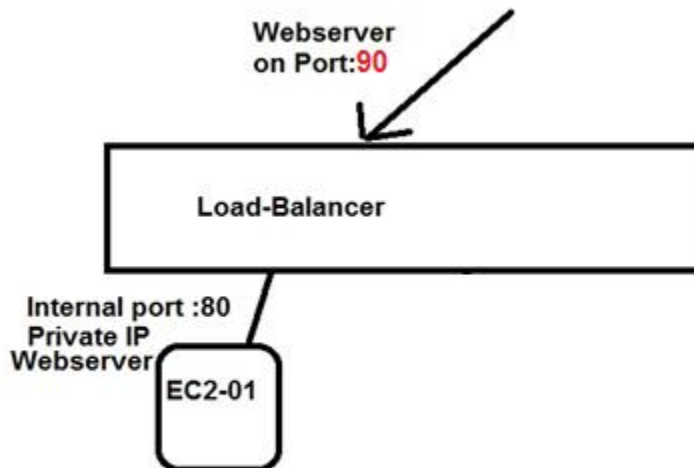


Lab manual – LB

Objective of this LAB.

This Lab Manual would cover the topics of Load Balancing, .

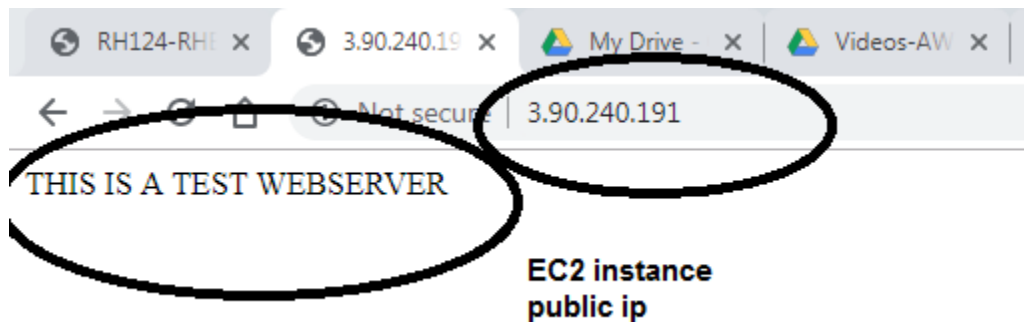
Diagram



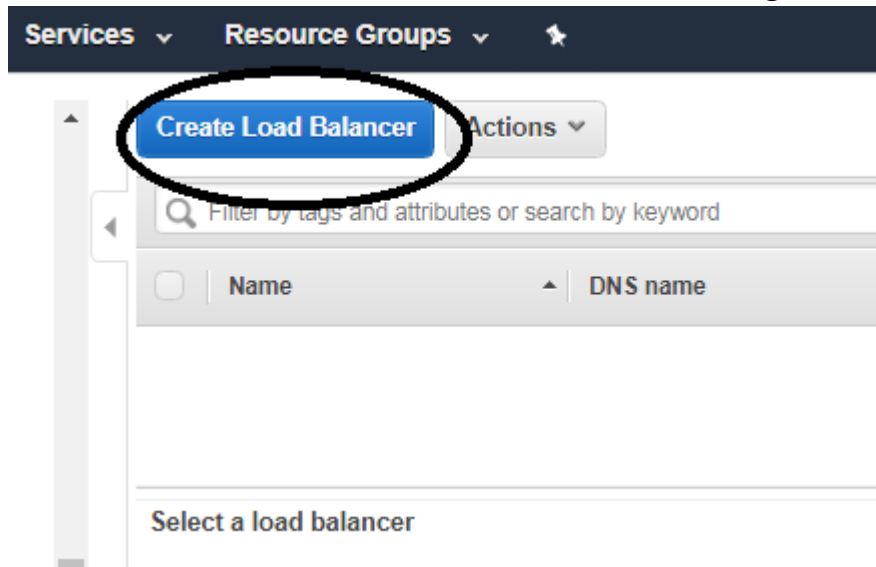
Configuration Steps.

1. Create an EC2 instance with Webserver enabled.
 - a. Create an Security Group with SSH and HTTP allowed
 - b. Use the above Security Group created to create a EC2 instance
 - c. Run the below command to enable webserver on the EC2 instance
 - i. `sudo yum install httpd`
 - ii. `sudo service httpd start`
 - iii. `sudo chkconfig httpd on`
 - iv. `sudo vi /var/www/html/index.html`
press "I"
type "**This is a TEST server ONE**" (message)
Press "esc"
Type "":wq" (lowercase)

Output: -- You should be able to open the webpage and get the above message with the public ip of EC2 instance



