

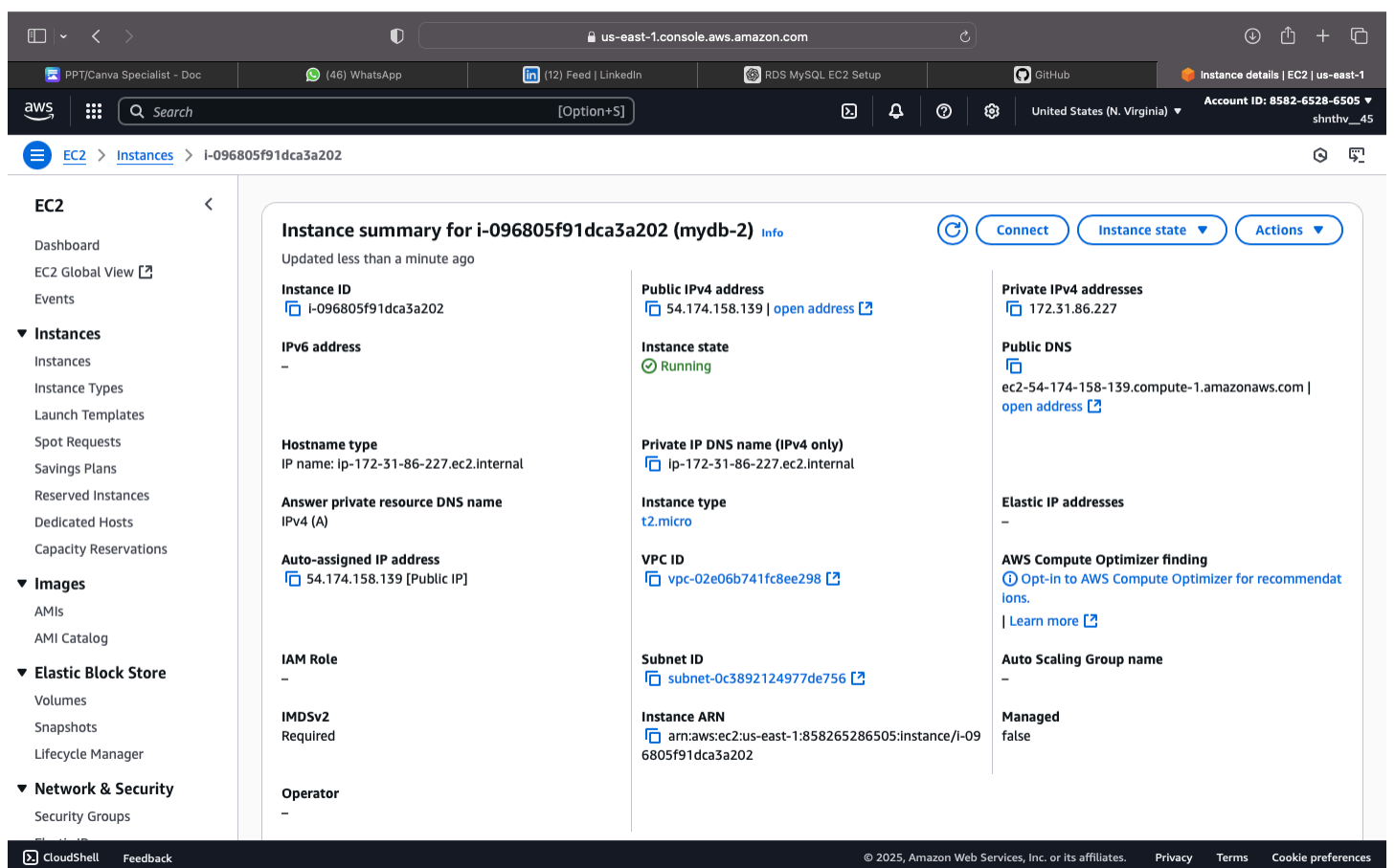
