

AWS Overview

Q1)List out the types of instance base on the pricing model and write a brief about your understanding about it.

Ans.Amazon EC2 : Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides compute capacity in the cloud.

It provides a pricing model that helps you skip upfront costs and problems of buying and setting up hardware. Instead, you can use a pay-as-you-go system, paying only for what you use during a month.

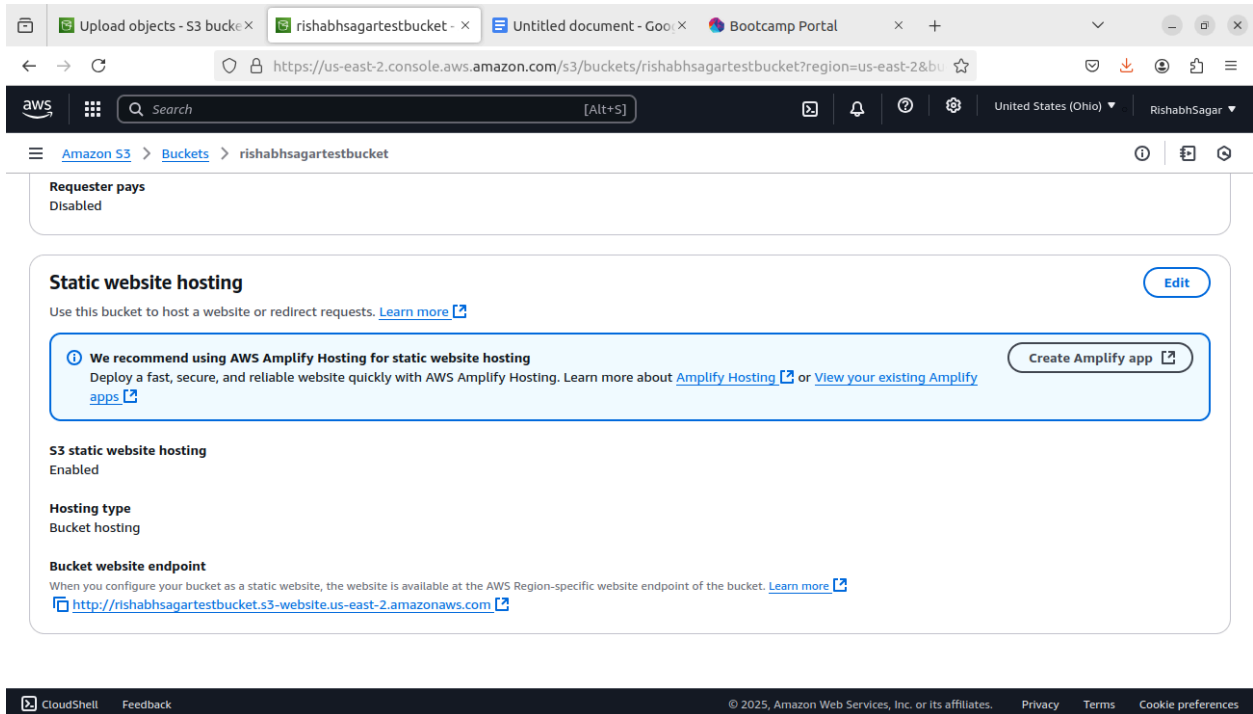
Types of Instances :

