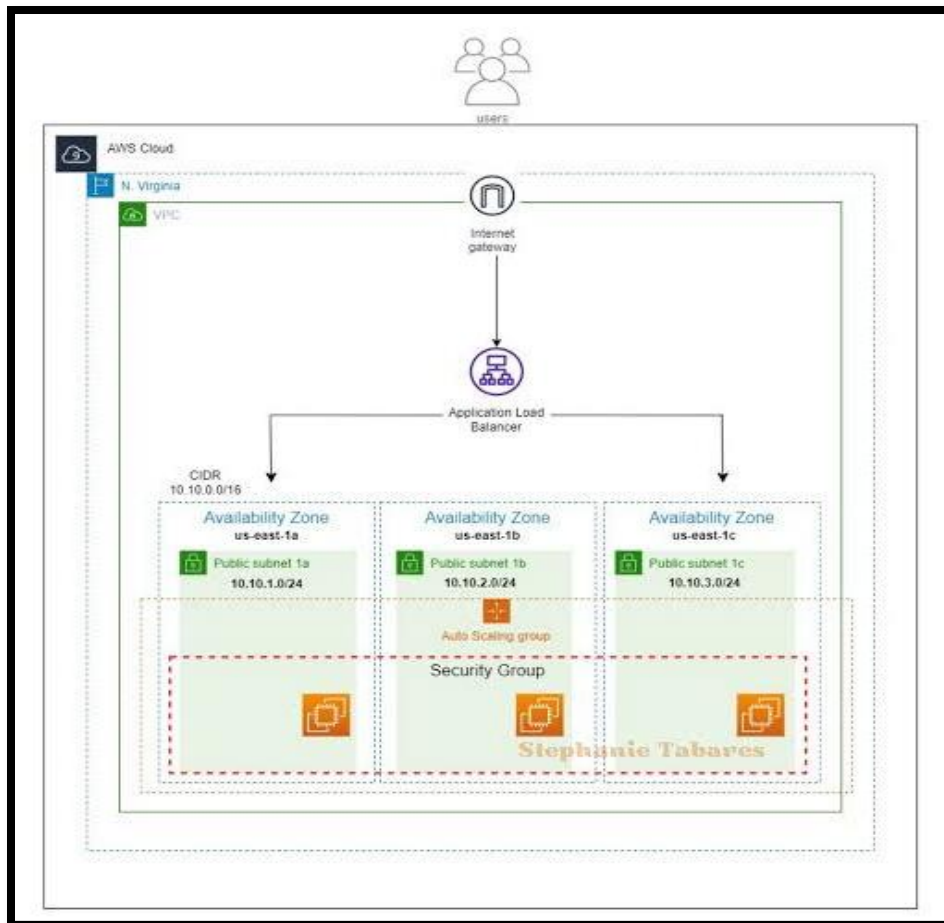


The Architecture given with **HIGH AVAILABILITY, HIGH SCALABILITY, WEB APP DEPLOYMENT, INFRASTRUCTURE**



Let's create step by step according to given architecture

STEP 1 Create a VPC

VPC > Your VPCs > Create VPC

Create VPC [Info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances.

VPC settings

Resources to create [Info](#)
Create only the VPC resource or the VPC and other networking resources.

