

Chapter 3: Working with Files in Illustrator

In This Chapter

- Determining File Format Requirements
- Illustrator's Commands to Save and Export Files
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- Troubleshooting

A file's format determines how the file's information is stored. Different formats store information in different ways and, in some cases, store different information. How the file can be used, and for what, often depends on file format. Print and Web applications require different file formats. What works well for print is not even visible on the Web. Trying to use Web-formatted images to produce high-quality printed materials is an exercise in frustration. Knowing the destination of a file before you begin working can often help prevent serious errors later. Creating with the end product in mind is usually a good idea.

You also need to consider various other issues when working with files in Illustrator. You may need to consider whether to link or embed placed artwork. You may need to consider copyright issues when sending images with fonts to a printer. Even how and what you name a file may be problematic.

Determining File Format Requirements

A file that's headed to the World Wide Web can be saved in one of several formats. Each format has its strengths and weaknesses. Images that are intended for four-color process printing can also be saved in several formats. There are, of course, several other possible destinations for your work. In this chapter, you'll look at appropriate file formats for those purposes, too.

More in-depth information on these specific issues is available in these chapters: Chapter 11, "Output Options"; Chapter 12, "Understanding and Applying Color"; Chapter 19, "Raster Images and Rasterized Objects"; Chapter 23, "Saving Images for the Web"; Chapter 24, "Flash and SVG Support"; and Chapter 25, "Commercial Printing and Trapping Issues."

Raster Versus Vector

File formats can be divided numerous ways and into numerous categories. One of the most important divisions is between *raster* and *vector*. Although these concepts are explained at length in Chapter 19, it's important to have the most basic of understandings for this discussion of file formats. In a nutshell, a raster file saves an image as a series of pixels, colored squares arranged in a series of rows. Vector data, on the other hand, consists of mathematical descriptions of shapes. When raster images are resized (enlarged or made smaller), the images can become blurry. Vector images, on the other hand, remain sharp and clear at any size.

More and more, the line between vector and raster is blurring. Illustrator is a vector art program, but it

can and does work with raster data. Adobe Photoshop, on the other hand, is a raster image editor. Photoshop 6, however, does have vector text capabilities and simulates vector objects through the use of clipping paths. Despite these advances, however, the difference between the two types of data is important.

If you're confused about the difference between raster and vector, see "[Pixels and Paths](#)" in the "[Troubleshooting](#)" section at the end of this chapter.

Web, Print, and Other File Destinations

For the Web, the most common file formats are all raster: JPEG, GIF, and PNG. Some of the newer formats, such as Flash and SVG, are vector based. JPEG is designed for photographs and also does a very good job with other continuous tone images. GIF, on the other hand, is limited in the number of colors it can store and so is better suited to images with large areas of solid color, such as clip art, cartoons, and logos. (The differences are explored in depth in Chapter 23.)

In the print world, EPS and TIFF can both be raster formats, although the clipping paths embedded in the files are actually vector data. Chapter 25 provides more information.

Illustrator also supports several other file formats, which are used specifically with certain programs. Files can be prepared in the native formats of programs such as Photoshop and AutoCAD, and for specific platforms and systems, such as Amiga and Pixar. Most files, however, are saved in a limited number of formats. They will be discussed later in this chapter.

Compression Issues

Many file formats shrink the amount of space required on disk for the file through compression. Files can also be prepared for archiving using compressed file formats. The two categories of file compression are *lossy* and *lossless*. Lossy schemes discard data to reduce file size. Lossless compression schemes rarely achieve the tiny file sizes available to their lossy counterparts but retain all of an image's original data.

The content of a file also plays a role in file format and compression selection. Some images are better suited for one type of compression than others; some files are better suited for a specific file type that uses one type of compression.

JPEG uses a lossy compression system, discarding data to reduce file size. There are several levels of JPEG compression, and Illustrator allows you to balance file size against image quality. The smaller the file, the more data discarded. The more data discarded, the lower the quality of the image.

