

# 1. Configure Classic Load balancer.

Go to load balancers and create classic load balancer.

aws [Search] [Alt+S] United States (N. Virginia)

EC2 > Load balancers > Create Classic Load Balancer

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

☒ **Internet-facing**

- Serves internet-facing traffic.
- Has public IP addresses.
- DNS name resolves to public IPs.
- Requires a public subnet.

☐ **Internal**

- Serves internal traffic.
- Has private IP addresses.
- DNS name resolves to private IPs.

**Network mapping** [Info](#)

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

**VPC** [Info](#)

loadBalancers.vpcDescriptionClbInternetFacing [Learn more](#)

vpc-06cf45eaab13624fe (default) (default) [Create VPC](#)

172.31.0.0/16

**Availability Zones and subnets**

Select at least one Availability Zone and one subnet for each zone. We recommend selecting at least two Availability Zones. The load balancer will route traffic only to targets in the selected Availability Zones. Availability Zones that are not available for selection.

☒ **us-east-1a (use1-az6)**

**Subnet**

Only CIDR blocks corresponding to the load balancer IP address type are used. At least 8 available IP addresses are required for your load balancer to scale efficiently.

subnet-0a192382de0e2bf6a default-p

IPv4 subnet CIDR: 172.31.0.0/17

**IPv4 address**

Go to ec2-instances and create 2 instances with different zones.while creating add the data of installing httpd and server-no and httpd configuration and index.html file.

```
#!/bin/bash
sudo yum -y install httpd
echo "welcome to server-02" >> /var/www/html/index.html
sudo systemctl start httpd
```

Instances (2/4) [Info](#) Last updated 12 minutes ago [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

[All states](#)

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
<input type="checkbox"/>	instance-us-1b	i-027e4cf530d144227	Terminated	t3.micro	-	<a href="#">View alarms +</a>	us-east-1b	-
<input type="checkbox"/>	instance-us-ea...	i-073389abc90d423a3	Terminated	t3.micro	-	<a href="#">View alarms +</a>	us-east-1a	-
<input checked="" type="checkbox"/>	server-01	i-0f434750791bbc6f3	Running	t3.micro	3/3 checks passed	<a href="#">View alarms +</a>	us-east-1a	ec2-13-2...
<input checked="" type="checkbox"/>	server-02	i-035abf01fd3af62a2	Running	t3.micro	3/3 checks passed	<a href="#">View alarms +</a>	us-east-1b	ec2-3-21...

2 instances selected

Check whether it was running or not with port 80.

Go to loadbalancers and go to target instances and manage instances and add 2 instances.

The screenshot shows the AWS Management Console interface. The left sidebar contains navigation links for EC2, Elastic Block Store, Network & Security, Load Balancing, and Auto Scaling. The main content area is titled 'Load balancers (1/1)' and shows a table with one load balancer named 'classic-loadbalancer'. Below this, the 'Target instances' tab is selected, showing 'Target instances (0)'. A green banner at the top indicates that it might take a few minutes for the load balancer to be fully set up.

**Load balancers (1/1)**

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Name	State	Type	Scheme	IP address type	VPC ID	Availability
classic-loadbalancer	-	classic	-	-	vpc-06cf45eaab13624fe	2 Availabili

**Load balancer: classic-loadbalancer**

Details | Listeners | Network mapping | Security | Health checks | **Target instances** | Monitoring | Attributes | Tags

**Target instances (0)**

Instances currently registered to your load balancer are displayed. To deregister instances, select them, then choose Deregister. To register and deregister instances simultaneously, choose Manage instances.

The screenshot shows the 'Manage instances' page for the 'classic-loadbalancer'. It displays a table of 'Available instances (2/2)'. Both instances are 'Not registered' and in a 'Running' state. Below the table, there is a 'Review selected instances (2)' section with a 'Deselect' button.

**Available instances (2/2)**

Choose from the instances currently available to the load balancer. Selecting an unregistered instance queues it for registration, while deselecting a registered instance queues it for deregistration. Once an instance is queued for deregistration, its details are only displayed here. [Learn more](#).

Registration status	Instance ID	Name	State	Security groups
<input checked="" type="checkbox"/> Not registered	i-035abf01fd3af62a2	server-02	Running	default
<input checked="" type="checkbox"/> Not registered	i-0f434750791bbc6f3	server-01	Running	default

**Review selected instances (2)**

The instances being registered, or remaining registered. Remove instances by selecting them, then choosing Deselect.

