

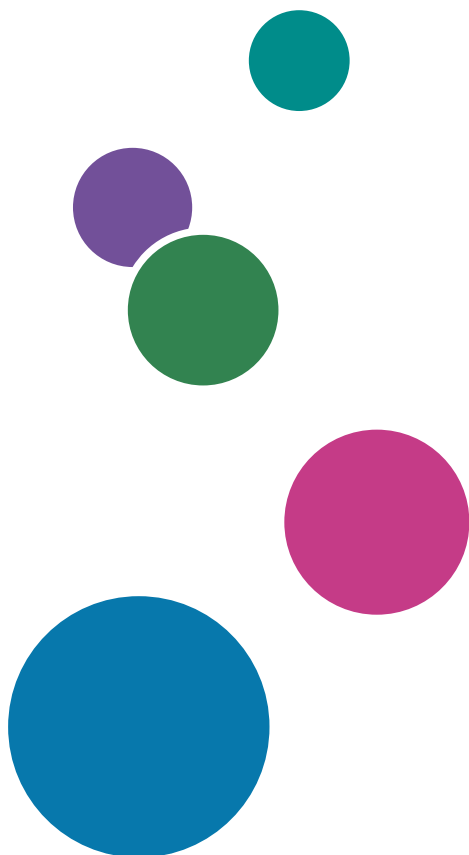


## High Availability Guidelines

**Version 4.13.1**

High availability overview	1
Planning and implementing for AIX	2
Planning and implementing for Linux	3
Planning and implementing for Windows	4

For information not in this manual, refer to the Help System in your product.





# TABLE OF CONTENTS

## Introduction

---

Important.....	3
Cautions regarding this guide.....	3
Guides for this application.....	3
How to read the documentation .....	4
Displaying the instruction manual.....	4
Displaying property help .....	5
Symbols.....	5
Abbreviations .....	5
Trademarks.....	6

## 1 High availability overview

---

Configuration supported by InfoPrint Manager.....	9
Cluster node considerations.....	9
Printing impacts.....	10
System overview: single points of failure.....	10

## 2 Planning and implementing for AIX

---

Resource configuration planning.....	11
File system configuration planning .....	12
Installation order planning .....	13
Configuring the Domain Name Resolutions .....	13
Installing InfoPrint Manager for AIX on a PowerHA server.....	13
Applying InfoPrint Manager Service.....	15
clsnapshot files worksheet.....	15

## 3 Planning and implementing for Linux

---

Resource configuration planning.....	18
File system configuration planning .....	19
Installation order planning .....	19
Installing InfoPrint Manager for Linux on a Linux HA server .....	20
Applying InfoPrint Manager Service.....	22

## 4 Planning and implementing for Windows

---

Resource configuration planning.....	23
--------------------------------------	----

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Problem determination checklist

---

Helpful non-InfoPrint Manager commands and log files

---

Glossary

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## Important

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To the maximum extent permitted by applicable laws, in no event will the manufacturer be liable for any damages whatsoever arising out of failures of this product, losses of documents or data, or the use or non-use of this product and operation manuals provided with it.

Make sure that you always copy or have backups of important documents or data. Documents or data might be erased due to your operational errors or malfunctions of the software. Also, you are responsible for taking protective measures against computer viruses, worms, and other harmful software.

In no event will the manufacturer be responsible for any documents created by you using this product or any results from the data executed by you.

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## Cautions regarding this guide

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- Some illustrations or explanations in this guide could differ from your product due to improvement or change in the product.
- The contents of this document are subject to change without notice.
- No part of this document may be duplicated, replicated, reproduced in any form, modified, or quoted without prior consent of the supplier.
- Throughout this publication, references to directory paths indicate the default paths only. If you install InfoPrint Manager or any of its components in a different location, including a different drive, you must adjust the paths accordingly.  
For example, if you install InfoPrint Manager on the D: drive of a computer running a Windows operating system, replace C: with D: in the directory paths.

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## Guides for this application

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This publication provides information about RICOH InfoPrint Manager™ for AIX, Linux, and Windows, Version 4.13 (Program Number 5648-F40).

This publication includes an overview of InfoPrint Manager and installation and configuration information about the product.

## Instruction manuals

These instruction manuals are included:

For information about InfoPrint Manager, see these documents:

- *RICOH InfoPrint Manager for Windows: Planning Guide* , G550-1071
- *RICOH InfoPrint Manager for Windows: Getting Started* , G550-1072
- *RICOH InfoPrint Manager for Windows: Procedures* , G550-1073
- *RICOH InfoPrint Manager for Linux: Planning Guide*, G550-20262
- *RICOH InfoPrint Manager for Linux: Getting Started*, G550-20263

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- *RICOH InfoPrint Manager for Linux: Procedures* , G550-20264
  - *RICOH InfoPrint Manager for AIX and Linux: Configuring and Tuning Guide*, S550-1062
  - *RICOH InfoPrint Manager for AIX: Planning Guide*, G550-1060
  - *RICOH InfoPrint Manager for AIX: Getting Started*, G550-1061
  - *RICOH InfoPrint Manager for AIX: Procedures*, G550-1066
  - *RICOH InfoPrint Manager: High Availability Guidelines*, G550-20261
  - *RICOH InfoPrint Manager: Reference*, S550-1052
  - *RICOH InfoPrint Manager: PSF, Server, and Transform Messages*, G550-1053
  - *RICOH InfoPrint Manager: Secure Print: Installing and Configuring*, G550-20129
  - *RICOH InfoPrint Manager: SAP R/3 Planning and Configuring Guide*, S550-1051
  - *RICOH InfoPrint Manager: Dictionary of Keywords*, S550-1188
  - *AFP Conversion and Indexing Facility: User's Guide*, G550-1342
  - *Page Printer Formatting Aid for Windows: User's Guide and Reference*, S550-0801
  - *RICOH InfoPrint Manager AFP2PDF Transform Feature: Installing and Using* , G550-1057
  - *RICOH InfoPrint Manager: Installing InfoPrint Manager Transform Feature*, G550-20160

## Help

Property help is available on many screens to provide information for specific tasks and settings.

In addition, the **Help** menu provides access to the HTML version of the instruction manual directly from the user interface.

### Note

- A PDF reader, such as Adobe Reader, must be installed to view the PDF documentation.

For more information about RICOH printing products, see:

RICOH Commercial and Industrial Printing website at <https://www.ricoh-usa.com/en/products/commercial-industrial-printing>.

RICOH Software Information Center at <https://help.ricohsoftware.com/swinfocenter>.

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## How to read the documentation

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### Displaying the instruction manual


Use this procedure to view the instruction manuals.

### Displaying the instruction manual in PDF format


- InfoPrint Manager includes publications in PDF format on the DVD-ROM supplied with the product.

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## Displaying the instruction manual in HTML format

- The HTML version of the instruction manual is available directly from the user interface. Start the application, and then click  button at the right of the banner and select **Help**.

## Displaying property help

Click the  button next to a property on the user interface to display the property help for that item.

## Symbols

The following symbols are used in this manual to help you to identify content quickly.

### Important

- This symbol indicates points to pay attention to when using the product. Be sure to read these explanations.

### Note

- This symbol indicates helpful supplementary information that is not essential to completing a task.

## Bold

**Bold type** indicates the names of dialogs, menus, menu items, settings, field labels, buttons, and keys.

## *Italic*

*Italic type* indicates the titles of manuals and variables that you must replace with your own information.

## Monospace

Monospace type indicates computer input and output.

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## Abbreviations

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### AFP

Advanced Function Presentation

### IP

Internet Protocol

### PDF

Portable Document Format

### PCL

Printer Command Language

### GIF

Graphical Interchange Format

### JPEG

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Joint Photographic Experts Group

**TIFF**

Tagged Image File Format

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**Trademarks**

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- Print Services Facility
- pSeries
- S/390
- z/OS

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# 1. High availability overview

- Configuration supported by InfoPrint Manager
- Cluster node considerations
- Printing impacts

The high availability concept defines a system that provides continuous operation and it makes sure that business and productivity continues during the possible downtimes. During these downtimes, the critical services and resources are accessed from a shared storage system.

The high availability clusters consist of multiple computers, called nodes, backing up the main server. They provide continuous usage of the system data. The high availability software monitors resources, such as disk drives, adapters, and network links. When a failure is detected, the high availability system automatically transfers the data to another system. A high availability solution is intended for mission-critical database and transaction-processing applications by eliminating single points of failure (SPOF) in your installation through appropriate design, planning, hardware selection, software configuration, and carefully controlled change management processes. The high availability solution has two of everything. If any component should fail, a redundant backup component is waiting to take over the workload.

A common configuration for the high availability systems consists of a two-node cluster. This is a basic and minimum setup of the system but more nodes can be added to ensure greater continuity in case of a server failure.

The cluster is defined as loosely coupled machines working together. Each cluster is connected to a node which is a server running its own operating system. Each node must be configured to obtain the data from another node that is down.

## Configuration supported by InfoPrint Manager

InfoPrint Manager supports a high availability cascading configuration without a fallback procedure. This configuration contains at least two nodes: a primary node that provides all critical services to end users, and a secondary or backup node that either sits idle or provides non-critical services. No InfoPrint Manager processes, such as running either the **InfoPrint Manager Administration GUI** or the **InfoPrint Manager Operations GUI**, should be performed on the secondary node. When the primary node fails, the secondary node takes over critical services. InfoPrint Manager has hard coded file systems, which would over-mount any existing and operating file systems on the secondary node during a failover.

Because the resource configuration is cascading, the data center staff can schedule the interruption for high availability re-integration (returning all critical services to the primary node) after the failure has been fixed. Cascade mode means that upon failure of the primary node, the resources (such as applications, disks, and the network address) are acquired by the secondary node.

This configuration allows you to shift from a single-system environment to an high availability cluster.

## Cluster node considerations

You must consider the requirements of the cluster as a total entity. Remember that the surviving node must add the workload of the failed node to its own workload. Consider these areas:

- Processor capacity
- Application requirements
- Anticipated growth requirements

- I/O slot requirements

Also consider the number of input/output expansion slots the models provide. The selected model must have enough slots to house the components required to remove single points of failure (SPOF) and provide the desired level of availability. A SPOF is defined as any single component in a cluster whose failure would cause a service to become unavailable to end users.

1

## Printing impacts

Print jobs will be impacted in certain circumstances. Since the printers and job types vary, the impact is unique with each implementation of InfoPrint Manager and a high availability solution. The high availability application remounts all shared directories where spooled jobs are located and in certain circumstances, InfoPrint Manager reprints jobs. Ricoh does not guarantee recovery of jobs that are currently printing.

### ↓ Note

The exact high availability failover timing depends on the unique configuration for the customer location.

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## System overview: single points of failure

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The following section identifies some of the potential SPOFs in a high availability configuration. The occurrence of any one of these failures results in that node's failure or isolation.

Potential SPOFs include:

1. Operating system crash or failure
2. Network failures
3. Failure of the physical servers
4. Storage subsystem failures
5. Power supply failures

The objective is to keep the applications running and highly available for the clients. The strategy is to keep the host operational with as much internal redundancy and operating system safeguards as possible or practical.

## 2. Planning and implementing for AIX

- Resource configuration planning
- File system configuration planning
- Installation order planning
- clsnapshot files worksheet

IBM PowerHA SystemMirror, formerly called High Availability Cluster Multiprocessing (HACMP), provides an environment that ensures a fast and reliable recovery of important applications from hardware and software failures. For more information about IBM PowerHA SystemMirror, refer to the [IBM PowerHA SystemMirror website](#). IBM PowerHA SystemMirror is referred to as PowerHA hereafter.

Before installing InfoPrint Manager or any of the components for your PowerHA configuration, you need to plan for the configuration of system resources, plan for the configuration of important file systems across your installation, and plan the sequence that products should be installed on your AIX server.

InfoPrint Manager supports IBM PowerHA SystemMirror 7.1 and its subsequent versions.

The following sections provide the PowerHA implementation requirements for InfoPrint Manager:

1. [Resource configuration planning, p. 11](#)
2. [File system configuration planning, p. 12](#)
3. [Installation order planning, p. 13](#)

### Note

- If you are installing InfoPrint Manager for AIX in an existing high availability installation, you should note that InfoPrint Manager appends information to the end of the `/etc/inittab` file. If a high availability application has been installed on the AIX server before InfoPrint Manager for AIX, the InfoPrint Manager information appears at the end of the `/etc/inittab` file.
- InfoPrint Manager is not supported with mutual takeover and cannot run in that environment.
- The InfoPrint Manager information must be commented out in the `/etc/inittab` file by adding ":" in front of InfoPrint Manager lines. For example:

```
:rcpd:2:once:/etc/rc.pd >/var/log/pd/rc.pd.out 2>&1 # InfoPrint Manager server
```

## Resource configuration planning

Resources in a PowerHA cluster include the application and all the shared file systems that belong to it. PowerHA provides a highly available environment by identifying a set of cluster-wide resources essential to uninterrupted processing, and then defining relationships among nodes that ensure these resources are available to client processes. When a cluster node fails or detaches from the cluster for a scheduled outage, the Cluster Manager redistributes its resources among any number of the surviving nodes.

PowerHA considers the following as resource types:

- Volume Groups
- Disks
- File Systems
- File Systems to be NFS mounted
- File Systems to be NFS exported

- Service IP addresses
- Applications

Each resource in a cluster is defined as part of a resource group. This allows you to combine related resources that need to be together to provide a particular service. A resource group also includes the list of nodes that can acquire those resources and serve them to clients. Resources can either be cascading or rotating.

