Preparing Adobe® PDF files for high-resolution printing

Today's prepress workflow works, but it doesn't really flow

Commercial printers and service providers are working hard to improve their ability to produce reliable, consistent, and predictable output on increasingly tight schedules. The current digital prepress process works, but it's fraught with problems that challenge this goal. Most commercial printers and service providers receive files in their native file format. These handoffs invariably have problems: missing components (fonts or graphics), missed deliveries (problems with modem or other electronic deliveries), accidental changes, unpredictable PostScript® language files (created from native applications), and enormous file sizes. In addition, service providers have to maintain different versions of many different applications to support the range of requests they get from you and other customers—a requirement that adds training and software/hardware compatibility issues to the mix. What they need is a more streamlined, PostScript-based process that's robust enough to meet their high quality standards.

Adobe Systems has a solution that addresses this fundamental problem. The solution is based on two core technologies: Adobe Acrobat® 3.0 software with its Portable Document Format (PDF) files and Adobe PostScript® 3™ printing technology. We developed these solutions by working with service providers and customers like you to identify how to streamline the printing process. The result is a portable, device-independent solution that overcomes many of the problems encountered in the old process. Here's how it works:

▶ Step One: You develop your illustrations or publications using your favorite software.

▶ Step Two: Before handing off to your commercial printer or service provider, you use Adobe Acrobat Distiller® 3.0x to create a PDF file. This PDF file contains all of the font, graphic, and other layout information necessary to print a high-resolution version of your document.

Note: You either create a composite or preseparated PDF file, depending on the content of your document. A composite PDF file contains all the information necessary for printing separations, but the actual separation occurs at the RIP your service provider uses. A preseparated PDF contains a page for each of the separations required by your document. For example, if you create a preseparated PDF file for a two-page, CMYK print job, the PDF file would contain eight pages—one for each separation required. (For additional information see page 11, "Using a preseparated PostScript/PDF workflow.")

▶ Step 3: You hand off the PDF file to your service provider.

PDF files streamline the printing process, while providing more consistent and reliable results. In particular, they reduce or eliminate delays from missing components or unstable files, better communication between you and your printer, and much smaller rework costs. Why? Because the PDF file format offers so many distinct benefits. PDF files are:

▶ **Complete**—They contain all the fonts, graphics, and page layout information necessary to display and print the file exactly as you laid it out.

▶ **Compact**—PDF supports a variety of compression methods (both lossy and lossless compression), creating smaller files that are easier to transmit and faster to print than the native application files.

▶ **Portable**—One of the key benefits of a PDF file is its page, platform, application, and device independence. You can print high-resolution PDF files on any Adobe PostScript 3 output device with the same high-quality results from each. This gives you greater flexibility than in a PostScript workflow.

▶ **Reliable**—Acrobat Distiller interprets the original PostScript file, creating cleaner, more reliable PostScript for final output.

▶ **Editable**—If you create composite PDF files, you maintain editing control over the final file. You or your service provider can do simple late-stage text and graphic editing in Acrobat Exchange® software using third-party plug-ins. PDF files are page independent—allowing you to sort, extract, insert pages without returning to the native application file.

▶ **Extensible**—You can add third-party plug-ins to your Acrobat toolkit to perform a number of supplementary tasks. (For details, visit the Adobe Web site at this URL: http://www.pluginsource.com/.)

In addition, your service provider will benefit from the following:

▶ **Adobe PostScript® 3™**—providing in-RIP technologies (e.g., separations and trapping) enabling a smaller, more efficient composite PostScript workflow as opposed to a larger, less efficient "host-based" color separated workflow.

▶ **Direct PDF Printing**—printing PDF files without having to select a print command through an application increases workflow productivity. Direct PDF printing also decreases operator errors by creating drop or hot folders defined with specific printing parameters and job specifications. (Check with your service provider or printing device manufacturer whether the direct PDF printing feature is supported. Not all Adobe PostScript 3 printing devices include the Direct PDF printing feature because it requires an actual hard disk for file storage.)

