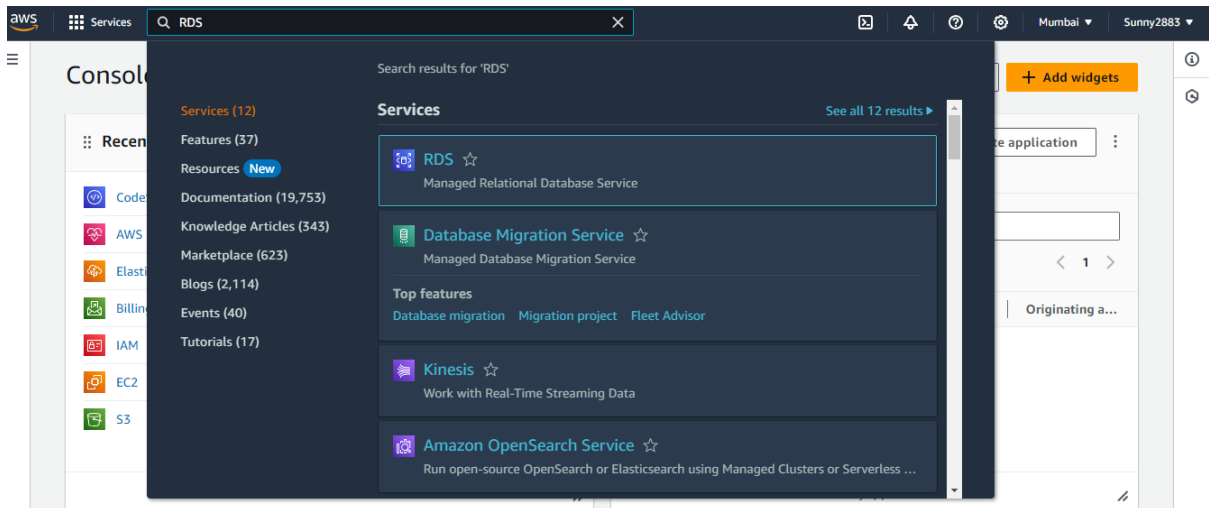


Assignment DB

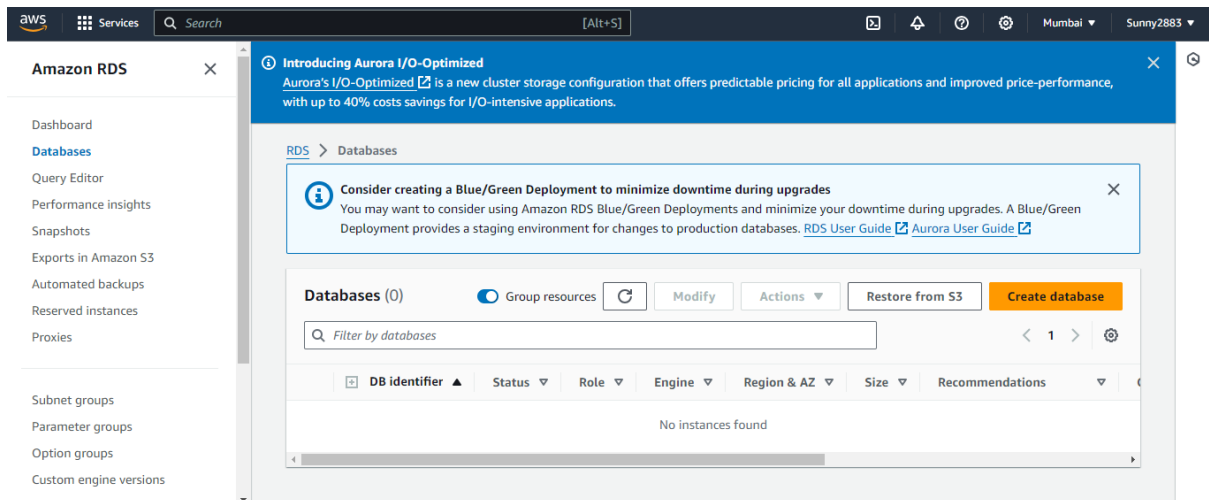
Task1:

Create a new Amazon RDS instance with a database engine of your choice (PostgreSQL)

