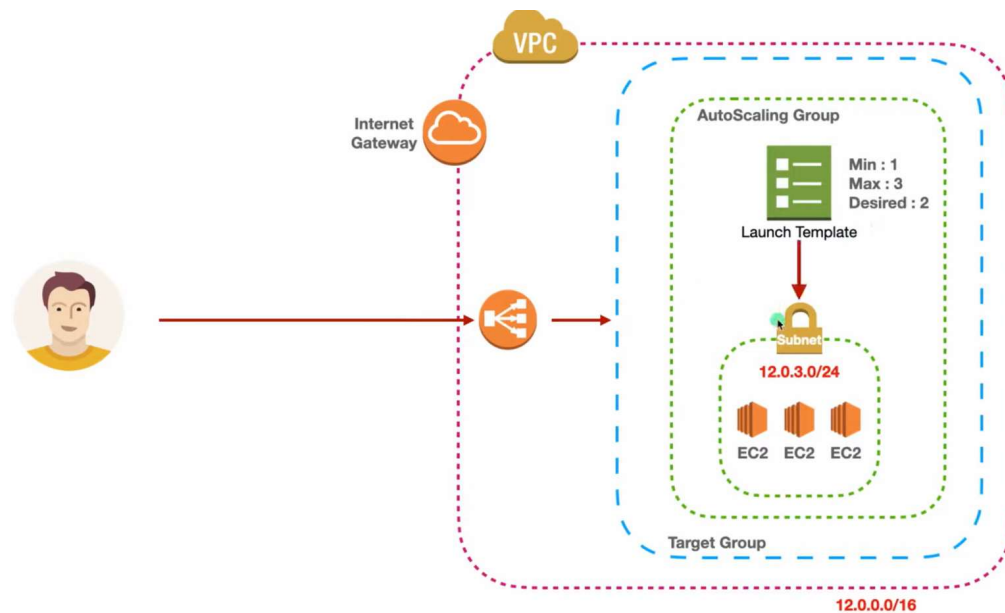


Cloud Computing

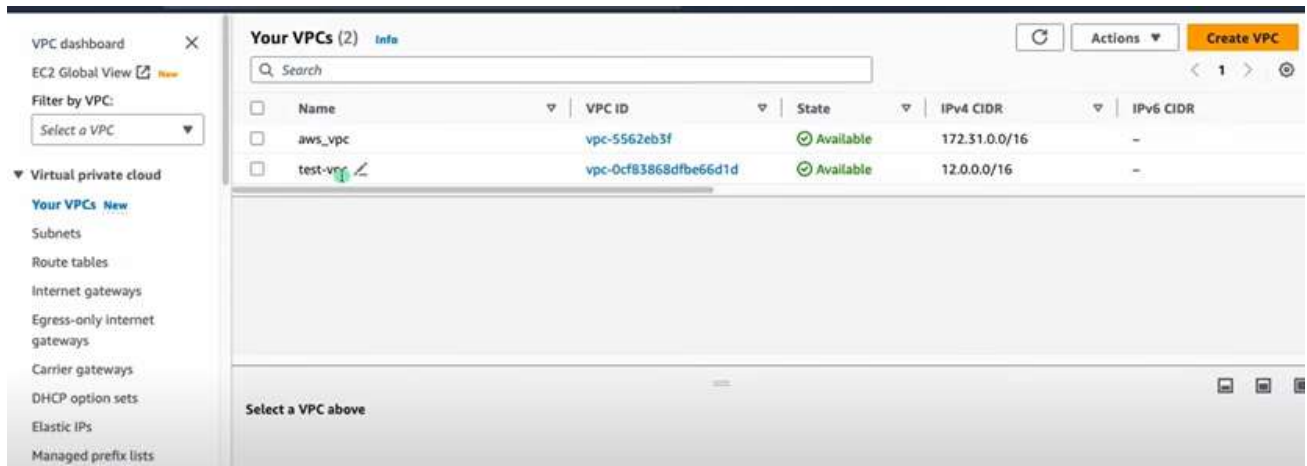
TA - 1

Name : Dhanshree Dharpure
Roll no. : 03
Batch : B1

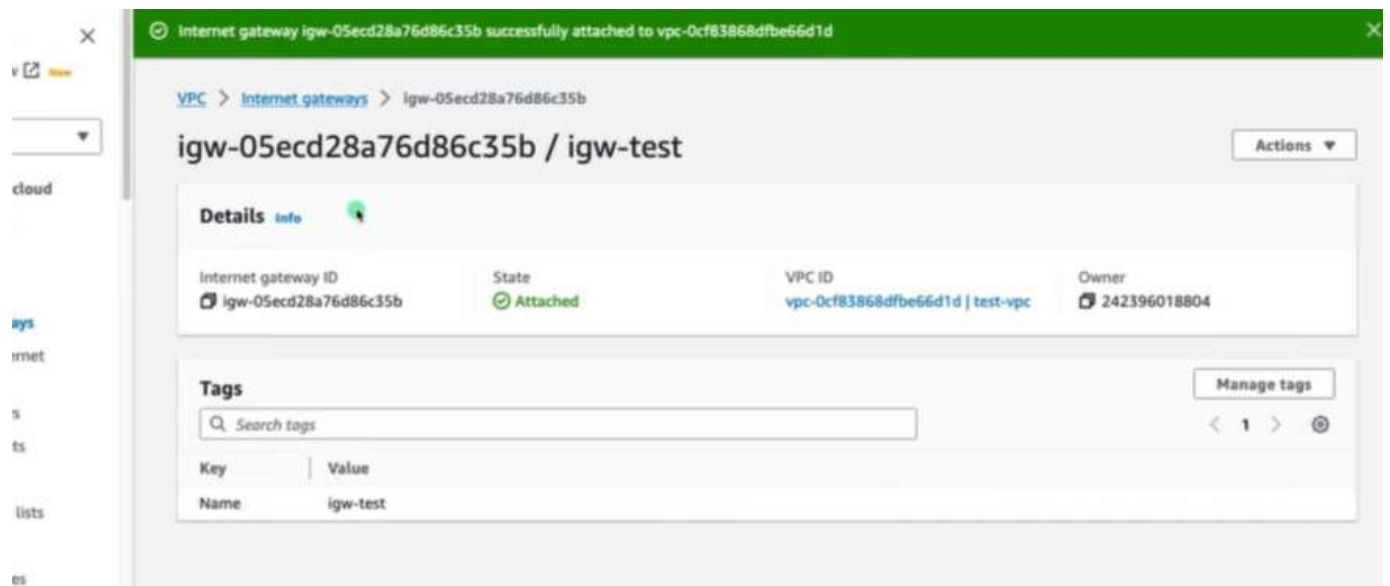
Building a Fully Scalable and Secure AWS Infrastructure from scratch.



