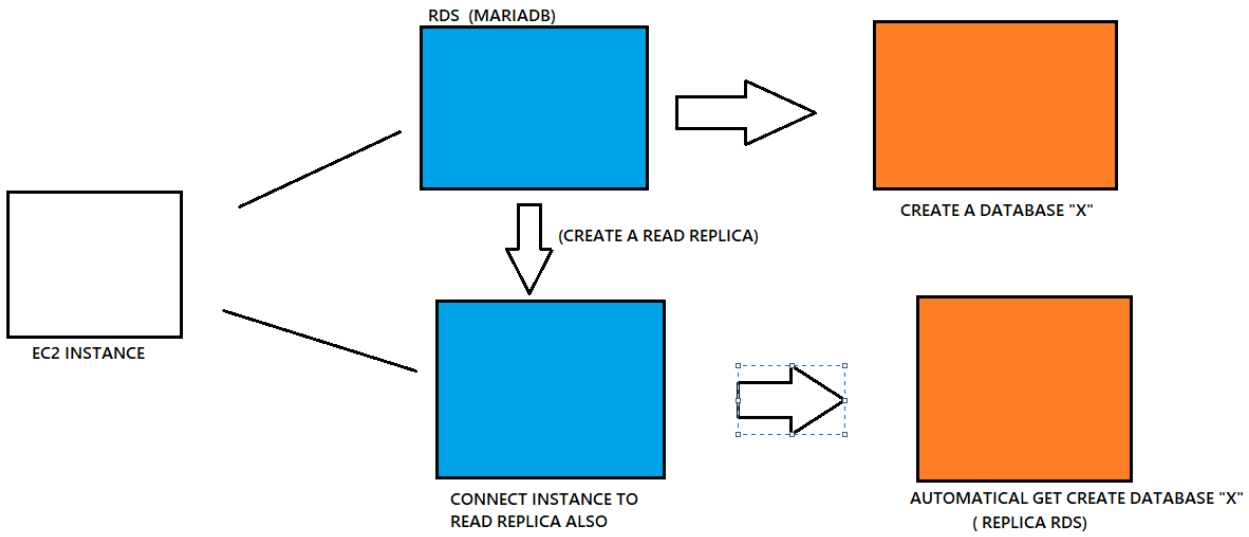
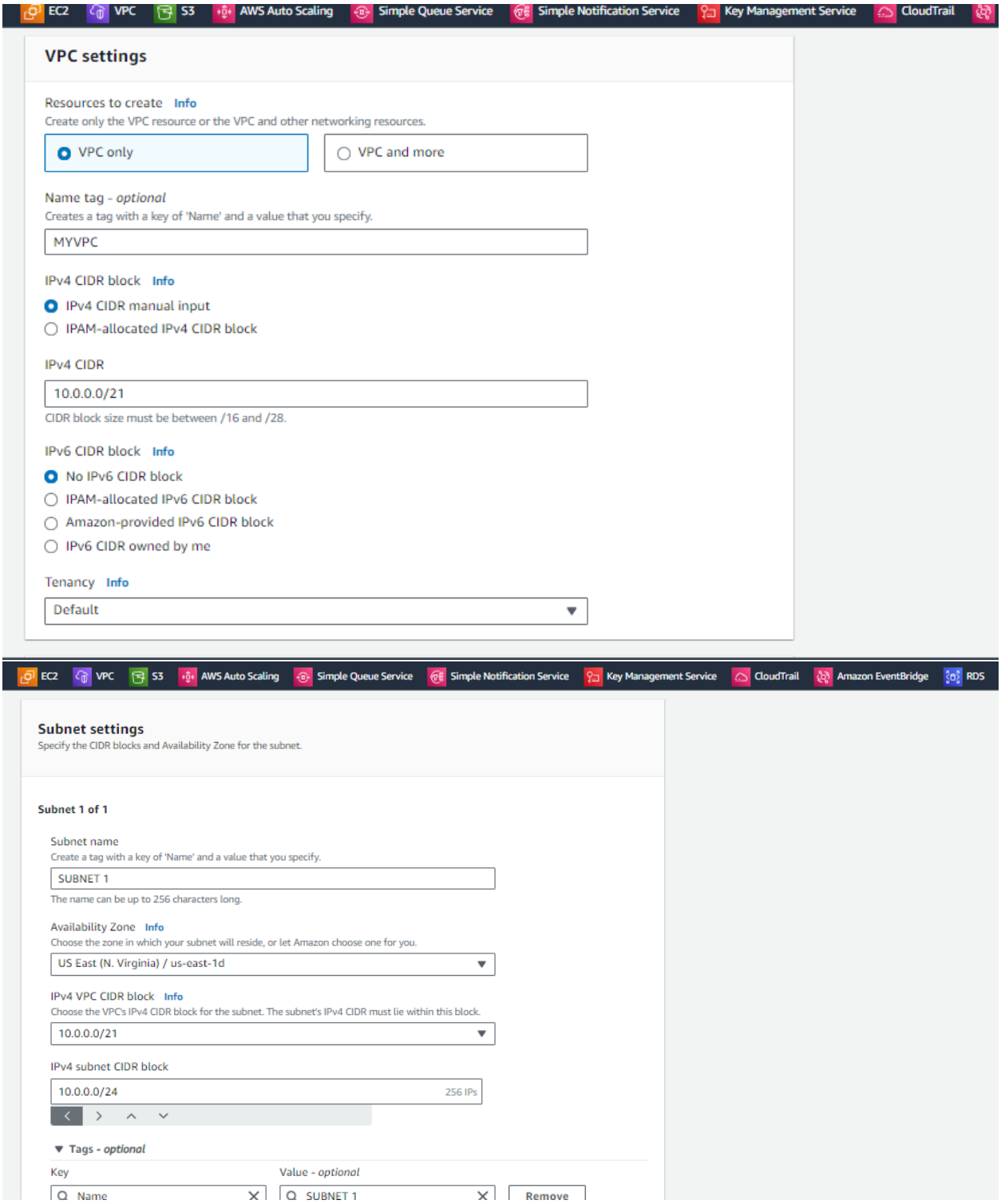
AIM – CONCEPT OF RDS REPLICA/BACKUP OF DATABASE

