



DEPARTMENT OF

COMPUTER SCIENCE & ENGINEERING

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## **EXPERIMENT- 09**

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**Subject Name: ADBMS**

**Subject Code: 23CSP-333**

**1. Aim:** To create and connect a PostgreSQL database instance on **Amazon RDS (Relational Database Service)** and EC2.

### **2. Objective:**

To understand the ACID property and the AWS completely.

### **3. Tools / Software**

- ☐ Amazon Web Services (AWS)
- ☐ PostgreSQL
- ☐ pgAdmin 4
- ☐ RDS (Relational Database Service)

### **4. Program:**

1. Overview of Database: SQL & NOSQL

#### **DATABASES ON EC2 INSTANCE**

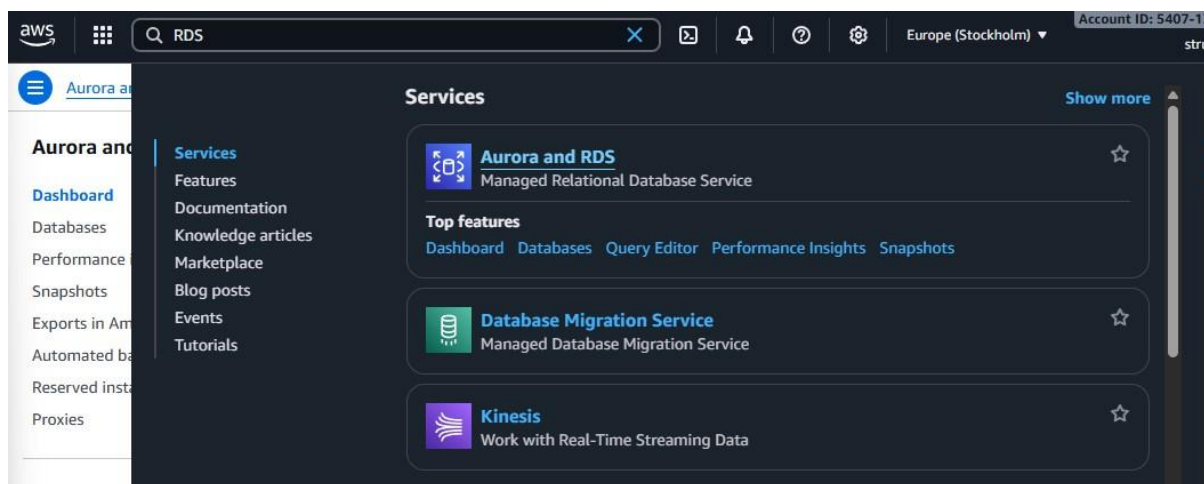
- **3-tier architecture:** where we can run all the 3 components in the same EC2 instance.  
**Not recommended**

- **2-tier architecture:** Where application + webserver runs on one EC2 instance & Database runs on another EC2 instance & finally we can place both of these EC2 instances in one availability zone

Feature	Description	Purpose
<b>CloudWatch</b>	Monitors RDS metrics, sends alarms, and stores logs	Performance & health monitoring
<b>Automated Backups</b>	Daily snapshots and transaction logs	Disaster recovery
<b>Manual Snapshots</b>	User-created backups	Long-term retention
<b>Manual Snapshots</b>	User-created backups	Long-term retention
<b>Multi-AZ Deployment</b>	Standby replica in another AZ	High availability
<b>Read Replicas</b>	Read-only copies	Load balancing
<b>Security (IAM, KMS, SSL)</b>	Data protection and access control	Compliance & safety
<b>Performance Insights</b>	SQL and load analysis tool	Performance tuning
<b>Storage Auto Scaling</b>	Grows storage automatically	Prevents space outages
<b>Enhanced Monitoring</b>	OS-level real-time metrics	Deep diagnostics
<b>Cross-Region Replicas</b>	Replication to other regions	Global availability
<b>Parameter/Option Groups</b>	DB configuration controls	Customization

