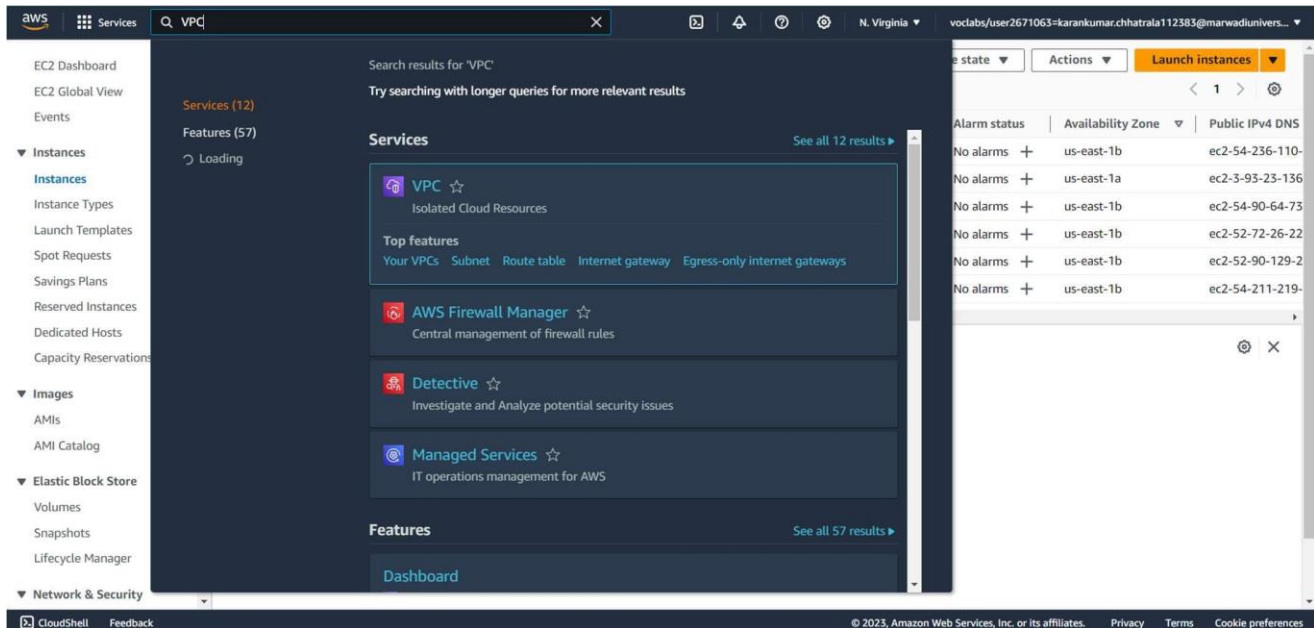


## Practical 08 : Creating and configuring database instance

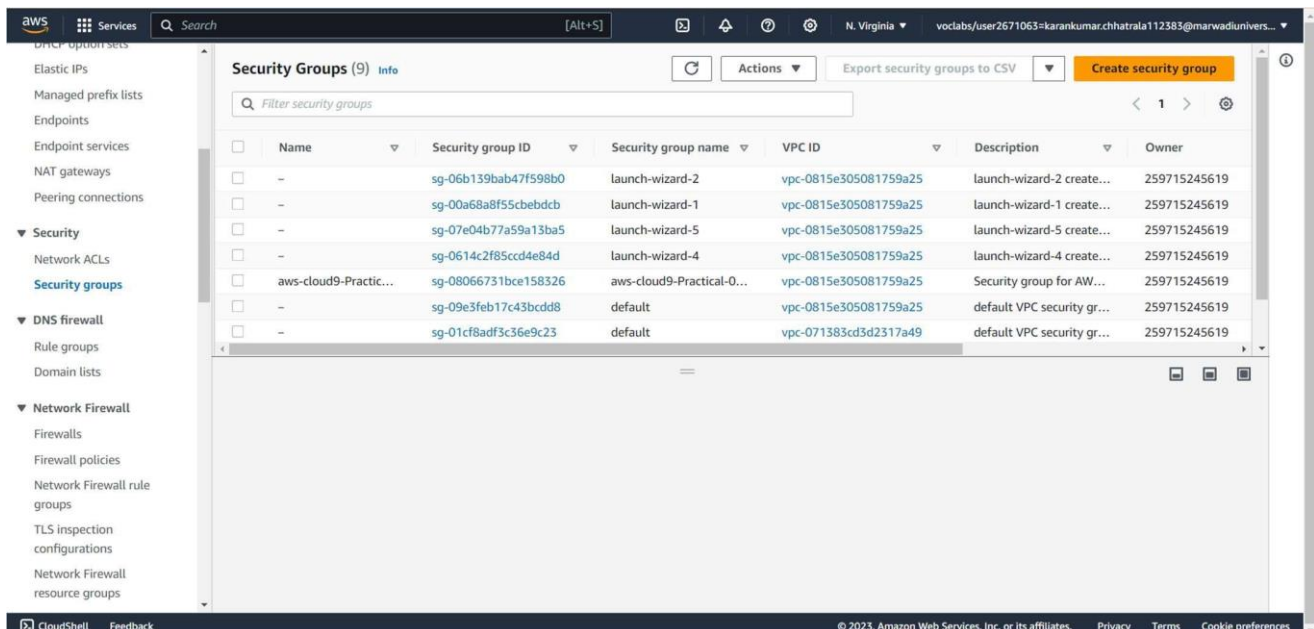
**Step 01 :** In the AWS Management Console, on the Services menu, choose VPC

**Snapshot :**



**Step 02 :** In the left navigation pane, choose Security Groups.

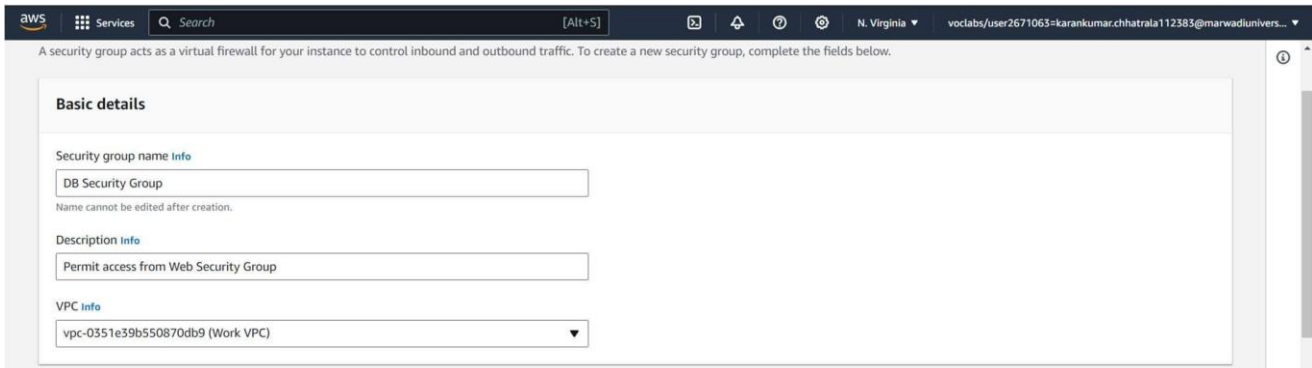
**Snapshot :**



**Step 03 :** Choose Create security group and then configure:

- **Security group name:** DB Security Group
- **Description:** Permit access from Web Security Group
- **VPC:** Lab VPC

**Snapshot :**



A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

**Basic details**

Security group name Info  
DB Security Group  
Name cannot be edited after creation.

