

Data Migration using Amazon RDS (IaaS -> PaaS)

Project Overview

In this mini project, we are moving a **database** from an **EC2 Instance (IaaS)** to **Amazon RDS (PaaS)**.

This shows how data can be easily shifted from a self-managed database to a managed database service.

Aim of project:

- To understand the difference between IaaS and PaaS
 - To learn how to migrate data from EC2 MySQL to RDS MySQL
 - To see how RDS makes database management easier.
-

Simple architecture

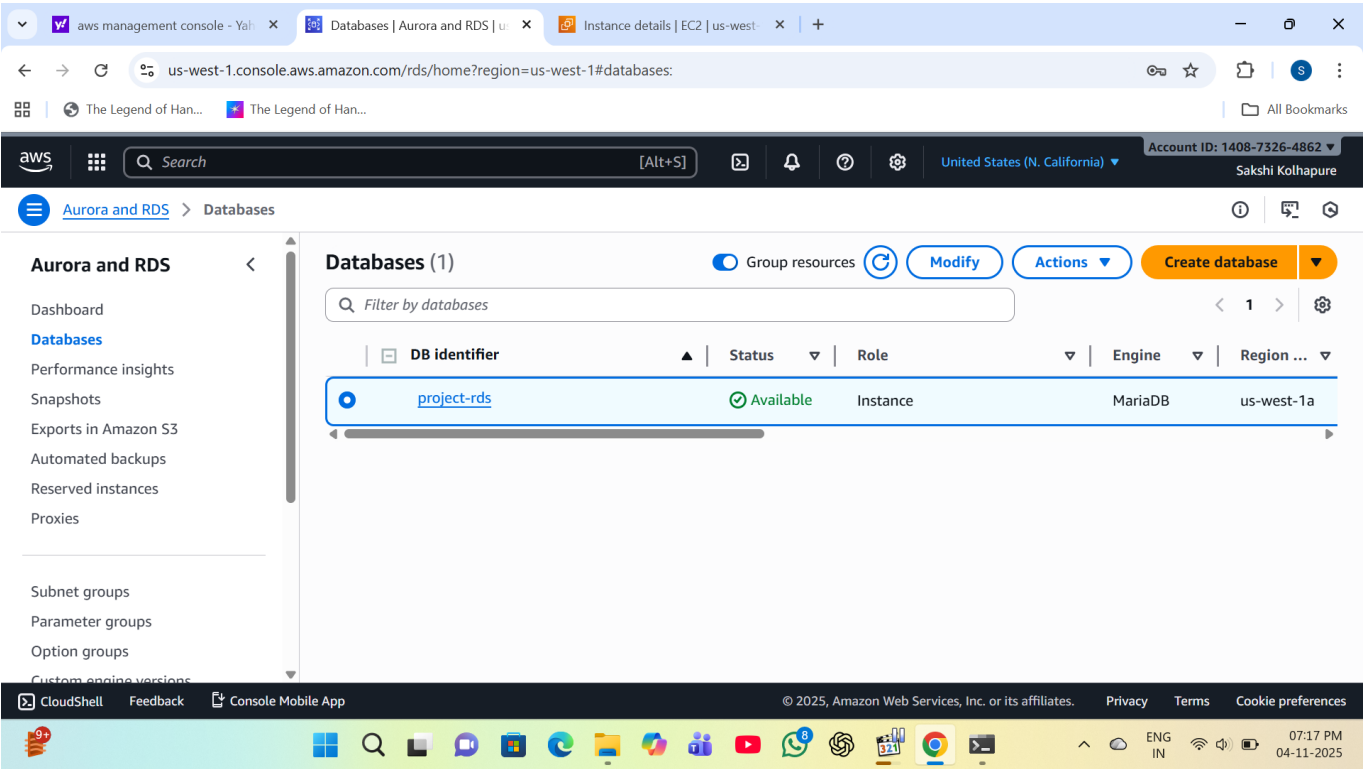
EC2 Instance (MySQL) -----> Amazon RDS (MySQL)

