

# Nginx as a web server and reverse proxy for Apache on Ubuntu and changing the default Apache root path.

Login to the server run the below cmd

1. `sudo apt update`

```
ubuntu@ip-172-31-16-214:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 liba
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 bzip2 libapr1 libaprutil
  ssl-cert
0 upgraded, 13 newly installed, 0 to remove and 29 not upgraded.
Need to get 2139 kB of archives.
After this operation, 8521 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

Port change config file

`sudo vi /etc/apache2/ports.conf`

```
ubuntu@ip-172-31-16-214: ~
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 80

<IfModule ssl_module>
    Listen 443
</IfModule>

<IfModule mod_gnutls.c>
    Listen 443
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
~
```

Once changed the port 80 to 8080.

```

ubuntu@ip-172-31-16-214: ~
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 8080

<IfModule ssl_module>
    Listen 443
</IfModule>

<IfModule mod_gnutls.c>
    Listen 443
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet

```

Save Press esc :wq! And hit enter then restart the apache service.

**sudo systemctl restart apache2**

**sudo systemctl status apache2**

Apache status check

```

ubuntu@ip-172-31-16-214:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: en
   Active: active (running) since Tue 2024-05-28 11:28:27 UTC; 4min 41s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 2272 (apache2)
    Tasks: 55 (limit: 1121)
   Memory: 4.8M
      CPU: 45ms
   CGroup: /system.slice/apache2.service
           └─2272 /usr/sbin/apache2 -k start
             └─2274 /usr/sbin/apache2 -k start
               └─2275 /usr/sbin/apache2 -k start

May 28 11:28:27 ip-172-31-16-214 systemd[1]: Starting The Apache HTTP Server...
May 28 11:28:27 ip-172-31-16-214 systemd[1]: Started The Apache HTTP Server.
ubuntu@ip-172-31-16-214:~$

```

Nginx installation

apt install nginx

```
ubuntu@ip-172-31-16-214:~$ sudo apt install -y nginx
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  fontconfig-config fonts-dejavu-core libdeflate0 libfontconfig1 libgd3 libjbig0 lib
  libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter libnginx-mod-mail lib
  nginx-common nginx-core
Suggested packages:
  libgd-tools fcgiwrap nginx-doc
The following NEW packages will be installed:
  fontconfig-config fonts-dejavu-core libdeflate0 libfontconfig1 libgd3 libjbig0 lib
  libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter libnginx-mod-mail lib
  nginx-common nginx-core
0 upgraded, 20 newly installed, 0 to remove and 29 not upgraded.
Need to get 2693 kB of archives.
After this operation, 8350 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 fonts-dejavu-
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 fontconfig-co
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libdeflate0 a
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libfontconfig
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libjpeg-turbo
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libjpeg8 amd6
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libjb
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libwe
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libti
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libx
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 libgd3 amd64
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 ngin
```

```
sudo systemctl status nginx
```

[illegible]

## Change the apache default root path directory.

Go to `cd /etc/apache2/sites-available`

Open sudo vi 000-default.conf

```
ubuntu@ip-172-31-16-214:~$ cd /etc/apache2/sites-available/  
ubuntu@ip-172-31-16-214:/etc/apache2/sites-available$ ll  
total 20  
drwxr-xr-x 2 root root 4096 May 28 11:51 ./  
drwxr-xr-x 8 root root 4096 May 28 11:35 ../  
-rw-r--r-- 1 root root 1332 Dec 4 18:58 000-default.conf  
-rw-r--r-- 1 root root 6338 Dec 4 18:58 default-ssl.conf  
ubuntu@ip-172-31-16-214:/etc/apache2/sites-available$ sudo vi 000-default.conf
```

Default Document root path /var/www/html/ changed to /home/ubuntu/myproject

```

<VirtualHost *:80>
    # The ServerName directive sets the request scheme, hostname and port that
    # the server uses to identify itself. This is used when creating
    # redirection URLs. In the context of virtual hosts, the ServerName
    # specifies what hostname must appear in the request's Host: header to
    # match this virtual host. For the default virtual host (this file) this
    # value is not decisive as it is used as a last resort host regardless.
    # However, you must set it for any further virtual host explicitly.
    #ServerName www.example.com

    ServerAdmin webmaster@localhost
    DocumentRoot /home/ubuntu/myproject

    # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
    # error, crit, alert, emerg.
    # It is also possible to configure the loglevel for particular
    # modules, e.g.
    #LogLevel info ssl:warn

    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined

    # For most configuration files from conf-available/, which are
    # enabled or disabled at a global level, it is possible to
    # include a line for only one particular virtual host. For example the
    # following line enables the CGI configuration for this host only
    # after it has been globally disabled with "a2disconf".
    #Include conf-available/serve-cgi-bin.conf
</VirtualHost>

```

Vi /etc/apache2/apache2.conf

```
<Directory /var/www/>
```

```
Options Indexes FollowSymLinks
```

```
AllowOverride None
```

```
Require all granted
```

```
</Directory>
```

Changed to as below

```
<Directory /home/ubuntu/myproject>
```

```
Options Indexes FollowSymLinks
```

```
AllowOverride None
```

```
Require all granted
```

```
Allow from all
```

```
</Directory>
```

```
# not allow access to the root filesystem outside of /usr/share and /var/v
# The former is used by web applications packaged in Debian,
# the latter may be used for local directories served by the web server.
# your system is serving content from a sub-directory in /srv you must all
# access here, or in any related virtual host.
<Directory />
    Options FollowSymLinks
    AllowOverride None
    Require all denied
</Directory>

