

# Apache Web Server

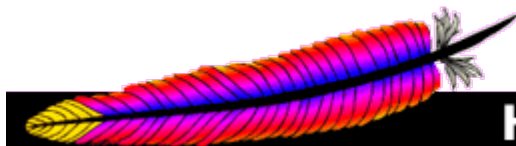
Quick and Dirty  
for AfNOG 2015

(Originally by Joel Jaeggli for AfNOG 2007)



# About Apache

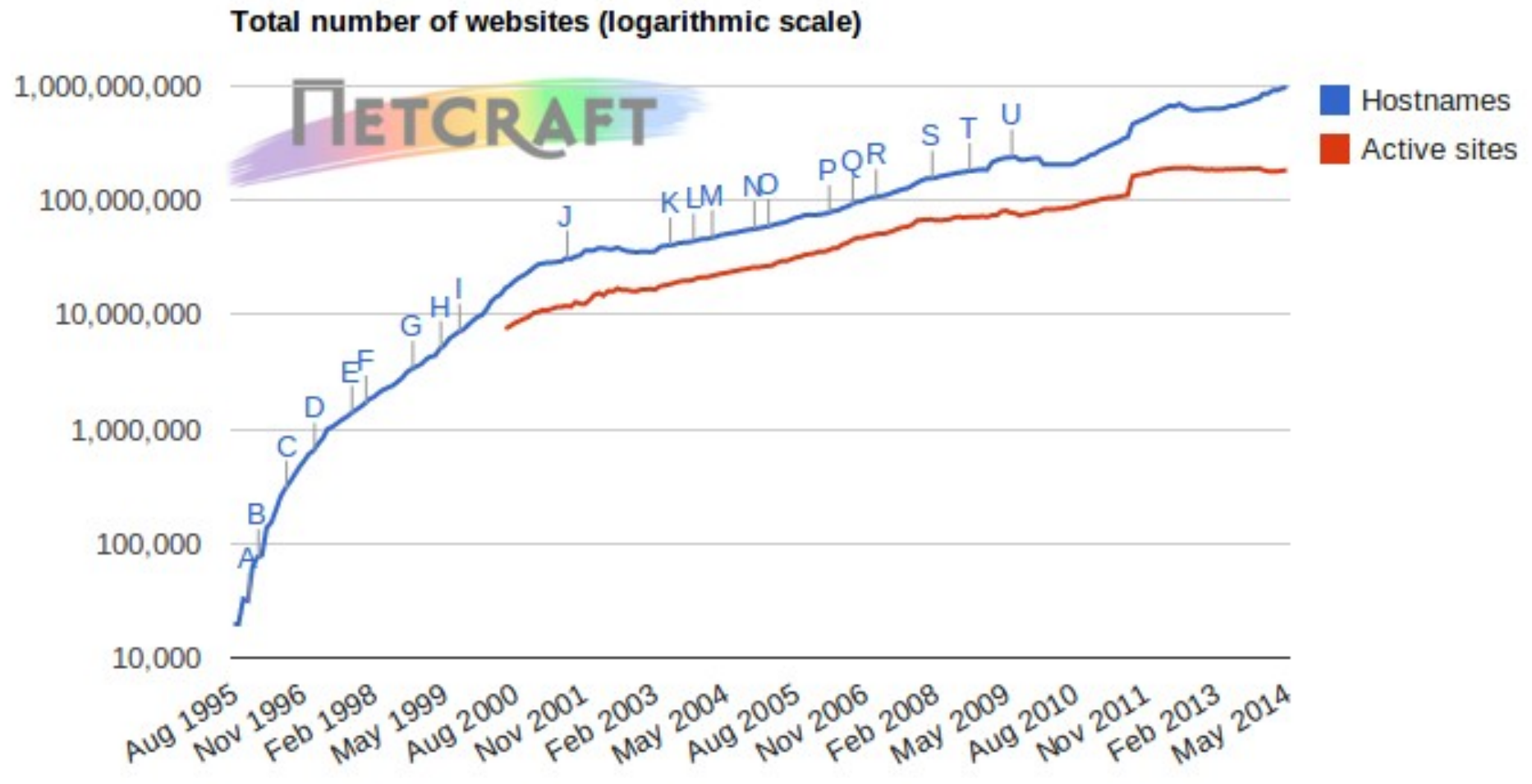
- Apache http server project
- <http://httpd.apache.org>
- Apache foundation started to support the web server project, but now extends to a multitude of other projects.



