

AWS PROJECT 2

Creating an EC2 Instance

Step 3: Configure Instance Details

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Shut down behavior

Stop - Hibernate behavior ☐ Enable hibernation as an additional stop behavior

Enable termination protection ☐ Protect against accidental termination

Monitoring ☐ Enable CloudWatch detailed monitoring
Additional charges apply:

Tenancy ☐ Shared - Run a shared hardware instance
Additional charges will apply for dedicated tenancy:

Elastic Inference ☐ Add an Elastic Inference accelerator
Additional charges apply:

Credit specification ☐ Unlimited
Additional charges may apply:

File systems

Advanced Details

Enclave ☐ Enable

Metadata accessible ☐ Enabled

Metadata version ☐ V1 and V2 (token optional)

Metadata token response hop limit ☐ 1

User data ☒ As text ☐ OS file ☐ Input is already base64 encoded

```
#!bin/bash -ex
yum install mysql -y
```

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Installing mysql in linux instance by bootstrapping method

aws

Services ▾

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

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Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more about tagging your Amazon EC2 resources.](#)

Key	Value	Instances	Volumes
<div>Name</div>	<div>MyRdsEC2server</div>	<div><input checked="" type="checkbox"/></div>	<div><input checked="" type="checkbox"/></div>

Add another tag

(Up to 50 tags maximum)

Cancel

Previous

Review and Launch

Next: Configure Security Group

Feedback

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Key-value For instance which is been created

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1. Choose AMI

2. Choose Instance Type

3. Configure Instance

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Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more about Amazon EC2 security groups.](#)

Assign a security group: ☒ Create a **new** security group
☐ Select an **existing** security group

Security group name:

Description:

Type	Protocol	Port Range	Source	Description
<input type="text" value="[All traffic]"/>	<input type="text" value="All"/>	<input type="text" value="0 - 65535"/>	<input type="text" value="Anywhere"/>	<input type="text" value="e.g. SSH for Admin Desktop"/>

Add Rule

Warning

Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel

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Security Group for ec2 instance

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Support

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

Step 7: Review Instance Launch

You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. Edit security groups

AMI Details

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-0be2609ba88322ec

Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is a...

Root Device Type: ebsVirtualization type: hvm

Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

Security Groups

Security group name

IMyEC2server-SG

Description

Security for ec2 server to connect with RDS

Type	Protocol	Port Range	Source	Description
All traffic	All	All	0.0.0.0/0	
All traffic	All	All	:::/0	

Instance Details

Storage

Tags

Edit AMI

Edit instance type

Edit security groups

Edit instance details

Edit storage

Edit tags

Cancel

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Instances (1/1)

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Instance state

Instance type

Status check

Alarm status

Availability Zone

Public IPv4 DNS

Elastic IP

MyRdsEc2server

i-0c4291ee73121f777

Running

2/2 che...

No alarms

us-east-1b

ec2-18-207-118-137.c...

Public IPv4 ...

18.207.118.137

Instance: i-0c4291ee73121f777 (MyRdsEc2server)

Details

Security

Networking

Storage

Status Checks

Monitoring

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Instance summary

Instance ID

Instance state

Instance type

AWS Compute Optimizer finding

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Public IPv4 DNS

Elastic IP addresses

IAM Role

Private IPv4 addresses

Private IPv4 DNS

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Subnet ID

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Instance Details

Creating a Security Group for RDS instance

aws

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EC2 > Security Groups > sg-0ffbe0796d0f92414 - rds-maz-SG

sg-0ffbe0796d0f92414 - rds-maz-SG

Details

Security group name
rds-maz-SG

Owner
245024665952

Security group ID
sg-0ffbe0796d0f92414

Inbound rules count
1 Permission entry

Description
Security group for RDS Aurora

Outbound rules count
1 Permission entry

VPC ID
vpc-eb7bb996

Actions ▾

Inbound rules

Type	Protocol	Port range	Source	Description - optional
MYSQL/Aurora	TCP	3306	0.0.0.0/0	-

Edit inbound rules

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Create an Amazon Aurora database with Multi-AZ enabled

Amazon RDS

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Choose a database creation method [info](#)

☒ 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.

Engine options

Engine type [info](#)

☒ Amazon Aurora

☐ MySQL

☐ MariaDB

☐ PostgreSQL

☐ Oracle

☐ Microsoft SQL Server

Edition

☒ Amazon Aurora with MySQL compatibility

☐ Amazon Aurora with PostgreSQL compatibility

Capacity type [info](#)

☒ Provisioned

☐ Serverless

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Replication features [info](#)

Single-master replication is currently selected

☒ Single-master

Supports multiple reader instances connected to the same storage volume as a single writer instance. This is a good general-purpose option for most workloads.

☐ Multi-master

Supports multiple writer instances connected to the same storage volume. This is a good option for when continuous writer availability is required.

