

Worksheet 9

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Branch: CSE

Semester: 5th

Subject Name: ADBMS

UID: 23BCS11935

Section/Group: KRG 2-A

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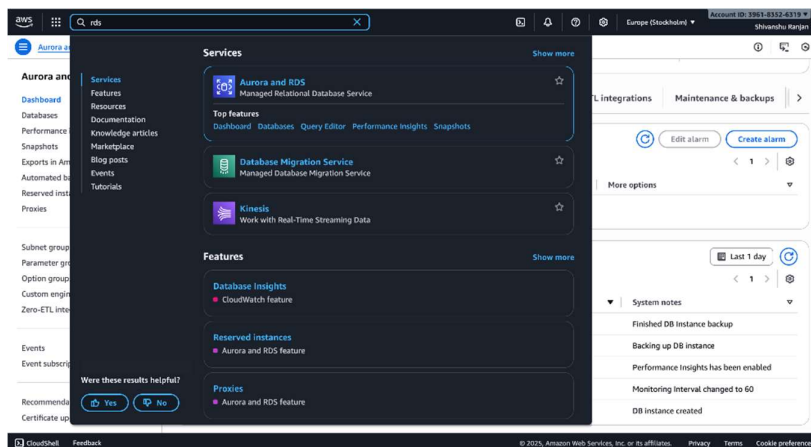
1. Aim: To understand and implement the setup of Amazon Relational Database Service (AWS RDS) by creating a database instance, configuring security groups, and establishing a secure connection between the local pgAdmin tool and the RDS instance hosted on the AWS Cloud.

2. Objective:

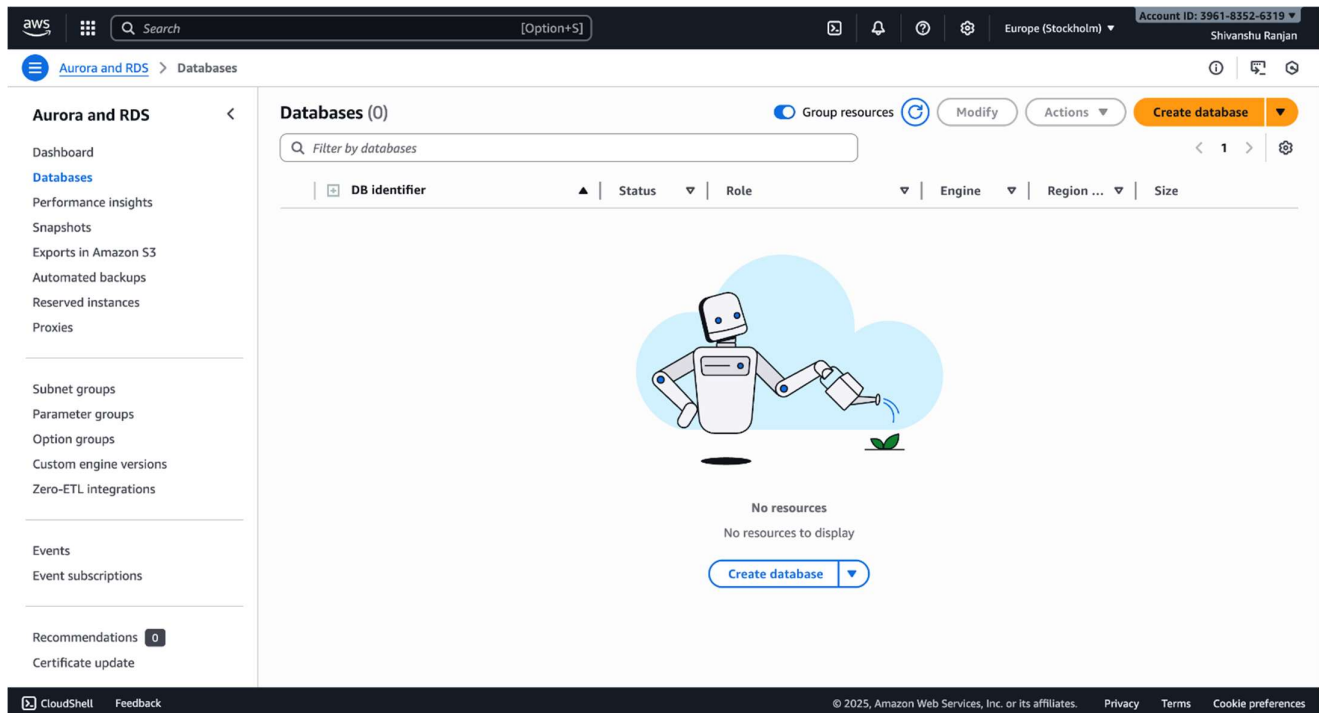
- To learn the basic concepts and features of Amazon Relational Database Service (AWS RDS).
- To create and configure a new RDS database instance on the AWS Management Console.
- To understand the role and configuration of security groups for controlling database access.
- To connect a local pgAdmin 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:

