

PROJECT 2

DEPLOYING AMAZON RDS MULTI-AZ AND READ REPLICA, SIMULATE FAILOVER.

AN EC2 INSTANCE IS CREATED.

The screenshot displays the AWS Management Console interface. The top navigation bar shows the AWS logo, a search bar, and the region 'N. Virginia'. The left sidebar contains navigation links for 'New EC2 Experience', 'EC2 Dashboard', 'Events', 'Tags', 'Limits', 'Instances', 'Instance Types', 'Launch Templates', 'Spot Requests', 'Savings Plans', 'Reserved Instances', 'Dedicated Hosts', 'Scheduled Instances', 'Capacity Reservations', 'Images', and 'AMIs'. The main content area shows the 'Instances (1/1)' page. A table lists the instance 'rdsinstance' with ID 'i-0714ff4515a9160a7', state 'Running', type 't2.micro', and status '2/2 checks passed'. Below the table, the 'Instance: i-0714ff4515a9160a7 (rdsinstance)' details are shown, including the 'Instance summary' with fields for Instance ID, Instance state, Public IPv4 address, Public IPv4 DNS, Private IPv4 addresses, and Private IPv4 DNS. The bottom of the screen shows the Windows taskbar with the search bar and system tray.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
rdsinstance	i-0714ff4515a9160a7	Running	t2.micro	2/2 checks passed	No alarms	us-east-1d

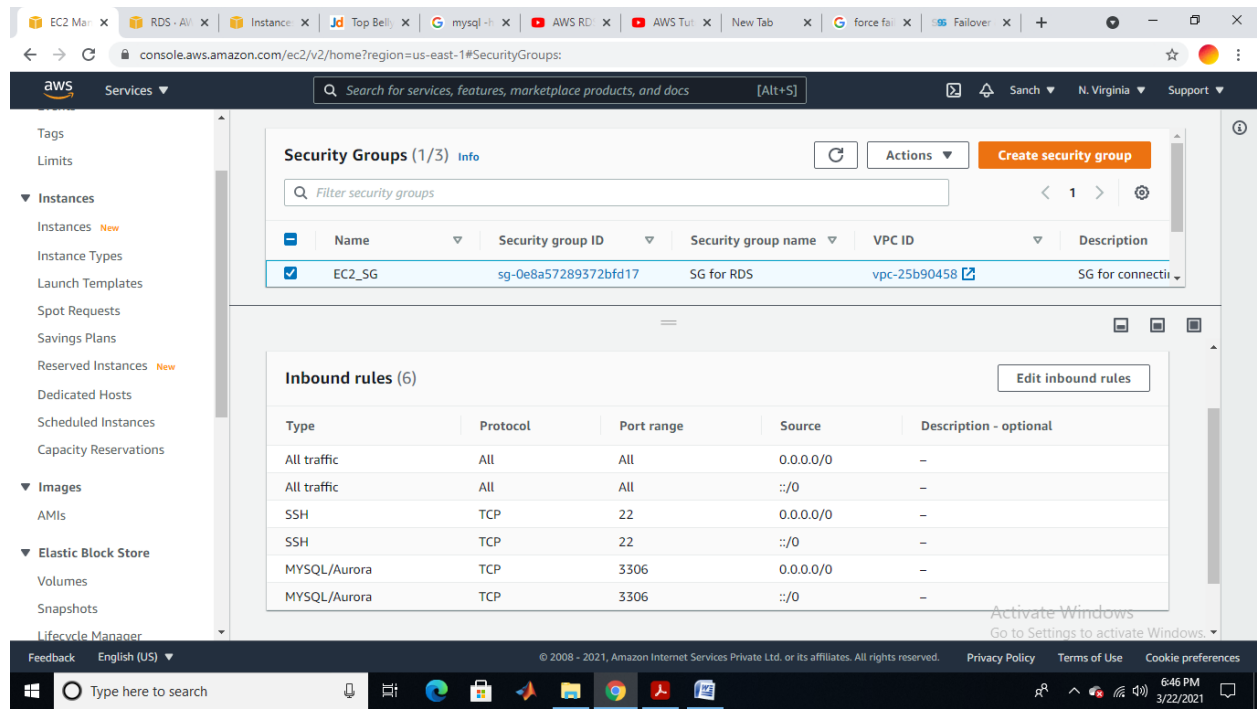
Instance: i-0714ff4515a9160a7 (rdsinstance)

Instance summary

Instance ID	Public IPv4 address	Private IPv4 addresses
i-0714ff4515a9160a7 (rdsinstance)	3.88.179.223 open address	172.31.29.186
Instance state	Public IPv4 DNS	Private IPv4 DNS
Running	ec2-3-88-179-223.compute-1.amazonaws.com open address	ip-172-31-29-186.ec2.internal

SECURITY GROUPS FOR EC2 INSTANCE WITH INBOUND RULES.

