



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Worksheet 9

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Semester: 5th
Subject Name: ADBMS

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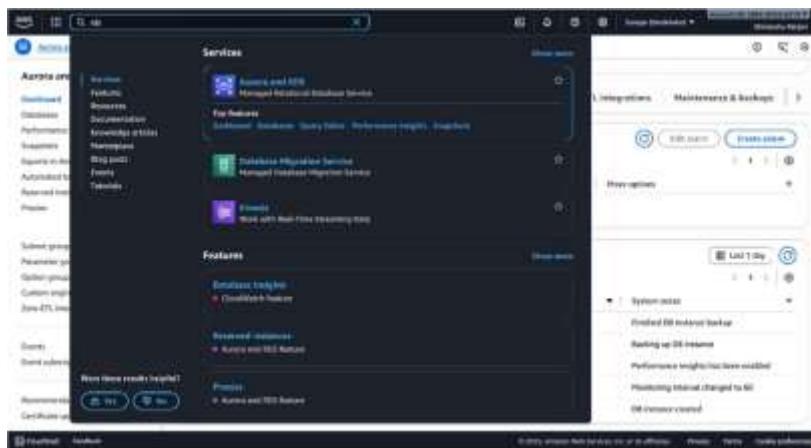
1. Aim: To understand and implement the setup of Amazon Relational Database Service (AWS RDS) by creating a database instance, configuring security groups, and establishing a secure connection between the local pgAdmin tool and the RDS instance hosted on the AWS Cloud.

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





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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, 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 search bar, a 'Databases (0)' section with a 'Create database' button, and a central illustration of a robot standing next to a cloud. Below the illustration, it says 'No resources' and 'No resources to display'. At the bottom, there are links for Classified, Feedback, © 2025 Amazon Web Services, Inc. or its affiliates, Privacy, Terms, and Cookie preferences.

3. Amazon RDS Dashboard Overview

The screenshot shows the Amazon RDS Dashboard. The left sidebar includes links for Dashboard, 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' (listing DB instances, DB clusters, snapshots, and automated options), 'Explore RDS' (activity status, start tutorial, and completion date), 'Create a database' (instructions and 'Create a database' button), and 'Recommended services' (no recommendations yet). At the bottom, there are links for Classified, Feedback, © 2025 Amazon Web Services, Inc. or its affiliates, Privacy, Terms, and Cookie preferences.



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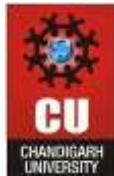
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4. Creating a New Database Instance

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 and an option to 'Upgrade plan'. Below that, under 'Choose a database creation method', the 'Standard create' option is selected, indicating access to all configuration options. In the 'Configuration' section, 'PostgreSQL' is chosen as the engine type, highlighted with a blue border. Other options shown are Aurora (MySQL-Compatible), MySQL, MariaDB, and Oracle. At the bottom of the page, there are links for CloudShell, Feedback, and various AWS links like Privacy, Terms, and Cookie preferences.

5. Selecting PostgreSQL as Database Engine

This screenshot continues from the previous one, showing the 'Create database' page. The 'PostgreSQL' engine type is now selected in the 'Engine type' dropdown. The 'DB instance identifier' field contains 'shivanshu-DB', and the 'Master username' field contains 'postgres'. Under 'Credentials management', the 'Self managed' option is selected, allowing the user to create their own password. The 'Master password' field is filled with a password, and the 'Confirm master password' field is also filled. The 'Password strength' bar is at 'Medium'. At the bottom, there are links for CloudShell, Feedback, and various AWS links like Privacy, Terms, and Cookie preferences.



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6. Choosing Deployment Option and Template

VPC security group: default
Publicly accessible: No
Database port: 5432
DB instance identifier: shivanshu-DB
DB engine version: 17.4
DB parameter group: default.postgres17
Monitoring type: Database Insights - Standard
Performance insights: Enabled
Monitoring: Enabled
Maintenance: Auto minor version upgrade enabled
Delete protection: Not enabled

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.

Create database

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

Creating database shivanshu-db
Your database might take a few minutes to launch. You can use settings from shivanshu-db to simplify configuration of suggested database add-ons while we finish creating your DB for you.

