

## Understanding Browsers

### What Causes Browser Display Differences?

- Different Browsers
- Different Browser Versions
- Different Computer Types
- Different Screen Sizes
- Different Font Sizes
- HTML Errors
- Browser Bugs

### Different Browsers

**Your Web browser is a translation device.** It takes a document written in the HTML language and translates it into a formatted Web page. The result of this translation is a little like giving two human translators a sentence written in French and asking them to translate it into English. Both will get the meaning across, but may not use the same words to do so.

The basic rules for translating HTML documents are established by the World Wide Web consortium, which publishes the official HTML standards. But there's considerable room for interpretation within those ground rules.

For example, the HTML standards say that the TABLE tag should support a CELLSPACING attribute to define the space between parts of the table. But standards don't define the default value for that attribute, so unless you explicitly define CELLSPACING when building your page, two browsers may use different amounts of white space in your table.

In addition, the HTML standards usually run ahead of what the browsers support. No browser as yet supports 100% of the HTML Version 5 standard, but some browsers come closer than others. Over the past few years Internet Explorer has done a much better job of this than Netscape Navigator, though Opera has done arguably the best job.

But since support for the latest HTML tags isn't universal, you could be building your pages with parts of the language that not all browsers understand. In that case the browser will ignore that part of your page it can't translate, and the way your page displays will be affected.

This problem is further complicated by browser-specific "HTML extensions." Back during the heyday of the Browser Wars, both Netscape and Microsoft tried to get a competitive edge by running ahead of the HTML standards, inventing their own tags and attributes.

The theory was that Web designers would fall in love with these attributes and put little buttons at the bottom of the page saying, "Best viewed with Netscape Navigator." So Internet users would rush to download that browser and, voila, Netscape would win the Browser Wars.

In practice no Internet user will download a new browser just to view your Web site, so these HTML extensions only created headaches for Web designers.

### Different Browser Versions

The major difference between two versions of the same browser is their support for newer portions of the HTML language. **A new browser is generally better at displaying Web pages than an old one.**

However, Internet users tend to upgrade their browser based on the addition of new features, like email integration and instant messaging. If a user doesn't care about these features, they're happy to keep surfing the Web with their old browser.

That presents a problem for Web designers, because for some length of time after the new browser appears, a significant minority of people will still use the previous version. So rushing to build pages with the HTML features supported by the new browser will have to wait.

While a handful of people use browsers older than that, their numbers aren't large enough to justify the sacrifice required to support them. A few people still use Version 3 browsers, but these browsers don't support Cascading Style Sheets, which are the most important addition to HTML in the last 6 years.

Also note that new browser versions sometimes represent major changes in a browser, and in these cases all bets on the browser's behavior are off.

For example, Navigator Version 6.1 is a complete rewrite of Netscape's browser, so a page that worked well under Navigator Version 4 may not work under Version 6. That's especially true if you use Dynamic HTML on your pages.

## Different Computer Types

**The Macintosh is still used by 12% of computer users**, and has a very loyal following among graphic designers and publishers. In theory, if you view your page on both a PC and a Mac using the same version of the same browser, it should display the same, right?

In practice that's rarely the case. There are three reasons for this:

- **Font Availability.** When you tell your Web page to use a particular typeface, such as "Arial," you may not always get the font you want. Fonts are a computer resource, and not all computers have the same fonts as your computer. That's true even between different PCs, but it's especially true between the PC and the Mac. If the typeface of your page suddenly changes between these computers, you've probably used a font that isn't available on both computer types.
- **Font Size.** The Mac will generally render your typeface in a smaller pixel size than the PC will. That's especially true if you use the FONT tag to set your type size, since this tag uses abstract units to define size. You can avoid this problem if you use Cascading Style Sheets to set your font size in pixels.
- **Internet Explorer.** Microsoft outsources the development of Internet Explorer for the Mac, and so to a large extent this is a different browser from the PC version. In particular, the Mac version of Internet Explorer is prone to quirks and bugs that you won't see in the PC version. If you check your Web page under only one browser on the Mac, do so under Internet Explorer!