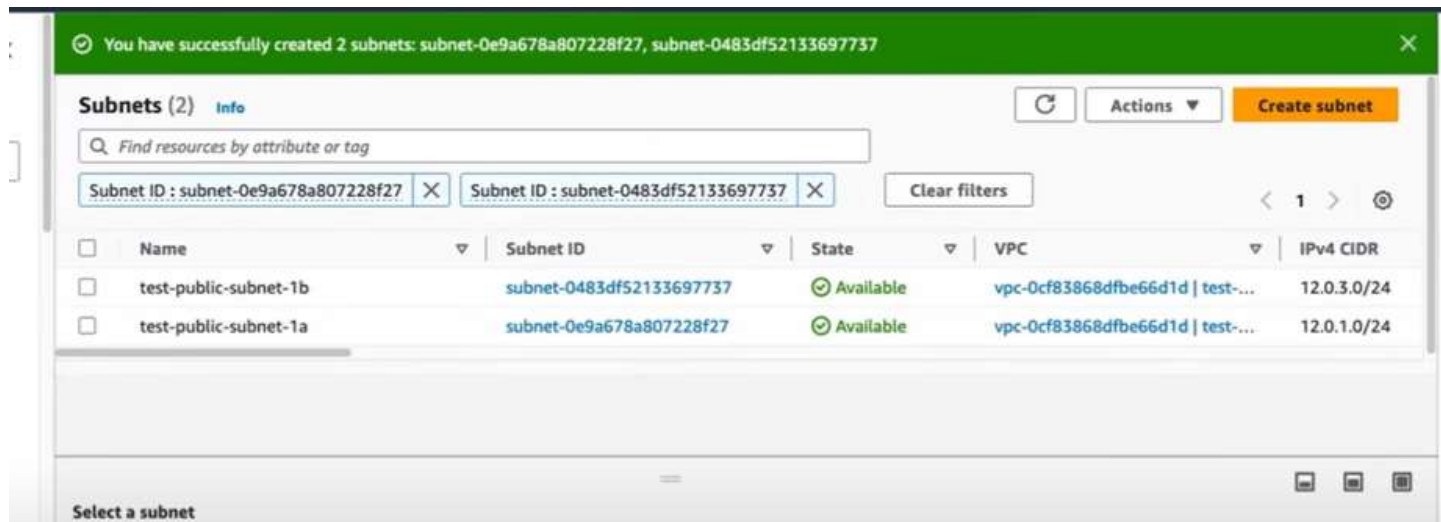
Creating VPC



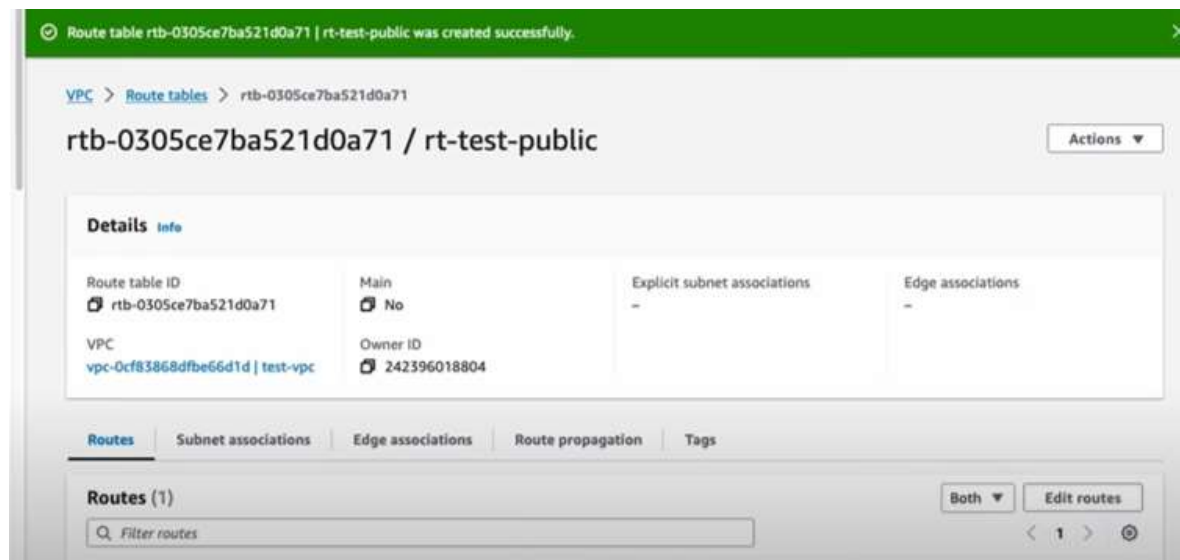
Created an internet gateway and attached it to vpc for internet traffic inside the vpc.



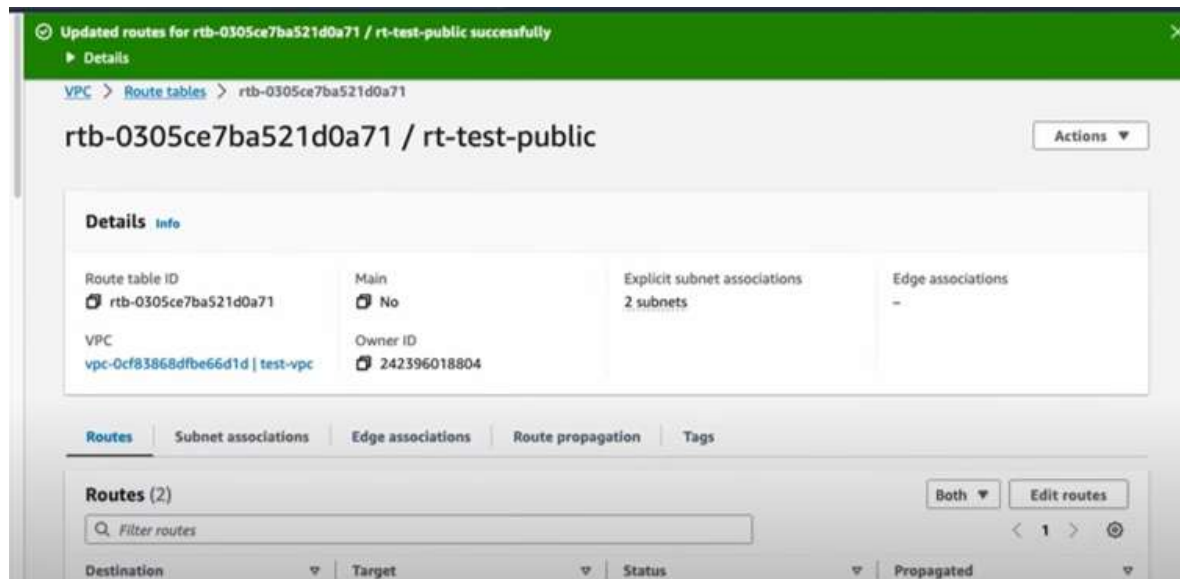
Created subnets in 2 availability zones.