Copy the DNS name of load balancer and paste in browser.

EC2 > Load balancers > classic-loadbalancer

**classic-loadbalancer**

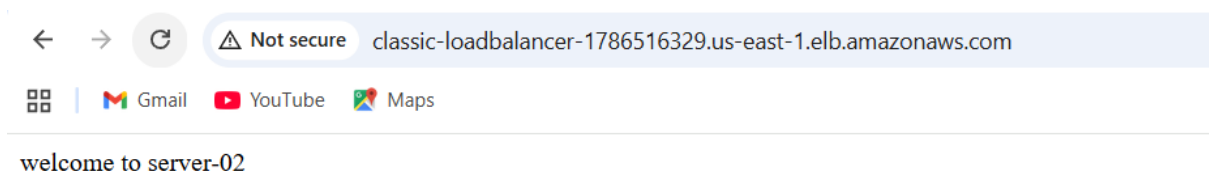
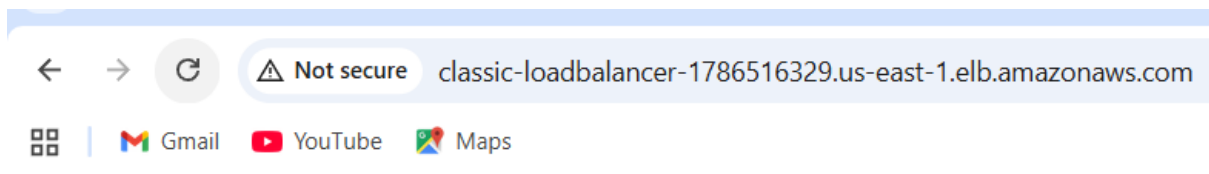
▼ Details

<b>Load balancer type</b> Classic	<b>Status</b> 2 of 2 instances in service	<b>VPC</b> <a href="#">vpc-06cf45eaab13624fe</a>
<b>Scheme</b> Internet-facing	<b>Hosted zone</b> Z35XDOTRQ7X7K	<b>Availability Zones</b> <a href="#">subnet-04f12a817188fcadc</a> 1b (use1-az1) <a href="#">subnet-0a192382de0e2bf6a</a> 1a (use1-az6)

**DNS name** [Info](#)  
[classic-loadbalancer-1786516329.us-east-1.elb.amazonaws.com](#) (A Record)

ⓘ This Classic Load Balancer can be migrated to a next generation load balancer. Migration wizard uses your load balance configurations to create a new load balancer. [Learn more](#)

► **Distribution of targets by Availability Zone (AZ)**  
For each enabled Availability Zone, you can view the number of registered instances and their current health states. Selecting any values here



## 2. Configure Application Load balancer.

Go to load balancers and click on application load balancer and create application load balancer.

aws

Search

[Alt+S]

Unit

EC2 > Load balancers > Create Application Load Balancer

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

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request content. When a connection request arrives, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

► How Application Load Balancers work

### Basic configuration

**Load balancer name**  
Name must be unique within your AWS account and can't be changed after the load balancer is created.  
  
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 resolves to public IPs.
- Requires a public subnet.

☐ **Internal**

- Serves internal traffic.
- Has private IP addresses.
- DNS name resolves to private IPs.
- Compatible with the IPv4 and Dualstack IP address types.

**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...  
☒ IPv4

EC2 > Load balancers > Create Application Load Balancer

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...

▼ Listener HTTP:80

**Protocol**

**Port**  
  
1-65535

**Default action** [Info](#)  
The default action is used if no other rules apply. Choose the default action for traffic on this listener.

**Routing action**

☒ Forward to target groups☐ Redirect to URL

**Forward to target group** [Info](#)  
Choose a target group and specify routing weight or [create target group](#).

**Target group**

☒ **Weight**  
  
0-999

**+ Add target group**  
You can add up to 4 more target groups.

**Target group stickiness** [Info](#)  
Enables the load balancer to bind a user's session to a specific target group. To use stickiness the client must support cookies. If you want to bind a user's session to a specific target group, you must turn on target group stickiness.  
☐ Turn on target group stickiness

CloudShell

Feedback

For this we need target groups so,go to target groups and create target groups.

