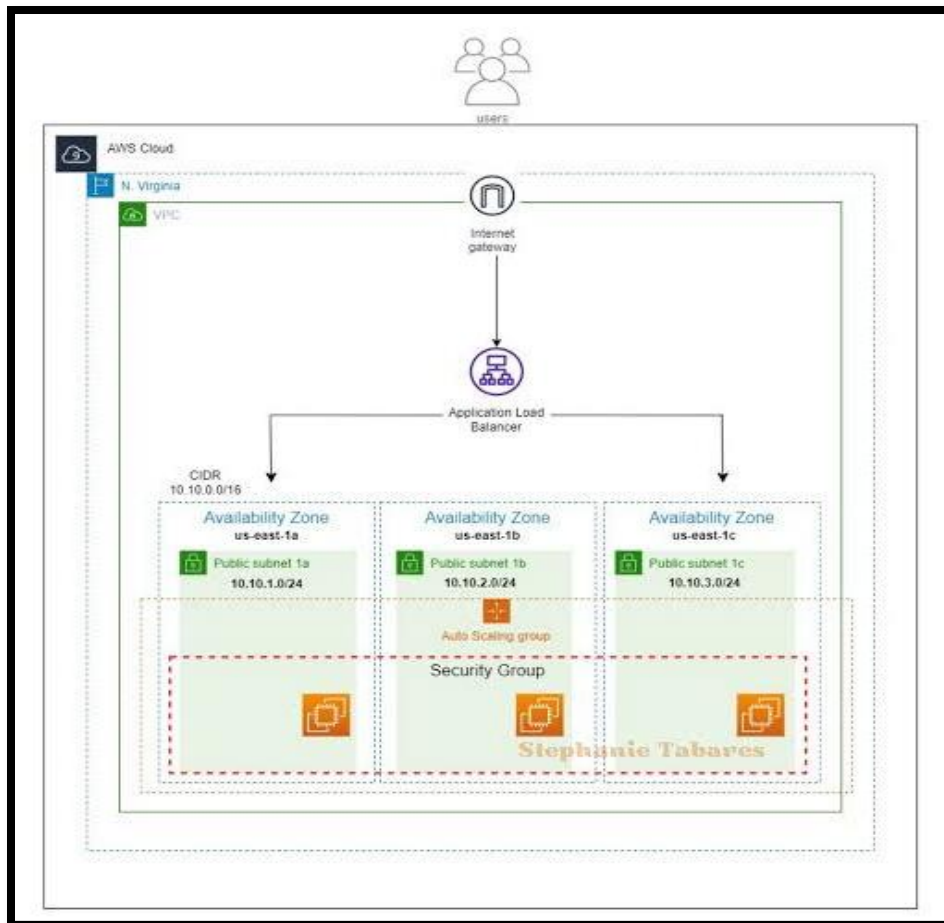The Architecture given with **HIGH AVALIABILITY, HIGH SCALABLITY, WEB APP DEPLOYMENT, INFRASTRUCTURE**

