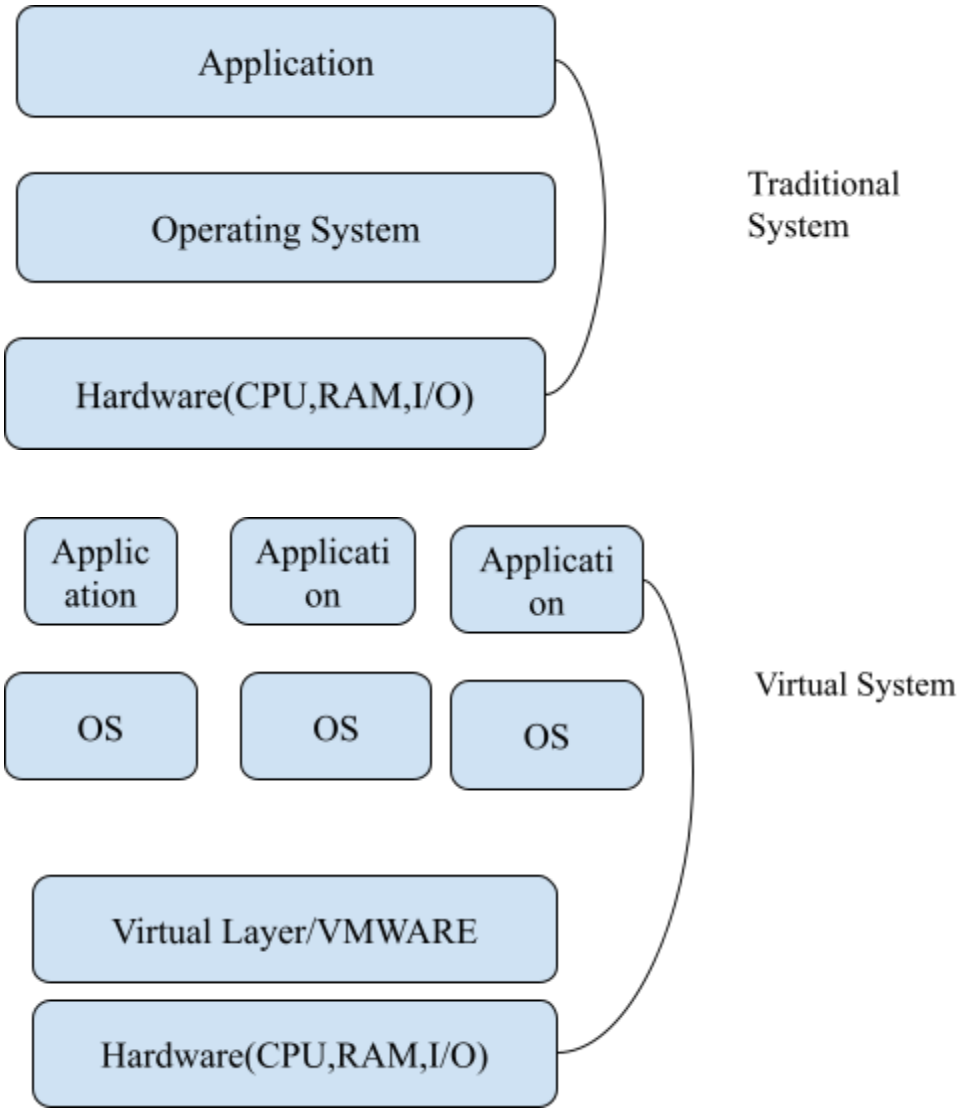
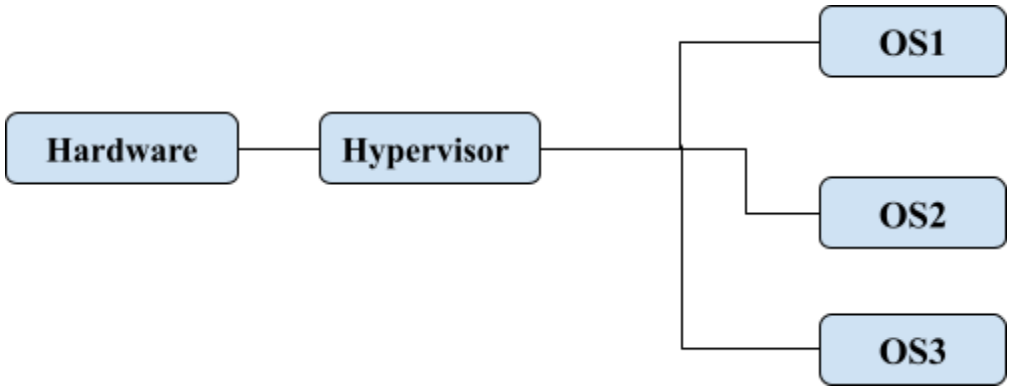


Virtualization:
It creates a virtual system which actually uses storage,operating compute (CPU, RAM) network resources of the host machine. A single computer can have multiple operating systems running parallely all because of the virtualization layer.

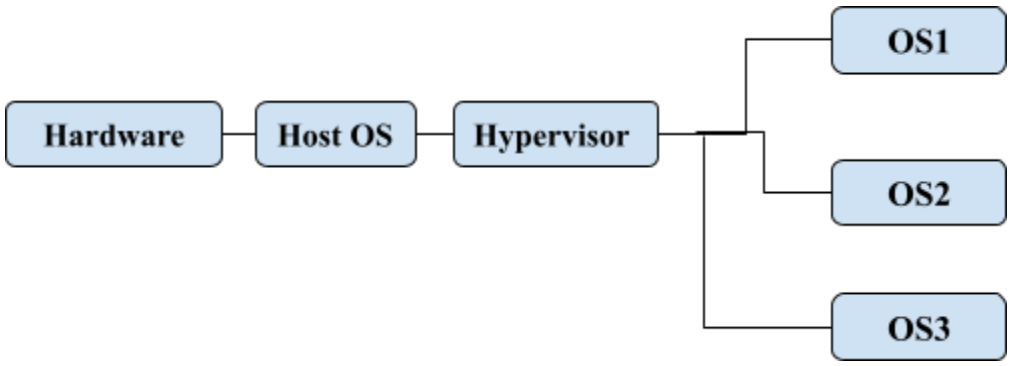
Hypervisor:
It is a form of virtualization software that is used to allocate the resource. It is hardware virtualization technique that allows multiple guest operating system to run on a single host machine at the same time.
It can also be referred to as virtual machine manager.

There are 2 types of hypervisor:

- **Type 1**:
  This runs directly on the host machine and it does not require any server based OS. It has direct access to hardware resources.

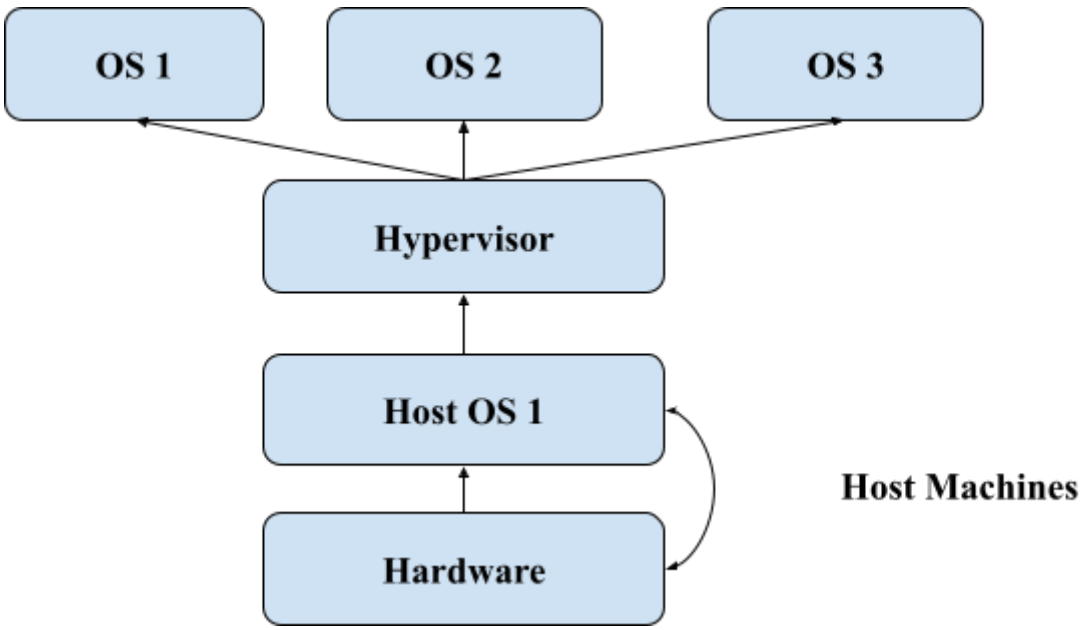


  Eg. VMware
- **Type 2**:
  Host operating systems run on the host system. This kind of hypervisor does not run directly on hardware. Rather than they require application on the host system. The software is installed on the operating system, the hypervisor makes hardware calls.
  Eg. Oracle Virtual Box, VMware workstation



Type of virtualization:

1. Hardware
2. Operating System
3. Server and storage OS



EC2:

EC2 is a web service that provides secure and resizable compute capacity in the cloud. EC2 allows you to configure the capacity and also provide the complete control of computing resources. In this user can scale up and scale down resources as per their requirement. As user create an

environment or instance as per their requirement, this leads to less wastage of capacity. EC2 is a virtual machine hosted on AWS.

There are many pricing options in EC2.

1. **On demand**: These instances are mostly used for short term application or for unpredictable workload. Here we pay by hours or minutes or seconds depending upon the type of instance.
   Application: Being developed on EC2.
   This is the most flexible option to scale up and scale down.

