**Load balancer Lab Document by Abhijeet Kumar**

**Lab : Create a microservice architecture using Application Load Balancer.**

A load balancer is a device or service that distributes incoming network traffic across multiple servers or resources to ensure no single server is overloaded.

**Different type of Load Balancer:**

**Application Load Balancer (ALB)**

- **Features:**
    - Operates at the Layer 7 (Application) level.
    - Suited for modern, microservices-based, and containerized applications.
    - Supports routing based on host-based (domain names) and path-based routing (URLs).
    - Allows routing to different targets based on content type (e.g., HTTP headers, HTTP methods).
    - Built-in support for WebSocket and HTTP/2.
    - SSL/TLS termination and more sophisticated security features.
    - Supports containerized applications (e.g., ECS, Kubernetes).

**3. Network Load Balancer (NLB)**

- **Features:**
    - Operates at the Layer 4 (Transport) level.
    - Suited for applications that require high performance, low latency, and the ability to handle millions of requests per second.
    - Supports TCP and UDP traffic, which is great for real-time applications like gaming, IoT, and VoIP.
    - Handles sudden, unpredictable traffic bursts.

- Ideal for applications that require extreme performance, such as those that need to scale to millions of requests per second.

**4. Gateway Load Balancer (GWLB)**

- **Features:**
  - Operates at Layer 3 (Network) level.
  - Suited for third-party virtual appliances, like firewalls, intrusion detection systems, and deep packet inspection appliances.
  - Works with appliances in the Virtual Private Cloud (VPC) to direct traffic.
  - Useful for networking and security appliances that need to inspect and handle traffic at a network layer.
  - Allows scaling of virtual appliances with automatic traffic distribution.

**Prerequisite:**

1. Create a VPC with 3 public subnets and 3 private subnets
2. Create one public server in public subnet
3. Create 3 private server in different private subnet
4. Connect to each private server using public server
5. Install webserver and add index.html in each private server

**Ex: Name server 1 as home and add index.html file**

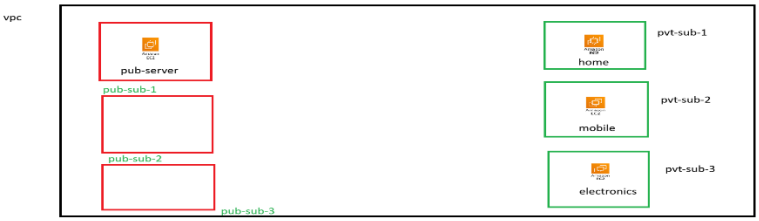
**Name server 2 as mobile and add index.html file in folder**

**/var/www/html/mobile**

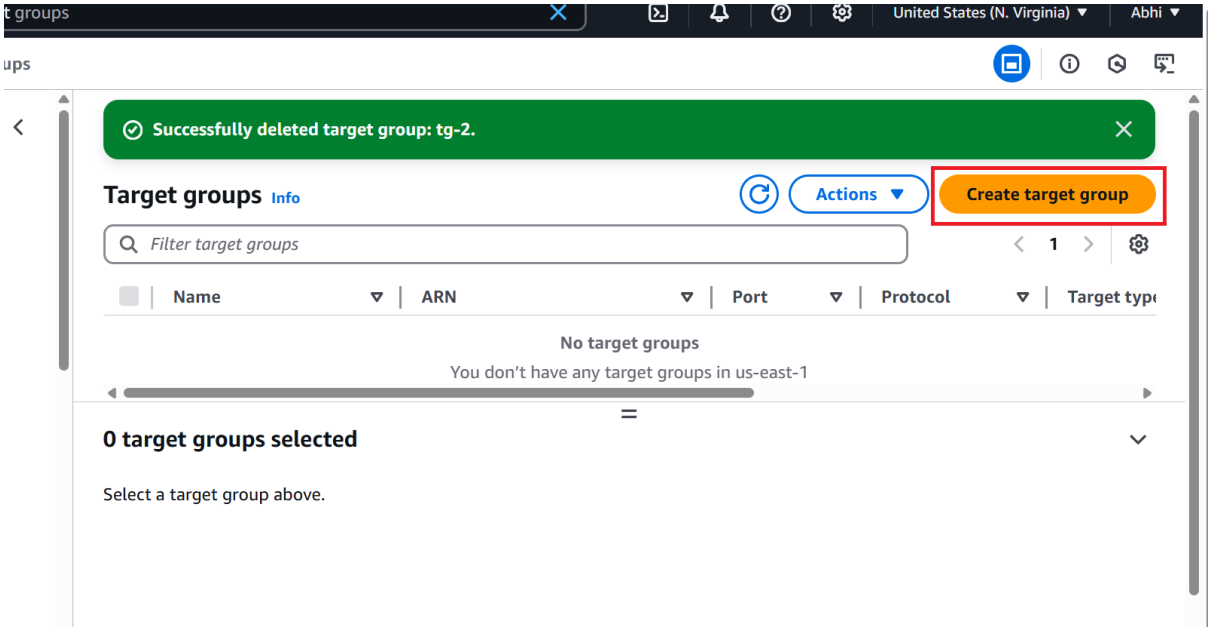
**Name server 3 as electronics and add index.html file in folder**

