



Fostering Inclusion

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Project - 1

An AWS Project on High Availability (HA) and Auto Scaling for a web application using Amazon EC2 (Elastic Compute Cloud), ELB (Elastic Load Bala ASG (Auto Scaling Group), and EBS (Elastic Block Store) involves several steps. Here's a comprehensive guide to set up this project:

1. Set Up the VPC and

Subnets

Create a VPC:

Navigate to the VPC dashboard in the AWS Management

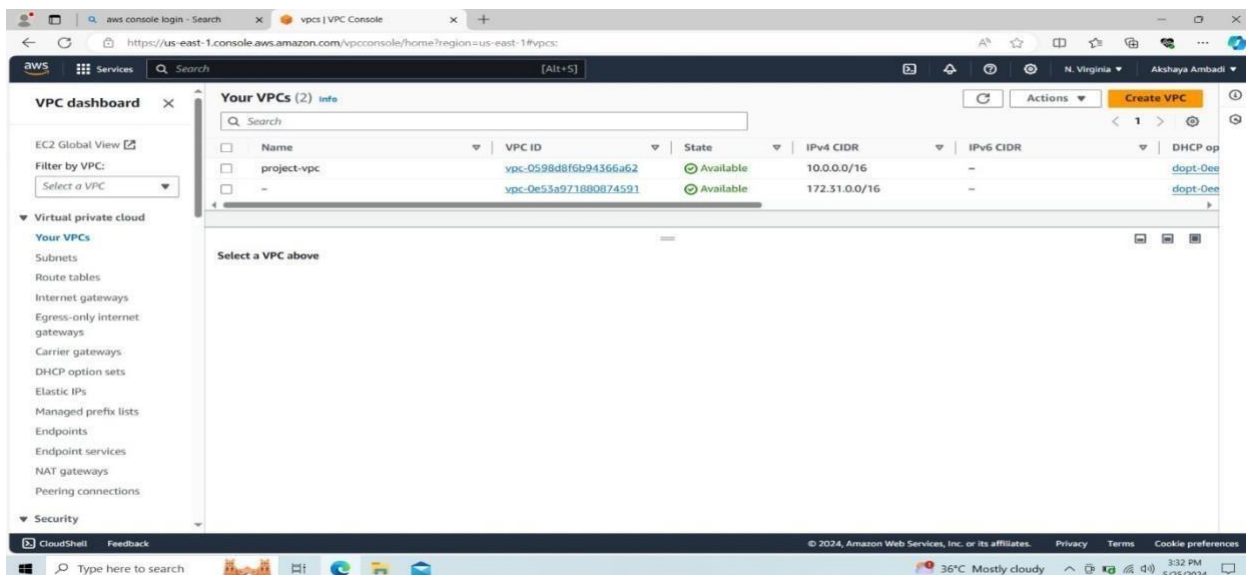
Console. Create a new VPC with a CIDR block (e.g.,

1000.0.0.0/32).

Create Subnets:

Create two public subnets(A,B) in different Availability Zones (AZs) within the VPC for theweb application instances.

Optionally, create private subnets for backend services or databases.

