

Experiment 9

Student Name: Ankush

Branch: CSE

Semester: 5th

Subject Name: ADBMS

UID: 23BCS12742

Section/Group: KRG 3-B

Date of Performance: 31/10/2025

Subject Code: 23CSP-333

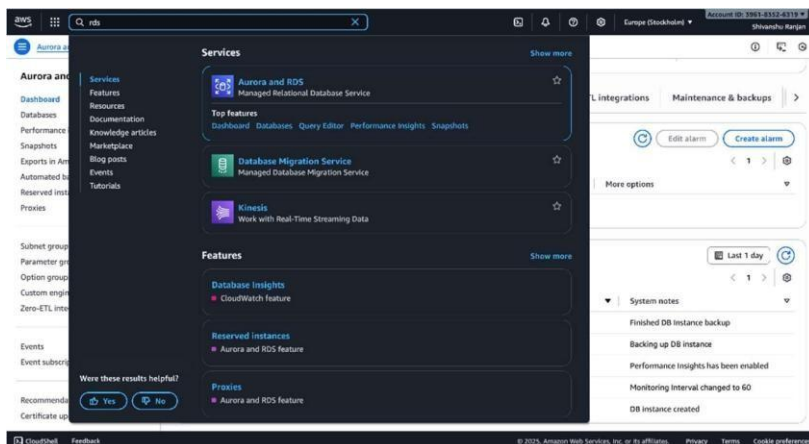
1. Aim: To understand and implement the setup of Amazon Relational Database Service (AWS RDS) by creating a database instance, configuring security groups, and establishing a secure connection between the local pgAdmin tool and the RDS instance hosted on the AWS Cloud.

2. Objective:

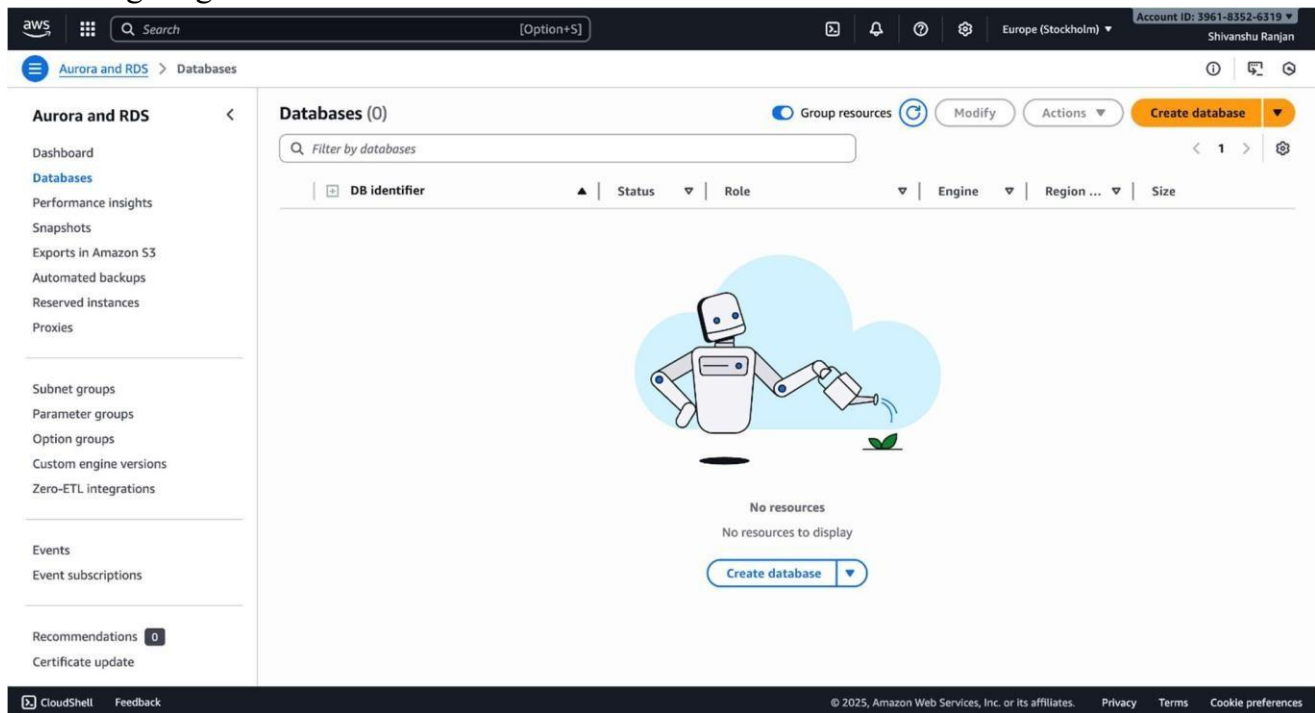
- To learn the basic concepts and features of Amazon Relational Database Service (AWS RDS).
- To create and configure a new RDS database instance on the AWS Management Console.
- To understand the role and configuration of security groups for controlling database access.
- To connect a local pgAdmin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



