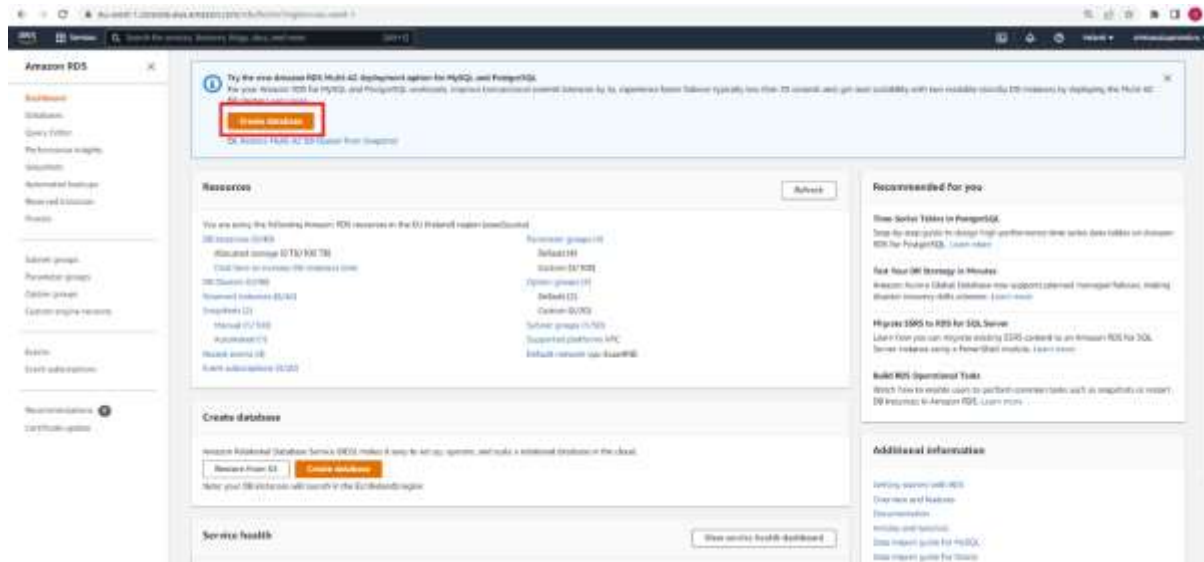


## Steps to create RDS (Relational Database System) in Amazon

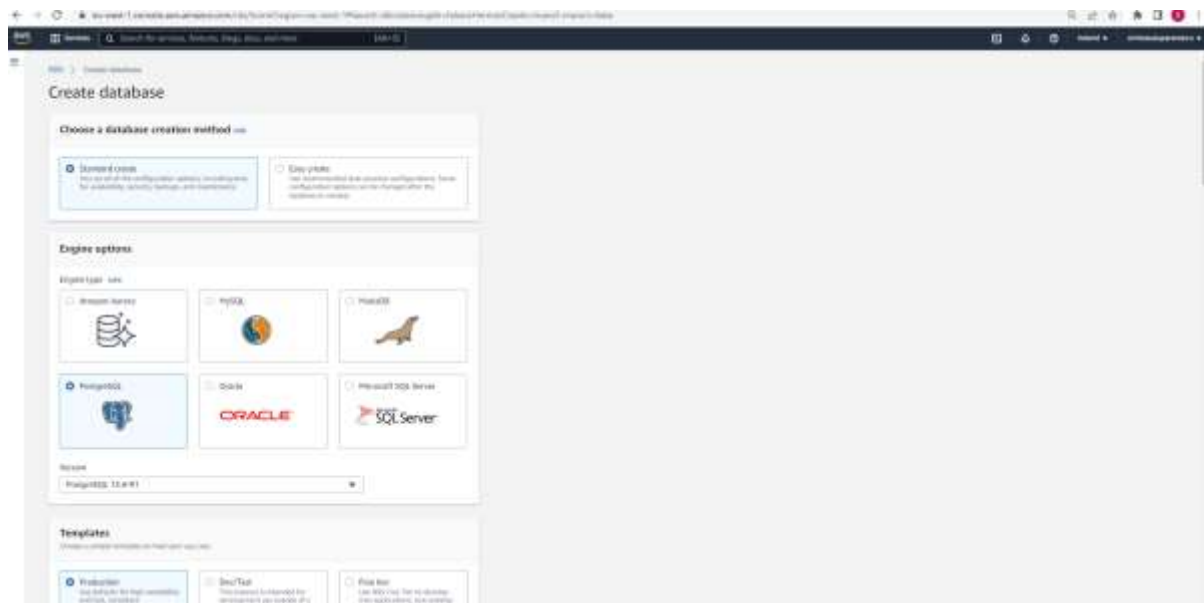
### Search and select Amazon RDS Service

#### Step 1 : Click on create database



#### Step 2 : Two options available to create database

- Standard create
- Easy create




I have selected the option **Standard create** for our demo.