IaaS -----> PaaS

Steps to do the Project

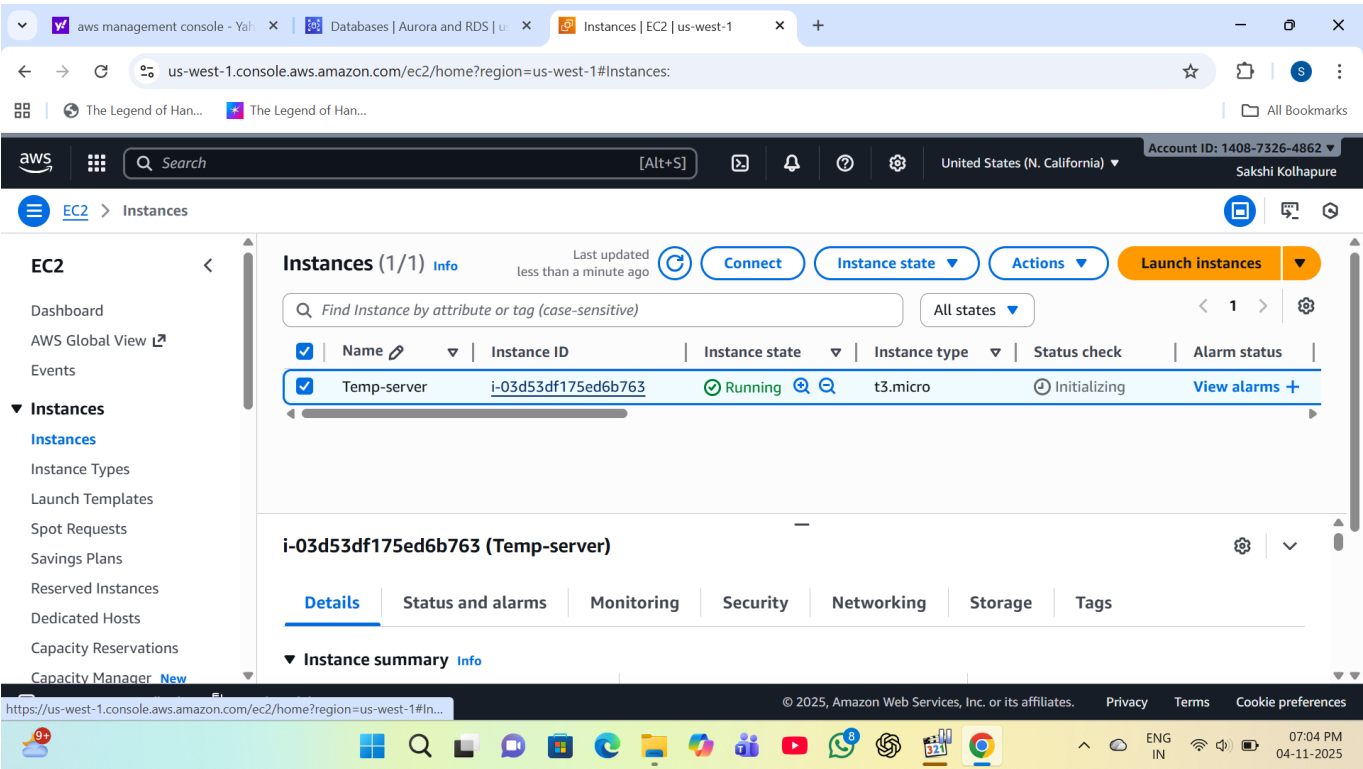
Step1: Create Amazon RDS (PaaS)

1. Go to AWS Console --> RDS --> Allow 3306 port number to security group --> Create database named as MYNTRA.



Step2: Create Database on Ec2 (IaaS)

1. Launch an temporary EC2 instance-



2. Take access of your EC2 instance-

[illegible]

3. Install and start mariadb105-server-

```
ec2-user@ip-172-31-28-72:~$ sudo yum update
Amazon Linux 2023 Kernel Livepatch repository                245 kB/s | 28 kB    00:00
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-28-72 ~]$ sudo yum install mariadb105-server -y
```