- **On demand pricing :** Pay for compute capacity per hour or per second . It is best for short term or variable workloads. This frees you from the costs and complexities of planning, purchasing, and maintaining hardware.
- **Spot Instances :** Leverage unused EC2 capacity at a discount of up to 90%. It is one of the cheapest and also show that AWS utilizes the hardware efficiently. AWS may terminate spot instances if the capacity is needed for other purposes, you are notified 2 minutes before termination of the instances. It is generally used for analytics or stateless applications.Pricing fluctuates based on supply and demand.
- **Reserved Instances :** Discount of up to 75% compared to On-Demand Instances when you commit to a 1 or 3-year term. Great for workloads that you know will be running for a long time.
- **Savings Plans:** It offer flexible pricing models similar to Reserved Instances but with more flexibility. You commit to a consistent amount of usage (measured in per hour basis) for a 1- or 3-year period. Good for customers with a predictable usage who want flexibility in instance types and regions and also help in significant cost savings.
- **Dedicated Hosts:**A physical server dedicated exclusively to your use. You pay for the entire host, and you can launch instances on it, offering full control over instance placement, suitable for workloads that need to comply with licensing restrictions or have regulatory requirements.
- **Capacity Reservations:**Capacity Reservations allow you to reserve specific EC2 instance capacity in a given Availability Zone for any duration.
- While similar to Reserved Instances, you only pay for the capacity you reserve, regardless of whether you use it.

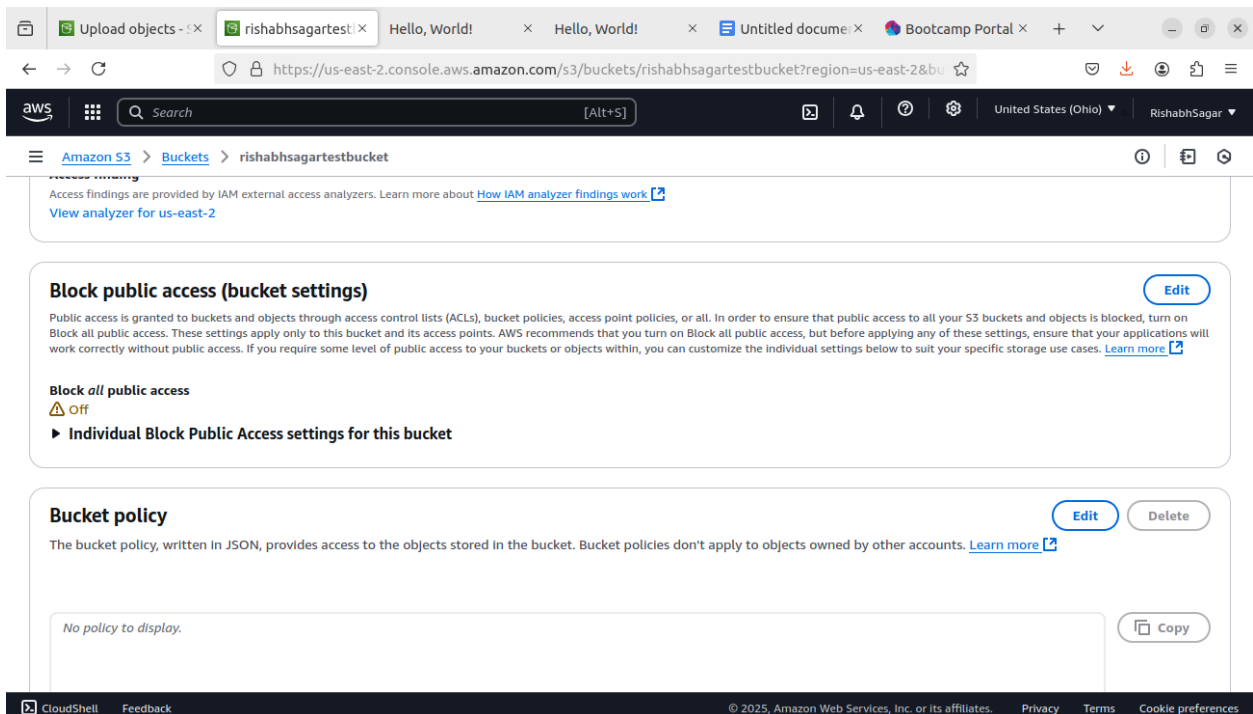
Q2)Host a static website in S3.

Ans. To host the static website in the AWS we have to follow certain step-

- 1.go to the s3 service in aws
- 2.go to the properties tab and enable the static hosting as it enables the static hosting on the s3 in aws.



