

Internet Image









			
TIFF 8 meg	JPEG 828 K	WAVELET 694 K	FRACTAL 606 K
			

Photo Quality

The Internet is changing our lives. Not long ago if a consumer wanted to send a treasured photo to a distant loved one, she relied upon the speed of the post office. Now, she can take a picture and transmit it over the phone lines via the Internet. Grandma and grandpa can see the newborn before the little one is even a day older. Thanks to image compression technology, today your customers can view great looking photos in Web pages and e-mail, and since savvy consumers will surely come looking for answers, the digital lab needs to fully understand and use image compression.

COMPRESSION



TIFF - 211K



JPEG - 9K



WAVELET - 5K



FRACTAL - 6K



Internet - Extreme Compression

Jack and Sue Drafahl

IMAGE COMPRESSION can be divided into two distinct usage areas: low resolution for Internet use and high quality photo imaging. The trick is getting the best quality and speed for each application using a variety of image compression formats and techniques.

Much to our dismay, we have found there is no one simple way to solve image compression problems. We'll try to save you some frustration by sharing a few examples of image compression problems we have encountered in our lab—and our solutions!

Often when we prepare a digital project for a client, time is critical. Even though the job is a super rush, the client still needs to see a mockup before approval. The answer is

to e-mail a compressed version of the file. The key is keeping the quality just high enough for the client to see all the important parts without having long transmission times over the Internet.

Another application we have found for image compression is image identification. Sometimes a file name is missing from our digital image database or has possibly been misnamed. When this happens, we can communicate back and forth with the client using compressed thumbnail images for image identification. It sure saves time, money and frustration. More recently, we have had several requests to convert stock images for use on Web pages.

Most of the time these images are compressed to less



**TIFF
204K**



**JPEG
27K**



**WAVELET
17K**



**FRACTAL
19K**

Internet Quality

than 25k in size so that the Web page transmission is fast. If you have ever had to wait a long time for a Web page to load, you quickly realize that Web page viewers are an impatient breed. If it takes too long for the page to load, they simply move on. That makes minimizing the load time and maximizing the image quality extremely vital.

Another popular Internet photo service is posting processed film images. Several manufacturers make it possible for a client to send in a roll of film for processing, and the resulting images are posted on the Internet. A password is given to the client, which they can give to family members in different parts of the country. Once they access the account, they can download and print the images on their color printers.

Most of these labs have a unique type of image compression and file viewer specifically designed for their Web

page, which is available when you sign up for their service. If you are considering offering this type of service, you will need to do extensive research to achieve the proper balance of quality vs. transfer time.

Hi Res Transmission

Up to now we have been talking about low resolution image transmission. Images for high quality printing can now easily be transmitted thanks to improved image compression and faster modem speeds. We often use this service when a job deadline has passed and a specific digital image is needed—yesterday! A high resolution image may take from 5–15 minutes to transmit in order to maintain quality, but it is still faster and cheaper than an overnight courier service.

The solution to all these image transmission problems requires a balancing act between image size and file compression. Everyone has his/her own personal choice and preference for quality level, and each requires different compression requirements. The trick is to match the quality with the end users' expectations.

If you are working with low resolution Internet quality images, you first need to reduce the image size to correctly fit on most computer screens. We will assume that most computer screens are at 600x800 pixels. Since your image need not fill the screen, your image size should be one-half or a quarter screen size. That brings your maximum image size down to less than 300x400 pixels. If you look at images that come across the Net, you will

find that most are 100–200 pixels on the longest side.

So, how exactly do you reduce the image size? Most image editing programs have a function called resize or resample. When you use this function, it will give you the present image dimensions and file size, along with the proposed file size for the new dimensions. Stop right here because this is where most people go wrong. The method the program uses to resample or resize an image also blurs the image at the same time.

To reclaim the sharpness lost during the resample/resize, you must use the sharpen tool before saving out the image. Many people don't use this step which is evident by all the soft images seen on the Internet. The tradeoff is that sharpened images have slightly larger compressed files, but who cares if the quality is maintained?

Once you have reduced the image size, you are ready to com-

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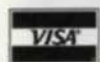
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press the image. Since there are dozens of file compressions, the choices seem endless. Be sure to check and select the ones your clients can read on their system. Some are better than others, but the two most common formats on the Web are GIF and JPEG.

The GIF format is used when the image can be reduced to 256 colors without affecting the image quality. As soon as you switch from full color to 256 colors, your file is one-third the size of your original uncompressed file. Most GIF files are of logos, banners, text, buttons, and objects that don't require much color.

Photographic images have a lot of tonal quality, so the JPEG compression is a better way to go for full color images over the Internet. For example, a 150x200 pixel fully uncompressed color image is 90K in size. If you compress the image using the JPEG format at the medium quality level, you are looking at a file about 6K in size.

With modem speeds in excess of 28K, a picture this size is transmitted almost instantaneously. So, you see that you don't have to sacrifice image quality to achieve speed on the Internet. More recently, several other image compression formats have surfaced that work as well as JPEG but have even smaller file sizes. The drawback is that not everyone will be able to read these new file formats.

The two new kids on the block that are giving JPEG a run for its money are Wavelet and Fractal image compression formats. Fortunately, there are a number of sources on the Web that allow you to download file translators, or plug-ins, for translating and viewing these new files.

When we last looked at the Netscape plug-in page, we found 176 that covered 3D, animation, video, photo image viewers, presentation images, and audio plug-in's. An "image compression" search in shareware or on the Web should net you dozens of sources for image compression programs, plug-ins and viewers.

Transmitting photo images used for

high quality printing will also require compression using a format such as JPEG, but it will not need to be resampled or resized. Since most good compression programs can compress a file by a 1:10 ratio with little loss in quality, you can transmit full quality images quickly.

For example, one of the images we submitted on CD for a recent article in *Rangefinder* magazine was unreadable. The original uncompressed file was 8MB in size. We knew that our system could transmit about 100k of compressed file each minute, so our goal was to reduce the file size to about 500k, or 5 minutes transfer time. We loaded the file in PhotoShop and started with a level 6 setting, then checked the file size. It was still too big, so we saved it again at level 5. This time it was about 550k. We put together a quick e-mail with the file attached and the problem was solved.

One final word of warning. Each image will react differently to a file compression program. Images with many color hues will not compress very well, while those with large single color areas will compress easily. Some files will compress well with a medium quality setting, while others will require a higher setting to maintain the same level of quality.

The best way to know exactly how a program works is to take several images and run your own tests at each quality level of compression. Be aware that compressed images may not look the same on the computer screen as on the final printed material. To insure the best results, take your comparisons all the way to a final printed image.

Hopefully we haven't compressed your brain too much with all this information. Tremendous advancements in file compression technology has made this an even faster paced world. The job of the photo lab is to stay ahead of it all. Good luck!

Jack and Sue Drafaehl own and operate a custom lab in Portland, OR. They are also professional photographers, specializing in underwater photography.