

# Data Migration using Amazon RDS (Iaas -> Paas)

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## 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.

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## 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.
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## 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.

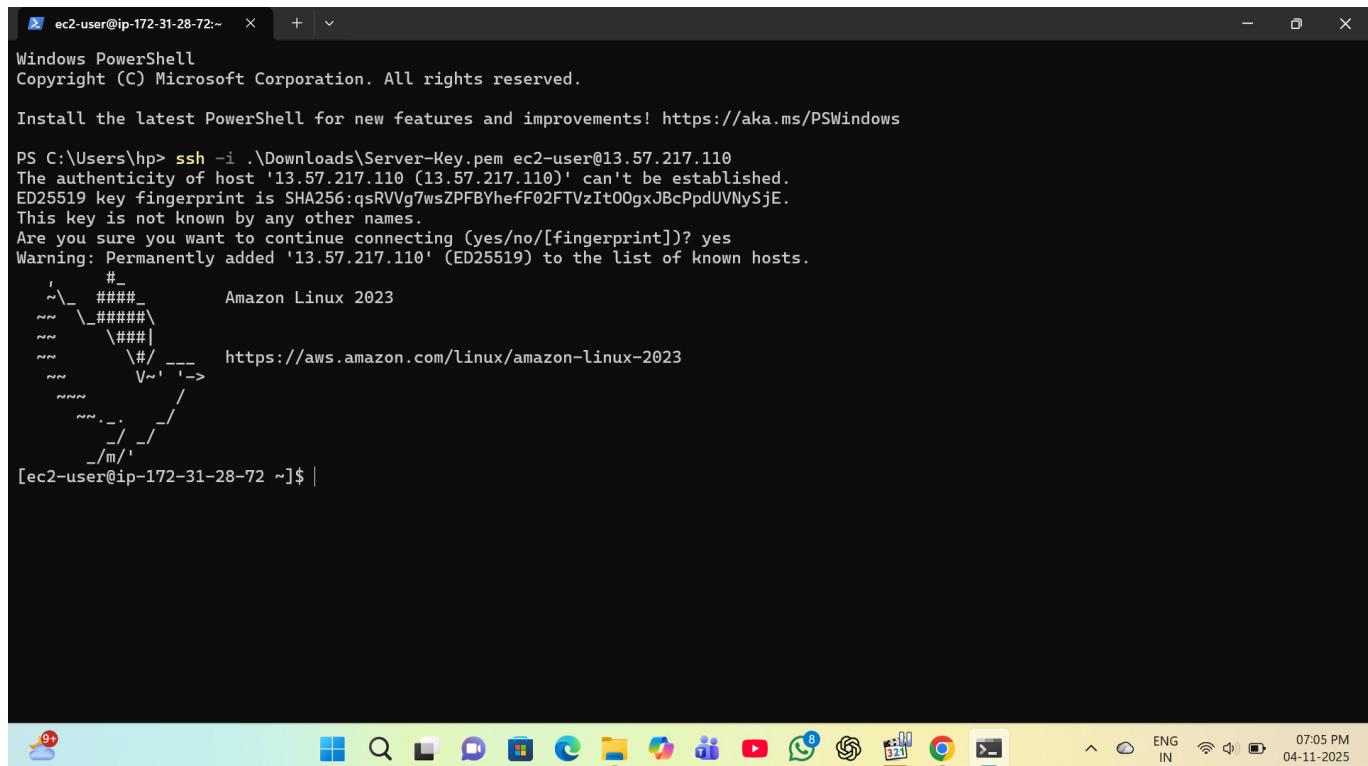
The screenshot shows the AWS Management Console with the URL <https://us-west-1.console.aws.amazon.com/rds/home?region=us-west-1#databases>. The page title is "Databases (1)". The database listed is "project-rds", which is "Available", running on an "Instance" (MariaDB), and located in the "Region ... us-west-1a". The left sidebar shows options like Dashboard, Databases, Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, and Custom engine versions. The top right shows Account ID: 1408-7326-4862 and Sakshi Kolhapure.

