



Experiment-9

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1. Aim: To understand and implement the setup of Amazon Relational Database Service (AWS RDS) by creating a database instance, configuring security groups, and establishing a secure connection between the local pgAdmin tool and the RDS instance hosted on the AWS Cloud.

2. Objective:

- To learn the basic concepts and features of Amazon Relational Database Service (AWS RDS).
- To create and configure a new RDS database instance on the AWS Management Console.
- To understand the role and configuration of security groups for controlling database access.
- To connect a local pgAdmin client to the AWS RDS instance securely using proper credentials and endpoint details.
- To verify successful database connectivity and perform basic operations through pgAdmin.

3. Code & Output:

1. Sign-in

The screenshot shows the AWS Management Console sign-in page. At the top, there's a search bar and a 'Sign in' button. The main area has sections for 'Console Home', 'Recently visited', 'Applications', 'Cost and usage', and 'Welcome to AWS'. On the right, there's a sidebar with account information like 'Account ID: 5572-2532-7973', 'Days remaining: 182 days', and a 'Sign out' button. The bottom of the page includes links for 'CloudShell', 'Feedback', and copyright information.



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2. Navigating to RDS Service

The screenshot shows the AWS Aurora and RDS service dashboard. The left sidebar includes links for Dashboard, Databases (selected), Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom engine versions, Zero-ETL integrations, Events, Event subscriptions, Recommendations (0), and Certificate update. The main content area displays a heading "Databases (0)" with a search bar and filter options for DB identifier, Status, Role, Engine, Region, Size, and Recommendations. A central illustration of a robot watering a plant is present, with the text "No resources" and "No resources to display". A "Create database" button is at the bottom. The top right shows account information (Account ID: 3572-2532-7975, Europe (Stockholm), prabhakar_147).

3. Amazon RDS Dashboard Overview

The screenshot shows the Amazon RDS Dashboard. The left sidebar includes links for Dashboard (selected), Databases, Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom engine versions, Zero-ETL integrations, Events, Event subscriptions, Recommendations (0), and Certificate update. The main content area is divided into sections: "Resources" (DB Instances 0/40, DB Clusters 0/40, Reserved instances 0/40, Snapshots 0), "Explore RDS" (Status: Not started, Complete by: May 11, 2026, Reward value: USD 20.00, Estimated duration: 2-5 minutes, Start tutorial), "Create a database" (Create a database button, Note: your DB instances will launch in the Europe (Stockholm) region, Restore from S3), "Service health" (View service health dashboard), and "Recommended services" (No recommendations yet, Recommended services will display based on your AWS console usage). The top right shows account information (Account ID: 3572-2532-7975, Europe (Stockholm), prabhakar_147).



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4. Creating a New Database Instance

The screenshot shows the 'Create database' page in the AWS RDS console. At the top, there's a note about the free plan having limited features. Below it, two creation methods are shown: 'Standard create' (selected) and 'Easy create'. The 'Configuration' section lists several database engines: Aurora (MySQL Compatible), Aurora (PostgreSQL Compatible), MySQL, Oracle, PostgreSQL (selected), MariaDB, and Microsoft SQL Server. The PostgreSQL option is highlighted with a blue border. At the bottom, there are links for CloudShell, Feedback, and various AWS terms like Privacy, Terms, and Cookie preferences.

5. Selecting PostgreSQL as Database Engine

This screenshot continues from the previous one, showing the configuration for a PostgreSQL database instance. It includes fields for the DB instance identifier ('prabhakar-db'), master username ('postgres'), and master password ('*****'). The 'Self managed' password option is selected. Other options like 'Managed in AWS Secrets Manager - most secure' and 'Auto generate password' are also shown. The 'Password strength' bar is at 'Strong'. At the bottom, there are sections for 'Set up EC2 connection - optional' and 'View default settings for Easy create'.