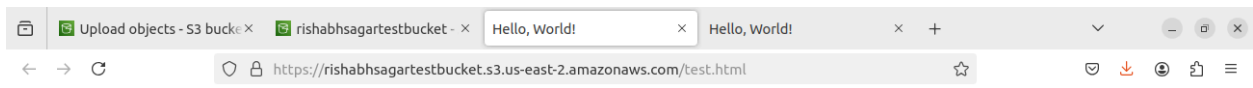
3. Now to access the static website we have to allow the public access hence to enable the public access go to the permission tab in the s3 and select the block public access and disable it.



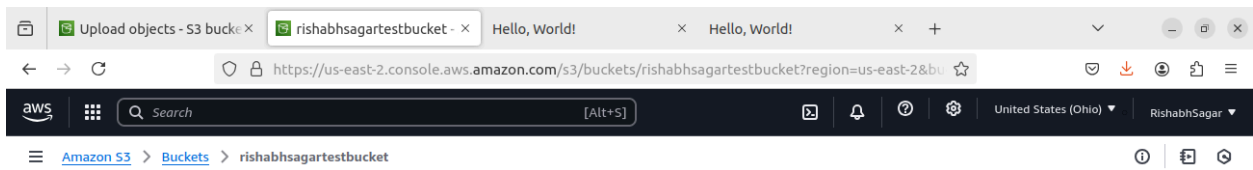
4. Now enable the ACL (Access control list) (it is the set of rules or policies which specify which users or systems can access resources and what actions they can perform on those

resources. It is needed as we give permission to the requester to access my static files)in the permission tab.

5.Now select all the files needed to host and from the action tab select the enable ACL option.



Hello World!



rishabhsagartestbucket [Info](#)

[Objects](#) | [Metadata](#) | [Properties](#) | [Permissions](#) | [Metrics](#) | [Management](#) | [Access Points](#)

Objects (2)

[Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#) [Create folder](#) [Upload](#)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 Inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	img/	Folder	-	-	-
<input type="checkbox"/>	test.html	html	January 28, 2025, 14:26:43 (UTC+05:30)	205.0 B	Standard

Q3)Launch an Ubuntu EC2 instance on AWS, with 10GB root volume, and SSH from your local machine using the private key.

Ans. To launch the ubuntu ec2 instance on aws with 10gb volume follow these steps-

1.first launch/create the ec2 instance on the aws but during creating the ec2 instance there is the section of key-pair create the pair it act as the private key which is used to access the ec2 instance through the ubuntu and also their is the section of the storage, the default is set to 8gb set it to 10gb(it is the volume of the ec2 instance).

2.Once the ec2 instance is created go to the running ec2 instance, there is the button for connect, press it, and select the ssh tab(as it is used here but there are 4 option and can use any of them) and follow the procedure there.

3.go the the terminal and run the following cmd-

A.chmod 400 "name of the pem file(key pair file downloaded previously)"(400 gives read access to the file)

B.ssh -i "pem file(key pair file)" ubuntu@<link given on the page of the ec2 instance>

The screenshot displays the AWS Management Console interface. At the top, there are browser tabs for 'Launch an instance | EC2', 'Instances | EC2 | us-east-2', and 'Bootcamp Portal'. The address bar shows the URL 'https://us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2#Instances:v=3;\$case=tag:st...'. The console header includes the AWS logo, a search bar, and navigation links for 'United States (Ohio)' and 'RishabhSagar'.

The main content area is titled 'Instances (1/1) Info'. It features a search bar with the placeholder 'Find Instance by attribute or tag (case-sensitive)', a dropdown for 'All states', and a table of instances. The table has columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IPv4 D. A single instance named 'test' with ID 'i-0a6b14508aff09992' is listed, showing a 'Running' state and 't2.micro' type.

Below the table, there are buttons for 'Connect', 'Instance state', 'Actions', and 'Launch instances'. The 'Connect' button is highlighted. Below the table, there are tabs for 'Details', 'Status and alarms', 'Monitoring', 'Security', 'Networking', 'Storage', and 'Tags'. The 'Details' tab is selected.

