# AWS Solutions Architect Training

## Module-7: Database Services

# Module 7: MariaDB Assignment

**Problem Statement:**
You work for XYZ Corporation. Their application requires a SQL service that can store data which can be retrieved if required. Implement a suitable RDS engine for the same.

**While migrating, you are asked to perform the following tasks:**

1. Create a MariaDB Engine based RDS Database.
2. Connect to the DB using the following ways:
a. SQL Client for Windows
b. Linux based EC2 Instance

# Module 7: Aurora Assignment

**Problem Statement:**
You work for XYZ Corporation. Their application requires a SQL service that can store data which can be retrieved if required. Implement a suitable RDS engine for the same.

**While migrating, you are asked to perform the following tasks:**

1. Create an AuroraDB Engine based RDS Database.
2. Create 2 Read Replicas in different availability zones for better infrastructure availability.

# Module 7: DynamoDB Assignment

## Problem Statement:

You work for XYZ Corporation. Their application requires a database service that can store data which can be retrieved if required. Implement a suitable service for the same.

## While migrating, you are asked to perform the following tasks:

1. Create a DynamoDB table with partition key as ID.
2. Add 5 items to the DynamoDB table.
3. Take backup and delete the table.

# Module 7: Redshift Assignment

## Problem Statement:

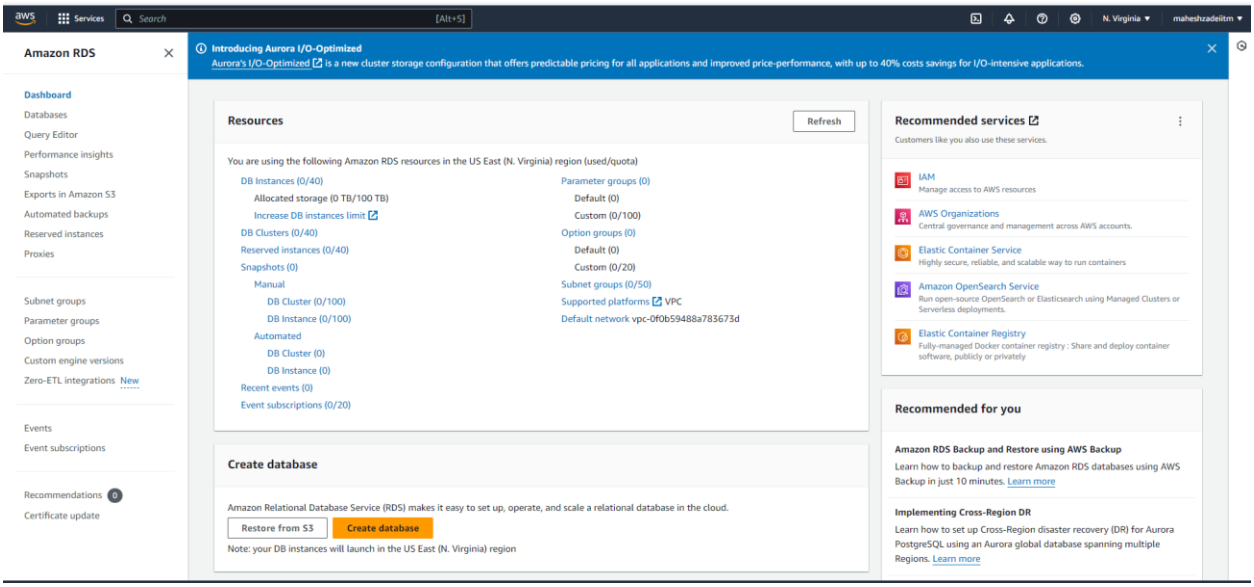
You work for XYZ Corporation. Their application requires a database service that can store data which can be retrieved if required. Implement suitable service for the same.

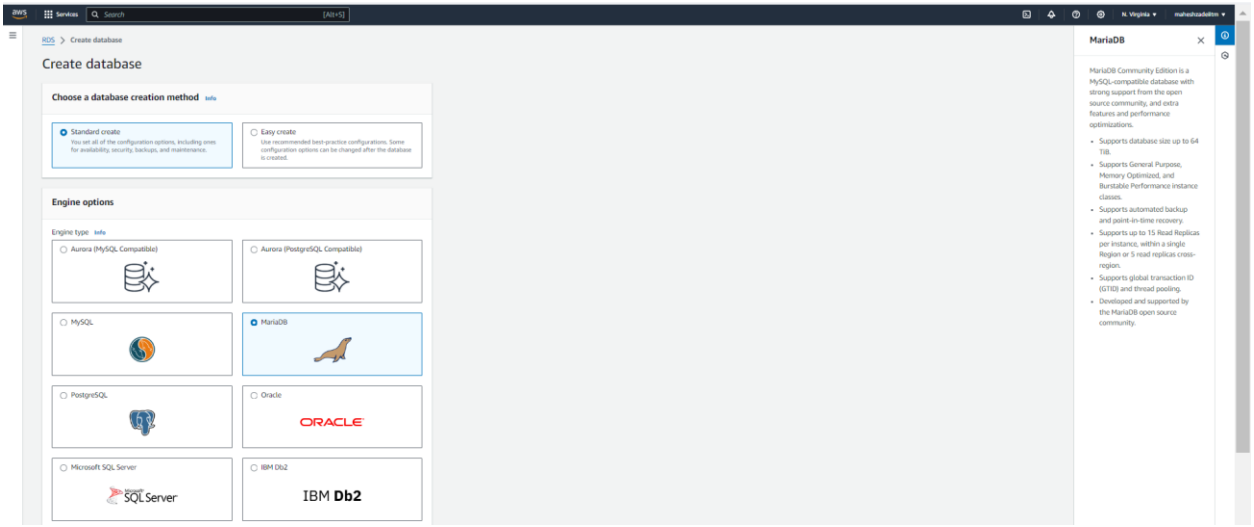
## While migrating, you are asked to perform the following tasks:

1. Create a Redshift data warehouse.
2. Using the query editor:
a. Load some data
b. Query the data

**MariaDB Assignment**

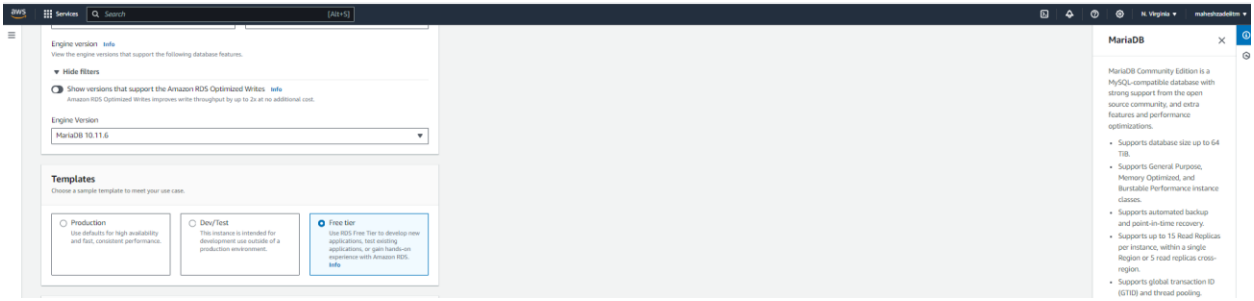
Go to AWS Management Console → RDS → Databases → Create Database

