

# CLOUD AWS HANDS ON

## Connecting RDS to MySQL

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### Amazon Relational Database Service (RDS)

Amazon RDS (Relational Database Service) is a cloud-based database service provided by Amazon Web Services (AWS). It falls under the category of Platform as a Service (PaaS). It is easier to set up, operate, and scale a relational database in the cloud. It supports popular database engines such as MySQL, PostgreSQL, Oracle, SQL Server, and MariaDB, handling routine database tasks like provisioning, patching, backup, recovery, and scaling, allowing users to focus on application development rather than managing database infrastructure.

Some key features and benefits of AWS RDS include:

- 1. Managed Service:** AWS handles routine database tasks such as provisioning, patching, backup, recovery, and scaling, reducing administrative overhead for users.
- 2. Multi-Engine Support:** Amazon RDS supports various relational database engines including MySQL, PostgreSQL, Oracle, SQL Server, and MariaDB, allowing users to choose the one that best fits their application requirements.
- 3. Automated Backups and Point-in-Time Recovery:** RDS automatically performs backups of your database and enables point-in-time recovery, providing data protection and easy restoration in case of accidental data loss or corruption.
- 4. High Availability and Fault Tolerance:** RDS offers features such as Multi-AZ (Availability Zone) deployments and Read Replicas to enhance availability, fault tolerance, and performance of database instances.
- 5. Scalability:** With Amazon RDS, users can easily scale their database instances vertically (by adjusting instance size) or horizontally (by adding Read Replicas) to accommodate changing workloads and performance requirements.

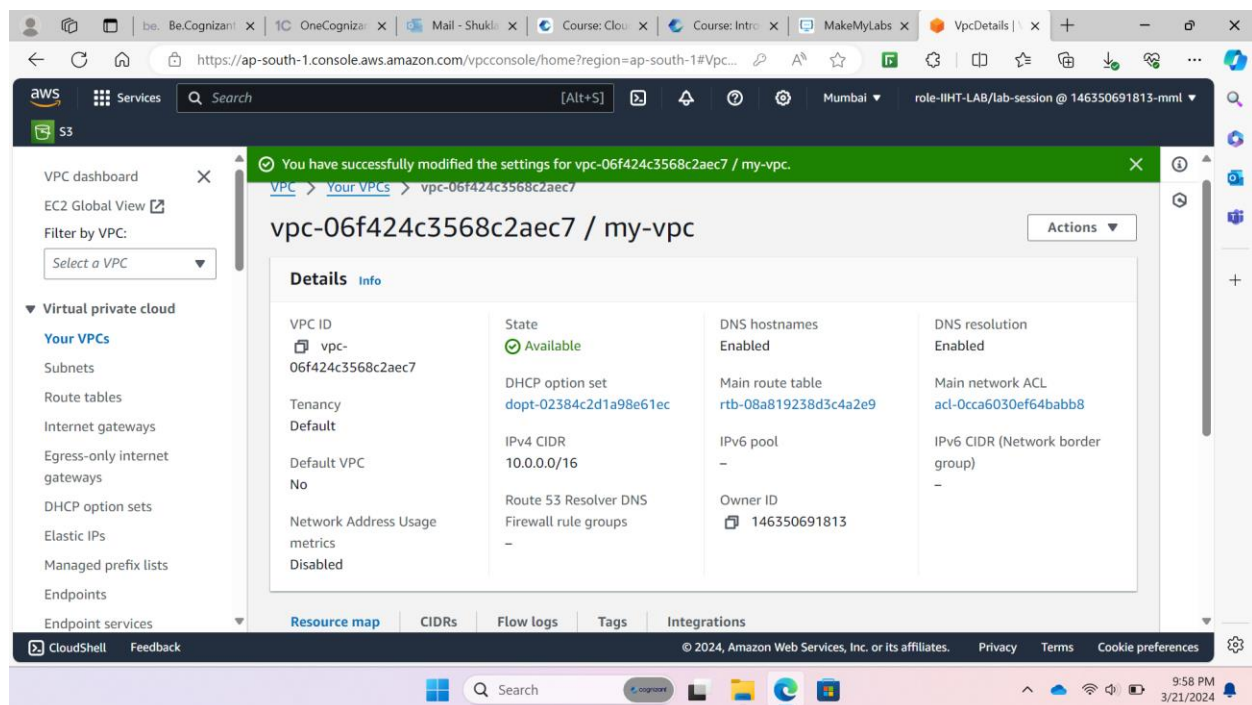
**6. Security:** RDS provides robust security features including network isolation, encryption at rest and in transit, authentication mechanisms, and integration with AWS Identity and Access Management (IAM) for access control.

**7. Monitoring and Metrics:** AWS CloudWatch integration allows users to monitor database performance metrics and set up alarms for automated notifications in case of performance issues or resource utilization breaches.

