

## Cloud Computing Lab 3

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Class: 5 MCA B

### **1. Describe Load Balancing and its significance in Cloud Environment**

Cloud load balancing is defined as the method of splitting workloads and computing properties in a cloud

computing. It enables enterprises to manage workload demands or application demands by distributing

resources among numerous computers, networks or servers.

There are several ways you can load balance on Google Cloud. In google cloud we will setup:

- Network Load Balancer
- HTTP(s) Load Balancer

Thousands of users have accessed a website at a particular time. It is challenging for applications to manage the load that comes from all these requests at a time. Sometimes, it may result in a breakdown of your entire system. Load balancing in cloud computing is the process in which workloads and computing resources are distributed across more than one servers. The workload is divided among two or more servers, network interfaces, hard drives and other computing resources which result in better utilization and system response

Time. High traffic web site requires highly efficient load balancing for a smooth operation of their business. Load balancing helps in maintaining system firmness, performance and protection against system failures.

### **Importance of Load Balancing**

#### **1. Better Performance**

- Load balancing techniques are less expensive and easy to implement as compared to its counterparts.

Organizations can work on their client's applications much more faster and deliver better performance

at relatively lower costs.

#### **2. Maintain Website Traffic**

- Cloud Balancing provides scalability to control website traffic. With the help of effective load balancers, you can easily manage high-end user traffic with the presence of servers and network devices.

• Cloud balancing plays a crucial role for e-commerce websites like Amazon and Flipkart, who are dealing with millions of visitors every single second. Load balancers help them distribute and manage

workloads at the time of promotional and sale offers.

- **Handle Sudden Traffic Burst**

- Load balancers have this ability to handle any sudden traffic received at a particular time. For example, a College or University website can shut down during result declaration due to too many requests arrivals at the same time.

- If they are using load balancers they do not have to worry about any amount of traffic burst. No matter how big is the traffic, load balancers equally divide entire website load into different servers for maximum results in a minimum response time.

### **3. Flexibility**

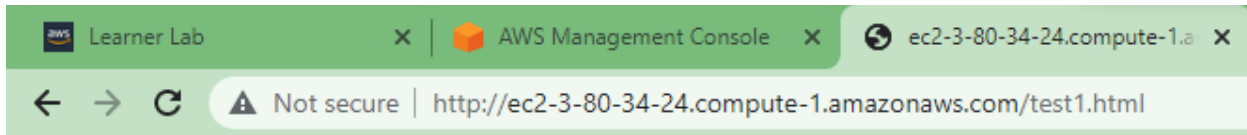
- The main objective of using a load balancer is to protect the website from a sudden mishap. When the workload is distributed among a number of network units or servers, even if one node fails, the load could be shifted to another node. This shows scalability, flexibility and the handling ability of traffic.

## **2. List the Load Balancing Service available in AWS, Azure and GCP.**

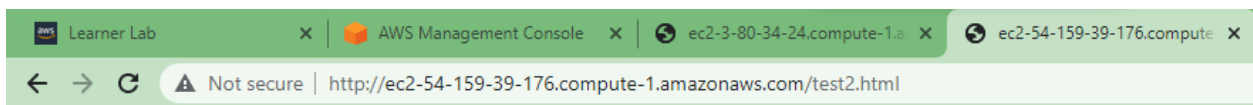
In AWS, Elastic Load Balancing supports the following load balancers: Application Load Balancers, Network Load Balancers, Gateway Load Balancers, and Classic Load Balancers. In GCP there are external load balancers and internal load balancers. Azure Front Door, Traffic Manager, Application Gateway, Azure Load Balancer are the azure load balancers.

**3. Create 2 Identical AWS EC2 / GCP VM Instances (Instance Name: Regno\_EC2\_VM1, Regno\_EC2\_VM2) and install a web server of your choice in each of the instances to host the website of your organization globally.**

