



AWS  
re:Start  
LAB

# Build your DB Server



WEEK 7





# Overview

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Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database administration tasks, which allows you to focus on your applications and business. Amazon RDS provides you with six familiar database engines to choose from: Amazon Aurora, Oracle, Microsoft SQL Server, PostgreSQL, MySQL and MariaDB.

Building a robust data infrastructure involves launching an Amazon RDS DB instance with high availability, ensuring uninterrupted access to your database. Configuring the DB instance to allow connections from your web server facilitates seamless communication between your application and the database, enabling real-time data processing and dynamic content delivery within your web application. This integration empowers users to access and utilize data effectively, supporting data-driven decision-making and enhancing overall user experience.

## Topics covered

- Launch an Amazon RDS DB instance with high availability.
- Configure the DB instance to permit connections from your web server.
- Open a web application and interact with your database.

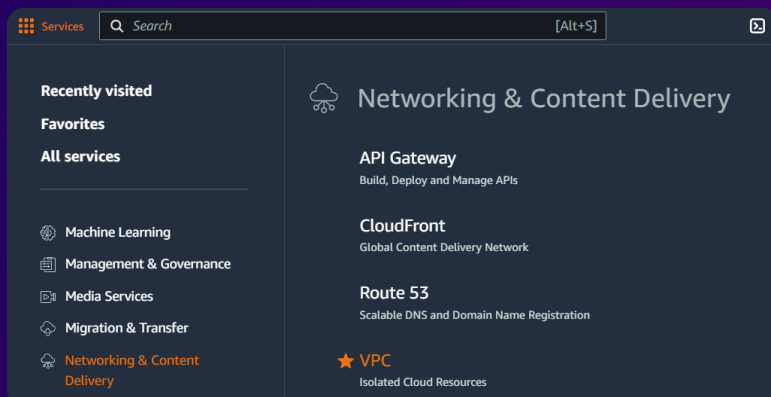


# Task 1

## Create a Security Group for the RDS DB Instance

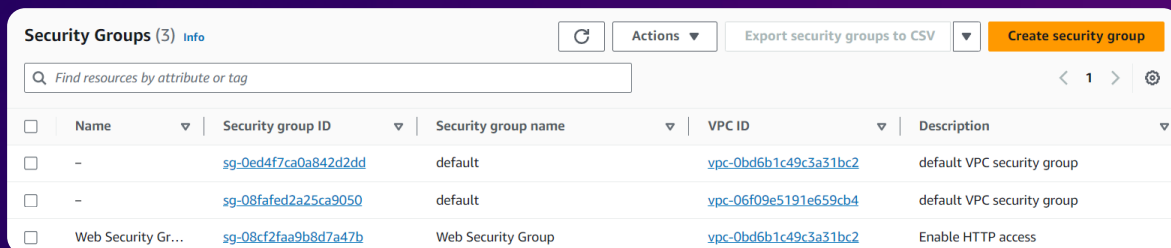
### Step 1: Access the VPC management console

Open the AWS Management Console, and select VPC.



### Step 2: Create security group

Navigate to the **Security Groups** section, and select [Create security group](#).





# Task 1

## Create a Security Group for the RDS DB Instance

### Step 3: Basic details

In the **Basic details** section, configure the DB Security Group using the following settings.

**Basic details**

Security group name [Info](#)

DB Security Group

Description [Info](#)

Permit access from Web Security Group

VPC [Info](#)

vpc-0bd6b1c49c3a31bc2 (Lab VPC)

### Step 4: Inbound rules

In the **Inbound rules** section, configure the DB Security Group to permit inbound traffic on port 3306 from any EC2 instance that is associated with the Web Security Group.