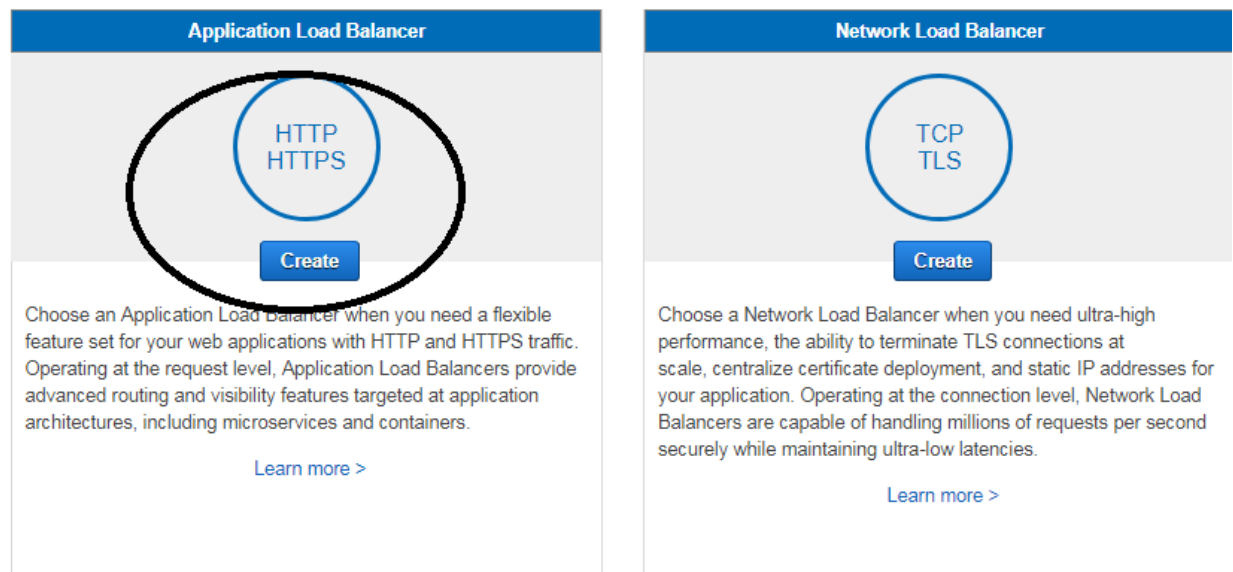
2. Create an Load balancer with Target Group.
 - a. Create an Load Balancer with “Internet Facing”



Click on **“Create Load Balancer”**

Select load balancer type

Elastic Load Balancing supports three types of load balancers: Application Load Balancers, Network Load Balancers (new), and Classic Load Balancers. Which load balancer is right for you



Click on **“Create”** for application load balancer.

- b. Assign the External port number , eg: --port 80 for people to access your page.

Step 1: Configure Load Balancer

Basic Configuration

To configure your load balancer, provide a name, select a scheme, specify one or more listeners, and select a network. The default configuration is an Internet-facing load balancer that receives HTTP traffic on port 80.

Name

Scheme ☒ internet-facing ☐ internal

IP address type **Both IPV4 and IPV6 -- External Access**

Listeners

A listener is a process that checks for connection requests, using the protocol and port that you configured.

Load Balancer Protocol	Load Balancer Port
<input type="text" value="HTTP"/>	<input type="text" value="90"/>
<input type="button" value="Add listener"/>	

Availability Zones

- c. Assign the VPC for which this Loadbalancer would be used, in our case, the above created same VPC.

STEP 1: CONFIGURE LOAD BALANCER

Availability Zones
Specify the Availability Zones to enable for your load balancer. The load balancer routes traffic to the targets in these Availability Zones only. You can specify only one subnet per Availability Zone. You must specify subnets from at least two Availability Zones to increase the availability of your load balancer.

VPC


Availability Zones

- ☒ **us-east-1a**
IPv4 address
IPv6 address
- ☒ **us-east-1b**
IPv4 address
IPv6 address
- ☐ **us-east-1c**
- ☐ **us-east-1d**

You are creating an internet-facing Load Balancer, but there is no Internet Gateway attached to these subnets you have selected: subnet-0e4144268cbcab1a7

At least two subnets must be specified

Step 2: Configure Security Settings

 **Improve your load balancer's security. Your load balancer is not using any secure listener.**
If your traffic to the load balancer needs to be secure, use the HTTPS protocol for your front-end connection. You can go back to the first step to add/configure secure listeners under [Basic Configuration](#) section. You can also continue with current settings.

[Cancel](#) [Previous](#) [Next: Configure Security Groups](#)

The Warning is because we have selected “HTTP”.

d. Assign a security group to the FRONT end of the Load Balancer


Step 3: Configure Security Groups

A security group is a set of firewall rules that control the traffic to your load balancer. On this page, you can add rules to allow specific traffic to reach your load balancer. First, decide whether to create a new or select an existing one.

