

Lab 1 Cloud Infrastructure Management**Date: 05-01-2024****CARRY OUT AN EXPERIMENT TO CREATE AND DEMONSTRATE THE WORKING STATIC WEB SERVER.****1. Install apache2 and check the status with below commands**

- sudo apt update
- sudo apt install apache2
- sudo ufw app list
- sudo ufw allow 'Apache'
- sudo systemctl status apache2

```

mtch@dslab-pc-
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

mtch@dslab-pc-:~$ sudo apt update
[sudo] password for mtch:
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Get:2 https://packages.microsoft.com/repos/ms-teams stable InRelease [5,931 B]
Hit:3 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Get:5 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Hit:6 https://ppa.launchpadcontent.net/gns3/ppa/ubuntu jammy InRelease
Hit:7 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Fetched 125 kB in 2s (59.2 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
41 packages can be upgraded. Run 'apt list --upgradable' to see them.
mtch@dslab-pc-:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libflashrom1 libftdi1-2
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap
0 upgraded, 8 newly installed, 0 to remove and 41 not upgraded.
Need to get 1,919 kB of archives.
After this operation, 7,718 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libapr1 amd64 1.7.0-8ubuntu0.22.04.1 [188 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libaprutil1 amd64 1.6.1-Subuntu4.22.04.2 [92.8 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-Subuntu4.22.04.2 [11.3 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libaprutil1-ldap amd64 1.6.1-Subuntu4.22.04.2 [9,170 B]
Get:5 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2-bin amd64 2.4.52-1ubuntu4.7 [1,246 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2-data all 2.4.52-1ubuntu4.7 [165 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2-utils amd64 2.4.52-1ubuntu4.7 [88.8 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2 amd64 2.4.52-1ubuntu4.7 [97.8 kB]
Fetched 1,919 kB in 6s (297 kB/s)
Selecting previously unselected package libapr1:amd64.
(Reading database ... 299217 files and directories currently installed.)
Preparing to unpack .../8-libapr1_1.7.0-8ubuntu0.22.04.1_amd64.deb ...
Unpacking libapr1:amd64 (1.7.0-8ubuntu0.22.04.1) ...
Selecting previously unselected package libaprutil1:amd64.
Preparing to unpack .../1-libaprutil1_1.6.1-Subuntu4.22.04.2_amd64.deb ...
Unpacking libaprutil1:amd64 (1.6.1-Subuntu4.22.04.2) ...
mtch@dslab-pc-:~$ sudo ufw app list
Available applications:
Apache
Apache Full
Apache Secure
CUPS
mtch@dslab-pc-:~$ sudo ufw allow 'Apache'
Skipping adding existing rule
Skipping adding existing rule (v6)
mtch@dslab-pc-:~$ sudo ufw status
Status: active

To Action From
--
Apache ALLOW Anywhere
Apache (v6) ALLOW Anywhere (v6)

mtch@dslab-pc-:~$ sudo systemctl status apache2
○ apache2.service - The Apache HTTP Server
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
Active: inactive (dead) since Fri 2024-01-05 10:43:23 IST; 57s ago
Docs: https://httpd.apache.org/docs/2.4/
Process: 8825 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
Process: 9061 ExecStop=/usr/sbin/apachectl graceful-stop (code=exited, status=0/SUCCESS)
Main PID: 8829 (code=exited, status=0/SUCCESS)
CPU: 30ms

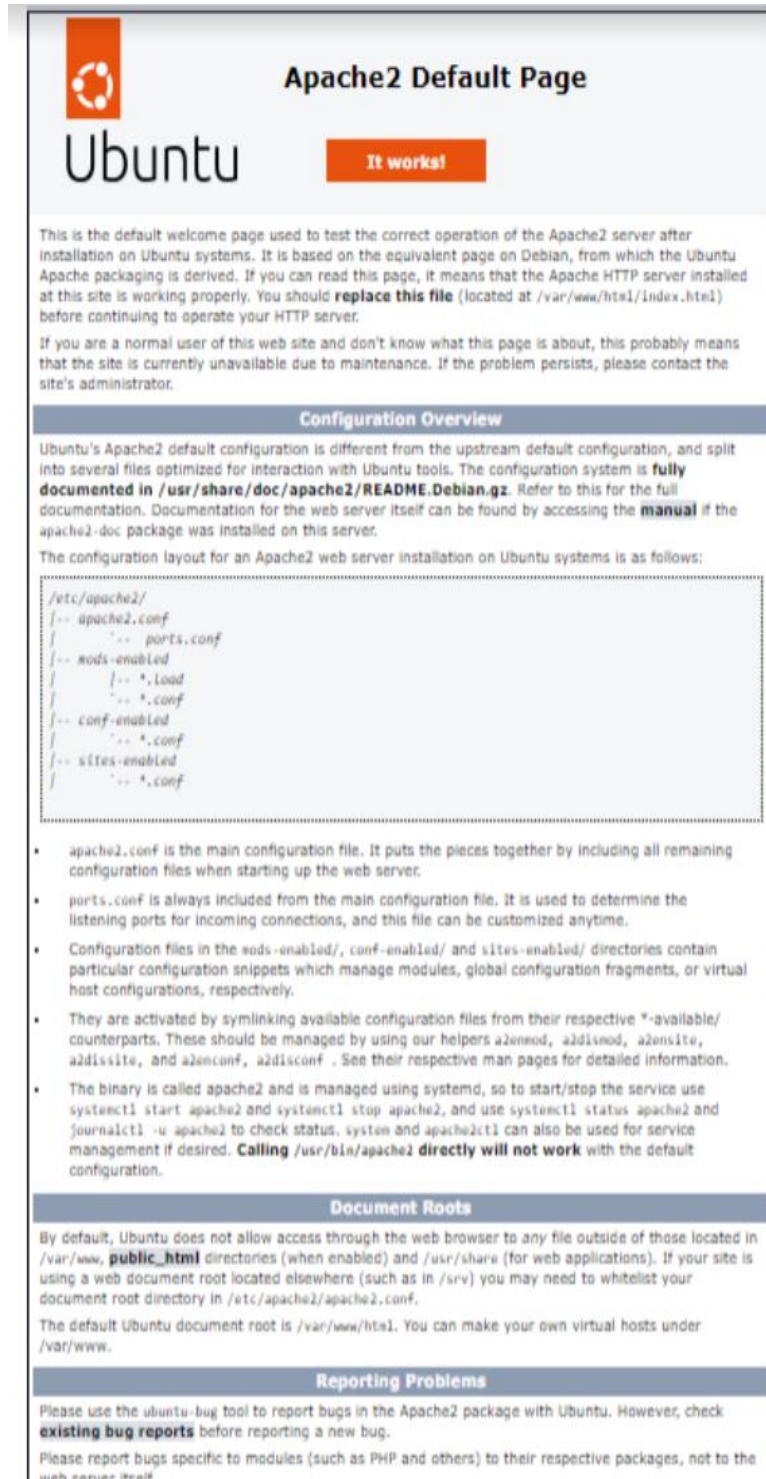
```

