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COS20019 – Cloud Computing Architecture - Wk5: ACF Lab 5: RDS lab

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

**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](#)  
DB Security Group

Name cannot be edited after creation.

Description [Info](#)  
Permit access from Web Security Group

VPC [Info](#)  
vpc-04ef9cee3d3e161be

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

Type <a href="#">Info</a>	Protocol <a href="#">Info</a>	Port range <a href="#">Info</a>	Source <a href="#">Info</a>	Description - optional <a href="#">Info</a>
MySQL/Aurora	TCP	3306	Custom	

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

Type <a href="#">Info</a>	Protocol <a href="#">Info</a>	Port range <a href="#">Info</a>	Destination <a href="#">Info</a>	Description - optional <a href="#">Info</a>
All traffic	All	All	Custom	

Steps 5-10: Create a new security group for the database with the required name, description, VPC, and inbound rule.

## Task 2 - Create a DB Subnet Group

The screenshot shows the AWS Management Console interface for creating a DB Subnet Group. The left sidebar contains navigation links for Amazon RDS, Subnet groups, Parameter groups, Option groups, Custom engine versions, Events, Event subscriptions, Recommendations, and Certificate update. The main content area is divided into two sections: 'Subnet group details' and 'Add subnets'.

**Subnet group details**

- Name:** DB-Subnet-Group (indicated by a red arrow). A note states: "You won't be able to modify the name after your subnet group has been created. Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed."
- Description:** DB Subnet Group (indicated by a red arrow).
- VPC:** Lab VPC (vpc-04ef9cee3d3e161be) (indicated by a red arrow).

**Add subnets**

- Availability Zones:** Choose the Availability Zones that include the subnets you want to add. The selected zones are us-east-1a and us-east-1b (indicated by a red arrow).
- Subnets:** Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones. The selected subnets are subnet-02d5afc6c7d055ae6 (10.0.1.0/24) and subnet-08a98ab785cb18599 (10.0.3.0/24) (indicated by a red arrow).

**For Multi-AZ DB clusters, you must select 3 subnets in 3 different Availability Zones.**

Steps 11-17: Create a new subnet group with the required name, description, VPC, and subnets.

## Task 3 - Create an Amazon RDS DB Instance

The screenshot displays the AWS Management Console interface for creating a new Amazon RDS database instance. The left-hand navigation pane lists various RDS-related tools and settings. The main content area is titled 'Create database' and includes a 'Choose a database creation method' section with 'Standard create' selected. Below this, the 'Engine options' section presents a grid of database engines: Aurora (MySQL Compatible), Aurora (PostgreSQL Compatible), MySQL (selected with a red arrow), MariaDB, PostgreSQL, Oracle, and Microsoft SQL Server. The right-hand sidebar provides a brief overview of MySQL and lists its key capabilities.

**Amazon RDS**

- Dashboard
- Databases**
- Query Editor
- Performance insights
- Snapshots
- Exports in Amazon S3
- Automated backups
- Reserved instances
- Proxies
- Subnet groups
- Parameter groups
- Option groups
- Custom engine versions
- Events
- Event subscriptions
- Recommendations 0
- Certificate update

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)

☒ **MySQL**

☐ MariaDB

☐ PostgreSQL

☐ Oracle

☐ Microsoft SQL Server

**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.

Steps 18-20: Choose MySQL engine.

aws Services Search [Alt+S] N. Virginia voclabs/user2564760=104222196@student.swin.edu.au @ 9183-7851 ...

### Amazon RDS

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---

- Events
- Event subscriptions

---

- Recommendations 0
- Certificate update

### 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 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.

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](#)

### MySQL

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Steps 21-22: Choose Dev/Test template and Multi-AZ DB instance.

aws

Services

Search

[Alt+S]

N. Virginia

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Settings

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Credentials Settings

Master username

Info

Type a login ID for the master user of your DB instance.

main

1 to 16 alphanumeric characters. 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).

Confirm master password

Info

\*\*\*\*\*

Instance configuration

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

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Step 23: Configure DB settings, including instance identifier, master username, and password.

