

## Experiment No : 4

Aim : To study and implement Infrastructure as a Service using AWS.

### Theory :

- The objective of this experiment is to study and implement Infrastructure as a Service (IaaS) using AWS.

- The focus will be on Amazon EC2 including the creation and management of instances, Amazon Machine Images (AMI), various types of EC2 computing instances, Elastic IP address and accessing Windows virtual machines using Remote Desktop Protocol (RDP).

#### 1) Amazon EC2

⇒ Amazon EC2 is a web service that provides resizable compute capacity in the cloud.

- It is designed to make web-scale cloud computing easier for developers.

- EC2 instances are virtual servers in the cloud that can run applications.

#### 2) Amazon Machine Images (AMI)

⇒ An AMI is a pre-configured virtual machine image, which is used to create EC2 instances.

- It contains necessary information to launch an instance, including the OS, application server and applications.

### 3) Types of EC2 Computing Instances:

⇒ EC2 instances come in various types optimized for different use cases, including compute-optimized, memory-optimized, storage-optimized and GPU instances.

For e.g., t2-micro, m5.large, etc.

### 4) Elastic IP address

⇒ An elastic IP address is a static IPv4 address designed for dynamic cloud computing.

It can be associated with EC2 instances, providing a consistent IP address even if the instance is stopped and started.

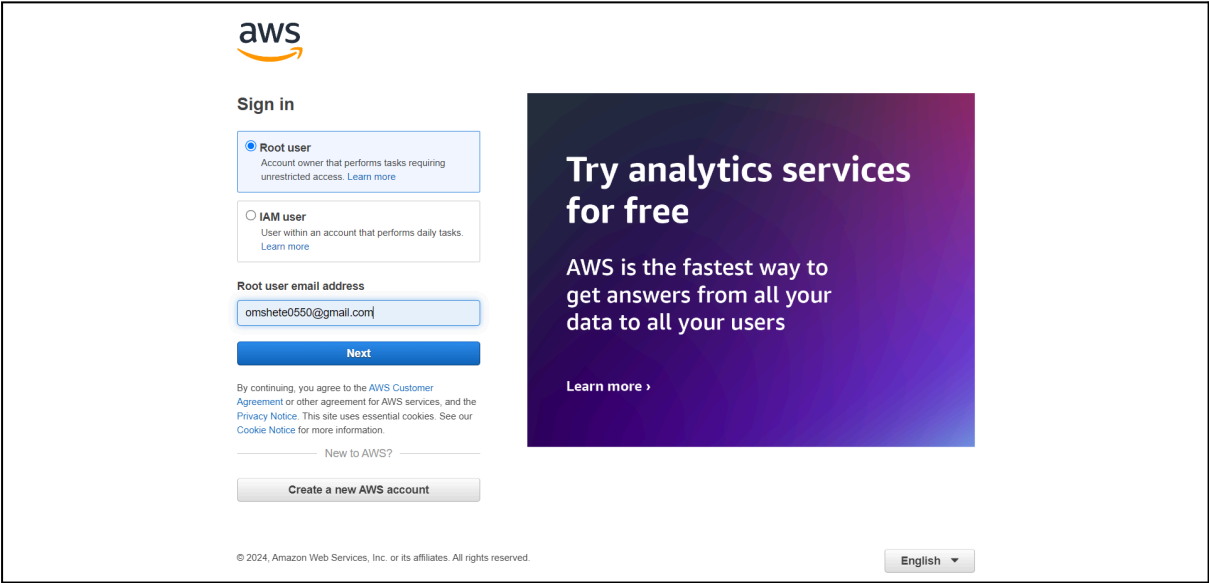
### 5) Remote desktop Protocol (RDP)

⇒ RDP is a proprietary protocol developed by Microsoft, which provides a user with a graphical interface to connect to another compute over a network connection.