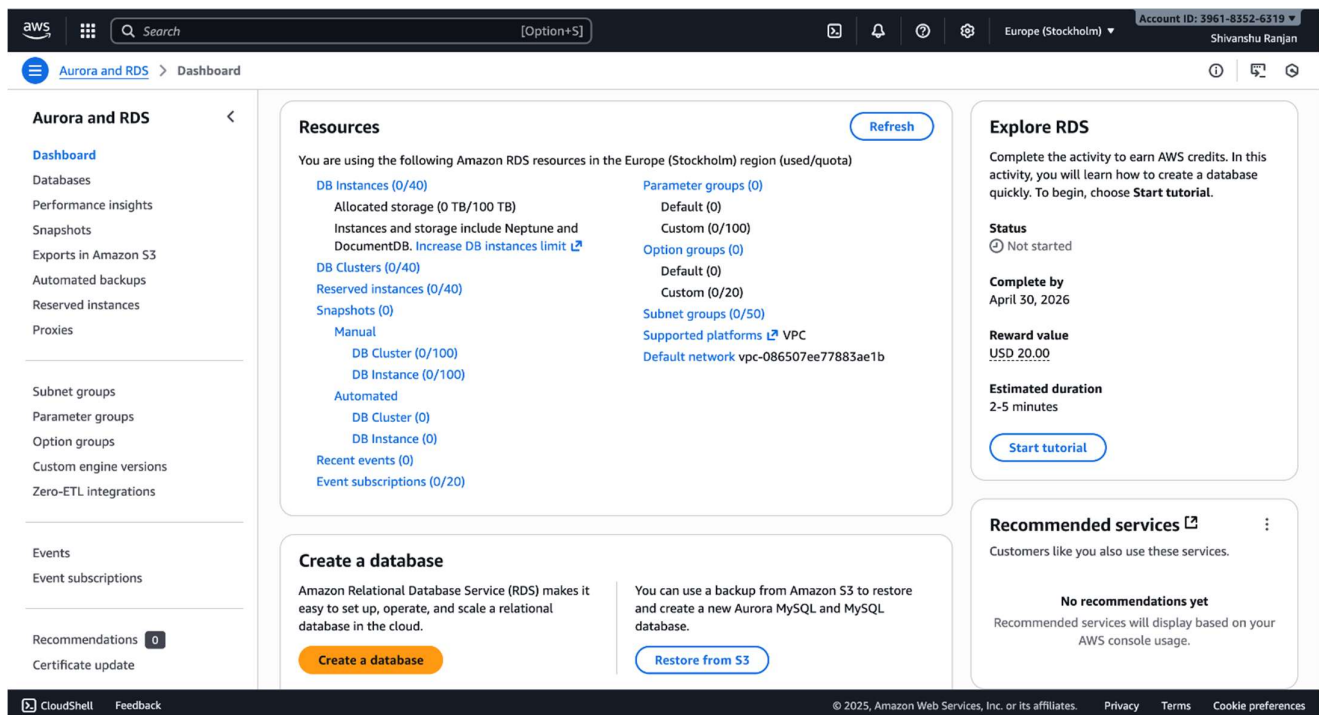
1. Sign-in



2. Navigating to RDS Service



3. Amazon RDS Dashboard Overview





4. Creating a New Database Instance

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](#)

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

☐ MySQL

☐ Oracle

CloudShell Feedback

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5. Selecting PostgreSQL as Database Engine

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.

shivanshu-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.

postgres

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 Neutral

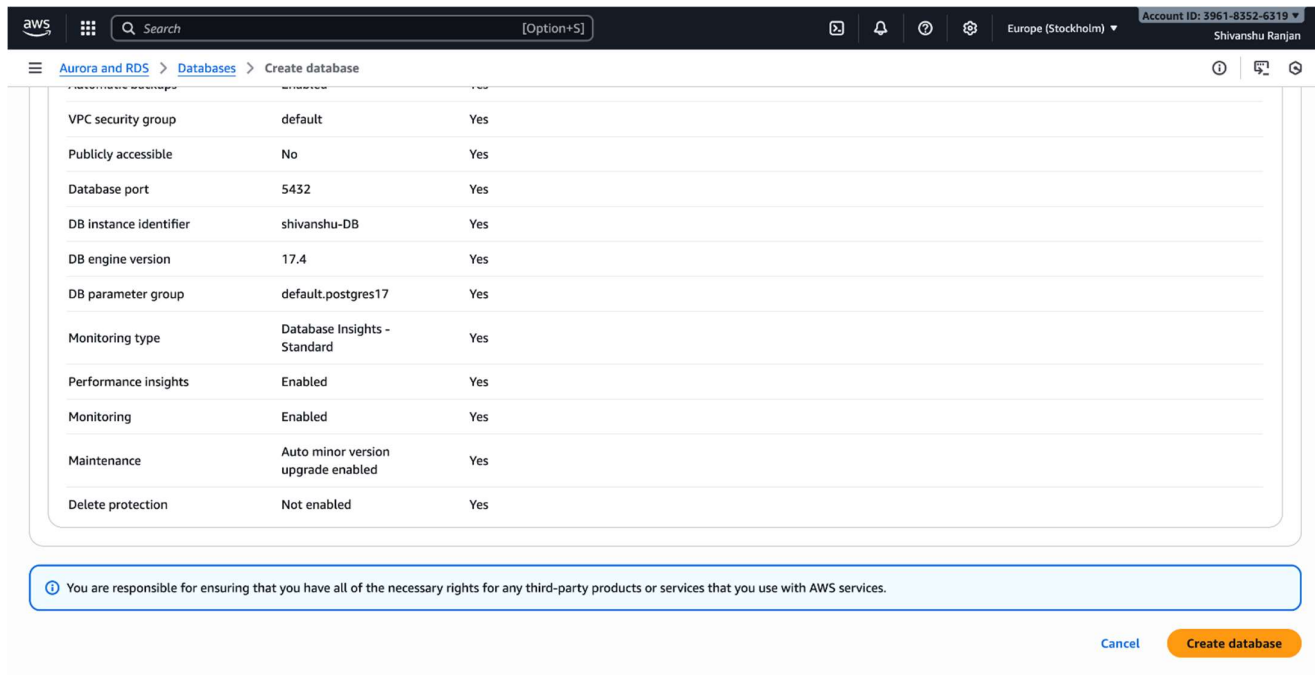
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' * @

Confirm master password Info

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6. Choosing Deployment Option and Template