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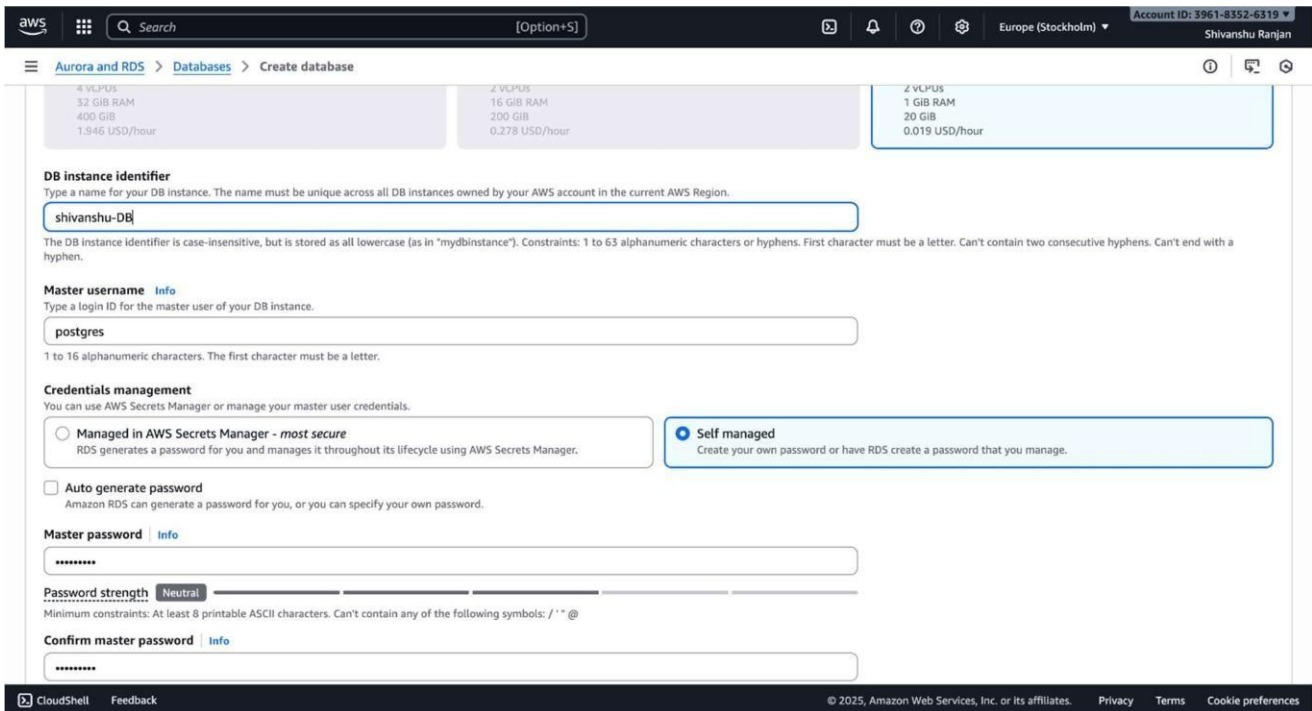
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The screenshot shows the AWS Aurora and RDS Dashboard for the Europe (Stockholm) region. The left sidebar contains navigation links for Aurora and RDS, including Databases, Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved 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 three sections: Resources, Explore RDS, and Recommended services. The Resources section lists various RDS resources such as DB Instances (0/40), Parameter groups (0), Option groups (0), 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), and Event subscriptions (0/20). The Explore RDS section provides information on completing the activity to earn AWS credits, including the status (Not started), completion date (April 30, 2026), reward value (USD 20.00), and estimated duration (2-5 minutes). The Recommended services section shows no recommendations yet.