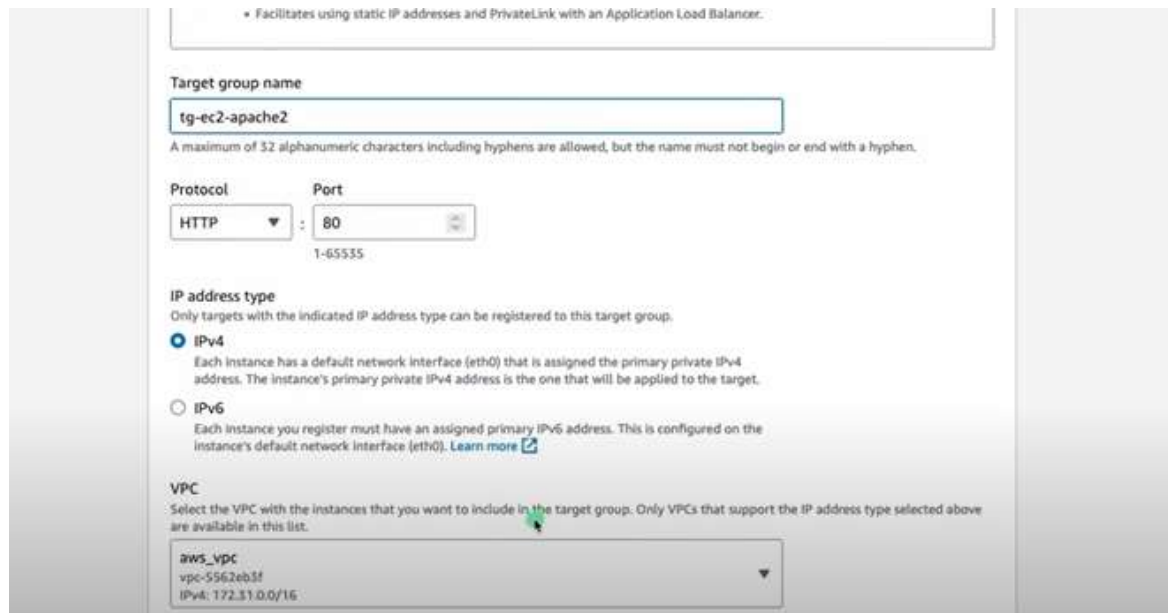
Created route table names as rtb

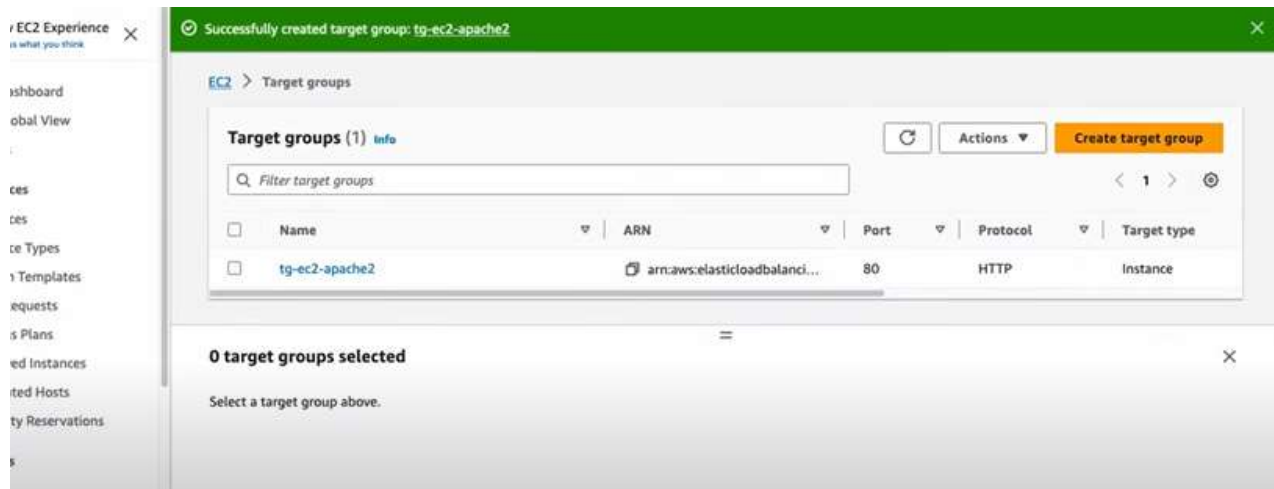


Updated the routes for internet gateway.

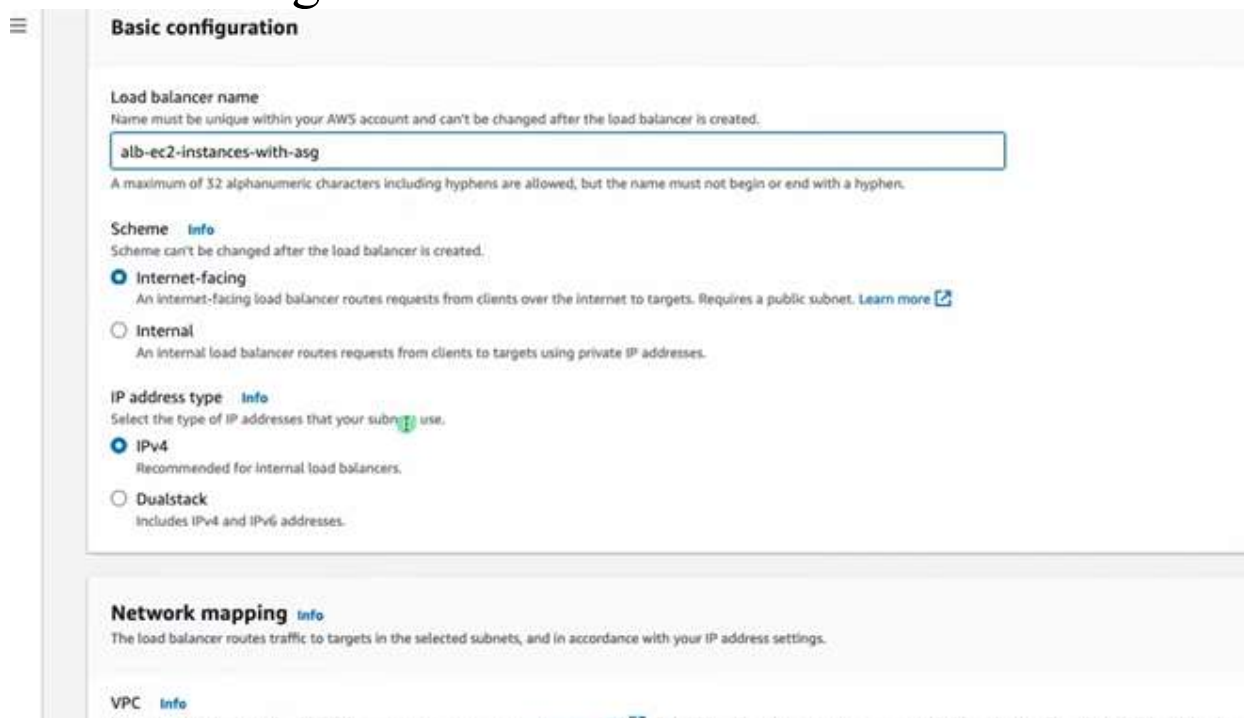


Now configuring the target group for load balancer





Now creating load balancer



For load balancer creating customized security group

aws

Services

Search

[Option+S]

[EC2](#) > [Security Groups](#) > Create security group

Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the following steps:

Basic details

Security group name [Info](#)

alb-sg-for-http-request

Name cannot be edited after creation.

Description [Info](#)

Allow http request

VPC [Info](#)

Q vpc-5562eb3f

X

Inbound rules [Info](#)

Allow http request

VPC [Info](#)

Q vpc-0cf83868dfbe66d1d

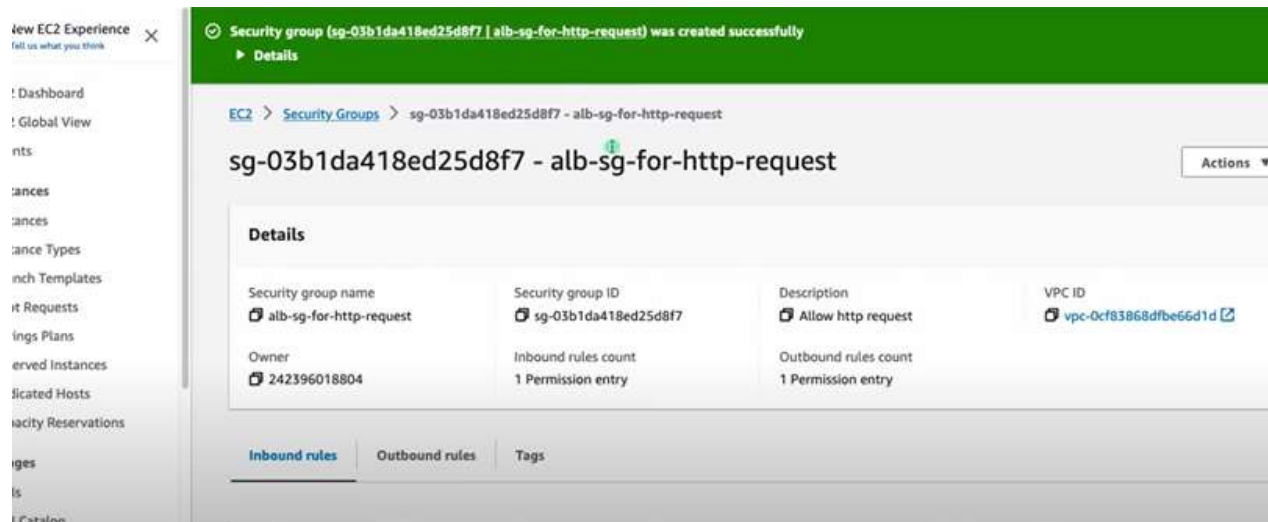
X

Inbound rules [Info](#)