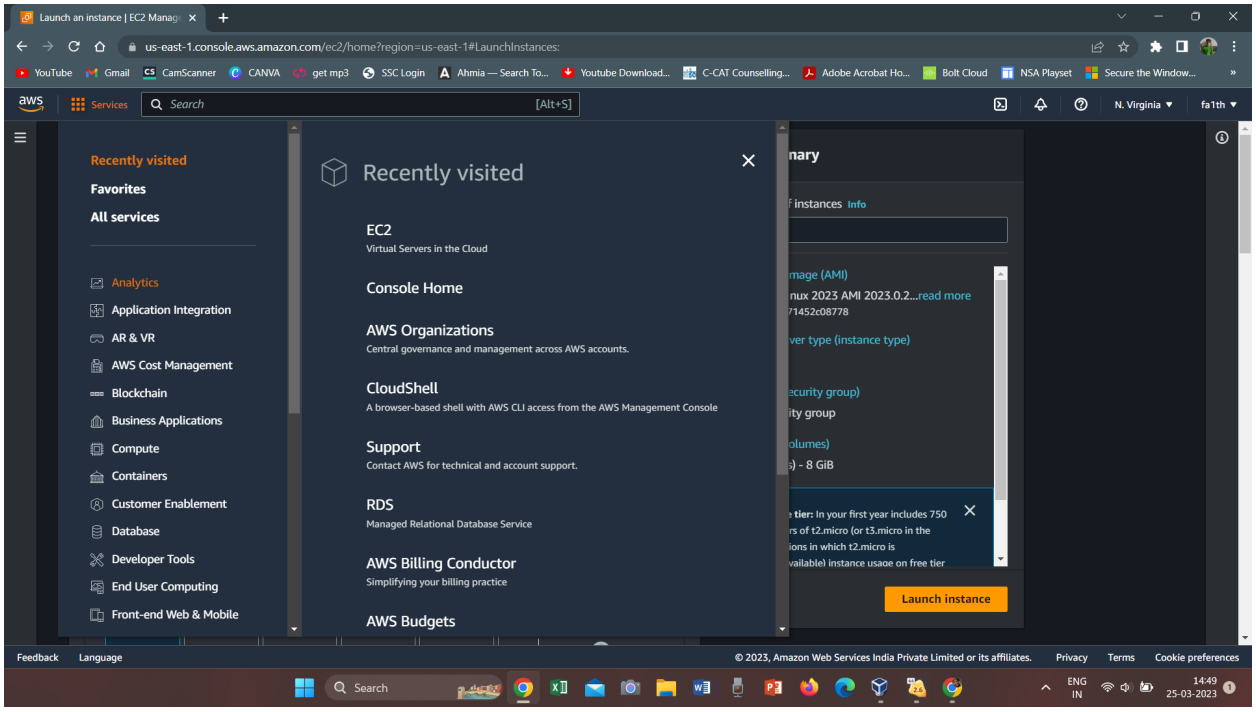
2. **Reserved instance**: When the workload is fixed and the extra requirement is known then we use these kinds of pricing instances.
   a. Standard Reserved Instance: Up to 70% of discount
   b. Convertible Reserved Instance: Up to 55% of discount
   c. Scheduled Reserved Instance: No discount

3. **Spot instance**: If you urgently need a large amount of computing capacity this is the best instance. You can purchase unused capacity at a discount of 90% as well. The fluctuation of pricing will be dependent on supply and demand.

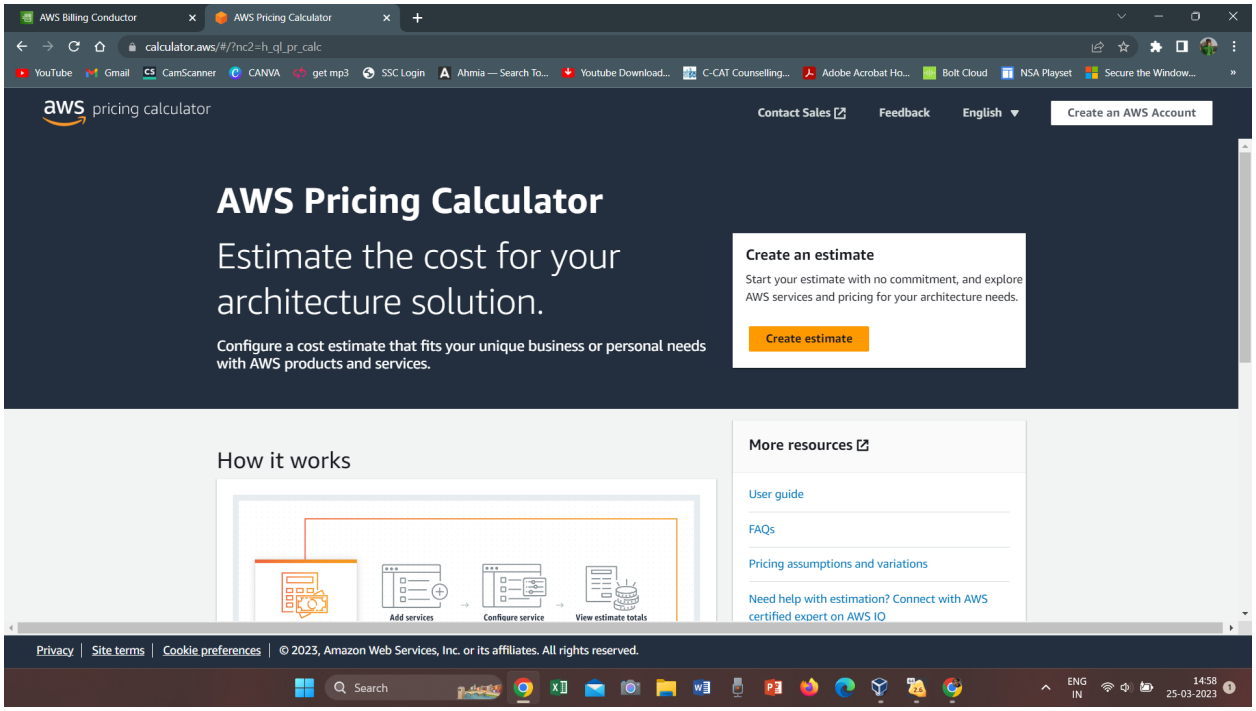
4. **Dedicated instance**: A physical EC2 server is dedicated for the use, and this is the most expensive option.

5. **Saving plans**: Users get up to 72% of discount regardless of their instance type. The user can commit to specific requirements for 2-3 years.