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6. Choosing Deployment Option and Template

The screenshot shows the AWS Aurora and RDS console. In the top right corner, the account ID is 3572-2532-7973, the region is Europe (Stockholm), and the user is prabhakar_147. On the left sidebar, under the 'Databases' section, 'prabhakar-db' is listed. In the main content area, a green success message says 'Successfully created database prabhakar-db'. Below it, a modal window titled 'Connection details to your database prabhakar-db' shows the following information:

Master username	postgres
Master password	*****
Endpoint	prabhakar-db.cnm84qk6sv83.eu-north-1.rds.amazonaws.com

At the bottom right of the modal is a 'Close' button.

7. Configuring Database Settings (Name, Username, Password)

The screenshot shows the AWS Aurora and RDS console. The left sidebar is identical to the previous screenshot. In the main content area, a blue header bar says 'Creating database prabhakar-db'. Below it, a message states: 'Your database might take a few minutes to launch. You can use settings from prabhakar-db to simplify configuration of suggested database add-ons while we finish creating your DB for you.' Under the 'Databases (1)' heading, the table shows the following data:

DB identifier	Status	Role	Engine	Region ...	Size	Recommendations
prabhakar-db	Creating	Instance	PostgreSQL	eu-north-1c	db.t4g.micro	

At the bottom right of the table is a 'Close' button.



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8. Setting Up Instance Size and Storage

The screenshot shows the pgAdmin interface. In the top navigation bar, 'Registers' is highlighted. A dropdown menu is open under 'Registers', showing options like 'Create', 'Refresh...', 'Remove Server Group', 'Disconnect from all servers', and 'Properties...'. The 'Server...' option is currently selected. Below the menu, there is a brief description of pgAdmin: 'pgAdmin is an Open Source administration and management tool for the PostgreSQL database. It includes a graphical administration interface, an SQL query tool, a procedural code debugger and much more. The tool is designed to answer the needs of developers, DBAs and system administrators alike.' There are also 'Quick Links' for 'Add New Server' and 'Configure pgAdmin'. At the bottom, there are links for 'PostgreSQL Documentation', 'pgAdmin Website', 'Planet PostgreSQL', and 'Community Support'.

9. Configuring Connectivity and VPC Settings

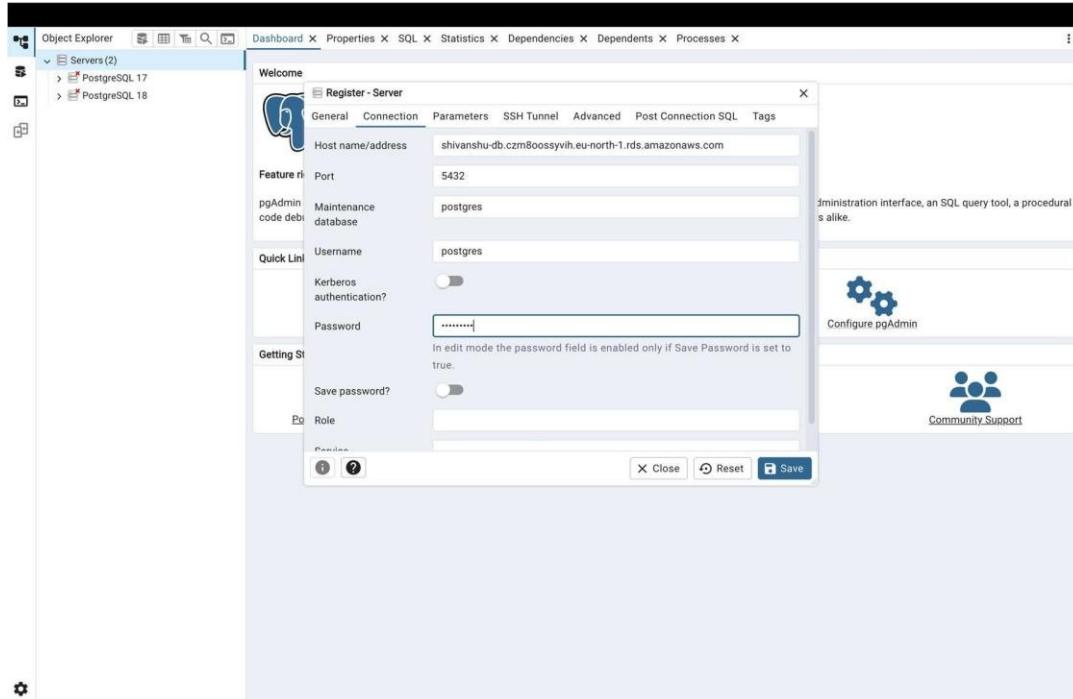
The screenshot shows the 'Register - Server' dialog box in pgAdmin. The 'Name' field is set to 'shivanshu DB'. Under the 'Feature' section, 'Background' is selected. The 'Comments' field is empty. At the bottom, there are buttons for 'Close', 'Reset', and 'Save'.