Engine version [info](#)

View the engine versions that support the following database features.

☒ Show versions that support the global database feature

☒ Show versions that support the parallel query feature

Version

Aurora (MySQL 5.7) 2.07.2

To see more versions, modify the capacity types. [info](#)

☐ Aurora MySQL engine versions earlier than 2.09.1 don't support the newest r6g generation instance classes.

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.

Settings

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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.

Settings

DB cluster identifier

Info

Type a name for your DB cluster. The name must be unique across all DB clusters owned by your AWS account in the current AWS Region.

MyAuroraCluster

The DB cluster identifier is case-insensitive, but is stored as all lowercase (as in "mydbcluster"). 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.

labsAdmin

1 to 16 alphanumeric characters. First character must be a letter

☐ 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 password

Info

DB instance size

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DB instance size

DB instance class

Info

Choose a DB instance class that meets your processing power and memory requirements. The DB instance class options below are limited to those supported by the engine you selected above.

☐ Memory Optimized classes (includes r classes)

☒ Burstable classes (includes t classes)

db.t2.small

1 vCPU 2 GiB RAM Not EBS Optimized

☒ Include previous generation classes

Availability & durability

Multi-AZ deployment

Info

☒ Create an Aurora Replica or Reader node in a different AZ (recommended for scaled availability)

Creates an Aurora Replica for fast failover and high availability.

☐ Don't create an Aurora Replica

Connectivity

Virtual private cloud (VPC)

Info

VPC that defines the virtual networking environment for this DB cluster.

Default VPC (vpc-eb7bb996)

Only VPCs with a corresponding DB subnet group are listed.

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

Subnet group

Info

DB subnet group that defines which subnets and DB engines the DB instance can use in the VPC you selected.

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Connectivity

Virtual private cloud (VPC) [Info](#)
VPC that defines the virtual networking environment for this DB cluster.

Default VPC (vpc-e7bb996)

Only VPCs with a corresponding DB subnet group are listed.

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

Subnet group [Info](#)
DB subnet group that defines which subnets and IP ranges the DB instance can use in the VPC you selected.

default

Public access [Info](#)
☒ Yes
Amazon EC2 instances and devices outside the VPC can connect to your database. Choose one or more VPC security groups that specify which EC2 instances and devices inside the VPC can connect to the database.
☐ No
RDS will not assign a public IP address to the database. Only Amazon EC2 instances and devices inside the VPC can connect to your database.

VPC security group
Choose a VPC security group to allow access to your database. Ensure 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 VPC security groups

rd-maz-SG

Additional configuration

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Additional configuration

Database options, encryption disabled, failover, backup enabled, backtrack disabled, Enhanced Monitoring enabled, maintenance, CloudWatch Logs, delete protection disabled

Database options

Initial database name [Info](#)

whizlabsrds

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

DB cluster parameter group [Info](#)

default:aurora-mysql5.7

DB parameter group [Info](#)

default:aurora-mysql5.7

Option group [Info](#)

default:aurora-mysql-5-7

Fallover priority

No preference

Backup
Creates a point-in-time snapshot of your database

Backup retention period [Info](#)
Choose the number of days that RDS should retain automatic backups for this instance.

1 day

☒ 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](#)