### Step 3 : Engine Options


Multiple Engine options available in the AWS Console and choose the database based on your requirement and currently I have chosen **MySQL** for our demo


**Engine options**


Engine type [Info](#)


☐ Amazon Aurora  


☒ MySQL  


☐ MariaDB  


☐ PostgreSQL  



☐ Oracle  


☐ Microsoft SQL Server  


Edition by default will be MySQL Community after the MYSQL Engine type selected and Version by default selected to the latest one

Edition

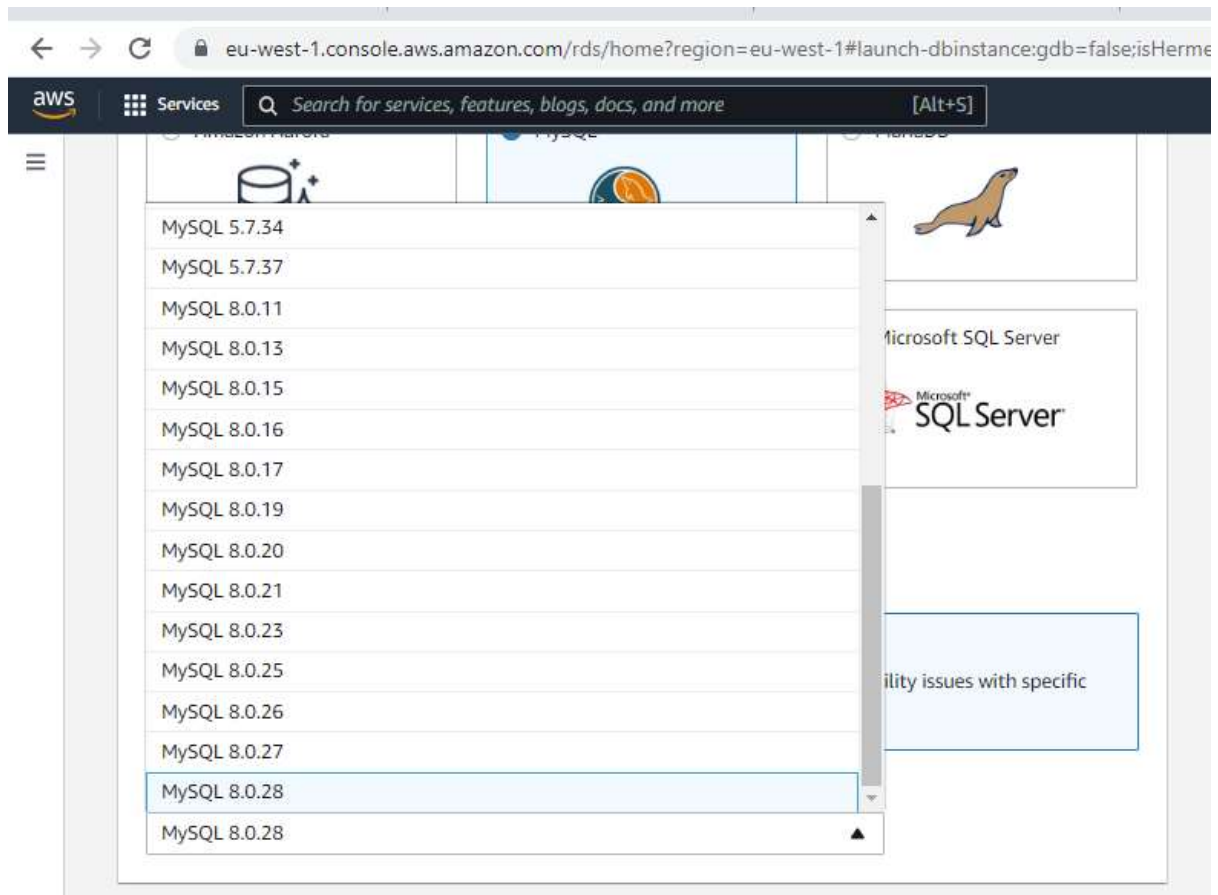
☒ MySQL Community

**Known issues/limitations**  
Review the [Known issues/limitations](#) to learn about potential compatibility issues with specific database versions.

Version

MySQL 8.0.28 ▼

If we want still we can select older version from the version list of items



## Step 4 : Templates

Different types of Templates available and select based on your requirement and for the demo I have selected Production, so I can show more options available .



## Step 5 : Availability and durability

Multiple options available in Deployment options

- Multiple-AZ DB Cluster-new
- Multi-AZ DB instance
- Single DB instance

Select the one based on requirement and I have chosen **Single DB instance** for my demo and others will be charged more.

### 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 - new**  
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.

## Step 6 : Settings

### 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.

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.

1 to 16 alphanumeric characters. First character must be a letter.

☐ **Auto generate a password**

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

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

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), ' (single quote), " (double quote) and @ (at sign).

**Confirm password** [Info](#)

DB instance identifier	Database-srini	Give the name as desired
Master username	admin	This is the default Master username
Master password	password	Give the password and remember it, which is required for connecting to the database
Confirm password	password	Enter the same password as Master password for confirmation

## Step 7 : Instance Configuration

Currently there are 3 DB instance class options available and I have chosen **Burstable classes** ( very less memory ones and vCPUs )

## Instance configuration

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

DB instance class [Info](#)

- ☐ 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

☐ Include previous generation classes

## Step 8 : Storage

Default settings - screenshot

### Storage

Storage type [Info](#)

Provisioned IOPS SSD (io1)  
Flexibility in provisioning I/O

Allocated storage

100
GiB

Minimum: 100 GiB. Maximum: 16,384 GiB

Provisioned IOPS [Info](#)

3000
IOPS

Minimum: 1,000 IOPS. Maximum: 160,000 IOPS

**i** Your actual IOPS might vary from the amount that you provisioned based on your database workload and instance type. [Learn more](#)

Storage autoscaling [Info](#)

Provides dynamic scaling support for your database's storage based on your application's needs.

