Apache Web Server
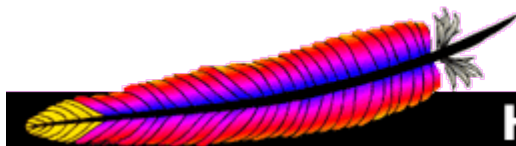
Quick and Dirty
for AfNOG 2015

(Originally by Joel Jaeggli for AfNOG 2007)

About Apache
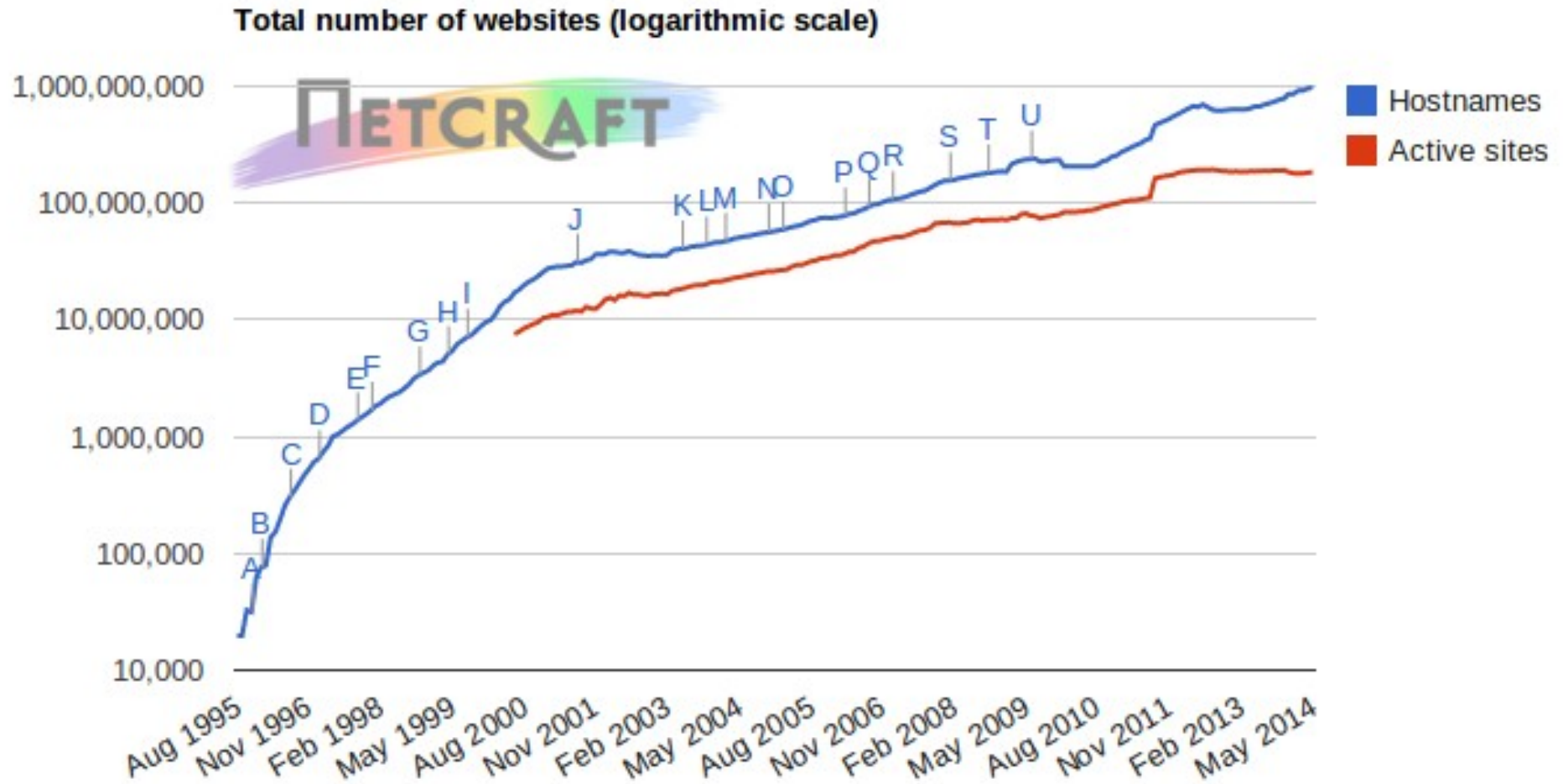
- Apache http server project

- http://httpd.apache.org

- Apache foundation started to support the web server project, but now extends to a multitude of other projects.