☒ VPC only ☐ VPC and more

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

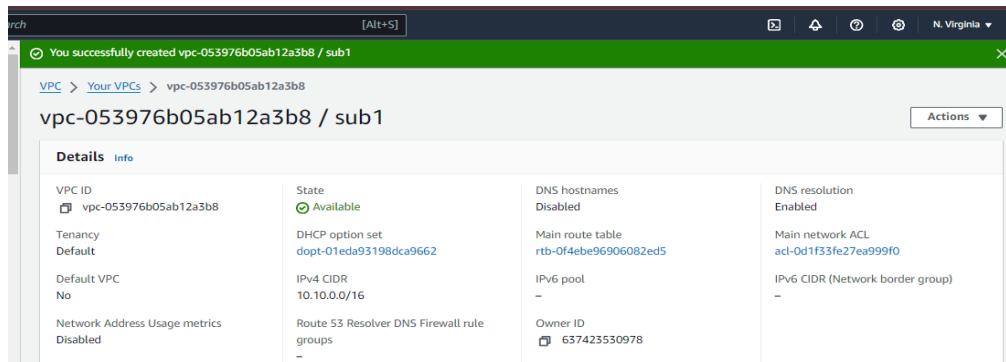
sub1

IPv4 CIDR block [Info](#)
☒ IPv4 CIDR manual input
☐ IPAM-allocated IPv4 CIDR block

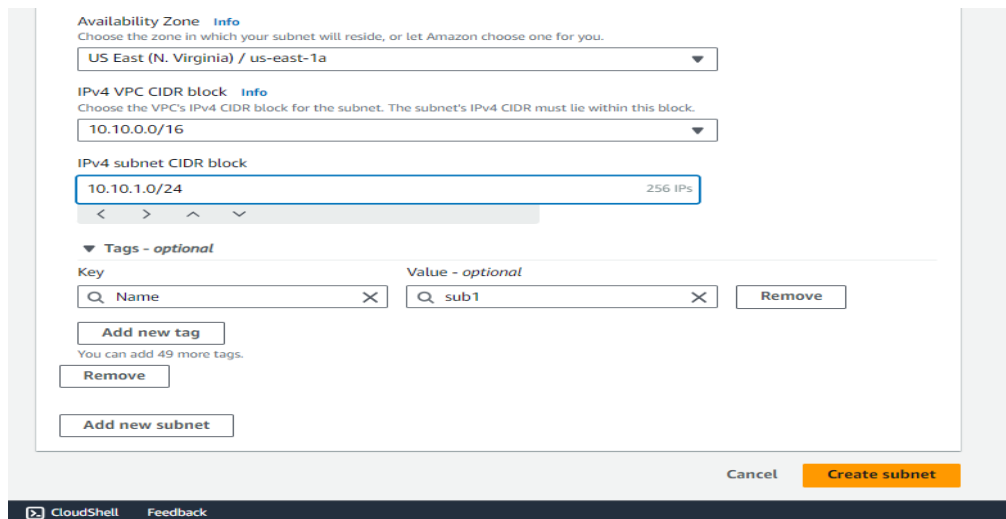
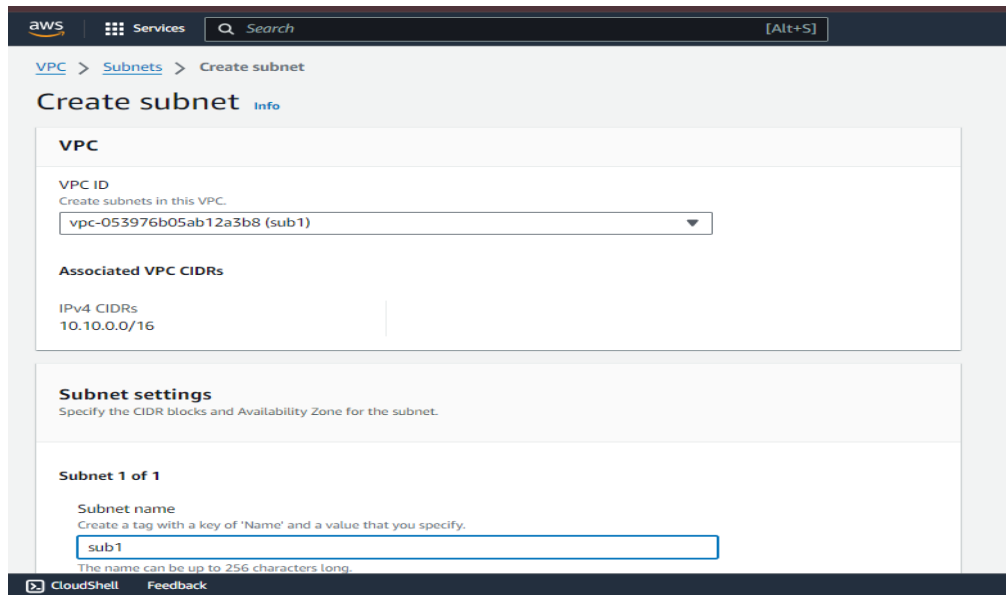
IPv4 CIDR
10.10.0.0/16
CIDR block size must be between /16 and /28.