1. GO TO AWS HOMEPAGE -> CLICK ON SIGN IN-> ENTER USER NAME WITH EMAIL ADDRESS.

2. AFTER SIGN-IN -> GO TO SEARCH BAR -> SEARCH FOR RDS -> HIT ENTER



### 3. HOW TO CREATE MY SQL DATABASE INSTANCE ON AWS RDS?

**Create database** [Info](#)

**Free plan has access to limited features and resources**  
The free plan limits the features and resources that are available for RDS and Aurora databases. Upgrade your account plan to remove all limitations. [Learn more](#)

[Upgrade plan](#)

**Choose a database creation method**

☐ Standard create  
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

☒ Easy create  
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

**Configuration**

**Engine type** [Info](#)

☐ Aurora (MySQL Compatible)

☐ Aurora (PostgreSQL Compatible)

☒ PostgreSQL

☐ MariaDB

☐ Microsoft SQL Server

☐ MySQL

☐ Oracle

### 4. CLICK ON CREATE DATABASE

**Aurora and RDS** [Dashboard](#)

**Resources** [Refresh](#)

You are using the following Amazon RDS resources in the Europe (Stockholm) region (used/quota)

**DB Instances (0/40)**  
Allocated storage (0 TB/100 TB)  
Instances and storage include Neptune and DocumentDB. [Increase DB instances limit](#)

**DB Clusters (0/40)**  
Reserved instances (0/40)

**Snapshots (0)**  
Manual  
DB Cluster (0/100)  
DB Instance (0/100)  
Automated  
DB Cluster (0)  
DB Instance (0)

**Recent events (0)**  
**Event subscriptions (0/20)**

**Parameter groups (0)**  
Default (0)  
Custom (0/100)

**Option groups (0)**  
Default (0)  
Custom (0/20)

**Subnet groups (0/50)**  
**Supported platforms** [VPC](#)  
Default network vpc-081fe9fe127bb8e79

**Create a database**

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale a relational database in the cloud.

[Create a database](#)

You can use a backup from Amazon S3 to restore and create a new Aurora MySQL and MySQL database.

[Restore from S3](#)

Note: your DB instances will launch in the **Europe (Stockholm)** region

IN THE STANDALONE CREATE, WE CAN SET EVERYTHING FOR OUR DATABASE, THE INCOMING TRAFFIC, IP ADDRESSES TO BE USED, BACKUP ETC.

▼ View default settings for Easy create

Easy create sets the following configurations to their default values, some of which can be changed later. If you want to change any of these settings now, use Standard create.

Configuration	Value	Editable after database is created
Encryption	Enabled	No
VPC	Default VPC (vpc-081fe9fe127bb8e79)	No
Multi-AZ	No	Yes
Option group	default:mysql-8-0	Yes
Subnet group	Create new DB Subnet Group	Yes
Automatic backups	Enabled	Yes
VPC security group	default	Yes
Publicly accessible	No	Yes
Database port	3306	Yes
DB instance identifier	strugmac-DB	Yes
DB engine version	8.0.42	Yes
DB parameter group	default:mysql8.0	Yes
Monitoring type	Database Insights - Standard	Yes
Performance insights	Not enabled	Yes
Monitoring	Enabled	Yes
Maintenance	Auto minor version upgrade enabled	Yes

DB instance size

☐ Production

db.r7g.xlarge

4 vCPUs

32 GiB RAM

400 GiB

1.946 USD/hour

☐ Dev/Test

db.r7g.large

2 vCPUs

16 GiB RAM

200 GiB

0.278 USD/hour

☒ Free tier

db.t4g.micro

2 vCPUs

1 GiB RAM

20 GiB

0.019 USD/hour

DB instance identifier

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.

strugmac-DB

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 63 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

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 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](#)

