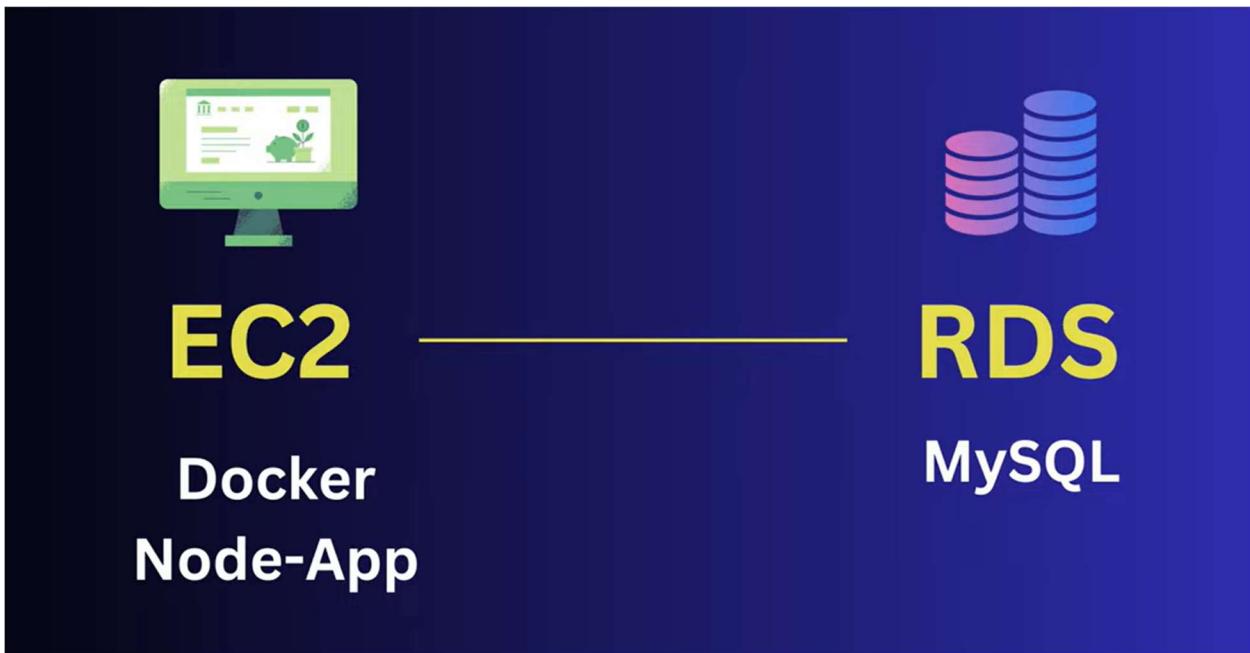


AWS RDS Practical

Deploy a Docker based Node.js App on EC2 with MySQL RDS



Step 1: Create RDS MySQL Database

1. Go to AWS Console → RDS

2. Click Create database

3. Choose:

- Engine: MySQL
- Template: Free tier
- DB Instance Identifier: database-2
- Master username: admin
- Master password: Azad1234

4. Connectivity:

- Select your VPC
- Subnet group: private subnets (recommended)
- Public access: Yes

- Security Group: create new → noderds

5. In SG (noderds)

Allow inbound:

- Port 3306

6. Create DB

Copy the **RDS endpoint** after creation:

Step 2: Launch EC2 Instance

1. Go to AWS → EC2 → Launch Instance

- OS: Amazon linux
- Type: t2.micro (free tier)
- Key pair: download .pem
- Security Group: create new → sg-ec2
 - Allow SSH (22) → only your IP
 - Allow HTTP (80) → Anywhere

