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InfoPrint Manager for Windows PTF UO00601 (November 2007) Release Notes

Version 2 Release 2

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Version 2 Release 2

> **Note:**
>
> Before using this information and the product it supports, read the information in "Notices" on page 53.

This edition applies to InfoPrint Manager for Windows, Version 2 Release 2 Modification 0 with PTF UO00601 (November 2007), and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters. Be sure to use the correct edition for the level of the product.

> **Internet**
>
> Visit our home page: `http://www.infoprint.com`

You can send comments by e-mail to **printpub@us.ibm.com** or by mail to:

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Contents

About PTF UO00601 (November 2007)

PTF UO00601 (November 2007) for InfoPrint® Manager for Windows® Version 2 Release 2, includes revisions to the following publications:

1. InfoPrint Manager: PSF and Server Messages, G550-1053-00.
2. InfoPrint Manager: SAP R/3 Planning and Configuration Guide, S550-1051-00.
3. InfoPrint Manager: Reference, S550-1052-00.
4. InfoPrint Manager for Windows: Getting Started, G550-1072-00.
5. InfoPrint Manager Page Printer Formatting Aid: User's Guide, S550-0801-00

The information is available at the InfoPrint Solutions Company home page on the web at `http://www.infoprint.com` .

This PTF includes:

- "Support for the AFP Color Management architecture in InfoPrint Manager and Page Printer Formatting Aid (PPFA)"
- "Support for a page count function for rippable files"
- "Support for additional halftone resources for InfoPrint 4100 Models MD1/2 and MS1" on page 2
- "Support for additional InfoPrint printer" on page 2
- "Support for clients using Windows Vista Business or Windows Vista Enterprise" on page 2

> **Important**
> All InfoPrint Manager servers should be upgraded at the same time. Do not forget to also upgrade any secondary InfoPrint Manager servers.

Support for the AFP Color Management architecture in InfoPrint Manager and Page Printer Formatting Aid (PPFA)

This PTF includes the print server support for the AFP color management architecture and support for AFP Color Management Resources in InfoPrint Manager and PPFA, which is a feature of InfoPrint Manager. See "Information available with next revision of the procedure manual" on page 2 or the PPFA user's guide.

Support for a page count function for rippable files

With this PTF, InfoPrint Manager has added a job page count function. This function is enabled by specifying a value of **rip-and-hold** on a new server attribute, **count-job-pages**. InfoPrint Manager updates the **page-count** document attribute and the **job-page-count** job attribute after it rips (transforms) the documents in a job that is being ripped and held. This updated page count information is displayed in the GUI.

Documents that are not ripped into AFP are not affected by the **count-job-pages** server attribute.

Support for additional halftone resources for InfoPrint 4100 Models MD1/2 and MS1

With this PTF, InfoPrint Manager includes new halftone resources with Windows bat files for switching between the V2 and the Std (default) halftone files.

These new bat files are installed in *install_path***config**:

    IP4100-MD1-MD2.Stdtoner.bat
    IP4100-MD1-MD2.V2toner.bat
    IP4100-MD1-MD2.V2_PQItoner.bat

Each bat file changes the Infoprint Manager system to use the halftones for the relevant toner; Stdtoner is the default.

For more information about the bat files available with InfoPrint Manager, see"Using the correct halftones for the installed toner version" on page 50.

Support for additional InfoPrint printer

This PTF includes support for the InfoPrint 5000 printer, Models AS1 and AD1/2.

Support for clients using Windows Vista Business or Windows Vista Enterprise

This PTF includes support for these clients using Windows Vista Business or Windows Vista Enterprise operating system:

- AFP Workbench
- AFP Driver
- Administrative and Operations GUI
- Command line client
- InfoPrint Job Ticketer with Java 1.4.2 SR6 or Sun Java 1.4.2
- Notification client
- Select
- Submit Express

Information available with next revision of the procedure manual

Understanding AFP color management and color management resources

Printing documents in full color or with very high-quality black and white (grayscale) images is more complex than printing black and white or spot-color documents. Understanding some of the principles of color and grayscale printing and how various InfoPrint products can fit into color and grayscale solutions can help you integrate color and grayscale printing with your current operations or expand to implement new color workflows.

InfoPrint AFP color and grayscale solutions

You can assemble printing products from InfoPrint Solutions Company and other companies in different configurations to support Advanced Function Presentation™ (AFP™) color and grayscale printing, including configurations that use the AFP

Color Management Object Content Architecture™ (CMOCA™) to provide optimal performance and color accuracy in high-speed color printing.

Color printing without explicit color management

You can include color images or specify colors for AFP objects in your print jobs and send them to an AFP color printer. The color images and objects print in color, based on the default settings in your print server and printer.

If you like the colors that the default color management settings provide, or if it is not essential that you print in exactly the right colors, you probably do not need to implement a full color management solution. However, if you want better control over the consistency and accuracy of your colors across devices, you might consider color management at some point in the future.

To understand some of the basic concepts about color printing, see:
- "Color printing concepts" on page 4
- "Grayscale printing concepts" on page 8

Resources that document composition software includes inline

Most often, print bureaus use document composition software to generate highly customized and personalized color output. AFP color management is largely built into the document composition tools that support their processes. The software puts all the resources that the printer needs into the print job and sends it to an InfoPrint print server. The print server sends the print job to the printer, and the printer uses the resources as appropriate.

Using this method, you know that the required resources, including the resources required for color management, are available for any print job that is sent to the printer. However, including all the resources can make the print job very large, and moving large print jobs through your system might slow down system performance. Also, you might not be able to save resources that are downloaded with a print job on the printer so they can be reused without being downloaded later.

For more information about color printing, see:
- General information about color printing and color management:
  - "Color printing concepts" on page 4
  - "Color management" on page 9
- "Tips for images" on page 25
- Scenario describing a possible implementation:
  "Eliminating physical inserts" on page 36

For a list of the companies that participate in the AFP Consortium and support AFP color management in their products, see:

http://www.afpcolor.org

Resources stored and managed centrally

To take full advantage of the AFP CMOCA, you can store your color and image resources in a central resource library, and let your print system manage those resources. This option optimizes system performance by:

- Creating some of the color management resources for you automatically
- Reducing the number of color conversion resources that the system creates at print time by generating link color conversion color management resources in advance
- Reducing the size of some images by removing embedded profiles when you store them, yet still retaining the association between the image and the profile
- Letting you mark resources as *capturable*, so they can be saved on the printer and used in other print jobs without being downloaded again

For an introduction to the full AFP CMOCA and how you might implement it, see:
- General information about color and grayscale printing and color management:
  - "Color printing concepts"
  - "Grayscale printing concepts" on page 8
  - "Color management" on page 9
- "AFP color management" on page 12
- "InfoPrint AFP color and grayscale products" on page 26
- "AFP color solution scenarios" on page 31
- "Related publications" on page 38
- Scenario describing a possible implementation:

  "Replacing pre-printed forms" on page 33

Color printing concepts

Color printing is significantly more complicated than black and white printing. If you understand some of the complexities, you can make the transition from black and white printing to grayscale or color printing more smoothly.

Color spaces and ICC profiles:

Presentation devices, such as computer monitors and printers, create colors differently. Because of these differences, colors must be described differently for each device. The different methods of describing colors are called *color spaces*. In addition, each device might have one or more International Color Consortium (ICC) profiles associated with it. ICC profiles are used when an image or another object is converted to the color space of a different device.

Each device has its own individual color space and range of colors that it can display or print. The color space specifies how color information is represented in an image when it is displayed on a particular device. As the image is passed from one device to the next, the color information about the image is converted from the color space of the source device to the color space of the destination device. Because color spaces do not exactly match between devices, some of the color information can be lost or modified in the conversion process.

A *color space* is a representation of the individual colors that can be combined to create other colors. Some color spaces that are relevant to printing are:
- **RGB**

  In an RGB color space, red, green, and blue light are combined in different amounts and intensities to create different colors. RGB colors are often specified as single-byte integers numbered from 0 through 255. You can specify 256 levels of intensity for each of the three colors. For example:
  - R=0, G=0, B=0 yields black
  - R=255, G=255, B=255 yields white

- R=251 , G=254 , B=141 yields a pale yellow
- R=210, G=154, B=241 yields a light purple

Devices such as monitors, digital cameras, and scanners generally use RGB color spaces to describe colors. Two standard implementations of RGB color spaces are **sRGB**, which is most often used for Web graphics, and **Adobe® RGB (1998)**, which we recommend for graphics that are printed.

- **CMYK**

  In a CMYK color space, cyan (bright blue), magenta (bright red-pink), yellow, and black pigments are combined to create different colors. CMYK values are often represented as a percentage. The percentage represents the portion of a particular area of paper that is covered by ink or toner. For example:
  - C=0%, M=0%, Y=0%, K=100% yields black
  - C=0%, M=0%, Y=0%, K=0% yields a blank area on the page
  - C=1.6%, M=0%, Y=44.7%, K=.4% yields a pale yellow
  - C=17.6%, M=39.6%, Y=5.5%, K=5.5% yields a light purple

  Color printers use the CMYK color space; they are loaded with ink or toner in each color. When the printer places dots of the correct sizes next to and on top of each other on a page, your eye interprets them as the intended color.

  Implementations of the CMYK color space vary from printer to printer and from paper to paper. Because the original color space of most images is an RGB color space, it is best to leave images in an RGB color space so they retain their original characteristics. That way, your print server or printer has as much of the original color information as possible when it converts the images to the most appropriate CMYK color space for the printer and paper combination.

  If you save an image using the CMYK color space, make sure that you either save an ICC profile for that color space or use a standard non-device specific CMYK color space like **SWOP** or **Coated FOGRA27** and associate the appropriate ICC profile with the image.

Note: Both RGB and CMYK values can be expressed in different ways. For example, in the PostScript® data stream, the values range from 0.0 to 1.0, while in some graphic arts programs they can be expressed in hexadecimal numbers or as percentages.

An *ICC profile* contains information for converting an image between a device-specific color space and a *device-independent color space*. A device-independent color space is a color space that does not depend on or relate to the characteristics of any particular device, but rather contains all colors across all gamuts. The ICC identified a specific Profile Connection Space (PCS) as the target device-independent color space for all ICC profiles.

You can use an input ICC profile to translate color data created on one device (such as a digital camera) into the PCS. Then you can use an output ICC profile to convert from the PCS into the native color space of a different device (such as a printer). Converting images from one color space to another is process-intensive and can affect performance in your print system, although it is the best way to maintain consistent color across the devices in your system.

Related concepts

The International Color Consortium (ICC) is an organization that has

established open standards for color management. These standards help products work together by identifying a device-independent color space and defining the elements of an ICC profile.

Gamut and rendering intent:

Every device has a *gamut*, a range of colors or shades of colors that it can display or print. Some devices have larger gamuts than others; some devices have gamuts that are similar sizes, but that contain slightly different colors. When an image or a print job is created on a device with a gamut that is different from the printer, you can use a *rendering intent* to tell the printer how to adjust the colors that are outside the gamut of the printer.

The gamut of a printer is almost always significantly smaller than the gamut of a monitor, digital camera, or scanner. Images or graphics nearly always have to be adjusted to print appropriately because some of the colors that they require might be outside the gamut of the printer.

A rendering intent tells the printer how to adjust the image when it encounters colors that it cannot reproduce. Each rendering intent has different benefits and trade-offs, so you can choose one based on how the print output should look.

> **Related concepts**
>
> "Rendering intents" on page 10
> Rendering intents indicate what you want a printer to do with colors that are outside its gamut.

Color mixing and calibration:

Four standard colors (cyan, magenta, yellow, and black) are blended to create all the colors in the gamut of a printer. A printer mixes colors by printing four layers of a page or an image, one in each color. If the printer registration is not set correctly, the images do not line up properly and the colors appear wrong. In addition, the printer must be calibrated to ensure that all its systems are functioning correctly and that it is in a known good state.

Using the color information described in its color space, each device determines the amount of cyan, magenta, yellow, or black to use. Dots of each color are printed in overlapping patterns that, when interpreted by your eyes, blend the colors appropriately. To ensure the colors are created accurately, the color planes must be perfectly aligned. If they are not, you might see *moire patterns*, unintended patterns in the printed images, or poorly blended colors, which are especially noticeable on the edges of your images.

Color printers must be calibrated regularly, in some cases daily, to ensure that the colors they produce are consistent. In addition, follow the recommended printhead maintenance procedures and schedule to ensure that the printer operates optimally. Even when a printer is calibrated correctly, its gamut is much smaller than that of any monitor, so images do not look the same when they are printed as they do when they are displayed on a monitor.

> **Related concepts**
>
> "Paper characteristics" on page 11
> The paper that you use has a significant impact on the colors that you see. Even if you use the same ICC profile and the same printer, printing on a different paper can result in a very different color appearance.

Halftones and tone transfer curves:

Halftones are used to convert images (such as photographs, drawings, logos, or charts) from the continuous tones that you see on a monitor into a pattern of dots that a printer can put on paper. Tone transfer curves are used to modify the values of a particular color component and thus adjust the look and feel of some of the colors. For example, you can apply a tone transfer curve to emphasize the brightest parts of an image.

Halftones and tone transfer curves are used with both color and grayscale print jobs.

There are several different kinds of halftones, including clustered-dot, stochastic, and error diffusion. For simplicity, this discussion only covers clustered-dot halftones.

Clustered-dot halftones are generally characterized by:

- **Line screen frequency**

  Line screen frequency is a measure of the resolution of a halftone, expressed in lines per inch (lpi). A low line screen frequency, such as 80 lpi, creates coarser images because they use larger halftone dots. A high line screen frequency, such as 150 lpi, can produce higher quality images by using smaller halftone dots.

- **Halftone pattern**

  Halftone dots are printed in various shapes and patterns. For example, dots can generally be round, elliptical, or square, and they can be arranged in slightly different orientations. The halftone pattern also describes how the size of the dot is increased to cover a larger percentage of the total area and yield darker colors. Different patterns might produce better results for some print jobs.

- **Rotation**

  Lines of halftone dots do not run parallel with the top or side of the paper because that could cause unintended patterns to emerge, resulting in lower quality output.

  In addition, the dots for each of the four colors in a CMYK printer cannot all be printed at the same angle because they would overlap incorrectly and the colors would not appear as intended. Instead, the lines of dots are printed on the page at specific angles so your eye blends them appropriately.

