
Release Notes for InfoPrint ProcessDirector for Linux 1.3.1

PTF U829966 (November 2009)

These release notes provide information about InfoPrint® ProcessDirector for Linux®, Version 1 Release 3 Modification 1 (Program Number 5765-G79) with PTF U829966 (1.3.1.225).

This PTF includes fixes for the base product and these features:

- Transforms
- Manufacturing Optimization
- Inserter Level I and Inserter Level II
- SLA
- AFP™ Editor
- AFP Indexer
- Reports

It also includes these functional improvements:

- **Support for DB2® installed on a different system**

With this PTF, you can choose to use the internal version of DB2 that is installed as part of InfoPrint ProcessDirector, or you can choose to purchase and install a separate copy of DB2 on a different system and let InfoPrint ProcessDirector use it.

DB2 must be Version 9.5 with Service Pack 3 or later. See *InfoPrint ProcessDirector for Linux: Planning and Installation* (G550-1042) for more information about installing and using DB2 on a different system.

- **Custom user groups**

You can now create your own security groups and choose the actions and properties that members of those groups can access.

- **Copy User**

The **Copy** function is now available for user objects. You can create one user and use it as a template to create other users with the same permissions.

- **Improvements to InfoPrint Visual Workbench**

The InfoPrint Visual Workbench framework is part of both AFP Editor and AFP Indexer. With this update, you can select metric units of measure. You can also view overlays defined in a form definition and other form definition properties, such as **constant back** and **multiple-up**.

- **Improvements to AFP Editor**

With this update for AFP Editor, you can:

- Add text blocks to an AFP file.

For example, you can add page numbers or include human-readable text that contains job property values or information from a 2D bar code.

- AFP Editor has enhanced capabilities for identifying PostNet bar codes and for placement of Intelligent Mail Barcodes relative to an address block.

- **Improvements to AFP Indexer**

With this update for AFP Indexer, you can:

- Define index tags from No Operation (NOP) structured fields in the AFP.

Many composition applications let you insert unprinted information in NOP records. With this update, you can find that information and use it as index tags.

- Identify header and trailer pages in the data when using AFP Indexer to make page groups.

You can also suppress the header and trailer pages from the print data.

- **New system object: Location**

This PTF adds the **Location** object. You can create locations to represent the sites where your printers reside. For example, if you have printers in different rooms or different buildings on the same site, you can create a location for each one; if you have sites in different cities, you can create a location for each city.

After you create locations, you can set the **Location** property on various system objects, such as printers, input devices, and jobs. Then, you can use the **Location** as a scheduling property to ensure that jobs are printed at the correct site. You can also set the **Location** property for users, so the Main page for that user shows only the jobs, printers, and input devices for a specific location or locations.

Note: If you set locations for any system objects, we recommend setting locations for all objects. If some objects have locations and others do not, system behavior can be unpredictable.

- **New feature: Designer**

Designer extends InfoPrint ProcessDirector to make it easier to interact with GMC PrintNet T 6.0. The feature adds step templates and job types tailored to work with files that the Designer portion of PrintNet T generates so they can be submitted to the processing engine to generate AFP print jobs as part of a print workflow.

- **Manual failover support**

This PTF provides instructions for installing a configuration that contains a backup primary server and a shared NFS-mounted file system. In this configuration, some of the InfoPrint ProcessDirector file systems are stored on the external storage system and used by both the active and the backup primary servers. The PTF includes scripts that you can run to transfer processing from the active server to the backup server and back again. See *InfoPrint ProcessDirector for Linux: Planning and Installation* (G550-1042) for more information.

- **Printer support**

InfoPrint ProcessDirector now has a workgroup printer feature that you can use to send print jobs to printers that print fewer than 75 pages per minute.

In addition, InfoPrint ProcessDirector now provides support for these printer models:

- InfoPrint 75
- InfoPrint 100
- InfoPrint Pro C900AFP
- InfoPrint Pro 907
- InfoPrint Pro 907EX
- InfoPrint Pro 1107
- InfoPrint Pro 1107EX
- InfoPrint Pro 1357
- InfoPrint Pro 1357EX

- InfoPrint 1823
 - InfoPrint Color 1825
 - InfoPrint Color 1836 MFP
 - InfoPrint 1892
 - InfoPrint 1985
 - InfoPrint 1948 MFP
 - InfoPrint 1968 MFP
 - InfoPrint 1988 MFP
 - InfoPrint 4100 Models TS1, TS2, TS3, TD1/2, TD3/4, TD5/6
 - InfoPrint 5000 Models AS3, AD3/4
 - InfoPrint SP 8200 DN1
- **Inserter improvements**

The load plan object has been removed. Administrators can now specify which materials to load in the inserter in a new job property called **Load plan comment**. Operators can view the properties of a job to see the materials to load and the bins in which to load them. Also, administrators can configure printer banner pages to print the contents of the **Load plan comment** property, and use the **Load plan comment** property in rules files for inserter control files to control which inserter bins deliver inserts for the job.

Installation alerts

Hardware requirements for the Inserter Level I and Level II features

If you install the Inserter Level I or Level II feature, these system hardware requirements replace the base InfoPrint ProcessDirector requirements:

- One or more 2.8 GHz or faster processors.
- A system with a 64-bit processor running a 64-bit operating system.
- A minimum of 200 GB free hard-drive space. More space might be required, depending on the number of documents.
- A minimum of 12 GB RAM.

Recommended file system sizing for external DB2 instance user

The instance user for an external DB2 requires a minimum amount of space in its home directory. If the space in the directory is not adequate, the DB2 instance cannot be created.

The default home directory of the DB2 instance owner is /home. The minimum size for the directory is 250 MB of free space.

Activating Manufacturing Optimization

The format of the docCustomDefinitions.xml file changed in PTF U829966. If you try to activate Manufacturing Optimization with no PTFs using a docCustomDefinitions.xml file that you created following the instructions for this PTF, the installation process reports an XML validation error even if your file contains valid XML.

To avoid problems, install and activate Manufacturing Optimization using the sample docCustomDefinitions.xml file. Then, install PTF U829966 and copy your docCustomDefinitions.xml into the correct location when the installation process requests it. If your docCustomDefinitions.xml file contains valid XML, the XML validation error should not be reported when you activate after the PTF installation.