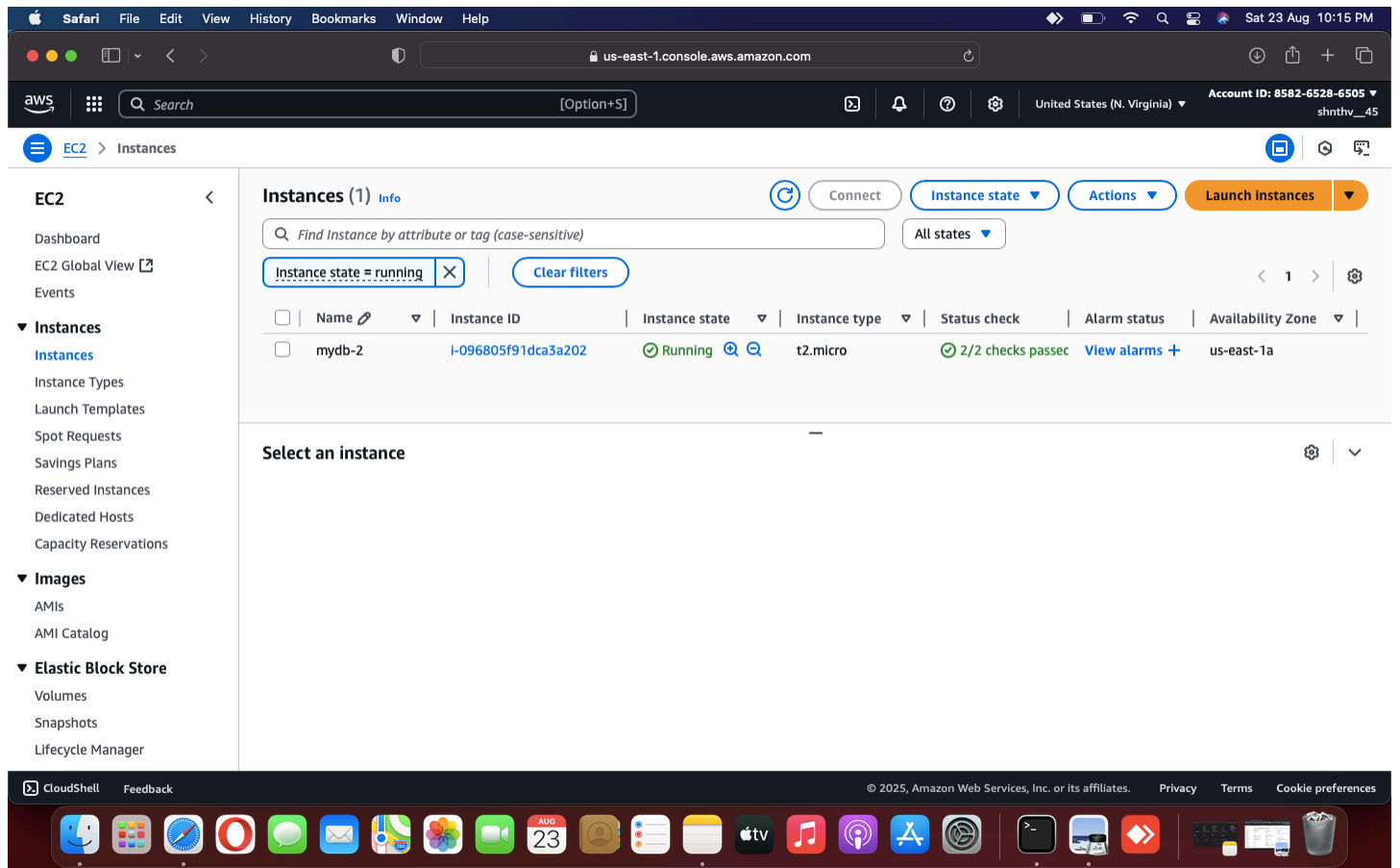
NullClass Cloud Technology (AWS)