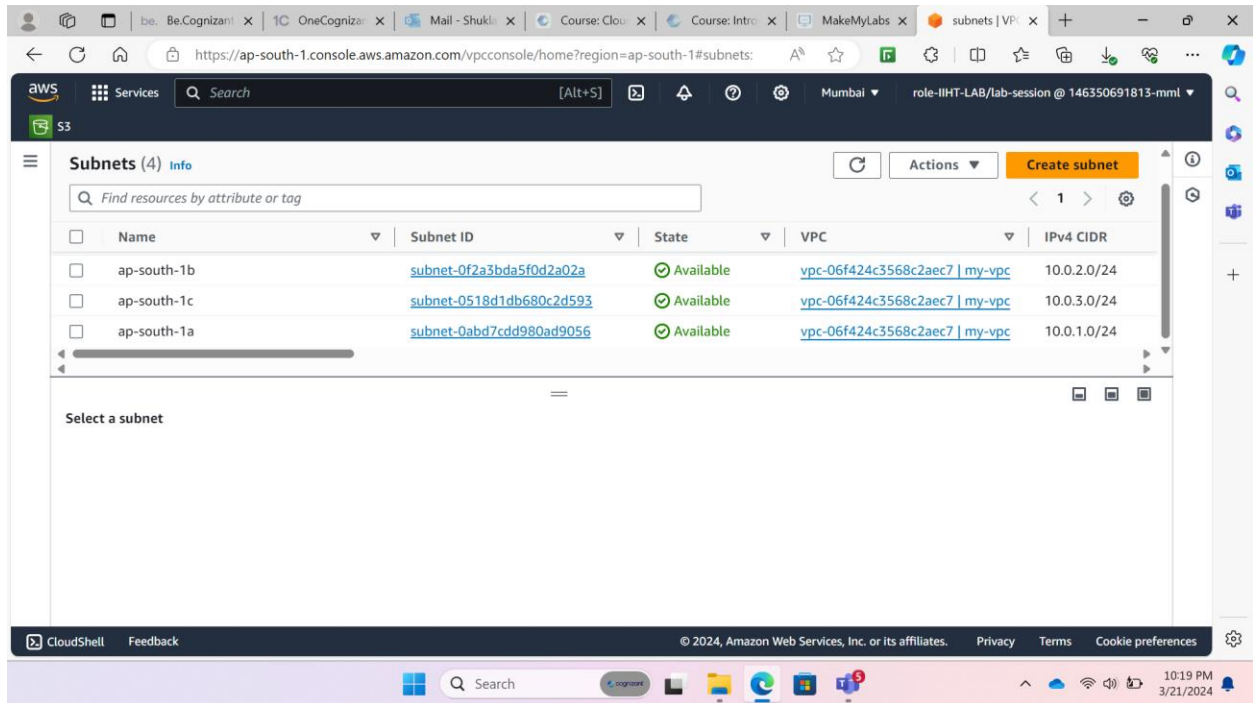
Overall, Amazon RDS simplifies the process of deploying and managing relational databases in the cloud, enabling developers to focus more on building applications and less on managing database infrastructure.

## Steps for static website hosting using S3 bucket

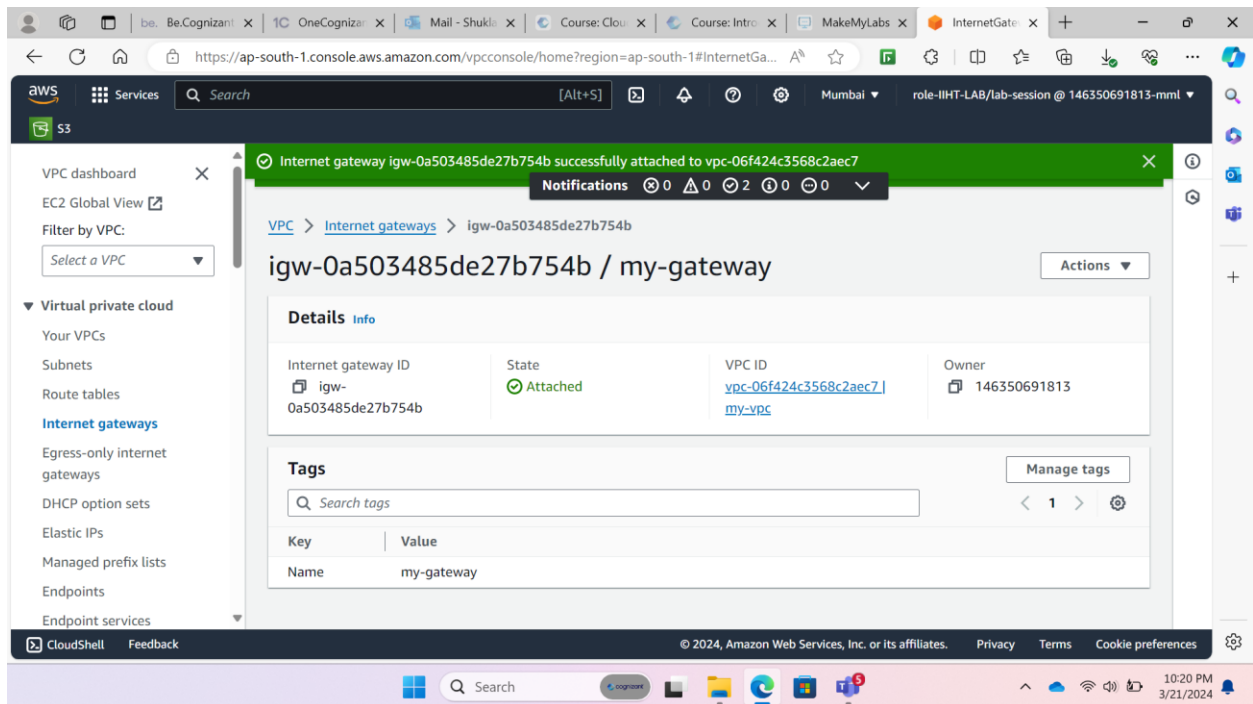
### 1. Creation of VPC.



### 2. Creation of subnets



### 3. Creating Internet gateway for the VPC and attaching it to the created VPC



### 4. Creating route tables and adding a route to your created internet gateway

aws S3

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

### Route table settings

**Name - optional**  
Create a tag with a key of 'Name' and a value that you specify.

my-route-table

**VPC**  
The VPC to use for this route table.

vpc-06f424c3568c2aec7 (my-vpc)

### Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

**Key** **Value - optional**

Q Name X Q my-route-table X Remove

Add new tag

You can add 49 more tags.

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aws S3

You have successfully updated subnet associations for rtb-0c0244ce885bda8d5 / my-route-table.