Services in AWS

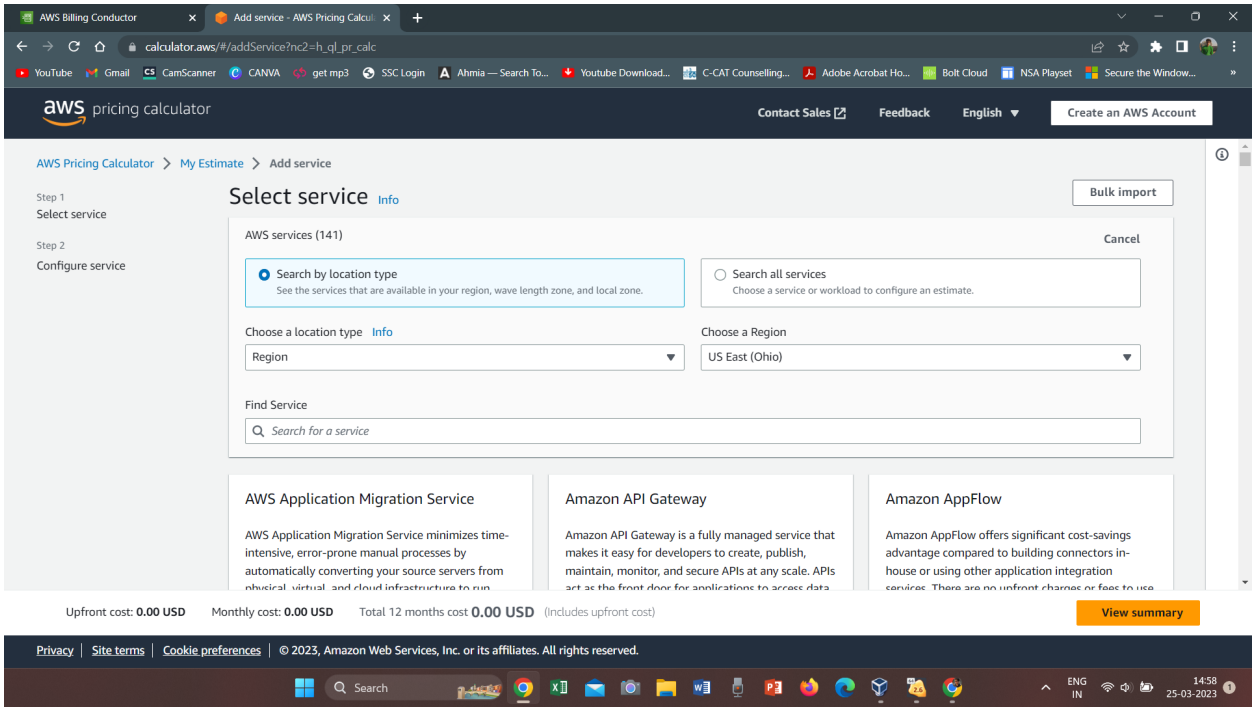


Pricing Calculator

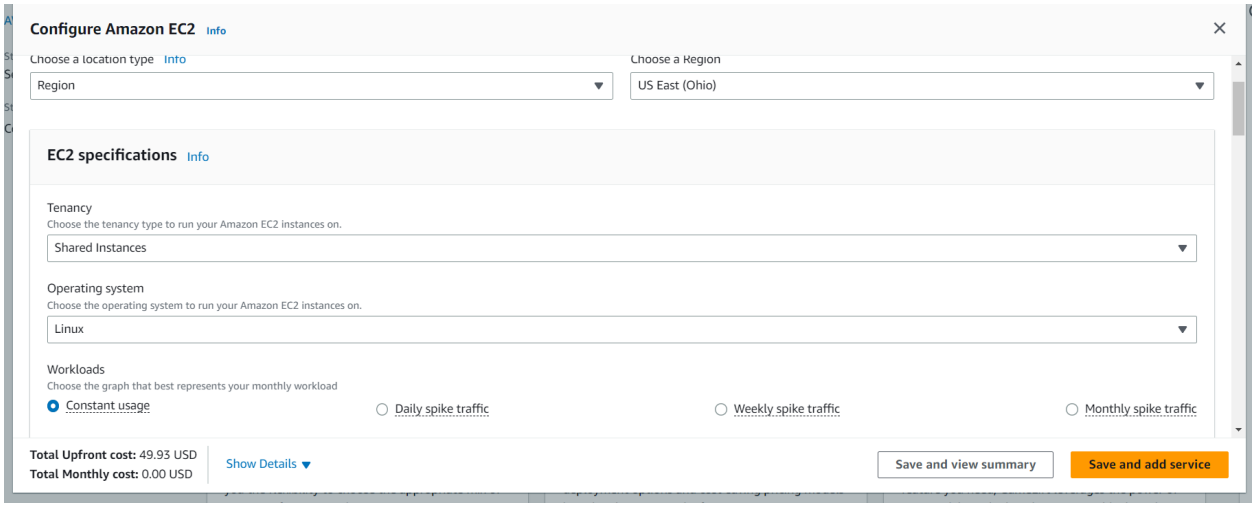


Create estimate

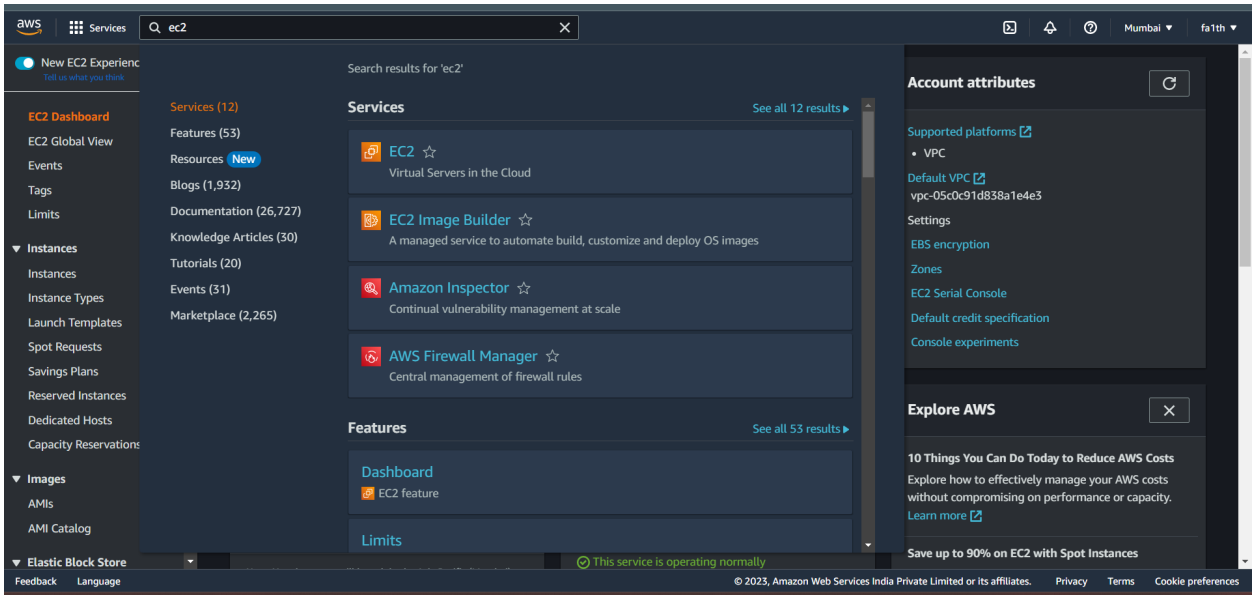
Select Service



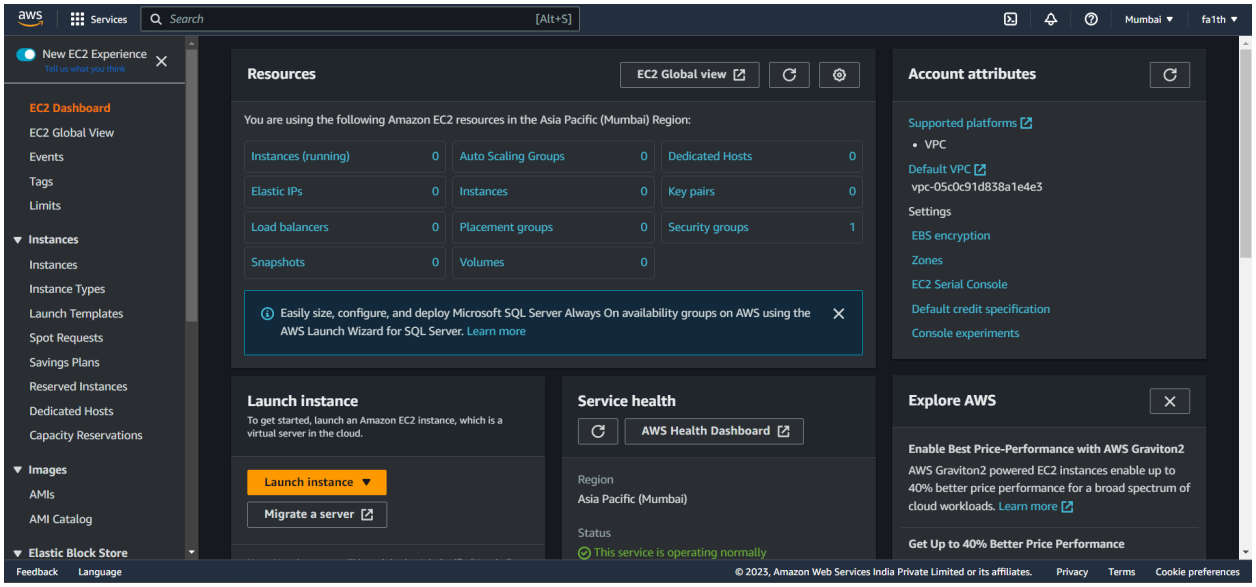
Configure the service and see the pricing



