PROJECT-3

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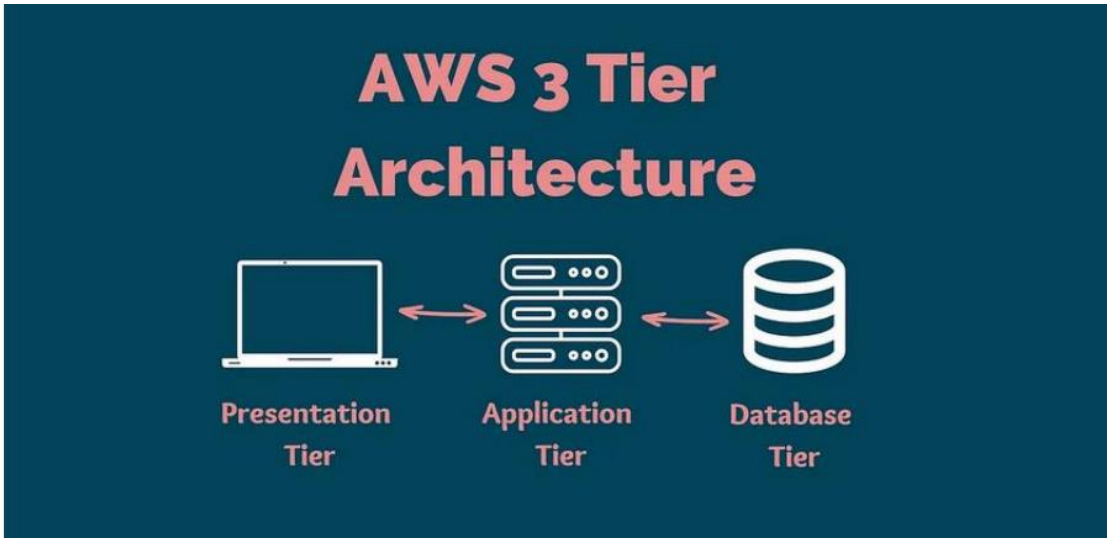
PROJECT:AWS 3 TIER ARCHITECTURE

What is three tier architecture?

- Three tier architecture is a well established software application architecture that organizes applications into three logical and physical computing tiers. The presentation tier or web tier, the application tier, and the database tier,where application data is stored and managed.



Presentation tier : The presentation tier is the user interface and communication layer of the application, where the end user interacts with the application. Its main purpose is to display information and collect information from the user. Thus top level tier can run on web,desktop application, or a graphical user interface. Web tiers are developed by using HTML,CSS and javascript.

Application tier : The application tier is also known as the logic tier or middle tier, is the heart of the application. In application tier the data that is collect presentation tier is processed sometimes against other informstion in the data tier. The application tier can also add, delete, or modify data in the data tier.

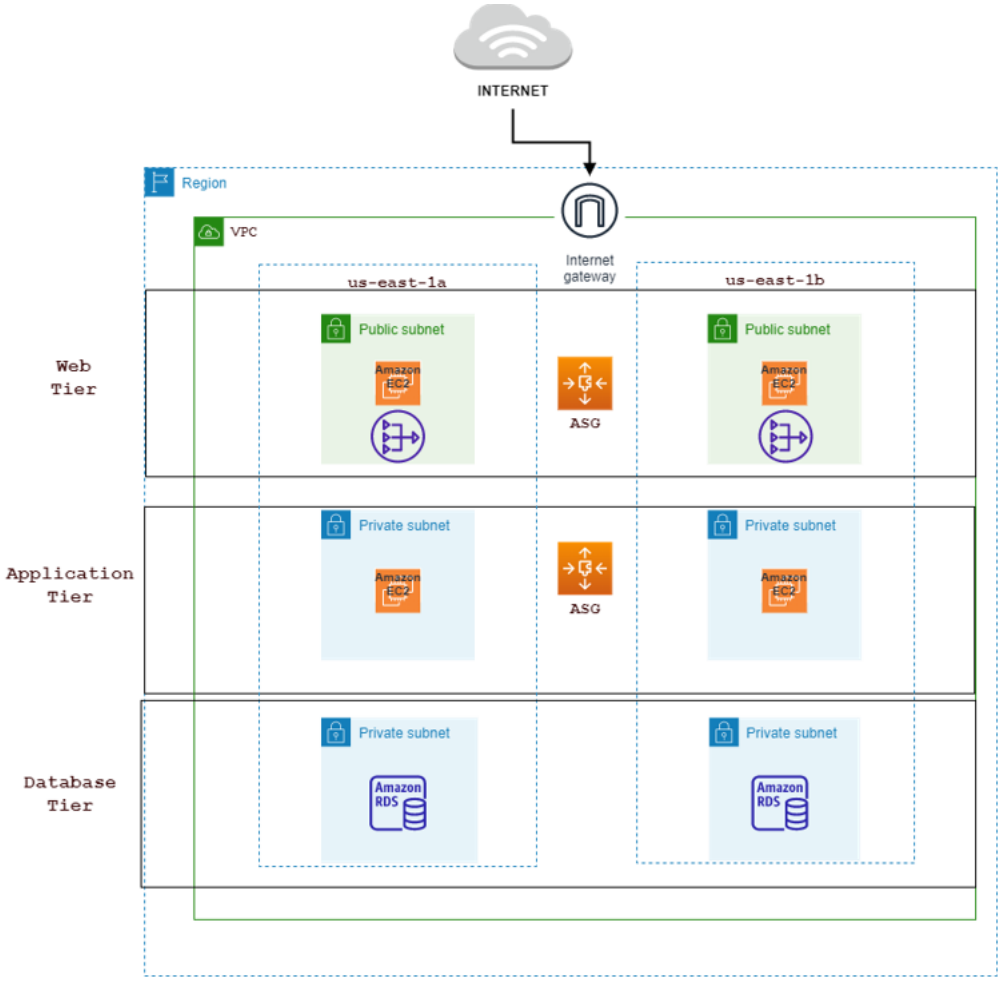
Database tier : The database tier is also known as data access tier or back-end, is where the information that is processed by the application is stored and managed. This can be a RDS management system such as PostgreSQL, MySQL, MariaDB, Oracle, DB2, Informix or Microsoft SQL Server, or in a NoSQL Database server such asCassandra, CouchDB, or MongoDB.

In a three tier application, all communication goes through the application tier. The web tier and the database tier cannot communicate directly with one another.

Benefits of three tier architecture :

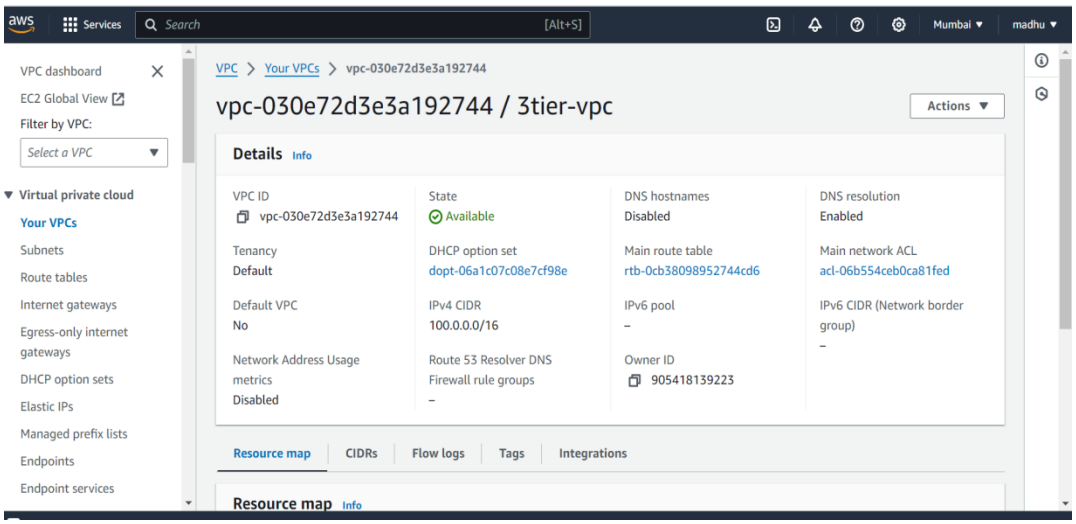
It's a logical and physical separation of functionality. Each tier can run on a separate OS and server platform-for example, web server, application server, database server. And each tier runs on atleast one dedicated server hardware or virtual server, so each services of each tier can be customized and optimized without impacting the other tiers. And also faster development, improved scalability, improved reliability, and improved security.