1. Create an RDS MySQL Database and Connect from EC2 Launch an RDS MySQL instance inside your VPC. Modify the security group to allow connections from your EC2 instance. Connect to the database from your EC2 instance using MySQL CLI.

This guide explains how to set up an **Amazon RDS MySQL database** and connect to it from an **EC2 instance**. We will launch an EC2 server, create an RDS MySQL database in the same VPC, configure security groups to allow communication, install the MySQL client on EC2, and then connect to the database. Finally, we will create a table, insert sample records, and verify the connection.

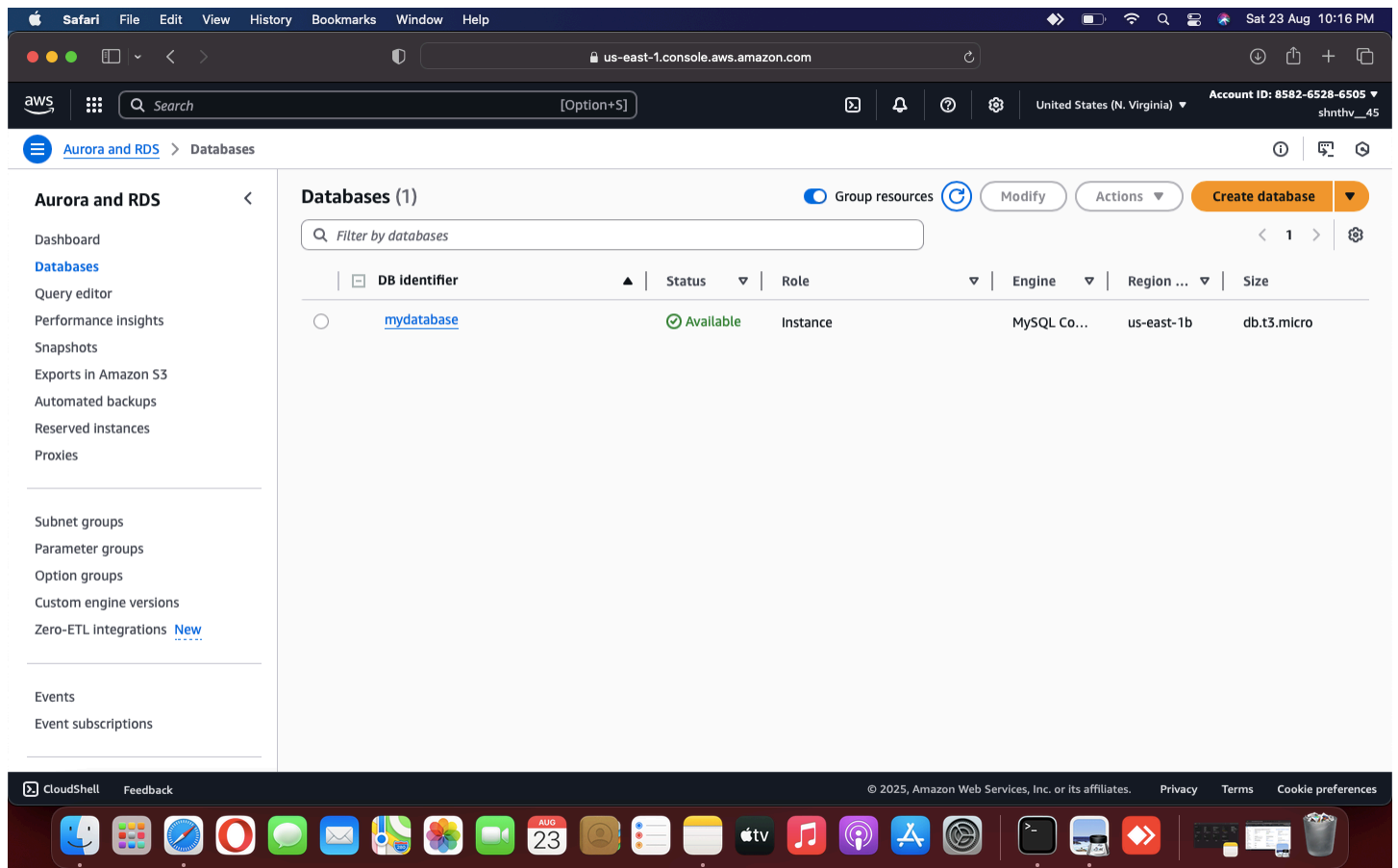
1. Launch an EC2 Instance

1. Log in to the **AWS Management Console**.
2. Navigate to **EC2 > Instances > Launch Instance**.
3. Choose an Amazon Machine Image (AMI):
 - Select **Amazon Linux 2023** (or Amazon Linux 2).
4. Choose instance type:
 - Example: **t2.micro** (Free Tier eligible).
5. **Key Pair**: Create or select an existing key pair (e.g., sonu-3.pem).
6. Network settings:
 - Attach to your default VPC.
 - Enable a public IP.
7. **Launch** the instance.



2. Launch an RDS MySQL Database

1. Go to **RDS > Databases > Create Database**.
2. Choose **Standard Create → MySQL**.
3. Select version: Example **MySQL 8.0**.
4. Choose **Free Tier** template.
5. DB instance identifier:
 - Example: mydatabase.
6. Set username & password:
 - Username: databasemysql.
 - Enter a secure password.
7. Connectivity:
 - VPC: Select the same VPC as your EC2 instance.
 - Subnet group: Default.
 - Public access: **No** (private DB).
 - Security group: Select or create one (we'll configure it next).
8. Create the database.



