

Infoprint Manager for AIX



Administrative procedures: Configuring Infoprint Manager

Version 4 Release 1

Infoprint Manager for AIX



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Version 4 Release 1

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Part 1. Administrative procedures: Configuring Infoprint Manager

Chapter 1. Creating and managing servers

The Infoprint server manages and controls all other Infoprint objects in your Infoprint system. During Infoprint installation, one server was created that contains a logical destination, a queue, and an actual destination (a physical printer). Use the information in this chapter to add additional servers and to perform server configuration and maintenance tasks.

Preparing to create additional servers in a distributed environment

If you are configuring for a distributed, non-DCE environment and need to define many instances of the Infoprint server process, you should use the **fstshow** command to see what intercommunication ports are available on your server.

For example, entering `fstshow -o` on an AIX command line produces a display similar to the contents of the following table:

Table 1. Output from sample `fstshow -o` command

IN-USE?	PORT#	PID	DIR-ID	NAME
Y	2050	23266	2	server1
Y	2051	24272	0	notifyd
N	2052		99	
N	2053		99	
N	2054		99	
N	2055		99	
N	2056		99	
N	2057		99	
N	2058		99	
N	2059		99	

Once you have a list of the server intercommunication ports that are either in use or available (2050 through 2059 in the display above), you can see if you have enough ports to start more Infoprint Manager server processes. If not, you can use the **pdinitports** utility to initialize a larger range of port numbers for interprocess communication. Note that Infoprint Manager processes, such as **notifyd** and the SAP callback daemons also use server intercommunication ports.

Because Infoprint defaults to reserving only 10 ports, if you want to define more than 10 server processes, you must use the **pdinitports** utility to initialize more than 10 ports. For example, if you want to initialize Infoprint to use the server interprocess communication ports 2050 through 2069 for twenty server processes, enter the following at the AIX command line:

```
pdinitports 2050 2069
```

For a complete description of the **pdinitports** utility, see Infoprint Manager: Reference. Once you have completed this process, you can begin “Creating additional servers or starting existing servers” on page 4.

Creating additional servers or starting existing servers

You can create a new server or start an existing server through the Infoprint SMIT administrator's interface. If you are not familiar with how to start the Infoprint SMIT administrator's interface, see "Using the Infoprint Interfaces" in *Infoprint Manager for AIX: Getting Started*.

To create a new server or start an existing server:

1. From the Infoprint Printing System panel, select **Start/Stop Servers**. A new menu displays.
2. Select **Start a Server**. The Start a Server dialog window opens.
3. Enter the name of the Infoprint server in the * **SERVER name** field. By default, Infoprint fills in this field with the name of the AIX system on which you are running the SMIT session.
4. If you want to use a port number other than the default of **6874** as the communications port for Infoprint, enter the port number in the **PORT number** field.

Note: When selecting your own port number, always increment the choice by two because the Infoprint server uses two numbers: the one you specify and the next one, for example, 6874 and 6875.

5. If you want the Infoprint server to run in a locale other than your current locale, enter the locale name in the **LOCALE** field.
6. Press **Enter**. The result of this step depends on whether the server exists:
 - If the server does not exist, Infoprint displays a confirmation message asking if you want to create a new server. Respond to the prompt to continue.
 - If the server exists but is not currently running, Infoprint displays status information and issues a message when it successfully starts the server.
 - If the server exists and is running, Infoprint issues a message to indicate that the server is already operational.

Notes:

1. Normally you will only run one Infoprint server on an AIX system.
2. You also use this procedure to start a server that you have shut down.

Configuring servers with a mixed language environment

If your Infoprint environment is a mixed language environment with separate locales, you must use "Creating additional servers or starting existing servers" to create separate servers running in each language of your environment. Each of these servers can be named for the locale they support (such as english, french, or german).

These Infoprint Manager servers do not need to contain any Infoprint Manager objects, such as queues or destinations. Instead, these servers handle the locale-specific processing of the commands and forward those commands to the Infoprint Manager server that contains the objects.

For each Infoprint client that is not running on the same AIX server as the Infoprint AIX servers, such as the Infoprint Manager Operations GUI, Infoprint Submit, or Infoprint Select, you must ensure that it connects to the correct Infoprint server by setting the **PD_SOCKET** environment variable to contain the port number of the Infoprint AIX server supporting the locale of your client. If your client is running in a locale not supported by the Infoprint server then

connect it to an Infoprint server running in English. To perform this task, see Chapter 14, “Setting Infoprint Manager and AIX environment variables”, on page 181.

Shutting down a server

You can shut down a server immediately or after it finishes processing some or all of its current jobs.

Infoprint prevents the server from accepting new jobs while the server is shutting down and after it has shut down. Logical destinations and actual destinations in the server that were enabled at shutdown time are enabled when the server is restarted. Logical destinations and actual destinations in the server that were disabled at shutdown time are disabled when the server is restarted.

Note: See “Creating additional servers or starting existing servers” on page 4 for the restart procedure.

You can shut down an existing server through the Infoprint SMIT administrator’s interface. If you are not familiar with how to start the Infoprint SMIT administrator’s interface, see “Using the Infoprint Interfaces” in *Infoprint Manager for AIX: Getting Started*.

To shut down an existing server:

1. From the Infoprint Printing System panel, select **Start/Stop Servers**. A new menu displays.
2. Select **Stop a Server**. The Stop a Server dialog window opens.
3. Enter the name of the Infoprint server in the * **SERVER name** field. By default, Infoprint fills in this field with the name of the AIX system on which you are running the SMIT session.
4. Press **Enter**. The result of this step depends on whether the server is running:
 - If the server is currently running, Infoprint issues a message when it successfully stops the server.
 - If the server is not running, Infoprint issues a message to indicate that the server is not operational.

Notes:

1. Normally you will only run one Infoprint server on an AIX system.
2. You also use this procedure to start a server that you have shut down.

Chapter 2. Installing and configuring printer devices and related hardware

For information on printers not included in this chapter, please go to the Infoprint Manager for AIX sitelet on the Web. You can access the sitelet from the Printing Systems homepage at <http://www.ibm.com/printers>.

To create and configure the Infoprint physical printers that represent printer devices, see "Creating and managing actual destinations" in *Infoprint Manager for AIX: Getting Started*.

Installing channel-attached printer devices

When you install a channel-attached printer device, you must:

1. Perform the prerequisite tasks.
2. Install the S/370 Channel Emulator/A adapter.
3. Load the device driver onto the S/370 Channel Emulator/A adapter.

You must also create and configure a PSF channel-attached physical printer to represent the printer device. For instructions, see "Creating and managing actual destinations" in *Infoprint Manager for AIX: Getting Started*.

Prerequisite tasks

Before installing a channel-attached printer, complete the following prerequisite tasks:

- ___ 1. Schedule an appointment with your IBM representative. This person will:
 - a. Install the S/370 Channel Emulator/A Adapter in the RS/6000 if it has not been installed already
 - b. Connect the channel cable to the printer
 - c. Install the bus and tag terminators in the last printer connected to the channel
 - d. Provide the control unit address for the printer
- ___ 2. Determine how many channel-attached printers and S/370 Channel Emulator/A Adapters to install.

While each S/370 Channel Emulator/A Adapter can physically attach four printers; for optimum performance, you should generally attach no more than two channel-attached printers to each RS/6000 with no more than one channel-attached printer per adapter. If you print relatively little data and require relatively few resources, you may be able to attach two printers to a single adapter.

If you install more than one adapter, you must decide which printer you will attach to each adapter.

- ___ 3. Check that you satisfy the electrical grounding requirements described in the documentation for the printer devices.
- ___ 4. Place the printer devices no more than 200 feet from the RS/6000 to which they will be attached.
- ___ 5. At the printer operator panel or console, set the printer to **High Speed Data Streaming** mode or to a similar mode, if applicable.
- ___ 6. Read *POWERstation and POWERserver Channel Emulator/A: User's Guide and Service Installation*.

Installing the S/370 Channel Emulator/A adapter

To find out if the S/370 Channel Emulator/A adapter has already been installed in your RS/6000, enter the following command on the AIX command line:

```
lsdev -C | grep chna
```

For each installed adapter, AIX returns a line similar to this:

```
chna0 Available 00-02 IBM S/370 Channel Emulator/A Adapter
```

If the adapter has not been installed, the IBM representative can install it; or you can install it yourself. To install the adapter:

1. Shut down the RS/6000. For example, to shut down the RS/6000 at 6:30 PM, first sending a warning to all users, enter:

```
shutdown 18:30
```
2. After shutdown is complete, turn off the RS/6000 and all attached devices.
3. Follow the installation instructions in *POWERstation and POWERserver Channel Emulator/A: User's Guide and Service Installation*.
4. Record the number of the slot in which you installed the S/370 Channel Emulator/A adapter and some identifying information for the printer or printers that you intend to attach to the adapter. You will need this information when you configure the Infoprint physical printer that represents each printer device.
5. Attach the channel cable to the S/370 Channel Emulator/A adapter at the RS/6000.

CAUTION:

- a. **Do not attach the channel cable to the printer. The cable and printer connection are easily damaged. The IBM representative will attach the channel cable to the printer.**
 - b. **If a bus cable and tag cable are provided with the S/370 Channel Emulator/A adapter, do not attach these cables to the channel cable or to the printer. The IBM representative will attach them.**
6. When the IBM representative comes to attach the cables, ask him or her to tell you the control unit address for each printer. Record this address. You will need it when you configure the Infoprint physical printer that represents the printer device.
 7. Turn on the RS/6000 and all attached devices.

Loading the device driver onto the S/370 Channel Emulator/A adapter

When you install Infoprint, you install a device driver for the S/370 Channel Emulator/A Adapter on the RS/6000. You must download this driver to each installed adapter. To do this:

1. Log on as **root**.
2. At the AIX command line, enter:

```
smit pd_psf_main
```

The Miscellaneous Configuration menu displays.

3. Select Load Driver onto S/370 Channel Emulator/A Adapter. The Adapter Selection panel (Figure 1 on page 9) displays.

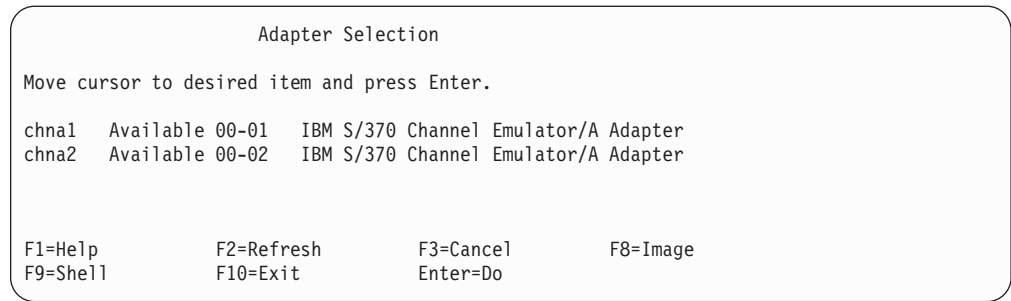


Figure 1. SMIT Adapter Selection panel

4. Select an adapter.
5. Press **Enter** (ASCII interface) or select Do (AIX windows interface).
6. To confirm that the device driver is loaded, enter the following command at the AIX command line:

```
lsdev -C | grep afp
```

For each adapter where the device driver was successfully loaded, AIX returns a line similar to this:

```
afp0 Available 00-02-00 IBM S/370 Channel Emulator/A Printer Driver
```

If the driver was not successfully loaded, the status is Defined instead of Available.

Installing the i-data 7913 IPDS Printer LAN Attachment

Infoprint requires the i-data 7913 Intelligent Printer Data Stream (IPDS) Printer Local Area Network (LAN) Attachment in order to print on IBM coaxial and twinaxial printers. You must install and configure one i-data 7913 IPDS Printer LAN Attachment for each coaxial or twinaxial printer that you plan to install.

How the i-data 7913 IPDS Printer LAN Attachment Works with Infoprint

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. It 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. You must install and configure each i-data 7913 IPDS Printer LAN Attachment separately.

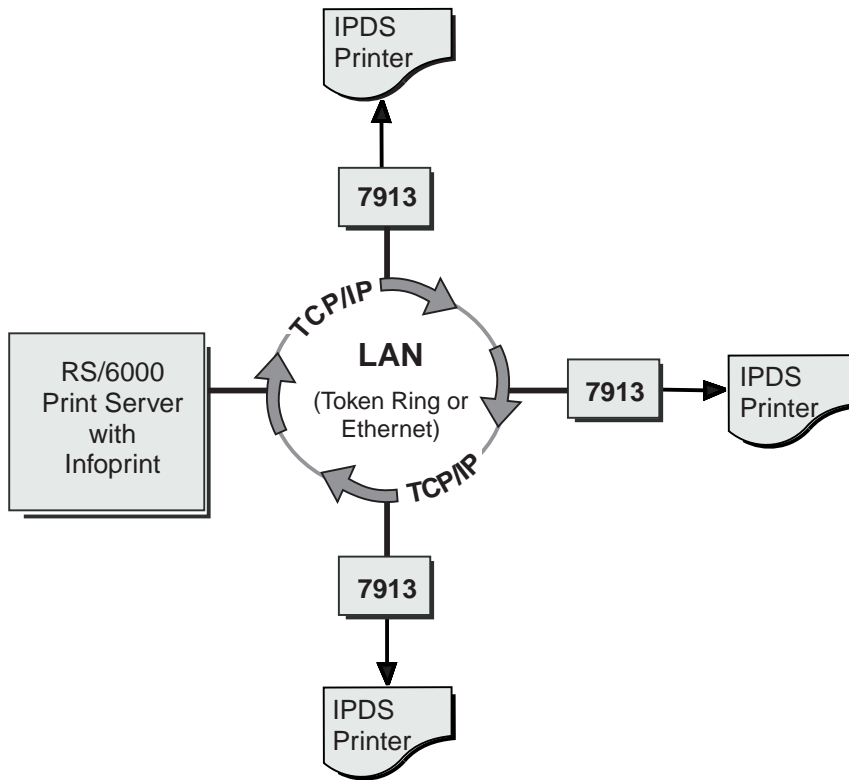


Figure 2. i-data 7913 IPDS Printer LAN Attachment in a TCP/IP LAN environment

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

There are two possible network configurations for the i-data 7913 IPDS Printer LAN Attachment.

Use the configuration in Figure 3 for new TCP/IP installations with one RS/6000 print server. This server contains all the software that Infoprint requires to drive printers. This server also runs TCP/IP and contains the TCP/IP **bootp** daemon, which initializes the i-data 7913 IPDS Printer LAN Attachment.

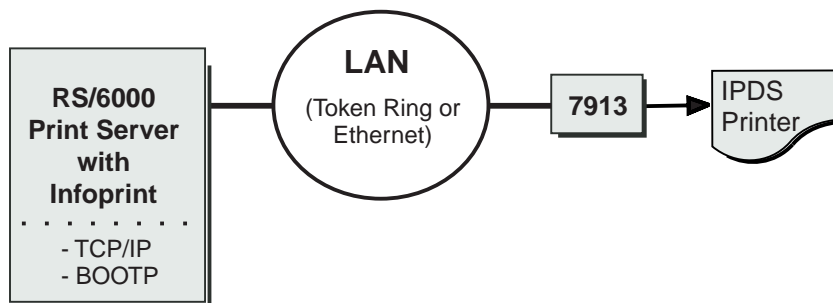


Figure 3. Network configuration for new TCP/IP installations

Use the configuration in Figure 4 on page 11 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. An existing AIX server may be running Infoprint.

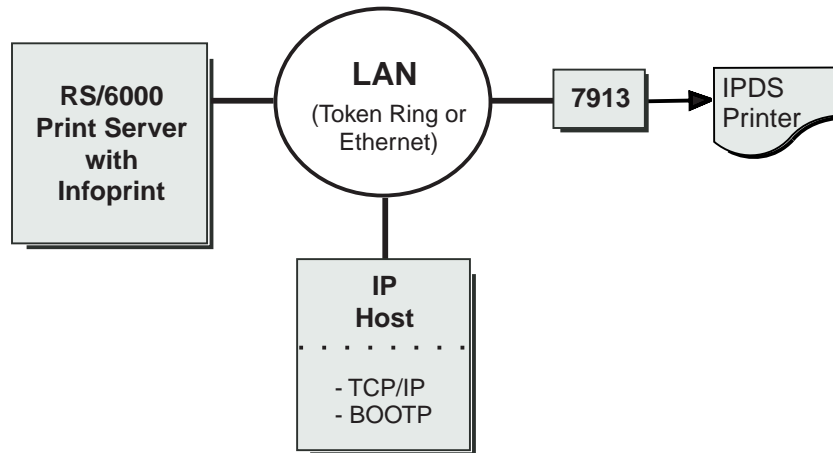


Figure 4. Network configuration for separate Internet Protocol hosts

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 i-data 7913 IPDS Printer LAN Attachment 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 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 does not support twinaxial connections for this printer device.

- IBM 6412 Line Matrix Printer Model CTA

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

- ___ 2. You have installed the following software:
 - IBM AIX Version 3.2.5 or higher for the RS/6000. For Infoprint Version 3.1, you must install IBM AIX Version 4.2.1 or higher.
 - The TCP/IP option (**bosnet.tcpip.obj**) of the AIX operating system
 - Infoprint Version 2.1 or higher
- ___ 3. You have either an IBM token-ring network or an Ethernet LAN installed and operating.

- ___ 4. Your AIX LAN coexists with TCP/IP. If it does not, refer to *TCP/IP Tutorial and Technical Overview*.
- ___ 5. 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 an AIX system in the 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.

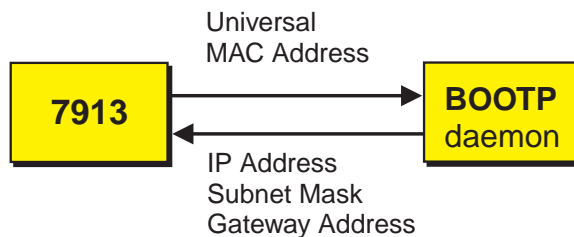


Figure 5. Data Flow between the i-data 7913 IPDS Printer LAN Attachment and the bootp daemon

Figure 5 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 2. *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 `/etc/bootptab` file

The `/etc/bootptab` 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 2. On most AIX systems, you must have **root** authority to edit the `/etc/bootptab` file.

Figure 6 shows an example of a simple `/etc/bootptab` 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 6. A simple `bootptab` file

The keywords and fields in Figure 6 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 7 shows a more complex way to describe the same **bootp** configuration as in Figure 6 on page 13. 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 7. A more complex bootptab file

In addition to the keywords you saw in Figure 6 on page 13, Figure 7 contains the following keywords:

tc=template

A pointer to another entry that contains addressing information.

Comment character.

Setting Up the bootp daemon on AIX

After you have configured the **/etc/bootptab** 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.

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 8 on page 16 shows the i-data 7913 IPDS Printer LAN Attachment Model 03 for IBM token-ring networks.

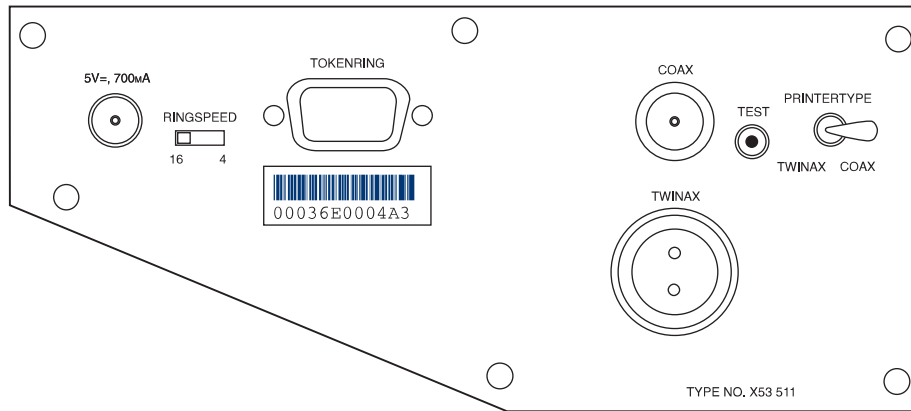


Figure 8. i-data 7913 IPDS Printer LAN Attachment Model 03 for IBM token-ring networks

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

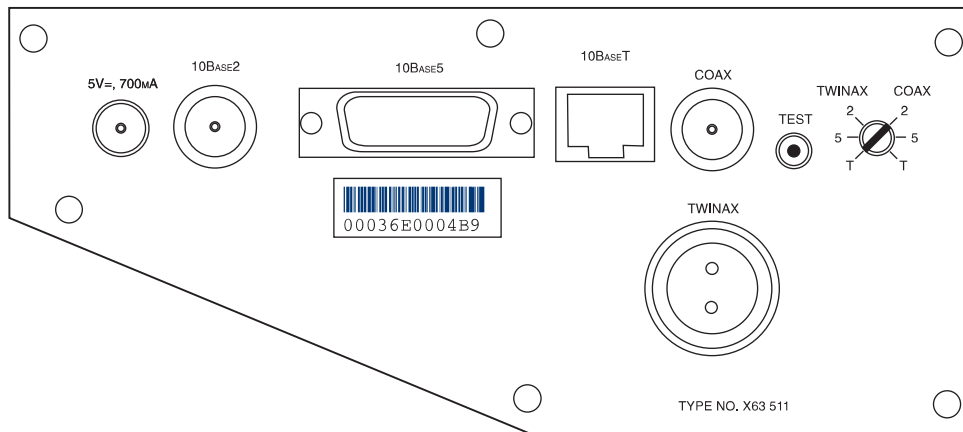


Figure 9. i-data 7913 IPDS Printer LAN Attachment Model 04 for Ethernet LANs

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.

1. Disconnect the i-data 7913 IPDS Printer LAN Attachment from the electrical outlet.
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.

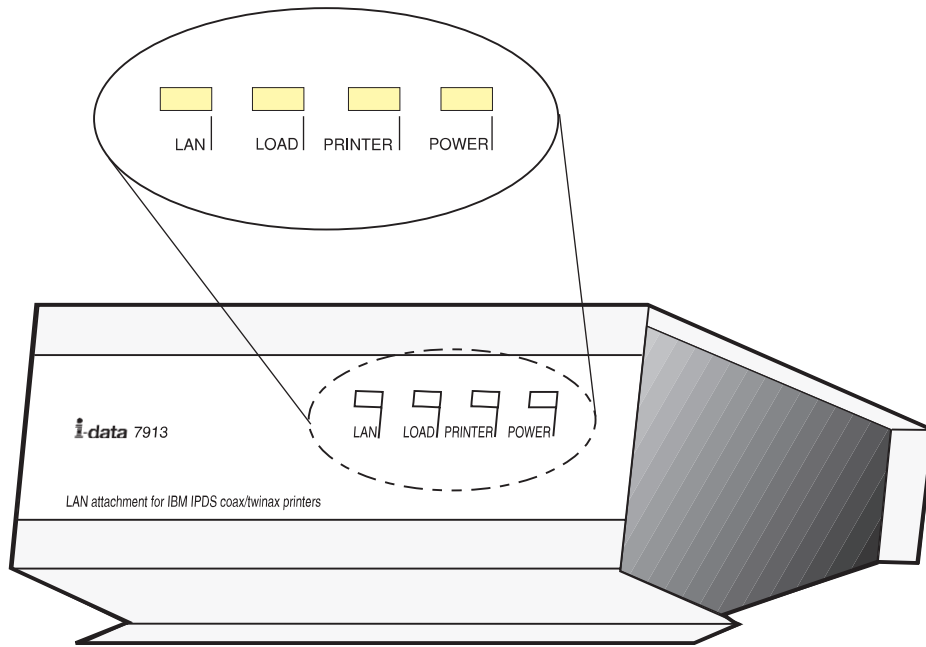


Figure 10. Status indicators on the i-data 7913 IPDS Printer LAN Attachment

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 and the i-data 7913 IPDS Printer LAN Attachment and causes the printer to print a test page.
2. From the RS/6000, ping the i-data 7913 IPDS Printer LAN Attachment to test both the physical LAN connection and the IP network connection.
 - a. Enter the **ping** command 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: 56 data bytes
64 bytes from 9.99.12.73: icmp_seq=0 ttl=255 time=1 ms
64 bytes from 9.99.12.73: icmp_seq=1 ttl=255 time=1 ms
64 bytes from 9.99.12.73: icmp_seq=2 ttl=255 time=1 ms
64 bytes from 9.99.12.73: icmp_seq=3 ttl=255 time=1 ms
⋮
```

- b. Press **Ctrl-C** to end the **ping** command.

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, use the Infoprint Manager Administration GUI to shut down the actual destination that represents the printer device.

Configuring the TCP KEEPALIVE frequencies

Infoprint Manager uses TCP protocol and relies on TCP to detect when a connection with an i-data 7913 or a PSF DSS printer with a TCP/IP attachment type is no longer usable.

Infoprint Manager directs TCP to poll its connection partner periodically when no other data is exchanged between Infoprint Manager and its connection partner. These periodic polls, called KEEPALIVE transmissions, enable TCP to discover when a connection is no longer accessible through the network.

Although Infoprint Manager directs TCP to send KEEPALIVE transmissions, the frequency of these transmissions is controlled by system-wide TCP/IP configuration parameters. On AIX, the default frequency is after roughly two hours of inactivity. However, AIX allows the frequency of KEEPALIVE transmissions to be adjusted. The frequency applies to all TCP applications that direct TCP to send KEEPALIVE transmissions.

The **no** (network options) command can be used by the root user to configure KEEPALIVE frequencies:

```
no -o tcp_keepidle=nnn
no -o tcp_keepintvl=nnn
```

where *nnn* is in half-seconds.

The **tcp_keepidle** parameter specifies the interval of inactivity that causes TCP to generate a KEEPALIVE transmission for an application that requests them. **tcp_keepidle** defaults to 14400 (two hours).

The **tcp_keepintvl** parameter specifies the interval between the nine retries that are attempted if a KEEPALIVE transmission is not acknowledged. **tcp_keepidle** defaults to 150 (75 seconds).

You must run the **no** commands each time you start the AIX system. Adding **no** commands to the **/etc/rc.net** file is a convenient way to automate this step.

For example, adding:

```
no -o tcp_keepidle=480
no -o tcp_keepintvl=80
```

to **/etc/rc.net** causes TCP to send a KEEPALIVE transmission if a TCP connection has been inactive for four minutes and the application requested KEEPALIVE transmission, as Infoprint Manager does. Infoprint Manager recommends these TCP configuration settings for customers who use PSF DSS printers with a TCP/IP attachment type and i-data 7913s.

Configuring the IBM InfoColor 70 and the IBM Infoprint Color 100

The IBM InfoColor 70 and Infoprint Color 100 printers require special configuration for optimal performance in an Infoprint Manager environment. The IBM InfoColor 70 ships with its own AIX (RS/6000) system, and the Infoprint Color 100 ships with its own Windows NT system. These systems, referred to below as printer CPUs, are dedicated to performing raster image processing (RIP) and other management functions for the printers. In addition, you may have purchased one or more Windows NT or AIX systems to function as additional “offline RIP” systems. These offline RIP systems are designed to accelerate the

printing process. If your Infoprint Manager installation uses an InfoColor 70 or Infoprint Color 100 printer, the printer CPU must be configured as directed in the hardware documentation.

The IBM Infoprint Color 100 gives an application programmer the ability to add color to black and white documents to be printed on the Infoprint Color 100 AFP printer and an Infoprint 4000 printer with an InfoPrint Hi-Lite Color Model HC2 Post-Processor (HCPP).

Creating the CD-ROM file system on AIX

Perform the following steps to create a CD-ROM file system only if you have not done so previously:

1. On the AIX command-line, type `smit cdrfs`
2. Select **Add a CDRom File System** from the list of choices presented.
3. Click the **List** button and select your CD-ROM device name (`cd0`, for example).
4. In the **Mount Point** field, type `/cdrom`
5. Click **OK**. The running person will raise his arms to indicate success. If he instead falls down and you see

```
crfs: 0506-909 /cdrom file system already exists
```

do not interpret this as a failure. (The existing `/cdrom` file system should be usable.)

6. Press the **F12** key to exit SMIT.

Configuring AIX offline RIP systems

The AIX printer CPU that shipped with the InfoColor 70 printer must be configured as an offline RIP system. At any time, you may add AIX systems to accelerate RIPs for your InfoColor 70 or Infoprint Color 100 printer. These systems must also be configured as offline RIP systems.

To configure an AIX system to function as an offline RIP system, install and configure the FastRip Postscript interpreter program as directed in its documentation. Then install and configure the `colorRipd` program by following these steps:

1. Log into the AIX system as **root**.
2. Insert the Infoprint Manager for AIX Server 1 CD-ROM into the CD-ROM reader.
3. Open a terminal window. (If you are using the Common Desktop Environment (CDE), you may open a terminal window by clicking on the terminal icon contained in the front panel. The front panel is the task bar that appears at the bottom of the screen.) By default, the terminal icon is contained in a popup menu above the text editor icon that appears on the front panel.
4. If you have not done so previously, create a CD-ROM file system as described below.
5. At the AIX command line type `mount /cdrom`
6. Type `/cdrom/cfgColorRipd`
7. Provide the information as prompted.

Now, start the **colorRipd** process. The **colorRipd** process cannot be run as a daemon. (Do not attempt to automatically start **colorRipd** at boot time by making an entry into `/etc/inittab`.) The **colorRipd** process must be started manually. To start **colorRipd**, simply invoke the **runColorRipd** script that resides in the working

directory specified during the configuration process. For example, if you specified/rip1 as the working directory, the following command would start **colorRipd**:

```
/rip1/runColorRipd
```

If your AIX system has multiple processors, you may wish to run more than one instance of **colorRipd** simultaneously on the same AIX system. To do this, repeat the procedure described above, but specify a different working directory. Each running instance of **colorRipd** must have its own independent working space.

Configuring Windows NT offline RIP systems

The NT printer CPU that shipped with the Infoprint Color 100 printer must be configured as an offline RIP system. To configure an NT system to function as an offline RIP system, install and configure the Barco Rip v4 PostScript Interpreter program as directed in its documentation.

If you already have a colorRipd program running on your Infoprint Manager for AIX Server, use the following procedure to stop and remove any previously installed colorRipd program:

1. From a Windows **Command Prompt**, change to the target directory where the colorRipd program is installed. If you have used the default directory, type: `cd /colorRipd`.
2. Stop the colorRipd service by typing: `deleteservice "Color Rip1"`, where **Color Rip1** is the name of the colorRipd service.

Note: If the named service has a space in the name, you must specify double quotes around the value.

You should see this response:

```
DeleteService [Color Rip1] SUCCESS
```

3. Go to **My Computer** → **Control Panel** → **Add/Remove Program** and select the colorRipd program from the list of programs.
4. Click **Remove**.

Then reinstall and configure the colorRipd program by following these steps:

1. Insert the Infoprint Manager Clients CD-ROM into the drive.
2. Navigate to the **\colorRipd** directory on your CD-ROM drive.
3. Double-click the **setup** icon and provide the information as prompted by InstallShield.

Note: You will need to do the following:

- Specify the colorRipd service name for the program (for example, Color Rip1).
- Select an Offline Rip System instead of a Print Server installation.
- Provide the name of the actual destination running on your Infoprint Manager for AIX Server through which the jobs will be submitted.
- Specify the hotfolder instead of the printer name if you are doing an online rip.

To enhance RIP performance, you can repeat steps 1 through 3 and add additional colorRipd programs (for example, Color Rip1 through Color Rip3) to your Windows system.

At any time, you may add a Windows NT system to accelerate RIPs for your Infoprint Color 100 or InfoColor 70 printer. Each NT offline RIP system must be configured by following the procedure described above.

Modifying your colorRipd configuration

To make changes to your **colorRipd** configuration, you must modify the property settings in the **colorRipd.cfg** file that resides in your working directory. A description of each configurable attribute follows:

crd_port

The TCP/IP port that this instance of **colorRipd** will monitor. Each instance of **colorRipd** running on a system must monitor a different port. The default is 11126.

crd_work_directory

A temporary working directory used for small files. By default, the **ini** subdirectory under the working directory is used.

crd_log_file

The file used to log output from **colorRipd**. A backup log is periodically created by appending **.BAK** to this file name. By default, **colorRipd.log** in the working directory is specified.

crd_log_file_size

The size of the log file before it wraps. Value is in bytes. The default value is 1024000 (almost 1 MB). The log file will have **WWWWW** placed at the wrap point. This marker appears at the end of file if the file has not yet wrapped.

rip_program

The name of the executable or script which performs the RIP.

rip_work_directory

The main temporary work directory. The files stored here are the original Postscript file, the **.ini** file with the RIP options (typically only a few Kbytes), and the output of the RIP. This output is 9 files—8 bitmap files and an index. All files are removed before the next RIP starts. Typically, the **rip** subdirectory in the working directory is used.

rip_hot_folder

The location the hot folder daemon monitors for RIP files. This should be set only for the **colorRipd** running on the printer CPU. **colorRipd** places RIP files and book ticket files in this directory.

printer_name

The hostname or IP address of the printer CPU. If this attribute is set, **colorRipd** sends RIP files to the specified printer CPU. On the printer CPU, an instance of **colorRipd** must be listening on port 11126.

Configuring RIP options

For jobs printing on an InfoColor 70 or Infoprint Color 100 printer, Infoprint Manager interprets RIP options in the following order:

1. Options specified at job submission.
2. Attribute values in the default document associated with the logical destination.
3. Options in the **.ini** file associated with the actual destination.
4. For image width and image length, actual destination attribute values. For actual destination attributes, refer to *Infoprint Manager: Reference*.

The default **.ini** file shipped with Infoprint is called **/usr/lpp/pd/bin/default.ini**. All 3170 actual destinations use this **.ini** file unless you specify another file using the **rip-ini-file** actual destination attribute.

Note: If you want to change the RIP options, do not edit the **/usr/lpp/pd/bin/default.ini** file. Copy it, make the changes in your copy, and specify your copy as the value of the **rip-ini-file** actual destination attribute. If there is a problem with your copy, you can restore the original values by resetting the **rip-ini-file** actual destination attribute to its default value.

The following displays an example of an **.ini** file.

[setup	
bps:	4
res:	600
output:	JobName
ocompress:	align72
offormat:	B/custdisk1/
duplex:	1
tumble:	0
orientation:	0
copies:	1
enablesettrap:	0
blackoverprint:	0
overprint:	P
stat:	2
profile:	0
machdebug	0
centery:	0
pageclip:	C
outputfaceup:	0
jobtype:	M
cms_product:	
cms_proclink:	
monochrome:	0
resident:	0
outputbin:	1s
cutmedia:	1
controlstrip:	
ssy:	1
centerx:	0
autotrap:	0

psx:	
psy:	
[job1:	
name:	%stdin%
type:	ps
dot:	/c=r,170,15/m=r,170,75/y=r,170,90/k=r,170,45
scale:	1
hpos:	0
vpos:	0

The keywords in the **[setup]** section of the **.ini** file are as follows:

bps Indicates the number of bits used to describe the gray value for each pixel. You can enter one of the following values:

- 2** Each pixel can have one of four levels of gray, from 0 to maximum density.
- 4** Each pixel can have one of sixteen levels of gray, from 0 to maximum density.

This keyword is equivalent to the document attribute **bits-per-spot**.

res Indicates the resolution, in pels, at which the printer device should print the image data in documents. For InfoColor 70 printers, the only valid value is **600**.

This keyword is equivalent to the document attribute **default-printer-resolution**.

output

The name of the RIPPed file. The value **JobName** indicates that this name should be the same as the job name.

ocompress

Indicates whether and how to compress the RIPPed file. **align72** is the only valid compression algorithm. You should not change this value because in most cases it is desirable to compress the RIPPed file. When you do not want to compress it, set the document attribute **compressed-output** to false.

This keyword is similar to the document attribute **compressed-output**.

offormat

The directory where backup RIPPed files are stored. Do not change this value.

duplex

Indicates whether to print on both sides of the paper. Enter **1** for true or **0** for false. This keyword is similar to the document attribute **sides**.

tumble

Indicates whether to print successive pages so that the top of one page is at the same edge of the bottom of the next page. Enter **1** for true or **0** for false. If duplex is 0, you must enter 0.

orientation

Indicates the placement of the image on the page. You can enter one of the following values:

- 0** Portrait
- 1** Landscape
- 2** Reverse Portrait
- 3** Reverse Landscape

This keyword is equivalent to the document attribute **content-orientation**.

copies Indicates the number of document copies to print. Enter an integer from **1** to **2147483647**.

This keyword is equivalent to the document attribute **copy-count**.

enablestrap

Indicates whether to turn on trapping for Quark XPress jobs. Enter **1** for true or **0** for false.

This keyword is equivalent to the document attribute **enable-strap**.

blackoverprint

Indicates whether to print black over colors. You can enter one of the following values:

- 0** Omit colors from areas where black will be printed.
- 1** Print a colored background with black over it.

This keyword is equivalent to the document attribute **black-overprint**.

overprint

Indicates how to handle overprinting. You can enter one of the following values:

- 0** Ignore overprinting.
- 1** Render objects as if they would truly overprint each other.
- P** Handle overprinting according to PostScript specifications, knocking out in separations where the object applies ink.

This keyword is equivalent to the document attribute **overprint**.

stat Indicates the level of statistical information to report. You can enter an integer from **0** (none) to **4** (detailed).

profile

You can leave this value blank.

machdebug

Indicates the level of machine debugging information to report. You can enter an integer from **0** (none) to **4** (detailed).

centery

Indicates whether to center the image vertically. Enter **1** for true or **0** for false.

This keyword overrides the **vpos** keyword.

This keyword is equivalent to the document attribute **image-center-y**.

pageclip

Indicates how to clip images that are too wide for the page. You can enter one of the following values:

- C** Center the image horizontally and clip both sides.
- R** Clip the right side of the image.
- E** Issue an error message and end the job.

This keyword is equivalent to the document attribute **page-clip**.

outputfaceup

Indicates whether to start the document on the side of the sheet that faces up in the output bin. Enter **0** for true or **1** for false. Note that these values are the opposite of what you would expect.

This keyword is similar to the document attribute **output-face-up**. Note that a value of true for the document attribute corresponds to a value of **0** for this keyword and results in face-up output. A value of false for the document attribute corresponds to a value of **1** for this keyword and results in face-down output.

jobtype

Indicates the type of data. You can enter one of the following values:

- M** Master file
- V1** Variable data that completely replaces the master file
- V2** Variable data that replaces the master file where the variable data applies toner
- V3** Variable data that replaces the master file where the variable data does not apply toner. This value is used to print variable data in white.
- T** Test data

cms_product

Identifies the color correction program. You can enter a value of **xeikon** or leave the value blank. If you enable Xeikon color correction, you must specify a value for the **cms_proclink** keyword or for the document attribute **cms-proclink**.

This keyword is equivalent to the document attribute **cms-product**.

cms_proclink

Identifies the translation table used by the color correction program. You can enter one of these fixed values:

matchp_ndtg2xkn_2

Match print, normal dot gain, 2 bits per spot

matchp_ndtg2xkn_4

Match print, normal dot gain, 4 bits per spot

swop_crom2xkn_2

SWOP Cromalin, 2 bits per spot

swop_crom2xkn_4

SWOP Cromalin, 4 bits per spot

This keyword is equivalent to the document attribute **cms-proclink**.

monochrome

Indicates whether to print in black and white. Enter **1** for true or **0** for false.

resident

Indicates whether to retain the RIPped file on the collator after printing. Enter **1** for true or **0** for false.

output-bin

Indicates the output bin. Enter the name of an output bin.

This keyword is equivalent to the document attribute **output-bin**.

cutmedia

Indicates whether to cut the paper. Enter **1** for true or **0** for false.

controlstrip

Indicates the file name of the pre-RIPped control strip to print with all documents. The control strip must be on the collator.

This keyword is equivalent to the document attribute **control-strip**.

ssy

The length of the medium sheet. Enter the length in millimeters or one of these fixed values:

0 The sheet length equals the signature length. Because the InfoColor 70 requires some white space between signatures, a number of scan lines at the top, bottom, or both of the signature will not be included in the image.

1 The sheet length equals the signature length plus the minimum amount of white space that the InfoColor 70 requires between signatures.

centerx

Indicates whether to center the image horizontally. Enter **1** for true or **0** for false.

This keyword overrides the **hpos** keyword.

This keyword is equivalent to the document attribute **image-center-x**.

autotrap

Indicates whether to enable trapping. Enter **1** for true or **0** for false.

Note: Trapping is a licensed feature of the InfoColor 70. **1** is valid only if this feature is installed.

psx

Indicates the width in millimeters of an image after it has been transformed for printing.

This keyword is similar to the document attribute **image-width**.

psy

Indicates the length in millimeters of an image after it has been transformed for printing.

This keyword is similar to the document attribute **image-length**.

The keywords in the **[job1]** section of the **.ini** file are as follows:

name Indicates the name of the job to which the keywords in this section apply. The value **%stdin%** indicates that they apply to any job submitted.

type Indicates the data type. This value is always **ps**.

dot Indicates the shape of pixels. Enter a value in this format:
/color=shape, lpi, angle... where:

color Indicates the dot color:

c Cyan
m Magenta
y Yellow
k Black

shape Indicates the dot shape:

r Round
c Combined
l Line
ln Line not calibrated

lpi Is the screen frequency in lines per inch.

angle Is the screen angle.

Some other possible values:

Classic

/c=r,170,15/m=r,170,75/y=r,170,90/k=r,170,45

Combined

/c=c,170,15/m=c,170,75/y=c,170,90/k=c,170,45

Sofocles

/c=l,158,15/m=l,158,75/y=l,158,90/k=l,158,45

Sofocles not calibrated

/c=ln,158,15/m=ln,158,75/y=ln,158,90/k=ln,158,45

No screen

/c=r,600,15/m=r,600,75/y=r,600,90/k=r,600,45

This keyword is equivalent to the document attribute **dot-shape**.

scale Indicates the image scaling factor. You can enter a numeric value from **0** to **2147483647**, which may optionally contain a decimal point. For example, to scale 120%, enter 1.2.

This keyword is equivalent to the document attribute **image-scale**.

hpos Indicates the horizontal offset of the logical page in millimeters to the right of the physical page origin.

The **centerx** keyword overrides this keyword.

This keyword is equivalent to the document attribute **x-image-shift**.

vpos Indicates the vertical offset of the logical page in millimeters below the physical page origin.

The **centery** keyword overrides this keyword.

This keyword is equivalent to the document attribute **y-image-shift**.

Creating and configuring the actual destination

Use the "Creating Actual Destinations with the AIX Command Line" in *Infoprint Manager for AIX: Getting Started* to create a 3170 physical printer to represent the InfoColor 70 or Infoprint Color 100 printer device. Then issue the following command to define the hot folder, the .ini file, the RIP servers, and the directory where the RIP servers store files:

```
pdset -c destination -x  
"printer-hot-folder=/custdisk1/HotFolder  
rip-ini-file=/iniFilePath transform-output-location=/custdisk1"  
-x color-rip-servers="IPAddress1:Port1...IPAddressN:PortN  
PrinterName
```

For example, if the physical printer is called `colorprint`, the `.ini` file is called `/usr/lpp/pd/bin/colorprint.ini`, the directory for copying jobs for automatic print submission is called `/custdisk1/HotFolder`, and you have provided both an `address1` (9.99.1.11) and an `address2` (9.99.1.12) on the InfoColor70 system for storing RIPped files, enter the following command:

```
pdset -c destination -x  
"printer-hot-folder=/custdisk1/HotFolder  
rip-ini-file=/usr/lpp/pd/bin/colorprint.ini"  
-x color-rip-servers="9.99.1.11:8433 9.99.1.12:5558" colorprint
```

Note that the system where the Infoprint Color 100 is attached is included among the RIP servers.

Using Infoprint Manager with the Infoprint Color 130 Plus

The Infoprint Color 130 Plus is a high-speed, high quality, full-color digital printer that you can submit jobs to through Infoprint Manager. Significant processing demands are placed on the Infoprint Manager system when it is preparing and sending print jobs to an Infoprint Color 130 Plus. Therefore, you should dedicate one AIX server entirely to your Infoprint Color 130 Plus; this system should only contain one Infoprint Manager server, and it should only send print jobs to one Infoprint Color 130 Plus.

System requirements

To submit jobs to an Infoprint Color 130 Plus through Infoprint Manager (without using the color PostScript transform), your system must meet the following requirements.

- Dedicated Gigabit Ethernet connection
- F80 AIX system with:
 - Two CPUs (450 Mhz)
 - Two GB RAM
 - Four 18 GB Serial Storage Architecture (SSA)
 - Two 18 GB SCSI hard drives

If you plan to use the PostScript color transform, your system must meet the following requirements.

- Dedicated Gigabit Ethernet connection
- F80 AIX system with:
 - Two 450 Mhz CPUs and four 500 Mhz CPUs
 - Six GB RAM
 - Six 18 GB Serial Storage Architecture (SSA)
 - Two 18 GB SCSI hard drives

Defining the Infoprint Color 130 Plus to Infoprint Manager

Important: Because you are dedicating an Infoprint Manager server to your Infoprint Color 130 Plus, this procedure assumes that you have either just installed Infoprint Manager on this system or that you have created a new server on this machine. In either case, your Infoprint Manager server would not contain any objects (logical destinations, queues, or actual destinations) yet. If you are planning to use an existing Infoprint Manager server to send jobs to your Infoprint Color 130 Plus, you should delete all of the objects that currently exist in it before you start this procedure.

When you define your Infoprint Color 130 Plus to Infoprint Manager, you must define it as a **PSF TCP/IP-attached** printer. You can create the printer either from the AIX command line using the **pdcreate** command or from the Infoprint Manager Administration GUI using the **Create Printer Wizard**. Follow this procedure to define the printer using the GUI.

1. Start the Infoprint Manager Administration GUI.
2. Select **Printer -> Create -> PSF -> TCP/IP**.
3. In the first panel of the Create Printer Wizard, do the following.
 - a. Type a name for the printer in the **Name** field.

- b. Verify that the server is correct in the **Server** field.
- c. Select **InfoprintColor130Plus** from the **Model** drop-down list.

Note: If that model is not shown, you must update Infoprint Manager to the current service level.

- d. Type the TCP/IP address and port number for the printer in the correct fields.
- e. Click **Next**.
4. In the second panel, type a name for the logical destination that will send jobs to this printer and click **Next**.
5. In the third panel, type a name for the queue that will submit jobs to the this destination and click **Next**.
6. On the rest of the panels, accept the default values that Infoprint Manager sets for AFP color printing by clicking **Next** and finally **Finish**.

Configuring the PSF TCP/IP printer in Infoprint Manager

Once you have created the printer in Infoprint Manager, you must do several other things before you can print. Complete the following procedures in any order. Instructions appear below.

- “Verifying the size and location of the Input Manager workspace”
- “Setting the **delete-segment-list** attribute on the default job” on page 32
- “Identifying where to store AFP resources” on page 32
- “Starting the color rasterized image processor (RIP) on this server” on page 33
- “Changing the color rendering value” on page 34

Once you have completed these steps, refer to *Printing Scenarios for Infoprint Manager with the Infoprint Color 130 Plus* (available from the IBM Printing Systems website at <http://www.ibm.com/printers>) for additional information on sending print jobs to the Infoprint Color 130 Plus. To find the publication, from the Printing Systems home page under **Resources for**, click **Infoprint Manager**, then click **Infoprint Manager for AIX** and select **3.2 Product Library**.

Verifying the size and location of the Input Manager workspace

The Input Manager is the part of Infoprint Manager that breaks print jobs into segments to allow greater flexibility during processing. The Input Manager stores job segments in its workspace. Segments remain in the workspace either until they are manually deleted or the workspace fills up, depending on how you choose to manage the workspace. By default, the Input Manager workspace is located at `/var/psf/segments`.

Because of the size and complexity of the color print jobs you send to your Infoprint Color 130 Plus, the Input Manager workspace must have at least 18 GB of disk space available and it should be a separate filesystem. If the existing `/var/psf/segments` does not have that much disk space available, the easiest thing to do is to create a new filesystem and mount it over `/var/psf/segments`. None of the Infoprint Manager settings need to be changed.

Note: Make sure that the new filesystem is set to mount automatically at system reboot so that it will still be available if you have to reboot your system.

If you do not want to overmount the filesystem, you can create a new filesystem and mount it on a different mount point. In this case, you must change the Input Manager settings to point to the correct location. To change the Input Manager settings, do the following.

1. At an AIX command prompt, type:
`smitty pd_psf_com_adm_inp`
2. Change the **PATH used for work area & percent usage threshold** to point to the new filesystem you created.
3. Confirm the changes and exit SMIT.

Setting the delete-segment-list attribute on the default job

When the Input Manager breaks a print job into segments, it creates a file called a *segment list*. The segment list is used to make sure the job is reassembled in the correct order, to track job progress, and to perform other job management functions. Segment lists are stored in `/var/psf/seglist`, and can either be saved or deleted when a job is finished printing. To help your Infoprint Manager system use processing space effectively, set the **delete-segment-list** attribute on the default job for your Infoprint Color 130 Plus system to **Yes**. By setting this attribute on the default job, it will be applied to all of the jobs that are printed through this logical destination.

You can set this attribute either from the AIX command line using the **pdset** command or in the Infoprint Manager Administration GUI. Follow this procedure to set the attribute using the GUI.

1. Start the Infoprint Manager Administration GUI.
2. Right-click the printer you created for your Infoprint Color 130 Plus and select **Job and Document Defaults** → **Modify** from the pop-up menu.
3. In the **Job and Document Defaults** properties notebook, click the **Job Other** tab.

Note: If you do not see the **Job Other** tab, click **Show More**.

4. Find the **Delete segment list** field and select **Yes**.
5. Click **OK**.

Identifying where to store AFP resources

There are various kinds of AFP resources, such as form definitions, page definitions, overlays, and fonts. The newest kind of AFP resource is the *data object*. Like other resources, data object resources are files that you can include in AFP documents. Data object resources can be EPS, PDF, and IOCA files. In addition, if you use the transforms that come with Infoprint Manager to convert TIF, GIF, and JPEG images into AFP first, they can be used as data object resources as well.

In Infoprint Manager, data object resources are grouped with BCOCA and GOCA objects, and all of those types of files are called *presentation object containers*. As with other kinds of AFP resources, you must tell Infoprint Manager where your presentation object containers are located.

In addition, you should tell Infoprint Manager whether your presentation object containers are **private** or **public**. Private resources cannot be reused by other print jobs; public resources can be used by anyone in a variety of print jobs. For example, you might make signature files **private**, so that no one could use them inappropriately in correspondence or on checks. In addition, you might make your company's logo **public**, so you only need to store one copy of it for everyone to use. By default, all presentation object containers are considered private.

You can define where your image resources are stored and whether they are public or not either from the AIX command line using the **pdset** command with the **resource-context-presentation-object-container** and **public-context-presentation-object-container** attributes or using the Infoprint Manager Administration GUI.

Follow this procedure to set the attributes using the GUI.

1. Start the Infoprint Manager Administration GUI.
2. Select **Options** → **Customize**.
3. In the **Customize** dialog, click the **Printer** tab.
4. In the **Action** column, find **Change AFP Resources**, **Change Tuning**, and **Change AFP Color**, and select the check boxes in the **Menu** column next to it.
This step adds this task to the **Printer** menu. If you want to add other tasks to the Printer menu or to any other menu, you can do it now or you can wait until later.
5. Click **OK** to apply the settings and close the dialog.
6. Select the printer that you created in “Defining the Infoprint Color 130 Plus to Infoprint Manager” on page 30.
7. Select **Printer** → **AFP Resources** to open the **Change AFP Resources** dialog.
8. In the **Location of presentation object containers** field, type the path where your presentation object containers are stored. If they are stored in more than one location, list all of the paths separated with colons (:), for example:
`/resources/containers:/dept123/pres-obj-containers:/dept456/pres-obj-containers`
9. Fill in any other fields that are appropriate. For example, if you use form definitions, fill in the **Location of form definitions** field.
10. Click **OK** to apply the settings and close the dialog.
11. If all of your presentation object containers are private, continue with step 13. If some or all of your presentation object containers are public, select **Printer** → **Change Tuning** to open the **Change Tuning** dialog.
12. In the **Public presentation object containers** field, type the path where your public resources are stored. If your resources are stored in more than one location, list them all here separated with colons (:), for example:
`/resources/containers:/dept123/public-pres-obj-containers`
13. Click **OK** to apply the settings and close the dialog.

Starting the color rasterized image processor (RIP) on this server

Important: You only need to perform this step if you will be submitting color PostScript print jobs to your Infoprint Color 130 Plus.

The RIP generates the data stream that Infoprint Manager sends to the printer. By default, Infoprint Manager uses a RIP that produces monochrome (black and white) documents. Therefore, you must install and start the color RIP before you send color documents to your Infoprint Color 130 Plus. You only have to start the RIP once.

To start the color RIP, type the following at a command prompt:

```
install.color
```

and press **Enter**. When the `install.color` script is finished, you will see the message:

The color Postscript config files have been activated.

If you ever want to send monochrome print jobs to your Infoprint Color 130 Plus, you can stop the color RIP and start the monochrome RIP by typing the following at a command prompt:

```
install.mono
```

and press **Enter**. When the install.mono script is finished, you will see the message:

```
The monochrome Postscript config files have been activated.
```

Be sure to start the color RIP again before you resume printing color jobs.

Changing the color rendering value

While the Infoprint Color 130 Plus produces vibrant full-color images, including images that contain gradients and shading, it is not able to reproduce every shade of every color. The *color rendering intent* value (**color-rendering-intent** attribute) determines what Infoprint Manager does when it encounters a shade in a PostScript image that the Infoprint Color 130 Plus cannot reproduce exactly.

There are two possible values for color rendering intent:

Relative

When Infoprint Manager encounters a color that Infoprint Color 130 Plus cannot reproduce, it substitutes the closest color value that it *can* reproduce.

Perceptual

When Infoprint Manager encounters a color that Infoprint Color 130 Plus cannot reproduce, it adjusts all of the colors in the image so that they maintain their color relationships to each other. The result is an image that is pleasing to the eye, but that may not look exactly like the original image.

The default value is **Relative**.

You can set the *color rendering intent* value on a print job, a default document, or on an actual destination using either the command line or the Infoprint Manager Administration GUI. Follow this procedure to set the attribute using the GUI.

1. Start the Infoprint Manager Administration GUI.
2. If you have not already customized the GUI to add the **Change AFP Color** task to the **Printer**, **Printer → Job and Document Defaults**, **Job**, and **Logical → Job and Document Defaults** menus, do the following:
 - a. Select **Options → Customize**.
 - b. In the **Customize** dialog, click the **Printer** tab.
 - c. In the **Action** column, find **Change AFP Color** and **Job and Document Defaults Change AFP Color** and select the check box in the **Menu** column next to it.
 - d. Repeat on the **Job** and **Logical** tabs.
 - e. Click **OK** to apply the settings and close the dialog.
3. Select the object that you want to set the *color rendering intent* value for by clicking it once.
4. Use the menu items you added in 2 to open the appropriate **Change AFP Color** dialog:
 - For an actual destination, select **Printer → Change AFP Color**.

- For a default job on an actual destination, select **Printer → Job and Document Defaults → Change AFP Color**.
 - For a default job on a logical destination, select **Logical → Job and Document Defaults → Change AFP Color**.
 - for a job that has already been submitted, select **Job → Change AFP Color**.
5. In the **Change AFP Color** dialog, find the **Color rendering intent** field, select a value from the drop-down list, and click **OK**.

Specifying the color rendering intent value on the other-transform-options

attribute: The attribute **other-transform-options** can now have a value which includes an equals sign, so **pragma** statements are supported. For example, to submit a color print job called PS.doc to a printer called color_printer using perceptual color rendering, you could type the following on the command line:

```
pdpr -d color_printer -x "other-transform-options = -pragma
color-rendering-intent=perceptual" PS.doc
```

This pragma can also be used on a command line invocation of a transform or it can be specified in the transform configuration file.

There are three methods that you can use to change the color rendering value for your print job.

1. Set the value in the PostScript data stream when you create the print job.
2. Add a line to the configuration file for the Infoprint Manager PostScript to AFP transform.
 - a. On your Infoprint Manager server, locate the ps2afpd.cfg file.
 - b. Open the file in a text editor.
 - c. Add the following line to the file: `pragma colorRendering=Perceptual`
 - d. Save and close the file.

All of the PostScript files that are sent through the ps2afp transform will now use perceptual color rendering.

3. Add a flag to the ps2afp command when you issue it. This option only applies if you are using the Infoprint transforms independently of Infoprint Manager; for example, if you want to convert your files into AFP before you submit your print jobs so they print more quickly. To change the color rendering value, add the following flag to the ps2afp command:

-pragma colorRendering=Perceptual

For example, to convert a PostScript file called mybook.ps to AFP using perceptual color rendering, you would issue the following command:

```
ps2afp -pragma= colorRendering=Perceptual mybook.ps
```

Refer to the *Infoprint Manager: Reference* for additional information about using the ps2afp transform.

Configuring the IBM Infoprint 2000

The IBM Infoprint 2000 printer is a multi-purpose solution designed for a multiplicity of users. Whether you require the speed and precision of an Advanced Function Presentation (AFP) printer, or the print quality of a PostScript or PCL commercial printer with finishing capabilities, the Infoprint 2000 can meet your needs. In addition, the Infoprint 2000 printer can be configured as a Xerox printer replacement that supports both Xerox LCDS and Xerox Metacode as input data streams.

Before you can use an Infoprint 2000 printer, it is important to ensure that your IBM Printing Systems Customer Engineer (CE) has both created a local account and added a local user. If these basic configuration tasks have not been performed on the Infoprint 2000 printer, you will not be able to use it with Infoprint Manager.

In order to submit print jobs to the Infoprint 2000, you must use a new destination support system (DSS) called Infoprint 2000 (specified as **IP2000** on the command line):

```
pdcreate -c destination \  
-x destination-model=Infoprint2000 \  
-x device-support-system=ip2000 \  
-x attachment-type=tcpip \  
-x destination-realization=actual \  
-x destination-tcpip-internet-address=9.99.43.3 \  
-x associated-queue=servername-default-queue \  
servername:printername
```

Review the following three topics before attempting to use the IBM Infoprint 2000 printer.

Matching media on the printer

Before you can send jobs to the IBM Infoprint 2000 printer, you must ensure that the media supported by the printer corresponds to the media specified by Infoprint Manager. You must:

1. Make sure media objects are defined for each media you will be using on the printer.
2. Tell Infoprint Manager what media is ready at the printer.

The **Infoprint Administration GUI** window shows a highlighted Infoprint 2000 printer defined in the **Queues** pane under **Printers**. By selecting the **Printers** drop-down menu and selecting the **Properties...** option, you can open the **Printer Properties** window. Then select the **Media/Bins/Trays** tab to see the media attributes signified by **letter**.

If you are using a non-AFCCU Infoprint 2000 printer, the **medium-type**, **medium-weight**, **medium-size**, and **medium-color** values specified in the **Printer Properties** window must exactly match the values for type, size, and color that are specified on the IBM Infoprint 2000 printer: To perform this task, you must check the Infoprint 2000 Paper Catalog and ensure it is mapped to the Infoprint Manager media. If you need to add a media object that is not yet defined, see Chapter 4, “Configuring media”, on page 61.

Telling Infoprint Manager what media is ready at the printer

To see the current values for PSF tray characteristics for each item displayed in the Media ready field, specify the following from the AIX command line:

```
pdls -cp -r psf-tray-characteristics ip2000
```

where ip2000 is the name of the actual destination used in this example.

For this example, Infoprint Manager displays the following values:

ip2000:

psf-tray-characteristics =

```
1:letter:1:1:true  
2:legal:2:2:true
```

```
3:ledger:3:3:true
4:A4:4:4:true
5:A3:5:5:true
6:B6:6:6:true
```

The first three values in each line, e.g. 1:letter:1, represent the tray name, medium, and input bin number. Tray name can be anything, but each one has to be unique. For simplicity, this example uses numbers 1 through 6. The medium and bin number should match the actual setup on the printer. That is, if tabloid paper is loaded in bin 2, one line should be "2:tabloid:2:2:true".

To set or change these values, you must use the **pdset** command at the AIX command line. To set the **psf-tray-characteristics** attribute for all six bins on the printer to define which of the supported paper sizes are loaded on the Infoprint 2000 printer.

For example, if you map "letter" paper to bin "1" through the **psf-tray-characteristics** attribute, the form definition provided with the print job should call out bin "1". When you update the **psf-tray-characteristics** attribute to change a paper size on the Infoprint 2000, the Infoprint AIX server will update the printer profile to reflect the change.

To complete this task from the command line of your Infoprint AIX server, use the following procedure:

1. To change the media ready, you must first disable the printer.
2. To initially define complete set of media ready invoke the **pdset** command. The following example sets the values shown above:

```
pdset -cp -x "psf-tray-characteristics=1:letter:1:1: 2:letter:2:2:
3:legal:3:z 4:tabloid:4:4: 5:A3:5:5: 6:A4:6:6:" ip2000
```

where ip2000 is the name of the actual destination used in this example.

You can change an individual media ready. If you have these values for **psf-tray-characteristics**:

ip2000:

psf-tray-characteristics =

```
1:letter:1:1:true
2:legal:2:2:true
3:ledger:3:3:true
4:A4:4:4:true
5:A3:5:5:true
6:B6:6:6:true
```

To change the paper in bin 3 from ledger to tabloid, invoke the following **pdset** command:

```
pdset -cp -x "psf-tray-characteristics+=3:tabloid" ip2000
```

where ip2000 is the name of the actual destination used in this example.

Note that in the above command, we used "+=" instead of just "=". This means you are adding a value to the list rather than replacing the whole list.

In this case, we specified tray name "3", so the previous setting for that tray is replaced. If you specified a tray name that was not in the list, it would be added.

Submitting jobs to the IBM Infoprint 2000 printer

The Infoprint 2000 DSS allows you to submit jobs in two ways: Passthru Mode or Infoprint Mode.

If you will be submitting AFP jobs to the Infoprint 2000, IBM recommends that you set the **dss-job-message-disposition** actual device attribute to `log` so that all job error messages are sent to the `/var/psf/DestinationName/jobmessage.log` file, instead of printing out at the end of the job. When you use the **jobmessage.log** file, remember to look in the file when a job fails to print.

You can modify this attribute from the AIX command line as follows:

```
pdset -cp -x "dss-job-message-disposition=log" ip2000
```

where `ip2000` is the name of your actual destination for the Infoprint 2000 printer.

Infoprint mode

Infoprint mode implies that the job is ripped by Infoprint Manager. In this mode, you can specify a range of different calibration screens by using the Halftone Management System, which is described in the topic "Configuring the Halftone Management System" on page 42.

Passthru mode

Passthru sends the job to the Infoprint 2000 through a special socket connection that passes the job to Infoprint Manager spooler without ripping the job. To submit a job as passthru, you must ensure that one of the following attributes has been specified:

```
job-ripped-by-server=false  
doc-formats-ripped-at-dest=postscript  
doc-formats-ripped-at-dest=pcl
```

The **jobs-ripped-by-server** attribute is a job attribute that takes precedence over the **doc-formats-ripped-at-dest** printer attribute.

When sending a job to the printer in passthru mode, you must not specify any of the following attributes:

- **account-text**
- **base-printer**
- **carriage-control-type**
- **chars**
- **convert-to-ebcdic**
- **default-character-mapping**
- **default-medium**
- **default-font-fidelity-action**
- **font-fidelity-action**
- **form-definition**
- **halftone**
- **image-fit**
- **image-length**
- **image-width**

- **input-exit**
- **new-line-option**
- **number-up**
- **other-transform-options**
- **output-bin**
- **output-format**
- **overlay**
- **page-definition**
- **page-select**
- **plex**
- **printer-pass-through**
- **resource-context**
- **resource-context-font**
- **resource-context-form-definition**
- **resource-context-page-defintion**
- **resource-context-page-segment**
- **resource-context-overlay**
- **resource-context-user**
- **shift-out-shift-in**
- **sides**
- **start-on-new-sheet**
- **subject-text**
- **table-reference-characters**
- **transform-message-file-name**
- **transform-output-file-name**
- **x-image-shift**
- **x-image-shift-back**
- **y-image-shift-back**
- **y-image-shift**

Note that the following job attribute conditions are not supported for Passthru Mode support:

1. Any use of the **job-finishing** attribute.
2. If the job is a variable data job or contains:
 - More than one printable document
 - An insert sheet
 - A file-reference document
 - A document with `document-format=modca`
 - A document with `job-rip-action=rip-and-hold` or `job-rip-action=rip-only`
 - A **copy-count** attribute set higher than 1

Limitations that apply to the IBM Infoprint 2000 printer

Because the Infoprint 2000 printer allows you to print AFP files on IPDS printers, there are some limitations to the printer and job commands that you can use. The Infoprint 2000 DSS does not support the following:

1. Duplex printing of tab paper.

While the Infoprint Manager GUIs allow you to request this support, printing duplex with tabbed paper causes output to be printed on the wrong side of the page and can cause a printer jam.

2. Forward space the job printing.
3. Back space the job printing.
4. Pausing a currently printing job.
5. Resuming a job that had been paused while printing.
6. Synchronous shut down of a printer.

This option is supported for jobs paused while ripping.

Configuring the IBM Infoprint 2085 and Infoprint 2105

The Infoprint 2085 and Infoprint 2105 printer models support a variety of data streams and provide a wide range of finishing options. Configure Infoprint Manager to avoid transforming jobs created with the Windows drivers for these models.

Note: If jobs that contain function specific to the Infoprint 2085 and Infoprint 2105, such as the Send and Save function, are sent to printers other than these models, the function will not be honored. In addition, jobs that are transformed by Infoprint Manager will not contain the function.

Passing data streams through Infoprint Manager to the printer without transforming them

To configure Infoprint Manager to avoid transforming jobs sent to the Infoprint 2085 and Infoprint 2105, complete the following steps:

1. From the main window of the Infoprint Manager Administration GUI, select **Printer** → **Create** → **AIX** or **PSF Other** destinations.
2. Fill in the necessary fields in the Create Printer Wizard to create an actual destination for the Infoprint 2085 or Infoprint 2105. Refer to "Chapter 8. Creating and managing actual destinations" in the *Infoprint Manager for AIX: Getting Started* for detailed instructions.
3. If you have created a PSF Other destination, select **Printer** → **Properties**. Select the **Documents** tab and make sure that the **Formats to RIP at destination** field is set to pass PostScript or PCL datastreams.

Using Send and Save in Infoprint Manager

Invoking Send and Save from the command line

If you are sending a job to the Infoprint 2085 or Infoprint 2105 and want to use the Send and Save functionality (and it is not already specified in the data stream), you can specify it from the command line. Send and Save is invoked by using the -S flag and you can choose from the following options:

- 0 Print now (Default)
- 1 Print one copy and hold job
- 2 Hold job until you enter PIN
- 3 Print later
- 4 Print now and save
- 5 Save

For example, if you want your Infoprint 2085 or 2105 to print one copy of job1 and then save it, enter the following command: `qprt -P ldname -S4 job1`, where *ldname* is the name of the logical destination associated with your Infoprint 2085 or 2105 in Infoprint Manager.

To verify that the setting is correct, use the **pdl**s command and verify that -S4 is specified for the **destination-pass-through** attribute.

Logging accounting information

The **Report job completed when printed** attribute indicates whether Infoprint Manager for AIX waits for the job to print completely before reporting the job as completed or reports the job as completed as soon as all the data has been sent to the printer. Be aware that if this attribute is set to **No**, Infoprint Manager will log the number of pages submitted, regardless of whether they printed or not. If this field set to **Yes** and you are using the Send and Save function, 0 pages will be logged as having printed, regardless of whether they print or not. To change this attribute, select **Printer** → **Properties** and then select the **Job** tab.

Troubleshooting

If you have an AIX DSS and **wait-for-job-completion (Report job completed when printed)** field on Job tab of the Printer Properties notebook) and you find that the backend is not waiting long enough for a job which was successfully sent to the printer to appear in the Job MIB, you may have to configure **wait-for-job-completion-snmp-timeout (Report job completed when printed timeout (sec))** field on SNMP tab of the Printer Properties notebook) so that it will not time out as quickly.

1. From the main window of the Infoprint Manager Administration GUI, select the Infoprint 2085 or Infoprint 2105 actual destination.
2. Select **Printer** → **Properties**.
3. Select the **SNMP** tab of the Printer Properties notebook.
4. Enter a higher value in the **Report job completed when printed timeout (sec)** field.
5. Select **OK** or **Apply**.

Note: Increasing this value will increase the amount of time it takes to report that a job has failed. If you decrease this value, you may get false failures.

Configuring the IBM Infoprint 4000 and 4100

Perform the following procedure with the help of your IBM service engineer (SE) to ensure that the actual destination, the Infoprint 4000 or IBM Infoprint 4100 printer device, and the cutter-trimmer-stacker (CTS) (a post-processing device used for paper handling) all support the same media types.

1. Use the procedure in “Associating a medium with a physical printer” on page 65 to specify the media that the actual destination representing the Infoprint 4000 supports.
2. On the printer, define forms that correspond to the media you specified in step 1, for example:

<i>Medium Object Name</i>	<i>Printer_Form Name</i>	<i>Printing_Form Description</i>
letter	na letter	2-Up letter (8.5 by 11)
legal	na legal	2-Up legal (8.5 by 14)
ledger	ledger	1-Up (11 by 17)

3. Set up the CTS for the dimensions required by the supported media. For example, to support ledger-size paper, set up the CTS for an 11-inch cut width and a 14-inch cut length. Note that the CTS may support a limited set of cut lengths and only one center slitting option.

Configuring the Halftone Management System

To support printer calibration on devices such as the IBM Infoprint 20 and the IBM Infoprint 4000, use the Halftone Management System. The Halftone Management System gives you the ability to calibrate halftones for each screen frequency on all your Intelligent Printer Data Stream (IPDS) printers. The result is consistent grayscale for each appearance selection.

With the Halftone Management System, you can run multiple IBM Infoprint 4000 printers and calibrate each system. For two-engine duplex print systems, the Halftone Management System also allows you to calibrate each print engine separately, so that whatever document you print, the various levels of gray (grayscale) used to print the document will look the same on both engines. Note that this applies to input file types of TIFF, GIF, JPEG, PostScript, and Portable Document Format (PDF).

From the smallest network printer to the largest production printer, you can either use the halftone provided with Infoprint Manager or create your own. You can calibrate for different paper types to account for differences between supplies. Infoprint Manager will save and manage these calibrations, allowing you to select them on a job-by-job basis.

Limitations of actual screen frequencies and angles on Infoprint 4000 and 4100 printers

If you change the version of toner used with your printer, you should recalibrate all customized calibration curves to ensure that they print correctly. The screen frequencies shown in this topic presume the use of a 600 dots per inch (DPI) printer. Frequencies at other DPI are proportionally lower. For example, an 85 lines per inch (LPI) screen used on a 300 DPI printer will be 43 LPI. Screen frequencies match the requested screen frequency as closely as possible, based on constraints of the halftone design.

For the actual screen frequencies and angles for both IBM Infoprint 4000 and IBM Infoprint 4100 printers, see Table 3, Table 4, and Table 5 on page 43.

Table 3. Screen Frequencies for Infoprint 4100 HD3/HD4, HD1/HD2, PD1/PD2 and Infoprint 4000 IR3/IR4 ID5/ID6 printers with Version 3 Toner

Submit Screen Frequency (LPI)	71	85	106	141
Actual screen frequency (LPI)	74	85	96	117
Actual Screen Angle (Default ° Set)	35.5°	45°	51.3 °	59°
Actual Screen Angle (90° Set)	54.5°	45°	38.7°	31°

Table 4. Screen Frequencies for Infoprint 4000 IR3/IR4 ID5/ID6 Printers with Version 2 or Standard Toner

Submit Screen Frequency (LPI)	71	85	106	141
Actual screen frequency (LPI)	71	85	103	141

Table 4. Screen Frequencies for Infoprint 4000 IR3/IR4 ID5/ID6 Printers with Version 2 or Standard Toner (continued)

Actual Screen Angle	45°	45°	31°	45°
----------------------------	-----	-----	-----	-----

Table 5. Screen Frequencies for Infoprint 4000 IR1/IR2 Printers with Version 2, 3, or Standard Toner

Submit Screen Frequency (LPI)	71	85	106	141
Actual screen frequency (LPI)	71	83	106	141
Actual Screen Angle	45°	34°	45°	45°

The Halftone Management System consists of two parts:

1. A daemon process (**runcalibd**) that runs on all Infoprint AIX servers.
2. A client process (**runcalib**) that can be run from any Infoprint AIX server.

You can calibrate printers on any Infoprint AIX server by using the client from another Infoprint AIX server. For example, if you have installed Infoprint servers A, B and C, you can calibrate printers on A using the client on either A, B or C. The daemon must be running on server A.

You invoke the Halftone Management System through the **Printer Calibration** icon (the page embossed with a lower-case "i" that is the fourth icon from the right) on the toolbar of the Infoprint Manager desktop (note that the **Printer Calibration** icon is available through the Infoprint Basic Configuration only; to use the Halftone Management System in an Infoprint Advanced configuration, you must use the command described in "Starting the Halftone Management System"):



Figure 11. Printer Calibration icon

This topic describes the following two procedures that you should ensure have been completed before attempting to use the Halftone Management System:

1. "Starting the Halftone Management System"
2. "Calibrating a densitometer" on page 45

Starting the Halftone Management System

If you find the Halftone Management System icon in the tool bar on your Infoprint Manager desktop and it starts, you do not need to perform this procedure and should go to "Calibrating a densitometer" on page 45. If you do not see the Halftone Management System icon on your Infoprint Manager desktop or it does not start, you can use the following procedure to start the Halftone Management System:

1. From your Infoprint AIX server's command line, ensure that your Infoprint AIX server is running by specifying:

```
ps -ef | grep server
```

 where *server* is the name of your Infoprint AIX server. You should see a response that shows the server running. Note that the

following response example has been split across two lines for clarity:

ID	Process #			Time
root	26078	"1"	"0"	"Mar 20 - 11:24:36"

Process and Server Name

ksh /usr/lpp/pd/ipcal/bin/runcalibd

Note: The server must be running before you start the Halftone Management System client.

2. If the Calibration daemon (**runcalibd**) is not running, start it by specifying:
`/usr/lpp/pd/ipcal/bin/runcalibd&`
3. From the toolbar that displays at the bottom of the Basic Infoprint Administrator's GUI (displayed below), double-click on the **Printer Calibration** icon (fourth icon from the right).

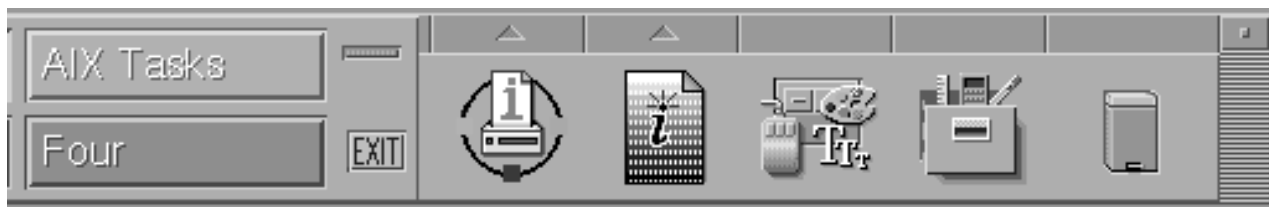


Figure 12. Printer Calibration icon

This icon starts the Halftone Management System client.

If your system uses the Infoprint Advanced Configuration, you must do the following from the command line:

- a. Select a directory to start it from and always start from that directory. This is because a file will be created in that directory that contains information about the servers defined: `cd /calibration-client`

Note: If you start from a different directory you have to redefine the servers to which you want to connect. Multiple Halftone Management System clients can be started on the same AIX server, but they must be started from different directories. Because the clients would try to share the **calibgui.db** file, you cannot start two clients from the same directory.

- b. Invoke the client: `/usr/lpp/pd/ipcal/bin/runcalib&`

From the client screen, a pop-up **Halftone Management System** window announces Starting the Halftone Management System Client.

To open this window, the client has created a **calibgui.db** file in the directory from which you entered the command.

If you either press the **Printer Calibration** icon or invoke the client from the command line before starting the Halftone Management System daemon, but after defining your Infoprint AIX server, Infoprint Manager provides an Error pop-up dialog with the following message:

Error in connecting to host *fully_qualified_server_name* -- A remote host refused an attempted connect operation.

To resolve this problem, you must close the Halftone Management System client window and restart the daemon. Once you have completed these steps, go to “Defining Infoprint servers to the Halftone Management System client” on page 46.

Calibrating a densitometer

The reflection densitometer must be calibrated to provide accurate density readings. Prior to using, you must follow the instructions that are provided by the manufacturer to calibrate the densitometer. The densitometer used must comply to the spectral responses defined by ANSI PH2.18 - 1985 and ISO 5/3 - 1984. The densitometer should not have a polarizing filter. The Greyttag Macbeth model D19C has a polarizing filter and should not be used. Densitometers which are appropriate to use include the X-Rite Model 504, 508, or 400B.

The densitometer should be used in Absolute Density mode for measurements. The following procedure describes how to calibrate the X-RITE 400B (1060) densitometer, using the Reflection Reference Card (part number 400-62). Since the X-RITE 400B is now obsolete, the following information is provided as reference.

The Reflection Reference is the card that is used to calibrate the densitometer. You will use only the circular patches labeled 1 (white reference) and 3 (black reference). The densitometer should be calibrated periodically, or whenever the instrument displays RECAL. You should store the Reflection Reference Card in its envelope.

1. Press the **FUNCTION** and **ENTER** keys in sequence, then release.
After the version and copyright notices appear, the display will show N cal O Y.
2. Press the **ZERO** key and release.
After the version and copyright notices appear, the display will show N qcal Y.
3. Press the **FUNCTION** key and release.
SET L0 is displayed momentarily, followed by X.XX, where X.XX should be the white patch ORTHO value from the Reflection Reference card.
4. If X.XX matches the white patch ORTHO value for your reflection reference, press the **ENTER** key. If X.XX does not match, hold down the **ZERO** key and press either the **FUNCTION** or the **ENTER** key. Decrease (**FUNCTION**) or increase (**ENTER**) the value until the correct number is displayed. When finished, release the keys and press **Enter**.
SET HI is displayed momentarily, followed by Y.YYH, where the Y.YY part of the value should be the black patch ORTHO value from the Reflection Reference card.
5. If Y.YY matches the black patch ORTHO value for your reflection reference, press the **ENTER** key. If Y.YY does not match, hold down the **ZERO** key and press either the **FUNCTION** or the **ENTER** key. Decrease (**FUNCTION**) or increase (**ENTER**) the value until the correct number is displayed. When finished, release the keys and press **Enter**.
6. When you see READ WHT displayed, center the circle on the base of the densitometer over the white patch (the one labeled "1") on the Reflection Reference. Push the head down and then release it to establish the white patch Optical Density.
If INVALID displays, repeat the measurement.

7. When you see READ BLK displayed, center the circle on the base of the densitometer over the white patch (the one labeled "3") on the Reflection Reference. Push the head down and then release it to establish the black patch Optical Density.

If INVALID displays, repeat the measurement.

Verify the calibration by measuring the black, gray, and white patches. If they agree within 0.02 OD to the reflection reference values on the card, density is accurately calibrated. If not, repeat this process until the measurements are accurate.

To find out how you can calibrate and set output appearances, see "Calibrating a printer using the Halftone Management System".

Calibrating a printer using the Halftone Management System

The Halftone Management System allows you to calibrate each of your printers to achieve a consistent tone curve for a set of generic halftone screens. The system also allows you to define additional calibrations for specific paper types. When calibrated the dot gain for a fifty percent dot will be nominally zero percent for **Standard** appearance, fourteen percent for **Highlight Midtown** appearance, and thirty-four percent for **Dark** appearance.

To use this tool to calibrate your printers, perform the following procedures in sequence:

1. Defining Infoprint Servers to the Halftone Management System Client
2. Defining Custom Patch Sets
3. Calibrating a Halftone
4. Measuring Optical Density with a Densitometer

Defining Infoprint servers to the Halftone Management System client

The first time you start the Halftone Management System client, you will see an empty window. You must connect to the Infoprint AIX server to see a list of the printers that are available for calibration:

1. From the **Halftone Management System** (or **Main**) window, select the **Edit → Servers** option.
2. From the **Servers** window, select the **File → Add Server** option.
3. In the **Server Properties** window, fill in the **Server Name** field with the symbolic server name, and the **Hostname** field with either the explicit name of the server or the server's dotted decimal notation IP address.

For example, the **Server Name** field value could be `sage.penn.boulder.ibm.com`, while the **Hostname** field value could be either `sage` or `9.99.43.73`.

4. Return to the **Main** window and either use left mouse button to double-click on each printer or highlight the printer and press enter to display its output screens (as displayed below). The Main window displays all printers defined to the Infoprint server to which you are connected, but only the IPDS printers contain screens that can be calibrated.

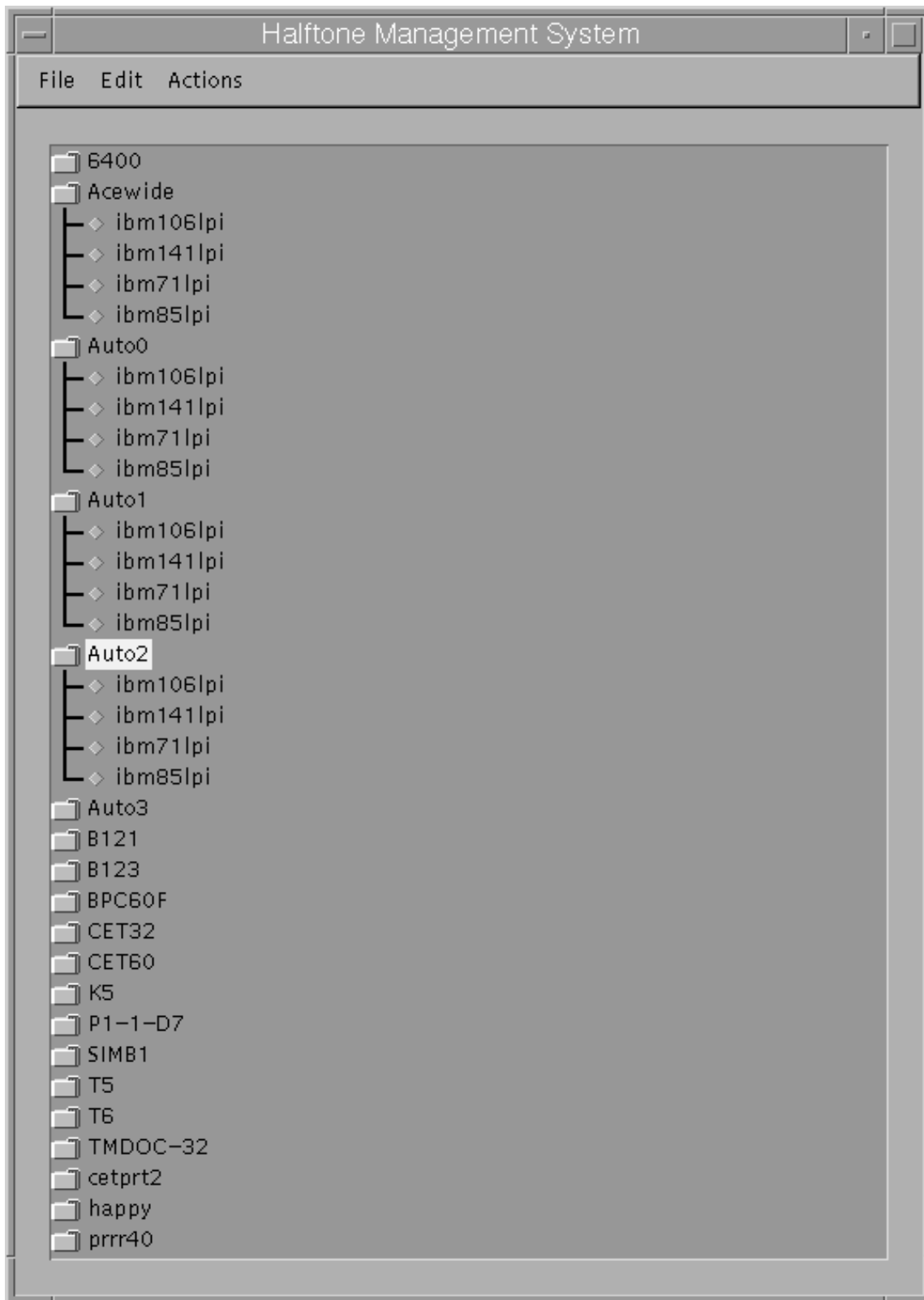


Figure 13. Main window

Defining custom patch sets

A patch set is a step wedge file that has patches with different shades of gray. One patch set has been defined (patches11). It has eleven uniformly-stepped grays.

To define additional patch sets, use the following procedure:

1. From the **Halftone Management System** window, select the **Edit → Patch Sets** option.
2. From the **Patch Sets** window, click on a patch set (such as patches11) and select the **Edit → Properties** option.
3. From the **Patch Set *name*** window (where *name* indicates the patch set highlighted in the previous step), use the left mouse button to select the patches that you would like to modify.

The screen shows 99 squares representing from 1-to-99 percent dot at one percent increments. Squares which are dark gray will be printed. To change a patch selection, point to the patch desired and click the left mouse button. Each click selects or deselects a patch. 0 percent and 100 percent dot patches are always included in each patch set. The example displayed below will print 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100 percent dot patches.

4. Once you have defined the patch set, select the **File → Save as** option and save your patch set with a unique name.

Note that the shipped patch set patches11 cannot be modified. However, a user-created patch set can be modified through the **Save** option. In the example below, the **Save** option is grayed-out because no changes have been made to the file.

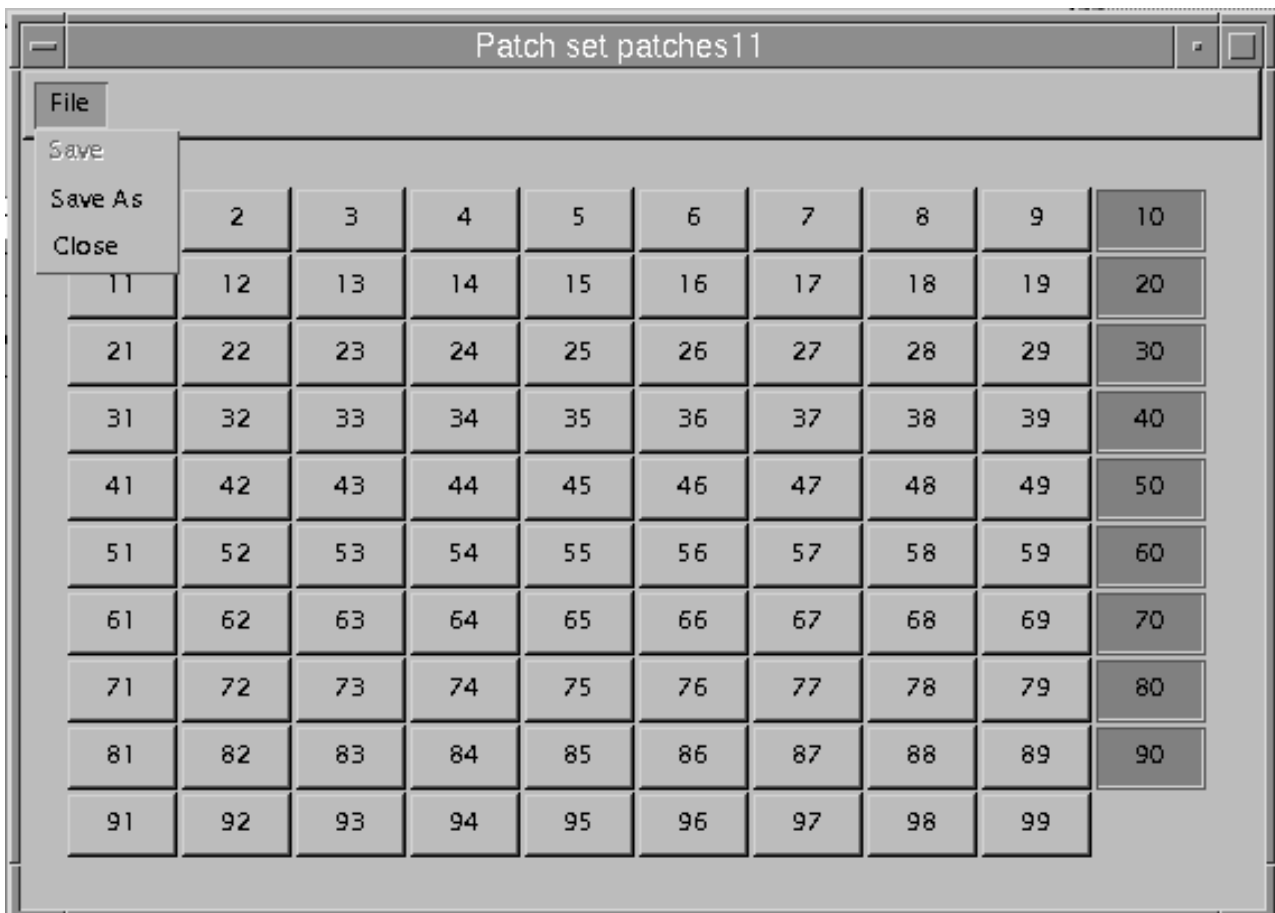


Figure 14. Patch set name window

Calibrating a halftone

Once you have either selected an existing patch set or created your own customized patch set, you must print it out, use a densitometer to measure the density of each gray patch. Then you must enter the calibration values in the Halftone Calibration Management System to create a calibration curve for the printer.

Note: Ensure that you use the Halftone Management System to both add and delete patch files and Calibration files.

Use the following procedure to accomplish these tasks:

1. If desired, define a custom patch set to print from the Halftone Management System window from the menu bar by selecting **EDIT → PATCH SETS**, then selecting the patch from the list and **ACTIONS → SELECT AS CURRENT, FILE → CLOSE**.
2. From the **Halftone Management System** window, select a printer and a halftone screen supported by that printer.
3. From the **Halftone Management System** window, select the **Actions → Print Patches** option.
4. If the actual destination you chose has a **logical-destination-assigned** attribute, the patch set will be sent to that logical printer. Otherwise, you will be prompted for a logical printer.
5. From the pop-up window, select **OK**.
6. Once you retrieve your output from the printer, use the densitometer to measure the patches. Because the Halftone Management System is designed to take multiple measurements of each patch and use the average, you could take three measurements of each patch.
7. Select the same actual destination (printer) and screen that you selected before you printed the patch set (in 2).
Note that the printed patch set identifies the screen, patch set, and printer, along with a date/time stamp.
8. From the **Halftone Management System** window, select the **Actions → Calibrate** option.
9. From the **Enter calibration values** window (shown below), set **The number of entries to average** field (it defaults to 3) to the number of measurements you took for each patch.
10. If this is a custom calibration and you want it to replace the default calibration provided by Infoprint Manager, allow it to retain the default value in the **Calibration name** field. If you want to retain the original default, but have this custom calibration as a second option, type a name for the calibration in the **Calibration name** field.
11. To enter your densitometer readings, begin with the **0%** field. Enter your first 0% value and press **Enter**. The statistics of your values will be displayed under the columns **Average**, **Min**, and **Max**.

Enter calibration values

Printer: sage60
 Screen: generic106lpi
 Patch set : patches11
 The number of entries to average:
 Calibration name:

% gray	Entry	Average	Min	Max	# entries
0%	<input type="text"/>			0	<input type="button" value="Clear"/>
10%	<input type="text"/>			0	<input type="button" value="Clear"/>
20%	<input type="text"/>			0	<input type="button" value="Clear"/>
30%	<input type="text"/>			0	<input type="button" value="Clear"/>
40%	<input type="text"/>			0	<input type="button" value="Clear"/>
50%	<input type="text"/>			0	<input type="button" value="Clear"/>
60%	<input type="text"/>			0	<input type="button" value="Clear"/>
70%	<input type="text"/>			0	<input type="button" value="Clear"/>
80%	<input type="text"/>			0	<input type="button" value="Clear"/>
90%	<input type="text"/>			0	<input type="button" value="Clear"/>
100%	<input type="text"/>			0	<input type="button" value="Clear"/>

Figure 15. Enter calibration values window

If you specified more than 1 in the number of entries to average field, the cursor will remain in the field for your next reading. Otherwise, it will move

on to the next patch field. Continue until all your readings have been entered. The display below shows a sample customized Calibration named first_run.

Printer: ip2000
 Screen: ibm85lpi
 Patch set : patches11
 The number of readings per patch: 3
 Calibration name: first_run

% gray	Entry	Average	Min	Max	# entries	
0%		0.0700	0.07	0.07	3	Clear
10%		0.1967	0.19	0.2	3	Clear
20%		0.3100	0.31	0.31	3	Clear
30%		0.4233	0.42	0.43	3	Clear
40%		0.5367	0.53	0.54	3	Clear
50%		0.6867	0.67	0.7	3	Clear
60%		0.8000	0.79	0.81	3	Clear
70%		0.9600	0.95	0.97	3	Clear
80%		1.0800	1.06	1.09	3	Clear
90%		1.3067	1.3	1.31	3	Clear
100%		1.4400	1.43	1.45	3	Clear

Do Cancel

Figure 16. First_run calibration

12. Once you have filled in your calibration values, press the **Do** button. Your calibration is saved in the `/usr/local/Infoprint/config` directory and ready for use.

Measuring optical density with a densitometer

The following procedure describes how you can measure optical density using the XRITE 400B Densitometer. While you can use other densitometers, this procedure has been verified with this particular make and model. Ensure that the density readings are absolute, not paper reference.

1. Press the **FUNCTION** key until DEN appears. If DEN-R appears, press the **ZERO** key and try again.
2. Center the circle on the base of the densitometer over the area to be measured.
3. Push the head down and release it to measure the Optical Density (OD).
The density reading will appear as X.XXD.
4. Record the X.XX value as it is displayed.

Several measurements should be taken at different representative locations on each gray patch and averaged to obtain an accurate OD value. Alternately, you can enter individual measurements into the calibration value screen and have the averaging performed automatically.

Specifying a halftone for printing on the Infoprint AIX server

You can use a particular halftone for printing a grayscale file through either Infoprint Submit interface or the AIX command line.

Note: The Halftone Management System does not need to be running when you print the job.

Printing from Infoprint Submit

You can print using a particular halftone for printing a grayscale file from a job ticket (`name.jtk` file) in Infoprint Submit. Through this interface, you can specify a specific screen and output appearance. Begin by selecting a value in the **Screen Name** field of the **Look** tab. Note that all screen frequencies shipped with the product have the term 'ibm' prepended to their identifier. If you are accessing this interface for the first time, all your previous default calibrations will have 'ibm' attached to the name.

Infoprint Manager allows you to determine output appearance on a job-by-job basis by setting a default screen and output appearance in a default document or job object.

Note: Infoprint Submit is part of the Infoprint Manager Print-on-Demand feature.

Printing from the AIX command line

You can submit a halftone calibration from the AIX command line by using some variation of the following **pdpr** Command:

```
pdpr -p sip20-sage -x halftone=generic106lpi:highlight-midtones:mycal grayscale.ps
```

where the `-x` value is the customized calibration file and `grayscale.ps` is the file to be printed.

Note: When submitting a **pdpr** command from the AIX command line, you specify the **halftone** attribute, rather than setting both frequency and output appearance as you do when using the Infoprint Submit interface. The actual halftone name for this example (`generic106lpi:highlight-midtones:mycal`) can be found either by using the **Infoprint Manager Administration GUI** to

look up the halftone for the actual destination, or enter the following at the command line: `pdls -cp -r halftones-supported ActualDestination name`.

Chapter 3. Setting up SNMP

About SNMP communication

For network printers that work with Simple Network Management Protocol (SNMP) and the standard printer management information block (MIB) RFC 1759, the Infoprint® Manager server can use SNMP to automatically:

- Set the default of several Infoprint Manager actual destination attributes in the printer to the values returned in the standard printer MIB. The actual destination attributes pertain to trays, media, bins, plexes, and sides. This process is called *smart-defaulting* the attributes.
- Detect, report, and recover from printer problems for several conditions, even if no jobs are currently being printed.

Smart-defaulting actual destination attributes

The Infoprint Manager server can automatically smart-default an actual destination attribute for an SNMP printer **only** if an Infoprint Manager user does one of these:

- Does **not** explicitly set the attribute when creating or modifying the physical printer
- Resets the attribute to the Infoprint Manager default

Before you create the actual destination and let the server smart-default one or more actual destination attributes for a printer, IBM recommends that you:

1. Turn the printer on.
2. Make sure the printer is connected to the network.

The actual destination attributes that the server can smart-default are:

- **destination-model**
- **input-trays-medium** (also smart-defaults the attributes **input-trays-supported** and **media-ready**)
- **media-ready**
- **media-supported**
- **output-bin-numbers** (also smart-defaults the attribute **output-bins-supported**)
- **plexes-supported**
- **psf-tray-characteristics** (also smart-defaults the attributes **input-trays-supported** and **media-ready**)
- **sides-supported**

For media, smart-defaulting only detects the **size** of the medium. If you have different media that are the same size (for example, three different letter-size preprinted forms) and you need to differentiate between them in the attributes, you must explicitly set the attributes instead of using smart-defaulting.

Detecting, reporting, and recovering from printer problems

The Infoprint Manager server can automatically detect, report, and recover from printer problems for several **needs key operator** conditions as it periodically queries an SNMP printer, even if no jobs are currently being printed. (To turn off automatic recovery, a key operator can manually disable the printer.)

For example, the server detects that a printer is out of toner, disables the printer, requeues the jobs, and sets the printer state to **needs key operator**. Then, when a key operator replaces the toner, the server detects that the printer is running again, sets the printer state to **idle**, and re-enables the printer.

In addition, the server can more accurately pinpoint the specific problem that caused a condition in an SNMP printer. The conditions are:

- Needs attention:
 - Cover open
 - Offline
 - Out of paper
 - Output tray full
 - Output tray problem
 - Paper jam
- Needs key operator:
 - Needs service
 - Out of toner
 - Output tray missing
- Warning (printing continues but a user needs to perform an action soon):
 - Low on paper
 - Low on toner
 - Needs service soon
 - Tray empty (printing continues with a linked tray)

Note: Not all printers report all these conditions. For example, most printers do not report the Warning conditions.

Setting up and using SNMP

To set up and use SNMP with Infoprint Manager, you must check and set the appropriate Infoprint Manager attributes when you create or modify the physical printer in Infoprint Manager.

This section explains:

- Determining if a printer works with SNMP
- Using the GUI
- Procedures

Determining if a printer works with SNMP

Not all printers work with SNMP and the standard MIB. In addition, only printers that are attached to a network can work with SNMP. Printers that are parallel-attached or channel-attached cannot use SNMP.

To determine if a printer works with SNMP:

1. Set the actual destination attribute **destination-tcpip-internet-address** to the IP address of the printer to indicate that Infoprint Manager should try to communicate with the printer using SNMP. The server sets the actual destination attribute **use-snmp** to “true”.
2. If the server cannot communicate with the printer using SNMP, it **pings** the printer. If the ping command:

- **Works**, the server concludes that the printer is not an SNMP printer. It sets **use-snmp** to “false”.
 - **Does not work**, the server concludes that the printer is turned off or is not currently connected to the network. It leaves **use-snmp** set to “true” and continues trying to establish an SNMP connection with the printer.
3. Check the actual destination attribute **snmp-active**. If it is “true”, the printer works with SNMP.

Using the GUI

To use the Infoprint Manager Administration GUI to check and set the attributes:

1. From the menu bar, select **Printer** or **Server**, as appropriate.
2. Select **Properties**. You see the printer properties or server properties notebook.
3. Select the **SNMP** tab.
4. Check and set the appropriate attributes on the SNMP tab as explained in “Procedures”.

Procedures

Do these steps to check and set the attributes:

1. Check these actual destination attributes:
 - **snmp-community-name**
Indicates the name of the SNMP community that the printer belongs to. The default is “public”. The field on the SNMP tab is “Community name”.
 - **snmp-retry-count**
Indicates the number of times the server should retry an SNMP request if it fails. The higher the number, the more network traffic. Using a lower number can improve performance. The default is “2”. The field on the SNMP tab is “Number of times to retry”.
 - **snmp-timeout**
Indicates the number of seconds the server should wait for the printer to respond to an SNMP request. Using a lower number can improve performance. The default is “5”. The field on the SNMP tab is “Timeout”.
 - **use-snmp**
Indicates whether the server should try to use SNMP to communicate with the printer. The default is “true”. The field on the SNMP tab is “Use SNMP”.
2. If the defaults in Step 1 in this section are correct, set this actual destination attribute:
 - **destination-tcpip-internet-address**
Indicates the IP address of the SNMP printer. The field on the tab is “TCP/IP address”.
3. Check this actual destination attribute:
 - **snmp-active**
Indicates whether the server has been able to establish an SNMP session with the printer. The field on the SNMP tab is “SNMP is active”.
4. Set these server attributes:
 - **snmp-discovery-during-startup**
Indicates whether the server queries the printer MIB when Infoprint Manager starts, or whether the server gets the printer status when it periodically polls the printer. The default is “true”, but you might want to set it to “false” if

you have several SNMP printers and you want to make the server start faster. The field on the SNMP tab is “Discover printers at startup”.

- **snmp-normal-poll-interval**

Indicates the number of seconds that the server should wait between polls for SNMP printers **without** known problems. Increasing the polling interval causes the server to use less CPU and network resources for SNMP polling, but it makes the currently shown printer status (for printers that are not currently printing) less accurate. The field on the SNMP tab is “Normal poll interval”.

- **snmp-problem-poll-interval**

Indicates the number of seconds that the server should wait between polls for SNMP printers **with** known problems. Increasing the polling interval causes the server to use less CPU and network resources for SNMP polling, but it makes the currently shown printer status (for printers that are not currently printing) less accurate. The field on the SNMP tab is “Problem poll interval”.

Additional SNMP information

This section briefly explains the:

- Effects on performance with SNMP
- Additional GUI status window

Effects on performance with SNMP

The performance areas that SNMP can influence are:

- Server start-up
- Actual destination queries
- SNMP polling

Server start-up

If you set **snmp-discovery-during-startup** to “true”, the server start-up might be slow because the server queries the printer MIB for the most current information. Setting this attribute to “false” can improve performance. However, the printer status is not as current because the server only gets the printer status when it periodically polls the printer.

Actual destination queries

On an SNMP printer, when you query an actual destination attribute that might be affected by the printer MIB (for example, **destination-state**), the default is that the server uses SNMP at the same time to get the relevant information from the printer. If the printer is turned off or not connected to the network, it might take a long time before the printer times out, which delays the response to your query.

If this is a problem, you can use the **pdl** command with the **when=now** attribute to return the current information instead of querying the printer MIB. Using this attribute can improve performance.

SNMP polling

The server periodically polls the SNMP printers to get their latest status. If a printer condition changes while the server is polling a printer (for example, a user closes an open cover), the server might temporarily miss one of the changes. However, during the next polling cycle, the server automatically picks up any changes that it missed.

If the server cannot discover an SNMP printer when Infoprint Manager starts, it shows the printer status from the last time the server was shut down.

Increasing the polling interval causes the server to use less CPU and network resources for SNMP polling, but it makes the currently shown printer status (for printers that are not currently printing) less accurate.

Additional GUI status window

The Infoprint Manager Administration GUI can launch the Status window from IBM Network Printer Manager (NPM) for the Web. The window lets you see a detailed view of the status of an SNMP printer. It includes a graphic representation of the printer and its current status, such as whether it has a paper jam or a door open.

To see the Status window from the GUI:

1. Select an SNMP printer.
2. Select **Check Status**.
3. Select **More Information**.

Chapter 4. Configuring media

This section describes how to create, configure, and manage media. Use the Infoprint Manager Administration GUI or the AIX command line to complete these tasks.

Determining the media that are in the servers

You can use the Infoprint Manager Administration GUI or the AIX command line to show the media in the servers being monitored.

Using the Infoprint Manager Administration GUI

Start the Infoprint Manager Administration GUI by double-clicking the icon or by entering `ipguiadvadm` at the AIX command line. From the **Server** menu on the Main window, select **Media** → **Show Media**. This dialog displays the media that resides in all servers currently being monitored.

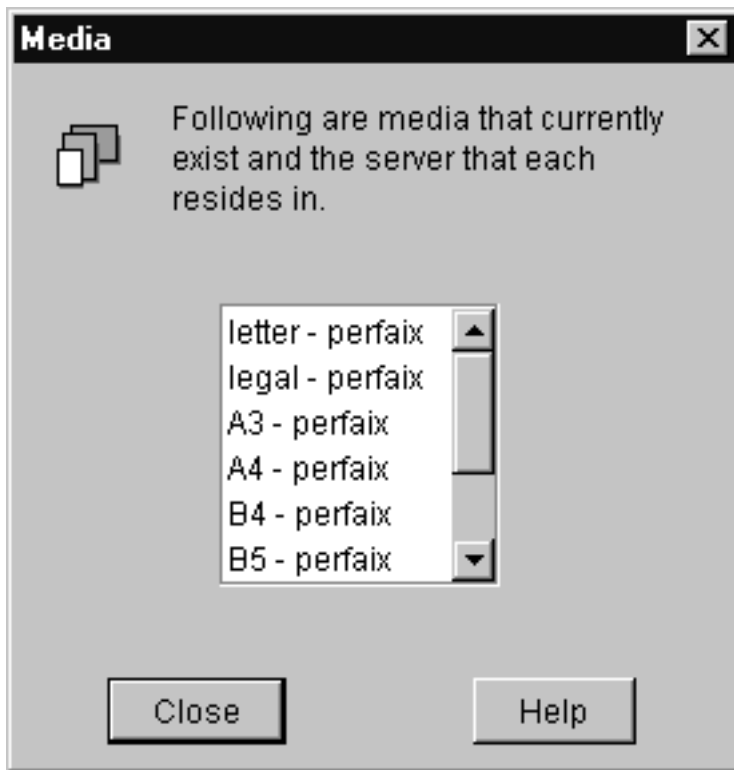


Figure 17. Media dialog

Using the AIX command line

To display all the media in specified servers, use the **pdls** command. For example, to display the media in **Server1**, enter:

```
pdls -c medium -r medium-identifier,associated-server,medium-type Server1:
```

Infoprint returns information similar to the following:

```

A4:      medium-identifier=A4
A4:      associated-server=Server1
A4:      medium-type=

letter:  medium-identifier=letter
letter:  associated-server=Server1
letter:  medium-type=

legal:   medium-identifier=letter
legal:   associated-server=Server1
legal:   medium-type=

A4-colored: medium-identifier=A4-colored
A4-colored: associated-server=Server1
A4-colored: medium-type=stationery

```

For more information, refer to *Infoprint Manager: Reference* or the **pdl**s man page.

Creating a media object

You can use the Infoprint Manager Administration GUI or the AIX command line to create a media object.

Using the Infoprint Manager Administration GUI

From the **Server** menu, select **Media** → **Create** or **Copy** (and select a media in the **Select Media to Copy** dialog) to open the **Create Media** dialog. You use this dialog to create a media in the specified server.

Figure 18. Create Media dialog

The Infoprint Manager Administration GUI creates a new media with property settings based on whether you choose to create a new media or copy an existing media:

- Use the **Create** option when you want to create a unique media (with default settings) without copying properties from an existing media.
- Use the **Copy** option when you want to create a new media using properties from an existing media.

Enter values in the following fields:

Name Media names can contain up to 255 characters and are case-sensitive.

Server Displays the names of all servers being monitored. Select a server from the list; this is the server that will contain the media. When you are copying a media, the server containing the media being copied is initially selected.

Type Displays a list of predefined media types. Select a media type from the list. When you are copying a media, the type of the media being copied is initially selected.

Untrimmed width and length

Specifies the physical size of the media. The width is usually the shorter dimension with respect to how the medium is loaded into the printer device. The length or height is usually the longer dimension with respect to how the media is loaded into the printer. Enter a positive real number for the width and the length fields. When you are copying a media, the untrimmed width and length (in inches or mm) of the media being copied is displayed.

Weight

Identifies the media weight. Enter a positive integer. When you are copying a media, the weight of the media being copied is displayed.

Color Displays a list of predefined media colors. Select a color from the list. When you are copying a media, the color of the media being copied is initially selected.

Details

Provides a text entry area for a message to be associated with the media object. Enter description information about the media. When you are copying a media, the message for the media being copied is displayed.

Select **OK** and you have created a new media.

Using the AIX command line

To create a medium, use the **pdcreate** command and the medium attributes. Specify:

- The name of the server where you want to create the medium
- The medium identifier
- The size of the medium, using one of these attributes:
 - **medium-dimensions** specifies the width and length of the medium in millimeters. Be sure to enter the dimensions accurately so that printed output will be aligned correctly on both sides of the medium. You must use this attribute if AIX physical printers are to use the medium.
 - **medium-size** specifies a predefined size by name.

For example, to create a letter-size (8.5 by 11 inches) medium called na-letter-colored in Server1, enter the following command:

```
pdcreate -c medium -x "medium-size=letter" Server1:na-letter-colored
```

For more information, refer to *Infoprint Manager: Reference* or the **pdcreate** man page.

Viewing or changing attributes of a medium

You can use the Infoprint Manager Administration GUI or the AIX command line to view or change attributes of a medium.

Using the Infoprint Manager Administration GUI

1. From the **Server** menu, select **Media** → **Properties** to open the **Select Media** dialog.

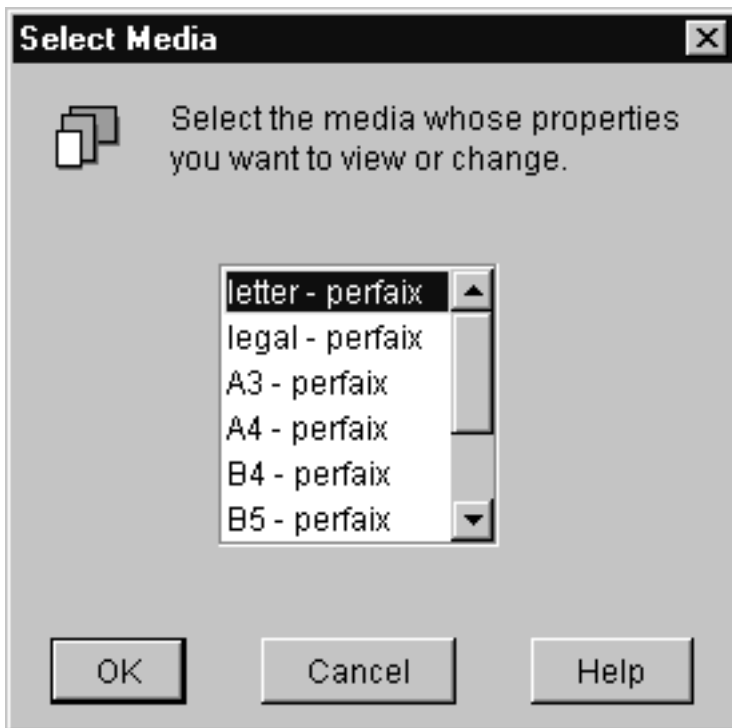


Figure 19. Select Media dialog

2. Select the medium whose properties you want to view or change.
3. Select **OK**. The Media Properties notebook for that medium opens and you can view all its attributes.
4. Make any changes and select **OK** to save those changes.

Using the AIX command line

To view the attributes of a medium, use the **pdls** command. For example, to view all the attributes of **na-letter-colored** in **Server1**, enter the following command:

```
pdls -c medium -r all Server1:na-letter-colored
```

To change the attributes of a medium, use the **pdset** command. For example, to change the description of **na-letter-colored** in **Server1**, enter the following command:

```
pdset -c medium -x "descriptor='Any color but white'"  
Server1:na-letter-colored
```

For more information, refer to *Infoprint Manager: Reference* or the **pdls** and **pdset** man pages.

Associating a medium with a physical printer

You can use the Infoprint Manager Administration GUI to associate a medium with a physical printer.

Using the Infoprint Manager Administration GUI

Depending on the input trays and paper feed mechanisms, a printer device may be capable of having a wide variety of paper sources loaded. You can use the **Change Media** dialog (**Printer** → **Change Media**) for a physical printer to define the different paper types that operators can load in the printer on the **Media Allowed** tab.

To specify the media supported by the physical printer:

1. From the **Printer** menu, select **Change Media** to open the **Change Media** dialog.

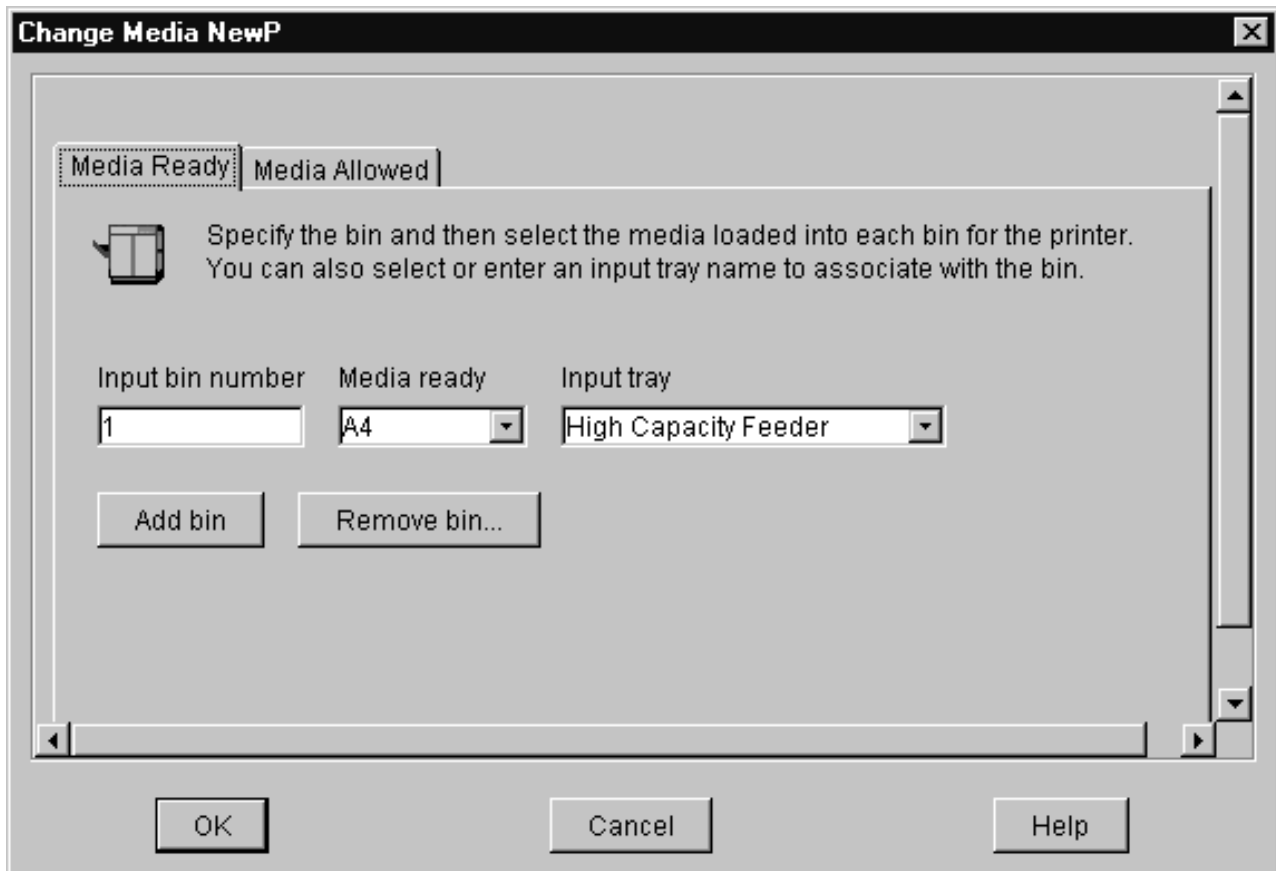


Figure 20. Change Media dialog

2. On the **Media Ready** tab, specify the bin and then select the media loaded into each bin for the printer. You can also specify an input tray name to associate with the bin.
3. Select **OK**. Infoprint updates the physical printer properties notebook with the values you specified.

Chapter 5. Infoprint Email support

Infoprint Email can be used for interoffice communication or to send emails to other addresses around the world. You can take advantage of the Email option to format documents that are both viewable and printable at company workstations. Send and receive data from a wide variety of sources, whether the data is PCL, PDF, PostScript, GIF, JPEG, TIFF, or a native SAP R/3 data stream (ABAP or OTF). Incoming data can be all these types; the Email DSS converts the data to PDF for viewing. To view output, you can use Adobe Acrobat Reader (for more information and available downloads, see the Adobe web site at <http://www.adobe.com>).

Note: Color PDF and PostScript jobs will be converted to black and white PDF emails if not handled appropriately.

Configuring Infoprint Email

Before you can send Email through Infoprint Manager for AIX, you must ensure your SMTP Email server is correctly configured and defined to Infoprint and create an Infoprint Email destination.

Defining the SMTP Email server to Infoprint

The Infoprint Manager for AIX Email DSS uses a Simple Mail Transfer Protocol (SMTP) server to send email. The SMTP server must have MIME support. The SMTP server used is defined by the Infoprint Manager server attributes **smtp-server-host** and **smtp-server-port**. These attributes default to the local AIX SMTP server. If you want to use a different SMTP server, you can modify these server attributes.

Note: Your SMTP server must be correctly configured to get outside the firewall if you plan to send emails outside your firewall.

If you want to change the SMTP server for the Infoprint AIX server, use the following procedure to accomplish this task.

1. To set the mail server at installation, start the **Infoprint Manager Administration GUI** by entering the following from the AIX command line:
`ipguiadvadm.`
2. From the Infoprint Manager Administration Servers main window, click **Server** → **Properties**.
3. From the **Server Properties** dialog (Figure 21 on page 68), specify your installation's mail server in the **SMTP server** field and the port in the **SMTP port** field.

Note: Note that the **SMTP server port** field defaults to 25, which is the default port for the SMTP server on most AIX servers. Figure 21 on page 68 displays the default values for this panel.

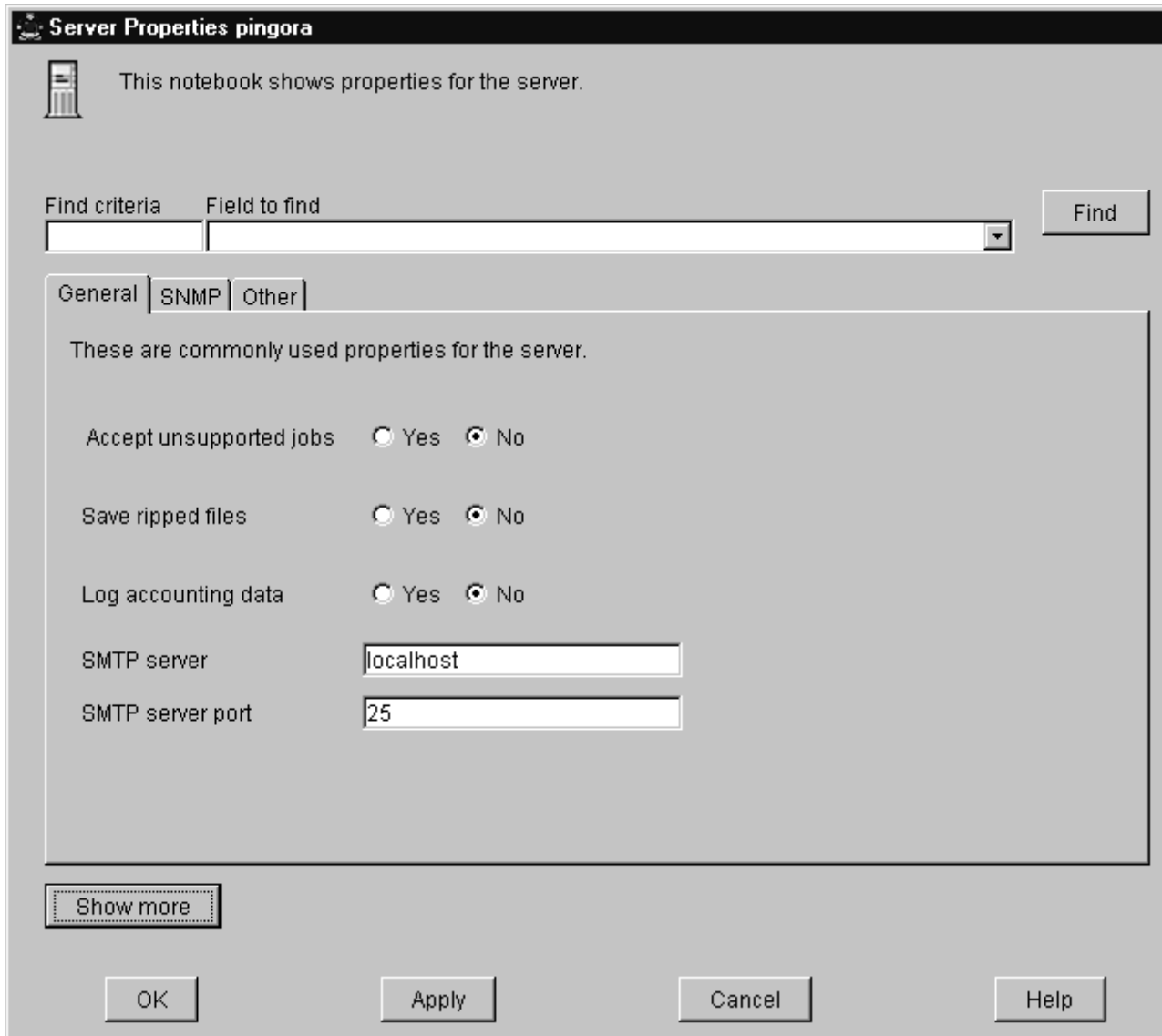


Figure 21. Server properties dialog for setting the mail server.

Note that if you plan to use Email to send large PDF files consisting of fifty pages or more, you will need to expand the size of the `/var/psf/segments` file system to 500 MB.

Creating an Infoprint Email destination

Before you can send email output through Infoprint Manager, you must create an email destination on your Infoprint AIX server. Please note that you should use the **Advanced Infoprint Manager Administration** graphical user interface (GUI) to perform this task.

Note: While users who have purchased the Print-On-Demand feature can use the **Basic Infoprint Manager Administration** interface (GUI), IBM recommends against it because you will not be able to view queue objects. This means you cannot select the queue to add to a logical destination.

1. Start the **Advanced Infoprint Manager Administration** GUI by entering the following from the AIX command line: `ipguiadvadm`.

- From the main window, select **Other → Create → Email Destination**.

Note: If the **Email Destination** option is not available under the **Other → Create** path, click on the **Options → Add/Remove Menu Items** path and check the **Create Email Destination** from the **Customize** dialog (see Figure 22). Note that you can specify any actions (delete, enable, disable, etc.) from this particular dialog.

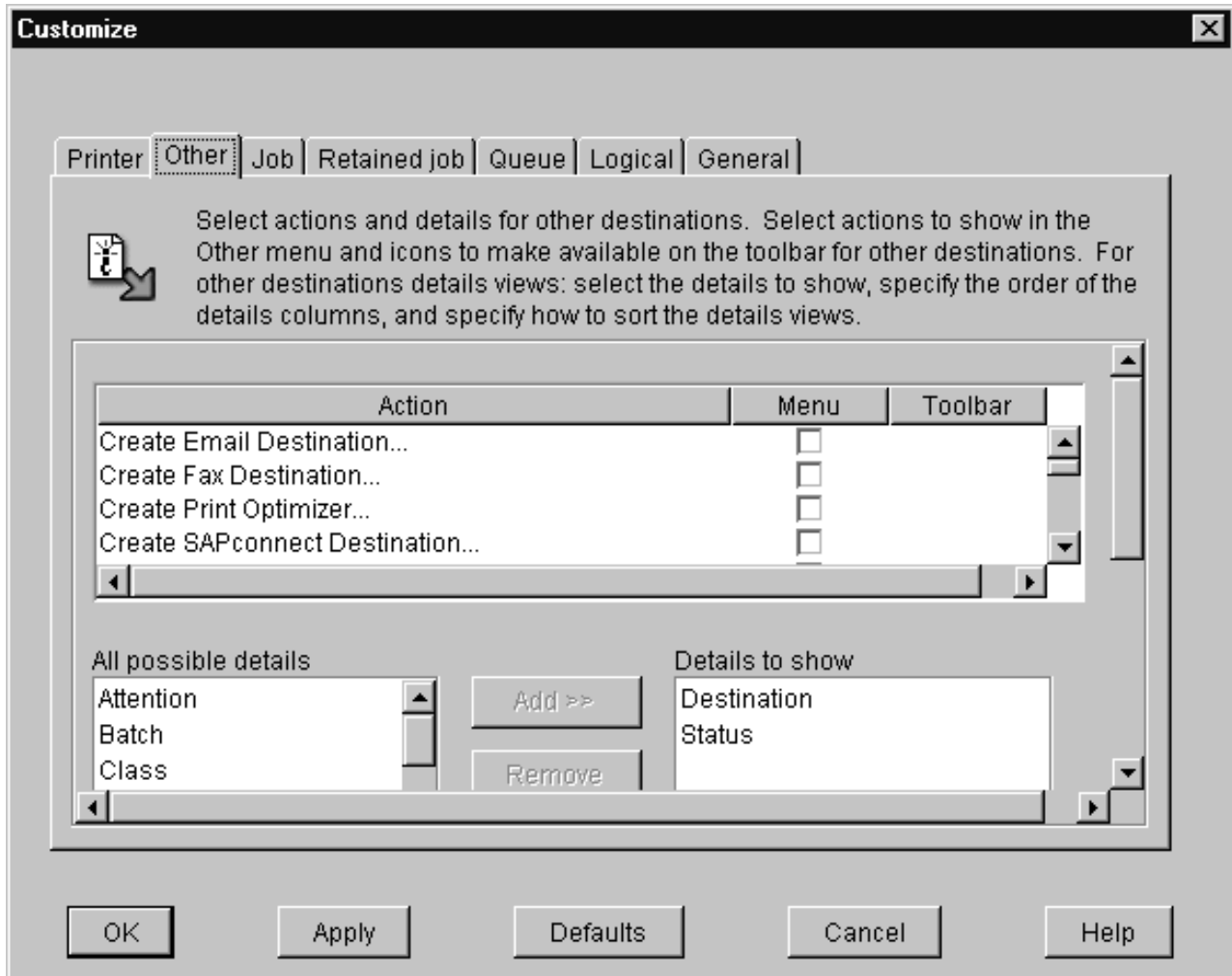


Figure 22. Customize dialog for adding the Email option.

- In the first panel of the Create Email Destination Wizard:
 - Specify a **Name** for the Email destination, such as email1.
 - Specify the Infoprint AIX **Server** where you are creating the Email destination, such as server1.
- In the second panel of the Create Email Destination Wizard, select a logical destination to feed this Email actual destination.
 IBM recommends that you create a separate logical destination object (email-ld), so that the same logical destination does not feed jobs to both a printer and an email destination. This step will make it easier for operators to monitor the progress of email jobs through the system and make it easier to diagnose any potential email problems.

5. In the third panel (if you have decided to create a separate logical destination object in the preceding step), you can choose which queue in which to put the new logical destination object.
6. In the fourth panel of the Create Email Destination Wizard, you can decide to take the default configuration or to further customize this destination by:
 - Changing the Infoprint logical destination to which jobs are routed (if different from the logical destination defined in the preceding step).
 - Specifying particular job batch values.
 - Modifying actual destination properties.

For purposes of this example, we take the default and apply the standard configuration.

7. In the fourth panel of the Create Email Destination Wizard, accept the default to enable the destination so that you have an Email destination with a status of **ready**.

Submitting Email jobs

Once you have installed and configured the Email option, you can submit jobs to a particular output destination by using the command line anywhere that you have the **pdpr** command installed. This topic shows the command syntax and provides three examples for submitting email jobs:

-
- Submitting attributes through a file with the **-Z** option
- Submitting files with a Korn Shell Script
- Submitting text files with a Korn Shell Script
- Submitting text files with a Korn Shell Script

Submitting a basic email job

For specific information about the **pdpr** command and its attributes, refer to the *Infoprint Manager: Reference*, on the web or the **pdpr** man page.

To submit a basic email job, you can use the following syntax:

```
pdpr -p email-ld -Z emailfilename
```

For an explanation of each variable on the command-line, consult the following table:

Variable	Definition
<i>logical_destination</i>	Specifies the logical destination that you defined when configuring the Email option through the Advanced Infoprint Manager Administration GUI.
Example: -p email-ld	For more information about configuring both logical and actual destinations and using the pdpr command, see the <i>Infoprint Manager: Reference</i> .

<p><i>emailfilename</i></p> <p>Example:</p> <p>-Z</p> <p>/email_script/samp.script</p>	<p>Specifies a file that contains the job attributes, the name of the file you are sending, and the email destination to which you are sending the email.</p> <p>Email attributes include cover sheet information, billing code information, and other options.</p> <p>Note that subject-text, email-body, and email-signature are the only required attributes.</p>
--	---

IBM recommends that you create sample attribute scripts that you can customize for your particular site. While you can specify email attributes on the command line, IBM recommends using an attribute file.

Submitting attributes through a file with the -Z option

You can create a sample attribute file using an input data type of AFP, PostScript, or Portable Document Format and submit it as the *emailfilename* for the syntax listed above:

```
-x email-from-address=root@serv.us.name.com
-x email-to-address=johndoe@us.name.com
-x subject-text="Test Script"
-x document-type=printable
  /usr/lpp/ps/sample.pdf
-x document-type=email-body
  /email_script/body.txt
-x document-type=email-signature
  /email_script/sig.txt
```

At the command-line, use the following syntax to use this attribute file:

```
pdpr -p logical_destination -Z emailfilename
```

where *logical_destination* is **email1-ld** and *emailfilename* could be named **/email_script/samp.script** and stored on your local system. Note that you must have defined a **body.txt** file and a **sig.txt** file for this script to work correctly.

This attribute file sends a report to a 'johndoe' Internet ID, using a logical destination (printer) named **email1-ld** that you specify from the command line. Note that the convention *us.name.com* is used to indicate a company-wide addressing system, where it indicates the country (*us*), the company name (*name*) and the communications name (*com*) for all fully-qualified addresses in the company.

Note that you cannot put comments in an attributes file using the **-Z** option.

This script does not print ASCII input data. To print ASCII input files, see Submitting Text Files with a Korn Shell Script.

Submitting files with a Korn shell script

You can create a Korn shell script (named **sendfile** for this example) with a simpler command syntax because the **pdpr** command is included within the shell script.

Create a file that contains the **pdpr** command and all its attributes. Create the following Korn shell script and place it in a directory on the AIX system where you have installed the **pdpr** command.

The file should look similar to the following:

```

# Sample Attribute File for Infoprint Manager Email
# using a script to submit
# sendemail $1 $2
# $1 is required as the name of the file to send.
# $2 is optional as the recipient of the email.
#
#! /usr/bin/ksh

if [[ -a $1 && -n $1 ] ]
then

    if [ $2 ]
    then
        WHOTO=$2
    else
        WHOTO="johndoe@us.name.com"
    fi
    /usr/lpp/pd/bin/pdpr -p email1-ld \
    -r brief \
    -x email-to-address=$WHOTO \
    -x email-from-address=root@serv.us.name.com \
    -x "subject-text='Your requested Email file'" \
    -x document-type=printable $1 \
    -x document-type=email-body /email_script/body.txt \
    -x document-type=email-signature /email_script/sig.txt

else
echo " sendfile: could not locate file [$1]"
fi

```

At the command-line, this Korn shell script would use the following syntax:

```
sendfile outputfilename [destination]
```

where *outputfilename* specifies the file that you are sending (**sample.pdf**) and destination is the email address (**johndoe**) to which you are sending the file.

This script sends an email to either the *destination* value that you specify as the second argument on the AIX command line, or to 'johndoe' Internet ID, if you take the default. The script uses a logical destination (printer) named **email1-ld** on your Infoprint AIX server.

Note that the convention *us.name.com* is used to indicate a typical Internet address for a business.

Submitting text files with a Korn shell script

You can create a Korn shell script (named **sendtxtfile** for this example) to submit ASCII text files as Email.

Create a file that contains the **pdpr** command and all its attributes. Create the following Korn shell script and place it in a directory on the AIX system where you have installed the **pdpr** command.

The file should look similar to the following:

```

# Sample Korn Shell
# Script for Infoprint Manager Email Text

# Uses a script to submit:
# sendtxtemail $1 $2
# $1 is required as the name of the file to send.
# $2 is optional as the recipient of the email.

```

```

#
# This script takes an ASCII file as input and creates
# PostScript output that is submitted with the pdpr command
# as email.

#! /usr/bin/ksh
if [[ -a $1 && -n $1 ] ]
then

    if [ $2 ]
    then
        WHOTO=$2
    else
        WHOTO="johndoe@us.name.com"
    fi
    # Make temporary PostScript file
    enscript -p /tmp/$$email.txt $1

    /usr/lpp/pd/bin/pdpr -p email1-ld \
    -r brief \
    -x email-to-address=$WHOTO \
    -x email-from-address=root@serv.us.name.com \
    -x "subject-text='Your requested Email file'" \
    -x document-type=printable /tmp/$$email.txt \
    -x document-type=email-body /email_script/body.txt \
    -x document-type=email-signature /email_script/sig.txt
    # Delete temporary PostScript file
    rm /tmp/$$email.txt

else
    echo " sendtxtfile: could not locate file [$1]"
fi

```

At the command-line, this Korn shell script would use the following syntax:

```
sendtxtfile outputfilename [destination]
```

where *outputfilename* specifies the file that you are sending (**email.txt**) and destination is the email address (**johndoe**) to which you are sending the file.

This script sends an email to either the destination value that you specify as the second argument on the AIX command line, or to 'johndoe' Internet ID, if you take the default. The script uses a logical destination (printer) named **email-ld** on your Infoprint AIX server. This file uses the **enscript** AIX command to convert the text file to PostScript, stores that PostScript file in the **/tmp** directory on the submitting AIX system, and then deletes that file once the **pdpr** command has submitted the PostScript file to the Infoprint AIX server.

Note that the convention *us.name.com* is used to indicate a typical Internet address for a business.

Using the Infoprint Select client

Once you have successfully installed Infoprint Select and defined an Email destination (refer to "Chapter 11. Using Infoprint Select to submit a job" in *Infoprint Manager for AIX: Getting Started* for more information), you can use the following procedure to email.

Note: In order to configure the port for the Infoprint server email destination on your client workstation, the email logical destination (in our example, **email-ld**) on the Infoprint AIX server must have a value filled in for the **client-driver-names** logical destination attribute. If this value is not filled in,

you will not be able to display printers from the Infoprint AIX server when you click the **Refresh Printers Selection List** button.

You must also set the **destination-support-system** logical destination attribute to **email** in order for Infoprint Select to send emails.

1. Specify **Print** from the screen menu.
2. From the **Print** window, ensure that the **Name** field contains the name of the logical destination that you defined to the Infoprint AIX server, then click on the **OK** button.
3. From the **Infoprint Email** pop-up window, specify the attribute information in the fields as indicated.

Color Email

If you have color Portable Document Format (PDF) or PostScript files, you can send these files to target email address through Infoprint Manager and receive color output.

Ensure that your color PDF files pass through the Email DSS without being transformed no matter what method you use to submit the job to the Infoprint Manager AIX server. To do this specify job attribute `job-ripped-by-server = false`. Alternatively, you can set the actual destination to not RIP PDF document formats. However, that would apply to all PDF jobs submitted.

You don't want to lose the color information contained in color PostScript files.

- If you currently use Infoprint Manager for AIX version 3.2 and migrate to version 4.1, you can specify `job-ripped-by-server = false` and Infoprint Manager will email you a color PDF.
- If you are a new customer and specify `job-ripped-by-server = false`, Infoprint Manager will email your color email as a PostScript attachment. You will need Ghostscript to view it.

Note: Color Email is not supported if your Email job sent to an Actual Destination contains any of the attributes specified in the lists that follow. If these attributes or conditions are sent to an Actual Destination, the file will print as black-and-white (MO:DCA-P) output.

Any job or document attributes that require the Email DSS to transform the data are not supported. For a list of these attributes and for more information about the `job-ripped-by-server` attribute, refer to *Infoprint Manager: Reference*.

Submitting color Email attributes through a file

You can print a color Email job with a batch file that contains the following:

- Job name
- Email body text
- Email to address
- Email from address

Here is the sample file:

```
-x job-name="Titleist"  
-x job-ripped-by-server=false  
-x email-from-address=gopher1@gopher.com  
-x email-to-address=gopher@gopher.com  
-x subject-text="testing"
```



```
-x document-type=email-body
-f d:\bsi\data\body.txt
-x document-format=pdf
-x document-type=printable
```

To submit this job to the Infoprint AIX server, specify the following at an AIX command line:

```
c:\Infoprint\pdpr -p email -Z d:\bsi\options\em_rip.txt \
d:\bsi\data\LogoOnly.pdf
```

where **em_rip.txt** is the **-Z** file above.

Chapter 6. Using Infoprint Fax

Attention: The Infoprint Manager for AIX Version 4 Release 1 Fax option is not supported on the AIX 5.x operating system. To use the Infoprint Fax feature, your Infoprint Manager for AIX server must be running on an AIX 4.3.3 operating system.

Infoprint Manager Fax is a separately-orderable feature that allows you to send and receive faxes.

Before you can configure and run the Infoprint Manager Fax, you must ensure that:

- Your installation has an analog phone line for each fax line (or channel) that you intend to use.
- You have purchased and installed either the GammaLink PCI or ISA Fax Board, or the Interstar LightningFAX Server version of this Board (such may be referred to as 'Card' in subsequent documentation). The Infoprint Manager Fax feature supports Dialogic Gammalink Fax Boards CPi/100 (ISA only), CPi/200, and CPi/400.

Note: The PCI card supports two lines as the fewest lines available. You do not require an additional license to use this card for one-line support.

For more information on how to obtain this Fax board, see the Intel (R) Communications Systems Products Fax Boards web page at http://www.intel.com/network/csp/products/fax_index.htm.

Enter the number of fax lines you intend to use in Infoprint Installer. If you are using more than one line, contact the IBM TECHLINE toll free number (1-888-426-5525 Option 5, Option 1) to obtain the correct license:

1. To obtain the planer ID of your system, specify the following from an AIX window:
`uname -a`
2. Send that planer ID number in a file to your IBM service representative. Your service representative will send you a file -- **LFlic.txt** -- which you must use in step 5 of the procedure that follows.

Installing the Infoprint Fax feature

Use the following procedure to install the Infoprint Fax feature:

1. Install the Fax card by putting it in any available PCI or ISA slot in your Infoprint AIX server.
2. Plug the fax phone line into the phone jack on the back of the card on the Infoprint AIX server so that the fax phone line links to the channels. Refer to your fax board documentation to determine which phone jack applies to which channel.
3. If you have already installed LightningFAX Version 7.5 SP1 on your Infoprint AIX server, you must see "Updating the Fax Feature when LightningFAX 7.5 is Already Installed" on page 80 and follow the directions there before continuing to Step 4 of this procedure.
4. Run the Infoprint Installer.

Refer to the *Infoprint Manager for AIX: Getting Started* for prerequisite information. It can be found on either the Publications CD-ROM for Infoprint Manager for AIX 4.1, or the Infoprint Manager for AIX web site at <http://www.ibm.com/printers>. On the Printing Systems homepage, click Infoprint Manager under **Resources For**, then click Infoprint Manger for AIX on the Infoprint Manager Family homepage. Select **Product Library** from the drop-down list in the right hand navigation bar, then click the link for *Infoprint Manager for AIX: Getting Started* under **Publications** to download the PDF version.

Specify the number of lines you have ordered and this utility will install Interstar LightningFAX Server Software Version 7.5 SP1.

5. If you are using multiple lines, copy the **LFlic.txt** file that you obtained from IBM, after following the directions in Chapter 6, "Using Infoprint Fax", on page 77, onto your Infoprint AIX server in the **/usr/lpp/lightningfax/lfaixserver** directory.

Note: This file replaces a file with the same name that resides on your system. If you do not obtain this file and replace the existing file on your server, you will be unable to use more than a single channel.

Configuring the LightningFAX server software files

To configure the LightningFAX Server Software files that control the GammaLink Fax card, use the following procedure:

1. Access the **/etc** file system and use your AIX editor of choice to make the changes identified in Table 6.

If you had previously installed an earlier version of the Infoprint Manager Fax feature, Infoprint Manager places copies of your old Fax configuration files in the **/tmp/FaxConfFiles** directory. You can access these files to update the default configuration files and ensure that your customizations of the Fax feature are not lost with each new install. To retain your customization changes, copy the saved **infofax.cfg** and **procfax.cfg** files back to their original directory, **/usr/lpp/psf/fax**.

Note: If migrating from one version of LightningFAX to another, you cannot reuse any of the saved **lf*.conf** files.

Table 6. Configuration files and values for Infoprint Fax support

Configuration File Name	Changed Parameter	Value
/etc/lfaixdriver.conf	<i>NumChanISA</i> = <i>NumChanPCI</i> = Under the [channel specific info section] section:	Specify a numeric value to match the number of lines on your physical fax card (usually either 1, 2, or 4). Fill in the appropriate parameter to reflect the type of adapter (ISA or PCI) in use at your installation.
/etc/lfaixdriver.conf	<i>ChannelX_Country</i> = where X indicates the channel number.	Channel 2 could specify <i>Channe12_Country</i> =17, which would indicate that channel 2 was set to the country code for Canada (which happens to work in the United States). For a complete set of country code numbers, see "Country code numbers for faxing" on page 95.

Table 6. Configuration files and values for Infoprint Fax support (continued)

Configuration File Name	Changed Parameter	Value
/etc/lfaixdriver.conf	<i>ChannelX_ServerIP=</i> where <i>X</i> indicates the channel number. For example, Channel 2 could specify <i>Channel2_ServerIP=9.99.98.3</i> .	Specify the Internet Protocol (IP) address of your Infoprint AIX server. Note: Be sure to change these parameters for the number of channels that you specify in this file. You can obtain the value for <i>ChannelX_ServerIP=</i> where <i>X</i> by specifying the following command: <i>ping -c3 servername</i>
/etc/lfaixapi.conf	Under the [Server Info] section: <i>Address=</i> value.	Specify the Internet Protocol (IP) address of your Infoprint AIX server.
/etc/lfaixapifbk.conf	Under the [Server Info] section: <i>Address=</i> value.	Specify the Internet Protocol (IP) address of your Infoprint AIX server.
/etc/lfaixserver.conf	Under the [Server Info] section: <i>Address=</i> value. <i>RSAddress=</i> value	Specify the Internet Protocol (IP) address of your Infoprint AIX server (<i>Address=</i> value). Specify the Internet Protocol (IP) address of the rasterization server (<i>RSAddress=</i> value).
infifax.cfg which resides in the /usr/lpp/psf/fax directory.	Under the [Server Info] section: <i>FAX_PREFIX=</i> value.	Specify the prefix for your phone number for sending faxes (fax-out). For example, if you must dial a '9' before the actual number, specify <i>FAX_PREFIX = 9,</i> . For example, if you must dial a '9' and a '1' before the actual number, specify <i>FAX_PREFIX = 9,1</i> . Note that the comma (,) indicates a five-second pause.

2. Reboot your AIX Infoprint server.
3. To ensure that the AIX operating system's device drivers are reading the fax card, specify the following at an AIX command line:

```
lsdev -C | grep -i LF
```

If the operating system is reading the fax card, the response should be similar to the following:

```
LFAIXkdriver0 Available 01-18 GammaLink Fax Board
```

4. Verify that the LightningFax software is working correctly with the fax card by waiting a few minutes for the LightningFax server to start, and then dialing each fax phone number from a phone.

If working correctly, the fax card should make a connection after the second ring and produce the static sound that is peculiar to fax machines.

Updating the Fax Feature when LightningFAX 7.5 is Already Installed

You can ignore this procedure if you attempt to install Infoprint Manager Manager for AIX 4.1 and either have:

- installed LightningFAX Version 6.5 on your Infoprint AIX server
- no version of LightningFAX installed on your Infoprint AIX server

If you have already installed LightningFAX Version 7.5 on your Infoprint AIX server and then attempt to install Infoprint Manager 4.1, the Infoprint Installer does not install the LightningFAX that IBM supplies and does not put the IBM configuration files in the proper sub-directories.

To remove existing versions of LightningFAX Version 7.5 from your Infoprint AIX server, use the following procedure:

1. Specify `smit` or `smitty` from an AIX command line and take the following path: **Software Installation and Maintenance** → **Software Maintenance and Utilities** → **Remove Installed Software**.
2. Use the **PF4** key to select the software filesets, then scroll down the list, and find all the `lightningfax.x` filesets for removal, where `x` (the second qualifier) indicates the fileset's purpose, such as `api` or `driver`.
3. Use the **PF7** key to select each fileset for removal, then press **Enter** to delete all the selected filesets at once.

Configuring Fax Out (sending)

In order to send faxes you must create a fax actual destination and configure it.

Creating an Infoprint Fax destination

Before you can send fax output through Infoprint Manager, you must create a Fax destination on your Infoprint AIX server. Use the Advanced Infoprint Manager Administration GUI to perform this task.

Using the Infoprint Manager Administration GUI to create a Fax actual destination

While users who have purchased the Print-On-Demand feature can use the **Basic Infoprint Manager Administration** interface (GUI), IBM recommends against it, because you will not be able to view queue objects. Because you cannot view queue objects, you cannot select the queue to add to a logical destination.

1. Start the **Advanced Infoprint Manager Administration GUI** by entering the following from the AIX command line: `ipguiadvadm`.
2. From the main window, select **Other** → **Create** → **Fax Destination**.

Note: If the **Fax Destination** option is not available under **Other** → **Create**:

- a. Click **Options** → **Add/Remove Menu Items**.
- b. From the **Customize** window, select the **Other** tab.
- c. Check the fax option in the **Customize** dialog (see Figure 23 on page 81).

You can specify any actions (delete, enable, disable, etc.) from this particular dialog.

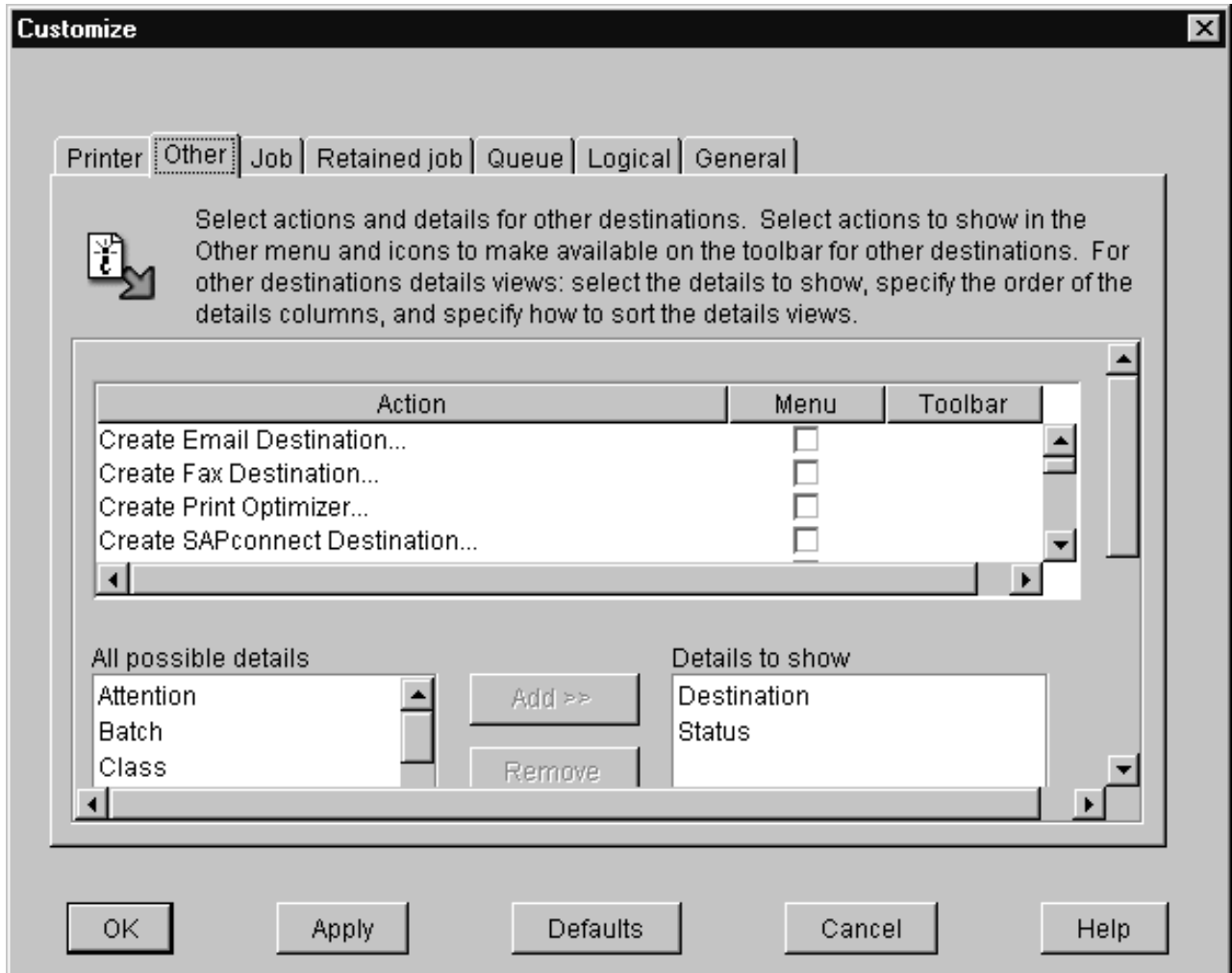


Figure 23. Customize dialog for adding the Fax option

3. In the first panel of the Create Fax Destination Wizard:
 - a. Specify a **Name** for the Fax destination, such as fax1.
 - b. Specify the Infoprint AIX **Server** where you are creating the Fax destination, such as server1.
4. In the second panel of the Create Fax Destination Wizard, create a new logical destination to feed this Fax actual destination.

IBM recommends that you create a separate logical destination object (in this example, fax-ld), so that the same logical destination does not feed jobs to both a printer and a fax destination. This step will make it easier for operators to monitor the progress of fax jobs through the system and make it easier to diagnose any potential fax problems.
5. In the third panel, you can choose which queue in which to put the new logical destination object.
6. In the fourth panel of the Create Fax Destination Wizard, you can decide to take the default configuration or to further customize this destination. Of the options available, the only one likely to apply to a fax destination is **Modifying actual destination properties**.

7. In the fourth panel of the Create Fax Destination Wizard, accept the default to enable the destination so that you have an Fax destination with a status of **ready**.

Configuring to fax A4 print jobs to faxes using letter paper

If you are faxing A4 size documents to fax machines that use letter-sized paper, you can scale down the output to fit the shorter paper by editing the `/usr/lpp/psf/fax/infifax.cfg` file and specifying `fax_height_scale = 1.0`. Because the modified `infifax.cfg` file will affect all jobs, you may want to remember to reset the values if you sent to a fax machine that uses A4-sized paper.

If you are submitting either A4 or letter print jobs to fax machines that use either A4 or letter paper respectively, you should submit the jobs so the paper type of the fax machine is identified through the **default-medium** document attribute, as shown in “Submitting a fax job with specific media (A4 or letter paper)” on page 89.

If submitting an A4 document to a fax machine through a **pdpr** print command, you must set the **image-length**, **image-width**, and **default-medium** attributes. If submitting a Letter document, you only need to specify the **default-medium** attribute.

Scaling the width and height of fax output

You can scale a fax document that you are sending to any size that you want. This tool removes pixels from the fax document. To ensure that you do not lose data from your fax job, be sure to specify a value for either parameter that is less than 2.0.

Modify the following two values on the `/usr/lpp/psf/fax/infifax.cfg` file:

fax_height_scale

Specifies the number of inches in height that a fax document should be scaled back. For example, if you take the 1.5 inch default value and submit a document that is 11 inches long, the output will be scaled to 9.5 inches.

fax_width_scale

Specifies the number of inches in width that a fax document should be scaled back. For example, if you take the 0.5 inch default value and submit a document that is 8.5 inches wide, the output will be scaled to 8.0 inches.

Specifying fax cover sheets

You can specify two different types of cover sheets with the Infoprint Fax Manager output device:

- Text cover page
- PCL cover page

Infoprint Manager provides one of each kind.

The Infoprint Manager—provided PCL cover page (`/var/psf/faxserver/covers/cover1.pcl`) is the default. The **COVER_PAGE=** parameter in the `infifax.cfg` file that resides in the `/usr/lpp/psf/fax/` directory controls what cover page is used by default. You can change the default on this parameter by editing the `infifax.cfg` file and substituting either the name of the IBM-provided text cover sheet, or a cover page (either text or PCL) that you have

created and stored in the fully-qualified path you specify (for example, COVER_PAGE=/var/psf.faxserver/mycovers/mycover.txt).

Note: If you are using the SAPconnect interface to send faxes with SAP R/3 using Infoprint Manager, these jobs will use the SAP cover page.

When making a PCL header sheet, make sure that your PCL driver outputs non-image PCL data, so that the PCL data has characters and font references. If your PCL driver creates image data, the PCL cover page that you have created will not work with the defined variable names.

