



Planning and Installing

Version 3.11.2

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

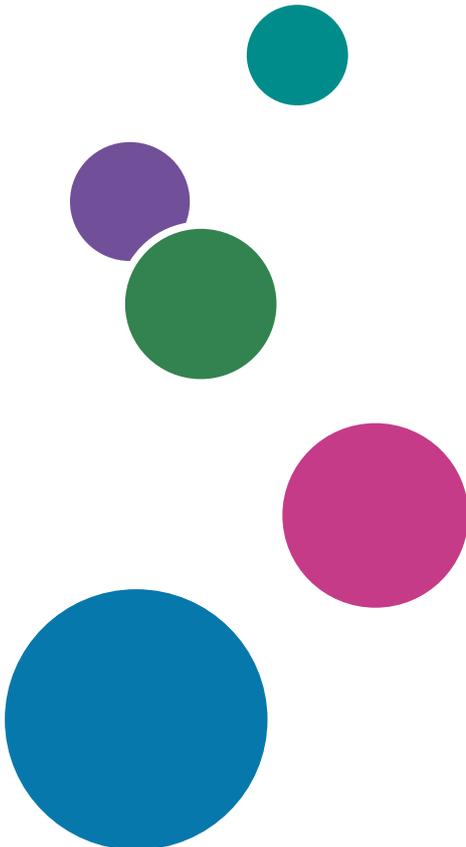


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Introduction

Important

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.

Cautions regarding this guide

- Some illustrations or explanations in this guide could differ from your product due to improvements or changes 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 RICOH ProcessDirector or any of its components in a different location, including a different drive, you must adjust the paths accordingly.

For example, if you install RICOH ProcessDirector on the D: drive of a computer running a Windows operating system, replace C: with D: in the directory paths.

Publications for this product

The RICOH ProcessDirector publications CD includes the RICOH ProcessDirector publications.

Instruction manuals

These instruction manuals are included:

- *RICOH ProcessDirector for AIX: Planning and Installing (this publication)*
This guide explains planning and installation procedures for RICOH ProcessDirector.
- *RICOH ProcessDirector: Integrating with Other Applications*
This guide provides technical information about the ways that you can configure RICOH ProcessDirector to exchange data with other applications.
This guide can be opened from the Help menu.
- *RICOH ProcessDirector: Installing Document Processing Features*

This guide explains how to install RICOH ProcessDirector features that control and track both jobs and the individual documents in jobs.

- *RICOH ProcessDirector: Using RICOH ProcessDirector Plug-in for Adobe Acrobat*
This guide explains how to use RICOH ProcessDirector Plug-in for Adobe Acrobat. You can use the Adobe Acrobat plug-in to define text, barcodes, images, and other enhancements in a PDF file. After you save your enhancements in a control file, RICOH ProcessDirector workflows can use the control file to make similar enhancements to PDF files.
- *Font Summary*
This guide explains font concepts and the different types of fonts in the RICOH InfoPrint Font Collection. The *Font Summary* is available only in English.
- *White Paper—Using the Enhance AFP Function*
This guide explains how to configure and use Enhance AFP control files. The guide is available only in English.
- The RICOH ProcessDirector readme file (readme.html).
This file tells you how to access the other publications. The readme file is available only in English.
- The RICOH ProcessDirector release notes
These release notes provide information about the RICOH ProcessDirector release, including new functions and updates; known limitations, problems, and workarounds; and code change requests. The release notes are available only in English.

You can also download English publications in PDF format from the [RICOH Software Information Center](https://help.ricohsoftware.com/swinfocenter/) (<https://help.ricohsoftware.com/swinfocenter/>).

 **Important**

- Because Adobe Reader is not compatible with AIX Version 7.2, you must use another system to view the PDF files contained on the CD.

RICOH ProcessDirector Information Center

The Information Center contains topics that help administrators, supervisors, and operators learn about and use RICOH ProcessDirector. The Information Center is available from the user interface and provides quick navigation and search features.

Help

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

How to read the documentation

Before using RICOH ProcessDirector

This manual contains instructions and cautions for correct use of RICOH ProcessDirector. Before using RICOH ProcessDirector, read this manual thoroughly and completely. Keep this manual handy for future reference.

How to use the manuals

Use the instruction manuals according to your needs.

To learn how to plan for, install, and start RICOH ProcessDirector:

See *RICOH ProcessDirector for AIX: Planning and Installing*.

To learn about the functions and operations of RICOH ProcessDirector and its installed features:

See the RICOH ProcessDirector Information Center.

To learn how to set property values in the user interface:

See the field help.

To learn how to install a document processing feature:

See *RICOH ProcessDirector: Installing Document Processing Features*.

To learn how to use the functions and operations of RICOH ProcessDirector Plug-in for Adobe Acrobat

See *RICOH ProcessDirector: Using RICOH ProcessDirector Plug-in for Adobe Acrobat*.

To learn how to configure RICOH ProcessDirector to exchange data with other applications:

See *RICOH ProcessDirector: Integrating with Other Applications*.

Displaying the publications

The RICOH ProcessDirector publications are available on the publications CD, so you can access them before you install the application.

Note

- A PDF viewer, such as Adobe Acrobat Reader, is required to view the publications.

To access the RICOH ProcessDirector publications CD on Windows:

1. Insert the CD in the CD drive.
If the Windows system is configured to autorun CDs, Windows Explorer opens automatically to show the contents of the CD.
2. If Windows Explorer does not start automatically, open it and display the contents of the CD drive.
3. Open the `readme.html` file for information about the contents of the CD.

Some of these publications are also available from RICOH ProcessDirector user interface.

Note

- You must log in to the RICOH ProcessDirector user interface to view the publications.

On the top menu bar of the RICOH ProcessDirector user interface, click the  button and select one of the following publications to download:

- *RICOH ProcessDirector: Integrating with Other Applications*
- *RICOH ProcessDirector: Installing Document Processing Features*

-
- *RICOH ProcessDirector: Using RICOH ProcessDirector Plug-in for Adobe Acrobat*
 - *RICOH ProcessDirector: Release Notes*

Displaying the Information Center

The RICOH ProcessDirector Information Center is available from the user interface.

To display the Information Center:

- On the top menu bar of the RICOH ProcessDirector user interface, click the  button and select **Help**.
- If you are not logged in to RICOH ProcessDirector, enter this URL in the address bar of your browser:

`http://hostname:15080/pdhelp/index.jsp`

In the URL, *hostname* is the host name or IP address of the computer where RICOH ProcessDirector is installed.

In addition, you can bookmark the location of the Information Center in your browser and open it at any time outside of RICOH ProcessDirector.

Information about using the functions and operations of features are available only when the features are installed in the system.

Related information

For information about our products, see:

- [RICOH website](https://ricohsoftware.com) (<https://ricohsoftware.com>)
- [RICOH Software Information Center](https://help.ricohsoftware.com/swinfocenter/) (<https://help.ricohsoftware.com/swinfocenter/>)

For information about related products, see:

- *InfoPrint Manager for AIX: Getting Started*, G544-5817
- *InfoPrint Manager for AIX: Introduction and Planning*, G544-5833
- *InfoPrint Manager: PSF and Server Messages*, G550-1053
- *InfoPrint Manager: Reference*, S550-1052
- *InfoPrint Transform Manager for Linux: Installation and User's Guide*, G550-1048
- *InfoPrint Transform Manager for Linux: afp2pdf Transform Installation and User's Guide*, G550-0538
- *RICOH InfoPrint XT for AIX: Installation and User's Guide*, GLD0-0024
- *RICOH InfoPrint XT for Linux: Installation and User's Guide*, G550-20375
- *RICOH InfoPrint XT for Windows: Installation and User's Guide*, GLD0-0025
- *AFP Conversion and Indexing Facility User's Guide*, G550-1342
- *Print Services Facility for z/OS: AFP Download Plus*, S550-0433
- *Print Services Facility for z/OS: Download for z/OS*, S550-0429

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.

Abbreviations

AFP

Advanced Function Presentation

API

Application Programming Interface

CSV

Comma-Separated Values

DNS

Domain Name System

GID

Group ID

HTTP

Hyper Text Transfer Protocol

IP

Internet Protocol

JDF

Job Definition Format

LPD

Line printer daemon

PDF

Portable Document Format

PSF

Print Services Facility

REST

Representational State Transfer

SMIT

System Management Interface Tool

SOAP

Simple Object Access Protocol

SSL

Secure Sockets Layer

UID

Default user ID

WSDL

Web Service Description Language

YaST

Yet Another Setup Tool

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The proper names of the Windows operating systems are as follows:

- Windows XP:
 - Microsoft Windows XP Professional
 - Microsoft Windows XP Enterprise
- Windows 7:
 - Microsoft Windows 7 Professional
 - Microsoft Windows 7 Ultimate
 - Microsoft Windows 7 Enterprise
- Windows 10:
 - Microsoft Windows 10 Pro
 - Microsoft Windows 10 Enterprise

-
- Windows 11:
Microsoft Windows 11 Pro
 - Windows Server 2008:
Microsoft Windows Server 2008 Standard
Microsoft Windows Server 2008 Enterprise
 - Windows Server 2016:
Microsoft Windows Server 2016 Standard
 - Windows Server 2019:
Microsoft Windows Server 2019 Standard
 - Windows Server 2022:
Microsoft Windows Server 2022 Standard

Other product names used herein are for identification purposes only and might be trademarks of their respective companies. We disclaim any and all rights to those marks.

New in this release

These new functions and updates have been included in RICOH ProcessDirector Version 3.11.2.

New functions and updates in Version 3.11.2

- **New support for custom job properties**
With this release, you can create custom properties for jobs. In the past, RICOH ProcessDirector provided 20 job properties that you could use to store custom information. However, you could not rename the fields or change anything about them. With this new function, you can create your own job properties— assigning unique field and database property names as you want to see them.
To define custom job properties, use the **Custom properties** page on the **Administration** tab. Fill in the property notebook, activate the property, and you can start using it in your workflows!
- **An easier way to define custom document properties**
The same **Custom properties** page used to define custom job properties can also be used to define document properties! This new function significantly reduces the overhead associated with creating custom document properties. You no longer need to update the `docCustomProperties.xml` file, run the DocCustom utility, or install the new property. Simply fill in the fields in the custom property notebook and activate. Your document properties are ready to use!
- **Updated Adobe Acrobat Plug-in**
The RICOH ProcessDirector Plug-in for Adobe Acrobat has been updated to support the OpenJDK™ Java® JRE Version 1.8 in addition to Oracle® Java. An appropriate JRE must be installed on your system before you install the Plug-in. With this update, we strongly recommend installing the 64-bit version of the JRE.
In addition, you can now install the Plug-in with the 64-bit version of Adobe Acrobat Pro.
- **Updates to translated publications**
Books and help systems containing translated information for function released in Version 3.11.1 are now available. To see the translated help content and updated books from the help menu,

download and install the Language Pack for your language. PDF versions of the books are also available in the [RICOH Software Information Center \(https://help.riohsoftware.com/swinfocenter/\)](https://help.riohsoftware.com/swinfocenter/)

New functions and updates in Version 3.11.1

- **Updated translations**

The content of the Version 3.11 product interface and the help system has been translated into these languages:

- Brazilian Portuguese
- French
- German
- Italian
- Japanese
- Spanish

To see the translated user interface and help content, download and install the Language Pack for your language.

- **Choose paper for banner pages using media settings**

If you're printing PDF jobs, you can now specify which paper to print banner pages on by media, instead of by specifying a paper tray. Your banner pages print on the correct paper, regardless of where that paper is loaded. This function is available for Ricoh PDF, Kodak PDF, and Xerox PDF printers.

- **User interface updates**

The user interface has been enhanced to adjust the size of your portlets to fit inside your browser window. When you change the size of the window (by changing the dimensions of the browser or by moving it to a different screen), the portlets shrink or expand to fill the space available.

- **Data capture improvements**

With this update, you can download a data capture file to your system directly from the data capture page, so you don't have to access the primary server to retrieve the file. You can also stop a capture that is already in progress.

- **Operating system support changes**

In this release, we increased the minimum level of CentOS required to install RICOH ProcessDirector to version 7.9.

New functions and updates in Version 3.11

- **Ability to restore to a previous installation of RICOH ProcessDirector**

With this version of RICOH ProcessDirector, you can restore a previous installation using Feature Manager. With this new function, you install a new feature and then effectively back it out if you decide that it does not meet your needs. Or, if you apply an update but something goes wrong during the install process, you can restore the installation from before the update to get back to a stable state before you try to update again.

- **New data collector to collect information about processing durations**

Now, you can use the **Job Step Duration** data collector to collect information about how long each step was in the **queued** and **processing** states, as well as the total length of time it takes for

each step in a workflow to complete processing. You can also select job properties to capture at the end of each step.

- **Operating system support changes**

In this release, we have removed support for installing RICOH ProcessDirector application servers on Windows Server 2016.

- **Include the Preset name in AFP print jobs**

If you send AFP print jobs to a printer that uses TotalFlow Print Server, you can now include the name of the printer preset to use for the job as a job property.

- **Security vulnerabilities addressed**

Ricoh is committed to responding to results of vulnerability scans and will continue to include those fixes in each release that we deliver. In this release, various components were updated to address these vulnerabilities, including:

- AFP Support
- Avanti Slingshot Connect
- Reports
- Printer Connector
- Ricoh PDF Printer
- DB2
- Product Update

Release notes for prior versions of RICOH ProcessDirector are available on the RICOH Software Information Center here: [Release notes: RICOH ProcessDirector](#)

1. Overview

- **Components**
- **Compatible products**
- **System configurations**

RICOH ProcessDirector lets you manage all aspects of your printing processes from a comprehensive Web browser-based user interface. RICOH ProcessDirector supports job submission from other systems using file copying methods. You can copy or move jobs into directories that you specify (*hot folders*), and you can configure RICOH ProcessDirector so that it continually monitors the directories and automatically processes jobs as they arrive. You can also submit jobs from any system that uses the line printer daemon (LPD) protocol for file transmission. In addition, RICOH ProcessDirector lets you control and track individual documents in PDF jobs.

RICOH ProcessDirector uses IBM DB2 technology for database management. The extensive database that RICOH ProcessDirector uses provides detailed audit information about your printing workload and tasks.

You can access RICOH ProcessDirector from a supported Web browser on workstations in your network. You do not need to install RICOH ProcessDirector on the workstations that you use to access the user interface; you only need to install RICOH ProcessDirector on the computer that is managing your workflow.

If you have purchased and installed the AFP Support feature, RICOH ProcessDirector lets you control and track jobs and individual documents in Advanced Function Presentation (AFP) format. The feature adds support for AFP and PCLOut printers and job submission from z/OS host systems using Download for z/OS and AFP Download Plus.

★ Important

If you purchased RICOH ProcessDirector without the AFP Support feature, instructions for download input devices, AFP and PCLOut printers, and other AFP-specific system objects and functions do not apply to your RICOH ProcessDirector installation.

You can purchase RICOH ProcessDirector, which provides a perpetual license, or RICOH ProcessDirector Subscription, which provides access to the product for 1-5 years with renewal options for longer term use. You purchase a subscription for the base product and for each feature that you want to install.

Components

The RICOH ProcessDirector base product is made up of these components:

RICOH ProcessDirector primary server

The RICOH ProcessDirector primary server manages all job activities, including input devices that create the jobs and printers that print the jobs. The server also processes jobs through workflows, some of which include other programs. It controls both the flow of jobs and the database tables that store system information.

The RICOH ProcessDirector primary server is installed on a pSeries computer with the AIX operating system.

In addition, you can set up your installation to have a standby computer to use as a backup (or failover) computer. RICOH ProcessDirector is installed on both the active computer and the backup computer, but it can only run on one computer at a time. Both computers must have access to an external storage system, such as a storage area network (SAN) or an NFS-mounted file system, where print jobs and systems objects are stored. In the event of an outage on the active computer,

you can run scripts provided with RICOH ProcessDirector to move processing to the backup computer without losing objects or print jobs.

↓ Note

- You must purchase a license key for both your active and backup computers.

The RICOH ProcessDirector primary server contains these programs:

IBM DB2

RICOH ProcessDirector properties and their corresponding values are stored in an IBM DB2 database. You can:

- Install your own copy of DB2 on the computer that you plan to use for the RICOH ProcessDirector primary server before you install RICOH ProcessDirector.
- Install your own DB2 server on a different computer and a DB2 client on the primary computer before you install RICOH ProcessDirector.
- Let the RICOH ProcessDirector installation program install DB2. If you choose this option, you cannot use this DB2 installation for any other purpose.

You do not have to install DB2 or the DB2 client on computers where you install Secondary Server features; secondary servers share the database that is installed on the primary computer.

Print Services Facility

The Print Services Facility (PSF) is a print-driver program that manages and controls data transmitted to AFP printers that are TCP/IP-attached. PSF is used with the AFP Support feature. PSF is also installed with Secondary Server features on AIX or Linux, but not on application servers.

RICOH ProcessDirector user interface

The RICOH ProcessDirector user interface is a Web browser-based interface that lets you manage the printing process. Users can access the user interface from a supported Web browser on a Windows or Linux workstation as long as they have a RICOH ProcessDirector user ID. The workstation must have one of these Web browsers installed:

- Most recent version of Mozilla Firefox
- Most recent version of Google Chrome
- Most recent version of Microsoft Edge based on Chromium

The user interface also has a Web-based file viewer that uses the Adobe Acrobat Reader (or similar PDF viewer plug-in) to display AFP or PDF files so you can select pages to reprint.

To access the user interface, enter this URL in the address bar of a Web browser, replacing *hostname* with the hostname or IP address of the computer that the primary server runs on: `http://hostname:15080/pd`

After you are authenticated, you can explore the user interface. Highlights of the user interface include:

- The **Main** page includes portlets that show system health, job status, and device status in graphical ways by using colors and graphics. Users can tell at a glance the overall status of their system and easily drill down for more detail as desired.

- On the **Main** page, you can move portlets by clicking the title bar, dragging the portlet to a different position, then releasing the mouse button to drop the portlet. You can also maximize any portlet, so that it fills the entire browser window. The **Fit portlets to window** action, lets you resize all the portlets at once so they fill the available window size.
- You can customize the columns available in all portlets and object tables, using the **Manage columns** action under the **Settings** (⚙️) menu. If a table appears on both the **Main** and **Administration** pages, you can save different columns on each page.
- Both the **Main** and **Administration** pages are automatically updated to show property and status changes. You do not need to refresh the browser to see the most recent information.

↓ Note

- If there are more than 1500 jobs in the **Jobs** table, property and status changes for jobs are not updated automatically. Other portlets continue to update automatically.
- You can add, copy, and delete all types of devices from the **Main** page as well as from the **Administration** page. On both pages, **Copy** and **Delete** are available on the **More actions** menu. On the **Administration** page, the **Add** action is available at the top of the table on the right side. On the **Main** page, the **Add** action is on the **Settings** (⚙️) menu.
- The **Jobs** table displays up to 1500 jobs without using pagination controls. You can scroll through the entire list of jobs in the same table, instead of advancing through them page by page.
- Most portlets and tables include a filter that you can use to find entries easily. Click the **Filter** icon (🔍) and type in the box. The portlet or table displays only rows that include the text you entered.
- The **Jobs** portlet includes an **Advanced filter**. Click the arrow to the left of the **Advanced filter** title to expand the filter and specify the conditions that you want to use to filter the **Jobs** table.
- You can manage access to objects on both the **Main** and **Administration** pages based on location properties. If you assign objects such as printers, input devices, and jobs to specific locations, you can use the **Allowed locations** property for each user to define which locations they can see in the user interface.
The **Locations to show** property lets users select which of their allowed locations to display in the user interface. If a user chooses to show a subset of the allowed locations, a location icon (📍) displays in the banner area.
- The help window that opens when you click the **?** button in a property notebook is now more flexible. You can move the window to a different position and resize it to see more or less information. You can also highlight text in the window, so that you can copy it.

The user interface is available in these languages:

- Brazilian Portuguese (pt_BR)
- English (en_US)
- French (fr_FR)
- German (de_DE)
- Italian (it_IT)
- Japanese (ja_JP)

- Spanish (es_ES)

RICOH ProcessDirector information center

The information center contains topics that help users learn about and use RICOH ProcessDirector.

You can open the information center by clicking **?** → **Help** from the top task bar of the user interface. In addition, you can bookmark the location of the information center in your browser and open it outside of RICOH ProcessDirector.

Features

RICOH ProcessDirector features provide more functions or let you add devices like inserters to the system. The modular design of RICOH ProcessDirector lets you add features to the base product as your business needs change. Most features are integrated seamlessly into the user interface.

Most features can be installed using the Feature Manager, available after you install the base product.

Features are copied to your system when you install the base product, but are not fully installed until you use Feature Manager to install them.

When you install a feature with Feature Manager, the feature is in trial mode. To continue using a feature after the trial period, you must purchase the feature and install a license key for it. If you do not install a license key, the feature stops working at the end of the trial period.

RICOH ProcessDirector features

Description	CD number
<p>Advanced Transform feature</p> <p>The Advanced Transform feature lets you transform print jobs to or from these file formats:</p> <ul style="list-style-type: none"> • AFP • PCL • PDF • PostScript • BMP, GIF, JPEG, PNG, TIFF (only as input data streams) <p>You can purchase and install any combination of these transform options.</p> <p>Note</p> <ul style="list-style-type: none"> • You install the Advanced Transform feature using Feature Manager. A separate license key is required for each input and output transform that you purchase. For example, if you buy Input PostScript and Output AFP, you need two license keys. 	LCD2-20004
<p>AFP Editor</p> <p>AFP Editor lets you create barcodes and hide areas in indexed AFP files. You can create barcodes that contain index values, job properties, and static text. For example, if the ZIP codes in an AFP file are index values, you can create barcodes that contain the ZIP codes. You can hide areas in AFP files. No one can see the data in the hidden areas, and the data does not print. For example,</p>	LCD4-5680

Description	CD number
<p>you can hide areas that contain existing barcodes that you want to replace. In addition, AFP Editor can automatically replace POSTNET barcodes with Intelligent Mail barcodes (IMBs) that have the same routing code. You can also add text strings, such as <i>Page x of y</i>, to formatted AFP files.</p> <p>You must have the AFP Support feature installed to use the AFP Editor feature.</p>	
<p>AFP Support</p> <p>The AFP Support feature lets you control and track jobs and individual documents in Advanced Function Presentation (AFP) format. AFP provides a transaction-oriented data stream that guarantees integrity between the RICOH ProcessDirector server and its printers. The printers can deliver the exact status of every page as it is received, printed, and stacked. The feature adds support for AFP and PCLOut printers.</p> <p>The feature includes RICOH Visual Workbench with AFP Indexer, Document Property Designer, and AFP Enhancer modes. RICOH Visual Workbench lets you identify individual documents in AFP files and extract data from the documents. Step templates let you add steps to your workflows that use the extracted data to sort, split, and group the documents into new jobs.</p> <p>The AFP Support feature is a prerequisite for many other features that work with AFP data. Without the feature, you can view but not print AFP data, and you can pass AFP jobs to other programs.</p>	LCD2-20057
<p>Archive</p> <p>Archive lets you store jobs, documents, and job processing history in a repository and retrieve them by searching for job and document properties. For example, you search for documents by job name, customer name, and account number. After you retrieve a job or document, you can view it, review the properties that were stored with it, and check the production history. You can save the job or document to your workstation, or submit it to a workflow for reprinting or other processing.</p> <p>You must have the AFP Support or PDF Document Support feature installed to use the Archive feature.</p>	LCD2-20049
<p>Automated Verification</p> <p>The Automated Verification feature lets you add barcodes to the documents in a print job. By reading barcodes, cameras or barcode scanners detect documents that failed to complete a step in their workflow. You can automatically reprint missing documents or manually pull them out of their workflow. A job log records the disposition of the documents in each job and the user ID of the operator who did the dispositions.</p> <p>You must have the AFP Support or PDF Document Support feature installed to use the Automated Verification feature.</p>	LCD2-20045
<p>Avanti Slingshot Connect</p> <p>With the Avanti Slingshot Connect feature, you can receive jobs and JDF job tickets from the Avanti Slingshot MIS system and process them within RICOH</p>	LCD2-20050

Description	CD number
ProcessDirector. RICOH ProcessDirector can then provide status of the job back to Avanti Slingshot as it moves through the system.	
<p>Cut Sheet Support for Kodak</p> <p>With this feature, you can define and drive Kodak cut sheet printers from RICOH ProcessDirector. RICOH ProcessDirector converts media and stapling requests into the KDK format used by these printers.</p>	LCD2-20043
<p>Cut Sheet Support for Xerox</p> <p>With this feature, you can define and drive Xerox cut sheet printers from RICOH ProcessDirector. RICOH ProcessDirector converts media and stapling requests into the XRX or XPIF format used by these printers.</p>	LCD2-20044
<p>Deadline Tracker</p> <p>Deadline Tracker lets you manage your progress toward meeting your delivery deadlines. If you have service level agreements with your customers, this feature helps you make sure that their jobs are on schedule to be completed on time. You can see when jobs are behind schedule or risk missing their deadlines. This information helps operators prioritize work and act to bring jobs back on track for on-time delivery. You can monitor expected work (jobs that you expect to receive at set intervals). If the jobs do not arrive in time, you can inform the sender.</p>	LCD2-20046
<p>Electronic Presentment</p> <p>The Electronic Presentment feature provides a sample workflow that receives jobs from a sample input device and uses a sample history record notification to capture the times when jobs are printed and mailed. The workflow stores jobs, documents, property values, and history information in a sample repository.</p> <p>This no-charge feature is provided with the base product, but not installed by default.</p> <p>You must have the Archive feature installed to use the Electronic Presentment feature.</p>	LCD2-20054
<p>Inserter</p> <p>Inserter automates the insertion of printed documents and inserts (such as marketing materials) into envelopes. The feature can communicate with inserter controllers by sending control files to them and receiving results files from them. Using information in the results file, the feature tracks the insert status of each document in the job. Jobs are reconciled automatically (or manually, with operator control). Reprints are automatically generated for damaged documents.</p> <p>You must have the AFP Support or PDF Document Support feature installed to use the Inserter feature.</p>	LCD2-20058
<p>Language pack</p> <p>The Language pack includes translations for the user interface and help system. Install this feature to use the user interface in a supported language.</p>	Not Applicable

Description	CD number
<p>MarcomCentral Connect</p> <p>The MarcomCentral Connect feature lets you integrate the online-storefront and web-to-print functions of MarcomCentral into your production workflows. Sample web service input devices retrieve orders for print, digital, and other items from MarcomCentral. RICOH ProcessDirector creates a job for each order and notifies MarcomCentral when the items in the job complete specified steps in the sample workflow.</p> <p>You must have the Web Services Enablement feature installed to use the MarcomCentral Connect feature.</p>	LCD2-20074-00
<p>PDF Document Support</p> <p>The PDF Document Support feature adds functions and objects that let you control and track individual documents in PDF jobs. The feature includes RICOH ProcessDirector Plug-in for Adobe Acrobat. The plug-in lets you identify individual documents, extract data from the documents, and add enhancements such as barcodes, OMR marks, images, hidden areas, and text. Step templates let you add steps to your workflows that use the extracted data to sort, split, and group the documents into new jobs.</p> <p>This no-charge feature is provided with the base product but is not installed by default.</p>	Not Applicable
<p>PitStop Connect</p> <p>PitStop Connect lets you integrate preflight operations that use Enfocus PitStop Server 10 into your print workflows for PDF print jobs.</p> <p>Enfocus PitStop Server is not included in this feature; it is a product that must be purchased separately.</p>	LCD2-20013
<p>Postal Enablement</p> <p>Postal Enablement lets you extract mailing address data from the documents in a job and prepare the data for processing by external postal software. After the postal software verifies the addresses and improves their quality, Postal Enablement updates the documents in the job with the results from the postal software.</p> <p>Postal software is not included in this feature. You can use your choice of external postal software.</p> <p>You must have the AFP Support or PDF Document Support feature installed to use the Postal Enablement feature.</p>	LCD2-20048
<p>Preference Management</p> <p>Preference Management lets you update document property values with values from an external preferences file. These values can be used to change the content of selected documents or to change the processing of those documents.</p> <p>This no-charge feature is provided with the base product, but not installed by default.</p>	LCD2-20053

Description	CD number
<p>You must have the AFP Support or PDF Document Support feature installed to use the Preference Management feature.</p>	
<p>Preprinted Forms Replacement</p> <p>The Preprinted Forms Replacement feature lets you print jobs on plain paper that previously required preprinted forms. You update the definition of each media object for the media requested by these jobs to include the electronic equivalent of the preprinted form data. The application that submits the print files to RICOH ProcessDirector can continue to specify the media for the jobs in the same way.</p> <p>The Preprinted Forms Replacement feature requires the PDF Document Support feature. If you install the AFP Support feature, the Preprinted Forms Replacement feature also lets you insert PDF forms into AFP jobs.</p>	LCD2-20076
<p>Quadient Inserter Express</p> <p>The Quadient Inserter Express feature is a simplified version of the Inserter feature, which includes support for only Quadient inserters. The feature provides sample objects that you can use as templates for configuring RICOH ProcessDirector to communicate with Quadient inserters.</p> <p>You must have the AFP Support or PDF Document Support feature installed to use the Inserter feature.</p>	LCD2-2007711
<p>Quadient Inspire Connect</p> <p>Quadient Inspire Connect extends RICOH ProcessDirector to make it easier to interact with Quadient® Inspire V8 or above. The feature adds system objects tailored to work with files created by Quadient Inspire so they can be submitted to the processing engine to generate print jobs as part of a print workflow.</p> <p>Quadient Inspire is not included in this feature; it is a product that must be purchased separately.</p> <p>You must have the AFP Support feature installed to create AFP files with Quadient Inspire.</p>	LCD4-6598
<p>Reports</p> <p>The Reports feature lets you capture selected job properties and printer status changes in a PostgreSQL database. To extract data and visualize it, you can use a business intelligence tool, such as Tableau.</p> <p>The Reports feature is supported on RICOH ProcessDirector for Linux and RICOH ProcessDirector for Windows. To install the feature with RICOH ProcessDirector for AIX, contact Software Support.</p> <p>This no-charge feature is provided with the base product, but not installed by default.</p>	LCD4-5682
<p>RICOH Supervisor Connect</p>	LCD2-2007907

Description	CD number
<p>The RICOH Supervisor Connect feature lets you send data collected by the Reports feature in the PostgreSQL data base to the RICOH Supervisor application in the cloud.</p>	
<p>RICOH Transform features</p> <p>RICOH Transform features provide a powerful and cost-effective system for transforming jobs to or from the format for Advanced Function Presentation (AFP) printing. The RICOH Transform features are:</p> <ul style="list-style-type: none"> • PostScript/PDF to AFP Converts PDF and PostScript into AFP • RICOH PCL to AFP Converts PCL into AFP • RICOH SAP to AFP Converts SAP OTF and ABAP into AFP • RICOH AFP to PDF Converts AFP into PDF <p>Note</p> <ul style="list-style-type: none"> • You use the InfoPrint Transform Manager user interface and help system for some Transform configuration tasks. If you install more than one Transform feature, they share the InfoPrint Transform Manager interface. • All RICOH Transform features include image transforms (GIF to AFP, JPEG to AFP, and TIFF to AFP), which convert GIF, JPEG, and TIFF images to AFP. • A separate license key is required for each purchased transform. • You cannot install any of the RICOH Transform features using Feature Manager. • You must have the AFP Support feature installed to use the RICOH Transform features. • The APPE conversion tool is installed with the Ricoh Transform features. 	<ul style="list-style-type: none"> • PostScript/PDF to AFP Transforms, LCD4-5671 • RICOH PCL to AFP Transform, LCD4-5672 • RICOH SAP to AFP Transform, LCD4-5673 • RICOH AFP to PDF Transform, LCD4-5674
<p>Secondary Server</p> <p>You can set up RICOH ProcessDirector servers that run on different computers and that interact with the primary server. The additional servers are called secondary servers.</p> <p>You can use secondary servers to run external programs that workflows send jobs to. To move some processing from the primary computer to the secondary computer, you can define printers that use the secondary server as their parent server.</p> <p>You cannot install this feature using Feature Manager.</p>	LCD4-5635
<p>Security</p> <p>Security provides advanced functions, including password requirements, that increase the security of user accounts.</p> <p>If you have a Lightweight Directory Access Protocol (LDAP) or Active Directory server, you can use LDAP user IDs and passwords to authenticate into RICOH ProcessDirector.</p>	Not Applicable

Description	CD number
<p>This no-charge feature is provided with the base product but is not installed by default. Installing it provides more control over the security of user accounts such as expiring unused accounts or enabling enforcement of complex password rules.</p>	
<p>Ultimate Impostrip® Connect</p> <p>Ultimate Impostrip® Connect lets you integrate the imposition functions of Ultimate Impostrip® Automation or Scalable into your RICOH ProcessDirector workflows.</p> <p>Ultimate Impostrip® is not included in this feature; it is a product that must be purchased separately.</p>	LCD2-20026
<p>Web Services Enablement</p> <p>The Web Services Enablement feature lets you call REST and SOAP web services from your production workflows to exchange data with third-party applications.</p> <p>The feature adds support for input devices, step templates, and notification objects that can send web service requests.</p>	LCD2-20074-00
<p>Whitespace Manager</p> <p>Whitespace Manager lets you define available areas of white space in AFP files. You can fill the white space with content, such as images and text, during the print production process. You place content in a white-space area based on rules you define to target content for specific customers or for the best use of available space.</p> <p>You must have the AFP Support feature installed to use the Whitespace Manager feature.</p>	LCD4-5699
<p>WPM Connect</p> <p>WPM Connect lets you integrate the WPM tool into RICOH ProcessDirector workflows for more processing.</p> <p>This feature is only available in Japan.</p> <p>You must have the AFP Support feature installed to use the WPM Connect feature.</p> <p>WPM is not included in the WPM Connect feature; it is a product that must be purchased separately.</p>	LCD2-20014

Application server

If your workflows require processing by applications that run on Windows, you can access those applications by installing an application server on a Windows computer.

Application servers share the database that the primary server uses and work with the primary server to process jobs effectively. Because application servers are installed on Windows computers, they can run steps that require applications on Windows. They cannot run other steps, such as **PrintJobs**.

Application servers can be the parent servers for Ricoh PDF printers, Custom PDF printers, and Passthrough printers. They cannot be the parent servers for other kinds of printers.

You can install application servers on these operating systems:

- Windows 10 Pro or Enterprise 64-bit
- Windows 11 Pro
- Windows Server 2019 64-bit
- Windows Server 2022 64-bit

Extended features

RICOH ProcessDirector extended features are custom software components that you can purchase from your Ricoh support representative. The Ricoh support representative installs the extended features on the existing RICOH ProcessDirector primary computer.

Compatible products

As an option, you can use these products with RICOH ProcessDirector:

RICOH InfoPrint Manager for AIX

InfoPrint Manager for AIX (Program Number 5765-F68) is a print server that handles the scheduling, archiving, retrieving, and assembly of a print job and its related resource files. If you plan to install InfoPrint Manager for AIX with RICOH ProcessDirector, make sure that it is installed on a different computer from RICOH ProcessDirector.

You can use these products with RICOH ProcessDirector if you have installed the AFP Support feature:

AFP Download Plus

AFP Download Plus is a separately ordered feature of Print Services Facility for z/OS (IBM Program Number 5655-M32) that transforms line data to MO:DCA-P data and then transmits the print job with all required resources to RICOH ProcessDirector.

Download for z/OS

Download for z/OS is a separately ordered feature of PSF for z/OS (IBM Program Number 5655-M32) and is used to submit jobs to RICOH ProcessDirector. Download for z/OS automatically transmits output across the TCP/IP network from the host system to RICOH ProcessDirector for printing or archiving.

RICOH InfoPrint XT for AIX

RICOH InfoPrint XT for AIX (Program Number 5799-GTF) transforms Xerox metacode and line conditioned data stream (LCDS) jobs to AFP. If you plan to install RICOH InfoPrint XT for AIX on the same server as RICOH ProcessDirector, make sure that it is installed after RICOH ProcessDirector.

RICOH InfoPrint XT for Linux

RICOH InfoPrint XT for Linux (Program Number 5765-XTA) transforms Xerox metacode and line conditioned data stream (LCDS) jobs to AFP.

RICOH InfoPrint XT for Windows

RICOH InfoPrint XT for Windows (Program Number 5765-XTA) transforms Xerox metacode and line conditioned data stream (LCDS) jobs to AFP.

System configurations

You can install RICOH ProcessDirector with various system configurations. The hardware configurations can include:

- Primary computer
- Primary computer with one or more secondary servers on the same computer
- Primary computer with an application server on a Windows computer
- Primary computer with one or more secondary servers on different computers
- Primary computer with a backup (failover) computer and an NFS-mounted file system

In this configuration, only one primary server can be running at a time. System objects are created and stored on the mounted file system, so they can be accessed from the backup computer in case of a hardware failure or other outage.

