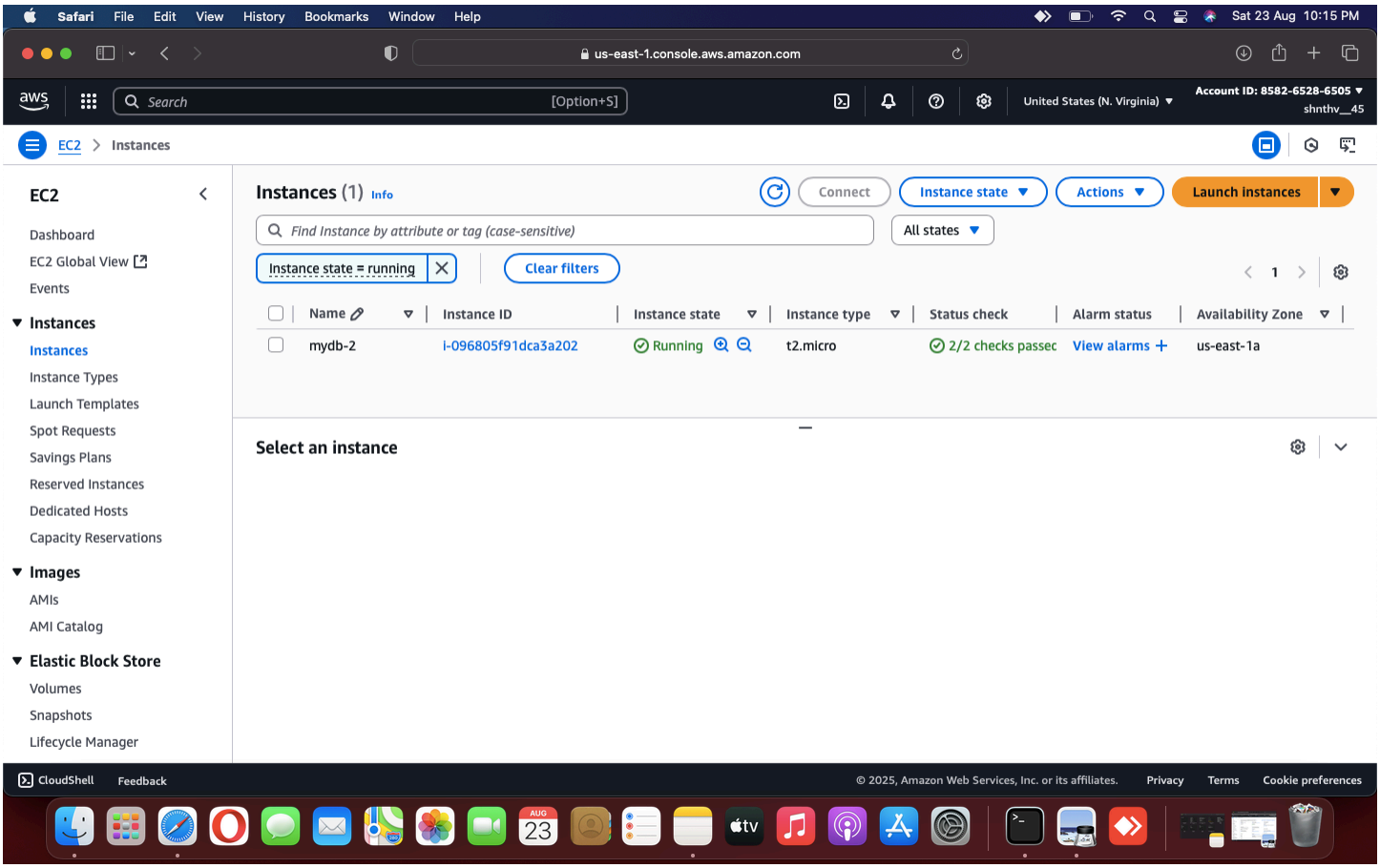
NullClass Cloud Technology (AWS)

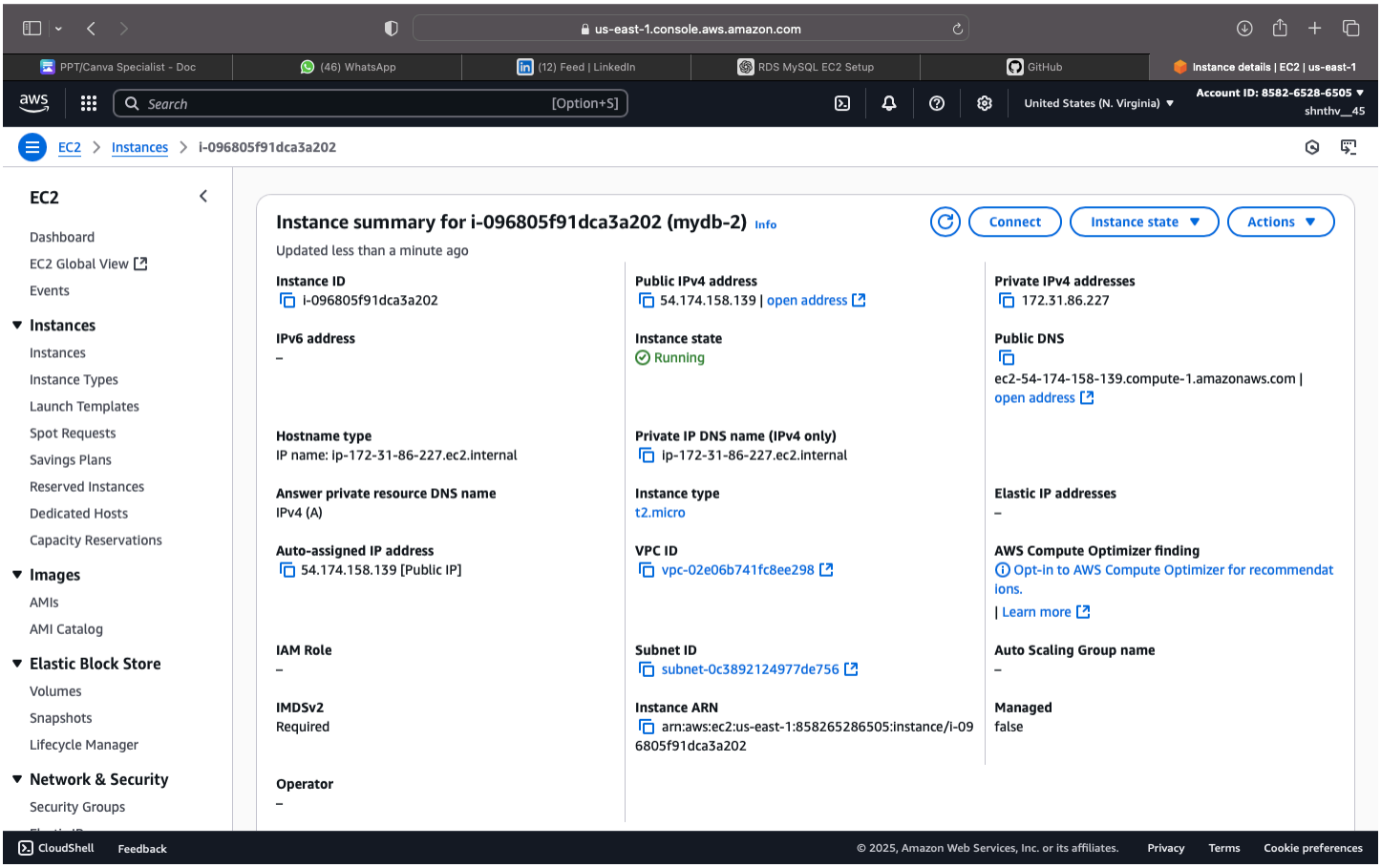
1.Create an RDS MySQL Database and Connect from EC2 Launch an RDS MySQL instance inside your VPC. Modify the security group to allow connections from your EC2 instance. Connect to the database from your EC2 instance using MySQL CLI.

