

InfoPrint ProcessDirector

Installing and Configuring the Manufacturing Optimization Feature

Version 3 Release 1

G550-1070-03

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Note:

Before using this information and the product it supports, read the information in "Notices" on page 47.

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Contents

About this publication	v
Who should read this publication	v
Related information	v
Chapter 1. Manufacturing Optimization	1
Terms.	1
Chapter 2. Planning for installation	3
Hardware requirements.	3
Software requirements	3
xmllint utility	3
IBM C++ Runtime Environment Component.	3
Gathering your document requirements	4
Chapter 3. Installing and activating Manufacturing Optimization	5
Setting the maximum number of open files (optional)	5
Preparing configuration files before installation.	5
Editing the document properties configuration file	5
Editing the document properties names file	6
Running the installation program	8
Chapter 4. Configuring Manufacturing Optimization	11
Customizing document properties for AFP files	11
Linking custom document properties to index tags	11
Defining link options for document properties.	12
Editing text for index tags linked to document properties	14
Configuring steps to identify documents in AFP files	16
Editing the sample document properties template file	17
Creating step templates and job types	18
Creating a job type to split jobs by size	18
Creating a job type to split jobs by document property	22
Adding references to medium maps in non-standard AFP files	24
Creating the Enhance AFP control file	25
Chapter 5. Reactivating Manufacturing Optimization	27
Chapter 6. Reference	29
Installation and configuration checklist	29
AFP data standards and requirements	29
AFP data stream preparation	30
Standardized AFP requirements	30
Indexable AFP requirements.	32
docCustomDefinitions.xml file	34
docCustomDefinitions.properties file	39
Document properties template file.	40
Document properties file	41
Document property conditions file.	42
Enhance AFP control file	43
Appendix. Accessibility	45
Notices	47
Trademarks	48
Index	51

About this publication

This publication provides installation and configuration information about Manufacturing Optimization. Manufacturing Optimization is a feature of InfoPrint® ProcessDirector.

Who should read this publication

This publication is for system administrators who need to install and configure Manufacturing Optimization.

Related information

Visit the InfoPrint Solutions Company Web site to see the most recent version of this documentation, and to find documentation for related products:

<http://www.infoprint.com/infocenter>

Chapter 1. Manufacturing Optimization

Manufacturing Optimization expands the concept of a print workflow beyond controlling and tracking print jobs to encompass controlling and tracking individual documents in a print job. You can pull documents out of a workflow or reprint individual documents. Without changing the application that creates the print job, you can change the way the individual documents are processed, using business rules to indicate what processing to do. The documents in the print job can be split into subset print jobs, sorted based on document-specific information like address data, or grouped into subset print jobs based on data in the document.

Terms

These terms are associated with Manufacturing Optimization. You can find more detailed information about each term in other topics.

Document

The smallest unit in a job that can be tracked by a workflow; for example, a document might be a set of pages that make up one bill, one statement, or one mailpiece. Manufacturing Optimization uses properties of the document, such as Customer Name, to distinguish one document from another in a job.

Documents portlet

A portlet on the Main page of the user interface. The Documents portlet contains the Documents table, where you can display a list of individual documents and see their properties. You can also create a job containing the documents that you select.

Document database

A repository that can manage the individual documents in the system.

Document properties file

A file that can contain properties of documents in a job; the file is stored in the job's spool directory. The document properties file is created automatically by the step templates IdentifyDocuments, ReadDocumentsFromDatabase, CreateJobsFromDocuments, and CreateAFPJobsFromDocuments. The file is structured like a table; the first line identifies the properties that are in the file, and each additional line contains the property values for each document. InfoPrint ProcessDirector uses the information in the document properties file to keep track of the documents associated with each job.

Important: Never edit this file manually.

Original job

The job that carries a document into InfoPrint ProcessDirector. Usually, its job type is associated with an input device that receives files from an external source. The job type then processes the file to identify documents and their properties, and optionally loads the data into the document database.

Production job

A job that is created from documents.

Assemble phase

A phase that can be defined in a workflow. The Assemble phase contains steps that organize documents prior to phases such as Print and Insert that produce the physical documents.

Document properties configuration file

A file that defines the custom document properties and job properties to use for job sorting, splitting, and grouping. You work with your support representative to set up this file during the configuration process. This file is named docCustomDefinitions.xml; it identifies which custom document properties are managed in the database, and which properties exist only in the document properties file.

One docCustomDefinitions.xml file exists for the entire system.

Document properties names file

A file that defines caption information for custom document properties and for job properties, for display in the user interface. The file is named docCustomDefinitions.properties; it is associated with the custom document properties and job properties that you define in the docCustomDefinitions.xml file. If you are using only one language in your environment and you do not define any job properties in the docCustomDefinitions.xml file, you do not need to edit the docCustomDefinitions.properties file.

Document properties template file

A file that determines which properties go into the document properties file for a job. The template file lets you control the number of document properties to be used, as well as the order of the columns in the document properties file. You can use multiple document property template files in one InfoPrint ProcessDirector system.

Document Property Designer

An InfoPrint Visual Workbench function installed with Manufacturing Optimization that lets you customize document properties for your installation. Document Property Designer lets you link information in the original job to document properties that are used by steps in the workflow to assemble jobs from documents.

Chapter 2. Planning for installation

Before you can install Manufacturing Optimization, you must obtain the required hardware and install required software. You must also decide what your requirements are for processing documents in print workflows.

Hardware requirements

Make sure that your system meets the system requirements for the InfoPrint ProcessDirector base product and for any optional components.

The system requirements in this section replace the corresponding requirements for the base product. The system hardware requirements for Manufacturing Optimization are:

- One or more 2.8 GHz or faster processors.
- For Linux[®] and AIX[®] systems, a minimum of 200 GB free hard-drive space. More space might be required, depending on the number of documents.
- On AIX 32-bit or 64-bit systems, a minimum of 12 GB RAM.
- On Linux 64-bit systems, a minimum of 12 GB RAM.

Software requirements

Make sure that your system has the required software before installing Manufacturing Optimization. In addition to the required software described in this section, we recommend that you use an XML editor to edit the required XML configuration files. The installer does a schema-based validation of XML files but does not validate all syntax.

xmllint utility

The xmllint utility is required. Manufacturing Optimization automatically uses it during the installation process to validate your XML configuration files. If xmllint is not on the system when you install Manufacturing Optimization, the configuration files will not be validated, and errors might occur during activation.

Manufacturing Optimization requires version libxml2-2.6.21-3 of the xmllint utility. Typically this utility is already installed on Linux systems, but on AIX systems you must install it manually.

The xmllint utility is contained in the libxml2 software library, which IBM[®] provides on the *AIX Toolbox for Linux Applications* CD. You can install the libxml2 library from the Toolbox CD or by downloading it from this Web site:

<http://www-03.ibm.com/systems/p/os/aix/linux/toolbox/download.html>

Follow the installation instructions in the AIX Toolbox for Linux Applications readme file on the Web site.

IBM C++ Runtime Environment Component

Manufacturing Optimization for AIX requires the IBM C++ Runtime Environment Component (xIC C++ Runtime, Version 8.0 or later).

You can download the required package from this Web site:

[http://www-01.ibm.com/support/docview.wss?rs=2030&context=SSJT9L
&uid=swg24015997&loc=en_US&cs=utf-8&lang=en](http://www-01.ibm.com/support/docview.wss?rs=2030&context=SSJT9L&uid=swg24015997&loc=en_US&cs=utf-8&lang=en)

Follow the installation instructions on the Web site.

Gathering your document requirements

Determine what document properties are relevant for the workflows that you want to create.

1. Ask yourself questions like these:
 - What document properties will you use to distinguish your documents? (What makes one document different from another?)
 - What document properties do you need to identify to make use of data defined in the index tags (also called Tagged Logical Elements (TLEs)) in your Advanced Function Presentation™ (AFP™) file?
 - What properties do you want to use as criteria for sorting or grouping documents? For example, you could define a property called “postal code” so that you can sort AFP documents according to postal code.
 - If you have an Inserter feature, what information do you want to include in inserter bar codes or in inserter control files? For example, to include the document’s ZIP code in the inserter control file, you could define a document property called “ZIP code”.
2. From your answers, decide what properties to define. Some properties that you might want to define are:
 - Address line
 - Postal keyline
 - Data that you want to put into a bar code that is unique for each document
 - ZIP code
 - Dispatch type, such as express or regular mail
 - Encloser type, such as flat or fold

Chapter 3. Installing and activating Manufacturing Optimization

Prepare the required configuration files first, and then copy them into the required directories before running the installation program.

Example configuration files to use as a guide are on the service update CD in the /samples directory.