Known limitations, problems, and workarounds

Base product

Text displayed in English

In some cases, English text is shown in the installation programs, user interface, and help system where translated text should appear. Usually, this text appears because the page contains properties or actions that were added after the page was translated.

AIX® secondary server names

Do not use double-byte characters in the name of an AIX secondary server.

Messages and descriptions not shown in the expected language

During the installation process, you are asked what language the server should use for some messages and descriptive text on the user interface. Your selection is used to set the language for the aiw1 user that is created for InfoPrint ProcessDirector. Sometimes that language setting does not take effect, so messages in the printer log or descriptions of objects supplied with InfoPrint ProcessDirector appear in English instead of the language that you selected. To make sure that you receive printer messages in the desired language, you can set the **Printer language** property on each printer. For other text, you can edit the aiw1 user profile and specify the desired language.

Printer messages appear in English

Messages from the printer-driver component of InfoPrint ProcessDirector are displayed in the language you select for the **Printer language** property. The printer-driver component does not provide messages in Brazilian Portuguese, Russian, Simplified Chinese, or Traditional Chinese, so you cannot select those languages as values for the **Printer language** property. These messages appear in the server log and on the message page that prints after a print job.

Banner pages print in portrait orientation

Configuration files to format the content of banner pages are only available in the portrait orientation. If you change the setting for the **Banner page** property on the printer, it has no effect.

Processing AFP files containing multiple documents

The AFP architecture lets applications place multiple documents within a single file, with the document boundaries marked with Begin Document (BDT) and End

Document (EDT) structured fields. Applications might use this function to cause finishing operations, such as stapling or binding, to operate on each document separately.

The **EnableRepositioning** and **CreatePageRanges** steps provided in many job types supplied with InfoPrint ProcessDirector map pages to sheets so that the **Jump to** and **Print again** functions can reliably locate a page in the job and so that the **CreateInserterReprints** step can reprint documents that were damaged during insertion. However, the **EnableRepositioning** and **CreatePageRanges** steps cannot process files that contain multiple documents as described above.

If a job containing multiple documents is processed by the **EnableRepositioning** or **CreatePageRanges** step, an error occurs that prevents the job from printing. You can remove those steps from the job type being used to process the job and the job will print, but you will no longer be able to use sheet numbers or indexing tags to select pages in the viewer when using the **Jump to** and **Print again** functions. If the job type contains the **CreateInserterReprints** step, do not remove the **EnableRepositioning** and **CreatePageRanges** steps because these steps are required to reprint documents damaged during insertion.

AFP file viewer restriction

The AFP file viewer does not apply any modifications in the form definition (such as print direction, page position, constant back, and N_UP page positioning).

Large PDF files do not display properly in viewer

If you try to view PDF files larger than 2 GB, you might see blank pages and images might not display. With large files, the viewer program sometimes stops the data transfer before the entire file has been received. Trying to view the page again sometimes overcomes this limitation.

Characters missing in viewer, but present in printed output

If your document composition software creates custom code pages for inline fonts to reduce the size of print files, your jobs print correctly, but some of the characters might not display properly in the AFP viewer. To make the characters display correctly, change the code page settings in the document composition tool so the standard AFP code pages are used by the print job.

Changing (UID) and group ID (GID) values for the default user

During installation, you can choose to use the default UID and GID for the InfoPrint ProcessDirector user or enter different values. However, if you enter new values, they are not retained. The default UID and GID are still used for the InfoPrint ProcessDirector user.

If you must use different UID and GID values, you can create a user called aiw1 before you start the installation process and use those values. InfoPrint ProcessDirector detects that the user exists and does not try to create it again.

Missing data patterns values

PTF U829966 adds additional default values for the **Data patterns** property for some supplied input devices. If you modified the supplied input devices, the new default values are not added.

PSF uninstall failure

If you uninstall InfoPrint ProcessDirector, you might see an error that prevents the PSF component from uninstalling completely. As a result, the installation program leaves some files on your system. To remove the files:

1. Log in as the root user.
2. Enter these commands to remove the PSF files:

```
rpm -e acif
rpm -e psfbase
rpm -e psfmvsd
rpm -e psfresliv
rpm -e psficu
rpm -e psfnlsmg
rpm -e psfmsg
rpm -e psftools
```

3. Enter these command to clean up files left by the installation program:

```
rm -rf /opt/IBM/aiv/V1.0/_uninst/psf*
rm -rf /root/InstallShield/Universal/infoprint/ippd/psf
```

4. Enter this command to remove the InfoPrint ProcessDirector install directory:
rm -rf /usr/lpp/psf

Coordinating permissions for actions and properties in custom groups

PTF U829966 adds the ability to create custom security groups that specify which actions and properties the group members can access. Though there are some dependencies between properties and actions, they are not enforced when you create groups. As a result, you can prohibit access to some of the properties that are required to do an action without knowing it. If you try to do one of those actions, you see an internal server error message. InfoPrint ProcessDirector continues to run, but you cannot do the requested action until you fix the access permissions for the group.

For example, you can create a group and make all the properties for a Job Type prohibited, and make all the actions allowed. A member of that group can try to view the properties of a Job Type, but InfoPrint ProcessDirector displays an error message because all the properties are prohibited.

Submitting inline resources with a line data print job

If you submit line data jobs with inline resources to a Download input device based on the supplied input device named **DownloadLineData** or process them with a job type that is based on the **DownloadLineData** job type, most inline resources are ignored. The inline resources are ignored because the value of the **Resource type** property for the **ConvertLineDataJobIntoAFP** step of that job type contains these values: **Form definition, Fonts, Inline**.

The value **Inline** indicates that InfoPrint ProcessDirector should retain all inline form definitions and fonts (the other values in the list) and remove any other inline resources from the data stream, not that it should retain all inline resources that come with the job. As a result, even if AFP Download Plus or Download for z/OS[®] includes page definitions or other resources inline with the job, InfoPrint

ProcessDirector removes them. To use the inline resources, you must update the value of the **Resource type** property for the **ConvertLineDataJobIntoAFP** step in the **DownloadLineData** job type.

To update the value:

1. Log in as an administrator.
2. Click the **Administration** tab.
3. In the left column, select **Job types**.
4. Select **DownloadLineData** and click **Disable**.
5. Select **DownloadLineData** and click **Properties**.
6. Under **Phases and Steps**, click **ConvertLineDataJobIntoAFP** to show the job defaults.
In the **Resource type** field, you see a list of resources with **Inline**, **Formdef**, and **Font** selected.
7. Add other types of inline resources to the **Resource type** by holding the **Ctrl** key and selecting the types of resources in the list.
8. Click **OK**.
9. Select **DownloadLineData** and click **Enable**.