This document guides you through the basic steps of producing high-quality PDF files for high-resolution output. It focuses mainly on the composite PDF workflow, but it also provides some basic information about the pros and cons of a preseparated PDF workflow. It explains the importance of producing good PostScript files for distilling (creating PDF files) and describes how to do this. The document also walks you through key Job Options in Acrobat Distiller, and offers some baseline recommendations that will ensure optimal PDF files. We recommend working closely with your service provider to develop a smooth PDF-based workflow that works for all of you.

Composite versus preseparated PDF files

The first step in producing a high-resolution PDF file from your document is to decide whether to create a composite or preseparated PDF file. As a rule, we recommend choosing a composite PDF workflow because it offers these key benefits:

▶ **On-screen viewing (or soft proofing)**—You and your service provider can review the file in its final form until it's output. You can double-check graphic placement, wording, and other file details. That way, you can catch problems before going to press and avoid costly rework.

▶ **Simple text and graphics editing**—You or your service provider can edit the PDF file if you find a problem or have an eleventh-hour change.

▶ **Faster, more efficient file transfers**—Composite PDF files are tiny by comparison to typical, high-resolution PostScript files. A typical PostScript file with an 8-up imposition with embedded high-resolution images can consume anywhere between 600 MB and 1 GB of disk space. In addition, your service provider has to transfer it over their network multiple times—once for each separation. A PDF file offers a compact, one-shot transfer—making it simpler for everyone.

▶ **The right use of in-RIP functionality**—Your service provider can perform trapping, separations, and late binding and file editing, all at the RIP. Furthermore, page independence in PDF files supports the Adobe PostScript Extreme workflow. (For details on Adobe PostScript Extreme™, see the Adobe Web site at this URL: http://www.adobe.com/print/main.html.)

If you choose a preseparated PDF workflow, you'll create larger files and lose the viewing, and editing capabilities. However, you must use a preseparated PDF workflow for documents that contain certain graphic file formats or features—specifically, duotone EPS files, colorized TIFF files, DCS images, and spot-color-to-spot-color gradients. These were designed to support a preseparated PostScript workflow, and don't include the information necessary to color separate them from a composite PostScript file.

Adobe is working with its industry partners to resolve this issue in the near future. In the meantime, using a preseparated PDF workflow offers you a more reliable and portable (device-independent) prepress process than you've had in the past. For details about creating preseparated files, see "Using a preseparated PostScript/PDF workflow" on page 11 of this document.
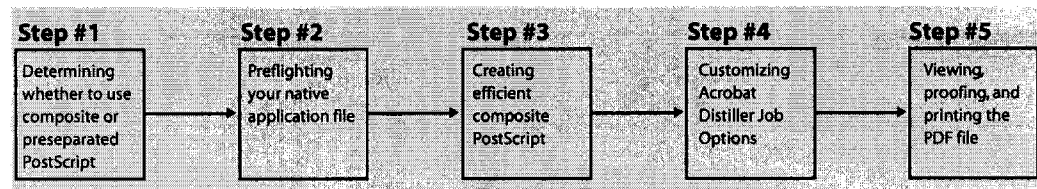
Retaining high quality printing information in Adobe PDF files

One of the challenges you face is understanding how to consistently create PDF files that retain the necessary information (e.g., fonts, color, links to high-resolution images, and overprint settings) for high-resolution printing. The key is understanding the relationship between PostScript and Acrobat Distiller, and how this relationship affects the resulting PDF files. The PostScript imaging model is the heart of Adobe Portable Document Format (PDF) files. After all, Acrobat Distiller 3.0x only accepts PostScript or Encapsulated PostScript (EPS) files. You need to know what variables affect this relationship and how to handle them quickly and efficiently.

Like a PostScript printing device, Acrobat Distiller interprets PostScript code. However, instead of creating printed output from that code on paper, film, or a printing plate, as a PostScript printing device would, Distiller creates a PDF file. Just as a document printed from a PostScript printing device is an exact representation of the original electronic document, so too is a PDF file. While Acrobat Distiller 3.0x is an Adobe PostScript Level 2 interpreter, Distiller does not actually "raster" the file, so it is not a PostScript raster image processor (RIP).

As the *Portable Document Reference Manual* notes on page 8: "PDF files represent text and graphics using the imaging model of the PostScript language. Like a PostScript language program, a PDF page description draws a page by placing 'paint' on selected areas." The quality of the page description drawing process is directly related to the quality of the PostScript file that Distiller interprets. If, for example, the PostScript does not include required fonts, proper paper sizes, or custom/spot color information, neither will the resulting PDF file.