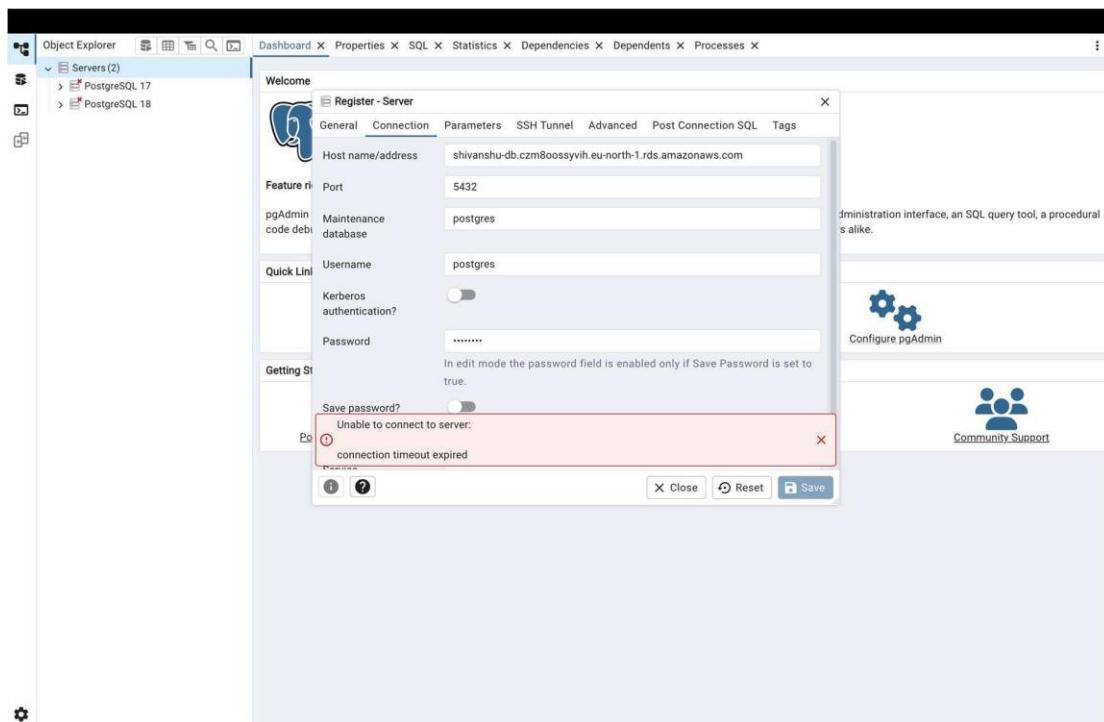
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10. Gr Setting Up Security Groups for RDS Access



11. Additional Database Configuration Options





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12. Reviewing and Creating the Database Instance

Successfully created database prabhakar-db

You can use settings from prabhakar-db to simplify configuration of suggested database add-ons while we finish creating your DB for you.