Finishing options are ignored for jobs with inline form definitions

InfoPrint ProcessDirector cannot apply finishing options to jobs that are processed with inline form definitions. To use finishing options such as punch and staple, store your form definitions in a resource library and let InfoPrint ProcessDirector retrieve them during processing instead of including the form definition inline.

No restrictions on deleting custom security groups or locations

When you try to delete most system objects, InfoPrint ProcessDirector searches for any dependencies between those objects. If another object uses the object being deleted, you cannot delete it. For example, you cannot delete a step template that is used in one or more job types.

InfoPrint ProcessDirector does not search for dependencies when you delete custom security groups or locations, which can cause unexpected behavior. For example:

- If you delete the only security group that a user belongs to, that user cannot log in until you have added the user to another security group.
- If you delete a location, any objects that have that location set continue to use that location until you change them.
- If you export objects from one system and import them to another system, they retain their location settings, even if the locations do not exist on the new system.

Features

InfoPrint Visual Workbench and displaying AFP

The InfoPrint Visual Workbench user interface cannot display all AFP objects, and it might not display some text and AFP objects with complete fidelity. Double-byte raster fonts display correctly, but double-byte outline fonts do not.

Symbolic notation for InfoPrint Visual Workbench control file name

If you have the AFP Indexer, AFP Editor, Inserter, or Manufacturing Optimization feature, you can now use symbolic notation for the name of the InfoPrint Visual Workbench control file in a job type. Using symbolic notation, you can use the same job type for input files that require different InfoPrint Visual Workbench control files.

For example, to create InfoPrint Visual Workbench control files for input files "abc.afp" and "xyz":

1. In InfoPrint Visual Workbench, save the control files with the name of the input file plus the .ctl extension:

Table 1.

Input file name	Control file name
abc.afp	/aiw/aiw1/control_files/workbench/abc.afp.ctl
xyz	/aiw/aiw1/control_files/workbench/xyz.ctl

2. When you configure the job type for input files abc.afp and xyz (in the step based on the IndexAFP, EditAFP, or IdentifyDocuments step template), specify:

Table 2.

Property	Value
InfoPrint Visual Workbench	/aiw/aiw1/control_files/workbench/\${Job.InputFile}.ctl

`${Job.InputFile}` causes InfoPrint ProcessDirector to set the value of the **InfoPrint Visual Workbench** property to the name of the input file plus the .ctl extension.

For more information about symbolic notation, see the InfoPrint ProcessDirector information center.

Including job properties in bar codes

You can use AFP Editor to create bar codes, including bar codes that contain property values. However, some of the properties presented in the list in AFP Editor might not have values when the EditAFP step runs. If a property does not have a value when the EditAFP step runs, the bar code is created with no value for that property; spaces or blanks are not substituted for the empty value. If the property value is the only element in the bar code and the value is empty, no bar code is created.

Form definition not found error

The first time you open an AFP file in InfoPrint Visual Workbench, you might see this message:

```
AVAP1017E: An error occurred because a Form Definition can not be found for the file
Disabling Form Definition processing and reopening the file.
```

The form definition processing is turned off for all files and stays off until you enable it.

To avoid this error or to correct it after it occurs, you can change the form definition settings so the InfoPrint Visual Workbench can find the form definitions.

To change the form definition settings:

1. Start the InfoPrint Visual Workbench.
2. Select **Resources** → **Form Definition Settings**.
3. In the Form Definition Settings dialog:
 - Make sure the **Process Form Definition and Medium Maps** option is selected.
 - In the **Default** field, enter this path: `/aiw/aiw1/lib/resources/F1A10111`.
4. Click **OK**.

Inserter and Manufacturing Optimization features supported on SLES 10 only

The Manufacturing Optimization and Inserter features are supported only on SLES 10.

Manufacturing Optimization feature and DB2

If you plan to use your own copy of DB2 installed on the primary system and you want to install the Manufacturing Optimization feature, do not activate after you install the base feature. Install the Manufacturing Optimization feature update for PTF U829966 before you activate.

Inserter and Manufacturing Optimization steps must run on primary servers

The step templates that are installed by the Inserter and Manufacturing Optimization features can only run on the primary server. If your environment includes InfoPrint ProcessDirector secondary servers, you must tune those step templates to run only on the primary server.

The step templates are:

- BuildAFPFromDocuments
- ChangeJobType
- CompleteDocuments
- CreateAFPJobsFromDocuments
- CreateInserterReprints
- CreateJobsFromDocuments
- GroupDocuments
- IdentifyDocuments
- InsertJobs
- ReadDocumentsFromDatabase
- ReadDocumentsFromParent
- Reconcile
- SendInserterControlFile
- SetDocPropsFromConditions
- SetInsertProperties
- SetJobProps

- SetJobPropsFromOriginal
- SortDocuments
- SplitDocuments
- UpdateDocumentsInDatabase
- WaitForDocumentCompletion
- WriteDocumentsToDatabase
- WriteInserterControlFile

Uninstall programs for Inserter features fail

The uninstall programs provided with the Inserter features do not work as expected. If you need to uninstall either of those features, contact Software Support.

Directory change in Inserter Level I feature

The name of directory fbi_basic has changed to fbi-basic to make it consistent with other directory names. Sample inserter rules files are now stored in: /opt/IBM/aiw/V1.0/extensions/fbi-basic/samples/icf, although the property help and translated information center topics refer to the previous directory.

Waiting state in the InsertJobs step

If the inserter controller specifies the automatic completion method, the **InsertJobs** step places a job in the Waiting state while it waits to receive the results file for the job from the inserter. Non-English versions of the help for messages and the information center incorrectly state that this InsertJobs state is Processing instead of Waiting.

Maximum documents to reprint (%) values of 0 and 100

The **Maximum documents to reprint (%)** job property lets you specify the maximum percentage of documents in a job that can be marked for reprint during automatic reconciliation before automatic reconciliation stops and the operator must manually reconcile the job. If you specify 0 or 100, no maximum percentage applies. Automatic reconciliation continues even if all documents in the job are marked for reprint.

