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Enrollment No. : A70405219039
Course : B.Tech (CSE) Sem-7
Subject : Cloud Computing Lab

Experiment : 6

Problem Statement

1. Attach EBS volume to the instance
2. Remove EBS volume from the instance
3. Create a Load balancer
4. Create Auto Scaling of instance

Results :

1. Attach EBS volume to the instance

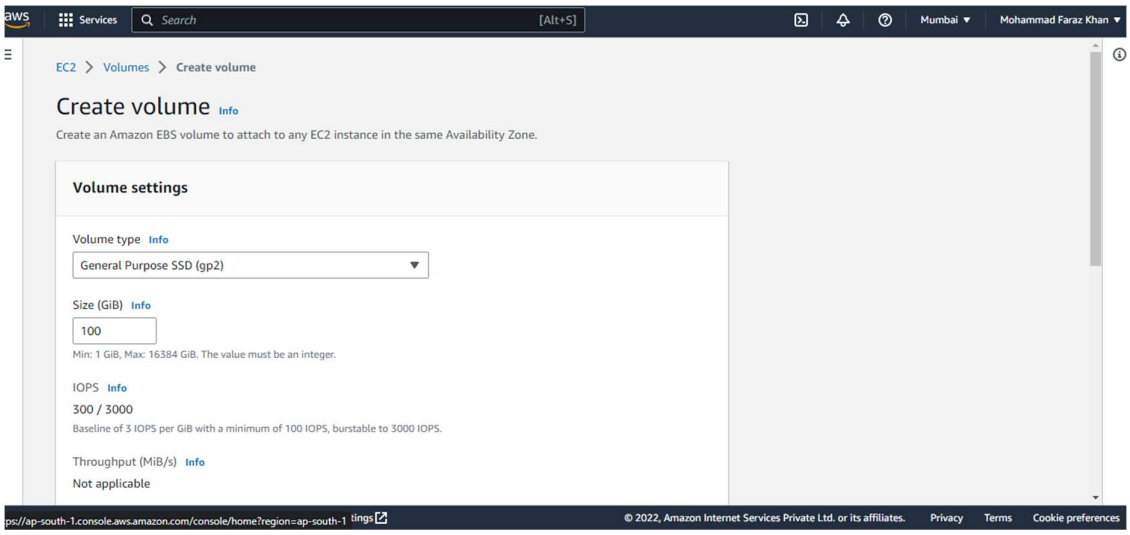
THEORY

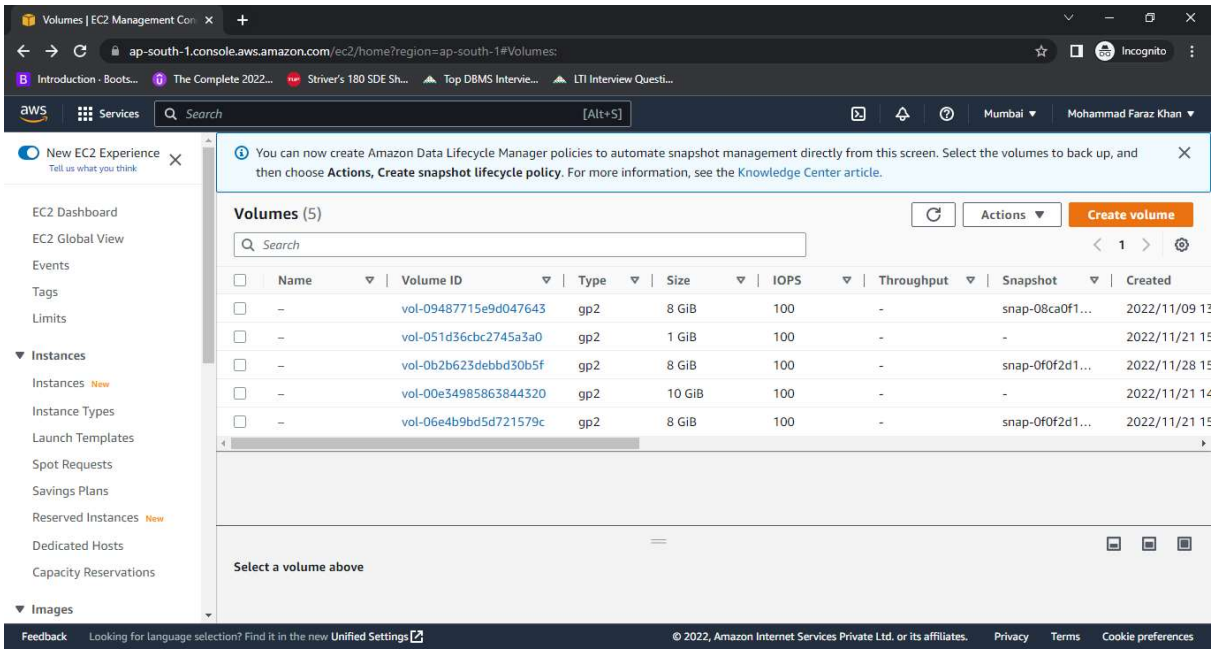
You may attach a robust, block-level storage device called an Amazon EBS volume to your instances. You may utilise a volume as you would a physical hard disc after attaching it to an instance. EBS volumes can be changed. You may dynamically adjust the volume type, provisioned IOPS capacity, and size for current-generation volumes that are associated to current generation instance types.

For data that needs frequent changes, such as the system drive for an instance or storage for a database application, you may utilise EBS volumes as main storage. They can also be used for applications with high throughput requirements that run continuous disc scans. EBS volumes survive independently of an EC2 instance's active life.

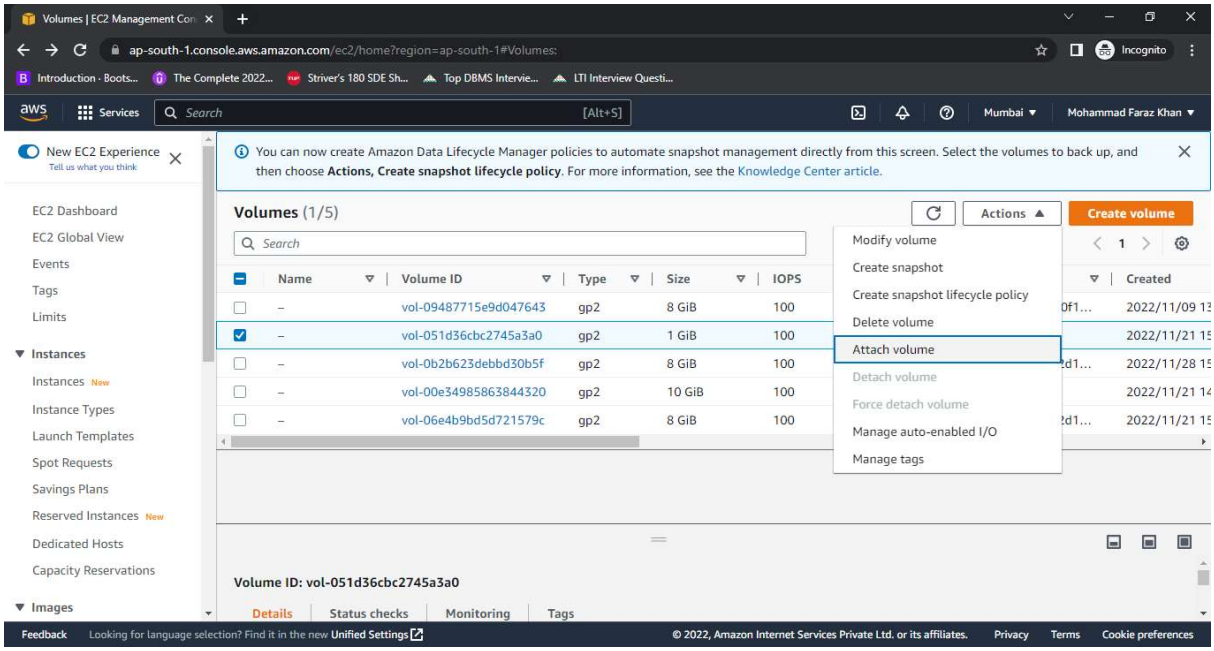
A single instance can have many EBS volumes attached. There must be a shared Availability Zone between the volume and the instance. You may use Multi-Attach to simultaneously mount a volume to several instances, depending on the volume and instance types.