VPC > Route tables > rtb-0c0244ce885bda8d5

## rtb-0c0244ce885bda8d5 / my-route-table

Actions

### Details Info

Route table ID	Main	Explicit subnet associations	Edge associations
rtb-0c0244ce885bda8d5	No	3 subnets	-
VPC	Owner ID		
vpc-06f424c3568c2aec7   my-vpc	146350691813		

Routes Subnet associations Edge associations **Route propagation** Tags

### Route Propagation (0)

Edit route propagation

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Route 1

Destination	Target	Status
10.0.0.0/16	local	Active

Propagated: No

Route 2

Destination	Target	Status
0.0.0.0/0	Internet Gateway	-
	igw-0a503485de27b754b	

Propagated: No

Updated routes for rtb-0c0244ce885bda8d5 / my-route-table successfully

Details

Route table ID	Main	Explicit subnet associations	Edge associations
rtb-0c0244ce885bda8d5	No	3 subnets	-

VPC: vpc-06f424c3568c2aec7 | my-vpc

Owner ID: 146350691813

Routes (2)

Destination	Target	Status	Propagated
0.0.0.0/0	igw-0a503485de27b754b	Active	No
10.0.0.0/16	local	Active	No

## 5. Creating security group for allowing MySQL traffic

aws S3 Services Search [Alt+S] Mumbai role-IHNT-LAB/lab-session @ 146350691813-mmml

VPC > Security Groups > Create security group

## Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

### Basic details

Security group name [Info](#)

Name cannot be edited after creation.

Description [Info](#)

VPC [Info](#)

vpc-06f424c3568c2aec7 (my-vpc)

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aws S3 Services Search [Alt+S] Mumbai role-IHNT-LAB/lab-session @ 146350691813-mmml

vpc-06f424c3568c2aec7 (my-vpc)

### Inbound rules [Info](#)

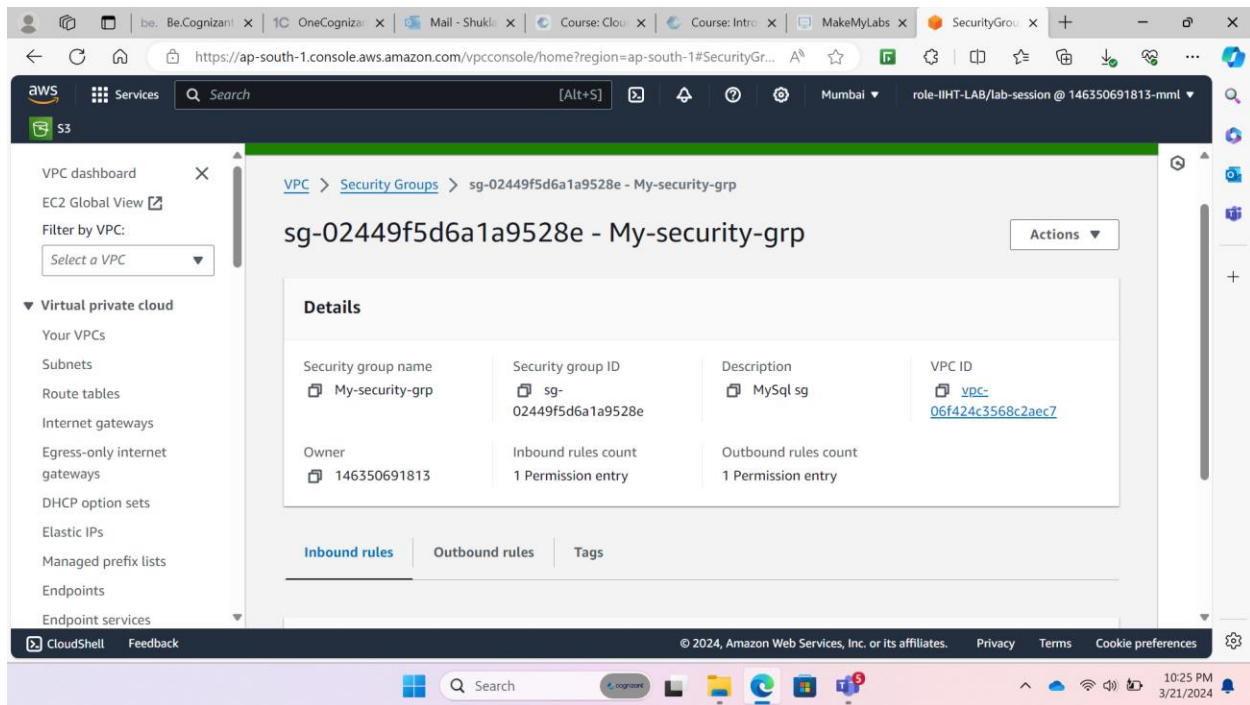
Type <a href="#">Info</a>	Protocol <a href="#">Info</a>	Port range <a href="#">Info</a>	Source <a href="#">Info</a>	Description - optional <a href="#">Info</a>	
MYSQL/Aurora	TCP	3306	A... 0.0.0.0/0		Delete
0.0.0.0/0 X					
Add rule					