Error updating the Inserter Level I and Inserter Level II features

This release of the Inserter Level I and Inserter Level II features replaces the load plan object with job properties that define the materials loaded in an inserter. Because of this change, when you update these features on an AIX system the installer can exit with a DB2 error and return code 42.

If this happens, look at the /opt/IBM/aiw/V1.0/logs/installer/activate.log file. A good activation log should include these lines:

```
Checking post reload exit /opt/IBM/aiw/V1.0/extensions/fbi-basic/reload.complete.exit
Post reload processing for fbi-basic...
mm/dd/yyyy hh:mm:ss      0  0  SQL1063N  DB2START processing was successful.
SQL1063N  DB2START processing was successful.
Processing for fbi-basic rc=0
extName=extensions rpmExtName=cx-cgi
Checking post reload exit /opt/IBM/aiw/V1.0/extensions/cx-cgi/reload.complete.exit
extName=extensions rpmExtName=sla
```

If you find an error, contact Software Support.

PDF support in the Transform feature

On SUSE Linux Enterprise Server (SLES) 9.0, the pdf2afp Transform feature can convert PDF Version 1.6 and earlier to AFP. On SUSE Linux Enterprise Server (SLES) 10.0, the pdf2afp Transform feature can convert PDF Version 1.7 and earlier to AFP.

Installing the Transform feature with your own copy of DB2

If you want to use your own copy of DB2 9.5 installed on the primary system with InfoPrint ProcessDirector and you plan to install one or more transform features, the usual installation instructions for the transform features fail. When you are ready to install the transform features, do these steps:

1. Insert the Transform feature CD in the drive.
2. Open a command prompt and navigate to the CD drive.
3. Enter this command:

```
./setupitm.bin -V allow_itm_core_install=true -W verify_ippd.active=false
```

4. Enter this command, replacing transform_name with the Transform feature that you want to install (ps2afp, pdf2afp, pcl2afp, sap2afp, or afp2pdf):

```
./transform_name -W bean4.active=false
```

Incorrect plexing behavior with the PCL2AFP transform

InfoPrint ProcessDirector uses a configuration file (prepare_transform.cfg) to send the appropriate values to transforms so files are transformed properly. The supplied configuration file is stored in /aiw/aiw1/control_files/external_programs/prepare_transform.cfg, and is sufficient for most applications.

However, the supplied file does not contain the command required to correctly pass plexing options to the pcl2afp transform. If you want to specify plexing options, you must copy the supplied file and customize it. Add this line under the # **Halftone** heading, immediately after the line that begins with **-thresh**:

```
-device = plex,input4=(pcl_bin=5)
```

With that option, the transform generates an inline form definition and includes it in the AFP file. As a result, you must add a step based on the UseInlineFormDefinition step template to the job type after the TransformJobIntoAFP step for the job to process correctly.

Custom configuration files for Reports

If you create custom configuration files to use with the Reports feature, those files are not saved in the same location as other backup files (/tmp/aiwsave) when you apply service. They are saved in /tmp and can be restored from that location manually.

Errors when exporting CSV files for reports

If you try to export a report as a CSV file and get an error, generate the report again and export it. Do not save the report before you export it.

Database errors with Reports and DB2 installed on a different system

If you try to view a Report in a system with this configuration:

- One system with InfoPrint ProcessDirector, Reports, and a DB2 9.5 Service Pack 3 client installed on it
- One system with AIX 5.3 and DB2 9.5 Service Pack 3 installed on it

you see the message: "Database query is invalid. Check logs for details." To correct the problem, you must install a different Java™ Runtime Environment (JRE) on the system that DB2 is installed on. You can copy the JRE that was installed with InfoPrint ProcessDirector.

Note: When you reactivate InfoPrint ProcessDirector at the end of this procedure, some of the reports data about jobs is deleted and cannot be restored unless it has been backed up manually. To back up that job data, enter this command on the InfoPrint ProcessDirector primary server:

```
/opt/IBM/aiw/V1.0/extensions/reportsbase/backup.pl -e
```

To copy and install the JRE that was installed with InfoPrint ProcessDirector:

1. Log in to the primary server as the root user.
2. Enter this command to archive the JRE:

```
tar -cvf jre.tar /opt/IBM/aiw/V1.0/java64
```

The command creates a file called **jre.tar**.

Note: If you installed the 32-bit version of InfoPrint ProcessDirector, the `/opt/IBM/aiw/V1.0/java64` does not exist so the command fails. Contact Software Support for assistance.

3. Copy the **jre.jar** file to the root directory of the system that DB2 is installed on.
4. Log in to the system that DB2 is installed on as the root user and navigate to the root directory.
5. Enter this command to install the JRE:

```
tar -xvf jre.jar
```

6. Change to the user that you created as the instance user for InfoPrint ProcessDirector. The default instance user is **aiwinst**.
7. As the instance user, enter this command to configure DB2 to use the new JRE:

```
db2 update dbm cfg using JDK_PATH /opt/IBM/aiw/V1.0/java64/sdk/
```

8. Log in to the primary server again as the root user.
9. Enter this command to reactivate InfoPrint ProcessDirector:

```
/opt/IBM/aiw/V1.0/base/activate.sh
```

Designer with PrintNet on Windows®

If you install Designer to send jobs to PrintNet on a Windows system, the default settings for the ComposeAFP step are not correct. You must make a copy of the ComposeAFP step and update your job types to use it. To update the settings:

1. Log in as an administrator.

2. On the Main page, click the **Administration** tab.
3. In the left pane, click **Workflow** → **Step Templates**.
4. Select **ComposeAFP** and click **Actions** → **Copy**.
5. On the **General** tab, type a name for the step template.
6. On the **Job Defaults** tab:
 - Change the value for **External program code page** to **Not set**.
 - Change the first part of the text in the **External command** from **PNNETT** to **PNNefT**.
7. Click **OK**.
8. Select the new step template and click **Tune**.
9. In the **Server** box, click **Run only on the selected server or servers** and select the Windows secondary server that PrintNet is installed on.
10. Click **OK**.

Make sure that you use the new step template in the job types that send jobs to Print Net.