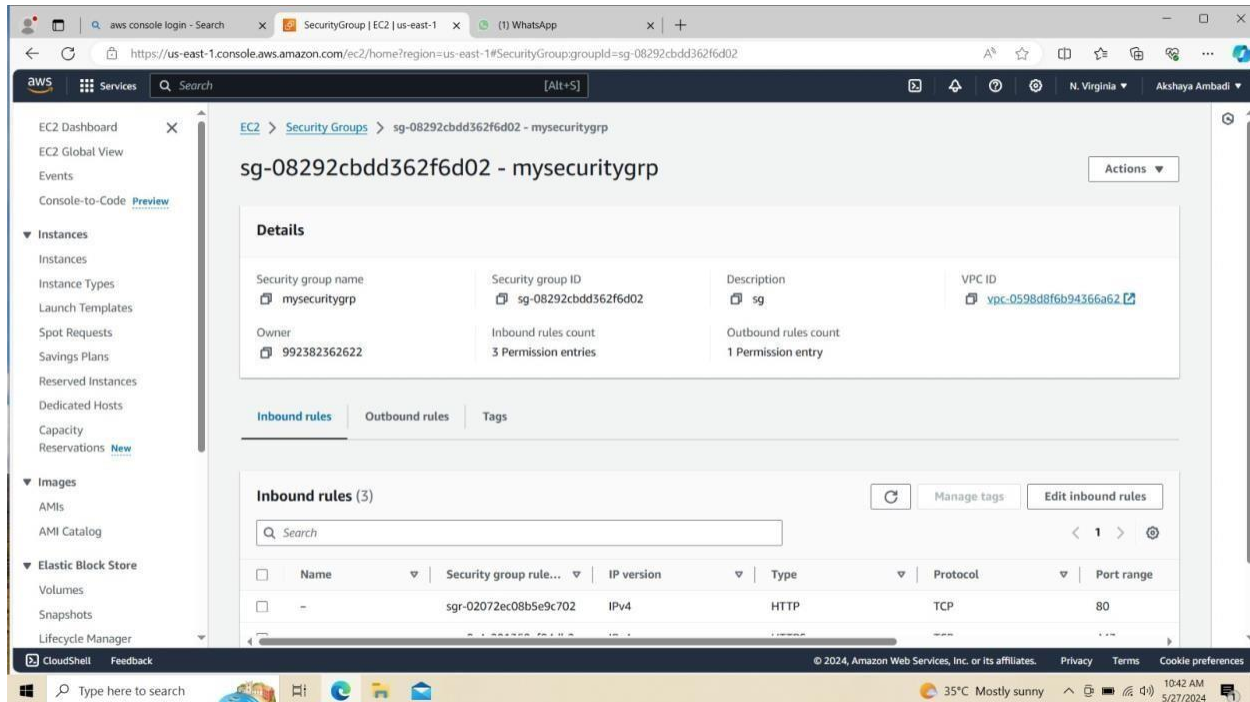


2 . Set Up Security Groups

Create Security Groups:

Create a security group for the EC2 instances allowing HTTP (port 80) and SSH (port 22) access.

Create a security group for the load balancer allowing HTTP access (port 80) from the internet.



2. Launch Two EC2 Instances

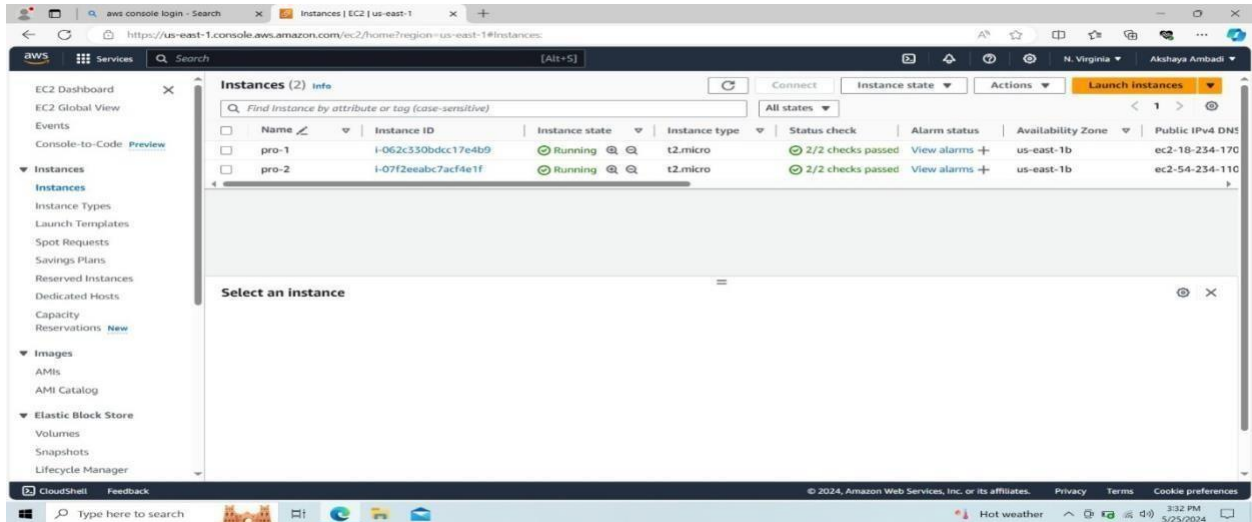
***Navigate to EC2 Dashboard*:**

- Open the AWS Management Console.
- Go to the EC2 service.