Having trouble with JPEG? See "[Lossy Compression](#)" in the "[Troubleshooting](#)" section at the end of this chapter.

GIF and PNG usually use lossless compression schemes. All the image's original information is retained. New in Illustrator 9 is Save for Web's lossy GIF compression option.

Note - Save for Web's option to reduce GIF file size by discarding data (Lossy %) cannot

be used with the Interlaced option. Lossy GIF likewise is unavailable when Noise or Pattern dither is selected.

Platform Considerations

Filenames are still a consideration, despite the great strides that have been made over the past few years. The "eight-point-three" naming system is no longer required for Windows, but that doesn't mean that it's gone completely. (In computer jargon, "8.3" refers to a filename of up to eight characters followed by a period and a three-character file extension. This was and is the only acceptable way to name files in MS-DOS.)

The following are some considerations when you're naming files:

- Windows filenames can be up to 256 characters long, and they are not case sensitive (upper- and lowercase letters are seen as the same letter). Several characters cannot be used in filenames: forward and back slashes, colons, asterisks, question marks, quotation marks, left and right angle brackets, and vertical slashes. In order, these characters are as follows: / \ : * ? " < > |
- Macintosh filenames through OS 9 can be up to 31 characters long and are not case sensitive. The only forbidden character is the colon (:).
- UNIX filenames can be 256 characters long, cannot use the slash character (/), and are case sensitive.
- MS-DOS filenames can use only the 8.3 format and have the same character restrictions as Windows.
- ISO 9660 for CD-ROMs uses the 8.3 name format and allows only 26 letters, the numbers from zero to nine, and the underscore (_). These names are not case sensitive. (This standard is designed to allow a CD-ROM to be recognized by any computer.)

Caution - When you're preparing files for the Web, including the three-character filename extension is important. Although the platform and operating system (OS) may support filenames without extensions, Web browsers require them. Because of the peculiarities of the Web, my best advice to you is to be as conservative as possible. Unless you have direct knowledge of (and control over) the server upon which your files will be stored, use the lowest common denominator for filenames:

- Use the 8.3 naming convention and never forget to add the filename extension.
 - Stick with the 26 letters, the 10 numerals, and the underscore (_).
 - Use only lowercase letters.
-

Illustrator's Commands to Save and Export Files

When you start a new document, it is, by default, an Illustrator document. However, the file isn't actually recorded to disk until you use the Save, Save As, Export, or Save for Web command. When the file is written to disk, you must select a file format. The format (as noted previously) determines many important aspects of how the file will be recorded. File compatibility, compression scheme, and file size are just some of the factors that you must consider.

Save

The Save command maintains the file's existing format and simply updates the file's information. If a new file has not previously been saved, the Save As dialog box opens.

Save As

The Save As dialog box offers three file formats from which to choose:

- **Adobe Illustrator Document (.ai)**—This is the native file format for Adobe Illustrator. It supports all the features of the program. However, earlier versions also use the .ai file extension and do not support all the features of Illustrator 9. Specifically, transparency may drop out of an image. The difference may be subtle when effects such as drop shadows are involved.

Illustrator offers you several options when saving a file in its native format. You can see them in the dialog box shown in [Figure 3.1](#).

Using the Compatibility option, you can make the file emulate earlier versions of Illustrator. You should use it when the file will be opened in an earlier version of the program. You can also embed the fonts used in the document and subset them to reduce file size. (See "[Embedding Fonts](#)" later in this chapter.) Any specific ICC profiles in use when the file was created can be included, as well as any files that were placed but not embedded. (See "[Linking and Embedding Images](#)" later in this chapter.) If an earlier version of Illustrator was selected for Compatibility, you have the option of choosing how to handle transparency. If you choose to preserve the paths, the file will be fully editable in the earlier version of the program. If you opt to preserve the appearance, sections of the illustration that employ transparency will be flattened (rasterized and divided). [Figure 3.2](#) shows the result.

