

Version 6.1  
April 2021  
702P08592

# Xerox® FreeFlow® Core Help

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# Table of Contents

- 1 Overview ..... 7
  - The Xerox® FreeFlow® Core Software..... 8
    - Language and Units ..... 8
- 2 User Roles and Passwords..... 9
  - Administrator..... 10
  - Operator ..... 11
  - Job Status Monitor..... 12
- 3 Job Management and Status ..... 13
  - Submit Job Dialog..... 14
  - Job Status Tab ..... 15
    - Job Files..... 15
    - Job Resubmission..... 16
    - Job Retention ..... 16
    - Job Group..... 16
- 4 Printer Management and Status Tab ..... 17
  - Printers ..... 18
  - Job Submission Regulation..... 19
  - Job Ticket Verification..... 20
  - JDF Settings..... 21
  - Understanding Printer Management ..... 22
- 5 Workflow Setup ..... 23
  - The Workflow Setup Tab ..... 24
    - About Presets..... 24
    - Creating Workflows..... 24
    - Collect Job Documents..... 26
    - Workflow Components..... 27
    - Workflow Process Common Controls..... 62
    - PDF Box Selection Behavior..... 68
    - Job Group Sequence Behavior..... 68
    - Workflow Process Variables ..... 68
    - Process Variable Operations ..... 68
    - Workflow Process Number Variables..... 71
    - Process Number Variable Calculations..... 71
  - Job Ticket Updates ..... 73

## Table of Contents

6 Administration.....	75
Job Submission Configurations .....	76
Hot Folder Setup.....	77
Scripting .....	77
Workflow Destinations.....	78
Manifest Automation from Xerox Setup .....	78
FreeFlow® Core Reports.....	80
Region Tab.....	82
Security Tab.....	83
LPD Gateway.....	84
LPR Printing .....	84
LPR Job Tickets .....	84
LPQ Queries .....	89
LPRM Command.....	90
JMF Gateway.....	91
JMF Submission and Workflow Job Routing.....	91
JMF Submission and JDF XSLT Processing .....	91
Command Line Interface (CLI).....	92
7 Notifications Setup.....	93
Notification Recipients.....	94
Job Notifications.....	95
Preflight Notifications.....	96
Job Submission Notifications .....	97
System Notifications.....	98
Email Notification Setup.....	99
SMTP Settings .....	99
8 User Access Setup.....	101
Adding or Editing Users.....	102
9 FreeFlow® Core Exchange.....	103
Import to Xerox® FreeFlow® Core Tab.....	104
Export from Xerox® FreeFlow® Core Tab.....	105
Required Items and Import/Export.....	106
FreeFlow® Core Exchange CLI .....	107
10 FreeFlow® Core Reports .....	109
FreeFlow® Core Reports CLI .....	110
11 FreeFlow® Core Submit.....	111
Connecting to Xerox® FreeFlow® Core.....	112
Submitting Jobs.....	113
4 Xerox® FreeFlow® Core Help	

12 FreeFlow® Core Cloud Print .....	115
FreeFlow® Core Cloud Print Client .....	116
FreeFlow® Core Cloud Print Server.....	116
Connecting to a FreeFlow® Core Cloud Print Server .....	116
Configuring Printers .....	116
13 FreeFlow® Core Configure .....	119
Enabling the FreeFlow® Core Configure Cloud Print Server.....	120
Enabling Active Directory and Single Sign-in .....	121
Mapping Active Directory Groups.....	121
Removing Active Directory Groups .....	121
Database and Service Accounts .....	122
Customer Override .....	123
A Job Properties .....	125
Job Information.....	126
Job File .....	127
Print Information .....	130
Job Metadata .....	133
Manifest Automation from Xerox.....	134
JMF .....	135
Workflow .....	138
PDF/VT Variables .....	140
External Process Node Variables.....	141
Additional Variables.....	142

## Table of Contents


# Overview

This chapter contains:

- [The Xerox® FreeFlow® Core Software](#) ..... 8

Xerox® FreeFlow® Core is the next generation in workflow solutions from Xerox. It is a browser-based solution that intelligently automates and integrates the processing of print jobs. From file preparation to final production, this solution provides a hands-free workflow that operates easily, adapts effortlessly, scales quickly, and delivers consistently. The modularity and scalability of Xerox® FreeFlow® Core affords even small to mid-size businesses the opportunity to take advantage of the tremendous value proposition prepress automation delivers. Adding advanced capabilities is as simple as adding modules for increased automation and potential.

Xerox® FreeFlow® Core also serves as the backbone of all new Xerox production workflow solutions. This platform is the core engine that enables automated and integrated solutions across market needs, including web-to-print, automated finishing, and even extending to digital publishing.

 **Note:** Xerox® FreeFlow® Core is fully configurable, with individual modules offering greater control over the workflow and the flexibility to add the components that are best suited to your needs. Certain features are not available depending upon the product configuration purchased. For more information, refer to [Workflow Component Configurations](#) and [Job Submission Configurations](#).

# The Xerox® FreeFlow® Core Software

The Xerox® FreeFlow® Core user interface includes the following tabs:

- **Job Management and Status:** Allows Operators and Administrators to submit and manage jobs in Xerox® FreeFlow® Core.
- **Print Management and Status Tab:** Allows Operators and Administrators to manage and monitor printing from Xerox® FreeFlow® Core.
- **Workflow Setup:** Allows Administrators to manage workflows.
- **Administration:** Allows Administrators to manage hot folders, notifications, Xerox® FreeFlow® Core users, security settings, FreeFlow® Core Reports, FreeFlow® Core Exchange, and region.
- **Region Tab:** Allows Administrators to manage Regional Setting Measurement Units.
- **Security Tab:** Allows Administrators to manage log in, lockout, and password reuse.

## Language and Units

The Xerox® FreeFlow® Core is a web-based application. The web browser locale settings determine the language and units used in the Xerox® FreeFlow® Core UI.

The following languages are supported:

- English
- French
- Italian
- Russian
- Dutch
- German
- Portuguese
- Spanish

If there is no translation for the language defined in the browser locale, the Xerox® FreeFlow® Core UI defaults to US English.



# User Roles and Passwords

This chapter contains:

- [Administrator](#)..... 10
- [Operator](#) ..... 11
- [Job Status Monitor](#)..... 12

By default, Xerox® FreeFlow® Core opens to a login screen. The user must log on to access the system. Logged-on users are logged off automatically after 30 minutes of inactivity.

# Administrator

The administrator has access to the entire system:

- Job Management and Status tab functions: [Submit Job Dialog](#) and [Job Status Tab](#).
- [Printer Management and Status Tab](#)
- [Workflow Setup](#)
- Administration tab functions: [Hot Folder Setup](#), [Notifications Setup](#), [User Access Setup](#), [Region](#), [FreeFlow® Core Reports](#), [FreeFlow® Core Exchange](#), and [Security Tab](#)
- Core Server Utilities, available on a server desktop: [FreeFlow® Core Exchange](#), [FreeFlow® Core Reports](#), [FreeFlow® Core Cloud Print Server](#), [FreeFlow® Core Certificates](#), [FreeFlow® Core License](#), and [FreeFlow® Core Configure](#)
- Core Client Utilities: [FreeFlow® Core Submit](#), and [FreeFlow® Core Cloud Print Client](#)



**Note:** Only one Administrator can be logged in to Xerox® FreeFlow® Core at any given time.

# Operator

The Operator has access to the following:

- Job Management and Status tab functions: [Submit Job Dialog](#) and [Job Status Tab](#)
- [Printer Management and Status Tab](#)
- Core Client Utilities: [FreeFlow® Core Submit](#), [FreeFlow® Core Cloud Print Client](#)

Multiple operators can be concurrently logged on to Xerox® FreeFlow® Core.

## Job Status Monitor

The Job Status Monitor has read-only access to the [Job Status Tab](#) window.

Multiple job status monitors can be logged on concurrently to Xerox® FreeFlow® Core.

# Job Management and Status

This chapter contains:

- [Submit Job Dialog](#)..... 14
- [Job Status Tab](#) ..... 15

The Job Management and Status tab allows Operators and Administrators to submit and manage jobs. The user can select **Submit Job** and **Job Status** using the tab menu.




Refer to: [Submit Job Dialog](#), [Job Status Tab](#)

## Submit Job Dialog


The Submit Job dialog allows the user to upload one or more documents. The user can submit the associated Xerox® Printing Instructions Format (XPIF) print tickets to the selected workflow. If the user uploads the documents and their associated job tickets at the same time, from the same location, use the following name convention:

- `filename.ext`: document
- `filename.ext.xpf`: print ticket

Submit Job options include:

- **Submit All Documents as a Job Group:** Determines whether documents are submitted as a single [Job Group](#) or as separate jobs.
  - **Use as Job Name:** This field allows the user to define the job name for jobs that are submitted.
  - **Workflow Destination:** This field allows the user to define the workflow to which jobs are submitted.
  - **Job Priority:** This field allows the user to define the priority of the job submission.
    - **Normal:** Jobs are queued for processing after any pending jobs that are already in the system.
    - **High:** Jobs are queued for processing before any pending jobs that are already in the system.
-  **Note:** Jobs that are processing already in the system have higher priority than submitted jobs.
- **Printer Destination:** This field allows the user to define the [Printer Destinations](#) or Printer Group that is used to print the selected job.
  - **Distribute By:** This field allows the user to define the distribution method for the [Printer Destinations](#) within a Print Group.
  - **Override Job Ticket Settings:** This field allows the user to define or override job ticket settings from uploaded job tickets.
    - If the user selects a [Printer Destinations](#), the available job ticket settings show values for the selected Printer Destination. Refer to [Printer Job Ticketing](#).
    - If the user selects **In Workflow** for the Printer Destination, a subset of job ticket settings is enabled.

During workflow submission, job ticket selections are merged with uploaded job tickets.

 **Note:** The Submit Job dialog does not display uploaded job ticket settings. Additionally, the user does not have the option to remove settings from uploaded job tickets.

- **Pass Through:** If a user selects **Pass Through**, FreeFlow® Core sends the job to the selected [Printer Destination](#) with no alterations.
- **Submit Job in a Held State:** If a user selects **Submit Job in a Held State**, the job does not process until the job is released in Job Management manually or the selected release date and time occurs. The offset that you select refers to the UTC timezone. The default offset value corresponds to the timezone of the browser.

## Job Status Tab

The Job Status tab allows the user to view Active Jobs, Held Jobs, Completed Jobs, Failed Jobs, Cancelled Jobs, or All Jobs.

Job Management functions in the Job Status tab include the following:

- **Printer Destination**



: This field allows the user to define the [Printer Destination](#) that is used to print the selected job.

- **Edit Job Ticket:** This field allows the user to edit the job ticket. Refer to: [Printer Job Ticketing](#). During print submission, job ticket selections are merged with the Printer Destination Job Ticket defaults.



**Note:** The Edit Job Ticket interface does not support use of variables when invoked from the Job Status tab.

- **Finisher Destination**



: This field allows the user to define the [Finisher Destination](#) that is used to save a JDF description of the selected job.

- **Resume:** This field allows the user to resume a paused job.
- **Submit Job Commands:** These options allow the user to **Resubmit**, **Delete**, or **Cancel** jobs. Jobs can be resubmitted to the same workflow or to a different workflow. Refer to: [Job Resubmission](#).
- **Hold Job Commands:** These options allow the user to **Hold**, **Hold Until** which specifies a release time, or **Release** jobs
- **Printer Job Commands:** These options allow the user to **Release**, **Hold**, or **Cancel** jobs at the [Printer Destination](#). Printer Job Commands require print server support for the relevant commands over IPP.
- **List Area:** This option shows the jobs in the system, based on the selected status. To view Job Properties, users can click the information icon



next to the job in the Job Status list.

To filter jobs, users can search jobs on either their Job Names or Workflow.

- **Navigation Area:** This field enables navigation for the List Area. Users can use the navigation links and buttons to browse through the jobs in the system. Alternatively, users can search for a specific job by Job ID.

## Job Files

The Job Properties contain links to the following job files:

- **Document:** The job file as it has been processed by the workflow.
- **Original Document:** The job file as it was submitted to Xerox® FreeFlow® Core.

- **Preflight Report:** The report, in PDF or XML format, from the Preflight task.

## Job Resubmission

The Resubmit dialog allows the user to resubmit jobs in a paused or terminal state. Completed, failed, canceled, or aborted jobs are considered to be in a terminal state.

Resubmission uses the original document and the original job ticket as defined after the initial job submission. The user can choose to edit the job ticket as part of resubmission.

During resubmission, the user can also select to edit resubmit jobs to another workflow. Jobs resubmitted to a different workflow appear as new jobs in the List Area.

- Job Resubmission behavior is the same as the [Submit Job Dialog](#).
- Additionally, job resubmission is not available for jobs submitted as a [Job Group](#) or for individual jobs in job groups.

## Job Retention

Jobs that are completed, cancelled, or aborted are retained for at least 24 hours before they are automatically deleted from the system. Jobs are automatically deleted once an hour. Failed jobs are retained indefinitely.

## Job Group

Depending on how jobs were submitted and the components that are in the workflow, jobs are processed individually or as part of a job group. Job Groups appear in the List Area as jobs that contain other jobs.

Click the triangle next to the Job Group name to see jobs in a job group:

Job ID	Job Name
1	▼ Job Group ( 3 jobs )
1-1	32Pgs
1-2	344Pgs
1-3	1000Pgs

Jobs in a job group are processed through the workflow independently with the following exceptions:

- The **Join** component combines multiple job group jobs into a single job.
- Individual job group jobs cannot be deleted or resubmitted.
- If the **Collect All Members of Job Group** option is enabled in the workflow component, the Save, Print and Finish components submit jobs based on their sequence in the job group.
- If the **Collect All Members of Job Group** option is enabled in Imposition, jobs in a group job are combined during imposition.



**Note:** Job Group Imposition requires the output management license. Refer to [Workflow Component Configurations](#).



# Printer Management and Status Tab

This chapter contains:

• <a href="#">Printers</a> .....	18
• <a href="#">Job Submission Regulation</a> .....	19
• <a href="#">Job Ticket Verification</a> .....	20
• <a href="#">JDF Settings</a> .....	21
• <a href="#">Understanding Printer Management</a> .....	22

The Printer Management and Status tab allow operators and administrators to manage Xerox® FreeFlow® Core printer destinations.

- **Printers area:** This area shows configured printers and their status. The list of printers is populated automatically based on the configured Printer Destinations. See also: [Understanding Printer Management](#).
- **Edit Printer:** Allows the user to edit the printer properties, including Job Submission Regulation, Job Ticket Verification and JDF Mapping settings.
- **Workflow Printer Destinations:** This field shows configured printer destinations and their status.
- **Printer Destination controls:** Allow the user to add, copy, edit, and delete printer destinations.
- **Printer Groups Tab Controls:** Allow the user to aggregate multiple printer destinations into a printer groups.
- **Job Submission controls:** Allow the user to suspend and resume job submissions to the selected [Printer Destination](#).
- **Printer Status and Consumables:** This field shows detailed printer and consumable status.

## Printers

To access the printer settings, from the Printers list, select **Edit**. 

- **Name:** This field defines a name for the printer. If a name is not defined, the model information retrieved from the print server is used as the name of the printer in the printers list.
- **This printer supports SNMP:** This field indicates that Xerox® FreeFlow® Core is to attempt to communicate with the printer using SNMP.

## Job Submission Regulation

If Xerox® FreeFlow® Core software loses connectivity with a printer, the software suspends job submission automatically to the Printer Destinations folders, even if Job Submission Regulation is enabled. When the printer is available, Xerox® FreeFlow® Core resumes job submission automatically.

If queues are missing or not accepting jobs, job submission pauses. If queues reappear or resume accepting jobs, job submission resumes.

If Job Submission Regulation is enabled, Xerox® FreeFlow® Core uses additional criteria to suspend and resume job submission automatically to Printer Destinations.

Job Submission Regulation is based on the following:

- **Print engine state:** If the Print engine state feature is enabled, when a print engine state stops for longer than the defined threshold, job submission pauses. When the print engine state changes to Ready or Warning, job submission resumes.
- **Available spool space:** If the Available spool space feature is enabled, when the available spool space at the print server falls below the defined threshold, job submission pauses. When Available spool space at the print server is above the defined threshold, job submission resumes. print server spool space is monitored using SNMP.
- **Number of Uncompleted Jobs at the Printer:** If the Number of Uncompleted Jobs at the Printer feature is enabled, when the number of active jobs in the print server is greater than the defined threshold, job submissions pause. When the number of active jobs in the print server falls below the defined threshold, job submission resumes.



**Note:** Use of additional criteria for Job Submission Regulation requires an output management license. Refer to [Workflow Component Configurations](#).

## Job Ticket Verification

Xerox® FreeFlow® Core job ticketing always reflects the options reported by the print server when queried for capabilities. Therefore, print ticketing defined in Xerox® FreeFlow® Core does contain constructs that are not reported as supported by the print server.

However, job tickets submitted to Xerox® FreeFlow® Core can have different capabilities than the target printer. The Job Ticket Verification options allow the user to define policies for handling constructs that a given printer does not support.

- **Fail Jobs Containing Stock Names not Defined at Printer:** This setting prevents submission of jobs to the printer if the specified stock name does not exist at the print server.
- **Use simplified Stock Name Matching:** This setting modifies print tickets to use simpler media definition if the print server supports this feature. If the print server does not support simpler media definition, it reverts to nominal behavior for defining media and media attributes.
- **Remove Unsupported Settings:** This setting removes job ticket settings that Xerox® FreeFlow® Core supports from the job ticket if the print server does not support the settings.



**Note:** Xerox® FreeFlow® Core does not send job ticket settings it does not support to the print server.

- **Remove Unsupported Stock Properties:** This option removes stock attributes that Xerox® FreeFlow® Core supports from the job ticket if the print server does not support the stock attributes.

## JDF Settings

When a job is sent to a printer that communicates with the JDF protocol, the following settings affect how FreeFlow Core sends the JDF job ticket and the print file.

When you submit a Xerox® FreeFlow® Core job to a printer that communicates with the JDF protocol, job ticket instructions are sent to the printer in a predefined JDF construct. Depending on the printer, it is possible that you need to modify the default Xerox® FreeFlow® Core JDF construct for specific print ticket instructions to a JDF format and a value that the printer supports.

To modify the predefined attribute construct for the JDF print ticket, specify an alternative JDF construct and value in a .txt or .csv file.

To upload the file, in the GUI, select **Printer Management and Status** → **Edit a Printer** → **JDF Mapping**, then upload the modified file. A template file is located on the Xerox® FreeFlow® Core server at `X:\Program Files\Xerox\FreeFlow Core\Support\JDFMapperTemplate.txt`. For FreeFlow® Cloud Print configuration, the template file is in the same location as the FreeFlow® Cloud Print client, at `X:\Program Files\Xerox\FreeFlow Core Cloud Print\Support\JDFMapperTemplate.txt`.

To allow the JDF printer to retrieve the print file from FreeFlow Core, instead of FreeFlow Core sending the file to the JDF printer, enable **Printer Retrieves the File for Printing**.

## Understanding Printer Management

Xerox® FreeFlow® Core printing is configured and managed using three interrelated objects:

- **Printers:** Printers represent a connection to the print server and a print engine. Each Printer is associated with one or more Printer Destinations.
  - Print Engine capabilities, state, and job submission regulation are managed at the printer level.
  - Printers are added or removed from Xerox® FreeFlow® Core automatically as needed when Printer Destinations are added or removed.
  - The FreeFlow® Core Cloud Print Configuration application can add or remove the Cloud Printers.
- **Printer Destinations:** Printer Destinations represent a print submission configuration. Each Printer Destination represents a connection to a specific print queue and a set of job ticketing defaults. Each Printer Destination can be associated with one or more print presets.
- **Printer Groups:** Printer Groups are an assembly of Printer Destinations. When you select the printer groups within a print node or job submission, from the Distribute by menu, you are required to select a distribution method for the use of the printer destinations in the printer groups.
- **Print Presets:** Print Presets represent an association between job processing configuration and one or more Printer Destinations. Print Presets defines that the jobs are submitted automatically to Printer Destinations. They also define rules for the selection of Printer Destinations.

## Workflow Setup

This chapter contains:

- [The Workflow Setup Tab](#) ..... 24
- [Job Ticket Updates](#) ..... 73



## The Workflow Setup Tab

The Workflow Setup tab allows an administrator to manage workflows and the processes and output destinations used to build workflows. The tab includes the following:

- **Components:** The area on the left of the screen that shows components available for building workflows. Components represent workflow operations such as imposition and printing.
- **Presets:** The area on the left of the screen that shows presets for the selected component. For details, refer to: [About Presets](#).
- **Workflow Canvas:** The canvas provides an area for creating or editing workflows. This canvas also provides an area for defining document conversion options.
- **Workflow List:** This field shows the workflows in the system.

## About Presets

Xerox® FreeFlow® Core manages workflow configuration using presets. When a Component is configured, that configuration is stored as a preset that is available globally. For details, refer to: [Workflow Components](#).



-  **Caution:** When the preset is updated, the updated preset is used automatically in all workflows in Xerox® FreeFlow® Core. To view a list of workflows that use the selected preset, next to the preset name, select the Info button. 

## Creating Workflows

Workflows in Xerox® FreeFlow® Core consist of a sequence of component presets.

To create a workflow, you can drag process presets from the Components and Presets panels to the Workflow canvas.

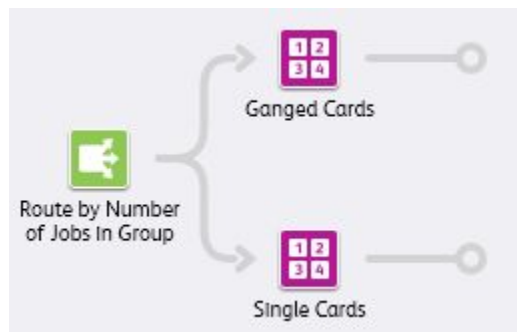
- **Component icon:** To add a blank preset to configure and save as a new preset, drag a component icon to the Workflow canvas.
- **Preset icon:** To add a saved configuration preset, drag a preset icon to the Workflow canvas.

-  **Caution:** When the preset is updated, the updated preset is used automatically in all workflows in Xerox® FreeFlow® Core. To view a list of workflows that use the selected preset, next to the preset name, select the Info button. 

