

EN-US

# Lab 5: Build Your DB Server and Interact With Your DB Using an App

## Lab Overview and objectives

This lab is designed to reinforce the concept of leveraging an AWS-managed database instance for solving relational database needs.

**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.

By the end of this lab, you will be able to:

VPC > Security Groups > Create security group

## Create security group [Info](#)

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](#)

Name cannot be edited after creation.

Description [Info](#)

VPC [Info](#)

### Inbound rules

Quiz-1

Grades for bitf20m528@

Workbench - Vocareum

SecurityGroup | VPC Con

us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#SecurityGroup:groupId=sg-0e47ae9e30331b5f8

awsServicesSearch[Alt+S]

N. Virginia

voclabs/user3046381=bitf20m528@pucit.edu.pk @ 9054-1838-3769

VPC dashboard

EC2 Global View

Filter by VPC:

Select a VPC

Virtual private cloud

Your VPCs

Subnets

Route tables

Internet gateways

Egress-only Internet gateways

Carrier gateways

DHCP option sets

Elastic IPs

Managed prefix lists

Endpoints

Endpoint services

Security group (sg-0e47ae9e30331b5f8 | DB Security Group) was created successfully

Details

VPC > Security Groups > sg-0e47ae9e30331b5f8 - DB Security Group

sg-0e47ae9e30331b5f8 - DB Security Group

Actions

Details

Security group name	Security group ID	Description	VPC ID
DB Security Group	sg-0e47ae9e30331b5f8	Permit access from Web Security Group	vpc-05fd6ba0eef9638f9
Owner	Inbound rules count	Outbound rules count	
905418383769	1 Permission entry	1 Permission entry	

Inbound rules

Outbound rules

Tags

CloudShellFeedback

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## Amazon RDS

### Dashboard

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Snapshots

Exports In Amazon S3

Automated backups

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Custom engine versions

Zero-ETL Integrations [New](#)

### Introducing Aurora I/O-Optimized

Aurora's I/O-Optimized [🔗](#) is a new cluster storage configuration that offers predictable pricing for all applications and improved price-performance, with up to 40% costs savings for I/O-intensive applications.



### Try the new Amazon RDS Multi-AZ deployment option for MySQL and PostgreSQL

For your Amazon RDS for MySQL and PostgreSQL workloads, improve transactional commit latencies by 2x, experience faster failover typically less than 35 seconds and, get read scalability with two readable standby DB instances by deploying the Multi-AZ DB cluster [Learn more](#) [🔗](#)

[Create database](#)

Or, [Restore Multi-AZ DB Cluster from Snapshot](#) [🔗](#)

## Resources

[Refresh](#)

You are using the following Amazon RDS resources in the US East (N. Virginia) region (used/quota)

[DB Instances \(0/40\)](#)

Allocated storage (0 TB/100 TB)

[Increase DB Instances limit](#) [🔗](#)

[DB Clusters \(0/40\)](#)

[Parameter groups \(0\)](#)

Default (0)

Custom (0/100)

[Option groups \(0\)](#)

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Zero-ETL integrations New

RDS > Subnet groups

Subnet groups (0)

🔄

Edit

Delete

Create DB subnet group

🔍 Filter by subnet group

< 1 > ⚙️

	Name ▲	Description ▼	Status ▼	VPC ▼
<div>No db subnet groups</div> <div>You don't have any db subnet groups.</div> <div>Create DB subnet group</div>				



Quiz-1

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Workbench - Vocareum

RDS | us-east-1

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#create-db-subnet-group:

aws

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add subnets related to that VPC.

Subnet group details

Name

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

DB-Subnet-Group

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

Description

DB Subnet Group

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.

Lab VPC (vpc-05fd6ba0eef9638f9)

Add subnets

Availability Zones

CloudShell

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Zero-ETL integrations [New](#)

✓ Successfully created DB-Subnet-Group. [View subnet group](#)

[RDS](#) > Subnet groups

### Subnet groups (1)



Edit

Delete

Create DB subnet group

Filter by subnet group

< 1 >



<input type="checkbox"/>	Name ▲	Description ▼	Status ▼	VPC ▼
<input type="checkbox"/>	<a href="#">db-subnet-group</a>	DB Subnet Group	✓ Complete	vpc-05fd6ba0eef9638f9

Quiz-1

Grades for bitf20m528@

Workbench - Vocareum

Databases | RDS | us-east-1

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#databases:

awsServicesSearch[Alt+S]

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Successfully created DB-Subnet-Group. [View subnet group](#)

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Aurora's I/O-Optimized [is](#) a new cluster storage configuration that offers predictable pricing for all applications and improved price-performance, with up to 40% costs savings for I/O-intensive applications.