☒ Enable storage autoscaling

Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

Maximum storage threshold [Info](#)

Charges will apply when your database autoscales to the specified threshold

1000
GiB

Minimum: 110 GiB. Maximum: 16,384 GiB

Storage type	General Purpose SSD(gp2)	Selected general purpose storage type for my demo and but its suggested to go with Provisioned IOPS SSD(io1) if you compare the storage types for more performance
--------------	--------------------------	--

Allocated Storage	20	When we selected General Purpose SSD(gp2) and by 20 GiB is the default , if we want more storage we can increase it.
-------------------	----	--

## Storage

Storage type [Info](#)

General Purpose SSD (gp2)



Baseline performance determined by volume size

Allocated storage

20

GiB

(Minimum: 20 GiB. Maximum: 16,384 GiB) Higher allocated storage can improve IOPS performance.

 Provisioning less than 100 GiB of General Purpose (SSD) storage for high throughput workloads could result in higher latencies upon exhaustion of the initial General Purpose (SSD) IO credit balance. [Learn more](#) 

## Storage autoscaling :

If you enable storage autoscaling , if the allocated storage got exhausted and storage increment will be taken automatically.

Maximum storage threshold : Minimum : 22 GiB , Maximum : 16,384 GiB and 1000 is auto populated and keep the value as your needs

## Storage autoscaling [Info](#)

Provides dynamic scaling support for your database's storage based on your application's needs.

### ☒ Enable storage autoscaling

Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

### Maximum storage threshold [Info](#)

Charges will apply when your database autoscales to the specified threshold

1000

GiB

Minimum: 22 GiB. Maximum: 16,384 GiB

But for mydemo, I have unselected the option Enable storage autoscaling



## Storage autoscaling [Info](#)

Provides dynamic scaling support for your database's storage based on your application's needs.

☐ **Enable storage autoscaling**

Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

## Step 9 : Connectivity

### Connectivity

#### Virtual private cloud (VPC) [Info](#)

VPC that defines the virtual networking environment for this DB instance.

Default VPC (vpc-3caa4f45) ▼

Only VPCs with a corresponding DB subnet group are listed.

 After a database is created, you can't change its VPC.

#### Subnet group [Info](#)

DB subnet group that defines which subnets and IP ranges the DB instance can use in the VPC you selected.

default-vpc-3caa4f45 ▼

#### Public access [Info](#)

☒ **Yes**

Amazon EC2 instances and devices outside the VPC can connect to your database. Choose one or more VPC security groups that specify which EC2 instances and devices inside the VPC can connect to the database.

☐ **No**

RDS will not assign a public IP address to the database. Only Amazon EC2 instances and devices inside the VPC can connect to your database.

#### VPC security group

Choose a VPC security group to allow access to your database. Ensure 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 VPC security groups ▼

default ✕

#### Availability Zone [Info](#)

No preference ▼

#### ► Additional configuration



Virtual private cloud (VPC) : You can select the default VPC , other VPCs or can create a new VPC and I have selected Default VPC

Subnet group : default subnet group

Public Access : Two options – Yes / No . As we need to access through the internet and so selected Yes option

VPC security group : Two options

- Choose existing (selected this option for my demo)
- Create new

Availability Zone : No preference (selected the default option)

### Under Additional Configuration

Database port : 3306 ( this value is auto populated)

#### ▼ Additional configuration

Database port [Info](#)

TCP/IP port that the database will use for application connections.

3306

## Step 10 : Database authentication

### 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.

Multiple options available for connecting to the database and I have selected password authentication .

## Step 11 : Additional Configuration

### ▼ Additional configuration

Database options, encryption enabled, backup enabled, backtrack disabled, Enhanced Monitoring enabled, maintenance, CloudWatch Logs, delete protection enabled.

#### Database options

Initial database name [Info](#)

SriniMySQLDB

If you do not specify a database name, Amazon RDS does not create a database.

DB parameter group [Info](#)

default.mysql8.0

Option group [Info](#)

default:mysql-8-0

Initial database name	sriniMySQLDB ( Give the name based on your application / choice)
DB parameter group	default selected one
Option group	default selected one


## Step 12 : Backup

By default Backup is enabled when we are trying to create database .

Default Backup retention period is 7 days and we can change the value from 0 days to 35 days

### Backup

- ☒ **Enable automated backups**  
Creates a point-in-time snapshot of your database

 Please note that automated backups are currently supported for InnoDB storage engine only. If you are using MyISAM, refer to details [here](#).

Backup retention period [Info](#)

Choose the number of days that RDS should retain automatic backups for this instance.

7 days

Backup window [Info](#)

Select the period for which you want automated backups of the database to be created by Amazon RDS.

- ☐ Select window
- ☒ No preference

**Backup window :** There two options available

- Select window [ Start time : Mostly selecting out of office hours ]
- No preference

**Backup window** [Info](#)

Select the period for which you want automated backups of the database to be created by Amazon RDS.

- ☒ Select window
- ☐ No preference

Start time

00 : 00 UTC

Duration

0.5 hours

## Step 13 : Encryption

By default Enable encryption is enabled

### Encryption

☒ **Enable encryption**

Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. [Info](#)

AWS KMS Key [Info](#)

(default) aws/rds

Account

481745247371

KMS key ID

2fc85403-479d-4d9d-9894-944672baeaad

But for the demo I am unselecting it

### Encryption

☐ **Enable encryption**

Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. [Info](#)

## Step14: Monitoring

By default monitoring is enabled

### Monitoring

☒ **Enable Enhanced monitoring**

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

Granularity

60 seconds

Monitoring Role

default

Clicking "Create database" will authorize RDS to create the IAM role rds-monitoring-role

But for the demo, I am unselecting "Enable Enhanced monitoring"

### Monitoring

☐ **Enable Enhanced monitoring**

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

### Step 15: Log exports

select the log types from the choices available but for the demo I am not selecting any options

### Log exports

Select the log types to publish to Amazon CloudWatch Logs

☐ Audit log

☐ Error log

☐ General log

☐ Slow query log

### IAM role

The following service-linked role is used for publishing logs to CloudWatch Logs.