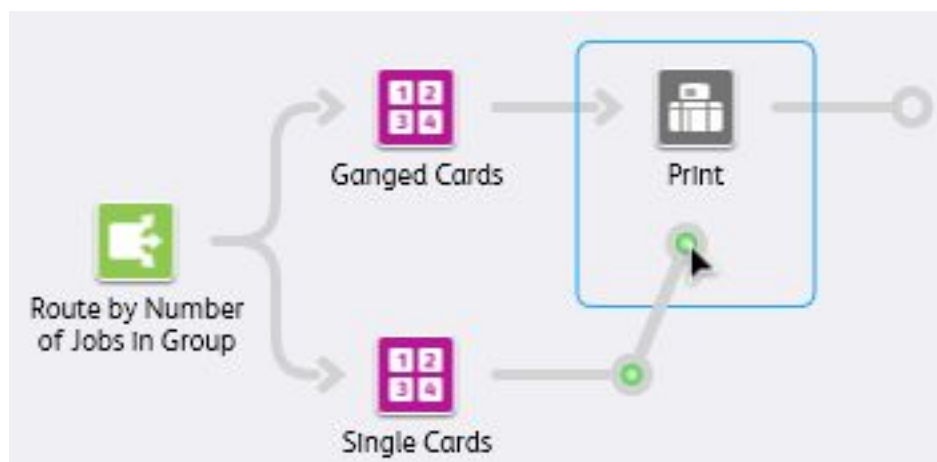
## Execution Paths

Workflows can include one or more execution paths.

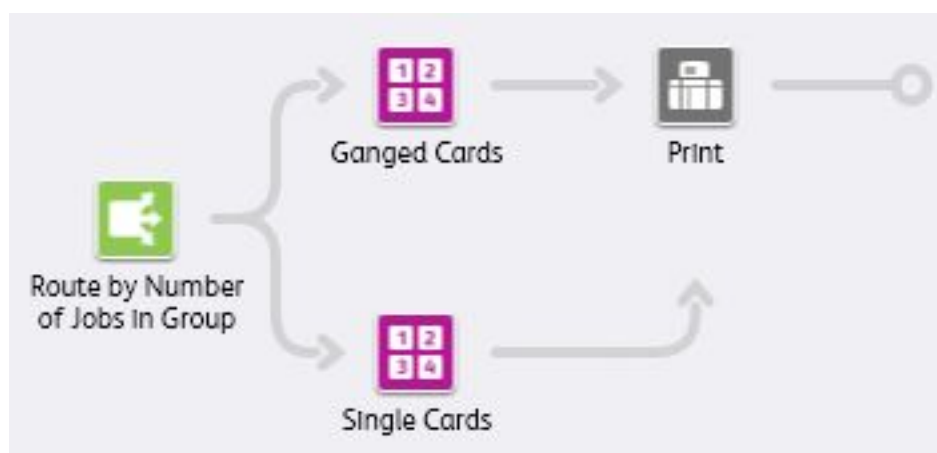




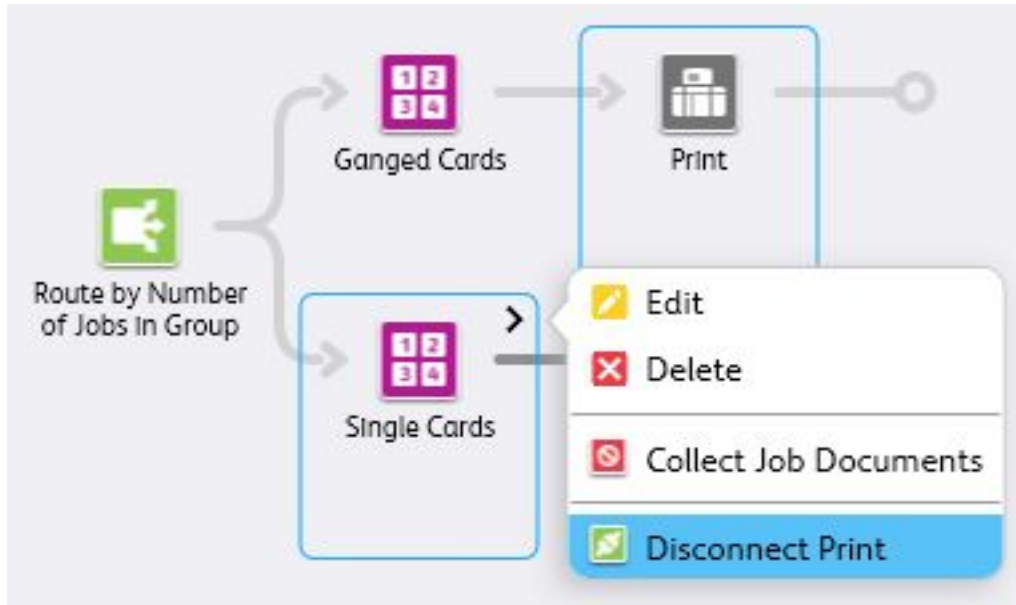
Execution paths in a workflow can be merged into any existing workflow component. To merge an execution path into a component, drag and drop the end of the execution path into the component icon.



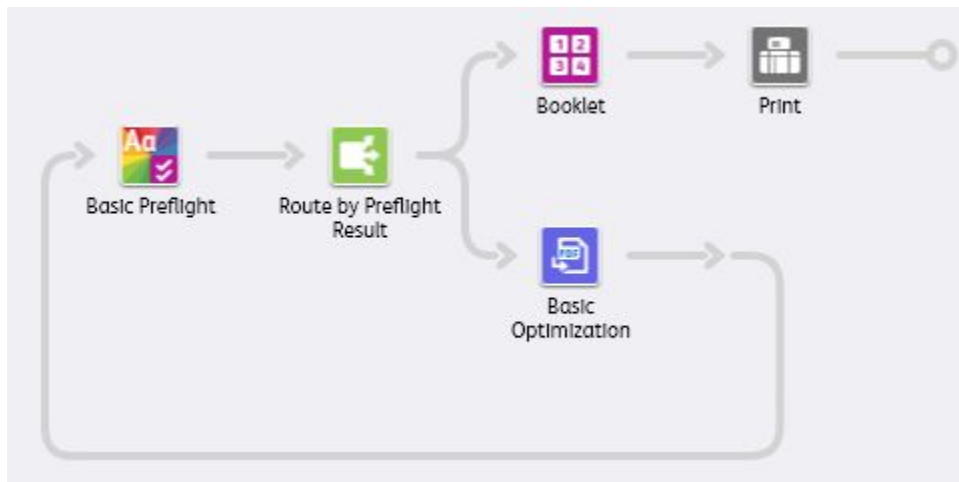
The execution paths are merged then into the component.



To disconnect an execution path from a component, from the component icon menu, select **Disconnect** → <preset name>.

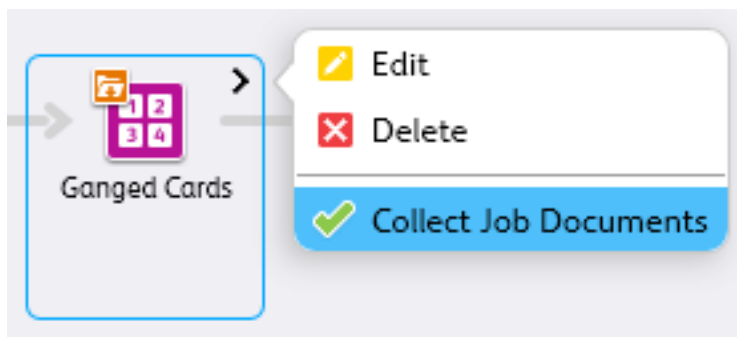


Execution paths can be connected to upstream component icons as well.



## Collect Job Documents

Some workflow components support an option to **Collect Job Documents**.



When this option is enabled, the workflow component defers execution for jobs that are part of a job

group until all members of the job group either have reached the component or have processed through an execution path in the workflow that prevents them from reaching the workflow component.

Workflow components can enable additional functionality when the Collect Job Documents option is enabled.

## Workflow Components

Workflow components represent the types of operations that Xerox® FreeFlow® Core can include as part of a workflow.

### Workflow Component Configurations

Xerox® FreeFlow® Core is a fully configurable software, with an individual module that offers greater control over the workflow and the flexibility to add the components that best suit your needs. Depending on the product configuration that you have purchased, certain features are not available.

For the features that are available within each product configuration, refer to the table.


- The Xerox® FreeFlow® Core Base software module is required.
- You can purchase optional modules. Optional modules provide more capabilities on top of the Xerox® FreeFlow® Core Base software.

Component	Xerox® FreeFlow® Core Base	Advanced Prepress (optional)	Advanced Automation (optional)	Output Management (optional)	Variable Data (optional)
Workflow creation	Linear workflows		Rules-based workflows		
Conversion	<input checked="" type="checkbox"/>				
Conversion: VIPP (.vpc)					<input checked="" type="checkbox"/>
Preflight	<input checked="" type="checkbox"/>				
Enhance images	<input checked="" type="checkbox"/>				
Imposition	<input checked="" type="checkbox"/>				PDF/VT-1
Finish: Supported when configured along with the Xerox IntegratedPLUS Finishing solution	<input checked="" type="checkbox"/>				
Save	<input checked="" type="checkbox"/>				
Print	<input checked="" type="checkbox"/>				

## Workflow Setup

Component	Xerox® FreeFlow® Core Base	Advanced Prepress (optional)	Advanced Automation (optional)	Output Management (optional)	Variable Data (optional)
Optimize		<input checked="" type="checkbox"/>			
Manage color		<input checked="" type="checkbox"/>			
Barcode		<input checked="" type="checkbox"/>			PDF/VT-1
Watermarks		<input checked="" type="checkbox"/>			PDF/VT-1
Pressmarks		<input checked="" type="checkbox"/>			PDF/VT-1
Page numbers		<input checked="" type="checkbox"/>			PDF/VT-1
Resize pages		<input checked="" type="checkbox"/>			PDF/VT-1
Rotate pages		<input checked="" type="checkbox"/>			PDF/VT-1
Insert pages		<input checked="" type="checkbox"/>			PDF/VT-1
Delete pages		<input checked="" type="checkbox"/>			PDF/VT-1
Join		<input checked="" type="checkbox"/>			PDF/VT-1
Route			<input checked="" type="checkbox"/>		
Printer routing			<input checked="" type="checkbox"/>		
Finisher routing			<input checked="" type="checkbox"/>		
Split			<input checked="" type="checkbox"/>		PDF/VT-1
External process			<input checked="" type="checkbox"/>		
Distribute				<input checked="" type="checkbox"/>	
Collect				<input checked="" type="checkbox"/>	
Color split				<input checked="" type="checkbox"/>	
Job group imposition				<input checked="" type="checkbox"/>	PDF/VT-1

Component	Xerox® FreeFlow® Core Base	Advanced Prepress (optional)	Advanced Automation (optional)	Output Management (optional)	Variable Data (optional)
Job group printing				<input checked="" type="checkbox"/>	
Printer job submission regulation				<input checked="" type="checkbox"/>	
Printer job distribution				<input checked="" type="checkbox"/>	
Printer job accounting	<input checked="" type="checkbox"/>				
Review		<input checked="" type="checkbox"/>			
Printer Groups				<input checked="" type="checkbox"/>	
Pass Through Job Submission				<input checked="" type="checkbox"/>	
Job Submission with Release Date				<input checked="" type="checkbox"/>	

 **Note:** If the corresponding optional modules are purchased and enabled as part of the Xerox® FreeFlow® Core product configuration, the Variable Data optional module enables the processing of individual PDF/VT records for the components noted in the table. Specific enhancements for PDF/VT files are outlined, as applicable, in the component descriptions that appear later in the section.

## Convert

The Convert component allows you to convert files to PDF.

Xerox® FreeFlow® Core accepts the following application file types:

- PostScript (.ps)
- Encapsulated PostScript (.eps)
- JPEG (.jpg, .jpeg)
- Portable Network Graphics (.png)
- TIFF (.tif, .tiff)
- Microsoft Word (.doc, .docx)
- Microsoft Excel (.xls, .xlsx)
- Microsoft PowerPoint (.ppt, .pptx)
- Microsoft Publisher (.pub)

When the Variable Data license is enabled, FreeFlow Core also accepts VIPP Project Containers (.vpc) and VIPP (.dbf, .vpn, .nm, .lm) files. Also, files without an extension or with an unknown extension are processed through VIPP conversion if they include VIPP commands.



**Note:** Text files (.txt, .csv) are not parsed for VIPP commands as they are submitted to Manifest Automation from Xerox (MAX).

A Convert component is added automatically and invisibly to the beginning of all workflows.

### Font Handling

If possible, fonts are embedded during conversion.

Handling of missing fonts or fonts that do not allow embedding depends on the format of the document being converted:

- **PostScript and Encapsulated PostScript:** Missing fonts are referenced in the PDF. Conversion status is set to `Success`. Use Preflight to detect missing fonts.
- **Microsoft Office:** Missing fonts are substituted. Fonts that are substituted are embedded in the PDF. Conversion status is set to `Warning` for Microsoft Word and `Success` for all other Microsoft Office files.
- **VIPP Project Container:** Font handling is based on settings from the selected `joboptions` file. Conversion status is set to `Warning`.



**Note:** Microsoft Office conversion of documents with 3D formatting options, such as depth and color gradients for text and shape colors, can produce unexpected results.



**Note:** The following TIFF features are unsupported: JPEG compression and YCbCr color space. In addition, TIFF transparencies are flattened during conversion.

### PS, VIPP, and PDF Generation Options

Workflow settings for PS, EPS, and VIPP conversion settings are available in the **Options** control at the top right corner of the workflow canvas.

- **Job Options file:** Defines the location of the selected Adobe® Acrobat® Distiller `joboptions` file using the [Document Selection Common Controls](#).
- **VIPP Init File:** Defines the location of the VIPP initialization file using the Document Selection Common Controls [Document Selection Common Controls](#).

The selected VIPP init file is prepended to:

- VIPP (.dbf, .vpn, .nm, .lm) files
- files without an extension
- files with an unknown extension
- text (.txt, .csv) files



**Note:** The VIPP init file is not prepended to VIPP Project Container (.vpc) files. Also, workflows that specify a VIPP Init file cannot be used with Manifest Automation from Xerox (MAX).

- **PDF Generation:** Determines whether the conversion will generate a single PDF file, a PDF/vt with metadata that FreeFlow Core can use to ascertain record boundaries, or a PDF for each record in the VIPP file.



**Note:** VIPP Specialty Imaging functions are not supported.

## Preflight

The Preflight component allows you to inspect and correct PDF files using Adobe® Acrobat® or Callas pdfToolbox preflight profiles.

### Preflight Checks


Enables preflight checks without the use of a preflight profile. Preflight checks that fail result in a preflight error.

- **Fonts Not Embedded:** Enables preflight checks to ensure that all fonts are embedded.
- **Color/Grayscale Image Resolution:** Enables preflight checks to ensure that color and grayscale image resolution is within the range defined in the Higher Than and Lower Than settings.
- **Bitmap Image Resolution:** Enables preflight checks to ensure that 1-bit image resolution is equal to or greater than the defined Minimum Resolution and equal to or less than the defined Maximum Resolution.
- **Check Width and Height:** Enables preflight checks to ensure the width and height of the selected PDF box using the size checks from the [Routing Common Controls](#). This option supports the use of [Workflow Process Number Variables](#).

### Preflight Using Profile

Enables preflight checks and fixups using a preflight profile created in Adobe® Acrobat® or Callas pdfToolbox.

- **Preflight Variables:** Defines the values for variables required by the selected pdfToolbox preflight profile.

 **Note:** pdfToolbox Process Plans are not supported.


- **File:** Defines the location of the selected preflight profile using the [Document Selection Common Controls](#).

### Preflight Using Process Plan

Enables preflight checks and fixups using a preflight process plan created in Adobe® Acrobat® or Callas pdfToolbox.

### Preflight Report Format

Defines the format for preflight reports.

 **Note:** PDF Preflight reports are saved as text for jobs with more than 1000 warnings or errors.

### Preflight Report Language

Defines the language used for preflight reports.


### Preflight Report Details

Defines the level of detail in the preflight report.

### Pause Jobs

Specifies when to pause jobs after preflight:

- **When Fixups are Applied:** If preflight profile fixups are applied to the job, this option pauses the jobs.
- **When a Warning Occurs:** If preflight profile checks result in a warning, this option pauses the jobs.
- **When an Error Occurs:** If preflight profile checks or fixups result in an error, this option pauses the jobs.


 **Note:** If the preflight profile cannot be executed, jobs fail in the Preflight component.

## Optimize


The Optimize process allows you to streamline documents to ensure more efficient and reliable processing downstream in the workflow.

### Optimize PDF Tab

- **Convert to PDF Standard:** This option enables conversion of the job to the selected PDF/X or PDF/A ISO standard.
  - **Set Output Intent To:** This option defines the output intent ICC profile for the job. Output intents are required for PDF/X conversion.
    - ICC profiles up to version 4 are supported. ICC profiles are retrieved from the operating system and are listed using the ICC profile name, which can differ from the file name.
    - To add more ICC profiles, install them in the operating system and restart the server.
  - **Use Document Output Intent Profile If Present:** If this option is enabled and if the document contains an output intent profile, the document output intent profile is retained during the PDF/X conversion. Otherwise, the output intent is set to the defined output intent profile.

 **Note:** PDF/X-4p conversion does not support use of the document output intent profile.

- **Embed Fonts If Needed:** This option embeds fonts that are not embedded in the PDF already. To enable embedding, ensure that fonts are installed on the Xerox® FreeFlow® Core server or are available in the location defined in **Fonts**.
  - **Fonts:** This field defines the location of more fonts that can be used for embedding in place of missing fonts. This option also allows the user to manage fonts in the Xerox® FreeFlow® Core sandbox.
  - **Font Substitution Configuration File:** This field defines the `pdfToolbox` configuration file that is used when embedding fonts. This configuration file controls font substitution behavior in the Optimize process.

 **Note:** Fonts are embedded as subsets. If fonts have a flag that indicates that embedding is not allowed, the fonts are not embedded.

- **Remove Unneeded Transparencies:** This option removes transparency groups from pages that do not contain transparent objects.
- **Flatten Transparent Objects:** This option flattens transparent objects and objects whose appearance is affected by transparent objects.



- Xerox® FreeFlow® Core renders transparent objects as a mix of raster and vector content, some of which can use overprint.
- These documents can have an unexpected appearance in Adobe® Acrobat®. To see an accurate representation of these documents in Adobe® Acrobat®, click **Tools**→**Print Production**→**Output Simulation**.
- **Define Page Geometry Based on Cut Marks:** This option searches for registration color cut marks in the PDF. This option adjusts the PDF TrimBoxes and BleedBoxes to match any cut marks that are found.
- **Remove Printer's Marks:** Removes marks such as cut marks, registration marks, registration text, and color patches outside of the BleedBox or TrimBox.



**Note:** If both options are selected, the removal action occurs before the **Define Page Geometry Based on Cut Marks** function.

- **Add Bleed by Scaling Document:** This option proportionally scales documents so that all edges have a bleed that is equal to or larger than the Bleed Distance.
- **Auto-Correct Page Geometry:** This option adjusts PDF boxes to ensure proper nesting according to the PDF/X standard.
- **Optimize for Fast Web View:** This option linearizes PDF to enable byte streaming over the Internet.
- **Flatten Form Fields:** This option changes PDF form fields into non-interactive PDF content.
- **Note:** Flattening some form field types, such as pop-up windows, renders only the selected values, if any. This appearance can differ from the PDF appearance in a viewer.
- **Remove Printer's Marks:** This option removes printer marks outside of the document BleedBox or TrimBox.
- **Discard Hidden Layers:** This option removes content in hidden layers and flattens remaining layers.
- **Remove Objects Completely Outside of:** This option removes objects that are completely outside of the selected PDF TrimBox.
- **Convert Fonts to Outlines:** This option turns fonts into graphic elements.
- **Fix potential font problems:** This option fixes font issues, such as missing fonts.
- **Mirror Bleed when No Bleed:** This option creates a bleed using mirrored image content within the TrimBox.
- **Pixel Replication Bleed when No Bleed:** This option creates a bleed using the pixel content on the edge of the TrimBox.

## Optimize Images Tab

- **Downsample Color/Gray images:** Change the resolution of color and gray images whose resolution is higher than the defined threshold.
- **Recompress Color/Gray images:** Change the compression method and quality of color and gray images.
- **Downsample 1-Bit images:** Change the resolution of 1-bit images whose resolution is higher than the defined threshold.
- **Recompress 1-Bit images:** Change the compression method and quality of 1-bit images.

- **Remove invisible image data:** Removes image data that is not visible.
- **Reduce 16-Bit Images to 8-Bit:** Changes the bit depth of 16-bit images to 8 bits.
- **Convert specified Spot Color to Specified CMYK color:** Converts a spot color to a CMYK color for text and graphics.
- **Convert specified CMYK Color to new CMYK color:** Converts a CMYK color to a new CMYK color for text and graphics.

### Optimize Metadata Tab

- **Override PDF Document Properties:** Override the contents of the standard PDF metadata fields.
- **Remove Thumbnails:** Remove PDF thumbnails from the job.
- **Remove All Annotations:** Remove all PDF annotations from the job.
- **Discard Actions:** Remove all PDF actions from the job.

## Impose

The Impose process allows you to define the placement of page elements to increase production press efficiency and to create specific applications, for example, booklets.

### Imposition Press Sheet Tab

#### Press Sheet Size

Specifies the size of the imposed document:

- **A predefined size:** Imposes the document to the selected size. Press Sheet Sizes can have fixed dimensions or a fixed and an automatic dimension. Custom sizes can be added to the list of available paper sizes. This option supports use of [Workflow Process Number Variables](#) for defining Press Sheet Sizes.
- **Automatic:** This option imposes the document to a press sheet size that is based on the dimensions of the input document, the number of rows and columns, and the margin and gutter distances.
- **Automatic with Size Options enabled:** Selects the Press Sheet Size from the specified sizes to ensure the least amount of waste.

#### Orientation

This option specifies the orientation as Portrait, Landscape, or Automatic. If Automatic is selected, the orientation is selected based on input document dimensions and the selected layout options.

#### Sides Imaged

Specifies plex for the imposed layout. This option supports the use of the Sides Imaged attribute from the submitted print ticket.



**Note:** The Sides Imaged selection will impact how the Cut Mark Press Sheet Sides selection is applied to the imposed PDF.

### Imposition Layout Tab

The Imposition Layout Tab defines the arrangement and placement of document pages on the imposed layout.