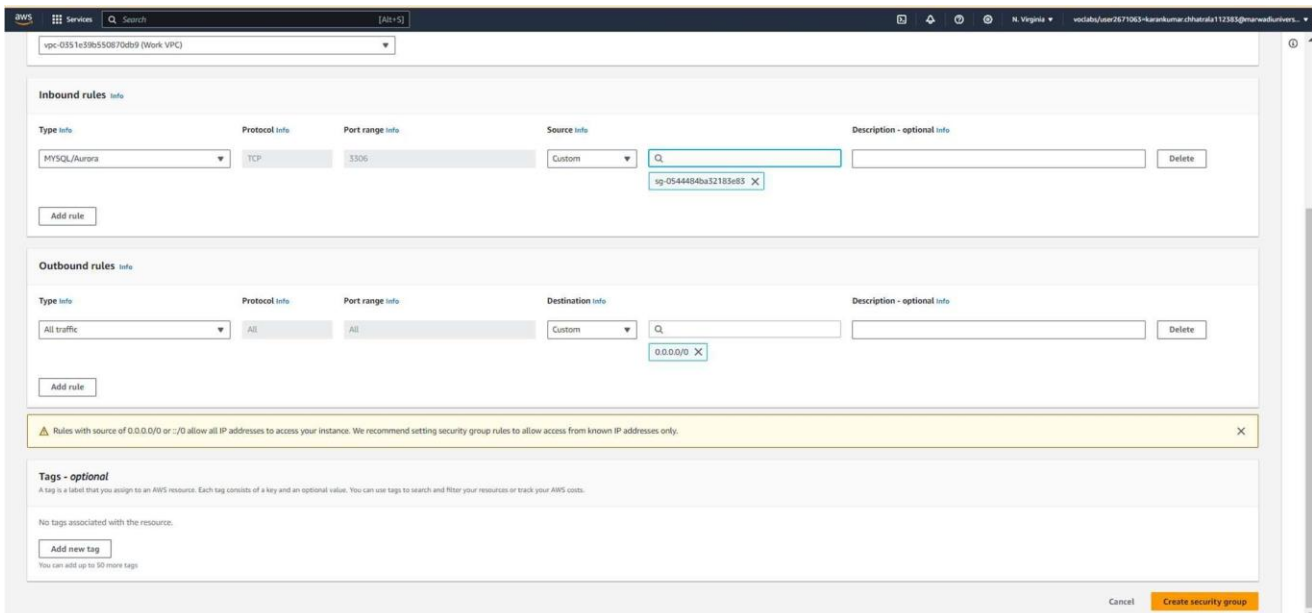
Description Info  
Permit access from Web Security Group

VPC Info  
vpc-0351e39b550870db9 (Work VPC)

**Step 04 :** In the Inbound rules pane, choose Add rule.

- **Type:** MySQL/Aurora (3306)
- **CIDR, IP, Security Group or Prefix List:** Type **sg** and then select Web Security Group.
- Choose Create security group

**Snapshot :**



vpc-0351e39b550870db9 (Work VPC)

**Inbound rules** Info

Type Info: MySQL/Aurora | Protocol Info: TCP | Port range Info: 3306 | Source Info: Custom | Description - optional Info:  
Q: sg-0544404ba32183e83 X  
Delete

Add rule

**Outbound rules** Info

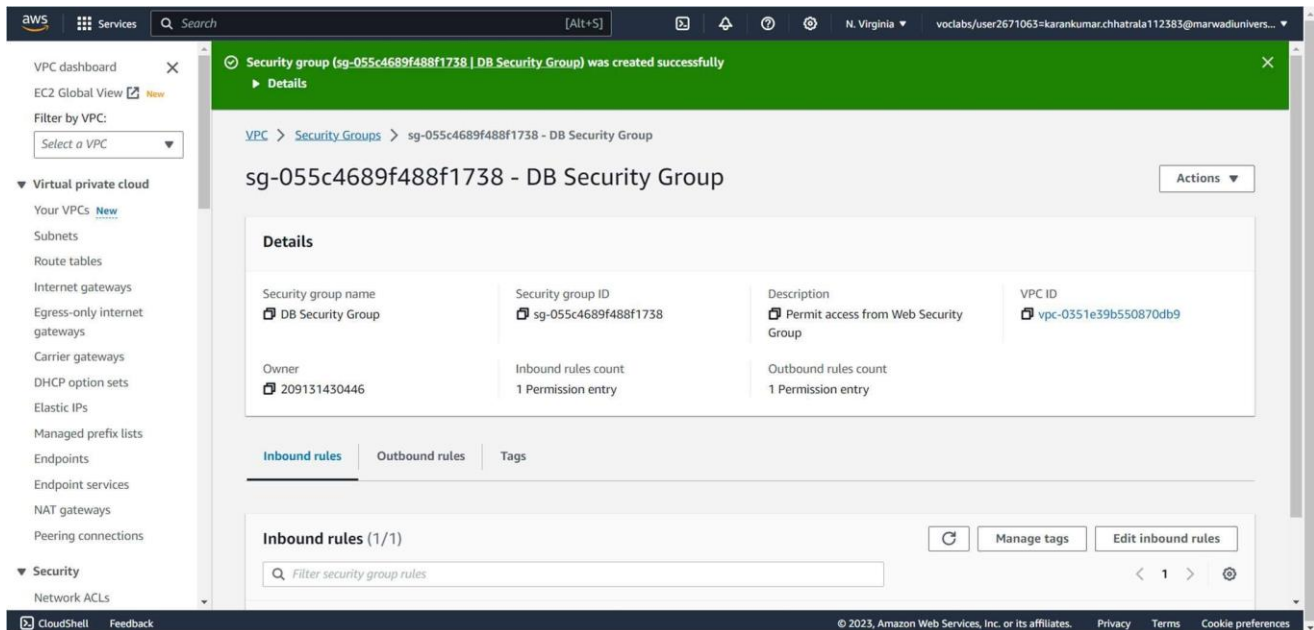
Type Info: All traffic | Protocol Info: All | Port range Info: All | Destination Info: Custom | Description - optional Info:  
Q: 0.0.0.0/0 X  
Delete

Add rule

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

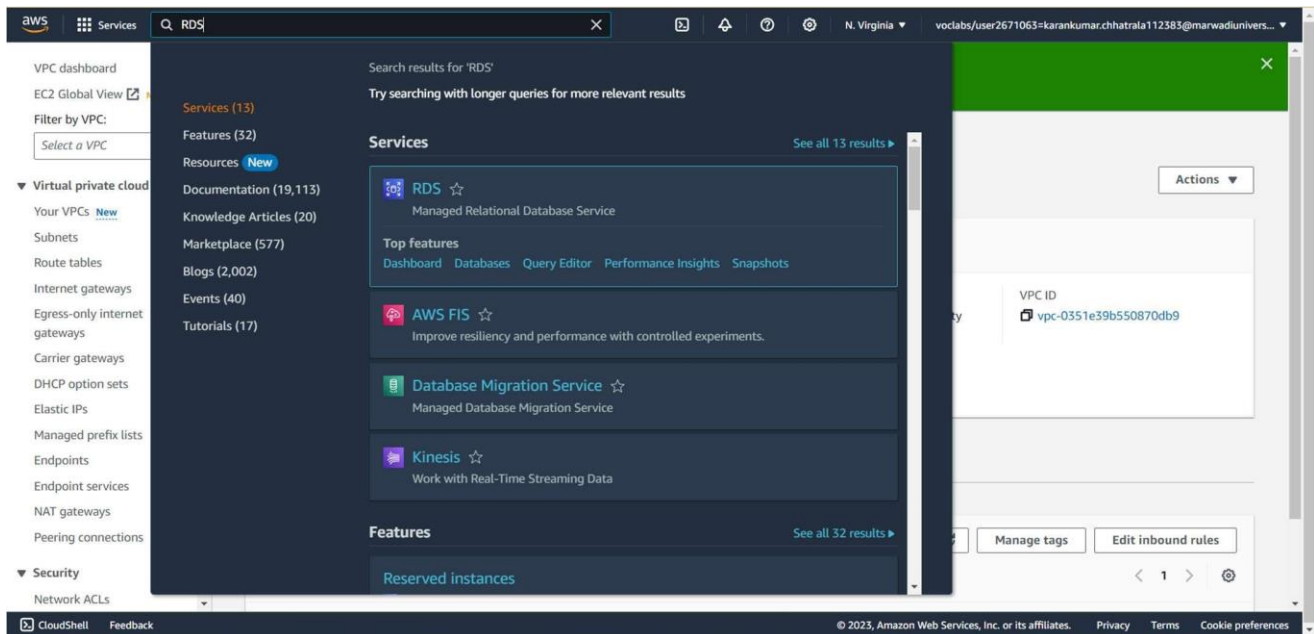
**Tags - optional**  
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.  
No tags associated with the resource.  
Add new tag  
You can add up to 50 more tags.

