

Optimizing Web Graphics

Every webmaster has faced the problem at some time or another – you have a great graphic you want to use, but its file size is just too big, and it takes too long for users to download. Fortunately, there are several things you can do to shrink the sizes of your graphics to make them “web-friendly” and help your site load faster.

But being smart about optimizing your World Wide Web graphics can help the situation. The best methods of optimizing graphics are shrinking their size and resolution and changing their format.

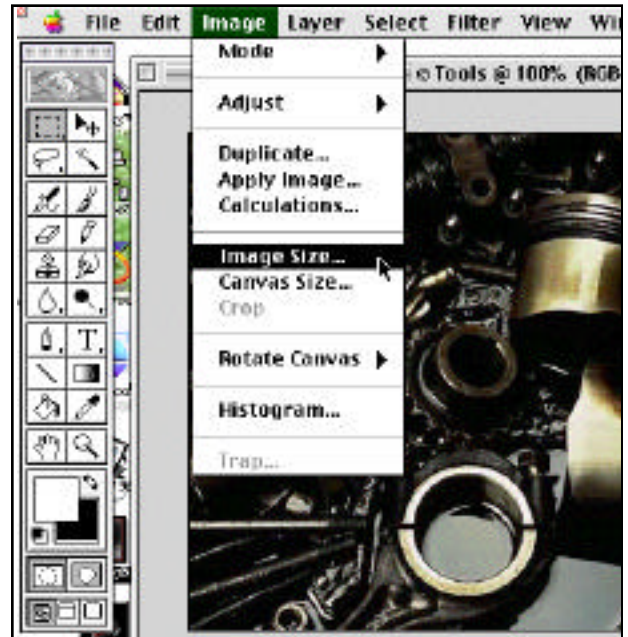
Using Size and Resolution to Your Advantage

The cardinal rule of web graphics is that they should be no larger or more complex than they absolutely have to be. Fortunately, most graphics programs will give you the option to change these things in any graphic you create or import (scan, copy, etc.). For these examples, we'll use the extremely-popular image-editing program **Adobe Photoshop**. If you don't use Photoshop, consult the user's manual for your image-editing software to find out how to make use of these options.

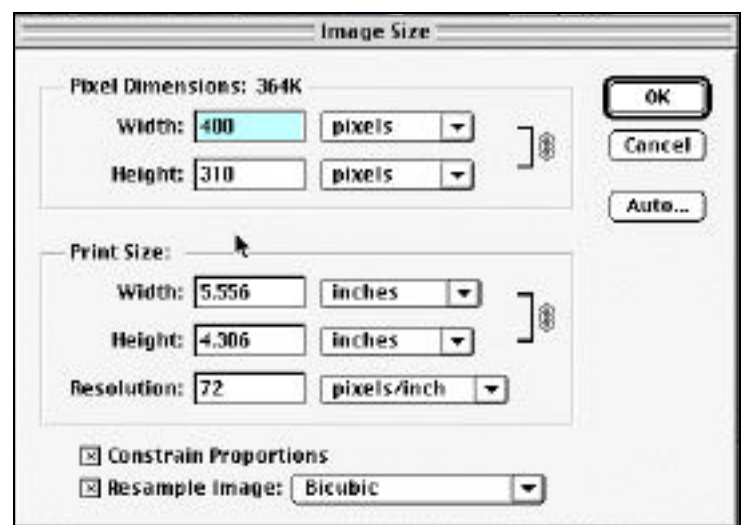
The most important tools for working with the size and resolution of an image in Photoshop are located in the **Image Size** dialog box, found by selecting it from the **Image** menu, as seen to the above right. Doing this will present you with a dialog box with many options, as seen below.

The first thing to examine is the graphic's *resolution*, or the number of individual colored dots (*pixels*) within an inch of the image. Lower resolution (fewer dots per inch) makes for a much smaller file size; a file weighing in at 50 kb at 300 pixels per inch can be reduced to 12 kb at 72 pixels per inch. Your graphic's resolution should depend on what you're doing with it: a graphic that will be used on printed materials should be 150 or 300 pixels per inch, or it will look “fuzzy” when printed out. However, a graphic that will only be seen on a screen (like on a website) can be safely reduced to 72 pixels per inch, which is the normal resolution that images are displayed on your computer screen.

Another item you can change in the Image Size dialog is the *pixel dimensions* of the graphic: literally, how many pixels high and how many pixels wide it is. It goes without saying that a smaller-sized image will have a smaller file size and download quicker. Unfortunately, there is no hard-and-fast rule about setting pixel dimensions (unless you have specified an image size in pixels in the `` tag in your HTML). Your image editor program will automatically shrink the picture into the new size through a process called “image resampling.” The best advice here is to play with the graphic at various sizes and see how small you can make it without losing too much detail.