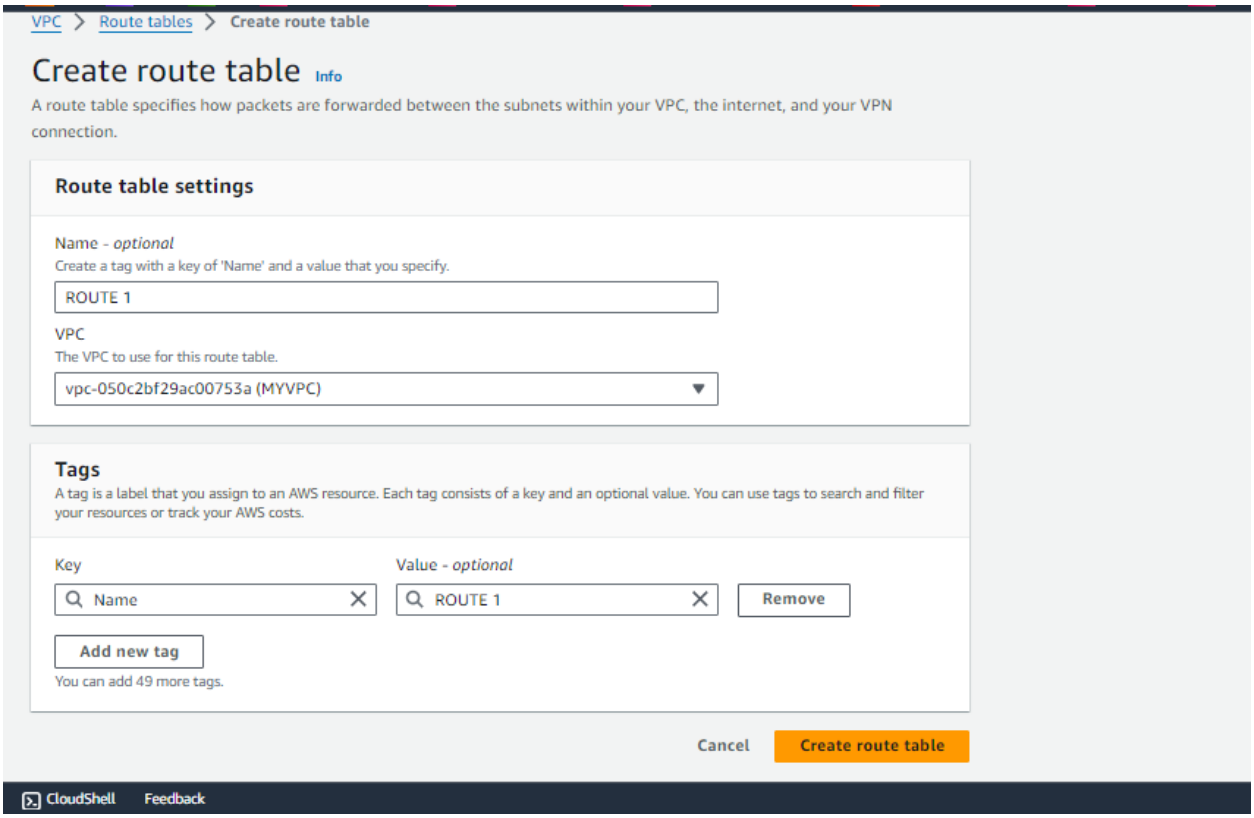
ARCHITECTURE:-



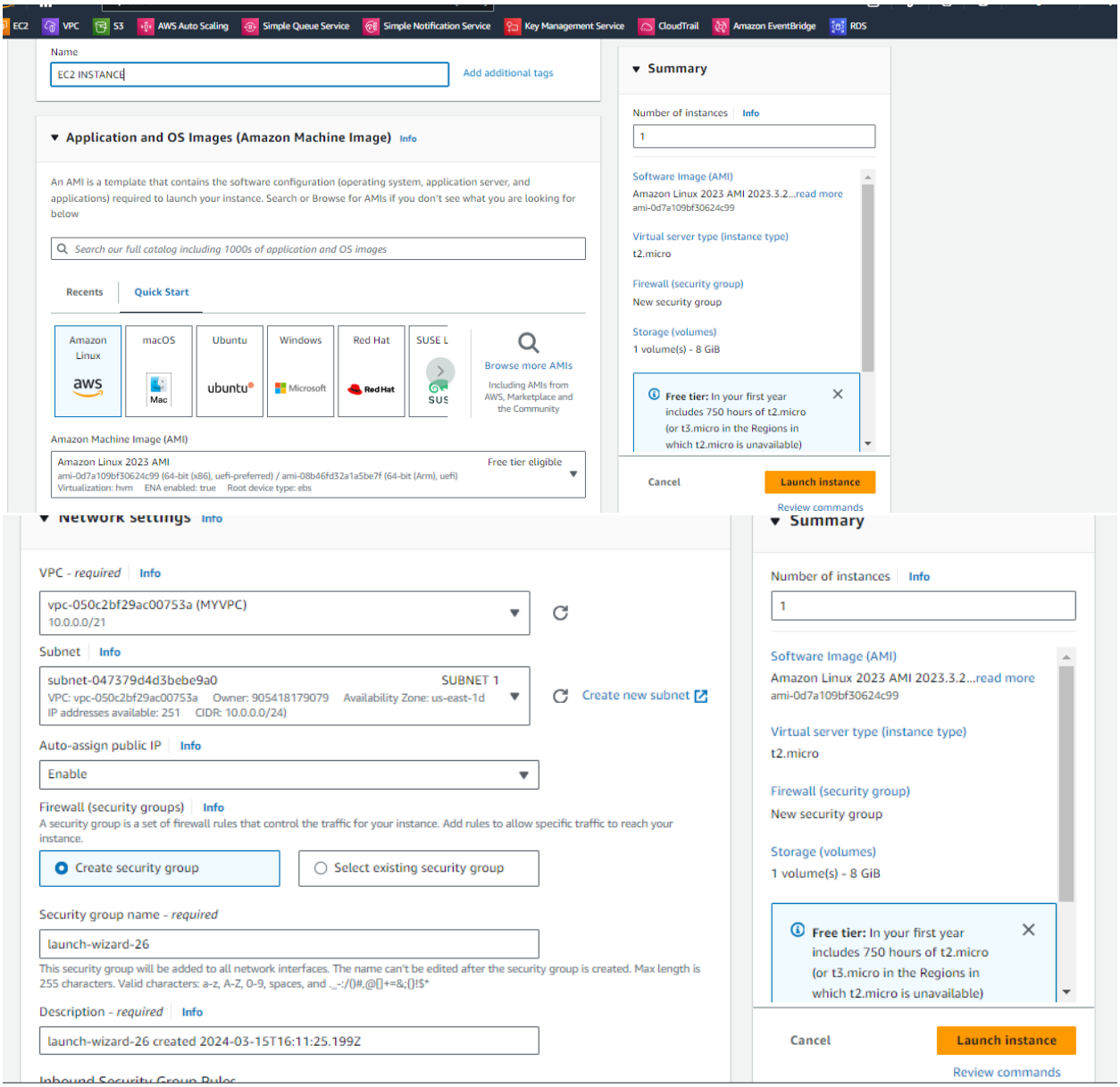

STEP 1-

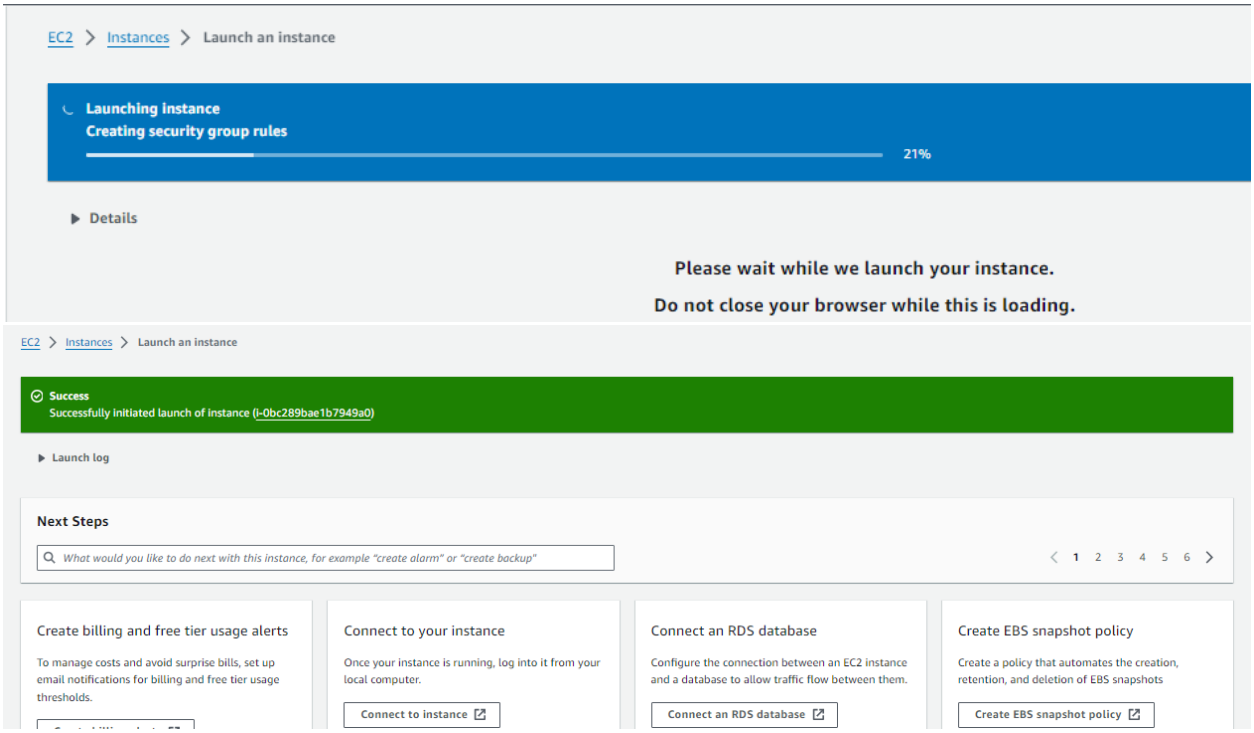
STEP 1-CREATE AN VPC FIRST AND CREATE SUBNET ONE FOR EC2 INSTANCE


EC2
VPC
S3
AWS Auto Scaling
Simple Queue Service
Simple Notification Service
Key Management Service
CloudTrail
VPC settings
Resources to create Info
Create only the VPC resource or the VPC and other networking resources.
VPC only
VPC and more
Name tag - optional
Creates a tag with a key of 'Name' and a value that you specify.
MYVPC
IPv4 CIDR block Info
IPv4 CIDR manual input
IPAM-allocated IPv4 CIDR block
IPv4 CIDR
10.0.0.0/21
CIDR block size must be between /16 and /28.
IPv6 CIDR block Info
No IPv6 CIDR block
IPAM-allocated IPv6 CIDR block
Amazon-provided IPv6 CIDR block
IPv6 CIDR owned by me
Tenancy Info
Default
EC2
VPC
S3
AWS Auto Scaling
Simple Queue Service
Simple Notification Service
Key Management Service
CloudTrail
Amazon EventBridge
RDS
Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.
Subnet 1 of 1
Subnet name
Create a tag with a key of 'Name' and a value that you specify.
SUBNET 1
The name can be up to 256 characters long.
Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
US East (N. Virginia) / us-east-1d
IPv4 VPC CIDR block Info
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.
10.0.0.0/21
IPv4 subnet CIDR block
10.0.0.0/24
256 IPs
Tags - optional
Key
Value - optional
Name
SUBNET 1
Remove

