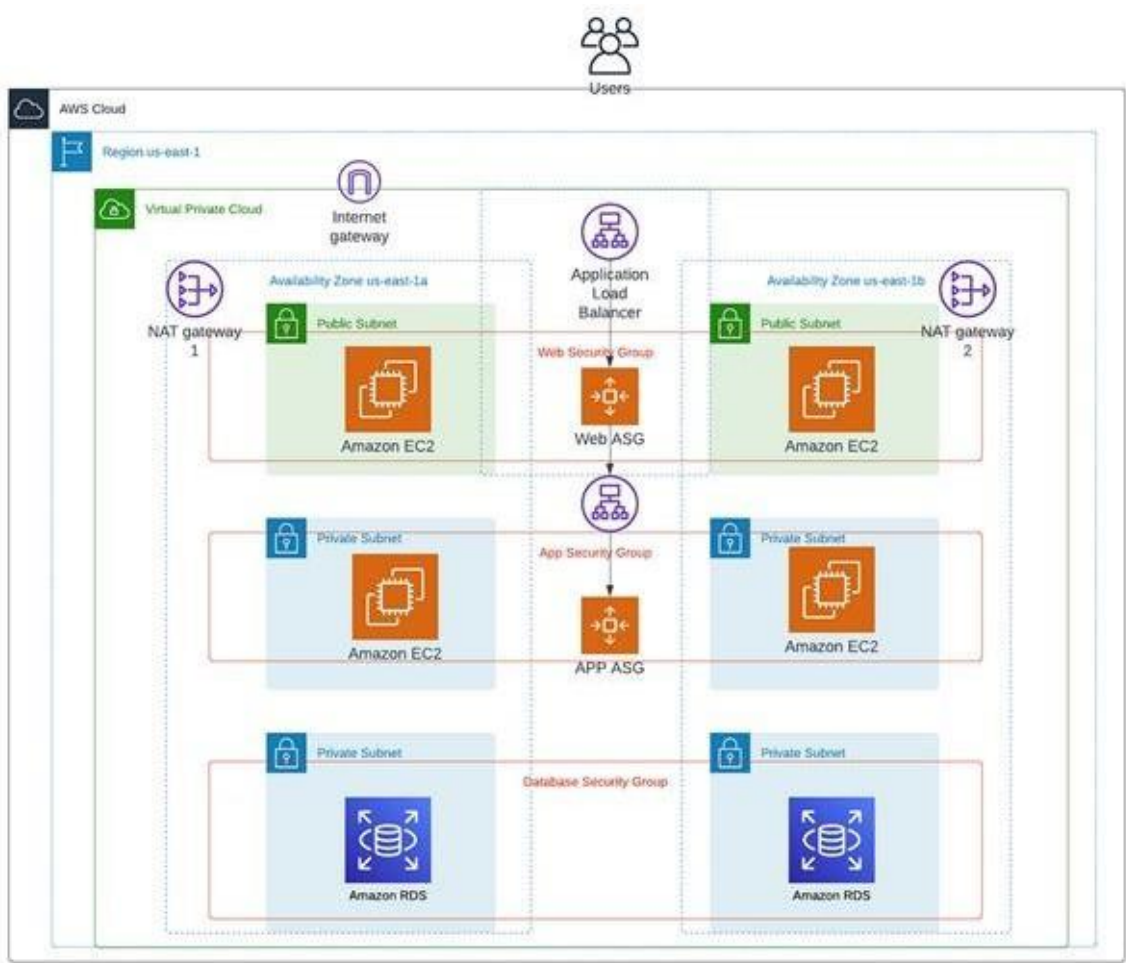
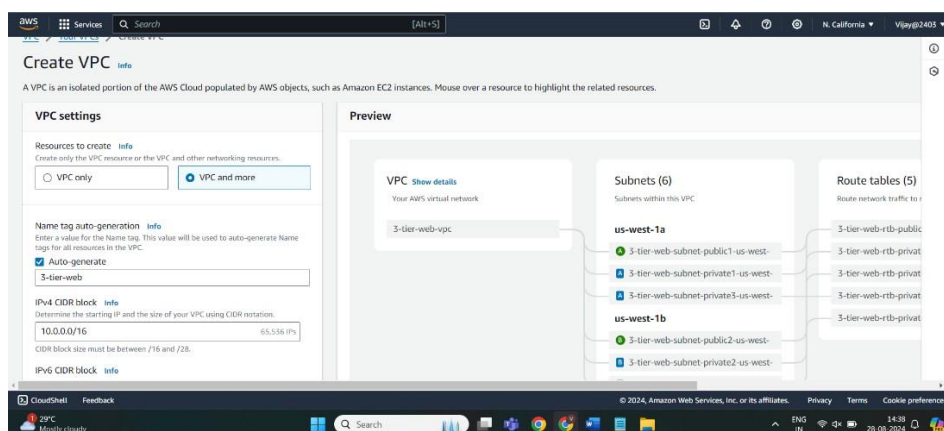


