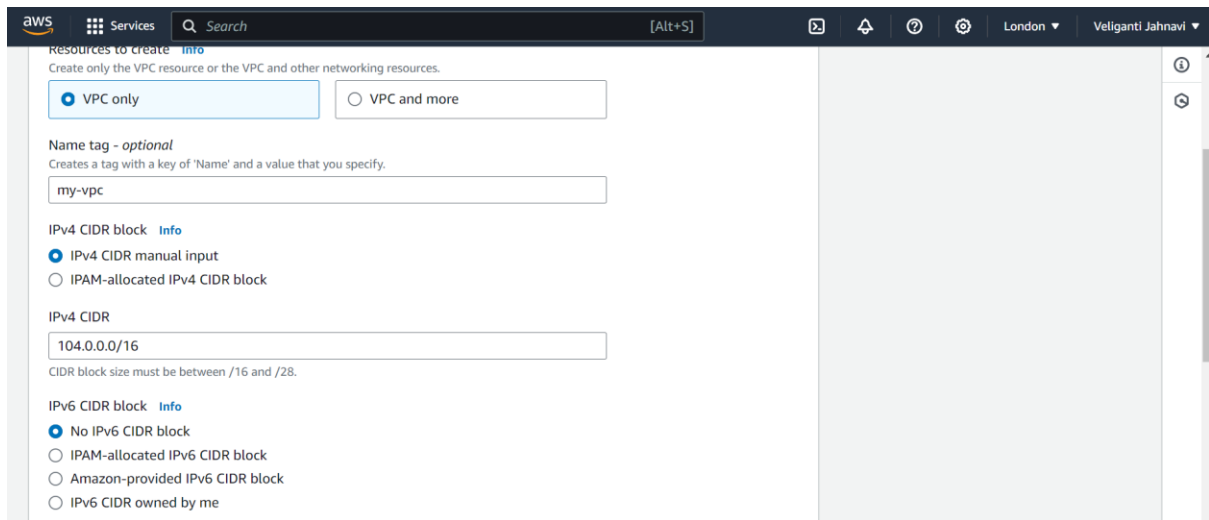


## 3-Tier Architecture.

**Step 1: Choose the region (London)→Create a VPC.**



The screenshot shows the 'Create VPC' page in the AWS Management Console. The 'Resources to create' section has 'VPC only' selected. The 'Name tag' is 'my-vpc'. Under 'IPv4 CIDR block', 'IPv4 CIDR manual input' is selected with the value '104.0.0.0/16'. Under 'IPv6 CIDR block', 'No IPv6 CIDR block' is selected.

Resources to create [Info](#)  
Create only the VPC resource or the VPC and other networking resources.

☒ VPC only ☐ VPC and more

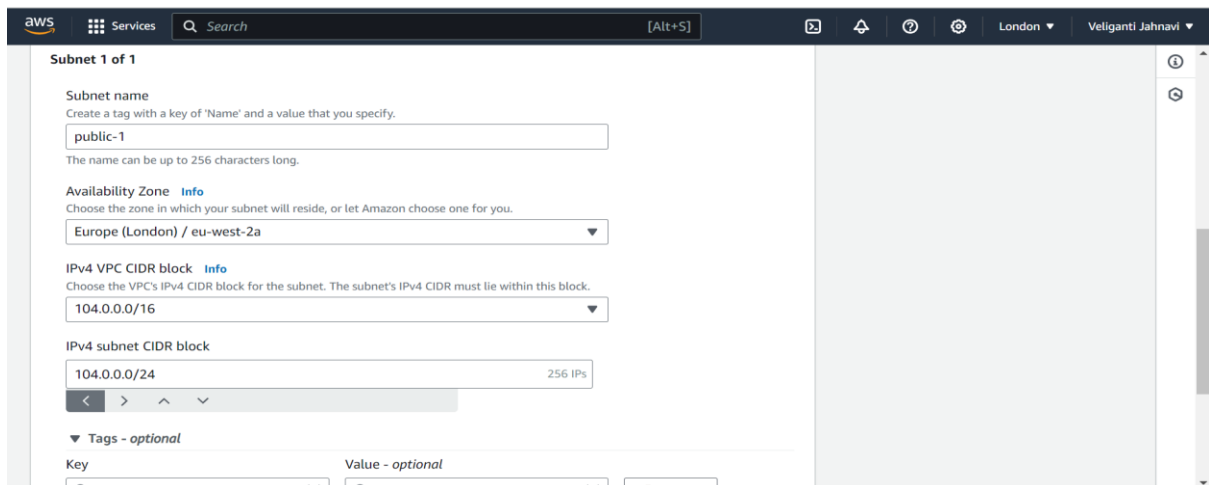
Name tag - optional  
Creates a tag with a key of 'Name' and a value that you specify.