Producing quality PostScript files, and therefore quality PDF files, involves planning. A complete workflow for creating high-resolution PDF files is a five-step process:

Step #1	Step #2	Step #3	Step #4	Step #5
Determining whether to use composite or preseparated PostScript	Preflighting your native application file	Creating efficient composite PostScript	Customizing Acrobat Distiller Job Options	Viewing, proofing, and printing the PDF file

Preflighting

Prior to creating a PostScript file for distilling, you must start with a "print-ready" native application file. What do we mean by print-ready? This is a file that adheres to your service provider's specifications for high-resolution printing. For example, the file:

- ▶ doesn't include any RGB images or colors in a four-color process job
- ▶ maintains links to placed graphics and images
- ▶ contains only high-resolution image data (no 72 dpi images)

Preflighting is the industry-standard name for this process. Ignoring this step in the process can result in missed deadlines or unexpected charges for rework. We recommend you ask your service provider which software they recommend for preflighting files. This will ensure consistency throughout the production process. Make sure the recommended software opens your native application files, as well as PostScript, EPS, and PDF files. You'll find the initial investment worthwhile—saving you valuable time and money.

Creating composite PostScript files

Creating efficient, composite PostScript files for high-resolution printing is not as simple as deselecting color separations in your native application's Print dialog box. Here is a list of variables you need to consider:

- ▶ Printer driver and PPD selection
- ▶ Paper size
- ▶ Font inclusion
- ▶ Spot-color information
- ▶ Trapping information
- ▶ OPI comments

Selecting a printer driver and PPD

For optimal results, we recommend using the Adobe PostScript printer driver (AdobePS™) and the Acrobat Distiller PostScript Printer Description (PPD) file. This will ensure you're creating consistent, device-independent PDF files—after all, your PDF file may be printed on more than one device. When you create PostScript files for distilling, make sure you're using the latest version of the AdobePS driver (version 8.51 for the Macintosh, version 4.2.3 for Windows 95, and version 5.0 for Windows NT* 4.0). You can download the latest versions of the AdobePS printer drivers from the Adobe Web site at the following URLs:

Macintosh:
http://www.adobe.com/supportservice/custsupport/LIBRARY/4cea.htm

Windows 95:
http://www.adobe.com/supportservice/custsupport/LIBRARY/4cee.htm

Windows NT 4.0:
http://www.adobe.com/supportservice/custsupport/LIBRARY/4f06.htm

The Acrobat Distiller PPD file is included with the Acrobat Distiller 3.0x software and is installed in the Xtras folder in the Adobe Acrobat 3.0x folder (Macintosh) or Acrobat3 > Distillr folder (Windows). This PPD does not write device-specific information in the resulting PostScript file, so you'll still be able to select certain high-end controls, such as custom paper sizes, for oversized jobs. The Acrobat Distiller PPD was originally written to create PDF files for on-screen viewing, so we recommend making the following modifications to ensure consistent, reliable results:

▶ Change the DefaultColorSpace value from RGB to CMYK
▶ Change the DefaultResolution value from 600 dpi to 1200 or 2400 dpi (based on your final output device)

To edit the PPD, perform these steps:
1. Open the Acrobat Distiller PPD in a text editor and locate these lines of text near the beginning of the file:
```
*% ==== Device Capabilities ===============
*ColorDevice: True
*DefaultColorSpace: RGB
```

2. Change the DefaultColorSpace value from RGB to CMYK as noted below:
```
*DefaultColorSpace: CMYK
```

3. Locate these lines of text further on in the file:
```
*% Multiple Resolution support for Distiller 3.0 ==============
*OpenUI *Resolution: PickOne
*OrderDependency: 50 AnySetup *Resolution
*DefaultResolution: 600dpi
```

4. Change the DefaultResolution value as noted below (or set the value to 1200 dpi):
```
*DefaultResolution: 2400dpi
```

5. Locate these lines of text near the beginning of the file:
```
*PCFileName: "ADISTILL.PPD"
*ShortNickName: "Acrobat Distiller"
```

6. Edit the text to read as follows:
```
*PCFileName: "CMYKDIST.PPD"
*ShortNickName: "Acrobat Distiller CMYK"
```

7. Save the edited PPD file in text-only (ASCII) format to the same location, using the file name CMYKDIST.PPD so that you can easily distinguish the edited PPD from the original.

