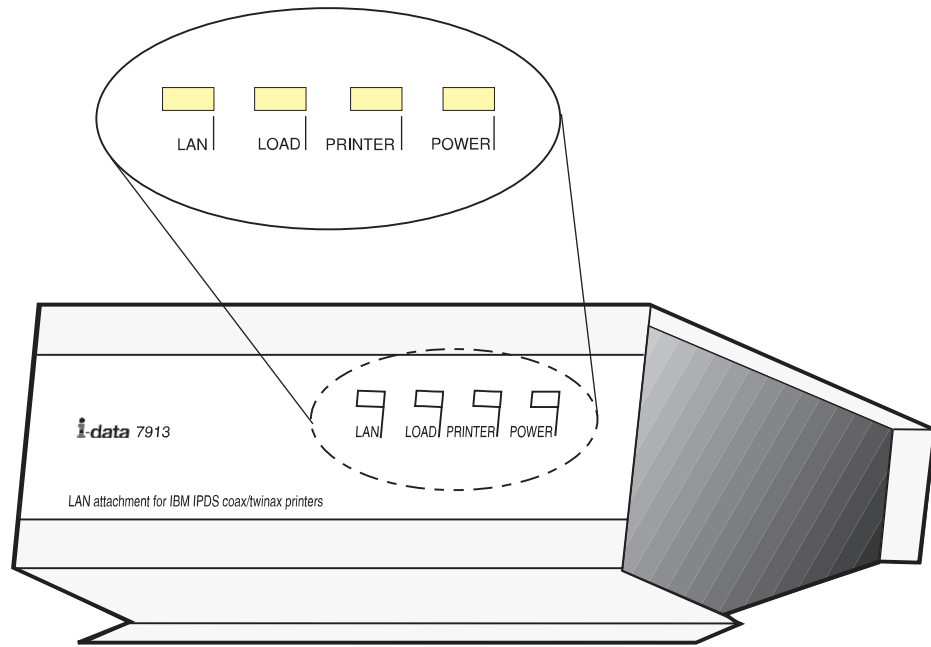


Figure 11. Status Indicators on the i-data 7913 IPDS Printer LAN Attachment

Testing the i-data 7913 IPDS Printer LAN Attachment

After you have started the i-data 7913 IPDS Printer LAN Attachment, follow these steps to test it:

1. Press the **TEST** button on the side panel of the i-data 7913 IPDS Printer LAN Attachment. This breaks the connection between Infoprint Manager and the i-data 7913 IPDS Printer LAN Attachment and causes the printer to print a test page.
2. From any system on your LAN, ping the i-data 7913 IPDS Printer LAN Attachment to test both the physical LAN connection and the IP network connection.

- a. Open a DOS window. On Windows NT systems, click the Windows Start button and select **Program** —> **Command Prompt**. On Windows 2000 systems, click the Windows Start button and select **Program** —> **Accessories** —> **Command Prompt**.
- b. Type **ping** and the IP address or host name of the i-data 7913 IPDS Printer LAN Attachment, for example:

```
ping 9.99.12.73
```

If the **ping** command is successful, the response looks like this:

```
ping 9.99.12.73 with 32 bytes of data
Reply from 9.99.12.73: bytes = 32 time<10ms ttl=128
Reply from 9.99.12.73: bytes = 32 time<10ms ttl=128
Reply from 9.99.12.73: bytes = 32 time<10ms ttl=128
Reply from 9.99.12.73: bytes = 32 time<10ms ttl=128
```

Shutting down the i-data 7913 IPDS Printer LAN Attachment

To end the connection between Infoprint and the i-data 7913 IPDS Printer LAN Attachment, you should treat it as you would any other physical destination. Issue

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a shutdown command to break the connection to Infoprint Manager, then unplug the device to ensure that the connection will not be inadvertently restored.

Chapter 3. Installing Infoprint Manager Client Software

Installing Infoprint Manager GUI software

Before you perform any of the steps documented here, you should understand the general features and requirements of Infoprint Manager.

There are two Infoprint Manager GUIs: the Infoprint Manager Administration GUI and the Infoprint Manager Operations GUI. When you install the Infoprint Manager for Windows NT and Windows 2000 server, you automatically install both GUIs on that system. The Infoprint Manager Operations GUI provides a subset of the functionality available in the Infoprint Manager Administration GUI.

You can also install either one or both GUIs on a suitable Windows 95, Windows 98, Windows NT, Windows ME, or Windows 2000 system. The system does not need to have the Infoprint Manager server software installed. Follow these procedures if you want to use Infoprint Manager GUI software to administer or control your Infoprint Manager server from a remote system.

- “Preparing for the Infoprint Manager GUI”
- “Installing the software” on page 28
- “Uninstalling the Infoprint Manager GUIs” on page 31

Preparing for the Infoprint Manager GUI

Prior to March 2001, the Infoprint Manager GUIs required the Java™ Runtime Environment (JRE) from IBM at version 1.1.8. In March 2001, this prerequisite changed. Now, both Infoprint Manager GUIs require the IBM Cross Platform Technologies for Windows® (CPT) version 2.0 Runtime Environment. This is the only supported Runtime Environment for running the Infoprint Manager GUIs.

Because of this change, we recommend that you uninstall any versions of the Infoprint Manager GUIs that you installed prior to March 2001 before you install the new Runtime Environment and the new GUIs. If you are not certain when the GUIs were installed, it is best to uninstall them before you continue.

To verify that you have the correct version of the Runtime Environment installed, follow these steps:

1. Type `java -fullversion` on an MS-DOS command line.
2. Verify that output from the command contains the following text:
`cn13--20010609`
3. If the output from the command does not contain the text above, uninstall the currently installed Runtime Environment component:
 - a. Click the Windows **Start** button and select **Settings -> Control Panel**, then double-click the **Add/Remove Programs** icon.
 - b. Find the **IBM Runtime Environment, Java(TM) Tech. Edition, 1.1.8** entry in the list of programs that can be removed and click **Add/Remove**. Follow the instructions on the screen to complete the process.
 - c. Remove the JRE or Runtime Environment entry from the PATH environment variable.

If necessary, follow these steps to install the required CPT Runtime Environment from the Client CD-ROM:

1. Insert the IBM Infoprint Manager Client CD-ROM into the drive.
2. Launch the `\jre\install.exe` executable from the CD-ROM:
 - a. Double-click the **My Computer** icon.
 - b. Double-click the CD-ROM drive icon.
 - c. Double-click the **jre** folder icon.
 - d. Double-click the **install.exe** icon.
3. Provide the information as prompted by the InstallShield program. When the installer asks if you want to install the Runtime Environment as the system Java Virtual Machine (JVM), answer **Yes**.
4. Type `java -fullversion` on an MS-DOS command line.
5. Verify that the output from the command contains the following text:


```
cn13--20010609
```

Installing the software

You can install the Infoprint Manager GUIs on any suitable Windows workstation that has network access to your Infoprint Manager server. This section contains the following information:

- “Installing the Infoprint Manager Operations GUI”
- “Installing the Infoprint Manager Administration GUI” on page 29

Installing the Infoprint Manager Operations GUI

If you are reinstalling or updating an existing version of the Infoprint Manager Operations GUI, close all instances of the Infoprint Manager Administration GUI and Infoprint Manager Operations GUI that are running on this system before you continue with the installation to avoid problems with files that need to be replaced.

Follow these steps to install the **Infoprint Manager Operations GUI** software.

1. If you have not already done so, uninstall any existing versions of the Infoprint Manager GUIs that you have on this system.
2. Insert the IBM Infoprint Manager Client CD-ROM into the drive.
3. Navigate to the `\ipgui\oper\locale` directory on your CD-ROM drive:
 - a. Double-click the **My Computer** icon.
 - b. Double-click the CD-ROM drive icon.
 - c. Double-click the **ipgui** folder icon.
 - d. Double-click the **oper** folder icon.
 - e. Double-click the folder icon that corresponds to your preferred language.
4. Double-click the **ipguiwinsetup.exe** icon to launch InstallShield.

It may take a minute for the installer to start. Do not click on any other part of the screen until the installer begins. If you do, the installer window may be hidden behind other windows.

5. Follow the instructions on the InstallShield screens, paying attention to the following guidelines.
 - If you are installing over a previous version of the Infoprint Manager GUI software, click **yes** for all questions about replacing files. If you will be using this GUI to work with an Infoprint Manager for Windows NT and Windows 2000 server, do not change any of the selected check boxes.

- You should only install the DCE version of the Infoprint Manager GUIs if you will be using them to work with the DCE version of Infoprint Manager for AIX.
- The Infoprint Manager GUI offers three different views: **Basic**, **Advanced**, and **Distributed**. The installer asks if you want to place icons for any and all of the views on the your desktop. The Infoprint Manager for Windows NT and Windows 2000 server only supports the advanced view of the Infoprint Manager GUIs, so if you plan to use the GUI to work with an Infoprint Manager for Windows NT and Windows 2000 server, you should only select the **Advanced** view. If you plan to use the GUI to work with an Infoprint Manager for AIX server, you can choose to install any (or all) of the icons. Each one is most suitable for a particular situation, as described below.
 - Use the *Basic* view if your Infoprint server is configured to support:
 - Print on Demand (commercial) printing
 - Assignment of jobs to actual destinations when they are submitted
 - PostScript, TIFF, and variable data jobs
 - Jobs submitted from Infoprint Submit, Infoprint Scan, or Infoprint Library
 - Use the *Advanced* view if your Infoprint server is configured to support:
 - Data center (production) or distributed mission printing
 - Printer pooling for workload balancing
 - Jobs submitted from the command line, from workstation applications through Infoprint Select, or from other application programs
 - Use the *Distributed* view if you are a customer service representative at a help desk who needs to locate jobs and assist customers with printing problems.
- The Infoprint Manager Operations GUI requires approximately 9.1 MB of memory on your hard drive, whether you install one view or all three.

Installing the Infoprint Manager Administration GUI

If you are reinstalling or updating an existing version of the Infoprint Manager Administration GUI, close all instances of the Infoprint Manager Administration GUI and Infoprint Manager Operations GUI that are running on this system before you continue with the installation to avoid problems with files that need to be replaced.

Follow these steps to install the **Infoprint Manager Administration GUI** software.

1. If you have not already done so, uninstall any existing versions of the Infoprint Manager GUIs that you have on this system.
2. Insert the IBM Infoprint Manager Client CD-ROM into the drive.
3. Navigate to the `\ipgui\admin\locale` directory on your CD-ROM drive:
 - a. Double-click the **My Computer** icon.
 - b. Double-click the CD-ROM drive icon.
 - c. Double-click the **ipgui** folder icon.
 - d. Double-click the **admin** folder icon.
 - e. Double-click the folder icon that corresponds to your preferred language.
4. Double-click the **ipguiwinadmsetup.exe** icon to launch InstallShield.

It may take a minute for the installer to start. Do not click on any other part of the screen until the installer begins. If you do, the installer window may be hidden behind other windows.
5. Follow the instructions on the InstallShield screens, paying attention to the following guidelines.

- If you are installing over a previous version of the Infoprint Manager GUI software, click **yes** for all questions about replacing files. If you will be using this GUI to work with an Infoprint Manager for Windows NT and Windows 2000 server, do not change any of the selected check boxes.
- You should only install the DCE version of the Infoprint Manager GUIs if you will be using them to work with the DCE version of Infoprint Manager for AIX.
- The Infoprint Manager GUI offers three different views: **Basic**, **Advanced**, and **Distributed**. The installer asks if you want to place icons for any and all of the views on the your desktop. The Infoprint Manager for Windows NT and Windows 2000 server only supports the advanced view of the Infoprint Manager GUIs, so if you plan to use the GUI to work with an Infoprint Manager for Windows NT and Windows 2000 server, you should only select the **Advanced** view. If you plan to use the GUI to work with an Infoprint Manager for AIX server, you can choose to install any (or all) of the icons. Each one is most suitable for a particular situation, as described below.
 - Use the *Basic* view if your Infoprint server is configured to support:
 - Print on Demand (commercial) printing
 - Assignment of jobs to actual destinations when they are submitted
 - PostScript, TIFF, and variable data jobs
 - Jobs submitted from Infoprint Submit, Infoprint Scan, or Infoprint Library
 - Use the *Advanced* view if your Infoprint server is configured to support:
 - Data center (production) or distributed mission printing
 - Printer pooling for workload balancing
 - Jobs submitted from the command line, from workstation applications through Infoprint Select, or from other application programs
 - Use the *Distributed* view if you are a customer service representative at a help desk who needs to locate jobs and assist customers with printing problems.
- The Infoprint Manager Administration GUI requires approximately 9.5 MB of memory on your hard drive, whether you install one view or all three.

Starting the Infoprint Manager GUIs

To launch the Infoprint Manager Administration GUI, double-click the **Advanced Administration Infoprint** icon on your desktop. To launch the Infoprint Manager Operations GUI, double-click the **Advanced Infoprint** icon on your desktop.

Attention: The graphical part of the icons are identical (see Table 2 on page 31 for illustrations of the icons). The label under the Infoprint Manager Administration GUI icon (**Advanced Administration Infoprint**) is usually truncated. The label under the Infoprint Manager Operations GUI icon (**Advanced Infoprint**) is not truncated.

Table 2. The Infoprint Manager GUI icon

Infoprint Manager Operations GUI	Infoprint Manager Administration GUI	Infoprint Manager Administration GUI (truncated)
 <p>Advanced Infoprint</p>	 <p>Advanced Administration Infoprint</p>	 <p>Advanced Administrati...</p>

If the icon is not on the desktop, click the Windows **Start** button and select **Programs**—>**Advanced Administration Infoprint** to launch the Infoprint Manager Administration GUI or **Programs**—>**Advanced Infoprint** to launch the Infoprint Manager Operations GUI.

Note: If you open the GUI and the colors look strange (they may appear in a plaid pattern), minimize the GUI and then maximize it. The colors should return to normal. This problem is most common on Windows 2000 systems running in 256 colors (8-bit color). To prevent the problem, you can increase the color depth of your system to 16- or 24-bit color.

The Infoprint Manager Administration GUI along with the Infoprint Manager Management Console allows the administrator to access almost all of the functions available in Infoprint Manager for Windows NT and Windows 2000. The administrator can use the Infoprint Manager Management Console to modify the authority of other users. See the Management Console help system and the Infoprint Manager Administration Procedures for additional information.

When you first run the Infoprint Manager GUI, you must provide the host name or IP address and the port number that the Infoprint Manager server communicates with client systems through. The default port number is 6874.

Uninstalling the Infoprint Manager GUIs

To uninstall the Infoprint Manager GUIs, follow these steps:

1. Click the Windows **Start** button and select **Settings**—> **Control Panel**.
2. Double-click the **Add/Remove Programs** icon.
3. Select **Infoprint Manager Administration GUI** or **Infoprint Manager Operations GUI**.
4. Click the **Add/Remove** (Windows NT) or the **Change/Remove** (Windows 2000) button.

Note: Only click the button once, then wait for at least 30 seconds before you do anything else. If you do not wait for the first panel of the uninstaller to appear, it may get lost behind other windows. If you don't see first panel of the uninstaller after 30 seconds, press and hold the **Alt** key, then press the **Tab** key to bring the window to the front.

5. Follow the instructions on the InstallShield Uninstaller screens that display.

Installing Infoprint Select

Infoprint Select allows you to submit jobs to Infoprint Manager from word processors, spreadsheets, and other desktop applications. It also provides you with a powerful command line which you can use to interface more directly with Infoprint Manager and to specify AFP™ print options. This section contains procedures for installing and configuring Infoprint Select on the Windows platform. The following topics are covered:

- “Understanding commands”
- “Installing Infoprint Select from a CD-ROM” on page 33
- “Configuring your Infoprint Manager server to work with Infoprint Select” on page 33
- “Creating Infoprint Select printers” on page 34

Understanding commands

Typically, Infoprint Select is used to allow users to print to Infoprint Manager destinations from existing Windows applications (usually through the **Print** option on the **File** menu). In addition, Infoprint Select provides the following POSIX commands which can be issued at a Command Prompt on the client system:

- **pdaccount**
- **pdclean**
- **pdcreate**
- **pddelete**
- **pddisable**
- **pdenable**
- **pdl**
- **pdmod**
- **pdq**
- **pdpause**
- **pdpr**
- **pdpromote**
- **pdreorder**
- **pdresubmit**
- **pdresume**
- **pdrm**
- **pdset**
- **pdshutdown**
- **pdspace**

You can find detailed documentation for these commands in the *Infoprint Manager: Reference* (S544-5475).

By default, Infoprint® Manager security allows everyone to use the **pdpr**, **pdl**, **pdmod**, **pdq**, **pdrm**, while only members of the **admin** and **oper** security groups can use the other commands. (Users who are not members of the **admin** or **oper** groups can only use **pdmod** and **pdrm** on their own print jobs.)

For additional information about Infoprint Manager security and permissions, refer to the on-line help system in the Management Console and “Managing Security for Infoprint Manager for Windows NT and Windows 2000” on page 65.

Installing Infoprint Select from a CD-ROM

Follow these steps to install Infoprint Select on a Windows system from a CD-ROM:

Notes:

1. If you plan to use Infoprint Select to print PostScript jobs to an AIX DSS or BSD DSS printer, be sure to use the PostScript printer driver that came with your printer when you create an Infoprint Select printer on your desktop. These drivers include PostScript Printer Definitions (PPDs) that are specific to your printer. Do not use the printer drivers and PPDs that are provided with Infoprint Select. They contain specific actual destination attributes that apply only to PSF DSS printers.
2. If you change a port number on a Windows 95 system, you may receive the following message:
Fonts downloaded to this printer while connected to Infoprint Select may be lost. You may need to resend them again on *your port*.

You can ignore this message.

1. If available, insert the most recent Infoprint Manager Service (CLIENT) CD-ROM into your CD-ROM drive. Otherwise, insert the appropriate Infoprint Manager Client CD-ROM into the drive.
2. Navigate to the *d:\select\win\language* directory, where *d:* is the CD-ROM drive and *language* corresponds to your preferred language.
 - a. Double-click the **My Computer** icon.
 - b. Double-click the CD-ROM drive icon.
 - c. Double-click the **select** folder.
 - d. Double-click the **win** folder.
 - e. Double-click the folder that corresponds to your preferred language.
3. Double-click the **select.exe** icon.
4. Follow the instructions on the InstallShield screens to install the program.

Configuring your Infoprint Manager server to work with Infoprint Select

In order for Infoprint Select to submit print jobs to Infoprint Manager properly, you must configure the appropriate Infoprint Manager logical destinations to accept jobs from Infoprint Select. Use the Infoprint Manager Administration GUI as described in the following procedure to configure the logical destinations correctly. If you want to use the command line instead of the GUI, use the **pdset** command to set the **windows-nt-driver-name** attribute.

Note: It is highly recommended that users who submit jobs with Infoprint Select send them to Infoprint logical destinations, not to Infoprint actual destinations.

1. Log on to a system that has the Infoprint Manager Administration GUI installed on it as a user with administrator privileges.

Note: To be able to complete this procedure, you must have the authority to use the **pdenable**, **pddisable**, and **pdset** commands. If you do not have that authority, your user id must be added to the access control lists (ACLs) on your Infoprint Manager server. Refer to “Managing Security for Infoprint Manager for Windows NT and Windows 2000” on page 65 for additional information.

2. Launch the Infoprint Manager Administration GUI.
3. Select one of the logical destinations that will receive print jobs from Infoprint Select by clicking on it once.
4. On the menu bar, click **Logical** and select **Properties**.
5. In the **Properties** notebook, click the **Drivers** tab.

Note: If you do not see the **Drivers** tab, click **Show more**, then click the **Drivers** tab.

6. In the **New value** field next to **Windows drivers**, type the name of one of the print drivers that users will use to submit jobs in conjunction with Infoprint Select.
7. Click **Add >>**.
8. Repeat from 6 for all of the drivers that users will use with Infoprint Select.
9. Click **OK**.

Creating Infoprint Select printers

This section describes how to configure Infoprint Select clients to allow print job submission from Windows applications to destinations managed by an Infoprint Manager server. This section includes the following topics:

- “Collecting required information”
- “Creating Infoprint Select printers on Windows 95/98 systems” on page 35
 - “Adding your first Infoprint Select printer on Windows 95/Windows 98 systems” on page 35
 - “Adding an additional Infoprint Select printer on Windows 95/Windows 98 systems” on page 37
- “Creating Infoprint Select printers on Windows NT systems” on page 38
 - “Adding your first Infoprint Select printer on Windows NT systems” on page 38
 - “Adding an additional Infoprint Select printer on Windows NT systems” on page 39
- “Creating Infoprint Select printers on Windows 2000 systems” on page 39
 - “Adding your first Infoprint Select printer on Windows 2000 systems” on page 39
 - “Adding an additional Infoprint Select printer on Windows 2000 systems” on page 41

Collecting required information

Before you can print to an Infoprint Manager destination from a Windows application, you must add an Infoprint Select printer to your Windows environment. Collect the following information before you begin:

- The host name or IP address of the Infoprint Manager server
- The port number that the Infoprint Manager server uses to communicate with client systems

The default is 6874.

You can find this port number in the **Service Configuration** dialog in the Management Console.

- The names of logical destinations to use
- The names of the drivers to associate with each logical destination
- Where the driver files are located (on a CD-ROM, on a network server, or on your local system)

Important: Drivers and Finishing The automatic data stream transforms that PSF printers use do not support finishing (stapling). As a result, if you plan to use Infoprint Select to submit PCL or PostScript jobs to a PSF printer (destination), you cannot specify finishing options when you submit a job, even if the print driver you use supports those options. It is recommended that you either use a different method to submit those print jobs, or that you submit them to an Infoprint printer that does not transform the data stream (such as a Passthrough printer or an AIX printer).

If you cannot use a different submission method and cannot submit your jobs to a different type of Infoprint printer, the only way to request finishing options on PCL and PostScript jobs submitted to a PSF destination is to use a default job. A *default job* is a list of attributes that is applied to every job that a particular logical destination receives. You can use the Infoprint Manager Administration GUI to modify the default job for the logical destination that Infoprint Select sends jobs to so that it requests the appropriate finishing options. However, this method is not recommended for two reasons:

1. Every job that you send to that logical destination will be finished the same way. For example, if you set the **Finishing options** attribute of the default job to **staple-top-left**, every job that is submitted to that printer will be stapled, even if the job is only one page long.
2. A logical destination can only have one default job, and a default job can only have one finishing option set. If you want to use different finishing options, you must create multiple logical destinations, each with different options set on the default jobs. Then, you must create a different printer on your desktop to submit jobs to each logical destination.

Creating Infoprint Select printers on Windows 95/98 systems

Adding your first Infoprint Select printer on Windows 95/Windows 98 systems: Follow this procedure to add an Infoprint Select printer to your Windows[®] 95/98 system:

1. On the Windows desktop, double-click the **My Computer** icon.
2. Double-click the **Printers** folder icon.
3. Double-click the **Add Printer** icon. The **Add Printer Wizard** window displays. Click **Next**.
4. Select **Local Printer** and click **Next**.
5. Click **Have Disk**.
 - a. Click **Browse**.
 - b. Navigate to the directory where you installed Infoprint Select. (By default, this is c:\Infoprint.) This directory holds the required ibmprt95.inf file.
 - c. Click **OK**.
 - d. Click **OK** to close the **Install from Disk** window.
6. Select a printer driver that is suitable for the printer you want to use and click **Next**.
7. If the next dialog is a notification that the printer driver already exists, select **Replace existing driver** and click **Next**.
8. In the **Available ports** list, find **Infoprint (Infoprint Select)** and check the box next to it.

Note: If you just installed Infoprint Select and cannot find it in the list, restart your system and start this procedure again from the beginning. If you cannot find the Infoprint Select port after you re-start the system, you may have to re-install Infoprint Select.

9. Click **Configure Port**. The **Infoprint Port** window displays.
10. In the **Print Server** field, select **Infoprint Manager** from the drop-down list.
11. In the **Host Name** field, type the host name of your Infoprint Manager server.
12. In the **Host Port** field, type the port number that your Infoprint Manager server uses to communicate with client systems. The default port is 6874.

Note: You can find this port number in the **Service Configuration** dialog in the Management Console.

13. Click **Refresh Printer Selection List**.
14. Select the appropriate printer from the list.
15. Click **OK**.
16. Click **Next**.
17. Enter a name for the printer in the field provided. This is the name by which the printer will be known to your Windows applications and the Windows desktop. Click **Next**.
18. When you are asked **Would you like to print a test page?**, select **No** and click **Finish**.

Note: The printer does not appear instantaneously in the Printers window.

If an **Insert Disk** dialog appears, click **OK** to close it.

At this point, a **Files Needed** dialog may appear. In all likelihood, the required file (adfonts.mfm) is already present on your system. If the **Files Needed** dialog appears, follow these steps:

1. Click the **Browse** button.
2. If you are using Windows 95, navigate to c:\win95\system (assuming that your operating system is installed on the C: drive). If you are using Windows 98, navigate to c:\windows\system, and select the file that is needed.
3. Click **OK**.
4. Click **OK** to close the **Copying Files** dialog and to complete the configuration.

If the **Files Needed** dialog appears again, follow a similar procedure to copy the files from either the \win95\system directory (\windows\system under Windows 98) or the Infoprint Select installation directory. You should find all missing files in one of these two locations.

If you cannot find a file in either of these directories, you must retrieve it from the operating system CD-ROM or floppy disks.

Specifying the logical destination name: Now you need to specify the logical destination name by doing the following:

1. Open a Command Prompt window and edit the autoexec.bat file.
2. Add the following line to the file:
SET PDPRINTER=*logicaldestinationname*
3. Save your changes and close the autoexec.bat file.
4. Restart the Windows system to make this change effective.

If you want to add additional Infoprint Select printers to your environment, follow the procedure described in “Adding an additional Infoprint Select printer on Windows 95/Windows 98 systems”.

Changing print driver properties: Next, you need to configure the print driver to work correctly with Infoprint Select to send binary data instead of ASCII data by doing the following:

1. In the **Printers** window, select the printer that you just created.
2. Click **File—>Properties** and the *Printer Properties* appears, where *Printer* is the printer that you just created.
3. Click the **PostScript** tab and click **Advanced...** The **Advanced PostScript Options** dialog box appears.
4. Click **Pure Binary Data**.
5. Click **OK** in the **Advanced PostScript Options** dialog box.
6. Click **OK** in the **Printers** window.

Adding an additional Infoprint Select printer on Windows 95/Windows 98 systems: Before adding an Infoprint Select printer to your Windows NT/Windows 2000 environment, you must first collect the information described in “Collecting required information” on page 34. Also, you must perform the appropriate server configuration as described in “Configuring your Infoprint Manager server to work with Infoprint Select” on page 33.

To print to an additional Infoprint Select printer, you must add an additional Infoprint Select port. Otherwise the configuration is similar to that described above in “Adding your first Infoprint Select printer on Windows 95/Windows 98 systems” on page 35.

Follow these steps to add an additional Infoprint Select port:

1. On the Windows desktop, double-click the **My Computer** icon.
2. Double-click the **Printers** folder.
3. In the **Printers** window, right-click the icon for the first Infoprint Select printer you created and select **Properties** from the pop-up list.
4. In the **Properties** window, click the **Details** tab.
5. In the **Details** tab, click **Add Port**.
6. In the **Add Port** window, select **Other**.
7. Select **Infoprint Select** as the type of port and click **OK**.
8. In the **Infoprint Port** dialog, type a name for the new port, such as Infoprint-2. (Use a name that is not used by any other port.) Click **OK**.
9. Select **Infoprint (Infoprint Select)** from the **Print to the following port** pulldown list. This will restore the original port assignment for the initial Infoprint Select printer. (The port you just created still exists and will be soon be used for the additional Infoprint Select printer.)
10. Click **OK** to close the **Properties** window.

After creating this new Infoprint Select port, follow the steps described in “Adding your first Infoprint Select printer on Windows 95/Windows 98 systems” on page 35, but select the new Infoprint Select port (for example, Infoprint-2) in step 8. Do not forget to configure the new port in step 9.

Creating Infoprint Select printers on Windows NT systems

Adding your first Infoprint Select printer on Windows NT systems: Before adding an Infoprint Select printer to your Windows NT environment, you must first perform these steps:

- Collect the information described in “Collecting required information” on page 34.
- Configure the server as described in “Configuring your Infoprint Manager server to work with Infoprint Select” on page 33.

Follow these steps to add an Infoprint Select printer to your Windows NT system:

1. On the Windows desktop, click the Windows **Start** button and select **Settings** -> **Printers**.
2. Double-click the **Add Printer** icon. The **Add Printer Wizard** window displays.
3. Select **My Computer** and click **Next**.
4. In the **Available ports** list, find **Infoprint Select** and check the box next to it.

Note: If you just installed Infoprint Select and cannot find it in the list, restart your system and start this procedure again from the beginning. If you cannot find the Infoprint Select port after you re-start the system, you may have to re-install Infoprint Select.

5. Click **Configure Port**. The **Infoprint Port Configuration** dialog displays.
6. In the **Print Server** field, select **Infoprint Manager** or **Infoprint Manager Server** from the dropdown list.
7. In the **Host Name** field, type the host name of your Infoprint Manager server.
8. In the **Host Port** field, type the port number that your Infoprint Manager server uses to communicate with client systems. The default port is 6874.

Note: You can find this port number in the **Service Configuration** dialog in the Management Console.

9. Click **Refresh Printer Selection List**.
10. Select the appropriate printer from the list.
11. Click **OK**.
12. Click **Next**.
13. Select the printer driver you wish to install and click **Next**.
14. If the next dialog tells you that the printer driver already exists, select **Replace existing driver** and click **Next**.
15. Enter a name for the printer in the field provided. This is the name by which the printer will be known to your Windows applications and the Windows desktop. Click **Next**.
16. Confirm that the **Not shared** radio button is selected and click **Next**.
17. When you are asked **Would you like to print a test page?**, select **No** and click **Finish**.

When the Files Needed dialog appears: A **Files Needed** dialog may open at this point. In all likelihood, the file you need (pscript.dll) is already present on your system. If the **Files Needed** dialog does appear, follow these steps:

1. In the **Files Needed** dialog, click **Browse**.
2. Navigate to the c:\winnt\system32 directory (assuming that your operating system is installed on the c: drive) and select the file that is needed.
3. Click **Open**.

4. Click **OK**.
5. If the `pscript.dll` file is not found in this directory, you must load it from the operating system CD-ROM. To do this, follow these steps:
 - a. Insert the Windows NT operating system CD-ROM.
 - b. In the **Files Needed** dialog, click **Browse**.
 - c. Navigate to the `d:\I386\Pscript.dl_` file (where *d*: is your CD-ROM drive) and select the file that is needed.
 - d. Click **Open** and then **OK** to complete the configuration.

If you want to add additional Infoprint Select printers to your environment, follow the procedure described in “Adding an additional Infoprint Select printer on Windows NT systems”.

Adding an additional Infoprint Select printer on Windows NT systems: Before adding an Infoprint Select printer to your Windows NT environment, you must first collect the information described in “Collecting required information” on page 34. Also, you must perform the appropriate server configuration as described in “Configuring your Infoprint Manager server to work with Infoprint Select” on page 33.

To print to an additional Infoprint Select printer, you must add an additional Infoprint Select port. Otherwise the configuration is similar to that described above in “Adding your first Infoprint Select printer on Windows NT systems” on page 38.

To add an additional Infoprint printer to your Windows NT environment, follow these steps:

1. On the Windows desktop, click the Windows **Start** button and select **Settings** -> **Printers**.
2. Double-click the **Add Printer** icon. The **Add Printer Wizard** window displays.
3. Select **My Computer** and click **Next**.
4. Click **Add Port**.
5. In the **Printer ports** dialog, find the **Infoprint port monitor** and select it.
6. Click **New Port**.
7. In the dialog that opens, type a name for the new port, such as `Infoprint-2`, and click **OK**. (Use a name that no other port uses.)
8. Click **Close** to return to the **Add Printer Wizard**. The port you just created is selected.
9. Continue with step 5 of the procedure documented in “Adding your first Infoprint Select printer on Windows NT systems” on page 38, configuring the new port you just added.

Creating Infoprint Select printers on Windows 2000 systems

Adding your first Infoprint Select printer on Windows 2000 systems: Before adding an Infoprint Select printer to your Windows 2000 system, you must first perform these steps:

- Collect the information described in “Collecting required information” on page 34.
- Configure the server as described in “Configuring your Infoprint Manager server to work with Infoprint Select” on page 33.

Follow these steps to add an Infoprint Select printer to your Windows 2000 system:

1. From the Windows desktop, click **Start—>Settings—>Printers—>Add Printer**.
2. The **Add Printer Wizard** window displays. Click **Next**.
3. In the **Local or Network Printer** dialog, select the **Local printer** button and ensure that the **Automatically detect and install my Plug and Play Printer** button is **not** selected. Click **Next**.
4. In the **Select the Printer Port** dialog, select the **Use the following port** check box, then scroll down the list of ports until you find the **Infoprint** port and select it. Click **Next**.
5. On the next dialog, select the manufacturer and model of your printer and click **Next**.
6. If the driver for your printer is already installed, the **Use Existing Driver** dialog appears. Click **Next**.
7. The **Name your Printer** dialog appears. Enter a name for the printer in the field provided. This is the name by which the printer will be known to your Windows applications and the Windows desktop. Click **Next**.
8. Select the **Do not share this printer** radio button and click **Next**.
9. When you are asked **Would you like to print a test page?** select **No** and click **Next**.
10. Click **Finish**.
11. From the Windows desktop, click the Windows **Start** button and select **Settings—> Printers**.
12. On the menu bar of the **Printers** window, click **File** and select **Server Properties**.
13. In the **Print Server Properties** window, click the **Ports** tab.
14. Highlight the **Infoprint Select** port that you want to configure and click **Configure Port**.
15. In the **Infoprint Port Configuration** window, find the **Print Server** field and select **Infoprint Manager** or **Infoprint Manager Server** from the dropdown list.
16. In the **Host Name** field, type the host name of your Infoprint Manager server.
17. In the **Host Port** field, type the port number that your Infoprint Manager server uses to communicate with client systems. The default port is 6874.

Note: You can find this port number in the **Service Configuration** dialog in the Management Console.

18. Click **Refresh Printer Selection List**.
19. Select the appropriate printer from the list.
20. Click **OK**.
21. Click **Close**.

When Files Needed dialog appears: A **Files Needed** dialog may open at this point. In all likelihood, the file you need (pscript.dll) is already present on your system. If the **Files Needed** dialog does appear, follow these steps:

1. Click **Browse**.
2. Navigate to the c:\winnt\system32 directory (assuming that your operating system is installed on the c: drive), and select the file that is needed.
3. Click **Open**.
4. Click **OK**.
5. If the pscript.dll file is not found in this directory, you must load it from the operating system CD-ROM. To do this, follow these steps:

- a. Insert the Windows 2000 operating system CD-ROM.
- b. Click **Browse** on the **Files Needed** dialog.
- c. Navigate to the *d:\I386\Pscript.dl_* file (where *d:* is your CD-ROM drive).
- d. Click **Open** and then **OK** to complete the configuration.

If you want to add additional Infoprint Select printers to your environment, follow the procedure described in “Adding an additional Infoprint Select printer on Windows 2000 systems”.

Adding an additional Infoprint Select printer on Windows 2000 systems: Before adding an Infoprint Select printer to your Windows 2000 environment, you must first collect the information described in “Collecting required information” on page 34. Also, you must perform the appropriate server configuration as described in “Configuring your Infoprint Manager server to work with Infoprint Select” on page 33.

To print to an additional Infoprint Select printer, you must add an additional Infoprint Select port. Otherwise the configuration is similar to that described above in “Adding your first Infoprint Select printer on Windows 2000 systems” on page 39.

To add an additional Infoprint printer to your Windows 2000 system, follow these steps:

1. From the Windows desktop, click **Start**—>**Settings**—>**Printers**—>**Add Printer**.
2. The **Add Printer Wizard** window displays. Click **Next**.
3. In the **Local or Network Printer** dialog, select **Local printer** and clear the **Automatically detect and install my Plug and Play Printer** checkbox. Click **Next**.
4. Click **Create a new port** and highlight **Infoprint port monitor** from the pull-down list. Click **Next**.
5. In the dialog that opens, type a name for the new port, such as Infoprint-2, and click **OK**. (Use a name that no other port uses.)
6. Continue with step 5 of the procedure documented in “Adding your first Infoprint Select printer on Windows 2000 systems” on page 39, configuring the new port you just added.

IBM Infoprint Select for Windows 3.1 Version 3.2 Read Me

This file contains information you need for installing this product as well as information that was not available for our printed publications.

Note: Before beginning the installation, determine whether you will download Infoprint Select from the Web or from the product CD-ROM. See either “Downloading Infoprint Select from the Infoprint Manager 3.2 Web Page” or “Downloading Infoprint Select from the Infoprint Manager 3.2 CD-ROM.”

This README.ENG file is divided into the following categories:

- Before You Install
- Downloading Infoprint Select from the Infoprint Manager 3.2 CD-ROM
- Expanding the Downloaded Files
- Trademarks

Before you install

Infoprint Select 3.1 requires the following software:

- DOS-Windows 3.1 or Windows for Workgroups 3.11:
 - DOS 5.0 or greater
 - TCP/IP, for example:
 - IBM TCP/IP 2.1.1 for DOS (Winsock 1.1 compliant, 87G7184)
 - For Windows for Workgroups, Microsoft TCP/IP-32 3.11)
- OS/2-WINOS2 Environment:
 - OS/2 3.0 or greater with WINOS2 support
 - IBM TCP/IP for OS/2, version 2.0 or greater
 - IBM TCP/IP DOS/Windows Access Kit

Downloading Infoprint Select from the Infoprint Manager Common Client CD

1. Insert the Infoprint Manager Common Client CD into the drive.
2. Note the file name of the Infoprint Select installation exec. It is called: d:\select\win31\Setup.exe where d: is the CD-ROM drive.
3. Continue with the installation instructions under "Expanding the downloaded files"

Expanding the downloaded files

1. Select **Run** from the Program Manager's **File** menu.
2. In the **Open** field, type:
 - d:\select\win31\Setup
 - Where d: is the CD-ROM drive.
3. Click **OK** to continue. The InstallShield setup program starts.
4. Follow the instructions on the InstallShield screens to install the program.

Enabling users to install Infoprint Select from a LAN server

1. Create a directory on the LAN server to store the install files. For example:


```
mkdir j:\wininst
```
2. Copy all of the product files into this directory. You can do this using the **DOS XCOPY** command. For example:


```
xcopy a:\*.* j:\wininst
```
3. Give all users access to the LAN drive that you copied the diskettes into (in this example, the J drive).
4. From the Program Manager's **File** menu, select **Run**. Type: j:\wininst\setup
After following the installation dialog for the product, the LAN users are now ready to use it on their workstations.

Automated installation

To perform an automated installation, you must first record responses to the dialog boxes during a manual installation with the "-r" option. This generates a "setup.iss" file which is placed in the Windows directory (c:\windows for Windows 3.1 and \os2\mdos\winos2 on the boot drive for WINOS2). This file can then be used with setup for an automated installation using the "-f1" parameter.

For example, suppose installation files are placed in j:\wininst. Perform the following steps to prepare an automated install:

1. j:
2. cd \wininst
3. setup -r
4. Answer all dialog prompts. For the installation directory, you may omit the drive letter and colon so that setup will automatically select the Windows system drive.
5. After installation completes: copy c:\windows\setup.iss j:\wininst or copy c:\os2\mdos\winos2\setup.iss j:\wininst

IBM Infoprint Select for OS/2 Version 3.2 Read Me

This file contains information you need to install Infoprint Select for OS/2 and additional information not included in the product documentation.

This README.ENG file is divided into the following categories:

- What is new in this version
- Before you install Infoprint Select for OS/2
- Downloading Infoprint Select from the Infoprint Manager CD-ROM
- Expanding the downloaded files
- Enabling users to install Infoprint Select from a LAN server
- Making installation diskettes
- Cancelling the installation

What's new in this version

In addition to the previously shipped commands (**pdls**, **pdpr**, and **pdq**), this version provides the following commands:

- pdclean
- pdcreate
- pddelete
- pdenable
- pdmod
- pdpause
- pdresume
- pdrm
- pdset
- pdspace

If you are installing onto an HPFS drive, you can also install the following longer command names:

- pddisable
- pdpromote
- pdreorder
- pdresubmit
- pdshutdown

The documentation for these commands can be found in the *Infoprint Manager: Reference*, S544-5475.

Before you install Infoprint Select for OS/2

Read through the following requirements information before installing Infoprint for OS/2 on your workstation.

Infoprint Select for OS/2 requires the following software:

- OS/2 Warp version 3.0 or above
- IBM TCP/IP for OS/2 version 3.0 or above
- Having the latest fix packs applied is strongly recommended

If you will be installing long command names such as **pdshutdown.exe**, you must have the installation drive formatted with HPFS.

Downloading Infoprint Select from the Infoprint Manager Common Client CD

Follow these instructions to download Infoprint Select from the CD-ROM:

1. Insert the Infoprint Manager Common Client CD into the drive.
2. Note the file name of the Infoprint Select installation exec. It is called: `d:\select\os2\locale\install.exe` where d: is the CD-ROM drive and locale is one of the following locales:

Locale	Language
dan	Danish
deu	German
eng	English
esp	Spanish
fin	Finnish
fra	French
ita	Italian
jpn	Japanese
nor	Norwegian
sve	Swedish
chs	Simplified Chinese
cht	Traditional Chinese

3. Continue with the installation instructions under "Installing the Files."

Installing the files

1. From an OS/2 full screen or window session, type:


```
d:\select\os2\locale\install
```

where d: is the CD-ROM drive.
2. Press **Enter**.
3. Follow the on-screen prompts.
4. Follow the instructions in the Infoprint Select online help to set up desktop printer objects.

Enabling users to install Infoprint Select from a LAN server

1. Create a directory on the LAN server to store the Infoprint for OS/2 files. For example:

```
mkdir j:\os2inst
```

2. Copy all of the Infoprint for OS/2 files from the Infoprint CD-ROM into this directory. You can do this using the OS/2 COPY command. For example:

```
copy d:\os2\eng\*. * j:\os2inst
```

Substitute the drive letter of the CD-ROM drive on the OS/2 workstation for d.

3. Give all users access to the LAN drive that you copied the files into (in this example, the J drive). Users with access to the LAN drive can access the alias drive and directory and then install the product by typing: `install`

After completing the installation procedure for the product, the LAN users are now ready to use it on their workstations.

Making installation diskettes

You can make Infoprint installation diskettes from the Infoprint for OS/2 files on the Infoprint CD-ROM. Either use a workstation that has both a CD-ROM drive and a diskette drive, or use a workstation that has LAN access to a CD-ROM drive on another OS/2 workstation.

1. Load the Infoprint for OS/2 CD-ROM into the CD-ROM drive on the appropriate workstation.
2. Open an OS/2 window to access the OS/2 command line.
3. Format two diskettes. The diskettes should be 1.44MB or greater in capacity. Label the diskettes Infoprint for OS/2 Disk 1 and Infoprint for OS/2 Disk 2.
4. Insert Disk 1 in the diskette drive after formatting.
5. Change to the drive letter of the CD-ROM drive containing the Infoprint CD-ROM.
6. Create the installation diskettes. When entering the following command, substitute the drive letter of your diskette drive for a: if necessary.

```
makedsk a:
```
7. Insert Disk 2 when prompted.
8. After creating the diskettes, you can install Infoprint for OS/2 by inserting Diskette 1 and using the command:

```
a:\install
```

Cancelling the installation

If you need to stop the installation on Infoprint for OS/2 for any reason, the installation program allows you to do so. It then prompts you as to whether it should delete any files that were installed. You should confirm the file deletion and allow the installation program to remove the files. Otherwise, you should manually delete the files yourself. If you do not and you choose to install again, you will receive messages throughout installation that certain files already exist and prompts that ask you to confirm whether they should be overwritten.

Installing Infoprint Manager Notifications

Infoprint Manager Notifications allows your Infoprint Manager server to send notification messages to any any Windows 95, Windows 98, Windows NT, or Windows 2000 system that has the notification client installed. The Infoprint Manager notification server and notification client software are both automatically installed on the system that your Infoprint Manager server software runs on. In addition, you can install the notification client on any other Windows system that is network-connected. Follow the procedures in this chapter if you want to use the Infoprint Manager Notifications client to receive messages from your Infoprint Manager server on a remote system.

This document contains the following sections:

- “Preparing for Infoprint Manager Notifications”
- “Installing the software” on page 47
- “Starting Infoprint Manager Notifications” on page 47
- “Uninstalling Infoprint Manager Notifications” on page 47

Preparing for Infoprint Manager Notifications

Infoprint Manager Notifications requires the the IBM Cross Platform Technologies for Windows® version (CPT) 2.0 Runtime Environment. This is the only supported Runtime Environment for running Infoprint Manager Notifications.

To verify that you have the correct version of the Runtime Environment installed, follow these steps:

1. Type `java -fullversion` on an MS-DOS command line.
2. Verify that output from the command contains the following text:
cn13--20010609
3. If the output from the command does not contain the text above, uninstall the currently installed Runtime Environment component:
 - a. Click the Windows **Start** button and select **Settings** -> **Control Panel**, then double-click the **Add/Remove Programs** icon.
 - b. Find the **IBM Runtime Environment, Java(TM) Tech. Edition, 1.1.8** entry in the list of programs that can be removed and click **Add/Remove**. Follow the instructions on the screen to complete the process.
 - c. Remove the JRE or Runtime Environment entry from the PATH environment variable.

If necessary, follow these steps to install the required CPT Runtime Environment from the Client CD-ROM:

1. Insert the IBM Infoprint Manager Client CD-ROM into the drive.
2. Launch the `\jre\install.exe` executable from the CD-ROM:
 - a. Double-click the **My Computer** icon.
 - b. Double-click the CD-ROM drive icon.
 - c. Double-click the **jre** folder icon.
 - d. Double-click the **install.exe** icon.
3. Provide the information as prompted by the InstallShield program. When the installer asks if you want to install the Runtime Environment as the system Java Virtual Machine (JVM), answer **Yes**.
4. Type `java -fullversion` on an MS-DOS command line.

5. Verify that the output from the command contains the following text:
cn13--20010609

Installing the software

Follow these steps to install the Infoprint Manager Notifications software on a remote system.

1. Insert the Infoprint Manager Client CD-ROM into the drive.
2. Double-click the **My Computer** icon.
3. Double-click the CD-ROM drive icon.
4. Double-click the **notification** folder icon.

There are two setup files to choose from:

- If you are installing Infoprint Manager Notifications on a Windows system running in Mandarin (Chinese (Taiwan)), use **notifysetup_zh_TW.exe**
 - If you are installing on any other language Windows system, use **notifysetup.exe**
5. Double-click the appropriate icon for the language your system runs in to launch InstallShield.
 6. Follow the instructions on the InstallShield screens.

Starting Infoprint Manager Notifications

To launch Infoprint Manager Notifications, click **Start—>Programs—>Infoprint Manager Notifications** to run the software.

When you first run Infoprint Manager Notifications, you will be prompted for some configuration information. You must obtain this information from your Infoprint Manager administrator. If your network is configured correctly, you should be able to accept the default settings in the dialog that displays. For more information, click the **Help** button in this dialog.

Uninstalling Infoprint Manager Notifications

To uninstall Infoprint Manager Notifications, follow these steps:

1. From the **Start** menu, click **Settings—>Control Panel**.
2. Double-click the **Add/Remove Programs** icon.
3. Select **Infoprint Manager Notifications**.
4. Click the **Add/Remove** (Windows NT) or the **Change/Remove** (Windows 2000) button.

Note: Click the button only once, then wait for at least 30 seconds before you do anything else. If you do not wait for the first panel of the uninstaller to appear, it may get lost behind other windows. If you don't see first panel of the uninstaller the after 30 seconds, press and hold the **Alt** key, then press the **Tab** key to bring the window to the front.

5. Follow the instructions on the screens that display.

Installing the AFP driver

The Infoprint AFP Driver software allows you to produce Advanced Function Presentation (AFP) output from desktop applications so you can use the powerful features of AFP in a wider range of environments. Used in conjunction with Infoprint Select or a Windows gateway printer, the AFP Driver provides a high

degree of control over the appearance of your printed documents. This section contains procedures for unpacking and installing the Infoprint AFP Driver on a Windows system.

English versions of the AFP drivers for all Windows platforms are provided on the Infoprint Manager Client CD-ROM. You can also download English and other language versions of the AFP driver from the IBM Printing Systems web site at <http://www.ibm.com/printers>.

Use the procedures below to unpack and install the AFP drivers on your Windows system.

Note: If you plan to use this driver to submit print jobs using Infoprint Select, install this driver on the same system that Infoprint Select is installed on. If you plan to use this driver to submit print jobs using a Windows gateway printer, install the driver on the system that your Infoprint Manager server is installed on.

Unpacking AFP driver files

1. On the system that you want to install the AFP driver on, create a directory called `afpdriver`.
2. Insert the most recent Infoprint Manager Common Client CD-ROM into your CD-ROM drive and navigate to the directory that contains the driver files.
 - a. Double-click the **My Computer** icon.
 - b. Double-click the CD-ROM drive.
 - c. Double-click the **drivers** folder.
 - d. Double-click the **afp** folder.
 - e. Double-click the **Win9X**, **WinNT** or **Win2000** folder.
 - f. Double-click the **english** folder.
3. Click the `ibmafp95.exe`, the `ibmafpnt.exe` or the `ibmafp2000.exe` file to select it.
4. In the menu bar, click **Edit** -> **Copy**.
5. Go back to the My Computer window and navigate to the `afpdriver` directory that you created in 1.
6. In the `afpdriver` directory window, click **Edit** -> **Paste**.
7. Verify that the file appears in the directory, then close all of the windows.
8. Click the Windows **Start** button and select **Programs** -> **Command Prompt**. (On Windows 2000, the correct path is **Start** -> **Programs** -> **Accessories** -> **Command Prompt**.)
9. Navigate to your `afpdriver` directory.
10. With the Command Prompt in that directory,

On **Windows 95/98** type:

```
ibmafp95.exe c:\path /d
```

On **Windows NT** type:

```
ibmafpnt.exe c:\path /d
```

On **Windows 2000** type:

```
ibmafp2000.exe c:\path /d
```

Where `c:\path` is the directory that you want to unpack the driver files into. You **can** unpack the driver files into the `afpdriver` directory.
11. Press **Enter**.

The files will be unpacked into the directory.

Installing the AFP driver

Once the files have been unpacked, you must complete the process of installing the AFP driver by creating a printer that uses the driver.

Notes:

1. The Windows printers that result from these procedures do not send print jobs to actual printer devices; they generate files. If you want to create a Windows printer that sends jobs to one of your printer devices, change the procedure as necessary.
2. Once you complete this procedure, you can delete the printer that you created. The driver will still be installed.

Installing the Infoprint AFP Driver on a Windows NT system

1. Click the Windows **Start** button and select **Settings** -> **Printers**.
2. In the Printers window, double-click the **Add printer** icon to start the **Add Printer Wizard**.
3. On the first panel of the wizard, select **My Computer** and click **Next**.
4. In the **Select Printer Port** dialog, select **FILE:** and click **Next**.
5. In the next dialog, click **Have disk** without selecting a printer or a manufacturer.
6. In the **Install from disk** dialog, type the path to the directory that you copied the AFP driver files into (for example, c:\afpdriver) and click **OK**.
7. Select the printer that you plan to use this driver with from the list and click **Next**.

Note: If your printer does not appear in the list, select **IBM AFP *nnn***, where *nnn* is the resolution of your printer.

8. In the next dialog, accept the name of the printer and do not set it to be your default printer. Click **Next**.
9. Leave the printer **Not shared** and click **Next**.
10. Select **No** to not print a test page and click **Finish**.

Installing the Infoprint AFP Driver on a Windows 2000 system

1. Click the Windows **Start** button and select **Settings** -> **Printers**.
2. In the Printers window, double-click the **Add printer** icon to start the **Add Printer Wizard**.
3. On the first panel of the wizard, click **Next**.
4. In the **Local or Network printer** dialog, select **Local** and click **Next**.
5. In the **Select Printer Port** dialog, select **FILE:** and click **Next**.
6. In the next dialog, click **Have disk** without selecting a printer or a manufacturer.
7. In the **Install from disk** dialog, type the path to the directory that you copied the AFP driver files into (for example, c:\afpdriver) and click **OK**.
8. Select the printer that you plan to use this driver with from the list and click **Next**.

Note: If your printer does not appear in the list, select **IBM AFP *nnn***, where *nnn* is the resolution of your printer.

9. In the next dialog, accept the name of the printer and do not set it to be your default printer. Click **Next**.
10. Leave the printer **Not shared** and click **Next**.
11. Do not print a test page and click **Next**.
12. Click **Finish**.
13. If a dialog displays telling you that the driver doesn't have a digital signature, simply select **Yes** to finish installing the driver.

Chapter 4. General Configuration Information

Selecting a type of actual destination

Once you have decided how many logical destinations, queues, and actual destinations you want to use and how to configure them, you need to determine which kind of actual destinations to create. In Infoprint Manager for Windows NT and Windows 2000, there are four basic types of actual destinations: PSF printers (including PSF Direct only destinations), Passthrough printers, BSD printers, and IPP printers. The names of the destination types refer to the destination support systems (DSSs) that process the print data and send it to the printer.

Consult the tables below to help you determine what kind of destinations to create based on where your print jobs are coming from:

- PC-based applications or a host system using IP Printway
- Host system using PSF Direct
- Both PC-based applications and host systems (using PSF Direct or MVS Download)

PC-based applications or a host system using IP Printway

If you do not use PSF Direct or MVS Download to submit jobs, use this table to see which type of destination fits your needs.

Table 3. PC-based applications or a host system using IP Printway

If the data stream that your applications send to Infoprint Manager is:	PostScript, PCL or any non-IPDS data stream			
and the data stream that you send to this printer is:	the same that the application sends to Infoprint Manager			PCL, PPDS ¹ , IPDS
and your jobs are going to be sent to a printer:	through a Windows defined port	using a command such as lpr	that is IPP enabled	that is attached to your Infoprint Manager system in any of the ways listed in the PSF Attachment Types table
Create this kind of actual destination:	Passthrough ²	BSD	IPP	PSF

Table 3. PC-based applications or a host system using IP Printway (continued)

<p>Notes:</p> <ol style="list-style-type: none"> 1. You can only print PPDS on a non-Windows system, for example, by sending the PPDS data stream to an AIX system. 2. If you are printing PCL data to an NT-defined printer, and have therefore chosen to create a Passthrough destination, you may want to consider creating a PSF (other driver or command) destination instead. A Passthrough destination uses fewer processing resources, but a PSF destination provides much more functionality, such as accounting and automatic datastream transforms.

For example, an advertising firm is installing Infoprint Manager for Windows NT/2000 to manage printing for its 1,200 employees. The company has 450 PCL and PostScript printers that are between one and seven years old, and about 20 printers that are more than seven years old. They have recently purchased 5 PCL printers that are also enabled to use the Internet Printing Protocol (IPP). Most of the print jobs that users generate are from word processing, graphics, or desktop publishing programs. These applications create mostly PCL and PostScript print jobs, which don't need to be transformed to another data stream to be printed on the existing printers.

The print administrator decides to create three kinds of actual destinations.

- Passthrough printers will send jobs to the PostScript and PCL printers.
- IPP printers will send jobs to the new IPP-enabled printers.
- BSD printers will send jobs to the oldest of the printers (the ones that still receive jobs using the lpr command).

Host system using PSF Direct

If you send print jobs to your printers from a host system using PSF Direct and you don't plan to allow job submission to those destinations through any other paths (such as the IPP gateway or a Windows gateway printer), use this table to see which type of destination fits your needs. This table assumes that a host PSF is being used to send IPDS data to Infoprint Manager. Use the Management Console to create these destinations.

Table 4. Host system using PSF Direct

If the data stream that you send to your printer is:	IPDS	PCL or PPDS ¹
Create this type of actual destination:	PSF Direct only (TCP/IP or channel)	PSF Direct only (non-IPDS) Note: This destination type is equivalent to a PSF command destination
<p>Note::</p> <ol style="list-style-type: none"> 1. You can only print PPDS on a non-Windows system, for example, by sending the PPDS data stream to an AIX system. 		

For example, a mail order clothing company stores all of its customer order information in a database on a mainframe. On the host system, the information is extracted and customer order sheets and shipping labels are generated. The order sheets and labels are then printed on a high-speed IPDS printer that is dedicated to these jobs. Because the print administrator wants to manage his print jobs and resources on the host system, he has chosen to use PSF Direct instead of MVS

Download to submit jobs. PSF/MVS converts these jobs to IPDS and sends them to Infoprint Manager. Also, the printer is an older model and it is only set up to support channel attachment, so the administrator attaches it to the system using a parallel channel emulator card.

The print administrator uses the Management Console to create a PSF Direct only (channel) destination.

Both PC-based applications and host systems

If you will be sending jobs to this destination from both PC-based applications and host systems (using PSF Direct or MVS Download), use this table to see which type of destination fits your needs.

Table 5. Both PC-based applications and host systems

If the data stream that your host system and applications send to Infoprint Manager is:	AFP, ASCII, DBCS ASCII, line data, PCL, PostScript, PDF, IPDS (via PSF Direct)		PCL only	PS only
and the data stream that you send to this printer is:	IPDS	PCL or PPDS ¹	PCL	PS
Create this type of actual destination:	PSF (TCP/IP or channel)	PSF (other driver or command)	PSF (other driver or command) OR any of the destination types listed under PC-based applications	One of the destination types listed under PC-based applications
Note:				
1. You can only print PPDS on a non-Windows system, for example, by sending the PPDS data stream to an AIX system.				

For example, a film studio uses the same printers for all of their print jobs. During the day, employees in their business offices print reports, letters, and advertising materials. At night, they print royalty checks for their actors from information stored on their AS/400 host operating system using the PSF Direct function. By creating their print destination through the Infoprint Manager Administration GUI rather than the Management Console, the print administrator can ensure that the same destination can print jobs from both the LAN and the host.

PSF attachment types

PSF destinations are further divided by attachment type. Refer to the table below for information on choosing an attachment type.

Table 6. PSF attachment types

If you are sending this data stream to the printer:	IPDS	IPDS	PCL or PPDS	PCL or PPDS
--	------	------	-------------	-------------

Table 6. PSF attachment types (continued)

and you are going to attach the printer to the system the Infoprint Manager is running on this way:	over the TCP/IP network	using the IBM 4159 Parallel Channel Emulator Card	over the TCP/IP network OR directly attaching it through a parallel or serial port	over the TCP/IP network using a command such as lpr to submit jobs to it
Select this attachment type:	TCP/IP	Channel	Other driver Note: You cannot use a PSF Other driver destination with PSF Direct	Command

Using the Internet Printing Protocol (IPP) with Infoprint Manager

The Internet Printing Protocol (IPP) is an application protocol that uses the Hypertext Transfer Protocol (HTTP) to allow you to print your documents to any IPP-enabled printer whose web address (or Uniform Resource Identifier-URI) you know. You can use IPP to send print data over both LANs and the Internet--so users who are directly connected to your LAN as well as those who work remotely have access to the same printers. Infoprint Manager for Windows NT and Windows 2000 provides two ways to configure your system to print using IPP.

Printing to an IPP-enabled printer

If you have an IPP-enabled printer, you can create an IPP printer just as you would any other actual destination--using the Create IPP Printer Wizard in the Infoprint Administration GUI. To print to the new destination, you can submit jobs using a print command such as pdpr, or you can install Infoprint Select on your workstation and create a Select printer that uses that destination.

Printing through the IPP Gateway

The IPP gateway is a service in Infoprint Manager that allows you to print using IPP even if you don't have an IPP-enabled printer, as long as you (and your users) have IPP client software installed on your workstation.

Note: Windows 2000 systems come with IPP client software built in. Users on other Windows platforms can download IPP client software. The Printer Working Group, the organization that is leading the development of IPP, provides a list of IPP client software that you can use to find an appropriate client at: <http://www.pwg.org/ipp/IPP-Products.html>

Once you have an IPP client installed, follow these steps to set up the gateway.

1. Enable the IPP Gateway using the Infoprint Manager Management Console. Refer to the Management Console online help for more information on completing this task.
 - a. The IPP Gateway runs as a Windows service called Infoprint Manager IPP Gateway. On Windows NT systems, the IPP Gateway service is set to start automatically by default. On Windows 2000 systems, the IPP Gateway is not set to start automatically by default. Refer to the Management Console online help for information on changing the default settings.

- b. To start the IPP Gateway service while your system is running:
 - On Windows NT, select **Start** → **Settings** → **Control Panel**, and open the **Services** icon.
 - On Windows 2000, select **Setup** → **Administrative Tools** → **Services**, and click the **General** tab. Find the Infoprint Manager IPP Gateway service and start it.
2. Verify that the gateway is working. Open your Internet browser and enter the following web address, replacing *serverhostname* with the DNS hostname of the system that Infoprint Manager is installed on:
`http://serverhostname:631/printers`

Note: If you don't have a DNS name server running on your network, replace *serverhostname* with the dotted-decimal IP address of the system that Infoprint Manager is installed on instead.

If the gateway is working correctly, you will see a list of the printers that are available through the gateway. All of your Infoprint destinations should be listed. Find the address (URI) of the destination you want your users to print to.
3. . Refer your users to "Chapter 18. Adding an Internet Printing Protocol (IPP) Gateway Printer to Your Desktop" on page 297 This step varies depending on which IPP client you are using; follow the instructions for adding a printer as provided by the IPP client. For the printer address, have your users enter the address that you found in step 2.

Understanding Printer Drivers, Port Monitors, Windows Gateway Printers, and Passthrough Printers

Before you decide which type of Infoprint actual destination to create, you should first understand the following terms and concepts. Figure 12 on page 56 illustrates how these items can fit into your Infoprint Manager system.

Printer driver

Software that accepts the output of your applications and converts it into a data stream that the printer can understand. Most printers come with one or more drivers that you can install and use; the printer documentation provides more specific information about the capabilities of the drivers. The driver you use determines what data stream is sent to the printer. In Infoprint Manager, the driver may process the data before it is placed on the print spool.

Port monitor

Software that controls how the data stream that is generated by the printer driver gets to the printer. If your printer is local- or parallel-attached to your system, you use a local port monitor; if your printer is attached over TCP/IP, you may use a TCP/IP port monitor. Infoprint Manager includes two port monitors: the **Infoprint port monitor** that sends print data to the Infoprint Manager spool, and the **IBM TCP/IP Network Port Monitor**.

Port

A Windows entity that represents a particular output device or target. The data stream that the driver creates is sent to the printer through a port. A port is always created with and controlled by a specific port monitor. Infoprint Manager creates ports that use the Infoprint port monitor when it needs them. You may have to create some ports yourself (such as a port that uses the IBM TCP/IP Network Port Monitor), but you should never have to create an Infoprint port.

Windows printer

The combination of a printer driver and a port. You can create a Windows printer using the Windows **Add printer** wizard. A Windows printer receives print data, sends it through the printer driver to create the data stream that you want to use, then sends the data stream to an output device (printer) or target through the port. Infoprint Manager sometimes creates Windows printers under the covers and names them **IPM-<actual destination name>**. You will be able to see these printers in the Windows **Printers** window, but you should never open and modify them from there.

Windows shared printer

A Windows printer that is defined so that a remote Windows user can send print jobs to it. When a user on the network uses the Windows **Add printer** wizard to create a network printer on his or her desktop, the wizard provides a list of the Windows shared printers that are available. In Infoprint Manager, a Windows gateway printer is a type of Windows shared printers.