**Inbound rules** [Info](#)

Type [Info](#)

Protocol [Info](#)

Port range [Info](#)

Source [Info](#)

Description - optional [Info](#)

MySQL/Aurora

TCP

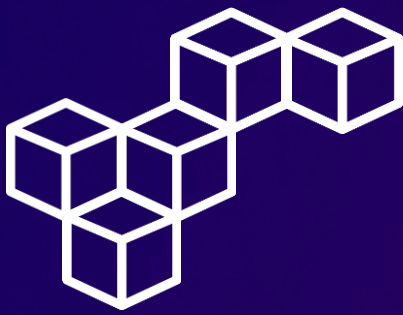
3306

Custom

sg-08cf2faa9b8d7a

sg-08cf2faa9b8d7a47b

Delete

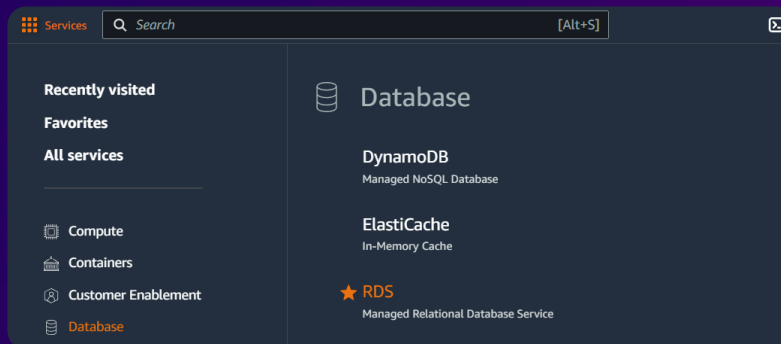


# Task 2

## Create a DB Subnet Group

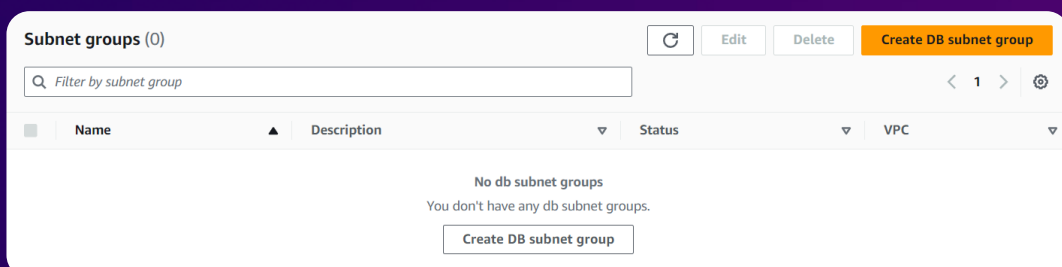
### Step 1: Access the RDS database service

In the AWS Management Console, select RDS.



### Step 2: Create DB subnet group

Navigate to the **Subnet groups** section, and select [Create DB subnet group](#).





# Task 2

## Create a DB Subnet Group

### Step 3: Subnet group details

In the **Subnet group details** section, configure the DB Subnet Group using the following settings.

**Subnet group details**

Name

DB Subnet Group

Description

DB Subnet Group

VPC

Lab VPC (vpc-0bd6b1c49c3a31bc2)

### Step 4: Add subnets

In the **Add subnets** section, configure the following settings.

**Add subnets**

Availability Zones

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

us-west-2a X us-west-2b X

Subnets

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

subnet-037e34d97ddb1d8e9 (10.0.1.0/24) X subnet-0d5feacc9f116f321 (10.0.3.0/24) X

Subnets selected (2)

Availability zone	Subnet ID	CIDR block
us-west-2a	subnet-037e34d97ddb1d8e9	10.0.1.0/24
us-west-2b	subnet-0d5feacc9f116f321	10.0.3.0/24