Figure 3.1

After you select a name and location for a file and click OK, this dialog box opens.

Tip - If you exchange files with anyone using an earlier version of Adobe Illustrator, suggest that your colleague download the free Version Checker from Adobe. With this plug-in installed, users of earlier versions of Illustrator get a warning when opening an AI9 document. The plug-in can be downloaded from the following sites:

Mac:

<http://www.adobe.com/support/downloads/827a.htm>

Windows:

<http://www.adobe.com/support/downloads/8276.htm>

Figure 3.2

The two objects on the left were flattened when the file was saved. To the right, the parts have been scattered to show them individually.

- **Adobe PDF (.pdf)**—The native format of Adobe Acrobat, PDF files are now very common. Acrobat Reader can be found on most modern computers and is freely available for others. Documents saved in PDF format can be viewed on almost any computer.

PDF files support both vector and raster (bitmap) information. Although PDF pages are PostScript at heart, they can also contain annotations and notes, and can be searched and hold hyperlinks.

You'll see two panels in the Adobe PDF Format Options dialog box after you've named and chosen a location for your file. On the General panel (shown in [Figure 3.3](#)), you can select general Acrobat options. On the Compression panel (shown in [Figure 3.4](#)), you can specify compression settings. In either panel, you can use the Options Set menu to select the predefined sets of options for Default (print) or Screen Optimized (Web).

Tip - Before saving complex illustrations as PDF files, you can take an extra step to help preserve the appearance of your image and ensure problem-free printing. Working on a copy of your original, open the Layers palette. From the palette menu (the little triangle in the upper-right corner of the palette), select Flatten Artwork. You can then save the file in PDF format with its original appearance intact.

Figure 3.3

The General options for PDF files include compatibility and embedding. Thumb-nails are used within Acrobat and Acrobat Reader, but not as previews in Illustrator's Open dialog box.

Figure 3.4

Note that in addition to allowing separate settings for different types of artwork, this dialog box warns that some art will be flattened.

- **Illustrator EPS (.eps)**—Encapsulated PostScript is a page description language developed by Adobe. Like PDF, it supports both vector and raster information. EPS is often used to put a graphic element into a page layout program. Typically, the EPS file is an image on a page, but it can be a complete page as well.

EPS files can contain previews that are visible in a page layout program. When no preview is

present, a placeholder (a box with two crossing diagonal lines) is shown on the page. Macintosh previews are available in PICT (Macintosh) or TIFF format, and either can be 1-bit (black and white) or 8-bit (color). Windows EPS files can have previews in TIFF or Windows Metafile (.wmf) format.

In addition to choosing the file format for the preview, you can set the preview to contain transparency in the EPS Format Options dialog box (see [Figure 3.5](#)).

Tip - Because TIFF previews are compatible with both Windows and Macintosh, choose this option when saving as an EPS file. And, although the 8-bit color preview will increase the file size slightly, choose it rather than the 1-bit black-and-white version.

Figure 3.5

Among the other options on this dialog box are a choice of PostScript Level 2 or Level 3. PostScript Level 1 is supported only when you're saving as Illustrator 8 or earlier.

Export

In addition to the three primary file formats available in the Save As dialog box, Illustrator offers a variety of export formats. Those formats unlikely to ever be needed can be deleted from the Photoshop Formats folder, found within Illustrator's Plug-ins folder.

A number of Illustrator's export formats require rasterization before you save the file. The Rasterize dialog box is shown in [Figure 3.6](#).

Figure 3.6

RGB, grayscale, and bitmap color modes are supported, along with a choice of resolution and antialiasing.