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

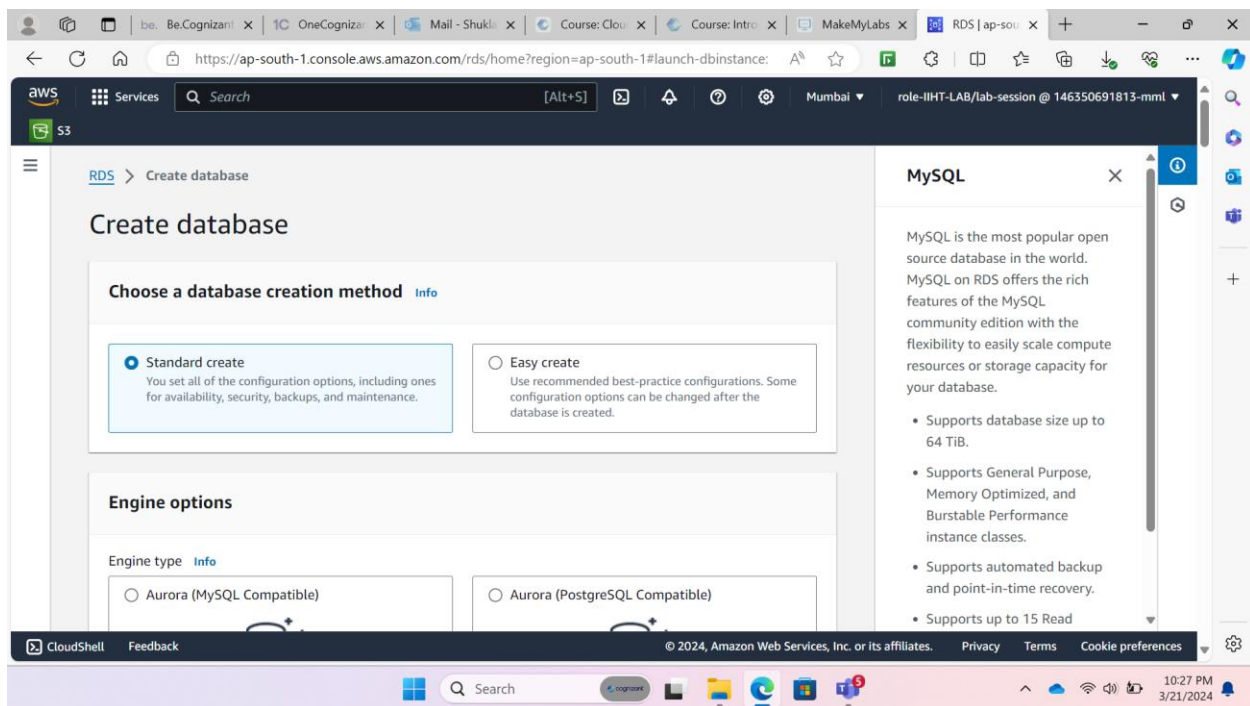
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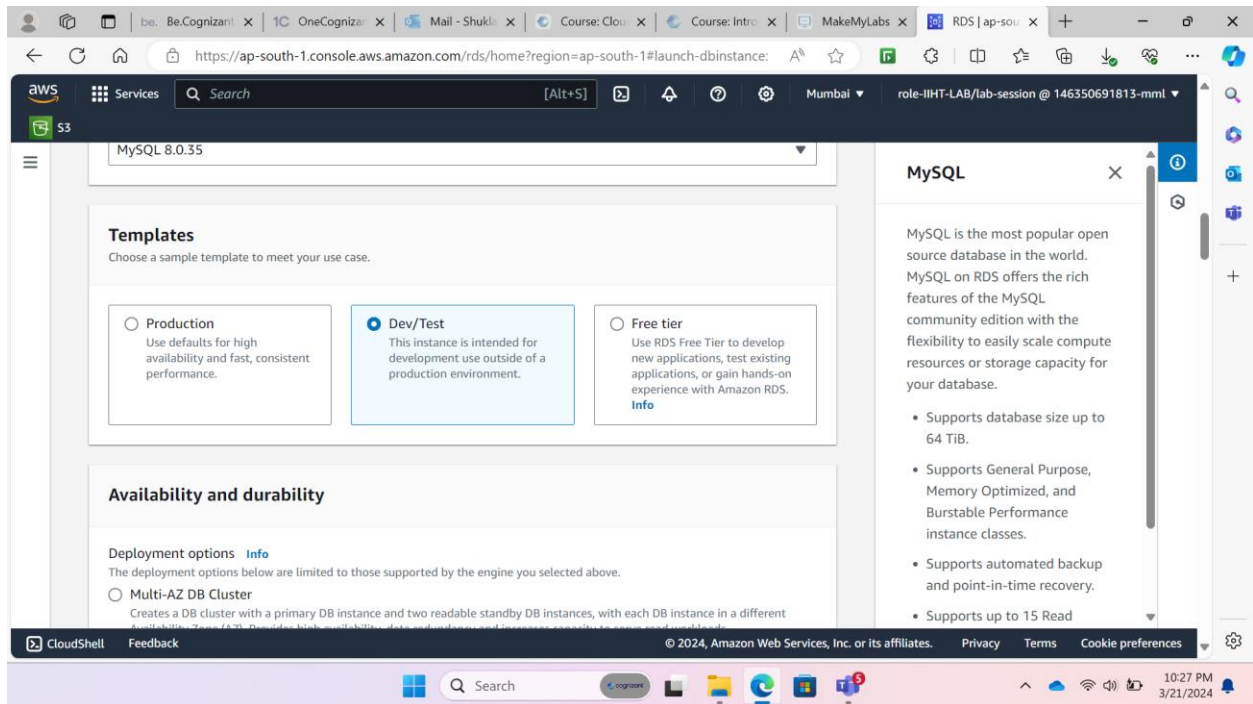
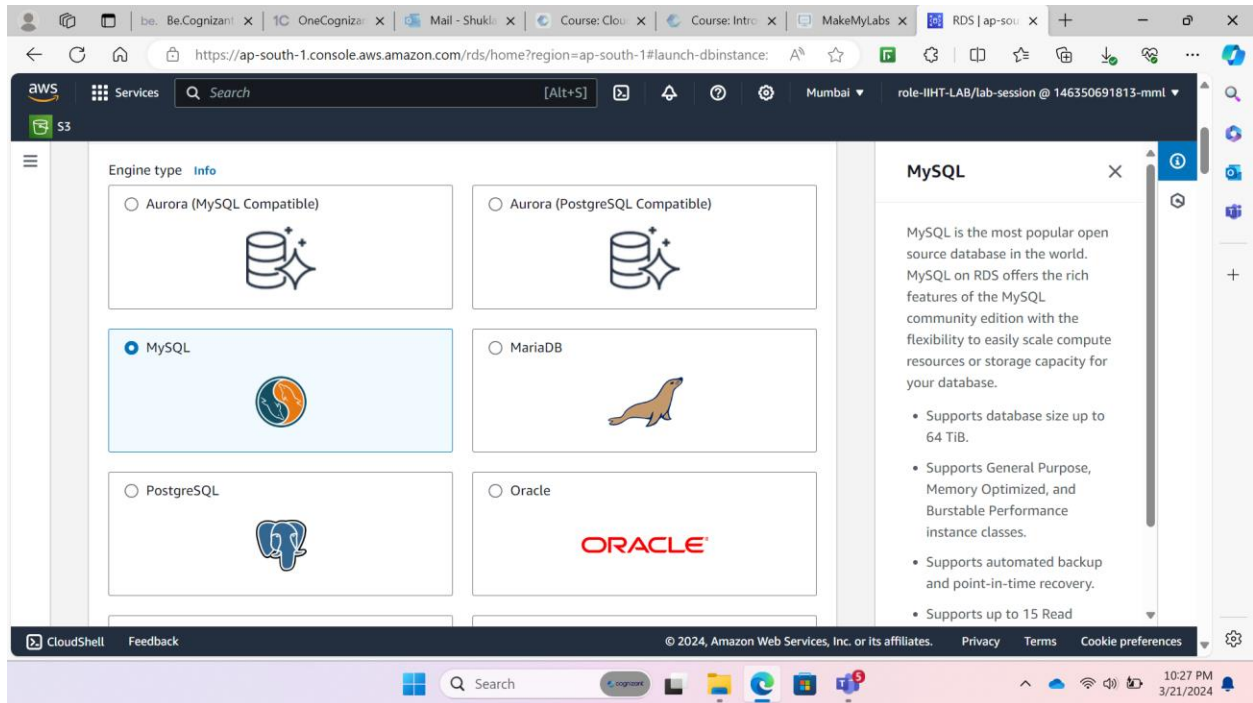
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## 6. Creating a RDS database







