

# Speed Up Your Web Pages

## Introduction

Nowadays, even with a faster Internet than before, the Web users consistently cite slow-loading pages as their No. 1 complaint. It's no doubt that downloading speed should be count into the significant factors of designing a Web site.

Basically, the size of a Web page is significantly affected by the graphics and multimedia files put on the page. Furthermore, the table, frame and other elements used to design a page also add up the page size. This paper is trying to give some practical solutions and tips to decrease page size in order to speed up your Web page thus to provider your users better surfing experience within your sites.

## Size Does Matter

Just think that how many times have you gone to a Web page and given up before it finishes the download? Why then, do you expect your readers to wait for your pages to load?

According to Georgia Tech University's 10th GVU World Wide Web User Survey, which is conducted from October 10, 1998 through December 15, 1998 and includes data from over 5,000 Web surfers, 66% of users are surfing the Web using a 56kbps modem or slower. A T1 line takes fully 55 seconds to load over a 28.8k modem (ignoring the impact of server connections), and over a third of visitors are browsing at about that speed.

Internet users are impatient. A Zona Research study found that if your site doesn't load in 8 seconds, up to 1/3 of your visitors will leave. That's why by reducing the download time of your web site, visitors will more likely to return--they remembered how fast it was to find what they wanted.

## What can we do

Among the many factors that may affect download time such as (1) your host's and Internet Service Provider's (ISP) hardware and configuration, (2) traffic on the Internet

and (3) time of day (4) size of each page, only the last one, the size of each page (HTML code and graphics) is under your control.

Following are some ways that help to keep your Web pages in acceptable size and make them accessible to all users.

## **Optimize Those Graphics**

It is said that a picture worth a thousand words. Carefully sized, relevant images make a Web site more appealing to visitors. However, Large, unwieldy graphic files often have the opposite effect. Fat graphics are the leading cause of slow-loading pages.

### **1. Reuse Images Throughout Your Site**

It's a god ideal to use the same image multiple times on your Web site. When a page calls for an image that's already been used, it loads and displays much more quickly on subsequent page views because it is coming from a local hard drive rather than the Internet. So that if you reuse any image in your Web site, visitors will only have to wait for a single download. After that, the images are cached on your computer and display immediately. Company logos and navigational menu bars/icons are excellent candidates for reuse since they often appear on every page.

But be careful, you must use the exact same name and path each time you use the image! It's a simple mistake we should avoid that two exact copies of the company logo are stored in different directories.

### **2. Optimize Images for Maximum Benefits**

One of a Web designer's most frustrating tasks is to balance attractive graphic design against load time constraints. Carefully selecting and optimizing graphic images is one strategy to create attractive pages that are accessible to every visitor.

#### **1) Choose Suitable Image Formats**

Your job balancing appealing graphic design and downloading time will be easier if you understand the different image formats and optimize them for best display.

Most Web graphics are presented in three formats: [GIF](#), [JPEG](#), and [PNG](#).

GIF stands for “Graphics Interchange Format.” It is the most commonly used format on the Web and the only format universally supported by all versions of graphical browsers. The number of colors that a GIF graphic bits the odds of is limited to 256 and the compression method makes them ideally suited to display any images with large areas of flat color.

JPEG stands for "Joint Photographic Experts Group." It is supported by most browsers 2.0 and up and used to display photographic images. PEG uses a "lossy" [compression](#) method, but fortunately, this isn't as bad as it sounds - you'd be surprised how much a JPEG can be compressed without much visible loss of picture quality. Not like GIF, JPEG can display images having potentially millions of colors. For that reason, JPEG is your best choice if your picture is a photograph.

PNG (Portable Network Format) is the newest format and the one least supported by browsers. It does combine many of the best features of GIF & JPEG and even adds more. PNG supports gamma correction: this feature lets a PNG image display exactly the same across different computer monitors (so if you select a certain color scheme, it will always display correctly). While Netscape and Explorer (4.0 and above) each support some features of PNG images, neither offers full support. Until they do, it's best to stick with GIF & JPEG images.

## 2) Pre-optimize Your Images

For the two most commonly used image formats: GIF (Graphics Interchange Format) and JPEG (Joint Photographic Experts Group), you can control many factors that contribute to image file size:

For GIF

- Limit the dimensions of the image (smaller is better!).
- Crop out any unnecessary white space or background color.
- Reduce the bit depth in the image

For JPEG

- Blur the image slightly: JPEG compression likes images with few details, subtle color gradations, and few hard edges.

- Use a graphics program that will let you preview different compression levels before you save the image.

### 3) Sneak Previews: Interlaced GIFs and Progressive JPEGs

Browsers normally display GIF and JPEG images one band at a time, from top to bottom. This process can seem excruciatingly slow to Internet users with dial-up connections. They can't see the image until it loads completely.