The screenshot displays the AWS Management Console for an Amazon RDS instance named 'mydatabase'. The interface is divided into a left-hand navigation pane and a main content area.

Navigation Pane (Left):

- Aurora and RDS** (selected)
 - Dashboard
 - Databases** (selected)
 - Query editor
 - Performance Insights
 - Snapshots
 - Exports in Amazon S3
 - Automated backups
 - Reserved Instances
 - Proxies
- Subnet groups
- Parameter groups
- Option groups
- Custom engine versions
- Zero-ETL integrations [New](#)
- Events
- Event subscriptions
- Recommendations **2**
- Certificate update

Main Content Area:

The main content area shows the configuration for the 'mydatabase' instance. At the top, there are tabs for 'Connectivity & security' (selected), 'Monitoring', 'Logs & events', 'Configuration', 'Zero-ETL integrations', and 'Maintenance & backup'.

Summary Section:

DB identifier	Status	Role	Engine	Recommendations
mydatabase	Available	Instance	MySQL Community	2 Informational

CPU: 2.50%

Class: db.t3.micro

Current activity: 0 Connections

Region & AZ: us-east-1b

Connectivity & security Section:

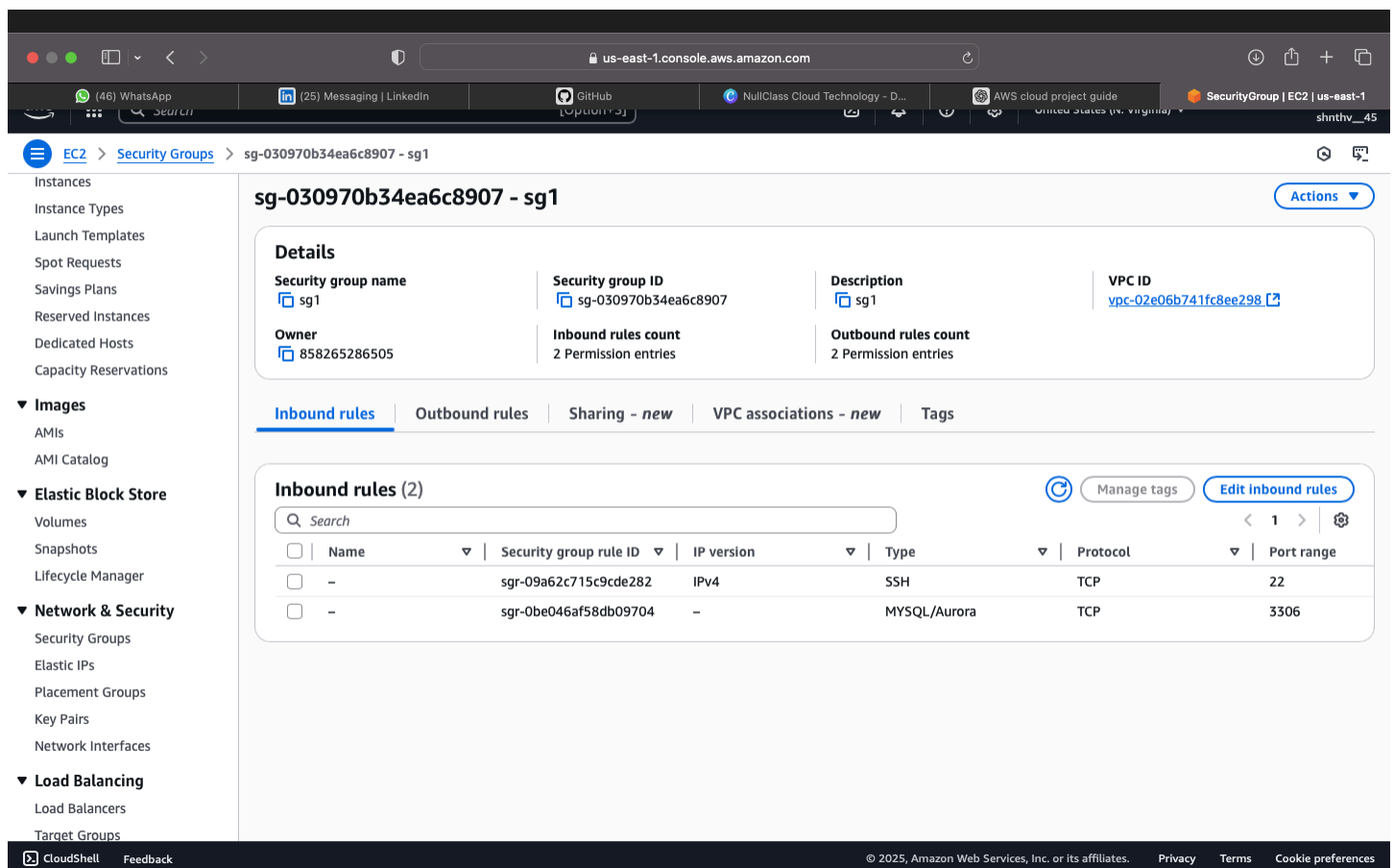
Endpoint & port	Networking	Security
Endpoint: mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com Port: 3306	Availability Zone: us-east-1b VPC: vpc-02e06b741fc8ee298 Subnet group: default-vpc-02e06b741fc8ee298 Subnets: subnet-01af2c369e5f2261d, subnet-05d33a19210e80703, subnet-0768c2aec47180ef4, subnet-0145efd42ec030e3d	VPC security groups: rds-ec2-1 (sg-0227caec5e6dd5ca3) - Active, default (sg-01be6af2bf2e366e3) - Active Publicly accessible: No Certificate authority: rds-ca-rsa2048-g1 Certificate authority date: May 26, 2061, 05:04 (UTC+05:30)

