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

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

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 Start Lab. 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 Open Console, 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.

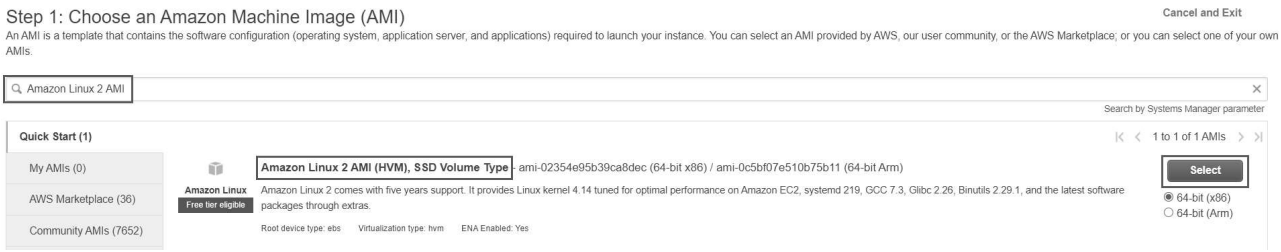
> **Note :** If you face any issues, please go through **FAQs and Troubleshooting for Labs.**

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 **Services** 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 

and click on

6. **Configure Instance Details:**

- Auto-assign Public IP : Select **Enable**
- Click on 

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
```

Copy

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.

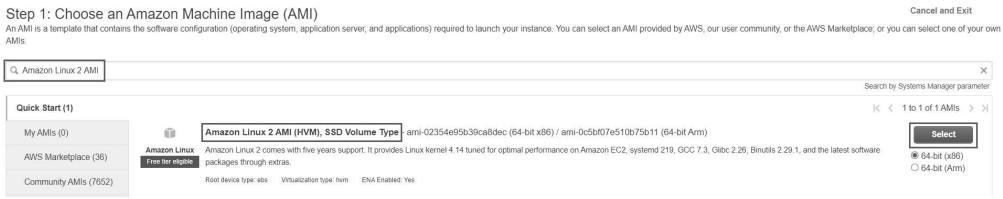
Task 3 : Launching Second EC2 Instances

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 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 Free tier eligible 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
```

Copy

   - 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.**

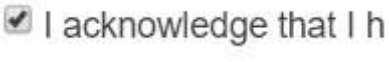
1. **Add Storage** : No need to change anything in this step, Click on **Next: Add Tags .**

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 

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.