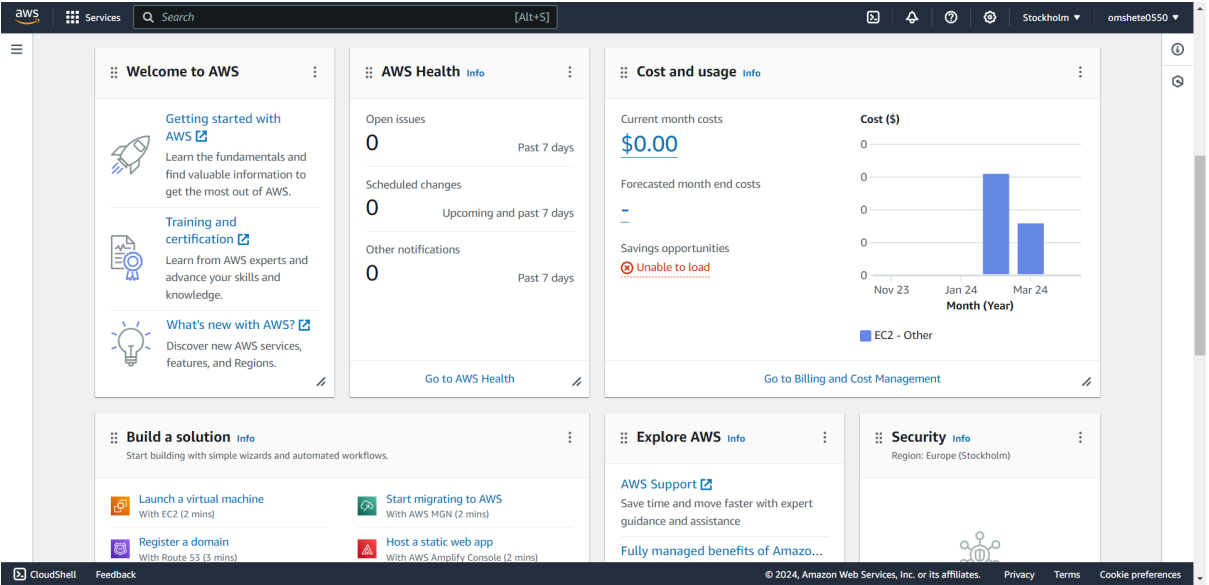
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Output:

1. Create an AWS account and Login

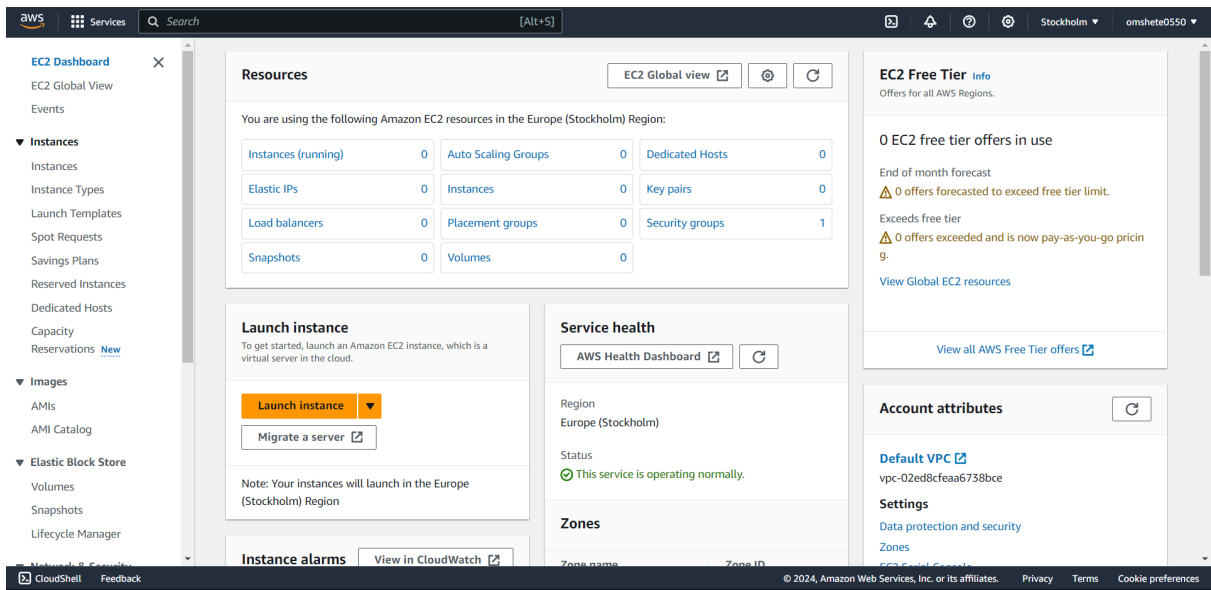


2. On Homepage Select Launch a Virtual Machine

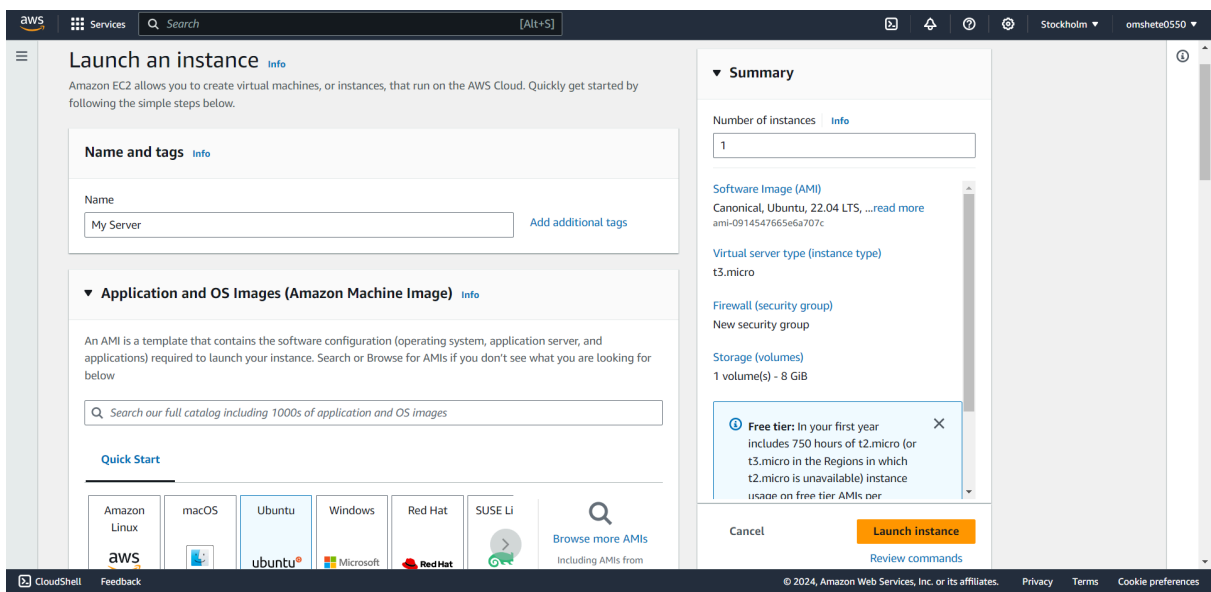




3. Select Launch Instance



4. Select the Instance Specifications



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macOS

Ubuntu

Windows

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SUSE Li

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type

ami-0914547665e6a707c (64-bit (x86)) / ami-0b559d60d5b0a5053 (64-bit (Arm))

Virtualization: hvm    ENA enabled: true    Root device type: ebs

Free tier eligible

Description

Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2024-03-01

Architecture

64-bit (x86)

AMI ID

ami-0914547665e6a707c

Verified provider

▼ Instance type

Info | Get advice

Instance type

t3.micro

Family: t3    2 vCPU    1 GiB Memory    Current generation: true

On-Demand RHEL base pricing: 0.0708 USD per Hour

On-Demand SUSE base pricing: 0.0108 USD per Hour

On-Demand Linux base pricing: 0.0108 USD per Hour

Free tier eligible

All generations

Compare instance types

▼ Summary

Number of instances

Info

1

Software Image (AMI)

Canonical, Ubuntu, 22.04 LTS, ...read more

ami-0914547665e6a707c

Virtual server type (instance type)

t3.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per

Cancel

Launch instance

Review commands

CloudShell

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Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

▼ Configure storage

Info

Advanced

1x 8 GiB gp2 Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance

Click refresh to view backup information

The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.

0 x File systems

Edit

▼ Summary

Number of instances

Info

1

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Launch instance

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▼ Advanced details

Info

Domain join directory

Info

Select

Create new directory

IAM instance profile

Info

Select

Create new IAM profile

Hostname type

Info

IP name

DNS Hostname

Info

☒ Enable IP name IPv4 (A record) DNS requests

☒ Enable resource-based IPv4 (A record) DNS requests

☐ Enable resource-based IPv6 (AAAA record) DNS requests

Instance auto-recovery

Info

Select

Shutdown behavior

Info

Stop

Stop - Hibernate behavior

Info

▼ Summary

Number of instances

Info

1

Firewall (security group)

