Install and configure_ Nginx on EC2

Nginx (pronounced as “Engine-X”) is an open source web server that is often used as reverse proxy or HTTP cache. It is available for Linux for free.

In this tutorial we’ll install Nginx and set up a basic site.

What you’ll learn

- How to set up Nginx
- Some basic Nginx configuration

What you’ll need

- A computer running Ubuntu Server 16.04 LTS
- Some basic knowledge of command line use
- Basic Knowledge about aws instance

1. Launch an EC2 Instance

- **Log in to AWS Console:** Go to AWS Management Console.
- **Navigate to EC2:** From the services menu, select **EC2**.
- **Launch a New Instance:**
    - Click **Launch Instance.**
    - Choose an **Amazon Machine Image (AMI)**: For this tutorial, select **Ubuntu Server** or **Amazon Linux.**
    - Choose an **Instance Type**: Select **t2.micro** (eligible for free tier).
    - **Configure Instance Details**: For basic deployment, you can leave the default settings.

- **Add Storage**: Keep default settings unless you need more storage.
- **Configure Security Group:**
  - Add an **inbound rule** for HTTP (port 80) to allow web traffic.
  - Add an **inbound rule** for **SSH** (port 22) to allow SSH access.
- **Launch**: Review and launch the instance.
- **Download Key Pair**: Choose or create a key pair and download the `.pem` file. You'll need it to SSH into the instance.

2. SSH into the EC2 Instance

- **Open Terminal (Linux/macOS)** or **PowerShell (Windows).**

Navigate to the directory where the `.pem` file is located and run the following command to connect to your EC2 instance:

➡
```
ssh -i /path/to/your-key.pem ubuntu@your-ec2-public-ip
```

- Replace `/path/to/your-key.pem` with the path to your key file and `your-ec2-public-ip` with the public IP of your EC2 instance.

3. Update the Package Lists

Before installing Nginx, update the package lists to get the latest versions of the software:

➡
```
sudo apt update  # For Ubuntu
```

4. Install Nginx

Install Nginx using the package manager:

➡
```
sudo apt install nginx -y  # For Ubuntu
```

5. Start and Enable Nginx

After installation, start the Nginx service and enable it to start on boot:

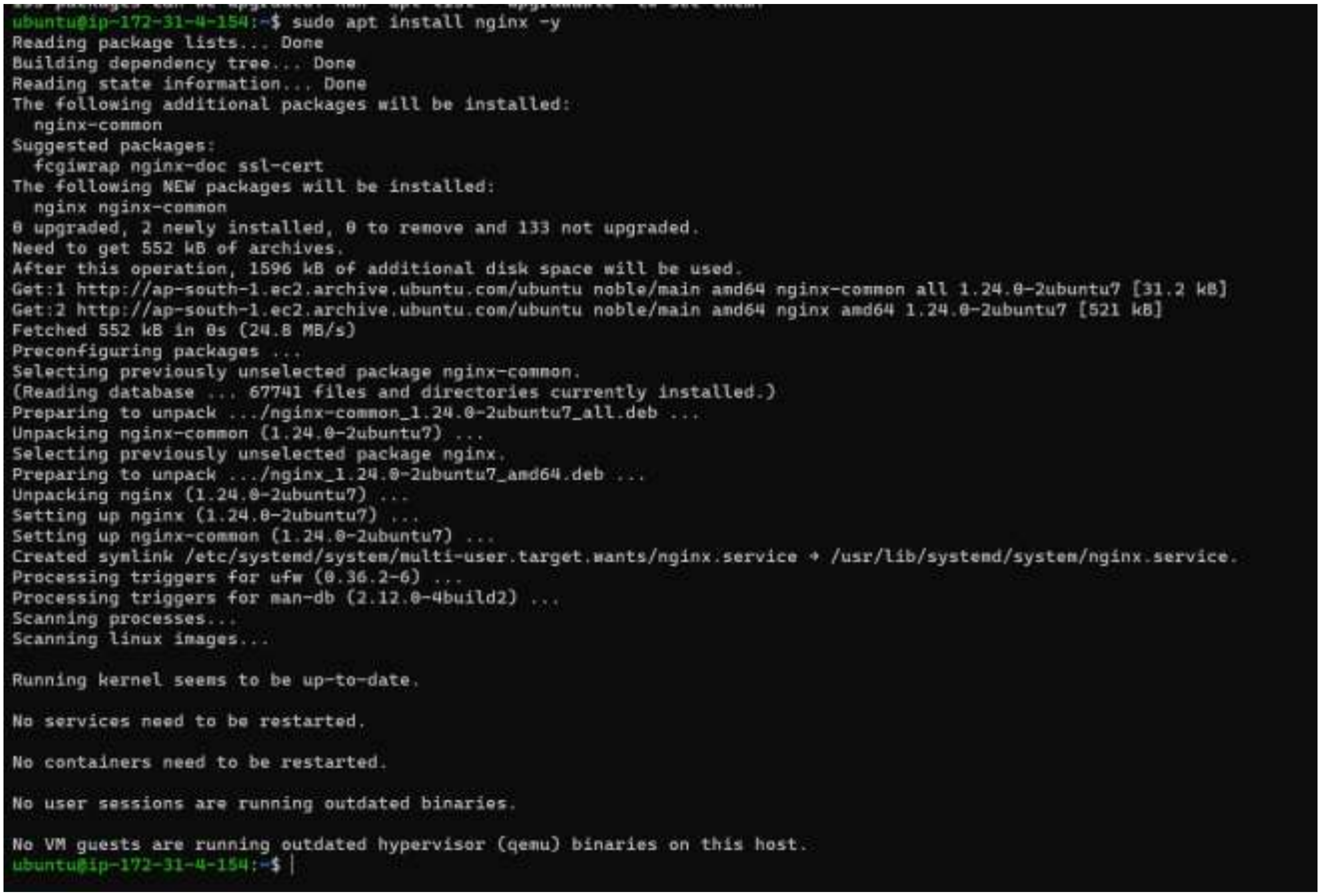
➡
```
sudo systemctl start nginx
```

➡
```
sudo systemctl enable nginx
```

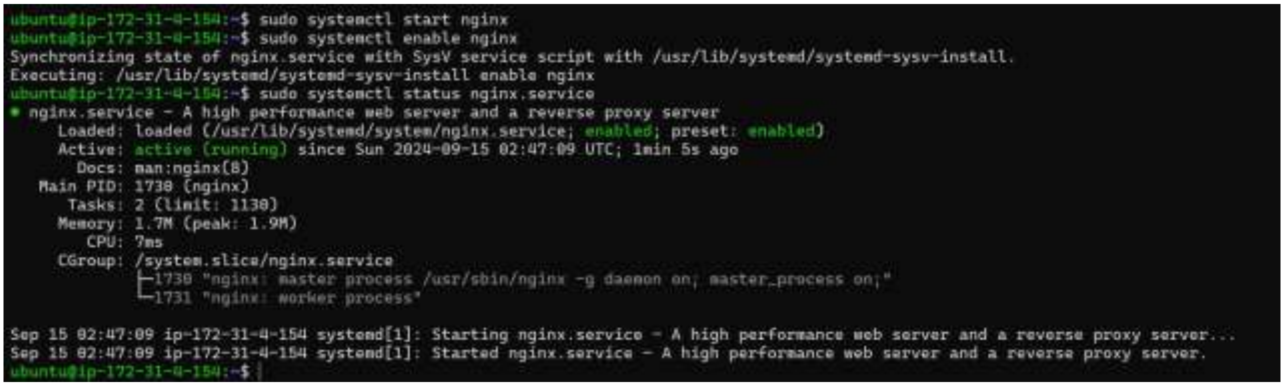
6. Check the Nginx Status

You can check if Nginx is running by using the following command:

➡ `sudo systemctl status nginx`



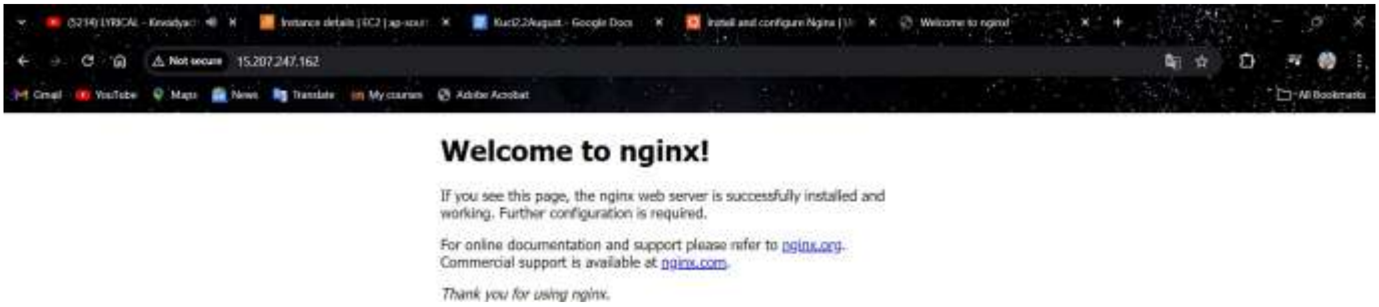
```
ubuntu@ip-172-31-4-154:~$ sudo apt install nginx -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  nginx-common
Suggested packages:
  fcgiwrap nginx-doc ssl-cert
The following NEW packages will be installed:
  nginx nginx-common
0 upgraded, 2 newly installed, 0 to remove and 133 not upgraded.
Need to get 552 kB of archives.
After this operation, 1596 kB of additional disk space will be used.
Get:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 nginx-common all 1.24.0-2ubuntu7 [31.2 kB]
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 nginx amd64 1.24.0-2ubuntu7 [521 kB]
Fetched 552 kB in 0s (24.8 MB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 67741 files and directories currently installed.)
Preparing to unpack .../nginx-common_1.24.0-2ubuntu7_all.deb ...
Unpacking nginx-common (1.24.0-2ubuntu7) ...
Selecting previously unselected package nginx.
Preparing to unpack .../nginx_1.24.0-2ubuntu7_amd64.deb ...
Unpacking nginx (1.24.0-2ubuntu7) ...
Setting up nginx (1.24.0-2ubuntu7) ...
Setting up nginx-common (1.24.0-2ubuntu7) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.
Processing triggers for ufw (0.36.2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-4-154:~$ |
```



```
ubuntu@ip-172-31-4-154:~$ sudo systemctl start nginx
ubuntu@ip-172-31-4-154:~$ sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nginx
ubuntu@ip-172-31-4-154:~$ sudo systemctl status nginx.service
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
     Active: active (running) since Sun 2024-09-15 02:47:09 UTC; 1min 5s ago
       Docs: man:nginx(8)
   Main PID: 1730 (nginx)
      Tasks: 2 (limit: 1130)
     Memory: 1.7M (peak: 1.9M)
        CPU: 7ms
     CGroup: /system.slice/nginx.service
             ├─1730 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─1731 "nginx: worker process"

Sep 15 02:47:09 ip-172-31-4-154 systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Sep 15 02:47:09 ip-172-31-4-154 systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
ubuntu@ip-172-31-4-154:~$ |
```

7. Verify Nginx is Working

- Open your web browser and go to your EC2 instance's **public IP.** You should see the default Nginx welcome page, which confirms that Nginx is running.
- To get the public IP, go to the AWS console, open your instance, and check the **Public IPv4 address**.


(5214) LYRICAL - Kinvadyach
Instance details | EC2 | ap-sout
Kuct2.2August - Google Docs
Install and configure Nginx | U
Welcome to nginx!
Not secure
15.207.247.162
Gmail
YouTube
Maps
News
Translate
My courses
Adobe Acrobat
All Bookmarks

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

If you see this page, you have successfully installed Nginx on your web server.