In cascading resource groups, all nodes are assigned priorities for that resource group. The set of resources cascades up or down to the highest priority node active in the cluster. When a node that is serving the resources fails, the surviving node with the highest priority takes over the resources.

A rotating resource group is associated with a group of nodes, rather than a particular node. A node can possess one rotating resource group per network. As participating nodes join the cluster for the first time, they acquire the first available rotating resource group per network until all the groups are acquired. The remaining nodes maintain a standby role. When a node holding a rotating resource group leaves the cluster, either because of a failure or gracefully while specifying the takeover option, the node with the highest priority and available connectivity takes over. Upon reintegration, a node remains as a standby and does not take back any of the resources that it had initially served.

## File system configuration planning

Ricoh recommends that the file systems be mirrored on a shared Storage Across Network (SAN) in order to eliminate as many SPOFs as possible. If Serial Storage Architecture (SSA) disks are used, the loops should be configured so that at least one mirror is wholly contained during a failover. When the primary node may be powered off, there is the potential for a hardware crash. In this case, the secondary system will have SSA fragments. The throughput rate for SSA fragment is about half of the loop. Mirroring file systems in AIX takes advantage of the faster disks (the ones in a loop) so that InfoPrint Manager does not see performance degradation as a result of disk fragments.

InfoPrint Manager shared file systems include these:

- **/var/pd**
- **/var/psm**
- **/var/psf**
- **/var/psf/segments** (do not mirror this file system)
- **/var/pddir/**

You must create these file systems before installing InfoPrint Manager. If they are already available at installation time, InfoPrint Manager detects the listed file systems and uses them to install the required files.

Use the **allocatefs** utility described in [Installing InfoPrint Manager for AIX on a PowerHA server, p. 13](#) and documented in the *RICOH InfoPrint Manager: Reference* to define the location and size of these file systems.

If your InfoPrint Manager for AIX installation drives printers that use either the AIX, BSD, or PSF-Other device support systems (DSSs), make sure that you synchronize the **/var/spool/lpd/pio/@local/ddi** directory on both systems, or allow it fail over. This directory contains critical device files that cannot be relocated, but must be identical on both your primary and back-up nodes. Even though these are AIX system files and not InfoPrint Manager files, InfoPrint Manager writes data to these files that is critical to ensuring that certain printers appear on your failover system. If this directory is not synchronized, certain

InfoPrint Manager actual destination objects may have to be deleted and redefined each time you failover.

## Installation order planning

The order of installation is important and should be carefully followed. After each step in the installation order, you should make sure that the configuration is working correctly. If PowerHA cannot successfully failover shared resources (such as volume groups, disks, and file systems) without InfoPrint Manager, then installing InfoPrint Manager will not resolve the problem.

1. Installing PowerHA for AIX.  
For more information about relevant sources, see [Configuring the Domain Name Resolutions](#), p. 13.
2. [Installing InfoPrint Manager for AIX on a PowerHA server](#), p. 13.

## Configuring the Domain Name Resolutions

Make sure Domain Name Resolutions work from of all cluster nodes and all cluster nodes are resolvable via DNS.

## Installing InfoPrint Manager for AIX on a PowerHA server

Once you have verified the failover of your PowerHA for AIX system, you can use the following procedure to install InfoPrint Manager for AIX.

1. Use the **allocatefs** utility to allocate disks for InfoPrint Manager file systems referred to in [File system configuration planning](#), p. 12. You must allocate these file systems in the order specified below.

### ★ Important

To create file systems using the **allocatefs** utility, you must set the correct PowerHA configuration. You can use one of these two methods:

- Create a new environment variable called `CLUSTER_OVERRIDE` and set the value to `yes`. This enables the correct permissions for **allocatefs** utility to create the file systems.
- You can use the InfoPrint SMIT administrator's interface to run the command through C-SPOC (Cluster Single Point Of Control). For more information about C-SPOC, see the PowerHA documentation.

If you are running InfoPrint Manager as a non-root user, such as `ipm1`, you must set the maximum number of processes to at least 4096. InfoPrint Manager installer sets this value for your system during the installation process.

### ↓ Note

If you are mirroring, these file systems should be mirrored and backed up. This advice applies to all file systems except **/var/psf/segments**.

- 1) There are two possible ways of allocating the **/var/psf**, **/var/psm**, and **/var/pddir** file systems:

1. To allocate a new shared hard drive, specify `allocatefs -d hdiskn` where *n* specifies the number for the hard drive. This command automatically creates a new volume group and allocates the three file systems to that volume group.
2. To add these file systems to an existing shared volume group, specify `allocatefs -s yourshared_volume_groupname`. This command automatically allocates the three file systems to that volume group.
- 2) To allocate `/var/pd`, specify `allocatefs -f /var/pd hdisk1 hdisk2 hdisk3 hdisk4`. This command allocates the `/var/pd` file system across the four hard drives named in the command. You can specify a minimum of two hard drives and a maximum of four hard drives.
- 3) To allocate `/var/psf/segments`, specify `allocatefs -f /var/psf/segments hdisk5 hdisk6 hdisk7 hdisk8`. This command allocates the `/var/psf/segments` file system across the four hard drives named in the command. You can specify a minimum of two hard drives and a maximum of four hard drives.
- 4) Set all created file systems and volume groups to not mount automatically at boot time.
- 5) After you complete running **allocatefs** on the primary node, vary off the volume groups and then import these volume groups to the secondary or backup node.

By specifying `allocatefs -?` from an AIX command line, you can see the command syntax that allows you to specify the disks for the InfoPrint Manager file systems. For more information, see the *RICOH InfoPrint Manager: Reference*.

2. Add these new file systems to the resource group in PowerHA.
3. Bring the resource group online.
4. Run the InfoPrint Manager Installer on both the primary and the backup server. When installing on the primary server, use the `-V` flag. When installing on the secondary or backup server, use the `-v` flag.
5. Comment out `/etc/inittab` InfoPrint Manager lines on both primary and secondary servers.
6. Add an PowerHA Application Server with InfoPrint Manager start (`start_ipmha`) and stop (`stop_ipmha`) scripts that reside in the `/usr/lpp/pd/bin` directory.

**Note**

- Only a person with root user authority or the InfoPrint Manager user can run this command.
- InfoPrint Manager for AIX Support does not support user modification of these scripts.

7. Specify the appropriate server names that must be started in the `etc/rc.pd.servers` file.

**Important**

Make sure that you synchronize these files on all your cluster nodes:

- `rc.pd.servers`
- `rc.ippgw.daemons`
- `rc.mvsd.daemons`

These files can be found in the `/etc` folder.

**Note**

This step needs to be performed manually on both the primary and the secondary node.



This script lists the InfoPrint servers that are started by the **rc.pd** process. If an AIX server named **ipm1** was being started, you could specify the following in this file:

```
startserv -l en_US ipm1
```

8. Run both the **InfoPrint Manager Administration GUI** and the **InfoPrint Manager Operations GUI** on the primary node.  
Ricoh recommends against running either GUI on the backup node.
9. Once InfoPrint Manager for AIX has been installed, ensure that you synchronize cluster resources across the installation.
10. Test to make sure that your server can failover to the backup node. Check to ensure the InfoPrint system is operational by verifying standard functions, including:
  - Verify the presence of the **lpd** daemon and restart the daemon if it is not running.
  - If you are performing a manual failover event, Ricoh recommends you shut down both the **InfoPrint Manager Administration GUI** and the **InfoPrint Manager Operations GUI** on the primary node. When the file systems are moved to the backup node on a failover, both GUIs will be brought down.

2

## Applying InfoPrint Manager Service

Since the InfoPrint Manager install process puts files locally in `/usr/lpp/pd/bin` on the AIX node and not on the shared filesystems that move from one node to another, updates have to be done on each node, but only one node at a time. To apply service updates on a clustered InfoPrint Manager system:

- Install the service update on each standby node.
- Failover the active node to the standby nodes, which will start InfoPrint Manager on the new service update level of code.
- Install the service update on the former active nodes.

This minimizes downtime since it only brings down InfoPrint Manager once.

## clsnapshot files worksheet

PowerHA's cluster snapshot utility records the PowerHA Object Data Manager (ODM) configuration information for both cluster topology and resources. These cluster snapshots provide an ideal means of capturing your cluster configuration for either cloning or change control purposes. Each snapshot provides both an ODM file (in the format `snapshotname.odm`) and a printable report (in the format `snapshotname.info`) that can be extended. By default, both files are stored in the `/usr/sbin/cluster/snapshots/` directory, although you can use the `$$SNAPSHOTPATH` environment variable to specify an alternate location.

Like many other Cluster Single Point of Control (C-SPOC) facility options, you can use a SMIT fastpath command (`smit cm_cfg_snap_menu`) to access the Cluster Snapshots panel. When creating a cluster snapshot, be sure to provide a meaningful description in the **Cluster Snapshot Description** field.

Cluster snapshots can be applied (`smit cm_apply_snap.select`) while the cluster is running. If you decide to reconfigure the resources, any resource group configuration changes take effect immediately. You can specify **yes** on the **Force apply if verify fails** field to force a snapshot to apply, even if it has a

different topology configuration than the current node. For example, if you are cloning cluster configuration across nodes and then changing the IP addresses with your adapters after the snapshot has applied, this option would be necessary.

# 3. Planning and implementing for Linux

- Resource configuration planning
- File system configuration planning
- Installation order planning

Linux High Availability provides an environment that ensures a fast and reliable recovery of important applications from hardware and software failures. Linux High Availability is referred to as Linux HA hereafter.

Before installing InfoPrint Manager or any of the components for your Linux HA configuration, you need to plan for the configuration of system resources, plan for the configuration of important file systems across your installation, and plan the sequence that products should be installed on your Linux server.

InfoPrint Manager supports Red Hat Enterprise Linux High Availability Add On and SUSE Linux Enterprise High Availability Extension.

The following sections provide the Linux HA implementation requirements for InfoPrint Manager:

1. [Resource configuration planning, p. 18](#)
2. [File system configuration planning, p. 19](#)
3. [Installation order planning, p. 19](#)

 **Note**

- If you are installing InfoPrint Manager for AIX in an existing high availability installation, you should note that InfoPrint Manager appends information to the end of the `/etc/inittab` file. If a high availability application has been installed on the AIX server before InfoPrint Manager for AIX, the InfoPrint Manager information appears at the end of the `/etc/inittab` file.
- InfoPrint Manager is not supported with mutual takeover and cannot run in that environment.
- Stop and disable the following InfoPrint Manager services by running the following commands:  
InfoPrint Manager Web Server

```
systemctl is-active --quiet ipm-ws.service && systemctl stop ipm-ws.service
systemctl disable ipm-ws.service
```

## InfoPrint Manager IPPGW

```
systemctl is-active --quiet ipm-ippgw.service && systemctl stop ipm-ippgw.service
systemctl disable ipm-ippgw.service
```

## InfoPrint Manager MVS Download

```
systemctl is-active --quiet ipm-mvsd.service && systemctl stop ipm-mvsd.service
systemctl disable ipm-mvsd.service
```

## InfoPrint Manager LPD

```
systemctl is-active --quiet ipm-lpd.service && systemctl stop ipm-lpd.service
systemctl disable ipm-lpd.service
```

## InfoPrint Manager SAP

```
systemctl is-active --quiet ipm-sapcbd.service && systemctl stop ipm-sapcbd.service
systemctl disable ipm-sapcbd.service
```

## InfoPrint Manager PDServers

```
systemctl is-active --quiet ipm-pdservers.service && systemctl stop ipm-pdservers.service
systemctl disable ipm-pdservers.service
```

## InfoPrint Manager Notification

```
systemctl is-active --quiet ipm-notifyd.service && systemctl stop ipm-notifyd.service
systemctl disable ipm-notifyd.service
```

## InfoPrint Manager LDAP Cache

```
systemctl is-active --quiet ipm-lcd.service && systemctl stop ipm-lcd.service
systemctl disable ipm-lcd.service
```

## InfoPrint Manager Licensing

```
systemctl is-active --quiet ipm-licverd.service && systemctl stop ipm-licverd.service
systemctl disable ipm-licverd.service
```

## Resource configuration planning

Resources in a Linux HA cluster include the application and all the shared file systems that belong to it. Linux HA provides a highly available environment by identifying a set of cluster-wide resources essential to uninterrupted processing, and then defining relationships among nodes that ensure these resources are available to client processes. When a cluster node fails or detaches from the cluster for a scheduled outage, the Cluster Manager redistributes its resources among any number of the surviving nodes.

Linux HA considers the following as resource types:

- Volume Groups
- Disks
- File Systems
- File Systems to be NFS mounted
- File Systems to be NFS exported
- Service IP addresses
- Applications

Each resource in a cluster is defined as part of a resource group. This allows you to combine related resources that need to be together to provide a particular service. A resource group also includes the list of nodes that can acquire those resources and serve them to clients. Resources can either be cascading or rotating.

## File system configuration planning

Ricoh recommends that the file systems be mirrored on a shared Storage Across Network (SAN) in order to eliminate as many SPOFs as possible.