## Step2: Create Database on Ec2 (IaaS)

### 1. Launch an temporary EC2 instance-

The screenshot shows the AWS Management Console with the URL <https://us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#Instances>. The page title is "Instances (1/1)". The instance listed is "Temp-server" (i-03d53df175ed6b763), which is "Running" and assigned to an "t3.micro" instance type. The left sidebar shows options like Dashboard, AWS Global View, Events, Instances, Instances Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, and Capacity Manager. The top right shows Account ID: 1408-7326-4862 and Sakshi Kolhapure.

### 2. Take access of your EC2 instance-



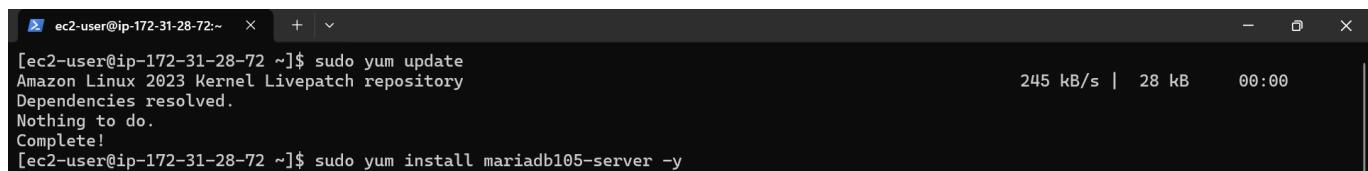
```

PS C:\Users\hp> ssh -i .\Downloads\Server-Key.pem ec2-user@13.57.217.110
The authenticity of host '13.57.217.110 (13.57.217.110)' can't be established.
ED25519 key fingerprint is SHA256:qsRVg7wsZPFBYheffF02FTVzIt00gxJBcPpdUVNySjE.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '13.57.217.110' (ED25519) to the list of known hosts.

  _#_
 /###\      Amazon Linux 2023
~~ \###\_
~~ \##|
~~  '#'
~~  '/__-->
~~   \~`-'>
~~    /
~~  .-.
~~  /_/
~~ /m/
[ec2-user@ip-172-31-28-72 ~]$ |

```

### 3. Install and start mariadb105-server-

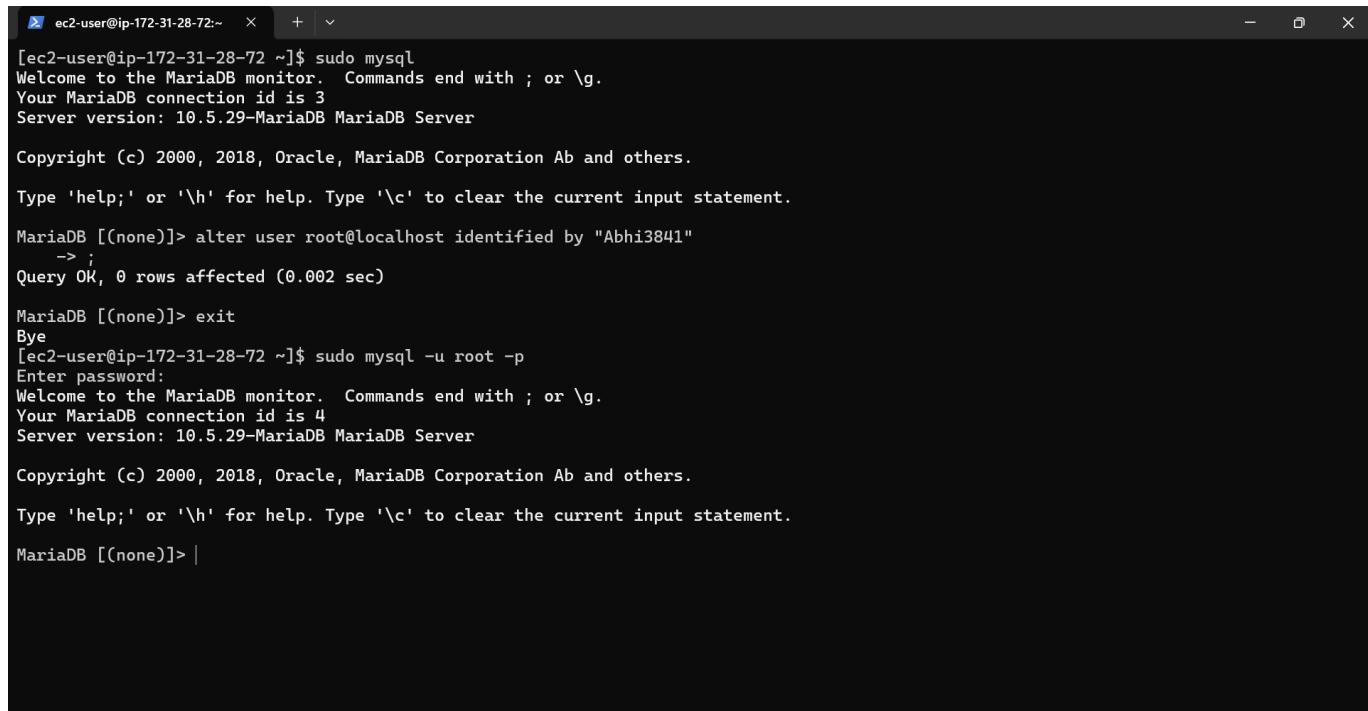


```

[ec2-user@ip-172-31-28-72 ~]$ sudo yum update
Amazon Linux 2023 Kernel Livepatch repository
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)]> |