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**

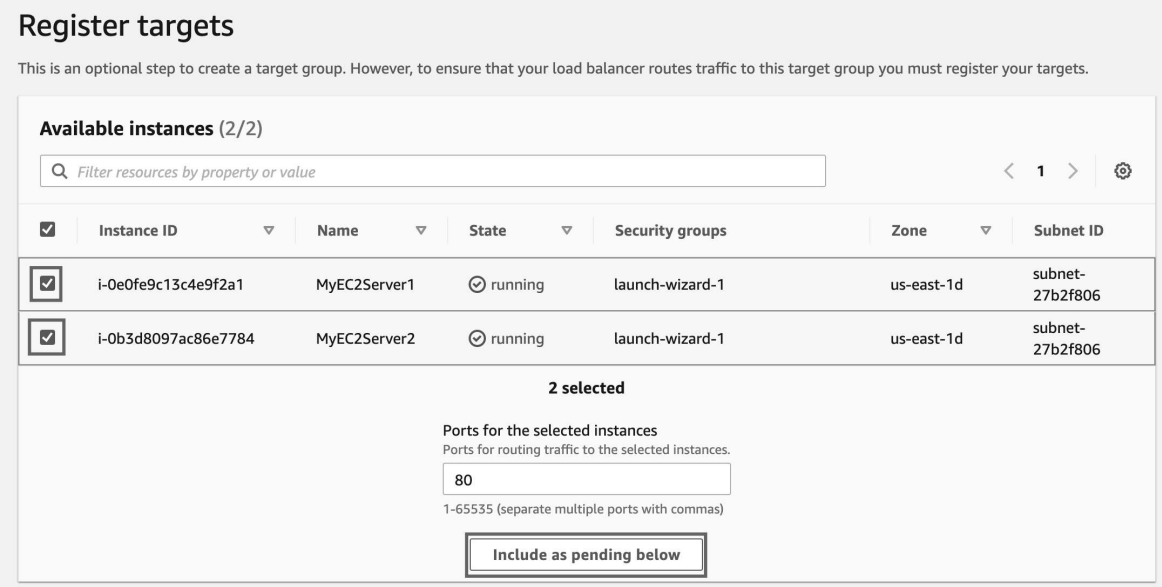
    - Under Basic configurations,

        - 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.



- 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 

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

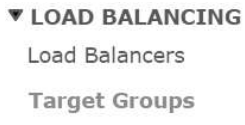
- For the **Basic configuration** section,
  - Name: Enter ***MyLoadBalancer***
  - Scheme: Select **Internet-facing**
  - IP address type: Choose **IPv4**
- For the **Network mapping** section:

- VPC: Select **Default**
- Mappings: **Select all the Availability zone present**

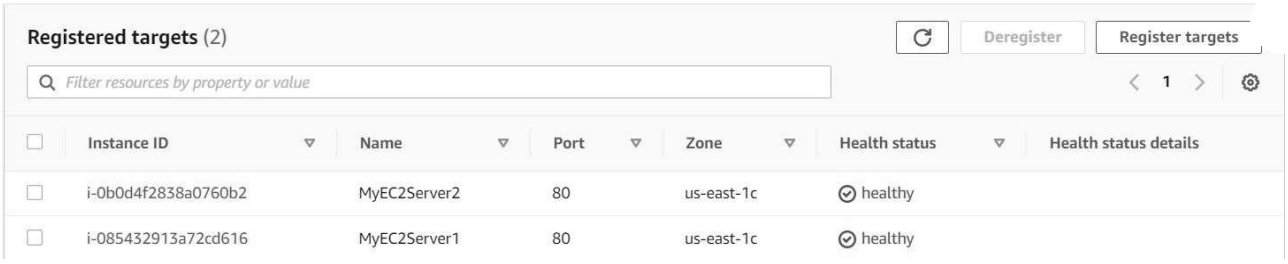
- For the Security groups section,
  - Select the **MyWebserverSG Security group** from the dropdown and **remove the default security group.**
- For the **Listeners and routing** section,
- The listener is already present with Protocol HTTP and Port 80.
  - **Select the target group MyTargetGroup for 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



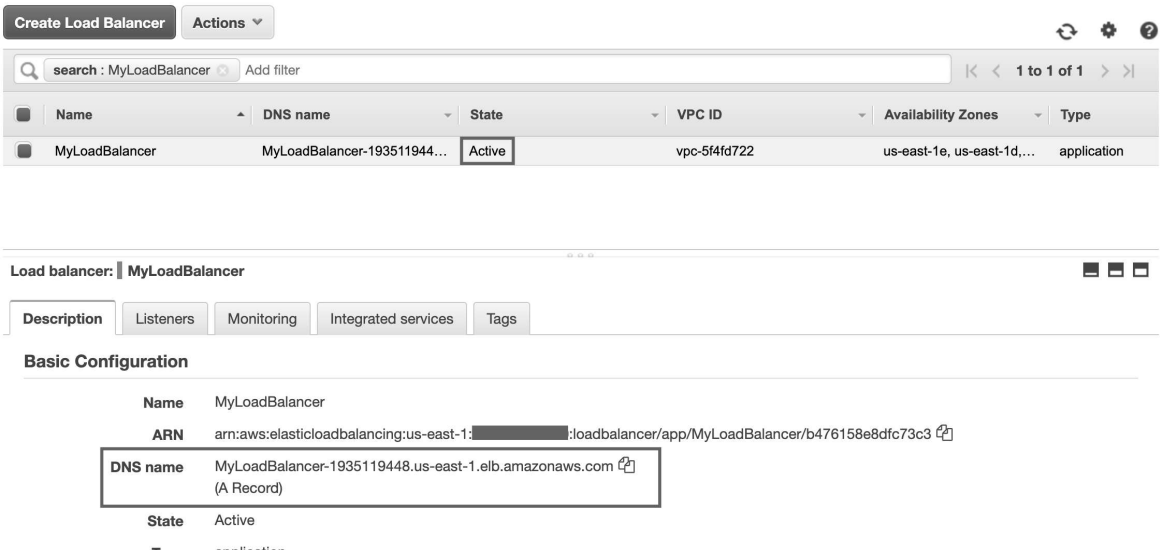
1. Click on from the left menu section.
2. Select **MyTargetGroup** and navigate to the **Targets** tab below.
3. **Wait** until the **status** column of the instances changes to **healthy** (this means both web servers have passed ELB health check)