APARs included in this PTF

The PTF is cumulative; it includes new fixes in addition to all the fixes that have been released in previous updates. These APARs have been resolved in this PTF:

APAR	Description
IO11273	If a page definition or chars attribute is specified for non-line-data or ABAP job, the server will ignore them when sending it to the transform
IO11319	The ainmain goes down when trace is set with certain trace group
IO11411	Core file when using "Clean up Cancelled Jobs and Leftover Files." It is a segprof wrong behavior when it is trying to log some return codes.
IO11441	Jobs submitted to email and fax destinations hang on IPM because the server is waiting for a job with a different Job ID to complete.
IO11477	Formdef in the pagedef.tab for OTF and ABAP job is ignored and the default formdef on AD is used instead.
IO11534	PCL6 files that contain simplex/duplex command are not transformed properly. When transformed to AFP and printed they print on duplex.
IZ31234	Printer error message "AIWI6087E 0420-018 InfoPrint was not able to finish the internal function PSFD_SemWait" and job remains in assigned state
IZ53406	When creating archives in French, Italian, German and Spanish, the pdcreate from these archives fails.
IZ53800	Allow naming of JobTypes based on filenames using regular expressions
IZ54014	On failover /aiw/aiw1/config/communication.cfg can be corrupted
IZ55295	java.lang.ArrayIndexOutOfBoundsException in DetectInputData; job shows "Unknown"
IZ55367	Random additional or missing information on banner pages.
IZ55375	Jobs randomly stuck in "Assigned", "Spooling", or "Printing" states

APAR	Description
IZ56004	Activation error 90 when migrating to 1.3.1.200
IZ56174	Viewer fails to display job properly if AFP resources are inline when ENABLE_AUTO_FONT_IMAGE=TRUE in a2pxopts.cfg.
IZ56220	Job priority not honored.
IZ57620	Process Again by an Operator can result in input datastream being set to unknown
IZ57946	Add new support to force a sheet eject, if requested, before issuing a JOG command when printing in CSE mode
IZ59536	Missing ERG when RESTYPE=INLONLY and the input file contains only BRG/ERG resource group
IZ59699	GUI freeze and AIWF6021E: A database error has occurred: "Unable to obtain a database connection"
IZ59702	Notifyd hangs and causes the pdesrver memory to increase when tspaces jar that runs inside the notifyd cores.
IZ60057	When multiple printers have been created by copying an existing printer in the GUI only one printer can be printed to at a time
IZ60508	Hot folder jobs sometimes print out of order
IZ61663	Error message "AIWP6085E Job Type property does not have a value" when using the SubmitInputFiles step
IZ62214	Extra sheets in output after CreatePagesRange step
IZ62499	Job assigned to wrong printer and cannot enable printer
IZ62525	Cannot resolve JobType during job submission with SetJobTypeFromFileName step
IZ62354	AIWF6021E when reprocessing retained jobs to the same input device using the same job type
IZ62815	The IPM WorkGroup Printers driver inserts the Confidential Print commands, based on the colon file definition, only for the actual job, causing the auxiliary pages to print and the job to hold on the printer.
IZ63585	"AIWP0085I The Reload utility processed 1192 objects and 150000 messages of type Job from the workflow system." leaving many jobs with empty job logs
IZ63791	IndexAFP step generates ArrayIndexOutOfBounds exception
IZ63937	SQL error when processing a job with two suffixes, such as 1001583.1.1
IZ64019	After enabling SSL, jobs cannot be viewed with Internet Explorer
IZ64412	Importing printers as part of all objects fails with an input tray error
IZ64866	Change Reports Feature to report on jobs that enter and complete printing over longer periods
IZ65185	Memory leak resulted in IPPD server crash

APAR	Description
PK94879	If a customer requests indexing by specifying the INDEXOBJ, TRIGGER, FIELD, and INDEXn parameters, ACIF must find the start of the indexing information by the time it processes the page specified with INDEXSTARTBY. If not, error message 0425-448 is issued and ACIF ends with RC 16. Some customers would like to have an empty input file be ignored by ACIF and processed with RC 0 even if the requested indexing information is not found. In order to do this, a new parameter will be added to ACIF, EXTENSIONS=EMPTYOK. If this parameter is specified and the input file is empty, ACIF will ignore it and end without issuing the error message for the missing index.

Fixes for these APARs have been released in the past and are also included in this PTF:

APAR	Description
IO10645	PSF cores when a NACK causes an IMP to be printed immediately after the last page of the job has stacked.
IZ09376	Viewing large file causes viewer and Web server crash
IZ18214	Files with inline True Type fonts fail
IZ27273	Jobs processed through ITM fail with message AIWI6135E
IZ28743	Message page not printed following NACK causing terminate
IZ31771	No error message printed for NACK "020D..05"; job terminated
IZ32784	Two or more \$\$ in FORMDEF/PAGEDEF names cause ACIF errors
IZ33932	New LPR and Download Input Devices accept jobs only after stopaiw/startaiw
IZ37500	IPPD server crash / core
IZ38206	Add Color Mapping Table (CMT) Support
IZ39879	ACIF does not find inline formdef with x01 triplet on BRS
IZ40186	Memory leaks during execution of ACIF
IZ40335	Printer language setting does not stick
IZ41049	Operator commands override NACK recovery
IZ41050	Wrong font for message page or IMP with implicit saved pages
IZ41910	Pause/resume failures on jobs with multiple inline resources
IZ42303	Job status is 'spooling' but job is 'printing'
IZ43383	PSF had processed all the data and the NPRO timer had popped. While processing an NPRO, a paper jam occurred. After clearing the jam, the customer issued a pause printer command. When PSF is in NPRO state, it doesn't check for a return code to see if the printer was paused, so after pausing the printer, PSF assumes it is done with the job. Any resume printer command that follows will be ignored.
IZ43839	PSF crash intermittently when printing a job with a job overlay.
IZ44513	Jobs with CMR or unwrapped Data Objects, and also with Data Object Fonts fail with an exception of an invalid or unsupported IPDS™ command length or IPDS command header length too small.