Selecting the Image Size Dialog in Adobe Photoshop.



Adobe Photoshop's Image Size dialog box allows you to set the pixel dimensions (size) of a graphic and its resolution (level of detail).

Choosing Between GIFs and JPEGs

Changing the pixel size of images is a pretty simple operation in most graphics programs – but what may take more thought is your choice of formats. The main thing to think about is the number of colors that an image has. For instance, a scanned photograph of a person would have more colors than an image of blue text on a white background. The standard image formats used on the Web are, of course, **JPEG** and **GIF**.

The GIF (Graphics Interchange Format) file format is a proprietary format, created by the on-line service CompuServe many years ago. CompuServe was looking for a format that could compress images stored on their content network so that users (paying for costly on-line time) could download them more quickly. The CompuServe GIF solved the problem by allowing only 256 colors in images and instituting a data compression scheme to shrink file sizes.

Since the GIF was really the first compressed file format designed for cross-platform compatibility and compressed size for easy transfers, it was adopted as the standard graphics format for the first widespread graphical web browser, **NCSA Mosaic**. When Mosaic's project manager Marc Andreessen left NCSA to start up Netscape, the GIF remained the accepted graphic format.

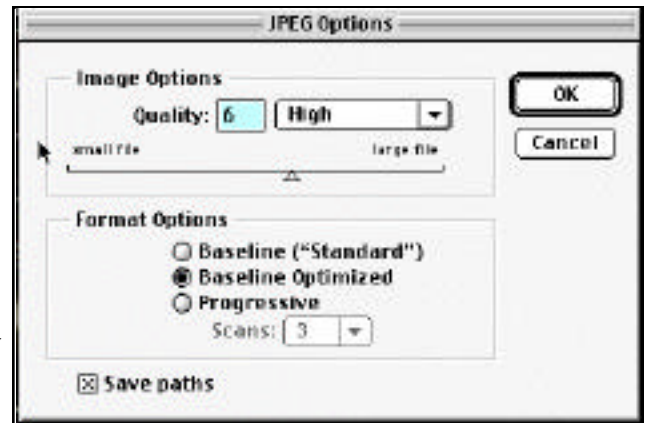
The JPEG was devised by the Joint Photographic Experts Group, a committee of photography and computer specialists attempting to devise an "open" graphic format for network use. The result of their work was the JPEG, a format which allows for a large number of colors to be used in a picture. The trade-off is that JPEGs, unlike GIFs, use a "lossy" compression scheme. This refers to the "loss" of image quality when the image is compressed: the computer simply throws away some of the information when the graphic's size is shrunk. Most photo utility programs allow the user to select what level of JPEG compression they want – and what level of quality they'll get as a result.

Colors are the Key

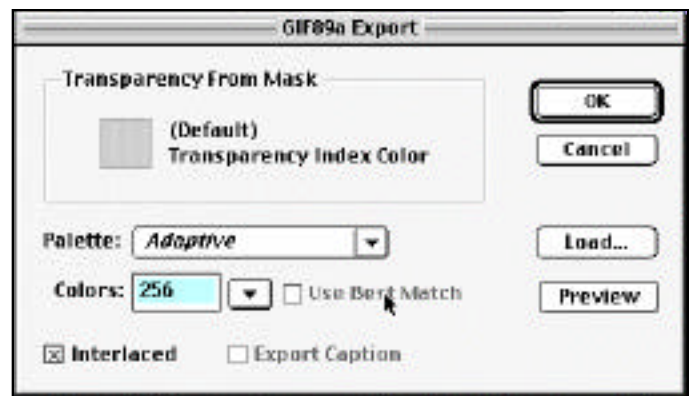
The best way to decide your format of choice is to think about the number of colors in the image. Lots of colors? Use *JPEG*. Few colors? Use *GIF*.

Remember that, in general, *more* compression means *less* image quality. I've found that one of the best applications for compressing images is **Adobe Photoshop 4.0** (and some earlier versions after 3.0.4). Photoshop's image manipulation and compression capabilities are second-to-none.

Many programs allow you to compress JPEG images to varying degrees. The key, however, is to find a happy medium for your graphic's purposes. Remember that details are thrown out when you use heavy JPEG compression, so make sure that you aren't losing too much. You can experiment with different levels of compression to find what works for you. An image that uses fewer colors (like red text on a yellow background) or even a grayscale photo will probably be smaller in GIF format. Although many programs don't allow you to select compression levels for GIFs, Photoshop 4.0 does. Again, test varying levels of compression for best results.



Adobe Photoshop 4.0's JPEG compression options dialog box.



Adobe Photoshop's GIF89a export options dialog box.