**Amazon RDS**

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Certificate update

### Instance configuration

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

**Amazon RDS Optimized Writes** - new Info  
☐ Show instance classes that support Amazon RDS Optimized Writes

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 (gp2)  
Baseline performance determined by volume size

Allocated storage Info  
20 GiB  
The minimum value is 20 GiB and the maximum value is 6,144 GiB

Provisioning less than 100 GiB of General Purpose (SSD) storage for high throughput workloads could result in higher latencies upon exhaustion of the initial General Purpose (SSD) IO credit balance. [Learn more](#)

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Steps 24-25: Choose burstable DB instance class, db.t3.micro, and configure storage setting to General Purpose SSD with 20GiBs of allocated storage.

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.

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

Lab VPC (vpc-04ef9cee3d3e161be)  
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 which resources can connect to the database.

☒ 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.

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

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Steps 26-27: Select the Lab VPC, and choose only the DB Security Group created earlier.

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Monitoring

Monitoring

☐ Enable Enhanced monitoring

Enabling Enhanced monitoring metrics are useful when you want to see how different processes or threads use the CPU.

▼ Additional configuration

Database options

Initial database name Info

lab

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

Backup

☐ Enable automated backups

Creates a point-in-time snapshot of your database

Encryption

☐ Enable encryption

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

Log exports

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Step 28: Configure additional settings.



Amazon RDS console showing the configuration for a database instance named **lab-db**.

**Summary:**

DB identifier lab-db	CPU 3.11%	Status <b>Available</b>	Class db.t3.micro
Role Instance	Current activity 0 Connections	Engine MySQL Community	Region & AZ us-east-1b

**Connectivity & security:**

Endpoint & port	Networking	Security
Endpoint lab-db.ckvmpkxrdltl.us-east-1.rds.amazonaws.com	Availability Zone us-east-1b	VPC security groups DB Security Group (sg-02d172c488dd0fa86) <b>Active</b>
Port 3306	VPC Lab VPC (vpc-04ef9cee3d3e161be)	Publicly accessible No
	Subnet group db-subnet-group	Certificate authority Info rds-ca-2019
	Subnets subnet-08a98ab785cb18599 subnet-02d5afc6c7d055ae6	Certificate authority date August 23, 2024, 00:08 (UTC+07:00)
	Network type IPv4	DB instance certificate expiration date August 23, 2024, 00:08 (UTC+07:00)

Steps 29-33: The database has been successfully created.

## Task 4 - Interact with Your Database

← → ↻ ⚠ Not secure | 54.198.69.217/rds.php 🔑 📄 ☆ 🔒 📺 🔍

aws Load Test RDS

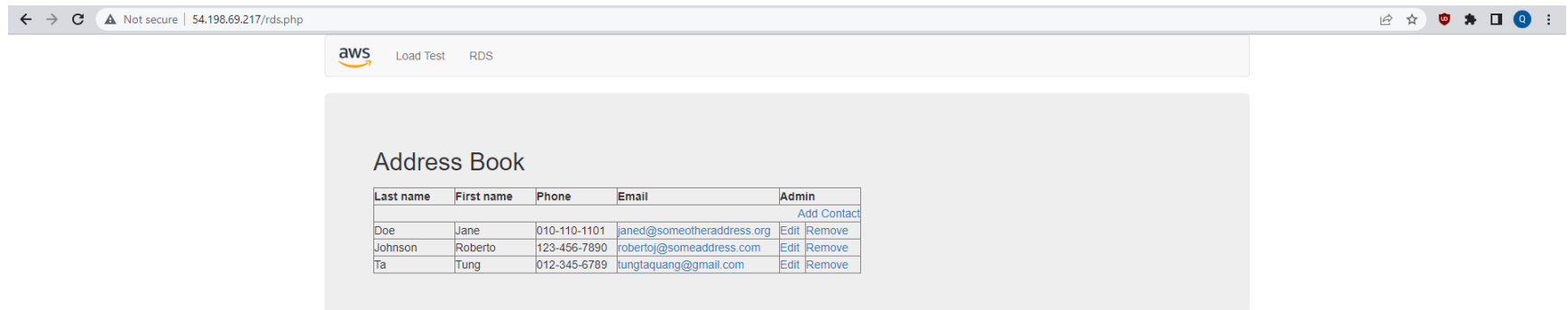
Endpoint

Database

Username

Password

Steps 32-35: Accessing the database via the WebServer IP address.



Step 36: The database's data successfully shows. In this picture a new entry has been added.