Setting the maximum number of open files (optional)

The system setting for the maximum number of open files prevents an uncontrolled process from taking over your system, but you might need a higher limit than the default if you are processing jobs with many documents. Changing the open file limit lets Manufacturing Optimization use more system resources. This task is optional, but if you have trouble with File Not Found errors appearing in the job log during job processing, you should do this task.

To set the open file limit:

1. Log in to your system as the root user, or use the **su** or **sudo** command to become the root user.
2. AIX: Open the file /etc/security/limits.
3. Linux: Open the file /etc/security/limits.conf.
4. Find the line in the file that sets the open file limit. For example, on a Linux system it might look like this: `aiw1 - nofile 4096`. If the line does not exist, add it in the next step.
5. Edit the line, or add a new line if needed, to set a higher limit for the `aiw1` user. This example sets the limit to 15,000 on Linux: `aiw1 - nofile 15000`. This example sets the limit to 15,000 on AIX: `aiw1 - nofiles 15000`. Check with your system administrator to determine a reasonable upper limit for the number of open files.
6. Log out as root and log in to make the change take effect.

Preparing configuration files before installation

Do these steps to prepare the required configuration files first, and then copy them into the required directories before running the installation program.

These instructions assume that the InfoPrint ProcessDirector base product has already been installed and activated. Make sure you have the correct version of InfoPrint ProcessDirector.

Example configuration files to use as a guide are on the feature CD in the /samples directory.

Editing the document properties configuration file

The document properties configuration file (`docCustomDefinitions.xml`) controls how Manufacturing Optimization uses document properties and job properties to manage jobs.

Notes:

- Manufacturing Optimization defines these document properties automatically. Do not define these properties in the docCustomDefinitions.xml file:
 - Doc.ID
 - Doc.OriginalJobID
 - Doc.OriginalSequence
 - Doc.OriginalSheets
 - Doc.OriginalPages
 - Doc.OriginalFirstPage
 - Doc.State
- The Inserter feature defines these document properties that you can customize and include in inserter control files and bar codes. Do not define these properties in the docCustomDefinitions.xml file:
 - Doc.Insert.BinTriggers (Inserter Level II feature only)
 - Doc.Insert.DivertBin
 - Doc.Insert.RecipientName
 - Doc.Insert.OriginalBarCode
- Define document properties for enhancing AFP, such as for bar codes, in this file.

To edit the document properties configuration file:

1. Navigate to the /samples directory on the service update CD.
2. Copy the sample docCustomDefinitions.xml file to a working directory.
3. Edit the file as needed, using the comments in the file to identify the sections that you want to change. We recommend using an XML editor to validate your syntax. Keep a backup copy of the edited file for recovery purposes.
4. Take note of the location of this edited file. When you run the installation program later, you will move the file to its proper location.

If you change the docCustomDefinitions.xml file after activating Manufacturing Optimization, you must activate again with the new settings. Define your requirements accurately to avoid needing to reactivate.

Editing the document properties names file

You provide descriptive information about custom document properties and job properties in the docCustomDefinitions.properties file so that InfoPrint ProcessDirector can display it in the user interface, such as in drop-down lists and in messages.

Entries in the docCustomDefinitions.properties file are related to the docProperty and jobProperty elements in the docCustomDefinitions.xml file. The docCustomDefinitions.properties file is required to:

- Define captions for any job properties that you defined in the docCustomDefinitions.xml file. Job property captions cannot be defined in the docCustomDefinitions.xml file.
- Define captions, short captions, and descriptions if you are setting up more than one language. You create a separate docCustomDefinitions_*language*.properties file for each additional language.

If all of these conditions are true, you do not need to edit the docCustomDefinitions.properties file:

- You are using a single language (English or any other language).
- All document property descriptive text is defined in docCustomDefinitions.xml.
- You did not include any job properties in docCustomDefinitions.xml.

Note: Although in these cases you do not need to edit docCustomDefinitions.properties, a file with the name docCustomDefinitions.properties must exist in the /aiw/aiw1/config directory for activation to succeed.

You define these values for each custom document property:

Name Property notebook headings in the user interface

Document field

Drop-down lists and captions in the user interface

Short name

Table column headings in the user interface, if applicable

Description

Online help when you click the help icon

For job properties, you define only the **Document field** element.

To edit the document properties names file:

1. Navigate to the /samples directory on the service update CD.
2. Copy the sample docCustomDefinitions.properties file to a working directory.
3. If you included any job properties in the docCustomDefinitions.xml file, edit docCustomDefinitions.properties to add the required **Document field** elements.
4. For any languages other than the default language, create language-specific docCustomDefinitions_*language*.properties files. For example:
 - docCustomDefinitions_de.properties (German)
 - docCustomDefinitions_en.properties (English)
 - docCustomDefinitions_es.properties (Spanish)
 - docCustomDefinitions_fr.properties (French)
 - docCustomDefinitions_it.properties (Italian)
 - docCustomDefinitions_ja.properties (Japanese)
 - docCustomDefinitions_pt.properties (Brazilian Portuguese)
 - docCustomDefinitions_ru.properties (Russian)
 - docCustomDefinitions_zh.properties (Traditional Chinese)
 - docCustomDefinitions_tw.properties (Simplified Chinese)
5. Edit the files as needed. Keep a backup copy of the edited file for recovery purposes.
6. Take note of the location of this edited file. When you run the installation program later, you will move the file to its proper location.

Running the installation program

As with the InfoPrint ProcessDirector base product, the installation process includes activation. You can run the activation process at the end of the installation process, or you can install additional features before activating Manufacturing Optimization.

Follow the appropriate steps depending on whether you are installing on an AIX or a Linux system.

Make sure you have already edited the sample configuration files located on the **service update CD** in the `/samples` directory before starting the installation process.

Important: If you are using the Remote DB2 function in InfoPrint ProcessDirector, do not activate Manufacturing Optimization at a level lower than the current PTF version.

To install and activate Manufacturing Optimization:

1. Stop the primary server.
2. Log in as the root user.
3. AIX: Enter this command to make sure that you are in the root directory:
`cd /`
4. AIX: Make sure that only one session of the cdrom daemon (**cdromd**) is running. Enter:
`ps -ef | grep cdromd`
 - If there is more than one session of the daemon running, make note of the process ID of each daemon and use the **kill** command to stop all except one session.
 - If there are no daemon sessions running, enter:
`cdromd`
5. Insert the base feature CD for Manufacturing Optimization in the CD-ROM drive.
6. Linux: To determine the name of the CD mount point, enter:
`ls /media/*`

On some systems where the CD is mounted automatically, the name of the mount point is the same as the name of the CD.
7. Linux: Mount the CD, if necessary. Enter:
`mount /media/mount_point`
8. Linux: Enter this command to start the installation:
`/media/mount_point/setup`
9. AIX: Enter this command to start the installation:
`/cdrom/cd0/setup`
10. Select the appropriate language for the wizard to use and then click **OK**. You see a welcome window for the InstallShield Wizard.
11. Reply to any prompts as the InstallShield Wizard steps you through the installation.
12. When the installer prompts you to select configuration files, choose to use the default configuration files that the installer found in the `/aiw/aiw1/config` directory and continue.

13. When you see a prompt to activate the installation, select **Activate later** and exit the installation.
14. Copy the docCustomDefinitions.xml file and (if applicable) the docCustomDefinitions_ *language*.properties files that you previously edited to the /aiw/aiw1/config/ directory.
15. Insert the service update CD into the CD-ROM drive and start the installation.
16. When the installer prompts you regarding configuration files, make sure you placed your edited files in the /aiw/aiw1/config directory, and continue. The installer validates the docCustomDefinitions.xml file. The installer does not verify the correctness of the values in the XML; it uses the schema definition to check for XML syntax errors.
17. Fix any validation errors and continue the installation.
18. If you see a prompt to activate the installation, select one of these options:
 - Activate later**
Select this option if you have additional feature or extension software to install.
 - Activate now**
Select this option if this is the last feature or extension that you have to install.
19. Click **Finish** to complete the installation. A prompt asks if you have additional software to install.
20. If you have additional feature or extension software to install, click **Yes** and reply to any prompts. Be sure to click **Activate now** during the final installation. The primary server restarts as part of the activation.

If you see error messages during the installation process, you can review the logs located in /opt/IBM/aiw/V1.0/extensions/doc1.

Chapter 4. Configuring Manufacturing Optimization

After installing and activating Manufacturing Optimization, configure it for use.

Customizing document properties for AFP files

You can use Document Property Designer to customize document properties for AFP files by linking the document properties to index tags. Index tags are also called Tagged Logical Elements (TLEs). In addition, you can define link options for the document properties and edit the index tag values.

If you want to manipulate documents using only the standard properties that Manufacturing Optimization provides—for example, if you want to split a job based on the number of sheets in each document—you do not need to link custom document properties to index tags. However, in most cases you will have custom document properties that you want to use to manipulate documents. For example, if you have a custom document property representing a postal code and you link it to its corresponding index tag, then you can sort, split, or group documents by their postal code.