InfoPrint Manager shared file systems include these:

- **/var/pd**
- **/var/psm**
- **/var/psf**
- **/var/psf/segments** (do not mirror this file system)
- **/var/pddir/**

You must create these file systems before installing InfoPrint Manager. If they are already available at installation time, InfoPrint Manager detects the listed file systems and uses them to install the required files.

If your InfoPrint Manager for Linux installation drives printers that use either the CUPS, BSD, or PSF-Other device support systems (DSSs), make sure that you synchronize the **/etc/cups** directory on both systems, or allow it fail over. This directory contains critical device files that cannot be relocated, but must be identical on both your primary and back-up nodes. Even though these are Linux system files and not InfoPrint Manager files, InfoPrint Manager uses data to these files that is critical to ensuring that certain printers appear on your failover system. If this directory is not synchronized, certain InfoPrint Manager actual destination objects may have to be deleted and redefined each time you failover.

## Installation order planning

The order of installation is important and should be carefully followed. After each step in the installation order, you should make sure that the configuration is working correctly. If Linux HA cannot successfully failover shared resources (such as volume groups, disks, and file systems) without InfoPrint Manager, then installing InfoPrint Manager will not resolve the problem.

1. Installing Linux HA.
2. [Installing InfoPrint Manager for Linux on a Linux HA server, p. 20.](#)

## Installing InfoPrint Manager for Linux on a Linux HA server

Once you have verified the failover of your Linux HA system, you can use the following procedure to install InfoPrint Manager for Linux.

1. Mount all the filesystems on the primary server but not on the secondary or backup server.

### Note

**/var/psf/segments** filesystem must be a local filesystem that must not be mirrored on a shared Storage Across Network (SAN).

2. Run the InfoPrint Manager Installer on both the primary and the backup server. When installing on the primary server, use the **-V** flag. When installing on the secondary or backup server, use the **-v** flag.
3. Stop and disable the following InfoPrint Manager services by running the following commands:  
InfoPrint Manager Web Server

```
systemctl is-active --quiet ipm-ws.service && systemctl stop ipm-ws.service
systemctl disable ipm-ws.service
```

InfoPrint Manager IPPGW

```
systemctl is-active --quiet ipm-ippgw.service && systemctl stop ipm-ippgw.service
systemctl disable ipm-ippgw.service
```

InfoPrint Manager MVS Download

```
systemctl is-active --quiet ipm-mvsd.service && systemctl stop ipm-mvsd.service
systemctl disable ipm-mvsd.service
```

InfoPrint Manager LPD

```
systemctl is-active --quiet ipm-lpd.service && systemctl stop ipm-lpd.service
systemctl disable ipm-lpd.service
```

InfoPrint Manager SAP

```
systemctl is-active --quiet ipm-sapcbd.service && systemctl stop ipm-sapcbd.service
systemctl disable ipm-sapcbd.service
```

InfoPrint Manager PDServers

```
systemctl is-active --quiet ipm-pdservers.service && systemctl stop ipm-pdservers.service
systemctl disable ipm-pdservers.service
```

InfoPrint Manager Notification

```
systemctl is-active --quiet ipm-notifyd.service && systemctl stop ipm-notifyd.service
systemctl disable ipm-notifyd.service
```

InfoPrint Manager LDAP Cache

```
systemctl is-active --quiet ipm-lcd.service && systemctl stop ipm-lcd.service
systemctl disable ipm-lcd.service
```

InfoPrint Manager Licensing

```
systemctl is-active --quiet ipm-licverd.service && systemctl stop ipm-licverd.service
systemctl disable ipm-licverd.service
```

4. Configure the `ipmha` service using the web interface. You can find more information about accessing the web interface and configuring the service in the [Red Hat Enterprise Linux 8](#), [Red Hat Enterprise Linux 9](#), or the [SUSE Linux Enterprise](#).

**Note**

InfoPrint Manager for Linux Support does not support user modification of this script.

5. When InfoPrint Manager is not running as user `root`, allow the user running InfoPrint Manager to restart `cups` service on all your cluster nodes:

- 1) Copy the `/usr/lpp/pd/polkit/10-ipm-cups-restart.rules` file to the `/etc/polkit-1/rules.d` directory.
- 2) If the user running InfoPrint Manager is not `ipm1`, edit the `/etc/polkit-1/rules.d/10-ipm-cups-restart.rules` file and change the following line:  

```
var IPM_USER = "ipm1".
```

Replace `ipm1` with the actual user running InfoPrint Manager.

6. Specify the appropriate server names that must be started or stopped on one of the cluster nodes when the `ipmha` script runs.

**Important**

Make sure that you synchronize these files on all your cluster nodes:

- `rc.pd.servers`
- `rc.ippgw.daemons`
- `rc.lpd.daemons`
- `rc.mvsd.daemons`
- `rc.ipmws.daemons`
- `rc.iprsap.daemons` (if available)

These files can be found in the `/etc` folder.

**Note**

This step needs to be performed manually on all cluster nodes.

7. Run both the **InfoPrint Manager Administration GUI** and the **InfoPrint Manager Operations GUI** on the primary node.  
Ricoh recommends against running either GUI on the backup node.
8. Once InfoPrint Manager for Linux has been installed, ensure that you synchronize cluster resources across the installation.
9. Test to make sure that your server can failover to the backup node. Check to ensure the InfoPrint system is operational by verifying standard functions, including:
  - If you are performing a manual failover event, Ricoh recommends you shut down both the **InfoPrint Manager Administration GUI** and the **InfoPrint Manager Operations GUI** on the primary node. When the file systems are moved to the backup node on a failover, both GUIs are brought down.

---

## Applying InfoPrint Manager Service

---

Since the InfoPrint Manager install process puts files locally in `/usr/lpp/pd/bin` on the Linux node and not on the shared filesystems that move from one node to another, updates have to be done on each node, but only one node at a time. To apply service updates on a clustered InfoPrint Manager system:

- Install the service update on each standby node.
- Failover the active node to the standby nodes, which will start InfoPrint Manager on the new service update level of code.
- Install the service update on the former active nodes.

This minimizes downtime since it only brings down InfoPrint Manager once.



## 4. Planning and implementing for Windows

### • Resource configuration planning

Windows High Availability provides an environment that ensures a fast and reliable recovery of important applications from hardware and software failures.

Before installing InfoPrint Manager or any of the components for your Windows HA configuration, you need to plan for the configuration of system resources, plan for the configuration of important file systems across your installation, and plan the sequence of products that should be installed on your Windows server.

### Resource configuration planning

Resources in the Windows HA cluster include the application and all the shared file systems that belong to it. Windows HA provides an environment by identifying a set of cluster-wide resources essential to uninterrupted processing defining relationships among these nodes ensuring resources are available to client processes. When a cluster node fails or detaches from the cluster for a scheduled outage, the Cluster Manager redistributes its resources among any number of the surviving nodes.

Each resource in a cluster is defined as part of a **Resource Group** or a **Role**. This allows you to combine related resources that need to be clustered to provide a particular service. A **Role** includes the list of nodes that can acquire those resources and serve them to clients. Resources can either be cascading or rotating.

When configuring the InfoPrint Manager clustering, you have to add the InfoPrint services as resources in the created **Resource Group** or **Role**.

Before adding the InfoPrint Manager services as resources, the InfoPrint Manager shared folders need to be created within the shared disk in the cluster (CSV) and the cluster nodes need to be rearranged.

### Changes within the primary node

1. Mount the CSV.  
Failover forces the CSV to be mounted within the other node.
2. On the CSV storage, create this folder structure:
  - RICOH\InfoPrint Manager
  - RICOH\InfoPrint Manager\var\pd
  - RICOH\InfoPrint Manager\var\psf
  - RICOH\InfoPrint Manager\var\pddir
3. After you create the folder structure, start installing InfoPrint Manager for Windows on the primary node and on all existing secondary nodes.
4. On the first panel, the installer asks you to choose between **Standard** or **HA** installation. To install InfoPrint Manager on a Windows Server Cluster for High Availability, select **HA**.
5. On the next installer panel, you can choose between **HA primary** and **HA failover** installation.

#### ↓ Note

- When installing InfoPrint Manager on the primary node, select **HA primary**.
- When installing InfoPrint Manager on any of the secondary nodes, select **HA failover**.

6. Continue with the installation in the usual manner. See *RICOH InfoPrint Manager for Windows: Getting Started* for more information.
7. After creating the folder structure and installing InfoPrint Manager for Windows, follow these steps:
  - 1) Stop all the InfoPrint Manager services within the primary node, if they are running. By default for a HA installation, the InfoPrint Manager services do not start automatically after the installation.
  - 2) After you create these folders, move the content from the primary node to the CSV:
    - Move the primary node `\var\pd` content to the `\var\pd` folder you created on the cluster shared volume. Within the primary node, the `\var\pd` folder must become a Windows junction to the `\var\pd` shared volume folder.
    - Move the primary node `\var\psf` to the `\var\psf` folder you created on the cluster shared volume. Within the primary node, the `\var\psf` folder must become a Windows junction to the `\var\psf` shared volume folder.
    - Move the primary node `\var\pddir` to the `\var\pddir` folder you created on the cluster shared volume, and then the primary node `\var\pddir` must become a Windows junction to the `\var\pddir` folder you created on the cluster shared volume.
  - 3) Start the InfoPrint Manager services and check if they are running after the primary node modifications.
  - 4) Stop all the InfoPrint Manager services.

## Changes within the failover node

### Note

By default, a **HA failover** installation does not create the `\var\pd`, `\var\pddir` and `\var\psf` folders. In this case, you must create the `\var\psf` folder and `\var\psf\segments` subfolder manually. For each node, you must create a unique segment with a unique name.

1. Remove the content of the failover node, `\var\pd` folder, if it exists.
2. Remove the content of the failover node, `\var\psf` folder.
3. Remove the content of the failover node, `\var\pddir` folder, if it exists.
4. Move the shared volume to the failover node using the Cluster Manager.
5. Create a Windows junction from the failover nodes `\var\pd` to the `\var\pd` folder you created on the cluster shared volume.
6. Create Windows junctions from the failover node `\var\psf` to the `\var\psf` folder you created on the cluster shared volume.
7. Create a Windows junction from the `\var\pddir` folder to the `\var\pddir` folder you created on the cluster shared volume.
8. To test if the InfoPrint Manager services start properly after making these changes within the failover node, change the state of the InfoPrint Manager services to Manual mode.
9. Stop all the InfoPrint Manager services if you have started them and change the state of the InfoPrint Manager services to Disabled mode.
10. Move the shared disk back to the primary node by using the Cluster Manager.

## File system configuration planning

InfoPrint Manager shared file systems include these:

- /var/pd
- /var/psf
- /var/pddir/

The cluster administrator must configure the `\var\psf\segments` folder path on each node before starting InfoPrint Manager. Each node uses its own segments directory. The first node uses `C:\ProgramData\RICOH\InfoPrint Manager\var\psf\segments1` folder, the second node uses `C:\ProgramData\RICOH\InfoPrint Manager\var\psf\segments2` folder, and so on.

You must configure each node through the Management Console application. Select **Option** from the menu and choose the **Customize Input Manager** option.

## Add resources to the InfoPrint Manager cluster group

1. Right click on the group you have created and select **Add a resource->Generic Service**.

### Note

All InfoPrint Manager services must be added as resources within the created group.

2. The InfoPrint Manager services are displayed on the next panel.

## Cluster resource configuration

After you add all the InfoPrint Manager resources to the cluster, you must configure them.

First, you must configure the dependencies between resources, the same as for a normal installation on a Windows machine.

These services or cluster resources are dependent on the service license:

- InfoPrint Manager Service
- InfoPrint Manager LPD
- InfoPrint Manager MVS Download Receiver
- InfoPrint Manager SAP

You must configure them individually, by right clicking on the resource you want to configure. Select the **Properties** tab and add the license service as a dependency.

### Note

The services or cluster resources that are not listed above do not need any dependency configuration.

After you configure the service dependencies, you must configure the registry entries. Right-click each cluster group resource, select the **Option** tab, and add these registry entries:

- **InfoPrint Manager Registry replication.**
  - HKEY\_LOCAL\_MACHINE\SOFTWARE\RICOH\Infoprint Manager\Configuration
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\InfoprintManager
- **InfoPrint Manager LPD Service Registry replication**

- HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\Infoprint Manager LPD
- **InfoPrint Manager MVS Download Receiver Service Registry replication**
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\Infoprint Manager MVS Download
  - HKEY\_LOCAL\_MACHINE\SOFTWARE\RICOH\InfoPrint Manager\MVS Download
- **InfoPrint Manager DPF Service Registry replication**
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\InfoprintManagerDPF
- **InfoPrint Manager IPP Gateway Registry replication**
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\InfoprintManagerIPPGateway
- **License Service Registry replication**
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\InfoprintManagerLicenseService
- **InfoPrint Manager SAP Service Registry replication**
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\InfoprintManagerSAP
- **InfoPrint Manager Notification Service Registry replication**
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\InfoprintManagerNotification
- **InfoPrint Manager WebServer Service Registry replication**
  - HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\services\InfoPrintManagerWebServer

#### ↓ Note

After you configured the cluster, you can start or stop the InfoPrint Manager services from the Cluster Manager.

To check if the InfoPrint Manager services were moved on the failover node, you can do a manual failover procedure within the Cluster Manager.

The server name must not be changed when InfoPrint Manager runs on the cluster.

The jobs will fail if you do this chain action: send the jobs with `rip-and-hold`, change the server name from the console, and you release the jobs

## Printers and Ports replication

Cluster administrator must assure that all printers are correctly replicated within the all failover nodes.