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**



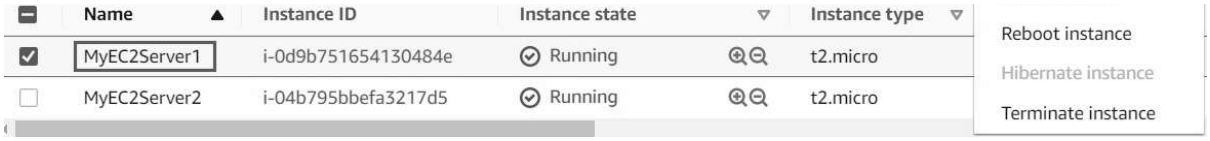
6. You should see the **index.html** page content of Web Server 1 or Web Server 2

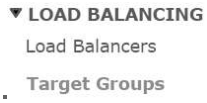
6. Now **Refresh** the page **a few times.** You will observe that the index pages change each time you refresh.

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

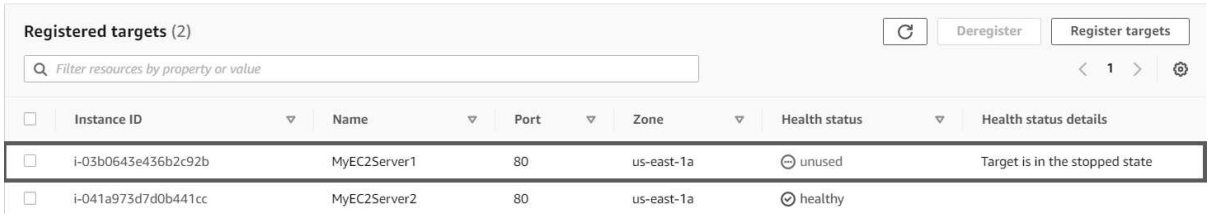
7. For testing, if ELB is working properly,

- 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.

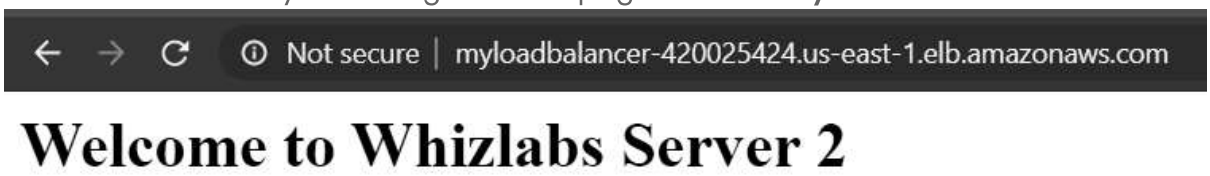




- Once **MyEC2Server1** is stopped, navigate to . Select the **MyTargetGroup**, Click on the **Targets.**
- It will say that the stopped instance **MyEC2Server1** is **unused.**



- **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.