IPv6 CIDR block [Info](#)
☒ No IPv6 CIDR block
☐ IPAM-allocated IPv6 CIDR block
☐ Amazon-provided IPv6 CIDR block

[CloudShell](#) [Feedback](#)



STEP 2 Creating three Subnet for VPC



Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name
Create a tag with a key of 'Name' and a value that you specify.
sub2
The name can be up to 256 characters long.

Availability Zone [Info](#)
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
US East (N. Virginia) / us-east-1b

IPv4 VPC CIDR block [Info](#)
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.
10.10.0.0/16

IPv4 subnet CIDR block
10.10.2.0/24 256 IPs

Tags - optional

CloudShell Feedback

Subnet 1 of 1

Subnet name
Create a tag with a key of 'Name' and a value that you specify.
sub3
The name can be up to 256 characters long.

Availability Zone [Info](#)
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
US East (N. Virginia) / us-east-1c

IPv4 VPC CIDR block [Info](#)
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.
10.10.0.0/16

IPv4 subnet CIDR block
10.10.3.0/24 256 IPs

Tags - optional

Key Value - optional
Name sub3 Remove

CloudShell Feedback

Subnets (3) [Info](#)

Find resources by attribute or tag

Last updated less than a minute ago

Actions Create subnet

	Name	Subnet ID	State	VPC	IPv4 CIDR
<input type="checkbox"/>	sub1	subnet-0f33e713c59df890e	Available	vpc-053976b05ab12a3b8 sub1	10.10.1.0/24
<input type="checkbox"/>	sub2	subnet-091d3c4567bb046ed	Available	vpc-053976b05ab12a3b8 sub1	10.10.2.0/24
<input type="checkbox"/>	sub3	subnet-07c93d2052420f165	Available	vpc-053976b05ab12a3b8 sub1	10.10.3.0/24

STEP 3 Create an Internet gateway, attach to vpc

VPC > Internet gateways > Create internet gateway

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

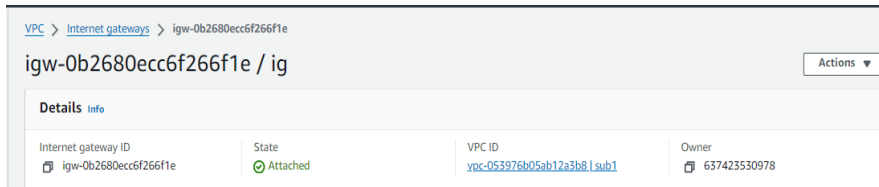
Name tag
Creates a tag with a key of 'Name' and a value that you specify.
ig

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
Name ig Remove

Add new tag
You can add 49 more tags.

Cancel Create internet gateway



STEP 4 Create a Route table

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.

VPC
The VPC to use for this route table.

vpc-053976b05ab12a3b8 (sub1) ▼

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

Remove

Add new tag

You can add 49 more tags.