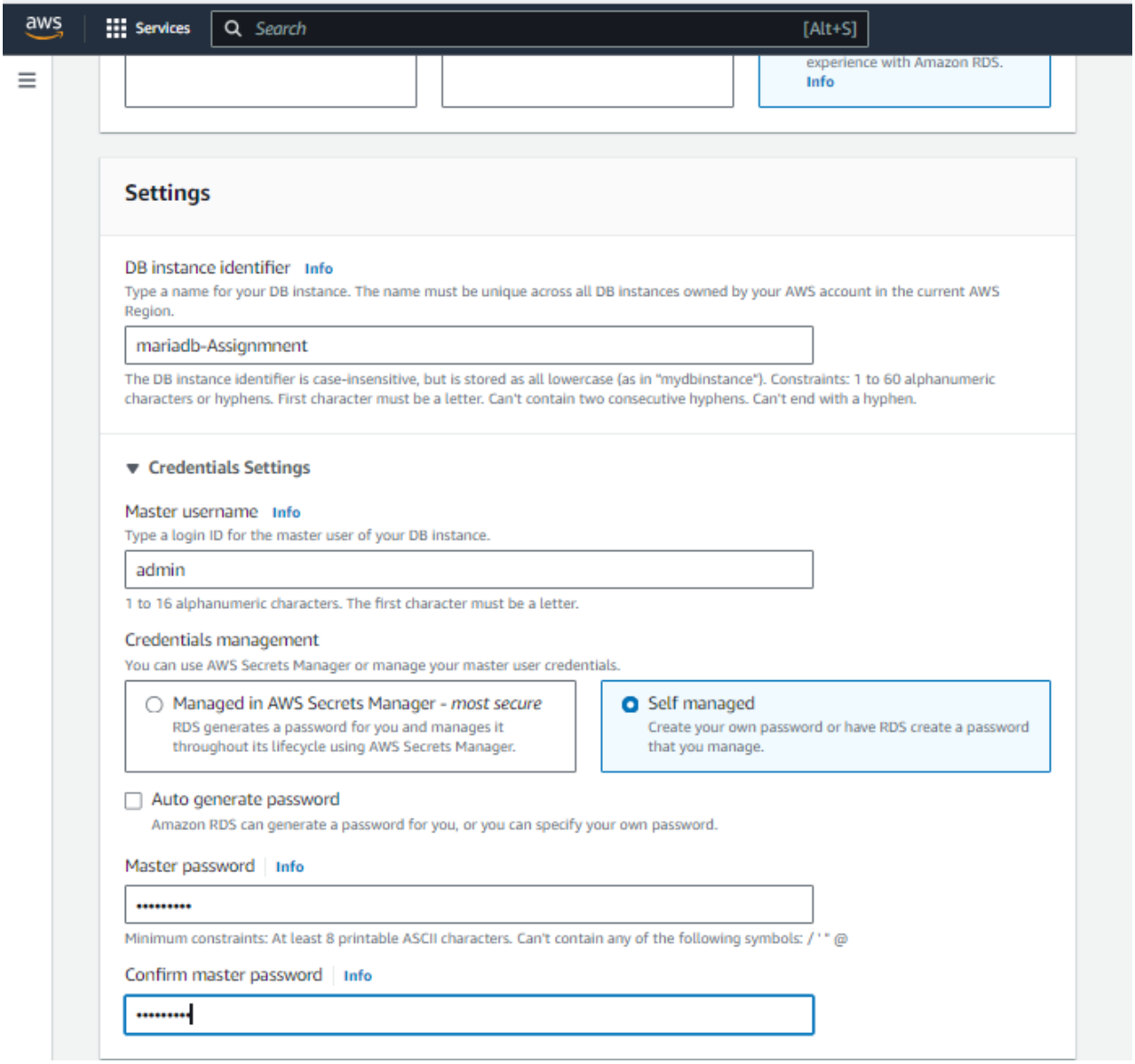


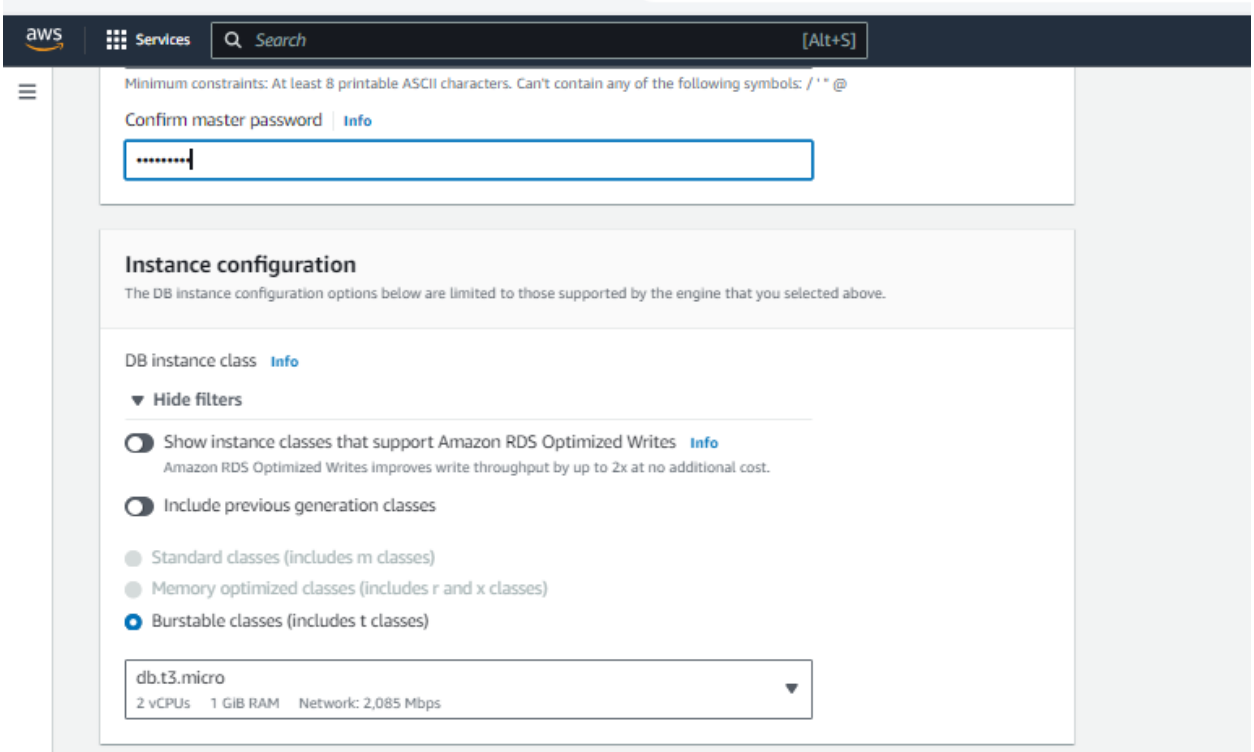

Select MariaDB

Templates → Free Tier



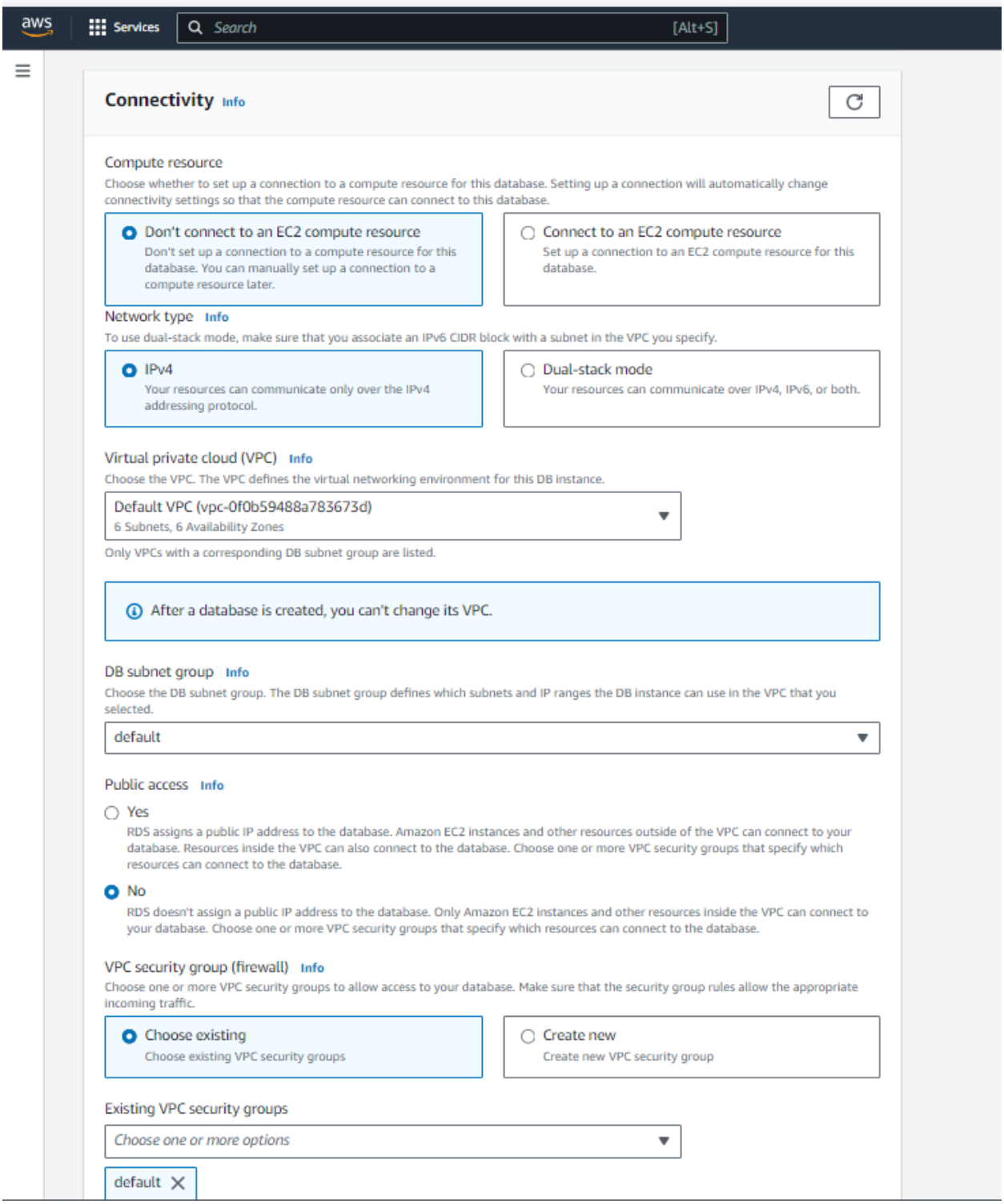



Master password is 12345678 and confirm master password  12345678




Keep default settings for Connectivity, Tags and Database Authentication

Go to Additional Configuration


aws
Services
Search
[Alt+S]
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.
Network type Info
To use dual-stack mode, make sure that you associate an IPv6 CIDR block with a subnet in the VPC you specify.
IPv4
Your resources can communicate only over the IPv4 addressing protocol.
Dual-stack mode
Your resources can communicate over IPv4, IPv6, or both.
Virtual private cloud (VPC) Info
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.
Default VPC (vpc-0f0b59488a783673d)
6 Subnets, 6 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
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

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-vpc-0f0b59488a783673d
6 Subnets, 6 Availability Zones

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.