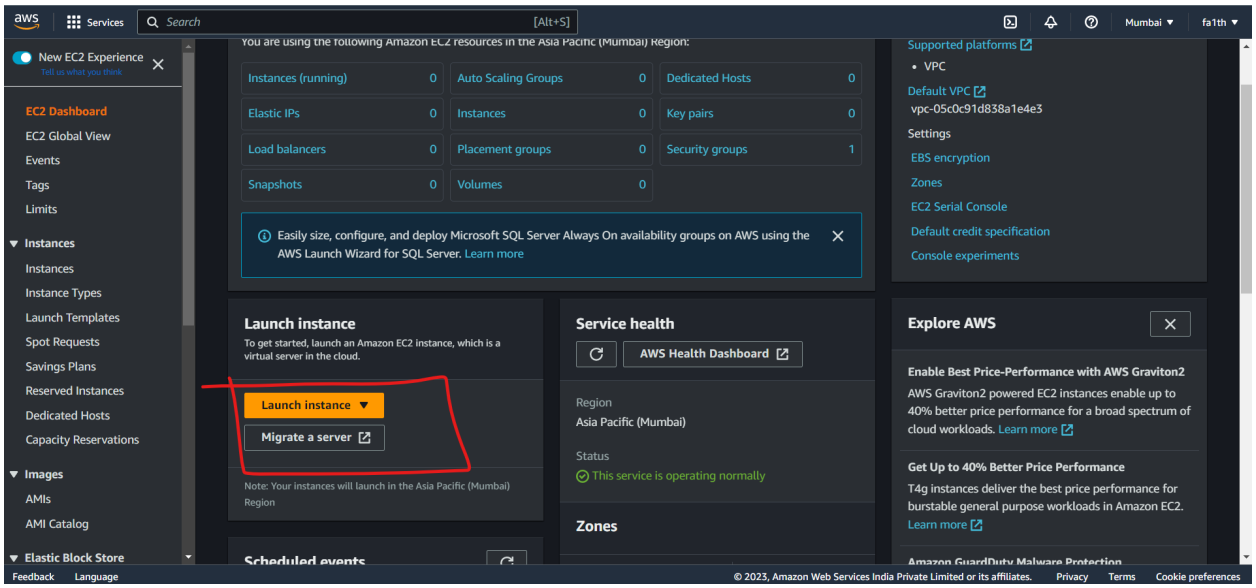
Search EC2

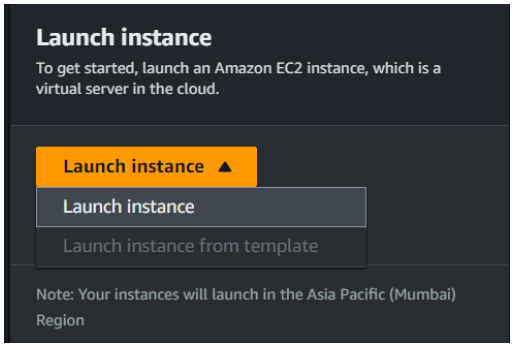


Dashboard

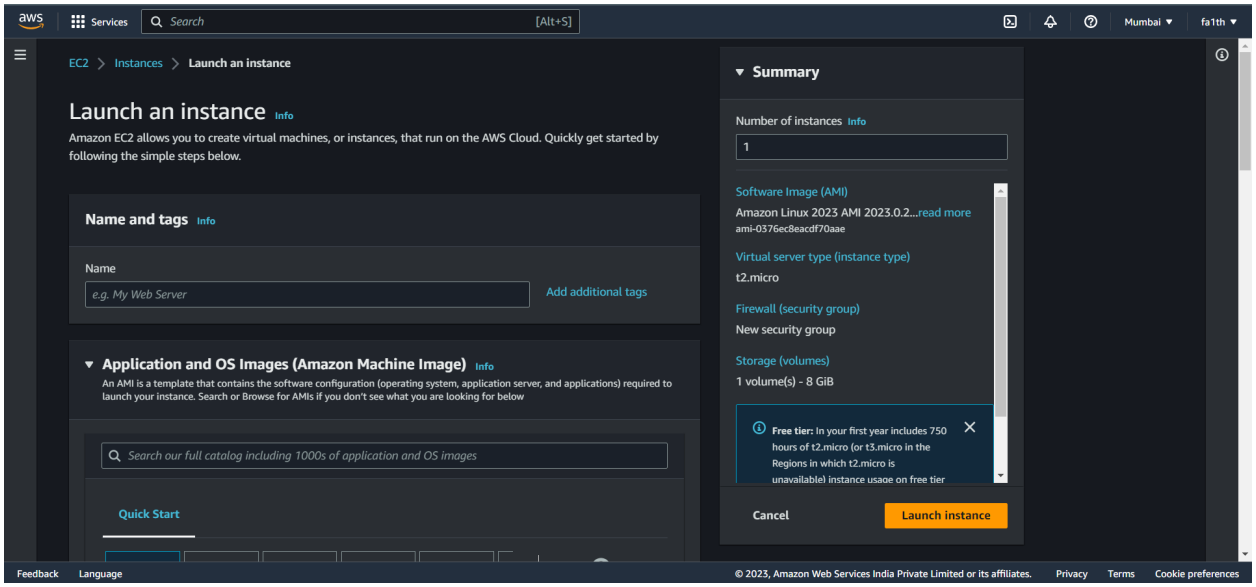


Click Launch Instance

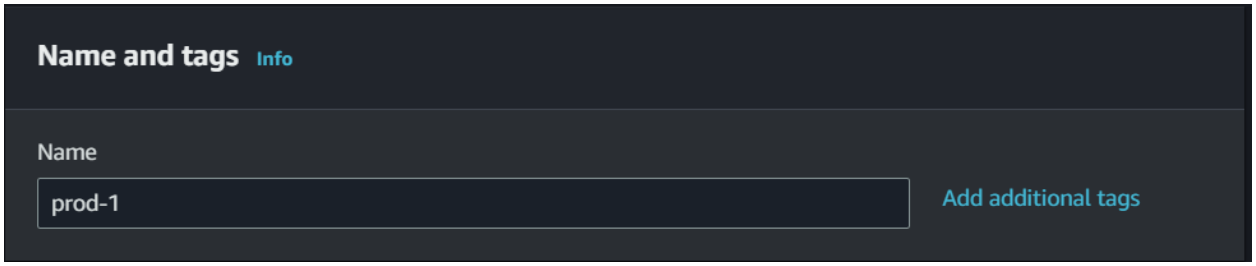




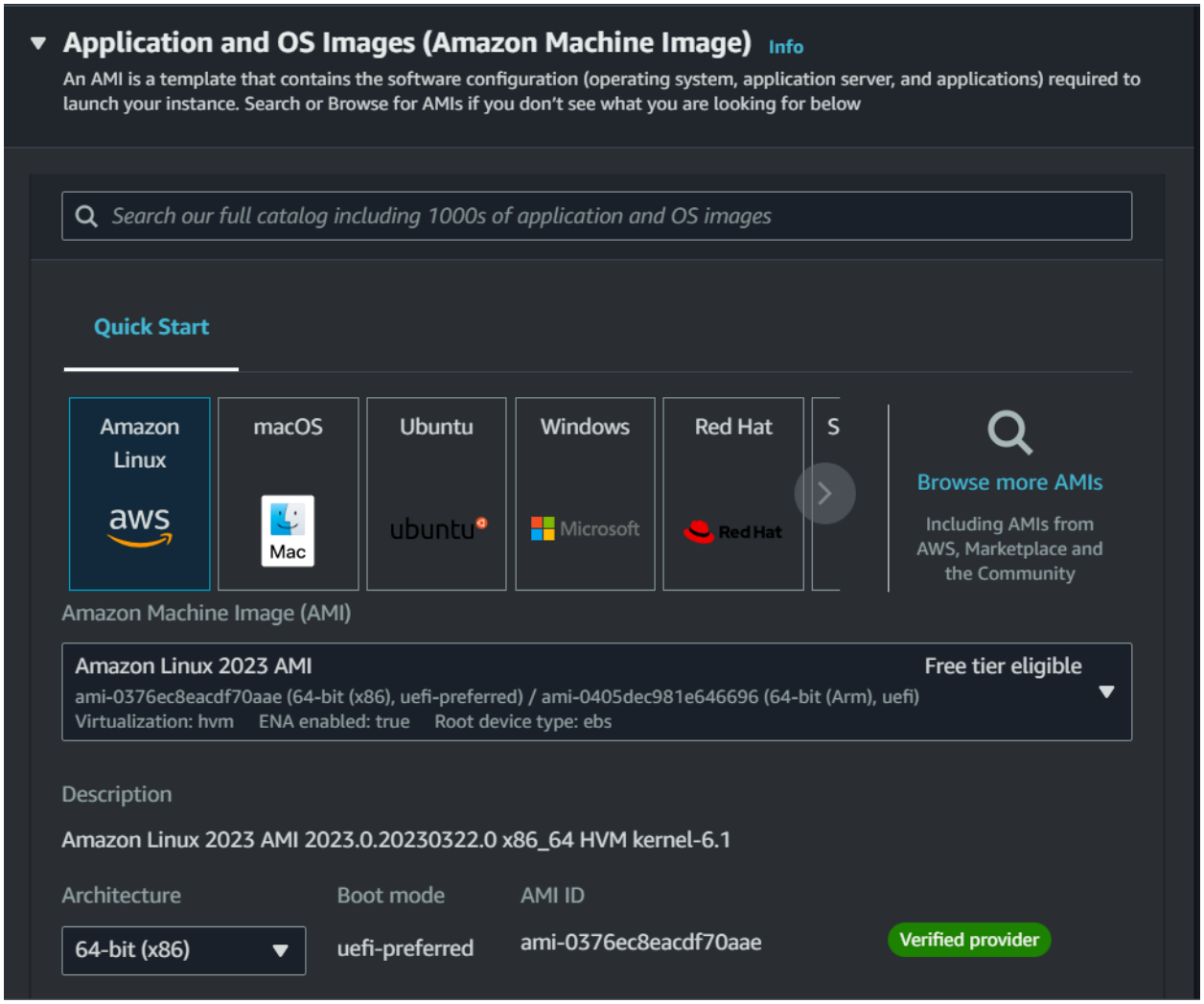
This screen will show up



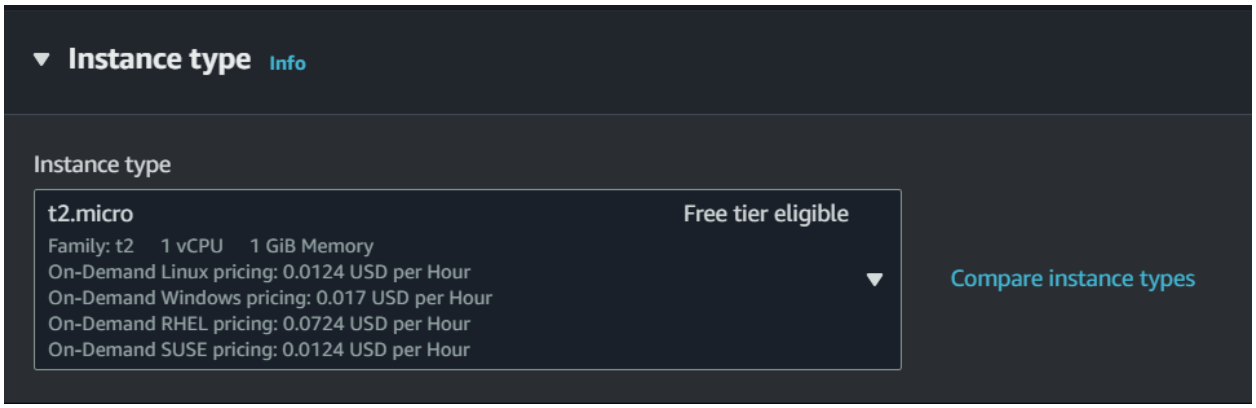
Give a suitable name to the instance



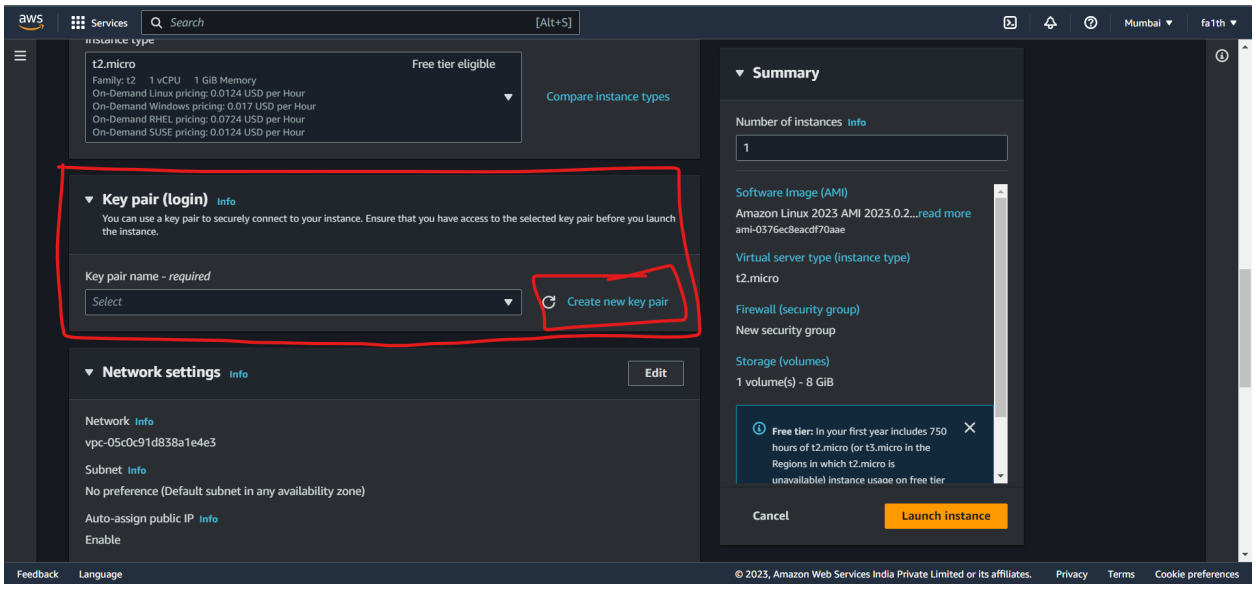
Select from variety of OS images (AMI- Amazon Machine Image)
Use free-tier eligible