  For example, the black layer of an image might be printed so the lines of dots run across the page at a 45 degree angle to the top of the paper, while the cyan layer is printed so that its lines of dots are at a 105 degree angle to the top of the paper.

Tone transfer curves are most often used to offset the effects of dot gain. *Dot gain* is the tendency for printed dots to be larger than intended, often because of the way ink reacts with paper. If the ink soaks into the paper and spreads out, the resulting dot is much larger (and possibly much lighter in color) than the printer intended it to be. Tone transfer curves can increase or reduce the amount of ink used in proportion to the dot gain.

Related concepts

Halftone CMRs carry the information that a printer uses to convert print jobs into a pattern of dots that it can put on paper. Halftone CMRs can be used with both color and grayscale print jobs.

"Tone transfer curve CMRs" on page 16
Tone transfer curve CMRs are used to carry tone transfer curve information for an AFP print job, so you can modify the values of a particular color component and adjust the appearance of some of the colors by increasing or decreasing the amount of ink used to emphasize or reduce the effects of dot gain on the final output.

File size:

Color print jobs can have a file size that is much larger than black and white print jobs. The larger file size can lead to longer processing times and increased traffic on your network.

Because color images must contain data about each layer of color, the file might contain three to four times more information than a grayscale file and over 24 times more information than a black and white file. In addition, ICC profiles are embedded in some file types (such as TIFF images). While ICC profiles by themselves might not be very large, they do increase the size of an image. If you only have one image repeated throughout a print job, and if you construct your job so the image is downloaded only once, the embedded profile is of little concern.

However, if you use a variety of different images, each with an embedded profile, or if you construct your print job so that each image is downloaded every time it appears, the embedded profiles can add unnecessary volume to the print job. If you plan to use a wide variety of color images, create or save them with the same color space so they all use the same ICC profile. You can also install color images in a resource library so they can be reused.

> **Related concepts**
>
> "Tips and best practices" on page 25
> These general guidelines about creating and managing images and other color resources can improve the performance of your AFP color printing system.
>
> "Data objects" on page 21
> Presentation data objects contain a single type of data (such as TIFF, GIF, and JPEG images) and can be used in your print jobs. These data objects can be placed directly in a page or overlay or can be defined as resources and included in pages or overlays. Using a data object as a resource is more efficient when that object appears more than once in a print job; resources are downloaded to the printer just once and referenced as needed.

Grayscale printing concepts

Grayscale printing lets you reproduce color images as high-quality black and white images, using many shades of gray to represent subtle variations in color and light. Printing solutions that produce high-quality grayscale output use color printing concepts with a black and white printer that supports them to achieve that effect.

Moving to grayscale printing might be a first step in a migration to full color printing. You can start to create color print jobs and print them on an existing printer until you are ready to invest in color printers. In addition, you can use a grayscale printer as a backup system for a full color printer.

Some color concepts are much less important in grayscale printing than they are in color printing:
- The gamut of a black and white printer is much smaller than that of a color printer; essentially all the colors in an image must be adjusted.

- The rendering intent you choose has little effect on the appearance of the image because the colors are already being changed significantly.
- Page registration is less important. Because the printer only uses one color, you do not have to line up the color planes to create the correct color.
- Paper characteristics have minimal effect on grayscale output; one output profile is usually adequate for all types of paper.

Other color concepts are more essential to grayscale printing.

Color spaces and ICC profiles

The color space of a black and white printer is much smaller than that of a color printer. Even so, printers that can print grayscale images have output ICC profiles, just like color printers. The ICC profiles for black and white printers map colors from the Profile Connection Space (PCS) to shades of gray. Otherwise, the color conversion process is the same.

The print job should specify the appropriate input profile; if there is no input ICC profile, the printer uses a reasonable default. The printer has its own default ICC profile installed and available; it should be adequate for nearly all print jobs.

Halftones

Grayscale printers apply halftones to print jobs to print them; halftones let the printer produce many shades of gray and high-quality images. Generally, the most important characteristic to consider for halftones in grayscale printing is line screen frequency, expressed in lines per inch (lpi). Each printer supports a set of line screen frequencies natively; when you specify the desired line screen frequency in a print job, the printer chooses the available line screen frequency that best matches it.

Tone transfer curves

Tone transfer curves are used in grayscale printing to adjust the amount of toner that is used at different levels of gray, thus adjusting the appearance of images. You can use the appearance value of a tone transfer curve in grayscale printing to indicate how much the tone transfer curve should adjust the color values. Some sample appearance values could be:
- Dark
- Highlight Midtone
- Standard

  Related concepts

  "InfoPrint 4100" on page 27
  The InfoPrint 4100 family of printers uses a laser, electrophotographic print technology and Advanced Function Presentation (AFP) licensed programs to create high-quality text and graphics output. InfoPrint 4100 printers with the InfoPrint POWER™ architecture and microcode release 15.4 or later support the AFP color management architecture and can be used to print very high-quality grayscale images.

Color management
Images, graphics, and photographs often appear different depending on the monitor or the printer you use. The colors printed by one printer might not match

the colors printed on another printer, even if they came from the same source. If it is important that colors stay consistent from camera, scanner, or monitor to printer, you must use *color management* practices.

It is virtually impossible to accurately reproduce the colors that you see on your monitor on a printed page. Because printers typically have smaller color gamuts than other devices, some of the colors must always be adjusted when images are transformed for printing. With color management, you can control the adjustments so they are less noticeable than they might be if you use the default settings of your image creation software, print server, and printer.

Several factors play significant roles in color management, including ICC profiles, rendering intents, and paper characteristics.

ICC profiles:

The International Color Consortium (ICC) is an organization that has established open standards for color management. These standards help products work together by identifying a device-independent color space and defining the elements of an ICC profile.

The device-independent color space that the ICC defined is called the profile connection space (PCS). The PCS is a color space large enough to include all the color gamuts of different input, display, and output devices. An ICC profile contains methods that map the colors that a device can create or display to the values of the corresponding colors in the PCS. The ICC profile can be used to convert an image from a device-specific color space to the PCS, or from the PCS to a device-specific color space.

Product manufacturers create ICC profiles that you can use with their devices. For example, if you take a photograph with a digital camera, you can associate the photograph with the ICC profile for your camera. Then, when you want to print that photograph, the color management system converts the color data from the camera into the PCS. The printer then uses its ICC profile to convert the photograph data from the PCS into its color space, and prints the photograph as accurately as it can.

For more information about the ICC, ICC profiles, and the PCS, see the ICC Web site:

http://www.color.org

Related concepts

"Color spaces and ICC profiles" on page 4
Presentation devices, such as computer monitors and printers, create colors differently. Because of these differences, colors must be described differently for each device. The different methods of describing colors are called *color spaces*. In addition, each device might have one or more International Color Consortium (ICC) profiles associated with it. ICC profiles are used when an image or another object is converted to the color space of a different device.

Rendering intents:

Rendering intents indicate what you want a printer to do with colors that are outside its gamut.

ICC profiles support these rendering intents:

- **Perceptual**

  If an image includes any colors that are out-of-gamut for the printer, the printer adjusts all the colors in the image, even those that are already in the gamut of the printer, so they are all in-gamut and maintain their color relationships to each other. The result is an image that is visually pleasing, but is not colorimetrically accurate. The perceptual rendering intent is useful for general reproduction of images, particularly photographs.

- **Saturation**

  If a print job includes colors that are out-of-gamut for the printer, the printer replaces the out-of-gamut color with the nearest color in the gamut. It also adjusts the in-gamut colors so that they are more vivid. Saturation is the least used rendering intent, but it is useful for business graphics, such as images that contain charts or diagrams.

- **Media-relative colorimetric**

  If a print job includes colors that are out-of-gamut for the printer, the printer substitutes the nearest in-gamut color; in-gamut colors are not adjusted. Colors printed on papers with different media white points might not match visually. The *media white point* is the color of the paper that the print job is printed on. For example, if you print an image on white paper, on off-white paper, and on blue paper using the media-relative colorimetric rendering intent, the printer uses the same amount of ink or toner for each one and the resulting color is technically the same. However, the images might seem different because your eyes adjust to the color of the background and interpret the color differently. This rendering intent is typically used for vector graphics.

- **Absolute colorimetric**

  All colors are mapped using the same method as the media-relative colorimetric rendering intent, however, all colors are adjusted for the media white point. For example, if you print an image on white paper, on off-white paper, and on blue paper using the media-relative colorimetric rendering intent, the printer adjusts the ink or toner used for each one. The resulting color is technically not same, but the images might look the same because of the way your eyes interpret them in relationship to the color of the paper. The absolute colorimetric rendering intent is typically used for logos.

  Related concepts

  "Gamut and rendering intent" on page 6
  Every device has a *gamut*, a range of colors or shades of colors that it can display or print. Some devices have larger gamuts than others; some devices have gamuts that are similar sizes, but that contain slightly different colors. When an image or a print job is created on a device with a gamut that is different from the printer, you can use a *rendering intent* to tell the printer how to adjust the colors that are outside the gamut of the printer.

Paper characteristics:

The paper that you use has a significant impact on the colors that you see. Even if you use the same ICC profile and the same printer, printing on a different paper can result in a very different color appearance.

Colors can change from paper to paper, particularly if you change from coated to uncoated paper or from sheet-fed to continuous forms paper. The changes can be so noticeable that printer manufacturers generally test and certify papers with certain characteristics for use with their printers. They also create different ICC profiles for their printers based on paper characteristics. Some ICC profiles can be used for groups of papers that have similar characteristics.

When you load paper, you set certain paper characteristics on the printer. When the printer chooses the correct device-specific output profile to use, it takes the characteristics into consideration. The paper characteristics are:

- **Media brightness**

  The percentage of light that the paper reflects
- **Media color**

  The color of the paper
- **Media finish**

  The characteristics of the surface of the paper, such as: glossy, satin, matte
- **Media weight**

  The basic weight of the paper

  Related concepts

  "Color mixing and calibration" on page 6
  Four standard colors (cyan, magenta, yellow, and black) are blended to create all the colors in the gamut of a printer. A printer mixes colors by printing four layers of a page or an image, one in each color. If the printer registration is not set correctly, the images do not line up properly and the colors appear wrong. In addition, the printer must be calibrated to ensure that all its systems are functioning correctly and that it is in a known good state.

AFP color management

You can use various ways to print color data with Advanced Function Presentation (AFP). However, to implement an AFP color printing solution with full color management, you must use color management resources (CMRs). We also recommend that you install all of your color images as data objects and associate CMRs with them.

Color management resources:

Color management resources (CMRs) are the foundation of color management in AFP print systems. They are AFP resources that provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.

CMRs share some characteristics with other AFP resources, but are different in some important ways.

CMRs are similar to other AFP resources in these ways:

- CMRs can be associated with elements of a print job at various levels of the hierarchy.

  Normal hierarchy rules apply, so CMRs specified at lower levels override those at the higher level. For example, a CMR set on a data object overrides a default CMR set on a print file.
- CMRs can be included in a print job in an inline resource group and referenced in a form definition, page environment, object environment, or an include Object (IOB) structured field.

  Note: CMRs can vary in size from several hundred bytes to several megabytes. If your print job uses relatively few CMRs, including them in the print file might not have an impact on the performance of your system. However, if your print job uses more than 10 CMRs, the size of the print job can increase so much that file transfer rates and network traffic are affected.

- CMRs can be stored centrally in a resource library, so you do not need to include them in every print job.

  You can configure all your print servers so they can access the CMRs.
- For the print server to find CMRs, the resource library must be listed in the AFP resource search path on the print server.

CMRs are different from other AFP resources in these ways:
- You cannot copy CMRs into a resource library as you can other AFP resources.

  To store CMRs in a central resource library, you must install them using an application such as AFP Resource Installer.
- CMRs and data objects must be stored in resource libraries that have resource access tables (RATs).

  AFP Resource Installer creates the RAT when CMRs and data objects are installed. We recommend that CMRs and data objects be installed in separate resource libraries and that you store resources that do not require RATs (such as form definitions, page definitions, and overlays) in other resource libraries.
- CMRs installed in a resource library can have names longer than 8 characters, and you can use the names in the print data stream.

  These names are created when you install the CMR using AFP Resource Installer and are UTF-16BE encoded.

  Related concepts

  "Resource library management" on page 23
  If you store CMRs and data objects in central resource libraries, you must understand some of the characteristics of resource libraries to make sure that your resources are available when and where you need them.

  "InfoPrint AFP Resource Installer" on page 28
  InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

Types of CMRs:

Different situations call for different types of CMRs. Some CMRs are created by product manufacturers so you can download and use them, while others are created by your printer or other color management software. If you have the appropriate information, you can also create CMRs yourself.

Some CMRs are used to interpret input files (similar to the function performed by ICC input profiles), while others are used to prepare the final print job output for a specific printer (similar to the function performed by ICC output profiles).

  Related concepts

  "CMR processing modes" on page 17
  CMR processing modes tell the print system how to apply a CMR to the print data it is associated with. You specify a CMR processing mode whenever you specify a CMR, although not all modes are valid for all CMR types.

Color conversion CMRs:

Color conversion CMRs are used to convert colors to and from the ICC Profile Connection Space (PCS), a device-independent color space. You can use them to prepare images for color or grayscale printing.

Color conversion CMRs are an essential element of any AFP color management system because they are ICC profiles encapsulated in AFP structures. The AFP structures add information that your color management system can use, but it leaves the ICC profile unaltered.

You can use color conversion CMRs to produce consistent colors on different devices. In a color system, they help ensure that the colors on your monitor are as close as possible to those that are printed. If you move the print job to a different printer, the colors are adjusted again to match the new printer.

In a grayscale system, color conversion CMRs map colors to appropriate shades of gray to produce high-quality black and white images.

> **Related concepts**
>
> "ICC profiles" on page 10
> The International Color Consortium (ICC) is an organization that has established open standards for color management. These standards help products work together by identifying a device-independent color space and defining the elements of an ICC profile.
>
> Link color conversion CMRs
> Link color conversion CMRs combine the processing information required to convert an image from the color space of an input device to the PCS, and then from the PCS to the color space of the output device. Essentially, link color conversion CMRs replace a pair of color conversion CMRs.

Link color conversion CMRs:

Link color conversion CMRs combine the processing information required to convert an image from the color space of an input device to the PCS, and then from the PCS to the color space of the output device. Essentially, link color conversion CMRs replace a pair of color conversion CMRs.