- Primary computer with a backup (failover) computer and a storage area network (SAN)

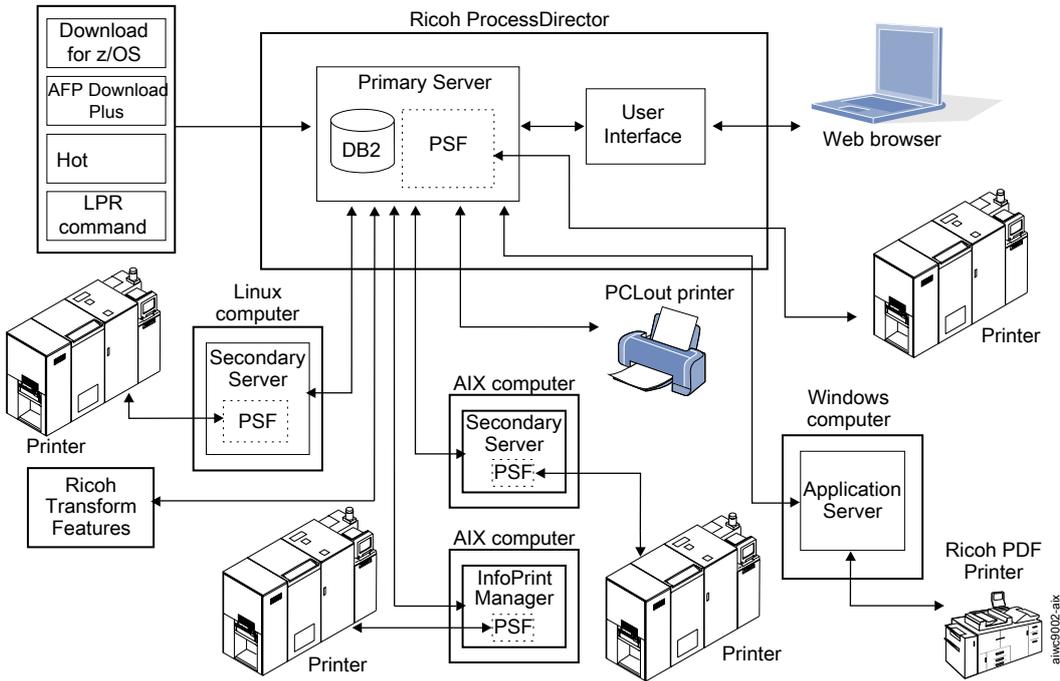
In this configuration, only one primary server can be running at a time. System objects are created and stored on the SAN, so they can be accessed from the backup computer in case of a hardware failure or other outage.

- Two primary computers running AIX Version 7.2, Technology Level 03 SP3 or later with PowerHA and an external storage system.

In this configuration, only one primary server can be running at a time. System objects are created and stored on the external storage system. If the active system fails, PowerHA can automatically switch processing to the backup system.

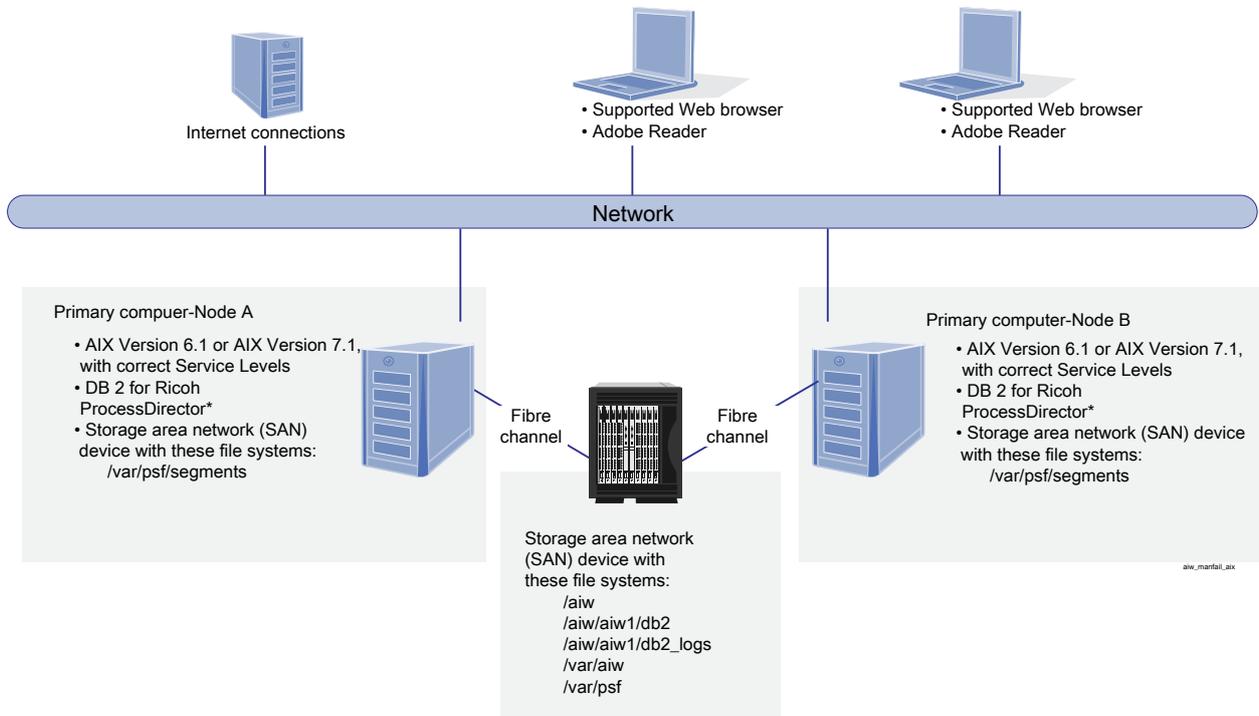
[Example of a system configuration, p. 27](#) shows a configuration of RICOH ProcessDirector with the AFP Support feature. The configuration has a primary server, a secondary server on a separate Linux computer, and a secondary AIX server. It also shows RICOH ProcessDirector components, including the optional RICOH Transform features, and the optional products you might use with RICOH ProcessDirector, including Download for z/OS, AFP Download Plus, and InfoPrint Manager for AIX.

Example of a system configuration



The figure below, [Example of a configuration with active and backup computers using a SAN, p. 27](#) shows a configuration with two primary computers (an active and a backup) connected to a SAN using a fibre channel connection.

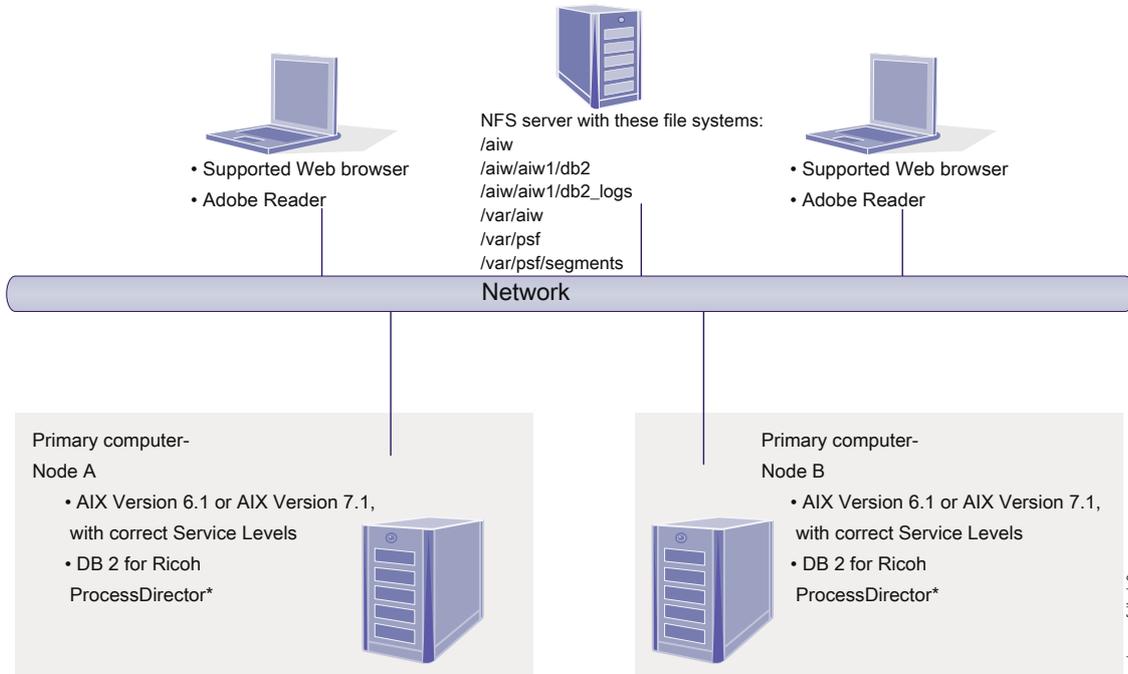
Example of a configuration with active and backup computers using a SAN



* DB2 is either installed on both Node A and Node B or installed on neither. If not installed on either node, it is accessed on a remote server.

Example of a configuration with active and backup computers using an NFS server, p. 28 shows a configuration with two primary computers (an active and a backup) and an NFS server that holds their shared file systems.

Example of a configuration with active and backup computers using an NFS server



* DB2 is either installed on both Node A and Node B or installed on neither. If not installed on either node, it is accessed on a remote server.

2. Planning for installation

- Task checklist
- Hardware requirements
- Planning for file systems
- Creating system groups and users
- Secure Sockets Layer and Transport Layer Security support
- Considerations for virtual and cloud environments
- Installing required software
- Planning for optional software

Before you install or upgrade RICOH ProcessDirector, you must do these planning tasks:

- Obtain required hardware.
- Determine your file system setup.
- Install required software.
- Install optional software.

You can use the checklist in [Installation planning checklist, p. 173](#) and the Task checklists at the beginning of each chapter to help you keep track of the planning tasks you have completed.

Note

- Your software installs in trial mode. The trial license expires after 60 days. For more information about obtaining and installing license keys, see [Downloading and installing license keys, p. 145](#).

When you finish preparing your computers, continue with the appropriate section:

- [Upgrading to the current version, p. 93](#)
- [Installing, p. 99](#)

Task checklist

Here are the tasks in this chapter that you need to verify are complete. Check each item as you verify it.

Checklist for verifying that planning is complete

Task
The installation planning checklist is complete. See Installation planning checklist, p. 173 .
Required hardware has been obtained. See Hardware requirements, p. 30 .
Required software had been installed. See Installing required software, p. 46 .
Optional software that you want to use has been installed. See Planning for optional software, p. 84 .

Hardware requirements

The computer or computers that you install the RICOH ProcessDirector base product on must meet minimum requirements. If you install RICOH ProcessDirector features on the same computer, it might need more memory, storage space, CPU, or network bandwidth.

Different components and features of RICOH ProcessDirector are installed on separate computers. Those computers have different minimum requirements than the one that the base product and all other features are installed on. These components are:

- Application servers
See [Application server computers, p. 33](#) for hardware requirements.
- Secondary Server
See [Secondary computers, p. 33](#) for hardware requirements.
- RICOH ProcessDirector Plug-in for Adobe Acrobat (part of the PDF Document Support feature)
See *RICOH ProcessDirector: Installing Document Processing Features, G550-20312*, for a description of the requirements.

The performance of RICOH ProcessDirector and its attached printers depends on the availability and efficiency of memory, processors, disk space, and network resources in the system configuration. Performance also depends on the content of the print data streams being processed and the overall load on the system. For example, complex print jobs, such as those containing images or bar codes, require more resources than those containing plain text. For help determining which hardware configuration meets your print requirements, contact your Ricoh representative to request a workload analysis and system sizing.

★ Important

- References to amount of RAM or free disk space are precise. Using commonly accepted estimates in your calculations might cause your system to fail prerequisite validation.

For example:

- 4 GB of free disk space is equal to 4,096 MB or to 4,294,967,296 bytes.
4 GB is not equal to 4,000 MB or to 4,000,000,000 bytes.

If the requirement is 4 GB, 4,000 MB is not enough.

- 12 GB of free disk space is equal to 12,288 MB or to 12,884,901,888 bytes.
12 GB is not equal to 12,000 MB or to 12,000,000,000 bytes.

If the requirement is 12 GB, 12,000 MB is not enough.

- RICOH ProcessDirector hardware requirements are for physical processors and CPU cores. As an alternative, you can run RICOH ProcessDirector on a properly configured virtual machine (VM) guest or logical partition (LPAR). Define the VM guest or LPAR so that the number of dedicated or entitled CPUs exceeds the recommended minimum hardware requirements for your configuration.

★ Important

- Using fewer than the recommended number of physical processors can result in RICOH ProcessDirector workflow performance issues especially under load, failure of the RICOH ProcessDirector system, or failure to install RICOH ProcessDirector or any of its features.

Examples:

- On a physical server with 16 cores, do not configure the RICOH ProcessDirector guest environment to have 24 CPUs.
- On a physical server with 16 cores, do not run two guest systems, each allocated 8 CPUs, where one guest is running the RICOH ProcessDirector software because the host software requires some resources.
- Do not install RICOH ProcessDirector on a virtual host that is configured to overcommit the physical CPU resources.
- Hardware requirements stated for other computing resources including memory, disk space, network I/O, and disk I/O should also be considered as requirements for a virtualized environment.

Primary computer

The system hardware requirements for the computer that the RICOH ProcessDirector base product (and most features) is installed on are:

- One or more 1.9 GHz or faster RISC processors.
- 200 GB free hard-drive space.
- Minimum of 8 GB available RAM is required.

More available RAM is required for high system loads. Large jobs, many jobs, jobs with many documents, workflow steps that run in parallel, and memory-intensive external programs all increase system loads.

★ Important

- A minimum of 16 GB available RAM is required when you are using one or more document processing features, for example:
 - ◆ AFP Support
 - ◆ PDF Document Support
 - ◆ Archive
 - ◆ Automated Verification
 - ◆ Inserter
 - ◆ Postal Enablement
 - ◆ Preference Management

Depending on the number of documents you process, you might need more RAM or free hard-drive space.

The operating system level does not have to be the same on the primary computer and on the computers that the Secondary Server features are installed on.

If you plan to install the base product on two computers so you can have an active computer and a backup (failover) computer, both computers must meet the minimum requirements for the RICOH ProcessDirector base product and features you are installing. The hardware does not have to be identical, but the operating system must be identical, including version, release, and service updates. You must also install and configure an external storage system, such as a SAN or an NFS-mounted file system, that is compatible with your computers. The external storage system must have enough free space to hold the required file systems. The recommended size for the external storage system is at least 110 GB.

The following features have more hardware requirements. These requirements are added to the requirements listed for the primary computer; they do not replace those requirements.

- Advanced Transform feature
 - Minimum 1 GB **more** free hard-drive space allocated to the RICOH ProcessDirector /opt file system
 - Minimum 2 GB **more** free hard-drive space allocated to the /aiw/aiw1 file system

↓ Note

- ◆ Large jobs sometimes require more RAM to process efficiently.
- RICOH Transform features

These requirements apply only to the RICOH Transform features (such as, PostScript/PDF to AFP and Ricoh PCL to AFP), not to the Advanced Transform feature.

 - Minimum of an extra 10 GB free hard-drive space.
 - An extra 1 GB RAM for every CPU core, but no less than 4 GB.
For example, if the computer has:
 - ◆ One dual-core processor, it must have an extra 4 GB RAM.
 - ◆ Two quad-core processors, it must have an extra 8 GB RAM.

- ◆ Three quad-core processors, it must have an extra 12 GB RAM.
- ◆ Four quad-core processors, it must have an extra 16 GB RAM.

Secondary computers

You can install RICOH ProcessDirector Secondary Server features on computers that meet these requirements:

2

- An x86 server that runs one of the following:
 - CentOS Linux 7.9 through latest 7.X for x86_64
 - Red Hat 7.6 through latest 7.X
 - Red Hat 8.1 through latest 8.X
 - SUSE Linux Enterprise Server (SLES) 12.0 with Service Pack 4 or above for x86_64
 - SUSE Linux Enterprise Server (SLES) 15.0 with Service Pack 1 or above for x86_64
- An IBM pSeries system that runs AIX Version 7.2, Technology Level 03 SP3 or later.
- If you only plan to run steps on the secondary server, you need 20 GB of free hard-drive space. If you plan to define printers on the secondary server, you need 200 GB or more of free hard-drive space.
We recommend that this space is not in the rootvg volume group on Logical Volume Manager (LVM) systems.
- Minimum of 1 GB available RAM for each secondary server. You might require more RAM, depending on the type and number of steps that you run on the secondary server and the number of printers that you define on the secondary server.

Application server computers

An application server has these hardware requirements:

- An x86 computer that can run one of these operating systems:
 - Windows 10 Pro or Enterprise 64-bit
 - Windows 11 Pro
 - Windows Server 2019 64-bit
 - Windows Server 2022 64-bit
- A minimum of two, 2.0 GHz CPU cores
- At least 4 GB RAM

Other hardware requirements

- If you are going to download the base product TAR file for installation, you must identify or create file system on your primary server large enough to accommodate the TAR file. The required size is specified on the installation downloads Web page.
- If you are going to download the base product ISO image for installation, a dual layer DVD drive or equivalent.

The installation program for the RICOH ProcessDirector base product is provided on a DVD or as an ISO image; features are included with the base product, but updated features might be provided on DVDs, ISO images, or TAR files. To install the product you must either:

- Use a DVD drive that is installed in either the primary or the secondary computer. In this case, you run the installation programs from the DVDs or CDs.
- Use a DVD drive on another UNIX-based system in your network. In this case, you copy the installation program and supporting files into a remote location on a UNIX-based system in your network and use the network installation procedure to install RICOH ProcessDirector.

 **Note**

- ◆ Due to operating system incompatibilities, you cannot use a DVD drive on a Windows system to copy the files into a staging location on a Linux or AIX computer.

You can either copy the installation program and supporting files onto the primary computer, the secondary computer, or onto a separate file server.

- Mount the ISO image to the primary server.
- Extract the TAR file to the primary server.
- If you install remotely or from a network location, the directory that you store the installers in must have sufficient room for the downloaded files. The ISO **Downloads** page on the Ricoh website specifies how much space is required for each package. See [Downloading installation files, p. 103](#) for more details.
- If you install your own licensed copy of the DB2 server on a different computer and use a DB2 client on the primary computer to interact with it, the computer that the DB2 server is installed on must have a minimum of 4 GB available RAM for each DB2 instance that you create for RICOH ProcessDirector to use.
- If you install the PDF Document Support feature, the RICOH ProcessDirector Plug-in for Adobe Acrobat must run on a Windows computer. See *RICOH ProcessDirector: Installing Document Processing Features, G550-20312*, for hardware requirements.

Supported RICOH printers

Ricoh PDF printer objects support the following printers:

Aficio MP 1100	Pro 1106EX	Pro 8310	Pro C7200S
Aficio MP 1350	Pro 1107	Pro 8310S	Pro C7210S
Aficio MP 9000	Pro 1107EX	Pro 8320	Pro C7200SL
Aficio MP C6000	Pro 1107M	Pro 8320S	Pro C7200SX
Aficio MP C6501	Pro 1356EX	Pro 906EX	Pro C7210SX
Aficio MP C7500	Pro 1357	Pro 907	Pro C7200
Aficio MP C7501	Pro 1357EX	Pro 907EX	Pro C7210
Aficio SP 9100DN	Pro 1357M	Pro C5100S	Pro C7200e
IM C6500	Pro 6100	Pro C5110S	Pro C7200X
IM C8000	Pro 6100HT	Pro C5200S	Pro C7210X
imaggio MP 1100	Pro 8100S	Pro C5210S	Pro C751
imaggio MP 1350	Pro 8100Se	Pro C5300S	Pro C751EX
imaggio MP 9000	Pro 8110	Pro C5310S	Pro C900
imaggio MP C6000	Pro 8110e	Pro C550EX	Pro C900S
imaggio MP C6001	Pro 8110S	Pro C651EX	Pro C901
imaggio MP C7500	Pro 8110Se	Pro C700EX	Pro C901S
imaggio MP C7501	Pro 8120	Pro C7100	Pro C9100
IPSiO 9100Pro	Pro 8120e	Pro C7100S	Pro C9110
Linoprint C7100	Pro 8120S	Pro C7100SX	Pro C9200
Linoprint C7100S	Pro 8120Se	Pro C7100X	Pro C9210
Linoprint C7100SX	Pro 8200S	Pro C7110	
Linoprint C7100X	Pro 8210	Pro C7110S	
Linoprint C7110	Pro 8210S	Pro C7110SX	
Linoprint C7110S	Pro 8220	Pro C7110X	
Linoprint C7110SX	Pro 8220S	Pro C720	
Linoprint C7110X	Pro 8300S	Pro C720S	
Linoprint C9100			
Linoprint C9110			

Planning for file systems

You can set up your file systems in any available volume group, but we recommend creating a new volume group. If you plan to install the RICOH ProcessDirector base product on two computers (an active computer and a backup computer), you must create them on the SAN or mounted file system so both computers can access them.

- On the AIX computers that the base product or a Secondary Server feature is installed on:
 - You need to set up file systems and mount the file systems on your computer before you install RICOH ProcessDirector.
 - We recommend creating enhanced journaled file systems (JFS2).
- On Linux computers that a Secondary Server feature is installed on:
 - A single partition is the simplest file system setup. The RICOH ProcessDirector installer can create directories in a single partition automatically.
 - Multiple partitions let the system continue functioning when it runs out of space in one partition. If you want to set up file systems in multiple partitions, you need to create and mount the file systems on your computer before you install RICOH ProcessDirector.
 - When setting up partitions of the Linux system for RICOH ProcessDirector, you can use Logical Volume Manager (LVM), Hardware RAID, or separate partitions. Hardware RAID 0 provides the best performance.
 - If you want to use Logical Volume Manager (LVM), you need to set up and mount the file systems on your computer before you install RICOH ProcessDirector.
 - RICOH ProcessDirector does not support file systems created with the 64-bit inode setting.
- On Windows computers that have application servers installed, you do not have to set up file systems before installation.

When you determine the size and location of file systems, consider these factors:

- Storage and backup needs
- Failure recovery

File systems for the primary computer

You must create the file systems listed in [File systems for the RICOH ProcessDirector primary computer, p. 37](#) before you install RICOH ProcessDirector. Create and mount the `/aiw` file system before you create the other file systems.

File systems for the RICOH ProcessDirector primary computer

File system	Recommended size	Minimum size	Description
/aiw	80+ GB	20 GB	File system for RICOH ProcessDirector print jobs, resources, backup files, and trace files. This file system is shared by the secondary computers as a mounted file system.
/aiw/aiw1/db2	30 GB	20 GB	File system for DB2 tables when DB2 is installed on the same computer as the base product (either the RICOH ProcessDirector version of DB2 or a separate copy).
/aiw/aiw1/db2_logs	12 GB	12 GB	File system for DB2 logs when DB2 is configured to store its transaction logs in a separate file system and is installed on the same computer as the base product (either the RICOH ProcessDirector version of DB2 or a separate copy).
Remote database location (DB2 administrator's choice)	22 GB	12 GB	File system for DB2 tables and logs when DB2 is installed on a different computer.
/var/aiw	5 GB	5 GB	File system for debug information from RICOH ProcessDirector.
/var/psf	5 GB	5 GB	File system for PSF configuration and temporary files.
/var/psf/segments	45 GB	10 GB	File system used to improve performance. This file system must be bigger than your biggest job. It requires enough space to store data for concurrent jobs on multiple printers. The recommended minimum size is 45 GB for five printers. Increase the size by 10 GB for each additional printer.

Existing file systems that RICOH ProcessDirector uses, p. 38 shows the file systems that you create when you install the operating system. You might need to increase the size of these file systems before you install RICOH ProcessDirector.

Existing file systems that RICOH ProcessDirector uses

File system	Recommended size	Minimum size	Description
/var	Varies	Set as an operating system default	File system that contains the /var/spool/1pd directory, used to spool jobs received by LPD protocol. This file system must be large enough to hold all of the print files that you receive at one time with the LPD protocol. If you install any Transform features, you must have an additional 1 GB free space in /var.
/home (default)	2.5 GB free space	2.5 GB free space	If DB2 is on the same computer as the base product: File system that contains the home directory of the DB2 instance user. This DB2 is either the RICOH ProcessDirector version of DB2 or a separate copy. Note <ul style="list-style-type: none"> If /aiwinst is in /home, it must have 2.5 GB free space. If /home/aiwinst is a separate file system from /home, /home/aiwinst must have 2.5 GB free space. The /home file system must not be mounted with the nosuid option. To verify that the nosuid option is not used, enter mount on the command line.
	5.5 MB free space	5.5 MB free space	If DB2 is installed on a different computer: File system that contains the home directory of the RICOH ProcessDirector DB2 client user when you install the DB2 client on the same computer as the base product and configure it to work with a DB2 server on a different computer.
/opt	15 GB free space With Ricoh Postscript/PDF to AFP, PCL to AFP, SAP to AFP, or AFP to PDF installed, 1 GB additional free space	10 GB free space With Ricoh Postscript/PDF to AFP, PCL to AFP, SAP to AFP, or AFP to PDF installed, 1 GB additional free space	File system for RICOH ProcessDirector code. Note <ul style="list-style-type: none"> The /opt file system must not be mounted with the nosuid option. To verify that the nosuid option is not used, enter mount on the command line.

File system	Recommended size	Minimum size	Description
	With the Advanced Transform feature installed, 1 GB additional free space	With the Advanced Transform feature installed, 1 GB additional free space	
/tmp	3 GB free space	750 MB free space	Temporary space used by the RICOH ProcessDirector installer. The RICOH Transform features listed require an additional 500 MB of free space in /tmp. <div style="border: 1px solid #0070C0; border-radius: 10px; padding: 2px; display: inline-block;">  Note </div> <ul style="list-style-type: none"> If you upgrade the DB2 database, you need 3 GB free space.
/usr	750 MB free space	750 MB free space	File system that contains the /usr/lpp/psf and /usr/lib directories used for printing AFP files.

For the file systems that RICOH ProcessDirector manages, ownership and permissions must be set as shown in [Ownership and permissions for file systems, p. 39](#).

Ownership and permissions for file systems

File system	Owner	Group	Permissions
/var/aiw	root	system	777 - drwxrwxrwx
/var/psf	root	printq	2777 - drwxrwsrwx
/var/psf/segments	root	printq	2777 - drwxrwsrwx
/aiw/aiw1/db2 (See Note .)	root	system	755 - drwxr-xr-x
/aiw/aiw1/db2_logs (See Note .)	root	system	755 - drwxr-xr-x
/aiw	root	system	755 - drwxr-xr-x

 **Note**

- The installation program changes the ownership to the RICOH ProcessDirector system user and group. You can use the default RICOH ProcessDirector system user (**aiw1**) and group (**aiwgrp1**) or you can specify a different user and group.

File systems for AIX Secondary Server features

File system to create for a secondary RICOH ProcessDirector AIX server, p. 40 shows the file system that you must create for an AIX secondary server.

File system to create for a secondary RICOH ProcessDirector AIX server

File system	Recommended size	Minimum size	Description
/var/aiw	5 GB	5 GB	File system for debug information from RICOH ProcessDirector.
/aiwinstaller	2 GB	2 GB	File system that the installation program uses to store its files.
/var/psf	5 GB	5 GB	File system for PSF configuration and temporary files. <div style="border: 1px solid blue; border-radius: 10px; padding: 2px; display: inline-block;"> ↓ Note </div> <ul style="list-style-type: none"> If /var/psf/segments is a subdirectory of /var/psf, /var/psf must meet the combined requirements of the two file systems.
/var/psf/segments	45 GB	10 GB	File system used to improve performance. This file system must be bigger than your biggest job. It requires enough space to store data for concurrent jobs on multiple printers. The recommended minimum size is 45 GB for five printers. Increase the size by 10 GB for each additional printer.

Existing file systems that the secondary RICOH ProcessDirector AIX server uses, p. 40 shows the file systems that you create when you install the AIX operating system. You might need to increase the size of these file systems before you install RICOH ProcessDirector.

Existing file systems that the secondary RICOH ProcessDirector AIX server uses

File system	Recommended size	Minimum size	Description
/var/spool/lpd	Varies	Set as an operating system default	File system used to spool jobs received by LPD protocol. This file system must be large enough to hold all of the print files that you receive at one time with the LPD protocol.
/opt	15 GB free space	10 GB free space	File system for RICOH ProcessDirector code.

File system	Recommended size	Minimum size	Description
			<p>Note</p> <ul style="list-style-type: none"> The /opt file system must not be mounted with the nosuid option. To verify that the nosuid option is not used, enter mount on the command line.
/tmp	750 MB free space	750 MB free space	Temporary space used by the RICOH ProcessDirector installation program.
/usr	750 MB free space	750 MB free space	File system that contains the /usr/lib/psf and /usr/lib directories used for printing AFP files.

For the file systems that RICOH ProcessDirector manages, ownership and permissions must be set as shown in [Ownership and permissions for AIX secondary server file systems, p. 41](#).

Ownership and permissions for AIX secondary server file systems

File system	Owner	Group	Permissions
/var/aiw	root	system	777 - drwxrwxrwx
/var/psf	root	printq	2775 - drwxrwsr-x
/var/psf/segments	root	printq	2777 - drwxrwsrwx

File systems for Linux Secondary Server features

You can let the RICOH ProcessDirector installer create the directories listed in [File systems for Linux Secondary Server features, p. 41](#), or you can create them yourself before you install RICOH ProcessDirector. If you let RICOH ProcessDirector create them, they are created as directories, not file systems. If you want to use multiple partitions, you must create the file systems manually.

File systems for Linux Secondary Server features

File system	Recommended size	Minimum size	Description
/aiwinstaller	2 GB	2 GB	File system that the installation program uses to store its files.
/var/psf	5 GB	5 GB	<p>File system for PSF configuration and temporary files.</p> <p>Note</p> <ul style="list-style-type: none"> If /var/psf/segments is a subdirectory of /var/psf, /var/psf must meet the combined requirements of the two file systems.

File system	Recommended size	Minimum size	Description
/var/psf/segments	45 GB	10 GB	File system used to improve performance. This file system must be bigger than your biggest job. It requires enough space to store data for concurrent jobs on multiple printers. The recommended minimum size is 45 GB for five printers. Increase the size by 10 GB for each additional printer.
/var/aiw	5 GB	5 GB	File system for debug information from RICOH ProcessDirector.

Existing file systems that Linux Secondary Server features use, p. 42 shows the file systems that you create when you install the Linux operating system. You might need to increase the size of these file systems before you install RICOH ProcessDirector.

Existing file systems that Linux Secondary Server features use

File system	Recommended size	Minimum size	Description
/var/spool/lpd	Varies	Set as an operating system default	File system used to spool jobs received by LPD protocol. This file system must be large enough to hold all of the print files that you receive at one time with the LPD protocol.
/opt	15 GB free space	10 GB free space	File system for RICOH ProcessDirector code. <div style="border: 1px solid #0070c0; border-radius: 10px; padding: 2px; display: inline-block;"> ⬇ Note <ul style="list-style-type: none"> The /opt file system must not be mounted with the nosuid option. To verify that the nosuid option is not used, enter mount on the command line. </div>
/tmp	750 MB free space	750 MB free space	Temporary space used by the RICOH ProcessDirector installer.
/usr	750 MB free space	750 MB free space	File system that contains the /usr/lpp/psf and /usr/lib directories used for printing AFP files.

For the file systems that RICOH ProcessDirector manages, ownership and permissions must be set as shown in [Ownership and permissions for Linux Secondary Server feature file systems, p. 43](#). If the RICOH ProcessDirector installer creates directories, it sets the correct ownership and permissions automatically.

Ownership and permissions for Linux Secondary Server feature file systems

File system	Owner	Group	Permissions
/var/aiw	root	sys	777 - drwxrwxrwx
/var/psf	root	sys	2775 - drwxrwsr-x
/var/psf/segments	root	sys	2777 - drwxrwsrwx

Creating system groups and users

RICOH ProcessDirector requires several user groups and IDs on the primary computer to operate correctly. The installation program can create the user groups and IDs or you can create them in advance.

It is easiest to let the installer create the user groups and IDs using the default values. If the default names do not comply with user and group naming rules in your environment, you can choose different names and enter them in the installer when requested. The groups and users are created using the specified names as local system users and groups.

If you prefer to create the groups and users in advance (using either the default names or names that you specify), the installation program can find and use them. Create those groups and users according to the descriptions below and enter their names in the installation program when asked.

Note

- If you plan to set up a manual failover environment, follow the instructions for setting up system groups and users in [Installing a manual failover environment, p. 109](#).

If you plan to install any Secondary Server features on AIX or Linux computers, you must create some groups and users on both the primary computer and secondary computers. The groups and users on the secondary computers must be identical to those on the primary computer.

Note

- All user IDs and group names must be 1-8 characters because of a restriction in DB2.

Required groups

RICOH ProcessDirector requires these groups on the primary computer:

RICOH ProcessDirector group

The group that controls access to the RICOH ProcessDirector data directory. Members of this group can access the /aiw/aiw1 file system. This is the default or primary group for the RICOH ProcessDirector system user.

The default name for the group is **aiwgrp1**.

Print queue group

The group used for all users and applications that send jobs to printers. On some platforms, this is a system group that is created when the operating system is installed, but not on others.

The name for this group must be printq. You cannot create a group with a different name and have RICOH ProcessDirector use it. If the installer does not find a group named **printq**, it creates one.

Database group

The group used to give members DB2 **sysadm** authority for database operation. This is the default or primary group for the RICOH ProcessDirector instance user and for the Database client user (if needed).

The default name for the group is **aiwdbgrp**.

If you plan to use a DB2 server installed on a different computer with RICOH ProcessDirector, this group is created while running the script **setupRemoteDB2.sh** on the computer that DB2 is installed on and also on the computer that RICOH ProcessDirector is installed on.

Database fenced group

The internal group required by DB2; the default or primary group for the fenced user.

The default name for the group is **aiwdbfgp**.

If you plan to use a DB2 server installed on a different computer with RICOH ProcessDirector, this group is created during the installation on the computer that DB2 is installed on.

RICOH ProcessDirector also requires the **RICOH ProcessDirector group** and **print queue group** on any AIX or Linux secondary computers.

Required users

RICOH ProcessDirector requires these users on the primary computer:

RICOH ProcessDirector system user

The user ID that RICOH ProcessDirector runs under. This user must have the **RICOH ProcessDirector** group set as its default or primary group. It must also be a member of the **Print queue** group and the **Database** group. You can use the default values for the other user properties.

The default system user ID is **aiw1**.

Instance user

The user ID that the RICOH ProcessDirector database instance runs under. This user must have its default or primary group set to the **Database** group. It must also be a member of the **RICOH ProcessDirector** group. You can use the default values for the other user properties.

The default instance user ID is **aiwinst**.

If you plan to use a DB2 server installed on a different computer, this user is created on the computer that DB2 is installed on.

Fenced user

A second user ID that DB2 requires when you create an instance. This user must be a member of the **Database fenced** group. You can use the default values for the other user properties.

The default fenced user ID is **aiwdbfid**.

If you plan to use a DB2 server installed on a different computer, this user is created on the computer that DB2 is installed on.

Database client user

The user ID that the DB2 client uses. This user is only required if you install a DB2 server on a different computer and the DB2 client on the same computer as RICOH ProcessDirector. This user

must have its primary or default group set to the **Database** group. You can use the default values for the other user properties.

The default database client user ID is **aiwclnt**.

RICOH ProcessDirector also requires the **RICOH ProcessDirector system user** on any AIX or Linux secondary computers.

↓ Note

- If you set up passwords with expiration rules for these user IDs, you must administer those IDs as needed. If you do not change the passwords as needed and they expire, RICOH ProcessDirector stops working.

RICOH Transform features users and groups

One additional group and two additional users are required if you install any of these RICOH Transform features:

- Ricoh AFP to PDF
- Ricoh PCL to AFP
- Ricoh PostScript/PDF to AFP
- Ricoh SAP to AFP

The default users are **ipsitm** and **ipsejz**; the default group is **itm**. The Advanced Transform feature does not require these users and group.

★ Important

- Do not make either RICOH Transform features user ID the same as the RICOH ProcessDirector user ID. For example, if the RICOH ProcessDirector user ID is **aiw1**, do not enter **aiw1** for either Transform feature user ID.

Secure Sockets Layer and Transport Layer Security support

RICOH ProcessDirector provides support for the Secure Sockets Layer (SSL) and Transport Layer Security (TLS) protocols, so you can protect the print data in the system.

SSL and TLS are widely used to protect data on the Internet. The SSL and TLS protocols use digital certificates to establish a secure connection between a Web server and any client systems that interact with it. After the connection is established, data transferred between the systems is encrypted using security keys. Only the intended recipient of the information can decrypt the data.

You can also use SSL or TLS to protect data on a smaller scale, such as within a print system like RICOH ProcessDirector. You can activate SSL or TLS to provide a greater level of security for the print data that is exchanged between the primary server and user interfaces, as well as the data that is exchanged with other applications using the Web services that RICOH ProcessDirector supports.

To use SSL or TLS on a computer, you must obtain a digital certificate and install it on that computer. It is recommended that you get your certificate from a certificate authority (CA), because CAs are considered trusted third parties. You can use a self-signed certificate for testing, but using that certificate on production systems is not recommended.

When the certificate is issued, the CA sends it to you in an e-mail. You store the certificate in a keystore on the computer that the certificate is registered to.

 **Note**

- RICOH ProcessDirector only supports Java Key Stores (JKS) files. To create a keystore, see the Java documentation about enabling SSL or TLS.

After the Web server is configured to use it, SSL or TLS is automatically used for communications. The URL for the RICOH ProcessDirector user interface changes to use the **https://** prefix. You can still access the user interface using the **http://** address, but you can configure the Web server to forward all requests to the secure address.

To use SSL or TLS with RICOH ProcessDirector, you can get a digital certificate and install it on the primary computer before you install the base product. After the base product is installed, you must activate SSL or TLS in the RICOH ProcessDirector Web server component.

Considerations for virtual and cloud environments

RICOH ProcessDirector can be installed in virtual environments, such as those provided with VMware, or cloud platforms such as Amazon Web Services.

