

Lab Manual- Setup Apache web Server on Ubuntu for Docker

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1 OBJECTIVE

Deploying your software becomes a lot easier after Docker where you don't have to worry about missing a system configuration or a prerequisite. In This Lab will cover the basics of installing Apache Webserver on Ubuntu and run Image with Docker containers expose on port 80.

- Pull latest Ubuntu Image
- Create a container with Ubuntu Image and Expose it on port 80
- Update the Ubuntu Image
- Install Apache web server

- Start the Apache service
- Install Nano Editor and edit the default Index.html
- Access the web site from browser using docker IP

2 PRE-REQUISISTE

- Prior knowledge of Linux
- Prior knowledge of docker
- A local Computer with 4 CPU, 16 GB RAM, 200 GB disk space

3 Lab Scenario

- Install apache inside a docker container and access it using the hosts IP.

docker pull ubuntu

```
$ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
Digest: sha256:d26d529daa4d8567167181d9d569f2a85da3c5ecaf539cace2c6223355d69981
Status: Image is up to date for ubuntu:latest

lenovo@DESKTOP-BB8JT6R MINGW64 /c/Program Files/Docker Toolbox
$
```

docker Images

```
$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
myimage1            1.0                18604b11a6f0       About an hour ago  127MB
ubuntu              latest             d131e0fa2585       6 days ago        102MB
hello-world         latest             fce289e99eb9       4 months ago      1.84kB
oktaadmin/dockertest latest             c786f18c1bd7       5 months ago      1.5GB

lenovo@DESKTOP-BB8JT6R MINGW64 /c/Program Files/Docker Toolbox
```

docker run --name WebServer -p 80:80 -t -i ubuntu /bin/bash

```
$ docker run --name WebServer -p 80:80 -t -i ubuntu /bin/bash
root@dde180c6d2a0:/#
```

apt-get update

```
root@dde180c6d2a0:/# apt-get update
Get:1 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [784 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:6 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [805 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1344 kB]
Get:8 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [6779 B]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [23.7 kB]
Get:10 http://archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [11.3 MB]
Get:11 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [186 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [13.5 kB]
Get:13 http://archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [1337 kB]
Get:14 http://archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [10.8 kB]
Get:15 http://archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [37.4 kB]
Get:16 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1078 kB]
Get:17 http://archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [2496 B]
Get:18 http://archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [4243 B]
Fetched 17.5 MB in 10s (1716 kB/s)
Reading package lists... Done
```

apt-get install apache2

```
root@dde180c6d2a0:/# apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils file libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-dev
  libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal
  libmagic-mgc libmagic1 libnghttp2-14 libperl5.26 libroken18-heimdal libsasl2-2 libsasl2-modules
  mime-support netbase openssl perl perl-modules-5.26 ssl-cert xz-utils
Suggested packages:
  www-browser apache2-doc apache2-suexec-pristine | apache2-suexec-custom ufw gdbm-l10n libsasl2-modules-ldap
  libsasl2-modules-ldap libsasl2-modules-otp libsasl2-modules-sql ca-certificates perl-doc libterm-readline-perl
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils file libapr1 libaprutil1 libaprutil1-dbd-sqlite3
  libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal
  libmagic-mgc libmagic1 libnghttp2-14 libperl5.26 libroken18-heimdal libsasl2-2 libsasl2-modules
  mime-support netbase openssl perl perl-modules-5.26 ssl-cert xz-utils
0 upgraded, 42 newly installed, 0 to remove and 8 not upgraded.
Need to get 21.0 MB of archives.
After this operation, 99.4 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

service apache2 start