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

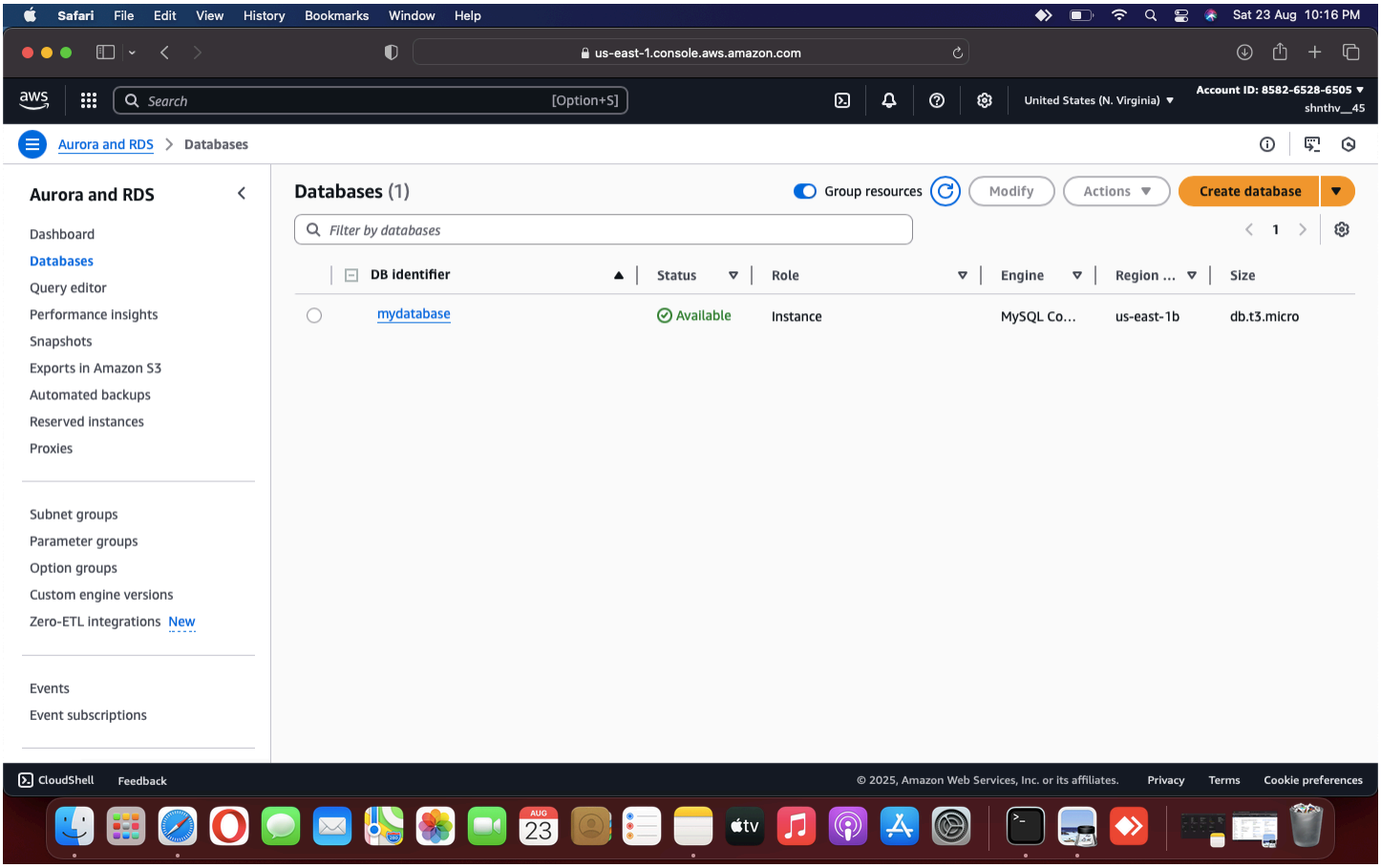
1. Log in to the **AWS Management Console**.
2. Navigate to **EC2 > Instances > Launch Instance**.
3. Choose an Amazon Machine Image (AMI):
   - Select **Amazon Linux 2023** (or Amazon Linux 2).
4. Choose instance type:
   - Example: **t2.micro** (Free Tier eligible).
5. **Key Pair**: Create or select 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.