```
Date Faxed:      @LFVAR_DATE@
Time Faxed:     @LFVAR_TIME@
Billing Code:   @LFVAR_BILLING_CODE@

To:             @LFVAR_DESTINATION_NAME@
Company:       @LFVAR_COMPANY@
Subject:       @LFVAR_SUBJECT@

From:          @LFVAR_CSID@
Callback Phone No: @LFVAR_CALL_BACK_NUMBER@
Commentary:    @LFVAR_COMMENTARY@

                @LFVAR_USER_DEFINED1@
                @LFVAR_USER_DEFINED2@
                @LFVAR_USER_DEFINED3@
                @LFVAR_USER_DEFINED4@
```

Figure 24. cover1.pcl file provided with Infoprint Manager for AIX

Infoprint Fax Manager Fax Cover Page

Date Faxed: 2001/10/15
Time Faxed: 12:40
Billing Code: 000000000

To:
Company: Your company
Subject: Your report

From: PSD, IBM
Callback Phone No: 3039244890
Commentary: Quarterly Report

6300 Diagonal HWY
Boulder, CO 80526
Building 8 E8-4
John Smith



Figure 25. Display of cover1.pcl file provided with Infoprint Manager for AIX

```
*****  
*                               *  
*   Infoprint Fax Manager     *  
*                               *  
*****
```

FROM: @LFVAR_CSID@
Callback Phone No: @LFVAR_CALL_BACK_NUMBER@
Commentary: @LFVAR_COMMENTARY@

TO: @LFVAR_DESTINATION_NAME@
Company Name: @LFVAR_COMPANY@
Subject: @LFVAR_SUBJECT@

Date Faxed: @LFVAR_DATE@
Time Faxed: @LFVAR_TIME@
Job Number: @LFVAR_APPLICATION_NAME@
Billing Code: @LFVAR_BILLING_CODE@

@LFVAR_USER_DEFINED1@
@LFVAR_USER_DEFINED2@
@LFVAR_USER_DEFINED3@
@LFVAR_USER_DEFINED4@

Figure 26. cover1.txt file provided with Infoprint Manager for AIX

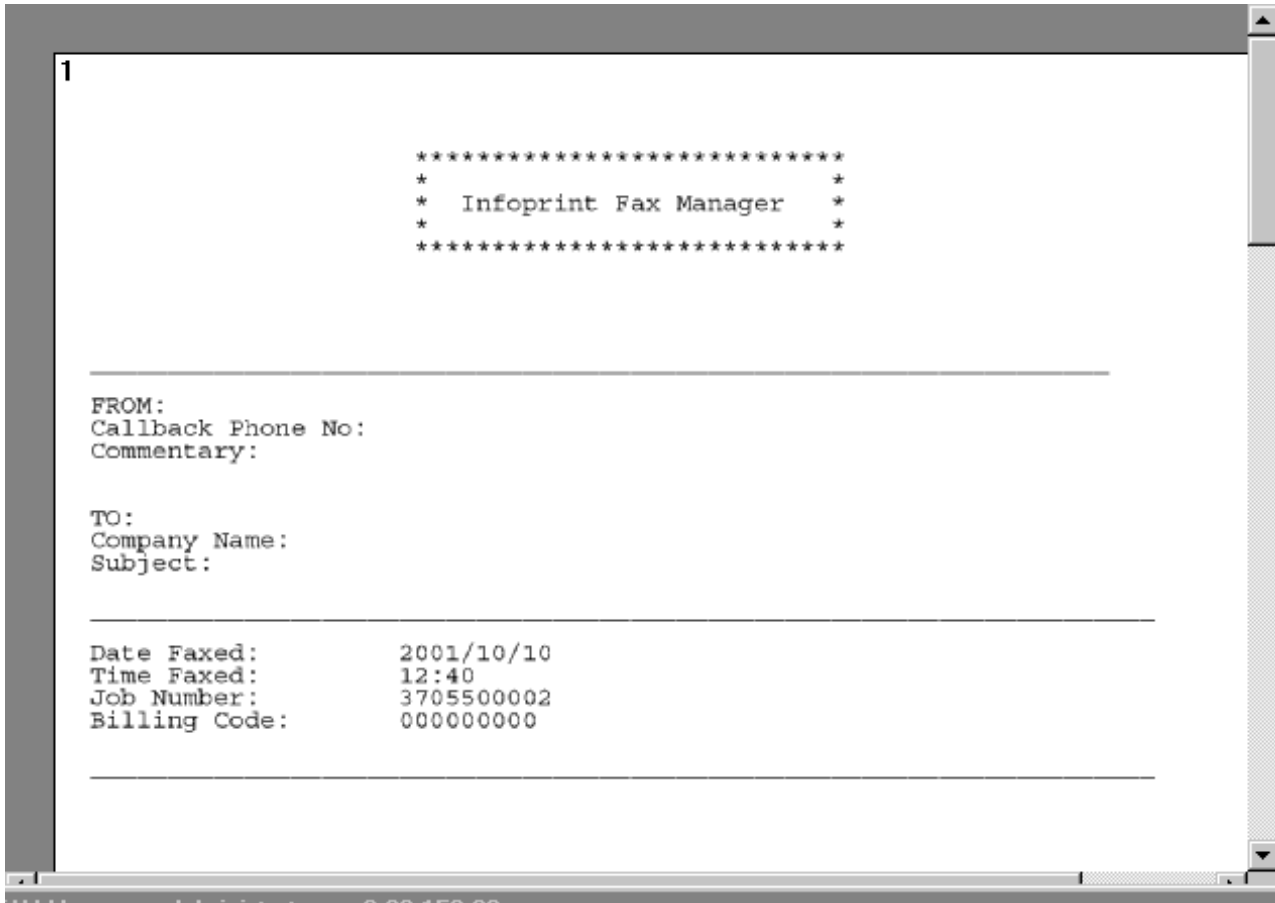


Figure 27. Display of cover1.txt file provided with Infoprint Manager for AIX

You can customize your fax header sheets by using the following set of LightningFAX parameters. Please note that complete definitions of the Infoprint Manager attributes provided in the following table are available from the latest version of the *Infoprint Manager: Reference*, which is available from the Infoprint Manager for AIX 4.1 Product Library page at <http://www.printers.ibm.com/R5PSC.NSF/Web/ipmrefinfo41>.

Configuration Value	Infoprint Manager Value
@LFVAR_APPLICATION_NAME@ Job ID automatically generated from Infoprint Manager.	job-identifier
@LFVAR_BILLING_CODE@ Department code to bill for the fax.	account-text
@LFVAR_CALL_BACK_NUMBER@ Call back telephone number.	callback-number
@LFVAR_COMMENTARY@ Fax document commentary	job-comment
@LFVAR_COMPANY@ Company for which the person to whom you are sending the fax works	destination-company-text

Configuration Value	Infoprint Manager Value
@LFVAR_CSID@ Identity of the person sending the fax.	original-company-text
@LFVAR_DATE@ Date when the fax is sent, which is generated automatically.	n/a
@LFVAR_DESTINATION_NAME@ Person to whom you have addressed the fax	fax-to-name
@LFVAR_FAX_NUMBER@ Telephone number of the fax machine called.	fax-number
@LFVAR_SUBJECT@ Subject of the fax	subject-text
@LFVAR_TIME@ Time when the fax is sent, which is generated automatically.	n/a
@LFVAR_USER_DEFINED1@ User-defined text.	address1-text
@LFVAR_USER_DEFINED2@ User-defined text.	address2-text
@LFVAR_USER_DEFINED3@ User-defined text.	address3-text
@LFVAR_USER_DEFINED4@ User-defined text.	address4-text

Submitting fax jobs

Once you have configured Infoprint Fax and defined a destination through the Infoprint Manager Administration GUI, you can submit jobs to the fax destination by using either the command-line or the Infoprint Select client.

Using the AIX command line

Faxes are sent through the **pdpr** command. The following three examples show how you can expand and customize this support. Please note that values that remain unchanged from the more basic examples are not explicitly defined in the later examples.

- “Submitting a basic fax job”
- “Submitting a fax job with the default cover sheet values specified”
- “Submitting a fax job with specific media (A4 or letter paper)” on page 89
- “Submitting a fax job with a customized cover sheet” on page 90
- “Sending ASCII data through Infoprint Manager Fax support” on page 90

For specific information about the **pdpr** command and its attributes, refer to the *IBM Infoprint Manager: Reference*, which is provided on the documentation CD-ROM and the Infoprint Manager for AIX 4.1 Product Library page at <http://www.printers.ibm.com/R5PSC.NSF/Web/ipmrefinfo41>.

Submitting a basic fax job

To submit a basic fax job to the Infoprint Manager fax feature, you can use the following syntax:

```
pdpr -p fax-out-ld -x "fax-number=17091234567" faxrpt1
```

where:

fax-out-ld

Specifies the Infoprint logical destination that feeds the Infoprint fax actual destination you created in “Configuring Fax Out (sending)” on page 80.

fax-number

Specifies the document attribute that contains the fax number (1-709-123-4567) to which you are sending the document. Note that this attribute is required for any jobs sent to a fax destination and must contain only numbers.

faxrpt1

Specifies the name of the file that you are faxing.

Note: This can include more than a single file specified in the sequence they should be received. For example,memo1 memo2

Submitting a fax job with the default cover sheet values specified

To submit a fax job with the default cover sheet values specified to the Infoprint Manager fax feature, you can use the following syntax:

```
pdpr -p fax-out-ld -x "fax-number=17091234567" -X /fax_scripts/cover/default.attr faxrpt1
```

where:

fax-out-ld

Specifies the Infoprint logical destination that feeds the Infoprint fax actual destination you created in “Configuring Fax Out (sending)” on page 80.

fax-number

Specifies the document attribute that contains the fax number (1-709-123-4567) to which you are sending the document. Note that this attribute is required for any jobs sent to a fax destination and must contain only numbers.

-X /fax_scripts/cover/default.attr

Specifies the attribute file that provides values for the default cover sheet.

The **default.attr** attributes file could consist of the following:

```
# Sample Attribute File for Infoprint Manager Fax Option
# = comment
#
account-text = 6400099
#
fax-to-name = "John Swift"
destination-company-text="Your Document Company"
subject-text = "Quarterly Report"
#
original-company-text="My Document Company"
callback-number=3031234567
job-comment="Status Report"
#
address1-text = "My Document Company"
address2-text = "Building 5, office 3"
address3-text = "1234 Main Street"
address4-text = "New London, CN"
```

faxprt1

Specifies the name of the file that you are faxing.

Note: This can include more than a single file specified in the sequence they should be received. For example,memo1 memo2

Submitting a fax job with specific media (A4 or letter paper)

To submit a fax job to a fax device which uses A4 paper, you can use the following syntax:

```
pdpr -p fax-out-ld -x "fax-number=02118265377 default-medium=A4" faxprt1
```

where:

fax-out-ld

Specifies the Infoprint logical destination that feeds the Infoprint fax actual destination you created in “Configuring Fax Out (sending)” on page 80.

fax-number

Specifies the document attribute that contains the fax number (0211-8265377) to which you are sending the document. Note that this attribute is required for any jobs sent to a fax destination and must contain only numbers.

default-medium

Specifies the paper type (either A4 or letter) size of the paper in the fax machine.

If all fax jobs at an installation should use one specific media type, the system administrator should set the **default-medium** attribute to this value by setting the initial-value-document (i-v-d) on the logical destination (fax-ld):

```
pdset -c i-v-d -x default-medium=A4 fax-ld-dd
```

Note: By default, Infoprint Manager sets the default-medium to letter, so if you are submitting all jobs on **letter** paper, you do not need to make any changes.

faxprt1

Specifies the name of the file that you are faxing.

Note: This can include more than a single file specified in the sequence they should be received. For example,memo1 memo2

Submitting a fax job with a customized cover sheet

To submit a fax job with a customized, text coversheet, you must use the following syntax:

```
pdpr -p fax-out-ld -x "fax-number=17091234567" -X /fax_scripts/new.attr \  
-x document-type="coversheet" mycover.txt -x document-type="printable" faxprt1
```

where:

-X /fax_scripts/new.attr

Specifies the job attributes that you can specify for fax output. These attributes include cover sheet information, billing code information, and other options.

To simplify the printing process, IBM recommends that you create a sample attribute script. In this example, there is a **new.attr** script file that resides in the **/fax_scripts** directory.

The **new.attr** attributes file could contain the following information:

```
# Sample Attribute File for Infoprint Manager Fax Option  
# = comment  
#  
callback-number=3031234567  
account-text = 6400099  
fax-to-name = "John Swift"  
destination-company-text="Your Document Company"  
originating-company-text="My Document Company"  
subject-text = "Quarterly Report"  
address1-text = "Building 5, office 3"  
address2-text = "1234 Main Street"  
address3-text = "New London, CN"  
job-comment="Status Report"
```

mycover.txt

Specifies the names of the customized text cover sheet file (**mycover.txt**). For the location where Infoprint cover sheets are defined and stored, refer to "Specifying fax cover sheets" on page 82.

faxprt1

Specifies the name of the file that you are faxing.

Note that this can include more than a single file specified in the sequence they should be received. For example,memo1 memo2.

Sending ASCII data through Infoprint Manager Fax support

To submit ASCII or line data as a fax job through Infoprint Manager, you must create an attribute file and submit it using the following syntax:


```
pdpr -p fax-out-ld -x "fax-number=17091234567" -X /fax_scripts/ascii.attr \  
-x "document-type=coversheet" cover1.txt -x "document-type=printable" faxrpt1
```

Your **ascii.attr** file requires the following **bold-faced** attributes:

```
# Sample Attribute File for Infoprint Manager Fax Option  
# = comment  
#  
callback-number=3031234567  
account-text = 6400099  
fax-to-name = "John Swift"  
destination-company-text="Your Document Company"  
originating-company-text="My Document Company"  
subject-text = "News Summary"  
document-format="line-data"  
input-exit="/usr/lpp/psf/bin/asciipe"  
form-definition="F1A10111"  
page-definition="P1A06462"  
carriage-control-type="none"  
transform-message-file-name="/faxserver/messages/error.log"  
job-comment="Weekly News Summary"
```

Note: You should specify the **transform-message-file-name** document attribute to ensure that your installation keeps error messages separately from the fax output.

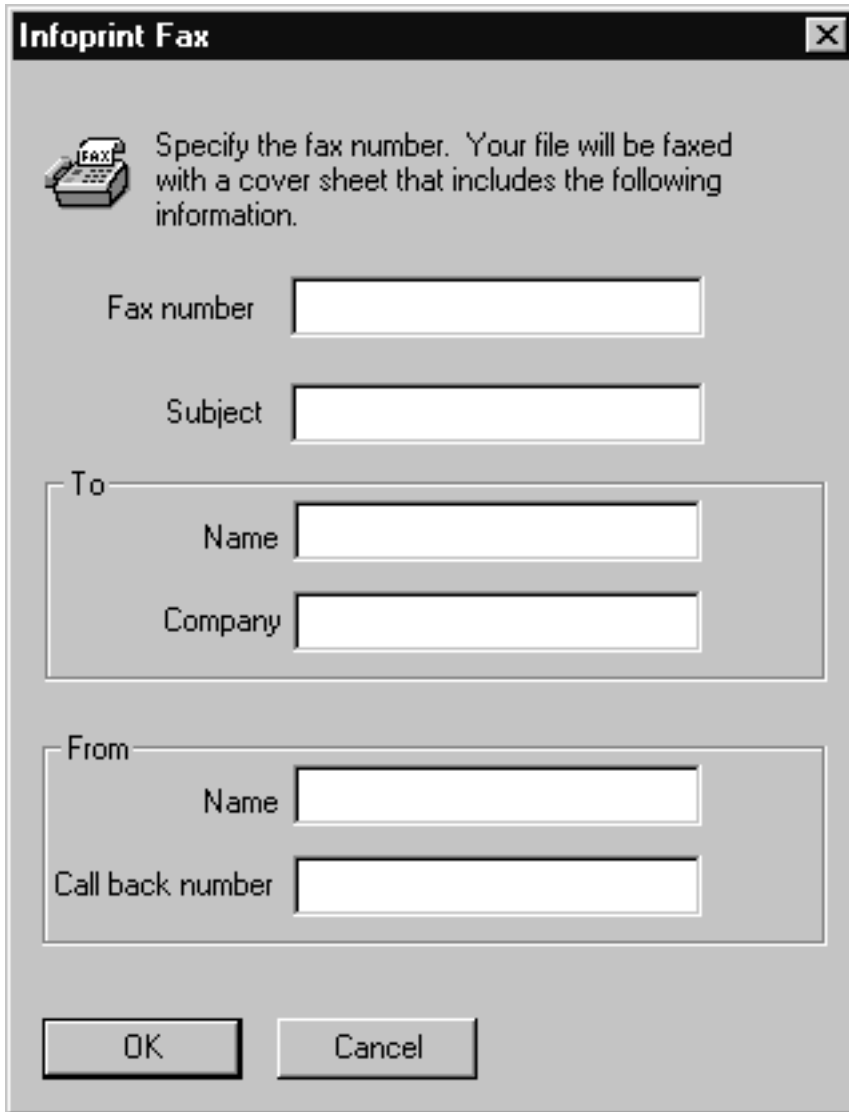
Using the Infoprint Select client

Once you have successfully installed Infoprint Select and defined a Fax printer destination (refer to "Chapter 11. Using Infoprint Select to submit a job" in *Infoprint Manager for AIX: Getting Started* for more information), you can use the following procedure to fax.

Note: In order to configure the port for the Infoprint server fax destination on your client workstation, the fax logical destination (in our example, **fax-out-ld**) on the Infoprint AIX server must have a value filled in for the **client-driver-names** logical destination attribute. If this value is not filled in, you will not be able to display printers from the Infoprint AIX server when you click the **Refresh Printers Selection List** button.

You must also set the **destination-support-system** logical destination attribute to **fax** in order for Infoprint Select to send faxes.

1. Specify **Print** from the screen menu.
2. From the **Print** window, ensure that the **Name** field contains the name of the logical destination that you defined to the Infoprint AIX server, then click on the **OK** button.
3. From the **Infoprint Fax** pop-up window (displayed below), specify the attribute information in the fields as indicated.



The image shows a dialog box titled "Infoprint Fax" with a close button (X) in the top right corner. Inside the dialog, there is a small icon of a fax machine on the left. To the right of the icon, the text reads: "Specify the fax number. Your file will be faxed with a cover sheet that includes the following information." Below this text are several input fields: "Fax number" (a single-line text box), "Subject" (a single-line text box), "To" (a group box containing "Name" and "Company" fields), and "From" (a group box containing "Name" and "Call back number" fields). At the bottom of the dialog are two buttons: "OK" and "Cancel".

Figure 28. Infoprint Fax pop-up window.

Note: You must specify a number for the **Fax number** field, or Infoprint Select cannot submit the job to the server.

Configuring Fax In (receiving)

Fax for input allows you to receive fax input and submit it to one or more Infoprint logical destinations for printing or delivery to a SAP system.

Mapping channel numbers to phone numbers with SMIT

For receiving fax input, use the System Management Interface Tool (SMIT) to map channel numbers to particular phone numbers, logical destinations, and the type of actual destinations that support these jobs. Note that the actual destination to which you submit incoming faxes must be either a **PSF DSS** or a **sapconnect DSS**.

To configure your Infoprint AIX server to receive incoming faxes, use the following procedure:

1. From an AIX window, type either `smit` or `smitty` and take the following path:
Infoprint Printing System → **Miscellaneous** → **Configure Fax Input**.

2. From the **Fax channel selector** panel, specify the first channel number you would like to configure (for this example), for the **Enter channel number** field value.

IBM recommends you specify each channel sequentially.

3. From the **ConfigureFax Input** panel, you can specify the values for the following fields:

Incoming Fax Line Phone Number

Specify a five-to-twelve digit number for this option (the **phone_number_1** = parameter in the **procfax.cfg** file).

The number of digits depends upon whether the number is a local extension (five digit) or to a long-distance fax machine (at least ten digit). In our example, we specify the twelve-digit extension:

```
phone_number_1 = 13039999999.
```

Logical Destination

Specify a logical destination (printer) for (the **logical_destination_1** = parameter in the **procfax.cfg** file).

In our example, we select a printer that resides on an Infoprint AIX server named **serv1**: `logical_destination_1 = ip201ab-serv1`.

Note that these logical destinations must already exist on the Infoprint AIX server and be configured to send jobs to a PSF or a sapconnect actual destination.

Fax SAP Connection

Specify either Yes or No to use this channel for faxes (jobs) to be delivered through the SAPconnect interface to a SAP system.

If you specify Yes, you must also install the SAP Print Feature on your Infoprint AIX server and complete configuration tasks on both that server and on your SAP system, including the creation of a **sapconnect** actual destination. For more information about these tasks, refer to SAP R/3 Support: Configuration and Printing Tasks (**sapr332.pdf**).

4. Once you have finished specifying these values, you can press the **Enter** key and exit SMIT.

Infoprint Manager stores these values in the `/usr/lpp/psf/fax/procfax.cfg` file.

Configuring the channel attribute files for PSF actual destinations

If you are receiving fax jobs and sending them to a **PSF** actual destination instead of a **sapconnect** actual destination (`fax_sapconnect_n = No` in the `procfax.cfg` file), you must perform the following task.

Each fax phone line represents a fax channel, which is controlled by the **Channel00X.att** files. This file serves as the **pdpr** print command and **tiff2afp** data stream transform command configuration file. For each fax channel you must copy a new version of this file, changing the **X** to the appropriate channel number. For example, for your first line (channel 1), the file would be named **Channel001.att**. Edit each copy of the file so the values apply to the appropriate channel number. By configuring a separate attribute file for each channel, you can define sets of attributes for different printers that reside in different departments of your business enterprise.

The most basic example contains only the parameters for the **tiff2afp** transform. To see the meaning of these values, refer to the **tiff2afp** Transform Command in the *Infoprint Manager: Reference*.

```
other-transform-options = "-r600 -alg alg1 -fit scale"
```

You can also use other Infoprint Manager attributes and have them apply to all fax jobs received from this line (channel). Note that a pound sign (#) should precede each comment in the AIX file.

Delivering incoming faxes to a SAP system

If you are using the Fax In support to receive faxes for more than one user on the same SAP System, you should ensure that the faxes for each user's fax line be delivered to the same **sapconnect** actual destination. If you have one logical destination associated with the **sapconnect** actual destination, you can do this by mapping the Incoming Fax Line Phone Numbers to the same logical destination using the SMIT **Configure Fax Input** panel. If you are supporting incoming faxes for users on more than one SAP system, use the same technique to ensure the correct incoming lines are sent to a logical destination which will deliver them to the **SAPconnect** actual destination for the appropriate SAP system.

Note: This same technique can be used to send incoming faxes for more than one fax line to the same PSF printer.

Distributing faxes to multiple printers

You can send the same fax to multiple printers (actual destinations) by repeating the **phone_number_n** and the **logical_destination_n** parameter pair, where *n* is the number of the fax card line. You can specify the same fax number with a different logical destination (printer) value. For example, you could specify the phone number 13039999999 to provide faxes for both the printer defined in step 3 (`logical_destination_1 = sapct-serv1`) and a second printer defined as `logical_destination_1 = np24lab-serv1`.

Country code numbers for faxing

The following list provides the relevant country codes for the **Channel_n_Country=** parameter in the **/etc/lfaxdriver.conf** file. Be sure you set this value correctly for the countries to which you will be sending faxes (fax-out) using the Infoprint fax support. Note that the number in the definition for each country represents the argument for this parameter.

Table 7. Country code fax numbers

Country	Channel _n _Country value
Albania	0
Algeria	1
American Samoa	2
Andorra	3
Argentina	4
Australia	5
Austria	6
Bahrain	7
Bangladesh	8
Belgium	9
Belize	10
Bolivia	11
Botswana	12
Brazil	13
Brunei	14
Bulgaria	15
Cameroon	16
Canada	17
Chile	18
China	19
Colombia	20
Costa Rica	21
Cuba	22
Cyprus	23
Czechoslovakia	24
Denmark	25
Ecuador	26
Egypt	27
El Salvador	28
Ethiopia	29
Europe	30
Fiji	31
Finland	32
France Alternative	33

Table 7. Country code fax numbers (continued)

Country	Channel _n _Country value
France	34
French Antilles	35
French Guadeloupe	36
French Polynesia	37
Gabon	38
Gabon Alternative	39
Germany	40
Gibraltar	41
Greece	42
Guam	43
Guantanamo Bay	44
Guatemala	45
Haiti	46
Honduras	47
Hong Kong	48
Hungary	50
Iceland	51
India	52
Indonesia	53
Iran	54
Iraq	55
Ireland	56
Israel	57
Italy Alternative	58
Italy	59
Ivory Coast	60
Japan (10pps)	61
Japan (20pps)	62
Jordan	63
Kenya	64
Korea	65
Kuwait	66
Lebanon	67
Lesotho	68
Liberia	69
Libya	70
Liechtenstein	71
Luxembourg	72
Malawi	73
Malaysia	74

Table 7. Country code fax numbers (continued)

Country	Channel _n _Country value
Malta	75
Mexico	76
Monaco	77
Morocco	78
North Korea	79
Namibia	80
Netherlands Alternative	81
Netherlands Antilles Aruba	82
Netherlands Antilles	83
Netherlands	84
New Caledonia	85
New Zealand	86
Nicaragua	87
Nigeria	88
Norway Alternative	89
Norway	90
Oman	91
Pakistan	92
Panama	93
Papua New Guinea	94
Paraguay	95
Peru	96
Philippines	97
Poland	98
Portugal	99
Qatar	100
Romania	101
Russia	102
Saipan	103
San Marino	104
Saudi Arabia	105
Senegal	106
Singapore	107
South Africa	108
Spain	109
SriLanka	110
St Pierre and Miquelon	111
Suriname	112
Swaziland	113
Sweden	114

Table 7. Country code fax numbers (continued)

Country	Channel _n _Country value
Switzerland	115
Syria	116
Tanzania	118
Thailand	119
Tunisia	120
Turkey	121
U.S.A.	122
Uganda	123
United Arab Emirates	124
United Kingdom Alternative	125
United Kingdom	126
Uruguay	127
Vatican City	128
Venezuela	129
Vietnam	130
Yemen Arab Republic	131
Yemen	132
Yugoslavia	133
Zambia	134
Zimbabwe	135

Chapter 7. User-exit programs (PSF, Fax, and Email DSS only)

This section describes the sample user-exit programs supplied with Infoprint Manager and how you can create your own user-exit programs.

What type of user exits does Infoprint Manager support?

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

Infoprint Manager allows eight different types of user exits. Infoprint Manager calls the user exits in the following order:

- Header (Start) page user exit
- Separator page user exit
- Input data user exit
- Output data user exit
- Accounting user exit
- Audit user exit
- Trailer (End) page user exit
- Post-print accounting user exit

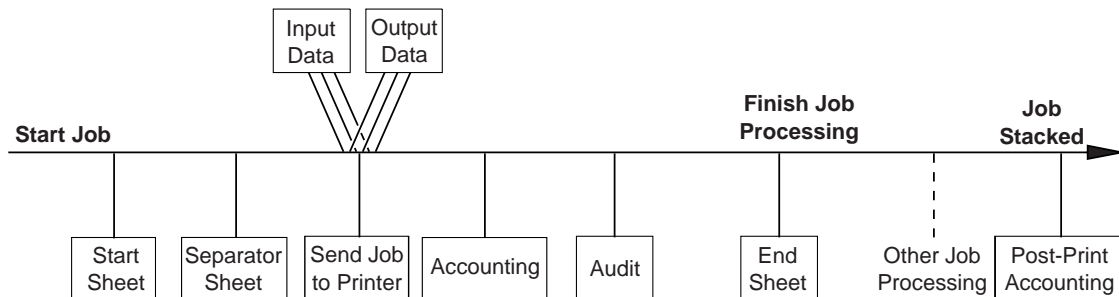


Figure 29. User exits for Infoprint Manager

What sample user-exit programs are available?

Infoprint Manager supplies sample user-exit programs for the header, separator, and trailer pages, for accounting and audit data, and for post-print accounting data. The sample header, separator, and trailer page user-exit programs generate Advanced Function Presentation (AFP) data stream pages. The sample accounting and audit user-exit programs generate ASCII data in a report file format or write to a log file. The sample post-print accounting user-exit program only writes to a log file. 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 `/usr/lpp/psf/exits` directory. Infoprint Manager supplies the following sample programs:

Table 8. 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.
	ainuxaccp.c	Generates accounting sheet log with job ticket information.
Post-print Accounting	ainuxjobcompletion.c	Generates accounting log information on printed ("stacked") sheets.

Table 8. Sample user-exit programs (continued)

Type of user exit	File Name	Description
Audit	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.
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.

See “User-exits programs for line-data transform” on page 116 for sample user-exit programs used with the line-data transform.

Creating and using your own user-exit programs

You can create your own user-exit program at any time; however, you must perform additional tasks to activate your program. You must have the XL C Compiler and the **bos.adt** components of the Base Application Development Toolkit of the AIX operating system installed.

Creating your own user-exit programs

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 an AIX editor.
- Write your own user-exit program. You can include the variable data shown in the following sections, for example, `USERID`; but Infoprint Manager cannot process variable data that is not shown in this chapter.

Compiling and installing the user-exit program

When you finish creating your own user-exit program, you must compile the program code and then install it in the correct directory. You do this by using the AIX **make** command.

When the **make** command executes, it reads the **Makefile** file, supplied with Infoprint Manager, that is located in the same directory as the sample programs. The **Makefile** file contains information about the specified target files and the commands necessary to update the target files.

Before you put your user-exit program into general use at your site, you should test it first to ensure that it runs correctly. Because your user-exit program becomes part of the Infoprint Manager executable code, a defective user-exit program could cause problems with Infoprint Manager.

Compile and install your user-exit program

To compile and install your user-exit program, follow these steps:

Note: You must have **root** authority to use the **make** command in this directory.

1. If you already have an existing executable user-exit program in the **/usr/lpp/psf/bin** directory for the user-exit program you are adding, perform the following steps first; otherwise, go to step 2.
 - a. Disable all the logical destinations associated with the queues that are to receive jobs that will use the new user-exit program.
 - b. Delete the executable user-exit program from the **/usr/lpp/psf/bin** directory.

2. To make the directory in which the user-programs are stored the current directory, enter:

```
cd /usr/lpp/psf/exits
```

3. On the AIX command line, enter:

```
make
```

The **make** command reads the **Makefile** file supplied with Infoprint Manager, compiles and generates the user-exit program.

4. On the AIX command line, enter:

```
make install
```

The **make install** command copies the executable user-exit program from the **/usr/lpp/psf/exits** directory into the **/usr/lpp/psf/bin** directory so that the code executes with Infoprint Manager.

5. Enable all of the logical destinations that you disabled.

Notes:

1. If you do not want to copy the executable user-exit program into the **/usr/lpp/psf/bin** directory, you can copy them into another directory. However, if you do this, you need to add the path to the **PATH** statement in the **/etc/environment** file so that Infoprint Manager can locate the module.
2. You can only specify one user-exit program for each function name provided by Infoprint Manager per queue.
3. Ensure the function name of the user exit is one of the following where the name is in uppercase letters, because that is the entry point in the module:
 - ACCOUNTING
 - AUDIT
 - JOBCOMPLETION
 - HEADER
 - SEPARATOR
 - TRAILER
 - INDATA
 - OUTDATA
4. If you do not want to use the same name for the user-exit program, you must edit the **Makefile** file and change the name of the user-exit program supplied with Infoprint Manager to the new name. For example, if you want to call your new header user-exit program **header**, you must edit the **Makefile** file and change the name of the existing header user-exit program, **ainuxhdr** to **header**. In addition, you must change the source code file name from **ainuxhdr.c** to **header.c**. You may also add new exit targets in the **Makefile** file.

5. You must mark the function as an exported symbol during the link-editing step. Refer to the Infoprint Manager supplied `/usr/lpp/psf/exits/Makefile` for more information.

Activating the user-exit program

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

From an AIX command line, complete the following steps:

1. Enter the following: `pdls -caux -rall servername:`, where *servername* refers to the name of the server you are using.

This command displays the attributes for all current auxiliary sheet objects available on the server. You can also view attributes for a specific auxiliary sheet object. For example, to view attributes for the accounting log, enter the following command: `pdls -caux -rall servername:accounting-log`

2. Use the **pdset** command to change the values of any of the auxiliary sheet objects, as necessary.

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.

Perform the following procedure from the AIX command line.

1. To create a new auxiliary-sheet object, type:

```
pdcreate -c aux-sh -x psf-exit-program-name=/usr/lpp/psf/exit_name
server1:auxiliary_sheet_name
```

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

```
pdshutdown -cp prt1
```

3. Associate this new auxiliary-sheet object (in this case, an audit exit) with the actual destination.

```
pdset -cp -x dest -x audit-exit=auxiliary_sheet_name prt1
```

Note: For the post-print accounting exit, instead of this step you will set the attribute in the accounting auxiliary sheet object for the actual destination, using this command: `pdset -c auxiliary-sheet -x psf-post-print-accounting-program-name=/usr/lpp/psf/exit_name servername: accounting-log`

By default, the accounting-log auxiliary sheet object is available for all destinations. This object can point to any combination of the accounting and post-print accounting exits. For example, you can set either one, both, or neither of the following attributes at the same time:

```
psf-exit-program-name=name of accounting exit
psf-post-print-accounting-program-name=name of post-print accounting exit
```

If you want some printers to have different accounting configurations than others, you must create a new auxiliary sheet object for each configuration.

4. Enable the actual destination (in this case, prt1).

```
pdenable prt1
```

See Chapter 8, “Creating and managing auxiliary sheets and user-exit programs”, on page 125 for the procedures to activate the various user-exit programs.

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

Because the Infoprint Manager start page and trailer page user-exit programs require the same inputs and produce the same outputs, the program descriptions are similar.

The source code (in the C programming language) for the sample header page user-exit programs and trailer page user-exit programs listed on page 99 are located in the `/usr/lpp/psf/exits` directory. These sample programs generate an AFP data stream page.

The data structures for the header and trailer page user-exit programs are included with the source code in the `/usr/lpp/psf/exits/ainuexit.h` file. The code for these structures is shown in “User-exit program structures” on page 116.

The declaration of these exits is:

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

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

The **HEADER_EXITDATA** and the **TRAILER_EXITDATA** structures include these fields.

The following fields provide input information:

UserID

Identifies the AIX user ID of the person who submitted the job. If you log in as yourself and then switch to **root**, the AIX user ID is **root**.

NodeID

Identifies the name of the AIX 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 Manager job attribute **job-name=name** when they submit a job.

If the job name is not specified for files defined as OTF, PCL, PostScript, ditroff, line data, unformatted ASCII, double-byte character set (DBCS) ASCII, EUC, PDF, JPEG, GIF, or TIFF files when the job is submitted, Infoprint Manager creates a temporary file for the transform output. Infoprint Manager uses the temporary file name for the job name.

SpoolID

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

Printer Name

Identifies the name of the Infoprint Manager destination.

hab This function is not used in AIX.

Date Identifies the date printed.

Time Identifies the time printed.

Distribution

Identifies 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 Job and Document Defaults notebook
- Fields in the Infoprint SMIT administrator's interface Submit an InfoPrint Job panel

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 or less characters.

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 or less characters.

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 or less characters.

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 or less characters.

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 or less characters.

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.

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 or less characters.

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 or less characters.

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 or less characters.

Passthru Identifies any other information provided when the job is submitted that will be passed through the user exit to the backend program.

The following **Passthru** flags are supported:

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** field 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 or less characters.

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 or less characters.

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 or less characters.

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 or less characters.

The following fields provide output information:

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 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. Valid return codes are:

- 0 Good completion, all done, accept resultant page.
- 1 Bad completion, non-fatal error, no page generated.
- 5 Bad completion, fatal error. The exit is disabled until you shut down the actual destination.
- 8 Bad completion, terminate the current job.
- 12 Bad completion: terminate the job and put it in pending state. In addition, Infoprint disables the actual destination.

After you create your header or trailer page user-exit program, you must use the AIX **make** command to compile the code (see “Compiling and installing the user-exit program” on page 101).

Separator page user-exit program inputs and outputs

The Infoprint Manager separator page user-exit program is called before copies of a job (including the very first copy) print. This exit is also called before the error messages and the trailer page (Figure 29 on page 99).

The source code (in the C programming language) for the sample separator page user-exit programs listed on page 99 are located in the `/usr/lpp/psf/exits` directory. These sample programs generate an AFP data stream page.

The data structures for the separator page user-exit program are included with the source code in the `/usr/lpp/psf/exits/ainuexit.h` file. The code for these structures is shown in “User-exit program structures” on page 116.

The declaration of this exit is:

```
void SEPARATOR (SEPARATOR_EXITDATA *exitdata)
```

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

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

The following fields provide input information:

UserID

Identifies the AIX user ID of the person who submitted the job. If you log in as yourself and then switch to **root**, the AIX user ID is **root**.

NodeID

Identifies the name of the AIX 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 Manager job attribute **job-name=name** when they submit the job.

If the job name is not specified for files defined as OTF, PCL, PostScript, ditroff, line data, unformatted ASCII, DBCS ASCII, EUC, PDF, JPEG, GIF, or TIFF files when the job is submitted, Infoprint Manager creates a temporary file for the transform output. The temporary file name is used for the job name.

SpoolID

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

Printer Name

Identifies the name of the Infoprint Manager destination.

hab This function is not used in AIX.

Date Identifies the date printed.

Time Identifies the time printed.

Distribution

Identifies the distribution information provided when the job is submitted.

Additional input information fields are used by some of the sample programs; see "Other input values" on page 105.

The following fields provide output information:

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. 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 separator page data produced by the exit.

PageSize

Indicates the size of the separator 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 separator 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** 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. Valid return codes are:

- 0** Good completion, all done, accept resultant page.
- 1** Bad completion, non-fatal error, no page generated.
- 5** Bad completion, fatal error. The exit is disabled until you shut down the actual destination.

- 8 Bad completion, terminate the current job.
- 12 Bad completion: terminate the job and put it in pending state. In addition, Infoprint disables the actual destination.

After you create your separator page user-exit program, you must use the AIX **make** command to compile the code (see “Compiling and installing the user-exit program” on page 101).

Accounting, post-print accounting, and audit user-exit program inputs and outputs

The Infoprint Manager accounting and audit user-exit programs require the same inputs and produce the same outputs so the program descriptions are the same. The post-print accounting user-exit program requires more inputs and produces more outputs.

The source code (in the C programming language) for the sample user-exit programs listed on page 99 are in the **/usr/lpp/psf/exits** directory. 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.

ainurpt7

Provides post-print accounting data stored in **jobcompletion.log**, sorted by actual destination.

ainurpt8

Provides summary post-print accounting data stored in **jobcompletion.log**, sorted by job submitter.

ainurpt9

Provides detailed entries of times and pages printed for a specific job submitter in **jobcompletion.log**.

The source code for these reporting utilities is also located in the **/usr/lpp/psf/exits** directory.

These executable reporting utilities are located in the `/usr/lpp/psf/bin` directory. By specifying these executable reporting utilities at the AIX 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 these exits to generate the log files used by these report programs. For more information on activating these exits, see “Activating the user-exit program” on page 103.

The data structures for the accounting, audit, and post-print accounting user-exit programs are included with the source code in the `/usr/lpp/psf/exits/ainuexit.h` and `/usr/lpp/psf/exits/ainurpt.h` files. The code for these structures is shown in “User-exit program structures” on page 116.

The declarations of these exits are:

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

The `ACCOUNTING_EXITDATA`, `AUDIT_EXITDATA`, and `JOBCOMPLETION_EXITDATA` input/output parameters contain all the input and output data needed to communicate between Infoprint Manager and the user-exit programs.

The `ACCOUNTING_EXITDATA`, `AUDIT_EXITDATA`, and `JOBCOMPLETION_EXITDATA` structures include the following fields.

The following fields provide input information for accounting, audit, and post-print accounting user-exit programs.

UserID

Identifies the AIX user ID of the person who submitted the job. If you log in as yourself and then switch to **root**, the AIX user ID is **root**.

NodeID

Identifies the name of the AIX 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 Manager job attribute **job-name=name** when they submit the job.

If the job name is not specified for files defined as OTF, PCL, PostScript, ditroff, line-data, unformatted ASCII, DBCS ASCII, EUC, DPF, GIF, JPEG, or TIFF files when the job is submitted, Infoprint Manager creates a temporary file for the transform output. The temporary file name is used for the job name.

SpoolID

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

Printer Name

Identifies the name of the Infoprint Manager destination.

hab This function is not used in AIX.

Pages Processed (accounting and audit user-exit only)

Shows the total number of impressions processed for this job.

Bin One Sheets Processed (accounting and audit user-exit only)

Shows the total number of processed sheets that were selected from the primary bin.

Bin Two Sheets Processed (accounting and audit user-exit only)

Shows the total number of processed sheets that were selected from bins other than the primary bin.

User Pages Stacked by Bin (post-print accounting user-exit only)

Shows the total number of stacked pages in the user print file. It does not include system pages, such as the header page, in the count.

User Sheets Stacked by Bin (post-print accounting user-exit only)

Shows the total number of stacked sheets in the user print file. It does not include system pages, such as the header page, in the count.

Pages Stacked by Bin (post-print accounting user-exit only)

Shows the total number of pages stacked for this job by bin.

Sheets Stacked by Bin (post-print accounting user-exit only)

Shows the total number of sheets stacked for this job by bin.

Data Object Resources

Shows the total number of Data Object Resources, which can consist of PDF pages, IOCA images, and Encapsulated PostScript (EPS) files, used in this job. Data Object Resources are also known as presentation-object containers (for more information, see the **presentation-object-container** attributes in the *Infoprint Manager: Reference*).

Note: 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.

Job Copies Requested (post-print accounting user-exit only)

Shows the total number of **results-profile** job copies requested in the job.

Number of Fonts used

Shows the total number of fonts used in this job.

Note: 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.

Note: 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 are not included in the resource totals.

Number of Segments used

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

Note: 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 are not included in the resource totals.

ExtStart Date

Identifies the date the job started processing.

Start Date

The date the job started processing.

Start Time

The time the job started processing.

ExtStop Date

The date the job finished processing.

Stop Date

The date the job finished processing.

Stop Time

The time the job finished processing.

Completion Date (post-print accounting user-exit only)

The date all pages in the job printed and stacked.

Note: If errors or operator commands affect the job so that all pages are not sent to the printer, this field indicates the time when all pages sent are printed and stacked.

Completion Time (post-print accounting user-exit only)

The time all pages in the job printed and stacked.

Note: If errors or operator commands affect the job so that all pages are not sent to the printer, this field indicates the time when all pages sent are printed and stacked.

Additional input information fields are used by some of the sample programs; see "Other input values" on page 105

The following fields 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** 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. Valid return codes are:

- 0** Good completion, all done, accept resultant page.
- 1** Bad completion, non-fatal error, no page generated.
- 5** Bad completion, fatal error. The exit is disabled until you shut down the actual destination.
- 8** Bad completion, terminate the current job.
- 12** Bad completion: terminate the job and put it in pending state. In addition, Infoprint disables the actual destination.

After you create your accounting or audit user-exit program, you must use the AIX **make** command to compile the code. See “Compiling and installing the user-exit program” on page 101.

Input data user-exit program inputs and outputs

The Infoprint Manager input data user-exit program is used to monitor the incoming print data stream to Infoprint Manager. This exit is called at the beginning of the job after the header (start) page (Figure 29 on page 99).

The source code (in the C programming language) for the sample input data user-exit program listed on page 99 is in the `/usr/lpp/psf/exits/ainuxind.c` file. This sample program consists of a return code and performs no function.

The data structures for the input data user-exit program are included with the source code in the `/usr/lpp/psf/exits/ainuexit.h` file. The code for these structures is shown in “User-exit program structures” on page 116.

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 Manager and the user-exit program.

The `INDATA_EXITDATA` structure includes the following fields.

The following fields provide input information:

UserID

Identifies the AIX user ID of the person who submitted the job. If you log in as yourself and then switch to **root**, the AIX user ID is **root**.

NodeID

Identifies the name of the AIX 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 Manager job attribute **job-name=name** when they submit the job.

If the job name is not specified for files defined as OTF, PCL, PostScript, ditroff, line-data, unformatted ASCII, DBCS ASCII, EUC, DPF, JPEG, GIF, or TIFF files when the job is submitted, Infoprint Manager creates a temporary file for the transform output. The temporary file name is used for the job name.

SpoolID

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

Printer Name

Identifies the name of the Infoprint Manager actual destination.

hab This function is not used in AIX.

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** 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. Valid return codes are:

- 0** Good completion, all done, accept resultant page.
- 1** Bad completion, non-fatal error, no page generated.
- 5** Bad completion, fatal error.
- 8** Bad completion, terminate the current job.
- 12** Bad completion: terminate the job and put it in pending state. In addition, Infoprint disables the actual destination.

After you create your input data user-exit program, you must use the AIX **make** command to compile the code (see “Compiling and installing the user-exit program” on page 101).

Note: The input information fields used by some of the sample programs (see “Other input values” on page 105) are available through the alternate sample user exits. Infoprint Manager does not provide an alternate Input Data User Exit.

Output data user-exit program inputs and outputs

The Infoprint Manager output data user-exit program is used to monitor the outgoing print data stream from Infoprint Manager. 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 output data user-exit program listed on page 99 is in the `/usr/lpp/psf/exits/ainuxout.c` file. This sample program consists of a return and performs no function.

The data structures for the output data user-exit program are included with the source code in the `/usr/lpp/psf/exits/ainuexit.h` file. The code for these structures is shown in “User-exit program structures” on page 116.

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 Manager and the user-exit program.

The `OUTDATA_EXITDATA` structure includes the following fields.

The following fields provide input information:

UserID

Identifies the AIX user ID of the person who submitted the job. If you log in as yourself and then switch to **root**, the AIX user ID is **root**.

NodeID

Identifies the name of the AIX 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 Manager job attribute **job-name=name** when they submit the job.

If the job name is not specified for files defined as OTF, PCL, PostScript, ditroff, line-data, unformatted ASCII, DBCS ASCII, EUC. DPF, JPEF, GIF, or TIFF files when the job is submitted, Infoprint Manager creates a temporary file for the transform output. The temporary file name is used for the job name.

SpoolID

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

Printer Name

Identifies the name of Infoprint Manager destination.

hab This function is not used in AIX.

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 outgoing print data stream.

Job Completion

Indicates the status returned by the exit. This field is initially set to 0 before the exit is called. Valid return codes are:

- 0** Good completion, all done, accept resultant page.
- 1** Bad completion, non-fatal error, no page generated.
- 5** Bad completion, fatal error. The exit is disabled until you shut down the actual destination.

- 8 Bad completion, terminate the current job.
- 12 Bad completion: terminate the job and put it in pending state. In addition, Infoprint disables the actual destination.

After you create your output data user-exit program, you must use the AIX **make** command to compile the code (see “Compiling and installing the user-exit program” on page 101).

Note: The output information fields used by some of the sample programs (see “Other input values” on page 105) are available through the alternate sample user exits. Infoprint Manager does not provide an alternate Output Data User Exit.

User-exit program structures

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

- The `/usr/lpp/psf/exits/ainuexit.h` file
- The `/usr/lpp/psf/exits/ainurpt.h` file

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

- Accounting Log
 - **ainurpt1**
 - **ainurpt2**
 - **ainurpt3**
- Audit Log
 - **ainurpt4**
 - **ainurpt5**
 - **ainurpt6**
- Post-print Accounting Log
 - **ainurpt7**
 - **ainurpt8**
 - **ainurpt9**

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 Manager user-exit programs, which are imbedded as part of the user-exit program.

User-exits programs for line-data transform

Infoprint Manager 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 Manager provides the following sample programs:

```
/usr/lpp/psf/acif/apkinp.c  
Input-record user exit  
/usr/lpp/psf/acif/apkout.c  
Output-record user exit  
/usr/lpp/psf/acif/apkres.c  
Resource exit
```

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

/usr/lpp/psf/acif/apka2e.c

Converts ASCII stream data to EBCDIC stream data.

/usr/lpp/psf/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.

/usr/lpp/psf/acif/asciinpe.c

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

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

For more information about compiling user-exit programs, refer to “Compiling and installing the user-exit program” on page 101.

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.

Figure 30 contains a sample C language header that describes the control block that is passed to the exit program.

