

CPET 499/ITC 250 Web Systems

Web Server Configuration and Trouble Shooting

References

- Apache HTTP Server Project, <http://httpd.apache.org/>
 - Apache httpd 2.4.10 Released, 2014-07-21
- XAMPP Server, <https://www.apachefriends.org/index.html>
- Wamp Server, <http://www.wampserver.com/en/>
- Apache HTTP Server 2.2 Server Administration Vol. I, 2010, by The Apache Software Foundation
- Apache – The Definitive Guide, 2003, by Ben Laurie & Peter Laurie, published by O'REILLY
- Apache Cookbook, 2008, by Ken Coar & Rich Bowen, published by O'REILLY
- IIS, <http://www.iis.net/>

Topics on Web Server

- Configuration
- Virtual Hosts
- Authentication
- Content Description and Modification
- Indexing
- Redirection
- Proxying
- Logging
- Security
- Running a Big Web Site
- Building Applications
- Server-Side Includes
- PHP
- CGI and Perl
- mod_perl
- mod_jserv and Tomcat
- The Apache API
- Writing Apache Modules

1. Web Servers

- Apache
- Nginx, <http://nginx.org/en/>
- Microsoft IIS
- Google Mongoose, <http://code.google.com/p/mongoose/>

October 2014 Web Server Survey, <http://news.netcraft.com/archives/2014/10/10/october-2014-web-server-survey.html>

Server Administration Knowledge/Skills

- Building, Installation, Upgrading
- Configuration

- Configuration Files
 - Configuration Sections
- Starting, Stopping, Restarting
- Adding common modules
- Logging
- Virtual Hosts
- Aliases, Redirecting, and Rewriting
- Security
- Installing SSL
- Dynamic Content
 - Enabling CGI scripts, PHP, Perl, Python
- Error Handling
- Proxies
- Performance
- Directory Listings

2. IPv6 References

- IPV6 Technical Overview, <http://en.wikipedia.org/wiki/IPv6>
- IPv4 vs. IPv6
 - IPv4, 32-bit, 4.3 billion (4.3×10^9) IPs
 - IPv6, 128-bit, 340 undecillion (3.4×10^{38}) IPs
 - Addressing:
 - 8 groups of 4-hex digits separated by colons
 - 2001:0db8:85a3:0000:0000:8a2e:0370:7334
- IPV6, Internet Society, <http://www.internetsociety.org/what-we-do/internet-technology-matters/ipv6>
- RFC 2460 Internet Protocol, Version 6 (IPv6) Specification, Dec. 1998, <http://tools.ietf.org/html/rfc2460>
- Test Your IPv6 Connectivity, <http://test-ipv6.com/>

3. IIS Web Server

ASP.NET and IIS Configuration, [http://msdn.microsoft.com/en-us/library/ms178477\(v=vs.100\).aspx](http://msdn.microsoft.com/en-us/library/ms178477(v=vs.100).aspx)