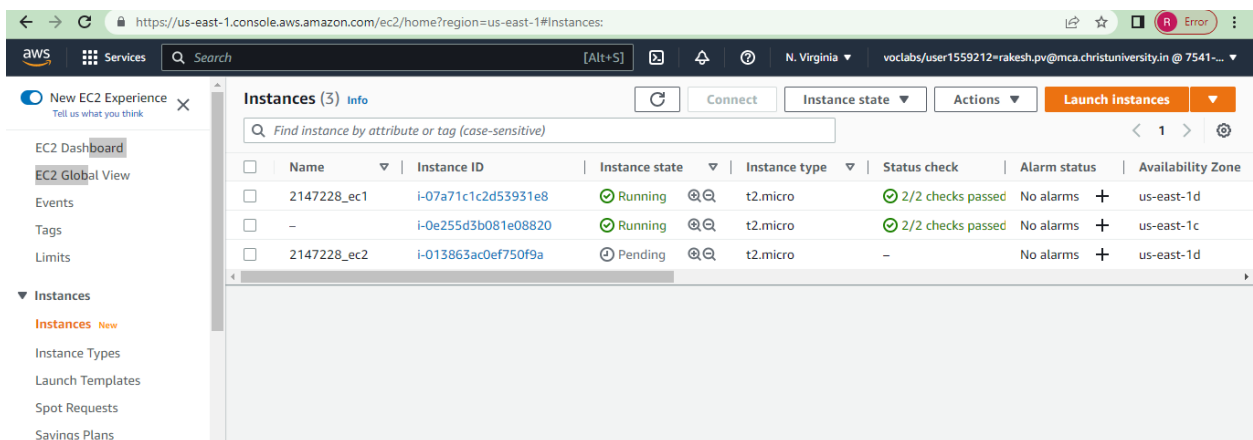
**LOAD BALANCER SUCCESSFULLY IMPLEMENTED AND RUNNING FOR 2 INSTANCES**



Hi i am test server 1



<html> hi i ams test servr 2



1. Define Load Balancer2. Assign Security Groups3. Configure Security Settings4. Configure Health Check5. Add EC2 Instances6. Add Tags7. Review

## Step 1: Define Load Balancer

### Basic Configuration

This wizard will walk you through setting up a new load balancer. Begin by giving your new load balancer a unique name so that you can identify it from other load balancers you might create. You will also need to configure ports and protocols for your load balancer. Traffic from your clients can be routed from any load balancer port to any port on your EC2 instances. By default, we've configured your load balancer with a standard web server on port 80.

Load Balancer name:

load\_balancer\_1

Load balancer names must contain only alphanumeric characters or hyphens, and must not start or end with a hyphen.

Create LB Inside:

My Default VPC (172.31.0.0/16)

Create an internal load balancer:

☐ (what's this?)

Enable advanced VPC configuration:

☒

Listener Configuration:

Load Balancer Protocol	Load Balancer Port	Instance Protocol	Instance Port
HTTP	80	HTTP	80

Add

Cancel

Next: Assign Security Groups

ection? Find it in the new Unified Settings

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N. Virginiavoclabs/user1559212=rakesh.pv@mca.christuniversity.in @ 7541-...

1. Define Load Balancer2. Assign Security Groups3. Configure Security Settings4. Configure Health Check5. Add EC2 Instances6. Add Tags7. Review

## Step 2: Assign Security Groups

You have selected the option of having your Elastic Load Balancer inside of a VPC, which allows you to assign security groups to your load balancer. Please select the security groups to assign to this load balancer. This can be changed at any time.

Assign a security group:

☒ Create a new security group

☐ Select an existing security group

Security group name:

quick-create-1

Description:

quick-create-1 created on Monday, November 7, 2022 at 9:58:02 AM U

Type	Protocol	Port Range	Source
Custom TCP F	TCP	80	Custom 0.0.0.0/0

Add Rule

Cancel

Previous

Next: Configure Security Settings

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### Step 5: Add EC2 Instances

The table below lists all your running EC2 Instances. Check the boxes in the Select column to add those instances to this load balancer.

VPC vpc-043e0d8c01d28866c (172.31.0.0/16)

<input type="checkbox"/>	Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
<input checked="" type="checkbox"/>	i-07a71c1c2d53931e8	2147228_ec1	running	launch-wizard-10	us-east-1d	subnet-0ecc488...	172.31.16.0/20
<input checked="" type="checkbox"/>	i-013863ac0ef750f9a	2147228_ec2	running	launch-wizard-11	us-east-1d	subnet-0ecc488...	172.31.16.0/20
<input type="checkbox"/>	i-0e255d3b081e08820		running	launch-wizard-6	us-east-1c	subnet-00de818...	172.31.80.0/20

#### Availability Zone Distribution

2 instances in us-east-1d

- ☒ Enable Cross-Zone Load Balancing ⓘ
- ☒ Enable Connection Draining ⓘ 300 seconds

Cancel Previous Next: Add Tags

### Step 5: Add EC2 Instances

The table below lists all your running EC2 Instances. Check the boxes in the Select column to add those instances to this load balancer.