#### ↓ Note

InfoPrint manager provides a printer migration script to help InfoPrint manager printers to migrate. It is a sample script and the cluster administrator can customize this migration script. By default, the name of the script is `IPMHAReplicate.ps1` and its log is located within the cluster shared volume. When configuring the cluster, make sure that all cluster nodes in the printers, ports, and drivers are identically configured.

Printers and ports can be created on the node where InfoPrint Manager is running. They must be replicated by the cluster administrator within all failover nodes. This operation should happen before any failover transition.

The default paths internally used by the `IPMHAReplicate.ps1` script:

- "C:\ClusterStorage\Volume1\RICOH\InfoPrint Manager\printers.csv" – default place for printers.csv file
- "C:\ClusterStorage\Volume1\RICOH\InfoPrint Manager\migrateLog.log" – default place for script log
- "C:\ClusterStorage\Volume1\RICOH\InfoPrint Manager\IPMPorts.reg" – default place for ports exported file

If the cluster is set using a different path, "C:\ClusterStorage\DISK1\RICOH\InfoPrint Manager", modify the script default path in the `IPMHAReplicate.ps1` script.

The `IPMHAReplicate.ps1` script default output:

- `Printers.csv` contains serialized printers.
- `migrateLog.log` script log file.
- `IPMPorts.reg` contains exported registers required for InfoPrint Manager.

On the machine where you created printers, export them by running the `IPMHAReplicate.ps1` script usage as follows:

1. Run `.\IPMHAReplicate.ps1 export -ports` without parameters on the node where the Cluster Shared Volume is mapped.

On the node where the Cluster Shared Volume is not mapped, run `.\IPMHAReplicate.ps1 export -ports` with parameters, `<printers.csv file> <logfile>`.

2. Run `.\IPMHAReplicate.ps1 export -printers` without parameters on the node where the CSV volume mapped.

On the node where the Cluster Shared Volume is not mapped, run `.\IPMHAReplicate.ps1 export -printers` with parameters, `<printers.csv file> <logfile>`.

The `IPMHAReplicate.ps1` script usage, on the machine where you want to replicate the printers, follow these steps:

1. Run `.\IPMHAReplicate.ps1 import -ports` without parameters on the node where the CSV volume mapped.

On the node where the Cluster Shared Volume is not mapped, run `.\IPMHAReplicate.ps1 import -ports` with parameters, `<portfile> <logfile>`.

2. Run `.\IPMHAReplicate.ps1 import -printers` without parameters on the node where the CSV volume mapped.

On the node where the Cluster Shared Volume is not mapped, run `.\IPMHAReplicate.ps1 import -printers` with parameters, `<portfile> <logfile>`.

The delete printers action is optional.

Run `.\IPMHAReplicate.ps1 delete-printers` without parameters on the node where the CSV volume mapped.

On the node where the Cluster Shared Volume is not mapped, run `.\IPMHAReplicate.ps1 delete-printers` with parameters, `<logfile>`.

The default script usage:

- Export ports on primary node.
- Export printers on primary node.
- Place the generated outputs, `IMPorts.reg` and `printres.csv`, on the failover node or nodes on a custom path.
- Import ports on failover node or nodes. Use the command with parameters.
- Import printers on failover node or nodes. Use the command with parameters.

 **Note**

Do not import printers before ports as the command may fail to create printers on the failover node or nodes due to missing ports on that machine.

---

## Problem determination checklist

Before you experience a problem with your high availability configuration, Ricoh recommends that you collect this information, especially snapshots of a working system and your current cluster diagram.

### Problem Determination Checklist for AIX

Item	Checked
Any error messages that appear in PowerHA logs or on the console.	
Your updated cluster diagram.	
A snapshot of your current cluster configuration.	
Details of any customization performed to PowerHA events.	
Details of current AIX, PowerHA, and application software levels.	
Details of any service update applied to either PowerHA or AIX.	
The adapter microcode levels (especially for SSA adapters)	
Cluster planning worksheets, with all components clearly labelled.	
A network topology diagram for the entire network.	
Copies of all PowerHA log files (including the <code>/tmp/hacmp.outfile</code> )	

### Problem Determination Checklist for Linux

Item	Checked
Any error messages that appear in Linux HA logs or on the console.	
Your updated cluster diagram.	
A snapshot of your current cluster configuration.	
Details of any customization performed to Linux HA events.	
Details of current Linux, Linux HA, and application software levels.	
Details of any service update applied to either Linux HA or Linux.	
Cluster planning worksheets, with all components clearly labelled.	
A network topology diagram for the entire network.	
Copies of all Linux HA log files	

## Helpful non-InfoPrint Manager commands and log files

The high availability applications provide a series of log files and commands that can provide valuable information about how your high availability process is operating. For examples of how these commands and log files record data, please consult your relevant high availability application documentation.

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## Helpful non-InfoPrint Manager Commands for AIX

Command	Purpose
<b>lsfs</b>	Displays the file systems on your system in a column format that shows: <ul style="list-style-type: none"><li>• Name</li><li>• Nodename</li><li>• Mount Point</li><li>• Type of Volume File System</li><li>• Size</li><li>• Options</li><li>• Whether AutoMounted or not</li><li>• Whether accounting applies or not</li></ul>
<b>netstat -i</b>	Displays active internet connections and active UNIX domain sockets.
<b>netstat -rn</b>	Displays the routing tables for all destinations defined on your server.
<b>no -a</b>	Displays all network options set on the server in a list format.
<b>lsvg -o</b>	Displays the volume group defined on your server.
<b>lsdev -C -c*</b>	Displays the logical devices defined on your system.
<b>ifconfig -a</b>	Provides a display of the network adapters defined for the interface.
<b>clshowres</b>	Displays the PowerHA cluster resources defined on your system.

## Helpful non-InfoPrint Manager Commands for Linux

Command	Purpose
<b>mount</b>	Displays mounted file systems.
<b>cat /etc/fstab</b>	Shows that file systems are mounted at startup.
<b>ifconfig -a</b> <b>ip</b> <b>route -n</b>	Displays network configuration related information.
<b>lvs</b> <b>vgdisplay</b>	Reports information about logical volumes.



Command	Purpose
<code>netstat -i</code>	Displays active internet connections and active UNIX domain sockets.
<code>netstat -rn</code>	Displays the routing tables for all destinations defined on your server.

### Valuable PowerHA Log Files

Log File Name and Default Path	Source
<code>/usr/adm/cluster.log</code>	Generated by cluster scripts and daemons.
<code>/usr/sbin//history/cluster.mmddyyy</code>	Cluster history files that are generated daily.
<code>/tmp/cspoc.log</code>	Generated by C-SPOC commands.
<code>/tmp/cm.log</code>	Generated by the <b>clstrmgr</b> daemon.
<code>/tmp/dms_loads.out</code>	Generated by deadman's switch activity.
<code>/tmp/emuhacmp.out</code>	Generated by event emulator scripts.
<code>/tmp/hacmp.out.n-7</code>	Generated by event scripts and utilities.
<code>/var/ha/log/topsvcs</code>	Generated by PowerHA/ES.
<code>/var/ha/log/grpsvcs</code>	Generated by PowerHA/ES.
<code>/var/ha/log/grpglsm</code>	Generated by PowerHA/ES.
<code>/tmp/clstrmgr.debug</code>	Generated by cluster manager.

### Valuable Linux Red Hat Log Files

Log File Name and Default Path	Source
<code>/var/log/cluster/*</code>	Generated by cluster scripts and daemons.
<code>/var/log/pd/ipmha*</code>	Generated by ipmha script.
<code>/var/log/clumond.log</code>	Generated by cluster scripts and daemons.
<code>/var/log/messages</code>	Generated by cluster scripts and daemons.

### Valuable Linux SUSE Log Files

Log File Name and Default Path	Source
<code>/var/log/cluster/*</code>	Generated by cluster scripts and daemons.
<code>/var/log/pd/ipmha*</code>	Generated by ipmha script.
<code>/var/log/messages</code>	Generated by cluster scripts and daemons.
<code>/var/log/sleha-bootstrap.log</code>	Generated by cluster installation scripts.

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# Glossary

This glossary defines technical terms and abbreviations used in InfoPrint Manager.

## Special Characters

### .Guidefaults file

A file created by InfoPrint in the home directory of a person using the InfoPrint GUI. InfoPrint uses this file to save and reference information about the servers you are monitoring and the windows you are working in.

## A

### Access Control List (ACL)

In computer security, a collection of all access rights for one object.

### ACL

Access Control List.

### acl editor

A command line interface that lets you view, add, update, and delete access authorization records in an ACL.

### action

In the InfoPrint GUI, an icon that represents an operation that you can perform on an InfoPrint object. You drag and drop the action onto an object to initiate the operation for that object. For example, using the `Enable` action to enable a disabled actual destination.

### actual destination

In InfoPrint, an object that represents the output device that performs the printing or transmission function. See *email destination*; see also *physical printer*, *printer device*; contrast with *logical destination*.

### additive color system

A system that reproduces an image by mixing (adding) appropriate quantities of red, green, and blue light (the additive primary colors) to create all other colors of light, either direct or transmitted. When the additive primaries are superimposed on one another, they create white light. Contrast with *subtractive color system*.

### administrator

In InfoPrint, the person who creates and manages one or more components of a printing system, such as servers and actual destinations. By default, InfoPrint gives administrators authorization to perform some InfoPrint operations and to access certain information that is not available to the operators or job submitters.

### Adobe Acrobat

An Adobe software program that provides instant access to documents in their original format, independent of computer platform. With the Adobe Reader, you can view, navigate, print, and present any Portable Document Format (.pdf) file.

### Adobe PageMaker

A desktop publishing program that produces PostScript documents.

---

## **Adobe PostScript Raster to Image Transform (RIP)**

See *raster image processor (RIP)*.

## **ADSM/6000**

Advanced Distributed Storage Manager.

## **Advanced Distributed Storage Manager (ADSM/6000)**

A program that provides storage management for archived files.

## **Advanced Function Common Control Unit (AFCCU)**

A RISC-based control unit with code common to all printers that use the AFCCU.

## **Advanced Function Presentation (AFP)**

A set of licensed programs, together with user applications, that use the all-points-addressable concept to print data on a wide variety of printers or to display data on a wide variety of display devices. AFP includes creating, formatting, archiving, retrieving, viewing, distributing, and printing information.

## **Advanced Function Presentation data stream (AFP data stream)**

The printer data stream used for printing AFP data. The AFP data stream includes composed text, page segments, electronic overlays, form definitions, and fonts downloaded from the operating system to the printer.

A presentation data stream that is processed in AFP environments. The AFP data stream includes MO:DCA-P-based data streams.

## **Advanced Interactive Executive (AIX)**

An operating system used with pSeries computers. The AIX operating system is IBM's implementation of the UNIX operating system.

## **AFCCU**

Advanced Function Common Control Unit.

## **AFP**

Advanced Function Presentation.

## **AFP data stream**

Advanced Function Presentation data stream.

## **ainbe**

The printer input/output backend program used by the PSF DSS to send jobs to printer devices. Depending on the incoming data stream of the job, the PSF DSS might have transformed the data stream of the job before the backend program sending it to the printer device.

## **AIX**

Advanced Interactive Executive.

## **AIX-attached printer**

A printer device, attached to an pSeries computer through the network or through a serial or parallel port that receives jobs from an AIX print queue.

---

In InfoPrint, a PSF physical printer that represents an AIX-attached printer device. See also *direct-attached printer*, *TCP/IP-attached printer*, *upload-TCP/IP-attached printer*.

### **AIX destination support system**

In InfoPrint, the destination support system that communicates with the standard AIX print backend (`piobe`), or with certain variations of the `rembak` print backend, to print jobs.

### **AIX physical printer**

In InfoPrint, the object representing a printer device that uses the AIX destination support system.

### **aliasing**

In a digitized image, the creation of diagonal lines by combining short horizontal and vertical line segments that approximate the path of the desired line.

### **all-points-addressability (APA)**

The capability to address, reference, and position text, overlays, and images at any defined point of the printable area of the paper or display medium.

### **alphameric**

Synonym for *alphanumeric*.

### **alphanumeric**

Pertaining to a character set containing letters, digits, and other symbols such as punctuation marks. Synonymous with *alphameric*.

### **AMPV**

Average monthly print volume.

### **analog**

Pertaining to a continuous variable sampling of information between two points that achieves an even, smooth transition of photographic material.

### **analog color proof**

An off-press color proof made from separation films.

### **anti-aliasing**

The rendering of hard-edged objects so that they blend smoothly into the background. PhotoShop offers anti-aliasing when rasterizing an EPS file.

Removing the jagged "stairstep" quality in diagonal lines produced on a computer screen by aliasing. This removal is effected by creating less densely shaded fields parallel to the diagonal line.

### **APA**

All-points-addressability.

### **API**

Application Program Interface.

### **Application Program Interface (API)**

The call interface between a client program and the procedures that implement the printing system, as defined by the specification. Clients use the API to access servers. (P)

---

**architecture**

The set of rules and conventions that govern the creation and control of data types such as text, image, graphics, font, color, audio, bar code, and multimedia.

**archiving**

The transfer of digital information from an online system onto floppy disk, compact disc, or other media for offline storage. The original copy is deleted from the online system. See also *retrieval*.