When configuring this type of system, the operating system prerequisites, memory and file system requirements still apply. Three other network configuration items are important:

- The hostname assigned to the RICOH ProcessDirector instance cannot change when the server is restarted. If this value changes over a restart, you will have a short grace period to update your license keys before the system stops running.
- If you are printing across an externally hosted or distributed network, you may need substantial network bandwidth to keep high-speed printers running at rated speed over long distances. Contact Ricoh Software Support for help with configuring your network capacity. If you are printing to AFP printers, you can use a secondary server to receive and buffer print jobs so that data transmission to the printers can keep up with high print speeds. After installing the secondary server, set these properties on the AFP printer:
 - **Printer server:** The secondary server name
 - **Copy to secondary server:** Yes
 - **Destination directory on secondary server:** The location on the secondary server file system where you want RICOH ProcessDirector to write print files.
- Securing data across your network and from cloud platforms to printers on the ground is your responsibility. Use of virtual private networks (VPNs) sometimes introduces performance degradation in file transfer. Involve your network and security administrators when planning to host RICOH ProcessDirector in these environments.

Installing required software

RICOH ProcessDirector requires this software on the primary computer:

- A supported AIX operating system
- DB2

RICOH ProcessDirector includes a copy of DB2 in its installation package. To use this copy of DB2, you do not have to install any DB2 software in advance. If you already have DB2 installed on a computer in your network, you can configure RICOH ProcessDirector to work with that version instead. See [Installing DB2, p. 75](#).

If you plan to install a Secondary Server feature, this software is required on the secondary computer:

- A supported operating system (Linux or AIX)

If you plan to install an application server on a Windows computer, this software is required on the Windows computer:

- Windows Server 2019 64-bit operating system
- Windows Server 2022 64-bit operating system
- Windows 10 Pro or Enterprise 64-bit operating system
- Windows 11 Pro operating system

These features require additional software:

- Secondary Docker
Docker Engine 19.03 or above is required on Linux computers that will host Docker container secondary servers.
- PitStop Connect
Enfocus PitStop Server 10 or higher on an application server that is configured to work with the primary server.
- Ultimate Impostrip® Connect
Ultimate Impostrip® Automation or Scalable on an application server that is configured to work with the primary server or on a separate Windows system.

Note

- If your Windows computer runs in a language other than English, do not install Ultimate Impostrip® in the default install directory. The program does not work properly with non-English default install paths. We recommend installing Ultimate Impostrip® in C:\ImpostripOnDemand on non-English Windows computers.
- Quadient Inspire Connect
Quadient Inspire Designer V8 or higher.
- The AFP Support feature includes RICOH Visual Workbench, a separate user interface that you can install on any Linux or Windows system in your network.
Java 1.8 or later must be installed on the system that is used for RICOH Visual Workbench.
- The PDF Document Support feature includes RICOH ProcessDirector Plug-in for Adobe Acrobat, a separate user interface that you can install on a Windows system in your network. Java 1.8 or later and Adobe Acrobat Pro 2020 or DC must be installed on the system that is used for RICOH ProcessDirector Plug-in for Adobe Acrobat.
- RICOH Transform features
WorldType Fonts version 8.13 for RICOH SAP to AFP files to transform correctly when IS/3 support is enabled.
Java Runtime Environment 1.4 or higher.
To install the **PDF to AFP** transform on an AIX operating system, XL C/C++ Runtime 16.1.0.3 or newer is required. Make sure that the fileset contains the install packages for both xLC and C++.
- Avanti Slingshot Connect

Avanti Slingshot with the JDF Integration add-on installed on an application server that is configured to work with the primary server.

Other required software:

- A supported Web browser
A Web browser is required to open the RICOH ProcessDirector user interface, so it is required on any system that is used to access the user interface.
- A PDF viewer
A PDF viewer is used inside the RICOH ProcessDirector user interface to display the contents of print jobs. It should be installed on any system that is used to access the user interface, but it is not required. If you open the user interface from a computer that does not have a PDF viewer installed, you see an error message if you try to view a job. Using Adobe Reader is recommended as it provides the most functionality.

Installing an operating system

RICOH ProcessDirector requires a 64-bit operating system that supports running 32-bit applications. You can install any of these operating systems, depending on the hardware you have:

IBM pSeries system (for primary or AIX secondary):

AIX Version 7.2, Technology Level 03 with SP3 or later

64-bit system (for Linux secondary):

One of these operating systems:

- CentOS Linux 7.9 through latest 7.X for x86_64
- Red Hat 7.6 through latest 7.X
- Red Hat 8.1 through latest 8.X
- SUSE Linux Enterprise Server (SLES) 12.0 with Service Pack 4 or above for x86_64
- SUSE Linux Enterprise Server (SLES) 15.0 with Service Pack 1 or above for x86_64

64-bit system (for Windows application servers):

One of these operating systems:

- Windows 10 Pro or Enterprise 64-bit
- Windows 11 Pro
- Windows Server 2019 64-bit
- Windows Server 2022 64-bit

★ Important

- RICOH ProcessDirector checks to make sure that the operating system meets these minimum requirements. The installation program does not install the software on earlier versions of the operating systems.

Installing the AIX operating system

To install the AIX operating system:

1. See the AIX documentation to install AIX Version 7.2, Technology Level 03 SP3 or later.

1. Make sure that these components are installed on both the primary and secondary computers:

- Perl interpreter (Perl.rte 5.8.8 or later)
- A UTF-8 language environment: EN_US, IT_IT, ES_ES, JA_JP, FR_FR, DE_DE, or PT_BR. Use `smittlang` to add a language environment.

Note

- Language environment names are case-sensitive. UTF-8 language environment names are all uppercase.

- Bash (4.3.30-1 or higher)
- libgcc (8.1.0 or higher)
- libstdc++ (8.1.0 or higher)
- Korn shell
This must be set as the default shell for the root user, at least during the RICOH ProcessDirector installation process.
- XL C++ runtime environment (xlc.rte 13.1.2.0 or later).
- The `fontconfig` and `freetype2` libraries
OpenJDK requires these libraries to identify available fonts on the system.

2. Make sure that the **maxuproc** value is set to at least **4096**.

This value is adequate for most installations, but requirements vary based on the number of programs running on your system. After the system is installed and running, work with your AIX system administrator to verify that the setting is appropriate for your environment.

- Open a command line and type this command:
`/usr/sbin/lssattr -E -l sys0 | grep maxuproc`
- If the value for `maxuproc` is less than 4096, type this command to increase it:
`/usr/sbin/chdev -l sys0 -a maxuproc=4096`

3. If you plan to install RICOH Transform features, we recommend that you install X Windows System because the installer for the Transform features requires it. If you do not install X Windows System, you can install the Transform features from the command line.

2. Run these commands and look for the expected results to verify that you have all the prerequisites installed:

AIX commands and expected results

Command	Expected result
To check the operating system level: <code>oslevel -s</code>	7200-03-03-xxxx or later (AIX 7.2)
To verify that the operating system is 64-bit: <code>bootinfo -K</code>	64
To verify the version of Perl that is installed: <code>lspp -l all grep perl</code>	Perl.rte 5.8.8 (or later)
To verify the version of Bash that is installed: <code>bash -version</code>	Results resemble this example: <pre>GNU bash, version 4.3.30(1)-release (powerpc-ibm-aix6.1.0.0) Copyright (C) 2013 Free Software Foundation, Inc. License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html> This is free software; you are free to change and redistribute it. There is NO WARRANTY, to the extent permitted by law.</pre>
To verify the version of libgcc that is installed: <code>rpm -qa grep libgcc</code>	Results resemble this example: <pre>libgcc-8.1.0.ppc</pre>
To verify the version of libstdc++ that is installed: <code>rpm -qa grep libstdc++</code>	Results resemble this example: <pre>libstdc++-8.1.0.ppc</pre>
To check for a UTF-8 environment: <code>locale -a</code>	EN_US, IT_IT, ES_ES, JA_JP, FR_FR, DE_DE, or PT_BR (uppercase)
To determine the shell that the root user is running under: <code>lsuser -a shell root</code>	/usr/bin/ksh If the shell is not ksh , use this command to change it: <code>chuser shell=/usr/bin/sh root</code>
To verify the version of the XL C++ runtime environment that is installed: <code>lspp -l x1C.rte</code>	13.1.2.0 COMMITTED IBM XL C++ Runtime for AIX

Command	Expected result
To verify that the libraries for font support are installed: <ul style="list-style-type: none"> • <code>rpm -qa grep fontconfig</code> • <code>rpm -qa grep freetype2</code> 	Results resemble these examples: <ul style="list-style-type: none"> • <code>fontconfig-2.11.95-4.ppc</code> • <code>freetype2-2.8-1.ppc</code>
<code>getconf -a grep -i kernel</code>	64 bits
If you are going to print with AFP printers, the portmap utility must be installed and running. <code>rpcinfo -p</code>	A response that includes portmap, such as: <pre>program vers proto port service 100000 4 tcp 111 portmapper</pre>
<p>Note</p> <ul style="list-style-type: none"> • If you have installed a later version of a prerequisite, the version number returned varies. 	

3. Create partitions and file systems. See [Planning for file systems, p. 36](#).
4. If your system has 4 GB of memory, set the paging space to 5440 MB. If your system has other than 4 GB of memory, use this formula to determine the amount of paging space to set: total paging space = 512 MB + (memory size - 256 MB) * 1.25.
 - To check your available memory, use the **prtconf -m** command.
 - To check your paging space, use the **lspcs -a** command.
 - To adjust the size of your paging space, use the **chps -s 32 paging00** command.
5. Verify date, time, and time zone settings through System Management Interface Tool (SMIT) and correct if necessary:
Click **System Environments** → **Change/show date and time**.
6. Set up networking based on system networking information:
 1. Make sure that RICOH ProcessDirector has access to a Domain Name System (DNS) server. The DNS server must have correct entries for the host name and IP address of each primary computer and secondary computer on the network.

Note

- RICOH ProcessDirector supports both IPv4 and IPv6 protocols. If you use IPv4, IP addresses can be expressed using dotted-decimal addresses or the fully qualified host name. If you use IPv6, you must use the fully qualified host name of the server.
 - If you use an IPv6 address, you must complete additional configuration steps after you install RICOH ProcessDirector. See [Configuring to use IPv6 addresses, p. 135](#).
2. Make sure that `/etc/hosts` on the primary computer has an entry for its IP address and the fully qualified host name.

3. In your firewall, open any ports that RICOH ProcessDirector uses. Depending on your configuration, you might need these ports:

Ports to open on the RICOH ProcessDirector primary server

Port	Source system	Description
15080	User workstation	Access to the RICOH ProcessDirector user interface if not using TLS.
15090	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager interface if not using TLS.
15443	User workstation	Access to the RICOH ProcessDirector user interface if using TLS.
15453	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager user interface if using TLS.
515	Customer application	Required when sending jobs to RICOH ProcessDirector using LPR.
5001-65535	Customer mainframe	Required when sending jobs to RICOH ProcessDirector using Download for z/OS or AFP Download Plus. The port numbers defined in RICOH ProcessDirector must match the port numbers defined as printers on the mainframe.
55555	RICOH ProcessDirector secondary server	Required if you use secondary servers that are not defined on the same system as the primary server. Allows communication between the secondary server and the primary server.
15080 or 15443	RICOH TotalFlow Print server	Used to send printing status to RICOH ProcessDirector.

Ports to open on RICOH ProcessDirector primary and secondary server

Port	Source system	Description
15081	Administrator workstation	Used to import the custom PDF printer definition to the RICOH ProcessDirector server that will be communicating with the printer Only necessary when using custom PDF printers. Most systems do not use custom PDF printers.
15081	Ricoh PDF printer	The job ticket contains reference to a PDF file that the printer retrieves.

Ports to open on the NFS server

Port	Source system	Description
111	RICOH ProcessDirector primary and secondary server	Used by the NFS server and User Name Mapping function when sharing data from the primary server to secondary servers or other systems using NFS.
2049	RICOH ProcessDirector primary and secondary server	Used by the NFS server when sharing data from the primary server to secondary servers or other systems using NFS.

Ports to open on printers

Port	Source system	Description
161	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector gets printer status and information using SNMP.
8010	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector gets printer status and information using SNMP.
9100-9103	RICOH ProcessDirector primary and secondary server	Required when sending jobs to a printer with a EFI Fiery controller using Postscript job tickets.

Ports to open on LDAP server

Port	Source system	Description
389, 636, or other port as configured.	RICOH ProcessDirector primary server	Required when RICOH ProcessDirector is using LDAP to authenticate users.

Ports to open on printers that support JMF interfaces ¹

Port	Source system	Description
80	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector sends IMSS queries using the HTTP protocol.
8010	RICOH ProcessDirector primary and secondary server	Required when sending JMF files to EFI Fiery controllers.
9100 (default) - 9103	RICOH ProcessDirector primary and secondary server	Required when sending jobs to a printer with a EFI Fiery controller using Postscript job tickets. 9100 is the default port. EFI printers use port 9102.

¹These printers are defined in RICOH ProcessDirector as Ricoh PDF Printer objects.

Ports to open on Passthrough printers

Port	Source system	Description
515	RICOH ProcessDirector primary server	Required when receiving jobs from RICOH ProcessDirector using LPR.

Ports to open on IPDS printers

Port	Source system	Description
5001-65535	RICOH ProcessDirector primary server	Required when sending files to RICOH ProcessDirector using Download for z/OS or AFP Download Plus. These port numbers are configured when you create the input devices that receive these jobs. Open these ports after you define the input devices.

Ports to open on a transform server

Port	Source system	Description
6984-6992	RICOH ProcessDirector primary server	Required if you use any of the RICOH Transforms and they are not installed on the primary server. These transforms are not the same as the RICOH ProcessDirector Advanced Transform feature.
16080	Administrator workstation	Access to the Transform Features user interface if using any of the RICOH Transforms.

Ports to open on a PostgreSQL server

Port	Source system	Description
5432	RICOH ProcessDirector primary server and any system accessing RICOH ProcessDirector reports data	Access to PostgreSQL database. By default, the PostgreSQL database is installed on the RICOH ProcessDirector primary computer. Required when using the RICOH ProcessDirector Reports feature.

Ports to open on a DB2 server

Port	Source system	Description
DB2 prior to 11.5.6: 50000 DB2 11.5.6 and higher: 25000	RICOH ProcessDirector primary server	Required when RICOH ProcessDirector uses a DB2 database installed on a different server. These are the default ports used by DB2; the default value changed in Version 11.5.6. If your installation of DB2 uses a different port, open the port you use.

7. Verify network connectivity:

1. To verify that host name resolution is working, enter this command:
host localhost

If you can access the DNS server, the response includes the host name `localhost` or `loopback` and the address `127.0.0.1`. For example:

```
localhost.infoprint.com is 127.0.0.1
```

2. From the system where you will access the RICOH ProcessDirector user interface, use both the host name and the IP address to ping the primary computer.
 3. From all secondary computers (if any), ping the primary computer.
 4. From the primary computer, ping all secondary computers (if any).
 5. Contact the network administrator if you are not successful with any of these verifications.
8. Verify that the speed, duplexing, and autonegotiation settings for the Ethernet card are those that your network administrator recommends for optimum performance. Note that the optimum settings are different for each installation.

To display and change these settings:

1. Log in as the root user.
2. To display the value of the **media_speed** attribute, enter.

```
lsattr -E -l ent0 -a media_speed
```

3. If necessary, use the `chdev` command to change the value. For example, this command sets full-duplex mode at a speed of 100 Mb per second with autonegotiation off:

```
chdev -P -l ent0 -a media_speed=100_Full_Duplex
```

This command sets autonegotiation on:

```
chdev -P -l ent0 -a media_speed=Auto_Negotiation
```

Installing the SLES operating system

1. See the SLES documentation to install SUSE Linux Enterprise Server (SLES) 12.0 with Service Pack 4 or above for `x86_64` or SUSE Linux Enterprise Server (SLES) 15.0 with Service Pack 1 or above for `x86_64`.
 1. Make sure that these components are installed on the secondary computer:
 - Korn shell (**mksh**)
 - `binutils`
 - `insserv-compat` package
 - `libX11.so.6` and its dependent libraries
 - Perl interpreter (Perl.rte 5.8.8 or later)
 - Zip and unzip utilities
 - The `fontconfig` and `freetype` libraries

We also strongly recommend installing DejaVu Fonts. OpenJDK requires these libraries to identify available fonts on the system.
2. Create Linux partitions and file systems. See [Planning for file systems, p. 36](#) for recommendations and considerations.
3. Run these commands and look for the expected results to verify that you installed SLES correctly:

SLES commands and expected results

Command	Expected result
To check the SLES release: <code>cat /etc/os-release</code>	Returns the operating system version and patch level.
To verify that the operating system is 64-bit: <code>uname -a</code>	A response that includes: <code>x86_64</code>
To check for Korn shell (mksh): <code>rpm -q mksh</code>	Response similar to: <code>mksh-50-2.13.x86_64</code>
To check for binutils: <code>rpm -q binutils</code>	Results resemble this example: <code>binutils-2.31-9.26.1.z86_64</code>
To check for insserv-compat: <code>rpm -qa grep insserv-compat</code>	Results resemble this example: <code>insserv-compat-0.1-4.3.1.noarch</code> If no results are returned, you must install the missing package. To install the serving-compat package, type: <code>zypper install insserv-compat</code>
To check for libX11.so.6: <code>rpm -qa grep -i X11</code> <code>ls -l /usr/lib*/libX11*</code>	Results include a collection of libraries with the text X11 in the name, such as: <code>libX11-6-1.6.2-12.5.1.x86_64</code> <code>libX11-data-1.6.5-1.41.noarch</code> <code>libxkbcommon-x11-0-0.8.0-1.17.x86_64</code> <code>ghostscript-x11-9.25-23.13.1.x86_64</code> <code>xorg-x11-essentials-7.6_1-1.22.noarch</code> If fewer than five results are returned, not all of the dependencies are installed. Install the libX11 libraries again, making sure to install all of the dependencies.
To check the version of Perl that is installed: <code>rpm -q perl</code>	A response that resembles: <code>perl-5.8.8-14.10</code>
To verify that the libraries for font support are installed: <ul style="list-style-type: none"> <code>rpm -qa grep fontconfig</code> <code>rpm -qa grep freetype</code> 	Results resemble these examples: <ul style="list-style-type: none"> <code>fontconfig-2.13.0-4.3.e17.x86_64</code> <code>freetype-2.8-14.e17.x86_64</code> <code>dejavu-fonts-common-2.35-7.e18.noarch</code> If no results are returned, you must install the missing library or fonts. To install all three, type:

Command	Expected result
<ul style="list-style-type: none"> <code>rpm -qa grep -i dejavu</code> 	<code>zypper install libfreetype6 fontconfig dejavu-fonts</code>
<p>To check the versions of zip and unzip that are installed:</p> <pre>rpm -q zip rpm -q unzip</pre>	<pre>zip-3.0-1.el6.x86_64 (typical) unzip-6.0-1.el6.x86_64 (typical)</pre>
<code>getconf GNU_LIBPTHREAD_VERSION</code>	NPTL 2.19
<p>To verify that the rpcbind service is running:</p> <pre>rpcinfo</pre>	A response that includes system information indicates that the rpcbind service is running. If the responses is an error message, the rpcbind service is not running. Type this command to start the rpcbind service: <code>/sbin/rpcbind</code>
<p>If you are going to print with AFP printers whose parent server is a SLES Linux server, the portmap utility must be installed and running.</p> <pre>rpcinfo -p</pre> <p>This command only returns results if the rpcbind service is running.</p>	<p>A response that includes portmap, such as:</p> <pre>program vers proto port service 100000 4 tcp 111 portmapper</pre>
<p>To check the status for SELinux:</p> <pre>getenforce</pre>	Disabled
<p>Note</p> <ul style="list-style-type: none"> If you have installed a later version of a prerequisite, the version number returned varies. 	

If the command results are not as you expect, use YaST to make sure you have installed the required components (see step 1). In YaST, click **Software** → **Install/Remove Software**.

- Verify date, time, and time zone settings through YaST, and correct if necessary:
Click **System** → **Clock and Time Zone Configuration**. If you change the date, time, or zone, you might have to reboot the system for your changes to take effect.
- Set up networking based on system networking information:

1. Make sure that RICOH ProcessDirector has access to a Domain Name System (DNS) server. The DNS server must have correct entries for the host name and IP address of each RICOH ProcessDirector primary computer and application/secondary computer on the network.

Note

- RICOH ProcessDirector supports both IPv4 and IPv6 protocols. If you use IPv4, IP addresses can be expressed using dotted-decimal addresses or the fully qualified host name. If you use IPv6, you must use the fully qualified host name of the server.
 - If you use an IPv6 address, you must complete additional configuration steps after you install RICOH ProcessDirector. See [Configuring to use IPv6 addresses, p. 135](#).
2. Make sure that /etc/hosts on the primary computer has an entry for its IP address and the fully qualified host name.
 3. In your firewall, open any ports that RICOH ProcessDirector uses. Depending on your configuration, you might need these ports:

Ports to open on the RICOH ProcessDirector primary server

Port	Source system	Description
15080	User workstation	Access to the RICOH ProcessDirector user interface if not using TLS.
15090	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager interface if not using TLS.
15443	User workstation	Access to the RICOH ProcessDirector user interface if using TLS.
15453	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager user interface if using TLS.
515	Customer application	Required when sending jobs to RICOH ProcessDirector using LPR.
5001-65535	Customer mainframe	Required when sending jobs to RICOH ProcessDirector using Download for z/OS or AFP Download Plus. The port numbers defined in RICOH ProcessDirector must match the port numbers defined as printers on the mainframe.

Port	Source system	Description
55555	RICOH ProcessDirector secondary server	Required if you use secondary servers that are not defined on the same system as the primary server. Allows communication between the secondary server and the primary server.
15080 or 15443	RICOH TotalFlow Print server	Used to send printing status to RICOH ProcessDirector.

Ports to open on RICOH ProcessDirector primary and secondary server

Port	Source system	Description
15081	Administrator workstation	Used to import the custom PDF printer definition to the RICOH ProcessDirector server that will be communicating with the printer Only necessary when using custom PDF printers. Most systems do not use custom PDF printers.
15081	Ricoh PDF printer	The job ticket contains reference to a PDF file that the printer retrieves.

Ports to open on the NFS server

Port	Source system	Description
111	RICOH ProcessDirector primary and secondary server	Used by the NFS server and User Name Mapping function when sharing data from the primary server to secondary servers or other systems using NFS.
2049	RICOH ProcessDirector primary and secondary server	Used by the NFS server when sharing data from the primary server to secondary servers or other systems using NFS.

Ports to open on printers

Port	Source system	Description
161	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector gets printer status and information using SNMP.
8010	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector gets printer status and information using SNMP.
9100-9103	RICOH ProcessDirector primary and secondary server	Required when sending jobs to a printer with a EFI Fiery controller using Postscript job tickets.

Ports to open on LDAP server

Port	Source system	Description
389, 636, or other port as configured.	RICOH ProcessDirector primary server	Required when RICOH ProcessDirector is using LDAP to authenticate users.

Ports to open on printers that support JMF interfaces ¹

Port	Source system	Description
80	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector sends IMSS queries using the HTTP protocol.
8010	RICOH ProcessDirector primary and secondary server	Required when sending JMF files to EFI Fiery controllers.
9100 (default) - 9103	RICOH ProcessDirector primary and secondary server	Required when sending jobs to a printer with a EFI Fiery controller using Postscript job tickets. 9100 is the default port. EFI printers use port 9102.

¹These printers are defined in RICOH ProcessDirector as Ricoh PDF Printer objects.

Ports to open on Passthrough printers

Port	Source system	Description
515	RICOH ProcessDirector primary server	Required when receiving jobs from RICOH ProcessDirector using LPR.

Ports to open on IPDS printers

Port	Source system	Description
5001-65535	RICOH ProcessDirector primary server	<p>Required when sending files to RICOH ProcessDirector using Download for z/OS or AFP Download Plus.</p> <p>These port numbers are configured when you create the input devices that receive these jobs. Open these ports after you define the input devices.</p>

Ports to open on a transform server

Port	Source system	Description
6984-6992	RICOH ProcessDirector primary server	Required if you use any of the RICOH Transforms and they are not installed on the primary server. These transforms are not the same as the RICOH ProcessDirector Advanced Transform feature.
16080	Administrator workstation	Access to the Transform Features user interface if using any of the RICOH Transforms.

Ports to open on a PostgreSQL server

Port	Source system	Description
5432	RICOH ProcessDirector primary server and any system accessing RICOH ProcessDirector reports data	<p>Access to PostgreSQL database. By default, the PostgreSQL database is installed on the RICOH ProcessDirector primary computer.</p> <p>Required when using the RICOH ProcessDirector Reports feature.</p>

Ports to open on a DB2 server

Port	Source system	Description
DB2 prior to 11.5.6: 50000 DB2 11.5.6 and higher: 25000	RICOH ProcessDirector primary server	Required when RICOH ProcessDirector uses a DB2 database installed on a different server. These are the default ports used by DB2; the default value changed in Version 11.5.6. If your installation of DB2 uses a different port, open the port you use.

6. Verify network connectivity:

1. To verify that host name resolution is working, enter this command:

```
host localhost
```

If you can access the DNS server, the response includes the host name `localhost` or `loopback` and the address `127.0.0.1`. For example:

```
localhost.mycompany.com is 127.0.0.1
```

2. From all secondary computers (if any), ping the primary computer.
3. From the primary computer, ping all secondary computers (if any).
4. Contact the network administrator if you are not successful with any of these verifications.

Installing the Red Hat or CentOS operating system

1. See the Red Hat or CentOS documentation to install the operating system.

1. Make sure that these components are installed on the secondary computer:

- Two versions of Korn shell: `ksh` and `mksh`
- `binutils`
- `/usr/lib64/libstdc++.so.6`

The 64-bit version of a shared library that RICOH ProcessDirector uses. On Red Hat 7.6 through latest 7.X or CentOS Linux 7.9 through latest 7.X for `x86_64`, the libraries are installed by: `.so.6:libstdc++-4.8.5-4.e17.x86_64`

Note

- The libraries are provided on the operating system installation media or can be downloaded from the Red Hat or CentOS website.
- `libX11.so.6` and its dependent libraries
- Perl interpreter (Perl.rte 5.8.8 or later)
- Zip and unzip utilities

- The fontconfig and freetype libraries
We also strongly recommend installing DejaVu Fonts. OpenJDK requires these libraries to identify available fonts on the system.
2. Create Linux partitions and file systems. See [Planning for file systems, p. 36](#) for recommendations and considerations.
 3. Run these commands and look for the expected results to verify that you installed Red Hat correctly:

Red Hat/CentOS commands and expected results

Command	Expected result
To check the Red Hat release: <pre>cat /etc/redhat-release</pre> To check the CentOS release: <pre>cat /etc/centos-release</pre>	Red Hat Enterprise Linux Server release <i>release_number</i> CentOS Linux release <i>release_number</i> (Core)
To verify that the operating system is 64-bit: <pre>uname -a</pre>	Results that include x86_64 as in this example: <pre>Linux myserver 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64 x86_64 x86_64 GNU/Linux</pre>
To check for the Korn shell packages: <pre>rpm -q ksh</pre> and <pre>rpm -q mksh</pre>	Results resemble this example: <pre>ksh-20120801-19.el7.x86_64</pre> and <pre>mksh-56c-5.el8.x86_64</pre>
To check for binutils: <pre>rpm -q binutils</pre>	Results resemble this example: <pre>binutils-2.30-108.el8.x86_64</pre>
To check for /usr/lib64/libstdc++.so.6: Go to /usr/lib64/ and type: <pre>ls</pre>	The list of files must include this exact entry: <pre>/usr/lib64/libstdc++.so.6</pre> The list might link that entry to this one: <pre>/usr/lib64/libstdc++.so.6.0.13</pre>
To check for libX11.so.6: <pre>rpm -qa grep -i X11</pre> <pre>ls -l /usr/lib*/libX11*</pre>	Results include a collection of libraries with the text X11 in the name, such as: <pre>libX11-1.6.5-2.el7.x86_64</pre> <pre>libX11-common-1.6.5-2.el7.noarch</pre> <pre>libxkbcommon-x11-0.7.1-1.el7.x86_64</pre> <pre>xorg-x11-font-utils-7.5-21.el7.x86_64</pre> <pre>xorg-x11-xinit-1.3.4-2.el7.x86_64</pre>

Command	Expected result
	If fewer than five results are returned, not all of the dependencies are installed. Install the libX11 libraries again, making sure to install all of the dependencies.
To check the version of Perl that is installed: <code>rpm -q perl</code>	Results resemble this example: <code>perl-5.16.3-283</code>
To verify that the libraries for font support are installed: <ul style="list-style-type: none"> <code>rpm -qa grep fontconfig</code> <code>rpm -qa grep freetype</code> <code>rpm -qa grep -i dejavu</code> 	Results resemble these examples: <ul style="list-style-type: none"> <code>fontconfig-2.13.0-4.3.e17.x86_64</code> <code>freetype-2.8-14.e17.x86_64</code> <code>dejavu-fonts-common-2.35-7.e18.noarch</code> If no results are returned, you must install the missing library or fonts. To install all three, type: <code>yum install freetype fontconfig dejavu-sans-fonts</code>
To check the versions of zip and unzip that are installed: <code>rpm -q zip</code> <code>rpm -q unzip</code>	Results resemble these examples: <code>zip-3.0-1.e16.x86_64 (typical)</code> <code>unzip-6.0-1.e16.x86_64 (typical)</code>
<code>getconf GNU_LIBPTHREAD_VERSION</code>	Results indicate version 2.17 or higher: <code>NPTL 2.17</code>
To verify the RPM files that printer objects require: <code>rpm -qa grep system-config-printer</code>	The list of results should include: <code>system-config-printer</code> <code>system-config-printer-libs</code> <code>system-config-printer-udev</code> <div style="border: 1px solid #0070C0; border-radius: 10px; padding: 2px; display: inline-block;"> Note</div> <ul style="list-style-type: none"> <code>system-config-printer</code> does not appear in the list on Red Hat 8.1 through latest 8.X
If you are going to print with AFP printers whose parent server is a Linux server, the portmap utility must be installed and running. <code>rpcinfo -p</code>	A response that includes portmap, such as: <code>program vers proto port</code> <code>100000 4 tcp 111 portmapper</code>

Command	Expected result
To check the status for SELinux: getenforce	Disabled
<p>Note</p> <ul style="list-style-type: none"> If you have installed a later version of a prerequisite, the version number returned varies. 	

If the command results are not as you expect, use the operating system tools to make sure that you have installed the required components (see step 1).

4. Verify date, time, and time zone settings, and correct if necessary. To display the settings, type:


```
timedatectl
```
5. Set up networking based on system networking information:
 1. Make sure that RICOH ProcessDirector has access to a Domain Name System (DNS) server. The DNS server must have correct entries for the host name and IP address of each RICOH ProcessDirector primary and application/secondary computer on the network.

Note

- RICOH ProcessDirector supports both IPv4 and IPv6 protocols. If you use IPv4, IP addresses can be expressed using dotted-decimal addresses or the fully qualified host name. If you use IPv6, you must use the fully qualified host name of the server.
2. In your firewall, open any ports that RICOH ProcessDirector uses. Depending on your configuration, you might need these ports:

Ports to open on the RICOH ProcessDirector primary server

Port	Source system	Description
15080	User workstation	Access to the RICOH ProcessDirector user interface if not using TLS.
15090	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager interface if not using TLS.
15443	User workstation	Access to the RICOH ProcessDirector user interface if using TLS.
15453	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager user interface if using TLS.
515	Customer application	Required when sending jobs to RICOH ProcessDirector using LPR.
5001-65535	Customer mainframe	Required when sending jobs to RICOH ProcessDirector using

Port	Source system	Description
		Download for z/OS or AFP Download Plus. The port numbers defined in RICOH ProcessDirector must match the port numbers defined as printers on the mainframe.
55555	RICOH ProcessDirector secondary server	Required if you use secondary servers that are not defined on the same system as the primary server. Allows communication between the secondary server and the primary server.
15080 or 15443	RICOH TotalFlow Print server	Used to send printing status to RICOH ProcessDirector.

Ports to open on RICOH ProcessDirector primary and secondary server

Port	Source system	Description
15081	Administrator workstation	Used to import the custom PDF printer definition to the RICOH ProcessDirector server that will be communicating with the printer Only necessary when using custom PDF printers. Most systems do not use custom PDF printers.
15081	Ricoh PDF printer	The job ticket contains reference to a PDF file that the printer retrieves.

Ports to open on the NFS server

Port	Source system	Description
111	RICOH ProcessDirector primary and secondary server	Used by the NFS server and User Name Mapping function when sharing data from the primary server to secondary servers or other systems using NFS.
2049	RICOH ProcessDirector primary and secondary server	Used by the NFS server when sharing data from the primary server to secondary servers or other systems using NFS.

Ports to open on printers

Port	Source system	Description
161	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector gets printer status and information using SNMP.
8010	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector gets printer status and information using SNMP.
9100-9103	RICOH ProcessDirector primary and secondary server	Required when sending jobs to a printer with a EFI Fiery controller using Postscript job tickets.

Ports to open on LDAP server

Port	Source system	Description
389, 636, or other port as configured.	RICOH ProcessDirector primary server	Required when RICOH ProcessDirector is using LDAP to authenticate users.

Ports to open on printers that support JMF interfaces ¹

Port	Source system	Description
80	RICOH ProcessDirector primary and secondary server	Required when RICOH ProcessDirector sends IMSS queries using the HTTP protocol.
8010	RICOH ProcessDirector primary and secondary server	Required when sending JMF files to EFI Fiery controllers.
9100 (default) - 9103	RICOH ProcessDirector primary and secondary server	Required when sending jobs to a printer with a EFI Fiery controller using Postscript job tickets. 9100 is the default port. EFI printers use port 9102.

¹These printers are defined in RICOH ProcessDirector as Ricoh PDF Printer objects.

Ports to open on Passthrough printers

Port	Source system	Description
515	RICOH ProcessDirector primary server	Required when receiving jobs from RICOH ProcessDirector using LPR.

Ports to open on IPDS printers

Port	Source system	Description
5001-65535	RICOH ProcessDirector primary server	<p>Required when sending files to RICOH ProcessDirector using Download for z/OS or AFP Download Plus.</p> <p>These port numbers are configured when you create the input devices that receive these jobs. Open these ports after you define the input devices.</p>

Ports to open on a transform server

Port	Source system	Description
6984-6992	RICOH ProcessDirector primary server	Required if you use any of the RICOH Transforms and they are not installed on the primary server. These transforms are not the same as the RICOH ProcessDirector Advanced Transform feature.
16080	Administrator workstation	Access to the Transform Features user interface if using any of the RICOH Transforms.

Ports to open on a PostgreSQL server

Port	Source system	Description
5432	RICOH ProcessDirector primary server and any system accessing RICOH ProcessDirector reports data	<p>Access to PostgreSQL database. By default, the PostgreSQL database is installed on the RICOH ProcessDirector primary computer.</p> <p>Required when using the RICOH ProcessDirector Reports feature.</p>

Ports to open on a DB2 server

Port	Source system	Description
DB2 prior to 11.5.6: 50000 DB2 11.5.6 and higher: 25000	RICOH ProcessDirector primary server	Required when RICOH ProcessDirector uses a DB2 database installed on a different server. These are the default ports used by DB2; the default value changed in Version 11.5.6. If your installation of DB2 uses a different port, open the port you use.

6. Verify network connectivity:

1. To verify that host name resolution is working, enter this command:

```
host localhost
```

If you can access the DNS server, the response includes the host name `localhost` or `loopback` and the address `127.0.0.1`. For example:

```
localhost.infoprint.com is 127.0.0.1
```

2. From all application/secondary computers (if any), ping the primary computer.
3. From the primary computer, ping all application/secondary computers.
4. Contact the network administrator if you are not successful with any of these verifications.

Installing a Windows Operating System

When you install a Windows operating system, you must choose the correct mode to run in and open the correct ports in the firewall.

RICOH ProcessDirector can be installed on these operating systems:

- Windows Server 2019 64-bit
- Windows Server 2022 64-bit
- Windows 10 Pro or Enterprise 64-bit
- Windows 11 Pro

To install a Windows operating system:

- See the Windows documentation to install the appropriate operating system. When you are asked to choose 32-bit or 64-bit mode, choose 64-bit mode for the Windows operating system. RICOH ProcessDirector is not compatible with 32-bit mode.

Make sure that User Account Control (UAC) is set to **OFF**. You can turn it back on when the installation is complete.

- RICOH ProcessDirector supports both IPv4 and IPv6 protocols. If you use IPv4, IP addresses can be expressed using dotted-decimal addresses or the fully qualified host name. If you use IPv6, you must use the fully qualified host name of the server.

Note

- If you use an IPv6 address, you must complete additional configuration steps after you install RICOH ProcessDirector. See [Configuring to use IPv6 addresses, p. 135](#).
- In your firewall, open any ports that RICOH ProcessDirector uses. You must open this port:
 - 15080 for inbound connections on the computer that RICOH ProcessDirector is installed on. Other computers use this port to connect to the RICOH ProcessDirector service.

Depending on your configuration, you might also need these ports:

Ports to open on the RICOH ProcessDirector primary server

Port	Source system	Description
15080	User workstation	Access to the RICOH ProcessDirector user interface if not using TLS.
15090	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager interface if not using TLS.
15443	User workstation	Access to the RICOH ProcessDirector user interface if using TLS.
15453	Administrator workstation	Access to the RICOH ProcessDirector Feature Manager user interface if using TLS.
515	Customer application	Required when sending jobs to RICOH ProcessDirector using LPR.
5001-65535	Customer mainframe	Required when sending jobs to RICOH ProcessDirector using Download for z/OS or AFP Download Plus. The port numbers defined in RICOH ProcessDirector must match the port numbers defined as printers on the mainframe.
55555	RICOH ProcessDirector secondary server	Required if you use secondary servers that are not defined on the same system as the primary server. Allows communication between the secondary server and the primary server.
15080 or 15443	RICOH TotalFlow Print server	Used to send printing status to RICOH ProcessDirector.