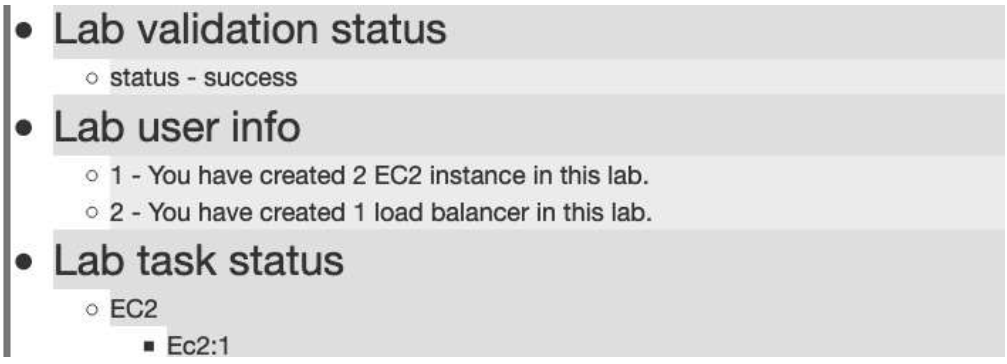


Task 6: Validation Test

1. Once the lab steps are completed, please click on the

button on the left side panel.

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



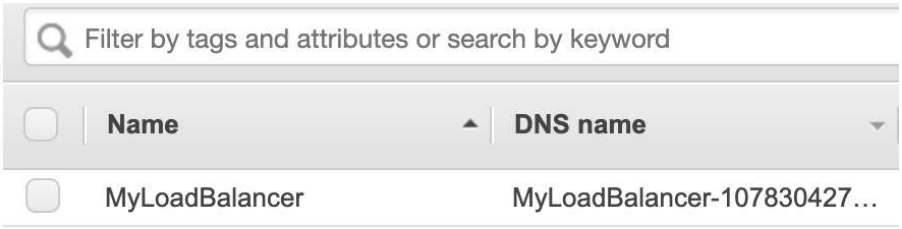
- Amazon EC2 instance creation status - success
- Select Amazon Linux 2 AMI status - success
- Enable HTTP port in security group status - success
- Ec2:2
  - Amazon EC2 instance creation status - success
  - Select Amazon Linux 2 AMI status - success
  - Enable HTTP port in security group status - success
- 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

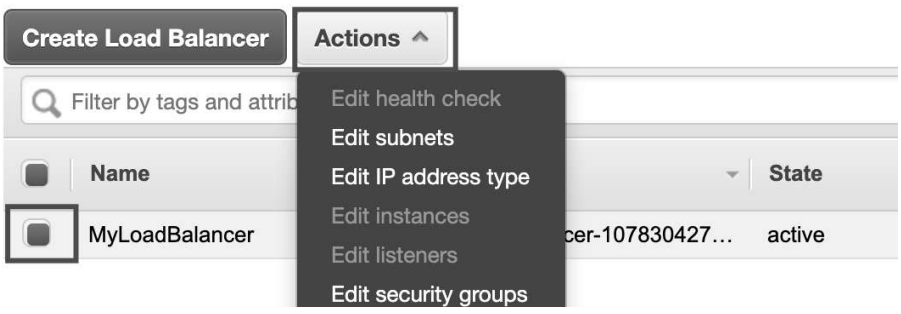
Deleting Load balancer

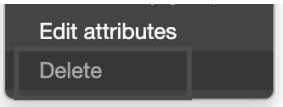
1. In the EC2 console, navigate to in the left-side panel.

2. **MyLoadBalancer** will be listed here.