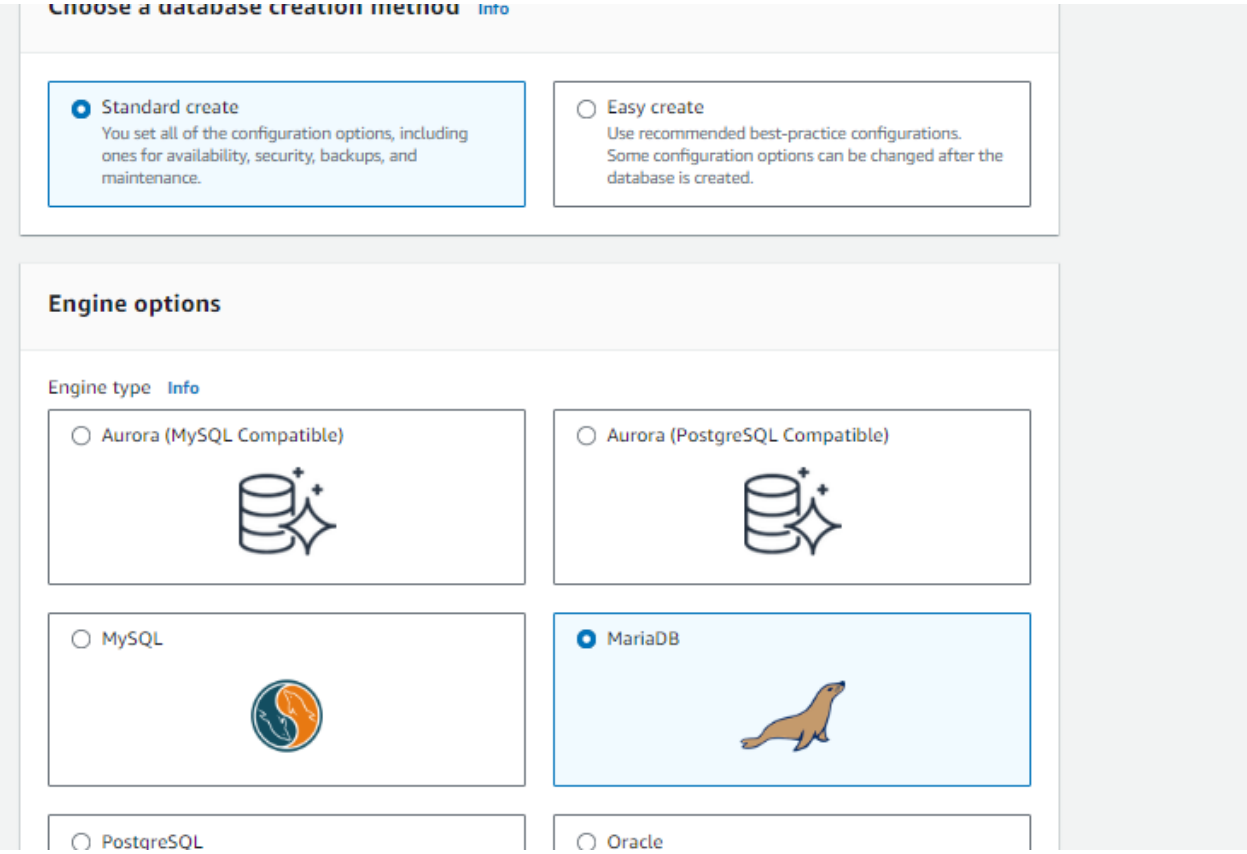



STEP 2- CREATE AN ISNTANCE IN SUBNET 1


EC2
VPC
S3
AWS Auto Scaling
Simple Queue Service
Simple Notification Service
Key Management Service
CloudTrail
Amazon EventBridge
RDS
Name
EC2 INSTANCE
Add additional tags
Application and OS Images (Amazon Machine Image) Info
An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below
Search our full catalog including 1000s of application and OS images
Recents
Quick Start
Amazon Linux
macOS
Ubuntu
Windows
Red Hat
SUSE L
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Amazon Machine Image (AMI)
Amazon Linux 2023 AMI
ami-0d7a109bf30624c99 (64-bit (x86), uefi-preferred) / ami-08b46fd32a1a5be7f (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs
Free tier eligible
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.3.2...read more
ami-0d7a109bf30624c99
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable)
Cancel
Launch instance
Review commands
Network settings Info
VPC - required Info
vpc-050c2bf29ac00753a (MYVPC)
10.0.0.0/21
Subnet Info
subnet-047379d4d3bebe9a0 SUBNET 1
VPC: vpc-050c2bf29ac00753a Owner: 905418179079 Availability Zone: us-east-1d
IP addresses available: 251 CIDR: 10.0.0.0/24)
Create new subnet
Auto-assign public IP Info
Enable
Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.
Create security group
Select existing security group
Security group name - required
launch-wizard-26
This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and ._-:/()#,@[]+=&;{}!$*
Description - required Info
launch-wizard-26 created 2024-03-15T16:11:25.199Z
Inbound Security Group Rules
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2023 AMI 2023.3.2...read more
ami-0d7a109bf30624c99
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable)
Cancel
Launch instance
Review commands




# STEP 4-NOW CREATE RDS



## Templates

Choose a sample template to meet your use case.

- (●) **Production**
  Use defaults for high availability and fast, consistent performance.
- ( ) **Dev/Test**
  This instance is intended for development use outside of a production environment.
- ( ) **Free tier**
  Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. **Info**

## Settings

DB instance identifier **Info**

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.

database-1

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

▼ **Credentials Settings**

Master username **Info**

Type a login ID for the master user of your DB instance.

Auto generate a password

Amazon RDS can generate a password for you, or you can specify your own password.

Master password Info

••••••••

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), '(single quote), "(double quote) and @ (at sign).

Confirm master password Info

••••••••

## 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

Show instance classes that support Amazon RDS Optimized Writes Info

Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Include previous generation classes

- ○ Standard classes (includes m classes)
- ○ Memory optimized classes (includes r and x classes)
- ◉ Burstable classes (includes t classes)

db.t3.micro

2 vCPUs 1 GiB RAM Network: 2,085 Mbps

## Storage

Storage type Info

Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp2)

Baseline performance determined by volume size

Allocated storage Info

20 GiB

The minimum value is 20 GiB and the maximum value is 6,144 GiB

ⓘ Provisioning less than 100 GiB of General Purpose (SSD) storage for high throughput workloads could result in higher latencies upon exhaustion of the initial General Purpose (SSD) IO credit balance. Learn more

ⓘ After you modify the storage for a DB instance, the status of the DB instance will be in storage-optimization. Your instance will remain available as the storage-optimization operation completes. Learn more

## Storage autoscaling Info

Provides dynamic scaling support for your database's storage based on your application's needs.

☐ Enable storage autoscaling
Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

## Availability & durability

Multi-AZ deployment Info

◉ Create a standby instance (recommended for production usage)
Creates a standby in a different Availability Zone (AZ) to provide data redundancy, eliminate I/O freezes, and minimize latency spikes during system backups.

○ Do not create a standby instance

## Connectivity Info

Compute resource

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.

EC2 instance Info
Choose the EC2 instance to add as the compute resource for this database. A VPC security group is added to this EC2 instance. A VPC security group is also added to the database with an inbound rule that allows the EC2 instance to access the database.

i-0bc289bae1b7949a0
EC2 INSTANCE

**Some VPC settings can't be changed when a compute resource is added**
Adding an EC2 compute resource automatically selects the VPC, DB subnet group, and public access settings for this database. To allow the EC2 instance to access the database, a VPC security group rds-ec2-X is added to the database and another called ec2-rds-X to the EC2 instance. You can remove the new security group for the database only by removing the compute resource.

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

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.