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URL: <https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance>

aws Services Search [Alt+S] Mumbai role-IHT-LAB/lab-session @ 146350691813-mm1

### Availability and durability

**Deployment options** [Info](#)

The deployment options below are limited to those supported by the engine you selected above.

- ☐ **Multi-AZ DB Cluster**  
Creates a DB cluster with a primary DB instance and two readable standby DB instances, with each DB instance in a different Availability Zone (AZ). Provides high availability, data redundancy and increases capacity to serve read workloads.
- ☐ **Multi-AZ DB instance**  
Creates a primary DB instance and a standby DB instance in a different AZ. Provides high availability and data redundancy, but the standby DB instance doesn't support connections for read workloads.
- ☒ **Single DB instance**  
Creates a single DB instance with no standby DB instances.

### Settings

**DB instance identifier** [Info](#)

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

database-1

### MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read

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URL: <https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance>

aws Services Search [Alt+S] Mumbai role-IHT-LAB/lab-session @ 146350691813-mm1

### Settings

**DB instance identifier** [Info](#)

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

my-database-1

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

▼ **Credentials Settings**

**Master username** [Info](#)

Type a login ID for the master user of your DB instance.

admin

1 to 16 alphanumeric characters. The first character must be a letter.

**Credentials management**

You can use AWS Secrets Manager or manage your master user credentials.

- ☐ **Managed in AWS Secrets Manager - most secure**  
RDS generates a password for you and manages it.
- ☒ **Self managed**  
Create your own password or have RDS create a password that you manage.

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URL: <https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbin...>

aws Services Search [Alt+S] Mumbai role-IHT-LAB/lab-session @ 146350691813-mm1

### admin

1 to 16 alphanumeric characters. The first character must be a letter.

#### Credentials management

You can use AWS Secrets Manager or manage your master user credentials.

☐ Managed in AWS Secrets Manager - *most secure*  
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.

☒ Self managed  
Create your own password or have RDS create a password that you manage.

☐ Auto generate password  
Amazon RDS can generate a password for you, or you can specify your own password.

Master password [Info](#)

Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' " @

Confirm master password [Info](#)

welcome123

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aws Services Search [Alt+S] Mumbai role-IHT-LAB/lab-session @ 146350691813-mm1

### Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

#### DB instance class [Info](#)

▼ Hide filters

☐ Show instance classes that support Amazon RDS Optimized Writes [Info](#)  
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

☐ Include previous generation classes

☐ Standard classes (includes m classes)

☐ Memory optimized classes (includes r and x classes)

☒ Burstable classes (includes t classes)

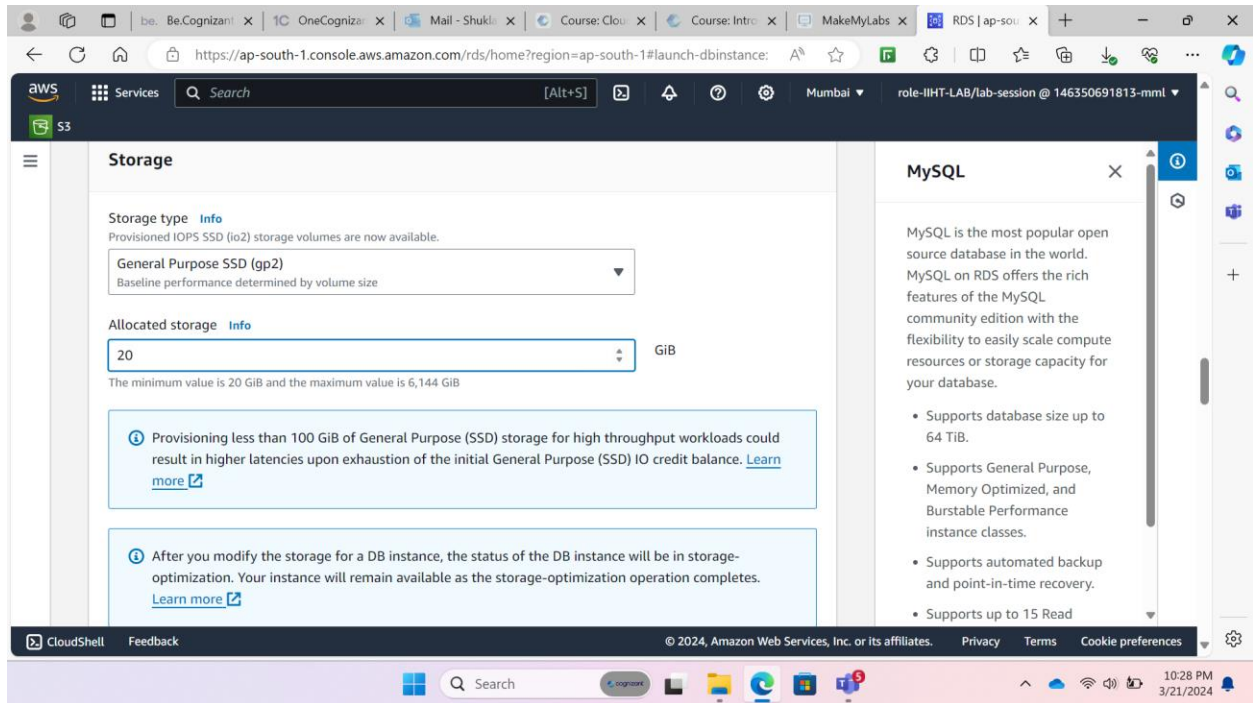
db.t3.micro  
2 vCPUs 1 GiB RAM Network: 2,085 Mbps