***Launch Instances*:**

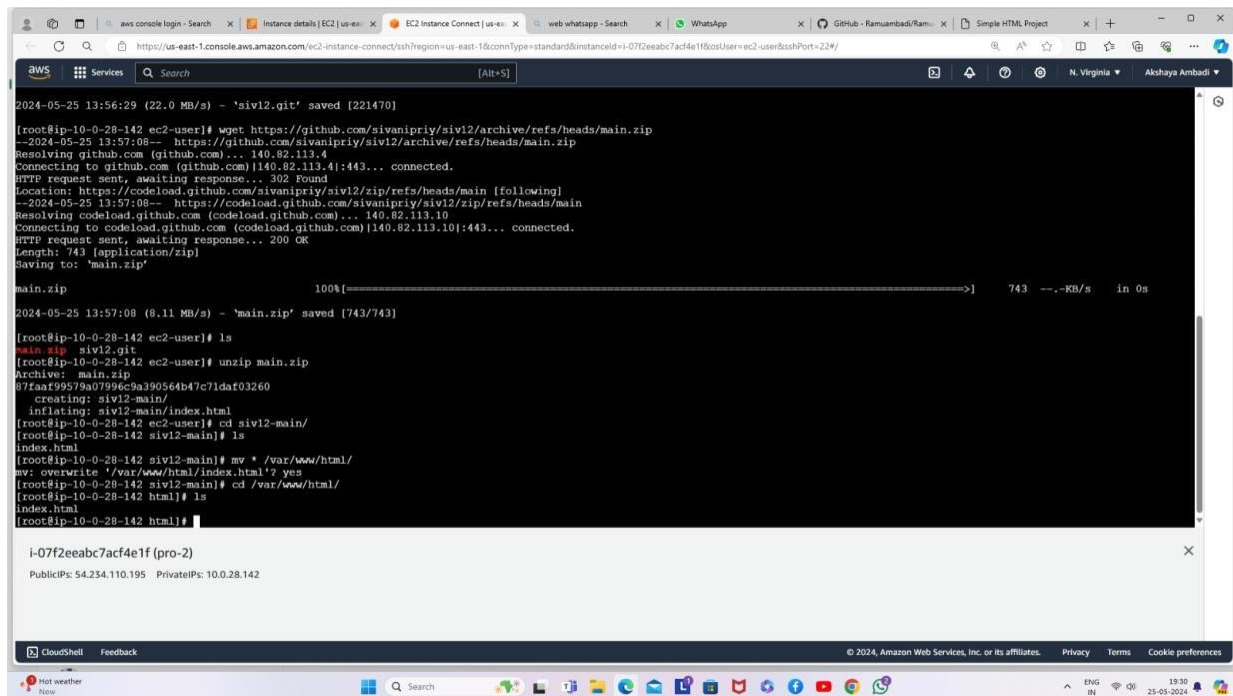
- Click on "Launch Instance".
- Choose an Amazon Machine Image (AMI), such as Amazon Linux 2.
- Choose an instance type (e.g., t2.micro for free tier).

- Configure instance details:
- Network: Select your newly created VPC.
- Subnet: Select Subnet-A for the first instance and Subnet-B for the second instance.