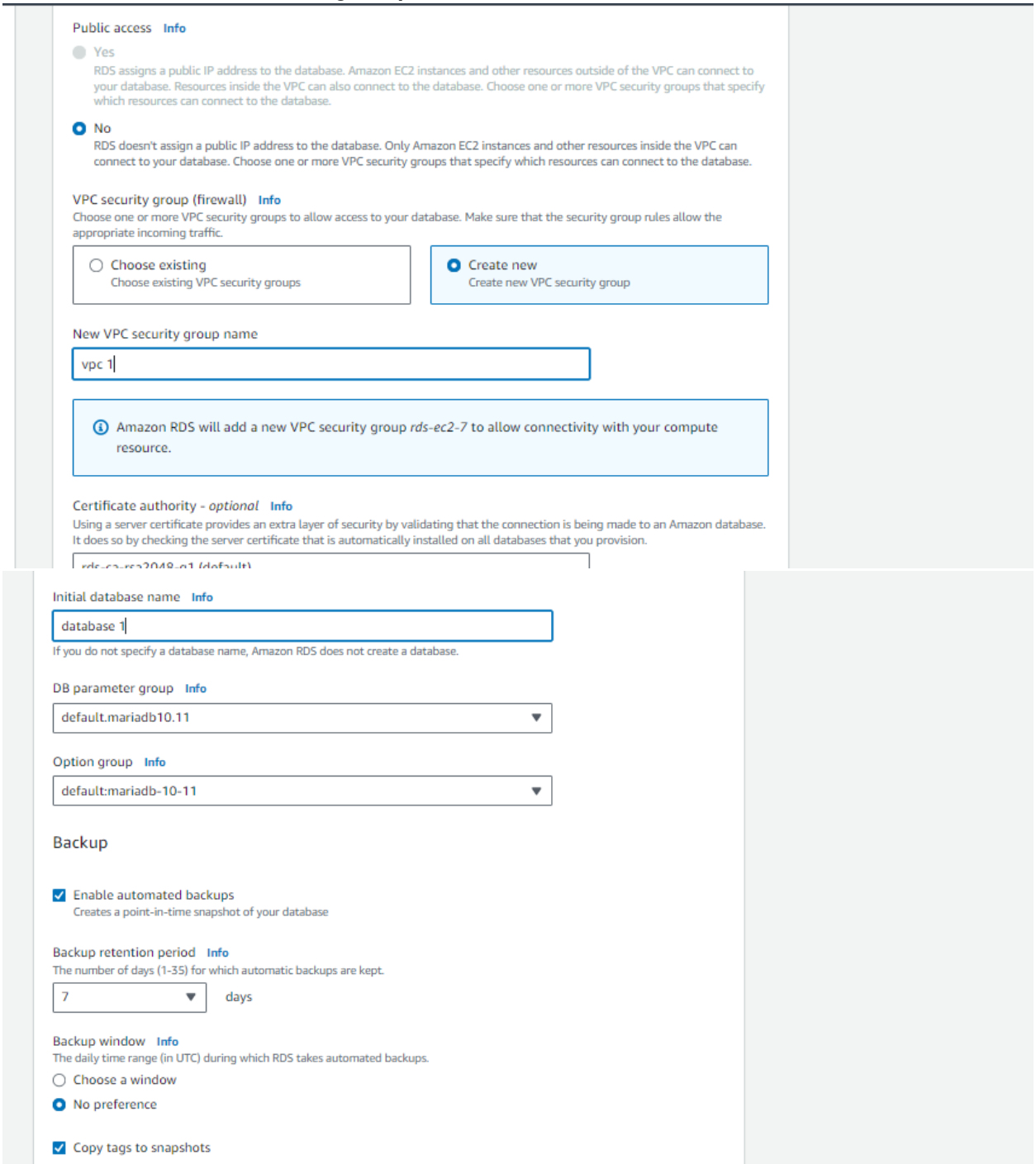
◉ Choose existing
Choose existing DB subnet group

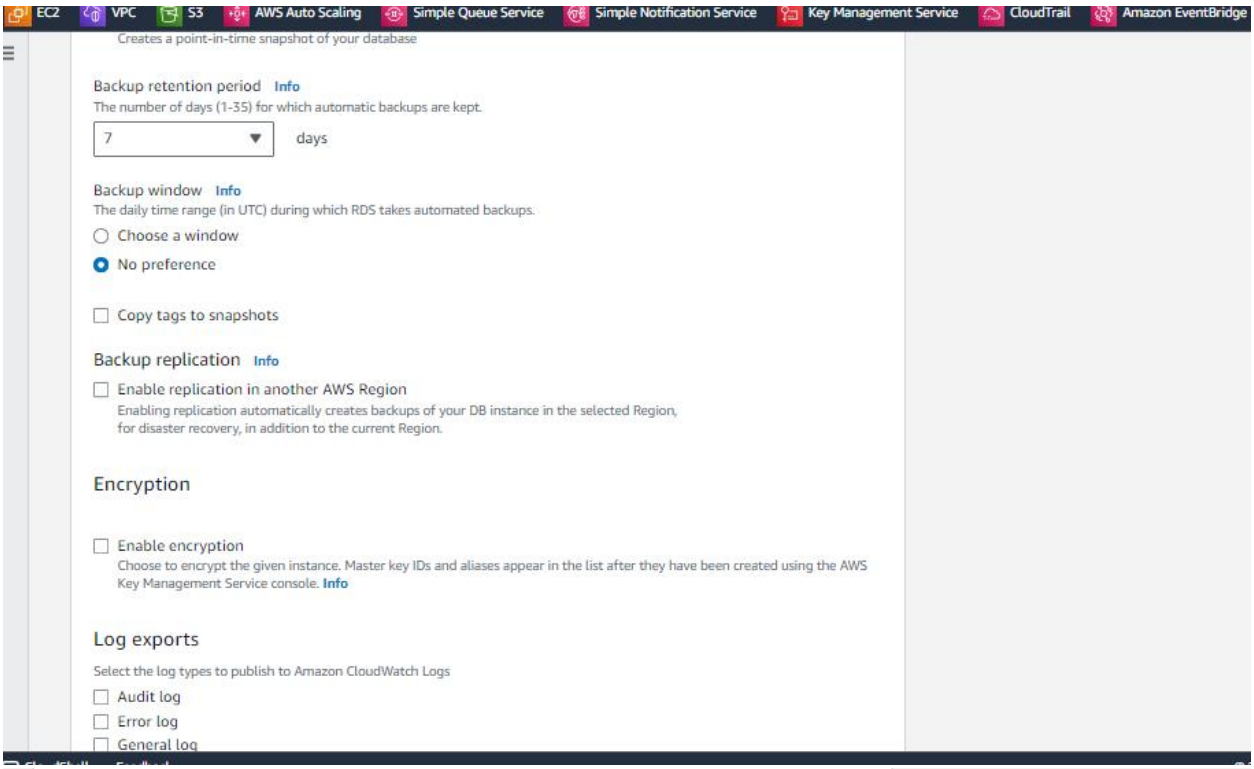
○ Automatic setup
RDS creates a new subnet group for you or reuses an existing subnet group

Existing DB subnet groups

Create new DB Subnet Group

## Mow create one subnet group for rds and add here






## Maintenance

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.