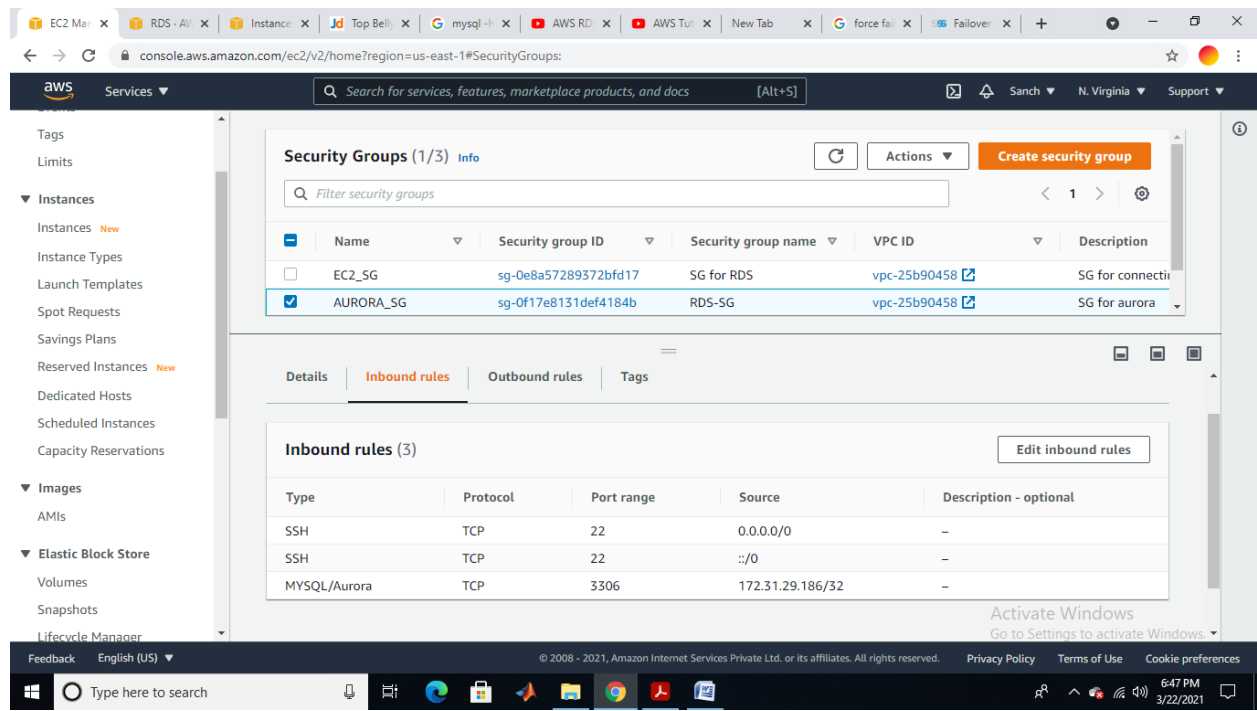
2 | LETS UPGRADE AWS ...



The screenshot shows the AWS Management Console interface for Security Groups. The left sidebar contains navigation links for Tags, Limits, Instances, Images, and Elastic Block Store. The main content area displays the 'Security Groups (1/3)' page. A table lists the security groups, with 'EC2_SG' selected. Below the table, the 'Inbound rules (6)' are shown in a table format.

Type	Protocol	Port range	Source	Description - optional
All traffic	All	All	0.0.0.0/0	-
All traffic	All	All	::/0	-
SSH	TCP	22	0.0.0.0/0	-
SSH	TCP	22	::/0	-
MYSQL/Aurora	TCP	3306	0.0.0.0/0	-
MYSQL/Aurora	TCP	3306	::/0	-

SECURITY GROUPS FOR EC2 INSTANCE WITH INBOUND RULES.



