

File Formats

File Extensions

All files must have a dot (.) letter extension at the end of the file name in order to be identified by the computer. All computers require file extensions. (If that feature is turned off, you may not be able to see the extension. Turn it on. This will help you find the right file for the project.)

The newest trend is for page layout and illustration programs to be able to accept "native" files. A native file is the software the original file was created in.

Because some file formats are becoming obsolete, as designers, you still need to know what they are and their strengths and weaknesses.

AI – This is the file extension for native Adobe Illustrator files. Illustrator files are always vector files and are always resolution independent. Illustrator is now offering some "raster" or bitmap effects, such as transparency or drop shadows. These effects are not resolution independent and can sometimes create issues when outputting the file.

RAW – Camera raw image files contain the data from the image sensor of a digital camera. Raw files are so named because they are not processed. Camera manufacturers all use their own licensed version of RAW image files with their own special names. Canon uses CRW or CR2. Nikon uses NEF, Sony uses ARW, etc. It is sometimes referred to as a digital negative file.

DNG – Digital Negative Graphic. This is a proprietary file format established by Adobe. By converting your native RAW file to this format, you will always have access to the file should the Nikon, Canon, Sony, etc. file format become obsolete. Converting the file to the DNG format limits the options available for processing RAW so has not been adopted by many photographer as yet

PSD – Photoshop Document. This is the file extension for native Adobe Photoshop files and while it is by far the most versatile, it is also the largest file size.

EPS – The Encapsulated PostScript (EPS) file format can be a vector or a raster image. As a vector file, it is resolution independent. As a raster or bitmapped file, it is resolution dependent. This file format is very buggy. Because of that and the confusion created by having a file format that is vector and bitmap, it is quickly becoming obsolete.

Tip: After scanning a photo, what file format should I use to save?

PSD or TIF

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GIF – The Graphics Interchange Format (GIF) is a file format commonly used to display index-color graphics and images in hypertext markup language (HTML) documents over the internet. GIF is a compressed format that is designed to minimize file size and load time.

Photoshop can save bitmap, grayscale, or indexed-color images in the GIF format. When saving an image as GIF, you can specify how the image appears as it is downloaded. Select Interlace to display the image gradually in increasing detail as it is downloaded.

Important: GIF images are ALWAYS low resolution and ALWAYS contain only 256 colors. This file format is ONLY for use on the web.

JPG – The Joint Photographic Experts Group (JPG or JPEG) format is generally used for photographs. It is ALWAYS a bitmap file. This file format is widely used on websites, but unlike the GIF format, JPG retains all the color information in an RGB image.

JPG also uses a compression scheme that effectively reduces file size by identifying and discarding extra data not essential to the display of the image. Opening a JPG image automatically decompresses it.

Because it discards data, the JPG compression scheme is referred to as “lossy.” This means that once an image has been compressed and then decompressed, it will suffer a loss of quality in the original image. A lower level of compression results in lower image quality, while a higher level of compression results in better image quality.

While you may need to use this format to transfer files, it should only be used on a copy of the original file and then decompressed very few times. You may often begin to see degradation in the image after only opening and closing it a few times. To avoid degradation of the image, save the original file as a PSD or TIF.

PNG – The PNG format was developed as an alternative to the GIF format and, like GIF, is used for displaying images on the Web and other online services. PNG preserves all color information and alpha channels in an image and uses a lossless compression scheme to reduce file size. The file size is larger than a JPG and may take longer to display. Only the most current version of browser software can display this format.

What to Use

For photos to be used for print, use PSD.

For vector graphics, use AI.

File formats used for print are PSD, JPG & TIF, and must be high resolution. (300 dpi)

File formats used on the web are JPG, GIF and PNG, and must be low resolution. (72-96 dpi)

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PDF – The PDF format is used by Adobe Acrobat®, Adobe’s electronic publishing software for use in all platforms. PDF files can be viewed and printed using the Acrobat Reader® software which can be downloaded free of charge from the Adobe website (get.adobe.com).

PDF can represent both vector and bitmap graphics, and can also contain search and navigation features. PDF files can contain hypertext links, video and an electronic table of contents. PDF is the wave of the future, and both graphics and web professionals should know how to create a good PDF file that is appropriate to the medium. The full version of Adobe Acrobat that includes both the reader and the distiller is required.

TIF – The Tagged-Image File Format (TIFF) is used to exchange files between applications and computer platforms. The TIFF format supports LZW compression, a lossless compression method that does not discard detail from the image.

When saving an Adobe Photoshop image in TIF format, you can choose to compress the file to a smaller size automatically by clicking the LZW Compression check box.

Scanning

A photo, graphic or anything else that is scanned by a desktop scanner or photographed is a bitmap image. Always. All Photoshop files, JPG file and TIF files are bitmap images. Always. As a bitmap image it is resolution dependent. Always.

When using bitmap files for print, the most important thing to remember is that a bitmap graphic must be high resolution at 100%.

What does that mean?

Let's say you have a Photoshop file that is 300 dpi and 3x5 inches in size and you want to use it as a background on an 8.5x11 inch page. If you use that file and simply stretch it to fit, you are literally stretching the pixels apart and that stretching reduces the resolution.

In order to use that graphic and maintain resolution, it must be 8.5x11 inches at 300 dpi. Otherwise when it prints it will be bitmapped (or pixelated). Printing at 100% means the graphic has to be 300 dpi at the final size in which it is used.

Tip: Always scan line art at a very high resolution to capture as much information as possible in the initial pass. I use 1200 dpi and then resample it down later.

Scanning Chart

| Reproduction process | Linescreen | Resolution |
|------------------------------|------------|------------|
| Laser printer, copy machine | 85 | 170 |
| Newspaper | 85 to 120 | 170 to 240 |
| Offset printing | 100 to 150 | 200 to 300 |
| Museum-quality display books | 175-200 | 350-400 |

Continuous-tones and Halftones

A halftone image is made up of a series of dots rather than a continuous tone. These dots can be different sizes, different colors, and sometimes even different shapes. Larger dots are used to represent darker, more dense areas of the image, while smaller dots are used for lighter areas.

Halftone images are used in newspapers and magazines because it is a much more efficient way to print images. Since a halftone image is made up of discreet dots, it requires significantly less ink to print than a continuous tone image. As long as the resolution of the image (measured in LPI) is high enough, the dots appear as a continuous image to the human eye. But if you closely examine the images printed in a newspaper, you should be able to see the dots that make up the halftone image.