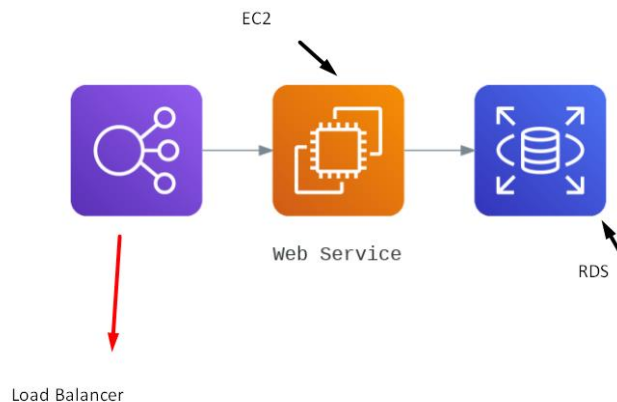


Assignment - 6

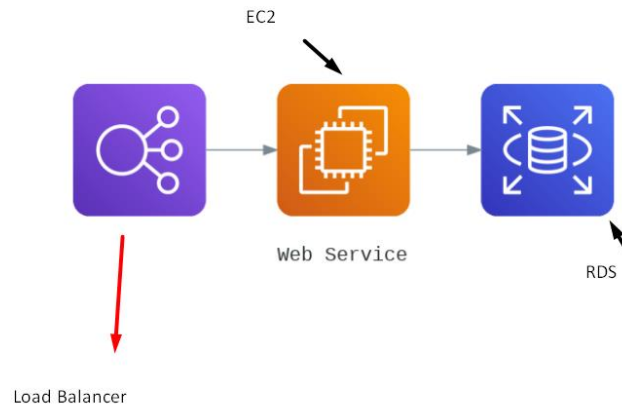
1) Explain the below AWS Architecture?



- Load balancer + EC2 + RDS
- In Amazon Web Services (AWS), a load balancer is a component that distributes incoming traffic across multiple Amazon Elastic Compute Cloud (EC2) instances. This can help improve the availability and fault tolerance of your application.
- Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides resizable compute capacity in the cloud. It allows you to launch virtual servers, called Amazon Elastic Compute Cloud (EC2) instances, which can be used to host applications and services.
- Amazon Relational Database Service (RDS) is a managed database service offered by Amazon Web Services (AWS) that makes it easy to set up, operate, and scale a relational database in the cloud. RDS supports a number of database engines, including MySQL
- Here's an example architecture that uses a load balancer in combination with EC2 instances and a database:
 - ✓ Client devices send requests to the load balancer over the internet.
 - ✓ The load balancer receives the request and distributes it to one of the available EC2 instances.
 - ✓ The EC2 instance processes the request and retrieves any necessary data from the database.
 - ✓ The EC2 instance sends a response back to the client device through the load balancer.
 - ✓ In this architecture, the load balancer acts as a single point of contact for clients and distributes incoming traffic among the EC2 instances. This can help ensure that the application is able to handle a large number of requests and improve the overall performance and reliability of the system.
 - ✓ The database can be any type of database, such as a MySQL database or a NoSQL database like Amazon DynamoDB. It is used to store data that the EC2 instances need to access in order to fulfil client requests.

- Overall, this architecture allows you to build scalable and highly available applications using AWS services.

2) Implement the same in the AWS (only do a proper connection between service)



I. Create a Security Group for SSH and HTTP

EC2 > Security Groups > sg-0fd0c20070e65bc9f - webserversecuritygroup

sg-0fd0c20070e65bc9f - webserversecuritygroup Actions

Details

Security group name webserversecuritygroup	Security group ID sg-0fd0c20070e65bc9f	Description Allow SSH and Http	VPC ID vpc-0e4e19f2e4e77c801
Owner 361621943543	Inbound rules count 2 Permission entries	Outbound rules count 1 Permission entry	

Inbound rules | Outbound rules | Tags

You can now check network connectivity with Reachability Analyzer [Run Reachability Analyzer](#)

Inbound rules (2) [Manage tags](#) [Edit inbound rules](#)