- *Install Necessary Software*:
- Connect to each instance via SSH.
- Install web server software (e.g., Apache or Nginx):

```
sh
sudo yum update -y
sudo yum install httpd -y
sudo systemctl start httpd
sudo systemctl enable httpd
```
- wget <https://github.com/gs0001/siv12.git>
- wget <https://github.com/gs0001/siv12/archive/refs/heads/main.zip>



```
2024-05-25 13:56:29 (22.0 MB/s) - 'siv12.git' saved [221470]
[root@ip-10-0-28-142 ec2-user]# wget https://github.com/sivanipriy/siv12/archive/refs/heads/main.zip
--2024-05-25 13:57:08-- https://github.com/sivanipriy/siv12/archive/refs/heads/main.zip
Resolving github.com (github.com)... 140.82.113.4
Connecting to github.com (github.com)[140.82.113.4]:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://codeload.github.com/sivanipriy/siv12/zip/refs/heads/main [following]
--2024-05-25 13:57:08-- https://codeload.github.com/sivanipriy/siv12/zip/refs/heads/main
Resolving codeload.github.com (codeload.github.com)... 140.82.113.10
Connecting to codeload.github.com (codeload.github.com)[140.82.113.10]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 743 [application/zip]
Saving to: 'main.zip'

main.zip                               100%[=====>] 743 --.-KB/s  in 0s

2024-05-25 13:57:08 (0.11 MB/s) - 'main.zip' saved [743/743]

[root@ip-10-0-28-142 ec2-user]# ls
main.zip  siv12.git
[root@ip-10-0-28-142 ec2-user]# unzip main.zip
Archive: main.zip
  07faaf99579a07996c9a180564b47c71daf03260
    creating: siv12-main/
      inflating: siv12-main/index.html
[root@ip-10-0-28-142 ec2-user]# cd siv12-main/
[root@ip-10-0-28-142 siv12-main]# ls
index.html
[root@ip-10-0-28-142 siv12-main]# mv * /var/www/html/
mv: overwrite '/var/www/html/index.html'? yes
[root@ip-10-0-28-142 siv12-main]# cd /var/www/html/
[root@ip-10-0-28-142 html]# ls
index.html
[root@ip-10-0-28-142 html]#
```

i-07f2eeabc7acf4e1f (pro-2)
PublicIPs: 54.234.110.195 PrivateIPs: 10.0.28.142

4 . Create the Application Load Balancer

1.Navigate to Load Balancers:

Go to the EC2 Dashboard, under select “Load Balancers.”

Create Load Balancer and select “Application Load Balancer.” 2.Define the ALB name,scheme (Inet-facing or Internal), and IP address type (IPv4 or Availability Zones) andcorresponding subnets for the ALB.

3.Configure Routing:

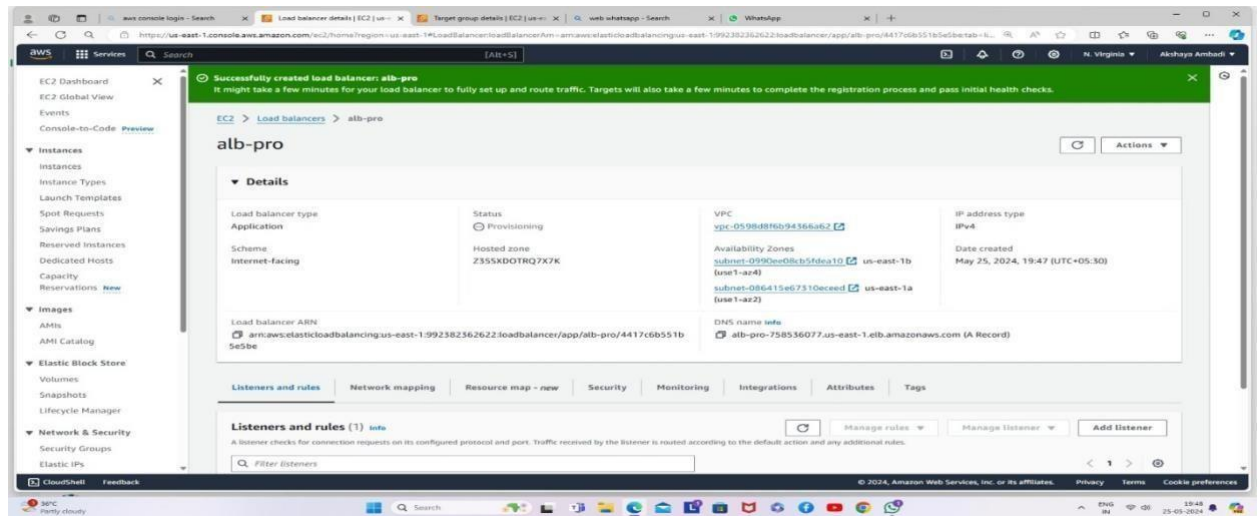
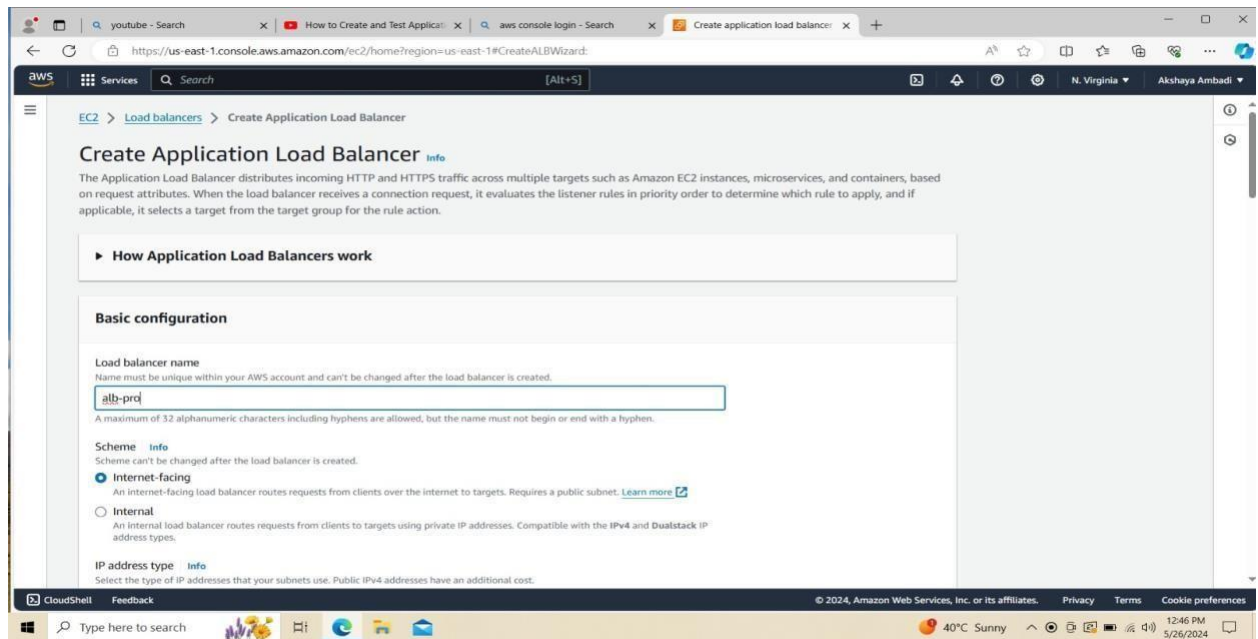
Create a new target group (e.g., MyTargetGroup).Target type: Instance.

Protocol:

HTTP.Port:

80.

Health checks: Use the default path (/).



5. Ceate an Auto Scaling Group

1. *Navigate to Auto Scaling Groups*:

Open the AWS Management Console.

Go to the EC2 service and select “Auto Scaling Groups” from the left menu.

2. *Create Auto Scaling Group*:

Click “Create Auto Scaling Group”.

Name the group (e.g., MyASG).

Launch template: Create a new launch template or use an existing one with your instance Configuration.