Assign a security group: ☒ Create a new security group
☐ Select an existing security group

Security group name:

Description:

Type 	Protocol 	Port Range 	Source 
Custom TCP 	TCP	90	Custom  0.0.0.0/0, ::/0

[Add Rule](#)

This is the Front end part,

Click on **“Next: Configure Routing”**

e. Give a name to the Target Group

Step 4: Configure Routing

Your load balancer routes requests to the targets in this target group using the protocol and port associated with only one load balancer.

Target group

Target group ⓘ

Name ⓘ

Target type

- ☒ Instance
- ☐ IP
- ☐ Lambda function

Protocol ⓘ

Port ⓘ

Health checks

Protocol ⓘ

Path ⓘ

Configure the Routing Target, this is to tell the Load Balancer what port in the backend should it be talking to the EC2 instance.

▼ Advanced health check settings

Port ⓘ ☒ traffic port
☐ override

Healthy threshold ⓘ

Unhealthy threshold ⓘ

Timeout ⓘ seconds

Interval ⓘ seconds

Success codes ⓘ

[Cancel](#) [Previous](#) [Next: Register Targets](#)

Click on **“Next:Register Targets”**

Step 5: Register Targets

Register targets with your target group. If you register a target in an enabled Availability Zone, the load balancer starts routing requests to the targets as soon as the registration process completes and the target passes the initial health checks.

Registered targets

To deregister instances, select one or more registered instances and then click Remove.

<input type="checkbox"/>	Instance	Name	Port	State	Security groups	Zone
No instances available.						

Instances

To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.

on port

<input type="checkbox"/>	Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
No instances available.							

[Cancel](#)

Click “Next: Review”

Note: -- The EC2 addition at this stage is NOT compulsory.

- f. Add and Register the TWO instance that has been created.

The screenshot displays the AWS Management Console interface for Target Groups. The left-hand navigation pane shows the 'Target Groups' link under the 'LOAD BALANCING' section, which is circled in blue. The main content area shows a list of target groups. The 'TG02' target group is selected, and its associated load balancer 'LB01' is circled in black. Below the table, the 'Targets' tab is selected and circled in black.

Name	Port	Protocol	Target type	Load Balancer	VPC ID	Monitoring
TG01	80	HTTP	instance		vpc-0d14c552b05cd4384	
TG02	80	HTTP	instance	LB01	vpc-0d14c552b05cd4384	

Target group: TG02

Description | **Targets** | Health checks | Monitoring | Tags

The load balancer starts routing requests to a newly registered target as soon as the registration process completes and the target passes the initial health checks. If demand on your targets increases, you can register additional targets. If demand on your targets decreases, you can deregister targets.

[Edit](#)

Registered targets

Instance ID	Name	Port	Availability Zone	Status
There are no targets registered to this target group				

Availability Zones

Availability Zone	Target count	Healthy?
There are no targets registered to this target group		

Click on **“EDIT”**

Add the listed EC2 instance and click **SAVE**.

Register and deregister targets ✕

Registered targets
To deregister instances, select one or more registered instances and then click Remove.

Remove

<input type="checkbox"/>	Instance	Name	Port	State	Security groups	Zone
<input type="checkbox"/>	i-065f2f6801ee739fc		80	running	SSH-HTTP	us-east-1b

Instances
To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.

Add to registered

 on port

✕

<input type="checkbox"/>	Instance	Name	State	Security	Zone	Subnet ID	Subnet CIDR
<input checked="" type="checkbox"/>	i-065f2f6801ee...		running	SSH-HTTP	us-east-1b	subnet-04353faa1f32c7713	192.168.1.0/24

Cancel

Save

The Target group will put the instance in the **“Initial”** phase.

When the load balancer starts receiving requests, it begins routing traffic to registered targets. As the registration process completes and the target passes the health checks, the target moves to the **“Healthy”** phase. If demand on your targets increases, you can register additional targets. If demand on your targets decreases, you can deregister targets.

Edit

None of these Availability Zones contains a healthy target. Requests are being routed to all targets.

Registered targets

Instance ID	Name	Port	Availability Zone	Status
i-065f2f6801ee739fc		80	us-east-1b	initial ⓘ

Availability Zones

Edit

increases, you can register additional targets. If demand on your targets decreases, you can deregister targets.