PROJECT-1

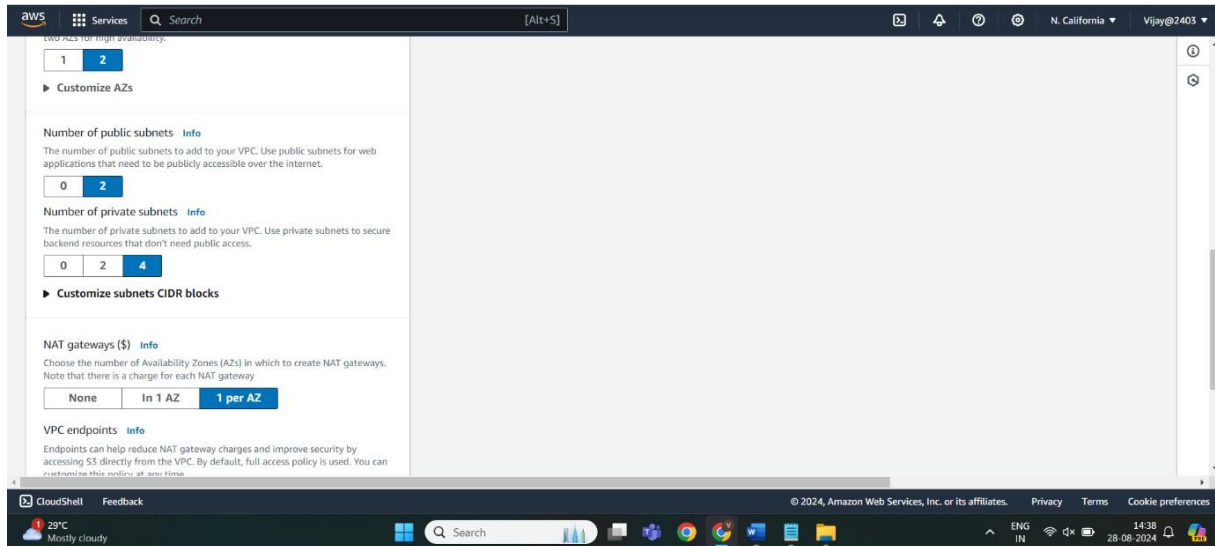
3-TIER ARCHITECTURE



Navigate to VPC > Create VPC > Choose "VPC and more" option. Set the IPv4 CIDR block to 10.0.0/16, select "No" for the IPv6 CIDR block, and leave the Tenancy option as "Default."

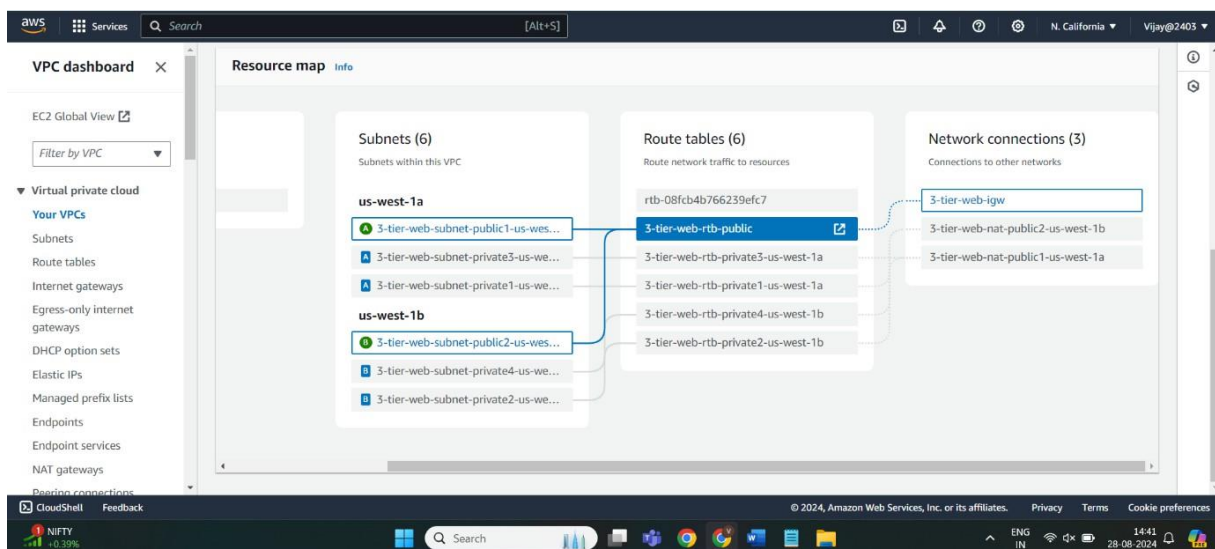


- Select '2' Availability Zones.
- Set the First availability zone to us-west-1a.
- Set the Second availability zone to us-west-1b.
- Enter the public and private subnet CIDR information as specified.
- Choose 1 per AZ for the NAT gateway.
- Select None for VPC endpoints.
- Enable DNS hostnames and DNS resolution.



- Click the **Create VPC** button.

Once completed, click View VPC button. Now, we have a VPC, 2 public subnets, 4 private subnets, and 2 NAT gateways.



- Navigate to VPC > Subnets.
- Select one of the two public subnets.
- Click the Actions menu button.
- Choose Edit subnet settings.
- Enable Auto-assign public IPv4 address.
- Click the Save button.
- Repeat the process for the other public subnet.

The screenshot shows the AWS Management Console interface for Subnets. The top section displays a list of 6 subnets, all in an 'Available' state. Below this, the 'Auto-assign IP settings' section is visible, showing that 'Enable auto-assign public IPv4 address' is checked.

Name	Subnet ID	State	VPC	IPv4 CIDR
3-tier-web-subnet-private3-us-west-1a	subnet-00959ffdfaba9e6d6	Available	vpc-00abece5b5efafc1a 3-tier...	10.0.160.0/20
3-tier-web-subnet-public1-us-west-1a	subnet-05d5e3902e98dacda	Available	vpc-00abece5b5efafc1a 3-tier...	10.0.0.0/20
3-tier-web-subnet-private1-us-west-1a	subnet-030e1816ef4c79ea	Available	vpc-00abece5b5efafc1a 3-tier...	10.0.128.0/20
3-tier-web-subnet-private4-us-west-1b	subnet-0a0b74c111fac468a	Available	vpc-00abece5b5efafc1a 3-tier...	10.0.176.0/20
3-tier-web-subnet-private2-us-west-1b	subnet-0e7c2fa4b64a028c0	Available	vpc-00abece5b5efafc1a 3-tier...	10.0.144.0/20
3-tier-web-subnet-public2-us-west-1b	subnet-0ef4b3b021719b340	Available	vpc-00abece5b5efafc1a 3-tier...	10.0.16.0/20

Auto-assign IP settings

- ☒ Enable auto-assign public IPv4 address
- ☐ Enable auto-assign customer-owned IPv4 address

Navigate to Internet Gateway and confirm that Internet Gateway is attached to the VPC we just created.

The screenshot shows the AWS Management Console interface for Internet gateways. A single internet gateway is listed, attached to the VPC.

Name	Internet gateway ID	State	VPC ID	Owner
3-tier-web-igw	igw-06fa2fc9d67125ede	Attached	vpc-00abece5b5efafc1a 3-tier-web-vpc	539247456082

Navigate to NAT gateways and confirm that two NAT gateways are created.

The screenshot shows the AWS Management Console interface for NAT gateways. Two NAT gateways are listed, both in an 'Available' state.