Select the instance type
Use free-tier eligible

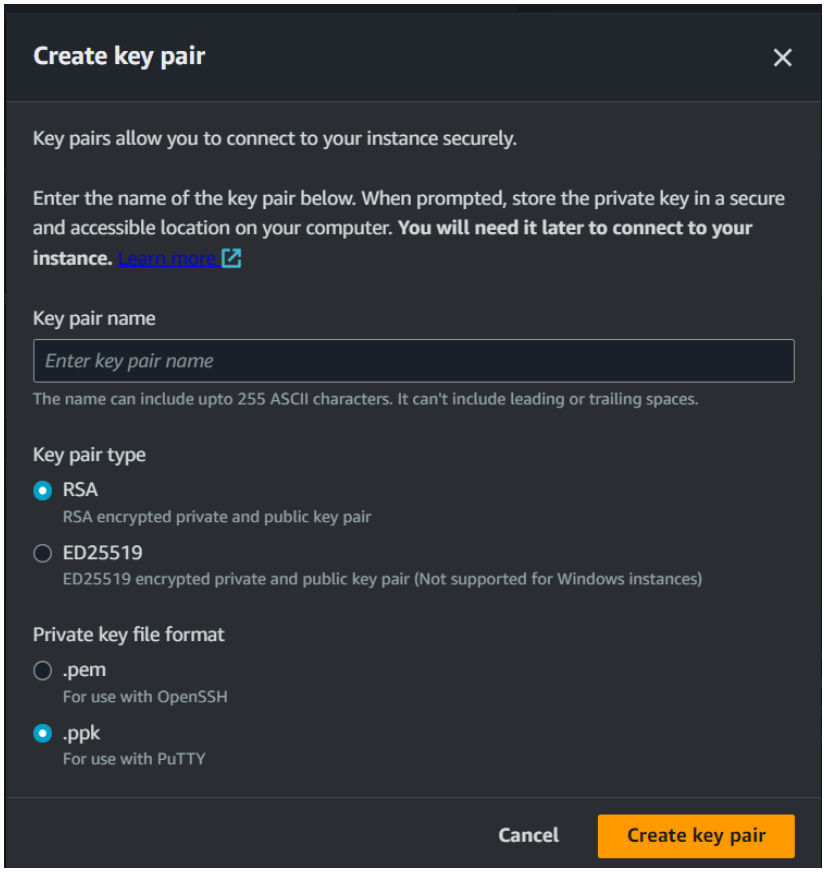


Select new key pair

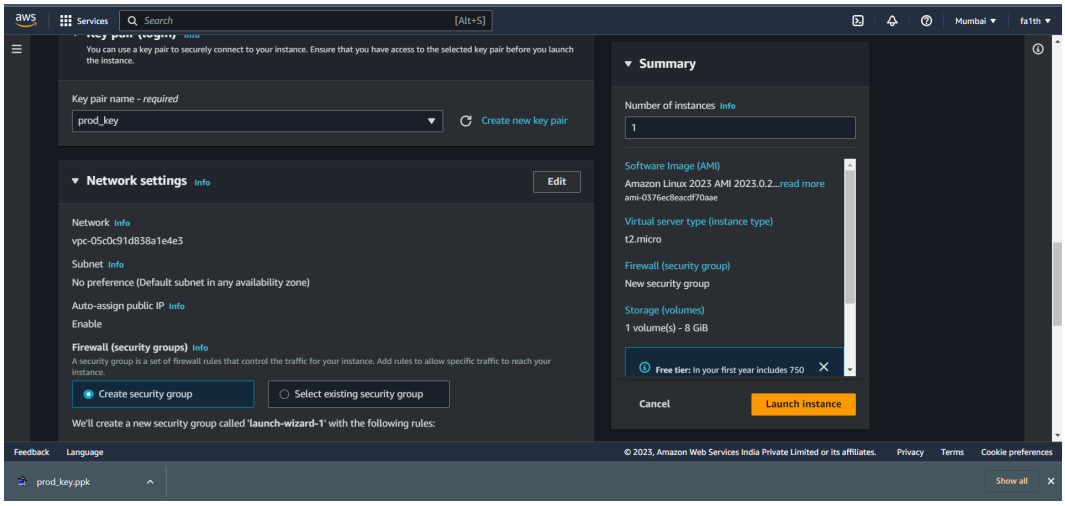


Give key pair name
Select .ppk
Save it in a safe folder

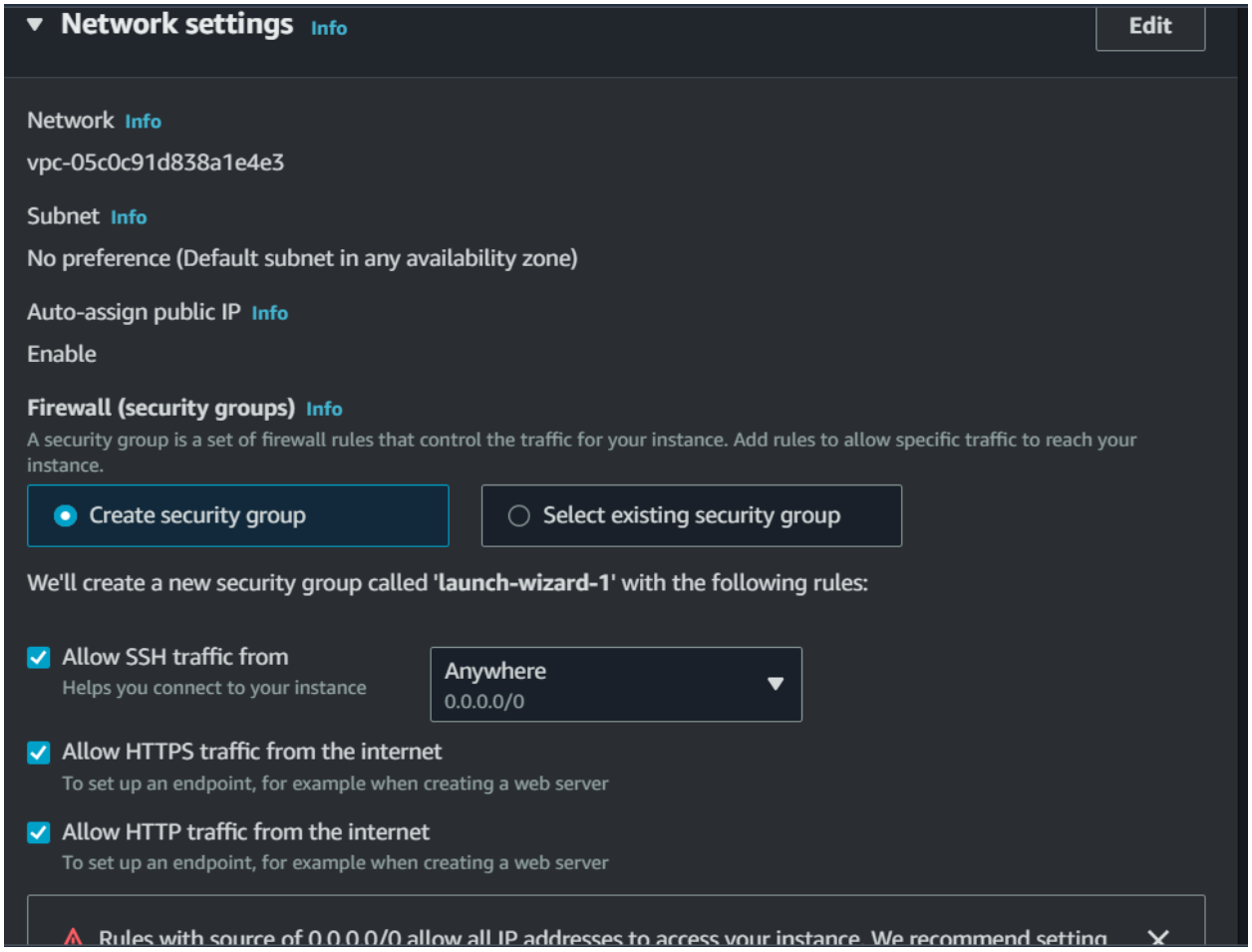
This key pair will be used to connect to the instance using putty.