<Directory /usr/share>
    AllowOverride None
    Require all granted
</Directory>

<Directory /home/ubuntu/myproject/>
    Options Indexes FollowSymLinks
    AllowOverride None
    Require all granted
</Directory>

#<Directory /srv/>
#     Options Indexes FollowSymLinks
#     AllowOverride None
#     Require all granted
#</Directory>
```

Once changed the path we should restart the apache service.

Sudo systemctl restart apache2

### Virtual host creation for apache and change document root and directory.

Go to cd /etc/apache2/site-available/

Sudo vi virtualhost.conf

```
<VirtualHost *:8080>
```

```
    DocumentRoot /home/ubuntu/myproject/
```

```
    <Directory /home/ubuntu/myproject>
```

```
        Options Indexes FollowSymLinks
```

```
        AllowOverride All
```

```
    </Directory>
```

```
</VirtualHost>
```

Press esc :wq! Then press enter and create a symbolic link

ln -s /etc/apache2/sites-available/virtualhost.conf /etc/apache2/sites-enabled/

Sudo systemctl restart apache2

```

ubuntu@ip-172-31-16-214:/etc/apache2/sites-available$ ll
total 20
drwxr-xr-x 2 root root 4096 May 28 11:53 ./
drwxr-xr-x 8 root root 4096 May 28 11:55 ../
-rw-r--r-- 1 root root 1341 May 28 11:53 000-default.conf
-rw-r--r-- 1 root root 6338 Dec  4 18:58 default-ssl.conf
ubuntu@ip-172-31-16-214:/etc/apache2/sites-available$ sudo vi virtualhost.conf
ubuntu@ip-172-31-16-214:/etc/apache2/sites-available$ sudo ln -s /etc/apache2/sites-available/virtualhost.conf /etc/apache2/sites-enabled/

```

Go to cd /etc/nginx/site-available/

Create a file sudo vi ssl.conf

```

server {
    listen 80;

    server_name 54.198.76.201;

    root /home/ubuntu/myproject;

    index index.html index.htm;

    location / {

        proxy_pass http://127.0.0.1:8080; # This points to Apache running on port 8080

        proxy_set_header Host $host;

        proxy_set_header X-Real-IP $remote_addr;

        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;

        proxy_set_header X-Forwarded-Proto $scheme;

    }
}

```

Press esc :wq! Then press enter and create a symbolic link.

```
sudo ln -s /etc/nginx/sites-available/ssl.conf /etc/nginx/sites-enabled/
```

```
sudo nginx -t
```

```
sudo systemctl restart nginx
```

Note : server name we should mention domain name but I mentioned the public Ip

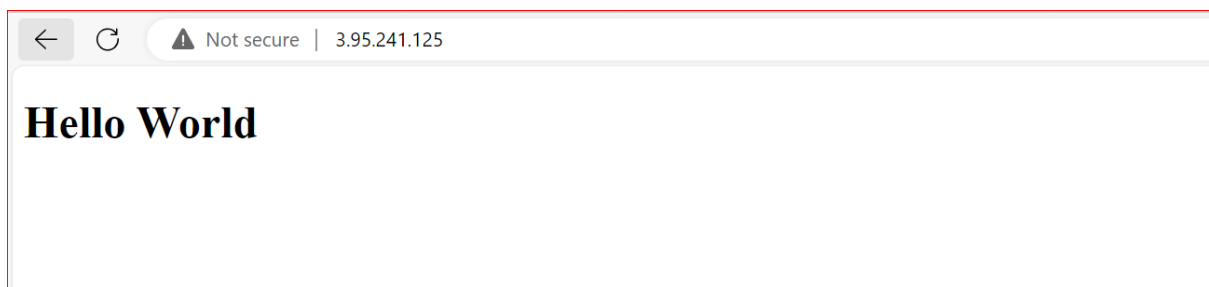
```

ubuntu@ip-172-31-16-214:/etc/nginx/sites-available$ sudo vi ssl.conf
ubuntu@ip-172-31-16-214:/etc/nginx/sites-available$ ln -s /etc/nginx/sites-available/ssl.conf /etc/nginx/sites-e
ln: failed to create symbolic link '/etc/nginx/sites-e': Permission denied
ubuntu@ip-172-31-16-214:/etc/nginx/sites-available$ sudo ln -s /etc/nginx/sites-available/ssl.conf /etc/nginx/sites-enabled/
ubuntu@ip-172-31-16-214:/etc/nginx/sites-available$

```

- After configuring the reverse proxy, we need to push the code into a directory using either the ci/cd Jenkins pipeline or SFTP.
- We upload the files directly to the directory and then try to access the site using a public IP or domain name.
- When you access the site, you may encounter a prohibited permission issue. please run the below command

Sudo **chmod 755 /home/ubuntu**



The Apache service has stopped due to memory or CPU issues, resulting in the site not working, but the nginx default page will appear as shown in the screenshot below.

