

Home / AWS / Guided Lab / Introduction to AWS Elastic Load Balancing

Introduction to AWS Elastic Load Balancing

Level: Intermediate

Amazon EC2 Amazon Web Services Elastic Load Balancing

 0H 51M 6S left

End Lab

Open Console

Validation

Lab Credentials

User Name ⓘ

Whiz_User_45200.91253519



Password ⓘ

a46c51b1-80a5-4f55-9551-90b526108a02



Access Key ⓘ

AKIATY2MPD2ZXK7GXKX6



Secret Key ⓘ

ARgr7iObmacThnjRMWdEYnFc3XXur9Y7FhQ111TO



Support Documents



Need help?



How to use Hands on Lab



Troubleshooting Lab



FAQs





Cloud Architect, Cloud Network Engineer



Compute, Networking



Lab Steps

Task 1: Launching Lab Environment

1. Launch the lab environment by clicking on . Please wait until the lab environment is provisioned. It will take less than 2 minutes to provision the lab environment.
2. Once the Lab is started, you will be provided with ***IAM user name, Password, AccessKey*** and ***Secret Access Key***.
3. Click on the , AWS Management Console will open in a new tab.
4. In the AWS sign in page, the Account ID will be present by default.
 - Leave the Account ID as default. Do not remove or change the Account ID otherwise you cannot proceed with the lab.
5. Copy and paste the ***IAM user name*** and ***Password*** into AWS Console. Click on **Sign in** to log into the AWS Console.

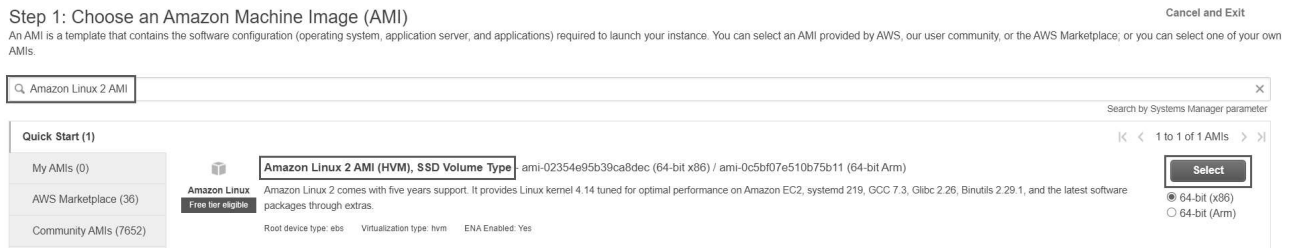
Note : If you face any issues, please go through **FAQs and Troubleshooting for Labs**.

Task 2 : Launching First EC2 Instance

1. Make sure you are in the **US East (N. Virginia) us-east-1** Region.
2. Navigate to **EC2** by clicking on the  menu in the top, then click on  **EC2** in the **Compute** section.

3. Navigate to **Instances** on the left panel and click on **Launch Instances**.

4. Search and Choose Amazon Linux 2 AMI:



5. Choose an Instance Type : Leave it to the default **t2.micro** and click on

Next: Configure Instance Details

6. **Configure Instance Details:**

- Auto-assign Public IP : Select **Enable**
- Click on **Advanced Details** and under the **User data:** section, enter the following script to create an HTML page served by an Apache httpd web server.

```
#!/bin/bash
```

```
sudo su
```

```
yum update -y
```

```
yum install httpd -y
```

```
echo "<html><h1> Welcome to Whizlabs Server 1 </h1><html>" >  
/var/www/html/index.html
```

```
systemctl start httpd
```



Note: After pasting the user data, make sure to remove extra spacing.

7. **Add Storage** : No need to change anything in this step, Click on **Next: Add Tags**

8. **Add Tags** : To easily identify your instances, you can add a tag with key pair combination.

- Key : Enter **Name**

- Value: Enter **MyEC2Server1**
- Click on **Next: Configure Security Group**.

9. Configure Security Group : Create a new security group,

- Security group name: Enter **MyWebserverSG**
- Description : Enter **My EC2 Security Group**
- To add **SSH**:
 - Choose Type:
 - Source: Select **Anywhere** (From ALL IP addresses accessible).
- For **HTTP**, click on **Add rule**,
 - Choose Type:
 - Source: Select **Anywhere** (From ALL IP addresses accessible).
- For **HTTPS**, click on **Add rule**,
 - Choose Type:
 - Source: Select **Anywhere** (From ALL IP addresses accessible).
- Click on **Review and Launch**.