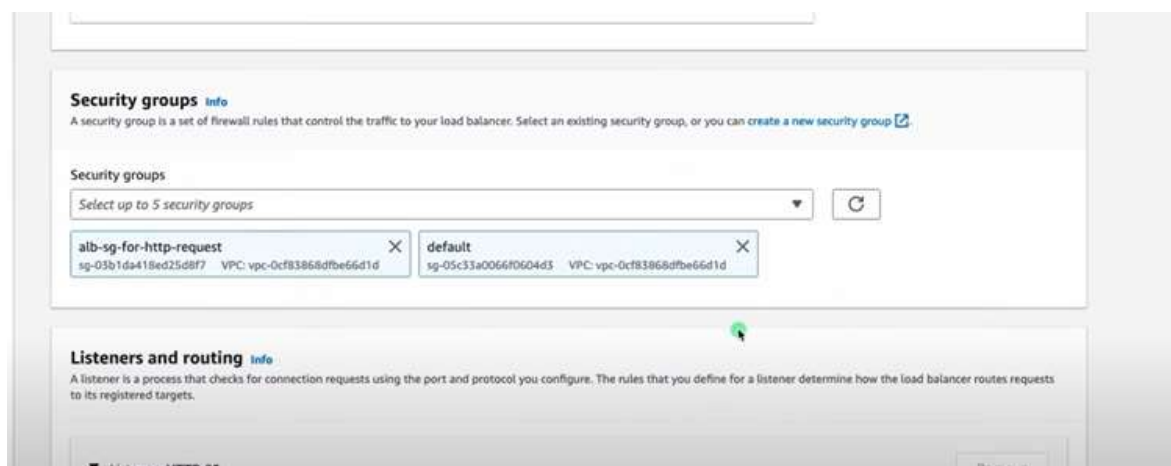
Type	Protocol	Port range	Source	Description - optional
HTTP	TCP	80	Any... <div><div>Q</div><div>0.0.0.0</div><div>X</div></div>	

Add rule

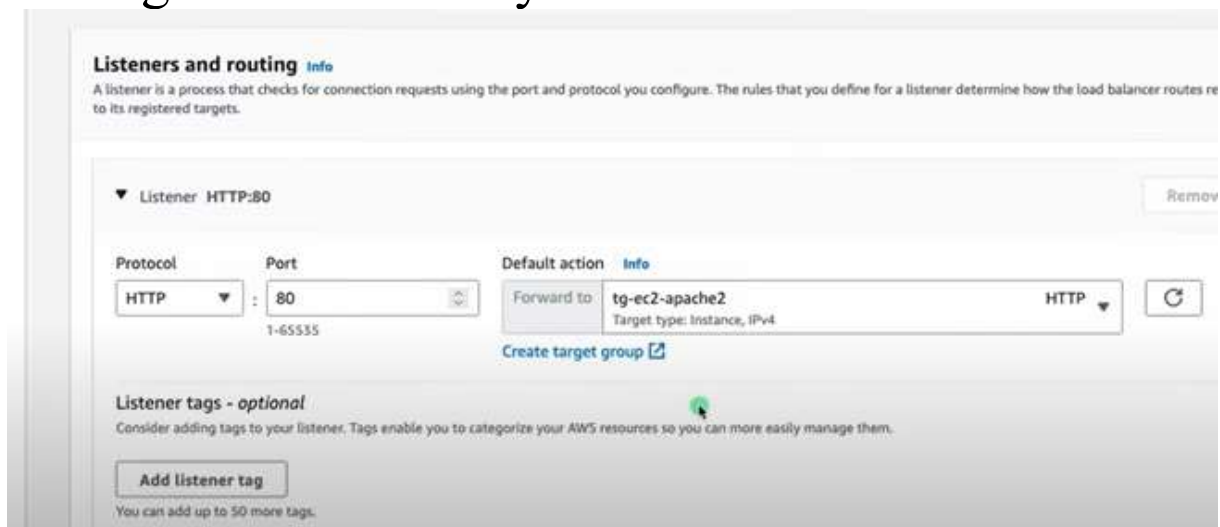
Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses.



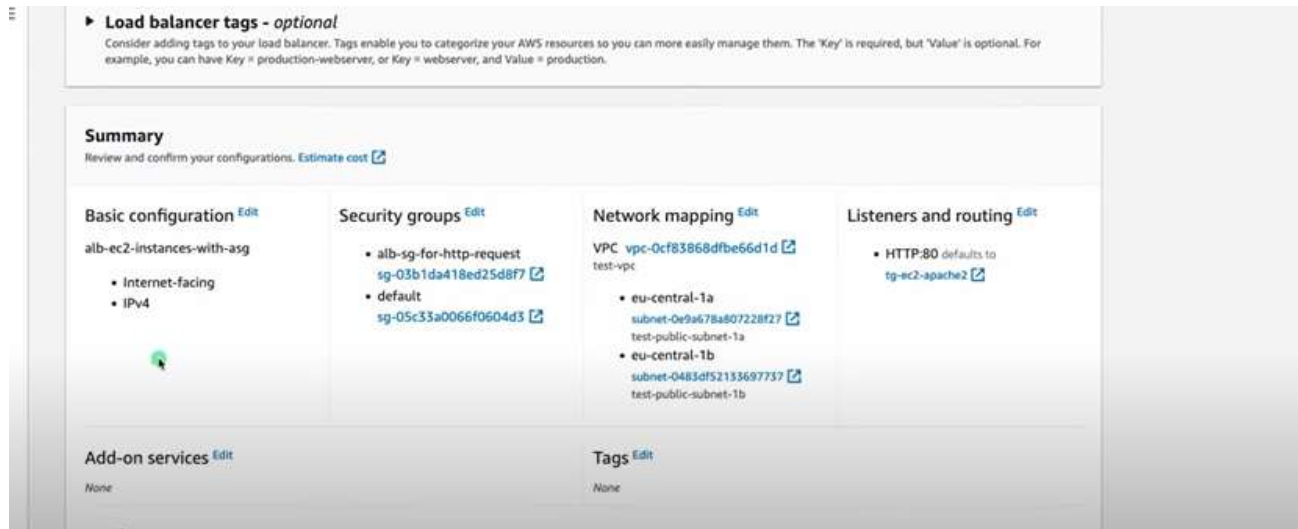
Attaching the customized security group to load balancer