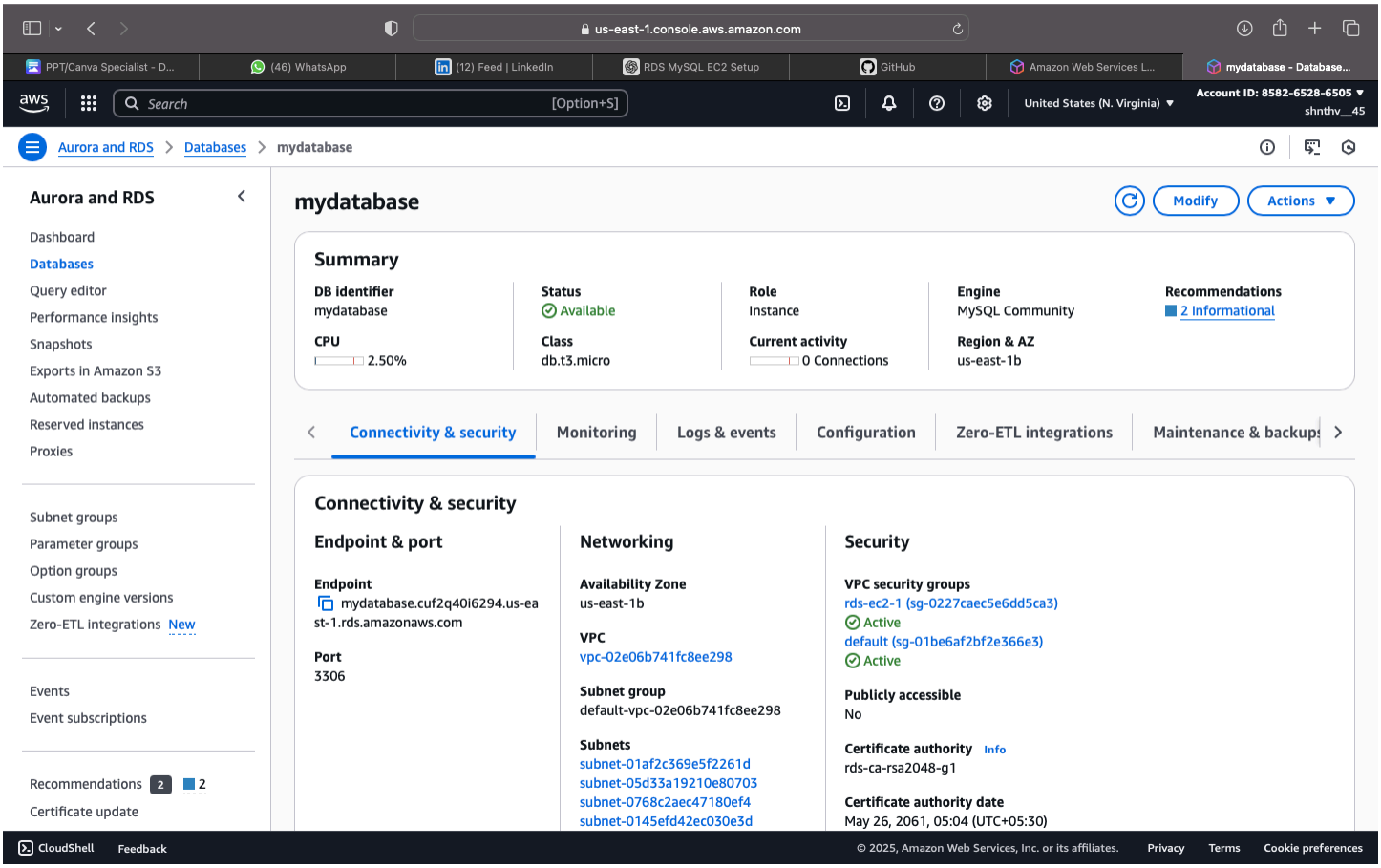




2. Launch an RDS MySQL Database

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.



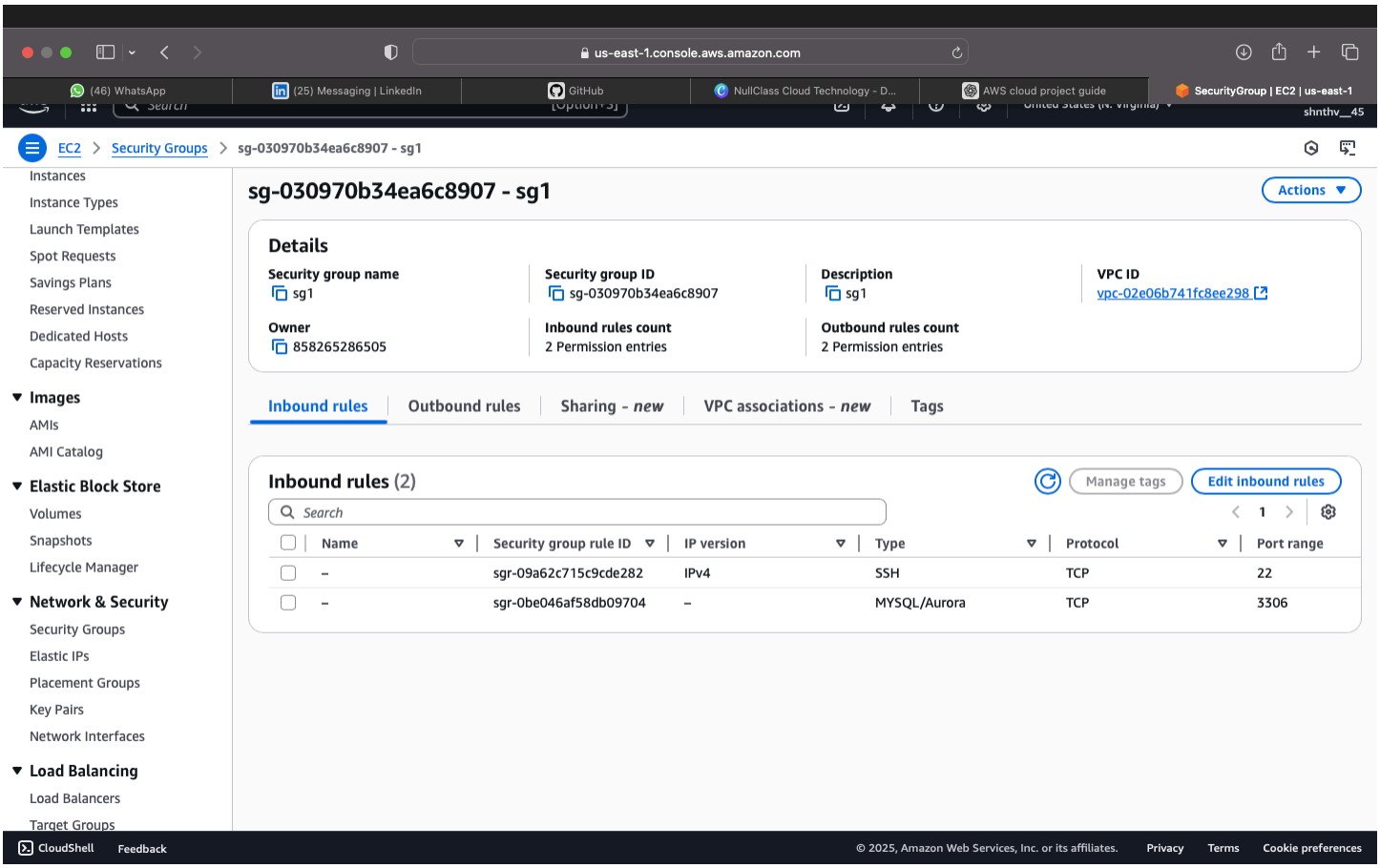


3. Configure Security Groups