```
typedef struct _INPEXIT_PARMS /* Parameters for the input record exit      */
{
    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          request;       /* Add, delete, or process the record      */
    char          eof;          /* EOF indicator                            */
} INPEXIT_PARMS;
```

Figure 30. Sample input record exit C language header

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. See “Attributes of the line-data input file” on page 123 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.

Using the line-data transform user input record exits

apka2e

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.

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=/usr/lpp/psf/bin/apka2e
cc=yes
cctype=z
```

asciinp

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=/usr/lpp/psf/bin/asciinp
cc=yes
cctype=z
```

asciinpe

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

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')

For more information on using and modifying these programs, refer to the prologue of the **asciinp.c** source file that is provided with Infoprint Manager in the `/usr/lpp/psf/acif` directory.

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.

Figure 31 contains a sample C language header that describes the control block passed to the exit program.

```
typedef struct _OUTEXIT_PARMS /* Parameters for the output record exit */
{
    char          *work;      /* Address of 16-byte static work area */
    PFATTR        *pfattr;    /* Address of print file attribute information */
    char          *record;    /* Address of the record to be written */
    unsigned short recordln;  /* Length of the output record */
    char          request;    /* Delete or process the record */
    char          eof;        /* Last call indicator */
} OUTEXIT_PARMS;
```

Figure 31. Sample output record exit C language header

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. See “Attributes of the line-data input file” on page 123 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 ignore 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 Manager 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).

Figure 32 contains a sample C language header that describes the control block that is passed to the exit program.

```
typedef struct _RESEXIT_PARMS /* Parameters for the resource record exit */
{
    char          *work;          /* Address of 16-byte static work area */
    PFATTR        *pfatrr;       /* Address of print file attribute information */
    char          resname[8];     /* Name of requested resource */
    char          restype;        /* Type of resource */
    char          request;        /* Ignore or process the resource */
    char          eof;           /* Last call indicator */
} RESEXIT_PARMS;
```

Figure 32. Sample resource exit C language header

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. See “Attributes of the line-data input file” on page 123 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.

Figure 33 shows the format of this data structure.

```
typedef struct _PFATTR      /* 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;
```

Figure 33. Sample print file attributes C language header

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 is 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.

Chapter 8. Creating and managing auxiliary sheets and user-exit programs

Besides logical destinations, queues, and actual destinations, the Infoprint server also controls auxiliary-sheet objects. This section contains information and procedures for creating and configuring these objects.

Preparing to work with auxiliary sheets

The following topics describe auxiliary-sheet terms, default auxiliary sheets, and user-exit programs supplied by Infoprint and provide examples of printed auxiliary sheets.

Terms relating to auxiliary sheets

To understand auxiliary sheets and how Infoprint 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 documents within a job, or follow the job. PSF, AIX, and 3170 physical printers print auxiliary sheets.

Auxiliary-sheet object

Represents a set of user-exit programs that you can specify for Infoprint PSF, fax, and email actual destinations. 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 and the auxiliary-sheet objects must reside in the same Infoprint server.

Note: AIX and 3170 physical printers print auxiliary sheets, but they do not support auxiliary-sheet objects. Fax and email destinations support the input-data and output-data auxiliary-sheet objects, but they do not transmit auxiliary sheets.

Two auxiliary-sheet styles supplied with Infoprint generate a file that you can use with an executable reporting utility to view job statistics. See Chapter 9, “Gathering accounting and auditing data about print jobs”, on page 137 for more information on viewing statistics.

Auxiliary-sheet object name

Identifies the auxiliary sheet. 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 Infoprint processing that allows you to run a user-exit program and return control of processing to Infoprint after the user-exit program ends. Infoprint provides data at each exit point that can serve as input to the user-exit program. Infoprint can use the output from the user-exit program for Infoprint processing; for example, a user-exit program can pass instructions about how to format a start sheet to Infoprint. Infoprint provides user exits for the following Infoprint auxiliary-sheet objects:

- Start sheet
- End sheet

- Separator sheet
- Accounting log
- Accounting sheet
- Audit log
- Audit sheet
- Input data stream
- Output data stream
- Post-print accounting (log file only)

Note: Fax and email destinations support only the log, input data stream, and output data stream user exits.

See “Sequence of user-exit programs” on page 131 for more information about user exits and user-exit programs.

User-exit program

Defines the data that prints and creates the format of the auxiliary sheet style. Infoprint extends its function by providing user-exit programs that you can use to format start, end, or separator sheets for the job, track accounting and audit information, or extract information about the incoming and outgoing job data streams.

Form definition

Defines the characteristics of the form or printed media, which includes: overlays used, the paper source (for cut-sheet printers), duplex printing, text suppression, fonts, and the position of composed-text data on the form.

See *Infoprint Manager: Reference* for more information about form and page definitions.

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 9.

Table 9. Default auxiliary sheet objects

Auxiliary sheet object	Form definition	Description	User exit program	Additional Information
none	n/a	Infoprint generates no auxiliary sheet.	n/a	n/a
brief	F1A10110	Start sheet	ainuxhdr	
		Separator sheet	ainuxsep	
		End sheet	ainuxtr	
		Accounting exit	ainuxacc	
		Audit exit	ainuxaud	

Table 9. Default auxiliary sheet objects (continued)

Auxiliary sheet object	Form definition	Description	User exit program	Additional Information
full	F1A10110	Start sheet	ainuxhdr2	
		Separator sheet	ainuxsep2	
		End sheet	ainuxtr2	
		Accounting exit	ainuxacc2	
		Audit exit	ainuxaud2	
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 <code>/var/psf/ accounting.log</code> file. Does not produce a printed sheet.
		Audit exit	ainaudlog	Writes audit information to the <code>/var/psf/ audit.log</code> file. Does not produce a printed sheet.
		Post-print accounting exit	ainuxjob completion	Writes post-print accounting information to the <code>/var/psf/ jobcompletion.log</code> file if the auxiliary sheet object's <code>psf-post-print-accounting-program-name</code> is set to <code>ainuxjobcompletion</code> . Does not produce a printed sheet.
job-ticket	n/a	Start sheet	ainuxhdrp	
		Separator sheet	ainuxsepp	
		End sheet	ainuxtrp	
		Accounting exit	ainuxaccp	Writes accounting information to the <code>/var/psf/ podaccount.log</code> . Does not produce a printed sheet.
		Audit exit	ainuxaudp	

You can create your own auxiliary-sheet styles using the Infoprint **pdcreate** command on the AIX command line. See “Creating new auxiliary-sheet objects using the pdcreate command” on page 133 for the procedure.

Examples of Brief-Style and Full-Style Auxiliary Sheets

These examples of auxiliary-sheet printouts were produced using the Infoprint brief and full default auxiliary-sheet objects.

Start Sheet Examples

In Figure 34, the user-exit program **ainuxhdr** generated the brief style of the start sheet and user-exit program **ainuxhdr2** generated the full style of the start sheet.



Figure 34. Brief and Full Styles of Start Sheets

Separator Sheet Examples

In Figure 35, the user-exit program **ainuxsep** generated the brief style of the separator sheet and user-exit program **ainuxsep2** generated the full style of the separator sheet.

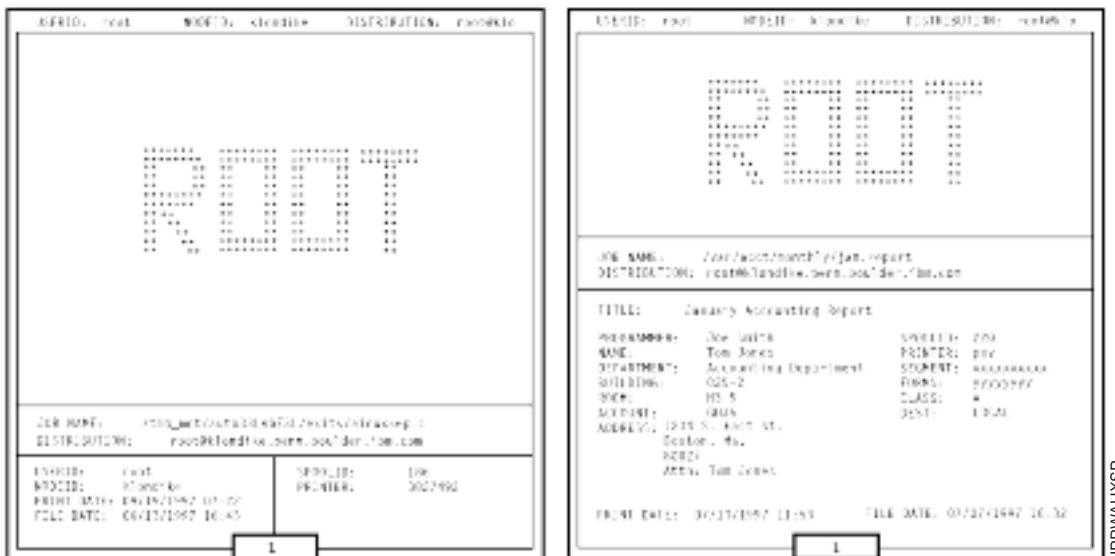


Figure 35. Brief and Full Styles of Separator Sheets

End Sheet Examples

In Figure 36, the user-exit program **ainuxltr** generated the brief style of the end sheet and user-exit program **ainuxltr2** generated the full style of the end sheet.

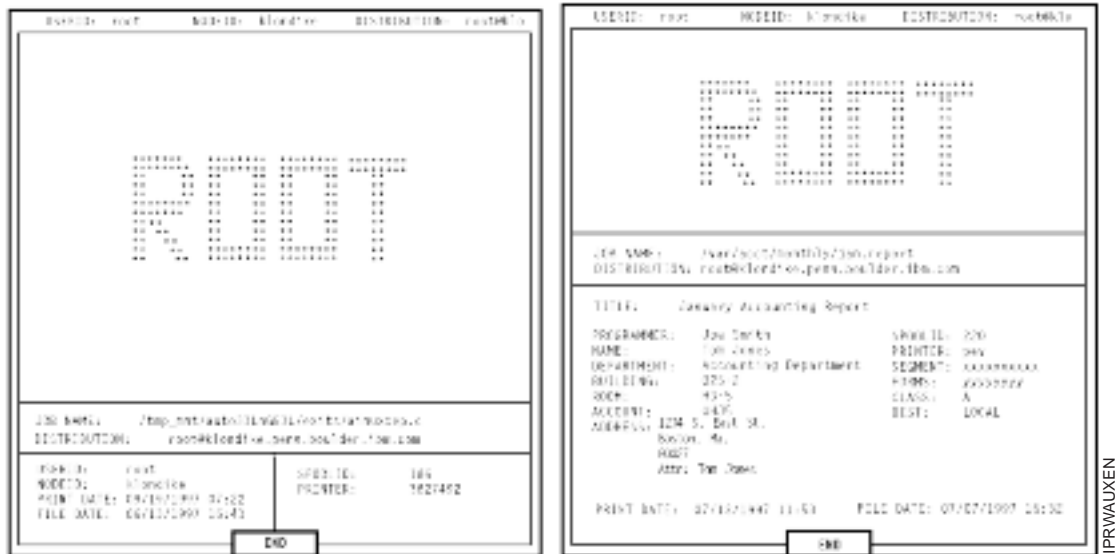
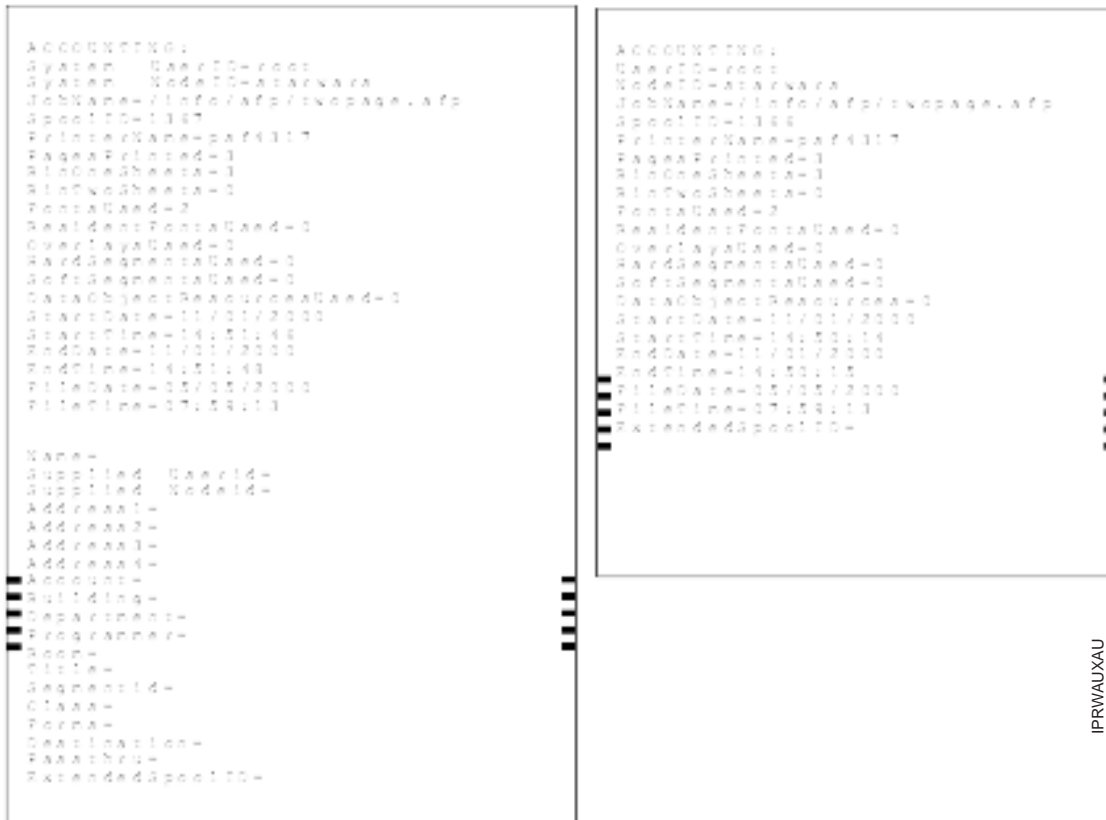


Figure 36. Brief and Full Styles of End Sheets

Accounting Sheet Examples

In Figure 37 on page 130, the user-exit program **ainuxacc** generated the brief style of the accounting-log sheet and user-exit program **ainuxacc2** generated the full style of the accounting-log sheet.



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Figure 37. Brief and Full Styles of Accounting-Log Sheets

Audit Sheet Examples

In Figure 38 on page 131, the user-exit program **ainuxaud** generated the brief style of the audit sheet and the user-exit program **ainuxaud2** generated the full style of the audit sheet.

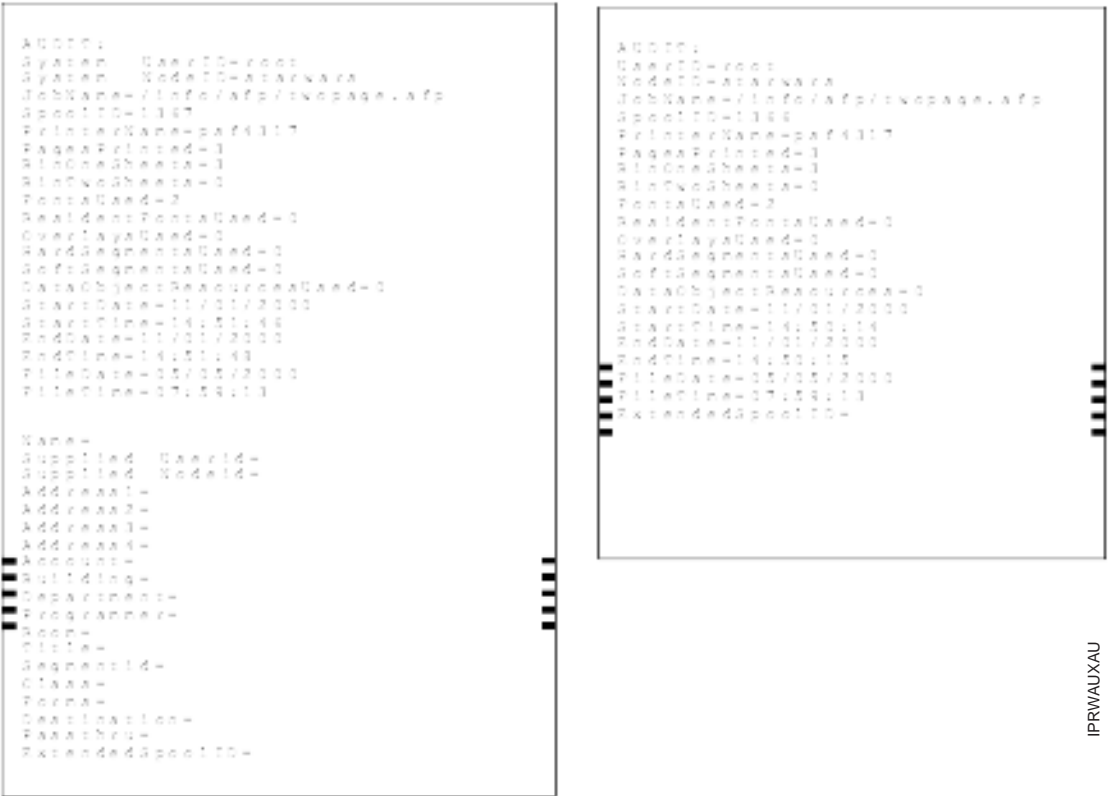


Figure 38. Brief and Full Styles of Audit Sheets

Sequence of user-exit programs

Figure 39 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.

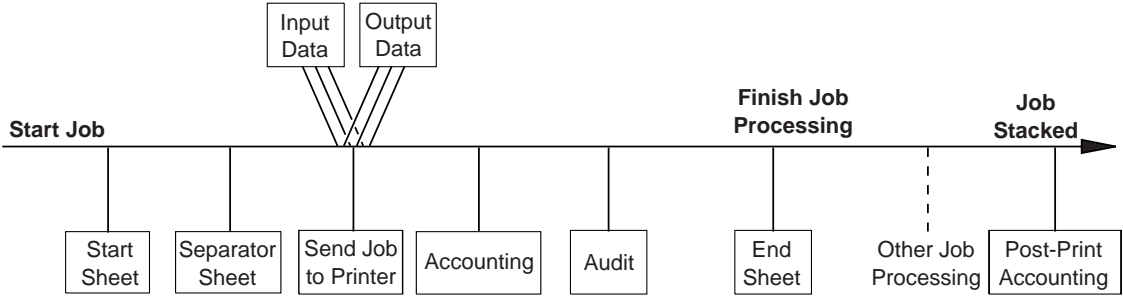


Figure 39. User exits for Infoprint

Directory locations of user-exit programs supplied with Infoprint

When you create the auxiliary-sheet object, you specify the name of the user-exit program and other options, such as the form definition, if 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 loads the user-exit programs that are called out into memory and runs the programs when you submit a job to that printer.

Table 10 shows the sample executable user-exit programs that Infoprint supplies.

Table 10. User-exit programs

<i>Program</i>	<i>Description</i>
Start Sheets	
<code>/usr/lpp/psf/bin/pduxblkh</code>	Prints a blank start sheet.
<code>/usr/lpp/psf/bin/ainuxhdr</code>	Prints a brief-style start sheet.
<code>/usr/lpp/psf/bin/ainuxhdr2</code>	Prints a full-style start sheet.
<code>/usr/lpp/psf/bin/ainuxhdrp</code>	Prints job ticket information on the start sheet.
<code>/usr/lpp/psf/bin/ainuxhdrx</code>	Prints a start sheet without vertical lines for IBM 64xx printers.
Separator Sheets	
<code>/usr/lpp/psf/bin/pduxblks</code>	Prints a blank separator sheet.
<code>/usr/lpp/psf/bin/ainuxsep</code>	Prints a brief-style separator sheet.
<code>/usr/lpp/psf/bin/ainuxsep2</code>	Prints a full-style separator sheet.
<code>/usr/lpp/psf/bin/ainuxsepp</code>	Prints job ticket information on the separator sheet.
<code>/usr/lpp/psf/bin/ainuxsepx</code>	Prints a separator sheet without vertical lines for IBM 64xx printers.
End Sheets	
<code>/usr/lpp/psf/bin/pduxblkt</code>	Prints a blank end sheet.
<code>/usr/lpp/psf/bin/ainuxtlr</code>	Prints a brief-style end sheet.
<code>/usr/lpp/psf/bin/ainuxtlr2</code>	Prints a full-style end sheet.
<code>/usr/lpp/psf/bin/ainuxtlrp</code>	Prints job ticket information on the end sheet.
<code>/usr/lpp/psf/bin/ainuxtlrx</code>	Prints an end sheet without vertical lines for IBM 64xx printers.
Accounting	
<code>/usr/lpp/psf/bin/ainuxacc</code>	Prints a brief-style accounting sheet.
<code>/usr/lpp/psf/bin/ainuxacc2</code>	Prints a full-style accounting sheet.
<code>/usr/lpp/psf/bin/ainuxaccp</code>	Writes accounting information to <code>/var/psf/podaccount.log</code> .
<code>/usr/lpp/psf/bin/ainuacclog</code>	Writes accounting information to <code>/var/psf/accounting.log</code> .
Post-print Accounting	
<code>/usr/lpp/psf/bin/ainuxjobcompletion</code>	Writes accounting information to <code>/var/psf/jobcompletion.log</code> .
Audit	
<code>/usr/lpp/psf/bin/ainuxaud</code>	Prints a brief-style audit sheet.
<code>/usr/lpp/psf/bin/ainuxaud2</code>	Prints a full-style audit sheet.
<code>/usr/lpp/psf/bin/ainuxaudp</code>	Prints job ticket information on the audit sheet.

Table 10. User-exit programs (continued)

Program	Description
/usr/lpp/psf/bin/ainaudlog	Writes accounting information to /var/psf/audit.log.
Input Data	
/usr/lpp/psf/bin/ainuxind	Performs no tasks; use it as a model for writing your own user exit program.
Output Data	
/usr/lpp/psf/bin/ainuxout	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 provides the source code in the `usr/lpp/psf/exits` directory.

Creating and configuring auxiliary-sheet objects (PSF, Fax, and Email DSS only)

When you first create a server, Infoprint creates the default auxiliary-sheet objects described in “Infoprint default auxiliary-sheet objects” on page 126. The following topics describe how you can create and configure auxiliary-sheet objects.

Creating new auxiliary-sheet objects using the `pdcreate` command

Create auxiliary-sheet objects from the AIX command line; you cannot create them through the Infoprint Manager Administration GUI. Use `-c auxiliary-sheet` with the `pdcreate` command 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. Two servers can each contain an auxiliary-sheet object 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
```

Refer to “Attributes for Auxiliary Sheet Objects” in Chapter 7 of *Infoprint Manager: Reference* for more information.

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*.

Associating auxiliary sheets for accounting or audit information

You can use the **Infoprint Manager Administration GUI** to specify auxiliary sheet objects to collect accounting and audit information about jobs processed (as opposed to printed) by a 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*.

To activate the accounting user-exit program, specify one of the accounting user-exit program names as the value for the `psf-exit-program-name` (for example, `psf-exit-program-name=ainacclog`) in the auxiliary sheet object associated with the destination. To activate the audit user-exit program, specify one of the audit user-exit program names as the value for the `psf-exit-program-name` (for example, `psf-exit-program-name=ainaudlog`) in the auxiliary sheet object associated with the destination.

Each PSF actual destination can have one, both, or neither of the two accounting methods (accounting and post-print accounting) active. If the accounting setup is intended to be the same for all PSF printers, this can all be done with one auxiliary sheet object, which can either be one you have created or the default `accounting-log` auxiliary sheet object supplied by IBM.

Associating the post-print accounting user-exit program with an actual destination

You can use the **Infoprint Manager Administration GUI** to specify auxiliary sheets to collect post-print accounting information about jobs processed (as opposed to printed) by a 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*. Then set the attribute of the auxiliary sheet object using the command shown in “Activating the user-exit program” on page 103.

To activate the post-print accounting exit program, specify `psf-post-print-accounting-program-name=ainuxjobcompletion` in the auxiliary sheet object associated with the destination.

Each PSF printer actual destination can have one, both, or neither of the two accounting methods (accounting and post-print accounting) active. If the accounting setup is intended to be the same for all PSF printers, this can all be done with one auxiliary sheet object, which can either be one you have created or the default `accounting-log` auxiliary sheet object supplied by IBM.

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*.

Modifying start sheets for 3170 physical printers

Although 3170 physical printers do not support auxiliary-sheet objects, they do print start sheets when the value of the **printer-start-sheet** actual destination attribute is **full**.

The shell script that generates these start sheets is called `/usr/lpp/pd/bin/ic70hdr.ksh`. It reads from the `/usr/lpp/pd/bin/ic70hdr.ps` file. You can modify either of these programs to produce a customized start sheet. The output must be a valid PostScript file.

Chapter 9. Gathering accounting and auditing data about print jobs

Infoprint allows you to gather accounting information about print jobs from two sources:

- The Infoprint Manager AIX server that applies to all device support systems (DSS). For more information, see “Working with Infoprint AIX server accounting information”.

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 PSF, FAX, and Email DSSs). For more information, see “Working with PSF accounting, post-print accounting, and auditing user-exit programs” on page 142.

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 AIX server accounting information

While all DSSs can store information about jobs processed, some DSSs are more accurate than 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 from the command-line or through the **pdaccount** command. The **pdaccount** command allows you to create views of 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 for a specified time period, instead of the summary data.

How does the pdaccount command collect Infoprint AIX server accounting information?

To activate Infoprint AIX server 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 set the **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. Otherwise, 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. Otherwise, the value of the **log-accounting-data** attribute for the server is used.

You may change the **log-accounting-data** attribute with a **pdset** command or the Infoprint Manager Administration GUI. For more information on the Infoprint Manager Administration GUI, see *Infoprint Manager for AIX: Getting Started*.

The **pdaccount** command obtains the following accounting information from one or more Infoprint Manager AIX 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 group by destinations on an Infoprint Manager server named `Server1` from 8 a.m. on 9/20/99 to 8 a.m. on 9/27/99, specify the following from an AIX command line:

```
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 week.

For more information about using the `pdaccount` command, see *Infoprint Manager: Reference* or the `pdaccount` man page.

The various DSSs for actual destinations report **pages-completed** differently. For example, actual destinations created using the PSF DSS report the number of Intelligent Printer Data Stream (IPDS) pages printed, based upon the number of **begin-page** and **end-page** structured field pairs in the data. As a result, if you print a 2-up document as duplex, you could get a page count of 4 for a single sheet of paper. However, if you created an actual destination through the AIX DSS (which does not support *number-up* printing), it counts each side-sheet printed as a single page. As a result, if you print duplex, you will get a page count of 2 for each sheet printed out.

How do you manage the contents of the Infoprint AIX server accounting logs?

Once you specify `log-accounting-data=true` on either an Infoprint AIX server or an actual destination, these accounting logs start growing without bound. The accounting logs must be managed carefully to avoid potential performance problems. Periodically, the log files must be either purged or moved to a different directory. If you do not perform either of these tasks, your installation will 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.

The accounting logs reside in a subdirectory of the server's directory. The following describes the names and location of the files, as well as their default permissions:

```
$PDBASE/ servername/accounting.logs
```

where *servername* indicates the name of your Infoprint AIX server. 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. Locating them in a separate directory makes them easier for you to manage.

Infoprint restricts direct access to the logs by setting the permissions on the **accounting.log** directory to `rx` (read, write, execute) for **root** and the system group. The logs themselves will be created with root having read and write access and the system group having read access.

To retain a record of Infoprint AIX server accounting data, you need to move the existing log files to a new directory. Use the following procedure:

1. Go to the directory where the log file, for example, `prt1.accounting.log.v1` on `server1`, resides by specifying:

```
cd $PDBASE/server1/accounting.logs
```
2. Move the `prt1.accounting.log.v1` file to a directory named `1qrt2000` by specifying:

```
mv prt1.accounting.log.v1 /1qrt2000
```

This command moves the existing file to the new directory and removes it from the `$PDBASE/server1/accounting.logs` directory. 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 file system 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 `podaccount.log` file without storing the data in another directory,

1. Specify

```
cd $PDBASE/server1/accounting.logs
```

This command moves you into the correct path.

2. Enter

```
rm prt1.accounting.log.v1
```

When the AIX command-line prompt returns, you know that the `prt1.accounting.log.v1` file has been deleted from the system.

3. Enter

```
ls
```

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, 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 original files. 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 when the printer is shutdown because of a printer problem, but puts them back in the queue.

AIX DSS

- If **wait-for-job-completion** is set to **True** and the job completes successfully or is paused or cancelled, then the page count shown in the accounting log is the number of pages stacked at the printer. For example, a three-page document printed simplex records three pages in the accounting log and three pages are stacked; a four-page document printed duplex records four pages in the accounting log even though only two sheets are stacked.
- If **wait-for-job-completion** is set to **False**, the page count is not based on the number of pages stacked on the printer. In this case, Infoprint Manager uses the following methods to calculate a page count:
 1. The printer backend may return a non-zero page count that is based on the number of pages it is sending to the printer. If this number is returned, Infoprint Manager uses it for the page count that is reported in the accounting log.
 2. If the printer backend returns a zero for the page count and if the user has specified a **job-page-count** with the job, Infoprint Manager reports that page count in the accounting log.
 3. If the printer backend returns a zero for the page count and the user has not specified a **job-page-count** and the job is PCL or PostScript, then Infoprint Manager attempts to calculate a page count and records that calculated page count in the accounting log.
- **Limitation:** The octet count reported for cancelled or paused jobs may not be accurate.

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 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).

PSF DSS with Other-Driver attachment type

- If **wait-for-job-completion** is set to **True** 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.
- If **wait-for-job-completion** is set to **False**, 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.

- **Limitations:** The page count and octet count reported in the accounting log for cancelled jobs is not accurate.

PSF DSS Command and Upload attachment types

The page count recorded in the accounting log for destinations using the command or upload attachment types is the number of pages PSF generates and sends to the printer or host system. It is not based on the number of pages received or printed by the printer or host system.

Email DSS

The page count recorded in the accounting log for destinations using the Email DSS reflects the number of pages generated and sent to the email recipient by Infoprint Manager. It is not based on the number of pages received by the email recipient.

FAX DSS

The page count recorded in the accounting log for destinations using the FAX DSS reflects the number of pages generated and sent to the fax recipient by Infoprint Manager. It is not based on the number of pages received or printed by the fax recipient.

Infoprint 2000 DSS

The page count recorded in the accounting log for destinations using the Infoprint 2000 DSS reflects the number of pages generated and sent to the destination by Infoprint Manager. It is not based on the number of pages stacked on the printer.

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.

3170 DSS

The page count recorded in the accounting log for destinations using the 3170 DSS is not based on the number of pages stacked on the printer. Instead, it 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.

Working with PSF accounting, post-print accounting, and auditing user-exit programs

The accounting, post-print accounting, and audit PSF DSS user-exit programs also record data about jobs. For each job printed, Infoprint Manager activates the accounting and audit user-exit programs *before* processing the print job's trailer page. Infoprint Manager activates the post-print accounting user-exit program *when*

the job stacks. More than one Infoprint Manager actual destination can use the same user-exit program to write into the same log file.

What do the PSF DSS accounting and auditing user-exits provide?

The accounting and audit user-exit programs record statistical data on jobs processed by Infoprint actual destinations. Table 11 shows the most common accounting and audit user-exit programs, the files where they record data, and the types of data that they record.

Table 11. PSF DSS accounting and audit user-exit programs

Program	Log File	Records
/usr/lpp/psf/bin/ainuxaccp	/var/psf/podaccount.log	Job submitter, job ID, actual destination, pages per job, pages per actual destination, pages per output bin, data object resources, start date, start time, copies per job
/usr/lpp/psf/bin/ainacclog	/var/psf/accounting.log	Job submitter, job name, actual destination, pages per job, pages per actual destination, jobs per output bin, data object resources, start date, start time, fonts, resident fonts, overlays
/usr/lpp/psf/bin/ainaudlog	/var/psf/audit.log	Job submitter, job name, actual destination, pages per job, pages per actual destination, jobs per output bin, data object resources, start date, start time, fonts, resident fonts, overlays
Note: /usr/lpp/psf/bin/ainacclog and /usr/lpp/psf/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.

What does the post-print accounting user exit provide?

This sample user exit can provide information on the actual number of pages and sheets printed from each input tray individually and as a combined total. This user exit also reports how many pages/sheets for the job were generated by Infoprint Manager and how many were user-generated, and it reports these results by input trays (up to 255). The complete list of information reported is shown in the following table.

Table 12. PSF DSS accounting and audit user-exit programs

Program	Log File	Records
/usr/lpp/psf/bin/ ainuxjobcompletion	/var/psf/ jobcompletion.log	Job submitter, job ID, job name, spool ID, actual destination, global ID, user pages stacked by tray, user sheets stacked by tray, actual pages stacked by tray, actual sheets stacked by tray, copies requested, fonts and resident fonts used, overlays used, hard and soft segments used, processing start and stop date/time, job completion date/time, file date/time, extended user ID, extended job ID, address, account, building, department, programmer, room, title, job ticket name

The **ainuxjobcompletion** exit is called when the printer reports back to Infoprint Manager that all of the pages for a job have printed. This includes a partial job (due to a datastream error or because the job was paused/canceled or forward-spaced) and also any extra pages produced as a result of a backspace or other recovery. For the last job that prints on a continuous forms printer, the exit is not called until an NPRO (non-print run out) is done, either by an operator or automatically by Infoprint Manager.

Only one record is written for a job that prints, unless a job is paused. In this case, a record is written for the part of the job that was printed up to the pause point; later, if the job is resumed another record is written for the rest of the job.

Note: If Infoprint Manager does not receive feedback from the printer that all pages have stacked, such as when the printer is shut down in the middle of a job or when an error such as a server failure occurs, no record is written.

How do you format PSF DSS accounting and audit data for viewing?

To view PSF DSS accounting and audit data, you can use one of the following executable reporting utilities that are provided with Infoprint:

ainupod1	Reports accounting data stored in podaccount.log , sorted by job submitter.
ainupod2	Reports accounting data stored in podaccount.log , sorted by job ID.
ainupod3	Reports times and pages printed by the job submitter from podaccount.log .
ainurpt1	Reports accounting data stored in accounting.log , sorted by actual destination.
ainurpt2	Reports accounting data stored in accounting.log , sorted by job submitter.
ainurpt3	Reports times and pages printed by the job submitter from accounting.log .
ainurpt4	Reports audit data stored in audit.log , sorted by actual destination.
ainurpt5	Reports audit data stored in audit.log , sorted by job submitter.
ainurpt6	Reports times and pages printed by the job submitter from audit.log .
ainurpt7	Reports post-printing accounting data stored in jobcompletion.log , sorted by actual destination.
ainurpt8	Reports summary post-printing accounting data stored in jobcompletion.log , sorted by job submitter.
ainurpt9	Reports detailed entries of times and pages printed for a specific job submitter in jobcompletion.log .

For examples using these utilities, see *Infoprint Manager: Reference* or the man pages for the utilities.

How do you manage the contents of the PSF DSS 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 directory. If you do not perform either of these tasks, your installation will 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.

To retain a record of PSF DSS accounting and audit data, you need to move the existing log files to a new directory. Use the following procedure:

1. Go to the directory where the log file, for example, **podaccount.log**, resides by specifying:

```
cd /var/psf
```
2. Move the **podaccount.log** file to a directory named **1quarter96** by specifying:

```
mv podaccount.log /1quarter96
```

This command moves the existing file to the new directory and removes it from the **/var/psf** directory. The next time a job is submitted for printing from Infoprint Submit, Infoprint will create a new **podaccount.log** file in the **/var/psf** directory and write a single line of data for each job.

IBM recommends you move the data to another file system 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 **podaccount.log** file without storing the data in another directory,

1. Specify