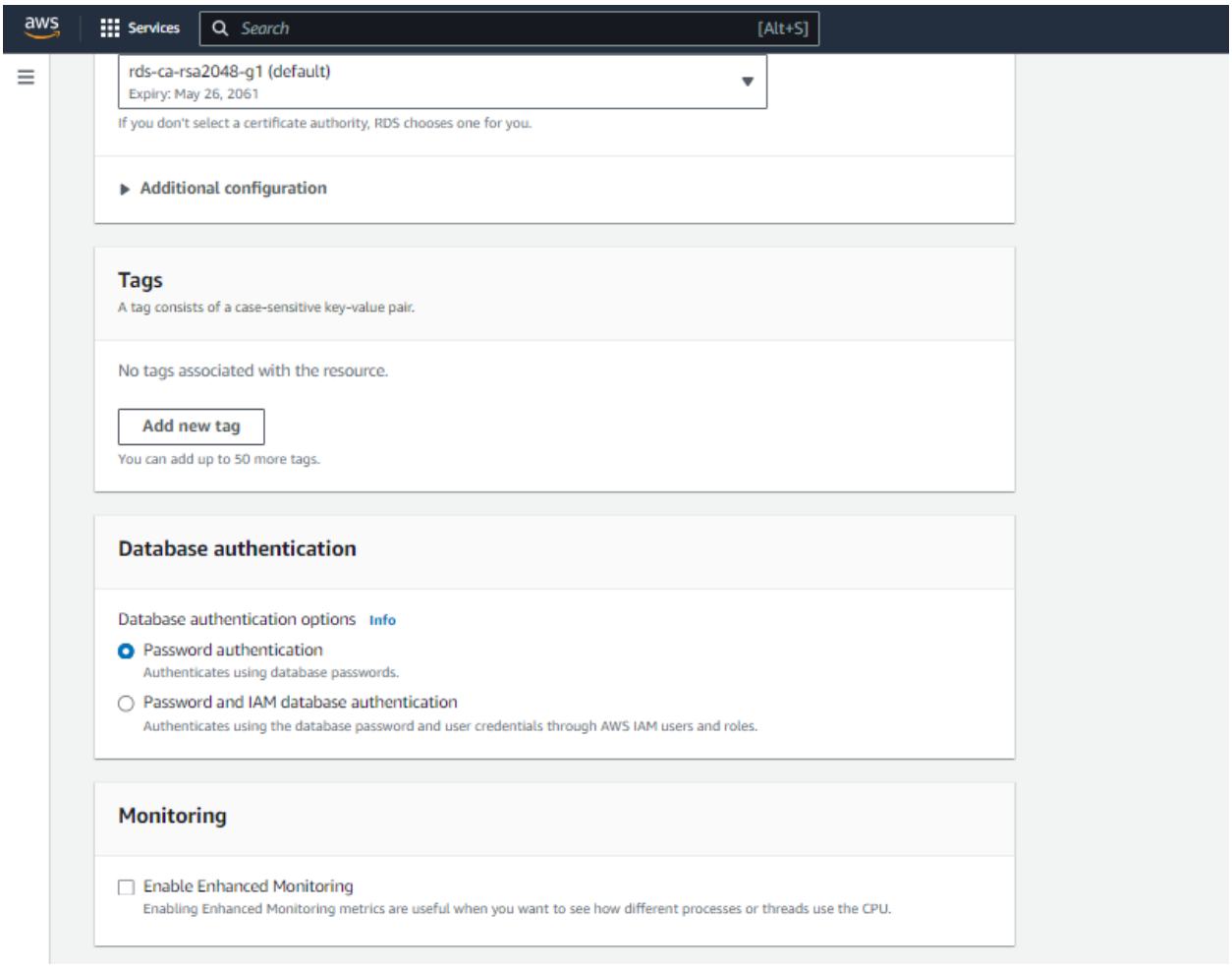
VPC security group (firewall) **Info**

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

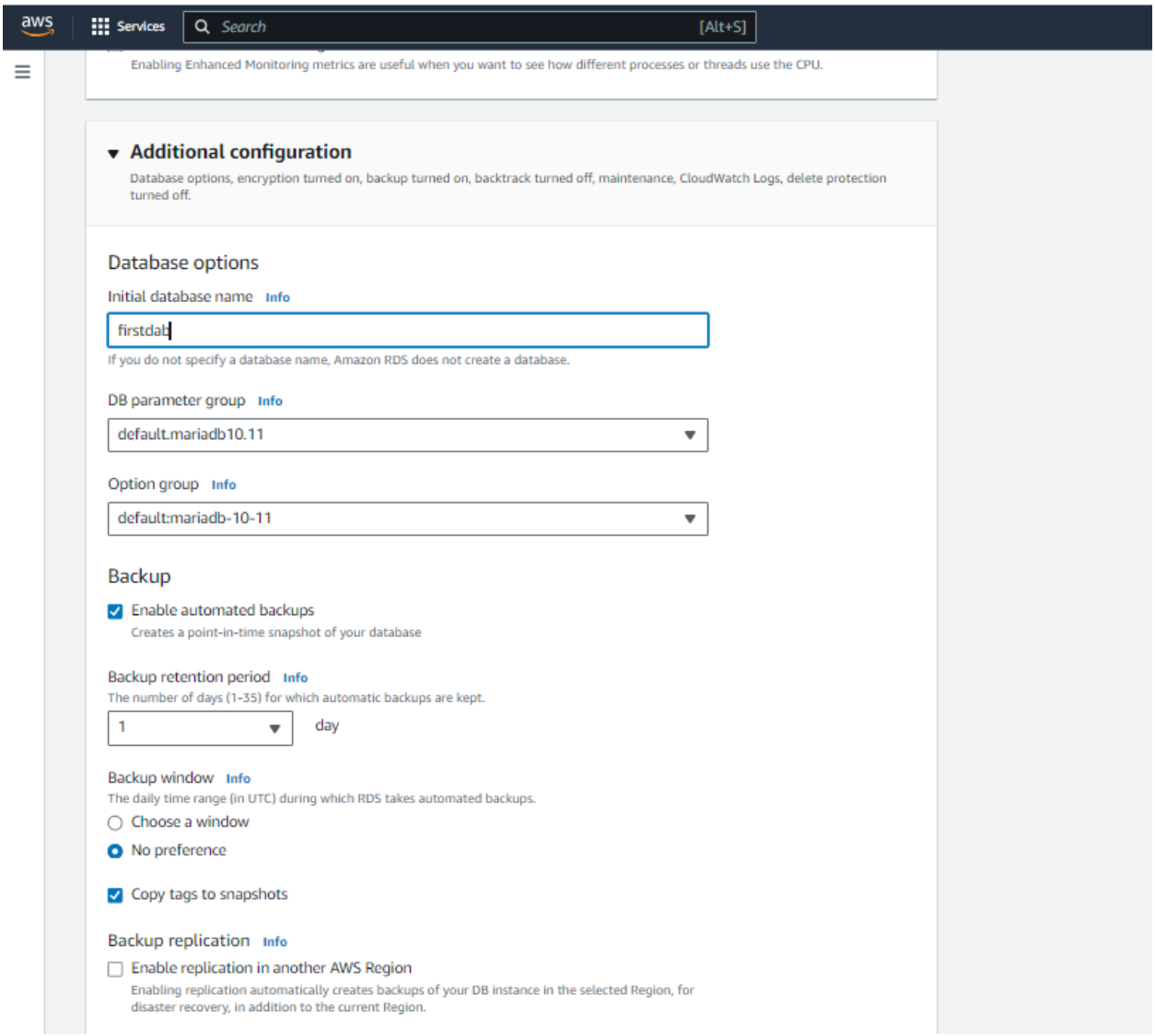
*Choose one or more options*



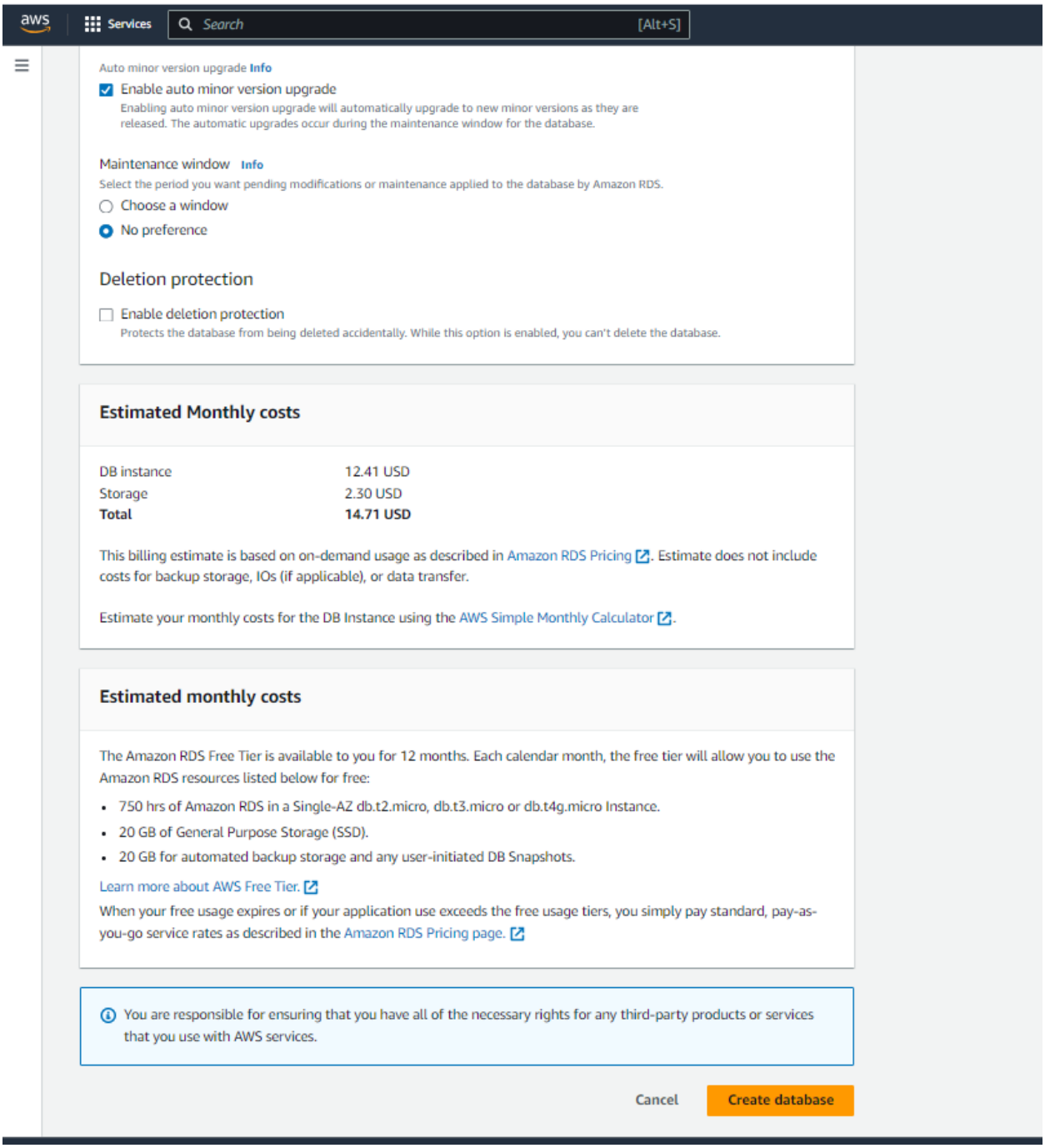

Go to Additional Configuration

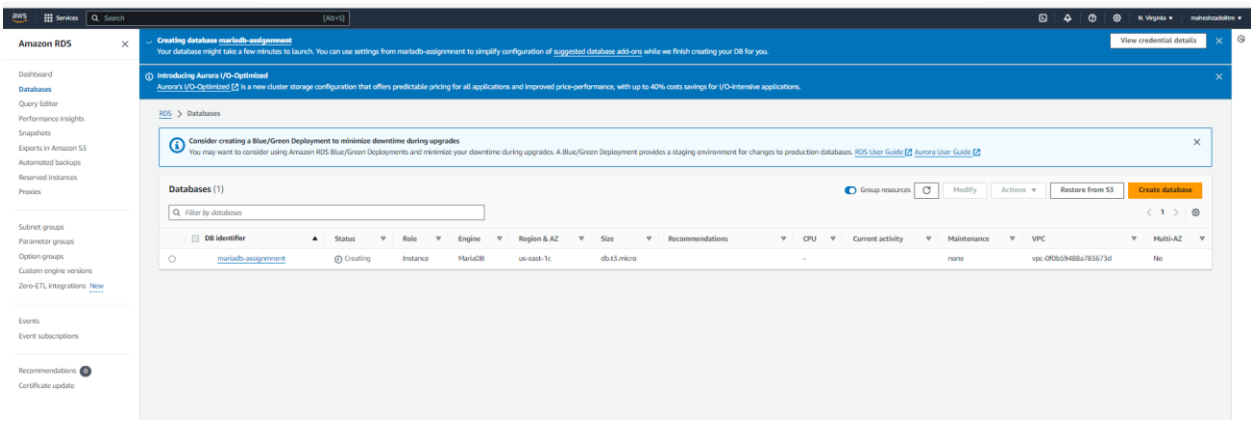
Give a name to the initial database

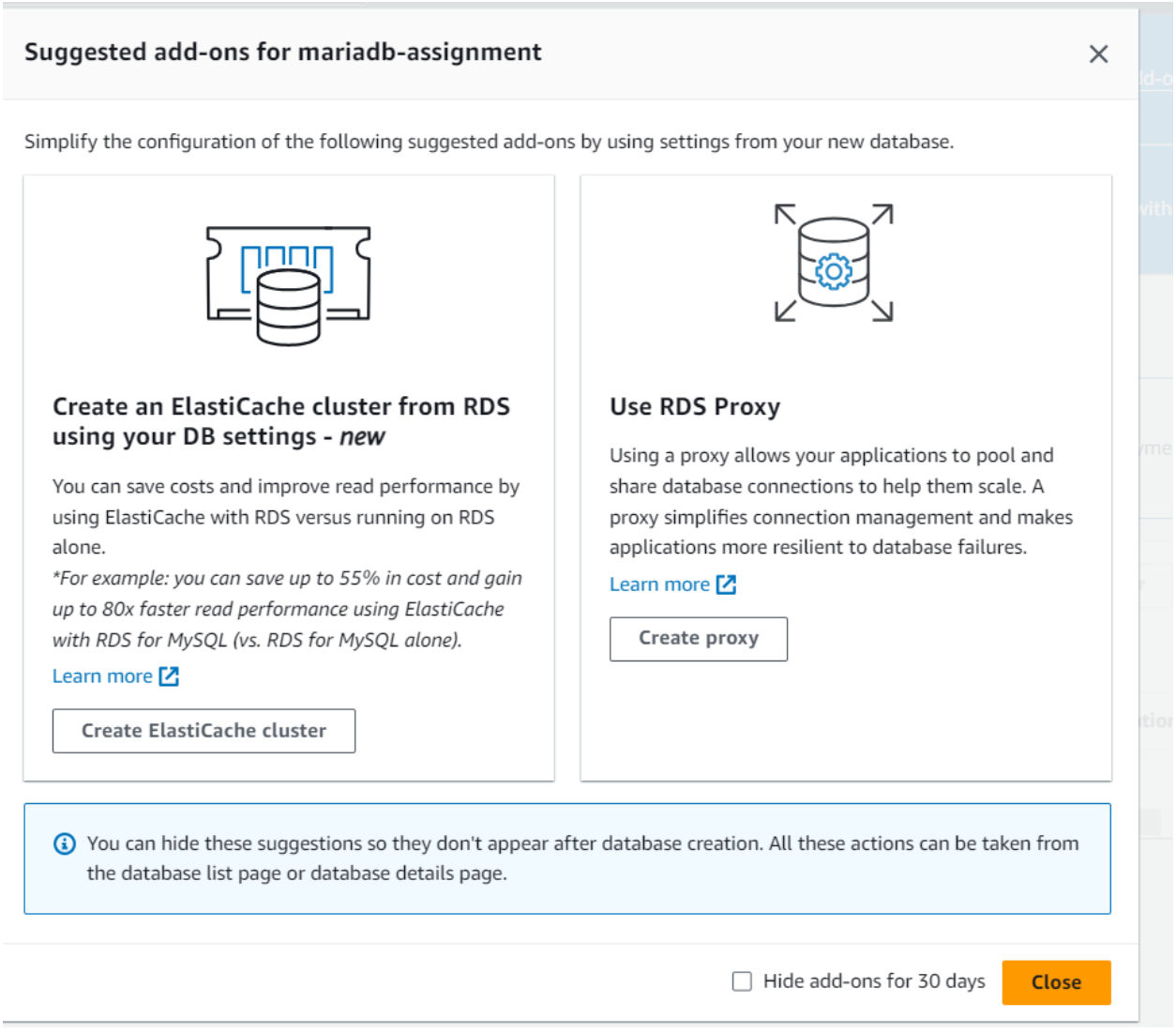
Firtstdb



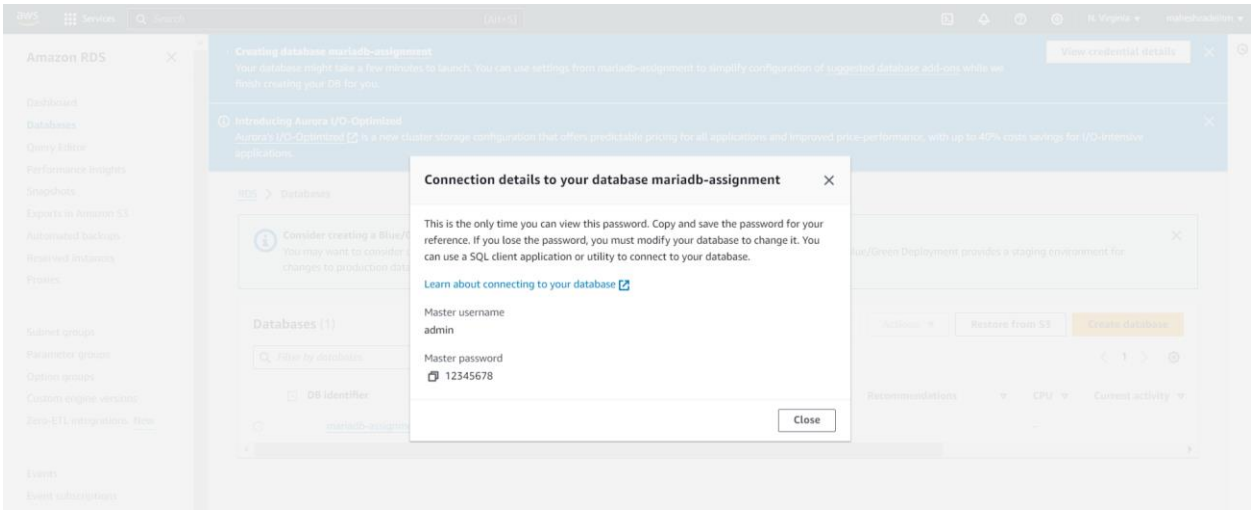

Keep the remaining settings to defaults and click on Create database


aws
Services
Search
[Alt+S]
Auto minor version upgrade Info
Enable auto minor version upgrade
Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.
Maintenance window Info
Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.
Choose a window
No preference
Deletion protection
Enable deletion protection
Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.
Estimated Monthly costs
DB instance 12.41 USD
Storage 2.30 USD
Total 14.71 USD
This billing estimate is based on on-demand usage as described in Amazon RDS Pricing. Estimate does not include costs for backup storage, IOs (if applicable), or data transfer.
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

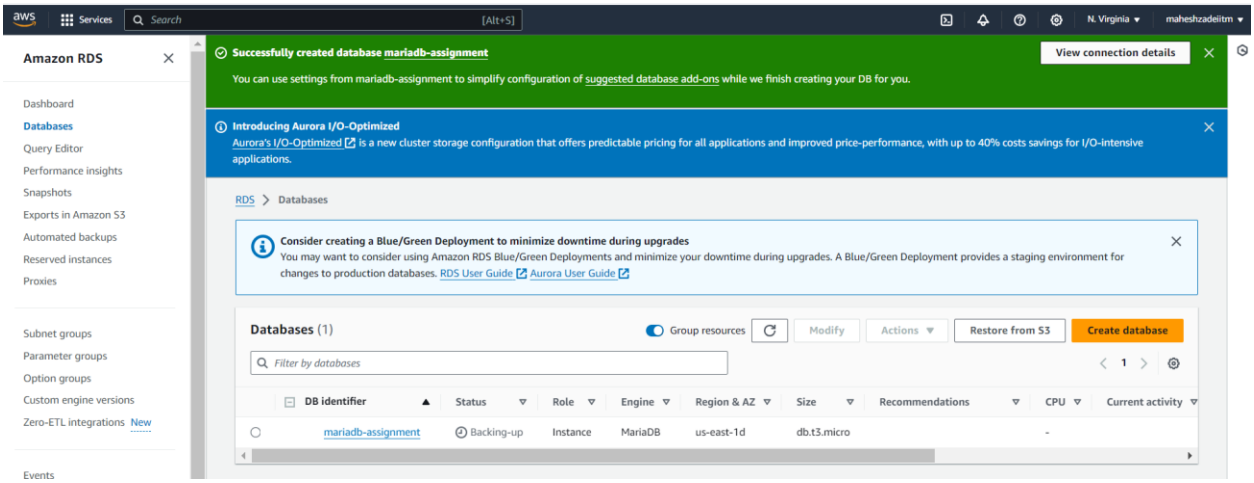



Click on close



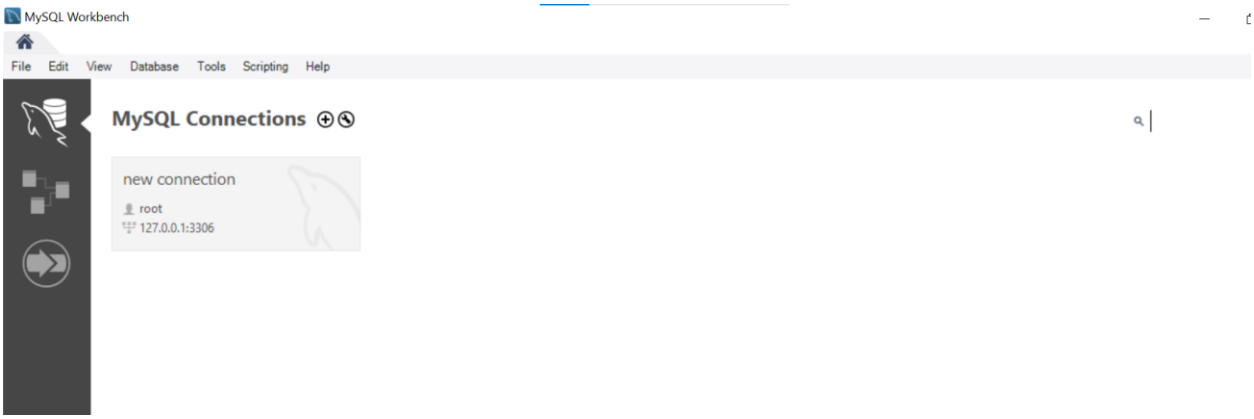

View credentials details



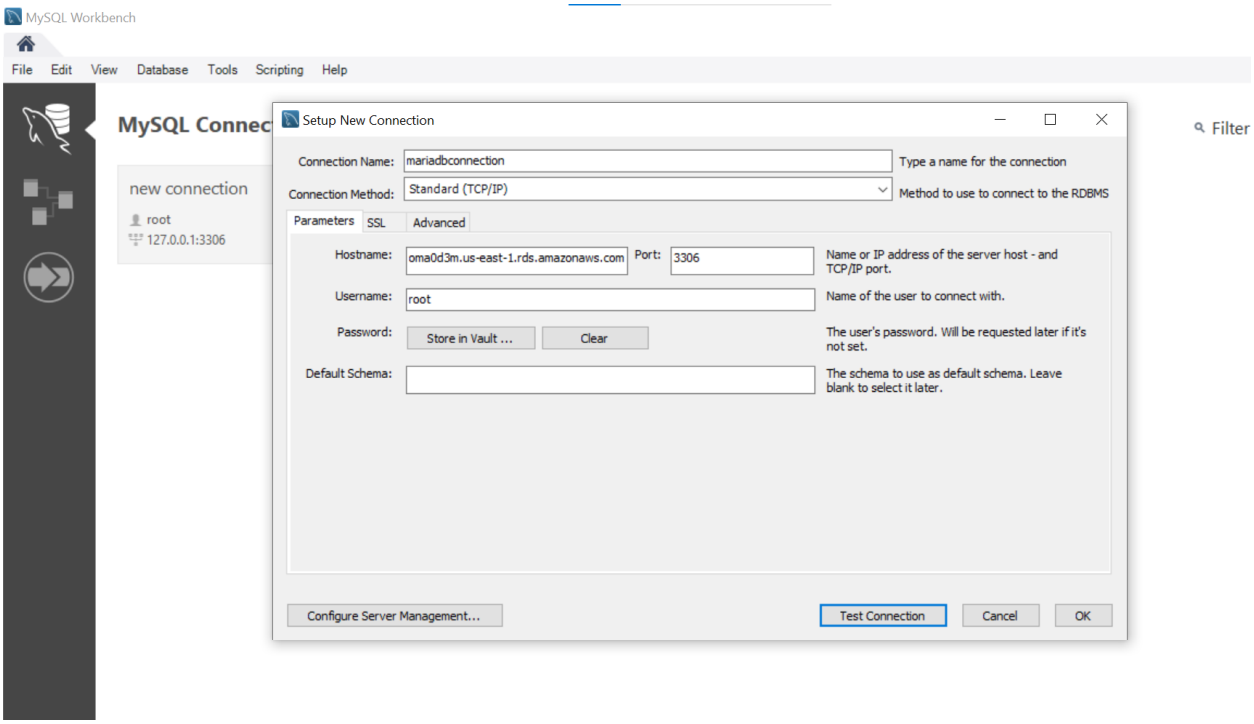

Database successfully created

It takes some time to create this database. Meanwhile download and install MySQL Workbench