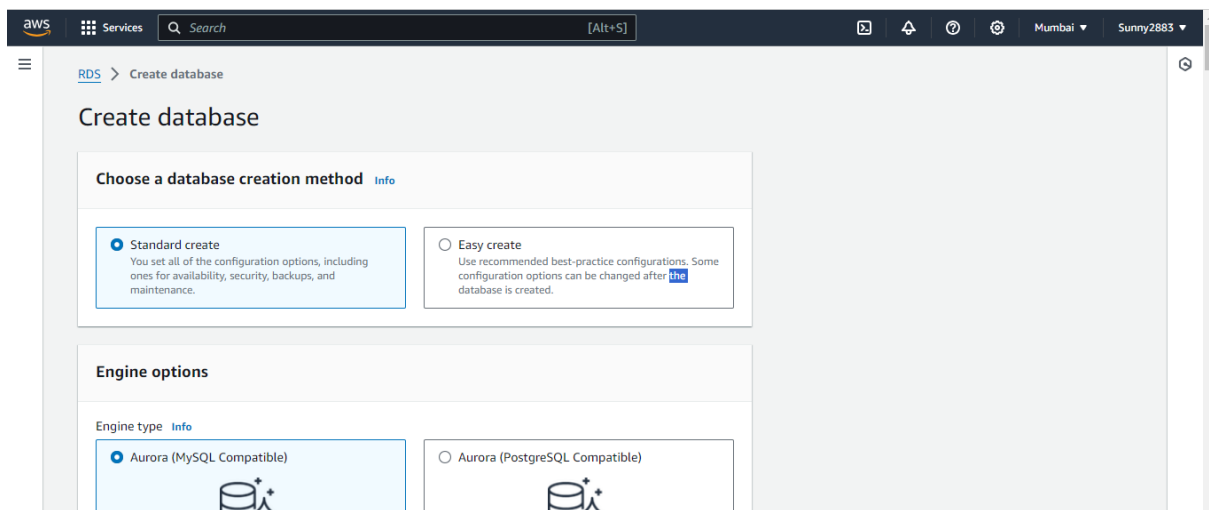
Step1: From the AWS Management Console, find and open the Amazon RDS service.



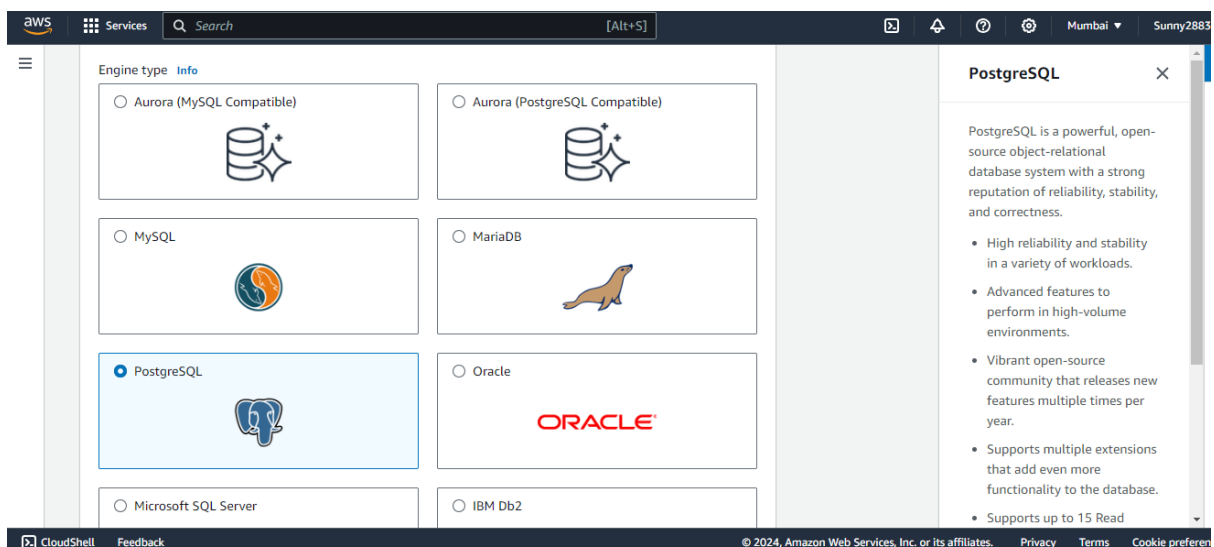
Step2: Click on the "Create Database" button to initiate the process.