The 'Instance summary' section is visible at the bottom, showing the instance ID 'i-0a6b14508aff09992 (test)'. The footer includes 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. or its affiliates.

```
ubuntu@ip-172-31-13-234: ~  
rishabh@TTNPL-rishabhsagar:~/git$ chmod 400 "test.pem"  
chmod: cannot access 'test.pem': No such file or directory  
rishabh@TTNPL-rishabhsagar:~/git$ cd -  
rishabh@TTNPL-rishabhsagar:~$ chmod 400 "test.pem"  
chmod: cannot access 'test.pem': No such file or directory  
rishabh@TTNPL-rishabhsagar:~$ ls  
abc.txt      hello.txt      script  
Desktop      hi             snap  
Documents    ideaIC-2024.3.2.tar.gz  Templates  
Downloads    IdeaProjects   test  
exercise     Music          touch  
git          output         'Untitled Document 1'  
grep         passwd_copy    'Untitled Document 11'  
hello1.txt   Pictures       vd.txt  
hello2.txt   po            Videos  
hello3.txt   Public  
rishabh@TTNPL-rishabhsagar:~$ cd Downloads  
rishabh@TTNPL-rishabhsagar:~/Downloads$ chmod 400 "test.pem"  
rishabh@TTNPL-rishabhsagar:~/Downloads$ ssh -i "test.pem" ubuntu@ec2-3-144-249-114.us-east-2.compute.amazonaws.com  
The authenticity of host 'ec2-3-144-249-114.us-east-2.compute.amazonaws.com (3.144.249.114)' can't be established.  
ED25519 key fingerprint is SHA256:VPwGV1i+PZMaAffdxTyiKHu051koz2VP1LvP9FrjDfY.  
This key is not known by any other names  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'ec2-3-144-249-114.us-east-2.compute.amazonaws.com' (ED25519) to the list of known hosts.  
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1021-aws x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:     https://landscape.canonical.com  
* Support:        https://ubuntu.com/pro  
  
System information as of Tue Jan 28 09:21:59 UTC 2025  
  
System load:  0.09          Processes:      107  
Usage of /:   19.3% of 8.65GB Users logged in: 0  
Memory usage: 21%          IPv4 address for enX0: 172.31.13.234  
Swap usage:   0%  
  
Expanded Security Maintenance for Applications is not enabled.
```

```
ubuntu@ip-172-31-13-234: ~  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
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Memory usage: 21%          IPv4 address for enX0: 172.31.13.234  
Swap usage:   0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
ubuntu@ip-172-31-13-234:~$
```

Q4) Install nginx package in the above server and access this page from your local browser using a domain name instead of IP address of the server.

Ans. To install and run the nginx and access the page through local browser using a domain name instead of IP address of the server follow these steps-

1. First connect to the ec2 instance (follow Q3 steps)
2. In the terminal run the following cmd-
 - a. Sudo apt update
 - b. Sudo apt install nginx (install the nginx in the ec2 instance i.e linux server)
 - c. Sudo systemctl start nginx (start the nginx on the ec2)
 - d. Sudo systemctl enable nginx (enable the nginx on the ec2)
 - e. Sudo system status nginx (check the status nginx on the ec2)
3. Now go to the ec2 instance and here there is two option to access the page-
 - a. Public ip address
 - b. public ipv4 dns

Nginx is the web server that is used in many different way like load balancer, reverse proxy, caching etc it is used because it can handle large number of connection concurrently.

The screenshot displays the AWS Management Console interface for an EC2 instance. The top navigation bar shows the AWS logo, a search bar, and the user's profile. The main content area is titled "Instance details for i-07f9f90642607392c (test)". It provides a comprehensive overview of the instance's configuration, including its ID, state (Running), public and private IP addresses, DNS names, instance type (t2.micro), VPC ID, subnet ID, and IAM role. The instance is currently in a "Running" state, indicated by a green checkmark. The public IPv4 address is 18.119.116.115, and the public IPv4 DNS is ec2-18-119-116-115.us-east-2.compute.amazonaws.com. The instance type is t2.micro, and the VPC ID is vpc-07c46029c592fabaf. The subnet ID is subnet-050df58d9c83fae41. The instance ARN is also provided. The bottom of the console shows the "CloudShell" button and the "Feedback" link.