**/var/www/html/electronics**

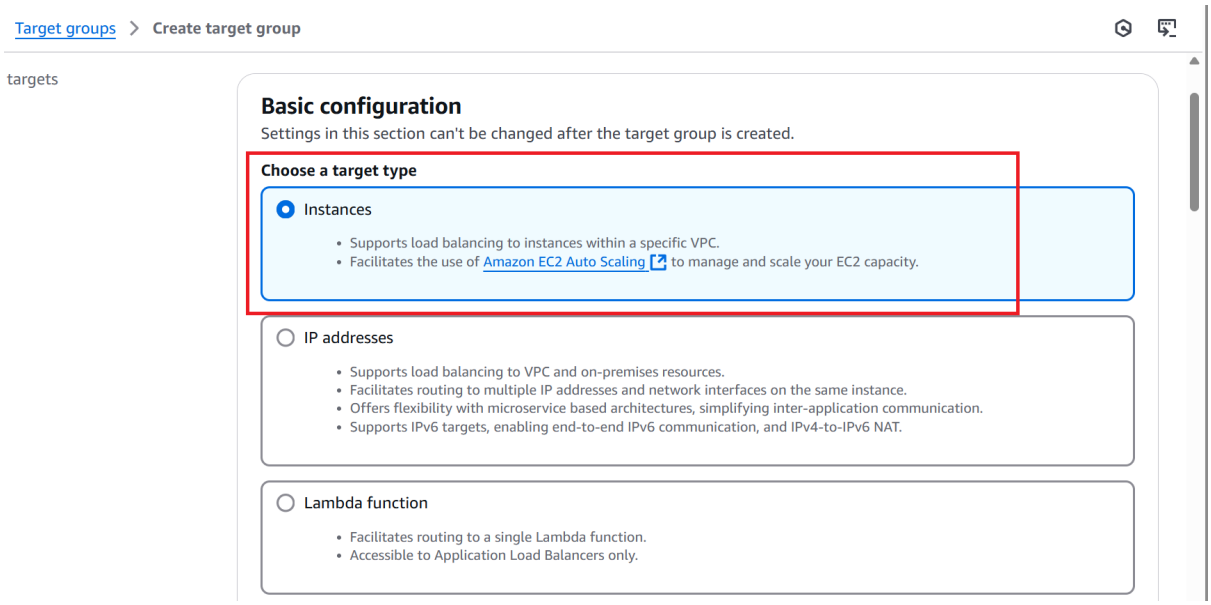
**Note: Refer previous notes and doc for above steps.**