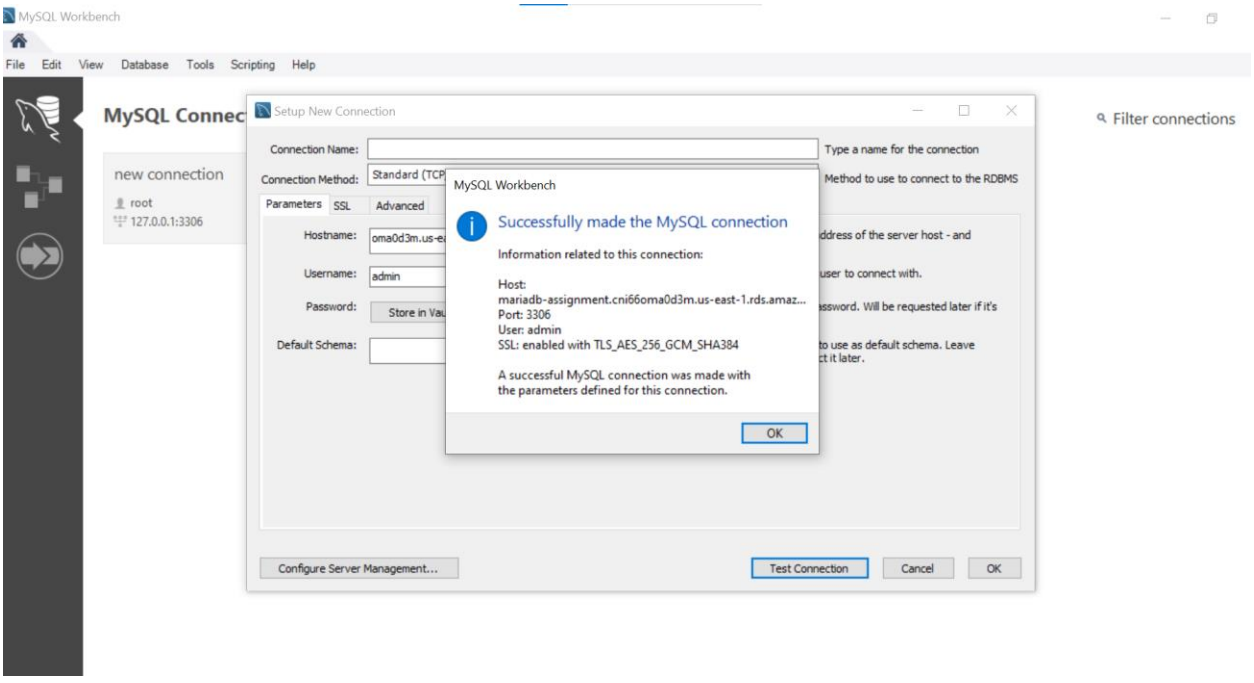
MySQL Workbench installed



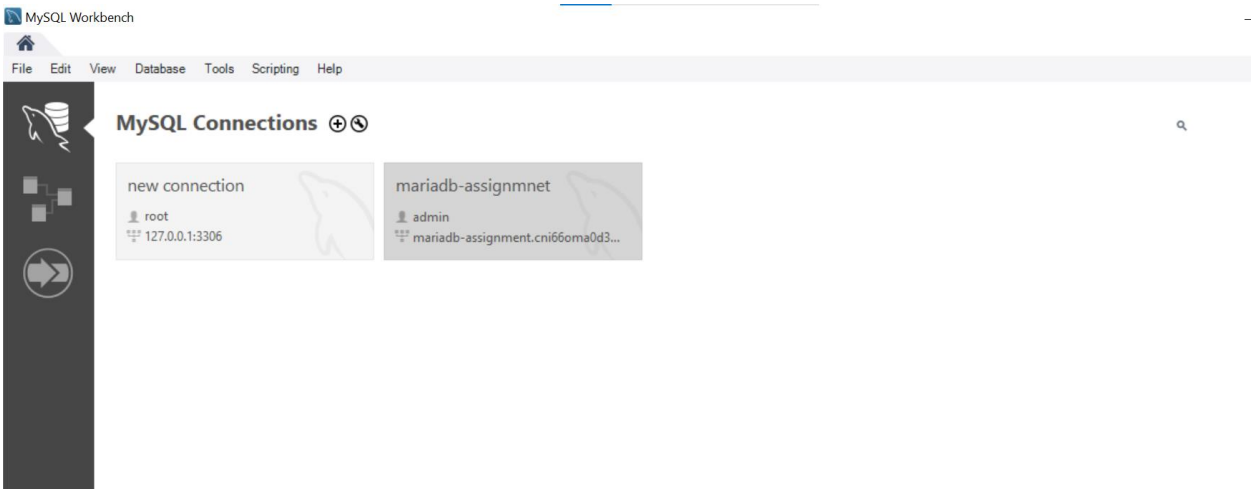
Now open MySQL workbench and enter the required details. Click on Store in Vault to enter the password

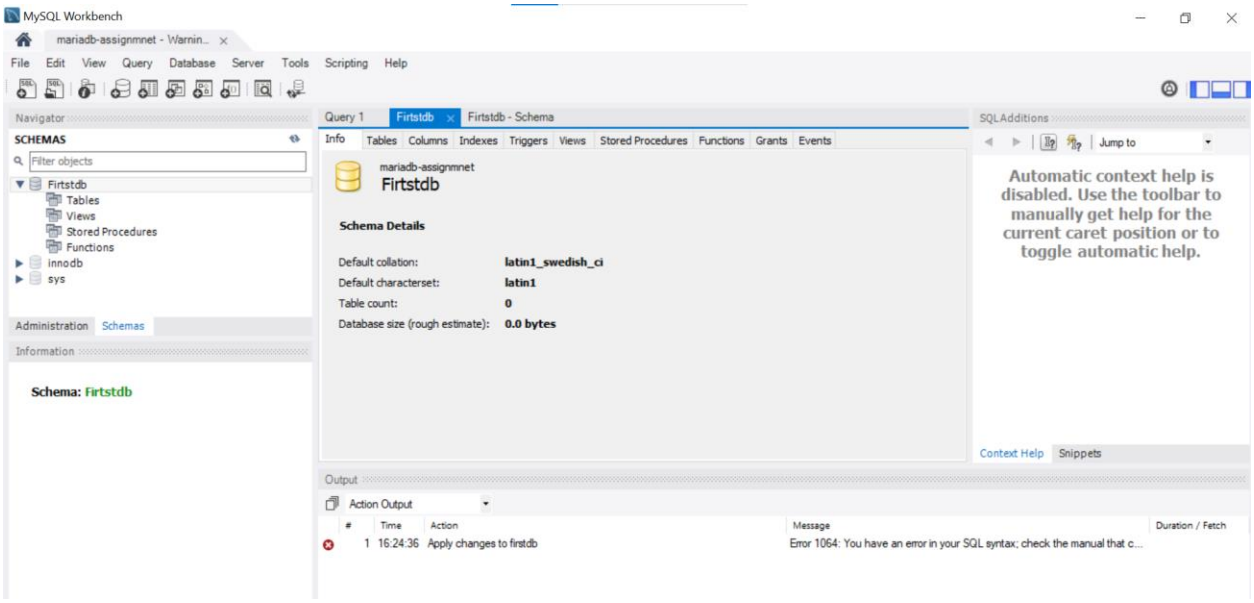


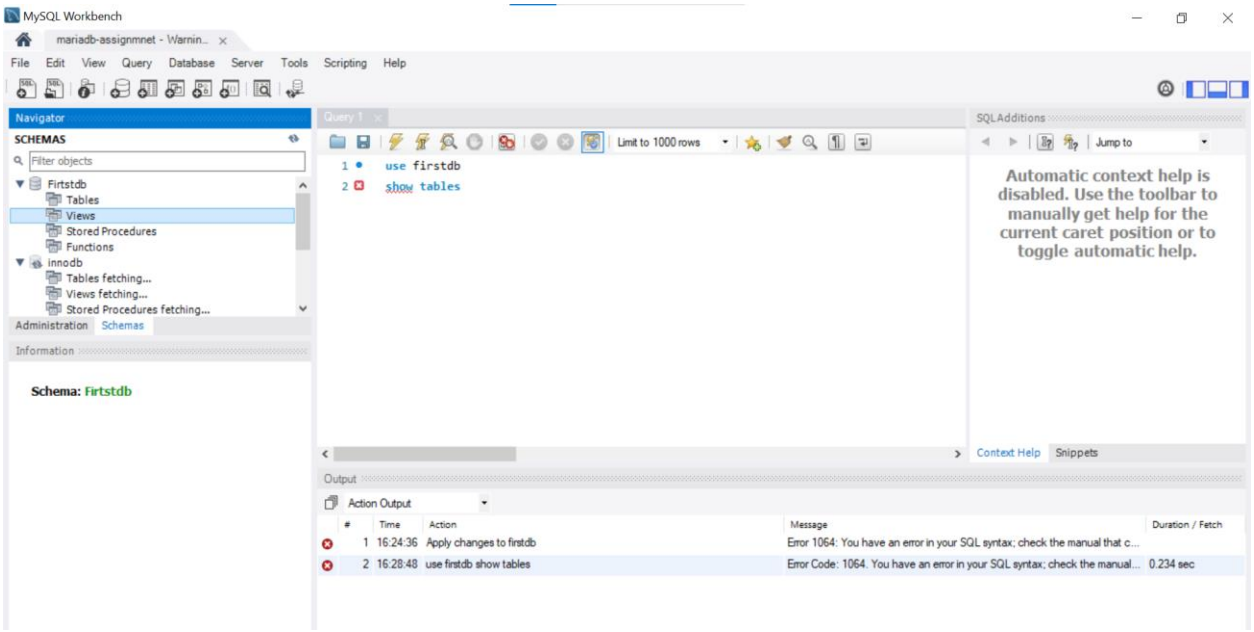

Click on test connection



Then click on OK






You can now run SQL queries and manage your database from the SQL client

## Linux based EC2 Instance

Let's Connect to the DB using a Linux-Based EC2 Instance. Create an Amazon Linux instance in the same VPC as the database.

Then install MariaDB client.

**sudo yum update -y >>>>> sudo yum install mariadb105 –y**

Note the **Endpoint** and **Port** from the RDS console as mentioned before.

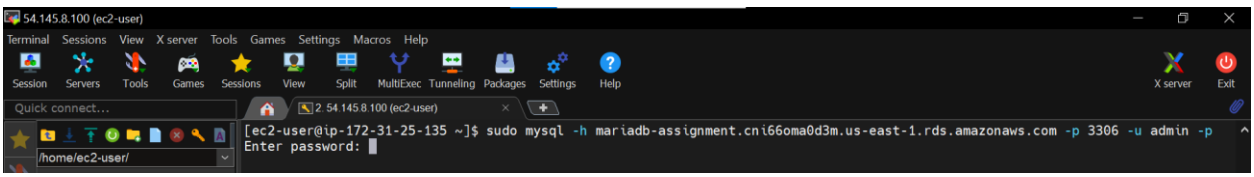
Connect to MariaDB using the below command

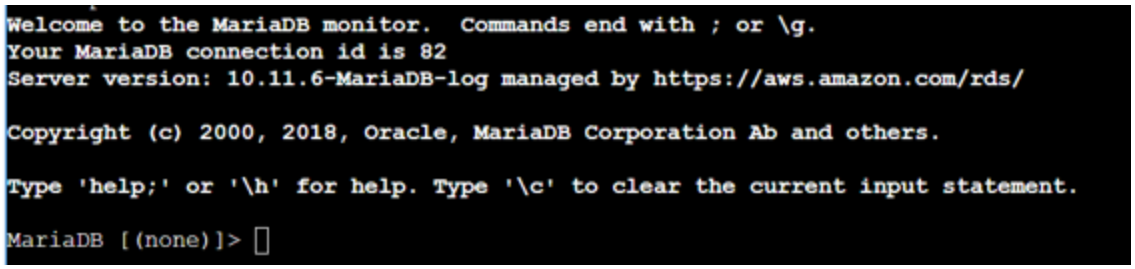
mysql -h <endpoint> -P <port> -u <username> -p

mysql -h mariadb-assignment.cni66oma0d3m.us-east-1.rds.amazonaws.com -p 3306 -u admin –p

**Enter password when prompted**

**12345678**






It is successfully connected. you can run SQL commands directly from the terminal

We've successfully set up a MariaDB RDS instance and connect to it from both a Windows SQL client and a Linux-based EC2 instance

1. Next, we'll do AuroraDB Assignment

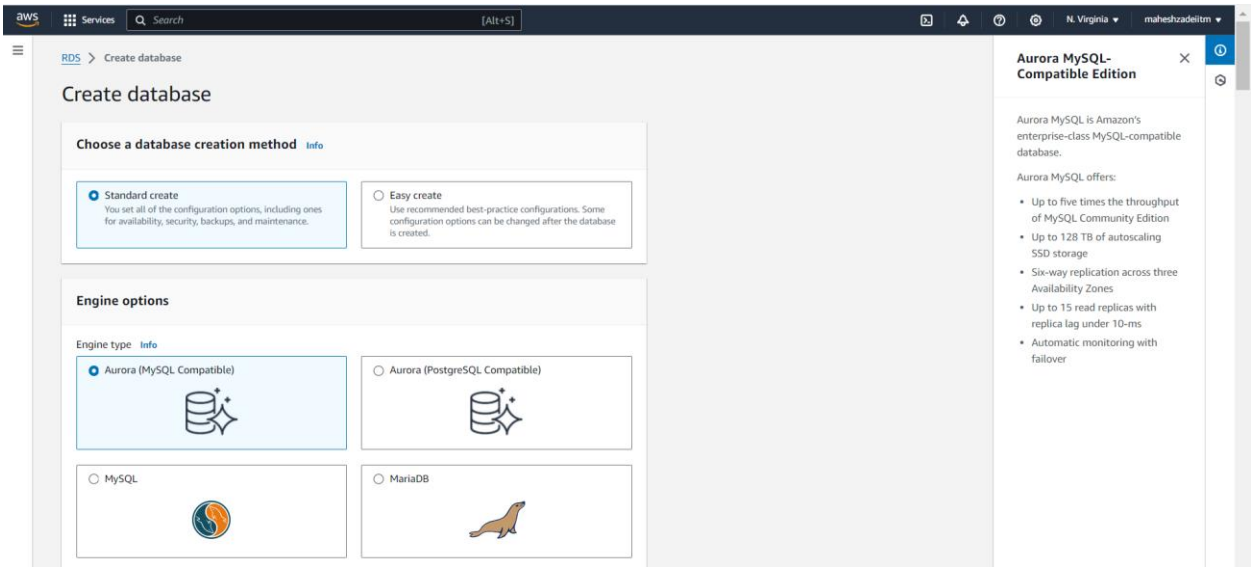
## 2. Problem Statement:

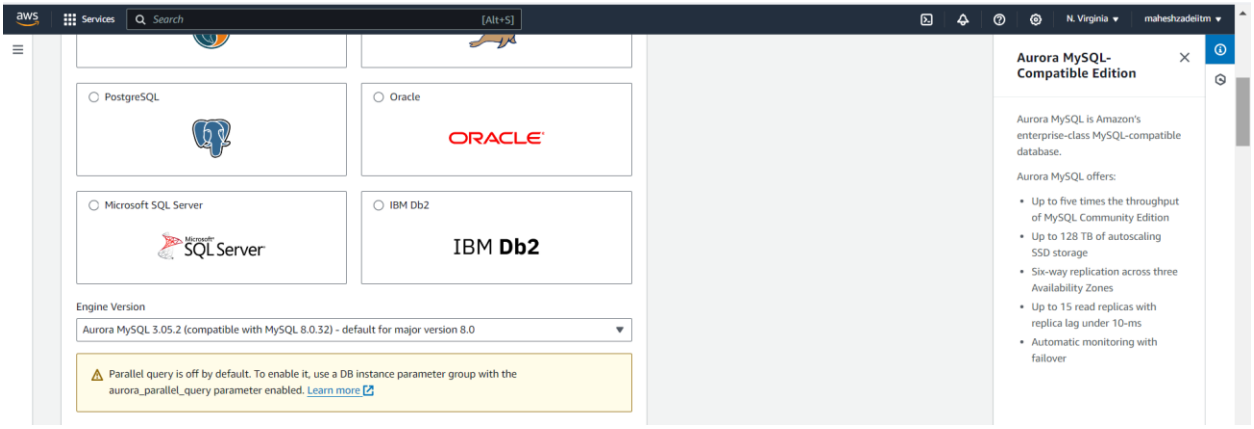
3. You work for XYZ Corporation. Their application requires a SQL service that can
4. store data which can be retrieved if required. Implement a suitable RDS engine
5. for the same.