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

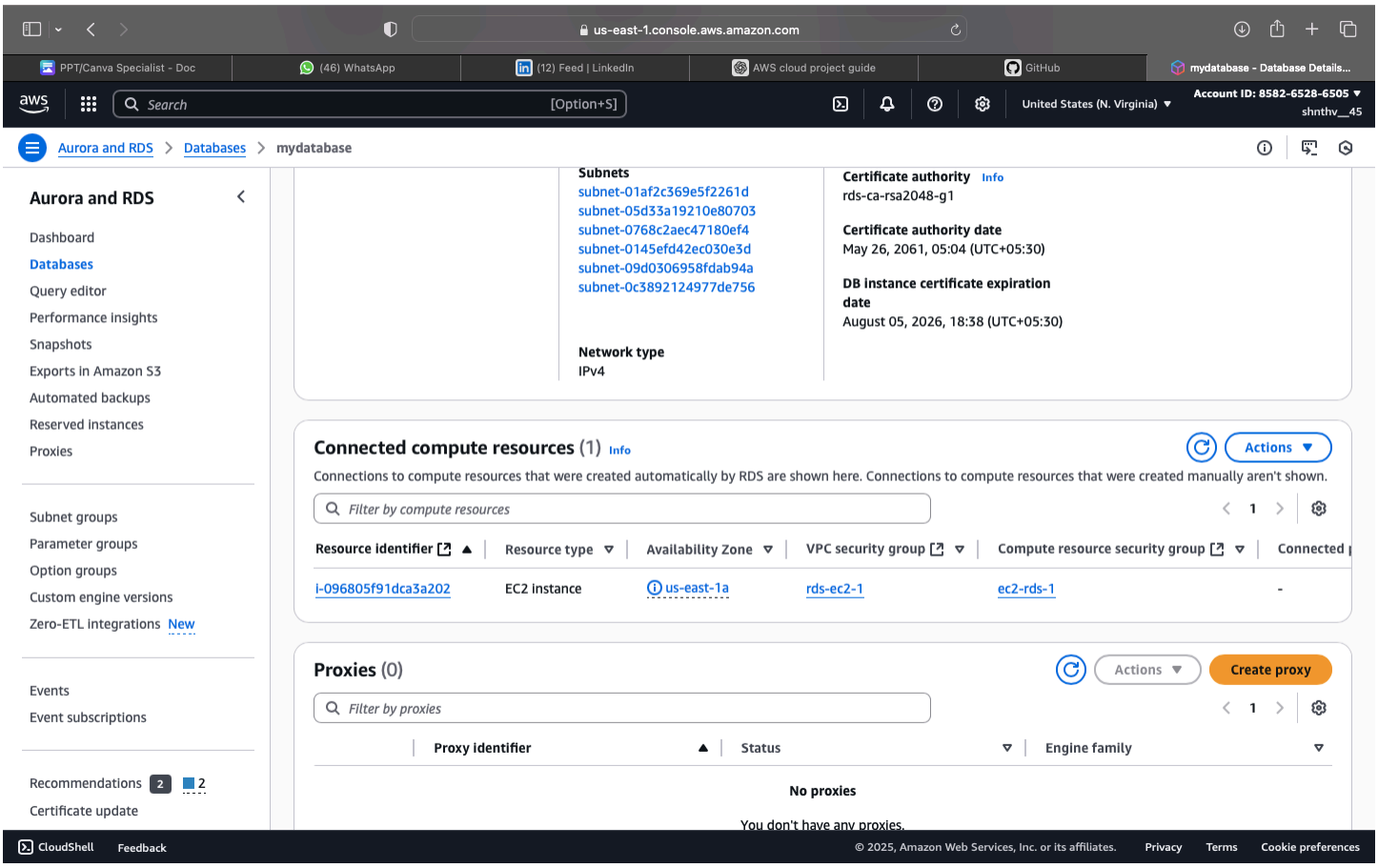
sudo dnf install -y mariadb105

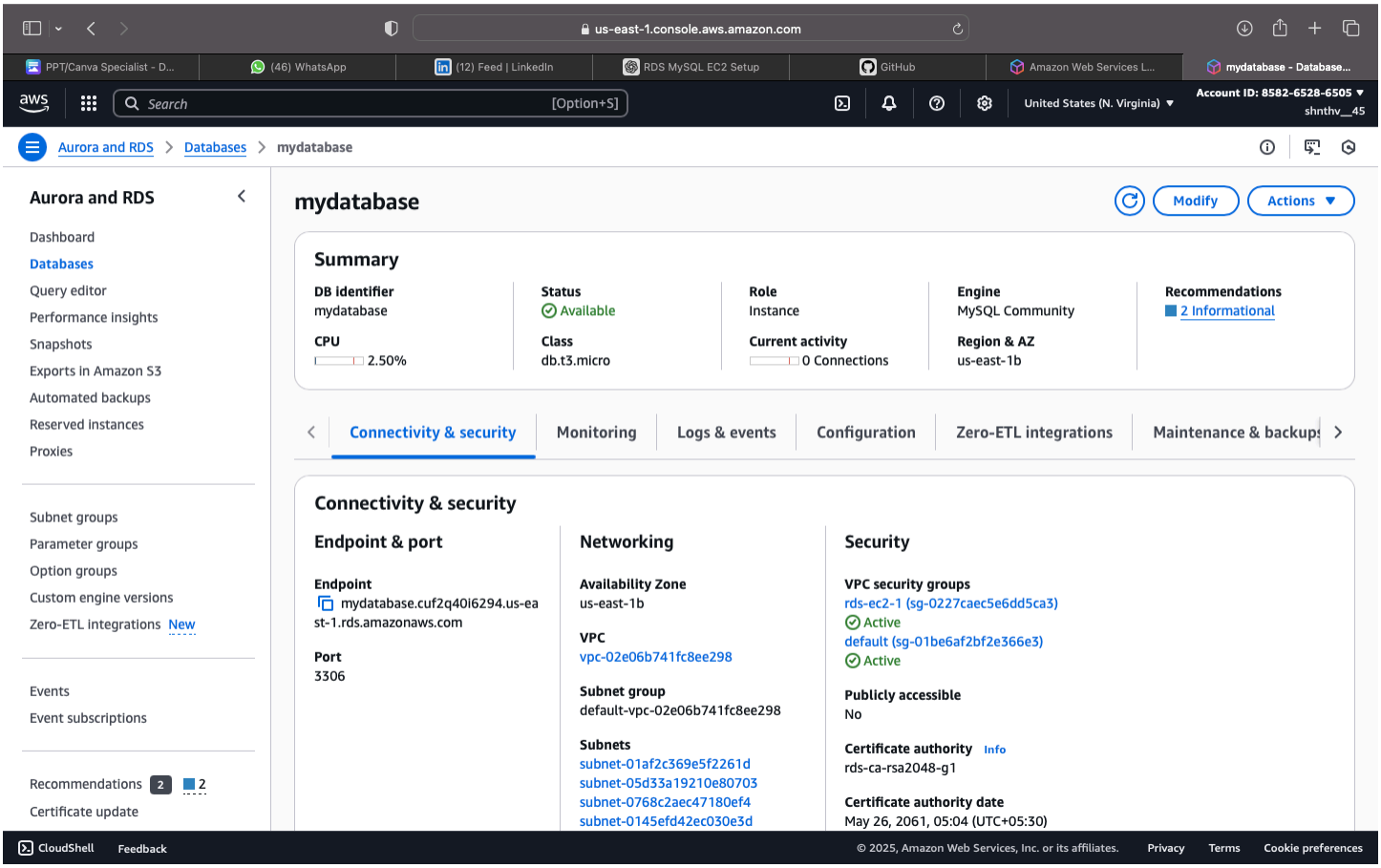
This installs the MySQL/MariaDB client, which lets you connect to RDS.