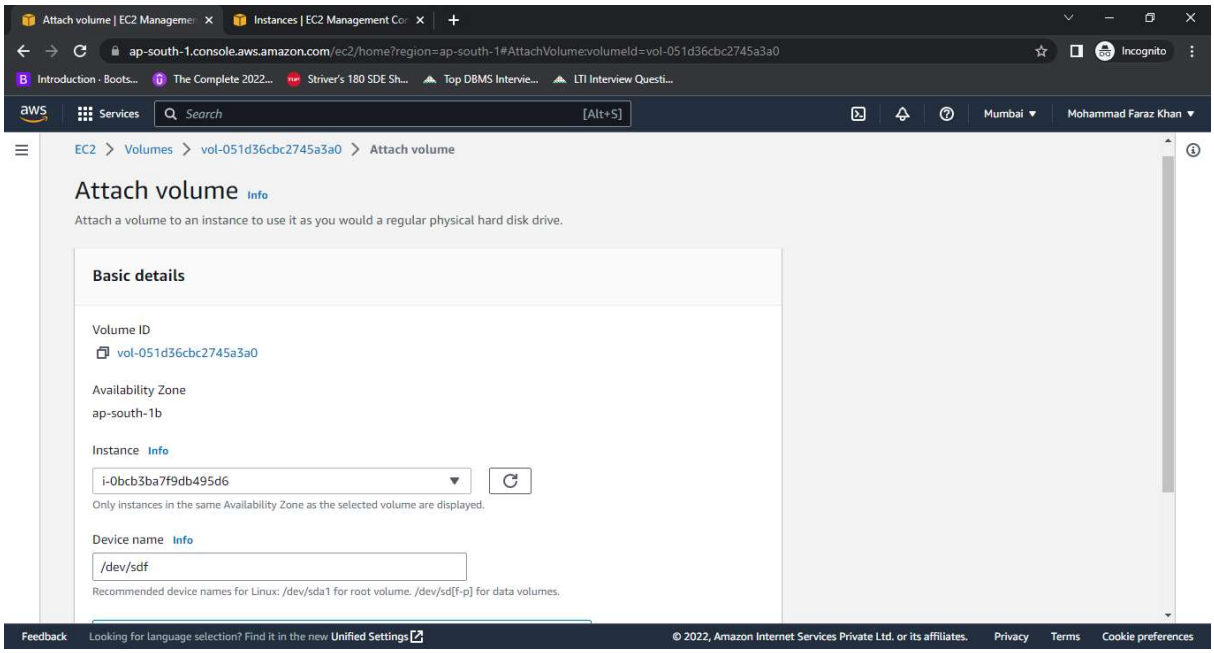
Creating EBS Volume



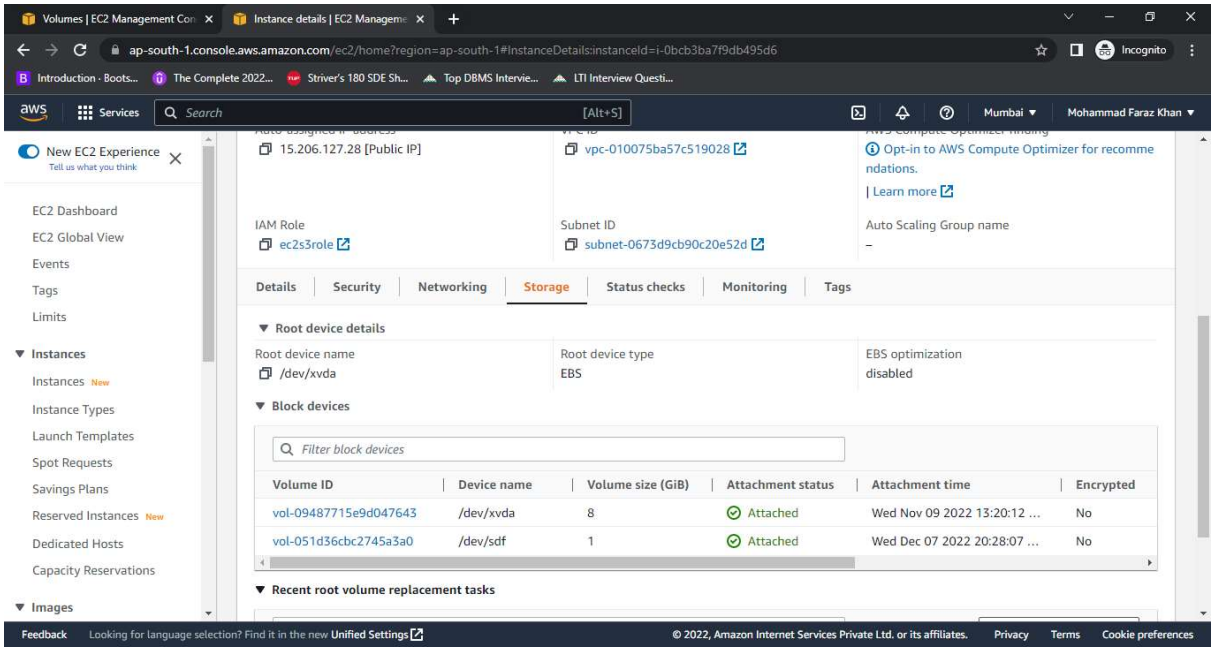


Attaching the EC2 Instance to the EBS Volume

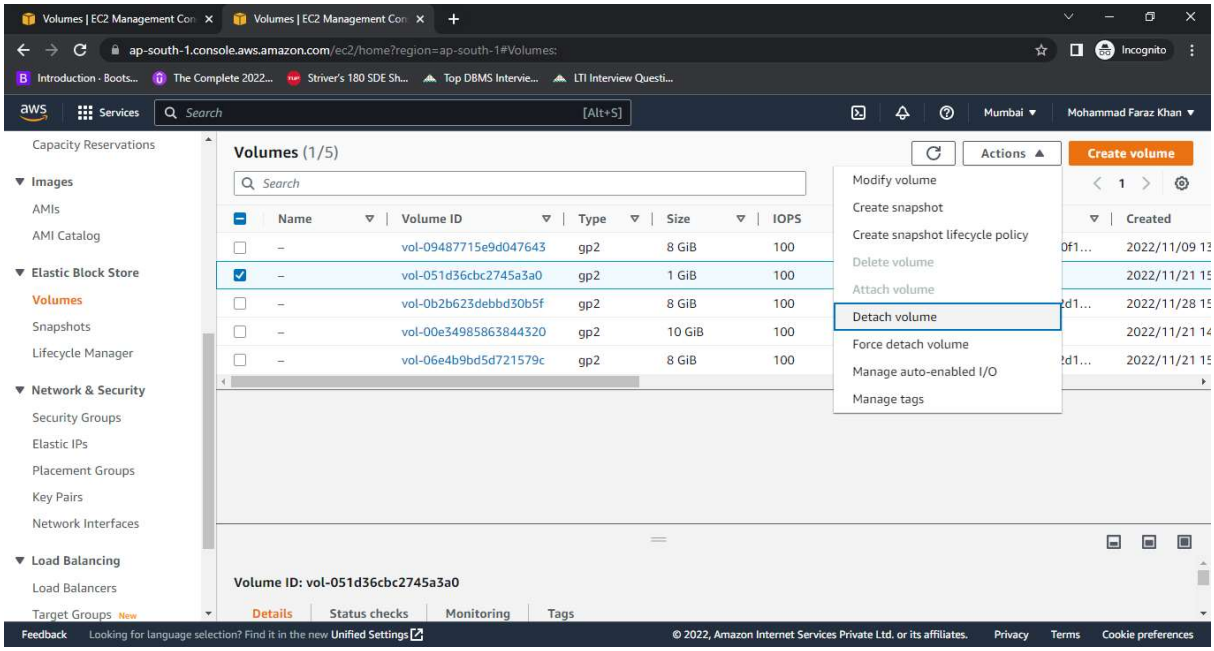


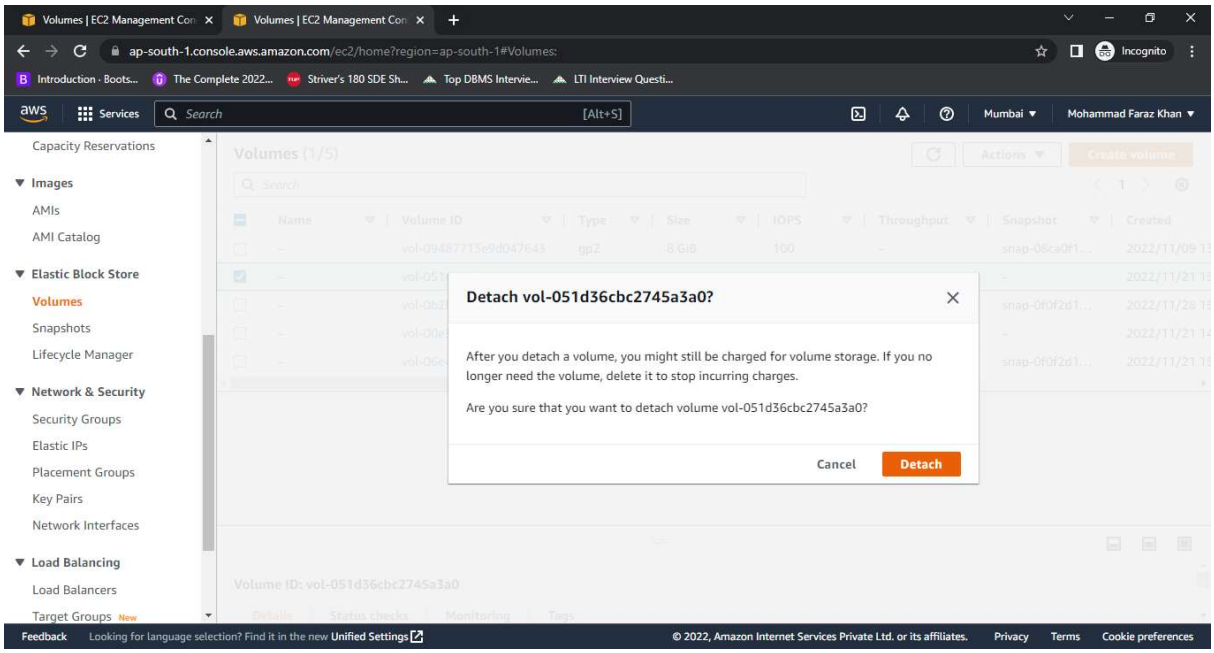


- Successfully Attached

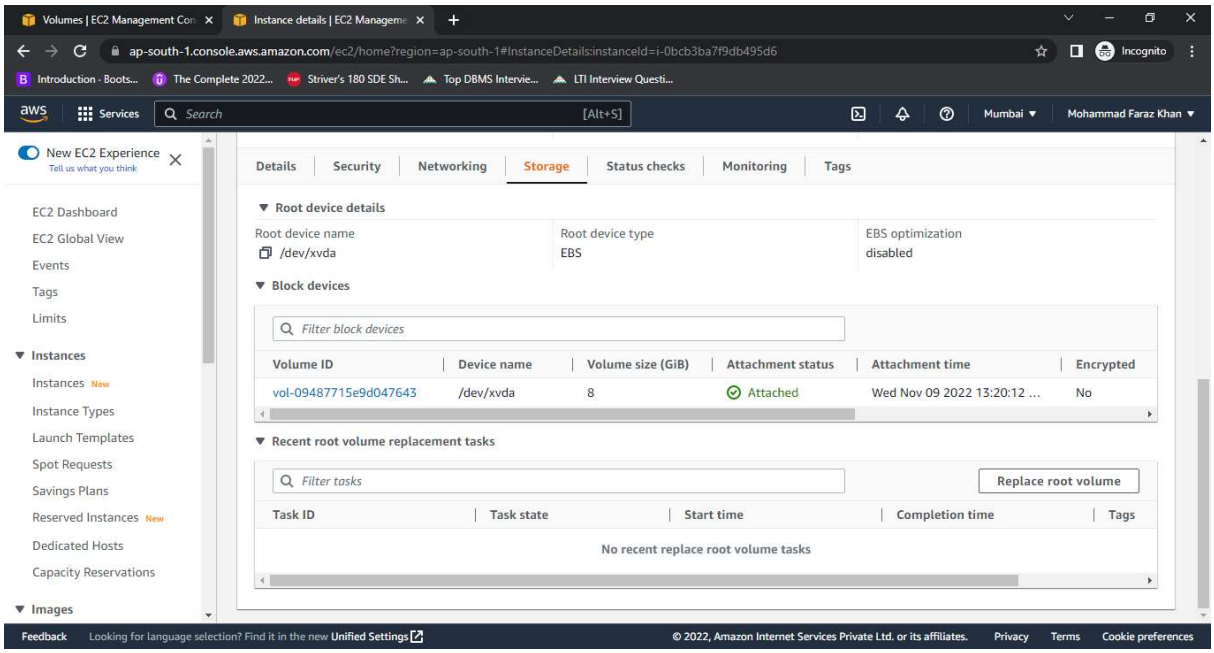


2. Detach EBS volume from the instance





- Successfully Detached


Volumes | EC2 Management Con
Instance details | EC2 Manageme
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#InstanceDetails:instanceId=i-0bcb3ba7f9db495d6
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New EC2 Experience
Tell us what you think
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EC2 Global View
Events
Tags
Limits
Instances
Instances New
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Dedicated Hosts
Capacity Reservations
Images
Details
Security
Networking
Storage
Status checks
Monitoring
Tags
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
vol-09487715e9d047643
/dev/xvda
8
Attached
Wed Nov 09 2022 13:20:12 ...
No
Recent root volume replacement tasks
Filter tasks