IPv4 CIDR block [Info](#)  
☒ IPv4 CIDR manual input  
☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR  
  
CIDR block size must be between /16 and /28.

IPv6 CIDR block [Info](#)  
☒ No IPv6 CIDR block  
☐ IPAM-allocated IPv6 CIDR block  
☐ Amazon-provided IPv6 CIDR block  
☐ IPv6 CIDR owned by me

**Step 2: Create 2 public(2a,2b) subnets and 4(2a,2b,2c,2d) private subnets.**



The screenshot shows the 'Create Subnet' page for 'Subnet 1 of 1'. The 'Subnet name' is 'public-1'. The 'Availability Zone' is 'Europe (London) / eu-west-2a'. The 'IPv4 VPC CIDR block' is '104.0.0.0/16'. The 'IPv4 subnet CIDR block' is '104.0.0.0/24' with 256 IPs.

Subnet 1 of 1

Subnet name  
Create a tag with a key of 'Name' and a value that you specify.  
  
The name can be up to 256 characters long.

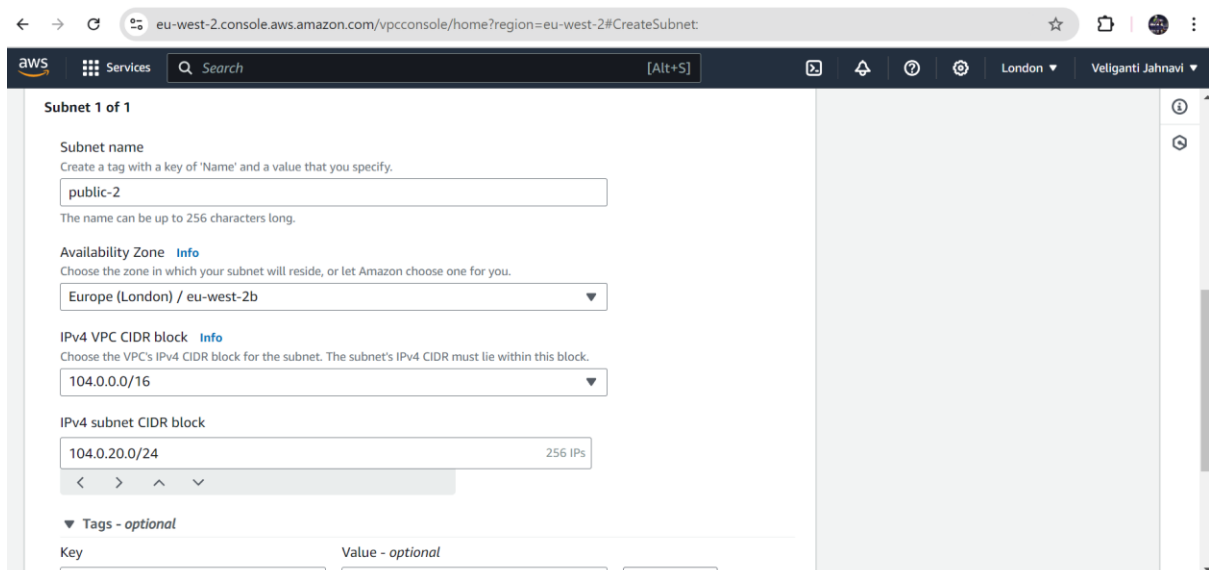
Availability Zone [Info](#)  
Choose the zone in which your subnet will reside, or let Amazon choose one for you.