prabhakar-db

Summary

DB identifier	Status	Role	Engine	Recommendations
prabhakar-db	Available	Instance	PostgreSQL	
CPU	Class db.t4g.micro	Current activity	Region & AZ	
-			eu-north-1c	

Connectivity & security

Endpoint & port	Networking	Security
Endpoint prabhakar-db.cnm84qk6sv83.eu-north-1.rds.amazonaws.com	Availability Zone eu-north-1c	VPC security groups default (sg-02c4867b1fd7ecde) Active
Port 5432	VPC vpc-0055cbc900cef1c65	Publicly accessible No
	Subnet group default-vpc-0055cbc900cef1c65	Certificate authority Info rds-ca-rsa2048-g1
	Subnets subnet-0b7c6ec9d80deb1c subnet-0450e6e89619da6e6 subnet-0455503cf336ab19	Certificate authority date May 25, 2061, 03:29 (UTC+05:30)
		DB instance certificate expiration date

13. RDS Instance Creation in Progress

Inbound rules

Type	Protocol	Port range	Source	Description - optional
All traffic	All	All	Custom	

Add rule

Cancel Preview changes Save rules

ModifyInboundSecurityGroupRules



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14. Viewing Database Instance Details

▼ Additional configuration

Public access

Publicly accessible
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

Not publicly accessible
No IP address is assigned to the DB instance. EC2 instances and devices outside the VPC can't connect.

Database port
Specify the TCP/IP port that the DB instance will use for application connections. The application connection string must specify the port number. The DB security group and your firewall must allow connections to the port. [Learn more](#)

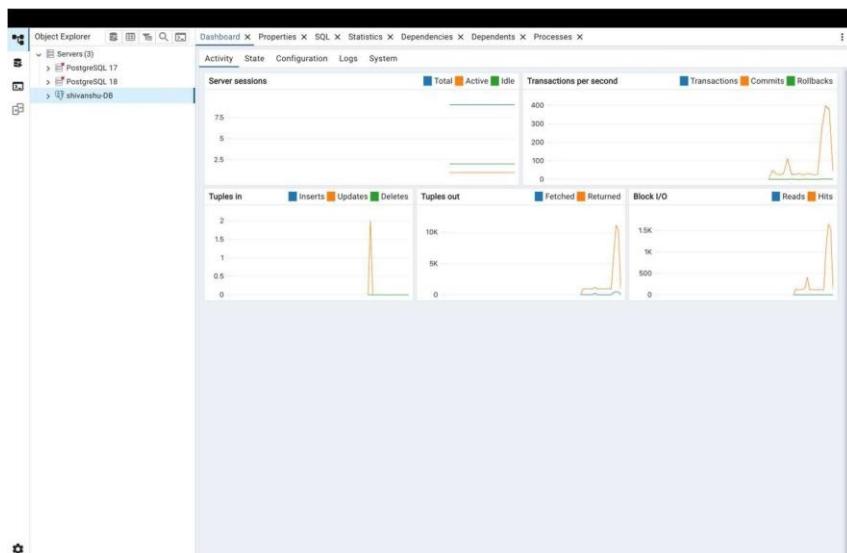
5432

15. Copying the RDS Endpoint for Connection

Connectivity & security

Endpoint & port	Networking	Security
Endpoint shivanshu-db.czrm8oossyvih.eu-north-1.rds.amazonaws.com	Availability Zone eu-north-1a	VPC security groups default (sg-0b4c8dc4647072099) <input checked="" type="checkbox"/> Active
Port 5432	VPC vpc-086507ee77883ae1b	Publicly accessible Yes
	Subnet group default-vpc-086507ee77883ae1b	Certificate authority Info rds-ca-rsa2048-g1
	Subnets subnet-0db6b45e321b7000a subnet-087377db566f545dc subnet-0bac42bdab1e990c5	Certificate authority date May 25, 2061, 03:29 (UTC+05:30)
	Network type IPv4	DB instance certificate expiration date October 30, 2026, 23:59 (UTC+05:30)