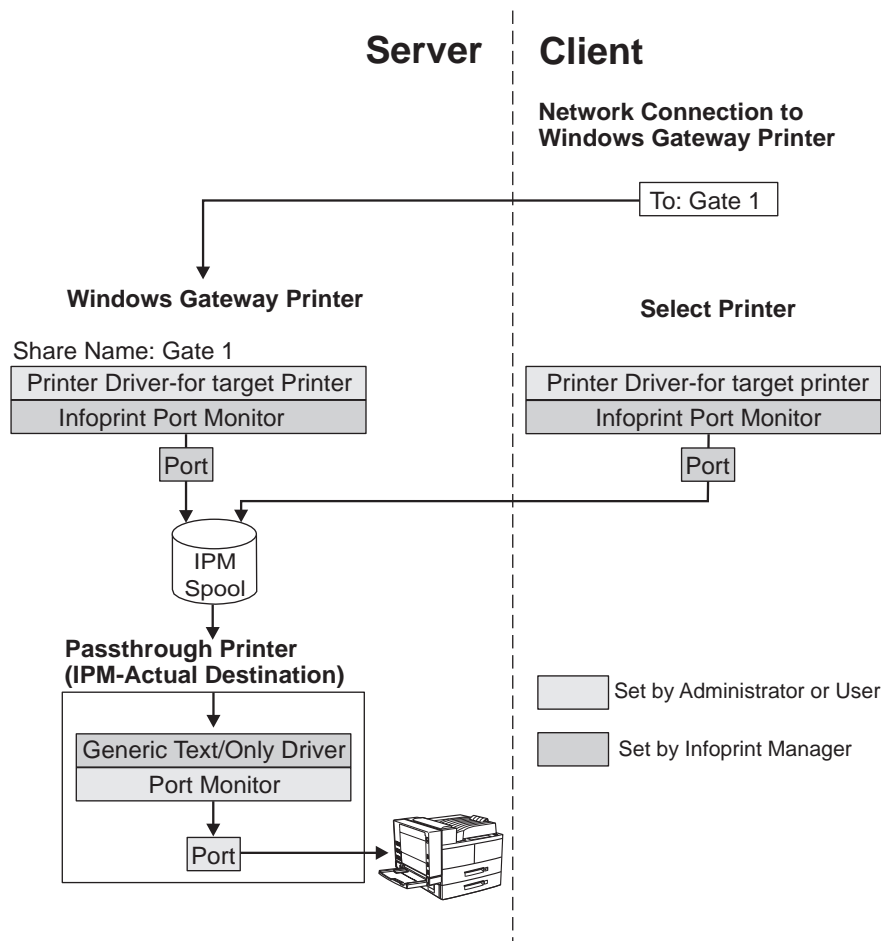


Figure 12. Infoprint Manager print data stream flow

Windows gateway printers

A Windows gateway printer is a Windows shared printer that you create on your Infoprint Manager system. Then, users can add that printer to their desktops and submit jobs to it. The gateway submits the jobs to the specified Infoprint destination to be printed.

Important: Infoprint Manager manages this Windows shared printer for you; you should never modify the port monitor or port configuration of this printer by opening it from the **Start—>Settings—>Printers** window.

You create a Windows gateway printer on the Infoprint Manager server system using the Management Console. Select **Edit —>New —> Windows Gateway Printer** to open the **Create Gateway Printer** dialog. In the dialog:

- Specify a *share name* for the Windows gateway printer. The share name is the name that users will see in the **Add Printer** wizard when they look for the printer.
- Select the Infoprint destination that the gateway will send jobs to.

Note: You must create this destination before you create the Windows gateway printer.

- Select the printer driver that generates a datastream that corresponds to the destination or destinations that the jobs may be printed on.

Note: The PCL drivers that come with Infoprint 1000 family printers (the Infoprint 1120, Infoprint 1125, Infoprint 1130, Infoprint 1140, and Infoprint 1145) generate PCL6. You cannot send PCL6 data to PSF destinations in Infoprint Manager because the automatic data stream transforms in Infoprint Manager cannot process PCL6 yet. If you want to submit jobs to an Infoprint 1000 family printer through a Windows gateway printer, there are several other options to choose from.

- Send your print jobs to an Infoprint Manager Passthrough printer instead of a PSF printer.

Passthrough printers don't use the data stream transforms, so you can send PCL6 to them.

- Send your print jobs to an Infoprint Manager PSF Other printer with the **document-formats-ripped-at-destination** attribute set to **pcl**.

This attribute allows the PSF Other printer to act like a Passthrough printer, so it will send all PCL jobs to the printer without transforming them. Make sure that you don't set any attributes that would make Infoprint Manager try to process the job itself.

- Use a PCL5 driver to send jobs to a PSF destination.

You can use any PCL5 driver; it doesn't have to correspond directly to your printer. This option is the only way to drive your Infoprint 1000 family printer in IPDS mode through Infoprint Manager; you cannot generate IPDS from the output of the PCL6 driver.

You cannot choose a port monitor; in this case, Infoprint Manager associates the selected driver with the Infoprint port monitor to create a Windows printer.

Passthrough printers

When you want to create a Passthrough printer, you first use the Management Console to create a port that the Passthrough printer will use. When you create this port, you must select a port monitor that supports the attachment type for

your printer. For example, if your printer is local- or parallel-attached, choose the Local Port; if your printer is TCP/IP attached, use a TCP/IP port monitor designed for that printer.

Note: For most IBM TCP/IP attached printers, you can use the IBM TCP/IP Network Port Monitor. However, if you want to send PDF jobs to a printer that accepts the PDF data stream, you will have to use a different port monitor.

Then you use the Infoprint Manager Administration GUI to create the Passthrough printer, specifying the port you just created.

To see a list of the ports that are available on your system, complete the following:

1. Click the Windows **Start** button and select **Settings** —> **Printers**.
2. In the **Printers** window, select **File** —> **Server Properties**, and in the **Print Server Properties** window, click the **Ports** tab.

Infoprint Manager automatically creates a Windows printer (named **IPM-*<actual destination name>***) that uses the port you named, along with the **Generic / Text Only** printer driver. The **Generic / Text Only** driver is considered a passthrough driver because it does not change the data stream it receives. If you send PostScript to it, it sends the same PostScript to the printer.

Important: Infoprint Manager manages this Windows printer for you; you should **never** modify it directly by opening it from the **Start**—>**Settings**—>**Printers** window.

Setting up to use Infoprint Manager hot folders

An Infoprint Manager *hot folder* is a directory that is associated with a logical destination. When you copy or move a file to the hot folder, Infoprint Manager automatically submits the file to that logical destination. The default job and document attributes that are set for that logical destination are applied to jobs submitted through the hot folder.

If all of the systems that will be submitting jobs to hot folders are Windows systems, you can use standard Windows folder sharing to make the hot folder accessible to both the Infoprint Manager server and to users. If you will be submitting jobs to hot folders from other systems (such as AIX), you will have to install and configure separate software to transfer the files (such as AIX FastConnect for Windows). The procedures below assume that jobs will only be submitted from other Windows systems.

Configuring your system to work with hot folders

1. Decide what Windows system you want to create the hot folder on. Make sure that the Infoprint Manager server and all users who will use it can access that system.

Notes:

- a. It is strongly recommended that you create your hot folder on the same system that your Infoprint Manager server is installed on for two reasons:
 - Performance will be better because the files only have to be transferred over the network once.
 - If you need to restart the system that the Infoprint Manager server is installed on, the Infoprint Manager server will automatically have access

to the hot folder when it restarts. If the hot folder is on a different system, you must log on to the Infoprint Manager server system to reestablish the connection.

- b. If you plan to have more than one hot folder, you can create all of them in the same parent directory. That way, users can access all of them through a single mapped drive.
2. Use the regular Windows process to create a directory (add a folder to an existing directory). Name the folder something distinctive, so you know that it is a hot folder and, possibly, what logical destination it submits jobs to or what department should submit jobs to it.
3. Set up sharing on the folder so that the Infoprint Manager server and users who will submit jobs to it have **write** access to it.
4. Open the Infoprint Manager Administration GUI.
5. Find or create the logical destination that you want the hot folder to submit jobs to, and select it.
6. In the Properties notebook for the logical destination, click the **General** tab and find the **Hot folder location** field. Type the directory path that the Infoprint Manager server system will use to access the hot folder.

If the hot folder is in a different partition or on a different hard drive than your Infoprint Manager server, this path will include the drive letter for that partition or drive and the directory path to the hot folder. For example, `d:\hotfolders\copy_postscript_here`. Refer to the Infoprint Manager Administration GUI online help for further instructions.

Note: A hot folder can be associated with only one logical destination, and a logical destination can be associated with only one hot folder.

7. Set the default document and default job attributes for the logical destination. Unless the job submitter overrides them, these attribute values will be used for all jobs submitted through the hot folder. Refer to the Infoprint Manager Administration GUI online help for instructions.

When you tell users how to submit jobs to the hot folder, be sure to tell them what types of files the Infoprint Manager destination can accept and how to generate those files.

For information about submitting print files through hot folders, refer to “Chapter 19. Submitting jobs through Infoprint Manager hot folders” on page 299.

Using Infoprint Manager Notifications- administrators

Infoprint Manager Notifications detects events (such as **job completed** or **destination needs attention**) as they occur, generates messages about those events, and delivers the messages to users who want to receive the information. Messages are delivered to users based on the notification profile that is set for the particular Infoprint object (server, destination, job, or queue). For example, you can change the notification profile so that users receive messages about the jobs they submit and print operators receive messages about objects that need their attention.

Notification doesn't only help users and operators; it also helps administrators manage large printing systems. You no longer have to query for status of the objects in your system— you can have notifications delivered to you when specific events (such as **needs key operator attention**) occur so you can take care of them.

Every Infoprint object has a **notification profile** associated with it. You can use the notification profile to control:

- Who receives messages about an object.
- Which events will cause messages to be sent to those people.
- How the messages will be delivered.

Default notification profiles

By default, the person who creates an object (server, destination, queue, job) receives the notification messages about that object. The default notification profile settings provide information such as object status, error conditions, or configuration changes. Some of these events require the person managing the object to intervene; for example, someone may need to clear a paper jam.

By default, the events listed in the following table generate messages for the corresponding objects. These messages are delivered to the user who created the object: job submitters receive messages about their print jobs, the administrator receives messages about destinations and servers that he or she created. The default delivery method is **message**, so the notifications are sent to Infoprint Manager Notifications, not the person's email.

Table 7. Default notification messages

Object	Events
Actual destination	destination-needs-administrator destination-needs-attention destination-needs-operator destination-timed-out object-cleaned object-deleted
Default Job	No defaults set
Job	destination-needs-attention destination-needs-operator destinations-not-ready-for-job document-aborted-by-destination document-aborted-by-server document-cancelled-at-destination job-aborted-by-server job-cancelled-by-operator job-cannot-be-scheduled job-completed past-discard-time
Logical destination	object-cleaned object-deleted
Queue	object-cleaned object-deleted queue-backlogged
Server	internal-server-error object-cleaned object-deleted server-shutdown-complete

Determining how much notification administrators, operators, and job submitters require takes some planning and, as you familiarize yourself with Infoprint, you should discover when you require more or less notification. You can start by using the defaults provided by Infoprint to see how much information Infoprint

generates and if that amount of notification meets your needs. If you find that you need more or less notification, if you want to modify which users receive notifications, or if you want messages to be sent to an email address instead of Infoprint Manager Notifications, you can change the notification profiles.

Changing notification

You can use the properties notebooks in the Infoprint Manager Administration GUI to change notification for jobs, default jobs, servers, and actual destinations. Open the properties notebook and select the **Notification** tab for an actual destination, a job or a default job, or the **Other** tab for a server. On the page that opens, you can set several options, including:

- How you want messages about that object to be delivered
- Who you want them to be sent to
- What events should generate messages
- Any comments that should be included with the message

Refer to the online help for the Infoprint Manager Administration GUI for additional information on setting notification. You can also change notification for jobs in the Infoprint Manager Operations GUI.

Note: If you change the delivery method to email, make sure you change the delivery address to a valid email address.

If you want to change the notification profiles for a queue or logical destination, you will need to modify the **notification-profile** attribute for that object using the command line. See “Changing Notification Profiles” for more information.

Changing Notification Profiles

In the **notification-profile** attribute of an Infoprint object, you can specify which events you want specific people to receive messages about, how you want to send those messages, and what the text of the message will be. The only way to change a notification profile for a queue or a logical destination is to follow the procedures below. You can use this procedure to change the notification profiles for other Infoprint objects, but you may find it easier to use the properties notebooks in the Infoprint Manager Administration GUI.

Note: This procedure only describes how to modify notification profiles by:

- “Adding or modifying events or users in a notification profile” on page 62
- “Removing users from a notification profile” on page 63
- “Changing the message delivery method” on page 64

If you need to change other parts of a notification profile, refer to the *Infoprint Manager: Reference* for information on the **pdset** command and the **notification-profile** attribute.

Viewing an existing notification profile

If you want to see what values are set for a notification profile, follow these steps.

1. Open a DOS window on the computer that your Infoprint Manager server is installed on. On Windows NT systems, click the Windows **Start** button and select **Program** —> **Command Prompt**. On Windows 2000 systems, click the Windows **Start** button and select **Program** —> **Accessories** —> **Command Prompt**.
2. Type the following command. Fill in the values for the italicized items as defined below.


```
pdls -c Type of Infoprint object -r notification-profile Objectname
```

Type of Infoprint object

What type of object you want to perform this command on, not the specific object. For example, type **destination** not **printer1-ld**.

Objectname

The name of the destination or queue that this notification profile refers to.

3. Press **Enter**.

The notification profile will be displayed. The events that cause messages to be sent are listed after **event-identifiers** and the user who receives those messages is listed after **delivery-address**. The way the message is delivered to the user is listed after **delivery-method**.

Notes:

1. If you have messages about a particular object sent to more than one person, the notification profile will display multiple values (entries), one for each person.
2. The default delivery method is **message**, which means that notifications will be sent to the Infoprint Manager Notifications client that is installed on a user's workstation. If the user wants to receive notifications through their e-mail instead, you can change the delivery method to **electronic-mail**.

Adding or modifying events or users in a notification profile

Follow these step to add or remove events in the notification profile for a particular delivery address, or to add another entry to the notification profile, so that messages will be sent to another address as well.

1. Open a DOS window on the computer that your Infoprint Manager server is installed on. On Windows NT systems, click the Windows **Start** button and select **Program** —> **Command Prompt**. On Windows 2000 systems, click the Windows **Start** button and select **Program** —> **Accessories** —> **Command Prompt**.
2. Type the following command. Fill in the values for the italicized items as defined below.

```
pdset -c Type of Infoprint object -x "notification-profile+={event-identifiers= event(s) delivery-address="address"}" Objectname
```

Type of Infoprint object

What type of object you want to perform this command on, not the specific object. Type **destination**, **queue**, **job**, or **server**.

event-identifiers

The events that cause Infoprint Manager to send a message. You can have messages sent for any of the events that are listed in the events-supported attribute for the server. Refer to the *Infoprint Manager: Reference*- chapter 7, section *Attributes for Servers: events-supported*, for a list of these values.

Note: You must type all of the events for this object that you want the user you specify in the delivery address to receive, even if they already appear in the notification profile. Any events that you do not type will not be listed in the notification profile.

delivery-address

Where you want to have messages sent. To have messages sent to a specific person, enter that person's user id and computer name in this

format: user1@computeraddress. The computer address must be the fully qualified address, for example: mycomputer.boulder.ibm.com. Enclose the address in double quotes.

Note: You cannot specify more than one delivery address here. If you want another user to receive messages about the same events, finish this procedure, then enter the command again with that user's delivery address.

Objectname

The name of the destination or queue that this notification profile refers to.

3. Press **Enter**.
4. Repeat the process for other users and objects.

Example: The default notification profile for queues is set to send you messages when the **queue-backlogged**, **object-cleaned**, and **object-deleted** events occur. You need to change the notification profile for the print queue **printer1-q** so that you receive messages when the **queue-no-longer-backlogged** and **queue-state-changed** events occur as well. Your backup person does not currently receive any messages about queues, but needs to receive all of the same messages you do.

Issue this command to change your notification profile. Remember to list the event-identifiers for **all** of the events that you want this user to receive notifications about. This list of event-identifiers replaces the existing list entirely.

```
pdset -c queue -x "notification-profile+={event-identifiers=object-cleaned
object-deleted queue-backlogged queue-no-longer-backlogged
queue-state-changed delivery-address="administrator@mydesk.office.com"}"
printer1-q
```

Then, issue this command to have the **same** queue messages sent to your backup person.

```
pdset -c queue -x "notification-profile+={event-identifiers=object-cleaned
object-deleted queue-backlogged queue-no-longer-backlogged
queue-state-changed delivery-address="backup@hisdesk.office.com"}"
printer1-q
```

Use the "Viewing an existing notification profile" on page 61 procedure to make sure the changes took effect.

Removing users from a notification profile

Follow these steps to remove an entire entry from a notification profile.

1. Open a DOS window on the computer that your Infoprint Manager server is installed on. On Windows NT systems, click the Windows **Start** button and select **Program** —> **Command Prompt**. On Windows 2000 systems, click the Windows **Start** button and select **Program** —> **Accessories** —> **Command Prompt**.
2. Use the "Viewing an existing notification profile" on page 61 procedure to find the entry you want to remove.
3. Type the following command. Type the correct **delivery-method** and the **delivery-address** exactly as it is displayed for the entry that you want to remove.

```
pdset -c Type of Infoprint object -x "notification-profile={delivery-
method=electronic-mail or message delivery-address="address"}"Objectname
```

4. Press **Enter**.
5. Use the "Viewing an existing notification profile" on page 61 procedure to verify that the entry has been removed.
6. Repeat the process for other entries.

Example: You and two other people currently receive messages about the logical destination **printer1-ld**. You don't want to receive them any longer. You view the notification profile, and see these three entries:

```
printer1-ld: notification-profile=

{event-identifiers = object-cleaned object-deleted delivery-method = message
delivery-address = "admin@desk1.office.com" locale = en_US}

{event-identifiers = object-cleaned object-deleted delivery-method = message
delivery-address = "helpdesk@desk2.office.com" locale = en_US}

{event-identifiers = object-cleaned object-deleted delivery-method = message
delivery-address = "backup@desk3.office.com" locale = en_US}
```

Issue this command to remove your entry from the notification profile.

```
pdset -c destination -x "notification-profile={delivery-method=message
delivery-address = "admin@desk1.office.com"}" printer1-ld
```

Note: If you display the notification profile to verify that the entry has been removed and find that it has not been removed, issue the command again, but this time instead of only specifying the **delivery-address**, type the entire notification profile exactly as it appears.

Changing the message delivery method

You can choose to receive your notification messages through Infoprint Manager Notifications or through your email. This choice is set in the **delivery-method** value. The default value is **message**, so you receive your notification messages through Infoprint Manager Notifications. Follow these steps to change your delivery method to email.

1. Open a DOS window on the computer that your Infoprint Manager server is installed on. On Windows NT systems, click the Windows **Start** button and select **Program** —> **Command Prompt**. On Windows 2000 systems, click the Windows **Start** button and select **Program** —> **Accessories** —> **Command Prompt**.
2. Use the "Viewing an existing notification profile" on page 61 procedure to find the entry you want to change.
3. Type the following command. Fill in the values for the italicized items exactly as they appear in the entry you want to change. Replace **delivery-method=message** with **delivery-method=electronic-mail**, and replace the entry after **delivery-address** with a valid email address.

```
pdset -c Type of Infoprint object -x "notification-profile+={event-
identifiers=event(s) delivery-method=electronic-mail delivery-
address="address" locale=yourlocale}"Objectname
```

4. Press **Enter**.
5. Use the "Viewing an existing notification profile" on page 61 procedure to verify that the entry was added.
6. Follow the procedure for removing a user to remove the old entry.

Example: You want to receive your messages about **printer1-q** in your email instead of through Infoprint Manager Notifications. You view the notification profile, and see this entry:

```
printer1-q: notification-profile={event-identifiers = object-cleaned
object-deleted queue-backlogged delivery-method = message delivery-address
= "admin@desk1.office.com" locale = en_US}
```

Issue this command to add another entry to the notification profile with a different delivery method and delivery address.

```
pdset -c queue -x "notification-profile+={event-identifiers=object-cleaned
object-deleted queue-backlogged delivery-method=electronic-mail
delivery-address="admin@mycompany.com" locale=en_US}" printer1-q
```

Then view the notification profile again and see two entries:

```
printer1-q: notification-profile= {event-identifiers = object-cleaned
object-deleted queue-backlogged delivery-method = message delivery-address
= "admin@desk1.office.com" locale = en_US} {event-identifiers =
object-cleaned object-deleted queue-backlogged delivery-method =
electronic-mail delivery-address = "admin@mycompany.com" locale = en_US}
```

Follow the procedure for removing a user to delete the entry that would send messages to Infoprint Manager Notifications.

Managing Security for Infoprint Manager for Windows NT and Windows 2000

Infoprint Manager Security (sometimes called *non-DCE security*) is a feature that you administer through the Infoprint Manager Management Console. It allows you to protect your printing system by associating an Access Control List (ACL) with an Infoprint object or operation. An *ACL* is the list of users and groups who have permission to do something to or with an object, and what type of permission that is.

Important: Infoprint Manager Security references the login ID of the current user to determine who is attempting to perform an action. Otherwise, the Infoprint Manager security system is entirely separate from any Windows security you have set. For example, you cannot use groups that you create with the Windows User Manager in Infoprint Manager Security- you must create security groups using the Infoprint Manager Management Console.

If you do not want to use Infoprint Manager Security, you can turn it off using the server properties notebook in the Infoprint Manager Administration GUI by setting the **Security level** for your server to **none**.

Types of permission

In Infoprint Manager, users can have three levels of permission: **read**, **write**, and **delete**. The levels provide the following types of access.

- **Read**- For operations, the user can perform the operation. For servers and queues, the user can view the attributes. For destinations, the user can view attributes and submit jobs to that destination.

- **Write**- For all objects, the user can modify attributes.
- **Delete**- For all objects, the user can delete the object.

Note: The levels of permission are not cumulative. If you give a user **delete** permission only, he will **not** automatically have **read** and **write** permissions. Be sure to mark all of the levels of permission that the user needs. For more information, see “Infoprint Manager Security Permissions” on page 69.

If you place userA on the ACL for the logical destination “print2ld” and give her **read** permission, she can send her print jobs to it and can open the “print2ld” object to see its properties. However, she cannot make changes to those properties. If she tried to change any of them or tried to delete the destination, she would receive an error message. If you decide that userA needs to be able to do more and give her **write** permission as well, she will be able to change the properties of “print2ld,” but still will not be able to delete it.

Important: If you protect a destination (logical or actual) so that only certain users can modify or delete its properties, you may inadvertently prevent other users from submitting print jobs to it. To be sure that all of your users can still print to the destination, add the wildcard character (*) to the ACL as a user with read permission.

You can also attach ACLs to the operations that you can perform on Infoprint objects. Allowing you to protect both operations and objects means that Infoprint Manager Security provides different levels of security: you can protect all objects by using ACLs at the operation level or you can protect individual objects with ACLs applied only to them. Or you can do both: protect all objects by using operation-level ACLs for some operations, and limit access to subsets of objects by using object-level ACLs.

For operations, there is only one level of permission: **read**. If a user has **read** permission, he can perform that action; if he does not, he cannot perform the action. For example, userB is a printer operator and must be able to move jobs to different positions in the print queue because some jobs need to be printed before others. You can give userB **read** permission for the operation **Reorder Job** to allow him to do his job. On the other hand, userC submits print jobs from his office workstation and doesn't like to wait for the jobs ahead of his in the queue to print. If you want to prevent him from moving jobs, don't put him on the ACL for the **Reorder Job** operation. When he tries to move his job to the top of the queue, the action will be denied.

When you install Infoprint Manager, many operations are already protected so that only members of the **admin** and **oper** groups can perform them. You can see the ACLs for operations in the Management Console by selecting the **Security-ACL-Operations** item in the left pane. If you want users to be able to perform those operations, you must either add those users to the individual ACLs or to a group that has permission (either the existing **admin** and **oper** groups or a new group that you create).

Note: If an object is protected, a user can only perform an operation on that object if he has both **read** permission for the operation and the appropriate level of permission for the object (for example, a job or a printer).

- If the object is not protected, any user with **read** permission on an operation can perform that operation.

- If the object is protected, the permission needed depends on the operation. For example: **List** requires **read** permission on the object, **Set** requires **write** permission, and **Delete** requires **delete** permission.

By default, Infoprint objects (destinations, queues, servers) are not protected, members of the **admin** group have read permission on all operations, members of the **oper** group have read permission on most operations, and **all** users have read permission on five operations. Those five operations are:

- **List/Query** (all objects)
- **Print**
- **Modify job**
- **Query job**
- **Remove job** (delete job)

However, users who are not members of the **admin** and **oper** groups can only modify and remove jobs that they submitted. In addition, if the ACL for the **Reorder job** action is changed so that everyone can use it, users who are not members of the **admin** and **oper** groups will only be able to reorder jobs that they submitted. By default, members of the **admin** and **oper** groups can perform all six of those operations on all jobs.

Note: If you decide to protect your queues, all users will still be able to perform the tasks listed above on their own jobs. Users who are on the ACL for a queue will be able to perform those tasks on all jobs in that queue.

Security groups

No matter what size organization you work in, manually adding every user to every ACL can be a time-consuming process. To reduce some of the work, you can create *security groups*, groups of users who need to have the same levels of permission for the same objects. You use the name of the security group like a user ID; instead of adding each user ID to an ACL, you add the group name. For example, if you want all of your help desk operators to be able to perform the same operations, create a group and name it **helpdesk**. Then, add **helpdesk** to the appropriate ACLs.

Important: User IDs and group names are case sensitive.

When you install Infoprint Manager, three security groups are created by default:

- **acl_admin**- Users who have authority to manage security by changing access control lists and groups. The default members are **Administrator@*** and the user who was logged on when Infoprint Manager was installed (for example, **myuserid@***).
- **admin**- Users who have administrator authority. The default members are **Administrator@*** and the user who was logged on when Infoprint Manager was installed (for example, **myuserid@***).
- **oper**- Users who have operator authority. The default member is **Administrator@***.

Notes:

1. You can modify these groups as needed. In the example above, you could have simply added the help desk operators to the default **oper** group and modified any permissions that weren't set to the level that you wanted them.
2. The default group members contain the wildcard character (*) for greater flexibility. See below for more information on wildcarding. If you don't want

the Administrator user on other systems to be able to administer Infoprint Manager, replace the * with the explicit address of the system that the Infoprint Manager server is installed on, for example **Administrator@serversystem.company.com**.

You can add users to multiple groups, but you cannot make one group a member of another group. For example, if you hire five new print operators, you might create a group for them called **trainees**, since you only want them to have limited permissions until they are finished with their training. When they finish their training, you cannot add **trainees** as a member of the **operators** group. You will have to add their user IDs to the operators group one at a time. In addition, you will have to either delete the **trainees** group or delete the members from it—otherwise those users will have conflicting levels of permission.

When users are members of more than one group and each group has a different level of permission for a particular object, the most restrictive permission applies. In the example above, if you forgot to remove the new employees from the **trainees** group at the end of their training, they wouldn't be able to perform the tasks their job required- they would still be restricted.

Identifying users and groups: wildcarding

When you add users to ACLs or Security groups, you identify them by their user ID and the computer that they work on in this format: *username@computername*. The permissions you assign will only apply when that person accesses Infoprint Manager from that workstation.

Note: The *computername* that you specify must be the fully-qualified name of the workstation, for example: joescomputer.boulder.ibm.com

If, however, you or any of your users want to be able to work with Infoprint Manager objects from various workstations, you may not want to add multiple user ID/computer name combinations for the same person— you can use wildcarding instead. When you use wildcarding, you replace the computer name or user ID with the wildcard character (*) when you add a member to an ACL or Security Group. The wildcard character stands for “any computer” or “any user ID.” So, if you create an ACL member called **Administrator@***, no matter what computer you log on to as **Administrator**, you have the same permissions. If you use the wildcard character before the computer name, for example ***@computer1**, any user who logs on to computer1 can perform the actions that the ACL member has permission for.

Working with ACLs and groups

Use the Infoprint Manager Management Console to manage the security of your print system. Open the **Security** folder in the left pane of the Management Console to display the Access Control Lists folder and Groups object. Open the Access Control Lists folder to see the types of ACLs that exist. Click on the type of ACL (**Operations**, **Destinations**, **Servers**, or **Queues**) to display the ACLs that exist. Click on **Groups** to see the groups that currently exist and their members.

For more detailed information on using the Management Console to work with groups and ACLs, refer to the online help (in the Management Console, click **Help** -> **Contents**, and look on the **Contents** tab under **Managing Security**).

Infoprint Manager Security Permissions

In Infoprint Manager Security, you can grant users three types of permission: **read**, **write**, and **delete**. The following table identifies what happens when you **deny** one of these permission levels to a user.

Note: In FST security (the security you administer through the Management Console), permission levels are not cumulative. If you grant a user **delete** permission for an object, she doesn't automatically have **read** and **write** permission; you must grant her those permissions as well.

Table 8.

	Read Permission Denied	Write Permission Denied ¹	Delete Permission Denied ¹
Server	<ul style="list-style-type: none"> • Cannot list object ⁴ • No effect on contained objects' permissions • No effect on job submission 	<ul style="list-style-type: none"> • Cannot modify object ² • Cannot create object within • No effect on contained objects' permissions • No effect on job submission 	<ul style="list-style-type: none"> • Cannot delete object • No effect on contained objects' permissions • No effect on job submission
Queue	<ul style="list-style-type: none"> • Cannot list object ⁴ • No effect on job submission 	<ul style="list-style-type: none"> • Cannot modify object ² • No effect on job submission 	<ul style="list-style-type: none"> • Cannot delete object • No effect on job submission
Logical Destination	<ul style="list-style-type: none"> • Cannot list object ⁴ • Cannot submit print to this object (directly, or indirectly through an AD) ³ 	<ul style="list-style-type: none"> • Cannot modify object ² 	<ul style="list-style-type: none"> • Cannot delete object
Actual Destination	<ul style="list-style-type: none"> • Cannot list object ⁴ • Cannot submit direct-print to this object (Note: May still submit to LD feeding this AD) 	<ul style="list-style-type: none"> • Cannot modify object ² 	<ul style="list-style-type: none"> • Cannot delete object

Notes:

1. In FST security, permissions are independent of each other. For example, you can grant someone **write** permission without granting him or her **read** permission. In contrast, DCE permissions are additive, so **write** permission implies that the user has both **read** and **write** permissions.
2. **Modify** includes set, enable/disable, pause/resume.
3. In DCE security, this check is only performed if the LD's **authorize-jobs** attribute is set to **true**. The **authorize-jobs** attribute is not used in FST security.
4. For FST security only. DCE always allows you to list the object .

Administering your Infoprint Manager Server Using a Windows Terminal Server Client

While you can perform most administrative tasks using the Infoprint Manager Administration GUI, there are a few that you must perform using the Management Console. However, since the Management Console must reside on the system that your Infoprint Manager server is installed on, performing those tasks can be inconvenient. The only way to perform administrative tasks on the Management Console on a different system is to use a Windows Terminal Server.

- If you use Windows NT, you must install Microsoft Windows NT Terminal Server as the operating system on the system that you install your Infoprint Manager server on.
- If you use Windows 2000, Terminal Server capabilities are included in Windows 2000 Server. Therefore, you must install your Infoprint Manager server on a Windows 2000 Server system, not a Windows 2000 Professional system.

Once you have Infoprint Manager installed on the correct version of Windows, you need to install the Terminal Server Client on any other systems that you want to be able to access the Management Console from. You can install the client on Windows 95, Windows 98, Windows NT, and Windows 2000 systems, but the process is slightly different based on the system that your Infoprint Manager server is installed on (Windows NT Terminal Server or Windows 2000 Server). Use the following procedure to create Terminal Server Client installation disks and install the client.

Installing the Windows Terminal Server client

To complete this procedure, you will need:

- One blank floppy disk if you are using Windows NT Terminal Server or
 - Two blank floppy disks if you are using Windows 2000 Server.
1. Log on to the system that your Infoprint Manager server is installed on.
 2. On Windows NT Terminal Server, click **Start** —> **Programs** —> **Administrative Tools** —> **Terminal Server Client Creator**.
On Windows 2000 Server, click **Start** —> **Programs** —> **Administrative Tools** —> **Terminal Services Client Creator**.
 3. In the dialog that opens:
 - On Windows NT Terminal Server, select **Terminal Server Client for Windows 95/NT Intel** and check the **Format disk(s)** check box. Click **OK**.
 - On Windows 2000 Server, select **Terminal Services for 32-bit x86 Windows** and check the **Format disk(s)** check box. Click **OK**.
 4. Follow the instructions in the pop up dialogs to create your Terminal Services Client installation disks.

Note: Save these disks. You will need them if you ever need to uninstall the client.

5. Close the dialog once the disks are created.
6. Log on to the machine that you want to install the Terminal Services Client on.
7. Insert the first Terminal Services Client installation disk in the drive.
8. Navigate to that disk drive and double click the **Setup.exe** icon to start the **Terminal Server/Services Client Setup** wizard.
9. Follow the instructions in the wizard to install the client.

When you finish the wizard, Terminal Server/Services Client will be added to your **Start** menu.

10. Start the client:
 - On Windows NT Terminal Server, select **Start** —> **Programs** —> **Terminal Services Client** —> **Terminal Server Client**.
 - On Windows 2000 Server, select **Start** —> **Programs** —> **Terminal Services Client** —> **Terminal Services Client**.
11. Find the name of the server that your Infoprint Manager server is installed on and connect to it.

Once you are connected, you can open the Management Console and use it just as you would on the server system itself.

Chapter 5. Advanced Configuration Information

Changing the Server Hostname and IP Address

Use this procedure to change the hostname of the system that your Infoprint Manager server runs on.

Notes:

1. If you have changed the hostname/IP address on the system and already restarted the system, the Infoprint Manager service will not be able to start and your Infoprint GUIs will not function properly. Complete the “Changing the server hostname and IP address” task to correct the problem.
2. If the system that your Infoprint Manager server runs on is part of a domain, remove it from the domain before you perform this procedure. Complete the “Changing the server hostname and IP address” task before you add the system to the domain again.
3. **For multi-server environments:**
 - If you are changing the hostname/IP address on the namespace system, you must stop all of the non-namespace servers and un-map the network drives all of the network drives that you have mapped to the namespace system before you start the procedure below. After you complete the procedure below, re-map the network drives. Then, use the Management Console (**Edit** -> **Service Configuration**) on each of the non-namespace servers to change the **Base namespace path** and **Remote namespace folder** to the new hostname and restart the non-namespace servers.
 - If you are changing the hostname of a Infoprint Manager non-namespace server (running on Windows NT or Windows 2000) that shares a namespace with Infoprint Manager for AIX (with the namespace on an AIX system), follow the “Changing the hostname of a non-namespace server” on page 74 procedure below.

Changing the server hostname and IP address

1. If your Infoprint Manager server is running, stop it by selecting **File** -> **Stop Server** in the Management Console.

Note: If you changed the hostname on the system and already restarted the system, your Infoprint Manager server will already be stopped.
2. If you use Infoprint Manager Security and have changed the member names of the **acl_admin** group so they include the hostname, follow these steps:
 - In the left pane of the Management Console, open the **Security** folder and click the **Groups** item.
 - In the right pane, check to see if any of the member names in the **acl_admin** group include the hostname.
 - Edit any user IDs in the **acl_admin** group that contain the old hostname by replacing the hostname with the wildcard character (*), so you will still be able to administer Infoprint Manager Security after the hostname is changed.
 - Make note of the members that you change so you can replace the wildcard with the new hostname once it is set.
3. Change the hostname/IP address using Windows interfaces. When the system asks, choose **not** to restart the system.

Note: If you have already changed the hostname/IP address of your system, you do not have to change them again. Continue with step 4.

4. In the Management Console, select **Edit->Changed Hostname**.
5. In the **Changed Hostname** dialog, enter the new hostname. Names are case sensitive. Make sure the new hostname that you type exactly matches the one on your Windows system and click **OK**.
6. When the system asks, restart the system so the changes take effect.
7. Update all of the client systems that communicated with the server using the old hostname/IP address to use the new one, including:
 - Infoprint Select clients
 - Infoprint Manager Administration GUI
 - Infoprint Manager Operations GUI
 - Windows gateway printers
 - IPP Gateway clients
 - Infoprint Manager Notifications clients
8. Update any Infoprint Manager Security ACLs or groups that reference IDs using the old hostname. In addition, if you changed any members of the **acl_admin** group in step 2, change the wildcard character to the new hostname.

Changing the hostname of a non-namespace server

Follow this procedure only if you are running both Infoprint Manager for AIX and Infoprint Manager for Windows NT and Windows 2000 as interoperating print servers and need to change the hostname of the system that Infoprint Manager for Windows NT and Windows 2000 is running on.

1. Complete “Changing the server hostname and IP address” on page 73 on the non-namespace server. At the end of the procedure, the Infoprint Manager for Windows NT/2000 server should be stopped and can no longer access the namespace on the AIX machine.
2. On the system that the Infoprint Manager for Windows NT/2000 runs on, disconnect the network drive that was mapped to the namespace on the AIX machine.
3. Log on to AIX server machine as **root**.
4. Follow this path: **Smitty-> Infoprint Printing System-> Infoprint Utilities-> Configure Secondary Servers (NFS)-> Link from Primary Server to Secondary Server**
5. In the dialog that appears:
 - a. Type the new hostname in the **Secondary Server Host Name** field.
 - b. Type the new server IP address in the **Secondary Server IP Address** field.
 - c. For **Is /ipdata used for job ticketing?** answer:
 - **Yes** if you use /ipdata with Infoprint Submit.
 - **No** if you do not.
 - d. For **Retain secondary servers previously defined?** answer **Yes**.
6. On the NT server machine, remap the network drive to the \\aixserver\var\pddir\default_cell filesystem using the same drive letter that you used for the network drive that you disconnected in step 2. Map the drive using the same user id and password that you used during the initial multiserver environment setup.
7. Log on to the AIX server machine as **root**.
8. Stop the Infoprint Manager for AIX server.

9. Clear the namespace by issuing the `clrfstns /var/pddir/default_cell` command.
10. Create the shared namespace by issuing the `crtfstns /var/pddir/default_cell` command.
11. Start the Infoprint Manager for AIX server.
12. Start the Infoprint Manager for Windows NT/2000 non-namespace server.

Changing only the server IP address

If you are only changing the IP address and you have updated your system name resolution so that the old name resolves to the new IP address, Infoprint Manager will be reset to use the new IP address with the old hostname when you restart the system. If any of your Infoprint clients refer to Infoprint Manager using the IP address, you must update them so they use the new IP address.

Setting up your Infoprint Manager Server to use Resources on a Different Windows System

Sometimes, users choose to store printing resources (such as pagedefs, formdefs, and fonts) on systems other than the one that their Infoprint Manager server runs on. If you choose that setup, you must first make sure that Infoprint Manager has access to the resources, then tell Infoprint Manager where the resources are located. Use the following procedures to complete these tasks.

1. "Giving Infoprint Manager access to remote resources"
2. "Telling Infoprint Manager where your remote resources are located" on page 100

Giving Infoprint Manager access to remote resources

Follow one of the procedures below to set up access to remote resources.

- If Infoprint Manager and the other system are running on Windows NT, refer to "Using Windows NT".
- If Infoprint Manager and the other system are running on Windows 2000, refer to "Using Windows 2000" on page 86.

Note: Both of your systems must be running on the same operating system. You cannot mix Windows NT and Windows 2000 systems in this environment. The systems should also operate in the same domain.

Using Windows NT

1. *Set up a domain user account that your Infoprint Manager server will run under.*
 - a. Log on to the system that your Infoprint Manager server runs on as a user who is a member of the Domain Administrators group.
 - b. Click the Windows **Start** button and select **Programs -> Administrative Tools (Common) -> User Manager for Domains**.

Note: This 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 must create this user on a different system in the domain that your Infoprint Manager server operates in, such as the Primary Domain Controller (PDC).

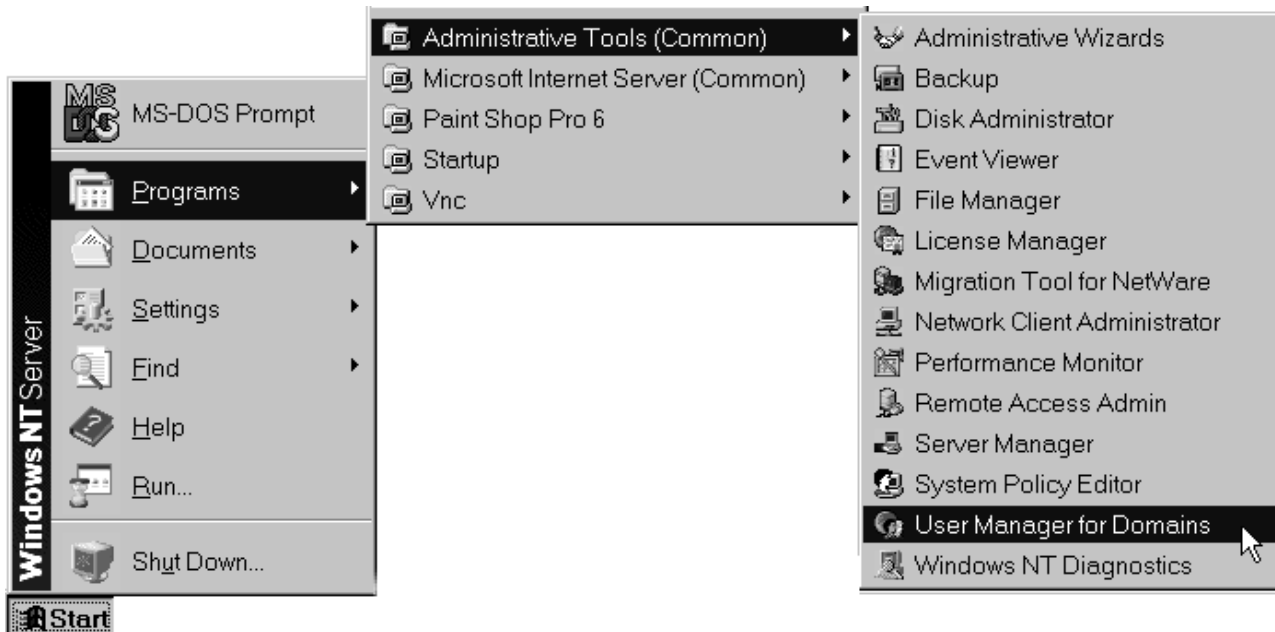


Figure 13. User Manager for Domains: Open

- c. In the User Manager window, select **User** -> **New User**.



Figure 14. User Manager for Domains: 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.
 - Clear all of the check boxes, then select **Password never expires** (so you don't have to change the password and update all of your servers on a regular basis).
 - Click **Groups**.

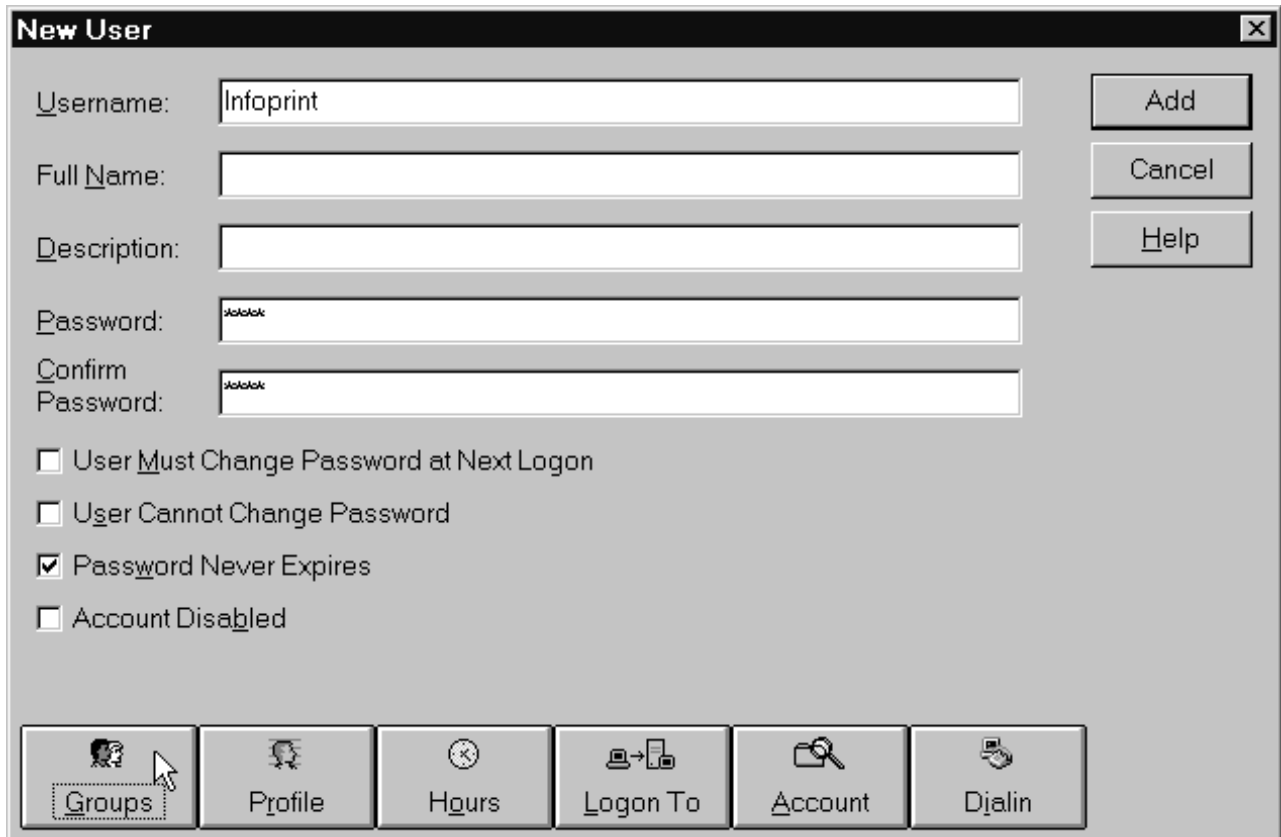


Figure 15. User Manager for Domains: Set User

- e. In the **Group Memberships** dialog:
 - 1) Find **Domain Admins** in the **Not member of** list and click to select it.

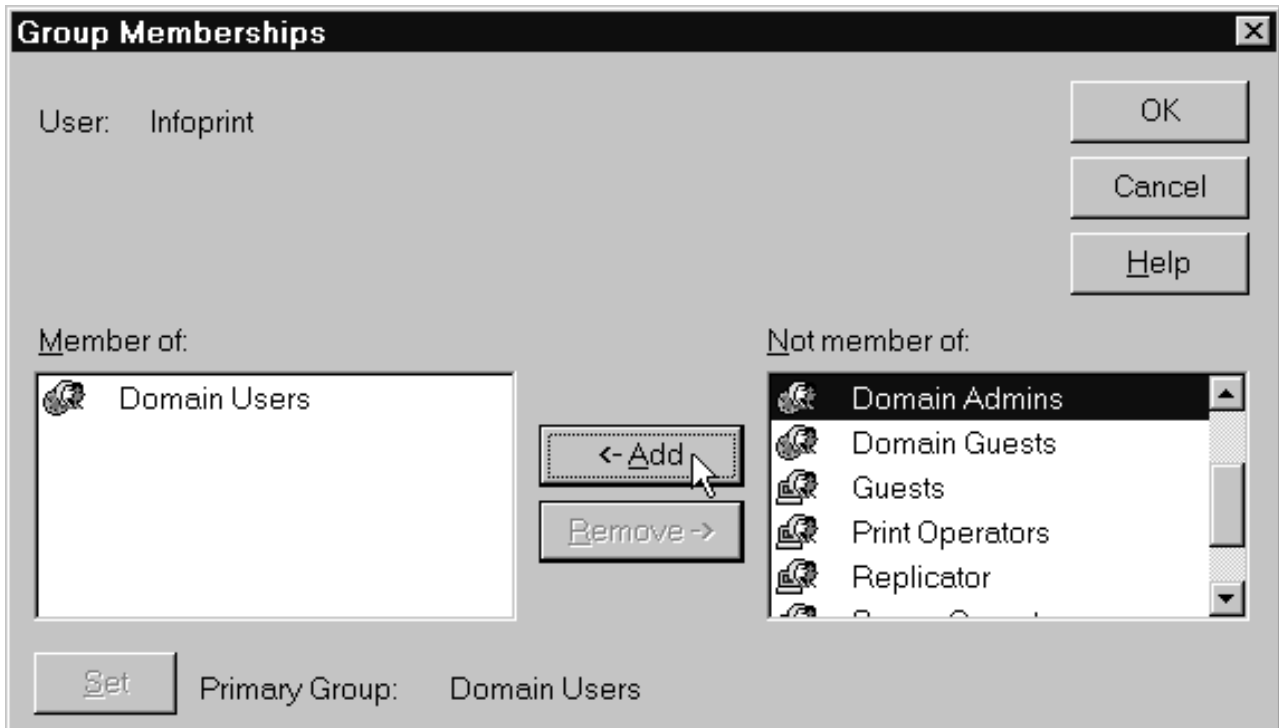


Figure 16. User Manager for Domains: Add to group

- 2) Click **<- Add**.
- 3) Select **Domain Admins** in the **Member of** list and click **Set** to make **Domain Admins** this user's primary group.

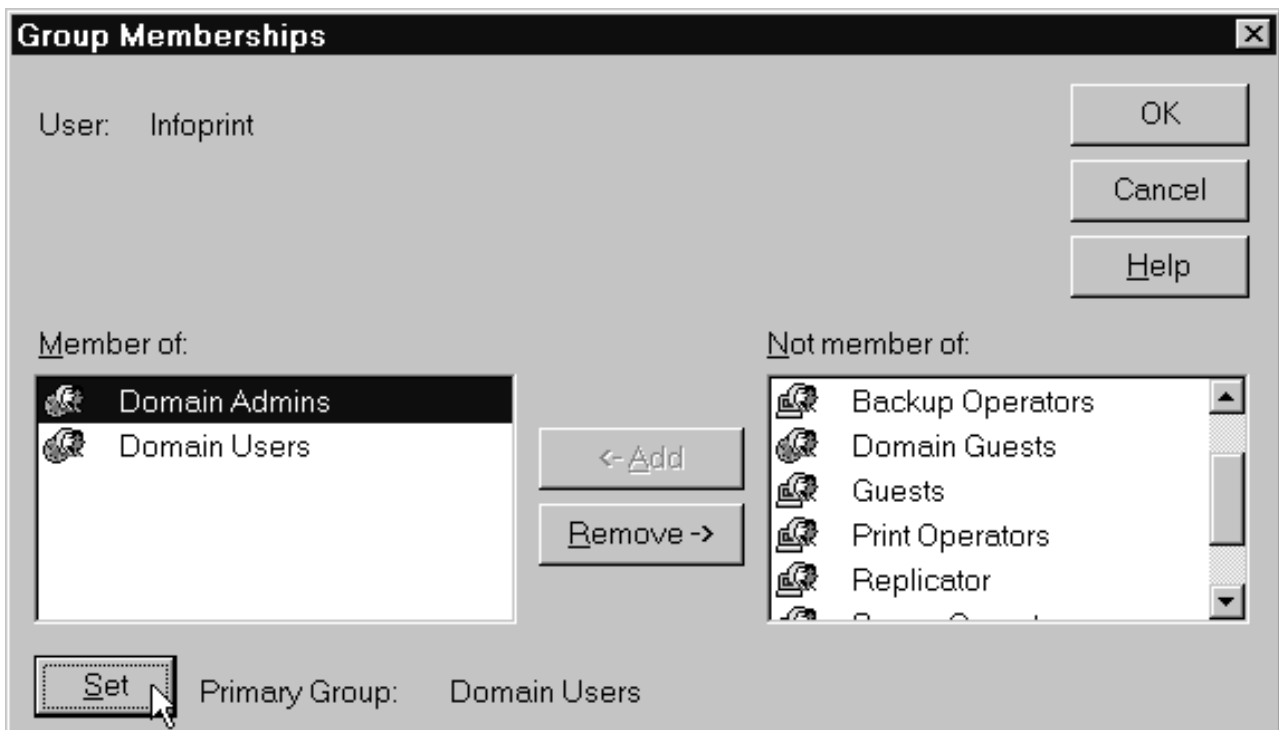


Figure 17. User Manager for Domains: Set User

- 4) Click **OK**.
 - f. In the **New User** dialog, click **Add** to create this user.
 - g. Click **Cancel** 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.
2. **Grant the appropriate user rights to the new domain user on the system that your Infoprint Manager server runs on.**
- a. If you did not perform step one on the system that your Infoprint Manager server runs on, log on to it as a user who is a member of the Administrators group.
 - b. Click the Windows **Start** button and select **Programs -> Administrative Tools -> User Manager** or **Programs -> Administrative Tools -> User Manager for Domains** (either one will work this time).
 - c. In the User Manager window, select **Policies -> User Rights**.



Figure 18. User Manager: User Rights Policy 1

- d. In the **User Rights Policy** dialog:
 - Select the **Show Advanced User Rights** check box.
 - Select **Act as part of the operating system** in the **Right** drop-down list.
 - Click **Add**.

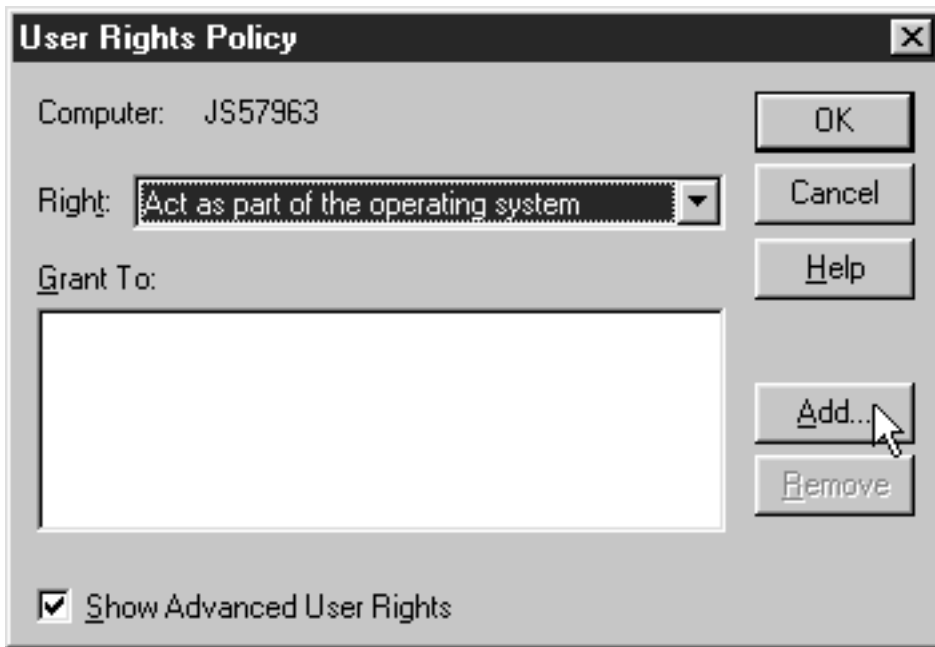


Figure 19. User Manager: User Rights Policy 2

- 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**.

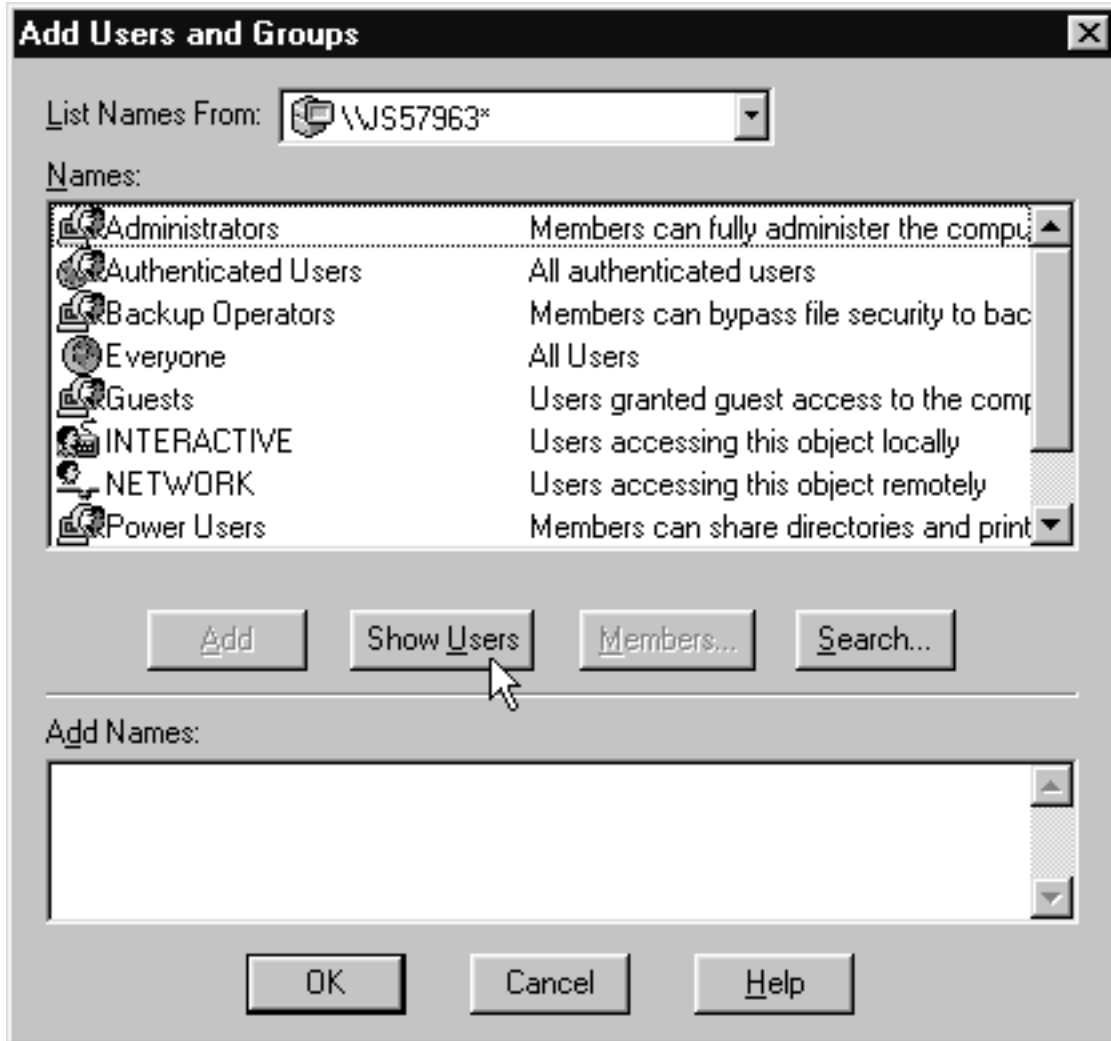


Figure 20. User Manager: Add user

- f. Find the domain user that you created in step 1 on page 75 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 2d on page 79 for two other rights: **Create permanent shared objects** and **Log on as a service**.
 - i. Click **OK** to close the **User Rights Policy** dialog.
 - j. Close the User Manager window.
3. **Set up the Infoprint Manager server to use the new user account.**
 - a. Click the Windows **Start** button and select **Programs -> IBM Infoprint Manager -> Management Console**.
 - b. Stop the Infoprint Manager server by selecting **File -> Stop Server**.

Note: If you are not able to stop the server because you are not authorized for that action, check the Infoprint Manager Access Control List (ACL) for the **Shutdown** operation. Log off and log back on as a user who is on the ACL.

- c. Select **Edit** --> **Service Account/Domain**.

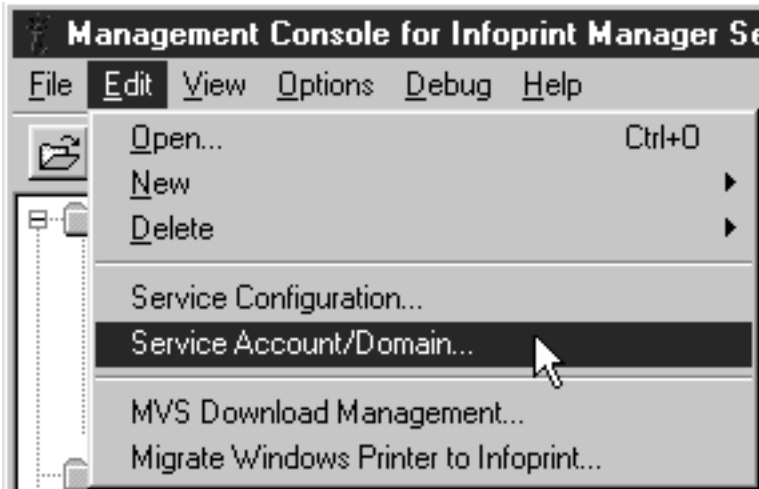


Figure 21. Management Console: Edit-> Service Account/Domain

- d. Enter the name of the domain that the Infoprint Manager server is installed in and the user name and password from step 1 on page 75.

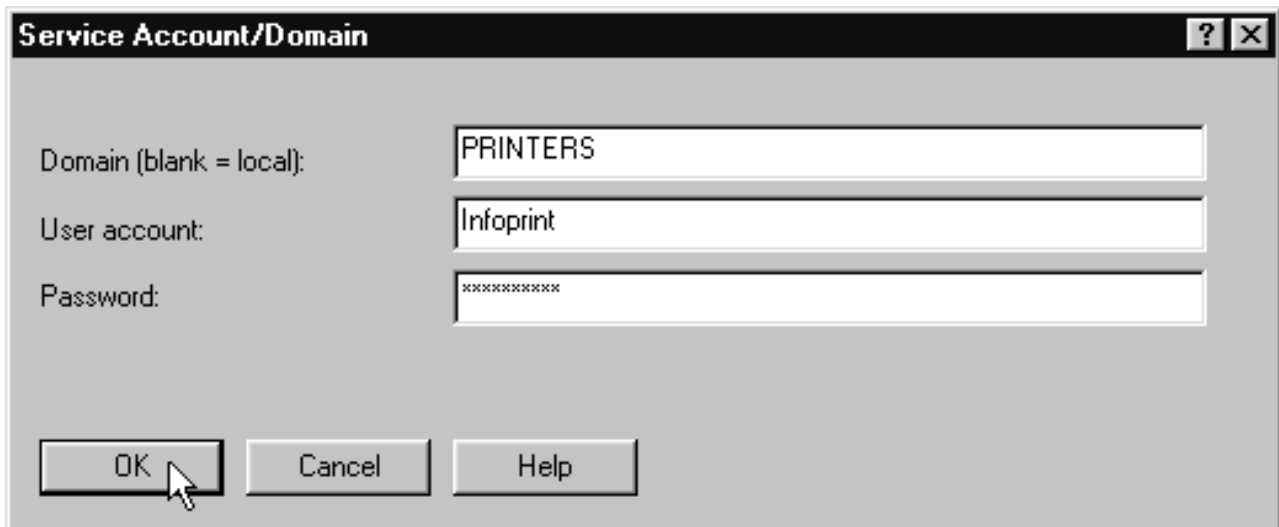


Figure 22. Management Console: Service Account/Domain dialog

- e. Click **OK**.
4. **On the machine that the AFP resources reside on, share the directory that the resources reside in so the domain user has access to it.**
- Log on to the system that your resources reside on as a user who is a member of the Administrators group.
 - Click the Windows **Start** button, and select **Programs** -> **Windows NT Explorer**.
 - Navigate to the directory that your resources are stored in.
 - Right-click that directory and select **Sharing** from the pop-up menu.

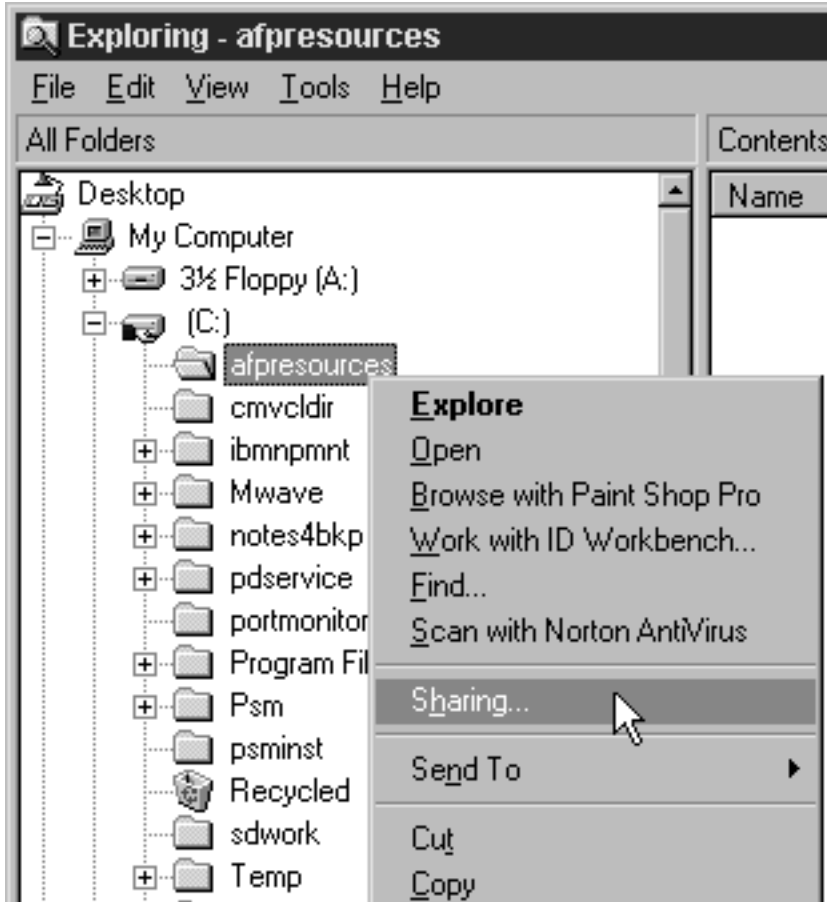


Figure 23. Windows Explorer: Sharing

- e. In the **Properties** dialog, select **Shared as** and type **Shared to Infoprint Manager** in the **Comment** text box.