### MySQL

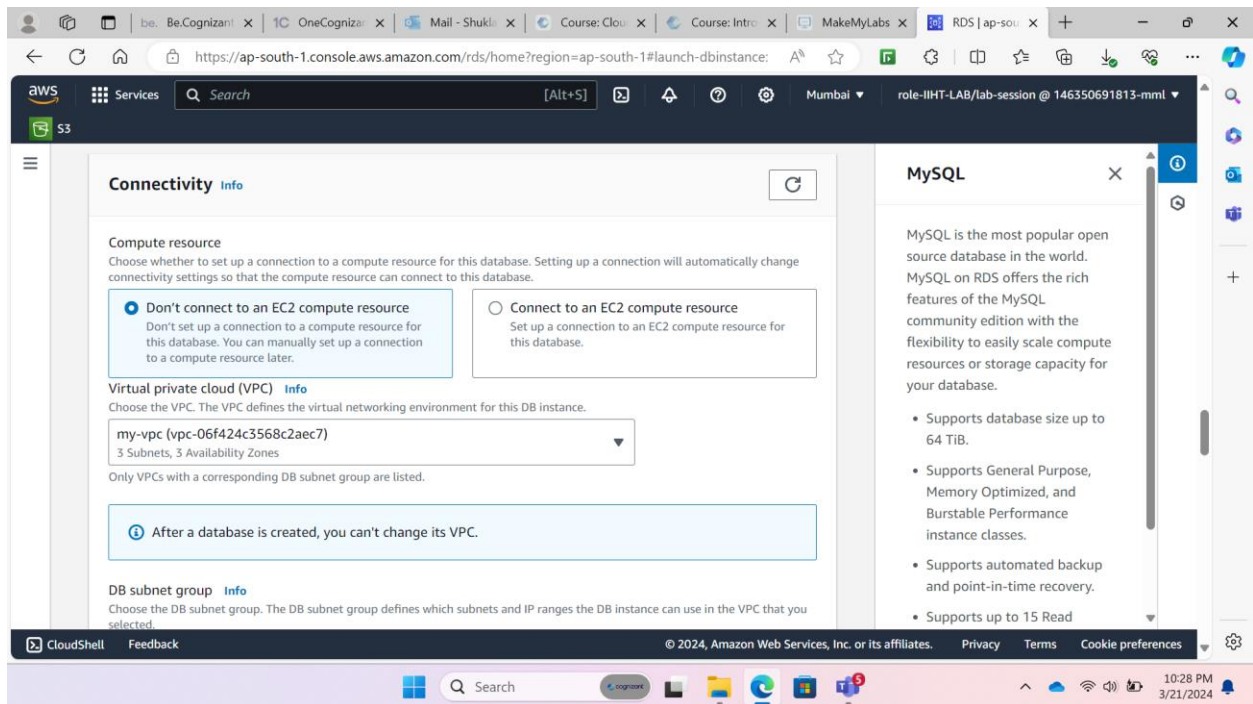
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## 7. Attaching RDS database to the created VPC and adding the security group to allow MySQL traffic



which resources can connect to the database.

☒ No  
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

**VPC security group (firewall)** [Info](#)  
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

☒ Choose existing  
Choose existing VPC security groups

☐ Create new  
Create new VPC security group

Existing VPC security groups  
Choose one or more options

My-security-grp X

Availability Zone [Info](#)  
No preference

**RDS Proxy**  
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

☐ Create an RDS Proxy [Info](#)

**MySQL**

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**Database authentication**

**Database authentication options** [Info](#)

☒ Password authentication  
Authenticates using database passwords.

☐ Password and IAM database authentication  
Authenticates using the database password and user credentials through AWS IAM users and roles.

☐ Password and Kerberos authentication  
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.

**Monitoring**

☐ Enable Enhanced Monitoring  
Enabling Enhanced Monitoring metrics are useful when you want to see how different processes or threads use the CPU.

**Additional configuration**

**MySQL**

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protection turned off.

### Estimated Monthly costs

DB instance	18.25 USD
Storage	2.62 USD
<b>Total</b>	<b>20.87 USD</b>

This billing estimate is based on on-demand usage as described in [Amazon RDS Pricing](#). Estimate does not include costs for backup storage, I/Os (if applicable), or data transfer.

Estimate your monthly costs for the DB Instance using the [AWS Simple Monthly Calculator](#).