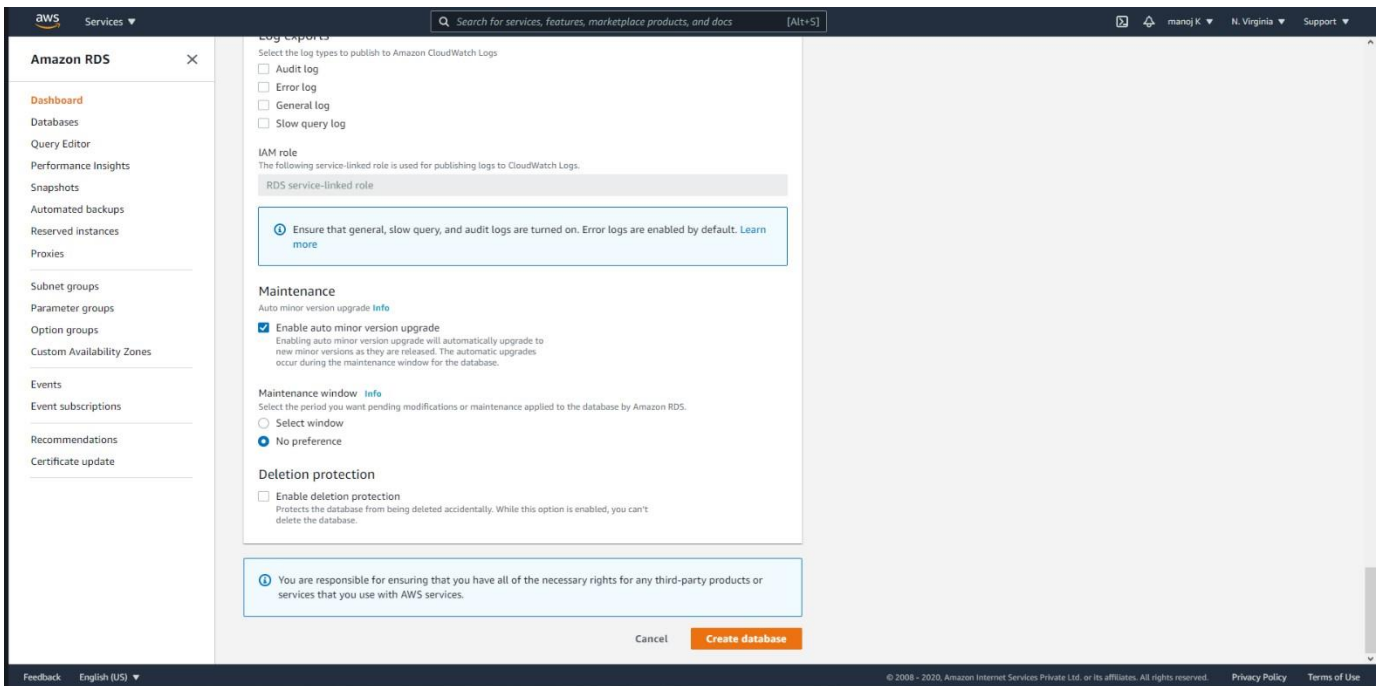
Feedback

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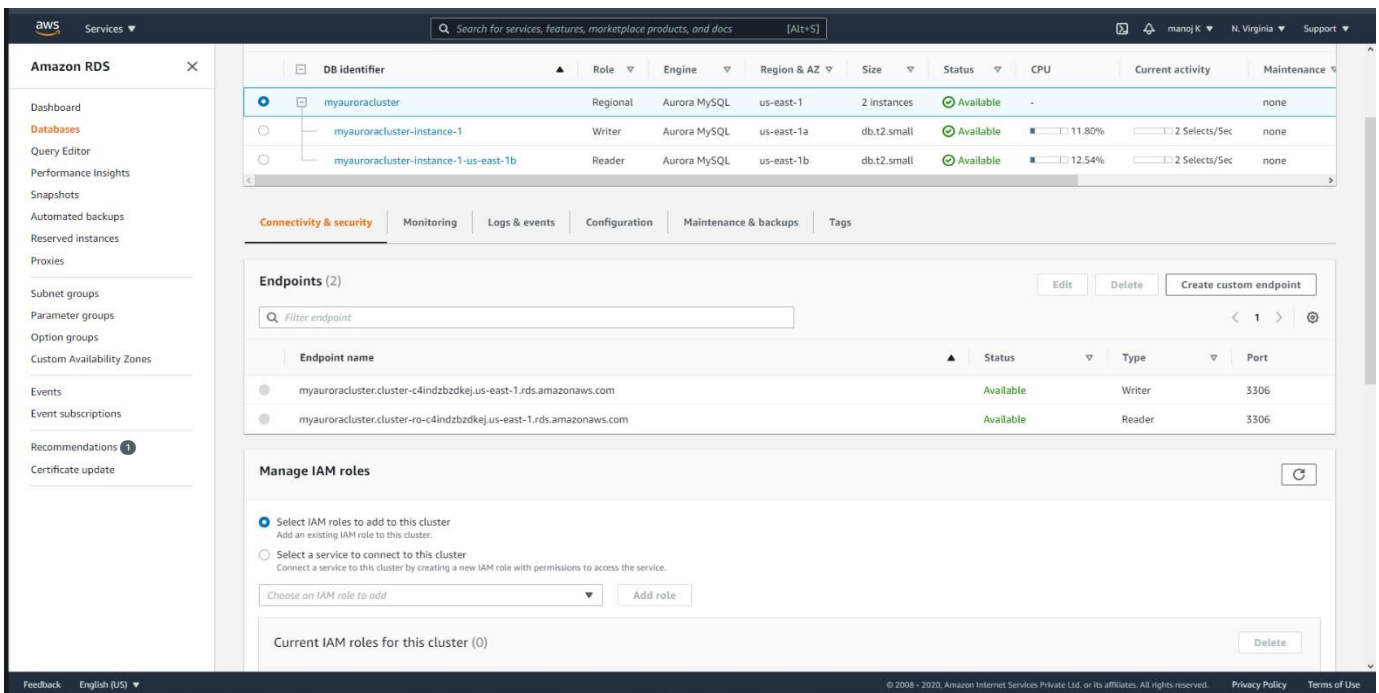
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