## Page Order

The Page Order feature specifies how input document pages are placed on the imposed layout. The following options are available:

- **Repeated:** This option places the same document page multiple times on the layout. To ensure that the number of finished sets reflects the required quantity, the print quantity is adjusted in Repeated imposition.
- **Cut and Stack:** This option places the document pages vertically through the stack in one layout position, before putting pages in the next layout position.
  - By default, the stack height is based on the number of pages in the document. To override the default setting, click **Define number of sheets per stack**.
  - The Pad with blank pages at end of stack feature sets the number of sheets for each stack. By default, the last stack has fewer pages than the other stacks. To ensure that the number of sheets in the last stack matches the number of sheets in each stack, the option adds blank pages.
- **Cut and Split:** When imposing a single PDF, this option places the document pages vertically through the stack in one layout position. The Cut and Split option is a variant of the Cut and Stack option, that ensures jobs in a Group or PDF/vt records remain in a single layout position on the imposed document. The Cut and Split option is used with the Job Groups or PDF/vt documents with the Apply to Each Variable Data Record option enabled. Refer to [Imposition and Job Groups](#) and [Imposition and PDF/VT Jobs](#).
  - **Retain Job Order When Ganging:** This option imposes documents vertically, based on the [Job Group Sequence Behavior](#).
  - When the Retain Job Order When Ganging option is disabled, to minimize waste, the imposition reorders jobs.
- **Sequential:** This option places document pages in all layout positions on one sheet side, before placing document pages on the next sheet side.
- **Signature:** This option defines either booklet or calendar imposition, depending on the Rows and Columns selection.
  - **Define number of sheets per signature:** By default, the number of pages in a page signature is based on the number of pages in the document. The number of sheets for a signature can override the default.
 

**Pad with blank pages at end of signature:** While setting the number of sheets for each signature, the last signature has fewer pages than the other signatures. To ensure that the number of sheets in the last signature matches the number of sheets in other signatures, the Pad with blank pages at end of signature option adds blank pages.
  - **Signature shift:** This option defines the distance to shift to compensate for creep for pages in nested signatures. [Workflow Process Number Variables](#) is used for defining Signature Shift.
  - **Shift Direction:** This option uses the Towards Binding Edge feature to shift pages to the outermost signature at nominal positions. Pages in other signatures are shifted progressively toward the signature spine. The Shift Direction feature uses the Away From Binding Edge option to place pages in the innermost signature at nominal positions. Pages in other signatures are shifted progressively away from the signature spine.
  - **Resize pages when shifting to preserve page content:** This option uses the Towards Binding Edge feature to shift pages and prevent content from disappearing into the binding edge. The Resize pages when shifting to preserve page content option uses the

Away from Binding Edge feature to shift pages and prevent content from disappearing into the non-binding edge.

- **Job Group:** This option places jobs in a [Job Group](#) or records PDF/vt jobs in separate page cells in the layout. Refer to [Imposition and Job Groups](#) and [Imposition and PDF/VT Jobs](#).
  - **Repeat Jobs to Fill Sheet When Possible:** This option duplicates jobs when there are not enough jobs to fill the imposed layout.
  - The print quantity is adjusted, based on the number of times each job was duplicated. If duplication results in enough jobs to fill a layout, jobs are imposed.
- **Manual:** This option places document pages in a layout, based on the order defined in the manual page-order table. The following options are available:
  - **Page:** The page entries in the manual page-order table define the starting page from the input document placed in the corresponding position in the layout.
  - **Increment:** This option defines the interval at which the input document pages create additional layout pages. For example, if the Increment is set to 2 and page is set to 1, the pages imposed are 1,3,5 and so on.
  - **Auto Increment:** Based on the number of entries in the manual page-order table, the Auto Increment feature defines the Increment values.

The list of pages and increments in the manual page-order table represents a pattern, used to map input document pages to a layout. The pattern is repeated until all input document pages are mapped to a layout page cell.

Page numbers used in the Manual page-order table are positive or negative. Negative numbers reference pages relative to the end of the document, with page -1 as the last page of the document.

- **Apply to Each Variable Data Record:** This option defines if the Page order applies to the entire PDF file or to each record within a PDF/vt file.

### Rows and Columns

This option specifies the number of Rows and Columns in a layout:

- **Fixed Rows and Columns:** This option specifies the number of rows and columns in a layout.
- **Auto Rows and Columns:** To ensure the least amount of waste in the imposed layout, the Auto Rows and Columns feature calculates the number of rows and columns in the layout.



**Note:** Using the first page in the job size, perform the number of rows and columns calculation,

- When the Auto Rows and Columns feature is used with the Automatic orientation feature, the orientation that results in the least amount of waste is selected automatically.
- When the Auto Rows and Columns feature is used with Automatic sheet size, with two or more Size options selected, the sheet size that results in the least amount of waste is selected automatically.
- When the Auto Rows and Columns feature is used with the Automatic sheet size feature, and when two or more Size options are selected, the media size and orientation are optimized for the least amount of waste.
- **Add a 90° rotated row or column when possible:** This option determines if a rotated row of pages fit in the layout. On confirmation, the rotated row is added. The number of pages in the rotated row is calculated automatically.

**Add a 90° rotated row or column when possible:** When **Add a 90° rotated row or column when possible** option is combined with the Automatic press sheet size, and when the size options are enabled, the layout is optimized for orientation and sheet size. The additional page cells are included in the calculations of waste, used to select the number of rows and columns, press sheet size, and orientation.

- **Auto Columns, Fixed Rows:** This option determines a fixed number of rows with an automatic number of columns.
- **Auto Rows, Fixed Columns:** This option determines a fixed number of columns with an automatic number of rows.
- **Asymmetric Rows and Columns:** To ensure the least amount of waste in the imposed layout, the number of rows and columns is calculated. When Page Order is set to Job Group, the Asymmetric Rows and Columns feature is available. Jobs in the job group are of different sizes.

- **Layout Style:** This option determines the jobs in the job group to impose together.

**Guillotine Cut:** This option imposes documents recursively in columns and rows that preserve the ability to separate jobs with a guillotine cutter.

**Laser Cut:** This option imposes the documents by filling the sheets to the maximum.

- **Maximum Waste:** This option defines the maximum percentage of the imposed blank layout. If a layout exceeds the defined Maximum Waste percentage, the jobs in the layout and the rest of the jobs are not imposed.



**Note:** When the Asymmetric Rows and Columns feature is selected, [Imposition Layout Modes](#), non-uniform Gutters, and Gutter Marks are unavailable. Asymmetric layouts are clustered.

### Impose Relative to

This option defines the PDF box used for imposition, using the [PDF Box Selection Behavior](#).



**Note:** Size is defined based on the size of the selected box in the first page of the document.

### Cell Clustering

This option controls if pages in the layout are abutted or spread out on the press sheet.

**Scale Mode:** This option defines a scaling mode applied to the layout. Scaling is performed according to the [Content Scaling Common Controls](#) behavior.

### Horizontal and Vertical Alignment

This option defines placement of clustered layout on the press sheet or alignment of pages in a non-clustered layout. Placement is performed according to the [Content Placement Common Controls](#) behavior.

### Imposition Gutters Tab

#### Margins

This field defines the distance from the edge of the imposed layout that is unavailable for placing input document pages.

Uniform margins are applied to all edges of the press sheet. Non-uniform margins are defined as

either absolute or as **Edge Relative** margins.

- **Edge Relative:** Margin distances are defined relative to the **Top-Left Corner** and the **Bottom-Right Corner**. For each corner, margin values are defined for the **Long Edge** and the **Short Edge**. The margins are applied to the top or left and to the bottom or right edges depending on the imposition press sheet size and orientation.

For square press sheets, the **Long Edge** margin is applied to the top or bottom edge. Similarly, **Short Edge** margin is applied to the left or right edge.

- **Absolute Gutters:** Margin distances are defined for the **Left, Top, Right, and Bottom** edges.

The margin distance increases the layout size used for press sheet size selection calculations. Similarly, the margin distance also reduces the page cell size that is used in scaling calculations.

### Row and Column Gutters

This field defines the distance between rows or columns in the layout that is unavailable for placing input document pages. Support use of [Workflow Process Number Variables](#) for defining gutter distances.

The aggregate row and column distances increase the layout size used for press sheet size selection calculations. Similarly, the aggregate distances of the gutters also reduce the page cell size used in scaling calculations around the page cell.

Non-uniform gutters are defined in a table starting from the top-most or left-most gutter.

### Imposition Cut Marks Tab

The Cut Marks tab provides the ability to add multiple cut marks to the imposed document.

#### Cut Marks Contents Tab

##### Placement Area

Defines the layout area that is used for placing cut marks.

- **Press Sheet:** Places cut marks relative to the press sheet. Press Sheet trims marks require an Inward Offset to appear within the imposed layout.
- **Page Cell:** Places cut marks relative the cells in the layout. Page Cell trims marks require an Inward Offset to appear within the imposed layout.
- **Cell Cluster:** Places cut marks relative to the perimeter of the placed document pages in the layout. The cell cluster perimeter is based on the PDF Box selected in the **Impose Relative To** selection in the Layout tab.
- **Gutters:** Places cut marks in the median of the selected gutters.
- **PDF Box:** Places cut marks relative to the selected PDF box using the [PDF Box Selection Behavior](#).

##### Type

Defines Single Line, Double Line, or Cross Line cut marks.

##### Gray Value

Defines shade of gray for cut marks.

## Cut Mark Dimensions

Specifies the cut mark Length, Bleed, and Line Thickness. The bleed distance for cut marks defines the distance between the edge of the reference box and the start of the cut mark.

## Cut Marks Placement Tab

**Page Selection Common Controls:** **Apply Only to Pages** selections are not applicable to imposition output.

## Press Sheet Sides

- Defines sides of sheet in which cut marks are to be placed.
- When Sides Imaged is set to Simplex, all document pages are considered to be on the Front Side.

## Offset Direction








Determines whether the specified offset is inward or outward from the nominal placement

## Offset Values


Defines offset from nominal cut mark placement.

## Imposition Layout Modes

Imposition Layout Modes includes controls for overriding the behavior of specific page cells in the layout. To use these controls, you need to enable the required override mode, then click on the icon.

- **Horizontal Alignment Override Mode:**  Allows the user to override the horizontal alignment mode for each cell in the layout. To define the horizontal alignment override, click on the page cell in the layout. To perform the alignment, refer to [Content Placement Common Controls](#)
- **Vertical Alignment Override Mode:**  Allows the user to override the vertical alignment mode for each cell in the layout. To define the vertical alignment override, click on the page cell in the layout. To perform the alignment, refer to [Content Placement Common Controls](#)
- **Page Scale Mode:**  Allows the user to override the scaling mode for each cell in the layout. To define the scaling override, click on the page cell in the layout. To perform the scaling, refer to [Content Scaling Common Controls](#)
- **Row Transform Mode:**  Allows the user to specify 180-degree rotation for layout rows. To specify the layout row rotation, in the override mode, click on the rotation icon  that is displayed appears when you hover over a layout row.
- **Column Transform Mode:**  Allows the user to specify 180-degree rotation for layout columns. To specify the column rotation, in the override mode, click on the rotation icon  that appears when you hover over a layout column.



- **Cell Transform Modes:**  Allows the user to specify 180-degree rotation, horizontal flip, and vertical flip for layout cells. To specify the cell rotation and flips, in the override mode, click on the rotation



, horizontal flip



, and vertical flip



icons that appear when you hover over a layout cell.

### Imposition Stages

**Imposition Stage:** Each imposition process can execute up to three imposition operations or stages as part of an imposition preset. The imposed layout from the Primary Stage is used as the input for the Secondary Stage and the imposed layout from the Secondary Stage is used as input for the Tertiary Stage.

### Imposed Document PDF Boxes

The imposed PDF CropBox is set to match the imposed press sheet size. PDF boxes inside the CropBox are set to match the perimeter of the matching boxes on the imposed layout. For example, the imposed PDF TrimBox is set to the perimeter of the imposed document TrimBoxes on the imposed layout.

## Imposition and Job Groups

The jobs in a [Job Group](#) are imposed nominally as separate jobs. To impose jobs in a job group using job group imposition, enable the [Collect Job Documents](#) option for the imposition node.

1. From the File menu, click **Collect Job Documents**.
2. From the Job Documents folder, select the jobs that you want to impose and print.

Job Group imposition differs from nominal imposition in the following ways:

- **Impose Relative to:** The PDF box size is based on the first page of the first job. The size is used for all documents in the multiple-document job.
- **Repeated, Cut and Stack, Sequential, Signature, and Manual Page Order:** Jobs are imposed separately. To pad imposed jobs to a multiple of two pages and join to a single job, for the If Sides Imaged feature, click **Two Sided** or **Head to Toe**.
- **Cut and Split:** To impose Jobs into a single PDF, jobs in the job group are added to one column in the layout, before the jobs are added to the next column in the layout. Individual jobs in the job group are imposed to remain within a single column of the imposed layout.
- **Job Group Page Order:**
  - Imposition determines the number of Rows and Columns required for the layout. Imposition determines the number of jobs that impose as a group. Excess jobs that do not fill the imposition sheet are not imposed.
  - Each job in the group is padded to match the number of pages in the longest job.



- To impose the jobs, the Cut and Stack Page Order is used. Each job has its position in the imposed layout.
- The imposed job is added to the output for [Job Group](#).

Imposition overflow for **Fixed Rows and Columns; Auto Rows and Columns; Auto Columns, Fixed Rows and Fixed Columns, Auto Rows:**

- The job group imposition process is repeated until all jobs in the job group are imposed or until the number of unimposed jobs is less than the number of Rows and Columns required for the imposed layout.
- If the job group does not contain enough jobs to fill a layout, the jobs are not imposed, and are added unimposed to the output for [Job Group](#).
- Depending on the number of jobs in the [Job Group](#), results include a mix of imposed and unimposed jobs.

Imposition for **Asymmetric Rows and Columns:**

- Asymmetric imposition creates a document for each imposed layout, even when imposing PDF/vt documents.
- The job group imposition process is repeated until all jobs in the job group are imposed or until the percentage of unused media in a layout exceeds the specified Maximum Waste.

Based on the [Job Group Sequence Behavior](#), jobs in a job group are added to layouts. When a layout exceeds the Maximum Waste threshold, all remaining jobs overflow, unimposed.

Depending on the number of jobs in the Job Group, a Job Group generates that includes a mix of imposed and unimposed jobs.

- **Multi-Stage Imposition:** The job group imposition behavior is used in the last stage of a multiple-stage imposition template. Other stages impose for nominal imposition behavior.

## Imposition and PDF/VT Jobs

When the **Apply to Each Variable Record** imposition option is enabled, the records in a PDF/VT file are nominally imposed as if they were separate jobs.

PDF/VT imposition differs from nominal imposition in the following ways:

- **Impose Relative to:** The PDF box size is based on the first page of the first record. This size is used for all records in the PDF/VT file.
- **Repeated, Sequential, Signature, and Manual Page Order:** Records are imposed separately. Additionally, each record is padded to ensure records print in separate imposed sheets. The record boundaries on the imposed PDF are adjusted to match the pages in each imposed record.
- **Cut and Stack:** Records are added to a column in the layout before they are added to the next column in the layout.
- **Cut and Split:** Records are added to a column in the layout before they are added to the next column in the layout. Individual records in the job group are imposed so they remain within a single column of the imposed layout.
- **Job Group Page Order:**
  1. Imposition determines the number of rows and columns required for the layout. This determines the number of records that can be imposed as a group.
  2. Each record in this group is padded to match the number of pages in the longest record.

3. The records then are imposed using the Cut and Stack Page Order. Each record ends up in its own position on the imposed layout.
4. Finally, new record boundaries are defined to match the pages in the imposed records.

The job group imposition process is repeated until all records in the PDF/VT have been imposed.


- **Imposition and Job Ticket Updates:**

- **Job Ticket Updates** for imposition include additional functionality vs. job ticket updates from other components.
- **Covers (Print None, Print Inside, Print Outside), Sides Imaged Exceptions, Chapter Starts, Sheet Inserts:** Before imposition, blank pages are added to the input document to consume these job ticket settings.

**Cover and Sheet Insert:** Media information is converted to Media Exceptions.

- **Color Exceptions:** Imposed pages are defined as color if at least one page in the layout is defined as color.
- **Media Exceptions:** Imposed pages are assigned a media exception if at least one page in the layout is defined as having a media exception.

If multiple pages in the layout are defined as having a media exception, then the media exception for the page with the lowest page number is assigned to the impose page.

 **Note:** Job Group and Cut and Split Page Orders are not supported. PDF/VT and one-sided imposition are not explicitly supported.

## Manage Color

The Manage Color component converts document colors to the defined Destination Profile color space. Also, It can homogenize spot color names and appearances as well as set knockout and overprint for text and vector objects.

- **Convert Colors:** Specifies whether color is conversion enabled. It supports the following color conversion modes:
  - **Using ICC Profiles:** Converts to RGB, CMYK, or Gray color space.
  - **Using N-Channel ICC Profiles:** Converts to N-Channel color space.
  - **Using ICC DeviceLink Profile:** Converts from two pre-defined color spaces using an ICC DeviceLink profile.

 **Note:** ICC Profile and N-Channel ICC Profile conversion can be applied to **All** objects or to **RGB, CMYK, or Gray** objects.

If **Convert Colors Using ICC Profiles or N-Channel ICC Profiles** is enabled:

- **Convert Spot Colors:** Defines whether spot colors are converted to the destination ICC profile.
- **Source RGB, CMYK, and Gray Profiles:** Define default ICC profiles used for ICC profile color space conversion. If source profiles are not embedded in the job files, default profiles are used.
- **Destination Profile:** Define the destination color space for ICC profile color conversion.



**Note:** ICC profiles up to version 4 are supported. ICC profiles are retrieved from the operating system and are listed using the ICC profile name, which can differ from the filename. To add additional ICC profiles, install them in the operating system and restart the server.

- **Use Document Output Intent Profile If Preset:** If enabled and if the document contains an output intent ICC profile, documents are converted to the output intent profile. Otherwise, documents are converted to the defined destination profile.
- **Rendering Intent:** Defines the rendering intent used for color conversion.



**Note:** N-Channel ICC Profiles must use the clrt tag to specify the colorant names and the XYZ or Lab values used to define the appearance of these colorants. N-Channel conversion can produce unexpected output when used with transparency, overprint, and smooth shades.

If **Convert Colors Using ICC DeviceLink Profiles** is enabled:

- **Device Link Profile:** Defines the ICC Device Link profiles to use for color conversion.
- **Make Pantone Spot Color Names Consistent:** Normalizes the spelling of Pantone and HKS spot color names. Additionally, normalizes spot colors that use different names but have the same appearance. The name of the first spot color found is used.
- **Normalize Spot Color Appearance:** Normalizes spot colors that use different CMYK values but have the same name to use the same CMYK values. The CMYK values of the first spot color found are used.
- **Convert Registration Color:** Converts registration color objects to the selected color.
- **Knock Out White Vector and Text Objects:** Sets white vector and text to knockout.
- **Overprint Black Vector and Text Objects:** Sets black vector and text to overprint.

## Enhance Images

The Enhance Images component provides the ability to intelligently enhance document images. Selected image enhancements are applied if they improve the appearance of document images.



The following image enhancements are available:

- Contrast
- Saturation
- Balance Colors
- Reduce Red Eye: Red eye reduction does not apply to images of animals
- Exposure
- Increase Shadow Detail
- Sharpness
- Noise Reduction: Enhance Images supports RGB and grayscale TIFF, JPEG, and BMP images embedded in a PDF. EXIF information is not retained on enhanced images

## Barcode

The Barcode component provides the ability to add multiple 1D or 2D barcodes to the document. Barcodes are added in the order in which they are placed on the barcodes table.

### Barcode Contents Tab

- **Name:** Defines a descriptive name for the barcode.
- **Symbology:** Defines the barcode type. When a symbology is specified, symbology-specific options appear.
- **Font Size for 1D symbologies:** Although the Barcode process does not require the use of barcode fonts, the barcode size is specified as a Font Size. The barcode font sizes map to minimum bar widths.
- **Cell Size (pixels per cell) for 2D symbologies:** The size defines the width, in pixels, of the individual barcode cells. Barcodes are rendered at 600 dpi.
- **Fits Into for 2D symbologies:** The width defines the maximum width of the overall barcode. The barcode is rendered to be as large as possible within the defined width. The barcode dimensions are calculated to ensure cells are rendered using complete pixels at 600 dpi.
  -  **Note:** The Quiet Zones are considered part of the barcode and are preserved when rendering the barcode into the dimensions specified in the Fits Into setting.
- **Barcode Height:** This option specifies the bar height for 1D barcodes that support variable height.
  -  **Note:** When **Enforce Minimum** is enabled, it overrides defined barcode height to ensure barcode meets minimum height requirements for the selected symbology.
- **Horizontal, Vertical Quiet Zones:** This field specifies the distance from the edge of the barcode to mask with the background color.
- **Color, Background Color:** This field defines the color of the barcode contents and background. Custom colors can be added to the list of available colors. Custom colors can be defined as CMYK, RGB, or Grayscale colors.
- **Background Opacity:** This field defines the translucency of the background color.
- **Include Caption:** This field adds a readable barcode caption to 1D barcodes that support captions. Symbology-specific caption options appear under the caption font formatting parameters.
- **Text and Paragraph Formatting Common Controls:**
  - Barcode caption text alignment is based on the [Content Placement Common Controls](#).
  - The Quiet Zones are considered part of the barcode. Placement is done to the edge of the quiet zones.
- **Scale Caption to Barcode:** This field sets the font size for the barcode caption based on the barcode length.
- **Horizontal, Vertical Alignment and Offset:** This variant of the [Content Placement Common Controls](#) uses the perimeter of the barcode as the reference box for text alignment and placement of the barcode caption.

### Barcode Data Tab

The content of a barcode is defined by adding text, including [Workflow Process Variables](#) and barcode variables to the **Barcode Data Value** field.

- **Select Values to Add:** Control used to add content to the Barcode Data Value. In addition to text, the following barcode variables are supported:
  - **Job ID:** The Xerox® FreeFlow® Core Job ID.
  - **Job ID in Group:** The Xerox® FreeFlow® Core Job ID within a job group.
  - **Job Number in Group:** A sequence number within a job group.
  - **Number of Documents in Job Group:** Total number of jobs in a job group.
  - **Sheet Number:** Counter for the number of sheets in the job.
  - **Number of Sheets in Job:** Total number of sheets in the job.
  - **Sheet Number in Signature:** Counter for the number of sheets in a signature.
  - **Number of Sheets in Signature:** Total number of sheets for each signature. This value matches the Sheets per Signature attribute.
  - **Signature Number:** Total number of signatures in a job. This value is calculated by dividing the Number of Sheets in Job by the Sheets per Signature value.
  - **Record Number:** Counter for the number of records in a PDF/VT file.
  - **Number of Records in Job:** Total number of records in a PDF/VT file.
  - **Sheet Number in Record:** Counter for the number of sheets in a PDF/VT record.
  - **Number of Sheets in Record:** Total number of sheets in a PDF/VT record.
  - **Barcode Number:** Counter for the number of times a barcode is added to the document.

Nominally, variables, such as counters and total number of sheets, map every page in the document to a sheet. However, variables increment for every two pages in the document when odd or even pages are selected in the [Page Selection Common Controls](#) or when a signature variable is added to the barcode.