- Step 1
- Create target group
- Step 2
- Register targets

## Create target group

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

### Basic configuration

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

#### Choose a target type

☒ Instances

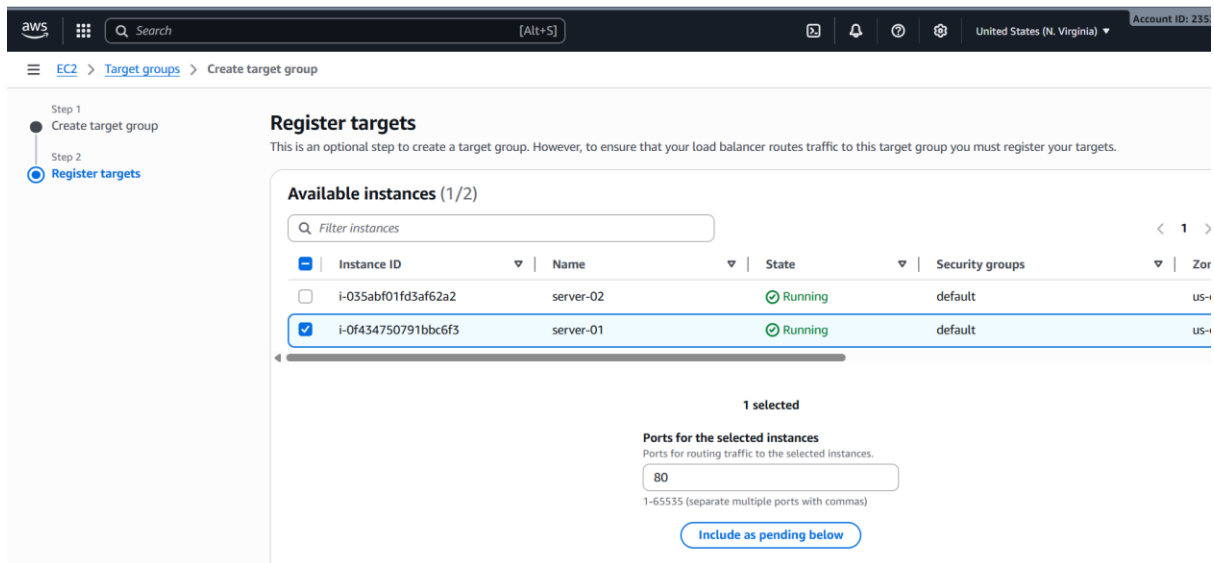
- Supports load balancing to instances within a specific VPC.
- Facilitates the use of [Amazon EC2 Auto Scaling](#) to manage and scale your EC2 instances.

☐ IP addresses

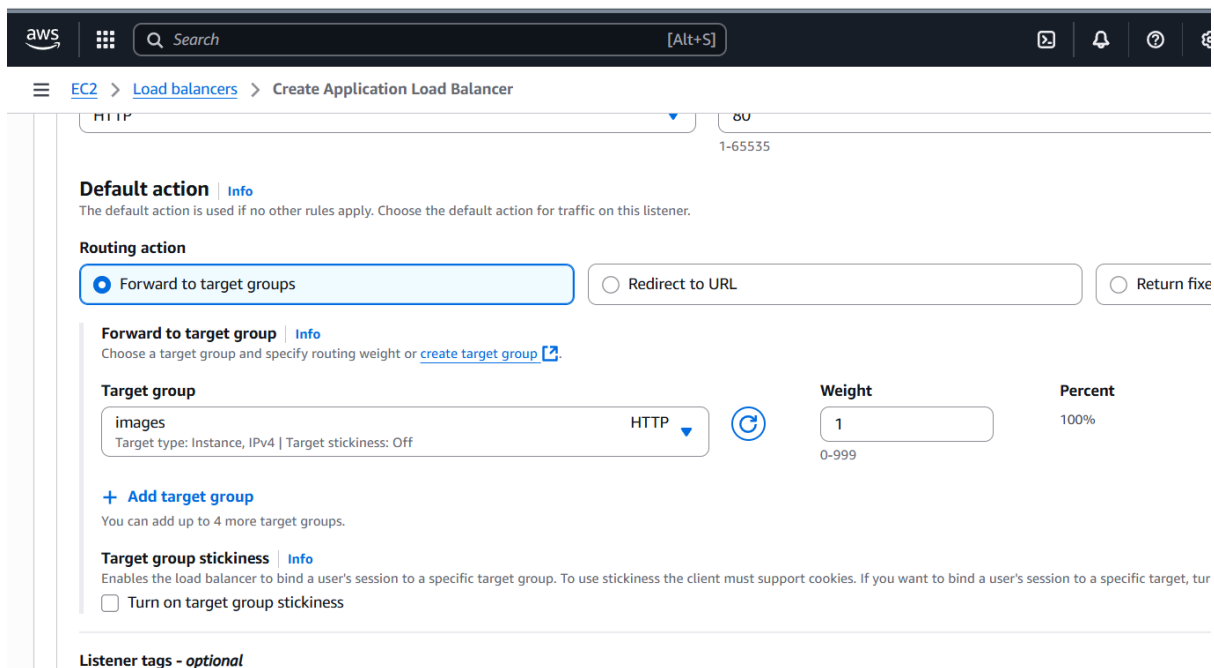
- Supports load balancing to VPC and on-premises resources.
- Facilitates routing to multiple IP addresses and network interfaces on the same network.
- Offers flexibility with microservice based architectures, simplifying inter-application communication.
- Supports IPv6 targets, enabling end-to-end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