The screenshot shows the AWS Management Console interface for Security Groups. The left sidebar contains navigation links for Tags, Limits, Instances, Images, and Elastic Block Store. The main content area displays the 'Security Groups (1/3)' page. A table lists the security groups, with 'AURORA_SG' selected. Below the table, the 'Inbound rules (3)' are shown in a table format.

Type	Protocol	Port range	Source	Description - optional
SSH	TCP	22	0.0.0.0/0	-
SSH	TCP	22	::/0	-
MYSQL/Aurora	TCP	3306	172.31.29.186/32	-

2 | LET'S UPGRADE AWS ...

CONNECTION VIA SSH USING PUTTY.

```
root@ip-172-31-29-186/home/ec2-user
Using username "ec2-user".
Authenticating with public key "imported-openssh-key"

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Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-29-186 ~]$ sudo -s
[root@ip-172-31-29-186 ec2-user]# mysql -h <mycluster.cluster-cbcwbqmmqzkl.us-east-1.rds.amazonaws.com>
-u <Users_db> -p
```

CONNECTING TO RDS USING WRITER ENDPOINT AND USERNAME.

```
root@ip-172-31-29-186/home/ec2-user
Using username "ec2-user".
Authenticating with public key "imported-openssh-key"
Last login: Mon Mar 22 11:54:05 2021 from 152.57.194.25

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Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-29-186 ~]$ sudo -s
[root@ip-172-31-29-186 ec2-user]# yum install mysql -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core | 3.7 KB 00:00
No package mysql available.
Error: Nothing to do
[root@ip-172-31-29-186 ec2-user]# yum install mysql -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Package 1:mariadb-5.5.68-1.amzn2.x86_64 already installed and latest version
Nothing to do
[root@ip-172-31-29-186 ec2-user]# mysql -h <mycluster-instance-1.cbcwbqmmqzkl.us-east-1.rds.amazonaws.com> -u <Users_db> -p
bash: mycluster-instance-1.cbcwbqmmqzkl.us-east-1.rds.amazonaws.com: No such file or directory
[root@ip-172-31-29-186 ec2-user]# mysql -h mycluster.cluster-cbcwbqmmqzkl.us-east-1.rds.amazonaws.com -p 3306 -u Users_db -p
Enter password:
ERROR 1049 (42000): Unknown database '3306'
[root@ip-172-31-29-186 ec2-user]# mysql -h mycluster.cluster-cbcwbqmmqzkl.us-east-1.rds.amazonaws.com -p Users_db -u
mysql: option '-u' requires an argument
[root@ip-172-31-29-186 ec2-user]# mysql -h
mysql: option '-h' requires an argument
[root@ip-172-31-29-186 ec2-user]# mysql -h mycluster.cluster-cbcwbqmmqzkl.us-east-1.rds.amazonaws.com -u Users_db -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 20
Server version: 5.7.12 MySQL Community Server (GPL)

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

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

MySQL [(none)]>
```

CONNECTION SUCCESSFUL.

```
root@ip-172-31-29-186:/home/ec2-user
Using username "ec2-user".
Authenticating with public key "imported-openssh-key"
Last login: Mon Mar 22 12:00:40 2021 from 152.57.194.25

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Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-29-186 ~]$ sudo -s
[root@ip-172-31-29-186 ec2-user]# mysql -h mycluster.cluster-cbcwbqmmqzkl.us-eas
t-1.rds.amazonaws.com -u Users_db -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 21
Server version: 5.7.12 MySQL Community Server (GPL)

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

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

MySQL [(none)]>
```

LIST OF DATABASES AVAILABLE.(mydatabase) IS THE ONE WE CREATED WHILE CREATING RDS DATABASE.

```
root@ip-172-31-29-186:/home/ec2-user
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 21
Server version: 5.7.12 MySQL Community Server (GPL)

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

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

MySQL [(none)]> show databases
-> show databases:
-> Create database auroro_db;
ERROR 1064 (42000): You have an error in your SQL syntax;
check the manual that corresponds to your MySQL server ver
sion for the right syntax to use near 'show databases:
Create database auroro_db' at line 2
MySQL [(none)]> Create database auroro_db;
Query OK, 1 row affected (0.01 sec)

MySQL [(none)]> show databases;
+-----+
| Database |
+-----+
| information_schema |
| auroro_db |
| mydatabase |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.01 sec)

MySQL [(none)]>
```

