Preflighting Electronic Files

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After you've spent a great deal of time and effort creating an attractive and effective graphic piece, the absolute last thing you want is your printer or service provider to give you a call and say "We have some problems with your job!" If you're a graphic designer or if you work for a company that buys printing, you've probably had several similar conversations. You're not alone. An informal survey of Houston-area service providers revealed that *most* files received in printing plants and service bureaus have flaws—some more serious than others. Similar conditions exist all over the nation.

Why are so many files in need of repair?
It's quite simple. In the past, graphic designers would submit artboards to printers. Highly trained specialists, such as typesetter operators, process camera operators, color scanner operators, retouchers, film-assembly technicians (a.k.a. strippers), proofers, and platemakers would combine their areas of expertise to execute the designer's plan. At each step of the process, flaws were noticed and could be corrected. However, today's technology often requires the person who builds page files electronically—usually the graphic designer—to perform *all* prepress tasks, from ideation through page layout and imposition. In many cases, these finished files are used—with little or no technician intervention—to directly operate computer-to-plate or computer-to-press devices. Frankly, it is a little unrealistic to expect any one person to possess all the skills and knowledge that *several* people used to contribute to a printing project. To make matters worse, finished pages are now contained in invisible digital files. So, mistakes are invisible until the file is output.

Defective files are frustrating for both the print buyer and the service provider. Corrections cost the print buyer money and lost time. On the other hand, flaws in files may result in wasted materials and may cause damage to the service provider's equipment. In addition, time spent performing corrections will probably interfere with the service provider's production schedule. It's a lose-lose situation.

Preventing Defective Files
Fortunately, defective files can be prevented through careful preparation and close examination. Checklists, such as the one included with this article, are provided by printing trade associations and individual service providers to help print buyers and graphic designers prevent problems before they occur. Contact your service provider and

find out which checklist they wish you to follow. Also, make sure you understand *each* and *every* point on the checklist. Ask questions!

No matter which checklist you use, it is important for you to know the major problems that occur when service providers attempt to output files. The Graphic Arts Technical Foundation (GATF), a research arm of the printing industry, recently reviewed nearly 1,000 files to determine the most commonly occurring problems (Graphic Arts Technical Foundation, 1997). The top-ten errors, in order of frequency from highest to lowest, found by the study are:

- fonts missing
- trapping incorrect
- incorrect use of spot vs. process color
- incorrect use of the RGB color mode
- incorrect page set-up settings
- graphics not properly linked to page layouts
- incorrect bleeds
- missing laser proofs
- missing graphics
- incorrect photograph resolution

Each of these problems will be covered in this article.

Hardware

With the introduction of Windows 95 and Macintosh PC Exchange, hardware compatibility is almost a non-issue today. Files built using all the common prepress software programs can be readily used on either a Macintosh or a Windows-based machine. However, you do need to know what computer platform your service provider will use to output your file. Most service providers use Macintosh equipment, so no particular problems arise for designers who use Macs. One of the few problems Windows users may find when submitting a file to a Macintosh-based service provider is font incompatibility—Windows fonts won't work on Macs, and Mac fonts won't work with Windows. If your service provider will output your job using a Windows machine and you use a Mac, you'll need to save your files on a PC-formatted disk. Macs can read and write both PC- and Mac-formatted disks.

Software

Software *is* a *major* issue. For best results, be *sure* to use industry-standard software. Although it is not the intention of this article to endorse any particular program, Houston-area service providers tend to prefer files created using QuarkXPress, Adobe Photoshop, and Adobe Illustrator. Adobe PageMaker and Macromedia Freehand files

are usually accepted, too. Both QuarkXPress and PageMaker can accept files created in Illustrator, Photoshop, and Freehand. However, your service provider may not be able to translate a QuarkXPress file to the PageMaker format and visa-versa. Be sure to find out if your service provider supports your software programs.

