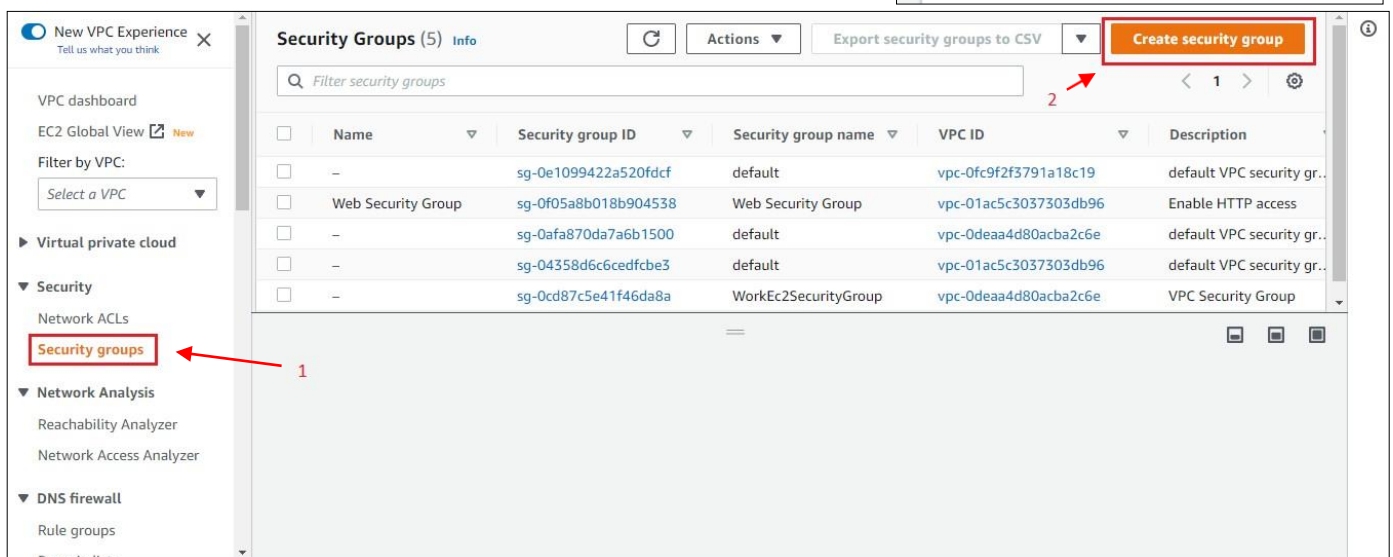
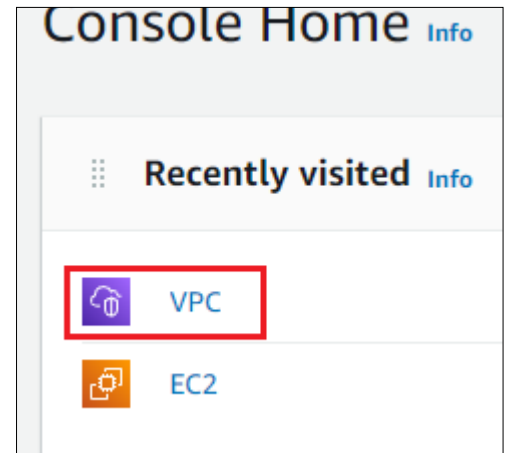


## Practical 5:- Build Your DB Server and Interact With Your DB Using an App.

### Task 1: Create a Security Group for the RDS DB Instance

1. In the **AWS Management Console**, on the Services menu, choose **VPC**.
2. In the left navigation pane, choose **Security Groups**.



3. Choose Create security group and then configure:
  - **Security group name:** DB Security Group
  - **Description:** Permit access from Web Security Group
  - **VPC:** Lab VPC

**Basic details**

Security group name [Info](#)

Name cannot be edited after creation.