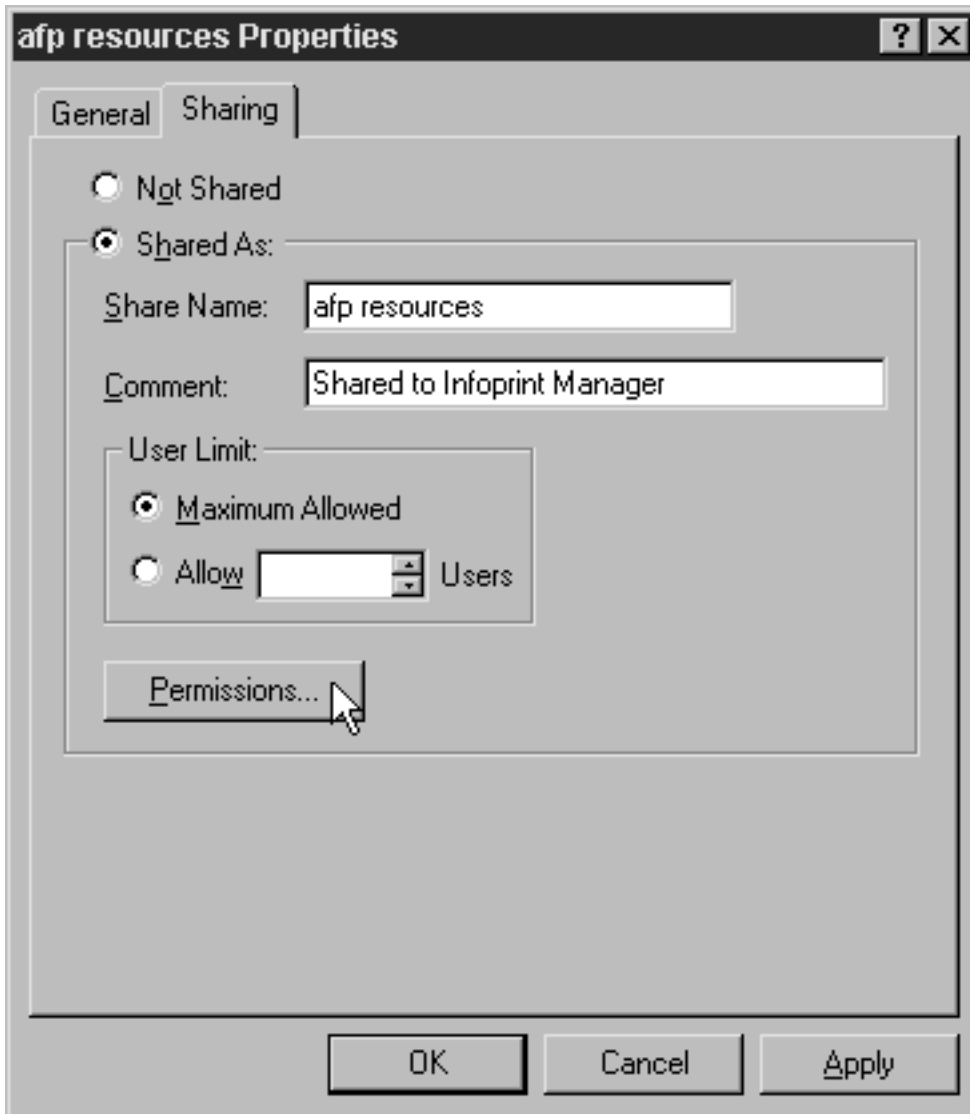


Figure 24. Windows Explorer: Directory Properties dialog

- f. Click **Permissions**.
- g. In the **Access through Shared Permissions** dialog, click **Add**.

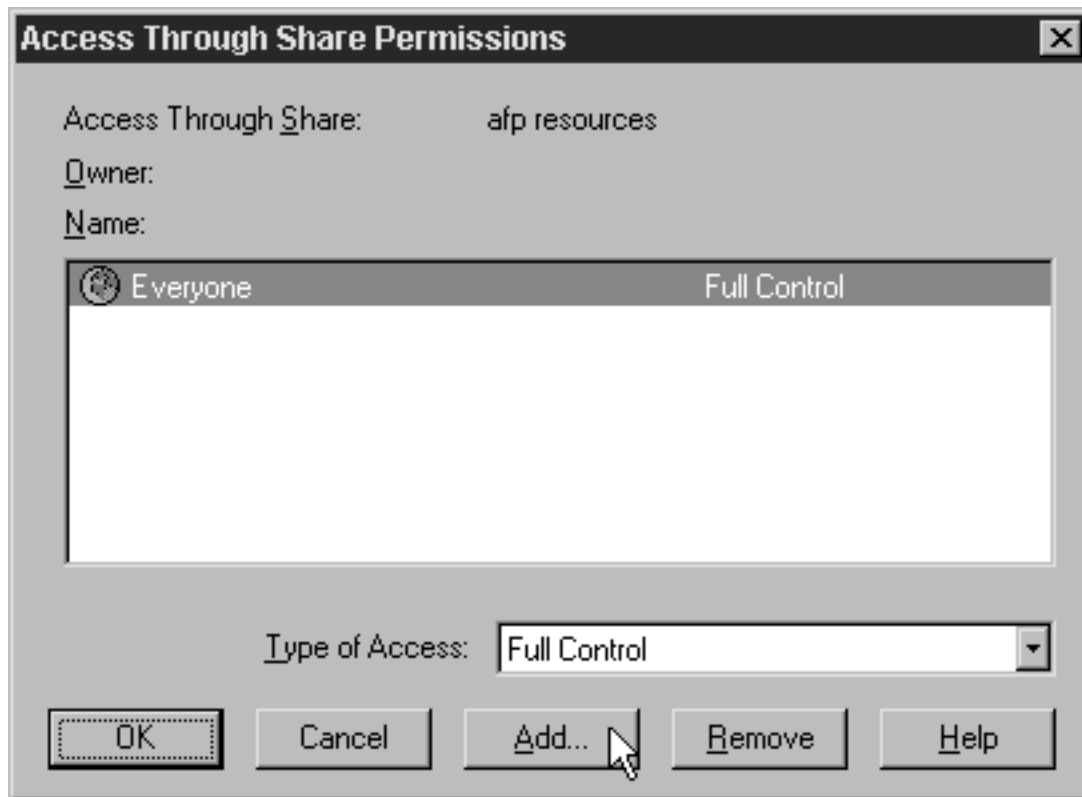


Figure 25. Windows Explorer: Access through Shared Permissions

h. In the **Add Users and Groups** dialog:

- 1) Select the appropriate domain in the **List Names From** drop-down box.
- 2) Find **Domain Admins** in the **Names** box.
- 3) Click **Add**.
- 4) Select **Full Control** in the **Type of Access** drop-down list.

Note: You can add any other users or groups that you want at this point.

- 5) Click **OK**.

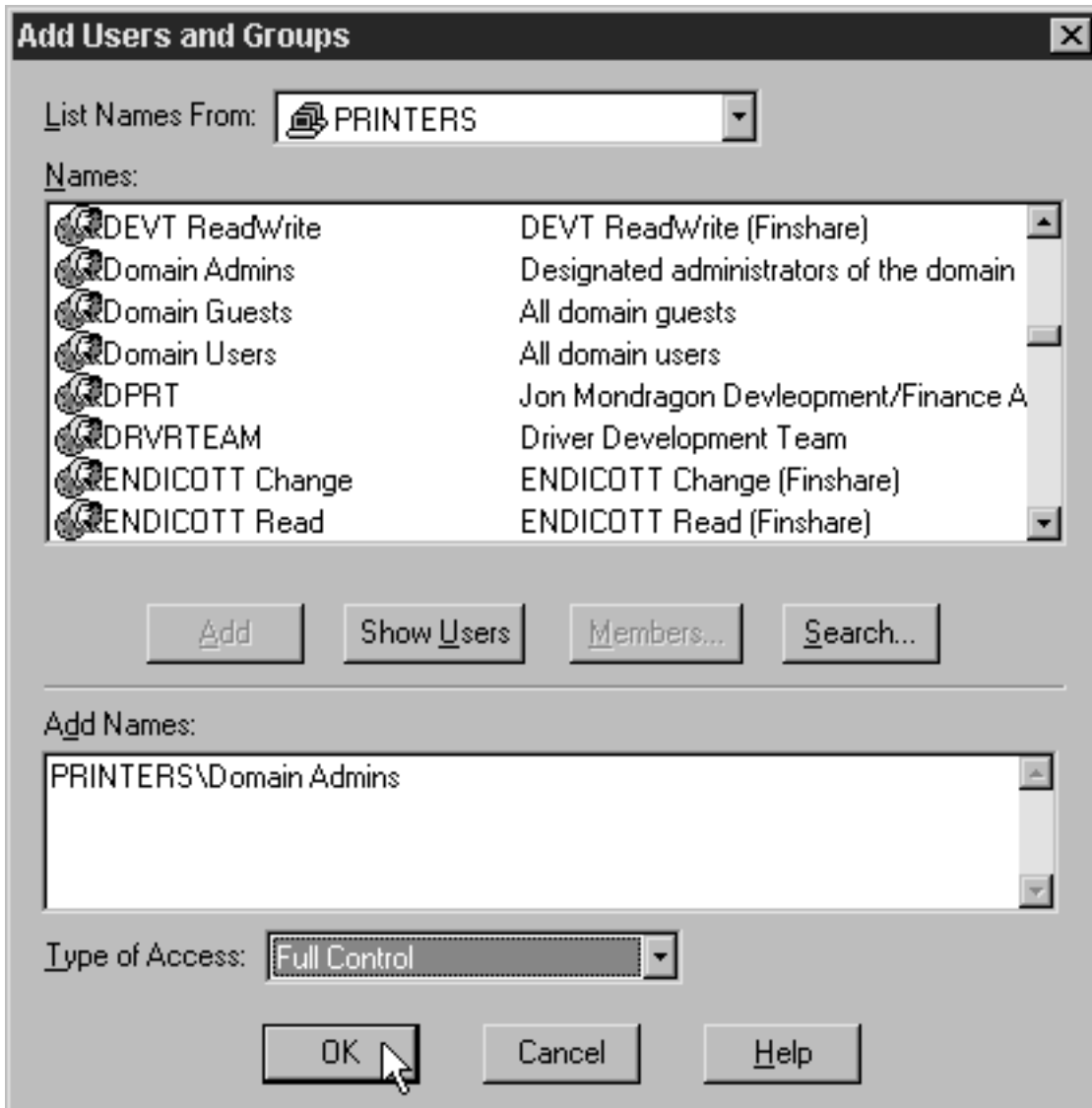


Figure 26. Add Users and Groups dialog

- i. Click **OK** in the **Access through Shared Permissions** dialog.
- j. Click **OK** in the **Properties** dialog.
- k. Return to the Management Console on the system that Infoprint Manager is installed on and select **File -->Start Server** to restart the Infoprint Manager server.

Using Windows 2000

1. **Set up a domain user account that your Infoprint Manager server will run under.**
 - 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 **Programs --> Administrative Tools --> Active Directory Users and Computers**.
 - c. In the left pane of the Active Directory Users and Computers window, find the Users directory.

- d. Right-click the Users directory and select **New** -> **User** from the pop-up menu.



Figure 27. Active 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 28. Active Directory Users and Computers: New Object- User

- f. Click **Next**.
- g. In the second dialog of the New Object – User wizard, enter a password for this user. Clear all of the check boxes, then select **Password never expires** (so you don't have to change the password and update all of your servers on a regular basis).



Figure 29. Active Directory Users and Computers: 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.

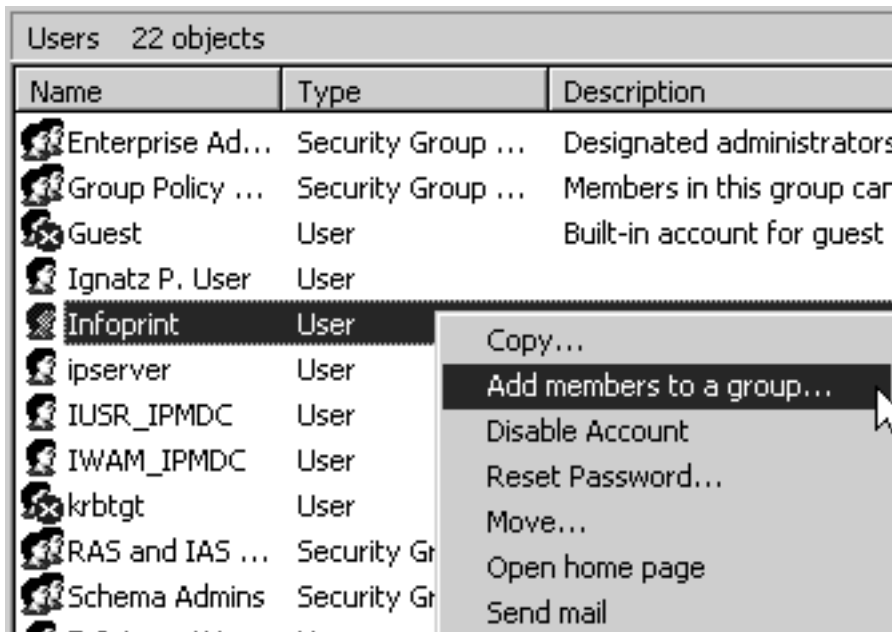


Figure 30. Active Directory Users and Computers: Add Members to Group

- 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.

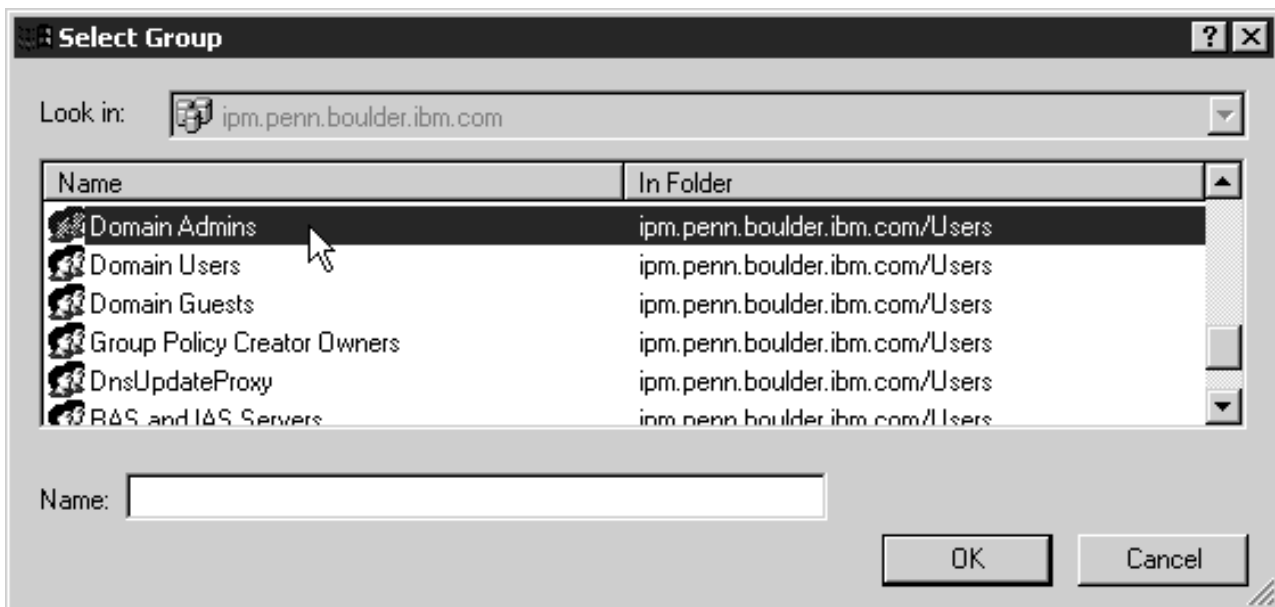


Figure 31. Active Directory Users and Computers: Select Group

2. **Grant the appropriate user rights to the new domain user on the system that your Infoprint Manager server runs on.**
 - a. Log on to the system 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**.

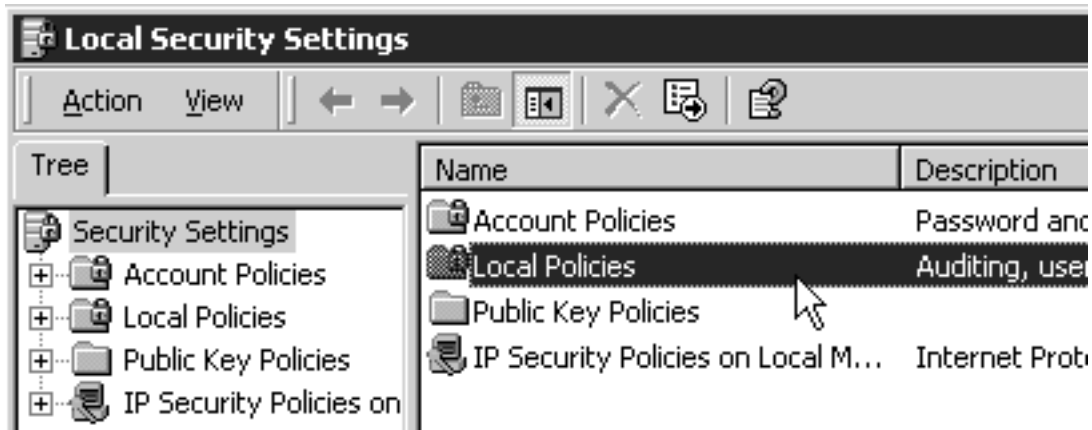


Figure 32. Local Security Policy: Local Security Settings

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



Figure 33. Local Security Policy: User Rights Assignment

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

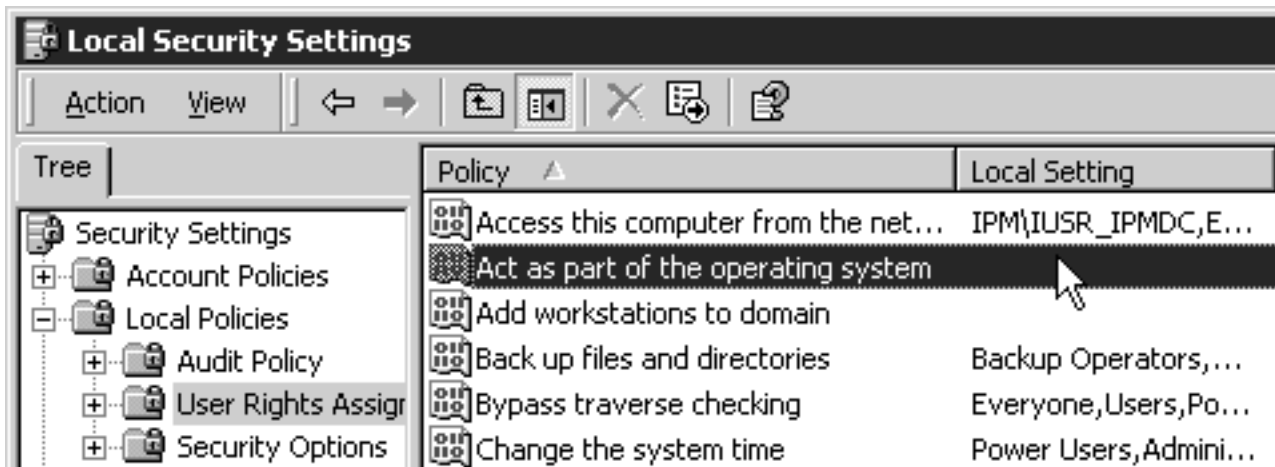


Figure 34. User Rights Assignment: Act as part of the operating system

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

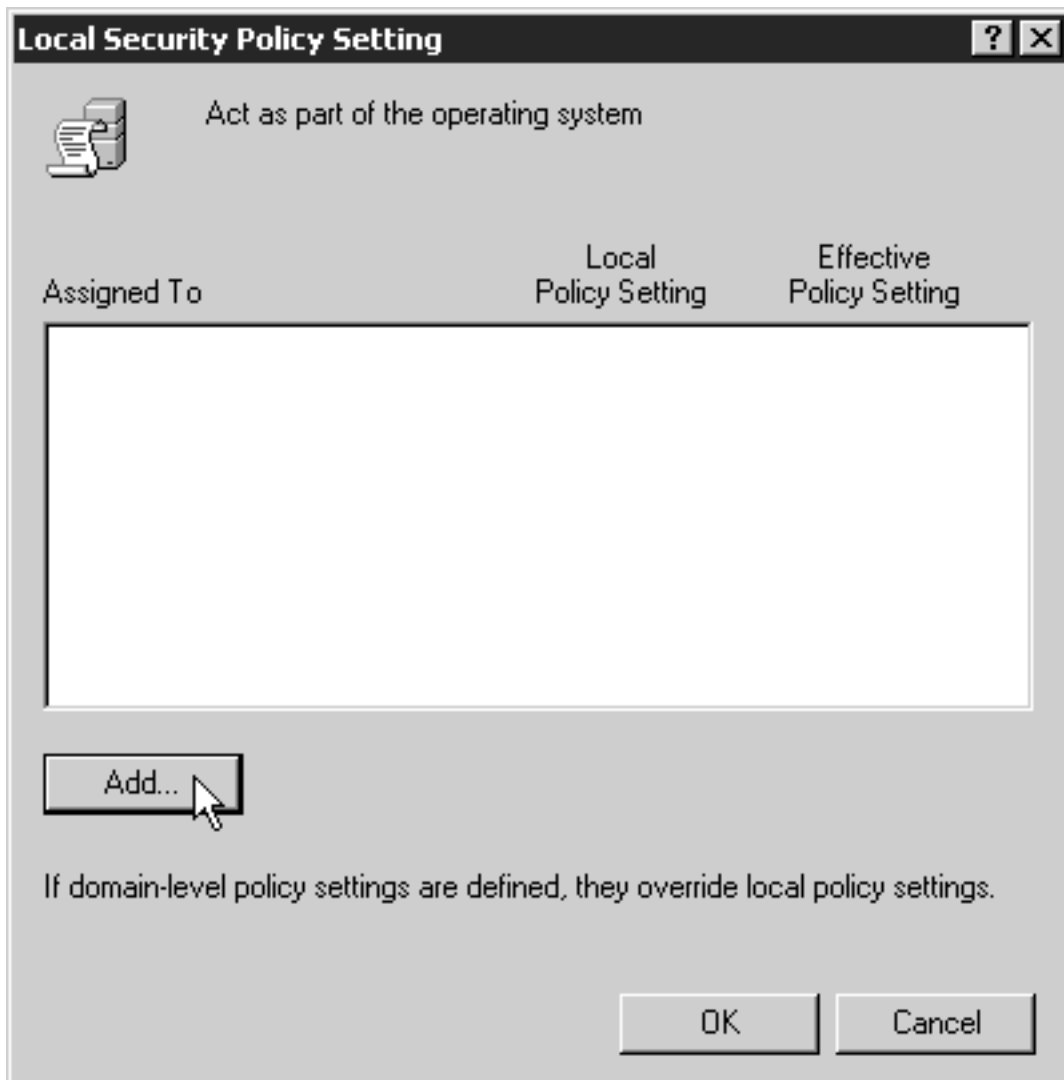


Figure 35. Local Security Policy Setting

- 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.

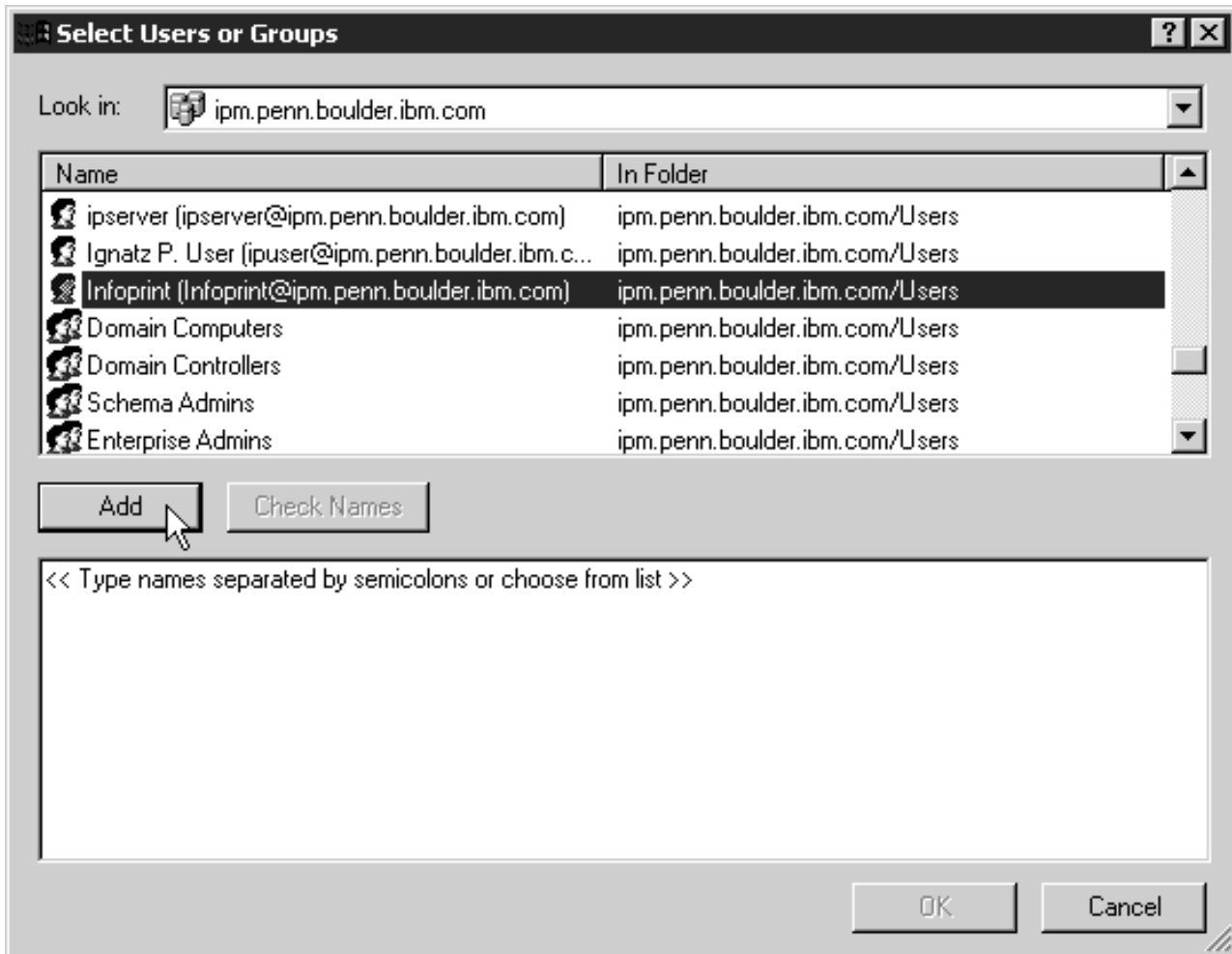


Figure 36. Local Security Policy Setting: Select Users or Groups

- 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 2g on page 91 for two other user rights: **Create permanent shared objects** and **Log on as a service**.
3. **Set up the Infoprint Manager server to use the new user account.**
 - a. Click the Windows **Start** button and select **Programs -> IBM Infoprint Manager -> Management Console**.
 - b. Stop the Infoprint Manager server by selecting **File -> Stop Server**.

Note: If you are not able to stop the server because you are not authorized for that action, check the Infoprint Manager Access Control List (ACL) for the **Shutdown** operation. Log off and log back on as a user who is on the access control list.

- c. Select **Edit -> Service Account/Domain**.

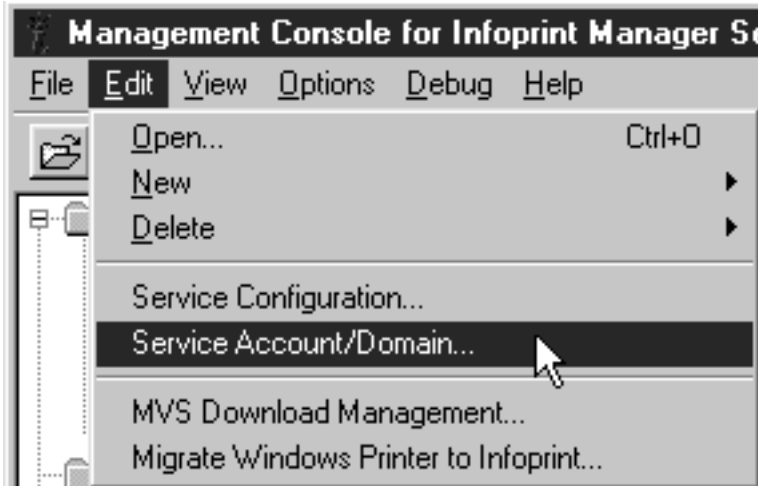


Figure 37. Management Console: Edit-> Service Account/Domain

- d. Enter the name of the domain that the Infoprint Manager server is installed in and the user name and password from step 1 on page 86.

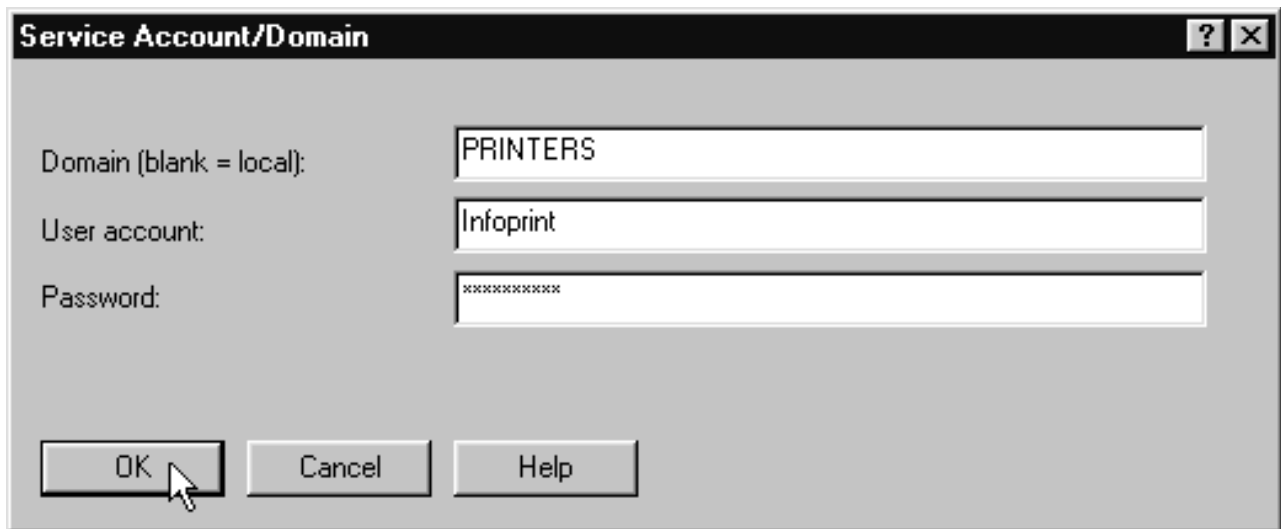


Figure 38. Management Console: Service Account/Domain dialog

- e. Click OK.
- 4. **On the machine that the AFP resources reside on, share the directory that the resources reside in so the domain user has access to it.**
 - a. Log on to the system that your resources reside on as a user who is a member of the Administrators group.
 - b. Open **Windows 2000 Explorer** and navigate to the directory that your resources are stored in.
 - c. Right-click the folder and select **Properties** from the pop-up menu.

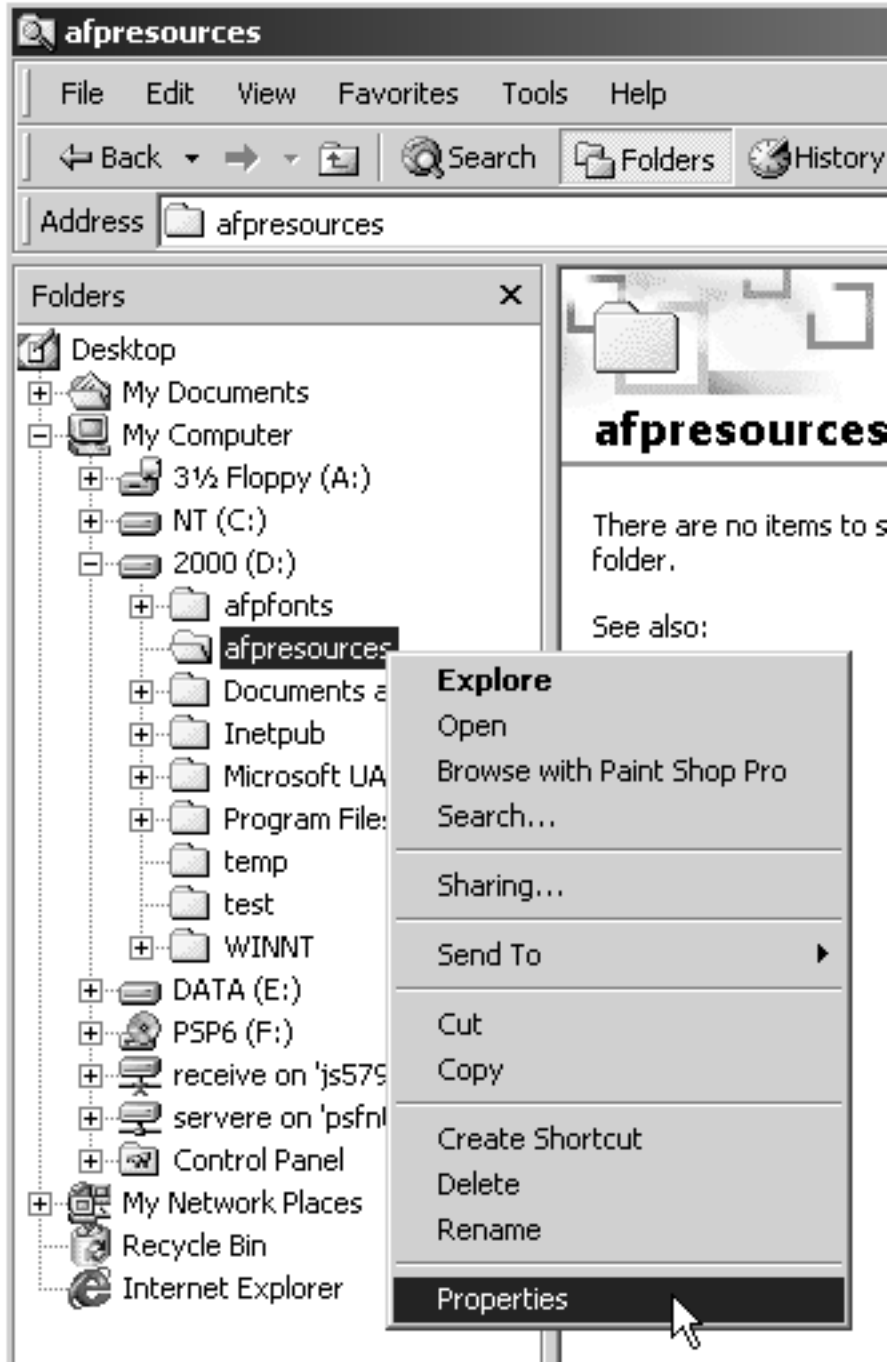


Figure 39. Windows Explorer folder right-click menu

- d. In the **Properties** dialog, click the **Security** tab.

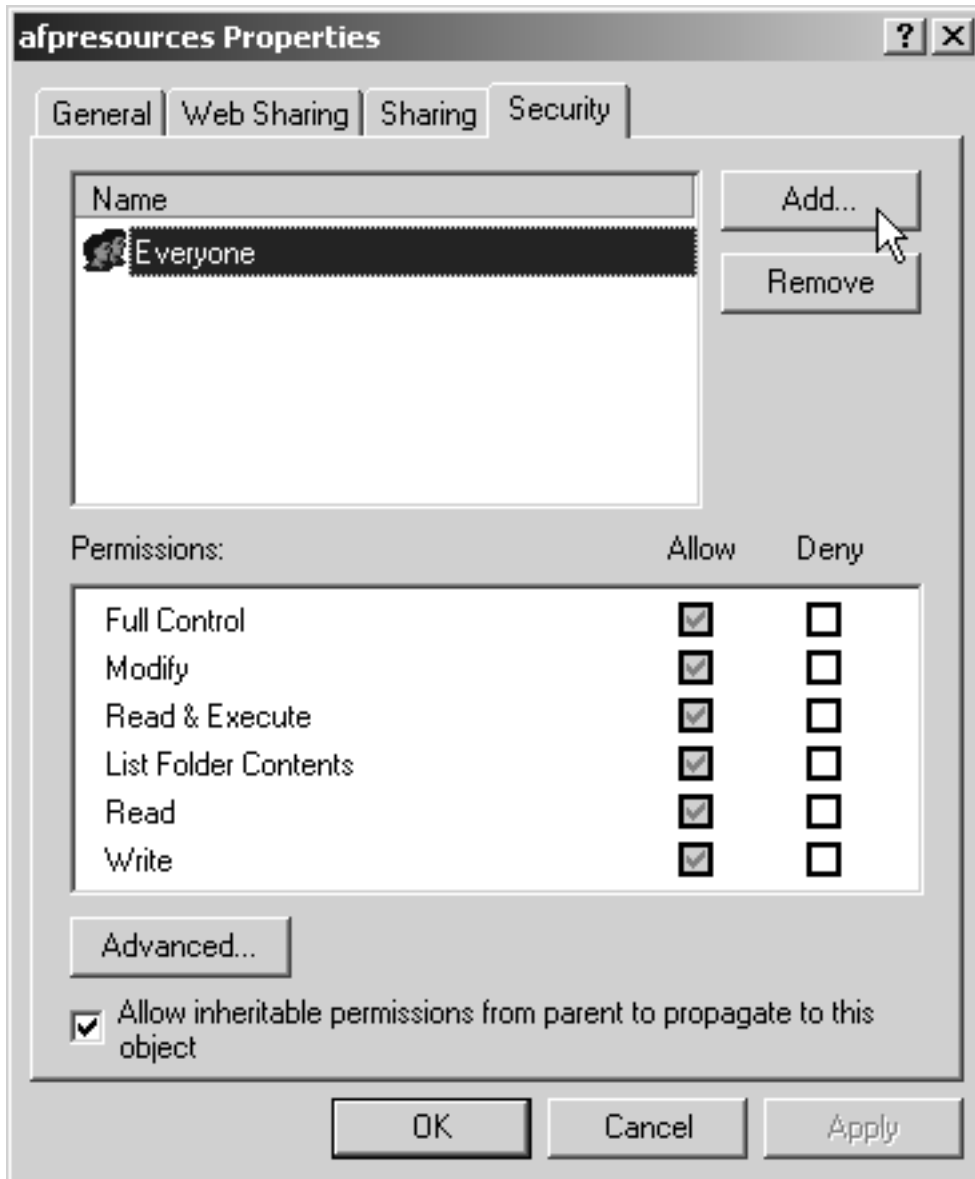


Figure 40. Properties dialog: Security tab

- e. If **Domain Admins** is not in the **Name** list, click **Add**.
- f. In the **Select Users, Computers, or Groups** dialog, choose the correct domain from the **Look in** drop-down list.
- g. Select **Domain Admins** in the **Name** list and click **Add**. You might also want to add the local administrators group as well.

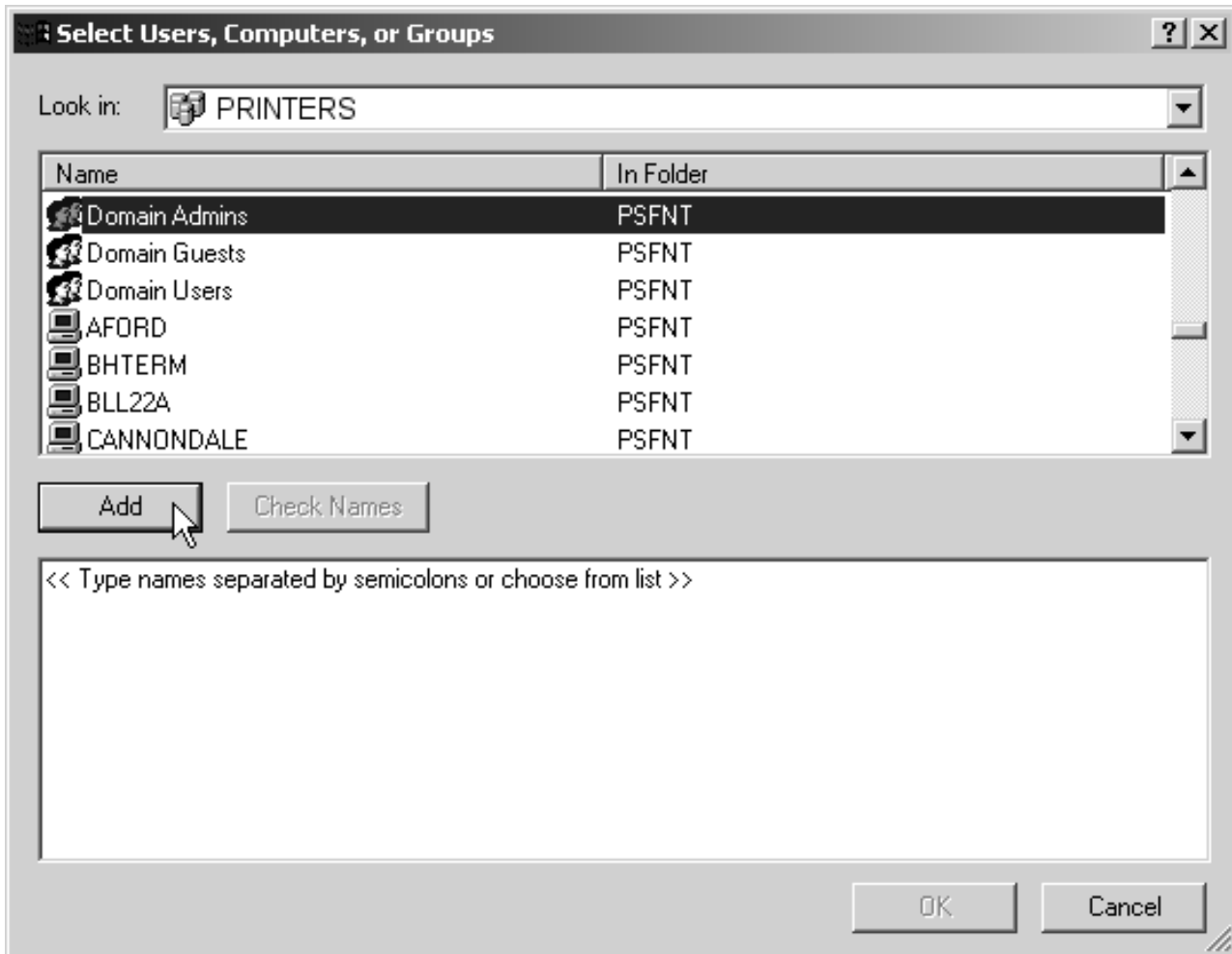


Figure 41. Add Domain Admins group to list

- h. Click **OK**.
- i. In the **Properties** dialog, make sure that **Full Control** is allowed for **Domain Admins** in the **Permissions** box.

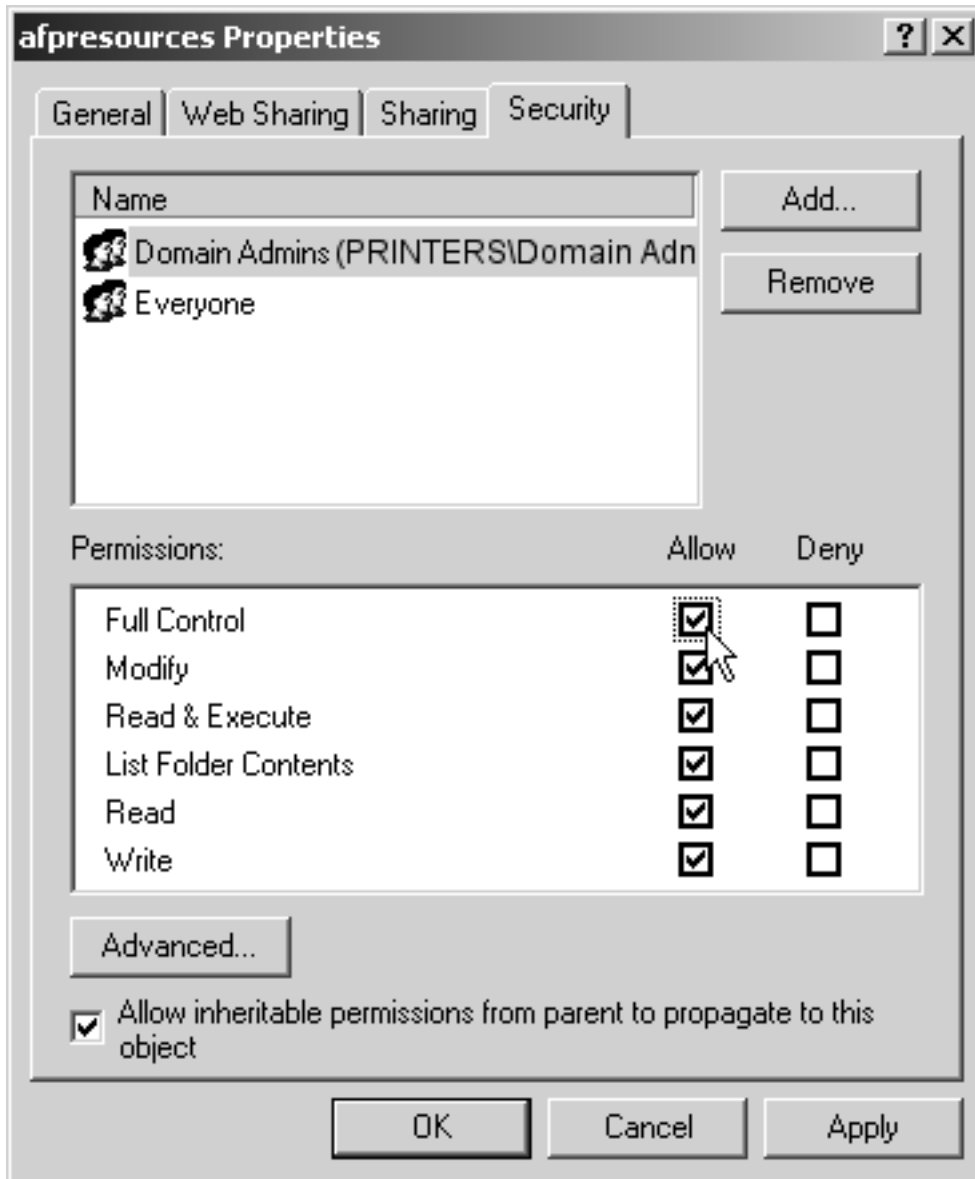


Figure 42. Properties dialog: Give Domain Admins Full Control

Note: You may want change the access level for the **Everyone** group as well.

- j. Click the **Sharing** tab.
- k. Select **Share this folder**. Verify the name of the folder in the **Share name** field and type a descriptive comment in the **Comment** field.

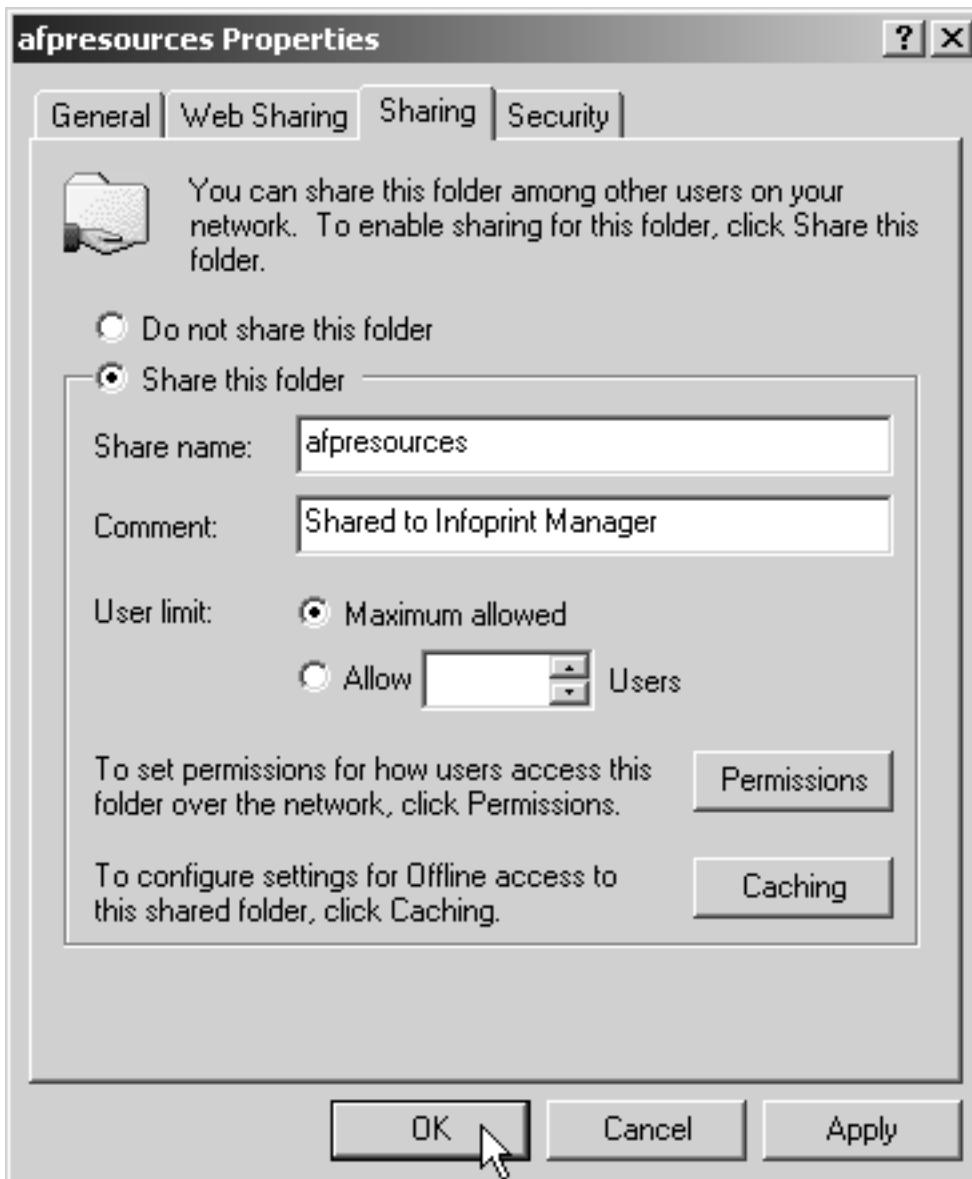


Figure 43. Properties dialog: Sharing tab

- l. Click **OK**.
- m. Return to the Management Console on the system that Infoprint Manager is installed on and select **File ->Start Server** to restart the Infoprint Manager server.

Telling Infoprint Manager where your remote resources are located

Once you have made the resources available, you have to make sure the Infoprint Manager destinations that will be using them know where they are. Follow the steps below to complete this configuration.

1. On the system that Infoprint Manager runs on, map a network drive to the directory that your resources reside in.
 - a. Open Windows NT/2000 Explorer.

- b. Select **Tools --> Map Network Drive**.

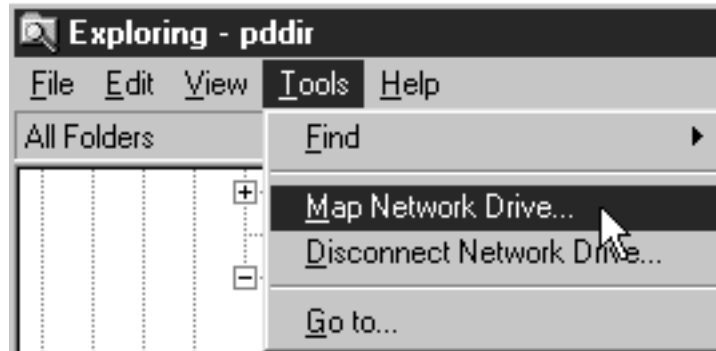


Figure 44. Map network drive

- 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 system that your resources are stored on in this format: `\\resourcesystem\sharename`.

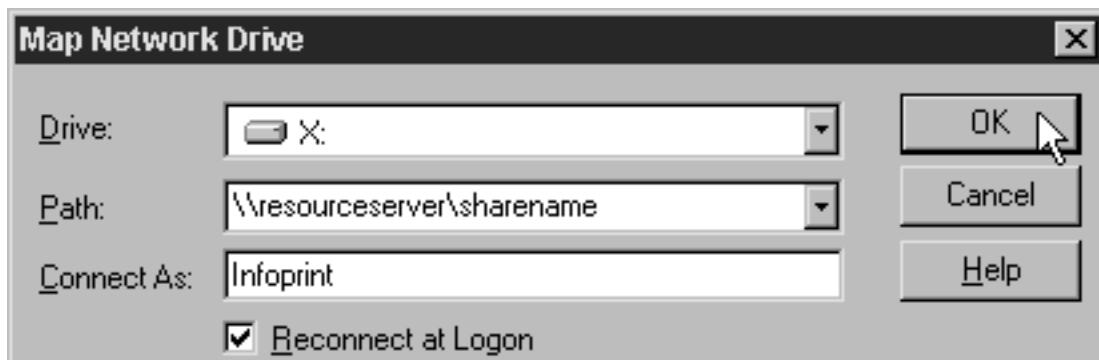


Figure 45. Map to

- 2) Type the user that you created in step 1 on page 75 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 1 on page 75, 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 46. Map Network Drive

- 2) In the **Folder** field, type the Universal Naming Convention (UNC) name of the directory you shared on the system that your resources are stored on server in this format: `\\resourcesystem\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 1 on page 86.

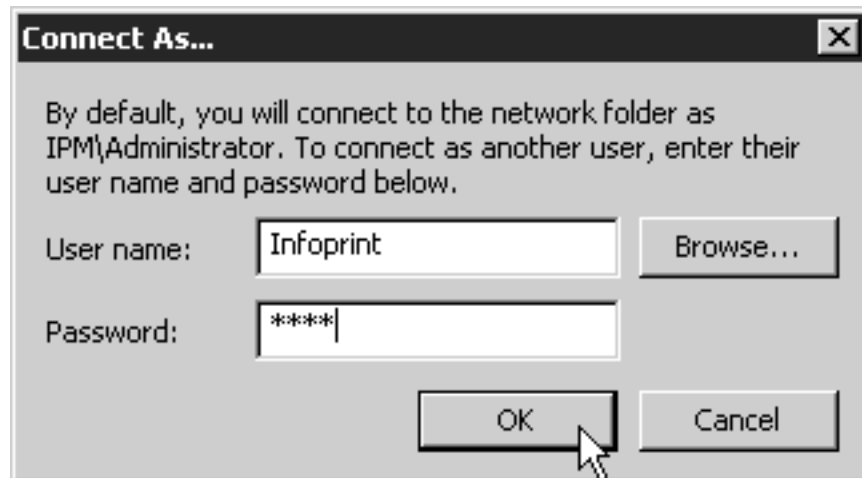


Figure 47. Connect As

- 6) Click **OK** in the **Connect As** dialog.
- 7) Click **Finish** in the **Map Network Drive** dialog.
2. Start the Infoprint Administration GUI.
3. Select one of the printers that needs to access these resources and right-click it.

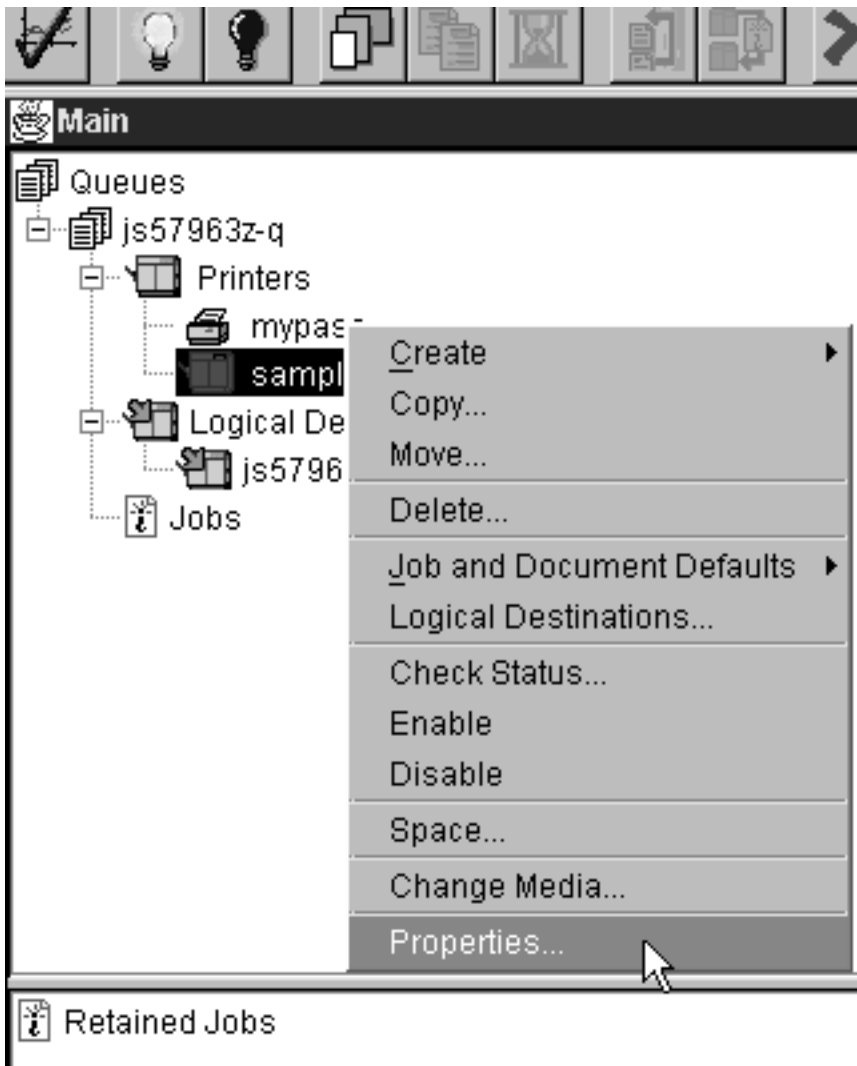


Figure 48. Administration GUI: Printer right-click menu

4. Select **Properties** from the pop-up menu.
5. In the Properties notebook for this printer, click the **AFP Resources** tab.

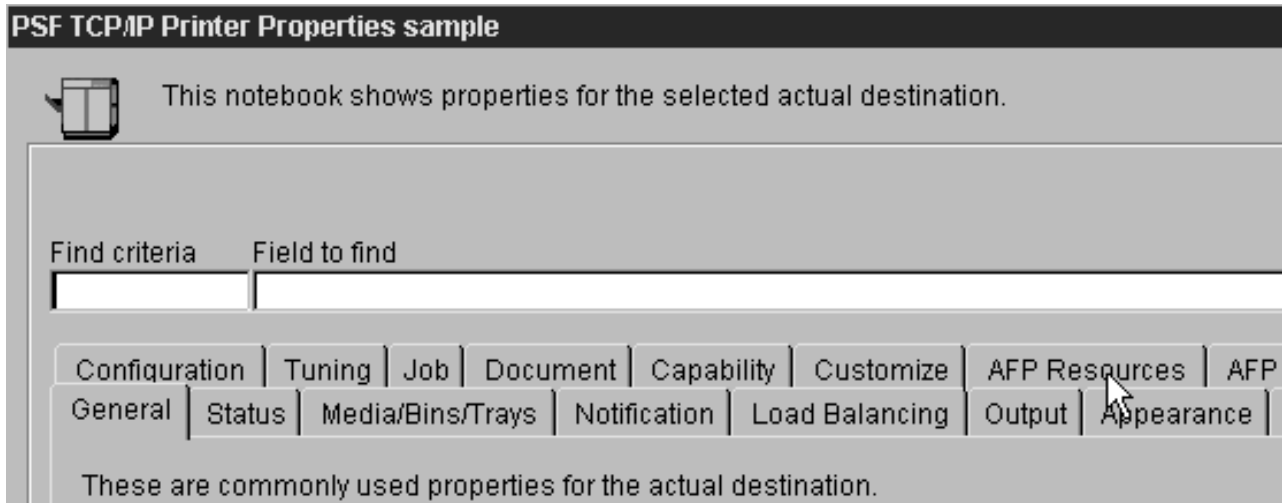


Figure 49. Administration GUI: Printer Properties Notebook

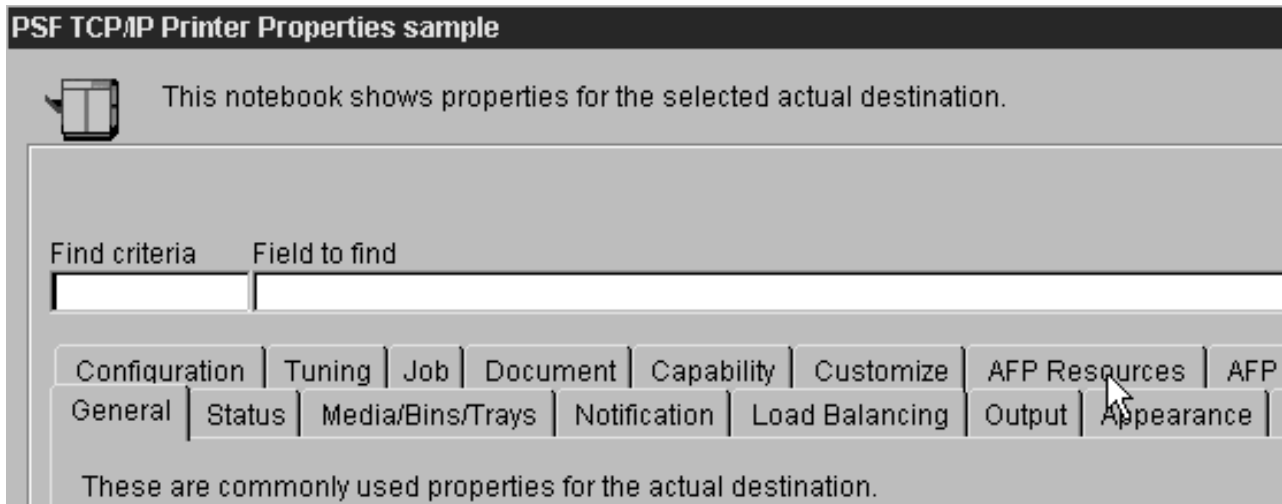


Figure 50. Administration GUI: Printer Properties Notebook

6. Find the correct field for your situation. For example, if your directory only holds fonts, find the **Location of fonts** field; if it holds only overlays, find the **Location of overlays** field. However, if the directory holds a variety of resources, find the **Location of resources** field.

General	Status	Media/Bins/Trays	Notification	Load Balancing	Output	Appearance
Configuration	Tuning	Job	Document	Capability	Customize	AFP Resources

These properties determine which AFP resources are used by the actual destination.

Form definition	<input type="text" value="F1A10111"/>
Medium overlay	<input type="text"/>
Location of form definitions	<input type="text"/>
Location of overlays	<input type="text"/>
Location of fonts	<input type="text"/>
Location of page segments	<input type="text"/>
Location of presentation object containers	<input type="text"/>
Location of resources	<input type="text" value="X:\afpresources"/>

Figure 51. Administration GUI: Printer Properties notebook- AFP Resources tab

7. In the correct field, type the letter of the drive you mapped in step 1c on page 101 and the share name of the directory that contains the resources. For example: x:\afpresources.
8. Click **OK** to close the properties notebook and make the settings take effect.

Setting Up and Tuning SNMP Communication

If you are printing to network printers you may choose to control how your Infoprint Manager servers issue SNMP requests. You can use the **Infoprint Manager Administration GUI** to specify:

- Whether or not to attempt SNMP communication with a printer.
- The name of the SNMP community to which the printer device belongs.
- How many times to retry failed SNMP requests.
- How many seconds to wait for an SNMP printer response before timing out.

When you create an SNMP printer, you must specify either the fully-qualified printer name or the Internet address in the **TCP/IP address** field (**destination-tcpip-internet-address** printer attribute). If you create an SNMP printer with an abbreviated printer name, Infoprint Manager responds with the SNMP connection lost message when you attempt to enable the printer.

The following SNMP attributes can be modified through the **Infoprint Manager Administration GUI** to either set up or tune the SNMP communication with network printers.

Set SNMP at start up (snmp-discovery-during-startup)

This attribute is a server object, so you must select the server that you want to configure, then use the **Server→Properties** menu to open the **Server Properties Notebook** and select the **SNMP** tab.

Setting `snmp-discovery-during-startup=false` ensures a fast start-up of your Infoprint Manager server, while ensuring that the **Actual Destination** information displayed is from when the server was last shut down. This status will not become accurate until Infoprint Manager polls each actual destination. When you accept the default on this server attribute (`snmp-discovery-during-startup=true`), the Infoprint Manager server does an SNMP query on each SNMP printer to obtain the most recent status. These SNMP queries can cause long start-up times, especially if there are many SNMP printers and some of them are either powered off or disconnected.

Setting SNMP printer attributes

To modify the Infoprint printer attributes cited below, select the actual destination that you want to configure and use the **Printer→Properties** menu to open the **Printer Properties Notebook**, and select the **SNMP** tab.