```
cd /var/psf
```

This command moves you into the correct path.

2. Enter

```
rm podaccount.log
```

When the AIX command-line prompt returns, you know that the **podaccount.log** file has been deleted from the system.

3. Enter

```
ls
```

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, Infoprint creates a new **podaccount.log** file and writes the data into that file.

Chapter 10. Creating and managing resource-context objects (PSF, Fax, Email, and Infoprint 2000 DSS only)

Resource-context objects identify the locations of different types of Advanced Function Presentation (AFP) resources that jobs sent to PSF physical printers, fax destinations, and e-mail destinations can reference. Resource-context objects let you encapsulate the directory path name in one place. Then you specify the resource-context object name rather than directory names with documents and actual destinations when specifying where to find resources. Later, if the location of a resource subsequently changes, you only need to modify the path name specified in the corresponding resource-context object.

The different types of AFP resources are:

Data object resources

Data object resources are a type of AFP resource: they can be an EPS, PDF, or IOCA file. In addition, if you use the transforms that come with Infoprint Manager to convert TIF, GIF, and JPEG images into AFP first, those types of files can be used as data object resources as well. In Infoprint Manager, data object resources are grouped with BCOCA and GCOCA objects, and they are collectively known as presentation object containers.

Form definitions

Form definitions provide instructions on how output devices position data on the page. Form definitions can specify overlays, a paper source for cut-sheet printer devices, duplexed printing, text suppression, data position, and the number and modifications of pages.

Page definitions

Page definitions contain the formatting controls for line data. Page definitions can include controls for the number of lines per logical page, font selection, print direction, and the mapping of individual fields to positions on the logical page.

Page segments

Page segments contain text and images that you can include at any addressable point on a page or an electronic overlay.

Overlays

Overlays are collections of predefined data such as lines, shading, text boxes, or logos, that can merge with variable data on a page or a form during printing or transmission.

Fonts A font is a single size and typeface in a particular type family, including letters, numerals, punctuation marks, special characters, and ligatures.

You use the **pdcreate** command to identify the directory or directories where the AFP resources reside and provide a name for the resource-context object. You use the **AFP Resources** tab of the actual destination and default document attributes notebooks in the Infoprint Manager Administration GUI, or the AIX command line, to identify the resource-context object name or which paths you want to associate with that object. Jobs can also reference resource-context objects through their contained documents. See “The search order for AFP resources” on page 148 for the

search order Infoprint uses to locate resource-context objects for a job. Both the actual destination and the resource-context objects that are referenced must reside in the same Infoprint server.

The search order for AFP resources

The following describes the order and the conditions on which Infoprint searches for AFP resources.

1. For fonts, paths specified by the **-osrchfontlib** keyword on the **enq**, **lp**, **qpri**, or **lprafp** command
2. Paths specified by the **-oreslib** keyword on the **enq**, **lp**, **qpri**, or **lprafp** command
3. The path specified by the **resource-context-user** document attribute.
4. The paths specified by one of the following document attributes, depending on the type of resource:
 - **resource-context-font**
 - **resource-context-form-definition**
 - **resource-context-overlay**
 - **resource-context-page-definition**
 - **resource-context-page-segment**

Note: When one of these document attributes contains a value, Infoprint ignores any location specified by the same attribute of a default document object, if one is used with the job.

5. The path specified by the **resource-context** document attribute.
6. The path specified by the **PSFPATH** environment variable.
7. The paths specified by the resource-context attributes of the actual destination. These attributes have the same names as the document attributes identified in step 4.
8. The **/usr/lpp/psf/reslib** directory.
9. For fonts, the **/usr/lpp/afpfonts** directory.
10. For fonts, the **/usr/lpp/psf/fontlib** directory.

Table 13 contains file extensions for specific types of resources and lists the order that the extensions are tried by Infoprint when searching for that resource.

Table 13. File extensions for resources

Type of Resource	File Extensions Searched (see note)
BCOCA (bar code) objects	1. No file extension
Code pages	1. No file extension 2. FONT3820 3. FONT38PP 4. CDP 5. FONT300
Coded fonts	1. No file extension 2. FONT3820 3. FONT38PP 4. CFT 5. FONT300

Table 13. File extensions for resources (continued)

Type of Resource	File Extensions Searched (see note)
Font character sets, 240-pel resolution	<ol style="list-style-type: none"> 1. No file extension 2. 240 3. FONT3820 4. FONT38PP 5. FIL
Font character sets, 300-pel resolution	<ol style="list-style-type: none"> 1. 300 2. FONT300 3. No file extension
Fonts, outline	<ol style="list-style-type: none"> 1. OLN 2. FONTOLN
Form definitions	<ol style="list-style-type: none"> 1. No file extension 2. FDEF3820 3. FDEF38PP 4. FDE 5. FIL
GOCA (graphics) objects	<ol style="list-style-type: none"> 1. No file extension
IOCA (IO image) objects	<ol style="list-style-type: none"> 1. No file extension
MO:DCA Objects	<ol style="list-style-type: none"> 1. No file extension 2. OBJ 3. OBJECT
Overlays	<ol style="list-style-type: none"> 1. No file extension 2. OVL3820 3. OVL38PP 4. OVL 5. OVR
Page definitions	<ol style="list-style-type: none"> 1. No file extension 2. PDEF3820 3. PDEF38PP 4. PDE
Page segments	<ol style="list-style-type: none"> 1. No file extension 2. PSEG3820 3. PSEG38PP 4. PSG 5. PSE
Color mapping table	<ol style="list-style-type: none"> 1. No file extension 2. SETUP 3. SET
Presentation-object-container (data object resources)	<ol style="list-style-type: none"> 1. No file extension 2. DOR
Setup data	<ol style="list-style-type: none"> 1. No file extension 2. SETUP 3. SET 4. COMSETUP
Note: All file extensions must be in upper case.	

When the total of all resource contexts are put together for a particular resource type, this list of extensions is tried in order as Infoprint searches each directory for a particular resource. For example, if Infoprint is searching for a 300-pel raster font named C0H20000 and the following conditions are true:

- Document attributes are set to resource-context-font=/myfonts
- resource-context=/all_resources
- The **\$PSFPATH** environment variable has not been set.
- The **resource-context-font** actual destination attribute has not been set.

a list of files similar to the following would be checked in sequence:

1. /myfonts/C0H20000.300
2. /myfonts/C0H20000.FONT300
3. /myfonts/C0H20000
4. /all_resources/C0H20000.300
5. /all_resources/C0H20000.FONT300
6. /all_resources/C0H20000
7. /usr/lpp/psf/reslib/C0H20000.300
8. /usr/lpp/psf/reslib/C0H20000.FONT300
9. /usr/lpp/psf/reslib/C0H20000
10. /usr/lpp/afpfonts/C0H20000.300
11. /usr/lpp/afpfonts/C0H20000.FONT300
12. /usr/lpp/afpfonts/C0H20000
13. /usr/lpp/psf/fontlib/C0H20000.300
14. /usr/lpp/psf/fontlib/C0H20000.FONT300
15. /usr/lpp/psf/fontlib/C0H20000

Once Infoprint finds a matching file, the search ends.

If Infoprint cannot find the resource in any of the paths, it still processes the job and prints an error message at the end of the job.

Creating a new resource-context object

You create resource-context objects from the AIX command line; 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 resource-context object name to create a new resource-context object. Specify a name that uniquely 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 actual destination attributes notebook. Two servers can each contain a resource-context object with the same name, but possibly with different values for their attributes.

Infoprint uses resource-context object names as values for the lists associated with the fields in the actual destination attributes notebook or as valid values you can enter in the fields of the default document attributes notebook. Job submitters can also use them as values for attributes of a document within a job.

For example, to create a resource-context object named Resfont1 contained in server Server1 that identifies /resource/fonts/group1 as the directory containing AFP font resources, enter the command:

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

Changing a directory path for a resource-context object

If you need to change the path to a resource-context object, you use the **pdset** command.

For example, to change the path for the resource-context object named Resfont1 contained in server Server1 to /resource/fonts/group2 as the directory containing AFP font resources, enter the command:

```
pdset -c resource-context -x "context-address=/resource/fonts/group2"
      Server1:Resfont1
```

To read more about resource-context attributes, enter the following at the AIX command prompt to view the associated man pages:

```
man pd_att_res_context
```

Assigning resource-context objects to an actual destination

If you have the Infoprint Manager Administration GUI, you can use it to assign resource-context objects to a PSF physical printer, fax destination, or e-mail destination. You can also use the AIX command line to do this.

Using the AIX command line

To assign resource-context objects to a PSF physical printer, fax destination, or e-mail destination from the AIX command line, use the **pdset** command and the **resource-context-font**, **resource-context-overlay**, **resource-context-form-definition**, **resource-context-page-definition**, or **resource-context-page-segment** attribute. For example, to associate the font resource context object Resfont1 with the PSF physical printer Serv1-pp residing in server Server1, enter the following command:

```
pdset -c destination -x "resource-context-font=Resfont1"
      Server1:Serv1-pp
```

If you have not created a resource-context object, you can assign the path name of a directory containing resources to the actual destination in the same way. For example, to associate the directories /resource/overlays/julia and /resource/overlays/henry, which contain overlays, with the fax destination Serv1-fax residing in server Server1, enter the following command:

```
pdset -c destination -x
      "resource-context-overlay=/resource/overlays/julia:/resource/overlays/henry"
      Server1:Serv1-fax
```

Infoprint searches the directories specified by the resource-context objects or the directories you specified for resources required by jobs.

Assigning a resource-context object to a default-document object

If you have the Infoprint Manager Administration GUI, you can use it to assign resource-context objects to a default-document object. You can also use the AIX command line to do this.

Using the AIX command line

To assign resource-context objects to a default-document object from the AIX command line, use the **pdset** command and the **resource-context-font**, **resource-context-overlay**, **resource-context-form-definition**, **resource-context-page-definition**, **resource-context-page-segment**, or **resource-context** attribute. For

example, to associate the font resource context object Resfont1 with the default document report residing in server Server1, enter the following command:

```
pdset -c initial-value-document -x "resource-context-font=Resfont1"  
Server1:report
```

If you have not created a resource-context object, you can assign the path name of a directory containing resources to the default document in the same way. For example, you want Infoprint to search for resources of any type that it cannot find in the other resource contexts associated with a default document in the directory /resource/any. To associate this directory with the default document report residing in server Server1, enter the following command:

```
pdset -c initial-value-document -x "resource-context=/resource/any"  
Server1:report
```

You can now assign the default-document object to an actual destination (use the Infoprint Manager Administration GUI) or inform the job submitters of the resource objects assigned to this default-document object.

Chapter 11. Using Infoprint Manager notifications

Infoprint Manager can detect events (such as **job completed** or **destination needs attention**) as they occur, generate messages about those events, and deliver the messages to users who need the information. For example, users can receive messages about jobs they submit, operators can be notified about Infoprint objects that require their attention, and administrators can be notified if someone makes a configuration change. With notifications, you don't have to query for status of the objects in your system—you just receive messages when specific events occur so you can take care of them.

You can tailor who receives these messages and how they are delivered based on the **notification profile** that is set for a particular Infoprint object.

Understanding notification profiles

Most Infoprint objects (the server, actual destinations, logical destinations, queues, jobs, and default jobs) have **notification profiles** associated with them. A notification profile is composed of one or more *notification profile entries*. Each notification profile entry has three main components:

Event Identifiers

Which events cause messages to be sent. See “Event identifiers” on page 154 for more information.

Delivery method

How the messages are delivered. See “Delivery method and delivery address” on page 154 for more information.

Delivery address

Where the messages are sent. See “Delivery method and delivery address” on page 154 for more information.

In addition, a notification profile entry can include a comment (text that Infoprint will add to the general message text) and a locale (to set the language that the message will be sent in). Comments are optional. If you don't specify a locale, Infoprint delivers messages using the locale (language) that the user is running in.

Some objects need only one entry in their notification profiles. For example, when a person submits a job, he is probably the only one who needs to receive information about it, and he will probably be content to have all of the messages about that job delivered the same way.

For other objects, there are very good reasons to have multiple entries. For example:

- If operators manage printers from more than one workstation, you can create an entry for each workstation. That way, all of the messages go to all of the machines.
- If operators can address some messages (like **destination-needs-attention**), but an administrator needs to address others (like **object-deleted**), you can create an entry for each operator and one for the administrator. Messages are delivered to the person who can handle them.

- If an administrator likes to use Infoprint Manager Notifications while he's at work, and wants to keep a more permanent record of how often some events occur, he can set up two entries. One delivers messages to the Infoprint Manager Notifications client and one writes certain messages into a file that he can check periodically.

Event identifiers

The **event identifiers** component lists the Infoprint events that trigger notifications. You can find a full list of Infoprint notification events and their descriptions in Chapter 9 of the *Infoprint Manager: Reference*. In the descriptions, you will see what objects each event supports. If you add an event to an object that it does not support, no messages will ever be generated for that event. For example, you can add the **queue-backlogged** event to a notification profile entry for an actual destination, but **queue-backlogged** only supports the queue, job, and server objects. As a result, the actual destination notification profile will not generate any messages about that event.

That chapter also lists the Infoprint Manager *event classes*, or groups of related notification events. When you add event identifiers to a notification profile, you can add individual events, event classes, or a combination of the two.

Each type of Infoprint object has a default set of event identifiers. Refer to “Default notification profiles” on page 158 for a list of defaults for each object.

Delivery method and delivery address

The **delivery method** component shows how you want notification messages to be delivered. The **delivery method** and **delivery address** components are strongly related; the delivery method you choose determines the type of value you use for the delivery address.

In addition, delivery method and delivery address are the *keyed components* in notification profile entries; they are the two values that Infoprint Manager checks when you modify a notification profile. If the delivery method and delivery address that you specify match the delivery method and delivery address of an existing entry, Infoprint Manager updates that entry. If both values don't match any of the existing entries, Infoprint Manager adds a new entry to the profile.

There are various delivery methods defined for Infoprint objects. All methods are valid for all objects **except** for **job-log**; **job-log** is only valid for jobs. Table 14 on page 155 lists the delivery methods, along with descriptions and how to set the delivery address for each type. ¹

1. Two other delivery methods, **sapcb** and **sapconnect** exist, but they are only used internally in conjunction with the Infoprint Manager SAP Print Feature. You should never use either of those values in a notification profile entry.

Table 14. Infoprint notification delivery method characteristics

Delivery Method	Description	Delivery address
<p>message</p> <p>Message is the default delivery method for all objects.</p>	<p>Sends a message to the Infoprint Manager notification server, where it waits for an Infoprint Manager Notifications client to pick it up. Once a message is picked up, it is deleted from the notification server; there are no further records of those messages.</p>	<p>The delivery address listed in the notification profile can be whatever you want it to be– a user id, office number, IP address, driver’s license number– as long as it is unique. In order to receive messages sent to that address, you must set the delivery address listed in the Settings dialog in the Infoprint Manager Notification client to the same value. The Infoprint Manager Notifications client will only pick up messages that specify an identical delivery address.</p>
<p>electronic-mail (synonyms: e-mail, email)</p>	<p>Sends an E-mail to the address listed in the delivery address, OR, for jobs submitted using Infoprint Select, to the Select message window. Refer to “Infoprint Select and notifications” on page 156 for more information.</p>	<p>The E-mail address that you want notification messages to be sent to. For example, kjones@printerco.com. If you submit jobs using Infoprint Select, this value is set for you.</p>
<p>exit</p>	<p>Doesn’t actually send a message. Instead, when the event specified in the event identifier occurs, Infoprint Manager runs an exit program or script. Refer to “Using the ‘exit’ delivery method” on page 157 for more information.</p>	<p>The full path to the notification exit program or script (with hard-coded arguments, if any).</p>
<p>delivery-method-wireless</p>	<p>Sends notifications to wireless devices, such as pagers, cellular phones, palm pilots, and laptop computers.</p>	<p>Because wireless notifications are delivered as emails, you must set both the smtp-server-host and the smtp-server-port server attributes on this Infoprint server.</p> <p>If your Infoprint server resides behind a firewall, you may have to configure your SMTP server. For information on this task, refer to <i>Configuring and Using Infoprint Email</i> on the web at http://www.printers.ibm.com/R5PSC.NSF/Web/41aixadmin.</p> <p>Note that this URL has been divided so it prints correctly in the text.</p>

Table 14. Infoprint notification delivery method characteristics (continued)

Delivery Method	Description	Delivery address
file	Writes the message in the file you specify in the delivery address. If the file doesn't exist, Infoprint Manager will create it. If the file does exist, Infoprint Manager will overwrite it the first time it writes a message. After that, messages are added to the end of the file.	The directory path and name of the file that you want to write your notification messages in. This file must reside on the same system as your Infoprint Manager server.
file-add-to	Adds the message to the end of the file you specify in the delivery address. If the file doesn't exist, Infoprint Manager will create it.	The directory path and name of the file that you want to write your notification messages in. This file must reside on the same system as your Infoprint Manager server.
job-log Only valid for jobs.	Writes messages into the job-log attribute of the job. To see the messages, issue the pdls command for the job-log attribute on the job you want to know about.	No value needed.
none	Does not send any notifications; turns notification off.	No value needed.

Infoprint Select and notifications

When you submit a print job using Infoprint Select, a default notification profile is sent with the job. That notification profile sets the event-identifiers to a default set of events and the delivery method to either **e-mail** (if you have the Select message window running) or to **none** (if you don't have it running). The Infoprint Select default notification profile overrides any notification settings you configure in a default job.

If you don't want to use the Select default notification profile, use the appropriate procedure below.

Windows NT

1. On the Windows system that Infoprint Select is installed on, right click on **My Computer** and select **Properties**.
2. In the System Properties window, click the **Environment** tab.
3. Click one of the variables listed under **System Variables** to signal that you want to create a system variable. The variable and its value will appear in the fields at the bottom of the dialog.
4. Clear the **Variable** and **Value** fields.
5. In the **Variable** field, type: `pdnotify` and in the **Value** field type: `override_select`.
6. Click **Set**.
7. Verify that `pdnotify` appears in the list of **System Variables** and not in the **User Variables**. If it appears in the list of User variables, delete it and start again from step 3.
8. Click **OK**.
9. Restart your system to make the changes take effect.

Windows 2000

1. On the Windows system that Infoprint Select is installed on, right click on **My Computer** and select **Properties**.
2. In the System Properties window, click the **Advanced** tab.
3. On the Advanced tab, click **Environment Variables**.
4. In the **System variables** box on the **Environment Variables** dialog, click **New**.
5. In the **Variable Name** field, type `pdnotify` and in the **Variable Value** field, type `override_select`.
6. Click **OK**.
7. Verify that `pdnotify` appears in the list of **System variables** and not in the **User variables**. If it appears in the list of User variables, delete it and start again from step 4.
8. Click **OK** in the **Environment Variables** dialog.
9. Click **OK** in the System Properties window.
10. Restart your system to make the changes take effect.

Using the 'exit' delivery method

The **exit** delivery method allows you to set up automatic responses to system events beyond just sending a message. When you set the delivery method for a given event to **exit**, you use the delivery address to specify the explicit path to a script or program on your system. Whenever that event occurs, Infoprint Manager runs the script or program you specify.

For example, if the Infoprint Manager server runs low on disk space, the **disk-space-low** event generates a message for the system administrator. The administrator then has to do something to clean up the disk so Infoprint Manager can continue to run effectively. However, using the **exit** delivery method can automate that process by launching a "disk clean up" script. The administrator can still receive the message, but will know that the script is already working on the problem.

If you are using the Print Optimizer DSS, Infoprint Manager provides a sample script called **poexitcleanup** that you can use with the **exit** delivery method. The script demonstrates one way that you can automate cleaning up disk space in the Print Optimizer resource filesystem after the **disk-space-low** event occurs.

By default, when you use the exit delivery method, Infoprint Manager only passes two values along to the script or program: the message number of the event that occurred and the text of the message. As a result, the command line that the exit delivery method executes is composed of the path that you specified in the delivery address, the last three digits of the message number, and the text of the message.

Therefore, if you create a notification profile entry for the **job-completed** event, setting the delivery method to **exit** and the delivery address to `/infoprint/exits/myscript`, when a job finishes printing, Infoprint Manager will generate and execute a command line similar to this one:

```
/infoprint/exits/myscript 280 "5010-280 Finished processing job ofc,  
Job 20 (3520800004)."
```

The scripts or programs you write may require other information, such as the destination name or the printer model. To pass those values, you can include them in the delivery address of the notification profile entry; they will be added to the end of the command line when Infoprint Manager creates it.

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 the Infoprint Manager Notification client on the system that the person used to create the object.

Table 15. Default notification profile settings

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. Refer to “Using notification profiles with default jobs” on page 159 for more information.
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 low-on-memory memory-exhausted object-cleaned object-deleted out-of-disk-space out-of-dpf-haids out-of-dpf-job-numbers out-of-dpf-raids sapcbd-down sapconnect-down 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 and see how many and what kind of messages you receive. If you find that you need more or less notification, or if you want to modify which users receive notifications, or if you want messages to be sent using a different delivery method, you can change the notification profiles.

Using notification profiles with default jobs

When someone submits a print job, Infoprint Manager sends messages about that job based on a default notification profile. As a result, the delivery method is **message**, the delivery address is "the user ID of the person who submitted the job @ the address of the system the job was submitted from," and the event identifiers are those listed in Table 15 on page 158. (If you submit jobs using Infoprint Select, the default notification profile is different. Refer to "Infoprint Select and notifications" on page 156 for additional information.)

If you want to change the settings in the default notification profile, you can create a notification profile on a default job. There are several things to keep in mind when you set up a notification profile on a default job:

- You can only set one default job on each logical destination. As a result, all of the jobs will use the same notification profile.
- If you set a delivery address in the notification profile for the default job, all messages will go to that address. However, if you leave the delivery address blank, Infoprint Manager will fill it in with the address that the job was submitted from (you can't specify this address; it is sent with the job). This option only works with the **message** and **e-mail** delivery methods and is the only time that the notification profiles are merged.
- If you submit a job with an explicit notification profile (for example, by including the **notification-profile** attribute when you submit a job using **pdpr**), that profile overrides the one set in the default job.

Note: If you submit jobs using Infoprint Select, an explicit notification profile is sent with every job. If you want to use a notification profile on a default job with Infoprint Select, refer to "Infoprint Select and notifications" on page 156 for information about overriding Select notifications.

Changing notification profiles

For jobs, default jobs, servers, queues, and actual destinations

You can use the properties notebooks in the Infoprint Manager Administration GUI to change notification profiles for jobs, default jobs, servers, queues, and actual destinations. Open the properties notebook and click the **Notification** tab for an actual destination, a job, or a default job. For a server, click the **Other** tab. On the page that opens, you can see the notification profile entries that already exist, including:

- How messages about that object are delivered
- Who they are sent to
- What events generate messages
- Any comments that are included with the messages

Use the **Add**, **Modify**, and **Delete** buttons to make changes to the notification profile. Refer to the online help for the Infoprint Manager Administration GUI for additional information. You can also change notification for jobs in the Infoprint Manager Operations GUI.

Note: If you change the delivery method, make sure you change the delivery address appropriately.

For logical destinations

The only way to change a notification profile for a logical destination is to use the **pdset** command. The procedures below provide examples of some common modifications you may want to make. You can use these procedures to change the notification profiles for other Infoprint objects as well, but you may find it easier to use the properties notebooks in the Infoprint Manager Administration GUI.

This procedure describes how to modify notification profiles by:

- “Adding or modifying events or users in a notification profile” on page 161
- “Removing users from a notification profile” on page 162
- “Changing the delivery method” on page 163

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.

Important: When you modify a notification profile, Infoprint Manager compares the new delivery method and delivery address to the delivery methods and delivery addresses in the existing entries and behaves accordingly:

- If you specify both of the values and both match the values in an existing entry, the modification replaces that entry.
- If you only specify one of the values, Infoprint Manager fills in the other value with the default values. Then, it checks to see if any of the existing entries match that combination. If they match, Infoprint Manager replaces that entry. If they don't match, Infoprint Manager creates a new entry.
- If you specify both values but only one matches, Infoprint Manager creates a new entry.
- If you specify both values and neither one matches, Infoprint Manager creates a new entry.

When you delete a notification profile entry, the delivery method and delivery address in your command must match those in an existing entry exactly.

Viewing an existing notification profile

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

1. 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.

2. Press **Enter**.

The notification profile will be displayed.

Note: If you have messages about a particular object sent to more than one person, the notification profile will display multiple entries, one for each person.

Adding or modifying events or users in a notification profile

Follow these steps 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. 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-method= method 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. Not all events support all objects. Refer to chapter 9 in the *Infoprint Manager: Reference* for lists of what objects each event supports.

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-method

How you want messages to be sent. Refer to Table 14 on page 155 for information about the various delivery methods.

delivery-address

Where you want to have messages sent. Refer to Table 14 on page 155 for information about what kinds of delivery address value to use with each delivery method. Enclose the value in double quotes.

Note: You cannot specify more than one delivery address here. If you want another user to receive messages about the same (or different) 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.

2. Press **Enter**.
3. 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 160 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. Use the “Viewing an existing notification profile” on page 160 procedure to find the entry you want to remove.
2. 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
```

3. Press **Enter**.
4. Use the “Viewing an existing notification profile” on page 160 procedure to verify that the entry has been removed.
5. 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 delivery method

You can choose to receive your notification messages in a variety of ways, as listed in Table 14 on page 155. Follow these steps to change the delivery method from the default to some other value.

1. Use the “Viewing an existing notification profile” on page 160 procedure to find the entry you want to change.
2. Type the following command. Fill in the values for the italicized items exactly as they appear in the entry you want to change. Replace the **delivery-method** and **delivery-address** values as specified in Table 14 on page 155.

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

3. Press **Enter**.
4. Use the “Viewing an existing notification profile” on page 160 procedure to verify that the entry was added.
5. Follow the procedure for removing a user to remove the old entry.

Example: You want to receive your messages about **printer1-q** in your E-mail 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.

Getting help for notification messages

If you receive a notification message that you don't understand, Infoprint Manager provides a way to get more information about the situation. In some cases, the explanation even suggests some things you can do to resolve the problem.

To see the full text of an error message, use the **pdmsg** utility and specify the message number to display help for notification messages you received.

For example, you receive the following notification message about the PrintQueue1 contained in server MainServer.

```
To:nrharvey@hope.bpc.boulder.ibm.com
Subject: 5010-192 Message from Infoprint server: MainServer
-----
[05/30/97 07:26:38] 5010-304 The queue MainServer:PrintQueue1 is backlogged.
```

To receive help for message 5010-304, enter the command:

```
pdmsg 5010-304
```

Infoprint displays information similar to the following:

```
5010-304 The queue _____:_____ is backlogged.
5010-304
EXPLANATION: Infoprint calculates that there are too many jobs in
this queue for all the jobs to print within the time specified by the
queue-backlog-upper-bound value.
A notification-profile value requested that you be notified of the event
queue-backlogged.
SYSTEM ACTION: The queue continues to accept jobs, but there will
be a delay before they print.
RESPONSE: Alleviate the backlog by moving some of the
jobs to a different queue or by adding actual destinations to this queue.
```

Note: The **LANG** environment variable and the message catalogs installed control the language in which the **pdmsg** utility displays message help information.

Other notification methods

Notify-operator attribute

The **notify-operator** attribute is a scaled-down version of a notification profile. It can only be set on Infoprint Manager queues and actual destinations and can only use the **e-mail**, **message**, **exit** and **wireless** delivery methods. In addition, it only sends messages when one of the following events occur.

1. A job is added to a queue.
2. An actual destination starts processing a job.
3. An actual destination finishes processing a job.

The syntax of the **notify-operator** attribute is:

```
delivery-method:delivery-address
```

Refer to Table 14 on page 155 for descriptions of the e-mail and message delivery methods and their corresponding delivery addresses. By default, the notify-operator attribute is set to **message:your user ID@your node** when you create an actual destination or a queue. To change the value for an actual destination, you can use the **Notification** tab of the properties notebook. To change the value for a queue, use the **pdset** command.

The messages that the notify-operator attribute delivers are not standard error messages like the ones you receive when you use a full notification profile. Instead, you write the messages that you want to send and specify them as attributes of jobs when you submit them.

Note: You must either specify those attributes in the command when you submit the job or set the text in the job and document defaults for the appropriate logical destination.

The job attributes that you use to specify these messages are the following.

- **job-message-to-operator**
The message that Infoprint Manager sends when it adds a job to the queue.
- **job-start-message**
The message that Infoprint Manager sends when the job starts processing.
- **job-end-message**
The message that Infoprint Manager sends when the job finishes processing.

You can type the text for all three of these messages in the appropriate field on the **Job Notification** tab of the properties notebook for a job or a default job.

In addition, you can use the **job-start-message** attribute in conjunction with the **job-start-wait** attribute. If you set the **job-start-wait** attribute on a job (or in a default job) to **true**, the actual destination receives the job and sends the job-start message. Then, it pauses the actual destination (whether or not a job is currently being printed) until the operator intervenes. This function is useful when different jobs need to be printed on different types of paper. Operators don't need to manually pause the actual destination to change paper between jobs; Infoprint Manager does it automatically. Once the printer is ready, the operator must resume the actual destination and the job prints. This function should be set for the first in a series of jobs, once you are certain that there are no jobs printing on the printer. Because it compels Infoprint Manager to pause the printer for every job with `job-start-wait=true`, you should not specify this value on the default job.

To use the **job-start-wait** attribute, you must set it to **yes** on the job or default job. You can specify the attribute in the command when you submit a print job or set it on the **Job Notification** tab of the properties notebook for default jobs.

Chapter 12. Managing Infoprint security with DCE

Distributed Computing Environment (DCE) is an application that allows the secure use and administration of distributed applications, such as Infoprint. Managing DCE security is similar to managing AIX security. As a DCE administrator, you create *groups* that have certain permissions related to Infoprint objects. When logged into DCE, each user who has an account with a group has the permissions for the group. A DCE group that has **read**, **write**, and **delete** permission for an Infoprint object, such as a server or a queue, is similar to an AIX group that has **read**, **write**, and **execute** permission for an AIX directory or file. Unlike AIX **write** permission, DCE **write** permission allows you to modify, but not to delete, an object.

Determining appropriate DCE permissions for Infoprint user groups

This section describes four categories of users who need different permissions for Infoprint objects.

Administrators

This group needs to create, delete, and modify the objects for which they are responsible in the printing system. They must have **read**, **write**, and **delete** permission for these objects.

Printing system operators

This group needs to manage jobs and assist users. To manage jobs sent to an actual destination, the printing system operators must have **read** and **write** permission for the actual destination. To manage jobs that have been retained in a server, the printing system operators must have **read** and **write** permission for the server.

Printer operators

This group loads media and other supplies into printer devices. In order to make an actual destination accurately reflect the state of its printer device, printer operators must be able to set actual destination attributes. They must have **read** and **write** permission for the actual destination.

End users

This group needs to print, fax, and email jobs, modify their own jobs, cancel their own jobs, and query Infoprint objects. They do not need to log into DCE to submit jobs to unrestricted logical destinations or to modify, query, or cancel those jobs. They must have **read** permission for restricted logical destinations in order to submit jobs to those logical destinations.

When you installed Infoprint with DCE on your system, the installation created two DCE groups: **pd_admin** and **pd_operator**. By default, these groups have permissions for every Infoprint object that you create. The **pd_admin** group has **read**, **write**, and **delete** permission. The **pd_operator** group has **read** and **write** permission.

The **pd_admin** and **pd_operator** groups may be sufficient for your needs. Members of these two groups can do all the administrator and operator tasks for your system.

On the other hand, you may need to create groups with different permissions. For example, if the printer operators are not the same people as the printing system

operators, you may wish to create another group with **read** and **write** permissions only for actual destinations. You may also want to create a group of users who can submit jobs to a restricted output device.

Adding Infoprint administrators and operators to the AIX `printq` group

You must add all Infoprint administrators and operators to the AIX `printq` group. To do this, use the AIX System Management Interface Tool (SMIT).

To use SMIT:

1. On the AIX command line, enter:

```
smit chgroup
```

The SMIT Change Group Attributes panel is displayed.

2. Type **printq** in the Group name field and press Enter.
3. Type the user IDs of the administrators and operators, separated by commas, in the User List field and press Enter.
4. Exit from SMIT.

Creating a DCE group

To create a DCE group:

1. Log into DCE as the cell administrator:

```
dce_login cell_admin
```

2. To start the AIX System Management Interface Tool and go directly to the panel for creating a DCE group, enter:

```
smit mkdcegroup
```

The Add a Group Name panel is displayed.

3. In the **Group NAME** field, enter the name of the DCE group you want to add, for example, `203_operators`.
4. In the **FULL name** field, enter a description of the group, for example, `Printer operators for Room 203`.
5. Select **Do**. SMIT displays a panel showing the progress of your command. When the command is successful, the running man icon at the top right corner of the panel stands with his arms up.
6. Select **Done**.

Creating DCE identities for users

Before you can give a person an account with a DCE group, you must first create a DCE identity, or *principal*, for the person. Like an AIX user ID, a DCE principal has a login name and a user identification number (UID). Use the same login name and UID for DCE as for AIX.

To create a DCE principal for a user whose login name is `lkbyrd` and whose UID is `975`:

1. Log into DCE as the cell administrator.

2. Enter:

```
smit mkdceprinc
```

The Add a Principal panel is displayed.

3. In the **Principal NAME** field, enter the login name of the user you want to add, for example, 1kbyrd.
4. In the **Principal ID** field, enter the UID number, for example, 975.
5. In the **Full NAME** field, enter the user's name and any other appropriate information, such as the user's telephone number.
6. Select **Do**. SMIT displays a panel showing the progress of your command. When the command is successful, the running man icon at the top right corner of the panel stands with his arms up.
7. Select **Done**.

Giving a user a primary account with a DCE group

After you have created a DCE principal for a user, you must give the principal a primary account with a DCE group. To do this:

1. Log into DCE as the cell administrator.
2. Enter:

```
smit mkdceacct
```

A panel listing types of DCE accounts is displayed.

3. Select **user**. The Add an Account panel is displayed. You may have to use the scroll bar on the right side of the window to display all the fields.
4. In the **Principal to create account for** field, enter the DCE login name of the user you want to add, for example, 1kbyrd.
5. In the **LOGIN user?** field, leave the default value of **yes**.
6. In the **GROUP to associate with this account** field, enter the name of the primary group to which you want to add this user, for example, pd_operator.
7. In the **ORGANIZATION to associate with this account** field, enter the name of your organization as you specified it when you installed DCE.
8. In the **HOME directory** field, you can enter the user's AIX home directory for your own information. DCE does not use this field.
9. In the **HOME directory** field, you can enter the user's AIX home directory for your own information. DCE does not use this field.
10. In the **ACCOUNT information** field, you can enter miscellaneous information about the account. DCE does not use this field.
11. In the **Require user to CHANGE PASSWORD on first login** field, leave the default value of **yes** if you want DCE to prompt the user to select a new password when he or she first logs into DCE. If you select **no**, the user can continue to use the password you assign or change it at any time.
12. In the **Maximum ticket LIFETIME** field, enter a value at least as large as the longest time that this user will leave the Infoprint Manager Administration GUI running. If the ticket expires while the Infoprint Manager Administration GUI is running, the user must log into DCE again to perform administrative tasks.

Note: The maximum ticket lifetime for a user cannot be longer than the maximum lifetime specified in the DCE authenticated policies. To change this maximum, go to the SMIT DCE Security and Administration panel and select **Registry Policies and Properties**, then **Authenticated Policies and Properties**, or enter **smit lsdcesecert** from the AIX command line.

13. Accept or modify the default values for the other fields in the window.

14. Select **Do**. DCE prompts you to enter a password for the new account.
15. Enter an appropriate password and press ENTER. DCE prompts you to enter your own password.
16. Enter the cell administrator's password and press ENTER.
17. When the command is complete, press ENTER.

Making a user a member of additional DCE groups

After you have created a DCE principal for a user and given the principal a primary account with a DCE group, you can add the principal to as many other DCE groups as you wish. For example, to add user `lkbyrd` to the `203_operators` group:

1. Log into DCE as the cell administrator.
2. Enter:
`smit mkdcegroupmem`

The Add Members to a Group panel is displayed.

3. In the **Group NAME** field, enter the name of the group to which you want to add the user, for example, `203_operators`.
4. In the **PRINCIPALS to add** field, enter the login name of the user you want to make a member of the group, for example, `lkbyrd`.
5. Select **Do**. SMIT displays a panel showing the progress of your command. When the command is successful, the running man icon at the top right corner of the panel stands with his arms up.
6. Select **Done**.

Changing DCE permissions for Infoprint objects

When you have created DCE groups to fit your requirements, you must give the groups appropriate permissions to work with DCE objects. You can use the Infoprint SMIT administrator's interface to change object permissions.

To change the permissions for an Infoprint server, follow these steps:

1. Log into DCE as the cell administrator:
`dce_login cell_admin`
2. On the AIX command line, enter one of the following commands:
`smit iprudce_security`

or

`smitty iprudce_security`

The SMIT Security panel is displayed.

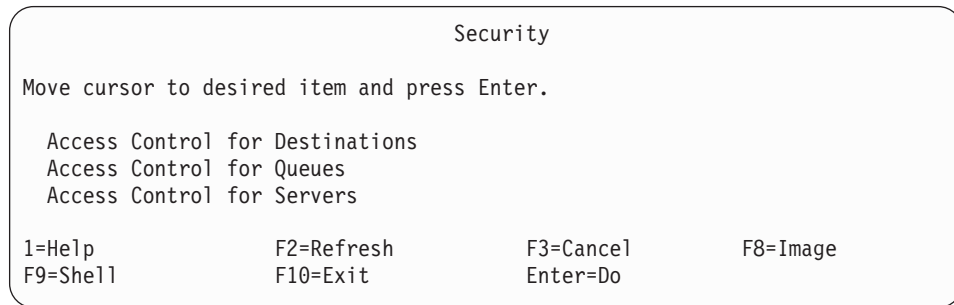


Figure 40. SMIT Security panel

3. Select **Access Control for Servers**. The Access Control for Servers panel is displayed.

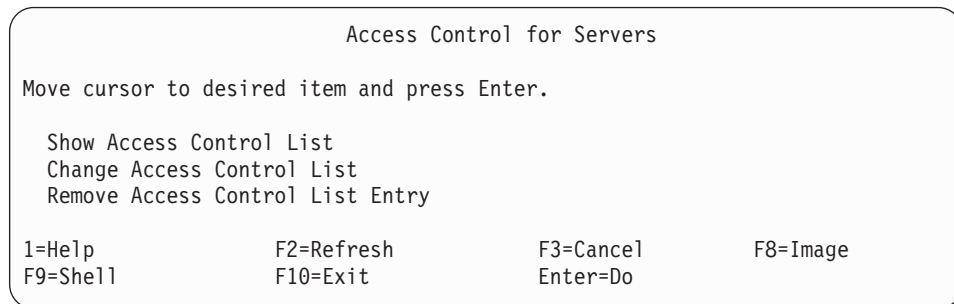


Figure 41. SMIT Access Control for Servers panel

4. Select **Change Access Control List**. A list of servers is displayed.
5. Select a server name and press **Enter**. The ACL Type list is displayed.
6. Select one of the following values and press **Enter**:
 - user_obj**
Permissions for the owner of the object.
 - user** Permissions for a specific DCE user defined in this namespace.
 - group** Permissions for a specific DCE group defined in this namespace.
 - other_obj**
Permissions for the group to which the owner of the object belongs.
 - any_other**
Default permissions for DCE users and groups defined in this namespace.
 - foreign_user**
Permissions for a specific user defined in another DCE namespace.
 - foreign_group**
Permissions for a specific group defined in another DCE namespace.
 - foreign_other**
Default permissions for DCE users and groups defined in other DCE namespaces.
 - unauthenticated**
Permissions for users who are not logged into DCE.