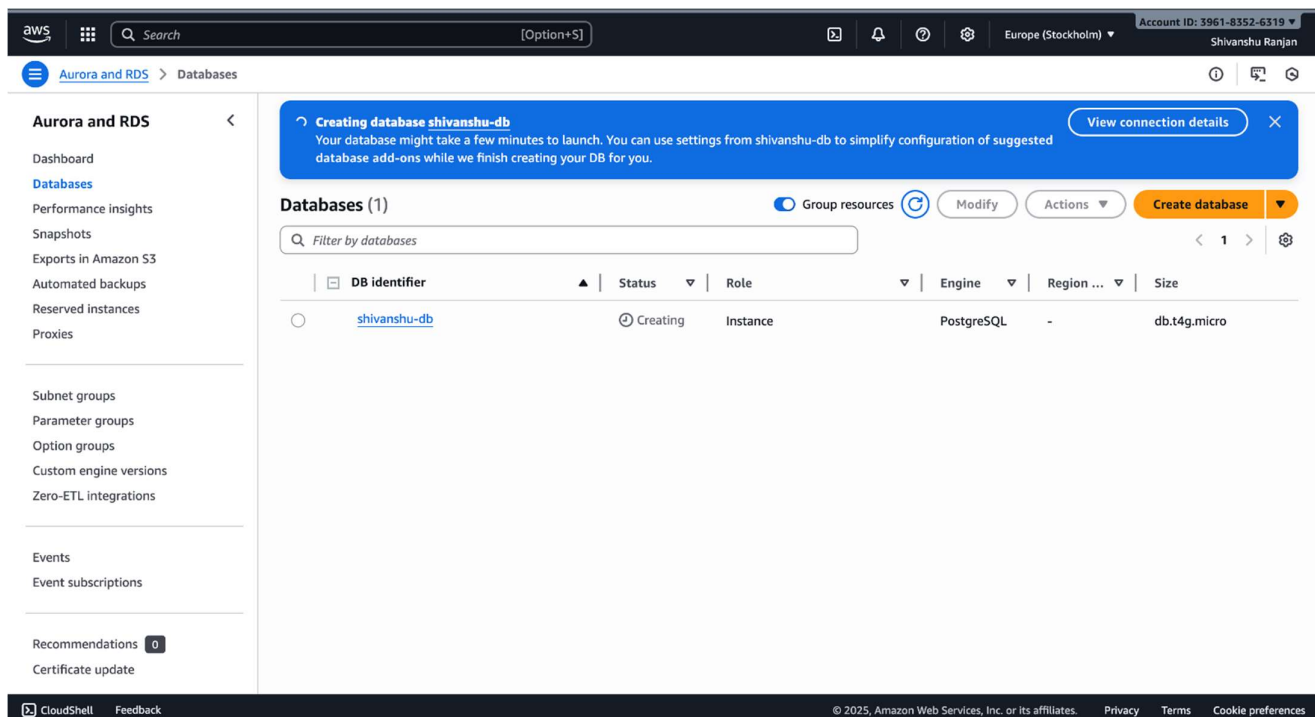


The screenshot shows the 'Create database' configuration page in the AWS Management Console. The 'Database settings' tab is selected, displaying a table of configuration options.

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

At the bottom, there is a blue box with a warning icon and text: "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." Below this box are two buttons: "Cancel" and "Create database".

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



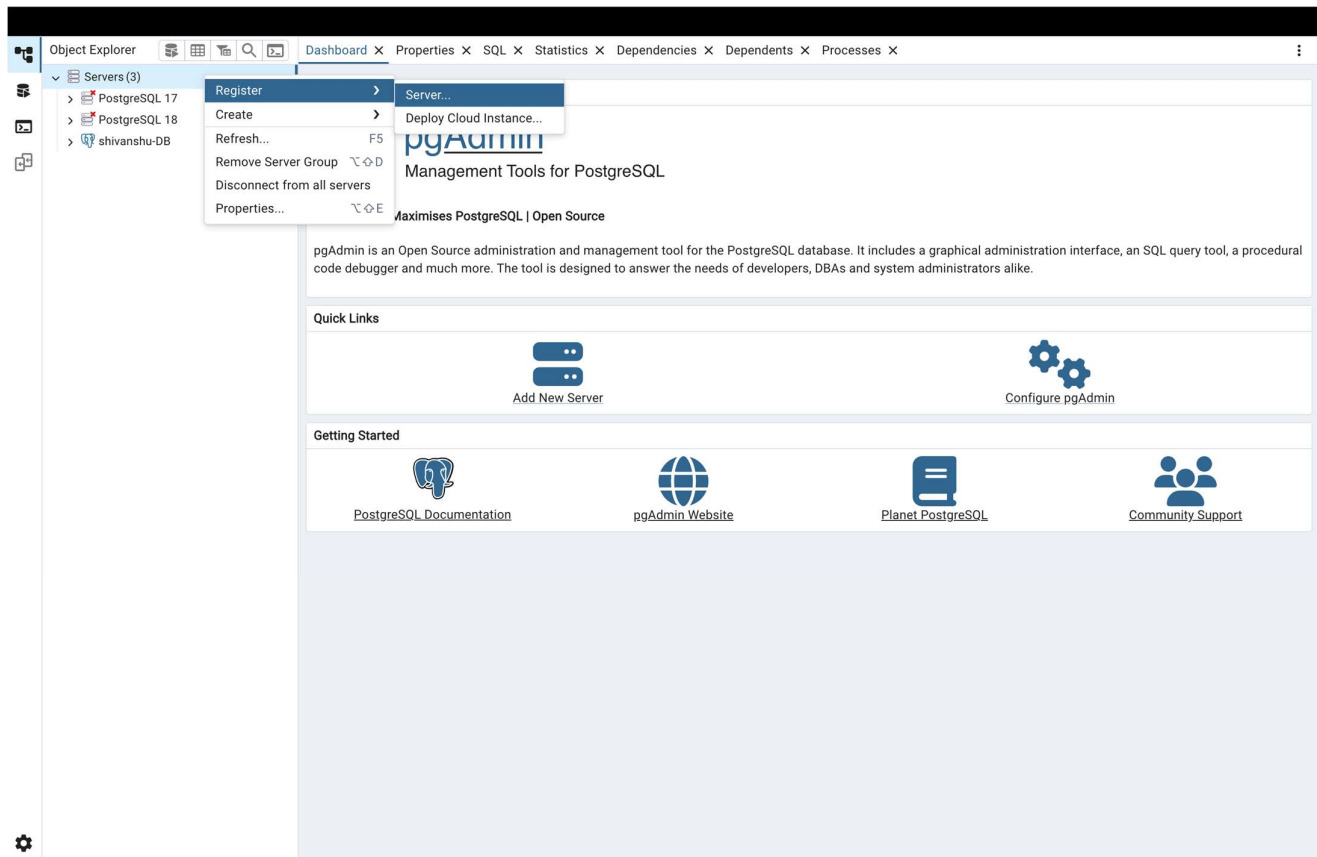
The screenshot shows the 'Databases' page in the AWS Management Console. A blue banner at the top indicates "Creating database shivanshu-db" and provides instructions: "Your database might take a few minutes to launch. You can use settings from shivanshu-db to simplify configuration of suggested database add-ons while we finish creating your DB for you." A "View connection details" button is also present.