APAR	Description
IZ44659	On a large file enabled filesystem, afpsplit cannot open files which are larger than 2GB.
IZ45458	A NACK before sending data to printer causes PSF to lose the page counter. The job ends unexpectedly or pause/resume command does not work.
IZ46825	When scheduling multiple child jobs from one group at once for the printer, the printer stops and starts randomly during printing.
IZ47671	Blank space(s) in JCL parms coming through MVS™ Download cause the InfoPrint ProcessDirector job to fail.
IZ47679	Document change: "The AFP file viewer does not apply any modifications in the form definition (such as print direction, page position, constant back, and N_UP page positioning)."
IZ47797	For some jobs (not related to the job itself), the server reports a stacked pages count that is lower than the real number of stacked pages (off by 1).
IZ47902	Repositioning to the first page of a document with media collection level finishing causes the 0277 NACK and the job disappears.
IZ47930	During the install and activation process the "Next Job ID" resets to "Smallest job number."
IZ48043	Processing of SNMP OIDs fails on Toshiba printer.
IZ48075	SQL error is generated when a job is processed or deleted and recreated, then run through the ArchiveDocumentData step
IZ35755	Support larger than 2Gb inline resource group
IZ36956	-opa 300 character limit causing MVSDL receiver to crash
IZ47817	When attempting to view a job, message "FTD0018E not enough memory available ..." is issued so the viewer cannot display any index information
IZ47992	Change audit file naming scheme to avoid collisions.
IZ48414	When using "PRINT AGAIN" and selecting the first document, only page 1 is available for selection.
IZ48642	Add support for line data object position migration triplet to display shading in images.
IZ49541	If an external program is called that sets the field "Job.RetainDuration=1" IPPD posts the error "InfoPrint ProcessDirector cannot assign the datatype Java.lang.String to the datatype java.lang.Integer for property Retention period."
IZ50174	Cannot process a job with \$ as the first character of the filename.
IZ50331	Increase limit of fonts per page from 127 to 253
IZ50439	Tolerate PEC structured field inAFP Editor Feature
IZ50704	IOCA inline resource cannot be found when its BRS contains FQN triplet
IZ51034	IPPD Viewer does not show Greek characters.
IZ51282	Wrong path in Message: The host name in /aiw/aiw1/servers.cfg does not match the IP address of the system.
IZ51691	Configuration file servers.cfg is overwritten after a stopaiw with an inappropriate host name value. Upper/lowercase issue.
IZ52687	Server crashes (out of memory) every night just after 00:00

APAR	Description
IZ53799	After failover, jobs fail
IZ55392	As part of a print again request, the CreatePageRanges step displays an OutOfMemory failure.

Product documentation

See *InfoPrint ProcessDirector for Linux: Planning and Installation* (G550-1042) for pre-installation planning, installation tasks, and post-installation tasks.

After it is installed, you can access the InfoPrint ProcessDirector user interface from a Web browser on the AIX, Linux, and Windows workstations in your network. The user interface contains field-level help and an information center for InfoPrint ProcessDirector. The information center contains administrative and operational topics that help administrators, operators, and supervisors learn about InfoPrint ProcessDirector. It also includes procedures that describe how to use the product.

To use the online help:

1. Access the user interface at **http:// hostname:15080/aiw**. Replace *hostname* with the name of the machine where the primary InfoPrint ProcessDirector system is installed.
2. To view the information center, click **Help** from the top task bar.
3. To access field or property help:
 - a. Log in to the user interface:
 - 1) Type the default user name of aiw and the default password of aiw.
 - 2) Click **Log in**. You are prompted to change the password before you can log in to the user interface.
 - b. Click the question mark icon for help about a field or property.

Base product documentation

Updated publications

With this service pack, these InfoPrint ProcessDirector publications are updated:

- *InfoPrint ProcessDirector: Developing Web Services* (G550-1152)
- *InfoPrint ProcessDirector for Linux: Planning and Installation* (G550-1042)

Additions to the information center

Various topics have been added to the information center and other topics have been updated to include additional information. These changes have not yet been translated, so the English version of the information center contains the most current information.

You can automatically view the new topics in English in a non-English information center. However, to view the updated topics, you can either:

- Change the language that your browser uses to English.
- Open the Web version of the information center: InfoPrint ProcessDirector for Linux.

These topics have been updated in the English information center:

Section	Updated topics
Overview	<ul style="list-style-type: none"> • Job submission methods • InfoPrint ProcessDirector features • Input devices portlet • Main page • Preferences page • Printers portlet • Properties • Secondary servers • System summary portlet • User interface • Users and groups
Installing	<ul style="list-style-type: none"> • Installing on Linux servers • Installing on AIX servers • Installing feature or extension software • Uninstalling features or extensions • Verifying the installation
Configuring	<ul style="list-style-type: none"> • AFP resources in InfoPrint ProcessDirector • Applying custom values • Assigning job types • Changing automatic refresh settings • Configuring control files for job audit information • Configuring for InfoPrint Transform Manager • Configuring for the InfoPrint ProcessDirector Transform Features • Configuring Internet Explorer • Configuring Mozilla • Configuring Mozilla Firefox • Configuring to use Download for z/OS • Configuring to use AFP Download Plus • Configuring to use the LPD protocol • Copying objects from another system • Defining a job type to print non-AFP data to a Passthrough Printer • Defining Passthrough printer devices • Defining printer devices • Displaying objects in different locations • Filtering the Jobs table • Grouping child jobs • Holding jobs before printing • Identifying AFP resource directories to InfoPrint ProcessDirector • Job types for non-AFP jobs • Print commands used with the LPD protocol • Printing bar codes on banner pages • Search order for AFP resource extensions • Security groups that InfoPrint ProcessDirector provides • Setting up Hot folder input devices to process JDF job tickets • Setting up Hot folder input devices to process several files together • Setting up Hot folder input devices to set job properties from text files • Setting up printers to print banner pages • Setting up step templates for external steps that use the command line or control files • Setting up step templates for external steps that use hot folders • Updating properties for banner pages • Using supplied input devices

Section	Updated topics
Managing objects	<ul style="list-style-type: none"> • Activating the primary or secondary server autostart script • Applying service updates on AIX secondary servers • Deactivating the primary or secondary server autostart script • Starting primary and secondary servers • Stopping primary and secondary servers • Submitting a batch of input files • Viewing properties of a media object • Updating properties of a printer • Updating properties of an input device • Updating properties of a job type • Updating properties of a media object • Viewing properties of a printer • Viewing properties of an input device
Working with jobs	<ul style="list-style-type: none"> • Editing the character set definition file • Editing the TrueType font definition file • Finding jobs using a user-defined filter • Holding jobs before printing • PDF viewer controls • Reprinting jobs • Sending jobs to a specific printer • Viewing job logs • Viewing jobs
Security	<ul style="list-style-type: none"> • Restricting use of the LPD protocol to submit jobs
Troubleshooting and support	<ul style="list-style-type: none"> • Applying service updates on the primary server • Applying service updates on Linux secondary servers • Applying service updates on AIX secondary servers • Backing up data • Cannot create Hot folder input device • Downloading service updates • Job in No matching device state • Logging job information before the job completes • Messages in InfoPrint ProcessDirector • Resources cannot be found • Restoring data • Whole job reprints instead of selected pages