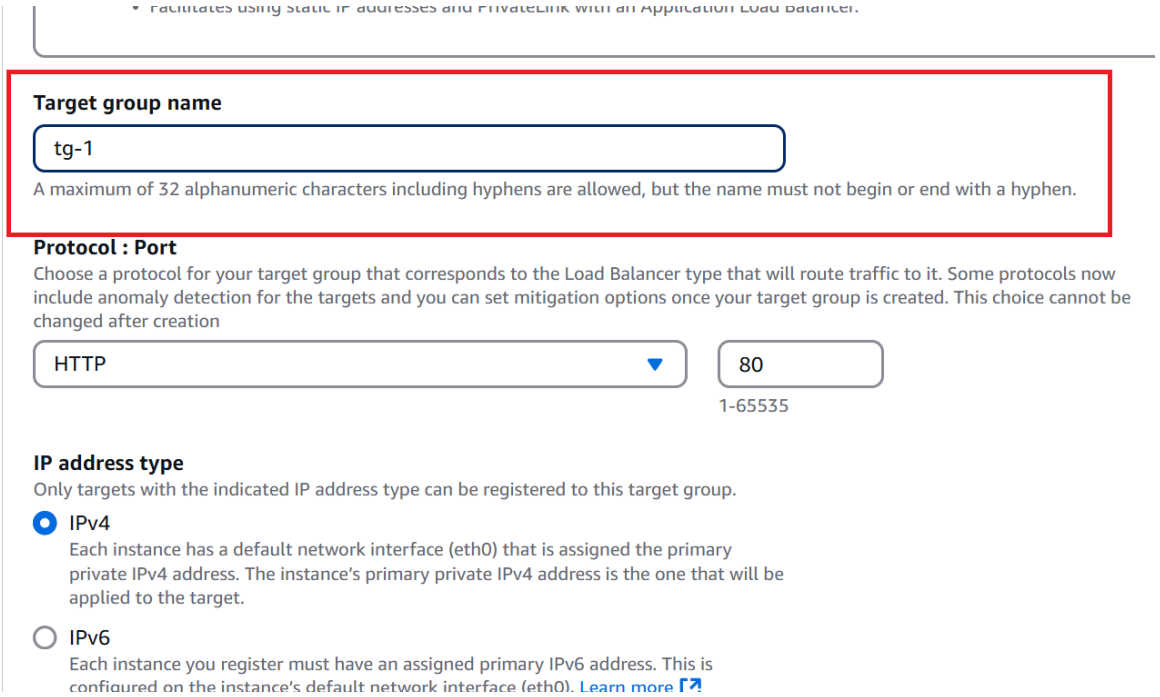

## Step 1: Click on create target group



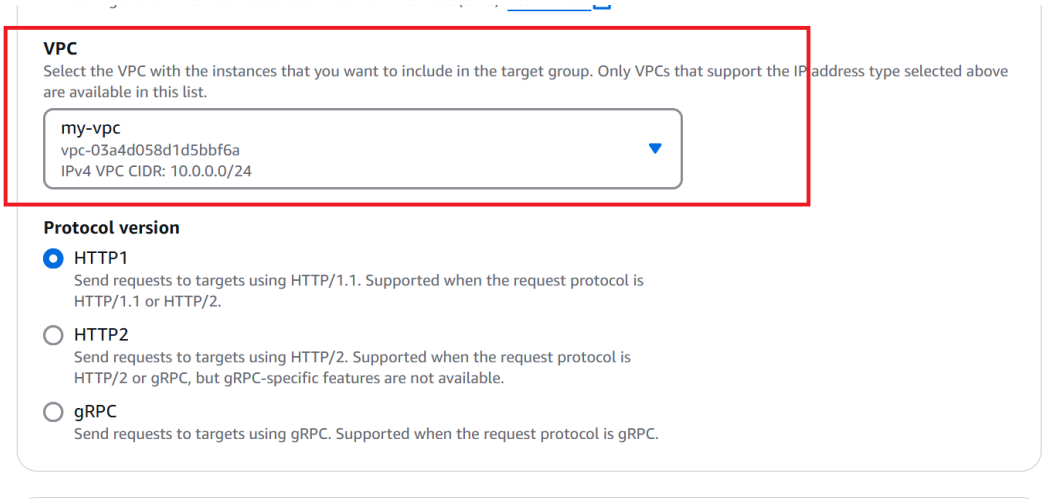

## Step 2: Select Instances as option



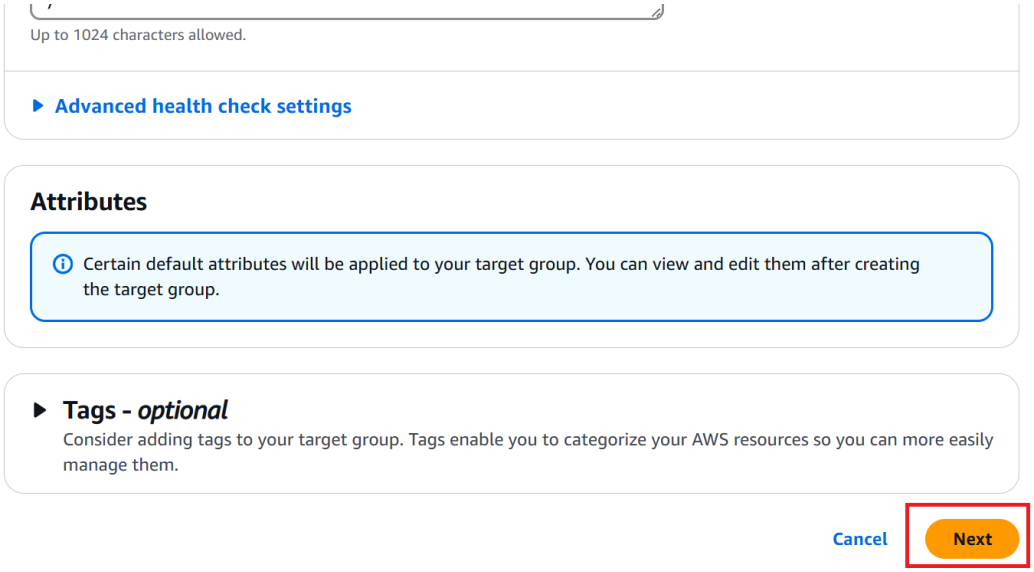

## Step 3: Enter name of target group



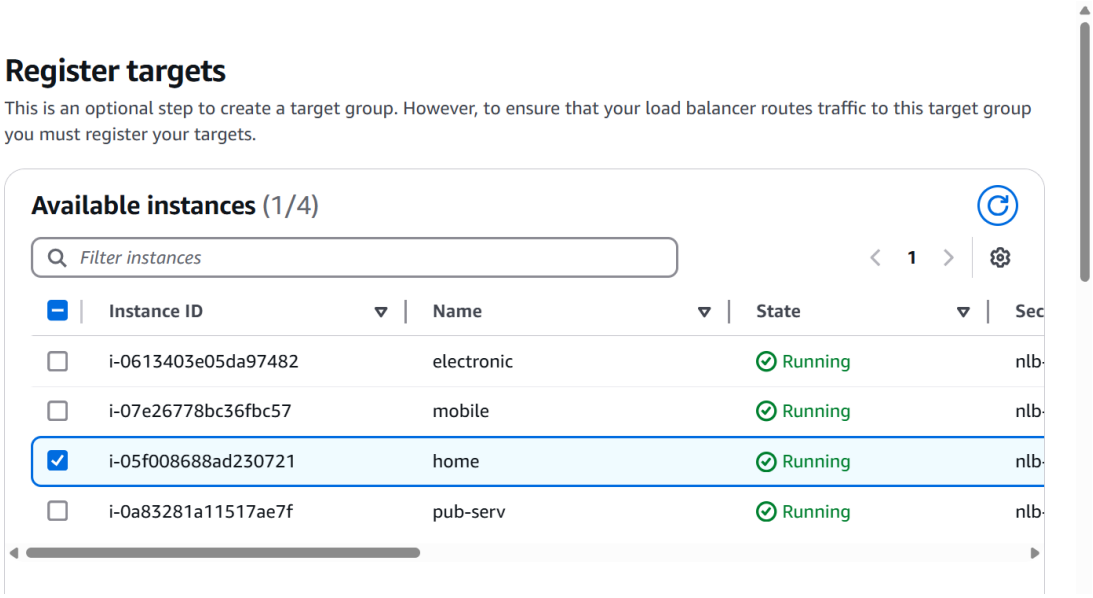