Replace root volume
Task ID
Task state
Start time
Completion time
Tags
No recent replace root volume tasks
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3. Create a Load balancer

THEORY

• Your incoming traffic is automatically split across several targets, including EC2 instances, containers, and IP addresses in one or more Availability Zones, thanks to elastic load balancing. It keeps track of the wellbeing of the registered targets, only sending traffic to those that are in good shape. Elastic load balancing automatically adjusts the capacity of your load balancer in response to variations in incoming traffic.

Benefits of Load Balancer

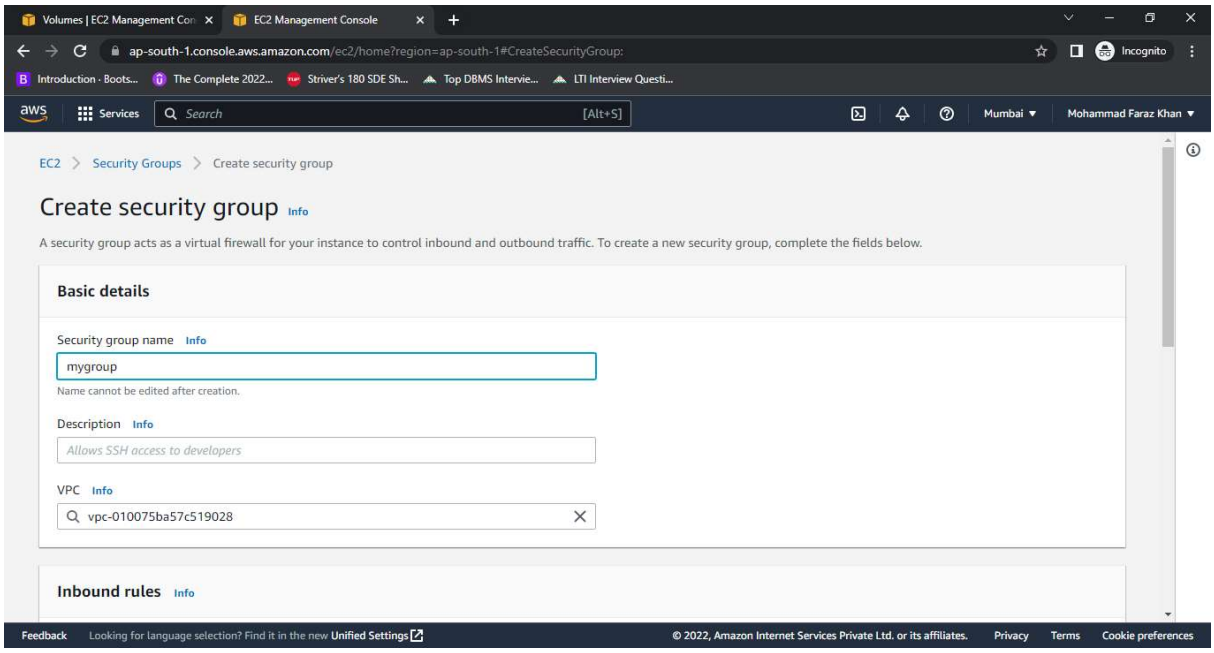
- Workloads are divided up across various computing resources, such virtual servers, via a load balancer. Your applications' availability and fault tolerance will be improved by using a load balancer.

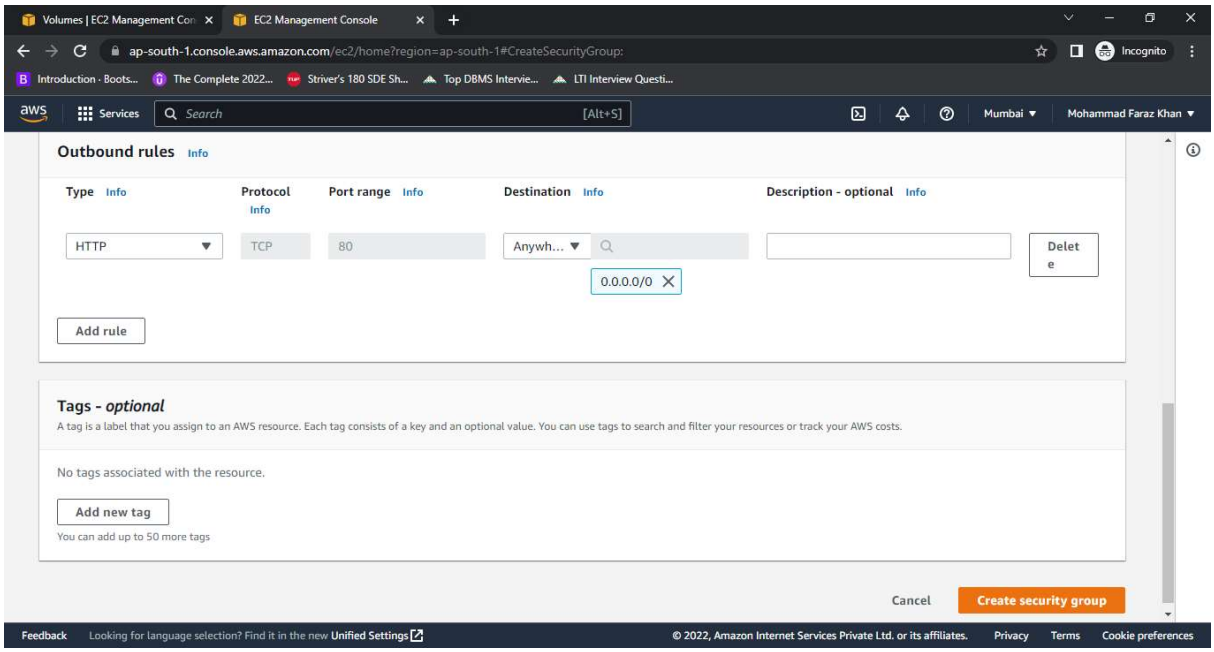
- Without affecting the overall flow of requests to your apps, you may add and subtract computing resources from your load balancer as your needs change.