RDS service-linked role



Ensure that general, slow query, and audit logs are turned on. Error logs are enabled by default. [Learn more](#)

### Step16 : Maintenance

By default Enable auto minor version upgrade is enabled but for the demo I have unselected it

## Maintenance

Auto minor version upgrade [Info](#)

☐ Enable auto minor version upgrade

Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

## Step 17 : Maintenance Window

For the demo I have gone with No preference

Maintenance window [Info](#)

Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.

☐ Select window

☒ No preference

## Step 18 : Deletion protection

By default Enable deletion protection is not selected and to prevent others from deleting the database, if you enable this option it will protect the database.

### Deletion protection

☒ Enable deletion protection

Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

But for the demo I am not enabled this option

### Deletion protection

☐ Enable deletion protection


Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

### Estimated monthly costs

DB instance	13.14 USD
Storage	2.54 USD
<b>Total</b>	<b>15.68 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, IOs (if applicable), or data transfer.

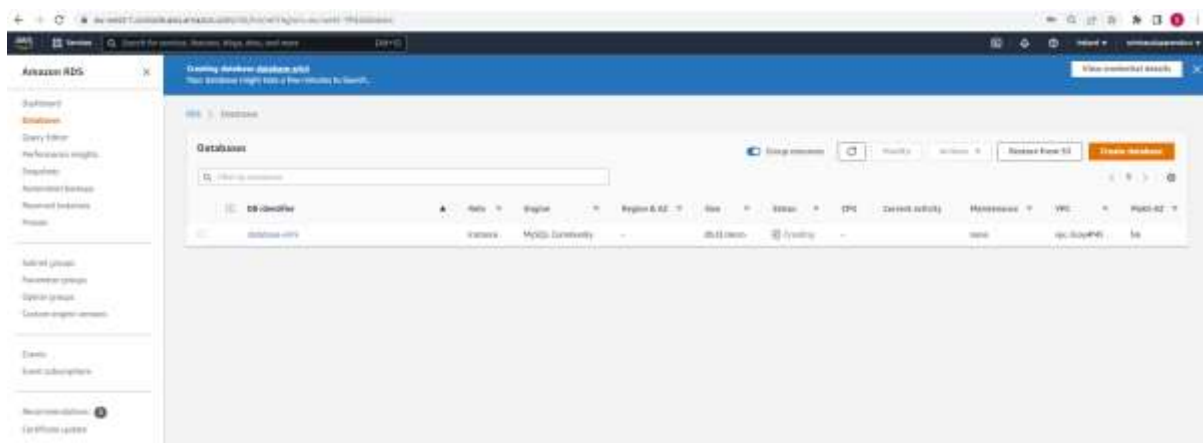
Estimate your monthly costs for the DB Instance using the [AWS Simple Monthly Calculator](#).