Converting color images to and from the PCS takes a significant amount of processing resources, in part because the process includes two conversions. Link color conversion CMRs combine the two conversions and make them more efficient. The printer can use the link color conversion CMR to convert colors directly from the color space of the input device to the color space of the output device with the same color fidelity they would have if the printer did both of the conversions. As a result, link color conversion CMRs can improve system performance.

Link color conversion CMRs are unique. You cannot create a link color conversion CMR yourself and you do not include references to link color conversion CMRs in your print jobs. The print system creates and uses link color conversion CMRs automatically.

If you use AFP Resource Installer, link color conversion CMRs are generated automatically when you create or install a color conversion CMR. As a result, your resource library always contains link color conversion CMRs for every combination of color conversion CMRs in audit (input) and instruction (output) processing modes. When link color conversion CMRs are created, AFP Resource Installer marks them as *capturable*, so the printer can save them to be used in other print jobs.

If you do not use AFP Resource Installer, your printer might create link color conversion CMRs when it processes print jobs. For example, if you send a print job

to an InfoPrint 5000, the printer controller looks at the audit color conversion CMRs that are specified. Then, the print controller looks at the link color conversion CMRs that it has available to find one that combines the audit color conversion CMR with the appropriate instruction color conversion CMR. If it does not find one, the print controller creates the link color conversion CMR and uses it. The print controller might save the link color conversion CMRs that it creates, but they can be removed during normal operation; for example, if the printer runs out of storage or is shut down. If the link is removed, the printer must create a new link color conversion the next time it is needed.

When a link color conversion CMR is created, the print system evaluates the conversion algorithms to and from the PCS. The system then combines the algorithms, so a data object can be converted directly from one color space to the other without actually being converted to the PCS.

Related concepts

"InfoPrint AFP Resource Installer" on page 28
InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

"Color conversion CMRs" on page 13
Color conversion CMRs are used to convert colors to and from the ICC Profile Connection Space (PCS), a device-independent color space. You can use them to prepare images for color or grayscale printing.

"InfoPrint 5000" on page 27
The InfoPrint 5000 is a full-color, high-speed, continuous forms Intelligent Printer Data Stream™ (IPDS™) printer that supports AFP color management.

Halftone CMRs:

Halftone CMRs carry the information that a printer uses to convert print jobs into a pattern of dots that it can put on paper. Halftone CMRs can be used with both color and grayscale print jobs.

Halftone CMRs generally specify the line screen frequency, halftone pattern, and rotation of the halftone that they carry. Device-specific halftone CMRs might also include the printer resolution.

A printer that uses AFP color management to print color or grayscale print jobs must use a halftone CMR to convert the print job into a format that the printer can reproduce in ink or toner. If a halftone CMR is not specified in the print job, the printer applies a default halftone CMR.

Note: If you send your color print jobs to an InfoPrint 5000 printer, halftones are applied by the print engine. As a result, the printer ignores halftone CMR requests.

You can associate device-specific halftone CMRs or generic halftone CMRs with print jobs:
- If you know which printer is printing the job, you can associate a device-specific halftone CMR with the print job (or with AFP resources inside the print job). The printer uses the halftone CMR that you specify.
- If you do not know which printer is printing the job, but you want to ensure that it uses a halftone CMR that has certain characteristics, such as a specific line screen frequency, you can associate a generic halftone CMR with the print job.

Because it is difficult to know which halftone CMRs should be used for the current conditions on the current printer, we recommend that you specify halftone CMRs generically and let the printer choose the most appropriate CMR that it has available.

Generic halftone CMRs

You can use generic halftone CMRs when you want to choose one or more characteristics of the halftone CMR for a print job, but you do not know exactly which halftone CMRs are available.

When a print job specifies a generic halftone CMR, the print server looks in the resource library for halftone CMRs that match the printer device type and model. If the print server finds an appropriate CMR, it sends the device-specific halftone CMR to the printer with the print job. If the print server does not find an appropriate halftone CMR, it sends the generic halftone CMR to the printer.

If a print job arrives at the printer requesting a generic halftone CMR, the printer compares the requested characteristics with the available device-specific halftone CMRs. If there is a match, the printer uses the selected device-specific halftone CMR when it processes the print job. If there is no match, the printer uses the halftone CMR whose line screen frequency value is closest to the one requested.

The Color Management Object Content Architecture (CMOCA) has defined a variety of generic halftone CMRs, which cover the most common line screen frequencies and halftone types. A print server that supports CMOCA can interpret generic halftone CMRs if it has device-specific halftone CMRs available to it in a resource library. If you use AFP Resource Installer, the generic halftone CMRs are installed in every resource library that you create and populate using AFP Resource Installer.

Printers that support CMOCA should be able to interpret those generic CMRs and associate them with device-specific halftone CMRs.

> **Related concepts**
>
> "Halftones and tone transfer curves" on page 7
> Halftones are used to convert images (such as photographs, drawings, logos, or charts) from the continuous tones that you see on a monitor into a pattern of dots that a printer can put on paper. Tone transfer curves are used to modify the values of a particular color component and thus adjust the look and feel of some of the colors. For example, you can apply a tone transfer curve to emphasize the brightest parts of an image.
>
> "InfoPrint AFP Resource Installer" on page 28
> InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

Tone transfer curve CMRs:

Tone transfer curve CMRs are used to carry tone transfer curve information for an AFP print job, so you can modify the values of a particular color component and adjust the appearance of some of the colors by increasing or decreasing the amount of ink used to emphasize or reduce the effects of dot gain on the final output.

Like halftone CMRs, tone transfer curve CMRs are associated with print jobs specifically or generically. If they are specified generically, the print server looks in the resource library for tone transfer curve CMRs that match the printer device type and model. If the print server finds an appropriate CMR, it sends the device-specific tone transfer curve CMR to the printer with the print job. If the print server does not find an appropriate tone transfer curve CMR, it sends the generic tone transfer curve CMR to the printer.

If a print job arrives at the printer requesting a generic tone transfer curve CMR, the printer compares the requested characteristics with the device-specific tone transfer curve CMRs that it has available. If there is a match, the print server or printer uses the selected device-specific tone transfer curve CMR when it processes the print job. If the printer cannot find a good match for the generic tone transfer curve CMR, it ignores the request and uses its default tone transfer curve CMR.

The Color Management Object Content Architecture (CMOCA) defines several generic tone transfer curve CMRs with different appearance values. The appearance values let you specify how to print your job with regard to the reported dot gain of the printer.

Generic tone transfer curves can be used to select these appearance values:
- **Dark**

  The output is adjusted to show a dot gain of 33% for a 50% dot.
- **Accutone**

  The output is adjusted to show a dot gain of 22% for a 50% dot.
- **Highlight Midtone**

  The output is adjusted to show a dot gain of 14% for a 50% dot. This appearance might be used to emphasize the brightest part of an image.
- **Standard**

  The output is adjusted just enough to account for the effects of dot gain, effectively counteracting the dot gain.

If you use AFP Resource Installer, it installs the generic tone transfer curve CMRs on your system automatically.

> **Related concepts**
>
> "Halftones and tone transfer curves" on page 7
> Halftones are used to convert images (such as photographs, drawings, logos, or charts) from the continuous tones that you see on a monitor into a pattern of dots that a printer can put on paper. Tone transfer curves are used to modify the values of a particular color component and thus adjust the look and feel of some of the colors. For example, you can apply a tone transfer curve to emphasize the brightest parts of an image.
> "InfoPrint AFP Resource Installer" on page 28
> InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

CMR processing modes:

CMR processing modes tell the print system how to apply a CMR to the print data it is associated with. You specify a CMR processing mode whenever you specify a CMR, although not all modes are valid for all CMR types.

Related concepts

"Types of CMRs" on page 13
Different situations call for different types of CMRs. Some CMRs are created by product manufacturers so you can download and use them, while others are created by your printer or other color management software. If you have the appropriate information, you can also create CMRs yourself.

Audit processing mode:

CMRs with the audit processing mode refer to processing that has already been applied to a resource. In most cases, audit CMRs describe input data and are similar to ICC input profiles.

The audit processing mode is used primarily with color conversion CMRs. In audit processing mode, those CMRs indicate which ICC profile must be applied to convert the data into the Profile Connection Space (PCS).

For example, to take a photograph with a digital camera and then include the photograph in an AFP print job, you can use AFP Resource Installer to:

1. Create a color conversion CMR using the ICC profile of your camera.
2. Install your photograph in a resource library.
3. Associate the color conversion CMR with the data object, indicating the audit processing mode.

Then, you create a print job that includes the data object. When processing the print job, the system uses the color conversion CMR to convert the colors in the image into the PCS. The colors can then be converted into the color space of the printer that is printing it.

Related concepts

"Data objects" on page 21
Presentation data objects contain a single type of data (such as TIFF, GIF, and JPEG images) and can be used in your print jobs. These data objects can be placed directly in a page or overlay or can be defined as resources and included in pages or overlays. Using a data object as a resource is more efficient when that object appears more than once in a print job; resources are downloaded to the printer just once and referenced as needed.

"InfoPrint AFP Resource Installer" on page 28
InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

"Color conversion CMRs" on page 13
Color conversion CMRs are used to convert colors to and from the ICC Profile Connection Space (PCS), a device-independent color space. You can use them to prepare images for color or grayscale printing.

Instruction processing mode:

CMRs with the instruction processing mode refer to processing that is done to prepare the resource for a specific printer using a certain paper or another device. Generally, instruction CMRs refer to output data and are similar to ICC output profiles.

The instruction processing mode is used with color conversion, tone transfer curve, and halftone CMRs. In instruction processing mode, these CMRs indicate how the system must convert a resource so it prints correctly on the target printer. The manufacturer of your printer should provide ICC profiles or a variety of CMRs that you can use. Those ICC profiles and CMRs might be installed in the printer controller, included with the printer on a CD, or available for download from the manufacturer's Web site.

If you send a color AFP print job to a printer that supports AFP Color Management, color conversion and tone transfer curve CMRs in instruction processing mode can be associated with the job. When the printer processes the print job, it applies the CMRs in this order:

1. Color conversion CMRs in audit processing mode, to convert the resources into the ICC Profile Connection Space (PCS)

2. Color conversion and tone transfer curve CMRs in instruction processing mode, to convert the resources into the color space of the printer

3. Halftone CMR in instruction processing mode, to convert the job pages from their digital format into the pattern of dots that the printer can produce

In some cases, CMRs that are usually used as instruction CMRs can be used as audit CMRs. For example, if you send a very large print job to a high-speed printer, the images in the print job are converted into the color space of that printer using a color conversion CMR with the instruction processing mode. However, if you have to reprint part of the job on a different printer, the system must convert the print job into the color space of the second printer. In that case, the color conversion CMR of the first printer is used in the audit processing mode to move the images back into the PCS. Then, the system uses a color conversion CMR of the second printer in instruction mode to convert the images into its color space.

Related concepts

"Color conversion CMRs" on page 13
Color conversion CMRs are used to convert colors to and from the ICC Profile Connection Space (PCS), a device-independent color space. You can use them to prepare images for color or grayscale printing.

"ICC profiles" on page 10
The International Color Consortium (ICC) is an organization that has established open standards for color management. These standards help products work together by identifying a device-independent color space and defining the elements of an ICC profile.

"Halftone CMRs" on page 15
Halftone CMRs carry the information that a printer uses to convert print jobs into a pattern of dots that it can put on paper. Halftone CMRs can be used with both color and grayscale print jobs.

Link processing mode:

CMRs with the link processing mode are used to replace a selected pair of color conversion CMRs. Only link color conversion CMRs can use the link processsing mode.

You can install both audit and instruction color conversion CMRs in your resource library using AFP Resource Installer or a similar software product. AFP Resource Installer then creates link color conversion CMRs for every combination of audit and instruction color conversion CMR.

When a print job calls for a given combination, the print server checks the resource library for a link color conversion CMR for that combination. If the print server finds an appropriate link color conversion CMR, it sends the CMR to the printer with the print job. Your printer can use the link CMRs whenever a print job indicates that it uses a particular combination of audit and instruction CMRs.

If you do not use AFP Resource Installer or a similar program to install your resources, your color printer must either create link CMRs while it processes your print jobs or convert the colors in your jobs twice, first from the original color space to the PCS and then from the PCS to the color space of the printer.

An InfoPrint 5000 printer creates link color conversion CMRs so it only has to do one conversion, and saves them so they can be used with other print jobs. The InfoPrint 5000 might save the link color conversion CMRs, but they can be removed during normal operation; for example, if the printer runs out of storage or is shut down.

Related concepts

"Link color conversion CMRs" on page 14
Link color conversion CMRs combine the processing information required to convert an image from the color space of an input device to the PCS, and then from the PCS to the color space of the output device. Essentially, link color conversion CMRs replace a pair of color conversion CMRs.

"InfoPrint AFP Resource Installer" on page 28
InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

"InfoPrint 5000" on page 27
The InfoPrint 5000 is a full-color, high-speed, continuous forms Intelligent Printer Data Stream (IPDS) printer that supports AFP color management.

CMR creation and installation:

Device manufacturers and groups that support AFP color standards create CMRs that you can use in your color printing systems. You can also create CMRs yourself, based on your needs.

The AFP Consortium, the group that defined the AFP Color Management Object Content Architecture (CMOCA), identified a set of color conversion CMRs that are most often used in audit processing mode. The set includes color conversion CMRs for common color spaces, such as:

- Adobe RGB (1998)
- sRGB
- SMPTE-C RGB
- SWOP CMYK

The standard CMRs are included with AFP Resource Installer, although they are not installed by default. You can install the standard CMRs that you plan to use. In addition, AFP Resource Installer automatically installs all the generic halftone and tone transfer curve CMRs in any resource library you create.

You can download device-specific CMRs for InfoPrint printers such as the InfoPrint 5000 from the InfoPrint Solutions Company Web site:

http://www.infoprint.com

If you need more CMRs, you can create them using wizards provided in AFP Resource Installer. See the online help for details about the wizard.

If you use AFP Resource Installer to create a CMR, the software automatically installs the CMR in a resource library. You can also use AFP Resource Installer to install CMRs that you get from your printer manufacturer.