Let's create step by step according to given architecture

STEP 1 Create a VPC

STEP 2 Creating three Subnet for VPC
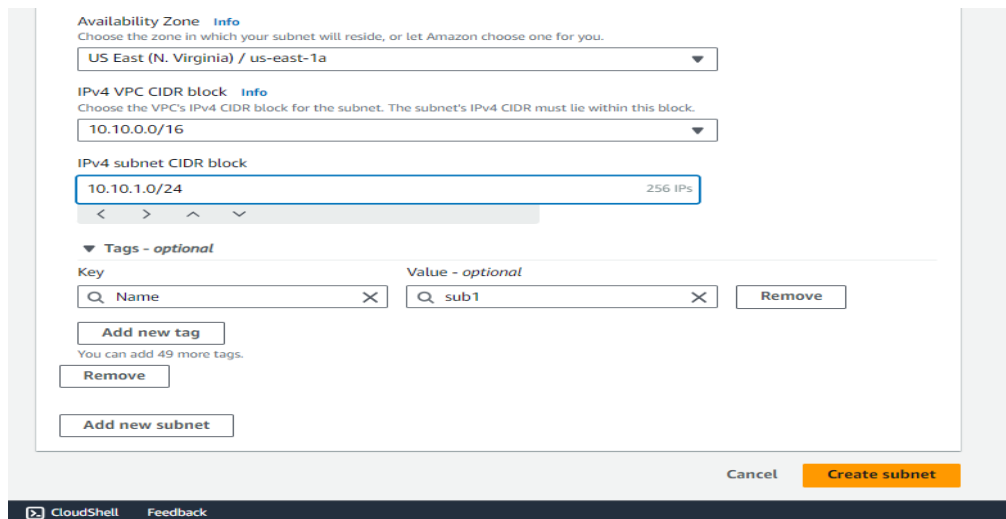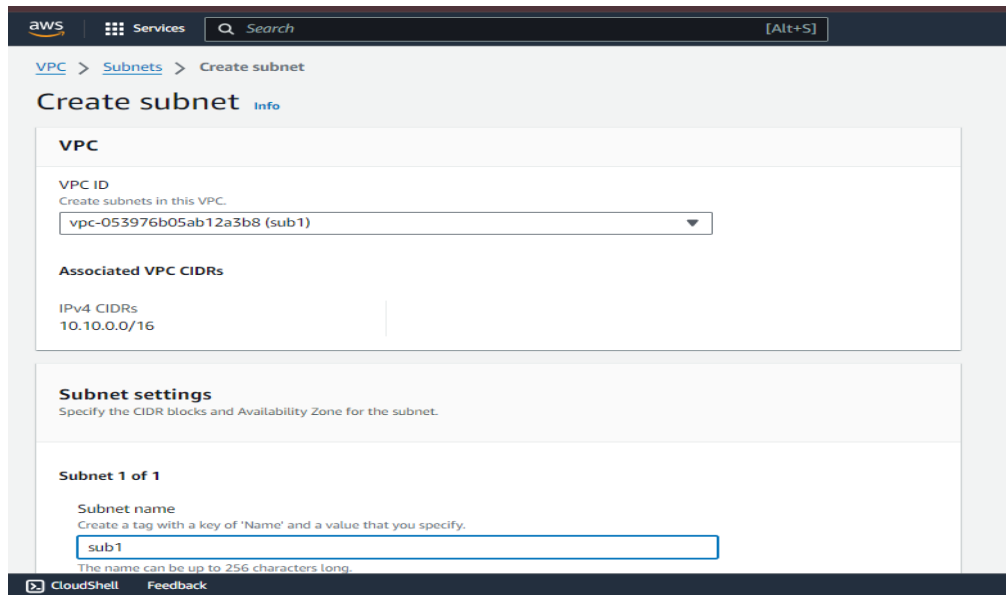
Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

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

[Alt+S]   ▷ ⌃ ⑦ ⚙ **N. Virginia ▾** p

Subnets (3) Info

Last updated less than a minute ago ⟳   Actions ▾   **Create subnet**

🔍 Find resources by attribute or tag

< 1 > ⚙

☐	Name ▽	Subnet ID ▽	State ▽	VPC ▽	IPv4 CIDR ▽
☐	sub1	subnet-0f33e713c59df890e	⊘ Available	vpc-053976b05ab12a3b8 | sub1	10.10.1.0/24
☐	sub2	subnet-091d3c4567bb046ed	⊘ Available	vpc-053976b05ab12a3b8 | sub1	10.10.2.0/24
☐	sub3	subnet-07c93d2057420f165	⊘ 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.
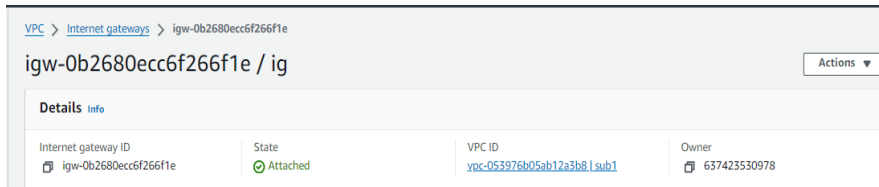
Internet gateway settings

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

STEP 5 Edit route add an internet gateway
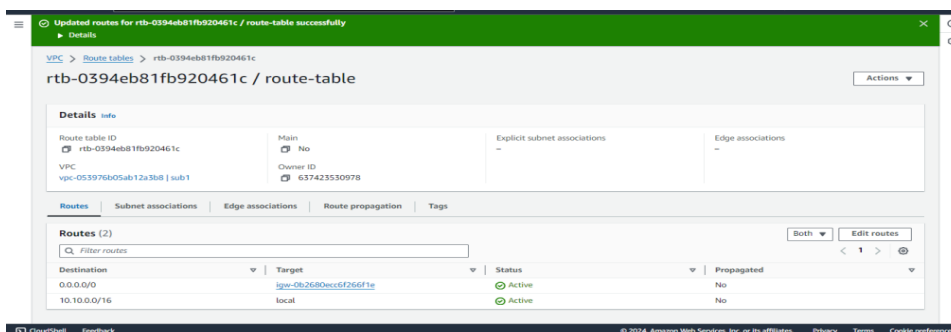
STEP 6 Edit security group add required port-ssh,http