☐ Lambda function

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



Go to creating loadbalancer and give the default path and create.



If we go to target groups and go to targets it will be initialising.

**► Distribution of targets by Availability Zone (AZ)**  
Select values in this table to see corresponding filters applied to the Registered targets table below.

**Targets** | Monitoring | Health checks | Attributes | Tags

**Registered targets (1)** [Info](#) [Anomaly mitigation: Not applicable](#) [Deregister](#) [Register targets](#)

Target groups route requests to individual registered targets using the protocol and port number specified. Health checks are performed on all registered targets according to the target group's health check settings. Anomaly detection is automatically applied to HTTP/HTTPS target groups with at least 3 healthy targets.

<input type="checkbox"/>	Instance ID	Name	Port	Zone	Health status	Health status details	Admini...	0
<input type="checkbox"/>	i-0f434750791bbc6f3	server-01	80	us-east-1a (us...	Initial	Target registration is i...	No override.	N

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Copy loadbalancer dns and add port 80

← → ↻ ⚠ Not secure application-loadbalancer-1634892184.us-east-1.elb.amazonaws.com

🗪 | 📧 Gmail 📺 YouTube 📍 Maps

welcome to server-01

When we do with port number and /images it shows not found.

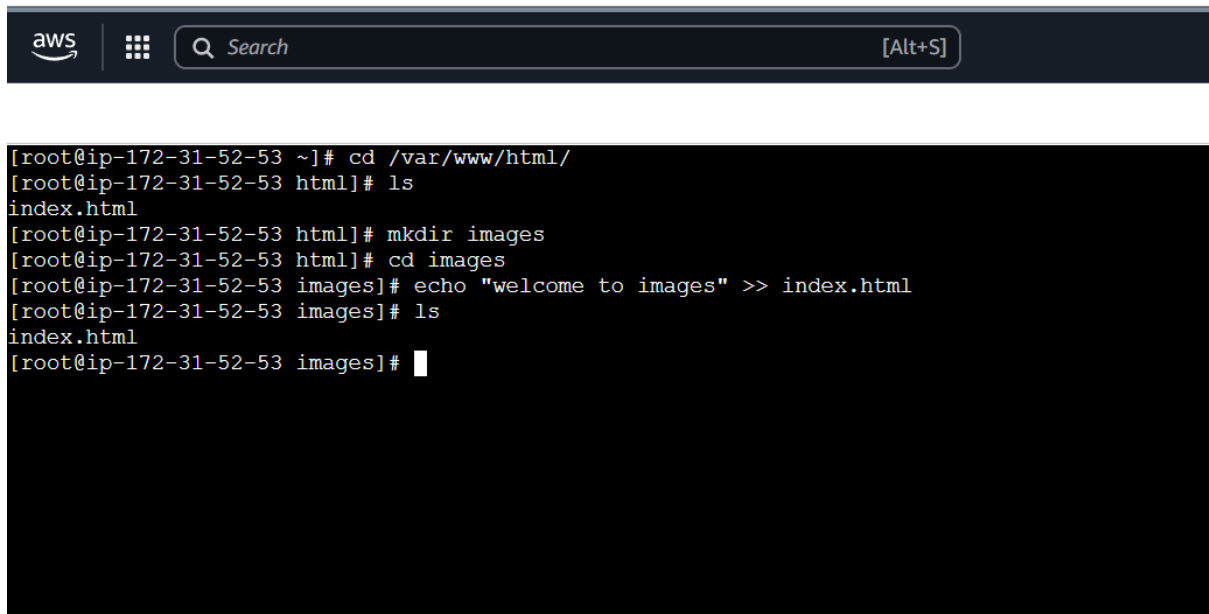
← → ↻ ⚠ Not secure application-loadbalancer-1634892184.us-east-1.elb.amazonaws.com/images