Step3: Choose a template or select "Standard Create."



Step4: Choose the PostgreSQL database engine from the available options.



Step5: Choose version and a free tier template.

The screenshot shows the AWS RDS console interface. At the top, there's a navigation bar with the AWS logo, 'Services', a search bar, and a user profile 'Sunny2883'. Below the navigation bar, there's a section titled 'Show versions that support the Multi-AZ DB cluster' with an 'Info' link. This section contains a dropdown menu for 'Engine Version' which is currently set to 'PostgreSQL 14.10-R2'. Below this, there's a 'Templates' section with the instruction 'Choose a sample template to meet your use case.' There are three radio button options: 'Production' (Use defaults for high availability and fast, consistent performance), 'Dev/Test' (This instance is intended for development use outside of a production environment), and 'Free tier' (Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. Info). The 'Free tier' option is selected. Below the templates, there's a section titled 'Availability and durability'.

Step6: DB Instance Identifier: Enter a unique name for your DB instance.

The screenshot shows the 'Settings' section of the AWS RDS console. It includes a 'DB instance identifier' field with the value 'database-2' and an 'Info' link. Below this, there's a section titled 'Credentials Settings' with a 'Master username' field containing 'Bhushan' and an 'Info' link. There's also a checkbox for 'Manage master credentials in AWS Secrets Manager'. At the bottom, there's a blue information box stating: 'If you manage the master user credentials in Secrets Manager, some RDS features aren't supported. Learn more'. The footer of the console shows 'CloudShell', 'Feedback', and copyright information for 2024.

Step7: Master Username/Password: Set the master username and password.

The screenshot shows the AWS RDS console interface for setting master credentials. The main panel has a header 'Type a login ID for the master user or your DB instance.' followed by a text input field containing 'Sunny'. Below this is a checkbox 'Manage master credentials in AWS Secrets Manager' with a note that RDS can generate a password. A blue information box states that some RDS features are not supported if credentials are managed in Secrets Manager. Another checkbox 'Auto generate a password' is present. The 'Master password' section includes a text input field with masked characters, constraints (8 printable ASCII characters, no special characters), and a 'Confirm master password' field below it. The right sidebar shows 'Deployment options' with 'Multi-AZ DB cluster' and 'Multi-AZ DB instance' options.

Step8: Choose the instance type based on your requirements.

The screenshot shows the AWS RDS console interface for choosing an instance type. The 'DB instance class' section has a 'Hide filters' button and three radio buttons: 'Include previous generation classes', 'Standard classes (includes m classes)', 'Memory optimized classes (includes r and x classes)', and 'Burstable classes (includes t classes)' which is selected. A dropdown menu shows 'db.t3.micro' with specifications '2 vCPUs', '1 GiB RAM', and 'Network: 2,085 Mbps'. The 'Storage' section has a 'Storage type' dropdown set to 'General Purpose SSD (gp2)' and an 'Allocated storage' field set to '20' GIB. The right sidebar shows 'Deployment options' with 'Multi-AZ DB cluster' and 'Multi-AZ DB instance' options.

Step9: Set the allocated storage for your database.

The screenshot shows the AWS RDS console interface for setting allocated storage. The 'Storage' section has a 'Storage type' dropdown set to 'General Purpose SSD (gp2)'. The 'Allocated storage' field is set to '20' GIB, with a note that the minimum value is 20 GIB and the maximum is 6,144 GIB. A blue information box states that the instance status will be in 'storage-optimization' after modifying storage. Below this is a 'Storage autoscaling' section. The 'Connectivity' section is partially visible at the bottom. The right sidebar shows 'Deployment options' with 'Multi-AZ DB cluster' and 'Multi-AZ DB instance' options.

Step10: Set the connectivity including compute resource subnet group and VPC.

Connectivity Info

Compute resource
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

☒ Don't connect to an EC2 compute resource
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

☐ Connect to an EC2 compute resource
Set up a connection to an EC2 compute resource for this database.

Virtual private cloud (VPC) Info
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Default VPC (vpc-06988e5057435e138)
3 Subnets, 3 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

After a database is created, you can't change its VPC.

DB subnet group Info
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

default

Deployment options

Multi-AZ DB cluster
Creates a DB cluster with three DB instances. Each DB instance is in a different Availability Zone. A Multi-AZ DB cluster has one primary DB instance and two readable standby DB instances. Using a Multi-AZ DB cluster provides high availability, increased capacity for read workloads, and lower latency.