## Different Screen Sizes

Many experienced Web designers use HTML tables to control their page layout, yet they design their pages on large, 1024x768 pixel screens. When these pages are displayed on smaller computer screens, the browser may not be able to fit all the content onto the screen. In these cases, the content will scroll off the right of the page. While this may not sound like much of a problem, users hate scrolling left and right to view a page.

This problem should be easy to avoid, yet a surprising number of otherwise well-designed Web sites don't fit within **the standard 800-pixel PC computer screen**. This is especially a problem for pages built by graphic artists using a **Macintosh, whose standard screen size is 1024x768**.

Because **the majority of Internet users have a screen resolution of 800 pixels or less**, it's a bad idea to design your site for a larger screen.

## HTML Errors

The HTML code on this page forgets to close a single TABLE tag, which is a violation of the HTML rules. Internet Explorer forgives this error and displays the page correctly; Netscape Navigator can't recover from the errors and doesn't display the page at all!

## Browser Bugs

Building a Web page that displays well on all browsers isn't easy. To make matters worse, sometimes you've done everything right, and your page still doesn't display correctly under one specific browser. It's not your fault - you've just encountered a browser bug.

Unfortunately, browser bugs are a fact of life for Web designers. **Each browser has its own unique set of errors and quirks that you have to adapt to.** That's especially true with Version 4 of Netscape Navigator, whose early editions were rushed out the door to beat Internet Explorer to market. A columnist for Web Reference recently called Navigator Version 4 "truly terrible browser."

For example, take perhaps the most widely encountered browser bug in existence. The HTML standards say that when you build an HTML table, you don't have to explicitly close each table cell with a closing `</TD>` tag. This closing tag is optional. Yet unless you explicitly close your table cells, Navigator 4 will not display your table if it is nested inside another table. Since nesting tables is common practice to control page layout, this bug wrecks many well-designed pages.

Netscape isn't the only browser prone to bugs. Internet Explorer for the Macintosh has a number of bugs and quirks in the way it handles text spacing.

## Set a Goal

First, understand that it's hard to build a Web page that displays perfectly on every version of every browser running on every computer. And doing so may require you to leave out features that you really, really want to have on your Web page. Building a Web page that's compatible with Version 1.0 of every browser would mean building a bland page filled with plain text.

**So the first step to solving browser compatibility problems is to determine which browsers really matter to you.**

You may decide to do the same for your site, or you may decide that not enough people use these browsers to justify supporting them. In either case, define a goal and design toward it.

## Avoid the Cutting Edge

The Web is hip; it's hot and exciting; it's radical. So many Web designers feel they have to build cutting-edge features into their Web page. That's a bad idea, because cutting-edge features are rife with browser compatibility problems, not to mention the impact they have on your page load time.

Web designers typically go through three stages of maturity: (1) I'm just learning; (2) I know it all, and I'm going to prove it by filling my site with cutting-edge features; (3) I've been burned by browser display problems, and only use what's compatible.

You won't see many cutting-edge features here. You won't see them using Java or Dynamic HTML. You won't see Flash.

You will see Javascript and Cascading Style Sheets. And most of all you'll see well-designed pages that work under all major browsers.

Including cutting-edge features in your site doesn't guarantee compatibility problems, but it greatly increases the chance of browser display errors.

**Cross-browser compatibility** is still one of the most complex issues when it comes to web-development. Web standards usually guarantee a (relatively) high degree of consistency, however no browser is perfect and particularly older browsers have always been quite good at surprising web-developers with their creative understanding of (X)HTML/CSS-code. Still you need to make sure that (at least) most visitors of your web-site can use it, navigate through it and find what they're looking for as quickly as possible

**Browsers Tests Are Necessary** the truth is that a) you never know who might type in your url in his/her navigation toolbar and b) the browser-environment is still very quirky and the risk of inconsistent presentation is simply too high to ignore it. For instance, different browsers and operating systems use different techniques for rendering fonts (Win vs. Mac on handling fonts). The font size isn't identical on different platforms and some fonts might not be installed on the user's system.

