

# Apache

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# About this presentation

Based on a previous talk by Joel Jaeggli with thanks!

You can access this presentation at:

- Online: <http://afnog.github.io/sse/apache/>
- Local: <http://www.ws.afnog.org/afnog2017/sse/apache/Apachepresentation.pdf>
- Github: <https://github.com/afnog/sse/blob/master/apache/presentation.md>
- Download PDF:  
<http://www.ws.afnog.org/afnog2017/sse/apache/Apachepresentation.pdf>

# What is Apache?

- An HTTP server (web server)

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## APACHE PROJECT LIST

BY CATEGORY	BY NAME		
Overview	HTTP Server	H	Pivot
All Projects			POI
AMC	A	Hadoop	Portals
Big Data	Accumulo	Hama	Q
Build Management	ACE	HBase	Qpid
Cloud	ActiveMQ	Helix	R
Content	Airavata	Hive	REEF
Databases	Allura	HttpComponents	River
FTP	Ambari	I	Roller
Graphics	Ant	Isis	S
HTTP	Any23	Ignite	
HTTP-module	Apex	J	Samza
Incubating	APR	Jackrabbit	Santuario
JavaEE	Archiva	James	Sentry
Labs	Aries	jclouds	Serf
Libraries	Arrow	Jena	ServiceMix
Mail	AsterixDB	JMeter	Shiro
Mobile	Aurora	JSPWiki	SIS
Network-client	Avro	Johnzon	Sling
Network-server	Axis	JUDDI	SpamAssassin
OSGI	B	K	Spark
		Kafka	Sqoop

A foundation supporting several web-related

software projects

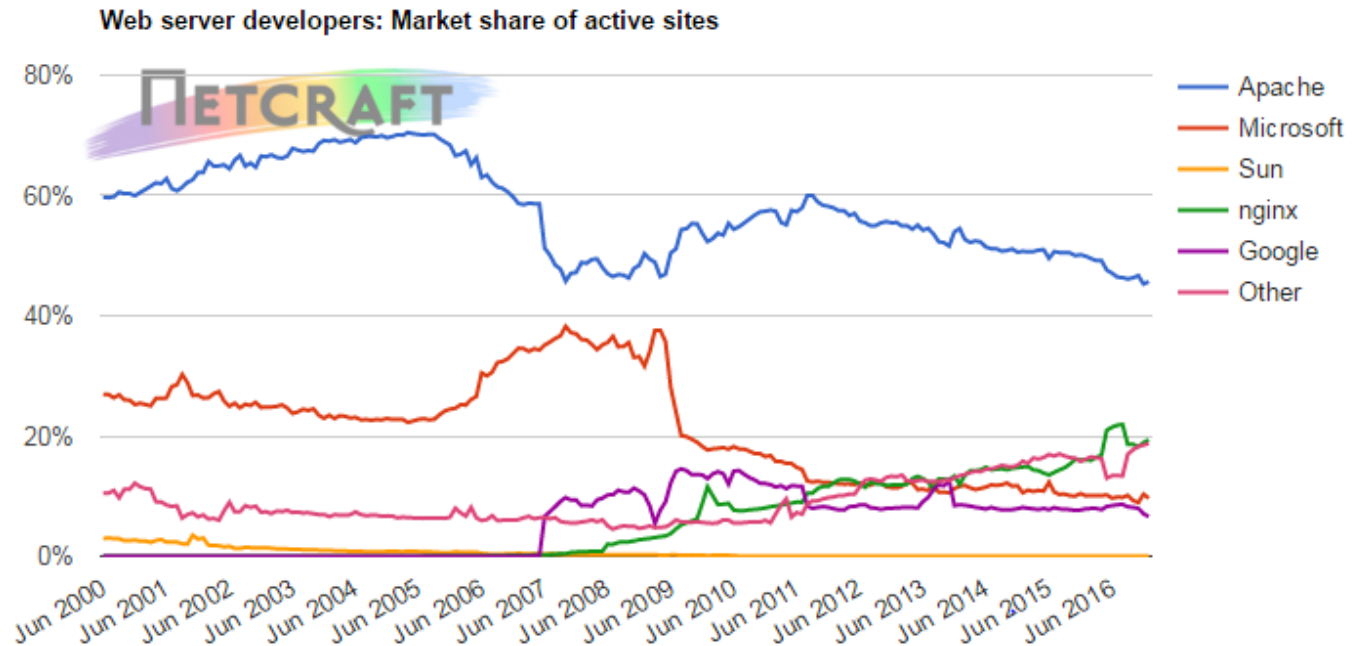
For clarity it might help to talk about "Apache Server" to mean the HTTPD server.



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# Other HTTP servers

What other HTTP (web) servers are commonly used?



# Which one to use?

- Apache

- Popular, well-documented, flexible, secure, big, slow, heavy, SSL support, PHP integration.

- Nginx

- Increasingly popular, quite well-documented, very fast, reverse proxy, SSL support, no PHP.