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.

IPv4 subnet CIDR block  
 256 IPs  
< > ^ v

Tags - optional  
Key Value - optional  

Key	Value - optional
<input type="text" value="Name"/>	<input type="text" value="public-1"/>



The screenshot shows the 'Create Subnet' page for 'Subnet 2 of 1'. The 'Subnet name' is 'public-2'. The 'Availability Zone' is 'Europe (London) / eu-west-2b'. The 'IPv4 VPC CIDR block' is '104.0.0.0/16'. The 'IPv4 subnet CIDR block' is '104.0.20.0/24' with 256 IPs.

Subnet 2 of 1

Subnet name  
Create a tag with a key of 'Name' and a value that you specify.  
  
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.

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.

IPv4 subnet CIDR block  
 256 IPs  
< > ^ v

Tags - optional  
Key Value - optional  

Key	Value - optional
-----	------------------

aws

Services

Search

[Alt+S]

London

Veliganti Jahnavi

Subnet 1 of 1

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

private-1

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.

Europe (London) / eu-west-2a

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.

104.0.0.0/16

IPv4 subnet CIDR block

104.0.25.0/24

256 IPs

< > ^ v

Tags - optional

Key	Value - optional
-----	------------------

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Subnet 1 of 1

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

private-2

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.

Europe (London) / eu-west-2b

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.

104.0.0.0/16

IPv4 subnet CIDR block

104.0.30.0/24

256 IPs

< > ^ v

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Subnet 1 of 1

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

private-3

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.

Europe (London) / eu-west-2c

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.

104.0.0.0/16

IPv4 subnet CIDR block

104.0.10.0/24

256 IPs

< > ^ v

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Subnet 1 of 1

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

private-4

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.

Europe (London) / eu-west-2c

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.

104.0.0.0/16

IPv4 subnet CIDR block

104.0.40.0/24

256 IPs

**Subnets (9)** Info

Last updated 1 minute ago

Find resources by attribute or tag

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 ...	Avail...	Availabil...
-	subnet-0f377b...	Available	vpc-0f77...	172.31.16.0/20	-	4091	eu-west-2a
-	subnet-0fd017...	Available	vpc-0f77...	172.31.32.0/20	-	4091	eu-west-2b
-	subnet-0155ba...	Available	vpc-0f77...	172.31.0.0/20	-	4091	eu-west-2c
public-1	subnet-064dad...	Available	vpc-034...	104.0.0.0/24	-	251	eu-west-2a
public-2	subnet-07eb03...	Available	vpc-034...	104.0.20.0/24	-	251	eu-west-2b
private-1	subnet-04aefa...	Available	vpc-034...	104.0.25.0/24	-	251	eu-west-2a
private-2	subnet-041674...	Available	vpc-034...	104.0.30.0/24	-	251	eu-west-2b
private-3	subnet-0dccc56...	Available	vpc-034...	104.0.10.0/24	-	251	eu-west-2c
private-4	subnet-053a43...	Available	vpc-034...	104.0.40.0/24	-	251	eu-west-2c

### Step 3: Create an Internet Gateway and attach it to VPC.

**Internet gateways (2)** Info

Search

Name	Internet gateway ID	State	VPC ID
-	igw-0793388b4089e25e2	Attached	vpc-0f777f585e5c3197a
igw	igw-075ab79c16a4bbd30	Attached	vpc-0343dc40e83e0b12e   my-vpc