10. Review and Launch : Review all your select settings and click on the **Launch**.

11. Key Pair : Select **Create a new key pair**

- Key pair type : Select **RSA**
- Key pair name : Enter **MyEC2Key**

12. Click on Download Key Pair and store them on your local machine.

13. Click on Launch Instance.

14. Your instances are now launching. Navigate to the EC2 instance page.

Task 3 : Launching Second EC2 Instances

1. Make sure you are in the **US East (N. Virginia) us-east-1** Region.

2. Navigate to **EC2** by clicking on the

Services

menu in the top, then click on

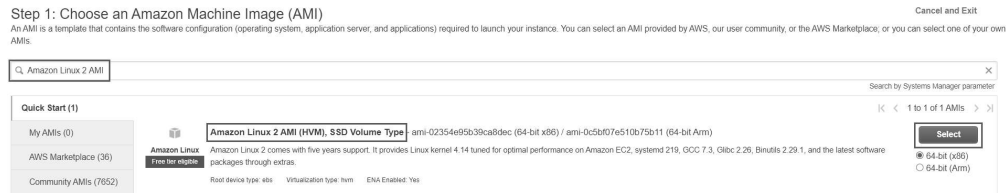


in

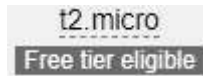
the **Compute** section.

3. Navigate to **Instances** on the left panel and click on **Launch Instances**.

4. Search and Choose Amazon Linux 2 AMI:



5. Choose an Instance Type : Leave it to the default



and click on

Next: Configure Instance Details

6. Configure Instance Details:

- Auto-assign Public IP : **Enable**
- Click on **Advanced Details** and under the **User data:** section, enter the following script to create an HTML page served by Apache httpd web server:

```
#!/bin/bash
```

```
sudo su
```

```
yum update -y
```

```
yum install httpd -y
```

```
echo "<html><h1> Welcome to Whizlabs Server 2 </h1><html>" >  
/var/www/html/index.html
```

```
systemctl start httpd
```

```
systemctl enable httpd
```

- Leave the rest of the fields as default and click on **Next: Add Storage**.
- **Note:** After pasting the user data, make sure to remove extra spacing.

1. **Add Storage** : No need to change anything in this step, Click on **Next: Add Tags** .



Copy

2. **Add Tags** : For identification of your instances, you can add a tag with a key pair combination

- Key : Enter **Name**
- Value: Enter **MyEC2Server2**
- Click on **Next: Configure Security Group**.

3. **Configure Security Group** : Select **Select an existing security group**,

- Select **MyWebserverSG** Security Group from the list.
- Click on **Review and Launch**.

8. **Review and Launch** : Review all your select settings and click on **Launch**.

9. **Key Pair**: Select **Choose an Existing Key pair** from the dropdown list and then select **MyWebKey** from the list.

10. Check the ☒ I acknowledge that I have read the AWS Instance User Guide checkbox and then click on **Launch Instances**.

11. **Launch Status**: Your instance is now launching. Click on **View Instances**. In the dashboard find your instance and wait for complete initialization of the instance until the instance state changes to running.

<input type="checkbox"/>	Name ▾	Instance ID	Instance state ▾	Instance type ▾	Status check
<input type="checkbox"/>	MyEC2Server2	i-04b795bbefa3217d5	🟢 Running 🔍	t2.micro	🟢 2/2 checks passed
<input type="checkbox"/>	MyEC2Server1	i-0d9b751654130484e	🟢 Running 🔍	t2.micro	🟢 2/2 checks passed

Task 4: Creating the Target Group and Load Balancer

1. In the **EC2** Console, Navigate to **Target Groups**, present in the left panel under **Load Balancing**.

2. Click on the **Create target group** button.

3. For **Step 1, Specify group details**

- Under Basic configurations,
 - Choose a target group: Choose **Instances**
 - Target group name: Enter **MyTargetGroup**

- **Keep all the settings as default.**
- Scroll to the end of the page and click on the **Next** button.

4. For **Step 2, Register targets**

- Select both instances and click on the **Include as pending below** button.

Register targets

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.