Ports to open on RICOH ProcessDirector primary and secondary server

Port	Source system	Description
15081	Administrator workstation	Used to import the custom PDF printer definition to the RICOH ProcessDirector server that will be communicating with the printer Only necessary when using custom PDF printers. Most systems do not use custom PDF printers.
15081	Ricoh PDF printer	The job ticket contains reference to a PDF file that the printer retrieves.

Ports to open on the NFS server

Port	Source system	Description
111	RICOH ProcessDirector primary and secondary server	Used by the NFS server and User Name Mapping function when sharing data from the primary server to secondary servers or other systems using NFS.
2049	RICOH ProcessDirector primary and secondary server	Used by the NFS server when sharing data from the primary server to secondary servers or other systems using NFS.

Ports to open on printers

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Ports to open on printers that support JMF interfaces ¹

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9100 (default) - 9103	RICOH ProcessDirector primary and secondary server	Required when sending jobs to a printer with a EFI Fiery controller using Postscript job tickets. 9100 is the default port. EFI printers use port 9102.

¹These printers are defined in RICOH ProcessDirector as Ricoh PDF Printer objects.

Ports to open on Passthrough printers

Port	Source system	Description
515	RICOH ProcessDirector primary server	Required when receiving jobs from RICOH ProcessDirector using LPR.

Ports to open on IPDS printers

Port	Source system	Description
5001-65535	RICOH ProcessDirector primary server	Required when sending files to RICOH ProcessDirector using Download for z/OS or AFP Download Plus. These port numbers are configured when you create the input devices that receive these jobs. Open these ports after you define the input devices.

Ports to open on a transform server

Port	Source system	Description
6984-6992	RICOH ProcessDirector primary server	Required if you use any of the RICOH Transforms and they are not installed on the primary server. These transforms are not the same as the RICOH ProcessDirector Advanced Transform feature.
16080	Administrator workstation	Access to the Transform Features user interface if using any of the RICOH Transforms.

Ports to open on a PostgreSQL server

Port	Source system	Description
5432	RICOH ProcessDirector primary server and any system accessing RICOH ProcessDirector reports data	Access to PostgreSQL database. By default, the PostgreSQL database is installed on the RICOH ProcessDirector primary computer. Required when using the RICOH ProcessDirector Reports feature.

Ports to open on a DB2 server

Port	Source system	Description
DB2 prior to 11.5.6: 50000 DB2 11.5.6 and higher: 25000	RICOH ProcessDirector primary server	Required when RICOH ProcessDirector uses a DB2 database installed on a different server. These are the default ports used by DB2; the default value changed in Version 11.5.6. If your installation of DB2 uses a different port, open the port you use.

The language that RICOH ProcessDirector runs in depends on the browser that you use to access it. To change the language, you have to change the language of the operating system.

Installing DB2

You can use the version of DB2 that is supplied with RICOH ProcessDirector, or you can install your own copy of DB2. Your own copy can be installed on the same computer as the RICOH ProcessDirector base product, or on a different AIX or Linux computer.

To install your own copy on the primary computer and use them together, your copy must be either:

- DB2 10.5 Fix Pack 5 or later
- DB2 11.1 Fix Pack 1 or later
- DB2 11.5.8 or later

If you have a different release of DB2, you cannot use it with RICOH ProcessDirector.

Installing the RICOH ProcessDirector version of DB2

Use the RICOH ProcessDirector version of DB2 if you have no other applications that require DB2. Only RICOH ProcessDirector can use this version.

The RICOH ProcessDirector version of DB2 is installed automatically when you install the RICOH ProcessDirector base product on a computer where no other version of DB2 is installed. If another compatible version of DB2 is installed, you can choose whether to install and use the RICOH ProcessDirector version of DB2 or to use the other version of DB2.

To work together, DB2 and RICOH ProcessDirector require several system users and groups. You should never log in as these users, but you might need to recognize them for recordkeeping and security.

Choose one of these three ways to create and specify which users and groups the applications should use:

- Before you start the installation program, create the users and groups. Then, during the installation process, enter the names of the users and groups that you created. RICOH ProcessDirector finds and uses them.
See [Creating system groups and users, p. 43](#) for information about required users and groups.
- During the installation process, enter different names for the users and groups and let RICOH ProcessDirector create them.
- During the installation process, let RICOH ProcessDirector create the users and groups using the default values.

The default users and groups are:

DB2 instance user

aiwinst

DB2 instance group

aiwdbgrp

DB2 fenced user

aiwdbfid

DB2 fenced group

aiwdbfgp

Note

- If you set up passwords with expiration rules for these user IDs, you must administer those IDs as needed. If you do not change the passwords as needed and they expire, RICOH ProcessDirector stops working.

When you install RICOH ProcessDirector, the installation program creates a DB2 instance and user ID using the value you enter for the **DB2 instance user**. There must be no other DB2 instance or user ID with this name on the RICOH ProcessDirector system, even in a different version of DB2.

Installing your own copy of DB2 on the primary computer

Use your own copy of DB2 on the same computer as RICOH ProcessDirector if:

- You have other applications that require DB2 on that computer.
- You already have a DB2 license for the computer that you want to use with RICOH ProcessDirector.
- You want to manage DB2 outside RICOH ProcessDirector.

You must install DB2 10.5 Fix Pack 5 or later, DB2 11.1 Fix Pack 1 or later, or DB2 11.5.8 or later before you install RICOH ProcessDirector.

When you install RICOH ProcessDirector, the installation program configures the existing version of DB2. It creates a DB2 instance for RICOH ProcessDirector to use. No other application should use this DB2 instance.

To work together, DB2 and RICOH ProcessDirector require several system users and groups. You should never log in as these users, but you might need to recognize them for recordkeeping and security.

Choose one of these three ways to create and specify which users and groups the applications should use:

- Before you start the installation program, create the users and groups. Then, during the installation process, enter the names of the users and groups that you created. RICOH ProcessDirector finds and uses them.
See [Creating system groups and users, p. 43](#) for information about required users and groups.
- During the installation process, enter different names for the users and groups and let RICOH ProcessDirector create them.
- During the installation process, let RICOH ProcessDirector create the users and groups using the default values.

The default users and groups are:

DB2 instance user

aiwinst

DB2 instance group

aiwdbgrp

DB2 fenced user

aiwdbfid

DB2 fenced group

aiwdbfgp

If you plan to install a configuration that includes two primary computers (an active and a backup), you must install DB2 on each computer. In addition, you must use the same user IDs and user groups on both computers.

2

Installing and configuring your own copy of DB2 on a different computer

Use your own DB2 server on a different computer and a DB2 client on the same computer as RICOH ProcessDirector if:

- You have other applications that already use DB2 on another computer.
- You already have a DB2 license for another computer that you want to use with RICOH ProcessDirector.
- You want to manage DB2 outside RICOH ProcessDirector.
- You want to use the same DB2 server with several RICOH ProcessDirector primary servers.

The DB2 client and server do not have to be on the same operating system, but they must be at the same level and fix pack. RICOH ProcessDirector only supports using DB2 10.5 Fix Pack 5 or later, or DB2 11.1 Fix Pack 1 or later in this configuration.

★ Important

- On Linux, the DB2 server requires a 64-bit operating system.

Before you install RICOH ProcessDirector, you must install and configure a DB2 server on the other computer and a DB2 client on the primary computer. If you are installing a manual failover configuration, you must install the DB2 client on both the active and the backup computers.

To install and configure the DB2 server and client:

1. Install DB2 10.5 Fix Pack 5 or later or DB2 11.1 Fix Pack 1 or later using the installation instructions provided with DB2.
In the **Set up a DB2 instance** window, choose the option to defer this task until later.
2. Verify that the computer that the DB2 server is installed on meets the memory and disk requirements to support RICOH ProcessDirector, keeping these issues in mind:
 - Each RICOH ProcessDirector primary server that connects to this DB2 server must use a separate directory on the DB2 server to store its databases. Each of those directories must have 22 GB of space available. By default, the primary servers use the home directory for their instance user to store their databases. If you use the default setting, make sure that the home directory for the instance user is large enough.
However, in a manual failover configuration, the active and the backup computers share a DB2 instance. As a result, they both use the same directory and only require 22 GB of space, not 44 GB.

- If you change the directory that the instance uses to store its databases, make sure that the home directory for each instance user has at least 300 MB of space available.
3. Use the provided script to configure DB2 to work with each RICOH ProcessDirector primary server that connects to it. This configuration includes: creating a DB2 instance for RICOH ProcessDirector to communicate with; tuning the instance; creating the required groups and users (if needed); and starting the instance.

The script is included in the `/scripts` directory on the RICOH ProcessDirector base product DVD.

To configure the DB2 server:

1) Insert the base product DVD in the drive and go to the `/scripts` directory.

2) Type this command to run the script:

```
./setupRemoteDB2.sh
```

Respond to the prompts as required:

- When the script asks for the DB2 instance name, type an instance name to use with one of your primary servers.
Each primary server must have a unique DB2 instance. The default instance name is **aiwinst**; you can use this name with one of your primary servers. Record the instance name and password to use when you install RICOH ProcessDirector.
- When the script asks for the **DB2 instance group** and the **DB2 fenced user group**, you can choose the default group or another existing group, or specify a new group to be created. The defaults are:

DB2 instance group

aiwdbgrp

DB2 fenced group

aiwdbfgp

The instance user uses the DB2 instance group as its primary group; the DB2 fenced user uses the DB2 fenced user group as its primary group. If you are unsure which group to use, consult your DB2 administrator.

- When the script asks for the **DB2 fenced user name**, you can choose the default user or another existing user, or specify a new user to be created. The default is **aiwdbfid**. If you are unsure which user to use, consult your DB2 administrator. You should never log in as this user, but you might need to recognize it for recordkeeping and security.
 - When the script asks for a DB2 instance port number, enter the port that you want DB2 to listen on for the primary server that uses this instance. The port number must be less than 65536. Record the port number to use when you install RICOH ProcessDirector.
- 3) On the DB2 server computer, run the script again for each primary server that will connect to DB2.

↓ Note

- If you are configuring a manual failover environment, the backup computer shares the DB2 instance with the active computer. Do not run the script again for a backup computer.
- 4) Record the host name or IP address of the computer that DB2 is installed on.

4. Install the DB2 client on each of the computers that you plan to install RICOH ProcessDirector on, including any backup computers. Use the DB2 installation CD and choose the **IBM Data Server Runtime Client**.
In the **Set up a DB2 instance** window of the installer, choose the option to defer this task until later.
After the installation finishes, make sure the same DB2 Fix Pack that is installed on the client is also installed on the server.
5. Continue installing RICOH ProcessDirector using the instructions in [Installing, p. 99](#).

Installing a Web browser

RICOH ProcessDirector requires a Web browser to access and display its user interface. You can access the user interface from the primary computer or from another computer. One of these browsers must be installed and configured on the computer where you access the user interface:

- Most recent version of Mozilla Firefox
- Most recent version of Google Chrome
- Most recent version of Microsoft Edge based on Chromium

The user interface has a Web-based file viewer that requires a PDF viewer plug-in to display AFP or PDF files so you can select pages to reprint. To view print files, you can use an Acrobat plugin or the default PDF viewers that are included with Firefox and Chrome. A supported version of Adobe Reader must be installed on the computer where you are accessing the user interface:

Adobe Reader requirements for the file viewer

On system:	Software required:	Obtain from:
Windows	Adobe Reader 10, 11, or DC	Adobe website . The website tries to detect the operating system and language that your system is running. If you want to download the software in a different language, click Do you have a different language or operating system?

↓ Note

- To view jobs that use double-byte fonts using an Acrobat plugin in RICOH ProcessDirector, be sure that the font package for the Adobe Reader is installed on your system. This package is available from the [Adobe website](http://supportdownloads.adobe.com/product.jsp?platform=windows&product=10) (<http://supportdownloads.adobe.com/product.jsp?platform=windows&product=10>).
- Use the latest versions of the Firefox and Chrome browsers to get better functionality from their default PDF viewers.

Configuring Google Chrome

To access the RICOH ProcessDirector user interface from the Google Chrome Web browser, configure the browser with these settings:

1. In the Chrome address bar, enter: `chrome://settings/`
2. Under Privacy and security:
 1. Click Cookies and other site data and select Allow all cookies.
 2. Go back to Privacy and security and click Site settings. Scroll down to Content and click JavaScript. Make sure **Sites can use Javascript** is turned on.
3. If you want to use the viewer component of RICOH ProcessDirector, you must verify that Chrome is configured to open PDF files in its built-in PDF viewer:
 1. In the Chrome address bar, enter: `chrome://settings/content/pdfDocuments`
 2. Make sure that the **Open PDFs in Chrome** is selected.
Some actions (such as highlighting search text or using small or large zoom values) do not function properly when you use the built-in viewer with RICOH ProcessDirector.
4. Close the settings tab.

Configuring Mozilla Firefox

To access the RICOH ProcessDirector user interface from a Windows computer with the Mozilla Firefox Web browser, you must configure the browser.

★ Important

The instructions to configure your version of Mozilla Firefox might differ from the instructions below. If any of the instructions do not work with your version of Firefox, click **Help** → **Help** and search the Firefox help system. For example, search for `enable javascript`. As an alternative, use a search engine. For example, search for `Firefox enable javascript`.

To configure Mozilla Firefox:

1. In the Firefox address bar, enter: `about:config`.
2. Click **I accept the risk!**.
3. To verify that Javascript is enabled:
 1. Find the **javascript.enabled** preference.
 2. Make sure the value is set to **True**.
If the value is set to **False**, double-click the **javascript.enabled** preference to change the value to **True**.
4. If you want to use the RICOH ProcessDirector right-click context menu, verify that the menu is enabled:
 1. Find the **dom.event.contextmenu.enabled** preference.
 2. Make sure the value is set to **True**.

If the value is set to **False**, double-click the **dom.event.contextmenu.enabled** preference to change the value to **True**.

5. Close the **about:config** tab.
6. Click **Menu Button** → **Options**.
7. To make sure that Firefox can accept cookies:
 1. Click the **Privacy & Security**  tab.
 2. In **History**, select **Use custom settings for history** to tailor cookies. Ensure **Accept cookies from sites** is selected.
8. **Optional:** To change how files are downloaded:
 1. Click the **General**  tab.
 2. In the Downloads area, select **Always ask you where to save files**.
9. **Optional:** If the Language feature is installed, you can change the language that RICOH ProcessDirector uses for the user interface text and most of the messages that it issues:
 1. In **Language**, click **Choose** and follow the instructions to add your language to the top of the list. Then click **OK**.

 **Note**

RICOH ProcessDirector supports these languages and locales:

- Brazilian Portuguese (pt_BR)
- English (en_US)
- French (fr_FR)
- German (de_DE)
- Italian (it_IT)
- Japanese (ja_JP)
- Spanish (es_ES)

10. **Optional:** When you install Firefox, it is configured to use a built-in PDF viewer. You can use the built-in PDF Viewer with RICOH ProcessDirector, but some actions (such as zoom and highlighting search text) might not function properly.

In some cases, using a different plugin provides more functionality. Depending on the version of Firefox that you are running, you might need to try different options to find one that works with the RICOH ProcessDirector viewer.

To set up the browser to use a different plugin for the viewer, do these steps:

1. In **Applications**, go to the **Content Type** list, find **Portable Document Format (PDF)**, and select it.
2. Next to **Portable Document Format (PDF)**, select the PDF plug-in you want to use.
3. Try to view a job in RICOH ProcessDirector to see if it meets your needs.
4. Repeat this process until you find the plugin that works best for you.

11. **Optional:** In general, we do not recommend logging in to RICOH ProcessDirector as more than one user from the same workstation. If you do, each user must log in to a different browser session. To make this possible, you must create a browser profile for each additional user ID and enable Firefox to use more than one profile at a time:

1. Close Firefox.
2. Click **Start** → **Run**.
3. Enter this command:

```
firefox.exe -ProfileManager
```

4. Follow the instructions in the Profile Manager to create a new profile.
5. In the Windows Control Panel, click **System** → **Advanced system settings** → **Environment Variables**.
6. In the System Variables area, click **New**.
7. In the **Variable name** field, type MOZ_NO_REMOTE.
8. In the **Variable value** field, type 1.
9. Click **OK** to close the New System Variable window.
10. Click **OK** to close the Environment Variables window.
11. Click **OK** to close the System Properties window.

Whenever you start Firefox, you will be able to choose a profile that is not already in use.

Running the prerequisite checker

Use the prerequisite checker to verify that your system is ready to install RICOH ProcessDirector.

↓ Note

- By default, the prerequisite checker log file is stored in this directory: `/opt/infoprint/ippd/logs/installer/prereq.out`

To run the prerequisite checker:

1. Log in to the primary computer as the root user.

★ Important

- You must log in as a user with UID 0. If you must log in as a different user, you can use `sudo su -` or `su -` to become the root user. However, do not use `sudo` or the `su` command in any other way to become the root user.
2. Open a command line and enter this command to make sure that you are in the root directory:


```
cd /
```
 3. If you are installing from a product DVD:
 1. Insert the base product DVD in the drive.
 2. If you already have a CD file system defined (named `/cdrom`, for example), you can insert the disk and enter:

```
mount /cdrom
```

To determine if you already have a file system defined, enter:

```
/usr/sbin/lfs | grep cdrfs | awk '{print $3}'
```

3. If you do not have a CD file system present, you can create one.

- 1) Determine the name of the CD device by entering: `lsdev -Cc cdrom`

- 2) Create the CD file system for device '**cd0**' at mount point '**/cdrom**' by entering: `/usr/sbin/crfs -v cdrfs -p ro -d'cd0' -m'/cdrom'`

4. To determine the name of the mount point, enter:

```
ls /media
```

On some systems, the name of the mount point is the same as the name of the CD or DVD.

5. Mount the drive, if necessary. Enter:

```
mount /media/mount_point
```

6. Change directories so you can see the contents of the DVD. Enter these commands:

```
cd /media/mount_point
```

```
ls
```

You see several scripts and directories, including a script called **setup**.

4. If you are installing from a mounted ISO file:

1. Enter this command: `ulimit -f unlimited`.

2. Transfer the ISO file to the computer. For example, place the file in the `/aiw` directory.

3. Create a directory for the ISO file: `mkdir /iso`

4. Mount the ISO file:

```
loopmount -i <filename.iso> -o "-V cdrfs -o ro" -m /iso
```

For example:

```
loopmount -i aiw_aix.iso -o "-V cdrfs -o ro" -m /iso
```

5. Before you run the setup script, change directories: `cd /iso`

5. If you are installing from a TAR file:

1. If you downloaded the TAR file, go to the folder where you downloaded the TAR file.

```
cd /<tar file download directory>
```

2. To expand the TAR file, enter:

```
tar -xvf <tar file name>
```

6. To start the prerequisite checker, enter:

- For a DVD-based installation:

```
/cdrom/setup -p PREREQ_ONLY=TRUE
```

- For a TAR-based installation:

```
setup -p PREREQ_ONLY=TRUE
```

Note

Make sure that you enter the command for the prerequisite checker correctly. If it is not entered correctly, the RICOH ProcessDirector installer runs instead of the prerequisite checker.

7. If you are installing from a remote directory:
 1. Follow the instructions in [Installing from a remote directory, p. 104](#). Return and complete this procedure after you go to the mounted directory.

If your system has all the prerequisites installed, the prerequisite checker exits without a message. If your system does not have all the prerequisites installed, a message is displayed showing the missing prerequisites. Refer to the prerequisite checker logs for more information. By default, the log file is stored in this directory: `/opt/infoprint/ippd/logs/installer/prereq.out`

2

Planning for optional software

You can install optional software to be used with RICOH ProcessDirector. The categories of optional software are:

- Job submission
- Data transforms
- InfoPrint Manager for AIX
- Fonts
- Formatting changes to PDF banner pages

Job submission

RICOH ProcessDirector can receive jobs from any system that can send jobs to hot folders or from any system that can use the LPD protocol or **pdpr** command. If you have the AFP Support feature, RICOH ProcessDirector can receive jobs from the Job Entry Subsystem (JES) spool on a z/OS host. Jobs are submitted to input devices that you define in RICOH ProcessDirector. Input devices receive the jobs and then initiate job processing.

The supported job submission methods are:

Hot folders

Receives print files through File Transfer Protocol (FTP) or your preferred file copying method. When you copy or move a print file to the hot folder directory, the input device that is associated with the hot folder automatically receives the job and initiates job processing.

LPD

Receives jobs that are submitted using the line printer daemon (LPD) protocol. Users can use the **lpr** command or another command that uses the LPD protocol to submit jobs to a RICOH ProcessDirector LPD input device. The input device automatically receives the job and initiates job processing.

pdpr

If you are migrating from InfoPrint Manager and you use the **pdpr** command to submit jobs, you can configure RICOH ProcessDirector to accept jobs from the **pdpr** command. The RICOH ProcessDirector **pdpr** script creates an **lprafp** command to submit jobs, adding flags to send supported job property values to the primary server.

If you have the AFP Support feature, these job submission methods are also supported:

AFP Download Plus

Converts line data to AFP data and transmits the print job with all required resources across the TCP/IP network from the host system to RICOH ProcessDirector for printing.

Download for z/OS

Automatically transmits output across the TCP/IP network from the host system to RICOH ProcessDirector for printing or archiving.

Download for z/OS and AFP Download Plus are separately ordered features of PSF for z/OS. For information about PSF for z/OS and its features, see the IBM website (<http://www.ibm.com>).

In addition to deciding which job submission methods to use, you need to determine the naming convention for the job submission directories on the primary computer where you want the input files to be. You must specify these directories when you create an input device:

Folder location directory

The name of the directory that an input device monitors for incoming jobs. For example, `/aiw/aiw1/System/hf/LineData` for hot folder jobs, `/aiw/aiw1/System/lpd/LPDLineData` for LPD jobs, or `/aiw/aiw1/System/d1/AFP` for Download for z/OS or AFP Download Plus jobs.

Staging location directory

The name of the directory where the job submission method places the input file. Consider creating a subdirectory of the folder location directory. For example, `/aiw/aiw1/System/hf/LineData/Staged` for line data input files received from hot folders or `/aiw/aiw1/System/d1/AFP/Staged` for AFP input files received from Download for z/OS or AFP Download Plus.

Note

- Let RICOH ProcessDirector create these directories automatically with the correct ownership when it creates an input device. Do not create the directories yourself.

Each directory must provide read and write access to a group that the RICOH ProcessDirector system user (**aiw1** is the default) is a member of so that RICOH ProcessDirector can read and modify the input files. One option is to use the RICOH ProcessDirector group (**aiwgrp1** is the default). For more information about the RICOH ProcessDirector group, see [Creating system groups and users, p. 43](#) and [Completing post-installation tasks, p. 133](#).

Before you use Download for z/OS or AFP Download Plus with RICOH ProcessDirector, you must configure the software to communicate with RICOH ProcessDirector. Some of the configuration tasks include:

- Define a JES initialization statement for a functional subsystem application (FSA).
- Create a startup procedure to identify program name, region size, and printing defaults for the FSA.
- For Download for z/OS, create a routing control data set that points to the IP address of the primary computer and port number of the input device.
- For AFP Download Plus, define a Startup Procedure to point to the IP address of the primary computer and port number of the input device.
- Use installation exits, if necessary, for modifications to software functions. Both Download for z/OS and AFP Download Plus can use installation Exit 15, which transmits additional print parameters to RICOH ProcessDirector.

See the RICOH ProcessDirector information center for information about these topics:

- Copying files to hot folders or sending files using the LPD protocol.
- Installing and configuring the RICOH ProcessDirector **pdpr** script.
- Configuring Download for z/OS and AFP Download Plus with RICOH ProcessDirector.

For information about configuring Download for z/OS and AFP Download Plus, see *PSF for z/OS: Download for z/OS* and *PSF for z/OS: AFP Download Plus*.

2

Data transforms

Data transforms receive print jobs from RICOH ProcessDirector and transform the data from one data stream to another so that it can be printed.

You can purchase RICOH ProcessDirector features that are used to transform jobs from one datastream to another. You can also purchase external programs and connect them to RICOH ProcessDirector.

Products and features that provide data transforms

Product	Data streams transformed to AFP	Data streams transformed from AFP	Other transforms	Information
RICOH Transform features	<ul style="list-style-type: none"> • GIF, JPEG, and TIFF • PCL • PDF and PostScript • SAP OTF and ABAP 	<ul style="list-style-type: none"> • PDF 		RICOH Transform feature information center
Advanced Transform feature	<ul style="list-style-type: none"> • PCL • PDF • PostScript 	<ul style="list-style-type: none"> • PCL • PDF • PostScript 	<ul style="list-style-type: none"> • Input-Image BMP, GIF, JPEG, PNG, and TIFF <p>When you send jobs with image files included in AFP object containers, you must install an input data stream transform to process them correctly. For example, for</p>	<p>When you order the Advanced Transform feature, you choose the input data stream and output data stream transforms that you need. Then, you can combine them as needed.</p> <p>For example, if you choose the InputAFP, InputPS, the OutputPDF, and the OutputPCL transforms, you can convert:</p> <ul style="list-style-type: none"> • AFP to PDF • AFP to PCL • PostScript to PDF • PostScript to PCL

Product	Data streams transformed to AFP	Data streams transformed from AFP	Other transforms	Information
			<p>AFP files containing images, you must use the InputImage transform. When installed, the InputImage transform automatically handles images in these formats.</p>	
<p>RICOH InfoPrint Manager for AIX</p>	<ul style="list-style-type: none"> • DBCS, ASCII, and EUC • ditroff • GIF, image, JPEG, and TIFF • Line data and ASCII data • PCL • PDF and PostScript • PPML • SAP OTF and ABAP • XML 	<p>PDF</p>	<p>XML to PDF</p>	<p><i>InfoPrint Manager: Reference</i></p>
<p>RICOH InfoPrint XT for AIX (installed on the same computer as the base product or on a secondary computer)</p>	<p>Xerox metacode and LCDS</p>			<p><i>RICOH InfoPrint XT for AIX: Installation and User's Guide</i></p>

Product	Data streams transformed to AFP	Data streams transformed from AFP	Other transforms	Information
RICOH InfoPrint XT for Linux (installed on a secondary computer)	Xerox metacode and LCDS			<i>RICOH InfoPrint XT for Linux: Installation and User's Guide</i>
RICOH InfoPrint XT for Windows (installed on an application server)	Xerox metacode and LCDS			<i>RICOH InfoPrint XT for Windows: Installation and User's Guide</i>

For more information about these RICOH software products, see the RICOH Software web site: <https://ricohsoftware.com>.

For information about using an external step in a workflow to use data transforms, see the RICOH ProcessDirector information center in the user interface.

Preparing to install RICOH Transform features

Before you install a RICOH Transform features, make sure your system meets the minimum requirements.

- Hardware requirements:
 - Minimum of an extra 10 GB free hard-drive space.
 - An extra 1 GB RAM for every CPU core, but no less than 4 GB.
For example, if the computer has:
 - One dual-core processor, it must have an extra 4 GB RAM.
 - Two quad-core processors, it must have an extra 8 GB RAM.
 - Three quad-core processors, it must have an extra 12 GB RAM.
 - Four quad-core processors, it must have an extra 16 GB RAM.
- File systems for the primary computer:
 - 1 GB additional free space in the RICOH ProcessDirector /opt file system.
- Required software:

WorldType Fonts version 8.13 for RICOH SAP to AFP files to transform correctly when IS/3 support is enabled.

Java Runtime Environment 1.4 or higher.

To install the **PDF to AFP** transform on an AIX operating system, XL C/C++ Runtime 16.1.0.3 or newer is required. Make sure that the fileset contains the install packages for both xLC and C++.

- System and network setup:
 1. Determine the number of nodes that the RICOH Transform features will use.

This value is based on the number of processor cores in the computer where you want to install the Transform feature. The value is **2** or half of the cores in the computer, whichever is larger. For example, if the computer has:

- One single-core processor, the number of nodes is **2**.
- One dual-core processor, the number of nodes is **2**.
- Two dual-core processors, the number of nodes is **2**.
- Two quad-core processors, the number of nodes is **4**.
- Four quad-core processors, the number of nodes is **8**.

2. In your firewall, open the ports that the Ricoh Transform feature uses.

These ports must have **LISTEN** permission for the listed application on the computer where you want to install the Transform feature:

- Port 6980 for `/opt/infoprint/itm/clients/fdi/fdi`.
- Ports 6984 and 6985 for `/opt/infoprint/itm/hn/feps`.
- Port 6986 for `/opt/infoprint/itm/clients/coord/coord`.
- Port 6989 through $6989 + (N - 1)$ for `/opt/infoprint/itm/node1/node` through `/opt/infoprint/itm/nodeN/node`.

Where N is the total number of nodes that the RICOH Transform features will use, as described above.

For example, if the total number of nodes is 2, give **LISTEN** permission to:

- Port 6989 for `/opt/infoprint/itm/node1/node`
- Port 6990 for `/opt/infoprint/itm/node2/node`

These applications must be able to make outgoing connections to the ports indicated on any computer:

- `/opt/infoprint/itm/clients/fdi/fdi` to port 6984.
- `/opt/infoprint/itm/hn/feps` to port 6986.
- `/opt/infoprint/itm/clients/coord/coord` to ports 6984 and 6986.
- `/opt/infoprint/itm/hn/pd/pdexec` to port 6984.
- `/opt/infoprint/itm/node[1 to N]/node` to port 6985.
- `/opt/infoprint/itm/node1/xforms/ctt_standalone/ctt_standalone` through `/opt/infoprint/itm/nodeN/xforms/ctt_standalone/ctt_standalone` to port 6989 through port $6989 + (N - 1)$.

Where N is the total number of nodes that the RICOH Transform features will use, as described above.

For example, if the total number of nodes is 2:

- `/opt/infoprint/itm/node1/xforms/ctt_standalone/ctt_standalone` to port 6989
- `/opt/infoprint/itm/node2/xforms/ctt_standalone/ctt_standalone` to port 6990

3. Add additional system users and groups.

One additional group and two additional users are required.

The default users are **ipsitm** and **ipsejz**; the default group is **itm**.

InfoPrint Manager for AIX

2

If you plan to use InfoPrint Manager for AIX with RICOH ProcessDirector, make sure that it is installed on a different computer from RICOH ProcessDirector.

RICOH ProcessDirector 3.9 or higher does not run on systems with InfoPrint Manager installed. To see if InfoPrint Manager is installed on the computer that you plan to use for the base product or a secondary server, run this command:

```
lspp -lcq ipr.server.rte
```

If InfoPrint Manager is installed, you must either remove it or install RICOH ProcessDirector on a different computer.

For information about InfoPrint Manager for AIX, see the InfoPrint Manager publications or the [RicoH Production Print website](http://www.rpp.rioh-usa.com) (<http://www.rpp.rioh-usa.com>).

Supplied fonts

Five sets of fonts are included with the RICOH ProcessDirector media package. The fonts are not available for download when you download RICOH ProcessDirector. You can request the RICOH ProcessDirector media package when you order RICOH ProcessDirector.

The RICOH ProcessDirector media package provides these fonts:

AFP Outline Fonts (LCD4-5683)

These fonts can be used on AIX, Linux, and Windows. They include fonts for Japanese, Korean, Simplified Chinese, and Traditional Chinese.

AFP Classic OpenType Fonts (LCD2-20029)

These fonts have four styles: Regular, Bold, Italic, and Bold Italic.

AFP Asian Classic OpenType Fonts (LCD2-20055)

These fonts can be used to replace the older AFP Asian single byte character set (SBCS) fonts.

WorldType Fonts (LCD4-5684)

These are OpenType and TrueType fonts in Microsoft Unicode format.

AFP Raster Fonts (LCD4-5700)

These fonts are distinguished from AFP outline fonts because they have character set and coded font names that are eight characters rather than six characters.

To install these fonts for use with RICOH ProcessDirector, copy all the fonts from the supplied media to the `/usr/lpp/ipfonts` directory on your primary computer. Be sure to copy all font files from the

media subdirectories to `/usr/lpp/ippfonts`. Do not maintain the subdirectory structure from the source directory, but do make sure that the uppercase file names are preserved.

The AFP printer driver component and the **line2afp** data stream conversion component of RICOH ProcessDirector search that directory when they need a resource to process a job.

The AFP Support feature also provides a basic set of 240-pel and 300-pel fonts (compatibility fonts). These fonts include both uniformly spaced and mixed-pitch type families. These font families are included:

- APL
- Boldface
- Courier
- Document
- Essay
- Format
- Gothic
- Letter Gothic
- Orator
- Prestige
- Roman
- Script
- Serif
- Symbols
- Text

Formatting PDF banner pages

You can change the formatting for PDF banner pages that RICOH ProcessDirector produces and sends to printers.

PDF banner pages use configuration files in the JRXML format. RICOH ProcessDirector provides sample JRXML files, but you can use customized files instead. The Jaspersoft® Studio application is open source software that helps you create JRXML files. You can download Jaspersoft Studio from <https://community.jaspersoft.com/project/jaspersoft-studio> and install the application on any supported workstation.

When you have created the JRXML files, copy them to the `/aiw/aiw1/control_files/banner_pages/` directory on the primary computer and update the **Header page configuration file** and **Trailer page configuration file** properties for jobs that are sent to printers to use the new files.

3. Upgrading

- Upgrading to the current version
- Backing up data
- Upgrading a manual failover environment
- Upgrading the DB2 database
- Completing the upgrade process

Upgrading to the current version

If you have RICOH ProcessDirector installed, you can upgrade to the current version without uninstalling your existing software, or by installing on a new system and moving your objects to it.

For information about the new functions and updates included in this release, see [New in this release, p. 12](#).

All upgrades include a license for the PDF Document Support feature. If your current version of RICOH ProcessDirector has one or more PDF document processing features, the upgrade installs the PDF Document Support feature.

If you are upgrading RICOH ProcessDirector and have another computer, we recommend that you install on that computer. By installing on a different computer, you lower the risk of problems and minimize downtime during this process. When the installation finishes, you can migrate your objects from RICOH ProcessDirector. You can then verify the new installation while the old computer is still running.

In RICOH ProcessDirector 3.5 or 3.5.1, the Jobs table in the updated user interface had limited function. One of the limitations was that the table only updated automatically if it contained fewer than 500 jobs. In version 3.6, that limit was increased to 1500. However, the value is not updated during the version upgrade process; you must update it manually. To update the value to 1500, log in as the system user (aiw1). Find and edit `/aiw/aiw1/config/product.cfg`, changing the value of the `recordsPerPage` entry from 500 to 1500.

Special considerations for upgrading the Reports feature

If you upgrade to Version 3.7 or above of RICOH ProcessDirector and have the Reports feature installed, the Reports feature is also upgraded.

The Reports feature for Version 3.7 and higher uses a PostgreSQL database to store the data collected. Previous versions used a DB2-based database called **rptdb**. Version 3.6 of RICOH ProcessDirector introduced the PostgreSQL database, but supported both databases. In Version 3.7, support for the DB2-based database was removed.

The PostgreSQL database is available on AIX, but RICOH ProcessDirector does not automatically install it or migrate your existing data into it. To use the updated Reports feature on AIX, you must install PostgreSQL and configure RICOH ProcessDirector to send data to it.

Three step templates that were supplied with the DB2-based Reports feature are deprecated:

- ArchiveInserterData
- ArchiveDocumentData
- WriteJobReport

Workflows containing steps based on these step templates continue to run but the steps do not produce output.

If you export workflows containing these steps, you cannot import them onto a Version 3.9 or higher system because those step templates are not present on the system. Remove those steps from the workflows before you export them.

If you import workflows containing these steps onto a Version 3.10 or higher, those steps get replaced with a placeholder step template named ReplacedStep. The original step name and step template name are available in the Step properties.

Backing up data

You can use a backup script to archive a copy of your RICOH ProcessDirector system configuration.

To back up RICOH ProcessDirector data:

1. Stop all application and secondary servers. The backup procedure stops the primary server automatically. See [Stopping the base product and secondary servers, p. 166](#) and [Stopping an application server, p. 167](#).
2. Log in to the primary computer as the root user.
3. Enter `/opt/infoprint/ippd/bin/aiwbackup.pl` with any of these options:

Option	Description
<code>-f filename</code>	Back up data to a directory and file name other than the default, which is <code>/tmp/aiw_backup_data.[timestamp].tar.gz</code> .
<code>-m</code>	Do not make a backup image of the DB2 database. Use this option if the DB2 database is on a different computer.
<code>-r</code>	<p>Input files and job files (the files in the spool directory that contain job information, including copies of input files) are saved by default. A backup with the <code>-r</code> option does not save input files or job files, but it does save jobs. System data and control files are always saved.</p> <p>★ Important</p> <ul style="list-style-type: none"> • The <code>-r</code> option is slightly different on the aiwbackup and aiwrestore commands: <ul style="list-style-type: none"> – On aiwbackup, the <code>-r</code> option removes only input files and job files from the saved system. It does not delete the jobs from the system. – On aiwrestore, the <code>-r</code> option removes jobs, input files, and job files from the restored system. <p>If you use the <code>-r</code> option when you back up RICOH ProcessDirector, you should also use it when you restore the system to avoid restoring jobs whose files have not been saved.</p>
<code>-h</code> or <code>-?</code>	Display help for the aiwbackup command.

For example, this command saves data, including jobs, but not including input files or job files, to a file called `mybackup.tar.gz`:

```
/opt/infoprint/ippd/bin/aiwbackup.pl -f mybackup.tar.gz -r
```

You see a message that all servers will be stopped, whether jobs and input files will be backed up, and the location of the backed up files.

4. Enter Y to proceed with the backup.
When the backup is complete, you see a message that the backup was successful.

Upgrading a manual failover environment

If you have your primary computers installed in a manual failover environment, you must upgrade both systems.

The process for upgrading a manual failover configuration varies based on the database configuration that you used with the previous version and the one you want to use with the new version, and can be complicated by other factors.