3. *Configure Auto Scaling Group Details*:

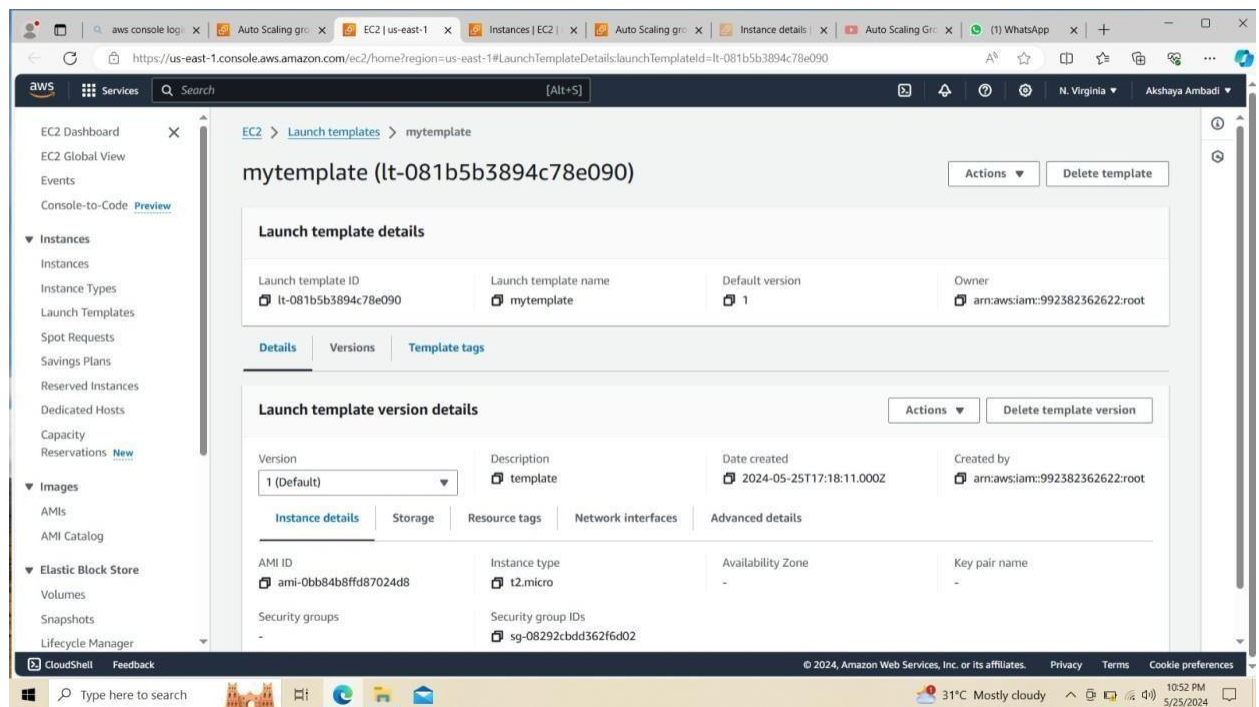
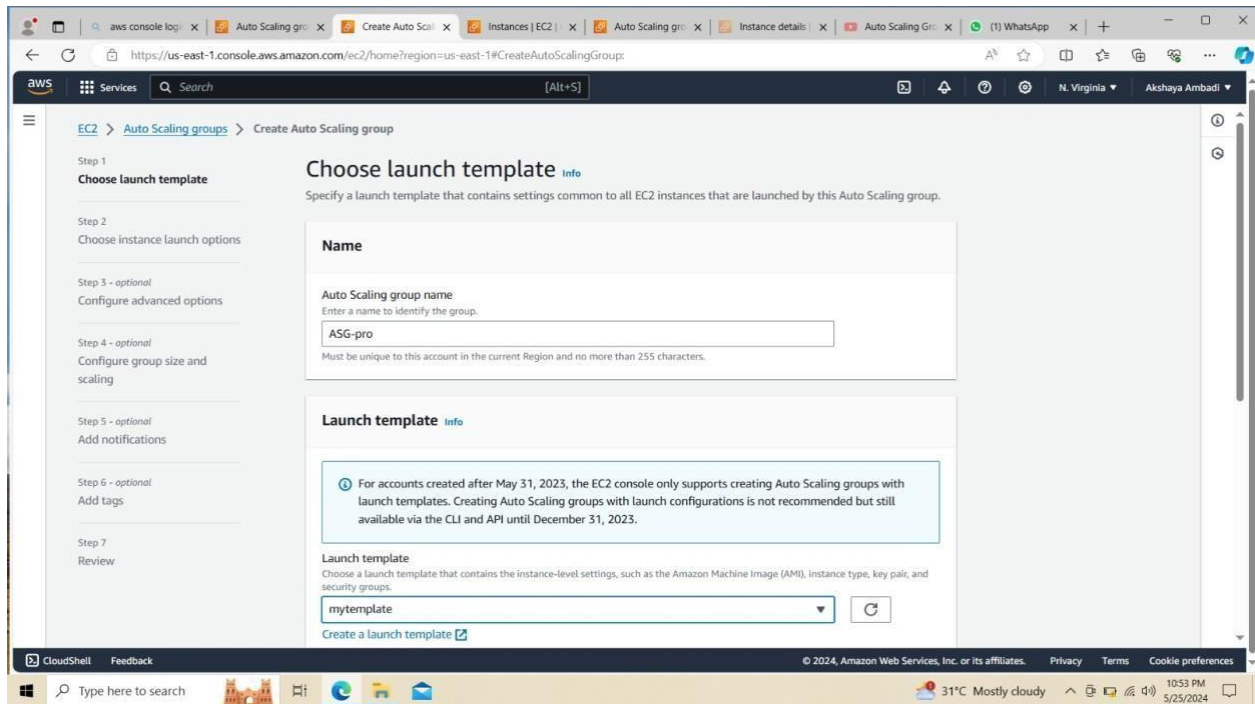
VPC: Select your newly created VPC.