Use SNMP (use-snmp)

This attribute defaults to **yes**, but you may want to set it to **no** under the following types of conditions:

- **Printer is off-line:** the printer is turned off or removed from the network for an extended period of time and you don't want to use system resources to poll the device.
- **Performance:** it's taking too much time to query and poll the SNMP status.
- **Invalid status/defaulting:** the destination status is being reported incorrectly and you want to disable SNMP while service investigates the problem.
- **TCP/IP-attached PSF printers that are not SNMP printers.**

TCP/IP address

Either the fully-qualified printer name or the Internet address that you specified when you created the printer. You can change this value if you need to. If you create an SNMP printer with an abbreviated printer name or try to change the address to an abbreviated printer name, Infoprint Manager responds with the **SNMP connection lost** message when you attempt to enable the printer.

Community name (snmp-community-name)

Use this attribute to indicate the name of the SNMP community to which the printer belongs. The name must match one of the community names configured in the printer.

Number of times to retry (snmp-retry-count)

Use this to specify the number of times to retry an SNMP request if it fails. The higher the number of retries, the more possible traffic there will be on the network. Use higher numbers for remote printers. Increasing this number too much may cause reduced performance.

Timeout (snmp-timeout)

Use this to specify the number of seconds the server should wait for the printer to respond to an SNMP request. If the printer is remote (on a different subnet), this number may need to be increased from the default. The amount of increase depends on a number of network factors, including routing and network loading. Increasing this number too much may cause reduced performance.

Working with SNMP printers

The following actual destination attributes are set automatically if you are printing to SNMP Printers:

- **input-trays-medium**
- **media-supported**
- **output-bin-numbers**
- **plexes-supported**
- **printer-model**
- **psf-tray-characteristics**
- **sides-supported**

For example, if you define an SNMP printer to Infoprint Manager and change the size of the paper in the printer at the printer device, the SNMP support updates the appropriate actual destination attributes on the list above. However, if you set any of these printer attributes explicitly either in a **pdset** command or the **Infoprint Manager Administration GUI**, the SNMP support will not override your setting.

Creating a New Resource-Context Object

You create **resource-context** objects from the **Command Prompt** window; you cannot create them through the **Infoprint Manager Administration GUI**. Use **-c resource-context** with the **pdcreate** command and specify the **context-address**, the server name, and the **resource-context** object name to create a new **resource-context** object. Specify a unique name that describes the **resource-context** object within the server. All **resource-context** objects within a server appear in the selection lists for the fields in the **PSF Resource** tab of the **Printer Properties** window. Two servers can each contain a **resource-context** object with the same name, but different values for their attributes.

For more information about the attributes used in creating resource-context objects, refer to the **Attributes for Resource Contexts** topic in **Chapter 7. Infoprint Object Attributes** of the *Infoprint Manager: Reference*.

Infoprint Manager uses **resource-context** object names as values for the lists associated with the fields in the **Printer Properties** window, or as a valid value you can enter in the fields of the **Modify Job and Document Defaults** notebook. Job submitters can also use them as values for attributes of a document within a job.

For example, to create the **resource-context** object Resfont1, which is contained in the Infoprint Manager server Server1, to identify the \resource\fonts\group1 directory as the directory that contains AFP font resources, enter the command:

- `pdcreate -c resource-context`
- `-x "context-address=\resource\fonts\group1"`
- `Server1:Resfont1`

Using PSF DSS User-Exit Programs

This topic describes the sample PSF DSS user-exit programs supplied with Infoprint Manager and shows how you can create your own PSF DSS user-exit programs. These user-exit programs apply to printers connected to Infoprint Manager through the PSF device support subsystem (DSS).

This section contains the following topics:

- “Supported types of PSF DSS user-exits”
- “Sample PSF DSS user-exit programs”
- “Creating and using your own PSF DSS user-exit programs” on page 111
- “Compiling and installing the user-exit program” on page 111
- “Header page, trailer page, and separator page user-exit program inputs and outputs” on page 112
- “Accounting and audit user-exit program inputs and outputs” on page 115
- “Input data user-exit program inputs and outputs” on page 118
- “Output data user-exit program inputs and outputs” on page 119
- “Structure of a user-exit program” on page 120
- “User-exit programs for the line data transform” on page 121
- “Attributes of the line data input file” on page 127
- “Using the iconv command to convert code pages” on page 128

Supported types of PSF DSS user-exits

Infoprint Manager supports dynamically loaded user-exit programs. These programs are loaded with Infoprint Manager during initialization and are called at various points during job processing.

Infoprint Manager allows seven different types of PSF DSS user exits. Infoprint Manager calls the exits in the following order:

1. Header (Start) page user exit
2. Separator page user exit
3. Accounting user exit
4. Audit user exit
5. Input data user exit
6. Output data user exit
7. Trailer (End) page user exit

Note: Refer to “Chapter 6. Setting up to use MVS Download” on page 151 for information about the sample user-exit program provided for MVS Download.

Sample PSF DSS user-exit programs

Infoprint Manager supplies sample PSF DSS user-exit programs for the header, separator, and trailer pages, and for accounting and auditing data. The sample header, separator, and trailer page user-exit programs generate Advanced Function Presentation (AFP) data stream pages. The sample accounting and auditing user-exit programs generate ASCII data in a report file format. Infoprint Manager also supplies sample user-exit programs for input data and output data; however, these user-exit programs do not perform any function. You can use all of these sample programs as they are or you can modify them.

If you choose to modify the existing user-exit programs, the source code for each one is located in the *install_path*\exits directory. The *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.

Table 1 lists the sample user exit programs supplied with Infoprint Manager.

Table 9. Sample user exit programs

Type of user-exit	File Name	Description
Header Page	ainuxhdr.c	Generates brief style start sheet.
	ainuxhdr2.c	Generates full style start sheet.
	ainuxhdrp.c	Generates start sheet with job ticket information.
	ainuxhdrx.c	Generates start sheet without vertical lines.
	pduxblkh.c	Generates a blank start sheet.
Separator Page	ainuxsep.c	Generates brief style separator sheet
	ainuxsep2.c	Generates full style separator sheet.
	ainuxsepp.c	Generates separator sheet with job ticket information.
	ainuxsepx.c	Generates separator sheet without vertical lines.
	pduxblks.c	Generates a blank separator sheet.
Trailer Page	ainuxtlr.c	Generates brief style end sheet.
	ainuxtlr2.c	Generates full style end sheet.
	ainuxtlrp.c	Generates start sheet with job ticket information.
	ainuxtlrx.c	Generates end sheet without vertical lines.
	pduxblkt.c	Generates a blank end sheet.
Accounting	ainuxacc.c	Generates brief style accounting sheet.
	ainuxacc2.c	Generates full style accounting sheet.
	ainacclog.c	Generates accounting log information.
Auditing	ainuxaud.c	Generates brief style audit sheet.
	ainuxaud2.c	Generates full style audit sheet.
	ainuxaudp.c	Generates audit sheet with job ticket information.
	ainaudlog.c	Generates audit log information.
Accounting log	ainuxaccp.c	Generates accounting sheet log with job ticket information.

Table 9. Sample user exit programs (continued)

Type of user-exit	File Name	Description
Input Data	ainuxind.c	Provides template for writing your own user-exit program.
Output Data	ainuxout.c	Provides template for writing your own user-exit program.

Note: Refer to “User-exit programs for the line data transform” on page 121 for sample user-exit programs used with the line data transform.

Creating and using your own PSF DSS user-exit programs

You can create your own PSF DSS user-exit program at any time; however, you must perform additional tasks to produce a PSF DSS user-exit executable program. You must have the Microsoft Visual C++ Program, Version 5.0 or higher, installed on your Infoprint NT server in order to compile and build user-exit programs. Be sure to apply the latest service available.

You can create your own user-exit program in one of the following ways:

- Copy one of the sample user-exit programs, rename it, and modify it using the Microsoft Visual C++ Program.
- Write your own user-exit program. You can include the variable data shown in the following sections, for example, USERID; but Infoprint cannot process variable data that is not shown in this topic.

Compiling and installing the user-exit program

You can only specify one user-exit program for each function name provided by Infoprint per actual destination.

The function name of the user-exit must be one of the following (in uppercase), because that is the entry point in the module:

- ACCOUNTING
- AUDIT
- HEADER
- SEPARATOR
- TRAILER
- INDATA
- OUTDATA

Activating the user-exit program

Before you can use the new user-exit program, you must activate the program.

To perform this task from the **Infoprint Manager Administration GUI**, you must select the printer that you want to associate with an auxiliary sheet (in this case, prt1) and then use the **Printer** —> **Properties** menu to access the **Printer Properties** notebook. To complete this task, refer to the online help topic **Using auxiliary-sheet objects** in the **Infoprint Manager Administration GUI**.

To perform this task from the command line, use the click the Windows **Start** button and select **Programs**—>**Command Prompt** path and perform the following procedure.

1. To create the auxiliary-sheet object, type:

```
pdcreate -c aix-sh -x psf-exit-prog-name=fullpath\exit_name
server1:auxiliary_sheet_name
```

2. Disable the actual destination (in this case, prt1).

```
pddisable prt1
```
3. Add this new auxiliary-sheet object (in this case, an audit exit) to the actual destination.

```
pdset -cp -x dest -x audit-exit=auxiliary_sheet_name prt1
```
4. Enable the actual destination (in this case, prt1).

```
pdenable prt1
```

Header page, trailer page, and separator page user-exit program inputs and outputs

Because the Infoprint start page and trailer page user-exit programs require the same inputs and produce the same outputs, the program descriptions are similar. The Infoprint separator page user-exit program differs only in having access to the copy counter output information.

There is one invocation of the separator user-exit prior to every copy of the job data. This assumes that the copies were requested using the result-profile attribute rather than the copy-count attribute (for which the multiple copies are merged into one job file).

The source code (in the C programming language) for the sample header page user-exit programs, trailer page user-exit programs, and separator page user-exit programs are located in the *install_path*\exits directory. These sample programs generate an AFP data stream page.

The data structures for the header, trailer, and separator page user-exit programs are included with the source code in the *install_path*\exits\ainuexit.h file. The code for these structures is shown in “Structure of a user-exit program” on page 120.

The declaration of these exits is:

```
void HEADER (HEADER_EXITDATA *exitdata)
void TRAILER (TRAILER_EXITDATA *exitdata)
void SEPARATOR (SEPARATOR_EXITDATA *exitdata)
```

The **HEADER_EXITDATA**, **TRAILER_EXITDATA**, and **SEPARATOR_EXITDATA** input/output parameters contain all the input and output data needed to communicate between Infoprint and the user-exit programs.

The **HEADER_EXITDATA**, **TRAILER_EXITDATA**, and **SEPARATOR_EXITDATA** structures include these fields.

To build the executable program, you must use the Microsoft Visual C++ Program, Version 5.0 pull-down menu.

Fields that provide input information

UserID

The system user ID of the person who submitted the job.

NodeID

The name of the system (host). The backend program sets the NodeID.

JobName

The name of the job. This is the same as the file name in the job.

Job submitters can also specify the job name with the Infoprint job attribute `job-name=name` or `name=name` when they submit a job. If the job name is not specified for files defined as PCL, PostScript, line data, unformatted ASCII, double-byte character set (DBCS) ASCII, or PDF, files when the job is submitted, Infoprint creates a temporary file for the transform output. Infoprint uses the temporary file name for the job name.

SpoolID

The job ID, which is an integer. Infoprint Manager sets the **SpoolID**.

PrinterName

The name of the Infoprint destination.

hab This field is not used.

Date The date the job is printed in MM/DD/YY format.

ExtDate

The date the job is printed in MM/DD/YYYY format.

Time The time the job is printed in HH:MM:SS format.

Distribution

The distribution information provided when the job is submitted.

Other input values: The following fields are used by some of the sample programs to provide additional input information. This information can be specified from:

- migrated jobs
- MVS Download jobs
- fields set in the Infoprint Manager Administration GUI **default-document** notebook on the **PSF Information** tab

The field length limits provided below are based on the currently shipped user-exits. Additional field length is normally provided to the user-exits, but would require modification of the exits to display the additional data.

Account

Identifies the account information provided when the job is submitted. The **Account** field value can be any null-terminated (X'00') character string. You should limit the string to 20 characters or less. Job submitters can specify this same information through the **account-text** document attribute.

Address1

Identifies the first line of address information provided when the job is submitted. The **Address1** field value can be any null-terminated (X'00') character string. You should limit the string to 57 characters or less. Job submitters can specify this same information through the **address1-text** document attribute.

Address2

Identifies the second line of address information provided when the job is submitted. The **Address2** field value can be any null-terminated (X'00') character string. You should limit the string to 57 characters or less. Job submitters can specify this same information through the **address2-text** document attribute.

Address3

Identifies the third line of address information provided when the job is submitted. The **Address3** field value can be any null-terminated (X'00')

character string. You should limit the string to 57 characters or less. Job submitters can specify this same information through the **address3-text** document attribute.

Address4

Identifies the fourth line of address information provided when the job is submitted. The **Address4** field value can be any null-terminated (X'00') character string. You should limit the string to 57 characters or less. Job submitters can specify this same information through the **address4-text** document attribute.

Building

Identifies the building information provided when the job is submitted. The **Building** field value can be any null-terminated (X'00') character string. You should limit the string to 24 or less characters. Note that job submitters can specify this same information through the **building-text** document attribute.

Department

Identifies the department information provided when the job is submitted. The **Department** field value can be any null-terminated (X'00') character string. You should limit the string to 24 characters or less. Job submitters can specify this same information through the **department-text** document attribute.

Name Identifies the name information provided when the job is submitted. The **Name** field value can be any null-terminated (X'00') character string. You should limit the string to 24 characters or less. Job submitters can specify this same information through the **name-text** document attribute.

Nodeid

Identifies the nodeid information provided when the job is submitted. The **Nodeid** field value can be any null-terminated (X'00') character string. You should limit the string to 10 characters or less. Job submitters can specify this same information through the **node-id-text** document attribute.

Passthru

Identifies any other information provided when the job is submitted that will be passed through the user exit to the backend program. Job submitters can also specify the account information with the Infoprint attribute **printer-pass-through='-pa=class=A...'**

The following **Passthru** flags are extracted by the "full" user-exits. Extracting other values from the **Passthru** variable would require modifications to the supplied user-exit programs.

class Identifies the one-character class attribute.

destination

Identifies the one- to eight-character destination attribute.

forms Identifies the one- to eight-character forms attribute.

segmentid

Identifies the one- to ten-character segmentation identifier.

The **Passthru** value can be any null-terminated (X'00') character string no greater than 1,024 characters in length.

Programmer

Identifies the programmer information provided when the job is submitted. The **Programmer** field value can be any null-terminated (X'00') character

string. You should limit the string to 24 characters or less. Job submitters can specify this same information through the **programmer-text** document attribute.

Room Identifies the room information provided when the job is submitted. The **Room** field value can be any null-terminated (X'00') character string. You should limit the string to 24 characters or less. Job submitters can specify this same information through the **room-text** Infoprint document attribute.

Title Identifies the title information provided when the job is submitted. The **Title** field value can be any null-terminated (X'00') character string. You should limit the string to 24 characters or less. Job submitters can specify this same information through the **title-text** document attribute.

Userid

Identifies the userid information provided when the job is submitted. The **Userid** field value can be any null-terminated (X'00') character string. You should limit the string to 10 characters or less. Job submitters can specify this same information through the **user-id-text** document attribute.

Fields that provide output information

Copy Indicates which copy is associated with this call to the separator page user-exit. Initially set to 1, it increments by one each time the exit is called. The sample separator page user-exit program generates one separator page for the first copy and all subsequent copies of the job.

PagePointer

Points to a buffer containing the header page or trailer page data produced by the exit.

PageSize

Indicates the size of the header page or trailer page data returned by the exit. This field is initially set to 0 before the exit is called. If no data is generated by the exit, this field remains set at 0.

PageType

Indicates the type of header or trailer page data (if any) that the exit generates. The field is initially set to 0 (AFP data stream) before the exit is called.

Valid values are:

- 0** Advanced Function Presentation (AFP) data stream.
- 1** ASCII data.

Job Completion

Indicates the status returned by the exit. This field is initially set to 0 before the exit is called.

Accounting and audit user-exit program inputs and outputs

The Infoprint accounting and audit user-exit programs require the same inputs and produce the same outputs so the program descriptions are similar.

The source code (in the C programming language) for the sample separator page user-exit programs listed in "Supported types of PSF DSS user-exits" on page 109 are located in the *install_path*\exits directory.

These sample programs generate an ASCII data stream page. The sample programs store the data into a file you can access with the following executable reporting utilities:

ainurpt1

Provides accounting data for the actual destinations defined, based upon the destination ID.

ainurpt2

Provides accounting data for the actual destinations defined, based upon the userid.

ainurpt3

Provides detailed accounting data for the destinations defined, based upon the particular userid supplied.

ainurpt4

Provides audit data for the actual destinations defined, based upon the destination ID.

ainurpt5

Provides audit data for the actual destinations defined, based upon the userid.

ainurpt6

Provides detailed audit data for the actual destinations defined, based upon the particular userid supplied.

These executable reporting utilities are located in the *install_path*\exits folder. By specifying these executable reporting utilities at the DOS command line, you can display data by either destination ID or userid. For example, to report on print requests submitted by a specific user to a actual destination for which the accounting user exit has been activated, you can specify **ainurpt3** and then provide the userid to the program.

Note: You must activate the audit and accounting exits to generate these reports. For more information on activating these exits, see “Activating the user-exit program” on page 111.

The data structures for the accounting and audit user-exit programs are included with the source code in the *install_path*\exits\ainuexit.h and *install_path*\exits\ainurpt.h files. The code for these structures is shown in “Structure of a user-exit program” on page 120.

The declarations of these exits are:

```
void ACCOUNTING (ACCOUNTING_EXITDATA *exitdata)
void AUDIT (AUDIT_EXITDATA *exitdata)
```

The **ACCOUNTING_EXITDATA** and the **AUDIT_EXITDATA** input and output parameters contain all the input and output data needed to communicate between Infoprint and the user-exit programs.

The **ACCOUNTING_EXITDATA** and the **AUDIT_EXITDATA** structures include the following fields.

To build the executable program, you must use the Microsoft Visual C++ Program, Version 5.0 pull-down menu.

Fields that provide input information

UserID

The system user ID of the person who submitted the job.

NodeID

The name of the system (host). The backend program sets the NodeID.

JobName

The name of the job. This is the same as the file name in the job.

Job submitters can also specify the job name with the Infoprint job attribute **job-name=name** or the alias **name=** when they submit a job. If the job name is not specified for files defined as PCL, PostScript, line data, unformatted ASCII, double-byte character set (DBCS) ASCII, or PDF, files when the job is submitted, Infoprint creates a temporary file for the transform output. Infoprint uses the temporary file name for the job name.

SpoolID

The job ID, which is an integer. Infoprint sets the **SpoolID**.

PrinterName

The name of the Infoprint destination.

hab This function is not used.

Pages Printed

Shows the total number of impressions produced for this job.

Bin One Sheets Printed

Shows the total number of sheets selected from the primary bin.

Bin Two Sheets Printed

Shows the total number of sheets selected from the secondary bin.

Number of Fonts used

Shows the total number of fonts used in this job.

Note: For **Number of Fonts used**, **Number of Overlays used**, and **Number of Segments used**, the counters do not include resources contained in the input file. The counters only include resources used before the accounting or audit user-exit is called. Therefore, the resources required for printing error messages and the trailer page do not appear in the resource totals.

Number of Overlays used

Shows the total number of overlays used in this job.

Number of Segments used

Shows the total number of page segments used in this job.

ExtStart Date

Identifies the four-digit date the job started printing.

Start Date

The two-digit date the job started printing.

Start Time

The time the job started printing.

ExtStop Date

The four-digit date the job finished printing.

Stop Date

The two-digit date the job finished printing.

Stop Time

The time the job finished printing.

Optional fields that can provide other input values for the accounting and auditing user-exit are listed in “Other input values” on page 113.

Fields that provide output information**PagePointer**

Points to a buffer containing the accounting or audit page data produced by the exit.

PageSize

Indicates the size of the accounting or audit page data returned by the exit. This field is initially set to 0 before the exit is called. If no data is generated by the exit, this field remains set at 0.

PageType

Indicates the type of accounting or audit page data (if any) that the exit generates. The field is initially set to 0 (AFP data stream) before the exit is called.

Valid values are:

- 0** Advanced Function Presentation (AFP) data stream
- 1** ASCII data

Input data user-exit program inputs and outputs

The Infoprint Manager input data user-exit program is used to monitor the print data stream that is coming into Infoprint Manager. This exit is called at the beginning of the job after the header (start) page.

The source code (in the C programming language) for the sample input data user-exit program listed in “Supported types of PSF DSS user-exits” on page 109 is in the *install_path*\exits\ainuxind.c file. This sample program consists of a return code and performs no function.

The data structures for the output data user-exit program are included with the source code in the *install_path*\exits\ainuexit.h file. The code for these structures is shown in “Structure of a user-exit program” on page 120.

The declaration of this exit is:

```
void INDATA (INDATA_EXITDATA *exitdata)
```

The **INDATA_EXITDATA** input/output parameter contains all the input and output data needed to communicate between Infoprint and the user-exit program.

The **INDATA_EXITDATA** structure includes the following fields.

To build the executable program, you must use the Microsoft Visual C++ Program, Version 5.0 pull-down menu.

Fields that provide input information**UserID**

The system user ID of the person who submitted the job.

NodeID

The name of the system (host). The backend program sets the NodeID.

JobName

The name of the job. This is the same as the file name in the job.

Job submitters can also specify the job name with the Infoprint job attribute **job-name=name** when they submit a job. If the job name is not specified for files defined as PCL, PostScript, line data, unformatted ASCII, double-byte character set (DBCS) ASCII, or PDF, files when the job is submitted, Infoprint creates a temporary file for the transform output. Infoprint uses the temporary file name for the job name.

SpoolID

The job ID, which is an integer. Infoprint Manager sets the **SpoolID**.

PrinterName

The name of the Infoprint destination.

hab This function is not used.

Copy Indicates which copy is associated with this call to the exit. Initially set to 1, it increments by one each time the exit is called.

DataOffset

Indicates the offset into the source file.

DataSize

Indicates the number of bytes in the buffer.

DataPointer

Points to a buffer containing the incoming print data stream.

DataType

Indicates the type of source data the exit receives.

Valid values are:

- 0** Advanced Function Presentation (AFP) data stream.
- 1** ASCII data.

Output data user-exit program inputs and outputs

The Infoprint output data user-exit program is used to monitor the outgoing print data stream from Infoprint. This exit is called at the end of the job before the error messages and the trailer page.

The source code (in the C programming language) for the sample input data user-exit program listed in “Supported types of PSF DSS user-exits” on page 109 is in the *install_path*\exits\ainuxout.c file. This sample program consists of a return code and performs no function.

The data structures for the output data user-exit program are included with the source code in the *install_path*\exits\ainuexit.h file. The code for these structures is shown in “Structure of a user-exit program” on page 120.

The declaration of this exit is: void OUTDATA (OUTDATA_EXITDATA \exitdata)

The **OUTDATA_EXITDATA** input/output parameter contains all the input and output data needed to communicate between Infoprint and the user-exit program.

To build the executable program, you must use the Microsoft Visual C++ Program, Version 5.0 pull-down menu.

The `OUTDATA_EXITDATA` structure includes the following fields.

Fields that provide input information

UserID

The system user ID of the person who submitted the job.

NodeID

The name of the system (host). The backend program sets the NodeID.

JobName

Identifies the name of the job. This is the same as the file name in the job.

Job submitters can also specify the job name with the Infoprint job attribute `job-name=name` when they submit a job. If the job name is not specified for files defined as PCL, PostScript, line data, unformatted ASCII, double-byte character set (DBCS) ASCII, or PDF, files when the job is submitted, Infoprint creates a temporary file for the transform output. Infoprint uses the temporary file name for the job name.

SpoolID

The job ID, which is an integer. Infoprint sets the `SpoolID`.

PrinterName

The name of the Infoprint destination.

hab This function is not used.

Copy Indicates which copy is associated with this call to the exit. Initially set to 1, it increments by one each time the exit is called.

DataSize

Indicates the number of bytes in the buffer.

DataPointer

Points to a buffer containing the incoming print data stream.

Note: The output information fields used by some of the sample programs (“Other input values” on page 113) are available through the alternate sample user exits. Infoprint does not provide an alternate Output Data User Exit.

Structure of a user-exit program

All input and output variables used in Infoprint user exits are defined through either of the following two files:

- `install_path\exits\ainuexit.h` or
- `install_path\exits\ainurpt.h`

The `ainuexit.h` file contains definitions for the header, trailer, separator, accounting and audit exits, while the `ainurpt.h` file formats data for the following executable reporting utilities that apply to both the accounting and audit exits:

- Accounting Log – (`ainurpt1`; `ainurpt2`; `ainurpt3`)
- Audit Log – (`ainurpt4`; `ainurpt5`; `ainurpt6`)

These user-exit program structure files are written in the C programming language. The declarations and statements in these files show the structure of the Infoprint user-exit programs, which are imbedded as part of the user-exit program.

User-exit programs for the line data transform

Infoprint provides several sample user-exit programs for the line-data transform. Use of the user exits is optional. You specify the names of the exit programs with the **inpexit**, **indxexit**, **outexit**, and **resexit** keywords.

Infoprint provides the following sample programs:

install_path\exits\acif\apkinp.c
Input-record user exit

install_path\exits\acif\apkout.c
Output-record user exit

install_path\exits\acif\apkres.c
Resource exit

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

- **apka2e**
- **asciinp.c**
- **asciinpe.c**

apka2e

install_path\exits\acif\apka2e.c
Converts ASCII stream data to EBCDIC stream data.

The **apka2e** input-record exit program translates data that is encoded in ASCII (code set IBM-850) into EBCDIC (code set IBM-037) encoded data. You should use this exit when your job requires fonts such as GT12, which has only EBCDIC code points defined.

When you apply PTF UR52401 (APAR IR43438), this program also converts the ASCII code page file (ibm-850) into a corresponding EBCDIC file (ibm-037) referring to files that reside in the *install_path\uconvtab* directory. You can use the Microsoft Visual C++ Program, Version 5.0 and edit this exit to convert any code page from ASCII to EBCDIC. To perform this conversion from a Command Prompt window, see “Using the iconv command to convert code pages” on page 128.

To execute the **apka2e** input record exit program, set the following keywords and values in your line-data transform keyword file. The **line2afp parmdd** keyword identifies the keyword file.

```
inpexit=install_path\bin\apka2e
cc=yes
cctype=z
```

asciinp.c

install_path\exits\acif\asciinp.c
Converts unformatted ASCII data that contains carriage returns and form feeds into a record format that contains an American National Standards Institute (ANSI) carriage control character. This exit encodes the ANSI carriage control character in byte 0 of every record.

The **asciinp** input-record exit program transforms an ASCII data stream into a record format that contains a carriage control character in byte 0 of every record. If byte 0 of the input record is an ASCII carriage return (X'0D'), byte 0 is transformed into an ASCII space (X'20') that causes a data stream to return and advance one

line; no character is inserted. If byte 0 of the input record is an ASCII form feed character (X'0C'), byte 0 is transformed into an ANSI skip to channel 1 command (X'31') that serves as a form feed in the carriage-control byte.

To execute the **asciinp** input record exit program, set the following keywords in your line-data transform keyword file. The **line2afp parmdd** keyword identifies the keyword file:

```
inpexit=install_path\bin\asciinp
cc=yes
cctype=z
```

asciinpe.c

install_path\exits\acif\asciinpe.c

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

The **asciinpe** input-record exit program combines both of the user input-record exits described above. To execute, specify `inpexit=install_path\bin\asciinpe` as the exit program in the keyword file and follow the directions specified for both **apka2e** and **asciinp**.

When you apply PTF UR52401 (APAR IR43438), this program also converts the ASCII code page file (ibm-850) into a corresponding EBCDIC file (ibm-037) referring to files that reside in the *install_path*\uconvtab\ directory. You can use the Microsoft Visual C++ Program, Version 5.0 and edit this exit to convert any code page from ASCII to EBCDIC. To perform this conversion from a Command Prompt window, refer to “Using the iconv command to convert code pages” on page 128.

While the **asciinp** and **asciinpe** input-record exits do not recognize other ASCII printer commands, you can modify these exits to account for the following:

- backspacing (X'08')
- horizontal tabs (X'09')
- vertical tabs (X'0B')

In addition to the information above, refer to the prolog of the **asciinp.c** source file that is provided with Infoprint Manager in the *install_path*\exits\acif directory for more information on using and modifying these programs.

The C language header file for all ACIF exit programs is provided in *install_path*\exits\acif\apkexits.h along with the build rules for the ACIF user exits in *install_path*\exits\acif\Makefile.

To build the executable program, you must use the Microsoft Visual C++ Program, Version 5.0 pull-down menu.

For more information about compiling user-exit programs, refer to “Compiling and installing the user-exit program” on page 111.

Input record exit

The line-data transform provides an exit that enables you to add, delete, or modify records in the line-data input file. The program invoked at this exit is defined by the value of the **inpexit** keyword of the **line2afp** command.

This exit is called after each record is read from the input file. The exit can request that the record be discarded, processed, or processed with control returned to the

exit for the next input record. The largest record that Infoprint Manager can process is 32756 bytes. This exit is not called when the line-data transform is processing resources from directories.

The following example provides a sample C language header that describes the control block that is passed to the exit program:

```
typedef struct_INPEXIT_PARMS /* Input record exit Parameters */
{
char *work; /*Address of 16-byte static work area */
PFATTR *pfattr; /*Address of print file attribute information */
char record; /*Address of the input record */
void reserved1; /*Reserved for future use */
unsigned short recordln; /*Length of the input record */
unsigned short reserved2; /*Reserved for future use */
char *work; /*Add, delete or process the record*/
char *eof; /*EOF indicator */
}
INPEXIT_PARMS
```

The address of the control block containing the following parameters is passed to the input record exit:

work (Bytes 1–4)

A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a full word boundary and is initialized to binary zeros prior to the first call. The user-written exit program must provide the code required to manage this work area.

pfattr (Bytes 5–8)

A pointer to the print file attribute data structure. Refer to “Attributes of the line data input file” on page 127 for more information on the format of this data structure and the information it contains.

record (Bytes 9–12)

A pointer to the first byte of the input record including the carriage control character. The record resides in a buffer that resides in storage allocated by the line-data transform but the exit program is allowed to modify the input record.

reserved1 (Bytes 13–16)

These bytes are reserved for future use.

recordln (Bytes 17–18)

Specifies the number of bytes (length) of the input record. If the input record is modified, this parameter must also be updated to reflect the actual length of the record.

reserved2 (Bytes 19–20)

These bytes are reserved for future use.

request (Byte 21)

Specifies how the line-data transform processes the record. On entry to the exit program, this parameter is X'00'. When the exit program returns control to line-data transform, this parameter must have the value X'00', X'01', or X'02', where:

X'00' Specifies that the line-data transform should process the record.

X'01' Specifies that the line-data transform should not process the record.

X'02' Specifies that the line-data transform should process the record and then return control to the exit program to allow it to insert the next

record. The exit program can set this value to save the current record, insert a record, and then supply the saved record at the next call. After the exit inserts the last record, the exit program must reset the request byte to X'00'.

A value of X'00' on entry to the exit program specifies that the record be processed. If you want to ignore the record, change the request byte value to X'01'. If you want the record to be processed, and you want to insert an additional record, change the request byte value to X'02'. Any value greater than X'02' is interpreted as X'00', and the exit processes the record.

Note: Only one record can reside in the buffer at any time.

eof (Byte 22)

An end-of-file (eof) indicator. This indicator is a one-byte character code that specifies whether an eof condition has been encountered.

When eof is signaled (eof value='Y'), the last record has already been presented to the input exit, and the input file has been closed. The pointer record is no longer valid. Records may not be inserted when eof is signaled. The following are the only valid values for this parameter:

- Y** **Specifies that eof has been encountered.**
- N** **Specifies that eof has not been encountered.**

This end-of-file indicator allows the exit program to perform some additional processing at the end of the file. The exit program cannot change this parameter.

Output record exit

Using the output-record exit, you can modify or ignore the records the line-data transform writes into the output file. The program invoked at this exit is defined by the outexit keyword of the **line2afp** command.

The exit receives control before a record (structured field) is written to the output document file. The exit can request that the record be ignored or processed. The largest record that the exit can process is 32752 bytes, not including the record descriptor word. The exit is not called when the line-data transform is processing resources.

The following example contains a sample C language header that describes the control block passed to the exit program:

```
typedef struct_OUTEXIT_PARAMS /* Output record exit Parameters */
{
char *work; /*Address of 16-byte static work area*/
PFATTR *pfattr; /*Address of print file attribute information */
char *record; /*Address of the output record*/
void reserved1; /*Reserved for future use */
unsigned short recordln; /*Length of the input record */
char request; /*Add, delete or process the record */
char *eof; /*EOF indicator */
}
OUTEXIT_PARAMS
```

The address of the control block containing the following parameters is passed to the output record exit:

work (Bytes 1-4)

A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work

areas). The 16-byte work area is aligned on a full word boundary and is initialized to binary zeros prior to the first call. A user-written exit program must provide the code required to manage this work area.

pfattr (Bytes 5–8)

A pointer to the print file attribute data structure. Refer to “Attributes of the line data input file” on page 127 for more information on the format of this data structure and the information it contains.

record (Bytes 9–12)

A pointer to the first byte of the output record. The record resides in a 32KB (where KB equals 1024 bytes) buffer. The buffer resides in storage allocated by the line-data transform, but the exit program is allowed to modify the output record.

recordln (Bytes 13–14)

Specifies the length, in bytes, of the output record. If the output record is modified, this parameter must also be updated to reflect the actual length of the record.

request (Byte 15)

Specifies how the line-data transform processes the record. On entry to the exit program, this parameter is X'00'. When the exit program returns control to the line-data transform, this parameter must have the value X'00' or X'01', where:

X'00' Specifies that the line-data transform should process the record.

X'01' Specifies that the line-data transform should not process the record.

A value of X'00' on entry to the exit program specifies that the record be processed. If you want to ignore the record, change the request byte value to X'01'. Any value greater than X'01' is interpreted as X'00'; the exit processes the record.

Note: Only one record can reside in the buffer at any time.

eof(Byte 16)

An end-of-file (eof) indicator. This indicator is a one-byte character code that signals when the line-data transform has finished writing the output file.

When eof is signaled (eof value='Y'), the last record has already been presented to the output exit. The pointer record is no longer valid. Records may not be inserted after eof is signaled. The following are the only valid values for this parameter:

Y Specifies that the last record has been written.

N Specifies that the last record has not been written.

This end-of-file flag, used as a last-call indicator, allows the exit program to return control to the line-data transform. The exit program cannot change this parameter.

Resource exit

The line-data transform provides an exit that enables you to filter (exclude) resources. This exit is useful in controlling resources at the file-name level. For example, assume you only wanted to use those fonts that are not shipped with Infoprint Manager. You could code this exit program to contain a table of all fonts shipped with Infoprint and filter those from the resource file. Security is another consideration for using this exit because you could prevent certain named

resources from being included. The program invoked at this exit is defined by the `resexit` keyword of the `line2afp` command.

This exit receives control before a resource is read from a directory. The exit program can request that the resource be processed or ignored (skipped), but it cannot substitute another resource name in place of the requested one. If the exit requests that any overlay be ignored, the line-data transform automatically ignores any resources the overlay may have referenced (that is, fonts and page segments).

The following example contains a sample C language header that describes the control block passed to the exit program:

```
typedef struct_RESEXIT_PARMS /* Resource record exit Parameters */
{
char *work; /*Address of 16-byte static work area */
PFATTR *pfattr; /*Address of print file attribute information */
char *resname[8]; /*Name of the requested resource */
char restype; /*Type of requested resource */
char request; /*Ignore or process the request */
char *eof; /*Last call indicator */
}
RESEXIT_PARMS
```

The address of the control block containing the following parameters is passed to the resource record exit:

work (Bytes 1–4)

A pointer to a static, 16-byte memory block. The exit program can use this parameter to save information across calls (for example, pointers to work areas). The 16-byte work area is aligned on a full word boundary and is initialized to binary zeros prior to the first call. A user-written exit program must provide the code required to manage this work area.

pfattr (Bytes 5–8)

A pointer to the print file attribute data structure. Refer to “Attributes of the line data input file” on page 127 for more information on the format of this data structure and the information presented.

resname (Bytes 9–16)

Specifies the name of the requested resource. The exit program cannot modify or change this value.

restype (Byte 17)

Specifies the type of resource the name refers to. This is a one-byte hexadecimal value where:

- X'03'** Specifies a GOCA (graphics) object.
- X'05'** Specifies a BCOCA (barcode) object.
- X'06'** Specifies an IOCA (IO image) object.
- X'40'** Specifies a font character set.
- X'41'** Specifies a code page.
- X'FB'** Specifies a page segment.
- X'FC'** Specifies an overlay.

The line-data transform does not call this exit for the following resource types:

Page definition

The page definition (**pagedef** keyword) is a required resource for transforming a line-data file.

Form definition

The form definition (**formdef** keyword) is a required resource for printing a transformed line-data file.

Coded fonts

The line-data transform must process coded fonts to determine the names of the code pages and font character sets they reference. This is necessary in creating Map Coded Font-2 (MCF-2) structured fields.

request (Byte 18)

Specifies how the line-data transform processes the resource. On entry to the exit program, this parameter is X'00'. When the exit program returns control to the line-data transform, this parameter must have the value X'00' or X'01' where:

X'00' Specifies that the line-data transform should process the resource.

X'01' Specifies that the line-data transform should ignore the resource.

A value of **X'00'** on entry to the exit program specifies that the resource be processed. If you want to ignore the resource, change the request byte value to **X'01'**. Any value greater than **X'01'** is interpreted as **X'00'** and the resource is processed.

eof (Byte 19)

An end-of-file (**eof**) indicator. This indicator is a one-byte character code that signals when the line-data transform has written the last record.

When **eof** is signaled (eof value = 'Y'), the last record has already been presented to the resource exit. The pointer **record** is no longer valid. Records may not be inserted after **eof** is signaled. The following are the only valid values for this parameter:

Y Specifies that the last record has been written.

N Specifies that the last record has not been written.

This end-of-file flag, used as a last-call indicator, returns control to the line-data transform. The exit program cannot change this parameter.

Non-zero return codes

If the line-data transform receives a non-zero return code from any exit program, the line-data transform issues message 0425-412 and terminates processing.

Attributes of the line data input file

Note: This data structure is provided for informational purposes only.

The line-data transform provides information about the attributes of the line-data input file in a data structure available to the line-data transform user exits. The following example shows the format of this data structure.

```
typedef struct_PFATTTR /* Print File Attributes */
{
char cc[3]; /*Carriage controls? - "YES" or "NO" */
char cctype[1]; /*Carriage control type - A(ANSI), M (Machine), Z (ASCII) */
char chars[20]; /*CHARS values, including commas (eg.. GT12,GT15) */
```

```

char formdef[8]; /*Form Definition (FORMDEF) */
char pagedef[8]; /*Page Definition (PAGEDEF) */
char prmode[8]; /*Processing mode */
char trc[3]; /*Table Reference Characters – "YES" or "NO" */
}
PFATTR;

```

The address of the control block containing the following parameters is passed to the user exits:

cc (Bytes 1–3)

The value of the **cc** keyword as specified with the **line2afp** command. The line-data transform uses the default value (**yes**) if this keyword is not explicitly specified.

cctype (Byte 4)

The value of the **cctype** keyword as specified with the **line2afp** command. The line-data transform uses the default value (**z**) for ANSI carriage-control characters that are encoded in ASCII, if this keyword is not explicitly specified.

chars (Bytes 5–24)

The value of the **chars** keyword as specified with the **line2afp** command, including any commas that separate multiple font specifications. Because the **chars** keyword has no default value, this field contains blanks if no values are specified.

formdef (Bytes 25–32)

The value of the **formdef** keyword as specified with the **line2afp** command. Because the **formdef** keyword has no default value, this field contains blanks if no value is specified.

pagedef (Bytes 33–40)

The value of the **pagedef** keyword as specified with the **line2afp** command. Because the **pagedef** keyword has no default value, this field contains blanks if no value is specified.

prmode (Bytes 41–48)

The value of the **prmode** keyword as specified with the **line2afp** command. Because the **prmode** keyword has no default value, this field contains blanks if no value is specified.

trc (Bytes 49–51)

The value of the **trc** keyword as specified with the **line2afp** command. The line-data transform uses the default value (**no**) if this keyword is not explicitly specified.

Using the iconv command to convert code pages

From a Command Prompt window, you can invoke the **iconv** command to convert a code page from one format to another (for example, to convert ASCII to EBCDIC). This command is useful when the line data code pages must be changed so they match the code pages for the available font resources for a job. These are often applied for job resources (such as page definitions and form definitions) that have been created on either an AIX or an MVS operating system and sent to Windows NT or Windows 2000.

Use the following syntax to invoke this command:

```
iconv -f nnn -t nnn infile [> outfile]
```

- f The existing code page that needs to be changed, using the format of *nnn* where *nnn* represents the particular code page. The space between the flag and its value is optional.
- t The code page that is the result of the command, using the format of *nnn* where *nnn* represents a three-to-five number alphanumeric code page name in the format *-nnn*, *nnnn*, or *nnnnn*. The space between the flag and its value is optional.
- infile** The input text file name to which you want to convert. If you do not specify a file name, the **iconv** command expects input from standard input (STDIN).
- outfile**
The output file where the result of the **iconv** transform is stored. Use an output file to pass the **iconv** output to a customized program designed to process this output. If you do not specify a file name, the output goes to standard out (STDOUT).

Example 1

To convert an ASCII code page to an EBCDIC code page, open a Command Prompt window and type the following:

```
iconv -f 850 -t 500 input.txt > output.txt
```

Example 2

To convert a Japanese ASCII code page to a Japanese EBCDIC code page, open a Command Prompt window and type the following:

```
iconv -f 932 -t 939 input_jpn.txt > output_jpn.txt
```

Creating and Managing Auxiliary Sheets and PSF DSS User-Exit Programs

Besides logical destinations, queues, and actual destinations, the Infoprint Windows NT server also controls auxiliary-sheet objects. This section contains information and procedures for creating and configuring these objects.

This section contains the following topics:

- “Preparing to work with auxiliary sheets”
- “Creating and configuring auxiliary sheet objects” on page 136

Preparing to work with auxiliary sheets

The following topics describe auxiliary-sheet terms, default auxiliary sheets, and PSF DSS user-exit programs supplied by Infoprint Manager, and provides examples of printed auxiliary sheets:

- “Terms relating to auxiliary sheets”
- “Infoprint default auxiliary-sheet objects” on page 131
- “Sequence of user-exit programs” on page 134
- “Directory locations of user-exit programs supplied with Infoprint Manager” on page 135

Terms relating to auxiliary sheets

To understand auxiliary sheets and how Infoprint Manager generates the information that appears on them, you need to understand the following terms:

Auxiliary sheet

Represents a particular sheet of paper, blank or otherwise, that can precede a job, separate copies of a job, or follow a job. PSF printers print auxiliary sheets. Both Internet Print Protocol (IPP) and Passthrough printers also print auxiliary sheets, but they do not use auxiliary sheet objects to activate this support.

Auxiliary-sheet object

Represents a single user-exit program that you can specify for Infoprint PSF printers. User-exit programs process information that can be printed on an auxiliary sheet or recorded in an accounting or audit log. Both the actual destination (PSF printer) and the auxiliary-sheet objects must reside in the same Infoprint server.

Some auxiliary sheet objects supplied with Infoprint Manager generate a file that you can use with an executable reporting utility to view job statistics. Refer to “Gathering Accounting and Auditing Data about Print Jobs” on page 142 for more information on viewing statistics.

Auxiliary-sheet object name

Identifies the auxiliary sheet object. The names of some of the default auxiliary sheets indicate the style of the auxiliary sheet: **brief**, **full**, or **blank**.

User exit

A point during print processing when you can tell Infoprint Manager to run a user-exit program, then return control of processing to Infoprint Manager after the user-exit program ends. Infoprint Manager provides data at each exit point that can serve as input to the user-exit program. Infoprint Manager can use the output from the user-exit program for Infoprint Manager processing; for example, a user-exit program can pass instructions about how to format a start sheet to Infoprint Manager. Infoprint Manager provides user exits for the following types of auxiliary-sheets:

- Start sheet
- End sheet
- Separator sheet
- Accounting log
- Accounting sheet
- Audit log
- Audit sheet
- Input data stream
- Output data stream

User-exit program

Defines the data that prints and creates the format of the auxiliary sheet style. Infoprint Manager extends its function by providing user-exit programs that you can use to format start, end, or separator sheets for the job. Also, Infoprint Manager user-exit programs allow you to track accounting and auditing information, as well as extract information about the incoming and outgoing job data streams.

Form definition

Defines the characteristics of the form or printed media, which include: overlays used, the paper source (for cut-sheet printers), duplex printing, text suppression, and the position of composed-text data on the form.

For more information about both form definitions, refer to the *Infoprint Manager:Reference*.

Edge marks

Marks that print at the edges of auxiliary sheets and help to identify job boundaries in printed output.

Infoprint default auxiliary-sheet objects

Infoprint Manager provides six default auxiliary-sheet objects, which it creates when you first create a server. Infoprint Manager automatically identifies these as supported values for PSF actual destinations. The default auxiliary-sheet objects with their associated user-exit programs and form definitions are shown in Table 10.

Table 10. Default auxiliary sheet objects

Auxiliary sheet object	Form definition	Description	User exit program	Information or Example
none	n/a	Infoprint generates no auxiliary sheet.	n/a	n/a

Table 10. Default auxiliary sheet objects (continued)

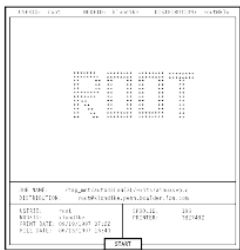

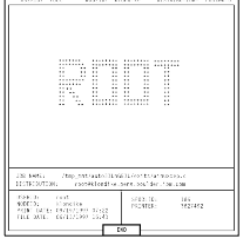


Auxiliary sheet object	Form definition	Description	User exit program	Information or Example
brief	F1A10110	Start sheet	ainuxhdr	
		Separator sheet	ainuxsep	
		End sheet	ainuxtlr	
		Accounting exit	ainuxacc	
		Audit exit	ainuxaud	

Table 10. Default auxiliary sheet objects (continued)


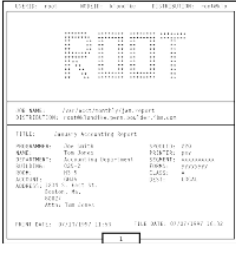
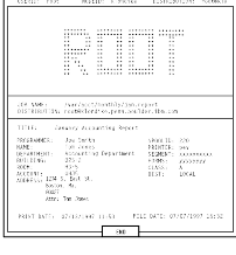

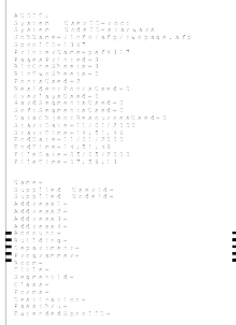
Auxiliary sheet object	Form definition	Description	User exit program	Information or Example
full	F1A10110	Start sheet	ainuxhdr2	
		Separator sheet	ainuxsep2	
		End sheet	ainuxtlr2	
		Accounting exit	ainuxacc2	
		Audit exit	ainuxaud2	

Table 10. Default auxiliary sheet objects (continued)

Auxiliary sheet object	Form definition	Description	User exit program	Information or Example
blank	F1A10110	Start sheet	pduxblkh	Blank sheet of paper
		Separator sheet	pduxblks	
		End sheet	pduxblkt	
accounting- log	n/a	Accounting exit	ainacclog	Writes accounting information to the <i>install_path</i> \var\psf\ accounting.log file. Does not produce a printed sheet.
		Audit exit	ainaudlog	Writes audit information to the <i>install_path</i> \var\psf\ audit.log file. Does not produce a printed sheet.
job-ticket	n/a	Start sheet	ainuxhdrp	
		Separator sheet	ainuxsepp	
		End sheet	ainuxtlrp	
		Accounting exit	ainuxaccp	Writes accounting information to the <i>install_path</i> \var\psf\ podaccount.log Does not produce a printed sheet.
		Audit exit	ainuxaudp	

You can create your own auxiliary-sheet objects using the Infoprint **pdcreate** command from a Command Prompt window. Refer to “Creating new auxiliary-sheet objects using the pdcreate command” on page 136.

Sequence of user-exit programs

The following figure shows the order in which Infoprint calls the user-exit programs during job processing. You cannot change this order.

Note: Separator sheets are printed only between copies of a job, not between documents within a job.

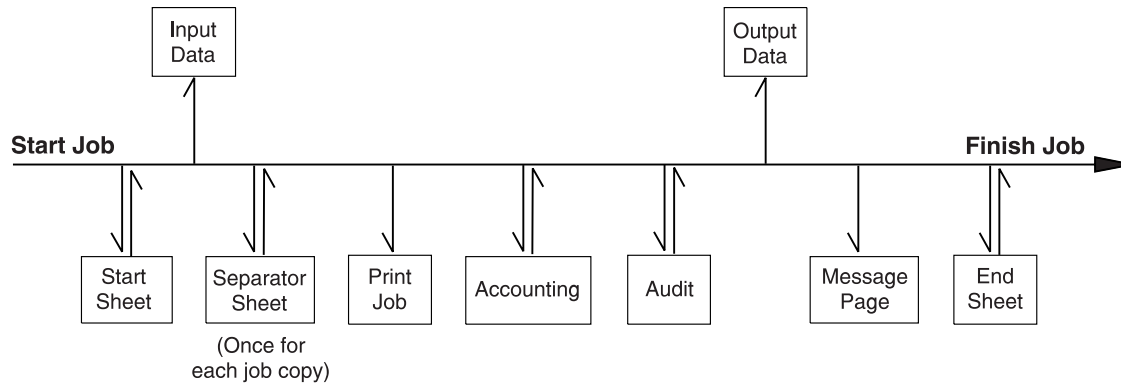


Figure 52. Infoprint Manager user-exit program order

Directory locations of user-exit programs supplied with Infoprint Manager

When you create the auxiliary-sheet object, you specify the name of the user-exit program and other options, such as the form definition and whether the program produces printed output. You identify which auxiliary-sheet objects you want associated with each actual destination using the GUI attributes notebook for each actual destination. Infoprint Manager runs the referenced user-exit programs when you submit a job to that printer.

Table 11. Locations of Infoprint Manager user-exits

Program	Description
Start Sheets	
<i>install_path\bin\pduxblkh.dll</i>	Prints a blank start sheet.
<i>install_path\bin\ainuxhdr.dll</i>	Prints a brief-style start sheet.
<i>install_path\bin\ainuxhdr2.dll</i>	Prints a full-style start sheet.
<i>install_path\bin\ainuxhdrp.dll</i>	Prints job ticket information on the start sheet.
Separator Sheets	
<i>install_path\bin\pduxblks.dll</i>	Prints a blank separator sheet.
<i>install_path\bin\ainuxsep.dll</i>	Prints a brief-style separator sheet.
<i>install_path\bin\ainuxsep2.dll</i>	Prints a full-style separator sheet.
<i>install_path\bin\ainuxsepp.dll</i>	Prints job ticket information on the separator sheet.
End Sheets	
<i>install_path\bin\pduxblks.dll</i>	Prints a blank end sheet.
<i>install_path\bin\ainuxtlr.dll</i>	Prints a brief-style end sheet.
<i>install_path\bin\ainuxtlr2.dll</i>	Prints a full-style end sheet.
<i>install_path\bin\ainuxtlrp.dll</i>	Prints job ticket information on the end sheet.
Accounting Sheets	
<i>install_path\bin\ainuxacc.dll</i>	Prints a brief-style accounting sheet.
<i>install_path\bin\ainuxacc2.dll</i>	Prints a full-style accounting sheet.

Table 11. Locations of Infoprint Manager user-exits (continued)

Program	Description
<i>install_path\bin\ainuxaccp.dll</i>	Writes accounting information to <i>install_path\var\psf\podaccount.log</i> .
<i>install_path\bin\ainacclog.dll</i>	Writes accounting information to <i>install_path\var\psf\accounting.log</i> .
Auditing	
<i>install_path\bin\ainuxaud.dll</i>	Prints a brief-style audit sheet.
<i>install_path\bin\ainuxaud2.dll</i>	Prints a full-style audit sheet.
<i>install_path\bin\ainuxaudp.dll</i>	Prints job ticket information on the audit sheet.
<i>install_path\bin\ainaudlog.dll</i>	Writes audit information to <i>install_path\var\psf\audit.log</i> .
Input Data	
<i>install_path\bin\ainuxind.dll</i>	Performs no tasks; use it as a model for writing your own user-exit program.
Output Data	
<i>install_path\bin\ainuxout.dll</i>	Performs no tasks; use it as a model for writing your own user-exit program.

In addition, you can use the source code of the sample user-exit programs to write your own user-exit programs. Infoprint Manager provides the source code for all of these exits in the *install_path\exits\psf* directory.

Creating and configuring auxiliary sheet objects

When you first create a server, Infoprint creates the default auxiliary-sheet objects described in “Infoprint default auxiliary-sheet objects” on page 131.

The following topics describe how you can create and configure auxiliary-sheet objects:

- “Creating new auxiliary-sheet objects using the `pdcreate` command”
- “Associating auxiliary-sheet objects with PSF printers” on page 137
- “Activating auxiliary sheets for accounting or auditing information” on page 137
- “Associating an input data user-exit program with an actual destination” on page 137
- “Associating an output data user-exit program with an actual destination” on page 137

Creating new auxiliary-sheet objects using the `pdcreate` command

You create auxiliary-sheet objects from the **Command Prompt** window; you cannot create them through the Infoprint administrator’s GUI. Use the `pdcreate` command with the `-c auxiliary-sheet` flag and specify the server name and an auxiliary-sheet object name to create a new auxiliary-sheet object. Specify a name that uniquely identifies the auxiliary-sheet object within the server. Different servers can contain a auxiliary-sheet objects with the same name, but possibly with different values for their attributes.

You also specify the **psf-exit-form-definition**, **psf-exit-page-mark**, and **psf-exit-program-name** attributes with the command to specify the form definition, whether edge marks print, and the user-exit program used.

For example, to create an auxiliary-sheet object named `custom-start` contained in `Server1` that specifies the **ainuxhdr** user-exit program, the **F1A10110** form definition, and includes edge marks, enter the command:

```
pdcreate -c auxiliary-sheet -x "psf-exit-program-name=ainuxhdr
psf-exit-form-definition=F1A10110 psf-exit-page-mark=true"
Server1:custom-start
```

Associating auxiliary-sheet objects with PSF printers

Use the **Infoprint Manager Administration GUI** to associate auxiliary sheet objects with PSF printers. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer** —> **Properties** to open the **Printer Properties** notebook. To complete this task, refer to the online help in the **Infoprint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

Activating auxiliary sheets for accounting or auditing information

Use the **Infoprint Manager Administration GUI** to specify auxiliary sheets to collect accounting and auditing information about jobs processed by selected PSF printer. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer** —> **Properties** to open the **Printer Properties** notebook. To complete this task, refer to the online help in the **Infoprint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

Associating an input data user-exit program with an actual destination

You can use the input data user-exit program to monitor the contents of the data stream coming into Infoprint Manager from the **Infoprint Manager Administration GUI**. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer** —> **Properties** to open the **Printer Properties** notebook. To complete this task, refer to the online help in the **Infoprint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

Associating an output data user-exit program with an actual destination

You can use the output data user-exit program to monitor the contents of the data stream created by Infoprint from the **Infoprint Manager Administration GUI**. Start the GUI and select the printer that you want to associate with an auxiliary sheet. Then, click **Printer** —> **Properties** to open the **Printer Properties** notebook. To complete this task, refer to the online help in the **Infoprint Manager Administration GUI**, starting with the topic *Using auxiliary-sheet objects*.

Creating a PSF Other-Driver Printer

Create a PSF other-driver actual destination to represent a PCL printer that receives data streams transformed by PSF.

By setting the **document-formats-ripped-at-destination** actual destination attribute, you can specify particular **document-formats** (such as PostScript and PCL) that will not be transformed by Infoprint Manager. The only exception that would cause Infoprint to transform these **document-formats** occurs when certain job and document attributes have been specified with the job. For example, if you submit a PostScript job that contains the document attributes **form-definition** and

output-format, Infoprint must transform this job to honor these attributes. For a complete list of the attributes that force Infoprint to transform the job, see “Document formats that cause a job to be transformed” on page 140, “Job attributes that cause a job to be transformed” on page 141, and “PSF header sheet attributes that cause a job to be transformed” on page 141.

Using this attribute allows you to use the same PSF other-driver actual destination for all jobs submitted to that printer, while eliminating the performance overhead of having PCL and PostScript documents transformed into Advanced Function Presentation data, and then into PCL image data.

Before creating a PSF other-driver printer, complete the following worksheet.

Table 12. PSF Other-Driver Printer Worksheet

Wizard Prompt	Description	Value
Name	The name for the actual destination object (8 character limit). Note: This name is case-sensitive.	
Server	The server that controls this actual destination.	
Model	On either a Windows or an AIX server, select the printer model from the pull-down list in the Infoprint Manager Administration GUI. If you are on a Windows server and the printer you are working with is not in the pull-down list, enter the name as it appears on the printer. If you are on an AIX server and the printer you are working with is not in the pull-down list, look in the /usr/lib/lpd/pio/predef directory to find the valid values. Note: While the predef value is not required for IBM Infoprint printers, the predef value is required for all other printers.	
SNMP TCP/IP address	The dotted-decimal IP address used to access this printer. This value is used only for SNMP printers.	
Device or Windows port name	The name of the output device that the selected actual destination represents.	On an AIX system, leave this column blank.

Table 12. PSF Other-Driver Printer Worksheet (continued)

Wizard Prompt	Description	Value
Printer command	The printer command that submits a job to this remote destination. Include the full path name for the print driver that you are using for your print device.	On a Windows system, leave this column blank.
Data stream	The data stream expected by the printing device (for example, PCL4 or PPDS).	
Logical destination	The logical destination that directs jobs to this actual destination.	
Logical destination's server	The server that contains the logical destination.	
Queue	The queue that holds jobs destined for this actual destination.	

To create this type of printer, use the **Create Printer Wizard** in the Infoprint Manager Administration GUI. (On the menu bar, click **Printers—>Create—>PSF—>Other.**) Referring to the worksheet above, provide the information as prompted by the wizard. For assistance, refer to the Infoprint Manager Administration GUI online help.

If you have installed Infoprint Manager Program Temporary Fix (PTF) UR52620 (available in March 2001), this step is not necessary. If you have not installed this level of service, after you create the PSF Other-Driver attached printer with the **Create Printer Wizard**, you must go into the **Printer Properties** notebook for the printer and modify the **Command** field to contain the correct command for your printer. The **Command** field can be found on the **General** tab of the **Printer Properties** notebook when all the available properties are displayed. It may be necessary to click the **Show More** button to display all the printer properties.

If you did not enable the printer with the **Create Printer Wizard**, use the Infoprint Manager Administration GUI to enable it.

Using a PSF Other-Driver for printing all jobs from a single actual destination

By setting the **document-formats-ripped-at-destination** actual destination attribute, you can specify particular **document-formats** (such as PostScript and PCL) that will not be transformed unless an attribute that requires the transform is specified. You should specify any **document-formats** that are supported by your particular printer. Using this attribute allows you to use the same PSF other-driver actual destination for all jobs submitted to that printer, while eliminating the performance overhead of having PCL and PostScript documents transformed twice.

Configuring the printer

To use the capability that is introduced with PTF UR52620, follow the directions under Creating a PSF Other-Driver Printer. Then use the following procedure to prepare your printer to accept jobs from a variety of data types.

1. From the main menu, select **Printer ->Properties**.
2. Click the **Document** tab.
3. Highlight both **PCL** and **PostScript** (or only one of the two, depending upon what data types your actual destination supports natively) from the **Formats to RIP at destination** list of Possible Values, and click the **Add>>** button.

Note: You can specify other values besides **PCL** and **PostScript** because you may have a destination that can accept them directly. For example, your printer may accept **ASCII**.

Once you have completed this task, you are ready to submit jobs to this printer.

Document formats that cause a job to be transformed

The following document attributes negate the **Document Formats Ripped at Destination** setting and force jobs to be transformed. For more information on these attributes, refer to the *Infoprint Manager: Reference (S544-5475)*.

- base-printer
- carriage-control-type
- chars
- color-mapping-table
- convert-to-ebcdic
- data-fidelity-problem-reported
- default-printer-resolution
- document-finishing
- font-fidelity-action
- font-processing-messages
- font-resolution
- form-definition
- halftone
- image-fit
- image-length
- image-out-format
- image-width
- input-exit
- input-tray-select
- jog-between-job-copies
- maximum-messages-printed
- maximum-transform-pages-ahead
- mvs-segment-id
- new-line-option
- number-up
- other-transform-options
- output-appearance
- output-bin
- output-format
- overlay
- overlay-back
- overlay-front

- page-definition
- page-media-select
- page-select
- resource-context
- resource-context-font
- resource-context-form-definition
- resource-context-overlay
- resource-context-page-definition
- resource-context-page-segment
- resource-context-user
- resource-exit
- scanner-correction
- screen-frequency
- segment-file-size
- shared-formdef
- shift-out-shift-in
- start-on-new-sheet
- table-reference-characters
- transform-output-file-name
- x-image-shift
- x-image-shift-back
- y-image-shift
- y-image-shift-back

Job attributes that cause a job to be transformed

The following job attributes negate the **Document Formats Ripped at Destination** setting and force the jobs to be transformed. For more information on these attributes, refer to the *Infoprint Manager: Reference* (S544-5475).

- delete-segment-list
- job-finishing
- job-rip-action
- optimize-for-multiple-copies
- tape-exit
- tape-format
- tape-labeled
- tape-max-block-size
- tape-rewind-before
- tape-rewind-unload

PSF header sheet attributes that cause a job to be transformed

These attributes could effect header sheet generation, so they also negate the **Document Formats Ripped at Destination** setting and force jobs to be transformed. For more information on these attributes, refer to the *Infoprint Manager: Reference* (S544-5475).

- account-text
- address1-text
- address2-text

- address3-text
- address4-text
- building-text
- department-text
- mvs-class
- mvs-destination
- mvs-forms
- name-text
- node-id-text
- programmer-text
- room-text
- subject-text
- title-text
- user-id-text

Gathering Accounting and Auditing Data about Print Jobs

Infoprint allows you to gather accounting information about print jobs from two sources:

- The Infoprint Manager server (applies to all destination support systems (DSSs)). For more information, see *Working with Infoprint Manager Accounting Information* below.

You should use accounting information from the Infoprint Manager if you:

- need to track accounting information for all types of Infoprint DSSs.
- want to take advantage of the **pdaccount** command to summarize data in a spread sheet program.

- The PSF auditing and accounting user-exit programs (applies only to the PSF DSSs). For more information, see *Working with PSF Accounting and Auditing User-Exit Programs*.

You should use accounting information from the PSF auditing and accounting user-exit programs if you:

- use only PSF attached printers.
- need more detailed information than that provided by the **pdaccount** command.

Working with Infoprint Manager server accounting information

While all DSSs can store accounting information about the jobs processed, the information from some DSSs is more accurate than the information from others. All actual destination accounting logs are enabled through the server and actual destination **log-accounting-data** attribute. When you specify `log-accounting-data=true`, Infoprint stores data into server accounting logs (one for each destination), which you can either view directly through your editor of choice (such as Notepad) from the command-line or by specifying the **pdaccount** command. The **pdaccount** command allows you to obtain summary information in a comma-delimited format (`Printer1,12997,1989787763`). This information can be saved in a file, which can be imported into a spread sheet to calculate the cost of consumables, the usage rate of printers, or the cost of printing by individual user. The summary information includes both the total pages and total octets (the number of bytes) printed, either by destination or by user as requested for a

specified time period. You can also obtain the complete accounting records (information for all print jobs) for a specified time period, instead of the summary data.

How does the **pdaccount** command collect Infoprint Manager accounting information?

To activate Infoprint Manager account log support, you must change the **log-accounting-data** value. By default, the Infoprint Manager value is `log-accounting-data=false`, and the actual destination default is to use the server setting. As a result, you must **log-accounting-data** attribute as follows:

- To activate accounting for all destinations on a server:
set the server's **log-accounting-data** attribute to **True** (if an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used).
- To activate accounting for a specific actual destination:
set the **log-accounting-data** attribute to **True** for that specific actual destination. If you have not set an actual destination, the value of the **log-accounting-data** attribute for the server is used.
- To deactivate accounting for all destinations on a server, :
set the **log-accounting-data** attribute to **False** . If an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used.
- To deactivate accounting for a specific actual destination:
set the **log-accounting-data** attribute to **False** for that specific actual destination. If an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used.