Cancel Create security group



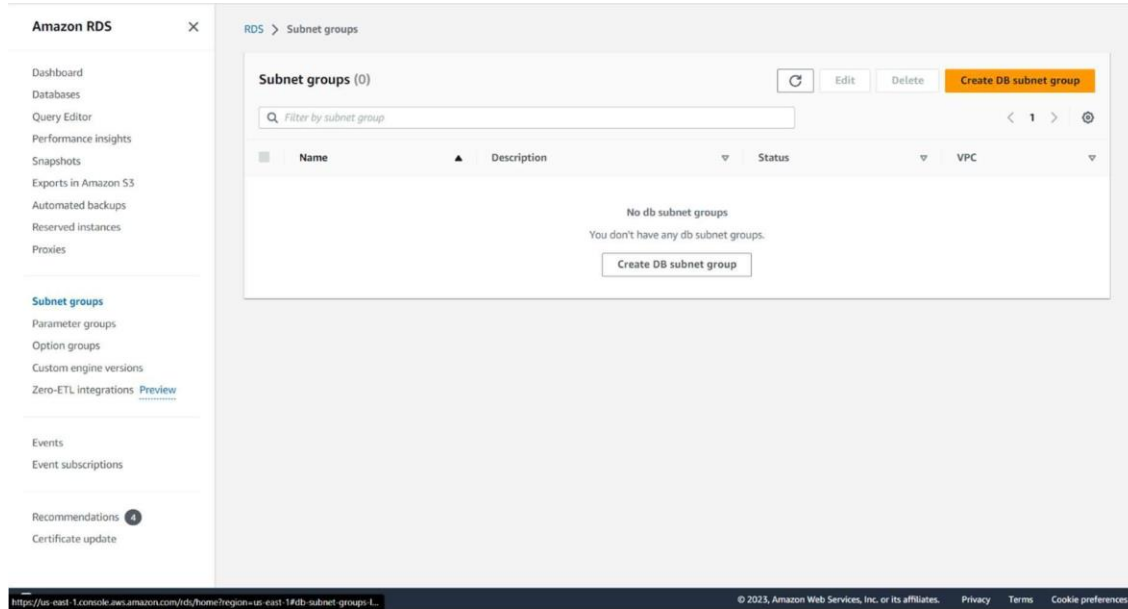
**Step 05 :** On the Services menu, choose RDS.