- **Include Leading Zeros:** When enabled, adds leading zeroes to variables.
  - **Set Total Digits from Number of Pages:** Defines the number of digits in the barcode variable based on the number of pages in the document.
  - **Total Digits:** Defines the number of digits in the barcode variable.
- **Sides Imaged:** Defines whether the print is 1-sided or 2-sided for the barcode counters. Supports the use of the Sides Imaged attribute from the submitted print ticket.
- **Sheet Counting Order:** Defines whether counting variables increment or decrement.
- **Sheets per Signature:** Defines the assumed number of sheets for each signature used by the variables in the barcode process. Supports use of the Imposition Sheets per Signature attribute.
- **Sheet Number Start Number:** The number from which to start adding sheet numbers to the document. Supports use of [Workflow Process Number Variables](#).

## Barcode Placement Tab

- [Content Placement Common Controls](#)
- [Page Selection Common Controls](#)

The Barcodes component includes an option to collect job documents. For information, click [Collect Job Documents](#). To enable the option, hover over the Barcodes component. From the menu that appears, access the **Workflow Canvas** area, then make your selections.

To ensure that job group variables do not change while processing the jobs in the Job Group, the Barcodes feature enables the Collect Job Documents option.

## Watermarks

The Watermarks component provides the ability to add multiple text and image watermarks to the document. Watermarks are added in the order in which they are placed in the watermarks table.

### Watermarks Contents Tab

- **Type:** Defines whether to insert a text, image, PDF, or Merge PDF pages watermark.
- **Name:** Defines a descriptive name for the text or image watermark.

### Text Watermarks

- **Text:** Text to be added to the document.
- [Text and Paragraph Formatting Common Controls](#)
- **Opacity:** Defines translucency of placed text or image watermarks.

### Image and PDF Watermarks

- **Image or PDF File:** Defines the location of the selected document using the [Document Selection Common Controls](#).
- **Image:** Supports JPEG (.jpeg, .jpg), Portable Network Graphics (.png), TIFF (.tif, .tiff), and BMP (.bmp) documents.
- **PDF:** When adding PDF image watermarks to PDF/VT jobs, the PDF must be PDF/X-4 compliant.

### Merge PDF Pages

- **Merge PDF Pages:** When Merge PDF Pages is selected, each page of the selected PDF is merged into the matching page of the job.
- **PDF File:** Defines the location of the selected document using the [Document Selection Common Controls](#).



**Note:** When merging PDF Pages to PDF/VT jobs, the PDF must be PDF/X-4 compliant.

- **Restart merge when all pages have been used:** Defines whether to continue merging PDF pages if the last page in the merged PDF is reached before the last page of the job is reached. If enabled, after the last page of the merged PDF is reached merging continues with the first page of the merged PDF and proceeds until a PDF page is merged into all job pages.
- [Content Scaling Common Controls](#)
- **Opacity:** Defines translucency of placed text or image watermarks.

### Watermarks Placement Tab

- The Layer Order feature allows you to define the watermark placement above or below existing content in the document.
- [Content Placement Common Controls](#)
- [Page Selection Common Controls](#)

The Watermarks component includes an option to [Collect Job Documents](#). The Collect Job Documents option is enabled from the menu that appears when you hover over the Watermarks

component in the Workflow Canvas area.

To ensure that job group variables do not change while processing the jobs in the Job Group, the Watermarks feature enables the Collect Job Documents option.

## Pressmarks

The Pressmarks process provides the ability to add multiple pressmarks to the document. Pressmarks are added in the order in which they are placed on the pressmarks table.

### Pressmarks Contents Tab

- **Type:** Defines the pressmark to add to the document. Supported pressmarks include registration marks, lay marks, and color swatches or bars.
  - **Solid Marks:** Solid rectangles most often used for finishing device control.
  - **Registration Marks:** Small targets printed outside the page area used to align different separations when printing color documents.
  - **Sequence Marks:** Marks used in book printing to ensure that folded signatures are in the expected sequence.
  - **Lay Marks:** Marks used to register content to press sheets.
  - **Line Marks:** Lines used to mark the location of operations such as cutting or perforating.
  - **Color Swatches/Bars:** Small squares of color that represents the RGB and CMYK solids and tints.
- **Name:** Defines a descriptive name for the pressmark.
- **Swatch Width, Height:** Defines the width and height of each swatch in a pressmark. Also used to define the overall dimensions of registration marks or the lay marks.
- **Color:** Defines the color of Solid Marks, Sequence Marks, or Line Marks. Custom colors can be added to the list of available colors. Custom colors can be defined as CMYK, RGB, Grayscale, or Spot Colors.
- **Line Thickness:** Defines the thickness of the lines in the registration, Lay, and Line Marks.

### Line Mark Options

- **Line Start (horizontal, vertical):** Location of the start of the Line Mark. Defined as a distance from the origin; defined in the [Content Placement Common Controls](#).
- **Line End (horizontal, vertical):** Location of the end of the Line Mark. Defined as a distance from the origin; defined in the [Content Placement Common Controls](#).

Horizontal and Vertical Offset controls are not available when adding Line Marks.

- **Dash:** Length of dashes in dashed Line Marks.
- **Gap:** Length of gaps in dashed Line Marks.



## Sequence Mark Options

- **Horizontal, Vertical Offset:** Incremental adjustment to the placement of each sequence mark.
- **Wrapping:** Defines how sequence marks are placed after they have been offset to the Wrap Width or Height.
- **Wrap Width, Height:** Define the offset distance at which to wrap sequence marks.
- **Sequence Mark Type:** Defines whether to place Plain or Numbered sequence marks. Numbered sequence marks have a number that increments with the placement of each sequence mark.
- **Sequence Start Number:** The number from which to start adding Sequence Mark numbers. Supports use of [Workflow Process Number Variables](#).


## Pressmarks Placement Tab

- [Content Placement Common Controls](#)
- [Page Selection Common Controls:](#) Unlike other content, registration marks are aligned to the center of the mark.

## Page Numbers

The Page Numbers component provides the ability to add page numbers in various formats to the document.

## Page Numbers Contents Tab

- **Start Number:** The number from which to start adding page numbers to the document. Supports use of [Workflow Process Number Variables](#).
- **Number Format:** Defines format used for the page numbers.
  -  **Note:** The alphabetic page number formats use the English alphabet.
- **Include Leading Zeroes:** When enabled, adds leading zeroes to page numbers.
  - **Set Total Digits from Number of Pages:** Defines the number of digits in the page numbers based on the number of pages in the document.
  - **Total Digits:** Defines a fixed number of digits in the page numbers.
- **Prefix and Suffix:** Defines text that is concatenated with the page numbers.
- [Text and Paragraph Formatting Common Controls](#)
- **Increment Page Numbers Based On:** Defines whether page numbers are incremented based on all pages in the document or based on the numbered pages.

## Page Numbers Placement Tab

- [Content Placement Common Controls](#)
- [Page Selection Common Controls](#)

The Page Numbers component includes an option to [Collect Job Documents](#). This option is enabled from the menu that appears when you hover over the Page Numbers component in the Workflow Canvas area.

To ensure that the job group variables do not change while processing the jobs in the job group, Page Numbers enables the `Collect Job Documents` option.



## Resize Pages

The Resize Pages process defines how the selected PDF boxes or contents in the document pages are resized.

### Resize Contents Tab

- **Resize:** Defines whether Resize modifies the PDF contents or the PDF boxes.
- **Resize Relative To:** Defines the PDF box or the PDF contents to use as the source size for resizing.
  - If resizing a PDF box that is not defined in the job file, the [PDF Box Selection Behavior](#) is used to define the selected PDF box before resizing.
  - If resizing the contents, the PDF boxes are not modified.
- **Proportionally Resize Relative To:** The selected PDF box is resized to the target dimensions. Other PDF boxes are scaled by the same amount as the selected PDF box to ensure the relationship between the PDF boxes is retained as the document is resized.



**Note:** When resizing only the selected PDF box, Resize, if required, resizes other PDF boxes to ensure proper nesting of the Trim, Bleed, Crop, and Media PDF boxes.

- **Method**
  - **By Percent:** Resizes the selected PDF box or the contents by a defined percentage.
  - **To Size:** Resizes the selected PDF box or the contents to a defined size. Supports use of [Workflow Process Number Variables](#) for defining the Width and Height.
  - **To Size Offsets:** Resizes the selected PDF box or the contents by the defined distance.
  - **By Percent Offsets:** Resizes the selected PDF box or the contents by the defined percentage.
  - **Offset Direction:** When resizing by offsets, defines whether to offset inward or outward.
- [Content Scaling Common Controls](#)

### Resize Placement Tab

- [Content Placement Common Controls](#)
- [Page Selection Common Controls](#)

## Rotate Pages

The Rotate Pages process updates the PDF page rotation property, adjusting it in 90-degree increments.

- **Rotate Pages:** Defines the rotation to apply to the selected pages.
- [Page Selection Common Controls:](#) Changing the PDF rotation property in a PDF does not rotate the PDF. As such, the PDF Job Properties remain unchanged. Refer to: [Job Properties](#).

## Insert Pages

The Insert Pages process inserts pages at defined locations in the document.

- **Type:** Defines the type of page insertion.

- **Blank Pages:** Add blank pages to the document.
- **Document:** Add the pages from a PDF to the document.
- **Job Pages:** Add job pages to the document.
- **Blank Pages Fill:** Add blank pages to the document until the Final Document Page Count is reached.
- **Document Fill:** Add the pages from a PDF to the document until the Final Document Page Count is reached.
- **Job Pages Fill:** Add job pages to the document until the Final Document Page Count is reached.

When inserting Blank Pages:

- **Insert Size, Orientation:** Defines the dimensions and orientation of inserted blank pages.
- **Insert Size Same As:** Defines the PDF box to use to set the dimensions of inserted blank pages.
- **Number of Inserts:** Defines the number of blank pages to insert at each insertion point in the PDF. Supports use of [Workflow Process Number Variables](#).

When a blank page is inserted, the Location attribute and the [Page Selection Common Controls](#) are used to define the insertion point in the PDF. The blank pages match the size of the selected PDF box of the page relative to which blank pages are inserted into the PDF.

When inserting PDF document pages:

- **File:** [Document Selection Common Controls](#)

When inserting Blank Pages, PDF document pages, or Job Pages to fill a document:

- **Final Document Page Count:** Defines the page count that must be reached before blank page fill or document fill stops. The page count can be an exact number or a multiple of the specified number. Supports use of [Workflow Process Number Variables](#).

When inserting Job Pages:

- **Divide Print Quantity by Number of Inserts:** Divides the print quantity based on the number of times job pages are inserted into the document.
- **Set Automatically Based on the Print Quantity:** Defines the **Number of Inserts** so that the number of times each page is in the document matches the Print Quantity. After inserting Job Pages, quantity is set to 1.

When inserting Blank Pages or Job Pages:

- **Number of Inserts:** Defines the number of job pages to insert at each insertion point in the PDF. Supports use of [Workflow Process Number Variables](#).
- The Number of Inserts can be defined as a fixed value or can be based on the value of the selected Manifest Job Property.
- Page Selection Common Controls are subject to a specific page number when inserting blank pages or PDF document pages to fill a document.
- **Location:** Defines whether the insertion is to happen before or after the locations specified by the [Page Selection Common Controls](#).

- If inserting Job Pages, options to insert job pages **Before** or **After Each Set of Contiguous Pages** become available.
- A PDF/VT is created when inserting PDF/X-4 job pages **Before** or **After Each Set of Contiguous Pages**.
- [Page Selection Common Controls](#): Page Selection Common Controls are subject to a specific page number when inserting blank pages or PDF document pages to fill a document.
- [Job Ticket Updates](#)

## Delete Pages

The Delete Pages component allows you to remove document pages.


[Page Selection Common Controls](#)

[Job Ticket Updates](#)

## Route

The Route component allows you to automate decisions about the execution path that a job is to take in the workflow.

Use the [Routing Common Controls](#) to define rules for routing jobs to one or more workflow execution paths. Each row in the Routing Rules table creates a unique execution path in the workflow.

 **Note:** Routing is applied to individual jobs in a [Job Group](#).

## Distribute


The Distribute component allows you distribute jobs between multiple workflow execution paths.

- **Select Workflow Path By**

**Selecting The Next Available (Round Robin):** Use round robin scheduling to select between the defined workflow execution paths.

- **Distribution Rules**

- **Always Available:** Jobs are always sent to these workflow paths when selected per the round robin scheduling.
- **Available Based on Job Characteristics:** Jobs are sent to these workflow paths when selected according to the round robin scheduling if the job matches the selected [Job Characteristic Presets](#). If the job does not match the selected Job Characteristics, Distribute skips the workflow path and continue evaluating other Distribution Rules.
- **None Available:** Jobs that cannot be sent to any of the defined Distribution Rules are sent to the None Available workflow path.

 **Note:** Jobs are distributed to workflow paths based on the [Job Group Sequence Behavior](#). After jobs are distributed, they continue processing according to the job group behavior.


## Collect


The Collect component allows you aggregate jobs. Collected jobs are held until one of the defined release conditions is met.


One of each of the following conditions can be added to the **Release Conditions**:

- **Time of Day:** Jobs are released at the specified time.  
**Day of Week:** Combined with Time of Day, this option defines the days of the week when jobs are released.
- **Collected Documents are Held for:** Jobs are released when the first job has been held for the defined number of minutes.
- **Time Since Last Job was Collected:** Jobs are released when the last collected job has been held for the defined number of minutes.
- **Number of Collected Documents:** Jobs are released when the number of held jobs reaches the defined number.
- **Number of Pages in Collected Documents:** Jobs are released when the number of pages in the held jobs reaches the defined number.
- **Number of Impressions in Collected Documents:** Jobs are released when the number of impressions in the held jobs reaches the defined number.

When **Release Collected Jobs as a New Job Group** is enabled, collected jobs are combined into a new **Job Group**. Jobs are sequenced nominally based on the order in which they were collected.

 **Note:** Jobs that are copied into the new Job Group are also new jobs.

- **Job Group Name:** Defines the name for Job Groups Created by Collect.  
 **Note:** Variables used to name the **Job Group** are evaluated using the first job in the job group.
- **Define Job Groups:** Determines how Job Groups are created.
  - **Define a Single Job Group:** All released jobs are added to a single Job Group.
  - **Define Job Groups Using Job Properties:** Released jobs are added to multiple job groups using the defined **Job Properties**. Jobs that have the same value for the defined Job Properties are put into the same job group.
- **Sort Jobs in Groups Using Job Properties:** Enables sorting of jobs within a job group based on the defined properties.
  - When the Release Collected Jobs is enabled, this option defines the job sequence in new job groups.
  - When the Release Collected Jobs is disable, this option updates the job sequence in existing job groups.
- **Order Job Groups:** Enables release of Job Groups based on the sort order specified for the selected variable.

 **Note:** Although Job Groups are released according to the **Order Job Group** settings, the Job Groups process in parallel.

## Split

The Split component allows you to split jobs into multiple execution paths in the workflow.

- **Split By:** Defines the method for splitting jobs.
  - **Split Each Variable Data Record:** Defines whether the **Page Selections** defined in the split rules apply to PDF/VT files or to each record within PDF/VT files.
  - **Split Rules when splitting by Pages:** Use the [Page Selection Common Controls](#) to define the subset of pages that are submitted to each workflow execution path. The pages submitted to each execution path, if any, appear as a separate job in a Job Group.
  - **Split Rules when splitting by Segments**
    - **Divide Into Equal Segments:** Jobs are divided into a Job Group in which the number of jobs matches the value defined in the Number of Segments field. Job Pages are divided between jobs in the Job Group as evenly as possible.
    - **Divide Into Fixed Page Segments:** Jobs are divided into a Job Group. The **Number of Pages** setting defines the number of pages for each job.
      - **Divide Short Segments Into Fixed Page Segments:** If this option is not enabled, the last job in the Job Group can have fewer pages than the other jobs in the Job Group.
      - **Divide Short Segments Into Fixed Page Segments:** If this option is enabled, FreeFlow Core splits the job into multiple jobs. The result is that the number of pages matches one of the defined Number of Pages values and makes as few short segments as possible.
        - **Number of Pages for Short Segments:** Defines the number of pages into which the short segments can be divided.
        - **Interleave Short Segments with Full Segments:** Modifies placement of short segments in the Job Group to ensure that all short segments are next to the full segments.
        - **Short Segment Location:** Defines where in the Job Group to place short segments.
  - **Split Rules when splitting by Quantity**
    - **Divide Print Quantity Evenly:** Jobs are divided into a Job Group in which the number of jobs matches the value defined in the Number of Jobs field. The print quantity is divided between jobs in the Job Group as evenly as possible and ensure that the overall quantity for the Job Group is the same as the input job quantity.
    - **Divide Into Fixed Print Quantity Jobs:** Jobs are divided into a Job Group. The **Print Quantity per Job** setting defines the quantity for each job. The last group in the Job Group can have a smaller quantity than the other jobs in the Job Group.
  - **Split Rules when splitting by Records**
    - **Divide Records Evenly:** Jobs are divided into a Job Group in which the number of jobs matches the value defined in the Number of Jobs field. The Variable Data Records are divided between jobs in the Job Group as evenly as possible.
    - **Divide Into Fixed Record Jobs:** Jobs are divided into a Job Group. The **Records per Job**

- setting defines the number of variable data records in each job. The last job in the Job Group can have fewer Variable Data Records than the other jobs in the Job Group.
- **Divide Record By Selection:** A PDF/VT file with the records defined in the **Record Selection** field for the split rule is sent to each workflow execution path.
    - **All Records:** Send all records in the document.
    - **Record Intervals:** Send every N record, starting with the defined record number, where N represents a number of records.
    - **Record Range:** Send specified records. This option supports both positive and negative numbers. Negative numbers are relative to the last record in the PDF/VT with record -1 representing the last record.
  - **Split Rules** when splitting by **Bookmarks**
    - **Bookmark Start or End Interval:** This rule specifies whether an encountered bookmark is the beginning or end of an interval.
    - **Divide Bookmarks Evenly:** Jobs are divided into a Job Group in which the number of jobs matches the value defined for the Number of Jobs field. The bookmark-defined intervals are divided between jobs in the Job Group as evenly as possible.
    - **Divide Into Fixed Bookmark Delineated Jobs:** Jobs are divided into a Job Group. The **Bookmarks per Job** setting defines the number of bookmark-defined intervals in each job. The last job in the Job Group can have fewer bookmark-defined intervals than the other jobs in the Job Group.
    - **Divide Bookmarks By Selection:** A file with the bookmark intervals defined in the **Bookmark Delineated** field for the split rule is sent to each workflow execution path.
      - **All Intervals:** Send all bookmark intervals in the document.
      - **Interval Designation:** Send every N bookmark interval, starting with the defined bookmark interval number, where N represents a number of intervals.
      - **Interval Range:** Send specified bookmark intervals. This option supports both positive and negative numbers. Negative numbers are relative to the last bookmark interval in the file. -1 represents the last interval.
  - **Append Rule Name to Job Name:** Defines whether the rule name is appended to the job name when a rule triggers a split operation.
  - **Maintain Sub Job Order:** The split produces the sub job order, and it is maintained throughout the Workflow.
  - [Job Ticket Updates](#)

## Join

The Join component concatenates jobs in a [Job Group](#) into a single job. If jobs in a job group process through multiple execution paths, Join concatenates all jobs in the execution path that includes the Join component. Jobs are joined based on the order defined in the [Job Group Sequence Behavior](#).

Join supports [Job Ticket Updates](#).

### Join and PDF/VT jobs

While joining PDF/VT and PDF files, the PDF files are joined as a record within a PDF/VT file. Ensure that the PDF file is PDF/X-4 compliant.

The resultant PDF on joining PF/X-4 files is PDF/VT, with each PDF file defined as a record.

## Color Split

The Color Split component separates jobs into color and monochrome jobs that can be reassembled either manually or at the printer. The Color Split component generates a Job Group with a monochrome and a color job.

- **Color Insert Handling:** Defines how to adjust the monochrome print ticket based on the expected assembly of the mono and color jobs.
  - **Merge In Printer:** To enable insertion of split color pages at the printer, the monochrome job ticket is adjusted.
  - **Merge Manually:** To enable manual insertion of split color pages, the monochrome job ticket is adjusted. Each contiguous set of color pages is replaced with a single-sheet insert in the monochrome job.
- Monochrome Job



### Color Insert Stock

Defines the Stock Name to use for the sheet inserts that represent the color pages that were removed from the job.

- Color Job

### Append “Color Inserts” to Job Name

Defines how a file is renamed for the Color Insert job.

- Page Selection
  - **Check Color Coverage:** Determines whether to evaluate color coverage when you determine whether a page is color or monochrome. If you do not select the check box for **Check Color Coverage**, A page with any color pixels is specified as a color page.
  - **Minimum Color Coverage:** Defines how the color content coverage threshold is used to determine if a page can be added to the color job.
    -  **Note:** Coverage is rounded upward. When the **Minimum Color Coverage** is set to 1 %, pages with any color content are added to the color job. Setting the Minimum Color Coverage to 1 % is significantly faster than other selections.
  - **PDF Box:** Constrains the Minimum Color Coverage evaluation to the selected PDF Box when the Minimum Coverage Threshold is above 1 %.
  - **Use Job Ticket Settings:** Determines whether to evaluate the job print ticket when you determine which PDF pages are assumed to be on the same sheet. If monochrome PDF pages are considered to be on the same sheet as a color page, they are added to the color job.
  - **Sides Imaged:** Defines whether the print is 1-sided or 2-sided when you determine which PDF pages are on the same sheet.
    -  **Note:** The **Sides Imaged** setting overrides the setting for 1-sided or 2-sided printing as defined in the job ticket, unless the job ticket is set to use the Sides Imaged Job Property.
  - [Job Ticket Updates](#)

## Review

The **Review** component provides the capability to pause a job and send the job information to a designated recipient for review. After review, the job can be released in the Job Management user interface.

### Name

Defines a descriptive name for the **Review** node.

### Sender

Defines the email address of the sender of the review email. If you have set up email addresses in the **User Access** component, you can select from the list of email addresses in the Sender area. Alternatively, you can add the required email addresses in the Additional Sender Address or To (separate addresses with semicolons) text fields.

### Enable Subject Line

Defines the email title information to be sent.

### Message Content

Defines the information to send within an email.

### Allow Job to Continue


This option enables the job to continue processing, even if there is a problem sending the review email.

## External

The External component allows you to integrate third-party software products into Xerox® FreeFlow® Core workflows.

When Type is set to Script, when the system executes the workflow component, it performs a CLI call. The CLI call concatenates the following attributes:

- The URI defined in the script. The following URI formats are supported:
  - `script.xxx` (Sandbox Location)
  - `<drive letter>:\folder\script.xxx`
- The text string is defined in the Parameters field.  
Carriage returns are removed automatically from the Parameters field.

