

Module 7: MariaDB Assignment

Problem Statement:

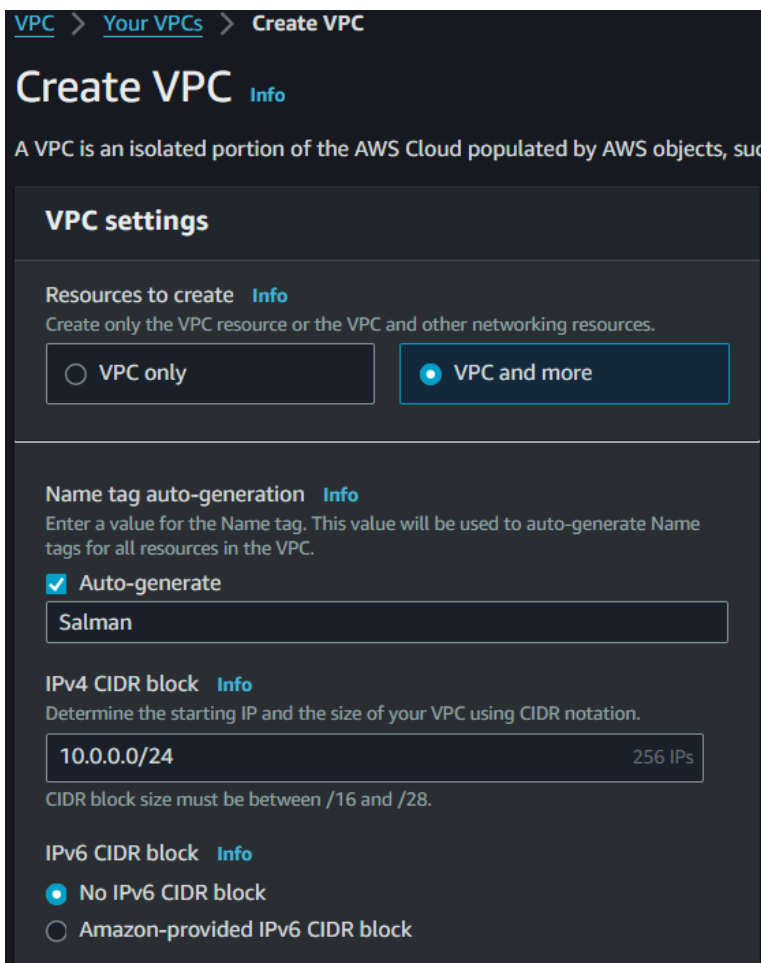
You work for XYZ Corporation. Their application requires a SQL service that can store data which can be retrieved if required. Implement a suitable RDS engine for the same.

While migrating, you are asked to perform the following tasks:

1. Create a MariaDB Engine based RDS Database.
2. Connect to the DB using the following ways:
 - a. SQL Client for Windows
 - b. Linux based EC2 Instance

Solution:

1. Created VPC



VPC > Your VPCs > Create VPC

Create VPC [Info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as subnets, route tables, and network interfaces.

VPC settings

Resources to create [Info](#)
Create only the VPC resource or the VPC and other networking resources.

☐ VPC only ☒ VPC and more

Name tag auto-generation [Info](#)
Enter a value for the Name tag. This value will be used to auto-generate Name tags for all resources in the VPC.

☒ Auto-generate

Salman

IPv4 CIDR block [Info](#)
Determine the starting IP and the size of your VPC using CIDR notation.

10.0.0.0/24 256 IPs

CIDR block size must be between /16 and /28.

IPv6 CIDR block [Info](#)

☒ No IPv6 CIDR block ☐ Amazon-provided IPv6 CIDR block

Default ▼

Number of Availability Zones (AZs) [Info](#)

Choose the number of AZs in which to provision subnets. We recommend at least two AZs for high availability.

1

2

3

► Customize AZs

Number of public subnets [Info](#)

The number of public subnets to add to your VPC. Use public subnets for web applications that need to be publicly accessible over the internet.

0

2

Number of private subnets [Info](#)

The number of private subnets to add to your VPC. Use private subnets to secure backend resources that don't need public access.