**Snapshot :**



**Step 06 :** In the left navigation pane, choose Subnet groups.

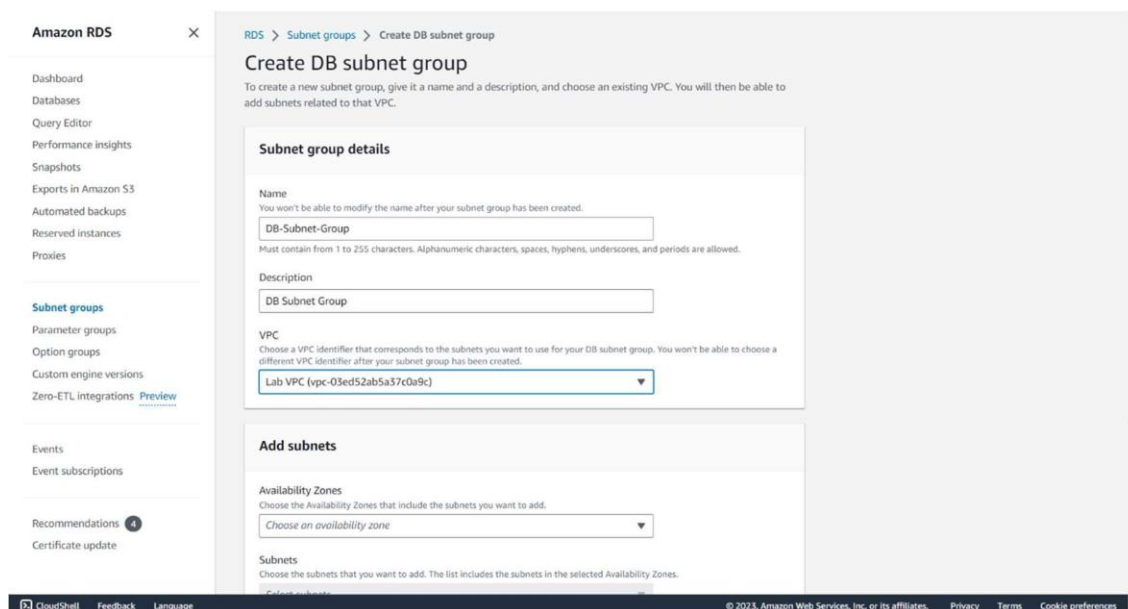
**Snapshot :**



**Step 07 :** Choose Create DB Subnet Group then configure:

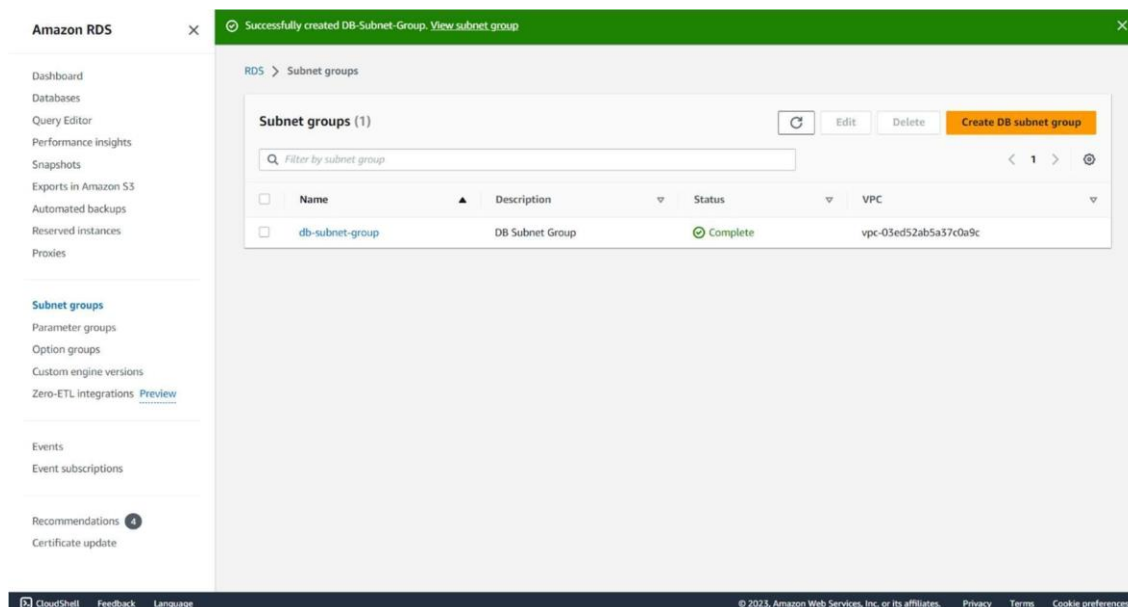
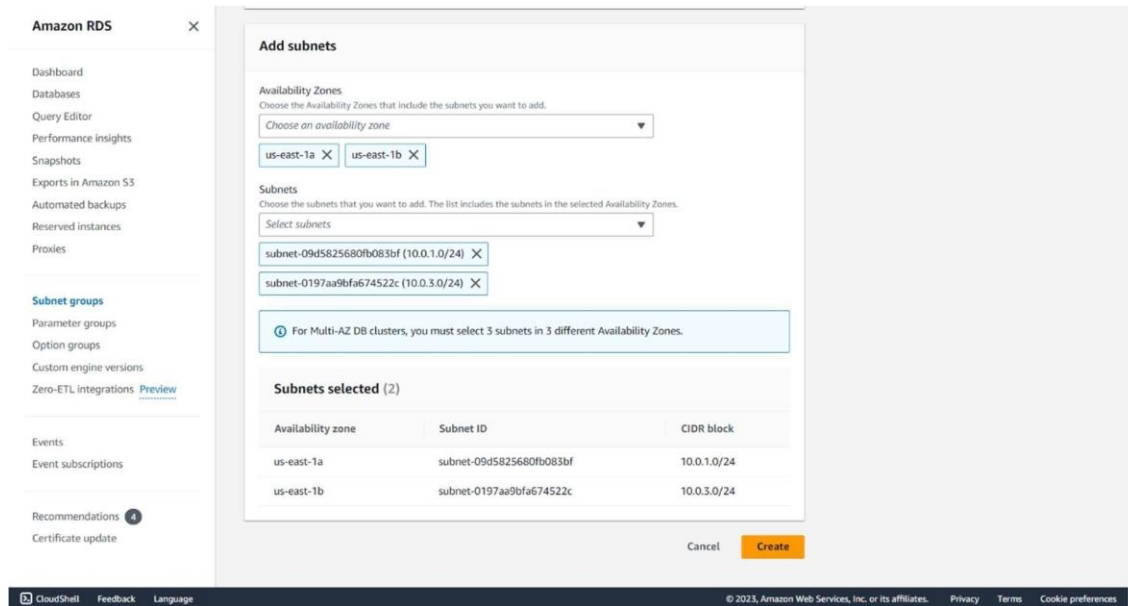
- **Name:** DB-Subnet-Group
- **Description:** DB Subnet Group
- **VPC:** Lab VPC

**Snapshot :**



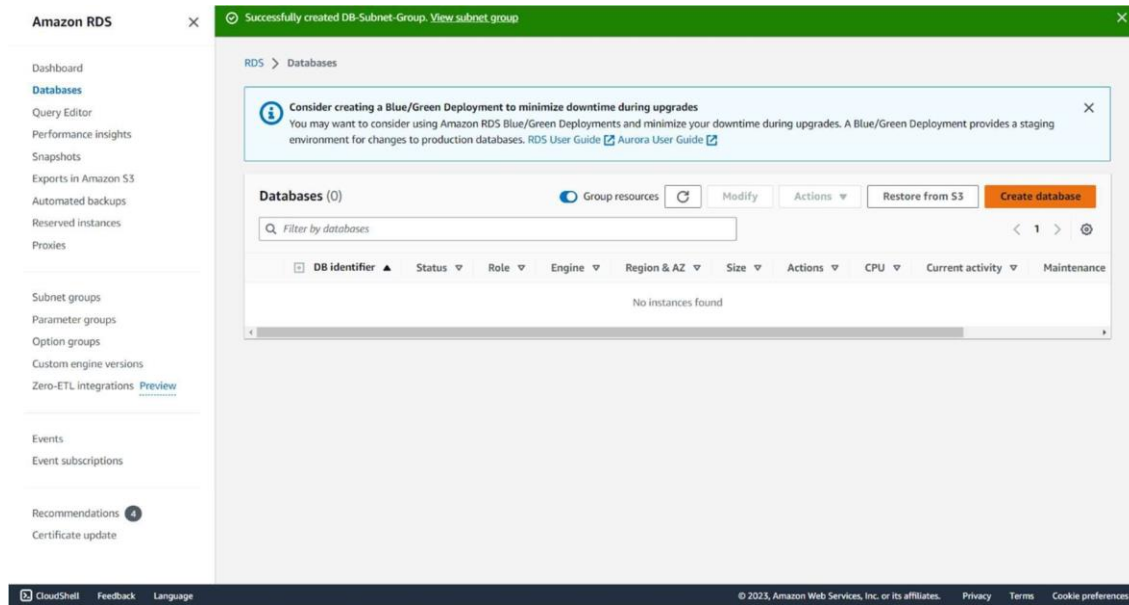
**Step 08 :** Scroll down to the Add Subnets section. Expand the list of values under Availability Zones and select the first two zones: us-east-1a and us-east-1b. Expand the list of values under Subnets and select the subnets associated with the CIDR ranges 10.0.1.0/24 and 10.0.3.0/24 Than Choose Create.

**Snapshot :**



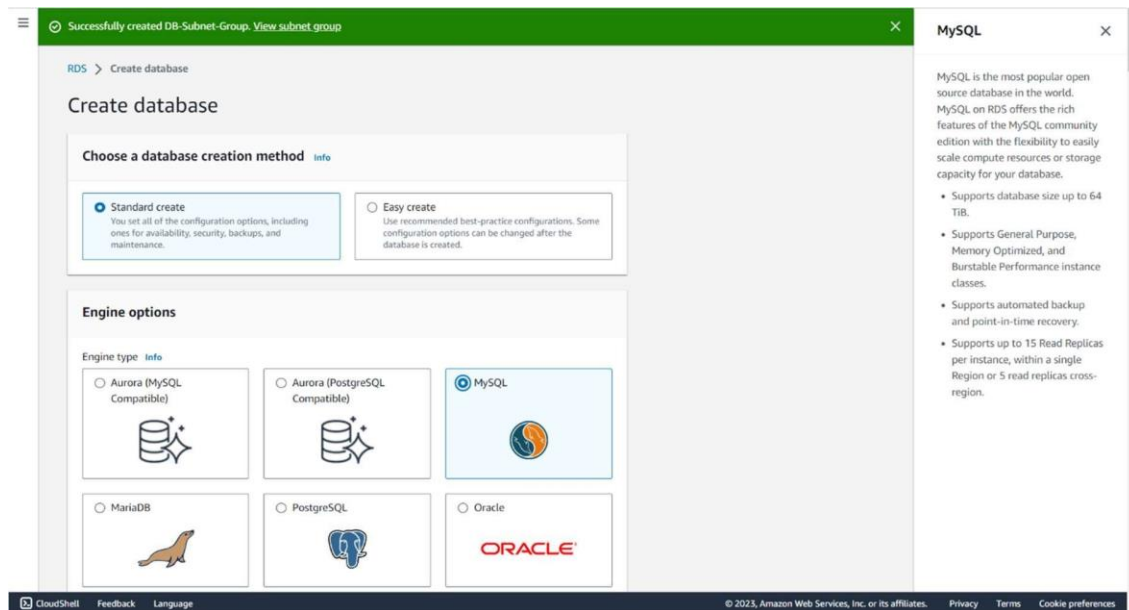
**Step 09 :** In the left navigation pane, choose Databases. Choose Create database.