🗪 | 📧 Gmail 📺 YouTube 📍 Maps

## Not Found

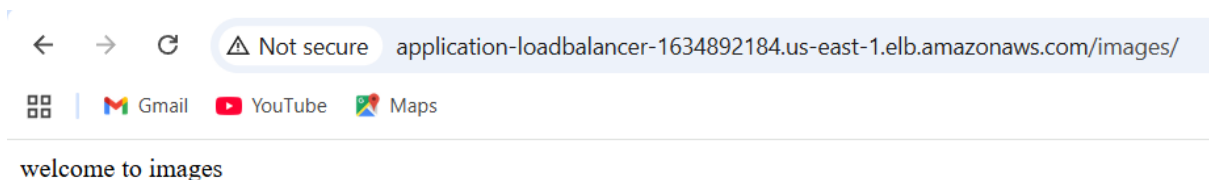
The requested URL was not found on this server.

So we need to configure that images so, we need to login to that server and go to create a directory mkdir images and create echo "welcome to images">>index.html

A screenshot of an AWS CLI terminal window. The top bar shows the AWS logo, a search bar with the text "Search", and a keyboard shortcut "[Alt+S]". The terminal output shows a series of commands and their results: the user navigates to /var/www/html, lists the contents (showing index.html), creates a new directory named 'images', changes to that directory, echoes the text "welcome to images" into index.html, and lists the contents again to confirm the file is there.

```
[root@ip-172-31-52-53 ~]# cd /var/www/html/
[root@ip-172-31-52-53 html]# ls
index.html
[root@ip-172-31-52-53 html]# mkdir images
[root@ip-172-31-52-53 html]# cd images
[root@ip-172-31-52-53 images]# echo "welcome to images" >> index.html
[root@ip-172-31-52-53 images]# ls
index.html
[root@ip-172-31-52-53 images]#
```

Now if you access that page it will redirect to images.



### 3. Configure Network Load balancer.

Go to load balancers and create network load balancer.



aws

Search

[Alt+S]

EC2 > Load balancers > Create Network Load Balancer

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

The Network Load Balancer distributes incoming TCP and UDP traffic across multiple targets such as Amazon EC2 instances, microservices, and containers. W based on the protocol and port that are specified in the listener configuration, and the routing rule specified as the default action.

► How Network Load Balancers work

### Basic configuration

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

networkloadbalancer

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

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

☒ Internet-facing

- Serves internet-facing traffic.
- Has public IP addresses.
- DNS name resolves to public IPs.
- Requires a public subnet.

☐ Internal

- Serves internal traffic.
- Has private IP addresses.
- DNS name resolves to private IPs.

**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.

☒ IPv4

## Create target groups

aws

Search

[Alt+S]

EC2 > Target groups > Create target group

Step 1

☒ Create target group

Step 2

☐ Register targets

## Create target group

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.

EC2 > Target groups > Create target group

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

network

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

Protocol

Protocol for load balancer-to-target communication. Can't be modified after creation.

TCP

Port

Port number where targets receive traffic. Can be overridden for individual targets during registration.

80

1-65535

IP address type

Only targets with the indicated IP address type can be registered to this target group.

IPv4

Each instance has a default network interface (eth0) that is assigned the primary private IPv4 address. The instance's primary private IPv4 address is the one that will be applied to the target.

IPv6

Each instance you register must have an assigned primary IPv6 address. This is configured on the instance's default network interface (eth0). [Learn more](#)

VPC

Select the VPC with the instances that you want to include in the target group. Only VPCs that support the IP address type selected above are available in this list.

CloudShell

Feedback

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## Register targets

Select instances, specify ports, and add the instances to the list of pending targets. Repeat to add additional combinations of instances and ports to the list of pending targets. Once you are satisfied with your selections, click Register pending targets.