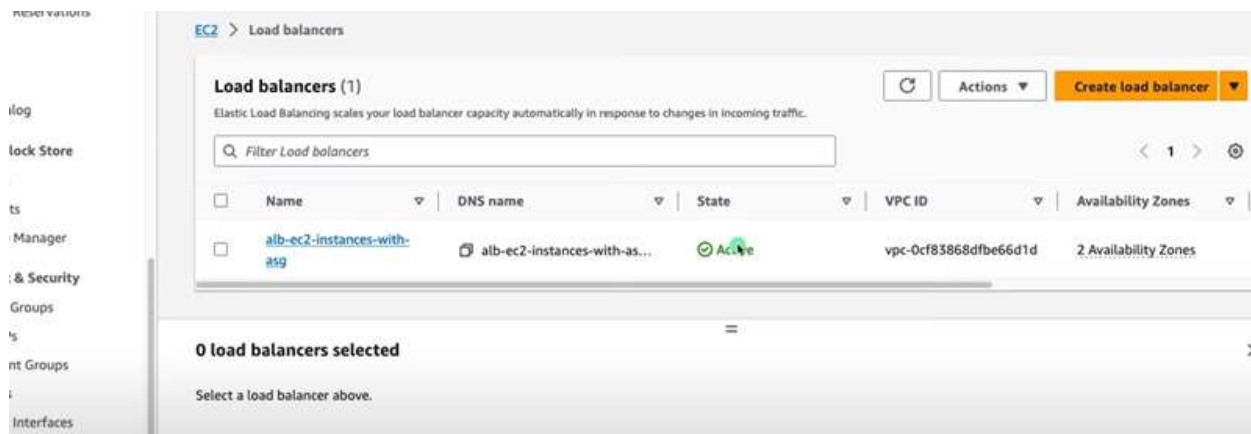
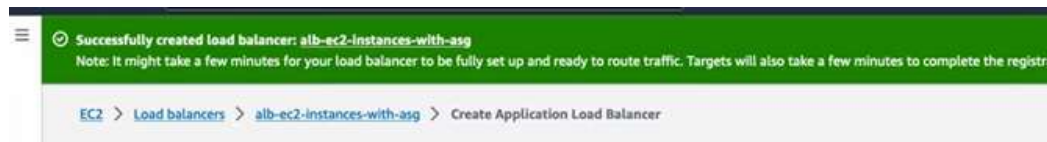
Setting listeners for my load balancer



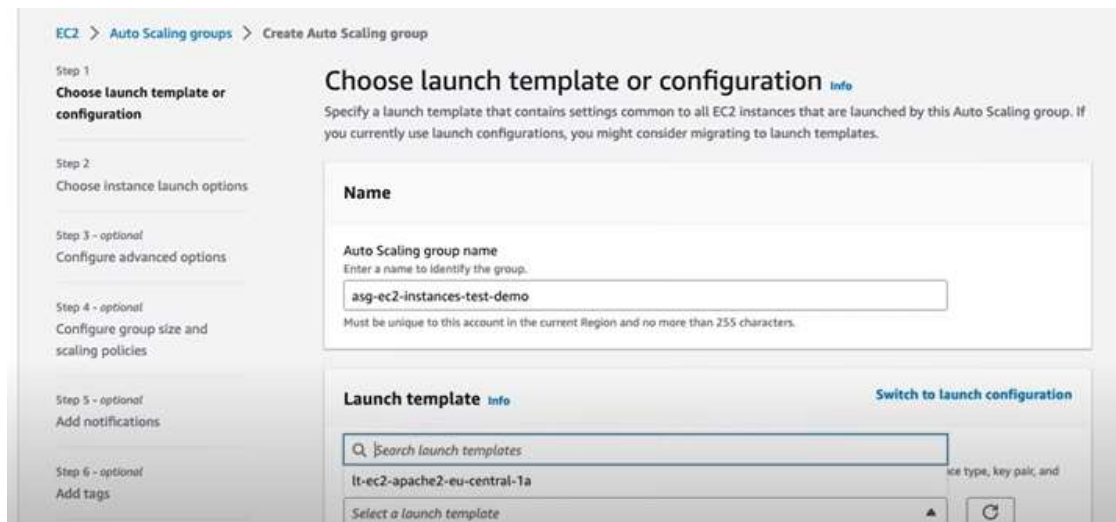
Summary of load balancer



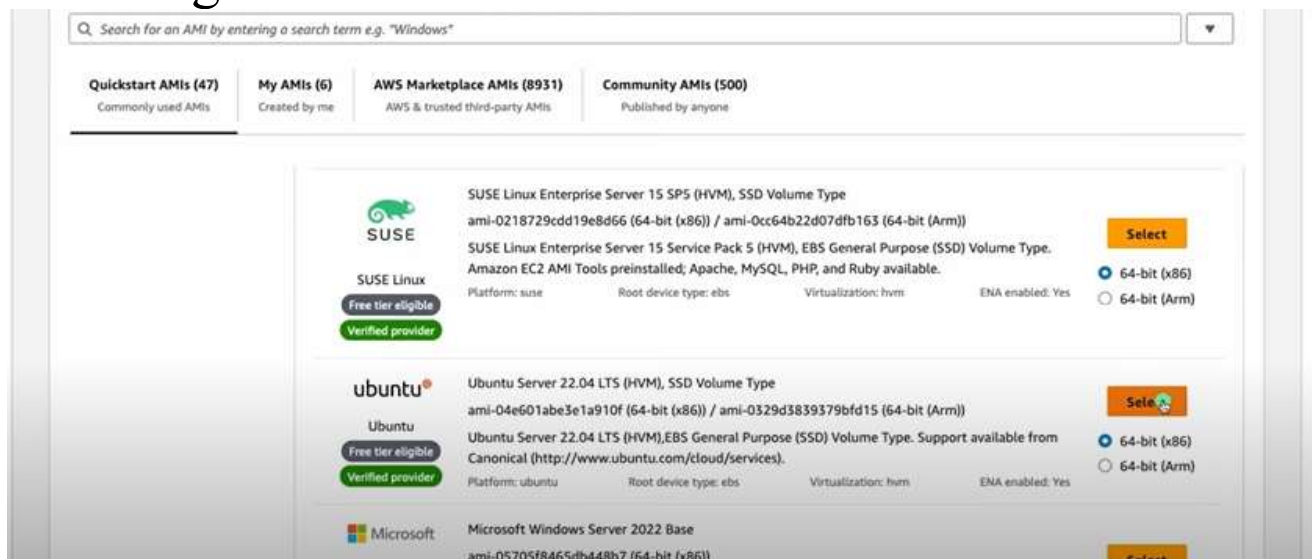
Load balancer created successfully



Now configuring the autoscaling groups named as
Asg-ec2-instances-test-demo



Selecting ubuntu ami



Creating customized security group for autoscaling groups which allow ssh and http traffic

Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To cr

Basic details

Security group name [Info](#)

Name cannot be edited after creation.

