

Problem Statement:

You work for XYZ Corporation that uses on premise solutions and a limited number of systems. With the increase in requests in their application, the load also increases. So, to handle the load the corporation has to buy more systems almost on a regular basis. Realizing the need to cut down the expenses on systems, they decided to move their infrastructure to AWS.

2. Create a load balancer to distribute the load between compute resources.

The screenshot shows the 'Create Application Load Balancer' wizard in the AWS Management Console. The page title is 'Create Application Load Balancer'. Below the title, there is a brief description of the load balancer's function. The 'Basic configuration' section is active, showing the 'Load balancer name' field with the value 'demo-lb'. The 'Scheme' section has two options: 'Internet-facing' (selected) and 'Internal'. The 'Load balancer IP address type' section has two options: 'IPv4' (selected) and 'Dualstack'. The bottom of the page shows the AWS logo, a search bar, and navigation links for 'EC2' and 'Load balancers'.

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 attributes. When the load balancer receives a connection request, 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 cost.

☒ **IPv4**
Includes only IPv4 addresses.

☐ **Dualstack**

The screenshot shows the 'Create Application Load Balancer' wizard in the AWS Management Console, Step 2: Availability Zones and subnets. The page title is 'Create Application Load Balancer'. Below the title, there is a brief description of the load balancer's function. The 'Availability Zones and subnets' section is active, showing a list of availability zones and subnets. The 'us-east-1a (use1-az2)' zone is selected, and the 'subnet-0f611e21b8cc81f3b' subnet is chosen. The 'us-east-1b (use1-az4)' zone is also selected, and the 'subnet-012d590a3c6d19642' subnet is chosen. The 'us-east-1c (use1-az6)' zone is also selected, and the 'subnet-08d2972ac79bdc996d' subnet is chosen. The 'us-east-1d (use1-az1)' zone is also selected, and the 'subnet-0a9ed3914328bcd7c' subnet is chosen. The 'us-east-1e (use1-az3)' zone is also selected, and the 'subnet-012d590a3c6d19642' subnet is chosen. The bottom of the page shows the AWS logo, a search bar, and navigation links for 'EC2' and 'Load balancers'.

Availability Zones and subnets info
Select at least two Availability Zones and a subnet for each zone. A load balancer node will be placed in each selected zone and will automatically scale in response to traffic. The load balancer routes traffic to targets in the selected Availability Zones only.

☒ **us-east-1a (use1-az2)**

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.

IPv4 subnet CIDR: 172.31.80.0/20

☒ **us-east-1b (use1-az4)**

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.

IPv4 subnet CIDR: 172.31.16.0/20

☒ **us-east-1c (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.

IPv4 subnet CIDR: 172.31.32.0/20

☒ **us-east-1d (use1-az1)**

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.

IPv4 subnet CIDR: 172.31.0.0/20

☒ **us-east-1e (use1-az3)**

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.

IPv4 subnet CIDR: 172.31.16.0/20

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https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateALBWizard:

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EC2 > Load balancers > Create Application Load Balancer

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: Forward to Select a target group 1-65535 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

You can add up to 49 more listeners.

► **Load balancer tags - optional**

Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them. The 'Key' is required, but 'Value' is optional. For example, you can have Key = production-webserver, or Key = webserver, and Value = production.

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https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup:protocol=HTTP&vpc=vpc-02196942317ad486

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EC2 > Target groups > Create target group

Step 1 Specify group details

Step 2 Register targets

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**

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https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup:protocol=HTTP&vpc=vpc-02196942317add486

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EC2 Target groups Create target group

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.

vpc-02196942317add486 (default) Create VPC

Protocol version

- ☒ **HTTP1**
Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.
- ☐ **HTTP2**
Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.
- ☐ **gRPC**
Send requests to targets using gRPC. Supported when the request protocol is gRPC.

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

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EC2 Target groups Create target group

Step 1 Specify group details
Step 2 **Register targets**

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 (1/2)

Filter instances

<input type="checkbox"/>	Instance ID	Name	State	Security groups	Zone
<input type="checkbox"/>	i-074a8e96a9cb437f8		Running	launch-wizard-29	us-east-1c
<input checked="" type="checkbox"/>	i-0eaff80f0cbc2f09	auto-scaling-demo	Running	launch-wizard-29	us-east-1b

1 selected

Ports for the selected instances
Ports for routing traffic to the selected instances.

80

1-65535 (separate multiple ports with commas)

Include as pending below

Review targets

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EC2 > Load balancers > Create Application Load Balancer

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: Info
Forward to: lb-target-gp Target type: Instance, IPv4 HTTP ⓘ
[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](#)
You can add up to 49 more listeners.

► **Load balancer tags - optional**
Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them. The 'Key' is required, but 'Value' is optional. For example, you can have Key = `prod-website` and Value = `www.example.com` and a Value = `production`.

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EC2 > Load balancers

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

Load balancers (1/1)

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

Filter load balancers

<input checked="" type="checkbox"/>	Name	State	Type	Scheme	IP address type	VPC ID	Availability Zones
<input checked="" type="checkbox"/>	demo-lb	Provisioning...	application	Internet-facing	IPv4	vpc-02196942317add4...	6 Availability Zones

demo-lb

Load balancer: demo-lb

< [Details](#) [Listeners and rules](#) [Network mapping](#) [Resource map](#) [Security](#) [Monitoring](#) [Integrations](#) [Attributes](#) [Capacity](#) >

Details

Load balancer type Application	Status Provisioning	VPC vpc-02196942317add486	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z35SXDOTRQ7X7K	Availability Zones subnet-0c3e601c1bdf99c4d us-east-1e (use1-az3)	Date created August 13, 2025, 15:35 (UTC+05:30)

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Edit Auto Scaling group | EC2 | us-east-1

Load balancers | EC2 | us-east-1

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#EditAutoScalingGroup?id=my-auto-scaling-gp

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EC2 > Auto Scaling groups > my-auto-scaling-gp > Edit

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

Load balancers

☒ Application, Network or Gateway Load Balancer target groups

Only instance target groups that belong to the same VPC as your Auto Scaling group are available for selection.

Select target groups

lb-target-gp | HTTP

Application Load Balancer: demo-lb

☐ Classic Load Balancers

Create and attach new load balancers

Add a new load balancer

VPC Lattice integration options - optional

To improve networking capabilities and scalability, integrate your Auto Scaling group with VPC Lattice. VPC Lattice facilitates communications between AWS services and helps you connect and manage your applications across compute services in AWS.

Select VPC Lattice service to attach

☒ No VPC Lattice service

VPC Lattice will not manage your Auto Scaling group's network access and connectivity with other services.

☐ Attach to VPC Lattice service

Incoming requests associated with specified VPC Lattice target groups will be routed to your Auto Scaling group.

Create new VPC Lattice service

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