Name	NAT gateway ID	Connectivity...	State	State message	Primary public I...	Primary private
3-tier-web-nat-publi...	nat-0d67d840cb71ba0cf	Public	Available	-	52.8.232.65	10.0.31.171
3-tier-web-nat-publi...	nat-0cbbb6de1a6e754ed	Public	Available	-	54.241.15.115	10.0.10.254

- Navigate to the public Route tables.
- Confirm that both public subnets are explicitly associated.

The screenshot shows the AWS Management Console interface for Route tables. A success message is displayed at the top: 'You have successfully changed subnet settings: Enable auto-assign public IPv4 address'. Below, a list of route tables is shown, with the public route table selected.

Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC
-	rtb-08fcb4b766239efc7	-	-	Yes	vpc-00abece5b5efafc1a 3-tier...
3-tier-web-rtb-public	rtb-057671da9c23cb3c4	2 subnets	-	No	vpc-00abece5b5efafc1a 3-tier...
3-tier-web-rtb-private3-us-west-1a	rtb-0b5af25bf2900c2e6	subnet-00959ffdfaba9e6...	-	No	vpc-00abece5b5efafc1a 3-tier...
3-tier-web-rtb-private1-us-west-1a	rtb-03ec26383f7a41fda	subnet-030e1816ef4c79...	-	No	vpc-00abece5b5efafc1a 3-tier...
3-tier-web-rtb-private4-us-west-1b	rtb-00f5241ed202a731f	subnet-0a0b74c111fac46...	-	No	vpc-00abece5b5efafc1a 3-tier...

- Verify that each private route table is explicitly associated with its corresponding private subnet.

STEP-1: CREATE WEB TIER

- Navigate to EC2 > Launch Templates.
- Click the Create launch template button.
- Enter the launch template name and description.

EC2 > Launch templates > Create launch template

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*

3-tier-web

Must be unique to this account. Max 128 chars. No spaces or special characters like %, ", @.

Template version description

allow

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

Summary

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...[read more](#)
ami-0d53d72369335a9d6

Virtual server type (instance type)
t2.micro

Firewall (security group)
3-tier-web

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 Create launch template

- Check the box for Auto Scaling guidance.

Select your AMI and the Instance type. I selected Ubuntu server 24.04 LTS and t2.micro Instance type.

Services Search [Alt+S]

Application and OS images (Amazon Machine Image) - *required*

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Quick Start

Amazon Linux Ubuntu Windows Red Hat SUSE Linux Debian

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

ami-0d53d72369335a9d6 (64-bit (x86)) / ami-06098d756d39a2267 (64-bit (Arm))

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

Free tier eligible

Description

Ubuntu Server 24.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical

Summary

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...[read more](#)
ami-0d53d72369335a9d6

Virtual server type (instance type)
t2.micro

Firewall (security group)
3-tier-web

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 Create launch template

- Select the Security Group and provide it with a name.
- Choose the VPC created in Part 1.
- Click the Add Security Group Rules button.
- Add rules to allow traffic on ports for ICMP, HTTP, and SSH.
- Under Advanced network configuration, enable Auto-assign public IP.

Services Search [Alt+S] N. California Vijay@2403

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Select existing security group ☐ Create security group

Common security groups info

Select security groups

3-tier-web sg-07d1bd6a4fa91462e X
VPC: vpc-00abec505efafc1a

Compare security group rules

Security groups that you add or remove here will be added to or removed from all your network interfaces.

▼ Advanced network configuration

Network interface 1

Device index Info Network interface Info Description Info Remove

0 New interface

Existing network interfaces are not recommended when creating a template for auto-scaling.

Subnet Info

Don't include in launch template
Not applicable for EC2 Auto Scaling

Security groups info

Select security groups

Auto-assign public IP Info

Enable

Show all selected (1)

Summary

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...read more
ami-0d53d72369335a9d6

Virtual server type (instance type)
t2.micro

Firewall (security group)
3-tier-web

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 Create launch template

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Subnet Info

Don't include in launch template
Not applicable for EC2 Auto Scaling

Primary IP Info

Don't include in launch template
Not applicable for EC2 Auto Scaling

IPv4 Prefixes Info

Don't include in launch tem...
The selected instance type does not support IPv4 prefixes.

Delete on termination Info

Don't include in launch tem...

ENAX Express UDP Info

Don't include in launch tem...

Security groups info

Select security groups

Show all selected (1)

Secondary IP Info

Don't include in launch tem...
Not applicable for EC2 Auto Scaling

IPv6 Prefixes Info

Don't include in launch tem...
The selected instance type does not support IPv6 prefixes.

Elastic Fabric Adapter Info

Enable
The selected instance type does not support EFA.

ENAX Express Info

Don't include in launch tem...
The selected instance type does not support ENAX Express.

Auto-assign public IP Info

Enable

Assign Primary IPv6 IP Info

Don't include in launch tem...
Not applicable for EC2 Auto Scaling

Summary

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...read more
ami-0d53d72369335a9d6

Virtual server type (instance type)
t2.micro

Firewall (security group)
3-tier-web

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 Create launch template

- Scroll to the bottom and paste the following script into the User Data field:

```
``bash
#!/bin/bash
apt update -y
apt install apache2 -y
systemctl start apache2
echo "<center><h1>vijay</h1></center>" > /var/www/html/index.html
``
```

- Click the Create launch template button.
- Click the View Launch template button.
- Navigate to EC2 > Auto Scaling Groups.
- Click the Create Auto Scaling group button.
- Provide the Auto Scaling group name.

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EC2 > Auto Scaling groups > Create Auto Scaling group

Step 1
Choose launch template

Step 2
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

Choose launch template Info

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group.

Name

Auto Scaling group name
Enter a name to identify the group.

3-tier-web

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

Services Search [Alt+S] N. California Vijay@2403

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-00abece5b5efafc1a (3-tier-web-vpc)
10.0.0.0/16

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

us-west-1a | subnet-05d5e3902e98dacda (3-tier-web-subnet-public1-us-west-1a)
10.0.0.0/20

us-west-1b | subnet-0ef4b3b021719b340 (3-tier-web-subnet-public2-us-west-1b)
10.0.16.0/20

Create a subnet

- Choose Attach a new load balancer.
- Select the Application Load Balancer type.
- Ensure that the Internet-facing Load balancer scheme is selected.
- Choose Create a target group for Default routing.
- A new target group with default settings will be created.