4. Creating a New Database Instance

The screenshot shows the AWS Create Database page for the Europe (Stockholm) region. The page is titled "Create database" and includes a "Free plan has access to limited features and resources" warning. The "Choose a database creation method" section offers two options: "Standard create" and "Easy create". The "Configuration" section shows the "Engine type" dropdown menu with options for Aurora (MySQL Compatible), Aurora (PostgreSQL Compatible), MySQL, PostgreSQL, MariaDB, and Oracle. The PostgreSQL option is selected.

5. Selecting PostgreSQL as Database Engine



aws [Search] [Option+S] Europe (Stockholm) Account ID: 3961-8352-6319 Shivanshu Ranjan

Aurora and RDS > Databases > Create database

4 VCPU 32 GiB RAM 400 GiB 1.946 USD/hour	2 VCPU 16 GiB RAM 200 GiB 0.278 USD/hour	2 VCPU 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.
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.
☐ **Auto generate password**
Amazon RDS can generate a password for you, or you can specify your own password.

Master password [Info](#)
[Masked Password]
Password strength **Neutral**
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / * @
Confirm master password [Info](#)
[Masked Password]

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6. Choosing Deployment Option and Template



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aws

Search

[Option+S]

Europe (Stockholm)

Account ID: 3961-8352-6319

Shivanshu Ranjan

Aurora and RDS

Databases

Create database

Parameter	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

ⓘ 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.