Multi-AZ DB instance
Creates a primary DB instance with one standby DB instance in a different Availability Zone. Using a Multi-AZ DB instance provides high availability, but the standby DB instance doesn't support connections for read.

Step11: Select the Virtual Private Cloud where your DB instance will be launched and choose the subnet group for your DB instance.

Public access Info

☒ Yes
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.

☐ No
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

VPC security group (firewall) Info
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

☒ Choose existing
Choose existing VPC security groups

☐ Create new
Create new VPC security group

Existing VPC security groups
Choose one or more options

default X

Availability Zone Info
No preference

Deployment options

Multi-AZ DB cluster
Creates a DB cluster with three DB instances. Each DB instance is in a different Availability Zone. A Multi-AZ DB cluster has one primary DB instance and two readable standby DB instances. Using a Multi-AZ DB cluster provides high availability, increased capacity for read workloads, and lower latency.

Multi-AZ DB instance
Creates a primary DB instance with one standby DB instance in a different Availability Zone. Using a Multi-AZ DB instance provides high availability, but the standby DB instance doesn't support connections for read.

Step12: Choose whether to enable Multi-AZ deployment for high availability.

default X

Availability Zone Info
No preference

RDS Proxy
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

☐ Create an RDS Proxy Info
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see Amazon RDS Proxy pricing.

Certificate authority - optional Info
Using a server certificate provides an extra layer of security by validating that the connection is being made to an Amazon database. It does so by checking the server certificate that is automatically installed on all databases that you provision.

rds-ca-rsa2048-g1 (default)
Expiry: May 20, 2061

If you don't select a certificate authority, RDS chooses one for you.

Additional configuration

Database authentication

Deployment options

Multi-AZ DB cluster
Creates a DB cluster with three DB instances. Each DB instance is in a different Availability Zone. A Multi-AZ DB cluster has one primary DB instance and two readable standby DB instances. Using a Multi-AZ DB cluster provides high availability, increased capacity for read workloads, and lower latency.

Multi-AZ DB instance
Creates a primary DB instance with one standby DB instance in a different Availability Zone. Using a Multi-AZ DB instance provides high availability, but the standby DB instance doesn't support connections for read.

Step13: Configure Authentication, which control access to your DB instance.

Additional configuration

Database authentication

Database authentication options [Info](#)

- ☒ **Password authentication**
Authenticates using database passwords.
- ☐ **Password and IAM database authentication**
Authenticates using the database password and user credentials through AWS IAM users and roles.
- ☐ **Password and Kerberos authentication**
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.

Monitoring

☐ Turn on Performance Insights

Deployment options

Multi-AZ DB cluster

Creates a DB cluster with three DB instances. Each DB instance is in a different Availability Zone. A Multi-AZ DB cluster has one primary DB instance and two readable standby DB instances. Using a Multi-AZ DB cluster provides high availability, increased capacity for read workloads, and lower latency.

Multi-AZ DB instance

Creates a primary DB instance with one standby DB instance in a different Availability Zone. Using a Multi-AZ DB instance provides high availability, but the standby DB instance doesn't support connections for read

Step14: Add initial database name .

Additional configuration

Database options, encryption turned on, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

Database options

Initial database name [Info](#)

MyDatabase

If you do not specify a database name, Amazon RDS does not create a database.

DB parameter group [Info](#)

default.postgres14

Option group [Info](#)

default-postgres-r3.4

Step15: Click on the "Create Database" button to initiate the creation process.

Estimate your monthly costs for the DB instance using the [AWS Simple Monthly Calculator](#).

Estimated monthly costs

The Amazon RDS Free Tier is available to you for 12 months. Each calendar month, the free tier will allow you to use the Amazon RDS resources listed below for free:

- 750 hrs of Amazon RDS in a Single-AZ db.t2.micro, db.t3.micro or db.t4g.micro Instance.
- 20 GB of General Purpose Storage (SSD).
- 20 GB for automated backup storage and any user-initiated DB Snapshots.

[Learn more about AWS Free Tier](#)

When your free usage expires or if your application use exceeds the free usage tiers, you simply pay standard, pay-as-you-go service rates as described in the [Amazon RDS Pricing page](#).

