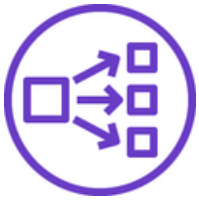
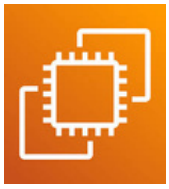
Notes

AWS Project Documentation

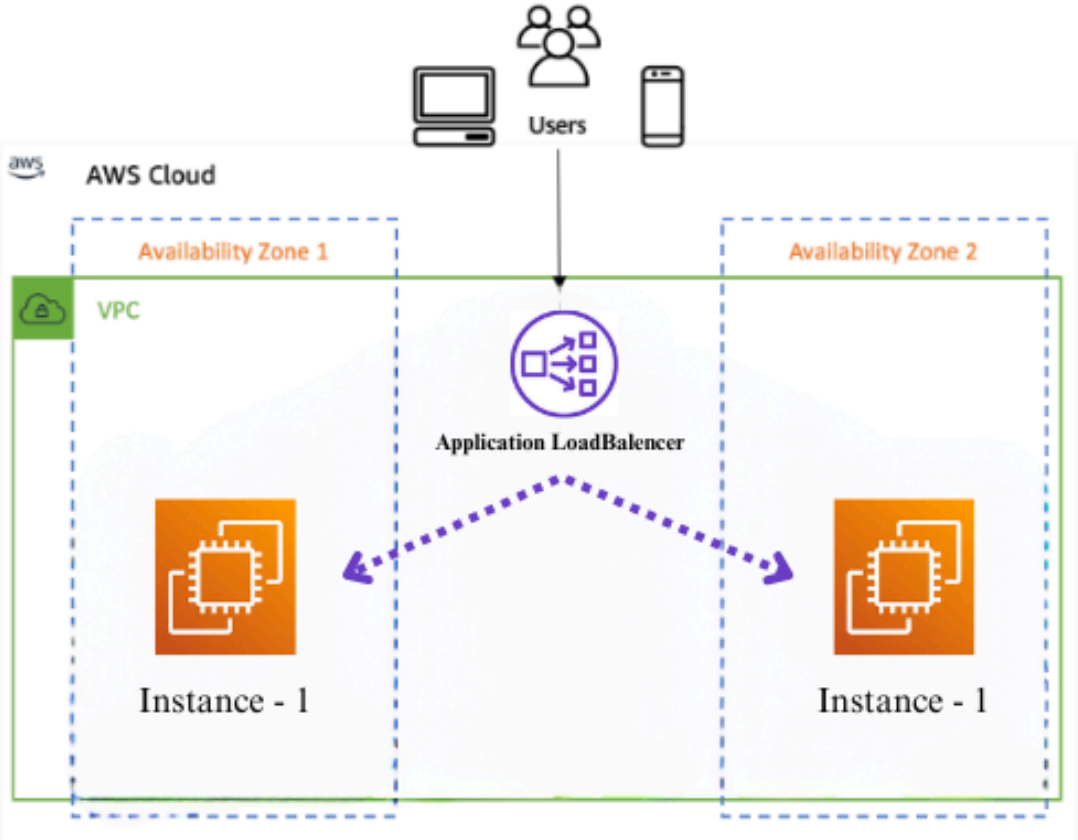
Creating EC2 Instances and Setting Up an Application Load Balance





@sAnandha

ARCHITECTURE DIAGRAM :



1. Users send requests to the Application Load Balancer (ALB) over the internet.
2. The ALB distributes traffic across two EC2 instances in different Availability Zones for high availability.
3. If one instance fails, the ALB routes requests to the healthy instance, ensuring fault tolerance.

Notes

Guide to Creating EC2 Instances and Setting Up an Application Load Balancer :

Introduction :

Amazon EC2 (Elastic Compute Cloud) provides virtual servers in the cloud, while an Application Load Balancer (ALB) distributes incoming traffic across multiple instances to ensure high availability and fault tolerance. This guide walks you through creating two EC2 instances, setting up a security group, configuring an ALB, and registering the instances in a target group.

Services Used

1. Amazon EC2 – Virtual cloud servers to host applications.
2. Security Groups – Firewall rules to control incoming and outgoing traffic.
3. Application Load Balancer (ALB) – Distributes incoming traffic across instances.
4. Target Group – Manages EC2 instances behind the load balancer.
5. VPC (Virtual Private Cloud) – Default AWS network for communication.
6. User Data – Automates tasks when an instance starts.

Applications of EC2 and ALB

1. Scalability – ALB distributes traffic, allowing seamless scaling.
2. High Availability – Ensures application uptime by routing traffic.
3. Load Distribution – Balances requests across multiple servers.
4. Security – ALB works with security groups to protect instances.
5. Automation – User data helps configure instances automatically.

Step-by-Step Guide

1. **Launch Two EC2 Instances**
    1. Open the AWS Management Console and go to EC2 Dashboard.
    2. Click Launch Instances.
    3. Enter a name (e.g., "Instance-1").
    4. Select an AMI (Amazon Linux 2).
    5. Choose an Instance Type (e.g., t2.micro).
    6. Under Key Pair, select an existing key or create a new one.
    7. In Advanced Details, paste your User Data script .
    8. Click Launch Instance.
    9. Repeat the steps to create a second instance ("Instance-2").

2. **Create a Security Group**
   1. Go to Security Groups in the EC2 Dashboard.
   2. Click Create Security Group.
   3. Enter a name (e.g., "Web-Security-Group").
   4. Under Inbound Rules, add:
      - HTTP (Port 80) → Source: Anywhere (0.0.0.0/0).
      - HTTPS (Port 443) → Source: Anywhere (0.0.0.0/0).
   5. Click Create Security Group.
   6. Attach this group to both EC2 instances.
3. **Create an Application Load Balancer (ALB)**
   1. Go to EC2 Dashboard > Load Balancers.
   2. Click Create Load Balancer → Choose Application Load Balancer.
   3. Enter a name (e.g., "My-ALB").
   4. Select Internet-facing and IPv4 as IP type.
   5. Under Network Mappings, choose the default VPC and select all available subnets.
   6. Under Security Groups, select the security group created earlier.

4. **Create a Target Group**
    1. Under Listeners and Routing, click Create a New Target Group.
    2. Select Target Type as Instances.
    3. Enter a name (e.g., "My-Target-Group").
    4. Choose Protocol: HTTP (Port 80).
    5. Select default VPC, then click Next.
    6. Under Register Targets, select both EC2 instances and Include in target group.
    7. Click Create Target Group.
5. **Attach the Target Group to the Load Balancer**
    1. Go back to the ALB setup page.
    2. Under Listeners and Routing, select the created target group.
    3. Click Create Load Balancer.
6. **Verify the Setup**
    1. Wait for the Load Balancer status to become Active.
    2. Copy the DNS Name of the Load Balancer from the EC2 Load Balancer dashboard.
    3. Paste it into a browser and check if your application loads.

7. **Delete Services to Avoid Charges**
   1. Terminate EC2 Instances
      - Go to EC2 Dashboard > Instances.
      - Select both instances and click Actions > Terminate.
   2. Delete the Security Group
      - Go to Security Groups, select the created group, and delete it.
   3. Delete the Load Balancer
      - Go to Load Balancers, select the ALB, and delete it.
   4. Delete the Target Group
      - Go to Target Groups, select the group, and delete it.
   5. Release Elastic IP (if assigned)
      - Go to Elastic IPs, select, and release the address.

This ensures that no unnecessary charges apply to your AWS account.

If you have struck in the Project creation Kindly refer the Video Reference .