Application Load Balancer (ALB) on AWS

This guide provides detailed steps to create an Application Load Balancer (ALB) using the AWS Management Console, based on the official AWS documentation. :contentReference[oaicite:0]{index=0}

Prerequisites

Before you begin, ensure you have:

- **VPC Setup**: A Virtual Private Cloud (VPC) with at least one public subnet in each of the Availability Zones where your targets (e.g., EC2 instances) are located. For more information, see Subnets for your load balancer.
- **Security Groups**: Appropriate security groups configured to allow necessary traffic.

Step 1: Configure a Target Group

A target group routes requests to one or more registered targets (e.g., EC2 instances).

1. **Access Target Groups**:
    - Open the Amazon EC2 console.
    - In the navigation pane, select **Target Groups**.
2. **Create Target Group**:
    - Click **Create target group**.
    - In the **Basic configuration** section:
        - **Choose a target type**: Select **Instances** to register targets by instance ID, **IP addresses** to register targets by IP address, or **Lambda function** to register a Lambda function as a target.
        - **Target group name**: Enter a unique name for the target group.
        - **Protocol**: Choose the protocol (e.g., HTTP).
        - **Port**: Specify the port on which targets receive traffic (e.g., 80).
        - **VPC**: Select the VPC containing your targets.
        - **Protocol version**: Choose the appropriate protocol version (e.g., HTTP1, HTTP2, or gRPC).

3. **Configure Health Checks**:
    - In the **Health checks** section:
        - **Health check protocol**: Select the protocol for health checks (e.g., HTTP).
        - **Health check path**: Specify the ping path (e.g., `/`) for HTTP or HTTPS checks.
        - **Advanced health check settings**:
            - **Port**: Choose the port for health checks or select **traffic port** to use the port on which each target receives traffic.
            - **Healthy threshold**: Number of consecutive successful health checks required before considering a target healthy.
            - **Unhealthy threshold**: Number of consecutive failed health checks before considering a target unhealthy.
            - **Timeout**: Time, in seconds, to wait for a health check response.
            - **Interval**: Time, in seconds, between health checks.
            - **Success codes**: HTTP codes indicating a successful response.
4. **Add Tags (Optional)**:
    - Expand the **Tags** section.
    - Click **Add tag**.
    - Enter the tag **Key** and **Value**.
5. **Proceed**:
    - Click **Next**.

Step 2: Register Targets

Register your targets (e.g., EC2 instances) with the target group.

1. **Select Targets**:
    - On the **Register targets** page:
        - If the target type is **Instances**:
            - Select one or more instances.
            - Enter the port on which each instance listens.
            - Click **Include as pending below**.
        - If the target type is **IP addresses**:
            - Select a network VPC or choose **Other private IP addresses**.
            - Enter the IP addresses and ports.
            - Click **Include as pending below**.
        - If the target type is **Lambda**:
            - Select a Lambda function or enter its ARN.

- Click **Include as pending below**.

2. **Create Target Group**:
    - Click **Create target group**.

Step 3: Configure a Load Balancer and a Listener

Set up the ALB and its listener to distribute traffic to your targets.

1. **Access Load Balancers**:
    - In the Amazon EC2 console, select **Load Balancers** in the navigation pane.
2. **Create Load Balancer**:
    - Click **Create Load Balancer**.
    - Select **Application Load Balancer**.
3. **Basic Configuration**:
    - **Name**: Enter a unique name for the load balancer.
    - **Scheme**: Choose **Internet-facing** for public access or **Internal** for private.
    - **IP address type**: Select **IPv4** or **Dualstack**.
4. **Network Mapping**:
    - **VPC**: Select the VPC for the load balancer.
    - **Mappings**: Choose at least two subnets in different Availability Zones.
5. **Security Groups**:
    - Assign one or more security groups to the load balancer.
6. **Listeners and Routing**:
    - **Listeners**: Confirm a default listener is configured (e.g., HTTP on port 80).
    - **Default action**: Forward to the target group created earlier.
7. **Add Tags (Optional)**:
    - Expand the **Tags** section.
    - Click **Add tag**.
    - Enter the tag **Key** and **Value**.
8. **Review and Create**:

- Review your settings.
- Click **Create load balancer**.

Step 4: Test the Load Balancer

Ensure the ALB is functioning correctly.

1. **Obtain DNS Name**:
   - In the Amazon EC2 console, navigate to **Load Balancers**.
   - Select your ALB and note its **DNS name**.
2. **Test Access**:
   - Open a web browser.
   - Enter the ALB's DNS name.
   - Verify that the browser displays the expected content served by your targets.
3. **Verify Target Health**:
   - In the Amazon EC2 console, go to **Target Groups**.
   - Select your target group.
   - Check the **Targets** tab to ensure all targets are healthy.

For more detailed information, refer to the AWS documentation.