Use the right software for the job. Photographs should be prepared in Photoshop, while illustrations should be done in Illustrator or Freehand. Complete pages should be built using QuarkXPress or PageMaker. Do *not* attempt to build complete pages in Photoshop, Illustrator, or Freehand. Do *not* build finished files using inappropriate software, including home-use greeting card programs, wordprocessing programs, spreadsheets, or paint/draw programs.

Fonts

Fonts are a special type of software to which you *must* give special consideration. Your first consideration must be font type—TrueType or PostScript. TrueType fonts come standard with Macintosh computers and Windows programs. However, service providers *prefer* you to use PostScript fonts because they perform more consistently when output on PostScript devices such as imagesetters and platesetters. If you prepare a job using TrueType fonts, your service provider may need to change your typeface to its PostScript equivalent. Unfortunately, changing typefaces often results in significant reflow of text.

Second, you must determine if your service provider has *the exact same font* you used when you built the file. Not all fonts with the same name perform the same way. More than one manufacturer may have the rights to the same typeface. Each manufacturer may make minor modifications to the attributes of the font, such as its kerning table. Such changes can cause reflow. It is also possible that *you* could have altered the font in one way or another. To prevent reflow, service providers generally ask you to provide the fonts on a disk when you submit your file for output. However, Ellen Wixted, writing in *Adobe Magazine* (Wixted, 1997), states:

> "...using fonts in this way can be a violation of your licensing agreement. The Adobe font-licensing agreement allows you to include the fonts if the service provider has already purchased a license to use them; the agreements for fonts from other vendors vary, so it's worth checking them carefully to ensure that you're not breaking the law."

The best resolution to the font problem is to make sure your service provider owns the fonts you intend to use. Most service providers have invested heavily in fonts and probably own one or more libraries, such as those sold by Adobe, Agfa, or Bitstream. However, service providers will probably not have "cloned" typefaces, such as those sold in mail-order catalogs on a disk containing thousands of faces for a ridiculously low price.

Many times print buyers overlook the fonts used in EPS images. For example, if you are building a document using Tekton and place an EPS image that contains Adobe Garamond on a page, the service provider will need to have both Tekton and Adobe Garamond installed when the file is output. Remember to always keep track of all the fonts used in the page layout file and all its supporting files.

Graphic File Formats

The digital files you provide to your printer or service bureau will be saved on your disk in some kind of file format. There are two types of file formats that you must consider: graphic file format and page file format. Graphics are typically prepared in Photoshop, Illustrator, or Freehand. Each of these programs can save files in its own native file format that can usually be read only by the originating software. In addition, these programs can also save in more generic formats that can be read by other programs. While you are creating an image, it is useful to save your file in your program's native format. However, when you prepare your files to be output, you should save in a generic format. In general, the TIFF (Tagged Image File Format) format is preferred for bit-mapped images such as photographs, while the EPS format is usually preferred for vector graphics such as illustrations. If you create a duotone or a clipping path in Photoshop, you must save the file in the EPS format. Additionally, if you want the halftone screen settings you apply in Photoshop to override those set in your page layout program, you must save the file in the EPS format and select the Include Halftone Screen checkbox in the EPS Format dialog box. Be sure to check with your service provider to find out the preferred formats for your files.

There are certain graphic file formats that you should avoid at all costs. Mac users should never use PICT, while Windows users should never use BMP, WMF, or PCX. Both Mac and Windows users should avoid JPEG and GIF formats. Each of these file formats have specific purposes—however, output on a high-end PostScript device is *not* one of those purposes. Do yourself a favor—*don't use those formats!*

Page File Formats

Page layout programs, including PageMaker and QuarkXPress, save completed documents in their own native formats. To print a file saved in one of these formats, your printer or service bureau will need to have the same page layout program and version that you have. This is not a problem because most service providers support both PageMaker and QuarkXPress. If you choose to provide your files in native format, you must be sure to provide *all* the supporting files, including all the linked graphics used in

the document. Use your page layout program's collect function to place a copy of your file and all linked files on the disk that you will hand off to your service provider. Another important point: don't change the name of any supporting file or edit it after you have placed it into your page layout. If you edit a graphic or change its name, the page-layout program will not be able to find the graphic during output.