You may change the **log-accounting-data** attribute with either a **pdset** command or the Infoprint Manager Administration GUI. For more information on the Infoprint Manager Administration GUI, see the Chapter 6: "Using the Infoprint Interfaces" in the *Infoprint Manager for Windows NT and Windows 2000: Getting Started*.

The **pdaccount** command obtains the following accounting information from one or more Infoprint Manager servers:

- **actual destination name**
- **job owner**
- **global job-id**
- **submission time**
- **completion time**
- **pages-completed**
- **octets-completed**
- **data stream**
- **job name**

Note: You only get all these accounting options if you specify `pdaccount -t all` on the command line.

If you wanted to request summary information grouped by destinations on an Infoprint Manager server named `Server1` from 8 AM 9/20/99 to 8 AM 9/27/99, specify the following from either the Windows **Command prompt** or **MS-DOS prompt** window:

```
pdaccount -t destination -s '08:00:00 09/20/99' -e '08:00:00 09/27/99'  
Server1
```

Infoprint displays the information in a format similar to the following:

```
Destination Name,Pages Completed,Octets Completed
Printer1,12997,1989787763
Printer2,2455,17676836
Printer3,86673,189808083
```

where Printer1 specifies the actual destination, 12997 indicates the pages completed, and 1989787763 indicates the octets completed within the specified start and end times (in this example, one week).

For more information about using the **pdaccount** command, see *Infoprint Manager: Reference*.

How do you manage the Infoprint Manager accounting logs?

Once you specify `log-accounting-data=true` on either an Infoprint Manager server or an actual destination, these accounting logs start growing without bound. As part of your scheduled system maintenance, the accounting logs should be managed carefully to avoid potential performance problems. Periodically, the log files must be either deleted or moved to a different folder. If you do not perform either of these tasks, your server will run out of space on the disk drive, preventing you from printing any more jobs.

The Windows NT and Windows 2000 accounting logs reside in a subfolder of the server's folder. The following describes the subdirectory where the files reside:

```
install_path\var\pd\accounting.logs
```

Infoprint provides one accounting log for each destination, named *actual_destination_name*.**accounting.log.v1**, where *actual_destination_name* specifies the actual destination where the job is processed.

To save a record of Infoprint Manager server accounting data, you need to move the existing log files to a new drive. Be sure that these logs are not being written to, then use the following procedure:

1. Create a new directory in the location where you want to archive the existing (**prt1.accounting.log.v1**) log file by moving to that location on your system (from the command line prompt, specify E:, then `cd \ntserver`).

To create the new directory, type: `mkdir 3qrt2001logs`

2. Go back to your **C** drive to the folder where the log file resides. Then access that location, for example **prt1.accounting.log.v1** on server1, by specifying:

```
cd install_path\var\pd\accounting.logs
```

3. Copy the **prt1.accounting.log.v1** file to a new directory on a different drive (**E** for this example) named **3qrt2001** by specifying:

```
copy prt1.accounting.log.v1 E:\ntserver\3qrt2001logs\
```

This command copies the existing file to the new directory.

4. Remove the original **prt1.accounting.log.v1** file from the *install_path*\var\pd\accounting.logs folder:

```
del prt1.accounting.log.v1
```

When the next job is processed on **prt1**, Infoprint creates a new **prt1.accounting.log.v1** file.

IBM recommends you move the data to another disk drive rather than deleting it from the system. This allows you to store accounting data and delete it from the system when you no longer need to refer to it. If you want to delete the **prt1.accounting.log.v1** file,

1. Specify `cd install_path\var\pd\accounting.logs`
This command moves you into the correct path.
2. Enter
`del prt1.accounting.log.v1`

When the MS-DOS command-line prompt returns, you know that the **prt1.accounting.log.v1** file has been deleted from the system.

3. Enter
`dir`

This command displays the contents of your directory for you to verify that the file has been deleted. When the next job is submitted for printing to that actual destination, Infoprint creates a new **prt1.accounting.log.v1** file and writes the data into that file.

The **pdaccount** command only finds and processes the information in the log files in the original location. Once you move or rename the files, you cannot use the **pdaccount** command to summarize the data. You may want to use the **pdaccount** command to find and process the information and summarize it, store the summaries in a different location, and then delete the logs.

Attention: Requesting information for **all** accounting records can consume a lot of the server's memory since all the data is read into memory to be sent to you. If you have a lot of data to retrieve, you should consider requesting it for smaller time periods and concatenating the returned data.

For example, if you want to retrieve all the accounting records for a one month period, you could issue four **pdaccount** commands like this:

```
pdaccount -t all -s '00:00:00 03/01/00' -e '00:00:00 03/08/00' Server A
>March1.accting.data
pdaccount -t all -s '00:00:00 03/08/00' -e '00:00:00 03/15/00' Server A
>March2.accting.data
pdaccount -t all -s '00:00:00 03/15/00' -e '00:00:00 03/22/00' Server A
>March3.accting.data
pdaccount -t all -s '00:00:00 03/22/00' -e '00:00:00 03/31/00' Server A
>March4.accting.data
```

Usage considerations by DSS for accounting information

This section contains more information about server accounting information by DSS. It also gives suggestions for working with the various DSSs when using the accounting information in Infoprint Manager.

In general, Infoprint Manager logs jobs that complete or are paused, cancelled, or are cleaned while being processed by the actual destination. Infoprint Manager **does not** log jobs that are not completed but are put back into the queue because the printer is shutdown when a printer problem is encountered.

PSF DSS with TCP/IP attachment type

- On jobs that complete successfully, the page count shown in the accounting log is the number of AFP pages stacked on the printer, including start pages, separator pages, and end pages.

Note: For n-up documents, up to *n* pages are counted for each sheet-side that prints.

- **Limitations:**
 - When printing a multiple-document job in which all the documents are ASCII, the accounting log only shows pages for the last document printed.
 - If a job is paused or cancelled, the page count shown in the accounting log may not be accurate.
 - On paused jobs, the octet count is always zero (0).
 - The number of Intelligent Printer Data Stream (IPDS) pages printed is based upon the number of **begin-page** and **end-page** structured field pairs in the data. As a result, a **2-up** document printed duplex could provide a page count of four for a single sheet of paper.

PSF DSS with Other-Driver attachment type

- If you are using the IBM TCP/IP Port Monitor and the job completes successfully, then the page count shown in the accounting log is the number pages stacked at the printer. For example, a three-page document printed simplex records three pages in the accounting log and three pages stacked; a four-page document printed duplex reports four pages in the accounting log even through only 2 sheets are stacked. A duplexed four-page job with a header sheet provides a page count of four, because the auxiliary sheets are not included in the count, but both sides of each page are counted.
- If you are not using the IBM TCP/IP Port Monitor, the page count is not based on the number of pages stacked on the printer. Instead, the page count recorded in the accounting log is the number of pages PSF reports it has sent to the printer driver, including start pages, separator pages, and end pages.
- If you have set the **document-formats-ripped-at-destination** actual destination attribute for a PSF DSS with Other-Driver attachment type actual destination, the accounting is handled as if it had been submitted to a Passthrough DSS actual destination.
- **Limitations:** The page count and octet count reported in the accounting log for cancelled and paused jobs is not accurate.

PSF DSS with Command attachment type

The page count recorded in the accounting log for destinations using the command is the number of pages PSF generates and sends to the printer. It is not based on the number of pages received or printed by the printer. The page count does include start pages, separator pages, and end pages.

BSD DSS

The page count recorded in the accounting log for destinations using the BSD DSS is based on the following criteria:

- If the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, Infoprint Manager records that number in the accounting log.

- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, Infoprint Manager attempts to calculate the page count and records the calculated page count in the accounting log.

Internet Printing Protocol (IPP) DSS

The page count recorded in the accounting log for destinations using the IPP DSS is based on the following criteria:

- Depending upon the capabilities of the your particular IPP printer, if the printer reports pages completed information through the Internet Printing Protocol and the job completes successfully, that information is used. The auxiliary sheet is not added to the count.
- If the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, Infoprint Manager records that number in the accounting log. The auxiliary sheet is not added to the count.
- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, Infoprint Manager retrieves the page count from the printer, if the particular printer supports that function. The auxiliary sheet is not included in the count.
- **Limitations:** Because all information is obtained through the Internet Printer Protocol, the attributes required for **pages-completed** might not be supported by a particular printer model.
- **Note:** For accurate results with this DSS, ensure that you set the sides default (whether simplex or duplex) in the printer to match the value on the **sides** actual destination attribute.

Passthrough DSS

The page count recorded in the accounting log for destinations using the Windows DSS is based on the following criteria:

- If you are using the IBM TCP/IP Port Monitor and the job completes successfully, then the page count shown in the accounting log is the number pages stacked at the printer. For example, a three-page document printed simplex records three pages in the accounting log and three pages stacked; a four-page document printed duplex reports four pages in the accounting log even through only 2 sheets are stacked. Auxiliary sheets are not included in the count.
- If you are using the IBM TCP/IP Port Monitor and the job does not complete successfully, or if you are not using the IBM TCP/IP Port Monitor and the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, Infoprint Manager records that number in the accounting log.
A duplexed four-page job with a header sheet provides a page count of four, because neither the auxiliary sheets nor the back sides of each page are included in the count.
- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, Infoprint Manager attempts to calculate the page count and records the calculated page count in the accounting log. The auxiliary sheet is not included in the count.

Note: For accurate results with this DSS, ensure that you set the sides default (whether simplex or duplex) in the printer to match the value on the **sides** actual destination attribute.

Working with PSF accounting and auditing data about the job

The accounting and auditing PSF DSS user-exit programs record data about jobs. For each job printed, Infoprint Manager activates the PSF DSS user-exit programs specified by the actual destination's **accounting-exit** attribute values before processing the print job's trailer page. More than one Infoprint actual destination can use the same user-exit program to write into the same log file.

This section contains the following topics:

- “What do the accounting and audit PSF DSS user-exits provide?”
- “How do you format accounting and audit data for viewing?”
- “How do you manage the contents of the accounting data file?” on page 149

What do the accounting and audit PSF DSS user-exits provide?

The accounting and audit PSF DSS user-exit programs record statistical data on jobs processed by Infoprint Manager actual destinations. The following table shows the most common accounting and audit user-exit programs, the files where they record data, and the types of data that they record.

Program	Log File	Records
<i>install_path</i> \ bin\ainuxaccp	<i>install_path</i> \var\psf\podaccount.log	Job submitter, job ID, actual destination, submission machine (nodeid), pages printed, sheets from bin 1, sheets from bin 2, end time, start date, start time, copies per job
<i>install_path</i> \ bin\ainacclog	<i>install_path</i> \var\psf\accounting.log	Job submitter, job name, actual destination, submission machine (nodeid), pages printed, sheets from bin 1, sheets from bin 2, end time, start date, start time, fonts, resident fonts, overlays
<i>install_path</i> \ bin\ainaudlog	<i>install_path</i> \var\psf\audit.log	Job submitter, job name, actual destination, pages per job, pages per actual destination, jobs per output bin, start date, start time, fonts, resident fonts, overlays

Note: Both *install_path* \ bin\ainacclog and *install_path* \ bin\ainaudlog record the same information in different files.

This information is specified in flat ASCII format, with a single line for each job that is processed. You can use this information to determine billing procedures, to assess the workload of different output devices, or to determine how resources are used at your installation.

How do you format accounting and audit data for viewing?: To view this data, you can use one of the following executable reporting utilities that are provided with Infoprint Manager. These reporting utilities only work if you open a **Command Prompt** window, navigate to the *install_path*\bin directory, and run the program from the command line.

ainupod1

Reports accounting data stored in **podaccount.log** in a summary format (one line per user), sorted by customer ID.

ainupod2

Reports accounting data stored in **podaccount.log**, sorted by job ID.

ainupod3

Reports detailed entries of times and pages printed for each job by the customer ID from **podaccount.log**.

ainurpt1

Reports accounting data stored in **accounting.log**, sorted by actual destination.

ainurpt2

Reports summary accounting data (one line per job submitted) stored in **accounting.log**, sorted by job submitter.

ainurpt3

Reports detailed entries of times and pages printed for a specific job submitter from **accounting.log**.

ainurpt4

Reports audit data stored in **audit.log**, sorted by actual destination.

ainurpt5

Reports summary audit data stored in **audit.log**, sorted by job submitter.

ainurpt6

Reports detailed entries of times and pages printed for a specific job submitter from **audit.log**.

How do you manage the contents of the accounting data file?: An installation with a regular schedule of printing jobs will accumulate accounting and audit data that must be managed carefully to avoid potential performance problems. Periodically, the log files must be either purged or moved to a different folder. If you do not perform either of these tasks, your installation may run out of space on the file system, preventing you from printing any more jobs. To avoid this problem, you should purge or move the accounting and audit logs as part of your system maintenance.

IBM recommends that you move the data to another file system rather than deleting it from the system. That way, you can store accounting data and delete it from the system when you no longer need to refer to it. The following procedure describes one way to copy the data to a new location.

1. On your Infoprint Manager server system, open the Management Console and select **Edit -> Service Configuration**.
2. Make note of the directory that is listed in the **Install path** field.
3. Open Windows NT Explorer or Windows 2000 Explorer and navigate to the *install path*\bin directory.
4. In that directory, find the accounting or audit log that you need to move, for example, **podaccount.log** and select it.
5. With the file selected, click **Edit -> Copy**.
6. Navigate to the directory that you want to archive the log file in and select the directory.

Note: This directory may be on a different Windows system than the one you are currently working on.

7. With the directory selected, click **Edit -> Paste**.
8. Verify that the log file appears in the new directory.

9. Navigate back to the *install path*\bin directory.
10. In that directory, find the accounting or audit log that you need to move, for example, **podaccount.log** and select it.
11. With the file selected, click **File** -> **Delete**.

If you want to delete the **podaccount.log** file without storing the data in another folder, use the procedure above, skipping steps five through ten.

When the next job is submitted for printing, Infoprint creates a new **podaccount.log** file and writes the data into that file.

Using the Infoprint Manager Line Printer Daemon (LPD)

The Infoprint Manager Line Printer Daemon (LPD) is a utility that allows you to submit print jobs from other operating systems using a Line Printer (LPR) client. The Infoprint Manager LPD replaces the LPD that is supplied with the Windows operating system (TCP/IP Print Services), however, it submits the files it receives directly to an Infoprint destination, not to a Windows printer. It also supports the -o options that are available with some LPR clients (-o options allow you to specify advanced Infoprint print options such as formdefs and pagedefs).

Only one LPD can run on your Infoprint Manager server system at a time. If you have TCP/IP Print Services installed, Infoprint Manager will disable it and enable the Infoprint Manager LPD. If you would prefer to use TCP/IP Print Services, use the Management Console to change the service configuration. Refer to the Management Console help for further instructions.

Important: If you have a different LPD installed, Infoprint Manager will **not** disable it, but will install and start the Infoprint Manager LPD. You must stop one of the LPDs before you try to submit a print job using an LPR client.

To submit print jobs to the Infoprint Manager LPD, you can use any LPR client. However, if you want to be able to specify advanced Infoprint options on the -o flag, you should use the **lprafp** sample code package. **lprafp** is an LPR client that is available as a free download from the IBM Printing Systems website. The package includes executable forms of the **lprafp** client for the Windows and AIX (version 4.3.3 and above) platforms. You can compile this code to use it on other platforms as well. IBM Printing Systems does not provide support for the package.

Refer to “Chapter 20. Submitting print jobs through the Infoprint Manager LPD” on page 303 for information about downloading, configuring, and using the **lprafp** sample code package.

Chapter 6. Setting up to use MVS Download

Important information for PSF for OS/2 users

If you have decided to use the MVS Download function of Infoprint Manager to replace your PSF for OS/2 system, you should be aware of these differences between the two products:

- PSF for OS/2 uses SNA to send data from the host to the server; MVS Download uses TCP/IP.
- To use PSF for OS/2, you had to install and configure IBM Communications Manager for OS/2 or IBM Communications Server for OS/2; you do not need to install the equivalent product on your Windows system to use MVS Download.
- The Distributed Print Function (DPF) feature of PSF for OS/2 receives IPDS data from the host system. MVS Download receives AFPDS and line data, as well as PCL or PostScript and passes it to Infoprint Manager to be transformed before it is printed.
- In PSF for OS/2, AFP resources are sent from the host system to the print server along with the job. In MVS Download, AFP resources are not sent with the job; they must either be sent inline in the data stream or they must be resident on your Infoprint Manager server before any print jobs that use them are sent.
- If you use the Distributed Print Function (DPF) feature of PSF for OS/2, your resources are managed automatically, so any changes you made to your resource files were automatically incorporated into your print jobs. MVS Download does not have an automatic resource management feature. If you make changes to your resource files, those changes will not be automatically incorporated into print jobs you submit through MVS Download. You will need to copy the changed resource files to the computer that your Infoprint Manager server runs on.

Configuring MVS Download

The MVS Download feature of Infoprint Manager uses a *Destination Control File (DCF)* to map Job Control Language (JCL) parameters to Infoprint Manager submission parameters. A default DCF called `mvsdmap.txt` is provided with Infoprint Manager; it is installed in the `<install path>\var\pd\mvsd` directory, where `<install path>` is the directory that you installed Infoprint Manager in. MVS Download receives JCL parameters from the host system, applies the DCF to it, and generates a corresponding list of Infoprint parameters. The list of Infoprint parameters is then passed to the MVS Download Exit Program (or *Exit*) so Infoprint Manager can process the job.

The MVS Download feature of Infoprint Manager also invokes an Exit for every file received. This Exit is responsible for performing some action on the received file. Two sample Exits are provided with Infoprint Manager: one written in Microsoft Visual C++ Version 6.0 and one written in Microsoft Visual Basic Version 6.0. Both samples perform the same action: submit the file to Infoprint Manager using `pdpr` and log any errors. The exit also stop the MVS Download receiver if the `pdpr` fails.

There are essentially five tasks that you must perform to be able to print using the MVS Download feature of Infoprint Manager:

1. Create the Infoprint destination or destinations that you want to submit your print jobs to.
2. Make the AFP resources that you need to use for your print jobs available to Infoprint Manager.
3. **[Optional]**Modify the DCF.
4. **[Optional]**Modify the Exit Program.
5. Create an MVS Download receiver that will accept print jobs from the host and tie all of the other elements together.

All printing configurations must complete steps one, two, and five. Refer to the *Infoprint Manager for Windows NT and Windows 2000: Getting Started* for information on creating destinations. Refer to “Making your AFP resources available to Infoprint Manager” on page 166 for information about completing step 2. If you can use the sample DCF and Exit that are provided with Infoprint Manager (the default configuration), you do not have to perform steps three and four. Refer to “Setting up a default MVS Download configuration” on page 153 for instructions on completing step five for the default configuration. You can use the default configuration if all of the following conditions apply:

1. On jobs that are sent to this MVS Download receiver, the DEST listed on the job when it is received from the host (converted to lower case) identifies the Infoprint actual or logical destination that the job should be submitted to
OR
Jobs with no DEST specified will be submitted to the Infoprint actual or logical destination that you set as the default for this receiver.
2. You do not use Infoprint job scheduling functions based on media type.
3. You will not submit AFPDS jobs with inline resources and request multiple copies.
4. When submission of a print job fails (for example, because the server is stopped or because the DEST requested does not exist), you will accept the default action that the receiver automatically stops.
5. You will not use MVS Exit 15.

If you do not meet all of the criteria, you will need to modify the DCF, the Exit, or both. Some of the reasons that you would need to modify the DCF are:

1. You want to use alternate attributes or no attributes for some mvs_keywords.
2. You do not want the DCF to change the DEST value it receives to lower case.
3. You want to use Infoprint job scheduling based on media type.
4. You will submit AFPDS jobs with inline resources and request multiple copies.
5. You see that some of the MVS to Infoprint mappings in the sample DCF are not what you want.
6. You want to identify MVS job defaults that are not communicated from MVS (for example PAGEDEF).
7. You want to identify Infoprint submission parameters to use on all jobs (for example, the font resource directory on your Windows system).
8. You use Host MVS Exit 15.

Refer to the following sections for instructions on modifying your DCF and Exit, and creating an MVS Download receiver:

- “Understanding and using the MVS Download destination control file” on page 154
- “Understanding the MVS Download Exit Program” on page 164

- “Creating an MVS Download Receiver” on page 165

Setting up a default MVS Download configuration

Once you have made your resources available, the only tasks you need to perform on your Windows system to set up a Default configuration are:

- Create an Infoprint destination.
Refer to the *Infoprint Manager for Windows NT and Windows 2000: Getting Started* for information on creating destinations.
- Create and configure an MVS Download receiver that uses the default DCF and Exit to send print jobs to that destination.
Refer to “Creating an MVS Download Receiver for a default configuration” for instructions.

Creating an MVS Download Receiver for a default configuration

Before you can begin sending jobs from the MVS JES spool to Infoprint Manager through the MVS Download feature, follow this procedure to set up an MVS Download Receiver:

1. Open the Infoprint Manager Management Console.
2. Left click the **MVS Download Receiver** item in the left pane to select it.
3. Right click the **MVS Download Receiver** item in the left pane to open a pop-up menu.
4. In the menu that pops up, select **New**.
The **Add MVS Receiver** dialog opens.
5. Fill in the fields according to the following specifications. Refer to the Management Console online help for more information about the dialog and the fields it contains.
 - **Port Number:** Enter the port number that you want this receiver to use when it communicates with the host system. This number must match the port number that is specified in the Routing Control File used by the MVS host Download FSA for this computer’s IP address.
 - **Target Destination:** Select the default Infoprint destination that you want this receiver to submit jobs to from the drop-down list. Infoprint Manager will only submit a job to this destination if the jobs does not have a DEST specified when it comes from the host system.
 - **Destination Control File:** Do not change this path.
 - **Exit Program Name:** Do not change this path.
 - In the **Processing Options** group box, both options are selected by default and can be left that way.

Note: When the **Retain command files** check box is selected, Infoprint Manager saves the control files for any MVS Download print jobs that failed in print submission. Therefore, when you want to resubmit those jobs, you do not have to download them from the host system again; the files are still on your Infoprint server. You can deselect this box, but any jobs that fail in processing will need to be resubmitted from the host to be printed.

Operators should evaluate any processing failures, correct the problems that caused the failures, and resubmit the jobs either from the host system (if this box is deselected) or from the receiver (if this box is selected).

For additional information, refer to “Chapter 15. Deleting Orphan Files and Resubmitting Jobs to MVS Download” on page 291.

6. Click **OK**.
One or more pop-up informational messages may appear; read them and click **OK** to dismiss them.
7. Select the **MVS Download Receivers** item in the left pane of the Management Console.
You should see the receiver you just created in the right pane. The receiver status may be **STOPPED**, but it should start momentarily. Click the **Refresh View** button on the toolbar until the status changes to **RUNNING**.

Once the receiver is running, it is ready to receive print jobs from the host system.

Understanding and using the MVS Download destination control file

The MVS Download Destination Control File (DCF) is a flat text file that consists of Control Statements, blank lines, and comments. Each line has a maximum length of 1023 bytes. Tabs are treated as blank spaces.

Note: If you change the DCF, the changes will not become active until you stop and restart the receivers that use that DCF.

The DCF maps the MVS keywords and parameters it receives from the host to the **pdpr** `-x` and `-p` attributes and parameters. The supplied MVS Download Exit uses **pdpr** to submit jobs to the target destination. To modify any of the other **pdpr** options, you must change the Exit Routine.

The sample DCF that comes with Infoprint Manager is set to perform the mappings listed in Table 13.

Note: This table only lists the Mapping statements in the sample DCF. It does not reflect the Default statements and Global statements that are set.

Table 13. Mappings in the Sample DCF

mvs_definition	Infoprint Attribute and Value
ACCOUNT	account-text
ADDRESS1	address1-text
ADDRESS2	address2-text
ADDRESS3	address3-text
ADDRESS4	address4-text
BUILDING	building-text
CC=NO	carriage-control-type=none
CC=YES	ignored
CCTYPE=ANSI	carriage-control-type=ansi-ebcdic
CCTYPE=MACHINE	carriage-control-type=machine
CCTYPE=ASCII	carriage-control-type=ansi-ascii
CHARS	chars
CLASS	printer-pass-through=-opa=class
COPIES	copy-count

Table 13. Mappings in the Sample DCF (continued)

DATAACK=UNBLOCK	data-fidelity-problem-reported=all
DATAACK=BLOCK	data-fidelity-problem-reported=none
DATAACK=BLKPOS	data-fidelity-problem-reported=character
DATAACK=BLKCHAR	data-fidelity-problem-reported=position
DATATYPE=LINE	document-format=line-data
DEPT	department-text
DEST	target-destination-name and printer-pass-through=-opa=destination
DUPLEX=NO	sides=1
DUPLEX=NO	plex=simplex
DUPLEX=NORMAL	sides=2
DUPLEX=NORMAL	plex=simplex
DUPLEX=TUMBLE	sides=2
DUPLEX=TUMBLE	plex=tumble
FCB	page-definition
FILEFORMAT=RECORD	new-line-option=counted-4-octet-aligned
FILEFORMAT=STREAM	new-line-option=lf
FORMDEF	form-definition
FORMS	printer-pass-through=-opa=forms
INTRAY	printer-pass-through=-obin
IPADDR	printer-pass-through=-opa=ipaddr
JOBID	printer-pass-through=-opa=jobid
JOBNAME	job-name and job-owner
NAME	name-text
NODEID	node-id-text
OFFSETXB	x-image-shift-back
OFFSETXF	x-image-shift
OFFSETYB	y-image-shift-back
OFFSETYF	y-image-shift
OUTBIN	output-bin
OVERLAYB	overlay-back
OVERLAYF	overlay-front
PAGEDEF	page-definition
PRMODE=SOSI1	shift-out-shift-in=one
PRMODE=SOSI2	shift-out-shift-in=two
PRMODE=SOSI3	shift-out-shift-in=three
PRMODE=[anything else]	ignored
PROGRAMMER	programmer-text
PRTQUEUE	printer-pss-through=-oprtqueue
RESFMT=P240	font-resolution=P240

Table 13. Mappings in the Sample DCF (continued)

RESFMT=P300	font-resolution=P300
ROOM	room-text
SEGMENTID	printer-pass-through=-opa=segmentid
SYSOUT	printer-pass-through=-opa=class
TITLE	title-text
TRC	table-characters-reference
UCS	chars
USERID	user-id-text

Types of control statements

There are three kinds of Control Statements in a DCF:

1. **Default statements** identify a default parameter for an mvs_keyword when one is not received from MVS. They consist of only an mvs_definition.

Note: If you include multiple Default statements that use the same mvs_keyword, Infoprint only uses the last one.

2. **Global statements** identify an Infoprint parameter that should be used on all data set submissions. This statement uses GLOBAL as the mvs_definition value.

Note: If you include multiple Global statements that use the same infoprint_attribute, Infoprint only uses the last one.

3. **Mapping statements** match mvs_keyword with their Infoprint equivalents. These statements must contain both an mvs_keyword and a control. If there is no Mapping statement listed in the DCF for one or more of the mvs_keywords and parameters that are received, Infoprint adds those mvs_keywords and parameters as unchanged printer-pass-through attributes.

Notes:

- a. If you include multiple Mapping statements that use the same mvs_definition but map to different infoprint_attributes, all of them will be honored.
- b. If you include multiple Mapping statements that use the same mvs_keyword and map to the same infoprint_attribute, the last one mapped will be used.
- c. If you define a Mapping statement that maps to an infoprint_attribute that is also used in a Global statement, and the Mapping statement is used due to the MVS Keywords in a received file, the Mapping statement will override the Global statement.
- d. If no matching Mapping statement is found for a received mvs_keyword and parameter, it will automatically be added to the printer-pass-through parameter. A null Mapping statement can be used to throw the mvs_keyword away entirely. A null Mapping statement contains an mvs_definition and a control, but no infoprint_definition.

Syntax of control statements

Each Control Statement consists of three parts as described below. The entire statement must reside on a single line (it can't contain a carriage return until it is complete) and it must follow this syntax:

```
mvs_definition [control [infoprint_definition]]
```

mvs_definition: The *mvs_definition* identifies a keyword that is generated by the host and, for Default and some Mapping statements, its associated parameter. It follows this format:

```
mvs_keyword[=mvs_parameter]
```

Note: In Control Statements, *mvs_definitions*, controls, and *infoprint_definitions* themselves cannot contain any white space (spaces or tabs). The first occurrence of white space separates the *mvs_definition* from the control and the second separates the control from the *infoprint_definition*. As a result, if the elements contain white spaces, the DCF will not complete the mapping correctly.

These values are described below.

mvs_keyword: The *mvs_keyword* represents the string that Infoprint Manager receives from an MVS system. It is what the MVS system uses to refer to information about a print job (for example, whether or not it should be duplexed or what overlay it uses, if any). The keywords identified in Table 13 on page 154 are the standard set of *mvs_keywords* that are available for you to use. The keywords that MVS uses to refer to these job characteristics are not the same as the Infoprint attribute names that do the same things.

mvs_parameter: The optional *mvs_parameter* is a case-sensitive free-format field. The purpose of an *mvs_parameter* depends upon what type of Control Statement it is used with.

- **Default Statement**

The *mvs_parameter* value is required. This value identifies the default value of the *mvs_keyword* when the *mvs_keyword* has not been sent by the host system with a job. For example, in the Defaults section of the *mvsdmap.txt* file, *CHARS=GT13* is identified. Therefore, *GT13* is the *mvs_parameter* default font value, and will be used whenever Infoprint Manager does not receive a font value from the host system.

- **Global Statement**

The *mvs_parameter* value is ignored.

- **Mapping Statement**

The *mvs_parameter* value is optional. If an *mvs_parameter* value is specified for an *mvs_keyword* on a Mapping statement, the *mvs_keyword* is not always mapped to the *infoprint_definition* specified. The *mvs_keyword* is only mapped to the *infoprint_definition* when the *mvs_keyword* and the *mvs_parameter* combination that comes from the host system matches the *mvs_keyword* and *mvs_parameter* combination specified on the Mapping statement.

For example, these four lines appear in the Mapping section of the *mvsdmap.txt* file:

```
CCTYPE :: carriage-control-type=none
CCTYPE=ANSI :: carriage-control-type=ansi-ebcdic
CCTYPE=MACHINE :: carriage-control-type=machine
CCTYPE=ASCII :: carriage-control-type=ansi-ascii
```

If Infoprint Manager receives a job from the host system with the *mvs_keyword* *CCTYPE=ANSI* specified, Infoprint Manager will map that keyword to the Infoprint attribute *carriage-control-type* and set its parameter to *ansi-ebcdic*. If the next job comes with the *mvs_keyword* *CCTYPE=MACHINE* specified, Infoprint Manager will map that keyword to the Infoprint attribute *carriage-control-*

type and set its parameter to machine instead. But, if Infoprint Manager receives a job with the `mvs_keyword` `CCTYPE` set to anything besides ANSI, MACHINE, or ASCII, it will map that keyword to the Infoprint attribute `carriage-control-type` and set its parameter to none.

For certain `mvs_keywords`, special `mvs_parameters` are recognized. These keywords are listed in Table 14.

Table 14. Special `mvs_parameters`

<code>mvs_keyword</code>	<code>mvs_parameters</code>
CC	YES NO
CCTYPE	ANSI MACHINE ASCII
DATAACK	BLOCK UNBLOCK BLKPOS BLKCHAR
DATATYPE	LINE
DUPLEX	NO NORMAL TUMBLE
FILEFORMAT	RECORD STREAM
RESFMT	P240 P300
TRC	YES NO

control: A *control* is a symbol that is used for delineation and which can also tell the MVS Download receiver what it has to do to the `mvs_keyword` if it converts the `mvs_keyword` to an Infoprint keyword. Every Mapping statement contains a control. Some of the controls listed below are used in the `mvsdmap.txt` file.

- :: Don't do any special processing. (Standard delineation)
- ::+ Change all of the characters in the `mvs_parameter` into upper case when converting it to an `infoprint_parameter`.
- ::- Change all of the characters in the `mvs_parameter` into lower case when converting it to an `infoprint_parameter`.
- ::! Do not convert this `mvs_parameter` into an `infoprint_parameter`. This control is only necessary if no `infoprint_parameter` is specified on this statement.

Note: In Control Statements, `mvs_definitions`, controls, and `infoprint_definitions` themselves cannot contain any white space (spaces or tabs). The first occurrence of white space separates the `mvs_definition` from the control and the second separates the control from the `infoprint_definition`. As a result, if the elements contain white spaces, the DCF will not complete the mapping correctly.

Controls behave differently in the different types of Control statements.

- In **Default** statements, you cannot specify a control.
- In **Global** statements, you must specify a control, but the operator is only recognized as a delineator; no matter what operator you use, it acts like the `::` control.
- In **Mapping** statements, you must specify a control.

infoprint_definition: The *infoprint_definition* identifies the attribute and parameter that will be specified on the `pdpr` command when Infoprint Manager sends the job to the printer. The *infoprint_definition* identifies an Infoprint attribute and (optionally) the value that it should be set to. `infoprint_definitions` follow this syntax:


```
infoprint_attribute[=infoprint_parameter]
```

Note: In Control Statements, *mvs_definitions*, controls, and *infoprint_definitions* themselves cannot contain any white space (spaces or tabs). The first occurrence of white space separates the *mvs_definition* from the control and the second separates the control from the *infoprint_definition*. As a result, if the elements contain white spaces, the DCF will not complete the mapping correctly.

The *infoprint_attribute* is the Infoprint attribute name as it is listed in the *Infoprint Manager: Reference* under *-x* options, plus the specially recognized *target-destination-name*, which is used to identify the *-p* option of the **pdpr** command. The *infoprint_parameter* is the value that is assigned to that attribute.

Infoprint_definitions work differently in each kind of control statement.

- In **Default statements**, you cannot specify an *infoprint_definition*.
- In **Global statements**, you must specify an *infoprint_definition*.
- In **Mapping statements**, you should specify an *infoprint_definition* to map the *mvs_definition* to. However, if you specify an *infoprint_attribute*, you do not have to specify an *infoprint_parameter* with it. If you only list an *infoprint_attribute*, the *mvs_parameter* value from the *mvs_keyword* becomes the *infoprint_attribute* value.

Notes:

1. If you do not provide an *infoprint_definition* in a Mapping statement, the information contained in that **mvs_keyword** will be discarded.
 2. If you provide multiple Mapping statements that lead to the same attribute only one will be used, but it is impossible to predict which one that will be.
- To identify an *infoprint_attribute* that you want to use on the *-x* option of the **pdpr** command, omit the *-x*, for example: *media-id*.
 - To identify an *infoprint_attribute* that you want to use on the *printer-pass-through* attribute of the **pdpr** command, prefix the *infoprint_attribute* with an *-o* flag for example, *-ojobid*. All generated *-o* attributes will be collected and added to a single *printer-pass-through* attribute.
 - To identify an *infoprint_attribute* that you want to use on the *-opa* option of the *printer-pass-through* attribute of the **pdpr** command, prefix the *infoprint_attribute* with an *-opa*, for example, *-opa:class*. All generated *-opa* attributes will be collected and added to a single *-opa* keyword on the *printer-pass-through* attribute.
 - To identify that the *mvs_definition* is to map to the name of the target destination for submission, specify *target-destination-name*, which is a specially-recognized *infoprint_attribute* that overrides the third parameter that is passed to the sample MVS Download Exit.
 - To handle complex, multi-valued *infoprint_attributes*, begin the *infoprint_parameter* with as many colons (:) as necessary to move the parameter into the correct position. For example, the *results-profile* attribute follows this syntax:

```
-x "results-profile=name@node:method:number:'message text':bin"
```

In use, the attribute would look like this:

```
-x "results-profile=nr645@bld25:pickup:2:'Please read this'"
```

So, if you wanted to map the COPIES value to the 'number' parameter of results-profile, you would enter two colons (::) in the mapping statement. The two colons indicate that the program should skip over the first two parameters in the results-profile (name@node and method), and insert the value in the third position (number). The mapping statement would look like this:

```
COPIES :: results-profile=::
```

You can include a hard-coded infoprint_parameter in the statement, but you do not have to. If you do not include one, the normal rules for determining the resulting infoprint_parameter apply.

Changing the sample DCF

Copying the sample DCF: Follow these steps to create a copy of the sample DCF provided with Infoprint Manager.

1. Open the file <install path>\var\pd\mvdsmap.txt, (where <install path> is the directory where Infoprint Manager is installed) in a text editor such as Notepad.
2. Select **File** ->**Save as**, and save the file into a directory outside of the <install path> directory. Make note of the directory and file name for reference later.

Notes:

- a. You can change the file name if you like, but do not need to.
- b. If you do not save the file to another directory outside the <install path> directory, it could be overwritten or deleted if you ever need to reinstall, apply service, or upgrade Infoprint Manager.
- c. This step creates a copy of the sample/default file and leaves the original, unedited version in the directory listed above so you can use it to create another customized DCF later if you need to.

Editing the DCF: Refer to this section to edit either the sample DCF provided with Infoprint Manager or an existing DCF.

1. Open the file you want to edit in a text editor.
Notice that most of the lines begin with a *. Every line that begins with a * is a line that is *commented out*, so Infoprint Manager ignores it during processing. When you need to comment out a line, insert a * at the beginning of the line; to uncomment a line, delete the * at the beginning of the line.
2. Read the notes and instructions in the file before you make any changes to it.
3. Change the Control Statements as you need to.
 - In the **Defaults** section, you can set the defaults as you need them to be.
 - In the **Globals** section, the only value that is set is carriage-control-type attribute value.

The statements that are commented out are examples of how to specify alternate resource search orders.

- The first example specifies a location that Infoprint Manager will search for all fonts (resource-context-font=C:\fonts\reslib).
- The second example specifies a location and search order for page definitions (resource-context-pagedef=C:\joeski\pagedefs;c:\bills\pdefs).

You should put any other **pdpr** parameters to be specified on the -x option on all jobs here.

- In the **Mapping** section, there are two sections: *Commonly changed mappings* and *Less commonly changed mappings*. Follow the instructions provided in the text file to make your changes, keeping these additional considerations in mind:
 - If you plan to send print jobs to different logical destinations based upon the media type of the job, you should uncomment the FORMS :: default-medium mapping.
 - The default mapping uses the MVS JCL keyword DEST to specify the target destination (printer) that the downloaded jobs are sent to. If you comment out this mapping or remove the target-destination-name from the right side, all jobs are submitted to the target destination that you specify in the **Target destination** field when you set up your MVS Download Receiver.
 - If your host MVS system uses the newer PRTQUEUE JCL keyword to identify the target-destination, comment out the DEST :: target-destination-name mapping and uncomment the lines:

```
PRTQUEUE :: target-destination-name
DEST      ::
```

Debugging your changed DCF: The sample DCF contains a DEBUG statement that is commented out. Follow these steps to use this statement to check your DCF.

1. Uncomment the DEBUG statement in the DCF that you changed.
2. Save the file.
3. Stop the MVS Download receiver that uses this DCF.
4. Restart the MVS Download receiver that uses this DCF.
5. Submit a job from MVS that runs through this MVS Download receiver.
Information will be written into the server log. You can view the server log by clicking the **Server Log** item in the left pane of the Management Console.
6. Once you are satisfied with the results, open the DCF and comment the DEBUG statement out again.
7. Save the file.
8. Stop the MVS Download receiver that uses this DCF.
9. Restart the MVS Download receiver that uses this DCF.

Changing the sample DCF- advanced information

If you use MVS Exit 15, understand that the predefined *mvs_keywords* are internally converted using Table 15 on page 162. If you need to add lines to the DCF you will need to be aware of these internal mappings and what additional information your lines need to contain.

For example, the sample DCF contains the line:

```
DATAACK=BLKPOS :: data-fidelity-problem-reported=character
```

But, because in Table 15 on page 162 DATAACK maps to -odatac, the following line would produce the same results:

```
-odatac=blkpos :: data-fidelity-problem-reported=character
```

When the MVS host actually sends -odatac=blkpos, this mapping statement is used. For information on the actual keywords that the MVS host sends, refer to the publication *Print Services Facility for OS/390: Download for OS/390, (S544-5624)*, which you can download from the IBM Printing Systems website at <http://www.ibm.com/printers>.

Note: The `mvs_definition` (all of the information to the left of the control) is case-sensitive and must exactly match the information that comes from the host system for the mapping to be made.

Some parameter information is received from the MVS host as `-o` keywords and other information is received as sub-keywords of the `-opa` keyword. For example, CLASS information is received as `-opa=class=xxx`.

When the DCF is processed by an MVS Download receiver, the receiver looks at each `mvs_keyword` to determine if it will be received from MVS as a keyword or as a sub-keyword of the `-opa` keyword. The receiver tries to convert the specified `mvs_keyword` according to Table 15. If the receiver doesn't find a mapping conversion for the specified `mvs_keyword`, the `mvs_keyword` is left unchanged. If the result of the conversion begins with `-o`, the receiver assumes that the `mvs_keyword` will be received as a keyword. If the result of the conversion does not begin with `-o`, the receiver assumes that the `mvs_keyword` will be received as a sub-keyword of the `-opa` keyword.

For example, the `mvs_keyword` SYSOUT is internally converted (according to Table 15) to `class`. Since `class` does not begin with `-o`, the receiver assumes that `class` is a sub-keyword of the `-opa` keyword.

Table 15. MVS keyword internal conversions

mvs_keyword	MVS Values Passed to Infoprint
ACCOUNT	-AC
ADDRESS1	-oaddress1
ADDRESS2	-oaddress2
ADDRESS3	-oaddress3
ADDRESS4	-oaddress4
BUILDING	-obu
CC	-occ
CCTYPE	-occtype
CHARS	-ochars
CLASS	class
COPIES	-ocop
DATAACK	-odatac
DATATYPE	-odata
DEPT	-ode
DEST	destination
DUPLEX	-odu
FCB	-opagedef
FILEFORMAT	-ofileformat
FORMDEF	-of
FORMS	forms
INTRAY	-oin
IPADDR	-oipdest
JOBID	jobid
JOBNAME	-ojobn

Table 15. MVS keyword internal conversions (continued)

NAME	-ona
NODEID	-ono
OFFSETXB	-ooffxb
OFFSETXF	-ooffxf
OFFSETYB	-ooffyb
OFFSETYF	-ooffyf
OUTBIN	-outbin
OVERLAYB	-oovlyb
OVERLAYF	-oovlyf
PAGEDEF	-opagedef
PRMODE	-oprmode
PROGRAMMER	-opr
PRTQUEUE	-oprqueue
RESFMT	-ore
ROOM	-oro
SEGMENTID	segmentid
SYSOUT	class
TITLE	-oti
TRC	-otrc
UCS	-ochars
USERID	-ous

MVS Exit 15 allows users to add sub-keywords to the `-opa` keyword only. The `mvs_keyword` that would be used in the DCF is the (case-sensitive) sub-keyword only. For example, if an MVS Exit 15 added `OUTGRP=n`, where *n* was the number of the dataset in the job, and you wanted to map this value to the `printer-pass-through=-opa=segmentid` parameter (instead of the supplied mapping), you would replace the existing DCF mapping statement of:

```
SEGMENTID      :: -opa:segmentid
```

with

```
OUTGRP         :: -opa:segmentid
```

If you wish to add multiple sub-keywords to the `-opa` keyword using MVS Exit 15, each keyword/parameter pair must be delineated with a comma. It is highly recommended that you not use any blank spaces or tabs around the comma or around the "=" sign that you place between your generated sub-keyword and the parameter.

For more information, refer to the publication *Print Services Facility for OS/390: Download for OS/390, (S544-5624)*, which you can download from the IBM Printing Systems website at <http://www.ibm.com/printers>.

Understanding the MVS Download Exit Program

The MVS Download Exit Program (or *Exit*) takes the Infoprint Manager submission parameters generated by the DCF and uses them to process the print job appropriately. The Exit is invoked once per file received from MVS.

Two sample exit routines are provided with Infoprint Manager: one written in Microsoft Visual C++ Version 6.0 and one written in Microsoft Visual Basic Version 6.0. The Visual C++ file set includes: `mvdsdsubm.dsp` and `mvdsdsubm.opt` (project files), `mvdsdsubm.dsw` (a workspace file), and `mvdsdsubm.c` (a source file). The Visual Basic file set includes `mvdsdsubm.vbp` (a project file), `mvdsdsubm.vbw` (a workspace file), and `mvdsdsubm.frm` (a source file). They are installed in the `<install path>\exits\mvdsd` directory, where `<install path>` is the directory that you installed Infoprint Manager in.

Using the sample MVS Download exit program

In the sample `mvdsdsubm` files, the Exit performs the following operations using the five parameters that are passed to it. Both of the sample Exits perform the same functions.

1. Issues a **pdpr** print command to submit the file (parameter #1) to the specified target destination (parameter #3), with the indicated Infoprint print parameters (parameter #5).
2. If the job prints successfully, the Exit will erase the print job file (parameter #1).
3. If the job does not print, the Exit will log an error in the MVS Download error file and terminate the receiver.

Parameters	Definition
#1	The name of the file that contains data received from the MVS JES spool
#2	MVS JES destination control parameters
#3	Infoprint target destination (printer) where the job is submitted
#4	MVS Download Receiver name
#5	Infoprint print parameters

Customizing the sample exit program

You can customize either the `mvdsdsubm.c` (written in Visual C++) or `mvdsdsub.frm` (written in Visual Basic) to allow the Exit to perform differently. For example, you might want to modify the Exit so that it ignores the Infoprint Manager print parameters (parameter #5) and just processes the MVS JES destination control parameters themselves (parameter #2). Or, you could remove the **pdpr** call and change it to any applicable program or OS command call. For instance, you could have the Exit copy or archive the data file (parameter #1).

Note: If you specify a DCF that contains no statements, Infoprint will pass parameter #5 as a null string.

Copying the sample exit: If you want to customize the sample Exit, you should not change the sample itself, because if you ever need to reinstall Infoprint Manager, all of your changes will be lost. Instead, copy the files that you want to use (either the Visual C++ version or the Visual Basic version) into a directory outside of the directory the you have Infoprint Manager installed in and make your changes to that version.

Note: You must have access to either Microsoft Visual C++ Version 6.0 or Microsoft Visual Basic Version 6.0 to customize the Exit.

You can follow these steps to complete the process:

1. Log on to the system that your Infoprint Manager server is installed on.
2. Decide which directory you would like to store your new exit in or create a new one for it.
3. Navigate to the <install path>\exits\mvsd directory, where <install path> is the directory that you installed Infoprint Manager in, using Windows Explorer or the **My Computer** icon.

You will see seven files. Four of them are the Visual C++ fileset and the other three are the Visual Basic fileset.

4. Copy the files for the version of the Exit you want to modify into the directory you selected or created in step two.
 - For the Visual C++ version, copy: mvdsdsubm.dsp, mvdsdsubm.opt, mvdsdsubm.dsw, and mvdsdsubm.c
 - For the Visual Basic version, copy: mvdsdsubm.vbp, mvdsdsubm.vbw, and mvdsdsubm.frm
5. Open the copy of the project and make your changes.
6. Save and compile the Exit.

Note: By default, the sample Visual C++ Exit builds a **Debug** compile version of the Exit. The pre-installed executable version of the sample (mvdsdsubm.exe) is a **Release** version. You can change the Active Configuration of the **mvdsdsubm** project to build the Release version of the Exit.

Creating an MVS Download Receiver

Before you can begin sending jobs from the MVS JES spool to Infoprint Manager through MVS Download, follow this procedure to set up an MVS Download Receiver.

1. Open the Infoprint Manager Management Console.
2. On the menu bar, select **Edit** —> **New** —> **MVS Download Receiver**.
The **Add MVS Receiver** dialog opens.
3. Fill in the fields according to the following specifications. Refer to the Management Console online help for more information about the dialog and the fields it contains.
 - **Port Number:** Enter the port number that you want this receiver to use when it communicates with the host system. This number must match the port number that is specified in the Routing Control File used by the MVS host Download FSA for this computer's IP address.
 - **Target Destination:** Select the Infoprint destination that you want this receiver to submit jobs to from the drop-down list. Infoprint Manager will only submit a job to this destination when the job does not have a target-destination-name value assigned to it after its mvs_keywords have been processed against the DCF.
 - **Destination Control File:** Click **Browse** and locate the destination control file that you want to use with this receiver. Select the file and click **Save**.

- **Exit Program Name:** If you have not modified the exit program, do not change this path. If you have modified the exit program, click **Browse** and locate the exit program file that you modified and compiled. Select the file and click **Save**.
- In the **Processing Options** group box, both of the options are selected by default.
 - When the **Retain command files** check box is selected, Infoprint Manager saves all of the files that pertain to MVS Download jobs that fail in processing. When MVS Download print jobs are processed successfully, these files are cleaned up regardless of what you select here. If you need to resubmit failed jobs, you do not have to download them from the host system again; the files are still on your Infoprint server. If you deselect this box, you will have to download any jobs that fail in processing from the host again to print them.

Note: You can diagnose errors by clicking the **Server Log** item in the left pane of the Management Console.

Operators should evaluate any processing failures, correct the problems that caused the failures, and resubmit the jobs.

Refer to “Chapter 15. Deleting Orphan Files and Resubmitting Jobs to MVS Download” on page 291.

- When the **Enable parallel processing** check box is selected, this MVS receiver will process multiple jobs simultaneously. When it is cleared, the receiver will wait until the Exit for one print job completes before it starts to process the next job.

This option is normally left selected unless a custom Exit has been written that requires only one instance of the exit to run at a time and in the order the files are received.

4. Click **OK**.
One or more pop-up informational messages may appear; read them and click **OK** to dismiss them.
5. Select the **MVS Download Receivers** item in the left pane of the Management Console.

You should see the receiver you just created in the right pane. The receiver status may be **STOPPED** but it should start momentarily. Click the **Refresh View** button on the toolbar until the status changes to **RUNNING**.

If the receiver does not start within a few minutes, select **Edit** → **MVS Download Manager** and manually start the receiver by selecting it and clicking **Start**.

Note: Receivers that will not start more than likely have destination control file errors. You can diagnose errors by clicking the **Server Log** item in the left pane of the Management Console.

Making your AFP resources available to Infoprint Manager

The AFP resources you use for your printing jobs must be available to Infoprint Manager so the jobs process correctly. This section assumes that these resources currently reside on your host system in AFP format, and that you (or someone) can locate them.

Note: If you currently use the Distributed Print Function (DPF) of PSF for OS/2, the resource files you use are in Intelligent Printer Data Stream (IPDS) format. However, the Advanced Function Presentation (AFP) versions of those files exist on your host system as well. Make sure that you use the AFP versions with MVS Download.

There are several ways that you can make your resources available to Infoprint Manager; three of them are described below. Read through the options and decide which is best for your configuration.

Manually transfer the resources from the host to your Windows system

You can move your resources directly from your host system using any method you like, though the most common is ftp. If you decide to ftp your files, make sure that you transfer the files as *binary* data, not as *text*. In general, the steps you should follow are:

1. Create a directory on your Windows system that will receive your resources.
2. ftp your resources to that directory as binary data.
3. Identify that directory to Infoprint Manager.

You can either identify the directory using a resource context object or by changing the default resource search path in the Management Console. For instructions on creating a resource context object, refer to the Administration Procedure “Creating a New Resource-Context Object” on page 108. For information on changing the default resource search path, consult the online help for the Management Console under **Service Configuration**.

This method is effective and relatively easy to implement. However, every time you change your AFP resources, you will have to ftp them to the correct directory on your Windows system. If you do not change your resources often, this method may work well for you. If you change your AFP resources often, you may want to consider a different option.

Store your resources in a central location

Another option is to store your AFP resources on any machine in your network (including the host system that they currently reside on), and NFS mount a directory on the Windows system that your Infoprint Manager server is installed on to that machine. Then, identify that directory to Infoprint Manager just as in the option above (either by using a resource context object or by changing the default resource search path). To implement this option, you will need to install NFS server and client software, which is available from a variety of vendors.

The main drawback to this solution is that it generates a significant amount of network traffic as the system retrieves the resources. The increase in traffic and time needed to retrieve the resources when needed could cause printer clutching.

Move the resources using MVS Download

A third option is to move your AFP resources using the MVS Download feature of Infoprint Manager itself. You can achieve this by setting up an MVS Download receiver that receives jobs and copies them into a particular directory without printing them. You would only use this receiver to move your resources. Setting up this configuration is different depending on your environment. Each time you modify a resource, you submit a job that sends the modified resource to each system that you are running an Infoprint Manager server on. To accomplish this task, you may need to customize the JES inish deck, the Host MVS Download routing control data set, the Destination Control File (DCF), and the Exit Program. The modifications needed will depend on your existing MVS Download

configuration used for sending jobs, although the process of getting the AFP resources to the Infoprint Manager computer is the same in all cases:

1. Place the resource on the spool for MVS Download to process with identification that it is an AFP resource, the resource name, and the desired target path. (Target path is optional)
2. Set up the routing control data set to send the AFP resources to unique MVS Download receivers on the Infoprint Manager system. (Optional)
3. Set up the routing control data set to not prefix each record with a record length field for AFP resources.
4. Set up the DCF to map the desired resource path/name to the target-destination-name. (Optional)
5. Modify the supplied Exit to copy the received AFP resource into the proper resource directory with the provided resource name. The full functionality of this Exit would depend on the options chosen above. For example:
 - a. If the target path was not supplied, the Exit would either need to have it hardcoded or determine it using other means.
 - b. If both AFP resources and print jobs are being sent to the same receiver, the exit would need to distinguish between the two by some mechanism and take the proper action for each.
 - c. If the DCF does not map the resource path/name to the target-destination-name, it will either need to parse it from the other parameters or determine it using other means.

This option is more difficult to set up than the other two, but is less time consuming once you have it implemented, because every time you change your AFP resources all you have to do is resubmit a job for transmission to your Windows systems. If you have multiple Windows systems to update or can further automate this process, this method may work well for you. One possible configuration example follows.

Example: Assume that JES is configured to schedule all jobs with DEST=NTPRT1 to an MVS Download FSA that downloads them to an Infoprint Manager system that then uses the default supplied DCF and Exit to submit the jobs to an IPDS printer, **ntp1**. The MVS Download FSA uses a routing control data set that contains the following statement:

```
DEST=NTPRT1
IPADDR=dept01.myststem
PORTNUM=5002
RETRYNUM=3
RETRYINTV=60
```

We have decided the following about the configuration:

- Leave the existing MVS Download receiver (on our Windows system) alone.
- Create a new receiver to processes the AFP resources, but continue using the existing MVS Download FSA.
- Pass only the AFP resource name, not the directory path for it to be stored in.
- Use the FORMS keyword to identify the job as an AFP resource since the Routing Control Statements can use FORMS to direct files to different receivers.
- Use the NAME JCL keyword to identify the AFP resource name because it sounds right.

In the JCL job for putting modified AFP resources on the spool, we have an OUTPUT statement with the following:

```
OUTPUT      DEST=NTPRT1,FORMS=AFPRES,NAME='COMYFNT.300',....
```

No changes to the JES inish deck are required since the MVS Download FSA already receives jobs with DEST=NTPRT1.

We change the routing control file as follows to send this job to a separate receiver and to prefix these resources with no length field. Jobs that do not have FORMS=AFPRES would continue to be sent to the existing receiver.

```
DEST=NTPRT1
FORMS=AFPRES
IPADDR=dept01.mysystem
PORTNUM=5003
SEND_REC_LENGTH=NO
RETRYNUM=3
RETRYINTV=60
DEST=NTPRT1
IPADDR=dept01.myststem
PORTNUM=5002
RETRYNUM=3
RETRYINTV=60
```

Now we need to define a new receiver on the dept01.mysystem machine. The new receiver will use port number 5003 (as identified in the routing control statement), a modified DCF, and a user-written Exit.

We make a copy of the supplied DCF and modify it to change the mapping of the NAME keyword from MVS. The existing statement:

```
NAME :: name-text
```

would be changed to:

```
NAME :: target-destination-name
```

Also, the existing statement that maps DEST to target-destination-name would be commented out as follows:

```
* DEST :: target-destination-name
```

Due to this change in the DCF, the Exit will now receive the AFP resource name as the third passed parameter.

Next, we make a copy of the supplied Exit (either the Visual Basic or Visual C++ version). We modify the Exit so it copies the received file instead of submitting it to Infoprint Manager using **pdpr**. The Exit must use the first passed parameter as the name of the resource file and the third passed parameter to derive the target resource file name, because the DCF mapped it that way. Since we did not pass the desired resource directory name in the JCL, the Exit needs to determine the drive and directory and pre-pend it to the target resource file name. Since this Exit will only be used on a receiver that receives AFP resources, it doesn't need to identify the file as an AFP resource and have a paths for both copying resources and submitting non-resources to Infoprint Manager to be printed. The Exit can also be coded to detect and react to error situations as appropriate.

Lastly, we use the Management Console to create the receiver that will use the DCF and Exit that we created. In this example, the **Target Destination** that we specify when we create the receiver is irrelevant and will only be passed to the Exit if no NAME is specified in the JCL that submitted the resource.

Chapter 7. Setting up Interoperating Environments

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 IBM Infoprint Manager for Windows NT and Windows 2000, Version 1, 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 IBM 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 173 and “Configuring for Interoperability on an Infoprint AIX Server” on page 206.

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 173.

- **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 IBM Infoprint Manager for Windows NT and Windows 2000, Version 1, 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 IBM 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 206

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 175, 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 the *IBM Infoprint Manager for Windows NT and Windows 2000: Getting Started*. When you are finished, your servers will all be operating independently.

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

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

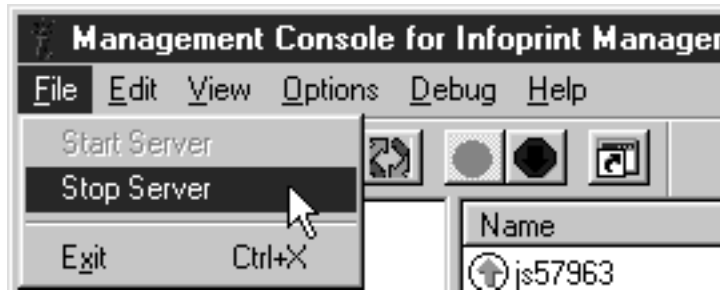


Figure 53. Management Console: Stop Infoprint Manager server

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.

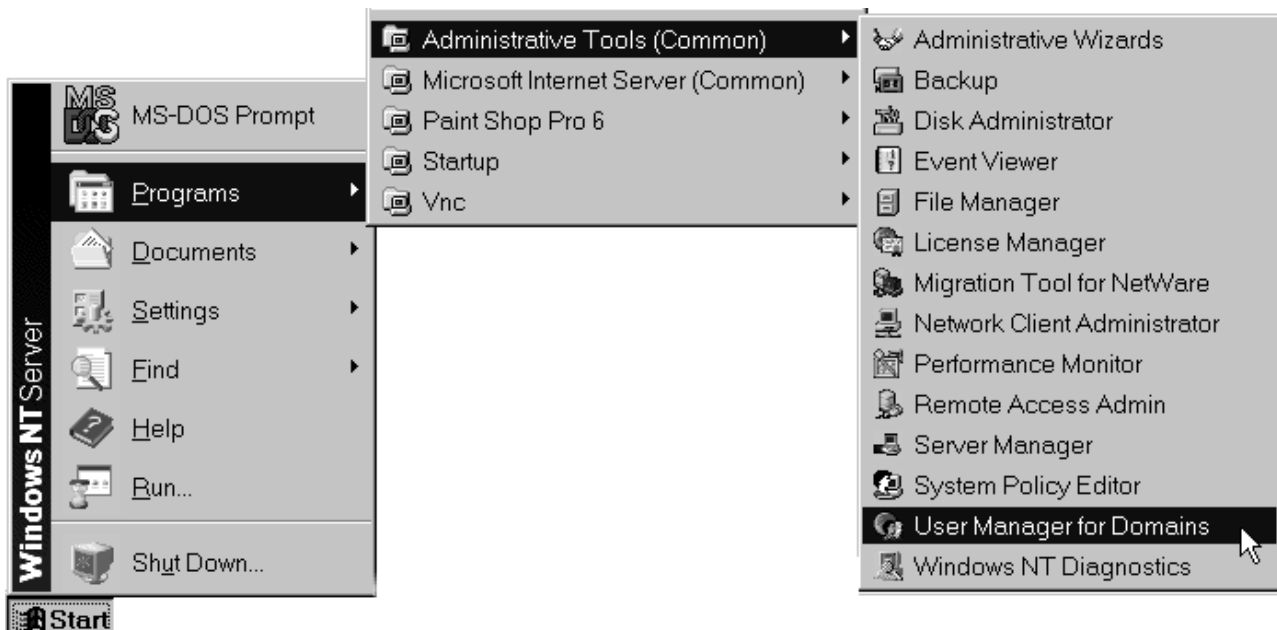


Figure 54. Open User Manager for Domains

- c. In the User Manager window, select **User -> New User**.



Figure 55. 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**.