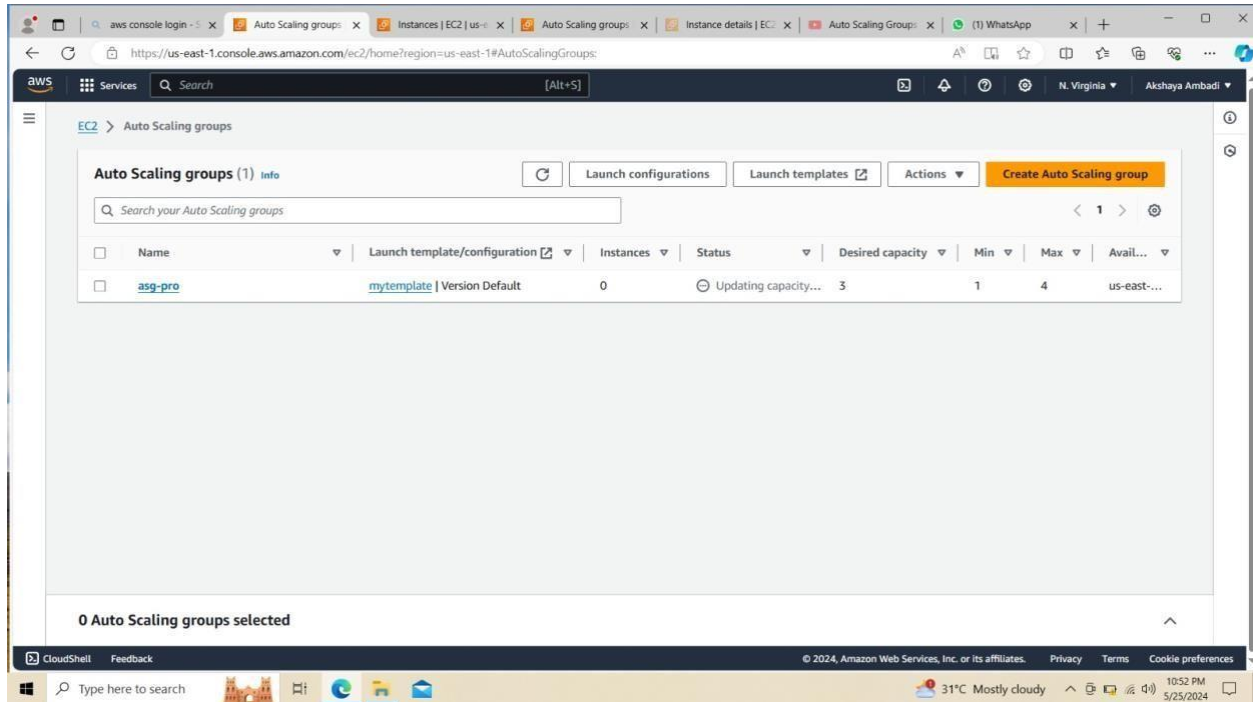
Subnets: Select the subnets created in Step 1.