3. Configure Security Groups

For EC2 to connect to RDS, security rules must allow traffic:

- **On RDS Security Group:**
 1. Go to **EC2 > Security Groups**.
 2. Find the RDS security group (e.g., rds-ec2-1).
 3. Edit inbound rules → Add rule:
 - **Type:** MySQL/Aurora
 - **Protocol:** TCP
 - **Port:** 3306
 - **Source:** Custom → Select your EC2's Security Group
- **On EC2 Security Group:**
 1. Add inbound rule:
 - **Type:** SSH
 - **Protocol:** TCP
 - **Port:** 22
 - **Source:** 0.0.0.0/0 (for testing; later restrict to your IP).

Now EC2 can reach RDS on port **3306**.



4. Connect to Your EC2 Instance via SSH

1. Open a terminal (Linux/Mac) or PowerShell (Windows).
2. Locate your key file: sonu-3.pem.
3. Set permissions so it's not publicly visible:
4. `chmod 400 sonu-3.pem`
5. Connect using EC2's **Public DNS**:
6. `ssh -i "sonu-3.pem" ec2-user@ec2-54-174-158-139.compute-1.amazonaws.com`
7. Once connected, you'll be inside your EC2 shell.

5. Install MySQL Client on EC2

On Amazon Linux 2023, run:

```
sudo dnf update -y
```

```
sudo dnf install -y mariadb105
```

This installs the MySQL/MariaDB client, which lets you connect to RDS.

6. Connect from EC2 to RDS

1. Go to **RDS > Databases > your database (mydatabase)**.
2. Copy the **endpoint** (e.g., mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com)
3. From your EC2 terminal, connect:
4. `mysql -h mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com -u databasemysql -p`
5. Enter your DB password when prompted.

6. You are now connected to your MySQL RDS database

Aurora and RDS

Dashboard

Databases

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Snapshots

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Reserved Instances

Proxies

Subnet groups

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Custom engine versions

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Events

Event subscriptions

Recommendations

Certificate update

Subnets

subnet-01af2c369e5f2261d
subnet-05d33a19210e80703
subnet-0768c2aec47180ef4
subnet-0145efd42ec030e3d
subnet-09d0306958fdab94a
subnet-0c3892124977de756

Network type

IPv4

Certificate authority

rds-ca-rsa2048-g1

Certificate authority date

May 26, 2061, 05:04 (UTC+05:30)

DB instance certificate expiration date

August 05, 2026, 18:38 (UTC+05:30)

Connected compute resources (1)

Connections to compute resources that were created automatically by RDS are shown here. Connections to compute resources that were created manually aren't shown.

Filter by compute resources

Resource identifier

i-096805f91dca3a202

Resource type

EC2 instance

Availability Zone

us-east-1a

VPC security group

rds-ec2-1

Compute resource security group

ec2-rds-1

Connected

-

Proxies (0)

Filter by proxies

Proxy identifier

Status

Engine family

No proxies

You don't have any proxies.