★ Important

- Before proceeding to upgrade in a manual failover environment, you must make sure that the production and failover servers meet the prerequisites to install the update. Therefore, you must run the prerequisite checker first on the production server and then on the failover server. See [Running the prerequisite checker](#), p. 82
- Make sure that the failover process is set up correctly and running successfully before upgrading a manual failover environment, by switching from the production server to the failover server and back to the production server.

To start the upgrading process in a manual failover environment:

1. On the production server, do these steps:
 1. Upgrade the production server to the current version. See [Upgrading to the current version](#), p. 93.
 2. Verify the installation to make sure that the installation completed successfully.
 3. Install the license keys for the production server. See [Downloading and installing license keys](#), p. 145
 4. Log in to the production server as the system user (aiw1 is the default).
 5. Open a command line and type `stop aiw` to shut down RICOH ProcessDirector on the production server.
2. On the failover server, do these steps:
 1. Log in as the **root** user.
 2. Open a command line and go to the directory where the installation media is located and type `scripts/failover-setup-rpd-node.sh` and press **Enter** to run the script. The script adds entries to `/etc/services`, installs PSF if necessary, and updates the rpm database on the failover server.
 3. Switch the active node to the failover server by entering `/opt/infoprint/ippd/bin/changeHostname.pl server_hostname` where `server_hostname` is the name of the production server.
 4. Verify the installation on the failover server.
 5. Install the license keys for the failover server.

6. Log in to the failover server as the system user (`aiw1` is the default).
 7. Open a command line and type `stopaiw` to shut down RICOH ProcessDirector on the failover server.
3. On the production server, log in as the **root** user.
 4. Switch the active node to the production server by entering `/opt/infoprint/ippd/bin/changeHostname.pl server_hostname` where `server_hostname` is the name of the failover server.

Upgrading the DB2 database

3

When you upgrade RICOH ProcessDirector, you have the option of upgrading the version of DB2 database that is embedded in RICOH ProcessDirector. You can upgrade DB2 database before you start the RICOH ProcessDirector install program, as part of the installation process, or after the install program completes.

If all these statements are true, you can upgrade the DB2 database either manually or as part of the install process:

- Your current DB2 database and RICOH ProcessDirector system is backed up.
- The home directory of the DB2 database (`/home/aiwinst` is the default) has 2.5 GB of free space.
- The directory `/tmp` has 2 GB of free space.

The default behavior of the RICOH ProcessDirector installation program is to leave the DB2 database at its current level. If you decide to upgrade the DB2 database, we recommend that you upgrade during the RICOH ProcessDirector installation process. If your environment requires that you upgrade outside of that process, you can use scripts provided on the installation media to upgrade the DB2 database. The DB2 database upgrade can be done before or after you run the RICOH ProcessDirector installation program.

Note

- You can only use the upgrade scripts with the version of DB2 that is installed with RICOH ProcessDirector. If you installed your own version of DB2 to work with RICOH ProcessDirector, you must use the standard upgrade process provided by IBM.

If you manually upgrade the DB2 database before upgrading RICOH ProcessDirector, do not start RICOH ProcessDirector until you upgrade to the new version. Some older versions of RICOH ProcessDirector do not work with newer versions of the DB2 database.

Whether you are installing using a DVD or an ISO image, make sure that you can access the installation media from the primary server. Make sure that you have completed these procedures as needed:

- [Preparing the primary computer for installation, p. 101](#)
- [Downloading installation files, p. 103](#)
- [Mounting an ISO file on AIX, p. 104](#)

To upgrade the DB2 database as part of the RICOH ProcessDirector install process, follow the instructions provided by the installer. When you get to the **Database configuration** tab of the installer, select **Check to upgrade DB2**. If you are using the command line installer, when you get to the **Upgrade DB2** section, select **1- Upgrade DB2**.

To upgrade the DB2 database manually:

1. Verify that your system meets the requirements listed above.
2. Log in to the primary computer as the system user (aiw1 is the default).
3. Open a command line and type `stopaiw`
4. Type `su - root` and press **Enter**. When prompted, enter the password for the root user and press **Enter**.
5. Go to the directory where the installation media is located and find `scripts/upgradeDB2.sh`
6. To run the script, type `scripts/upgradeDB2.sh` and press **Enter**.

Note

- It can take several minutes for the script to complete.

When the script finishes, the command prompt returns: `Successfully upgraded DB2.`

7. Check the installation log for any errors. Go to `/opt/infoprint/ippd/logs/installer/` and open `upgradeDB2.log`.
8. Verify the DB2 database level on the system. Type `/usr/local/bin/db2ls` and press **Enter**. The command displays the current DB2 database level along with the install path and install date. If the installation was successful, the DB2 database level is 11.5.8.
9. If you upgraded the DB2 database before upgrading RICOH ProcessDirector, continue with installing RICOH ProcessDirector. See [Installing, p. 99](#) for more information.
10. If you upgraded the DB2 database after upgrading RICOH ProcessDirector, start RICOH ProcessDirector and log on to verify that the upgrade was successful.

Completing the upgrade process

After you upgrade RICOH ProcessDirector, you must do a few more steps to make the transition easier.

The upgrade process converts your objects to versions that are compatible with the new RICOH ProcessDirector version. All your existing users and groups exist, so your users can log in using the same names and they have the same authority levels. When you log in, you see all of your printers, input devices, and other objects.

To complete the upgrade process:

1. Before they log in for the first time, tell your users to clear their browser cache.
Information that is stored in the browser cache can cause errors when users try to use the newer level. Clearing the cache prevents those errors.
2. Make sure that all your configuration files are in the right locations, so your jobs can find them. Restore any configuration files that you store outside of the `/aiw/aiw1` file system.

4. Installing

- Task checklist
- Preparing the primary computer for installation
- Downloading installation files
- Mounting an ISO file on AIX
- Installing from a remote directory
- Installing the base product
- Installing in a high availability environment
- Troubleshooting installation errors
- Installing a manual failover environment
- Troubleshooting manual failover environment installation errors

When you order RICOH ProcessDirector, you receive one or more installation discs unless you specified no media:

- A DVD that holds the base product and installers for trial versions of the features that can be installed using Feature Manager.
- DVDs and CDs that hold supplied fonts. See [Supplied fonts, p. 90](#).
- If you purchased a Secondary Server feature, a CD that holds the secondary server installer.
- If you purchased any of the Ricoh Transforms, DVDs that hold the installers for each transform.

If you want to install the software before the discs arrive, you can download ISO images from the Ricoh Production Print website: <http://rpp.ricoh-usa.com/products/software/workflow/ricoh-processdirector>. To download the software, follow the instructions in [Downloading installation files, p. 103](#). After downloading an ISO image, use DVD and CD burning software to create a DVD or CD.

Alternatively, you can download a TAR file of the installation program. To download the software, follow the instructions in [Downloading installation files, p. 103](#).

The RICOH ProcessDirector Secondary Server feature and application servers are the only components that are installed on different computers.

★ Important

1. RICOH ProcessDirector is installed in trial mode. After you install, you can download and install license keys for the features that you have purchased. See [Downloading and installing license keys, p. 145](#) for more information.
2. The installation instructions for installing RICOH ProcessDirector on an active computer with a backup computer in a manual failover configuration are different than for installing on a primary computer alone. See [Installing a manual failover environment, p. 109](#).
3. The installation instructions describe how to install with a graphical display. If you cannot run the installation program in graphical mode, use console mode to install with a text-based installation program. To start the installer in console mode, insert `-console` in the command after the word `setup`. For example, to install the base product, type:
`./setup -console`
 To use the installer in console mode:
 - Press Enter to move to the next screen.
 - Type back to return to the previous screen.
 - Type `quit` to exit the installer.
4. If the computer where you plan to install the base product already has a RICOH ProcessDirector Secondary Server feature installed, you must uninstall the Secondary Server feature before you install the base product. See [Uninstalling Secondary Server features from AIX or Linux computers, p. 170](#) for details.
5. To migrate your objects from a primary server running on one operating system to a primary server running on a different operating system, follow the instructions in [Copying objects from another system, p. 151](#) after installing RICOH ProcessDirector.
6. RICOH ProcessDirector is not guaranteed to work with third party products installed on the server, such as antivirus programs and network sniffers. Such programs may affect ports or files which are needed for RICOH ProcessDirector to function normally.

Task checklist

Here are the tasks you need to complete in this chapter. Check each item as you complete the task.

Checklist for completing installation tasks

	Task
	<p>Preparing the primary computer for installation, p. 101</p> <p>Use this procedure to make sure that you are ready to run the installation program.</p>
	<p>Downloading installation files, p. 103</p> <p>If you do not have installation discs, use this procedure to download ISO images or a TAR file package.</p>
	<p>Optional: Installing from a remote directory, p. 104</p> <p>You can use a remote directory to install RICOH ProcessDirector or a Secondary Server feature without using a DVD. You can use a DVD drive on a different computer to copy the</p>

	Task
	installation programs into the remote directory on your network. The remote directory holds the installers so you can access them from the computers that you want to install RICOH ProcessDirector on. The remote directory can be located on the computer that you plan to install RICOH ProcessDirector on.
	Installing the base product, p. 106 Use this procedure to install RICOH ProcessDirector.
	Optional: Installing a manual failover environment, p. 109 Installing a manual failover environment lets you create a backup of the production server. If the production server becomes unavailable, processing moves to the failover server until the production server is available again.
	Optional: Installing in a high availability environment, p. 108 Use this procedure to install RICOH ProcessDirector on systems that use IBM PowerHA for failover operations.
	Troubleshooting installation errors, p. 108 If you have trouble installing RICOH ProcessDirector, you can find information in the installation logs.

Preparing the primary computer for installation

★ Important

- Although the Secondary Server feature is not mandatory to be at the same code level as the base product, we recommend checking and upgrading the secondary server too when the primary server is upgraded. To determine the level of code that is installed on either computer, enter this command:
echo \$AIW_VERSION

↓ Note

- In addition to RICOH ProcessDirector, this software is installed or upgraded if it is not already present on the AIX system:
 - RPM installp package (Rpm.rte 3.0.5.52 or higher)
- During the installation, the RICOH ProcessDirector license files are copied to the `/opt/infoprint/ippd/base/license` directory.
- If you are using a copy of DB2 installed on a different computer instead of the version of DB2 that is included with RICOH ProcessDirector, make sure that you complete [Installing and configuring your own copy of DB2 on a different computer, p. 77](#) before you start this procedure.
- Setting the `umask` to use strict permissions might cause read or write issues on the installation folder. Therefore we recommend setting `umax` to 022, the default set of permissions.

To prepare the primary computer:

1. Make sure that the planning checklist is complete and the required hardware and software are available and installed. See [Planning for installation, p. 29](#).

2. Make sure that `/etc/hosts` on this computer has an entry for its IP address and the fully qualified host name.
3. Log in as the root user.

★ Important

- You must log in as a user with UID 0. If you must log in as a different user, you can use `sudo su -` or `su -` to become the root user. However, do not use `sudo` or the `su` command in any other way to become the root user.
4. If you are going to download a TAR file for installation, create a separate directory to hold the TAR file and its expanded contents. Use an obvious name like `tardownload` for clarity and easy identification.

```
mkdir <tar file download location>
```

5. Make sure that the user process resource limit for file size is set to **unlimited**.

1. Open a command line and type this command:

```
ulimit -a
```

2. If the value for `file(blocks)` is `unlimited`, you can continue setting the default shell for the root user to Korn shell, described below. If the value is different, change it.
3. Go to the `/etc/security` directory and open the `limits` file with a text editor.
4. Edit the `limits` file like this:

```
fsize = -1
core = -1
cpu = -1
data = -1
rss = -1
stack = -1
nofiles = -1
```

5. Save the file and exit the editor.

6. Make sure that the `maxuproc` value is set to at least **4096**.

This value is adequate for most installations, but requirements vary based on the number of programs running on your system. After the system is installed and running, work with your AIX system administrator to verify that the setting is appropriate for your environment.

1. Open a command line and type this command:

```
/usr/sbin/lssattr -E -l sys0 | grep maxuproc
```

2. If the value for `maxuproc` is less than 4096, type this command to increase it:

```
/usr/sbin/chdev -l sys0 -a maxuproc=4096
```

7. Make sure that the default shell for the root user is set to Korn shell.

1. Open a command line and type this command:

```
lsuser -a shell root
```

2. If the results show: `root shell=/usr/bin/ksh`, the shell is set correctly and you can continue with checking to see whether DB2 or a DB2 client is installed on this computer, described below. If the results are different, change the default shell for the root user.

- To change the default shell, type this command:

```
chuser shell=/usr/bin/ksh root
```

- Check to see whether DB2 or a DB2 client is installed on this computer. Enter this command to see if a separate copy of DB2 or a DB2 client is installed:

```
/usr/local/bin/db2ls
```

The results show whether DB2 is installed and the level of that installation. If there are no results, DB2 is not installed outside of RICOH ProcessDirector. If DB2 is installed, take one of the following actions to use either the installed copy or the RICOH ProcessDirector version.

- If DB2 10.1 Fix Pack 5 or later, DB2 11.1 Fix Pack 1 or later, or DB2 11.5.8 or later is installed, continue installing RICOH ProcessDirector.
 - If DB2 10.1 or DB2 11.1 is installed but it is not at the Fix Pack level required, update DB2 to the required Fix Pack level. DB2 10.1 must be at Fix Pack 5 or later and DB2 11.1 must be at Fix Pack 1 or later.
- Disable your antivirus software. The DB2 that RICOH ProcessDirector installs is not supported on a system that has antivirus software running on it.
 - If your IT department does not let you disable antivirus software, set up exceptions within your antivirus software for these paths:
 - /aiw/aiw1/db2
 - /aiw/aiw1/db2_logs
 - /aiw/aiw1/ext_db2 (if you have an older version of the Reports feature installed)
 - /home/aiwinst/sql1lib
 - /opt/infoprint/ippd/db
 - /var/psf

Downloading installation files

If you do not have installation discs, use this procedure to download ISO images or a TAR file package.

To download installation files:

- In a web browser, open this page: <https://dl.ricohsoftware.com/>
- Click **Software Downloads**, enter your Entitlement ID, and click **Submit**.
- Under **Product Downloads in this EID**, click the title of the base product that you want to download.

Note

For information about using ISO files to install software, click **Working with ISO files** on the right side of the Web page.

- After each file downloads, validate its MD5 checksum to the value shown on the Web page. Use this command, substituting the name of the file for *ProductUpdate.iso*:

```
csum -h MD5 ProductUpdate.iso
```

If the checksum does not match, download the file again.

- If you need to install a Ricoh Transform feature, click the feature and save its ISO file to your computer.

6. **Optional:** If you downloaded the ISO image for the base product, burn the base product ISO file onto a blank dual-layer DVD. Burn the ISO file for each separately downloaded feature onto its own blank CD or DVD. If you have software that allows you to mount an ISO file, you do not have to burn the images to physical media.

You are now ready to use the installation program to install RICOH ProcessDirector. If you want to install from the downloaded TAR file or from a DVD drive on the primary server, continue with [Installing the base product, p. 106](#). For a DVD installation where you want to copy the installers to a staging location on this computer or somewhere else on your network, continue with [Installing from a remote directory, p. 104](#).

Mounting an ISO file on AIX

You can use a virtual drive to mount an ISO file to install RICOH ProcessDirector.

To mount an ISO file:

1. Enter this command: `ulimit -f unlimited`.
2. Transfer the ISO file to the computer. For example, place the file in the `/aiw` directory.
3. Create a directory for the ISO file: `mkdir /iso`
4. Mount the ISO file:

```
loopmount -i <filename.iso> -o "-V cdrfs -o ro" -m /iso
```

For example:

```
loopmount -i aiw_aix.iso -o "-V cdrfs -o ro" -m /iso
```

5. Before you run the setup script, change directories: `cd /iso`

Installing from a remote directory

You can use a remote directory to install RICOH ProcessDirector or a Secondary Server feature without using a DVD. You can use a DVD drive on a different computer to copy the installation programs into the remote directory on your network. The remote directory holds the installers so you can access them from the computers that you want to install RICOH ProcessDirector on. The remote directory can be located on the computer that you plan to install RICOH ProcessDirector on.

The remote directory must have enough free space to hold the installers you want to store. We recommend having at least 7 GB of space in the remote directory for each installer. If you have installers for two operating systems in the same staging area, we recommend having at least 14 GB of space in the remote directory.

All the computers that you use in this procedure must be UNIX-based systems. In addition:

- You cannot store the installers in a remote directory on a Windows computer and then install RICOH ProcessDirector on a Linux or AIX computer.
- If the DVD drive is on a third computer that is mounted to the remote directory, that computer must also be a UNIX-based computer.

To install from a remote directory:

1. If you plan to copy the installation programs from a DVD drive on the same computer as the remote directory, continue with the next step. If you plan to copy the installation programs from a

DVD drive that is not on the computer that holds the remote directory, mount the remote directory to the computer with the DVD drive.

2. Copy the installers to the remote directory:
 1. Log in to the computer that you want to create the remote directory on and open a command prompt.
 2. Create a directory that the files can be copied to, such as `/installers`. Configure the directory so other computers can mount it. This is the remote directory.
 3. Insert the base product DVD in the drive.
 4. Go to the media mount point to view the contents. You should see a file named `mk_remote`.
 5. Type this command to run the script:


```
./mk_remote -d <directory>
```

 Substitute the path to the remote directory that you created above for `<directory>`.
 6. When the script finishes, type `cd /` and eject the CD or DVD.
 7. When you finish moving all the installers, you can go to the remote directory to verify that the installers have been copied correctly.

3. Access the installers from the computer that you want to install RICOH ProcessDirector on:

1. Log in to the computer that the software will be installed on.

Note

You must install the base product before you install any Secondary Server features. A Secondary Server feature cannot be installed on the same computer as the base product.

2. Create a directory to mount to the remote directory. We recommend that you give the directory the same name as the remote directory.
3. Mount the directory you just created to the remote directory.
4. Go to the mounted directory. You see several files and directories, including a script named `setup`.
4. Run the `setup` script in the mounted directory to start the installer.
 - To install the base product, type: `./setup`
 - To install a Secondary Server Feature, type: `./setup IPPDs`
The base product must be installed on the primary computer already.
5. When the installer starts:
 - For the base product, continue by following the instructions that appear in the installer as described in section [Installing the base product, p. 106](#).
 - For the Secondary Server feature, continue by following the instructions that appear in the installer as described in section [Installing on Linux systems, p. 120](#) or section [Installing on AIX systems, p. 123](#).

Installing the base product

Before you begin, make sure that you have verified all the prerequisites for your configuration as listed in [Planning for installation, p. 29](#) and [Preparing the primary computer for installation, p. 101](#).

To install the base product:

1. Log in as the root user.

★ Important

- You must log in as a user with UID 0. If you must log in as a different user, you can use `sudo su -` or `su -` to become the root user. However, do not use `sudo` or the `su` command in any other way to become the root user.

2. Open a command line and enter this command to make sure you are in the root directory:

```
cd /
```

3. If you have downloaded the base product TAR file, skip to step .
4. Insert the base product DVD in the drive.
5. If you already have a CD file system defined (named `/cdrom`, for example), you can insert the disk and enter:

```
mount /cdrom
```

To determine whether or not you already have a file system defined, enter:

```
/usr/sbin/lfs | grep cdrfs | awk '{print $3}'
```

6. If you do not have a CD file system present, you can create one.

1. Determine the name of the CD device by entering:

```
lsdev -Cc cdrom
```

2. Create the CD file system for device '`cd0`' at mount point '`/cdrom`' by entering:

```
/usr/sbin/crfs -v cdrfs -p ro -d cd0 -m /cdrom
```

7. If you downloaded the TAR file, go to the folder where you downloaded the TAR file, otherwise skip to step .

```
cd /<tar file download directory>
```

8. To expand the TAR file, enter:

```
tar -xvf <tar file name>
```

9. To start the installer, enter:

- For a DVD or ISO-based installation:

```
/cdrom/setup
```

- For a TAR-based installation:

```
/<tar file download directory>/setup
```

The installer starts and displays the Introduction screen. Select the appropriate language for the installer to use and then click **OK**.

10. Follow the instructions in the installer.

The installer verifies many of the prerequisites for the system. If it finds any problems, it lists them for you. You cannot proceed until you correct them. After you fix the issues, verify the

prerequisites again by returning to the **Prerequisite Verification** window. Click **Previous** in the installer or type back in console mode, then continue with the installer.

★ Important

- After you verify all the prerequisites, click **Cancel** to change a previous entry and begin the installation process again. Clicking the **Previous** button sometimes causes problems.

11. Review and accept the license and maintenance agreements.
12. You can choose the name that you want to use for the RICOH ProcessDirector system user or you can use the default name. This is the user that RICOH ProcessDirector runs under. The default system user is **aiw1**.

↓ Note

- All user IDs and group names must be 1-8 characters because of a restriction in DB2.

Enter a name for the user. If the installer finds that the user already exists on the system, it asks if you want to use that user. If you did not create the user, choose **No** and enter a different name. If the installer does not find the user on the system, the installer creates it.

13. Enter the security group to use as the primary group for the system user, the UID and GID numbers for the user and group, and the home directory for the system user. The default values are shown in the installer, but you can change them.
If you created the user and group before you started the installer, you are not asked for these values.
14. Choose a password for the system user and enter it twice. Remember this password; you need it later when you have to log in as the system user. If you created the user before you started the installer, you are not asked for the password.
15. Choose the language that you want the system user to use. This language determines the language used for some messages, even if you set the browser for the user interface to a different language.
16. Choose the DB2 configuration that you want to use.
If you choose **DB2 installed on a different server**, the next window shows any DB2 clients that are installed on the system. Choose the one that you want to use.
17. Enter values for the users and groups that DB2 requires, along with any other instance information requested.

The users and groups vary based on the DB2 configuration that you use:

- The RICOH ProcessDirector version of DB2 requires an instance user, a fenced user, and their corresponding groups.
- A separate copy of DB2 installed on the same computer as the base product requires an instance user, a fenced user, and their corresponding groups.
- A separate copy of DB2 installed on a different computer requires an instance user and group for the DB2 client on the primary computer, and an instance user, a fenced user, and their corresponding groups for the DB2 server on the other computer.

You created these users and groups when you installed and configured the DB2 client and server in [Installing and configuring your own copy of DB2 on a different computer, p. 77](#).

↓ **Note**

- All user IDs and group names must be 1-8 characters because of a restriction in DB2.

If you created the users and groups before you started the installer, make sure you use the correct values.

18. Review the pre-installation summary and click **Install** to start installing.

19. Click **Done** to complete the installation.

If you're upgrading to the current version, skip this step and return to [Upgrading to the current version on the same computer, p. .](#)

20. On the command line, type this command to return to the root directory:

```
cd /
```

21. If you have installed from a DVD, eject the disc.

22. If you see error messages, view the installation logs in the `/opt/infoprint/ippd/logs` directory and contact Software Support.

23. Reboot the system.

24. Continue with [Logging in for the first time, p. 135](#).

↓ **Note**

- Your software installs in trial mode. The trial license expires after 60 days. For more information about obtaining and installing license keys, see [Downloading and installing license keys, p. 145](#).

Installing in a high availability environment

RICOH ProcessDirector can be installed on the systems that use IBM PowerHA for failover operations.

In this configuration, RICOH ProcessDirector is installed on two AIX computers, each one running PowerHA. Some of the file systems that RICOH ProcessDirector uses are created on an external storage system that both the active and backup computers can access in an IBM PowerHA environment. When processing moves from one server to the other, the objects are not affected.

Each AIX computer must include two network interface cards (NICs): one uses a unique IP address (hostname) and can be used to administer the system; the other uses the Service IP address for RICOH ProcessDirector. Users access the RICOH ProcessDirector user interface through the Service IP address. The Service IP address is only active on one computer at a time.

You must configure PowerHA to manage the RICOH ProcessDirector Service IP address, the shared file system, and starting and stopping RICOH ProcessDirector.

Contact Software Support for assistance with installing and configuring a high availability environment.

Troubleshooting installation errors

If you have trouble installing RICOH ProcessDirector, you can find information in the installation logs.

The installer logs information in these directories:

- `opt/infoprint/ippd/logs`

- `opt/infoprint/ippd/logs/installer`
- `/tmp`

Here are some possible DB2 scenarios if you have to reinstall RICOH ProcessDirector:

- If you installed the RICOH ProcessDirector version of DB2:

When you install RICOH ProcessDirector, the installation program creates a DB2 instance and user ID using the value you enter for the **DB2 instance user**. There must be no other DB2 instance or user ID with this name on the RICOH ProcessDirector system, even in a different version of DB2.

If the installation program finds an instance using that name, it cannot create the instance. You can either delete the existing instance or choose another value for **DB2 instance user**. To delete an existing instance, enter this command, substituting the name you want to use for *DB2 instance user*:

```
/opt/IBM/db2/V11.1/instance/db2idrop DB2 instance user
```

↓ Note

- The path name might be different if you have installed a version of DB2 other than 11.1 or if DB2 is not installed in the default location.
 - When you delete a DB2 instance, you delete all data in that instance.
- If you installed your own copy of DB2 on the primary computer:

If you have to reinstall RICOH ProcessDirector, the DB2 instance that the first installation created might still exist. To check, log in as the root user and enter this command:

```
/opt/IBM/db2/V11.1/instance/db2ilist
```

↓ Note

- The path name might be different if DB2 is not installed in the default location.
- If you installed your own copy of DB2 on a computer other than the primary computer (a remote computer):

If you have to reinstall RICOH ProcessDirector, the DB2 instance that the first installation created might still exist. To check, log in as the root user and enter this command:

```
/opt/IBM/db2/V11.1/instance/db2ilist
```

↓ Note

- The path name might be different if DB2 is not installed in the default location.

If you find a DB2 instance with the name that you want to use, you cannot reuse it. You can either:

- Enter a different name for the DB2 instance when you reinstall RICOH ProcessDirector.
- Enter this command to delete the existing DB2 instance:

```
/opt/IBM/db2/V11.1/instance/db2idrop aiwinst
```

★ Important

- ◆ When you delete a DB2 instance, you delete all data in that instance.

Installing a manual failover environment

Installing a manual failover environment lets you create a backup of the production server. If the production server becomes unavailable, processing moves to the failover server until the production server is available again.

Installing a manual failover environment is a complex procedure. Before you start the configuration process, consult with your system administrator. Manual failover is primarily used in enterprise environments and might not be appropriate for your setting.

This procedure assumes that you use NFS for file sharing. Based on your system requirements and workflow, you might need a different setup, such as a SAN or NAS. Determine your system requirements and use the best technology for your company. Use the following steps as a guide to set up your system.

Before you start this procedure, open the required ports in your firewall to allow communication between your file server, production server, and failover server. Also, make sure you have completed these procedures as needed:

- [Preparing the primary computer for installation, p. 101](#)
- [Downloading installation files, p. 103](#)
- [Mounting an ISO file on AIX, p. 104](#)
- [Installing from a remote directory, p. 104](#)

Whether you are installing using a DVD or an ISO image, make sure that you can access the installation media from the production server, the failover server, and the file server.

To install a manual failover environment:

1. Determine the GID for each of these system groups. See [Creating system groups and users, p. 43](#) for more information about system groups. You must use the same system group names and GID values on the production and failover systems. The defaults are listed below. If you choose to use different values, record them here for future reference.

Group Name	Default GID
aiwdbgrp	1000
aiwdbfgp	1001
printq	1002
aiwgrp1	32458

2. Determine the UID values for each of these user names. You must use the same system user names and UIDs on the production and failover systems. See [Creating system groups and users, p. 43](#) for more information about system users. The values are listed below.

User name	Default UID	Group Membership
aiwinst	1000	aiwdbgrp
aiwdbfid	1001	aiwdbfgp
aiw1	32457	aiwgrp1,printq,aiwdbgrp

3. Determine the hostnames for each of these servers.

Server	Description
Production server	The system that has the primary server installed and the system RICOH ProcessDirector runs on during normal operations.
Failover server	The system that RICOH ProcessDirector runs on as a backup, used when the normal server is unavailable.
File server	The system set up by a network administrator which hosts files such as installed code, configuration files, data files, and the database. Might be a SAN or NAS.

Note

A DNS can be set to use a single hostname alias to redirect to either the production or failover server, depending on which system is active. With this configuration, users can access the system from a single URL.

4. Log on to the file server as an administrator.
5. Using a command prompt, create a file system for RICOH ProcessDirector as `/aiw`. The file system must be no less than 30 GB and is used for all RICOH ProcessDirector file systems.
6. Type: `mount /aiw` to mount the aiw filesystem.
7. Create the following file systems using the recommended sizes:

File System	Mapped To	Recommended Size
<code>/aiw/aiwdata</code>	<code>/aiw/aiw1</code>	30 GB
<code>/aiw/aiwpath</code>	<code>/opt/infoprint</code>	10 GB

8. Open a command line and go to the directory where the installation media is located and find `scripts/failover-create-shares.sh`.

If you have custom share paths or are using a technology other than NFS, copy `failover-create-shares.sh` to `/tmp`. Edit the script to match your system configuration.

9. To run the script, type: `failover-create-shares.sh` and press **Enter**.
10. Verify that the script created these directories on the file server:
 - `/aiw/aiwdata`
 - `/aiw/aiwpath`
 - `/aiw/varaiw`
 - `/aiw/homeaiw1`
 - `/aiw/homeaiwinst`
 - `/aiw/homeaiwdbfid`
 - `/aiw/varpsf`

11. If you are using NFS, edit the shares to add the production server and failover server to the hosts field allowed for both the client user and root user.
12. Type: `smit nfs` or `smitty nfs` to add these shares to NFS.
 - `/aiw/aiwdata`
 - `/aiw/aiwpath`
 - `/aiw/varaiw`
 - `/aiw/homeaiw1`
 - `/aiw/homeaiwinst`
 - `/aiw/homeaiwdbfid`
 - `/aiw/varpsf`
13. Restart NFS. Type: `showmount -e` then `cat /etc/exports` to view and confirm the settings are correct on the file server.
Make sure the added shares are correct and check the flags and permissions of each share.
14. Log in to the production server as the **root** user and mount the shared directories:
 1. Open a command line and go to the directory where the installation media is located. Type: `scripts/failover-create-mountpoints.sh` and press **Enter**.
 2. If the directory `/usr/local/bin` does not exist, type: `mkdir -p /usr/local/bin` and press **Enter**.
 3. Copy `scripts/mountDrives.sh` from the installation media to `/usr/local/bin`
 4. Using a text editor, edit `mountDrives.sh`. Make sure you change the file server value to the name of your file server.
 5. If you are not using NFS to share and mount the filesystems, modify the script to run the appropriate commands to mount them.
 6. To make the script executable, type: `chmod +x /usr/local/bin/mountDrives.sh` and press **Enter**.
 7. To run the script, type: `/usr/local/bin/mountDrives.sh` and press **Enter**.
 8. To confirm the shared directories are mounted, type: `df` and press **Enter**.
15. Create users on the production server:
 1. Copy `scripts/failover-user-configuration` from the installation media to `/tmp` on the production server.
 2. Using a text editor, open `failover-user-configuration`. Compare the system user and system group values to the system user and system group values from Step . If you are using the default values, these values do not need to be changed. The value for `printq` might already exist with a system group of 9. In `/tmp/failover-user-configuration`, modify `printq` to also have the system group value of 9.
 3. To run the script, go to the directory where the installation media is located and type: `scripts/failover-create-users.sh /tmp/failover-user-configuration` and press **Enter**.
 4. Type: `id username` for each user name to verify it was created.
For example, if you type: `id aiw1`, your output might look like:

```
uid=3133(aiw1) gid=1038(ipserve) groups=10(wheel),1038(ipserve),111(staff1)
```

16. Log in to the failover server as the **root** user and mount the shared directories:
 1. Open a command line and go to the directory where the installation media is located. Type: `scripts/failover-create-mountpoints.sh` and press **Enter**.
 2. If the directory `/usr/local/bin` does not exist, type: `mkdir -p /usr/local/bin` and press **Enter**.
 3. Copy `scripts/mountDrives.sh` from the installation media to `/usr/local/bin`.
 4. Using a text editor, edit `mountDrives.sh`. Make sure you change the file server value to the name of your file server. If you are not using NFS, update the script to use your sharing technology.
 5. If you are not using NFS to share and mount the filesystems, modify the script to run the appropriate commands to mount them.
 6. To make the script executable, type: `chmod +x /usr/local/bin/mountDrives.sh` and press **Enter**.
 7. To run the script, type: `/usr/local/bin/mountDrives.sh` and press **Enter**.
 8. To confirm the shared directories are mounted, type: `df` and press **Enter**.
17. Create users on the failover server:
 1. Copy `scripts/failover-user-configuration` from the installation media to `/tmp` on the failover server.
 2. Using a text editor, open `failover-user-configuration`. Compare the system user and system group values to the system user and system group values from Step . If you are using the default values, these values do not need to be changed. The value for `printq` might already exist with a system group of 9. In `/tmp/failover-user-configuration`, modify `printq` to also have the system group value of 9.
 3. To run the script, go to the directory where the installation media is located, type: `scripts/failover-create-users.sh /tmp/failover-user-configuration` then press **Enter**.
 4. Type: `id username` for each user name to verify it was created.
For example, if you type: `id aiw1`, your output might look like:


```
uid=3133(aiw1) gid=1038(ipserve) groups=10(wheel),1038(ipserve),111(staff1)
```
18. Install RICOH ProcessDirector on the production server. See [Installing the base product, p. 106](#).
When prompted for system users and system groups, use the same values you used in the scripts and select the system user (`aiw1` is the default).
19. Continue with [Logging in for the first time, p. 135](#). Do not do the **Verifying the installation** procedure. Return to this section to complete the manual failover environment installation.
20. Completely shut down RICOH ProcessDirector on the production server:
 1. Log in to the production server as the system user (`aiw1` is the default).
 2. Open a command line and type: `stopaiw`
 3. Type: `su - root` and press **Enter**. When prompted, enter the password for the **root** user and press **Enter**.
 4. Type: `/opt/infoprint/ippd/db/bin/db2fmcu -d`

5. Type: `ps -ef | grep db2` to display all db2 processes that are still running. To end each db2 process, type:

`kill` followed by each of the process IDs listed in the results of the **grep** command. For example, your results might look similar to:

dasusr1	14729	1	0	Aug24	?	00:00:01	/home/dasusr1/das/ adm/db2dasrrm
root	18266	1	0	Aug24	?	00:15:08	/opt/infoprint/ippd/db/ bin/db2fmcd
dasusr1	18342	1	0	Aug24	?	00:00:23	/opt/infoprint/ippd/db/das/ bin/db2fmd -i dasusr1 -m / opt/infoprint/ippd/db/das/ lib/libdb2dasgcf.so.1
root	21049	1	0	Sep01	?	00:00:00	db2wdog 0 [aiwinst]
aiwinst	21051	21049	0	Sep01	?	01:13:01	db2sysc 0
root	21059	21049	0	Sep01	?	00:00:00	db2ckpwd 0
aiwinst	21061	21049	0	Sep01	?	00:00:00	db2vend (PD Vendor Process - 1) 0

In these results, the process IDs are listed in the second column. To end the first process in the list, type: `kill 14729` and press **Enter**.

6. Type: `ps -ef | grep psfapid` to display all psfapid processes. To end each psfapid process, type:
 - `kill` followed by each of the process IDs listed in the results of the **grep** command.
 7. Type: `ps -ef | grep aiw1` to display all aiw1 processes. To end each aiw1 process, type:
 - `kill` followed by each of the process IDs listed in the results of the **grep** command.
21. On the failover server:
 1. Log in as the **root** user.
 2. Open a command line and go to the directory where the installation media is located. Type: `scripts/failover-setup-rpd-node.sh` and press **Enter** to run the script. The script adds entries to `/etc/services`, installs PSF if necessary, and updates the rpm database on the failover server.
 3. Type: `/opt/infoprint/ippd/bin/changeHostname.pl production_server_hostname` where `production_server_hostname` is the name of the production server.
 4. To verify the installation on the failover server, log in to the product again. This time, use the host name of the failover server in the Web browser: `http://failover_hostname:15080/pd` If you can log in, the installation is successful.
 22. Switch processing back to the production server:
 1. Log in to the failover server as the system user (`aiw1` is the default).
 2. Open a command line and type: `stopaiw`
 3. Log in to the production server as the **root** user.
 4. On the production server, type: `/opt/infoprint/ippd/bin/changeHostname.pl failover_server_hostname` where `failover_server_hostname` is the name of the failover server. The failover server is currently the primary server.
 23. Install the license keys for the production and failover servers. You must purchase two license keys, one per server.

1. On the production server, install the license key for the production server. See [Downloading and installing license keys, p. 145](#).
2. Open a command line and log in as the system user (aiw1 is the default) and type: `stopaiw`
3. Switch processing to the failover server. On the failover server, open a command prompt as the **root** user and type: `/opt/infoprint/ippd/bin/changeHostname.pl production_server_hostname` where *production_server_hostname* is the name of the production server.
4. On the failover server, install the license key for the failover server. See [Downloading and installing license keys, p. 145](#).

When you open the RICOH ProcessDirector user interface on the failover server, you might see the message **License key violation detected. Contact Software Support**. This message does not appear after the license key is installed.

5. Open a command line and log in as the system user (aiw1 is the default) and type: `stopaiw`
6. Switch processing to the production server. On the production server, open a command prompt as the **root** user and type: `/opt/infoprint/ippd/bin/changeHostname.pl failover_server_hostname` where *failover_server_hostname* is the name of the failover server.

