

## **AWS ELB - ALB Multiple Target Groups**

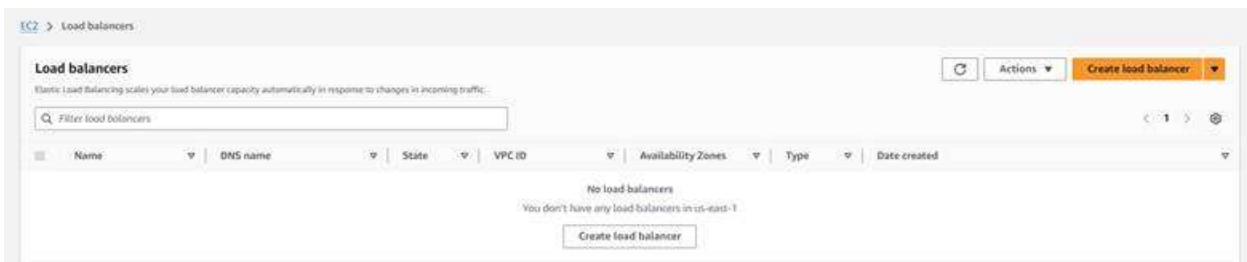
Two EC2 instances with a simple web application that shows the web page with the string "Hey, it's a me, <HOSTNAME>!" One EC2 instance with a simple web application that shows the web page with the string "Hey, it's only a test..." under the endpoint /test

### **Objectives**

1. Create an application load balancer for the two instances you have, with the following properties
2. healthy threshold: 3
3. unhealthy threshold: 3
4. interval: 10 seconds
5. Create another target group for the third instance
6. Traffic should be forwarded to this group based on the "/test" path

## Solution

- Go to EC2 service
- Click in the left side menu on "Load balancers" under "Load balancing"
- Click on "Create load balancer"



- Choose "Application Load Balancer"

### Compare and select load balancer type

A complete feature-by-feature comparison along with detailed highlights is also available. [Learn more](#)

#### Load balancer types

##### Application Load Balancer [Info](#)

Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.

Create

##### Network Load Balancer [Info](#)

Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your applications. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.

Create

##### Gateway Load Balancer [Info](#)

Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.

Create

- Insert a name for the LB

### Basic configuration

#### Load balancer name

Name must be unique within your AWS account and can't be changed after the load balancer is created.

Demo-ALB

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

#### Scheme

Info

Scheme can't be changed after the load balancer is created.

☒ Internet-facing

- Serves internet-facing traffic.
- Has public IP addresses.
- DNS name is publicly resolvable.
- Requires a public subnet.

☐ Internal

- Serves internal traffic.
- Has private IP addresses.
- DNS name is not publicly resolvable.

#### Load balancer IP address type

Info

Select the front-end IP address type to assign to the load balancer. The VPC and subnets mapped to this load balancer must include the selected IP address types. Public IPv4 addresses have an additional cost.

☒ IPv4

- Includes only IPv4 addresses.

☐ Dualstack

- Includes IPv4 and IPv6 addresses.

☐ Dualstack without public IPv4

- Includes a public IPv6 address, and private IPv4 and IPv6 addresses. Compatible with **internet-facing** load balancers only.

- Choose an AZ

### Network mapping

Info

The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

#### VPC

Info

The load balancer will exist and scale within the selected VPC. The selected VPC is also where the load balancer targets must be hosted unless routing to Lambda or on-premises targets, or if using VPC peering. To confirm the VPC for your targets, view [target groups](#). For a new VPC, [create a VPC](#).

vpc-014ccf5a14583eefe  
IPv4 VPC CIDR: 172.31.0.0/16

#### Mappings

Info

Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection.

##### Availability Zones

☒ ap-southeast-1a (apse1-az2)

Subnet

subnet-0124cf7cc3f08212f  
IPv4 subnet CIDR: 172.31.32.0/20

IPv4 address  
Assigned by AWS

☒ ap-southeast-1b (apse1-az1)

Subnet

subnet-0509b9524002b4fad  
IPv4 subnet CIDR: 172.31.16.0/20

IPv4 address  
Assigned by AWS

☐ ap-southeast-1c (apse1-az3)

- Choose a security group

**Security groups** [Info](#)

A security group is a set of firewall rules that control the traffic to your load balancer. Select an existing security group, or you can [create a new security group](#).

**Security groups**

Select up to 5 security groups

default  
sg-0c03059786b227f6f VPC: vpc-07c506f5a8dff669

- Under "Listeners and routing" click on "Create target group" and choose "Instances"

**Listeners and routing** [Info](#)

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

▼ Listener HTTP:80 

Remove

Protocol HTTP

Port 80  
1-65535

Default action Forward to Select a target group  
[Create target group](#)

**Listener tags - optional**

Consider adding tags to your listener. Tags enable you to categorize your AWS resources so you can more easily manage them.