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control over health check replacements and monitoring.

Load balancing Info

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.

resolution.

☒ us-west-1a subnet-05d5e3902e98dacda

☒ us-west-1b subnet-0ef4b3b021719b340

Listeners and routing
If you require secure listeners, or multiple listeners, you can configure them from the [Load Balancing console](#) after your load balancer is created.

Protocol	Port	Default routing (forward to)
HTTP	80	Create a target group

New target group name
An instance target group with default settings will be created.

3-tier-web-1

- Confirm that Health check is already enabled.
- Ensure that Enable group metrics collections with CloudWatch is already selected.
- Click the Next button.
- Specify the desired size of the Auto Scaling group.abled, and Enable group metrics collections with CloudWatch is already selected. Click Next button. Specify the desired size of the Auto Scaling group.

Specify your group size.

2

Scaling info
You can resize your Auto Scaling group manually or automatically to meet changes in demand.

Scaling limits
Set limits on how much your desired capacity can be increased or decreased.

Min desired capacity	Max desired capacity
1	2

Equal or less than desired capacity

Equal or greater than desired capacity

Automatic scaling - optional
Choose whether to use a target tracking policy info
You can set up other metric-based scaling policies and scheduled scaling after creating your Auto Scaling group.

☒ **No scaling policies**
Your Auto Scaling group will remain at its initial size and will not dynamically resize to meet demand.

☐ **Target tracking scaling policy**
Choose a CloudWatch metric and target value and let the scaling policy adjust the desired capacity in proportion to the metric's value.

- Choose Target tracking scaling policy. Click Next button.
- Click Next button again. On Review page, click Create Auto Scaling group.

Automatic scaling - optional
Choose whether to use a target tracking policy info
You can set up other metric-based scaling policies and scheduled scaling after creating your Auto Scaling group.

☐ **No scaling policies**
Your Auto Scaling group will remain at its initial size and will not dynamically resize to meet demand.

☒ **Target tracking scaling policy**
Choose a CloudWatch metric and target value and let the scaling policy adjust the desired capacity in proportion to the metric's value.

Scaling policy name

Target Tracking Policy

Metric type info
Monitored metric that determines if resource utilization is too low or high. If using EC2 metrics, consider enabling detailed monitoring for better scaling performance.

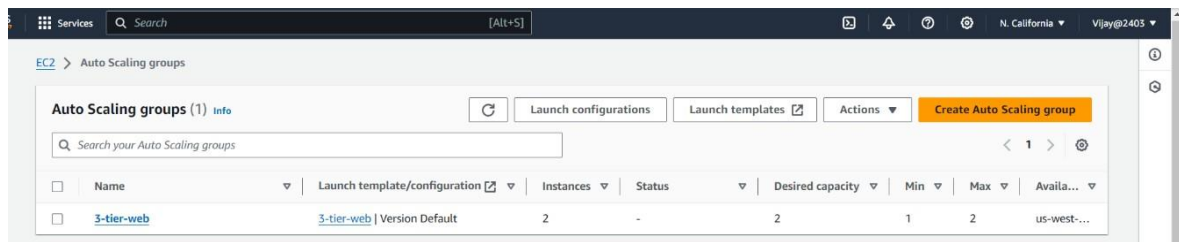
Average CPU utilization

Target value

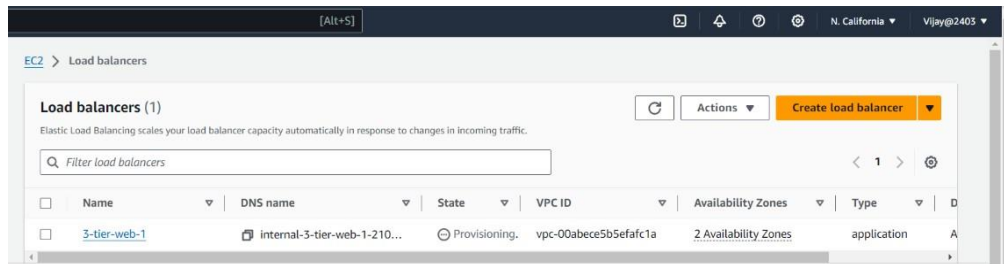
50

Instance warmup info
100 seconds

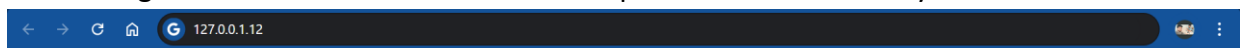
☐ Disable instance to create only a scaled-up policy



Go to EC2 > Load Balancers and confirm if it has been created successfully.



Go to EC2 and confirm if two EC2 instances are running. Yes, two EC2 instances are initializing. Go to a web Browser and enter the public IPv4 address. Yay! Success!



