Optimizing Web Graphics

Software: Photoshop/ImageReady **Platform:** Mac/PC

Overview

The main purpose for optimizing images for the Web is to lower the download time for your Web pages. We define optimizing as reducing the size of an image file when saving it in a Web format: JPEG or GIF. Adobe Photoshop software makes this process easy. Photoshop contains an extra program called ImageReady. This program is specifically designed to modify and process Web graphics.

The two formats we will discuss are JPEG (Joint Photograhic Experts Group) and GIF (Graphic Interchange Format). JPEG is designed to be used with full-color or gray-scale images of natural, real-world scenes. It works well on photographs, naturalistic artwork or other similar images.

GIF on the other hand, is designed to work well with images with a few distinct colors. Images such as line drawings and simple cartoons or artwork are good candidates for GIF format. Images that have large areas of the same color are compressed very efficiently by GIF. Images with sharp edges also do very well with GIF compression, but not with JPEG.

Process

Optimizing a JPEG image:

1. With a JPEG image open in Photoshop , select Save for Web ... from the File menu.
2. The Image Ready Save for Web dialog box will open (fig. 2).
3. Click on the 4-Up tab above the image window in the Save for Web dialog box. You should see four versions of the image, the one in the upper right corner should have a border around it indicating it is the active image. When you place the cursor over the image it turns into the hand tool allowing you to drag the image to move it around in the pane (the images in all panes will move together). Move to part of the image with enough detail to allow you to evaluate image clarity. You may select the magnifying glass icon in the upper left corner of the dialog box to zoom in or out on the image.

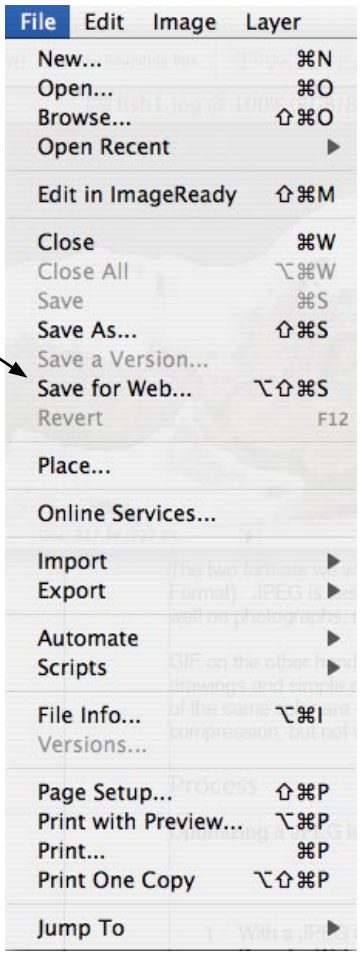


Figure 1

4. Evaluate the image. The upper left image is the original with no changes applied to it. Each of the other panes displays a copy of the image that allows you to change the JPEG compression. To evaluate the image at different compression rates (starting with the upper right pane):

    - Click in the window to select it.
    - In the Settings area in the right side of the dialog box, pull down the Format menu and select JPEG.
    - In the Settings area in the right side of the dialog box, pull down the Format Quality menu and select High.
    - Repeat the process above for the lower panes selecting Medium and Low format quality as you move from one window to the next. You should now have four windows with differing images: upper left- original; upper right - high quality JPEG; lower left - medium quality JPEG; lower right - low quality JPEG. Compare the image quality between these versions and decide what the smallest file size versus image quality is that is acceptable for your pages.
    - You can adjust the quality level for each window individually: select the window by clicking in it, highlight the Quality Number Input Box and type in a value, press return. This will allow you to vary the quality beyond the preset high, medium, and low settings.