DB identifier	Status	Role	Engine	Region	Size
shivanshu-db	Creating	Instance	PostgreSQL	Europe (Stockholm)	db.t4g.micro

Databases (1)

View connection details

Group resources Modify Actions Create database

Filter by database

DB identifier Status Role Engine Region Size

shivanshu-db Creating Instance PostgreSQL Europe (Stockholm) db.t4g.micro

Aurora and RDS

- Dashboard
- 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

Certificate updates

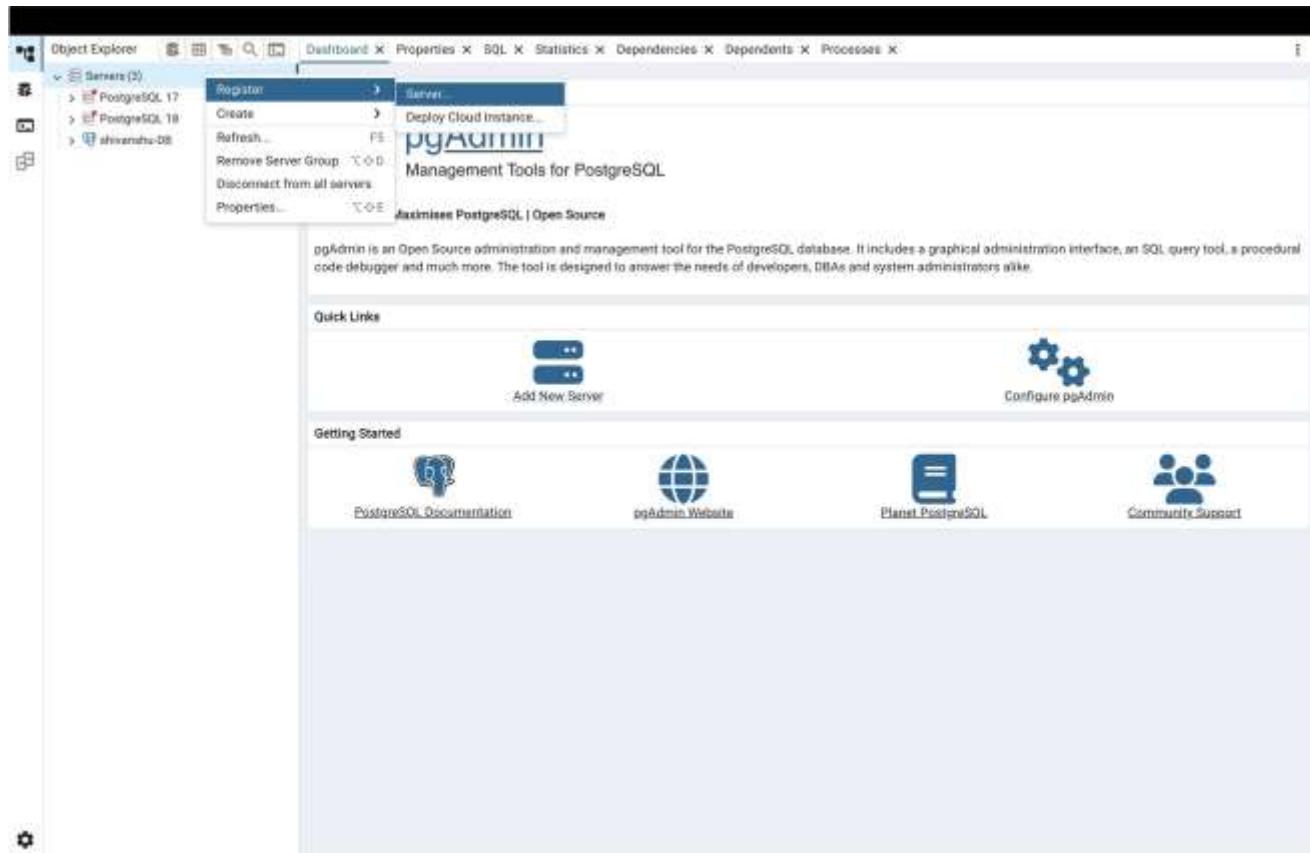
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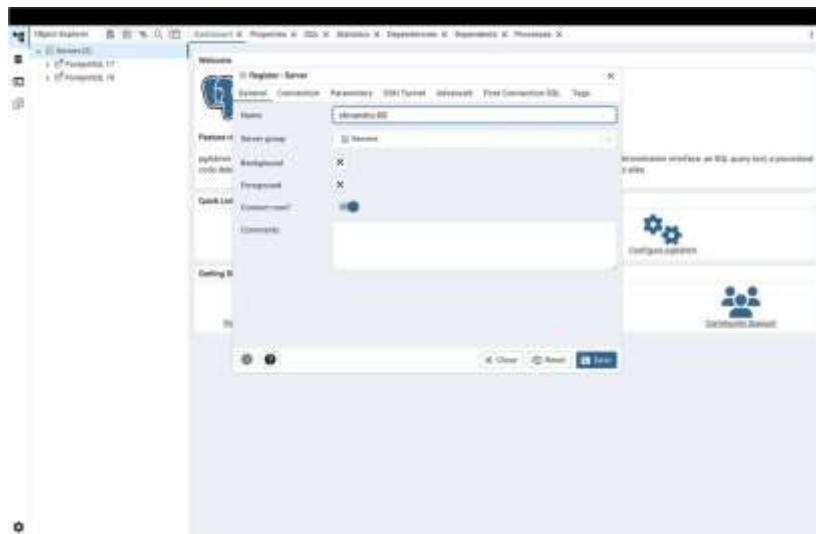
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8. Setting Up Instance Size and Storage