hii instance 1

Instance-1



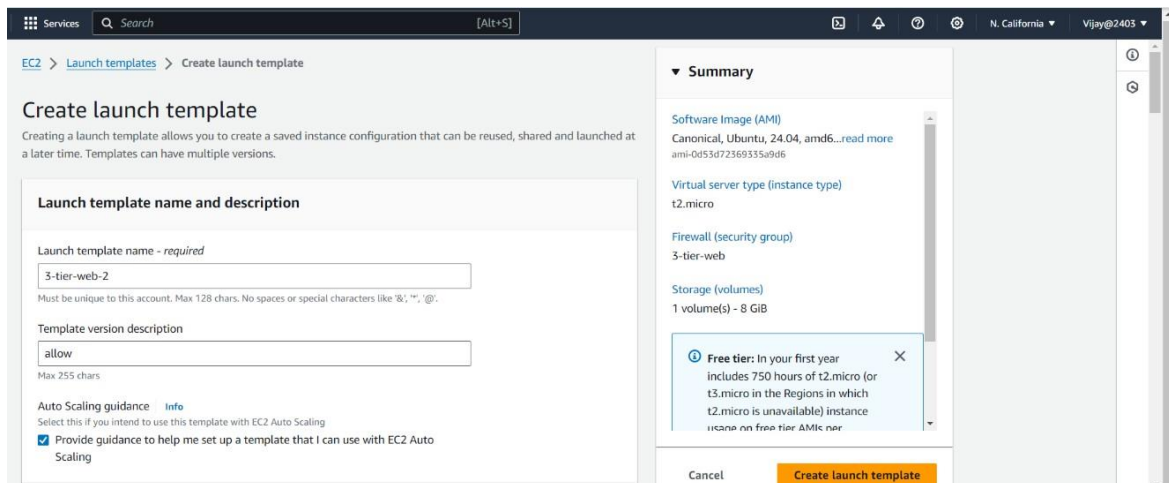
hii instance 2

Instance-2

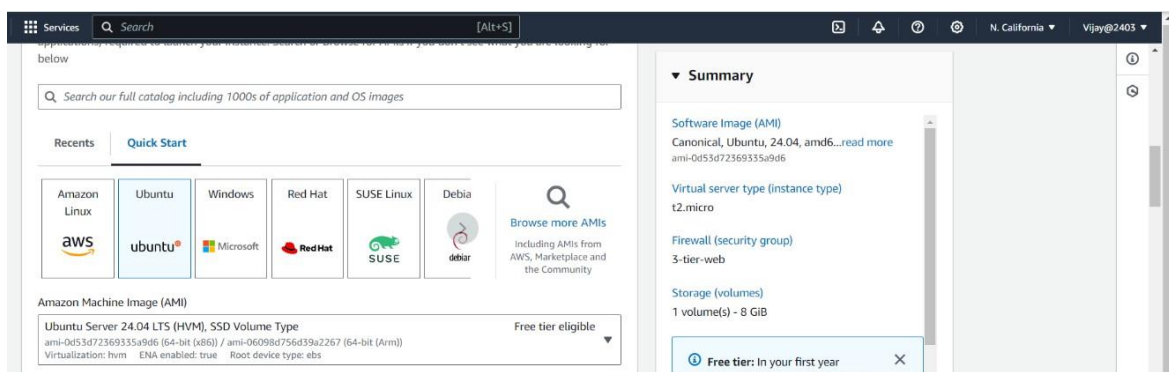
STEP-2: Create the App tier

Go to EC2 > Launch templates > Click Create launch template button.

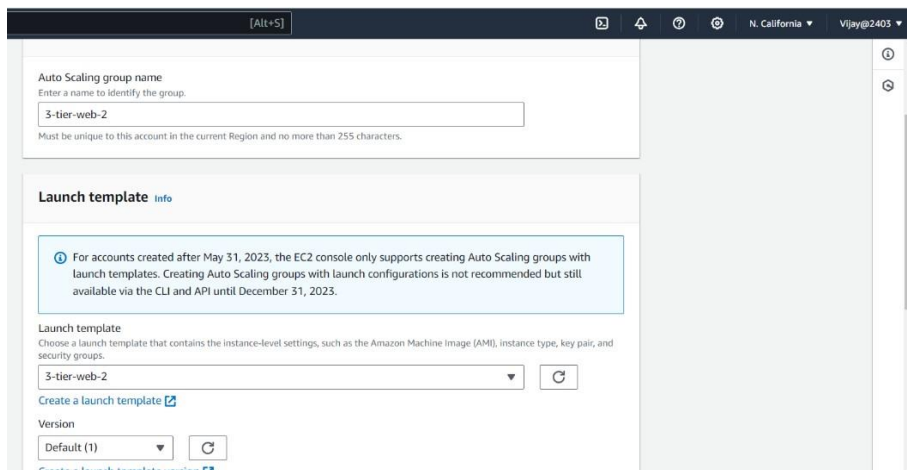
Give the Launch template name and check for Auto Scaling guidance.



Select Ubuntu server 24.04 LTS and t2.micro Instance type.

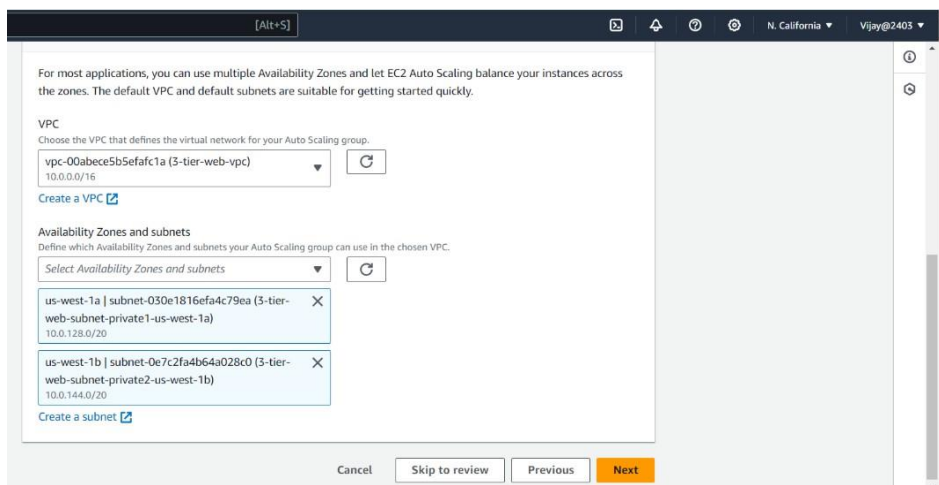


Select the Key pair you already have.



- Under Network settings, select Create security group.
- Provide a name for the security group and choose the VPC created for the tier 3 project.
- Click Add security group rule to allow traffic for ICMP to ping the app EC2 via SSH.
- Set the Web tier security group as the Source for the SSH group rule.
- Click the Create launch template button.

Go to EC2 > Auto Scaling groups > Click Create Auto Scaling group button. Give it a name and select the launch template for app tier and click Next button. Select VPC we created and select private subnets created for app tier. Click Next button.



Choose Attach to a new load balancer. Then, select Application Load Balancer. For app tier, we need to select Internal Load balancer scheme.

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control over health check replacements and monitoring.

Load balancing [Info](#)

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.

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vpc-00abece5b5efafc1a 3-tier-web-vpc

Availability Zones and subnets

You must select a single subnet for each Availability Zone enabled. Only public subnets are available for selection to support DNS resolution.