Specifying the appropriate paper size

If your document's page size (usually specified in an application's Document Setup dialog box) does not account for image-bleeds or printer marks, you'll want to create a custom paper size using your application's Print dialog box. The Acrobat Distiller PPD, like an imagesetter PPD, supports custom paper sizes. So, specify a paper size that is large enough to accommodate the document's page size, as well as any image-bleeds, printer's marks, or printer information you want. As a general rule, increase paper size by one

Note: If you choose the Export Adobe PDF command in Adobe PageMaker® 6.5x software (File > Export > AdobePDF) to create the PDF file, you may also need to customize the Printer Style you select. (For additional information see page 415 in the *Adobe PageMaker 6.5 User Guide.*)

Including all your document fonts

When you create a PostScript file for distilling, make sure you include all PostScript Type 1 and TrueType fonts. This will ensure that the fonts will be available for viewing and printing. Unlike Type 1 fonts, Acrobat Distiller 3.0x can only embed TrueType fonts in a PDF file if they're included in the original PostScript file. (See "Renaming the Acrobat Distiller font database file" on page 9 for additional information.)

   If you are considering using TrueType fonts for high-resolution printing, we recommend you discuss this with your service provider. They may have printing devices or post-processing applications that do not contain a TrueType rasterizer which is required for printing these fonts—resulting in your document fonts printing in Courier.

Note: QuarkXPress® 4.0x and earlier do not include the document fonts when you save pages as EPS files (as opposed to printing a file to disk as a PostScript file).

Spot-color information

The ability to preserve spot-color information in your composite PostScript file depends on the software applications and graphic file formats you use. Page layout applications such as Adobe PageMaker and QuarkXPress do preserve spot colors applied to their native elements. However, if you're using other page-layout applications or certain graphic files containing spot colors, they may not color separate properly from the resulting composite PDF file. For additional information on these file formats, see page 11.

Including trapping information

It is essential to include trapping information in the composite PostScript file for Acrobat Distiller to preserve it in the resulting PDF file. The page layout application you are using determines what document trapping information you can include in the composite PostScript file. (By "document trapping," we are not referring to line art created in a graphics application and placed in a page layout application. Instead, we're referring to trapping applied to native application elements, such as text and drawn elements.)

   QuarkXPress 4.0x and earlier include document trapping information only when creating preseparated PostScript files. On the other hand, Adobe PageMaker 6.01 and later include document trapping information in both composite and preseparated PostScript files. Therefore, if you are using QuarkXPress, you may need to modify your workflow (e.g., use a preseparated workflow, use a post-processing application to trap the file, or use an output device that supports in-RIP trapping). You can also download the Adobe In-RIP Trapping plug-in for Adobe PageMaker 6.52 for Macintosh and Windows from the Adobe Web site.

Note: Some raster-based prepress workflows ignore application trapping information, so check with your service provider about trapping.

Preserving OPI comments

You can specify that Acrobat Distiller 3.0x read and preserve Open Prepress Interface (OPI) 1.3 comments. Acrobat Distiller 3.0x does not read OPI 2.0 comments because it was released before the OPI 2.0 specification was finalized. However, we plan to include support for OPI 2.0 comments in a future version of Acrobat.

   If you or your service provider uses an OPI server that reads and writes OPI 2.0 comments, you will need to create "fat" PostScript files prior to distilling. This means that all the high-resolution image data is included in the composite or preseparated PostScript file. Fat PostScript files produce larger PDF files, but ensure that Distiller uses the high-resolution image data, and not the sampled or low-resolution placeholder.

Customizing Acrobat Distiller Job Options for high-resolution printing

We've covered the variables associated with creating optimized, composite PostScript files. The next step in the process is to customize the Acrobat Distiller 3.0x Job Options. To access these settings, start Acrobat Distiller 3.0x, (choose Distiller > Job Options), or press Command + J (Macintosh) or Control + J (Windows). A dialog box appears with four tabs: General, Compression, Font Embedding, and Advanced.

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