Filter security group rules

	Name	Security group rule...	IP version	Type	Protocol	Port range	Source
<input type="checkbox"/>	-	sgr-026436375abc5b0...	IPv4	SSH	TCP	22	0.0.0.0/0
<input type="checkbox"/>	-	sgr-0828cb5cc91407695	IPv4	HTTP	TCP	80	0.0.0.0/0

- II. Create two ec2 machine with webserver to verify the load balancer is working correctly or not

Machine 1

The screenshot shows the AWS Management Console 'Instances' page. A table lists two instances: 'Machine 1' (ID: i-02434b72517d55b28) and 'Machine 2' (ID: i-0ec8f1a344987cec6). Both are in a 'Running' state. Below the table, the details for 'Machine 1' are expanded. A red box highlights the 'Public IPv4 address' (13.232.71.88) and the 'Instance state' (Running). Below the details, a browser window shows the URL '13.232.71.88' with a 'Not secure' warning.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
Machine 1	i-02434b72517d55b28	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-13-232-71-88.ap-s...
Machine 2	i-0ec8f1a344987cec6	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-43-205-118-131.ap...

Instance: i-02434b72517d55b28 (Machine 1)

Public IPv4 address: 13.232.71.88 | [open address](#)

Instance state: Running

Browser: Not secure | 13.232.71.88

Welcome to first acrh. of the combined service of ec2+loadblancer+rds

Machine 1

Machine 2

The screenshot shows the details for 'Machine 2' (ID: i-0ec8f1a344987cec6). A red box highlights the 'Public IPv4 address' (43.205.118.131) and the 'Instance state' (Running). Below the details, a browser window shows the URL '43.205.118.131' with a 'Not secure' warning.

Instance: i-0ec8f1a344987cec6 (Machine 2)

Public IPv4 address: 43.205.118.131 | [open address](#)

Instance state: Running

Browser: Not secure | 43.205.118.131

Welcome to first acrh. of the combined service of ec2+loadblancer+rds

Machine 2

III. Create a Target Group

- ✓ Creating a target group in Amazon Web Services (AWS) allows you to route traffic to one or more Amazon Elastic Compute Cloud (EC2) instances.
- ✓ When you create a target group, you specify the protocol and port that you want to use to route traffic to your instances.
- ✓ You can then register your instances with the target group and use it as the destination for traffic in your Amazon Elastic Load Balancer or Application Load Balancer.

EC2 > Target groups > TG-Machine1

TG-Machine1

Actions ▾

Details
arn:aws:elasticloadbalancing:ap-south-1:361621943543:targetgroup/TG-Machine1/f845c24af1be86d5

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC vpc-0e4e19f2e4e77c801
IP address type IPv4	Load balancer MyApplB		

Total targets 2	Healthy 1	Unhealthy 0	Unused 0	Initial 1	Draining 0
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Targets | Monitoring | Health checks | Attributes | Tags

Registered targets (2)

Filter resources by property or value

	Instance ID	Name	Port	Zone	Health status	Health status details
<input type="checkbox"/>	i-02434b72517d55b28	Machine 1	80	ap-south-1a	healthy	
<input type="checkbox"/>	i-0ec8f1a344987cec6	Machine 2	80	ap-south-1a	initial	Target registration is in progress

IV. Create a Load balancer

search : MyAppLB Add filter

Name	DNS name	State	VPC ID	Availability Zones	Type	Created At
MyAppLB	MyAppLB-282395679.ap-so...	Active	vpc-0e4e19f2e4e77c801	ap-south-1b, ap-south-...	application	December 21, 2022 at 12:23...

Load balancer: MyAppLB

Description Listeners Monitoring Integrated services Tags

Basic Configuration

Name MyAppLB

ARN arn:aws:elasticloadbalancing:ap-south-1:361621943543:loadbalancer/app/MyAppLB/3c1cc0d4bd005739

DNS name **MyAppLB-282395679.ap-south-1.elb.amazonaws.com**
(A Record)

State Active

Type application

Scheme internet-facing

IP address type ipv4

Edit IP address type

VPC vpc-0e4e19f2e4e77c801

Load balancer: MyAppLB

Description **Listeners** Monitoring Integrated services Tags

Listeners listen for connection requests using their protocol and port. You can add, remove, or update listeners and listener rules.