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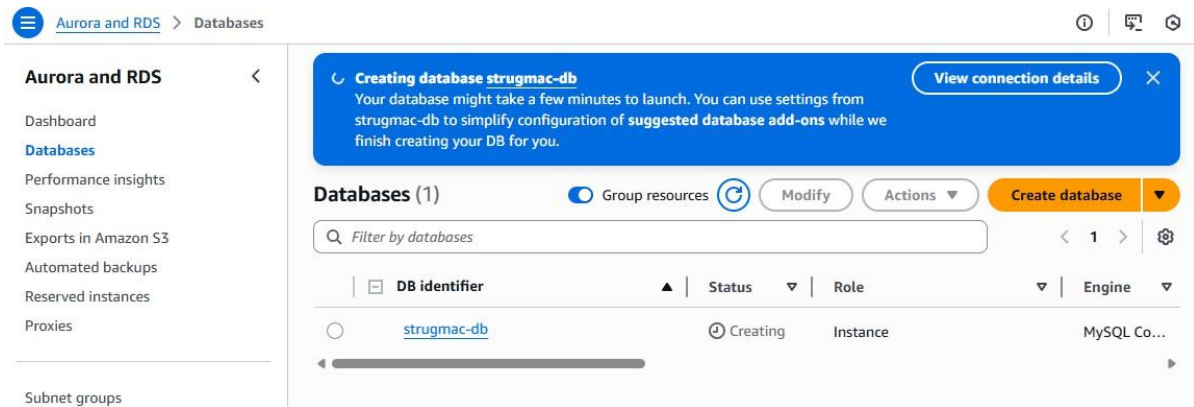
Password strength

Very strong

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

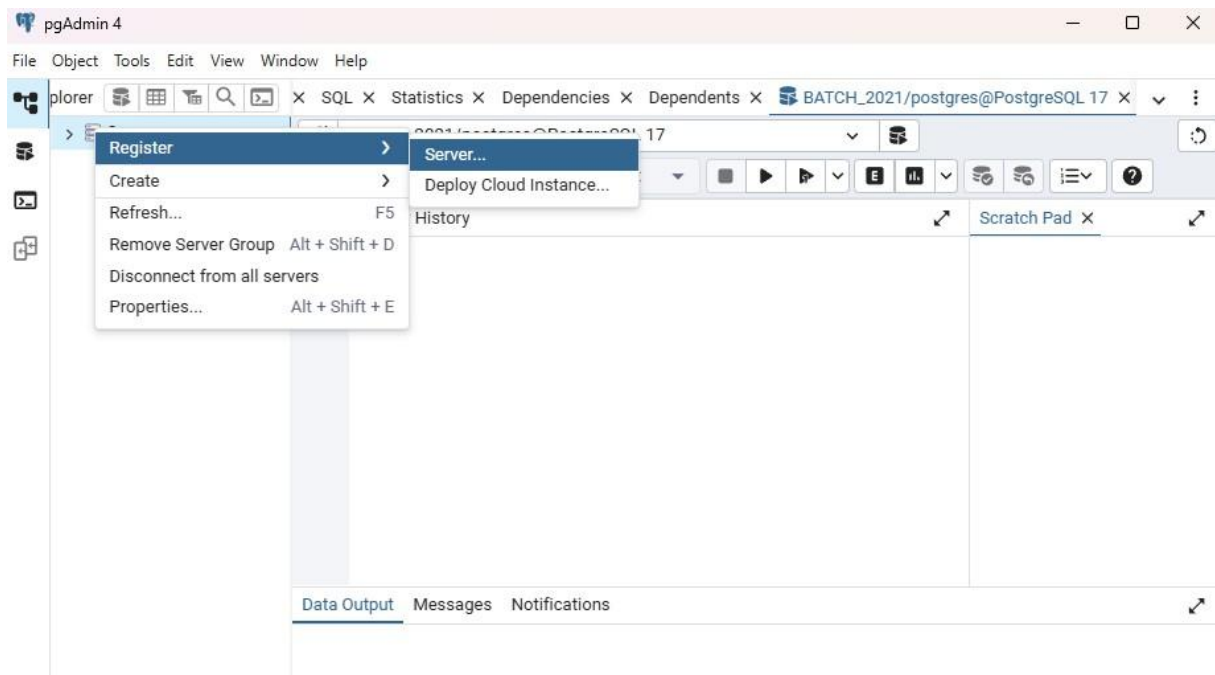
Confirm master password [Info](#)