- **Amiga IFF (.iff)**—The Commodore Amiga is still in use as a video-editing platform, and the Interchange File Format (.iff) is also in use with some paint programs. However, most Illustrator users have no need for this format. Because IFF is a video format, it supports only RGB, grayscale, and bitmap color modes.
- **AutoCAD Drawing (.dwg)**—AutoCAD is a premier architectural and engineering design tool. DWG is the program's standard vector file format. DWG (and its sister format DXF) swaps white fills and strokes for black. The export dialog box is shown in [Figure 3.7](#).

Figure 3.7

AutoCAD version, bit depth, and raster format for fills and textures are among the choices for the DWG format.

- **AutoCAD Interchange File (.dxf)**—This file format is used to exchange information between AutoCAD and programs that do not support the DWG format. From Illustrator, it can also be used to exchange information with those programs. When you're working directly with AutoCAD, however, DWG is usually a better choice. DXF is a tagged format. The dialog box

is identical to that of DWG (shown in [Figure 3.7](#)).

- **bitmap (.bmp)**—BMP requires that the image be rasterized before you save. The Rasterize dialog box is identical to the one shown in [Figure 3.6](#). In addition, however, the BMP format offers compatibility with Windows or IBM's OS/2 format, a choice of color depth, and (in some cases) compression (see [Figure 3.8](#)).

Figure 3.8

The Run Length Encoding (RLE) compression option is not always available.

- **Computer Graphics Metafile (.cgm)**—This format is designed for use with complex engineering and architectural diagrams. It is not suitable for illustrations that incorporate large amounts of text. It is a vector format. The export function has no user-definable options.
- **Enhanced Metafile (.emf)**—An advanced version of Microsoft's Windows Metafile (.wmf) format, EMF is available only for 32-bit Windows. The export function has no user-defined options.
- **Flash (.swf)**—Although not the native Flash format, SWF fulfills the need for a vector-based, interactive file format. SWF is actually the Shockwave file format. (Flash's FLA is a proprietary format controlled by Macromedia.) This is a Web format, but viewers must use a browser equipped with the Flash plug-in. For more information, see Chapter 24. [Figure 3.9](#) shows the dialog box for Flash (SWF) Format Options.
- **JPEG (.jpg)**—One of the two main file formats on the Web, JPEG is a 24-bit file format best suited for photographs and other continuous-tone images. In addition to Export, JPEG is available through Illustrator's Save for Web feature. More information is available in Chapter 23.

Problems creating JPEG files for the Web? If they're valid JPEG files, but your browser won't show them, see "RGB for the Web" in the "Troubleshooting" section at the end of this chapter.

- **Macintosh PICT (.pct)**—Like GIF, PICT is most effective when you're working with areas of solid color rather than continuous tone. This Macintosh format has some (but limited) support in Windows programs.
- **Paintbrush (.pcx)**—Like IFF, BMP, and a number of other formats, PCX requires rasterization before you save an image. (The Rasterize dialog box is shown in [Figure 3.6](#).) PCX was developed for the PC Paintbrush program. Illustrator fully supports only version 5 of the format.

Figure 3.9

The specific options in this dialog box are discussed in Chapter 24.

- **Photoshop (.psd)**—Photoshop native format files can now be created from Illustrator. Layered Illustrator documents can be exported to Photoshop with layers intact. Illustrator 9 supports the Photoshop 5 file format but not all the new features found in Photoshop 6. [Figure 3.10](#) shows the Photoshop Options dialog box.

For additional information, see Chapter 19, "Raster Images and Rasterized Objects," and Chapter 28, "Integrating Illustrator 9 and Photoshop 6."

Figure 3.10

The available color models are RGB, CMYK, and grayscale.