Linking custom document properties to index tags

You can use InfoPrint Visual Workbench to link document properties to index tags in a sample AFP file. When a document property is linked to an index tag, InfoPrint ProcessDirector steps assign the value of the index tag in a production AFP file to the document property in a workflow. For example, if the value of the index tag is a ZIP code, the value of the document property is also the ZIP code.

You can link more than one document property to the same index tag. For example, you might want to link one document property to one portion of an index tag value and link another document property to another portion of the same index tag value. For example, an address line might contain both a city and state or country. If the index tag contains both the city and the country, you can make separate document properties of City and Country.

You do not need to link all document properties to index tags, and you do not need to link all index tags to document properties. InfoPrint ProcessDirector displays the value of an unlinked document property as **Not set**.

These symbols indicate the status of each document property and index tag:

- The **unlinked** (🔗) symbol indicates the property or index tag is unlinked.
- The **linked** (🔗) symbol indicates the property or index tag is linked.

Before you can link document properties to index tags:

- Work with your InfoPrint ProcessDirector support representative to customize the `/aiw/aiw1/config/docCustomDefinitions.xml` and `/aiw/aiw1/config/docCustomDefinitions.properties` files for your installation. These files contain the names of the document properties that you can link to index tags in your installation.

- Open a sample AFP file in InfoPrint Visual Workbench. The sample file must contain page groups and the index tags that you want to link to document properties. If the AFP Indexer feature is installed, you can use it to create page groups and index tags.
- As the aiw1 user, create a directory to store the control file containing the links. InfoPrint recommends the /aiw/aiw1/control_files/workbench directory, because files in this directory are backed up when you do an aiwbackup process. This directory and any files you create should be owned by aiw1 or a member of the aiwgrp1 group, with the same permissions (775) as the control_files directory.

To link a document property to an index tag:

1. In InfoPrint Visual Workbench, click **Mode** → **Document Property Designer**. If the Document Property Designer mode is the only mode that is available, this mode is selected automatically.
2. Click **Tools** → **Link Document Properties**.
3. In the Link Document Properties window, select a document property and select the index tag that you want to link to the document property, and then click **Link**.
4. Optional: In the Define Link Options window, define the link options for the document property.
5. Click **OK**.
6. To link other document properties to index tags, repeat steps 3 to 5.
7. Click **OK**. You see the document properties and linked index tags listed on the **Document Properties** tab in the bottom pane.
8. To save the InfoPrint Visual Workbench control file that contains information about how the document properties are linked to index tags, do one of these:
 - To save a new control file, click **File** → **Save control file as**. Select the directory that you created in step 1 and type the name of the control file in the **File name** field, and then click **Save**. Remember where you saved the control file because you must specify the location of the control file when you configure the steps that identify documents in AFP files. The default extension for control files is .ctl.
 - To save an updated control file, click **File** → **Save control file**.
 - If you used AFP Indexer to define the index tags, you should use the same control file for the document properties.

Note: When you add a step to the job type, you can reference the control file name using symbol notation if the name of the control file for the job matches a value of a job property, such as the job name.

Defining link options for document properties

When you link document properties to index tags, you can define options for each document property. These options apply to the document property only when it is linked to the index tag. For example, you can specify whether the index tag is required, the default value for the document property if the index tag is not found in a document, and so on. You can also edit the text value for the index tag so that the document property contains only part of the index tag value.

Before you can define the document property link options, you must link the document property to an index tag. When you link a document property to an index tag, Document Property Designer automatically displays the Define Link

Options window so that you can define the options. If you have previously linked a document property to an index tag, you can modify the link options.

To define link options for a document property:

1. In InfoPrint Visual Workbench, click **Mode** → **Document Property Designer**.
2. Click **Tools** → **Link Document Properties**.
3. In the Link Document Properties window, select the document property whose link options you want to modify and click **Modify Link**.
4. Optional: In the Define Link Options window, change the index tag that the document property is linked to by selecting the new index tag from the drop-down list next to the **Linked index tag** field.
5. Optional: To edit the text value of the document property, click **Edit Value**. You might want to edit the index tag value to remove any leading or trailing blanks, or to remove unwanted special characters. The edits you make apply only to the document property value and do not change the value of the index tag itself.
6. Specify one or more of these fields:

Field	Action
Required	Select this option if the index tag must exist in each document. If InfoPrint ProcessDirector does not find the linked index tag in a document, the production AFP job is placed in an error state.
Default value	The default value is used if the index tag is not found in a document. If you did not select Required , type a default value for the document property, or select the Not set option.
Minimum length	Select the minimum number of characters (0 - 254) the document property value can contain. If the index tag value, after it is edited, is less than the minimum length, the production AFP job is placed in an error state. 0, the default, means no minimum length.
Maximum length	Select the maximum number of characters (0 - 254) the document property value can contain. If the index tag value, after it is edited, is greater than the maximum length, the production AFP file is placed in an error state. 0, the default, means no maximum length.
Maximum count	Select the maximum number of times (0 - 100) the index tag can occur in a document. If the index tag occurs a greater number of times, the production AFP job is placed in an error state. 0, the default, means that the index tag can occur any number of times without error.

Field	Action
Ignore after nn occurrences	Select which index tag in a document (0 - 100) is to be used as the document property value. For example, if you select 2, the value of the second index tag in the document is the document property value. If the index tag occurs a fewer number of times in a document, the value of the last occurrence of the index tag is used. 0, the default, means that the value of the last index tag in the document is used as the document property value.

7. Click **OK**.

Editing text for index tags linked to document properties

You can edit the text value for an index tag so that the document property contains only part of the index tag value. You might want to edit the text value to remove any leading or trailing blanks, or to remove unwanted special characters. The edits you make apply only to the document property value and do not change the value of the index tag itself.

For example, if the index tag value contains an account number, *01-345678*, you can edit the text value so that the document property value contains only part of the account number, such as *345678*.

When you edit a text value, make sure that you edit it so that it is appropriate for all documents because the index tag values can be different in each document.

The editing rules in the table below are applied top to bottom; for example, first editing by stripping of characters, then editing on delimiters, and finally editing on characters.

To edit the text value for an index tag that is linked to a document property:

1. On the **Edit Value** window, select **On** for one or more of these fields:

Field	Action
<p>Edit by stripping characters</p>	<p>Type one character or a blank character (use the space bar to type a blank character) that you want to remove from the value. The character is case-sensitive. Then, select one of these buttons:</p> <p>Strip leading characters The specified character is removed from the beginning of the value.</p> <p>For example, if you type a blank character, all blanks are removed from the beginning of the value.</p> <p>Strip trailing characters The specified character is removed from the end of the value.</p> <p>For example, if you type a blank character, all blanks are removed from the end of the value.</p> <p>Strip leading and trailing characters The specified character is removed from the beginning and end of the value.</p> <p>For example, if you type a blank character, all blanks are removed from the beginning and end of the value.</p> <p>Strip all characters The specified character is removed from all positions in the value.</p> <p>For example, an account number is: 324-1443255-11. You can type a - to strip all - characters from the value, producing 324144325511.</p>
<p>Edit on delimiter</p>	<p>Type a text string of one or more characters or blanks in the Specify delimiter string field to indicate where the text value is split into separate strings. The text is case-sensitive. Then select numbers for Select first string and Select number of strings to mark the beginning and end of the edited text.</p> <p>For example, an account number is: 324-1443255-11. You can use - as the delimiter to split the value into these three strings: 324, 1443255, and 11. To select the second and third strings, 1443255-11, select 2 for both Select first string and Select number of strings.</p>
<p>Edit on character</p>	<p>Select numbers for Select first character position and Select number of characters to indicate the first character in the text value and how many characters are included.</p>

When you select the options in the window, the index tag value in the **Original text** field is edited based on your selections and the new value is displayed in

the **Edited text** field. The index tag value that is displayed is the value of the first index tag in the first document in the file.

2. Click **OK**.

Configuring steps to identify documents in AFP files

After you have linked document properties to index tags in a sample AFP file, you must configure the step that determines values for document properties in production AFP files. The step names the InfoPrint Visual Workbench control file that contains information about how document properties are linked to index tags.

Steps that calculate values for document properties are based on the IdentifyDocuments step template. Some InfoPrint ProcessDirector features provide job types containing an IdentifyDocuments step. If you use any of those supplied job types, you can configure the IdentifyDocuments step in the job type to specify the name of the InfoPrint Visual Workbench control file. These are examples of job types supplied with InfoPrint ProcessDirector features:

- ReceiveInsert_I (provided with the Inserter feature)
- SortAFP
- SortSplitAFP

If you add an IdentifyDocuments step to another job type, keep these tips in mind:

- The same control file is used for the IndexAFP step, the EditAFP step, and the IdentifyDocuments step.
- The EnableRepositioning step must precede IdentifyDocuments; EnableRepositioning updates the AFP file and provides page and sheet information to the IdentifyDocuments step.
- Place IdentifyDocuments in the Prepare phase and position it after the IndexAFP step if it is present.
- The IdentifyDocuments step must be after all steps that update the AFP file.