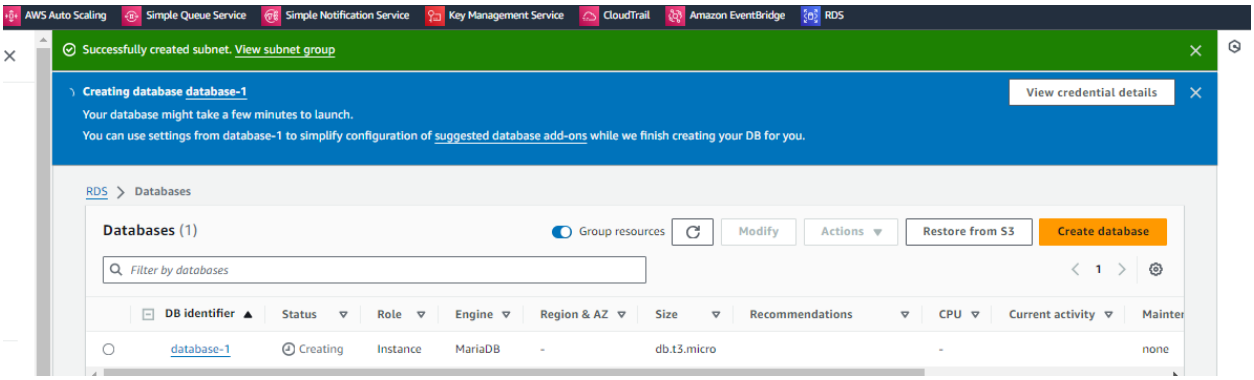
- ( ) Choose a window
- (•) No preference

## Deletion protection

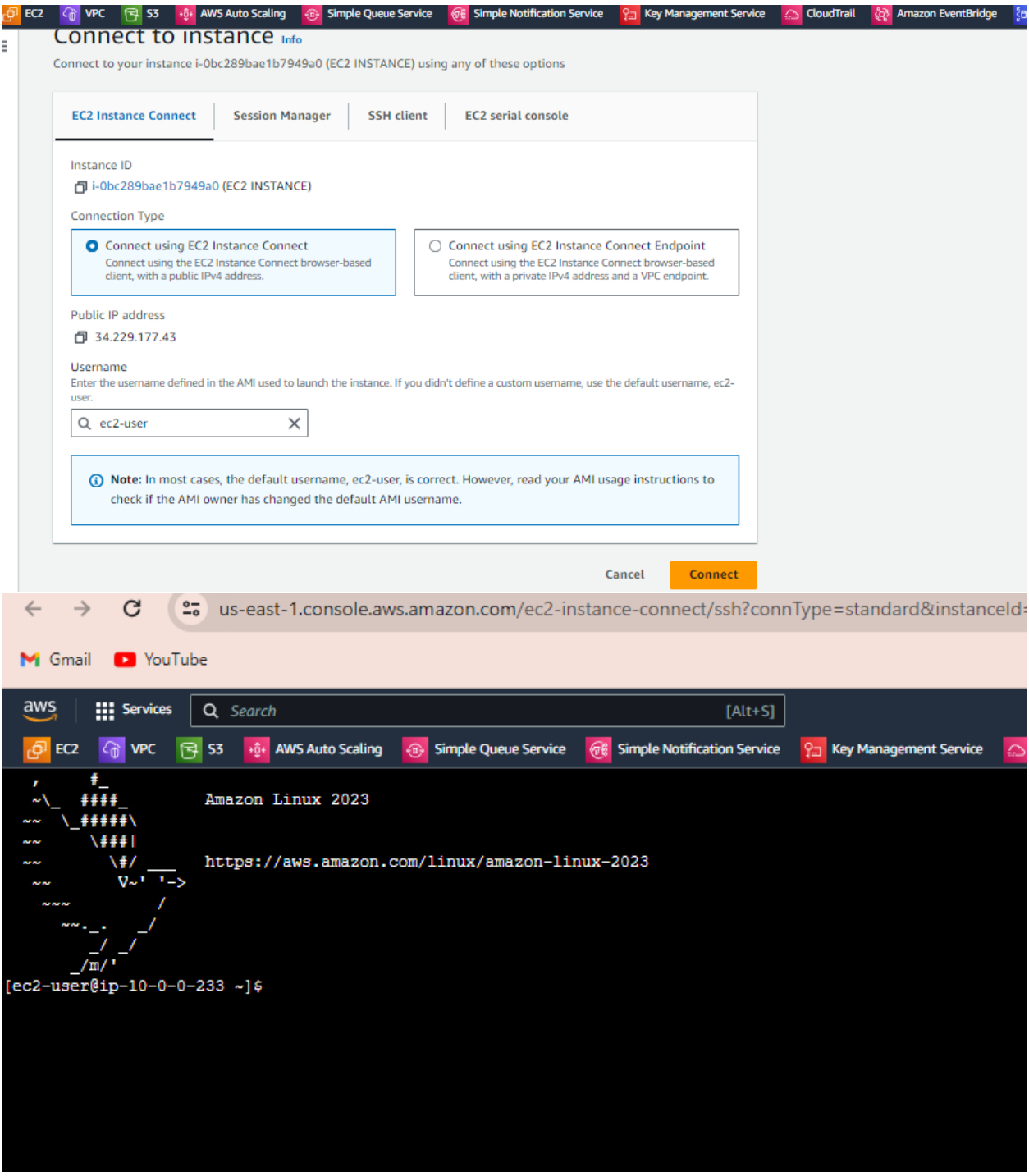
- [ ] Enable deletion protection
  Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

## Estimated Monthly costs

| | |
|---|---|
| DB instance | 24.82 USD |
| Storage | 4.60 USD |
| **Total** | **29.42 USD** |




STEP 4-NOW CONNECT INSTANCE TO RDS DATABSE WHICH YOU CREATED NOW




Now install mariadb and connect to rds database

```
       _/m/'
[ec2-user@ip-10-0-0-233 ~]$ sudo su
[root@ip-10-0-0-233 ec2-user]# yum update
Last metadata expiration check: 0:26:20 ago on Fri Mar 15 16:13:34 2024.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-10-0-0-233 ec2-user]# yum install mariadb* -y
```

```
Complete!
[root@ip-10-0-0-233 ec2-user]# mysql -u admin -p -h database-1.cbqawamoa5pu.us-east-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 13
Server version: 10.11.6-MariaDB-log managed by https://aws.amazon.com/rds/

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
```

NOW CREATE A READ REPLICA OF DATABSE WHICH YOU MADE

RDS > Databases > Create read replica

# Create read replica

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

Replica source
Source DB instance identifier

database-1
Role: Instance

DB instance identifier
This is the unique key that identifies a DB instance. This parameter is stored as a lowercase string (for example, mydbinstance).

REPLICADB

## 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

- Standard classes (includes m classes)
- Memory optimized classes (includes r and x classes)
- Burstable classes (includes t classes)

db.t3.micro
2 vCPUs 1 GiB RAM Network: 2,085 Mbps

## AWS Region

Destination Region
The Region where the replica will be launched.

US East (N. Virginia)

## Storage

Storage type Info

## Storage

Storage type Info
Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp3)
Performance scales independently from storage

Allocated storage Info

20 GiB

Minimum: 20 GiB. Maximum: 6,144 GiB

Storage configuration upgrade Info

Upgrade storage file system configuration
RDS recommends a storage file system configuration upgrade for your selected DB instance.

You are on the latest storage configuration.