☒ us-west-1a subnet-030e1816efa4c79ea

☒ us-west-1b subnet-0e7c2fa4b64a028c0

Listeners and routing

If you require secure listeners, or multiple listeners, you can configure them from the [Load Balancing console](#) after your load balancer is created.

Protocol	Port	Default routing (forward to)
HTTP	80	Create a target group

New target group name
An instance target group with default settings will be created.

3-tier-web-2-1

Tags - optional

Select Create a target group. It will be automatically created for you. Keep the default settings for Health checks and click Next button.

[Alt+S] N. California Vijay@2403

vpc-00abece5b5efafc1a 3-tier-web-vpc

Availability Zones and subnets

You must select a single subnet for each Availability Zone enabled. Only public subnets are available for selection to support DNS resolution.

☒ us-west-1a subnet-030e1816efa4c79ea

☒ us-west-1b subnet-0e7c2fa4b64a028c0

Listeners and routing

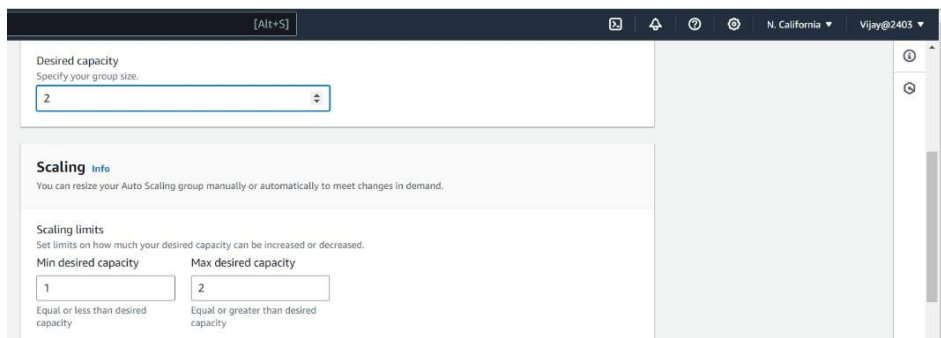
If you require secure listeners, or multiple listeners, you can configure them from the [Load Balancing console](#) after your load balancer is created.

Protocol	Port	Default routing (forward to)
HTTP	80	Create a target group

New target group name
An instance target group with default settings will be created.

3-tier-web-2-1

Enter your desired capacity.



Desired capacity
Specify your group size.

2

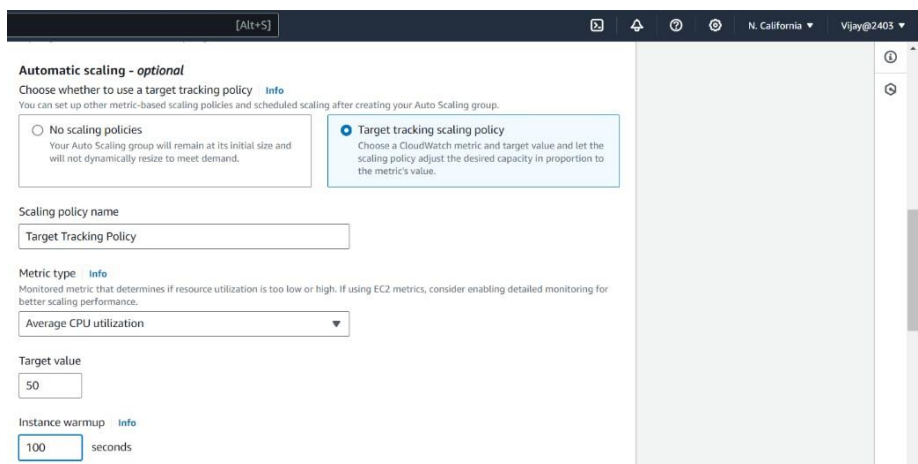
Scaling [Info](#)
You can resize your Auto Scaling group manually or automatically to meet changes in demand.

Scaling limits
Set limits on how much your desired capacity can be increased or decreased.

Min desired capacity
1
Equal or less than desired capacity

Max desired capacity
2
Equal or greater than desired capacity

Enter your Scaling policies. Then, click Next button.



Automatic scaling - optional
Choose whether to use a target tracking policy [Info](#)
You can set up other metric-based scaling policies and scheduled scaling after creating your Auto Scaling group.

☐ No scaling policies
Your Auto Scaling group will remain at its initial size and will not dynamically resize to meet demand.

☒ Target tracking scaling policy
Choose a CloudWatch metric and target value and let the scaling policy adjust the desired capacity in proportion to the metric's value.

Scaling policy name
Target Tracking Policy

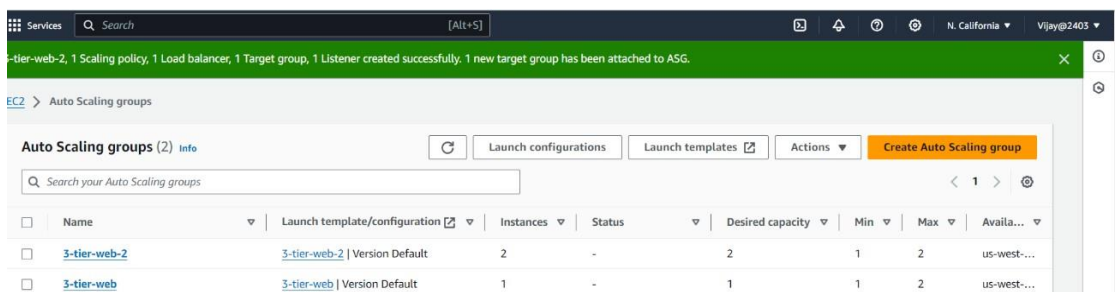
Metric type [Info](#)
Monitored metric that determines if resource utilization is too low or high. If using EC2 metrics, consider enabling detailed monitoring for better scaling performance.

Average CPU utilization

Target value
50

Instance warmup [Info](#)
100 seconds

Review and then click Create Auto Scaling group button.



Services Search [Alt+S] N. California Vijay@2403

3-tier-web-2, 1 Scaling policy, 1 Load balancer, 1 Target group, 1 Listener created successfully. 1 new target group has been attached to ASG.