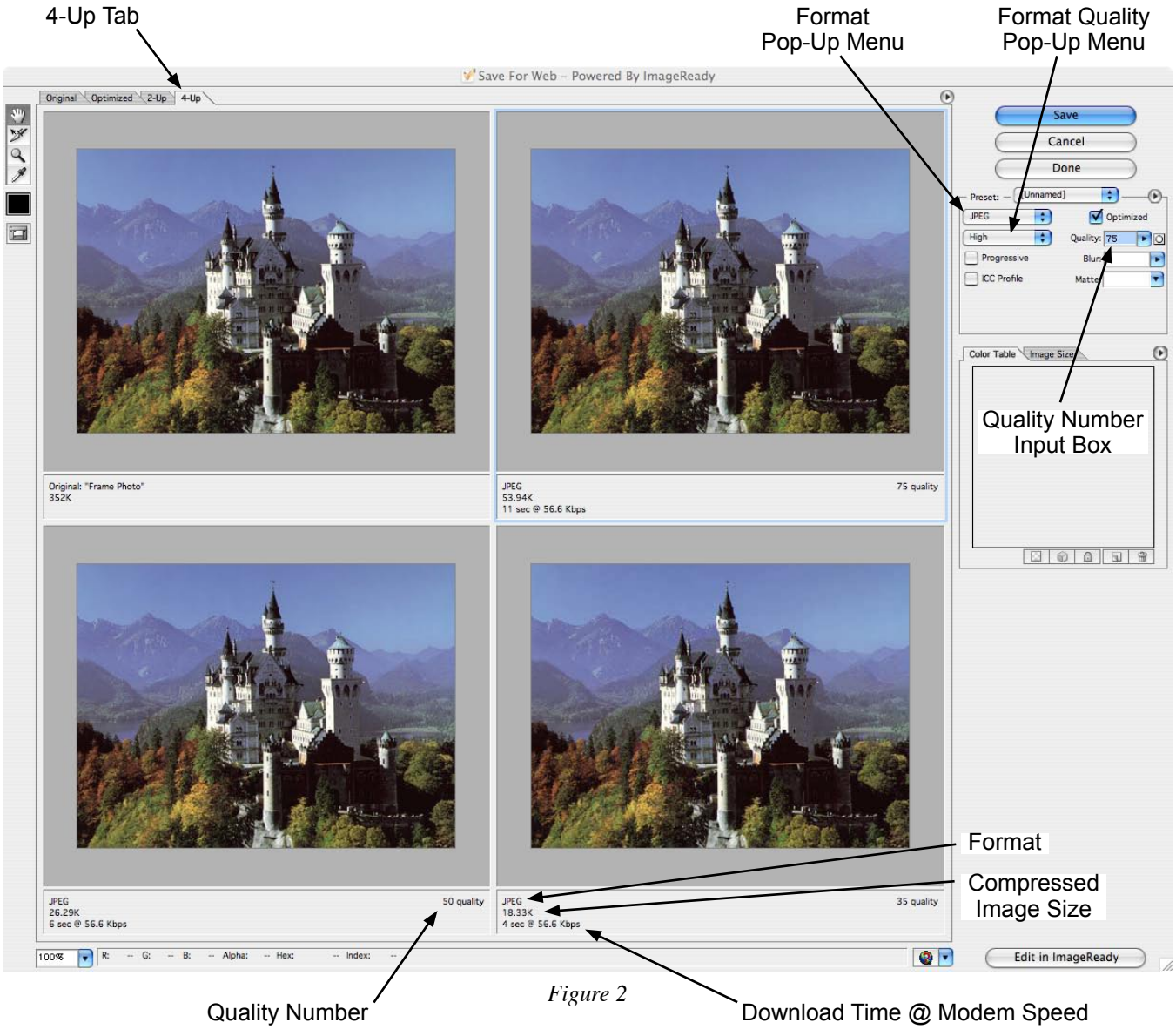


Figure 2

5. After you decide which version of the image you want to use, click in that pane to select it, then click on Save. The Save Optimized As dialog box (fig. 3) will open.

- Give the image a name with a .jpg extension. The extension should already be there.
- Select the location where you want to save the image.
- Click on Save.

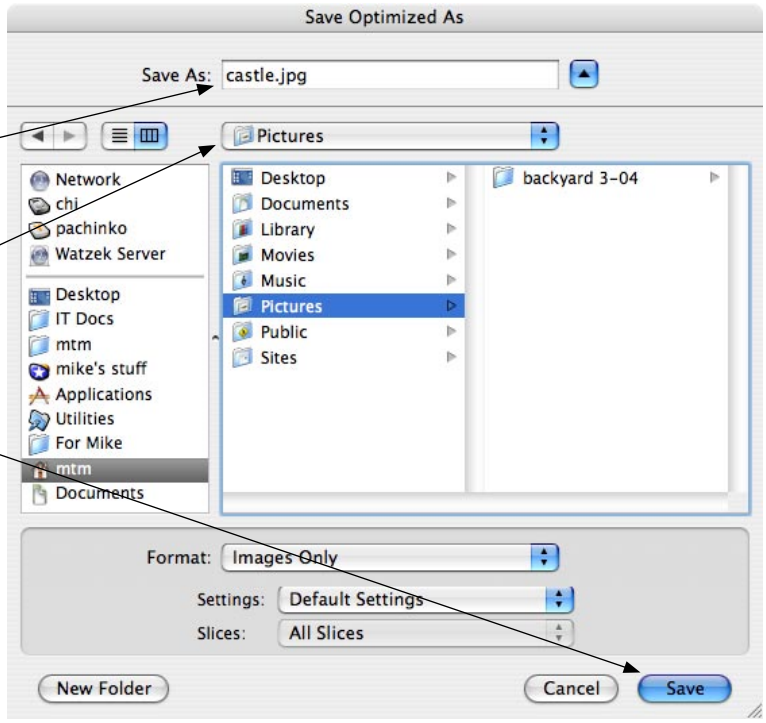


Figure 3

To optimize a GIF image (basic):