- Lighttpd

- Simple, fast, no PHP.

- Thttpd

- Tiny, fast, no PHP.

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# Apache Features

- **Server Side Programming Language Support**

- Apache supports some common language interfaces which include Perl, Python, Tcl, and PHP. It also supports a variety of popular authentication modules like `mod_auth`, `mod_access`, `mod_digest` and many others.

- **IPv6 Support**

- On systems where IPv6 is supported by the underlying Apache Portable Runtime library, Apache gets IPv6 listening sockets by default.

- **Virtual Hosting**

- Apache will allow one installation instance to serve multiple websites. For instance one Apache installation can serve `sse.afnog.org`, `ws.afnog.org` etc
- **Simplified configuration (!)**

More at: <http://httpd.apache.org/>

# Virtual Hosting

What does it mean?

Apache support virtual hosting (deciding which website to display) using:

- Name based virtual hosts
- IP based virtual hosts
- Aliases (subdirectories)

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# PHP and MySQL

- Many web applications written in PHP and using a MySQL database.
- Relatively easy to deploy under Apache (and most web hosting).
- We will install the necessary software shortly.



# Install Apache

```
sudo apt install apache2
```

How do you test that it worked?

```
telnet localhost 80
```

```
root@pc38:/home/afnog# telnet localhost 80
Trying ::1...
Connected to localhost.
```

And visit <http://pcXX.sse.ws.afnog.org> in your browser.



## Apache2 Debian Default Page

### It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

### Configuration Overview

Debian's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Debian tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Debian systems is as follows:

What content is it serving? How do we change it?

```
/var/www/html/index.html
```

# Enable and test IPv6

Set your IPv6 address to match your IPv4 address (replace `XX` with your PC number plus 100):

```
$ sudo ip -6 addr add 2001:43f8:220:219::XX/64 dev eth0
```

Then add your default route for IPv6:

```
$ sudo ip -6 route add default via 2001:43f8:220:219::1
```

On the above if you get the error message `RTNETLINK answers: File exists`, it means that the gateway is already in place, as it was auto-configured.

Test your IPv6 connectivity:

```
$ ping6 www.google.com
```

Then browse your IPv6 address at [http://\[2001:43f8:220:219::XX\]](http://[2001:43f8:220:219::XX]) (the square brackets are deliberate and essential!).

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# Apache configuration files

```
* /etc
* /apache2
* apache2.conf
* ports.conf
* conf-available
* *.conf
* conf-enabled
* symlinks to mods-available for services which are enabled
* mods-available (and mods-enabled)
* *.load
* *.conf
* sites-available (and sites-enabled)
* 000-default.conf
* default-ssl.conf
* /var/www/html (content) * index.html (the test page)
```

<https://httpd.apache.org/docs/2.4/configuring.html>

# Starting Apache

- Startup scripts are located in `/etc/init.d/`

- `/etc/init.d/apache2 start`
- `service apache2 start`

- Other useful commands:

- `/etc/init.d/apache2 stop`
- `/etc/init.d/apache2 restart` (stop+start)
- `/etc/init.d/apache2 reload` (graceful reload config)

# Install MySQL and PHP

Install the packages:

```
$ sudo apt install mysql-server apache2 php5 php5-mysql
```

When the mysql-server prompts for a password to be entered use 'afnog' as the password. If not prompted, don't worry, we will set it later.

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# Testing PHP

Create the file `/var/www/html/test.php` with the following contents:

```
<?php echo phpinfo(); ?>
```

Load it in your browser at <http://pcXX.sse.ws.afnog.org/test.php>. You should see this:



The screenshot shows the output of the PHP info script. At the top, it displays "PHP Version 5.6.20-0+deb8u1" and the PHP logo. Below this is a table with system information.

System	Linux pc40.sse.ws.afnog.org 4.4.0-22-generic #40-Ubuntu SMP Thu May 12 22:03:46 UTC 2016 i686
Build Date	Apr 27 2016 15:23:23
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php5/apache2
Loaded Configuration File	/etc/php5/apache2/php.ini
Scan this dir for additional .ini files	/etc/php5/apache2/conf.d

# Securing MySQL

Please read the instructions and use the letters "y" or "n" on the keyboard.

```
$ sudo mysql_secure_installation
```

The password for MySQL is probably `afnog` (unless you entered a different password during the installation above).

```
Enter current password for root (enter for none):  
OK, successfully used password, moving on...  
Remove anonymous users? [Y/n] y  
... Success!  
Disallow root login remotely? [Y/n] n  
... Success!  
Remove test database and access to it? [Y/n] y  
Reload privilege tables now? [Y/n] y  
... Success!  
Cleaning up...
```

## Testing MySQL

Log in to mysql console to check if the password was set properly using command below.

```
$ mysql -u root -p  
Password:
```

Type the password at the prompt. Then you should see a `mysql>` prompt, which means that you authenticated successfully and can enter SQL commands.

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# FIN

Any questions?

(yeah, right!)