0

2

4

► Customize subnets CIDR blocks

NAT gateways (\$) [Info](#)

Choose the number of Availability Zones (AZs) in which to create NAT gateways. Note that there is a charge for each NAT gateway

None

In 1 AZ

1 per AZ

VPC endpoints [Info](#)

VPC endpoints [Info](#)

Endpoints can help reduce NAT gateway charges and improve security by accessing S3 directly from the VPC. By default, full access policy is used. You can customize this policy at any time.

None

S3 Gateway

DNS options [Info](#)

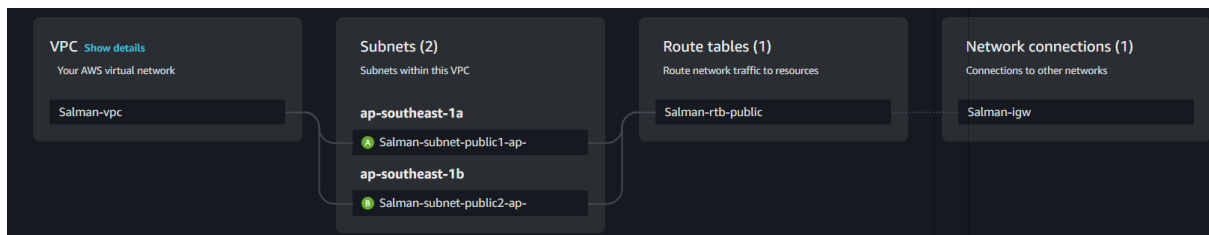
☒ Enable DNS hostnames

☒ Enable DNS resolution

► Additional tags

Cancel

Create VPC



2)Created Subnet Group

[RDS](#) > [Subnet groups](#) > [Create DB subnet group](#)

Create DB subnet group

To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to 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.

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

Description

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.

Add subnets

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

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

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

Subnets selected (2)

Availability zone	Subnet ID	CIDR block
ap-southeast-1b	subnet-01a0515fdd1ce2934	10.0.0.16/28
ap-southeast-1a	subnet-0b189a020d1d1f3c0	10.0.0.0/28

Subnet groups (1)					Refresh Edit Delete Create DB subnet group
<input type="text" value="Filter by subnet group"/>					< 1 > Settings
<input type="checkbox"/>	Name	Description	Status	VPC	
<input type="checkbox"/>	salman-subnet-group	This Subnet Group will used to deploy my RDS	Complete	vpc-0c588162023483ef4	

3) Create RDS engine type : MariaDB

[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
 

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](#)

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.

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.

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

Credentials management

You can use AWS Secrets Manager or manage your master user credentials.



Managed in AWS Secrets Manager - *most secure*

RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.



Self managed

Create your own password or have RDS create a password that you manage.

Instance configuration

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

DB instance class [Info](#)



Hide filters



Show instance classes that support Amazon RDS Optimized Writes [Info](#)

Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.



Include previous generation classes



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



Storage

Storage type [Info](#)

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

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

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](#)

► Storage autoscaling

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.

Salman-vpc (vpc-0c588162023483ef4)

2 Subnets, 2 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

i 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.

salman-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

New VPC security group name

salman-db-sg

Availability Zone [Info](#)

No preference ▼

▼ 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](#)

salman_db

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

DB parameter group [Info](#)

default.mariadb10.11 ▼

Option group [Info](#)

default:mariadb-10-11 ▼

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](#)

Maintenance

Auto minor version upgrade [Info](#)

☒ Enable auto minor version upgrade

Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

Maintenance window [Info](#)

Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.

☐ Choose a window

☒ No preference

Deletion protection

☐ Enable deletion protection

Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

Estimated monthly costs

The Amazon RDS Free Tier is available to you for 12 months. Each calendar month, the free tier will allow you to use the Amazon RDS resources listed below for free:

- 750 hrs of Amazon RDS in a Single-AZ db.t2.micro, db.t3.micro or db.t4g.micro Instance.
- 20 GB of General Purpose Storage (SSD).
- 20 GB for automated backup storage and any user-initiated DB Snapshots.

[Learn more about AWS Free Tier.](#)

When your free usage expires or if your application use exceeds the free usage tiers, you simply pay standard, pay-as-you-go service rates as described in the [Amazon RDS Pricing page](#).