### Step 4: Create Route tables.

**Route tables (8)** Info

Last updated less than a minute ago

Find resources by attribute or tag

Name	Route table ID	Explicit subnet associ...	Edge associations
-	rtb-0c858c12374c2eaff	-	-
-	rtb-0ea737828f09b64d0	-	-
route-1	rtb-010a79696e6def199	-	-
route-2	rtb-0fd8fa334a6c63f2b	-	-
route-3	rtb-000fc4a062349217d	-	-
route-4	rtb-09c10e16545969b21	-	-
route-5	rtb-0d9aa73d63cf7144c	-	-
route-6	rtb-00c3cda936cb8117d	-	-

### Step 6: Go to route 1 → Edit routes → Attach to IGW.

**Edit routes**

**Route 1**

Destination: 104.0.0.0/16

Target: local

Status: Active

Propagated: No

**Route 2**

Destination: 0.0.0.0/0

Target: Internet Gateway

Status: -

igw-075ab79c16a4bbd30

Here edit the subnet association, select public-1, and save.

**Edit subnet associations**  
Change which subnets are associated with this route table.

Available subnets (1/6)

Filter subnet associations

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	public-1	subnet-064dad0c795f55ae0	104.0.0.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	public-2	subnet-07eb033a5666f9a46	104.0.20.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-1	subnet-04aefad602428fd25	104.0.25.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-2	subnet-0416742bc2460707c	104.0.30.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-3	subnet-0dcc56acc07a973fb	104.0.10.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-4	subnet-053a4379a54c3e032	104.0.40.0/24	-	Main (rtb-0c858c12374c2eaf

Step 6: Go to route 2 → Edit routes → Attach to IGW.

**Route 2**

Destination: 0.0.0.0/0

Target: Internet Gateway

Status: -

Propagated: No

Remove

Add route

Cancel Preview Save changes

Here edit the subnet association, select public-2, and save.

**Available subnets (1/6)**

Filter subnet associations

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/>	public-1	subnet-064dad0c795f55ae0	104.0.0.0/24	-	rtb-010a79696e6def199 / ro
<input checked="" type="checkbox"/>	public-2	subnet-07eb033a5666f9a46	104.0.20.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-1	subnet-04aefad602428fd25	104.0.25.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-2	subnet-0416742bc2460707c	104.0.30.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-3	subnet-0dcc56acc07a973fb	104.0.10.0/24	-	Main (rtb-0c858c12374c2eaf
<input type="checkbox"/>	private-4	subnet-053a4379a54c3e032	104.0.40.0/24	-	Main (rtb-0c858c12374c2eaf

**Selected subnets**

subnet-07eb033a5666f9a46 / public-2

Cancel Save associations

Step 7: Create 2 NAT Gateways (public1, public2).

aws Services Search [Alt+S] London Veliganti Jahnavi

Elastic IP address 13.41.231.180 (eipalloc-04acd7a161ac10c6e) allocated.

### NAT gateway settings

**Name - optional**  
Create a tag with a key of 'Name' and a value that you specify.  
my-nat  
The name can be up to 256 characters long.

**Subnet**  
Select a subnet in which to create the NAT gateway.  
subnet-064dad0c795f55ae0 (public-1)

**Connectivity type**  
Select a connectivity type for the NAT gateway.  
☒ Public  
☐ Private

**Elastic IP allocation ID** [Info](#)  
Assign an Elastic IP address to the NAT gateway.  
eipalloc-04acd7a161ac10c6e Allocate Elastic IP

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Elastic IP address 3.11.231.3 (eipalloc-01b970a6b30a495c9) allocated.

### NAT gateway settings

**Name - optional**  
Create a tag with a key of 'Name' and a value that you specify.  
my-nat-2  
The name can be up to 256 characters long.

**Subnet**  
Select a subnet in which to create the NAT gateway.  
subnet-07eb033a5666f9a46 (public-2)

**Connectivity type**  
Select a connectivity type for the NAT gateway.  
☒ Public  
☐ Private

**Elastic IP allocation ID** [Info](#)  
Assign an Elastic IP address to the NAT gateway.  
eipalloc-01b970a6b30a495c9 Allocate Elastic IP

Go to the route table → edit route → Add NAT Gateway → [Route (3,5)-NAT (1)] → Route (4,6)-NAT (2) → edit subnet association and tick and save [route(3,4,5,6) → subnet(private-1,2,3,4)].