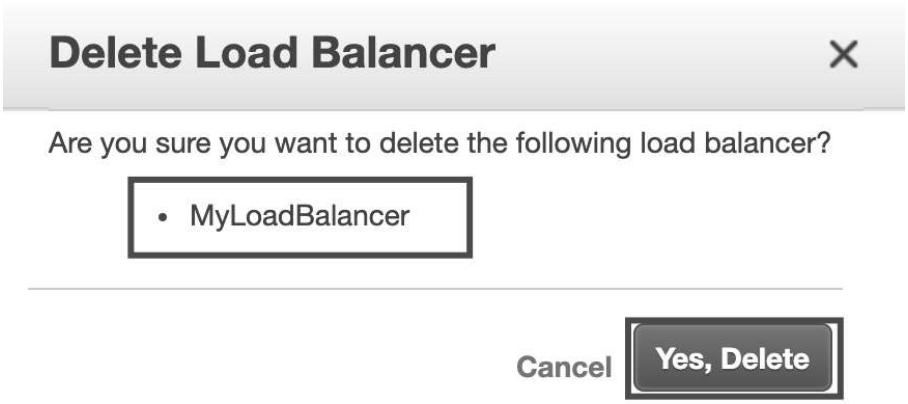


3. To **delete** the load balancer, need to Load Balancers perform the following actions:
   - **Select** the load balancer,
   - Click on the **Actions** button,
   - select the **Delete** option.





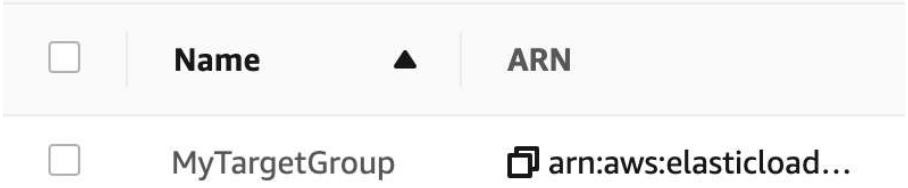
4. Confirm by clicking on the **Yes, Delete** button when a pop-up is shown.



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

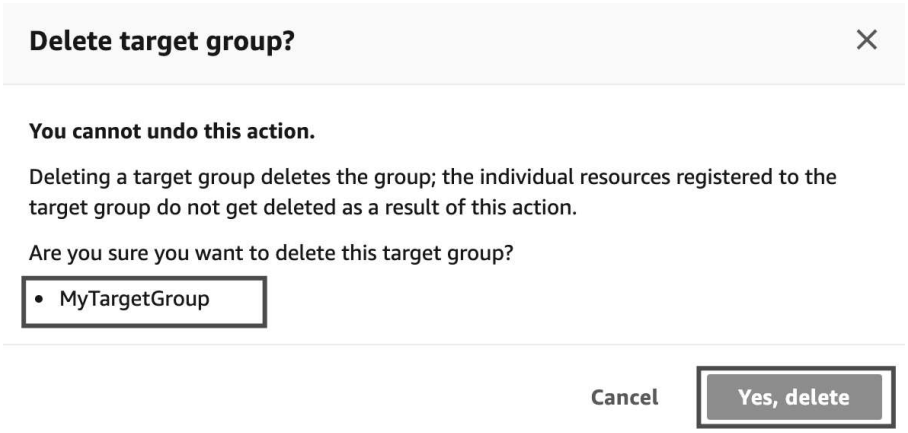
Deleting Target groups

1. In the EC2 console, navigate to Target Groups New in the left-side panel.
2. **MyTargetGroup** will be listed here.

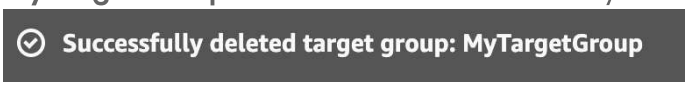


3. To delete the **target group**,you need to perform the following actions:
   - **Select** the load balancer,
   - Click on the **Actions** button,
   - select the **Delete** option

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



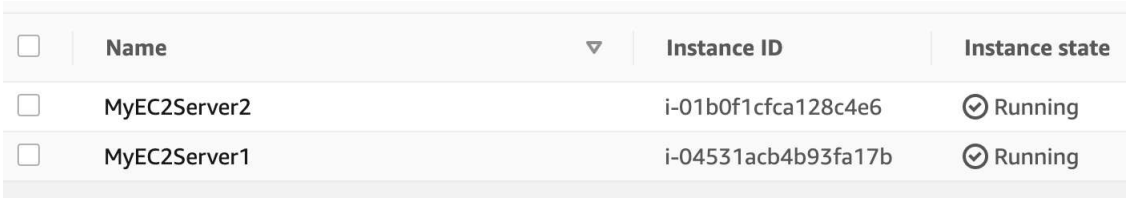
5. **MyTargetGroup** will be deleted immediately.