## 6. While migrating, you are asked to perform the following
## 7. tasks:

8. 1. Create an AuroraDB Engine based RDS Database.
9. 2. Create 2 Read Replicas in different availability zones for better
10. infrastructure availability.

Go to AWS Management Console → RDS → Databases → Create Database

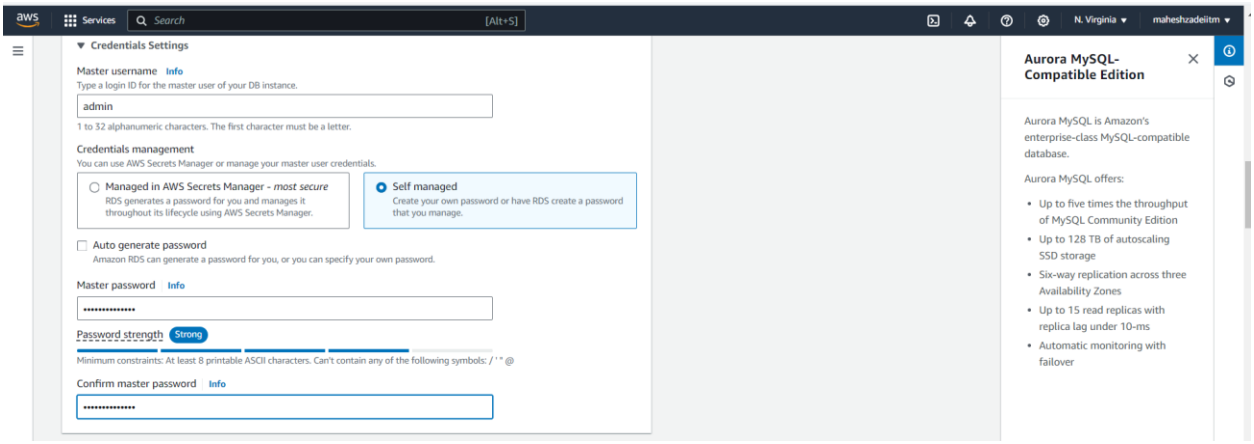


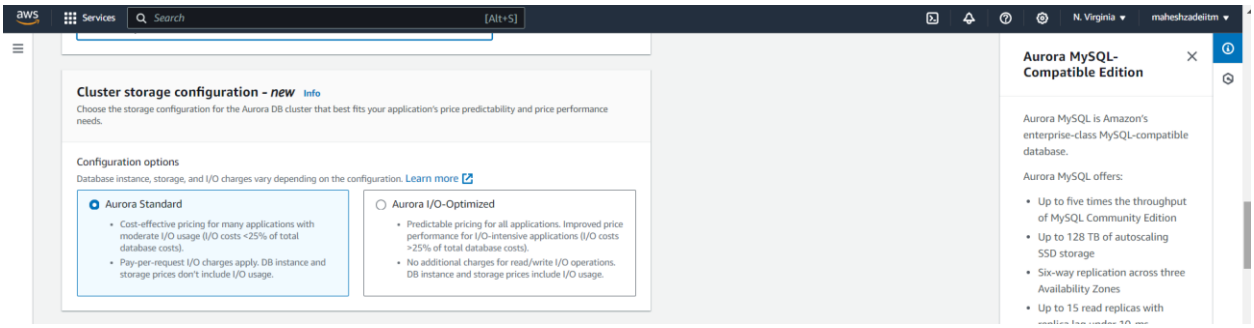


Master user admin

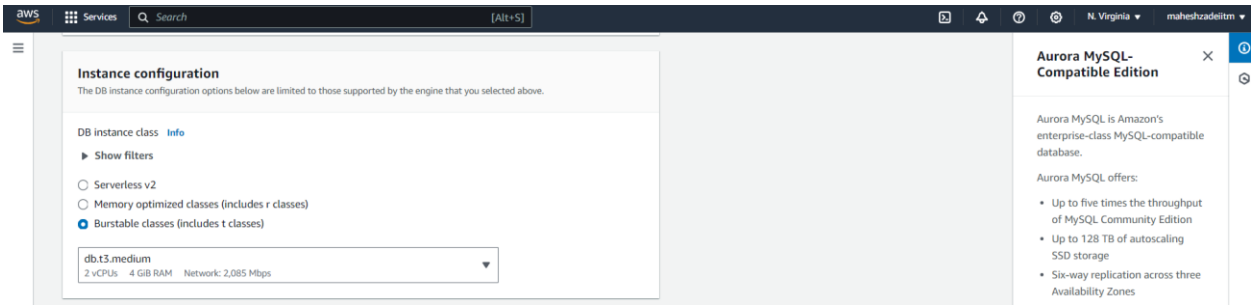
Password is admin#12345678



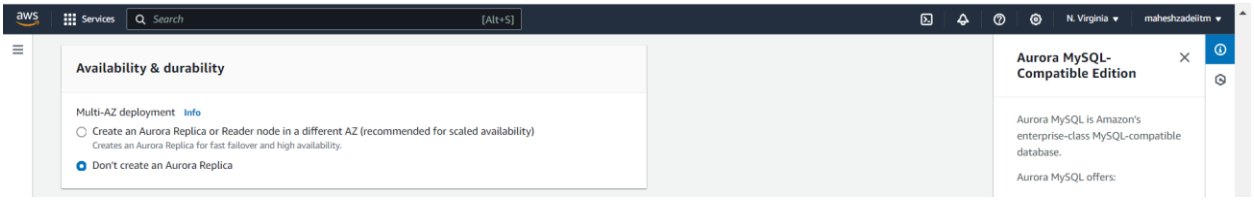

Keep default settings for Connectivity, Tags and Database Authentication

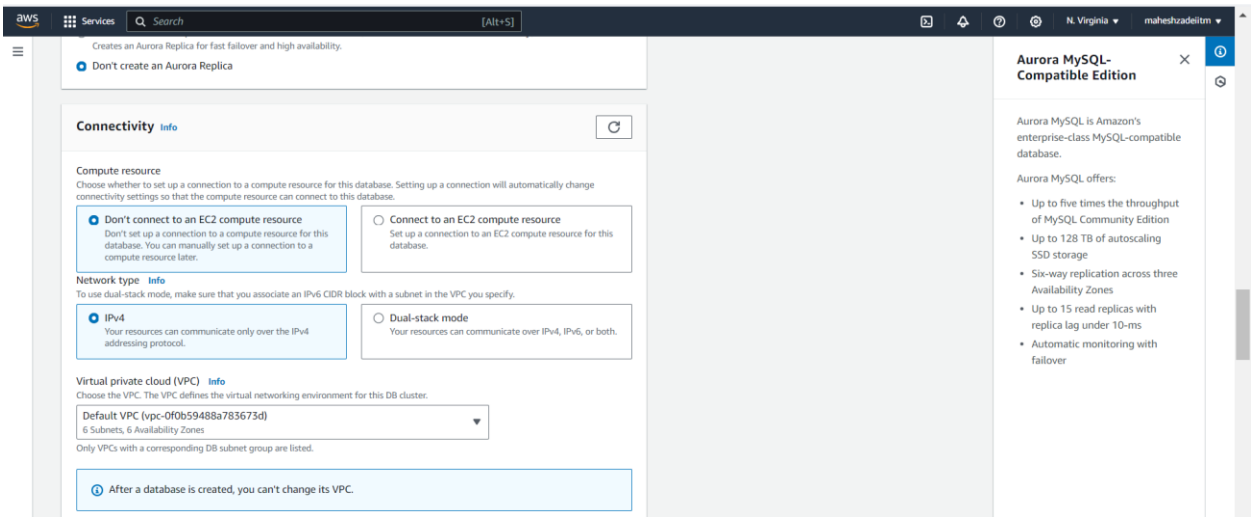


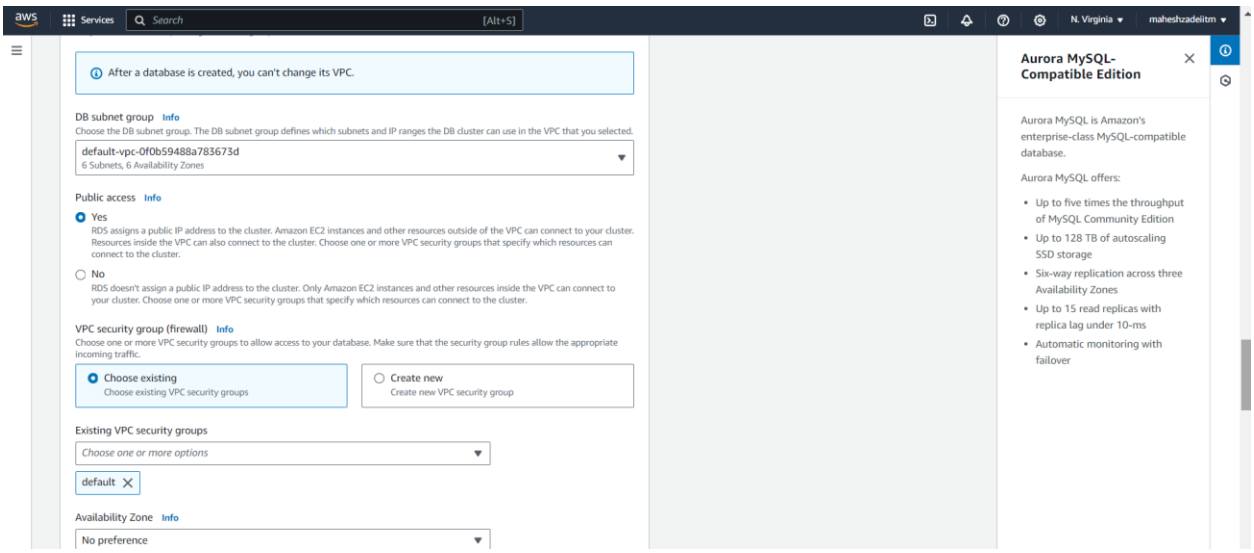

Select db t3 .medium



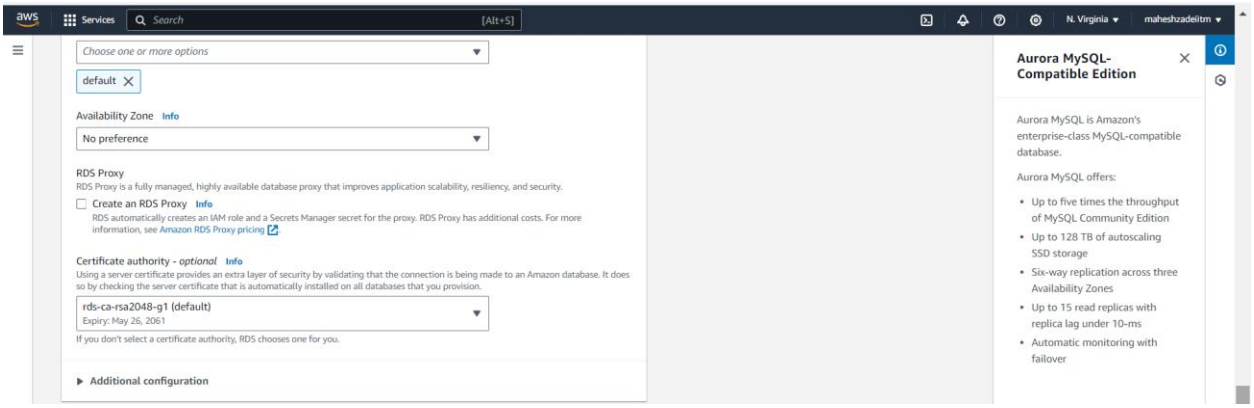

Go to Additional Configuration



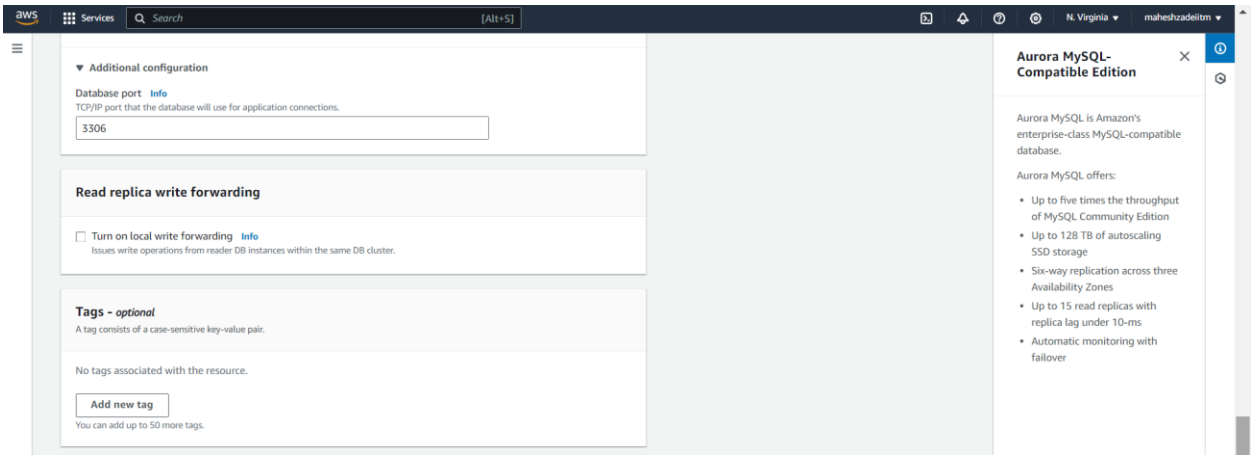


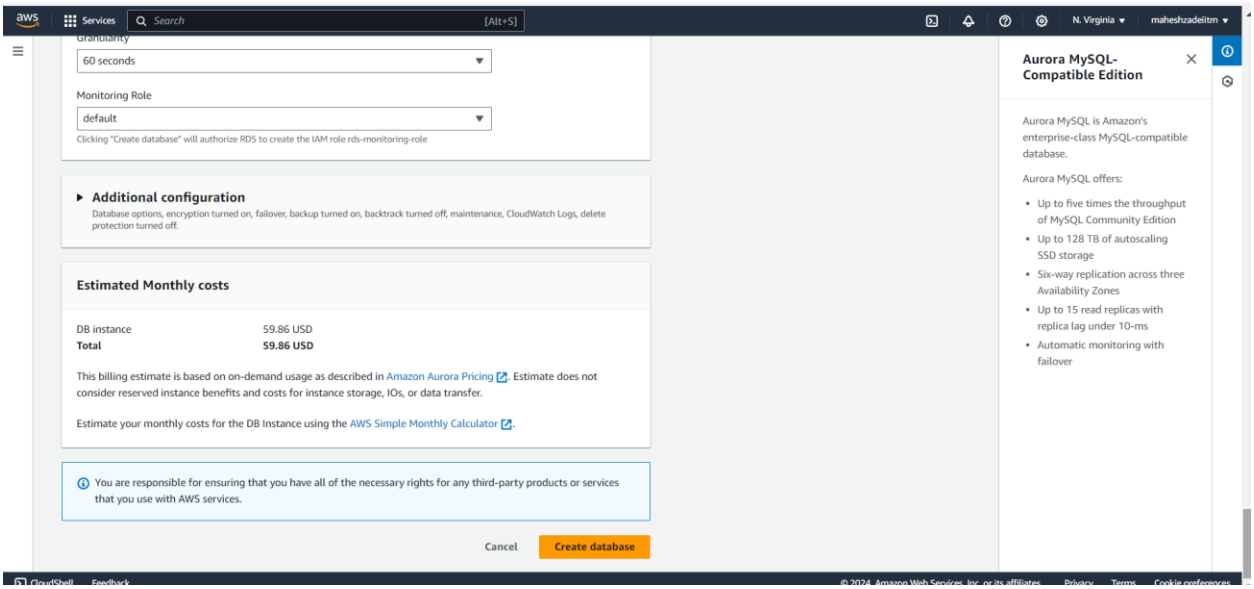




Choose default VPC




Go to Additional Configuration

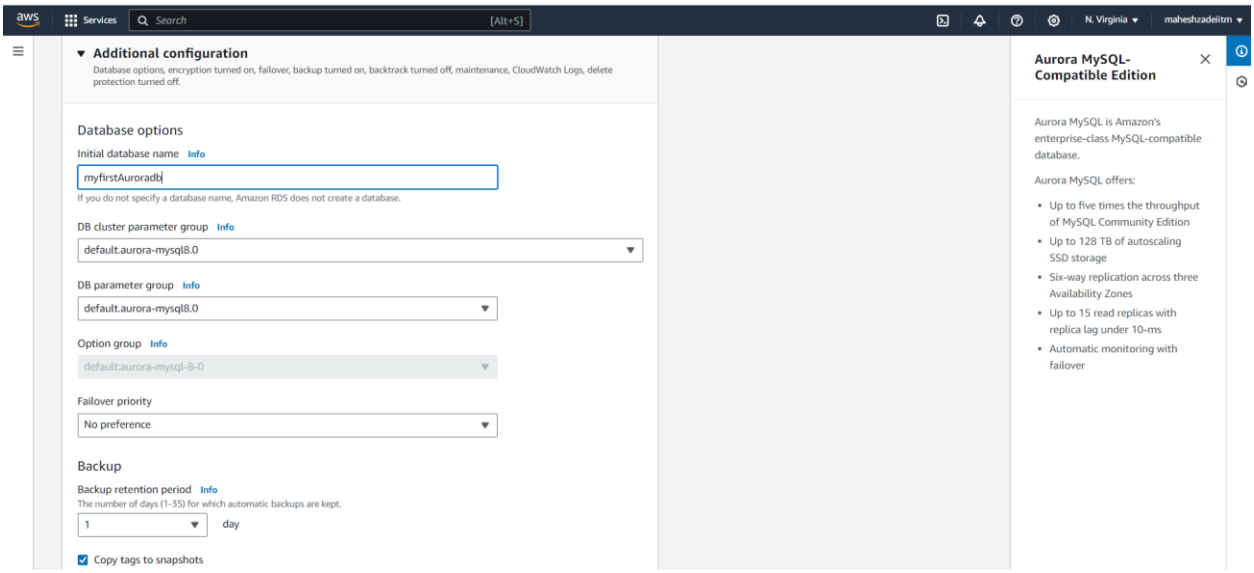


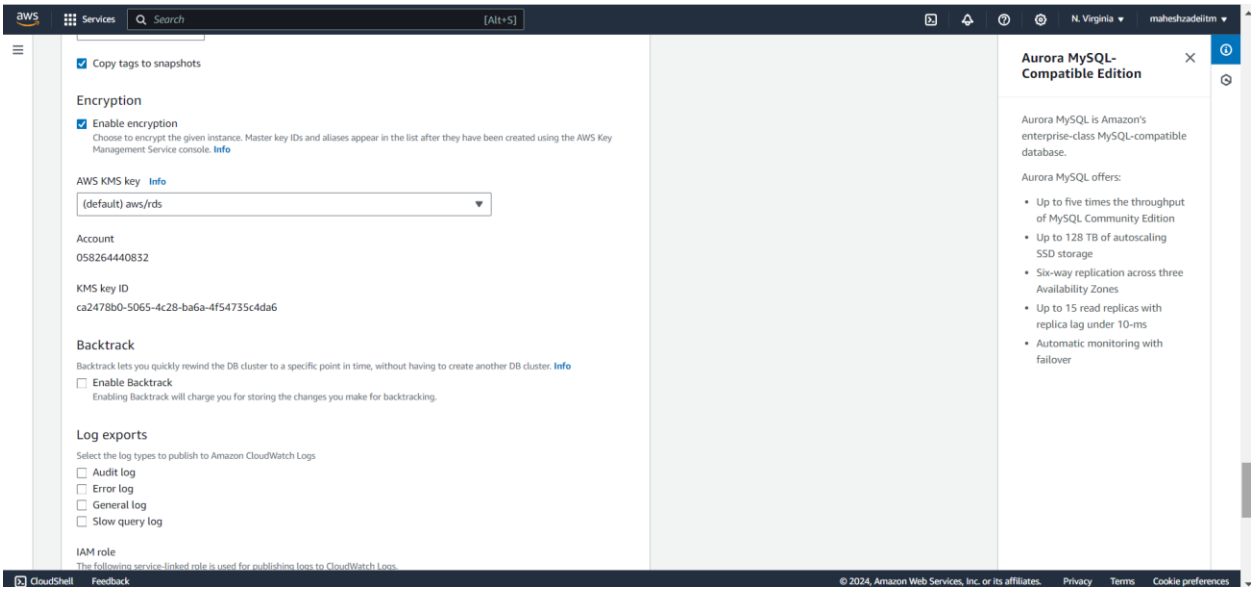



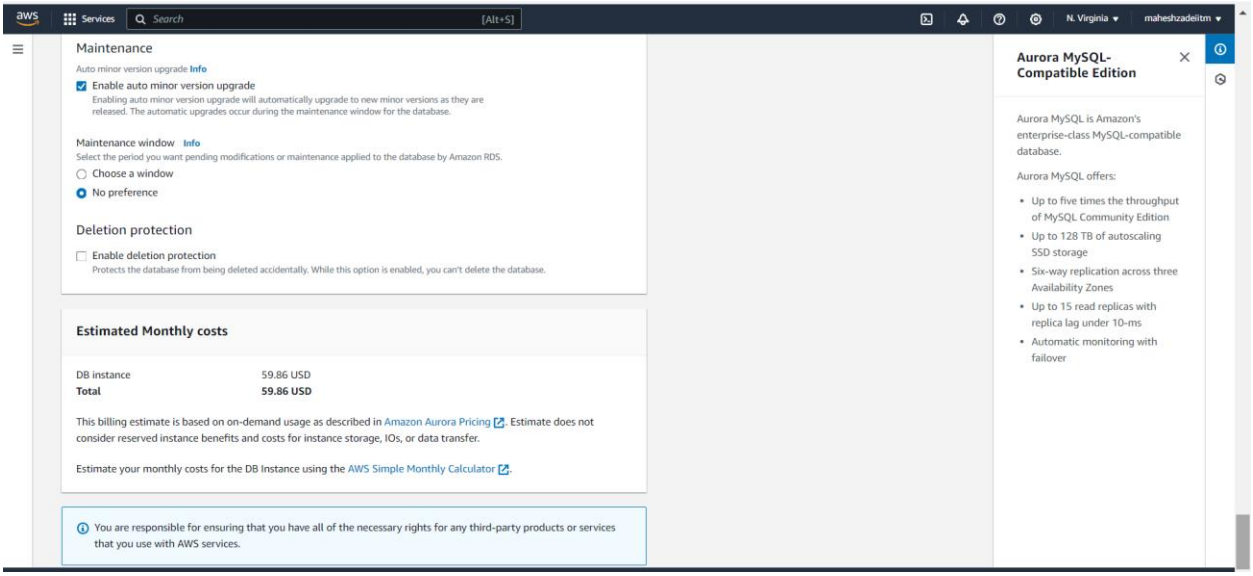

Go to additional configuration

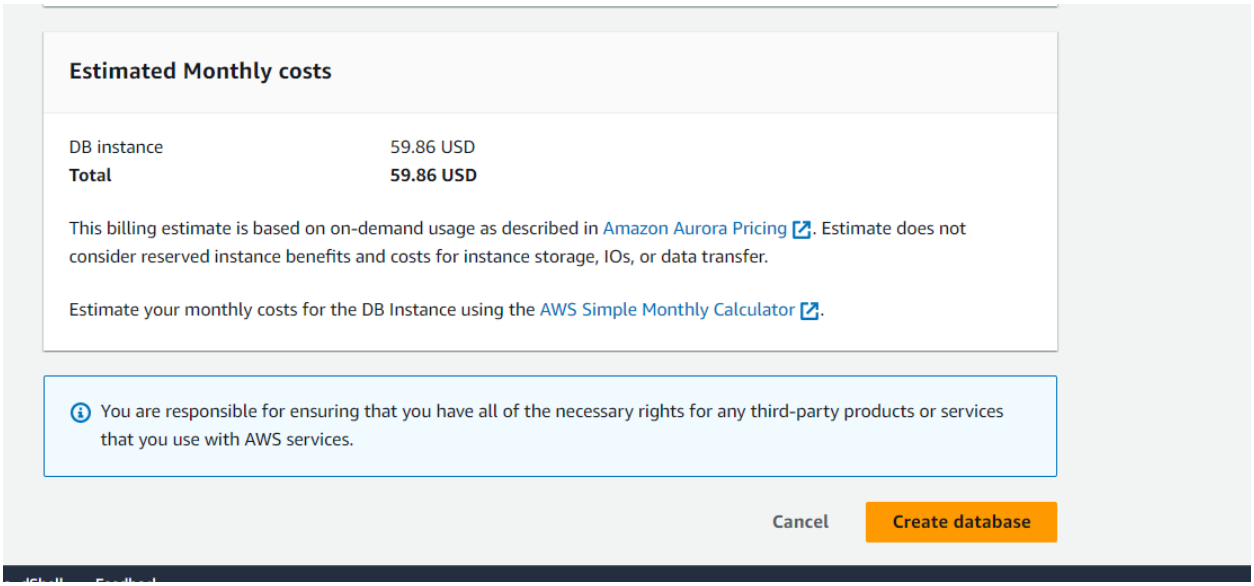
Give a name to the initial database.

Keep the remaining settings to defaults and click on Create

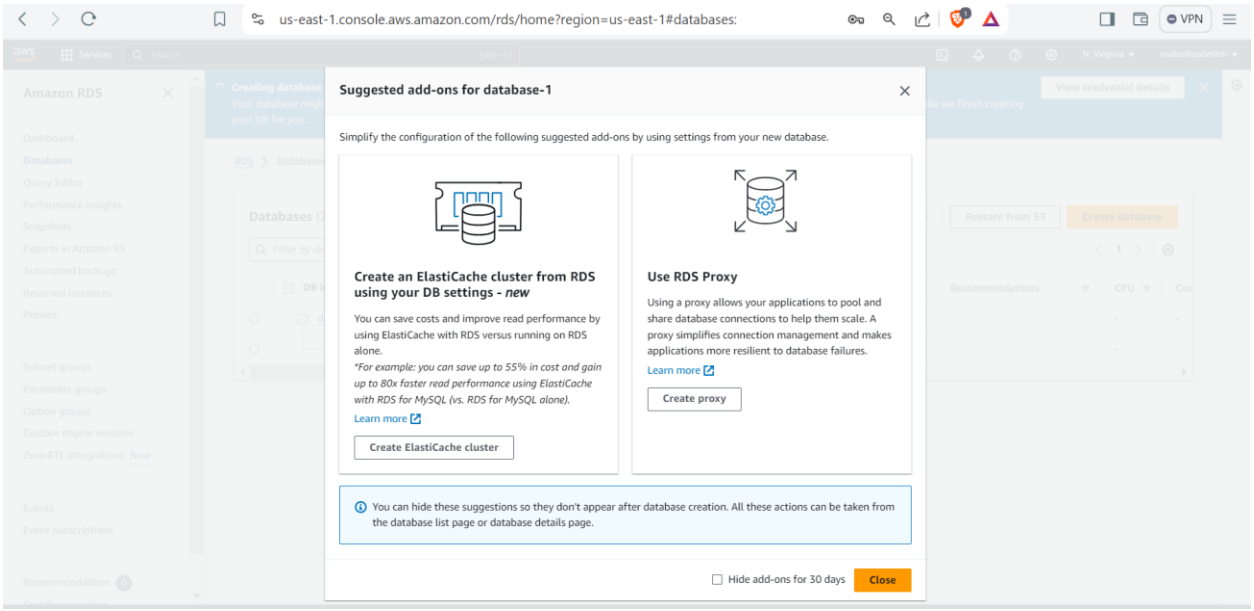

aws
Services
Search
[Alt+S]
N. Virginia
maheshzadeiitm
Additional configuration
Database options, encryption turned on, failover, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.
Database options
Initial database name Info
myfirstAuroradb
If you do not specify a database name, Amazon RDS does not create a database.
DB cluster parameter group Info
default.aurora-mysql8.0
DB parameter group Info
default.aurora-mysql8.0
Option group Info