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](#)

Deployment options

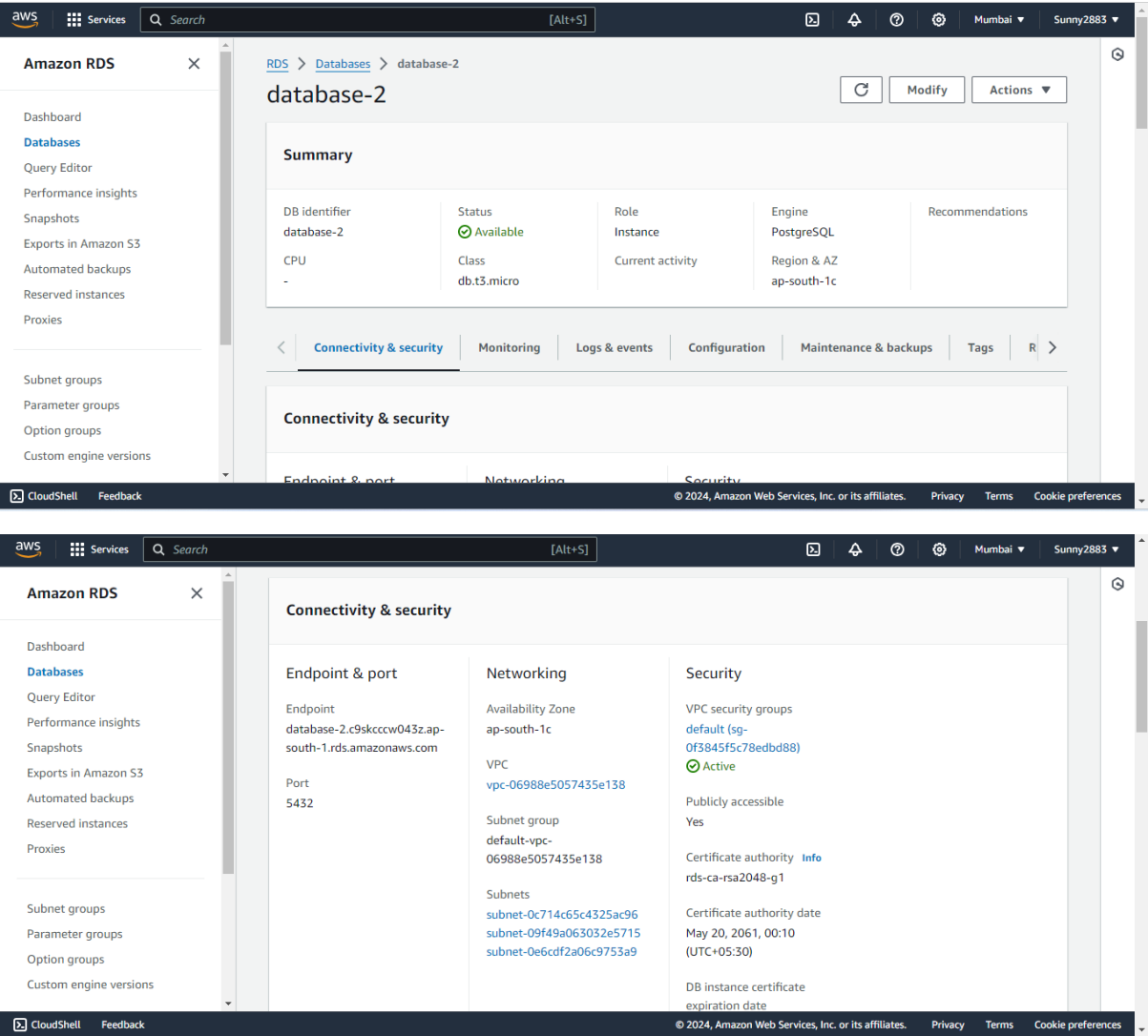
Multi-AZ DB cluster

Creates a DB cluster with three DB instances. Each DB instance is in a different Availability Zone. A Multi-AZ DB cluster has one primary DB instance and two readable standby DB instances. Using a Multi-AZ DB cluster provides high availability, increased capacity for read workloads, and lower latency.