Instance ID	Public IPv4 address	Private IPv4 addresses
i-07f9f90642607392c	18.119.116.115 open address	172.31.11.134

IPv6 address	Instance state	Public IPv4 DNS
-	Running	ec2-18-119-116-115.us-east-2.compute.amazonaws.com open address

Hostname type	Private IP DNS name (IPv4 only)	Elastic IP addresses
IP name: ip-172-31-11-134.us-east-2.compute.internal	ip-172-31-11-134.us-east-2.compute.internal	-

Answer private resource DNS name	Instance type	AWS Compute Optimizer finding
IPv4 (A)	t2.micro	Opt-in to AWS Compute Optimizer for recommendations. Learn more

Auto-assigned IP address	VPC ID	Auto Scaling Group name
18.119.116.115 [Public IP]	vpc-07c46029c592fabaf	-

IAM Role	Subnet ID	Managed
-	subnet-050df58d9c83fae41	-

IMDSv2	Instance ARN
-	-

```
ubuntu@ip-172-31-11-134: ~  
rishabh@TTNPL-rishabhsagar:~/Downloads$ chmod 400 "test.pem"  
rishabh@TTNPL-rishabhsagar:~/Downloads$ ssh -i "test.pem" ubuntu@ec2-18-119-116-115.us-east-2.compute.amazonaws.com  
ssh: connect to host ec2-18-119-116-115.us-east-2.compute.amazonaws.com port 22: Connection timed out  
rishabh@TTNPL-rishabhsagar:~/Downloads$ ssh -i "test.pem" ubuntu@ec2-18-119-116-115.us-east-2.compute.amazonaws.com  
The authenticity of host 'ec2-18-119-116-115.us-east-2.compute.amazonaws.com (18.119.116.115)' can't be established.  
ED25519 key fingerprint is SHA256:ACA/Db+PzBAImEbV8Z5OCHS8q/mrUk0hhl/EypS4+4c.  
This key is not known by any other names  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'ec2-18-119-116-115.us-east-2.compute.amazonaws.com' (ED25519) to the list of known hosts.  
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1021-aws x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/pro  
  
System information as of Tue Jan 28 09:42:25 UTC 2025  
  
System load:  0.1          Processes:      186  
Usage of /:   19.3% of 8.65GB  Users logged in: 0  
Memory usage: 20%          IPv4 address for enX0: 172.31.11.134  
Swap usage:   0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
```

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ubuntu@ip-172-31-11-134: ~  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
ubuntu@ip-172-31-11-134:~$ sudo apt update  
Hit:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble InRelease  
Get:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]  
Get:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]  
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]  
Get:5 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]  
Get:6 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]  
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [607 kB]  
Get:8 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]  
Get:9 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]  
Get:10 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]  
Get:11 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]  
Get:12 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]  
Get:13 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]  
Get:14 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [822 kB]  
Get:15 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [186 kB]  
Get:16 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]  
Get:17 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [981 kB]  
Get:18 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [244 kB]  
Get:19 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [313 kB]  
Get:20 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [19.9 kB]  
Get:21 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [623 kB]  
Get:22 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [120 kB]  
Get:23 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]  
Get:24 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [16.0 kB]  
Get:25 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [3844 B]  
Get:26 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]  
Get:27 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [552 B]  
Get:28 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]  
Get:29 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 B]  
Get:30 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [13.4 kB]  
Get:31 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [11.4 kB]
```