Project:

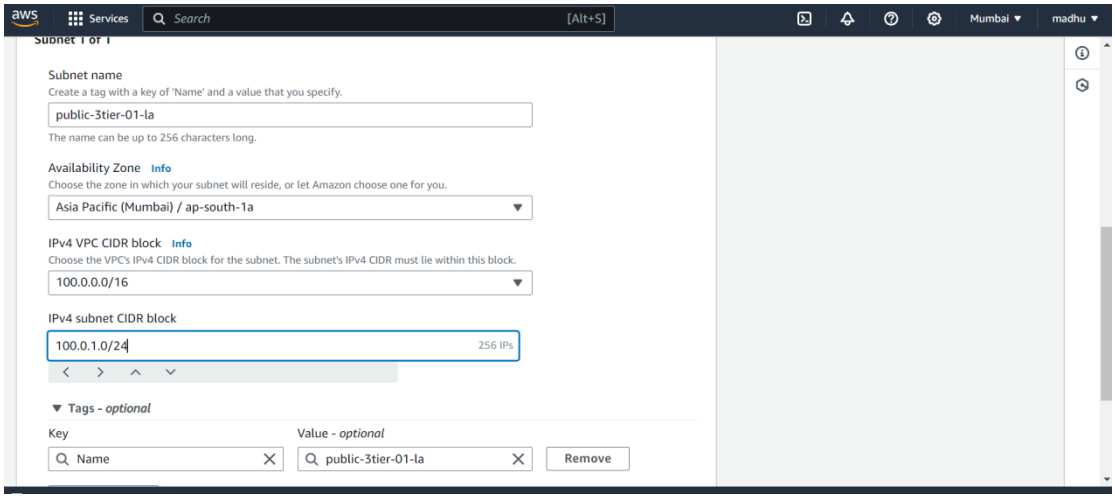


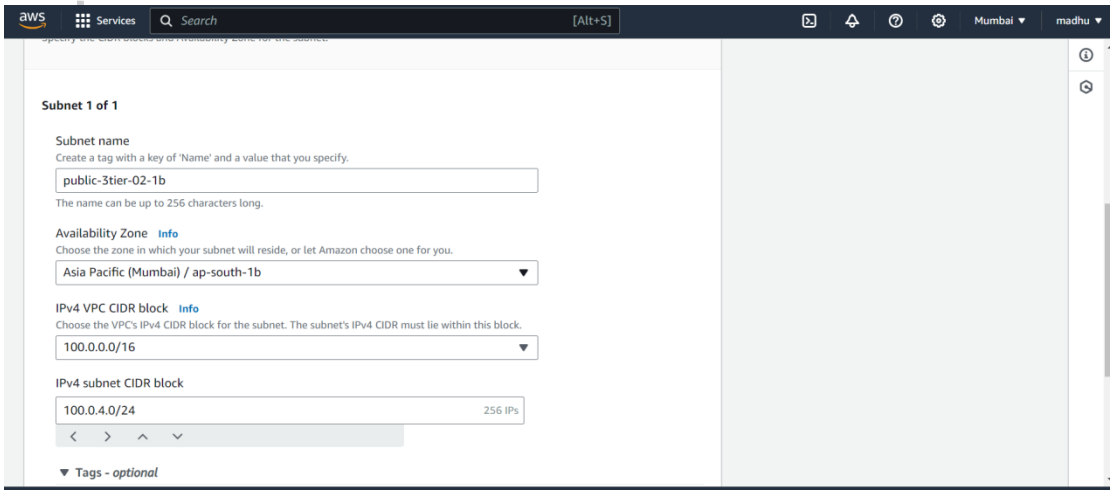
VPC :

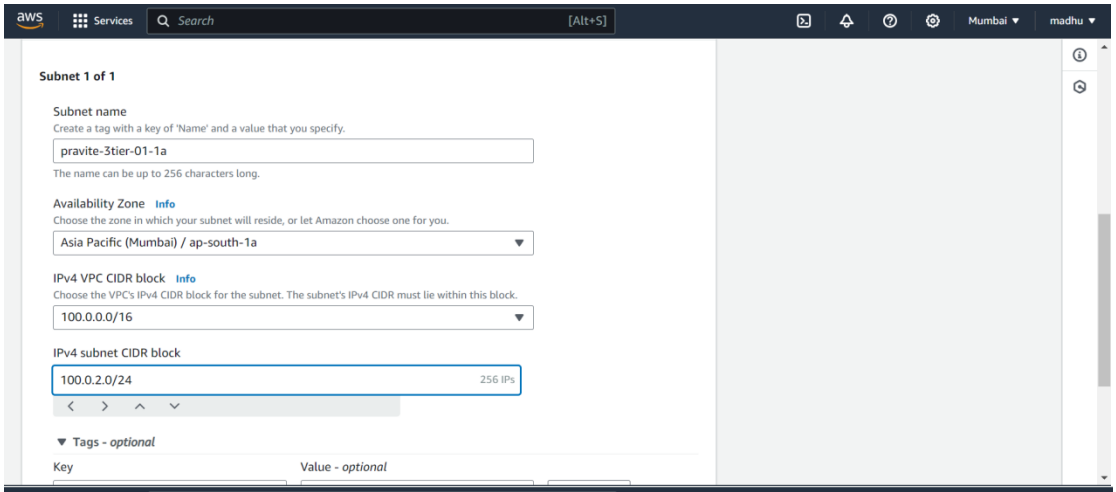
- Create a VPC with specific name [my-vpc] in a region Mumbai.

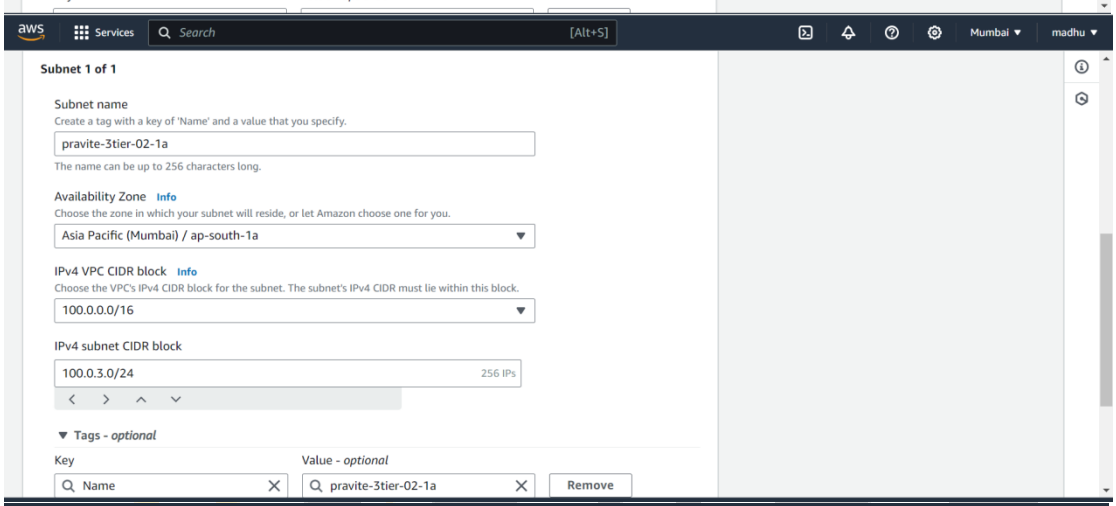


- Now create 6 subnets [1 public, 2 private subnets in one availability zone and same for the other subnets but in different availability zone] with in the same VPC.