9. Configuring Connectivity and VPC Settings

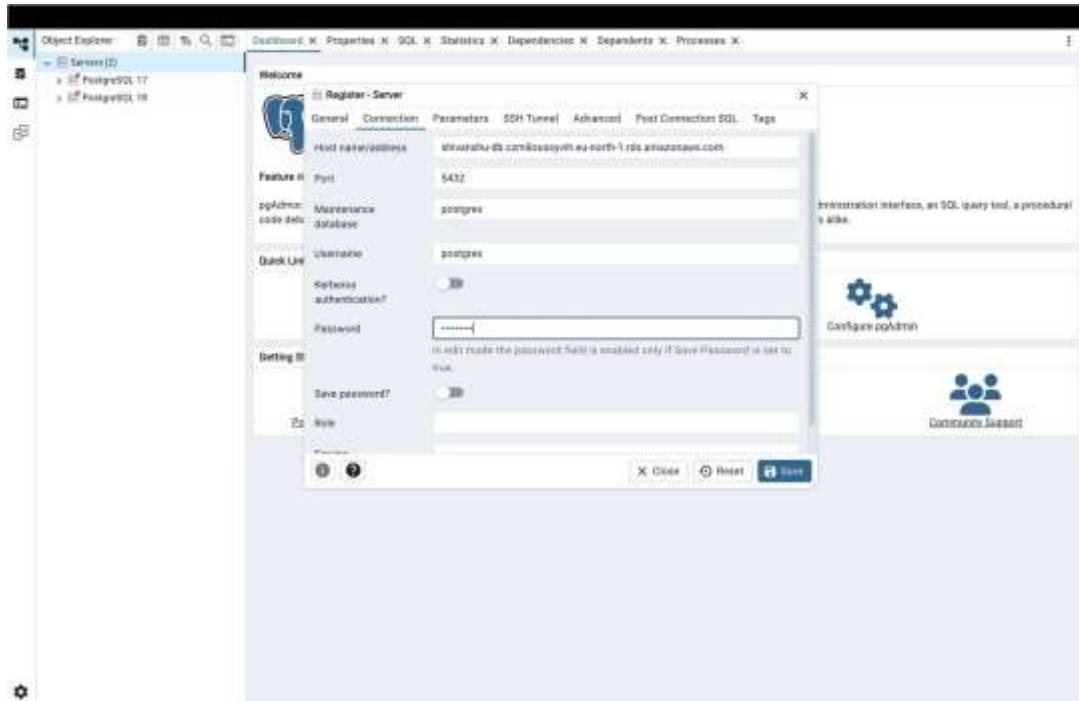




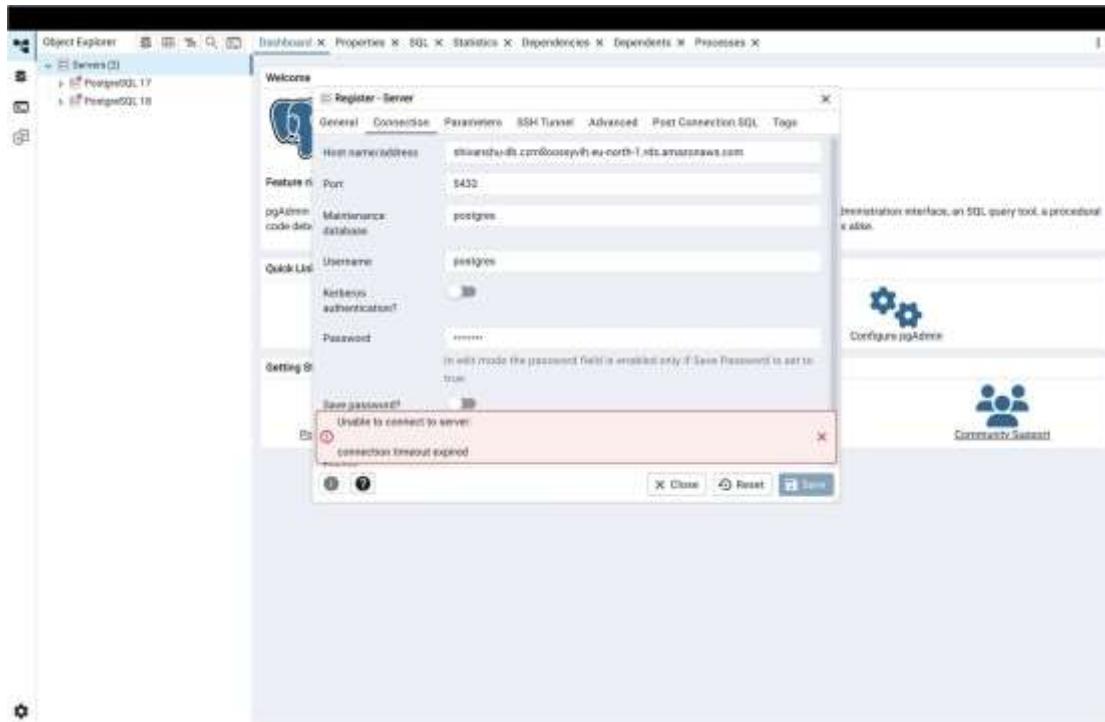
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10. Gr Setting Up Security Groups for RDS Access



11. Additional Database Configuration Options





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12. Reviewing and Creating the Database Instance

The screenshot shows the AWS RDS console for the 'shivanshu-db' database instance. The left sidebar includes links for Aurora and RDS, 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, and Certificate update. The main summary panel displays the DB identifier (shivanshu-db), Status (Available), Role (Instance), Engine (PostgreSQL), and Region & AZ (eu-north-1a). Below the summary, tabs for Connectivity & security, Monitoring, Logs & events, Configuration, Zero-ETL integrations, and Maintenance & backups are visible. The Connectivity & security tab is selected, showing details like Endpoint (shivanshu-db.cmboosyyvh.eu-north-1.rds.amazonaws.com), Port (5432), VPC (vpc-086507ee77883ae1b), Availability Zone (eu-north-1a), Subnet group (default-vpc-086507ee77883ae1b), and Subnets (subnet-0ff66b45a321b7000a, subnet-087377d566f545dc, subnet-0bac42bdab1e990c). Security details include VPC security groups (default sg-0b4c8dc4647072099) and Publicly accessible (No). Certificate authority (rds-ca-rs42048-g1) and certificate authority date (May 25, 2061, 03:29 (UTC+05:30)) are also listed. The DB instance certificate expiration is shown as May 25, 2061, 03:29 (UTC+05:30).

13. RDS Instance Creation in Progress

The screenshot shows the AWS EC2 Security Groups console for the 'sg-0b4c8dc4647072099 - default' security group. The left sidebar includes links for EC2, Security Groups, and Edit inbound rules. The main page displays the 'Edit inbound rules' section with an optional description field. It lists an existing rule for 'All traffic' (Type: All traffic, Protocol: TCP, Port range: 5432, Source: My IP) and a new rule for PostgreSQL (Protocol: TCP, Port range: 5432, Source: 47.247.118.50/32). Buttons for Add rule, Preview changes, and Save rules are at the bottom.