 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

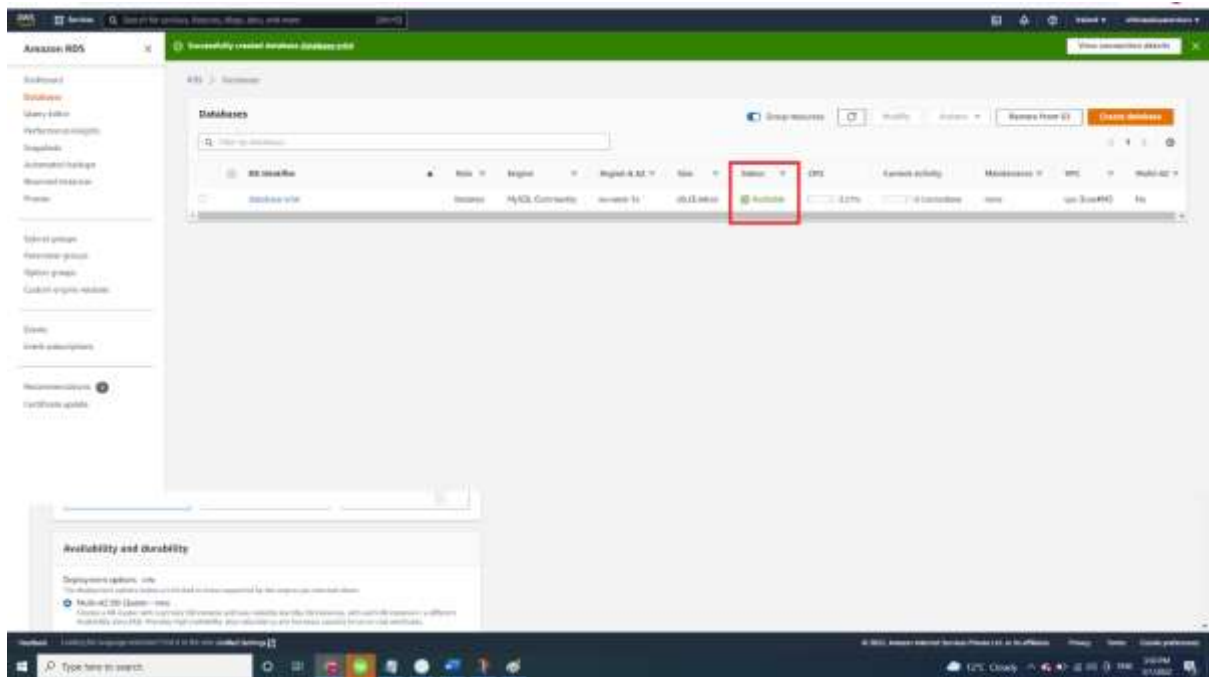
Create database

Finally click on Create database

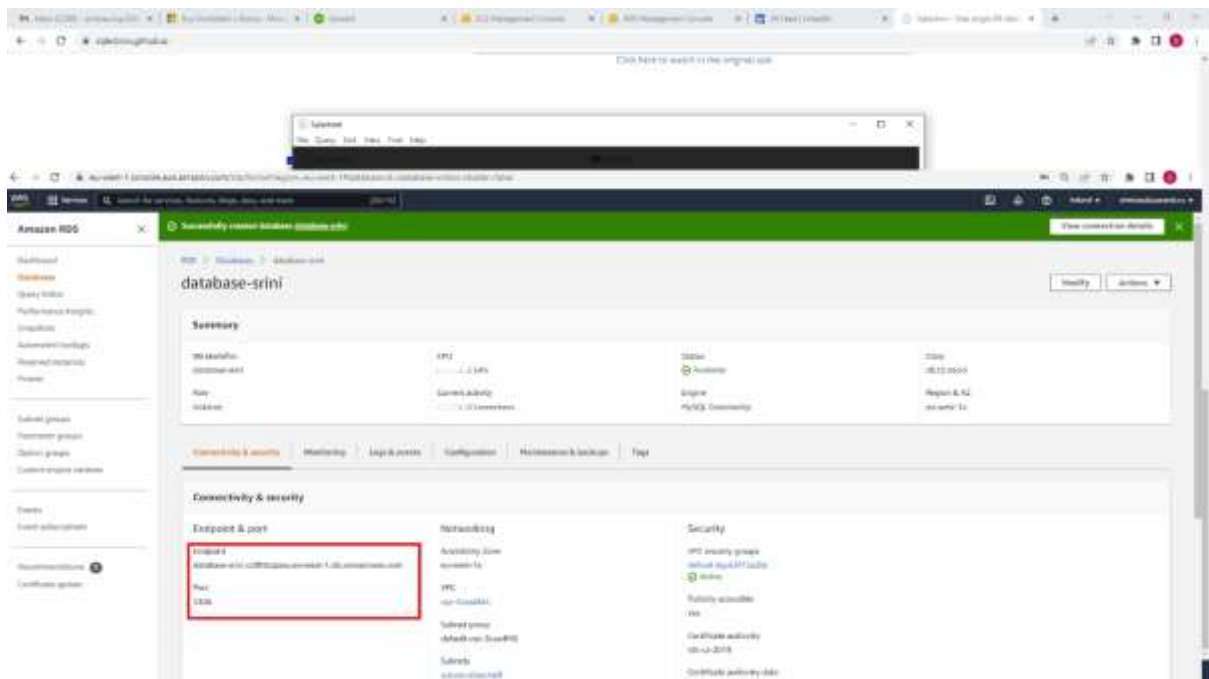


If we see the status is showing as Creating and we need to wait for 5 to 10 minutes for the RDS to be provisioned properly and once the RDS is ready status changes to **Available**.