New security group

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Cancel

Launch instance

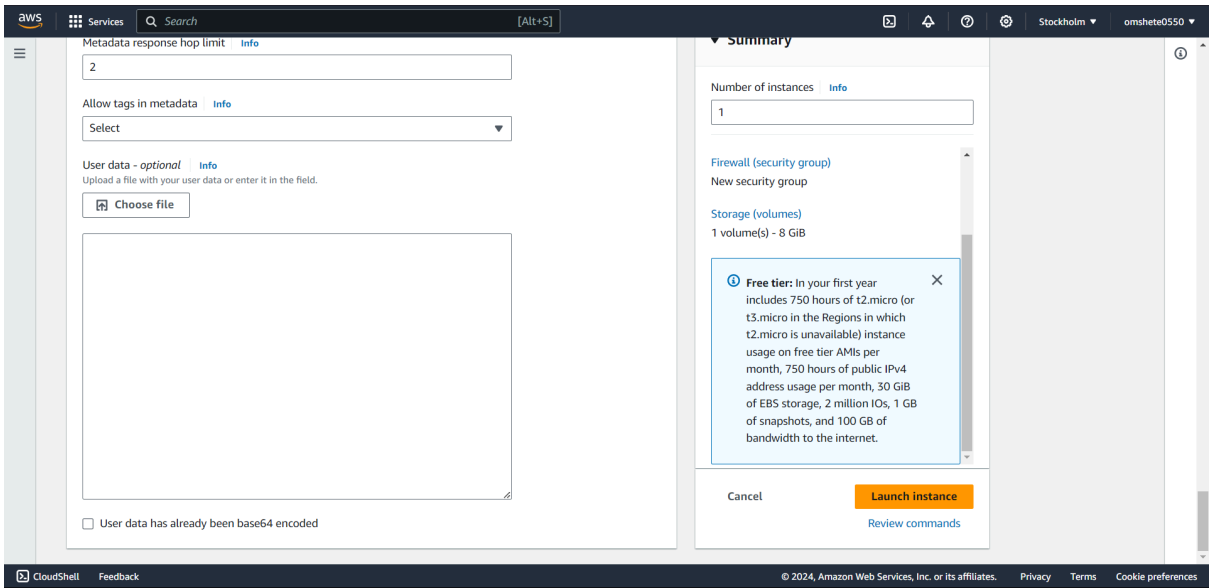
Review commands

CloudShell

