

Install mariadb to the Linux instance and create DB. That DB backup Store in RDS Database

Step 1: Add Name and Tags

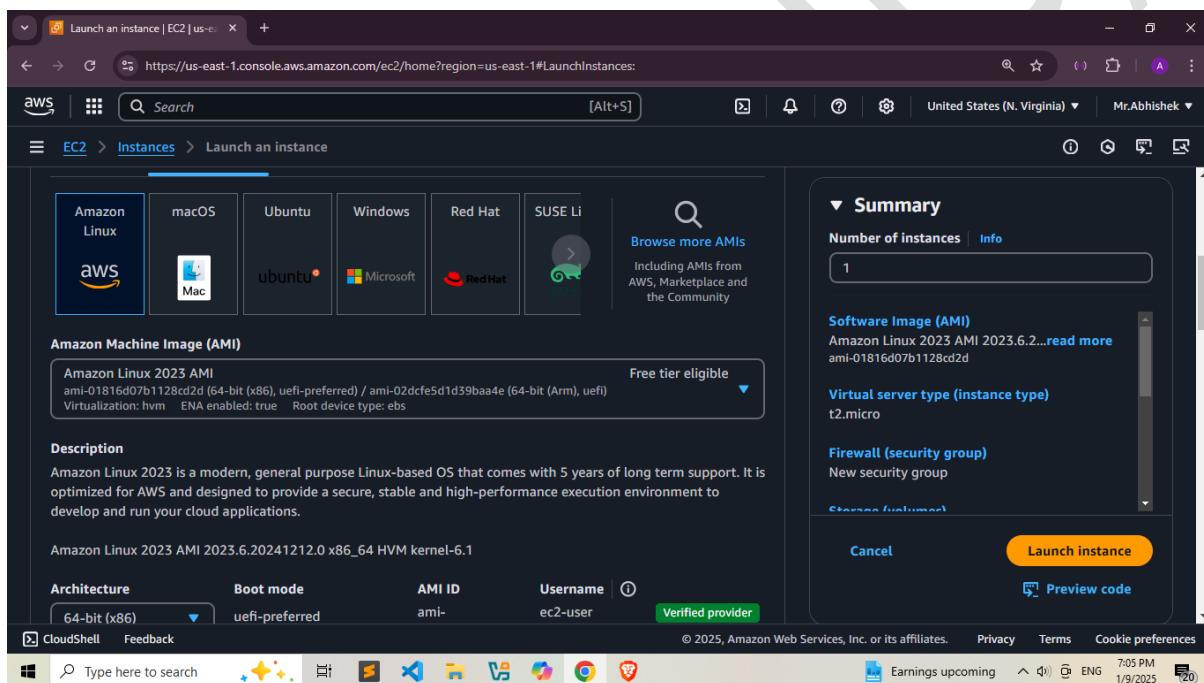
- Add tags to your instance for better management and identification.
 - Example: Key: Name, Value: MyInstance.

The screenshot shows the AWS EC2 Dashboard for the Asia Pacific (Mumbai) Region. The left sidebar lists navigation options such as Dashboard, EC2 Global View, Events, Instances, Images, and Elastic Block Store. The main area displays resource counts: Instances (running) 0, Auto Scaling Groups 0, Capacity Reservations 0, Dedicated Hosts 0, Elastic IPs 0, Instances 0, Key pairs 17, Load balancers 0, Placement groups 0, Security groups 21, Snapshots 0, and Volumes 0. Below this is a 'Launch instance' button. To the right, there's a sidebar for 'EC2 Free Tier' which shows offers for all AWS Regions, 2 EC2 free tier offers in use, and offer usage for monthly Linux EC2 Instances and Storage space on EBS. The bottom right corner shows the date as 11/26/2024 and time as 9:16 PM.

The screenshot shows the 'Launch an instance' wizard in the AWS EC2 console. Step 1: Set Instance Details shows the 'Name and tags' section where 'Database' is entered as the name. Step 2: Application and OS Images (Amazon Machine Image) shows the selection of 'Amazon Linux 2023.6.2...' as the AMI. Step 3: Summary shows the configuration summary and a 'Launch instance' button. The bottom right corner shows the date as 11/26/2024 and time as 7:05 PM.

Step 2: Choose an Amazon Machine Image (AMI)

- Select an **AMI**, which is a pre-configured virtual machine template.
 - Examples:
 - **Amazon Linux 2 AMI** (Free-tier eligible).
 - **Ubuntu Server**.
 - **Windows Server** (if you need a Windows environment).
- Choose an AMI that suits your requirements for the operating system and software packages.

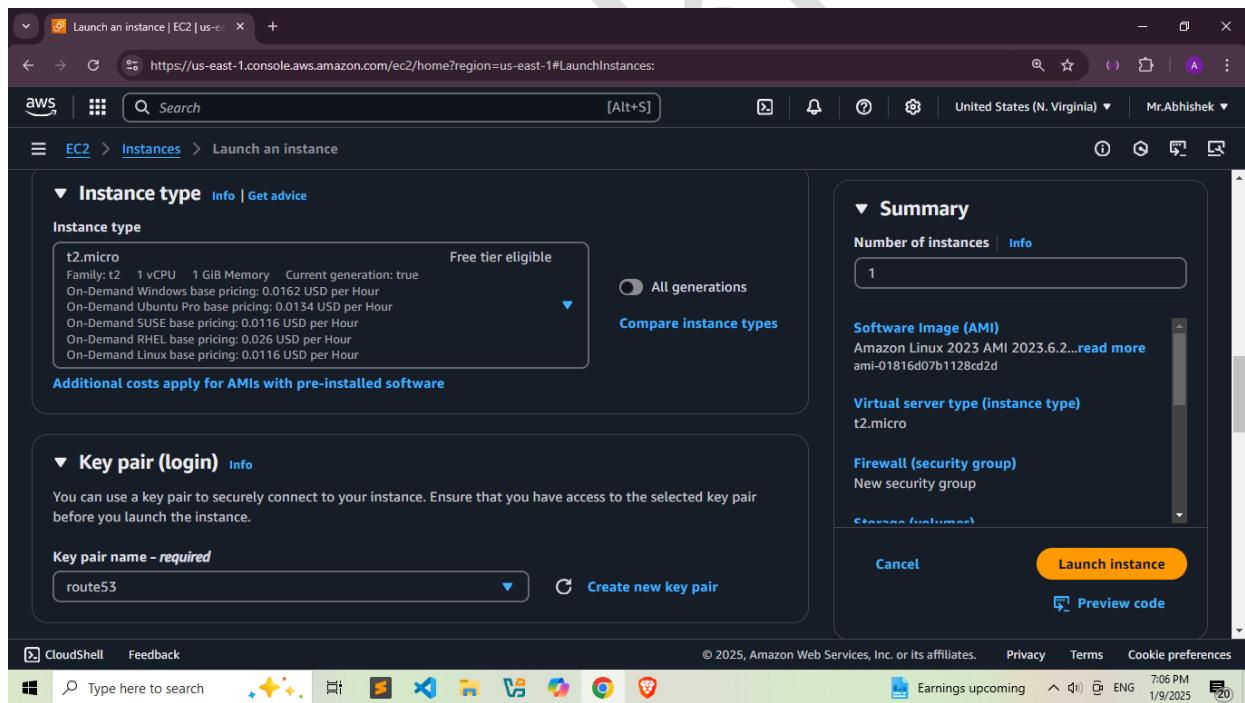


Step 3: Choose an Instance Type

Select the instance type based on your performance needs (CPU, memory, storage, etc.).