 **Note:** Variables unique to the external process component are listed in the [External Process Node Variables](#) section of [Job Properties](#).

Xerox® FreeFlow® Core determines the job status based on the script exit code.

- If the exit code is a value other than 0, the job fails.
- If the exit code is 0, the job completes.
- If the script does not explicitly return an exit code, the default value is returned. The default value is 0.

When a job completes, a PDF is named according to the name defined in \$FFin\$, in the location defined by \$FFout\$. The PDF is used as the job document. Otherwise, the current document is used.



Each time a script executes, Xerox® FreeFlow® Connect archives the contents of the `stdout` and `stderr` folders to XML files in the sandbox, in the `External Process Status` subfolder of the `Scripts` folder. The folder is accessible using the server file system.

To save the job to the `Input to External Process` folder, set **Type** to **Hot Folder**. When the submitted file is received in the `Output from External Process` folder, the job continues processing.

The **Send the current ticket to the external process** selection sends the current Xerox® Programming Information Format (XPIF) ticket for the job to the external process.



**Note:** If the Xerox® Programming Information Format (XPIF) ticket is sent to the Hot Folder external process, the XPIF ticket is returned with the job file before the job continues processing.

The **Timeout** selection defines the number of seconds to wait before it is assumed that there was a problem with the external process.

The **External** component includes an option to collect job documents. For information, refer to [Collect Job Documents](#). To enable the **Collect Job Documents** option, hover over the **External** component. From the menu that appears, access the **Workflow Canvas** area, then make your selections.

To ensure that job group variables do not change while processing the jobs in the Job Group, the **Collect Job Documents** option is enabled.

The **External** node has an option to specify more FreeFlow Core variables. To view the list of these variables, select the **Search** icon. You can pass and update these variables using the specified script.

## Print

The **Print** component allows you to submit jobs to IPP-based Printer Destinations.

The **Print** components can:

- **Send All Jobs to a Single Printer**
- **Select the Printer Based on Job Characteristics:** Jobs are sent to a Printer Destination using the [Routing Common Controls](#).
- **Distribute Jobs Between Selected Printer Destinations:** Jobs are distributed between defined Printer Destinations. To select a Printer Distribution, select one of the following options:
  - **Selecting The Next Available (Round Robin):** To select between the defined printer destinations, use round-robin scheduling. If [Job Submission Regulation](#) is enabled, jobs are not distributed to Printer Destinations for which job submission has been suspended.
  - **Selecting The First Available:** Send jobs to the first Printer Destination in the list for which job submission has not been suspended by [Job Submission Regulation](#).

The **Pause Job Before Sending to Printer** option pauses jobs in Xerox® FreeFlow® Core when the jobs reach the **Printer** component.

If the **Pause Job Before Sending to Printer** option is enabled, the job resumes using the **Job Status** user interface or a **JMF ResumeQueueEntry** signal.

The **Print** component includes an option to [Collect Job Documents](#). This option is enabled from the menu that appears when you hover over the **Print** component in the **Workflow Canvas** area.

To submit jobs to the print server in the order defined in the [Job Group Sequence Behavior](#), the **Print** component enables the **Collect Job Documents** option.



**Note:** If you are printing to a print server with the Collect Job Documents option enabled, FreeFlow Core uses a single Printer Destination for all connections to that print server. The Printer Destination is shared by all Print presets that submit to print server.

### Printer Destination

- **Name of Printer Destination:** Defines a descriptive name for the Printer Destination.
- **Printer:** Determines whether to create a printer destination using an existing printer or a new printer.
- **Name:** Defines a name for the printer. If a name is not defined, the Model information retrieved from the print server is used as the name of the printer in the Printers list.
- **DNS Name or IP Address:** Defines the hostname or IP address for the print server. If the printer supports JDF/JMF connectivity, the JMF port number :<JMF port number> is appended to the hostname or IP address. For example: xxx.xxx.xxx.xxx:8010.
- **Get Printer Info:** Retrieves printer capabilities from the print server. This information is used to populate the printer description, the list of queues, if any, and the job ticketing options.
  - If available printer options change, to retrieve updated capabilities from the print server, you can select **Refresh Printer Info** on an existing printer.
  - For example, if the media library is changed or an output destination is added to the printer configuration.



**Tip:** Print server queues that are not accepting jobs do not appear in the list of returned queues.



**Note:** When you connect to a Fiery print server, ensure that one of the default queues of print, hold, or direct is enabled.

Ensure that the following protocols are enabled in the print server:

- **IPP Printing:** Enables the retrieval of supported job ticketing and print submission.
- **JDF Printing:** Enables retrieval of supported job ticketing and print submission.
  - **JDF Printing** is supported for printers that use an EFI® Fiery® print server.
  - To enable **JDF printing**, on the Fiery controller, install the **Fiery Productivity Pack**.
  - After you install the productivity pack, in the Server menu, invoke Free Flow® Core® Configure. To configure the JDF settings in the Job Submission section, use the **Fiery Command Workstation**.
  - After you enable **JDF printing**, to add virtual printers and configure **Job Ticket Defaults**, use **Device Center**.
  - When FreeFlow Core retrieves Printer Info, the virtual printers created at the EFI® Fiery® controller appear as Print server queues.
- **LPR Printing:** Enables print submission, does not provide for retrieval for supported job ticketing.
- **SNMP:** Enables device type discovery using the Standard Device Description.
- **XBDS:** To fetch the capabilities of office and production DMP printers, ensure that the XBDS protocol is enabled on the printer.

After Xerox® FreeFlow® Core retrieves Printer Info, the following options become available:

- **Printer Queue Name:** Name of the queue to use for job submission.



**Note:** This option is available for print servers that support multiple queues only.

- **Define Job Ticket Defaults:** Enables the use of default job ticket settings for print submission.
- **Secure Printing:** Enables the use of Secure IPP for print submission.

Before you do Secure Printing, download a certificate from the print server using the FreeFlow® Core Certificates utility. Secure Printing requires a print server with SSL/TSL enabled.



**Note:** Secure Printing is supported on Xerox® FreeFlow® Print Servers and EFI® Fiery® print servers.

## Printer Job Ticketing

Printer job ticketing defaults are defined in the Xerox® FreeFlow® Core Printer Destinations.

To access the job ticket settings, click **Apply Job Ticket Settings**→



**Edit Job Ticket Settings.**

### Setup Tab

- **Job Name:** Defines the jobs name in the print server. For job groups, the sub-job names define the print server job name, not the job group name.
- **Quantity:** Defines the number of copies for the job. The option to use printer default overrides the nominal precedence so that the Xerox® FreeFlow® Core default quantity and the quantity in incoming job tickets is ignored.
- **Main Stock:** List is based on the current stock library of the print server. When you hover over the stock name, a tool tip appears that shows the Stock properties retrieved from the print server. Stocks loaded in the printer trays are marked with a



icon.

- **Sides Imaged:** Defines whether the printer is programmed for Simplex or Duplex mode of printing.
- **Color:** Defines the color mode used for printing.
- **Collation:** Defines the page sequence used for printing.
- **Output Order:** Defines the print order and face orientation used for printing.
- **Output Location:** Defines the destination for printed sheets.
- **Slip Sheets:** Defines the insertion of blank sheets between sets when printing.
- **Offset:** Defines when to change the output position of the printed stack.
- **Number of Leading Banner Pages:** Defines the number of pages in the PDF, starting with the first page, which is treated as a banner page by the print server.
- **Sender:** Defines the Sender Name in the print server.

### Exceptions Tab

**Exception Pages:** Defines stock, plex and color mode for specific pages within a job. Exception Pages supports negative page numbers. If needed, negative numbers are converted to the appropriate positive numbers when sending the job to the print server.

### Inserts Tab

**Sheet Inserts:** Defines printer sheet inserts, for example, a blank piece of paper or a pre-printed page, that are inserted between printed pages in a job. Sheet Inserts supports negative page numbers. If needed, negative numbers are converted to the appropriate positive numbers when sending the job to the print server.



**Note:** Page ranges for Sheet Inserts and Exception Pages start with the first page in the PDF. This enables page exceptions and sheet inserts on Leading Banner Pages. However, this also means that page ranges must compensate for the number of Leading Banner Pages in the document.

### Finishing Tab

- **Finishing Orientation:** Defines whether the finishing options apply to portrait or landscape pages.
- **Finishing:** Defines the available finishing on the print server. The following integrated finishing operations are supported:
  - Stapling
  - Hole Punching
  - Folding
  - Booklet Making
  - Multiple Finishing
  - DFA Finishing Profiles
  - Custom DFA Finishing Profiles

### Job Submission Methods and Job Ticketing

The default [Printer Destination](#) job ticketing values can be overridden during job submission. Different submission mechanisms support different levels of job ticketing:

- **Job Submission Client:** All Printer Destination job ticketing using Job file + XPIF upload. Quantity and Main Stock overrides.
- **LPR:** Printer Destination job ticketing using a concatenated file or using LPR arguments.
- **JMF:** Printer Destination job ticketing using JDF.
- **Hot Folder:** All Printer Destination job ticketing using XPIF.
- **MAX:** All available Printer Destination job ticketing options using a manifest field referencing an XPIF file. Quantity and Main Stock use manifest columns.
  - Finishing, Special Pages, or Sheet Inserts defined using XPIF or JDF replace all Finishing, Special Pages, or Sheet Inserts defined in the default job ticket.
  - Job ticketing supports the print ticketing attributes available in the Printer Destination in addition to media attributes. Other job ticketing attributes are not supported.

## Finish

Finisher Destinations saves a JDF layout description of the Xerox® FreeFlow® Core job.

The Finish component can **Send All Jobs to a Single Finisher** or use the [Routing Common Controls](#) to **Select the Finisher Based on Job Characteristics**.

**Pause Job Before Sending to Finisher** pauses jobs in Xerox® FreeFlow® Core when they reach the Finish component. If this option is enabled, the job must be resumed using either the Job Status UI or a JMF ResumeQueueEntry signal.

Two types of finisher presets are available:

- **Inline finishers:** Generates a JDF that contains the Xerox® FreeFlow® Core print server job ID required for Ultimate Bindery to release the held Xerox® FreeFlow® Core print server job after the finisher is properly configured.
- **Offline finishers:** Generates a JDF without the Xerox® FreeFlow® Core print server job ID.



**Note:** Ultimate Bindery processes jobs using a FIFO queue. This ensures that the job group order defined during job submission to Xerox® FreeFlow® Core is retained when finishing jobs.

### Finisher Destination

- **JDF Location:** [Document Selection Common Controls](#)
- **Media Weight:** Defines the media weight used by the finisher to fine-tune paper handling.
- **Source Tray:** Defines the tray to use for feeding the job when you use the Bourg Sheet Feeder.
- **Sheet Inserts:** Defines the trays to use for finisher sheet inserts when you use the Bourg Sheet Feeder.

The Bourg Sheet Feeder supports the following Source Tray values:

- **Printer:** For sheets that go through the Print Engine Bypass.
- **Tray-1:** For sheets fed out of the top Tray in the Bourg Sheet Feeder.
- **Tray-2:** For sheets fed out of the High Pile bottom tray in the Bourg Sheet Feeder.

The Finish component includes an option to [Collect Job Documents](#). The option is enabled from the menu that appears when you hover your mouse over the Finish component in the Workflow Canvas area.

To save JDF files based on the order defined in the [Job Group Sequence Behavior](#), the Finish component enables the Collect Job Documents option.

## Save

The Save feature saves a copy of the job file to the defined File Location.

- File Location: [Document Selection Common Controls](#).



**Note:** Requires a URI that supports write access.

- To name the file that you want to save, click **File Name**.
- For the Job Ticket to Save feature, select an option:

- **Don't Save the Job Ticket:** Do not save a job ticket.
- **Submitted Job Ticket:** Saves the job ticket as it is consumed during job submission, but before it is modified by the workflow.
- **Workflow Job Ticket:** Save the job ticket as it is modified by the workflow.
- The Save Job Ticket As feature determines whether to save an XPIF or a JDF job ticket.
- The When Setting The PDF Location in the JDF feature determines the URI scheme to use for the reference to the PDF, within the saved JDF.

The Save component includes an option to [Collect Job Documents](#). This option is enabled from the menu that appears when you hover over the Save component in the Workflow Canvas area.

To save jobs based on the order defined in the [Job Group Sequence Behavior](#), the Save component enables the Collect Job Documents option.

## Workflow Process Common Controls

Workflow processes include common controls whose behavior is defined globally. These controls, if used by the workflow process, will always have coherent behavior.

### Routing Common Controls

Hot Folders can send jobs to a specific workflow based on job characteristics. Based on job characteristics, the Route component can send jobs to a specific workflow execution path, or the Print and Finish components can send jobs to a specific destination.

These tasks are accomplished by defining routing rules composed of the following:

- **Job Characteristics:** Define checks of job properties that must be true for the routing rule to be considered true.
- **Job Destination:** If the job characteristics are true, then the job is sent to the associated destination. Job Destinations are as follows:
  - Workflows: Used with Hot Folder job routing.
  - Workflow execution paths: Used with the Route component.
  - Printer Destinations: Used with Print component job routing.
  - Finisher Destinations: Used with Finish component job routing.

Routing rules are evaluated in the order in which they are defined in the routing common control. The routing rules are evaluated until the job matches the specified Job Characteristics.

### Job Characteristic Presets

The job characteristic presets define the job conditions that must be true for a routing rule to be true.

An example of a condition: Quantity is less than 1000.

This condition will be true if the defined job property (Quantity) is less than 1000.

Within the job characteristic preset, conditions are grouped into sets. The user can define whether **All Conditions in the Set Must be Met** or **Any Condition in the Set May be Met** in order for the set to be considered true.

Similarly, the job characteristics preset can contain multiple sets of conditions. The user can define

whether **All Sets Must be Met** or **Any Set May be Met** in order for the job characteristics preset to be considered true.

Each set can contain up to 25 conditions. Each job characteristics preset can contain up to three sets of conditions.

## Job Properties

The job properties defined in the job characteristic presets are evaluated differently depending on their types:

- Numbers are evaluated using the following variables:

- is equal to
- is greater than
- is greater than or equal to
- is less than
- is less than or equal to
- is not equal to
- is a multiple of
- is not a multiple of

- Text is evaluated using the following variables:

- contains
- does not contain
- is equal to
- starts with
- ends with
- is not equal to
- is blank
- is not blank



**Note:** When Text is selected, a new check box **Make Text Comparison case-insensitive** is available. When you select check box for **Make Text Comparison case-insensitive**, text comparison is done, even if the text is case insensitive.

- Sizes are evaluated using the following variables:

- is equal to
- is not equal to
- fits into
- does not fit into
- fits between
- does not fit between

Dimensions for the **fits into/does not fit into** checks ignore orientation. For example, Width: 11, Height: 17 with Units set to Inches fit 11 x 17 inch and 17 x 11-inch documents.

Selection of **Any** for a 2-dimensional size results in the specified dimension not being evaluated.

- Enumerations are evaluated using the following variables:
  - is
  - is not
- Finishing enumeration is evaluated using the following variables:
  - Includes
  - Does not Include
- Boolean enumerations are evaluated using the following variables:
  - is equal to
  - is not equal to



**Note:** Boolean enumerations always have a value of True or False.

For a complete list of variables, refer to [Job Properties](#).

### Printer Related Properties

Job properties can evaluate job information against information retrieved from a Printer. The following options are supported.

- Main Stock is:
  - loaded on device
  - not loaded on device
  - available on device
  - not available on device



**Note:** A device returns information about loaded media if the Main Stock list in the [Printer Destination](#) default job ticket setting includes media with a green checkbox next to the name.

- Finishing is:
  - supported on device
  - not supported on device
- Printer Destination Status:
  - equals on device <status>
  - not equals on device <status>



**Note:** Printer Destination status values represent specific states as seen in the Printer Management and Status.

For a complete listing of variables, refer to [Job Properties](#).

## Page Selection Common Controls


These controls allow the user to define rules that are used to determine the document pages impacted by a workflow process. The pages affected by a workflow process must meet all the criteria specified in the **Page Selection** and **Apply Only to Pages** controls.



- **Page Selection:** Defines the pages that are modified by the workflow process.
  - **All Pages:** Modify all pages in the document.
  - **Page Intervals:** Modify every N pages starting with the defined page number.
  - **Page Range:** Modify specified pages. Supports both positive and negative numbers. Negative numbers are relative to the last page of the document with page -1 representing the last page of the document.
- **Apply Only to Pages:** Creates subsets of the the defined Page Selection to pages that match the selected properties:
  - **Orientation:** Landscape or Portrait
  - **Parity:** Odd or Even
  - **Size:** Size comparisons from [Routing Common Controls](#)
  - **Bookmarks:** Text comparison from [Routing Common Controls](#)
- **Apply to Each Variable Data Record:** Defines whether the Page Selections defined in the common control apply to PDF/VT files or to each record within PDF/VT files.


## Content Placement Common Controls

This feature allows the user to define rules that are used to determine the coordinates for placing content on the document.


- **Rotation:** Defines clockwise rotation of content to be placed on the page.
- **Position Relative To:** Defines the PDF box to use as the basis for evaluating the alignment rules in other content placement common controls. The selection of the PDF box is based on the [PDF Box Selection Behavior](#).
  -  **Note:** The label for this common control is customized to the process. So, for example, the label is Resize Relative To in the Resize process.
- **Horizontal Alignment, Vertical Alignment:** Alignment controls define how content is placed on the target area of the document. Left and Right alignment aligns content based on the input document edges. Binding Edge and Non-Binding Edge aligns content based on the sheet edges.
- **Horizontal Offset, Vertical Offset:** Adjustment to the nominal content placement resulting from evaluation of other content placement common controls. This option supports positive and negative values. Positive values offset content in the specified direction. Negative values offset content in the direction opposite of the specified direction. This option supports use of [Workflow Process Number Variables](#).
- **Horizontal Direction, Vertical Direction:** Specifies whether content is aligned to the inside or the outside of the selected PDF box.

## Text and Paragraph Formatting Common Controls

This option allows the user to define text and paragraph formatting options.

- **Font:** Provides a list of fonts installed on the Xerox® FreeFlow® Core server.
  -  **Note:** To add more fonts, install them in the operating system, then restart the server.
- **Size:** Defines the size of the font.

- **Color:** Defines the color of the font. Custom colors can be added to the list of available colors. Custom colors can be defined as CMYK, RGB, Grayscale, or Spot colors.
- **Text Alignment:** Defines the alignment for a block of text.
  - **None:** Aligns text based on the horizontal alignment defined in the [Content Placement Common Controls](#).
  - **Left, Right, Center Align:** Overrides the text alignment that is defined implicitly in the [Content Placement Common Controls](#).
  - **Justify:** When using a width other than Zero, this option wraps text at the defined width and spaces the text so it is aligned to both sides of the paragraph.
  - **Fit:** When using a width other than Zero, this option decreases the font size, if needed, to ensure all text fits within the specified width. Alignment of the block of text is based on the alignment in the [Content Placement Common Controls](#).
  - **Compress:** When using a width other than Zero, this option scales text horizontally, if needed, to ensure all text fits within the specified width. Alignment of the block of text is based on the alignment in the [Content Placement Common Controls](#).

 **Note:** Text is not compressed to less than 10% of the original width.
- **Width:** Defines a width for the text watermark. When the width is a value other than zero, the text wraps at the width distance.
- **Line Spacing:** Defines vertical space between lines in a paragraph.

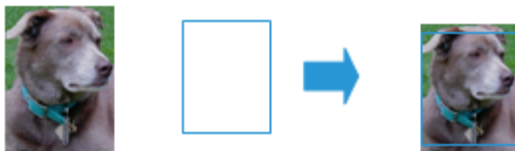
## Content Scaling Common Controls

These controls allow the user to specify how content is scaled to fit into a target area of the document.

- **None:** Content is placed without scaling.
- **Fit:** Scales content proportionally to fit the target area.



- **Uniform Fill:** Scales content proportionally to fill entire target area.




- **Stretch Fit:** Scales content anamorphically to fill entire target area.



- **Fit Width:** Scales content proportionally to fill width of target area.
- **Fit Height:** Scales content proportionally to fill height of target area.
- **Width, Height:** Defines the dimensions of the target area for scaling.
  - For Imposition, the Press Sheet Size is used to define the target Width and Height.
  - For Resize using Offsets, the Resize Relative To selection and the Offset values are used to define the target Width and Height.

## Document Selection Common Controls

These controls allow you to specify the location (URI) for file system operations. The following URI types are available:

- **Xerox® FreeFlow® Core Sandbox:** Available when you select the sandbox  in the Location dialog.


For example, `MyFile.pdf`.

- **Local Path:** To access, type the path in the location field. Ensure that the path is a valid URI that points to a local drive in the Xerox® FreeFlow® Core server.

For example, `C:\MyFile.pdf`.

- **UNC:** To access, type the path in the location field. Ensure that the path is a valid URI that points to a shared windows folder.

For example, `\\Server\MyFile.pdf`.

 **Note:** By default, the Xerox® FreeFlow® Core service runs as the Local System account. Access to network resources requires additional configuration. For more information, refer to the *Xerox® FreeFlow® Core Installation Guide*.

**FTP:** To access, type the path in the location field. Ensure that the URI is URL-encoded and the credentials are in the URI. FTP access is read only.

For example, `ftp://user:password@Server/MyFile.pdf`.

- **SFTP:** To access, type the path in the location field. Ensure that the URI is URL-encoded and the credentials are in the URI. SFTP access is read only. Xerox® FreeFlow® Core also supports certificates, private keys, and SSH fingerprint keys.
- For example, `http://sftpuser:password@Server/MyFile.pdf`.
- **HTTP:** To access, type the path in the location field. Ensure that the URI is URL-encoded and the credentials are in the URI. Only HTTP basic authentication is supported. HTTP access is read only.

For example, `http://user:password@Server/MyFile.pdf`.

- **HTTPS:** To access, type the path in the location field. Ensure that the URI is URL-encoded and the credentials are in the URI. HTTPS access is read only. Xerox® FreeFlow® Core also supports certificates, private keys, and SSH fingerprint keys.
- For example, `ftp://httpsuser:password@Server/MyFile.pdf`.

## PDF Box Selection Behavior

If the selected PDF box is not defined in the PDF, the component falls back to using another PDF box as follows:

- The ArtBox falls back to the TrimBox.
- The TrimBox falls back to the BleedBox.
- The BleedBox falls back to the CropBox.
- The CropBox falls back to the MediaBox.