Multi-AZ DB instance

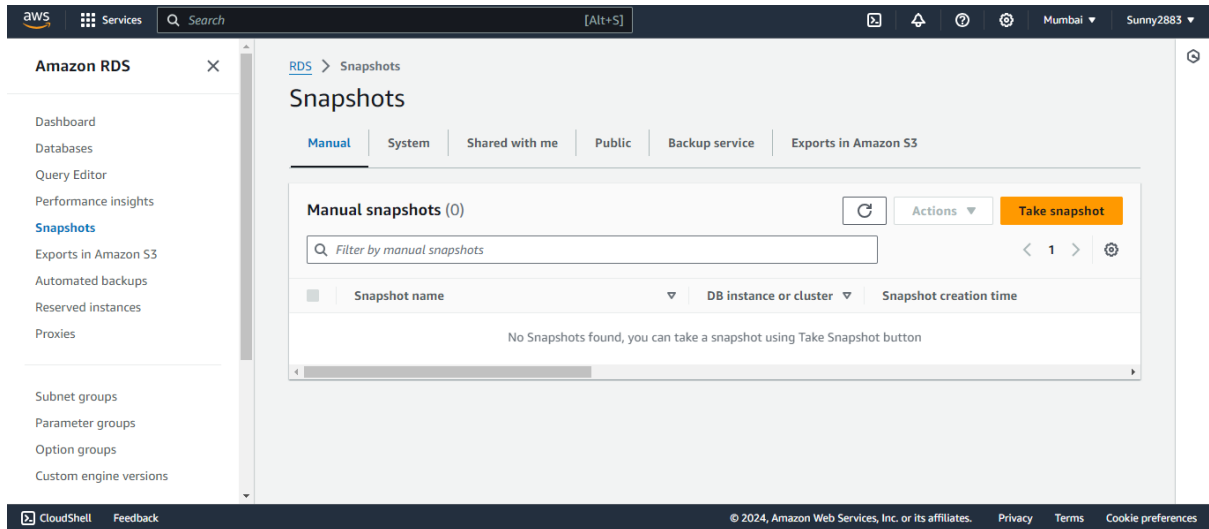
Creates a primary DB instance with one standby DB instance in a different Availability Zone. Using a Multi-AZ DB instance provides high availability, but the standby DB instance doesn't support connections for read

Step16: Once the instance status is "Available," you can access your PostgreSQL database using the provided endpoint, master username, and password.