Cancel

Create database

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



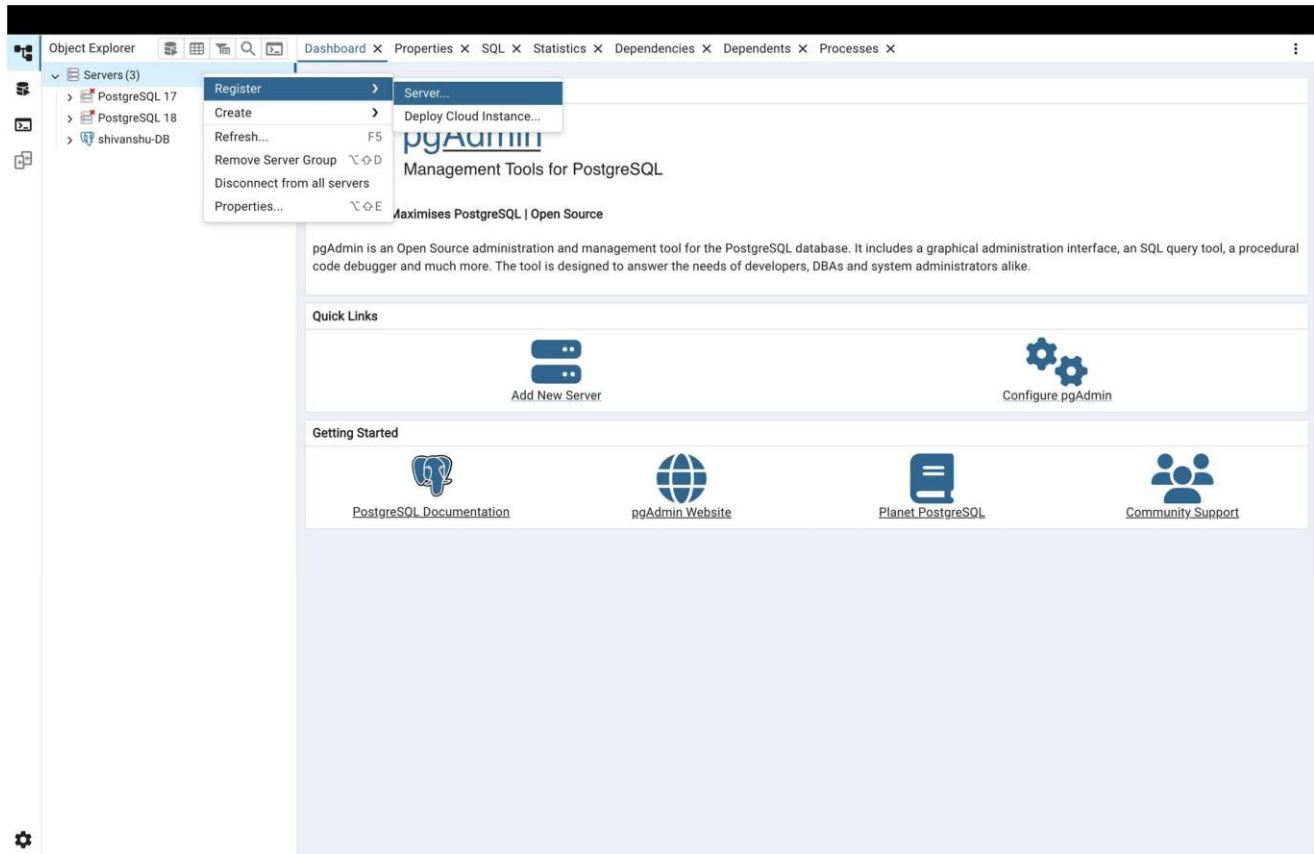
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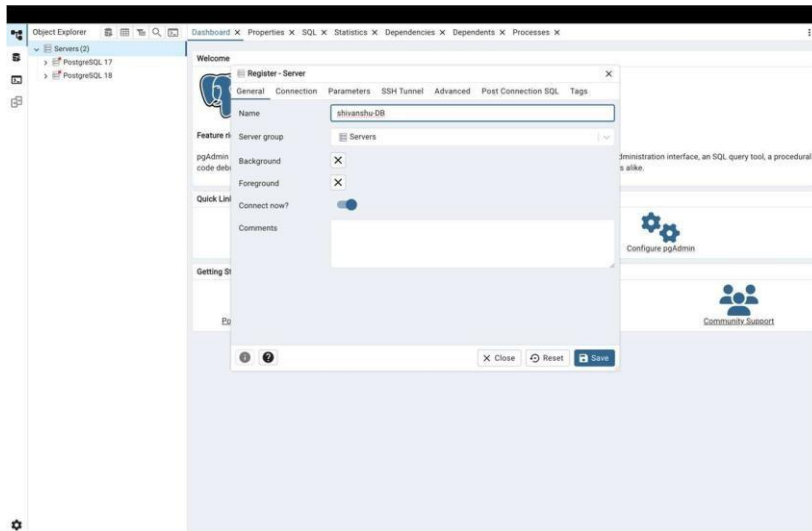
The screenshot displays the AWS Aurora and RDS console. At the top, a blue banner indicates the creation of a database named 'shivanshu-db'. Below this, the 'Databases (1)' section shows a table with one entry: 'shivanshu-db' in the 'Creating' status, using the 'PostgreSQL' engine and 'db.t4g.micro' instance type. The left sidebar contains navigation links for various RDS features, and the bottom footer shows the AWS CloudShell interface.

