LAMBDATEST

# BROWSER COMPATIBILITY TESTING: A MUST FOR WEB APPS AND WEBSITES

## Introduction

From 2000 to 2017, the world has seen 764% growth in the number of people online. Today, nearly half of the world's population is online. Some places even show an impressive number. In Europe, nearly 75% people have Internet access and they spend over 1900 minutes per month just being online. With this statistics, it can be easily figured out that for any business to grow, the digital transformation has a major role to play.

Today, nearly all the businesses are online and it is necessary for the businesses to keep the customers happy. These people using internet have varied choices hence they use different platforms to access the websites. With so much varied choices, it is the duty of the provider to ensure the same experience to all the users regardless of the platform they are on. The one term that explains this seamless performance on all the platforms is 'Browser Compatibility'. In this paper, Browser Compatibility will be explained in detail.

## History of Browser Compatibility Testing: Browser Wars

This all began with the advent of Browser War for the usage share of web browsers in the market. The first browser war occured in the late 90s between Microsoft's Internet explorer and Netscape Navigator. It continued when there came a decline of Internet explorer in 2003 and the increased popularity of browsers like Chrome, Firefox, Safari, and Opera. This time between the newly added ones too.

With the introduction of CSS3 and HTML5 a brand new era of browser wars begun. This added to the widespread use of mobile devices for browsing the web plus extensive client side scripting to the WWW.

The new browsers added to the list have ensured that the Browser Wars is going to continue for the tech enthusiasts while the average users are going to use the same choices or do upgrade a bit as per their choices. So, the tech savvy users are giving birth to the Browser Wars and in order to win the browser wars every website/web app is going to find the need to perform browser compatibility testing.

## Understanding Browser Compatibility Testing

Browser compatibility or cross browser compatibility, means if the website or web application that has been developed is working as expected in any given browser or not. So, the process of testing that the website or web application works as intended in any web browser is called as Browser Compatibility Testing.

This can include client or server both the sides. It involves many different parameters like:

**Code validation:** Making sure that the JavaScript and CSS of the code validates across different browsers.

**Performance:** Ensuring seamless web performance across all the platforms.

**Mobile:** Responsiveness for mobile browsers based on what is the resolution, what happens when the device is rotated, & viewport.

**User Interface:** makes sure that the developed UI matches the original plan.

**Behavior:** Confirming the same behavior of the application like dialog boxes, navigations, links, etc throughout.

## The Importance

As we can see that the users across the world have their own choice of browsers utilized, so the application that they are using should work the same regardless the browser used.

For developers, compatibility testing can help them to understand the criteria that their application must attain so that it gets accepted by the users who are using some configuration of OS, software, hardware, etc already.

Compatibility testing also helps the users in finding out which system will fit the best in the current setup being used by them. Also, it helps in figuring out the necessary changes that are required to make the application compatible with the computing environment.

## Strategizing the execution

To simply understand how to test browser compatibility testing, browser compatibility can be split into two parts:

1. **Fundamental or basic browser compatibility**

a) Operating System Support: This ensures whether the site is working as intended with the Operating System or not. Present day working frameworks use the following operating systems: Android, Windows, Windows Phone, iOS, Linux, IBM z/OS and QNX.

b) Browser's functional highlights: This includes the information about regular browser highlights that are executed locally. These highlights can comprise of bookmarks, downloads, shape overseeing, spell checking, etc.

c) Accessibility highlights:This majorly constitutes information about what normal availability highlights could be executed. This would constitute page selection, blocking of pop ups, promotion sifting, zooming feature, movements of mouse, cover route, and so forth.

2. **In-depth or functional Analysis**

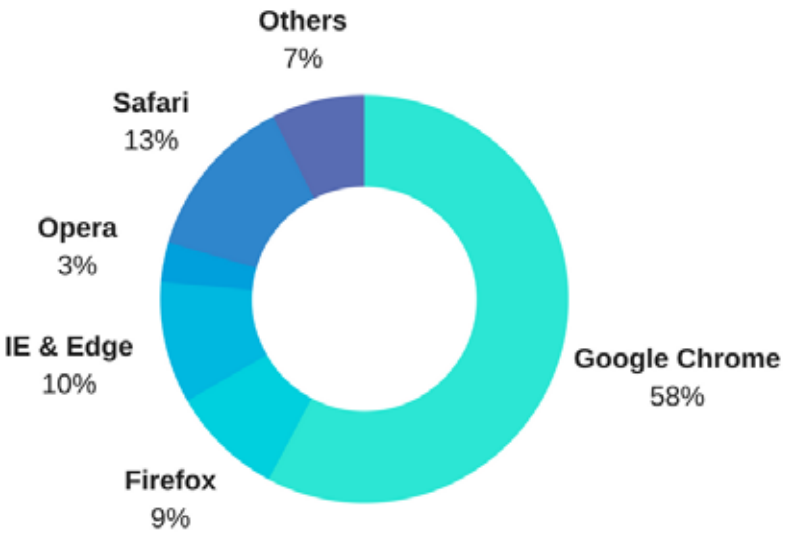
a) Checking the Cascading Style Sheets of the webpages
b) Verifying whether font/page renders properly
c) Verification of image organization support
d) Working of protocol support
e) Proper functioning of web technology support
f) Working of various HTML tags
g) Document Object Model
h) Plugins/Add-ons
i) Checking the languages used for scripting
j) Mobile Technology Support
k) Third Party Entities