aws
Services
Search
[Alt+S]
Mumbai
madhu
Subnet 1 of 1
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
pravite-3tier-01-1a
The name can be up to 256 characters long.
Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
Asia Pacific (Mumbai) / ap-south-1a
IPv4 VPC CIDR block Info
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.
100.0.0.0/16
IPv4 subnet CIDR block
100.0.2.0/24
256 IPs
Tags - optional
Key
Value - optional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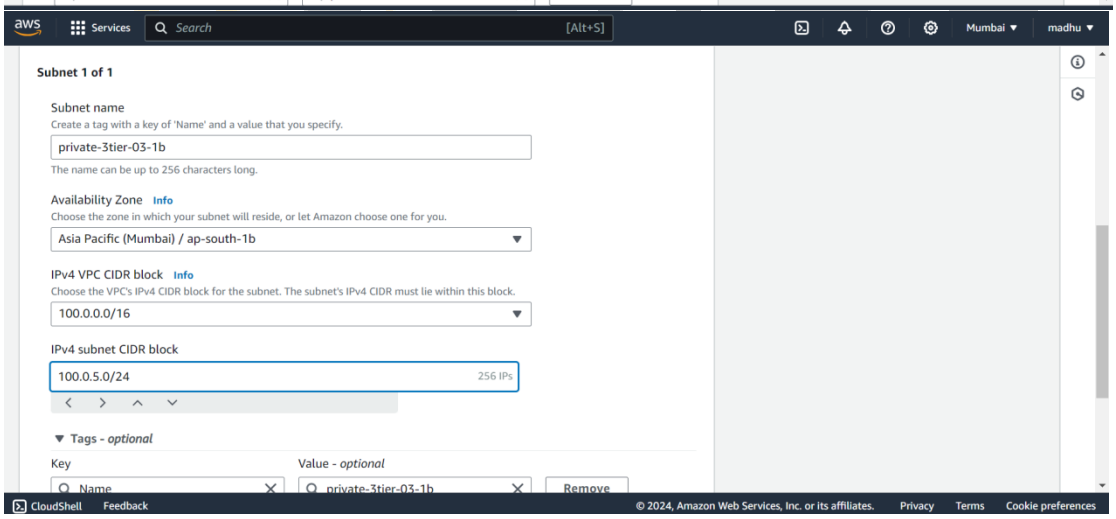
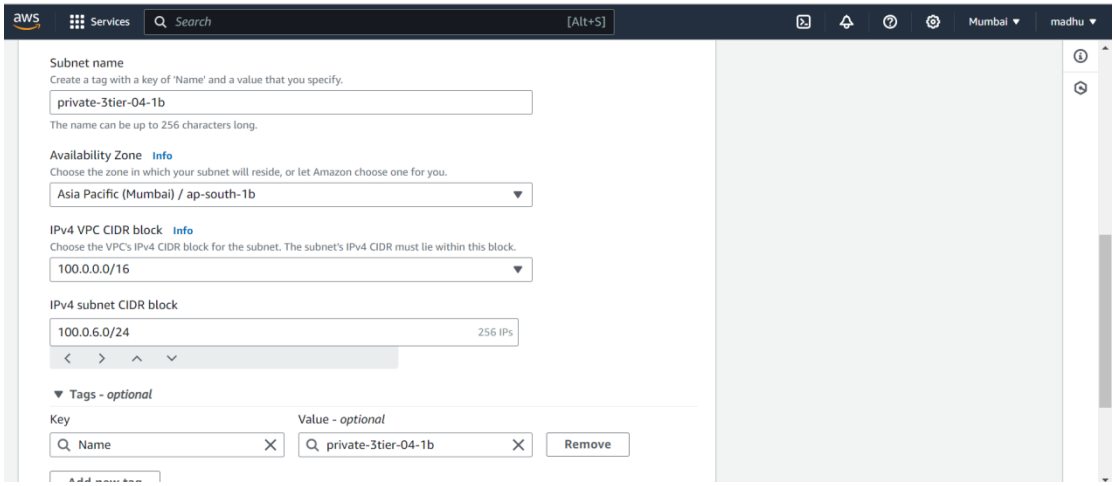
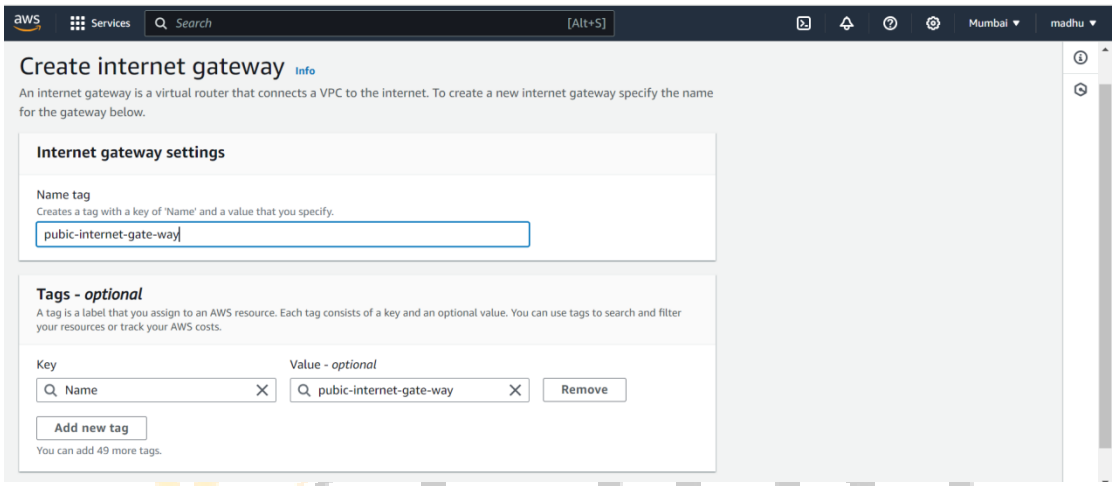
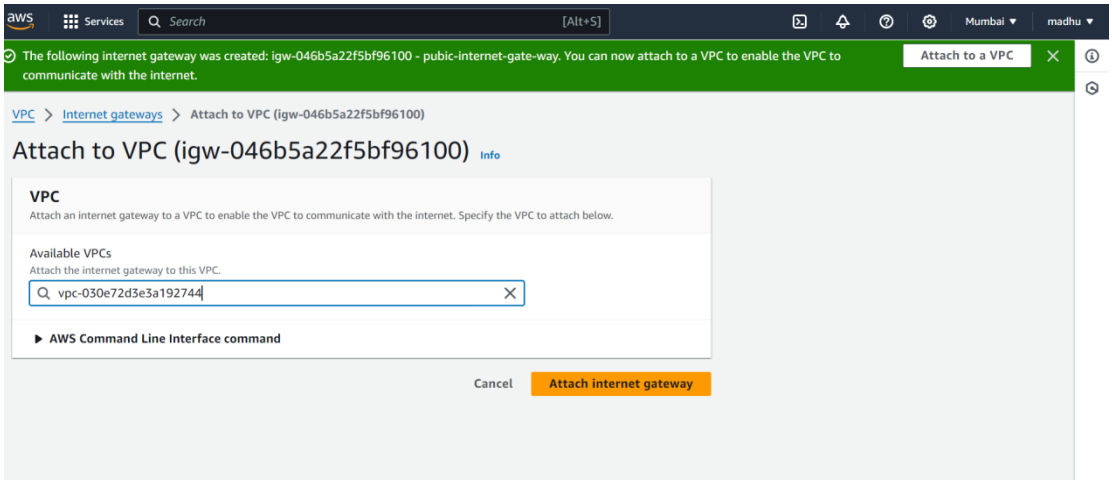
Mumbai
madhu
Subnet 1 of 1
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
pravite-3tier-02-1a
The name can be up to 256 characters long.
Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
Asia Pacific (Mumbai) / ap-south-1a
IPv4 VPC CIDR block Info
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.
100.0.0.0/16
IPv4 subnet CIDR block
100.0.3.0/24
256 IPs
Tags - optional
Key
Value - optional
Name
pravite-3tier-02-1a
Remove


aws
Services
Search
[Alt+S]
Mumbai
madhu
Subnet 1 of 1
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
private-3tier-03-1b
The name can be up to 256 characters long.
Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
Asia Pacific (Mumbai) / ap-south-1b
IPv4 VPC CIDR block Info
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.
100.0.0.0/16
IPv4 subnet CIDR block
100.0.5.0/24
256 IPs
Tags - optional
Key
Value - optional
Name
private-3tier-03-1b
Remove
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences

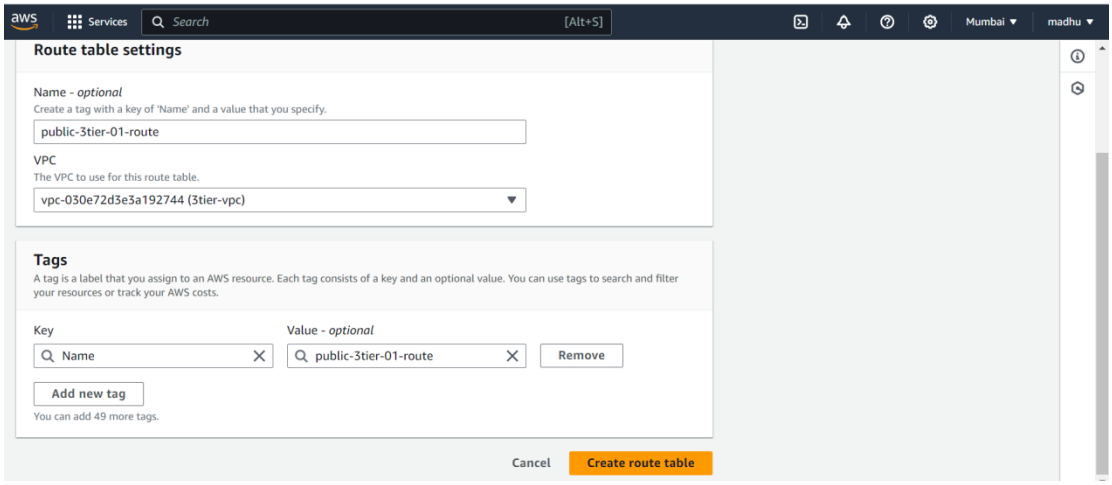


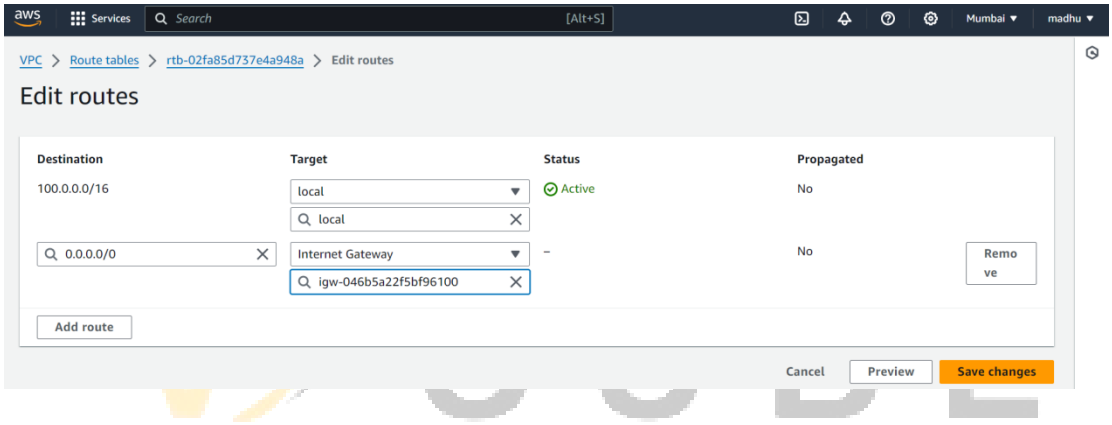
- Create a internet gateway and click on actions and attach it to the respective Vpc

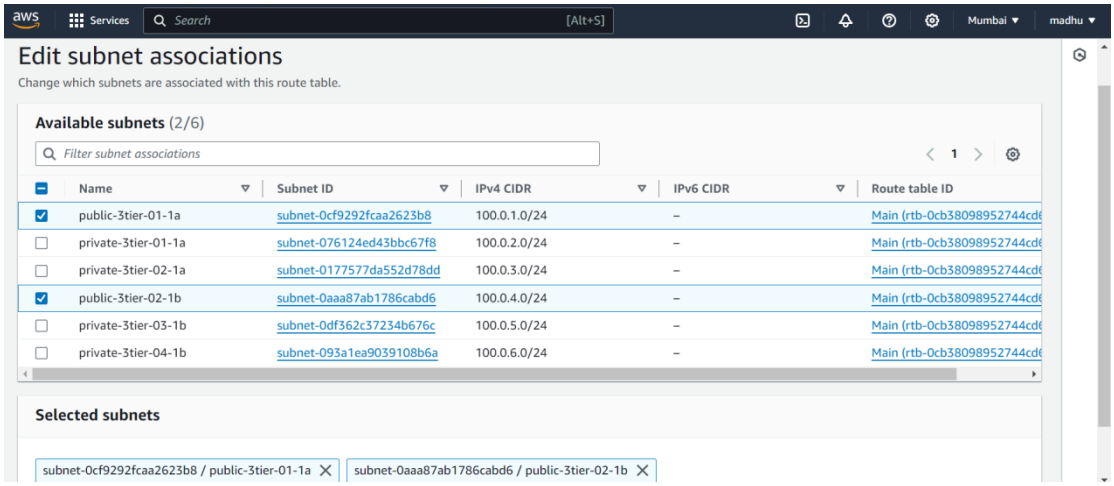




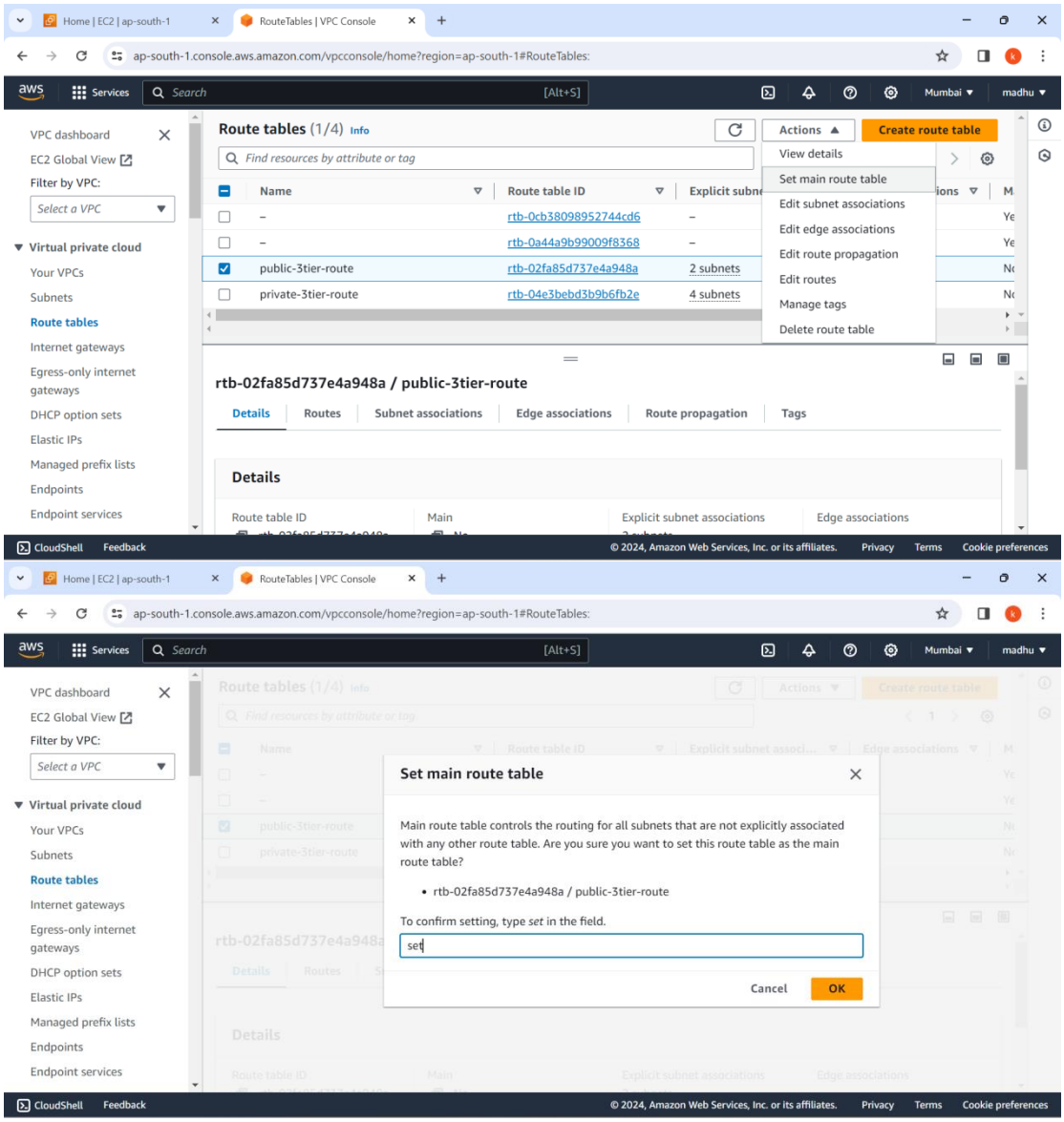
• And create route tables 1(public) and associate them with subnets along with the internet connection attaches to the [1a & 2a] public subnets.