Related concepts

"InfoPrint AFP Resource Installer" on page 28
InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

Data objects:

Presentation data objects contain a single type of data (such as TIFF, GIF, and JPEG images) and can be used in your print jobs. These data objects can be placed directly in a page or overlay or can be defined as resources and included in pages or overlays. Using a data object as a resource is more efficient when that object appears more than once in a print job; resources are downloaded to the printer just once and referenced as needed.

Data objects can either be included inline with a print job or installed in a resource library using software such as AFP Resource Installer. If you install your data objects in a resource library, you can associate color conversion CMRs with them.

Related concepts

"Resource library management" on page 23
If you store CMRs and data objects in central resource libraries, you must understand some of the characteristics of resource libraries to make sure that your resources are available when and where you need them.

"InfoPrint AFP Resource Installer" on page 28
InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

Types of data objects:

Image data objects can be stored in a number of different formats, including EPS, GIF, IOCA, JFIF (JPEG), PDF, and TIFF. These image types are device-independent so they can be used by different systems and still be interpreted consistently.

- Encapsulated PostScript (EPS)

  EPS is a PostScript graphics file format that follows conventions that Adobe Systems defined. EPS files support embedded ICC profiles.

- Graphics Interchange Format (GIF)

  GIF files are bitmap image files that are limited to a palette of 256 RGB colors. Because of the limited color range that it can contain, GIF is not a good format for reproducing photographs, but it is generally adequate for logos or charts. GIF images are widely used on the Internet because they are usually smaller than other image formats. GIF files use the file extension .gif.

- Image Object Content Architecture (IOCA)

  IOCA is an architecture that provides a consistent way to represent images, including conventions and directions for processing and exchanging image

information. The architecture defines image information independently of all data objects and environments in which it might exist and uses self-identifying terms; each field contains a description of itself along with its contents.

- JPEG File Interchange Format (JFIF)

  JFIF files are bitmap image files that are compressed using Joint Photographic Experts Group (JPEG) compression. As a result, JFIF files are most commonly referred to as JPEG files. JPEG files most commonly use the file extension .jpg, but can also use .jpeg, .jpe, .jfif, and .jif.

  JPEG compression deletes information that it considers unnecessary from images when it converts them. JPEG files vary from having small amounts of compression to having large amounts of compression. The more an image is compressed, the more information is lost. If the image is compressed only once, there usually is no noticeable effect on the image. However, if the image is compressed and decompressed repeatedly, the effects of deleting information become more noticeable.

  JPEG compression is commonly used for photographs, especially photographs that are transmitted or displayed on Web pages. The compression makes the files small enough to transmit across a network efficiently, but leaves enough information that the image is still visually appealing.

- Portable Document Format (PDF)

  PDF is a standard file format that Adobe Systems developed.

  PDF files can be used and stored on various operating systems and contain all the required image and font data. Design attributes in a PDF are kept in a single compressed package.

  Note: PDF files can contain multiple pages. However, only single-page PDF files can be used as data objects in AFP print jobs.

- Tagged Image File Format (TIFF)

  TIFF files are bitmap image files that include headers to provide more information about the image. TIFF files use the file extensions .tif or .tiff.

  TIFF files support embedded ICC profiles. If an ICC profile is embedded in a file, the characteristics of the input color space are known whenever the file is used; however, the profiles increase the file size. When you save a file in the TIFF format, you can use various compression algorithms.

Not all printers support all types of data objects.

The embedded ICC profiles in EPS, JPEG, and TIFF files contain the information that a printer uses to convert colors in the image from an input color space into the Profile Connection Space (PCS). The input color space might be an industry-standard space or it can describe the color reproduction capabilities of a device, such as a scanner, digital camera, monitor, or printer.

Related concepts

"ICC profiles" on page 10
The International Color Consortium (ICC) is an organization that has established open standards for color management. These standards help products work together by identifying a device-independent color space and defining the elements of an ICC profile.

Data object creation and installation:

You can use a wide variety of software applications to create or manipulate images to include in print jobs. If you want to store them in central resource repositories, you can use AFP Resource Installer to install them.

Data object creation

Most types of data objects are images of some kind. They might be photographs taken using a digital camera, charts or diagrams generated by a software tool, or digital drawings created using graphics software. Regardless of how images are created, you generally need to manipulate them to include them in print jobs.

The changes include:
- Convert the image into a file type that is appropriate for printing. For example, the file types that many graphics applications (such as Adobe Illustrator, CorelDRAW, and Corel Paint Shop Pro) use to store images while you work on them are not appropriate for printing. To use images that you create using any of those programs, you can save or export those files as a different file type, such as EPS, JPEG, or TIFF.
- Make sure that your image files are associated with an appropriate color space or input profile. Follow the instructions provided with your graphics software to set up color management, including installing and using ICC profiles for digital cameras and monitors, and customizing color management settings. The instructions should also explain how to change the color profile that an image uses and how to save an image with an embedded profile.
- Follow the tips and best practices provided in the other sections below for creating images and managing them as data object resources.

Data object installation

You can use AFP Resource Installer to install your images in a resource library. AFP Resource Installer includes wizards that can guide you through the process of installing an image as a data object. When you install an EPS, JPEG, or TIFF image with an embedded ICC profile using AFP Resource Installer, you can choose how you want to handle the profile:
- Leave the profile in the file without creating a CMR.
- Leave the profile in the file, but also copy the profile and create a CMR from the copy. Associate the new CMR with the data object.
- Remove the profile from the file (to reduce the file size) and make the profile into a CMR. Associate the new CMR with the data object.

  Related concepts

  "Tips and best practices" on page 25
  These general guidelines about creating and managing images and other color resources can improve the performance of your AFP color printing system.

  "InfoPrint AFP Resource Installer" on page 28
  InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

Resource library management:

If you store CMRs and data objects in central resource libraries, you must understand some of the characteristics of resource libraries to make sure that your resources are available when and where you need them.

Resource libraries that AFP Resource Installer creates use a *resource access table* (RAT) as the index of the resource library. The index is stored as a file in the library that it refers to. You must store CMRs in resource libraries that use a RAT. We recommend that you store data objects in resource libraries that use a RAT as well.

When you use AFP Resource Installer to create a resource library, it creates a RAT and stores it in the library. When you install a CMR or data object, AFP Resource Installer updates the RAT with information about the resource. When a print server looks in a resource library for a resource, it first looks in the RAT to see if the resource is listed.

The print server relies on the RAT; if it is incorrect, the print server cannot find resources in the resource library. As a result, you must always use AFP Resource Installer to manage your resource libraries, including to:

- Add CMRs and data objects to a resource library.

  Do not copy CMRs or data objects directly into the resource libraries that AFP Resource Installer uses. If you copy CMRs or data objects into these resource libraries, the RAT is not updated so the print server cannot use it to find the CMRs or data objects.

- Modify properties of data objects and CMRs listed in the RAT.

  Do not directly edit the RAT or any of the files in a resource library. Do not replace an existing version of a CMR or data object with a new version by copying the new version directly into the resource library; use AFP Resource Installer to update the resource.

- Install CMRs or data objects in a different resource library or replicate a resource library in a different location.

  Do not copy CMRs or data objects from a resource library and store them in another location.

For more information about completing these tasks, see the AFP Resource Installer online help.

Related concepts

"Color management resources" on page 12
Color management resources (CMRs) are the foundation of color management in AFP print systems. They are AFP resources that provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.

"Data objects" on page 21
Presentation data objects contain a single type of data (such as TIFF, GIF, and JPEG images) and can be used in your print jobs. These data objects can be placed directly in a page or overlay or can be defined as resources and included in pages or overlays. Using a data object as a resource is more efficient when that object appears more than once in a print job; resources are downloaded to the printer just once and referenced as needed.

"InfoPrint Manager" on page 30
InfoPrint Manager is a flexible and scalable print management solution for AIX® or Windows that provides many choices in expanding and managing your print environment. InfoPrint Manager can process print jobs that contain references to color management resources and interact with centralized resource libraries.

"InfoPrint ProcessDirector" on page 31
InfoPrint ProcessDirector is a database-driven print workflow system that lets you manage all aspects of your printing process. The server runs on an AIX or Linux® system and is accessed using a Web browser-based interface. InfoPrint ProcessDirector can receive and process AFP print jobs that include AFP color management objects.

"InfoPrint AFP Resource Installer" on page 28
InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

Tips and best practices:

These general guidelines about creating and managing images and other color resources can improve the performance of your AFP color printing system.

Related concepts

"Data object creation and installation" on page 22
You can use a wide variety of software applications to create or manipulate images to include in print jobs. If you want to store them in central resource repositories, you can use AFP Resource Installer to install them.

Tips for images:

To optimize the performance of your AFP color printing system, we recommend that you follow some guidelines for creating and including images in print jobs.

When you want to use color images in your print jobs:
- Get the original electronic versions of images instead of scanning existing documents.

  Almost unnoticeable specks of color in the background of images that have been scanned can greatly increase the size of the image. If you must scan an image, use an image editing tool to clean up the background as much as possible.
- Save all images in the same standard color space so you only need one input profile for all of them.

  Adobe RGB (1998) is the recommended color space for images that are to be printed.
- Flatten multi-layer images (such as the ones you can create in graphics tools like Adobe Illustrator and Corel Paint Shop Pro) before including them in print jobs.

  Unflattened images are extremely large and more difficult to work with. Save a copy of the original image for future editing, but flatten the version that you include in your print job.

Tips for resources:

To optimize the performance of your AFP color printing system, we recommend that you follow some guidelines for managing color resources.

You can use AFP Resource Installer to:
- Install all the CMRs for your printer in a resource library.
- Install the data objects that you use frequently in a resource library.

- Mark the CMRs and data objects that are reused regularly as non-private, capturable resources so they can be saved on the printer and used for other print jobs without being downloaded every time.

  Note: This option is not advisable for secure resources, such as signature files.
- Install CMRs and data objects in resource libraries that the print server can access, so they only need to be stored in one place and can be used by all print servers.
- Associate audit color conversion CMRs with data objects that require color management, so the embedded profiles can be removed from the image files.

InfoPrint AFP color and grayscale products

InfoPrint Solutions Company provides a variety of products that support AFP color and grayscale printing. They can be used in various combinations to create color workflow solutions.
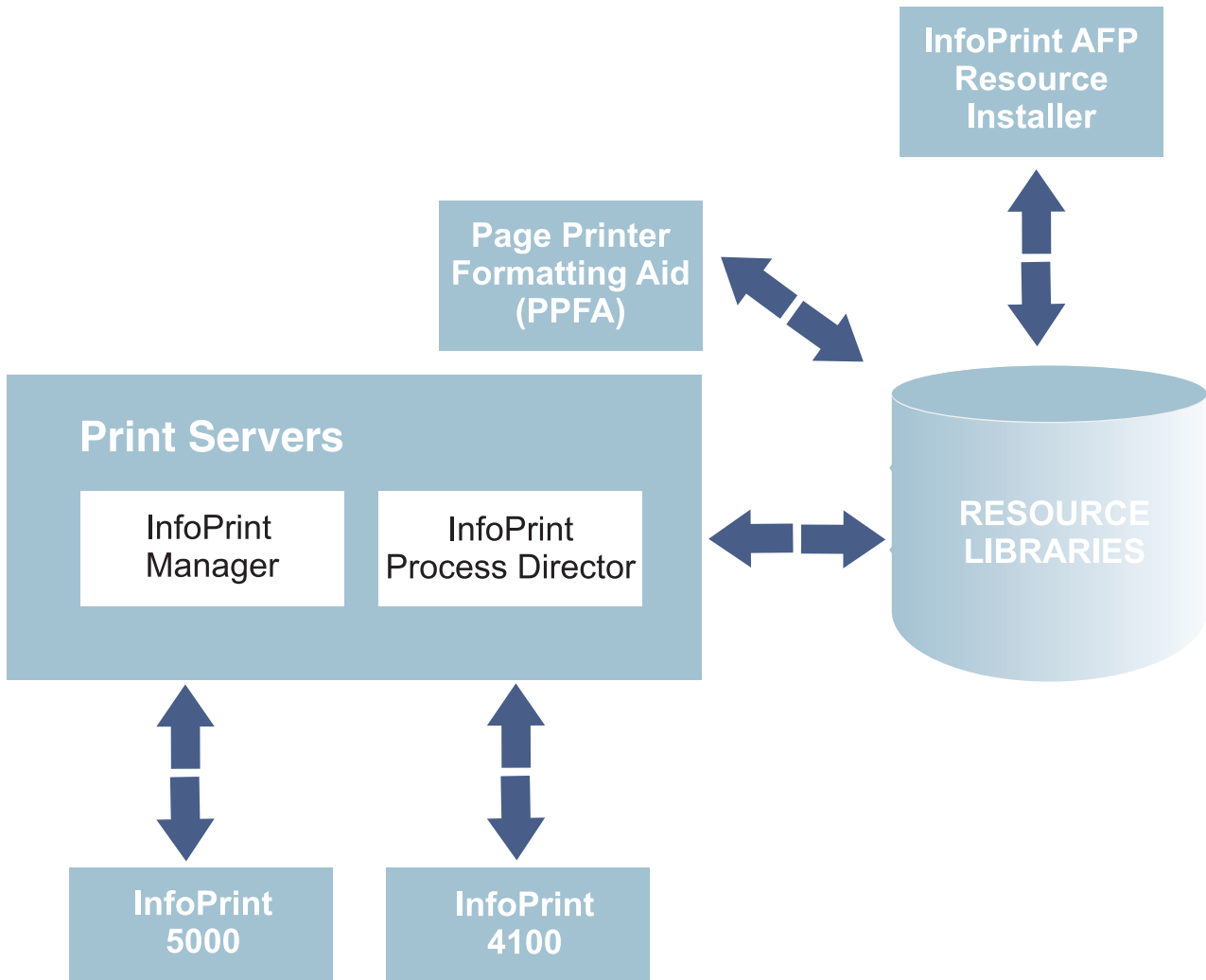
Figure 1. The InfoPrint products that support AFP color management

Printers:

Some InfoPrint Solutions Company printers support color or grayscale printing with full AFP color management, while others support AFP color printing without color management.

InfoPrint 5000:

The InfoPrint 5000 is a full-color, high-speed, continuous forms Intelligent Printer Data Stream (IPDS) printer that supports AFP color management.

The InfoPrint 5000 uses piezo-electric drop-on-demand inkjet technology with water-based pigment inks that are designed to resist fading and smearing.