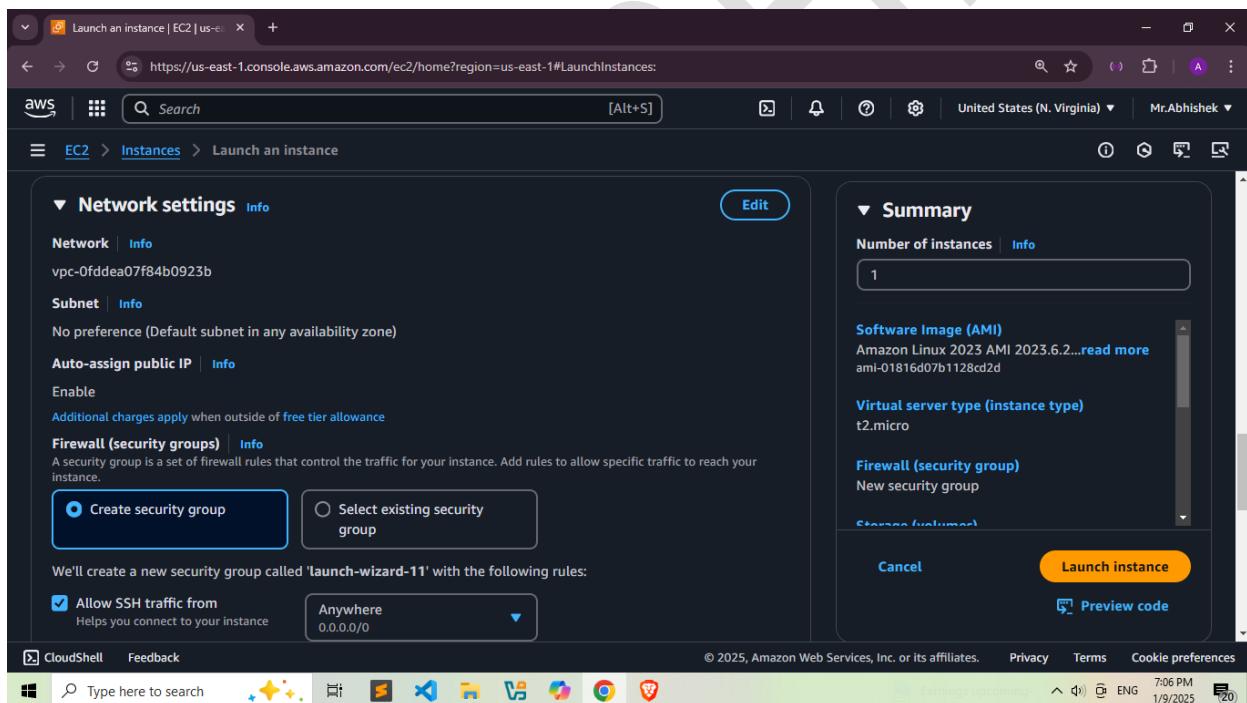
- For free-tier eligible users, choose **t2.micro** or **t3.micro**.

- When prompted, create a new key pair or use an existing one for SSH access:
 - Download the private key file (.pem) if creating a new key pair.



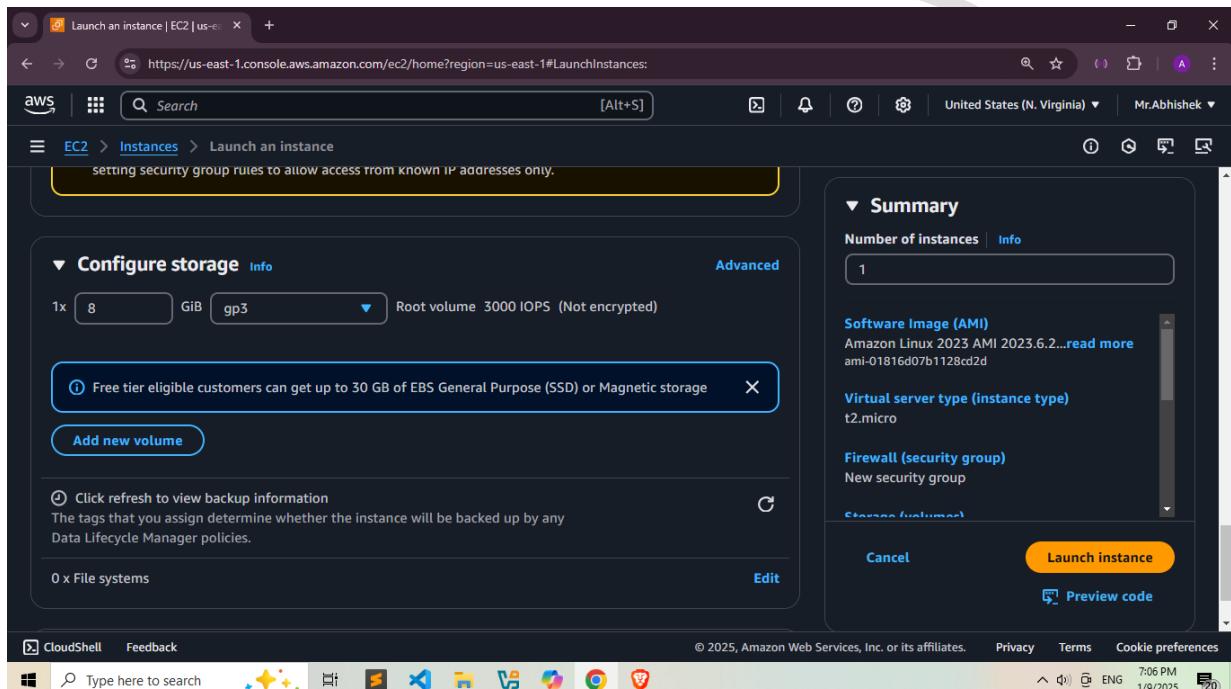
Step 4: Configure Instance Details

- Specify the details for your instance:
 - **Number of instances:** Default is 1.
 - **Network:** Select a Virtual Private Cloud (VPC).
 - **Subnet:** Choose a subnet for your instance.
 - **Auto-assign Public IP:** Enable this if you need internet access.
 - **IAM Role:** Assign an IAM role if necessary.
 - Advanced options: Configure placement groups, capacity reservations, etc.
- Click **Next** when done.