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

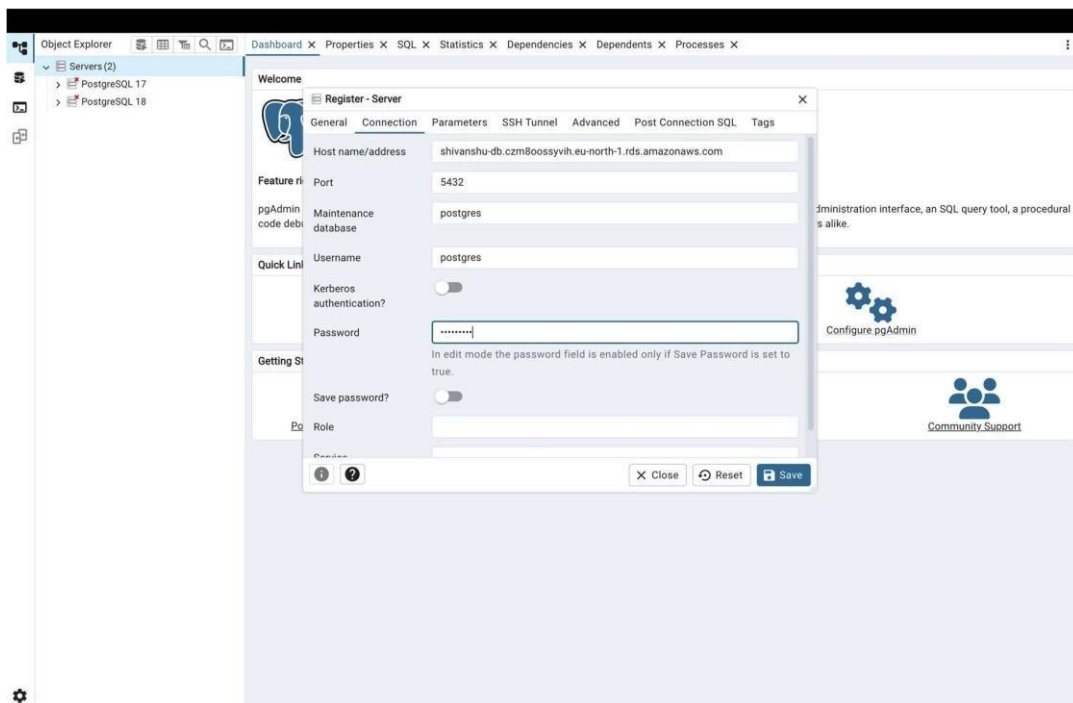
8. Setting Up Instance Size and Storage



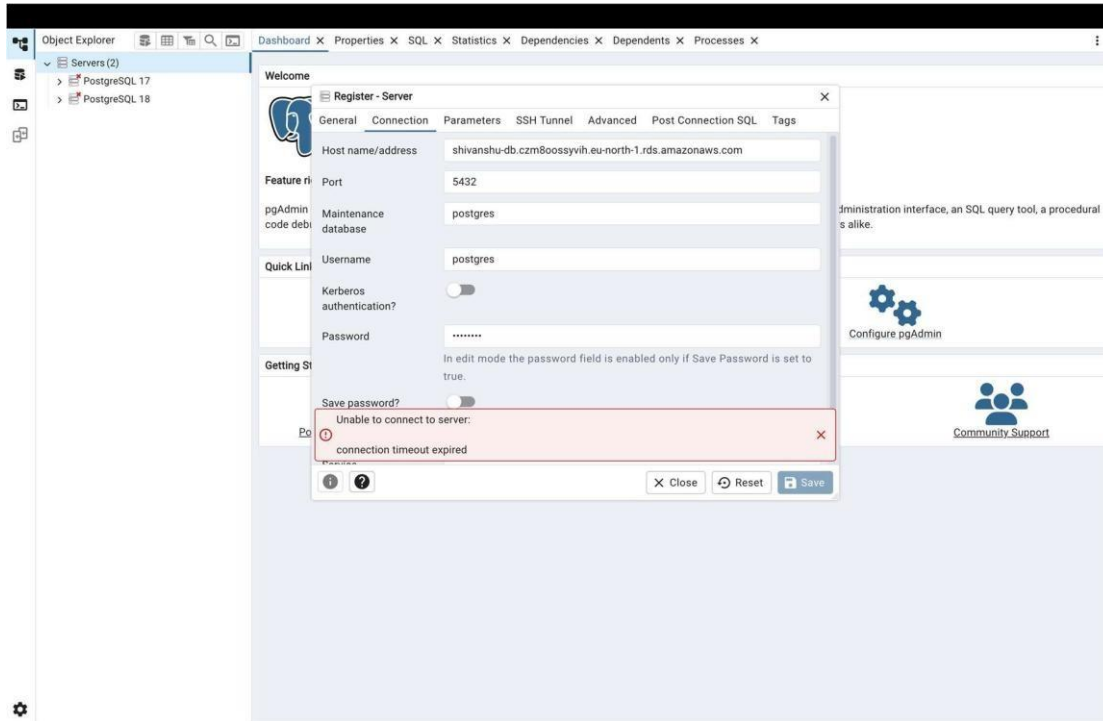
9. Configuring Connectivity and VPC Settings