## Job Group Sequence Behavior

The sequence of jobs in a [Job Group](#) is based on the following:


- **Submit Job:** Jobs are sequenced in the order in which they appear in the [Submit Job Dialog](#) Document List.
- **Manifest Jobs:** Jobs are sequenced in the order in which they appear within the Manifest. Refer to: [Manifest Automation from Xerox Setup](#).
- **JMF Jobs:** Jobs are sequenced in the order in which they appear within the Run List in the JDF submitted during [Job Group Sequence Behavior](#).
- **Zip files:** Jobs are sequenced alphabetically based on their filenames.
- **Split Jobs:** When splitting a job, the resultant jobs are sequenced based on the order of the Rules table in the [Split](#) component.
- **Split jobs in a job group:** When splitting a jobs in a job group, additional jobs are sequenced based on the order of the Rules table in the split component. In addition, these additional jobs are sequenced after the job from which the additional job was created.

## Workflow Process Variables

All components support use of process variables as part of their configuration.

To use a process variable, type in the variable name as part of the content in a text field. Runtime variables are evaluated and replaced with their current value during execution.

For example, a barcode or watermark preset with the variable `$FFwfjob.Id$` results in the addition of a barcode or watermark that contains the Xerox® FreeFlow® Core job ID of the job.

 **Note:** Newline control characters, `\n` and `\r\n`, are replaced by carriage returns for settings that support carriage returns.

The units for localized variables such as `$FFwfjob.documentWidth$` are defined during startup by reading the Measurement System configuration in the Region and Language control panel of the Xerox® FreeFlow® Core server.

For a complete list of variables, refer to [Job Properties](#) .

## Process Variable Operations

You can manipulate the value from a variable using one of the following operations:

## String Operations

- Substring: `$FF<variable name>.substring(x,y)$`
  - x - start position: The first character occupies position 0
  - y - number of characters

Examples: Variable = `wfJob.JobName`, Value = `Abecedaria`

```
$FFwfJob.jobName.substring(5)$ daria
$FFwfJob.jobName.substring(0,4)$ Abec
$FFwfJob.JobName.substring(-3,2)$ ri
```
- Trim: `$FF<variable name>.ltrim(x)$`; `$FF<variable name>.rtrim(x)$`
  - x - character up to which to trim.

Examples: Variable = `wfJob.JobName`, Value = `Abecedaria`

```
$FFwfJob.jobName.ltrim()$ Abecedaria
$FFwfJob.jobName.ltrim()$ Abecedaria
$FFwfJob.jobName.ltrim(d)$ aria
$FFwfJob.jobName.rtrim(d)$ Abece
```

## Number Operations

- Pad: `$FF<variable name>.pad(x)$`
  - x - number of digits

Examples: Variable = `wfDoc.Pages`, Value = `1`

```
$wfDoc.Pages.pad(5)$ 00001
```
- Format: `$FF<variable name>.numberFormat(a,b,c,d)$`
  - a - units, mm and in.
  - b - number of integers
  - c - number of fractionals
  - d - include radix and separators true, false

Examples: Variable = `wfDoc.documentWidth`, Value = `8.5in`

Numbers are stored using an internal unit of measure.

```
$FFwfdoc.documentWidth.numberFormat(mm,4,2,false)$ 021590
$FFwfdoc.documentWidth.numberFormat(mm,4,2,true)$ 0,215.90
$FFwfdoc.documentWidth.numberFormat(in,4,2,true)$ 0,008.50
$FFwfdoc.documentWidth.numberFormat(in,4,2,false)$ 000850
```

## New Process Variable Operations

Format: `$$FFtimeStamp.Format(a,b,c,d,e,f,g,h,i)$$`

- a - include milliseconds true/false
- b - month before date true/false
- c - date separator. For example, the format using a comma as separator is March 30, 2020
- d - Month format num/numpad/3lettertext/fullmonthtext. For example: 3/03/Mar/March
- e - Hour format num/numpad. For example: 7/07
- f - AM/PM true/false – if false use 24 hour clock values
- g - full year true/false
- h- optional, UTC offset time in the format of +/- HH:MM
- i- optional, true/false. True results in the additional text of UTC offset with an offset value defined for the h option

The date precedes the current time and requires the substring operation to be enabled on the output. For example, March 10, 2014 7:21:15.206 PM:

```
$$FFtimeStamp.Format(true,true,-,numpad,num, true, true)$$ 03-10-2014 7:21:15.206 PM
```

```
$$FFtimeStamp.Format(false,true,/,numpad,numpad, false, false)$$ 03/10/14 19:21:10
```

```
$$FFtimeStamp.Format(false,true,',',numpad,numpad, true, false).substring(-4,4)$$ 1 PM
```

```
$$FFtimeStamp.Format(true,true,-,numpad,num, true, true,-05:00, true)$$ 03-10-2014  
7:21:15.206 PM UTC offset -05:00
```

## Array Operations

- Join: `$$FF<variable name>.join(x)$$`

– x - separator character

Examples: Variable = `joinedJobNames`, Value = array with Job n

```
$$FFwfJobjoinedJobNames(,)$$ Job 1, Job 2, Job 3, . . .
```

```
$$FFwfJobjoinedJobNames(\r\n)$$
```

```
Job 1  
Job 2  
Job 3
```

- Range: `$$FF<variable name>.range(a,b).join(x)$$`

– a - start array item

– b - number of array items

Examples: Variable = `joinedJobNames`, Value = array with Job n

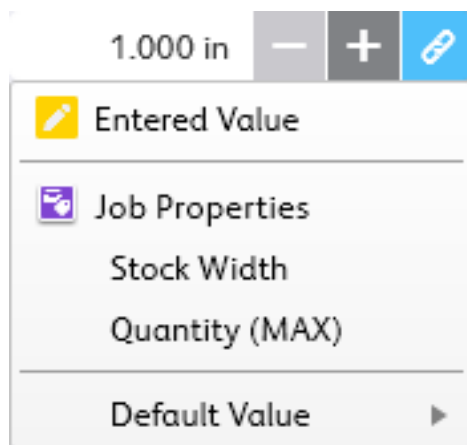
```
$$FFjoinedJobNames.range(0,2).join(,)$$ Job 1,Job 2
```

The following variables do not support variable operations:

- \$FFwfjob.PDFVTRecordNumber\$
- \$FFwfjob.PDFVTNumberOfRecords\$
- \$FFwfjob.PDFVTPagesInRecord\$
- \$FFwfjob.PDFVTSheetNumberInRecord\$
- \$FFwfjob.PDFVTSheetsInRecord\$
- \$FFtimeStamp\$
- \$FFwfDoc.totalNumberedPages\$
- \$FFwfdoc.ColorantNames\$
- \$FFwfdoc.CurrentBookmark\$

## Workflow Process Number Variables

Number settings can support the use of process variables as part of their configuration. Number settings that support process variables include a menu that lists available variables.



These variables include Number MAX variables and, sometimes, additional variables are applicable to the specific setting.

If the selected variable is undefined for a given job, the **Default Value** setting defines a fixed value that can be used

## Process Number Variable Calculations

Number settings can support calculated values as part of their configuration. Calculated values can be defined using arithmetic formulas. The following operations are supported:

- Addition
- Subtraction
- Multiplication
- Division
- Parentheses to change the order of operations

In addition, the formula can also include other Process Variables.

## Workflow Setup

Example:  $(\$FFwdoc.pages\$ / 2) + 1$

If the selected variable is undefined for a given job, the **Default Value** setting defines a fixed value to use. For calculated values, there is a **Round Up** option, which calculates the values that contain decimals rounding up to the nearest integer. If the Round Up option is not selected, decimals values are truncated.



## Job Ticket Updates

Workflow components that support job ticket updates will modify both the job file and ticket. The ticket is modified to ensure exceptions and sheet inserts reference the original job page as the number of job pages changes due to component processing.

Job Ticket Updates are supported for the following:

- Covers
- Stock Exceptions
- Sides Imaged Exceptions
- Color Exceptions
- Chapter Starts
- Sheet Inserts



# Administration

This chapter contains:

- [Job Submission Configurations](#)..... 76
- [Hot Folder Setup](#) ..... 77
- [Region Tab](#)..... 82
- [Security Tab](#) ..... 83
- [LPD Gateway](#) ..... 84
- [JMF Gateway](#)..... 91
- [Command Line Interface \(CLI\)](#)..... 92

## Job Submission Configurations

Xerox® FreeFlow® Core is fully configurable, with individual modules offering greater control over the workflow and the flexibility to add the components that are suited best to your needs. Certain features are not available depending on the product configuration purchased.

The table that follows defines the features that are available for each product configuration. The Xerox® FreeFlow® Core Base module is required. Optional modules provide more capabilities.

Component	Xerox® FreeFlow® Core Base	Advanced Prepress	Advanced Automation
Hot Folder	<input checked="" type="checkbox"/>		
LPD/LPR	<input checked="" type="checkbox"/>		
LPD/LPR Routing			<input checked="" type="checkbox"/>
JMF/JDF	<input checked="" type="checkbox"/>		
JMF Routing			<input checked="" type="checkbox"/>
JMF plus JDF XSLT			<input checked="" type="checkbox"/>
Hot Folder Scripting			<input checked="" type="checkbox"/>
Hot Folder Routing			<input checked="" type="checkbox"/>
Manifest Automation from Xerox (MAX)			<input checked="" type="checkbox"/>

## Hot Folder Setup

[Hot Folder Setup](#) allows administrators to define hot folders and associate them with an existing workflow.


Hot Folders are used to process both supported job files and manifests. Job files submitted to a hot folder are associated with a Xerox® Programming Information Format job ticket, using the following naming conventions:

- For a document, use `filename.ext`
- For a print ticket, use `filename.ext.xpf`

Input Hot Folder Name defines the name for the hot folder configuration.

The Hot Folder Location is a location where job files are monitored. The following Universal Resource Identifier (URI) formats are supported:

- Folder (Sandbox Location)
- `<drive letter>:\folder\`
- `\\server\share\folder\`


 **Note:** When defining Hot Folder Locations within Windows Shared Folders, the Hot Folder Location uses a folder within the shared directory.

Job Priority defines the priority for jobs submitted to the workflow. For more information about job priority, refer to the [Submit Job Dialog](#).


## Scripting

When the Hot Folder option to **Execute Script Prior to Workflow** is enabled, the system issues a CLI call in response to retrieving a file in the Hot Folder. The CLI call concatenates the following attributes:

- The URI defined in the **Script**. The following URI formats are supported:
  - `script.xxx` (Sandbox Location)
  - `<drive letter>:\folder\script.xxx`
- The text string defined in the **Parameters**. This field has two predefined variables:
  - `$FFin$` the URI of the file that was put into the Hot Folder
  - `$FFout$` the URI of the folder where the script is to output a valid job file

 **Note:** Other variables are not supported in the Hot Folder Scripting tab.

Each time a script executes, Xerox® FreeFlow® Core archives the contents of `stdout` and `stderr` to XML files in the **Manifest Status** subfolder of the Hot Folder. This subfolder is accessible using the filesystem of the host.

 **Note:** When scripting is enabled the Hot Folder will accept files of any type. However, the output file from the script must be a file type supported by Xerox® FreeFlow® Core. The file must be placed in the location defined by the `$FFout$` variable.

## XSLT Processing of Hot Folder Jobs

The XSLT processor used for transforming JDF job tickets is available also using a command line application. This command line application can be used along with hot folder scripting to transform an XML file into a manifest, for example.

To invoke the XSLT processor from a hot folder, enable scripting in the hot folder and do the following:

- Set `<Xerox® FreeFlow® Core installation directory>\transformXML.bat` as the value in the **Script** field.
- Append the location of an XML stylesheet to the default `$$Fin$, $$Fout$/File.txt` variables in the **Parameters** field.



**Note:** If the `transformXML.bat` file is moved from the Xerox® FreeFlow® Core installation directory, the file does not function properly.

## Workflow Destinations

Hot Folders can send jobs to a specific workflow destination or select a workflow destination based on job characteristics. The workflow destinations can be a Pass Through destination.

To select workflow destinations, use the [Routing Common Controls](#).

When **Select Workflow Based on Job Characteristics** is enabled, the Hot Folder **Options** selection allows the user to define [PS, VIPP, and PDF Generation Options](#) for jobs submitted to the workflow.

## Manifest Automation from Xerox Setup

Manifest Automation from Xerox connects the order-management system of the print provider, print MIS, or other Web to Print systems with automated print production. Manifest Automation from Xerox simplifies integration by enabling hot folder submission of order information using a delimited file, the manifest: `.csv` and `.txt`.

During manifest processing, Xerox® FreeFlow® Core retrieves a job file for each row in the manifest.



**Note:** Rows starting with a pound sign are not processed.

The manifest information in each row is mapped to job metadata based on the Manifest Automation from the Xerox Setup configuration. The files listed in a manifest are submitted to a workflow based on the Hot Folder [Workflow Destinations](#) settings.

Manifest Automation from Xerox configurations is associated with individual hot folders. Multiple manifest configurations can be used with a single workflow by associating multiple hot folders. Each hot folder has its own Manifest Automation from the Xerox configuration, with the same workflow.

**Build job name using data fields:** By default, manifest jobs are named using the filename of the PDFs. Enabling this option allows the use of static text and manifest variables for job naming.

## Standard Fields

- **File Name:** Specifies the location (URI) of the job file to be submitted for processing. The following URI formats are supported:

- `job.xxx`
- `<drive letter>:\folder\job.xxx`

- `\\server\share\folder\job.xxx`
- `ftp://username:password@server/path/folder/job.xxx`
- `sftp://username:password@server:port/path/folder/job.xxx`
- `http://username:password@server/path/job.xxx`
- `https://username:password@server/path/job.xxx`
- `file:///path/folder/job.xxx`

When you use a local path or a UNC as the URI, the File Name field can contain either the entire path to the file or the file name. If the File Name field contains the file name, ensure that the rest of the URI is defined using one of the following mechanisms:

- **Folder Name:** Specifies the path to the job file.
- **Default Source File Location:** Specifies a default path for all files in the manifest.



**Note:** When you use HTTP or FTP URIs, files without an extension or with an unknown extension are assumed to be PDF files.


- **Quantity:** Specifies the print quantity. The value in the Quantity field overrides the quantity in the XPIF.
- **Paper Stock Name:** Specifies the main stock for the job. The value in the Paper Stock Name field overrides the main stock in the XPIF.
- **XPIF File Name:** Specifies the location of the XPIF job ticket associated with the job. The following URI formats are supported:
  - `<drive letter>:\folder\job.xxx`
  - `\\server\share\folder\job.xxx`
  - `ftp://username:password@server/path/folder/job.xxx`
  - `http://username:password@server/path/job.xxx`
  - `file:///path/folder/job.xxx`
- **Printer Destination:** Specifies the Printer Destination or Printer Group to use in the first printer preset in the workflow.
- **Distribute By:** Defines the algorithm to use for distributing jobs within a Printer Group. The valid values are:
  - 0 for Round Robin
  - 1 for First Available
  - 2 for Completion Time
- **Order ID:** Specifies that manifest rows with a given order ID are submitted as jobs within a job group. This option allows creation of multiple job groups from rows that have the same group key. The jobs in the job groups are sequenced based on the [Job Group Sequence Behavior](#).
- **Group Key:** Defines manifest rows with a given order ID value to be submitted as jobs within a job group.
 

All rows in a manifest that have the same value for the order ID and group key columns are submitted as a single job group.
- **Hold Job:** Defines whether a job is set to the Held state. The designations are Y for yes and N for no.

- **Hold Until:** Defines the date and time for the job release. The format used is the ISO date format with the time in 24-hour format, YYYY-MM-DD HH:MM. For UTC times, the format is YYYY-MM-DD HH:MM Z±HH:MM.

## Custom Fields

You can add more custom fields to the Manifest Automation from Xerox configuration. When configured, these fields behave in the same manner as the standard fields.

 **Note:** Manifest Automation from Xerox supports up to 100 columns of data in a manifest.

## Manifest Processing

The options that follow are available:

- **Column delimiter:** Defines the delimiter used in the manifest.
- **Text Qualifier:** Defines the character that you can use to surround values in a manifest. This value can be set to none, single quotes or double quotes.
- **Process the first row as data:** Defines whether or not manifest processing skips processing of the first row of data in the manifest.
- **Abort Manifest Processing If Errors Are Encountered:** Determines whether to continue processing a manifest if errors occur during processing of individual manifest rows.
- **Abort Order In Manifest If Errors Are Encountered:** Determines whether to continue processing an order in a manifest if errors occur during processing of individual manifest rows in an order.

## Manifest Status

A status file is created after a manifest is processed and placed in the manifest status subdirectory in the hot folder. The status file contains the original manifest content and a status column with descriptive status messages.

The name of the status file is composed of:

- The original filename
- `.status` if there were no submission errors or `.error.status` if there were errors
- The original extension

A status file indicates the success or failure of the job submission. The status file does not indicate the status of the jobs in the workflow.

## Unicode Manifests

Manifests that use Unicode characters must be encoded as utf-8 text. These manifests also must include a byte-order mark (BOM).

## FreeFlow® Core Reports

The **FreeFlow® Core Reports** feature enables you to export Xerox® FreeFlow® Core job data. You can access the same data using the Xerox® FreeFlow® Core Reports application.



By default, FreeFlow® Core Reports does not collect data for the generation of reports. To enable a data collection, refer to [Enabling Data Collection](#). When data collection is disabled, collection stops and jobs processed are not available in the report.

For more information, refer to [FreeFlow® Core Reports](#).

## Enabling Data Collection

To enable data collection, do the following:

1. Click the **Administration** tab.
2. Select **Core Reports**.
3. Click the star symbol on the upper right of the screen.
4. Select the check box for **Enable Data Collection**.

## Region Tab

This tab allows administrators to manage Regional Setting Measurement Units.

## Security Tab

This tab allows administrators to set policies for Account Lockout, Auto LogOut, and Password Reuse.

## LPD Gateway

Xerox® FreeFlow® Core supports the following LP functionality:

- LPR Job Submission
- LPQ Queries
- LPRM Command

## LPR Printing

Syntax: `lpr<options> file`

LPR print submission is supported for any file that can be converted to PDF.

The `lpr` command supports the following options.

Option	Description
-S	Name or IP address of the FreeFlow® Core server
-P	Name or ID of the workflow that processes the jobs. For <b>Pass Through</b> job submission, the workflow name is <b>Pass Through</b> . For a <b>Pass Through</b> job submission, a printer destination name is required, using the <code>-C"&lt;options&gt;"</code> option.
-J	Job Name. This job name overrides the job names in the XPIF file. The default is the file name.
-# (number)	Number of copies. Overrides the quantity in the XPIF file and the quantity specified using the <code>-C</code> argument.
-C"<options>"	Job Ticket settings. Overrides values in the XPIF file.
-x	Compatibility with SunOS v4.1.x and earlier

## LPR Job Tickets

LPR printing supports job ticketing using the following:

- XPIF Job Tickets concatenated at the start of the print file. This option is supported for PS, PDF, and VIPP files.
- Job Ticketing as defined using the `-C` argument
- Job Ticketing as defined using LPR arguments

**LPR -C** options allow the LPR client to do the following:

- Construct an XPIF print ticket for submission with the print job
- Define job variables and submission parameters

Syntax: `lpr-C["name1"][(option1[,options2])][names2"]`

- name1 maps to job-recipient-name
- name2 maps to job-sheet-message

**-C Job Parameters**

Option	Description
C("printer=<name>")	The Printer Destination Name. Overrides the Printer Destination in the first Print component in the workflow.
C("variable=<variableName: variableValue>")	Adds variables to the job. Variables can override existing variables. Variables can define new variables. Variables can be used in text fields with the following syntax: <b>\$FF&lt;variableName&gt;\$</b>
C("fileExtension=<extension>")	Specifies the extension for files that do not have an extension
C("printerGroup=PGroup:N")	Printer Group Name and Distribution method. Where N can be either of these three values 0, 1 and 2. It represents the Distribution Option. <ul style="list-style-type: none"> <li>0: Round robin</li> <li>1: First available</li> <li>2: Completion Time</li> </ul>
C("holdUntil=<date/time>")	Specifies a job release time in the ISO format YYYY-MM-DD HH:MM. The time from the FreeFlow® Core server is used. For UTC-defined time, the format is YYYY-MM-DD HH:MM Z±HH:MM.
C("hold")	Specifies that a job is submitted in the held state.

**-C Job Ticket Parameters**

Supported XPIF attributes are documented as part of the Xerox® FreeFlow® Core SDK. The Xerox® FreeFlow® Core SDK is available at: <https://www.xerox-solutions.net/developers>.

Option	XPIF Attribute
C("copies=<n>")	copies
C("simplex")	sides='one-sided'
C("duplex")	sides='two-sided-long-edge'
C("tumble")	sides='two-sided-short-edge'
C("collated")	sheet-collate=collated
C("uncollate") or C(uncollated)	sheet-collate=uncollated
C("flip")	page-delivery='same-order-face-down'
C("frontcover=<print:size:type:color:weight>")	cover-front Example: -C("frontcover=<print-both:USLetter:cardstock:220>")
C("backcover=<print:size:type:color:weight>")	cover-back
C("slipsheet")	separator-sheets


Option	XPIF Attribute
	separator-sheets-type=slipsheet
C("sg=<n>")	output-bin=stacker-N where N is 1 or 2. If <n> is 0, output-bin is set to 'top'
C("account=<text>")	job-account-id
C("recipient=<name>")	job-recipient-name

### -C Job Ticket Stock Parameters

Option	XPIF Attribute
C("media=size:type<modulus>:color:weight">")	media-col values Examples: C("media=A4:plainPrecutTab 5:Blue:90") C("media=A4:plain:White:90") C("media=A4:White") Carets (^) are not used for custom color names that use spaces
C("mediaSize=<size>")	media-size/x-dimension media-size/y-dimension Keywords: USLetter, USLegal, USLedger (17x11 in), Tabloid, USStatement, a0-a10, isob0- isob10, jisb0-jisb10 Keywords are converted to x, y dimensions Example: C("mediaSize=A3") Dimensions: Values <100 are considered inches Values > 100 are considered mm Example: C("mediaSize=10 12") Considered 10" x 12" stock
C("mediaType=<type>")	media-col/media-type Mapping for mediaType values not supported in XPIF plain=media-type='stationary' plainPreCutTab <modulus>

Option	XPIF Attribute
	<ul style="list-style-type: none"> <li>- media-type='pre-cut-tabs'</li> <li>- media-order-count=&lt;modulus&gt;</li> </ul> plainDrilled <ul style="list-style-type: none"> <li>- media-type='stationary'</li> <li>- media-hole-count='3'</li> </ul> drilled=media-hole-count='3' drilledPreCutTab <modulus> <ul style="list-style-type: none"> <li>- media-type='pre-cut-tabs'</li> <li>- media-order-count=&lt;modulus&gt;</li> <li>- media-hole-count='3'</li> </ul> drilledFullCutTab <ul style="list-style-type: none"> <li>- media-type='full-cut-tabs'</li> <li>- media-hole-count='3'</li> </ul> drilledTransparency <ul style="list-style-type: none"> <li>- media-type='transparency'</li> <li>- media-hole-count='3'</li> </ul> Examples: C("mediaType=bond:3") hole count =3 C("mediaType=pre-cut-tabs:5") modulus =5
C("mediaColor=<color>")	media-col/media-color  Use carets to enclose values with spaces C ("mediaColor=^Hello Kitty Pink^")
C("mediaWeight=<weight>")	media-col/media-weight-metric
C("opacity=<transparencylopaque>")	media-col/media-type-transparency media-col/media-type-stationary
C("prefinish=<option>")	<option> can be any mediaType value

### -C Job Ticket Finishing Parameters

 **Note:** Corner and Edge values relate to a portrait document. The LPD client selects the correct portrait finishing option for landscape documents. For example, to staple the top of a landscape document, the client selects **twoStaplesLeft**.