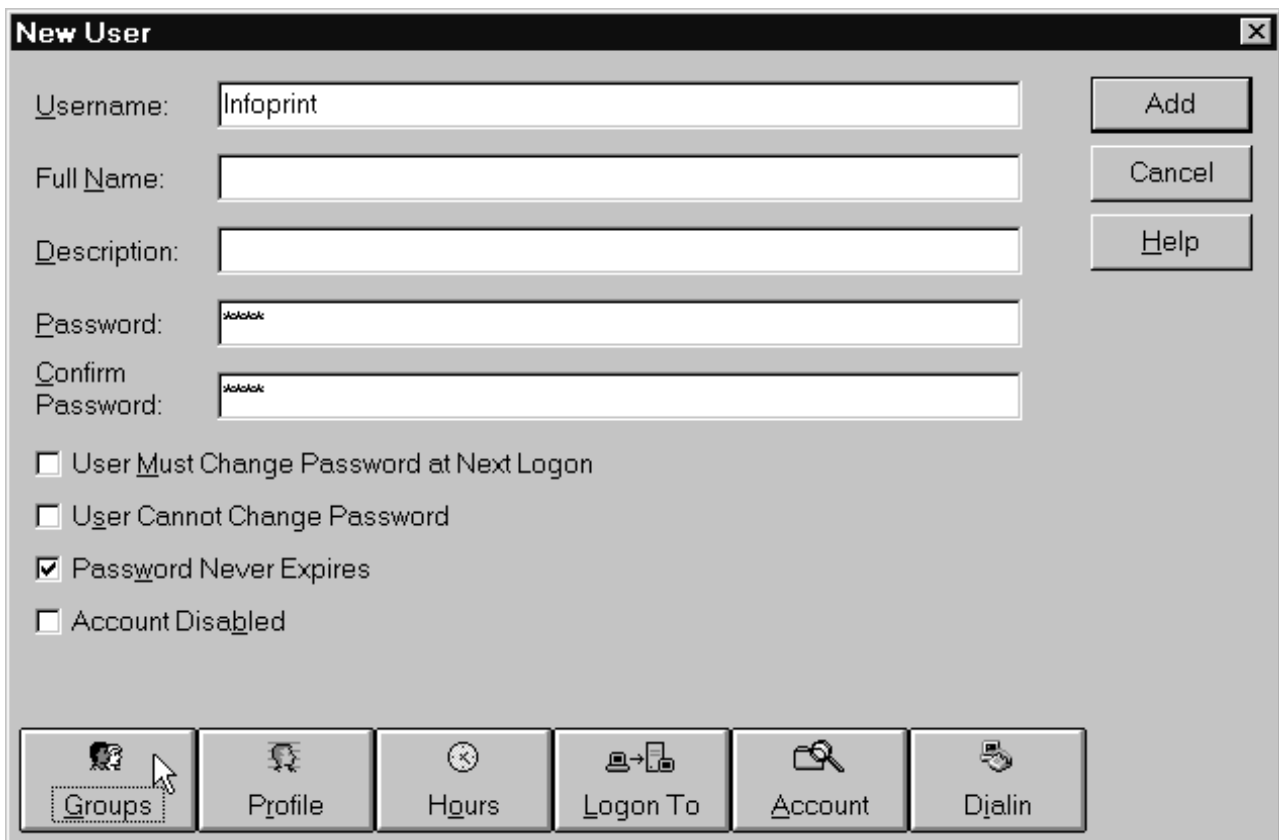


Figure 56. Create new user dialog

- e. In the Group Memberships dialog:

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

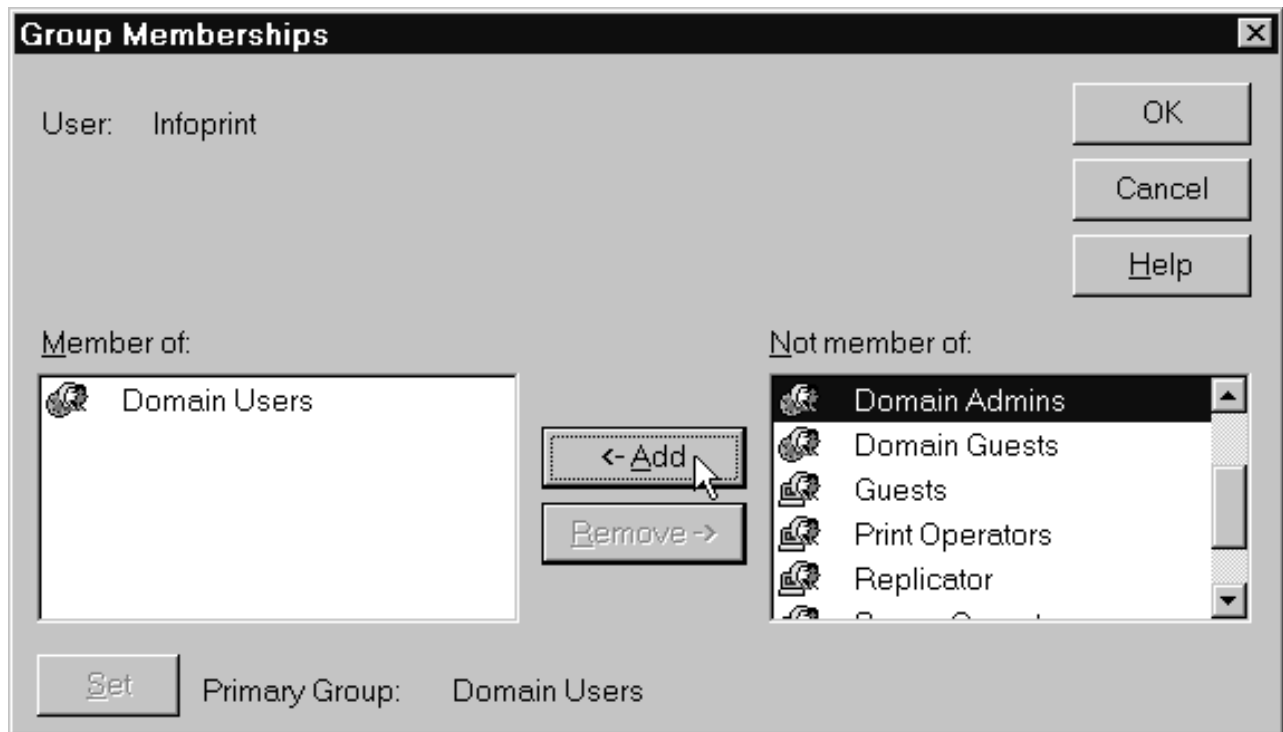


Figure 57. Add user to group

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

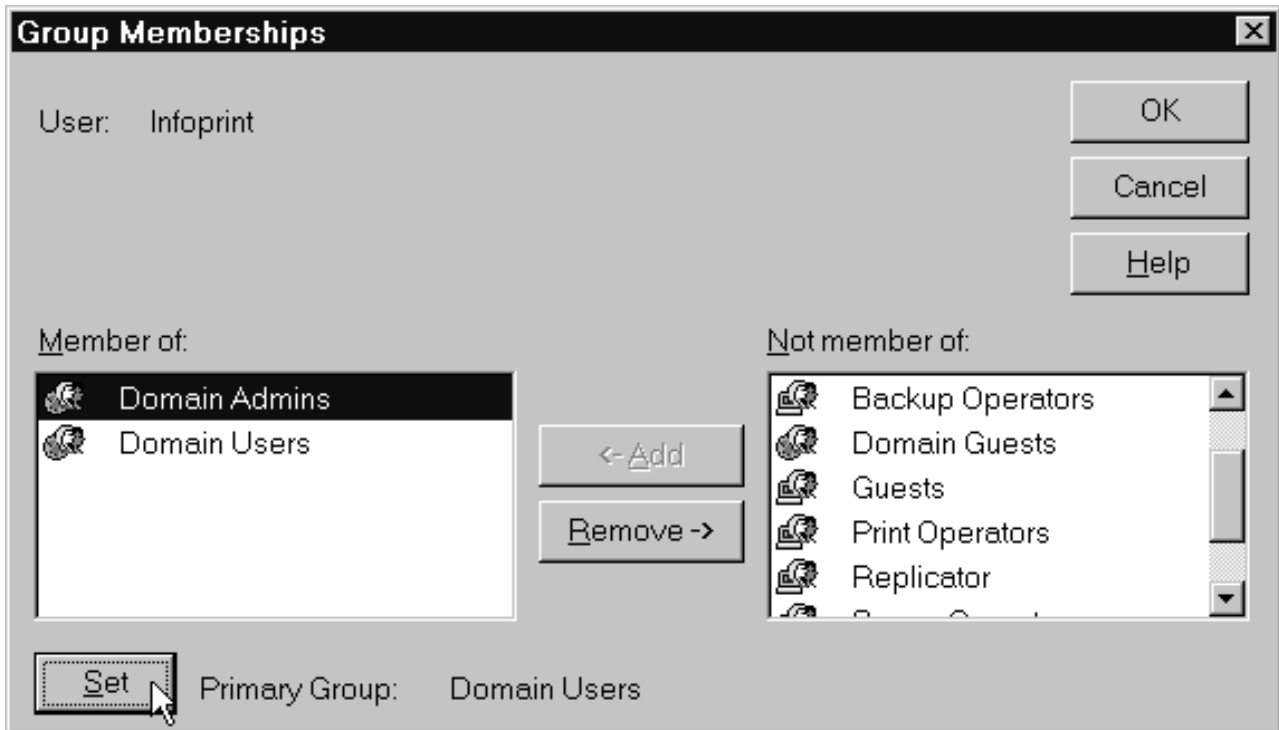


Figure 58. Reset Primary Group

- 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 59. 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 60. 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 61. 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.

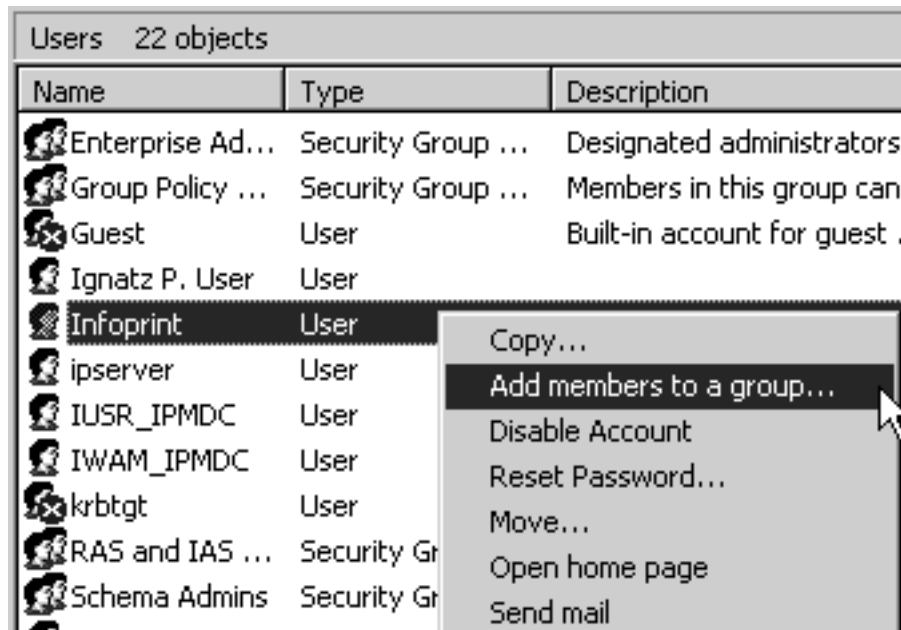


Figure 62. Add Members to a Group

- 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.

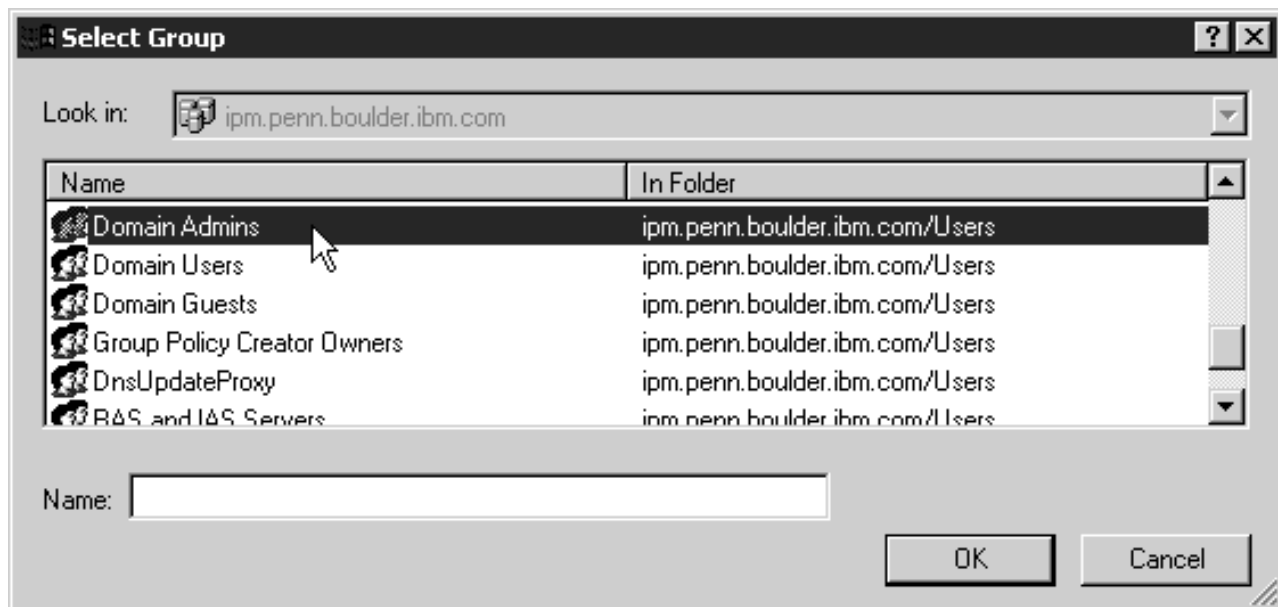


Figure 63. Select Group

- 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 64. 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**.

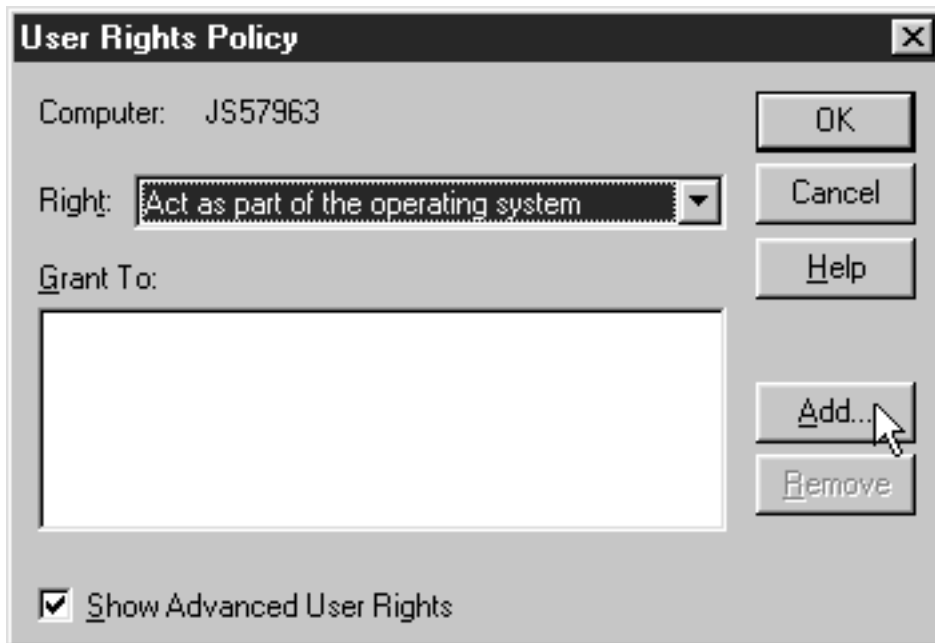


Figure 65. Local User Manager: User Rights Policy

- 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**.

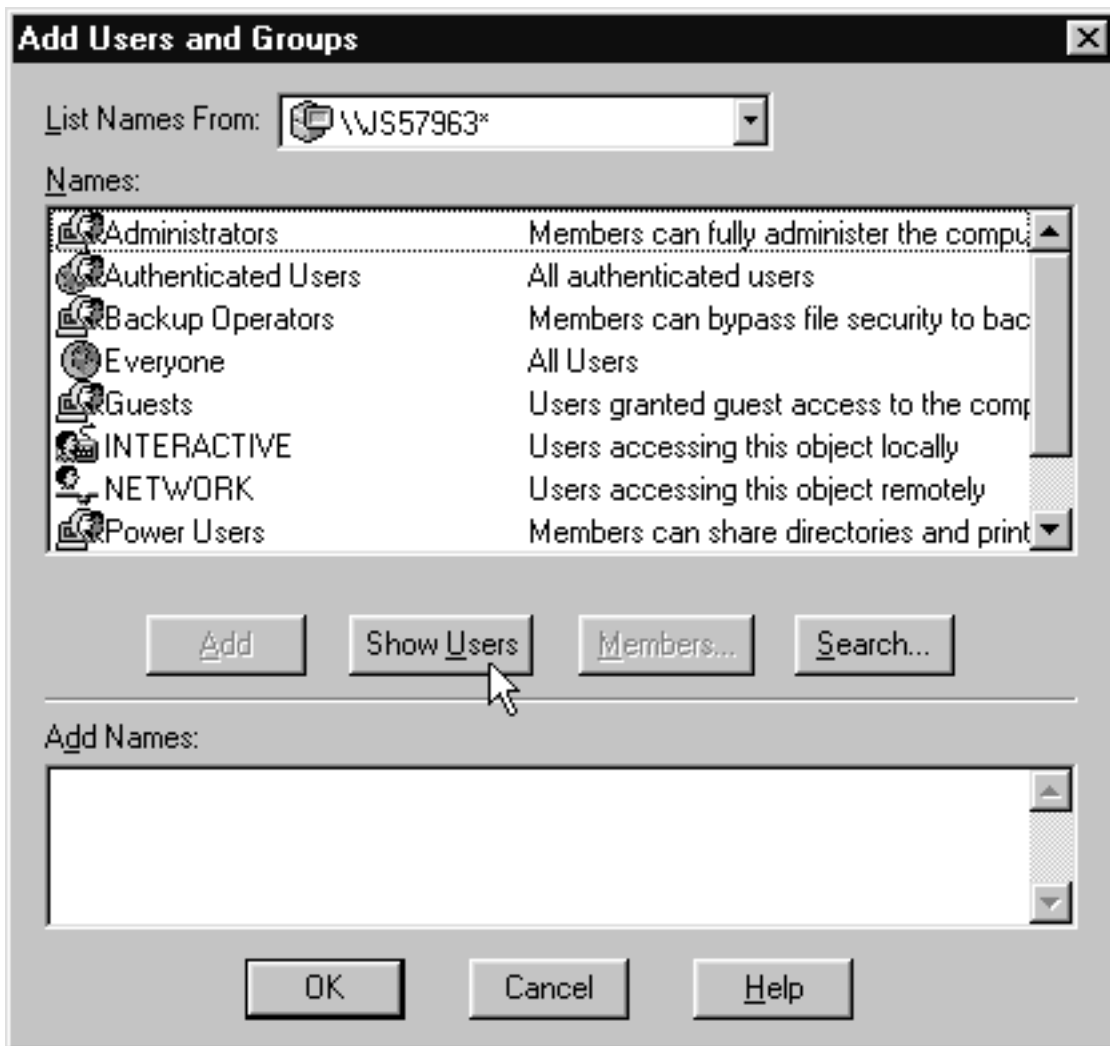


Figure 66. Local User Manager: Add Users and Groups

- f. Find the domain user that you created in step 4 on page 175 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 183 for two other rights: **Create permanent shared objects** and **Log on as a service**.
- i. Repeat from step 5a on page 182 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**.

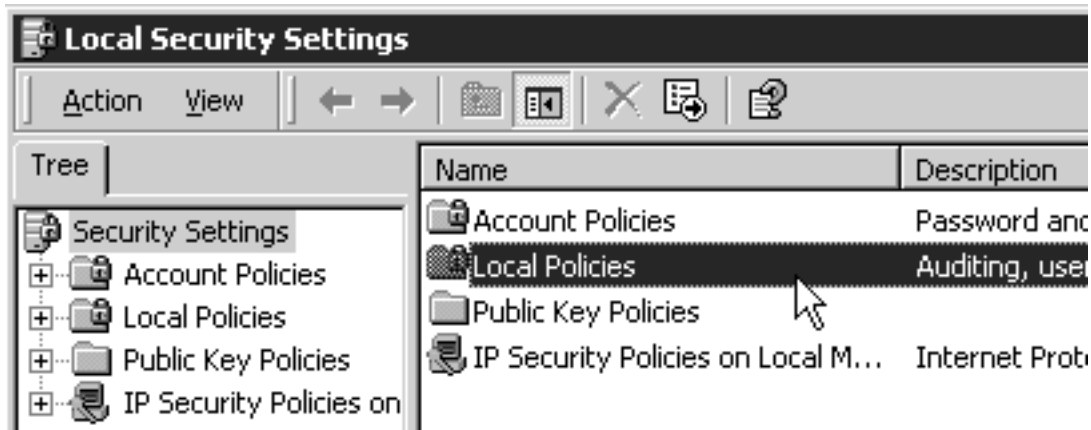


Figure 67. Local Policies

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

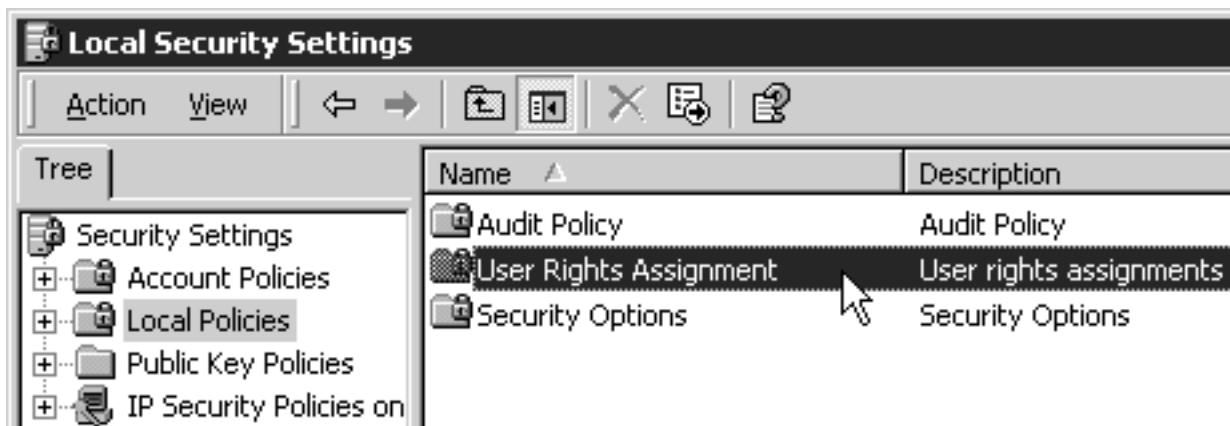


Figure 68. User Rights Assignment

- 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**.

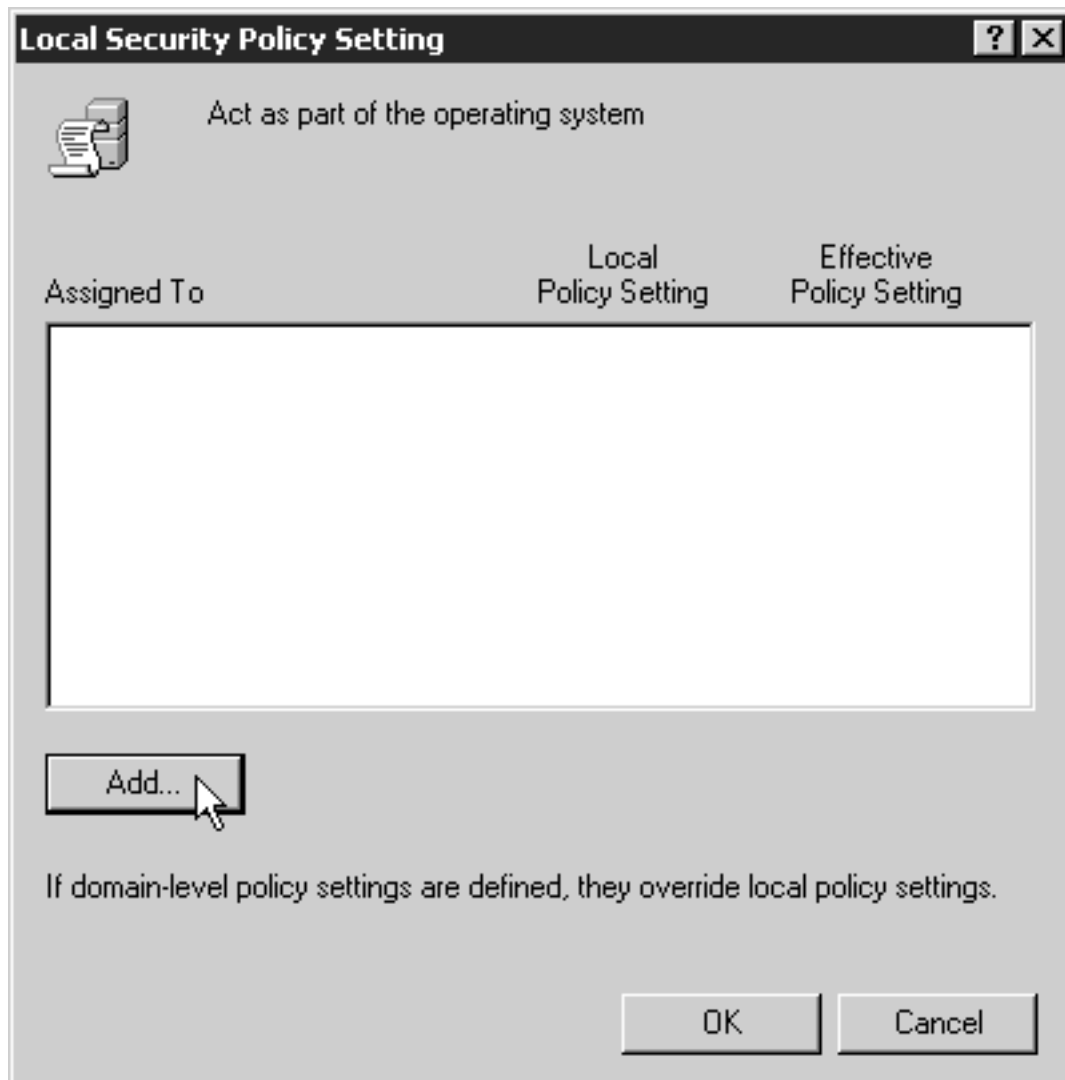


Figure 69. Local Security Policy Setting

- 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.

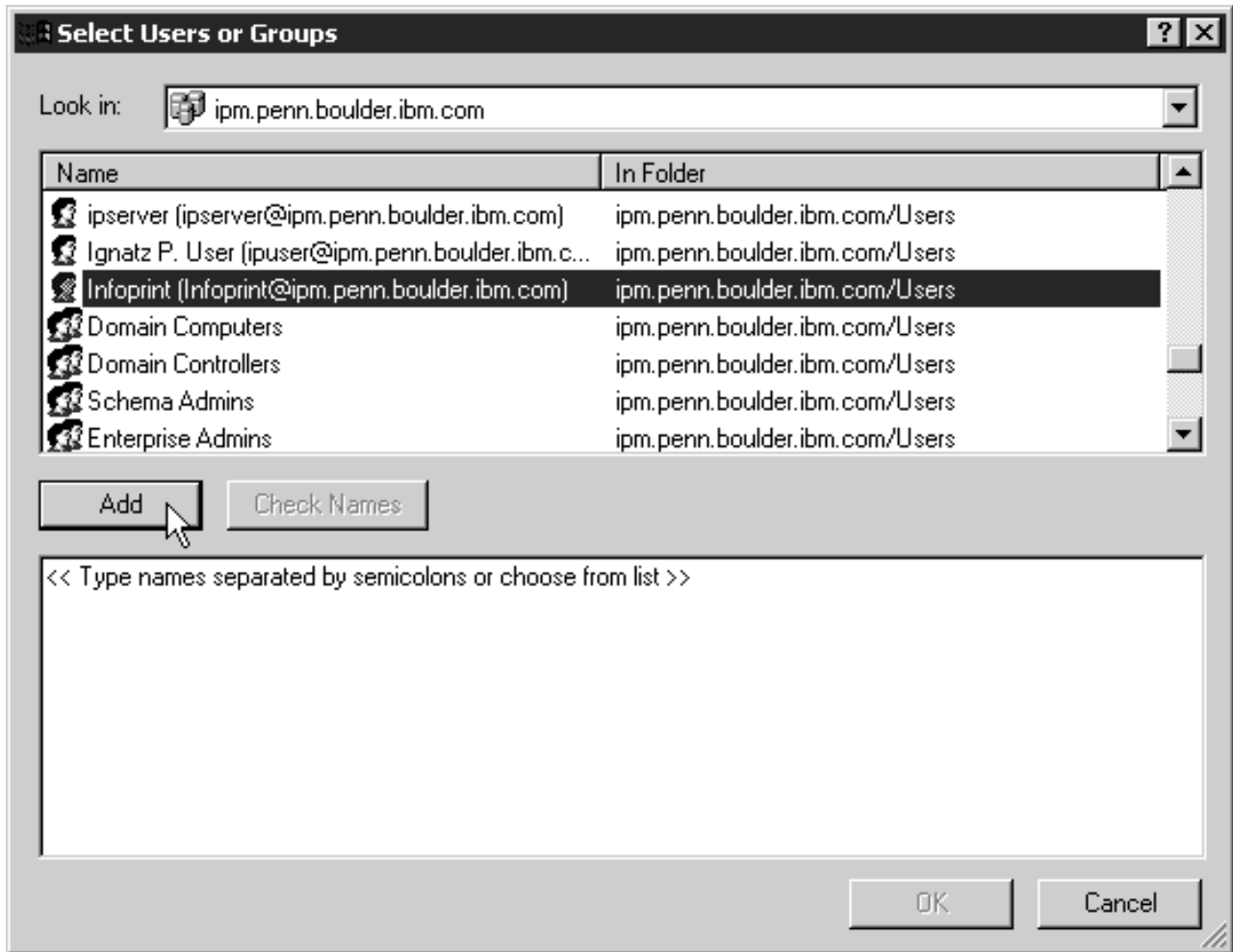


Figure 70. Select Users or Groups

- 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 185 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**.

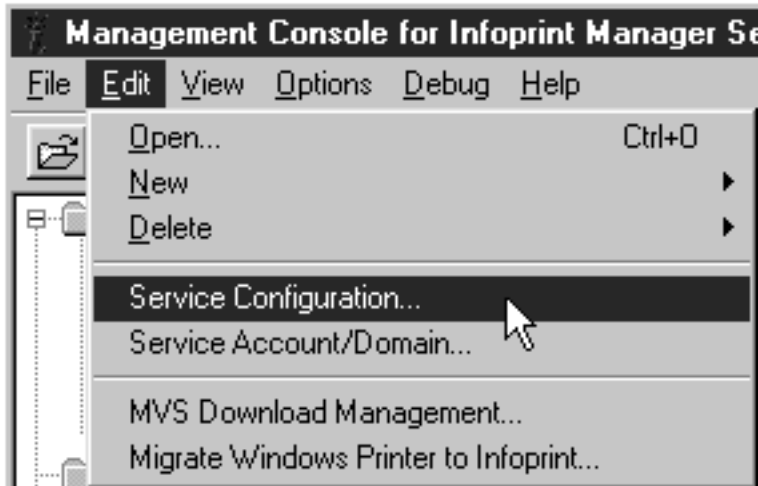


Figure 71. Management Console: Edit menu

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

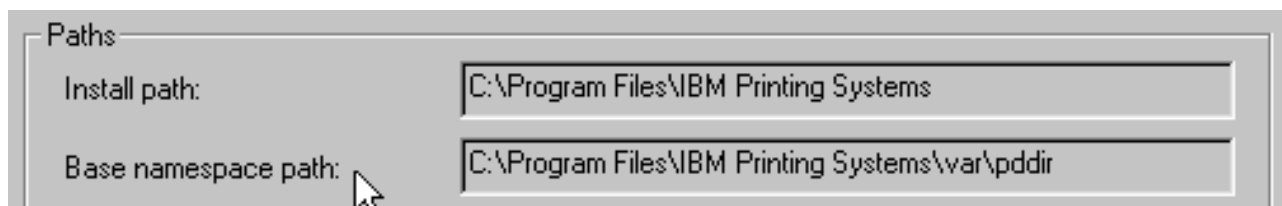


Figure 72. Management Console: Service Configuration- Base namespace path

- 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.

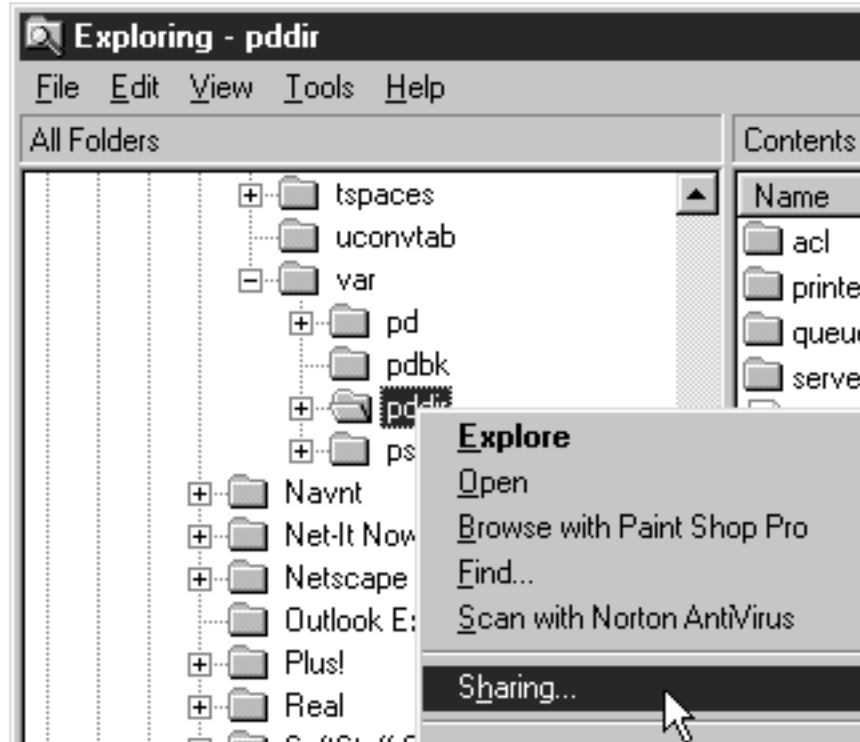


Figure 73. Sharing item

f.

On Windows NT:

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

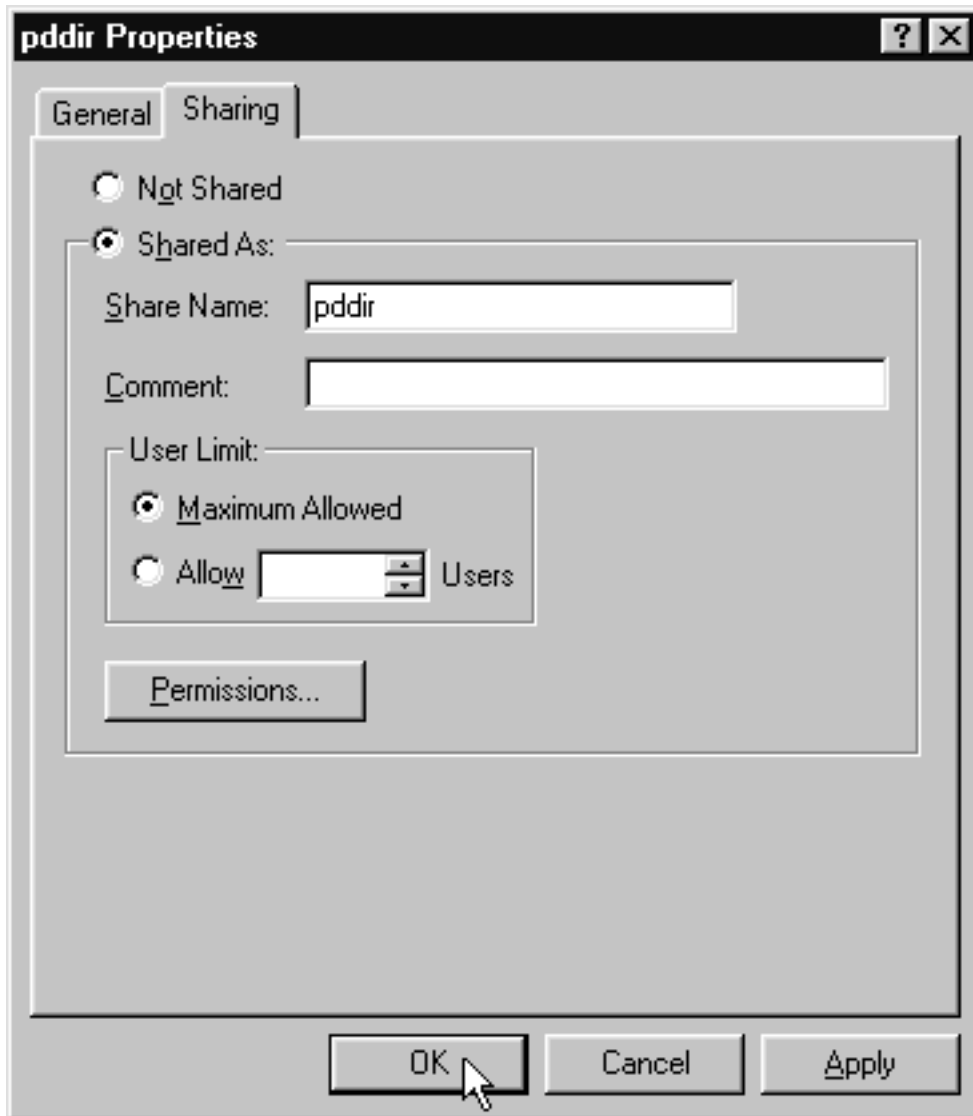


Figure 74. Shared as

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

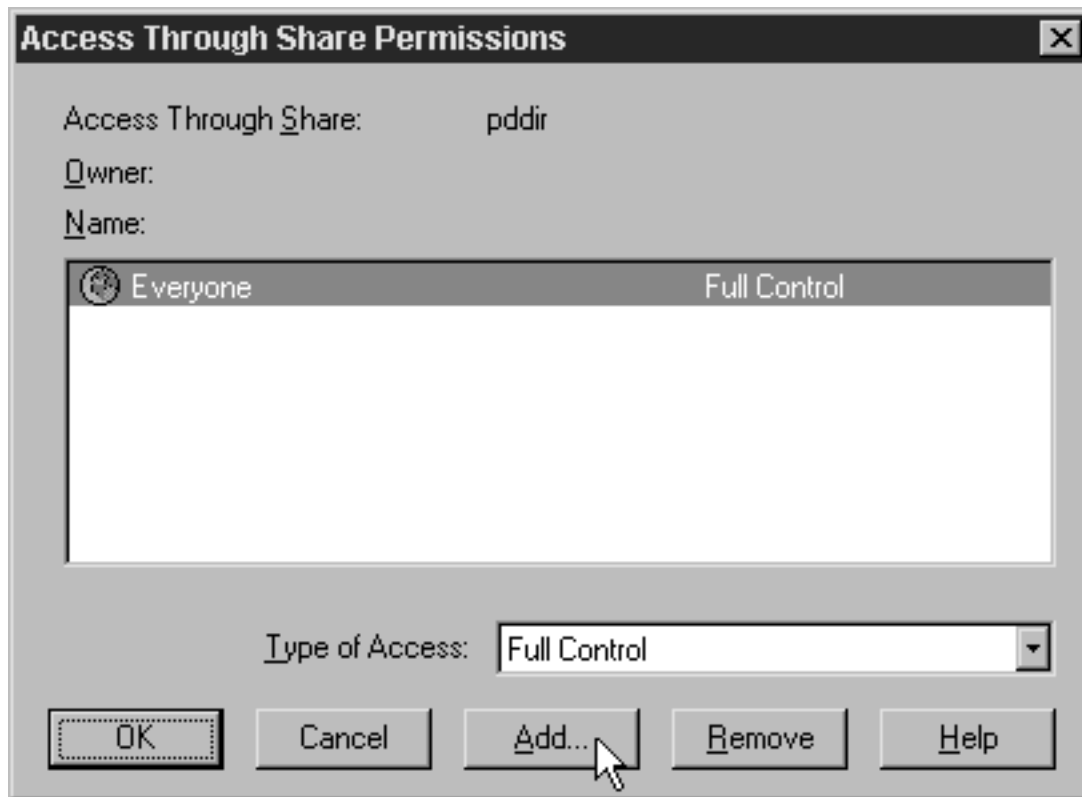


Figure 75. Access through Share Permissions dialog

- 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.

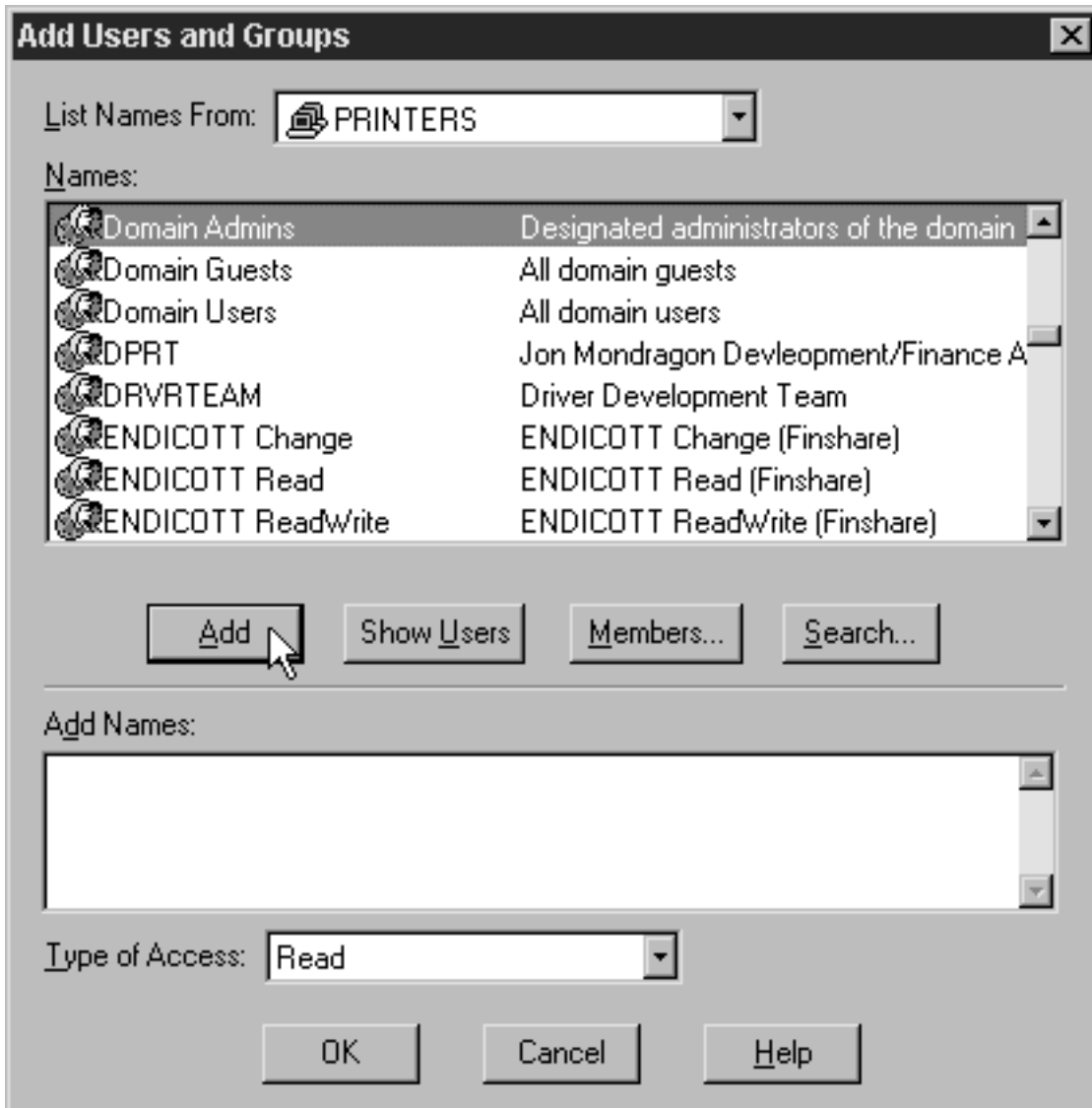


Figure 76. Add Users and Groups dialog

- 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 Control** drop-down list.

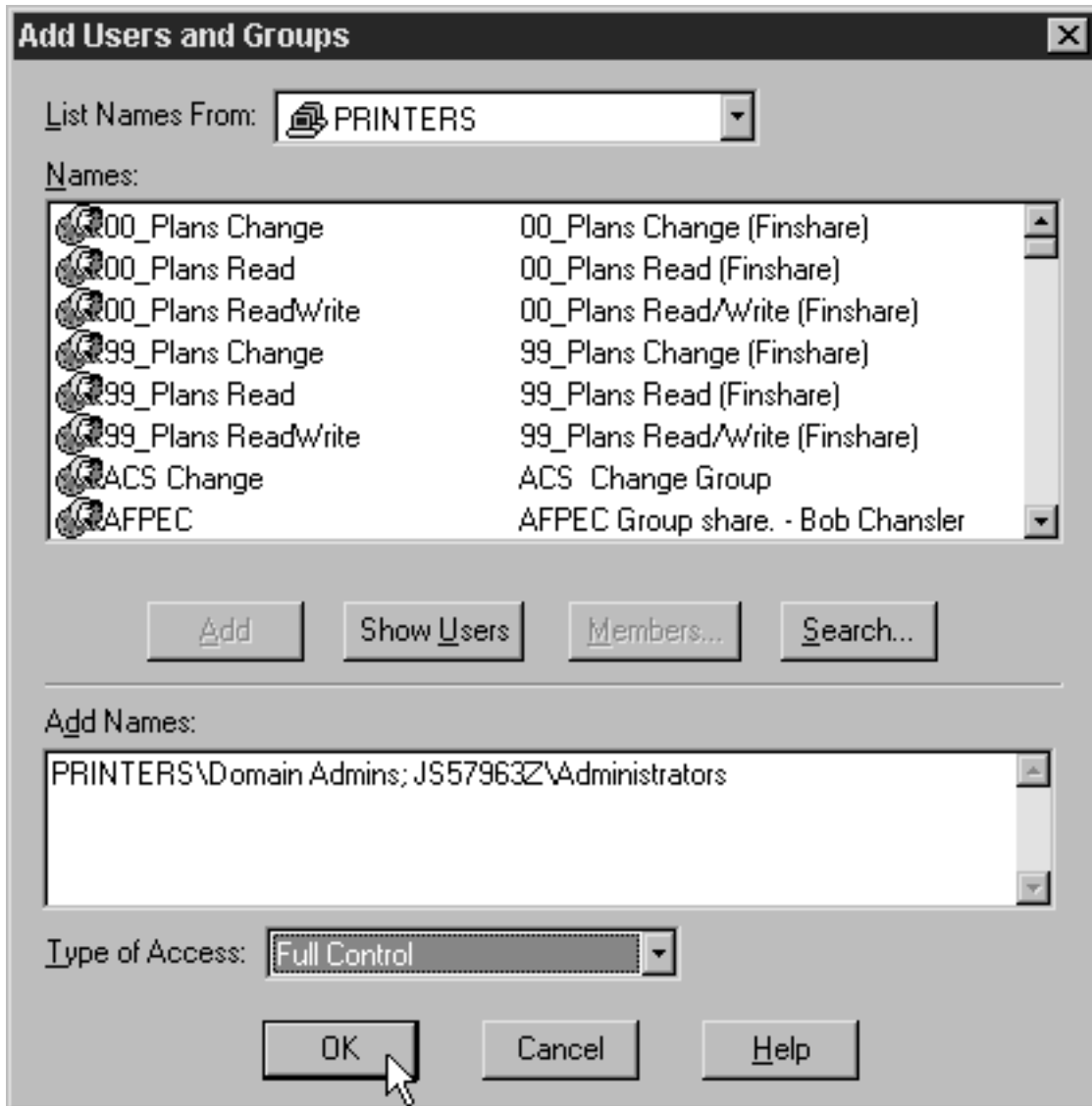


Figure 77. Change level of control

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

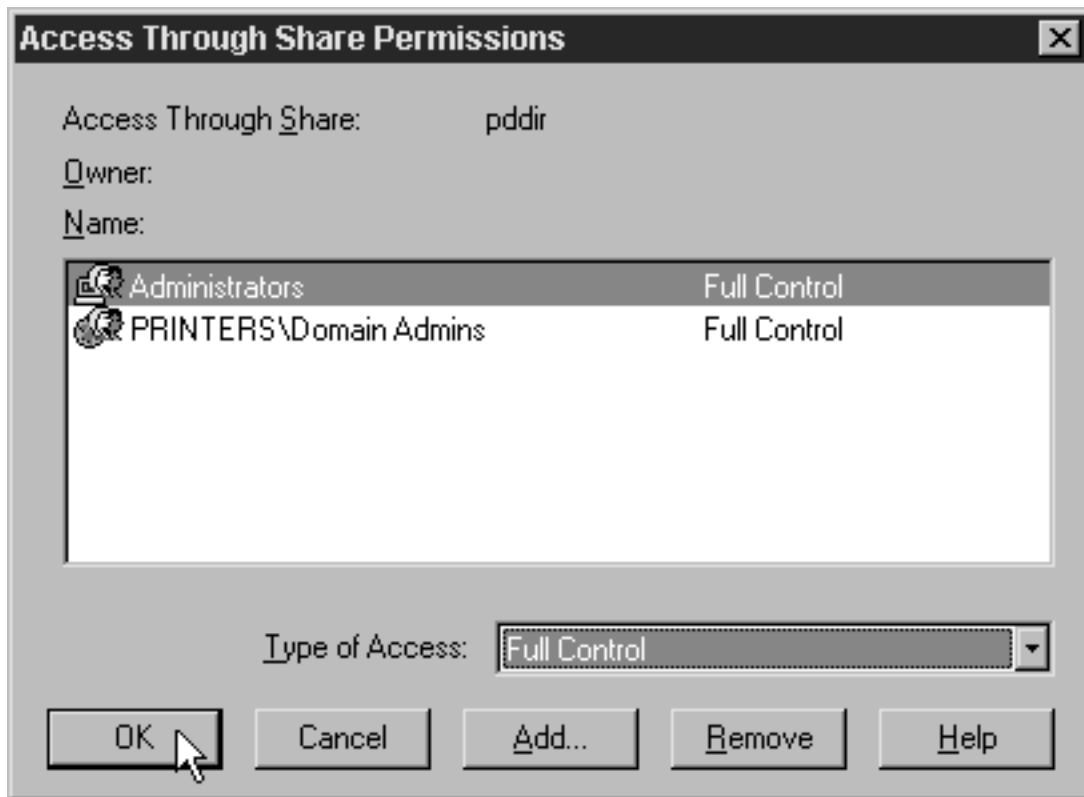


Figure 78. Finish assigning permissions

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.

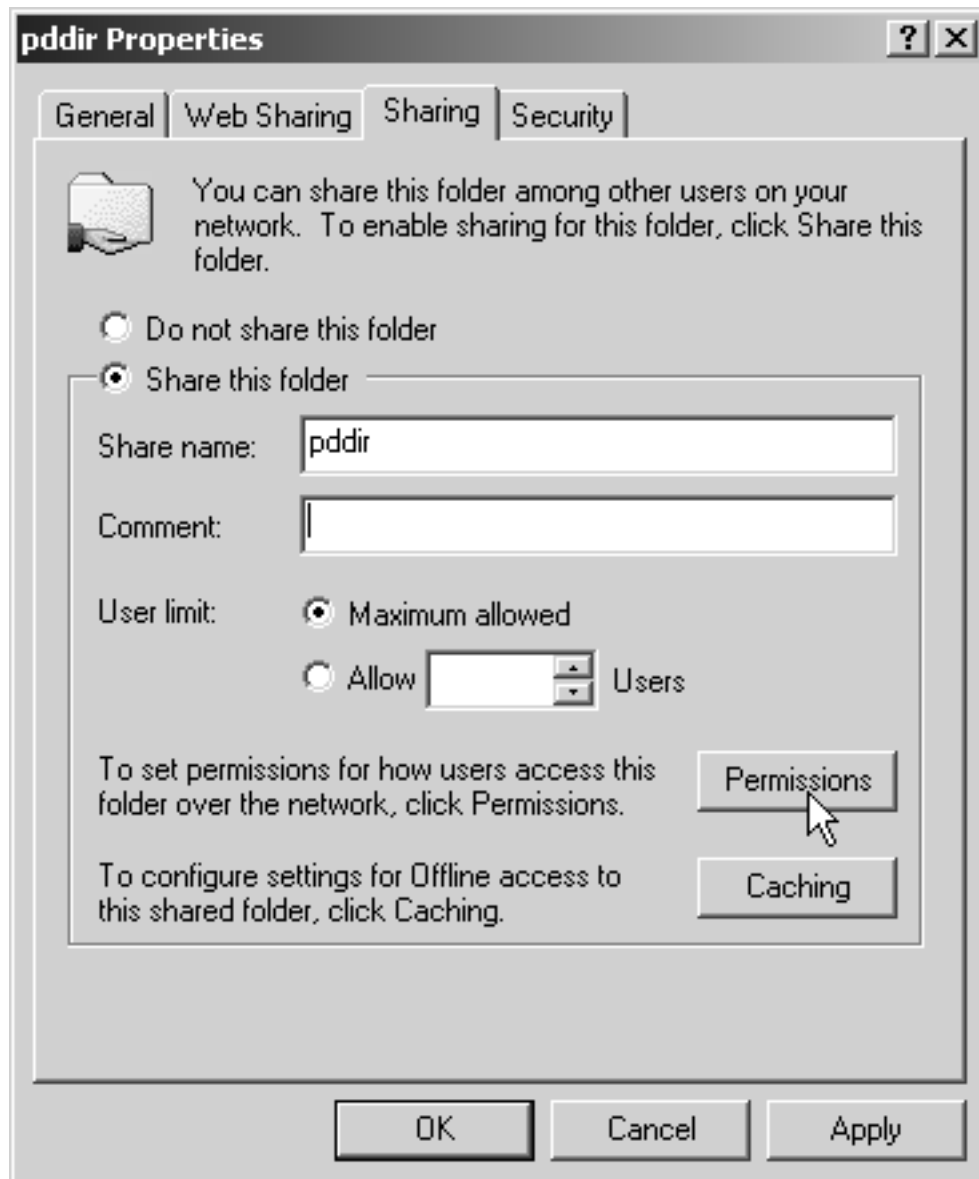


Figure 79. Share Namespace folder

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

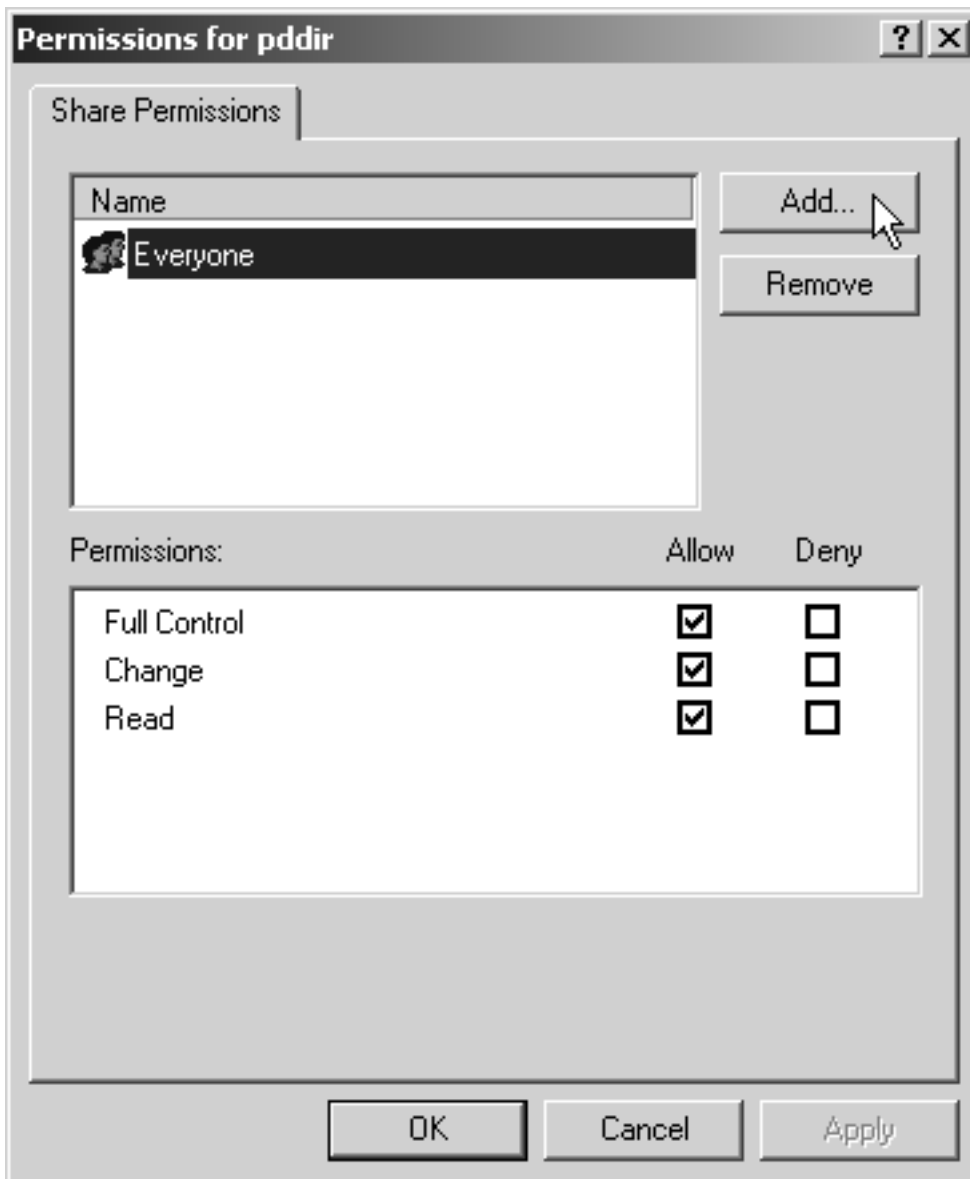


Figure 80. Check permissions on folder

- 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.

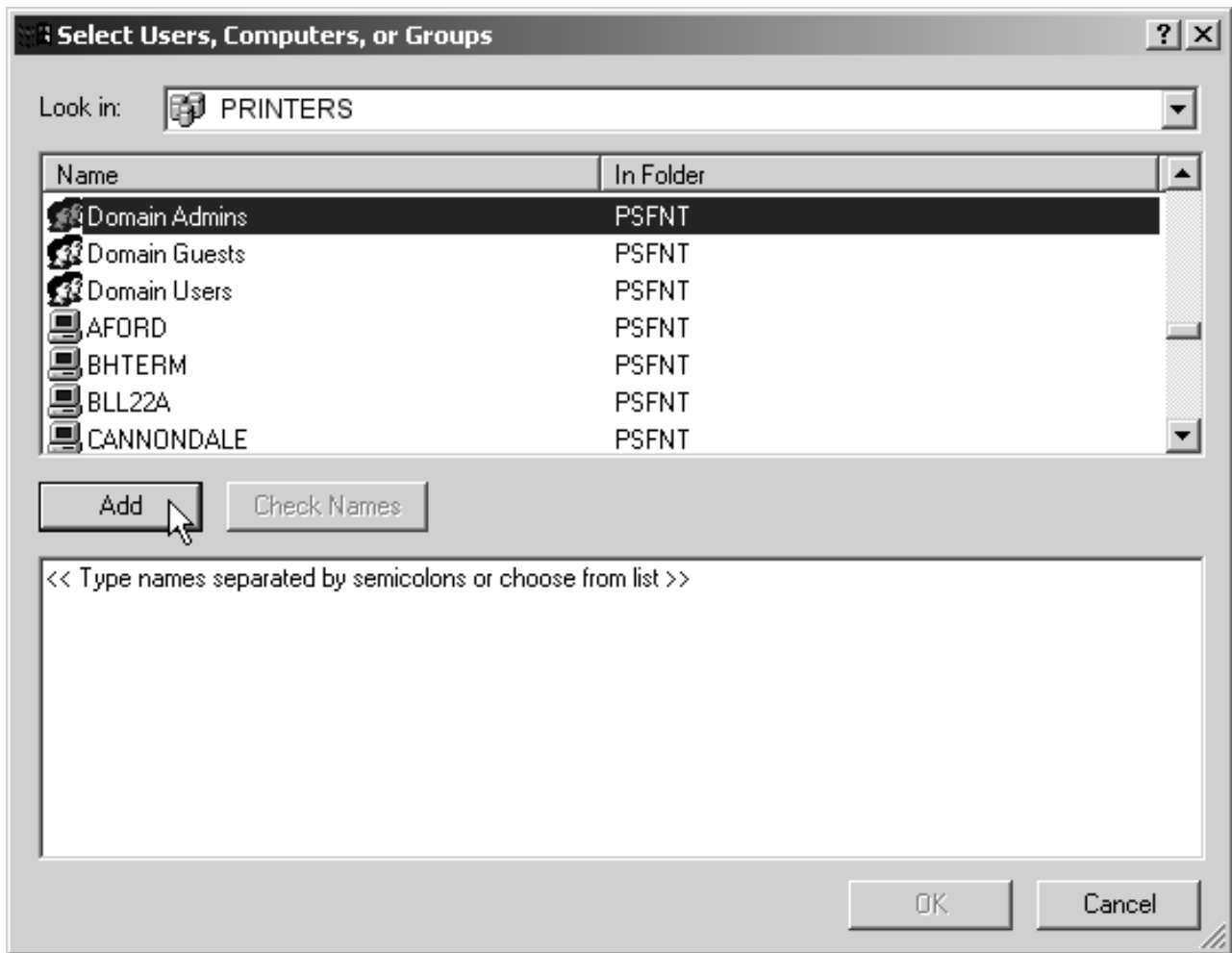


Figure 81. Add Domain Admins to list

- 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.

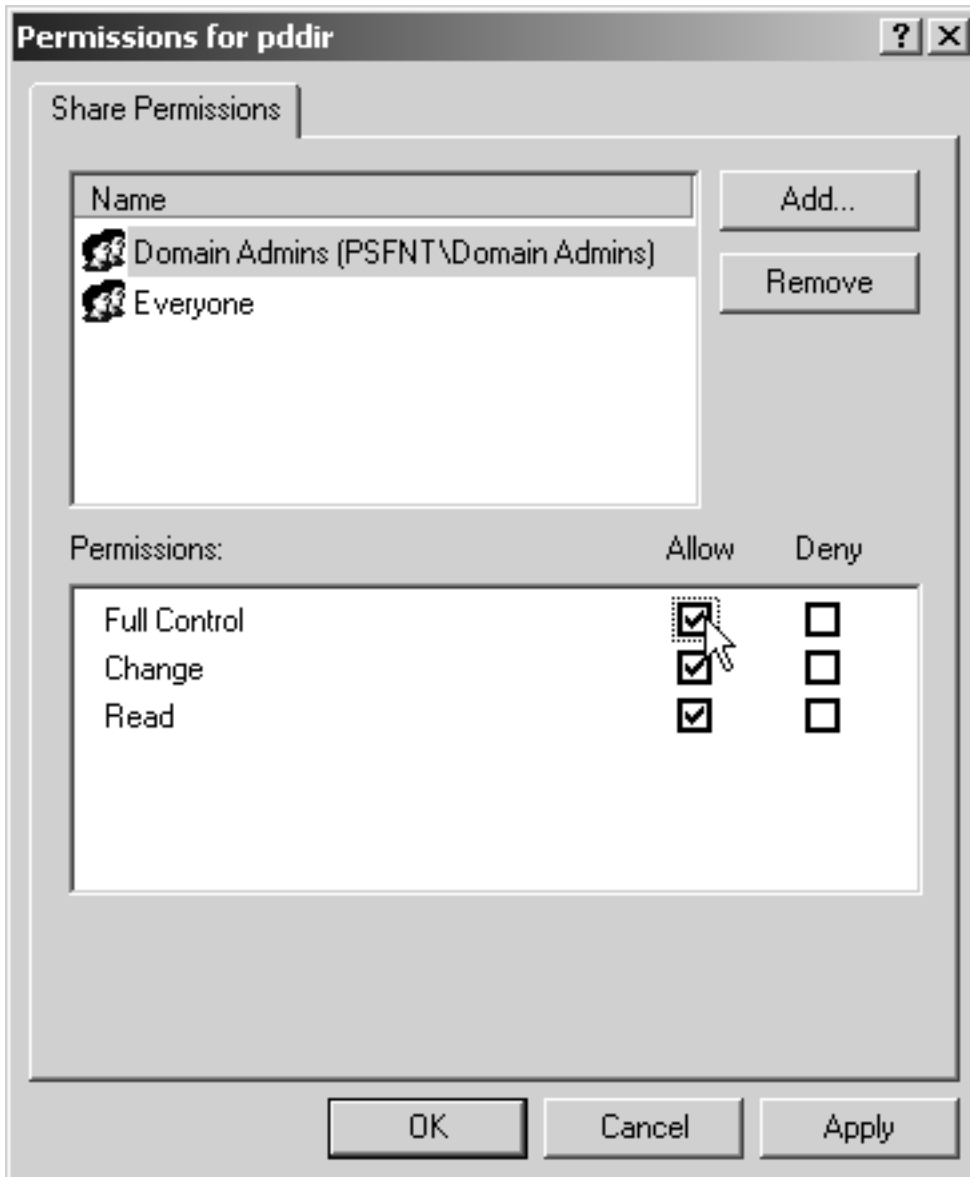


Figure 82. Give Domain Admins Full Control

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

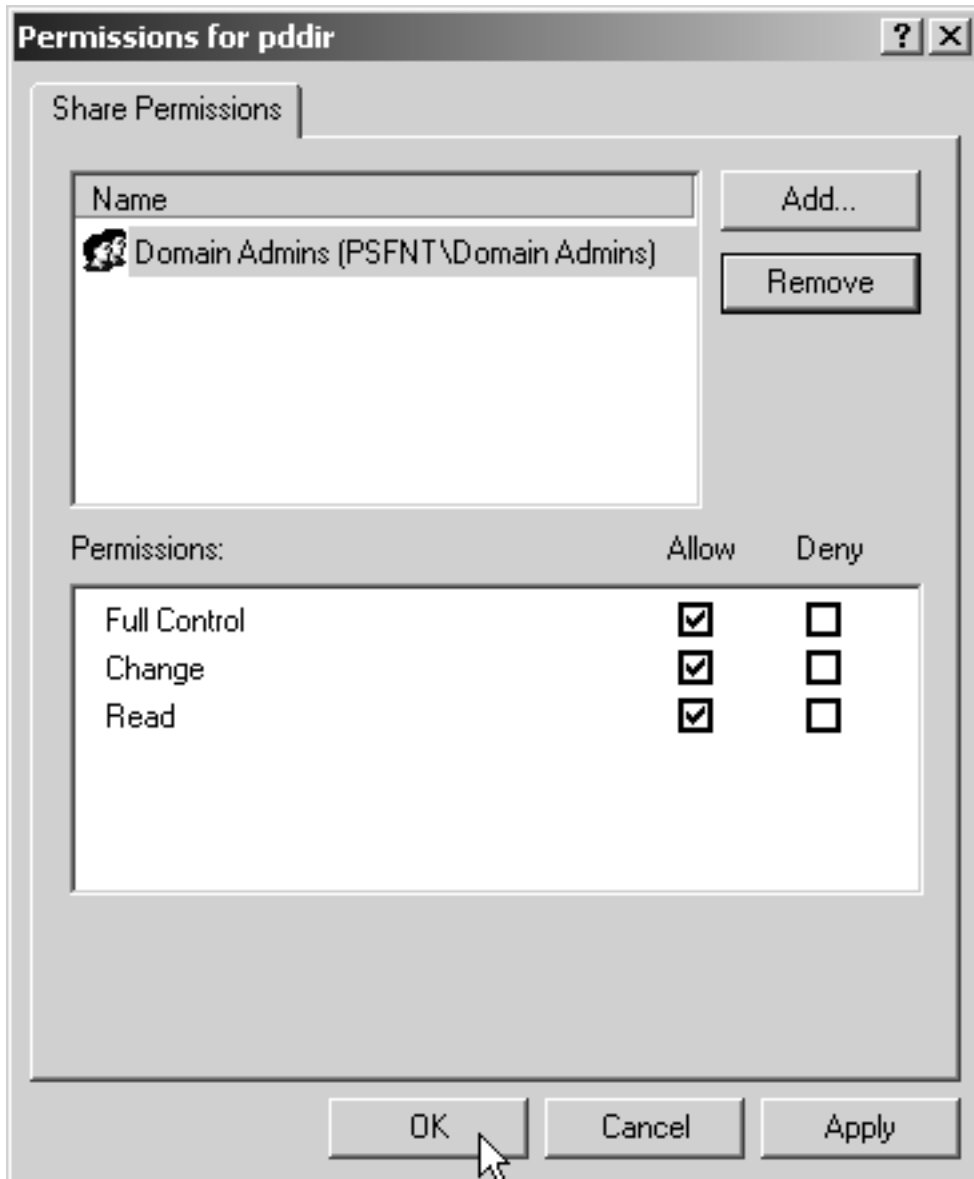


Figure 83. Finish assigning permissions

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**.