## AWS – MYSQL RDS Creation Steps



### Step 19 : RDS Endpoint & port



Endpoint	database-srini.cx9lhtqiaou.eu-west-1.rds.amazonaws.com
Port	3306

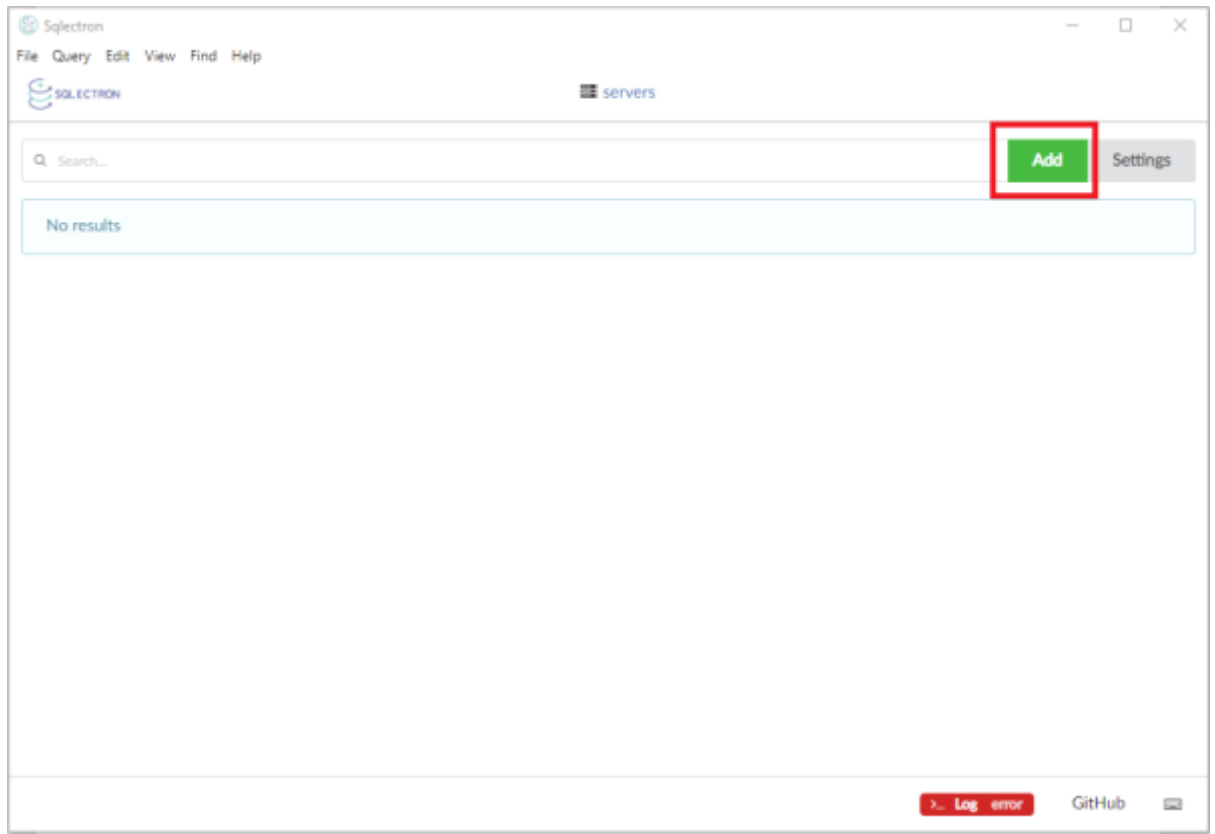


## Step 20 : Tools used for connecting

SQL ECTRON : A simple and lightweight SQL client desktop/terminal with cross database and platform support.

Link to download : <https://sqlectron.github.io/> ( it's a free ware tool )

Open SQL ECTRON after the installation










Click on Add

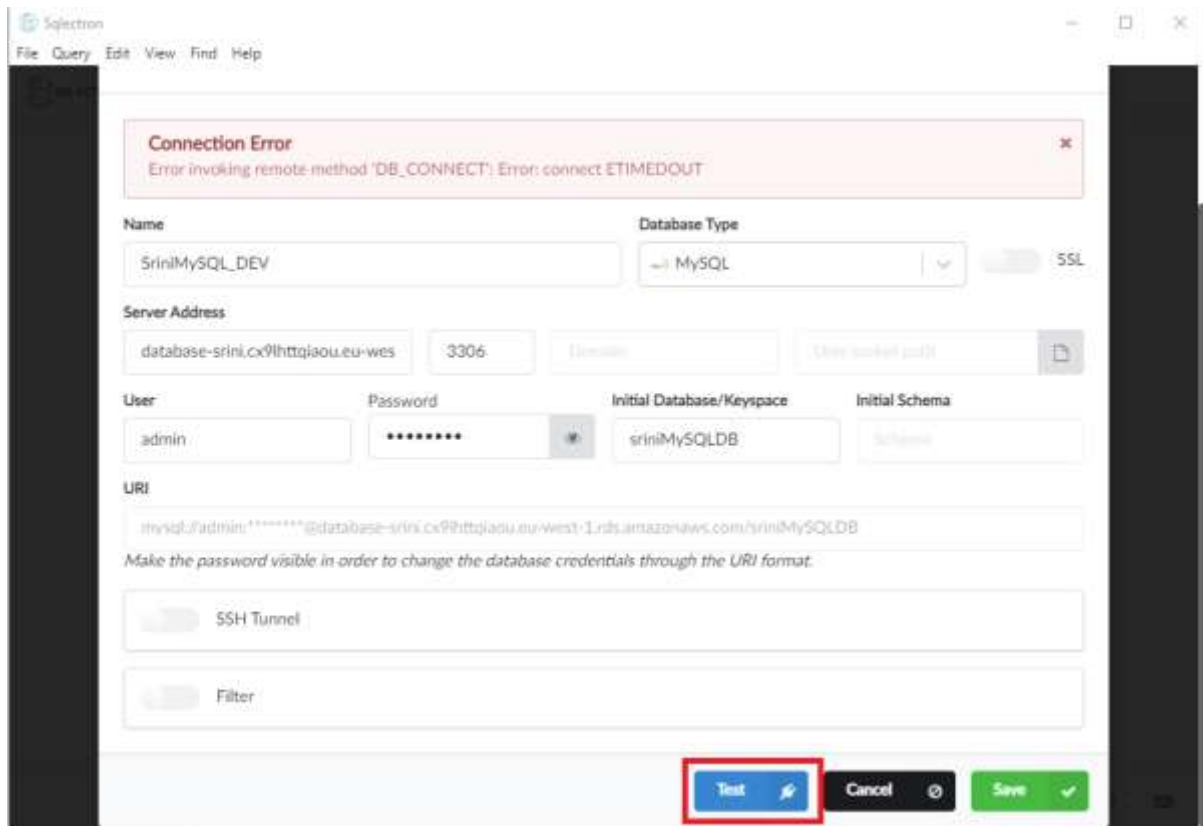
The screenshot shows the 'Server Information' dialog in the Sqlectron application. The fields are as follows:

- Name:** A text input field with the placeholder 'Name'.
- Database Type:** A dropdown menu currently showing 'Select'.
- SSL:** A toggle switch that is currently turned off.
- Server Address:** A section containing four sub-fields: 'Host', 'Port', 'Domain', and 'Unix socket path'.
- User:** A text input field with the placeholder 'User'.
- Password:** A text input field with the placeholder 'Password' and a small eye icon to toggle visibility.
- Initial Database/Keyspace:** A text input field with the placeholder 'Database'.
- Initial Schema:** A text input field with the placeholder 'Schema'.
- URI:** A text input field with the placeholder 'URI'.
- Instructions:** A line of text below the URI field: 'Make the password visible in order to change the database credentials through the URI format.'
- SSH Tunnel:** A checkbox that is currently unchecked.
- Filter:** A checkbox that is currently unchecked.
- Buttons:** At the bottom right, there are three buttons: 'Test' (blue), 'Cancel' (black), and 'Save' (green).