-C Finishing values do not have XPIF equivalents. Most values are mapped by the LPD gateway.

Option	XPIF Attribute
<p>C("finishing=&lt;finishingOption1&gt;, finishing=[&lt;finishingOption2&gt; ...finishing=&lt;finishingOptionN&gt;])"&gt;")</p>	<p>Stitching value mappings:</p> <p>oneStapleTopLeft=20</p> <p>oneStapleBottomLeft=21</p> <p>oneStapleTopRight=22</p> <p>oneStapleBottomRight=23</p> <p>twoStaplesLeft=28</p> <p>twoStaplesTop=29</p> <p>twoStaplesRight=30</p> <p>twoStaplesBottom=31</p> <p>centerStapleLeft=32</p> <p>centerStapleTop=33</p> <p>centerStapleRight=34</p> <p>centerStapleBottom=35</p> <p>fourStaplesLeft=40</p> <p>fourStaplesRight=42</p> <p>Hole Punching (must specify count and placement):</p> <p>Count Mappings:</p> <p>twoHolePunch = 90</p> <p>threeHolePunch = 91</p> <p>fourHolePunch = 92</p> <p>Placement Mappings:</p> <p>punchLeft = 93</p> <p>punchTop = 94</p> <p>punchRight = 95</p> <p>punchBottom = 96</p> <p>Coil Punching Mappings:</p> <p>coilPunchLeft = 254</p> <p>coilPunchRight = 256</p> <p>Fold Mappings:</p> <p>zFoldHalfSheetBindRight = 1008</p> <p>zFoldHalfSheetBindLeft = 1011</p> <p>triCFoldInsideLeft = 1000</p> <p>triCFoldOutsideLeft = 1005</p> <p>triZFoldInside = 1001</p>



Option	XPIF Attribute
	triZFoldOutside = 1012 Other mappings none = 3 Examples: C("finishing=triCFoldOutsideLeft) C("finishing=twoStaplesLeft twoHolePunch punchLeft zFoldHalfSheetBindLeft") C("finishing=centerStapleBottom, finishing= twoHolePunch punchRight, finishing= zFoldHalfSheetBindLeft")
C("booklet=<fold:squareFold:trim>")	fold value mapping: multiSheet = 111 multiSheetInside = 113 multiSheetStapled = 110 inside = 1003 outside = 1004 squareFold value mapping: none = none veryLow = low-2 low = low-1 normal = normal high = high-1 veryHigh = high-2 Trim (Width of document after trim): Values less than 100 are considered to be inches Values greater than 100 are considered to be mm Examples: C("booklet=multiSheetInside:veryLow:254") C("booklet=Outside")
C("finishingprofile=<finishingTemplate>")	finishing-template

## LPQ Queries

Syntax: lpq<options> file

The LP system assigns a three-digit job number to received jobs. This number is displayed in the lpq response. This number is not correlated to Xerox® FreeFlow® Core Job IDs.

The lpq command supports the following options.

Option	Description
-S	Name or IP address of Xerox® FreeFlow® Core server
-PFreeFlowCore (or if -P is not used)	List all jobs
-PListWorkflows	List Xerox® FreeFlow® Core workflows
-P<workflow name or id>	Lists jobs for the specified workflow Use quote marks if the workflow name includes spaces Lpq -P"WorkflowX"
+	Display information at specified interval in seconds

## LPRM Command

Syntax: lprm<options>

The lprm command supports the following options.


Option	Description
-S	Name or IP address of Xerox® FreeFlow® Core server
-j<lp job number>	Line printer job number for the job to be deleted

## JMF Gateway

Xerox® FreeFlow® Core supports JMF submission. The JMF client connects to `http://hostname:7751/` and performs a **KnownDevices** query to retrieve a list of workflows. The client performs a **SubmitQueueEntry** query to submit jobs to a workflow. Other valid JMF client connections are `http://<DNS name>:7751/FreeFlowCore` and for Cloud Configurations `https://<DNS Name>:7759/<tenantname>`.


## JMF Submission and Workflow Job Routing

When Hot Folder [Workflow Destinations](#) routing is enabled, Xerox® FreeFlow® Core advertises a routing workflow to JMF clients. This workflow name is `HFRoutingWorkflow_<<Hot Folder Name>>`. Jobs submitted to this workflow using JMF use the Hot Folder routing rules to select a workflow.

 **Note:** For Pass Through capability, select the **Pass Through** workflow.

## JMF Submission and JDF XSLT Processing

When JDF XSLT processing is enabled, Xerox® FreeFlow® Core transforms the JDF content of JMF submissions using a defined XSLT. The output of the XSLT is submitted to Xerox® FreeFlow® Core for processing.

 **Note:** Supported JMF commands, signals and JDF attributes are documented as part of the FreeFlow® Core SDK. The FreeFlow® Core SDK is available at <https://www.xerox-solutions.net/developers>.

## Command Line Interface (CLI)

The CLI functionality enables the processing of scripts for job submission. The following commands are supported:

- **ffcprijob**: Command to submit the primary or parent job.
- **ffcadddoc**: Command to add a child job to the primary or parent job.
- **ffcclosejob**: Command to close the primary or parent job that is in an open state. Only the jobID argument is needed.

To access the list of available arguments, add the *-h* or *help* to command line command. The arguments use [ ] to contain the argument parameter. If the parameter contains a space or / character, " \" characters are needed.

The arguments are:

- *-j*: Primary or parent job ID
- *-d*: Job file name with full path
- *-t*: XPIF file name with full path
- *-n*: Job name
- *-r*: Job priority, either normal or high
- *-w*: Workflow destination name
- *-p*: Printer destination name
- *-h*: Held date time. For UTC-defined time, the format is YYYY-MM-DD HH:MM Z±HH:MM.
- *-I*: Infinite hold or manual release
- *-o*: Keep job in open state.

Example scripts:

### Submit a job with the held and open state:

```
ffcprijob -d["D:\TestData\16color.pdf"] -t["D:\TestData\16color.pdf.xpf"] -n[CliSubmitJob] -r
[Normal] -w[CLIDemoPrint] -p["New Printer Destination"] -h["14/02/2020 17:20:00"] -o
```

### Add a child job with the open state to parent job that is in the open state:

```
ffcadddoc -j["10"] -d["D:\TestData\16color.pdf"] -t["D:\TestData\16color.pdf.xpf"] -o
```

### Close the parent job that is in the open state:

```
ffcclosejob -j["10"]
```

### Create a batch file that submits PDF files from a specified directory using the batchfilename command:

```
batchfilename C:\Users\Administrator\Desktop\
@SETLOCAL
@ECHO ON
for %%a in (%1*.pdf) do ffcpriJob -d[%%a] -w[SaveF]
```

# Notifications Setup

This chapter contains:

- [Notification Recipients](#)..... 94
- [Job Notifications](#)..... 95
- [Preflight Notifications](#)..... 96
- [Job Submission Notifications](#) ..... 97
- [System Notifications](#)..... 98
- [Email Notification Setup](#) ..... 99

The notification service monitors the system and sends out email notifications when relevant events occur.

## Notification Recipients

Select the users to receive system notifications. Notifications can be sent to users with [Administrator](#) privileges.

Enabling notifications requires at least one Xerox® FreeFlow® Core Administrator with a valid email address.

## Job Notifications

Enable notifications when the following job events occur:

- A job fails.
- A Conversion Warning occurs.

## Preflight Notifications

Enable notifications when the following preflight events occur:

- Fixups are applied to a job.
- Preflight checks return a warning.
- Preflight checks or fixups return an error.



## Job Submission Notifications

Enable notifications when the following events occur:

- An Unsupported File is Detected.
- An Error Occurs Processing the File.

## System Notifications

Enable System Notifications when the following events occur:

- Server Resources are running out of space.
  - Notifications are sent when the system is low on memory or disk space.
  - Notifications are sent when the database is low on table space.
- License Expires/Expired within 30 days
  - Notifications are sent when the License Expires/Expired is within 30 days.


# Email Notification Setup

The two options available for Email Notification Setup are:


- **E-mailed from:** This field defines the sender email address used for notification.
- **Use Xerox E-Mail:** To designate the use of a Xerox server email address for sending notifications, select this check box.

## SMTP Settings


- **Server Address:** This field defines hostname or IP address for the SMTP server.
- **Port:** This field defines the port used for communicating with the SMTP server.

 **Note:** Common ports are 25, 2525, 465, 475, and 587.

- **SSL:** This field enables encryption of communication between the notification service and the SMTP server.
- **Username and Password:** This field contains the credentials for authenticating with the SMTP server.

 **Note:** Using a single space for both the username and password fields allows Xerox® FreeFlow® Core to connect to SMTP servers that do not require authentication.

The E-Mail Notification Setup includes a **Test** button that is used to validate connectivity. The **Test** button generates an email to the first enabled user in the Notification Recipients list.

 **Note:** The notification service requires exceptions in the Windows firewall and in any installed antivirus software.

## Notifications Setup

# User Access Setup

This chapter contains:

- [Adding or Editing Users.....](#) 102

## Adding or Editing Users

Users with administrator privileges can define additional users or edit existing users.

- **User Name:** Allows you to enter a name.
- **Password:** Allows you to enter and confirm a password.
- **Access Level:**
  - [Administrator](#)
  - [Operator](#)
  - [Job Status Monitor](#)
- **Email address:** Allows you to enter an email address.
- **Workflow Mapping:** Allows you to specify which workflows are visible on the Workflow tab and Submit Job tab for a user.
- **Printers Mapping:** Allows you to specify which printers are visible on the Printer Management tab and Submit Job tab for a user.

# FreeFlow<sup>®</sup> Core Exchange

This chapter contains:

- [Import to Xerox<sup>®</sup> FreeFlow<sup>®</sup> Core Tab](#) ..... 104
- [Export from Xerox<sup>®</sup> FreeFlow<sup>®</sup> Core Tab](#)..... 105
- [Required Items and Import/Export](#)..... 106
- [FreeFlow<sup>®</sup> Core Exchange CLI](#) ..... 107

The FreeFlow<sup>®</sup> Core Exchange is a desktop application and an Administration user interface option that enables the import and export of Xerox<sup>®</sup> FreeFlow<sup>®</sup> Core configuration data. This application is installed on the Xerox<sup>®</sup> FreeFlow<sup>®</sup> Core server.

## Import to Xerox® FreeFlow® Core Tab

When the user opens a FreeFlow® Core Exchange file (.ffc), the contents of the file appear on the Importable Items area within FreeFlow® Core Exchange. In the Administration tab, the user has to specify an export .ffc file. The user selects items from this list to add to the Items to Import area. When the user selects **Import**, items in the Items to Import area are imported.

When the user selects **Import as Clone...**, items, users, and configuration notification are discarded before importing. Imported items are available the next time the user logs in to Xerox® FreeFlow® Core.

The user can use a Printer Destination Mapping file during import. When a Printer Destination Mapping file is used, an additional item is added to the Items to Import area. When the additional item is imported, FreeFlow® Core Exchange redefines the IP addresses of [Printer Destinations](#) during import.

The user can create a Printer Destination Mapping file or use an existing Printer Destination Mapping file during import. The user can edit an existing Printer Destination Mapping file before import.



**Note:** Existing Printer Destination Mapping files can reference printer destinations that exist in the FreeFlow® Core Exchange file only.

If the **Overwrite Conflicting Items During Import** option is not enabled, FreeFlow® Core Exchange compares items on the import list with existing items in Xerox® FreeFlow® Core. Items that are identical are not imported. Instead, imported items are linked automatically to existing items. Items that are not identical but have conflicting names are renamed on import. Other imported items are linked to the newly renamed items.

If the **Overwrite Conflicting Items During Import** option is enabled, FreeFlow® Core Exchange overwrites any existing items that have the same name as imported items.



## Export from Xerox® FreeFlow® Core Tab

When the user selects the **Export from FreeFlow® Core** tab, a list of all items that can be exported appears in the **Exportable Items** area. The user selects items from this list to add to the Items to Export area.

When the **Create FreeFlow® Core Clone** option is selected, all Xerox® FreeFlow® Core items, users, and configuration notifications are added to the Items to Export area.

FreeFlow® Core Exchange does not export the following information:

- FreeFlow® Core Cloud Printers and Printer Destinations
- Xerox® FreeFlow® Core Configuration settings
- Job data

When the user selects **Export Items** or **Export Clone**, items in the Items to Export area are exported.


Exported items are saved to a FreeFlow® Core Exchange file (.ffc).

During the export process, FreeFlow® Core Exchange exports files and folders within the Xerox® FreeFlow® Core sandbox. These items are listed in the Files and Directories Managed by the Xerox® FreeFlow® Core section of the Exportable Items window.

The user can choose the **Create Printer Destination Mapping** option during export. After items are exported, FreeFlow® Core Exchange presents a Printer Destination Mapping dialog, in which the user can redefine the IP addresses of all [Printer Destinations](#) in the FreeFlow® Core Exchange file. The printer destination mapping information is saved in a separate Printer Destination Mapping file (.ffm).

## Required Items and Import/Export

When an item is imported into or exported from Xerox® FreeFlow® Core, all linked items are imported or exported. For example, if the user elects to import or export a Hot Folder, the workflow or workflows associated with that Hot Folder are also imported or exported. Similarly, the presets associated with the selected workflows are also imported or exported. To see the list of required items that will be imported or exported with an item, select the Info icon that appears when you hover over items in the Items to Import or Items to Export window.

To see the list of required items that are imported or exported with an item, select the Info icon  that appears when you hover over items in the Items to Import or Items to Export window.



**Note:** FreeFlow® Core Exchange does not import or export fonts and ICC profiles. Fonts and ICC Profiles are retrieved from the operating system and can have licensing restrictions.

## FreeFlow® Core Exchange CLI

The **CoreExchange.exe** application is a CLI application that can be used to import and export items from Xerox® FreeFlow® Core. This application is to be invoked from its location in the Xerox® FreeFlow® Core installation directory.

The following arguments are supported and are case-insensitive:

- `/lw`: List Xerox® FreeFlow® Core workflows
- `/lh`: List Xerox® FreeFlow® Core hot folders
- `/lc <file>`: List the contents of FreeFlow® Core Exchange file
- `/lv <file>`: List the version of FreeFlow® Core Exchange file
- `/i <file>`: Import contents of FreeFlow® Core Exchange file
  - `/o`: Overwrite items that conflict with items in the FreeFlow® Core Exchange file
  - `/clone`: Remove all existing items, users, and configuration data and import all items, users, and configuration data
  - `/r`: Display a report after import
- `/i <file> <printerDestinationMappingFile>`: Import contents of FreeFlow® Core Exchange file while remapping Printer Destination IP addresses
- `/e <file>`: Export items to FreeFlow® Core Exchange file
  - `/w <workflow1 workflow2...>`: Export only named workflows
  - `/h <hotfolder1 hotfolder2...>`: Export only named hot folders
  - `/clone`: Export all items, users, and configuration data
  - `/r`: Display a report after export
  - `/s`: Run Core FreeFlow® Exchange in silent mode. This is useful for scripted operations.



# FreeFlow® Core Reports

This chapter contains:

- [FreeFlow® Core Reports CLI..... 110](#)

FreeFlow® Core Reports is a desktop application that enables export of Xerox® FreeFlow® Core job data. This application is installed on the Xerox® FreeFlow® Core server. You can access the same data that this application provides from the Administration tab in the Xerox® FreeFlow® Core user interface.

By default, FreeFlow® Core Reports does not collect data for the generation of reports. To enable data collection, open **FreeFlow® Core Configure**, click **Settings**, then select **Enable Data Collection**. When data collection is disabled, collection stops and jobs processed are not available in the report.

By default, FreeFlow® Core Reports retrieves data from Xerox® FreeFlow® Core itself. To enable the data retrieval from the print server, open **FreeFlow® Core Configure**, click **Settings**, then select **Retrieve Job Accounting from Printer**.

When you select the **FreeFlow® Core Job Report** or the **FreeFlow® Core Print Report** tabs, a list of available fields appears. You can select items from this list to add to the **Selected Items** area. When you select **Create Report**, the **Selected Items** are exported as either a .csv or an XML file.

After a report is generated, collected data used in the report is removed.



**Note:** If the accounting information is still available in the print server, the FreeFlow® Core Print Report includes information from the print server. This information uses XPIF values. If print ticket information is not available from the print server, the information is based on the print ticket that Xerox® FreeFlow® Core submitted to the print server. This information uses the values from Xerox® FreeFlow® Core.

## FreeFlow® Core Reports CLI

The **CoreReports.exe** application is a CLI application that can be used to export the Job and Printer reports. This application needs to be invoked from its location in the Xerox® FreeFlow® Core installation directory.

The following arguments are supported and are case-insensitive:

- /runMode=silent: runs FreeFlow® Core Reports in CLI mode
  - silent: launches the FreeFlow® Core Reports CLI application
  - gui: launches the FreeFlow® Core Reports application
- /reportType: specifies the report to export
  - export\_job: export the Job Report
  - export\_print: export the Print Report
- /fileType: specifies the report format
  - csv: exports the report in CSV format
  - xml: exports the report in XML format
- /pathName: defines the location for saving the report

Example:

```
<FFCore Install Directory>/CoreReports /runMode=silent  
/reportType=<report Type>  
/fileType=<file type>/pathName=<drive letter>:\folder\report.xxx
```

# FreeFlow<sup>®</sup> Core Submit

This chapter contains:

- [Connecting to Xerox<sup>®</sup> FreeFlow<sup>®</sup> Core](#) ..... 112
- [Submitting Jobs](#) ..... 113

FreeFlow<sup>®</sup> Core Submit allows Job Submission to Xerox<sup>®</sup> FreeFlow<sup>®</sup> Core Cloud instances running in the Xerox<sup>®</sup>cloud environment.

## Connecting to Xerox® FreeFlow® Core

The FreeFlow® Core Submit client includes both a stand-alone desktop application and Microsoft Office Add-Ins for Word, PowerPoint and Excel. After the FreeFlow® Core Submit client is installed, the Setup tab is used to establish a connection to Xerox® FreeFlow® Core. When the connection is established, it is shared by the application and the Add-Ins.

- **FreeFlow® Core DNS Name:** The hostname for the Xerox® FreeFlow® Core server.
- **FreeFlow® Core Username:** The username the FreeFlow® Core Cloud Print client uses to establish a connection to the Xerox® FreeFlow® Core password.



**Note:** The selected user must have Operator or Administrator level access. Also, FreeFlow® Core Cloud Print authentication does not support Active Directory.

- **FreeFlow® Core Password:** The password for the specified username.



## Submitting Jobs

The FreeFlow® Core Submit application and the Office Add-Ins provide job submission in alignment with the [Submit Job Dialog](#).

There are a several job submission differences:

- Microsoft Office files are converted to PDF locally before they are submitted to FreeFlow® Core.
- The Microsoft Office Add-Ins submit the currently active document. Submission of multiple documents is not supported.
- The FreeFlow® Core Submit **PDF Conversion Options** are not available in the Submit Job Dialog.
- Microsoft Office conversion options are not available in the FreeFlow® Core Submit Job user interface.



# FreeFlow® Core Cloud Print

This chapter contains:

- [FreeFlow® Core Cloud Print Client .....](#) 116

FreeFlow® Core Cloud Print allows Xerox® FreeFlow® Core Cloud instances running in the Xerox® cloud environment to seamlessly submit jobs to printers located in networks behind a firewall.

## FreeFlow® Core Cloud Print Client

FreeFlow® Core Cloud Print uses a client running behind the firewall inside the customer network. This client communicates with the FreeFlow® Core Cloud Print server to facilitate communication with printers behind the firewall.

## FreeFlow® Core Cloud Print Server

FreeFlow® Core Cloud Print uses a dedicated server running alongside Xerox® FreeFlow® Core. This server communicates with the FreeFlow® Core Cloud Print client to facilitate communication with printers behind the firewall.

To enable the server, open the Xerox® FreeFlow® Core Configuration, go to **Settings** and select the option to **Enable the Core Cloud Print server**.

Communication between the FreeFlow® Core Cloud Print server and client requires a secure connection. Additional configuration details are documented in the Xerox® FreeFlow® Core Security Guide.

## Connecting to a FreeFlow® Core Cloud Print Server

After the FreeFlow® Core Cloud Print client is installed, the FreeFlow® Core Cloud Print Configuration is used to establish a connection to the FreeFlow® Core Cloud Print server. When the configuration tool launches the first time, it prompts for the following information:

- **FreeFlow® Core DNS Name:** The hostname for the Xerox® FreeFlow® Core server.
- **Remote Client Name:** Defines a descriptive name for the FreeFlow® Core Cloud Print client.
- **FreeFlow® Core Username:** The username the FreeFlow® Core Cloud Print client uses to establish a connection to the FreeFlow Core password.



**Note:** The selected user must have Operator or Administrator level access. Additionally, FreeFlow® Core Cloud Print authentication does not support Active Directory.

- **FreeFlow® Core Password:** The password for the specified username.



**Note:** The FreeFlow® Core Cloud Print client communicates with a single Xerox® FreeFlow® Core server. However, the Xerox® FreeFlow® Core server can communicate with multiple FreeFlow® Core Cloud Print clients.

- **Proxy Credentials:** Entry of authentication information enables communication through an authentication protected proxy server.

## Configuring Printers

FreeFlow® Core Cloud Print Configuration is used to manage FreeFlow® Core Cloud Print printers. The user can add, edit, and delete printers.

- **Name of Printer:** Defines a name for the printer. If a name is not defined, the Model information retrieved from the print server is used as the name of the printer.
- **DNS Name or IP Address:** The hostname or IP address for the print server.

When a printer is saved, it is pushed to the Xerox® FreeFlow® Core server with which the FreeFlow® Core Cloud Print client is registered. After this, the printer can be used to create [Printer Destinations](#).

FreeFlow® Core Cloud Print printers have the following limitations:

- Secure Printing is not supported.
- Automating Pausing and Resuming of job submission is not enabled.
- The Printer Name cannot be changed within Xerox® FreeFlow® Core.
- FreeFlow® Core Cloud Printers that do not have Printer Destinations do not appear in the Printer Status and Management tab.