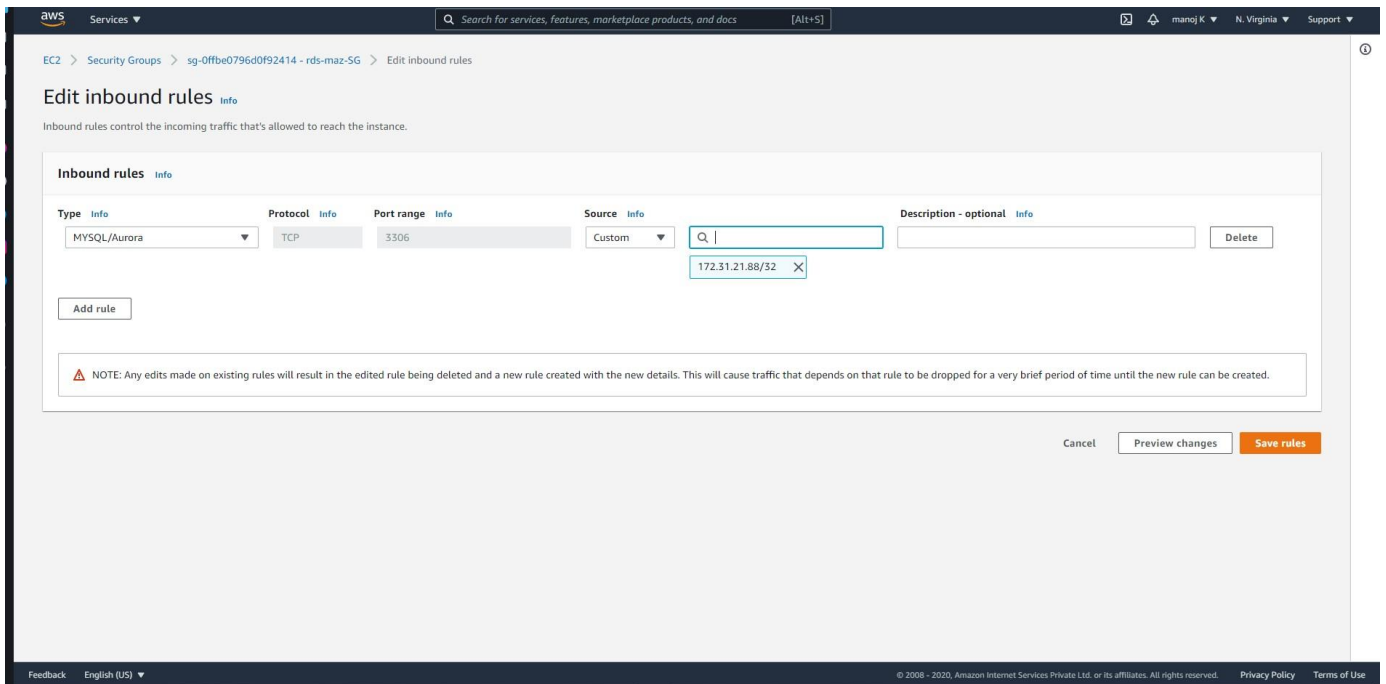
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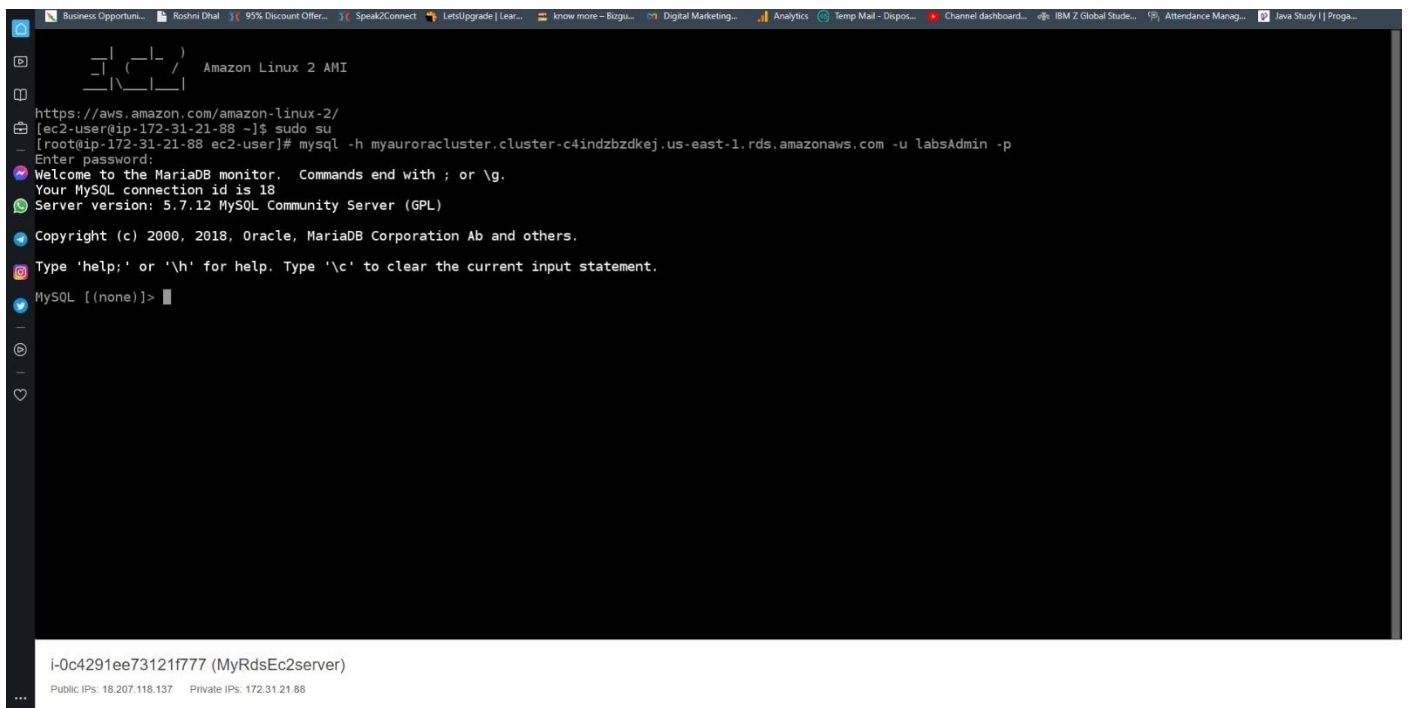
Connecting to the Aurora (MySQL) database on RDS





