Apache and Virtual Hosts
Exercises
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Install Apache version 2

Before installing we need to point our machines to our FreeBSD repository which is on our local NOC machine. This will speed up the time to install considerably. To do this do the following (you can use the `ee` editor instead of `vi` if you wish):

```
# vi /etc/make.conf
```

In this file you need to add a line at the bottom and enter the following line:

```
MASTER_SITE_OVERRIDE=ftp://noc.sae.ws.afnog.org/pub/FreeBSD
/releases/i386/7.2-RELEASE/packages/All/
```

This is a **single line**. Do not split it across two lines.

For this exercise we will use the ports collection. Apache is already installed on your machine, so we will simulate the installation. Apache, however, is not configured to run.

To run the Apache installation do this:

```
# cd /usr/ports/www/apache22
# make
```

This will build apache version apache-2.2.11_4 (as of May 13, 2009).

After you type "`make`" you will be presented with an options screen. There are five pages of options you can set for Apache. For most people the default option settings are acceptable, so select "**OK**" to continue.

Make will take a few minutes to complete. Once it is done please ***do not*** type "`make install`". Now we will configure Apache to run on your machines.

Configure Apache version 2

Apache is a Third Pary software package. The configuration files for Apache reside in the `/usr/local/etc` directory. In order for Apache to run you must first do the following:

```
# vi /etc/rc.conf
```

Add a line to the bottom of this file and enter:

```
apache22_enable="YES"
```

Now exit and save the file.

If you install Third Party software and need to know what to enter in the /etc/rc.conf file to enable it, read the initialization script for that software. For instance, for Apache you can do:

```
# less /usr/local/etc/rc.d/apache22
```

You will see comments at the top of the file describing the options you can place in the /etc/rc.conf file to run the service. Press "**q**" to exit from the `less` command.

Start Apache version 2

This is quite simple. Now that the service has been enabled in /etc/rc.conf type:

```
# /usr/local/etc/rc.d/apache22 start
```

If you would like to prove that Apache is working on your computer open a web browser and enter in the address:

http://localhost/

You should see a page that says, "It works!"

The file where this text resides is:

```
/usr/local/www/apache22/data/index.html
```

Configure Virtual Hosts in Apache 2

There are several ways to approach virtual hosting. The first thing you must determine is your directory structure where each web site will reside. For our purposes we will use:

```
/usr/local/www/share
```

All of your PCs have multiple entries for their assigned IP addresses. At the very least you have:

```
pcX.sae.ws.afnog.org ==> 196.200.218.1xx
pcX.sae.mtg.afnog.org ==> 196.200.218.1xx
```

We will take advantage of this for the exercise.

Let's create three web directories:

```
# cd /usr/local/www/
# mkdir share
# cd share
# mkdir default
# mkdir mtg
# mkdir ws
```

Now let's copy the original `index.html` file to our `default` directory, and the `mtg` and `ws` directories as well..

```
# cp ../apache22/data/index.html default/.
# cp ../apache22/data/index.html mtg/.
# cp ../apache22/data/index.html ws/.
```

Edit the `index.html` files in `mtg` and `ws`.

```
# vi mtg/index.html
```

Change the text "It works!" to "MTG Virtual Host". Close and save the file.

```
# vi ws/index.html
```

Change the text "It works!" to "WS Virtual Host". Close and save the file.

Next we need to edit the Apache configuration files to adjust for our new directory settings.

```
# cd /usr/local/etc/apache22
# vi httpd.conf
```

In the file httpd.conf we are looking first for the following line:

```
DocumentRoot "/usr/local/www/apache22/data"
```

Change this line to read:

```
DocumentRoot "/usr/local/www/share/default"
```

Then look for the line that reads:

```
<Directory "/usr/local/www/apache22/data">
```

And change this to:

```
<Directory "/usr/local/www/share">
```

Now find the line that says:

```
#Include etc/apache22/extra/httpd-vhosts.conf
```

And change this to:

```
Include etc/apache22/extra/httpd-vhosts.conf
```

Now let's verify that Apache is still working.

```
# /usr/local/etc/rc.d/apache22 restart
```

In a web browser (on your machine) open the URL "http://localhost/" once again. It should still read, "It works!".

Now we will add the configuration for our two virtual hosts:

```
# cd /usr/local/etc/apache22/extra
# vi httpd-vhosts.conf
```

Find the line that says:

```
NameVirtualHost *:80
```

And ***delete everything after*** that line. Now let's configure your two virtual hosts. Add the following to the file below the "`NameVirtualHost *:80`" line:

```
<VirtualHost *:80>
    ServerAdmin inst@localhost
    DocumentRoot "/usr/local/www/share/default"
    ServerName 196.200.218.112
    ErrorLog "/var/log/httpd-error_log"
    CustomLog "/var/log/httpd-access_log" common
</VirtualHost>

<VirtualHost *:80>
    ServerAdmin inst@localhost
    DocumentRoot "/usr/local/www/share/mtg"
    ServerName pc12.sae.mtg.afnog.org
    ErrorLog "/var/log/mtg-error_log"
    CustomLog "/var/log/mtg-access_log" common
</VirtualHost>

<VirtualHost *:80>
    ServerAdmin inst@localhost
    DocumentRoot "/usr/local/www/share/ws"
    ServerName pc12.sae.ws.afnog.org
    ErrorLog "/var/log/ws-error_log"
    CustomLog "/var/log/ws-access_log" common
</VirtualHost>
```

Once you are done save the file and quit. Now we must restart Apache to load the new configuration. You can do this two different ways:

Either:

```
# /usr/local/etc/rc.d/apache22 restart
```

Or:

```
# apachectl restart
```

After restarting prove to yourself that virtual hosting is working. To do this let's install a text-based browser to make things simpler. This browser is called `lynx` and is an excellent tool to have if you are working on a machine with no graphical interface. To install the `lynx` text-based web browser do:

```
# pkg_add -r lynx
```

This might take just a second. Once installation completes type:

```
# rehash
```

To view a page in `lynx` you simply type:

```
# lynx url
```

So, for example, to check that virtual hosting is working on your machine you could use `lynx` and type:

```
# lynx localhost
# lynx 127.0.0.1
# lynx 196.200.218.1xx
# lynx pcX.sae.ws.afnog.org
# lynx pcX.sae.mtg.afnog.org
```

Do you see what you expect? Remember to replace the "X" and "xx" with the appropriate numbers. For example, for pc10.sae.ws.afnog.org the urls would be:

- `localhost`
- `127.0.0.1`
- `196.200.218.110`
- `pc10.sae.ws.afnog.org`
- `pc10.sae.mtg.afnog.org`

If you have defined additional hosts for your IP address feel free to add them in to your `/usr/local/etc/apache22/extra/httpd-vhosts.conf` file. Remember to create a directory for their DocumentRoot and to place an html file in that directory.