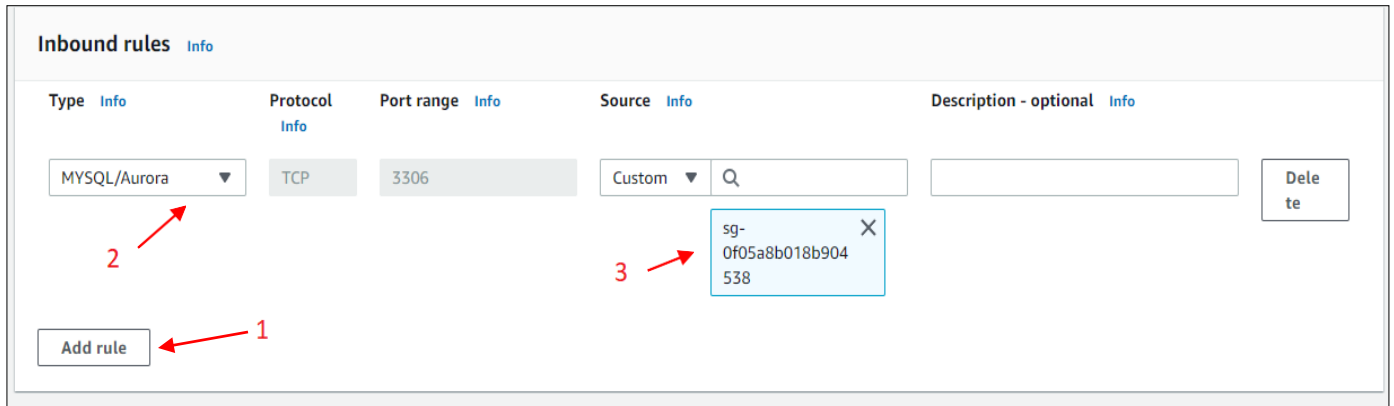
Description [Info](#)

VPC [Info](#)

vpc-0deaa4d80acba2c6e (Work VPC)	10.0.0.0/16
vpc-0fc9f2f3791a18c19	172.31.0.0/16 (default)
vpc-01ac5c3037303db96 (Lab VPC)	10.0.0.0/16

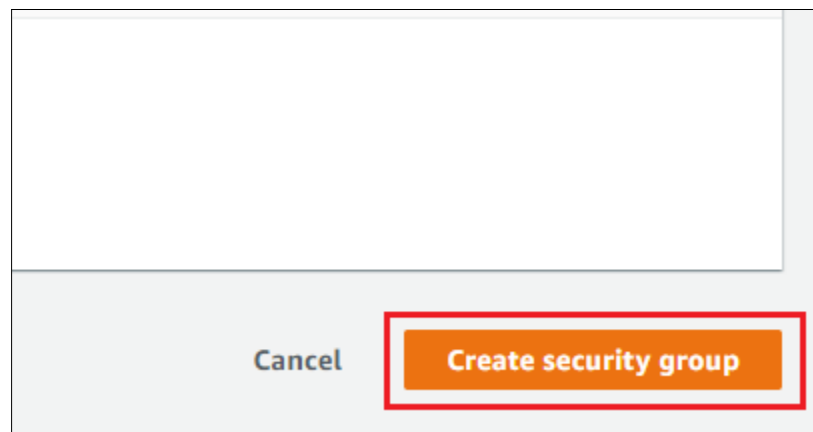
4. In the **Inbound rules** pane, choose Add rule
5. Configure the following settings:
  - **Type:** *MySQL/Aurora (3306)*
  - **CIDR, IP, Security Group or Prefix List:** Type `sg` and then select *Web Security Group*.

This configures the Database security group to permit inbound traffic on port 3306 from any EC2 instance that is associated with the *Web Security Group*.