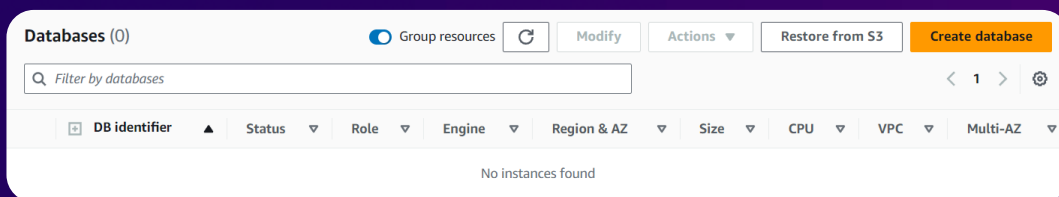


# Task 3

## Create an Amazon RDS DB Instance

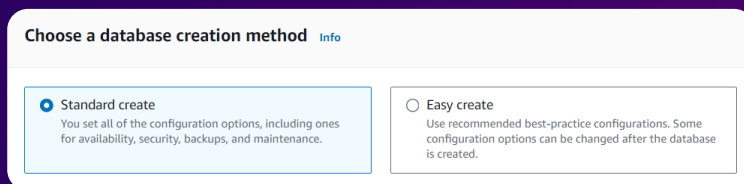
### Step 1: Create database

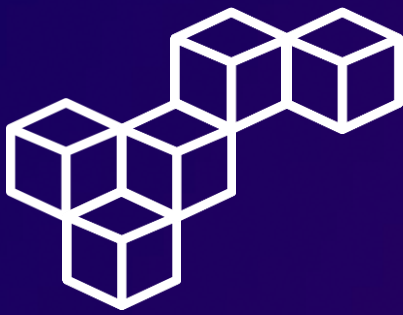
Navigate to the **Databases** section, and select [Create database](#).



### Step 2: Choose a database creation method

In the **Choose a database creation method** section, choose [Standard create](#).





# Task 3


## Create an Amazon RDS DB Instance


### Step 3: Engine options

In the **Engine options** section, for Engine type, choose [MySQL](#), for Engine version, choose the latest version.

**Engine options**

Engine type [Info](#)

☒ MySQL 

☐ Aurora (MySQL Compatible) 

Engine Version

MySQL 8.0.36 ▼

### Step 4: Templates

In the **Templates** section, choose [Dev/Test](#).

**Templates**

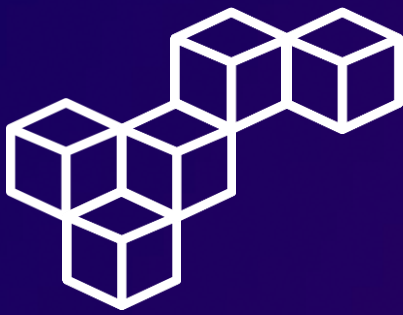
Choose a sample template to meet your use case.

☐ **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](#)





# Task 3

## Create an Amazon RDS DB Instance

### Step 5: Availability and durability

In the **Availability and durability** section, for Deployment option, choose **Multi-AZ DB Instance**.

**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**  
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 workloads.

☒

**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.

☐

**Single DB instance**  
Creates a single DB instance with no standby DB instances.

### Step 6: Settings

In the **Settings** section, configure the following parameters.

**Settings**

**DB instance identifier** [Info](#)  
Type a name for your DB instance.

▼ **Credentials Settings**

**Master username** [Info](#)  
Type a login ID for the master user of your DB instance.

**Master password** [Info](#)

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



# Task 3

## Create an Amazon RDS DB Instance

### Step 7: Instance configuration

In the **Instance configuration** section, for DB instance class, configure the following settings.

**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.medium

2 vCPUs 4 GiB RAM Network: 2,085 Mbps

▼

### Step 8: Storage

In the **Storage** section, for Storage type, select **General Purpose (SSD)**.

**Storage**

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

General Purpose SSD (gp3)

Performance scales independently from storage

▼



# Task 3

## Create an Amazon RDS DB Instance

### Step 9: Connectivity

In the **Connectivity** section, configure the following settings.