4. Go to mysql-

```
ec2-user@ip-172-31-28-72:~$ sudo mysql
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 3
Server version: 10.5.29-MariaDB MariaDB Server

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)]> alter user root@localhost identified by "Abhi3841"
-> ;
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> exit
Bye
ec2-user@ip-172-31-28-72 ~]$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 4
Server version: 10.5.29-MariaDB MariaDB Server

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)]> |
```

5. create database named as Myntra and create table and insert values into table-

```
ec2-user@ip-172-31-28-72:~  
Server version: 10.5.29-MariaDB MariaDB Server  
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)]> create database Myntra;  
Query OK, 1 row affected (0.000 sec)  
MariaDB [(none)]> use Myntra;  
Database changed  
MariaDB [Myntra]> create table Users ( ID int, Name varchar(20), Address varchar(20). Age int);  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near '. Age int)' at line 1  
MariaDB [Myntra]> insert into Users values ( 1, "Sakshi", "Sangli", 22), ( 2, "Mayuri", "Pune", 21), ( 3, "POonam", "Sangli", 25), ( 4, "Rutuja", "Mumbai", 24), ( 5, "Abhi", "Kolhapur", 22);  
ERROR 1146 (42S02): Table 'Myntra.Users' doesn't exist  
MariaDB [Myntra]> create table Users ( ID int, Name varchar(20), Address varchar(20), Age int);  
Query OK, 0 rows affected (0.009 sec)  
MariaDB [Myntra]> insert into Users values ( 1, "Sakshi", "Sangli", 22), ( 2, "Mayuri", "Pune", 21), ( 3, "POonam", "Sangli", 25), ( 4, "Rutuja", "Mumbai", 24), ( 5, "Abhi", "Kolhapur", 22);  
Query OK, 5 rows affected (0.002 sec)  
Records: 5 Duplicates: 0 Warnings: 0  
MariaDB [Myntra]> |
```

Step 3: Extract data from EC2 server and convert into file-

```
ec2-user@ip-172-31-28-72:~  
[ec2-user@ip-172-31-28-72 ~]$ mysqldump -u root -p Myntra > myntra_bkp.sql  
Enter password:  
[ec2-user@ip-172-31-28-72 ~]$ ls  
myntra_bkp.sql  
[ec2-user@ip-172-31-28-72 ~]$ |
```

Step 4: Migrate data from Ec2 to RDS

```
ec2-user@ip-172-31-28-72:~$ mysql -h project-rds.cvkaoc2soh93.us-west-1.rds.amazonaws.com -u Sakshi -p
MYNTRA < myntra_bkp.sql
Enter password:
[ec2-user@ip-172-31-28-72 ~]$ |
```