6. Choose Create security group

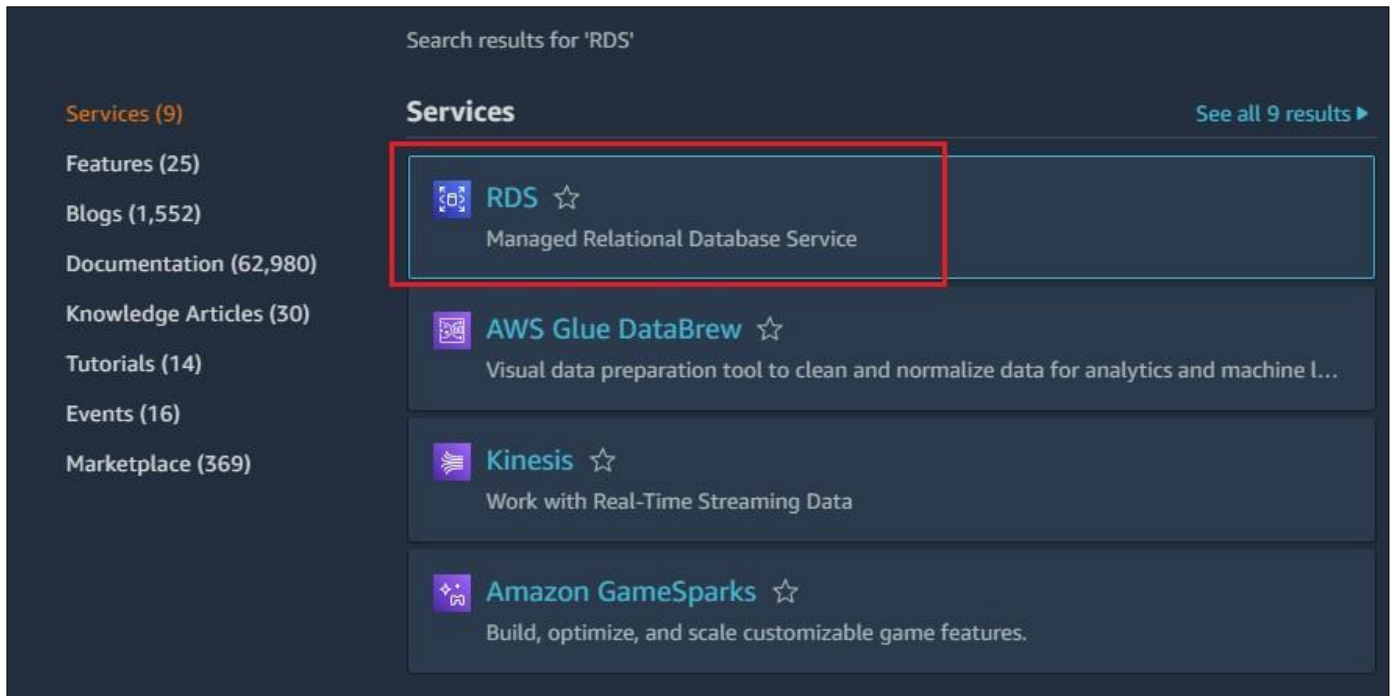
You will use this security group when launching the Amazon RDS database.



## Task 2: Create a DB Subnet Group

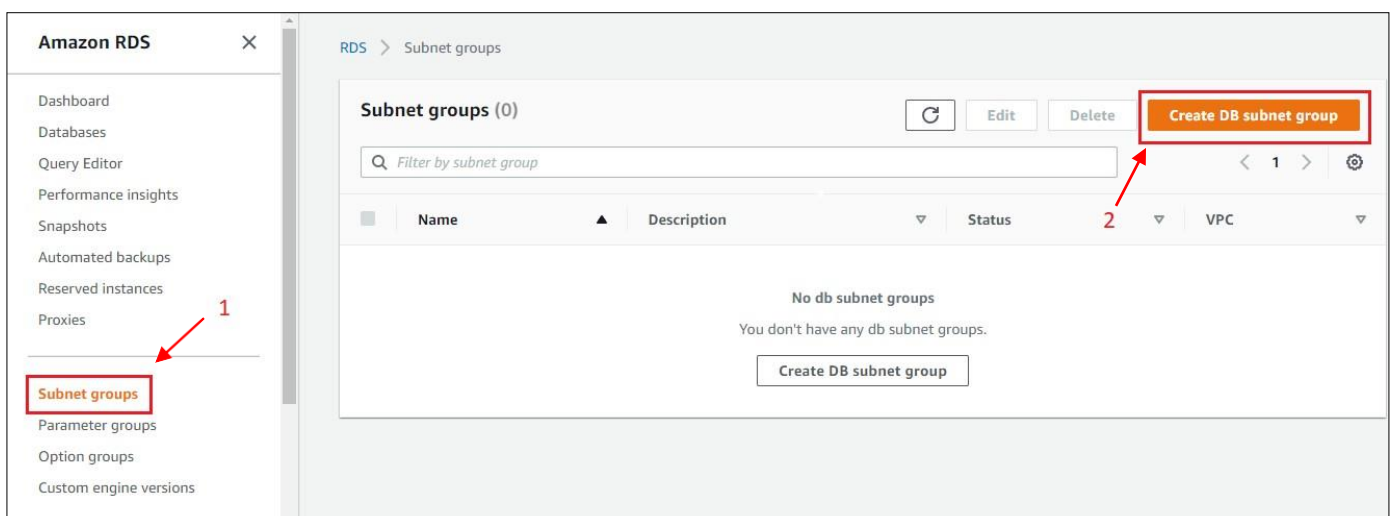
In this task, you will create a *DB subnet group* that is used to tell RDS which subnets can be used for the database. Each DB subnet group requires subnets in at least two Availability Zones.