**You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.**

Cancel **Create database**

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RDS > Databases > my-database-1

### my-database-1

Refresh Modify Actions

#### Summary

DB identifier my-database-1	Status Available	Role Instance	Engine MySQL Community	Recommendations
CPU 4.64%	Class db.t3.micro	Current activity 0 Connections	Region & AZ ap-south-1a	

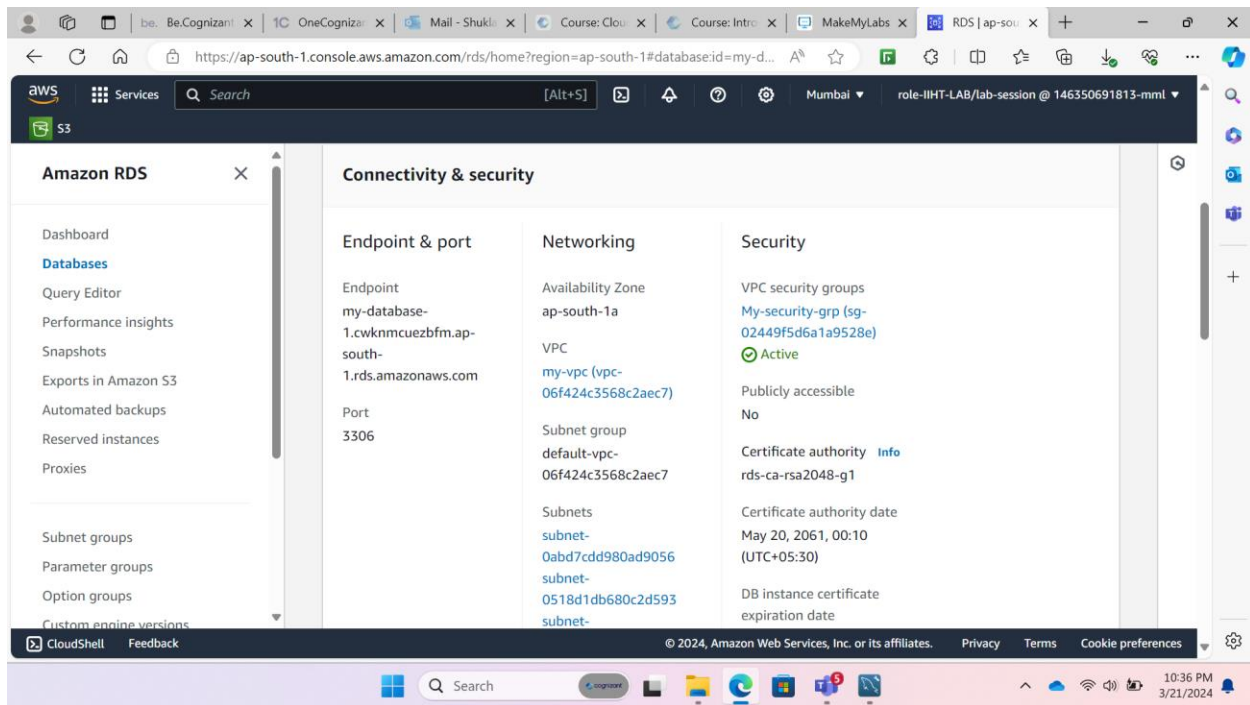
Connectivity & security Monitoring Logs & events Configuration Maintenance & backups

#### Connectivity & security

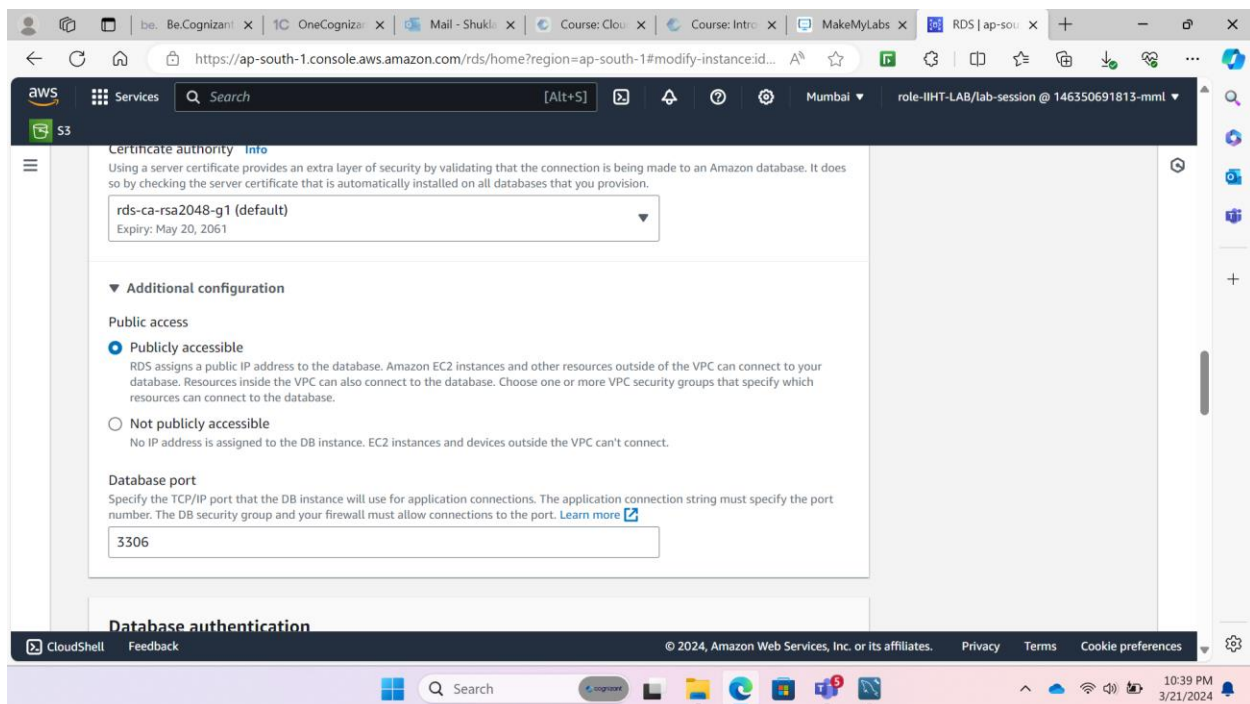
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8. Note the endpoint of your created RDS database