```
root@dde180c6d2a0:/# service apache2 start
* Starting Apache httpd web server apache2
```

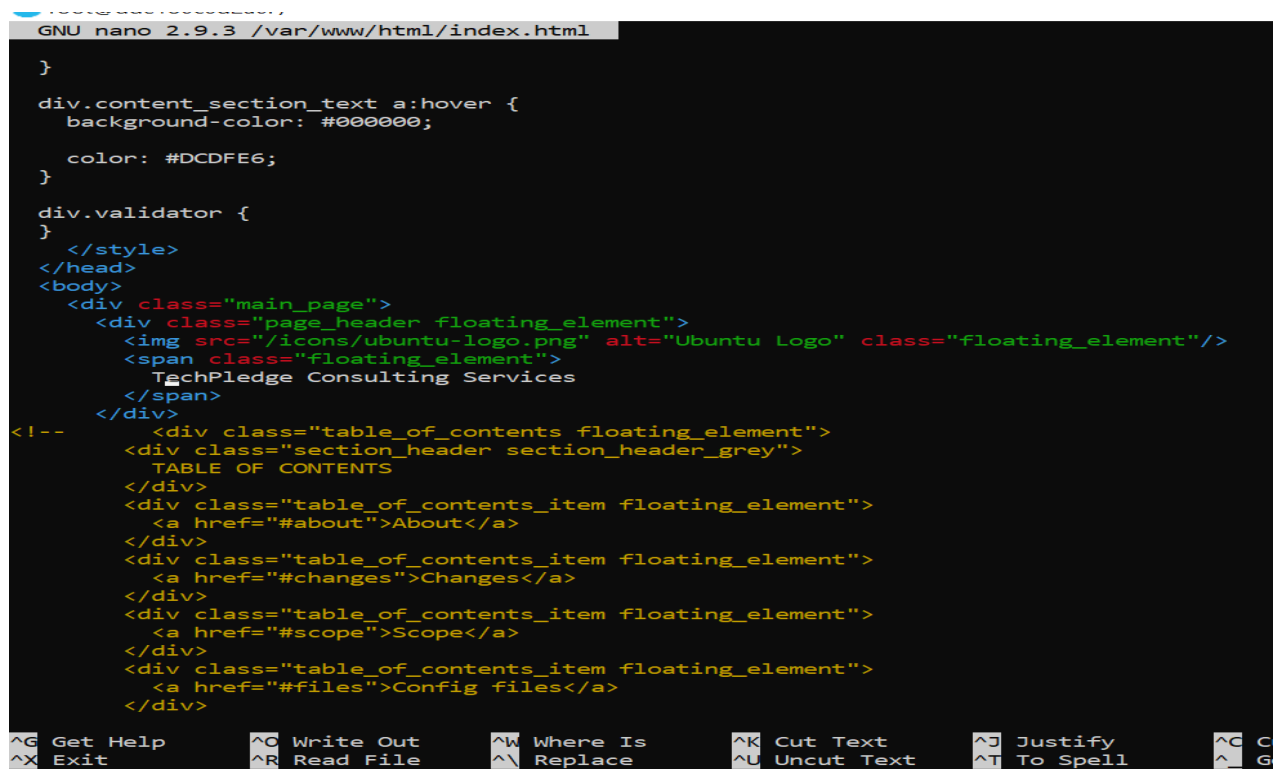
apt-get install nano

```
root@dde180c6d2a0:/# apt-get install nano
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  spell
The following NEW packages will be installed:
  nano
0 upgraded, 1 newly installed, 0 to remove and 8 not upgraded.
Need to get 231 kB of archives.
```

nano /var/www/html/index.html

```
$ docker attach WebServer
root@dde180c6d2a0:/# nano /var/www/html/index.html
```

Change the Line to Tech Pledge Consulting



```
GNU nano 2.9.3 /var/www/html/index.html
}
div.content_section_text a:hover {
  background-color: #000000;
  color: #DCDFE6;
}
div.validator {
}
</style>
</head>
<body>
  <div class="main_page">
    <div class="page_header floating_element">
      