VARIOUS COMMANDS TO CREATE TABLE STUDENTS AND DATA IS INSERTED.

```
root@ip-172-31-29-186:/home/ec2-user
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_id |              |              |            |
+-----+
| 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]>
```

DATABASE CREATED WITH CLUSTER.WRITER LOCATION IS 1-F AND READER IS IN LOCATION 1-C.

6 | LETS UPGRADE AWS ...

The screenshot shows the AWS Management Console for the 'mycluster-instance-1' database instance. The left sidebar contains navigation links for Amazon RDS, including Dashboard, Databases, Query Editor, Performance Insights, Snapshots, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom Availability Zones, Events, Event subscriptions, and Recommendations. The main content area displays the 'mycluster-instance-1' page with a 'Related' table and a 'Connectivity & security' section. The 'Related' table lists three instances: 'mycluster' (Regional), 'mycluster-instance-1' (Writer), and 'mycluster-instance-1-us-east-1c' (Reader). The 'mycluster-instance-1' instance is highlighted. The 'Actions' menu is open, showing options like Reboot, Delete, Failover, Take snapshot, and Start database activity stream.

DB identifier	Role	Engine	Region	Size	Status
mycluster	Regional	Aurora MySQL	us-east-1	2 instances	Available
mycluster-instance-1	Writer	Aurora MySQL	us-east-1f	db.t2.small	Available
mycluster-instance-1-us-east-1c	Reader	Aurora MySQL	us-east-1c	db.t2.small	Available

AFTER FORCED FAILOVER, READER LOCATION HAS CHANGED TO 1-F AND WRITER TO 1-C (IT WAS READER LOCATION).

The screenshot shows the AWS Management Console for the 'mycluster-instance-1' database instance after a forced failover. The left sidebar contains navigation links for Amazon RDS, including Dashboard, Databases, Query Editor, Performance Insights, Snapshots, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom Availability Zones, Events, Event subscriptions, and Recommendations. The main content area displays the 'mycluster-instance-1' page with a 'Related' table and a 'Connectivity & security' section. The 'Related' table lists three instances: 'mycluster' (Regional), 'mycluster-instance-1-us-east-1c' (Writer), and 'mycluster-instance-1' (Reader). The 'mycluster-instance-1' instance is highlighted. The 'Actions' menu is open, showing options like Reboot, Delete, Failover, Take snapshot, and Start database activity stream.

DB identifier	Role	Engine	Region & AZ	Size	Status	CPU
mycluster	Regional	Aurora MySQL	us-east-1	2 instances	Available	-
mycluster-instance-1-us-east-1c	Writer	Aurora MySQL	us-east-1c	db.t2.small	Available	14.07%
mycluster-instance-1	Reader	Aurora MySQL	us-east-1f	db.t2.small	Available	12.95%

6 | LET'S UPGRADE AWS ...

CONNECTED USING NEW MASTER WITH LOCATION 1-F.HENCE, THE CONTENT IS VISIBLE OF THE PREVIOUS MASTER AFTER FORCED FAILOVER.

```
root@ip-172-31-29-186/home/ec2-user
[ec2-user@ip-172-31-29-186 ~]$ sudo-s
-bash: sudo-s: command not found
[ec2-user@ip-172-31-29-186 ~]$ sudo -s
[root@ip-172-31-29-186 ec2-user]# mysql -h mycluster-instance-1.cbcbwqmmqzk1.us-east-1.rds.amazonaws.com -u Users_db -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 5
Server version: 5.7.12 MySQL Community Server (GPL)

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

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

MySQL [(none)]> show databases
-> show databases;
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 'show databases' at line 2
MySQL [(none)]> show databases;
+-----+
| Database |
+-----+
| information_schema |
| auroro_db |
| mydatabase |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.03 sec)

MySQL [(none)]>
```

***HENCE, PROJECT2 IS
IMPLEMENTED
SUCCESSFULLY.***