Name	SriniMySQL_DEV ( Give the name based on choice, so you can remember multiple databases are there )
Database Type	Selected MySQL a we need to connect to MYSQL

	<div><div>Database Type</div><div><div>Select</div><div><div> MySQL</div><div> MariaDB</div><div> PostgreSQL</div><div> Redshift</div><div> Microsoft SQL Server</div><div> SQLite</div><div> Cassandra</div></div></div></div>
Server Address	<div>Copy the endpoint url copied from the RDS database</div> <div>database-srini.cx9lhttqiaou.eu-west-1.rds.amazonaws.com</div>
port	3306 ( should be 3306 , check the step 19)
User	Admin
Password	Password
Initial Database	sriniMySQLDB ( Name given at the time of RDS creation)

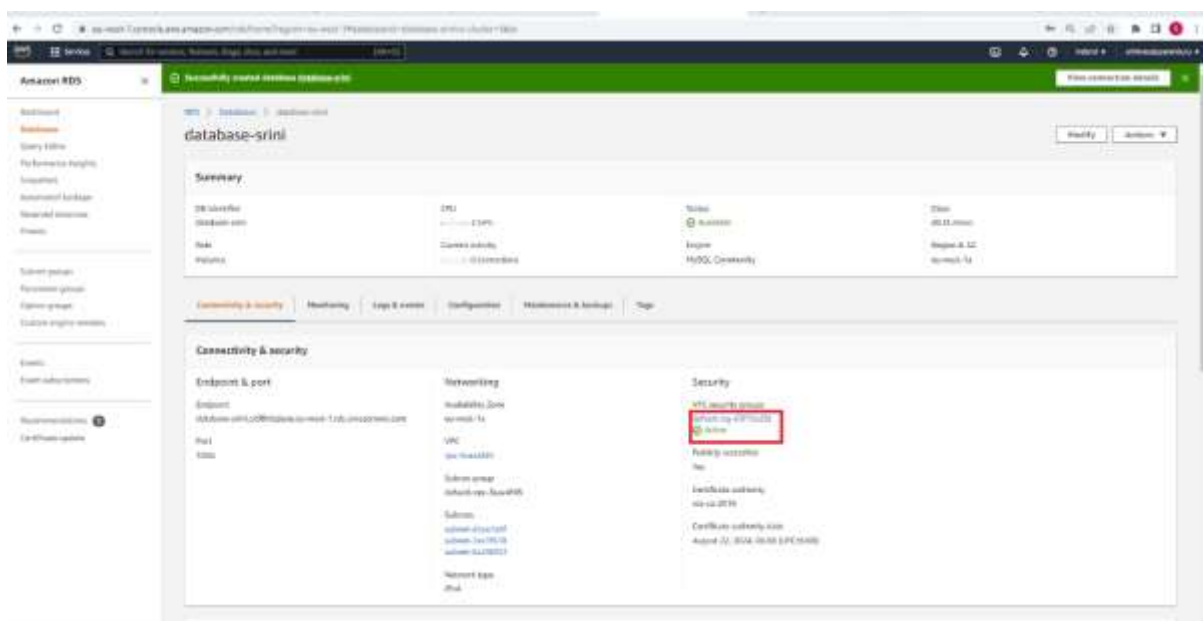
## AWS – MYSQL RDS Creation Steps



Click on Test button and it will fail with the Connection Error

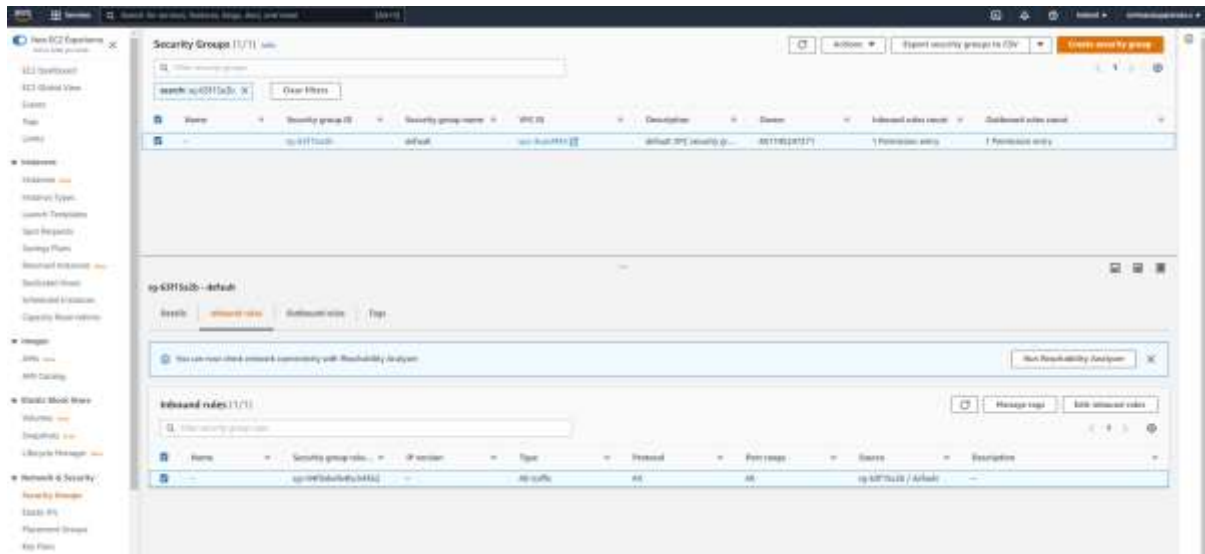
## Step 21 : Changes to the security group to allow access