The increasing pace at which new OS are getting deployed is a challenge for the organizations to adapt and to stay up to date with the genuine condition is seriously a very challenging task. And if it comes to keeping all the updated gadgets handy, it becomes even more challenging. For this task, the browser compatibility testing tools come to the rescue. The browser compatibility testing tools can help to determine the compatibility testing defects.

Testing a website crosswise over various gadgets has always turned out to be a huge challenge for testers. With a vast variety of browsers available for utilization, test developers face difficulties to test for browser compatibility. It may sound that the browser compatibility is somewhat specialized or something that should be left to developers. But it is basically a thorough exercise done by the testers. It is a must for on to perform because poor browser compatibility can influence the brand that the team has been working on for days, months or even years and can lead to a bad business reputation.

## How to Start

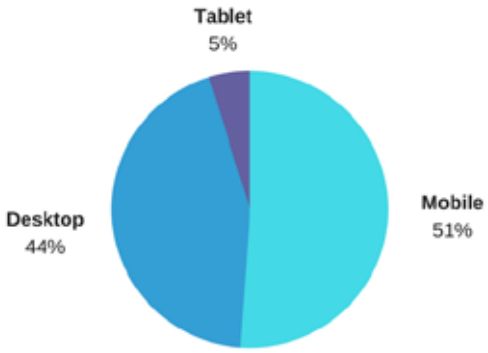
To start with Browser compatibility optimization , the target audience and the area covered needs to be studied. Before considering for factors and need of the Browser need to be tested, the tester should know the dominating and mostly used browser for area in the given time frame. This gives the clarity of how to start. Various researches are being done everyday on Browser usage and market share to find out the mostly used mobile/web browsers used in different areas, different platforms used for browsing, etc.




Reports generated by W3 Counter states that the Google Chrome is the most widely used web browser with 58% market share followed by Safari, 13% share.

This provides a sort of clarity that the webpage should be 100% compatible with Google Chrome since 58% of the people are using it without a second thought. But that does also implies that Firefox and Safari also hold a great part of market share so the user should be given a seamless experience on these browsers too and that too on all the available platforms and all the available browser versions for those browsers.

This graph depicts the share of users between Mobile, Tablet and Desktop devices. Since mobile and desktop shares almost the same number of users so the website/web application must be available for the user on both the platforms flawlessly. So, the need of testing of website or web applications is made clear for responsiveness. Responsive means the response that is provided by the web application or website when it is switched from one platform to another. In other words, it means that the website/ web app should respond the same across different devices.




With the given statistics it is clear how important is it to keep pace with the top browsers and from where the testing is to be started.

A browser should generally be tested if it meets any or some of the following criterias or all of them:
1. If the browser is famous among a significant portion of sites users and is in common, widespread usage.

2. When the browser is the default browser on any of the latest version of Windows or Mac OS X.

3. Any of the latest browser version is released and it is expected to gain a popularity among a large number of audience.

Once the data is reviewed against those criterias, the browsers are then selected for inclusion for testing most sites.

## Common Causes for Browser Incompatibility

### 1. Incorrect DOCTYPE or no DOCTYPE at all

The very first line that describes the Doctype is: <!DOCTYPE html> This one line code can create a huge difference in terms of rendering. If the webpage is not rendering properly this one line code can be the reason.

**Tip:** When there is improper rendering of the webpage check the DOCTYPE first.

### 2. No CSS Reset

Every browser comes with its own CSS styles which applies to the website if the current website does not overwrite them. This causes the website to render differently depending upon the browser based on the browser's CSS styling.

**Tip:** Use CSS Reset in your website. It ensures that every browser renders with the same basic set of rules. Some of the CSS Reset style sheets:

a) Normalize.css
b) HTML5Reset
c) Eric Meyer's CSS Reset

So make sure to add CSS Reset as first style sheet to the page.

**Note:** Some frameworks like Twitter Bootstrapped already includes a CSS reset hence eliminating the need to add another one.