8. Creating our own website

Default page is placed in `/var/www/html/` location. You can place your static pages here, or use virtual host and place it other location.

Virtual host is a method of hosting multiple domain names on the same server.

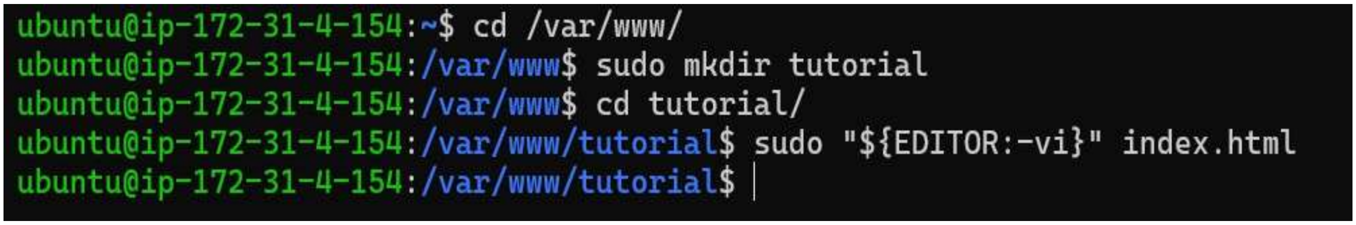
Let’s create simple HTML page in `/var/www/tutorial/` (it can be anything you want). Create `index.html` file in this location.

➡ **cd /var/www**

➡ **sudo mkdir tutorial**

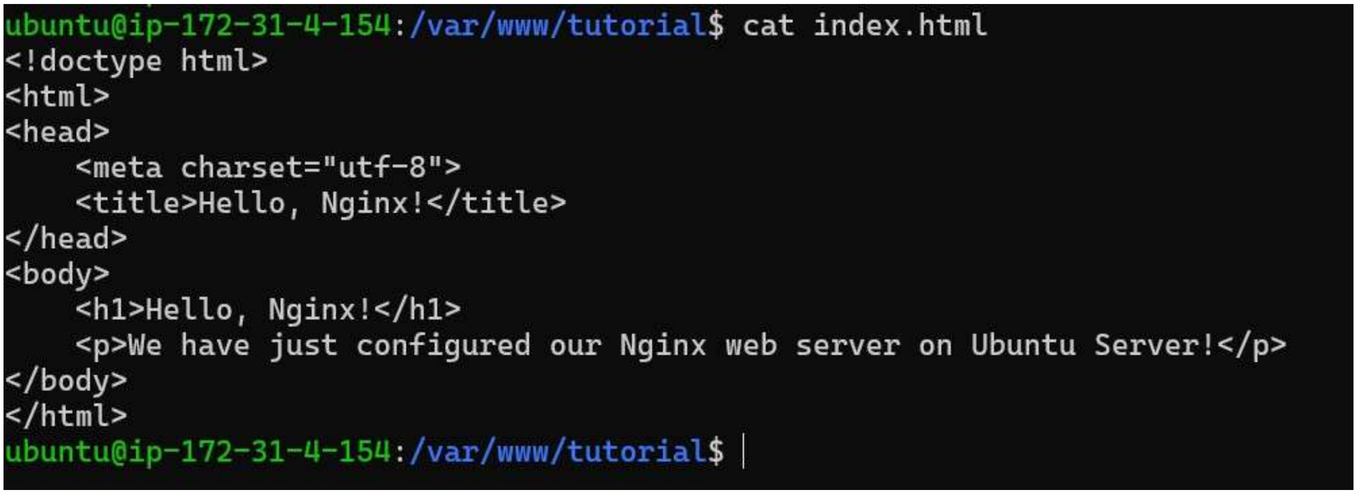
➡ **cd tutorial**

➡ **sudo "${EDITOR:-vi}" index.html**



```
ubuntu@ip-172-31-4-154:~$ cd /var/www/
ubuntu@ip-172-31-4-154:/var/www$ sudo mkdir tutorial
ubuntu@ip-172-31-4-154:/var/www$ cd tutorial/
ubuntu@ip-172-31-4-154:/var/www/tutorial$ sudo "${EDITOR:-vi}" index.html
ubuntu@ip-172-31-4-154:/var/www/tutorial$ |
```