## Step 4: Select your VPC



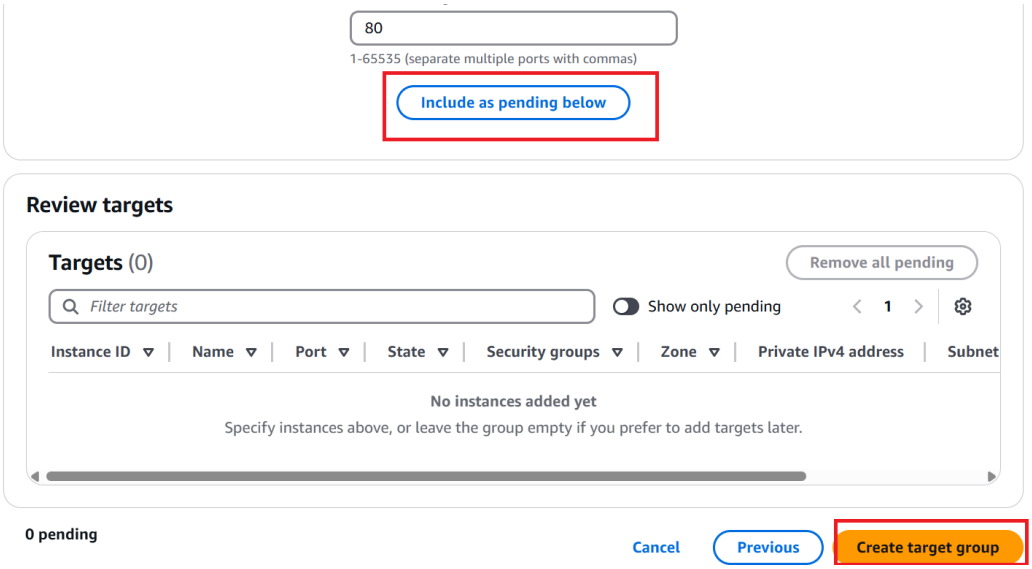

## Step 5: Click next




## Step 6: Select home instance/server from the list

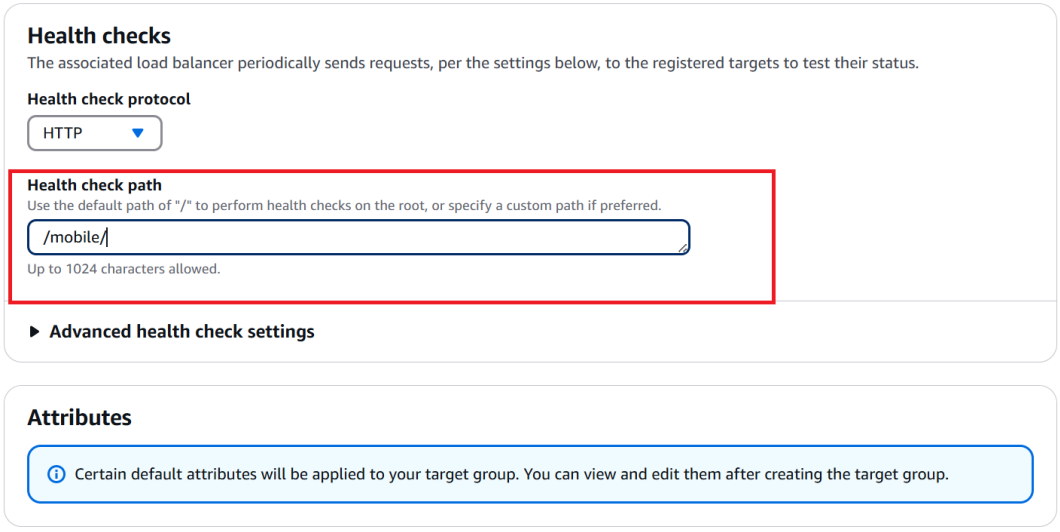


## Step 7: Click include as pending below and create