Changing security for RDS

Execute Database Operations via SSH



```
MySQL [(none)]> Show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| whizlabsrds |
+-----+
5 rows in set (0.02 sec)

MySQL [(none)]> Create database auroro_db;
Query OK, 1 row affected (0.02 sec)

MySQL [(none)]> use auroro_db;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'use auroro_db' at line 1

MySQL [(none)]> use auroro_db;
Database changed
MySQL [auroro_db]> CREATE TABLE students ( subject_id INT AUTO_INCREMENT, subject_name VARCHAR(255) NOT NULL, teacher VARCHAR(255),start_date DATE, lesson TEXT,PRIMARY KEY (subject_id));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'teacher VARCHAR(255),start_date DATE, lesson TEXT,PRIMARY KEY (subject_id))' at line 1
MySQL [auroro_db]> CREATE TABLE students ( subject_id INT AUTO_INCREMENT, subject_name
-> VARCHAR(255) NOT NULL, teacher VARCHAR(255),start_date DATE, lesson
-> TEXT,PRIMARY KEY (subject_id));
Query OK, 0 rows affected (0.03 sec)

MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('English', 'John Taylor');
Query OK, 1 row affected (0.02 sec)

MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('Science', 'Mary Smith');
Query OK, 1 row affected (0.01 sec)

MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('Maths', 'Ted Miller');
Query OK, 1 row affected (0.01 sec)
```

i-0c4291ee73121f777 (MyRdsEc2server)