To configure a step that identifies documents in AFP files:

1. On the Main page, click the **Administration** tab.
2. In the left pane, click **Workflow** → **Job Types**.
3. Copy a job type that contains the IdentifyDocuments step.
4. Select the job type that you copied, and click **Properties**.
5. Select the **IdentifyDocuments** step in the Prepare phase.
6. If necessary, change the properties for the step in the right side of the window.
7. If you previously linked document properties to index tags, this step is required. Otherwise, it is optional. In the **InfoPrint Visual Workbench control file** field, type the path and file name of the InfoPrint Visual Workbench control file that contains information about how document properties are linked to index tags, or use symbol notation to refer to it. InfoPrint Visual Workbench created this control file when you linked document properties to index tags. The default extension for control files is .ctl. If you do not specify a control file, IdentifyDocuments uses any page group information that is already in the AFP file to identify documents, and no index tags in the AFP file are mapped to document properties.
8. If the input AFP file does not already contain index tags and you use AFP Indexer, add the IndexAFP step before the IdentifyDocuments step.
9. Click **OK**.
10. Select the job type with the IdentifyDocuments step and click **Enable**.

Editing the sample document properties template file

The document properties template file determines which properties go into the document properties file for a job. The template file lets you control the number of document properties to be used, as well as the order of the columns in the document properties file. As you create your workflow, look at each step and make sure that any properties that the step needs are listed in the document properties template file.

The document properties template file contains the database names of document properties. Steps based on the ReadDocumentsFromDatabase step template use the content of the document properties template file to create the document properties file.

Using a document properties template file is optional, but highly recommended. Performance is better when the document properties file includes only the necessary properties. If you do not use it, all document properties are included in the generated document properties file.

The document properties template file must include all the properties needed by steps that process the document properties file. In addition, the document properties template file must include certain properties, depending on the step that is using the template file. These properties are required by CreateAFPJobsFromDocuments and BuildAFPFromDocuments:

- Doc.OriginalSheets
- Doc.DataOffset
- Doc.DataLen

These document properties are automatically included in the document properties file whether or not they are defined in the template:

- Doc.ChildJobID
- Doc.ID (only if you use a step based on the WriteDocumentsToDatabase step template)
- Doc.OriginalJobID
- Doc.OriginalSequence
- Doc.SequenceInChild

If you have an Inserter feature and you edit the sample document properties template file, include these Inserter document properties in the template:

- Doc.Insert.Status
- Doc.Insert.Disposition
- Doc.Insert.PendingDisposition
- Doc.Inserter.StatusCode
- Doc.Inserter.StatusCodeExtended
- Doc.Insert.OperatorID
- Doc.Insert.TimeStamp
- Doc.Insert.InserterID
- Doc.Insert.BinTriggers (Inserter Level II feature only)
- Doc.Insert.BinResults
- Doc.Insert.DivertBin
- Doc.Insert.RecipientName

- Doc.Insert.OriginalBarCode
- Doc.Insert.Sequence
- Doc.Insert.Iteration

You can use more than one document properties template file in one InfoPrint ProcessDirector system.

To edit a document properties template file:

1. Copy the sample document properties template file named docPropTemplate.txt from the /opt/IBM/aiw/V1.0/extensions/doc/samples directory to the /aiw/aiw1/config/ directory. The permissions on the file must allow it to be readable by aiw1 user.
2. Edit the file to contain the properties that you want to use for step processing by a specific job type. Keep these tips in mind:
 - Add the custom document properties that are important for the job. For example, if the job type will sort the documents in postal code order, make sure the Postal Code document property is included in the template file.
 - Include only the necessary properties. Limiting the number of properties improves performance and reduces the amount of storage space needed to store the document property data.
 - All entries in the document property template file must be on a single line; subsequent lines are ignored.
 - Use a space or a tab character between each property.
 - A document properties template can also specify job properties.
3. Optional: Create additional document properties template files. For example, if you create several job types using the PrintDocuments job type, and you want to manipulate a different set of document properties for each of the new job types, create a document properties template file for each job type.

Creating step templates and job types

If you have applications that require customized step templates or job types, create them or edit existing ones to meet your needs. The examples in this section describe some job types and step templates that you might want to use with Manufacturing Optimization.

Creating a job type to split jobs by size

Manufacturing Optimization includes step templates that you can use to split a job into smaller jobs so that, for example, they can be printed on separate printers.

To split a job without fragmenting any of its documents across two jobs, you must identify the boundaries of the documents in the job. To do that, you must define page groups in the AFP file, either when you create the job, or by using the IndexAFP step provided with the AFP Indexer feature of InfoPrint ProcessDirector.

The EnableRepositioning step identifies how the pages are formatted onto sheets, and the IdentifyDocuments step applies the rules that you defined in Document Property Designer to create the document property file for the original job. The SplitDocuments step determines which documents are placed into each child job, and updates the document properties file with that information.

Now you can choose a method for building the new AFP files for the child jobs:

- You can use a CreateJobsFromDocuments step, which makes document properties files for the child jobs but does not create AFP files. In this implementation, you must include a BuildAFPFromDocuments step in the job type assigned to the child jobs. BuildAFPFromDocuments creates the AFP file with all the documents in the correct order. This is the recommended method. Because BuildAFPFromDocuments is defined in the child job type, it runs in parallel for all the child jobs. This can cause the overall job to complete faster, although the existence of several parallel processes might lead to database contention issues in rare cases.
- You can add a CreateAFPJobsFromDocuments step in the Assemble phase of this job type. If you choose this method, all the AFP files for all the child jobs are built sequentially.

This method is not recommended if you have the Inserter feature and the inserter controller specifies the open-loop reprint method. You must add the BuildAFPFromDocuments step in the child job type for the open-loop reprint method; so, adding the CreateAFPJobsFromDocuments step in the original job type causes duplicate processing, and degrades system performance.

The original job type does not have any steps in the Print phase because the child job type controls printing. After all the child jobs complete, the parent job enters its RetainCompletedJobs step, if present, or continues any other processing defined in the Complete phase of the original job type.

The child job type should begin with steps based on these two step templates: SetJobProps and SetJobPropsFromOriginal. SetJobProps sets values for job properties from the steps of the child job type. SetJobPropsFromOriginal copies the values that were set in the original job type to become the values for those properties in the child job type. Then if you chose to run the building of the child AFP files in parallel by including a CreateJobsFromDocuments step in the original job type, you need to use a BuildAFPFromDocuments step in the child job type.

Table 1. Splitting jobs by size, using CreateJobsFromDocuments

Parent/child	Phase	Step
Parent	Receive	SetJobPropsFromRules
		In the Input data stream field, select AFP .
	Prepare	UseInlineFormDefinition
		IndexAFP
		EnableRepositioning
		IdentifyDocuments
	Assemble	SplitDocuments
		CreateJobsFromDocuments
	Complete	RetainCompletedJobs
		RemoveJobs

Table 1. Splitting jobs by size, using CreateJobsFromDocuments (continued)

Parent/child	Phase	Step
Child	Receive	SetJobProps
		SetJobPropsFromOriginal
	Assemble	BuildAFPFromDocuments
	Print	UseInlineFormDefinition
		Needed only if you are using inline form definitions.
		EnableRepositioning
		CreatePageRanges
	Complete	PrintJobs
		RetainCompletedJobs
		RemoveJobs

Table 2. Splitting jobs by size, using CreateAFPJobsFromDocuments

Parent/child	Phase	Step
Parent	Receive	SetJobPropsFromRules
		In the Input data stream field, select AFP .
	Prepare	UseInlineFormDefinition
		IndexAFP
		EnableRepositioning
		IdentifyDocuments
	Assemble	SplitDocuments
		CreateAFPJobsFromDocuments
	Complete	RetainCompletedJobs
		RemoveJobs
Child	Receive	SetJobProps
		SetJobPropsFromOriginal
	Print	UseInlineFormDefinition
		Needed only if you are using inline form definitions.
		EnableRepositioning
		CreatePageRanges
	Complete	PrintJobs
		RetainCompletedJobs
		RemoveJobs

Adding steps for insertion to job types for splitting jobs

If an Inserter feature is installed, you might want to add steps related to insertion to the parent and child job types that you created to split jobs.

You must add these steps to the parent job type in the order shown:

- WriteDocumentsToDatabase (Include this step after the IdentifyDocuments step.)

- CreateJobsFromDocuments (If the job type includes the CreateAFPJobsFromDocuments step, delete it and use CreateJobsFromDocuments instead.)

