Optional Configuration for Infoprint Manager for AIX

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Contents

Preface

This document describes a set of optional configuration tasks that you can perform on your Infoprint AIX server both during and after installation. These tasks are loosely grouped in sequence. For example, while installing Infoprint Manager for AIX, you are likely to perform the following:

1. Control access to Infoprint administrator and operator functions by creating the default **admin** and **oper** security groups.
2. Decide whether or not to :
   a. Disable the autostart capability on your Infoprint servers.
   b. Install language support besides English (**en_US** filesets) on your server(s).
   c. Install secondary Infoprint AIX servers
   d. Use SNMP Communication requests with your network printers

Once your Infoprint Manager for AIX server is installed and operational, you may want to consider how your AIX server's tuning parameters have been set. Also, you can decide whether or not you wish to configure your printers to provide cut-sheet emulation.

Chapter 1. Creating Default Users

If you are using the non-DCE version of Infoprint Manager and are running a
″Basic″ configuration (formerly known as ″commercial″), your should control
access to Infoprint administrator and operator functions by creating the default
users **admin** and **oper** (security groups).

If you are using the DCE version of Infoprint or are running an ″Advanced″
configuration, you must follow different procedures to control access to Infoprint.

Running Infoprint as the **root** user is not recommended under any circumstances.
The **admin** user will be allowed to perform both administrator and operator tasks
on basic, non-DCE Infoprint systems. The **oper** user will be able to perform
operator tasks, but will be prohibited from performing administrative tasks. To set
up these users, do the following:

1. Access the **Infoprint Utilities** main menu by:
   - If you do not have an **Infoprint Manager** icon on your front panel, open the
     Infoprint folder in the Application Manager and double click on the
     Infoprint SMIT icon. Then click **Infoprint Utilities**.
   - If you do have an **Infoprint Manager** icon on your front panel, open
     Infoprint Manager's popup menu and click on the **Infoprint SMIT** icon.
     Then click **Infoprint Utilities**.
2. Click **Create Default Users**.
3. Click **OK** when asked, ″Are you sure?″
4. Note the passwords you set for the **admin** and **oper** users because they will be
   needed in the future.

Chapter 2. Enabling/Disabling Autostart

The server created for you by the Infoprint Installer will start automatically when the system reboots. You may enable or disable the automatic starting of any Infoprint servers present on your AIX system.

Enabling Autostart

To enable the automatic starting of a server, do the following:

1. Access the **Infoprint Utilities** main menu by:
   - If you do not have an **Infoprint Manager** icon on your front panel, open the **Infoprint** folder in the Application Manager and double click on the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
   - If you do have an **Infoprint Manager** icon on your front panel, open Infoprint Manager's popup menu and click on the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
2. Click **Enable/Disable Autostart**.
3. Select **on** in response to the question, ″Do you wish to turn autostart on or off?″
4. Click **List** and select the Infoprint server you wish to start automatically on reboot.
5. Enter the port number which this server uses for communication with other programs. (Leave blank to use the default port number.)
6. Click **List** and select the locale (language environment) in which you want the server to run.
7. Click **OK**.

Disabling Autostart

To disable the automatic starting of a server, do the following:

1. Access the **Infoprint Utilities** main menu by:
   a. If you do not have an **Infoprint Manager** icon on your front panel, open the **Infoprint** folder in the Application Manager and double click on the **Infoprint SMIT** icon.
   b. If you do have an Infoprint Manager icon on your front panel, open Infoprint Manager's popup menu and click on the **Infoprint SMIT** icon.
   c. Click **Infoprint Utilities**.
2. Click **Enable/Disable Autostart**.
3. Select **off** in response to the question, ″Do you wish to turn autostart on or off?″
4. If prompted, select the server you want to disable for automatic starting.

Chapter 3. Adding or Removing Languages

The Infoprint Installer will install U.S. English (en_US) filesets on all Infoprint Control systems. If you will be installing a version of Infoprint Manager in a language other than U.S. English, you will need to install additional language support so that the Infoprint Installer can provide support for the language selected for use during install. The following topics provide the software prerequisites required, as well as procedures for adding and removing Infoprint Manager language support.

Software Prerequisites for Translated Versions of Infoprint Manager

You must install such support from the AIX operating system version 4.2.1 CD-ROM, onto each AIX system on which you will install Infoprint Manager and run an Infoprint Manager server. Infoprint Manager supports French, German, Italian, Spanish, and Japanese.

To install a language on an AIX operating system, use the following procedure:
1. From an AIX command line, access the smit fastpath by specifying: `smitty lang`
2. Select the **Add Additional Language Environments** option.
3. From the **Add Additional Language Environments** panel, press the **f4** key to determine value to specify in the **CULTURAL convention to Install** field.

   Note: Languages that are already installed on this AIX system will not appear in this list.
4. Press the **f4** key to determine the value to specify in the **LANGUAGE translation to install** field.