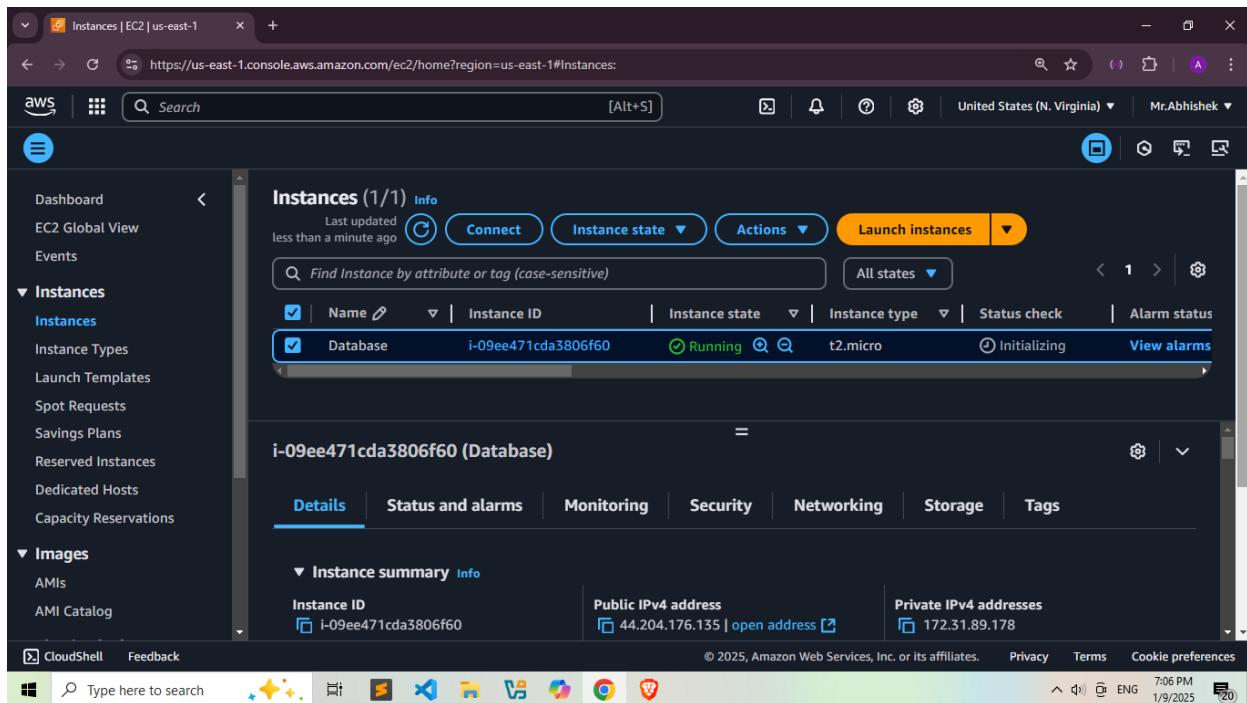
Step 5: Add Storage

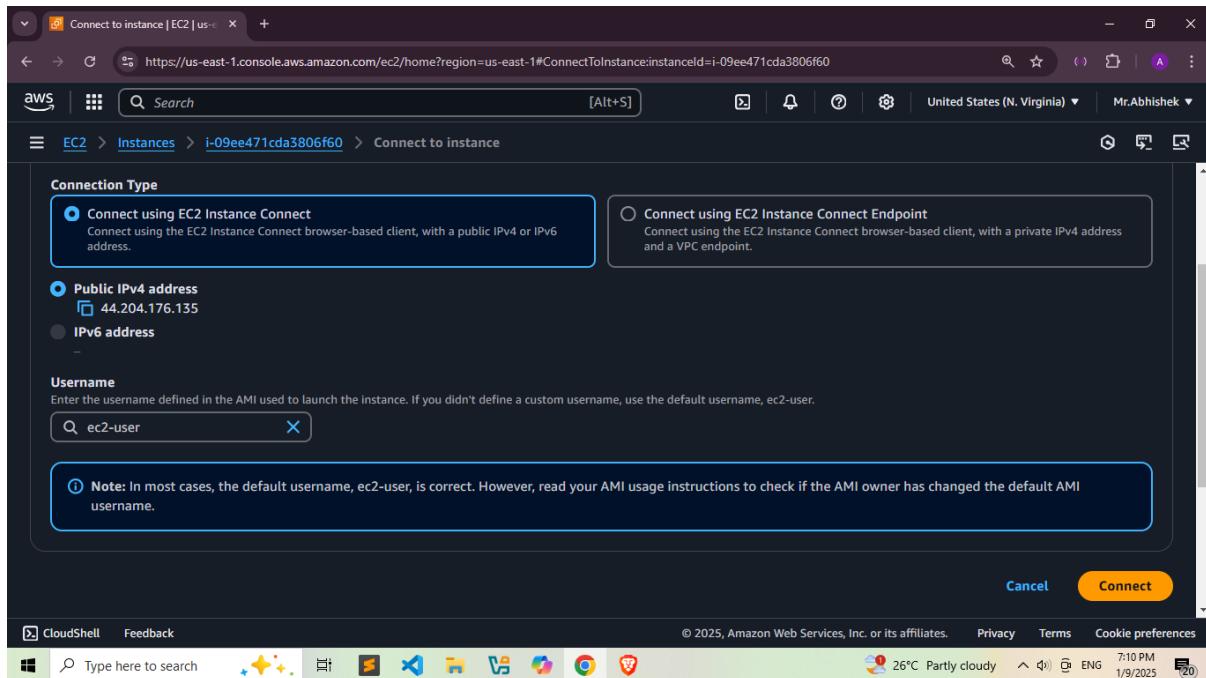
- Configure the storage for your instance:
 - Root volume size (default is 8 GiB for Amazon Linux).
 - Add additional volumes if required.
 - Choose the storage type (e.g., General Purpose SSD).



Step 6: Instance to Launch

- You will be redirected to a confirmation page.
- Click **View Instances** to go to the EC2 Dashboard and monitor the status of your instance.





Install MariaDB: Install MariaDB using the package manager. On redhat-based systems like centos, use:

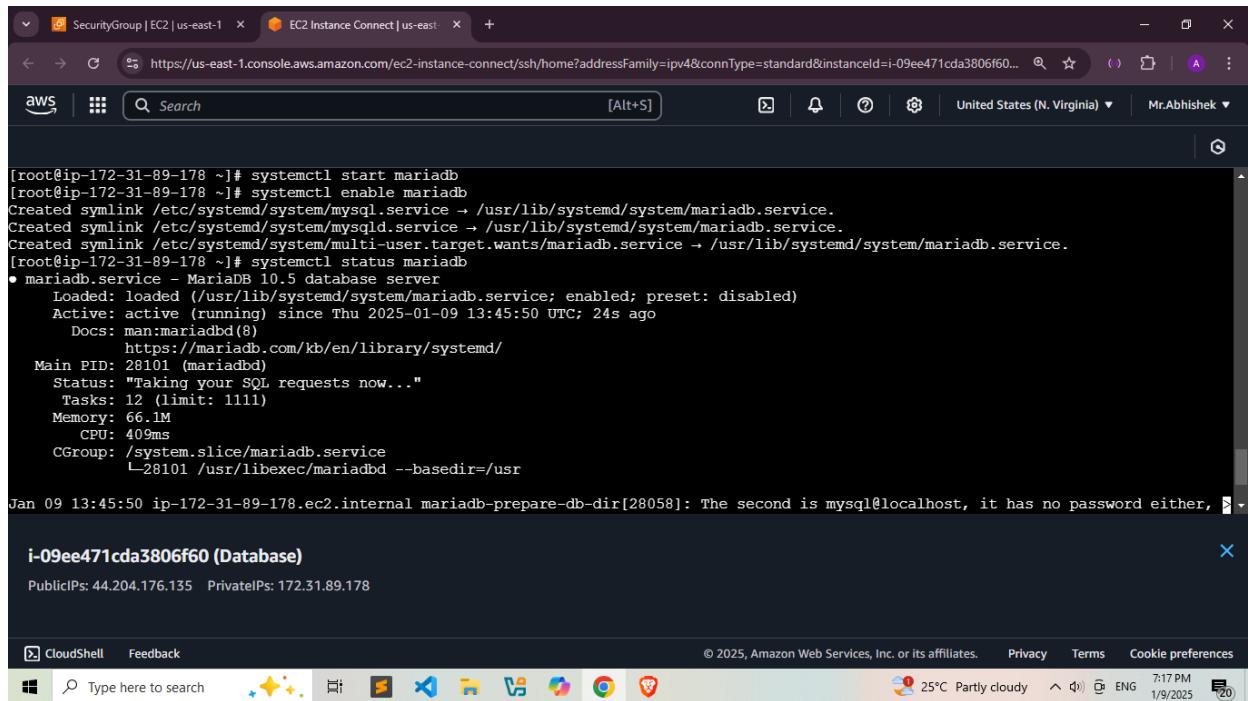
```
[root@ip-172-31-89-178 ~]# yum install mariadb105
Last metadata expiration check: 0:06:35 ago on Thu Jan  9 13:37:21 2025.
Package mariadb105-3:10.5.25-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-89-178 ~]# yum list mariadb*
Last metadata expiration check: 0:07:06 ago on Thu Jan  9 13:37:21 2025.
Installed Packages
mariadb-connector-c.x86_64          3.1.13-1.amzn2023.0.3           @amazonlinux
mariadb-connector-c-config.noarch   3.1.13-1.amzn2023.0.3           @amazonlinux
mariadb105.x86_64                  3:10.5.25-1.amzn2023.0.1        @amazonlinux
mariadb105-common.x86_64           3:10.5.25-1.amzn2023.0.1        @amazonlinux
Available Packages
mariadb-connector-c-devel.x86_64    3.1.13-1.amzn2023.0.3           amazonlinux
mariadb-connector-c-test.x86_64     3.1.13-1.amzn2023.0.3           amazonlinux
mariadb105-backup.x86_64           3:10.5.25-1.amzn2023.0.1        amazonlinux
mariadb105-connect-engine.x86_64   3:10.5.25-1.amzn2023.0.1        amazonlinux
mariadb105-cracklib-password-check.x86_64 3:10.5.25-1.amzn2023.0.1        amazonlinux
mariadb105-devel.x86_64            3:10.5.25-1.amzn2023.0.1        amazonlinux

i-09ee471cda3806f60 (Database)
PublicIPs: 44.204.176.135 PrivateIPs: 172.31.89.178
```

The terminal output shows the installation of MariaDB 10.5.25 on an Amazon Linux 2 instance. It lists the installed packages and their versions. The instance ID 'i-09ee471cda3806f60' is identified as a database. The public IP is 44.204.176.135 and the private IP is 172.31.89.178.

Start MariaDB Service: Start the MariaDB service with.

Enable MariaDB Service: Enable the MariaDB service to start on boot.