**Snapshot :**



**Step 10 :** Select MySQL under Engine Options.

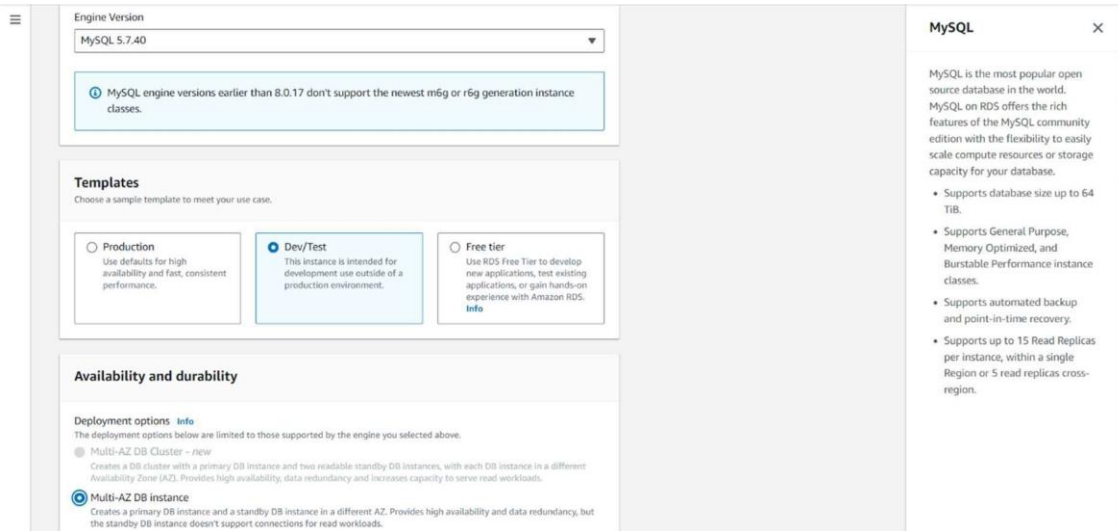
**Snapshot :**





**Step 11 :** Under Templates choose Dev/Test Under Availability and durability choose Multi-AZ DB instance.

**Snapshot :**



Engine Version  
MySQL 5.7.40

MySQL engine versions earlier than 8.0.17 don't support the newest m6g or 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.

☐ Free tier  
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

**Availability and durability**

**Deployment options** [Info](#)  
The deployment options below are limited to those supported by the engine you selected above.

☐ Multi-AZ DB Cluster - new  
Creates a DB cluster with a primary DB instance and two readable standby DB instances, with each DB instance in a different Availability Zone (AZ). Provides high availability, data redundancy and increases capacity to serve read workload.

☒ Multi-AZ DB instance  
Creates a primary DB instance and a standby DB instance in a different AZ. Provides high availability and data redundancy, but the standby DB instance doesn't support connections for read workloads.

**MySQL**

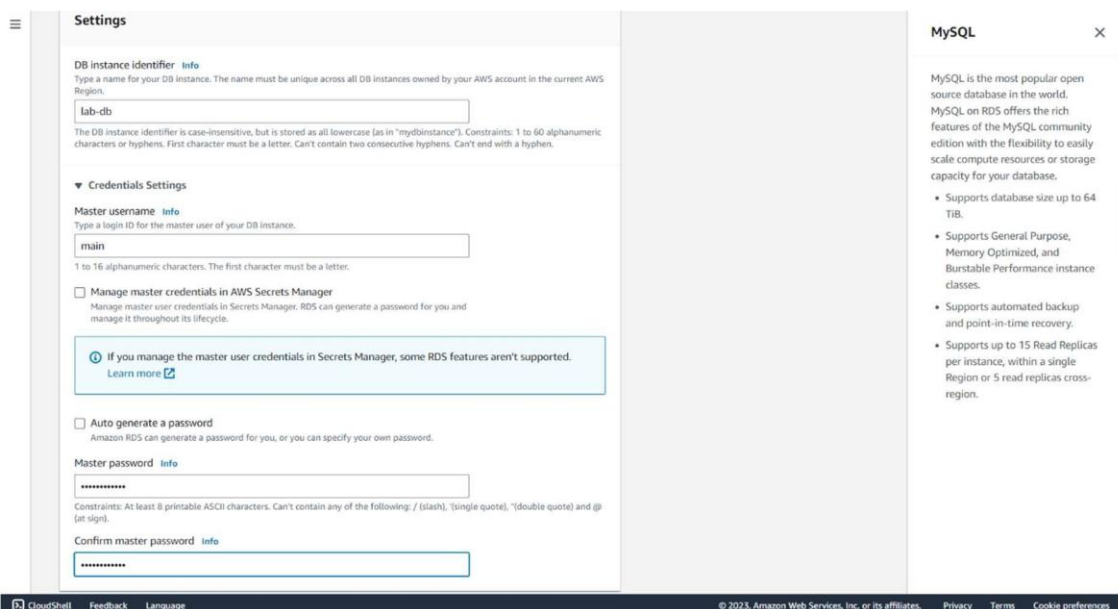
MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

**Step 12 :** Under Settings, configure:

- **DB instance identifier:** lab-db
- **Master username:** main
- **Master password:** lab-password
- **Confirm password:** lab-password

**Snapshot :**



**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.

lab-db

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.

main

1 to 16 alphanumeric characters. The first character must be a letter.

☐ **Manage master credentials in AWS Secrets Manager**  
Manage master user credentials in Secrets Manager. RDS can generate a password for you and manage it throughout its lifecycle.

☒ **If you manage the master user credentials in Secrets Manager, some RDS features aren't supported.** [Learn more](#)

☐ **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).

lab-password

**Confirm master password** [Info](#)  
lab-password

**MySQL**

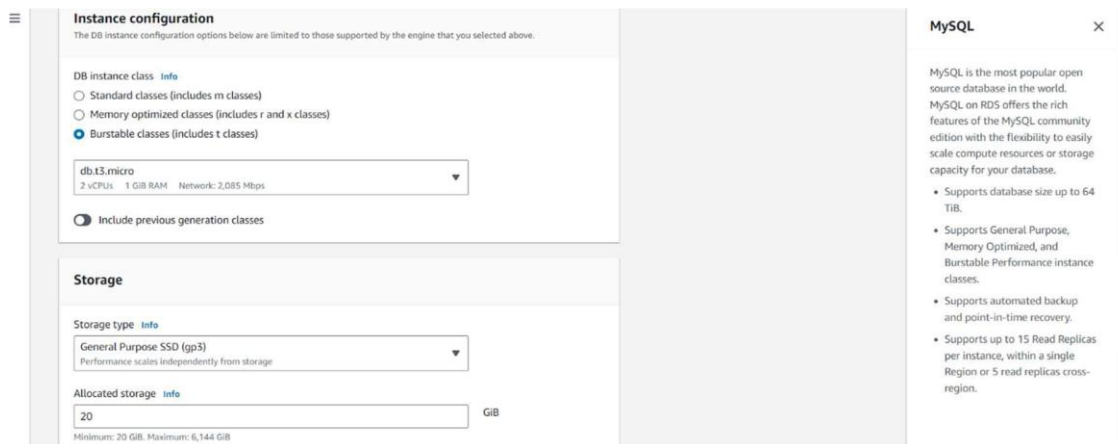
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**Step 13 :** Under DB instance class, configure:

- Select Burstable classes (includes t classes).
- Select db.t3.micro
- Under Storage, configure:
  - Storage type: General Purpose (SSD)
  - Allocated storage: 20

**Snapshot :**



**Instance configuration**  
The DB instance configuration options below are limited to those supported by the engine that you selected above.