### 3. Vendor Specific CSS Styles

Many a times it happens that while doing the development of a particular website, the developer gets lost in the so called vendor specific CSS styles, defined specially for a specific browser. This vendor specific CSS styles prevents the website's rendering on other browsers except the one with the specific CSS styling. Consider, a website developed for mozilla uses mozilla's styling sheet attributes, if the particular website is opened on chrome then it may not render properly. This is because of the Mozilla specific CSS styles.

**Tip:** To make sure that the code works in all browsers an unprefixed version should be added alongside the prefixed ones.
Prefixes for different browsers:

- -ms for Microsoft (Internet Explorer)
- -moz for Mozilla Foundation (Firefox)
- -o for Opera Software
- -webkit  for Safari and Chrome

### 4. Lack of Valid HTML / CSS

Interpreting HTML and CSS is done differently in different browsers. Some browsers are very smart while others aren't. For example: Many a times it happens that one forgets to close a tag. Say  was left opened, in that case smart browsers like chrome and mozilla may add  to the code and the page will render correctly but some browsers are not that forgiving and the webpage will render incorrectly.

**Tip:** To avoid this, validation of code using some 'validators for HTML and CSS'  can be done.

### 5. Outdated Browser Detection

Sometimes, it may happen that the Javascript code used detects browser rather than the features. If the browser is known then the older Javascripts may break and the page will not render in latest browsers. So, if the code is not working for modern browsers then it can be because of the outdated browser detection.

**Tip:** Remove browser detection and detect the features instead.

# About the Company

LambdaTest Computing Inc. is a high performing cloud based testing platform running on a SaaS business model. It currently provides live interactive real time cross browser testing, screenshot testing, responsive testing,and smart testing to aid in testing needs of testers, QAs, and developers. With 1400+ configurations of Mobile and Desktop Browsers, Browser versions and Operating system on LambdaTest browser compatibility can be assured. Automation testing is further going to add to its features soon.

# LAMBDATEST CREW

## Asad Khan (CEO & CO-FOUNDER)

Founded multimillion dollars Independent Testing services company (360logica) for ISVs. Saksoft Inc. Acquired 360logica in 2014. 360logica grown vertically in five years and became third largest Independent Testing company in India. 13+ years of experience in Testing Vertical. Core skills include Business Development, Market Fit, Product Fit and Strategic Planning.

## Jay Singh (CO-FOUNDER)

Over 15 years of experience in technology sales and customer success. Led and mentored high performing Sales and customer success teams . With an educative approach and as a trusted adviser, have won trust of customers which have led to long term partnerships.

## Manuj Goel (UI/UX DESIGNER)

User Interface and Experience Designer Technology enthusiast, blockchain subject matter expert & hardcore gamer, Helps tech startups designing and evolving proof of concepts and products.

## Deeksha Agarwal (MARKETING)

Blogger, Content executioner, product evangelist driven to thrive excellence for the best material. Helps to get the maximum out of the available to offer the best.

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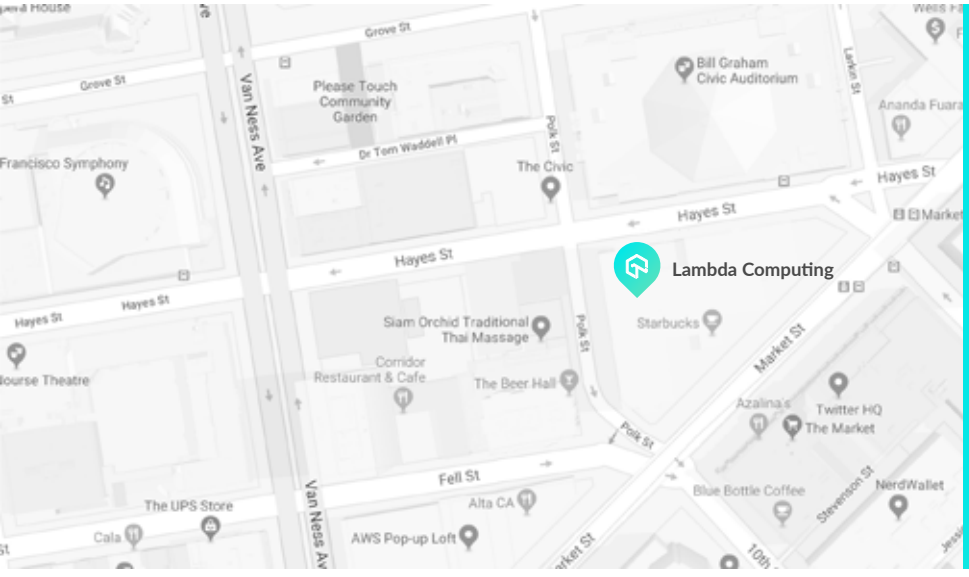


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