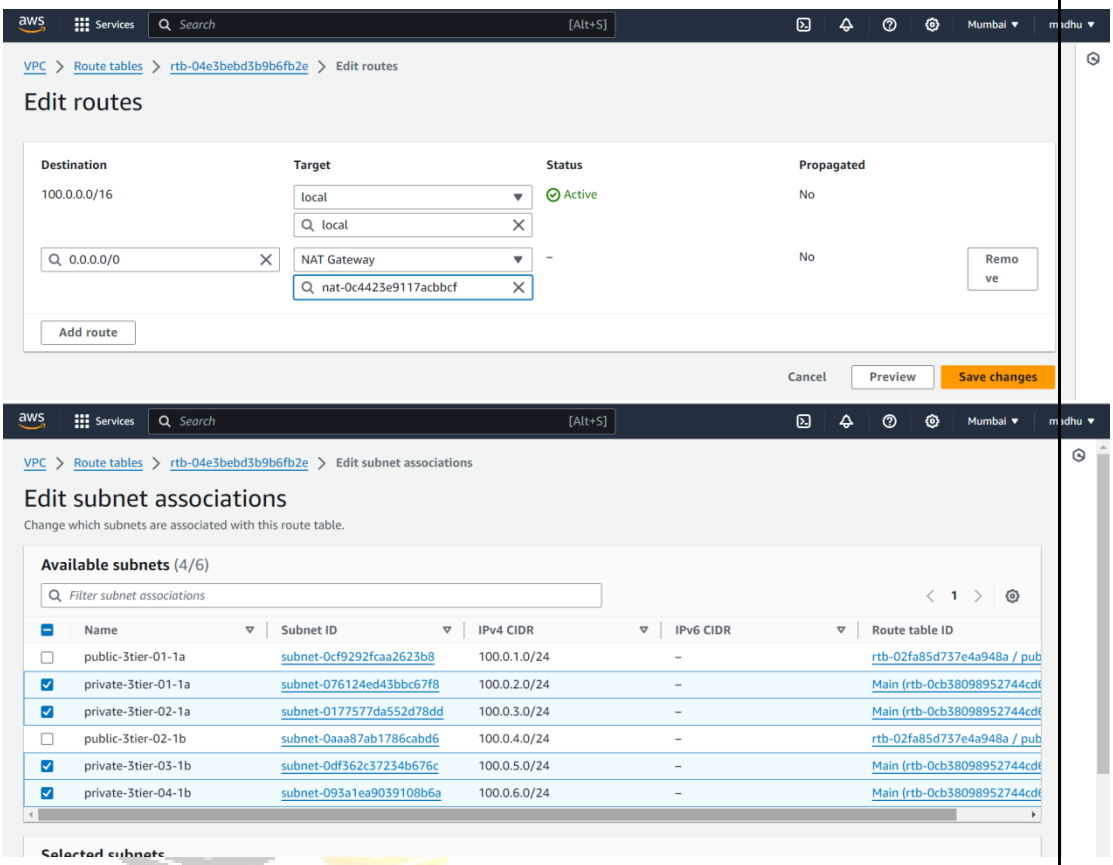


• And also set the public route tables as main route tables.

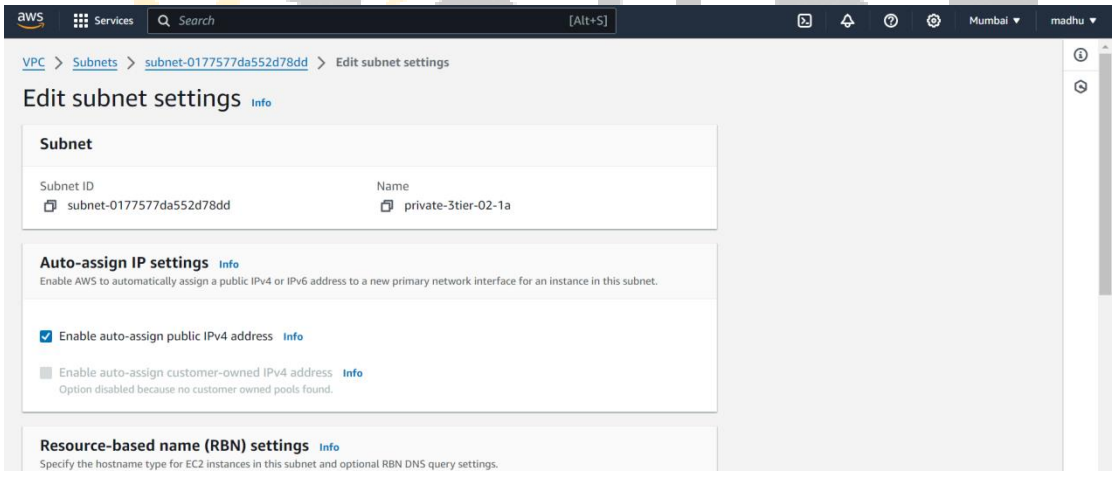


- Create a Nat gateway for one way traffic attach to the private route table.

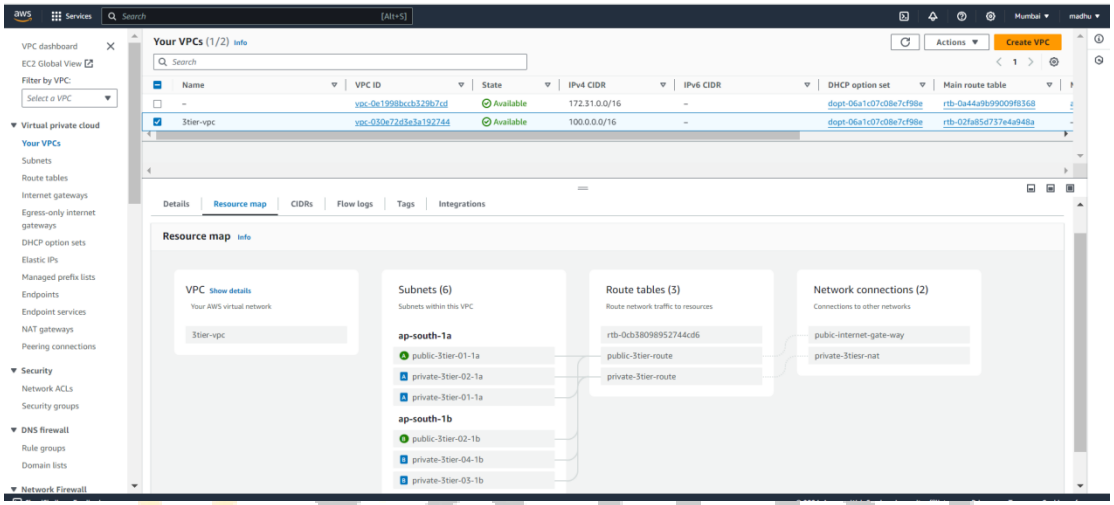
- Create a Nat gateway for one way traffic attach to the private route table and associate them with subnets along with the natgateway connection attaches to the private subnets.



- Goto all subnet and click on edit subnets settings to auto assign IPV4.



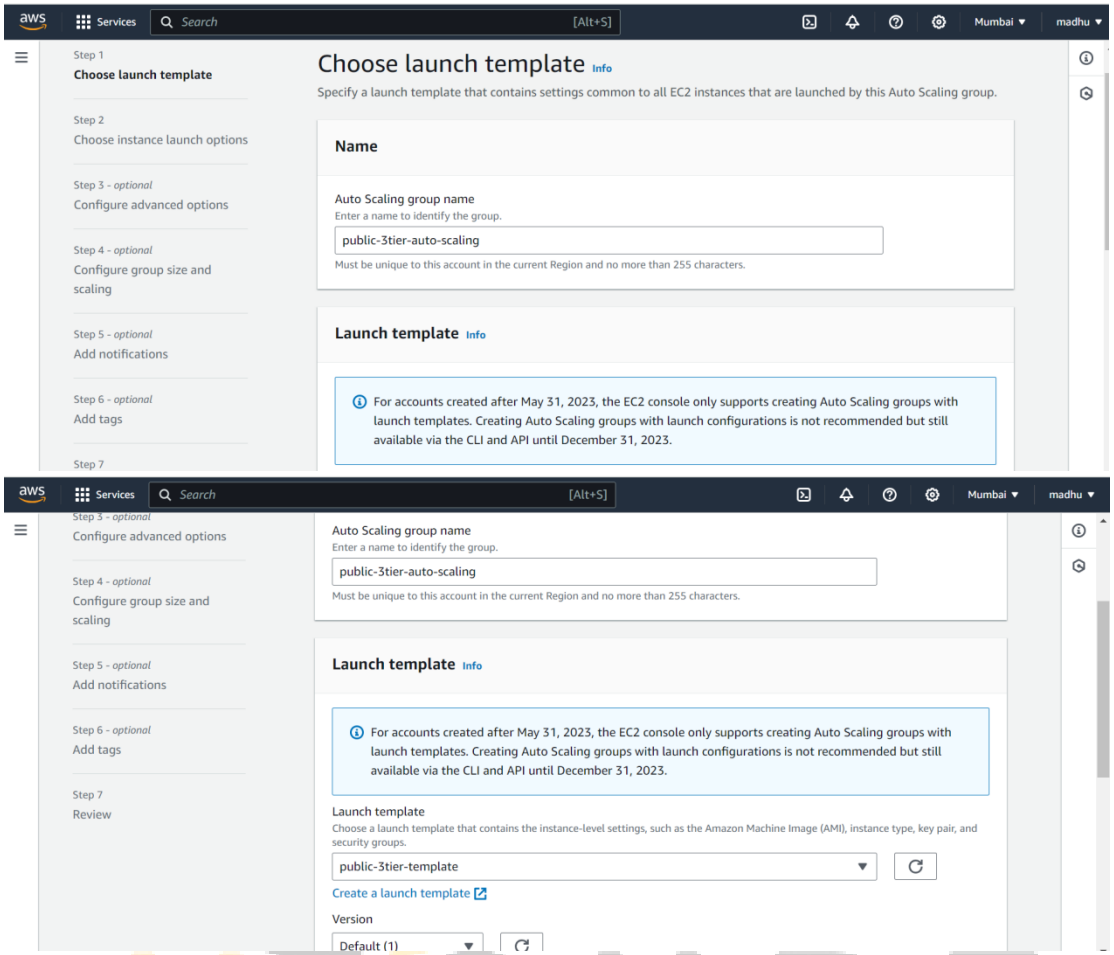
- After all connections established in VPC.