      <span class="floating_element">
        TechPledge Consulting Services
      </span>
    </div>
    <!--
      <div class="table_of_contents floating_element">
        <div class="section_header section_header_grey">
          TABLE OF CONTENTS
        </div>
        <div class="table_of_contents_item floating_element">
          <a href="#about">About</a>
        </div>
        <div class="table_of_contents_item floating_element">
          <a href="#changes">Changes</a>
        </div>
        <div class="table_of_contents_item floating_element">
          <a href="#scope">Scope</a>
        </div>
        <div class="table_of_contents_item floating_element">
          <a href="#files">Config files</a>
        </div>
    </div>
  </div>
</body>
</html>
```

Ctrl +x

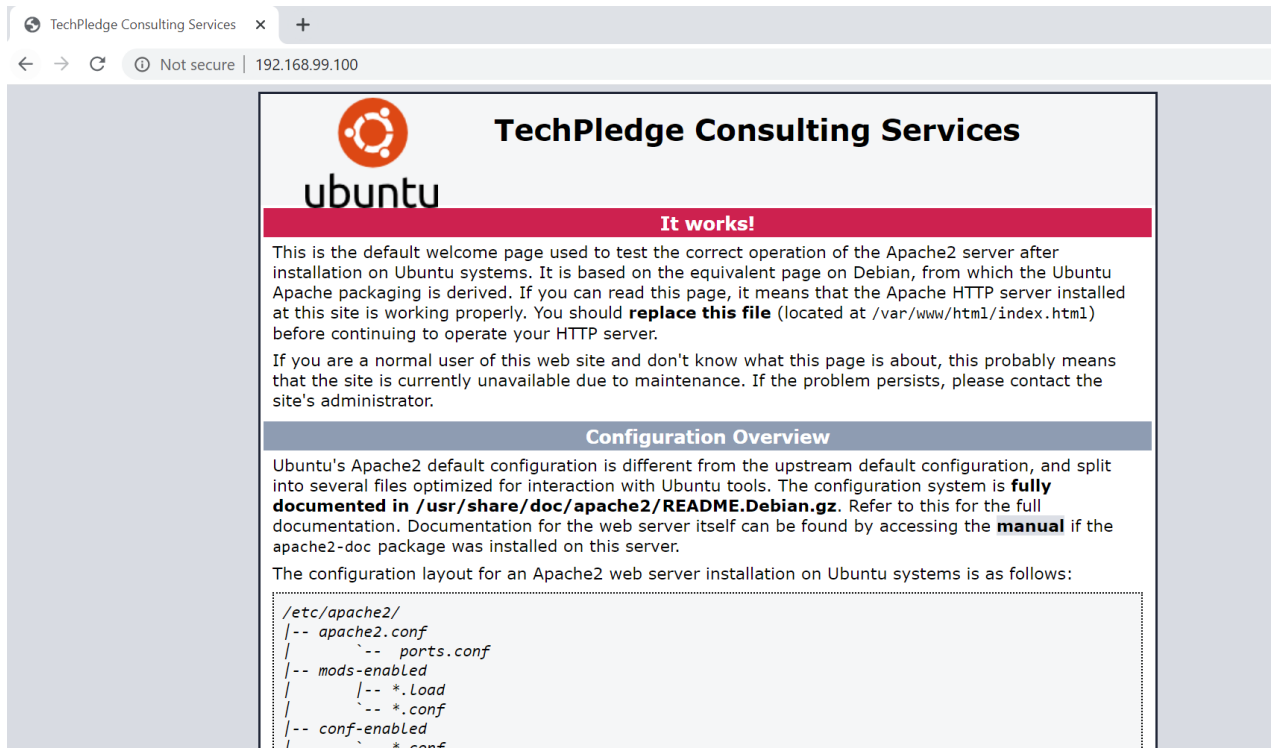
```
margin-right: auto;
Save modified buffer? (Answering "No" will DISCARD changes.)
Y Yes
N No      ^C Cancel
```

Yes

Enter