- To ensure that the load balancer only sends requests to the healthy compute resources, you may implement health checks, which keep an eye on their condition. Additionally, you may delegate encryption and decryption tasks to your load balancer, freeing up your computational resources to concentrate on their primary tasks.

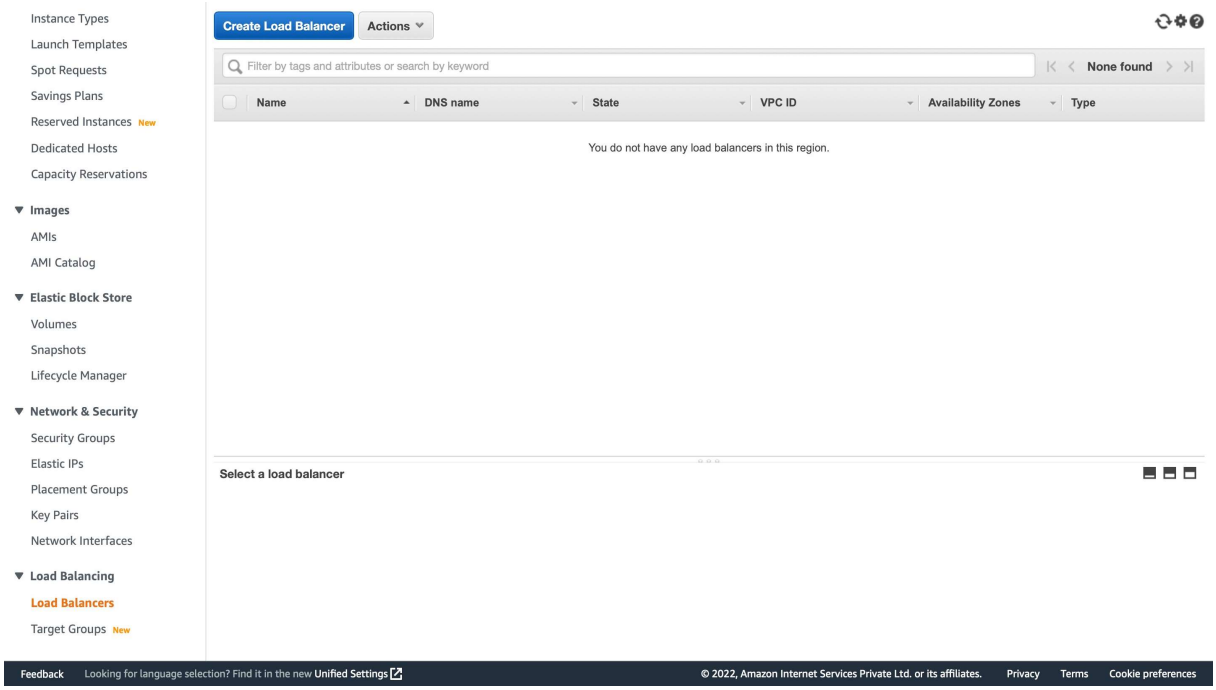
- To start with, before creating the Load Balancer we will have to create a security group

Creating the Security Group





Creating a Load Balancer


Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups New
Create Load Balancer
Actions
Filter by tags and attributes or search by keyword
None found
Name
DNS name
State
VPC ID
Availability Zones
Type
You do not have any load balancers in this region.
Select a load balancer
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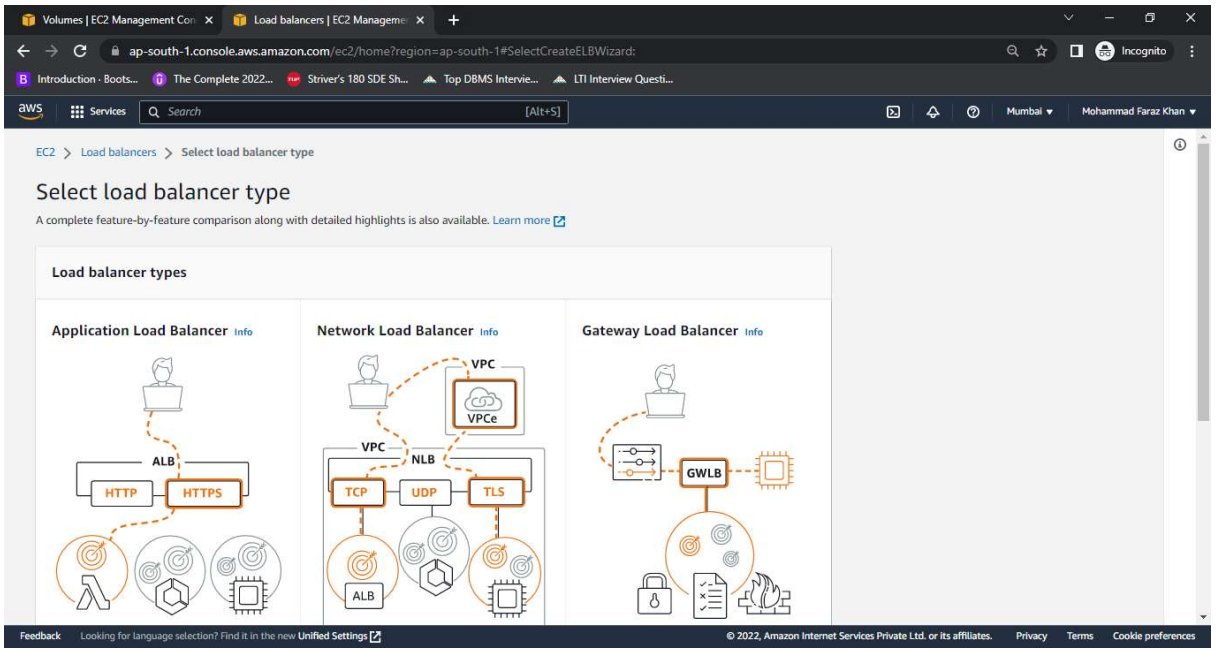
Volumes | EC2 Management Con
Load balancers | EC2 Manageme
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#SelectCreateELBWizard:
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EC2 > Load balancers > Select load balancer type
Select load balancer type
A complete feature-by-feature comparison along with detailed highlights is also available. Learn more
Load balancer types
Application Load Balancer Info
Network Load Balancer Info
Gateway Load Balancer Info
ALB
HTTP
HTTPS
VPC
VPCe
NLB
TCP
UDP
TLS
ALB
GWLB
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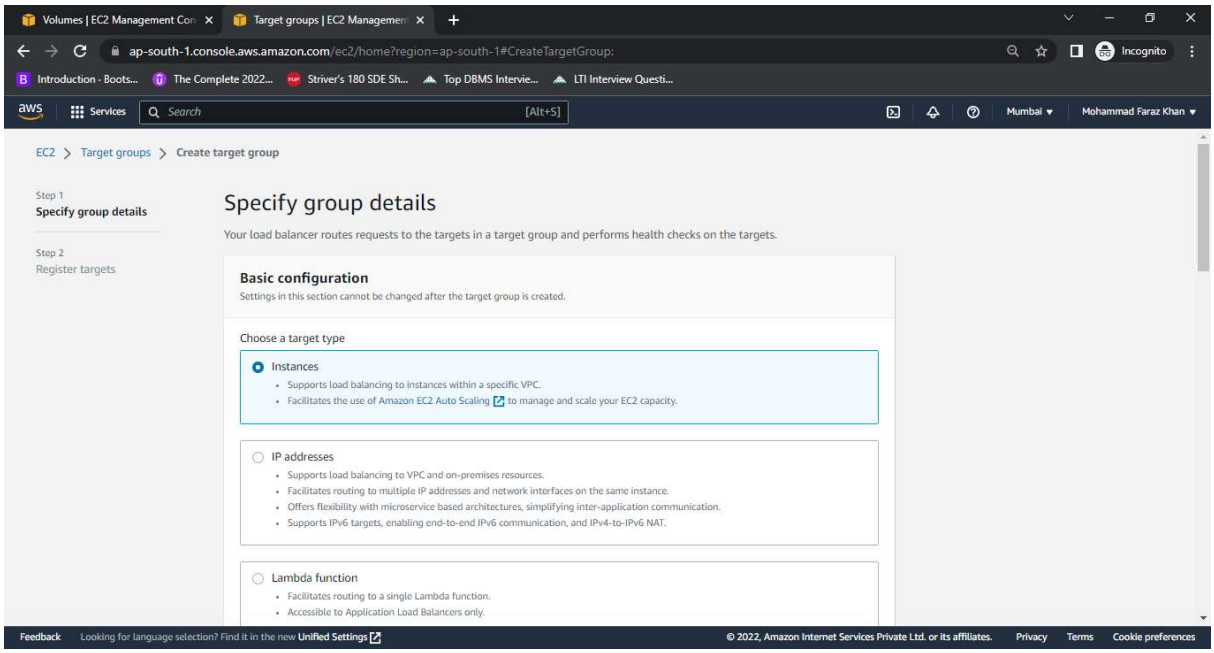
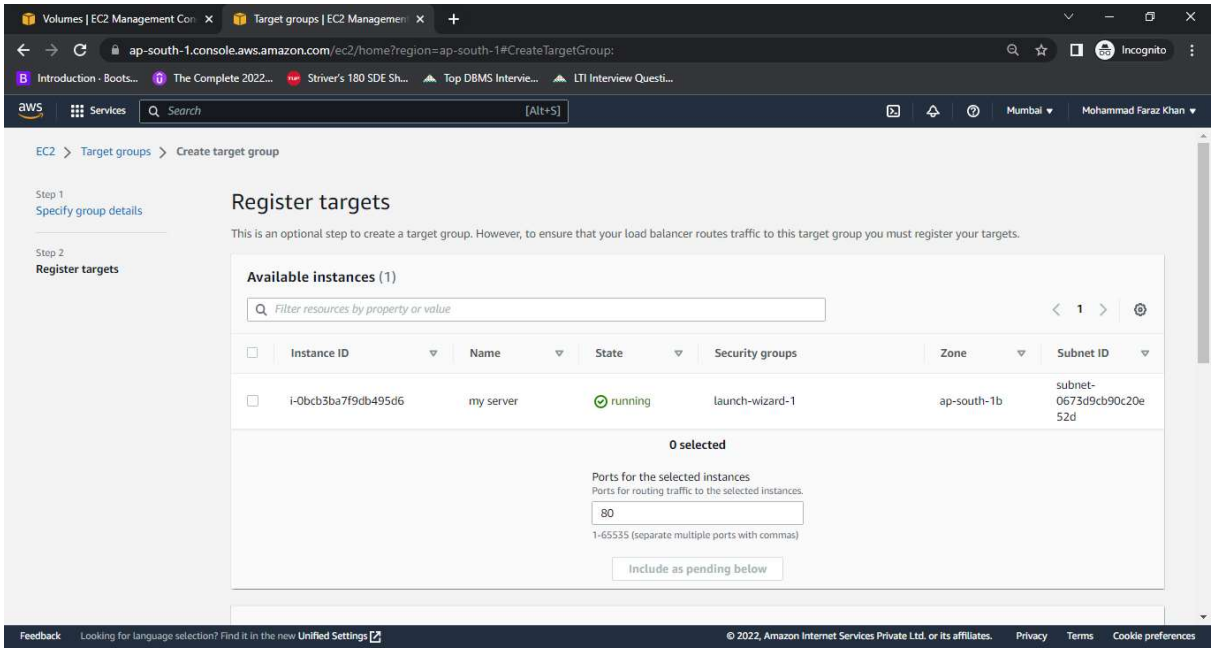
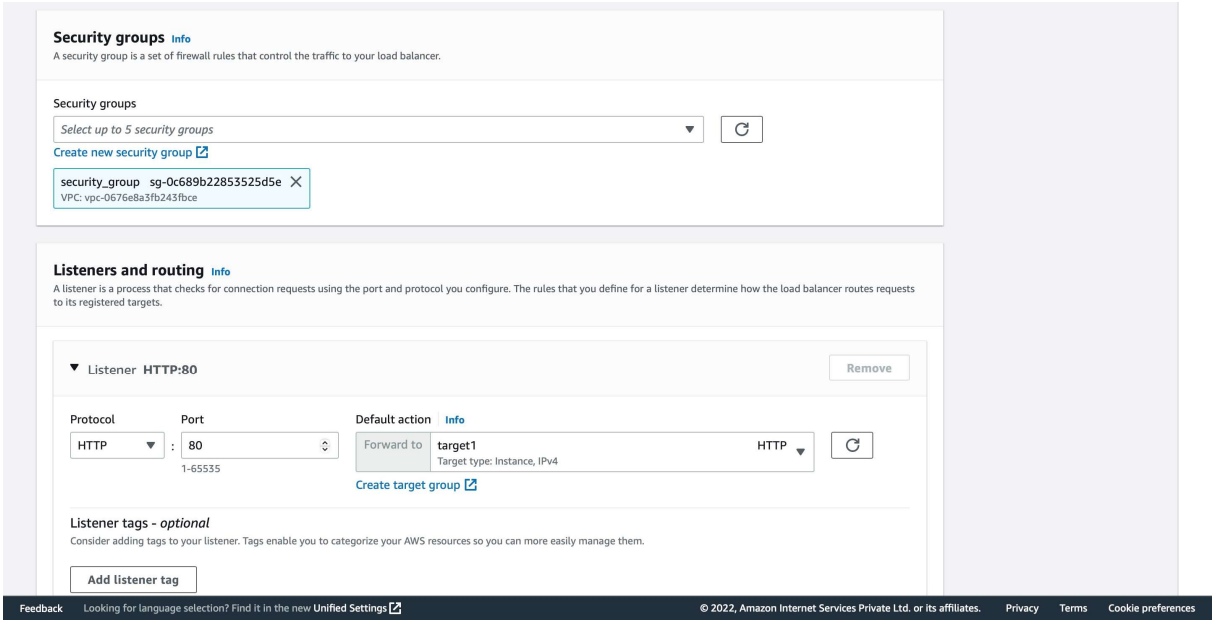