16. Launching pgAdmin on Local Machine

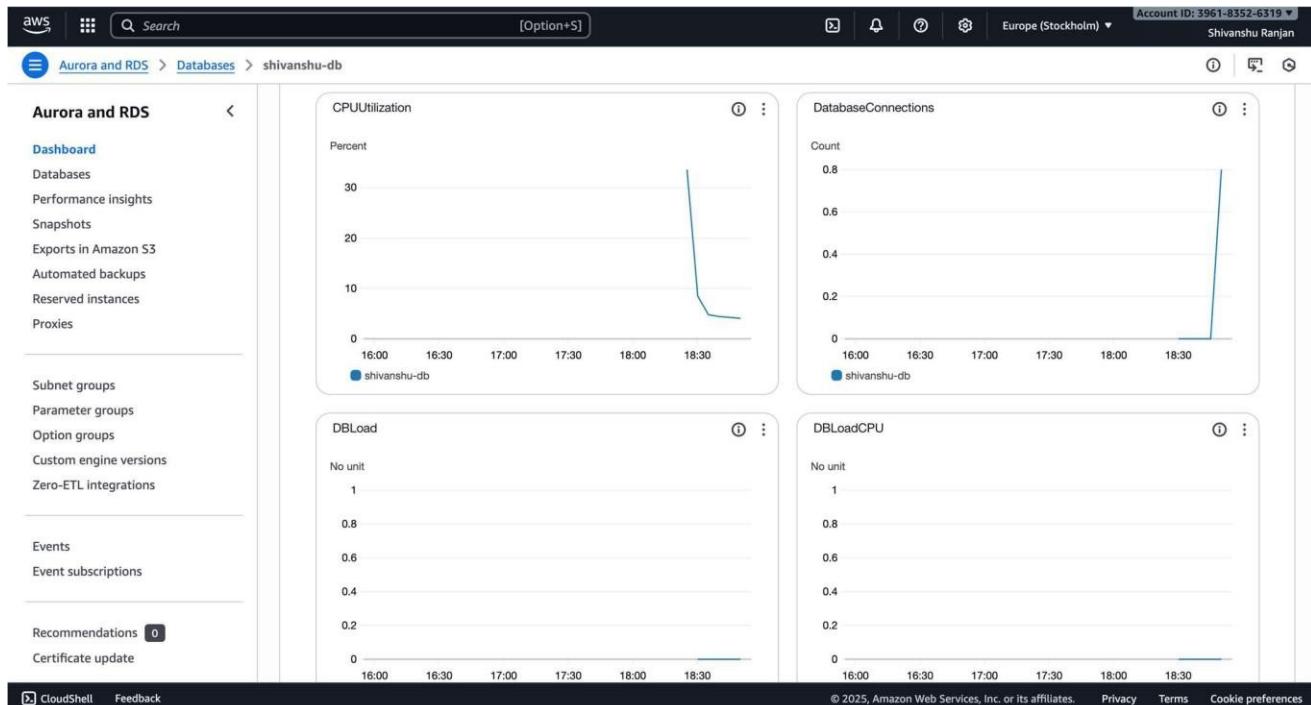




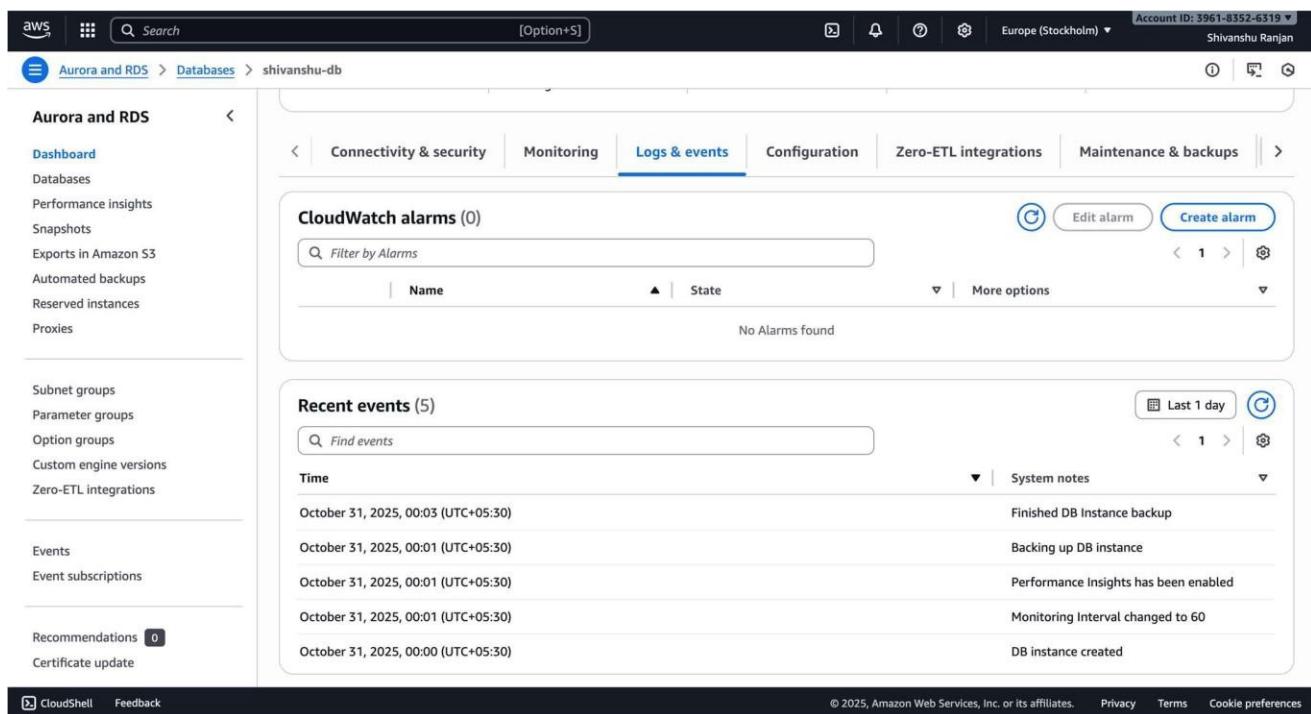
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17. Adding a New Server in pgAdmin



18. Entering Connection Details (Endpoint, Username, Password)





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19. Successful Connection to AWS RDS Database via pgAdmin

The screenshot shows the AWS RDS Databases page. On the left, there's a sidebar with 'Aurora and RDS' selected. The main area displays a table titled 'Databases (1)'. The table has columns for DB identifier, Status, Role, Engine, Region ..., Size, and Recommendations. One row is visible, showing 'prabhakar-db' as the DB identifier, 'Available' as the status, 'Instance' as the role, 'PostgreSQL' as the engine, 'eu-north-1c' as the region, 'db.t4g.micro' as the size, and no recommendations. At the bottom of the page, there are links for CloudShell, Feedback, Privacy, Terms, and Cookie preferences.

DB identifier	Status	Role	Engine	Region ...	Size	Recommendations
prabhakar-db	Available	Instance	PostgreSQL	eu-north-1c	db.t4g.micro	0

4. Learning Outcomes:

- Understand the fundamental concepts and benefits of using Amazon RDS for relational database management in the cloud.
- Gain practical knowledge of creating and configuring an RDS database instance on AWS.
- Learn how to manage and secure database access using AWS security groups.
- Develop skills to connect a local pgAdmin client to a cloud-hosted RDS instance.
- Be able to monitor, manage, and test database connectivity and performance in a cloud environment.