target group

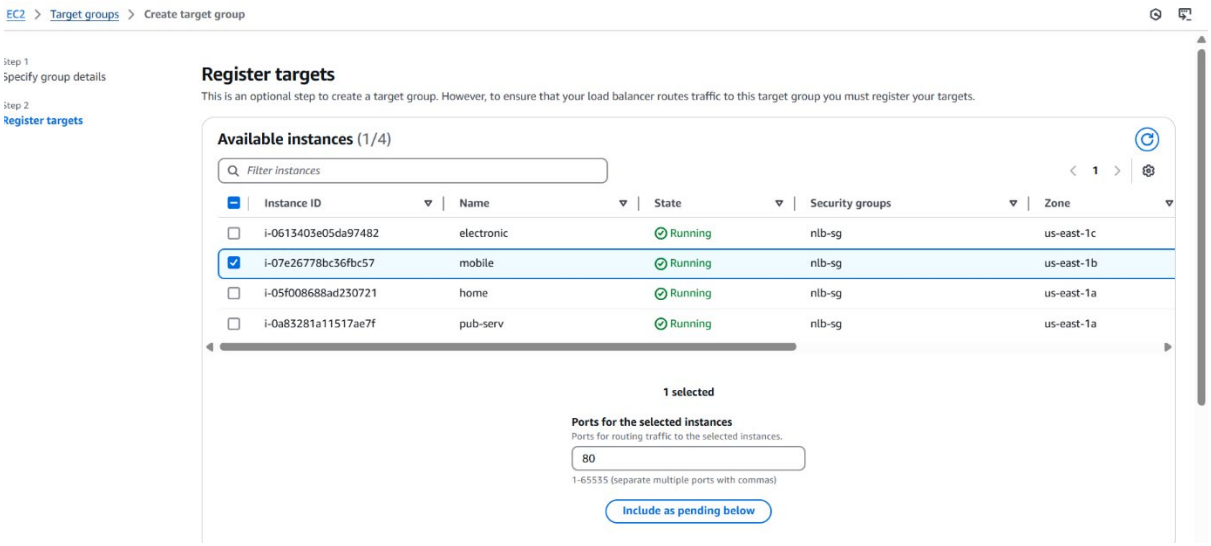



## Step 8: Create another target group for mobile server

## Repeat all above steps except in path add



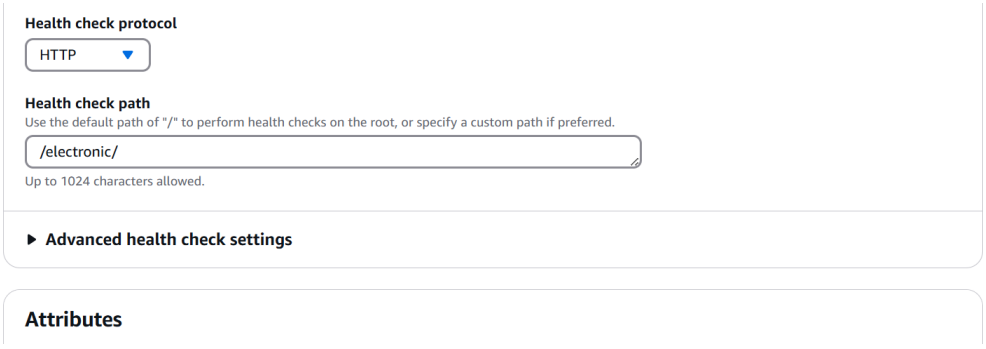
## Step 9: Select server as mobile and click include pending below