Deleting EC2 Instances

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

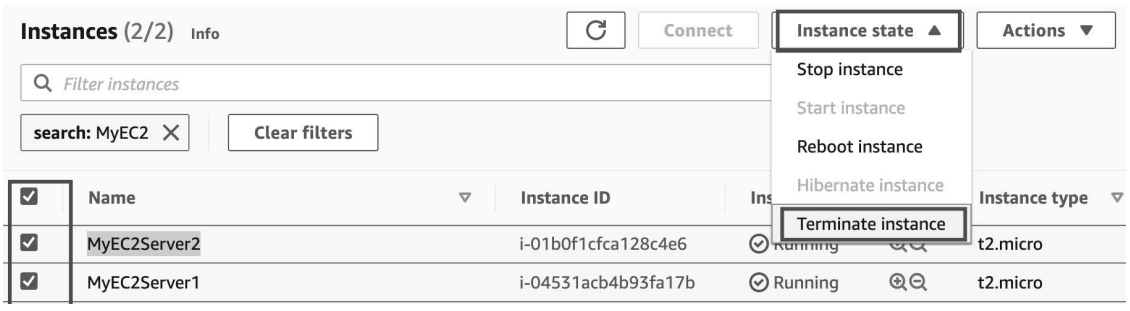
2. 2 EC2 Instance **MyEC2Server1** and **MyEC2Server2** will be listed here.



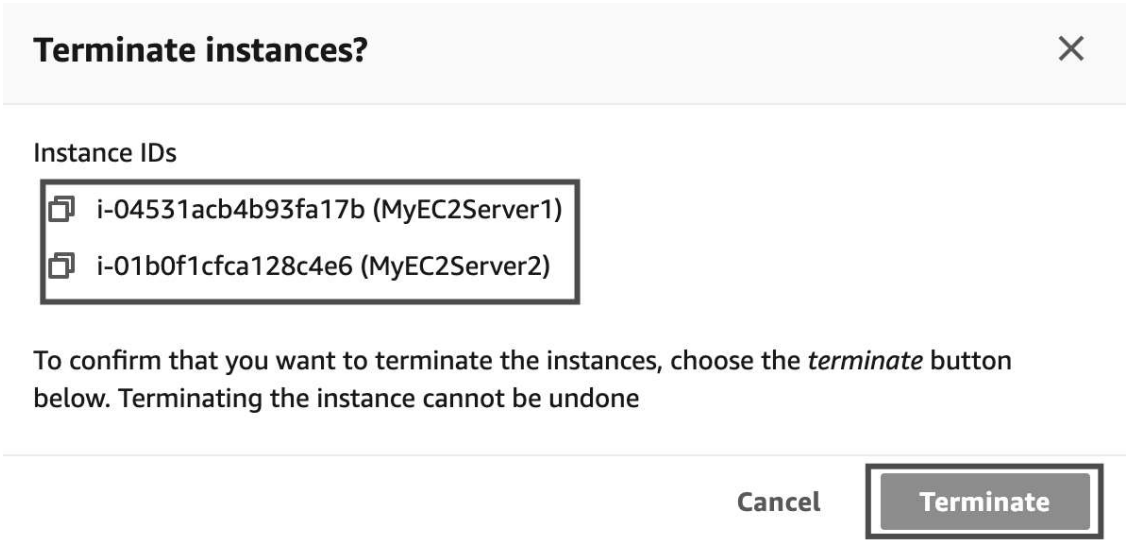
Name	Instance ID	Instance state
MyEC2Server2	i-01b0f1cfca128c4e6	Running
MyEC2Server1	i-04531acb4b93fa17b	Running

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



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



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

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 

from your whizlabs dashboard.