Paste the following to the `index.html` file:



```
ubuntu@ip-172-31-4-154:/var/www/tutorial$ cat index.html
<!doctype html>
<html>
<head>
    <meta charset="utf-8">
    <title>Hello, Nginx!</title>
</head>
<body>
    <h1>Hello, Nginx!</h1>
    <p>We have just configured our Nginx web server on Ubuntu Server!</p>
</body>
</html>
ubuntu@ip-172-31-4-154:/var/www/tutorial$ |
```

Save this file. In next step we are going to set up virtual host to make Nginx use pages from this location.

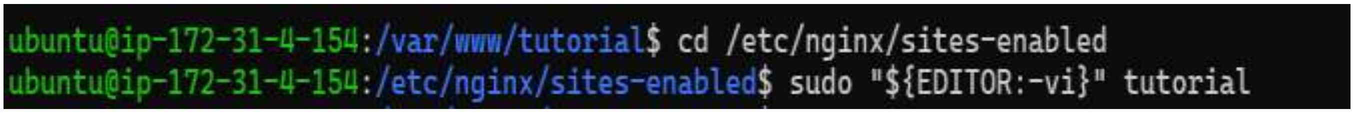
9. Setting up virtual host

To set up virtual host, we need to create file in `/etc/nginx/sites-enabled/` directory.

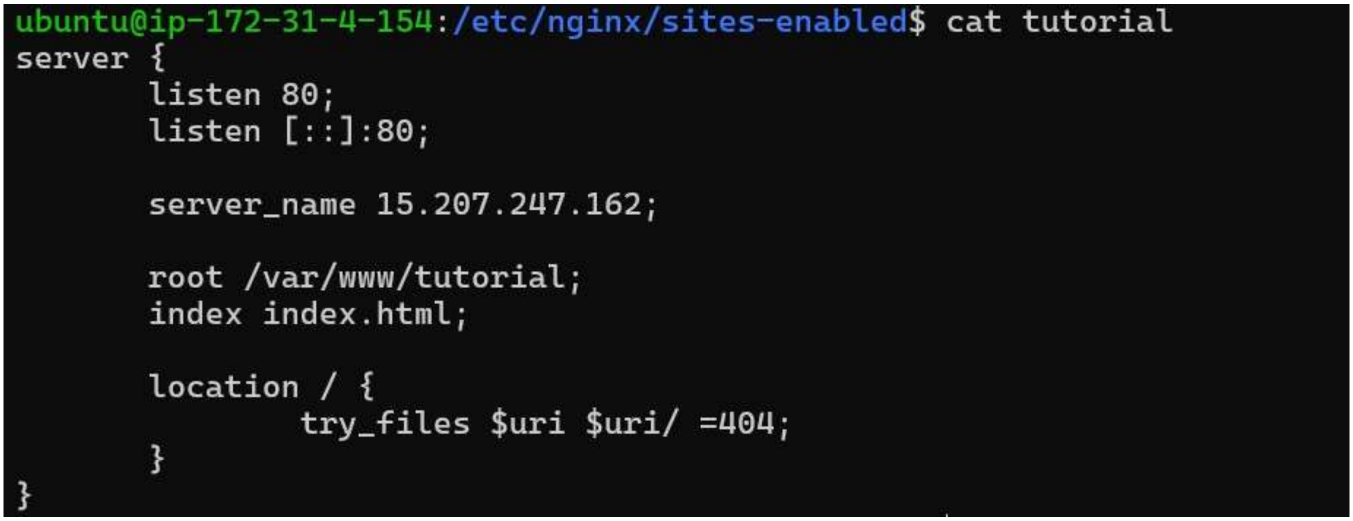
For this tutorial, we will make our site available on 80 port, which is standard port. You can change it if you would like to do.