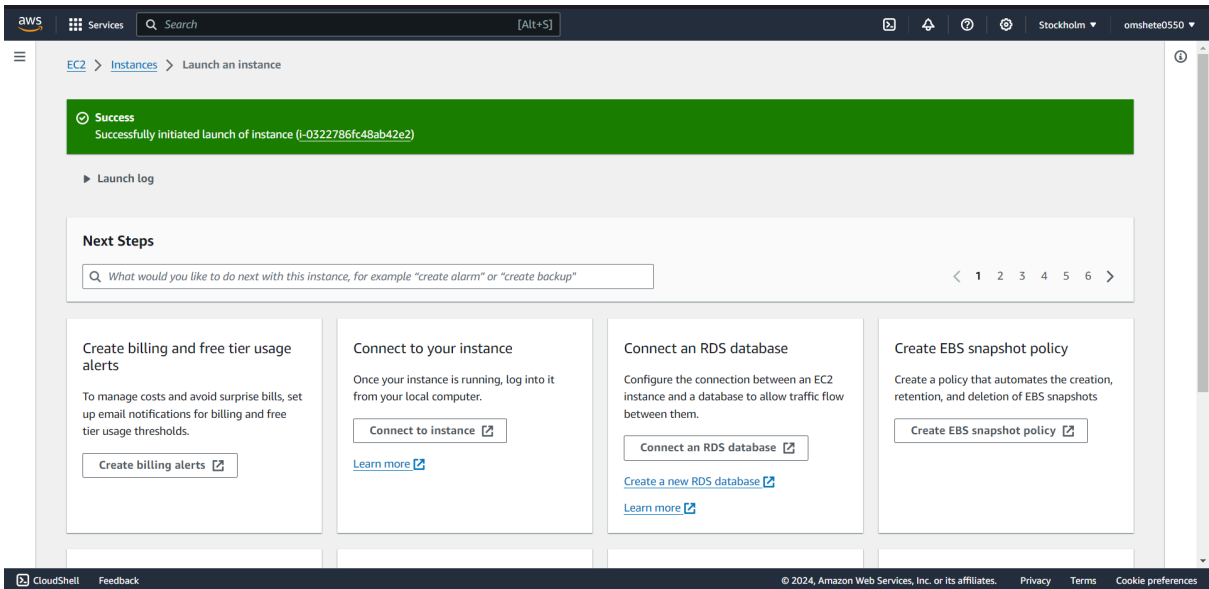
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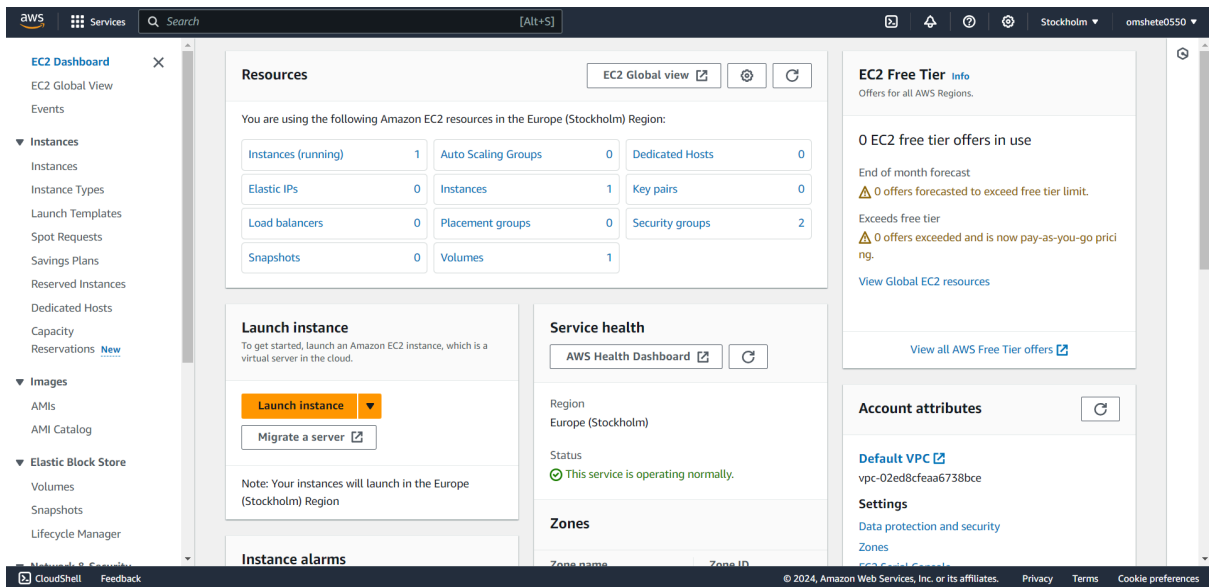
5. Click on Launch Instance on the right