- **Pixar (.pxr)**—Pixar is the file format used by the PIXAR workstations for 3D and animation work. Saving in the Pixar format automatically rasterizes the image (refer to [Figure 3.6](#) for the dialog box).
- **Scalable Vector Graphics (.svg)**—Discussed in depth in Chapter 24, SVG is a new vector file standard that incorporates JavaScript interactivity. Most Web browsers require a plug-in to see SVG files. As you can see in [Figure 3.11](#), SVG allows you to embed information required to properly display the image.
- **SVG Compressed (.svgz)**—A compressed version of SVG, SVGZ can substantially reduce file sizes. Only one level of compression is available.
- **Targa (.tga)**—Targa files are designed for use with systems incorporating the Truevision video board. Numerous MS-DOS color applications can use the format. Artwork is automatically rasterized (refer to [Figure 3.6](#)) when saved as Targa.

Figure 3.11

The various options in this dialog box are explained in Chapter 24.

- **Text (.txt)**—This "plain text" format is a most basic text format. It is a suitable choice when you need to move text to a word processor without fancy formatting. Such options as baseline shift and character scaling will be ignored.
- **Tagged Image File Format (.tif)**—TIFF (as the file format is known) is among the most common raster image formats. In addition to image-editing programs, many scanners produce TIFF files. This format is among the most common for placing rasterized images into page layout programs. In addition to the settings shown in the Rasterize dialog box (refer to [Figure 3.6](#)), the TIFF Options include LZW Compression settings and profile embedding.
- **Windows Metafile (.wmf)**—The file format of clip art from Microsoft Office for Windows (among other files), WMF is a vector format.

Save for Web

The Save for Web command opens what is perhaps Illustrator's most impressive dialog box. Save for Web, which might be considered an independent program within Illustrator, will be fully explored in Chapter 23. It even creates a separate and independent preferences file. Its entire function is to properly optimize graphic files for the Web in GIF, JPG, and PNG formats. As you can see in [Figure 3.12](#), it offers up to four variations of optimization for comparison.

Figure 3.12

The Save for Web dialog box, despite its appearance, is actually quite user friendly.

Save for Web allows you to balance the file's size against its appearance, even to the point of specifying exactly how many colors will be included (8-bit color only). Because it works only with GIF, JPG, and PNG, the files are rasterized when you save. Save for Web also allows you to specify a target file size and let the program make the decisions about how to optimize.

Linking and Embedding

The process of linking and embedding objects is discussed fully in Chapter 26, "Linking and Embedding Images and Fonts." When you add artwork to an image from an outside file by using the Place command, it can be linked or embedded. Embedding places a copy of the artwork within the Illustrator file. Linking places only enough information to allow Illustrator to find the original artwork for display within the image. Linking placed images rather than embedding them keeps the Illustrator document's file size down and allows the placed artwork to be updated or changed as necessary in its own program.

Fonts can also be embedded in an image, ensuring that they will be available for later use with that file. To reduce file size, you can *subset* fonts. Subsetting a font allows you to include only the characters used.

Linking and Embedding Images

One of the two ways that you can place artwork in an Illustrator document from another file is *linking*. A linked image remains separate. Somewhat similar to a hyperlink for the Web, only a pointer is placed in your illustration, and the external image is loaded when your file is opened. Illustrator notifies you if any changes have been made to the original. Keep in mind, though, that your image must always be able to find the external artwork. If you were, for example, to send out your image on disk without including a copy of the linked file, the linked artwork would not be available to anyone opening your image from the disk. A warning dialog box would appear. The Save As command (and Save the first time it is used) allows you the option of including linked files.

Embedding is the other way to include artwork from another file in an Illustrator document. When you embed an image, a copy of the artwork is incorporated into your Illustrator document. You are not notified of any changes to the original, and the only way to update is to replace the placed image. The advantage is that the placed artwork becomes part of your image, and it doesn't have a link that can be accidentally broken. The Illustrator document's size increases by the size of the placed artwork.

Illustrator can place files of any format that it can open, with the exception of the Illustrator (.ai) format. Some formats, however, must be embedded rather than linked:

- CGM
- DOC
- DXF/DWG
- Freehand

- RTF
- SVG
- WMF

The Links palette, shown in [Figure 3.13](#), is for use with linked and embedded images. Using the palette is an excellent way to maintain control of and to track images from other documents.