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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](#)

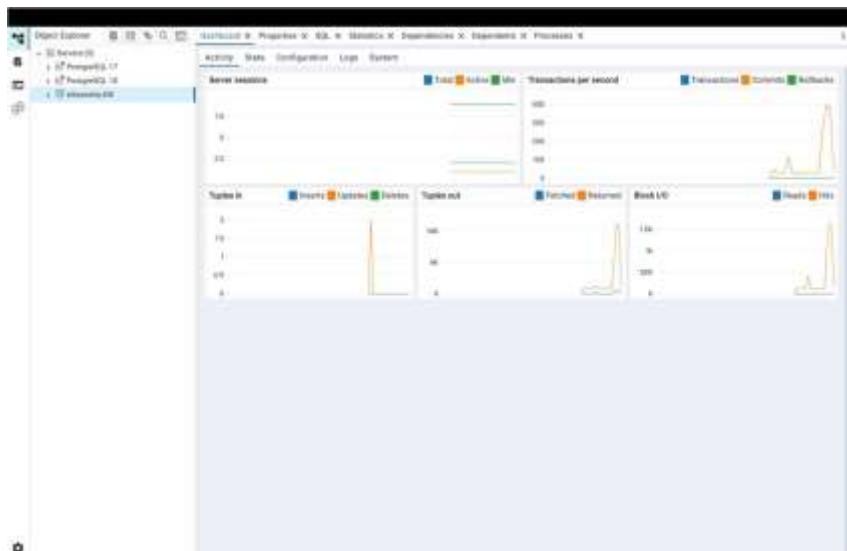
5432

15. Copying the RDS Endpoint for Connection

Connectivity & security

Endpoint & port	Networking	Security
Endpoint shivanshu-db.czr8oossyvih.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