The InfoPrint 5000 receives AFP print jobs from InfoPrint print servers. When used as part of a full AFP color management system, the InfoPrint 5000 can receive color conversion, link, and tone transfer curve CMRs and apply them to print jobs. Because the printer engine applies its own halftones, it does not support halftone CMRs.

The InfoPrint 5000 can capture resources and store them in a repository in its controller so they can be reused in other print jobs. The printer only captures resources that are marked non-private and capturable using an application such as AFP Resource Installer.

You can also submit PostScript and Portable Document Format (PDF) jobs to hot folders on the InfoPrint 5000, but those print jobs are not processed using AFP color management.

> **Related concepts**
>
> "Color management resources" on page 12
> *Color management resources* (CMRs) are the foundation of color management in AFP print systems. They are AFP resources that provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.
>
> "Data objects" on page 21
> Presentation data objects contain a single type of data (such as TIFF, GIF, and JPEG images) and can be used in your print jobs. These data objects can be placed directly in a page or overlay or can be defined as resources and included in pages or overlays. Using a data object as a resource is more efficient when that object appears more than once in a print job; resources are downloaded to the printer just once and referenced as needed.

InfoPrint 4100:

The InfoPrint 4100 family of printers uses a laser, electrophotographic print technology and Advanced Function Presentation (AFP) licensed programs to create high-quality text and graphics output. InfoPrint 4100 printers with the InfoPrint POWER architecture and microcode release 15.4 or later support the AFP color management architecture and can be used to print very high-quality grayscale images.

The base level of AFP color management support in InfoPrint 4100 printers with the InfoPrint POWER architecture and microcode release 15.4 or later lets you apply color management to grayscale text, graphics (GOCA), bi-level images (IOCA FS10), and bar codes. To use color management functions with other types of objects, the AFP Color Emulation feature is required.

The AFP Color Emulation feature lets you print color objects in grayscale. When the feature is installed, AFP Color Management lets you natively print GIF, IOCA FS11, IOCA FS45, JPEG, and TIFF images in high-quality grayscale.

Note: Single-page PDF and EPS data objects are not supported on the InfoPrint 4100.

InfoPrint 4100 printers support these types of CMRs:
- Color conversion
- Link color conversion
- Tone transfer curve
- Halftone

For even better images on InfoPrint 4100 Models MS1, MD1, and MD2, you can also install the Image Enhancement feature. Benefits of this feature include:
- Enhanced fusing technology to minimize toner distortion
- Optimized developer unit for high coverage and high-density applications
- Improved halftones tailored to new hardware and toner technology

   Related concepts

   "Color management resources" on page 12
   Color management resources (CMRs) are the foundation of color management in AFP print systems. They are AFP resources that provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.

   "Data objects" on page 21
   Presentation data objects contain a single type of data (such as TIFF, GIF, and JPEG images) and can be used in your print jobs. These data objects can be placed directly in a page or overlay or can be defined as resources and included in pages or overlays. Using a data object as a resource is more efficient when that object appears more than once in a print job; resources are downloaded to the printer just once and referenced as needed.

   "Grayscale printing concepts" on page 8
   Grayscale printing lets you reproduce color images as high-quality black and white images, using many shades of gray to represent subtle variations in color and light. Printing solutions that produce high-quality grayscale output use color printing concepts with a black and white printer that supports them to achieve that effect.

InfoPrint 1xxx series:

The InfoPrint 1xxx series of workgroup printers and multifunction devices includes a wide range of cut-sheet color and monochrome devices, although they do not support AFP Color Management.

For general office purposes, the InfoPrint 1000 series lets you manage color output efficiently and cost-effectively through advanced technologies such as access controls, confidential print, and data stream encryption. Through the 1000 family of printers, InfoPrint Solutions Company offers output strategies and InfoPrint color printers that address diverse requirements for high quality, security, and cost.

InfoPrint AFP Resource Installer:

InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

AFP Resource Installer is a Java™ application that you install on a Windows workstation. You can use it to install and work with fonts in addition to CMRs and data objects.

You can use AFP Resource Installer to:
- Create CMRs from existing data, including ICC profiles.

  You can use a wizard to guide you through the process.
- Install CMRs, fonts, and data objects in resource libraries on the local system or on any system that you can access using FTP.
- Associate CMRs with data objects, so data objects can be reproduced accurately on different printers.

  In some cases, you can reduce the file size of your images by removing the embedded color profile from the file and using an associated CMR.
- Mark resources as capturable.

  Capturable resources can be captured and saved in the printer for use with other print jobs, which can help improve system performance. The print server queries the printer before it sends any resources; if the printer already has the resource, the print server does not have to send it.
- Mark resources as private.

  Private resources cannot be captured in the printer and must be downloaded with every print job that uses them. For example, you can mark signature files used for company checks as private for security reasons.

When you use AFP Resource Installer to install a color conversion CMR, the software automatically creates link color conversion CMRs between the new color conversion CMR and the existing color conversion CMRs. When a print file references the new CMR, the print server automatically downloads the link CMRs that match the target device type and model and sends them to the printer with the print job. If one of those link CMRs is appropriate, the printer can use it instead of having to spend extra time creating a link CMR.

To let a print server use resources installed by AFP Resource Installer, you must add the path to the resource libraries to the AFP resource path in the server.

Related concepts

"Color management resources" on page 12
Color management resources (CMRs) are the foundation of color management in AFP print systems. They are AFP resources that provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.

"Resource library management" on page 23
If you store CMRs and data objects in central resource libraries, you must understand some of the characteristics of resource libraries to make sure that your resources are available when and where you need them.

"Data objects" on page 21
Presentation data objects contain a single type of data (such as TIFF, GIF, and JPEG images) and can be used in your print jobs. These data objects can be placed directly in a page or overlay or can be defined as resources and

included in pages or overlays. Using a data object as a resource is more efficient when that object appears more than once in a print job; resources are downloaded to the printer just once and referenced as needed.

Print servers:

InfoPrint print servers receive print jobs from various sources and prepare them to be sent to a printer. After print jobs have been prepared, the print server interacts with the printer to make sure that all the required resources are available, then sends the print job data to be printed.

Several different print servers are available. Although they provide much of the same function, they are appropriate for different environments.

InfoPrint Manager:

InfoPrint Manager is a flexible and scalable print management solution for AIX or Windows that provides many choices in expanding and managing your print environment. InfoPrint Manager can process print jobs that contain references to color management resources and interact with centralized resource libraries.

When InfoPrint Manager receives AFP or line data print jobs, it processes CMRs and data objects similar to the way it processes other AFP resources. You can add the resource libraries that you create using AFP Resource Installer to the Location of presentation object containers property (also called the resource-context-presentation-object-container attribute) of your actual destinations. Then, InfoPrint Manager can search those resource libraries to find data objects and CMRs when print jobs request them.

> **Related concepts**
> "Resource library management" on page 23
> If you store CMRs and data objects in central resource libraries, you must understand some of the characteristics of resource libraries to make sure that your resources are available when and where you need them.

Enabling capture for CMRs:

If the jobs that run through your system use the same CMRs, you might want to enable your actual destination to capture inline CMRs.

These inline CMRs must have an object identified (OID) so InfoPrint Manager can capture them.

From the **InfoPrint Manager Administration GUI**:
1. Click on the actual destination and select **Printer → Properties**.
2. From the actual destination's **Printer Properties** notebook, click the **Tuning** tab.
3. Find the **Capture inline CMR resources** radio button. If you can't see the **Capture inline CMR resources** radio button, click **Show more**.
4. Scroll to the bottom of the screen and click the **Yes** radio button for the **Capture inline CMR resources** setting.

Page Printer Formatting Aid (PPFA):

PPFA is a feature of InfoPrint Manager that lets you create form definitions and page definitions for use with your AFP print jobs. You can use PPFA to associate CMRs with form definitions and page definitions for your color print jobs.

The form definitions and page definitions that you create using PPFA can be used in print jobs that are sent to InfoPrint Manager and InfoPrint ProcessDirector.

InfoPrint ProcessDirector:

InfoPrint ProcessDirector is a database-driven print workflow system that lets you manage all aspects of your printing process. The server runs on an AIX or Linux system and is accessed using a Web browser-based interface. InfoPrint ProcessDirector can receive and process AFP print jobs that include AFP color management objects.

InfoPrint ProcessDirector can also receive line data print jobs that refer to CMRs and data objects and convert them into AFP using a step based on the **ConvertLineDataJobIntoAFP** step template.

InfoPrint ProcessDirector processes CMRs and data objects similar to the way it processes other AFP resources. You can add the resource libraries that you create using AFP Resource Installer to the AFP resource path property on a print job or in the job defaults for your job types. Then, InfoPrint ProcessDirector can search those resource libraries to find data objects and CMRs when print jobs request them.

> **Related concepts**
> "Resource library management" on page 23
> If you store CMRs and data objects in central resource libraries, you must understand some of the characteristics of resource libraries to make sure that your resources are available when and where you need them.

AFP color solution scenarios

AFP color solutions from the InfoPrint Solutions Company can be assembled in a variety of configurations based on your environment and needs.

Printing high-quality grayscale output on an InfoPrint 4100 printer:

An insurance company wants to migrate to AFP color printing slowly, so they start the process by using AFP color management to print high-quality grayscale output on their InfoPrint 4100 printers.

The insurance company runs an in-house print shop that has four duplex InfoPrint 4100 lines. They use a document composition tool to create AFP print jobs and submit the jobs to InfoPrint Manager for Windows, which they use to balance the printing loads and keep all the printers running as much as possible.

They have decided that they want to add images to some of their output. To start, they want to add photographs of their insurance agents to the letterhead on letters to their clients. They are not ready to move into full color printing, so they want to print black and white images using their existing printers. Unfortunately, they have not been satisfied with the appearance of the images; they are too black and one-dimensional, so they look unprofessional.

The solution

The InfoPrint Solutions Company team suggests these changes to improve image quality:
- Upgrade the printer to use a controller with the InfoPrint POWER architecture with microcode release 15.4 or later.

This update adds support for the AFP color management, which includes high-quality grayscale printing using halftones and tone transfer curves.

- Purchase and install the AFP Color Emulation feature for the printer.
- Use AFP Resource Installer to manage the images, including associating them with the correct halftones and tone transfer curves to create the best quality output.

☐ Existing system objects

☐ New system objects

Print Jobs

The company installs the AFP Resource Installer, then uses it to install color images in a resource library. They upgrade some of their print jobs to refer to those images using the names given to them when they installed.

InfoPrint AFP Resource Installer

Print Jobs are submitted to an InfoPrint Manager logical destination that sends jobs to the printer with the upgraded features. InfoPrint Manager processes the jobs, getting the images and CMRs from the resource library, then sending them to the right printer.

InfoPrint Manager for AIX

RESOURCE LIBRARY

InfoPrint 4100 Line 4

with:
- Microcode Release 15.4
- AFP Color Emulation Feature

InfoPrint 4100 Line 1

InfoPrint 4100 Line 2
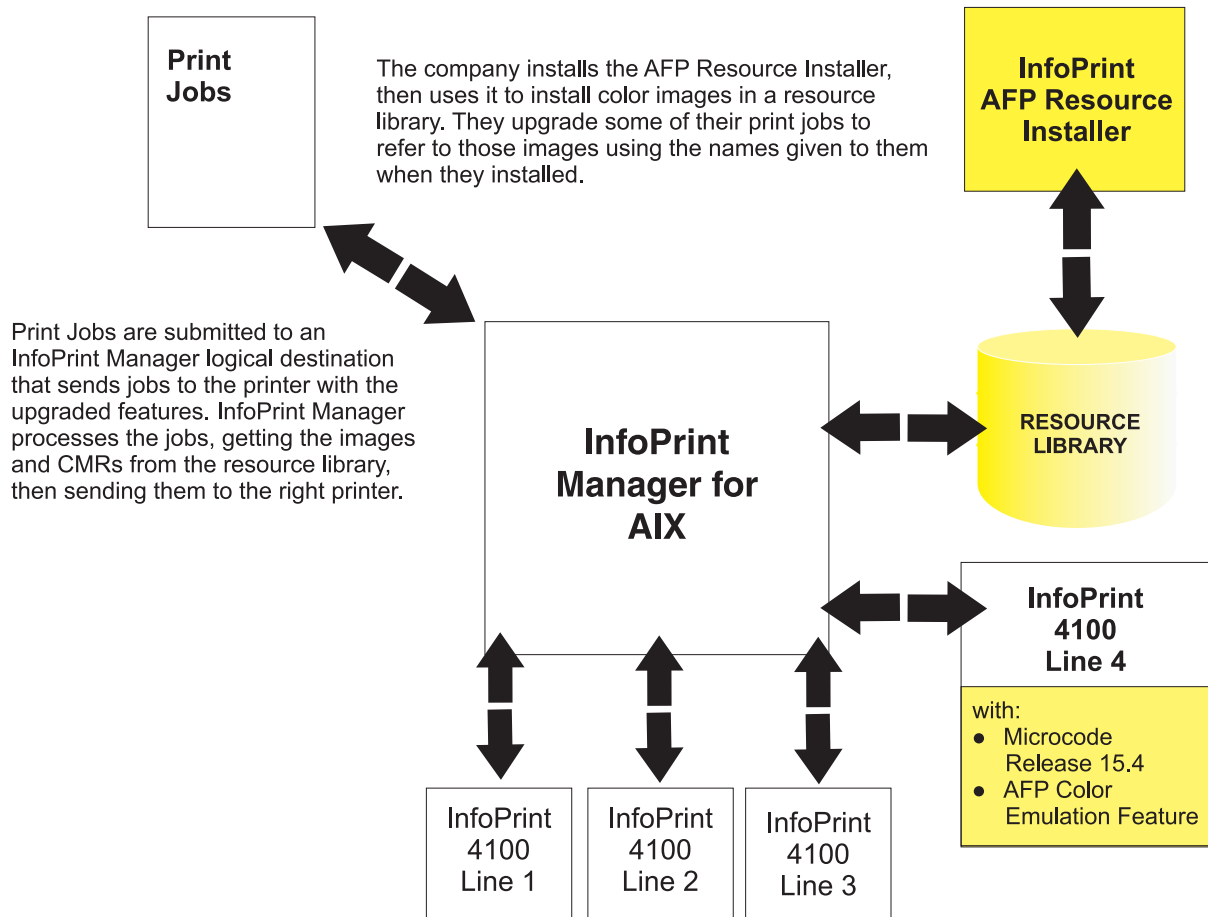
InfoPrint 4100 Line 3

Figure 2. Solution diagram for adding AFP Resource Installer and a resource library, and updating one InfoPrint 4100 printer line to use microcode release 15.4 and the AFP Color Emulation Feature.

