

# Load Balancer

- Create VPC and subnet

The screenshot shows the 'Create VPC' page in the AWS Management Console. The breadcrumb navigation is 'VPC > Your VPCs > Create VPC'. The page title is 'Create VPC' with an 'Info' link. A descriptive text states: 'A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances.' The 'VPC settings' section includes: 'Resources to create' with 'VPC only' selected; 'Name tag - optional' with the value 'MyVPC'; 'IPv4 CIDR block' with 'IPv4 CIDR manual input' selected and the value '172.21.0.0/17' entered. A note specifies: 'CIDR block size must be between /16 and /28.'

The screenshot shows the 'Subnet 1 of 2' configuration page. It includes: 'Subnet name' with the value 'PublicCN'; 'Availability Zone' set to 'US East (N. Virginia) / us-east-1a'; 'IPv4 VPC CIDR block' set to '172.21.0.0/17'; and 'IPv4 subnet CIDR block' with the value '172.21.0.0/23' and a range of '512 IPs'.

The screenshot shows the 'Subnet 2 of 2' configuration page. It includes: 'Subnet name' with the value 'PublicCN-2'; 'Availability Zone' set to 'US East (N. Virginia) / us-east-1a'; 'IPv4 VPC CIDR block' set to '172.21.0.0/17'; and 'IPv4 subnet CIDR block' with the value '172.21.123.0/23' and a range of '512 IPs'. At the bottom, there is a section for 'Tags - optional' with a table structure for 'Key' and 'Value - optional'.

Create Internet Gateway, then attach to VPC

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## Create internet gateway Info

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

### Internet gateway settings

**Name tag**  
Creates a tag with a key of 'Name' and a value that you specify.

MyGTW

### Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional

Q Name X Q MyGTW X Remove

Add new tag

You can add 49 more tags.

Cancel Create internet gateway

## Create RouteTable

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## Create route table Info

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

### Route table settings

**Name - optional**  
Create a tag with a key of 'Name' and a value that you specify.

PublicRT

**VPC**  
The VPC to use for this route table.

vpc-0a1bd482bac2f8616 (MyVPC)

### Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional

Q Name X Q PublicRT X Remove

Add new tag

## Associate both Subnets

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VPC dashboard X

EC2 Global View

Filter by VPC: Select a VPC

Virtual private cloud

- Your VPCs
- Subnets
- Route tables
- Internet gateways
- Egress-only internet gateways
- Carrier gateways
- DHCP option sets
- Elastic IPs
- Managed prefix lists
- Endpoints
- Endpoint services
- NAT gateways

rtb-06e751098b45490c4 / PublicRT

Actions

### Details Info

Route table ID rtb-06e751098b45490c4	Main No	Explicit subnet associations 2 subnets	Edge associations -
VPC vpc-0acc80f5df5b1e660   My-VPC	Owner ID 992382819518		

Routes Subnet associations Edge associations Route propagation Tags

### Explicit subnet associations (2)

Edit subnet associations

Find subnet association

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
PublicSN-2	subnet-08ba79935add9cd36	172.21.122.0/23	-
PublicSN-1	subnet-00fb0872796a99832	172.21.0.0/23	-

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EC2 > Instances > Launch an instance

## Launch an instance

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

### Name and tags

Name

[Add additional tags](#)

### Application and OS Images (Amazon Machine Image)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

### Summary

Number of instances

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...[read more](#)

ami-0440d3b780d96b29d

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

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Network settings

VPC - required

vpc-0acc80f5df5b1e660 (My-VPC)

Subnet

subnet-00fb0872796a99832

PublicSN-1

Auto-assign public IP

Enable

Firewall (security groups)

Create security group

Select existing security group

Security group name - required

Application\_1\_SG

### Summary

Number of instances

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...[read more](#)

ami-0440d3b780d96b29d

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

In SG SSH, HTTP

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Network settings

VPC - required

vpc-0acc80f5df5b1e660 (My-VPC)

Subnet

subnet-00fb0872796a99832

PublicSN-1

Auto-assign public IP

Enable

Firewall (security groups)

Create security group

Select existing security group

Security group name - required

Application\_1\_SG

### Summary

Number of instances

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...[read more](#)

ami-0440d3b780d96b29d

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

In advance add script to start directly

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Select

User data - optional Info

Upload a file with your user data or enter it in the field.