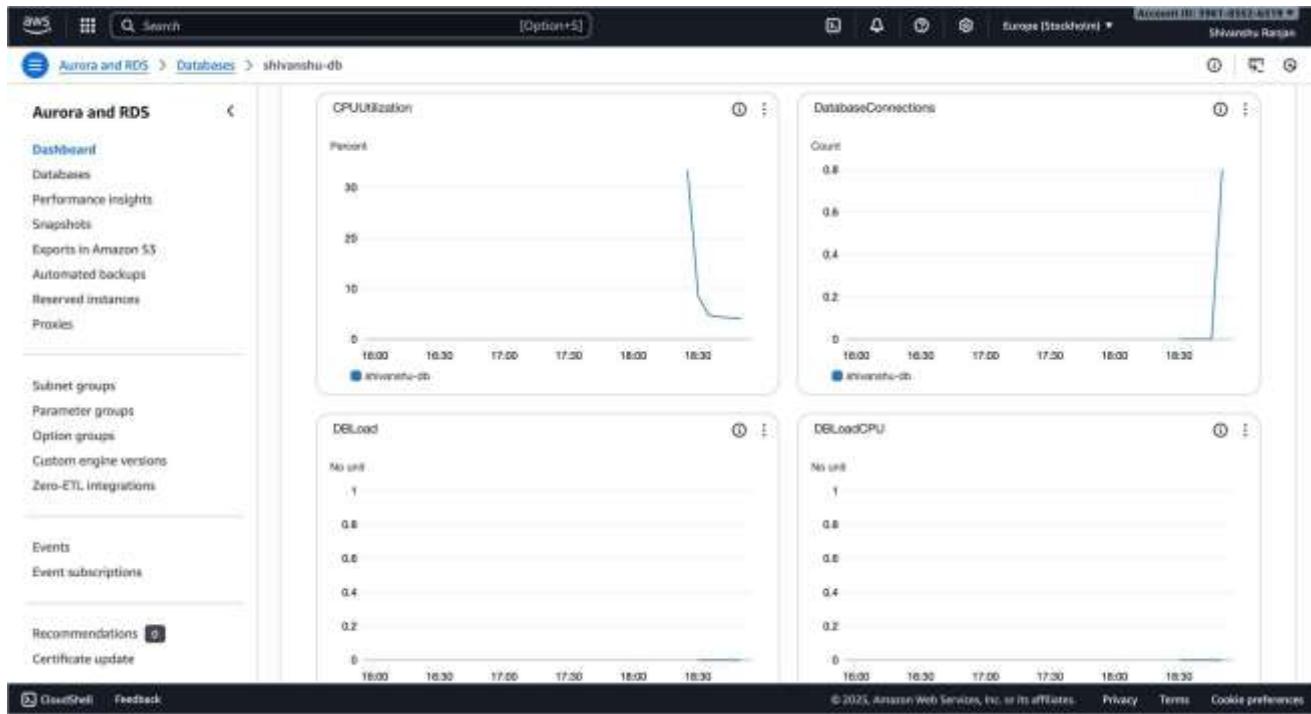




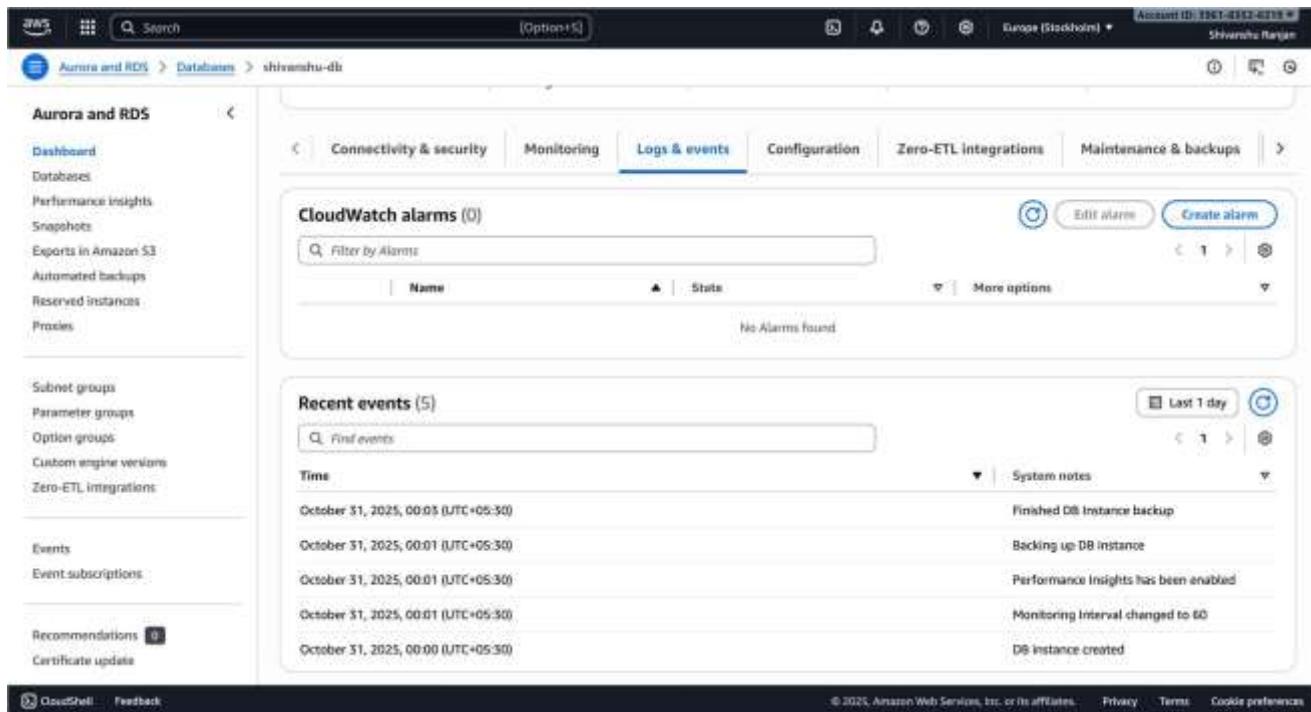
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17. Adding a New Server in pgAdmin



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 (Amazon Relational Database Service) console. The left sidebar navigation includes: Dashboard, Databases (selected), Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Processes, 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 table titled 'Deleting DB Instance shivanshu-db'. The table has columns: DB identifier, Status, Role, Engine, Region ..., and Size. One row is shown: shivanshu-db, Deleting, Instance, PostgreSQL, eu-north-1a, db.t4g.micro. Above the table, a blue header bar indicates 'Deleting DB Instance shivanshu-db'.

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.