CloudShell

Feedback

us-east-1.console.aws.amazon.com

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United States (N. Virginia)

Account ID: 8582-6528-6505

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Certificate update

mydatabase

Summary

DB Identifier

mydatabase

CPU

2.50%

Status

Available

Class

db.t3.micro

Role

Instance

Current activity

0 Connections

Engine

MySQL Community

Region & AZ

us-east-1b

Recommendations

2 Informational

Connectivity & security

Monitoring

Logs & events

Configuration

Zero-ETL integrations

Maintenance & backup

Connectivity & security

Endpoint & port

Endpoint

mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com

Port

3306

Networking

Availability Zone

us-east-1b

VPC

vpc-02e06b741fc8ee298

Subnet group

default-vpc-02e06b741fc8ee298

Subnets

subnet-01af2c369e5f2261d
subnet-05d33a19210e80703
subnet-0768c2aec47180ef4
subnet-0145efd42ec030e3d

Security

VPC security groups

rds-ec2-1 (sg-0227cae5e6dd5ca3)
default (sg-01be6af2bf2e366e3)

Publicly accessible

No

Certificate authority

rds-ca-rsa2048-g1

Certificate authority date

May 26, 2061, 05:04 (UTC+05:30)

CloudShell

Feedback

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mydatabase - Database...

Search

[Option+S]

United States (N. Virginia)

Account ID: 8582-6528-6505

7. Create a Database and Table

Inside the MySQL shell, run:

```
CREATE DATABASE company;
```

```
USE company;
```

```
CREATE TABLE users (  
    id INT AUTO_INCREMENT PRIMARY KEY,  
    name VARCHAR(50),  
    email VARCHAR(100)  
);
```

8. Insert and Verify Data

Insert some sample records:

```
INSERT INTO users (name, email) VALUES ('Alice', 'alice@example.com');
```

```
INSERT INTO users (name, email) VALUES ('Bob', 'bob@example.com');
```

```
INSERT INTO users (name, email) VALUES ('Charlie', 'charlie@example.com');
```

```
INSERT INTO users (name, email) VALUES ('Diana', 'diana@example.com');
```

Check the data:

```
SELECT * FROM users;
```

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Home - CanvaAWS cloud project guidemydatabase - Modify Instance | Aurora a...Instance details | EC2 | us-east-1EC2 Instance Connect | us-east-1

Search[Option+S]

United States (N. Virginia)Account ID: 8582-6528-6505shnthv_45

```
ec2-user@ec2-54-174-158-139.compute-1.amazonaws.com: Permission denied (publickey,gssapi-keyex,gssapi-with-mic).
[ec2-user@ip-172-31-86-227 ~]$ ssh -i "sonu-3.pem" ec2-user@ec2-54-174-158-139.compute-1.amazonaws.com
Warning: Identity file sonu-3.pem not accessible: No such file or directory.
ec2-user@ec2-54-174-158-139.compute-1.amazonaws.com: Permission denied (publickey,gssapi-keyex,gssapi-with-mic).
[ec2-user@ip-172-31-86-227 ~]$ ssh -i "sonu-3.pem" ec2-user@ec2-54-174-158-139.compute-1.amazonaws.com
Warning: Identity file sonu-3.pem not accessible: No such file or directory.
ec2-user@ec2-54-174-158-139.compute-1.amazonaws.com: Permission denied (publickey,gssapi-keyex,gssapi-with-mic).
[ec2-user@ip-172-31-86-227 ~]$ sudo dnf update -y
sudo dnf install -y mysql
[[[1;2BAmazon Linux 2023 repository
[[[1;2BAmazon Linux 2023 repository
Amazon Linux 2023 repository
Errors during downloading metadata for repository 'amazonlinux':
- Curl error (28): Timeout was reached for https://al2023-repos-us-east-1-de612dc2.s3.dualstack.us-east-1.amazonaws.com/core/mirrors/2023.8.20250721/x86_64/mirror.list [Connection timed out after 30002 milliseconds]
- Curl error (28): Timeout was reached for https://al2023-repos-us-east-1-de612dc2.s3.dualstack.us-east-1.amazonaws.com/core/mirrors/2023.8.20250721/x86_64/mirror.list [Connection timed out after 30001 milliseconds]
Error: Failed to download metadata for repo 'amazonlinux': Cannot prepare internal mirrorlist: Curl error (28): Timeout was reached for https://al2023-repos-us-east-1-de612dc2.s3.dualstack.us-east-1.amazonaws.com/core/mirrors/2023.8.20250721/x86_64/mirror.list [Connection timed out after 30001 milliseconds]
Amazon Linux 2023 Kernel Livepatch repository
Errors during downloading metadata for repository 'kernel-livepatch':
- Curl error (28): Timeout was reached for https://al2023-repos-us-east-1-de612dc2.s3.dualstack.us-east-1.amazonaws.com/kernel-livepatch/mirrors/al2023/x86_64/mirror.list [Connection timed out after 30002 milliseconds]
- Curl error (28): Timeout was reached for https://al2023-repos-us-east-1-de612dc2.s3.dualstack.us-east-1.amazonaws.com/kernel-livepatch/mirrors/al2023/x86_64/mirror.list [Connection timed out after 30001 milliseconds]
Error: Failed to download metadata for repo 'kernel-livepatch': Cannot prepare internal mirrorlist: Curl error (28): Timeout was reached for https://al2023-repos-us-east-1-de612dc2.s3.dualstack.us-east-1.amazonaws.com/kernel-livepatch/mirrors/al2023/x86_64/mirror.list [Connection timed out after 30002 milliseconds]
Ignoring repositories: amazonlinux, kernel-livepatch
Error encountered while trying to retrieve release information: Unable to retrieve release info data. Curl error (28): Timeout was reached for https://al2023-repos-us-east-1-de612dc2.s3.dualstack.us-east-1.amazonaws.com/core/releasemd.xml [Connection timed out after 30001 milliseconds]
Dependencies resolved.
Nothing to do.
Complete!
Amazon Linux 2023 repository
Amazon Linux 2023 Kernel Livepatch repository
```