NAT-1(SUBNET PRIVATE-1,3)

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### Edit routes

Route	Destination	Target	Status
Route 1	104.0.0.0/16	local	Active
Route 2	0.0.0.0/0	NAT Gateway	-

Propagated: No

NAT-2(SUBNET PRIVATE-2,4)

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### Edit routes

Route	Destination	Target	Status
Route 1	104.0.0.0/16	local	Active
Route 2	0.0.0.0/0	NAT Gateway	-

Propagated: No

## Step 8: Create a Security Group.

**Inbound rules** [Info](#)

Type	Protocol	Port range	Source	Description - optional	
SSH	TCP	22	0.0.0.0/0		Delete
HTTP	TCP	80	0.0.0.0/0		Delete
All traffic	All	All	0.0.0.0/0		Delete

[Add rule](#)

## Step 9: Create 2 EC2 Instances (Public and Private).

**VPC - required** [Info](#)

vpc-0343dc40e83e0b12e (my-vpc)  
104.0.0.0/16

**Subnet** [Info](#)

subnet-064dad0c795f55ae0 public-1  
VPC: vpc-0343dc40e83e0b12e Owner: 058264259610 Availability Zone: eu-west-2a  
IP addresses available: 250 CIDR: 104.0.0.0/24

**Auto-assign public IP** [Info](#)

Enable

[Additional charges apply](#) when outside of [free tier allowance](#)

**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.

☐ Create security group ☒ Select existing security group

**Common security groups** [Info](#)

Select security groups

sg sg-0c09249321ef8d59c  
VPC: vpc-0343dc40e83e0b12e

[Compare security group rules](#)

**VPC - required** [Info](#)

vpc-0343dc40e83e0b12e (my-vpc)  
104.0.0.0/16

**Subnet** [Info](#)

subnet-0416742bc2460707c private-2  
VPC: vpc-0343dc40e83e0b12e Owner: 058264259610 Availability Zone: eu-west-2b  
IP addresses available: 251 CIDR: 104.0.30.0/24

**Auto-assign public IP** [Info](#)

Enable

[Additional charges apply](#) when outside of [free tier allowance](#)

**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.

☐ Create security group ☒ Select existing security group

**Common security groups** [Info](#)

Select security groups

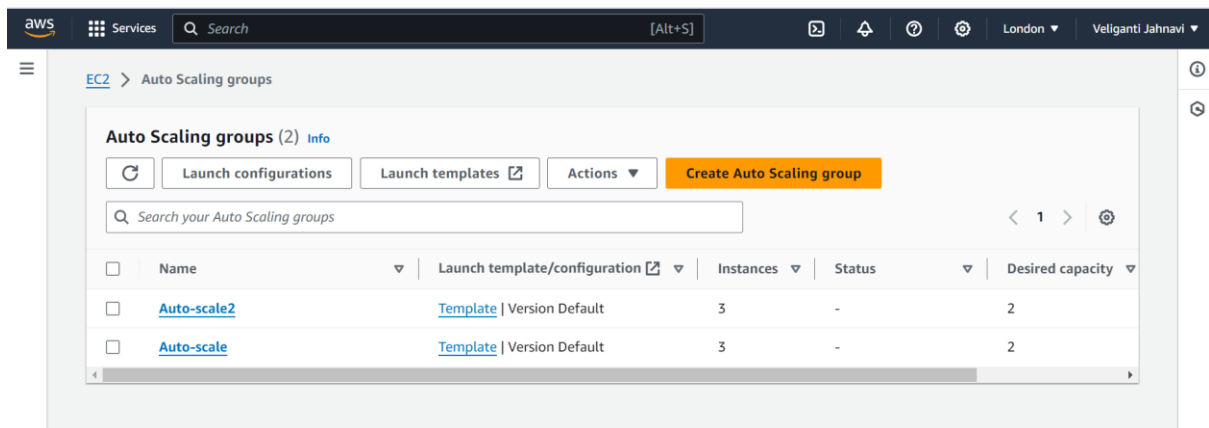
sg sg-0c09249321ef8d59c  
VPC: vpc-0343dc40e83e0b12e