Description [Info](#)

VPC [Info](#)

Inbound rules [Info](#)

Inbound rules [Info](#)

Type [Info](#)

Protocol [Info](#)

Port range [Info](#)

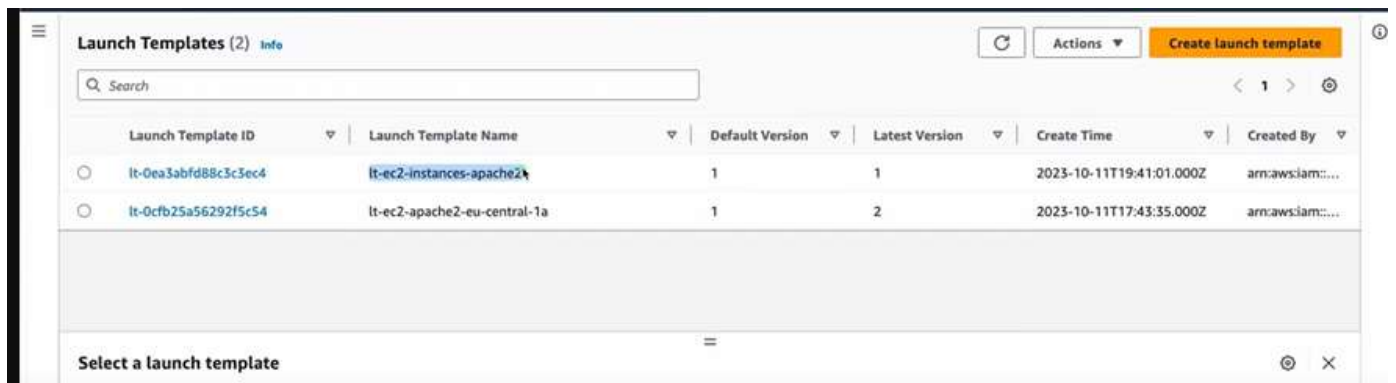
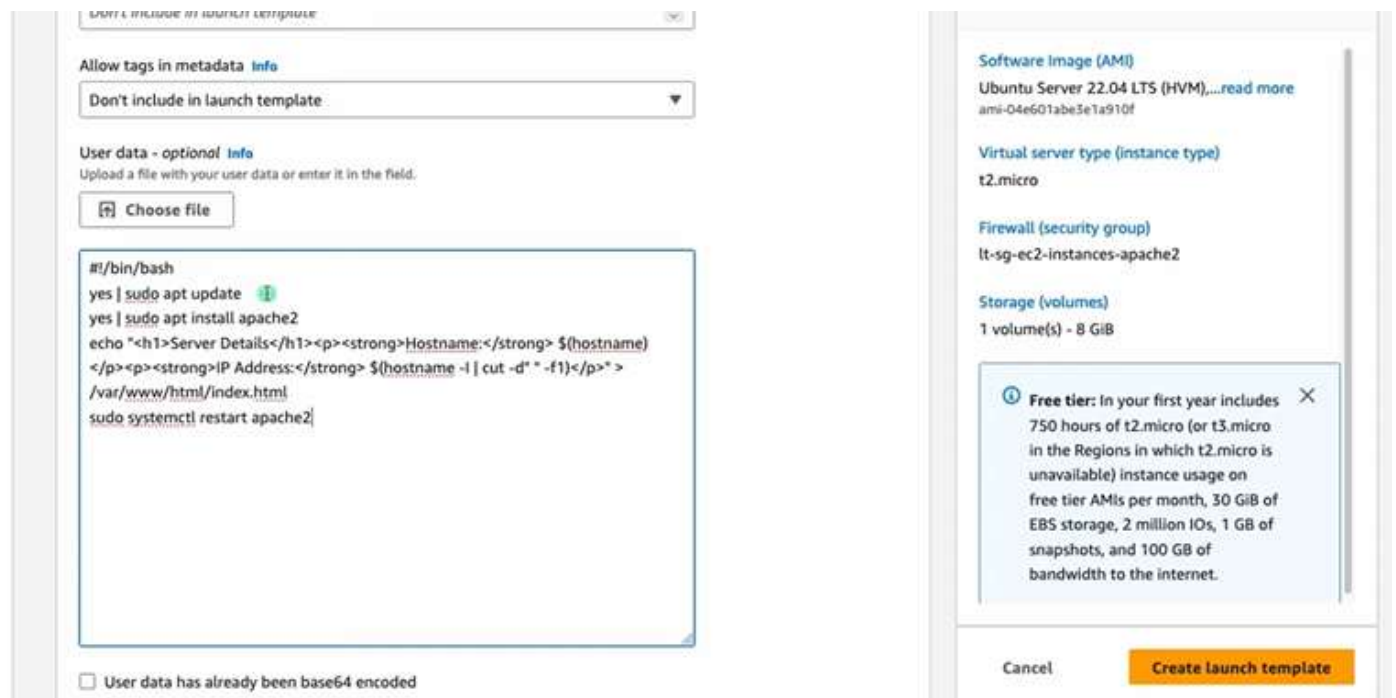
Source [Info](#)

Description - optional [Info](#)

Add rule



Now creating template for autoscaling group with Initial scripts to run for ec2 instances.



Choosing the created launch template

The screenshot shows the 'Launch template' step in the AWS Management Console. On the left, a sidebar lists steps: Step 4 (optional) 'Configure group size and scaling policies', Step 5 (optional) 'Add notifications', Step 6 (optional) 'Add tags', and Step 7 'Review'. The main area has a text input 'asg-ec2-instances-test-demo' with a note 'Must be unique to this account in the current Region and no more than 255 characters.' Below this is the 'Launch template' section with a dropdown menu showing 'lt-ec2-instances-apache2' and a refresh button. There are links for 'Create a launch template' and 'Create a launch template version'. A 'Version' dropdown shows 'Default (1)' with a refresh button and a link 'Create a launch template version'. A table below shows details for the selected launch template: 'Description' is '-', 'Launch template' is 'lt-ec2-instances-apache2' with a link, 'Instance type' is 't2.micro', and 'AMI ID' is 'lt-0ea3abfd88c3c3ec4'.

Setting up subnets

The screenshot shows the 'Network' step in the AWS Management Console. The left sidebar is the same as the previous image. The main area shows the 'Launch template' section with 'lt-ec2-instances-apache2' and 'lt-0ea3abfd88c3c3ec4', and 'Instance type' 't2.micro'. Below is the 'Network' section with a description about VPC and subnets. It says 'Choose the VPC that defines the virtual network for your Auto Scaling group.' and shows a list of subnets: 'eu-central-1a | subnet-0e9a678a807228f27 (test-public-subnet-1a)' with a checked checkbox and '12.0.1.0/24', and 'eu-central-1b | subnet-0483df52133697737 (test-public-subnet-1b)' with a checked checkbox and '12.0.3.0/24'. There is a 'Select Availability Zones and subnets' dropdown and a refresh button. A table at the bottom shows the selected subnets: 'eu-central-1a | subnet-0e9a678a807228f27 (test-public-subnet-1a)' with a close button and '12.0.1.0/24'.

Attaching load balancer to autoscaling groups

☒ Choose from your load balancer target groups
This option allows you to attach Application, Network, or Gateway Load Balancers.

☐ Choose from Classic Load Balancers

Existing load balancer target groups

Only instance target groups that belong to the same VPC as your Auto Scaling group are available for selection.

Select target groups

tg-ec2-apache2 | HTTP

Application Load Balancer: alb-ec2-instances-with-asg

VPC Lattice integration options [Info](#)

To improve networking capabilities and scalability, integrate your Auto Scaling group with VPC Lattice. VPC Lattice facilitates communications between AWS services and helps you connect and manage your applications across compute services in AWS.

Select VPC Lattice service to attach

☒ No VPC Lattice service
VPC Lattice will not manage your Auto Scaling group's network access and connectivity with other services.

☐ Attach to VPC Lattice service
Incoming requests associated with specified VPC Lattice target groups will be routed to your Auto Scaling group.

checking healths checks

EC2 health checks

[Always enabled](#)

Additional health check types - optional [Info](#)

☒ Turn on Elastic Load Balancing health checks **Recommended**

Elastic Load Balancing monitors whether instances are available to handle requests. When it reports an unhealthy instance, EC2 Auto Scaling can replace it on its next periodic check.

EC2 Auto Scaling will start to detect and act on health checks performed by Elastic Load Balancing. To avoid unexpected terminations, first verify the settings of these health checks in the [Load Balancer console](#).