Below the banner, the "Databases (1)" section is visible. It includes a search bar "Filter by databases" and a table of database instances.

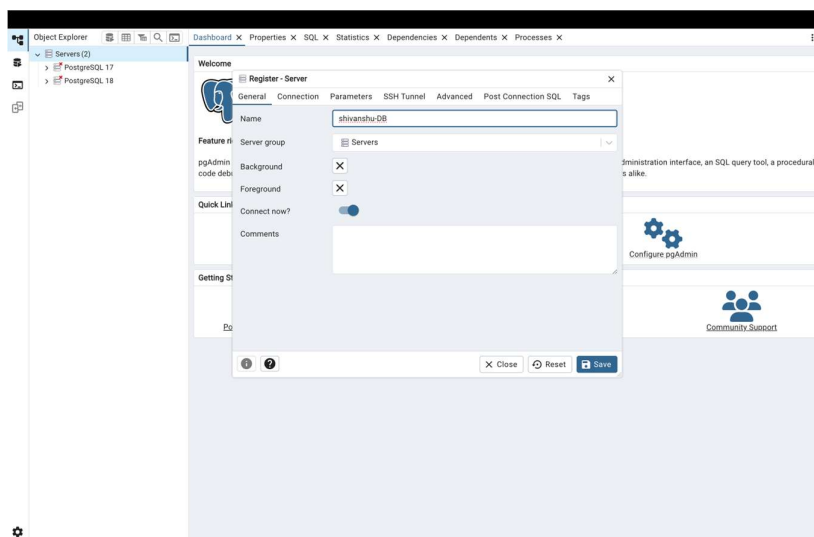
| DB identifier | Status | Role | Engine | Region ... | Size |
|------------------------------|----------|----------|------------|------------|--------------|
| shivanshu-db | Creating | Instance | PostgreSQL | - | db.t4g.micro |

The left sidebar shows the navigation menu for "Aurora and RDS", with "Databases" selected. The bottom of the page features a footer with "CloudShell", "Feedback", and copyright information: "© 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences".