Implementation

To implement the solution, the print shop works with their InfoPrint Solutions Company representatives to upgrade one of their print lines to try the new function. They:

- Upgrade the print controller to the microcode release 15.4 or later.
- Install the AFP Color Emulation feature on the printer controller.
- Install AFP Resource Installer.
- Use AFP Resource Installer to:

- Create and install the color conversion CMRs for the InfoPrint 4100 printer and for the digital camera used to take the photographs.
- Choose the generic halftone and tone transfer curve CMRs to use with the InfoPrint 4100 based on the line screen frequency and appearance values that you want to use.
- Install the photographs of the insurance agents in a resource library, then associate them with the appropriate CMRs.
- Update the InfoPrint Manager destinations so they send the print jobs that contain photographs to the printer line that has the AFP Color Emulation feature installed.
- Create print jobs that call the images using the names that they were given when they were installed.

  Related concepts

  "InfoPrint 4100" on page 27
  The InfoPrint 4100 family of printers uses a laser, electrophotographic print technology and Advanced Function Presentation (AFP) licensed programs to create high-quality text and graphics output. InfoPrint 4100 printers with the InfoPrint POWER architecture and microcode release 15.4 or later support the AFP color management architecture and can be used to print very high-quality grayscale images.

  "Grayscale printing concepts" on page 8
  Grayscale printing lets you reproduce color images as high-quality black and white images, using many shades of gray to represent subtle variations in color and light. Printing solutions that produce high-quality grayscale output use color printing concepts with a black and white printer that supports them to achieve that effect.

  "InfoPrint AFP Resource Installer" on page 28
  InfoPrint AFP Resource Installer is a key element of an AFP color management system when resources are stored in central libraries. You can use it to create, install, and manage color management resources (CMRs) and data objects for use in your system.

  "InfoPrint Manager" on page 30
  InfoPrint Manager is a flexible and scalable print management solution for AIX or Windows that provides many choices in expanding and managing your print environment. InfoPrint Manager can process print jobs that contain references to color management resources and interact with centralized resource libraries.

  "Color management resources" on page 12
  Color management resources (CMRs) are the foundation of color management in AFP print systems. They are AFP resources that provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.

Replacing pre-printed forms:

A bank wants to reduce the amount of paper that it stores. If the bank eliminates some of the pre-printed forms that they use by printing some statements on a color printer, they can use the same type of plain paper for various applications.

Over the last five years, the bank has purchased ten smaller banks and is in negotiations for several others. The parent bank uses an AFP system to print statements in-house on pre-printed forms. All the pre-printed forms contain color logos. Some of them also contain background images or blocks of color that divide the page into regions. The existing system consists of:

- InfoPrint Manager for AIX, including the Page Printer Formatting Aid (PPFA) feature
- Three duplex InfoPrint 4000 lines
- Two duplex InfoPrint 4100 lines

Print jobs are submitted as line data and InfoPrint Manager transforms them into AFP. AFP resources are stored in a central location. There are no color production printers in use.

The banks that were acquired handled printing in different ways. Some of them had their own print shops; some of them outsourced print to other companies. The print staff at the parent bank has spent a significant amount of time moving the printing operations of the acquired banks to their in-house print operation, starting with the ones that outsourced their print. Five of them have been converted. The print shop administrators are starting to face some interesting issues:

- The increased workload for the in-house operation means that they need to increase their print capacity.
- Each of the banks that the parent has purchased has maintained its own logo and branding. Each time one of the banks has been integrated with print operations, it has brought with it at least five different pre-printed forms that need to be ordered and stored.
- Even though each kind of pre-printed form comes from the same vendor, the colors vary noticeably.
- The acquired banks will eventually replace their old logos and forms with the logo and forms of the parent bank, but the dates are not yet planned.

With the increase in the number of forms that must be stored, space is becoming a problem. The team knows that they have to expand printing capacity, but they do not have space for a new duplex line. If they could eliminate some of the paper that they have to store, they could use that space for the new line.

The solution

The InfoPrint Solutions Company team proposes an AFP color solution to:
- Transform their pre-printed forms to simple color statements and eliminate the need for pre-printed forms, thus reducing the paper that needs to be stored.
- Streamline the process of moving the acquired banks to the parent bank's logo and forms.
- Optimize resource management to maximize throughput.
- Make the colors more uniform from job to job.

The solution adds a duplex InfoPrint 5000 line and AFP Resource Installer to the existing system and updates the other components to add AFP color support. The bank can choose which applications to move to the color workflow, taking into consideration the fact that the throughput of the InfoPrint 5000 line is less than that of an InfoPrint 4100 line. In addition, those print jobs cannot be run on the existing InfoPrint 4100 or InfoPrint 4000 printers, since those printers cannot print the required color elements.

As the printing staff becomes proficient in using the system, they can start to prepare more applications for an eventual move to color by migrating them to use the high-quality grayscale function available on their InfoPrint 4100 printers. Then, when they are ready to add another color line (either by eliminating more paper storage or by replacing one of the InfoPrint 4000 lines), they can move those print
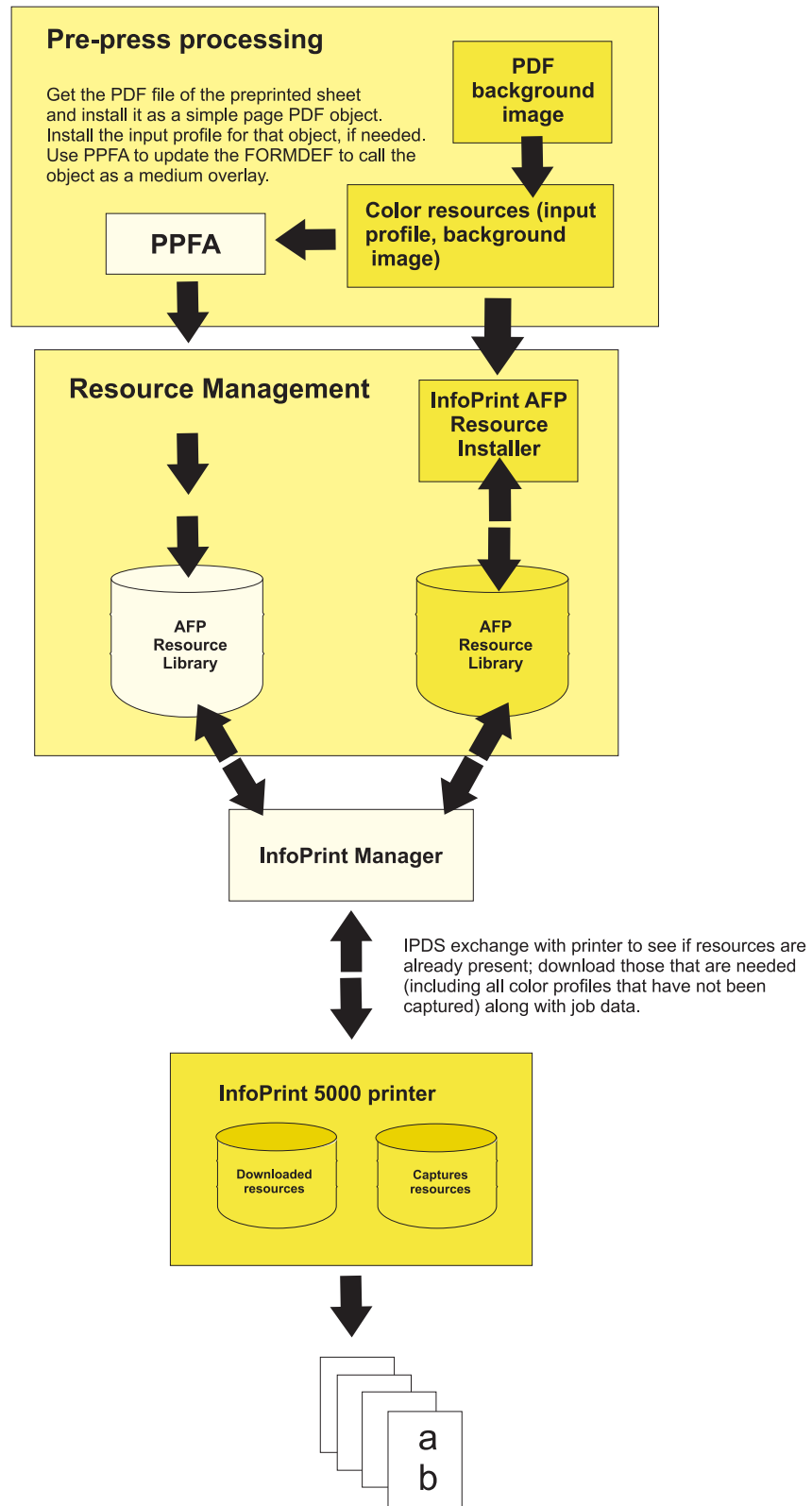
jobs to the color printers.

Figure 3. Solution diagram for adding InfoPrint AFP Resource Installer and an InfoPrint 5000 printer

Implementation

To implement the color solution, the bank printing staff works with the InfoPrint Solutions Company team through several phases:

- **Planning the color solution**
  - Determine where the resource library should be located so that it is accessible to all the applications that need to use it.
  - Determine which types of resources can or should be saved on the printer for reuse. For example, signature files should probably not be saved on the printer; company logos and background images probably should be saved.
- **Installing and configuring the system**
  - Install the InfoPrint 5000 printers.
  - Apply service updates to InfoPrint Manager for AIX and PPFA to add color support.
  - Install AFP Resource Installer.
- **Configuring resource management for optimal performance**
  - Use AFP Resource Installer to install the CMRs for the InfoPrint 5000 printers.
  - Get the PDF file of the pre-printed form or use graphic art software to create a full page image to use as the background image.
  - Use AFP Resource Installer to install the PDF or image as a data object resource and associate a color conversion CMR with it.
  - Configure InfoPrint Manager for AIX to recognize the resource libraries that AFP Resource Installer uses and to send print jobs to the new printer.
  - Use PPFA to create a form definition and page definition that calls the new data object resource.

    Refer to the object using the ID that you specified when you installed it.
  - Copy any new form definitions or page definitions that you created into an existing resource library.
- **Testing system operations**
  - Create a print job that calls the form definition and page definition, and that points to the new resource libraries.
  - Submit the print job.
  - Check the color output.

    Related concepts

    "InfoPrint 5000" on page 27
    The InfoPrint 5000 is a full-color, high-speed, continuous forms Intelligent Printer Data Stream (IPDS) printer that supports AFP color management.

    "InfoPrint Manager" on page 30
    InfoPrint Manager is a flexible and scalable print management solution for AIX or Windows that provides many choices in expanding and managing your print environment. InfoPrint Manager can process print jobs that contain references to color management resources and interact with centralized resource libraries.

    "Types of data objects" on page 21
    Image data objects can be stored in a number of different formats, including EPS, GIF, IOCA, JFIF (JPEG), PDF, and TIFF. These image types are device-independent so they can be used by different systems and still be interpreted consistently.

Eliminating physical inserts:

A print service bureau wants to reduce the number of physical inserts that they have to add to envelopes by printing full color electronic inserts in blank areas on credit card statements.

The print service bureau prints statements and one-to-one advertising brochures for a variety of customers. The customers send their resources and print job data to the service bureau. The pre-press staff uses a document composition tool to create AFP jobs. The AFP print jobs are submitted to InfoPrint ProcessDirector for Linux, which sends them to ten duplex InfoPrint 4100 systems. After the jobs are printed, they go to post-processing to be folded, inserted, and mailed.

The service bureau asks all their customers to submit required resources with every print job; they do not store resources indefinitely. Many of their customers (such as credit card companies) include inserts in the envelope with their statements. Some problems with this arrangement are:

- Inserters often ruin mailpieces, so they frequently have to reprint individual statements. Reprinting adds time and cost to the process.
- Customers tend to ignore the inserts, separating them from the statement immediately after opening the envelope and discarding them.

The service bureau would like expand its offerings to include full-color variable-data printed using an AFP color solution. They also think that they can save time, money, and paper by reducing the complexity of the tasks that their inserters do. If the inserter only has to fold each statement and put it in an envelope (instead of adding two more sheets of paper, folding, and inserting), it has fewer opportunities for ruining mailpieces.

The solution

The service bureau works with the InfoPrint Solutions Company team to create a solution based on its existing process and environment that will help their customers move away from using physical inserts for advertising and toward electronic inserts. They hope to eliminate one of their inserters by printing full color ads directly in blank areas or on sides of customer statements.

If a credit card company can identify data and rules that determine the characteristics of each customer, the electronic inserts can be targeted for each statement. For example, the bill could show an ad for a minivan, a sports car, or a motorcycle depending on the demographics of the customer.

Implementation

To take advantage of this new color capability, the service bureau makes a few changes to their workflow:

- They add a duplex InfoPrint 5000 system and configure InfoPrint ProcessDirector to submit print jobs to it.
- They give guidelines to their customers so that it includes guidelines for using color images and logos in addition to fonts and graphics.
- They train the pre-press department is trained to use a graphics application for color profile management and image normalization.
- They add a step to their process to make sure that their customers have followed the guidelines. If they have not, the pre-press staff adjusts the resolution and input color profiles to conform to the guidelines before they submit the print job.

Related concepts

"InfoPrint 5000" on page 27
The InfoPrint 5000 is a full-color, high-speed, continuous forms Intelligent Printer Data Stream (IPDS) printer that supports AFP color management.

"InfoPrint ProcessDirector" on page 31
InfoPrint ProcessDirector is a database-driven print workflow system that lets you manage all aspects of your printing process. The server runs on an AIX or Linux system and is accessed using a Web browser-based interface. InfoPrint ProcessDirector can receive and process AFP print jobs that include AFP color management objects.

"Tips and best practices" on page 25
These general guidelines about creating and managing images and other color resources can improve the performance of your AFP color printing system.