EC2 > Auto Scaling groups

Auto Scaling groups (2) [Info](#) [Refresh](#) [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	Availa...
<input type="checkbox"/>	3-tier-web-2	3-tier-web-2 Version Default	2	-	2	1	2	us-west-...
<input type="checkbox"/>	3-tier-web	3-tier-web Version Default	1	-	1	1	2	us-west-...

STEP-3: Create the Database Tier

Navigate to EC2 > Auto Scaling groups.

- Click the Create Auto Scaling group button.
- Provide a name for the Auto Scaling group and select the launch template for the app tier.
- Click the Next button.
- Select the VPC created for the project and choose the private subnets created for the app tier.

The screenshot shows the 'Create DB subnet group' page in the AWS Management Console. The breadcrumb navigation is 'RDS > Subnet groups > Create DB subnet group'. The page title is 'Create DB subnet group'. Below the title, there is a brief instruction: 'To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that VPC.' The 'Subnet group details' section contains three fields: 'Name' with the value '3-tier-web', 'Description' with the value 'allow', and 'VPC' which is currently empty. The 'Name' field has a note: 'You won't be able to modify the name after your subnet group has been created. Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.' The 'Description' field has a note: 'Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.'

- Click the Next button.

Navigate to RDS > Click Create database button. Choose Standard create method. Select MySQL Engine type.

The screenshot shows the 'Create database' page in the AWS Management Console. The breadcrumb navigation is 'RDS > Create database'. The page title is 'Create database'. Below the title, there are two tabs: 'Standard create' (selected) and 'Easy create'. The 'Standard create' tab has a note: 'You set all of the configuration options, including ones for availability, security, backups, and maintenance.' The 'Easy create' tab has a note: 'Use recommended best-practice configurations. Some configuration options can be changed after the database is created.' Below the tabs, there is a section titled 'Engine options'. It contains four options: 'Aurora (MySQL Compatible)', 'Aurora (PostgreSQL Compatible)', 'MySQL' (selected), and 'MariaDB'. Each option has a corresponding icon. To the right of the 'Engine options' section, there is a sidebar titled 'MySQL' with a close button. The sidebar contains the following text: 'MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.' Below this text, there are four bullet points: 'Supports database size up to 64 TiB.', 'Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.', 'Supports automated backup and point-in-time recovery.', and 'Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.'

Choose Free tier Template. Give your DB instance name and set up the master credential.

The screenshot shows the 'Templates' section in the AWS Management Console. The breadcrumb navigation is 'RDS > Templates'. The page title is 'Templates'. Below the title, there is a brief instruction: 'Choose a sample template to meet your use case.' There are three templates: 'Production', 'Dev/Test', and 'Free tier' (selected). Each template has a corresponding icon and a brief description. The 'Free tier' template has a note: 'Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. Info'. To the right of the 'Templates' section, there is a sidebar titled 'MySQL' with a close button. The sidebar contains the following text: 'MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.' Below this text, there are four bullet points: 'Supports database size up to 64 TiB.', 'Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.', 'Supports automated backup and point-in-time recovery.', and 'Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.'

▼ Credentials Settings

Master username [Info](#)

Type a login ID for the master user of your DB instance.

admin

1 to 16 alphanumeric characters. The first character must be a letter.

Credentials management

You can use AWS Secrets Manager or manage your master user credentials.

☐ **Managed in AWS Secrets Manager - *most secure***
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.

☒ **Self managed**
Create your own password or have RDS create a password that you manage.

☐ **Auto generate password**

Amazon RDS can generate a password for you, or you can specify your own password.

Master password [Info](#)

Password strength [Weak](#)

Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' " @

Confirm master password [Info](#)

- Keep the default instance configuration and select the db.t2.micro instance type.
- Choose Don't connect to an EC2 compute resource.
- Add the VPC created for the project.
- Select the DB subnet group you created.

Connectivity [Info](#)



Compute resource

Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

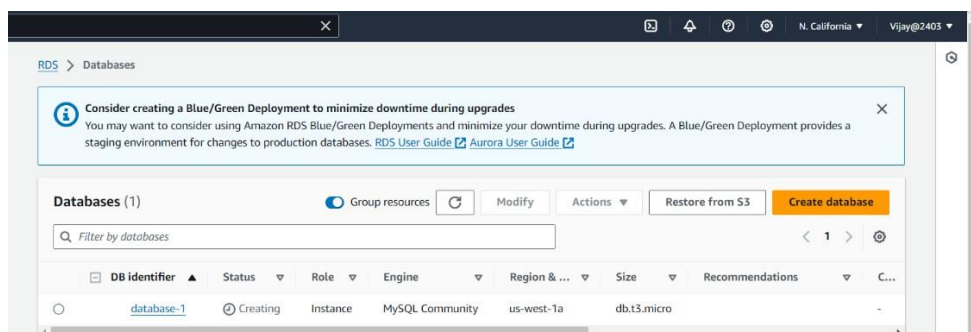
☒ **Don't connect to an EC2 compute resource**
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

☐ **Connect to an EC2 compute resource**
Set up a connection to an EC2 compute resource for this database.

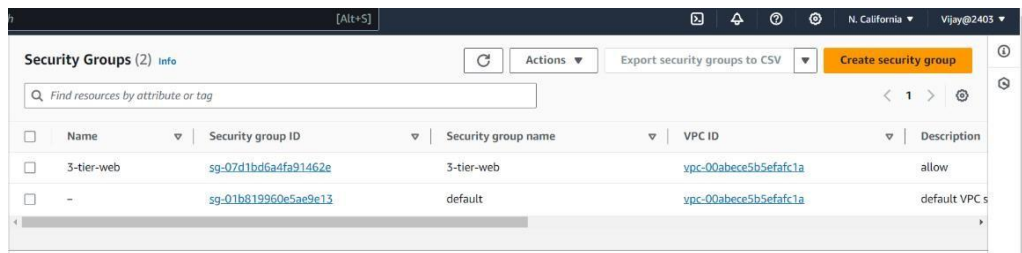
Virtual private cloud (VPC) [Info](#)

- Set Public access to No to ensure that only EC2 instances can connect to your RDS database.

Keep the default setting for the rest of sections and then click Create database button.