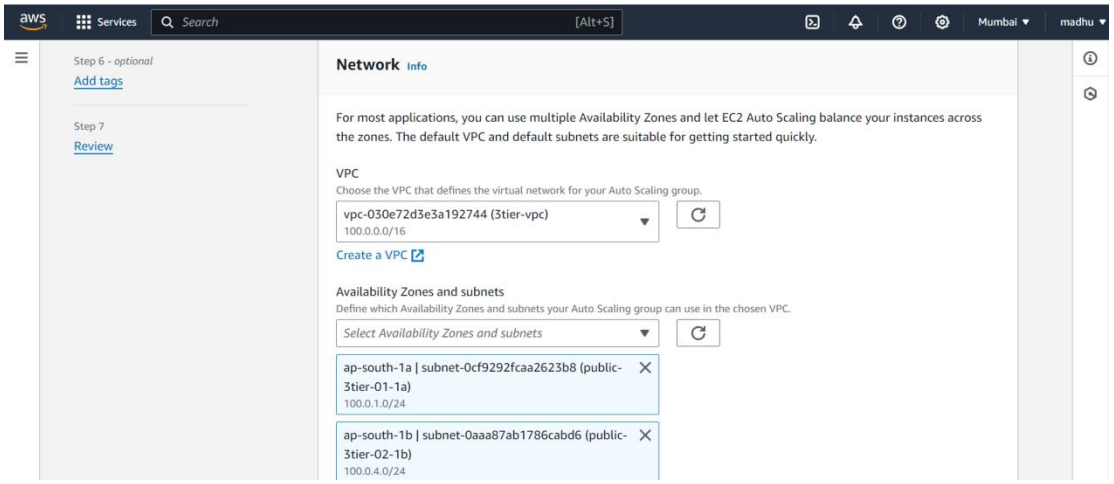


Web tier:

- create a web tier launch template

1. Give a specific name public-3tier-autoscaling and private-3tier-autoscaling create autosacllng it will create load blancer and target groups




aws
Services
Search
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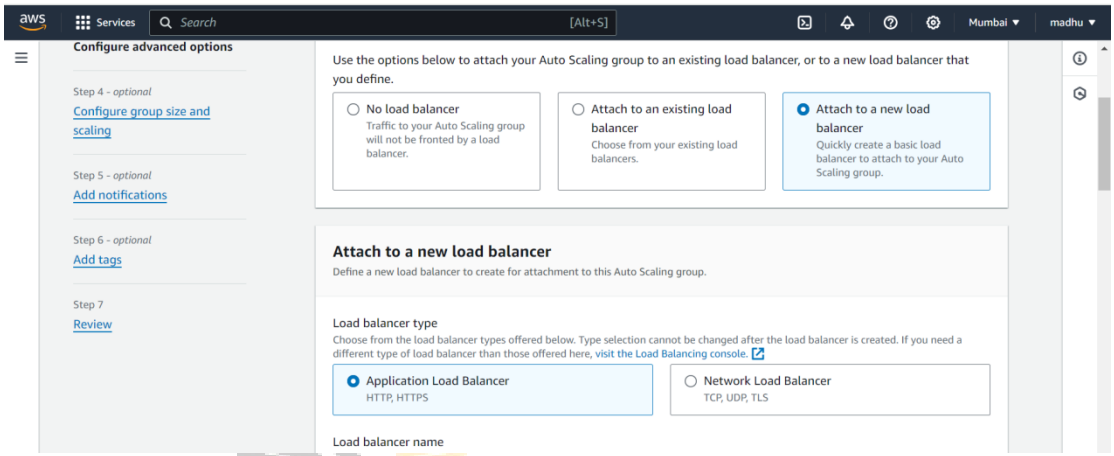
Mumbai
madhu
Step 6 - optional
Add tags
Step 7
Review
Network Info
For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.
VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.
vpc-030e72d3e3a192744 (3tier-vpc)
100.0.0.0/16
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-0cf9292fcaa2623b8 (public-3tier-01-1a)
100.0.1.0/24
ap-south-1b | subnet-0aaa87ab1786cabd6 (public-3tier-02-1b)
100.0.4.0/24


aws
Services
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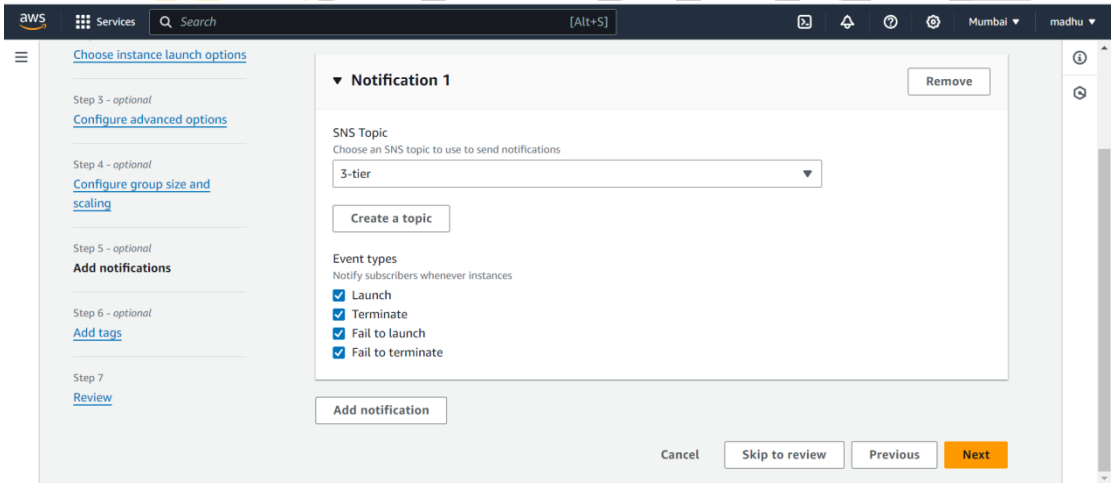
Mumbai
madhu
Configure advanced options
Step 4 - optional
Configure group size and scaling
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.
No load 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 a new load balancer
Define a new load balancer to create for attachment to this Auto Scaling group.
Load balancer type
Choose from the load balancer types offered below. Type selection cannot be changed after the load balancer is created. If you need a different type of load balancer than those offered here, visit the Load Balancing console.
Application Load Balancer
HTTP, HTTPS
Network Load Balancer
TCP, UDP, TLS
Load balancer name