**array inkjet**

An ordered collection of multiple print heads used in an inkjet printer.

**ASCII**

American National Standard Code for Information Exchange. The standard code, using a coded character set consisting of 7-bit coded characters (8 bits including a parity check). The ASCII code is used for information exchange among data processing systems, data communications systems, and associated equipment. The ASCII character set includes control characters and graphic characters.

**asynchronous**

Pertaining to two or more processes that do not depend upon the occurrence of specific events, such as common timing signals. (T)

In InfoPrint, occurring without a regular or predictable time relationship to a specified action. Contrast with *synchronous*.

**attachment type**

Defines the method by which a printer device is attached to the AIX system from which it receives data. See *AIX-attached printer*, *direct-attached printer*, *TCP/IP-attached printer*, and *upload-TCP/IP-attached printer*.

**attribute**

A defined characteristic of an object, such as the number of copies required of a job, or the document formats accepted by an actual destination.

**attribute name**

A string that identifies an attribute. Typically, in InfoPrint attribute names consist of two or more words separated by hyphens.

**attribute value**

The element of an attribute that specifies the characteristics relating to the attribute.

**authorization**

In computer security, verification of the eligibility of a user to access an object.

**authorized user**

A person with the appropriate permissions to access an object or to issue a command.

**automatic recovery**

A function of printer logic that permits the printer to reprint a job if the job is misprinted or damaged or if a component has failed.

---

## auxiliary sheet

In InfoPrint, an object that represents a particular sheet of paper, blank or otherwise, that can precede a job, separate documents in a job, or follow a job.

## auxiliary-sheet selections

A particular combination of start, separator, and end sheets that print with jobs on a particular printer device.

## B

### backend

In AIX or Linux, the program that is invoked by the `qdaemon` process (AIX) or CUPS printing system (Linux) to run a print or batch job. Synonymous with *backend program*.

### backend program

Synonym for *backend*.

### backlog

In InfoPrint, the amount of time calculated by InfoPrint that is required to print all of the jobs currently in a queue.

### backspace

In InfoPrint, the action used to back up and reprint pages in a job.

### bar code

A code representing characters by sets of parallel bars of varying thickness and separation that are read optically by transverse scanning.

An array of parallel rectangular bars and spaces that together represent data elements or characters in a particular symbology. The bars and spaces are arranged in a predetermined pattern following unambiguous rules defined by the symbology.

## BCOCA

Bar Code Object Content Architecture.

## Bezier curves

A method of defining curves using anchor points, control handles, and tangent lines. The PostScript path passes through anchor points. Its approach direction is along the tangent lines that are controlled by the control handles. Many personal computer programs use this drawing method. Type 1 PostScript fonts are defined using Bezier curves.

## binding

The cover and materials that hold a book together. See *edition binding*, *perfect binding*, *spiral binding*, *wire-o binding*.

The process of applying the binding to a book.

In InfoPrint, assigning a job to an actual destination. See *early binding*, *late binding*.

## bitmapped

Pertaining to an image formed by a rectangular grid of pixels. Each pixel is assigned a value to denote its color. One-bit images are black and white; 8-bit images have 256 colors (or grays);

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24-bit images have full color. CMYK images have 32-bits per pixel to encode 256 levels in each of four channels. Bitmapped images are also called raster images.

**bleed**

An extra amount of printed image that extends beyond the trim edge of the sheet. Bleed ensures that no white gap appears at the edge of the sheet.

**boot**

To prepare a computer for operating by loading an operating system.

**BSD**

Berkeley Software Distribution.

**BSD destination support system**

In InfoPrint, the destination support system that generates a print command string that the shell runs to print jobs.

**BSD physical printer**

In InfoPrint, the object representing a printer device that uses the BSD destination support system.

**burn**

In platemaking, an exposure. Burn is named because of the extremely bright ultraviolet lamps used to transfer images from film to plate.

In photography, to lengthen the final exposure time to increase the final density of print.

**C****CDE**

Common Desktop Environment.

**child**

See *parent/child relationship*.

**choke**

In color printing, an area whose dimensions have been reduced to avoid overlapping another color. Contrast with *spread*.

**class**

Synonym for *object class*.

**clean**

In InfoPrint, an action used to remove all the jobs from specified servers, actual destinations, or queues, or to remove all the jobs submitted to specified logical destinations.

**CLI**

Command Line Interface.

**client**

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In InfoPrint, the component of the print system that assembles a print request and submits the request to a server. The client generates the local ID numbers for each job, submits the jobs to the servers, and keeps track of where each user's jobs have been submitted.

**CMR**

Color Management Resource.

**CMY**

Cyan, magenta, yellow.

**CMYK**

Cyan, magenta, yellow, black.

**collator**

In some printers a special-purpose hard drive disk array used to store RIPped files and later transfer them to the LED print heads for imaging.

**color balance**

The relative levels of cyan, magenta, and yellow channels in an image to produce accurate color rendition of an original image.

**color correction**

The adjustment of the color balance in an image to produce accurate color rendition of an original image. Color correction is used for two- or three-spot-color jobs.

**color key**

A color proof similar to Cromalin, but typically not laminated and not necessarily accurate in color. Color keys are used to verify that breaks or color assignments and traps have been made accurately.

**Color management resource**

Color management resource (CMR) is an architected resource that is used to carry all of the color management information required to render a print file, document, group of pages or sheets, page, or data object with color fidelity.

**Command Line Interface (CLI)**

A type of user interface where commands are specified on the command line. Contrast with *Graphical User Interface*.

**Common Desktop Environment (CDE)**

A graphical user interface running on a UNIX operating system.

**complex attribute**

In InfoPrint, an attribute that can have multiple values with each value containing multiple components.

**constant data**

Data that does not change between copies of a document and that is merged with variable data to produce personalized documents. For example, a form letter (constant data) can be merged with a customer's name and address (variable data).



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## **contextual help**

A type of online help that provides specific information about each selectable object, menu choice, notebook tab, field, control, and pushbutton in a window.

## **control strip**

A strip of information that can be attached to a print job and used to measure registration and density.

## **Cromalin**

The Dupont color proofing system. Four layers (CMYK) of light-sensitive material are exposed through final halftone negative films, then laminated together on an opaque backing to produce a color- and trap-accurate final proof showing actual halftone dot structure. Cromalin is sometimes called an analog proof.

## **crop**

To remove unwanted areas of an image, usually indicated by crop marks on the original.

## **CTS**

Cutter-trimmer-stacker.

## **CUPS**

Common Unix Printing System is a modular printing system for Unix-like computer operating systems which allows a computer to act as a print server. A computer running CUPS is a host that can accept print jobs from client computers, process them, and send them to the appropriate printer.

## **CUPS destination support system**

In InfoPrint, the destination support system that communicates with the standard LINUX print system (CUPS) and that uses InfoPrint Manager **pioinfo** backend, InfoPrint Manager **piorpdm** backend for Ricoh printers or other print backends to print jobs.

## **cutter-trimmer-stacker (CTS)**

A post-processing device attached to a printer device and used for paper handling.

## **cyan, magenta, yellow (CMY)**

The subtractive primary colors.

## **cyan, magenta, yellow, black (CMYK)**

The four basic colors used in offset printing, as opposed to the three basic colors of light: red, green, and blue. Magenta, yellow, and cyan are the subtractive primaries. Black is added to provide better density and to produce a true black.

## **D**

### **daemon**

A program that runs unattended to perform a standard service. Some daemons are triggered automatically to perform their tasks; others operate periodically. Daemon processes generally provide a service that must be available at all times to more than one task or user, such as sending data to a printer.

### **data stream**

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All information (data and control commands) sent over a data link.

A continuous stream of data that has a defined format.

In InfoPrint, pertaining to the incoming format of the job and the output format required by the printer device. InfoPrint transforms the incoming format into the output format, as required. See also *document format*.

### **DB2\*/6000**

DataBase 2/6000.

### **deadline**

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the one whose deadline is closest. Contrast with *FIFO (first-in-first-out)*, *job-priority*, *longest-job-first*, and *shortest-job-first*.

### **default document**

In InfoPrint, an object that represents default attribute values for a document in a job. Synonymous with *initial value document*.

### **default job**

In InfoPrint, an object that represents default attribute values for a job. Synonymous with *initial value job*.

### **default object**

In InfoPrint, a general term that refers either to a *default document* or a *default job*. Synonymous with *initial value object*.

### **default value**

A value stored in the system that is used when no other value is specified.

### **delete**

In InfoPrint, an action used to delete default objects, jobs, logical destinations, actual destinations, or queues from the server.

### **desktop publishing**

Performing print-related activities on a personal computer, including but not limited to layout, design, photo manipulation, creating fonts, editing text, color separation, scanning, and animation.

### **destination**

See *actual destination*, *logical destination*.

### **destination support system (DSS)**

In InfoPrint, the programs that an actual destination uses to communicate with the output device. Synonymous with *device support system*. See *AIX destination support system*, *BSD destination support system*, *email destination support system*, and *PSF destination support system*.

### **device**

An individual piece of equipment (hardware) that attaches to a computer, such as a printer device.

### **device address**

The identification of an input or output device by its channel and unit number.

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**device driver**

A file that communicates with a specific device such as a printer, disk drive, or display. An application that sends output to a device controls the actions of the device through the device driver. See *printer driver*.

**device support system (DSS)**

Synonym for *destination support system*.

**DFE**

Digital Front End

**DFE destination support system**

In InfoPrint Manager, the destination support system that communicates with a DFE print server driving a Ricoh printer.

**DFE printer**

In InfoPrint Manager, the object representing a DFE print server driving a Ricoh printer.

**DFS**

Distributed File Service.

**digital**

Pertaining to data represented by digits, sometimes with special characters and the space character.

**digital color proof**

An off-press color proof made from a color printer attached to a computer.

**digital printing**

A filmless and plateless printing process in which digital data for each page is transferred directly to a light-sensitive drum and then to paper for a final image.

**direct-attached printer**

A printer device, attached to an pSeries computer through the network or through a serial or parallel port.

In InfoPrint, a PSF physical printer that represents a direct-attached printer device. See also *AIX-attached printer*, *TCP/IP-attached printer*, and *upload-TCP/IP-attached printer*.

**disable**

In InfoPrint, an action used to stop the acceptance of jobs on destinations, queues, or servers, or to stop writing information to logs.

**distributed print system**

A computer system with the ability to interchange print data and controls among different computing environments with the intent of printing the data on a different system from the one where the print request was generated. For example, in host-to-LAN distributed printing, data that is located on the host is printed on printers attached to a local area network.

**dithering**

A technique of filling the gap between two pixels with another pixel having an average value of the two to minimize the difference or to add detail to smooth the result.

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## document

In InfoPrint, an object representing a grouping of data in a job. A job can contain one or more documents. The documents in a job can differ from each other in some ways. For example, they can contain different data and can have different document formats. A document in a job can contain printable data or a resource that is not printable by itself. See *file-reference document*, *printable document*, and *resource document*.

## document element

A portion of a document at least a single page in size.

## document format

In InfoPrint, a document format describes the type of the data and control characters in the document, such as line data or PostScript. The format of the data determines which printer devices are capable of printing the document and whether InfoPrint must transform the format.

## document identifier

A string that identifies a document in a job. It consists of a job ID followed by a period (.) and a document sequence number. For example, 12.2. Document sequence numbers are integers starting at 1.

## Document Printing Application (DPA)

An ISO/IEC 10175 standard that addresses those aspects of document processing that enable users in a distributed open systems environment to send electronic documents to shared, possibly geographically-dispersed printers. InfoPrint supports the DPA standard.

## document transfer method

In InfoPrint, the transfer method describes how documents are transferred to, or acquired by, servers. See *pipe-pull* and *with-request*.

## document type

In InfoPrint, the document type describes the kind of data in the document. A *printable document* can only contain printable data. A *resource document* can only contain data such as fonts or form definitions that are not printable. A *file reference document* can only contain names of files entered on separate lines.

## dot

The individual elements of a halftone.

## dot gain

An increase in the size of a halftone dot during printing, caused by ink spreading. Generally, this value is known precisely, and the scanning and filming production process is calibrated to compensate for it. The Cromalin proofing system simulates this effect.

## dots per inch (dpi)

A measure of data density per unit distance. Typical values for desktop publishing range from 200 to 300 dpi.

## DPA

Document Printing Application.

## DPF

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Distributed Print Facility.

**dpi**

Dots per inch.

**drag and drop**

In graphical user interfaces, a procedure by which you perform actions and tasks. Using the mouse, you drag (move) an action or object icon to a new position where you want the action or task to occur.

**DSS**

Destination support system.

**dummy**

A rough paste-up or hand-drawn representation of the anticipated finished product. A dummy is used for basic design and pagination.

**duplex printing**

Printing on both sides of the paper. Contrast with *simplex printing (1)*.

Printing on both sides of the paper, placing output images on the media in a head-to-head format, so that the top of one image is at the same edge as the top of the next image. Contrast with *tumble duplex printing*; see also *simplex printing (2)*.

**E****early binding**

In InfoPrint, assigning a job to an actual destination as soon as it is accepted. Early binding permits InfoPrint to estimate the time when the job will be completed. Contrast with *late binding*.

**edition binding**

A type of book binding in which printed sheets are folded into 16- or 32-page signatures. Four-page endleaves are pasted on the outside of the first and last signature. The signatures are then collated by machine and sewn together using special sewing machines. Contrast with *perfect binding*, *spiral binding*, and *wire-o binding*.