Available instances (2)

Filter instances

< 1 >

<input type="checkbox"/>	Instance ID	Name	State	Security groups	Zone	Private IPv4 address
<input type="checkbox"/>	i-0252f731635de4637	server-02	Running	default	us-east-1b	172.31.159.201
<input type="checkbox"/>	i-056fbf494a46d2ce2	server-01	Running	default	us-east-1a	172.31.75.82

aws

Search

[Alt+S]

United States (N. Virginia)

EC2 > Load balancers > network-loadbalancer

AMI Catalog

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

Load Balancing

Load Balancers

Target Groups

Trust Stores

Auto Scaling

Auto Scaling Groups

Settings

Successfully created load balancer

network-loadbalancer

Details

Load balancer type

Network

Status

Provisioning

VPC

vpc-06cf45eaab13624fe

Load balancer IP

IPv4

Scheme

Internet-facing

Hosted zone

Z26RNL4JYFTOTI

Availability Zones

subnet-04f12a817188fcadc us-east-1b (use1-az1)

subnet-0a192382de0e2bf6a us-east-1a (use1-az6)

Date created

October 10, 2021

Load balancer ARN

arn:aws:elasticloadbalancing:us-east-1:235351028455:loadbalancer/net/network-loadbalancer/293373af9e053025

DNS name

network-loadbalancer-293373af9e053025.elb.us-east-1.amazonaws.com

Listeners

Network mapping

Resource map

Security

Monitoring

Integrations

Attributes

Capacity

Listeners (1)

Actions






Copy the load balancer url and paste it.

welcome to server-01

welcome to server-02

## 4. Attach SSL for application load balancer.

Go to loadbalancers and select your ALB and go to listeners and rules and select add rule-HTTPS-443.

   [Alt+S]   

[EC2](#) > [Load balancers](#) > [application-loadbalancer](#) > Add listener

### Add listener [Info](#)

Add a listener to your Application Load Balancer (ALB) to define how client requests and network traffic are routed within your application. Every listener is made up of one or more rules. Additional rules can be added, edited and deleted from the listener.

► **Load balancer details:** application-loadbalancer

**Listener: HTTPS:443**

A listener checks for connection requests using the protocol and port that you configure. The default action and any additional rules that you create determine how traffic is routed to registered targets.

**Protocol**

Used for connections from clients to the load balancer.

HTTPS ▼

**Port**

The port on which the load balancer is listening for connections.

443

1-65535

**Default action** [Info](#)

The default action is used if no other rules apply. Choose the default action for traffic on this listener.

**Authentication action - optional** [Info](#)

Authentication requires IPv4 connectivity to authentication endpoints. [Learn more](#)

☐ **Authenticate users**

Configure user authentication through either OpenID Connect (OIDC) or Amazon Cognito.

**Routing action**

Create your target groups for https and select your acm certificate

[Security policy](#) | [Info](#)

Security category	Policy name
-------------------	-------------

**Policy name**

All security policies ▾ ELBSecurityPolicy-TLS13-1-2-Res-2021-06 (recomm

The certificate used if a client connects without SNI protocol, or if there are no matching certificates. You can source this certificate from AWS Certificate Manager. This certificate will automatically be added to your listener certificate list.

☒ From ACM ☐ From IAM

The selected certificate will be applied as the default SSL/TLS server certificate for this load balancer's secure listeners.