VPC vpc-043e0d8c01d28866c (172.31.0.0/16)

<input type="checkbox"/>	Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
<input type="checkbox"/>	i-07a71c1c2d53931e8	2147228_ec1	running	launch-wizard-10	us-east-1d	subnet-0ecc488...	172.31.16.0/20
<input type="checkbox"/>	i-013863ac0ef750f9a	2147228_ec2	running	launch-wizard-11	us-east-1d	subnet-0ecc488...	172.31.16.0/20
<input type="checkbox"/>	i-0e255d3b081e08820		running	launch-wizard-6	us-east-1c	subnet-00de818...	172.31.80.0/20

#### Availability Zone Distribution

- ☒ Enable Cross-Zone Load Balancing ⓘ
- ☒ Enable Connection Draining ⓘ 300 seconds

Cancel Previous Next: Add Tags

## Step 6: Add Tags

Apply tags to your resources to help organize and identify them.

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more](#) about tagging your Amazon EC2 resources.

Key	Value
<input type="text" value="2147228"/>	<input type="text" value="1"/>

Create Tag

Cancel

Previous

Review and Create

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## Load Balancer Creation Status



### Successfully created load balancer

Load balancer [loadbalancer1](#) was successfully created.

Note: It may take a few minutes for your instances to become active in the new load balancer.

Close

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Filter by tags and attributes or search by keyword

<< 1 to 1 of 1 >>

	Name	DNS name	State	VPC ID	Availability Zones	Type
	loadbalancer1	loadbalancer1-41550574.us-...		vpc-043e0d8c01d28866c	us-east-1b, us-east-1a	classic

Load balancer: loadbalancer1

DescriptionInstancesHealth checkListenersMonitoringTagsMigration

Basic Configuration

Name	loadbalancer1	Creation time	November 7, 2022 at 10:03:29 AM UTC+5:30
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Filter by tags and attributes or search by keyword

<< 1 to 1 of 1 >>

	DNS name	State	VPC ID	Availability Zones	Type	Created At
	loadbalancer1-41550574.us-...		vpc-043e0d8c01d28866c	us-east-1b, us-east-1a	classic	November 7, 2022 at 10:03:29 AM UTC+5:30

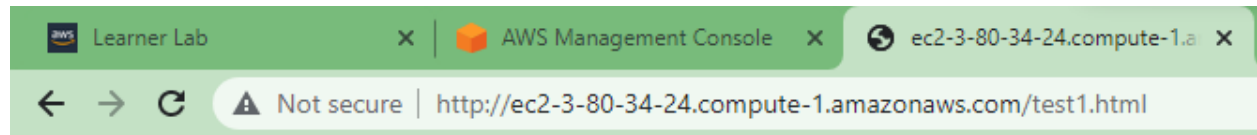
Load balancer: loadbalancer1

DescriptionInstancesHealth checkListenersMonitoringTagsMigration

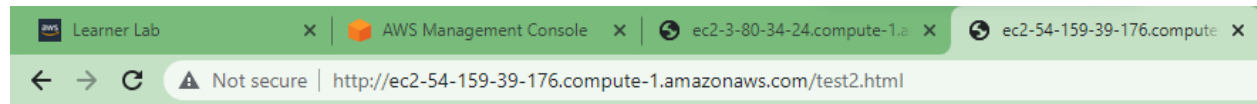
Basic Configuration

Name	loadbalancer1	Creation time	November 7, 2022 at 10:03:29 AM UTC+5:30
* DNS name	loadbalancer1-41550574.us-east-1.elb.amazonaws.com (A Record)	Hosted zone	Z35SXD0TRQ7X7K
Type	Classic (Migrate Now)	Status	0 of 2 instances in service
Scheme	internet-facing	VPC	vpc-043e0d8c01d28866c
Availability Zones	subnet-08496a93b6fd32b43 - us-east-1a, subnet-0c243e139f02f558d - us-east-1b		

Port Configuration



Hi i am test server 1



<html> hi i ams test servr 2