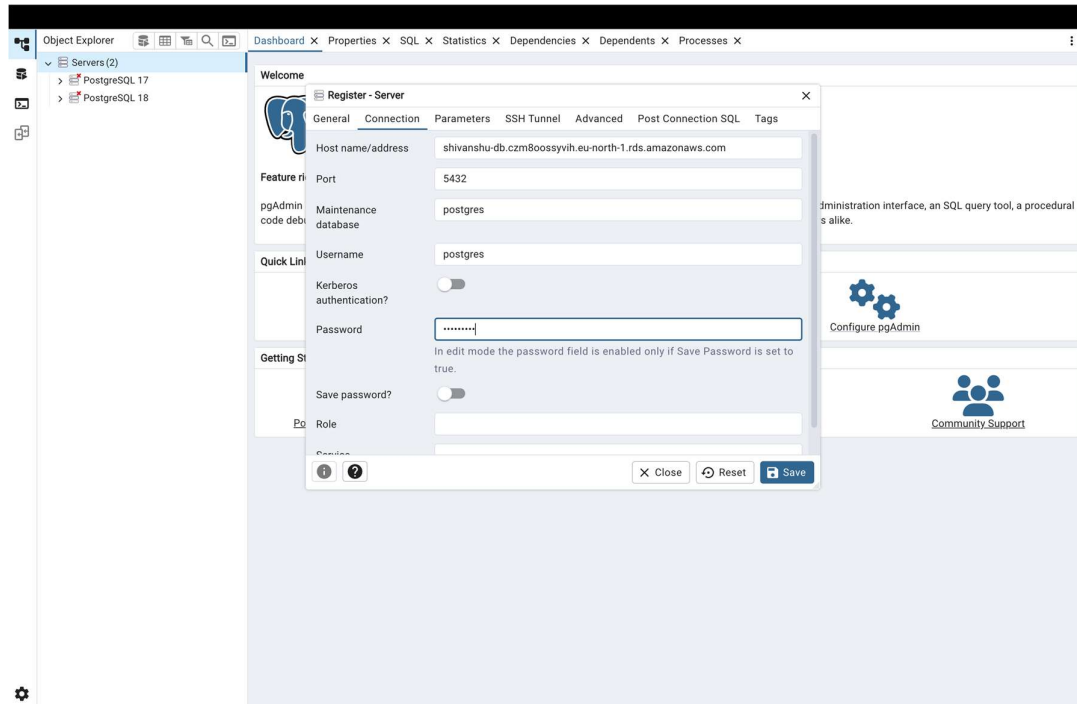
8. Setting Up Instance Size and Storage



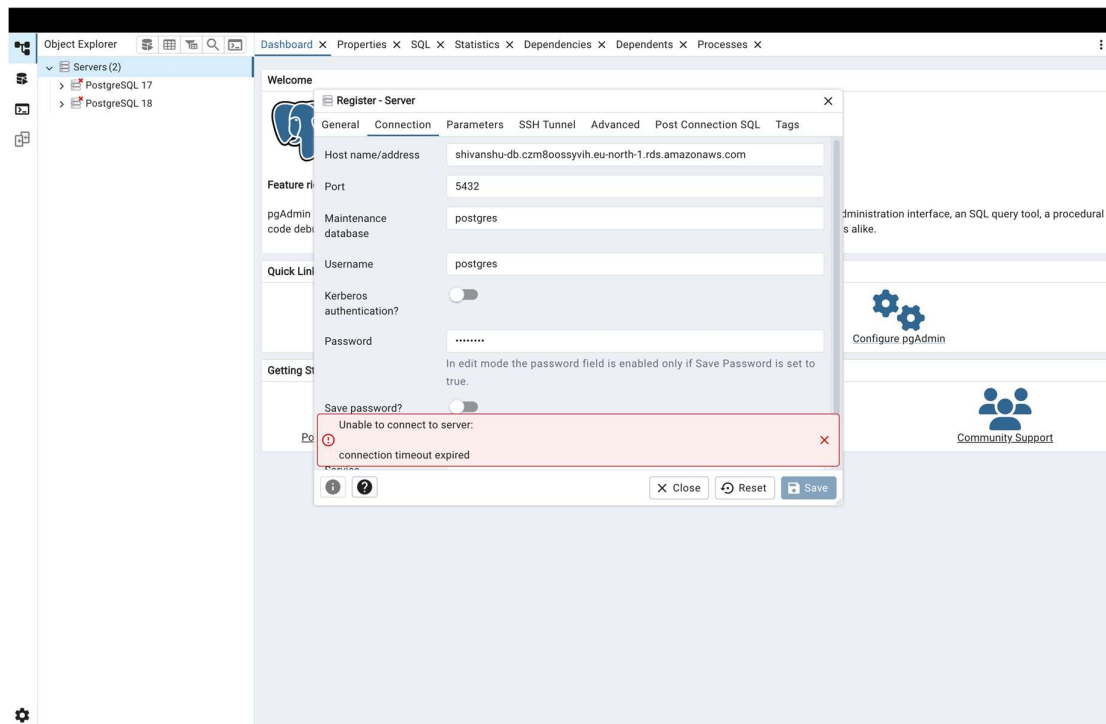
9. Configuring Connectivity and VPC Settings



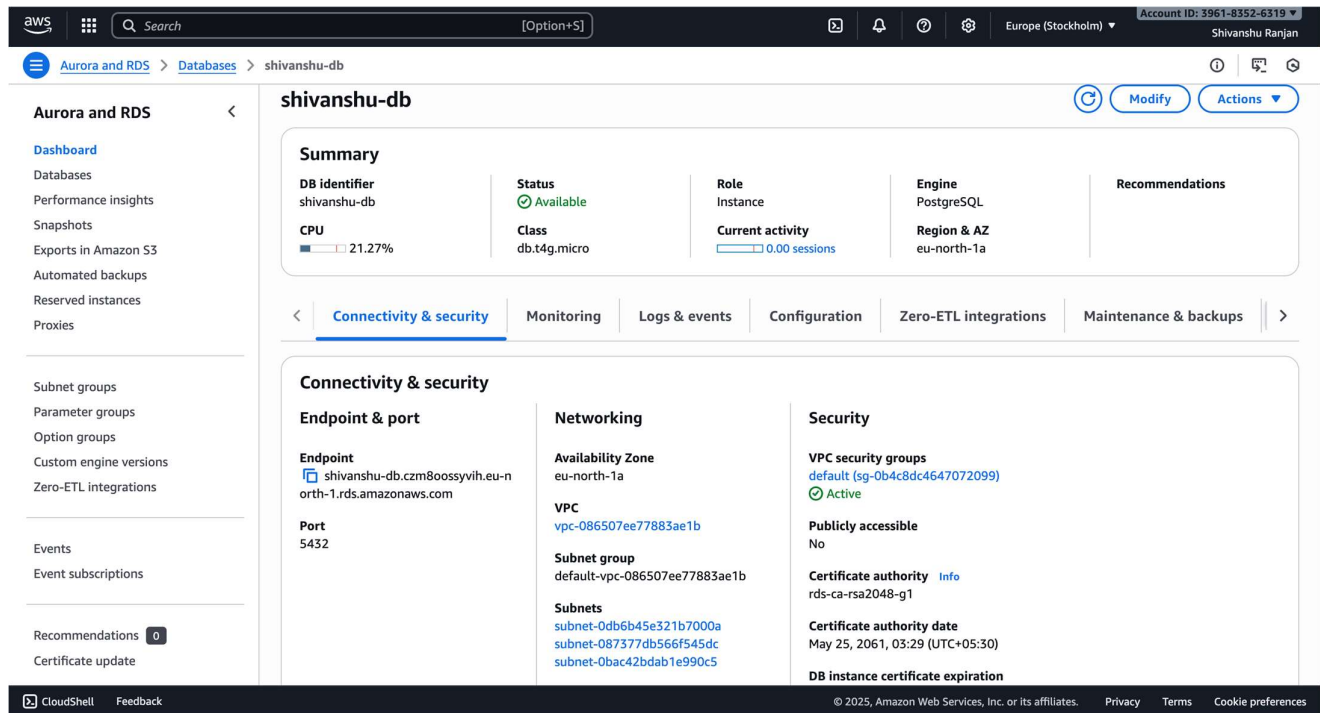
10. Gr Setting Up Security Groups for RDS Access