- Attaching the security group, created earlier, to the load balancer



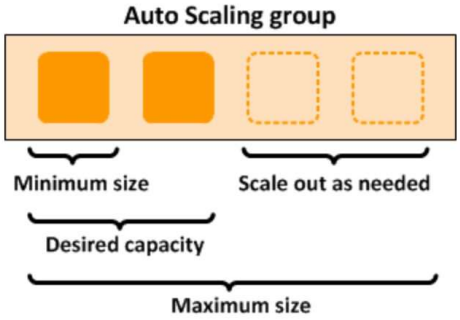
4. Create Auto Scaling of instance

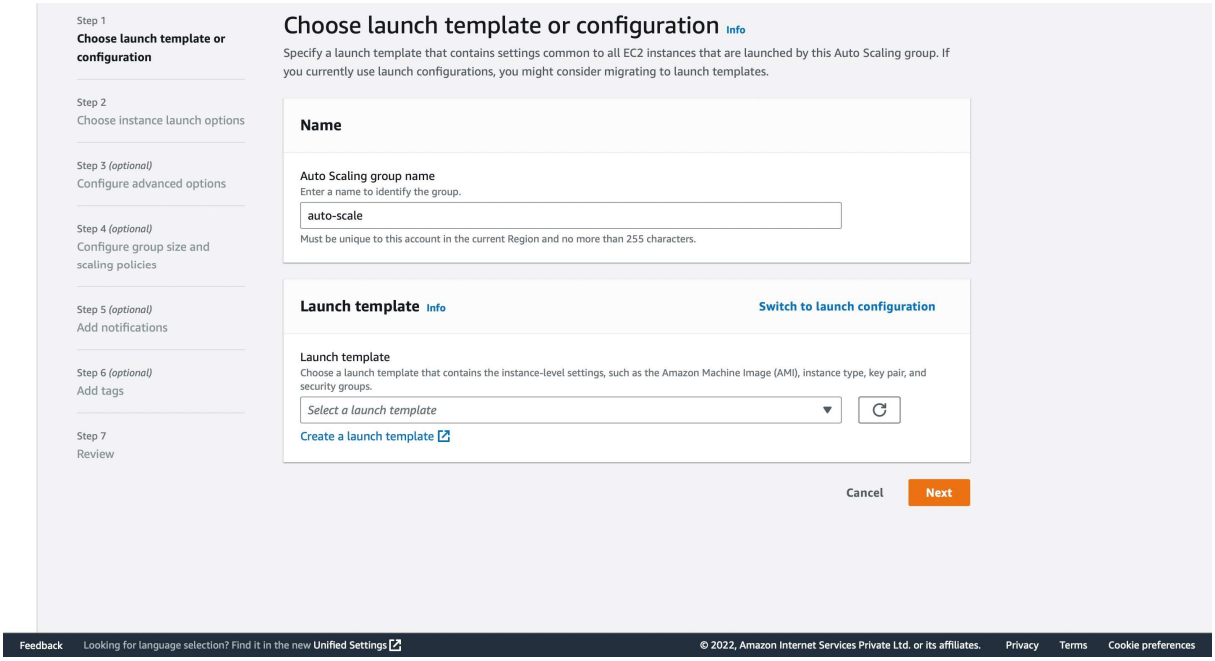
THEORY

- You can make sure that you have the appropriate number of Amazon EC2 instances available to handle the load for your application by using Amazon EC2 Auto Scaling. Auto Scaling groups are assemblages of EC2 instances that you build. Each Auto Scaling group has a minimum number of instances that can be specified, and Amazon EC2 Auto Scaling makes sure that your group never falls below this amount. Each Auto Scaling group has a maximum number of instances that can be specified, and Amazon EC2 Auto Scaling makes sure that your group never exceeds this amount. Amazon EC2 Auto Scaling makes sure that your group has the number of instances you select when you create the group or at any other time afterward if you specify the appropriate capacity. As the demand for your application rises or falls, Amazon EC2 Auto Scaling can launch or terminate instances provided scaling policies are specified.