[Compare security group rules](#)

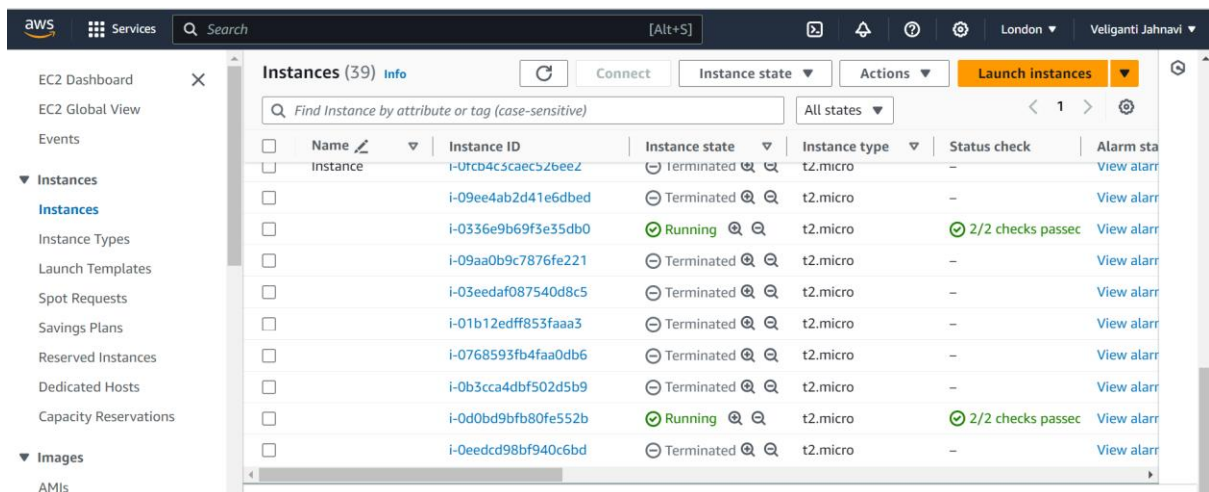
## Connect to EC2 instance (PUBLIC[EC1-public]).



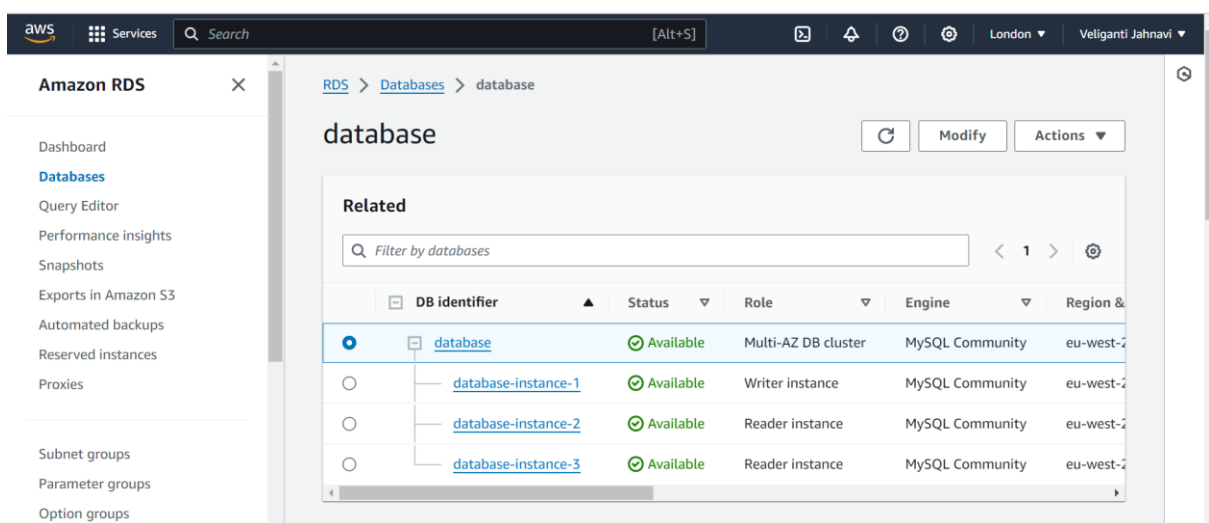
## Step 12: Create an Auto Scaling Group (Public, private).