11. Additional Database Configuration Options



12. Reviewing and Creating the Database Instance

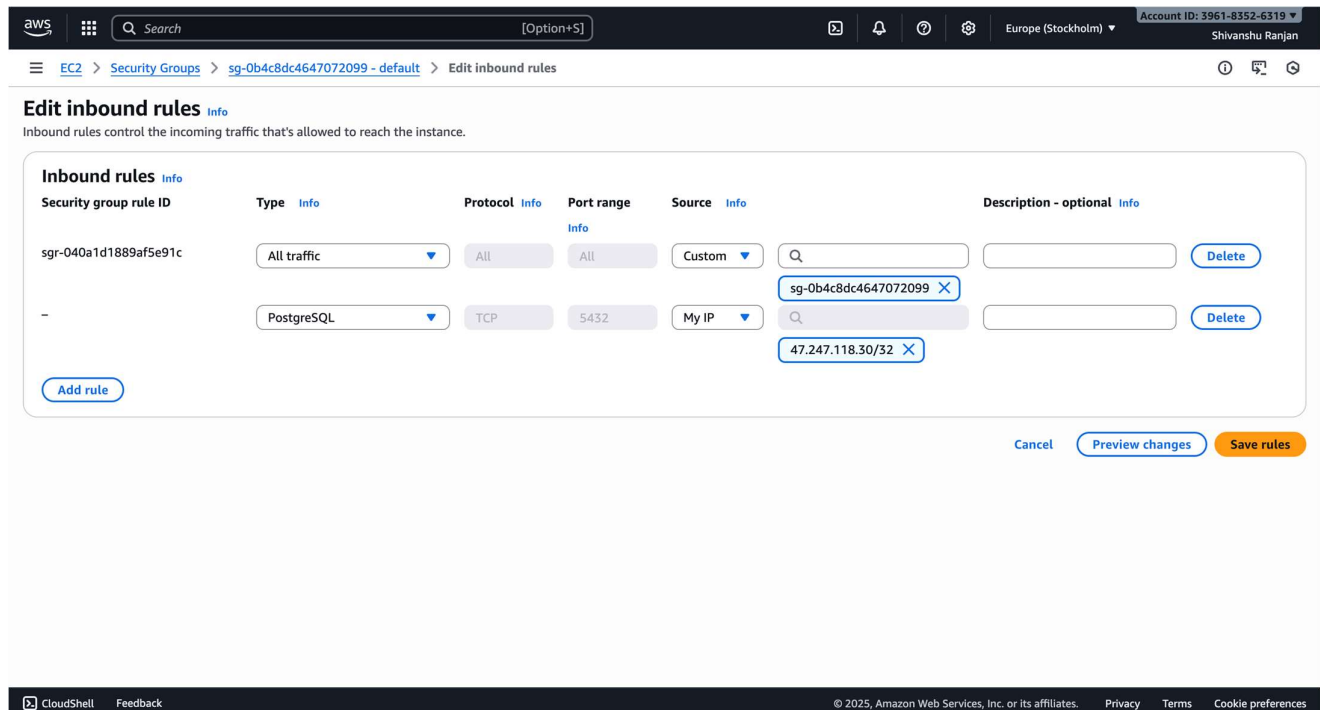


The screenshot shows the AWS Management Console interface for an Amazon RDS instance named 'shivanshu-db'. The left sidebar contains navigation links for Aurora and RDS, Databases, and various database management tasks. The main content area displays the instance details under the 'Summary' tab, including the DB identifier, status (Available), role (Instance), engine (PostgreSQL), and region (eu-north-1a). The 'Connectivity & security' tab is selected, showing the endpoint, port, availability zone, VPC, and security groups. The 'Security' section shows the VPC security groups and publicly accessible status.

| Summary | | | | |
|--------------------------------------|------------------------------|--|---------------------------------------|------------------------|
| DB identifier shivanshu-db | Status Available | Role Instance | Engine PostgreSQL | Recommendations |
| CPU 21.27% | Class db.t4g.micro | Current activity 0.00 sessions | Region & AZ eu-north-1a | |

| Connectivity & security | | |
|--|--|--|
| Endpoint & port | Networking | Security |
| Endpoint shivanshu-db.czm8oossvih.eu-north-1.rds.amazonaws.com | Availability Zone eu-north-1a | VPC security groups default (sg-0b4c8dc4647072099) Active |
| Port 5432 | VPC vpc-086507ee77883ae1b | Publicly accessible No |
| | Subnet group default-vpc-086507ee77883ae1b | Certificate authority rds-ca-rsa2048-g1 |
| | Subnets subnet-0db6b45e321b7000a subnet-087377db566f545dc subnet-0bac42bdab1e990c5 | Certificate authority date May 25, 2061, 03:29 (UTC+05:30) |
| | | DB instance certificate expiration |

13. RDS Instance Creation in Progress



The screenshot shows the AWS Management Console interface for editing inbound rules for a security group. The left sidebar contains navigation links for EC2, Security Groups, and Edit inbound rules. The main content area displays the 'Edit inbound rules' page, which includes a table of existing inbound rules and an 'Add rule' button. The table has columns for Security group rule ID, Type, Protocol, Port range, Source, and Description - optional. The 'Add rule' button is located at the bottom left of the table.

| Security group rule ID | Type | Protocol | Port range | Source | Description - optional |
|------------------------|-------------|----------|------------|--------|------------------------|
| sgr-040a1d1889af5e91c | All traffic | All | All | Custom | |
| - | PostgreSQL | TCP | 5432 | My IP | |

[Add rule](#)

[Cancel](#) [Preview changes](#) [Save rules](#)

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

Endpoint

[shivanshu-db.czm8oossyviu.eu-north-1.rds.amazonaws.com](#)

Port

5432

Networking

Availability Zone

eu-north-1a

VPC

[vpc-086507ee77883ae1b](#)

Subnet group

default-vpc-086507ee77883ae1b

Subnets

[subnet-0db6b45e321b7000a](#)

[subnet-087377db566f545dc](#)

[subnet-0bac42bdab1e990c5](#)

Network type

IPv4

Security

VPC security groups

[default \(sg-0b4c8dc4647072099\)](#)