**Connectivity** [Info](#)

**Virtual private cloud (VPC)** [Info](#)  
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Lab VPC (vpc-0bd6b1c49c3a31bc2)  
4 Subnets, 2 Availability Zones

**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

**VPC security group (firewall)** [Info](#)  
Choose one or more VPC security groups to allow access to your database. Make sure 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 one or more options

DB Security Group X

### Step 10: Monitoring

In the **Monitoring** section, for Additional configuration, uncheck [Enable Enhanced Monitoring](#).

**Monitoring**

**▼ Additional configuration**  
Enhanced Monitoring

☐ **Enable Enhanced Monitoring**  
Enabling Enhanced Monitoring metrics are useful when you want to see how different processes or threads use the CPU.



# Task 3

## Create an Amazon RDS DB Instance

### Step 11: Additional configuration

In the **Additional configuration** section, configure the following settings.

**▼ Additional configuration**  
Database options, encryption turned on, backup turned off, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

Database options

Initial database name [Info](#)

lab

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

Backup

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

### Step 12: Review database creation

Verify the availability of the [lab-db](#) database and take note of its endpoint in the **Connectivity & Security** section.

Databases (1)

Group resources

Modify

Actions

Restore from S3

Create database

Filter by databases

<

1

>

<div><div><div></div></div></div> <div>DB identifier</div> <div><div></div></div>	Status	Role	Engine	Region & AZ	Size	VPC
<div><div><div></div></div><div>lab-db</div></div>	<div><div></div><div>Available</div></div>	Instance	MySQL Community	us-west-2b	db.t3.medium	vpc-0bd6b1c49c3a31bc2




# Task 4

## Interact with Your Database

### Step 1: Access the web application

Open the web application running on your web server and click the [RDS](#) link.


 Load Test RDS

Meta-Data	Value
InstanceId	i-06be9f1adf9e514c2
Availability Zone	us-west-2b

Current CPU Load: 0%

### Step 2: Connect to the database

Configure the application to connect to your database.

 Load Test RDS

Endpoint

lab-db.choy4g226l0w.us-west-2.rds.amazonaws.com

Database

lab

Username

main

Password

lab-password

Submit



# Task 4

## Interact with Your Database

### Step 3: Review the Address Book

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

awsLoad TestRDS

Address Book

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

### Step 4: Test the web application

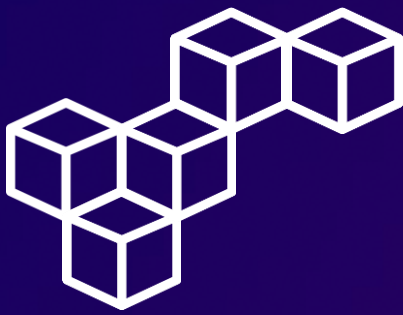
Test the web application by adding, editing and removing contacts.

awsLoad TestRDS

Address Book

Data Updated!

Last name	First name	Phone	Email	Admin
				<a href="#">Add Contact</a>
Becerra	Cristhian	000-000-0000	<a href="#">cristhianbecerra99@gmail.com</a>	<a href="#">Edit</a> <a href="#">Remove</a>
Doe	Jane	010-110-1101	<a href="#">janed@someotheraddress.org</a>	<a href="#">Edit</a> <a href="#">Remove</a>
Johnson	Roberto	123-456-7890	<a href="#">roberto@someaddress.com</a>	<a href="#">Edit</a> <a href="#">Remove</a>



# Conclusions

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## **Amazon Relational Databases**

Amazon Relational Databases offer scalable and reliable solutions for managing structured data, catering to diverse business needs.

## **Amazon RDS DB Instances**

Amazon RDS DB Instances provide flexible configurations and high availability options, ensuring continuous access to databases.

## **Permitting connections to a DB instance**

Permitting connections to a DB instance allows seamless communication between applications and databases, facilitating real-time data interactions.

## **DB Subnet Groups**

DB Subnet Groups enable secure networking configurations, ensuring data privacy and compliance with regulatory requirements.

## **Interacting with a Database**

Interacting with a database through applications or query tools enables data retrieval, updates, and analysis, empowering informed decision-making and efficient data management.



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