



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

EXPERIMENT- 09

Student Name: Chetan Prakash

Branch: BE-CSE

Semester: 05

Subject Name: ADBMS

UID: 23BCS13776

Section/Group: KRG-1B

Date of Performance: 04/11/25

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.

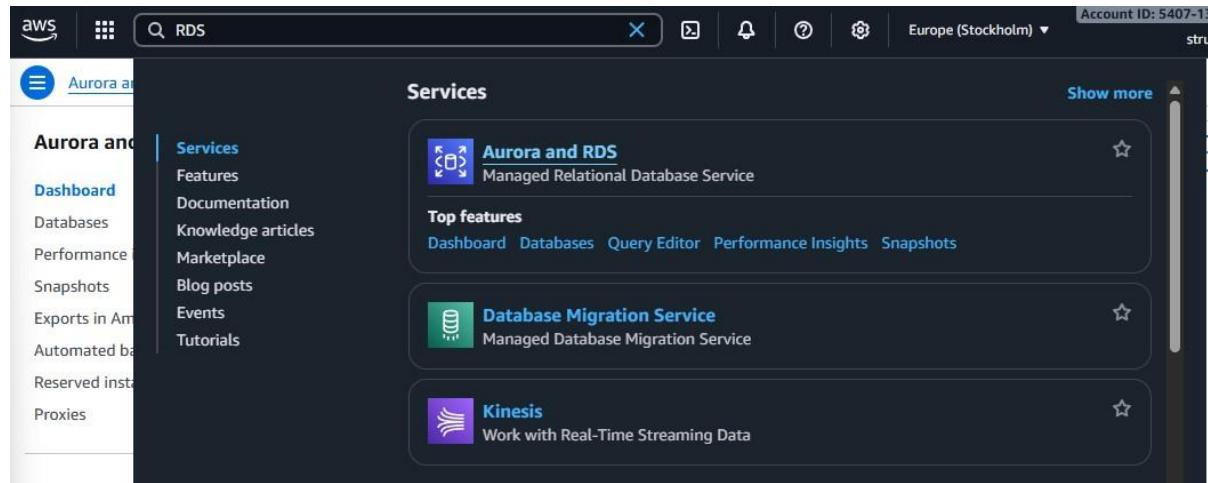
Not recommended

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

The screenshot shows the 'Create database' wizard in the AWS RDS console. The 'Configuration' step is selected. Under 'Engine type', 'PostgreSQL' is chosen and highlighted with a blue border. Other options shown include Aurora (MySQL Compatible), Aurora (PostgreSQL Compatible), MySQL, MariaDB, Oracle, and Microsoft SQL Server.

4. CLICK ON CREATE DATABASE

The screenshot shows the AWS RDS Dashboard. In the center, there is a large callout box titled 'Create a database'. It contains the text: 'Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale a relational database in the cloud.' Below this is a large orange button labeled 'Create a database'. To the right of the button, smaller text says: 'You can use a backup from Amazon S3 to restore and create a new Aurora MySQL and MySQL database.' At the bottom of the callout box, it says: '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

.....

Password strength Very strong

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

Confirm master password Info

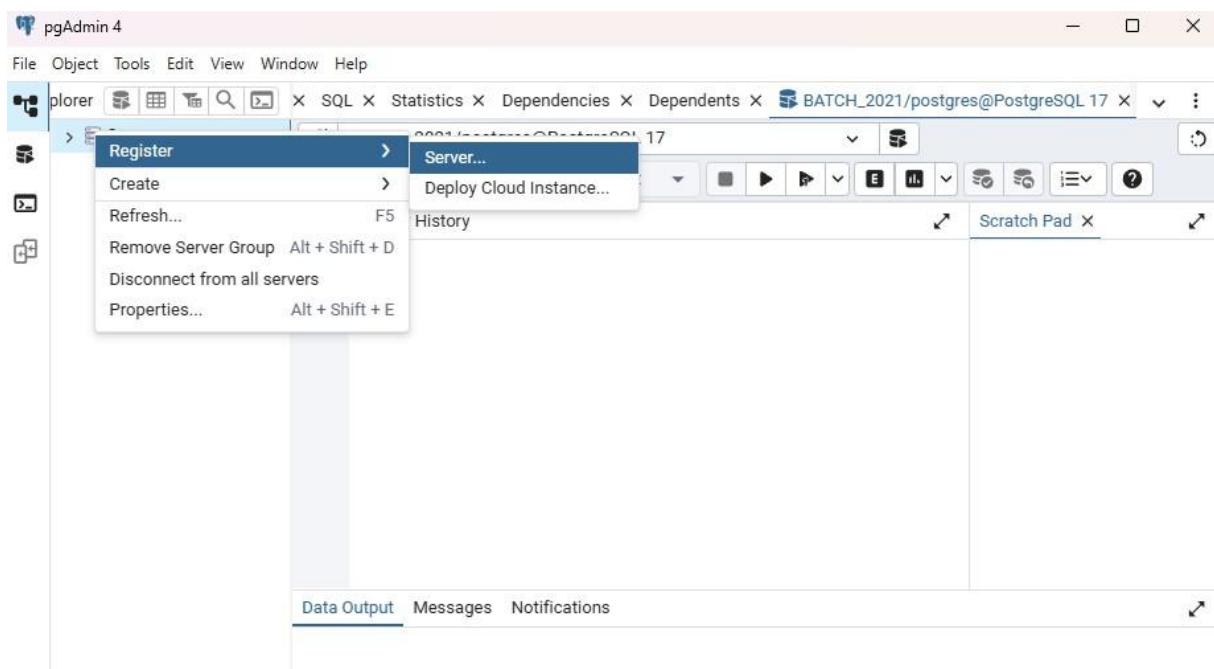
.....