default:aurora-mysql-8-0
Failover priority
No preference
Backup
Backup retention period Info
The number of days (1-35) for which automatic backups are kept.
1
day
Copy tags to snapshots
Aurora MySQL-Compatible Edition
Aurora MySQL is Amazon's enterprise-class MySQL-compatible database.
Aurora MySQL offers:
Up to five times the throughput of MySQL Community Edition
Up to 128 TB of autoscaling SSD storage
Six-way replication across three Availability Zones
Up to 15 read replicas with replica lag under 10-ms
Automatic monitoring with failover


aws
Services
Search
[Alt+S]
N. Virginia
maheshzadeiitm
Copy tags to snapshots
Encryption
Enable encryption
Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. Info
AWS KMS key Info
(default) aws/rds
Account
058264440832
KMS key ID
ca2478b0-5065-4c28-ba6a-4f54735c4da6
Backtrack
Backtrack lets you quickly rewind the DB cluster to a specific point in time, without having to create another DB cluster. Info
Enable Backtrack
Enabling Backtrack will charge you for storing the changes you make for backtracking.
Log exports
Select the log types to publish to Amazon CloudWatch Logs
Audit log
Error log
General log
Slow query log
IAM role
The following service-linked role is used for publishing logs to CloudWatch Logs.
Aurora MySQL-Compatible Edition
Aurora MySQL is Amazon's enterprise-class MySQL-compatible database.
Aurora MySQL offers:
Up to five times the throughput of MySQL Community Edition
Up to 128 TB of autoscaling SSD storage
Six-way replication across three Availability Zones
Up to 15 read replicas with replica lag under 10-ms
Automatic monitoring with failover
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences



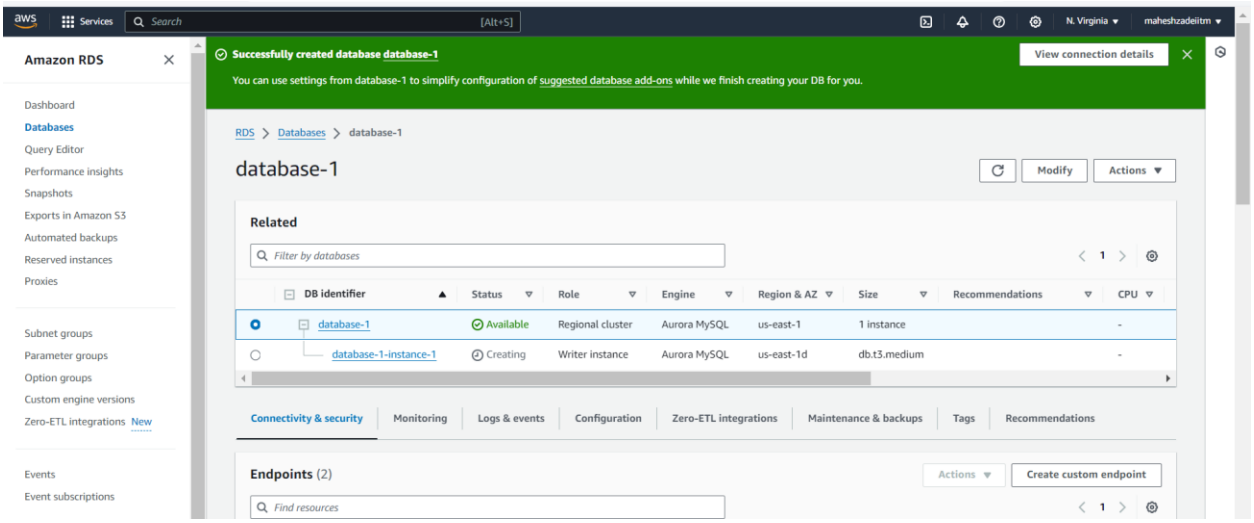

Click create database

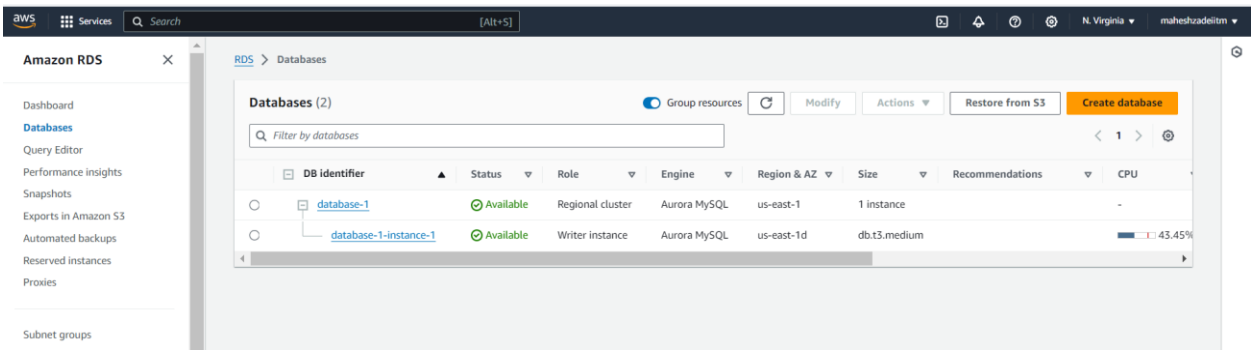



Close

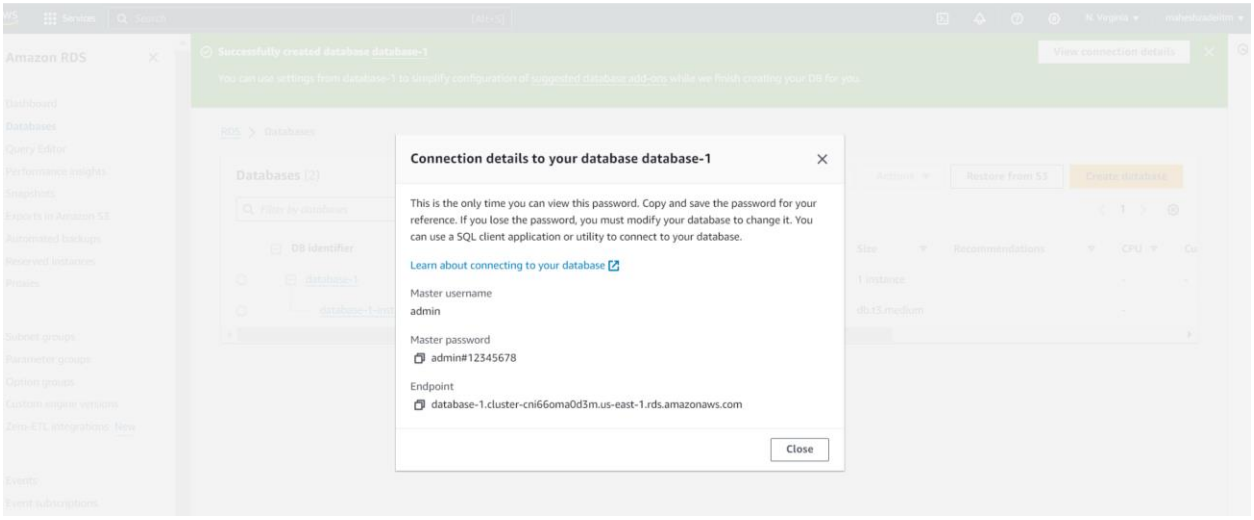
database is created and is available now wait till database instance created .

note endpoint name : database-1.cluster-cni66oma0d3m.us-east-1.rds.amazonaws.com






click on view connection details

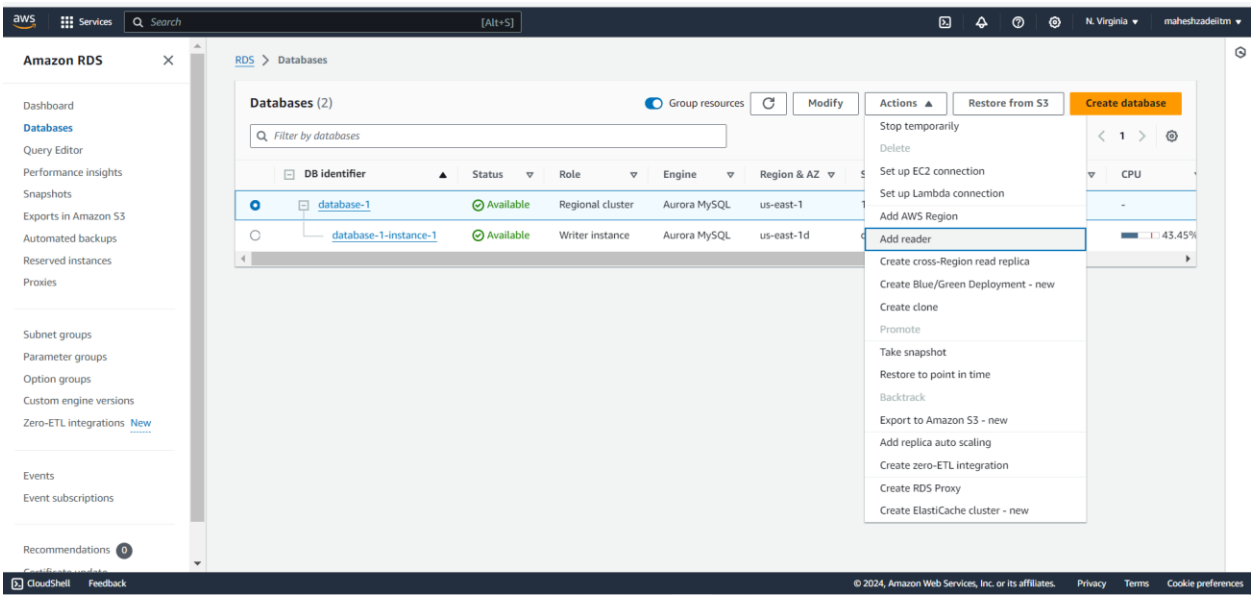



Master username : admin

Master password : admin#12345678

Endpoing : database-1.cluster-cni66oma0d3m.us-east-1.rds.amazonaws.com

Now Let’s create read replicas in 2 different Azs. Go to Actions -> Add reader


Amazon RDS
Dashboard
Databases
Query Editor
Performance insights
Snapshots
Exports in Amazon S3
Automated backups
Reserved instances
Proxies
Subnet groups
Parameter groups
Option groups
Custom engine versions
Zero-ETL integrations New
Events
Event subscriptions
Recommendations 0
RDS > Databases
Databases (2)
Group resources
Modify
Actions
Restore from S3
Create database
Filter by databases
DB identifier
Status
Role
Engine
Region & AZ
CPU
database-1
Available
Regional cluster
Aurora MySQL
us-east-1
database-1-instance-1
Available
Writer instance
Aurora MySQL
us-east-1d
43.45%
Stop temporarily
Delete
Set up EC2 connection
Set up Lambda connection
Add AWS Region
Add reader
Create cross-Region read replica
Create Blue/Green Deployment - new
Create clone
Promote
Take snapshot
Restore to point in time
Backtrack
Export to Amazon S3 - new
Add replica auto scaling
Create zero-ETL integration
Create RDS Proxy
Create ElastiCache cluster - new
CloudShell
Feedback
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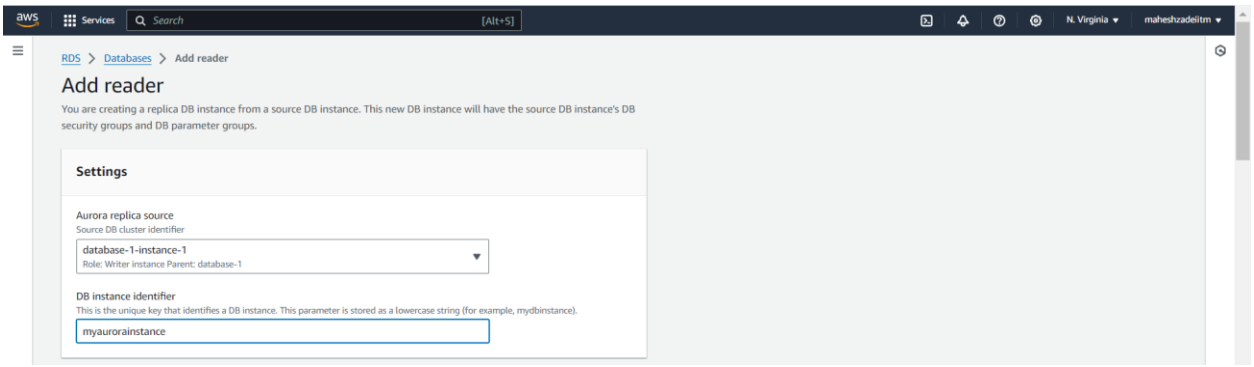
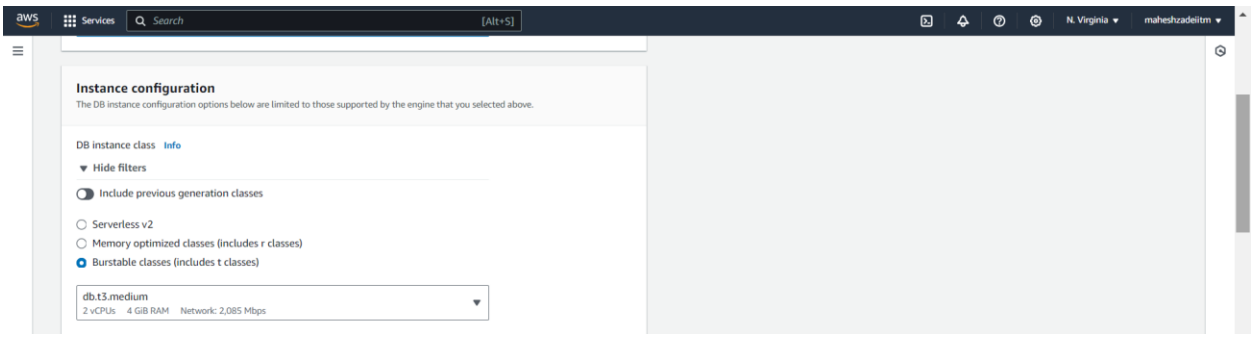
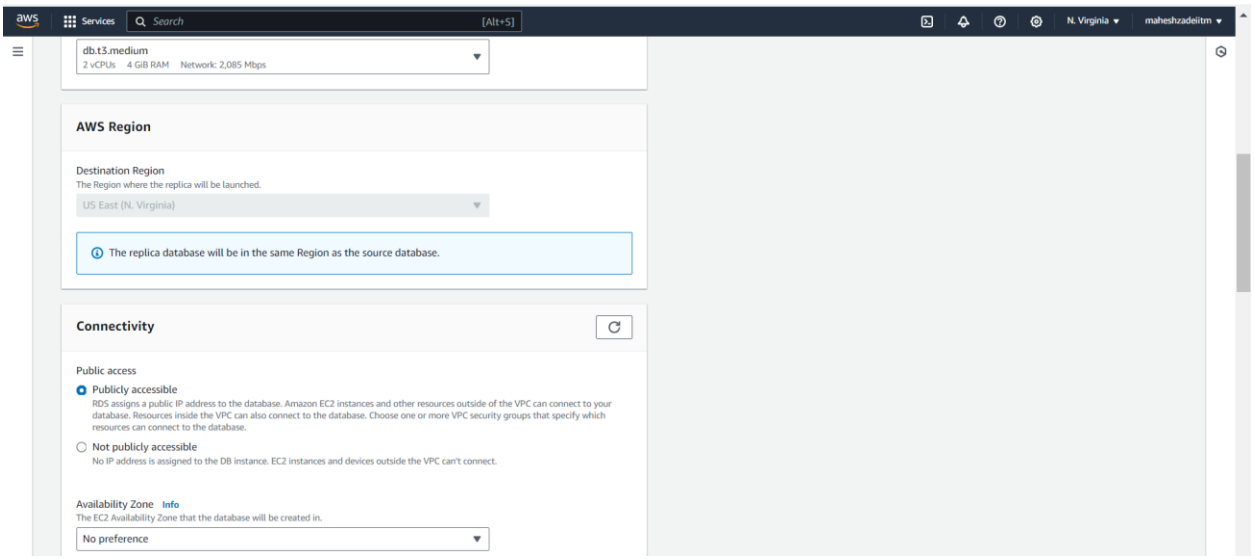
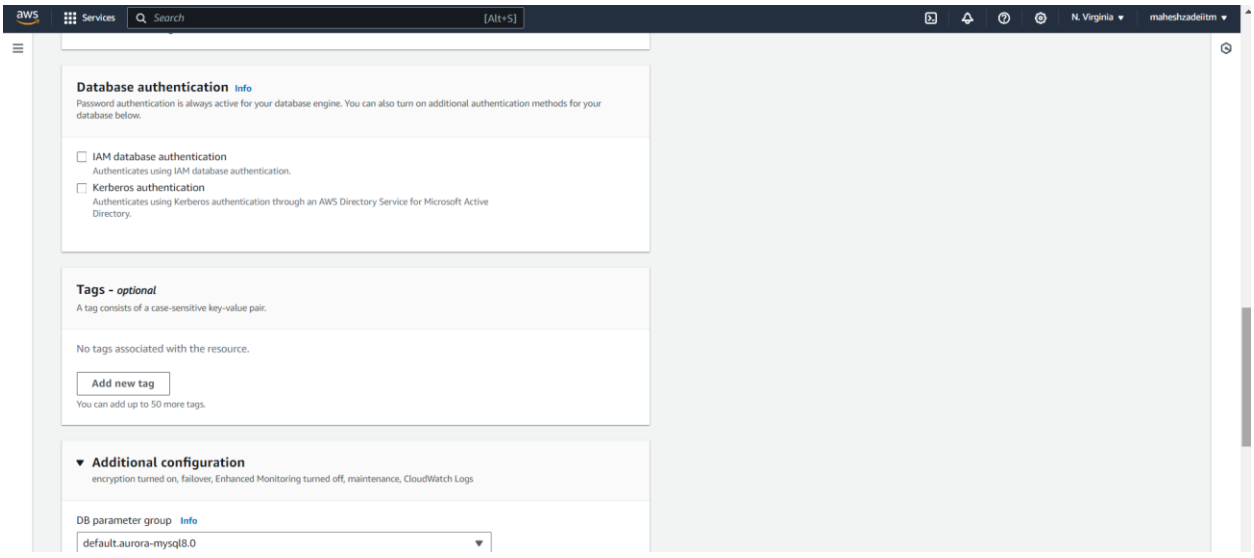
Privacy
Terms
Cookie preferences