Add listener tag

You can add up to 50 more tags.

Add listener

- Provide a name for the target group

## Specify group details


Your load balancer routes requests to the targets in a target group and performs health checks on the targets.

### Basic configuration

Settings in this section can't be changed after the target group is created.

#### Choose a target type

☒ Instances

- Supports load balancing to instances within a specific VPC.
- Facilitates the use of [Amazon EC2 Auto Scaling](#)  to manage and scale your EC2 capacity.

☐ IP addresses

- Supports load balancing to VPC and on-premises resources.
- Facilitates routing to multiple IP addresses and network interfaces on the same instance.
- Offers flexibility with microservice based architectures, simplifying inter-application communication.
- Supports IPv6 targets, enabling end-to-end IPv6 communication, and IPv4-to-IPv6 NAT.

☐ Lambda function

- Facilitates routing to a single Lambda function.
- Accessible to Application Load Balancers only.

☐ Application Load Balancer

- Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
- Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

#### Target group name

Demo-Group

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

- Set healthy threshold to 3
- Set unhealthy threshold to 3
- Set interval to 10 seconds

## Health checks

The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.

### Health check protocol

HTTP ▼

### Health check path

Use the default path of "/" to perform health checks on the root, or specify a custom path if preferred.

/

Up to 1024 characters allowed.

### ▼ Advanced health check settings

Restore defaults

### Health check port

The port the load balancer uses when performing health checks on targets. By default, the health check port is the same as the target group's traffic port. However, you can specify a different port as an override.

☒ Traffic port

☐ Override

### Healthy threshold

The number of consecutive health checks successes required before considering an unhealthy target healthy.

3

2-10

### Unhealthy threshold

The number of consecutive health check failures required before considering a target unhealthy.

3

2-10

### Timeout

The amount of time, in seconds, during which no response means a failed health check.

5

seconds

2-120

### Interval

The approximate amount of time between health checks of an individual target

10



seconds

5-300

### Success codes

The HTTP codes to use when checking for a successful response from a target. You can specify multiple values (for example, "200,202") or a range of values (for example, "200-299").

200

- Click on "Next" and choose two out of three instances and click on include as pending below
- Click on "Create target group"

**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 (3)**

Filter instances

Instance ID	Name	State	Security groups	Zone	Private IPv4 address	Subnet ID	Launch time
i-0aa9650bf8fabcc32	Demo3	Running	default	ap-southeast-1b	172.31.23.180	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)
i-02706bef2427b4e5b	Demo2	Running	default	ap-southeast-1b	172.31.17.239	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)
i-03ac29655b278af70	Demo1	Running	default	ap-southeast-1b	172.31.21.160	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)

0 selected

Ports for the selected instances

Ports for routing traffic to the selected instances

80

1-65535 (separate multiple ports with comma)

Include as pending below

2 selections are now pending below. Include more or register targets when ready.

**Review targets**

Targets (2)

Filter targets

Show only pending

Remove all pending

Instance ID	Name	Port	State	Security groups	Zone	Private IPv4 address	Subnet ID	Launch time
i-02706bef2427b4e5b	Demo2	80	Running	default	ap-southeast-1b	172.31.17.239	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)
i-03ac29655b278af70	Demo1	80	Running	default	ap-southeast-1b	172.31.21.160	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)

2 pending

Cancel Previous **Create target group**

- Refresh target groups and choose the target group

**Listeners and routing** [Info](#)

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

▼ Listener HTTP:80 Remove

Protocol: HTTP Port: 80

Default action: [Info](#)

Forward to: Demo-Group HTTP Refresh

Target type: Instance, IPv4

[Create target group](#)

**Listener tags - optional**

Consider adding tags to your listener. Tags enable you to categorize your AWS resources so you can more easily manage them.

Add listener tag

You can add up to 50 more tags.

Add listener

- Click on "Create load balancer" and wait for it to be provisioned
- In the left side menu click on "Target Groups" under "Load Balancing"

**Successfully created load balancer: Demo-ALB**  
It might take a few minutes for your load balancer to fully set up and route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.

**Demo-ALB**

**Details**

Load balancer type Application	Status Provisioning	VPC vpc-014ccc5a14583eaf0	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z1LM591P8C0LES	Availability Zones subnet-0509b9524002b4fad (ap-southeast-1b (spot1-a-ct1)) subnet-0124a77c3408212f (ap-southeast-1a (spot1-a-az2))	Date created November 21, 2024, 10:45 (UTC+08:00)
Load balancer ARN arn:aws:elasticloadbalancing:ap-southeast-1:396913698392:loadbalancer/app/Demo-ALB/45d5053e8a3fa5de		DNS name info Demo-ALB-216331549.ap-southeast-1.elb.amazonaws.com (A Record)	