***Configure Group Size and Scaling Policies*:**

Set the desired capacity, minimum, and maximum number of instances (e.g., desired: 3, min:1, max: 4).

Configure scaling policies to adjust the number of instances based on CPU utilization.





6 . Attach EBS Volumese to EC2 instances

Open the AWS Management Console.

Go to the EC2 service and select “Volumes” from the left menu.

2. Create EBS Volumes:

Click “Create Volume”.

Choose volume type (e.g., General Purpose SSD).

Specify size and availability zone matching your instances.

Create the volumes.

3. Attach Volumes to Instances:

Select each volume and click “Actions” -> “Attach Volume”.

Choose the corresponding instance name.

aws console login - Search x AWS Tutorials x aws console login x Load balancer d x Auto Scaling gro x Volumes | EC2 | x Load balancers | x Instances | EC2 | x +

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Volumes:

Services Search [Alt+S]

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AMI Catalog

▼ Elastic Block Store
[Volumes](#)
Snapshots
Lifecycle Manager

Volumes (1/6) Info

Search

	Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot
<input type="checkbox"/>	-	vol-0e56d794df80844c7	gp3	8 GiB	3000	125	snap-096c7a
<input type="checkbox"/>	-	vol-019238ad6d1d70ad1	gp3	8 GiB	3000	125	snap-096c7a
<input type="checkbox"/>	-	vol-03e3826997a402b22	gp3	8 GiB	3000	125	snap-096c7a
<input checked="" type="checkbox"/>	-	vol-0dda60c3294eaafc3	gp3	20 GiB	3000	125	-
<input type="checkbox"/>	-	vol-0422774c2e6a2e51d	gp3	8 GiB	3000	125	snap-096c7a
<input type="checkbox"/>	-	vol-0977595aceb719095	gp3	8 GiB	3000	125	snap-096c7a

Actions [Create volume](#)

- Modify volume
- Create snapshot
- Create snapshot lifecycle policy
- Delete volume
- Attach volume
- Detach volume
- Force detach volume
- Manage auto-enabled I/O
- Manage tags
- Fault injection

Volume ID: vol-0dda60c3294eaafc3

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aws console login - Search x Instance details | EC2 | us-east-1 x (1) WhatsApp x +

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#InstanceDetails:instanceId=i-062c330bdc17e4b9

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Auto-assigned IP address
18.234.170.54 [Public IP]

IAM Role
-

IMDSv2
Required

VPC ID
vpc-0598d8f6b94366a62 (project-vpc)

Subnet ID
subnet-0990ee08cb5fdea10 (project-subnet-public2-us-east-1b)

AWS Compute Optimizer finding
[Opt-in to AWS Compute Optimizer for recommendations.](#)
[Learn more](#)

Auto Scaling Group name
-

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▼ Root device details

Root device name
/dev/xvda

Root device type
EBS

EBS optimization
disabled

▼ Block devices

Filter block devices

	Volume ID	Device name	Volume size (GiB)	Attachment status	Attachment time	Encrypted	KMS key
<input checked="" type="checkbox"/>	vol-0e56d794df80844c7	/dev/xvda	8	Attached	2024/05/24 15:49 GMT+5:30	No	-

Volume monitoring (1)

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