i-096805f91dca3a202 (mydb-2)

PublicIPs: 54.174.158.139 PrivateIPs: 172.31.86.227

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Search[Option+S]

United States (N. Virginia)Account ID: 8582-6528-6505shnthv_45

```
Complete!
[ec2-user@ip-172-31-86-227 ~]$ sudo yum install -y mysql
Last metadata expiration check: 0:00:56 ago on Mon Aug 18 20:49:20 2025.
No match for argument: mysql
Error: Unable to find a match: mysql
[ec2-user@ip-172-31-86-227 ~]$ sudo dnf install -y mariadb105
Last metadata expiration check: 0:01:34 ago on Mon Aug 18 20:49:20 2025.
Dependencies resolved.

=====
Package                                Architecture      Version            Repository          Size
=====
Installing:
mariadb105                             x86_64            3:10.5.29-1.amzn2023.0.1    amazonlinux          1.5 M
Installing dependencies:
mariadb-connector-c                     x86_64            3.3.10-1.amzn2023.0.1    amazonlinux          211 k
mariadb-connector-c-config              noarch            3.3.10-1.amzn2023.0.1    amazonlinux          9.9 k
mariadb105-common                       x86_64            3:10.5.29-1.amzn2023.0.1    amazonlinux          28 k
perl-Sys-Hostname                       x86_64            1.23-477.amzn2023.0.7      amazonlinux          16 k
Transaction Summary
-----
Install 5 Packages

Total download size: 1.8 M
Installed size: 19 M
Downloading Packages:
(1/5): mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarch.rpm
(2/5): mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64.rpm
(3/5): mariadb105-10.5.29-1.amzn2023.0.1.x86_64.rpm
(4/5): mariadb105-common-10.5.29-1.amzn2023.0.1.x86_64.rpm
(5/5): perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64.rpm
-----
Total
Running transaction check
Transaction check succeeded.
```

i-096805f91dca3a202 (mydb-2)

PublicIPs: 54.174.158.139 PrivateIPs: 172.31.86.227

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Verifying : mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_644/5

Verifying : perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_645/5

=====

WARNING:

A newer release of "Amazon Linux" is available.

Available Versions:

Version 2023.8.20250808:

Run the following command to upgrade to 2023.8.20250808:

dnf upgrade --releasever=2023.8.20250808

Release notes:

https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.8.20250808.html

Version 2023.8.20250818:

Run the following command to upgrade to 2023.8.20250818:

dnf upgrade --releasever=2023.8.20250818

Release notes:

https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.8.20250818.html

=====

Installed:

mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarchmariadb105-3:10.5.29-1.amzn2023.0.1.x86_64

mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64

Complete!

[ec2-user@ip-172-31-86-227 ~]\$ mysql --version

mysql Ver 15.1 Distrib 10.5.29-MariaDB, for Linux (x86_64) using EditLine wrapper

[ec2-user@ip-172-31-86-227 ~]\$ mysql -h mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com -u mydatabase -p

Enter password:

i-096805f91dca3a202 (mydb-2)

PublicIPs: 54.174.158.139 PrivateIPs: 172.31.86.227

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Search[Option+S]

United States (N. Virginia)Account ID: 8582-6528-6505shnthv_45

Version 2023.8.20250818:

Run the following command to upgrade to 2023.8.20250818:

dnf upgrade --releasever=2023.8.20250818

Release notes:

https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.8.20250818.html

=====

Installed:

mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarchmariadb105-3:10.5.29-1.amzn2023.0.1.x86_64

mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64

Complete!