**electronic document**

A document stored in a computer instead of printed on paper.

**electronic mail**

Correspondence in the form of messages sent between workstations over a network. Synonymous with *email*.

**electrophotographic**

Pertaining to a type of printer technology that creates an image on paper by uniformly charging the photoconductor, creating an electrostatic image on the photoconductor, attracting negatively charged toner to the discharged areas of the photoconductor, and transferring and fusing the toner to paper.

**em**

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In composition, a unit of measurement exactly as wide and as high as the point size of the font being set. The name is derived from the fact that the letter M in early typefaces was usually cast on a square body.

**email**

Electronic mail.

**email destination**

In InfoPrint, an actual destination representing an electronic mailing system.

**email destination support system**

In InfoPrint, the destination support system that supports email destinations.

**embellishments**

Variable data added to all copies of assembled pages to make the unit appear like a whole; for example, headers, footers, a table of contents, and chapter separations.

**en**

In composition, exactly one-half an em.

**enable**

In InfoPrint, the action that makes a destination, queue, or server able to accept jobs, or a log able to accept information.

**end sheet**

The sheet of paper, blank or otherwise, that can follow a job. See also *auxiliary sheet*.

**Enhanced X-Windows**

A tool designed to permit multiple application processes to operate in multiple windows displayed on a virtual terminal. See *X-Windows*.

**environment variable**

Any one of a number of variables that describe the way an operating system runs and the devices it recognizes.

**error log**

A data set or file in a product or system where error information is stored for later access.

**estimate**

The professional cost analysis made by a print shop in response to a customer's request for a price quotation on a print job.

**event**

In InfoPrint, an occurrence in the printing system during an operation; for example, the completion of a command.

**event log**

In InfoPrint, a collection of messages about events that have occurred.

**event notification**

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The notification that is sent by InfoPrint for an event.

## **F**

### **Federated Authentication**

A technology that grants users secure access to InfoPrint Manager relying on external identity providers (IdPs). Instead of managing separate user credentials within the InfoPrint Manager system, federated authentication allows users to log in using their existing accounts from trusted third-party services.

### **FIFO (first-in-first-out)**

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the job that has been in the queue for the longest time. InfoPrint processes jobs in the order in which they are received. Contrast with *deadline*, *job-priority*, *longest-job-first*, and *shortest-job-first*.

### **file-reference document**

In InfoPrint, a file containing the names of other files, each entered on a separate line. Job submitters can specify this file for printing when they specify a document type of *file-reference*; InfoPrint prints each file listed in the reference document.

### **File Transfer Protocol (FTP)**

In TCP/IP, the application protocol that makes it possible to transfer data to and from host computers and to use foreign hosts indirectly.

### **finisher**

A hardware device attached to a printer that performs such operations as folding or stapling the printed pages.

### **finishing**

In a print shop, the final operations on a printed product, such as stapling, trimming, drilling, folding, embossing, varnishing, gluing, shrink wrapping, perforating, laminating, collating, and so on.

### **flag**

A modifier of a command that specifies the action of the command. A dash usually precedes a flag. Synonymous with *option*. See also *keyword*.

### **FOCA**

Font object content architecture.

### **folder**

In the InfoPrint GUI, an object that represents a container for a collection of similar objects. For example, the Retained Jobs folder contains retained jobs.

### **font**

A family of characters of a given size and style; for example, 9-point Helvetica.

One size and one typeface in a particular type family, including letters, numerals, punctuation marks, special characters, and ligatures.

A paired character set and code page that can be used together for printing a string of text characters. A double-byte font can consist of multiple pairs of character sets and code pages.

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## **form definition**

A resource object used by InfoPrint that defines the characteristics of the form or printed media, which include: overlays to be used, the paper source (for cut-sheet printers), duplex printing, text suppression, and the position of composed-text data on the form.

## **forward space**

In InfoPrint, the action used to move ahead and skip the printing of a specified number of pages in a job.

## **FPO**

Low-quality (sometimes photographic) images placed in a dummy to represent final images. Desktop publishing software produces images as display-screen resolution FPOs.

## **front panel**

In the CDE, a workspace area containing controls that represent various tasks you can perform and workspace switches.

## **FST**

Files and Sockets Transport is the local security implementation for InfoPrint Manager. It uses the local namespace for user credentials, and it is a lightweight security protocol.

## **FTP**

File Transfer Protocol.

## **G**

### **GCR**

Gray component replacement.

### **GIF**

Graphics Interchange Format.

## **global change**

In the InfoPrint GUI, an action used to make changes to one or more attributes of several objects at once. You can also perform the same action on several objects of the same object class at the same time; for example, disabling two or more actual destinations at the same time.

## **global character**

A character or set of characters used to specify an unknown number or set of characters in a search string. In InfoPrint, a global character is represented by an asterisk (\*).

## **global ID**

Global job identifier.

## **global job identifier**

An unambiguous job identifier. In InfoPrint, it is represented as the name of the server managing the job followed by a colon (:) and a generated integer. This ID uniquely identifies the job in the InfoPrint server.

## **glyph**



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An image, usually of a character, in a font.

## **GOCA**

Graphics object content architecture.

## **graphic character**

A visual representation of a character, other than a control character, that is normally produced by writing, printing, or displaying.

## **Graphical User Interface (GUI)**

A type of user interface that takes advantage of a high-resolution monitor and includes a combination of graphics to implement an object-action paradigm, the use of pointing devices, menu bars, overlapping windows, and icons. Contrast with *Command Line Interface*.

## **Graphics Interchange Format (GIF)**

A compressed graphics format widely used on the Internet.

## **gray component replacement (GCR)**

Synonym for *under color removal (UCR)*.

## **gray scale**

A strip of standard gray tones, ranging from white to black, placed at the side of the original copy during photography to measure the tonal range and contrast obtained.

## **GUI**

Graphical User Interface.

## **gutter**

The blank area or inner margin from the printing area to the binding.

## **H**

### **halftone**

A printing method that simulates continuous-tone shading using dots of varying sizes laid out on a rectangular grid. Larger dots simulate darker tones and smaller dots simulate lighter tones. Typical grid spacings are 85 lines per inch (lpi) (newspaper), 133 lpi (low end), 150 lpi (midrange), and 175+ lpi (high quality).

### **help**

In the InfoPrint GUI, an action used to display the online help for a specific template, object, action, button, control, or area in an application window.

The name of a button used to access the online help.

### **hold**

An indication determined by the **job-hold** attribute that is used to keep a job in the queue and prevent InfoPrint from scheduling it.

### **hostname**

The name given to an AIX system.

### **hot folder**

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A workstation directory where users copy jobs to submit them to print.

### **hypertext**

A way of presenting information online with connections between one piece of information and another. These connections are called hypertext links. See also *hypertext link*.

### **hypertext link**

A connection between one piece of information and another. Selecting a link displays the target piece of information.

## **I**

### **icon**

A graphic symbol displayed on a screen that a user can click to invoke a function or software application.

### **image**

Toned and untoned pels arranged in a pattern.

### **image data**

Rectangular arrays of raster information that define an image.

### **imagesetter**

A high resolution (1270–3600+ dpi) printer that uses an Argon (green) laser to write to film using digital input. Imagesetting is the step before Cromalin proofing and platemaking.

### **imposition**

The process of arranging pages on a press sheet to ensure the correct order during final cutting, folding, and binding. Electronic imposition builds press sheets automatically during the RIP and outputs film formatted for immediate use in platemaking.

### **InfoPrint**

A solution of software and hardware products that can supplement or replace the offset presses and copiers in print shops with high-quality, non-impact, black and white or process color printers. InfoPrint takes documents from creation to the published, kitted, and shipped product.

In InfoPrint software publications, InfoPrint Manager for AIX or any of its components.

### **InfoPrint Manager for AIX**

The software component of InfoPrint. InfoPrint Manager for AIX handles the scheduling, archiving, retrieving, and assembly of a print job and its related resource files. It also tracks the finishing and packaging of the printed product.

InfoPrint Manager for AIX is based on Palladium technology developed at MIT/Project Athena. It conforms to the ISO DPA and POSIX standards.

### **InfoPrint Network**

The local area network running TCP/IP protocol that InfoPrint uses to communicate among servers, clients, and output devices.

### **InfoPrint Select**

The component of InfoPrint Manager for AIX that lets you submit jobs from a Windows workstation.

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### **InfoPrint Submit Express**

The component of InfoPrint Manager that lets you submit jobs with a job ticket from a Windows or Macintosh workstation.

### **InfoPrint 20**

A black and white, large-format, cut-sheet, workgroup laser printer with optional duplexing and 600-dpi resolution.

### **InfoPrint 60**

A duplex, black and white, cut-sheet printer with 600-dpi resolution.

### **InfoPrint 62**

A non-impact, continuous-forms printer that runs at a maximum of 62 impressions-per-minute (depending on forms size), and is factory set to run at either 240 or 300 dpi on a maximum paper size of 370.8 mm (14.6 in.).

### **InfoPrint 4000**

A duplex, black and white, continuous-forms printer with 600-dpi resolution.

### **initial value document**

Synonym for *default document*.

### **initial value job**

Synonym for *default job*.

### **initial value object**

Synonym for *default object*.

### **initially settable attribute**

An attribute whose value can be established when an object is created but cannot be subsequently set or modified. See also *resettable attribute*; contrast with *non-settable attribute*.

### **input focus**

The area of a window where user interaction is possible from either the keyboard or the mouse.

### **input tray**

For a printer device, the container that holds the medium upon which the printer prints its output.

### **Intelligent Printer Data Stream (IPDS)**

An all-points-addressable data stream that enables users to position text, images, and graphics at any defined point on a printed page.

Information that the host sends to IPDS printers. This information generally contains basic formatting, error recovery, and character data and enables the printers to make decisions.

An architected host-to-printer data stream that contains both data (text, image, graphics, and bar codes) and controls defining how the data is to be presented. IPDS provides a device-independent interface for controlling and managing all-points-addressable (APA) printers.

### **International Organization for Standardization (ISO)**

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An organization of national standards bodies from various countries established to promote development standards to facilitate international exchange of goods and services, and develop cooperation in intellectual, scientific, technological, and economic activity.

## **Internet**

A wide area network connecting thousands of disparate networks in industry, education, government, and research. The Internet network uses TCP/IP as the protocol for sending information.

## **Internet Protocol**

The set of rules that determines how to route data from its source to its destination in an internet environment.

## **intervening jobs**

In InfoPrint, the number of jobs in a queue that are scheduled to print before the job in question.

## **IOCA**

Image object content architecture.

## **IP address**

The IPv4 or IPv6 address.

## **IPDS**

Intelligent Printer Data Stream.

## **ISO**

International Organization for Standardization.

## **J**

### **job**

In InfoPrint, an object that represents a request to print or send one or more documents together in a single session. A job includes the data to be printed or sent and resources such as fonts, images, and overlays. Depending on how it was submitted, it can also include a job ticket. Synonymous with *job bundle* and *print job*.

### **job bundle**

Synonym for *job*.

### **job data**

The page descriptions, merge data, and embellishments that compose a document in a job, either directly or by reference.

### **job ID**

A local or a global identifier that identifies a job to a job submitter, administrator, operator, or InfoPrint. See *local job identifier*, *global job identifier*.

### **job-priority**

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the one with the highest priority. Contrast with *deadline*, *FIFO (first-in-first-out)*, *longest-job-first*, and *shortest-job-first*.

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## **job submitter**

In InfoPrint, the person who submits jobs for printing. Often, this person is an application programmer who maintains applications that generate data to be printed.

## **job ticket**

The customer's hardcopy or electronic instructions listing all the variables describing a print job, either directly or by reference. The print shop can add specifications to the job ticket and can print the job ticket.

## **Joint Photographic Experts Group (JPEG)**

A compressed graphics format widely used on the Internet.

## **JPEG**

Joint Photographic Experts Group.

## **K**

### **kerning**

In typesetting, adjusting the relative spacing of two characters to improve their appearance and readability. Kerning pairs are specific sets of characters with built-in relative spacing. Some typefaces have as many as 100 kerning pairs.

### **keyword**

A name or symbol that identifies a parameter.

Part of a command operand that consists of a specific character string, such as `DSNAME=`.

### **kitting**

In a print shop, packaging the completed published work with attendant binders, tabs, diskettes, and other equipment or information, before shipping the finished product.

## **L**

### **LAN**

Local Area Network.

### **laser (light amplification by stimulated emission of radiation)**

In InfoPrint printers, a device that emits a beam of coherent light that forms the image on the photoconductor that is subsequently transferred to the paper.

### **late binding**

In InfoPrint, waiting to assign a job to an actual destination until it is about to be processed. Late binding permits InfoPrint to route a job to the first suitable actual destination that becomes available. Contrast with *early binding*.

### **LDAP**

Lightweight Directory Access Protocol is the network security implementation for InfoPrint Manager. It uses an LDAP or Active Directory server for user credentials, and it offers a unified security implementation in a customer environment.

## **LED**

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Light-emitting diode.

### **light-emitting diode (LED)**

The imaging device element for electrophotographic print units.

### **lines per inch (lpi)**

A measure of the density of the grid used to space halftone dots. Typical grid spacings are 85 lpi (newspaper), 133 lpi (low end), 150 lpi (midrange), and 175+ lpi (high quality).