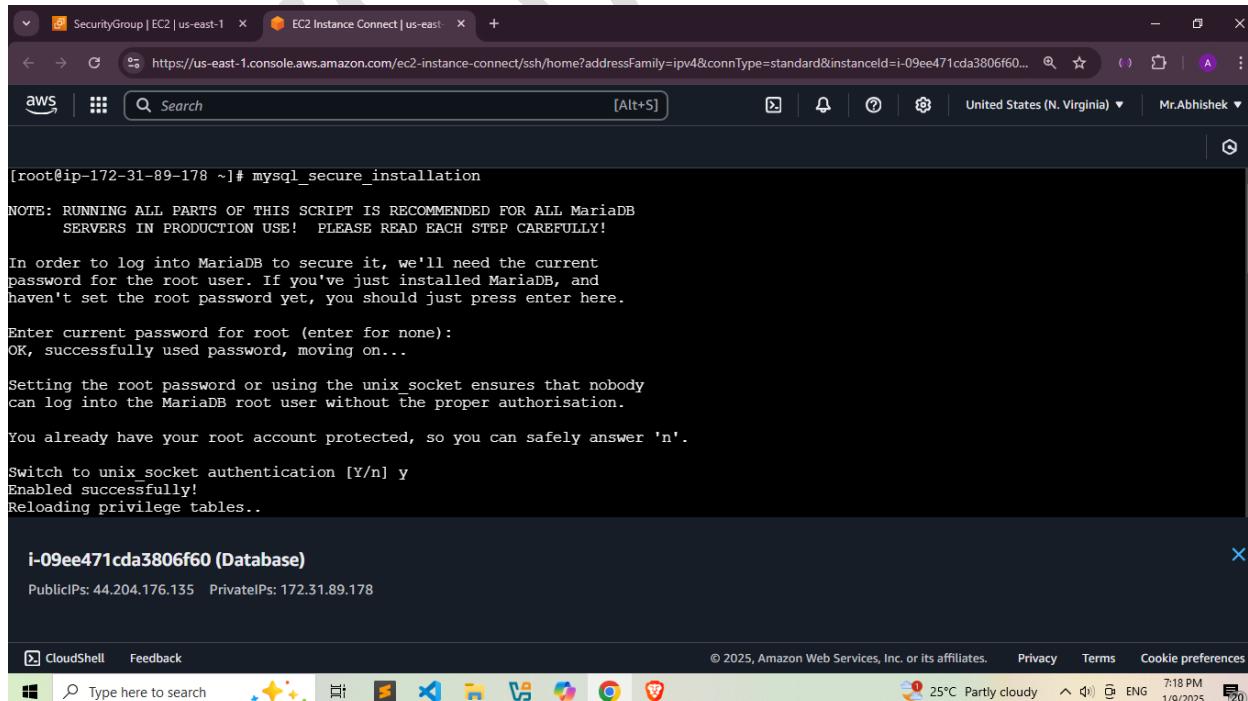


```
[root@ip-172-31-89-178 ~]# systemctl start mariadb
[root@ip-172-31-89-178 ~]# systemctl enable mariadb
Created symlink /etc/systemd/system/mysql.service → /usr/lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/mysqld.service → /usr/lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /usr/lib/systemd/system/mariadb.service.
[root@ip-172-31-89-178 ~]# systemctl status mariadb
● mariadb.service - MariaDB 10.5 database server
    Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: disabled)
      Active: active (running) since Thu 2025-01-09 13:45:50 UTC; 24s ago
        Docs: man:mariadb(8)
              https://mariadb.com/kb/en/library/systemd/
    Main PID: 28101 (mariadb)
      Status: "Taking your SQL requests now..."
       Tasks: 12 (limit: 1111)
     Memory: 66.1M
        CPU: 409ms
      CGroup: /system.slice/mariadb.service
              └─28101 /usr/libexec/mariadb --basedir=/usr

Jan 09 13:45:50 ip-172-31-89-178.ec2.internal mariadb-prepare-db-dir[28058]: The second is mysql@localhost, it has no password either, ▾

i-09ee471cda3806f60 (Database)
PublicIPs: 44.204.176.135 PrivateIPs: 172.31.89.178
```

Secure MariaDB Installation: Run the security script to set up some security options



```
[root@ip-172-31-89-178 ~]# mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user. If you've just installed MariaDB, and
haven't set the root password yet, you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...

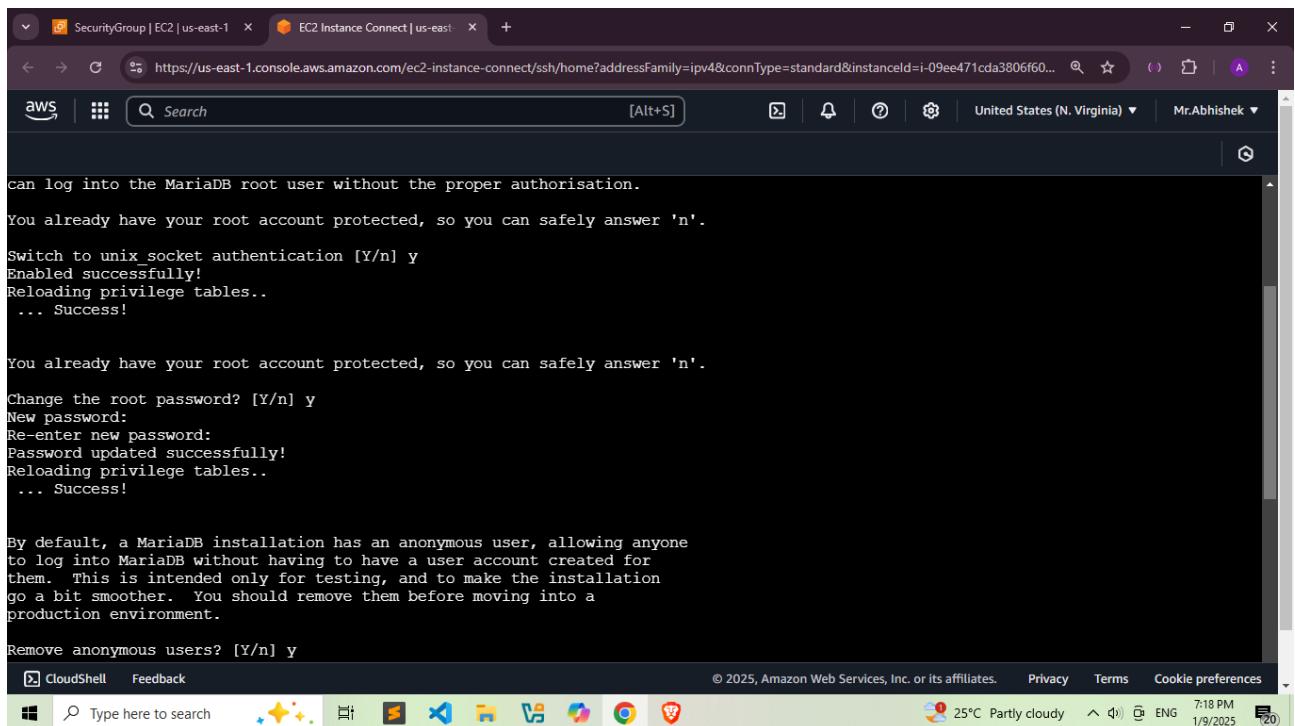
Setting the root password or using the unix_socket ensures that nobody
can log into the MariaDB root user without the proper authorisation.

You already have your root account protected, so you can safely answer 'n'.

Switch to unix_socket authentication [Y/n] y
Enabled successfully!
Reloading privilege tables..

i-09ee471cda3806f60 (Database)
PublicIPs: 44.204.176.135 PrivateIPs: 172.31.89.178
```

- **Run the mysql_secure_installation Script:** Open your terminal and run the following:
 - **sudo mysql_secure_installation**
- **Change the Root Password:** You will be prompted to change the root password. Follow the prompts to set a new password:



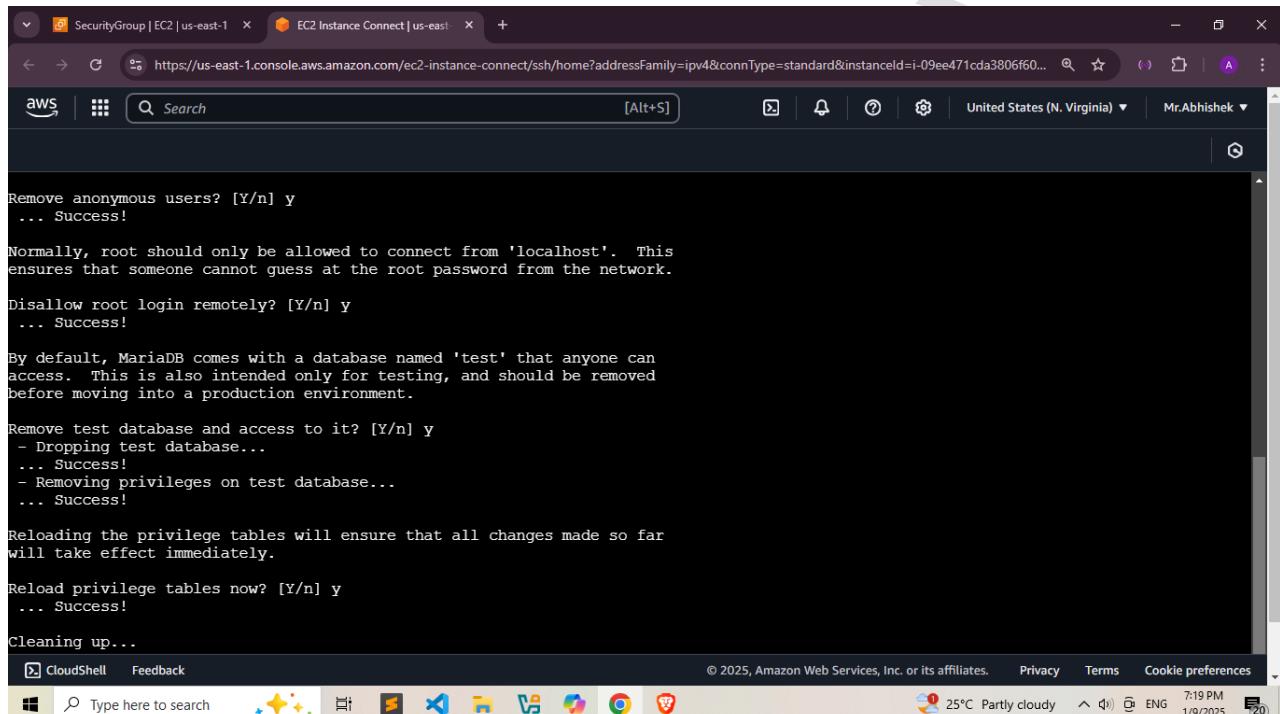
The screenshot shows a terminal window in the AWS CloudShell interface. The user has run the `sudo mysql_secure_installation` command. The output shows the following steps:

- It asks if the MariaDB root user can log in without proper authorization. The user answers 'n'.
- It asks if the root account is already protected. The user answers 'n'.
- It asks if switching to unix socket authentication is successful. The user answers 'y'.
- It reloads privilege tables successfully.
- It asks if the root password is already protected. The user answers 'n'.
- It changes the root password, prompting for a new password and re-entering it.
- It reloads privilege tables successfully.
- It informs the user that by default, a MariaDB installation has an anonymous user, allowing anyone to log in without having to have a user account created for them. It suggests removing them before moving into a production environment.
- It asks if anonymous users should be removed. The user answers 'y'.

The terminal also shows the AWS CloudShell toolbar at the bottom with various icons for file operations, search, and help.

Follow Additional Prompts: The script will then prompt you with several security-related questions. Answer each one as follows:

- **Remove anonymous users:** Yes
- **Disallow root login remotely:** Yes (optional, for security)
- **Remove test database and access to it:** Yes
- **Reload privilege tables now:** Yes



aws | Search [Alt+S] United States (N. Virginia) ▾ Mr.Abhishek ▾

```
Remove anonymous users? [Y/n] y
... Success!

Normally, root should only be allowed to connect from 'localhost'. This
ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] y
... Success!

By default, MariaDB comes with a database named 'test' that anyone can
access. This is also intended only for testing, and should be removed
before moving into a production environment.

Remove test database and access to it? [Y/n] y
- Dropping test database...
... Success!
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] y
... Success!

Cleaning up...
```

CloudShell Feedback © 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

25°C Partly cloudy 7:19 PM 1/9/2025

- Switch to user **sudo mysql -u root -p1234**.
- Write **show databases;** command.



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

MariaDB [(none)]> show databases;
+-----+
| Database      |
+-----+
| information_schema |
| mysql          |
| performance_schema |
+-----+
3 rows in set (0.000 sec)

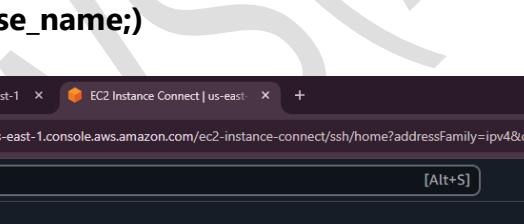
MariaDB [(none)]> create database linux;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> show databases;
+-----+
| Database      |
+-----+
| information_schema |
| linux          |
| mysql          |
| performance_schema |
+-----+
4 rows in set (0.000 sec)

MariaDB [(none)]>
```

CloudShell Feedback Type here to search 25°C Partly cloudy 7:20 PM 1/9/2025

- To switch to a different database in MariaDB, you use the **(USE database_name;)**



```
MariaDB [(none)]> use linux;
Database changed
MariaDB [linux]> create table student(Roll_No int,Name varchar(50),Age int,City varchar(10));
Query OK, 0 rows affected (0.010 sec)

MariaDB [linux]> show tables;
+-----+
| Tables_in_linux |
+-----+
| student         |
+-----+
1 row in set (0.000 sec)

MariaDB [linux]> INSERT INTO student (Roll_No, Name, Age, City) VALUES (1, 'John Doe', 20, 'Pune'),(2, 'Jane Smith', 22, 'Mumbai'),(3, 'Amit Kumar', 21, 'Delhi'),(4, 'Priya Singh', 23, 'Kolkata');
Query OK, 4 rows affected (0.002 sec)
Records: 4  Duplicates: 0  Warnings: 0