▼ Advanced settings
Baseline IOPS of 3,000 IOPS and storage throughput of 125 MiBps are included for allocated storage less than 400 GiB.

Provisioned IOPS Info

▼ Storage autoscaling

### Storage autoscaling Info

Provides dynamic scaling support for your database's storage based on your application's needs.

☐ Enable storage autoscaling
Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

## Availability & durability

Multi-AZ deployment Info
Specifies if the DB instance should have a standby deployed in another Availability Zone.

○ Create a standby instance (recommended for production usage)
Creates a standby in a different Availability Zone (AZ) to provide data redundancy, eliminate I/O freezes, and minimize latency spikes during system backups.

◉ Do not create a standby instance

## Connectivity

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.

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.

subnet ▼

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.

Existing VPC security groups

*Choose VPC security groups* ▼

default ✕

Availability Zone Info
The EC2 Availability Zone that the database will be created in.

## 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.

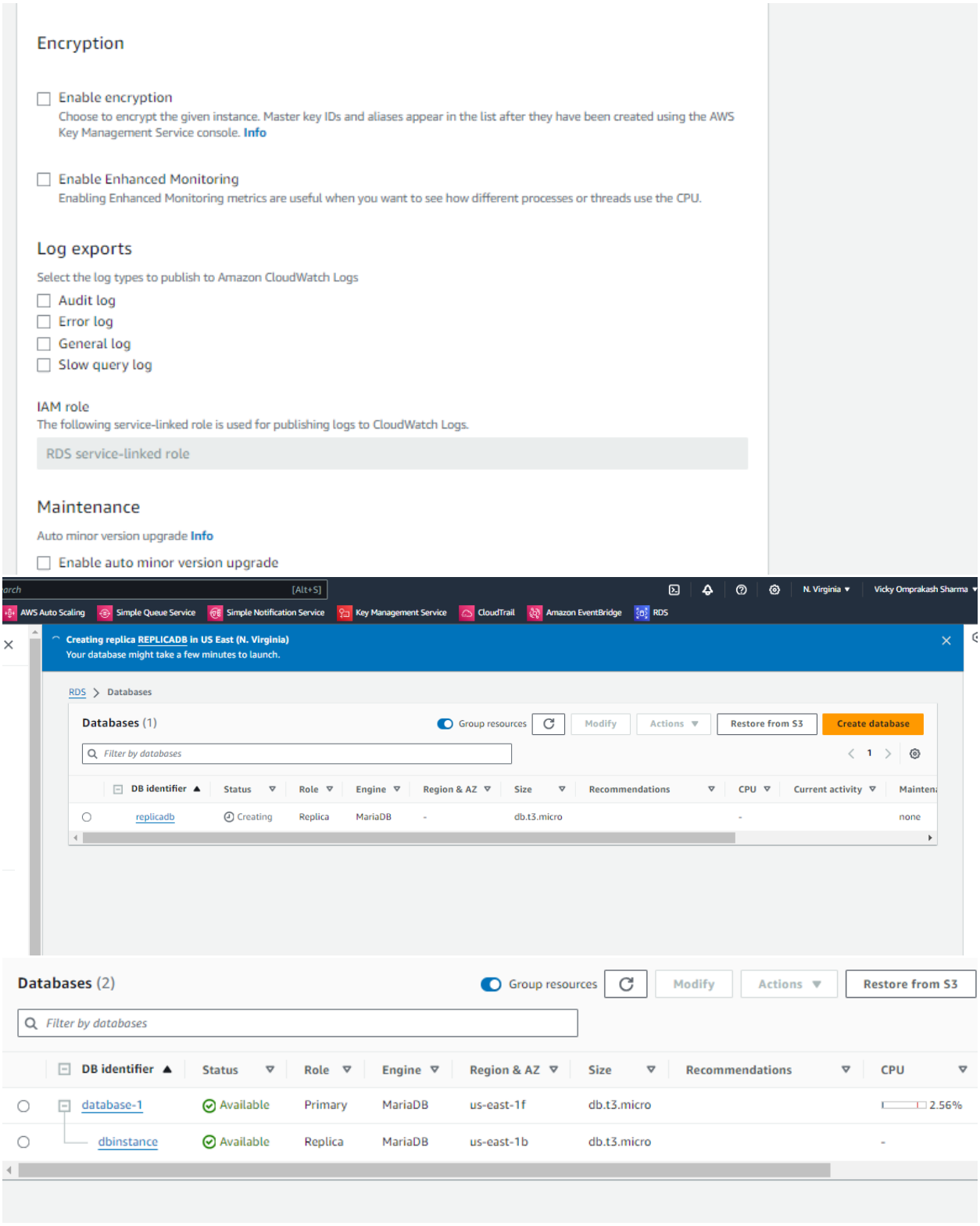
## ▼ Additional configuration

encryption turned off, backup, Enhanced Monitoring turned off, maintenance, CloudWatch Logs, delete protection turned off