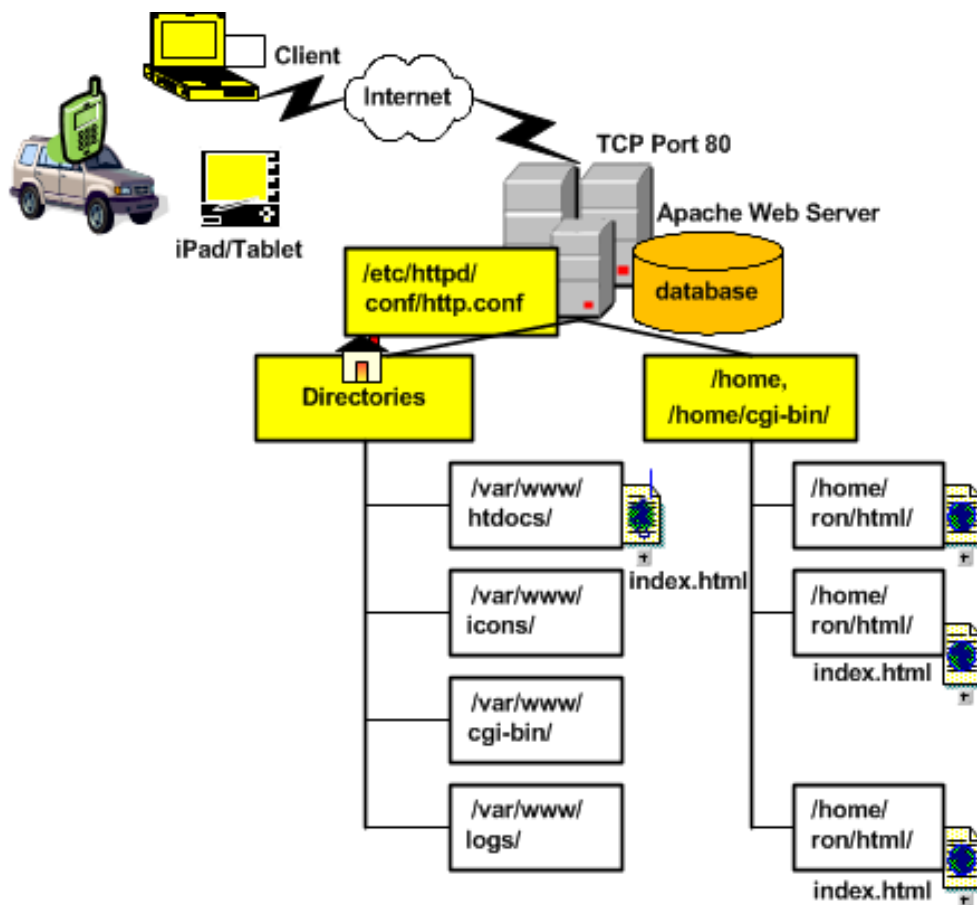
Microsoft IIS Configuration Reference, <http://www.iis.net/configreference>

4. Apache Web Server

Apache Folders/Subdirectories (XAMPP example)

- apache
 - /bin/
 - /conf/httpd.conf the configuration file
 - Listening port 80 (default)
 - LoadModule
 - ServerName localhost:80
 - DocumentRoot "C:/xampp/htdocs"
 - <Directory "C:/xampp/htdocs"> ... </Directory>
 - <Directory "C:/xampp/cgi-bin"> ... </Directory>
 - /conf/extra

- /conf/original
- /conf/ssl.crt
- /conf/ssl.csr
- /conf/ssl.key
- /error
- /icons
- /include
- /lib
- /logs
- /manual
- /modules
- /scripts
- htdocs
- cgi-bin
- php
- perl
- phpMyAdmin



Apache and TCP/IP Ports

Processes (viewed from Window Task Manager)

- httpd.exe *32 Apache server (PID: 1244)

- httpd.exe *32 Apache server (PID: 9188)

NNTP: Port number (Network News Transport Protocol)

SMTP: Port number (Simple Mail Transfer Protocol)

DNS: Port number (Domain Name Service)

HTTP: Port number 80

Apache SSI (Server Side Includes), <http://httpd.apache.org/docs/current/howto/ssi.html>

- SSI are directives that are placed in HTML pages, and evaluated on the server while the pages are being served.
- Add dynamically generated contents to an existing HTML page
- Examples
 - `<!--#echo var="DATE_LOCAL" -->`
- Configuring the HTTP server to permit SSI (httpd.conf OR in a .htaccess file)
- Basic SSI Directives
 - Today's date
 - Modification date of the file
 - `<!--#flastmod file="index.html" -->`
 - Including the results of a CGI program
 - `<!--#include virtual="/cgi-bin/counter.pl">`
 - Executing commands
 - `<pre>`
 - `<!--#exec cmd ="ls" -->`

Apache 2.2 Directives, <http://httpd.apache.org/docs/2.2/mod/directives.html>

- Block Directives
 - `<Directory> ... </Directory>`
 - `<DirectoryMatch> ... <DirectoryMatch>`
 - `<Files> ... </Files>`
 - `<FilesMatch> ... </FilesMatch>`
 - `<IfDefine> ... </IfDefine>`
 - `<IfModule> ... </IfModule>`
 - `<IfVersion> .... </IfVersion>`
 - `<Limit> ... <LimitExcept>`
 - `<Location> ... <Location>`
 - `<LocationMatch> ... <LocationMatch>`
 - `<VirtualHost> ... <VirtualHost>`
- Configuration Directives

`<Directory> .. </Directory>`

`<Files>`

`<VirtualHost>`, <http://httpd.apache.org/docs/2.2/mod/core.html#virtualhost>

`<VirtualHost host[:port]>`

..

