

# TNE30019/TNE80014 – Unix for Telecommunications

## Apache – Basic Configuration

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## Outline

- Web Servers
- Apache
  - History
  - FreeBSD-specific setup
  - Basic Configuration
  - Common Issues

## Web Server

### Concept is simple

- Accept connection from remote client (browser)
- Receive request for content
- Send response with content

### Implementation is difficult

- Need to service potentially thousands of concurrent requests
- Need to manage authenticated access
- Posting of data
- Launching of CGI scripts

## Apache

### History of Apache

Taken from [http://httpd.apache.org/ABOUT\\_APACHE.html](http://httpd.apache.org/ABOUT_APACHE.html)

- February 1995 – most popular web server was public domain HTTP daemon developed at University of Illinois (httpd)
- Development stalled, webmasters put together their own bug fixes and extensions ("patches") and formed Apache group
- April 1995 – first public release (based on enhanced httpd v1.3)
- August 1995 – new release after major code restructure
- Ported to multiple platforms – version 1 finally released in December 1995
- Less than one year after start, Apache passed NCSA's httpd as #1 server

### Apache Availability

- Free download: <http://www.apache.org>
- One of the most popular servers (\*nix market split)
- July 2018 – 25% of WWW sites hosted by Apache (nginx – 23%) ([http://news.netcraft.com/archives/web\\_server\\_survey.html](http://news.netcraft.com/archives/web_server_survey.html))

## Apache – Autostart

- FreeBSD
  - Apache installed in `/usr/local/sbin/httpd`
  - Can start by executing it directly
  - Should use `/usr/local/sbin/apachectl` `[start|stop|...]`
- Servers are systems that should run without user interaction
  - If power goes out or system reboots, we want services to start automatically
  - Remember `rc.d`
  - Apache installation installs startup script

```
/etc/rc.conf
apache24_enable="YES"
```

## Configuring Apache

### Apache Configuration Files

- Live in `/usr/local/etc/apache24/` (FreeBSD)
- Contents determine how Apache runs

### Changing Configuration

- Files are only read on Apache startup
- Need to restart (or send HUP signal to) Apache

### Restart or HUP will

- Properly terminate all child processes
- Close any open network sockets
- Reload the configuration file
- Recreate network sockets and child processes

## Apache rc Script Startup

### Runs all startup scripts in `/usr/local/etc/rc.d/apache24`

- Runs automatically at system start up
- Checks `apache24_enable` variable and decides whether or not to start Apache
- Apache launched as root (but changes to user `www`)
- Automatically stopped at system shutdown

### Manual Start/Stop/Reload

```
/usr/local/etc/rc.d/apache24 start
/usr/local/etc/rc.d/apache24 stop
/usr/local/etc/rc.d/apache24 restart
```

But how do we configure Apache?

## Apache Configuration File

- Important configuration in `httpd.conf`
- Well commented and documented

### Server Pool MPM

Define number of threads/processes

### Listen

Defines IP addresses and ports to create listening sockets on

### LoadModule

Apache supports extensibility through the use of loadable modules

## Apache Configuration File

### User/Group

- Apache switches to this user and group ID after creating sockets
- Improves security/stability as after startup server no longer has root access

### DocumentRoot

Defines where on (local) file system web pages and other (downloadable) content is

### Directory

Sets `httpd` options for files located in specified directory

### DirectoryIndex

Which file to send if directory is requested (default `index.html`)

## Apache Configuration File

### ErrorLog

Location of error log file

### LogLevel

Control number of messages logged

### IfModule

Module specific configuration options

### Include

Include sub configuration file

## Other Stuff

### Type of content identified by MIME-type

- Multi-purpose Internet Mail Extensions (MIME) type tells browser the type of file for display purposes
- HTML content: `text/html`
- Major and minor MIME types

### How does server know MIME type?

- Configuration file `/usr/local/etc/apache24/magic` tells Apache how to determine MIME type from file
- Can add new MIME-types if you are developing new web app

### Common configuration errors

- Apache can only deliver content if it has permission to read
- Files must be owned by Apache user/group
- Alternatively, files must be readable by all