### **Linux**

Linux is an open-source operating system modeled on UNIX. There are multiple distributions available, InfoPrint Manager is only supported on Red Hat Enterprise Linux (RHEL) and SUSE Linux Enterprise Server (SLES).

### **Local Area Network (LAN)**

A computer network at one location that consisting of devices connected to one another and communicating. This network can also be connected to a larger network.

### **local ID**

Local job identifier.

### **local job identifier**

In InfoPrint, a job identifier automatically generated by the server, identifying the job to the person who submitted it. InfoPrint maps a local job ID to a global job ID.

### **locale**

The human language and character set of information presented to a user.

In InfoPrint, the language InfoPrint uses when sending notification and error messages or displaying the InfoPrint graphical user interfaces.

### **log**

A collection of messages or message segments added to a file for accounting or data collection purposes.

To record messages in a file.

### **logical destination**

In InfoPrint, an object to which users submit their jobs. The logical destination routes jobs to one or more actual destinations representing output devices such as printers, or electronic mail systems. See also *logical printer*; contrast with *actual destination*.

### **logical printer**

In InfoPrint, a type of logical destination. The logical printer routes jobs to one or more physical printers representing printing devices.

### **logical unit (LU)**

A type of network accessible unit that enables end users to gain access to network resources and communicate with each other.

### **logical unit (LU) 6.2**

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A type of logical unit that supports general communication between programs in a distributed processing environment. LU 6.2 is characterized by (a) a peer relationship between session partners, (b) efficient utilization of a session for multiple transactions, (c) comprehensive end-to-end error processing, and (d) a generic application program interface (API) consisting of structured verbs that are mapped into a product implementation.

### **longest-job-first**

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the longest job in the queue. Contrast with *deadline*, *FIFO (first-in-first-out)*, *job-priority*, and *shortest-job-first*.

### **lpi**

Lines per inch.

### **LU**

Logical unit.

### **M**

#### **magnetic ink character recognition (MICR)**

Identification of characters printed with ink that contains particles of magnetic material.

#### **mainframe processor**

A functional unit that interprets and executes instructions in a large computer to which other computers are connected so that they can share the facilities the mainframe provides.

#### **makeready**

All the setup work involved in preparing a press for a print run.

#### **manage**

In the InfoPrint GUI, the action used to put an object into a mode where its icon reflects changes of status.

#### **mechanical**

A camera-ready layout. The mechanical can consist of multiple sheets or overlays for each spot or process color used. Final images, if not stripped in later, should be at final size, cropped and screened to the correct line frequency.

#### **medium**

In InfoPrint, an object representing the physical material upon which a job is printed.

#### **merge data**

Data that is unique to each copy of a document and that customizes the document; for example, serial numbers or mailing information. Merge data is typically a small percentage of the total data in the document.

#### **message catalog**

A file of all the possible messages than can display during the processing of an application.

### **MICR**

Magnetic ink character recognition.

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## **Mixed Object Document Content Architecture (MO:DCA)**

An architected, device-independent data stream for interchanging documents.

### **MO:DCA-P**

Mixed Object Document Content Architecture Presentation.

### **modify**

In InfoPrint, an action used to modify the values of attributes in the object attributes notebook.

### **moire**

Undesirable interference patterns caused by two overprinting halftone screens with incorrect halftone dot angles.

### **monospaced**

In typesetting, pertaining to a typeface in which all the characters have equal widths. Monospaced typefaces are useful for tabulating figures.

## **Multiple Virtual Storage (MVS)**

An operating system developed by IBM. The design of MVS incorporates an addressing architecture that provides a unique address space to each job in the system.

### **MVS**

Multiple Virtual Storage.

## **N**

### **N\_UP**

Pertaining to the number of forms placed together in a layout. Typical layouts are 2\_UP, 4\_UP, 8\_UP, 16\_UP, and so on. N\_UP printing is done to use the maximum area of the print sheet.

### **namespace**

A global name repository available to all utilities and API procedures. The namespace contains mappings of object names to other related objects. For example, the namespace provides the mapping of a logical destination to the server in which it is located.

## **Network File System (NFS)**

A protocol developed by Sun Microsystems that uses Internet Protocol to allow a set of cooperating computers to access each other's file systems as if they were local.

### **newline options**

The different ways in which the printer determines how lines are delimited in a document data stream.

### **NFS**

Network File System.

### **non-process-runout (NPRO)**

A printer function that moves the last printed sheet to the stacker of the printer device.

### **non-settable attribute**



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An attribute that is neither initially settable nor resettable. The values for these attributes are controlled by InfoPrint. Contrast with *initially settable attribute* and *resettable attribute*.

### **notification**

The act of reporting the occurrence of events.

In InfoPrint, notification of events appears as messages in event logs or messages sent to administrators, operators, and job submitters. In the InfoPrint GUI, notification of events also appears as changes to the appearance of icons.

### **notification-profile**

In InfoPrint, an attribute associated with an object that contains information designating the people to whom InfoPrint sends notification about events for that object, which event information it sends, and how it sends the information.

### **NPRO**

Non-process-runout.

## **O**

### **object**

A collection of attributes that represent a physical or logical entity in the print system. For example, a specific printer device is represented by an actual destination (physical printer) object. An object is identified by its object name. Objects are grouped into classes. See also *object class*.

### **object class**

A group of objects that share a common definition and therefore share common properties, operations, and behavior as defined by their attributes. For example, all InfoPrint queue objects are in the same object class and each queue has the same set of queue attributes. However, the values for those attributes can differ for each queue in the queue object class.

### **Object Identifier (OID)**

In architecture, a notation that assigns a globally unambiguous identifier to an object or a document component. The notation is defined in international standard ISO.IEC 8824(E).

### **object name**

The alphanumeric term that identifies an object.

### **object state**

The state of an object indicates its availability and readiness for performing its functions. An object can be in one of a number of states such as ready, busy, or unknown.

### **OCR**

Optical character recognition.

### **octet**

A byte that consists of eight binary digits (bits).

### **offset stacking**

In certain printer devices, a function that allows the printer to offset the printed output pages for easy separation of the jobs.

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## **OID**

Object Identifier.

## **open destinations window**

In the InfoPrint GUI, the action used to open a new application window displaying the logical and actual destinations associated with a queue.

## **Open Prepress Interface (OPI)**

An industry standard for replacing low-resolution images in review documents with high-resolution images needed for high-quality final output.

## **Open Software Foundation (OSF)**

A nonprofit research and development organization created by a consortium of companies that work together to develop software in the open systems market.

## **OpenType font (OTF)**

An extension of the TrueType font format that adds:

- Support for PostScript outlines
- Better support for international character sets
- Broader support for advanced typographic control

## **open window**

In the InfoPrint GUI, the action used to open a new application window representing one or more objects displayed in the currently open application window.

## **operation**

An action performed on one or more data items.

## **operator**

In InfoPrint, the person responsible for printer devices. Also, this person performs a subset of tasks for InfoPrint queues and actual destinations and performs some job-related tasks.

## **OPI**

Open Prepress Interface.

## **optical character recognition (OCR)**

Conversion of scanned text to editable ASCII characters.

## **option**

A modifier of a command that specifies the action of the command. A dash usually precedes an option. Synonymous with *flag*. See also *keyword*.

## **orphan logical destination**

In the InfoPrint GUI, an object that represents a logical destination that is not associated with an existing queue.

## **orphan logical printer**

In the InfoPrint GUI, an object that represents a logical printer that is not associated with an existing queue.

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## OSF

Open Software Foundation.

## overlay

A collection of constant data, such as lines, shading, text, boxes, or logos, that is electronically composed in the host processor and stored in a library, and that can be merged with variable data during printing.

## OTF

OpenType font.

## P

### PAC

Privilege Attribute Certificate.

### page definition

A resource that contains the formatting controls for line data.

In InfoPrint, a resource that defines the rules of transforming line data into composed pages and text controls.

### page segment

A resource that contains composed text and images, which are prepared before formatting and included during printing.

## Palladium

A distributed print system developed at MIT/Project Athena with participation from Digital Equipment Corporation (DEC), International Business Machines (IBM), and Hewlett-Packard (HP). It is a reference implementation for the OSI Document Printing Architecture (DPA) standard, ISO/IEC 10175.

## pane

In the Work Area of the InfoPrint Manager Administration GUI, an area containing a group of objects of a specific type, such as an actual destinations pane.

### parent/child relationship

In InfoPrint, servers, queues, and destinations are related to one another in a parent/child relationship. For example, a server is the parent of all the queues that reside in that server, and these queues are its children.

### pass through

In InfoPrint, referring to options submitted with a job that are used by the device driver, but not InfoPrint. InfoPrint does not process or validate this information; it passes it along to the device driver. See *printer driver*.

## path

The route used to locate files; the storage location of a file. A fully qualified path lists the drive identifier (if any), directory name, subdirectory name (if any), and file name with the associated extension.

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**pause**

In InfoPrint, the action used to temporarily halt the printing or transmission of jobs on actual destinations or the distribution of jobs from servers or queues.

**pdcreate**

In InfoPrint, the command used to create a new object and set its attributes to specified values.

**PDF**

Portable Document Format.

Printer description file.

**pdmsg**

In InfoPrint, a utility used to display information about a message.

**pdpr**

In InfoPrint, the command used to create and submit a job, consisting of one or more documents, to a server for printing or transmission.

**perfect binding**

A type of book binding in which the pages are held together with flexible adhesive. Contrast with *edition binding*, *spiral binding*, and *wire-o binding*.

**permissions**

In AIX, codes that determine who can access a file and what operations they can perform on the file.

**physical printer**

In InfoPrint, a type of actual destination that represents a printer device. See also *printer device*.

**piobe**

The standard printer input/output backend program used by AIX for printing. See also *ainbe*.

**pipe-pull**

In InfoPrint, a document transfer method where InfoPrint saves the documents in a file and transfers the address of the file to the server. InfoPrint transfers the file to the server upon the request from the server. This is an efficient transfer method for large jobs and is the default transfer method at job submission. Contrast with *with-request*.

**plex**

A document or actual destination attribute used to define the placement of output images on the page. See the plex values *simplex* and *tumble*.

**Portable Document Format (PDF)**

An Adobe PostScript data format that can be viewed or printed.

**Portable Operating System Interface for Computer Environments (POSIX)**

An Institute of Electrical and Electronics Engineers (IEEE) standard for computer operating systems.

**POSIX**

Portable Operating System Interface for Computer Environments.

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## **PostScript**

Adobe's page description language. PostScript has become a standard for graphic design and layout software. PostScript files can contain both vector and raster data. Fonts are described using PostScript coding. Many desktop publishing systems produce PostScript data as their output data stream.

## **PostScript printer description (PPD)**

A file that contains options for printing PostScript data on various printer devices.

## **PPD**

PostScript printer description.

## **Prefix lengths**

Identify a range of IPv6 addresses that are on the same network.

## **preflight**

To assess all resources for a job before the actual print run.

## **prepress**

Work done in the print shop before printing a job, such as preparing data and art, page imposition, color retouching, electronic editing, and page layout.

## **print database**

The set of files on disk that provide a permanent repository for the attributes of all print objects, such as logical destinations, queues, and actual destinations.

## **print job**

Synonym for *job*.

## **Print Quality Enhancement (PQE)**

A printer facility that provides edge smoothing along diagonal lines, fine fidelity protection, and independent boldness control.

## **Print Services Facility (PSF)**

Any of several programs, including PSF for AIX, PSF/MVS, PSF/VM, and PSF/VSE, that produce printer commands from the data sent to them.

## **print system**

A group of one or more print servers and one or more printing devices, which might or might not be located in the same geographical area. The components of a print system are assumed to be interconnected in some manner, providing at least one network interface to print clients, and acting synergistically to supply the defined document print service. (D)

## **printable document**

In InfoPrint, an object that represents text or data to be printed by a job. Contrast with *resource document*.

## **printer description file (PDF)**

A file that contains options for printing PostScript data on a specific printer device.

## **printer device**

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The physical output device that performs the printing function. See also *physical printer*.

**printer driver**

A file that describes the physical characteristics of a printer or other peripheral device. This file is used to convert graphics and text into device-specific data at the time of printing or plotting.

Synonymous with *device driver*.

**priority**

In InfoPrint, a number assigned to a job that determines its precedence in being printed. Jobs with higher priority numbers are handled before jobs with lower priority numbers.

**process color**

Color made up of CMYK links simulating a specified color. This is the traditional method of reproducing continuous tone color images (color separations). Because of the nature of color inks, certain inks do not reproduce well.

**processor**

In a computer, a functional unit that interprets and executes instructions. A processor consists of at least an instruction control unit and an arithmetic and logic unit. (T)

**promote**

In InfoPrint, the action used to move a job to the beginning of the queue so that it will print on the next available printer that can handle that job.

**protocol**

A set of semantic and syntactic rules that determines the behavior of functional units in achieving communication.

**pSeries**

A family of workstations and servers based on IBM's POWER architecture. They are primarily designed for running multi-user numerical computing applications that use the AIX operating system.

**PSF**

Print Services Facility.

**PSF destination support system**

In InfoPrint, the destination support system that communicates with PSF for AIX to print jobs.

**PSF physical printer**

In InfoPrint, the object representing a printer device that uses the PSF destination support system.

**Q****QuarkXpress**

A desktop publishing system produced by Quark, Incorporated.