```
root@dde180c6d2a0:/# nano /var/www/html/index.html
root@dde180c6d2a0:/#
```

Now open the browser and type the default ip address of docker with port 80



docker ps

```
$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
dde180c6d2a0	ubuntu	"/bin/bash"	16 minutes ago	Up 16 minutes	0.0.0.0:80->80/tcp	WebServer

docker commit -m "Apache web server" -a "TechPledge Consulting" dde180c6d2a0 shrutisinhaa/training:Apache

```
$ docker commit -m "Apache web server" -a "TechPledge Consulting" dde180c6d2a0 shrutisinhaa/training:Apache
sha256:cee8a5fc80279546c057d414aa4857d9bc6f8ece6f590819032d23d7266b840c
```

docker Images


```
$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
shrutisinhaa/training	Apache	cee8a5fc8027	8 seconds ago	189MB
ubuntu	Apache	05cfe8fa52af	8 minutes ago	189MB

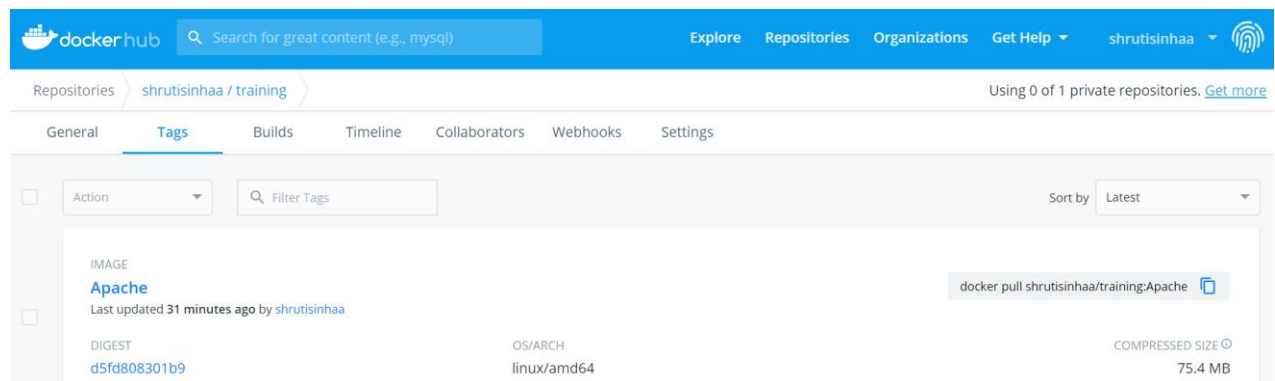
docker login

```
$ docker login
Login with your Docker ID to push and pull images from
Username (shrutisinhaa):
Password:
Login Succeeded
```

docker push shrutisinhaa/training:Apache

```
$ docker push shrutisinhaa/training:Apache
The push refers to repository [docker.io/shrutisinhaa/training]
52cb33175da4: Pushed
e0b3afb09dc3: Mounted from library/ubuntu
6c01b5a53aac: Retrying in 1 second
2c6ac8e5063e: Mounted from library/ubuntu
cc967c529ced: Mounted from library/ubuntu
dial tcp: lookup registry-1.docker.io on 10.0.2.3:53: read udp 10.0.2.15:50976->10.0.2.3:53: i/o timeout
```

Check docker hub

The screenshot shows the Docker Hub interface for the repository 'shrutisinhaa/training'. The 'Tags' tab is selected, showing a list of image tags. The 'Apache' tag is highlighted, indicating it is the latest version. The page shows the image was last updated 31 minutes ago by shrutisinhaa. The image details include the digest 'd5fd808301b9', the OS/ARCH 'linux/amd64', and the compressed size '75.4 MB'. A button 'docker pull shrutisinhaa/training:Apache' is visible.

If we again need to make some changes inside this container, we need to attach to this container using docker attach command.

docker attach WebServer

```
$ docker attach WebServer
root@dde180c6d2a0:/#
```