[ec2-user@ip-172-31-86-227 ~]\$ mysql --version

mysql Ver 15.1 Distrib 10.5.29-MariaDB, for Linux (x86_64) using EditLine wrapper

[ec2-user@ip-172-31-86-227 ~]\$ mysql -h mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com -u mydatabase -p

Enter password:

ERROR 1045 (28000): Access denied for user 'mydatabase'@'172.31.86.227' (using password: YES)

[ec2-user@ip-172-31-86-227 ~]\$ mysql -h mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com -u mydatabase -p

Enter password:

ERROR 1045 (28000): Access denied for user 'mydatabase'@'172.31.86.227' (using password: YES)

[ec2-user@ip-172-31-86-227 ~]\$ mysql -h mydatabase.cuf2q40i6294.us-east-1.rds.amazonaws.com -u mydatabase -p

Enter password:

Welcome to the MariaDB monitor. Commands end with ; or \g.

Your MySQL connection id is 1320

Server version: 8.0.41 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)]>

i-096805f91dca3a202 (mydb-2)

PublicIPs: 54.174.158.139 PrivateIPs: 172.31.86.227

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Search[Option+S]

United States (N. Virginia)Account ID: 8582-6528-6505shnthv__45

```
MySQL [(none)]>
MySQL [(none)]> CREATE DATABASE testdb;
Query OK, 1 row affected (0.014 sec)

MySQL [(none)]>
MySQL [(none)]> USE testdb;
Database changed
MySQL [testdb]>
MySQL [testdb]> CREATE TABLE users (
  -> id INT AUTO_INCREMENT PRIMARY KEY,
  -> name VARCHAR(50) NOT NULL,
  -> email VARCHAR(100) UNIQUE NOT NULL,
  -> created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
  -> );
Query OK, 0 rows affected (0.063 sec)

MySQL [testdb]>
MySQL [testdb]> INSERT INTO users (name, email) VALUES ('Alice', 'alice@example.com');
Query OK, 1 row affected (0.009 sec)

MySQL [testdb]> INSERT INTO users (name, email) VALUES ('Bob', 'bob@example.com');
Query OK, 1 row affected (0.007 sec)

MySQL [testdb]>
MySQL [testdb]> SELECT * FROM users;
+-----+-----+-----+-----+
| id | name | email | created_at |
+-----+-----+-----+-----+
| 1 | Alice | alice@example.com | 2025-08-18 21:02:26 |
| 2 | Bob | bob@example.com | 2025-08-18 21:02:26 |
+-----+-----+-----+-----+
2 rows in set (0.001 sec)

MySQL [testdb]>
```

i-096805f91dca3a202 (mydb-2)

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Search[Option+S]

United States (N. Virginia)Account ID: 8582-6528-6505shnthv__45

```
MySQL [testdb]> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| testdb |
+-----+
5 rows in set (0.001 sec)

MySQL [testdb]> CREATE DATABASE projectdb;
Query OK, 1 row affected (0.006 sec)

MySQL [testdb]> USE projectdb;
Database changed
MySQL [projectdb]> CREATE TABLE users (
  -> id INT AUTO_INCREMENT PRIMARY KEY,
  -> name VARCHAR(50) NOT NULL,
  -> email VARCHAR(100) UNIQUE NOT NULL,
  -> created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
  -> );
Query OK, 0 rows affected (0.038 sec)

MySQL [projectdb]> INSERT INTO users (name, email) VALUES ('Alice', 'alice@example.com');
Query OK, 1 row affected (0.005 sec)

MySQL [projectdb]> INSERT INTO users (name, email) VALUES ('Bob', 'bob@example.com');
Query OK, 1 row affected (0.004 sec)

MySQL [projectdb]> INSERT INTO users (name, email) VALUES ('Charlie', 'charlie@example.com');
Query OK, 1 row affected (0.005 sec)

MySQL [projectdb]> INSERT INTO users (name, email) VALUES ('Diana', 'diana@example.com');
```

i-096805f91dca3a202 (mydb-2)

PublicIPs: 54.174.158.139 PrivateIPs: 172.31.86.227

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