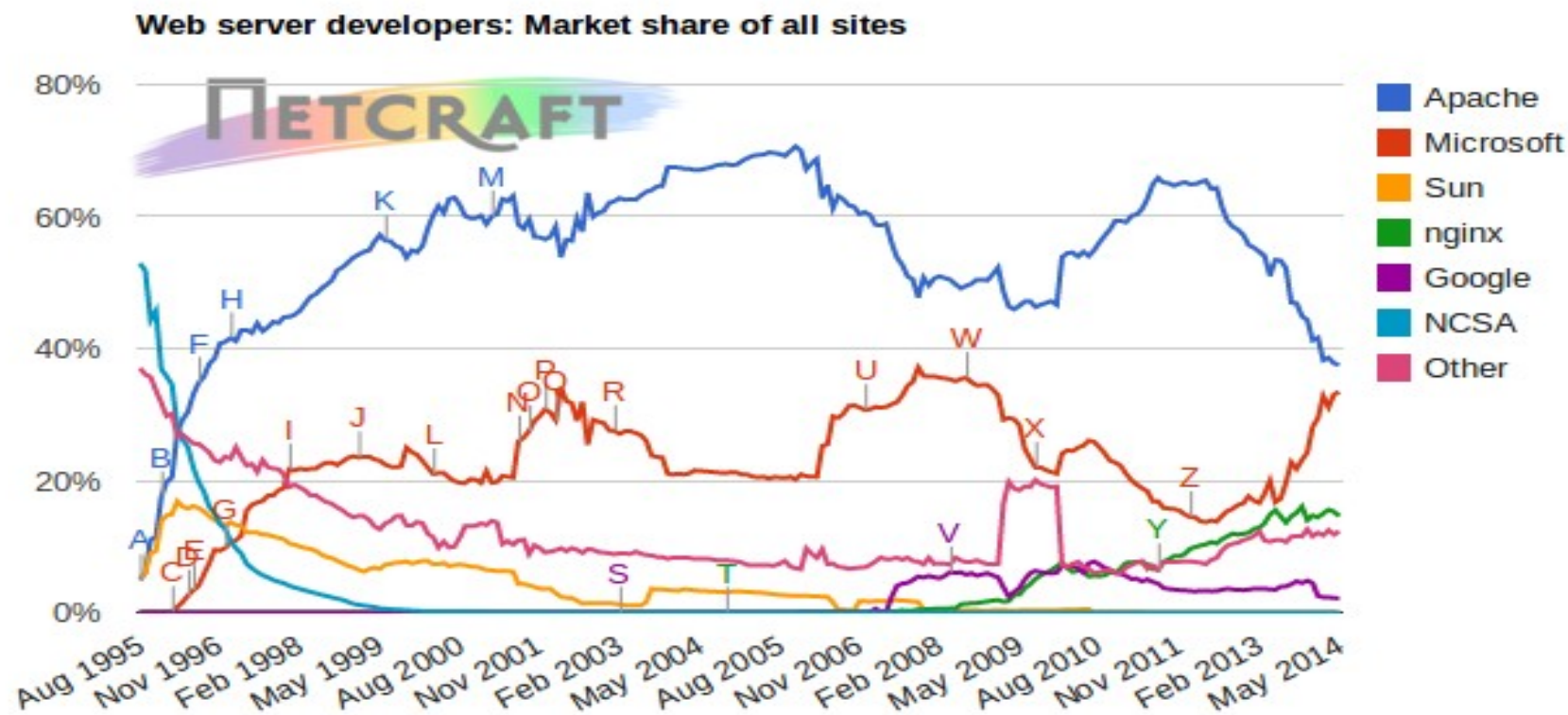
**Apache**  
HTTP SERVER PROJECT



# No. of websites



# Top Server Market share from 1995 - 2014



Developer	April 2014	Percent	May 2014	Percent	Change
Apache	361,853,003	37.74%	366,262,346	37.56%	-0.18
Microsoft	316,843,695	33.04%	325,854,054	33.41%	0.37
nginx	146,204,067	15.25%	142,426,538	14.60%	-0.64
Google	20,983,310	2.19%	20,685,165	2.12%	-0.07