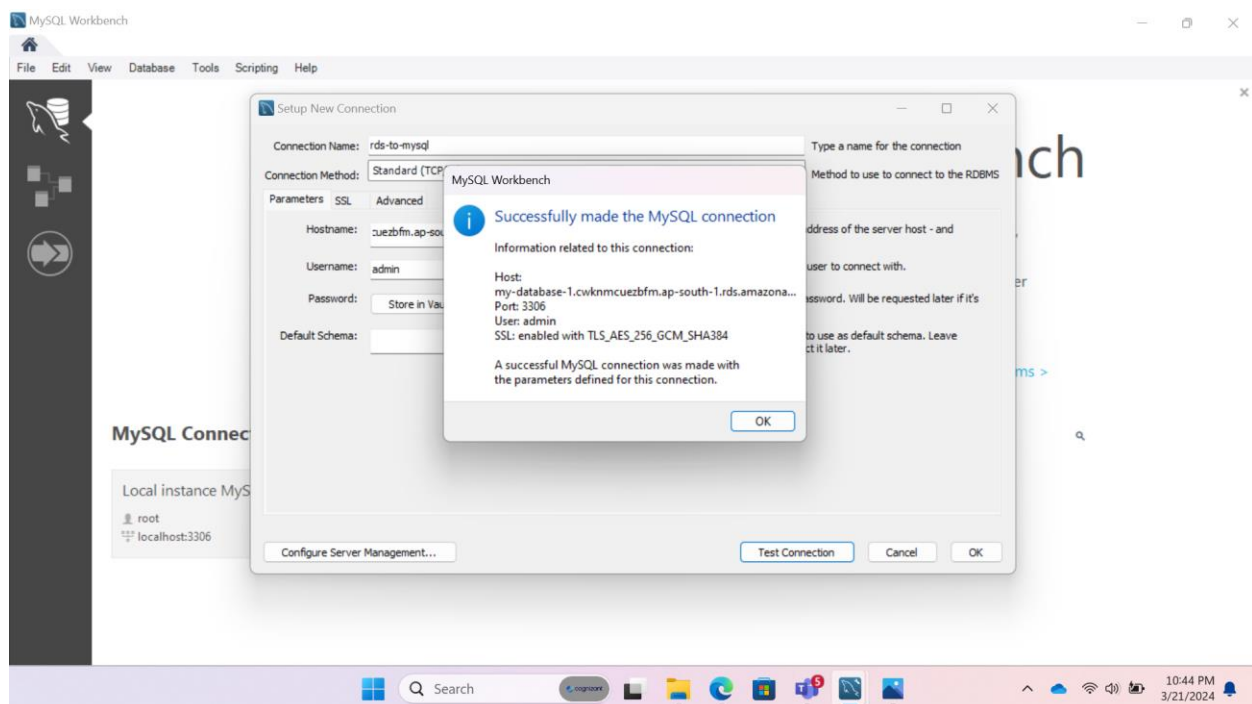
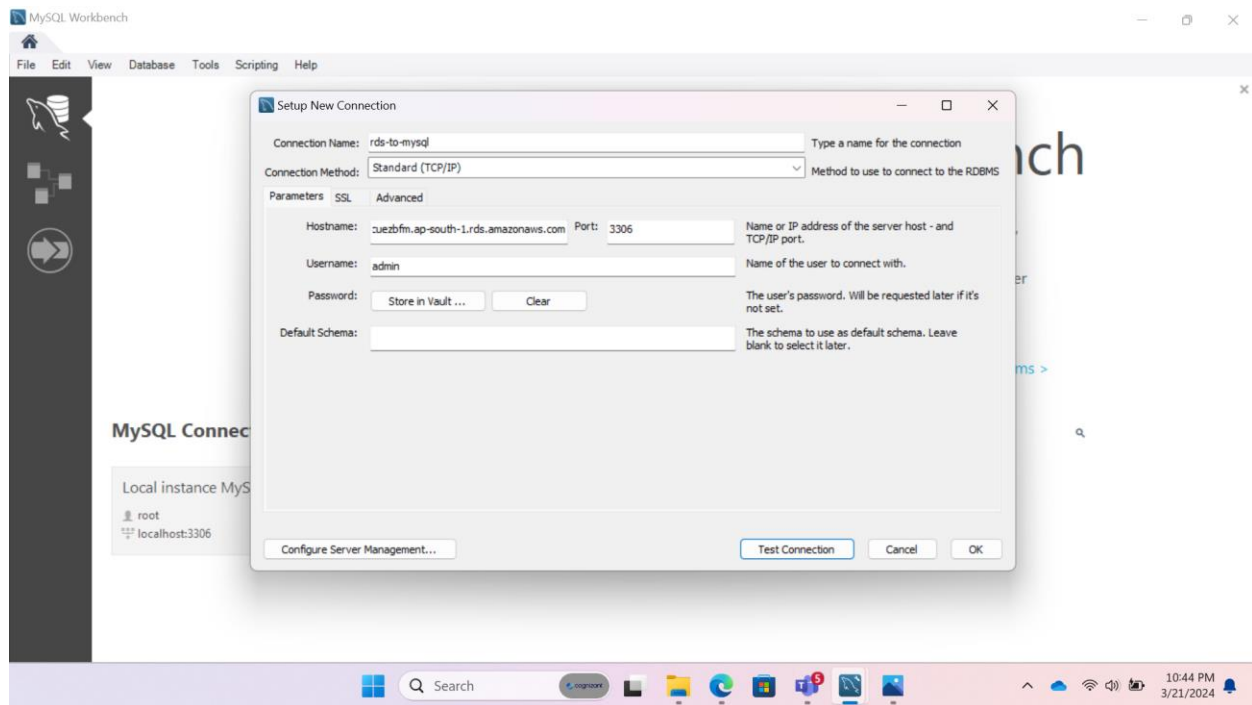
## 9. Make the created RDS database publicly accessible



## 10. Open MySQL workbench and create a new connection



MySQL workbench->Set-up new connection->Paste the endpoint of the created RDS database in hostname->Enter username and password->Test Connection



The Amazon RDS has successfully been connected to the MySQL workbench.