- On the Services menu, choose **RDS**.



- In the left navigation pane, choose **Subnet groups**.

If the navigation pane is not visible, choose the menu icon in the top-left corner.



9. Choose Create DB Subnet Group then configure:

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

### Subnet group details

**Name**  
You won't be able to modify the name after your subnet group has been created.

DB-Subnet-Group

1

Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.

**Description**

DB Subnet Group

2

**VPC**  
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.

Choose a VPC

Work VPC (vpc-0deaa4d80acba2c6e)

vpc-0fc9f2f3791a18c19

Lab VPC (vpc-01ac5c3037303db96)

3

**Add subnets**

10. Scroll down to the **Add Subnets** section.

11. Expand the list of values under **Availability Zones** and select the first two zones: **us-east-1a** and **us-east-1b**.

12. 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**.

These subnets should now be shown in the **Subnets selected** table.

13. Choose Create

Choose the Availability Zones and include the subnets you want to add.

Choose an availability zone

us-east-1a X us-east-1b X 1

Subnets

Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.

Select subnets

subnet-09a816eb33aa918aa (10.0.1.0/24) X  
 subnet-0ed872efd258c6552 (10.0.3.0/24) X 2

**Subnets selected (2)**

Availability zone	Subnet ID	CIDR block
us-east-1a	subnet-09a816eb33aa918aa	10.0.1.0/24
us-east-1b	subnet-0ed872efd258c6552	10.0.3.0/24

3

Cancel **Create**

### Task 3: Create an Amazon RDS DB Instance

14. In the left navigation pane, choose **Databases**.

15. Choose Create database

Amazon RDS

Dashboard  
**Databases** 1  
 Query Editor  
 Performance insights  
 Snapshots  
 Automated backups  
 Reserved instances  
 Proxies