```

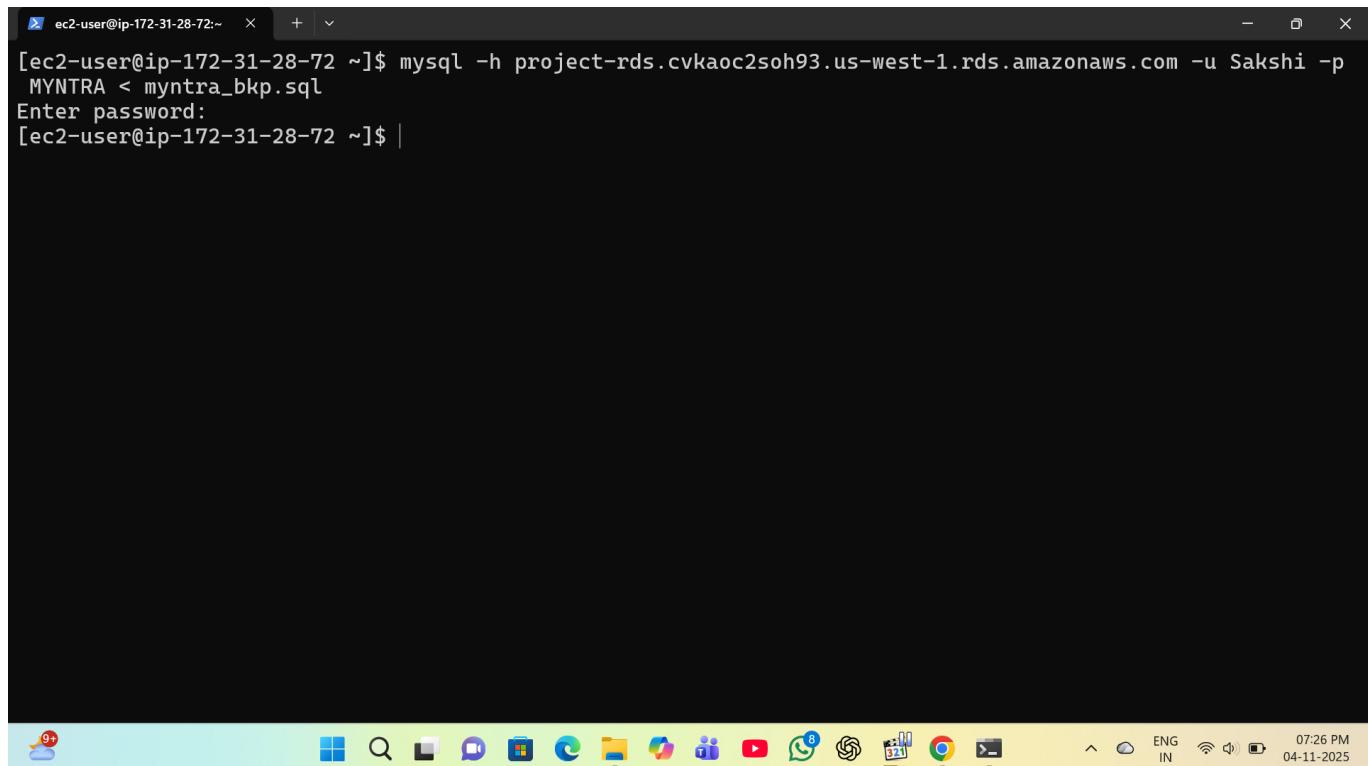
### 5. create database named as Mynta and create table and insert values into table-

```
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-

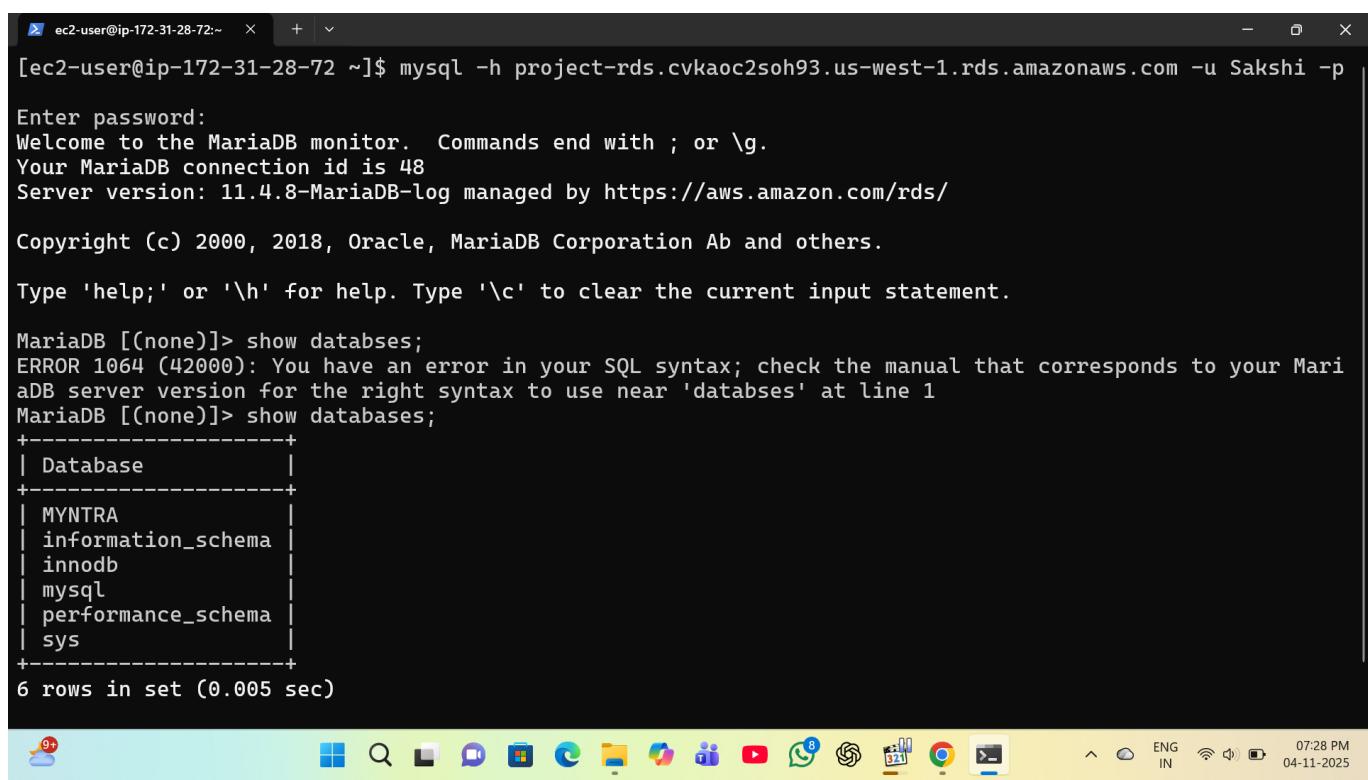
```
[ec2-user@ip-172-31-28-72 ~]$ mysqldump -u root -p Myntra > myntra_bkp.sql Enter password: [ec2-user@ip-172-31-28-72 ~]$ ls myntra_bkp.sql [ec2-user@ip-172-31-28-72 ~]$ |
```

### 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 databases;
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 'databases' 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:~ + - X
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.