Available instances (2/2)

Q Filter resources by property or value

<input checked="" type="checkbox"/>	Instance ID	Name	State	Security groups	Zone	Subnet ID
<input checked="" type="checkbox"/>	i-0e0fe9c13c4e9f2a1	MyEC2Server1	running	launch-wizard-1	us-east-1d	subnet-27b2f806
<input checked="" type="checkbox"/>	i-0b3d8097ac86e7784	MyEC2Server2	running	launch-wizard-1	us-east-1d	subnet-27b2f806

2 selected

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

80

1-65535 (separate multiple ports with commas)

Include as pending below

- Instances will be present in the Review targets part, having health status as **Pending**.
- Click on the **Create target group** button.

5. The Target group is now created.

6. In the EC2 console, navigate to **Load Balancers** in the left-side panel.



7. Click on **Create Load Balancer** at the top-left to create a new load balancer for our web servers.

8. **Select Load Balancer Type:** Under the **Application load balancer**, click on **Create** button.

9. To create an Application load balancer, **configuring the load balancer** as below

- For the **Basic configuration** section,
 - Name: Enter **MyLoadBalancer**
 - Scheme: Select **Internet-facing**
 - IP address type: Choose **IPv4**
- For the **Network mapping** section:

- VPC: Select **Default**
- Mappings: **Select all the Availability zone present**
- For the Security groups section,
 - Select the **MyWebserverSG Security group** from the dropdown and **remove the default security group**.
- For the **Listeners and routing** section,
- The listener is already present with Protocol HTTP and Port 80.
- **Select the target group MyTargetGroup for the Default action forwards to option.**

10. Keep the tags as default and click on the **Create load balancer** button.

11. **You have successfully created the Application Load balancer.** Click on the **View load balancers button**.

12. Wait for 2 to 3 minutes for the load balancer to become **Active**.

Task 5: Testing the Elastic Load Balancer

▼ LOAD BALANCING

Load Balancers

1. Click on **Target Groups** from the left menu section.

2. Select **MyTargetGroup** and navigate to the **Targets** tab below.

3. **Wait** until the **status** column of the instances changes to **healthy** (this means both web servers have passed ELB health check)

Registered targets (2)							
<input type="text"/> Filter resources by property or value				<input type="button" value="Refresh"/> <input type="button" value="Deregister"/> <input type="button" value="Register targets"/>		<input type="button" value="Previous"/> 1 <input type="button" value="Next"/> <input type="button" value="Settings"/>	
<input type="checkbox"/>	Instance ID	Name	Port	Zone	Health status	Health status details	
<input type="checkbox"/>	i-0b0d4f2838a0760b2	MyEC2Server2	80	us-east-1c	☑ healthy		
<input type="checkbox"/>	i-085432913a72cd616	MyEC2Server1	80	us-east-1c	☑ healthy		

▼ LOAD BALANCING

4. Next, navigate to **Load Balancers** and notice the state of ELB is **active**.

5. Copy the **DNS name** of the ELB and enter the address in the **browser**.

- **DNS Example: MyLoadBalancer-913911171.us-east-1.elb.amazonaws.com**

Create Load Balancer Actions

search : MyLoadBalancer Add filter

Name	DNS name	State	VPC ID	Availability Zones	Type
MyLoadBalancer	MyLoadBalancer-193511944...	Active	vpc-5f4fd722	us-east-1e, us-east-1d,...	application

Load balancer: MyLoadBalancer

Description Listeners Monitoring Integrated services Tags

Basic Configuration

Name MyLoadBalancer

ARN arn:aws:elasticloadbalancing:us-east-1:██████████:loadbalancer/app/MyLoadBalancer/b476158e8dfc73c3

DNS name MyLoadBalancer-1935119448.us-east-1.elb.amazonaws.com (A Record)

State Active

6. You should see the **index.html** page content of Web Server 1 or Web Server 2



6. Now **Refresh** the page **a few times**. You will observe that the index pages change each time you refresh.

- **Note:** The ELB is equally dividing the incoming traffic to both servers in a Round Robin manner.

7. For testing, if ELB is working properly,

- In the left side menu, scroll up and navigate back to the **Instances** page.
- Select **MyEC2Server1**, click on **Instance State** and click on **Stop instance** to stop the EC2 instance.