10. Gr Setting Up Security Groups for RDS Access



11. Additional Database Configuration Options



12. Reviewing and Creating the Database Instance



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The screenshot displays the AWS Management Console for an Amazon RDS instance named 'shivanshu-db'. The interface includes a top navigation bar with the AWS logo, a search bar, and account information (Europe (Stockholm), Account ID: 3961-8352-6319, Shivanshu Ranjan). The left sidebar shows the 'Aurora and RDS' menu with options like 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 shows the 'shivanshu-db' instance details. The 'Summary' tab is active, displaying the following information:

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

The 'Connectivity & security' tab is also visible, showing the following details:

Endpoint & port	Networking	Security
Endpoint shivanshu-db.czm8oossyvi.h.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 Info 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

The bottom of the console shows the 'CloudShell' button, 'Feedback' link, and copyright information: © 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences.

13. RDS Instance Creation in Progress



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Edit inbound rules [Info](#)

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

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.czm8oosyvih.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

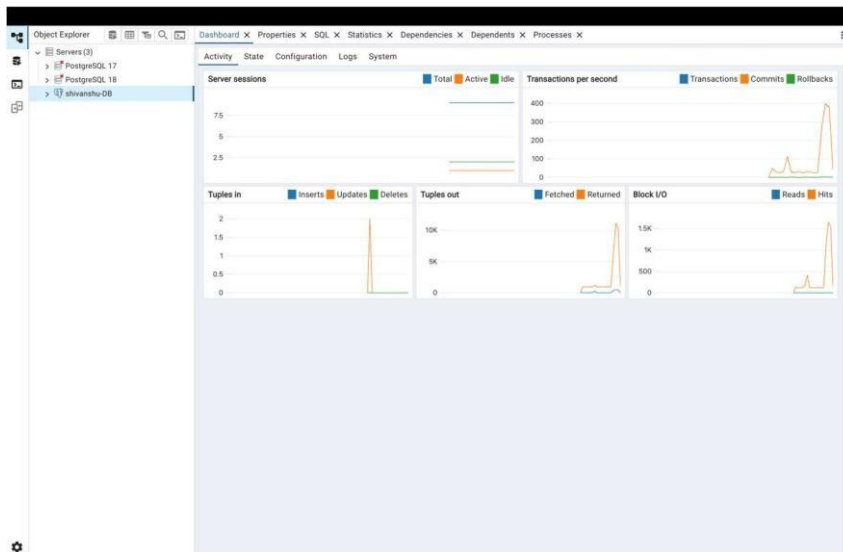
Certificate authority date