✓ Active

Publicly accessible

Yes

Certificate authority [Info](#)

rds-ca-rsa2048-g1

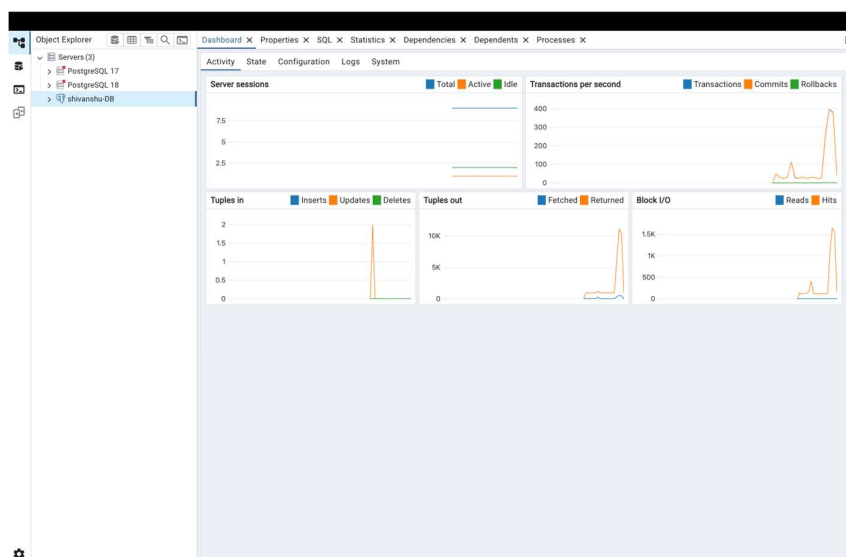
Certificate authority date

May 25, 2061, 03:29 (UTC+05:30)

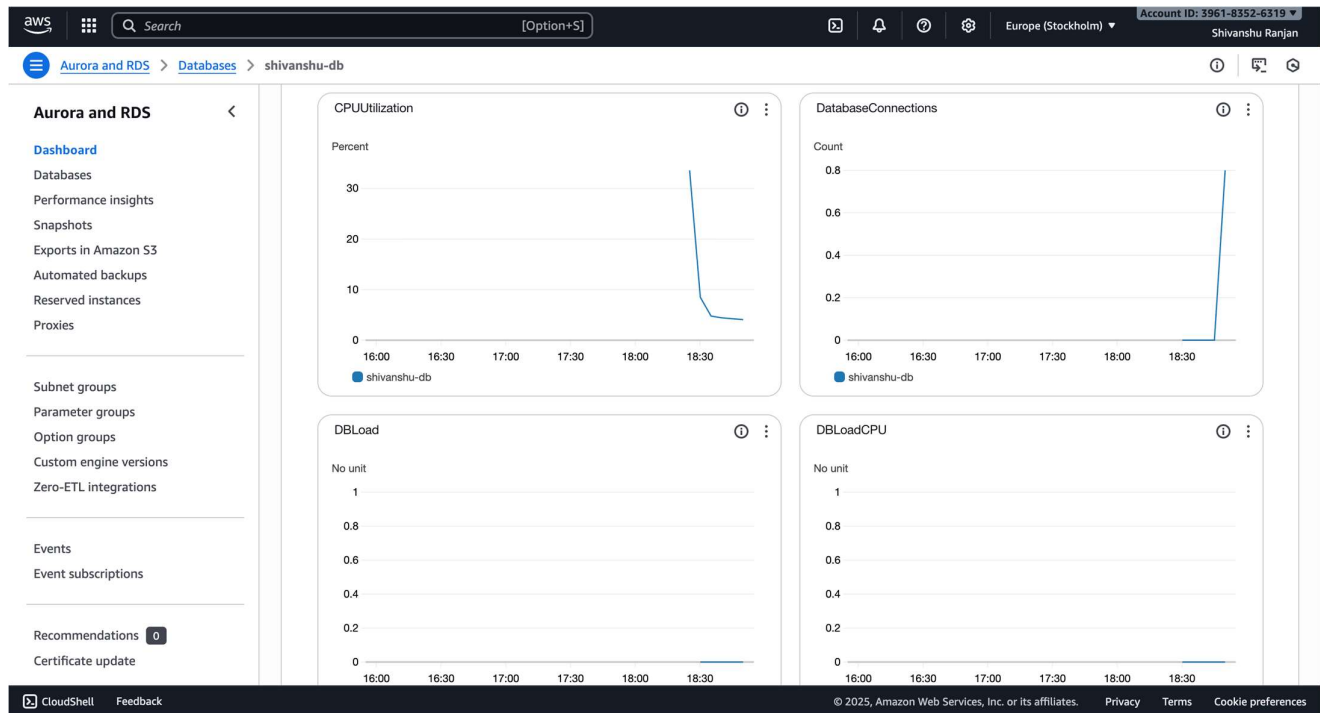
DB instance certificate expiration date

October 30, 2026, 23:59 (UTC+05:30)