4) Successfully created MariaDB

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 (1) Group resources Modify Actions Restore from S3 Create database

Filter by databases

DB Identifier	Status	Role	Engine	Region & AZ	Size	Recommendations	CPU	Current activity	Maintenance	VPC
salman-db	Available	Instance	MariaDB	ap-southeast-1a	db.t3.micro		51.91%	0 Connections	none	vpc-

5) Create EC2 instance

Instances (1) [Info](#) Refresh

Find Instance by attribute or tag (case-sensitive) All states

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
<input type="checkbox"/>	salman-db-instance	i-099297c4d29a2a79f	Running	t2.micro	2/2 checks passed	View alarms

6) Through End Point(Local Host) and Port, DB name and Password

[Connectivity & security](#) | [Monitoring](#) | [Logs & events](#) | [Configuration](#) | [Maintenance & backups](#) | [Tags](#) | [Recommendations](#)

Connectivity & security

Endpoint & port

point copied

salman-db.cfgaesci3hq.ap-southeast-1.rds.amazonaws.com

Port: 3306

Networking

Availability Zone: ap-southeast-1a

VPC: Salman-vpc (vpc-0c588162023483ef4)

Subnet group: salman-subnet-group

Subnets: subnet-01a0515fdd1ce2934, subnet-0b189a020d1d1f3c0

Network type: IPv4

Security

VPC security groups: salman-db-sg (sg-07701f97a485cc5e2) Active

Publicly accessible: Yes

Certificate authority: rds-ca-rsa2048-g1 [Info](#)

Certificate authority date: May 22, 2061, 04:09 (UTC+05:30)

DB instance certificate expiration date: April 22, 2025, 19:17 (UTC+05:30)

Connection Settings



MariaDB connection settings

[Main](#) | [Driver properties](#) | [SSH](#) | [SSL](#) | [+ Network configurations...](#)

Server

Connect by: ☒ Host ☐ URL

URL: jdbc:mariadb://salman-db.cfgaesci3hq.ap-southeast-1.rds.amazonaws.com:3306/salm

Server Host: salman-db.cfgaesci3hq.ap-southeast-1.rds.amazonaws.com Port: 3306

Database: salman_db

Authentication (Database Native)

