

Implementation of Application Load Balancer project

Indroduction

In today's online world, websites and apps need to be available, reliable, and able to handle a lot of users at the same time. A Load Balancer helps make this possible by spreading traffic across different servers. In this project, we will learn how an Application Load Balancer (ALB) works by setting up a real example where it shares incoming traffic between multiple servers like EC2 instances or containers.

This project showcases the deployment of an Application Load Balancer (ALB) on AWS by launching three EC2 instances, each representing a different service: Home, Laptop, and Mobile. Three separate target groups are created and associated with these instances. The ALB is then set up to route incoming traffic to the appropriate target based on predefined rules. Finally, the DNS name of the ALB is obtained and tested to confirm that traffic is being properly distributed among the instances.



Project Highlights

- 1] Three EC2 Instances: In this project, we launch three EC2 instances, each running an Apache web server. To make each server unique, we use a User Data script that customizes the index.html page with different content for each one — labeled Home, Laptop, and Mobile.
- 2] Target Groups: We create three separate target groups, assigning each EC2 instance to its own group. This setup ensures that traffic can be routed individually to the Home, Laptop, and Mobile servers.
- 3] Application Load Balancer (ALB): An Application Load Balancer is then set up and linked to all three target groups. The ALB is configured to distribute incoming traffic based on routing rules. To verify everything is working correctly, we access the DNS name of the ALB in a browser and check that traffic is being directed to the correct server.

Steps of Implementation

Step1: Launch 3 instance Home, Laptop, Mobile.

- Click on "Launch Instances" to start creating servers.
- Name your first Instance "Mobile".
- Choose a key pair so you can connect to the server later.
- Select a security group to allow internet access (like HTTP or SSH).
- Scroll down and click on "Advanced Details".
- Find the "User Data" box and paste your script there (this sets up the server automatically).
- Set the "Number of Instances" to 2 so that two servers will be created at the same time.



- Create a Second instance "Laptop" same as first instance
- Find the "User Data" box and paste your script there as shown below



- Create a Third instance "Mobile" same as first instance
- Find the "User Data" box and paste your Mobile script Same as Laptop
- Now, we Launch the Instances like Home, Laptop & Mobile



Step 2: Create Target Groups

- Create 3 target groups in AWS console. Register each EC2 instance to its respective target group
- Go to the Target Groups



- Create three target groups



Step 3: Create Application Load Balancer

- Click on load balancer



- Select Application Load Balancer and click on create



- Put Load Balancer name like ALB



- Select all AZ's



- Select Existing Security Group which allows port 80 & port 22



- Click on create target groups



- Specify all group details



- Put Health check path for home is /



- Then select the both home targets for register targets



- Same target group create for Laptop
- Put health check path for laptop is /Laptop/
- Then select the both Laptop targets for register targets



- Same target group create for Mobile
- Put health check path for laptop is /Mobile/



- Then select the both Mobile targets for register targets



- Then Add a Home target group on the Load balancer



- Now, Click on load balancer



- Successfully created a load balancer



- Go to the listeners and rules



- Click on manage rule and add the rules like Lapto and Mobile rule



- Add a laptop-rule first



- Select a condition as a path



- Give Path /Laptop/*



- Then add Laptop target group



- Set rule priority 1st to the laptop rule



- Now, add the rule Mobile



- Select Path like /Mobile/*



- Give 2nd Priority to Mobile



- Now, successfully we create a Load balancer named as ALB



- Copy the DNS name of load balancer and hit on browser



- Final output

This is Output of server- Home Instance



This is Output of server- Laptop Instance



This is Output of server- Mobile Instance



Summary

In this project, we set up an Application Load Balancer (ALB) on AWS to share traffic between three EC2 instances: Home, Laptop, and Mobile. Each instance ran a script when it started to install Apache and show a custom webpage. We created three target groups, and each instance was added to its own group. Then, we created an Application Load Balancer with a listener on port 80 (HTTP), which sends traffic to these target

groups. Finally, we tested the ALB's DNS link in a web browser. The page showed different responses from Home, Laptop, and Mobile, proving that the load balancer was working correctly.