The screenshot shows the AWS Aurora and RDS Databases console. On the left, there's a sidebar with options like Dashboard, Databases, Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, and Subnet groups. The main area has a blue header bar with the text "Creating database strugmac-db" and a message: "Your database might take a few minutes to launch. You can use settings from strugmac-db to simplify configuration of suggested database add-ons while we finish creating your DB for you." Below this, there's a "Databases (1)" section with a table. The table has columns for DB identifier, Status, Role, and Engine. It shows one row for "strugmac-db" which is "Creating".

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.

Schemas | Statistics | Dependencies | Depended on | [CREATE SCHEMA](#) / [ALTER SCHEMA](#)

Register - Server

General Connection Parameters SSH Tunnel Advanced Post Connection SQL Tags

Name strugmac-postgresql

Server group Servers

Background X

Foreground X

Connect now?

Comments

i No data output. Execute a query to get output.

Schemas | Statistics | Dependencies | Depended on | [CREATE SCHEMA](#) / [ALTER SCHEMA](#)

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

In edit mode the password field is enabled only if Save Password is set to true.

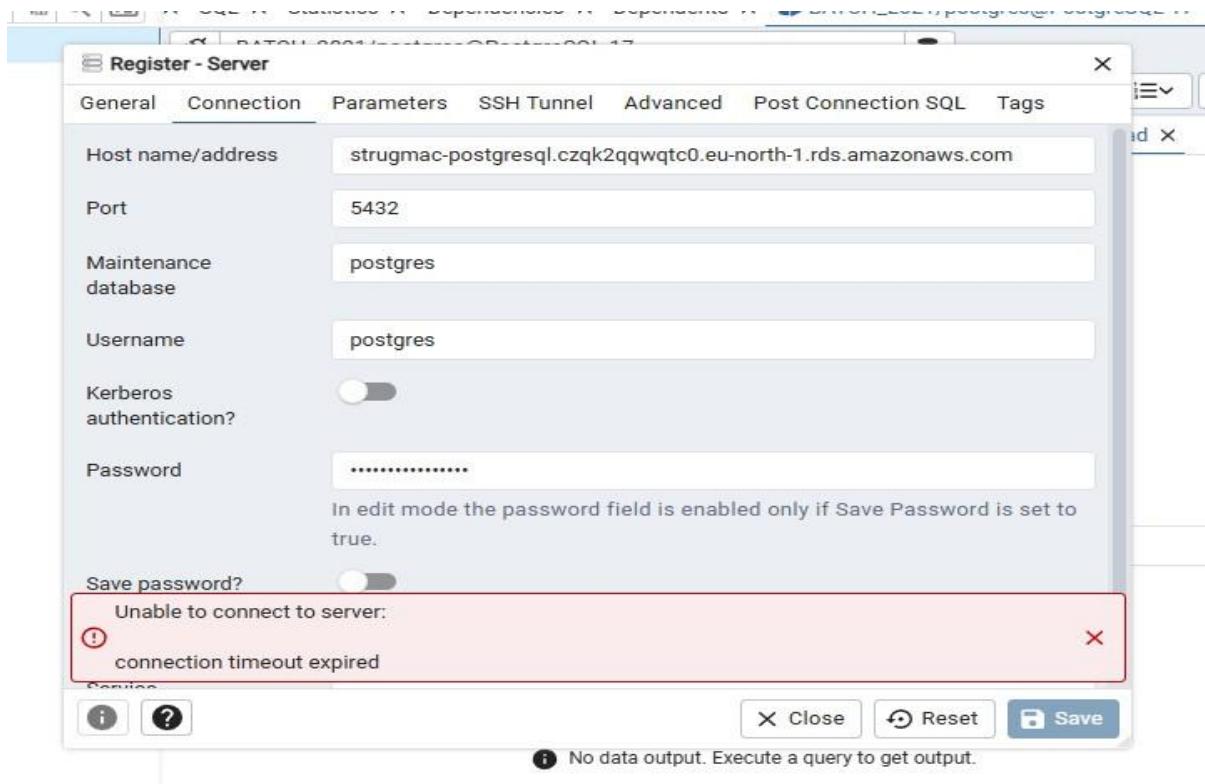
Save password?

Role

Services

i 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

Connectivity & security

Endpoint & port	Networking	Security
Endpoint strugmac-postgresql.czqk2qqwqtc0.eu-north-1.rds.amazonaws.com	Availability Zone eu-north-1c	VPC security groups default (sg-0e67db7abaff84225) Active
Port 5432	VPC vpc-081fe9fe127bb8e79	Publicly accessible No
	Subnet group default-vpc-081fe9fe127bb8e79	Certificate authority Info rds-ca-rsa2048-g1
	Subnets subnet-00bf0147db6493492 subnet-0aa3f608f07d8cecc subnet-0f9ee2b6eb9698f78	Certificate authority date May 25, 2061, 03:29 (UTC+05:30)

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 <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
sgr-0d9f21030174e69aa	All traffic <small>▼</small>	All	All	C... <small>▼</small>	<input type="text"/> sg-0e67db7abaff84 225 <small>X</small>
-	PostgreSQL <small>▼</small>	TCP	5432	M... <small>▼</small>	<input type="text"/> 223.181.100.173 /32 <small>X</small>

Add rule Cancel Preview changes **Save rules**