Cancel Create route table

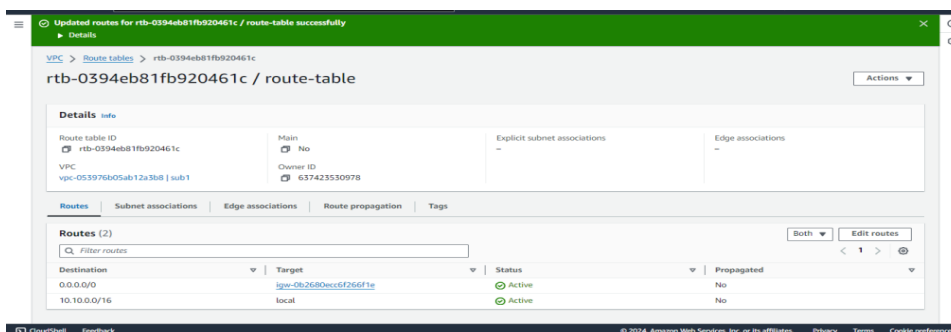
STEP 5 Edit route add an internet gateway

Edit routes

Destination	Target	Status	Propagated
10.10.0.0/16	local	Active	No
0.0.0.0/0	Internet Gateway	-	No

Add route

Cancel Preview Save changes



STEP 6 Edit security group add required port-ssh,http

VPC > Security Groups > sg-0e7df04403ae41e91 - default > Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>	
sgr-0ca1123d9db3b2a80	All traffic	All	All	Custom	Q	Delete
-	SSH	TCP	22	Anyw...	Q sg-0e7df04403ae41e91 X 0.0.0.0/0 X	Delete
-	HTTP	TCP	80	Anyw...	Q 0.0.0.0/0 X 0.0.0.0/0 X	Delete

[Add rule](#)

STEP 7 Create a Target group for load balancer

EC2 > Target groups > Create 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.

Target group name
alb-tg

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.

sub1
vpc-053976b05ab12a3b8
IPv4 VPC CIDR: 10.10.0.0/16

Protocol version
☒ **HTTP1**
Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTPS.

Successfully created the target group: **alb-tg**. Anomaly detection is automatically applied to all registered targets. Results can be viewed in the **Targets** tab.

EC2 > Target groups > alb-tg

alb-tg

Actions

Details

arn:aws:elasticloadbalancing:us-east-1:637423530978:targetgroup/alb-tg/142957bd40b6cf19

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC vpc-053976b05ab12a3b8
IP address type IPv4	Load balancer None associated		

0 Total targets	0 Healthy	0 Unhealthy	0 Unused	0 Initial	0 Draining
--------------------	--------------	----------------	-------------	--------------	---------------

0 Anomalies

STEP 8 Create an Application Load balancer

EC2 > Load balancers

Load balancers

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

Filter load balancers

No load balancers

You don't have any load balancers in us-east-1

Actions

- Create load balancer
- Compare load balancer types
- Create Application Load Balancer
- Create Network Load Balancer
- Create Gateway Load Balancer
- Create Classic Load Balancer

Basic configuration

Load balancer name

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

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

☐ **Internal**
An internal load balancer routes requests from clients to targets using private IP addresses. Compatible with the IPv4 and Dualstack IP address types.

Load balancer IP address type **Info**

Select the type of IP addresses that your subnets use. 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.

VPC

Select the VPC for your targets. Only VPCs with an internet gateway are eligible for selection. The default VPC can't be changed after the load balancer is created. To confirm the VPC for your targets, view your [target groups](#).

vpc-0a31bf387324fada2
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.

☒ **us-east-1a (use1-az6)**

Subnet

subnet-0f3473494d77ca92e 1a

IPv4 address

Assigned by AWS

☒ **us-east-1b (use1-az1)**

Subnet

subnet-05f4c1cf0f0ea91c0 1b

IPv4 address

Assigned by AWS

☒ **us-east-1c (use1-az2)**

Subnet

subnet-0e5cb86d1b7c70f5b 1c

IPv4 address

Assigned by AWS

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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

alb-tg

HTTP

1-65535

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

Successfully created load balancer: 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.