Troubleshooting manual failover environment installation errors

If you see errors when setting up a manual failover environment, check the following:

- If your production server, failover server, and file server cannot communicate with each other, make sure the correct ports on your firewall are open.
- If you switch between the production server and the failover server, and one of the servers cannot start up, then there might be locks on the file system. This is typically caused by one of the servers not being shut down correctly. To determine if this is the issue:

1. In a command prompt, type `su - aiw1 -c "db2start;db2 connect to aiwdb"`

Look in the results for a message like this: `SQL1391N The database is already in use by another instance of the database manager. SQLSTATE=51023`

If you see a similar message, you must release the locks on the database.

2. Reboot the fileserver to release the locks.

5. Setting up application and secondary servers

- Task checklist
- Preparing the primary computer
- Installing on Linux systems
- Installing on AIX systems
- Preparing a Windows application server
- Installing application servers on Windows computers
- Configuring an application server to run as a service

After successfully installing the base product, you can set up application and secondary servers on other computers in your network.

Secondary servers run on AIX and Linux computers; application servers run on Windows computers. Those computers must meet the requirements listed in the section [Secondary computers, p. 33](#).

↓ Note

- If you only want to create local secondary servers on the primary computer, you do not have to complete these procedures.

Secondary servers created on other computers use the Network File System (NFS) protocol to access the /aiw file system on the primary server. Application servers can use NFS or a different protocol to access the /aiw file system. Some configuration is required on both the primary computer and the secondary computers to enable that access.

After you configure the communication protocol between the computers, you install the Secondary Server feature or the Application Server and define the server object in RICOH ProcessDirector.

Task checklist

Here are the tasks you need to complete in this chapter. Check each item as you complete the task.

Checklist for application server and secondary server tasks

Task
Preparing the primary computer, p. 118 Before you install any application or remote secondary servers, you must export the /aiw file system and create an application or secondary server object in RICOH ProcessDirector. You must also verify that an NFS server is installed and started on the primary computer.
Installing on Linux systems, p. 120 Use this procedure to install a Linux application server or secondary server.
Installing the AIX operating system, p. 49 Use this procedure to install an AIX application server or secondary server.
Preparing a Windows application server, p. 125 When you install an application server on Windows, you are required to mount the /aiw file system from the primary computer so the Windows application server has write access to the /aiw file system as the system user (aiw1 is the default).

	Task
	<p>Installing application servers on Windows computers, p. 129</p> <p>After you have completed the prerequisite steps, you can install an application server on a Windows system in your network.</p>
	<p>Configuring an application server to run as a service, p. 130</p> <p>Application servers can be configured to run as Windows services. Windows services can be set up to start automatically when a user logs in to the system.</p>

Preparing the primary computer

Before you install any application or remote secondary servers, you must export the `/aiw` file system and create an application or secondary server object in RICOH ProcessDirector. You must also verify that an NFS server is installed and started on the primary computer.

To prepare the primary computer:

1. Log in as the root user.
2. Enter these commands:

```

nfsd -po nfs_use_reserved_ports=1
chnfsdom <domain name>

```

Where `<domain name>` is the fully qualified DNS domain the AIX primary server is in. This domain does not include the hostname of the primary server.

3. Use SMIT to configure the NFS server on the primary computer to start both now and when the system restarts:
 1. Enter `smitty nfs`.
 2. Select **Network File System (NFS)** and press Enter.
 3. Select **Configure NFS on This System** and press Enter.
 4. Select **Start NFS** and press Enter.

★ **Important**

 - If NFS is running, make sure you select **Stop NFS** before you select **Start NFS**.
 5. In the **Set Start NFS now, on system restart or both** field, select **both**.
 6. Press Enter.
 7. Press F10 to exit SMIT.
4. If this is the first time you are setting up this primary computer for an application or secondary server, add `/aiw` to the exports list:

1. Enter `smitty nfs`.
2. Select **Network File System (NFS)** and press Enter.
3. Select **Add a Directory to Exports List**.
4. Type or select values in these fields. The **bold** entries in the example below show changes that you must make. Type the host name of the computer that is prepared for the application

server or Secondary Server feature where *new-secondary* appears. Set the NFS versions to **4** or **3,4** where *nfs-versions* appears.

<pre>Type or select values in entry fields. Press Enter AFTER making all changes * Pathname of directory to export Anonymous UID Public filesystem? * Export directory now, system restart or both Pathname of alternate exports file Allow access by NFS versions External name of directory (NFS V4 access only) Referral locations (NFS V4 access only) Replica locations Ensure primary hostname in replica list Allow delegations? Scatter * Security method 1 * Mode to export directory Hostname list. If exported read-mostly Hosts & netgroups allowed client access Hosts allowed root access</pre>	<pre>[Entry Fields] /aiw -2 no both [] nfs-versions [] [] [] yes no none sys,... read-write [] new-secondary new-secondary</pre>
---	---

5. Press Enter.
6. Press F10 to exit SMIT.
5. If *another* secondary server is already set up on this primary computer, update the exports list to include the new server:
 1. Enter `smitty nfs`.
 2. Select **Network File System (NFS)** and press Enter.
 3. Select **Change/Show Attributes of an Exported Directory** and press Enter.
 4. In the **Set Pathname of exported directory** field, type `/aiw` and press Enter.
 5. If your version of AIX has an **Version of exported directory to be changed** field, type the version number.
 6. Add the host name of the new application or secondary computer to the same fields where the other computers are already listed.
In the example below, *old-secondary* is the host name of an existing secondary computer and *new-secondary* is the host name of a new secondary computer.

<pre>Press Enter AFTER making all changes Hosts & netgroups allowed client access Hosts allowed root access</pre>	<pre>[Entry Fields] [old-secondary,new-secondary] [old-secondary,new-secondary]</pre>
---	--

7. Press Enter.
8. Press F10 to exit SMIT.
6. If your network does not have a Domain Name System (DNS) server, edit `/etc/hosts` on the primary computer to add the host name and IP address of the computer that is prepared for the application server or Secondary Server feature.

7. Use the RICOH ProcessDirector user interface to add and enable the application or secondary server:
 1. Open a Web browser and enter `http://hostname:15080/pd` in the address bar replacing, *hostname* with the host name of the primary computer.
 2. Log in as an authorized user. The default user name is `aiw`.
 3. Click the **Administration** tab.
 4. In the left pane, click **System** → **Servers**.
 5. Click **Actions** → **Add** and select the type of server you want to add.
 6. Specify a server name and the IP address or host name for the application or secondary computer. As an option, specify a description and values for the other properties of the server.
 7. Choose an option for the **In general server pool** field.

Servers in the general server pool can run any step defined in any workflow.

For a secondary server that runs on an AIX or Linux system, you can specify either **Yes** or **No**. If you want the secondary server to run only specific steps, specify **No** in this field and then use the **Tune** function for each step template that you want to run on the secondary server.

For an application server that runs on Windows, specify **No** for **In general server pool**.

Note

- If any steps send jobs to the application server, you must tune the step template appropriately. For information about how to tune the step template, click **Help** from the top task bar of the RICOH ProcessDirector user interface to see the information center.

8. Click **OK**.
9. Select the server and then click **Enable**.

Installing on Linux systems

You can install the RICOH ProcessDirector Secondary Server feature on a Linux system in your network.

Important

- Although the Secondary Server feature is not mandatory to be at the same code level as the base product, we recommend checking and upgrading the secondary server too when the primary server is upgraded. To determine the level of code that is installed on either computer, enter this command:
`echo $AIW_VERSION`
- Before you begin this procedure, make sure that you followed the steps from [Preparing the primary computer, p. 118](#).

To install the Secondary Server feature on a Linux system:

1. Log in as the root user.

★ Important

- You must log in as a user with UID 0. If you must log in as a different user, you can use `sudo su -` or `su -` to become the root user. However, do not use `sudo` or the `su` command in any other way to become the root user.
2. Make sure that `/etc/hosts` on this computer has an entry for its IP address and the fully qualified host name.
 3. Open a command line and enter this command to make sure you are in the root directory:


```
cd /
```
 4. Insert the RICOH ProcessDirector Secondary Server feature DVD.
 5. Mount the drive, if necessary. Enter:


```
mount /media/mount_point
```
 6. To start the installer, enter:


```
./setup IPPDs
```

The installer starts and displays the Introduction screen. Select the appropriate language for the installer to use and then click **OK**.

↓ Note

- If the computer's operating system is Red Hat and its language is Japanese, Simplified Chinese, or Traditional Chinese, choose **English** on the dropdown language menu. Japanese, Simplified Chinese, and Traditional Chinese characters do not display properly during a Red Hat installation of RICOH ProcessDirector.
7. Follow the instructions in the installer.

The installer verifies many of the prerequisites for the system. If it finds any problems, it lists them for you. You cannot proceed until you correct them. After you fix the issues, verify the prerequisites again by returning to the **Prerequisite Verification** window. Click **Previous** in the installer or type back in console mode, then continue with the installer.

★ Important

- After you verify all the prerequisites, click **Cancel** to change a previous entry and begin the installation process again. Clicking the **Previous** button sometimes causes problems.
8. Review and accept the license and maintenance agreements.
 9. Type the host name or fully qualified IP address of the primary computer and verify it.
 10. Enter the name of the RICOH ProcessDirector system user that you used on the primary computer. The default system user is **aiw1**.

↓ Note

- All user IDs and group names must be 1-8 characters because of a restriction in DB2.

If the installer finds that the user already exists on the system, it asks if you want to use that user. If you did not create the user, choose **No** and enter a different name. If the installer does not find the user on the system, the installer creates it.

Do not select the check box for **Use system update file from another computer**.

11. Enter the values that you used on the primary computer for:

- The security group to use as the primary group for the system user
- The UID number for the user
- The GID number for the group
- The home directory for the system user

The default values are shown in the installer.

If you created the user and group before you started the installer, you are not asked for these values.

12. Enter the same password that you used for the system user on the primary computer twice. Remember this password; you need it later when you have to log in as the system user. If you created the user before you started the installer, you are not asked for the password.

13. Choose the language that you want the system user to use. This language determines the language used for some messages, even if you set the browser for the user interface to a different language.

14. Review the pre-installation summary and click **Install** to start installing.

The final window displays the URL for accessing the user interface in this format, where *hostname* is the host name of the primary computer:

```
http://hostname:15080/pd
```

15. Click **Done** to complete the installation. The secondary server starts automatically.

16. On the command line, type this command to return to the root directory:

```
cd /
```

17. If you have installed from a DVD, eject the disc.

18. Reboot the system.

Note

- If you have an automated recovery mechanism for system outages, disable it before rebooting.

19. To verify that the secondary server is running, enter this command on the command line:

```
ps -ef | grep Instance
```

You should see an instance statement such as:

```
java com.ibm.aiw.instance.SecondaryInstance hostname
```

If the software is not running, view the installation logs in the `/opt/infoprint/ippd/logs` directory. If this does not solve the problem, contact customer support.

20. To make sure that the secondary server is connected to the primary server, log in to the RICOH ProcessDirector user interface and click **Administration** → **Objects** → **Servers** to verify that the **Connection status** column contains **Connected**.

After your secondary server is running, you must determine how it is used and change the properties of some objects accordingly. For example:

- What printers and input devices do you want the secondary server to manage?

Create or modify those devices so this secondary server is listed as their **Parent server**.

- What step templates can run on this secondary server?
Tune those step templates so that they can run on this secondary server.
- What external programs on this secondary computer can be accessed using an external step?
Set up the external program and configure a step based on the **RunExternalProgram** step template so it uses that program.

Installing on AIX systems

You can install the RICOH ProcessDirector Secondary Server feature on an AIX system in your network.

★ Important

- Although the Secondary Server feature is not mandatory to be at the same code level as the base product, we recommend checking and upgrading the secondary server too when the primary server is upgraded. To determine the level of code that is installed on either computer, enter this command:
echo \$AIW_VERSION
- Before you begin this procedure, make sure that you followed the steps from [Preparing the primary computer](#), p. 118.

↓ Note

- In addition to RICOH ProcessDirector, this software is installed or upgraded if it is not already present on the AIX system:
 - RPM installp package (Rpm.rte 3.0.5.52 or later)

To install the Secondary Server feature on an AIX system:

1. Log in as the root user.

★ Important

- You must log in as a user with UID 0. If you must log in as a different user, you can use `sudo su -` or `su -` to become the root user. However, do not use `sudo` or the `su` command in any other way to become the root user.
2. Make sure that `/etc/hosts` on this computer has an entry for its IP address and the fully qualified host name.
 3. Open a command line and enter this command to make sure you are in the root directory:
`cd /`
 4. If you are installing on a server running in a double-byte language (such as Japanese), the server must be running in a UTF-8 language environment. To change the server to a UTF-8 language environment:
 1. Enter:

```
export LANG=locale.UTF-8
```

Replace `locale` with the locale identifier for a double-byte language (such as `JA_JP`).

5. Insert the RICOH ProcessDirector Secondary Server feature DVD.

6. If you already have a CD file system defined (named `/cdrom`, for example), you can insert the disk and enter:

```
mount /cdrom
```

To determine whether or not you already have a file system defined, enter:

```
/usr/sbin/lfs | grep cdrfs | awk '{print $3}'
```

7. If you do not have a CD file system present, you can create one.

1. Determine the name of the CD device by entering:

```
lsdev -Cc cdrom
```

2. Create the CD file system for device `'cd0'` at mount point `'/cdrom'` by entering:

```
/usr/sbin/crfs -v cdrfs -p ro -d'cd0 -m'/cdrom'
```

8. To start the installer, enter:

```
/cdrom/setup IPPDs
```

The installer starts and displays the Introduction screen. Select the appropriate language for the installer to use and then click **OK**.

9. Follow the instructions in the installer.

The installer verifies many of the prerequisites for the system. If it finds any problems, it lists them for you. You cannot proceed until you correct them. After you fix the issues, verify the prerequisites again by returning to the **Prerequisite Verification** window. Click **Previous** in the installer or type back in console mode, then continue with the installer.

★ Important

- After you verify all the prerequisites, click **Cancel** to change a previous entry and begin the installation process again. Clicking the **Previous** button sometimes causes problems.

10. Review and accept the license and maintenance agreements.
11. Type the host name or fully qualified IP address of the primary computer and verify it.
12. Enter the name of the RICOH ProcessDirector system user that you used on the primary computer. The default system user is **aiw1**.

↓ Note

- All user IDs and group names must be 1-8 characters because of a restriction in DB2.

If the installer finds that the user already exists on the system, it asks if you want to use that user. If you did not create the user, choose **No** and enter a different name. If the installer does not find the user on the system, the installer creates it.

Do not select the check box for **Use system update file from another computer**.

13. Enter the values that you used on the primary computer for:
- The security group to use as the primary group for the system user
 - The UID number for the user
 - The GID number for the group
 - The home directory for the system user

The default values are shown in the installer.

↓ **Note**

- All user IDs and group names must be 1-8 characters because of a restriction in DB2.

If you created the user and group before you started the installer, you are not asked for these values.

14. Enter the same password that you used for the system user on the primary computer twice. Remember this password; you need it later when you have to log in as the system user. If you created the user before you started the installer, you are not asked for the password.
15. Choose the language that you want the system user to use. This language determines the language used for some messages, even if you set the browser for the user interface to a different language.
16. Review the pre-installation summary and click **Install** to start installing.

The final window displays the URL for accessing the user interface in this format, where *hostname* is the host name of the primary computer:

```
http://hostname:15080/pd
```

17. Click **Done** to complete the installation. The secondary server starts automatically.
18. To verify that the secondary server is running, enter this command on the command line:

```
ps -ef | grep Instance
```

You should see an instance statement such as:

```
java com.ibm.aiw.instance.SecondaryInstance hostname
```

If the software is not running, view the installation logs in the `/opt/infoprint/ippd/logs` directory. If this does not solve the problem, contact customer support.

19. To make sure that the secondary server is connected to the primary server, log in to the RICOH ProcessDirector user interface and click **Administration** → **Objects** → **Servers** to verify that the **Connection status** column contains **Connected**.

After your secondary server is running, you must determine how it is used and change the properties of some objects accordingly. For example:

- What printers and input devices do you want the secondary server to manage?
Create or modify those devices so this secondary server is listed as their **Parent server**.
- What step templates can run on this secondary server?
Tune those step templates so that they can run on this secondary server.
- What external programs on this secondary computer can be accessed using an external step?
Set up the external program and configure a step based on the **RunExternalProgram** step template so it uses that program.

Preparing a Windows application server

When you install an application server on Windows, you are required to mount the `/aiw` file system from the primary computer so the Windows application server has write access to the `/aiw` file system as the system user (`aiw1` is the default).

There are various ways to mount the `/aiw` file system on the primary computer from the application server. You can use any method to mount the file system. The procedures below use Samba and NFS file sharing as examples.

Connecting to the primary computer using Samba

To use Samba file sharing, you must configure Samba on the primary computer so the `/aiw` filesystem is accessible to the Windows application server. The share is then mounted on the Windows application server.

To connect to the primary computer using Samba:

1. Log on to the primary computer as `root`.
2. If Samba is not installed, install it.
3. Configure Samba using a setup tool such as SMIT. While the configuration procedure is similar between operating systems, commands or tools used might differ. Configure as follows:
 1. Enter the workgroup or domain name.
 2. **Optional:** Set RICOH ProcessDirector as a domain controller. RICOH ProcessDirector does not need to be set as a domain controller. This setting does not affect RICOH ProcessDirector functionality.
 3. Set Samba to start on boot.
 4. Share the `/aiw` drive as a share named **aiw**.
4. Modify the `smb.conf` file located in `/etc/samba/` (Linux) or `/usr/lib/` (AIX) to include lines similar to these:

```
[global]
workgroup = RPDWorkgroup
passwd backend = tdbsam
encrypt passwords = Yes
restrict anonymous = 2
domain logons = No
domain master = No
security = user
wins support = No
ntlm auth = Yes
min protocol = SMB2
max protocol = SMB3
client min protocol = SMB2
client max protocol = SMB3

[aiw]
comment = RPD share
inherit acls = Yes
path = /aiw
read only = No
write list = root aiw1
valid users = root aiw1
force create mode = 0664
force directory mode = 0775
guest ok = No
```

↓ **Note**

- These settings are suggestions for the contents of `smb.conf`; they are not necessarily the exact settings you should use. The global section likely contains additional lines. Leave the additional lines in the file. Additional sections can be commented out or deleted to prevent other parts of the system from being shared through Samba.

This configuration file must have read and write privileges from the Windows machine as the system user (`aiw1` is the default).

- You must enable the SMBv2 and SMBv3 protocols on the Samba server to avoid any connection errors.

5. **Optional:** Add the following lines to the `smb.conf` under the `[aiw]` section to increase security:

```
valid users = root aiw1
hosts allow = windowspc
```

↓ **Note**

- Replace `windowspc` with the name of the application server and `aiw1` with the system user ID if you do not use the default.

5

6. Save the `smb.conf` file.
7. Restart the Samba daemon.
8. Run the command `smbpasswd -a root` and enter the password for **root**.
9. Run the command `smbpasswd -a system_user`, where `system_user` is the system user ID (`aiw1` is the default), and enter the password for the system user.
10. On the application server, map the `/aiw` filesystem from the primary computer using the Map Network Drive dialog in Windows and this address for the server:

```
\\<primary_server_hostname>\aiw
```

To map the network drive from a command prompt, use this command:

```
net use <drive_letter>: \\primary_server_hostname\aiw
```

To give read and write permission on the mapped Samba folder, use this command:

```
setsebool -P samba_export_all_rw 1
```

Replace `primary_server_hostname` with the hostname or IP address of the primary computer.

11. Test the configuration by creating a file in the `drive_letter:\aiw1` directory and then deleting it.
12. Note the name of the drive for use during the installation process.
13. Continue with [Installing application servers on Windows computers, p. 129](#).

Connecting to the primary computer using NFS

To use NFS file sharing, you must configure NFS on the primary computer so the `/aiw` filesystem is accessible to the Windows application server. The share is then mounted on the Windows application server.

To connect to the primary computer using NFS:

1. On the application server, verify File Services are installed for the Network File System:
 1. Press **Windows Key+r** to open the Run dialog box and type: `appwiz.cpl`. This opens the Programs and Features window.
 2. In the Program and Features window, click **Turn Windows Features on or off**.
 3. Follow the instructions in the features wizard to make sure that NFS is installed.
 - For Windows Server 2019, install NFS by selecting **Features** → **Client for NFS**.
 - For Windows 10 Pro or Enterprise, install NFS by selecting **Services for NFS** → **Client for NFS**.

Note

- Client for NFS is only available on Windows 10 version 1703 or later.

2. Add registry entries to configure NFS with the UID and GID used to access files:
 1. Log in to the primary computer.
 2. In a command prompt type `id <system_user>` where `<system_user>` is your system user ID (default `aiw1`).
 3. Note the UID and GID numbers and convert them to hexadecimal format.

Note

The UID is the system user ID (default `aiw1`) and the GID is the system group ID (default `aiwgrp1`). They are specified in hexadecimal values in the registry, for example, the default UID of 32457 is `0x00007ec9`, and the default GID of 32458 is `0x00007eca`.

4. On the application server, create a file named **nfs.reg**.

Note

You can create **nfs.reg**, anywhere on your system.

Make sure you have file extensions showing. If you do not display file extensions, the file is created as a text file, not a registry file.

5. Edit **nfs.reg** so it contains the following contents:

```
Windows Registry Editor Version 5.00
[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\ClientForNFS\CurrentVersion\Default]
"AnonymousGID"=dword:<GID_hex>
"AnonymousUID"=dword:<UID_hex>
```

6. Replace `<GID_hex>` with the GID hexadecimal number starting after the `0x`. For example, if the GID hexadecimal number is `0x00007eca`, replace `<GID_hex>` with `00007eca`.
7. Replace `<UID_hex>` with the UID hexadecimal number starting after the `0x`. For example, if the UID hexadecimal number is `0x00007ec9`, replace `<UID_hex>` with `00007ec9`.
8. Save **nfs.reg** and close the file.
9. Double-click **nfs.reg** to run the registry file, which adds the UID and GID values to the registry.

Note

Make sure that the values in the registry file exactly match the instructions. Incorrect registry modification can damage your operating system.

10. Delete **nfs.reg** from your system.
11. Restart the NFS service by typing the following commands into a command prompt:

```
nfsadmin client stop
nfsadmin client start
```

If you receive error messages when stopping or starting the NFS service, restart the application server computer.

3. On the application server, map the /aiw filesystem from the primary computer using the Map Network Drive dialog in Windows and this address for the server:

```
\\<primary_server_hostname>\aiw
```

Note

- If the connection fails, map the filesystem manually. Open a Command Prompt, and type:

```
mount primary_server_hostname:/aiw drive_letter.
```
4. Test the configuration by creating a file in the <drive_letter>:\aiw1 directory and then deleting it.
 5. Note the name of the drive for use during the installation process.
 6. Continue with [Installing application servers on Windows computers, p. 129](#).

Installing application servers on Windows computers

After you have completed the prerequisite steps, you can install an application server on a Windows system in your network.

Important

- The application server code level must match the base product code level on the primary computer.
- After you verify all the prerequisites, click **Cancel** to change a previous entry and begin the installation process again. Clicking the **Previous** button sometimes causes problems.

To install an application server on a Windows computer:

1. Log in as an administrator.
2. Insert the RICOH ProcessDirector base product DVD in the drive.
3. Use Windows Explorer to view the contents of the DVD and find appserver\setupIPPDs.exe.
4. Double-click setupIPPDs.exe to start the installer.
5. In the installer, do these steps:
 1. Select the appropriate language and click **OK**. You see a welcome window for the installation program.
 2. Review the information presented in each window and click **Next** until you reach the Choose installation folder window. Choose a directory to install the application server in and click **Next**.

Note

- You cannot choose a directory with international characters (such as á, É, î, ñ, ô, ß) or double-byte characters anywhere in the directory path.
3. Enter the drive letter that you used to mount the /a i w filesystem from the primary server.
For example, to connect to the J drive type J :
 4. Click **Next**.
 5. In the Preinstallation summary window, review the information and click **Install**.
 6. Restart the computer to complete the installation.
 6. When the system restarts, log in using the user ID that you want to run RICOH ProcessDirector under.
 7. **Optional:** Make sure the connection between the application server and RICOH ProcessDirector is included in the local intranet zone. This step is important so that you can gather troubleshooting information in the future.
 1. Log in to the application server as the user that the service runs under.
 2. Select **Start** → **Internet Options** → **Security** → **Local Intranet**
 3. Click **Sites**.
 4. Under **Add this website to the zone** type the drive letter that you used to map the connection between the application server and the RICOH ProcessDirector primary server. Include a colon after the drive letter. For example, this application server has drive R: mapped to the primary server, type: R:
 5. Click **Add**.
 6. Click **Close**.
 7. Click **OK** in the **Internet properties** dialog.
 8. Start the application server. Use the **Start application server** link in the RICOH ProcessDirector start menu folder.
 9. To make sure that the application server is connected to the primary server, log in to the RICOH ProcessDirector user interface and click **Administration** → **Objects** → **Servers** to verify that the **Connection status** column contains **Connected**.
 10. If the application server is not connected to the primary server, see the *Application server does not connect* troubleshooting topic in the RICOH ProcessDirector information center. Click **Help** from the top task bar of the RICOH ProcessDirector user interface to see the information center.

Configuring an application server to run as a service

Application servers can be configured to run as Windows services. Windows services can be set up to start automatically when a user logs in to the system.

To configure an application server to run as a service:

1. Make sure the application server is installed and functions correctly.
2. Make sure the RICOH ProcessDirector is connected to the application server:
 1. Log in to RICOH ProcessDirector.

2. Go to **Administration** → **Objects** → **Servers** and verify the application server is connected.
3. Log in to the Windows computer that the application server is installed on.
4. Stop the application server. Use the **Stop application server** link in the RICOH ProcessDirector start menu folder.
5. Windows services do not automatically have access to mapped network drives. The `mountaiwdata.bat` file grants access to these mapped network drives. Edit the provided `mountaiwdata.bat` file to automatically mount the shared drive for the service:

1. Go to `C:\Program Files\Ricoh\ProcessDirector\bin`.
2. Make a copy of the file `mountaiwdata_sample.bat` and rename it to `mountaiwdata.bat`. If you are upgrading or reinstalling the system, already have the `mountaiwdata.bat` file, and want to keep your previous settings, you do not have to do this step.
3. Open `mountaiwdata.bat` and include commands to mount the drive and map it to the drive letter that you have previously set up.

For example, if you use Samba and Windows file sharing to map your drive, your BAT file contents might include commands such as:

```
net use /delete <drive_letter>:
net use <drive_letter>: \\<primary_host_name>\aiw /user:<primary_host_name>\aiw1 <password> /persistent:yes
```

where `<drive_letter>` is your mapped application server drive, `<primary_host_name>` is the name of the server RICOH ProcessDirector is installed on, and `<password>` is your system password for the RICOH ProcessDirector system user (**aiw1** is the default system user).

If you use NFS and Windows file sharing to map your drive, your BAT file contents might include commands such as:

```
mount -o anon \\<primary_host_name>\aiw <drive_letter>
```

where `<primary_host_name>` is the name of the server RICOH ProcessDirector is installed on and `<drive_letter>` is your mapped application server drive.

4. Make sure that the drive is not currently mapped, then run **mountaiwdata.bat**. When it finishes, open Windows Explorer and make sure that the drive is mapped and connected.
6. Install the application server service:
 1. Start a command prompt as an administrator. Even if you are logged on to your system as an administrator, you must start the command prompt by selecting **Run as administrator** from the right-click menu.
 2. Go to `C:\Program Files\Ricoh\ProcessDirector\bin`.
 3. Type `aiwsvc install` and press Enter. This installs the application server service.
 4. Open the Windows Services window and look for the **Ricoh Process Director Application Server** service to make sure the application service installed.
7. **Optional:** Set the application server service to run as a local administrator user.

↓ Note

- The application server service can run as a local administrator user service or a LocalSystem service (default). If it runs as a LocalSystem service, a password is not required. If it runs as a local administrator service, Windows requires a password for the user.

1. In the Windows Services window, right-click the **Ricoh Process Director Application Server** service and select **Properties**.
2. In the Log On tab, select **This Account** and specify the user and password.
3. Click **OK**.
8. In the Windows Services control panel, right-click the **Ricoh Process Director Application Server** service and select **Start**.
9. Verify the application server service has started. In the Windows Services control panel, the status should read Started. In RICOH ProcessDirector, go to **Administration** → **Objects** → **Servers** and verify the application server is connected and that the startup type is set to **Automatic**.

6. Completing post-installation tasks

- Task checklist
- Configuring to use IPv6 addresses
- Logging in for the first time
- Verifying the installation
- Deleting temporary installer files
- Installing features
- Downloading and installing license keys
- Installing the Transform Feature license keys
- Configuring RICOH ProcessDirector
- Scheduling automatic maintenance
- Replacing your control files with the sample files
- Copying objects from another system
- Installing and configuring the pdpr script
- Setting up to use LDAP authentication
- Communicating between RICOH ProcessDirector and the LDAP server
- Creating a Docker container secondary server
- Moving processing to and from a failover server
- Installing a RICOH ProcessDirector product update

After you finish installing RICOH ProcessDirector, you complete post-installation tasks.

Note

- The installer creates files with the default group ownership set to the RICOH ProcessDirector group (**aiwgrp1** is the default). Any user who is in the RICOH ProcessDirector group can access files that RICOH ProcessDirector creates:
 - If you have users with AIX system user IDs who need to work directly with RICOH ProcessDirector files or submit files to hot folders, you must add their user IDs to the RICOH ProcessDirector group. Be sure to use that group as an additional group for your users, not as their default group.
 - If you create another group to own directories that RICOH ProcessDirector input devices use, you must add the RICOH ProcessDirector system user (**aiw1** is the default) to the new group.

Task checklist

Here are the tasks you need to complete in this chapter. Check each item as you complete the task.

Checklist for completing post-installation tasks

Task
Configuring to use IPv6 addresses, p. 135 You can use IPv6 addresses for the primary server and some of the other IP addresses in RICOH ProcessDirector.
Logging in for the first time, p. 135 After you install, reboot the primary computer and log in to RICOH ProcessDirector using a Web browser.
Verifying the installation, p. 137

	Task
	<p>If you have finished installing RICOH ProcessDirector and want to verify the installation, use this procedure to enable the Sample printer, submit a test job to the HotFolderPDF input device, and process the job.</p>
	<p>Optional: Deleting temporary installer files, p. 137</p> <p>If a file system named <code>/aiwtmp</code> remains on your system after the RICOH ProcessDirector installer has finished an installation, you can delete that folder and all its contents.</p>
	<p>Installing features using Feature Manager, p. 139</p> <p>After you install the base product, you can install features using the Feature Manager.</p>
	<p>Downloading and installing license keys, p. 145</p> <p>If you have purchased RICOH ProcessDirector, RICOH ProcessDirector Subscription, or any feature, use this procedure to download license keys and install them.</p>
	<p>Configuring RICOH ProcessDirector, p. 148</p> <p>You use the user interface to complete configuration tasks for RICOH ProcessDirector, such as setting up job processing, defining input devices for job submission, defining your printer hardware to RICOH ProcessDirector, and adding users. The RICOH ProcessDirector information center describes these configuration tasks.</p>
	<p>Scheduling automatic maintenance, p. 149</p> <p>RICOH ProcessDirector provides maintenance scripts that must be run regularly on the primary computer to improve performance. By default, RICOH ProcessDirector runs these scripts every day at midnight. You can change the time or frequency, and you can run your own maintenance scripts at the same time.</p>
	<p>Optional: Replacing your control files with the sample files, p. 149</p> <p>When you install a new version of RICOH ProcessDirector, the installer automatically adds new sample control files to the <code>/aiw/aiw1/samples</code> directory and copies them to your control files directory, <code>/aiw/aiw1/control_files</code>. It does not overwrite any of your customized control files in <code>/aiw/aiw1/control_files</code>. You can use the <code>copyConfigurationFiles</code> script to install the default control files or to overwrite your customized control files.</p>
	<p>Optional: Copying objects from another system, p. 151</p> <p>To reuse objects from another RICOH ProcessDirector system, you can use the other system to export them. On this RICOH ProcessDirector system, you can import the objects rather than recreating them manually.</p>

	Task
	<p>Optional: Installing and configuring the pdpr script, p. 153</p> <p>If you are migrating from InfoPrint Manager and you use the pdpr command to submit jobs, you can install the RICOH ProcessDirector pdpr script on the computers that submit jobs and use the same command to send jobs to RICOH ProcessDirector.</p>
	<p>Optional: Setting up to use LDAP authentication, p. 155</p> <p>If you have an existing LDAP or Active Directory server, you can use LDAP or Active Directory user names and passwords to authenticate into RICOH ProcessDirector.</p>

Configuring to use IPv6 addresses

You can use IPv6 addresses for the primary server and some of the other IP addresses in RICOH ProcessDirector.

To configure to use IPv6 addresses:

1. Log in to the primary computer as **aiw1**.
2. Open `/aiw/aiw1/config/jvmsettings.cfg` in a text editor.
3. Find all lines that contain `preferIPv4Stack=true`.
4. Change true to false:
`preferIPv4Stack=false`
5. Save the file.
6. Run the command: `startaiw`

6

Logging in for the first time

After you install, reboot the primary computer and log in to RICOH ProcessDirector using a Web browser.

When the installation process finishes:

1. Reboot the primary computer.
2. Start a Web browser.
3. Enter this URL replacing *hostname* with the host name of the primary computer: `http://hostname:15080/pd`
4. On the login page, type the default administrator user ID **aiw** and the default password **aiw** and then click **Log in**. You are prompted to change the password before you can log in to the user interface. Make note of your new password on the [Installation planning checklist, p. 173](#).
5. If the browser page is blank after a full minute, so you do not see the RICOH ProcessDirector login page, first try to refresh the browser. If you still do not see the login page, you might need to stop and restart the base product.
 1. Log in to the primary computer as the RICOH ProcessDirector system user, using the user and password you entered in the installer (**aiw1** is the default).

↓ **Note**

- The installer sets up the RICOH ProcessDirector system user with environment variables and paths that permit all of the administrative functions for RICOH ProcessDirector. If you use the `su` command to switch from another login to the system user, use the `-` (minus) flag (`su - username`) to make sure that you inherit the environment that was set up for the system user.
2. Enter `stopaiw` at the command prompt and wait for all the components to stop.
 3. Enter `startaiw` at the command prompt.
 4. To verify that RICOH ProcessDirector is running, enter this command on the command line:

```
ps -ef | grep Instance
```

You should see a statement that includes `PrimaryInstance`, such as:

```
aiw1 6593 1 0 Mar23 pts/3 00:00:05 java -Xmx2048m
-Djava.net.preferIPv4Stack=true
-Djava.awt.headless=true com.ricoh.aiw.primary.PrimaryInstance
```

If there is a secondary server, you should also see a process that includes `SecondaryInstance`.

5. Enter this URL in the Web browser, replacing `hostname` with the host name of the primary computer:


```
http://hostname:15080/pd
```
 6. If you still see a blank page, view the installation logs in the `/opt/infoprint/ippd/logs` directory.
6. If you see a message that the browser cannot connect to the primary server:
1. Log in to the primary computer as the RICOH ProcessDirector system user, using the user and password you entered in the installer (**aiw1** is the default).

↓ **Note**

- The installer sets up the RICOH ProcessDirector system user with environment variables and paths that permit all of the administrative functions for RICOH ProcessDirector. If you use the `su` command to switch from another login to the system user, use the `-` (minus) flag (`su - username`) to make sure that you inherit the environment that was set up for the system user.
2. Enter `startaiw` at the command prompt.
 3. To verify that RICOH ProcessDirector is running, enter this command on the command line:

```
ps -ef | grep Instance
```

You should see a statement that includes `PrimaryInstance`, such as:

```
aiw1 6593 1 0 Mar23 pts/3 00:00:05 java -Xmx2048m
-Djava.net.preferIPv4Stack=true
-Djava.awt.headless=true com.ricoh.aiw.primary.PrimaryInstance
```

If there is a secondary server, you should also see a process that includes `SecondaryInstance`.

4. Enter this URL in the Web browser, replacing `hostname` with the host name of the primary computer:

```
http://hostname:15080/pd
```

5. If you still see the message, view the installation logs in the `/opt/infoprint/ippd/logs` directory.

RICOH ProcessDirector is now open and the base product is running. See [Verifying the installation, p. 137](#) to verify the installation by printing a test job.

Verifying the installation

If you have finished installing RICOH ProcessDirector and want to verify the installation, use this procedure to enable the Sample printer, submit a test job to the HotFolderPDF input device, and process the job.

This verification procedure only applies to new installations. When you upgrade an existing installation, RICOH ProcessDirector does not create a Sample printer.

To verify the installation:

1. If you are not logged in to the RICOH ProcessDirector user interface, log in.
2. In the Printers portlet, right-click the **Sample** printer and select **Enable**.
3. On the command line, enter this command to copy a test file into the hot folder that the HotFolderPDF input device monitors:


```
cp /aiw/aiw1/testfiles/Demo.pdf /aiw/aiw1/System/hf/defaultPDF
```
4. Wait a few seconds for the RICOH ProcessDirector user interface to refresh. If it does not refresh automatically, refresh your browser. You should see a job in the Jobs table on the Main page. The job's Phase should be **Complete**, and its State should be **Retained**.

If you do not see a job, see the "Job not appearing in Jobs table" troubleshooting topic in the RICOH ProcessDirector information center. Click **Help** (?) from the top task bar of the RICOH ProcessDirector user interface to see the information center.

5. Right-click the job and select **View Log**. The log should show that the job printed. For example, if the job ID is 10000000, the log should show message `AIWI0016I: 10000000 printed`. The job does not print on a real printer.

This verifies that RICOH ProcessDirector is installed correctly.

The PDF workflow processes jobs that are submitted to the HotFolderPDF input device. During the Prepare phase, the workflow runs a `RunExternalProgram` step. This step is an example of how you can integrate other programs into your workflow. The step produces a CSV file with information about the job. To see the type of information that you can access with a step in a workflow, look at the output in the CSV file. The file is in the `/aiw/aiw1/samples` directory. The file name is the job ID followed by `info.csv`. For example, `10000000.info.csv`.