Public IPs: 18.207.118.137 Private IPs: 172.31.21.88

```
MySQL [(none)]> use auroro_db;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'use auroro_db' at line 1
MySQL [(none)]> use auroro_db;
Database changed
MySQL [auroro_db]> CREATE TABLE students ( subject_id INT AUTO_INCREMENT, subject_name VARCHAR(255) NOT NULL, teacher VARCHAR(255),start_date DATE, lesson TEXT,PRIMARY KEY (subject_id));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'teacher VARCHAR(255),start_date DATE, lesson TEXT,PRIMARY KEY (subject_id))' at line 1
MySQL [auroro_db]> CREATE TABLE students ( subject_id INT AUTO_INCREMENT, subject_name
-> VARCHAR(255) NOT NULL, teacher VARCHAR(255),start_date DATE, lesson
-> TEXT,PRIMARY KEY (subject_id));
Query OK, 0 rows affected (0.03 sec)

MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('English', 'John Taylor');
Query OK, 1 row affected (0.02 sec)

MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('Science', 'Mary Smith');
Query OK, 1 row affected (0.01 sec)

MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('Maths', 'Ted Miller');
Query OK, 1 row affected (0.01 sec)

MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('Arts', 'Suzan Carpenter');
Query OK, 1 row affected (0.01 sec)

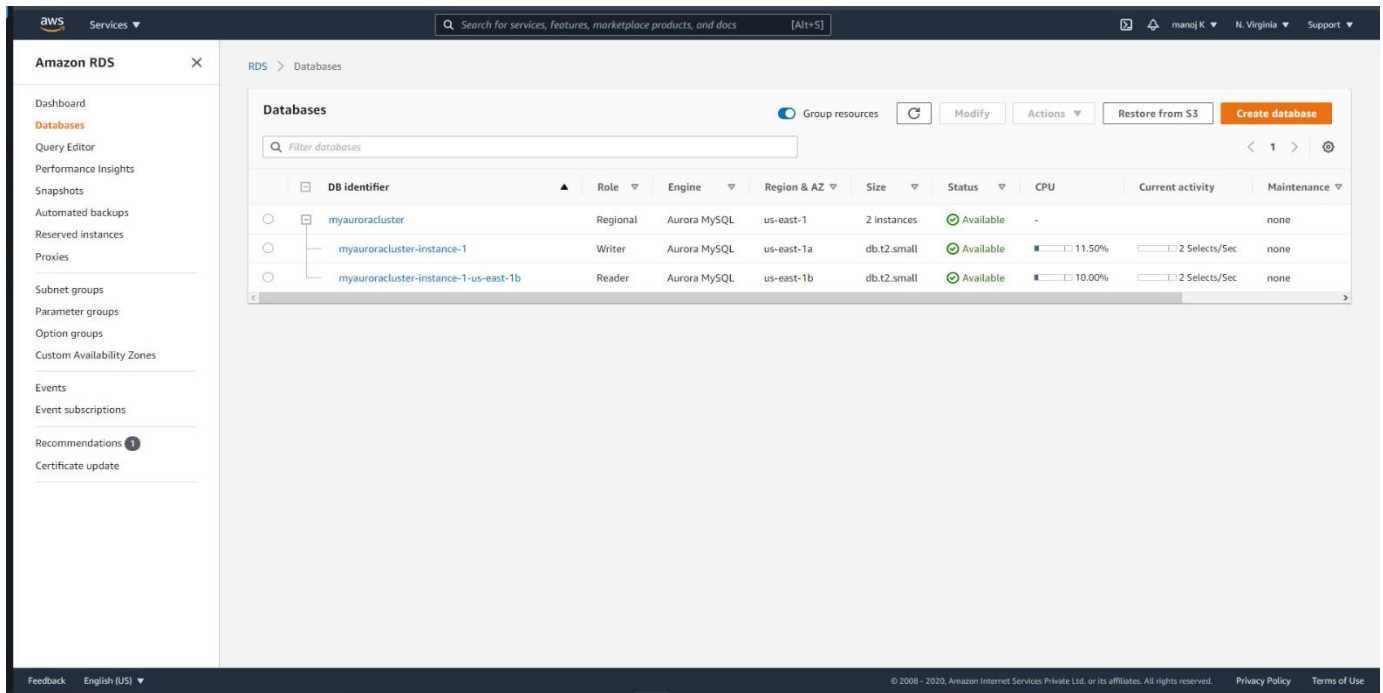
MySQL [auroro_db]> select * from students;
+-----+-----+-----+-----+-----+
| subject_id | subject_name | teacher | start_date | lesson |
+-----+-----+-----+-----+-----+
| 1 | English | John Taylor | NULL | NULL |
| 2 | Science | Mary Smith | NULL | NULL |
| 3 | Maths | Ted Miller | NULL | NULL |
| 4 | Arts | Suzan Carpenter | NULL | NULL |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

MySQL [auroro_db]>
```

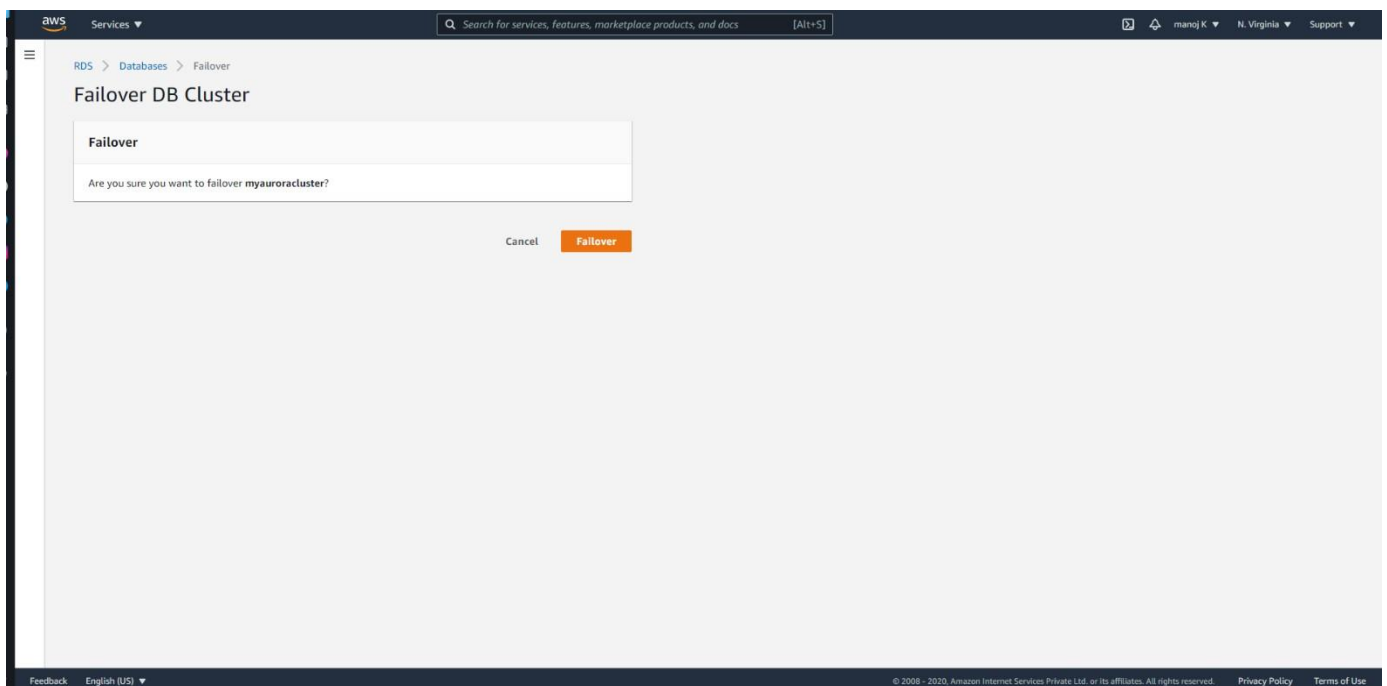
i-0c4291ee73121f777 (MyRdsEc2server)

