

Color File Exporting Tips

Computer Graphic Formats

- *Graphics are stored as a computer file in two distinct ways: bitmap and vector.*

Bitmap graphics are a collection of dots called pixels (picture elements), arranged in a matrix, each pixel with a different color value. Bitmaps are the native format of photographs, scanned images, and screen captures. The number of pixels in a given area is known as resolution, commonly expressed as dpi (dots per inch) or ppi (pixels per inch).

Bitmaps are resolution-dependent, which means that for optimal display, there must be a match between the pixel matrix stored in the graphics and the display pixel matrix. When a given bitmap is displayed using a different number of pixels, let's say a 100-by-100-pixel bitmap is displayed in an area of 160 by 160 pixels, or in an area of 90 by 90 pixels, some pixels are added or eliminated. **This process is known as resampling, and results in degradation of image quality.** Rotating bitmaps using angles other than 90 degrees also causes images to be distorted.

- Common bitmap formats include BMP, GIF, TIFF, JPEG, and PNG.

Vector graphics are a list of drawing objects (such as lines, arcs, curves, circles, and rectangles), encoded as textual or binary instructions. Vector graphics work best when real-life photographs are not necessary. In fact, they can often be clearer in detail than a photograph, enabling you to emphasize the important details and eliminate or minimize details that cause visual noise.

However, when vector graphics try to imitate a photograph, the look can be synthetic or technical. Thin lines may be displayed with inconsistent line thickness. As a vector graphic is independent of display/output resolution, it can be scaled or rotated flexibly. It will always display/print at the highest resolution of the output device used. Because of this, a PDF with vector graphics can be viewed at various magnifications (effectively different resolutions) with no degradation or loss of quality.

- Common formats for vector graphics include WMF, SVG, AI, DXF, and CGM. Authoring tools, such as Microsoft Word or Adobe FrameMaker, include their own vector graphics tools, which are directly carried to the PDF during distilling.

Some vector formats (WMF, for example) support bitmaps as a component. EPS can contain both vector graphics and bitmap graphics.

We accept print-ready .TIFF, .JPEG, and .PDF files through our web site, CD, DVD, or USB-stick.

- Provide a **hard copy** (*laser print*) of the final file, whenever possible.
- **Do not use “styles” for fonts** in the application. If the font has a bold or italic version, please use it instead.
- Vector based files should always have the **type converted to outlines** to eliminate fonts, but this will also eliminate our ability to edit the text.
- All images should be exported as **300 dpi tiff or jpg**. Always embed with a CMYK profile. You can save as 50% at 300 dpi for large files.
- **Include all images** (no links) with the files, even if the files have been embedded.
- All color documents and/or imported color files should be **CMYK or PMS** spot color (not RGB). CMYK images should not be used in a spot color job.
- Flatten transparency using the **high resolution preset**.
- **Do not use WMF files**. They must be converted to Illustrator or Photoshop files first.
- **Delete unused colors** from the color palette in your application. Do not use multiples of the same color (ie: 285 C, 285 CV, 285 CVC) as each of these will print as a separate color.
- **Remove all unused text or graphics** from the pasteboard outside the document image area.
- Your file should be **cropped edge to edge with no bleed, crop or registration marks**. Crop the image as how you want your final print to appear. (Do not “float” your document on an oversized page).
- **Do not use MS Word or MS Office programs for color printing**.
- **PDFs containing bitmaps need to be exported using the “highest resolution” setting**.
- **PDFs containing text needs to be exported using the “embed all fonts” setting**.

Common mistakes we see are:

- Bitmaps (logos, artwork, photos) exported at too low of a resolution. Also images that have been copied and pasted from the web as a 72 dpi image, and then upsampled to 300 dpi and sent to us.
- Not embedding all fonts.
- Requesting that a file be enlarged to a size that is disproportionate, (i.e. sending a file to us that is 10” x 10” and then asking it to be printed 20” x 36”).
- “Floating” the document on an oversized page, (excess white space not intended for final print).
- Adding trim marks and registration bullets.

Tips for ADOBE users:

Acrobat consists of two main parts, firstly Acrobat Reader (available free from <http://www.adobe.com>) and secondly Acrobat 4, made up of a more advanced version of the free reader and Distiller which is the part that allows you to create PDF (version 1.3) files from either postscript or EPS files.

Using different “Job Option” files it is possible to create a number of different types of PDF files for specific purposes.

- Low resolution (say 72 dpi) PDFs with RGB (smaller than CMYK) images. These PDFs are very small compared with the raw application file or postscript files and very useful for e-mailing proofs of jobs to clients, or putting documents on the web.

- Medium resolution (say 120 dpi) PDFs with RGB for producing reasonable quality colour laser prints.

- **High resolution (300-400 dpi) PDFs with CMYK images for publishing purposes.**

Creating High Quality PDFs

There are several ways to convert your application file (PageMaker, Quark, CorelDraw; Illustrator etc) to PDF files.

The first two involve printing from your application to either of the two printer drivers (PDF Writer, Acrobat Distiller Driver) installed when Acrobat is installed.

The PDF Writer is not a suitable driver to use if you need to create high quality PDFs. The PDF Writer automatically downsamples images to 72 dpi (far too low) and uses only the screen header of any EPS files included.

Some applications allow you to “Export” the job as a PDF. Generally these export facilities also do not give you complete control over all the settings.

By far the best way to create a PDF is to create a postscript print file from the application and then distill that file into a PDF using the appropriate job option.

