

# Systematic Review of Web Server Technologies – Apache

## Abstract

Apache is a big part of developing web servers and it continues after about 20 years to be the most widely used web server application out there. This article looks at the Apache httpd web server application. When looking at Apache there are many things that need to be considered, this includes looking at what Apache is and how it is doing in the market. As well as looking at the features of Apache and what it has over other web server applications have, and what current trends and the future means for Apache.

## Introduction

Apache httpd is an open source web server application that has been around since February 1995 and has been through many versions since its initial release<sup>[6]</sup>. It was originally based on the NCSA httpd 1.3 web server application. The people behind apache fixed some of the bugs and added some new features and enhancements, and then made an official release<sup>[2]</sup>. After that it became the biggest and most widely used web server application. It is an open source project which means that the source code is freely available online and free to download. With It being open source, it means that many people can contribute to the project, to fix bugs and add features.

The most widely used stack that Apache runs on is the LAMP stack, which is Linux, Apache, MySQL and PHP. With LAMP you can sometimes use Perl or Python instead of PHP, but PHP is more widely used in the LAMP stack. There are different variations on the Apache, MySQL and PHP type stacks, this involves changing some of the components of LAMP. For example, if your using Windows, then you wont be able to use LAMP because that uses Linux. So, there are many different stacks that Apache can be used with. Including WampServer, XAMPP, LAPP, DAMP, WAMP.NET, etc.



The graph above shows the market share of all site using a web server application. As can be seen in the graph Apache has dominated the market for many years ever since it took over NCSA and other web server applications in the 1990s. Over the rest of the 90s, 2000s and 2010s Apache continued to dominate the market. In November 2005, it had its biggest percentage share of the market at 71% of

all sites running Apache rather than other web server applications. Although now the market share has gone down in recent years with Microsoft having the biggest percentage share of the market for all sites, leaving Apache at 19%. However, in terms of active sites on the web, Apache still have the biggest percentage share at 44% in October 2017. While Microsoft is near the bottom in terms of active sites.<sup>[9]</sup>

## Feature comparison

Features of Web Server Applications<sup>[3][10]</sup>:

<i>Features</i>	<i>Apache</i>	<i>NGINX</i>	<i>Node.js</i>	<i>Microsoft IIS</i>	<i>NCSA httpd</i>
<i>Authentication</i>	Yes	Yes	Unknown	Yes	Yes
<i>HTTPS</i>	Yes	Yes	Yes	Yes	Unknown
<i>CGI</i>	Yes	No	Unknown	Yes	Yes
<i>FastCGI</i>	Yes	Yes	Unknown	Yes	Unknown
<i>Virtual Hosting</i>	Yes	Yes	Yes	Yes	Partial
<i>Java Servlets</i>	No	No	No	No	No
<i>Admin Console</i>	Yes	Yes	Unknown	Yes	Unknown
<i>IPv6</i>	Yes	Yes	Yes	Yes	Unknown
<i>Runs in</i>	User	User	Unknown	User & Kernel	User

When it comes to the features of Apache compared to other web server applications, Apache comes out on top with Microsoft for the most features. This is because they are the most actively developed. Apache will have a lot of features because there are a lot of contributions to the project because it is an open source project and they have a community of developers.

Apache has many different features, this is because it has been developed over years which means its had to keep up to date to stay relevant. Authentication is supported in Apache in terms of basic authentication and direct access authentication. Basic access authentication just provides a user name and password when making a request, while direct access applies a hash function to the username and password before it is sent across a network<sup>[4]</sup>. Having direct access authentication make it more reliable. Apache also supports HTTPS which means that it can securely communicate and send data across a network so that it is, which is very important for handling sensitive information.

Also supported is CGI (Common Gateway Interface) and FastCGI which is essentially a way of showing dynamic content on the web, using a programming language. CGI allows for separation between the code execution and web server. This allows for security benefits. While FastCGI is better for security and efficiency. Apache like most web server applications doesn't support Java Servlets, because Apache uses PHP and other languages for dynamic content instead of Java. Apache also has support for an Administrator Console and IPv6. Having IPv6 means that Apache is future proofed for when IPv6 becomes more widely used.<sup>[1]</sup>

## Discussion

When it comes to web development there is always new things being added to web server applications to always support new technologies. So, it means there are always trends in web server applications. In terms of all sites the trend seems to be Apache being in a bit of a slump and some of the other web server applications like Microsoft IIS rising in the market share. <sup>[9]</sup>

Apache being the dominating force it is in the web market, it will always try to stay ahead of the game. This means that it will adapt in terms of features and enhancements, which is because it is an open source software and has a big community of developers, it will mean new features that work for other applications will can be implemented, so that it can continue to be widely used and easy to use. With it being free and continually being developed it will continue to be a big force in web. It even has features to make it ready for the future and that will continue to be added to.

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