No. of websites

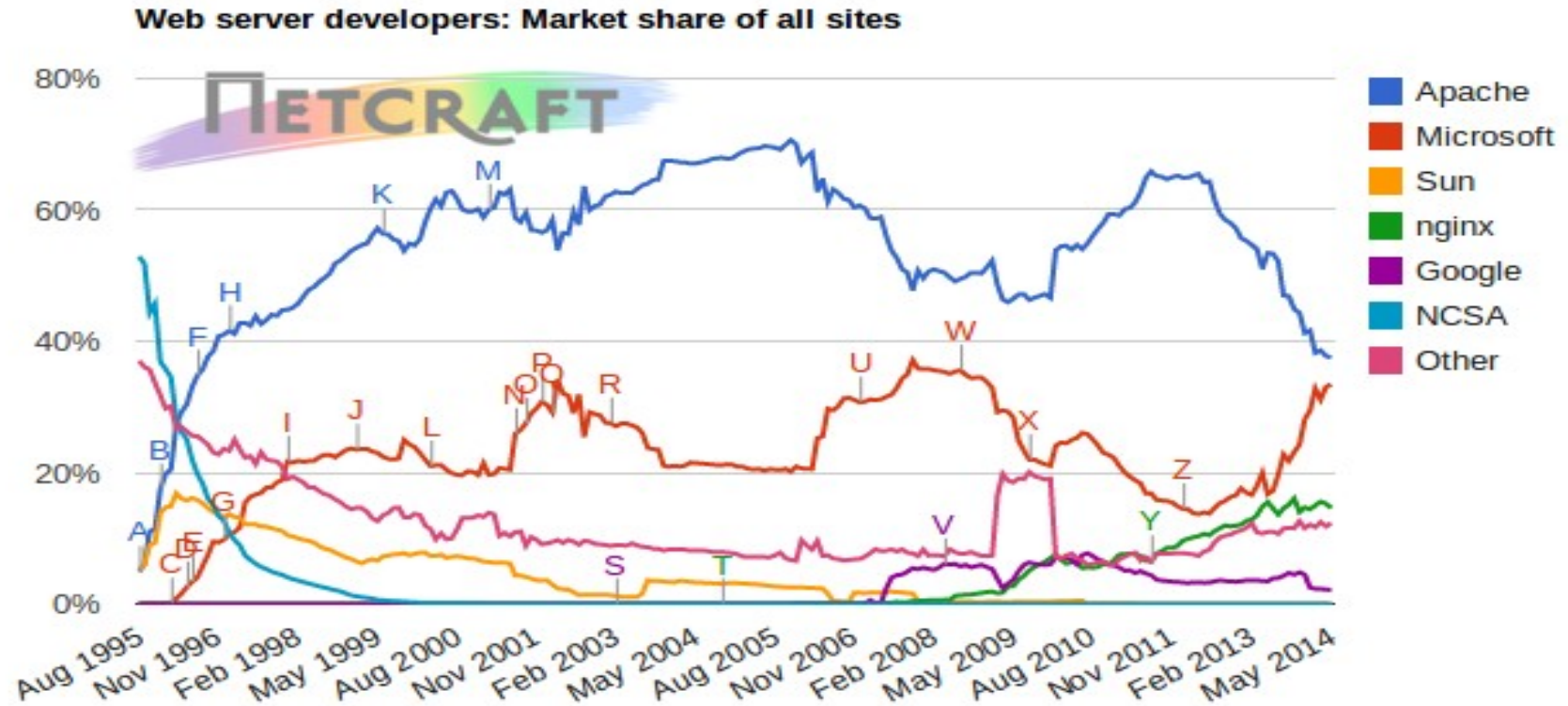Total number of websites (logarithmic scale)

Top Server Market share from 1995 - 2014

Web server developers: Market share of all sites

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 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

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*

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*

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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

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`

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

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Apache use cases

- Apache is widely used to serve many content applications

- Webmail, Blogs, Wiki's, CMS etc

Start Exercises