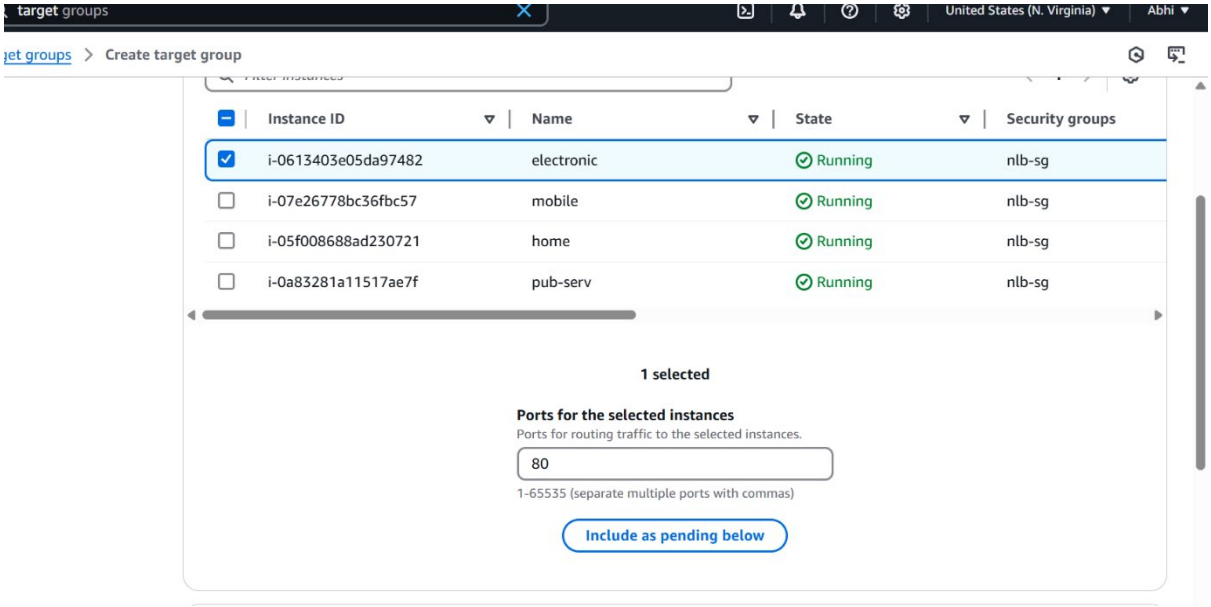

## Step 10: Create create  target group

## Step 11: Create another target group for electronic

## Repeat all above steps except in path add



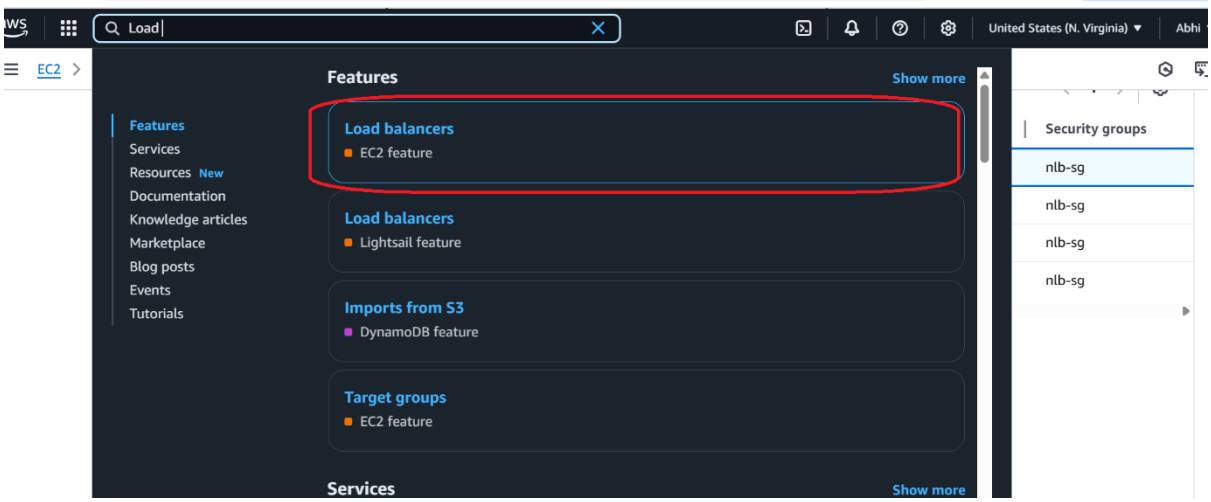

## Step 12: Select server as electronic and click include pending below



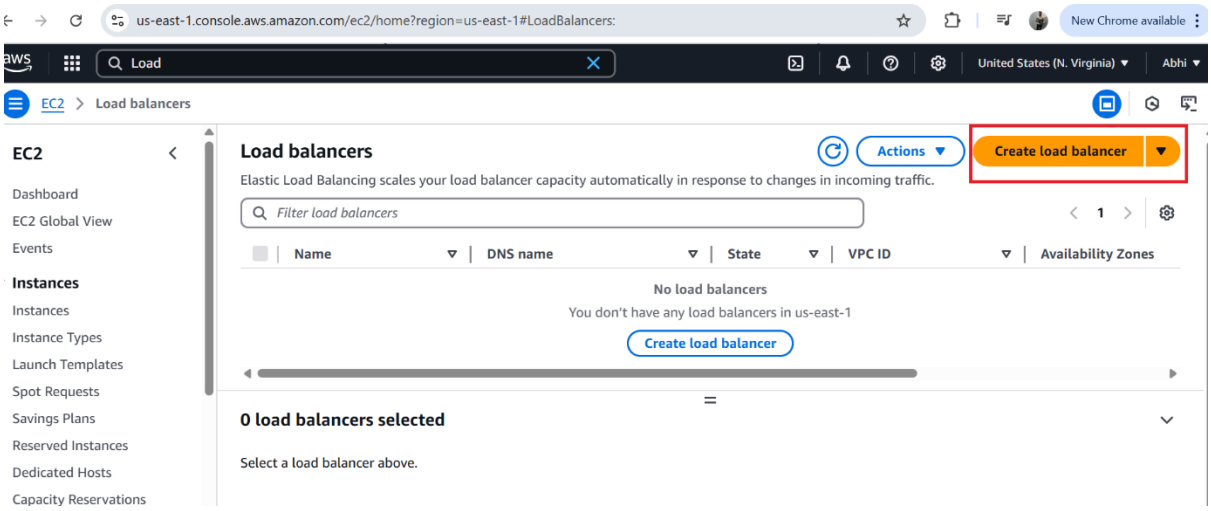

## Step 13: Create create  target group

**Now all three target group is created with three different server and different application in it,But still if you go and check all target will show as unhealthy since there is no Load Balancer**

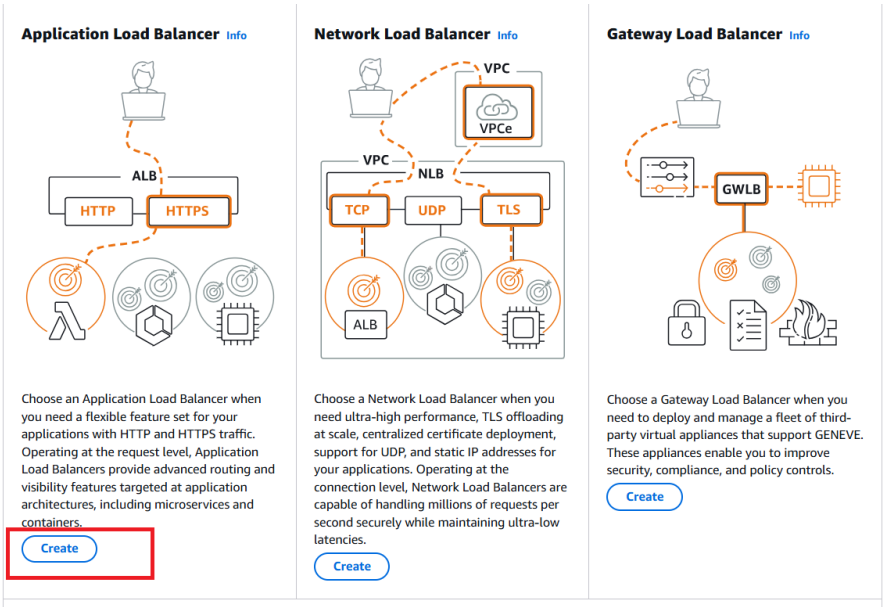
## Step 14: Search for Load balancer and select it