### Backup

Tags

- [ ] Copy tags to snapshots

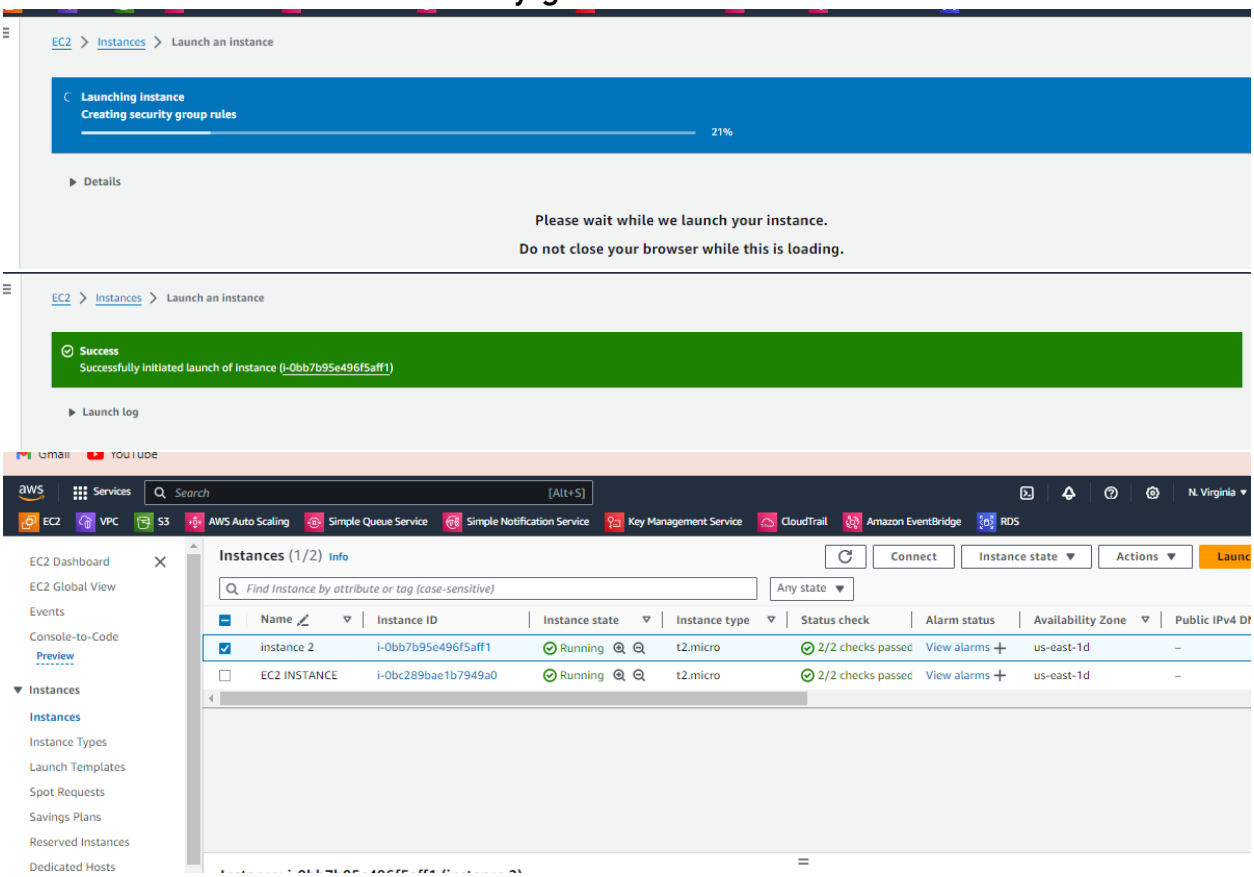



NOW CREATE A DATABASE IN PRIMARY RDS

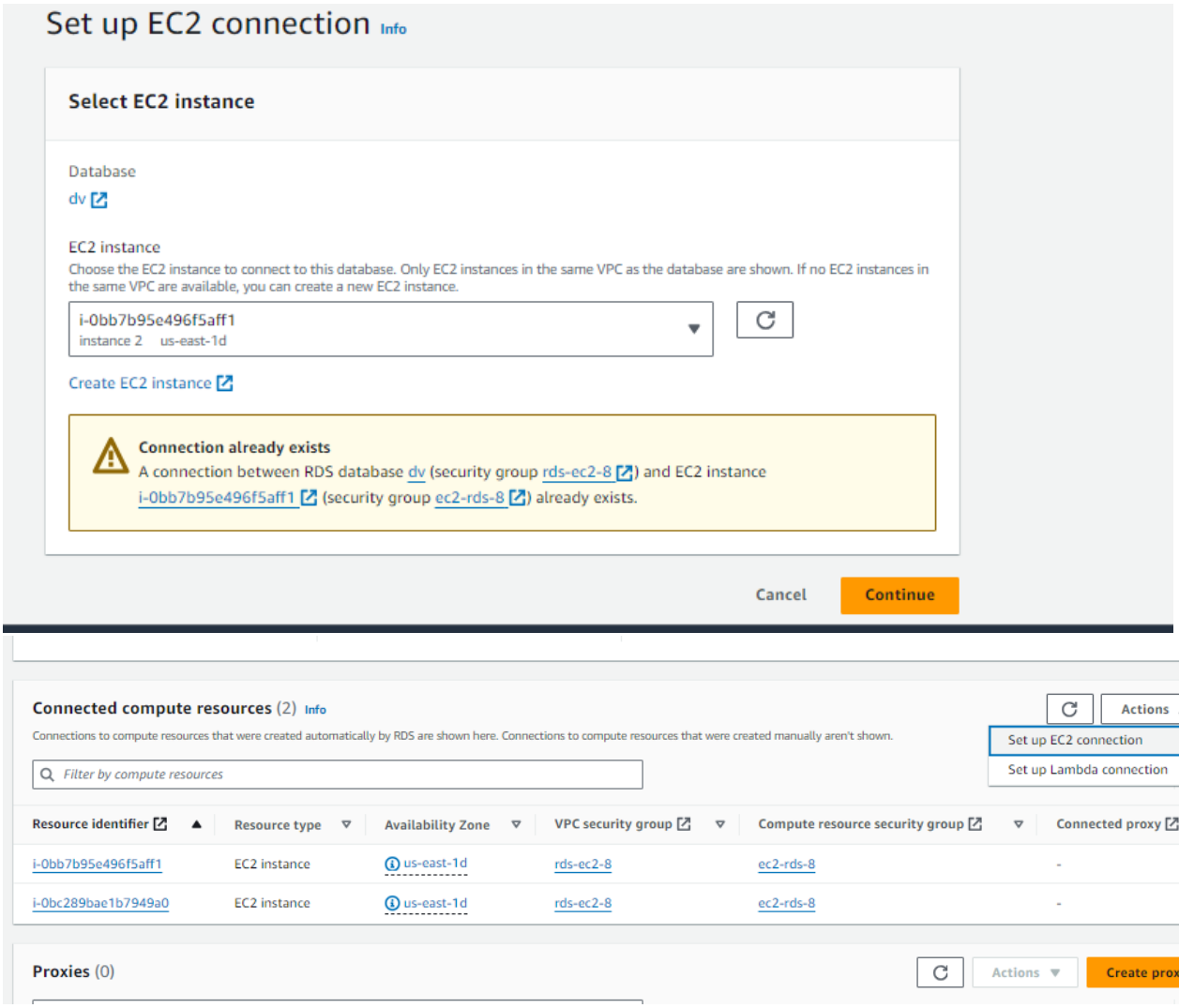
```
MariaDB [(none)]> create database vicky;
Query OK, 1 row affected (0.005 sec)

MariaDB [(none)]>
```

Now CREATE NEW  instance to CONNECT replica rds and check whether these database is automatically generate or not




Before connecting instance go to replica >connected compute resources and attach instance new that you made







Now connect instance to replica and check database which you create in

```
[root@ip-10-0-0-75 ec2-user]# mysql -u admin -p -h dv.cbqawamoa5pu.us-east-1.rds.amazonaws.com
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 29
Server version: 10.11.6-MariaDB managed by https://aws.amazon.com/rds/

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show databases;
+--------------------+
```

```
[root@ip-10-0-0-75 ec2-user]# mysql -u admin -p -h dv.cbqawamoa5pu.us-east-1.rds.amazonaw
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 29
Server version: 10.11.6-MariaDB managed by https://aws.amazon.com/rds/

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| database18         |
| information_schema |
| innodb             |
| mysql              |
| performance_schema |
| sys                |
| vicky              |
+--------------------+
7 rows in set (0.003 sec)

MariaDB [(none)]>
```