Choose file

```
#!/bin/bash
yum update -y
yum install -y httpd
systemctl start httpd
systemctl enable httpd
echo You_are_in_1st_Application > /var/www/html/index.html
```

☐ User data has already been base64 encoded

Summary

Number of instances Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...read more  
ami-0440d3b780d96b29d

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Cancel Launch instance Review commands

Similarly create 2<sup>nd</sup> instance

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EC2 > Instances > Launch an instance

### Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name

Application2 Add additional tags

▼ Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Summary

Number of instances Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...read more  
ami-0440d3b780d96b29d

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Cancel Launch instance Review commands

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▼ Network settings Info

VPC - required Info

vpc-0acc80f5df5b1e660 (My-VPC)  
172.21.0.0/17

Subnet Info

subnet-08ba79935add9cd36 PublicSubnet-2  
VPC: vpc-0acc80f5df5b1e660 Owner: 992382819518  
Availability Zone: us-east-1a IP addresses available: 507 CIDR: 172.21.122.0/23

Create new subnet

Auto-assign public IP Info

Enable

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

Security group name - required

Application-25G

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-./!@,[]+=&()\$\*

Summary

Number of instances Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...read more  
ami-0440d3b780d96b29d

Virtual server type (instance type)

t2.micro

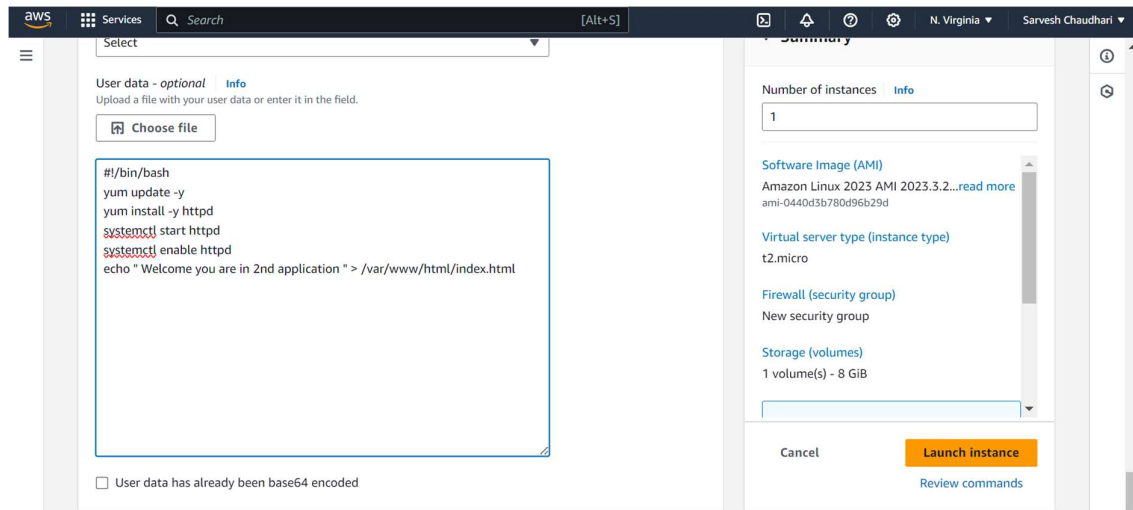
Firewall (security group)