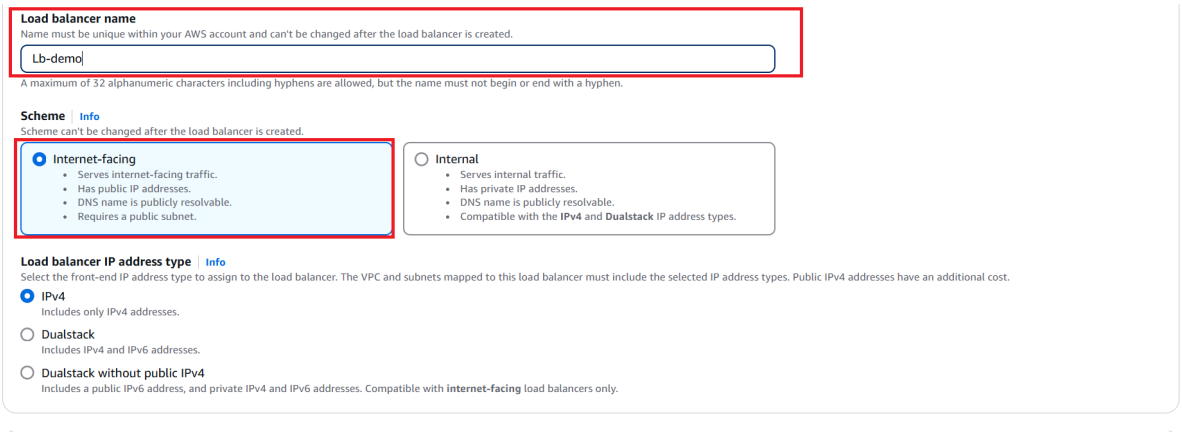

## Step 15: Click on Create Load Balancer



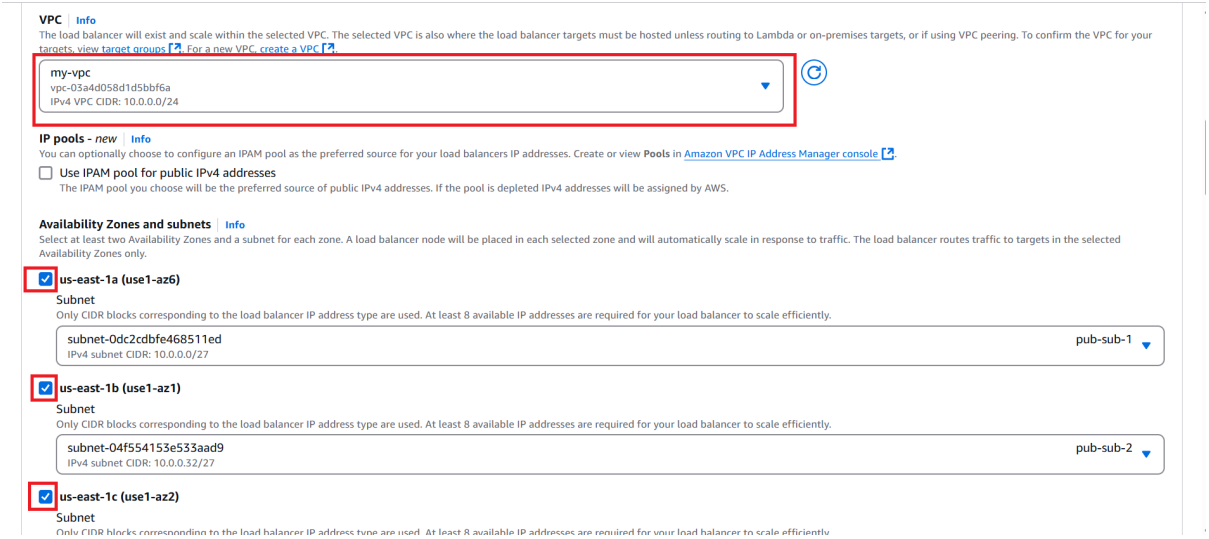

## Step 16: Click create on Application Load balancer



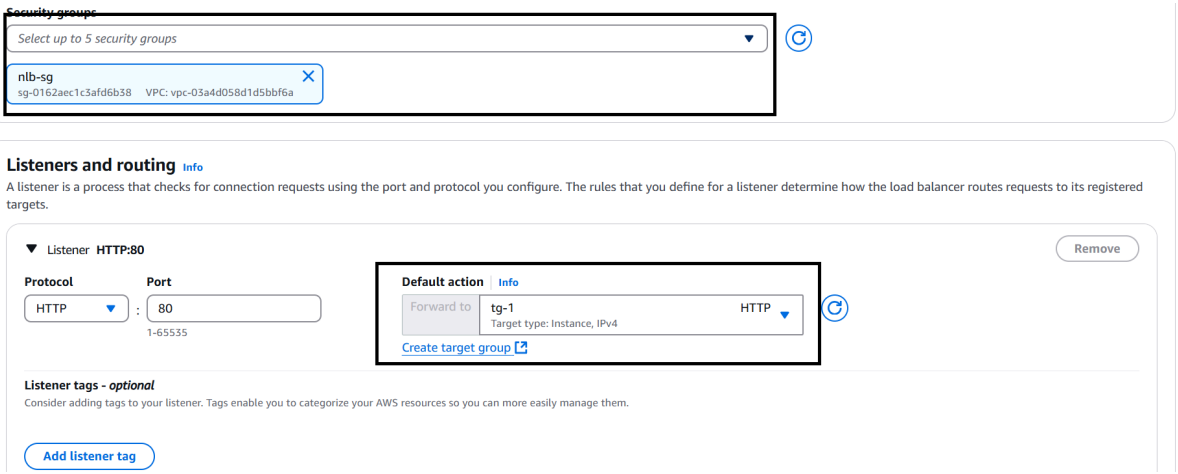
## Step 17: Enter name and select Internet facing



