

GIF vs. JPG vs. PNG

While there are a number of different methods which can be used to store images electronically, the three most popular file formats used on the web are GIF, JPG and PNG. It is these three types of image formats that I'll be covering here.

How Graphics File Formats are Judged

There are three key considerations that need to be considered when deciding which format you should save you image as. They are...

Browser Support – Without unanimous support of the web browsers, a graphics format is useless for web work. A good example is the SVG graphics file format. While nearly every browser supports it, Microsoft's Internet Explorer only started supporting SVG with it's most recent version... IE9. This makes SVG a poor choice for most website projects.

Image Quality – Obviously, this refers to how an image looks. Not so obvious is that there is no one best method. It really depends on specific characteristics of the image itself.

Image Size – Lastly, the image format (along with settings defined when saving the image) will determine the size of the image. For fast loading pages, you'll want to keep the image size as



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determine the size of the image. For fast loading pages, you'll want to keep the image size as small as possible.

GIF's, JPG's & PNG's – How They Stack UP

GIF Files

GIF's, pronounced jif (as in jiffy) or as gif (as in Gifford). The GIF format is the elder statesmen of the group. First appearing in 1987, GIF stands for Graphics Interchange Format. Key features of this graphics format include a 256 color maximum—meaning no more than 256 different colors may appear in an image—certainly a limitation when used for photographs! GIF files also support animation (remember all the animated under construction signs, spinning globes, and the like... they were GIF's). Finally, GIF's use a lossless compression. This means that the file show no loss in quality from the original—that is... as long as the original was limited to 256 colors!

Due GIF's 256 color limitation, it is best suited for images with a limited color palette and broad patches of solid colors. Think logo's, illustrations, page buttons, and the like. In fact, since GIF's use a lossless compression, they are not subject to the blemishes (aka artifacts) which are bound to crop up in JPEG images which contain patches of solid color. For this reason, GIF or PNG files are the preferred format for logo's and the like.

It should be noted that a few years back the patent holder to the GIF image format, Unisys was collecting a license fee from companies building GIF capabilities into their products. In truth it was the LZW file compression algorithm that was being licensed, not the resulting GIF files. This meant that software companies needed to license the technology when using it in their products. It did not apply to a person using GIF files on their website. A search on the web will result in old articles referencing a GIF/LZW patent. The important thing to remember is that patent has since expired (as of 2004) so as they say... the point is moot!

JPEG Files

While GIF and PNG are great for logos and line art, JPEG is the format of choice for photographs. In fact, the name JPEG stands for Joint Photographic Experts Group—clearly hints at what the purpose

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of the format is. That said, images that contain a lot of smooth gradients (i.e. require more than 256 color shades) may also benefit from being saved as a JPEG. While GIF images are limited to 256 colors, JPEG images range from thousands to even millions of possible colors depending on the bit depth at which they were saved. JPEG is also the format used by point and shoot digital camera's. Because JPEG's use a compression algorithm—which is a fancy way to say heavy duty mathematics are employed to shrink the size of the file, the images do contain some electronic noise. The amount of noise depends on the amount of compression used. More compression means smaller, faster loading images on your website. This is good. The bad is that too much compression means the quality of the image will suffer as the level of compression is increased. The key is to select the right amount of compression so that the image still looks good, while the size of the image does not slow how fast the web page renders. In short how much to compress an image in Photoshop really is a balancing act.

One thing that JPEG does not do is animations. Thankfully, no 1990's era cute cartoon running dogs, spinning globes, or animated under construction signs are possible using JPEG's.

PNG Files

Last but by no means least, we come to the PNG graphics file format. PNG stands for Portable Network Graphics and is pronounced P-N-G or simply "ping". The PNG format was created in response to the GIF patent issues at the time (circa 1995) and to overcome some of the technical limitations of the GIF format. In short, the PNG is a patent free yet improved version of the GIF type image file format. Improvements include better compression resulting in smaller files when compared to GIF images—yet still a lossless format making it ideal for logo's, simple illustrations, buttons and the like.

PNG files come in two flavors. PNG-8 and PNG-24. Like GIF, PNG supports 256 colors, single pixel transparency and lossless compression. PNG-24 raises the bar by supporting up to 16 million colors, alpha transparency and yet still utilizes lossless compression. It would be the perfect file format. It can be used for both photographs and line art type images as long as they don't require animation. (PNG does not support animation like GIF) The drawback of PNG-24 is a file size that is significantly bigger than images created using JPG or GIF. For this reason PNG files are saved as

PNG-8 unless there is a need for saving as a PNG-24.

Which Graphics Format Should You Use?

So which file format(s) should you use on a website project. First of all, in 2011 it's best to leave the 1987 technology in the past. For this reason, unless you need to add an animated GIF to your website... an animated under construction sign perhaps. It is better to save logo's, buttons and the like as a PNG-8.

That is, unless a graphic needs to be saved on a transparent background. While both GIF and PNG-8 support transparency, it is of very poor quality and of little use for today's high quality website. PNG-24, on the other hand supports alpha transparency, a topic I'll cover in a later blog post. For now I'll say alpha transparency is an important tool used by web designers. It's used when images seamlessly appear to be sitting on top of an existing background.

For most photographs, use JPEG unless alpha transparency is required—then PNG-24 would be a better choice.

As a final note, both PNG-8 and PNG-24 both utilize the same “.png” extension. The good thing about this is that, if during the website development it is determined that a graphic needs to be saved as a PNG-24, or vice-versa as a PNG-8—no XHTML programming changes are required. Just save the file in Photoshop using the appropriate format. Then upload the new file to the website and your good to go!

Just the Beginning

I hope this brief introduction to those new to web design and those interested in learning a bit about the inner-workings of a website. For those web designers just starting out I encourage you to spend some time learning and experimenting with the different file formats. Learning the finer points of how to effectively use the correct file format for the job at hand can really open up the possibilities and lead to new and exciting website designs.



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