`<VirtualHost>`

`<Directory "C:/xampp/htdocs">`

Options Indexes FollowsSymLinks Includes ExecCGI

AllowOverride All

Require all granted
</Directory>

Window

- net start apache
- net stop apache

Apache and Domain Name Servers

- Multiple sites (Linux)
 - Utility ifconfig => binds IP addresses to physical interfaces
- Multiple sites: (Windows)

Virtual Host and Examples, <http://httpd.apache.org/docs/2.2/vhosts/examples.html>

- Running several name-based web sites on a single IP address
 - One IP address
 - Multiple aliases point to this machine in DNS
 - Example: run a web server for www.example.com and www.example.org on this machine
- Name-based hosts on more than IP address
 - Two IP address (any number of IP)
- Serving the name content on different IP addresses (such as an internal and external address)
- Running different sites on different ports
- IP-based virtual hosting
 - Listen to port 80
 - Two server names: www.example.com; www.example.org
- Mixed port-based and IP-based virtual hosts
 - Two IP addresses
 - Run hosts on port 80 and 8080
- Mixed name-based and IP-based vhosts
- Using Virtual_host and mod_proxy together
- Using_default_vhosts
- Migrating a name-based vhosts to an IP-based vhost
- Using the ServerPath directive

Virtual Host Examples, <http://httpd.apache.org/docs/2.2/vhosts/examples.html>

- VirtualHost Example, <http://httpd.apache.org/docs/2.2/mod/core.html#virtualhost>

```
<VirtualHost 10.1.2.3:80>
ServerAdmin webmaster@host.example.com
DocumentRoot /www/docs/host.example.com
ServerName host.example.com
ErrorLog logs/host.example.com-error_log
TransferLog logs/host.example.com-access_log
</VirtualHost>
```
- IPv6 Example

```
<VirtualHost [2001:db8::a00:20ff:fea7:ccea]:80>
ServerAdmin webmaster@host.example.com
DocumentRoot /www/docs/host.example.com
ServerName host.example.com
```

```
ErrorLog logs/host.example.com-error_log
TransferLog logs/host.example.com-access_log
</VirtualHost>
```

- **Running several name-based web sites on a single IP address**

Server configuration:

```
# Ensure that Apache listens on port 80
```

```
Listen 80
```

```
# Listen for virtual host requests on all IP addresses
```

```
NameVirtualHost *:80
```

```
<VirtualHost *:80>
```

```
DocumentRoot /www/example1
```

```
ServerName www.example.com
```

```
# Other directives here
```

```
</VirtualHost>
```

```
<VirtualHost *:80>
```

```
DocumentRoot /www/example2
```

```
ServerName www.example.org
```

```
# Other directives here
```

```
</VirtualHost>
```

- **Name-based hosts on more than one IP address.**

Two IP addresses: 172.20.30.40; 172.20.30.50

Server configuration:

```
Listen 80
```

```
# This is the "main" server running on 172.20.30.40
```

```
ServerName server.domain.com
```

```
DocumentRoot /www/mainserver
```

```
# This is the other address
```

```
NameVirtualHost 172.20.30.50
```

```
<VirtualHost 172.20.30.50>
```

```
DocumentRoot /www/example1
```

```
ServerName www.example.com
```

```
# Other directives here ...
```

```
</VirtualHost>
```

```
<VirtualHost 172.20.30.50>
```

```
DocumentRoot /www/example2
```

```
ServerName www.example.org
```

```
# Other directives here ...
```

```
</VirtualHost>
```

Apache or XAMPP Startup Problem

See what's Using Port 80:

1) start => command

2) netstat -ao

⇒ TCP 0.0.0.0:80 PID 4

3) Task Manager

Kill the process

NT Kernel & System?

4) Administrative Tools

=> Services

Opening Up Port 80 for Apache to Use on Windows,

<http://www.devside.net/wamp-server/opening-up-port-80-for-apache-to-use-on-windows>

⇒ Control Panel > System and Security > Administrative Tools => Service > Web Deployment Agent Service (STOP this service)