Subnet groups  
 Parameter groups  
 Option groups  
 Custom engine versions

RDS > Databases

**Databases** 2

Group resources ☒     **Create database**

Filter by databases

DB identifier Role Engine Region & AZ Size Status CPU

No instances found

16. Select **MySQL**.

**Configuration**

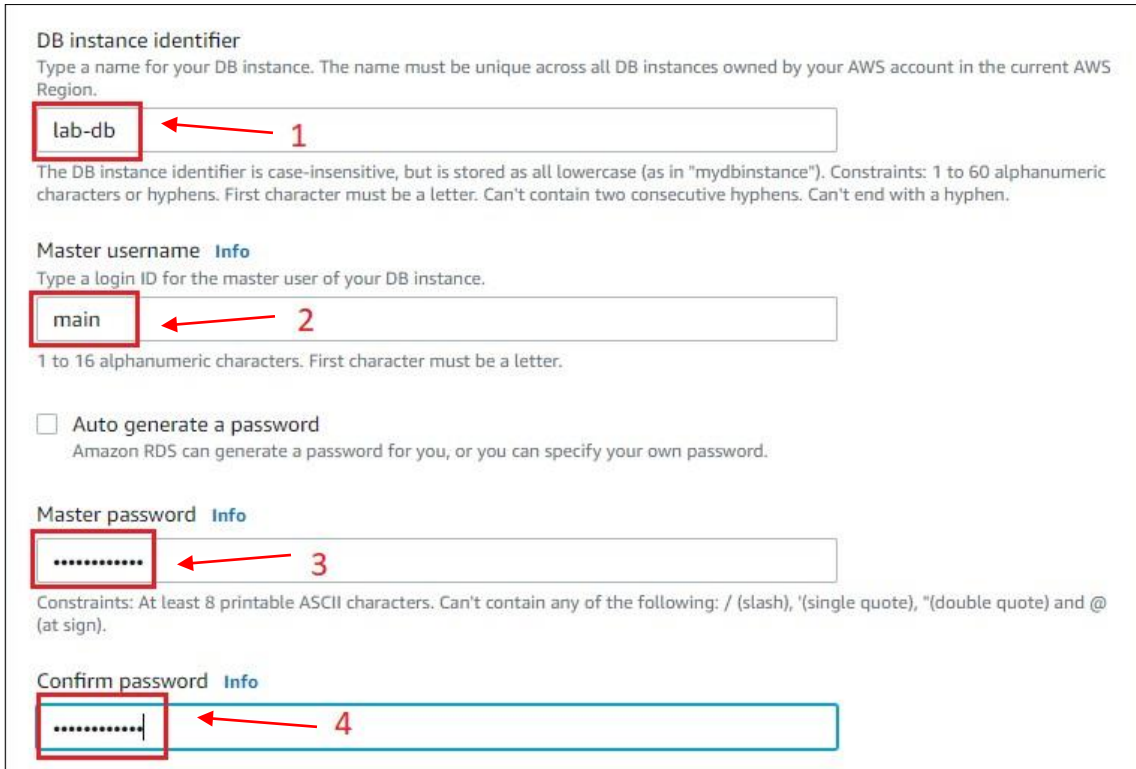
Engine type [Info](#)

☐ Amazon Aurora

☒ **MySQL**

17. Under **Settings**, configure:

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



**DB instance identifier**  
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 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.

**Master username** Info  
Type a login ID for the master user of your DB instance.

main 2

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

..... 3

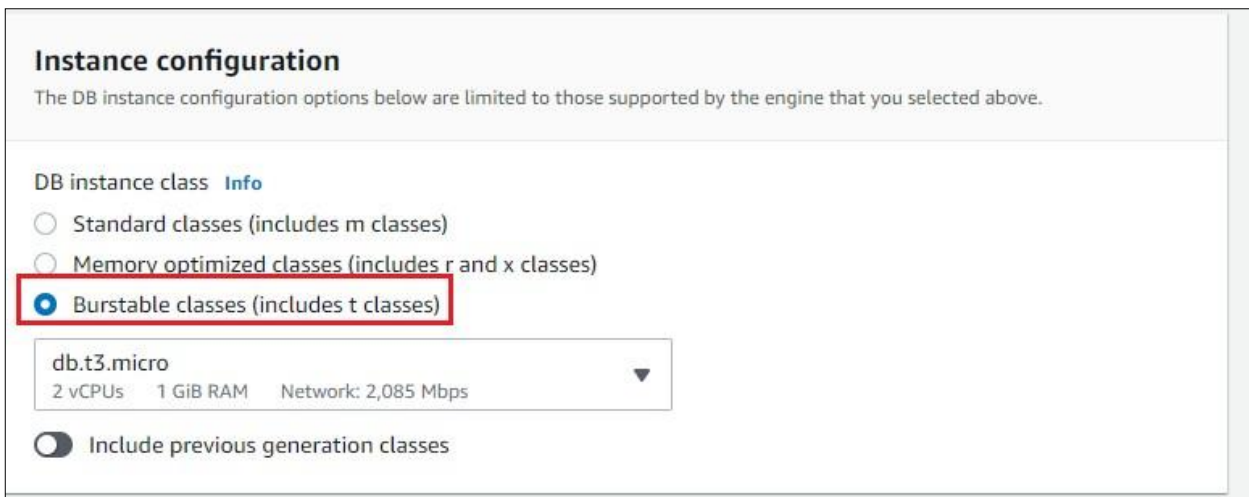
Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), ' (single quote), " (double quote) and @ (at sign).