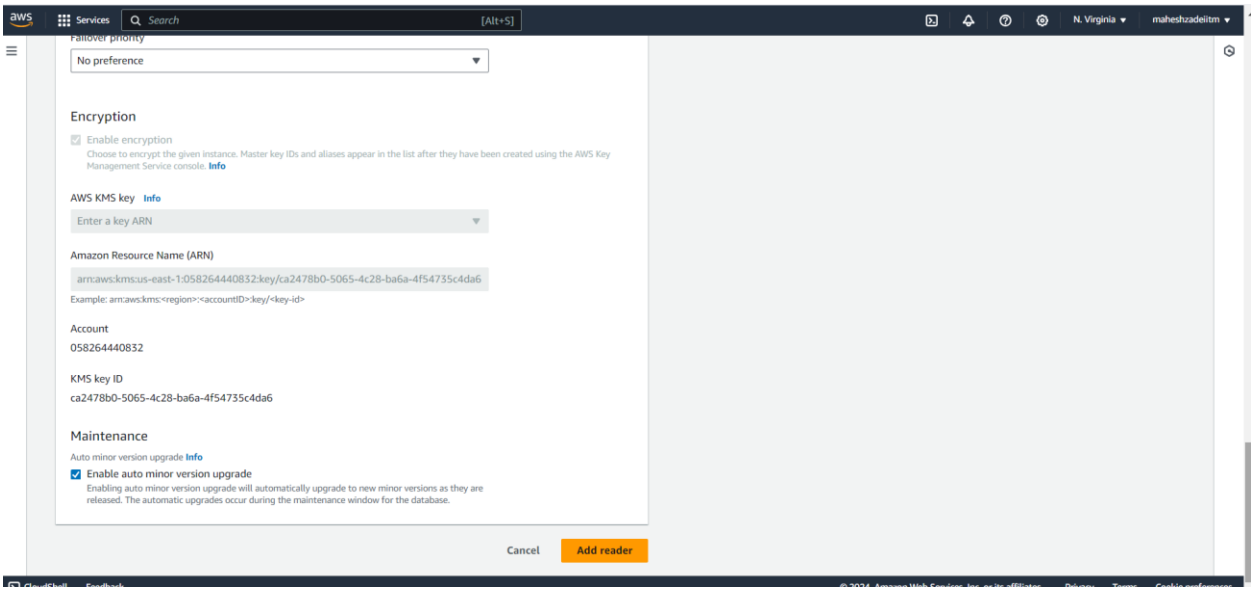

RDS > Databases > Add reader
Add reader
You are creating a replica DB instance from a source DB instance. This new DB instance will have the source DB instance's DB security groups and DB parameter groups.
Settings
Aurora replica source
Source DB cluster identifier
database-1-instance-1
Role: Writer instance Parent: database-1
DB instance identifier
This is the unique key that identifies a DB instance. This parameter is stored as a lowercase string (for example, mydbinstance).
myaurorainstance


Instance configuration
The DB instance configuration options below are limited to those supported by the engine that you selected above.
DB instance class Info
Hide filters
Include previous generation classes
Serverless v2
Memory optimized classes (includes r classes)
Burstable classes (includes t classes)
db.t3.medium
2 vCPUs 4 GiB RAM Network: 2,085 Mbps



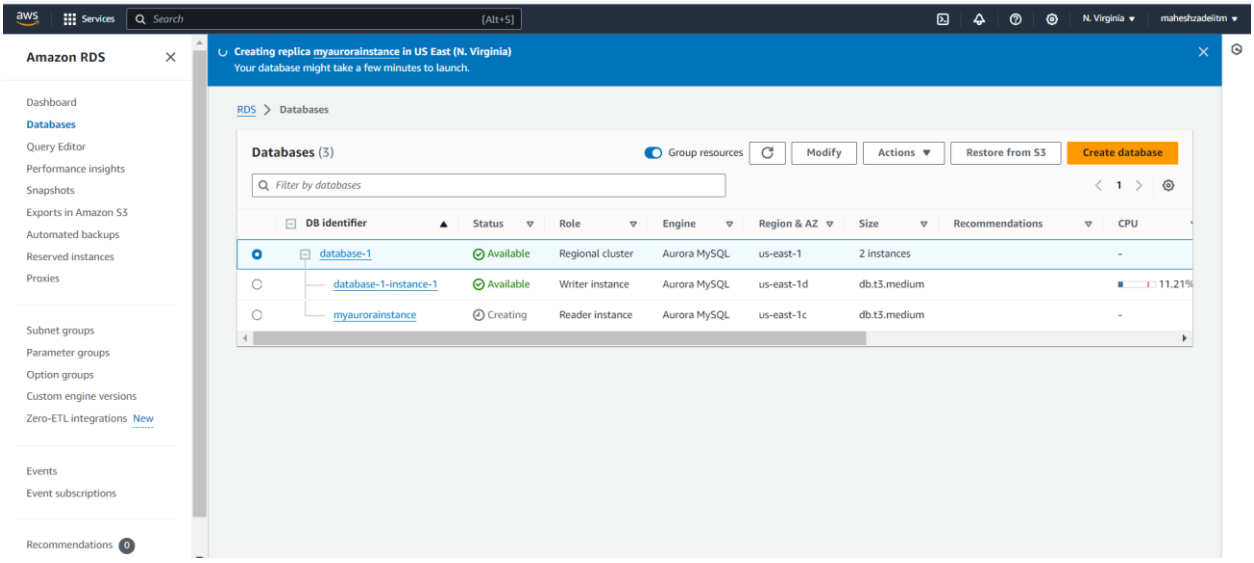

**Keep the remaining settings to defaults and click on Add Reader**

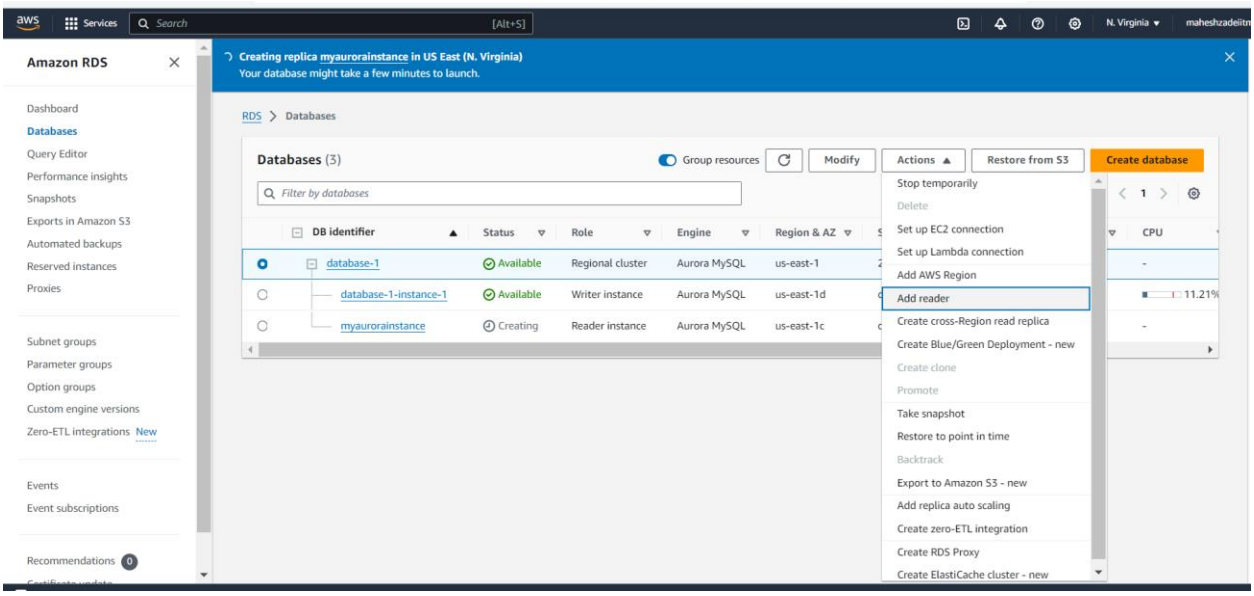





Read replica is getting created. Meanwhile, we go and create another read replica in a different AZ.

Choose cluster → Go to Actions -> Add reader




Amazon RDS
Creating replica myaurorainstance in US East (N. Virginia)
Your database might take a few minutes to launch.
RDS > Databases
Databases (3)
Group resources
Modify
Actions
Restore from S3
Create database
Filter by databases
DB identifier
Status
Role
Engine
Region & AZ
CPU
database-1
Available
Regional cluster
Aurora MySQL
us-east-1
database-1-instance-1
Available
Writer instance
Aurora MySQL
us-east-1d
11.21%
myaurorainstance
Creating
Reader instance
Aurora MySQL
us-east-1c
Stop temporarily
Delete
Set up EC2 connection
Set up Lambda connection
Add AWS Region
Add reader
Create cross-Region read replica
Create Blue/Green Deployment - new
Create clone
Promote
Take snapshot
Restore to point in time
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Export to Amazon S3 - new
Add replica auto scaling
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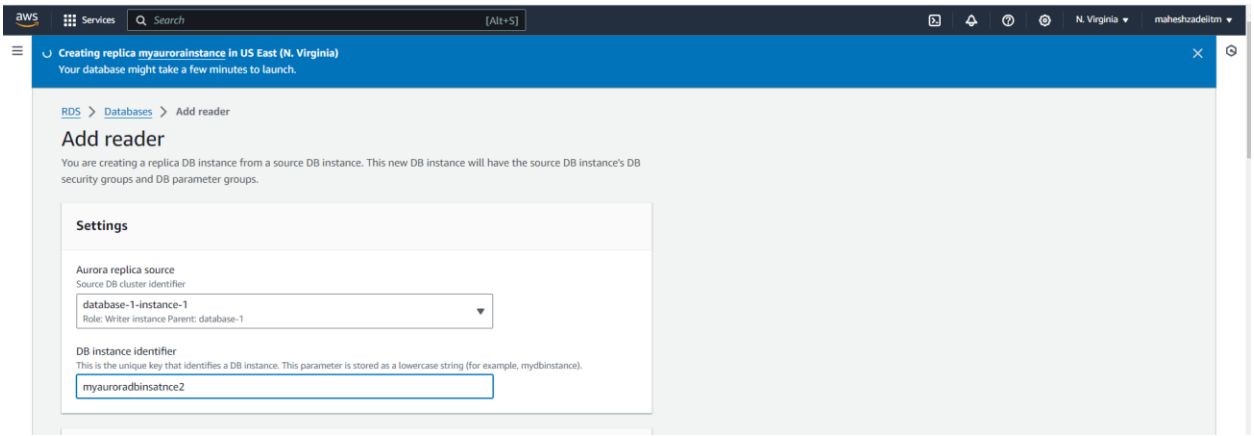
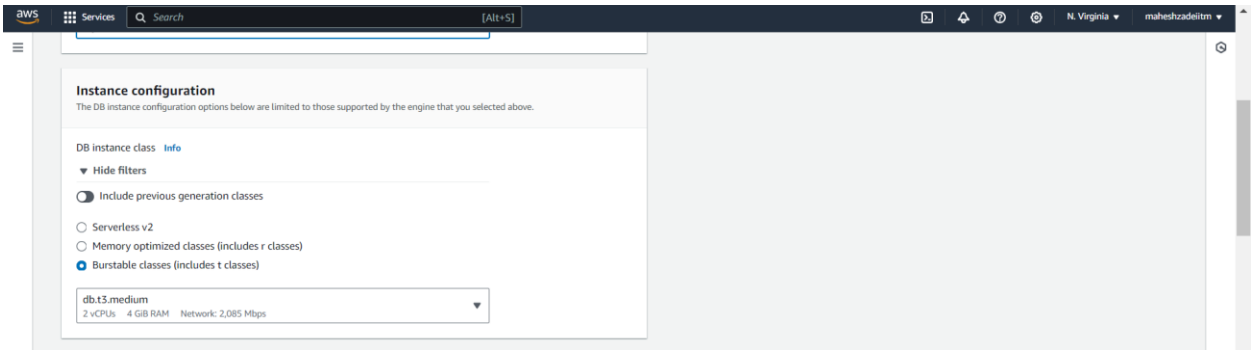
Subnet groups
Parameter groups
Option groups
Custom engine versions
Zero-ETL integrations New
Events
Event subscriptions
Recommendations 0


Creating replica myaurorainstance in US East (N. Virginia)
Your database might take a few minutes to launch.
RDS > Databases > Add reader
Add reader
You are creating a replica DB instance from a source DB instance. This new DB instance will have the source DB instance's DB security groups and DB parameter groups.
Settings
Aurora replica source
Source DB cluster identifier
database-1-instance-1
Role: Writer instance Parent: database-1
DB instance identifier
This is the unique key that identifies a DB instance. This parameter is stored as a lowercase string (for example, mydbinstance).
myauroradbinsatnce2


Instance configuration
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DB instance class Info
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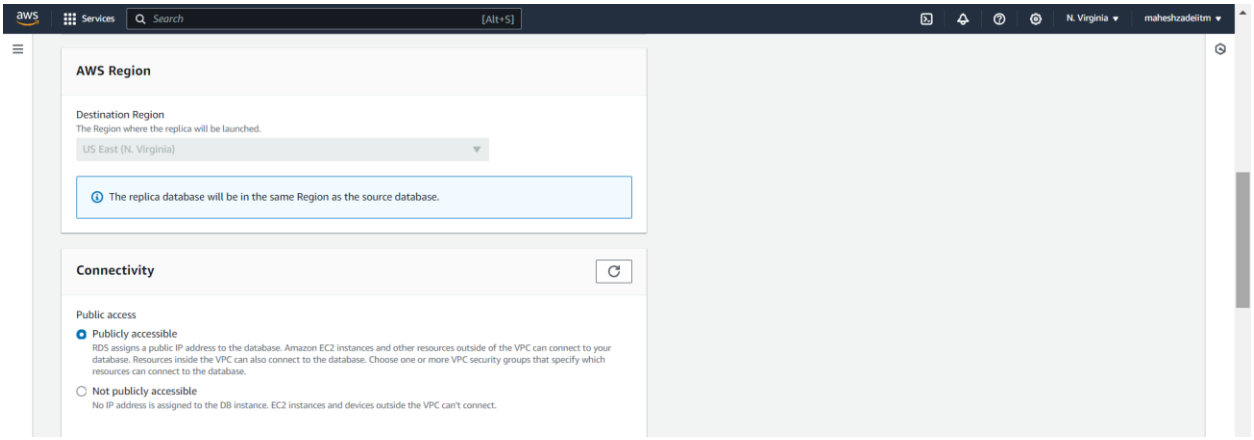
Burstable classes (includes t classes)
db.t3.medium
2 vCPUs 4 GiB RAM Network: 2,085 Mbps




## AZ change to  us-rast-1a