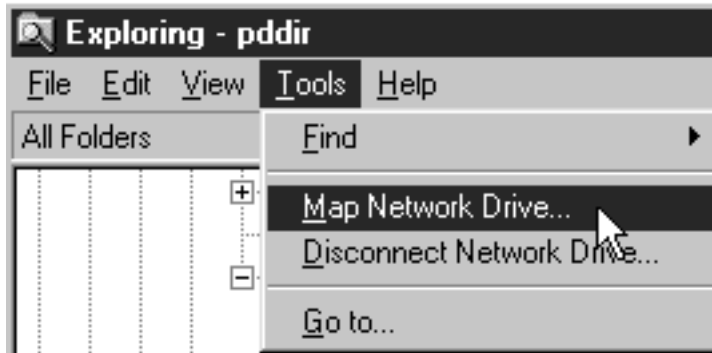


Figure 84. Map network drive

- 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`.

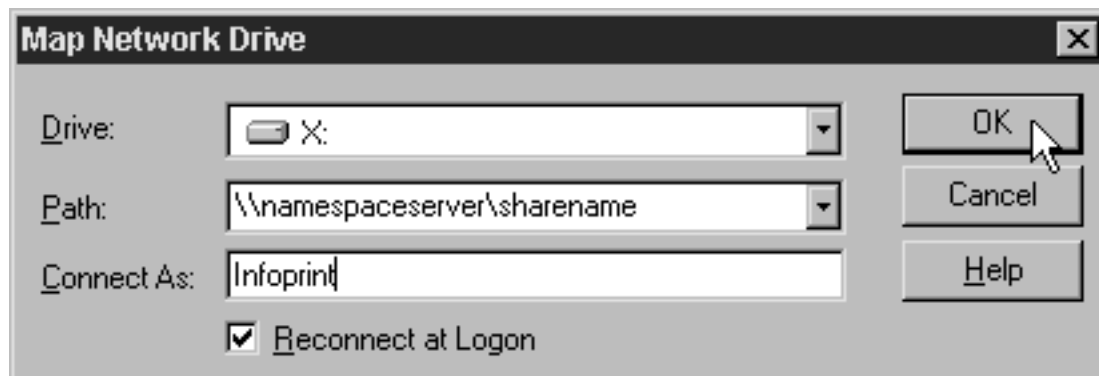


Figure 85. Map to

- 2) Type the user that you created in step 4 on page 175 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 175, 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.

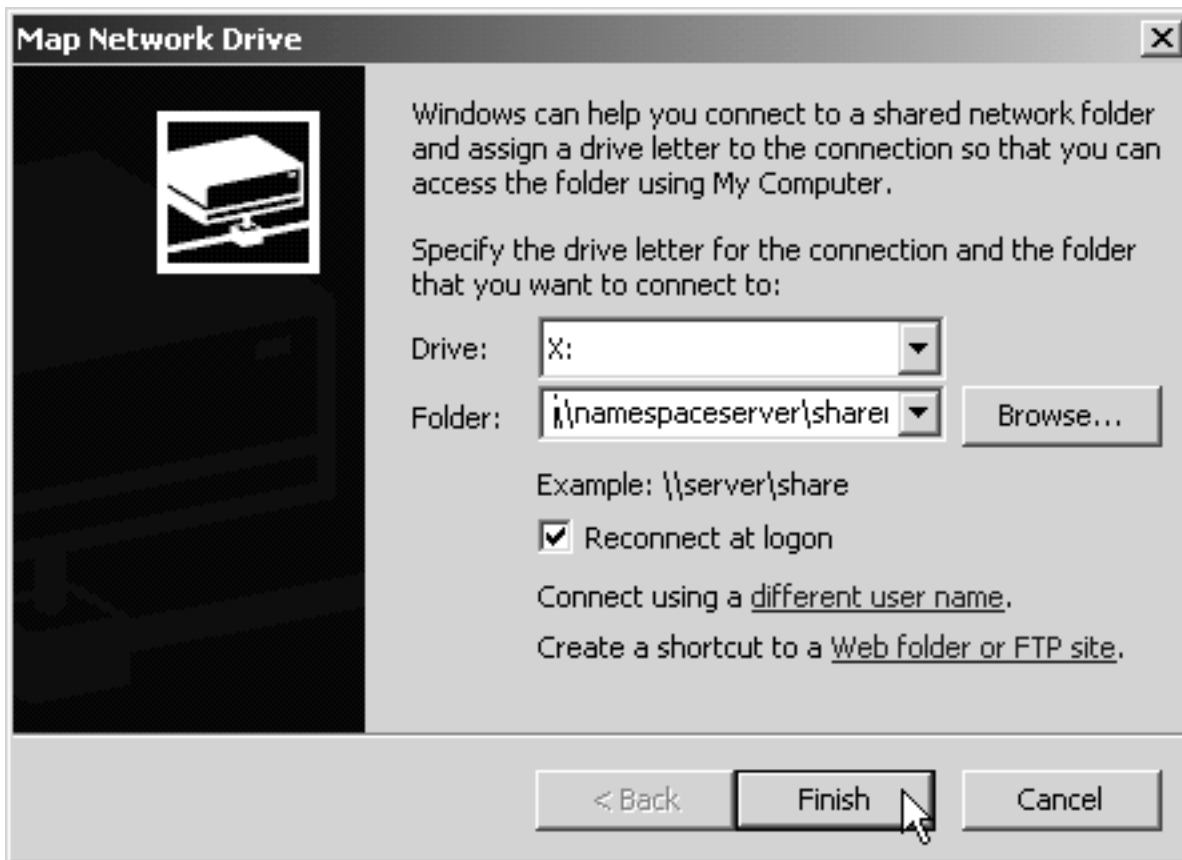


Figure 86. Map Network Drive

- 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 175.

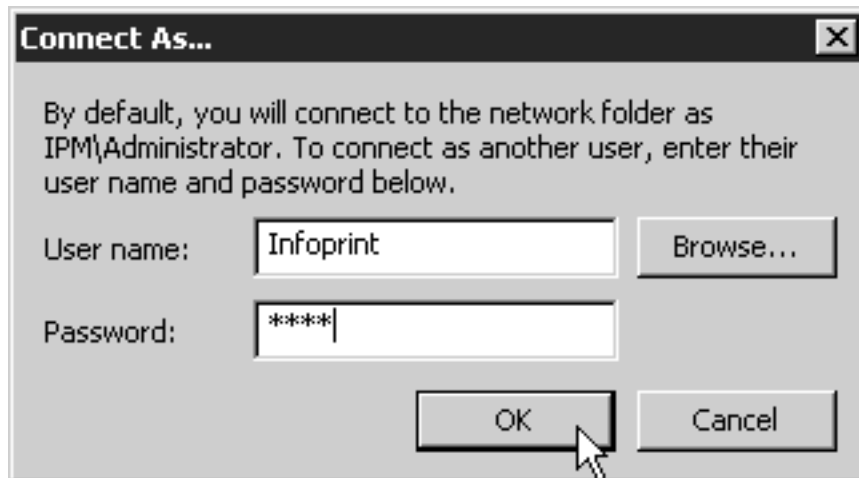


Figure 87. Connect As

- 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**.

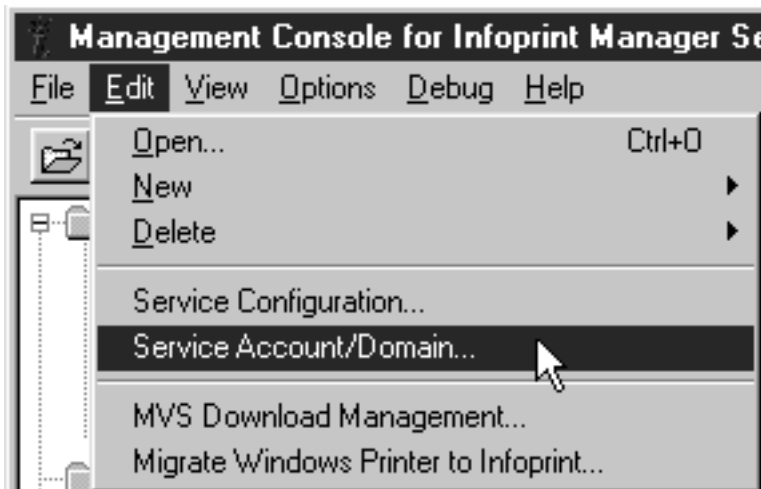


Figure 88. Management Console: Edit menu: Service account/domain

- 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 175.

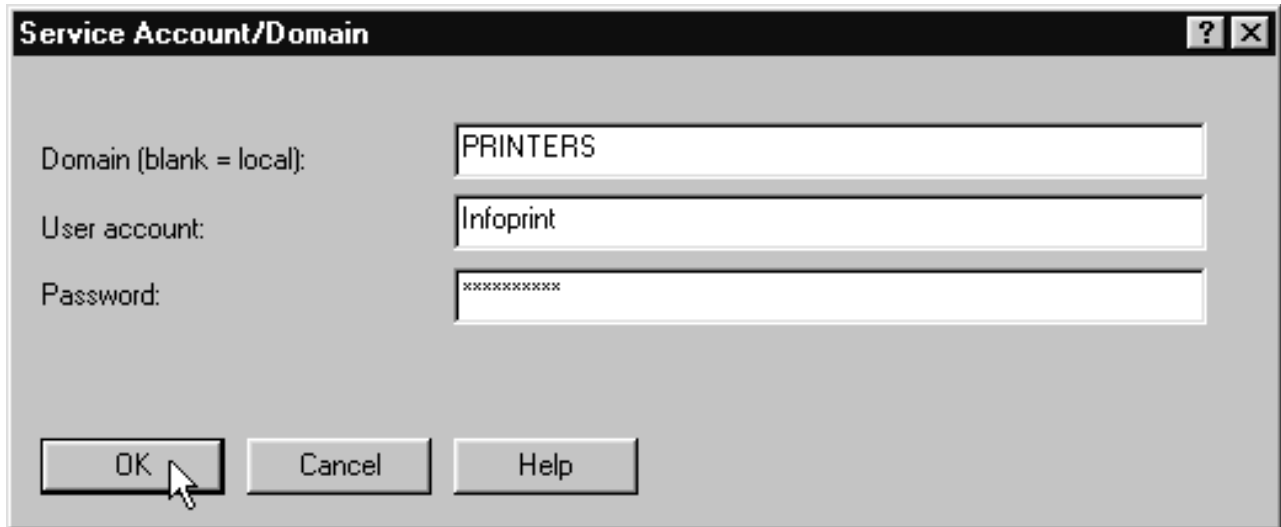


Figure 89. Change Service Account/Domain

- 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**.

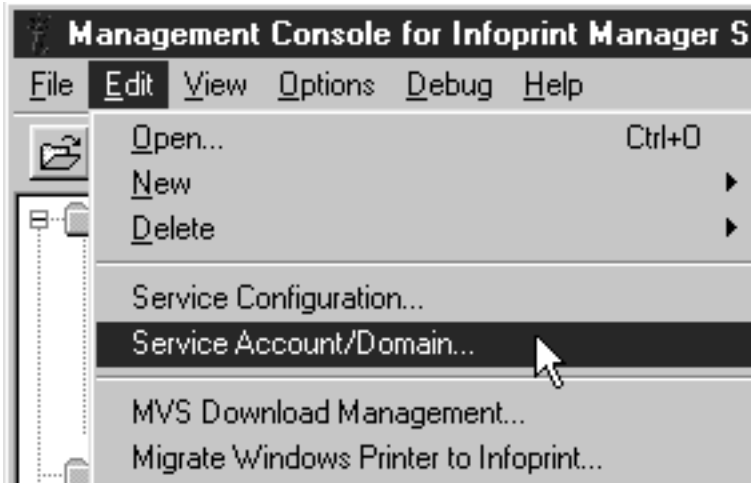


Figure 90. Management Console: Edit menu: Service account/domain

- 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 175.

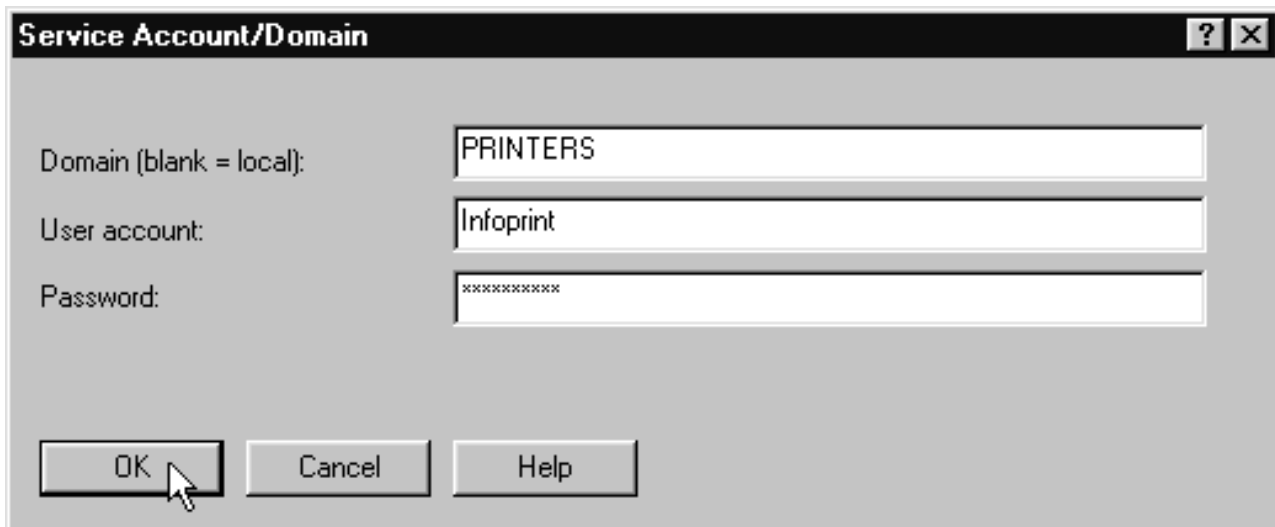


Figure 91. Change Service Account/Domain

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

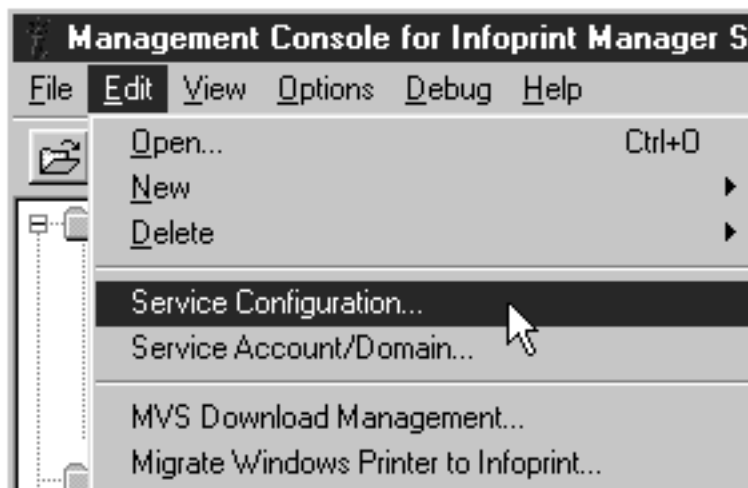


Figure 92. Management Console: Edit menu: Service Configuration

- f. Clear the **Base namespace path** field and type the drive letter that you mapped to the namespace in step 7 on page 199 followed by a colon.

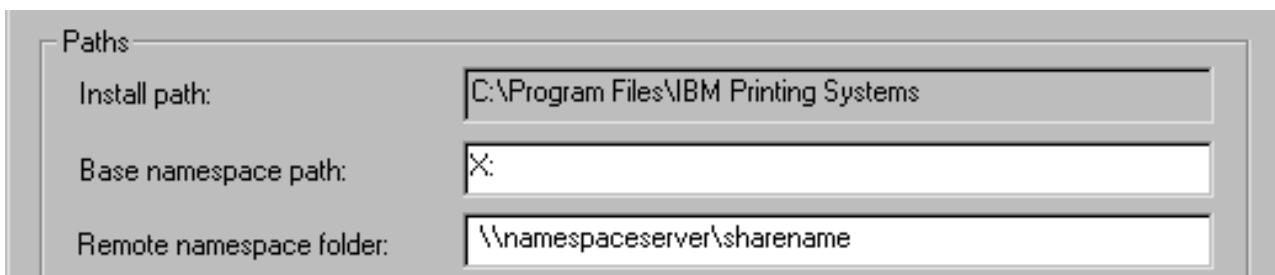


Figure 93. Management Console: Service Configuration: Change paths

- 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**.

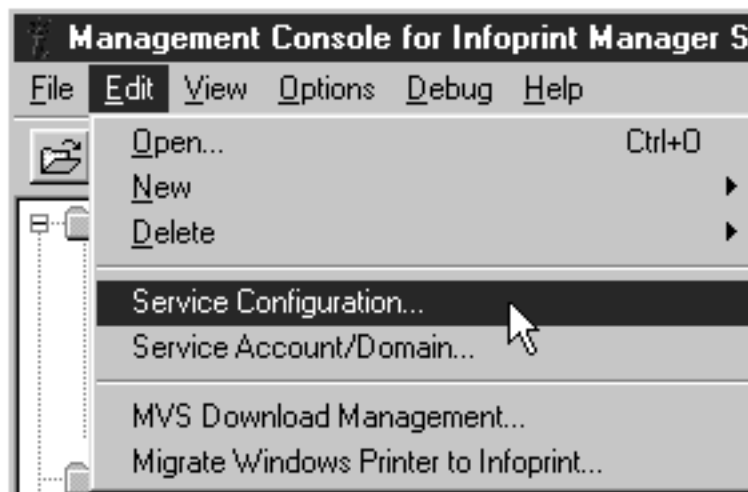


Figure 94. Management Console: Edit menu: Service Configuration

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

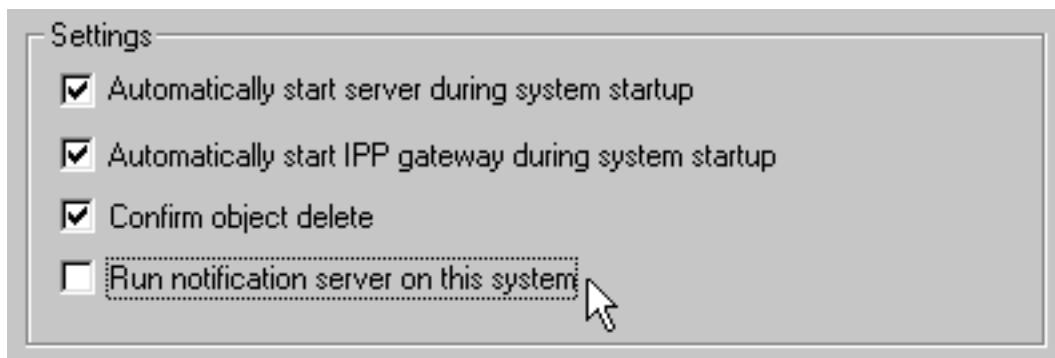


Figure 95. Management Console: Service Configuration: Disable notification

- 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 **Fi -> Start Server**.



Figure 96. 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 199 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.

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 3 Release 2 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 `smit`. The following screen displays.

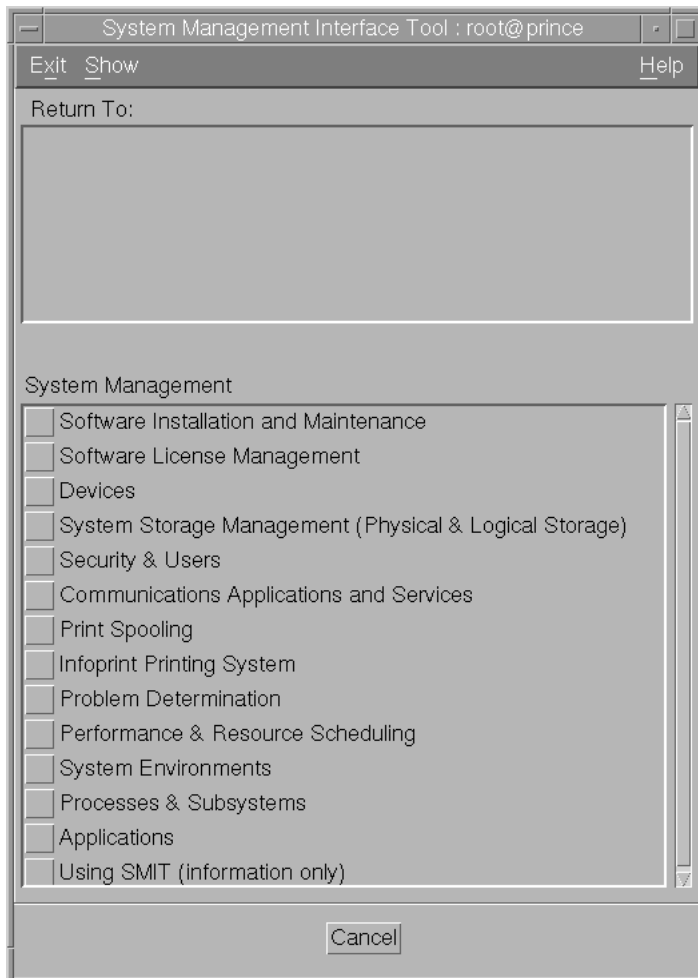


Figure 97. Main SMIT Panel

3. From this panel, specify the **Infoprint Printing System-->Infoprint Utilities-->Configure Secondary Servers (NFS)-->Link from Primary Server to Secondary Server** path.
4. 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:

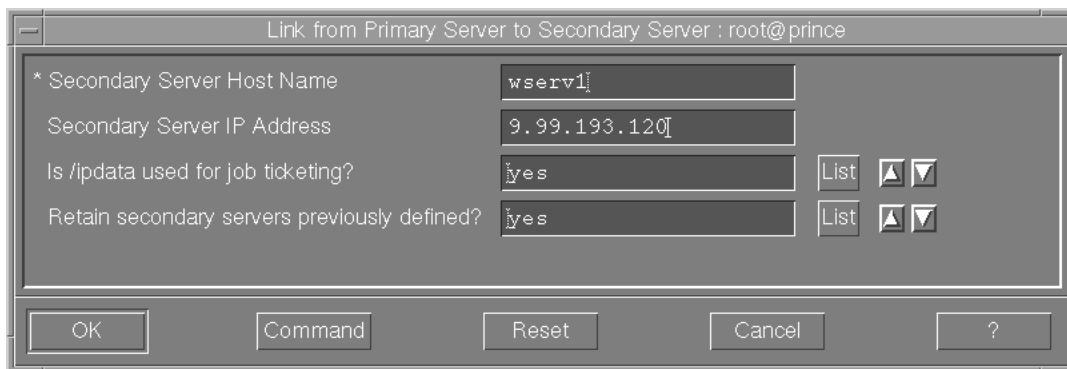


Figure 98. Link from Primary to Secondary Server Panel

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 RIPPed 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.

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

Adding users to and modifying permissions for FST security groups

1. 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**.
2. 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.
3. 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 above 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 Infoprint Manager administrative user you normally log in to the Infoprint Manager for Windows NT or Windows 2000 server machine as for the **User or Users to Add** field. For the remainder of this procedure we will refer to this Windows Infoprint Manager 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`.)
6. Once complete, click **Ok** to ensure the changes take effect and return to the first SMIT panel displayed in step 2.

Creating the ntuser ID on the Infoprint AIX server

The following procedure creates the 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 to `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. From a dtterm window, type `cd /var/pddir/default_cell`.
2. 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 * .`
3. 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
```

4. 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 or Windows 2000 servers" on page 173

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 Windows Infoprint Manager 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 Infoprint Manager 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 Windows 2000 domain controller

On the Windows 2000 Domain Controller server for the domain where your Windows Infoprint Manager 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 Infoprint Manager 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:

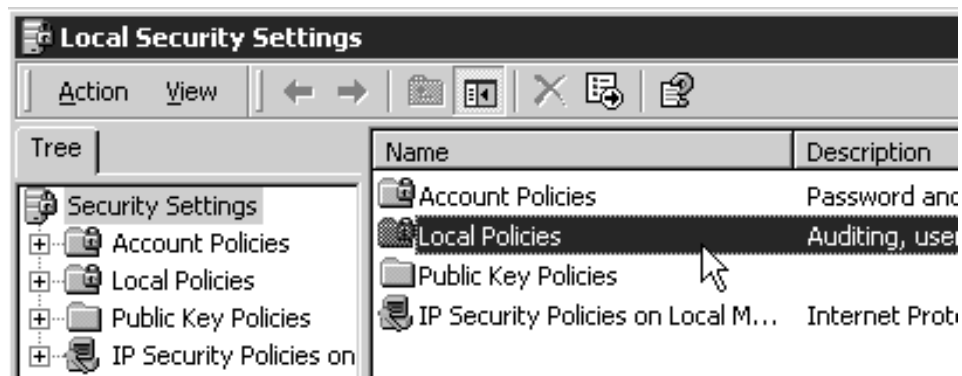
Click the **Advanced User Rights** check box to see these rights.

- 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.

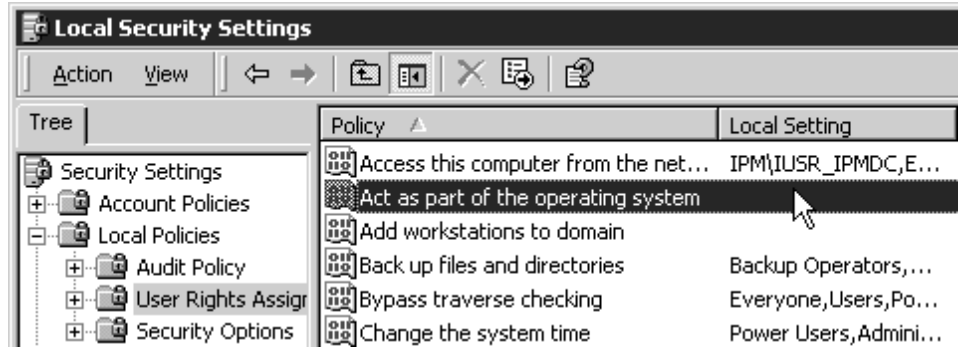
1. Log on to one of the systems as a user who is a member of the Domain Administrators group.
2. Click the Windows **Start** button and select **Settings --> Control Panel**.
3. In the **Control Panel** window, double-click the **Administrative Tools** icon.
4. In the **Administrative Tools** window,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



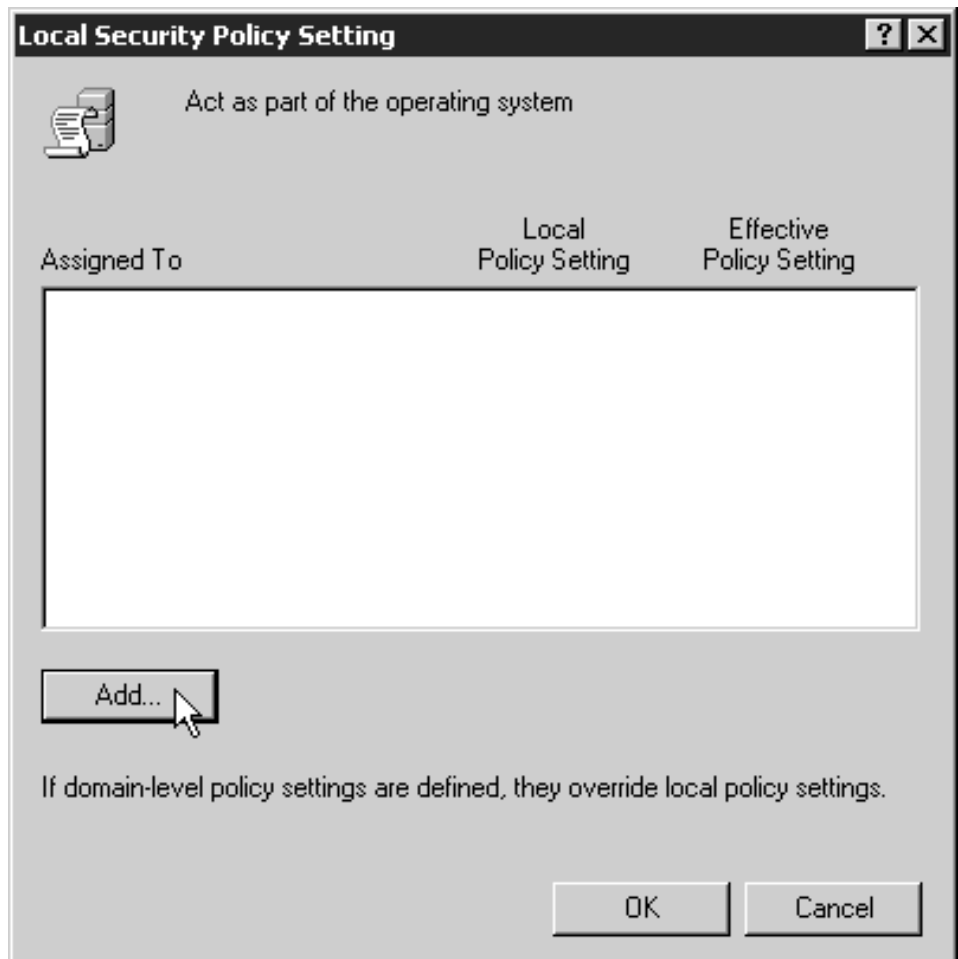
6. Double-click **User Rights Assignment** in the right pane.



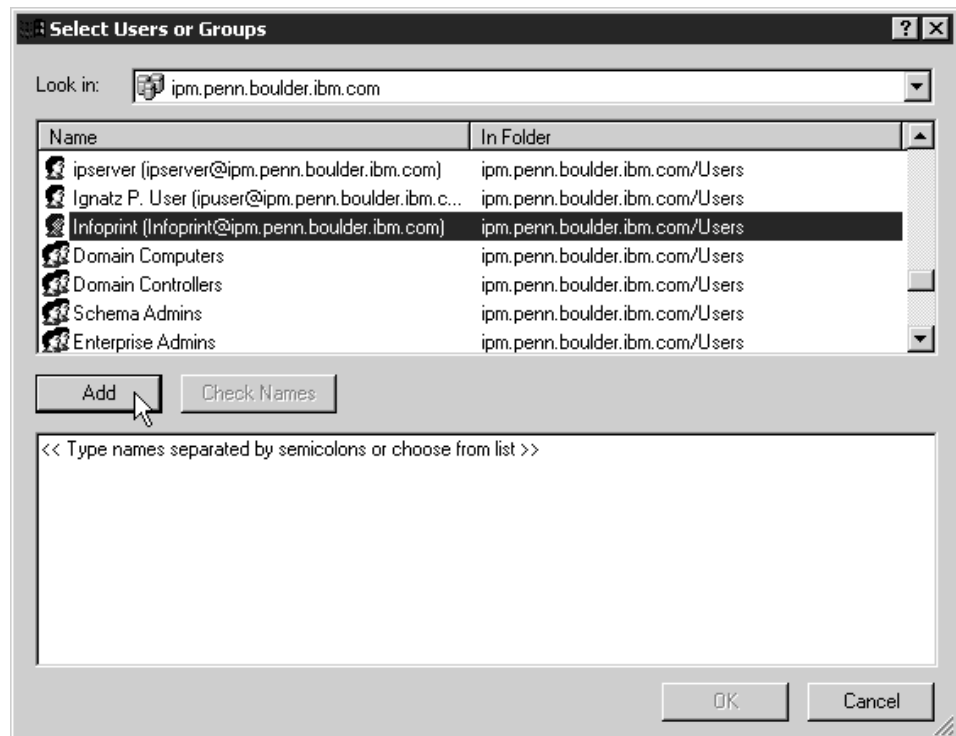
7. In the list of user rights, select **Act as part of the operating system** and double click it.



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 213 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:

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

Match Filenames Exactly	check
Match Filenames Ignoring Case	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.
Please note that if you have not applied service program temporary fix (PTF) U472668, you will not see the **Run Infoprint Manager LPD service** check box.
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: `\\namespaceserver\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.

Providing authority to the ipwinadmin ID

Use the following procedure to ensure 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. Create a user named ipwinadmin in the domain, using the Setting Up the Common Account for Infoprint Windows Servers on the Domain Controller 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.

Chapter 8. Submitting Specialized Print Jobs

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.

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”.

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 226.
- 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 226.

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 16 are placed in the data stream.

Table 16. IBM PCL5e Bin numbers

Tray (what you select in Device Settings)	PCL bin number (what the driver puts in data stream)
Automatically Select	0

Table 16. IBM PCL5e Bin numbers (continued)

Tray (what you select in Device Settings)	PCL bin number (what the driver puts in data stream)
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* (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**.)

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 226.
 - 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 226.
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 17 for an Infoprint 20.

Table 17. 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 224
3. "Testing tray mappings" on page 225

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 18. 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 18 on page 223 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” on page 226.
 - 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 226.
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 224, 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 224.
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 224.
- 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.

Sending print jobs to IBM Infoprint Manager for Windows NT and Windows 2000 from an AIX system

To send print jobs from an AIX system to IBM Infoprint Manager for Windows NT and Windows 2000, 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 NT and Windows 2000 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 “Using the Infoprint Manager Line Printer Daemon (LPD)” on page 150.

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 NT and Windows 2000 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 206

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 NT and Windows 2000 system, you must complete two tasks:

- “Verify that the Infoprint Manager LPD is running”
- “Install and configure **lprafp**” on page 229

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 NT and Windows 2000**.
4. On the Infoprint Manager for Windows NT and Windows 2000 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.

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 on page 229. 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 NT and Windows 2000 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 “Using the Infoprint Manager Line Printer Daemon (LPD)” on page 150.

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 NT and Windows 2000 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 206

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 NT and Windows 2000, you must complete the two tasks listed in “Sending print jobs to IBM Infoprint Manager for Windows NT and Windows 2000 from an AIX system” on page 227.

October 4, 2001

Chapter 9. Working with Transforms

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 235 and “Configuring Data Stream Transform Sequences” on page 245.

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.

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 245. 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 236
- “Customizing the TIFF, JPEG, and GIF transforms” on page 237
- “Working with the transform for line data” on page 239
- “Working with the transform for double byte text streams” on page 243

Note: For information about the fonts used with the double-byte (**db2afp**) transform, refer to “Working with Infoprint Fonts” on page 251.

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 19 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 19. 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 236.
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 236.
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 20 shows the default configuration files that Infoprint Manager provides. You can either modify these files or create your own.

Table 20. 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 20. Default TIFF, JPEG, and GIF Transform Configuration Files (continued)

Data Stream	Transform	Configuration Files
GIF	gif2afp	<code>install_path\gif2afp\gif2afp.cfg</code> <code>install_path\gif2afp\gif2afp.3160cfg</code> <code>install_path\gif2afp\gif2afp.3900cfg</code>

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 20 on page 237.
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 240
- “What are variable-length and fixed-length files?” on page 241
- “How does the imageout keyword affect processing?” on page 242
- “Customizing the line data transform” on page 242

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 21.

Table 21. 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 22.

Table 22. Machine carriage control characters

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

Table 22. 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 23.

Data Type	Newline Character
All EBCDIC	EBCDIC <code>X'25'</code>
All EBCDIC	ASCII <code>X'0D0A'</code> or <code>X'0A'</code> ¹
All ASCII	EBCDIC <code>X'25'</code> ¹
All ASCII	ASCII <code>X'0D0A'</code> or <code>X'0A'</code>
<p>1: 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"> • For EBCDIC data with ASCII newlines, use <code>X'0320202020200A'</code> as the first seven bytes of the file. • For ASCII data with EBCDIC newlines, use <code>X'03404040404025'</code> as the first seven bytes of the file. 	

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 245.

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 244

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 NT and Windows 2000 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 NT and Windows 2000 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 NT and Windows 2000 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 NT and Windows 2000.

For more information on setting up font resources to print DBCS fonts, refer to “Fonts for printing DBCS ASCII and EUC” on page 254.

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 24, locate the **Code Page Value** that you got from your system above.

Table 24. 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

Table 24. Code pages and their associated PSFDBLANG values (continued)

Code Page Value	PSFDBLANG Value	Language
970 or eucKR	KE	Traditional Korean EUC

- 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.

- 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 for Windows NT and Windows 2000 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 **XFMFLTR** 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 247
- “Using the netware print program” on page 249

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:

- Start the **Infoprint Manager Administration GUI**.
- Click the **Server** menu, and select **Transform -->Create**.
- In the **Create Transform** dialog, fill in the fields as shown in Figure 99 on page 246. 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.

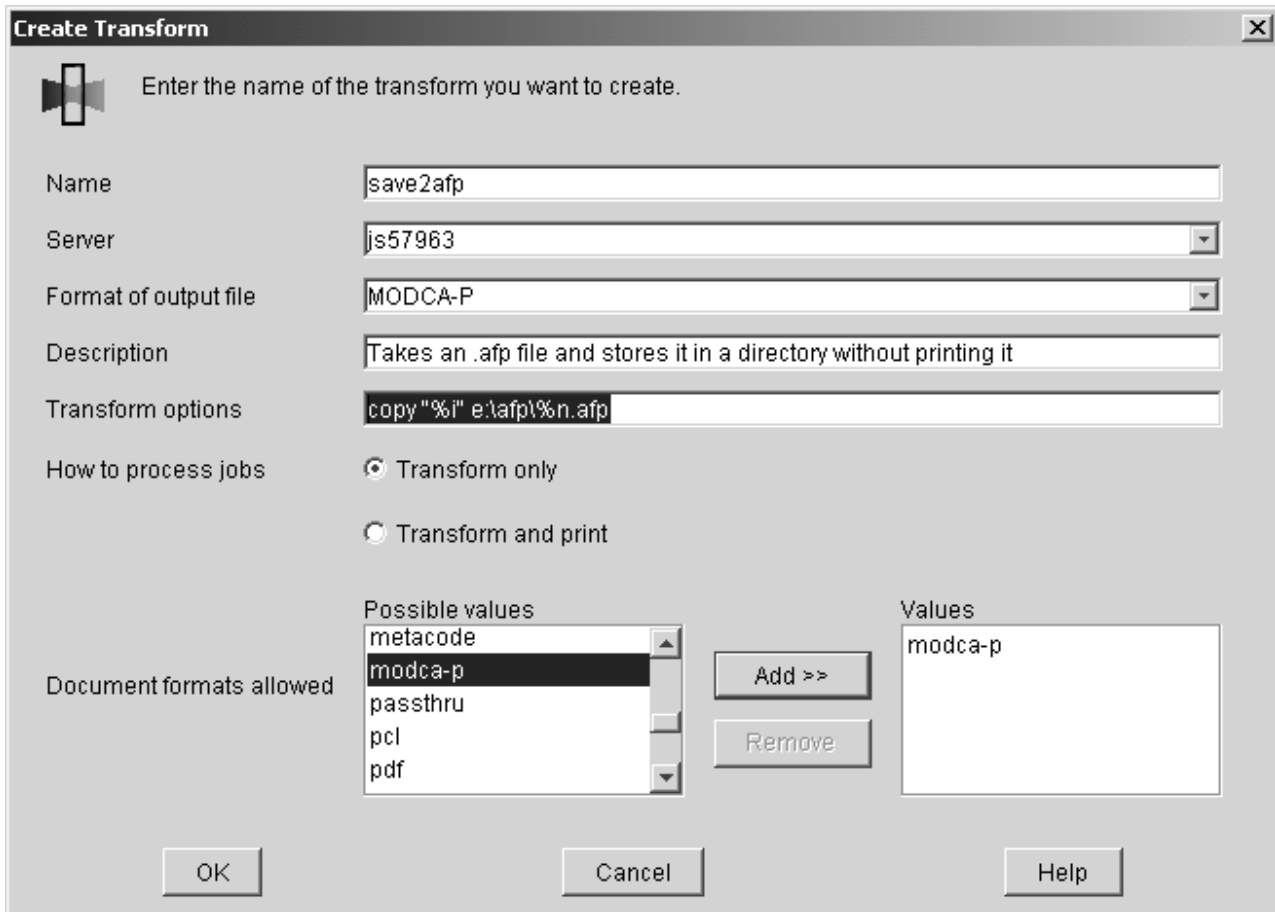


Figure 99. Create Transform dialog: define a transform that copies an AFP file to a directory without printing it

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 25.

Table 25. 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. Note: 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 25. Transform substitution variables (continued)

Transform options Substitution Variables	Meaning
%j	The name of the original print file, minus the path (from the document-file-name attribute). Note: 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 document-file-name attribute). Note: 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"> • ASCII for ASCII line data. • AFPDS for Advanced Function Presentation data • PCL for Printer Control Language data • PS for PostScript data
%p	The value of the destination-pass-through 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:

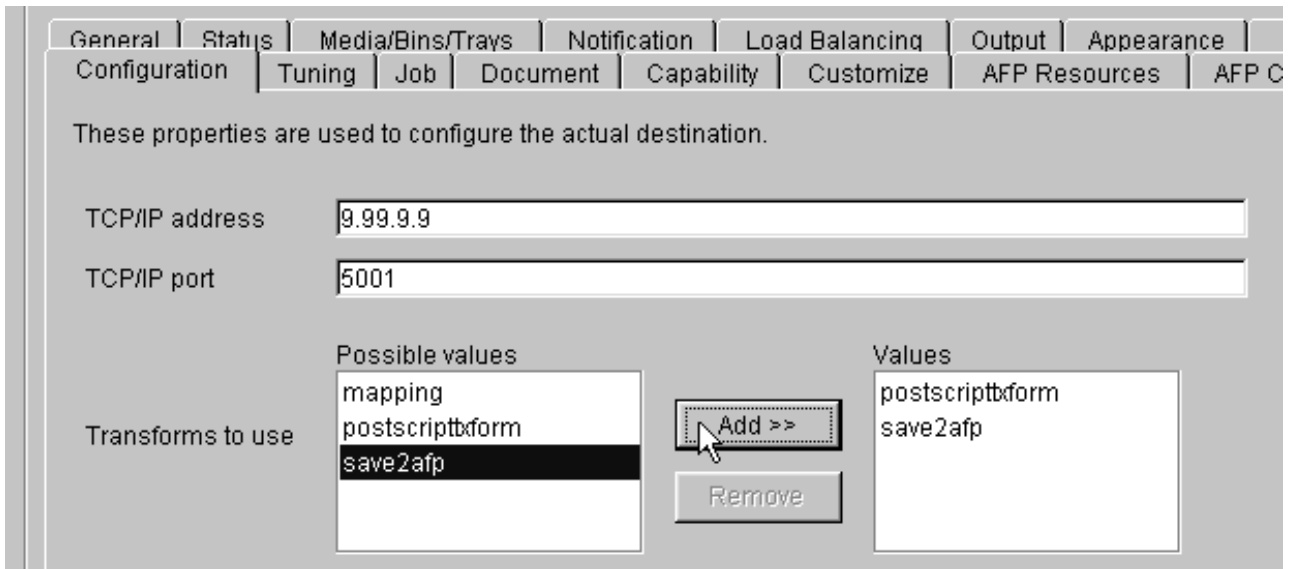


Figure 100. Printer Properties notebook: Transforms to use

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

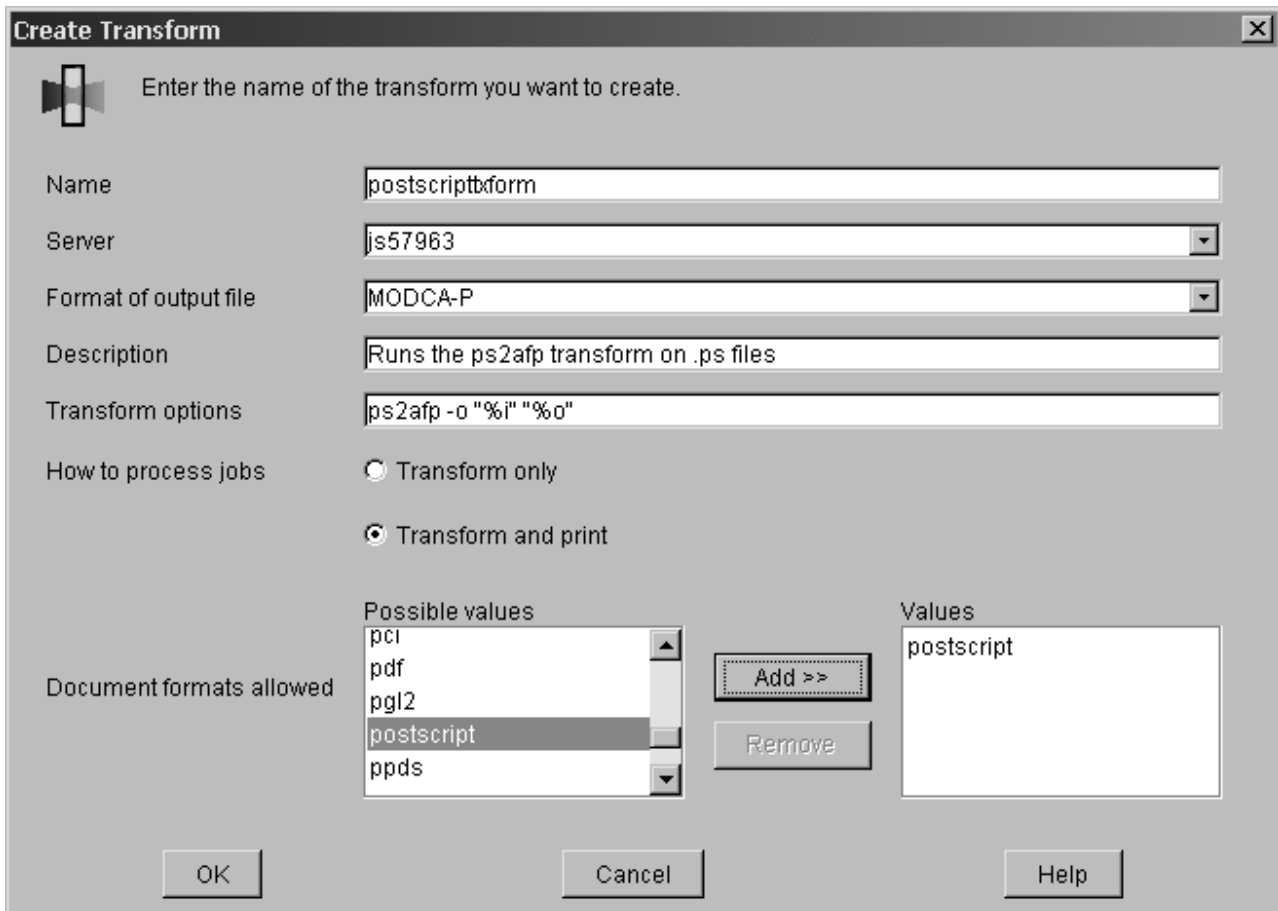


Figure 101. Create Transform dialog: Create a transform that converts PostScript data into AFP

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:

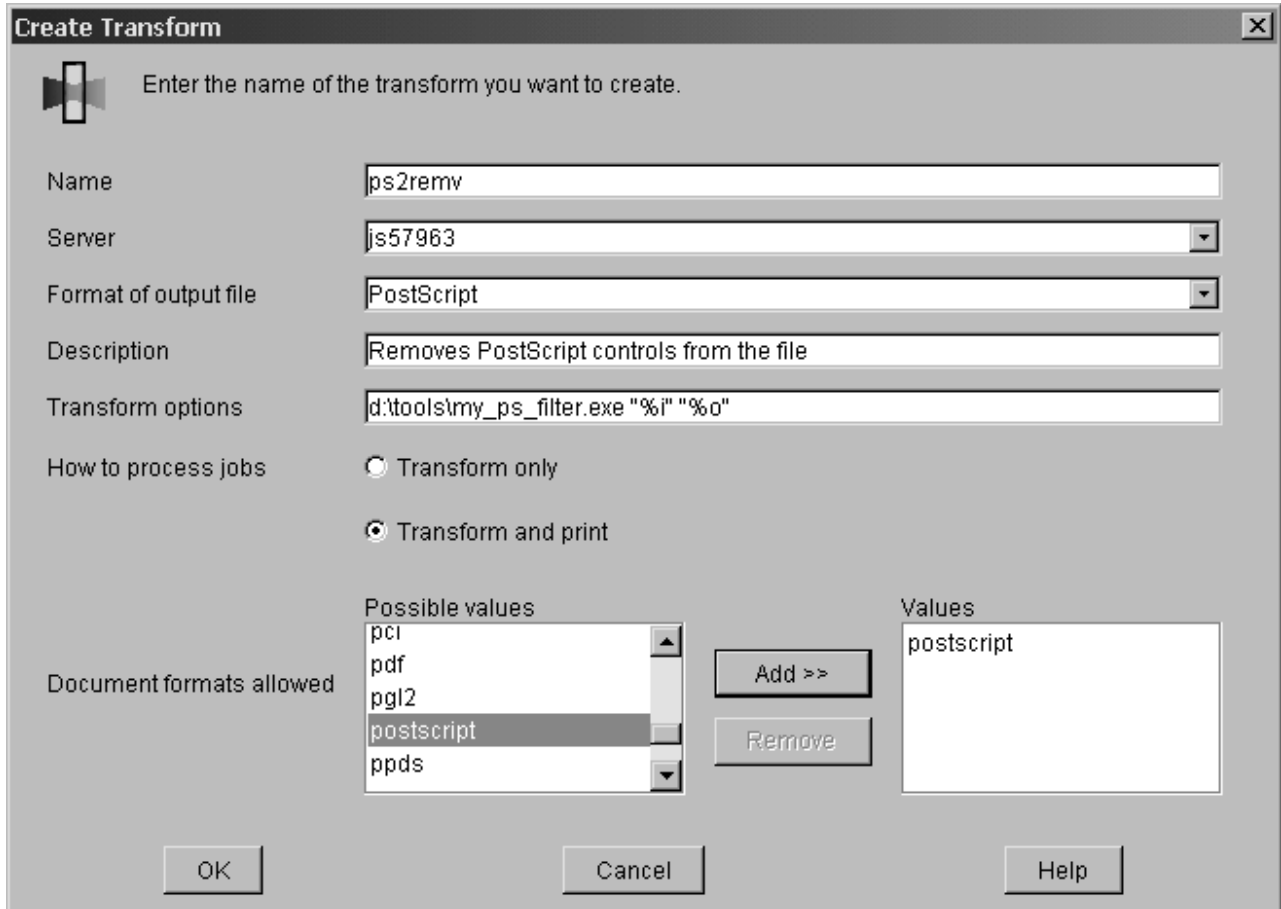


Figure 102. Create Transform dialog: Create a transform that removes the PostScript controls from a file

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**
- **pdl**

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 10. Working with Fonts

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 254
- “Fonts for printing line data” on page 255

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 253

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 236). 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 -oout.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 -oout.afp -F\samp1.map d:\incoming.ps
```

If you create your own font mapping file -- either by using the **mkfontmap** 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 235.

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 as separate features on the *AFP Font Collection* CD-ROM that is provided with 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 “Creating a New Resource-Context Object” on page 108.
- 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

If you apply service Program Temporary Fix (PTF) UR52620, 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, as described in *Installing DBCS Fonts on Windows NT and Windows 2000*, and your printer must be DBCS-enabled. Also, you must have installed the *AFP Font Collection – Japanese Fonts, Version 2.1.0* CD-ROM to support printing the Japanese DBCS message page. If you have installed these prerequisites 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 26. 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

The following table provides a list of additional fonts that are available through the *AFP Font Collection* CD-ROM that is provided with Infoprint Manager.

Table 27. Additional fonts from the AFP Font Collection

Type Family	Point Size	Coded Font Name	Short Name (for chars keyword)
Letter Gothic Latin1	10	X0523002	X05350
Gothic Text Latin1	10	X0623002	X06350
Prestige Latin1	10	X0723002	X07350
Boldface Latin1	12	X08430B2	X0895B

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>\grd 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 103 on page 258 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 103. 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 104 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 104. 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 105 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 105. 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 106 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 106. 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>\grd**
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 262.

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 **CON20000** character set. Then, Infoprint searches the resource library search path to locate the **CON20000** 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 261, 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.

Chapter 11. Configuring Infoprint Manager for Specific Printers

Setting up Finishing Options for the Infoprint 60

The Infoprint 60 with finisher provides a variety of finishing options. Infoprint Manager can be set up to support many of these possibilities, including finishing, edge stitching (stapling one edge of the print job to create a booklet), and saddle stitching (stapling in the middle of the page to create a folded booklet). Use the following procedures to set up your system to use finishing options.

1. “Telling Infoprint Manager what options the finisher supports”
2. “Setting up Infoprint Manager and clients to use finishing options”
3. “Selecting the correct finishing options” on page 267

Telling Infoprint Manager what options the finisher supports

The first step in enabling the finishing options is to let Infoprint Manager know what options the finisher supports. Follow the steps below to set the appropriate values.

Note: If you will only be submitting print jobs that request a form definition to this printer or if you will only be submitting jobs to this printer using PSF Direct, you do not have to complete this procedure. You can proceed to “Setting up Infoprint Manager and clients to use finishing options”.

1. Start the Infoprint Manager Administration GUI.
2. Find or create the printer (destination) that sends jobs to your Infoprint 60. This printer is usually a PSF printer.
3. Right-click the printer and select **Properties** from the pop-up menu.
4. In the Printer Properties notebook, click the **Job** tab.
5. Find the **Finishing options allowed** field.

Note: If you don't see the **Finishing options allowed** field, click **Show More**.

6. Select all of the finishing options that your finisher supports in the **Possible values** list and add them to the **Values** list.
7. Click **OK**.

Setting up Infoprint Manager and clients to use finishing options

How you set up to use finishing options varies depending upon what kind of print jobs you create and how you submit them. There are several categories; find the one below that most resembles your situation.

All print jobs that request a form definition

If you submit your print jobs using a form definition (either by specifying a certain one or by using a default form definition), you can identify the finishing options that you want to apply in the form definition. When you specify printing and finishing options this way, no Infoprint attributes are necessary to request the finishing options. The print job is sent to the printer and the options are read out of the formdef. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part.

Note: Infoprint Manager does not check the finishing options you specify in the formdef against the options you set in “Telling Infoprint Manager what options the finisher supports” on page 265. As a result, if the finisher doesn’t support the options, the job will fail.

Print jobs submitted using PSF Direct

When you submit a job using PSF Direct, all of the job options (including finishing options) are set on the host system. Use the method provided by your host system or document creation applications to request finishing. When you send the job, no Infoprint finishing attributes are applied; the options you set on the host system are forwarded to the printer. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part. If the finisher doesn’t support the options, the job will fail.

Print jobs submitted using Infoprint Select

If you want to use Infoprint Select to submit print jobs with finishing options, there are different methods to choose from. The method you use depends on what type of Infoprint printer (destination) you plan to send your jobs to.

PSF printer: If you want to use Infoprint Select to submit print jobs with finishing options to a PSF printer, you must create a Select printer that uses the **IP60 with Finisher** printer driver. The driver is installed on your system when you install Infoprint Select. Use the procedure that is described in the Select readme for creating a Select printer, modifying it as described below.

1. Follow the procedure through creating a port and selecting an Infoprint destination.
2. When the **Add Printer** wizard asks you to choose a manufacturer and a printer model, don’t select anything, just click **Have Disk**.
3. In the **Install from Disk** dialog, click **Browse** and navigate to the directory that you installed Infoprint Select in. The default directory is c:\Infoprint.

Note: Because this dialog assumes the the driver is actually on a floppy disk or CD-ROM, you may receive an error that the drive is not ready. In the error box, click **Cancel**. A Windows **Open** dialog should then open. Use that dialog to navigate to the correct directory.

4. Select the **Ibmprint.inf** file and click **Open**.
5. Select **IBM Infoprint 60 with Finisher** from the list of printers and click **OK**.
6. In the **Install from Disk** dialog, click **Next**.
7. Complete the wizard as usual.

When you submit jobs to this printer, you can choose the finishing option you want to use.

Note: The **IBM Infoprint 60 with Finisher** driver only supports four finishing options: **top corner**, **bottom corner**, **2 edge stitch** (two staples in one side of the paper), and **3 edge stitch** (three staples on one side of the paper). If you need to use other finishing options, you have to use a different submission method.

Any other destination type: If you want to use Infoprint Select to submit print jobs to a different destination type (such as a BSD, Passthrough, or IPP printer), the only way to request finishing options on PCL and PostScript jobs submitted to a PSF destination is to use the method described in “Print jobs submitted using a Windows gateway printer or the IPP gateway” on page 267.

Print jobs submitted from the command line using the `pdpr` command

When you submit print jobs from the command line, you use the **job-finishing** attribute on the `-x` flag to specify finishing options. For a list of allowed values, proper syntax, and usage guideline for the **job-finishing** attribute, refer to the *Infoprint Manager: Reference*, Chapter 7, Job/Default Job attributes.

Print jobs submitted using a Windows gateway printer or the IPP gateway

You cannot select finishing options on job submission when you submit a print job using any of these methods, therefore it is recommended that you choose a different submission method if you want to specify finishing options.

If you cannot use a different submission method, the only way to submit print jobs through one of these methods and request finishing options is to use default jobs. A *default job* is a list of attributes that is applied to every job that a particular logical destination receives. You can use the Infoprint Manager Administration GUI to modify the default job for the logical destination that Infoprint Select sends jobs to so that it requests the appropriate finishing options.

This method is not recommended for two reasons. First, every job that you send to that logical destination will be finished the same way. For example, if you set the **Finishing options** attribute of the default job to **staple-top-left**, every job that is submitted to that printer will have a staple in the top left corner, even if the job is only one page long. In addition, a logical destination can only have one default job, and a default job can only have one finishing option set. If you want to use different finishing options, you must create multiple logical destinations, each with different options set on the default jobs.

Selecting the correct finishing options

In Infoprint Manager, the finishing options have very descriptive names so that it is easy to choose the one you want for your job. However, the names of those options are based on print jobs that use the "portrait" orientation, and as a result are misleading for jobs that printed in the "landscape" orientation. In addition, some of the options are valid if the paper is fed through the printer long edge first (LEF) and not valid if the paper is fed short edge first (SEF), and vice versa. As a result, choosing the correct finishing option can be confusing. The tables below can help you determine which option to choose based on how you want your job to be finished.

Paper fed LEF

Table 28. Options to set for paper fed LEF

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
One staple in the upper left corner	staple top left	staple bottom left
One staple in the upper right corner	staple top right	staple top left
One staple in the bottom left corner	staple bottom left	staple bottom right
One staple in the bottom right corner	staple bottom right	staple top right

Table 28. Options to set for paper fed LEF (continued)

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
More than one staple on the left edge of the paper (uses the default number of staples that is set for the finisher)	edge stitch OR edge stitch left	Not supported
Two staples on the left edge of the paper	edge stitch 2	Not supported
Three staples on the left edge of the paper	edge stitch 3	Not supported
More than one staple on the top edge of the paper (uses the default number of staples that is set for the finisher)	Not supported	edge stitch OR edge stitch left
Two staples on the top edge of the paper	Not supported	edge stitch 2
Three staples on the top edge of the paper	Not supported	edge stitch 3
More than one staple on the right edge of the paper	edge stitch right	Not supported
More than one staple on the bottom edge of the paper	Not supported	edge stitch right

Paper fed SEF

Table 29. Options to set for paper fed SEF

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
One staple in the upper left corner	staple top left	staple bottom left
One staple in the upper right corner	staple top right	staple top left
One staple in the bottom left corner	staple bottom left	staple bottom right
One staple in the bottom right corner	staple bottom right	staple top right
More than one staple on the top edge of the paper (uses the default number of staples that is set for the finisher)	edge stitch OR edge stitch top	Not supported
Two staples on the top edge of the paper	edge stitch 2	Not supported
Three staples on the top edge of the paper	edge stitch 3	Not supported
More than one staple on the right edge of the paper (uses the default number of staples that is set for the finisher)	Not supported	edge stitch OR edge stitch top
Two staples on the right edge of the paper	Not supported	edge stitch 2

Table 29. Options to set for paper fed SEF (continued)

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
Three staples on the right edge of the paper	Not supported	edge stitch 3
More than one staple on the left edge of the paper	Not supported	edge stitch bottom
More than one staple on the bottom edge of the paper	edge stitch bottom	Not supported
Default number of staples in the center of the sheet	saddle stitch	saddle stitch

Using Infoprint Manager with the Infoprint 70

Turning duplexing on and off

The Infoprint 70 can produce either simplex (single-sided) or duplex (double-sided) output. You can turn the duplex option **ON** or **OFF** at the printer console, depending upon what type of output you need. However, you can also turn duplexing on and off using the **sides** attribute in Infoprint Manager. If you use Infoprint Manager to turn duplexing on or off, the Infoprint Manager setting will override the setting on the printer.

You can set the **sides** attribute on a document, default document, or an actual destination. You can also specify **duplex** or **simplex** in a form definition (formdef). If you set the attribute in a document, that setting overrides the value in the formdef. The formdef overrides the setting on the default document, which overrides the setting on the actual destination. All of these settings override the setting on the printer console.

Important: The default value of the **sides** attribute on all three objects (document, default document, and actual destination) is **Use default**. When Infoprint Manager encounters that value, it considers the attribute "not set" and looks to the next item in the priority list to see if **sides** is set there. Infoprint Manager keeps going down the list until it finds a value to use.

Some examples of this behavior follow.

- You turn duplexing **OFF** at the console of your Infoprint 70. Then, you submit a job to your Infoprint 70 through Infoprint Manager. The job uses a formdef that requests duplex printing. The **sides** attributes on the document, default document, and actual destination are set to **Use printer default**.

Infoprint Manager looks at the **sides** attribute on the document, and considers it "not set," so it looks at the formdef. The job prints duplex.

- You turn duplexing **OFF** at the console of your Infoprint 70. Then, you use Infoprint Submit to send a job with **Sides** set to duplex, and don't use a formdef. The **sides** attributes on the default document is set to **Use printer default** and on the actual destination is set to **1**.

Infoprint Manager looks at the **sides** attribute on the document, and sees that Submit set it to **2**. Infoprint Manager ignores all of the other values and the job prints duplex.

For additional information about the sides attribute, refer to the *Infoprint Manager: Reference*, Chapter 7, **Actual Destination** and **Document** attributes.

Setting up Finishing Options for the Infoprint 70

The Infoprint 70 provides several finishing options. Infoprint Manager can be set up to support many of these possibilities, including edge stitching and corner stapling. Follow these three procedures to set up your system to use finishing options.

1. "Telling Infoprint Manager what options the finisher supports"
2. "Setting up Infoprint Manager and clients to use finishing options"
3. "Selecting the correct finishing options" on page 272

Telling Infoprint Manager what options the finisher supports

The first step in enabling the finishing options is to let Infoprint Manager know what options the finisher supports. Follow the steps below to set the appropriate values.

Note: If you will only be submitting print jobs that specify a form definition to this printer or if you will only be submitting jobs to this printer using PSF Direct, you do not have to complete this procedure. You can proceed to "Setting up Infoprint Manager and clients to use finishing options".

1. Start the Infoprint Administration GUI.
2. Find or create the PSF printer (actual destination) that sends jobs to your Infoprint 70.
3. Right-click the printer and select **Properties** from the pop-up menu.
4. In the Printer Properties notebook, click the **Job** tab.
5. Find the **Finishing options allowed** field.

Note: If you don't see the **Finishing options allowed** field, click **Show More**.

6. Select all of the finishing options that your finisher supports in the **Possible values** list and add them to the **Values** list.
7. Click **OK**.

Setting up Infoprint Manager and clients to use finishing options

How you set up to use finishing options varies depending upon what kind of print jobs you create and how you submit them. There are several categories; find the one below that most resembles your situation.

All print jobs that request a form definition

If you submit your print jobs using a form definition (either by specifying a certain one or by using a default form definition), you can identify the finishing options that you want to apply in the form definition. When you specify printing and finishing options this way, no Infoprint attributes are necessary to request the finishing options. The print job is sent to the printer and the options are read out of the formdef. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part.

Note: Infoprint Manager does not check the finishing options you specify in the formdef against the options you set in “Telling Infoprint Manager what options the finisher supports” on page 270. As a result, if the finisher doesn’t support the options, the job will fail.

Print jobs submitted using PSF Direct

When you submit a job using PSF Direct, all of the job options (including finishing options) are set on the host system. Use the method provided by your host system or document creation applications to request finishing. When you send the job, no Infoprint finishing attributes are applied; the options you set on the host system are forwarded to the printer. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part. If the finisher doesn’t support the options, the job will fail.