# FreeFlow® Core Configure

This chapter contains:

- [Enabling the FreeFlow® Core Configure Cloud Print Server.....](#) 120
- [Enabling Active Directory and Single Sign-in.....](#) 121
- [Database and Service Accounts .....](#) 122
- [Customer Override .....](#) 123

FreeFlow® Core Configure can be used to enable cloud print server and active directory user groups, or to change database and service accounts, and configure settings. FreeFlow® Core Configure has the following tabs:

- **Settings**
- **Authentication**
- **Database**
- **Customer Override**

## Enabling the FreeFlow® Core Configure Cloud Print Server

To enable the FreeFlow® Core Configure Cloud Print server, do the following:

1. Launch FreeFlow® Core Configure.  
The FreeFlow® Core Configure window appears.
2. Click the **Settings** tab.
3. Select the check box for **Enable the Xerox® FreeFlow® Core Configure Cloud Print server**.  
The client connects to a Xerox® FreeFlow® Core server.



## Enabling Active Directory and Single Sign-in

To enable Active Directory Groups, do the following:

1. Launch FreeFlow® Core Configure.  
The FreeFlow® Core Configure window appears.
2. Click the **Authentication** tab.
3. In the Authenticate User Based on area, select one of the radio buttons:
  - **FreeFlow® Core User Setup:** By default, this radio button is enabled.
  - **Active Directory Groups:** If you select this radio button, the **Check this box to enable single sign-in** check box is available for selection. This option enables authentication based on mapping Active Directory Groups. For more information on Active Directory Groups Mapping, refer to [Mapping Active Directory Groups](#).
4. To enable single sign-in, select the check box for **Check this box to enable single sign-in**.

## Mapping Active Directory Groups

To access Xerox® FreeFlow® Core, ensure that the users belong to a mapped group.

To map Active Directory groups to FreeFlow® Core user roles, do the following:

1. In the Group Name field, enter a local Active Directory name.
2. To assign users roles to the Active Directory group, for the required user role, select **Assign**.  
For more information, refer to [User Roles and Passwords](#).

## Removing Active Directory Groups

To remove an Active Directory group, do the following:

1. Select the Active Directory group from the group names in the required user role.
2. Click **Remove**.

## Database and Service Accounts

The Database tab enables you to change the settings for the database account and the Xerox® FreeFlow® Core services account.

To change the login credentials of the accounts, do the following:

1. Launch FreeFlow® Core Configure.  
The FreeFlow® Core Configure window appears.
2. Click the **Database** tab.
3. For the required account, update the name and password fields.

## Customer Override

The Customer Override tab enables you to change Xerox® FreeFlow® Core software configuration settings.



# A

## Job Properties

This appendix contains:

- [Job Information](#) ..... 126
- [Job File](#) ..... 127
- [Print Information](#) ..... 130
- [Job Metadata](#) ..... 133
- [Manifest Automation from Xerox](#) ..... 134
- [JMF](#) ..... 135
- [Workflow](#) ..... 138
- [PDF/VT Variables](#) ..... 140
- [External Process Node Variables](#) ..... 141
- [Additional Variables](#) ..... 142

Variables can be used in any parameter field that accepts text input. Some variables are not available in the Job Characteristics.

## Job Information

Job Property	Type	Variable	Source
Name	String	\$FFwfJob.jobName\$	Xerox® FreeFlow® Core Job
Job Group Name	String	\$FFwfJob.groupName\$	Job Group

## Job File

Job Property	Type	Variable	Source
Input File Name	String	\$FFwfDoc.inputFileName\$	Job file filename.
Input Document Format	Enum	\$FFwfDoc.inputDocumentFormat\$	Job file format.
Document Size	Dimension	\$FFwfDoc.documentWidth\$ \$FFwfDoc.documentHeight\$	Dimensions of the CropBox of the first page in the PDF.  Updated by Impose, Insert Pages, Delete Pages, Resize Pages, Split, and Join.
Original Document Size	Dimension	\$FFwfDoc.pdfPageWidth\$ \$FFwfDoc.pdfPageHeight\$	Dimensions of the CropBox of the first page in the PDF.
Trim Size	Dimension	\$FFwfDoc.trimWidth\$ \$FFwfDoc.trimHeight\$	Dimensions of the TrimBox of the first page in the PDF.  If the TrimBox is not defined, a PDF is selected according to the PDF Box Selection Behavior.  Updated by Impose, Insert Pages, Delete Pages, Resize Pages, Split, and Join.  If cut marks are enabled in Impose, then set to the dimensions of the perimeter defined by the placement of the outermost cut marks.  If cut marks are not enabled, set to the dimensions of the perimeter of the PDF boxes used for imposition.
Minimum Bleed Distance	Number	\$FFwfDoc.minimumBleedDistance\$	The smallest distance between the trim and a bleed boxes in the PDF. Bleed distances are calculated independently for all PDF box sides.  Updated by Insert Pages, Delete Pages, Resize Pages, Split, and Join.

## Job Properties

Job Property	Type	Variable	Source
Pages	Number	\$FFwfDoc.pages\$	The number of pages in the PDF. Updated by Imposition, Delete Pages, Insert Pages, Split, and Join.
Orientation	Enum	\$FFwfDoc.documentOrientation\$	The orientation of the first page in the PDF. Updated by Insert Pages, Delete Pages, Resize Pages, Split, and Join. Portrait is defined as taller than wider. Landscape is defined as wider than taller. Square documents are portrait.
PDF MediaBox	Dimension	\$FFwfDoc.pdfMediaWidth\$ \$FFwfDoc.pdfMediaHeight\$	The dimensions of the MediaBox of the first page in the PDF.  Updated by Insert Pages, Delete Pages, Resize Pages, Split, and Join.
PDF CropBox	Dimension	\$FFwfDoc.pdfCropWidth\$ \$FFwfDoc.pdfCropHeight\$	The dimensions of the CropBox of the first page in the PDF.  Updated by Insert Pages, Delete Pages, Resize Pages, Split, and Join.
PDF BleedBox	Dimension	\$FFwfDoc.pdfBleedWidth\$ \$FFwfDoc.pdfBleedHeight\$	The dimensions of the BleedBox of the first page in the PDF.  Updated by Insert Pages, Delete Pages, Resize Pages, Split, and Join.
PDF TrimBox	Dimension	\$FFwfDoc.pdfTrimWidth\$ \$FFwfDoc.pdfTrimHeight\$	The dimensions of the TrimBox of the first page in the PDF.  Updated by Insert Pages, Delete Pages, Resize Pages, Split, and Join.
PDF ArtBox	Dimension	\$FFwfDoc.pdfArtWidth\$ \$FFwfDoc.pdfArtHeight\$	The dimensions of the ArtBox of the first page in the PDF.  Updated by Insert Pages, Delete Pages, Resize Pages, Split, and Join.
Face Trim (Left)	Number	\$FFwfDoc.trimOffsetLeft\$	The distance between the left edge of the



Job Property	Type	Variable	Source
			imposed document and the left edge of TrimBox of the imposed document. Updated by Impose, Insert Pages, Delete Pages, Resize Pages, Split, and Join based on the distance between the left side of the Trim Size and the Stock Size.
Face Trim (Right)	Number	\$FFwfDoc.trimOffsetRight\$	The distance between the right edge of the imposed document and the right edge of the TrimBox of the imposed document. Updated by Impose, Insert Pages, Delete Pages, Resize Pages, Split, and Join based on the distance between the right side of the Trim Size and the Stock Size.
Head Trim	Number	\$FFwfDoc.trimOffsetTop\$	The distance between the top edge of the imposed document and the top edge of the TrimBox of the imposed document. Updated by Impose, Insert Pages, Delete Pages, Resize Pages, Split, and Join based on the distance between the top side of the Trim Size and the Stock Size.
Foot Trim	Number	\$FFwfDoc.trimOffsetBottom\$	The distance between the bottom edge of the imposed document and the bottom edge of the TrimBox of the imposed document. Updated by Impose, Insert Pages, Delete Pages, Resize Pages, Split, and Join based on the distance between the bottom side of the Trim Size and the Stock Size.

## Print Information



**Note:** Print Information string variables are evaluated using XPIF values.

Job Property	Type	Variable	Source
Print Quantity	Number	\$FFwfJob.printQuantity\$	The quantity on the incoming job ticket (Submit Job, XPIF, JDF, MAX). Updated by imposition when imposing using the Repeated Page Order.
Finished Quantity	Number	\$FFwfJob.finishedQuantity\$	The quantity on the incoming job ticket (XPIF, JDF, MAX).
Total Impressions	Number	\$FFwfJob.totalImpressions\$	The product of the number of pages on the imposed document and the print quantity. Updated by insert and delete.
Total Finished Impressions	Number	\$FFwfJob.totalFinishedImpressions\$	The product of the number of pages on the imposed document and the finished quantity. Updated by insert and delete.
Main Stock	String	\$FFwfJob.mainStockName\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Tray Name	String	\$FFwfJob.trayName\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination..
Description	String	\$FFwfJob.mediaDescription\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Stock Size	Dimension	\$FFwfJob.mediaWidth\$ \$FFwfJob.mediaHeight\$	The incoming job ticket. If undefined, the dimensions of the Crop box of the first page in the PDF. Updated by Impose, Insert Pages, Delete Pages, Resize Pages, Split, and Join.
Stock Size Name	String	\$FFwfJob.mediaSizeName\$	The incoming job ticket (XPIF).

Job Property	Type	Variable	Source
Weight	Number	\$FFwfJob.mediaWeightMetric\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Thickness	Number	\$FFwfJob.mediaThickness\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Color	String	\$FFwfJob.mediaColor\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Type	String	\$FFwfJob.mediaType\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Coating Type	Enum	\$FFwfJob.mediaFrontCoating\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Drilled	Enum	\$FFwfJob.mediaHoleCount\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Ordered	Enum	\$FFwfJob.mediaOrderCount\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Preprinted	Enum	\$FFwfJob.mediaPreprinted\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Recycled	Enum	\$FFwfJob.mediaRecycled\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Grain	Enum	\$FFwfJob.mediaGrain\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Sides Imaged	Enum	\$FFwfJob.sidesImaged\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination. Updated by Imposition.
Collation	Enum	\$FFwfJob.collation\$	The incoming job ticket. If undefined, the Printer

## Job Properties

Job Property	Type	Variable	Source
			Destination's Default Job Ticket.
Color	Enum	\$FFwfjob.color\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Output Order	Enum	\$FFwfJob.outputOrder\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Output Location	String	\$FFwfJob.outputLocation\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Job Sheets Inserted	Number	\$FFwfDoc.jobSheetsInserted\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Finishing	Enum	\$FFwfJob.finishing\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Multiple Finishing	Enum	\$FFwfJob.hasMultipleFinishing\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Sender	String	\$FFwfjob.sender\$	The incoming job ticket. If undefined, the Default Job Ticket of the Printer Destination.
Job Account ID	String	\$FFwfjob.jobAccountId\$	The incoming job ticket.

## Job Metadata

Job Property	Type	Variable	Source
Job ID	Number	\$FFwfJob.Id\$	Xerox® FreeFlow® Core Job
Job in Group	String	\$FFwfJob.documentGroupId\$	Job in Job Group
Job Number in Job Group	Number	\$FFwfDoc.documentSequenceNumber\$	Job in Job Group
Number of Documents in Job Group	Number	\$FFwfJob.documentGroupCount\$	Job Group
Author	String	\$FFwfdoc.Author\$	The Author property of the PDF. Updated by Optimize if overriding PDF Document properties is enabled.
Creator	String	\$FFwfdoc.Creator\$	The Creator property of the PDF.
Producer	String	\$FFwfdoc.Producer\$	The Producer property of the PDF.
Title	String	\$FFwfdoc.Title\$	The Title property of the PDF. Updated by Optimize if overriding PDF Document properties is enabled.
Subject	String	\$FFwfdoc.Subject\$	The Subject property of the PDF. Updated by Optimize if overriding PDF Document properties is enabled.
Keywords	String	\$FFwfdoc.Keywords\$	The Keywords property of the PDF. Updated by Optimize if overriding PDF Document properties is enabled.

## Manifest Automation from Xerox

Job Property	Type	Variable	Source
File Name	String	\$FFFile Name\$	The value of the defined manifest column.
Folder Name	String	\$FFFolder Name\$	The value of the defined manifest column.
Paper Stock Name	String	\$FFPaper Stock Name\$	The value of the defined manifest column.
XPIF File Name	String	\$FFXPIF File Name\$	The value of the defined manifest column.
Printer Destination	String	\$FFwfjob.printerName\$	The value of the defined manifest column.
Order ID	String	\$FFOrder ID\$	The value of the defined manifest column.
Group Key	String	\$FFGroup key\$	The value of the defined manifest column.
Quantity	String	\$FFQuantity\$	The value of the defined manifest column.
Custom MAX Fields	String	\$FF<custom name>\$	The value of the defined manifest column.

## JMF

Job Property	Type	Variable	JDF Attribute Location	Source
Job Name	String	\$FFwfJob. jdfJobName\$	JDF/@DescriptiveName or JDF/ CustomerInfo/@CustomerJobName	The incoming JDF ticket.
Job ID	String	\$FFwfJob.jdfJobId\$	JDF/@JobID	The incoming JDF ticket.
Job Part ID	String	\$FFwfJob. jdfJobPartId\$	JDF/@JobPartID	The incoming JDF ticket.
Sender ID	String	\$FFwfJob.senderId\$	JMF/@SenderID or JDF/CustomerInfo/ Contact[@ContactTypes="Customer"]/ Person/@DescriptiveName	The JMF signal.
Customer ID	String	\$FFwfJob. CustomerID\$	JDF/CustomerInfo/@CustomerID	The incoming JDF ticket.
Customer Order ID	String	\$FFwfJob.OrderID\$	JDF/CustomerInfo/@CustomerOrderID	The incoming JDF ticket.
Customer Project ID	String	\$FFwfJob. CustomerProjectID\$	JDF/CustomerInfo/@CustomerProjectID	The incoming JDF ticket.
Customer Billing Code	String	\$FFwfJob. BillingCode\$	JDF/CustomerInfo/@BillingCode	The incoming JDF ticket.
Customer Organization Name	String	\$FFwfJob. CustomerCompany \$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Company/ @OrganizationName	The incoming JDF ticket.
Customer Name	String	\$FFwfJob. CustomerFullName \$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Person/ @DescriptiveName	The incoming JDF ticket.
Customer First Name	String	\$FFwfJob. CustomerFirstName \$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Person/ @FirstName	The incoming JDF ticket.
Customer Family Name	String	\$FFwfJob. CustomerLastName \$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Person/ @LastName	The incoming JDF ticket.
Customer Title	String	\$FFwfJob. CustomerTitle\$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Person/ @JobTitle	The incoming JDF ticket.
Customer Phone	String	\$FFwfJob. CustomerPhone\$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/ ComChannel[ChannelType="Phone"]/ @Locator	The incoming JDF ticket.
Customer Email	String	\$FFwfJob. CustomerEmail\$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/ ComChannel[ChannelType="Email"]/ @Locator	The incoming JDF ticket.

## Job Properties

Job Property	Type	Variable	JDF Attribute Location	Source
Customer Street	String	\$FFwfJob. CustomerStreet\$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Address/ @Street	The incoming JDF ticket.
Customer City	String	\$FFwfJob. CustomerCity\$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Address/ @City	The incoming JDF ticket.
Customer Region	String	\$FFwfJob. CustomerRegion\$	JDF/CustomerInfo/Contact [ContactTypes="Customer"]/Address/ @Region	The incoming JDF ticket.
Customer Country	String	\$FFwfJob. CustomerCountry\$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Address/ @Country	The incoming JDF ticket.
Customer Postal Code	String	\$FFwfJob. CustomerPostal- Code\$	JDF/CustomerInfo/Contact [@ContactTypes="Customer"]/Address/ @PostalCode	The incoming JDF ticket.
Delivery Organization Name	String	\$FFwfJob. DeliveryCompany\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Company/ @OrganizationName	The incoming JDF ticket.
Delivery Name	String	\$FFwfJob. DeliveryFullName\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Person/ @DescriptiveName	The incoming JDF ticket.
Delivery First Name	String	\$FFwfJob. DeliveryFirstName\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Person/ @FirstName	The incoming JDF ticket.
Delivery Family Name	String	\$FFwfJob. DeliveryLastName\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Person/ @LastName	The incoming JDF ticket.
Delivery Title	String	\$FFwfJob. DeliveryTitle\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Person/ @JobTitle	The incoming JDF ticket.
Delivery Phone	String	\$FFwfJob. DeliveryPhone\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/ComChannel [ChannelType="Phone"]/@Locator	The incoming JDF ticket.
Delivery Email	String	\$FFwfJob. DeliveryEmail\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/ComChannel [ChannelType="Email"]/@Locator	The incoming JDF ticket.
Delivery Street	String	\$FFwfJob. DeliveryStreet\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Address/ @Street	The incoming JDF ticket.
Delivery City	String	\$FFwfJob. DeliveryCity\$	JDF/CustomerInfo/Contact [ContactTypes="Delivery"]/Address/@City	The incoming JDF ticket.
Delivery Region	String	\$FFwfJob. DeliveryRegion\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Address/ @Region	The incoming JDF ticket.



Job Property	Type	Variable	JDF Attribute Location	Source
Delivery Country	String	\$FFwfJob. DeliveryCountry\$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Address/ @Country	The incoming JDF ticket.
Delivery Postal Code	String	\$FFwfJob. DeliveryPostalCode \$	JDF/CustomerInfo/Contact [@ContactTypes="Delivery"]/Address/ @PostalCode	The incoming JDF ticket.
Requested Finisher Hint	String	\$FFwfJob. requestedFinisher- Hint\$	JMF/@DeviceID	The DeviceID in Resume- QueueEntry JMF signals.

## Workflow

Job Property	Type	Variable	Source
Workflow Name	String	\$FFworkflow.workflowName\$	Workflow
Time Since Submission	Number	n/a	Time since job was submitted.
Submission Method	Enum	\$FFwfJob.submissionMethod\$	The submission gateways.
Submitter Name	String	\$FFwfJob.submitterName\$	Submit Job UI: Set to the User Name of the logged in user. Hot Folder: Set to the Hot Folder Name. JMF: Set to the AgentName.
Job Priority	Enum	\$FFwfJob.priority\$	The submission gateways.
Convert Result	Enum	\$FFwfDoc.convertResult\$	The conversion results.
Preflight	String	\$FFwfJob.preflight\$	The name of the most recently used preflight preset.
Preflight Result	Enum	\$FFwfDoc.preflightResult\$	The results of the preflight checks defined in the preflight profile. Set to the most severe result if preflight returns multiple preflight results.
Preflight Fixup Result	Enum	\$FFwfDoc.preflightFixupResult\$	The results of the preflight fixups defined in the preflight profile. Set to the most severe result if preflight returns multiple fixup results.
Number of Preflight Fixups	Number	\$FFwfdoc.preflightNumFixups\$	The results of the preflight fixups defined in the preflight profile.
Number of Preflight Fixup Errors	Number	\$FFwfdoc.preflightNumFixupErrors\$	The results of the preflight fixups defined in the preflight profile.
Number of Preflight Errors	Number	\$FFwfdoc.preflightNumErrors\$	The results of the preflight checks defined in the preflight profile.
Number of Preflight Warnings	Number	\$FFwfdoc.preflightNumWarnings\$	The results of the preflight checks defined in the preflight profile.

Job Property	Type	Variable	Source
Imposition	String	\$FFwfJob.imposition\$	The name of the most recently used imposition preset.
Imposition N-Up	Number	\$FFwfJob.impositionNumberUp\$	The total number of page cells on the imposed documents. Increments with every imposition operation in the workflow.
Imposed Sheets per Signaturre	String	\$FFwfJob.sheetsPerSignature\$	The number of sheets for each signature used in the most recent imposition preset.
Optimize	String	\$FFwfJob.optimize\$	The name of the most recently used optimize preset.
Manage Color	String	\$FFwfJob.manageColor\$	The name of the most recently used manage color preset.
Last Pages Added	Number	\$FFwfjob.lastPagesAdded\$	Number of pages inserted in the PDF by the last Insert Pages in workflow.
Total Pages Added	Number	\$FFwfjob.totalPagesAdded\$	Number of pages inserted in the PDF. Set and updated by Insert Pages.
Job Release	Enum	\$FFwfJob.jobRelease\$	The release conditions used to release a job in Collect.
Printer Destination	String	\$FFwfJob.printerName\$	The name of the most recently used printer destination.
Printer Destination Status	n/a	n/a	The status of the selected Printer Destination.
Finisher Destination	String	\$FFwfJob.finisherName\$	The name of the most recently used finisher destination.

## PDF/VT Variables

Job Property	Type	Variable	Source
Pages in Record	n/a	\$FFwfJob.PDFVTSheetsInRecord\$	The Number of Sheets in the PDF/VT record. Updated by Imposition, Delete Sheets, Insert Sheets, Split, and Join.
Record Number	n/a	\$FFwfJob.PDFVTRecordNumber\$	The PDF/VT Record Number. Updated by Imposition, Delete Pages, Insert Pages, Split, and Join. Variable is reflected correctly only if <b>Apply to Each Variable Data Record</b> check box is selected.
Number of Records in Job	n/a	\$FFwfJob.PDFVTNumberOfRecordsInJob\$	The Number of Records in PDF/VT.

## External Process Node Variables

Job Property	Type	Variable	Source
Job File	n/a	\$FFin\$	URI of the job document.
Return Folder	n/a	\$FFout\$	URI of the folder the external process must use to return the job document (\$FFin\$).
Job Print Ticket	n/a	\$FFxpf\$	URI of the workflow job ticket.
Workflow Job Ticket	n/a	\$FFsubmittedxpf\$	URI of the submitted workflow job ticket.
Job Preflight Report	n/a	\$FFwfJob.preflightReportUri\$	URI of the preflight report.

## Additional Variables

Job Property	Type	Variable	Source
Manifest File Name	n/a	\$FFmanifestName\$	Manifest filename.
PDF Bookmark	n/a	\$FFwfDoc.CurrentBookmark\$	The value of the bookmark in the current PDF page.
PDF Colorants	n/a	\$FFwfDoc.ColorantNames\$	The names of the process and spot colors used in the PDF page. Valid only in the Watermarks component. Requires that a preflight node, with Preflight Report Format with XML is selected. Precedes the Watermark node using the variable.
Total Numbered Pages	n/a	\$FFwfDoc.totalNumberedPages\$	The total number of pages that were numbered. Valid only in the Page Numbers component.
Joined Job Names	Array	\$FFjoinedJobNames\$	The names of the jobs joined in the previous Join component.
Job ID on the Printer	n/a	\$FFwfjob.jobIdOnPrinter\$	Job ID returned by the print server after print submission.
Time Stamp	n/a	\$FFtimeStamp\$	Current date and time.