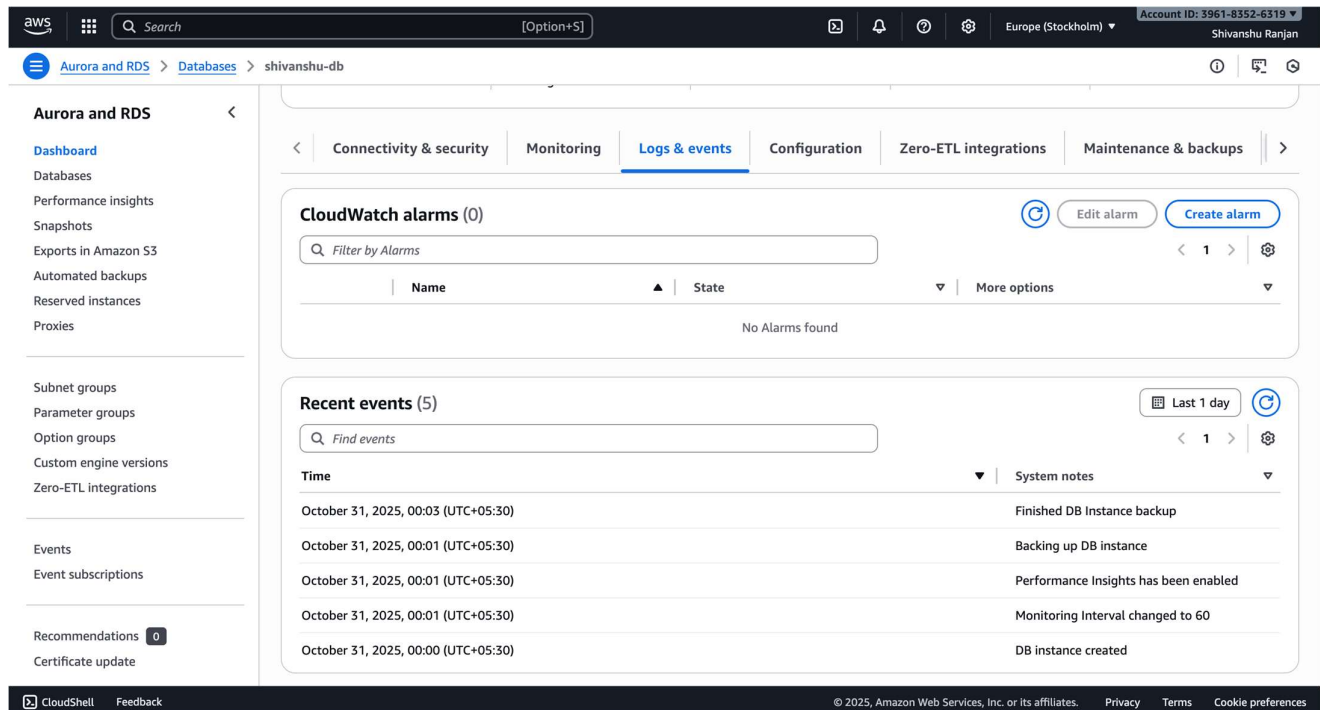
16. Launching pgAdmin on Local Machine



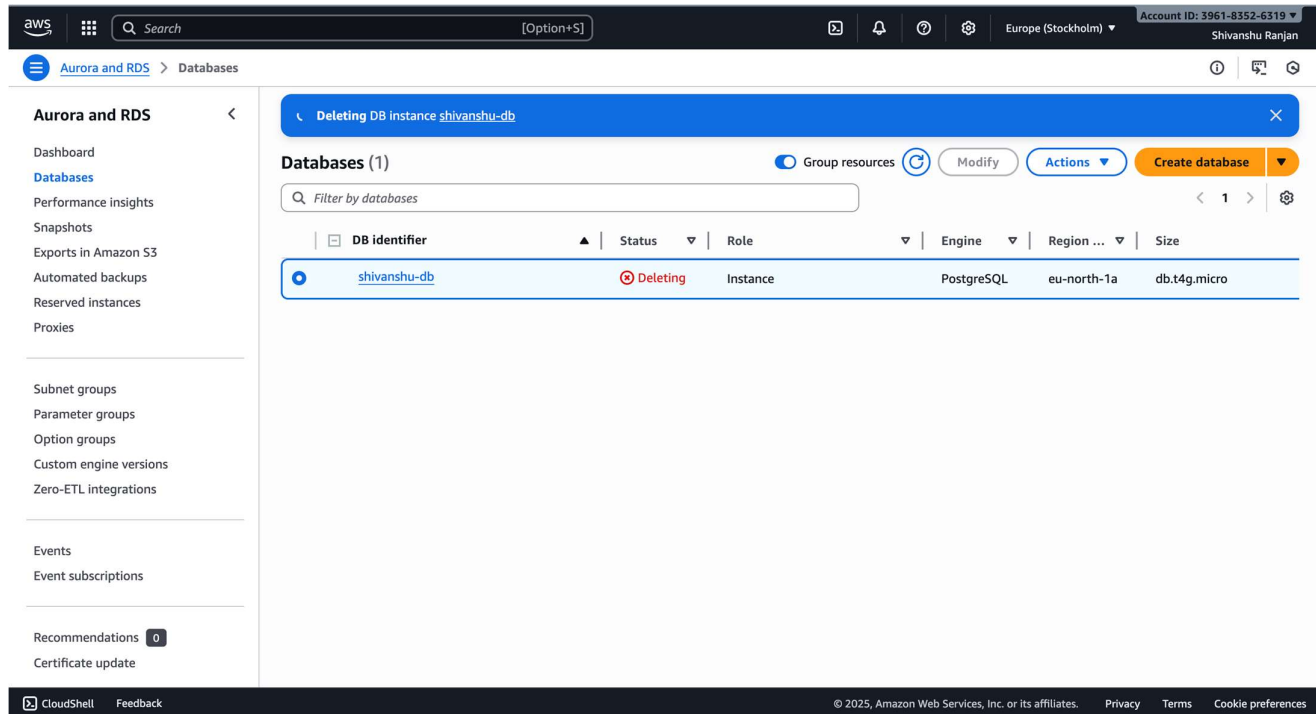
17. Adding a New Server in pgAdmin



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



19. Successful Connection to AWS RDS Database via pgAdmin



The screenshot displays the AWS Management Console interface. At the top, the navigation bar shows the AWS logo, a search bar, and the account ID: 3961-8352-6319. The main content area is titled 'Aurora and RDS' and 'Databases'. A blue banner at the top of the main area indicates 'Deleting DB instance shivanshu-db'. Below this, the 'Databases (1)' section shows a table with one entry:

| DB identifier | Status | Role | Engine | Region ... | Size |
|---------------|----------|----------|------------|-------------|--------------|
| shivanshu-db | Deleting | Instance | PostgreSQL | eu-north-1a | db.t4g.micro |

The left sidebar contains various navigation options under 'Aurora and RDS', including 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, and Certificate update.

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.