Print jobs submitted using Infoprint Select

The automatic data stream transforms that PSF printers use do not support finishing (stapling). As a result, if you plan to use Infoprint Select to submit PCL or PostScript jobs to a PSF printer (destination), you cannot specify finishing options when you submit a job, even if the print driver you use supports those options. It is recommended that you either use a different method to submit those print jobs, or that you submit them to an Infoprint printer that does not transform the datastream (such as a Passthrough printer).

If you cannot use a different submission method or cannot submit your jobs to a different type of Infoprint printer, the only way to request finishing options on PCL and PostScript jobs submitted to a PSF destination is to use the method described in “Print jobs submitted using a Windows gateway printer or the IPP gateway”.

Print jobs submitted from the command line using the pdpr command

When you submit print jobs from the command line, you use the **job-finishing** attribute on the **-x** flag to specify finishing options. For a list of allowed values, proper syntax, and usage guideline for the **job-finishing** attribute, refer to the *Infoprint Manager: Reference*, Chapter 7, Job/Default Job attributes.

Print jobs submitted using a Windows gateway printer or the IPP gateway

You cannot select finishing options when you submit a print job using any of these methods, therefore it is recommended that you choose a different submission method if you want to specify finishing options.

If you cannot use a different submission method, the only way to submit print jobs through one of these methods and request finishing options is to use default jobs. A *default job* is a list of attributes that is applied to every job that a particular logical destination receives. You can use the Infoprint Manager Administration GUI to modify the default job for the logical destination that Infoprint Select sends jobs to so that it requests the appropriate finishing options.

This method is not recommended for two reasons. First, every job that you send to that logical destination will be finished the same way. For example, if you set the **Finishing options** attribute of the default job to **staple-top-left**, every job that is submitted to that printer will have a staple in the top left corner, even if the job is only one page long. In addition, a logical destination can only have one default job, and a default job can only have one finishing option set. If you want to use different finishing options, you must create multiple logical destinations, each with different options set on the default jobs.

Selecting the correct finishing options

In Infoprint Manager, the finishing options have very descriptive names so that it is easy to choose the one you want for your job. However, the names of those options are based on print jobs that use the "portrait" orientation, and as a result are misleading for jobs that printed in the "landscape" orientation. In addition, some of the options are valid if the paper is fed through the printer long edge first (LEF) and not valid if the paper is fed short edge first (SEF), and vice versa. As a result, choosing the correct finishing option can be confusing. The tables below can help you determine which option to choose based on how you want your job to be finished.

Paper fed LEF

Table 30. Options to set for paper fed LEF

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
One staple in the upper left corner	staple top left	staple bottom left
One staple in the upper right corner	Not supported	staple top left
One staple in the bottom left corner	staple bottom left	Not supported
More than one staple on the left edge of the paper	edge stitch, OR edge stitch left	Not supported
More than one staple on the top edge of the paper	Not supported	edge stitch OR edge stitch left

Paper fed SEF

Table 31. Options to set for paper fed SEF

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
One staple in the upper left corner	staple top left	Not supported
One staple in the upper right corner	staple top right	staple top left
One staple in the bottom right corner	Not supported	staple top right
More than one staple on the right edge of the paper	Not supported	edge stitch OR edge stitch top
More than one staple on the top edge of the paper	edge stitch OR edge stitch top	Not supported

Setting up Finishing Options for the Infoprint 2000 AFP

The Infoprint 2000 AFP with finisher provides a variety of finishing options. Infoprint Manager can be set up to support many of these possibilities, including edge stitching and corner stapling. Follow these three procedures to set up your system to use finishing options.

1. "Telling Infoprint Manager what Options the Finisher Supports" on page 273

2. "Setting up Infoprint Manager and Clients to use Finishing Options"
3. "Selecting the correct finishing options" on page 274

Telling Infoprint Manager what Options the Finisher Supports

The first step in enabling the finishing options is to let Infoprint Manager know what options the finisher supports. Follow the steps below to set the appropriate values.

Note: If you will only be submitting print jobs that specify a form definition to this printer or if you will only be submitting jobs to this printer using PSF Direct, you do not have to complete this procedure. You can proceed to "Setting up Infoprint Manager and Clients to use Finishing Options".

1. Start the Infoprint Administration GUI.
2. Find or create the PSF printer (actual destination) that sends jobs to your Infoprint 2000.
3. Right-click the printer and select **Properties** from the pop-up menu.
4. In the Printer Properties notebook, click the **Job** tab.
5. Find the **Finishing options allowed** field.

Note: If you don't see the **Finishing options allowed** field, click **Show More**.

6. Select all of the finishing options that your finisher supports in the **Possible values** list and add them to the **Values** list.
7. Click **OK**.

Setting up Infoprint Manager and Clients to use Finishing Options

How you set up to use finishing options varies depending upon what kind of print jobs you create and how you submit them. There are several categories; find the one below that most resembles your situation.

All print jobs that request a form definition

If you submit your print jobs using a form definition (either by specifying a certain one or by using a default form definition), you can identify the finishing options that you want to apply in the form definition. When you specify printing and finishing options this way, no Infoprint attributes are necessary to request the finishing options. The print job is sent to the printer and the options are read out of the formdef. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part.

Note: Infoprint Manager does not check the finishing options you specify in the formdef against the options you set in "Telling Infoprint Manager what Options the Finisher Supports". As a result, if the finisher doesn't support the options, the job will fail.

Print jobs submitted using PSF Direct

When you submit a job using PSF Direct, all of the job options (including finishing options) are set on the host system. Use the method provided by your host system or document creation applications to request finishing. When you send the job, no Infoprint finishing attributes are applied; the options you set on the host system are forwarded to the printer. If the finisher supports the options chosen, the job should print correctly without any more configuration on your part. If the finisher doesn't support the options, the job will fail.

Print jobs submitted from the command line using the `pdpr` command

When you submit print jobs from the command line, you use the **job-finishing** attribute on the `-x` flag to specify finishing options. For a list of allowed values, proper syntax, and usage guideline for the **job-finishing** attribute, refer to the *Infoprint Manager: Reference*, Chapter 7, Job/Default Job attributes.

Print jobs submitted using a Windows gateway printer or the IPP gateway

You cannot select finishing options when you submit a print job using any of these methods, therefore it is recommended that you choose a different submission method if you want to specify finishing options.

If you cannot use a different submission method, the only way to submit print jobs through one of these methods and request finishing options is to use default jobs. A *default job* is a list of attributes that is applied to every job that a particular logical destination receives. You can use the Infoprint Manager Administration GUI to modify the default job for a logical destination so that it requests the appropriate finishing options.

This method is not recommended for two reasons. First, every job that you send to that logical destination will be finished the same way. For example, if you set the **Finishing options** attribute of the default job to **staple-top-left**, every job that is submitted to that printer will have a staple in the top left corner, even if the job is only one page long. In addition, a logical destination can only have one default job, and a default job can only have one finishing option set. If you want to use different finishing options, you must create multiple logical destinations, each with different options set on the default jobs.

Selecting the correct finishing options

In Infoprint Manager, the finishing options have very descriptive names so that it is easy to choose the one you want for your job. However, the names of those options are based on print jobs that use the "portrait" orientation, and as a result are misleading for jobs that printed in the "landscape" orientation. Use the table below to determine which finishing value to choose.

Note: Paper must be pulled from the paper tray long-edge-first (LEF) for finishing options to be applied. Because ledger and A3 paper are both pulled from the paper tray short edge first (SEF), the Infoprint 2000 does not support finishing options for those paper sizes.

Table 32. Options to set for paper fed LEF

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
One staple in the upper left corner	staple top left	staple bottom left
One staple in the upper right corner	staple top right	staple top left
One staple in the bottom left corner	staple bottom left	staple bottom right*
One staple in the bottom right corner	staple bottom right*	staple top right
Two staples on the left edge of the paper	edge stitch, edge stitch left, OR edge stitch 2	Not supported

Table 32. Options to set for paper fed LEF (continued)

Desired output	Select this value for "portrait" jobs	Select this value for "landscape" jobs
Two staples on the top edge of the paper	Not supported	edge stitch, edge stitch left, OR edge stitch 2
Two staples on the right edge of the paper	edge stitch right	Not supported
Two staples on the bottom edge of the paper	Not supported	edge stitch right

* Some printers support this option via 180-degree image rotation, some do not. See printer documentation for more details.

October 4, 2001

Part 2. Operator and User Procedures

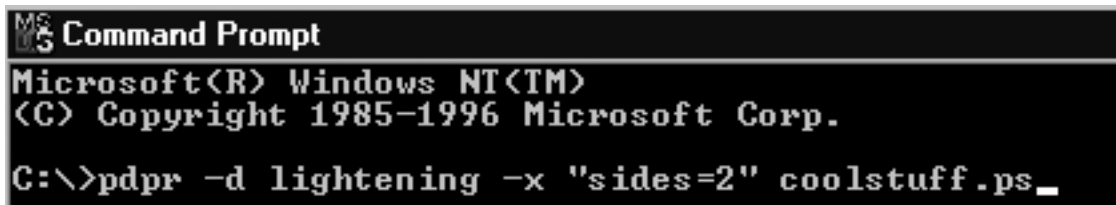
Chapter 12. Using Infoprint Manager Commands

Installing the Select client on a workstation also installs the Infoprint Manager command set. The security level necessary to use all of the commands from a particular workstation is controlled by the system administrator from the Infoprint Manager server. If, however, your workstation is on the LAN and you have access to Infoprint Manager controlled printers, you will also be able to use Infoprint Manager commands to perform basic tasks, with no additional configuration necessary, such as:

- submit a print job (**pdpr**)
- list selected attribute values (**pdls**)
- query the status of submitted jobs (**pdq**)

To invoke an Infoprint Manager command from a Windows NT or Windows '95 workstation, simply press the **Start** button, drag the cursor to **Programs**, and then drag it to **Command Prompt**. When the command prompt displays, specify the Infoprint command and press **Enter**.

If you wanted to print the job, coolstuff.ps, two sided to the printer named lightening, your command in the **Command Prompt** window would resemble the following:



```
MS Command Prompt
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.
C:\>pdpr -d lightening -x "sides=2" coolstuff.ps_
```

For a list of typical operator tasks and associated commands, refer to “Chapter 13. IPDS Print Operator Commands” on page 281.

October 4, 2001

Chapter 13. IPDS Print Operator Commands

Infoprint Manager offers a comprehensive set of operator commands which can be used to manage printing on IPDS printers. These commands can be used to help manage printing priorities and also help by providing the operator with functions often useful when dealing with problems that may occur in the printing system. For more information about the commands listed in the following table, refer to the *Infoprint Manager: Reference*, (S544-5475). The operator can perform the following tasks:

	Task	Description	Infoprint Manager Command Syntax
1	Disable	Stop a printer from receiving new jobs.	<code>pddisable -cd dest</code> where <i>dest</i> specifies either a logical or an actual destination (printer) object.
2	Enable	Allow a printer to receive new jobs.	<code>pdenable -cd dest</code> where <i>dest</i> specifies either a logical or an actual destination (printer) object.
3	Query active job	Query which job is actively printing on a printer Note: The query response is based on the last set of station counters obtained from the printer, which is printing pages continuously. To get an absolutely accurate query you must: <ul style="list-style-type: none"> • Pause the printer (7) • Issue the query • Resume the printer (11). 	<code>pdls -f "destination-name-requested==ldest && current-job-state==printing" server:</code> where <i>server</i> specifies the Infoprint AIX server to which the job was submitted, and <i>dest</i> specifies the actual destination (physical printer).
4	Query page number	Query the page number of the currently printing page. Refer to Note after (3).	<code>pdls -cj -r current-page-printing jobid</code> where <i>jobid</i> specifies the job-identifier attribute. IBM recommends using the global ID, which follows the convention <code>server:0123456789</code> where <i>server</i> specifies the name of the Infoprint AIX server to which this job was submitted and 0123456789 indicates a 10-digit numeric value assigned by the Infoprint spooler. You can determine the job-identifier attribute value by specifying: <code>pdls -cj server:</code>
5	Query job details	Query the number of copies, sheets and pages stacked for a job. Refer to Note after (3).	<code>pdls -cj -r "job-copies-completed media-sheets-completed pages-completed" jobid</code> where <i>jobid</i> specifies the job-identifier attribute.
6	Clean	Remove all jobs from a printer.	<code>pdcclean ldest</code> where <i>ldest</i> specifies the logical destination (logical printer).

7	Pause printer	Pause a printer immediately.	<code>pdpause -cd dest</code> where <i>dest</i> specifies the actual destination (physical printer).
8	Pause printer	Pause a printer after the current copy completes.	<code>pdpause -cd -w after-current-copy dest</code> where <i>dest</i> specifies the actual destination (physical printer).
9	Pause printer	Pause a printer after the current job completes.	<code>pdpause -cd -w after-current-job dest</code> where <i>dest</i> specifies the actual destination (physical printer).
10	Resume printer	Resume a printer that had been paused.	<code>pdresume -cd dest</code> where <i>dest</i> specifies the actual destination (physical printer).
11	Cancel job	Cancel a specific job.	<code>pdrm jobid</code> where <i>jobid</i> specifies the job-identifier attribute.
12	Pause job	Pause a specific job after the current copy completes.	<code>pdpause -cj -w after-current-copy jobid</code> where <i>jobid</i> specifies the job-identifier attribute.
13	Pause job	Pause a specific job immediately.	<code>pdpause -cj jobid</code> where <i>jobid</i> specifies the job-identifier attribute.
14	Pause job	Pause the job that is currently printing immediately.	<code>pdpause -cd -j dest</code> where <i>dest</i> specifies the actual destination (physical printer).
15	Pause job	Pause the job that is currently printing after the current copy.	<code>pdpause -cd -j -w after-current-copy dest</code> where <i>dest</i> specifies the actual destination (physical printer).
16	Resume job	Resume a job that was paused.	<code>pdresume -cj jobid</code> where <i>jobid</i> specifies the job-identifier attribute.
17	Back space	Back space (reprint a specific number of sides) the job that is printing.	<code>pdspace -cd -b sidecount dest</code> where <i>dest</i> specifies the actual destination (physical printer).
18	Reprint	Reprint the job that is printing from the beginning.	<code>pdspace -cd -b -1 dest</code> where <i>dest</i> specifies the actual destination (physical printer).
19	Forward space	Forward space (skip a specific number of sides) the job that is printing.	<code>pdspace -cd -f sidecount dest</code> where <i>dest</i> specifies the actual destination (physical printer).

If one of these commands is received and it affects a job that has been sent or is in the process of being sent to the printer, Infoprint Manager immediately stops sending data to the printer and sends the printer a command to stop printing (this applies to commands 7, 9, 10, 12-15).

For printers that support “Setting Up and Tuning SNMP Communication” on page 106, like the Infoprint 4000, the printer will stop within a few seconds. For printers without this support, some pages will likely print before the printer stops.

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The number of pages that print before the printer stops will vary depending on the number, size, and complexity of jobs that are in process as well as the speed and type of printer involved. Once the printer has stopped, Infoprint Manager performs the steps necessary to execute the requested operator command.

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Chapter 14. IPDS Error Recovery

This document contains the following topics:

- “IPDS error recovery overview”
- “IPDS error recovery: data stream errors” on page 286
- “IPDS error recovery: insufficient memory in the printer” on page 287
- “IPDS error recovery: intervention required conditions” on page 288
- “IPDS error recovery: unrecoverable problems” on page 288

IPDS error recovery overview

When driving an IPDS printer, Infoprint Manager sends page and resource data to the printer. The printer reports status and errors back to Infoprint Manager. The printer status information is in the form of station counters representing progress of pages sent to the device through the printer microcode and the physical printing mechanism. Station counters report the number of pages and the number of copies of pages proceeding through each point in the printer.

Infoprint Manager requests printer status information (an acknowledgement request) after sending each job. The acknowledgement response contains the latest values of all the printer station counters. Once all pending jobs have been processed, Infoprint Manager polls the printer periodically until all the pages of each job have been stacked.

The actual destination object **ack-interval** attribute is configurable and defines how often Infoprint Manager requests updated station counters from the printer while processing a particular job. The value for this attribute is specified in terms of pages and can be from 1 to 9999; the default value is 100 pages. For a 360 page job, an **ack-interval** setting of 100 pages means that Infoprint Manager will send an acknowledgement request to the printer after sending pages 100, 200, 300, and 360.

The printer responds to an acknowledgement request and returns station counters when all of the pages up to that point have been processed. This does not necessarily mean that all of those pages have printed or are stacked. The acknowledgement response from the printer after the 100th page will show that 100 pages have been processed (received). The printer may report, however, that only 10 pages have stacked.

The **ack-interval** value affects printing performance and the currency of job status information. A small **ack-interval** value causes increased communication and processing and can cause a reduction in printer throughput. A small **ack-interval** value will, however, increase the frequency that job attributes such as **current-page-printing**, **job-copies-completed**, **media-sheets-completed**, and **pages-completed** are updated. A small **ack-interval** value will also enable the Infoprint Manager software to have more recent station counters than it would with a large **ack-interval** value.

Errors reported from the printer can be grouped into the following categories:

- “IPDS error recovery: data stream errors” on page 286
- “IPDS error recovery: insufficient memory in the printer” on page 287
- “IPDS error recovery: intervention required conditions” on page 288

- “IPDS error recovery: unrecoverable problems” on page 288

IPDS error recovery: data stream errors

For data stream errors, the job may continue printing or the job may be terminated, depending on the severity of the error. There are hundreds of specific data stream errors. If one data stream error is defined for the error, Infoprint Manager directs the printer to continue processing the page and take an alternate exception action.

When a data stream error occurs, messages are produced describing the problem and the recovery actions performed. The messages report details about the error and include the page number where the error occurred. After Infoprint Manager receives a data stream error from the printer and produces a message, it uses station counters returned from the printer to continue printing without skipping or reprinting any pages.

Reporting of some data stream errors (using undefined code points in a font or printing outside of the valid printable area) can be controlled with job attributes. This allows the job submitter to decide whether or not error messages or printer error marks should be generated when the following type of errors are encountered:

- “Data stream error example 1 (job continues printing):”
- “Data stream error example 2 (job is terminated, no pages print):”
- “Data stream error example 3 (job is terminated; some pages print):” on page 287

Data stream error example 1 (job continues printing):

If page 3 of a 10–page document attempts to print outside the valid printable area (an error) and the submitter specified (data-fidelity-problem-reported=all), the following occurs:

1. Pages 1-2 and 4-10 in the document print normally.
2. For page 3, the printer prints only the data that is inside the valid printable area. In addition, a printer error marker (PEM) is printed on the page where the print data extends outside the valid printable area.
3. After all 10 pages have printed, a set of messages is printed:

0420-094:	The following messages were generated for file /info/afp/baddata with Job ID 123. This file printed on the Infoprint destination ip60, which is a 3160 destination.
0420-484:	The destination reported that an attempt was made to print outside of the valid printable area.
0420-249:	Infoprint received IPDS exception X'08C1..00', action code X'01' from the destination.
0420-098:	The error occurred while printing page 3 of copy 1 of this print job.
0420-254:	The destination reported an error that caused Infoprint to stop processing the page.

Data stream error example 2 (job is terminated, no pages print):

If a document is submitted and it requests a specific form definition which does not exist, the following occurs:

1. The document does not print. However, auxiliary sheets such as the start sheet (header) and end sheet (trailer) page, if requested, do print.

2. A message page will print with the following messages:

0420-094:	The following messages were generated for file /info/afp/testfdef with Job ID 456. This file printed on the Infoprint destination ip60, which is a 3160 destination.
0420-128:	ERROR: Infoprint cannot find or cannot access the FORMDEF resource named F1BAD.
0420-060:	The error occurred with the object type page with token name PAGE0001.
0420-060:	The error occurred with the object type document with token name ASCII.
0420-098:	The error occurred while printing page 1 of copy 1 of this print job.

Data stream error example 3 (job is terminated; some pages print):

If page 5 of a 10–page document requests a font (C0D0GT15) which cannot be located, the following occurs:

1. Pages one through four print; page five does not print. Printing of the document ends; pages 6 through 10 also do not print.
2. A message page will print with the following messages:

0420-094:	The following messages were generated for file /info/afp/long.list3820 with Job ID 167. This file printed on the Infoprint destination psf4317, which is a 4317 destination.
0423-284:	Infoprint mapped the FGID, GCSGID, width, vertical size combination: 230, 0, 96, 160 to the FCS name C0D0GT15. The FGID.GRD mapping file specified that this mapping be performed.
0423-291:	Map Coded Font (MCF) structured field could not be processed because Infoprint could not locate the font character set C0D0GT15. Attempted resolution/type(s): 300-pel Font Fidelity for this job was CONTINUE. Destination supported resolution/type(s): 300-pel.
0420-060:	The error occurred with the object type Active Environment Group with token name 1.
0420-060:	The error occurred with the object type page with token name 1.
0420-060:	The error occurred with the object type document with token name LONG.
0420-098:	The error occurred while printing page 1 of copy 1 of this print job.
0423-302:	The font reference in the MCF1 structured field, repeating group number 1, with sequence number 1, at file offset 118, could not be processed successfully. Additional error and diagnostic messages follow.
0420-729:	The error occurred in file /info/afp/long.list3820. The structured field in error was structured field EAG with code X'D3A9C9' and sequence number 1 located at file offset 250.

IPDS error recovery: insufficient memory in the printer

In some cases, a printer may not have sufficient storage to process the data or resources required for a page. When this occurs, Infoprint Manager responds by deleting resources in the printer which are not required for the page and then tries to print the page again. Frequently, this recovery will allow the page to print successfully. If the printer still reports that there is insufficient storage to process the page, the job is terminated and a message is produced indicating that the page and its associated resources are too complex.

Insufficient memory in the printer example:

A 30 page document is submitted. Each page of the document references several complex page segments.

1. Infoprint Manager sends pages for the document to the printer.
 - Before each page is sent, Infoprint Manager downloads page segments that are required by the page.
2. The printer reports an insufficient memory error to Infoprint Manager (for page 23).
 - Infoprint Manager deletes all the page segments (and any other resources) previously downloaded to the printer. All of the printer memory available for resources should now be free. Infoprint Manager then attempts to load only the page segments required for page 23. Because unnecessary page segments have been removed from printer memory, all of the page segments for page 23 can be successfully downloaded into the printer. No messages are reported to the server and no message pages are printed.
3. All 30 pages of the job print successfully.

IPDS error recovery: intervention required conditions

A printer may experience intervention required conditions that are not related to the data stream or complexity of the data. These conditions cause printing to stop. Some intervention required conditions are handled directly by some printers and are not reported back to Infoprint Manager. In these cases, Infoprint Manager continues to send data to the printer.

Example:

1. As soon as the paper jam occurs, printing stops and the destination (printer) object changes to red.
 - A message is sent to the operator:
 - 0420-466: The destination reported a paper jam; clear the jam.
2. The actual destination (printer) object's destination-state changes to "needs key operator."
 - Infoprint Manager waits until the paper jam has been cleared.
3. The operator then clears the paper jam, according to the printer jam recovery procedure. Some damaged pages are usually discarded as part of this procedure.
4. Once the printer jam is cleared, the destination (printer) object is no longer red. Using station counters from the printer, Infoprint Manager repositions to the correct page and continues printing the document.
5. At the end of the document, a message page is printed which contains the following:
 - 0420-094: The following messages were generated for file /info/paperjam with Job ID 787. This file printed on the Infoprint destination ip32, which is a 4332 destination.
 - 0420-467: A paper jam occurred in the destination while printing this job. Inspect the output to determine if it is complete and that all printed pages are acceptable.

IPDS error recovery: unrecoverable problems

Unrecoverable problems cause the Infoprint Manager software or printer software to stop functioning or prevent them from communicating with each other.

Examples of unrecoverable errors include: server system crash, software core dump, printer abort, power failure, or severe network problems.

These errors prevent the Infoprint Manager software from obtaining current station counter status information from the printer. In these cases, Infoprint Manager cannot determine how many pages and which jobs printed since the last set of valid station counters were received. Infoprint Manager considers a job complete only when all pages are reported by the printer as stacked. In most cases, some pages for one or more jobs will print between the time Infoprint Manager last received a printer acknowledgment and the time the unrecoverable error occurs.

Those jobs, because they are considered incomplete, will normally start printing from the beginning when the problem is resolved and both the Infoprint Manager software and the printer are operating and communicating again.

However, if the submitter or operator does not want the job to start printing from the beginning, there is a way to modify where printing starts for the documents in these jobs. The document object **page-select** attribute can be modified before the job is processed again. This attribute allows the submitter to specify a page range (first to last) for each document in a job. This way, the submitter or operator can control which pages are printed after the problem is resolved.

Depending on the type of error and the network configuration, some errors may not be reported to Infoprint Manager immediately. In these cases, an operator can issue a **pdshutdown** command to the actual destination object. This command works without any attempts to communicate with the printer. Infoprint Manager will checkpoint the job that was partially stacked at the printer and use the station counters from the last valid acknowledgment to determine which page of which job to checkpoint. A small **ack-interval** value will make it possible to checkpoint using a more recent set of station counters than would be available with a large **ack-interval** value. The job can be resumed later from that checkpoint.

Some unrecoverable errors are reported immediately to the Infoprint Manager software and the actual destination object (printer) is disabled. When this occurs, the **pdshutdown** command cannot be issued and therefore no checkpoint can be taken. Infoprint Manager does not perform automatic checkpointing.

Unrecoverable problem example:

1. The destination (printer) object becomes disabled and the icon changes to **black**.
2. The job object changes to the **pending** state.
3. Later, the printer power is restored.
4. The operator must enable the destination (printer) object.
5. Jobs start printing on the printer in the order they have been scheduled.

All 300 pages of the job that was printing during the power failure print again.

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Chapter 15. Deleting Orphan Files and Resubmitting Jobs to MVS Download

Orphaned files are old files left in the Windows NT file system because you specified the **Keep CMD file for Resubmitting Jobs** check box when you started the MVS Download Receiver to submit the jobs, and errors prevented Infoprint from processing these print jobs. Their file names follow the MVS Download Destination Control file naming format:

`MVS_system_name.job_name.dataset_name.forms_name.yyddd.hhmmssstABCD.PRD`

Because orphan files can cause performance problems, you should either correct the problem that prevented the job from processing and then resubmit the job to MVS Download, or delete the orphan files from the system.

Deleting orphaned files from the system

Orphan files should only occur when there's an error. If you do not want to identify and correct errors, delete all files that are older than some site-determined period, such as three days.

To manually delete individual files, you can do the following:

1. In the **Management Console**, double-click the MVS Download Receiver that you want to clean out.
2. In the **Viewing: Receiver xxx** dialog, find the **View Job Data** field and click **Browse**. The orphan and **.CMD** files that remain on the Infoprint Manager server are listed in the **MVS Download Receiver Data** dialog that opens.
3. Highlight the job to be deleted and right-click it, then select **Delete** from the menu that appears.

Resubmitting jobs

Use the following procedure to resubmit jobs through MVS Download:

1. In the **Management Console**, double-click the MVS Download Receiver that received the failed print job.
2. In the **Viewing: Receiver xxx** dialog, find the **View Job Data** field and click **Browse**. The orphan and **.CMD** files that remain on the Infoprint Manager server are listed in the **MVS Download Receiver Data** dialog that opens.
3. Right-click the **.CMD** file that failed.
4. Select **Edit** from the menu that appears to open the **.CMD** file as a text file.
5. Edit the file as you need to and save it.
6. Close the text editor.
7. Back in the **MVS Download Receiver Data** dialog, select and right-click the **.CMD** file again.
8. Select **Open** from the menu that appears to run the file.
9. In the **MVS Download Receiver Data** dialog, click **Cancel**.
10. In the **Viewing: Receiver xxx** dialog, click **Cancel**.

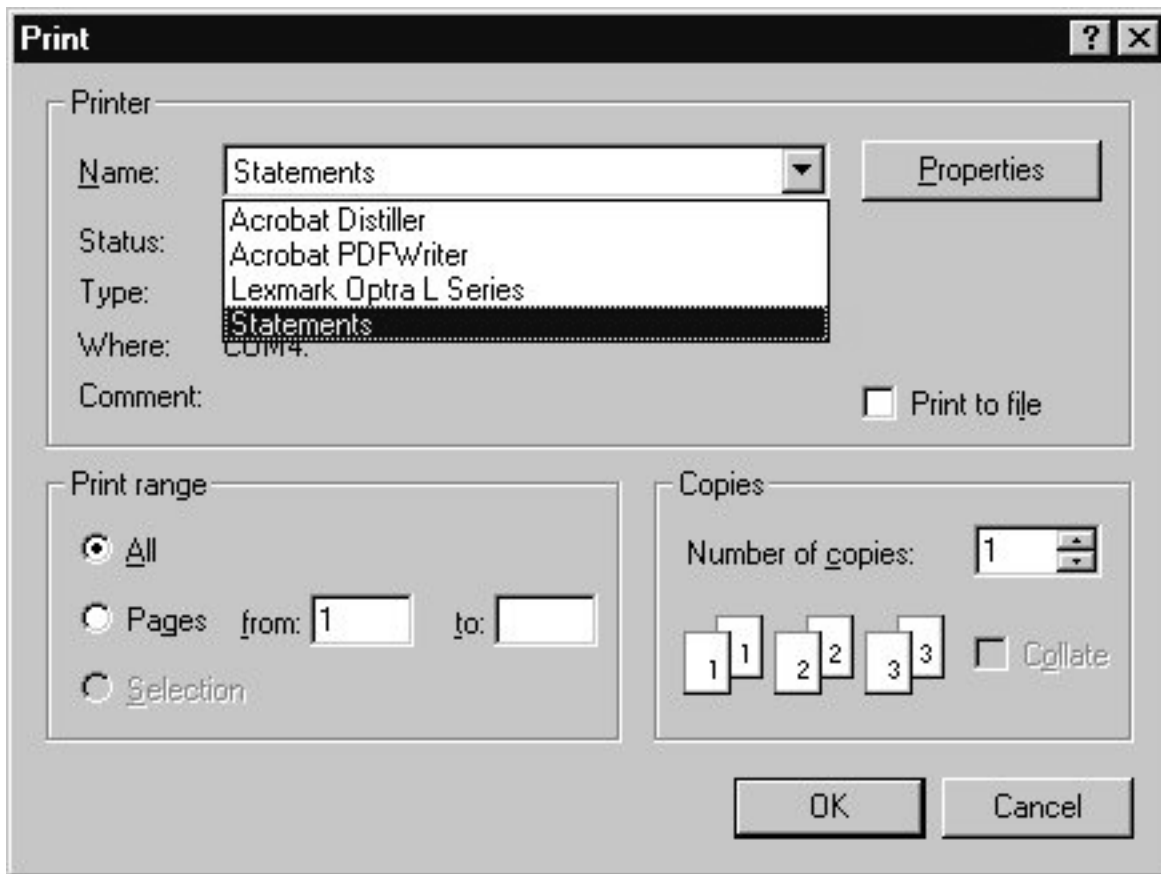
If you identify and correct print errors, re-submission of the file to MVS Download should delete the file once it is successful.

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Chapter 16. Using Infoprint Manager Select

The Infoprint Manager Select client is used to give you print access to Infoprint Manager controlled printers. Your system administrator defines a logical destination (a name for the printer or pool of printers for instance), and you install the appropriate Select client on your networked workstation.

When Select is installed and configured on your workstation, the Infoprint Manager destinations available to you will display in the list of printers you see when you are printing from familiar print applications. In the following example, a pool of printers named statements was created for a group of users. When a user prints from Netscape, for instance, Statements is now one of the printers that the user can select.



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Chapter 17. Adding a Windows gateway printer to your desktop

A Windows gateway printer is a printer that you add to your desktop the same way you add any other printer. The difference is that when you send a print job to a Windows gateway printer, it doesn't go directly to a printer-- it goes to Infoprint Manager first. Infoprint Manager organizes everyone's print jobs by putting them in a print queue in the order that it receives them, then sends them all to the correct printers. In addition, if you have Infoprint Manager Notifications running on your workstation, Infoprint Manager will send you messages about the status of your print job.

Follow these steps to add a Windows gateway printer to your desktop.

1. Ask your system administrator for the share name of the Windows gateway printer.
2. Follow the standard instructions for adding a network printer to your desktop based on the operating system you use. (For example, on Windows systems, use the **Add Printer** wizard.) When you are prompted for the name of the printer to connect to, find or enter the share name from 1.
3. Once the connection to the Windows gateway printer is created, you can print to it just as you would to any other printer.

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Chapter 18. Adding an Internet Printing Protocol (IPP) Gateway Printer to Your Desktop

The Internet Printing Protocol (IPP) is a data transport protocol that allows you to print your documents to any IPP-enabled printer whose IP address you know. You can use IPP to send print data over both LANs and the Internet-- so you can send print jobs to a network printer from your desk, your home office, or anywhere that you find an Internet connection. Not all printers are currently enabled to work with IPP. However, Infoprint Manager provides an IPP gateway-- a mechanism that allows you to use IPP, even if your printers are not IPP-enabled.

To be able to print through an IPP gateway, you must first have IPP client software installed on your workstation or laptop. IPP client software is available from various printer vendors; check with your printing system administrator to see which IPP client your company is using. Once you have the IPP client software installed, follow these steps to set up to print through the IPP gateway.

1. Ask your printing system administrator for the address of the printer that you want to print to.
2. Follow the instructions provided with your IPP client software for adding a printer to your desktop. When you are asked for the address of the printer, enter the address that you got in step 1.
3. Once the printer is added, you can print to it just as you would any other printer.

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Chapter 19. Submitting jobs through Infoprint Manager hot folders

An Infoprint Manager *hot folder* is a directory that is associated with a logical destination. When you copy or move a file to the hot folder, Infoprint Manager automatically submits the file to that logical destination. The default job and document attributes that are set for that logical destination are applied to jobs submitted through the hot folder.

To submit print jobs through an Infoprint Manager hot folder, you do not have to install any Infoprint client software or create any printers. All you have to do is map a network drive on your system to the hot folder (or to a parent directory of the hot folder). Then, you can use a simple copy and paste to put your print files in that directory. The hot folder submits the job to an Infoprint logical destination to be printed.

Note: Make sure you know what kinds of files the Infoprint Manager destination will accept. The files that you put in the hot folder should already be print data streams (such as PCL or PostScript), not the standard "working" files that many desktop programs create.

For example, if you are writing a report using word processing software, you cannot simply save the file and copy that file to the hot folder to be printed. You need to convert it into a print data stream first. One way to do that conversion is to create a printer on your desktop that uses a PostScript or PCL driver and the **FILE:** port. If you send a job to that printer, the output won't be printed; it will be saved in a file (called `my_report.ps`, for example). Then, you can copy the new file into the hot folder to be sent to Infoprint Manager.

Contact your printing system administrator to find out where the hot folders are on your network, and which printer each hot folder sends job to.

Mapping a network drive

On your system, use the standard Windows method to map a network drive (available in Windows Explorer) to the Infoprint Manager hot folder. If there are multiple hot folders within the same directory, you only have to map one network drive to the parent directory; you will be able to access all of the subdirectories through it.

Submitting jobs through a hot folder

To submit a job through a hot folder, simply copy or move the print file to the hot folder.

Note: Files are deleted from the hot folder after they are sent to Infoprint Manager.

Specifying job attributes

By default, jobs submitted through a hot folder use the attribute values in the default document and default job associated with the logical destination. If you want to specify other attributes or use different values for existing attributes, do the following.

Note: By default, hot folder jobs are submitted to Infoprint Manager with job notifications turned **off**. If you want to receive notifications about jobs that you submit through hot folders, you must specify a **notification-profile** with an explicit **delivery-address** in the .att file.

1. Either on your system or in the hot folder itself, create a text file to use as your attributes file. Name the attributes file *filename.att*, where *filename* is the same as the file name of the print file. For example, if the print file is *report.pdf*, the attributes file is *report.pdf.att*.
2. In the attributes file, specify the Infoprint attributes and values that you want to use for this job. For example, if you want to print three single-sided copies of *report.pdf*, *report.pdf.att* looks like this:

```
copy-count = 3
sides = 1
```

Note: The attributes file is in the same format as a **-X** file passed to a **pdpr**. For information about job and document attributes, refer to *Infoprint Manager: Reference*, S544-5475.

3. If you created the attributes file on your system, copy or move the file to the hot folder. The Infoprint Manager logical destination recognizes the .att file extension as an attributes file and knows not to try to print it.
4. Copy or move the print file to the hot folder. The Infoprint Manager logical destination sees the print file and looks for an attributes file with the same file name. Both of the files are taken and your attributes are used.

Printing large jobs

Because it takes time to copy or move files, the Infoprint Manager logical destination may try to take a large job out of the hot folder before it is finished copying. You can prevent the logical destination from taking partial jobs by *staging* large jobs. To do this:

1. Make a copy of the print file on your local system.
You will end up with 2 files: **report.pdf** and **copy of report.pdf**.
2. Rename the copy of the print file so that it has the same name as the original print file and the extension .stg.
Rename **copy of report.pdf** to **report.pdf.stg**.
3. Copy the new file to the hot folder.
Copy **report.pdf.stg** and paste it in the hot folder.

Note: The Infoprint Manager logical destination ignores files with the .stg extension.

4. When the file is finished copying, change the extension back to the original extension.

Rename **report.pdf.stg** back to **report.pdf**. Infoprint Manager will pick up the renamed file and send it to print.

Submitting multiple-document jobs

You can also use staging to print jobs that contain multiple documents. In this case, you stage an entire directory. The Infoprint Manager logical destination prints the documents as one job, in the order that you copied the files into the directory.

1. Navigate to the hot folder (using Windows Explorer, for example).
2. In the hot folder directory, create a new folder named *jobname.stg*, where *jobname* is any name you choose.

Note: The Infoprint Manager logical destination ignores directories with the .stg extension.

3. Copy the documents you want to print into the subdirectory in the **same** order that you want to print them.

Note: If you copy multiple files in a single operation, they may not be copied in the same order that you selected them. If the print order matters, copy the files one at a time.

4. If you want to override the default attributes, create an attributes file called *jobname.att*, where *jobname* is the same as the subdirectory name, and copy it into the hot folder.
5. Rename the subdirectory from *jobname.stg* to *jobname*. The Infoprint Manager logical destination then accepts all of the files in the subdirectory as a single job.

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Chapter 20. Submitting print jobs through the Infoprint Manager LPD

To submit jobs to the Infoprint Manager LPD using an LPR client, you do not have to create a Windows gateway printer or install any Infoprint client software. You must, however, install an LPR client on the system that you are submitting jobs from. You can use any LPR client, but if you want to be able to specify advanced Infoprint options on the `-o` flag, you should use the **lprafp** sample code package.

lprafp is an LPR client that is available as a free download from the IBM Printing Systems website. The package includes executable forms of the **lprafp** client for the Windows and AIX (version 4.3.3 and above) platforms. You can compile this code to use it on other platforms as well. IBM Printing Systems does not provide support for the package.

To download the package, navigate to the IBM Printing Systems web site at <http://www.ibm.com/printers>. On the home page, click **Support** in the left hand navigation bar, then click **Downloads, fixes, drivers, and updates**, and then **Tools (Unsupported ASIS)**. Find the **lprafp- LPR sample code package** link under **Multiple Systems**.

Note: The Microsoft LPR client supports a `-o` flag, but it is not the same as the Infoprint `-o`. Any values you pass to Infoprint Manager using the Microsoft `-o` flag will be lost. In addition, some LPR clients provide print control functions, such as landscape print. The Infoprint Manager LPD does not support these options.

Preparing to submit print jobs

When you submit jobs to the Infoprint Manager LPD, it uses a mapping file to match the keywords you specify on the `-o` option with Infoprint attributes. A sample mapping file comes with Infoprint Manager for Windows NT and Windows 2000; before you submit any print jobs to the Infoprint Manager LPD, you should modify this file to meet your needs.

To modify the mapping file do the following.

1. Open the file `<install path>\var\pd\lpd\lpdmap.txt` (where `<install path>` is the directory where Infoprint Manager is installed) in a text editor such as Notepad.
2. Read all of the instructions in the mapping file before you make any changes.
3. Edit the mappings as necessary and save the file using the same name.

Because all LPR clients use different keywords, it is impossible to list them all. The mappings listed are "best guess" mappings, and may not generate the results you need. The best way to see what values you need to add or change is to uncomment the line that reads:

```
* DEBUG
```

and save the file. (To uncomment the line, delete the `*`.) Submit a print job through the LPD and check the output. If the job fails or if it prints incorrectly, check the error messages in the server log in the Management Console. Use them to help

determine which keywords are missing or mapped incorrectly. When you are finished, be sure to open the mapping file and comment the DEBUG line out again.

Submitting print jobs

When you submit print jobs using the LPR client, all you need to specify is the Infoprint Manager server and the name of an Infoprint destination (logical or actual). The Infoprint Manager LPD will submit the job to the Infoprint print spool.

Chapter 21. Checking Job Status

The easiest way to find out the status of print jobs that you submit through Infoprint Manager is to have Infoprint Manager send you messages about them. Refer to the topic “Chapter 22. Using Infoprint Manager Notifications- Operator and End User” on page 307 if you want to receive messages about your print jobs. If you have installed Infoprint Select on your workstation, you can receive messages through Select Notification as well.

If you do not install Infoprint Manager Notifications, you may be able to check the status of your jobs manually. If you submit jobs to a Windows gateway printer, follow these steps:

1. Click the Windows **Start** button, and select **Settings>Printers** to open the Printers window.
2. In the Printers window, double-click the printer that you sent your job to. The job window for that printer will open.
3. Find your job in the list of documents. If the job isn't in the list, it may be finished printing.

Note: Your print job will only appear in this list if your printing system administrator has configured the gateway to report accurate job status back to workstations.

If you submit print jobs using Infoprint Select or an IPP gateway and you need to check the status before you receive notification about them, contact your help desk or printing system support personnel.

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Chapter 22. Using Infoprint Manager Notifications- Operator and End User

Infoprint Manager Notifications is an application that you can use to receive messages about Infoprint objects, such as print jobs that you submit to Infoprint Manager, or printers, queues, and jobs that you manage. For example, Infoprint Manager can send you a message when a job you submit is finished printing so you know that you can pick it up, or it can let you know that there is something wrong with the printer and no jobs can be printed until someone resolves the problem.

Note: If you have installed Infoprint Select and use it to submit your print jobs to Infoprint Manager, messages about your jobs will continue to be sent to Select Notification, even if you install Infoprint Manager Notifications. You can still use Infoprint Manager Notifications to receive messages about other objects.

Before you install Infoprint Manager Notifications, check with your system administrator to make sure that the notification server is enabled on the Infoprint server. At the same time, ask for the notification server hostname and the number of the port you should use to connect with the server. You may need this information when you run Infoprint Manager Notifications for the first time.

Installing Infoprint Manager Notifications

You can install Infoprint Manager Notifications from the Infoprint Manager Common Client CD, available from your system administrator. Instructions for installing the program are provided in the Notification Client Readme on the CD and in "Installing Infoprint Manager Notifications" on page 46.

Starting Infoprint Manager Notifications

When you install Infoprint Manager Notifications, a program icon will be added to your **Start** menu. Select **Infoprint Manager Notifications** to start receiving messages. The first time you start the program, it will try to connect to the notification server on the machine that your Infoprint Manager server runs on. If it does not succeed, the **Notification Client Properties** dialog will be displayed. Check to see if the notification server hostname and port number match the ones that your system administrator provided. If they do not, change them and click **OK**. If you need further assistance with the dialog, click **Help** to see the online help.

Receiving Messages

In order to receive messages, you must have Infoprint Manager Notifications not only installed, but running on your workstation. You can minimize the notification window if you do not want it open on your desktop, but then you will have to restore it when you want to check the messages that have arrived.

Tip: On Windows systems, you can put Infoprint Manager Notifications in your Startup folder, so it will automatically start whenever you log on.

You will receive certain messages without having to do anything else--for example, messages about print jobs you have submitted (including messages about the printers you send your jobs to) will come to you by default. Most of the messages you receive about jobs provide reasons for a job not printing. If you receive one of them, you can either resend the job or check with your print room operators or system administrator to resolve the problem. If you start to receive messages that don't seem to relate to you, inform your system administrator.

If you need to receive messages about other objects-- for example, about printers that you manage-- your system administrator can change the notification profile for those objects.

Part 3. Infoprint Manager FastPaths

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Chapter 23. Interrupting and restarting a job that's currently printing

Use this procedure if you want to stop printing a job and start printing it again or if you want to stop printing a job, move it to a different printer, and start printing again. If you are printing an AFP print job, you can also use this procedure to stop printing a job and start it again from any page in the job, not just from the beginning.

This procedure does NOT stop the printer; it only stops the job you select.

Once the job is stopped, the next job in the queue will start to print. If you need to stop the printer, (for example, to replace toner) use the **Stopping a printer to perform scheduled maintenance** procedure.

Note: Refer to the online help in the Infoprint Manager GUI if you need instructions on completing any of these steps.

Stopping the job

1. Open the Infoprint Manager Operations GUI or the Infoprint Manager Administration GUI.
2. In the GUI, find the job that you want to interrupt and select it.
3. Click **Job** -> **Delete and Retain**.

Note: If the **Delete and Retain** item doesn't appear in the **Job** menu, use **Add/Remove Menu Items** to add it.

4. In the **Set Retain Time** dialog, type 1 in the **Days** field.

Important:

- a. The job will now stay in the **Retained** state for twenty-four hours and then will be deleted. If you don't think you'll be able to print the job within twenty-four hours, use a greater number of days.
 - b. If the job was submitted with a retain time already set, you will not see the **Set Retain Time** dialog. Infoprint Manager will retain the job using the existing retain time.
5. Click **OK**.

The job will stop printing and will be listed in the **Retained Jobs** list in the main Infoprint Manager GUI window.

Restarting the job

Use this procedure if you want to do one of the following:

- Print the entire job on the same printer it was printing on before.
- Print the entire job on a different printer.
- Print part of the job (such as page one to page fifty, or page twelve to the end).

Important:

- You can only print part of the job if the job is transformed into AFP before it gets printed. You cannot print part of an ASCII, KGL, metacode, or LCDS job; you have to print the whole job.

- You can only print part of the job if the job has only one printable document. If it has more than one printable document, you either have to print the whole job or use spacing to skip a section of the job. Refer to the **Moving backward or forward in a print job that's already printing** topic for instructions on spacing.
- If you submitted this job using DPF from a host system, you can start printing from any page in the job, but Infoprint Manager ignores any value you enter for the end page. You will always print to the end of the job.




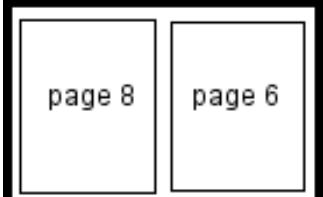
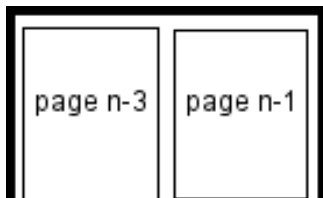
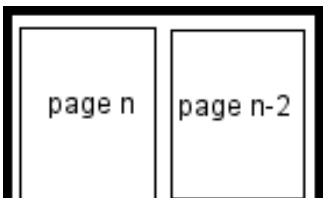
To restart the print job:

1. If you want to print the entire job, skip to **Before you Continue** between steps 7 and 8 below.
2. If you only want to print part of the job, figure out what page you want to start printing from.

Important: If you don't want to start printing from the first page of the job, be careful when you choose which page to start with. Duplex and n-up jobs can be confusing because you have to start printing with the **first** page on the **front** side of the sheet of paper. If you don't choose the correct start page, the job will print, but the sequence will probably be wrong.

For example, if you are printing a 2-up duplex job, each sheet of paper actually has four pages printed on it, like this:

Table 33. 2-up duplex print job: front and back views

	Front of sheet	Back of sheet
Sheet one		
Sheet two		
Last sheet		

Since you have to start printing this job at the first page on the front side, you can choose page one or page five (or any other

page that would fall in that position). If you choose a different page, the sequence of pages will be wrong, and the job won't print correctly.

3. Figure out what page you want to stop printing on (if you don't want to print all the way to the end of the job).
You don't have to be as precise on the last page to print; the last page can be in any location on the sheet of paper.
4. Select the job in the **Retained Jobs** list in the main Infoprint Manager GUI window.
5. With the job selected, click **Job** -> **Change Page Range to Process**.
If you don't see the **Change Page Range to Process** item in the **Job** menu, use **Add/Remove Menu Items** to add it.
6. In the **Change Page Range to Process** dialog, select **Range of Pages** and type the start page and end page you figured out above.
7. Click **OK**.

Before you continue:

You should only move a job to an Infoprint printer that uses the same destination support system (DSS) as the one the job was originally submitted to. If you move the job to a printer that uses a different DSS and the new printer doesn't support all of the attributes of the job, the job will fail to print. To check which DSS your Infoprint printer uses, do the following.

- a. Select the printer in the tree view of the Main window of the Infoprint Manager GUI.
- b. See if the **Type** column appears in the details view. The **Type** column displays the DSS that the Infoprint printer uses.
- c. If you don't see the **Type** column, use **Add/Remove menu items** to add it.

Continue with step 8.

8. Select the job again and click **Job** -> **Move job**.
9. In the **Move Jobs** dialog, select the printer that you want to print the job on. You can choose the same printer it was printing on before or a different one.

If the job is accepted, it will go back into the queue and wait to be printed. Depending on how many jobs are ahead of it in the queue, it may take a while for the job to print. If you want the job to print right away, you can either move it to the top of the queue (so it prints next) or you can change its priority (so it prints sooner, but not necessarily next).

10. To move the job to the top of the queue, select the job in the Infoprint Manager GUI and use the **Make Job First** task. To change the priority of the job, use the **Change Priority** task.

Note: If the task you want to use doesn't appear in the menu, use **Add/Remove menu items** to add it.

Chapter 24. Setting up high speed printers for spacing

In Infoprint Manager, moving from page to page in a job is called *spacing*:

- *Forward spacing* is moving to a point later in the job (such as skipping from page 10 to page 15).
- *Backspacing* is moving to a point earlier in the job (such as backing up from page 40 to page 20).

For spacing to work effectively on the Infoprint 2000 for AFP printing, Infoprint 3000, Infoprint 4000, and Infoprint 4100, you must first enable the printer to work with the Simple Network Management Protocol (SNMP) and allow SNMP to configure the printer. These settings allow you to use the Infoprint Manager GUI to stop a printer very quickly (in ten seconds or less) when you need to, instead of having to wait for all of the pages of a job that have been buffered to print.

Enabling SNMP on an Infoprint 2000 for AFP printing

1. On the display/touch screen on the touch screen/printer console, open the **Printer definition** pull-down menu.
2. Select **Remote Access**.
3. On the **SNMP** tab:
 - Select the **Enable SNMP Agent** and **Allow SNMP to configure the printer** check boxes.
 - In the **Communities** list, touch the name of the community you will be using to access the printer and verify the settings. Make sure that the community has **Write** access to the printer.
4. Touch **OK** to close the window.
5. On the main screen of the console, make sure that the attachment type you will be using is enabled.
6. If you changed the **Enable SNMP Agent** or the **Allow SNMP to configure the printer** setting, shutdown and restart the printer to make the changes take effect.

Now you have to disable the Infoprint Manager printer and enable it again to refresh the printer configuration information in the server.

7. Start the Infoprint Manager Administration GUI.
8. In the GUI, find the Infoprint Manager printer (actual destination) that corresponds to this printer and select it.
9. Use the GUI to disable the printer.
10. Use the GUI to enable the printer again.

Enabling SNMP on an Infoprint 3000 or an Infoprint 4000 printer that uses the Operator console

The Operator console is the standard console for the Infoprint 3000 and the Infoprint 4000.

1. On the display/touch screen on the Operator console, open the **Configure** pull-down menu.
2. Select **Remote Access**.

3. Under **Select a Remote Access**, select **SNMP**.
4. Under **Enabled**, select **Yes**.
5. Under **Allow to Configure**, select **Yes**.
6. Touch **OK** to close the window.
7. You will be prompted to restart the printer so that these settings can take effect. Restart the printer, and wait for it to power back up before you continue.

Now you have to disable the Infoprint Manager printer and enable it again to refresh the printer configuration information in the server.

8. Start the Infoprint Manager Administration GUI.
9. In the GUI, find the Infoprint Manager printer (actual destination) that corresponds to this printer and select it.
10. Use the GUI to disable the printer.
11. Use the GUI to enable the printer again.

Enabling SNMP on a printer that uses the Enhanced Operator console

The Enhanced Operator console is the standard console for the Infoprint 4100 and is available as an upgrade for the Infoprint 4000.

1. On the Enhanced Operator Console, touch **Printer definition** at the top of the screen.
2. On the left side of the screen, touch **Remote Access**.
3. In the **Communities** list, select the name of the community you will be using to access the printer and verify the settings. Make sure that the community has **Write** access to the printer.
4. Select the **SNMP Agent Enabled** and **Allow SNMP to Configure Printer** checkboxes, so they both say **Yes**.
5. Touch **OK** to save the settings.
6. You may be prompted to restart the printer so that these settings can take effect. Restart the printer, and wait for it to power back up before you continue.

Now you have to disable the Infoprint Manager printer and enable it again to refresh the printer configuration information in the server.

7. Start the Infoprint Manager Administration GUI.
8. In the GUI, find the Infoprint Manager printer (actual destination) that corresponds to this printer and select it.
9. Use the GUI to disable the printer.
10. Use the GUI to enable the printer again.

Chapter 25. Moving backward or forward in a job that's currently printing

In Infoprint Manager, moving from page to page in a job is called *spacing the printer*:

- *Forward spacing* is moving to a point later in the job (such as skipping from page 10 to page 15).
- *Backspacing* is moving to a point earlier in the job (such as backing up from page 40 to page 20).

Spacing a printer

Things to remember:

- **You can only space a printer that uses the PSF Destination Support System (DSS) and one of the following attachment types:**
 - PSF TCP/IP
 - PSF Channel
 - PSF BSD
 - PSF Other

To see what DSS your printer uses, do the following:

1. Select the printer in the tree view of the Main window of the Infoprint Manager GUI.
 2. See if the **Type** column appears in the details view. The **Type** column displays the DSS that the Infoprint printer uses.
 3. If you don't see the **Type** column, use **Add/Remove menu items** to add it.
- **You can only space a printer after a job has already started to print.**

If you only want to print a section of a job (such as page 11 to page 20) or if you want to start printing from a page other than the first page of the job, use the **Change Page Range to Process** task in the Infoprint Manager GUI.
 - **Spacing works better on high-speed printers than on low speed printers.**

While spacing is supported on all printers that you print to using the PSF DSS, it is very difficult to space printers that print 40 pages per minute (ppm) or less. Spacing works adequately on printers that print between 60 and 100 ppm, and works very well with high-speed Infoprint printers that are configured correctly.
 - **The Infoprint 2000, Infoprint 3000, Infoprint 4000, and Infoprint 4100 printers require additional configuration for spacing to work efficiently.**

Refer to the **Setting up high speed printers for spacing** topic for instructions on configuring your printer.
 - **Page numbers refer to pages of the print job, not necessarily to any page numbers in your document.**

For example, in a book, the first page of chapter one is usually "page 1." However, it might be page 15 of the print job, because of the title page, credits, and table of contents.
 - **You cannot space to the back side of a sheet of paper.**

If you are printing a duplex job, you will always print both the front and back sides of the sheet of paper that you space to.

To space a printer, do the following:

1. Start the Infoprint Manager GUI.
2. In the GUI, find the Infoprint printer that you need to space.
3. Select the Infoprint printer by clicking on it, then click **Printer** -> **Stop**.

Note: If you don't see **Stop** in the menu, use **Add/Remove menu items** to add it.

4. In the **Stop printer_name** dialog, select **Pause** and **Now**, and click **OK**.
Even though you selected **Now**, the printer will keep printing for a while because it has to get to a point in the job where it can stop. For Infoprint 2000, Infoprint 3000, and Infoprint 4000 printers that are configured correctly, you shouldn't have to wait more than 10 seconds. For other printers, you may have to wait longer.
5. Once the printer has stopped printing, look at the last sheet that printed. Write down the number of that sheet of the job.
6. Figure out what sheet of paper in the job you want to space to. Write down the number of that sheet of the job.
7. Figure out the number of sheets of paper you need to space.
 - To **forward space** the printer:
Subtract the number of the sheet that printed last (from step 5) from the number of the sheet that you want to skip to (from step 6), and then subtract one. Like this:
 $(\text{number from step 6}) - (\text{number from step 5}) - 1 = \text{number of sheets to skip}$
 - To **backspace** the printer:
Subtract the number of the sheet that you want to go back to (from step 6) from the page that printed last (from step 5), and add one (for the current page). Like this:
 $(\text{number from step 5}) - (\text{number from step 6}) + 1 = \text{number of sheets to back up}$
8. Determine the number of "sides" to space the printer.
 - If you are printing a simplex job, the number of sides is the same as the number of sheet from step 7.
 - If you are printing a duplex job, multiply the number from step 7 by two to get the number of sides. $(\text{number from step 7} \times 2 = \text{number of sides})$
9. In the Infoprint Manager GUI, find the printer you want to space and select it.
10. With the printer selected, click **Printer** -> **Space**.
11. In the **Space printer_name** dialog, select **Backspace** or **Forward space** and type the number of sides you found in step 8.
12. Click **OK**.
13. Make sure the printer is still selected and click **Printer** -> **Resume** to start the printer again.

Chapter 26. Stopping a printer to perform scheduled maintenance

Use this procedure to stop a printer so you can perform routine maintenance, such as updating the microcode, changing paper, or cleaning the printer. While you have the printer stopped, Infoprint Manager will not be able to send or schedule jobs to it. This procedure will work for printers that use any DSS.

1. Open the Infoprint Manager Operations GUI or the Infoprint Manager Administration GUI.
2. In the GUI, find the printer that you want to stop and select it.
3. Use the to disable the printer.

The Infoprint printer will stop accepting jobs, but the printer will not stop printing immediately. All of the jobs that were in the **processing** state before you disabled the printer will print before it stops.

4. After the printer stops printing, you can perform whatever maintenance you need to.
5. When you are finished and the printer is ready to receive jobs again, go back to the Infoprint Manager GUI.
6. Find the printer in the GUI and select it.
7. Use the GUI to enable the printer again.

The printer will be available to accept and print jobs again.

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Chapter 27. Fixing a printer problem and starting to print again

Use this procedure when the printer stops printing because of a paper jam, "out of paper" error, or for some other reason.

Note: Refer to the online help in the Infoprint Manager GUI if you need instructions on completing any of these steps.

Try this first

"Out of paper" errors and some paper jams are easy to recover from. Most of the time, you don't have to do anything to Infoprint Manager to fix them; Infoprint Manager just waits until the printer is ready to print again. While it is waiting, Infoprint Manager continues to accept jobs and schedule them to the printer.

If the printer stops printing because of a problem, first try the following.

1. Check the printer.
 - If a lot of pages of the job are ruined and need to be reprinted, stop here. Don't finish this procedure. Use the "Fixing more complicated problems" procedure below instead.
 - Otherwise, load paper if the bins are empty or clear paper jams as the printer console indicates. Once everything is clear, the printer should reset itself and continue sending jobs. Infoprint Manager should pick up where it left off.
2. Find the printer in the Infoprint Manager GUI. Make sure that its status is **ready**. If it is not, select the printer and use the GUI to enable it.
3. If just a few pages of the print job need to be printed again, the easiest thing to do is to resubmit the job and print just those pages. You can only print part of the job if you are using the PSF DSS and if the job will be transformed to AFP before it is printed.

Fixing more complicated problems

Use this procedure when the problem is more difficult to fix or if you have to reprint numerous pages of a job.

1. Open the Infoprint Manager GUI.
2. Find the Infoprint Manager printer (also called an actual destination) that sends jobs to that printer and select it.
3. Use the GUI to disable the printer.

The printer won't be able to accept any print jobs until you enable it again.
4. If the printer stopped printing in the middle of a job, find that job in the GUI and select it.
5. With the job selected, click **Job -> Delete and Retain**.

Note: If the **Delete and Retain** item doesn't appear in the **Job** menu, use **Add/Remove Menu Items** to add it.

6. In the **Set Retain Time** dialog, type 1 in the **Days** field.

Important:

- a. The job will now stay in the **Retained** state for twenty-four hours and then will be deleted. If you don't think you'll be able to print the job within twenty-four hours, use a greater number of days.
 - b. If the job was submitted with a retain time already set, you will not see the **Set Retain Time** dialog. Infoprint Manager will retain the job using the existing retain time.
7. Click **OK**.
 8. Decide what you want to do with any other jobs that are in the queue waiting for this printer. Some of the options are:
 - Leave them in the queue, so they print when you enable the printer again. If you can fix the problem quickly, this option is the easiest one. In addition, if your printers are pooled, the other printers will take care of all of the jobs until this one is ready.
 - Move them to a different printer so they can be scheduled to print while you are working on this one.
 - Delete them. You should only consider this option if it is easier to resubmit the jobs than to use other methods to recover them.
 9. Fix the problem at the printer.

Once the problem is fixed, the printer may start to print again, just to clear the pages that were in the buffer before you disabled it and deleted the job. If any other jobs were in **processing** state when you disabled the printer, they will print as well.
 10. Go back to the Infoprint Manager GUI, find the Infoprint printer again, and select it.
 11. Use the GUI to enable the printer.

The printer will be available to accept jobs again. If you left jobs in the queue, the printer should start accepting and printing them.

Restarting the job that was printing when the problem occurred

You can either:

- Start the job from the beginning.
- Start the job from a point before the problem occurred (so the ruined pages get printed).

Important:

- You can only start printing in the middle of the job if the job is transformed into AFP before it gets printed. You cannot print part of an ASCII, KGL, metacode, or LCDS job; you have to print the whole job.
- You can only start printing in the middle of the job if the job has only one printable document. If it has more than one printable document, you either have to print the whole job or use spacing to skip a section of the job. Refer to the **Moving backward or forward in a print job that's already printing** topic for instructions on spacing.



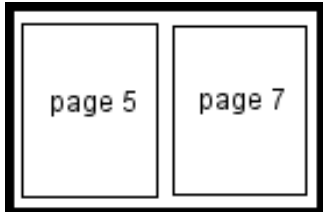
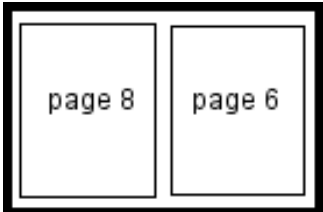


Note: Spacing will only work if you send the job to a PSF DSS printer.

1. If you want to print the entire job, skip to **Before you Continue** between steps 7 and 8 below.
2. If you only want to print part of the job, figure out what page you want to start printing from.

Important: If you don't want to start printing from the first page of the job, be careful when you choose which page to start with. Duplex and n-up jobs can be confusing because you have to start printing with the **first** page on the **front** side of the sheet of paper. If you don't choose the correct start page, the job will print, but the sequence will probably be wrong.

For example, if you are printing a 2-up duplex job, each sheet of paper actually has four pages printed on it, like this:

Table 34. 2-up duplex print job: front and back views

	Front of sheet	Back of sheet
Sheet one		
Sheet two		
Last sheet		

Since you have to start printing this job at the first page on the front side, you can choose page one or page five (or any other page that would fall in that position). If you choose a different page, the sequence of pages will be wrong, and the job won't print correctly.

3. Figure out what page you want to stop printing on (if you don't want to print all the way to the end of the job).
You don't have to be as precise on the last page to print; the last page can be in any location on the sheet of paper.
4. Select the job in the **Retained Jobs** list in the main Infoprint Manager GUI window.
5. With the job selected, click **Job -> Change Page Range to Process**.
If you don't see the **Change Page Range to Process** item in the **Job** menu, use **Add/Remove Menu Items** to add it.
6. In the **Change Page Range to Process** dialog, select **Range of Pages** and type the start page and end page you figured out above.
7. Click **OK**.

Before you continue:

You should only move a job to an Infoprint printer that uses the same destination support system (DSS) as the one the job was originally submitted to. If you move the job to a printer that uses a different DSS and the new printer doesn't support all of the attributes of the job, the job will fail to print. To check which DSS your Infoprint printer uses, do the following.

- a. Select the printer in the tree view of the Main window of the Infoprint Manager GUI.
- b. See if the **Type** column appears in the details view. The **Type** column displays the DSS that the Infoprint printer uses.
- c. If you don't see the **Type** column, use **Add/Remove menu items** to add it.

Continue with step 8.

8. Select the job again and click **Job -> Move job**.
9. In the **Move Jobs** dialog, select the printer that you want to print the job on. You can choose the same printer it was printing on before or a different one.

If the job is accepted, it will go back into the queue and wait to be printed. Depending on how many jobs are ahead of it in the queue, it may take a while for the job to print. If you want the job to print right away, you can either move it to the top of the queue (so it prints next) or you can change its priority (so it prints sooner, but not necessarily next).

10. To move the job to the top of the queue, select the job in the Infoprint Manager GUI and use the **Make Job First** task. To change the priority of the job, use the **Change Priority** task.

Note: If the task you want to use doesn't appear in the menu, use **Add/Remove menu items** to add it.

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