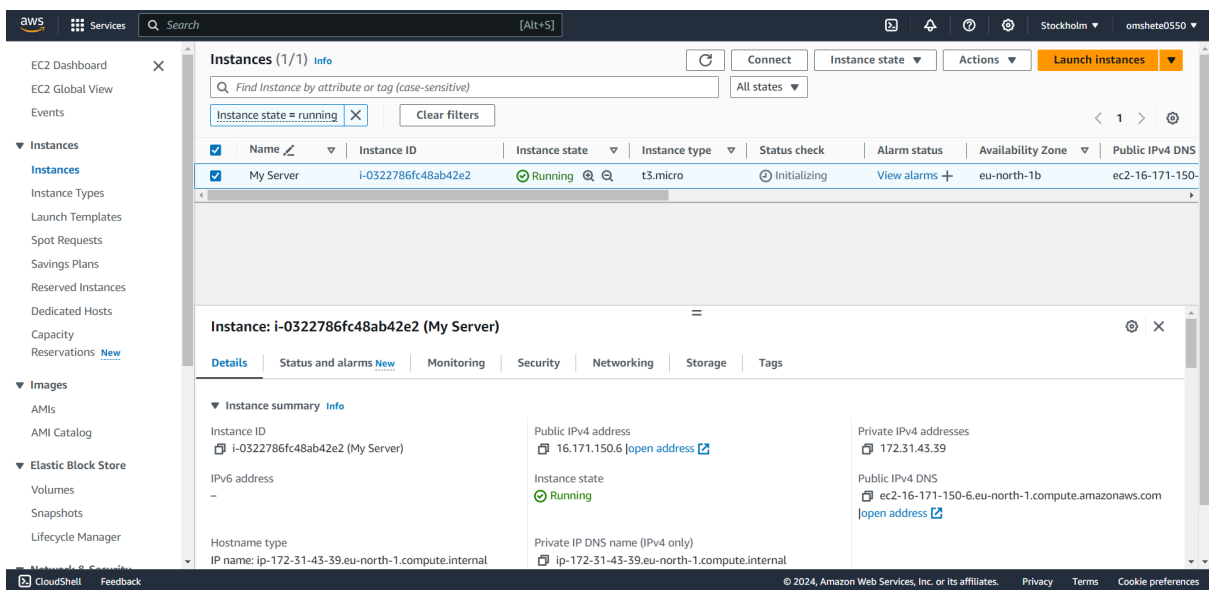
6.Instance Created Successfully

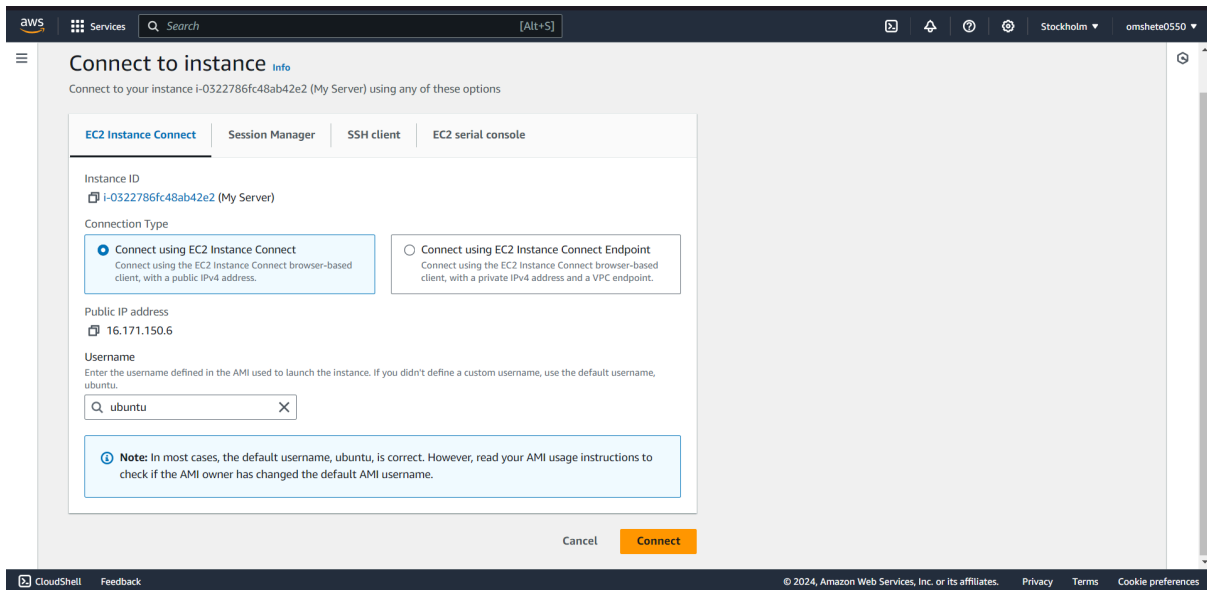


7. On EC2 Dashboard Click Instances(running)

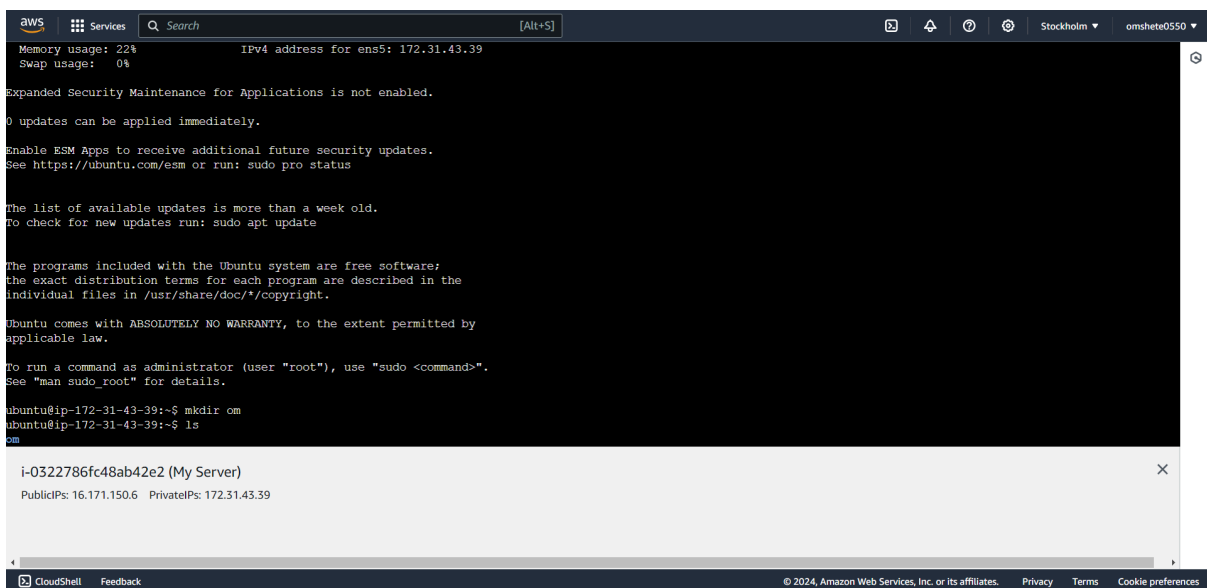


8. Click on Connect



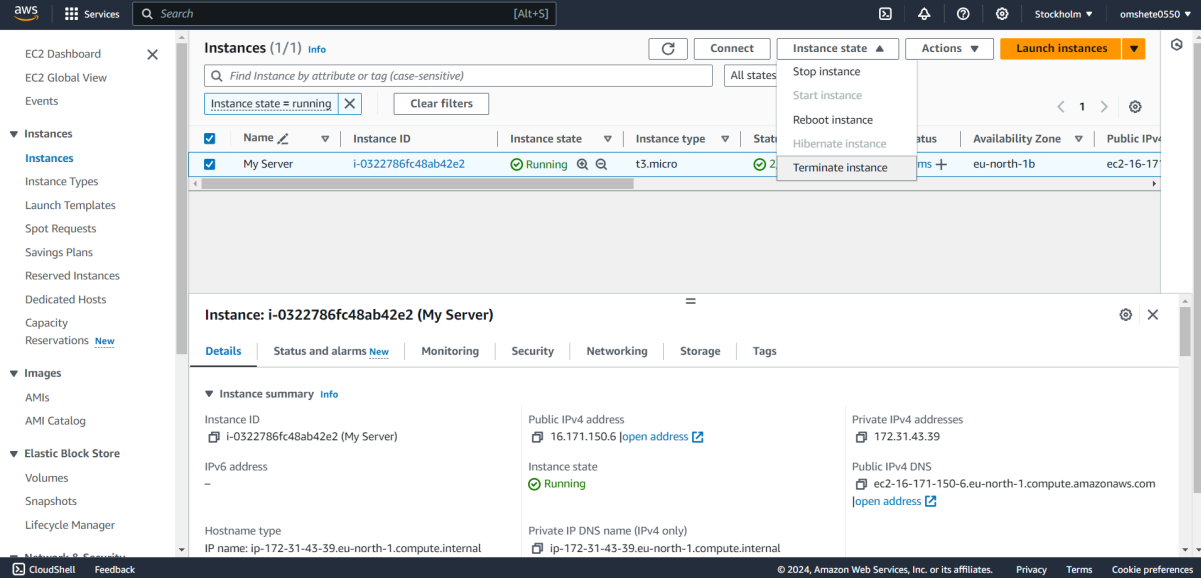


## 9. After Connecting to the Instance you can run any Linux command



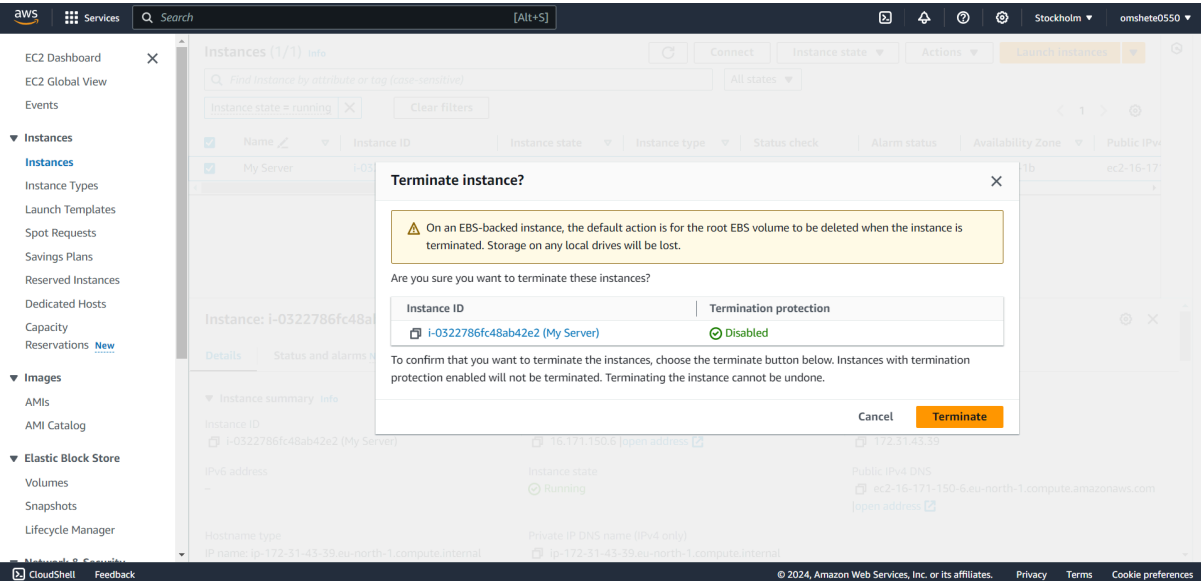


## 10. Now Go to EC2 Dashboard and Select Instance State



The screenshot shows the AWS Management Console interface. On the left, the navigation pane lists various services, with 'Instances' selected under the 'EC2' category. The main content area displays a list of instances. One instance, 'My Server' with ID 'i-0322786fc48ab42e2', is in the 'Running' state. The 'Instance state' dropdown menu is open, showing options: Stop instance, Start instance, Reboot instance, Hibernate instance, and Terminate instance. Below the instance list, the details for 'My Server' are shown, including its Instance ID, IP addresses, and DNS information.

## 11. Select Terminate Instance



The screenshot shows the AWS Management Console interface with the 'Terminate instance?' dialog box open. The dialog box contains a warning message: 'On an EBS-backed instance, the default action is for the root EBS volume to be deleted when the instance