☐ Turn on VPC Lattice health checks

VPC Lattice can monitor whether instances are available to handle requests. If it considers a target as failed a health check, EC2 Auto Scaling replaces it after its next periodic check.

Health check grace period [Info](#)

This time period delays the first health check until your instances finish initializing. It doesn't prevent an instance from terminating when placed into a non-running state.

20
seconds

Additional settings

Monitoring [Info](#)

☐ Enable group metrics collection within CloudWatch

Configuring the capacity

EC2 > Auto Scaling groups > Create Auto Scaling group

Step 1
Choose launch template or configuration

Step 2
Choose instance launch options

Step 3 - optional
Configure advanced options

Step 4 - optional
Configure group size and scaling policies

Step 5 - optional
Add notifications

Step 6 - optional
Add tags

Step 7
Review

Configure group size and scaling policies - *optional* [Info](#)

Set the desired, minimum, and maximum capacity of your Auto Scaling group. You can optionally add a scaling policy to dynamically scale the number of instances in the group.

Group size - *optional* [Info](#)

Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.

Desired capacity
2

Minimum capacity
1

Maximum capacity
3

Scaling policies - *optional*

Auto scaling group created successfully

EC2 > Auto Scaling groups

Auto Scaling groups (1) [Info](#)

Launch configurations Launch templates [Actions](#) [Create Auto Scaling group](#)

Search your Auto Scaling groups

<input type="checkbox"/>	Name	Launch template/configuration	Instances	Status	Desired capacity	Min	Max
<input type="checkbox"/>	asg-ec2-instances-test-demo	lt-ec2-instances-apache2 Version Default	0	Updating capacity	2	1	

EC2 > Auto Scaling groups

Auto Scaling groups (1) [Info](#)

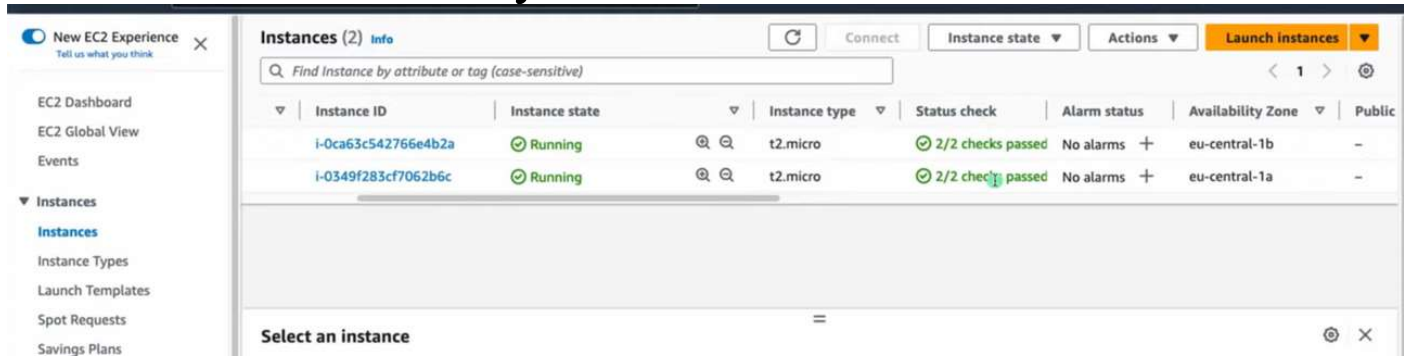
Launch configurations Launch templates [Actions](#) [Create Auto Scaling group](#)

Search your Auto Scaling groups

<input type="checkbox"/>	Name	Launch template/configuration	Instances	Status	Desired capacity	Min	Max
<input type="checkbox"/>	asg-ec2-instances-test-demo	lt-ec2-instances-apache2 Version Default	2	-	2	1	3

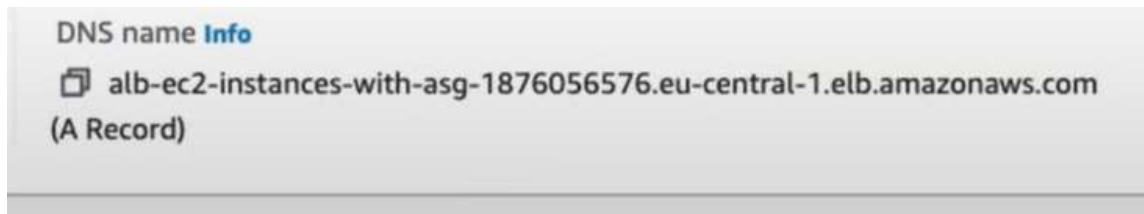
Auto scaling successfully launched and it created desired

instances automatically.