2. Place EC2 inside the same VPC as RDS

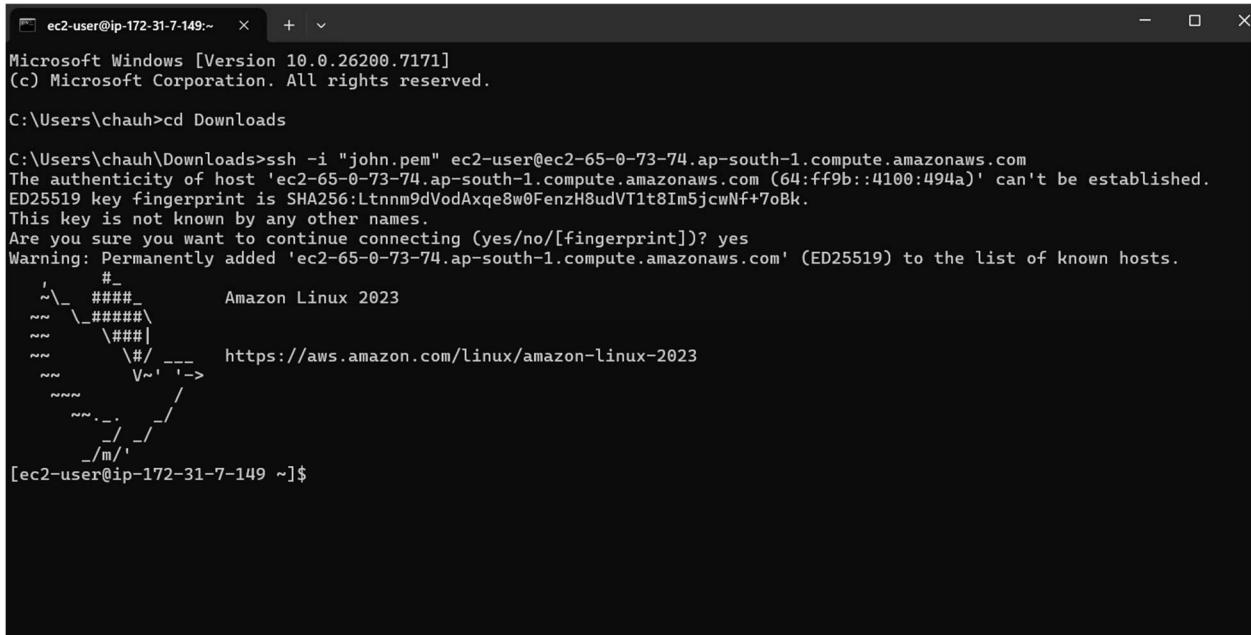
3. Launch the instance.

The screenshot shows the AWS EC2 Instances page. The left sidebar has sections for EC2, Dashboard, AWS Global View, Events, Instances (selected), Instances Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Capacity Manager, Images (AMIs, AMI Catalog), and Elastic Block Store. The main content area displays the 'Instances (1) Info' table with one row for 'node-app'. The table columns include Name (node-app), Instance ID (i-0d87e955d317167de), Instance state (Running), Status check (Initializing), Alarm status (View alarms +), Availability Zone (ap-south-1b), and Public IP (ec2-65-0-). There are also 'Connect', 'Actions', and 'Launch instances' buttons at the top of the table. A search bar at the top of the table allows filtering by attribute or tag. Below the table, there is a section titled 'Select an instance' with a dropdown menu.

Name	Instance ID	Instance state	Status check	Alarm status	Availability Zone	Public IP
node-app	i-0d87e955d317167de	Running	Initializing	View alarms +	ap-south-1b	ec2-65-0-

Step 3: Install Docker on EC2

Connect your local computer to EC2 via ssh



```
ec2-user@ip-172-31-7-149:~ + ^ Microsoft Windows [Version 10.0.26200.7171] (c) Microsoft Corporation. All rights reserved. C:\Users\chauh>cd Downloads C:\Users\chauh\Downloads>ssh -i "john.pem" ec2-user@ec2-65-0-73-74.ap-south-1.compute.amazonaws.com The authenticity of host 'ec2-65-0-73-74.ap-south-1.compute.amazonaws.com (64:ff9b::4100:494a)' can't be established. ED25519 key fingerprint is SHA256:Ltnnm9dVodAxqe8w0FenzH8udVT1t8Im5jcwNf+7oBk. This key is not known by any other names. Are you sure you want to continue connecting (yes/no/[fingerprint])? yes Warning: Permanently added 'ec2-65-0-73-74.ap-south-1.compute.amazonaws.com' (ED25519) to the list of known hosts. # _###_ Amazon Linux 2023 _\###\ _###| _#/ ___ https://aws.amazon.com/linux/amazon-linux-2023 _\_\_/_ / _\_\_/_ /_m/_ [ec2-user@ip-172-31-7-149 ~]$
```

sudo yum install -y docker (Installs Docker on your Linux system using the yum package manager.)

sudo systemctl start docker (Docker must be running before you can use Docker commands.

)

sudo systemctl status docker (Shows the current status of the Docker service. To verify if Docker is running, stopped, or showing errors.)

sudo docker pull philippaul/node-mysql-app:02 (Downloads a **pre-built Docker image** named philippaul/node-mysql-app:02 from Docker Hub.)

sudo docker images (Lists all Docker images stored on your system.)

sudo docker run --rm -p 80:3000 -e DB_HOST="database-2.cxumu0icm8c1.ap-south-1.rds.amazonaws.com" -e DB_USER="admin" -e DB_PASSWORD="Azad1234" -d philippaul/node-mysql-app:02 (To run your Node.js app connected to MySQL RDS in Docker.)

sudo docker ps (To see if your app container is running.)

sudo docker logs -f eloquent_northcutt (To check:

- If the app started correctly
- If the app connected to the database
- Any errors happening inside the container)

```

ec2-user@ip-172-31-7-149:~ % 
--> \#####
--> \###|
--> '#/ ___ https://aws.amazon.com/linux/amazon-linux-2023
--> V~' ->
--> /_
--> ~`_/_/
--> /m/`_
Last login: Mon Nov 17 17:25:55 2025 from 152.59.59.186
[ec2-user@ip-172-31-7-149 ~]$ docker run --rm -p 80:3000 -e DB_HOST="database-2.cxumu0icm8c1.ap-south-1.rds.amazonaws.com" -e DB_USER="admin" -e DB_PASSWORD="Azad1234" -d philippaul/node-mysql-app:02
docker: permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Head "http://%2Fvar%2Frun%2Fdocker.sock:_ping"
: dial unix /var/run/docker.sock: connect: permission denied.
See 'docker run --help'.
[ec2-user@ip-172-31-7-149 ~]$ sudo docker run --rm -p 80:3000 -e DB_HOST="database-2.cxumu0icm8c1.ap-south-1.rds.amazonaws.com" -e DB_USER="admin" -e DB_PASSWORD="Azad1234" -d philippaul/node-mysql-app:02
cc41ca9f4b1ebf3592976890c9d0ad8cfceab2b70d347420fadfc70633494efa
[ec2-user@ip-172-31-7-149 ~]$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAME
S cc41ca9f4b1e philippaul/node-mysql-app:02 "docker-entrypoint.s..." About a minute ago Up About a minute 0.0.0.0:80->3000/tcp, :::80->3000/tcp eloquent_northcutt
[ec2-user@ip-172-31-7-149 ~]$ sudo docker logs -f competent_sanderson
Error response from daemon: No such container: competent_sanderson
[ec2-user@ip-172-31-7-149 ~]$ sudo docker logs -f eloquent_northcutt
Server is running on http://localhost:3000
Database "my_app_db" is ready.
Using database "my_app_db".
Table "contacts" is ready.

```

Its checking and confirmation processes Inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sgr-0ff0cc76c94f0f046	MySQL/Aurora	TCP	3306	Anywhere (0.0.0.0/0)	0.0.0.0/0

Add rule

Warning: Rules with source of 0.0.0.0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Buttons: Cancel, Preview changes, Save rules

Step 4: Test Application

Open browser:http://EC2_PUBLIC_IP/ (65.0.73.74)

The image consists of two vertically stacked screenshots of a web application titled "Contact App".

Screenshot 1 (Top): The application has a light blue background. At the top center is a white rounded rectangle containing the title "Contact App". Below it is a white input field with the placeholder "Enter Username". Underneath the input field are two orange rectangular buttons with white text: "Add Username" and "Show All Contacts".

Screenshot 2 (Bottom): This screenshot shows the state after some data has been entered. The "Enter Username" input field is empty. Below it are the same two orange buttons. Further down, there is a list of names, each preceded by an orange "Delete" button:

- Raj (Delete)
- Gopi (Delete)
- Azad (Delete)
- Priya (Delete)

Step 5: Test RDS Connectivity

```
sudo docker run -it --rm mysql:8.0 mysql -h <YOUR-RDS-ENDPOINT> -u admin -p
```

```

Last login: Mon Nov 17 18:43:36 2025 from 152.59.59.102
[ec2-user@ip-172-31-7-149 ~]$ sudo docker run -it --rm mysql:8.0 \
    mysql -h database-2.cxumu0icm8c1.ap-south-1.rds.amazonaws.com \
    -u admin -p
Unable to find image 'mysql:8.0' locally
8.0: Pulling from library/mysql
023a182c62a0: Pull complete
4f78e34adfad: Pull complete
a2ed1082d9e2: Pull complete
c9ecfb07ed08: Pull complete
4f94eaa123bf: Pull complete
2a2d53254403: Pull complete
48ec49971d94: Pull complete
fdca9f583d44: Pull complete
abcf302dead6: Pull complete
37bd516ff765: Pull complete
d68710a4a4e9: Pull complete
Digest: sha256:f37951fc3753a6a22d6c7bf6978c5e5fefcf6f31814d98c582524f98eae52b21
Status: Downloaded newer image for mysql:8.0
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 64
Server version: 8.0.43 Source distribution

Copyright (c) 2000, 2025, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

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

mysql> show databases

```

```

| ec2-user@ip-172-31-7-149:~ | + - x
mysql> show databases;
-> show databases;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'how databases' at line 2
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| my_app_db |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.01 sec)

mysql> use my_app_db;
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
mysql> show tables;
+-----+
| Tables_in_my_app_db |
+-----+
| contacts |
+-----+
1 row in set (0.00 sec)

mysql> select * from contacts;
+---+---+
| id | username |
+---+---+
| 2 | Raj |
| 3 | Gopi |
| 4 | Azad |
| 6 | Priya |
+---+---+
4 rows in set (0.01 sec)

mysql>

```

System tray icons include: battery (20C), network (ENG IN), signal strength, and date/time (12:50 AM, 11/18/2025).