EC2 > Load balancers > alb

alb

Actions

▼ Details

Load balancer type	Status	VPC	Load balancer IP address type
Application	Active	vpc-053976b05ab12a3b8	IPv4
Scheme	Hosted zone	Availability Zones	Date created
Internet-facing	Z35SXDOTRQ7X7K	subnet-091d3c4567bb046ed us-east-1b (use1-az1)	July 2, 2024, 18:13 (UTC+05:30)
		subnet-07c93d2057420f165 us-east-1c (use1-az2)	
		subnet-0f33e713c59df890e us-east-1a (use1-az6)	
Load balancer ARN	DNS name		
arn:aws:elasticloadbalancing:us-east-1:637423530978:loadbalancer/app/alb/b0abbcb759b5874	alb-187248243.us-east-1.elb.amazonaws.com (A Record)		

STEP 9 Create a template for Auto scaling group

Launch Templates (1)

Info

Actions

Create launch template

Search

< 1 > ⚙

Launch Template ID	Launch Template Name	Default Version	Latest Version	Create Time	Created...
lt-0f678072429a51171	template	1	1	2024-07-02T13:22:58.000Z	arnaws:ia...

Launch template name - required

template

Must be unique to this account. Max 128 chars. No spaces or special characters like '&', "'", '@'.

Template version description

pt1

Max 255 chars

Auto Scaling guidance

Info

Select this if you intend to use this template with EC2 Auto Scaling

☒ Provide guidance to help me set up a template that I can use with EC2 Auto Scaling

► Template tags

► Source template

Launch template contents

Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.

▼ Application and OS Images (Amazon Machine Image) - required

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

Launch Templates (1) Info							<div> <div>↺</div> <div>Actions ▾</div> <div>Create launch template</div> </div>		<div> <div><</div> <div>1</div> <div>></div> <div>⚙</div> </div>	
<div> <div>Q Search</div> </div>										
	Launch Template ID ▾	Launch Template Name ▾	Default Version ▾	Latest Version ▾	Create Time ▾	Created...				
	lt-0ba72eb95e2f10b86	sp-template	1	1	2024-07-04T12:21:58.000Z	arn:aws:ia...				

Step 2

Choose instance launch options

Step 3 - optional

Configure advanced options

Step 4 - optional

Configure group size and scaling

Step 5 - optional

Add notifications

Step 6 - optional

Add tags

Step 7

Review

Name

Auto Scaling group name

Enter a name to identify the group.

sp-auto

Must be unique to this account in the current Region and no more than 255 characters.

Launch template

info

ⓘ

For accounts created after May 31, 2023, the EC2 console only supports creating Auto Scaling groups with launch templates. Creating Auto Scaling groups with launch configurations is not recommended but still available via the CLI and API until December 31, 2023.

Launch template

Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.

template

Create a launch template

Version

Default (1)

Create a launch template version

Step 6 - optional

[Add tags](#)

Step 7

[Review](#)

Network info

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.

vpc-053976b05ab12a3b8 (sub1)
10.10.0.0/16

⌂

[Create a VPC](#)

Availability Zones and subnets
Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.

Select Availability Zones and subnets

⌂

us-east-1a | subnet-0f33e713c59df890e (sub1)
10.10.1.0/24

✕

us-east-1b | subnet-091d3c4567bb046ed (sub2)
10.10.2.0/24

✕

us-east-1c | subnet-07c93d2057420f165 (sub3)
10.10.3.0/24

✕

[Create a subnet](#)

Cancel

Skip to review

Previous

Next

Step 3 - optional
Configure advanced options

Step 4 - optional
[Configure group size and scaling](#)

Step 5 - optional
[Add notifications](#)

Step 6 - optional
[Add tags](#)

Step 7
[Review](#)

Load balancing Info

Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.

☐ No load balancer
Traffic to your Auto Scaling group will not be fronted by a load balancer.

☒ Attach to an existing load balancer
Choose from your existing load balancers.

☐ Attach to a new load balancer
Quickly create a basic load balancer to attach to your Auto Scaling group.

Attach to an existing load balancer

Select the load balancers that you want to attach to your Auto Scaling group.

☒ Choose from your load balancer target groups
This option allows you to attach Application, Network, or Gateway Load Balancers.