Many people find it convenient to provide PostScript print files to service providers rather than files saved in page-layout native formats. To create a PostScript print file, choose Print to File instead of Print to Printer in the Print dialog box of your page layout program. There are three distinct advantages to providing PostScript print files. First, the fonts can be embedded into the file so that the service provider does not need to have them installed on its computer. Second, all graphics are embedded into the file so you don't have to worry about renamed or missing files. Third, PostScript print files *cannot* be opened by a service provider so no changes can be inadvertently made to your document.

Unfortunately, PostScript print files also have two downsides. First, before you print to file you must make sure that the Page Setup and Print dialog boxes are set properly *for the output device that the service provider will use.* In particular, the GATF study (1997) mentions the following adjustments that are often incorrectly set: page size, orientation, media size, margins, polarity (negative or positive output), and emulsion orientation (right-reading or wrong-reading). To properly set the page setup dialog box, you will need to obtain the PPD file (for PageMaker) or the PDF file (for QuarkXPress) that matches the service provider's output device. Always ask your service provider for assistance *before* creating a PostScript print file. Second, you must remember that PostScript print files cannot be edited by your service provider. If the file contains errors of any kind, you will have to fix them.

An alternative file format is now available for saving completed pages. Adobe Acrobat Portable Document Files (PDF) can be read on Mac, Windows, or UNIX computers using Acrobat Reader software (available free on the Web). PDF files can be compressed to very small sizes, and can have all fonts and graphics embedded. In addition, PDF documents can be printed on most any output device. To save a PDF, first print to file. Then use Adobe Distiller software to compress the file and create the PDF. PDFs offer some advantages over PostScript print files. In particular, PDFs can be edited in a limited way using the Adobe Acrobat Exchange software. Some service providers currently support the PDF format, and it is likely that many more will accept them in the future.

Trapping

Most off-the-shelf desktop publishing programs do a limited job of trapping. Page layout programs trap items created within the program—not imported images. In addition, the page-layout program's default *amount* of trap may be insufficient for a given printing process or paper. Many people find it effective for the service provider to create all traps using specialized trapping software. If you choose to use your own software to create traps, be sure to ask your service provider for specific instructions for each program you intend to use on a project.

Spot vs. Process Color

If you are building a spot-color job, you must be sure that your colors are defined as spot colors. For example, if you choose from the standard colors on the QuarkXPress color palette, or add a PANTONE or other spot color to the color palette, the program will, by default, assume that each color is a spot color and will output an individual separation for each color. This is fine if you are creating a spot-color job. However, if you are building a process color job and change the color of an item using QuarkXPress' color palette, XPress will output five separations: cyan, magenta, yellow, black, and whatever color you chose from the palette. This is fine if you are expecting to pay for a five-color press run. However, it is more economical, and often aesthetically acceptable, to simulate spot colors using CMYK. To simulate a spot color ink, and thus prevent the transformation of a four-color job into a five-color job, you must define the color as a process color in QuarkXPress' Edit Color dialog box.

If you are building a spot color job, you must make sure that the colors you use are *not* simulated using CMYK in the page-layout or graphics program. An important lesson: Photoshop treats *all* color images *except duotones* as process color. If you specify a color in the Photoshop's Custom Colors dialog box, the color will *automatically* be simulated using CMYK. For example, say you scan a black-and-white line illustration and use Photoshop to change its color to PANTONE Blue 072CV. If Photoshop is in the CMYK mode when you change the drawing's color, the PANTONE color will automatically be converted to its CMYK equivalent. If you save the file and import it into a spot color QuarkXPress document, XPress has no choice but to print it in process color. To prevent a spot color from being automatically converted to CMYK in Photoshop, you must use the Duotone mode. To change the color of a black-and-white line drawing to a spot color in Photoshop, convert the grayscale image to the Duotone Mode. In the Duotone Options dialog box, choose Monotone, click the Ink Color icon, then select a color from the Custom Colors dialog box. When you are finished, save the drawing as an EPS file, and import it into your QuarkXPress document. When the drawing is imported, its spot

color will automatically be added to the color palette. XPress will treat the drawing as a spot color and will print a separation for its color.