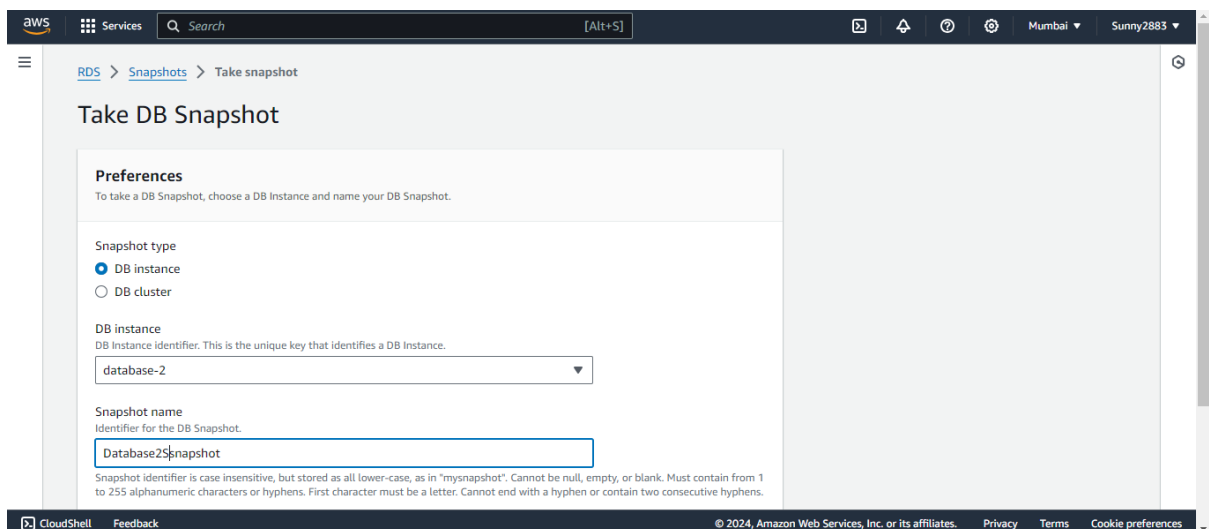


2. Take a manual snapshot of your RDS instance.

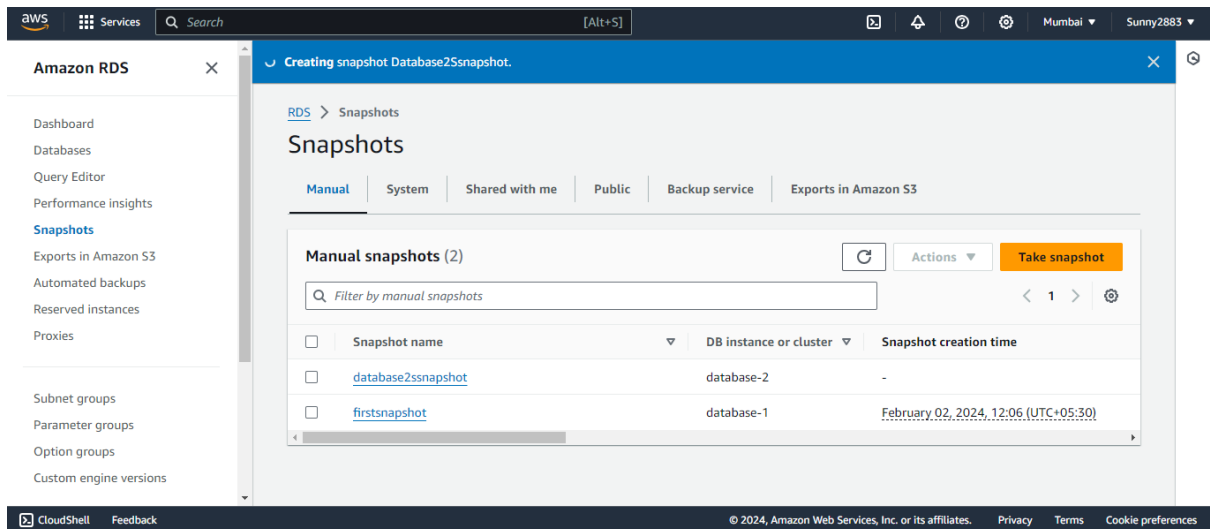
Step1: From the dropdown menu, select "Take Snapshot."



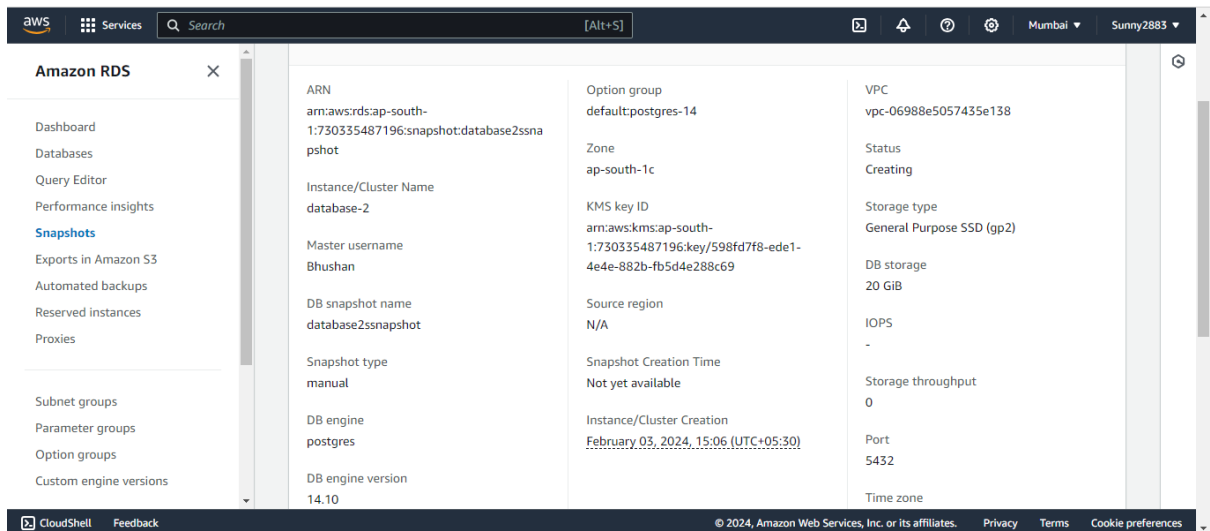
Step2: Select snapshot type and enter a descriptive name for the manual snapshot and Click on the "Take Snapshot" button to initiate the manual snapshot creation



Step3: The snapshot creation process may take some time. Monitor the progress on the RDS dashboard.