Note

- Your software installs in trial mode. The trial license expires after 60 days. For more information about obtaining and installing license keys, see [Downloading and installing license keys, p. 145](#).

Deleting temporary installer files

If a file system named `/aiwtmp` remains on your system after the RICOH ProcessDirector installer has finished an installation, you can delete that folder and all its contents.

If the installer creates the `/aiwtmp` directory, it also deletes it. However, if you create `/aiwtmp` before starting the installer, the installer does not remove this file system. If any errors occur during the installation, files might be left in this file system, which can now be removed.

To delete the temporary installer files:

1. Log in to the primary computer as **root**.
2. Open a command line and enter these commands to find the root directory and see its contents:

```
cd /  
ls
```
3. If you see the `/aiwtmp` file system, delete it and all its contents.

Installing features

After you install RICOH ProcessDirector or RICOH ProcessDirector Subscription, you can add features at any time.

You install most features using the Feature Manager, available on the **Administration** tab.

The RICOH Transform features cannot be installed using the Feature Manager. See [Installing RICOH Transform features, p. 143](#) for instructions.

★ Important

- All features are installed in trial mode. To continue using a feature after the trial period, you purchase the feature and install a license key for it. See [Downloading and installing license keys](#), p. 145 for more information.
To see whether a feature is running in trial mode and how many days remain for each feature in trial mode, go to the Licenses page of the Administration tab and look at the **License state** column.
- The maintenance license for RICOH ProcessDirector includes maintenance for features. They do not have separate maintenance licenses.
- Licenses for the RICOH ProcessDirector Subscription base product and its features expire when the base product subscription period is over.
- If you intend to install the AFP Support feature, we recommend that you install it before or at the same time as your other features. If you install features that process documents (such as Archive) before you install AFP Support, RICOH ProcessDirector does not install the AFP versions of sample workflows supplied with those features.
- The PDF Document Support feature has a two-part installation process. You install the RICOH ProcessDirector components on the primary computer using the Feature Manager. You install RICOH ProcessDirector Plug-in for Adobe Acrobat on a computer with Adobe Acrobat Pro installed.
- When you install RICOH ProcessDirector, some configuration files in `/aiw/aiw1/control_files/external programs` are used by both the RICOH Transform and the Advanced Transform features. However, the Advanced Transform features supply a different sample version of the `xform.cfg`. That sample file includes parameters that are only used by the Advanced Transform features.
After you install the Advanced Transforms, you must make those parameters available. Find the `xform.cfg` installed by the Advanced Transform features in `/aiw/aiw1/samples/control_files/external programs`. Compare it to the one installed by the base product in `/aiw/aiw1/control_files/external programs`. Manually merge any changes from the sample file into the base product file.
If you are upgrading to a newer version, update the `xform.cfg` file as well as the profiles installed in `/aiw/aiw1/cpt/profiles`, such as `mffaafp.pro`.

Installing features using Feature Manager

After you install the base product, you can install features using the Feature Manager.

↓ Note

- If you have any RICOH Transform features installed, you must shut down the Transform Features application before you install any feature with Feature Manager. Restart the Transform Features application after the feature installation completes.

To install one or more features using Feature Manager:

1. If one or more secondary servers are defined and started, stop all of the secondary servers. See [Stopping the base product and secondary servers](#), p. 166.
2. Log in as a user authorized to use Feature Manager.
3. Click the **Administration** tab.

4. In the left pane, choose **Utilities** → **Features**.

Some browsers might prevent opening the Feature Manager in a new tab due to the pop-up blockers. Verify your settings and allow Feature Manager to open in a new browser tab.

If you see an error message, you must start Feature Manager manually:

1. Log in to the primary server as the RICOH ProcessDirector system user (aiw1 is the default).
2. Open a command prompt and type: `startaiw -f`
3. Refresh the Feature Manager web page.
5. If the feature that you want to install is not listed, you must import it. See [Adding or upgrading a feature using Import Package, p. 140](#) for details about importing the feature package.
6. If the feature that you want to install is in the list, select the check box next to it.
7. In the **Available versions** column for each feature, select the version of the feature you want to install.
8. Click **Install**.
9. Review the information in the confirmation window, specify a name for the **Installation display name**, then click **OK** to continue.

The features are installed, then RICOH ProcessDirector restarts to finish the install process.

Note

If one or more features fail to install, choose one of these options:

- Click **Try again** to retry the installation. If the install fails a second time, click **Restore this Installation** to return to a stable state.
- Click **Restore this Installation** to revert the system to the state it was in before this installation.

If you cannot install a particular feature or restore an installation, contact Ricoh Software Support.

10. Click **DISMISS**. The dialog closes and you see the login page.
11. To complete the installation process, clear your browser cache.
Information that is stored in the browser cache can cause errors when you try to use the newer level. Clearing the cache prevents those errors.
12. Log in again.
13. Restart any secondary servers that you stopped in step 1. See [Starting the base product and secondary servers, p. 165](#).

Adding or upgrading a feature using Import Package

You can use Feature Manager to add a new feature or upgrade an existing feature by downloading a feature package file, either from the Ricoh website or from a feature DVD, and then using the **Import Package** action.

You must save the feature package file to a location that can be accessed by using the primary computer.

If you download the feature package file from the Ricoh website, save it to a location that is accessible from RICOH ProcessDirector. This location can be on the primary computer, a workstation, or a network drive. Remember where you save the file so that you can browse to it from RICOH ProcessDirector. Additionally, you must extract the file in that location so the EPK file within the downloaded file can be seen.

If you receive the feature package file from a DVD, you need to locate the file on the DVD, copy it from the DVD onto the primary computer, and remember where you put it so you can browse to it.

To import a feature package using Import Package:

1. If one or more secondary servers are defined and started, stop all of the secondary servers. See [Stopping the base product and secondary servers, p. 166](#).
2. Log in as an administrator or other user with authority to import packages.
3. In the left pane, choose **Utilities** → **Features**.

If you see an error message, you must start Feature Manger manually:

1. Log in to the primary computer as the RICOH ProcessDirector system user (aiw1 is the default).
2. Open a command prompt and type: `startaiw -f`
3. To complete the process, clear your browser cache.

Information that is stored in the browser cache can cause errors when you try to use the newer level. Clearing the cache prevents those errors.

4. Reload the Feature Manager web page.

The Feature Manager page opens in a new browser tab.

4. Click **Import Package**.

5. In the **Package to import** field click .

6. Select the feature package EPK file for the feature you want to install and click **Open**. The import automatically begins.

7. When the import finishes, the feature you installed or upgraded appears in the main Feature Manager window.

The feature appears in the Feature Manager table selected.

8. In the **Available Versions** column, use the list to select the version of the feature you want to install.

9. Click **Install**.

10. Review the information in the confirmation window, then click **OK** to continue. The feature is installed, then RICOH ProcessDirector is restarted to finish the install process.

11. Click **DISMISS** to close the Feature Manager browser tab.

12. To complete the process, clear your browser cache.

Information that is stored in the browser cache can cause errors when you try to use the newer level. Clearing the cache prevents those errors.

13. Log in again.

Restoring a previous installation of RICOH ProcessDirector

Reverting to any past installation lets you effectively uninstall recently added features, extensions, or updates.

You can use the restore action to go back to a version of RICOH ProcessDirector that was installed on a specific time and date. Use this action to return your system to a known-good state, in case the newly-installed features or extensions are damaged.

★ Important

- When restoring an installation that removes a feature from the system, you must perform a cleanup before attempting to restore the installation. You must disable any objects added when the feature was installed. If there are features containing step templates and if the step templates are used in a workflow outside the provided samples, you must remove the step templates before removing the feature. Features that are removed are marked with the **Remove** label in the **Restore Details** tab of the **Installation History** dialog.

When you restore a previous installation of RICOH ProcessDirector to remove a feature, we recommend:

- If a feature was just installed and not used, restore to a point before that feature was installed.
- If the feature was used, request assistance from the Ricoh Software Support team.

To restore a previous installation:

1. Log in as a user authorized to use Feature Manager.
2. Click the **Administration** tab.
3. In the left pane, choose **Utilities** → **Features**.
4. To launch the installations list, click **Installations**.
5. Select an installation that you want to restore.
The **Installation Details** tab shows a list of features, extensions, and files added with the selected installation. The **Restore Details** tab lists the features, extensions, and files modified or removed by the selected installation.
6. To revert to the selected installation, click **Restore**.
7. If one of the restore steps cannot be completed, click **Try Again** to retry.
8. To restore the entire installation due to an error, click **Restore this Installation** to start again the restore process.

↓ Note

- The number of installations varies according to the value specified in the **Installations to store** field. If the value is 0, the installations list contains only the baseline installation.
- Storing multiple installations uses more disk space and may increase the time to uninstall and restore the features and extensions.

Installing RICOH Transform features

Before you install any RICOH Transform features:

- Make sure that your computer meets the additional hardware and software requirements specified. See [Primary computer, p. 31](#) and [Data transforms, p. 86](#) for those requirements. You can install one or more RICOH Transform features on the primary server or on another computer on your network.
- The AFP Support feature must be installed on the primary server even if the Transform feature is installed on a computer other than the primary server.
- XL C/C++ Runtime 16.1.0.3 and IBM_XL_CPP_UTILITIES packages must be installed before installing the **PDF to AFP** transform on an AIX machine. To install the packages:
 1. Download the XL C/C++ Runtime 16.1.0.3 and IBM_XL_CPP_UTILITIES packages from the IBM website.
 2. Unpack the packages to a location on your disk.

↓ Note

- The packages must contain these .tar files and must be installed in the specified order:
 - ◆ 16.1.0.2-IBM-x1C-AIX-FP002.tar
 - ◆ 16.1.0.3-IBM-x1C-AIX-FP003.tar
 - ◆ IBM_XL_CPP_UTILITIES_V16.1.0.0_AIX.tar
- 3. Use SMIT to install the compiler. Use this command: `smit install_latest`
- 4. Specify the **INPUT** device or directory of the package and click **OK**.
- 5. Select **Yes** next to **Accept new LICENSE agreements?** to continue with the installation.
- 6. Select the options that can help you customize the compiler installation on your system.
- 7. Click **OK**.
- The RICOH Transform features are installed in trial mode. To continue using the RICOH Transform features after the trial period, you must purchase each transform that you want to use and a license key for it.

You can either:

- Do the steps in this section to install RICOH Transform features using their DVDs.
- Use [Installing from a remote directory, p. 104](#) to copy the RICOH Transform features installers to a staging location on your network, then mount the computer that you want to install features on to that location and run the installers.

↓ Note

- This task does not apply to the Advanced Transform feature. If you are installing the Advanced Transform feature, use the instructions for installing features using Feature Manager.

To install a RICOH Transform features:

1. Log in as the root user.

★ Important

- You must log in as a user with UID 0. Do not use **sudo** or the **su** command to become the root user.
2. Open a command line and enter this command to make sure you are in the root directory:
`cd /`
 3. Insert the appropriate RICOH Transform features DVD.
 4. If you already have a CD file system defined (named `/cdrom`, for example), you can insert the disk and enter:
`mount /cdrom`

To determine whether or not you already have a file system defined, enter:

```
/usr/sbin/lfsfs | grep cdrfs | awk '{print $3}'
```

5. If you do not have a CD file system present, you can create one.
 1. Determine the name of the CD device by entering:
`lsdev -Cc cdrom`
 2. Create the CD file system for device '**cd0**' at mount point '**/cdrom**' by entering:
`/usr/sbin/crfs -v cdrfs -p ro -d'cd0 -m'/cdrom'`

6. Enter this command to start the installation program:

```
/cdrom/setup
```

7. Select the appropriate language for the installer to use and click **OK**.
8. Reply to any prompts in the installer.

When the installer asks you to choose a directory to install the transform in, you can choose a directory on any drive. However, you cannot choose a directory with international characters (such as á, É, î, ñ, ô, ß) or double-byte characters anywhere in the directory path.

The installation program analyzes the system. If it reports any errors, follow the instructions to correct them.

If the installation program finds an older version of the RICOH Transform features, you must uninstall it. All custom configurations or resources associated with the older version are also deleted.

If this is the first RICOH Transform features installed, the program detects that the Transform Feature Base is not installed. Click **Next** to install it.

The installation program checks for missing dependencies. After you install all of the

9. Review the information in the Pre-Installation Summary window and click **Install**.
When the installation program completes, it shows a summary, including information about accessing the user interface with a Web browser. The default password is `nopassword`.
10. When the installer completes, click **Done**.
11. Unmount and eject the DVD.
12. If you have another RICOH Transform features to install, repeat this procedure beginning with the step to insert the appropriate RICOH Transform features DVD, described above. Make sure you install all the Transform features before you install the license key.

Note

- When upgrading a transform feature, make sure that all transform features are at the same version. If the transform features are not at the same version, the transform feature you did not upgrade stops working.
- When installing a new version of Transform Features over a previous version, make sure to uninstall first the previous version of Transform Features. Uninstalling Transform Features deletes the files stored in your installation folders.

Important

- To install a language pack, enter this command: `/media/cdrom/aix/features/install_tf_rpd_language_pack.sh`

Logging into the Transform Features user interface

This section describes how to log into the Transform Features user interface.

To log in:

1. Open a Web browser and enter this address:

`http://target server host name or ip address:port determined at install/itm`

The default port number is 16080.

For example, if a Transform Feature is installed on a host with TCP/IP address **127.0.0.1** with the default port, the address is: **http://127.0.0.1:16080/itm**.

2. In the browser window, you see the **Log in to the Transform Feature user interface** page. Type the Transform Features password.

The default password is `nopassword`.

3. Click **Log in**. You see the Transform Features user interface main page.

Note

- If you do not use the Transform Features user interface for 30 minutes or more, you must log in again.

When you first log in to the Transform Features user interface, you see one transform server that has been added by default during the installation.

Downloading and installing license keys

If you have purchased RICOH ProcessDirector, RICOH ProcessDirector Subscription, or any feature, use this procedure to download license keys and install them.

Before you begin this procedure:

- Install the product or feature in trial mode.
- If you have not already purchased the software, contact your local Ricoh support representative or sales representative.

After you purchase the software, Ricoh Production Print sends an email to the email address provided when the order was placed with the Entitlement Management System (EMS) - Entitlement Certificate in the subject line. This email contains an Entitlement ID (EID).

- Follow all the steps in this procedure each time that you receive an email with an Entitlement ID for RICOH ProcessDirector components that you have purchased.
You will receive a new Entitlement ID when you renew the subscription for RICOH ProcessDirector Subscription.
- License keys are specific to the release of RICOH ProcessDirector or RICOH ProcessDirector Subscription that you have installed. Be sure that the version on the **About** dialog matches the information in the email.
- This procedure for downloading and installing license keys does not apply to the Transform Features. See [Installing the Transform Feature license keys, p. 147](#) for more information.

To download and install license keys:

1. Open RICOH ProcessDirector.
2. Click the  button at the right of the banner and select **About**.
3. Click **INSTALL LICENSES**.
4. Click the link to open the license activation website.
5. On the **Software Activation** page, enter your **EID** and system fingerprint.
 - Find the EID in the **Ricoh-Entitlements** email and type or paste it into the **EID** field.
 - Copy the system fingerprint from the **Install Licenses** dialog.
6. Click **Confirm Content**.
7. Select the license you want to activate and click **Activate**.
8. After the license is activated, click **Download License Key**.
The license key file is downloaded to your computer.
9. Return to the **Install Licenses** dialog.
10. In the **Install licenses** dialog, click  and select the license file you want to install.
11. Click **Done**.
12. Restart RICOH ProcessDirector to complete the installation. See [Starting the base product and secondary servers, p. 165](#).

 **Important**

- If the trial period or subscription expires before you restart RICOH ProcessDirector, RICOH ProcessDirector shuts down.

The license keys for all purchased features are now installed on the primary computer. Any feature without a license key remains in trial mode until its trial period ends. If you purchase an additional feature, renew your subscription, or renew your maintenance on the product, repeat this process to install the new key.

When the trial period ends, the steps and objects that are supplied with the feature stop working, but remain on the system. Installing a license key after you purchase the feature activates the steps and objects without requiring a reinstall.

When a subscription expires, all of your objects remain in the system, but you cannot log in. Contact Ricoh software support for assistance with installing a new license on a system with an expired subscription.

Installing the Transform Feature license keys

You can install a Transform Feature license key on a computer other than the primary computer using an installation program from the Transform Features directory.

To install a Transform Feature license key:

1. Log in as an administrator or root user to the computer that the Transform Feature is installed on.
2. Get the fingerprint for the computer.
 1. Open a command prompt.
 2. For AIX and Linux, navigate to the `/opt/infoprint/itm/license_installer` directory, and type:
 - `./GetFingerprint.sh`
 3. For Windows, navigate to the **drive:**`\Program Files\InfoPrint\InfoPrint Transform Features\license_installer` directory, and type:
 - `GetFingerprint.cmd`

The output of the command looks like this:

```
*1AW QLQ7 BQDZ RLRZ
```

↓ Note

- This fingerprint is required to generate the license key. Save the fingerprint for later.
3. Get the license file.
 1. When you purchased the Transform Feature, Ricoh Production Print sent an email to the email address provided when the order was placed with the Entitlement Management System (EMS) - Entitlement Certificate in the subject line. This email contains an Entitlement ID (EID) and a link to the Entitlement Management System website.
 2. Open the Entitlement Management System website in your browser.
 3. In the **Login Using** list, select **EID**.
 4. Find the EID in the email and type or paste it into the **EID** field.
 5. Click **Login**.
 6. Select the license you want to activate and click **Activate**.
 7. In the **Activate Product(s)** window, enter the system fingerprint and click **Generate**.

↓ Note

- If you see an error message that the license could not be generated because checksum validation failed, you entered an incorrect system fingerprint.

8. Select what you want to do with the license file:

- Select **Save to File** to save the license file to your computer.

Note

- Note the **hostname** and the **fingerprint** (without the *) when saving the license file. This is valuable information to have when recovering from a hard drive failure.
- To add the license keys to an existing license file, select **Append To File**.
- To email yourself a copy of the license file, select E-mail.

Note

- Check the email address in the Contact field. If a copy of the email (including the license key file) should be sent to a different email address, click **E-mail**. Type the email address and click **Send**.

9. Log out from the EMS website.

10. If you received the license key file in an email, transfer it to the computer that the Transform Feature is installed on or a network location that is accessible to that computer.

4. Install the license key.

- For AIX and Linux:
 1. Open a command prompt.
 2. Navigate to the `/opt/infoprint/itm/license_installer` directory, and type `./install_license_keys.sh`.
- For Windows:
 1. In Windows Explorer, navigate to the **drive:**\Program Files\InfoPrint\InfoPrint Transform Features\license_installer directory.
 2. Double-click `license_keys_installer.exe` to run the license key installation program.

Configuring RICOH ProcessDirector

You use the user interface to complete configuration tasks for RICOH ProcessDirector, such as setting up job processing, defining input devices for job submission, defining your printer hardware to RICOH ProcessDirector, and adding users. The RICOH ProcessDirector information center describes these configuration tasks.

To access the RICOH ProcessDirector information center to learn about configuration tasks:

1. Enter `http://hostname:15080/pd` from the Web browser on a workstation. The host name of the primary computer is *hostname*.
2. Click  → **Help** from the top task bar. You see the RICOH ProcessDirector information center.
3. From Contents in the left pane, click **Configuring**. You see a list of configuration tasks in the right pane.
4. Select the configuration tasks that apply to your installation.

Scheduling automatic maintenance

RICOH ProcessDirector provides maintenance scripts that must be run regularly on the primary computer to improve performance. By default, RICOH ProcessDirector runs these scripts every day at midnight. You can change the time or frequency, and you can run your own maintenance scripts at the same time.

While these scripts are running, they might slow RICOH ProcessDirector down for a few minutes. Therefore, you should avoid running them at peak production times.

These entries in the crontab file run the maintenance scripts:

```
00 00 * * 0-6 /aiw/aiw1/maintenance/maintenance.pl daily
00 00 * * 0 /aiw/aiw1/maintenance/maintenance.pl weekly
```

crontab entries are in this format:

```
mm hh dd month weekday command
```

The first entry runs all scripts in the `/aiw/aiw1/maintenance/daily` directory at 00:00 (midnight) every day from Sunday (0) through Saturday (6). The second entry runs all scripts in the `/aiw/aiw1/maintenance/weekly` directory at 00:00 (midnight) every Sunday. (By default, there are no scripts in `/aiw/aiw1/maintenance/weekly`.)

- To run the maintenance scripts weekly instead of daily, move them to the `/aiw/aiw1/maintenance/weekly` directory.
- To change the time, day, or frequency for running maintenance scripts, edit the crontab file.
 1. Log in to the primary computer as the RICOH ProcessDirector system user (**aiw1** is the default).
 2. Enter this command:


```
crontab -e
```
 3. Make any necessary changes.

For example, this entry runs all scripts in the `/aiw/aiw1/maintenance/daily` directory at 10:30 PM every Monday, Wednesday, and Friday:

```
30 22 * * 1,3,5 /aiw/aiw1/maintenance/maintenance.pl daily
```

- To run your own scripts at the same time as the RICOH ProcessDirector maintenance scripts, copy them into the `/aiw/aiw1/maintenance/daily` or `/aiw/aiw1/maintenance/weekly` directory.

Make sure that the RICOH ProcessDirector system user ID has execute permission for your scripts.

Replacing your control files with the sample files

When you install a new version of RICOH ProcessDirector, the installer automatically adds new sample control files to the `/aiw/aiw1/samples` directory and copies them to your control files directory, `/aiw/aiw1/control_files`. It does not overwrite any of your customized control files in `/aiw/aiw1/control_files`. You can use the `copyConfigurationFiles` script to install the default control files or to overwrite your customized control files.

Replacing your control files requires Perl to run. Before replacing your control files, make sure a Perl interpreter is installed.

To replace your control files with the sample files:

1. Log in to the primary computer as the RICOH ProcessDirector system user (**aiw1** is the default).

2. On the command line, enter this command:

```
/opt/infoprint/ippd/bin/copyConfigurationFiles.pl
```

You can add these optional parameters to the `copyConfigurationFiles` command:

```
[-r [-b]] [-w forceReplaceFile] [samplesDirectory configurationFilesDirectory]  
[[-o differencesOutputFile] [-c]] [-v] [-help]
```

-r

The script overwrites existing files in the `/aiw/aiw1/control_files` directory.

-b

The script backs up each file it replaces. The backup files are called *replaced_file.bak*. It does not back up files unless they are being replaced by a different version of that file.

-w *forceReplaceFile*

The script overwrites a specific set of files. List the file paths to overwrite in the *forceReplaceFile* file.

samplesDirectory

The directory where the sample files are located. The default is `/aiw/aiw1/samples`.

configurationFilesDirectory

The directory where the control files are located. The default is `/aiw/aiw1/control_files`.

-o *differencesOutputFile*

The script writes any file names where there are different versions of a file in the `samples` and `control_files` directories. The different version file names are written to the *differencesOutputFile* file.

-c

The script compares the files in the `/aiw/aiw1/samples` and `/aiw/aiw1/control_files` directories and prints a list of which files are in both directories but have different content. Running the script with this parameter does not do the normal copying and replacing.

-v

The script displays additional file information while copying files.

-help

The script displays help and syntax information.

New versions of RICOH ProcessDirector might add new functions that require updated control files. To move your customized content from the old control files to the new control files:

1. Generate a list of which files have new versions. Enter this command:
`copyConfigurationFiles.pl -o /tmp/differencesOutputFile`
2. Copy the new control files. Enter this command: `copyConfigurationFiles.pl -r -b -w /tmp/differencesOutputFile`
Specifying the `-b` option means the script backs up files before overwriting them.
3. Copy your customized content from the *replaced_file.bak* backup files to the corresponding control file.

Copying objects from another system

To reuse objects from another RICOH ProcessDirector system, you can use the other system to export them. On this RICOH ProcessDirector system, you can import the objects rather than recreating them manually.

You can export and import objects such as input devices, workflows, printers, media objects, notifications, servers, step templates, user names, groups, and locations. You can also export and import some objects added by features or extensions.

★ Important

- Do not import objects added by a feature or extension that is not installed on this system.
- Before you import an object that has the same name as an existing object of the same type, make sure that the existing object is disabled. If the object is an input device, also make sure that it is disconnected. When you import the new object, the existing object is updated to match the new one.
- Before you import an input device or printer whose **Parent server** property has any value other than **System**, make sure that the parent server has been added as a secondary server. Make sure that the secondary server has been enabled and connected to the primary server.
- Before you import a notification, you must import the user names and groups specified on the **Recipient address**, **Copy address**, and **Blind copy address** properties if they do not exist on the system.
- If you are using the Preprinted Forms Replacement feature, export the `media.zip` file before you import media objects with electronic forms. Follow the instructions in the help system for exporting media objects with electronic forms.
- When you import step resources, the files that they refer to are not included in the export package. Copy the files referenced in the step resources from the export system to the import system manually. You must copy the files to the import system before you import the step resource objects.
 - To import all the step resources, copy the contents of `/aiw/aiw1/StepResources` from the export system into the same directory on the import system.
 - To import specific step resources, open the XML file that you exported. Find the entry for each step resource that you exported and locate the **StepResource.File** property. In that value, find the name of the RSC file associated with that step resource. For example, in this value:


```
<property name="StepResource.File" value="{&quot;fileName&quot; : &quot; / aiw/aiw1/StepResources/1992052c6ef44a229b8b43d77232bf53.rsc1992052c6ef44a229b8b43d77232bf53.rsc&quot; , &quot;&quot; , &quot;displayName&quot; : &quot; Ricoh_Export-2019-08-26_13-30-04.xml&quot; }"/>
```

 The file name is: `1992052c6ef44a229b8b43d77232bf53.rsc`
 Find the file on the export system and copy it into the same directory on the import system.
- You can export objects from a primary server running on one operating system and import them on a primary server running on a different operating system.

If you export objects from Windows and import them on Linux, you need to manually update the paths for the paths or the configuration files.

If you import any step templates based on the **RunExternalProgram** step template, you must update the **External command** and **External control file template** properties for those templates.

To copy objects from another system:

1. Click the **Administration** tab.
2. In the left pane, click **Utilities** → **Import Objects**.
3. In the **File to import** field, click  to select the XML file that contains the properties of exported objects.

The default name of this file is `Ricoh_Export_timestamp.xml`. The administrator who exported the objects might have given the file a different name.

Note

- If you exported media objects with electronic forms, the name of the file is `media.xml`. It is in this directory:

– `/aiw/aiw1`

The file is automatically examined, and the objects are evaluated. If there are issues with any objects in the file, you see a dialog that lists the import errors and warnings. Close the dialog and all the objects appear in the **Objects to import** table. Objects with errors or warnings are marked with an icon.

Repeat this step for all the files you want to import. Objects from additional files are added to the table, so they can all be added at the same time.

4. Review the objects in the list. Select any object marked with a warning or error symbol and click **Details** to see additional information about the warning or error. Follow the instructions in the description to resolve problems. You cannot import objects that are marked as errors.
5. Select the objects that you want to import.
6. **Optional:** To make sure that you do not update objects that exist, click **Deselect existing objects**.
7. Click **Import**.

If the **Import** button is disabled, one or more selected objects are marked with the error icon. Click **Deselect error objects** to clear the selection for those objects and click **Import** again. The objects without errors are imported.

Return to the error objects to resolve the issues and try to import them again.

Note

- Credential objects might be contained in the file you import if they were included as references in workflows, step templates, input devices, or transmitter objects. The imported credential objects cannot be used until you re-enter values for the **User name** and **Password** properties on the imported system.
- If an imported workflow refers to a step that does not exist on this system, RICOH ProcessDirector replaces the step with a placeholder step named ReplacedStep. The original step name and step template name are available in the Step properties. The ReplacedStep acts like the ContinueToNextStep step template, so it simply passes the job to the next processing step without changing it.
- Contact your local Ricoh support representative if you receive an error message for step templates not containing a reference to an extension when importing objects.

Installing and configuring the pdpr script

If you are migrating from InfoPrint Manager and you use the **pdpr** command to submit jobs, you can install the RICOH ProcessDirector **pdpr** script on the computers that submit jobs and use the same command to send jobs to RICOH ProcessDirector.

The installation package for the **pdpr** script is copied to the primary computer when you install the base product. You can copy the installation package and install it on computers that submit jobs running these operating systems:

- AIX 6.1 or 7.1
- Sun Solaris 9 and 10
- Windows 7

↓ Note

- To install the **pdpr** script on a different operating system, contact your Ricoh support representative.

The **pdpr** script requires Perl to run. Before you install the **pdpr** script, make sure that a Perl interpreter is installed on the client systems.

The **pdpr** script uses a control file named `pdpr.cfg` to determine whether jobs are sent to InfoPrint Manager or to RICOH ProcessDirector. You can either store the control file on the same computer that you install the **pdpr** script on, or you can store it in a central location and let the **pdpr** script access it using FTP. The **pdpr** script uses an anonymous login to the FTP server, so the anonymous user must have read permission for the control file.

To get the most recent **pdpr** script, contact your Ricoh support representative.

To install and configure the **pdpr** script:

1. Log in to the primary computer as the RICOH ProcessDirector system user (**aiw1** is the default), or with a user ID that is a member of the RICOH ProcessDirector group (**aiwgrp1** is the default).
2. Find the **pdpr** installer file: `/aiw/aiw1/samples/pdpr/pdpr_installer`.
3. Copy the file to a temporary directory on the computer that runs the **pdpr** command.
4. Log in to a client computer:
 - On an AIX or UNIX-based client, log in as the root user and open a command prompt.
 - On a Windows client, log in as a user with administrator permission and open a command prompt.
5. Change directories to the directory that contains `pdpr_installer`.
6. Type: `perl pdpr_installer`
The installer interface runs in the command prompt window.
7. When the installer asks where you want to install the program, choose a different directory than the temporary directory that the `pdpr_installer` was copied in to.

★ Important

- If you install into the temporary directory, the installation fails. You get an incomplete installation that has a `pdpr` directory instead of the **pdpr** script.
8. Respond to the questions in the installer according to these definitions:

Hostname or IP address of RICOH ProcessDirector server

Fully qualified hostname or IP address of the computer that the primary server is installed on.

Full FTP path for pdpr.cfg file

If you want to store the `pdpr.cfg` file in a central location, the full path to the `pdpr.cfg` file. The value must end with the file name `pdpr.cfg`.

If you plan to store the `pdpr.cfg` file on the same system as the **pdpr** script, do not type anything; press **Enter** and continue with the installer.

9. Finalize the installation process:

- If you are installing on an AIX or Sun Solaris client, log out and log back in so the changes can take effect.
- If you are installing on a Windows client, restart the computer so the changes can take effect.

10. To define rules for parsing the `pdpr` command and submitting jobs to RICOH ProcessDirector, edit the `pdpr.cfg` file.

The file must contain one line for each rule that you define. Jobs are sent to an input device based on the last rule that they match. If the job does not meet the conditions of any of the rules, it is sent to InfoPrint Manager.

Each line of the file follows this syntax:

```
FileName | LDName ,regular_expression, input_device_name, [BOTH]
```

Use **FileName** if you want to parse the file name of the input file to determine where to send the job. Use **LDName** to parse the value of the **-d** (InfoPrint Manager logical destination) option on the **pdpr** command to determine where to send the job.

For example, the file might contain these lines:

```
LDName, .*\. [Pp][Ss], InputPS
FileName, .*\. [Aa][Ff][Pp], InputAFP
```

The first line instructs the script to look at the **-d** option on the **pdpr** command. If the value specified for that option ends with **.ps** or **.PS**, the job is sent to the input device named **InputPS**. The second line instructs the script to look at the file name of the input file. If the file name ends with **.afp** or **.AFP**, the job is sent to the input device named **InputAFP**.

If neither condition is met, the job is sent to InfoPrint Manager using the value stored in the `PDHOST` environment variable on the system.

Add the **BOTH** parameter to the end of an entry to indicate that if the condition is satisfied, the job should be sent to both InfoPrint Manager and RICOH ProcessDirector. This is useful when you are initially configuring RICOH ProcessDirector to receive jobs from **pdpr** because you can test the RICOH ProcessDirector configuration while continuing to use InfoPrint Manager in your production environment.

Now you can configure RICOH ProcessDirector to receive jobs submitted with the **pdpr** script from all the client systems. For more information, see the RICOH ProcessDirector information center in the user interface.

Setting up to use LDAP authentication

If you have an existing LDAP or Active Directory server, you can use LDAP or Active Directory user names and passwords to authenticate into RICOH ProcessDirector.

You must install the Security feature before you can set up to use LDAP authentication.

Consult your LDAP administrator for the values of the **LDAP server** and other properties you set in this procedure. Before you turn on LDAP authentication, you map RICOH ProcessDirector security groups to existing LDAP groups.

After you turn on LDAP authentication, the first time that a user logs in:

- RICOH ProcessDirector authenticates the user name and password with the LDAP server.
- RICOH ProcessDirector creates a RICOH ProcessDirector user name that is identical to the LDAP user name.

Note

- No LDAP password information is stored on the RICOH ProcessDirector server.
- RICOH ProcessDirector assigns the user RICOH ProcessDirector group memberships based on the values for the **Product to LDAP group mapping** property and the LDAP group memberships of the user.

Each time that a user logs in:

- RICOH ProcessDirector authenticates the user name and password with the LDAP server.
- If you synchronize product groups with LDAP groups, RICOH ProcessDirector updates the product group memberships of the user based on:
 - The values for the **Product to LDAP group mapping** property.
 - The LDAP group memberships of the user.
- If you do not synchronize product groups with LDAP groups, RICOH ProcessDirector does not update the product group memberships of the user. You can assign group memberships to users manually in RICOH ProcessDirector. See the RICOH ProcessDirector information center for information about managing users and groups.

To set up to use LDAP authentication:

1. Log in as a user who is a member of the **Administrator** security group.
2. Click the **Administration** tab.
3. In the left pane, click **Settings** → **LDAP**.
4. Set the **LDAP server** property to either of these values:
 - The network IP address.
 - The fully qualified host name of the LDAP server and the port that the system uses for authentication.
To include more than one LDAP server, use a semicolon (;) to separate the entries.
5. Specify values for the **Root distinguished name**, **User search base**, and **User search filter** properties.

The value you enter for the **User search filter** property determines the format of your RICOH ProcessDirector user names, for example, an email address format or a UID format.

6. **Optional:** Specify a value for the **Email attribute** property.

If you enter a value for this property, RICOH ProcessDirector sets a value for the **Email address** property when it creates a user.

7. Specify values for the **Manager distinguished name** and **Manager password** properties.
8. Specify values for the **Group search base**, **Group search filter**, and **Group search member** properties.

RICOH ProcessDirector uses the name of the LDAP group specified in the **Product to LDAP group mapping** property in the **Group search filter** property when it authenticates an LDAP user to RICOH ProcessDirector.

9. If you want to manage RICOH ProcessDirector security groups using LDAP, set the **Synchronize with LDAP** property to **Yes**. If you want to manage security groups using RICOH ProcessDirector, set the property to **No**.
10. Specify the connections between product groups and LDAP groups:
 1. Select a product security group from the list.
 2. Type the name of the corresponding LDAP group next to it.
 3. Click **+** to the right of the LDAP group and map another product group to an LDAP group.
 4. Repeat the previous step until you have mapped all product groups to LDAP groups.
11. Check to see whether your browser has automatically filled the **Manager distinguished name** and **Manager password** properties. If they are filled, clear the properties and leave them blank.
12. To secure the connection to the LDAP server and establish Transport Layer Security (TLS), specify a value for the **LDAP security** property:
 - To use the StartTLS operation, set the property to **StartTLS**. StartTLS works with most default implementations of LDAP.
 - To use the Secure LDAP (LDAPS) protocol, set the property to **ldaps**. Do not specify LDAPS unless your LDAP administrator already has set up your LDAP implementation to use LDAPS.
13. To verify that you can log in with your LDAP credentials:
 1. In the **Test LDAP Settings** section, enter an LDAP user name and password. Make sure that the user name is a member of an LDAP group that is mapped to the RICOH ProcessDirector **Administrator** group.
 2. Click **Test LDAP Settings**.
If the test is successful, you receive a message that says LDAP settings test succeeded.

If you receive an error message, click **Close**, update your LDAP settings, and click **Test LDAP Settings** again.
14. When the test completes successfully, set the **Authenticate with LDAP** property to **Yes**.
If you cannot get a successful test, leave the **Authenticate with LDAP** property set to **No** and have your LDAP specialist look at other possible issues.
15. Click **SAVE**.

If you have not used the test function before you click **SAVE** with the **Authenticate with LDAP** property set to **Yes**, the system runs the test with the user ID and password specified.

- If the test succeeds, the settings are saved and LDAP authentication is activated.
- If the test fails, you see an error message and none of the settings are saved.
Fix the **LDAP settings** and run the test until it passes. If the test continues to fail, set the **Authenticate with LDAP** property to **No** and click **SAVE**. Work with your LDAP specialist to resolve the problems and retest the settings.

After you turn on LDAP authentication:

- Local RICOH ProcessDirector users cannot log in to RICOH ProcessDirector.
- The first time that an LDAP user logs in to RICOH ProcessDirector, the system creates a user name that is identical to the LDAP user name.
- If the **Synchronize with LDAP** property is set to **Yes**, RICOH ProcessDirector does not use any product groups that are not associated with LDAP groups.

RICOH ProcessDirector does not delete existing user names when you turn on LDAP authentication. You must manually delete those user names from the system.