**Confirm password** Info

..... 4

18. Under **DB instance class**, configure:

- Select **Burstable classes (includes t classes)**.
- Select *db.t3.micro*



**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)

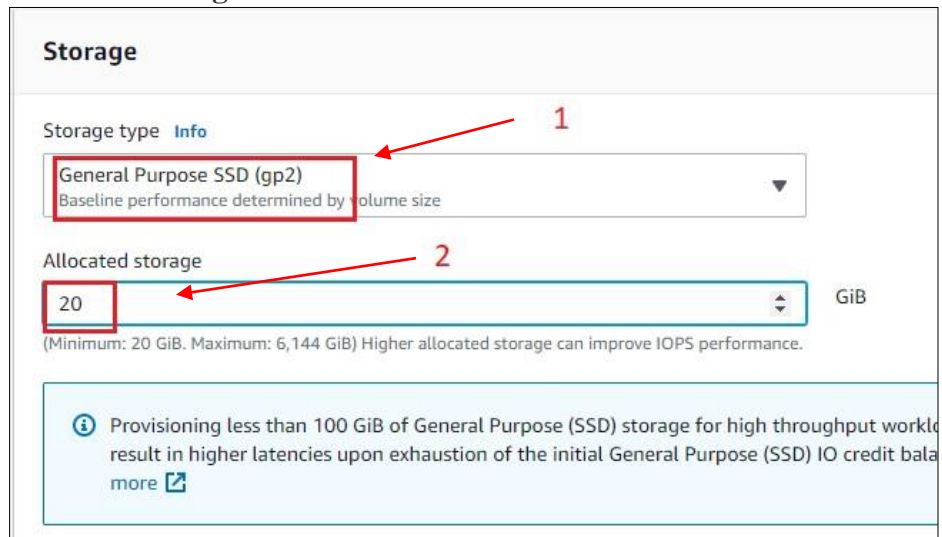
☒ Burstable classes (includes t classes)

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

☐ Include previous generation classes

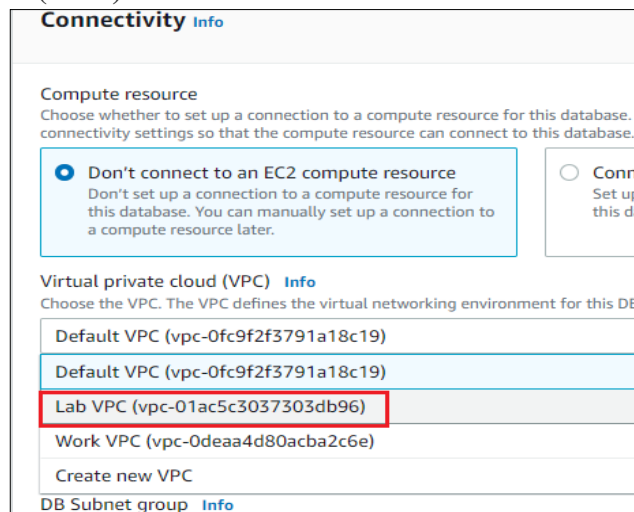
19. Under **Storage**, configure:

- **Storage type:** *General Purpose (SSD)*
- **Allocated storage:** 20



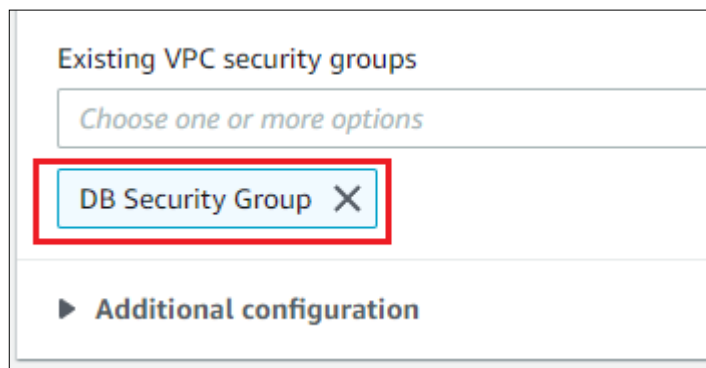
20. Under **Connectivity**, configure:

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



21. Under **Existing VPC security groups**, from the dropdown list:

- Choose *DB Security Group*.
- Deselect *default*.