Interlaced GIF's and progressive JPEGs give your visitors a sneak preview: a very low-resolution version of the image that becomes clearer with each pass the browser makes. This hint of the image keeps the viewer's attention and provides important page clues. Most graphics programs allow you to create interlaced GIF's and progressive JPEGs. Simply create (or edit) your image and select it as an option on the save menu. Photoshop 5.0 has a pop up box that asks you specifically if you want to save your GIF as "normal" or "interlaced." Other packages offer similar options.

### 3. Add HEIGHT and WIDTH to <IMG> Tags

If the Web page designer failed to add two simple arguments, HEIGHT and WIDTH to the <IMG> tags, the browser displays text first, then relocates it to accommodate images when they finish loading, which causes a sudden rearrangement of text when the images pop up. Although HEIGHT and WIDTH don't speed up your page, the page layout change can confuse your visitors - especially if they had already started reading the text before the images appeared. . When you include these size specifications, you prepare the browser to hold a place for this image until it downloads and the problem would be solved.

The [syntax](#) for this is simple:

```
<IMG SRC="image.gif"  
HEIGHT="250" WIDTH="150"  
ALT="Descriptive text here">
```

Using HEIGHT and WIDTH with any image name, format, or any size image is a simple way to alert your visitors to expect an image - and give them something to do while they wait.

#### **4. Preloading Images**

Preload image means download images in the background as the rest of your page loads. The browser will cache the images (store them on your computer) and then immediately display them wherever they're used on subsequent pages. Preloading images doesn't actually change your download time, but subsequent pages appear to load faster.

It's easy to do so: Just insert the following code into your HEAD tag. Be sure to use the correct name and path for your image!

```
<SCRIPT LANGUAGE = JAVASCRIPT>
if (document.images)
{
img1 = new Image();
img2 = new Image();
img1.src = "imageName1.gif";
img2.src = "imageName2.gif"
}
</SCRIPT>
```

Insert the preloaded image on subsequent pages by its name and path: "imageName1.gif".

#### **5. Use Colorful Table Cell instead of large Clocks of Color**

Colorful images add visual interest to Web pages, but they also increase download time. With careful use of colored table cells though, you can often keep the color while decreasing page load time. Images take time to download, but browsers can render color immediately. Keep in mind that don't do anything in an image that you could do in just HTML.

#### **6. Create Your Own Color Palette**

The color palette used in a specified Web site also counts to the size of its Web pages. There are two principal ways to counter those delays. The first is to reduce palette size. The second, and perhaps more significant, is to create a uniform site palette.

Through most graphic programs a surprisingly thin palette can be created for all of the type, line-art, ect. Images will comprise the rest of the "art" on a page. That palette can then be further reduced for individual images by pruning the extraneous colors and forcing the "close" ones to conform. The browser will not have to create an individual palette for each item and all subsequent images will be quicker. All of this can be done without loss to the aesthetics of the page or the individual pieces.

## **Speed Up Those Tables**

Tables have been prevailing used to control page layout. It works greatly to keep everything in right place. However, carelessly use of table could also cause slow downloading speed of your Web pages. Fortunately, there are something that we can do to help our pages display faster:

### **1. Avoid Nested Tables if Possible**

Nested tables are a common cause of slow pages. They are so tempting to use as they improve the layout enormously, but they take a long time for the browser to render: it has to slowly work to figure out the table structure working from the inside out. A browser can't display the inner table until it knows what the outer table looks like and it can't display the outer table until it has the inner table figured out. In another word, the browser cannot display any part of the page in the tables until it has figured out how to render all the tables that are nested.

Sometimes you really need a nested table, but make it as simple as possible. You can also consider if you could achieve the same effect by using colored table cells or the COLSPAN or ROWSPAN attributes inside a single table.

### **2. Break Up Huge Tables**

A Web page built with using a single large layout table can take a long time to render in visitors' browsers - especially visitors using dial-up connections, because browsers wait to have the whole table before showing it so they can calculate the column width.

So break up that giant table into several smaller ones. When you divide a large table into a series of smaller ones, the browser can display the smaller tables one at a time instead of waiting for the huge table to load. This actually doesn't speed up the whole download time by much, but avoids the long wait in front of a blank window so that the page appears to download faster.

If you design a table with multiple rows, it can often load more quickly if you write each row as a separate table because the browser would render the first and then render the second.

Also keep in mind when you break up your tables that the top table will load and display first. Be sure it contains something interesting to visitors and not a meaningless graphic or unrelated ad.

### **3. Use HEIGHT And WIDTH Attributes**

While smaller tables appear to load faster, tables with both the HEIGHT and WIDTH attributes actually do! This is the same principle you use when you define the HEIGHT and WIDTH attributes of images so text can flow around them as they download.

WIDTH is definitely the more important of the two attributes because it tells the browser how wide the table is. If the browser knows the width, it can go ahead and begin placing the text and images while the rest of the table is rendering.