1. With an image open in Photoshop, select Save for Web ... from the File menu (fig. 1).
2. The Image Ready Save for Web dialog box will open (fig. 2).
3. Click on the 4-Up tab above the image window in the Save for Web dialog box. The process is similar to that for a JPEG image.
4. Evaluate the image. The most basic method of reducing the file size for a GIF is to decrease the number of colors in the image (bit depth). The upper left image is the original with no changes applied to it. Each of the other windows displays a copy of the image that allows you to change the GIF attributes. To evaluate the image with different numbers of colors (starting with the upper right window):
   - Click in a window to select it.
   - In the Settings area in the right side of the dialog box, choose GIF 128 No Dither from the Preset pop-up menu (fig. 4).
   - In the Settings area in the right side of the dialog box, make sure GIF is selected from the format pop-up menu.
   - In the Settings area in the right side of the dialog box, select Perceptual (if not already selected) from the Palette pop-up menu.
   - Repeat the process above for the lower panes selecting GIF 64 No Dither and GIF 32 No Dither. You should now have four windows with differing images: upper left- original; upper right - 128 color GIF; lower left - 64 color GIF; lower right - 32 color GIF. Compare the image quality between these versions and decide what the smallest file size versus image quality you want on your pages.

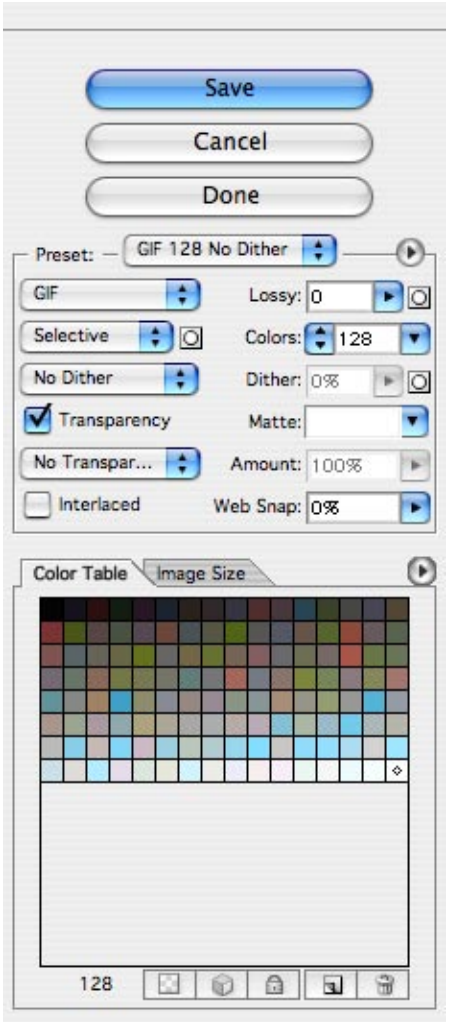


Figure 4

5. After you decide which version of the image you want to use, click in that window to select it, then click on Save. The Save Optimized As dialog box will open. Select your location, name your image and then click on Save.

Note: There are other ways to reduce the number of colors that Photoshop/ImageReady use for GIF compression. One way is selecting different "palettes" from the GIF Color Reduction Algorithms Pop-Up menu. This is Adobe's description of the palettes:

- Perceptual - Creates a custom color table by giving priority to colors for which the human eye has greater sensitivity.
- Selective - Creates a color table similar to the Perceptual color table, but favoring broad areas of color and the preservation of Web colors. This color table usually produces images with the greatest color integrity. Selective is the default option.
- Adaptive - Creates a custom color table by sampling colors from the spectrum appearing most commonly in the image. For example, an image with only the colors green and blue produces a color table made primarily of greens and blues. Most images concentrate colors in particular areas of the spectrum.
- Restrictive (Web) - Uses the standard 216-color table common to the Windows and Mac OS 8-bit (256-color) palettes. This option ensures that no browser dither is applied to colors when the image is displayed using 8-bit color. (This palette is also called the Web-safe palette.) If your image has fewer colors than the total number specified in the color palette, unused colors are removed.

  Using the Web palette can create larger files and is recommended only when avoiding browser dither is a high priority.
- Custom - Preserves the current color table as a fixed palette that does not update with changes to the image.
- Black and White - Creates a color table with only black and white pixels
- Grayscale - Creates a color table with only grayscale pixels.
- Mac OS - Uses the Mac OS system's default 8-bit (256-color) color table, which is based on a uniform sampling of RGB colors. If your image has fewer colors than the total number specified in the color palette, unused colors are removed.
- Windows - Uses the Windows system's default 8-bit (256-color) color table, which is based on a uniform sampling of RGB colors. If your image has fewer colors than the total number specified in the color palette, unused colors are removed.

Note About Dither: Unless you're using the Exact color table option, the color table may not contain all the colors used in the image. To simulate colors not in the color table, you can dither the colors. Dithering mixes the pixels of the available colors to simulate the missing colors.

Choose a dither option from the menu, and enter a value for the dither amount (A higher amount dithers more colors). Usually we recommend no dither because it increases file size.

Further Information

Adobe Photoshop CS User Guide for Windows and Macintosh, Preparing Graphics for the Web, Adobe Systems Inc., 2003.