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





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)
);
```

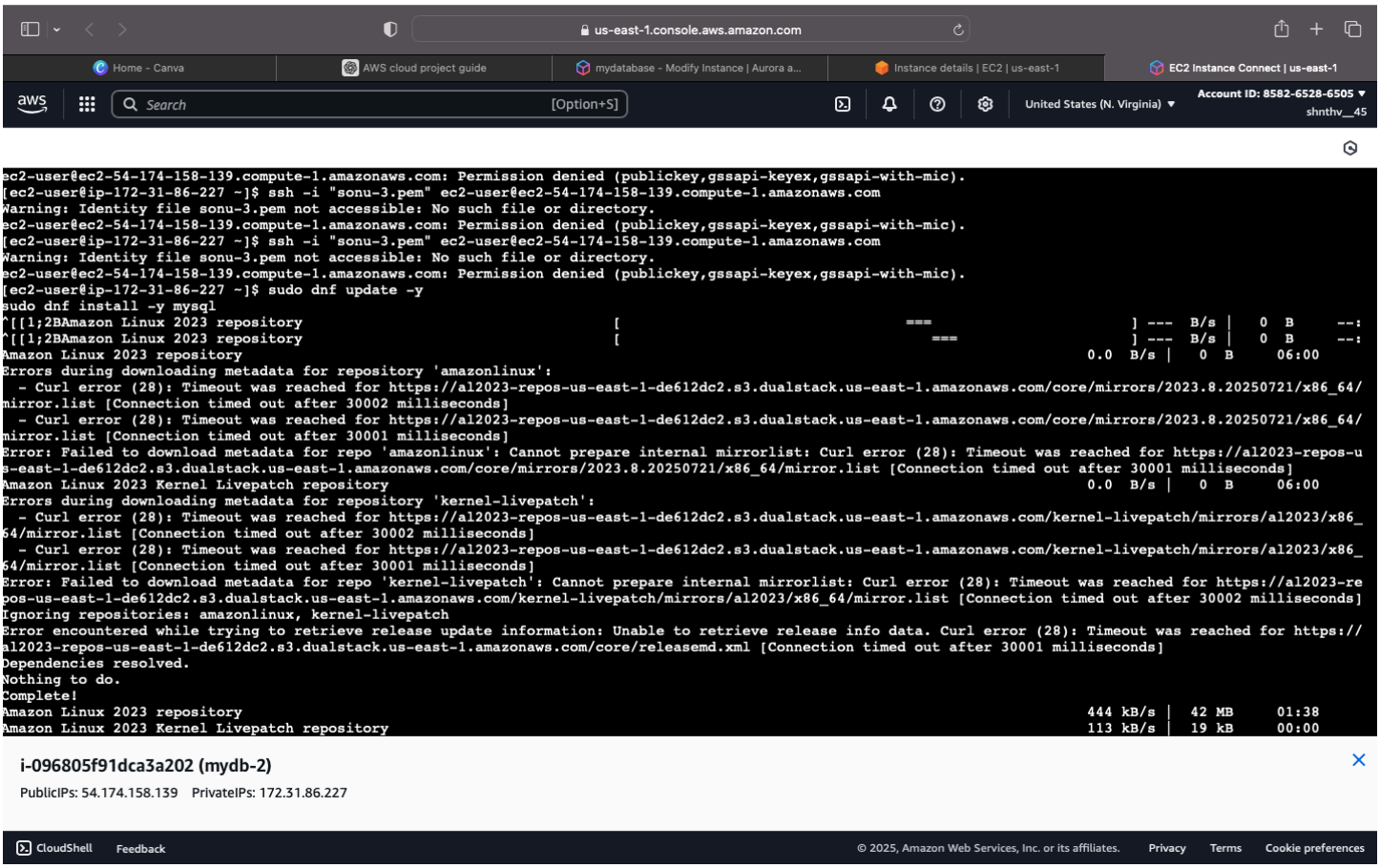
8. Insert and Verify Data

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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United States (N. Virginia)
Account ID: 8582-6528-6505
shnthv__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 0.0 B/s | 0 B 06:00
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 0.0 B/s | 0 B 06:00
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 update 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 444 kB/s | 42 MB 01:38
Amazon Linux 2023 Kernel Livepatch repository 113 kB/s | 19 kB 00:00
i-096805f91dca3a202 (mydb-2)
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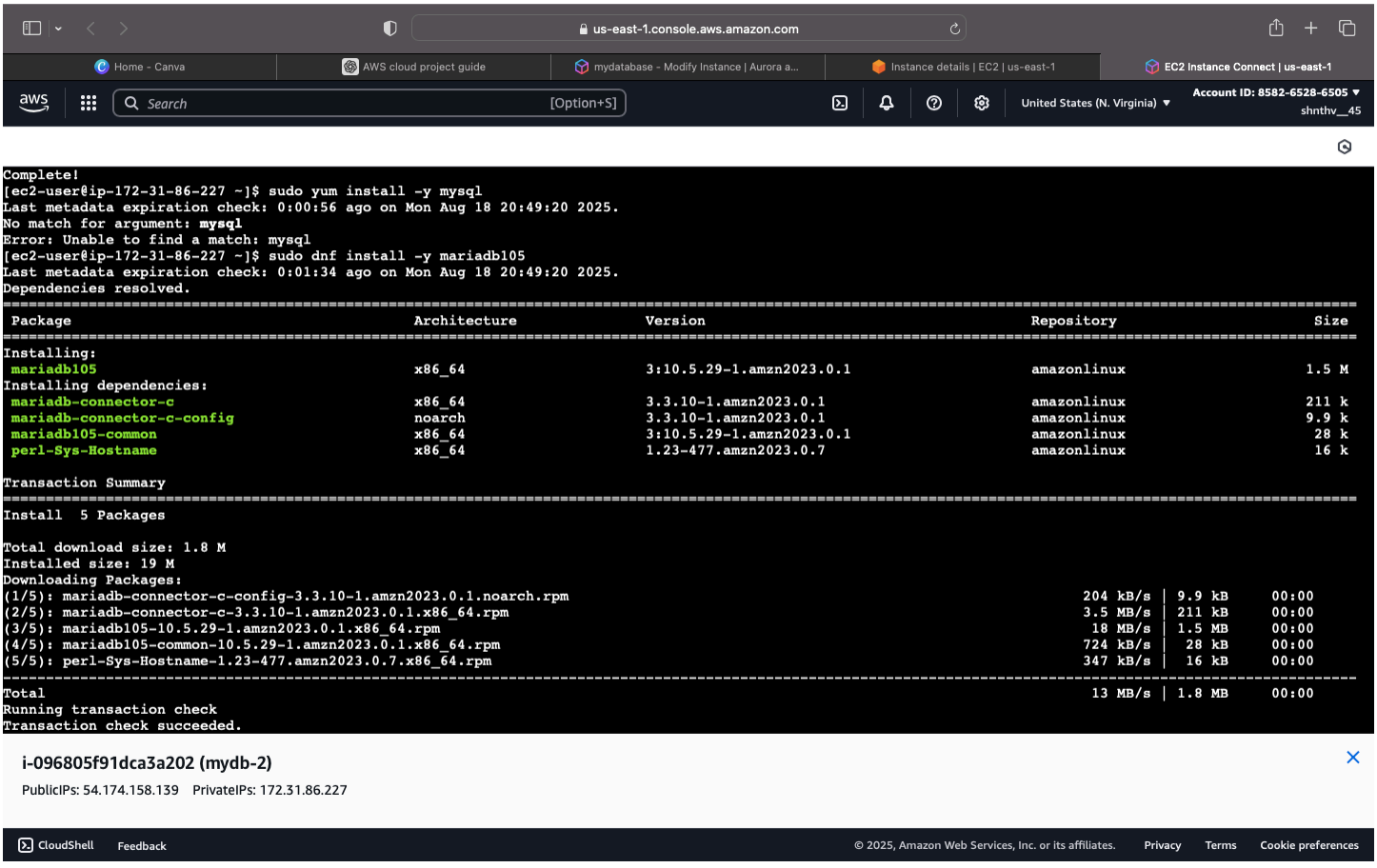
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United States (N. Virginia)
Account ID: 8582-6528-6505
shnthv__45
Complete!
[ec2-user@ip-172-31-86-227 ~]$ sudo yum install -y mysql