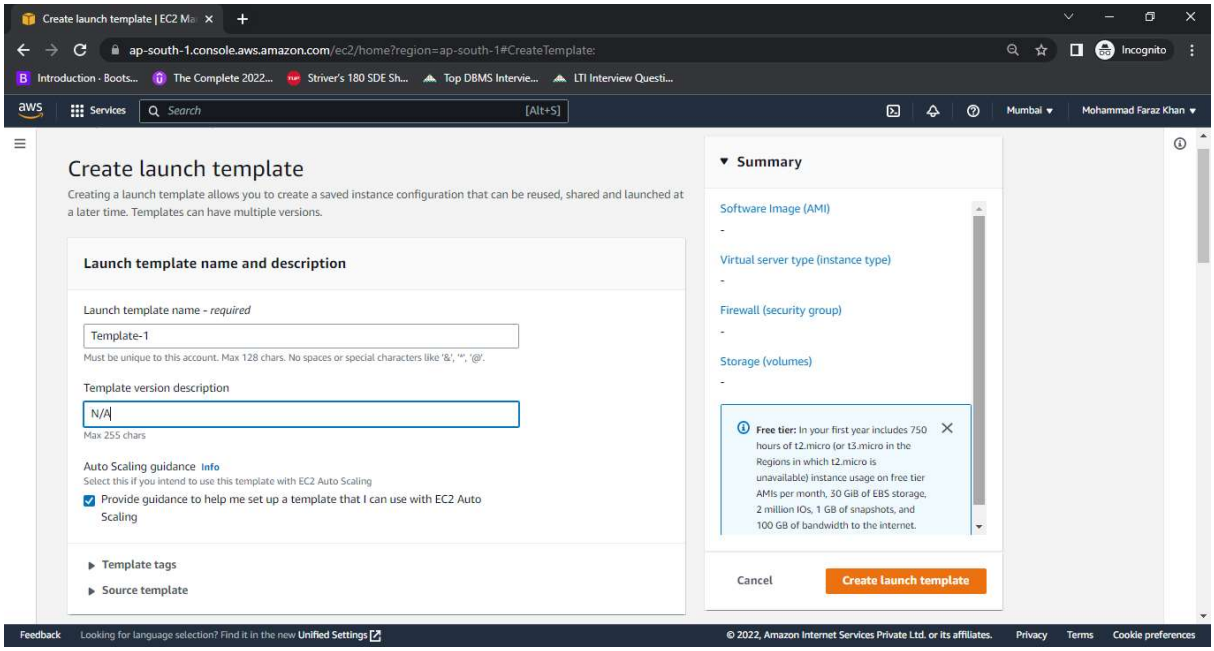
- For instance, the next Auto Scaling group has a minimum instance size of one, a targeted instance capacity of two, and a maximum instance size of four. Within your minimum and maximum number of instances, the scaling policies

you design change the number of instances according to the parameters you set.





- Creating a Template


Create launch template | EC2 Ma
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateTemplate:
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Create launch template
Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.
Launch template name and description
Launch template name - required
Template-1
Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '*', '@'.
Template version description
N/A
Max 255 chars
Auto Scaling guidance Info
Select this if you intend to use this template with EC2 Auto Scaling
Provide guidance to help me set up a template that I can use with EC2 Auto Scaling
Template tags
Source template
Summary
Software Image (AMI)
-
Virtual server type (instance type)
-
Firewall (security group)
-
Storage (volumes)
-
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, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.
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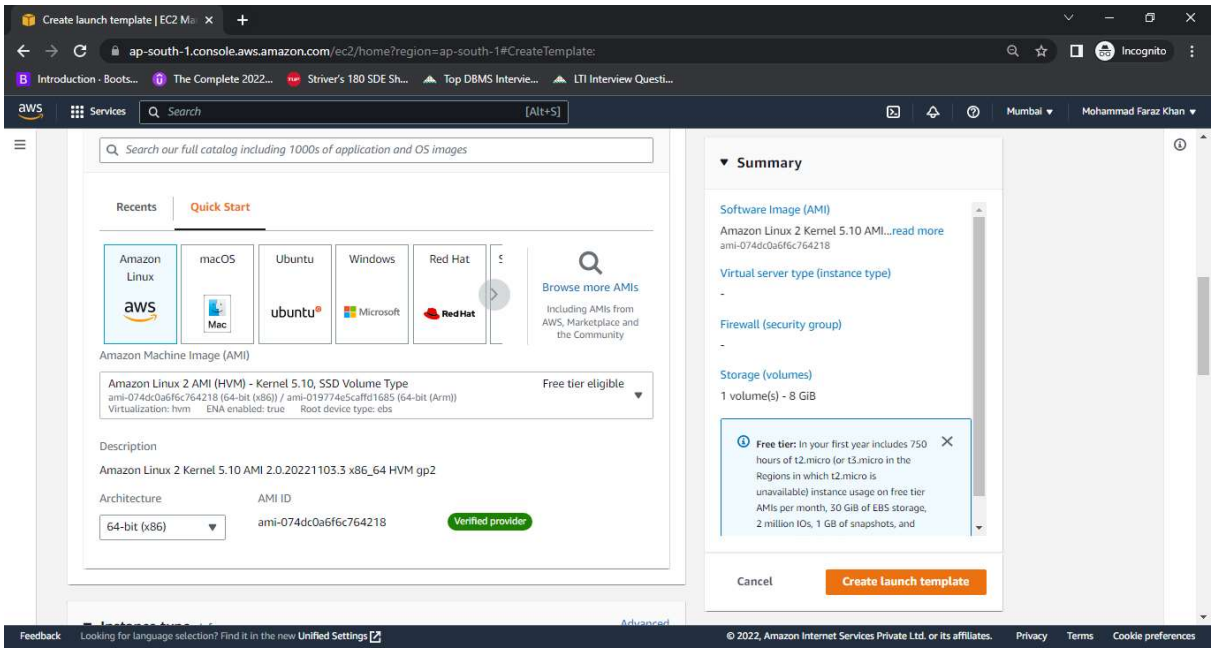
Create launch template | EC2 Ma
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Amazon Machine Image (AMI)
Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type
Free tier eligible
ami-074dc0a6f6c764218 (64-bit (x86)) / ami-019774e5caffd1685 (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs
Description
Amazon Linux 2 Kernel 5.10 AMI 2.0.20221103.3 x86_64 HVM gp2
Architecture
AMI ID
64-bit (x86)
ami-074dc0a6f6c764218
Verified provider
Summary
Software Image (AMI)
Amazon Linux 2 Kernel 5.10 AMI...read more
ami-074dc0a6f6c764218
Virtual server type (instance type)
-
Firewall (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, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and
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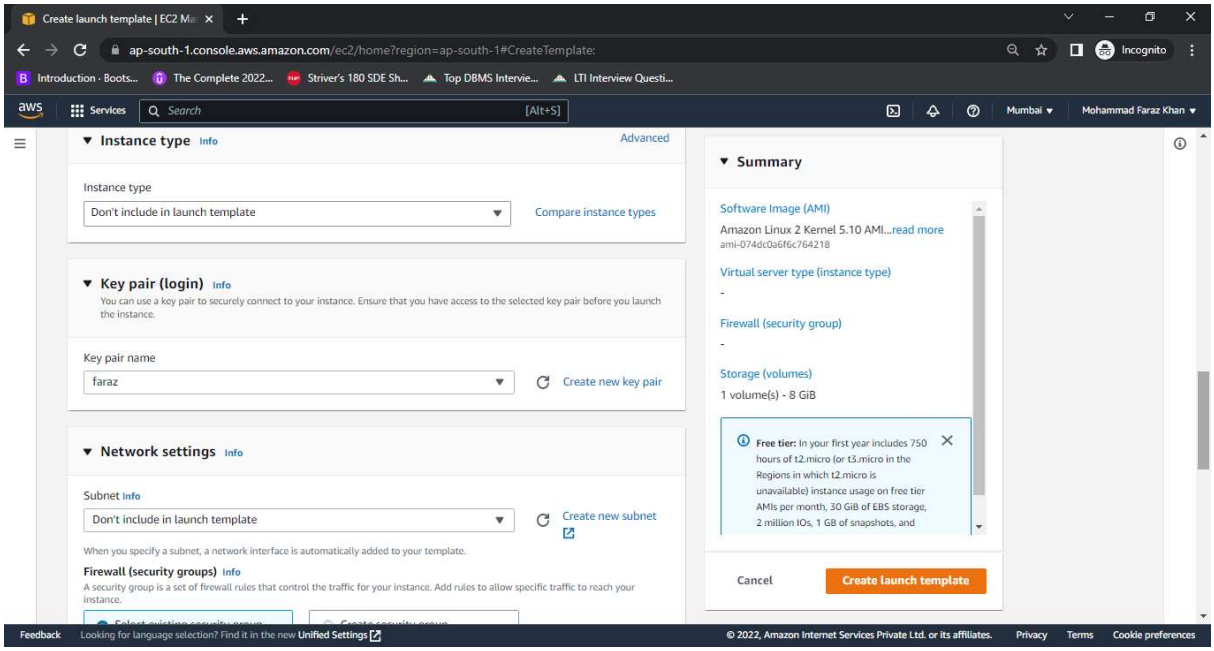
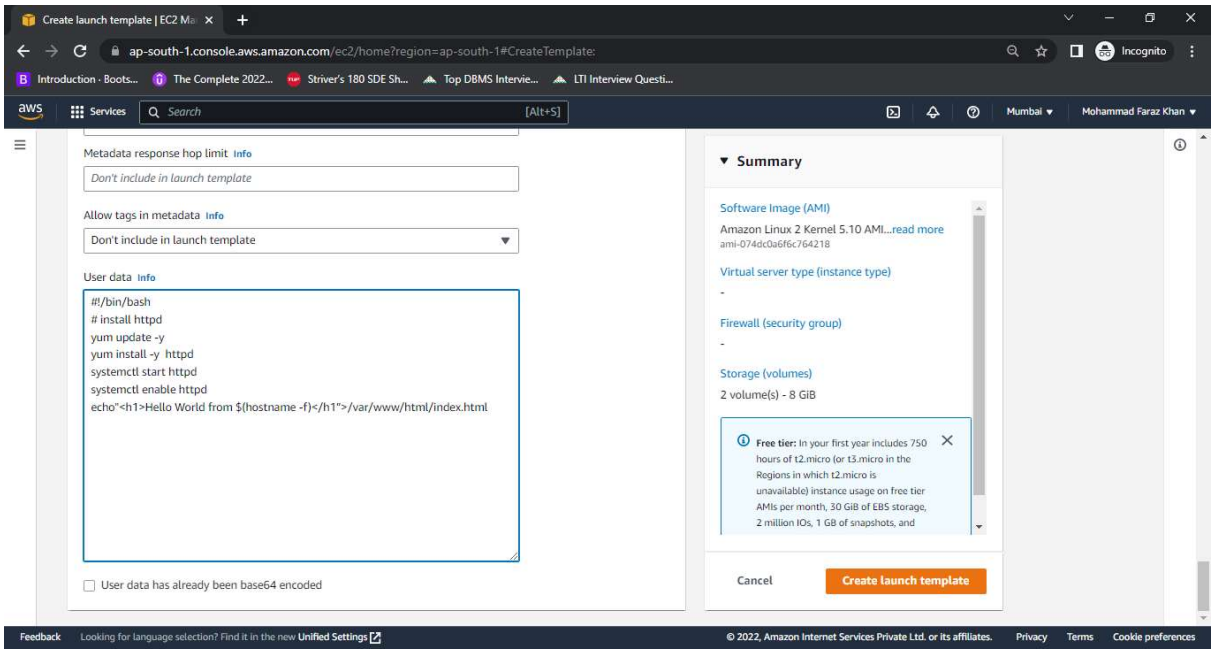
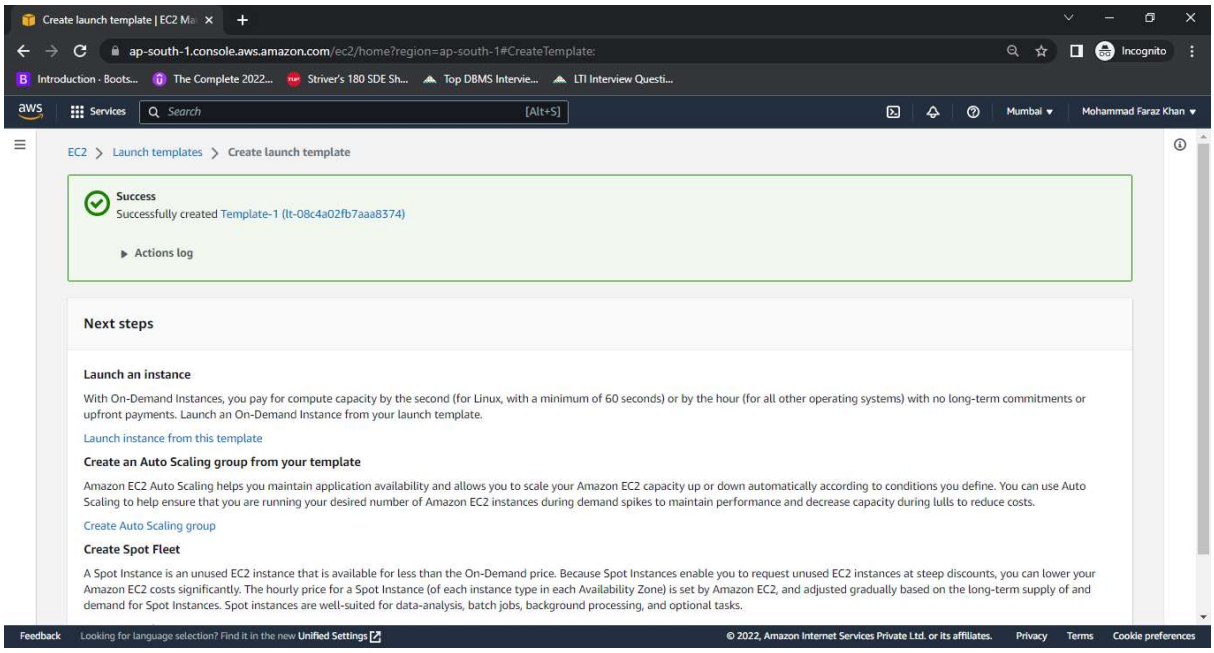