STEP 7 Create a Target group for load balancer

EC2 > Target groups > alb-tg

alb-tg

Actions ▼

Details

arn:aws:elasticloadbalancing:us-east-1:637423530978:targetgroup/alb-tg/f42957bd40b6cff9

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

0	⊘ 0	⊗ 0	⊝ 0	⊘ 0	⊝ 0
Total targets	Healthy	Unhealthy	Unused	Initial	Draining
	0 Anomalous				

STEP 8 Create an Application Load balancer

[Alt+S] ⊠ ⏻ ⊘ ⚙ N. Virginia ▼ pr

EC2 > Load balancers

Load balancers

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

🔄 Actions ▼ | **Create load balancer** ▲

Compare load balancer types

Create Application Load Balancer

Create Network Load Balancer

Create Gateway Load Balancer

Create Classic Load Balancer

🔍 Filter load balancers

☐	Name ▽	DNS name ▽	State ▽	VPC ID ▽	Availabil

No load balancers

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

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.

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 ⧉.

-
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-0f3473494d7fca92e   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

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
🗇 arn:aws:elasticloadbalancing:us-east-1:637423530978:loadbalancer/app/alb/b b0abbcb759b5874

DNS name Info
🗇 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	arn:aws:ia...

Launch template name – *required*

| template |

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

Template version description

| 2d |

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

udShell   Feedback

STEP 10 Create an Auto scaling group

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	Max desired capacity
3	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

Services | Q security

EC2 > Auto Scaling groups

Auto Scaling groups (1) Info | Launch configurations | Launch templates | Actions ▼ | **Create Auto Scaling group**

Q Search your Auto Scaling groups

Name	Launch template/configuration ▼	Instances ▼	Status ▼	Desired capacity ▼	Min ▼	Max ▼	Avail... ▼
sp-auto	template | Version Default	0	Updating capacity...	2	2	3	us-east-...

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
		i-051547d11bd947289	Running	t2.micro	2/2 checks passed	View alarms
		i-0fdeee70c9c0fcf7e	Running	t2.micro	2/2 checks passed	View alarms
		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 | Connect | Instance state ▼ | Actions ▼ | **Launch instances** ▼

Q Find Instance by attribute or tag (case-sensitive) | All states ▼

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
		i-051547d11bd947289	Running	t2.micro	2/2 checks passed	View alarms
		i-0fdeee70c9c0fcf7e	Running	t2.micro	2/2 checks passed	View alarms
		i-05667c6c9402afdfc	Running	t2.micro	2/2 checks passed	View alarms
		i-00f309931d37809c5	Terminated	t2.micro	–	View alarms
		i-067a30a6fab951da0	Terminated	t2.micro	–	View alarms
		i-06cd88c523fe97ed5	Terminated	t2.micro	–	View alarms

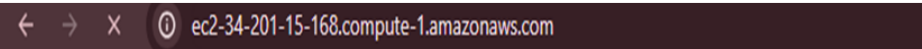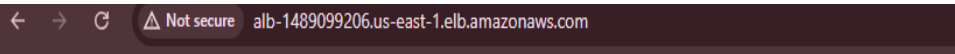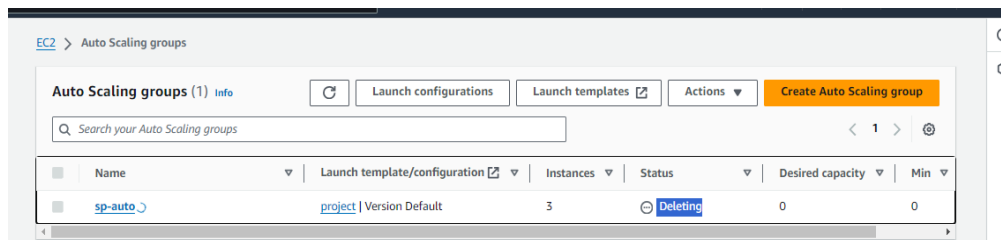**STEP 11** Now let's check the each Instances Public IPV4 DNS, DNS id in browser

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

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

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

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

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