   Note: Languages that are already installed on this AIX system will not appear in this list.
5. Ensure that the **INPUT device/directory for software** field is pointing to your CD-ROM drive.
6. Press **Enter** to install the language.

Note: For more information about installing different languages on your AIX operating system, access the **info** data base.

Adding a Language

You may add support for an Infoprint Manager language only if your system is able to provide system messages in the chosen language. To add support for a language, do the following:
1. Insert your Infoprint product CD.
2. Access the **Infoprint Utilities** main menu by:
   - If you do not have an **Infoprint Manager** icon on your front panel, open the **Infoprint** folder in the Application Manager and double click on the **Infoprint SMIT** icon. Click **Infoprint Utilities**.

- If you do have an **Infoprint Manager** icon on your front panel, open Infoprint Manager's popup menu and click on the **Infoprint SMIT** icon. Click **Infoprint Utilities**.
3. Click **Add or Remove Languages**, then **Add Language**.
4. Select one or more locales to add from the list presented. (The list will only contain locales that your system is able to support.)
5. Enter your customer ID and Infoprint Manager Control Key in the fields provided.
6. Click **OK**.

Removing a Language

To remove support for an Infoprint Manager language environment, do the following:

1. Access the **Infoprint Utilities** main menu by:
   - If you do not have an **Infoprint Manager** icon on your front panel, open the **Infoprint** folder in the Application Manager and double click on the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
   - If you do have an **Infoprint Manager** icon on your front panel, open Infoprint Manager's popup menu and click on the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
2. Click **Add or Remove Languages**, then **Remove Language**.
3. Select one or more locales to remove from the list presented.
4. Click **OK**.

Note: The English locale may not be removed because some default messages must be presented in English.

Chapter 4. Installing Secondary Infoprint Servers

Infoprint Manager allows you to configure multiple AIX systems to work together to meet your printing needs. Installing secondary servers using the Distributed Computing Environment (DCE) version of Infoprint Manager is simple. All that is required is to run the Infoprint Installer on each system. DCE will provide the services that your primary and secondary Infoprint servers require to communicate with each other.

If, however, you are installing secondary servers in a non-DCE Infoprint environment, you will be using Network File System (NFS) to enable communication between servers. To make this work correctly, you must use one of the following two procedures:

- Installing Secondary Infoprint Servers Using NFS (No Job Ticketing)
- Installing Secondary Infoprint Servers Using NFS (Job Ticketing)

Installing Secondary Infoprint Servers Using NFS (No Job Ticketing)

To set up multiple Infoprint servers that do not require full job ticketing services, do the following:

1. Complete the installation of the primary Infoprint server.
2. Apply current APAR service, if available.
3. Complete the configuration of the primary Infoprint server:
   a. Access the **Infoprint Utilities** main menu by:
      - If you do not have an **Infoprint Manager** icon on your front panel, open the **Infoprint** folder in the Application Manager and double click the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
      - If you do have an **Infoprint Manager** icon on your front panel, open Infoprint Manager's popup menu and click on the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
   b. Click **Configure Secondary Servers (NFS)**, then **Link from Primary Server to Secondary Server**.
   c. Provide the information about your secondary system as prompted.

      Note: If you are using DNS or NIS name resolution services, be sure to update these services with all new server information before proceeding. (DNS and NIS are centralized services used to resolve host names into IP addresses. Whenever a new machine is added to the network, these services must be advised of the host name and IP address of the new system. These services may or may not be used on your LAN. If you are unsure about about your network's name resolution services, contact your network administrator.)
   d. Do the following for each secondary server:
      1) Run the Infoprint Installer.
      2) Apply current APAR service, as necessary.

Installing Secondary Infoprint Servers Using NFS (Job Ticketing)

To set up multiple Infoprint servers with job ticketing fully enabled:

1. Complete the installation of the primary Infoprint server.
2. Apply current APAR service, if available.
3. Run **Infoprint Utilities** on the primary Infoprint server as described in Setting Up the Primary Server.
4. Run **Infoprint Utilities** on the secondary Infoprint server as described in Setting Up the Secondary Server.

Note: You must set up the Primary Server before setting up the Secondary Server.

Setting Up the Primary Server

1. Access the Infoprint Utilities main menu by:
   - If you do not have an **Infoprint Manager** icon on your front panel, open the **Infoprint** folder in the Application Manager and double click the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
   - If you do have an **Infoprint Manager** icon on your front panel, open Infoprint Manager's popup menu and click on the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
2. Click on **Configure Secondary Servers (NFS)**, then **Link from Primary Server to Secondary Server**. Provide the information about your secondary system as prompted.
3. If the **/ipdata** filesystem was not allocated on the primary server, you must perform the necessary steps to make **/ipdata** accessible to all Infoprint servers before proceeding. (This is necessary if, for example, you have elected to use a PC to store shared information instead of your primary server.)