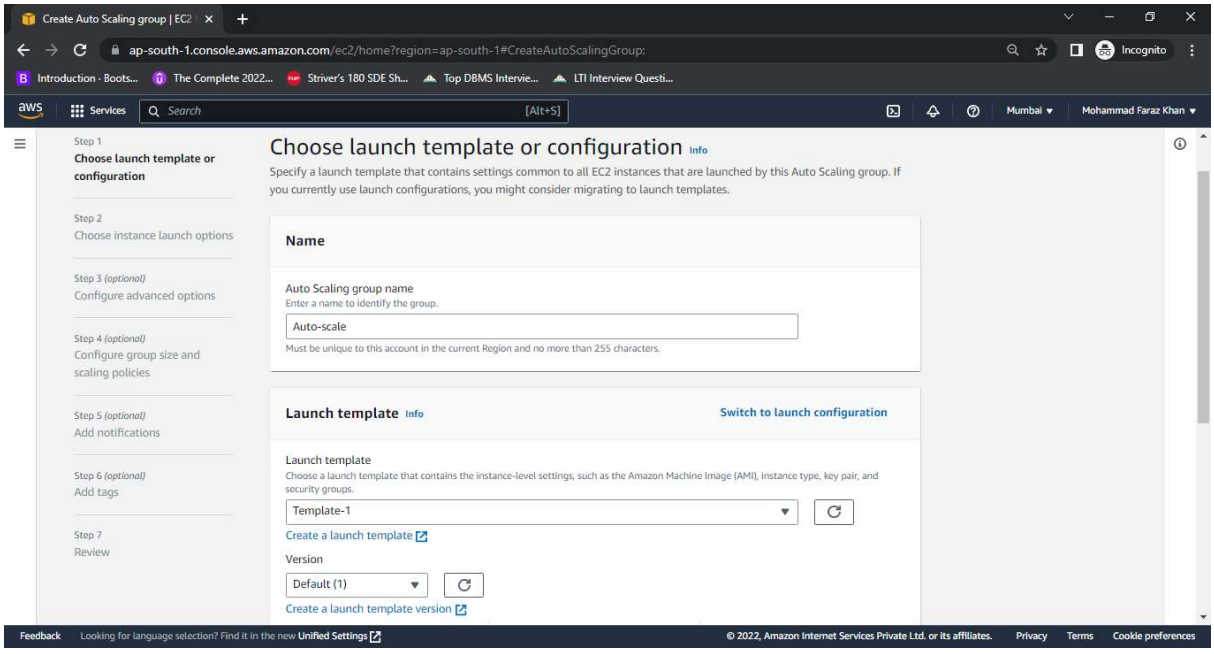
In the user data section, as shown above, insert the following code

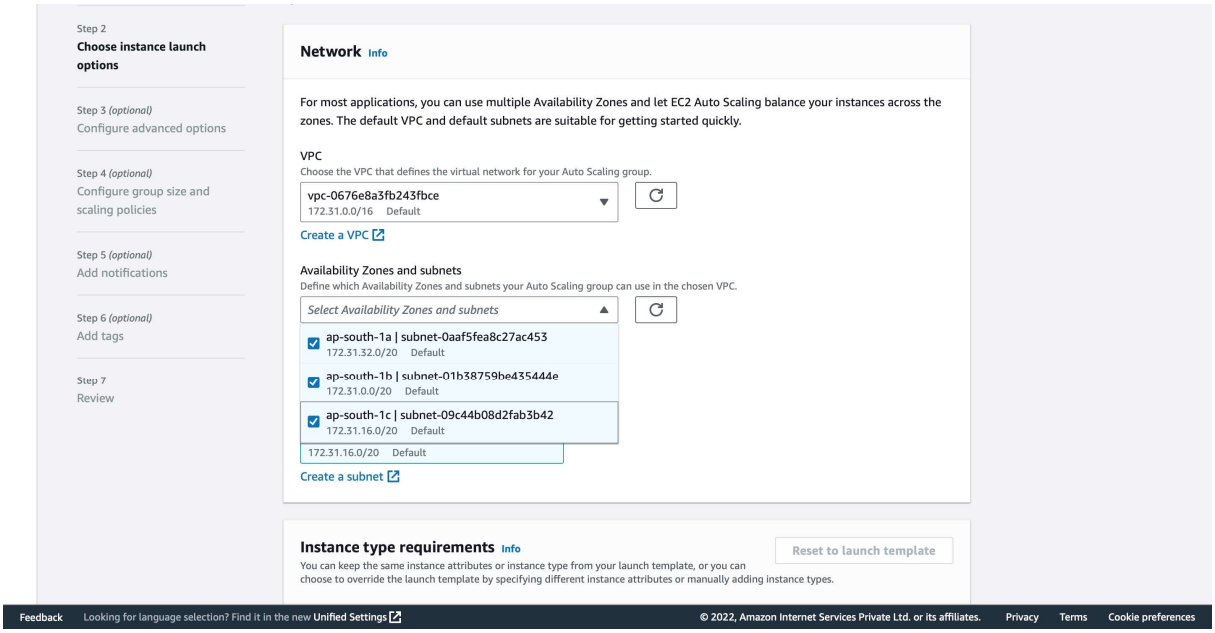
```
#!/bin/bash
# install httpd yum
update -y yum install
-y httpd systemctl
start httpd systemctl
enable httpd
```

echo"<h1>Hello World from $(hostname -f)</h1”>/var/www/html/index.html
Template successfully created



