

Complete the below task: 1.

Explain the below AWS Architecture



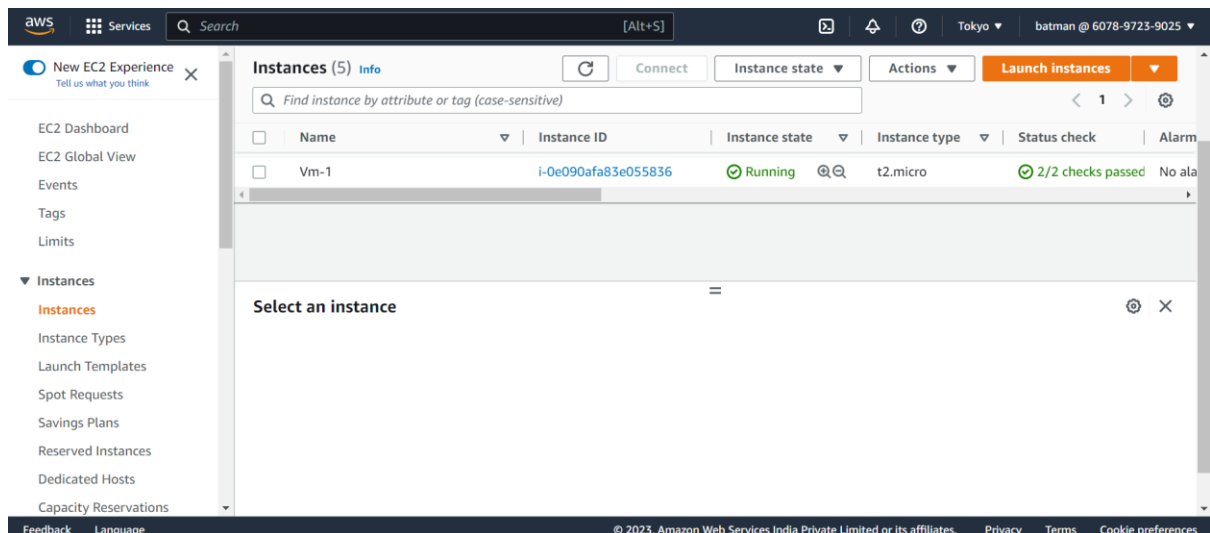
Sol:

- Above diagram using three services of the AWS which are **Elastic Load Balancer, Amazon Elastic Compute Cloud and Amazon Relational Database Service**
- The Elastic Load Balancer is use to distribute the incoming traffic from the end user to the EC2 instance
- Elastic Load Balancer act as a frontend and distribute the incoming traffic to the EC2 Instances.
- Then The EC2 instance is where the Web Application is deployed and then this application is using AWS RDS(**Amazon Relational Database Service**) to store the data

2. Implement the same in the AWS(only do a proper connection between service) NOTE: Submission can be done by sharing the proper screenshots of implementation and doc for explanation

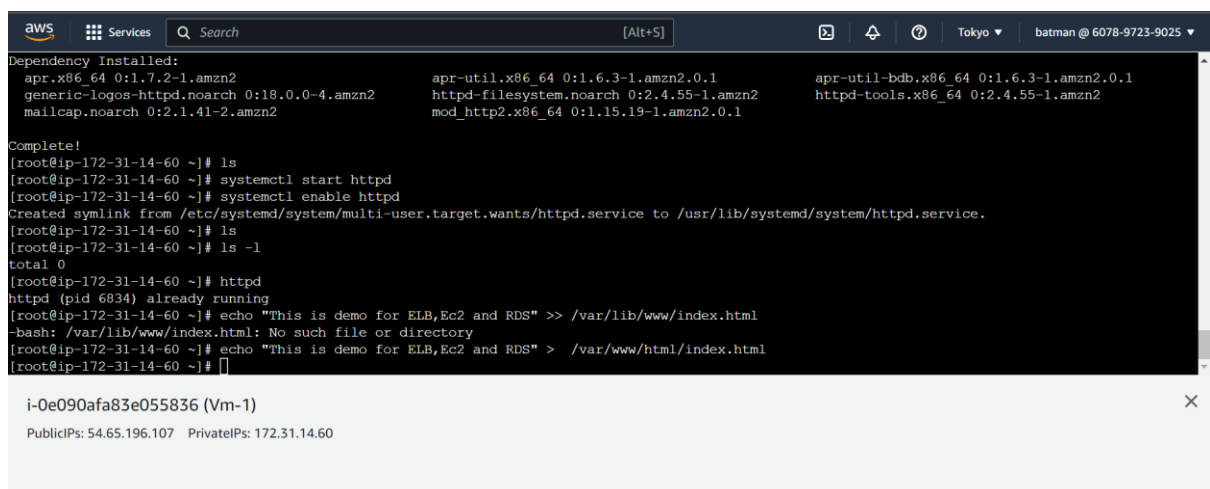
Step to implement:

- Creating EC2 instances with **Vm-1** name:



- Updating the EC2, Installing the Apache server and creating index .html file :

1. Sudo su -u
2. Yum update -y
3. Yum install httpd
4. Systemctl start httpd
5. Systemctl enable httpd



- Adding Inbound rules for port 80 to Security group:

Inbound security group rules successfully modified on security group (sg-00c2ee8af4e3a54c9 | launch-wizard-1)

EC2 > Security Groups > sg-00c2ee8af4e3a54c9 - launch-wizard-1

sg-00c2ee8af4e3a54c9 - launch-wizard-1

Actions

Details			
Security group name launch-wizard-1	Security group ID sg-00c2ee8af4e3a54c9	Description launch-wizard-1 created 2023-02-28T07:53:31.543Z	VPC ID vpc-048bda092f04dd162
Owner 607897239025	Inbound rules count 2 Permission entries	Outbound rules count 1 Permission entry	

Inbound rules | Outbound rules | Tags

- Creating AWS RDS (Amazon Relational Database Service):

Amazon RDS

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 Asia Pacific (Tokyo) region (used/quota)

Resource	Quota
DB Instances	0/40
Allocated storage	0 TB/100 TB
Increase DB instances limit	Increase DB instances limit
DB Clusters	0/40
Reserved instances	0/40
Snapshots	0
Manual	
DB Cluster	0/100
DB Instance	0/100
Parameter groups	0
Default	0
Custom	0/100
Option groups	0
Default	0
Custom	0/20
Subnet groups	0/50
Supported platforms	Supported platforms
VPC	
Default network	vpc-048bda092f04dd162

Recommended for you

Migrate SSRS to RDS for SQL Server
Learn how you can migrate existing SSRS content to an Amazon RDS for SQL Server instance using a PowerShell module. [Learn more](#)

Test Your DR Strategy in Minutes
Amazon Aurora Global Database now supports planned managed failover, making disaster recovery drills a breeze. [Learn more](#)

Amazon RDS Backup and Restore using AWS Backup

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.

Configuration

Engine type: [info](#)

☐ Aurora MySQL (Compatible)

☐ Aurora PostgreSQL (Compatible)

☒ MySQL

☐ MariaDB

☐ PostgreSQL

☐ Oracle

☐ Microsoft SQL Server

Edition

☒ MySQL Community

DB instance size

☐ Production (db.r5g.xlarge 4 vCPUs)

☐ Dev/Test (db.t3.micro 2 vCPUs)

☒ Free tier (db.t3.micro 2 vCPUs)

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 TB.
- 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.

- Adding name and password for MySQL:

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.
MyDB-RDS

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.
shoalb

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](#)

MySQL

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- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
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- Adding to Security group

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

launch-wizard-1 X

Availability Zone [Info](#)

No preference

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

☐ **Create an RDS Proxy** [Info](#)
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see Amazon RDS Proxy pricing.

Certificate authority - optional [Info](#)
Using a server certificate provides an extra layer of security by validating that the connection is being made to an Amazon database. It does so by checking the server certificate that is automatically installed on all databases that you provision.

rds-ca-2019 (default)

If you don't select a certificate authority, RDS chooses one for you.

Additional configuration

Feedback Language

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- Creating inbound rule as Mysql will listen on port 3306 so that our Ec2 can connect to MySQL and providing EC2 private Ip:

EC2 > Security Groups > sg-00c2ee8af4e3a54c9 - launch-wizard-1 > Edit inbound rules

Edit inbound rules [Info](#)

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules [Info](#)

Security group rule ID	Type	Protocol	Port range	Source	Description - optional	Delete
sg-0776ae8875a4b6990	SSH	TCP	22	Custom	0.0.0.0/0	Delete
sg-0724249101cde815d	HTTP	TCP	80	Custom	0.0.0.0/0	Delete
-	MySQL/Aurora	TCP	3306	Custom	172.31.14.60/32	Delete