**DB instance class** [info](#)

- ☐ 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

☐ Include previous generation classes

**Storage**

**Storage type** [info](#)

General Purpose SSD (gp3)  
Performance scales independently from storage

**Allocated storage** [info](#)

20 GiB  
Minimum: 20 GiB, Maximum: 6,144 GiB

**MySQL**

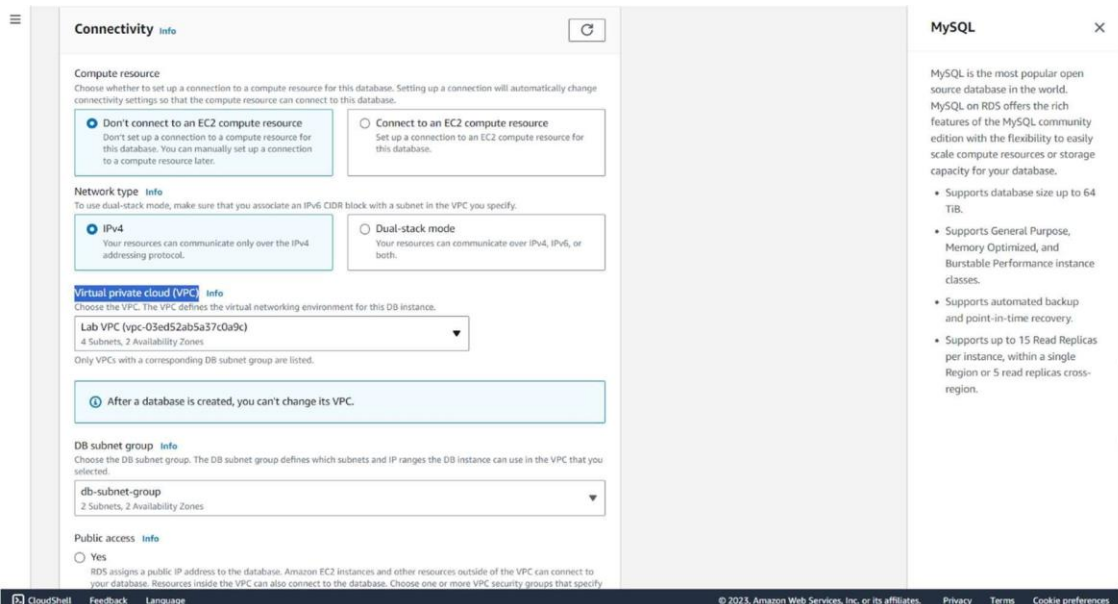
MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

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- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

**Step 14 :** Under Connectivity, configure:

- **Virtual Private Cloud (VPC):** Lab VPC.

**Snapshot :**



**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.

Lab VPC (vpc-03ed52ab5a37c0a9c)  
4 Subnets, 2 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.

db-subnet-group  
2 Subnets, 2 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

**MySQL**

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

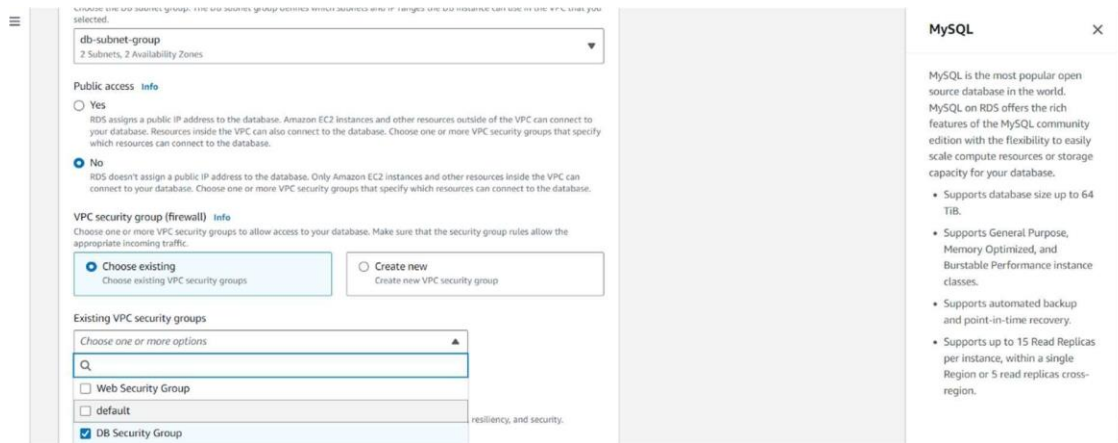
- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.



**Step 15 :** Under Existing VPC security groups, from the dropdown list:

- Choose DB Security Group.
- Deselect default.

**Snapshot :**

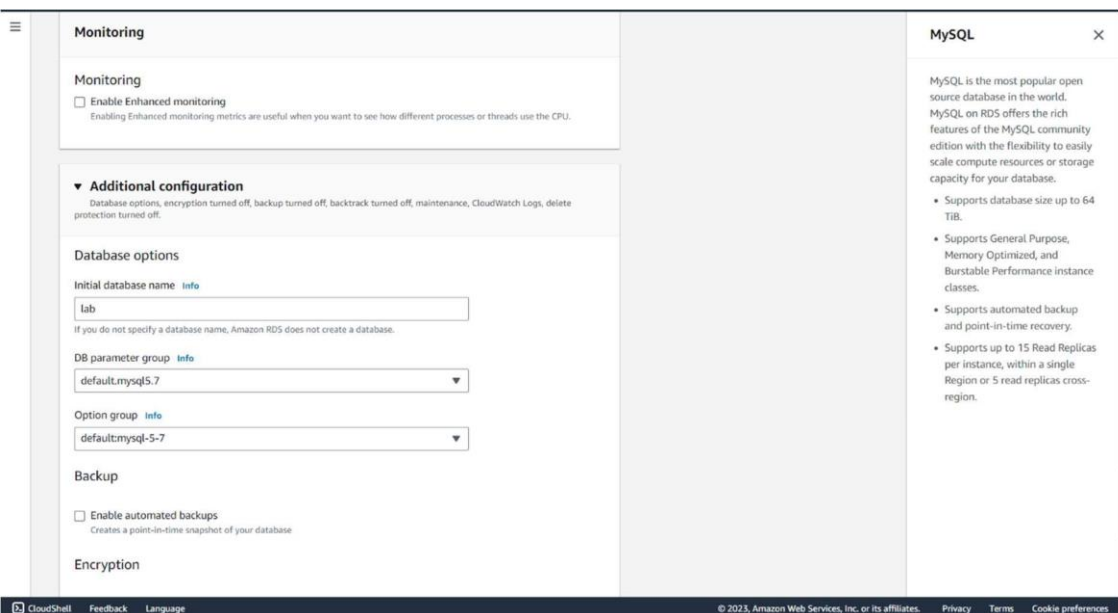


The screenshot shows the 'VPC security group (firewall)' configuration page in the Amazon RDS console. The 'Public access' section has 'No' selected. The 'VPC security group (firewall)' section has 'Choose existing' selected. In the 'Existing VPC security groups' list, 'DB Security Group' is selected, while 'Web Security Group' and 'default' are deselected. A sidebar on the right provides information about MySQL.