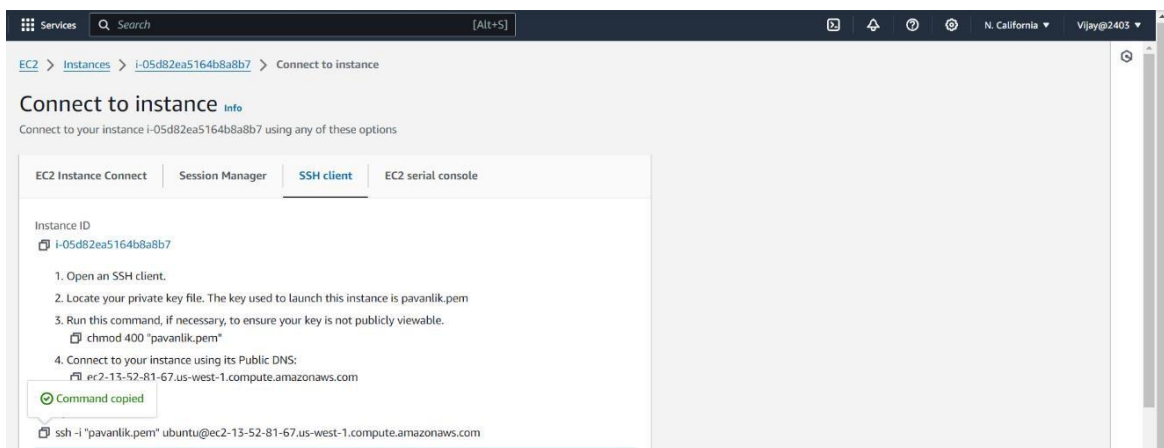
- Navigate to EC2 > Security Groups.
- Type the keyword "data" to find the matched security group.
- Select the relevant security group.
- Go to the Inbound rules tab.



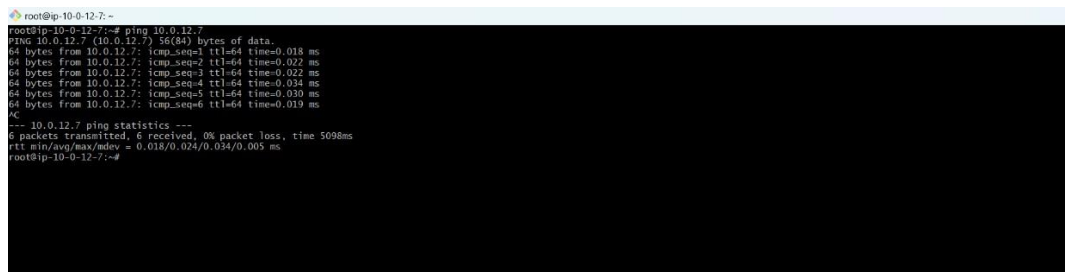
- Click the Edit inbound rules button.

Change the Inbound Source to App Tier Security Group so that the App tier can communicate to Database Tier. Click Save rules button.

Now click Connect button to copy the ssh address.



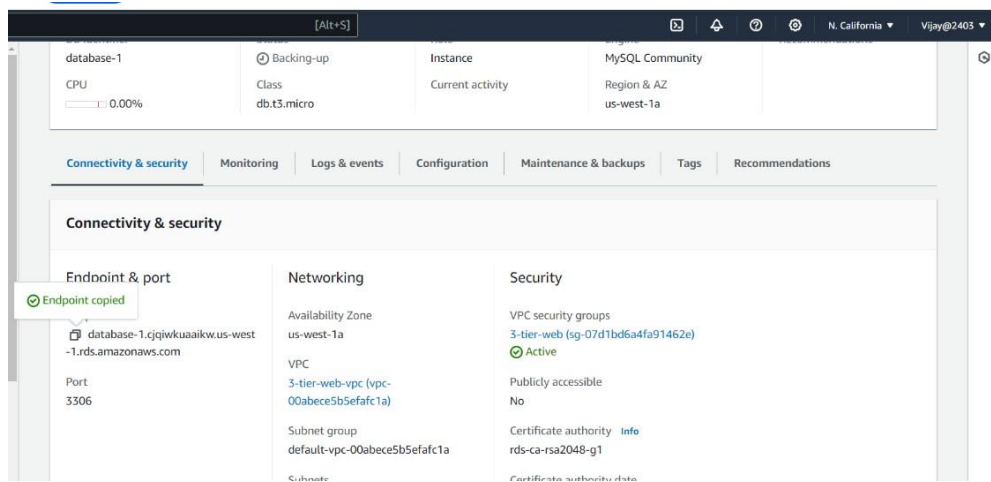
SSH into the EC2 instance. Ping one of the Private IPv4 from EC2 in the Private Subnet. Yes, I can ping the app EC2 instance private IP.



- Run the following commands to test connectivity to the Database Tier:

```
``bash
sudo apt update
sudo apt install mysql-server
sudo systemctl start mysql.service
``
```

- Navigate to RDS > Databases.
- Select the Tier 3 database.
- Click the Connectivity & security tab.
- Copy the Endpoint address.



Run command below and then enter your admin password. Yay, success! Now, we are in the RDS database instance.

```
mysql: [Warning] Using a password on the command line interface can be insecure.
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 33
Server version: 8.0.35 Source distribution

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owners.

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

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

mysql> create database vijay;
Query OK, 1 row affected (0.00 sec)

mysql> use database vijay;
ERROR 1049 (42000): unknown database 'database'
mysql> use vijay;
Database changed
mysql> create table pavan(
  -> id int,
  -> name varchar(50),
  -> gender varchar(50),
  -> age int)primary key id;
ERROR 1064 (42000): you have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right
syntax to use near 'primary key id' at line 5
mysql>
```

```
mysql> create table ajoy(
  -> id int,
  -> name varchar(50)
  -> );
ERROR 3150 (HY000): unable to create or change a table without a primary key, when the system variable 'sql_require_primary_key' is set
Add a primary key to the table or unset this variable to avoid this message. Note that tables without a primary key can cause perform
ance problems in row-based replication, so please consult your DBA before changing this setting.
mysql> create table ajoy( id int primary key, name varchar(50) );
Query OK, 0 rows affected (0.02 sec)

mysql> show tables;
+-----+
| Tables_in_vijay |
+-----+
| ajoy |
+-----+
1 row in set (0.00 sec)

mysql>
```