New security group

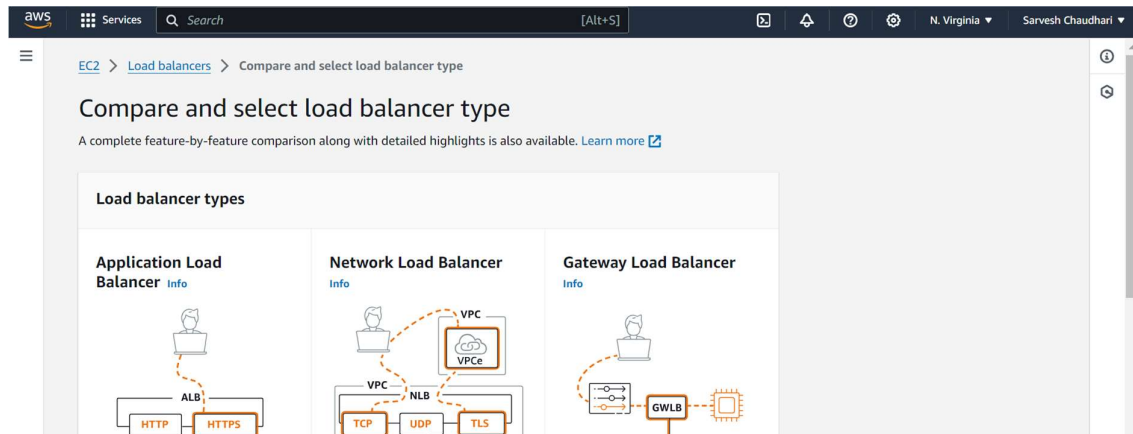
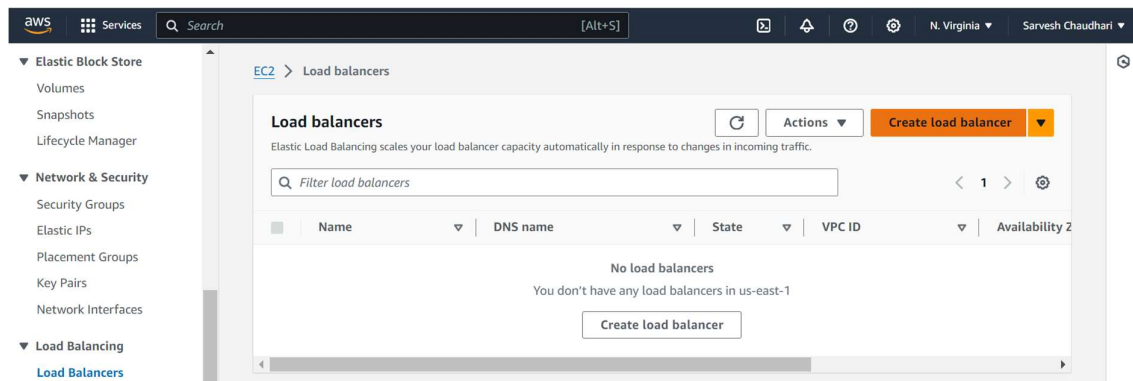
Storage (volumes)

1 volume(s) - 8 GiB

Cancel Launch instance Review commands



Now create Load Balancer



Now create Application LB

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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 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.

Mypool

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**  
An internet-facing load balancer routes requests from clients over the internet to targets. Requires a public subnet. [Learn more](#)

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Network mapping [Info](#)

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

**VPC** [Info](#)  
Select the virtual private cloud (VPC) for your targets or you can [create a new VPC](#). Only VPCs with an internet gateway are enabled for selection. The selected VPC can't be changed after the load balancer is created. To confirm the VPC for your targets, view your [target groups](#).

My-VPC  
vpc-0acc80f5df5b1e660  
IPv4: 172.21.0.0/17

**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.

☒ **us-east-1a (use1-az6)**

Subnet  
subnet-08ba79935add9cd36 PublicSN-2

IPv4 address  
Assigned by AWS

We use new created SG

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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

NewSG\_CRT  
sg-05561a412f453f113 VPC: vpc-0acc80f5df5b1e660

## Now in this create 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

Port

Default action [Info](#)

HTTP ▼

:

80

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.

## Now create target group

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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.

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Target group name

Mypool

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

Protocol : Port

Choose a protocol for your target group that corresponds to the Load Balancer type that will route traffic to it. Some protocols now include anomaly detection for the targets and you can set mitigation options once your target group is created. This choice cannot be changed after creation

HTTP ▼ 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](#)