You must add these steps to the child job type in the order shown:

- SetInsertProperties
- BuildAFPFromDocuments
- UseInlineFormDefinition (If no AFP files use inline form definitions, you can omit this step.)
- WriteInserterControlFile (This step is available only in the Inserter Level II feature.)
- SendInserterControlFile (This step is available only in the Inserter Level II feature.)
- InsertJobs
- Reconcile
- CreateInserterReprints

This table shows the steps that you must add to the parent and child job types in bold text. Your job types might already include the CreateJobsFromDocuments and BuildAFPFromDocuments steps.

Table 3. Adding steps for inserters to Manufacturing Optimization job types

Parent/child	Phase	Step
Parent	Receive	SetJobPropsFromRules
		In the Input data stream field, select AFP .
	Prepare	UseInlineFormDefinition
		IndexAFP
		EnableRepositioning
		IdentifyDocuments
		WriteDocumentsToDatabase
	Assemble	SplitDocuments
		CreateJobsFromDocuments
	Complete	RetainCompletedJobs
		RemoveJobs

Table 3. Adding steps for inserters to Manufacturing Optimization job types (continued)

Parent/child	Phase	Step
Child	Receive	SetJobProps
		SetJobPropsFromOriginal
	Assemble	SetInsertProperties
		BuildAFPFromDocuments
	Print	UseInlineFormDefinition
		EnableRepositioning
		CreatePageRanges
		PrintJobs
	Insert	WriteInserterControlFile (Inserter Level II feature only)
		SendInserterControlFile (Inserter Level II feature only)
		InsertJobs
		Reconcile
		CreateInserterReprints
	Complete	RetainCompletedJobs
		RemoveJobs

For more information about configuring job types for insertion, see the topics related to inserters in the information center.

Creating a job type to split jobs by document property

Instead of splitting a job into several jobs using job size as the criterion, you might want to use the value of a document property, such as country or sales region. In this scenario, you use the GroupDocuments step template instead of the SplitDocuments step template. Each group of documents becomes a separate child job.

You can use a step based on the GroupDocuments step template to gather all the documents of one group into a single child job. You can use up to six grouping criteria to create child jobs. Each child job contains only the members of a group, such as all statements for each of five cities in each of 10 countries.

Table 4. Splitting jobs by document property, using CreateJobsFromDocuments

Parent/child	Phase	Step
Parent	Receive	SetJobPropsFromRules
		In the Input data stream field, select AFP .
	Prepare	UseInlineFormDefinition
		IndexAFP
		EnableRepositioning
		IdentifyDocuments
	Assemble	GroupDocuments
		CreateJobsFromDocuments
	Complete	RetainCompletedJobs
		RemoveJobs
Child	Receive	SetJobProps
		SetJobPropsFromOriginal
	Assemble	BuildAFPFromDocuments
	Print	UseInlineFormDefinition
		Needed only if you are using inline form definitions.
		EnableRepositioning
		CreatePageRanges
	Complete	PrintJobs
		RetainCompletedJobs
		RemoveJobs

Table 5. Splitting jobs by document property, using CreateAFPJobsFromDocuments

Parent/child	Phase	Step
Parent	Receive	SetJobPropsFromRules
	Prepare	UseInlineFormDefinition
		IndexAFP
		EnableRepositioning
		IdentifyDocuments
	Assemble	GroupDocuments
		CreateAFPJobsFromDocuments
	Complete	RetainCompletedJobs
		RemoveJobs

Table 5. Splitting jobs by document property, using CreateAFPJobsFromDocuments (continued)

Parent/child	Phase	Step
Child	Receive	SetJobProps
		SetJobPropsFromOriginal
	Print	UseInlineFormDefinition
		Needed only if you are using inline form definitions.
		EnableRepositioning
		CreatePageRanges
	Complete	PrintJobs
		RetainCompletedJobs
		RemoveJobs

Adding references to medium maps in non-standard AFP files

If you use the Inserter or Manufacturing Optimization feature, InfoPrint ProcessDirector can use a different medium map to print each document in the file. (The medium map specifies formatting options, such as duplex options and overlays.) Your AFP files must contain an Invoke Medium Map (IMM) structured field in each document (page group) so that InfoPrint ProcessDirector knows which medium map to use.

The Normalize AFP function that is provided with the Inserter and Manufacturing Optimization features can add IMM structured fields in each document in a job if they do not already exist. To use the Normalize AFP function, you create a step (based on the RunExternalProgram step template) that runs the afpnorm command. Then, you include this step in your job types before the IdentifyDocuments step.

To create a step that adds references to medium maps:

1. Copy the RunExternalProgram step template, giving it a unique name such as NormalizeAFP.
2. In the **External command** field, type this command exactly as shown here:

```
afpnorm -m -o ${getFileName(print,afp,write)} -f
"${Job.Line2AFP.FORMDEF}" -p "${Job.Print.ResourcePath}"
${getFileName(print,afp,read)}
```
3. Delete the content in the **External control file** property.
4. Save the step.
5. Tune the step so that it runs only on the primary server.
6. Add the new step into your job type, inserting it:
 - After IndexAFP (if applicable)
 - Before EnableRepositioning
 - Before IdentifyDocuments

Creating the Enhance AFP control file

You can create an Enhance AFP control file to define where to place AFP data on a page. For example, you can apply bar codes, mask text by creating hidden areas (cover blocks), or add text.

The BuildAFPFromDocuments and CreateAFPJobsFromDocuments step templates can make enhancements to AFP files. When you set up steps based on these step templates, you enter the location of the Enhance AFP control file to be used in manipulating the AFP data.

Documentation and examples for using Enhance AFP are located on the product CD in the /samples directory. After installation, you can find them in the directory /opt/IBM/aiw/V1.0/extensions/doc/samples/.

1. As the aiw1 user, create a directory to store the Enhance AFP control file. InfoPrint recommends the /aiw/aiw1/control_files/enhanceafp directory, because files in this directory are backed up when you do an aiwbackup process. This directory should be owned by aiw1 or a member of the aiwgrp1 group, with the same permissions (775) as the control_files directory.
2. Create an Enhance AFP file that defines setup attributes and update requests. Documentation and examples for using Enhance AFP are located on the product CD in the /samples directory and the /publications directory.
3. Save the file in the directory that you created in step 1.

Specify the path to this file in the **Enhance AFP control file** property of the step in the Assemble phase, in the job type that creates the AFP file.

Chapter 5. Reactivating Manufacturing Optimization

If you change the `docCustomDefinitions.xml` file, you must reactivate InfoPrint ProcessDirector and Manufacturing Optimization.

Before doing this task, verify that the syntax in the `docCustomDefinitions.xml` file is correct. You can use `xmllint` to validate the file.

To reactivate Manufacturing Optimization:

1. Log in to the operating system as the `aiw1` user.
2. Enter this command to stop the server:
`stopaiw`
3. Log in as the root user.
4. Navigate to the `/opt/IBM/aiw/V1.0/base/` directory.
5. Enter this command to start the activation process:
`./activate.sh`

If you see error messages during the activation process, you can review the logs located in `/opt/IBM/aiw/V1.0/extensions/doc1` directory.

6. Log in as the `aiw1` user.
7. Enter this command to restart the server:
`startaiw`

Chapter 6. Reference

This section includes format information and examples of configuration files.

Installation and configuration checklist

This checklist can help you plan your installation and configuration process.

Task	Notes
Decide which document properties you want to use for all the applications that you process.	
Define custom document properties in the document properties configuration file (docCustomDefinitions.xml).	
Edit the associated docCustomDefinitions.properties file.	
Run the installer.	
Use InfoPrint Visual Workbench Document Property Designer to link custom document properties to index tags.	
Edit the sample document property template file.	
Create or edit step templates and job types as needed.	
Optional: Create the Enhance AFP control file.	

AFP data standards and requirements

The AFP data standard for Manufacturing Optimization and Inserter defines general characteristics of AFP print data.

- Each document in an AFP file must be bounded by Begin Named Group (BNG) and End Named Group (ENG) structured fields.
- Each document in an AFP file must use one or more Tagged Logical Element (TLE) structured fields to identify the document and its properties. These are often called index tags.
- The AFP file must conform to certain formatting rules so that text, bar code, and cover block enhancements can be added to its documents.
- AFP resources including fonts, form definitions, page segments, and overlays must be included as an inline resource group or as external files in the resource path. External resource groups are not supported.

AFP data stream preparation

You can prepare the AFP data stream to conform to the standard before it reaches InfoPrint ProcessDirector, or prepare the data in InfoPrint ProcessDirector. You do not need to prepare the data at all if document-level processing is not required. To prepare the data in InfoPrint ProcessDirector, you use AFP Indexer and other utility programs.