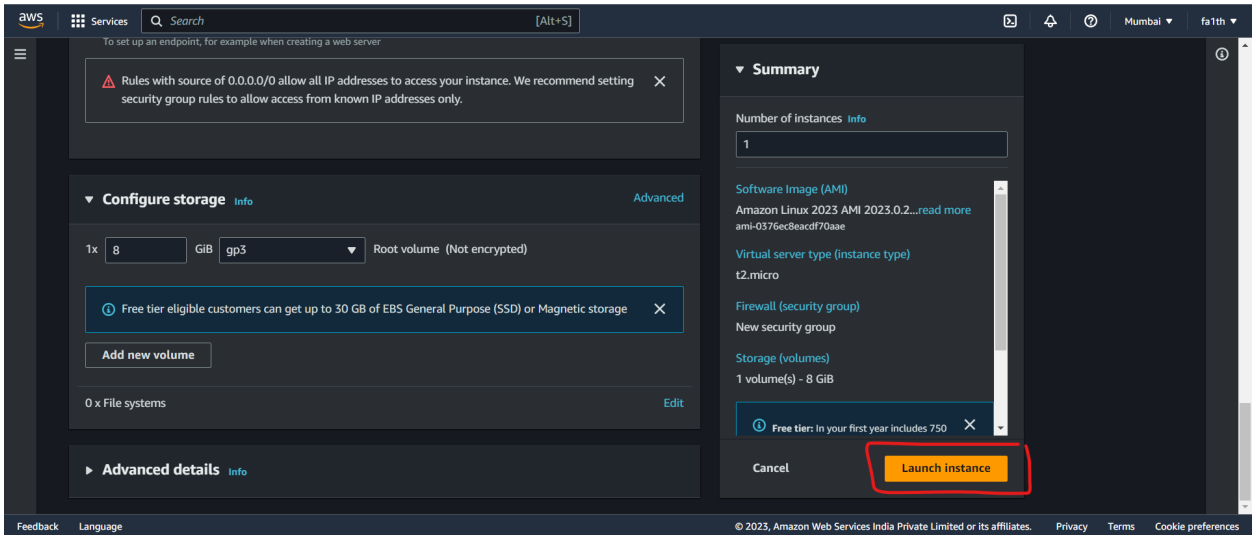
Click on create key pair
The key file will be downloaded



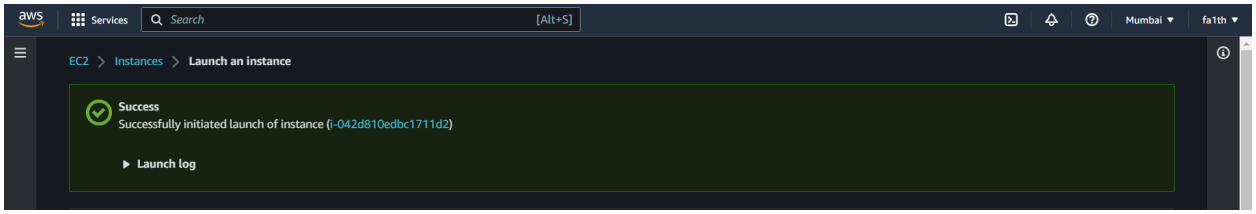
Keep the network settings as it is
Allow traffic - tick mark all 3 boxes