Instances (1/2) Info

Filter instances

Instance state ▲

Stop instance

Start instance

	Name	Instance ID	Instance state	Instance type	
<input checked="" type="checkbox"/>	MyEC2Server1	i-0d9b751654130484e	Running	t2.micro	Reboot instance
<input type="checkbox"/>	MyEC2Server2	i-04b795bbefa3217d5	Running	t2.micro	Hibernate instance
					Terminate instance

▼ LOAD BALANCING

Load Balancers

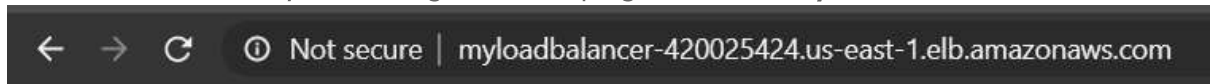
Target Groups

Select

- Once **MyEC2Server1** is stopped, navigate to . Select the **MyTargetGroup**, Click on the **Targets**.
- It will say that the stopped instance **MyEC2Server1** is **unused**.

Registered targets (2)							<input type="button" value="Refresh"/> <input type="button" value="Deregister"/> <input type="button" value="Register targets"/>
<input type="text" value="Filter resources by property or value"/>							< 1 > <input type="button" value="Settings"/>
<input type="checkbox"/>	Instance ID	Name	Port	Zone	Health status	Health status details	
<input type="checkbox"/>	i-03b0643e436b2c92b	MyEC2Server1	80	us-east-1a	unused	Target is in the stopped state	
<input type="checkbox"/>	i-041a973d7d0b441cc	MyEC2Server2	80	us-east-1a	healthy		

- Refresh** the ELB domain name URL in **Browser**, and notice the HTML webpage remains visible. The ELB is only rendering the HTML page from the **MyEC2Server2** instance.



Welcome to Whizlabs Server 2

Task 6: Validation Test

- Once the lab steps are completed, please click on the



button on the left side panel.

- This will validate the resources in the AWS account and displays whether you have completed this lab successfully or not.
- Sample output :

• Lab validation status

- status - success

• Lab user info

- 1 - You have created 2 EC2 instance in this lab.
- 2 - You have created 1 load balancer in this lab.

• Lab task status

- EC2
 - Ec2:1

- Amazon EC2 instance creation status - success
- Select Amazon Linux 2 AMI status - success
- Enable HTTP port in security group status - success
- Ec2:2
 - Amazon EC2 instance creation status - success
 - Select Amazon Linux 2 AMI status - success
 - Enable HTTP port in security group status - success
- LoadBalancer
 - Elb:1
 - Application Load balancer creation status - success
 - Select HTTP as Listener Protocol status - success
 - Creating Target Group status - success
 - Registered targets access status - success
 - Accessing Load Balancer DNS status - success
 - Install Apache webserver status - success
 - Add HTML page in server status - success

Task 7: Delete AWS Resources

Deleting Load balancer

1. In the EC2 console, navigate to in the left-side panel.

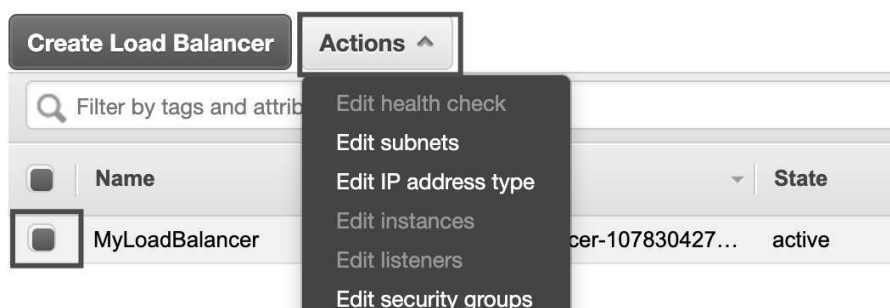
2. MyLoadBalancer will be listed here.

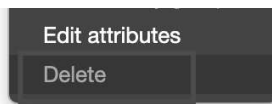
Filter by tags and attributes or search by keyword	
<input type="checkbox"/> Name	<input type="checkbox"/> DNS name
<input type="checkbox"/> MyLoadBalancer	MyLoadBalancer-107830427...

Load Balancers

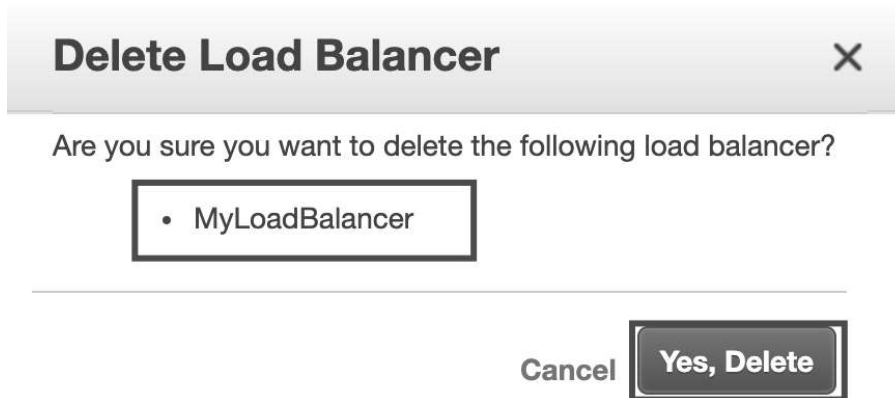
3. To **delete** the load balancer, need to perform the following actions:

- **Select** the load balancer,
- Click on the **Actions** button,
- select the **Delete** option.





4. Confirm by clicking on the **Yes, Delete** button when a pop-up is shown.



5. Web-server-LG will be deleted immediately.

Deleting Target groups

1. In the EC2 console, navigate to **Target Groups** New in the left-side panel.

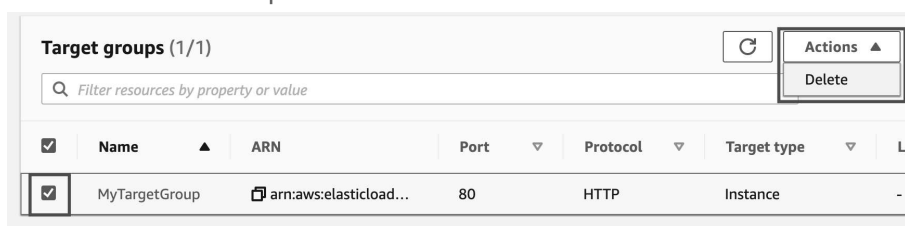
2. **MyTargetGroup** will be listed here.

<input type="checkbox"/>	Name	ARN
<input type="checkbox"/>	MyTargetGroup	arn:aws:elasticload...

3. To delete the **target group**, you need to perform the following actions:

- **Select** the load balancer,
- Click on the **Actions** button,

- select the **Delete** option



4. Confirm by clicking on the **Yes, delete** button when a pop-up is shown.

Delete target group?



You cannot undo this action.

Deleting a target group deletes the group; the individual resources registered to the target group do not get deleted as a result of this action.

Are you sure you want to delete this target group?

- MyTargetGroup

Cancel

Yes, delete

5. MyTargetGroup will be deleted immediately.

✓ Successfully deleted target group: MyTargetGroup

Deleting EC2 Instances

1. In the EC2 console, navigate to **INSTANCES** in the left-side panel.

2. 2 EC2 Instance **MyEC2Server1** and **MyEC2Server2** will be listed here.

<input type="checkbox"/>	Name	Instance ID	Instance state
<input type="checkbox"/>	MyEC2Server2	i-01b0f1cfca128c4e6	✓ Running
<input type="checkbox"/>	MyEC2Server1	i-04531acb4b93fa17b	✓ Running

3. To terminate the **EC2 Instances**, need to perform the following actions:

- **Select** the EC2 instances,
- Click on the **Instance state** button,

- select the **Terminate instance** option

Instances (2/2) Info

Filter instances


search: MyEC2 X Clear filters


<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type
<input checked="" type="checkbox"/>	MyEC2Server2	i-01b0f1cfca128c4e6	Running	t2.micro
<input checked="" type="checkbox"/>	MyEC2Server1	i-04531acb4b93fa17b	Running	t2.micro

4. Confirm by clicking on the **Terminate** button when a pop-up is shown.

Terminate instances? ×

Instance IDs

 i-04531acb4b93fa17b (MyEC2Server1)

 i-01b0f1cfca128c4e6 (MyEC2Server2)

To confirm that you want to terminate the instances, choose the *terminate* button below. Terminating the instance cannot be undone

Cancel

Terminate

5. **EC2 Instances** will be terminated immediately.

✓ Successfully terminated i-04531acb4b93fa17b,i-01b0f1cfca128c4e6

Completion and Conclusion

1. You have created two EC2 instances with a bash script that installed Apache servers and created sample HTML pages and published them.
2. You created a Load Balancer and Target group.
3. You added both EC2 instances in the load balancer Target group.
4. You have tested the Elastic Load Balancer by refreshing and simulating a shutdown of an EC2 Instance.

End Lab

1. Sign out of the AWS Account
2. You have successfully completed the lab.
3. Once you have completed the steps, click on **End Lab** from your whizlabs dashboard.