The degree of preparation done before the AFP file is submitted to InfoPrint ProcessDirector as a job determines how much processing InfoPrint ProcessDirector might need to do. You add different steps to your job types depending on the amount of processing that you want InfoPrint ProcessDirector to do.

Standardized AFP requirements

Standardized AFP is the required input for document tracking and manipulation. This topic describes document delineation, document indexing, and document manipulation requirements.

Document delineation

Begin Named Group (BNG) and End Named Group (ENG) structured fields surround each document in the AFP file.

Each page contained by the group delimiters is included; therefore, banners or separator pages that are not to be enclosed in an envelope should not be included in the group. Pages outside the groups at the beginning and end of the file or between groups through the file are discarded before printing, because each document becomes a unique entity that is no longer required to remain with the other documents in the print file.

This standard applies to each document, whether or not the document is ever physically printed or mailed.

Document indexing

Each document includes at least one Tagged Logical Element (TLE) structured field that lets an operator easily identify the document. In the Inserter features, this is defined as the Mailpiece Recipient. With the Manufacturing Optimization feature, you can specify additional document properties that contain values from the index tags in the data.

Documents that the Inserter feature processes must include a TLE that contains information the inserter can use to determine what inserts to include with each document.

Documents that are to be sorted or grouped using Manufacturing Optimization need TLEs to define the grouping and sorting criteria. Typically these include postal (ZIP) code and mail type (foreign, courier, and so on). Some criteria can be defined in job properties instead of in individual document TLEs.

This is a sample of standard AFP structure:

```
BDT (Begin Document)
  BPG (Begin Page – Header page (s))
  EPG (End Page)
  BNG (Begin Named Group – Document)
  IMM
  TLE (Tagged Logical Element) – CustomerAcctNo
```

TLE (Tagged Logical Element) – CustomerAddr<1-6>
 TLE (Tagged Logical Element) – MailRecipient
 TLE (Tagged Logical Element) – CustomerZIP
 TLE (Tagged Logical Element) – CustomerInsertBins
 BPG (Begin Page)
 Page data
 EPG (End Page)
 BPG (Begin Page)
 Page data
 EPG (End Page)
 ENG (End Named Group)
 EDT (End Document)

Document manipulation

The AFP file must adhere to the formatting rules listed here to allow the addition of text, bar codes, or cover blocks. Those additions can be made with the Enhance AFP control file that is specified on the CreateAFPJobsFromDocuments and BuildAFPFromDocuments step templates. These rules are in addition to the document indexing rules and define a consistent set of documents throughout the file.

Requirements and Examples

Valid AFP

The AFP data must conform to the *Data Stream and Object Architecture: MO:DCA Reference*.

BDT/EDT(s)

The AFP data can contain more than one pair of Begin Document (BDT) and End Document (EDT) structured fields, but they cannot be nested.

Example:
 BDT
 ...
 EDT
 BDT
 ...
 EDT

Named Groups - BNG/ENG(s)

Named page groups for document boundaries must be present. If there are nested page groups, only the outer level is used to define document boundaries.

Example: 2 mailpieces
 BNG (1st mailpiece)
 BNG/./ENG (nesting allowed)
 BNG/./ENG\
 ENG
 BNG (2nd mailpiece)
 ENG

Pages - BPG/EPG(s)

Pages outside of named groups are ignored. These pages are not indexed or printed.

Example: 2 banner pages
 BDT
 BPG/EPG (discarded)
 BPG/EPG (discarded)
 BNG
 BPG/EPG (1st document)
 ENG
 EDT

Index Tags - TLE(s)

Index tags cannot occur outside of existing named page group boundaries. One instance of each required index tag is found in the bounds of the named group. These index tags can be in nested named groups or pages.

There is only one value for each required index tag, regardless of how many TLEs of the same name have been provided. Therefore, multiples of the same index tag, such as CustomerName in a group, are not supported.

Example: valid TLEs

```
BDT
  BNG
    TLE 1
  BPG
    TLE 2
  EPG
    TLE 3
  ENG
```

Invoke Medium Maps - IMM(s)

An Invoke Medium Map structured field must be included after the BNG structured field that marks the beginning of each document, and before the first BPG structured field that marks the beginning of the first page of the document.

Example:

```
BDT
  BNG/IMM/./ENG
  BNG/IMM/./ENG
  BNG/IMM/./ENG
  ...
EDT
```

Units Measurement units in any Presentation Text Descriptor (PTD) structured field in the document must match the units set in the Page Descriptor (PGD) structured field.

Enhanced N-Up

The form definition used for the AFP data can use the enhanced N-up function but it cannot specify pagination between the partitions.

Constant Pages

If the constant pages function of the form definition is used, it must specify only constant pages that fit a consistent pattern, such as all backs, all fronts, first back of each document, and so on.

Mixed Plex

The form definition used for the AFP data must not change back and forth between simplex and duplex.

Form definition functions

The form definition must not contain these structured fields: Presentation Finishing Control (PFC), Map Suppression (MSU), and Medium Finishing Control (MFC).

Indexable AFP requirements

The basic requirement for indexable AFP is that AFP Indexer can be used to establish document boundaries and to add index tags to form standardized AFP. Note that AFP Indexer only does document delineation and document indexing. It does not change AFP data to conform to the document manipulation requirements of standardized AFP, such as including an inline medium map inside each document.

Begin Named Group (BNG) and End Named Group (ENG) structured fields that already exist in the input AFP data can be either recognized and retained by AFP Indexer, or removed and replaced using AFP Indexer to define a new document trigger.

If existing named page groups are retained, the levels of nesting to be retained can be selected during configuration. The system determines documents based on the outermost named page groups.

When named page groups are preserved, existing index tags (TLEs) can also be preserved.

This section describes the requirements of the AFP data to be input to AFP Indexer.

Requirements and Examples

Valid AFP

The AFP data must conform to the *Data Stream and Object Architecture: MO:DCA Reference*.

BDT/EDT(s)

The AFP data can contain more than one pair of Begin Document (BDT) and End Document (EDT) structured fields, but they cannot be nested.

Example:
BDT
...
EDT
BDT
...
EDT

Pages – BPG/EPG(s)

Pages before the start of named groups are not indexed.

Example: 2 banner pages discarded
BDT
BPG/EPG
BPG/EPG
BNG
BPG/EPG (1st document)
ENG
...
EDT

Existing Named Page Groups – BNG/ENG(s)

Named page groups for document boundaries can be present. The nesting level is specified when you select to keep the existing named page groups.

You can remove named page groups and redefine boundaries by setting a new document trigger.

Existing TLEs are removed if the document trigger is redefined.

Example: 2 documents
BNG (1st document)
BNG/./ENG (nesting allowed)
BNG/./ENG\
ENG
BNG (2nd document)
ENG

Existing Indexes – TLE(s)

Existing index tags can be retained if named page groups are maintained. Index tags cannot occur outside of existing named page group boundaries.

Document Triggers

To add named page groups for document delineation, you must define a document trigger.

The AFP text field must be in a constant physical (print) location, in the same sequence in the case of multiple fields in that location.

If parsing is required, the parsing rules must apply consistently to the document trigger text for every document in the file.

Only Presentation Text Object Content Architecture (PTOCA) within an AFP page is supported. AFP Image, Draw Rules, Bar Code Object Content Architecture™ (BCOCA™) objects, or PTOCA in page segments or overlays are not supported as document triggers.

Sample document trigger:
BPG
PTX
TRN (full trigger text)
EPG

Index tags

The AFP text must be in a constant physical (print) location or area, and in the same sequence in the case of multiple text blocks in that location.

If parsing is required, the parsing rules must apply consistently to the index data for every document in the file.

Only Presentation Text data within an AFP page is supported for use as an index tag. AFP Image, Draw Rules, BCOCA objects, or PTOCA in page segments or overlays are not supported as index tag data.

Sample index tag:
BPG
PTX
TRN (index text here)
BPG

docCustomDefinitions.xml file

The document properties configuration file (docCustomDefinitions.xml) defines properties that are used to manage documents and jobs. A sample file is located in the /samples directory on the service update CD. The activation process places a sample in /opt/IBM/aiw/V1.0/extensions/doc/samples.

The sample docCustomDefinitions.xml file contains several sections. This table summarizes the sections in the file.

Table 6. Sections in the docCustomDefinitions.xml file

Section	Purpose
Schema	The schema section identifies the schema and the unique character string for the custom document properties. Only the InfoPrint support representative should edit this section.