Public IPs: 18.207.118.137 Private IPs: 172.31.21.88

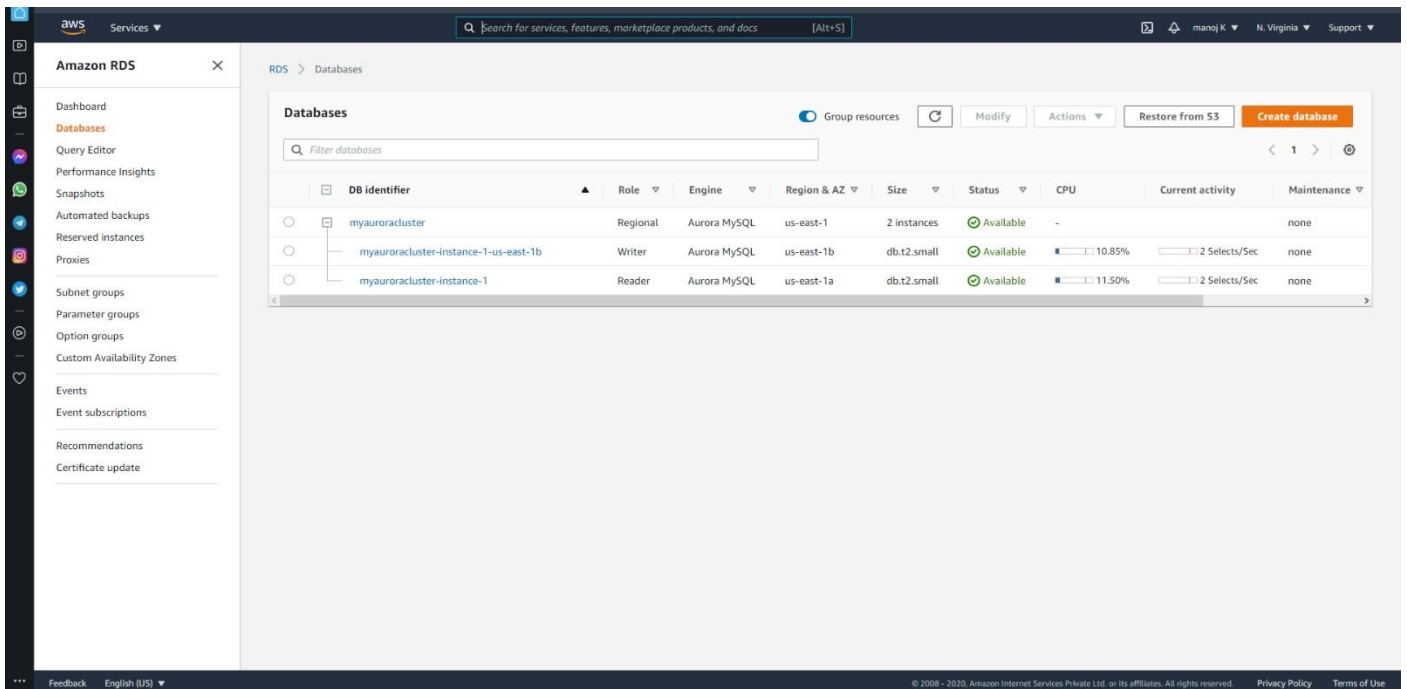
Forcing a Failover to Test Multi-AZ



Cluster before forcing a failover

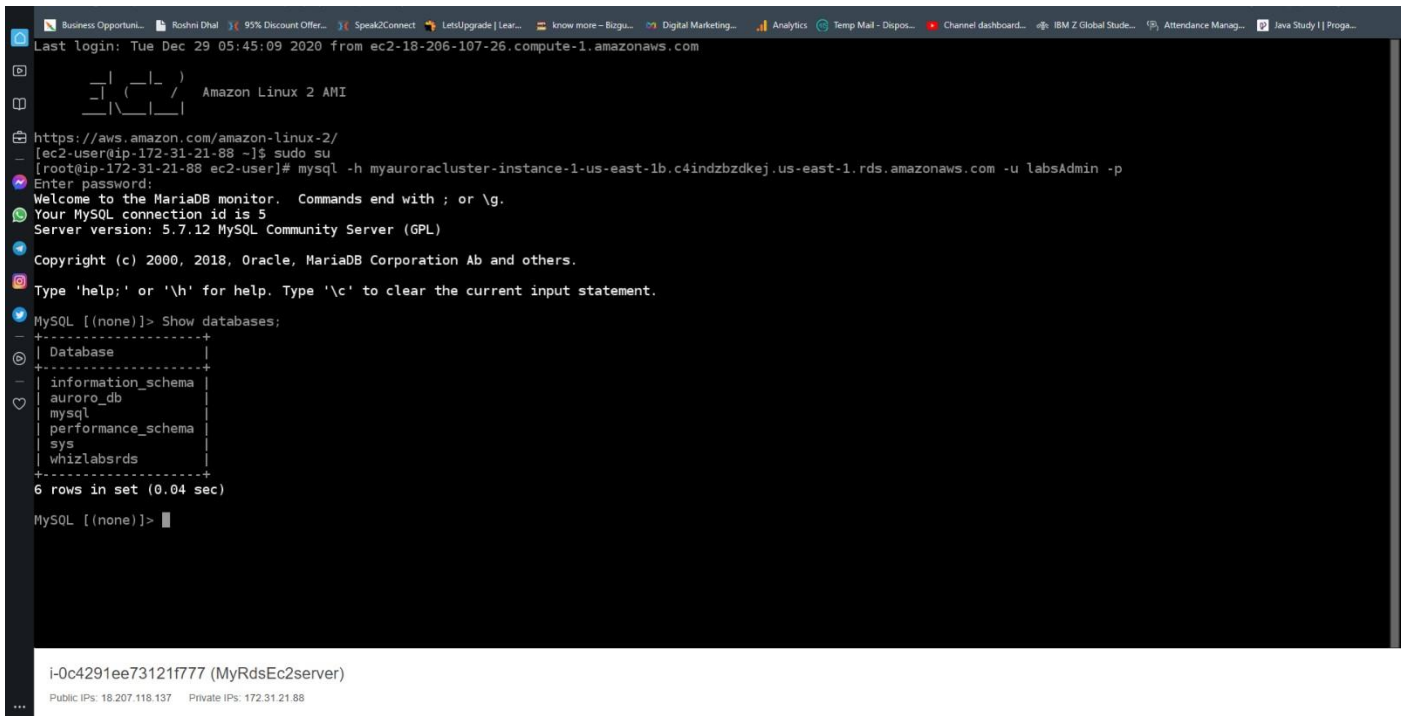


Creating failover of the Writer



Changing of writer and reader after failover

Testing the Failover Condition



Reading table information for completion of table and column names
 You can turn off this feature to get a quicker startup with -A

Database changed

```
MySQL [auroro_db]> show tables;
```

Tables_in_auroro_db
students

1 row in set (0.01 sec)

```
MySQL [auroro_db]> select * from students;
```

subject_id	subject_name	teacher	start_date	lesson
1	English	John Taylor	NULL	NULL
2	Science	Mary Smith	NULL	NULL
3	Maths	Ted Miller	NULL	NULL
4	Arts	Suzan Carpenter	NULL	NULL

4 rows in set (0.00 sec)

```
MySQL [auroro_db]> INSERT INTO students(subject_name, teacher) VALUES ('Spanish', 'Isabella');
Query OK, 1 row affected (0.01 sec)
```

```
MySQL [auroro_db]> select * from students;
```

subject_id	subject_name	teacher	start_date	lesson
1	English	John Taylor	NULL	NULL
2	Science	Mary Smith	NULL	NULL
3	Maths	Ted Miller	NULL	NULL
4	Arts	Suzan Carpenter	NULL	NULL
5	Spanish	Isabella	NULL	NULL

5 rows in set (0.00 sec)

```
MySQL [auroro_db]>
```

i-0c4291ee73121f777 (MyRdsEc2server)

Public IPs: 18.207.118.137 Private IPs: 172.31.21.88