aws
Services
Search
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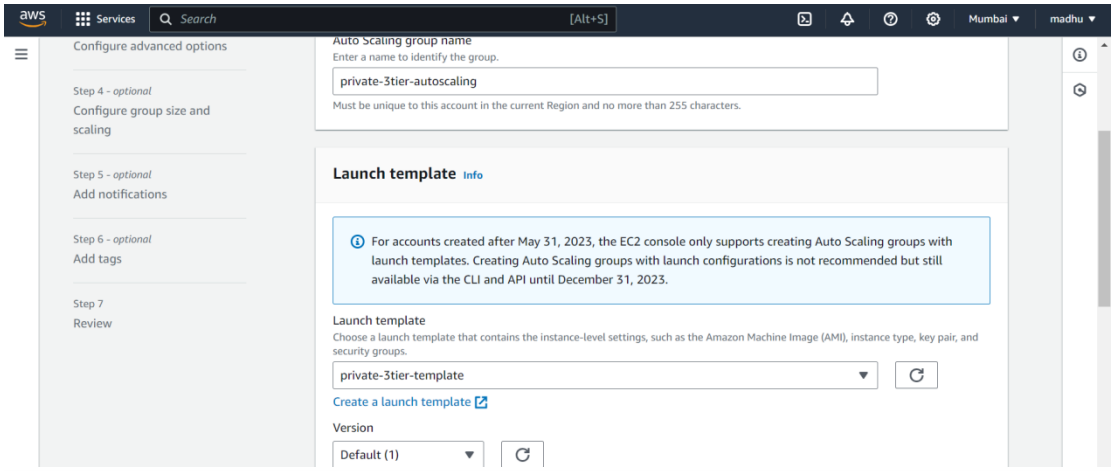
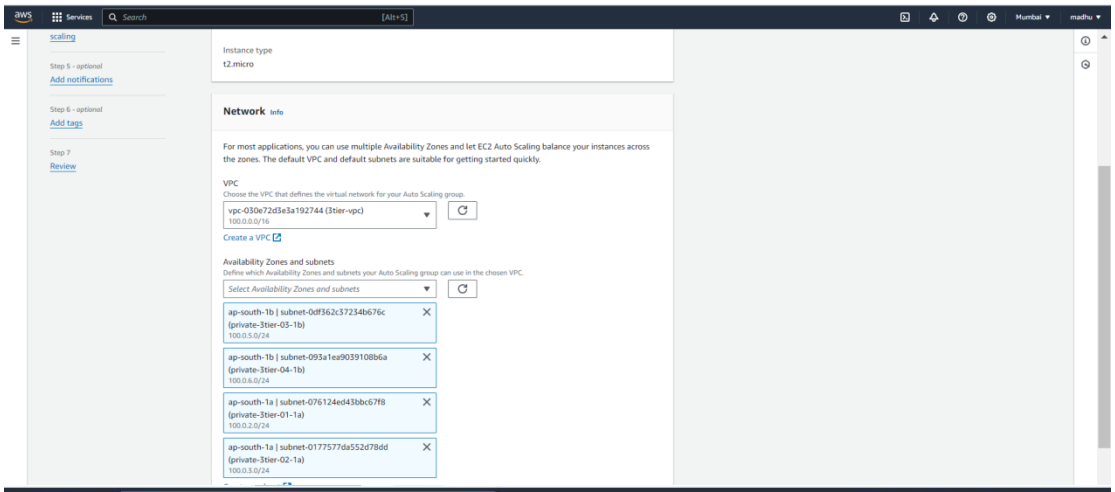
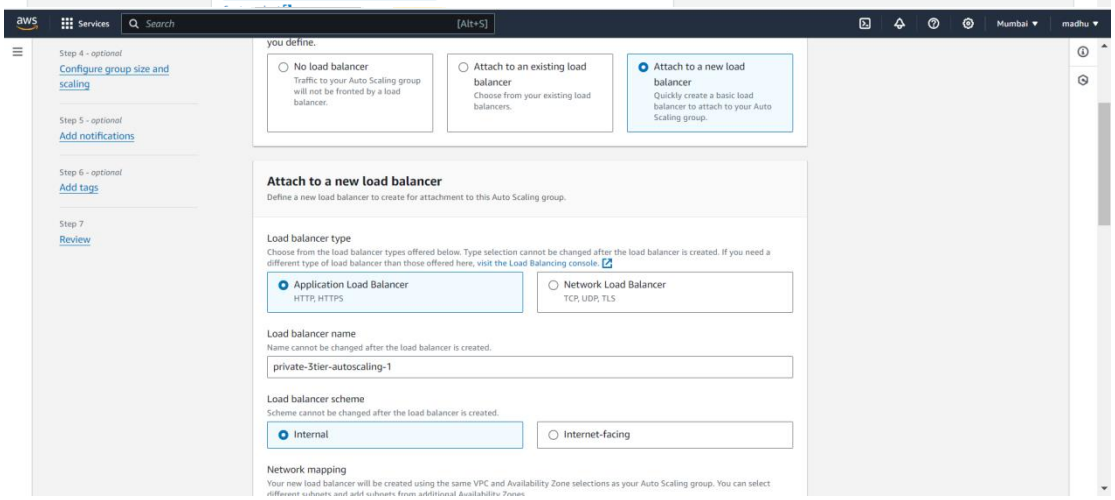
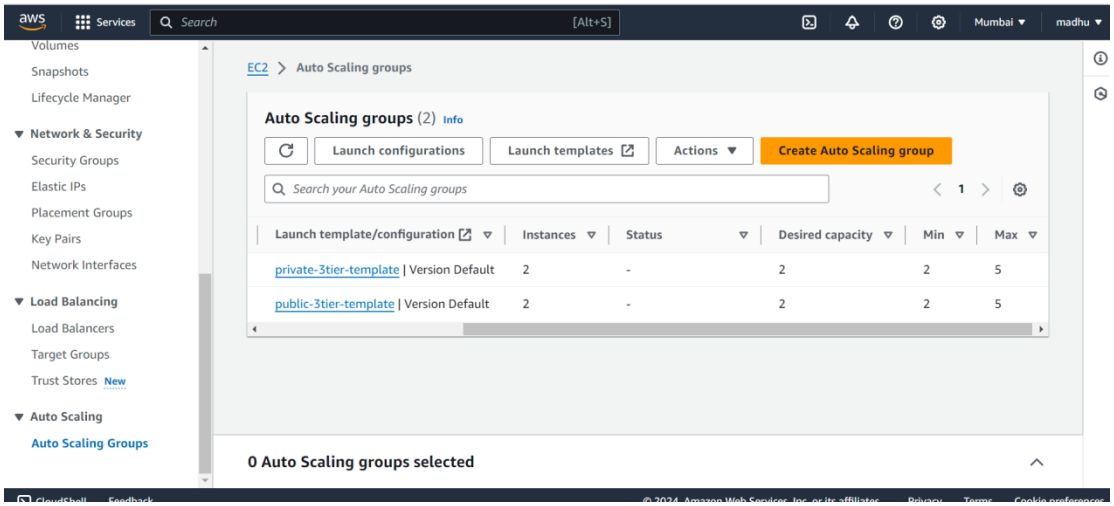
Mumbai
madhu
Choose instance launch options
Step 3 - optional
Configure advanced options
Step 4 - optional
Configure group size and scaling
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Notification 1
Remove
SNS Topic
Choose an SNS topic to use to send notifications
3-tier
Create a topic
Event types
Notify subscribers whenever instances
Launch
Terminate
Fail to launch
Fail to terminate
Add notification
Cancel
Skip to review
Previous
Next


Configure advanced options
Step 4 - optional
Configure group size and scaling
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Auto Scaling group name
Enter a name to identify the group.
private-3tier-autoscaling
Must be unique to this account in the current Region and no more than 255 characters.
Launch template Info
For accounts created after May 31, 2023, the EC2 console only supports creating Auto Scaling groups with launch templates. Creating Auto Scaling groups with launch configurations is not recommended but still available via the CLI and API until December 31, 2023.
Launch template
Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.
private-3tier-template
Create a launch template
Version
Default (1)

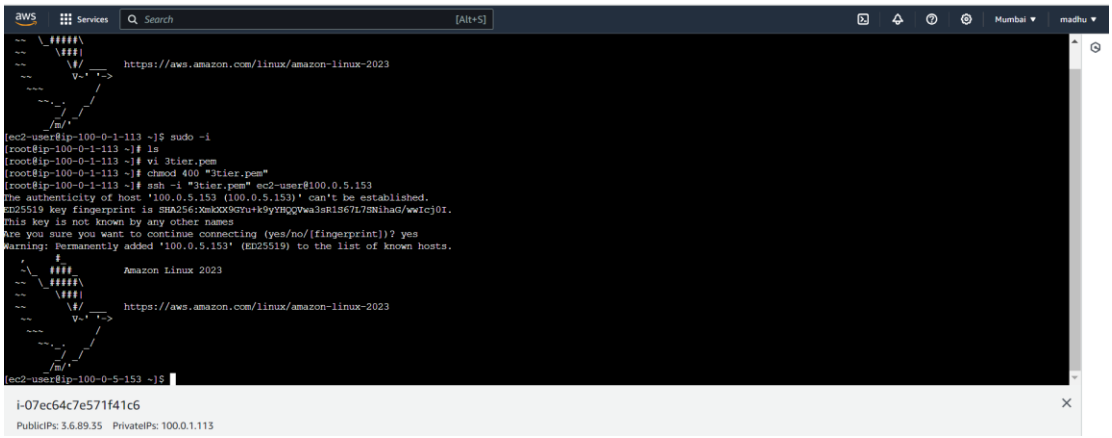

Instance type
t2.micro
Network Info
For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.
VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.
vpc-030e72d3e3a192744 (3tier-vpc)
100.0.0.0/16
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-1b | subnet-0df362c37234b676c (private-3tier-03-1b) 100.0.5.0/24
ap-south-1b | subnet-093a1ea9039108b6a (private-3tier-04-1b) 100.0.6.0/24
ap-south-1a | subnet-076124ed43bbc67f8 (private-3tier-01-1a) 100.0.2.0/24
ap-south-1a | subnet-0177577da552d78dd (private-3tier-02-1a) 100.0.3.0/24


you 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 a new load balancer
Define a new load balancer to create for attachment to this Auto Scaling group.
Load balancer type
Choose from the load balancer types offered below. Type selection cannot be changed after the load balancer is created. If you need a different type of load balancer than those offered here, visit the Load Balancing console.
Application Load Balancer
HTTP, HTTPS
Network Load Balancer
TCP, UDP, TLS
Load balancer name
Name cannot be changed after the load balancer is created.
private-3tier-autoscaling-1
Load balancer scheme
Scheme cannot be changed after the load balancer is created.
Internal
Internet-facing
Network mapping
Your new load balancer will be created using the same VPC and Availability Zone selections as your Auto Scaling group. You can select