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

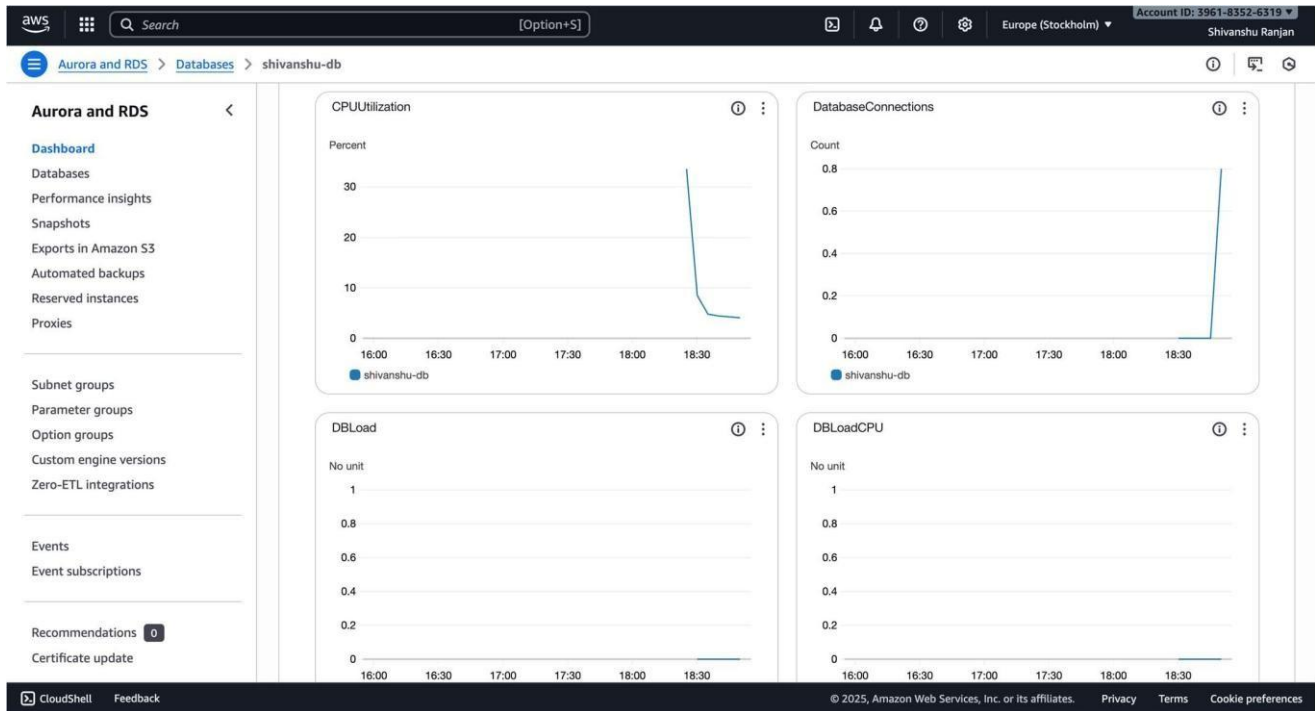
DB instance certificate expiration date

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)



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The screenshot shows the AWS RDS console for instance `shivanshu-db`. The left sidebar lists 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 (0), and Certificate update. The main content area has tabs for Connectivity & security, Monitoring, Logs & events (selected), Configuration, Zero-ETL integrations, and Maintenance & backups. Under 'Logs & events', there is a section for 'CloudWatch alarms (0)' with a search bar and a table showing no alarms. Below that is a 'Recent events (5)' section with a search bar and a table of events.

Time	System notes
October 31, 2025, 00:03 (UTC+05:30)	Finished DB Instance backup
October 31, 2025, 00:01 (UTC+05:30)	Backing up DB instance
October 31, 2025, 00:01 (UTC+05:30)	Performance Insights has been enabled
October 31, 2025, 00:01 (UTC+05:30)	Monitoring Interval changed to 60
October 31, 2025, 00:00 (UTC+05:30)	DB instance created

19. Successful Connection to AWS RDS Database via pgAdmin

The screenshot shows the AWS RDS console with a blue banner at the top indicating 'Deleting DB instance shivanshu-db'. The left sidebar is the same as in the previous screenshot. The main content area shows the 'Databases (1)' section with a search bar and a table listing the database instance.

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



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.