## Auto Create Instance and Terminated.



## Step 13: Go to RDS and Create databases.



Connect to Server→Install MariaDB→Connect to MYSQL Server.



```

root@ip-104-0-0-191:~# sudo yum install -y https://dev.mysql.com/get/mysql57-community-release-e17-11.noarch.rpm
Last metadata expiration check: 1:13:53 ago on Sun Jul 28 11:47:00 2024.
mysql57-community-release-e17-11.noarch.rpm                                104 kB/s | 2
Error:
  Problem: problem with installed package mysql80-community-release-e19-5.noarch
    - package mysql80-community-release-e19-5.noarch from @System conflicts with mysql57-community-release provided by mysql57-c
7-11.noarch from @commandline
    - package mysql80-community-release-e19-1.noarch from mysql80-community conflicts with mysql57-community-release provided by
release-e17-11.noarch from @commandline
    - package mysql80-community-release-e19-3.noarch from mysql80-community conflicts with mysql57-community-release provided by
release-e17-11.noarch from @commandline
    - package mysql80-community-release-e19-4.noarch from mysql80-community conflicts with mysql57-community-release provided by
release-e17-11.noarch from @commandline
    - package mysql80-community-release-e19-5.noarch from mysql80-community conflicts with mysql57-community-release provided by
release-e17-11.noarch from @commandline
    - conflicting requests
(try to add '--allowerase' to command line to replace conflicting packages or '--skip-broken' to skip uninstallable packages)
[root@ip-104-0-0-191 ~]# sudo dnf update -y
Last metadata expiration check: 1:15:43 ago on Sun Jul 28 11:47:00 2024.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-104-0-0-191 ~]# sudo dnf install mariadb105-server
Last metadata expiration check: 1:15:59 ago on Sun Jul 28 11:47:00 2024.
Package mariadb105-server-3:10.5.23-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-104-0-0-191 ~]# mysql -h database.cluster-cxs28mgewqag.eu-west-2.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 96
Server version: 8.0.37 Source distribution

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

```

```

MySQL [(none)]> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.002 sec)

MySQL [(none)]> create database Jahnnavi;
Query OK, 1 row affected (0.041 sec)

MySQL [(none)]> use Jahnnavi;
Database changed
MySQL [Jahnnavi]> CREATE TABLE Persons(
  -> ID int NOT NULL,
  -> LastName varchar(255) NOT NULL,
  -> FirstName varchar(255),
  -> Age int,
  -> PRIMARY KEY(ID)
  -> );
Query OK, 0 rows affected (0.012 sec)

MySQL [Jahnnavi]> show databases;
+-----+
| Database |
+-----+
| Jahnnavi |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+

```

```

MySQL [Jahnnavi]> show databases;
+-----+
| Database |
+-----+
| Jahnnavi |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.001 sec)

MySQL [Jahnnavi]> show tables;
+-----+
| Tables_in_Jahnnavi |
+-----+
| Persons |
+-----+
1 row in set (0.002 sec)

MySQL [Jahnnavi]> INSERT INTO Persons(ID,LastName,FirstN
ame,Age)
  -> VALUES(101,'Jahnnavi','Veliganti',21);
Query OK, 1 row affected (0.013 sec)

MySQL [Jahnnavi]> select * from Persons;
+-----+
| ID | LastName | FirstName | Age |
+-----+
| 101 | Jahnnavi | Veliganti | 21 |
+-----+
1 row in set (0.001 sec)

MySQL [Jahnnavi]>

```