### **4. Use Percentage Cell Widths**

It pays to have a calculator handy if you have a multi-column table with widths defined for each individual cell. However, define your individual cells of a table in percentage terms help the browser to calculate and decide what should it do. The 5 cells of a 500 pixels might have widths set to 10%, 15%, 50%, 15%, and 10% respectively other than set the exact widths of each cell. Since the browser knows the total table width is 500 pixels, it can quickly calculate the widths of the individual cells. Just make sure the percentages add up right.

**Be Cautious With Special Effects And [Multimedia](#) Files**

There are hundreds of other elements you can choose to include on your site. This may include such things as: multimedia files, search boxes, pull down menus, opinion polls, hit counters, rotating banner ads, associate programs etc.

Whenever you add [Java](#) or [JavaScript](#) or other effects, it impacts the download time of your site. So before use any of the special effects or Web enhancement, make sure that the site needs the effects you want by asking yourself the question: How does it help me accomplish the purpose of this web site? If you can't think of a good answer, chances are you don't need the extra element.

### **1. Be Careful With Multimedia Files**

The multimedia effects like [Flash](#), background music, Java animations, and others are viewed as "rich media enhancements" by designers. However, Internet users with dial-up connections have a description of the multimedia files on the Web: "maddeningly slow." A September 2000 survey by Jupiter Media Metrix showed that while visitors may appreciate multimedia, other aspects of a site are far more important: Only 20% of visitors would visit a site more often if it had rich media enhancements. 40% would visit a site more if it loaded more quickly. 59% of retail shoppers want more product information than most sites provide. People are looking for fast-loading pages that contain lots of good information.

There is another reason making us think carefully before we include any of the multimedia stuff on our Web site: Many Visitors Are Unplugged.

Each new generation of Web browsers offers more multimedia capabilities than before. Often these capabilities are part of the browser itself, but other multimedia effects require users to install special software called plug-ins in Netscape and Active-X components in Explorer. Special effects designed using the latest software may not work with the older versions still prevalent on users' machines. And many people are notoriously slow to upgrade to the latest browser versions. They're even more reluctant to download and install plug-in software applications. You have to convince them that the extra effort involved is worthwhile. That's why it's so important for you to carefully consider your options before you load up your site with multimedia effects. Plug-ins can

really bloat your page's size and increase download times. Don't count on people having either the patience or goodwill to wait.

## **2. Give Visitors A Choice And Keep Them Posted**

If the special effect is really vital to your page, then carefully explain why, as in "You must have Flash 6 installed to play this game." Then visitors will understand just how they'll benefit.

Visitors resent having to sit and wade through information or animations that don't interest them. Designer should always give visitors as much control as possible over their experience:

- Offer a "skip intro" link on your splash page if you're using a showy Flash introduction
- Set a [cookie](#) to keep visitors from viewing an introductory multimedia message more than once if you don't want to let them to skip it entirely.
- Give visitors the option of viewing a "low-bandwidth" version of your site that's done in straight [HTML](#).
- Never present vital site information (like site navigation) inside multimedia effects only. Always offer the information in an alternative format too.
- If anything your system does is going to take more than a few moments, make sure you give your users reassurance that all is well, and an idea of how long it will be until you're done.

## **Other Factors Count To Enhance Your Web Site**

### **1. Use Frame Only When Necessary**

Frames are a bit trickier than tables when you're speeding up your site. Frames, by their very nature, take a bit more time for the browser to load. Especially the first time the frameset is loaded.

Unfortunately, there is not a lot to be done about the inherent speed of frames. If you use a framed site, then make sure that each frame in the frameset is small and loads quickly. Keep the images small and use small amounts of text.

## **2. Use Correct Html Code**

Ensure that the code is tidy so that the code is syntactically correct with the HTML standard. Correct code will always load faster than 'will do' code in which some browsers allow slack coding to load.

## **3. Keep each page right in length and focus well**

With small images and clean HTML, you can still end up with a page that takes forever to download because there is so much information. Although text on pages loads far more quickly than images which permitting you to convey more information more efficiently, it still should be avoided to make the user scroll down several times. Too much text on one page will slow the download time of your site. It will also make it very tiring for your visitor to read all your text.

A well-designed Web site should also ensure that each Web page is focused to deliver a single message. If several related messages are required, have them on separate pages with links to the next page and try and keep page content to be on a single page without any scrollbars.

## **Summary**

Slow download speed is a big headache to Web users, especially those who use dial-up Internet connection to surf Internet. Nobody is willing to sit in front of a blank page for minutes waiting for it to be downloaded.

Thus Web designers should balance the function, information and visual appealing of their Web site well with the overall size of their Web pages in order to provide user better navigating experience within the sites.

There are many ways we could use and many factors we should take into consideration to achieve above goal. The main factors affecting page size significantly such like graphics, tables, frames, multimedia files etc. should be chosen carefully and be put into the right place to ensure a user-friendly Web site.

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