2. To obtain system IP type below command

- hostname -I

172.25.187.85**3. Start the apache server. Open chrome tab and enter the system ip. Default page will load****4. To start reload and stop use below commands**

- sudo systemctl stop apache2
- sudo systemctl start apache2
- sudo systemctl restart apache2
- sudo systemctl reload apache2



Apache2 Default Page

Ubuntu

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```

/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|-- mods-enabled
|   |-- *.load
|   |-- *.conf
|-- conf-enabled
|   |-- *.conf
|-- sites-enabled
|   |-- *.conf

```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.
- They are activated by symlinking available configuration files from their respective `*-available/` counterparts. These should be managed by using our helpers `a2enmod`, `a2dismod`, `a2ensite`, `a2dissite`, and `a2enconf`, `a2disconf`. See their respective man pages for detailed information.
- The binary is called `apache2` and is managed using `systemd`, so to start/stop the service use `systemctl start apache2` and `systemctl stop apache2`, and use `systemctl status apache2` and `journalctl -u apache2` to check status. `system` and `apache2ctl` can also be used for service management if desired. **Calling `/usr/bin/apache2` directly will not work** with the default configuration.

Document Roots

By default, Ubuntu does not allow access through the web browser to any file outside of those located in `/var/www`, **public_html** directories (when enabled) and `/usr/share` (for web applications). If your site is using a web document root located elsewhere (such as in `/srv`) you may need to whitelist your document root directory in `/etc/apache2/apache2.conf`.

The default Ubuntu document root is `/var/www/html`. You can make your own virtual hosts under `/var/www`.

Reporting Problems

Please use the `ubuntu-bug` tool to report bugs in the Apache2 package with Ubuntu. However, check **existing bug reports** before reporting a new bug.

Please report bugs specific to modules (such as PHP and others) to their respective packages, not to the web server itself.

5.To create new static page create new folder with domain name

- `sudo mkdir /var/www/172.25.187.85`

6.Create index.html in the newly created folder

`sudo nano /var/www/172.25.187.85/index.html`

```

<html>
<head>
<title>Welcome to your_domain!</title>
</head>

```

```
<body>
<h1>Success! The your_domain virtual host is working!</h1>
</body>
</html>
```

7. Create new configuration file

```
sudo nano /etc/apache2/sites-available/172.25.187.85.conf
<VirtualHost *:80>
ServerAdmin webmaster@localhost
ServerName 172.25.187.85
ServerAlias www. 172.25.187.85
DocumentRoot /var/www/172.25.187.85
ErrorLog ${APACHE_LOG_DIR}/error.log
CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

8. Disable default conf

- sudo a2dissite 000-default.conf

```
mtch@dslab-pc: ~$ sudo a2dissite 000-default.conf
Site 000-default already disabled
mtch@dslab-pc: ~$ sudo apache2ctl configtest
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Syntax OK
mtch@dslab-pc: ~$ systemctl restart apache2
```

9. Enable 172.25.187.85.conf

- sudo a2ensite 172.25.187.85.conf
- sudo apache2ctl configtest

10. Restart apache

- sudo systemctl restart apache2

```
mtch@dslab-pc: ~$ sudo a2ensite 172.25.187.85.conf
Enabling site 172.25.187.85.
To activate the new configuration, you need to run:
  systemctl restart apache2
mtch@dslab-pc: ~$ sudo apache2ctl configtest
Syntax OK
mtch@dslab-pc: ~$ sudo systemctl restart apache2
systemctl restart apache2
Jan 05 15:44:46 dslab-pc systemd[1]: Starting The Apache HTTP Server...
Jan 05 15:44:46 dslab-pc apache2[15818]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Jan 05 15:44:46 dslab-pc systemd[1]: Started The Apache HTTP Server.
```

Success! The your_domain virtual host is working!