The RGB Color Mode

Desktop scanners separate color images into red, green, and blue (RGB) channels. Printing machines print color images using cyan, magenta, yellow, and black (CMYK) inks. Be sure that you always separate all RGB images into CMYK using Photoshop or other software. *Never* provide RGB files to your service provider unless it is understood that they will perform the separations.

It is important to make sure that your system is properly calibrated before you separate images to CMYK. Calibration includes setting your monitor to display accurate colors and setting Photoshop to properly match the inks that will be used to print the final job. Use either the Gamma Control Panel (Mac) or Photoshop's Monitor Setup Dialog Box (Windows) to set your monitor. Use the Levels dialog box, the Printing Inks Setup dialog box, and the Separation Setup dialog box to match Photoshop's colors to the inks that will be used to print the job. Mac operators can use ColorSync to simplify the calibration process. ColorSync is a color management system that is part of the Macintosh Operating System. It uses a *profile* of your monitor and a profile of the printing device to automatically set both the monitor and Photoshop. If you have not calibrated your monitor and Photoshop, make sure you do so *before* you perform any color separations.

Bleeds

If a photograph or other image is to bleed off the edge of the paper, it must extend past the edge of the document page by a specified amount—usually 1/8". Make sure you find out in advance, from your service provider, the amount of bleed to use.

Laser Proofs

Be sure to include two sets of laser proofs with your disk(s). One set should be composites—i.e. they should be printed with the Print Colors as Grays option selected in the Print dialog box. The second set should be a set of separations. Print separations by choosing the separation option from the Print dialog box.

Resolution Setting

Whenever you scan an image, be sure that you set the resolution to two times the halftone screen ruling. For example, if a halftone is to be printed with a 150 lpi (lines per inch) halftone screen, the scan resolution should be set to 300 ppi (pixels per inch). You can change the resolution of a scanned image using Photoshop's Image Size dialog box.

If the resolution of an image is too high, you can decrease it without the image being adversely affected. However, if the resolution is too low, you should only increase the resolution *if* you decrease image size. In most cases it is *not* a good idea to allow Photoshop to resample an image to a larger size because the larger image will probably be unacceptably pixelized.

Preflighting

After the file is finished, an examination process called *preflighting* should be performed by the designer. Service providers should also preflight every job before production begins. Simply stated, preflighting is a systematic process to uncover flaws *before* a file is output.

There are several things a designer can do to preflight a job. First, use a checklist such as the one included with this article and check your file and its supporting files against the list. Second, print the job using a laser printer. Be sure to print separations if it is a color job. When the file prints, watch for messages that your page layout program might give you, such as missing fonts, or missing or modified pictures. Be sure to *correct* the file so that *no* messages appear during printing with your laser printer. If a file causes problems when printing to your laser printer, it most likely will give an imagesetter problems, too. However, you should remember that imagesetters are *much* more complex machines than laser printers. If a file prints on your machine, it is no guarantee that it will output properly on an imagesetter. Third, you can print the file to a PostScript print file, then use Adobe Distiller to create a Portable Document File. Use Adobe Acrobat to open the PDF. If the file opens properly, chances are it will print properly, too.

When your file is received by a service provider, a technician will follow a similar process to preflight the file. In addition, many service providers now use a program called *FlightCheck* (available from Markzware—800-300-3532) to scan your files. This program scans QuarkXPress and PageMaker files and checks for over 150 potential problems such as incorrect color mode, missing fonts, fonts embedded in EPS files, stylized or edited fonts, incorrect scaling of photographs, and improperly compressed images. If you are serious about preflighting your own files, you may want to purchase FlightCheck and use it on your files before handing them off to a service provider.

It is important that you remember that preflighting is an exacting process that must be performed correctly. It takes time. Therefore, some printers will not be able to inform you if there are problems with your job until two or three days have passed. In this case, good printing comes to those who are patient.

References

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