is terminated. Storage on any local drives will be lost.' Below the warning, it asks 'Are you sure you want to terminate these instances?' and shows the instance ID 'i-0322786fc48ab42e2 (My Server)' with 'Termination protection' set to 'Disabled'. At the bottom, there are 'Cancel' and 'Terminate' buttons.

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EC2 Dashboard

EC2 Global View

Events

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity

Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Successfully terminated i-0322786fc48ab42e2

Instances (1/1) Info

Find Instance by attribute or tag (case-sensitive)

Instance state = running

Clear filters

1

My Server

i-0322786fc48ab42e2

Shutting-d...

t3.micro

2/2 checks passed

View alarms

eu-north-1b

ec2-16-17

Instance: i-0322786fc48ab42e2 (My Server)

Details

Status and alarms

Monitoring

Security

Networking

Storage

Tags

Instance summary

Instance ID

i-0322786fc48ab42e2 (My Server)

IPv6 address

-

Hostname type

IP name: ip-172-31-43-39.eu-north-1.compute.internal

Public IPv4 address

16.171.150.6

Instance state

Shutting-down

Private IP DNS name (IPv4 only)

ip-172-31-43-39.eu-north-1.compute.internal

Private IPv4 addresses

172.31.43.39

Public IPv4 DNS

ec2-16-171-150-6.eu-north-1.compute.amazonaws.com

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EC2 Dashboard

EC2 Global View

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Reserved Instances

Dedicated Hosts

Capacity

Reservations

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Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Resources

EC2 Global view

You are using the following Amazon EC2 resources in the Europe (Stockholm) Region:

Instances (running) 0

Elastic IPs 0

Load balancers 0

Snapshots 0

Auto Scaling Groups 0

Instances 1

Placement groups 0

Volumes 1

Dedicated Hosts 0

Key pairs 0

Security groups 2

Launch instance

Launch instance

Migrate a server

Note: Your instances will launch in the Europe (Stockholm) Region

Instance alarms

Service health

AWS Health Dashboard

Region

Europe (Stockholm)

Status

This service is operating normally.

Zones

Zone name

Zone ID

EC2 Free Tier

Offers for all AWS Regions.

0 EC2 free tier offers in use

End of month forecast

0 offers forecasted to exceed free tier limit.

Exceeds free tier

0 offers exceeded and is now pay-as-you-go pricing.

View Global EC2 resources

View all AWS Free Tier offers

Account attributes

Default VPC

vpc-02ed8cfeaa6738bce

Settings

Data protection and security

Zones

EC2 Free Tier

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