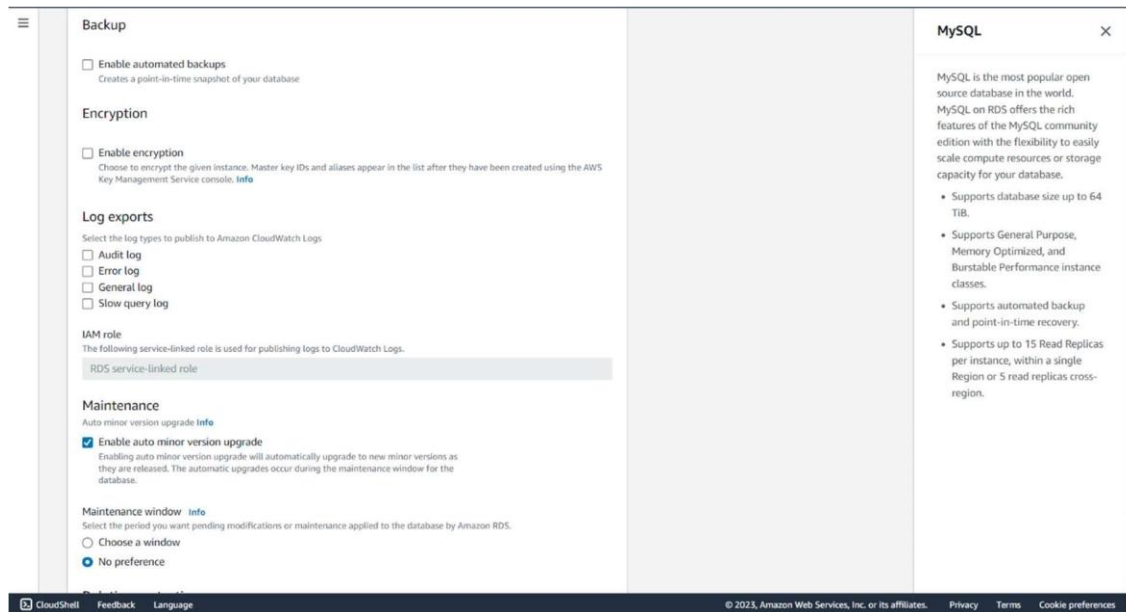
**Step 16 :** Expand Additional configuration, then configure:

- Initial database name: lab
- Uncheck Enable automatic backups.
- Uncheck Enable encryption
- Uncheck Enable Enhanced monitoring. Then Choose Create database

**Snapshot :**

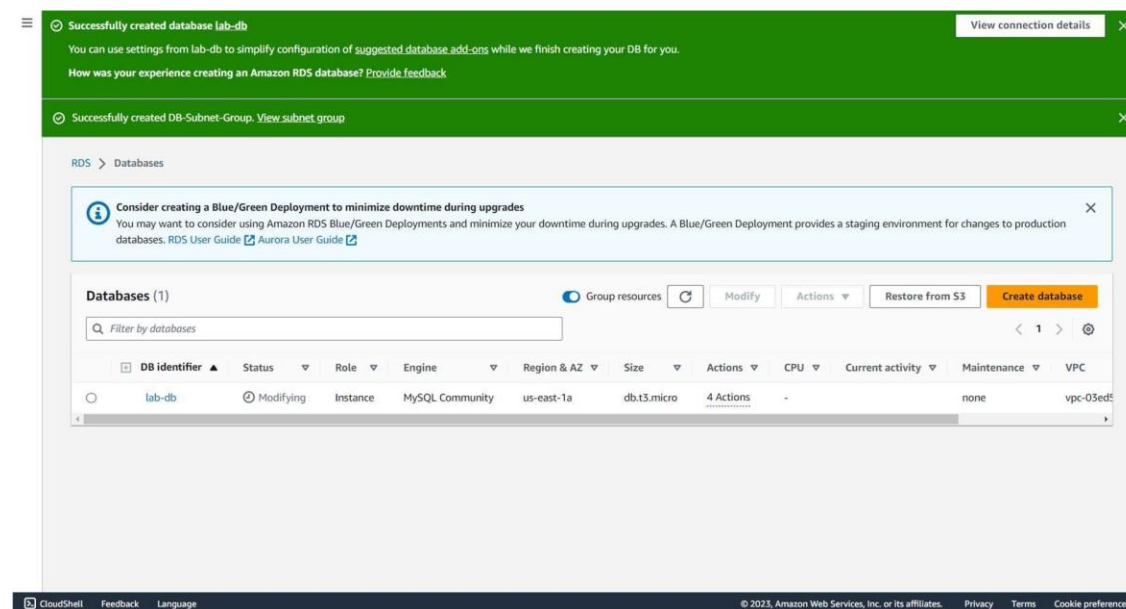


The screenshot shows the 'Additional configuration' section in the Amazon RDS console. The 'Database options' section has 'Initial database name' set to 'lab'. The 'DB parameter group' is set to 'default.mysql5.7' and the 'Option group' is set to 'default:mysql-5-7'. The 'Backup' section has 'Enable automated backups' unchecked. The 'Encryption' section is visible at the bottom. A sidebar on the right provides information about MySQL.



**Step 17 :** Choose lab-db (choose the link itself).

**Snapshot :**



**Step 18 :** Wait until Info changes to Modifying or Available.

**Snapshot :**

Modifying

**Amazon RDS** X

RDS > Databases > lab-db

lab-db

Modify Actions

**Summary**

DB identifier lab-db	CPU 2.30%	Status Available	Class db.t5.micro
Role Instance	Current activity 0 Connections	Engine MySQL Community	Region & AZ us-east-1a

Connectivity & security Monitoring Logs & events Configuration Maintenance & backups Tags

**Connectivity & security**

<b>Endpoint &amp; port</b>	<b>Networking</b>	<b>Security</b>
Endpoint lab-db.cpnvgij06gnt.us-east-1.rds.amazonaws.com	Availability Zone us-east-1a	VPC security groups DB Security Group (sg-00849ee733fb0679)
Port 3306	VPC Lab VPC (vpc-03ed52ab5a37c0a9c)	Publicly accessible No
	Subnet group db-subnet-group	Certificate authority info rds-ca-2019
	Subnets subnet-0197aa9bfa674522c subnet-09d5825680fb083bf	

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**Step 19 :** Scroll down to the Connectivity & security section and copy the Endpoint field.

**Snapshot :**

**Amazon RDS** X

Instance 0 Connections MySQL Community us-east-1a

Connectivity & security Monitoring Logs & events Configuration Maintenance & backups Tags

**Connectivity & security**

<b>Endpoint &amp; port</b>	<b>Networking</b>	<b>Security</b>
Endpoint lab-db.cpnvgij06gnt.us-east-1.rds.amazonaws.com	Availability Zone us-east-1a	VPC security groups DB Security Group (sg-00849ee733fb0679)
Port 3306	VPC Lab VPC (vpc-03ed52ab5a37c0a9c)	Publicly accessible No
	Subnet group db-subnet-group	Certificate authority info rds-ca-2019
	Subnets subnet-0197aa9bfa674522c subnet-09d5825680fb083bf	Certificate authority date August 22, 2024, 22:38 (UTC+05:30)
	Network type IPv4	DB instance certificate expiration date August 22, 2024, 22:38 (UTC+05:30)