Registered targets

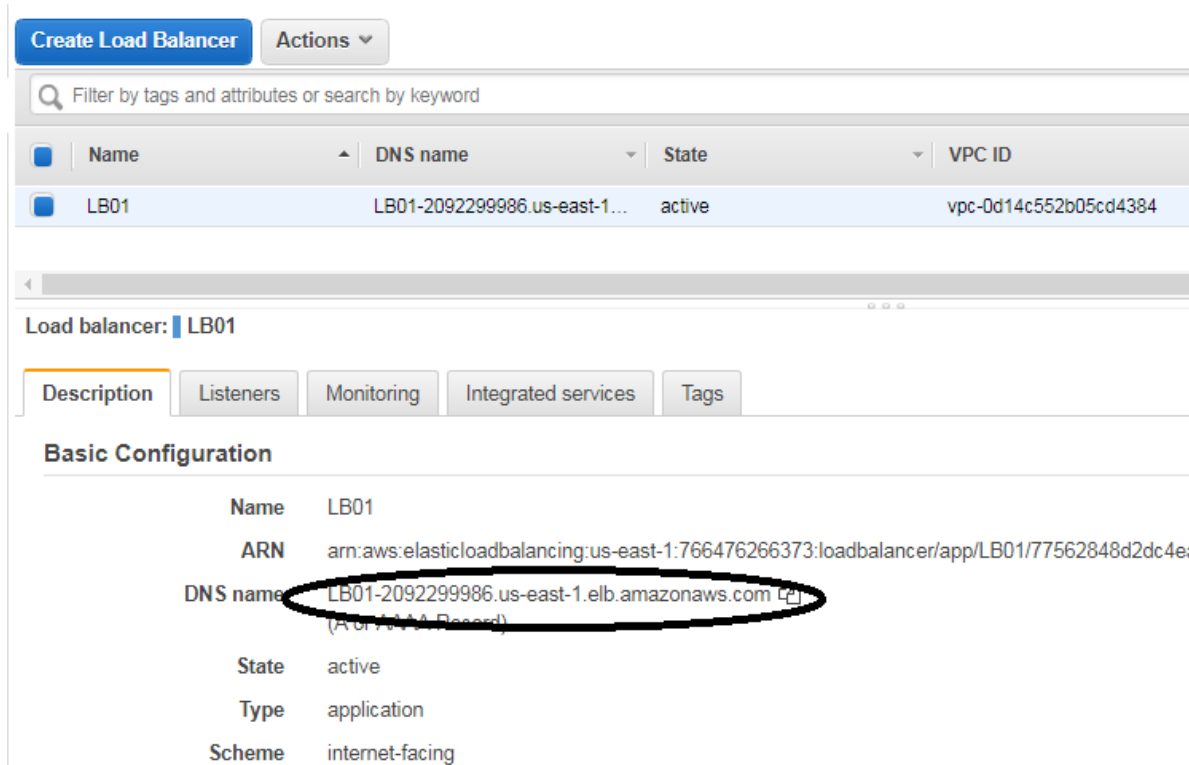
Instance ID	Name	Port	Availability Zone	Status
i-065f2f6801ee739fc		80	us-east-1b	healthy ⓘ

Availability Zones

Availability Zone	Target count	Healthy?
us-east-1b	1	Yes

This shows the machine is healthy for access

Output: -- Under the Loadbalancer that you have created, you would find “DNS” name.

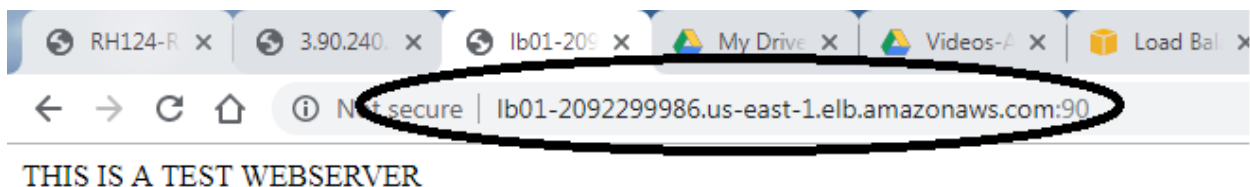


The screenshot shows the AWS Management Console interface for a Load Balancer. At the top, there is a "Create Load Balancer" button and an "Actions" dropdown. Below this is a search bar and a table listing the load balancers. The table has columns for Name, DNS name, State, and VPC ID. The first entry is "LB01" with a DNS name of "LB01-2092299986.us-east-1..." and a state of "active".

Below the table, the "Load balancer: LB01" section is expanded, showing the "Description" tab. Under "Basic Configuration", the following details are listed:

- Name: LB01
- ARN: arn:aws:elasticloadbalancing:us-east-1:766476266373:loadbalancer/app/LB01/77562848d2dc4e:
- DNS name: LB01-2092299986.us-east-1.elb.amazonaws.com (A or AAAA Record) - This is highlighted with a red circle.
- State: active
- Type: application
- Scheme: internet-facing

Copy that name and paste it on the Webpage.



The screenshot shows a web browser with multiple tabs. The active tab is titled "lb01-209...". The address bar shows the URL "lb01-2092299986.us-east-1.elb.amazonaws.com:90", which is highlighted with a red circle. The webpage content displays the text "THIS IS A TEST WEBSERVER".