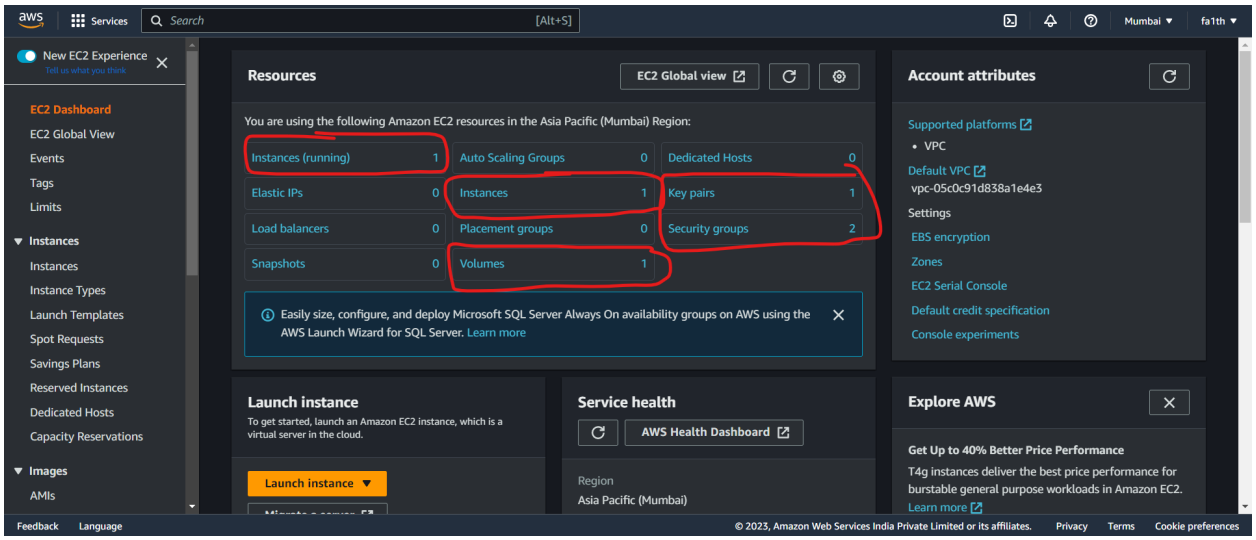
Keep rest of the settings same



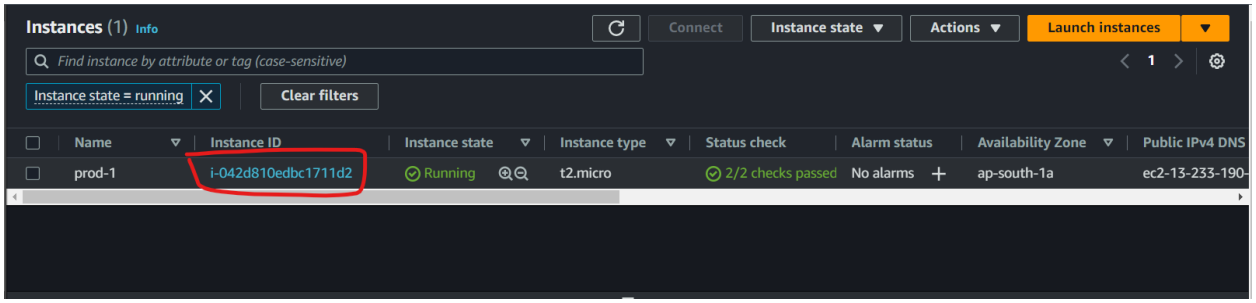
Launch instance

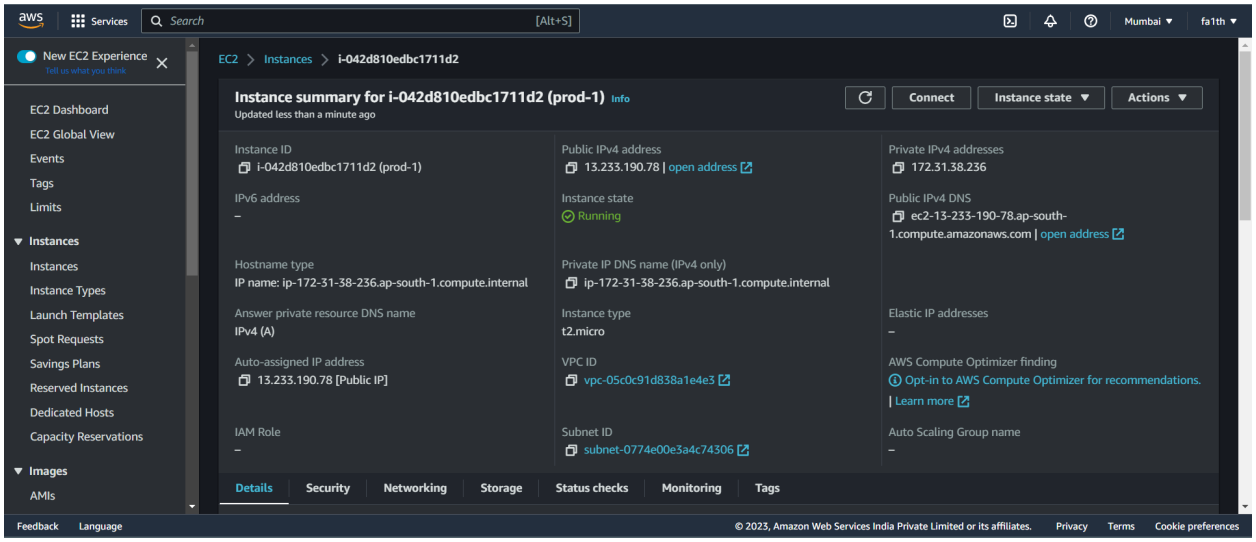


Go to dashboard and check if the instance is running

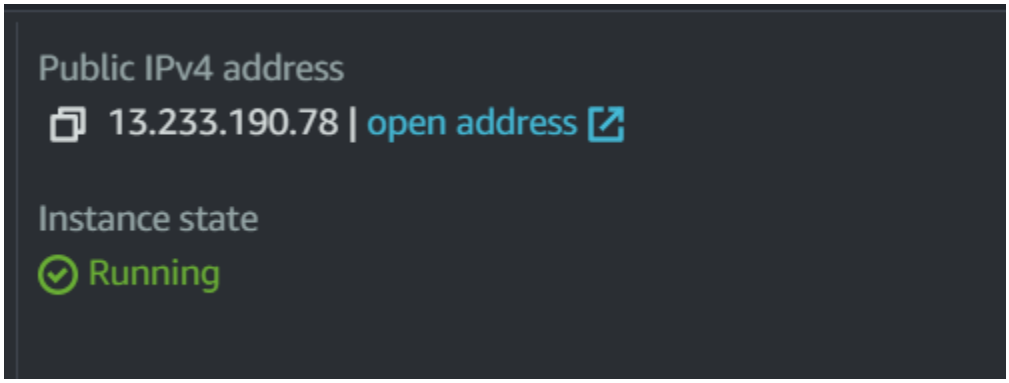


Click on running instances
Click on instance ID



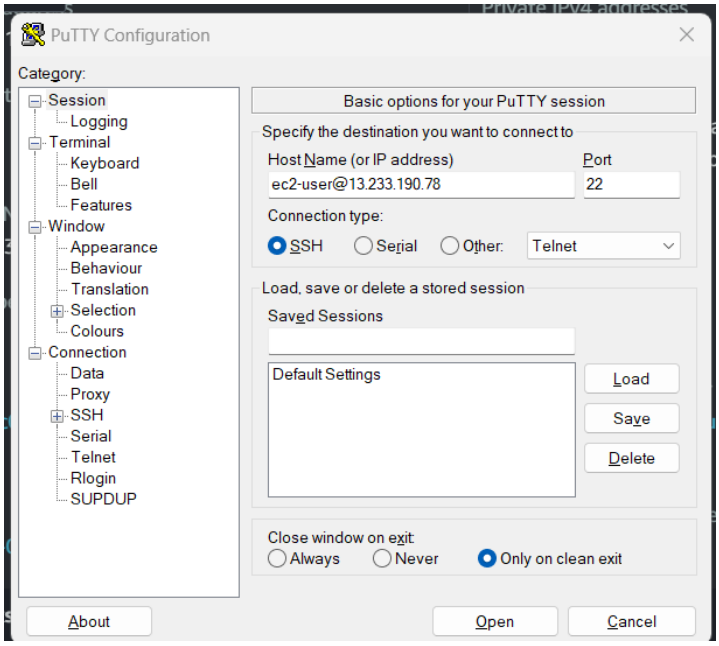


Copy Public ipv4 address

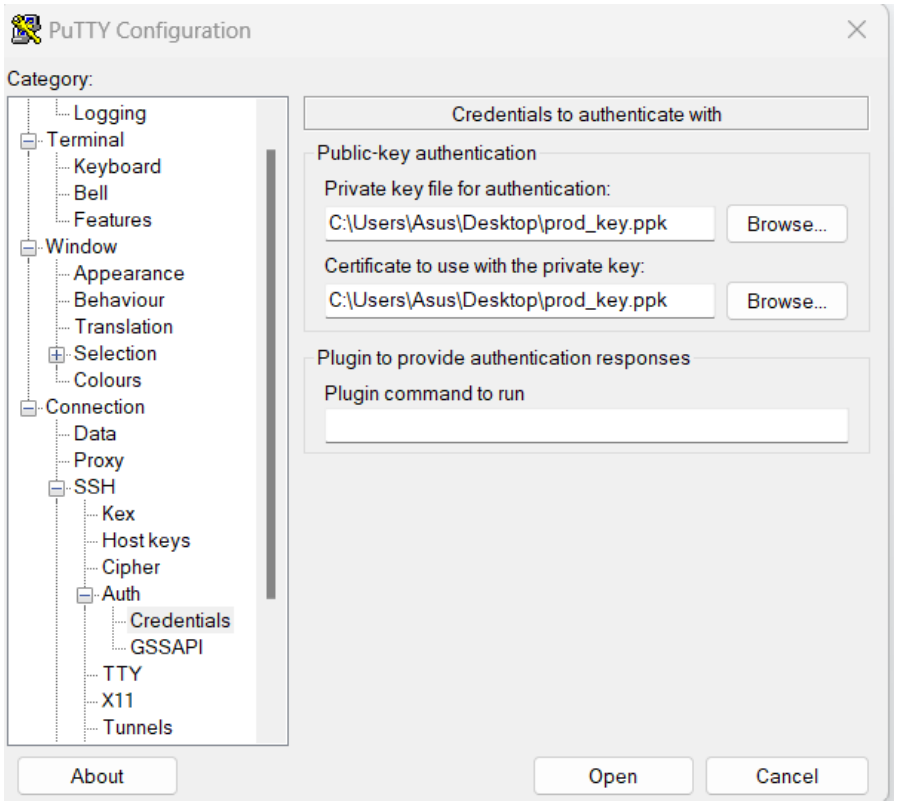


Open putty and write the ip in hostname

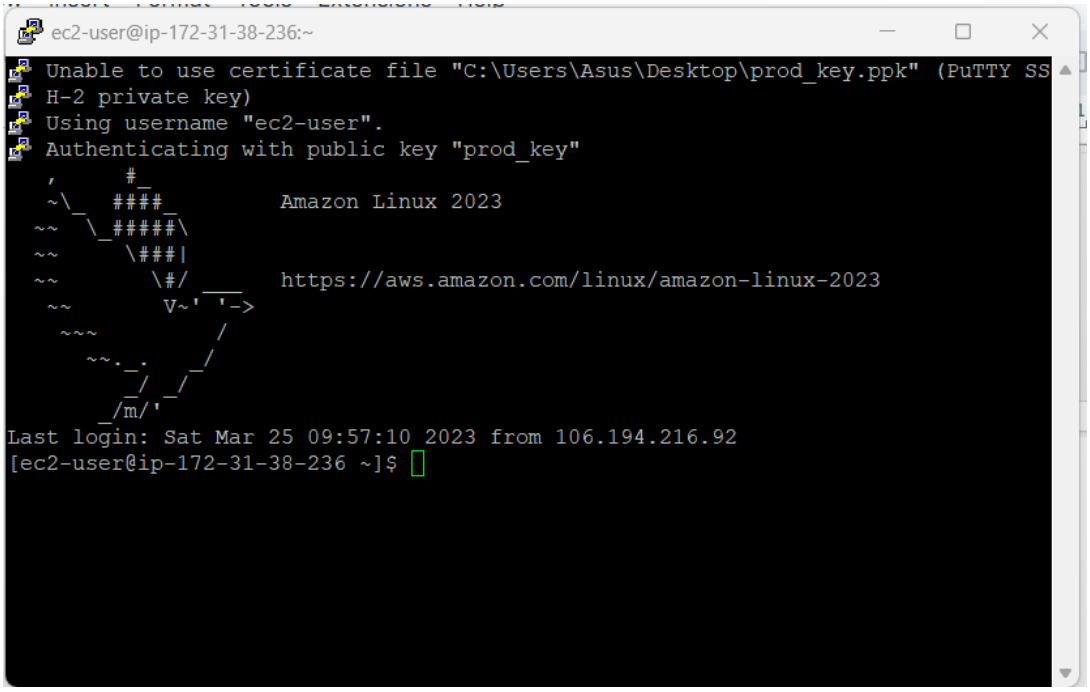
ec2-user@ipaddress



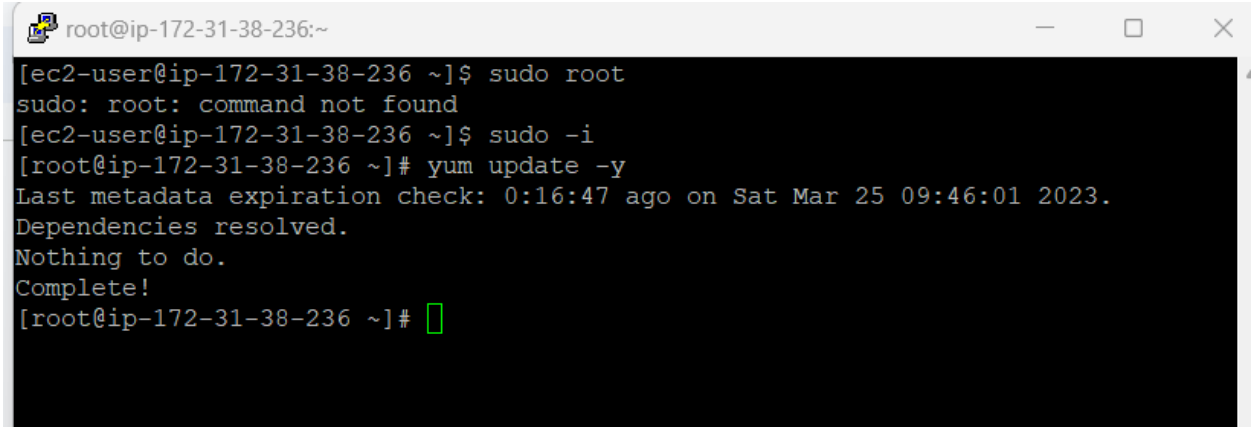
Add key and certificate
Select SSH from left panel
SSH>Auth>Credentials