```
ubuntu@ip-172-31-11-134: ~  
Get:50 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [356 B]  
Fetched 32.0 MB in 6s (5608 kB/s)  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
49 packages can be upgraded. Run 'apt list --upgradable' to see them.  
ubuntu@ip-172-31-11-134:~$ 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 49 not upgraded.  
Need to get 552 kB of archives.  
After this operation, 1596 kB of additional disk space will be used.  
Get:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx-common all 1.24.0-2ubuntu7.1 [31.2 kB]  
Get:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx amd64 1.24.0-2ubuntu7.1 [521 kB]  
Fetched 552 kB in 0s (16.7 MB/s)  
Preconfiguring packages ...  
Selecting previously unselected package nginx-common.  
(Reading database ... 70610 files and directories currently installed.)  
Preparing to unpack .../nginx-common_1.24.0-2ubuntu7.1_all.deb ...  
Unpacking nginx-common (1.24.0-2ubuntu7.1) ...  
Selecting previously unselected package nginx.  
Preparing to unpack .../nginx_1.24.0-2ubuntu7.1_amd64.deb ...  
Unpacking nginx (1.24.0-2ubuntu7.1) ...  
Setting up nginx (1.24.0-2ubuntu7.1) ...  
Setting up nginx-common (1.24.0-2ubuntu7.1) ...  
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.serv  
ice → /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...
```



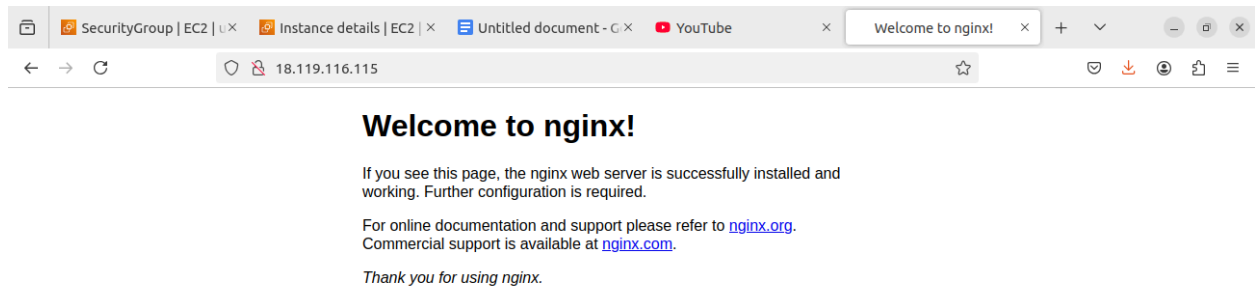
```
ubuntu@ip-172-31-11-134: ~$ sudo systemctl start nginx
No containers need to be restarted.

No user sessions are running outdated binaries.

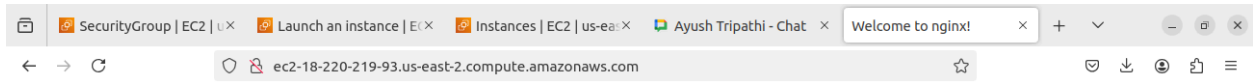
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-11-134:~$ sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nginx
ubuntu@ip-172-31-11-134:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-01-28 09:43:07 UTC; 2min ago
     Docs: man:nginx(8)
    Main PID: 1775 (nginx)
      Tasks: 2 (limit: 1130)
     Memory: 1.7M (peak: 1.9M)
        CPU: 11ms
    CGroup: /system.slice/nginx.service
            └─1775 "nginx: master process /usr/sbin/nginx -g daemon"
              └─1776 "nginx: worker process"

Jan 28 09:43:07 ip-172-31-11-134 systemd[1]: Starting nginx.service: A high performance web server and a reverse proxy server: -
Jan 28 09:43:07 ip-172-31-11-134 systemd[1]: Started nginx.service: A high performance web server and a reverse proxy server: -
...skipping...
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-01-28 09:43:07 UTC; 2min ago
     Docs: man:nginx(8)
    Main PID: 1775 (nginx)
      Tasks: 2 (limit: 1130)
     Memory: 1.7M (peak: 1.9M)
        CPU: 11ms
    CGroup: /system.slice/nginx.service
            └─1775 "nginx: master process /usr/sbin/nginx -g daemon"
              └─1776 "nginx: worker process"
```

Access through IP address-



Access through default domain name-



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.