Step 5: Go to your RDS instance

```
ec2-user@ip-172-31-28-72:~$ mysql -h project-rds.cvkaoc2soh93.us-west-1.rds.amazonaws.com -u Sakshi -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 48
Server version: 11.4.8-MariaDB-Log managed by https://aws.amazon.com/rds/

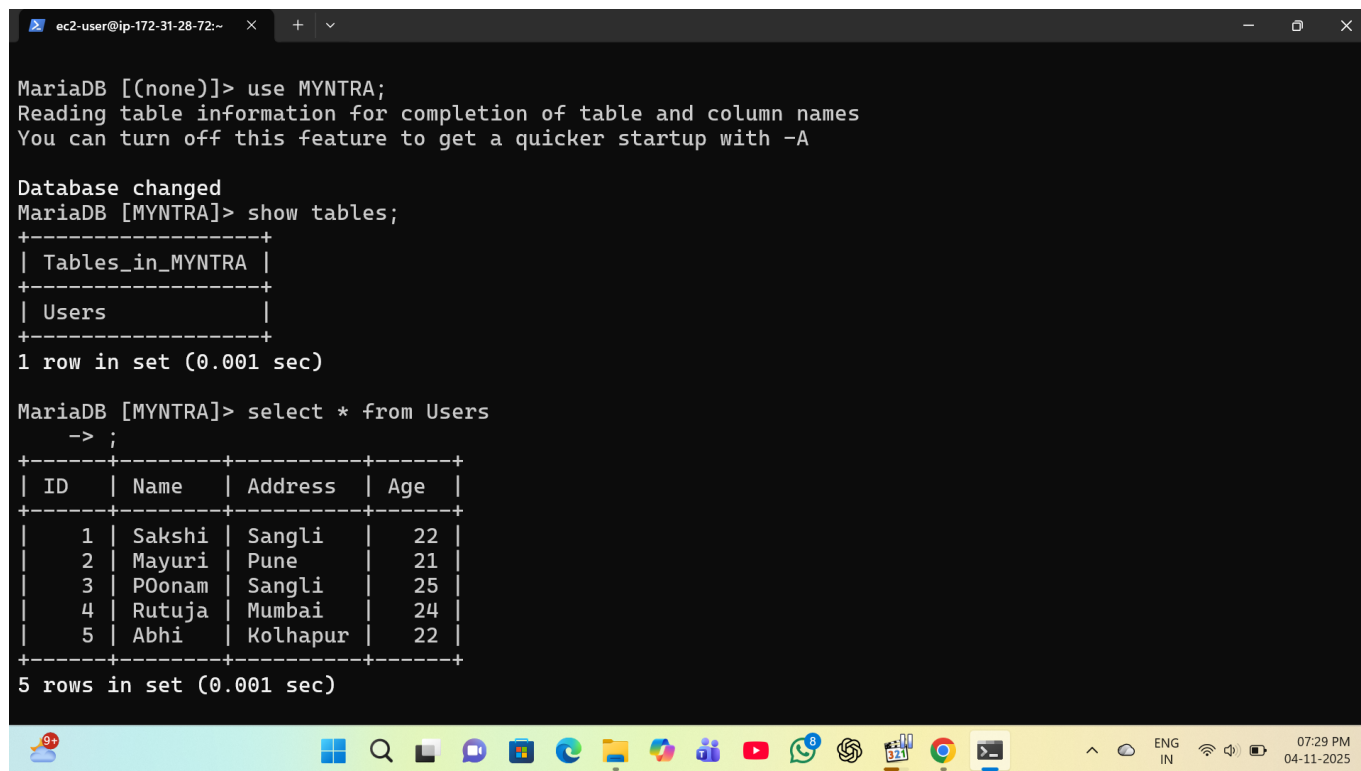
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> show databses;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server version for the right syntax to use near 'databses' at line 1
MariaDB [(none)]> show databases;
+-----+
| Database |
+-----+
| MYNTRA   |
| information_schema |
| innodb   |
| mysql    |
| performance_schema |
| sys      |
+-----+
6 rows in set (0.005 sec)
```

Step 6: Check data from MYNTRA database

```
ec2-user@ip-172-31-28-72:~  
MariaDB [(none)]> use MYNTRA;  
Reading table information for completion of table and column names  
You can turn off this feature to get a quicker startup with -A  
  
Database changed  
MariaDB [MYNTRA]> show tables;  
+-----+  
| Tables_in_MYNTRA |  
+-----+  
| Users              |  
+-----+  
1 row in set (0.001 sec)  
  
MariaDB [MYNTRA]> select * from Users  
-> ;  
+-----+-----+-----+-----+  
| ID | Name | Address | Age |  
+-----+-----+-----+-----+  
| 1 | Sakshi | Sangli | 22 |  
| 2 | Mayuri | Pune | 21 |  
| 3 | POonam | Sangli | 25 |  
| 4 | Rutuja | Mumbai | 24 |  
| 5 | Abhi | Kolhapur | 22 |  
+-----+-----+-----+-----+  
5 rows in set (0.001 sec)
```



Conclusion

By using Amazon RDS, we don't need to handle database maintenance manually. It saves time, gives backups automatically, and is easier to scale when needed.