Figure 3.13

The Links palette allows you to view according to the status of a file.

Icons to the right of each image indicate the status. A red octagon with a white question mark (shown in [Figure 3.13](#) next to <DocInfo combi.psd>) indicates that a linked image's original is missing. The icon to the right of the next image indicates that it is embedded rather than linked. The symbol to the right of the third image indicates that it has been modified since it was placed into the Illustrator document. The fourth image, with no icon showing to the right, is linked and its status is okay.

Embedding Fonts

Illustrator allows you to include the fonts used when saving files in the Illustrator format. Embedding fonts ensures that they will be available when the image is opened on different machines or in different programs. When a font is not embedded and it is not installed on the computer opening the file, another font is substituted. However, that font may not have the same spacing, appearance, or size as the font originally used and, therefore, the appearance of your image can be altered, sometimes drastically.

You also have the option to subset a font, which results in only the characters used being embedded in the file. Subsetting helps keep file size small but restricts editing possibilities since not all characters will be available. In addition, font embedding is available only when the file is saved as an Illustrator 9 document. Saving a file to be compatible with an earlier version of the program eliminates the option.

One other aspect of font embedding deserves attention. Fonts are copyrighted. You may or may not have acquired the right to embed the font when you acquired the font itself. If you are sending a project to a print shop or service bureau, and it does not own copies of the fonts, you must have permission from the fonts' creators to embed them. Adobe allows embedding of all its fonts (as long as you have acquired the fonts properly). Other foundries may not. For information on how to determine the ownership of a font, check the Adobe Web site at <http://www.adobe.com/type/embedding.html>.

Troubleshooting

Pixels and Paths

I just don't get it. Shouldn't pictures be pictures? Why make a big deal out of this vector-raster stuff?

The two types of file formats are not generally compatible. Each has its strengths and weaknesses. Objects and lines created in Illustrator are typically made up of paths that may or may not be filled with color. These paths themselves may be colored or may be blank. The computer file that stores the image needs to know the relationship of each path to the others in the image and the colors used for each stroke and fill. When the file is opened and the image is viewed, the computer can make it any size required, as long as the relationships among the paths and their fills and strokes are maintained. The capability to resize images without degrading their quality is one of the things that can make vector formats preferable to raster formats in many cases.

Raster images, such as photographs taken with digital cameras or scanned into a computer, don't have paths and objects. You may see shapes and lines in the picture, but they weren't recorded as such in the image's file. Raster files record only a series of little squares (pixels), each a specific color. Neighboring pixels may be of the same color, different colors, or shades of the same color so close that you cannot see the difference. The picture is re-created by displaying those thousands or millions of little colored squares. Raster images are typically better than vector for displaying subtle shifts in colors and hues, such as those found in photographs.

Lossy Compression

I want to get my files really small for the Web, but it takes a long time. I save an image at one compression level and open it up to look at it. Then I have to go back and try a different compression level to get what I want. Isn't there a way to preview an image being saved as a JPEG?

Use the menu command File, Save for Web. This feature allows you to compare up to four versions of the same image, all at the same time. You pick the versions that best meet your needs for quality and file size, and click OK.

RGB for the Web

I created JPEG files of a lot of the images my company used in its latest brochure so that I could post them on the Web, but they don't show up. I exported them as JPEGs, so what's the problem?

For a brochure, eh? I'll bet those images were CMYK. Although that color mode is perfectly acceptable for JPEG, it's not acceptable on the Web. Your images need to be converted to RGB before they can be seen by a Web browser. Throw away the CMYK JPEGs and go back to the originals. Use Save for Web rather than Export, and the color mode will automatically be converted for you.

What's that? Why does JPEG accept CMYK if you can't see it on the Web? Well, JPEG does more than just Web graphics. It's also one of the major file formats used to compress images for storage or archiving. And many of those images are CMYK.

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