Last metadata expiration check: 0:00:56 ago on Mon Aug 18 20:49:20 2025.
No match for argument: mysql
Error: Unable 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 204 kB/s | 9.9 kB 00:00
(2/5): mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64.rpm 3.5 MB/s | 211 kB 00:00
(3/5): mariadb105-10.5.29-1.amzn2023.0.1.x86_64.rpm 18 MB/s | 1.5 MB 00:00
(4/5): mariadb105-common-10.5.29-1.amzn2023.0.1.x86_64.rpm 724 kB/s | 28 kB 00:00
(5/5): perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64.rpm 347 kB/s | 16 kB 00:00
Total 13 MB/s | 1.8 MB 00:00
Running transaction check
Transaction check succeeded.
i-096805f91dca3a202 (mydb-2)
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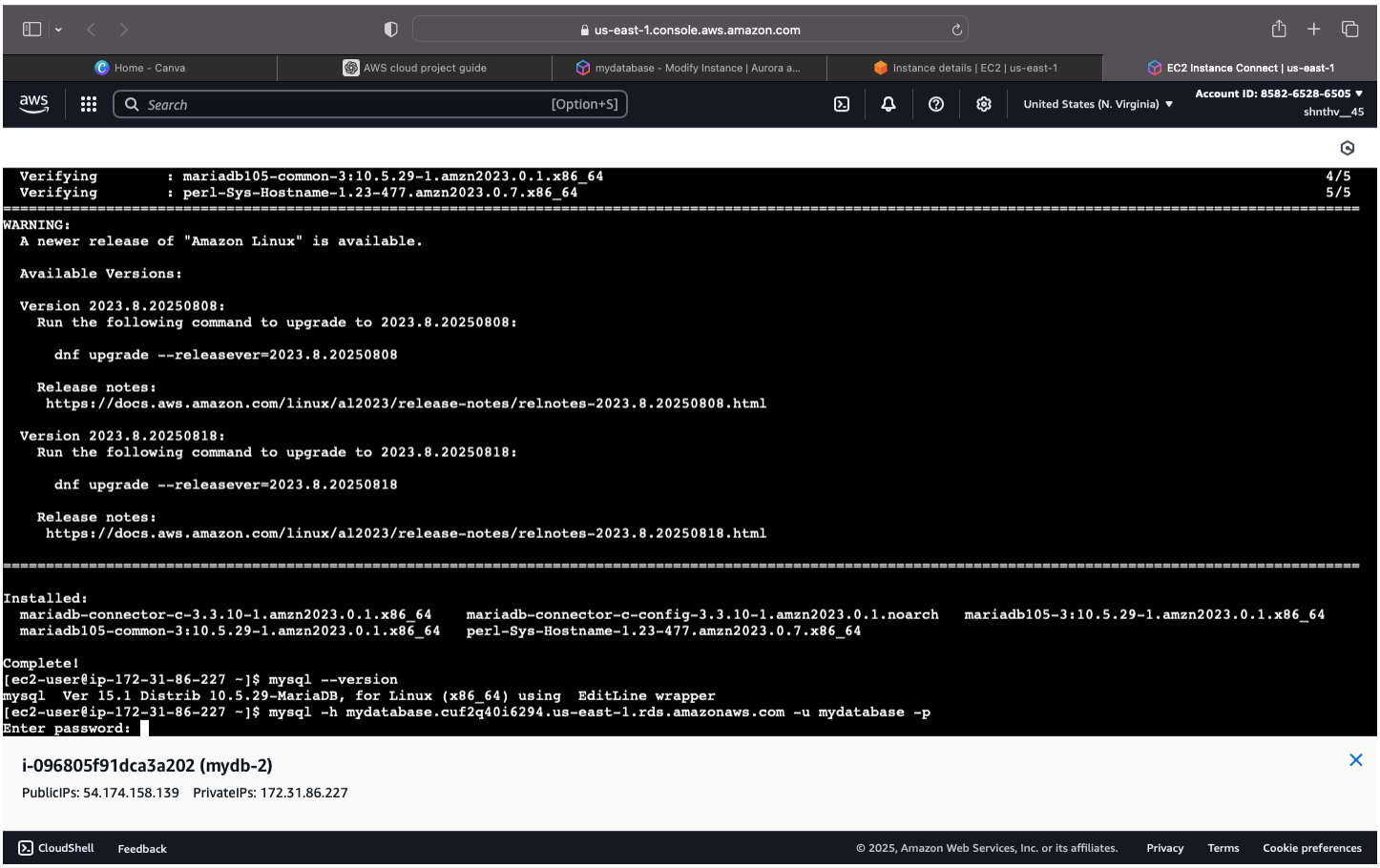
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shnthv__45
Verifying : mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64 4/5
Verifying : perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64 5/5
WARNING:
A newer release of "Amazon Linux" is available.