Section	Updated topics
Reference	<ul style="list-style-type: none"> • Accessibility • Banner page fields for bar codes • Continue jobs • Count candidate printer jobs • Count object log entries • CopyToFolder (step template) • Count candidate printer jobs (Web service) • Database property names for input devices • Database property names for input files • Database property names for jobs • Database property names for media sizes • Database property names for media types • Database property names for printers • Database property names for servers • Database property names for step templates • Database property names for user login names • Delete jobs • DownloadAFP • DownloadJobTypeSet • DownloadLineData • DownloadMultiple • DownloadMultipleJobType • EnableRepositioning • File system mapping file for job tickets • Get candidate printer jobs • Get object log • Get Tagged Logical Elements within a job • HotFolderAFP • HotFolderFileName • HotFolderJDF • HotFolderLineData • HotFolderTransform • Job properties that can be set from the job ticket • LPDAFP • LPDAFPMultiple • LPDLineData • LPDLineDataMultiple • Print again • Print commands used with the LPD protocol • receive_lpd_overrides.cfg • RetainCompletedJobs • RunExternalProgram (step template) • Sample control files for banner pages • Sample control files for job audit information • SetJobPropsFromRules • SetJobPropsFromSteps • SetJobPropsFromTextFile • SetJobTypeFromFileName • Stop jobs • Submit a job (Web service) • Submit a job using a job ticket (Web service) • TransformJobIntoAFP • Using InfoPrint ProcessDirector methods such as getFileName • WaitForRelatedJobs (step template) • Windows print commands

These new topics are included in the information center in English:

Section	Updated topics
Overview	Users and groups
Installing	Installing the Transform Features
Configuring	<ul style="list-style-type: none"> • Copying a user • Copying locations • Copying a security group • Creating locations • Defining locations • Defining security groups • Defining user names • Displaying objects in different locations • Setting up external programs
Managing system objects	<ul style="list-style-type: none"> • Deleting locations • Exporting locations • Locations • Moving processing to and from a backup server • Updating properties of a location • Viewing properties of a location
Working with jobs	<ul style="list-style-type: none"> • Logging job information before job completes
Security	<ul style="list-style-type: none"> • Changing the password for the DB2 instance user • Deleting groups • Exporting groups • Managing groups • Managing user names and passwords • Updating properties of a group • Viewing properties of a group
Troubleshooting and support	<ul style="list-style-type: none"> • Cannot log in to both InfoPrint Transform Manager and InfoPrint ProcessDirector • Job continues processing on InfoPrint Transform Manager • Job moves to Device unavailable state • Job moves to No matching device state • Printer does not stop • Startup fails to connect to DB2 database with message SQL30082N • Transformed halftone images are poor quality • Unexpected results with portlets on the Main page • User interface freezes • User interface does not show printers or input devices • Viewer reports PDF file structure error after transform • Whole job reprints instead of selected pages
Reference	<ul style="list-style-type: none"> • Database property names for groups • Database property names for locations • SubmitInputFiles • Using the -outbin parameter in JCL and LPD overrides files • WriteJobLog

Printing PDF and PostScript files on the InfoPrint 5000 printer Models AS1 and AD1/2 with hot folders from InfoPrint ProcessDirector for Linux

To send PDF and PostScript® files to the hot folders on the InfoPrint 5000 printer Models AS1 and AD1/2 with InfoPrint ProcessDirector for Linux, you can set up a job type that uses the **CopyToFolder** step.

To send PDF and PostScript files to an InfoPrint 5000 hot folder, you must:

- Verify that the Samba open source client is installed on your primary system.
- Define a job type that includes a **CopyToFolder** step.
- Make sure that your primary Linux system is connected to the InfoPrint 5000 printer.

Verifying that Samba open source client is installed:

To print to an InfoPrint 5000 printer hot folder from InfoPrint ProcessDirector for Linux requires the Samba open source client.

To verify that the Samba open source client is installed:

1. Log in to the primary server as root.
2. Enter this command:

```
>smbclient -L printername -N
```

3. You see results similar to these:

```
Domain=[WORKGROUP] OS=[Unix] Server=[Samba 3.0.22-ibm-SLES10]
  Sharename      Type      Comment
  -----      -
  Duplex         Disk
  IPC$           IPC       IPC Service (INFOPRINT 5000)
  ADMIN$        IPC       IPC Service (INFOPRINT 5000)
```

```
Domain=[WORKGROUP] OS=[Unix] Server=[Samba 3.0.22-ibm-SLES10]
  Server          Comment
  -----
  printer3        INFOPRINT 5000
```

The presence of the Sharename of Duxplex indicates that at least one hot folder is enabled on the InfoPrint 5000 printer.

4. If Samba is not installed, contact your system administrator.

Defining a job type to submit a file to an InfoPrint 5000 hot folder:

To submit a print job to a hot folder on an InfoPrint 5000, you must create a job type that uses the **CopyToFolder** step.

To define the job type:

1. Log in as an administrator.
2. On the Main page, click the **Administration** tab.
3. In the left pane, click **Workflow** → **Job Types**.
4. Select the **OutputPDF** job type.
5. Click **Actions** → **Copy**.
6. Type a name for the new job type.
7. Under the **Prepare** phase, click the **Delete step** button next to the **TransformJobIntoPDF** step.
8. Click the name of the **CopyToFolder** step.
9. Delete the contents of the **External Command [Print] [CopyToFolder]** property and replace it with a command that looks like this:

```
cp ${getFileName(print,${Job.InputDatastream},read)}
  /mnt/destinationHotFolder

```
10. Replace *destinationHotFolder* with the name of the directory that the InfoPrint 5000 printer uses as a hot folder:

```
cp ${getFileName(print,${Job.InputDatastream},read)} /mnt/yourhotfolder
  on the InfoPrint 5000/${Job.Name}
```

11. Click **OK**.
12. To use the new job type, select it and click **Enable**.

Connecting to the InfoPrint 5000 hot folder:

To copy files into a hot folder on an InfoPrint 5000, that hot folder must be mounted to the InfoPrint ProcessDirector primary server.