The Change Access Control List panel is displayed. Figure 42 on page 172 shows the panel that is displayed when you select **group**.

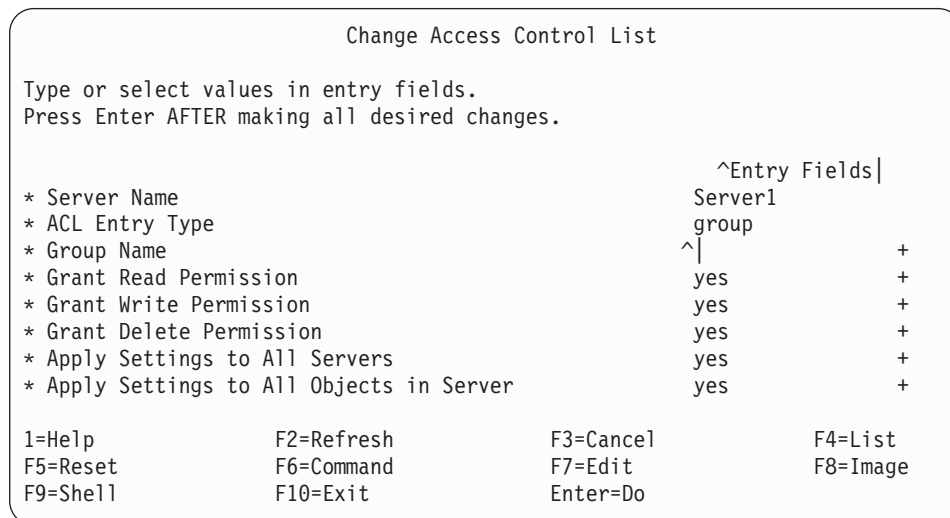


Figure 42. SMIT Change Access Control List panel

7. Fill in the panel and press **Enter**.

Notice that the last lines of the Change Access Control List panel allow you to propagate the permissions you set here to other objects. If you give the 203_Operators group **read** and **write** permission for this server, the 203_Operators group will have **read** and **write** permission for any logical destinations, actual destinations, or queues that you later create in the server.

Propagation only works for entries that have not yet been created. If you create a logical destination, then change the permissions for the server and apply your changes to all objects in the server, the existing logical destination will not inherit the changes.

Adding other DCE namespaces to your Infoprint environment

Part of DCE is a directory tree called the DCE *namespace*. Installing Infoprint creates a branch of this directory tree where Infoprint stores its security information. This is your Infoprint cell directory structure.

When you start an Infoprint AIX server, it gets a list of servers from the namespace. Infoprint Manager uses the list to contact each of those servers. If a server that belongs to the DCE namespace has been shut down (`stop_server servername`) when you start the current Infoprint AIX server, Infoprint returns a message in the server error log, telling you that the server is not in the endpoint map:

```
5010-589 The DCE message text is:
Not registered in endpoint map (dce/rpc)
Object caine (server name)
was not found at location f5159c44-bdb1-aad5-8b80-004ace4a889@ (object UUID)
ncacn_ip_tcp:9.99.225.27 (ip_address)
```

When you see this message after starting your DCE configuration, it is informational and does not require you to take any action.

When problems arise in your DCE configuration, this message can be a valuable tool for diagnosing problems. It can indicate which old servers can be removed from your DCE namespace in order to improve performance. If you enter `pdls -c serv *` from an AIX command line to list your available Infoprint AIX servers, but

instead see the message about the endpoint map in the server error log for a server that you expect to be running, it indicates that there may be a problem with this server.

You can set up your Infoprint environment so that clients in another DCE namespace can communicate with the Infoprint server. Clients in other namespaces can issue only the **pdpr**, **pdls**, and **pdq** commands.

To add a DCE namespace to the Infoprint environment, follow these steps:

1. Log into DCE as the cell administrator:

```
dce_login cell_admin
```
2. On the AIX command line, enter one of the following commands:

```
smit iprudce_ns
```

or

```
smitty iprudce_ns
```

The SMIT Name Spaces panel is displayed.

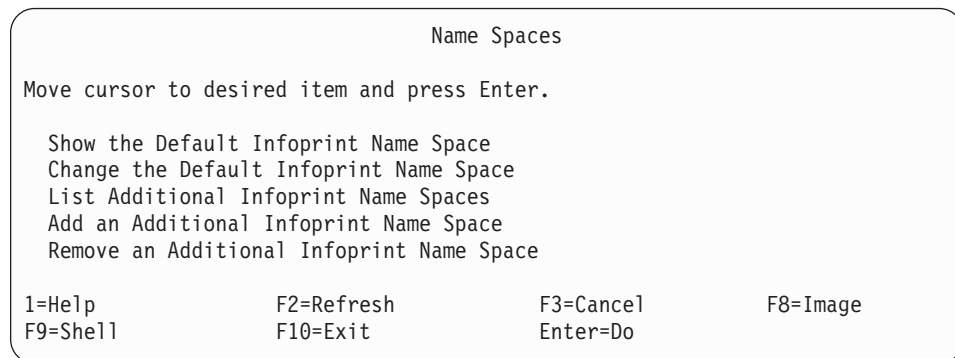


Figure 43. SMIT Name Spaces panel

3. Select **Add an Additional Infoprint Name Space**. The Add an Additional Infoprint Name Space panel is displayed.

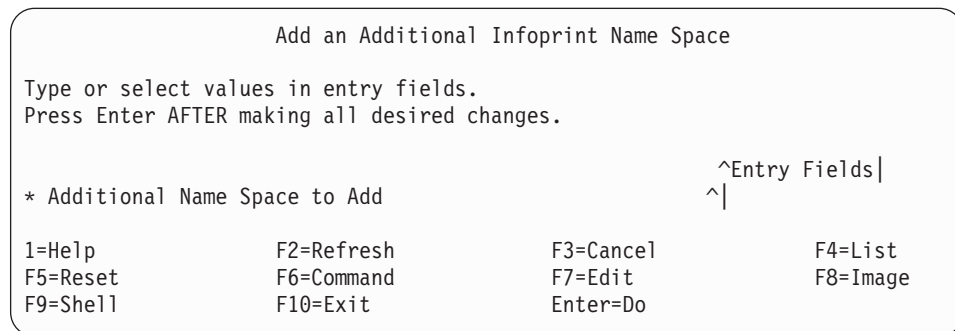


Figure 44. SMIT Add an Additional Infoprint Name Space panel

4. Enter the name of the namespace and press **Enter**.

Ignoring network interfaces

You can also use DCE to configure Infoprint so that it ignores selected network interfaces. Follow these steps:

1. Log into DCE as the cell administrator:
`dce_login cell_admin`
2. On the AIX command line, enter one of the following commands:
`smit iprudce_interfaces`

or
`smitty iprudce_interfaces`

The SMIT Network Interfaces panel is displayed.

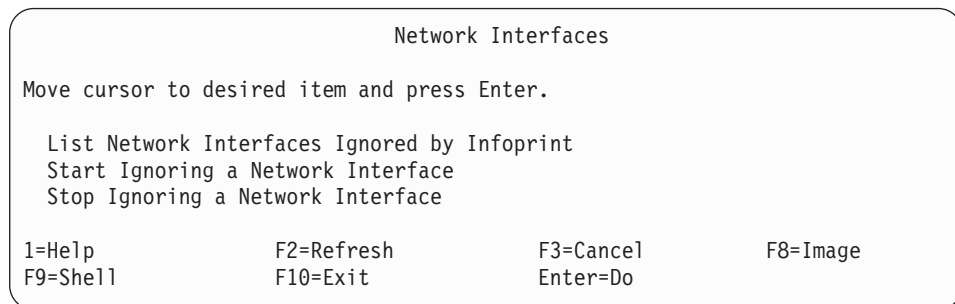


Figure 45. SMIT Network Interfaces panel

3. Select **Start Ignoring a Network Interface**. The Start Ignoring a Network Interface panel is displayed.

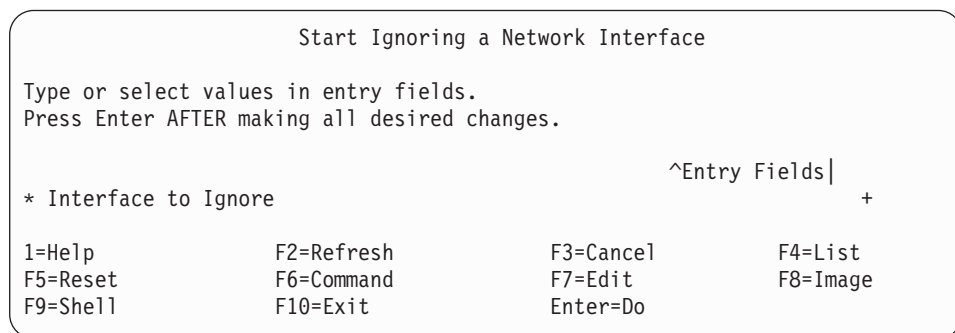


Figure 46. SMIT Start Ignoring a Network Interface panel

4. Press **F4** to display a list of network interfaces.
5. Select an interface and press **Enter**.

Examples

The examples in this section show you how to manage Infoprint security by creating DCE groups and granting permissions for specific objects to these groups.

Creating two printer operator groups

Printer operators are responsible for supporting and maintaining printer devices. This includes such tasks as replacing toner, loading media, and making the printers available for large and small jobs at different times of the day.

Printer operators do not need all the permissions of the default **pd_operator** group. The **pd_operator** group has **read** and **write** permission for all Infoprint objects. Printer operators need **read** and **write** permission only for the actual destinations that represent printer devices in their care.

When you plan printer operator groups, first decide for which actual destinations each group needs **read** and **write** permission. This is easiest to do before you create the actual destinations. If the same printer operator group needs permission for all the actual destinations in a server, you can give the printer operator group **read** and **write** permission for the server's DCE **printers** directory. The group will automatically have **read** and **write** permission for all the actual destinations that you later create in the server. If you create the actual destinations before you give the printer operator group **read** and **write** permission for the server; or if different printer operator groups need **read** and **write** permission for different actual destinations in the same server, you must assign permissions for each actual destination individually.

Suppose that you are configuring Infoprint to manage two printer rooms. Each printer room contains several printer devices. One group of printer operators cares for all the printer devices in one room and another group of printer operators cares for all the printer devices in the other room.

1. Create dedicated servers to contain the actual destinations representing printer devices in each room. One server can support up to five actual destinations. See Chapter 1, "Creating and managing servers", on page 3 for instructions.
2. Create a printer operator group for each room. See "Creating a DCE group" on page 168 for instructions.
3. Give each printer operator group **read** and **write** permission for the DCE **printers** directory of each server for the group's printer room. See "Changing DCE permissions for Infoprint objects" on page 170 for instructions.
4. For each printer device, create an actual destination in a server dedicated to the printer room where the printer device is located. See "Creating and Managing Actual Destinations" in *Infoprint Manager for AIX: Getting Started*. for instructions.
5. Give each printer operator membership in the appropriate printer operator group. See "Creating DCE identities for users" on page 168 for instructions.

Restricting all access to an output device

You may need to restrict all use of an output device to certain users. For example, you can restrict all use of a fax machine to salespeople who need to fax information to customers. To do this:

1. Type the following command at the AIX command line: `pdset -c dest -x "authorize-job=true" ldname`, where *ldname* refers to the name of the logical destination that sends jobs to the actual destination that represents the output device. Now only users who are logged into DCE can submit jobs to this logical destination.
2. Delete the permissions for the **any_other** and **unauthenticated** groups from the access control list (ACL) for the logical destination. Now only users who have explicit **read** permission for this logical destination can submit jobs to it.
3. Create a DCE group with **read** permission for the logical destination. Refer to "Creating a DCE group" on page 168 for more information.
4. Give each authorized user membership in the new DCE group.

Restricting functions of an output device

You may need to restrict certain functions of an actual destination to certain users. For example, you can restrict one-sided printing to editors, while allowing everyone else to print two-sided jobs on the same printers. To do this:

1. Create two logical destinations that send jobs to the actual destination representing the output device. Configure one logical destination to support all the functions of the output device and the other to support only the functions that everyone is permitted to use. For example, to restrict one-sided printing, create one logical destination with values of **1** and **2** for the **Sides Supported** field and another with a value of **2**.
2. Use the process in “Restricting all access to an output device” on page 175 to restrict all access to the logical destination that supports all the functions of the output device.

Chapter 13. Managing non-DCE security for Infoprint Manager for AIX

Infoprint Manager Security, a feature that you administer through SMIT, 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.

Note: Infoprint Manager Security only uses the login ID permissions. Therefore, if a user logs in, then performs an SU to root or to another user, the permissions associated with the original login ID remain in effect.

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 view and modify attributes.

- **Delete**

For all objects, the user can view and modify attributes and can delete the object.

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 sub-sets of objects by using object-level ACLs.

Note that all Infoprint object names, including security groups and ACL members, are case sensitive.

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

If the object has an ACL the permission needed depends on the operation. For example, **List** requires **read**, **Set** requires **write**, and **Delete** requires **delete**.

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 ten of your print operators to be able to perform the same operations, create a group and name it **operators**. Then, add **operators** to the appropriate ACLs.

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.
- **admin**
Users who have administrator authority. The default members are **administrator** and the user who was logged on when Infoprint Manager was installed.
- **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 your operators to the default **oper** group and modified any permissions that weren't set to the level that you wanted them.

2. AIX is case sensitive when it comes to user IDs, whereas Windows is not. When you are using AIX and Windows machines together, make sure that you take this into consideration. For example, you might want to add both **Administrator** and **administrator** to your ACLs.

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.

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 ***@computer**, 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 AIX SMIT utility to manage the security of your print system. Open an AIXterm window and enter `smit` on the command line. The line Infoprint Printing System will appear as an option. By following the menu item to the right with your cursor, you can navigate the following directory structure of menu choices:

Tab #1	Tab #2	Tab #3	Choices
Infoprint Printing Systems→	Security→	Groups→	Add Group Show Group Add User to Group Remove User from Group

Tab #1	Tab #2	Tab #3	Tab #4	Choices
Infoprint Printing Systems→	Security→	Access Control→	Operations→ Servers→ Destinations→ Queues→	Show Access Control List Change Access Control List Remove Access Control List

Note that the following three groups are created for you by default and display when you choose the **Groups→Show Group** option: `acl_admin`, `admin`, and `oper`. The root user is placed in the `acl_admin` group. To have access to modify security characteristics, the user must be a member of the `acl_admin` group.

For specific information supporting a menu choice, press **F1** for help.

Chapter 14. Setting Infoprint Manager and AIX environment variables

Infoprint Manager uses environment variables:

- To define its environment within the AIX system
- To define the objects managed by and options available in the Infoprint SMIT operator's GUI

Environment variables are strings that have a name and a value in the form of **NAME=value**. Refer to *Infoprint Manager: Reference* for a complete list of Infoprint Manager environment variables and AIX environment variables that affect Infoprint Manager.

Preparing to work with Infoprint Manager and AIX environment variables

Read through the following topics to become familiar with environment-variable structure and terms.

Where are environment variables found?

Infoprint and AIX environment variables can be found in the following files:

Infoprint SMIT operator's GUI environment file

The name of this file is the value of the **PPO_DEFAULT_ENV** environment variable, by default, **/usr/lpp/pd/bin/ppo.env**. It contains environment variables that define values used by the Infoprint SMIT operator's GUI.

/etc/environment

This file contains environment variables that apply to all sessions for all users on a given AIX system.

.profile

The **.profile** file in a user's home directory contains environment variables that apply to all the user's AIX sessions. Values in this file override values in **/etc/environment**.

How are environment variables set?

You can use the following methods to set or change values for environment variables:

- If you are an administrator, you can set AIX environment variables and Infoprint Manager environment variables in the **/etc/environment** file or in the Infoprint SMIT operator's GUI environment file by using an AIX editor.
Settings in these files apply to all sessions for all users, unless users override them through their **.profile** files or from the command line.
- You can modify your **.profile** file in your home directory by using an AIX editor. Settings in the **.profile** file override settings in the **/etc/environment** file. These settings apply only to you and are in effect for all AIX sessions, unless you override the settings from the command line.
- You can enter one of the following commands on the command line to set environment variables for a single AIX session:
 - In the Korn shell or the Bourne shell, use the **export** command.

- In the C shell, use the **setenv** command.

Command line settings override settings in the **/etc/environment** file and **.profile** file. These settings apply only to you and are in effect only until you exit the AIX session from which you issued the command.

You cannot change the environment of a running process. If you change the value of an environment variable, you must restart any process that was started before the change if the change is to take effect for that process. For example, an Infoprint Manager server is a process. If you change the **/etc/environment** file, you must stop and start the server again for the change to take effect.

What restrictions apply?

The following restrictions apply when you create or define values for environment variables:

- Ensure that newly created environment variables do not conflict with standard variables, such as **MAIL**, **PS1**, **PS2**, and **IFS**. Refer to AIX documentation for further information.
- Ensure that the information in the **/etc/environment** file is in the **NAME=value** format. The **/etc/environment** file is not a shell script and does not accept data in any format other than the **NAME=value** format.
- Do not use variables to represent values in the **/etc/environment** file. For example:

```
PATH=$PATH:/path1:/path2
```

is not a valid entry in the **/etc/environment** file. Instead of **\$PATH**, enter a full path name.

- The format in which you specify the value for any variable that defines directory paths determines whether your value is appended to the current value or overrides it.

- The following format overrides the current value:

```
export PATH=/path1:/path2
```

If you do not include the Infoprint Manager directories in the value you specify, you will not have automatic access to Infoprint Manager.

- The following format appends your value to the current value:

```
export PATH=$PATH:/path1:/path2
```

Querying environment variables

You can use one of the following AIX commands to query the value of an environment variable:

- In any shell, use the **echo** command.
- In the Korn shell, use the **print** command.

For example, to determine the default logical printer, enter:

```
echo $PDPINTER
```

Note: Infoprint Manager uses default values for some Infoprint Manager environment variables without setting the environment variable. When you query those environment variables and you have not set a value, the response is a blank line.

To query all environment variables that have values set, enter: `env`

Editing the `/etc/environment` file

To set an environment variable in the `/etc/environment` file, you need to edit the file with an AIX editor. See “How are environment variables set?” on page 181 and “What restrictions apply?” on page 182 for additional information.

The following example shows how to set the **PDPRINTER** environment variable in the `/etc/environment` file using the **vi** editor:

1. Enter the following command to change to the `/etc` directory:

```
cd /etc
```

2. Enter the following command:

```
vi environment
```

A typical `/etc/environment` file contains lines similar to the following:

```
NLSPATH=/usr/lib/nls/msg/%L/%N:/usr/lib/nls/msg/%L/%N.cat
LANG=en_US
```

3. Insert or modify the following line in the `/etc/environment` file:

```
PDPRINTER=LogicalDestinationName
```

where *LogicalDestinationName* is the name of the logical printer you want to set as the default logical printer for all users.

4. Save the change in plain text format and exit from the editor.
5. Make the change effective by entering the command:

```
./etc/environment
```

6. Verify the change by entering the command:

```
echo $PDPRINTER
```

The logical destination name you entered displays.

Editing a `.profile` file

To set an environment variable in the `.profile` file, you need to edit the file with an AIX editor. See “What restrictions apply?” on page 182 for information on restrictions.

The following example shows how to set the **PDPRINTER** environment variable in your `.profile` file, using the **vi** editor.

1. Enter the following command to change to your home directory:

```
cd
```

2. Enter the following command:

```
vi .profile
```

3. A typical `.profile` file contains lines similar to the following:

```
PATH=.:$HOME/bin:/bin:/usr/bin:/etc:/usr/ucb:/usr/bin/X11:tools/
usr/bin:/usr/lpp/cmvc/bin:/usr/OV/bin:/usr/local/tools/rs6/bin:/usr
/local/tools/rs6:/usr/dt/bin
export PATH
export EDITOR=vi
```

4. Insert or modify the following line in the `.profile` file:

```
export PDPRINTER=LogicalDestinationName
```

where *LogicalDestinationName* is the name of the logical printer you want to set as your default.

5. Save the change in plain text format and exit from the editor.
6. Make the change effective by entering the following command:

```
. .profile
```
7. Verify the change by entering the command:

```
echo $PDPRINTER
```

The logical printer name you entered displays.

Setting an environment variable from the command line

To set the value of the environment variable **PDPRINTER** to Printer3 for a single AIX session, enter one of the following commands:

- In the Korn shell or the Bourne shell, enter:

```
export PDPRINTER=Printer3
```
- In the C shell, enter:

```
setenv PDPRINTER Printer3
```

Verifying the setting of environment variables

You can verify the setting of environment variables that Infoprint set or appended during Infoprint installation by doing the following procedures.

Verifying the setting of the PATH environment variable

During the installation process, Infoprint updates the AIX **PATH** environment variable to include the directory location of the Infoprint executable files; Infoprint appends **/usr/lpp/pd/bin** and **/usr/lpp/psf/bin** to the paths already specified.

To verify that the **PATH** environment variable is set and contains **/usr/lpp/pd/bin** and **/usr/lpp/psf/bin**, enter the command:

```
echo $PATH
```

Verifying the setting of the PDBASE environment variable

During the installation process, Infoprint adds the Infoprint **PDBASE** environment variable to the **/etc/environment** file and specifies **/var/pd** as the working directory where Infoprint stores its object code.

To verify that the **PDBASE** environment variable is set and contains **/var/pd**, enter the command:

```
echo $PDBASE
```

Verifying the setting of the MANPATH environment variable

During the installation process of an Infoprint Manager server or an Infoprint Manager client, Infoprint appends **:/usr/share/man/\$LANG** to the value of this variable. The **:/usr/share/man/\$LANG** directory is the location of the **cat7** subdirectory, which contains the Infoprint man pages. **\$LANG** is the locale.

To verify that the **MANPATH** environment variable is set and contains **:/usr/share/man/\$LANG**, enter the command:

```
echo $MANPATH
```

Chapter 15. Monitoring space on your AIX system

AIX allocates space for the printing and monitoring tasks required in an Infoprint environment through different file systems. A *file system* is a structure of parent directories, subdirectories, and files. A *directory* is a unique type of file that contains only the information need to access files or other directories. Directories contain files, subdirectories, or a combination of both. The directory containing a subdirectory is the parent directory.

On occasion, you might have to ensure that work files used in printing jobs do not consume too much space on your file systems. For example, PostScript or TIFF job tickets that are ripped for printing might leave work files in the `/var/psf` file system. Over time, these files can reduce system performance and eventually stop the system. Develop a maintenance strategy with your IBM Printing Systems Company service representative.

Monitoring memory use on your Infoprint AIX server

Infoprint Manager provides a method for monitoring memory use on your Infoprint AIX server. This support also provides you the opportunity to define and establish recovery options through exit programs or shell scripts that you can customize and add to the system. By default, the **Memory Usage** tab of the server property notebook is left blank; you must set these values and create the customized shell scripts or programs to activate this support.

You can access this support from the Infoprint Manager Administration GUI:

1. Select **Server** → **Properties**.
2. Click the **Show more** button.
3. Select the **Memory Usage** tab.

From the **Memory Usage** page, you can specify a low memory threshold percentage and a high memory threshold percentage that cause Infoprint to invoke a customized exit program or shell script that you can write for your print installation. For example, in Figure 47 on page 187, you can see that if the server's system memory usage goes above 60% (the value for the **upper memory usage threshold** field), Infoprint invokes a user-customized shell script (the `/localtools/uplimit` value for the **Upper memory usage exit** field) that contains specific recovery actions for your print installation. If the server's system memory usage drops below 59% (the value for the **lower memory usage threshold** field), Infoprint calls a user-customized shell script (the `/localtools/lowlimit` value for the **Lower memory usage exit** field) that contains specific recovery actions for your print installation. This exit usually restores the previous state of the server, undoing temporary changes made by the upper threshold exit.

The customized exit programs or shell scripts can do as little or as much as you specify. For example, you might write a script to disable a certain set of printers. The script could also move jobs to other servers. Both the **lower-memory-usage-exit** and **upper-memory-usage-exit** server attributes allow you to substitute values in the commands that are generated to run the exit program. For example, `%s` is equivalent to *server name* and `%t` is equivalent to *threshold value*. If a particular exit attribute contains a value of `memprob %s` in the server **server1**, then when Infoprint invokes the memory usage shell script it passes **server1** as the first argument.

For example, a shell script named `uplimit` might:

1. Prevent new jobs from arriving at a logical destination by disabling that Infoprint object.
2. Prevent the listing of jobs so that queries of the current backlog do not add to the memory constraints.
3. Ensure that any actual destinations (in this case, the three pooled actual destinations named `adn`) are re-enabled, so that they can reduce any backlog of jobs that could be causing the problem.

The `uplimit` script might look like the following:

```
#!/bin/ksh
pddisable prt1-ld
pdset -cserv -xdisallow-list-obj-class=job server1
pdenable ad1 ad2 ad3
```

The `lowlimit` script might look like the following:

1. Re-enable the logical destination so that new jobs are being accepted.
2. Reset the server to allow the listing of job queries.

The `lowlimit` script might look like the following:

```
#!/bin/ksh
pdenable prt1-ld
pdset -cserv -xdisallow-list-obj-class== server1
```

Note: You can use the **Queries to Prevent** section on the **Memory Usage** page to both add and remove the listing of any queries against a specified Infoprint object, such as **Jobs**. The **Jobs** object is the most useful to restrict, but this should be done cautiously, because once it has been set, you cannot query any jobs from either the Infoprint Manager Administration GUI or the Infoprint Manager Operations GUI.

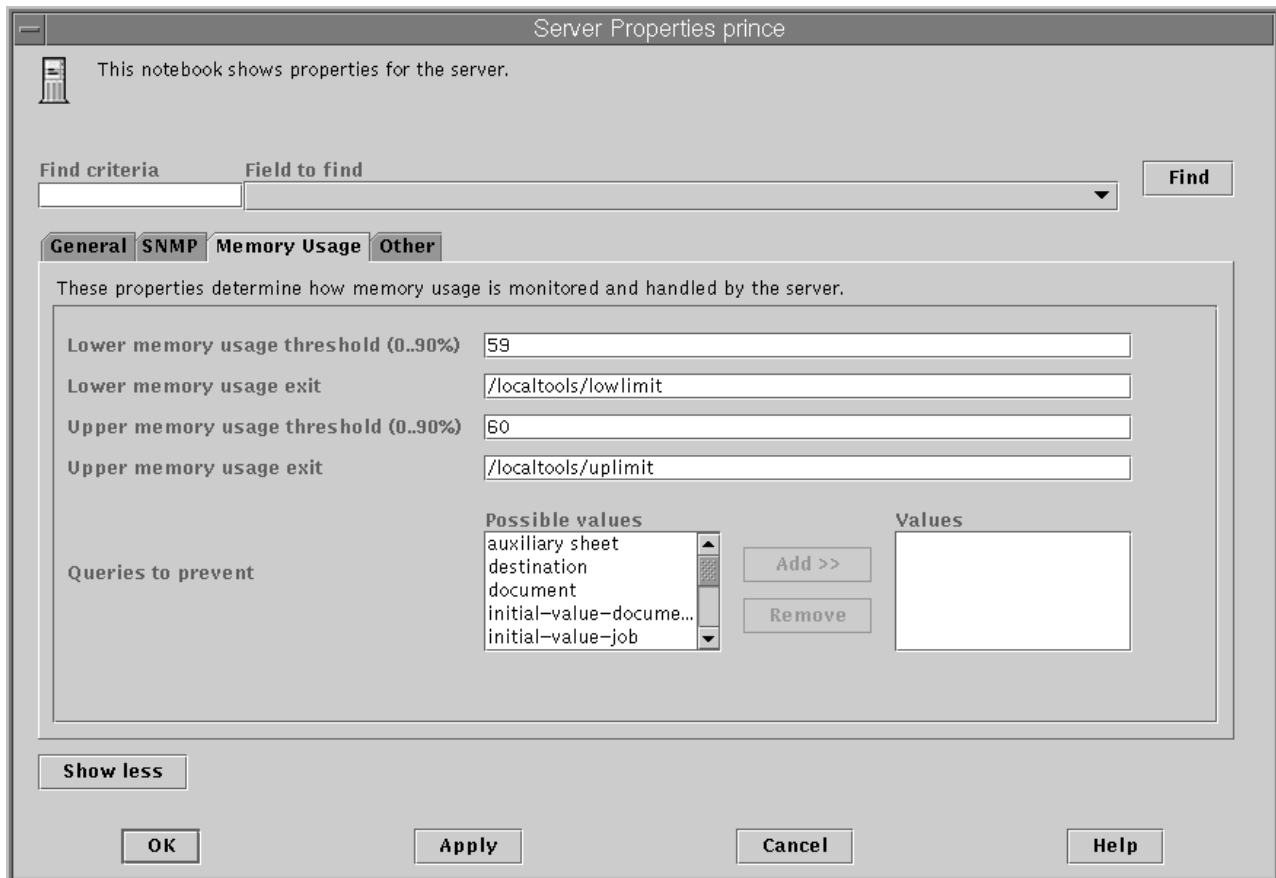


Figure 47. Memory usage page from the Server Properties notebook

Note that if the shell scripts or programs are not in the system path, you must specify the fully-qualified path for the shell scripts that you have customized. If you misspell a shell script name or refer to a file that does not exist, Infoprint allows you to change the setting. For more information about the **lower-memory-usage-threshold**, **lower-memory-usage-exit**, **upper-memory-usage-threshold**, and **upper-memory-usage-exit** server attributes that support this feature, see *Infoprint Manager: Reference*.

Once you have selected the appropriate values, click **OK** to apply this change and close the **Server Properties** dialog.

Using the disk usage tool

The **Disk Usage** icon on the front panel of the CDE allows you to display information about total space and available space on a file system. To find this icon:

- In a basic Infoprint installation, click on the **User Tools** icon (the paper and pencil) to open a subpanel.
- In an advanced or distributed Infoprint installation, click on the **Application Manager** icon (the file drawer containing a ruler, calculator, and pencil) to open a window. In this window, click on the **Desktop_Tools** icon.

When you select the **Disk Usage** icon, AIX displays information for all currently mounted file systems as shown in the following:

Filesystem	512-blocks	Free	%Used	Iused	%Iused	Mounted on
/dev/hd4	16384	7024	58%	1069	27%	/
/dev/hd2	1359872	493128	64%	17071	11%	/usr
/dev/hd9var	16384	13528	18%	305	15%	/var
/dev/hd3	32768	30984	6%	87	3%	/tmp
/dev/hd1	16384	15368	7%	136	7%	/home
/dev/lv00	1015808	983440	4%	66	1%	/var/psf
/dev/lv01	2015232	1951888	4%	16	1%	/var/psf/segments
/dev/lv02	3014656	2919936	4%	17	1%	/var/pd

The first column displays AIX file systems that are also directories. These directories are all subdirectories of the `/dev` parent directory, which means that they contain special files for I/O devices. The most important column is the fourth from the left that displays the percentage of each file system used.

Using the `df` command

You can see how your AIX system uses space in a single file system by using the **df** command. To display the space on the file system where your current directory resides, enter the following command on the AIX command line:

```
df .
```

AIX displays the following:

Filesystem	512-blocks	Free	%Used	Iused	%Iused	Mounted on
/dev/hd1	16384	15368	7%	136	7%	/home

File systems and directories to clean up

Certain file systems and directories tend to fill up. You should check, and if necessary, clean up these file systems and directories regularly.

File systems used by all Infoprint installations

If either the `/var/psf` or the `/var/pd` file system is more than 85% full, you should contact your IBM service representative to determine whether you need to clean out files or modify any configuration changes. You might consider removing files, such as large accounting logs and old error logs. You can find these files as follows:

```
/var/pd/servername/accounting.logs
```

For more information on accounting logs, see “How do you manage the contents of the Infoprint AIX server accounting logs?” on page 139 in Chapter 9, “Gathering accounting and auditing data about print jobs”, on page 137.

```
/var/pd/server.BAK/error.log.BAK.timestamp
```

Each time the Infoprint server is started, it backs up the last **error.log**. You need to delete these old logs as determined by your maintenance strategy.

When Infoprint processes large jobs, it is not uncommon for the `/var/psf/segments` file system to grow to over 90% full.

Note: When deciding whether or not to delete files, create a new file system, or change your configuration, do not modify the logical volume (`/dev/lv01`) that is mounted on the `/var/psf/segments` file system. This file system is used by Infoprint when printing jobs and monitors its own system use.

Directories used by InfoColor 70 printers

If you have any InfoColor 70 printers, you will occasionally have to clean out files from the following directories:

Directory	On AIX System
<i>/var/pd/HostName</i>	System where the Infoprint server is installed
<i>/custdisk1/Pool</i>	System where the InfoColor 70 is attached
<i>/custdisk1/HotFolder</i>	System where the InfoColor 70 is attached
<i>/custdisk1/IPAddress</i>	All RIP servers, including the system where the InfoColor 70 is attached

Chapter 16. Tuning the RS/6000 server to improve performance

If an AIX system administrator suspects that the Infoprint Manager RS/6000 server is either limiting overall print throughput or contributing to excessive print job response times, he or she can use this section to tune the server. However, administrators should use caution when modifying default configuration values: they could improve Infoprint Manager performance while degrading the performance of another application running on the same Infoprint Manager RS/6000 server. Any tuning changes should be evaluated for effectiveness after they have been applied.

The performance of an Infoprint Manager RS/6000 server can differ, depending upon the environment they have been configured to support. This topic describes how the Infoprint Installer modifies the configuration defaults for both a basic server configuration and an advanced server configuration. In addition, this section provides tuning recommendations for Input Manager, Infoprint Manager's utility for processing input from tape, file, or standard input that must be processed and printed.

Basic server configuration

During the install of a Basic Infoprint Manager 4.1 configuration, the Infoprint Installer sets the Infoprint Manager RS/6000 tuning parameters for large print-on-demand documents that contain compressed images and are printed on high-speed printers, such as the Infoprint 4000 IR3/IR4 printer. These performance options are contained in the `/etc/rc.net.ipr` file.

Note that if you have a pre-configured Model 4161-002 RS/6000 server, the Infoprint Installer will not perform any additional performance tuning. Because the serial storage architecture (SSA) disk array performance within this model is dependent upon the vmtune settings, IBM does not recommend modifying tuning parameters on a Model 4161-002 RS/6000 server for any other applications.

Advanced server configuration

During the install of an Advanced Infoprint Manager 4.1 configuration, the Infoprint Installer does not make any changes to the tuning parameters for a general RS/6000 environment. If system administrators decide to tune parameters, they should use the System Management Interface Tool (SMIT) to make changes.

1. Logon to the AIX system as **root**.
2. From the AIX command line, type either **smit** or **smitty** and take the following path: **Infoprint Printing Systems** → **Infoprint Utilities** → **Tune System Performance** → **Optimize Infoprint Performance**
This option sets system tuning parameters that affect TCP/IP memory and disk I/O characteristics that are contained in the `/etc/rc.net.ipr` script.
3. From an AIX window, specify:
 - a. `pdshutdown -w now servername` where *servername* is the name of the Infoprint AIX server.
 - b. Shutdown `-Fr` to shut down and subsequently restart the AIX operating system so these values can take effect.

Tuning Input Manager

Input Manager is Infoprint Manager's internal component for processing input from a variety of sources. The following section provides tuning suggestions for some of Input Manager's key components:

- File Sync Parameter
- Segment Size Parameter
- Work Area Allocation
- Tuning Input Manager through SMIT

File Sync parameter

In Infoprint Manager 4.1, the **File Sync THRESHOLD LIMIT (K Bytes)** is set to 0 to disable it. The `/etc/rc.net.ipr` file performance settings help sequential disk I/O performance. However, if your installation does not call the **vmtune** options from this file, you may need to specify a file sync setting to improve the performance of some print applications.

Segment Size parameter

The **Default SEGMENT SIZE** parameter affects the disk I/O performance of the `/var/psf/segments` file system. This parameter determines the maximum size of any temporary file created by the Input Manager component that is stored in `/var/psf/segments`. This setting determines the number of temporary files that Input Manager requires for all print jobs submitted to Infoprint Manager: the smaller the setting, the more files required to process the AFP input data.

For Basic Server configurations, the default setting of 5000 KB per segment can be raised to reduce the disk I/O usage associated with reading and writing data to the `/var/psf/segments` file system.

For Advanced Server configurations, the default setting of 1000 KB per segment can be raised to reduce the disk I/O usage associated with reading and writing data to the `/var/psf/segments` file system; however, the default setting usually works well with most AFP production applications.

Work area allocation

The SMIT field **PERCENTAGE of work area for retained jobs** determines how much of the `/var/psf/segments` file system is allocated for retained segment files. The lower this number, the better Input Manager's performance. The default setting is 50 percent, but you may want to lower the setting to 5 percent.

Tuning Input Manager through SMIT

Use the following procedure to tune Input Manager settings with SMIT:

1. Logon to the AIX system as **root**.
2. From the AIX command line, type either `smit` or `smitty` and take the following path: **Infoprint Printing Systems** → **Miscellaneous Configuration** → **Customize the Input Manager**

From the **Customize the Input Manager** panel, set the following values as indicated in the table below.

Field	Variable
PATH used for work area & percentage usage	threshold /var/psf/segments
Work area MANAGEMENT	automatic

PERCENTAGE of work area for retained jobs	5
File Sync THRESHOLD LIMIT (K Bytes)	0
Default SEGMENT SIZE (K Bytes)	5000 for Basic Server Configuration 1000 for Advanced Server Configuration

Contents of the /etc/rc.net.ipr script

This script modifies three AIX commands that are necessary to set network, memory, and I/O tuning parameters: **chdev**, **vmtune**, and **no**. The **chdev** command acts upon the system device (in this case, sys0) to enable pacing. The **vmtune** command options are optimal for sequential I/O operations, especially the **-c4** setting, which enables the memory-to-disk write behind algorithm. This **-c** parameter keeps memory from being over committed to large sequential files, reducing the potential for real memory thrashing.

The **no** commands help improve system-wide network performance for all network devices. If you have Ethernet devices at 1,492 bytes Maximum Transmission Unit (MTU) size (both 10 BaseT and 100 BaseT), Token-Ring devices at 4,096 bytes MTU, or FDDI devices at 4,352 bytes MTU, the settings shown below are helpful:

```
# TCP/IP PERFORMANCE TUNING
if [ -f /usr/sbin/no ] ; then
/usr/sbin/no -o rfc1323=1
/usr/sbin/no -o thewall=16384
/usr/sbin/no -o sb_max=262144
/usr/sbin/no -o tcp_sendspace=131072
/usr/sbin/no -o tcp_recvspace=131072
/usr/sbin/no -o udp_sendspace=65536
/usr/sbin/no -o udp_recvspace=65536
/usr/sbin/no -o tcp_keepidle=240
/usr/sbin/no -o tcp_keepintvl=60
fi

# VMTUNE MEMORY MANAGEMENT PERFORMANCE TUNING
if [ -f /usr/samples/kernel/vmtune ] ; then
/usr/samples/kernel/vmtune -r 2 -R 16 -f 120 -F 200 -c 4
fi

# I/O PACING TO HELP TUNE READ AND WRITE I/O PERFORMANCE
if [ -f /usr/sbin/chdev ] ; then
/usr/sbin/chdev -l sys0 -a maxpout=41 -a minpout=16
fi
```

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EuroReady

Infoprint Manager is capable of processing data containing the euro sign. Font character sets and code pages that contain and map the euro sign consistently with the application must be present either in a host library or in the printer. AFP fonts that support the euro sign are included in the AFP Font Collection (Program Number 5648-B33).

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Easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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