"InfoPrint 4100" on page 27
The InfoPrint 4100 family of printers uses a laser, electrophotographic print technology and Advanced Function Presentation (AFP) licensed programs to create high-quality text and graphics output. InfoPrint 4100 printers with the InfoPrint POWER architecture and microcode release 15.4 or later support the AFP color management architecture and can be used to print very high-quality grayscale images.

Related publications

You can find more information about AFP color printing on the Web sites of InfoPrint Solutions Company and the AFP Color Consortium™.

For more information about the AFP color management and the Color Management Object Content Architecture, see:

- *AFP Color Management Architecture*™, G550-0526
- *Color Management Object Content Architecture Reference*, S550-0511

These AFP Architecture reference books contain information about color management resources:

- *Mixed Object Document Content Architecture*™ *Reference*, SC31-6802
- *Advanced Function Presention: Programming Guide and Line Data Reference*, S544-3884
- *IPDS Reference*, S544-3417

You can download or order these publications from:

http://www.infoprint.com

For more information about the activities and publications of the AFP Color Consortium, see the Consortium Web site:

http://www.afpcolor.org

For more information about the ICC, ICC profiles, and the PCS, see the ICC Web site: http://www.color.org

Creating and managing resource-context objects

Resource-context objects identify the locations of different types of Advanced Function Presentation (AFP) resources that jobs sent to PSF physical printers can reference. Resource-context objects let you encapsulate the directory path name in

one place. Then you specify the resource-context object name rather than directory names with documents and actual destinations when specifying where to find resources. Later, if the location of a resource changes, you only need to modify the path name specified in the corresponding resource-context object.

The different types of AFP resources are:

Color managment resources (CMRs)

CMRs are the foundation of color management in AFP print systems. They are AFP resources that provide all the color management information, such as ICC profiles and halftones, that an AFP system needs to process a print job and maintain consistent color from one device to another.

Notes:

1. CMRs are stored in resource access tables (RATs). When you alter a CMR RAT, you must restart PSF so that the changes will take effect.
2. CMRs are considered data object resources for accounting purposes.
3. For retention of resources across print jobs, CMRs are counted as part of the **maximum-presentation-object-containers-to-keep**.

Data object font resources

A data object font resource can be an OpenType font collection, an OpenType set of linked fonts, or OpenType fonts that are installed in one or more directories on your InfoPrint Manager server. Data object font resources are the only fonts registered through a Resource Allocation Table that resides in the same directory as the fonts. For more information about using data object font resources with InfoPrint Manager, see "Using OpenType Fonts" on page 44.

Data object resources

Data object resources are a type of AFP resource: they can be IOCA files or types of files natively supported by a particular model of printer (for example, an EPS file on an Infoprint Color 130 Plus). In addition, if you use the transforms that come with InfoPrint Manager to convert objects into AFP first, these non-native types of files can be used as data object resources as well. In InfoPrint Manager, data object resources are grouped with BCOCA and GCOCA objects, and they are collectively known as presentation object containers.

Note: When data object resources (DOR) are stored in resource access tables (RATs) and you alter a DOR RAT, you must restart PSF so that the changes will take effect.

Fonts A font is a single size and typeface in a particular type family, including letters, numerals, punctuation marks, special characters, and ligatures.

Form definitions

Form definitions provide instructions on how output devices position data on the page. Form definitions can specify overlays, a paper source for cut-sheet printer devices, duplexed printing, text suppression, data position, and the number and modifications of pages.

Page definitions

Page definitions contain the formatting controls for line data. Page definitions can include controls for the number of lines per logical page, font selection, print direction, and the mapping of individual fields to positions on the logical page.

Page segments

Page segments contain text and images that you can include at any addressable point on a page or an electronic overlay.

Overlays

Overlays are collections of predefined data such as lines, shading, text boxes, or logos, that can merge with variable data on a page or a form during printing or transmission.

You use the **pdcreate** command to identify the directory or directories where the AFP resources reside and provide a name for the resource-context object. You use the **AFP Resources** tab of the actual destination and default document attributes notebooks in the InfoPrint Manager Administration GUI, or the **Command Prompt** window from an InfoPrint Manager for Windows server, to identify the resource-context object name or which paths you want to associate with that object. Jobs can also reference resource-context objects through their contained documents. See The search order for AFP resources for the search order InfoPrint uses to locate resource-context objects for a job. Both the actual destination and the resource-context objects that are referenced must reside in the same InfoPrint server.

You may also purchase additional resources or even create your own custom resources. To create page definitions and form definitions, you can purchase the Page Printer Formatting Aid (PPFA) for Windows, which is an optional feature of InfoPrint Manager for Windows.

The search order for AFP resources

The following describes the order and the conditions on which InfoPrint searches for AFP resources:

1. For fonts, paths specified by the **-osrchfontlib** keyword on the **enq**, **lp**, **qprt**, or **lprafp** command
2. Paths specified by the **-oreslib** keyword on the **enq**, **lp**, **qprt**, or **lprafp** command
3. The path specified by the **resource-context-user** document attribute.
4. The paths specified by one of the following document attributes, depending on the type of resource:
   - **resource-context-font**
   - **resource-context-form-definition**
   - **resource-context-overlay**
   - **resource-context-page-definition**
   - **resource-context-page-segment**

   Note: When one of these document attributes contains a value, InfoPrint ignores any location specified by the same attribute of a default document object if one is used with the job.
5. The path specified by the **resource-context** document attribute.
6. The path specified by the **PSFPATH** environment variable.

   If you are using OpenType Fonts, you must allow the Infoprint Fonts product to install its resource access table for keeping track of these fonts in the default directory. On an InfoPrint Manager Windows server, if you change the location of this table from the folder where it was installed, you can update the global search path on your Windows system with the global resource path for these fonts.

7. The paths specified by the resource-context attributes of the actual destination.
8. For fonts, the directory where your fonts are installed.

Once a resource is located, the search ends, and the located resource is used to process the job, as long as the user can access the resource. If InfoPrint Manager ultimately cannot find a required resource, it prints an error message advising you of the missing resource. InfoPrint Manager reports that the job completed successfully.

The preceding information may make planning for resource-context objects in your InfoPrint Manager environment appear complicated. But in most cases, it is actually quite simple. If the only AFP resources you use are the AFP resources that shipped with InfoPrint Manager, there is no need to use resource-context objects. All of your resources are located automatically because these resources reside in the **reslib**, **fontlib**, and font directories described above. If, on the other hand, you have custom AFP resources, make sure that you *do not* store them in the **reslib**, **fontlib**, or font directories listed. Any custom resources stored in these locations may be corrupted by installing, uninstalling, or servicing the software. Store any custom AFP resources in a directory outside these locations and use resource-context objects to provide access to them.

When InfoPrint Manager puts together the total of all resource contexts for a particular resource type, InfoPrint Manager tries this list of extensions in order while searching each directory for a particular resource. For example, if InfoPrint Manager is searching for a 300–pel raster font named C0H20000 and the following conditions are true:

- Document attributes are set to `resource-context-font=\myfonts`
- `resource-context=\all_resources`
- The **$PSFPATH** environment variable has not been set.
- The **resource-context-font** actual destination attribute has not been set.

a list of files similar to the following would be checked in sequence:

1. `x:\myfonts\C0H20000.300`
2. `x:\myfonts\C0H20000.FONT300`
3. `x:\myfonts\C0H20000`
4. `x:\all_resources\C0H20000.300`
5. `x:\all_resources\C0H20000.FONT300`
6. `x:\all_resources\C0H20000`
7. With InfoPrint Manager for AIX:
   a. The `/usr/lpp/psf/reslib` directory.
   b. For fonts, the `/usr/lpp/afpfonts` directory.
   c. For fonts, the `/usr/lpp/psf/fontlib` directory.
8. With InfoPrint Manager for Windows:
   a. `c:install_path\reslib\C0H20000.300`
   b. `c:install_path\reslib\C0H20000.FONT300`
   c. `c:install_path\reslib\C0H20000`
   d. `c:\font_install_path\afpfonts\C0H20000.300`
   e. `c:\font_install_path\afpfonts\C0H20000.FONT300`
   f. `c:\font_install_path\afpfonts\C0H20000`
   g. `c:\font_install_path\psf\fontlib\C0H20000.300`

h. *c:\font_install_path*\psf\fontlib\C0H20000.FONT300

i. *c:\font_install_path*\psf\fontlib\C0H20000

Once InfoPrint Manager finds a matching file, the search ends.

If InfoPrint Manager cannot find the resource in any of the paths, it still processes the job and prints an error message at the end of the job.

File extensions for resources:

This table contains file extensions for specific types of resources and lists the order that the extensions are tried by InfoPrint when searching for that resource.

Type of Resource	File Extensions Searched (see note)
BCOCA (bar code) objects	No file extension
Code pages	1. No file extension 2. **FONT3820** 3. **FONT38PP** 4. **CDP** 5. **FONT300**
Coded fonts	1. No file extension 2. **FONT3820** 3. **FONT38PP** 4. **CFT** 5. **FONT300**
Font character sets, 240-pel resolution	1. No file extension 2. **240** 3. **FONT3820** 4. **FONT38PP** 5. **CFT** 6. **CDP**
Font character sets, 300-pel resolution	1. No file extension 2. **300** 3. **FONT300** 4. **CFT** 5. **CDP**
Outline fonts	1. No file extension 2. **OLN** 3. **FONTOLN** 4. **CFT** 5. **CDP**
TrueType and OpenType fonts, CMRs, and data object resources	Entire file name, including extension; comes from the Resources Access Tables (RATs) of the AFP Resource Installer. If a CMR RAT or a data object resources RAT is altered, PSF must be restarted for the changes to take effect.

Type of Resource	File Extensions Searched (see note)
Form definitions	1. No file extension 2. **FDEF3820** 3. **FDEF38PP** 4. **FDE** 5. **FIL**
BCOCA (bar code) objects	No file extension
GOCA (graphics) objects	No file extension
IOCA (IO image) objects	No file extension
MO:DCA Objects	1. No file extension 2. **OBJ** 3. **OBJECT**
Overlays	1. No file extension 2. **OVLY3820** 3. **OVLY38PP** 4. **OVL** 5. **OLY** 6. **OVR**
Page definitions	1. No file extension 2. **PDEF3820** 3. **PDEF38PP** 4. **PDE**
Page segments	1. No file extension 2. **PSEG3820** 3. **PSEG38PP** 4. **PSG** 5. **PSE**
Color mapping table	1. No file extension 2. **SETUP** 3. **SET**
Presentation object container For data object resources not installed in a Resource Access Table (RAT).	1. No file extension 2. **DOR**
Setup data	1. No file extension 2. **SETUP** 3. **SET** 4. **COMSETUP**
Note: All file extensions must be in upper case.	

Processing resources installed with Resource Access Tables:

Before this PTF, **line2afp** resource names were limited to eight characters plus an extension. Now, with changes to MO:DCA™ architecture and the use of Resource Access Tables (RATs), **line2afp** no longer has this limitation on AIX or Windows systems.

A RAT maps a resource name specified in the MO:DCA-P data stream to information used to find and process the resource. The resources that are installed with a RAT include:

- TrueType and OpenType fonts
- Color management resources (CMRs)
- Data object resources

In order for **line2afp** to process resources installed with a RAT, you must:

1. Use the InfoPrint AFP Resource Installer or a similar product to install the resources and create RATs in the appropriate resource directories on your system.
2. When invoking **line2afp**, use these parameters on AIX and Windows systems to specify the path names where the RATs and resources reside:

Parameter	Resource Type
FONTPATH	TrueType and OpenType fonts
OBJCONDDD, RESLIB, and USERLIB	Object containers and CMRs
USERPATH	Any RAT-installed resource

3. Modify your application to include the RAT-installed resources in a page definition, form definition, or Map Data Resource (MDR) structured field. Refer to *InfoPrint Page Printer Formatting Aid for Windows: User's Guide*, S550-0801, for more information about including resources. You can use the RESTYPE parameter with **line2afp** to control what type of resources are included in the resource type.

Using OpenType Fonts

This section describes what you need to use OpenType Fonts for printing with InfoPrint Manager.

These fonts offer many benefits over printing with standard font resources. They provide users with these benefits:

- A wide range of non-Latin typefaces from which to choose
- A multilingual presentation environment through the support of Unicode
- A migration path towards a single font technology across all presentation environments

OpenType Fonts have the following three characteristics within the font file:

1. A Microsoft Unicode version of Version 3 Release 1.
2. Microsoft Unicode Full Font Names
3. A Unicode character map (CMAP)

   A CMAP defines the mapping of code points to glyph indices, which are used to index the actual character shape information.

If your fonts do not contain all these elements, they cannot be used with InfoPrint Manager. If the InfoPrint AFP Resource Installer (Program Number 5639-EE2) does not install a font, that font does not meet this criteria.

Note: You can use the standard AFP code pages you use for other font resources with OpenType fonts. For more information about performing this task, see *Using OpenType Fonts in an AFP System*.

Prerequisites for using OpenType Fonts with InfoPrint Manager

To print with OpenType fonts through InfoPrint Manager, you must purchase and install the following components of the IBM Infoprint Fonts for Multiplatforms product:

- AFP Outline Fonts for a General Library (base feature)
- Font Installer for AFP Systems (optional feature)

  The InfoPrint AFP Resource Installer (Program Number 5639-EE2) runs on Windows systems. If you are running on an InfoPrint Manager AIX server, you must either move or store the Resource Access Table to that system so that InfoPrint Manager for AIX can find it.

For more information about this product, see *Using OpenType Fonts in an AFP System*, G544-5876.

If you want to use IBM OpenType fonts with InfoPrint Manager, you should also purchase and install the WorldType Fonts for AFP Print Servers Feature of IBM Infoprint Fonts for Multiplatforms. This optional feature consists of a rich set of OpenType fonts for installation on IBM print servers.

Note:

1. Ensure that the licensing of your OpenType fonts allows you to use the fonts with InfoPrint Manager.
2. You can only print OpenType fonts through InfoPrint Manager using an InfoPrint PSF TCP/IP or an InfoPrint PSF Channel DSS. No other DSSs support using these fonts.
3. When installing OpenType fonts in a directory, no PSF TCP/IP or Channel DSS should be using OpenType Fonts in that directory. Because there is no automatic synchronization between the Resource Installer and InfoPrint Manager, all PSF TCP/IP and Channel actual destinations should be shut down before installing OpenType Fonts on a system.
4. InfoPrint Manager only references linked fonts at one level. If you have a linked font with another font linked to it, InfoPrint Manager only downloads the first level of linked fonts. For more information about using linked fonts, refer to the *Using OpenType Fonts in an AFP System*, G544-5876.