You can mount the hot folder using the **smbmount** command.

Note: If either InfoPrint ProcessDirector or the InfoPrint 5000 printer is shut down, you need to re-issue the **smbmount** command.

To issue a **smbmount** command:

1. Log in to the primary InfoPrint ProcessDirector as root.
2. Enter this command for Model AS1:

```
>smbmount //printerIPAddress/simplex /mnt -o guest,fmask=777
```
3. Enter this command for Model AD1/2:

```
>smbmount //printerIPAddress/duplex /mnt -o guest,fmask=777
```
4. To view the enabled hot folders, list the contents of the shared directory:

```
>ls -al /mnt
```

Feature documentation

Updated publications

InfoPrint ProcessDirector: Installing and Configuring the Manufacturing Optimization Feature (G550-1070) has been updated. These topics have been updated in English:

- Software requirements - xmllint utility
- Reactivating Manufacturing Optimization

Additions to the information center for features

Various topics have been added to the information center and other topics have been updated to include additional information. These changes have not yet been translated, so the English version of the information center contains the most current information.

You can automatically view the new topics in English in a non-English information center. However, to view the updated topics, you can either:

- Change the language that your browser uses to English.
- Open the Web version of the information center: InfoPrint ProcessDirector for Linux.

AFP Editor

These new topics are included in the information center in English:

- Creating conditions between bar code definitions
- Creating text in AFP files
- Deleting conditions between bar code definitions
- Deleting text strings
- Modifying conditions between bar code definitions

- Modifying text strings
- Text strings

These topics have been updated in the information center in English:

- Adding steps to edit AFP files
- AFP Editor
- Bar codes
- Creating bar codes in AFP files
- Creating hidden areas in AFP files
- Creating IMB serial number files
- Data tab for Code 39, Data Matrix, Interleaved 2-of-5, PDF417, and POSTNET bar codes
- Data tab for IMBs
- Deleting bar codes
- Deleting hidden areas
- EditAFP
- Editing AFP files
- IMB serial number file
- Modifying bar codes
- Modifying hidden areas
- Modifying or deleting AFP Editor definitions
- Position tab
- Position tab for IMBs
- Replacing POSTNET bar codes with IMBs
- Type tab
- Type tab for IMBs

AFP Indexer

These new topics are included in the information center in English:

- Copying or moving page indexes to page groups
- Creating index tags from page group NOP records
- Defining header and trailer pages
- Editing existing index tags
- Modifying NOP index tags

These topics have been updated in the information center in English:

- Adding steps to index AFP files
- Creating index tags for text blocks
- Creating index tags in address areas
- Creating index tags in areas
- Creating page groups in AFP files
- Creating page groups of fixed length
- Creating page groups using triggers
- Deleting index tags
- Deleting page-group triggers
- Editing text for triggers and index tags

- IndexAFP
- Index tags
- Modifying index tags for text blocks
- Modifying index tags in address areas
- Modifying index tags in areas
- Modifying page-group triggers
- Page groups
- Using existing page groups and index tags in AFP files

Inserter Level I and Inserter Level II

These topics have been updated in the information center in English:

- Bar code format objects
- Configuring banner pages for insertion
- Configuring inserter controllers to write results files
- Configuring job types for insertion
- Content Expression Language (CEL)
- Creating bar code formats
- Creating jobs to process documents
- Database property names for bar code formats
- Database property names for documents
- Database property names for Inserter
- Defining a job type to print jobs created in the Documents table
- Documents
- Documents portlet
- Enhancing AFP files for insertion
- Finding documents by properties
- Finding documents by scanning bar codes
- Finding documents in the system
- Finding jobs ready to load on an inserter
- Finding jobs waiting for reconciliation
- Finding jobs waiting to complete insertion
- Finding the jobs associated with documents
- Inserter overview
- Inserter reprint methods
- Reconcile
- Viewing document properties
- Viewing documents
- Working with documents

Manufacturing Optimization

These new topics are included in the information center in English:

- Adding references to medium maps in non-standard AFP files
- Adding steps for insertion to job types for splitting jobs
- AFP data standards and requirements (and all sub-topics)

- Bar code format objects
- Creating bar code formats
- Creating jobs to process documents
- Database property names for bar code formats
- Database property names for documents
- Defining a job type to print jobs created in the Documents table
- Documents
- Documents portlet
- File not found errors when files exist
- Finding documents by properties
- Finding documents by scanning bar codes
- Finding documents in the system
- Finding the jobs associated with documents
- Missing overlays or wrong duplex output
- UpdateDocumentsInDatabase
- Viewing document properties
- Viewing documents
- Working with documents

These topics have been updated in the information center in English:

- CompleteDocuments (step template)
- Configuring job types for insertion
- Considerations for managing job types
- Database property names for Inserter
- Database properties for Manufacturing Optimization
- docCustomDefinitions.properties file
- docCustomDefinitions.xml file
- Document property values in the user interface are missing
- Document property values in the user interface are not current
- Editing the document properties configuration file
- Editing the document properties names file
- Editing the sample document properties template file
- Enhance AFP control file
- Gathering your document requirements
- Inserter overview
- Inserter reprint methods
- Reconcile
- Reprinting documents by reconciling jobs again
- Running the installation program
- SetDocPropsFromConditions
- SortDocuments (step template)
- SplitDocuments
- Terms
- WriteDocumentsToDatabase

Reports

These new topics are included in the information center in English:

- ArchiveInsertionData
- Database properties for jobs with Reports
- Inserter report

These topics have been updated in the information center in English:

- Deleting reports
- DocumentReprint report
- Reports overview
- reprint_collect.cfg

Customer support

For help installing InfoPrint ProcessDirector, contact Software Support:

- Web page: <http://www.infoprint.com/support>
- Outside the United States: open a call through your country's help line. Level 1 sends it to Level 2 for the Geography. If Level 2 cannot answer the question, the question becomes a PMR in the RETAIN[®] system.

While using the InfoPrint ProcessDirector user interface, see the online help before contacting Software Support.

Trademarks

These terms are trademarks or registered trademarks of Ricoh Co., Ltd., in the United States, other countries, or both:

- AFP
- InfoPrint
- Infoprint
- IPDS
- Ricoh

These terms are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both:

- AIX
- DB2
- IBM
- RETAIN
- z/OS

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.