**Listeners and rules (1)**

A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

Protocol/Port	Default action	Rules	ARN	Security policy	Default SSL/TLS certificate	mTLS	Trust store	Trust store association status	Tags
HTTP/80	Forward to target group • Demo-Group (1 (100%)) • Target group stickiness: Off	1 rule	ARN	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	0 tags

- Click on "Create target group"
- Set it with the same properties as previous target group with third instance

**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 (3)**

Instance ID	Name	State	Security groups	Zone	Private IPv4 address	Subnet ID	Launch time
i-0a9b50bf8fabcc32	Demo3	Running	default	ap-southeast-1b	172.31.23.180	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)
i-02706bef2427b4e5b	Demo2	Running	default	ap-southeast-1b	172.31.17.239	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)
i-03ac29b55b278af70	Demo1	Running	default	ap-southeast-1b	172.31.21.160	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)

**0 selected**

Ports for the selected instances  
Ports for routing traffic to the selected instances.  
80  
1-65535 (separate multiple ports with comma)  
Include as pending below

1 selection is now pending below. Include more or register targets when ready.

**Review targets**

**Targets (1)**

Filter targets Show only pending Remove all pending

Instance ID	Name	Port	State	Security groups	Zone	Private IPv4 address	Subnet ID	Launch time
i-0a9b50bf8fabcc32	Demo3	80	Running	default	ap-southeast-1b	172.31.23.180	subnet-0509b9524002b4fad	November 21, 2024, 10:27 (UTC+08:00)

1 pending Cancel Previous Create target group



- Go back to your ALB and under "Listeners" click on "Edit rules" under current listener

**Demo-ALB** ⌵ Actions

**Details**

Load balancer type Application	Status Active	VPC <a href="#">vpc-014ccf5a14583ee6e</a>	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z1LM591P8CMLES	Availability Zones <a href="#">subnet-0509b9524002b4fa0</a> ap-southeast-1b (aps1-az1) <a href="#">subnet-0124c77c3998212f</a> ap-southeast-1a (aps1-az2)	Date created November 21, 2024, 10:43 (UTC+08:00)
Load balancer ARN <a href="#">arn:aws:elasticloadbalancing:ap-southeast-1:396913698392:loadbalancer/app/Demo-ALB/43d3053e8a3fa56e</a>		DNS name info <a href="#">Demo-ALB-216331549.ap-southeast-1.elb.amazonaws.com</a> (A Record)	

[Listeners and rules](#) | [Network mapping](#) | [Resource map - new](#) | [Security](#) | [Monitoring](#) | [Integrations](#) | [Attributes](#) | [Capacity - new](#) | [Tags](#)

**Listeners and rules (1/1)** info

A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

⌵ Manage rules ⌵ Manage listener ⌵ Add listener

⌵ Add rule Edit rules ⌵ Reprioritize rules

Protocol/Port	Default action	Rules	ARN	Security policy	Default SSL/TLS certificate	mTLS	Trust store	Trust store association status	Tags
<a href="#">HTTP:80</a>	Forward to target group <ul style="list-style-type: none"> <li>Demo-Group <span>⌵</span>: 1 (100%)</li> <li>Target group stickiness: Off</li> </ul>	<a href="#">1 rule</a>	<span>⌵</span> ARN	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	<a href="#">0 tags</a>

- Add a rule where if the path is "/test" then traffic should be forwarded to the second target group

**Add condition** Rule limits ⌵

**Rule condition types**

Route traffic based on the condition type of each request. Each rule can include one of each of the following conditions: host-header, path, http-request-method and source-ip. Each rule can include one or more of each of the following conditions: http-header and query-string.

Path ⌵

**Path**  
Define the path. Case sensitive.

is  ⌵

Valid characters are a-z, A-Z, 0-9 and special characters. Path must be 1-128 characters. Character count: 5/128

Add new value

You can add up to 4 more condition values for this rule.

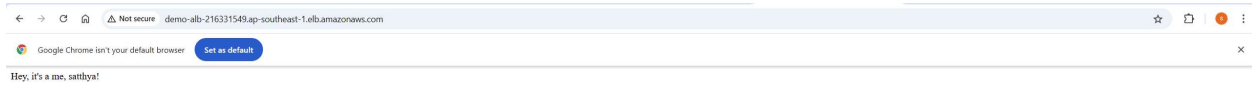
Cancel Confirm

- Click on "Save"
- Test it by going to the browser, insert the address and add "/test" to the address

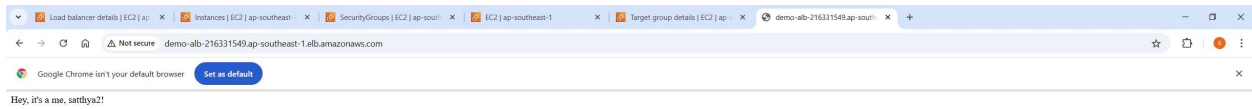
## Output

Load was distributed equally to both instance using load balance after configuration

- First refresh



- Second refresh



- Run the DNS name with /test