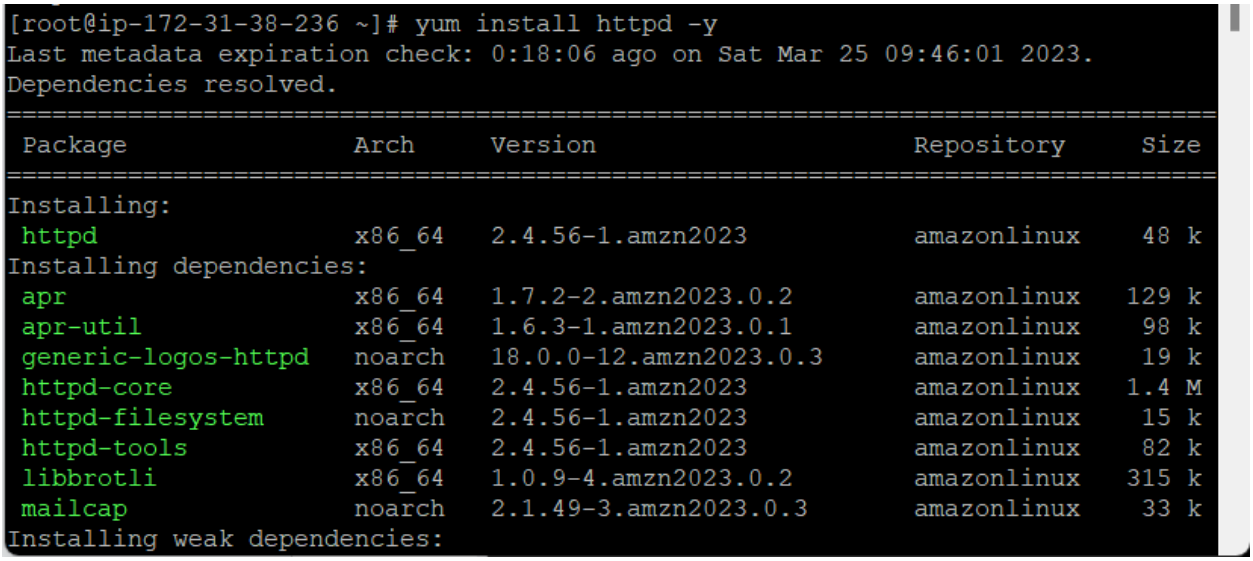
Hit open and it will open up



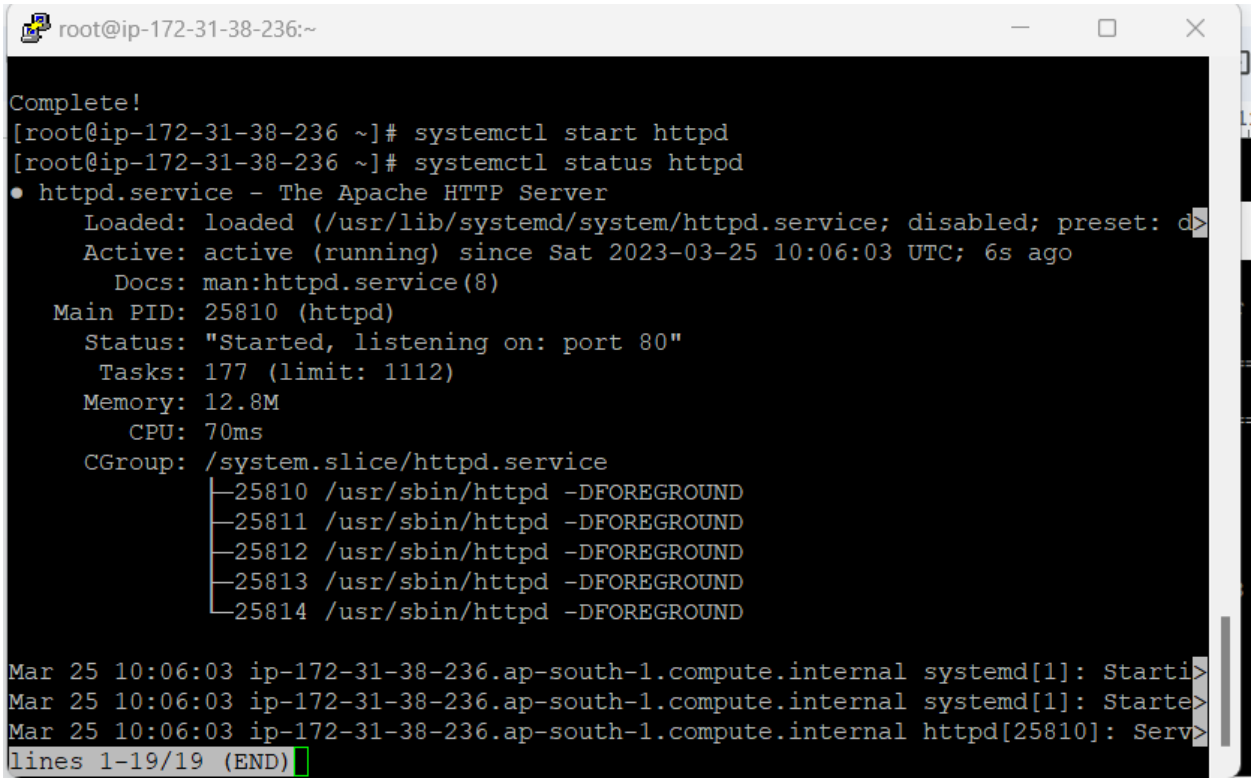
Enter root : sudo -i
Update : yum update -y



Install httpd : yum install httpd -y



Install httpd : yum install httpd -y
Start httpd : systemctl start httpd
Check httpd service running : systemctl status httpd

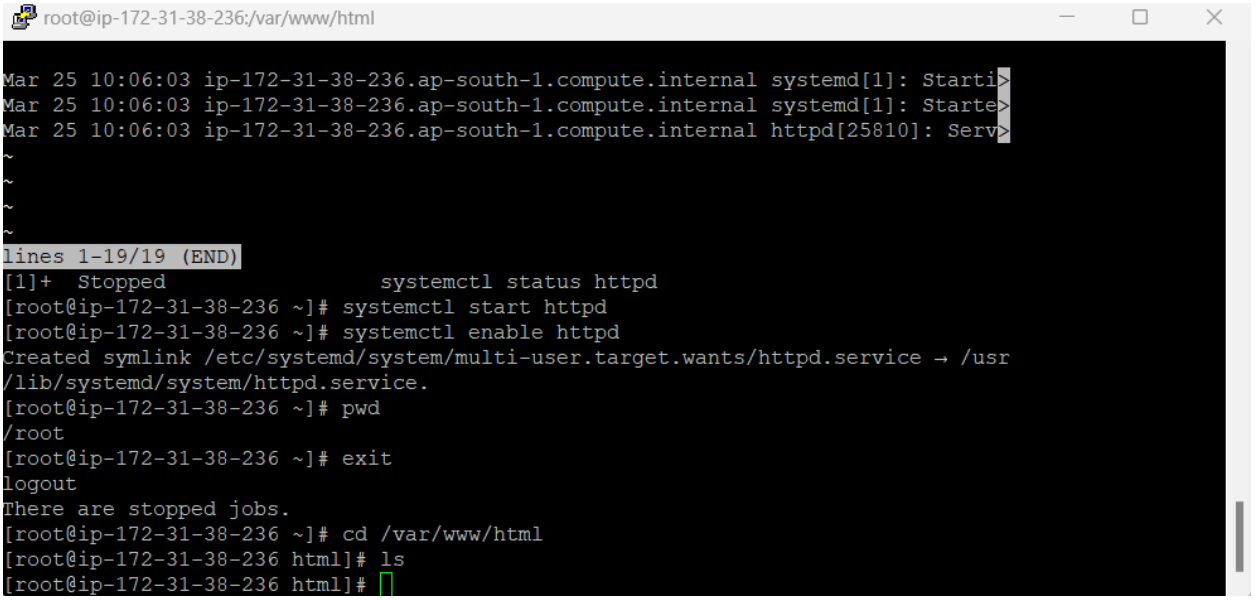


systemctl enable httpd

```
[root@ip-172-31-38-236 ~]# systemctl start httpd
[root@ip-172-31-38-236 ~]# systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr
/lib/systemd/system/httpd.service.
[root@ip-172-31-38-236 ~]#
```

cd /var/www/html

vi index.html



Write a small html code inside the file

root@ip-172-31-38-236:/var/www/html

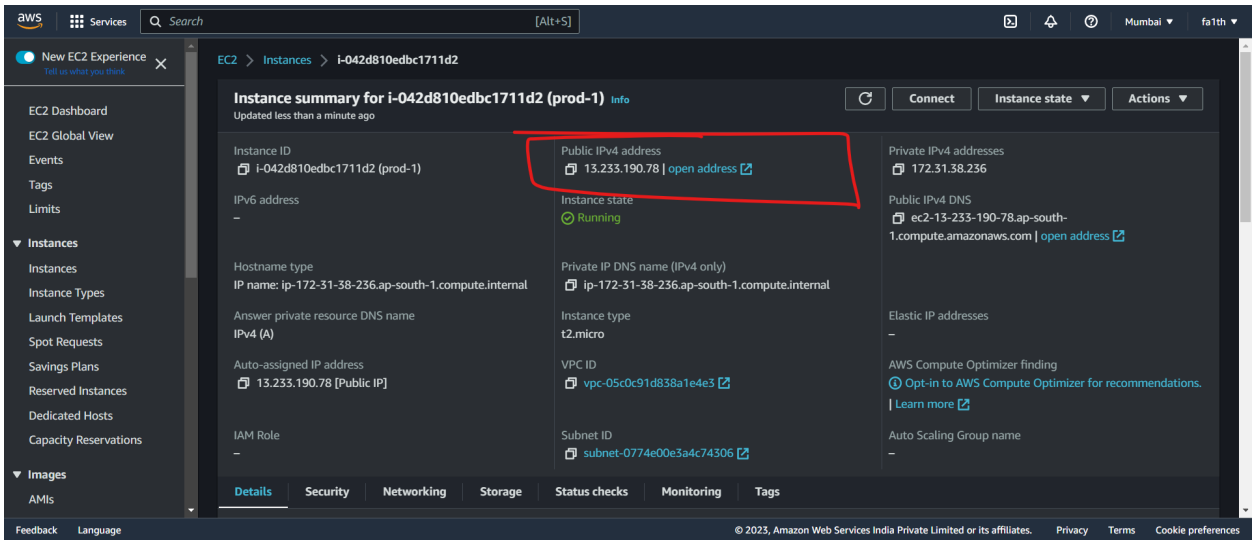
```
<html>
<body>
        <h1> Hello this is heading </h1>
</body>
</html>
~
~
~
~
~
~
~
~
~
~
~
~
~
~
```

systemctl start httpd
systemctl enable httpd

root@ip-172-31-38-236:/var/www/html

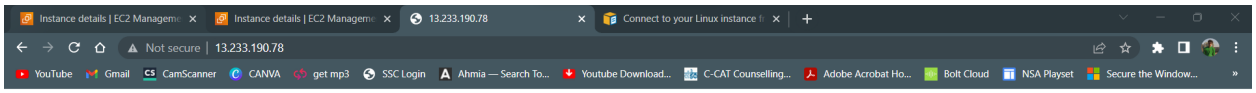
```
[root@ip-172-31-38-236 html]# systemctl status httpd
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
     Active: active (running) since Sat 2023-03-25 10:06:03 UTC; 7min ago
       Docs: man:httpd.service(8)
   Main PID: 25810 (httpd)
     Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes served/sec:   0 >
      Tasks: 177 (limit: 1112)
     Memory: 12.8M
        CPU: 340ms
     CGroup: /system.slice/httpd.service
             ├─25810 /usr/sbin/httpd -DFOREGROUND
             ├─25811 /usr/sbin/httpd -DFOREGROUND
             ├─25812 /usr/sbin/httpd -DFOREGROUND
             ├─25813 /usr/sbin/httpd -DFOREGROUND
             └─25814 /usr/sbin/httpd -DFOREGROUND

Mar 25 10:06:03 ip-172-31-38-236.ap-south-1.compute.internal systemd[1]: Starting httpd.service >
Mar 25 10:06:03 ip-172-31-38-236.ap-south-1.compute.internal systemd[1]: Started httpd.service ->
Mar 25 10:06:03 ip-172-31-38-236.ap-south-1.compute.internal httpd[25810]: Server configured, li>
lines 1-19/19 (END)
[2]+  Stopped                 systemctl status httpd
```

Open dashboard
Copy the public ip address



Paste it in browser

The html code will run and show the output



Hello this is heading