➡ **cd /etc/nginx/sites-enabled**

➡ **sudo "${EDITOR:-vi}" tutorial**



```
ubuntu@ip-172-31-4-154:/var/www/tutorial$ cd /etc/nginx/sites-enabled
ubuntu@ip-172-31-4-154:/etc/nginx/sites-enabled$ sudo "${EDITOR:-vi}" tutorial
```

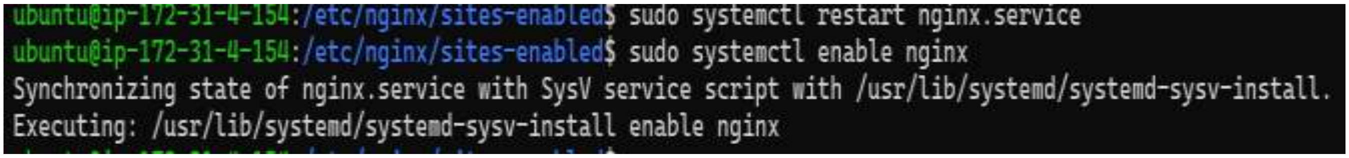


```
ubuntu@ip-172-31-4-154:/etc/nginx/sites-enabled$ cat tutorial
server {
       listen 80;
       listen [::]:80;

       server_name 15.207.247.162;

       root /var/www/tutorial;
       index index.html;

       location / {
               try_files $uri $uri/ =404;
       }
}
```

`root` is a directory where we have placed our .html file. `index` is used to specify file available when visiting root directory of site. `server_name` can be anything you want, because you aren't pointing it to any real domain by now.

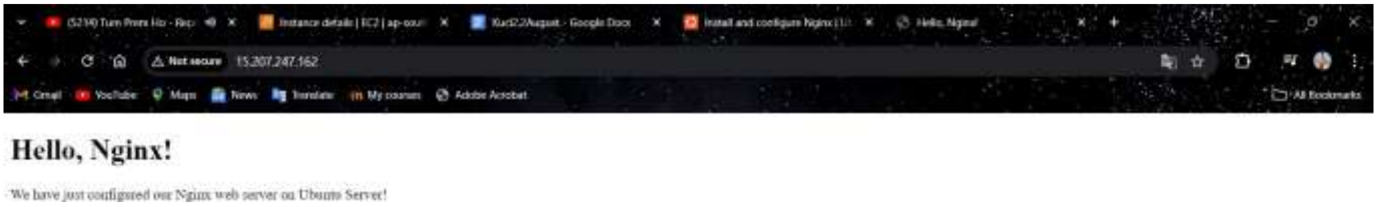
10. Activating virtual host and testing results

To make our site working, simply restart Nginx service.



```
ubuntu@ip-172-31-4-154:/etc/nginx/sites-enabled$ sudo systemctl restart nginx.service
ubuntu@ip-172-31-4-154:/etc/nginx/sites-enabled$ sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nginx
```

Let's check if everything works as it should. Open our newly created site in web browser. Remember that we used :80 port.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Install and configure Nginx | U
Hello, Nginx!
Not secure
Gmail
YouTube
Maps
News
Translate
My courses
Adobe Acrobat
All Bookmarks

15.207.247.162

Hello, Nginx!

We have just configured our Nginx web server on Ubuntu Server!

Congratulations! Everything works as it should. We have just configured Nginx web server.

11. Terminate the EC2 Instance (Optional)

If you no longer need the EC2 instance, remember to terminate it to avoid incurring costs:

- **Go to EC2 Dashboard.**
- **Select the instance and choose Actions > Instance State > Terminate.**

That's it! Nginx is now deployed on your EC2 instance and serving web pages over the internet.