Using the Resource Installer to install OpenType fonts

If you have OpenType fonts, you must install them using the InfoPrint AFP Resource Installer (Program Number 5639-EE2). If you create a new library or subdirectory for these fonts, you must also update the global search path on your InfoPrint Manager server. If you place them in an existing subdirectory, InfoPrint Manager should already have this location in its global search path.

Each time you either add new OpenType fonts or modify existing ones, you must reinstall them with the Resource Installer to ensure that InfoPrint Manager can access them correctly. The search order of directories for a data object font resources is the same as the search order for AFP font resources. Ensure that the path where you install the OpenType Fonts is in the font search order that

InfoPrint Manager uses. For more information about how the font search order is defined see "The search order for AFP resources" on page 40.

An administrator installs the OpenType fonts in a particular directory on each system. On an AIX server, the default path for installing these fonts is the **/usr/lpp/ipfonts** directory. On a Windows server, the default path is set up by the administrator who configured the system.

Once the OpenType fonts have been installed through the IBM Infoprint Fonts for Multiplatforms product, you must run the Resource Installer to create the Resource Access Table (**IBM_DataObjectFont.rat**) and store it in the same directory where the fonts reside. The Resource Installer does not prompt you to perform this task because the Resource Installer is not aware of changes to the directory. As a result, the system administrator who installed the new fonts must perform this task whenever fonts are either added or removed from the directory.

The Resource Access Table contains an entry for each installed font so that InfoPrint Manager can access it.

For more information on how to use the Resource Installer of IBM Infoprint Fonts, either access the online help system of the Resource Installer or see *Using OpenType Fonts in an AFP System*.

Using font capture with OpenType fonts

Font capture allows a printer to capture a downloaded font and treat it as if it were a printer-resident font. Treating a downloaded font as a printer-resident font improves performance for future jobs that use the same fonts. Printers retain captured fonts across job boundaries and power cycles. Captured fonts may be deleted from the printer when additional space is required. Because OpenType fonts are large, you may want to ensure that your InfoPrint printer is set to support font capture.

If you want to capture OpenType fonts that reside in a library on a particular drive, click on the Font Installer's **Capture** check box. (far right column of the Top pane) for each font that you want to capture. For more information, consult the Resource Installer online help system.

Note: Do not capture sensitive fonts, such as signatures, because an unauthorized person could access the captured font, even from another system.

Enabling font capture for inline fonts:

If the jobs that you run through your system use the same fonts, you may want to enable your actual destination to capture inline font resources. These inline fonts must have an object identifier (OID) so InfoPrint can capture them.

Note: For many systems, this procedure is not recommended because captured inline fonts may be deleted when your printer needs more storage. If InfoPrint Manager cannot access these fonts, the jobs can either fail or print incorrectly.

From the **Infoprint Manager Administration GUI**:
1. Click on the actual destination and select **Printer** → **Properties**.
2. From the actual destination's **Printer Properties** notebook, click the **Tuning** tab.

3. Find the **Capture inline OTF resources** radio button. If you can't see it, click **Show more**.

4. Scroll to the bottom of the screen and click the **Yes** radio button for the **Capture inline OTF resources** setting.

Using multiple fonts with limited printer memory

When you are using the OpenType fonts and you receive the `Out of memory` error message, you can decrease the **Maximum fonts to keep** configuration item for InfoPrint Manager or increase the size of the character cache from the Printer console.

To decrease the number of **Maximum fonts to keep**, complete these steps:

1. Right click on the actual destination in the InfoPrint Manager GUI and select **Properties**.

2. Select the **Tuning** tab.

3. Find and change the **Maximum fonts to keep** value to a smaller number, such as **5**.

To increase the character cache size from the Printer's console, complete these steps:

1. Select **Printer Definition**.

2. Select **Printer**.

3. Select **Resource Utilization**.

4. Increase **Font Usage** to the highest setting.

Updating the global search path on an InfoPrint Manager Windows server

To update the global search path on an InfoPrint Manager Windows server, follow these steps.

Note: If you do not update the global search path, you must update each actual destination that you use to print OpenType fonts.

1. To start the InfoPrint Manager Management Console, click the Windows **Start** button and select **Programs** → **IBM Infoprint Manager** → **Management Console**.

2. Stop the InfoPrint Manager server by selecting **File** → **Stop Server**.

   Note: If you are not able to stop the server because you are not authorized for that action, check the InfoPrint Manager Access Control List (ACL) for the **Shutdown** operation. Log off and log back on as a user who is on the access control list.

3. Select **Edit** → **Service Configuration**.

4. Update both the **Default Font Search Path** field and the **Default Resources Search Path** fields with the directory where the OpenType fonts reside.

Using OpenType fonts with line data

When printing line data with OpenType fonts through InfoPrint Manager, you need to specify the appropriate parameters on the **line2afp** command. To define the location of the OpenType fonts to the **line2afp** command, you can either use the InfoPrint Manager global search path (using "Updating the global search path on an InfoPrint Manager Windows server") or use the appropriate values on the **line2afp** command. For more information about these values, see either *Using OpenType Fonts in an AFP System* or *ACIF: User's Guide*.

For more information about either creating or modifying page definitions for line data jobs to print with OpenType fonts, see *Page Printer Formatting Aid: User's Guide*.

Limitations when printing line data with OpenType fonts: Before you can print this data, you must transform it to Unicode Transformational Format (UTF-16), with big-endian byte order. Big-endian byte order means that within a two-byte UTF-16 code point the high-order byte is specified first, followed by the low-order bytes. You can transform it through the **uconv** utility, or any other application that transforms ASCII to Unicode. For more information about the **uconv** utility see the AIX operating system documentation.

Line data using OpenType fonts supports using the Byte Order Mark (BOM) and little endian data: InfoPrint Manager can process the Unicode Byte Order Mark (BOM) when printing line data with OpenType fonts. (For UTF8 or UTF16-BE data, the BOM is skipped and not printed. For UTF16-LE, the data is reversed to BE before it is printed, and the BOM is not printed.) In addition, InfoPrint Manager can now recognize multi-byte carriage return and line feed characters when parsing Unicode line data.

This support allows you to process UTF8 and UTF16 line data in either little-endian or big-endian order using a traditional line data or record-format page definition. As many Windows and AIX editors default to UTF8 or UTF16LE encodings and automatically insert a BOM at the beginning of the file, you can now print documents created with these editors using Unicode-enabled Open Type Fonts.

Mixed mode data is line data mixed with MODCA structured fields. You can use mixed mode data with UTF8, UTF16LE, and UTF16BE with a BOM as long as the BOM is the first bytes (following any cc or trc bytes) of the first line of data.

If you want to mix UTF8 or UTF16BE data with other data encodings, you can do that if there is **no** BOM. In this case, the font selected for the data tells InfoPrint Manager the data encoding. You can't do this with UTF16LE data because it always requires a BOM.

This support includes a **-o newlineencoding** flag for the **-o** flag, a **stream,(newline=*characters,encoding*)** value for the **fileformat** parameter on the **line2afp** transform, and a **new-line-option-data-encoding** document/default document attribute. For more information on this support, see *InfoPrint Manager: Reference*.

Known problems and work arounds

Interaction between job-retry-count-limit and job-retry-interval attributes

The **job-retry-count-limit** actual destination attribute should not be set to a large value if the **job-retry-interval** actual destination attribute is set to a small value because several processes start and stop on each retry. After a period of time, such retries could result in the InfoPrint Manager Server stopping or the Windows operating system becoming unresponsive.

Unreadable Japanese in InfoPrint Manager GUIs with Vista

If you are using the Windows Vista operating system with the InfoPrint Manager GUIs, you might see unreadable Japanese. To correct this, install Java 1.5 from the Common Client CD-ROM available with this PTF.

InfoPrint Select with Windows Vista

If you are running InfoPrint Select on the Windows Vista Business or Enterprise operating system with the **User Account Control** set to **ON**, the **Activate Job Settings** dialog and the Notifications port applications need to be run as Administrator.

To run as Administrator:
1. Right click on the application shortcut.
2. Click **Properties**.
3. Click on the **Compatibility** tab and select the **Run this program as administrator** checkbox.

Notes:
1. There might be a delay of up to several minutes before the **Job Settings** dialog displays when you submit a job because of the Windows Interactive Services Dialog Detection service.
2. InfoPrint Manager recommends not to activate the Job Settings Dialog feature.

Java GUI Property Notebooks not updated

The Java GUI Property Notebooks were not updated with this PTF. For information on the new attributes, please see the *InfoPrint Manager: Reference*, S550-1052-00, that is available on the PTF download page.

Here is a list of new attributes available with this PTF:
- **capture-inline-cmr-resources** actual destination attribute
- **count-job-pages** server attribute
- **hot-folder-polling-interval** logical destination attribute
- **hot-folder-polling-method** logical destination attribute

Limitations:

Installing this PTF

If the license agreement doesn't display when you are installing this PTF, remove the Service CD-ROM, and reinsert it. The installation of the PTF cannot proceed until you have accepted the license agreement.

InfoPrint Manager CMR limitations

Print files with CMRs that are submitted to InfoPrint Manager must be in MO:DCA or line2afp format.

With this PTF, InfoPrint Manager does not support:
- Indexed CMRs
- Data stream transforms for CMRs

Using the correct halftones for the installed toner version

Multiple versions of toner are available for the InfoPrint 4000 and InfoPrint 4100 printers. For some printer models, InfoPrint Manager ships different halftone curves for different toners and provides scripts to replace or install the correct ones. Make sure you have the correct ones installed for your toner to achieve the best print quality

The toner characteristics can require changes in the halftone resources. When the toner in the printer is replaced with a different version of toner, you must run the associated Windows bat file from the command line.

Notes:

1. When you apply InfoPrint Manager PTFs, the appropriate Windows bat file must be run again, because the PTF replaces the existing halftone files with the standard halftone files.

2. Not all different versions of toner require different halftones, so there might not be a Windows bat file provided.

The bat files are installed in *install_path***config**:

- IP4000-ID5-6.Std
- IP4000-ID5-6.V2toner
- IP4000-ID5-6.V3toner
- IP4000-IR1-2.Std
- IP4000-IR1-2.V2toner
- IP4000-IR1-2.V3toner
- IP4000-IR3-4.Std
- IP4000-IR3-4.V2toner
- IP4000-IR3-4.V3toner
- IP4100-HD3-HD4.RTtoner
- IP4100-HD3-HD4.Stdtoner
- IP4100-HD3-HD4.V3toner
- IP4100-HD3-HD4.V5toner
- IP4100-MD1-2.Stdtoner
- IP4100-MD1-2.V2toner
- IP4100-MD1-2.V2_PQItoner
- IP4100-PD1-2.Std
- IP4100-PD1-2V3toner

Each bat file changes the InfoPrint Manager system to use the relevant toner; Std or Stdtoner is the default.

IBM Personal Communicator 6.2.1

Windows 2003 64-bit operating system does not support IBM Personal Communicator 6.2.1, which is used with PSF Direct.

Indexed Multiple Data Sets

MVS Download cannot be used with multiple data sets that have already been indexed (contain AFP TLEs).

Longer processing for color text that uses embedded fonts

When transforming PDF with color text that uses embedded font subsets to black and white or color AFP output, the rip processing can take longer. If you use **savevm=false**, this performance will improve. However, we recommend using the current default of **savevm=true** because in some cases, PDF input files with many embedded font subsets might fail to transform. The **savevm** option appears on the **ps2afp/pdf2afp** command line as: **-pragma pdf2psoptions=savevm=true**.

APARs included in PTF UO00601

PTF UO00601 includes resolution for these APARs:

APAR	Description
IO06228	Empty directories created when services configuration is run from MMC
IO06727	Re-commented device_controls - ignored by pcl2afp
IO06837	pcl_x_origin and pcl_y_origin not working for overlay output
IO07524	2 psfapid running on an IPM Windows system
IO07700	ACIF: missing DBCS font sections on MCF
IY91695	pdserver hung up on printer shutdown command
IY94918	Image error generated for valid image in a PDF stream
IY96014	PTF5 common client install does not update shortcut links
IY96205	Input Manager exit code 50
IY96750	Sprint IPW GUI initiated backspace request ignored; printing continues
IY96970	PDPR command in AIX fails for a large file from a remote client
IY97025	img2fax dumps core files during compression
IY97368	Hot Folder Enhancements
IY97967	PD server spooler core
IY98109	AIX rip generates blank pages
IY98203	Edge Rectangle Relative without coordinates is still drawn
IY98601	Test fix for customer -- remove listen on signal 58
IY99058	pdserver fails to catch cancel request for a job w/ hung procs
IY99207	Wrong fractional point sizes with outline fonts
IY99866	phone2 testcase gives RC 16 during regression
IY99884	On AIX after PTF5, the MVS Download working directory ...
IZ01239	Duplicate pdpr names if over 16384 jobs are sent in 24 hour period
IZ01322	PS/PDF Transform hangs in AIX. CPSI hangs in thread
IZ01327	Add support to IPM to alternate the edgemarks on a printer that ...
IZ01401	pdserver freeze after a hold job
IZ01899	A transform command that is too complicated results in cancelTransform hang
IZ02243	SNMP status messages displayed incorrectly when umlauts used
IZ02275	print adjust at start of job causes X'027701' NACK
IZ02741	GUI will not come up
IZ03084	Introduce 180 and 270 rotation for bitmap
IZ03251	pdjobs file cleanup

APAR	Description
IZ05041	SE submits PDF files with incorrect width and height causing rip
IZ05763	object not in an acceptable state - when pioinfo is hung
PK38962	Conditional processing fails for a pagedef for XML and multiple conditions
PK39912	This APAR contains these fixes: • Empty resource file no longer created. • Message 025-413S has been corrected. • The INDEXSTARTBY parameter indicates the page by which a group index must be found.
PK45269	This APAR contains these fixes: • Issue 0425-104 error message if a BNG structured field is encountered inside a page. • Fix a problem where an inline coded font cannot be found even if EXTENSIONS=RESORDER is specified. • Change the default of LINECNT in this instance (CONVERT=NO and CC=NO) to be 999 instead of 0 to avoid out-of-storage errors.

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