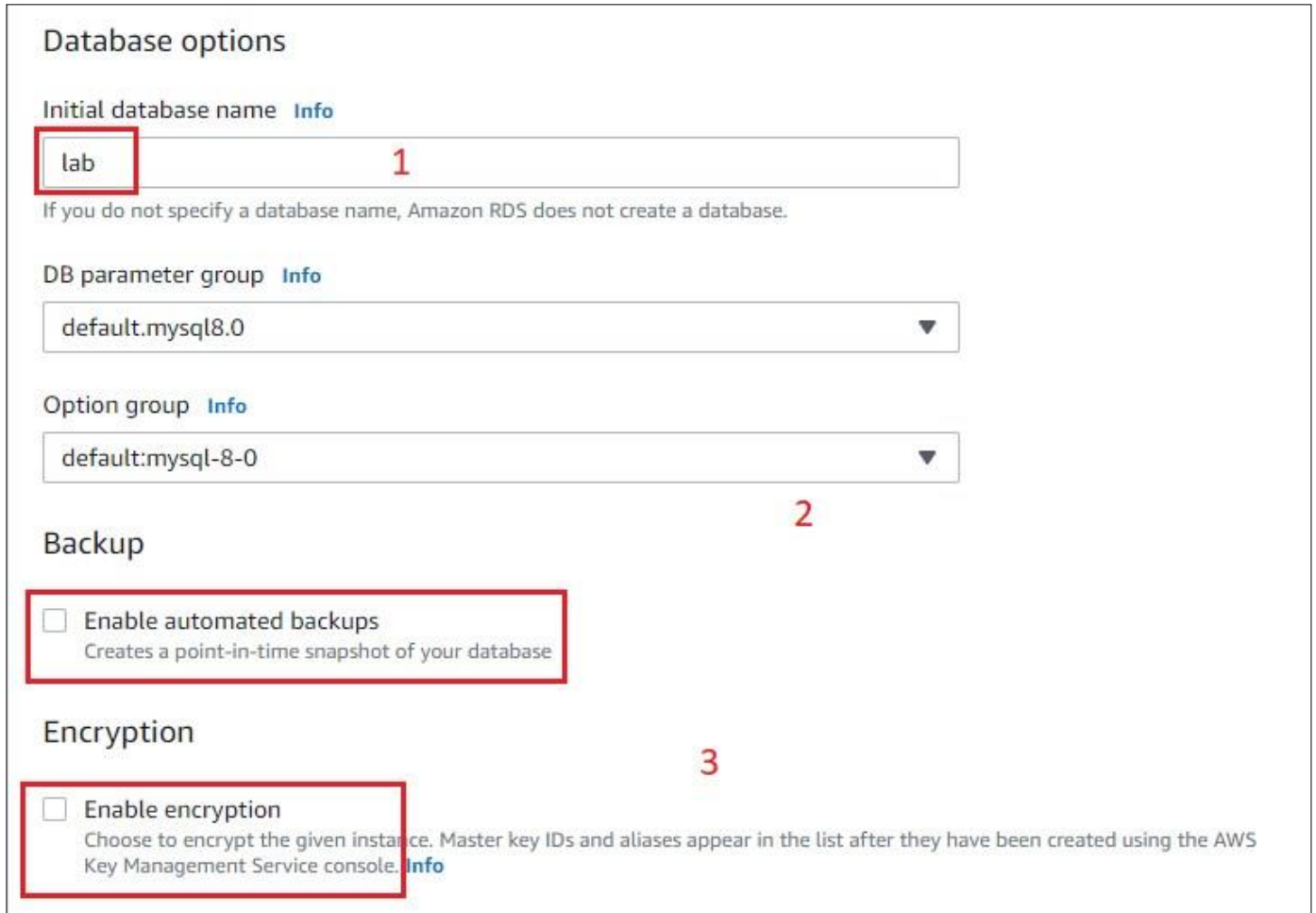




22. Expand **Additional configuration**, then configure:

- **Initial database name:** lab
- Uncheck **Enable automatic backups**.
- Uncheck **Enable encryption**
- Uncheck **Enable Enhanced monitoring**.

This will turn off backups, which is not normally recommended, but will make the database deploy faster for this lab.



**Database options**

Initial database name [Info](#)

lab 1

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

DB parameter group [Info](#)

default.mysql8.0

Option group [Info](#)

default:mysql-8-0 2

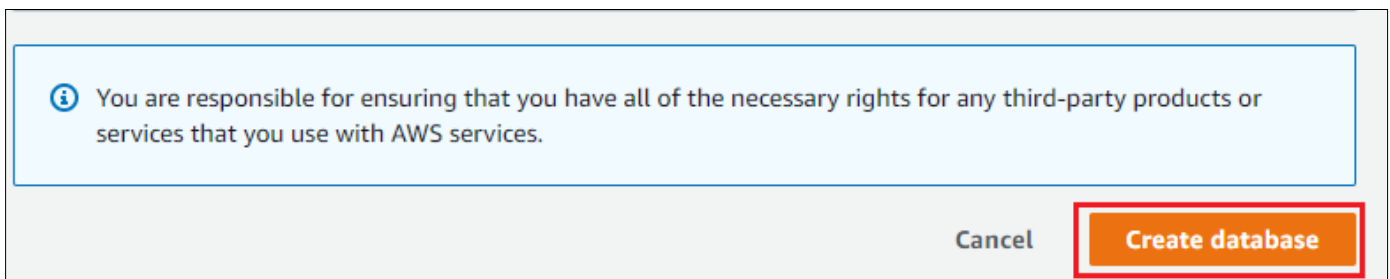
**Backup**

☐ Enable automated backups  
Creates a point-in-time snapshot of your database

**Encryption**

☐ Enable encryption 3  
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](#)

23. Choose Create database



**Info** 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**



24. Choose **lab-db** (choose the link itself).
25. Wait until **Info** changes to **Modifying** or **Available**.
26. Scroll down to the **Connectivity & security** section and copy the **Endpoint** field.

It will look similar to: *lab-db.cggq8lhnvnxv.us-west-2.rds.amazonaws.com*

27. Paste the Endpoint value into a text editor. You will use it later in the lab.

DB identifier lab-db	CPU <div><div></div></div> 2.60%	Status <span>Available</span>	Class db.t3.micro
Role Instance	Current activity <div><div></div></div> 0 Connections	Engine MySQL Community	Region & AZ us-east-1b

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

**Connectivity & security**

<b>Endpoint &amp; port</b> Endpoint <div>lab-db.crfkubdepvh2.us-east-1.rds.amazonaws.com</div>	<b>Networking</b> Availability Zone us-east-1b VPC	<b>Security</b> VPC security groups <a href="#">Web Security Group (sg-0d4bf20d0a1f3d16c)</a> <span>Active</span>
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## Task 4: Interact with Your Database

In this task, you will open a web application running on your web server and configure it to use the database.

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

The web application will be displayed, showing information about the EC2 instance.

30. Choose the **RDS** link at the top of the page.

You will now configure the application to connect to your database.

31. Configure the following settings:
  - **Endpoint:** Paste the Endpoint you copied to a text editor earlier
  - **Database:** lab

- **Username:** main
- **Password:** lab-password
- Choose **Submit**

A message will appear explaining that the application is running a command to copy information to the database. After a few seconds the application will display an **Address Book**.

The Address Book application is using the RDS database to store information.

32. Test the web application by adding, editing and removing contacts.

The data is being persisted to the database and is automatically replicating to the second Availability Zone.