MariaDB [linux]> select * from student;
+-----+-----+-----+
| Roll_No | Name   | Age   | City   |
+-----+-----+-----+
| 1       | John Doe | 20    | Pune   |
| 2       | Jane Smith | 22    | Mumbai |
| 3       | Amit Kumar | 21    | Delhi  |
| 4       | Priya Singh | 23    | Kolkata|
+-----+-----+-----+
```

CloudShell Feedback Type here to search 25°C Partly cloudy 7:28 PM 1/9/2025

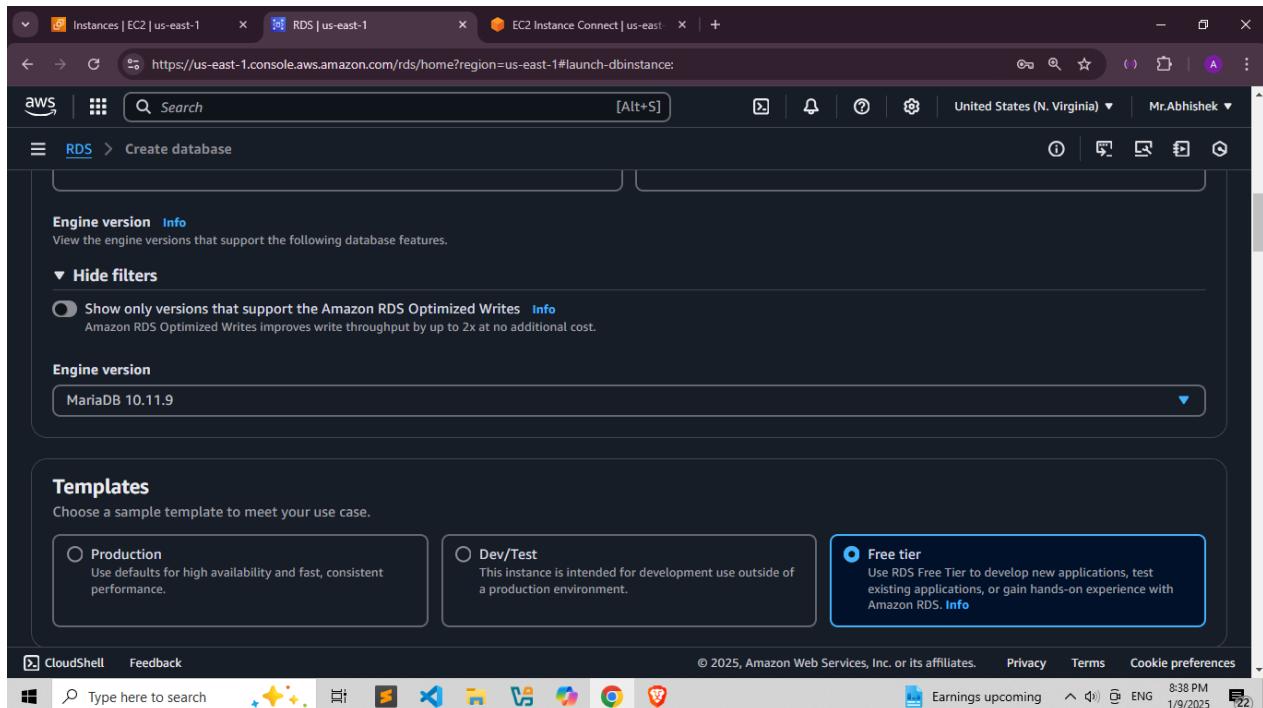
➤ Create Database with RDS (Relational Database Service)

The screenshot shows the Amazon RDS Databases page. The left sidebar has links for Dashboard, Databases (which is selected), Query Editor, Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, and Custom engine versions. The main area is titled "Databases (0)" and shows a table with columns for DB identifier, Status, Role, Engine, Region, and Size. A message at the bottom says "No instances found". At the top right, there are buttons for Group resources, Modify, Actions, Restore from S3, Create database, and a search bar. The URL in the browser is https://us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#databases:.

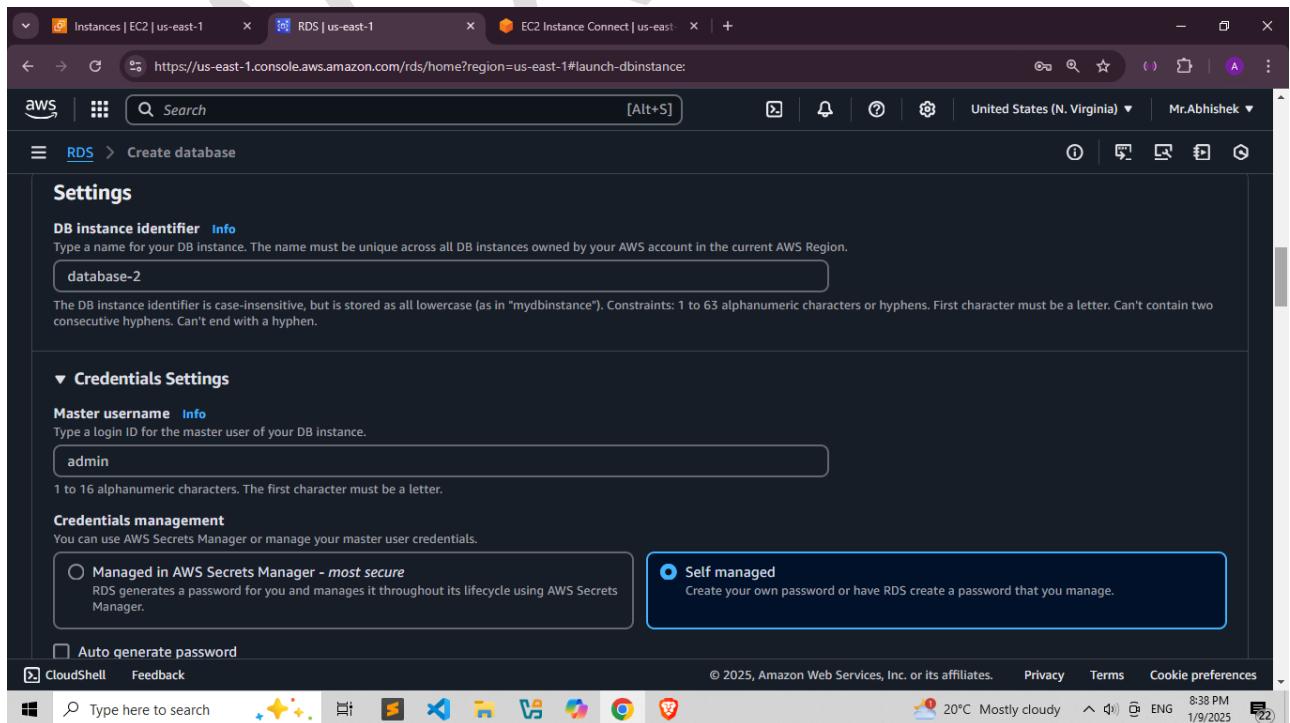
➤ Select Engine: Choose "MariaDB" as the database engine

The screenshot shows the "Create database" page. Under "Choose a database creation method", the "Standard create" option is selected. It describes setting all configuration options, including availability, security, backups, and maintenance. The "Easy create" option is also shown, describing recommended best-practice configurations. Under "Engine options", the "Engine type" dropdown is set to "Aurora (PostgreSQL Compatible)". Other options shown are "Aurora (MySQL Compatible)" and "MySQL". The "PostgreSQL" option is also present. The URL in the browser is https://us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:.

- **Select Template:** Choose the "Free Tier" template. This will configure your database instance to use the free tier pricing, which includes a free tier eligible instance for 12 months



- **DB Instance Identifier:** A unique name for your database instance



Master Username: The username for the master user of your database.

Master Password: The password for the master user

Master password | Info

Password strength **Very weak**

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

Confirm master password | Info

Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

DB instance class | Info

▼ Hide filters

- Show instance classes that support Amazon RDS Optimized Writes | Info
- Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.
- Include previous generation classes

© 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

- **Allocated Storage:** Specify the amount of storage (e.g., 20 GB for the free tier)

db.t4g.micro
2 vCPUs 1 GiB RAM Network: Up to 2,085 Mbps

Storage

Storage type | Info

Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp2)
Baseline performance determined by volume size

Allocated storage | Info

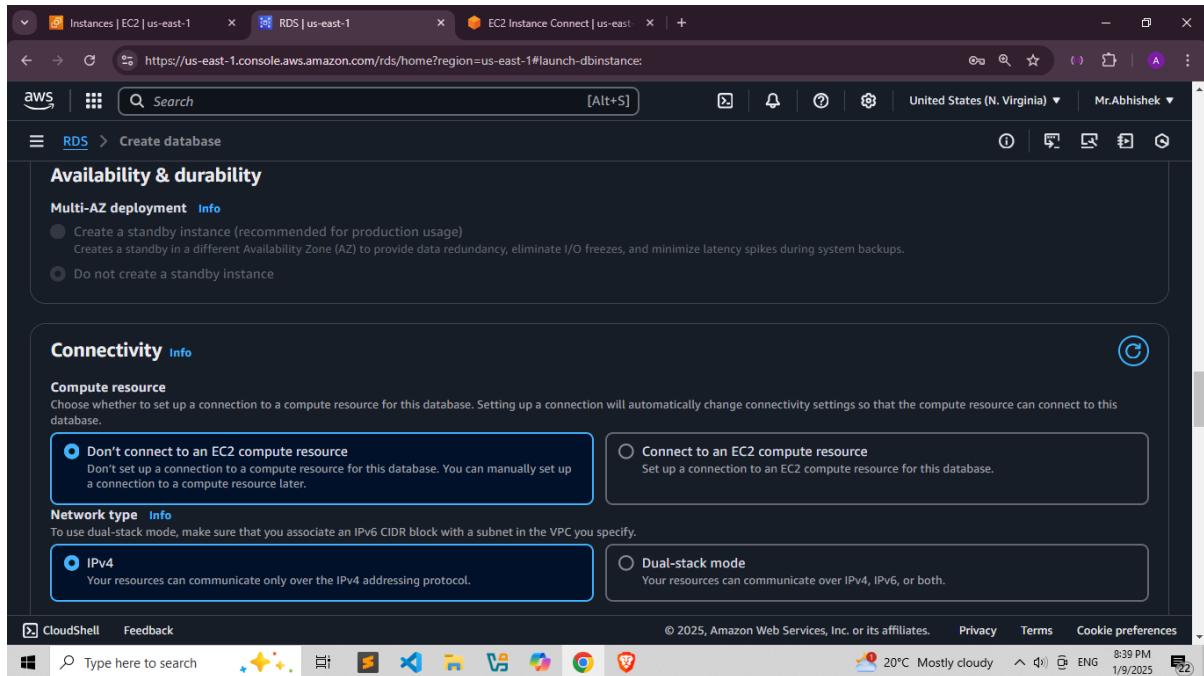
20 GiB

Allocated storage value must be 20 GiB to 6,144 GiB

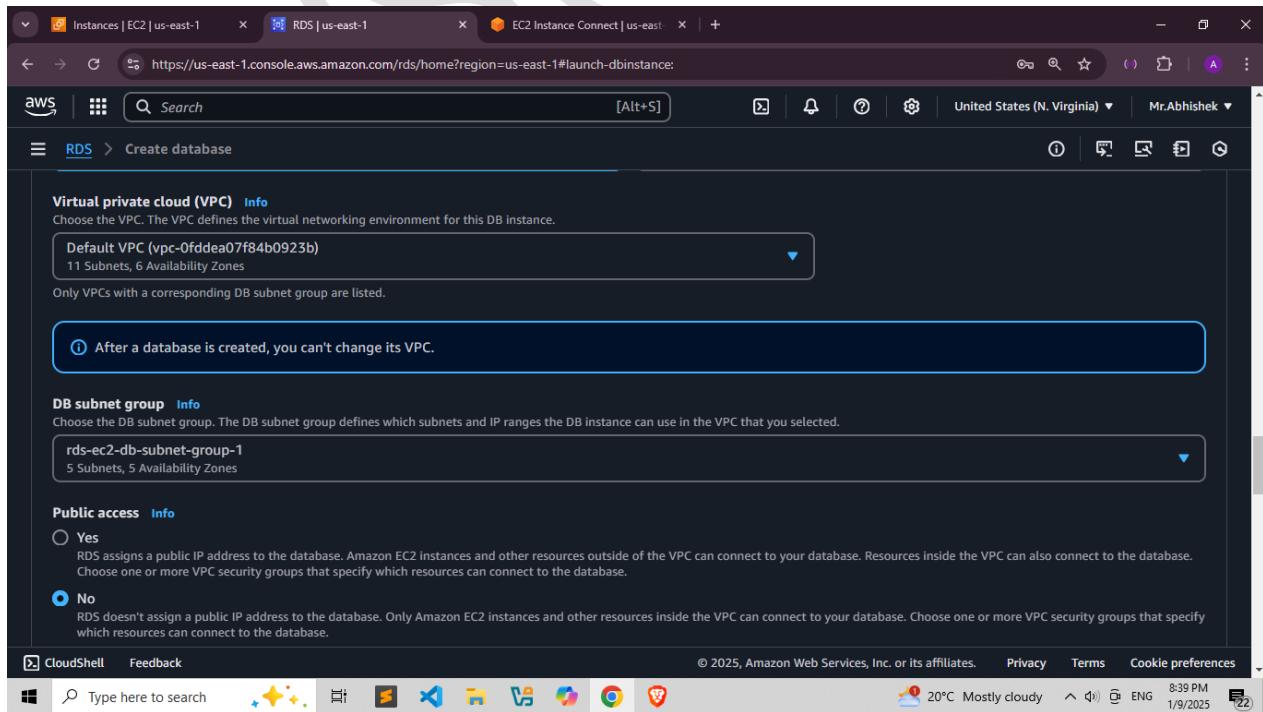
► Additional storage configuration

© 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

➤ **Multi-AZ Deployment:** Enable Multi-AZ deployment for high availability.



➤ **DB Subnet group:** Choose the **Subnet** group that allows access to your database.

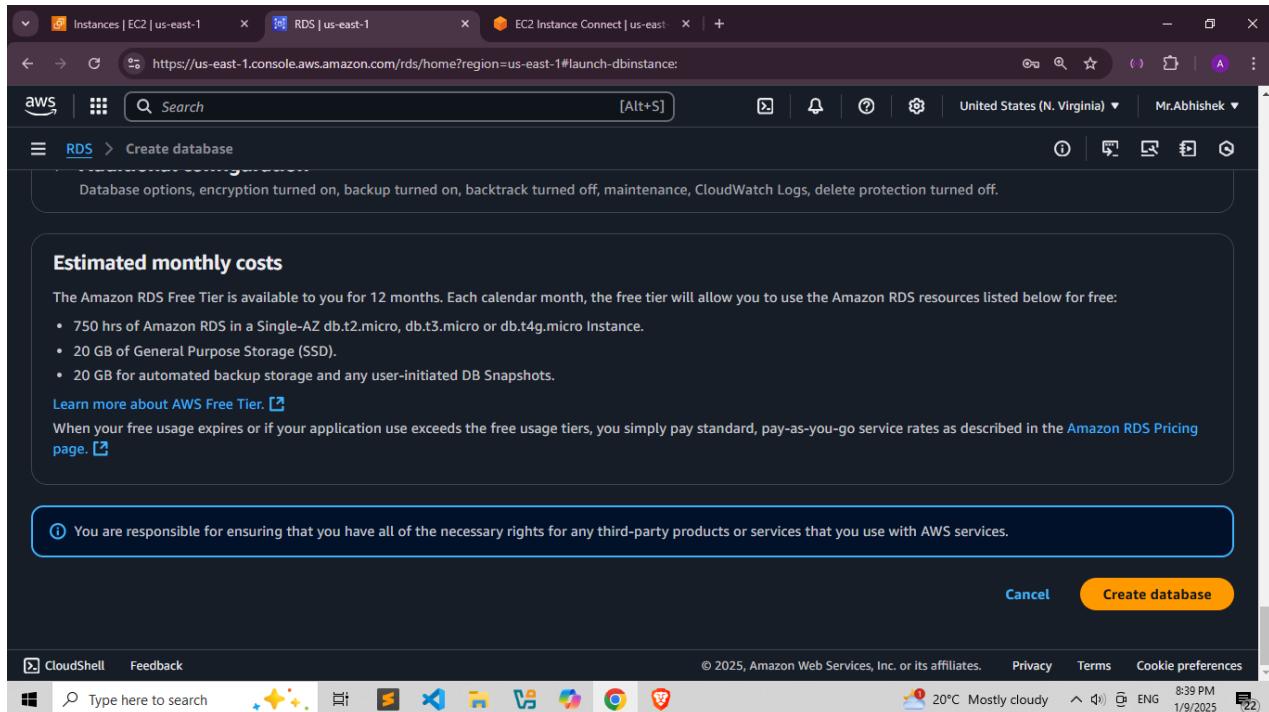


➤ **VPC Security Groups:** Choose the security group that allows access to your database.

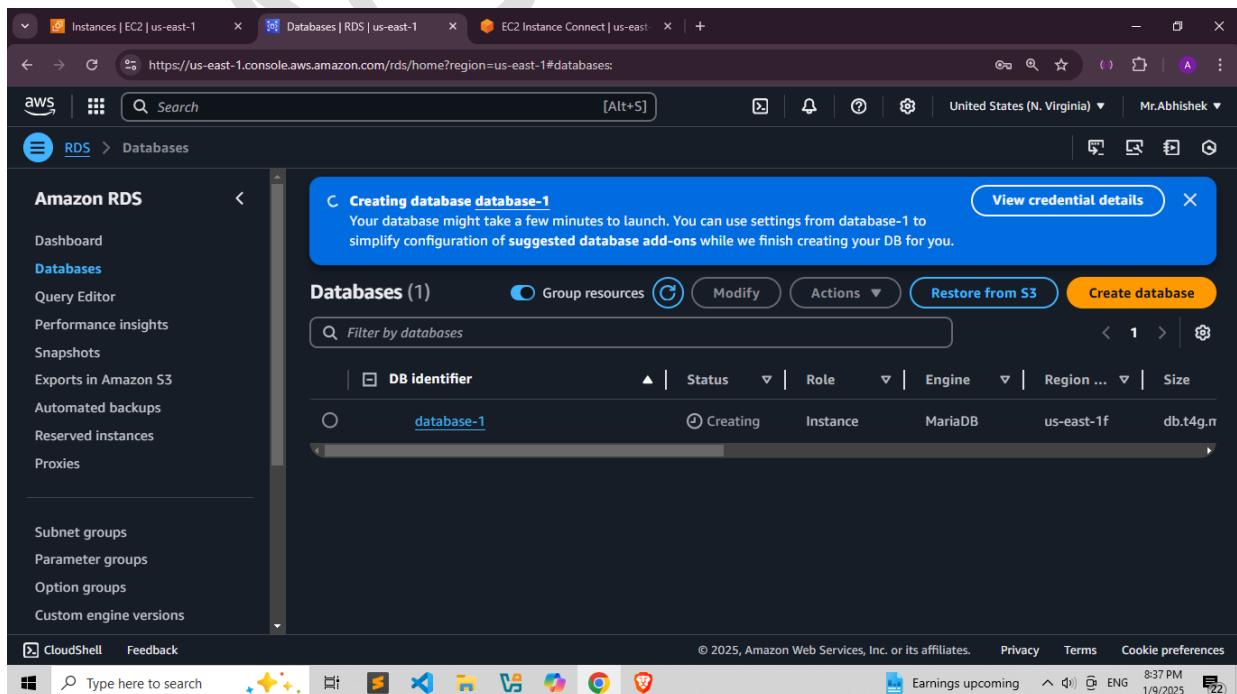
The screenshot shows the 'Create database' step in the AWS RDS wizard. Under 'VPC security group (firewall) Info', the 'Choose existing' option is selected, with 'Choose existing VPC security groups' highlighted. A dropdown menu titled 'Choose one or more options' contains the entry 'default'. Below this, the 'Availability Zone' dropdown is set to 'No preference'. The 'RDS Proxy' section is collapsed. The 'Certificate authority - optional' section is also collapsed. The bottom navigation bar includes CloudShell, Feedback, and search fields, along with system status icons like battery level and network connection.

The screenshot shows the 'Create database' step in the AWS RDS wizard. Under 'Database authentication', the 'Password authentication' option is selected. The 'Monitoring' section contains the 'Enable Enhanced Monitoring' checkbox, which is unchecked. The 'Additional configuration' section contains the note: 'Database options, encryption turned on, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.' The bottom navigation bar includes CloudShell, Feedback, and search fields, along with system status icons like battery level and network connection.

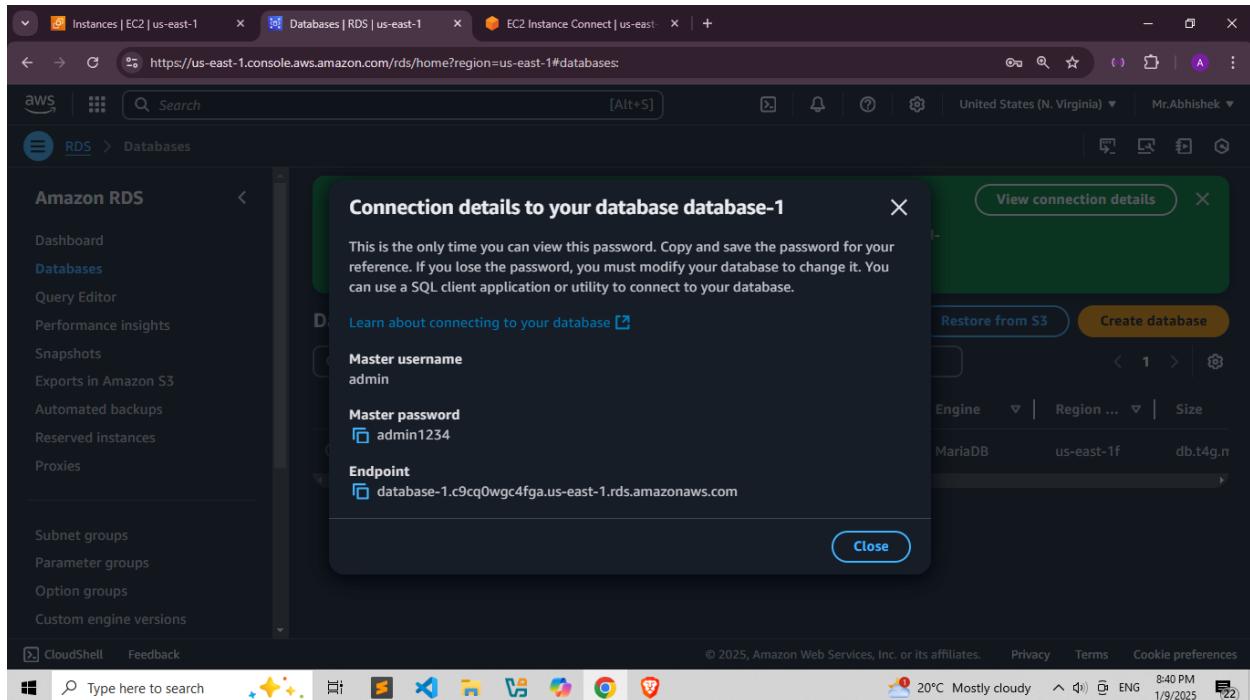
➤ **Review and Create:** Review your settings and click on the "Create database" button to create your MariaDB instance.



➤ **Connect to Your Database:** Once the database is created, you can connect to it using a database client (e.g., MySQL Workbench) with the master username and password you specified



➤ View Connection Details:



➤ Connect with RDS database in Linux Instance using **Endpoint, Username and Password**.

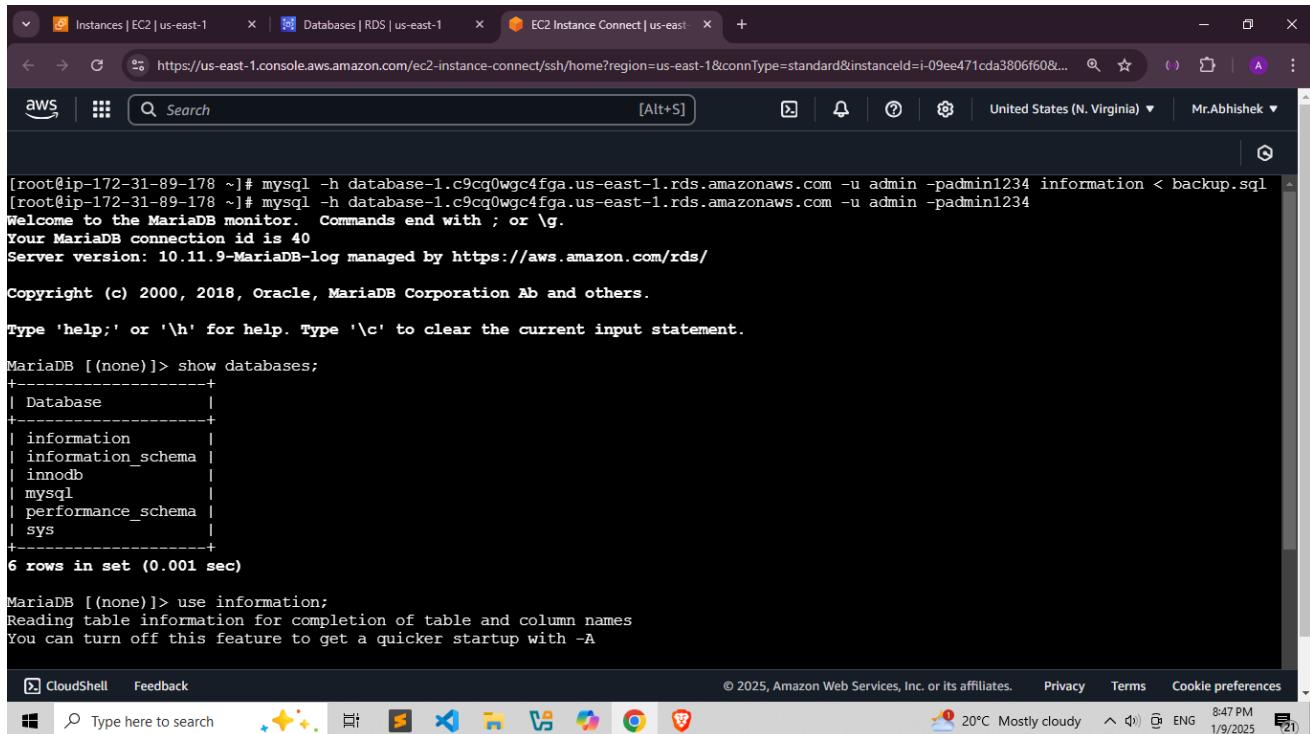
```
[root@ip-172-31-89-178 ~]# mysql -h database-1.c9cq0wgc4fga.us-east-1.rds.amazonaws.com -u admin -padmin1234
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 37
Server version: 10.11.9-MariaDB-log managed by https://aws.amazon.com/rds/
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> show databases;
+-----+
| Database |
+-----+
| information |
| information_schema |
| innodb |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.001 sec)