Username: admin

Password: ☒ Save password

Advanced

Server Time Zone: Auto-detect

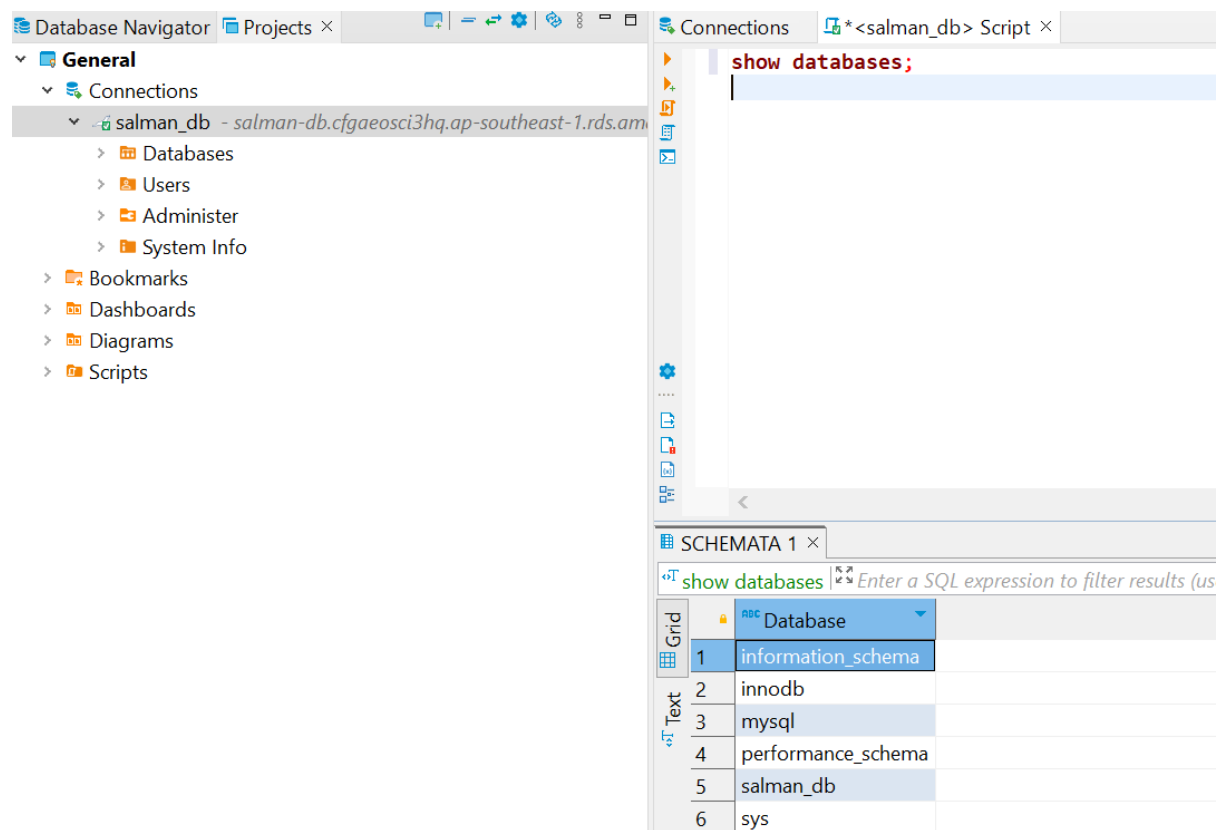
Local Client: MySQL Binaries

[You can use variables in connection parameters.](#) [Connection details \(name, type, ...\)](#)

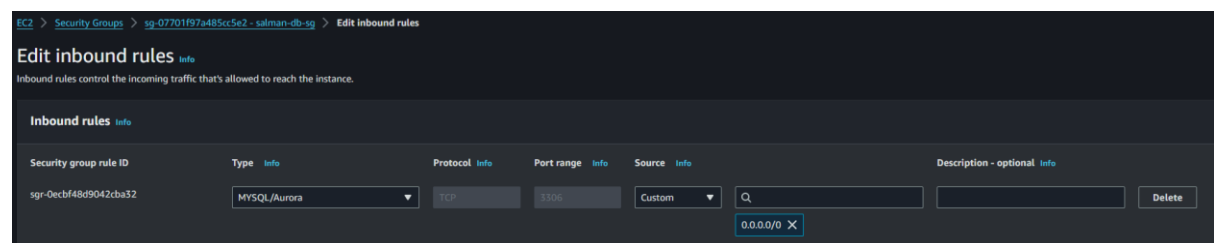
Driver name: MariaDB [Driver Settings](#) [Driver license](#)

[Test Connection ...](#) [< Back](#) [Next >](#) [Finish](#) [Cancel](#)

7) Successfully Connected and Shown the databases



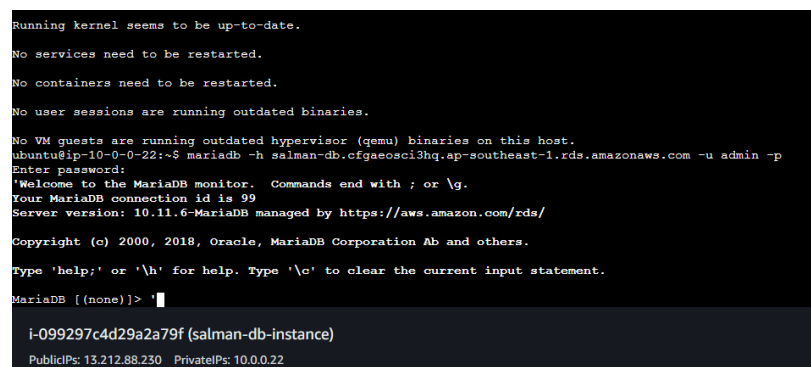
8) Make Sure on here, we allowed source to anywhere or not to connect instances



9) Update the Ubuntu Machine and Install Maria DB server

1. sudo apt update -y

2. sudo apt install mariadb-server -y



```
10) mysql -h salman-db.cfgaeosci3hq.ap-southeast-1.rds.amazonaws.com -u  
admin -p
```

Type- Show databases; Now Connected to the DB using Linux based EC2 Instance

```
type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
MariaDB [(none)]> show databases;  
+-----+  
| Database |  
+-----+  
| information_schema |  
| innodb |  
| mysql |  
| performance_schema |  
| salman_db |  
| sys |  
+-----+  
5 rows in set (0.001 sec)  
MariaDB [(none)]> 
```

i-099297c4d29a2a79f (salman-db-instance)

PublicIPs: 13.212.88.230 PrivateIPs: 10.0.0.22