Add rule

Cancel Preview changes Save rules

Installing Mysql on EC2 Instance (VM-1):

```
aws Services Search [Alt+S] Tokyo batman @ 6078-9723-9025
Installed size: 49 M
Downloading packages:
mariadb-5.5.68-1.amzn2.x86_64.rpm | 8.8 MB 00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : 1:mariadb-5.5.68-1.amzn2.x86_64 1/1
Verifying : 1:mariadb-5.5.68-1.amzn2.x86_64 1/1
Installed:
mariadb.x86_64 1:5.5.68-1.amzn2
Complete!
[root@ip-172-31-14-60 ~]#

i-Oe090afa83e055836 (Vm-1)
PublicIPs: 54.65.196.107 PrivateIPs: 172.31.14.60

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```

- Connect to Mysql by using the Endpoints of it through EC2 instance:
 - `Mysql -h mydb-rds.cose0rc4hp6b.ap-northeast-1.rds.amazonaws.com -u shoai -p`

```
aws Services Search [Alt+S] Tokyo batman @ 6078-9723-9025
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 17
Server version: 8.0.28 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> show databases
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

MySQL [(none)]>
```

- Creating target group (MyLoadgroup) for load balancer:

The screenshot shows the 'Specify group details' page in the AWS Management Console. The page is titled 'Specify group details' and includes a sub-header 'Your load balancer routes requests to the targets in a target group and performs health checks on the targets.' The page is divided into two main sections: 'Basic configuration' and 'Choose a target type'.

Basic configuration
Settings in this section cannot be changed after the target group is created.

Choose a target type

- ☒ **Instances**
 - Supports load balancing to instances within a specific VPC.
 - Facilitates the use of [Amazon EC2 Auto Scaling](#) to manage and scale your EC2 capacity.
- ☐ **IP addresses**
 - Supports load balancing to VPC and on-premises resources.
 - Facilitates routing to multiple IP addresses and network interfaces on the same instance.
 - Offers flexibility with microservice based architectures, simplifying inter-application communication.
 - Supports IPv6 targets, enabling end-to-end IPv6 communication, and IPv4-to-IPv6 NAT.
- ☐ **Lambda function**
 - Facilitates routing to a single Lambda function.
 - Accessible to Application Load Balancers only.
- ☐ **Application Load Balancer**
 - Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
 - Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

- Registering the target in the target group:

The screenshot shows the 'Register targets' page in the AWS Management Console. The page is titled 'Register targets' and includes a sub-header 'This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.' The page is divided into two main sections: 'Available instances' and 'Review targets'.

Available instances (1/1)

Filter resources by property or value

Instance ID	Name	State	Security groups	Zone	Subnet ID
i-0d9kxh8a3d055836	Vm-1	running	launch-wizard-1	ap-northeast-1c	subnet-08f664e330f995040

1 selected

Ports for the selected instances
Ports for routing traffic to the selected instances.

ID

1-65535 (separate multiple ports with commas)

Include as pending below

Review targets

Targets (0)

Filter resources by property or value

Remove	Health status	Instance ID	Name	Port	State	Security groups	Zone	Subnet ID
No instances added yet								

Specify instances above, or leave the group empty if you prefer to add targets later.

0 pending

Cancel Previous Create target group

MyLoadgroup

Details

arn:aws:elasticloadbalancing:ap-northeast-1:607897239025:targetgroup/MyLoadgroup/daf6c5d25e74bd58

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC vpc-048bda092f04dd162
IP address type IPv4	Load balancer MyloadVm		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
1	0	0	0	1	0

Distribution of targets by Availability Zone (AZ)

Select values in this table to see corresponding filters applied to the Registered targets table below.

Targets | Monitoring | Health checks | Attributes | Tags

Registered targets (1)

Filter resources by property or value

Instance ID	Name	Port	Zone	Health status	Health status details
i-0e090afa83e055836	Vm-1	80	ap-northeast-1c	Initial	Target registration is in progress

- Creating Elastic load balancer (MyloadVm) :

Application Load Balancer info

Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.

Network Load Balancer info

Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your applications. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.

Gateway Load Balancer info

Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.

Classic Load Balancer - previous generation

Load balancers (1)

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Filter by property or value

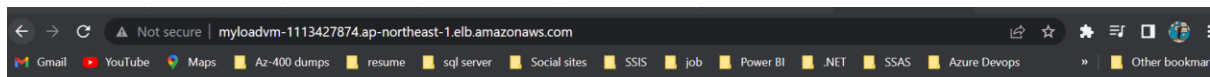
search: MyloadVm X Clear filters

Name	DNS name	State	VPC ID	Availability Zones	Type	Date created	Instance ID
MyloadVm	MyloadVm-1113427874.a...	Provisioning	vpc-048bda092f04dd162	3 Availability Zones	application	February 28, 2023, 13:43 (UTC+05:30)	-

0 load balancers selected

Select a load balancer above.

- Load balancer is distributing traffic to the target VM:



This is demo for ELB, Ec2 and RDS