**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

1. **IPv6 References**

* IPV6 Technical Overview, <http://en.wikipedia.org/wiki/IPv6>
* IPv4 vs. IPv6
  + IPv4, 32-bit, 4.3 billion (4.3 x 10^9) IPs
  + IPv6, 128-bit, 340 undecillion (3.4 x 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/>

1. **IIS Web Server**

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

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

1. **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/exta
  + /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**](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**](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](http://www.example.com) and [www.example.org](http://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](http://www.example.com); [www.example.org](http://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 vvhosts
* 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>

* Administrative Tools => Web Deployment Agent Service (STOP this service)
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