↓ Note

- When LDAP authentication is turned on and RICOH ProcessDirector has a user with the same user name as an LDAP user:
 - RICOH ProcessDirector keeps the password of the existing user.
 - RICOH ProcessDirector lets the user authenticate with LDAP.
- If LDAP authentication is turned off, the user can authenticate with the RICOH ProcessDirector password.

6

Communicating between RICOH ProcessDirector and the LDAP server

When you set up communications between RICOH ProcessDirector and your LDAP server, you might have to modify your LDAP server settings for these binds and search requests.

This table maps the Database property names to the corresponding names in the user interface. Use this table as a reference to help understand what properties are passed and returned by the searches and binds performed by RICOH ProcessDirector.

Database and User Interface property names

Database Property Name	User Interface Property Name
WorkflowSystem.AdLdap.GroupMap	Product to LDAP group mapping
WorkflowSystem.AdLdap.GroupSearchBase	Group search base
WorkflowSystem.AdLdap.GroupSearchFilter	Group search filter
WorkflowSystem.AdLdap.GroupSearchMember	Group search member
WorkflowSystem.AdLdap.ManagerDN	Manager distinguished name

Database Property Name	User Interface Property Name
WorkflowSystem.AdLdap.ManagerPassword	Manager distinguished name password
WorkflowSystem.AdLdap.rootDN	Root distinguished name
WorkflowSystem.AdLdap.Server	LDAP server
WorkflowSystem.AdLdap.UserSearchBase	User search base
WorkflowSystem.AdLdap.UserSearchFilter	User search filter
User.ID	User name
User.Password	User password

RICOH ProcessDirector creates these binds whenever a user logs in:

- bind `${WorkflowSystem.AdLdap.Server}` using `${WorkflowSystem.AdLdap.ManagerDN}` and `${WorkflowSystem.AdLdap.ManagerPassword}`
When the **Manager distinguished name** system property (`WorkflowSystem.AdLdap.ManagerDN`) does not have a value, an Anonymous bind is created.
- bind to `${WorkflowSystem.AdLdap.Server}` using `${User.ID}` and `${User.Password}`

Note

- The password for `User.Password` must be set when making changes for LDAP. If the password is not set, the bind fails.

RICOH ProcessDirector does these search requests whenever a user logs in:

- For all RICOH ProcessDirector LDAP groups: `searchRequest "${WorkflowSystem.AdLdap.GroupSearchBase},${WorkflowSystem.AdLdap.rootDN}" wholeSubtree Filter: (${WorkflowSystem.AdLdap.GroupSearchFilter}${WorkflowSystem.AdLdap.GroupMap})`
The results must include the **Group search member**. The value of the Group search member is used as the RICOH ProcessDirector user name.
- When a user name is set to the value returned on the **Group search member** argument: `searchRequest "${WorkflowSystem.AdLdap.UserSearchBase},${WorkflowSystem.AdLdap.rootDN}" wholeSubtree Filter: (${WorkflowSystem.AdLdap.UserSearchFilter}=${User.ID})`

Verify communications between RICOH ProcessDirector and your LDAP server are working correctly by testing the **Group search base** and **User search base**:

- Test the **Group search base** by entering this command at a command prompt:

```
ldapsearch -D "WorkflowSystem.AdLdap.ManagerDN" -x -W -b "WorkflowSystem.AdLdap.GroupSearchBase,WorkflowSystem.AdLdap.rootDN" -h "WorkflowSystem.AdLdap.Server" -s sub "(WorkflowSystem.AdLdap.GroupSearchFilter=GroupMap)"
```

If communications between RICOH ProcessDirector and your LDAP server are working correctly, data containing the group search is returned. The response contains information stored in your LDAP server:

```
UID=UserName, ou=GroupName, ou=OrganizationName, dc=ComputerName, dc=CompanyName
```

`GroupName` is returned by **WorkflowSystem.AdLdap.GroupSearchBase**. `OrganizationName`, `ComputerName`, and `CompanyName` are returned by **WorkflowSystem.AdLdap.rootDN**.

- Test the User search base by entering this command at a command prompt:

```
ldapsearch -D "WorkflowSystem.AdLdap.ManagerDN" -x -W -b "WorkflowSystem.AdLdap.
UserSearchBase,WorkflowSystem.AdLdap.rootDN" -h "WorkflowSystem.AdLdap.Server"
-s sub "(WorkflowSystem.AdLdap.UserSearchFilter=User.ID)"
```

Data containing the user search is returned if communications between RICOH ProcessDirector and your LDAP server are working correctly. The response contains information stored in your LDAP server:

```
UID=UserName, ou=OrganizationUsers, ou=OrganizationName, dc=ComputerName, dc=
CompanyName
```

OrganizationUsers is returned by **WorkflowSystem.AdLdap.UserSearchBase**. OrganizationName, ComputerName, and CompanyName are returned by **WorkflowSystem.AdLdap.rootDN**.

Creating a Docker container secondary server

Use this procedure to create a Docker container secondary server on a Linux system and connect it to your primary computer.

Before you begin this procedure, install Docker Engine 19.03 or above on the Linux computer that will host the container secondary server.

To create a Docker container secondary server:

1. Contact Ricoh Software Support for assistance with this process.
The Software Support team can help evaluate your system and determine whether this procedure needs to be modified to fit your needs.
2. Download and install the Secondary Docker feature.
Follow these procedures:
 - [Downloading and installing update packages, p. 162](#)
 - [Adding or upgrading a feature using Import Package, p. 140](#)
3. If directed by Software Support, install the Secondary Server feature on the remote Linux computer that will host the Docker container secondary server.
Follow the procedures outlined in [Setting up application and secondary servers, p. 117](#).
4. If you did not install the Secondary Server feature:
 1. Configure NFS to communicate between the primary computer and the computer that will host the Docker container secondary server.
Follow the procedure in [Preparing the primary computer, p. 118](#) to set up NFS on the primary computer. Stop after you have configured NFS and edited `/etc/hosts`. Do not create a secondary server at this time.
 2. On the computer that will host the Docker container secondary server, create this directory: `/aiw`, then mount it to the `/aiw` directory on the primary computer.
Use this command: `mount -t nfs primary computer IP address or hostname:/aiw /aiw`
5. On the computer that will host the Docker container secondary server:

1. Create a Linux user ID with the same name as the RICOH ProcessDirector system user (**aiw1** is the default). Add that user ID to the **docker** group.
2. Change the ownership of the `/aiw` directory to the user you created.
6. Log in to RICOH ProcessDirector.
7. Create the server object to represent the Docker container secondary server.
 1. Click the Administration tab.
 2. In the left pane, click **Objects** → **Servers**.
 3. On the **Servers** page, click **Add** → **Container secondary server**
 4. Fill in the properties as appropriate.
 5. Click **OK**.

RICOH ProcessDirector creates the server object and installs the container secondary server on the target system.

8. When the installation process completes, start the container secondary servers. Log in to the computer that hosts the secondary container servers and run the command below.

Note

- If you created the container secondary server on the primary computer, run the command on the primary computer.
Replace *directory* with: `/aiw`
The *path_to_script* is not required on the primary server.
- If you created the container secondary server on a different computer, run the command from the secondary computer.
On a secondary computer, you must provide the full path to the script on the primary computer, including the directory that is mounted to the `/aiw` directory on the primary server. In the command below, replace these values:
 - *path_to_script*
The full path to the script on the primary server, including the mounted directory. If the mounted directory is `/aiw` (as in the procedure above), the value is: `/aiw/aiw1/bin/`
 - *directory*
The full path to the directory that is mounted to the `/aiw` directory on the primary server. In the procedure above, this directory is also `/aiw`.
- To start a specific container secondary server, replace `[secondary_name]` with the name of that server. Omit this value to start all of the container secondary servers present on the Linux computer.

`[path_to_script]containers.pl start directory [secondary_name]`

For example:

- To start all the container secondary servers on the primary server:
`containers.pl start /aiw`
- To start one of four container secondary servers on a different computer:
`/aiw/aiw1/bin/containers.pl start /aiw secServContainer3`

To stop the Docker container secondary servers, run this command on the computer that hosts them:

```
[path_to_script]containers.pl stop directory [secondary_name]
```

Follow the replacement instructions above for `[path_to_script]`, `directory` and `[secondary_name]`.

Moving processing to and from a failover server

Failover servers are designed to take over processing in the event that your RICOH ProcessDirector production server suffers a catastrophic event. Use this procedure to move processing between the RICOH ProcessDirector production server and the failover server.

To switch RICOH ProcessDirector processing to and from a failover server:

1. Log in as the system user (aiw1 is the default) to the server you are moving processing from. If the system is not available (for example hardware failure or if the system is powered down), continue with step 3. If you are moving processing from the production server to the failover server, log in to the production server. If you are moving processing from the failover server to the production server, log in to the failover server.
2. Open a command line and enter: `stopaiw`
3. Log in as the root user to the server you are moving the processing to.
4. Enter `/opt/infoprint/ippd/bin/changeHostname.pl server_hostname` where `server_hostname` is the name of the server you are moving processing from and press **Enter**. If you are moving processing from the production server to the failover server, `server_hostname` is the production server. If you are moving processing from the failover server to the production server, `server_hostname` is the failover server.

Installing a RICOH ProcessDirector product update

Preparing for the update

When you prepare your system for an update, you must determine how you want to update your system and what components you have installed, and then back up your system.

To prepare for an update:

1. Decide how to update your system. You have two choices:
 - Download the full product ISO file for the most recent version of RICOH ProcessDirector. The ISO file includes a full update of the base product and all of the features. You install the update the same way that you initially installed the product. This option is the most efficient, because there is only one package to download and installed features are updated automatically.

Note

- RICOH Transform features must be downloaded and installed separately.
- Download the update packages for the base product and each of the features you have installed. Downloading individual update packages can be faster than downloading the full ISO file, as each package is significantly smaller than the ISO file. However, each package must be

downloaded individually. If you have a large number of features to update, the process can take a long time.

You can only install a product update on RICOH ProcessDirector systems at Version 3.6 or higher. If your software is below Version 3.6, use the full product ISO file or contact Software Support.

2. If you have RICOH Transform features installed, log in to the Transform Feature user interface and open the About dialog. Note the transforms that you have installed.
3. If you chose to use the full product ISO file, follow the instructions in chapters 3 and 4 of *Ricoh ProcessDirector: Planning and Installing* for downloading and installing the update.
4. If you chose to install update packages, you must update the base product and all features that are currently installed.

1. Log in as a user authorized to use Feature Manager.
2. Click **Administration**.
3. In the left pane, choose **Utilities** → **Features**

If you see an error message, you must start Feature Manager manually:

- On AIX or Linux: Log in to the primary computer as the default user and open a command prompt. Type: `startaiw -f`
- On Windows: Log in to the primary computer using the RICOH ProcessDirector administrator account. Click the Windows Start button and type `services` to search for the Services App. Open the Services App, then right-click the Feature Manager Service and select **Restart**.

To complete the process, clear your browser cache and reload the Feature Manager web page.

4. Make a list of all the features that have a version number in the **Installed Version** column. The Product Update feature contains the base product, so it must be updated.
5. Back up the system. Type these commands.

```
zip -r aiwlib.zip /aiw/aiw1/lib/*
zip -r ext-xml.zip /opt/infoprint/ippd/extensions/**/extension.xml
```

↓ Note

- This procedure stops and starts your RICOH ProcessDirector server. Do this procedure at a scheduled maintenance time.

Downloading and installing update packages

Product updates for RICOH ProcessDirector can be downloaded from the Ricoh Software Web page.

↓ **Note**

- This procedure assumes that you are not using the primary computer to access an external Web page and download the update files.

If you download the files directly to the primary computer, download the files to this directory:

```
/opt/infoprint/ippd/available
```

To download and install the update packages:

1. In a web browser, open this page: <https://dl.ricohsoftware.com/>.
2. Click **Software Downloads**, enter your Entitlement ID, and click **Submit**.
3. **Optional:** If you have RICOH Transform features to update, find and click the names of those transforms to download them.
4. Click **View Related Files** on the right side of the page.
5. Click the title of each package that you want to download, starting with **Ricoh ProcessDirector: Product Update Feature**.
Use the list of installed features that you made to determine which other packages to download.
6. After each package downloads, validate its MD5 checksums to the value shown on the Web page. Use this command, substituting the name of the file for *ProductUpdate.epk*:

```
csum -h MD5 ProductUpdate.epk
```


If the checksum does not match, download the file again.
7. Log in to the primary server as the aiw1 user.
8. Copy the EPK files into this directory on the primary computer:

```
/opt/infoprint/ippd/available
```
9. Install the Product Update feature using Import Package.
For more information, see: [Adding or upgrading a feature using Import Package, p. 140](#)
10. When the installation completes, RICOH ProcessDirector restarts. Use your browser to log in to the user interface. If an error occurs during the installation, contact Ricoh Software Support.
11. If you downloaded other feature packages, use Feature Manager to install them.
12. If you downloaded RICOH Transform features, mount and install each ISO file.
For details about running the install program, refer to *RICOH ProcessDirector: Planning and Installing*, chapter 4.

7. Starting, stopping, and uninstalling

- Starting the base product and secondary servers
- Starting an application server
- Stopping the base product and secondary servers
- Stopping secondary servers on Linux
- Stopping an application server
- Uninstalling RICOH ProcessDirector

You can start and stop RICOH ProcessDirector servers. You can also uninstall RICOH ProcessDirector.

Starting the base product and secondary servers

RICOH ProcessDirector base product and secondary servers start automatically when the systems on which they are installed start. However, you might need to start the base product or a secondary server without restarting the entire operating system.

After a system shutdown and restart, all the printers are disabled. If you want all the printers that were enabled before the shutdown to be enabled after the system is restarted, you can change the **Remember enabled status of printers** system property to **Yes**.

To start the base product or remote secondary servers:

1. Log in to the system as the RICOH ProcessDirector system user (**aiw1** is the default).
2. Access the command line.
3. Enter this command:

```
startaiw
```
4. If the **startaiw** command fails, enter these commands:

```
stopaiw  
startaiw
```

On the primary computer, the command starts the primary server, local secondary servers, the user interface program, and the information center. On a secondary computer, the secondary server starts and connects to the primary server.

Starting and stopping the base product when the DB2 server is on a different computer

The RICOH ProcessDirector primary server and its DB2 client must always be able to connect to the DB2 server. If the DB2 server is installed on a different computer and you reboot that computer, you must stop and restart RICOH ProcessDirector.

Stop and restart RICOH ProcessDirector and the DB2 server in this order:

1. Log in to the AIX system as the RICOH ProcessDirector system user (**aiw1** is the default).
2. Enter this command to stop RICOH ProcessDirector:

```
stopaiw
```

3. Reboot the computer where the DB2 server is installed.
The DB2 server stops automatically.

4. Log in to the DB2 server computer as the RICOH ProcessDirector DB2 instance user.
The default user ID is aiwinst.
5. Enter this command to start the DB2 server:

```
db2 start db manager
```

6. On the RICOH ProcessDirector primary computer, log in as the RICOH ProcessDirector system user again and enter this command to restart RICOH ProcessDirector:

```
startaiw
```

If the DB2 server stops unexpectedly, stop RICOH ProcessDirector, then continue with the step after stopping RICOH ProcessDirector, described above.

Starting an application server

To run processing steps on an application server, the application server must be running. If the application server is not configured as a service, you must start the application server manually.

To manually start an application server:

1. Log in to the Windows system as the user that the application server runs under.
2. Start the application server. Use the **Start application server** link in the RICOH ProcessDirector start menu folder.

Stopping the base product and secondary servers

When you stop the RICOH ProcessDirector base product or a remote secondary server, you can stop the system with or without waiting for job-processing steps to complete. If you have the AFP Support feature installed, you can also choose whether to stop processes that were started by the RICOH ProcessDirector printer driver component, by Download for z/OS, or by AFP Download Plus.

After a system shutdown and restart, all the printers are disabled. If you want all the printers that were enabled before the shutdown to be enabled after the system is restarted, you can change the **Remember enabled status of printers** system property to **Yes**.

To stop the base product or a remote secondary server:

1. Log in to the system as the RICOH ProcessDirector system user (**aiw1** is the default).
2. Access the command line.
3. **Optional:** To minimize the impact of shutting down the system on processes that are currently running, disable the input devices associated with the server.
4. Enter one of these commands:
 - To stop the system immediately without waiting for steps to complete:
stopaiw
Any steps that were in a processing state will move to an error state when you restart the system.
 - To stop the system after the currently processing steps are complete:
stopaiw -q
 - To stop the system and all processes that were started by the printer driver component, by Download for z/OS, or by AFP Download Plus:

```
stopaiw -t
```

This option is only available on a primary computer with the AFP Support feature installed.

On the primary computer, the command shuts down the primary server, local secondary servers, the user interface program, and the information center. If a remote secondary server is connected to the primary server when the primary server stops, the secondary server tries to reestablish the connection every 30 seconds, until it can connect or until the remote secondary server stops.

On a secondary computer, the command disconnects the remote secondary server from the primary server and stops the secondary server.

Stopping secondary servers on Linux

When you stop a RICOH ProcessDirector secondary server running on Linux, you can stop the server with or without waiting for job-processing steps to complete.

To stop a secondary server on a Linux system:

1. Log in to the Linux system as the RICOH ProcessDirector system user (**aiw1** is the default).
2. Access the command line.
3. **Optional:** To minimize the impact of shutting down the system on processes that are currently running, disable the input devices associated with the server.
4. Enter one of these commands:

- To stop the secondary server immediately without waiting for steps to complete:
`stopaiw`

Any steps that were in a processing state will move to an error state when you restart the system.

- To stop the secondary server after the currently processing steps are complete:
`stopaiw -q`

RICOH ProcessDirector disconnects the secondary server from the primary server and stops the secondary server.

7

Stopping an application server

You can stop an application server through the Windows Start menu. Stopping the server prevents RICOH ProcessDirector from accessing any external programs on the Windows system.

To stop an application server:

1. Log in to the Windows system as the user that the application server runs under.
2. Stop the application server. Use the **Stop application server** link in the RICOH ProcessDirector start menu folder.

Uninstalling RICOH ProcessDirector

You might need to uninstall RICOH ProcessDirector (for example, if you need to restore to a previous level).

Uninstalling the base product, features, and extensions

You can use one command to uninstall the base product and all features and extensions (except Secondary Server features) at the same time. You cannot uninstall features or extensions individually.

To uninstall the base product and all features and extensions:

1. Log in to the primary computer as the root user.
2. Enter one of these commands:
 - If you are running the primary computer from a graphical user interface such as X Windows:
`/opt/infoprint/ippd/_uninstall/ippd/removeIPPD -i gui`
 - If you are running the primary computer from a terminal window:
`/opt/infoprint/ippd/_uninstall/ippd/removeIPPD -i console`

Note

- If you see an error that the Java virtual machine cannot be found, enter this command, then try to run the command again:
`. ~aiw1/.profile`

RICOH ProcessDirector starts the program that guides you through the uninstallation process. Follow the instructions in the program.

3. Click **Uninstall** to start the uninstallation process.
You can choose to remove the system user (aiw1), the system group (aiwgrp1), and the database user (aiwclnt) and group (aiwdbgrp).
When the uninstallation is complete, you either see a message that the uninstallation was successful or a message that there were errors and the location of the error log file.
4. Click **Done**.
5. The uninstallation program leaves behind part of the directory structure. To completely remove all files that the RICOH ProcessDirector installation program installed, remove any file systems that were created as part of the installation.

File systems to remove include:

- /aiw/aiw1/db2
- /aiw/aiw1/db2_logs
- /aiw
- /opt/infoprint/ippd
- /var/psf/segments
- /var/psf
- /var/aiw

Important

- Do not remove the /opt/infoprint directory if RICOH InfoPrint XT or RICOH Transform Feature are installed on the server you are using.

6. To remove the RICOH ProcessDirector databases and DB2 instance from a DB2 server on a different computer:
 1. Log in to that computer as the DB2 instance owner of the RICOH ProcessDirector database.
 2. Insert the RICOH ProcessDirector base product DVD in the drive.
 3. Go to the `/scripts` directory on the RICOH ProcessDirector base product DVD.
 4. Enter this command to run the uninstall script:


```
./remoteDB2uninstall.sh
```

↓ Note

- `remoteDB2uninstall.sh` lets you choose whether to remove the RICOH ProcessDirector user IDs or user groups created by `setupRemoteDB2.sh`. It does not remove RICOH ProcessDirector user IDs or user groups that you created manually.
7. Restart the primary computer.

Uninstalling Transform Features

If you want to uninstall Transform Features, you need to uninstall it from the server and the BladeCenter, as appropriate.

Uninstalling Transform Features from a server

This section describes the procedure for uninstalling Transform Features from a server.

To uninstall Transform Features from a server:

1. For Linux and AIX, run this command from this path: `/opt/infoprint/itm/_uninst/uninstall_itm.sh`, and for Windows, specify the uninstall command from this path: `install_path_uninst\uninstall.exe`
2. To uninstall only a specific transform, for Linux and AIX, run this this command: `/opt/infoprint/itm/_inst/feature/<transform_id>/_uninst/uninstall_tf_<transform_id>.sh` where `<transform_id>` is the transform name.
3. You see the **Welcome to the uninstall program** page.
4. Click **Next**.
You see the summary page stating that the installer will uninstall Transform Features.
5. Click **Uninstall**.
You see the page stating that Transform Features has successfully uninstalled.
6. Click **Finish** to exit the wizard.

On Windows operating systems, Transform Features can also be uninstalled from the Control Panel.

Uninstalling Transform Features from a Linux server from the command line

This section describes how to uninstall Transform Features from the command line.

To uninstall Transform Features from a Linux server:

1. Log in as a root (administrator) user.
2. For a console uninstall, enter this command:

```
/opt/infoprint/itm/_uninst/uninstall_itm.sh
```

3. To uninstall only a specific transform, enter this command:

```
/opt/infoprint/itm/_inst/feature/<transform_id>/_uninst/uninstall_tf_<transform_id>.sh where <transform_id> is the transform name.
```

Uninstalling Transform Features from a Windows server from the command line

This section describes how to uninstall Transform Features from the command line.

To uninstall Transform Features from a Windows server:

1. Log in as an administrator user.
2. For a console uninstall, enter this command:
`install_path_uninst\uninstall.exe -i console`
3. For a silent uninstall (does not produce any output and does not require user input), enter this command:
`install_path_uninst\uninstall.exe -i silent`

Uninstalling Secondary Server features from AIX or Linux computers

To uninstall the AIX or Linux secondary servers:

1. Log in as the root user.
2. Enter this command:

```
/opt/infoprint/ippd/_uninstall/ippds/removeIPPDS
```

RICOH ProcessDirector starts the installation program that guides you through the uninstallation process. Follow the instructions in the installer.

3. Choose whether to remove any RICOH ProcessDirector users and groups.
4. Click **Uninstall** to start the uninstallation process.
5. When the uninstallation is complete, you see either a message that the uninstallation was successful or a message that there were errors and the location of the error log file.
6. Click **Done**.
7. To completely remove all files installed by RICOH ProcessDirector, delete these file systems and directories:

```
/aiw
```

```
/var/psf/segments
```

```
/var/psf
```

```
/var/aiw
```

Removing the application server as a service

To remove the application server as a service without uninstalling the application server:

1. Log in to the Windows computer that the application server is installed on.
2. In a Windows command prompt, go to `C:\Program Files\Ricoh\ProcessDirector\bin`.
3. Type: `aiwsvc uninstall` and press Enter.
4. Open the Windows Services window, and look for the **Ricoh Process Director Application Server** service. If the **Ricoh Process Director Application Server** is no longer there, the application service has been removed.
5. Turn off the automatic drive mounting function that the application service used:
 1. In Windows Explorer, go to `C:\Program Files\Ricoh\ProcessDirector\logs`.
 2. Remove or disable the `mountaiwdata.bat` file. If you plan to reactivate the application server service in the future, disabling the file is a good option. You can disable the file by commenting out the file contents or by renaming it to something similar to `mountaiwdata.bat.bak`.
6. **Optional:** Start the application server. Use the **Start application server** link in the RICOH ProcessDirector start menu folder.

Uninstalling an application server

To uninstall an application server:

1. Log in to the application server as an administrator.
2. If the application server is running as a service, remove the application server as a service. See [Removing the application server as a service, p. 171](#).
3. From the Windows Control Panel, click **Programs and Features**.
4. Double-click **Ricoh ProcessDirector application server**.
5. Follow all instructions as directed.
6. Click **Finish**.

8. Installation planning checklist

This checklist contains tasks that can help you plan for your RICOH ProcessDirector installation.

Installation planning checklist

Check each item as you complete the task.

	Task	Notes
	<p>Determine your system configuration (see System configurations, p. 26 for an example of a configuration). Keep in mind your requirements for file sharing (such as Shark, FAST, RAID, or NFS) and failure recovery.</p>	
	<p>Estimate your current and future storage and backup needs. Consider production volumes, print resource management, and failure recovery.</p>	
	<p>Make sure that you have adequate network capacity.</p>	
	<p>Determine which printers you want to use with RICOH ProcessDirector. When you define printers to RICOH ProcessDirector, you need this information:</p> <ul style="list-style-type: none"> • Printer name • TCP/IP port number • TCP/IP address or host name • SNMP community name, if you want to use SNMP to monitor the printer <p>You should also decide on the language for the printer driver component to use when it returns messages to RICOH ProcessDirector.</p>	
	<p>Obtain the required hardware for your configuration that meets your storage and backup requirements See Hardware requirements, p. 30.</p>	
	<p>Decide whether to set up your file system as partitions or as mounted file systems from other storage units. See Planning for file systems, p. 36.</p>	
	<p>Decide whether to use the version of DB2 supplied with RICOH ProcessDirector or your own copy. If you use your own copy:</p>	

	Task	Notes
	<ul style="list-style-type: none"> Decide whether to install DB2 on the primary computer or on a different computer. If you install DB2 on a different computer, determine the directory for RICOH ProcessDirector information. 	
	<p>Determine what values to use for the RICOH ProcessDirector group on this computer. The default name for the group is aiwgrp1 and the default GID is 32458. You can change either value. Keep in mind that the GID must be the same across all primary and secondary computers; therefore, if you choose your own, make sure the value is large enough to avoid conflicts. All user and group names must have 1-8 characters because of a restriction in DB2.</p> <p>See Creating system groups and users, p. 43 for additional information about creating this group and other required groups.</p>	
	<p>Determine what values to use for the RICOH ProcessDirector system user. The default name for the system user is aiw1 and the default UID is 32457. You can change either value. Keep in mind that the UID must be the same across the primary and all secondary computers that connect to it; therefore, if you choose your own, make sure the value is large enough to avoid conflicts. All user and group names must have 1-8 characters because of a restriction in DB2.</p> <p>If you create directories for RICOH ProcessDirector input devices to use, this UID must be a member of the group that owns these directories.</p> <p>See Creating system groups and users, p. 43 for additional information about creating this user and other required users.</p>	
	<p>Determine the user IDs and groups for DB2 to use. Default names are provided, but you can change them to meet your requirements. All user and group names must have 1-8 characters because of a restriction in DB2.</p> <ul style="list-style-type: none"> In any DB2 configuration, you need an Instance group and a Database fenced group. The default names for those groups are aiwdbgrp and aiwdbfgp. In any DB2 configuration, you need an Instance user and a Fenced user. The default names for the users are aiwinst and aiwdbfid. 	

	Task	Notes
	<ul style="list-style-type: none"> If you install a DB2 client on the same computer as the base product and a DB2 server on a different computer, you need a Database client user. The default name for this user is aiwclnt. <p>You should never log in as any of these users, but you might need to recognize them for recordkeeping and security.</p>	
	<p>Establish a host name and IP address for each server, including the DB2 server on a different computer if you use one. RICOH ProcessDirector supports IPv4 addresses.</p>	
	<p>Determine the password to use when you log in to the RICOH ProcessDirector user interface with the aiw user name. The first time you log in to RICOH ProcessDirector with the default user name of aiw and the default password of aiw, you are prompted to change the password. The password must be 8 to 32 alphanumeric characters.</p>	
	<p>Determine how many RICOH ProcessDirector user IDs you want to create and which authority you want each ID to have, such as monitor, operator, supervisor, or administrator. Determine what other authority groups you want to create and what actions they can do.</p>	
	<p>If you want to use LDAP or Active Directory user IDs and passwords to authenticate RICOH ProcessDirector users, ask your LDAP administrator to create LDAP groups for each level of access you want to set up as a RICOH ProcessDirector security group.</p>	
	<p>Consider which job submission methods you are going to use to send jobs to RICOH ProcessDirector. You can copy or FTP files into hot folders, send files using the LPD protocol, or use the pdpr command. If you have the AFP Support feature, you can use Download for z/OS or AFP Download Plus. The job submission method you use depends on the system you are sending the jobs from. For more information, see Job submission, p. 84.</p>	
	<p>Determine which ports RICOH ProcessDirector will use. Common ports are:</p> <p>515</p>	

	Task	Notes
	<p>LPD protocol</p> <p>5001–65535</p> <p>IPDS printers</p> <p>6001 or alternative</p> <p>AFP Download Plus or Download for z/OS</p> <p>6100</p> <p>DownloadAFP input device</p> <p>6102</p> <p>DownloadLineData input device</p> <p>6986–6992</p> <p>InfoPrint Transform Manager or RICOH Transform features</p> <p>15080</p> <p>RICOH ProcessDirector base product</p> <p>15081</p> <p>Ricoh Printer Connector services for Custom PDF printers</p> <p>15443</p> <p>RICOH ProcessDirector base product when SSL or TLS is enabled</p> <p>16080</p> <p>Ricoh Transform feature user interface (default)</p> <p>50000</p> <p>DB2</p> <p>55555</p> <p>Primary servers listening for secondary servers</p>	
	<p>Determine which resources must be available for RICOH ProcessDirector to use (such as standard and non-standard AFP fonts). Then, consider how you want to share your resources so they are available to RICOH ProcessDirector (for example, NFS or Samba).</p> <p>If you store your resources in the <code>/aiw/aiw1/</code> resources directory on your primary computer, all the RICOH ProcessDirector components, including any secondary servers, can find them with no additional configuration. RICOH ProcessDirector</p>	

	Task	Notes
	does not make any changes to that directory during updates, so you do not have to reload the resources when you install an update.	
	Install the required software for your configuration (see Installing required software, p. 46).	
	Install any optional software, such as Download for z/OS, AFP Download Plus, or InfoPrint Transform Manager (see Planning for optional software, p. 84).	
	<p>Change the language for the computer, if required:</p> <p>AIX</p> <p>In SMIT, click System Environments → Manage Language Environment.</p> <p>SLES</p> <p>In YaST:</p> <ul style="list-style-type: none"> • Click System → Choose Language. • Click System → Select Keyboard Layout. <p>In the KDE Control Center, click Regional & Accessibility → Country/Region & Language.</p> <p>Red Hat or CentOS</p> <p>To check which locale is currently in use, type: <code>cat /etc/locale.conf</code></p> <p>To check which locales are installed on the system, type: <code>localectl list-locales</code></p> <p>To change the locale that is in use, type: <code>localectl set-locale LANG=<i>locale name</i></code></p> <p>Replace <i>locale name</i> with the name of one of the locales that is installed on the system.</p> <p>Windows</p> <p>Click Control Panel → Regional and Language Options.</p>	<p>RICOH ProcessDirector supports these languages and locales:</p> <ul style="list-style-type: none"> • Brazilian Portuguese (pt_BR) • English (en_US) • French (fr_FR) • German (de_DE) • Italian (it_IT) • Japanese (ja_JP) • Spanish (es_ES)

9. Accessibility

Ricoh strives to provide products with usable access for everyone, regardless of age or ability.

For more information about the commitment that we have made to accessibility, refer to the [Accessibility page](#) on the Ricoh website.

Accessibility features

Accessibility features help users who have disabilities, such as restricted mobility or limited vision, use information technology products successfully.

The major accessibility features in this product let you:

- Use screen readers, screen magnifiers, and other assistive technologies.
- Use a keyboard instead of a mouse.
- Change attributes such as volume, color, contrast, and font size.

In addition, the information center and the publications for the product are in an accessible format.

To enable assistive technology support in the installer, specify the console option at the end of the setup command. For example, to enable assistive technology on AIX or Linux computers, enter:

```
./setup -console
```

Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

★ Important

- You cannot use the Workflow tab, the AFP Indexer mode of RICOH Visual Workbench (which is part of the AFP Support feature), the AFP Editor feature, or the Whitespace Manager feature with the keyboard alone. They require a mouse.

RICOH ProcessDirector user interface shortcut keys

When the Jobs table on the Main page or a table on the Administration page has focus, you can use these shortcut keys:

User interface shortcut keys

Description	Ctrl + key
Select all objects in the table.	a
Open the field help for the currently selected property.	F1

When viewing a job in a workflow, you can use these shortcut keys:

View job in workflow shortcut keys

Description	Ctrl + key
Zoom in.	+
Zoom out.	-
Return to the default zoom level.	0

RICOH ProcessDirector workflow shortcut keys

On the Workflow Editor, you can use these shortcut keys:

Workflow shortcut keys

Description	Ctrl + key
Save the workflow.	Ctrl + s
Undo a previous action, including changes made on a step or connector property notebook.	Ctrl + z
Reverse an Undo action, including changes made on a step or connector property notebook.	Ctrl + y or Ctrl + Shift + z
Show or hide the Step Templates window.	Ctrl + e
Show or hide the Map .	Ctrl + m
Zoom in.	Ctrl + +
Zoom out.	Ctrl + -
Reset the zoom to the default value.	Ctrl + 0
Reset the default size and location of the Map window.	Ctrl + d
Copy one or more steps. Steps must be selected first.	Ctrl + c
Delete one or more steps. Steps must be selected first.	Delete

GLOSSARY

This glossary defines technical terms and abbreviations used in RICOH ProcessDirector.

access control

In computer security, the methods and facilities used to ensure that a computer system and the data, system software, and application programs stored in it can be accessed only by authorized users in authorized ways.

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 display data on a variety of display devices. AFP also includes creating, formatting, archiving, retrieving, viewing, and distributing information.

AFP

See [Advanced Function Presentation](#), .

AIX

Advanced Interactive Executive operating system. A UNIX operating system developed by IBM that is runs on POWER microprocessor-based hardware such as servers, workstations, and blades.

client

In a distributed file system environment, a system that is dependent on a server to provide it with programs or access to programs.

client/server

In communications, the model of interaction in distributed data processing in which a program at one site sends a request to a program at another site and awaits a response. The requesting program is called a client; the answering program is called a server.

command

A request from a terminal or a specification in a batch-processing print file for the performance of an operation or the running of a particular program.

compatibility fonts

A group of AFP fonts that emulate the uniformly spaced and fixed-pitch fonts used with line printers. Compatibility fonts include 240-pel and 300-pel fonts.

File Transfer Protocol (FTP)

In the Internet suite of protocols, an application layer protocol that uses TCP and Telnet services to transfer bulk-data files between machines or hosts.

GIF

Graphics interchange format for images.

hostname

The network name for a print server or transform server. The host name is the fully qualified domain name or a specific subname of a fully qualified domain name. For example, if printserver1.boulder.ibm.com is the fully qualified domain name, either printserver1.boulder.ibm.com or printserver1 can be the host name. See also [IP address](#), .

hot folder

A directory that receives input files that are submitted to RICOH ProcessDirector.

InfoPrint Manager for AIX

A print server that handles the scheduling, archiving, retrieving, and assembly of a print job and its related resource files.

IP address

In the Internet suite of protocols, the 32-bit address of a print server or transform server, expressed in dotted decimal notation. For example: 9.99.9.143. See also [host name](#), .

ISO image

An image of an optical disc based on an International Organization for Standardization file system standard. A file containing an ISO image can be burned to a CD or DVD or mounted in an operating system as a virtual disc.

JPEG

Joint Photographic Experts Group image format.

Linux

An open source implementation of the UNIX system.

line printer daemon (LPD)

The receiving portion, or target, of a file transfer that receives the spooled file that was sent and places the file on a local output queue.

mount

To make a file system accessible.

OpenType font

An extension of the TrueType font format that adds support for PostScript outlines and more support for international character sets and advanced typographic control.

outline font

A font whose graphic character shapes are defined by mathematical equations rather than by raster patterns.

PDF

See [Portable Document Format](#), .

Portable Document Format (PDF)

A universal file format that preserves the fonts, images, graphics, and layout of any source document so it can be viewed and printed on a variety of platforms.

PostScript (PS)

A page description language with graphics capabilities that was developed by Adobe Systems, Incorporated.

primary computer

A computer on which the RICOH ProcessDirector base product is installed and on which the primary server runs.

primary server

The component of the RICOH ProcessDirector base product that contains the PSF print driver and the RICOH ProcessDirector version of DB2. It manages all aspects of job processing; controls system settings; maintains a file system shared between all primary and application/secondary servers; and processes each job through a series of steps, some of which can call other programs to do special processing.

print server

A computer to which one or more printers are connected or the process that manages those printers.

PS

See [PostScript](#), .

raster font

A font in which the characters are defined directly by the raster bitmap.

root

The user name for the system user with the most authority.

secondary computer

A computer on which a RICOH ProcessDirector Secondary Server feature is installed and on which a secondary server runs.

secondary server

A RICOH ProcessDirector server that provides additional processing power and can run on the primary computer or on separate computers (secondary computers).

server

On a network, the computer that contains the data or provides the facilities to be accessed by other computers on the network.

spool

The system function of putting files or jobs into disk storage for later processing or printing.

transform server

The process that manages data and image transforms.

TIFF

Tagged image file format.

TrueType font

A font format based on scalable outline technology in which the graphic character shapes are based on quadratic curves. The font is described with a set of tables contained in a TrueType font file.

Web browser

A client program that initiates requests to a Web server and displays the information that the server returns.

Web server

The program that is capable of servicing Hypertext Transfer Protocol (HTTP) requests for display in a Web browser.