☐ Choose from Classic Load Balancers

Existing 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

alb-tg | HTTP
Application Load Balancer: alb

Group size Info

Set the initial size of the Auto Scaling group. After creating the group, you can change its size to meet demand, either manually or by using automatic scaling.

Desired capacity type

Choose the unit of measurement for the desired capacity value. vCPUs and Memory(GiB) are only supported for mixed instances groups configured with a set of instance attributes.

Units (number of instances)

Desired capacity

Specify your group size.

3

Scaling Info

You can resize your Auto Scaling group manually or automatically to meet changes in demand.

Scaling limits

Set limits on how much your desired capacity can be increased or decreased.

Min desired capacity: 3
Max desired capacity: 4

Equal or less than desired capacity
Equal or greater than desired capacity

Automatic scaling - optional

Choose whether to use a target tracking policy. Info

EC2 > Auto Scaling groups

Auto Scaling groups (1) Info

Launch configurations Launch templates Actions Create Auto Scaling group

Search your Auto Scaling groups

	Name	Launch template/configuration	Instances	Status	Desired capacity	Min	Max	Avail...
<input type="checkbox"/>	sp-auto	template Version Default	0	Updating capacity...	2	2	3	us-east-...

Find Instance by attribute or tag (case-sensitive)

All states

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
<input type="checkbox"/>		i-051547d11bd947289	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-0fdeee70c9c0fc7e	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-05667c6c9402afdfc	Running	t2.micro	2/2 checks passed	View alarms

- While deleting EC2 which is created using auto scaling group, it automatically created 3 minimum instances

Instances (6) Info

Find Instance by attribute or tag (case-sensitive)

All states

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
<input type="checkbox"/>		i-051547d11bd947289	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-0fdeee70c9c0fc7e	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-05667c6c9402afdfc	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-00f309931d37809c5	Terminated	t2.micro	-	View alarms
<input type="checkbox"/>		i-067a30a6fab951da0	Terminated	t2.micro	-	View alarms
<input type="checkbox"/>		i-06cd88c523fe97ed5	Terminated	t2.micro	-	View alarms

STEP 11 Now let's check the each Instances Public IPV4 DNS, DNS id in browser

<https://ec2-54-81-215-254.compute-1.amazonaws.com/>



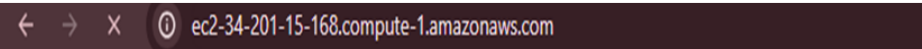
It works!

<https://ec2-44-201-206-104.compute-1.amazonaws.com/>



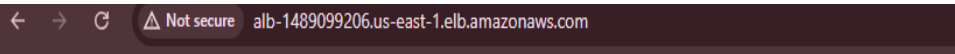
It works!

<https://ec2-34-201-15-168.compute-1.amazonaws.com/>



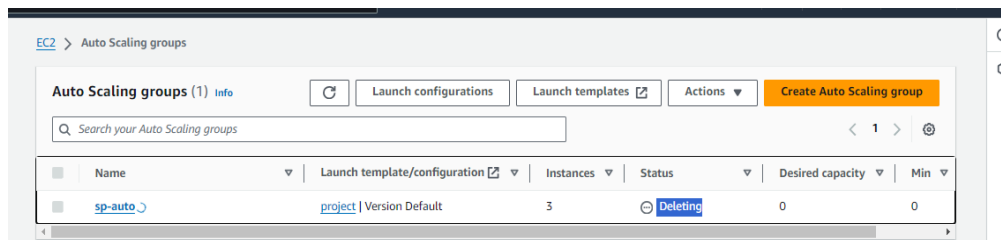
It works!

<http://alb-1489099206.us-east-1.elb.amazonaws.com/>



It works!

- While deleting auto scaling group, it automatically terminates the instances



<input type="checkbox"/>	i-0fddee70c9c0fcf7e	Terminated	t2.micro	-	View alarms
<input type="checkbox"/>	i-05667c6c9402afdfc	Terminated	t2.micro	-	View alarms
<input type="checkbox"/>	i-051547d11bd947289	Terminated	t2.micro	-	View alarms