Step4: Once the snapshot is created, you can verify its status in the list of snapshots. The status should be "Available."



3. Do PG Dump of RDS using connection string or Connect to the DB using connection string.

Step1: Connect to AWS EC2 Instance:

Step2: Install postgresql14 using amazon-linux-extras.

sudo amazon-linux-extras install postgresql14

```
Bhushanfalse3[ec2-user@ip-172-31-45-45 ~]$ ^C
[ec2-user@ip-172-31-45-45 ~]$ sudo amazon-linux-extras install postgresql14
```

Step3: install postgresql14.

sudo yum install postgresql

```
[ec2-user@ip-172-31-45-45 ~]$ sudo yum install postgresql
```

Step4: Run the pg_dump command using the connection string to perform a database dump:

pg_dump -h database-2.c9skcccw043z.ap-south-1.rds.amazonaws.com -U Bhushan -Fc MyDatabase > mydb.dump

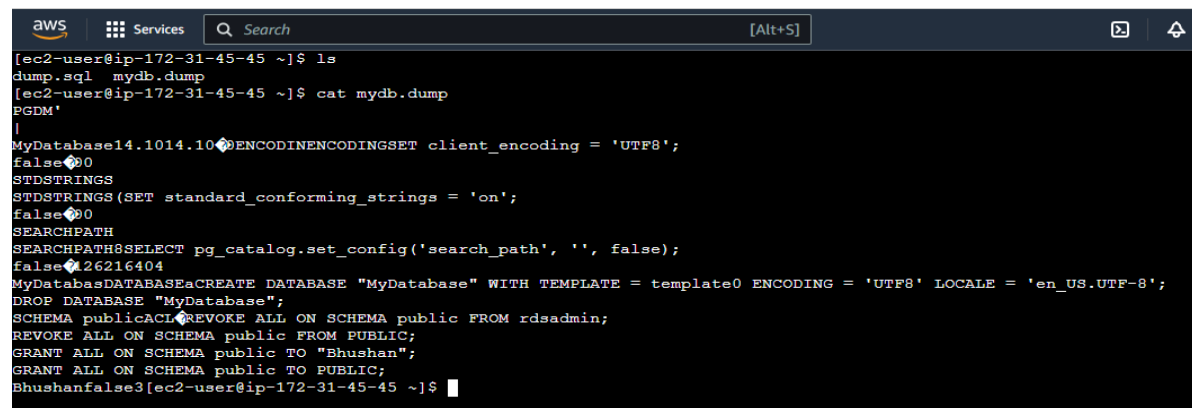
```
[ec2-user@ip-172-31-45-45 ~]$ pg_dump -h database-2.c9skcccw043z.ap-south-1.rds.amazonaws.com -U Bhushan -Fc MyDatabase > mydb.dump
```

Step5: Use la command to list all the files.

```
aws Services Search [Alt+S]
[ec2-user@ip-172-31-45-45 ~]$ ls
dump.sql  mydb.dump
[ec2-user@ip-172-31-45-45 ~]$
```

Step6: Use cat command see the content of dump file.

cat mydb.dump



```
aws Services Search [Alt+S]
[ec2-user@ip-172-31-45-45 ~]$ ls
dump.sql  mydb.dump
[ec2-user@ip-172-31-45-45 ~]$ cat mydb.dump
PGDM'
|
MyDatabase14.1014.10ENCODINGSET client_encoding = 'UTF8';
false00
STDSTRINGS
STDSTRINGS (SET standard_conforming_strings = 'on';
false00
SEARCHPATH
SEARCHPATH8SELECT pg_catalog.set_config('search_path', '', false);
false26216404
MyDatabaseasDATABASEaCREATE DATABASE "MyDatabase" WITH TEMPLATE = template0 ENCODING = 'UTF8' LOCALE = 'en_US.UTF-8';
DROP DATABASE "MyDatabase";
SCHEMA publicACLREVOKE ALL ON SCHEMA public FROM rdsadmin;
REVOKE ALL ON SCHEMA public FROM PUBLIC;
GRANT ALL ON SCHEMA public TO "Bhushan";
GRANT ALL ON SCHEMA public TO PUBLIC;
Bhushanfalse3[ec2-user@ip-172-31-45-45 ~]$
```