Table 6. Sections in the docCustomDefinitions.xml file (continued)

Section	Purpose
Database properties	<p>The values of database properties are displayed in the user interface; the values of limited properties are not displayed. The most common reasons to use database properties rather than limited properties are:</p> <ul style="list-style-type: none"> • To view document property values in the user interface. • To search for a document based on a particular property value. For example, if you have the Inserter feature and you want to use a custom document property to search for documents to reconcile or to reprint, the document property must be a database property. <p>Database property manipulation can degrade performance if you are processing a significant number of documents. Work with your InfoPrint support representative to determine your specific needs.</p> <p>If you have the Document Pool extension, you can use selectors to manipulate documents based on their property values if the properties are defined as database properties.</p>
Limited properties	<p>You can include document properties and job properties in this section of the file. Limited properties can be manipulated in a document properties file, but they are not stored in the database and their values do not display in the user interface. Property names do display in the user interface where applicable; for example, in the SortDocuments step, document property names display in drop-down lists.</p> <p>Common reasons to use limited properties rather than database properties are:</p> <ul style="list-style-type: none"> • To avoid displaying sensitive property values in the user interface, such as Social Security numbers or check amounts • To maximize performance <p>Work with your InfoPrint support representative to determine your specific needs.</p> <p>If you specify job properties here, you can use them for sorting or grouping, and they are added to the document properties file.</p>
User authorization properties	<p>This section is optional. User authorization properties specify custom authority groups for access to database properties.</p>

Schema section

The **Schema** section contains one **docCustomDefinitions** element and one **schema** element. Only InfoPrint support representatives should edit the schema section.

Database properties section

The **Database properties** section contains the **docProperty** element.

Database properties and limited properties can be:

- Stored in a document properties file
- Used with steps in a job type to group or sort documents (for example, with the SortDocuments step template)
- Linked to index tags using the InfoPrint Visual Workbench Document Property Designer

Note: Do not define a property as both a database property and a limited property. Unexpected behavior might occur.

<docProperty>

Defines document properties that are in the database.

Note: Do not define a property as both a database property and a limited property. Unexpected behavior might occur.

Table 7. Attributes for the docProperty element

docProperty attribute	Required?	Notes
name	Yes	The internal name of the property used by programs that read or write properties. InfoPrint recommends that you use a consistent naming convention for your custom property names, so they are unique across the entire system. For example, the sample docCustomDefinitions.xml file uses the prefix Doc.Custom to make its properties unique from those of InfoPrint ProcessDirector.
access	No	The user access level for the property. You can use an access level that is already defined in Manufacturing Optimization, or you can create a custom access level if an existing one does not meet your needs. See the Access section for more information.
datatype	Yes	The InfoPrint ProcessDirector data type to use for the property. See the next table.
dbType	Yes	A database parameter that specifies the type of data. See the next table.
caption	Yes	The default caption displayed in the user interface for the property. If you are setting up captions in only one language, define them in this file. If you are setting up captions in more than one language, create additional document properties names files (docCustomDefinitions_<language>.properties) for the other languages. See the related information center topic for details.
shortCaption	Yes	The default short caption displayed for this property where required, such as in table column headings. If you are setting up short captions in only one language, define them in this file. If you are setting up short captions in more than one language, create additional document properties names files (docCustomDefinitions_<language>.properties) for the other languages. See the related information center topic for details.

Table 7. Attributes for the docProperty element (continued)

docProperty attribute	Required?	Notes
description	Yes	The default description of the document property, which displays in the user interface as help text. If you are setting up descriptions in only one language, define them in this file. If you are setting up descriptions in more than one language, create additional document properties names files (docCustomDefinitions_language.properties) for the other languages. See the related information center topic for details.

You can use these data types and database types in database property definitions. Keep in mind that the database definition might further restrict the values that can be stored, in addition to the validation rules shown in this table. For example, a SMALLINT can store integers from 0 to 32,767 and a VARCHAR(12) does not permit strings longer than 12 characters. Database type values are not case-sensitive.

Table 8. Data types and database types for docProperty definitions

Data type	Database type (used in SQL)	Validation for data type
String	CHAR VARCHAR LONG VARCHAR	CHAR: fixed length, 1–254 characters VARCHAR: variable length, 1–32,672 characters LONG VARCHAR: variable length, 1–32,700 characters
IntegerNonNeg	SMALLINT BIGINT INTEGER	SMALLINT: 2 bytes BIGINT: 4 bytes INTEGER: 8 bytes Minimum=0

Limited properties section

The **Limited properties** section contains one or more **docProperty** or **jobProperty** elements.

Database properties and limited properties can be:

- Stored in a document properties file
- Used with steps in a job type to group or sort documents (for example, with the SortDocuments step template)
- Linked to index tags using the InfoPrint Visual Workbench Document Property Designer

Note: Do not define a property as both a database property and a limited property. Unexpected behavior might occur.

<docProperty>

Defines document properties that are manipulated only in the document properties file and not in the database.

Table 9. Attributes for the docProperty element

docProperty attribute	Required?	Notes
name	Yes	InfoPrint recommends that you use a consistent naming convention for your custom property names, so that they are unique across the entire system. For example, the sample docCustomDefinitions.xml file uses the prefix Doc.Custom to make its properties unique from InfoPrint ProcessDirector.
datatype	No	See the next table.
caption	No	The caption displayed in drop-down lists in the user interface for this property. If you are setting up captions in only one language, define them in this file. If you are setting up captions in more than one language, create a document properties names file (docCustomDefinitions_<language>.properties) for the other languages. See the related information center topic for details.

You can use these data types in docProperty definitions:

Table 10. Data types for the docProperty element

Data type	Validation for data type
String	None
IntegerNonNeg	Integer between 0 and 2147483647

<jobProperty>

Lets you write job properties to the document properties file. If you specify job properties, you can use them for sorting or grouping. The only valid attribute for job properties is **name**. You must define job property captions in the document property names file (docCustomDefinitions.properties). Job property captions display in drop-down lists in the user interface, where applicable.

Table 11. Attribute for the jobProperty element

jobProperty attribute	Required?	Notes
name	Yes	Job properties come from a document's original job. This is only a reference to an existing job property, not a definition.

Automatically defined document properties

These properties are not defined in docCustomDefinitions.xml but they are automatically stored in the document database. Do not add them to the docCustomDefinitions.xml file:

- Doc.ID
- Doc.OriginalJobID
- Doc.OriginalSequence
- Doc.OriginalSheets
- Doc.OriginalPages
- Doc.OriginalFirstPage

- Doc.State

docCustomDefinitions.properties file

The entries in the docCustomDefinitions.properties file are used in the InfoPrint ProcessDirector user interface when you select document or job properties from lists, in online help, and in messages. A sample file is in the /samples directory on the service update CD, and the activation process places a sample file in /opt/IBM/aiw/V1.0/extensions/doc/samples.

Entries in the docCustomDefinitions.properties file are related to the docProperty and jobProperty elements in the docCustomDefinitions.xml file. The docCustomDefinitions.properties file is required to:

- Define captions for any job properties that you defined in the docCustomDefinitions.xml file. Job property captions cannot be defined in the docCustomDefinitions.xml file.
- Define captions, short captions, and descriptions if you are setting up more than one language. You create a separate docCustomDefinitions_*language*.properties file for each additional language.

When creating language-specific docCustomDefinitions_*language*.properties files, use a language identifier in each file name. For example:

- docCustomDefinitions_de.properties (German)
- docCustomDefinitions_en.properties (English)
- docCustomDefinitions_es.properties (Spanish)
- docCustomDefinitions_fr.properties (French)
- docCustomDefinitions_it.properties (Italian)
- docCustomDefinitions_ja.properties (Japanese)
- docCustomDefinitions_pt.properties (Brazilian Portuguese)
- docCustomDefinitions_ru.properties (Russian)
- docCustomDefinitions_zh.properties (Traditional Chinese)
- docCustomDefinitions_tw.properties (Simplified Chinese)

You create a stanza of short caption, caption, document field, and description values for every document property. For job properties, only the document field element is applicable.

[property].Short

A shortened form of the property name. This value appears as the column heading in the user interface.

[property]

The full property name.

DocumentField. [property]

Drop-down lists and captions in the user interface.

[property].Description

A description of the property. Use HTML tags if you want to format the text. This content appears in the online help when the user clicks the Help icon.

For example:

```
| Doc.Custom.Zip.Short=ZIP
| Doc.Custom.Zip=ZIP code
| DocumentField.Doc.Custom.Zip=ZIP code
| Doc.Custom.Zip.Description=The ZIP code of an address
|
| DocumentField.Job.Class=Job class
```

Note:

Do not rename the default docCustomDefinitions.properties file; a file with this name must exist in your configuration directory (/aiw/aiw1/config). Copy the file and name the copy with the appropriate language identifiers as needed.

Document properties template file

The document properties template file determines which properties go into the document properties file for each job. The template file lets you control the number of document properties to be used, as well as the order of the columns in the document properties file. As you create your workflow, look at each step and make sure that any properties that the step will need are listed in the document properties template file. A sample file is located on the product CD in the /samples directory. After installation, you can find it in the directory /opt/IBM/aiw/V1.0/extensions/doc/samples/.