**Security group rules (2)**

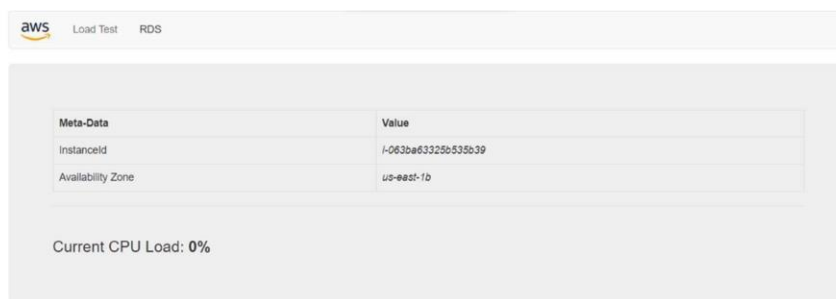
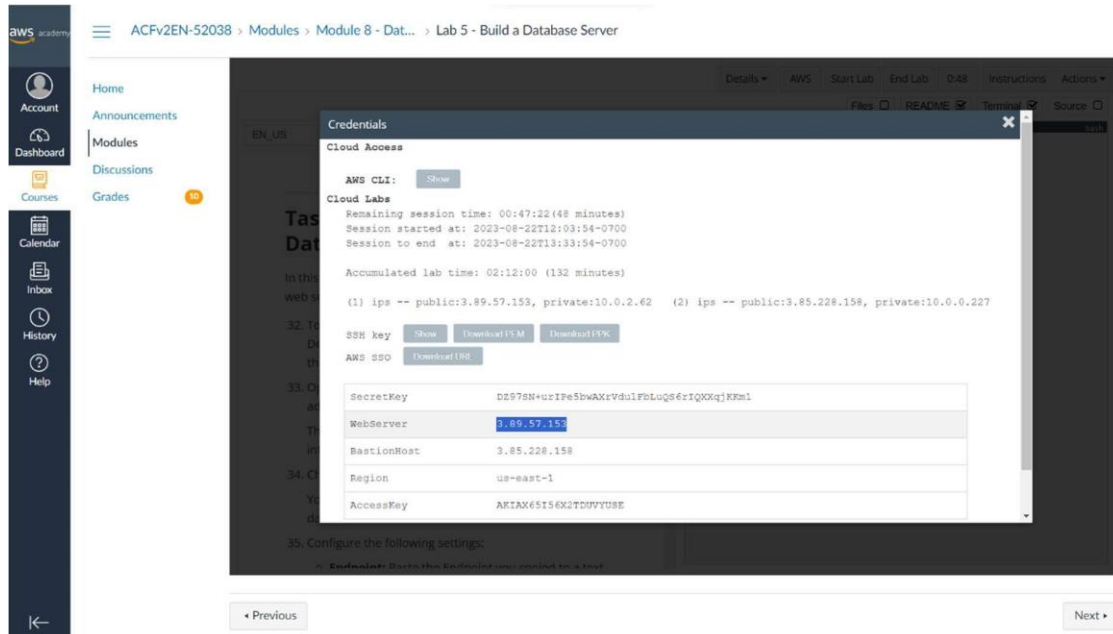
Filter by Security group rules

Security group	Type	Rule
----------------	------	------

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**Step 20 :** To copy the WebServer IP address, choose on the Details drop down menu above these instructions, and then choose Show. and Open a new web browser tab, paste the WebServer IP address and press Enter.

**Snapshot :**

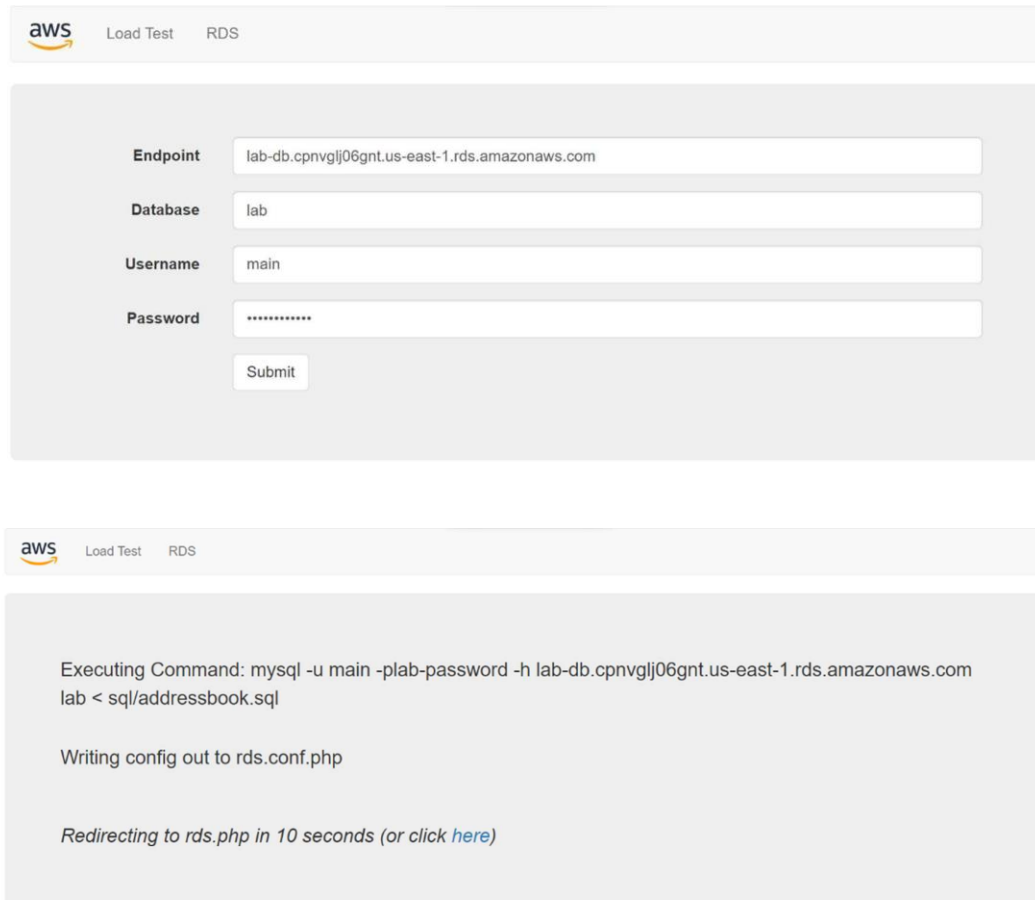


3.89.57.153/index.php

**Step 21 :** Choose the RDS link at the top of the page then Configure the following settings:

- Endpoint: Paste the Endpoint you copied to a text editor earlier
- Database: lab
- Username: main
- Password: lab-password
- Choose Submit

**Snapshot :**



aws Load Test RDS

Endpoint: lab-db.cpnvglj06gnt.us-east-1.rds.amazonaws.com

Database: lab

Username: main

Password: \*\*\*\*\*

Submit


Executing Command: `mysql -u main -plab-password -h lab-db.cpnvglj06gnt.us-east-1.rds.amazonaws.com lab < sql/addressbook.sql`

Writing config out to rds.conf.php

Redirecting to rds.php in 10 seconds (or click [here](#))

**Step 22 :** Test the web application by adding, editing and removing contacts.

**Snapshot :**


Load Test
RDS

### Address Book

Last name	First name	Phone	Email	Admin
Doe	Jane	010-110-1101	janed@someotheraddress.org	<a href="#">Add Contact</a> <a href="#">Edit</a> <a href="#">Remove</a>
Johnson	Roberto	123-456-7890	roberto@someaddress.com	<a href="#">Edit</a> <a href="#">Remove</a>


Load Test
RDS

### Address Book

#### Add Contact

Last Name:   
 First Name:   
 Phone:   
 Email:

Last name	First name	Phone	Email	Admin
Johnson	Roberto	123-456-7890	roberto@someaddress.com	<a href="#">Add Contact</a> <a href="#">Edit</a> <a href="#">Remove</a>


Load Test
RDS

### Address Book

Last name	First name	Phone	Email	Admin
Demo	1	012355	mskk@vbn.com	<a href="#">Add Contact</a> <a href="#">Edit</a> <a href="#">Remove</a>
Johnson	Roberto	123-456-7890	roberto@someaddress.com	<a href="#">Edit</a> <a href="#">Remove</a>