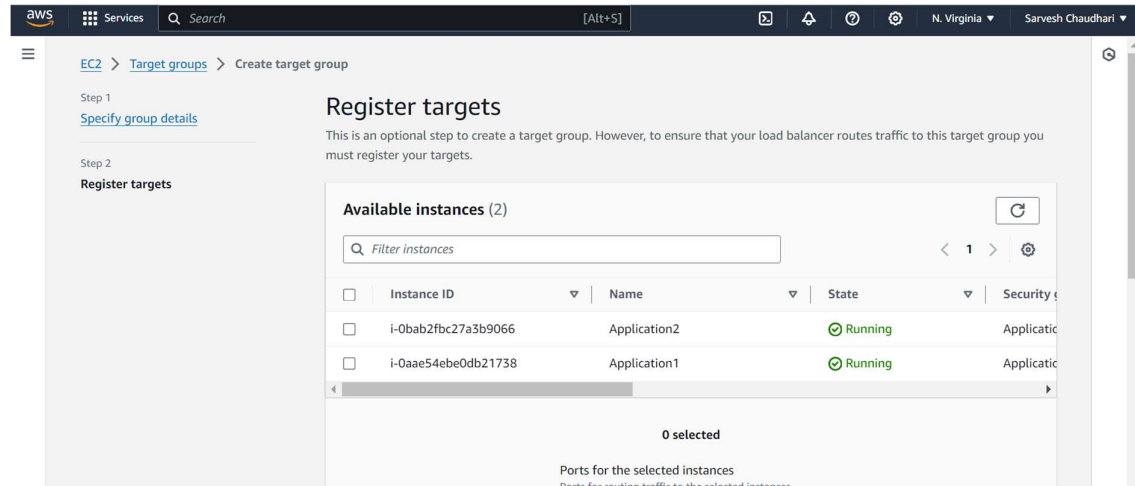
VPC

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.

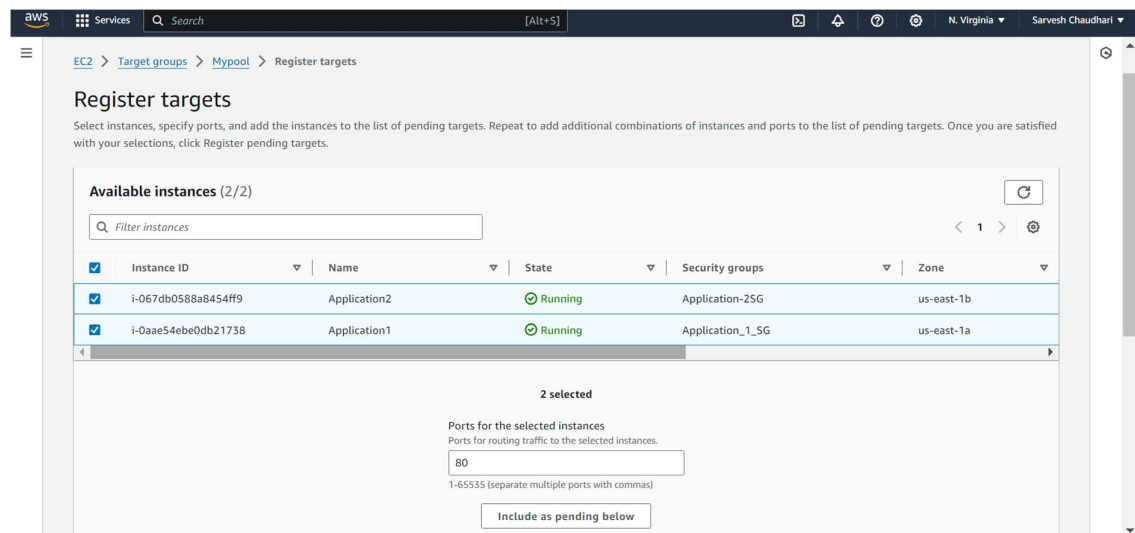
My-VPC  
vpc-0acc80f5df5b1e660  
IPv4: 172.21.0.0/17



## Include instances



Now select instances then click on



Click on Register

Then keep all by default and click on Create Load balancer.

Now to check how unhealthy appear in Load balancer.



**Target groups (1/1) Info**

Name	ARN	Port	Protocol	Target type	Load balance
Mypool	[Redacted]	80	HTTP	Instance	None associated

**Target group: Mypool**

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC <a href="#">vpc-0acc80f5df5b1e660</a>
IP address type IPv4	Load balancer <a href="#">None associated</a>		

2 Total targets	2 Healthy	0 Unhealthy	0 Unused	0 Initial	0 Draining
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Now edit SG of application 1 remove http

As we deny http permission we get one unhealthy IP

**Target groups (1/1) Info**

Name	ARN	Port	Protocol	Target type	Load balance
Mypool	[Redacted]	80	HTTP	Instance	LoadBalancer1

**Target group: Mypool**

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC <a href="#">vpc-0acc80f5df5b1e660</a>
IP address type IPv4	Load balancer <a href="#">LoadBalancer1</a>		

2 Total targets	1 Healthy	1 Unhealthy	0 Unused	0 Initial	0 Draining
	0 Anomalous				