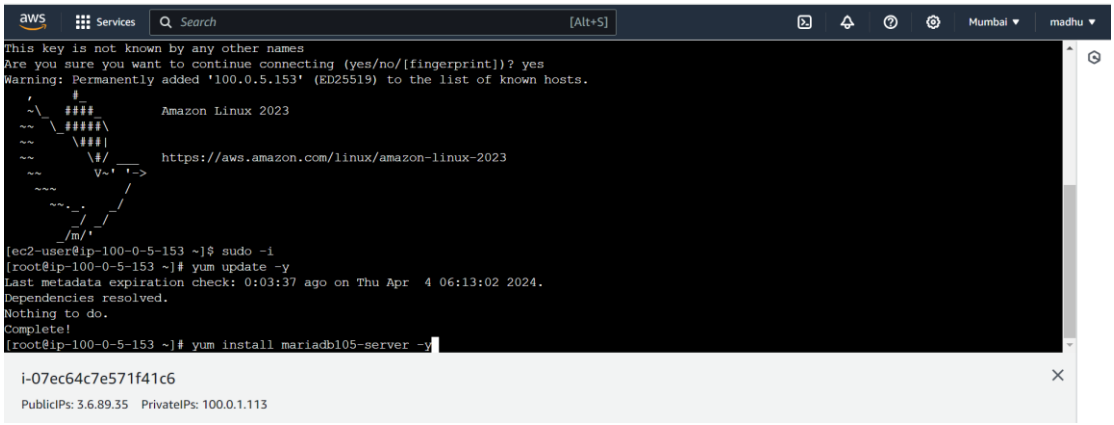


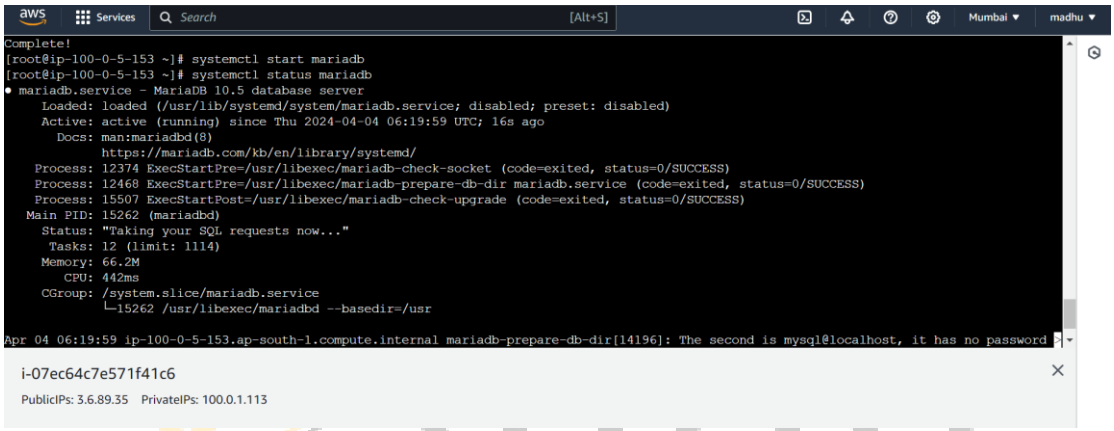
- Now connect public instance

- Now connect public instance to private instance



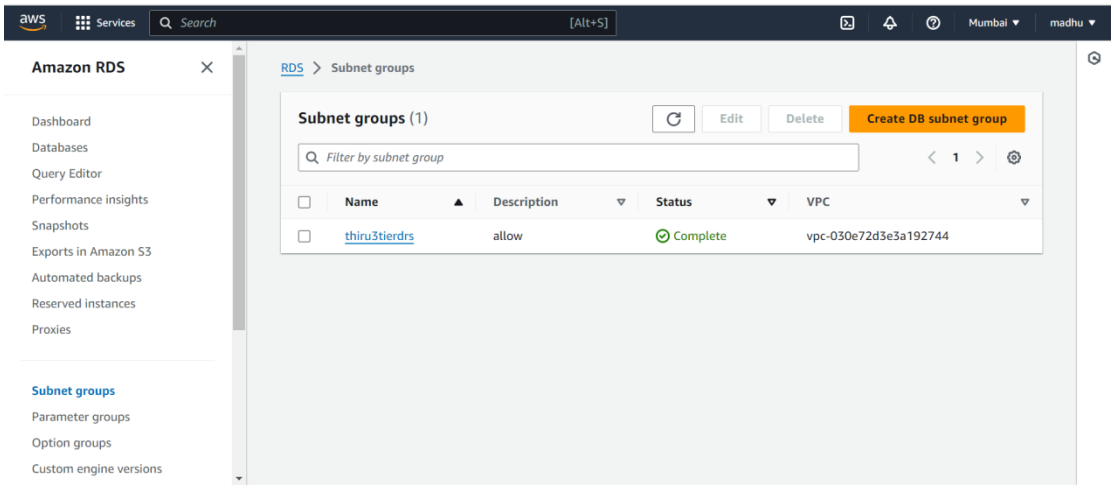
- Now install mariadb in web



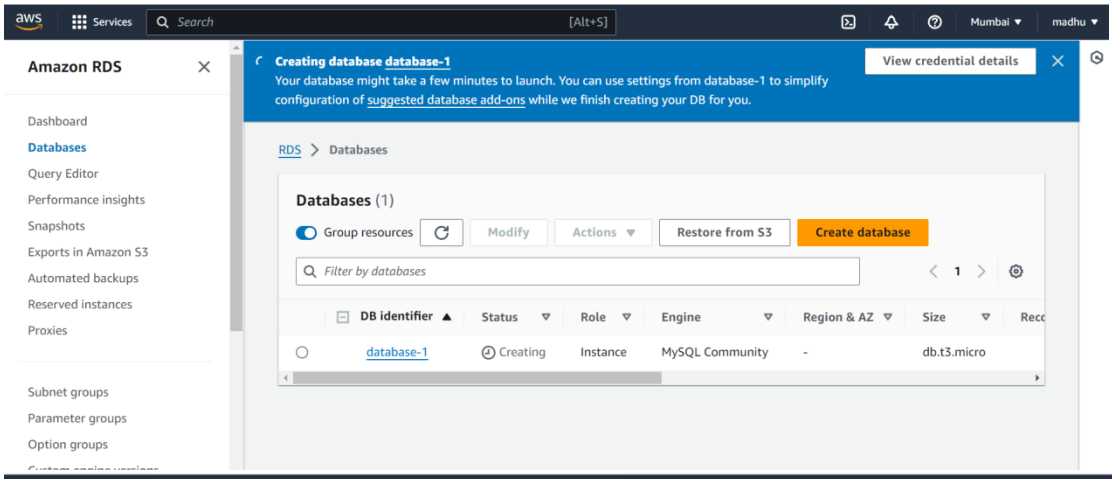


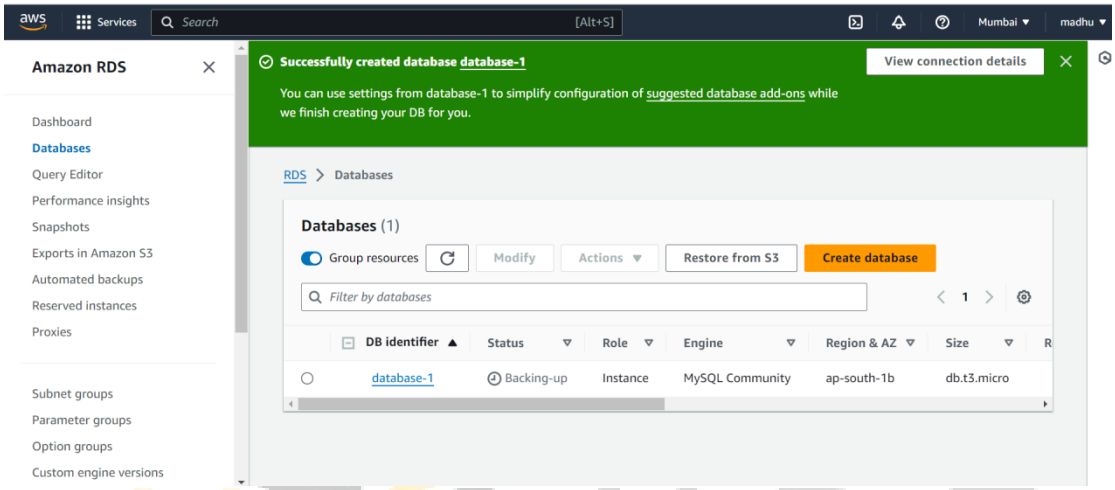
- Now create RDS

1. frist we have to create subnet group



2. Now create database





• Connect to the database.

1. Connect to the server
2. Install MySQL
3. And enter command `MySQL -h YOUR_DB_ENDPOINT -P 3306 -u YOUR_DB_USERNAME -p` in this command instead of your_dB_endpoint we should enter our database endpoint and also edit username as well after that enter password that you have given while creating a relational database.

```
[ec2-user@ip-10-0-156-224 ~]$ mysql -h brainiac-webapp-db.cgwzuzkgdaxy.us-east-1
.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 115
Server version: 8.0.28 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]>
```