Note: If you are using DNS or NIS name resolution services, be sure to update these services with all new server information before proceeding. (DNS and NIS are centralized services used to resolve host names into IP addresses. Whenever a new machine is added to the network, these services must be advised of the host name and IP address of the new system. These services may or may not be used on your LAN. If you are unsure about about your network's name resolution services, contact your network administrator.)

Setting Up the Secondary Server(s)

Do the following for each secondary server:

1. Run the Infoprint Installer.
2. Apply current APAR service, as necessary.
3. Access the **Infoprint Utilities** main menu by:
   - If you do not have an **Infoprint Manager** icon on your front panel, open the **Infoprint** folder in the Application Manager and double click the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
   - If you do have an Infoprint Manager icon on your front panel, open Infoprint Manager's popup menu and click the **Infoprint SMIT** icon. Then click **Infoprint Utilities**.
4. Click on **Configure Secondary Servers (NFS)**, then **Link from Secondary Server to Primary Server**. Provide the information about your primary system as prompted.

Note: If any of the procedures above fail because the user and group identifiers could not be set, you must set these values manually so they are the same on all servers in the namespace. To do this, follow these steps:

1. Invoke **SMIT**.
2. Click **Infoprint Printing System**, then **Troubleshooting**, then **Standardize Default Users**.
3. Enter ID numbers as prompted.

Perform this procedure on both primary and secondary systems until the same IDs are in use by all servers in the namespace.

Chapter 5. Setting Up and Tuning SNMP Communication

If you are printing to network printers you may choose to control how your Infoprint servers issue Simple Network Management Protocol (SNMP) requests. You can use your Infoprint Administrator's GUI to specify:

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

The following SNMP attributes can be modified through the Infoprint Administrator's GUI to setup or tune the SNMP communication with network printers.

Set SNMP at Startup (snmp-discovery-during-startup)

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

To display the current settings for the following SNMP printer attributes, select the SNMP tab located on the printer properties notebook.

Use SNMP (use-snmp)

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

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

Community name (snmp-community-name)

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

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

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

Timeout (snmp-timeout)

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

Working with SNMP Printers

The following printer attributes may not need to be set if you are printing to SNMP Printers:

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

Chapter 6. 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, they 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 3.2 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 3.2 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 3.2, 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
```

Chapter 7. Configuring for Cut Sheet Emulation

To enable cut -sheet emulation, ensure that your printer has a microcode level of at least 9.216, then ensure that the appropriate personnel perform the following tasks at your installation on the systems specified:

1. At the Infoprint AIX server, the print administrator for your installation must disable the physical printer that you intend to run in cut sheet emulation mode.

2. At the printer console, an operator must set the printer to cut-sheet emulation mode.

3. The operator must then restart the printer.

4. At the Infoprint AIX server, the print administrator must create a logical printer for the physical printer.

5. The print administrator must ensure that both the logical and physical printer has been enabled.

To submit a job, see ″Using Cut Sheet Emulation.″

Chapter 8. Using Cut Sheet Emulation

Job submitters must specify a form definition that will print using cut sheet emulation through the following application programming interfaces:

- Using Infoprint Submit
- Using the PSF Physical Printer Properties notebook
- Using the pdpr command

Before using any of these interfaces, ensure that you are aware of this support's Defaults and limitations of cut sheet emulation support.

Using Infoprint Submit

From the **Layout** tab of the Infoprint Submit Job Ticket window, you can leave the **Use form definition** field blank to get the default form definition on the Infoprint AIX server, or specify a specific form definition.

By using the default form definition, cut sheet emulation will be invoked.

Using the PSF Physical Printer Properties Notebook

1. From the Infoprint Administration *servername* window, use the middle mouse button to drag the printer notebook action icon onto the Actual Destination (printer) that you want to use for cut-sheet emulation.
2. From the View and Change PSF Physical Printer Properties window, select the **Customization** tab.
3. Specify the form definition of choice in the form definition field.
4. Click **OK** or **Apply** to ensure that this form definition is applied.

Using the pdpr Command

The **form-definition** document, default document, or actual destination attributes on the **pdpr** command also change the form definition on a printer.

For specific examples of how to modify these values on the printer, refer to the *IBM Infoprint Manager: Reference*, (S544-5475).

Defaults and Limitations of Cut Sheet Emulation Support

When a form definition is explicitly named, any attribute found in both the form definition and either the Infoprint Manager graphical user interface or the **pdpr** command reverts to the value specified in the form definition.

Note that corresponding values specified on the **printer-pass-through** (or **destination-pass-through**) attribute override the values specified in either the **PSF Resource** tab of the PSF printer notebook or the **form-definition** document, default document, or actual destination attribute.

If you use a form definition that contains a medium map using **N_UP** commands, the printer will go out of cut sheet emulation mode while processing that **N_UP** command. If the **N_UP** processing ends, the printer will return to cut sheet

emulation mode. This scenario can occur when printing a large image in the middle of a job.

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Special Characters

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