RDS > Databases

Consider creating a Blue/Green Deployment to minimize downtime during upgrades

You may want to consider using Amazon RDS Blue/Green Deployments and minimize your downtime during upgrades. A Blue/Green Deployment provides a staging environment for changes to production databases. [RDS User Guide](#) [Aurora User Guide](#)

Databases (0)

Group resources

Modify

Actions

Restore from S3

Create database

Filter by databases

< 1 >

DB identifier ▲	Status ▼	Role ▼	Engine ▼	Region & AZ ▼	Size ▼	Recommendations ▼
No instances found						

CloudShell

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Successfully created DB-Subnet-Group. [View subnet group](#)

[RDS](#) > Create database

## Create database

### 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](#)

☒ Aurora (MySQL Compatible)

☐ Aurora (PostgreSQL Compatible)

Quiz-1

Grades for bitf20m528@

Workbench - Vocareum

RDS | us-east-1

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

aws

Services


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Engine type


☐ Aurora (MySQL Compatible)  



☒ MySQL  



☐ PostgreSQL  


☐ Microsoft SQL Server  


☐ Aurora (PostgreSQL Compatible)  


☐ MariaDB  


☐ Oracle  


☐ IBM Db2  


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

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RDS | us-east-1

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

aws

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Engine Version

MySQL 8.0.35

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.

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## 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.

## 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.

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## Storage

### Storage type [Info](#)

Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp3)

Performance scales independently from storage

### Allocated storage [Info](#)

20

GiB

Minimum: 20 GiB, Maximum: 6,144 GiB

**i** After you modify the storage for a DB instance, the status of the DB instance will be in storage-optimization. Your instance will remain available as the storage-optimization operation completes.

[Learn more](#)

### ► Advanced settings

Baseline IOPS of 3,000 IOPS and storage throughput of 125 MiBps are included for allocated storage less than 400 GiB.

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☒ No

RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

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.

- ### Existing VPC security groups

Choose one or more options

DB Security Group 

RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

- Certificate authority - optional
- [Info](#)

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## ▼ Additional configuration

Database options, encryption turned off, backup turned off, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

### Database options

Initial database name [Info](#)

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

DB parameter group [Info](#)

Option group [Info](#)

### Backup

☐ Enable automated backups

## MySQL

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Databases | RDS | us-east-1

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#databases:

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Create an ElastiCache cluster from RDS using your DB settings - new

You can save up to 55% in cost and gain up to 80x faster read performance using ElastiCache with RDS for MySQL (vs. RDS for MySQL alone).

[Learn more](#)

Create ElastiCache cluster



Use RDS Proxy

Using a proxy allows your applications to pool and share database connections to help them scale. A proxy simplifies connection management and makes applications more resilient to database failures.

[Learn more](#)

Create proxy

You can hide these suggestions so they don't appear after database creation. All these actions can be taken from

☐ Hide add-ons for 30 days

Close

Quiz-1

Grades for bitf20m528@

Workbench - Vocareum

Databases | RDS | us-east-1

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#databases:

aws

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Creating database lab-db

View credential details

Your database might take a few minutes to launch.

You can use settings from lab-db to simplify configuration of [suggested database add-ons](#) while we finish creating your DB for you.

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Databases (1)

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RDS > Databases

### Databases (1)

☒ Group resources



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Actions ▼

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<input type="checkbox"/> DB identifier ▼	Status ▼	Role ▼	Engine ▼	Region & AZ ▼	Size ▼	Recommendation
<input checked="" type="radio"/> <a href="#">lab-db</a>	Available	Instance	MySQL Community	us-east-1b	db.t3.micro	



Quiz-1

Grades for bitf20m528@

Workbench - Vocareum

RDS | us-east-1

us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#database:id=lab-db;is-cluster=false

awsServicesSearch[Alt+S]

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Connectivity & security

Monitoring

Logs & events

Configuration

Zero-ETL integrations

Maintenance &

Connectivity & security

Endpoint & port

Endpoint

lab-db.cbkiwasi4t7v.us-east-1.rds.amazonaws.com

Port

3306

Networking

Availability Zone

us-east-1b

VPC

vpc-05fd6ba0eef9638f9

Subnet group

db-subnet-group

Subnets

subnet-0c0ff2f8a66134dda

subnet-0553151ebcb29be91

Network type

Security

VPC security groups

DB Security Group (sg-0e47ae9e30331b5f8)

Active

Publicly accessible

No

Certificate authority Info

rds-ca-rsa2048-g1

Certificate authority date

May 26, 2061, 04:34 (UTC+05:00)

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Load Test

RDS

Meta-Data	Value
InstanceId	i-0f5f8d6877990cbb4
Availability Zone	us-east-1b

Current CPU Load: 0%



Load Test

RDS

Endpoint

lab-db.cbkiwasi4t7v.us-east-1.rds.amazonaws.com

Database

lab

Username

main

Password

.....

Submit



Load Test

RDS

## 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="#">robertoj@someaddress.com</a>	<a href="#">Edit</a>	<a href="#">Remove</a>

# Address Book

Data Updated!

Last name	First name	Phone	Email	Admin	
				<a href="#">Add Contact</a>	
Basharat	Usama	03095544404	<a href="#">sendingtousama@gmail.com</a>	<a href="#">Edit</a>	<a href="#">Remove</a>
Johnson	Roberto	123-456-7890	<a href="#">robertoj@someaddress.com</a>	<a href="#">Edit</a>	<a href="#">Remove</a>



# Address Book

## Edit Contact

Last name:

First name:

Phone:

Email:

Last name	First name	Phone	Email	Admin	
				<a href="#">Add Contact</a>	
Basharat	Usama	03095544404	<a href="#">sendingtousama@gmail.com</a>	<a href="#">Edit</a>	<a href="#">Remove</a>
Johnson	Roberto	123-456-7890	<a href="#">robertoj@someaddress.com</a>	<a href="#">Edit</a>	<a href="#">Remove</a>