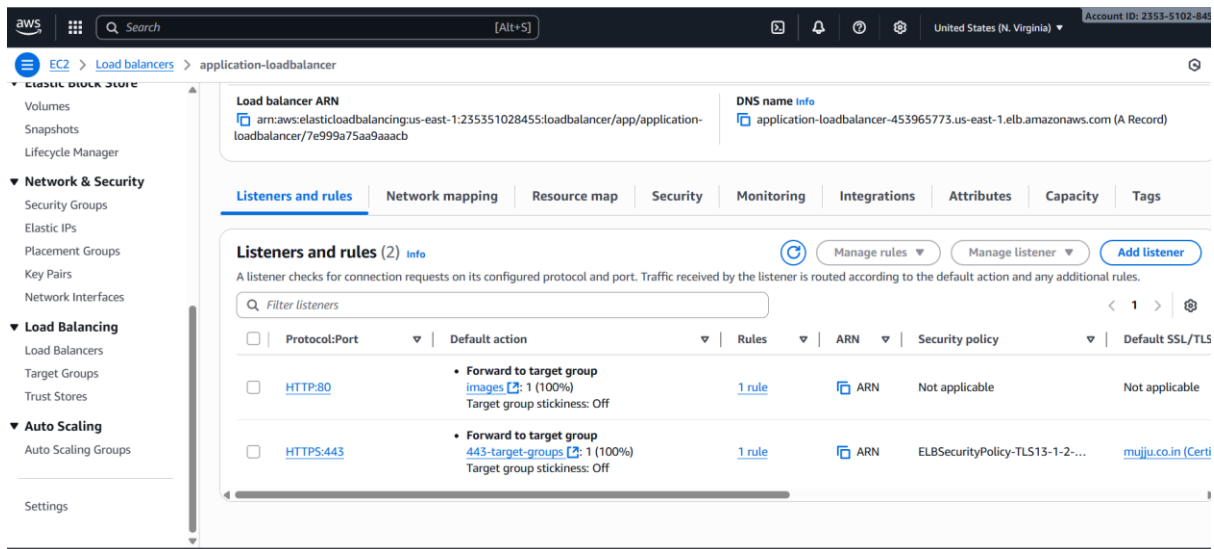
mujju.co.in 66b0e303-ccc9-435e-8769-214eaae3a835

[Request new ACM certificate](#) 

Client certificates are used to make authenticated requests to remote servers. [Learn more](#)

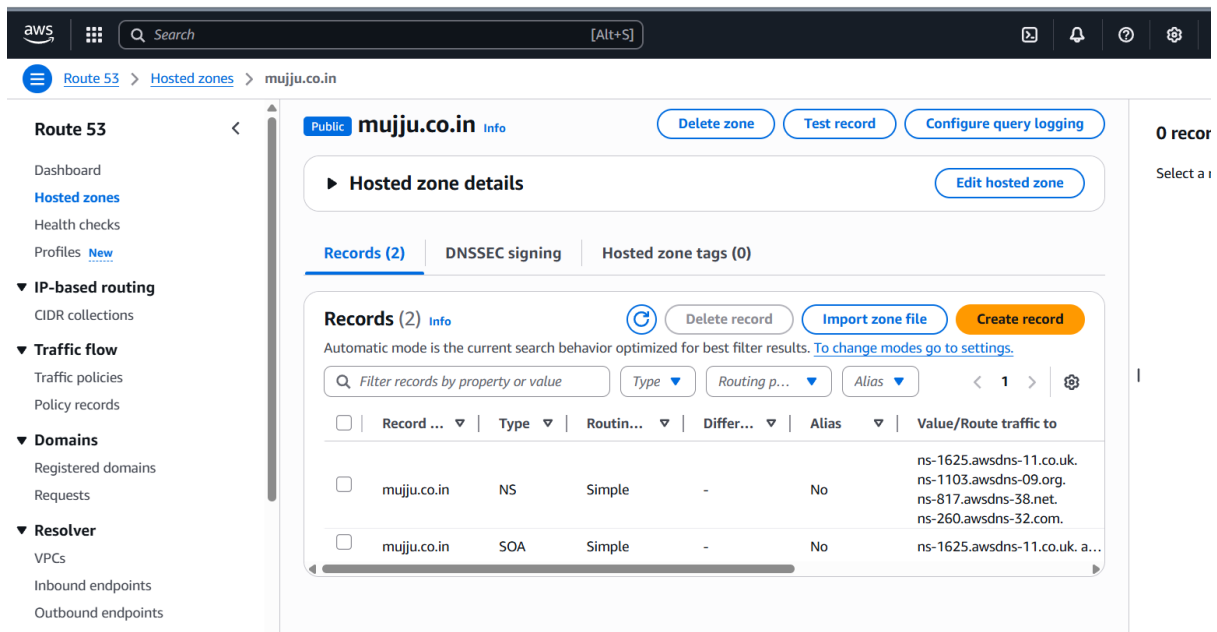
☐ **Mutual authentication (mTLS)**  
Mutual TLS (Transport Layer Security) authentication offers two-way peer authentication. It adds a layer of security over TLS and allows your server to verify the identity of the client.

Mutual TLS (Transport Layer Security) authentication offers two-way peer authentication. It adds a layer of security over TLS and allows your server



## 5.Map Application load balancer to R53.

Go to ec2 and select your alb load balancer copy the DNS name and go to route53 and select your domain



Select create record and select alias,route traffic to ALB,select region, select load balancer create record.