Available Versions:
Version 2023.8.20250808:
Run the 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_64 mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarch mariadb105-3:10.5.29-1.amzn2023.0.1.x86_64
mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64 perl-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)
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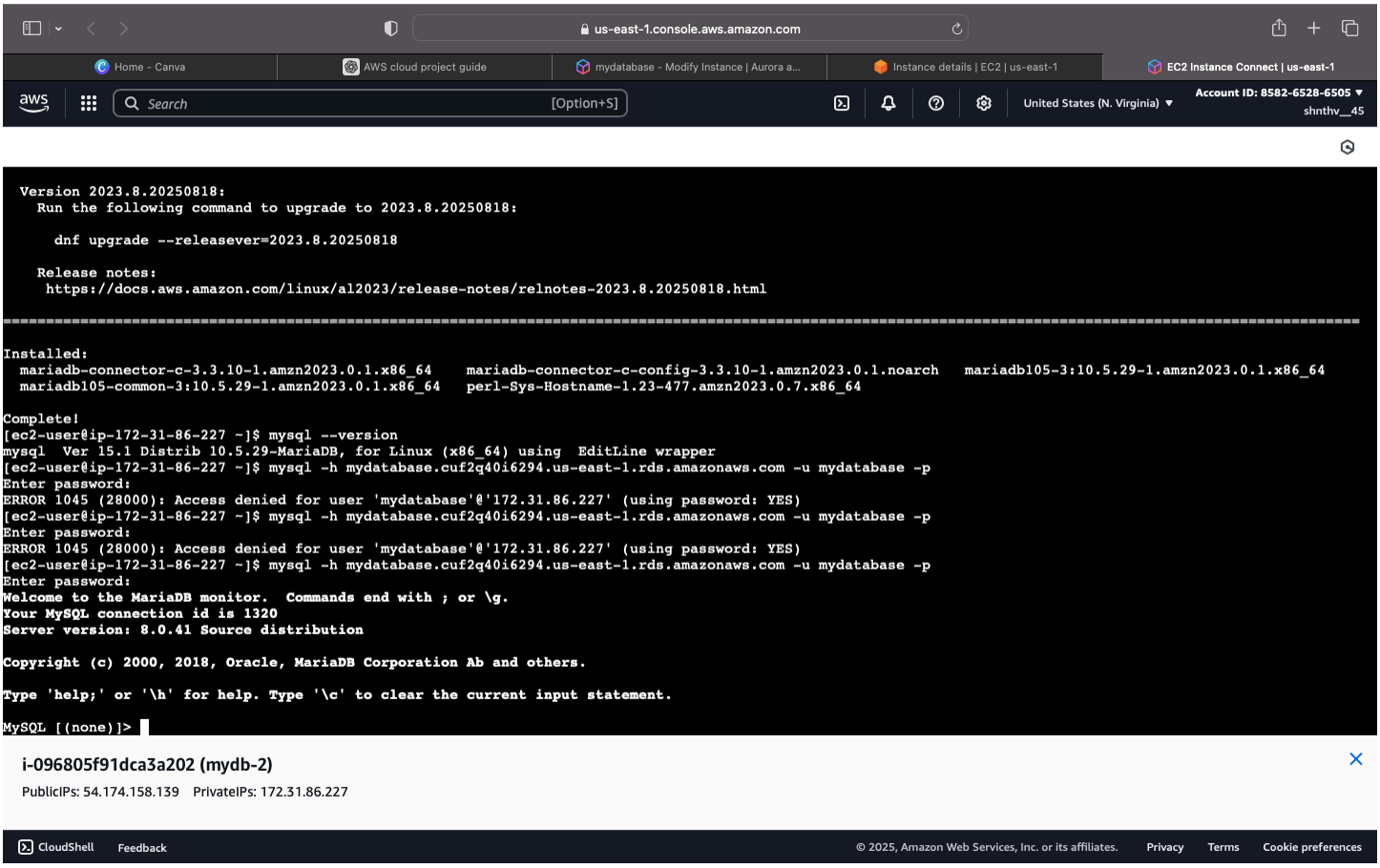
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Account ID: 8582-6528-6505
shnthv__45
Version 2023.8.20250818:
Run the following command to upgrade to 2023.8.20250818:
dnf upgrade --releasever=2023.8.20250818
Release notes:
https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.8.20250818.html
Installed:
mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64 mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarch mariadb105-3:10.5.29-1.amzn2023.0.1.x86_64
mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64 perl-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)