The document properties template file contains a single line that lists the database names of document properties separated by a tab or space character. When a step based on the ReadDocumentsFromDatabase step template creates the document properties file, it copies the first line from the template file. Then the step creates a separate line for each document associated with the job. Each document description line lists the property values, separated by a tab or space character, in the same order that they appear in the first line. If a value is Not set, an empty string ("") is placed in the file.

Using a document properties template file is optional, but highly recommended. If you do not use it, all document properties are included in the generated document properties file. For best system performance, use a template so that the step includes only the necessary properties.

The document properties template file must include all the properties needed by steps that process the document properties file. In addition, the document properties template file must include certain properties, depending on the step that is using the template file. These properties are required by CreateAFPJobsFromDocuments and BuildAFPFromDocuments:

- Doc.ChildJobID (*)
- Doc.OriginalJobID (*)
- Doc.OriginalSequence (*)
- Doc.SequenceInChild (*)
- Doc.OriginalSheets
- Doc.DataOffset
- Doc.DataLen

Document properties marked with an asterisk (*), as well as the Doc.ID property, are automatically included in the document properties file whether or not they are defined in the template:

A document properties template can also specify job properties.

Document properties file

Manufacturing Optimization uses information from the document properties file in these processes:

- Steps that process documents, such as steps based on the CreateAFPJobsFromDocuments and BuildAFPFromDocuments step templates. For either the CreateAFPJobsFromDocuments or BuildAFPFromDocuments steps to run successfully, these properties must be included in the document properties file:
 - Doc.OriginalJobID
 - Doc.ChildJobId
 - Doc.SequenceInChild
 - Doc.OriginalSequence
 - Doc.OriginalSheets
 - Doc.DataOffset
 - Doc.DataLen
- Steps that sort, group, and split documents into AFP files. For example, if you want to use a step to sort documents by ZIP code, a property such as Doc.Custom.ZipCode must be in the document properties file.
- External programs that process document properties.

The first line in the document properties file contains the information from the document property template file. Each additional line contains values for each of the properties from one document.

The document properties file is created automatically.

- If you use a step based on the IdentifyDocuments step template, the step creates the document properties file using the InfoPrint Visual Workbench control file as a guide.
- If you use a step based on the ReadDocumentsFromDatabase step template, the step creates the document properties file using a document property template file as a guide.
- If you use a step based on the CreateJobsFromDocuments or CreateAFPJobsFromDocuments step template, the step creates the document properties file for child jobs using the document properties file of the parent (current) job as a guide.

The GroupDocuments, SortDocuments, and SplitDocuments steps of the Assemble phase can manipulate the document properties file. The document properties file might also be used by an external program or a custom step that you create.

A document properties file always contains the properties Doc.ChildJobId and Doc.SequenceInChild. If a step (such as GroupDocuments) that creates document groups runs, the document properties file will contain more than one value for Doc.ChildJobId.

The document properties file is stored in the job's spool directory and has the format *jobid.document.dpf* (for example, /aiw/aiw1/spool/default/10000009/10000009.document.dpf). The values are in UTF-8 format and separated by tabs.

Some information in the document properties file is not stored in the database but is used only during the processing of steps. This information, for example, is in the document properties file but not in the database:

Doc.DataOffset

The offset of the print data for the document in the original job's print file.

Doc.DataLen

The length of the print data for the document in the original job's print file.

Document property conditions file

Steps based on the SetDocPropsFromConditions step template set document properties in the current job based on conditions found in this property conditions file. The document property conditions file is a comma-separated value (CSV) file. The path to a sample document property conditions file is /aiw/aiw1/doc/DocPropConditions.csv.

The first line in the file lists names of the document properties; first the properties that are part of the conditions, and then the properties that this step sets if the conditions are all true. Each remaining line in the file represents an if-then conditional statement. When all of the conditions on that line are true, all of the specified values are set. If any of the conditions is not true, none of the specified values are set.

This is an example of a document property conditions file.

```
Doc.Custom.MailCategory,Job.Name,Doc.Run.PAVE
=USPS,Yes
=USPS,~XYZ*,No
=NonUSPS,No
=Exception, No
```

The first if-then condition sets a default that if a mailpiece category is USPS, InfoPrint ProcessDirector sets the Doc.Run.PAVE property to Yes. The second line overrides the default if the job name begins with XYZ.

We recommend that you place all properties that are part of conditions to the left of properties that are receiving values. Properties that are part of conditions use condition characters from this set:

Table 12. Condition characters in the conditions file

Condition characters	Condition	Example
=[value]	equal to	=Fir
<>[value]	not equal to	<>Fir
<[value]	less than	<4900000
>[value]	greater than	>61000
<=[value]	less than or equal to	<=61207
>=[value]	greater than or equal to	>=61207
~[value]	like	~INSURE*.AFP
!~[value]	not like	!~*.AFP
"([val1],[val2],...)"	in (must start and end with parentheses surrounded by quotation marks)	"(PRTA, PRTB)"

Table 12. Condition characters in the conditions file (continued)

Condition characters	Condition	Example
!"([val1],[val2],...)"	not in (must start and end with parentheses surrounded by quotation marks)	!"(PRTA, PRTB)"
" (blank)	wildcard (*)	

Usage notes

- You can use InfoPrint ProcessDirector symbol notation in the conditions file to set conditions based on the current value of a particular document or job property. See the related Reference topic for a description of symbol notation syntax.
- You can begin a line in the conditions file with the exclamation point character (!) if you want to set a condition to update the document properties file, but not to update the database. For example, you might want to update a job property in the document properties file, but not on the job, when setting the job type for child jobs produced by CreateJobsFromDocuments or CreateAFPJobsFromDocuments. The default value for the child job type is the property of the job, but the document properties file can override the value. The conditions file can set the child job type for documents in the document properties file, and can use the ! character to prevent the job's property from being changed.
- Spaces can separate keyword characters from condition values.
- The ? and * characters are wildcard characters used with the like and not like conditions. The question mark matches single characters and the asterisk matches any number of characters.
- If a condition field has an equal sign (=) without a value, the condition is true if the job's property value is null. If a field has an empty value, the property is ignored for that line; it is not part of any condition and its value is not changed. Because of this rule, the step cannot set a job property to null.
- Each line is evaluated independently.
- All lines with conditions that match a document's properties are applied to the document. The lines are applied in the order that they occur in the file.
- Leading and trailing blanks are removed from field values before any comparison or set operation takes place. Blanks within a value (not leading or trailing) are retained.

Enhance AFP control file

Steps based on the BuildAFPFromDocuments and CreateAFPJobsFromDocuments step templates use an Enhance AFP control file to change the content of AFP files. You can work with your InfoPrint support representative to create control files that contain rules for the changes. Documentation and examples for using Enhance AFP are located on the product CD in the /samples directory. After installation, you can find them in the directory /opt/IBM/aiw/V1.0/extensions/doc/samples/.

These are examples of the changes you can make using Enhance AFP:

- Insert new bar codes or text.
- Remove obsolete content, such as bar codes, text, or OMR marks.
- Find variable text or bar code content to use as a basis for generating new content.

- Insert, find, or remove index tags (TLEs).

Messages and some of the instructions related to Enhance AFP refer to the function as `adf_extract`.

Visit the InfoPrint Solutions Company Web site to see the most recent version of the documentation:

<http://www.infoprint.com/infocenter>

Appendix. Accessibility

InfoPrint Solutions Company strives to provide products with usable access for everyone, regardless of age or ability. For more information about the commitment that we have made to accessibility, see: <http://www.infoprint.com/accessibility>

Accessibility features

Accessibility features help users who have disabilities, such as restricted mobility or limited vision, use information technology products successfully.

The major accessibility features in this product let you:

- Use screen readers, screen magnifiers, and other assistive technologies.
- Use a keyboard instead of a mouse.
- Change attributes such as volume, color, contrast, and font size.
- Distinguish keys by touch without activating them.
- Attach alternative input and output devices such as special pointing devices and Braille displays.

In addition, the information center and the publications for the product are in an accessible format.

Keyboard navigation

This product uses standard Microsoft® Windows® navigation keys.

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Index

A

- accessibility 45
- AFP files
 - configuring steps to calculate document properties 16
 - linking document properties to index tags 11

D

- disability 45
- document database 29
- document properties
 - linking to index tags 11
- Document Property Designer
 - defining link options 12
 - linking document properties to index tags 11

I

- IdentifyDocuments
 - configuring 16
- index tags
 - linking to document properties 11

J

- job type splitting by document property
 - creating 22
- job type splitting by size
 - creating 18

K

- keyboard 45

M

- medium maps for child jobs 24

S

- steps
 - configuring to identify documents in AFP files 16

T

- troubleshooting
 - File not found errors 5

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