Go the RDS which we created and click on the security group

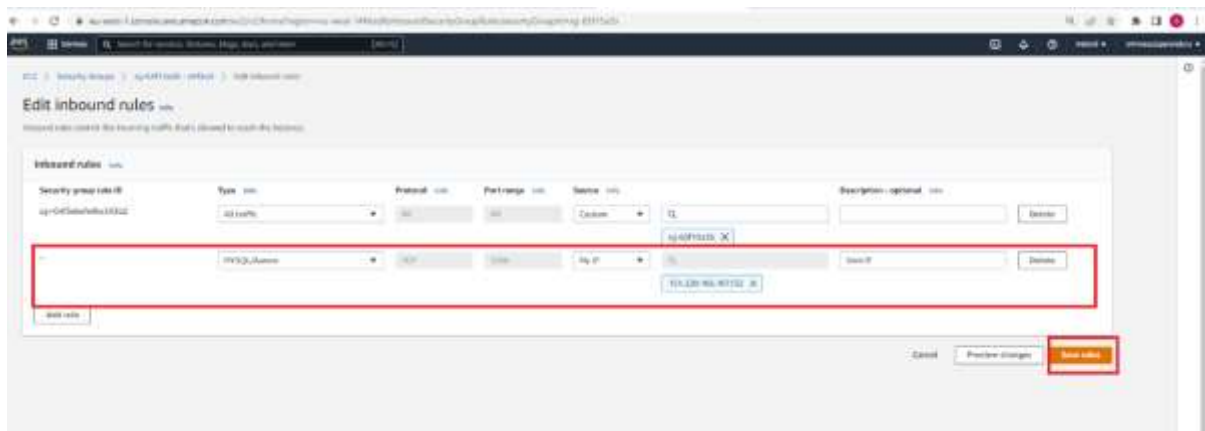


Author - Srinivasulu Paranduru

Security group Inbound details given below and click on Edit Inbound rules

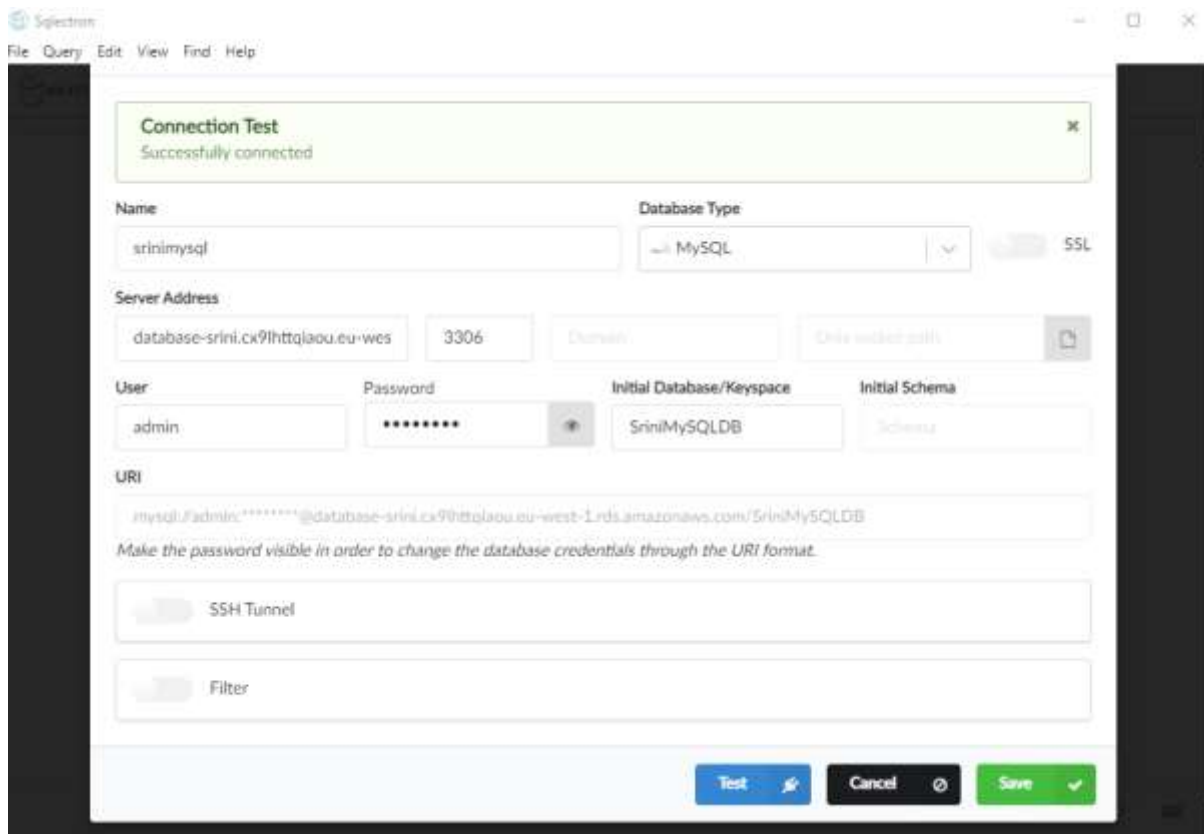


Added a new Inbound rule and source I have selected MyIP and wanted this database to be accessible only to my IP and save rules



Go back to step 20 and try connecting using the Test button below

## AWS – MYSQL RDS Creation Steps



Connection Test is successful and click on save to store the database details and click on connect button as per the image given below



Able to connect to the database



Create a table and insert two rows to the table



Create table EmpDetails(FirstName varchar(50),LastName varchar(50))

insert into EmpDetails(FirstName, LastName) values('Dev','User')

insert into EmpDetails(FirstName, LastName) values('Test','User')





Table we created is showing in the left side section, once the table is created please refresh the database and it will get reflected in the Sqlelctron UI