.....



Now this will create a MySQL database to me, and we want to connect to RDS

1. Create AWS RDS database for PostgreSQL
2. Connect from PgAdmin.



Copy the API Endpoints from the dashboard of AWS RDS Database instance.

Register - Server

General Connection Parameters SSH Tunnel Advanced Post Connection SQL Tags

Name strugmac-postgresql

Server group Servers

Background ☐

Foreground ☐

Connect now? ☒

Comments

No data output. Execute a query to get output.

Register - Server

General Connection Parameters SSH Tunnel Advanced Post Connection SQL Tags

Host name/address strugmac-postgresql.czqk2qqwqtc0.eu-north-1.rds.amazonaws.com

Port 5432

Maintenance database postgres

Username postgres

Kerberos authentication? ☐

Password .....

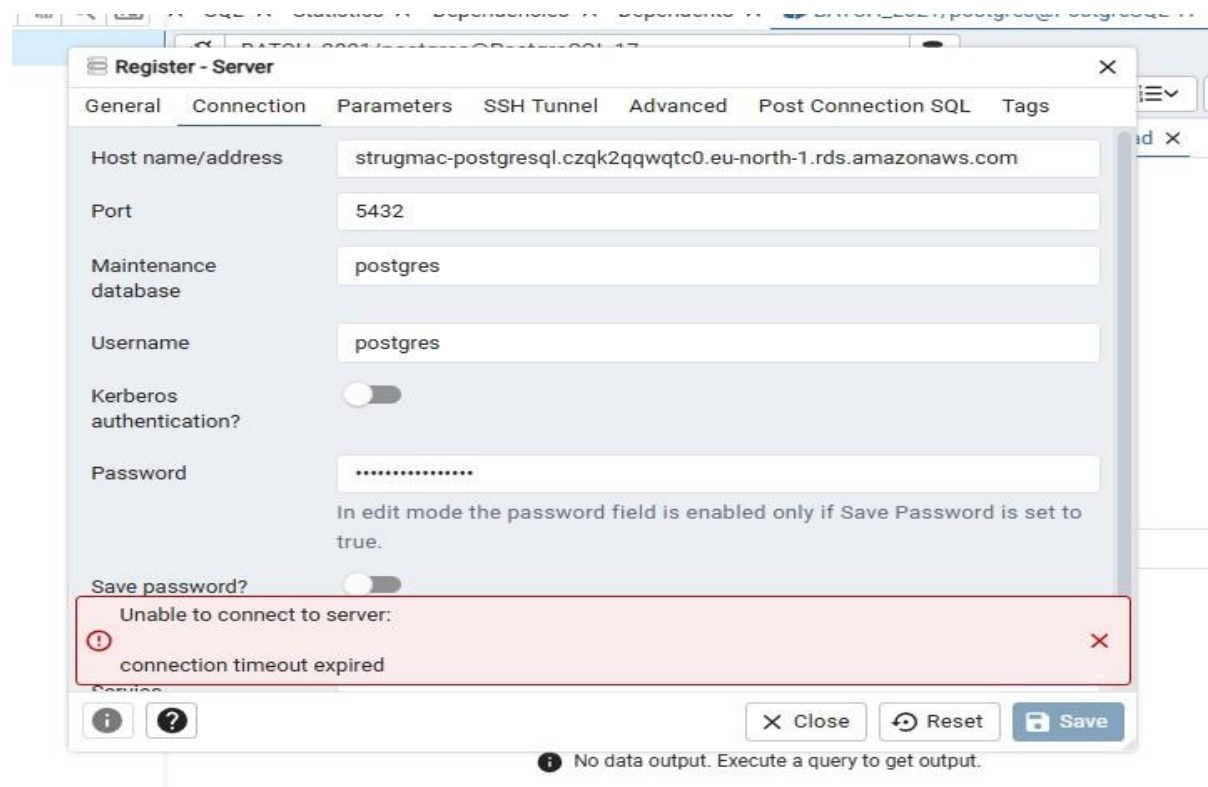
Save password? ☐

Role

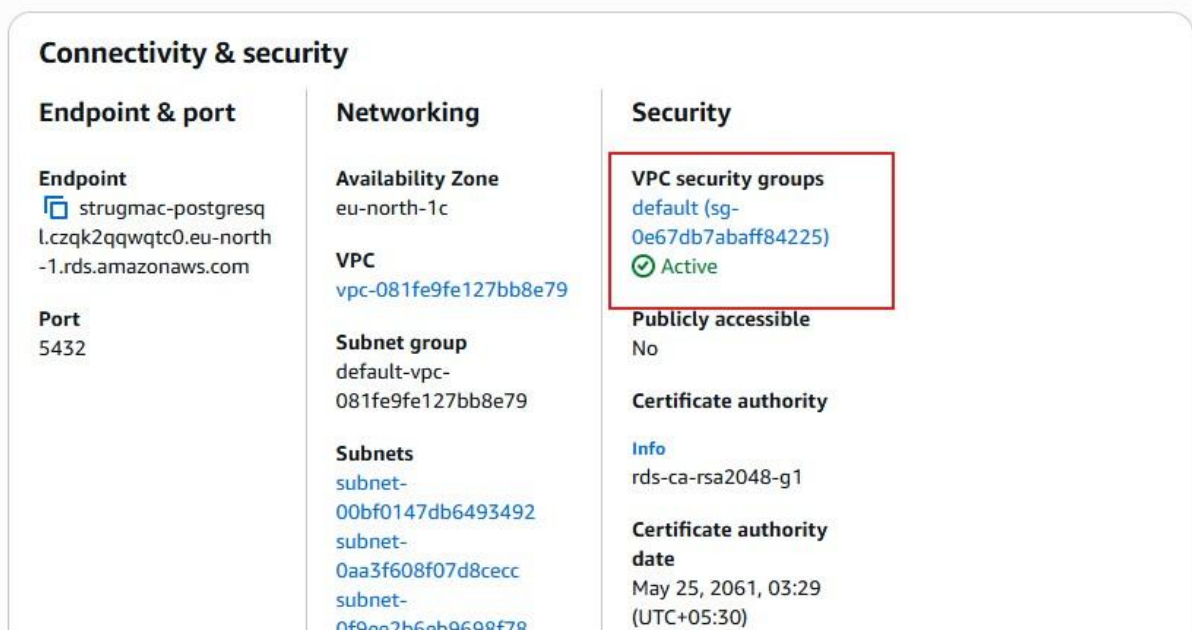
Service

No data output. Execute a query to get output.

Click on Save



Might give this error as this DB instance is not available locally.  
Change the INBOUND RULES of DB Instance from the A



WS Console

## Edit inbound rules [Info](#)

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

### Inbound rules [Info](#)

Security group rule ID	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>	
sgr-0d9f21030174e69aa	All traffic ▼	All	All	C... ▼	<input type="text"/>	<a href="#">Delete</a>
-	PostgreSQL ▼	TCP	5432	M... ▼	<input type="text"/>	<a href="#">Delete</a>

[Add rule](#)

[Cancel](#)

[Preview changes](#)

[Save rules](#)