Creating Postscript Print Files

The start of a good PDF file is a good Postscript file and the best start is to install the Adobe Postscript Printer Driver (available free from <http://www.adobe.com>).

If the application you are printing from uses PPD files, select the Acrobat Distiller PPD. In most cases the bureau or publication will require trim marks and registration marks, so make sure these are selected. Ensure that the “paper” size chosen is large enough to include your complete job plus the trim/registration marks (eg. print an A4 page to A4 Extra).

Don’t select color separations or any items such as negative or mirror image etc All these options are best done on the imagesetting end. Also ensure that the images print at their full resolution (i.e. don’t let the application optimize or downsample, Acrobat will do a better job).

The resulting postscript file (which may be considerably larger than the application file) can then be distilled into a PDF using Acrobat Distiller.

Setting Distiller's Job Option for High Quality PDFs

General Settings

Format

Normally, unless you have difficulty in transferring files, do not select ASCII as this will result in a larger file.

Compatibility

Unless you know that the bureau/publication can accept Acrobat 4 files, set the file compatibility to Acrobat 3.

Optimize

Always “Optimize”. While this slightly increases the time it takes to distill a file, the resulting PDF is very well organized and will usually be processed through a RIP very efficiently. Since much of the important font and other information is moved to the front of the file, in the unlikely event of a PDF failing to RIP, they normally fail very early in the ripping process - thus saving valuable time.

Thumbnails

Choose whether you want “Thumbnails” to be generated. Thumbnails are tiny images of each page, which in a multi page document, make it easy to navigate to a particular page. Adding thumbnails will slightly increase the size of the final PDF.

Resolution

Set the resolution to at least 2400 (or higher if you know the exact resolution of the image setting by which the file will be processed). **This setting affects only vector EPS files, i.e. to determine the number of steps for a blend or fade. It has no effect of any bitmaps included in the file (see compression settings).**

Compression

• *Color and Greyscale images*

(While Acrobat has separate sections for Color and Grayscale images, normally you should treat both types of bitmaps in the same way)

Part of the secret of PDFs is that bitmap images are processed so that no extra unnecessary information is included in the file. This results in a file that is the smallest possible for the given purpose. For this reason the Compression settings are some of the most important.

Choose “Bicubic rather than “Average” downsampling. “Average” simply throws out (for example) every second pixel. “Bicubic”, on the other hand, looks at a small group of pixels and keeps those that best represent what was there originally.

Many “experts” say that the dpi (dots per inch) should be twice that of the lpi (lines per inch) of the “Screen Ruling used for the publication. PC Update, for instance, is printed using 150 lpi, so the dpi would be 300. However, I believe this is overkill. After conducting many test and real examples over the years I know that setting the dpi to 1.5 times the lpi will give perfect results. In fact, in emergency situations where you are trying to dramatically reduce the file size, setting the dpi to the same as the lpi will still give you acceptable results. (If anyone ever tells you that you must scan or downsample at/to 300 dpi, ask them if they have actually conducted any tests at lower resolutions to determine the difference.)

With regard to compression, always use “ZIP-8 bit” as this is a loss-less process. “JPEG” on the other hand removes some information and may adversely image quality.

For monochrome images set the dpi to about 8 times the lpi, the compression as “CCITT Group 4” and make sure Text and Line art compression is on.

Fonts

Select “Embed All Fonts” and “Subset All Embedded Fonts Below 100%”

In order that your PDF file will print out at the “other” end exactly as intended it is vital that all the fonts are not only embedded but also “subset”. If, for example, the font “FuturaBold” is embedded in a PDF, and the file is printed out to a imagesetter that already has a “FuturaBold” installed, the font installed in the imagesetter will be used rather than the font embedded in the PDF. Whilst they might have the same names the two fonts could be and often are slightly different. “Subsetting” embeds the font but gives it a unique name, meaning that the imagesetter will never have the font installed and will use the font embedded in the PDF.

Color

Under the “conversion” settings select only the “leave color unchanged” option. All other “conversion” and “Assumed Profile” options should be left unchecked.

In the “Option” section, select all the options **except** “Preserve Halftone Information”. This would be used only in unique circumstances where the halftone details set in the file are to override the halftone setup in the RIP (in most cases the bureau imagesetter operators are better able to determine the correct halftone screen ruling, angles and dot shape. Leave it to them.)

Normally the PDF file will want to preserve or keep the “Overprint”, “Under Color Removal”, “Black Generation” and “Transfer Function” already existing in components within your job, so all these options should be selected.

Advanced

The settings in this area can be very specific to particular RIPS and they highlight one of the great things about Acrobat 4. The graphic company or print house can do all the hard work to find out exactly which settings suit their equipment and all you have to do is install and select the job-option file they supply.

However, there are two items here that may be useful to users who need to distill EPS files. As well as being able to distill postscript print files Acrobat Distiller can distill EPS files. This can be extremely useful when you have an EPS file that is causing problems in either an application or RIP, often, distilling the EPS file into a PDF and then exporting it back out as an EPS from Acrobat, can solve the problem.

If you want to distill an EPS, then the “Default Page Size” dictates the size of the final PDF. A postscript print file contains information about the page size of a job, however an EPS file does not, so Distiller needs to be “told” what size to make the PDF.

If you need to distill EPS files and need the PDF file to be made the exact size of the EPS, then select “Process DSC Comments” and “Resize Page and Center Artwork for EPS files”.

Some Important Issues

Trial and more trial is probably one of the most important techniques. Spending time making a few (small) trial PDFs in consultation with your printer, will ensure that your PDFs work as intended.