<http://news.netcraft.com/archives/category/web-server-survey/>



# Apache Installation on Debian

- Apache can be installed from APT-GET  
`apt-get install apache2`
- Can be installed from dpkg
- Or from source if one requires a more recent version than what's on Debian source list

# File System Layout

```
/etc/apache2/  
|-- apache2.conf  
|   |-- ports.conf  
|-- mods-enabled  
|   |-- *.load  
|   |-- *.conf  
|-- conf-enabled  
|   |-- *.conf  
|-- sites-enabled  
|   |-- *.conf
```

# Starting Apache

- **Startup scripts are located at**  
`/etc/init.d/`
- **Take a look in startup script**  
`/etc/init.d/apache2`
- **Add Apache to startup**  
`update-rc.d apache2 enable`
- **Run**  
`$ /etc/init.d/apache2 restart`  
`$ sudo service apache2 start`
- **Restart**  
`$ sudo service apache2 restart`

# 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
- Native Windows NT Unicode Support
- More at: [http://httpd.apache.org/docs/2.2/new\\_features\\_2\\_0.html](http://httpd.apache.org/docs/2.2/new_features_2_0.html)





# Apache SSL

- Secure Socket Layer (SSL) port is 443
- SSL is important to protect communication between client browser and web-server
- Requires the creation of SSL certificates and Certificate Signing Requests (CSR)
- For integrity, SSL certificates are signed by a Certificate Authority's (CA) such as Verisign
- Self signed Certificates will also work but your browser will not trust it and will give a warning to users (which most don't read)
- *Refer to the Creating SSL Certificate Exercise Section*

# How SSL Works

- Each SSL certificate has a Public and Private key
- The Public Key is used to encrypt the information
- The Public Key is accessible to everyone
- The private Key is used to decipher the information
- The private should be not be disclosed

# Role of Certificate Authority

- There are a number of CA that certify certificates
- Most browsers have pre-included public Keys from the CA's
- A CA certified certificate will have validation information signed by the CA's private key
- The browser will decrypt the validation information using the public key and verify that the certificate is certified by the CA
- If this fails a warning is given



# Virtual Hosting

- Apache Provides multiple options of virtual hosting and scales
  - Name Based virtual hosts
  - IP Based Virtual Hosts
  - Aliases
- Its recommended to use name based virtual hosting over IP based hosting in virtual hosting configuration
- *Refer to virtual hosting Exercise section*

# Installing PHP & Mysql

- PHP and Mysql implementations have increased driven mainly by development requests
- LAMP and WAMP are the most common implementations
- Installation via “dkpg” and “apt-get” and relatively straight forward
- *See PHP & Mysql installation exercise section*

# Apache and IPv6

- Apache supports IPv4 and IPv6 by default
- Set the listen option to port 80 will listen for both IPv4 and IPv6
- listen option with IPv4 and IPv6 specific addresses will invoke different sockets for each protocol

Listen 196.200.219.xx:80

Listen [2001:43f8:0:219:196:200:219:xx]:80

- *Refer to IPv6 & php test exercise*



# Start Apache!

- `/etc/init.d/apache2 start`
- Check that you can access `http://your.ip.add.ress` in your browser
- Check that you can access `https://your.ip.add.ress` in your browser, and that you get a certificate warning
- Click on the padlock icon in your browser and check that the certificate details are correct

# Apache use cases

- Apache is widely used to serve many content applications
- Webmail, Blogs, Wiki's, CMS etc



# Start Exercises