Firefox on Linux doesn't display web-sites as Firefox on Windows does. As bonus web-developers have to cope with dozens of versions and, of course, Internet Explorer 6 — 46% of browser usage share, which is a true godsend for hardcoders and hackers. It's almost impossible to keep all possible problems in mind — a detailed test helps you to **identify the critical issues** — also and particularly if these are the smallest details of your layout.

### Browsers Tests: What Can You Do?

In fact, browser inconsistencies are hard to deal with, and to be able to deal with them you have to know what the problems are and what browsers render your site in a quite creative way you probably haven't expected. To ensure the (more or less) identical presentation in browsers you need to verify its consistency in a number of browsers — before going live with your project.

Browser display problems can basically just kill your web pages, and these display differences are caused by a lot of things such as different browser versions, different computer platforms, screen size, browser bugs, HTML errors, and multiple browsers.

## Internet Browser Statistics

### Web Statistics and Trends

Statistics are important information. From the statistics below, you can see that Internet Explorer and Firefox are the most common browsers.

### Browser Statistics Month by Month

2009	IE7	IE6	IE8	Fx	Chrome	S	O
January	25.7%	18.5%	0.6%	45.5%	3.9%	3.0%	2.3%
2008	IE7	IE6	IE5	Fx	Chrome	S	O
December	26.1%	19.6%		44.4%	3.6%	2.7%	2.4%
November	26.6%	20.0%		44.2%	3.1%	2.7%	2.3%
October	26.9%	20.2%		44.0%	3.0%	2.8%	2.2%
September	26.3%	22.3%		42.6%	3.1%	2.7%	2.0%
August	26.0%	24.5%		43.7%		2.6%	2.1%
July	26.4%	25.3%		42.6%		2.5%	1.9%
June	27.0%	26.5%	0.5%	41.0%		2.6%	1.7%
May	26.5%	27.3%	0.7%	39.8%		2.4%	1.5%
April	24.9%	28.9%	1.0%	39.1%		2.2%	1.4%
March	23.3%	29.5%	1.1%	37.0%		2.1%	1.4%
February	22.7%	30.7%	1.3%	36.5%		2.0%	1.4%
January	21.2%	32.0%	1.5%	36.4%		1.9%	1.4%
2007	IE7	IE6	IE5	Fx	Moz	S	O
November	20.8%	33.6%	1.6%	36.3%	1.2%	1.8%	1.6%
September	20.8%	34.9%	1.5%	35.4%	1.2%	1.6%	1.5%
July	20.1%	36.9%	1.5%	34.5%	1.4%	1.5%	1.9%
May	19.2%	38.1%	1.6%	33.7%	1.3%	1.5%	1.7%