Attaching the created template




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
Network Info
For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.
VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.
vpc-0676e8a3fb243fbce
172.31.0.0/16 Default
Create a VPC
Availability Zones and subnets
Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.
Select Availability Zones and subnets
ap-south-1a | subnet-0aaf5fea8c27ac453
172.31.32.0/20 Default
ap-south-1b | subnet-01b38759be435444e
172.31.0.0/20 Default
ap-south-1c | subnet-09c44b08d2fab3b42
172.31.16.0/20 Default
172.31.16.0/20 Default
Create a subnet
Instance type requirements Info
Reset to launch template
You can keep the same instance attributes or instance type from your launch template, or you can choose to override the launch template by specifying different instance attributes or manually adding instance types.
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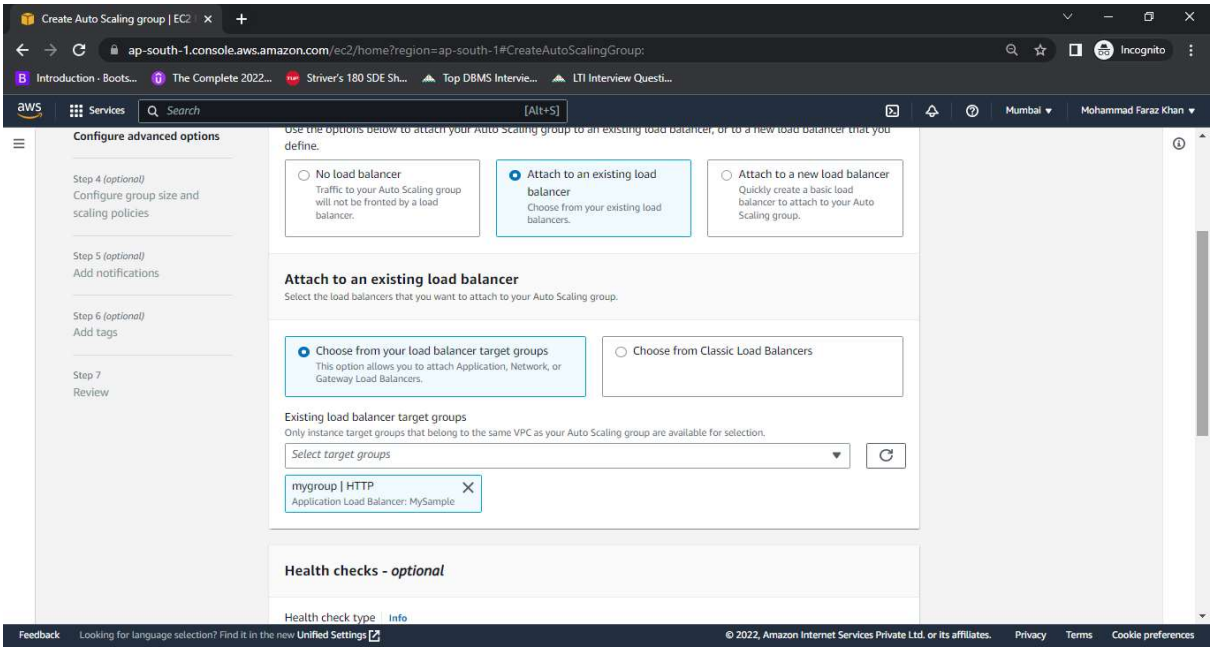
Create Auto Scaling group | EC2
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateAutoScalingGroup:
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Configure advanced options
Step 4 (optional)
Configure group size and scaling policies
Step 5 (optional)
Add notifications
Step 6 (optional)
Add tags
Step 7
Review
define.
No load balancer
Traffic to your Auto Scaling group will not be fronted by a load balancer.
Attach to an existing load balancer
Choose from your existing load balancers.
Attach to a new load balancer
Quickly create a basic load balancer to attach to your Auto Scaling group.
Attach to an existing load balancer
Select the load balancers that you want to attach to your Auto Scaling group.
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
mygroup | HTTP
Application Load Balancer: MySample
Health checks - optional
Health check type Info
Feedback
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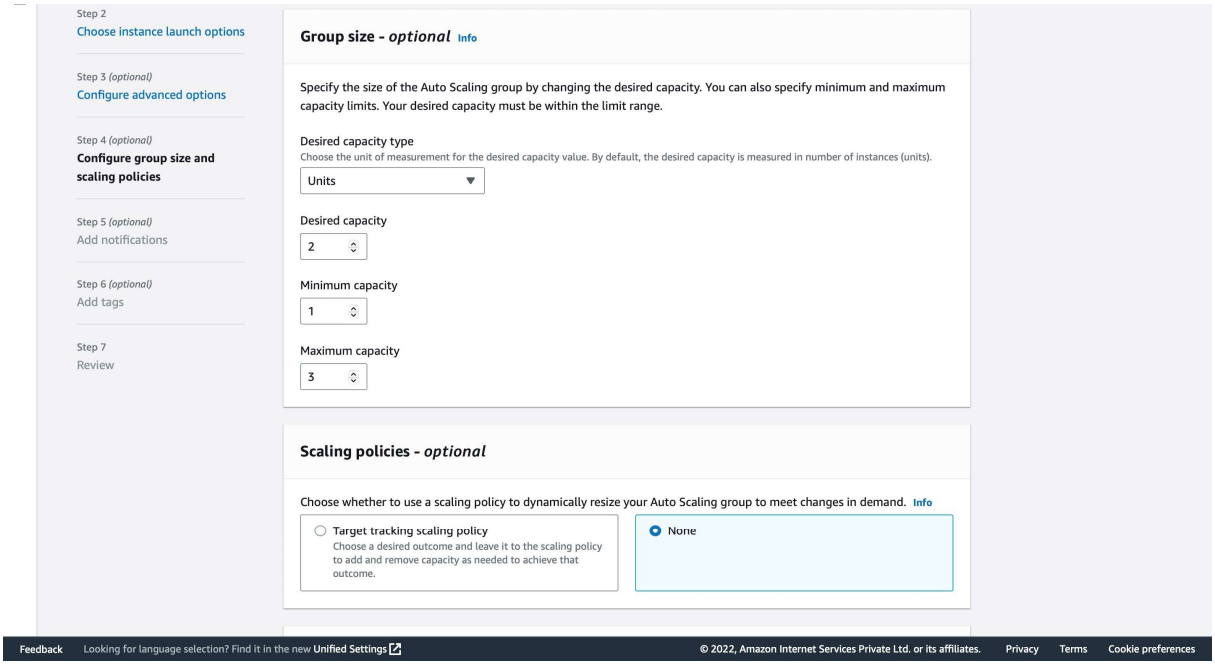
Step 2
Choose instance launch options
Step 3 (optional)
Configure advanced options
Step 4 (optional)
Configure group size and scaling policies
Step 5 (optional)
Add notifications
Step 6 (optional)
Add tags
Step 7
Review
Group size - optional Info
Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.
Desired capacity type
Choose the unit of measurement for the desired capacity value. By default, the desired capacity is measured in number of instances (units).
Units
Desired capacity
2
Minimum capacity
1
Maximum capacity
3
Scaling policies - optional
Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in demand. Info
Target tracking scaling policy
Choose a desired outcome and leave it to the scaling policy to add and remove capacity as needed to achieve that outcome.
None
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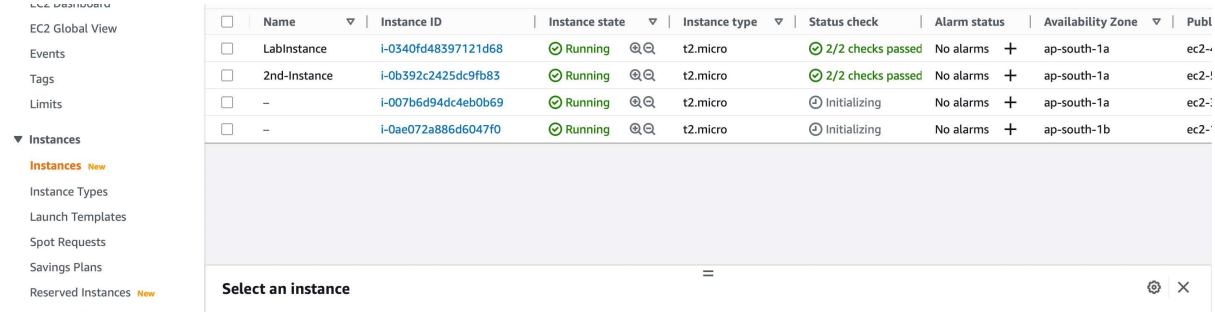
EC2 Global View
Events
Tags
Limits
Instances
Instances New
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
LabInstance
i-0340fd48397121d68
Running
t2.micro
2/2 checks passed
No alarms
ap-south-1a
2nd-Instance
i-0b392c2425dc9fb83
Running
t2.micro
2/2 checks passed
No alarms
ap-south-1a
–
i-007b6d94dc4eb0b69
Running
t2.micro
Initializing
No alarms
ap-south-1a
–
i-0ae072a886d6047f0
Running
t2.micro
Initializing
No alarms
ap-south-1b
Select an instance