To view and edit listener attributes, select the listener and choose Edit.

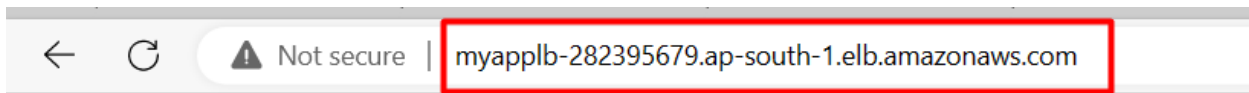
Add listener Edit Delete

Listener ID	Security policy	SSL Certificate	Rules
<input type="checkbox"/> HTTP : 80 arn...70d566f3c7508cb6	N/A	N/A	Default: forwarding to TG-Machine1 View/edit rules

← ↻ ⚠ Not secure **myaplb-282395679.ap-south-1.elb.amazonaws.com**

Welcome to first acrh. of the combined service of ec2+loadblancer+rds

Machine 1



Welcome to first acrh. of the combined service of ec2+loadblancer+rds

Machine 2

V. Created RDS with MySQL database and connected with previously created ec2.

RDS > Databases > database-1

database-1

Modify Actions

Summary

DB identifier database-1	CPU <div><div></div></div> 3.07%	Status Available	Class db.t3.micro
Role Instance	Current activity <div><div></div></div> 0 Connections	Engine MySQL Community	Region & AZ ap-south-1a

Connectivity & security

Monitoring

Logs & events

Configuration

Maintenance & backups

Tags

Connectivity & security

Endpoint & port Endpoint database-1.ch3syugfy88k.ap-south-1.rds.amazonaws.com Port 3306	Networking Availability Zone ap-south-1a VPC vpc-0e4e19f2e4e77c801 Subnet group rds-ec2-db-subnet-group-1 Subnets	Security VPC security groups rds-ec2-1 (sg-04e25d90893bc51a5) Active webserversecuritygroup (sg-0fd0c20070e65bc9f) Active Publicly accessible No
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Connectivity & security

Monitoring

Logs & events

Configuration

Maintenance & backups

Tags

Connectivity & security

Endpoint & port

Endpoint
database-1.ch3syugfy88k.ap-south-1.rds.amazonaws.com

Port
3306

Networking

Availability Zone
ap-south-1a

VPC
vpc-0e4e19f2e4e77c801

Subnet group
rds-ec2-db-subnet-group-1

Subnets
subnet-06982ac92b262cd46
subnet-0fb75ac7ab92bf222
subnet-0a7b1c842be65dc8c

Network type
IPv4

Security

VPC security groups
rds-ec2-1 (sg-04e25d90893bc51a5)
Active
webserversecuritygroup (sg-0fd0c20070e65bc9f)
Active

Publicly accessible
No

Certificate authority
rds-ca-2019

Certificate authority date
August 22, 2024, 22:38 (UTC+05:30)

Security group rules (2)

Filter by security group rules

Security group	Type	Rule
rds-ec2-1 (sg-04e25d90893bc51a5)	EC2 Security Group - Inbound	sg-0dd0147dad1700de2
webserversecuritygroup (sg-0fd0c20070e65bc9f)	CIDR/IP - Outbound	0.0.0.0/0

Replication (1)

Filter by replication

DB identifier	Role	Region & AZ	Replication source	Replication state	Lag
database-1	Instance	ap-south-1a	-	-	-

Connected compute resources (1) Info

Connections to compute resources that were created automatically by RDS are shown here. Connections to compute resources that were created manually aren't shown.

Filter by compute resources

Resource identifier	Resource type	Availability zone	RDS security group	Compute resource security group
i-02434b72517d55b28	EC2 Instance	ap-south-1a	rds-ec2-1	ec2-rds-1