**queue**

In InfoPrint, an object that manages a collection of jobs that are waiting to print. A queue receives jobs from one or more logical destinations and sends jobs to one or more actual destinations.

A line or list formed by items waiting for processing.

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## R

### raster

A pattern of dots defined at varying data depths. Black and white images are one-bit (on/off); grayscale images are 8-bit (256 levels); RGB images are 24-bit; CMYK images are 32-bit.

### raster image processor (RIP)

A processor in which a PostScript data stream is converted into dot patterns that are transferred to the final print medium. InfoPrint uses an Adobe RIP to convert PostScript to IPDS for such printers as the InfoPrint 4000 and InfoPrint 60.

### rc.pd

In InfoPrint, a utility used to start the InfoPrint servers listed in the `/etc/pd.servers` file.

### read-only

In InfoPrint, describes an attribute value that cannot be set by the user but can change based on other activity.

### ready

A state in which an object is ready and able to perform tasks.

An available resource, such as a value of the `media-ready` attribute. Contrast with *supported*.

### red, green, blue (RGB)

The colors of CRT display phosphors. RGB images are for screen display only. They must be converted to CMYK images before printing.

### registration

The accuracy of printing on paper relative to the edges of the paper.

The accuracy of printing a single color (cyan, magenta, or yellow) relative to black.

The accuracy of printing on one side of a page relative to printing on the reverse side of the page.

### reprographics

The process of copying or duplicating documents or information.

### requested

In InfoPrint, pertaining to the specific values of attributes requested by a job when it is submitted. The requested attribute values of a job are validated against supported attribute values for an actual destination to determine if the printer can handle that job. Contrast with *supported*.

### resettable attribute

An attribute whose value can be set or modified after an object has been created, assuming the object is in an appropriate state to be modified. See also *initially settable attribute*; contrast with *non-settable attribute*.

### resource

In AFP, a file containing a collection of printing instructions used when printing a job. Resources include fonts, overlays, form definitions, page definitions, and page segments.

### resource context

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In InfoPrint, an object that contains directory path information that helps the print system locate resources needed for printing a job. The resources include fonts, overlays, form definitions, page definitions, and page segments.

**resource document**

In InfoPrint, an object that represents a resource, such as graphics or fonts, used by a job to print a printable document. Contrast with *printable document*.

**resubmit**

In InfoPrint, an action used to reroute pending or retained jobs to a different logical destination than the one through which the job was originally submitted.

**resume**

In InfoPrint, the action used to resume the printing of paused jobs or resume the distribution of jobs from paused servers or queues.

**retained job**

In InfoPrint, an object that represents a job that is being stored in the print system for a specified amount of time, normally after the completion of printing the job. A retained job does not reside in a queue.

**retention**

The process of storing data after completion of a process for a certain length of time.

**retrieval**

The process of bringing digital archived data out of storage and into online memory for reuse. See also *archiving*.

**RGB**

Red, green, blue.

**RIP**

Raster image processor.

To convert data to dot patterns using a raster image processor.

**root user**

In the AIX environment, the system user with the most authority who can log in and execute restricted commands, shut down the system, and edit or delete protected files. Synonymous with *superuser*.

**RPC**

Remote Procedure Call.

**RPM**

Red Hat Package Management is the baseline package format of the Linux Standard Base distribution.

**S****scanner**



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A device that converts hardcopy source data into digital format (halftone dots) to avoid retyping the data.

### **scheduler**

In InfoPrint, the scheduling method that the queue uses when assigning a job to an actual destination.

### **separator sheet**

The sheet of paper, blank or otherwise, that separates documents in a job. See also *auxiliary sheet*.

### **server**

In InfoPrint, the object that accepts configuration, management, and printing requests, performs the requested operations, and sends responses back as a result of the operation.

### **settable attribute**

See *initially settable attribute*, *resettable attribute*.

### **severity**

An indication of how serious an error condition is.

### **shell**

In the AIX operating system, a command interpreter that acts as an interface between the user and the operating system. In InfoPrint documentation, all shell examples use the Korn shell.

### **shift-out, shift-in code**

Control characters used to indicate the beginning and end of a string of double-byte, ideographic characters.

### **shortest-job-first**

In InfoPrint, a queuing technique where the next job assigned to the first position in the queue is the shortest job in the queue. Contrast with *deadline*, *FIFO (first-in-first-out)*, *job-priority*, and *longest-job-first*.

### **shut down**

In InfoPrint, the action used to halt all server or actual destination processes without deleting the server or actual destination.

### **signature**

A group of pages that are printed, folded, cut, and bound together. Manual placement of pages in the signature is determined using a folding dummy.

### **simplex**

In InfoPrint, the value of the document or actual destination `plex` attribute indicating that output images are placed on the media in a head-to-head format, so that the top of one image is at the same edge as the top of the next image. Depending on the value of the document or actual destination `sides` attribute, the document can be printed on one or both sides of the paper. Contrast with *tumble*; see also *simplex printing* and *duplex printing*.

### **simplex printing**

Printing on only one side of the paper. Contrast with *duplex printing (1)*.

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Printing on one or both sides of the paper, placing output images on the media in a head-to-head format, so that the top of one image is at the same edge as the top of the next image. Contrast with *tumble duplex printing*; see also *duplex printing (2)*.

**SMIT**

System Management Interface Tool.

**SNA**

Systems Network Architecture.

**spiral binding**

A type of book binding in which wire or plastic coils are threaded through a series of holes or slots in the binding edge. Contrast with *edition binding*, *perfect binding*, and *wire-o binding*.

**spot color**

Individual colored inks formulated to exactly match a specified color. Spot color is used when CMYK process color cannot produce a reasonable facsimile of the color or when vivid color is needed. Spot color is also used when fluorescent or metallic colors are needed.

**spread**

In color printing, an area whose dimensions have been enlarged to eliminate white space between it and another color. Contrast with *choke*.

**start sheet**

The sheet of paper, blank or otherwise, that can precede a job. See also *auxiliary sheet*.

**state**

Synonym for *object state*.

**stripping**

The process of mechanically assembling film into plate layouts. Page imposition takes place during stripping.

**subnet mask**

Identify a range of IPv4 addresses that are on the same network.

**subnetwork**

Any group of nodes that have a set of common characteristics, such as the same network ID.

In the AIX operating system, one of a group of multiple logical divisions of another network, such as can be created by TCP/IP.

**subtractive color system**

A system that reproduces an image by mixing (adding) appropriate quantities of cyan, magenta, and yellow paints on white paper. These paints reflect certain colors and absorb—or subtract—others. Contrast with *additive color system*.

**superuser**

Synonym for *root user*.

**supported**

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In InfoPrint, pertaining to the specific job attribute values that the actual destination can accept during job validation. InfoPrint validates the requested attribute values of the job against the supported attribute values of the actual destination to determine whether the actual destination can handle that job. Contrast with *requested*.

### **synchronous**

Occurring with a regular or predictable time relationship to a specified action. Contrast with *asynchronous*.

### **system administrator**

Synonym for *administrator*.

### **System Management Interface Tool (SMIT)**

In the AIX operating system, an interface tool for installation, maintenance, configuration, and diagnostic tasks. SMIT lets you perform tasks without entering any commands.

### **Systems Network Architecture (SNA)**

The description of IBM's logical structure, formats, protocols, and operational sequences for sending units through, and controlling the configuration and operation of, networks.

## **T**

### **table reference character (TRC)**

An optional control character in a print data set. The TRC identifies the font used to print the record and can be used to select a font during printing.

### **Tagged Image File Format (TIFF)**

A digital format for storing scanned images. TIFF files are also referred to as raster format files (as opposed to vector format files). When used in desktop publishing, TIFF files produce only a low-resolution FPO image; the high-resolution data remains on the hard disk.

### **task help**

A type of online help that provides a list of tasks that can be completed with a selected object. When you select a task, the help provides step-by-step information about how to complete the task.

### **TCP/IP**

Transmission Control Protocol/Internet Protocol.

### **TCP/IP-attached printer**

A printer device attached to an pSeries computer through telecommunication lines using the TCP/IP protocol.

In InfoPrint, a PSF physical printer that represents a TCP/IP-attached printer device. See also *AIX-attached printer*, *direct-attached printer*, and *upload-TCP/IP-attached printer*.

### **template**

In the InfoPrint Manager Administration GUI, an object that represents a set of default attribute values that has been defined for creating a particular type of object, such as an actual destination.

### **ticket**

See *job ticket*.

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## TIFF

Tagged Image File Format.

## Transmission Control Protocol/Internet Protocol (TCP/IP)

A set of communication rules used in the Internet and in any network that follows the U.S. Department of Defense standards for inter-network protocol. TCP provides a reliable host-to-host protocol between hosts in packet-switched communications networks and in interconnected systems of such networks. It assumes that the Internet Protocol (IP) is the underlying protocol. See also *Internet Protocol*.

## trapping

In desktop publishing, the amount of overlap in overprinting colors. Trapping prevents white paper showing through gaps caused by normal errors in registration. On sheet-fed presses, trapping is usually 0.25 point. See also *choke* and *spread*.

## TRC

Table Reference Character.

## TrueType font (TTF)

A font format based on scalable outline technology with flexible hinting. Glyph shapes are based on quadratic curves. The font is described with a set of tables contained in a TrueType Font File.

## TTF

TrueType font.

## tumble

In InfoPrint, the value of the document or actual destination **plex** attribute indicating that output images are placed on the media in a head-to-toe format, so that the top of one image is at the same edge as the bottom of the next image. The document must be printed on both sides of the paper. Contrast with *simplex*.

## tumble duplex printing

Printing on both sides of the paper, placing output images on the media in a head-to-toe format, so that the top of one image is at the same edge as the bottom of the next image. Contrast with *simplex printing (2)*, *duplex printing (2)*.

## U

### UCR

Under color removal.

### under color removal (UCR)

Conversion of neutral color areas to black ink that reduces use of CMY inks, improves trapping, and reduces setup time. Generally, UCR is performed during image scanning, but some RIPs perform it during processing. Synonymous with *gray component replacement (GCR)*.

### unmanage

In the InfoPrint Manager Administration GUI, the action used to put an object into a mode where its icon does not reflect the changes of status for the object.

### upload printer

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See *upload-TCP/IP-attached printer*.

### **upload-TCP/IP-attached printer**

In InfoPrint, a PSF physical printer that represents a printer device attached through an MVS system and managed by PSF/MVS. InfoPrint communicates with the MVS system through the TCP/IP network. See also *AIX-attached printer*, *direct-attached printer*, and *TCP/IP-attached printer*.

## **V**

### **validate**

In InfoPrint, to compare the attribute values requested by a job with the supported attribute values of the actual destinations in the system and to determine whether there is an actual destination capable of printing or sending the job.

### **value**

A specific characteristic of an attribute.

### **variable**

A name used to represent a data item whose value can change while the program is running.

### **variable data**

Data that can be changed between copies of a document. For example, a form letter (constant data) can be merged with variable data, such as a customer's name and address to produce personalized documents.

### **varnish**

A protective layer applied to a finished sheet, usually for photos, but sometimes used as a design element because of its reflective qualities. Varnishes can be tinted.

### **vector**

An absolute coordinate point and line in space. PostScript files can contain vector artwork. Vector files are converted to rasters during the RIP process.

### **velox**

A black and white photographic print made from a halftone negative, to be used as a proof copy.

### **vignette**

An image with soft, fade-away edges.

### **Virtual Machine (VM)**

An IBM licensed product that manages the resources of a single computer so that multiple computing systems appear to exist.

A virtual data processing system that appears to be at the exclusive disposal of a particular user, but whose functions are accomplished by sharing the resources of a real data processing system. (T)

### **Virtual Storage Extended (VSE)**

An IBM licensed program whose full name is the Virtual Storage Extended/Advanced Function. It is a software operating system controlling the execution of programs.

### **Visual Systems Management (VSM)**

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In AIX, a type of graphical user interface that allows system management through the direct manipulation of objects.

**VM**

Virtual Machine.

**VSE**

Virtual Storage Extended.

**VSM**

Visual Systems Management.

**W****web**

A roll of paper used in web or rotary printing.

**well**

In the InfoPrint Manager Administration GUI, an area in a pane that contains a group of objects related to the objects in the pane; for example, a queues well in a servers pane.

**what you see is what you get (WYSIWYG)**

Refers to the fact that the composite image displayed on the screen at a computer workstation has the appearance of the final printed image.

**window**

A rectangular area of the screen that you can move about, place on top of, or pull under other windows, or reduce to an icon.

**wire-o binding**

A continuous double series of wire loops run through punched slots along the binding side of a booklet. Contrast with *edition binding*, *perfect binding*, and *spiral binding*.

**with-request**

In InfoPrint, a document transfer method where the client transfers the documents directly to the server. Contrast with *pipe-pull*.

**workstation**

A terminal or microcomputer, usually one that is connected to a mainframe or to a network, at which a user can use applications.

**write access**

A level of authorization that grants the ability to modify data.

**WYSIWYG**

What you see is what you get.

**X****X-Windows**

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A network-transparent windowing system developed by MIT. It is the basis for Enhanced X-  
Windows, which runs on the AIX Operating System.

**xerography**

A dry printing process using corona-charged photoconductive surfaces to hold latent images that  
are developed with a dry toner and then transferred to paper and fused with heat.

**Xstation**

A terminal that is connected through a network to an pSeries computer, from which a user can  
perform command-line functions and run X-Windows based applications.