MariaDB [(none)]> exit
Bye
[root@ip-172-31-89-178 ~]#
```

- View Copy the **backup.sql** file to the RDS Database.



```
[root@ip-172-31-89-178 ~]# mysql -h database-1.c9cq0wgc4fga.us-east-1.rds.amazonaws.com -u admin -padmin1234 information < backup.sql
[root@ip-172-31-89-178 ~]# mysql -h database-1.c9cq0wgc4fga.us-east-1.rds.amazonaws.com -u admin -padmin1234
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 40
Server version: 10.11.9-MariaDB-log managed by https://aws.amazon.com/rds/
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

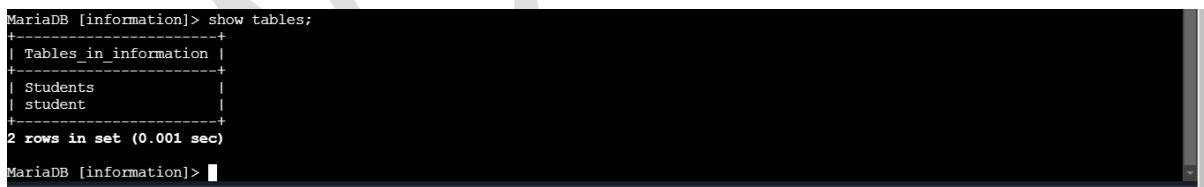
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show databases;
+-----+
| Database |
+-----+
| information |
| information_schema |
| innodb |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.001 sec)

MariaDB [(none)]> use information;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

CloudShell Feedback © 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
Type here to search 20°C Mostly cloudy 8:47 PM 1/9/2025
```

- Output of file:



```
MariaDB [information]> show tables;
+-----+
| Tables_in_information |
+-----+
| Students |
| student |
+-----+
2 rows in set (0.001 sec)

MariaDB [information]>
```

AWS(ABHIS)