March	18.0%	38.7%	2.0%	31.8%	1.3%	1.6%	1.6%
January	13.3%	42.3%	3.0%	31.0%	1.5%	1.7%	1.5%
<b>2006</b>	<b>IE7</b>	<b>IE6</b>	<b>IE5</b>	<b>Fx</b>	<b>Moz</b>	<b>N7/8</b>	<b>O</b>
November	7.1%	49.9%	3.6%	29.9%	2.5%	0.2%	1.5%
September	2.5%	55.6%	4.0%	27.3%	2.3%	0.4%	1.6%
July	1.9%	56.3%	4.2%	25.5%	2.3%	0.4%	1.4%
May	1.1%	57.4%	4.5%	25.7%	2.3%	0.3%	1.5%
March	0.6%	58.8%	5.3%	24.5%	2.4%	0.5%	1.5%
January	0.2%	60.3%	5.5%	25.0%	3.1%	0.5%	1.6%
<b>2005</b>	<b>IE6</b>	<b>IE5</b>	<b>Fx</b>	<b>Moz</b>	<b>N7</b>	<b>O8</b>	<b>O7</b>
November	62.7%	6.2%	23.6%	2.8%	0.4%	1.3%	0.2%
September	69.8%	5.7%	18.0%	2.5%	0.4%	1.0%	0.2%
July	67.9%	5.9%	19.8%	2.6%	0.5%	0.8%	0.4%
May	64.8%	6.8%	21.0%	3.1%	0.7%	0.7%	0.6%
March	63.6%	8.9%	18.9%	3.3%	1.0%	0.3%	1.6%
January	64.8%	9.7%	16.6%	3.4%	1.1%		1.9%
<b>2004</b>	<b>IE6</b>	<b>IE5</b>	<b>Moz</b>	<b>N3</b>	<b>N7</b>	<b>N4</b>	<b>O7</b>
November	66.0%	10.2%	16.5%	0.2%	1.2%	0.3%	1.6%
September	67.8%	11.2%	13.7%	0.3%	1.4%	0.3%	1.7%
July	67.2%	13.2%	12.6%	0.4%	1.4%	0.4%	1.6%
May	68.1%	13.8%	9.5%	0.6%	1.4%	0.4%	1.6%
March	68.2%	14.6%	7.9%	0.8%	1.4%	0.6%	1.4%
January	68.9%	15.8%	5.5%	0.4%	1.5%	0.5%	1.5%
<b>2003</b>	<b>IE6</b>	<b>IE5</b>	<b>Moz</b>	<b>N3</b>	<b>N7</b>	<b>N4</b>	<b>O7</b>
November	71.2%	13.7%	7.2%	0.5%	1.6%	0.5%	1.9%
September	69.7%	16.9%	6.2%	0.6%	1.5%	0.6%	1.8%
July	66.9%	20.3%	5.7%	0.6%	1.5%	0.6%	1.7%
May	65.0%	22.7%	4.6%	1.0%	1.4%	0.9%	1.4%
March	63.4%	24.6%	4.2%	0.9%	1.4%	1.1%	1.2%
January	55.3%	29.3%	4.0%	1.2%	1.1%	1.7%	
<b>2002</b>	<b>IE6</b>	<b>IE5</b>	<b>AOL</b>	<b>N3</b>	<b>N5</b>	<b>N4</b>	<b>IE4</b>
November	53.5%	29.9%	5.2%	1.1%	4.9%	2.0%	
September	49.1%	34.4%	4.5%	1.3%	4.5%	2.2%	
July	44.4%	40.1%	3.5%	1.2%	3.5%	2.6%	0.5%
May	40.7%	46.0%	2.8%	1.2%	2.7%	3.4%	0.7%
March	36.7%	49.4%	3.0%	1.2%	2.4%	4.1%	0.7%
January	30.1%	55.7%	2.8%	1.3%	2.2%	4.4%	1.0%

<b>IE</b>	Internet Explorer
<b>Fx</b>	Firefox (identified as Mozilla before 2005)
<b>Chrome</b>	Google Chrome
<b>Moz</b>	The Mozilla Suite (Gecko, Netscape)

<b>S</b>	Safari (and Konqueror. Both identified as Mozilla before 2007)
<b>O</b>	Opera
<b>N</b>	Netscape (identified as Mozilla after 2006)
<b>AOL</b>	America Online (based on both Internet Explorer and Mozilla)

Browsers that count for less than 0.5% are not listed.

The average user tends to use Internet Explorer, since it comes preinstalled with Windows. Most do not seek out other browsers.

These facts indicate that the browser figures above are not 100% realistic. Other web sites have statistics showing that Internet Explorer is used by at least 80% of the users.