**Record 1**

Record name:  mujju.co.in

Record type: A – Routes traffic to an IPv4 address and some AWS resources

Route traffic to: Alias to Application and Classic Load Balancer

US East (N. Virginia)

Use: "dualstack.application-loadbalancer-453965773.us-east-1.elb.amazonaws.com"

Simple routing: ☐ Yes ☒ No

[Add another record](#)

[Cancel](#) [Create records](#)

**Route 53**

Dashboard

Hosted zones

Health checks

Profiles [New](#)

▼ IP-based routing

CIDR collections

▼ Traffic flow

Traffic policies

Policy records

▼ Domains

Registered domains

Requests

▼ Resolver

VPCs

Inbound endpoints

Outbound endpoints

Private

**Records (3)**

Automatic mode is the current search behavior optimized for best filter results. [To change modes go to settings.](#)

<input type="checkbox"/>	Record ...	Type	Routin...	Differ...	Alias	Value/Route traffic to
<input type="checkbox"/>	mujju.co.in	A	Simple	-	Yes	dualstack.application-loadba...
<input type="checkbox"/>	mujju.co.in	NS	Simple	-	No	ns-1625.awsdns-11.co.uk. ns-1103.awsdns-09.org. ns-817.awsdns-38.net. ns-260.awsdns-32.com.
<input type="checkbox"/>	mujju.co.in	SOA	Simple	-	No	ns-1625.awsdns-11.co.uk. a...

go to browser and search for your domain the alias record will redirect the page to nginx that you are installed application init.

---

## Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](http://nginx.org).  
Commercial support is available at [nginx.com](http://nginx.com).

*Thank you for using nginx.*

welcome to server-02

## 6. Push the application load balancer logs to S3.

Go to s3 buckets and go to permissions and add the script.

```
{  
  "Version": "2012-10-17",  
  "Statement": [  
    {  
      "Effect": "Allow",  
      "Principal": {  
        "Service":  
"logdelivery.elasticloadbalancing.amazonaws.com"  
      },  
      "Action": "s3:PutObject",  
      "Resource": "arn:aws:s3:::amzn-s3-demo-  
bucket/prefix/AWSLogs/123456789012/*"  
    }  
  ]  
}
```

] }

The screenshot shows the AWS IAM console interface. At the top, there's a navigation bar with the AWS logo, a search bar, and a menu icon. Below the navigation bar, the breadcrumb trail reads "Amazon S3 > Buckets > app-bucket02345". A green success message banner at the top of the main content area states "Successfully edited bucket policy." Below this, a large text area displays the JSON policy document:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "Service": "logdelivery.elasticloadbalancing.amazonaws.com"
      },
      "Action": "s3:PutObject",
      "Resource": "arn:aws:s3:::app-bucket02345/prefix/AWSLogs/235351028455/*"
    }
  ]
}
```

Go to ALB and select attributes and enable access logs

The screenshot shows the AWS Elastic Load Balancing console. The navigation bar at the top includes the AWS logo, a search bar, and a menu icon. The breadcrumb trail reads "EC2 > Load balancers > application-loadbalancer > Edit load balancer attributes". The main content area is divided into three sections:

- Zonal shift**: A section with a radio button labeled "Enable". Below it, a note states: "Zonal shift will be available to the load balancer."
- Protection**: A section with a checkbox labeled "Deletion protection". Below it, a note states: "To prevent your load balancer from being deleted accidentally, turn on deletion protection. If you turn on deletion protection, you must turn it off before you can delete the load balancer."
- Monitoring**: A section with a checked checkbox labeled "Access logs". Below it, a note states: "Access logs deliver detailed logs of all requests made to your Elastic Load Balancer. Choose an existing S3 location. If you don't specify a prefix, the logs are stored in the root of the bucket. Additional charges apply. [Learn more](#)". Below this, there is a text input field labeled "S3 URI" containing the value "s3://app-bucket02345". To the right of the input field are buttons for "View" and "B". Below the input field, a note states: "Format: s3://bucket/prefix". At the bottom, there is a checkbox labeled "Connection logs". Below it, a note states: "Connection logs deliver detailed logs of all connections made to your Elastic Load Balancer. Choose an existing S3 location. If you don't specify a prefix, the logs are stored in the root of the bucket. Additional charges apply. [Learn more](#)".