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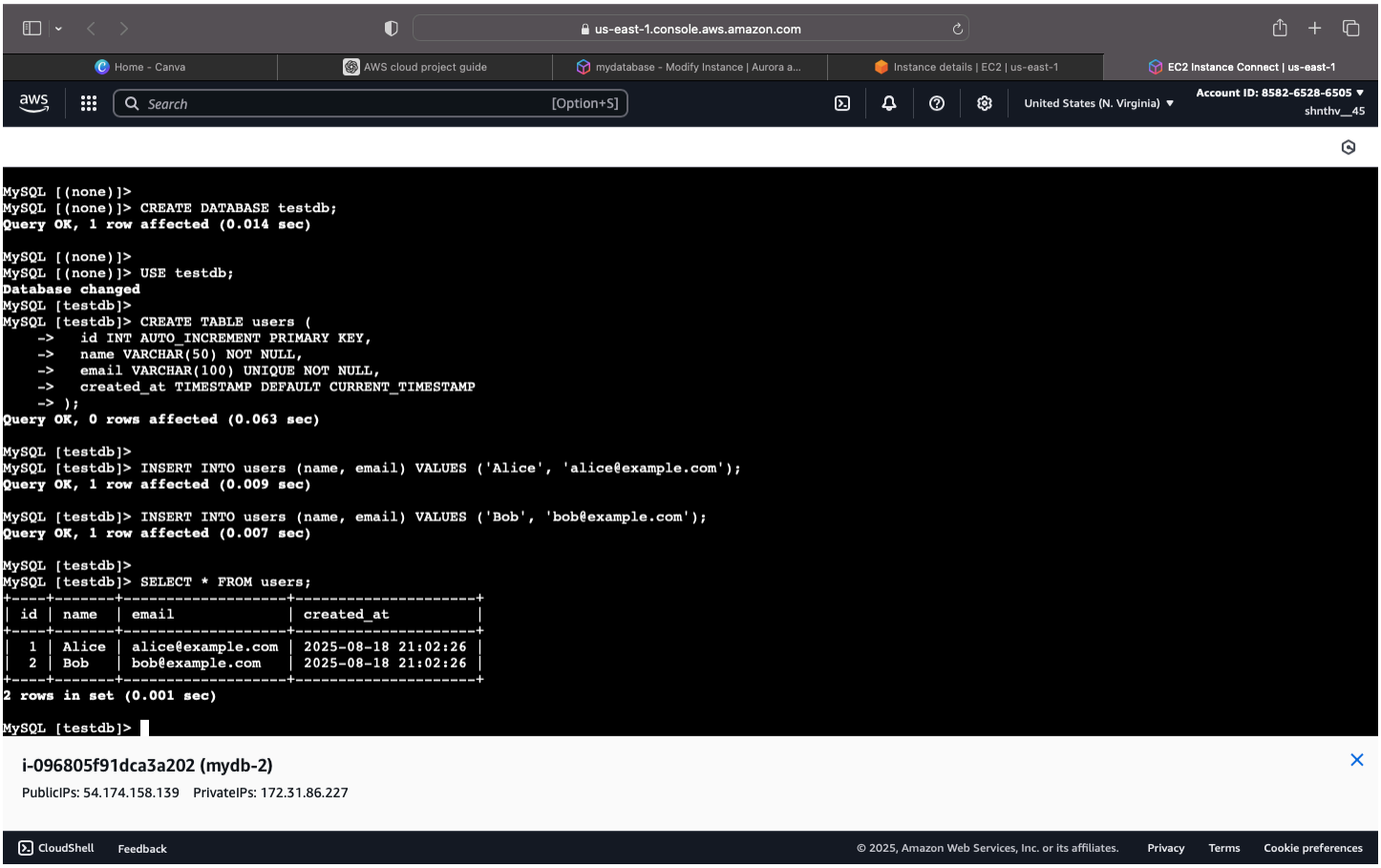
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United States (N. Virginia)
Account ID: 8582-6528-6505
shnthv__45
MySQL [(none)]>
MySQL [(none)]> CREATE DATABASE testdb;
Query OK, 1 row affected (0.014 sec)
MySQL [(none)]>
MySQL [(none)]> USE testdb;
Database changed
MySQL [testdb]>
MySQL [testdb]> 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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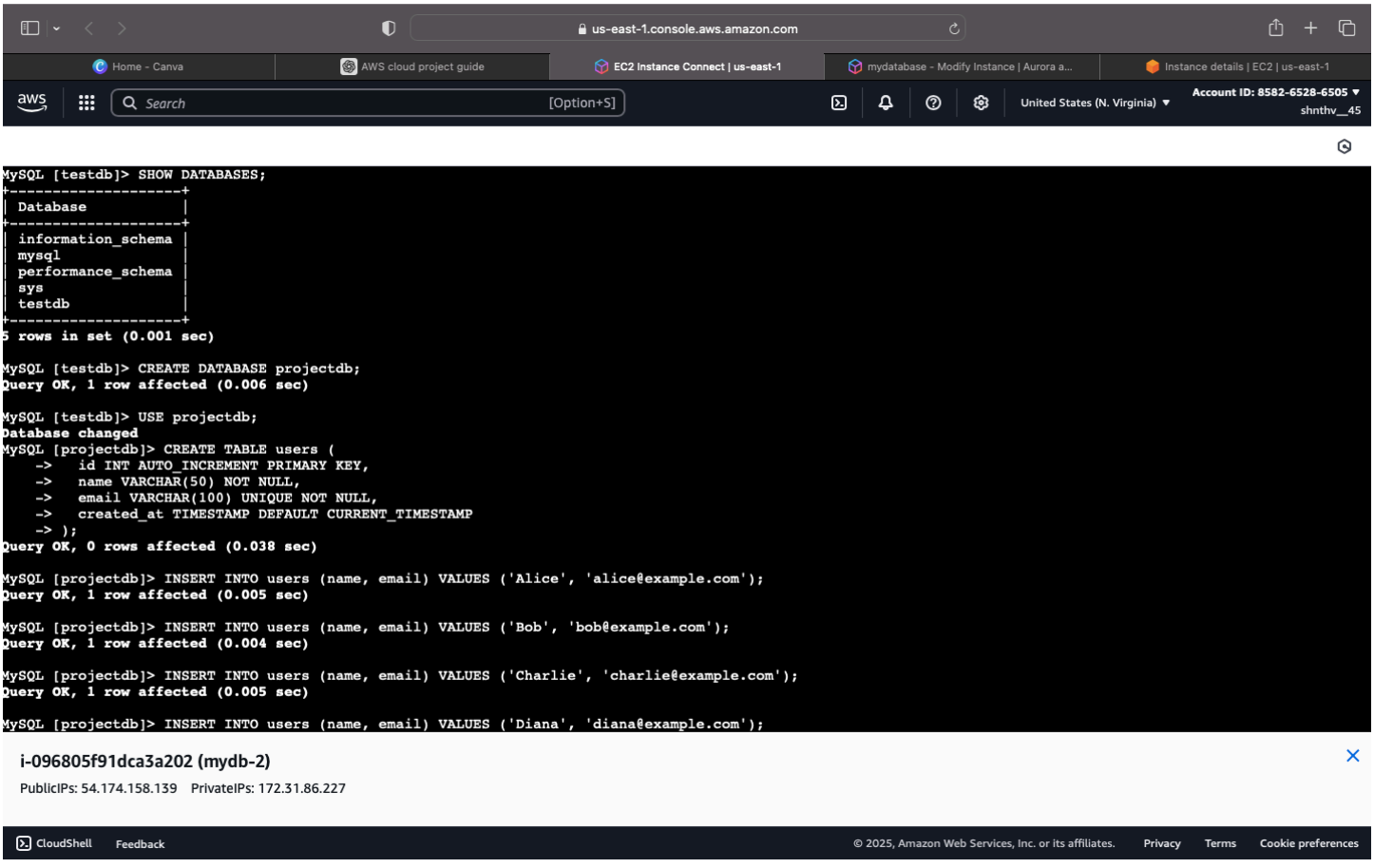
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[Option+S]
United States (N. Virginia)
Account ID: 8582-6528-6505
shnthv__45
MySQL [testdb]> SHOW DATABASES;
+--------------------+
| Database |
+--------------------+
| information_schema |
| mysql |
| performance_schema |
| sys |
| testdb |
+--------------------+
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');
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