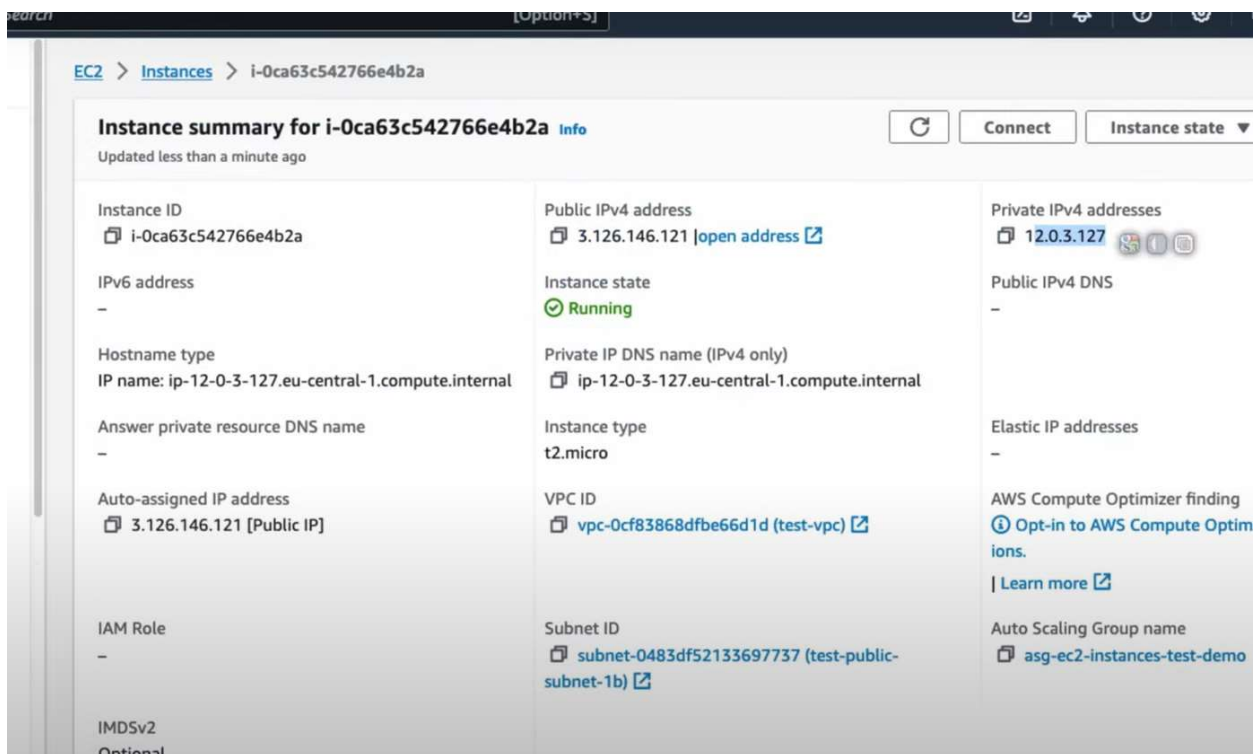


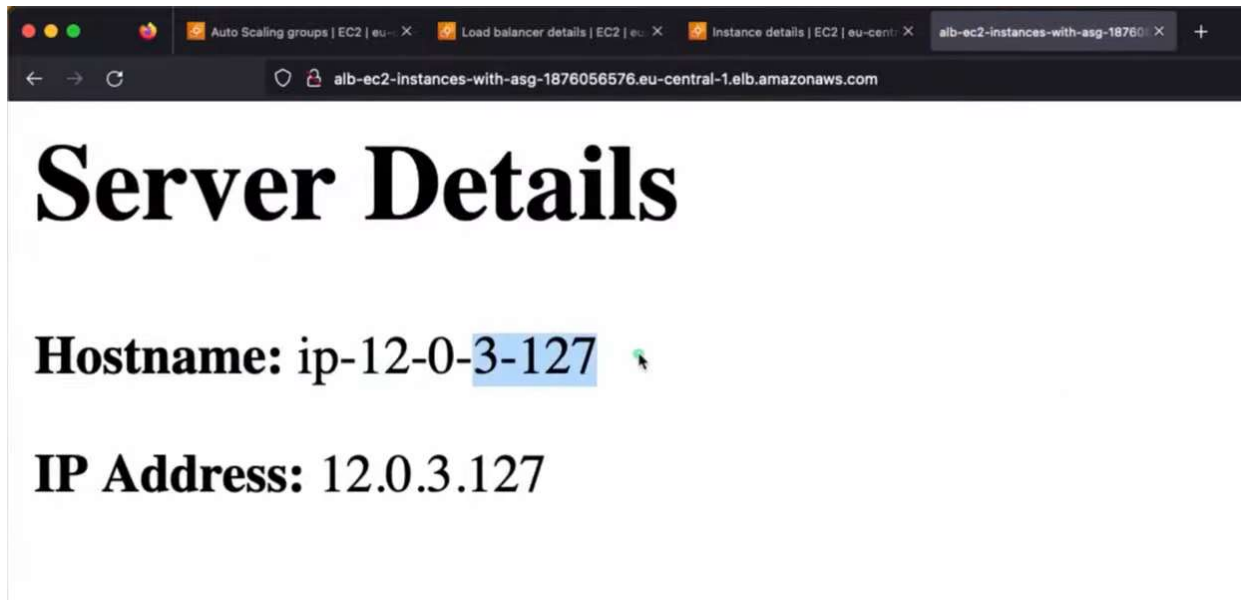
Checking if the load balancer is setup correctly or not

Accessing the servers using dns of load balancer

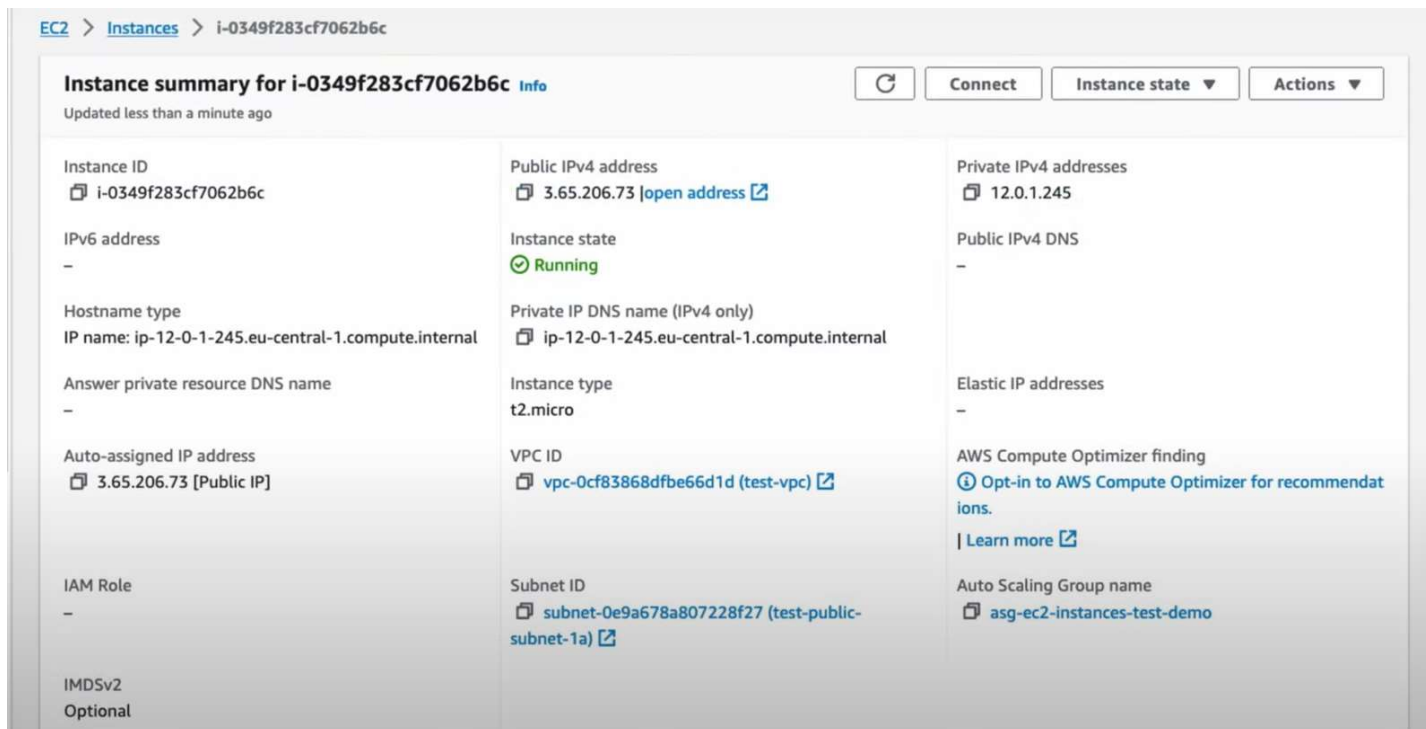


Private id of instance 1 is 12.0.3.127





Private id of instance 2



Server Details

Hostname: ip-12-0-1-245

IP Address: 12.0.1.245

Now checking the autoscaling group



asg-ec2-instances-test-demo

[Details](#) | [Activity](#) | [Automatic scaling](#) | [Instance management](#) | [Monitoring](#) | [Instance refresh](#)

Group details

Auto Scaling group name	Desired capacity	Status
asg-ec2-instances-test-demo	2	-
Date created	Minimum capacity	
Wed Oct 11 2023 22:44:40 GMT+0300 (Eastern European Summer Time)	1	
	Maximum capacity	
	3	

Launch template

Launch template	AMI ID	Instance type
 lt-0ea3abfd88c3c3ec4 lt-ec2-instances-apache2	 ami-04e601abe3e1a910f	t2.micro
Version	Security groups	Security group IDs

Even if I manually terminated the ec2 instance it will automatically relaunch to maintain the desired capacity here 2

asg-ec2-instances-test-demo

Details

Activity

Automatic scaling

Instance management

Monitoring

Instance refresh

Instances (2)

Filter instances

<input type="checkbox"/>	Instance ID	Lifecycle	Instance t...	Weighted ...	Launch te...	Availabilit...	Health sta...
<input type="checkbox"/>	i-0349f283cf7062b6c	InService	t2.micro	-	lt-ec2-instances-a	eu-central-1a	Healthy
<input type="checkbox"/>	i-0ca63c542766e4b2a	InService	t2.micro	-	lt-ec2-instances-a	eu-central-1b	Healthy

Lifecycle hooks (0)

Filter lifecycle hooks

Actions

Create lif