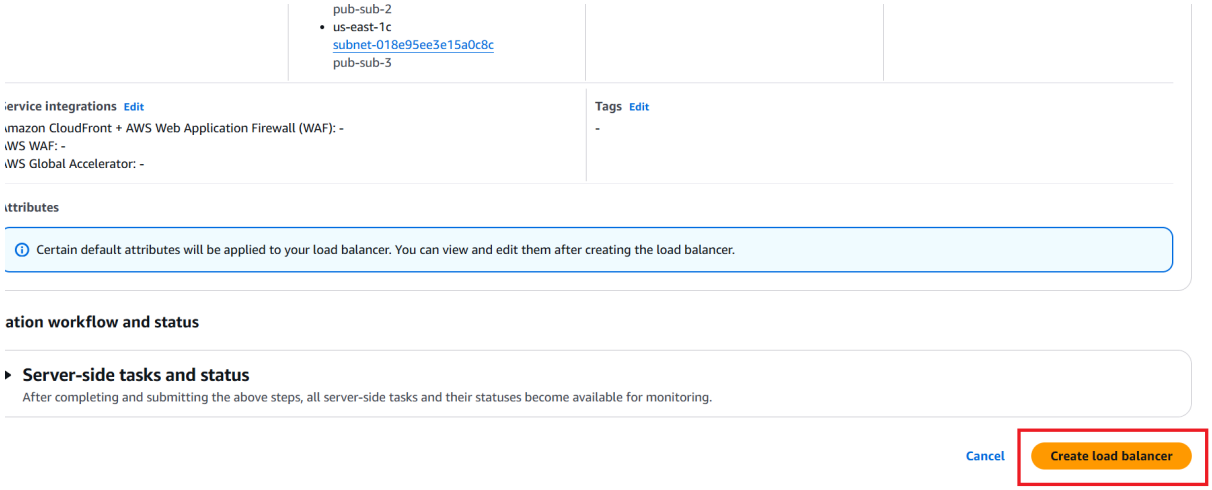

## Step 18: Select your VPC and all available zones



## Step 19:Select security group and target group (target group select as home server in it i.e tg-1)

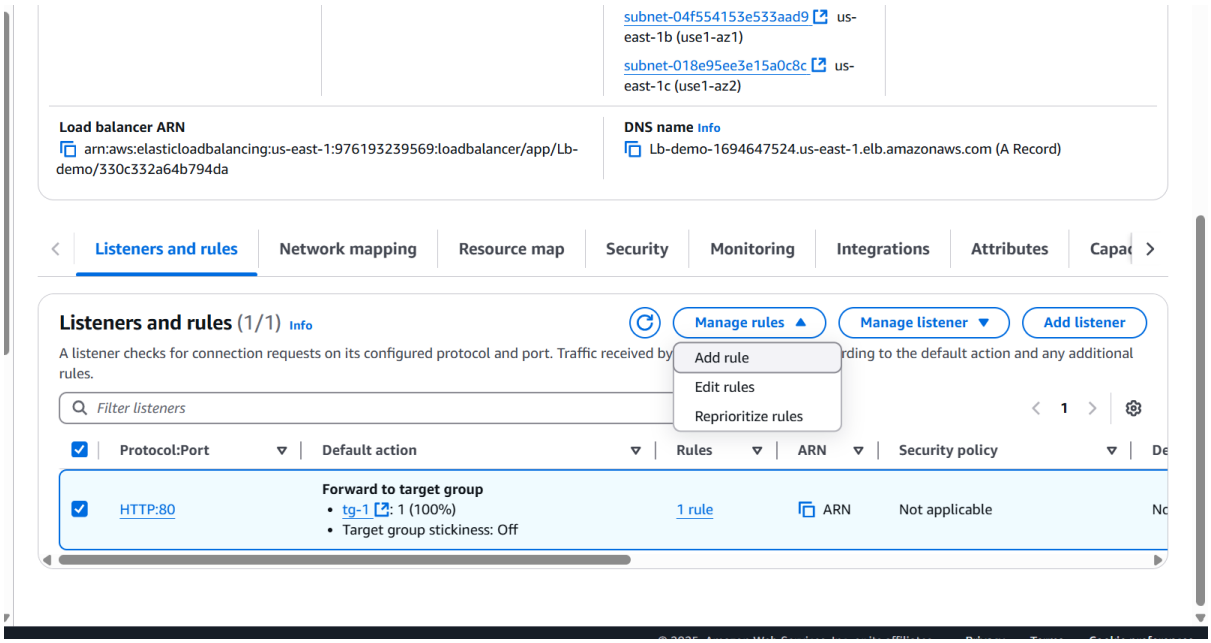



## Step 20: Click on create load balancer

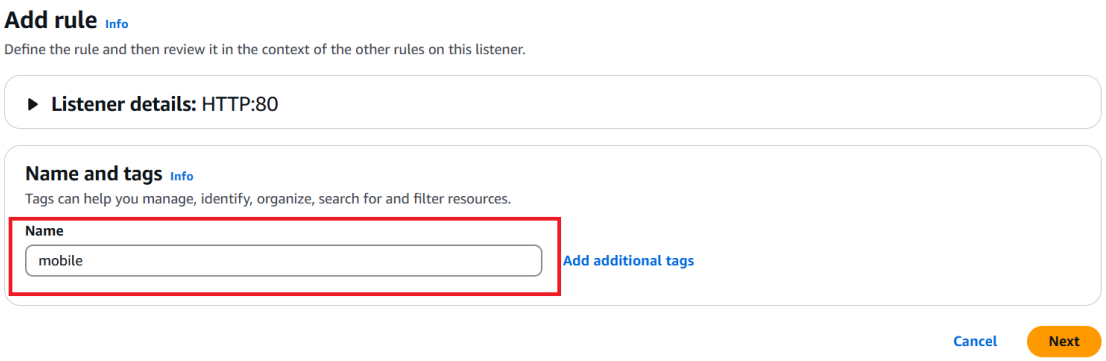


## Load balancer will be created successfully, scroll below and go to bottom

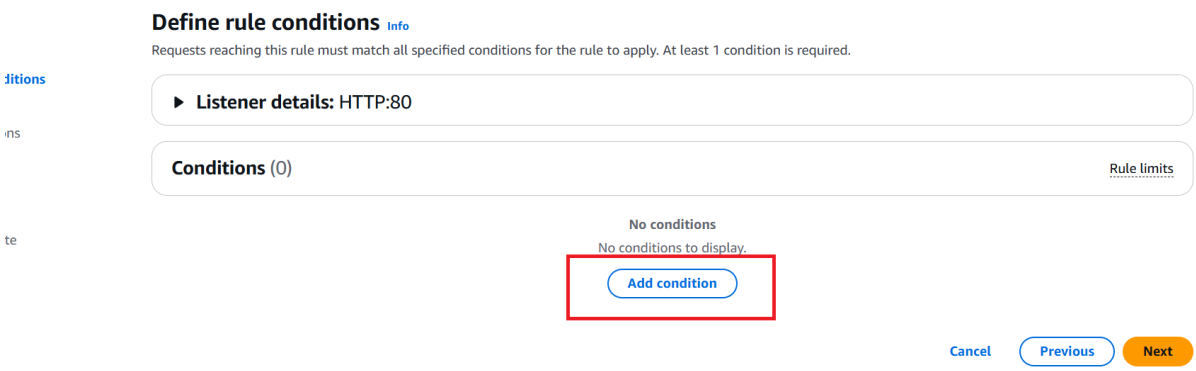
## Select the listener and rule and click on manage rule and select add rule from that



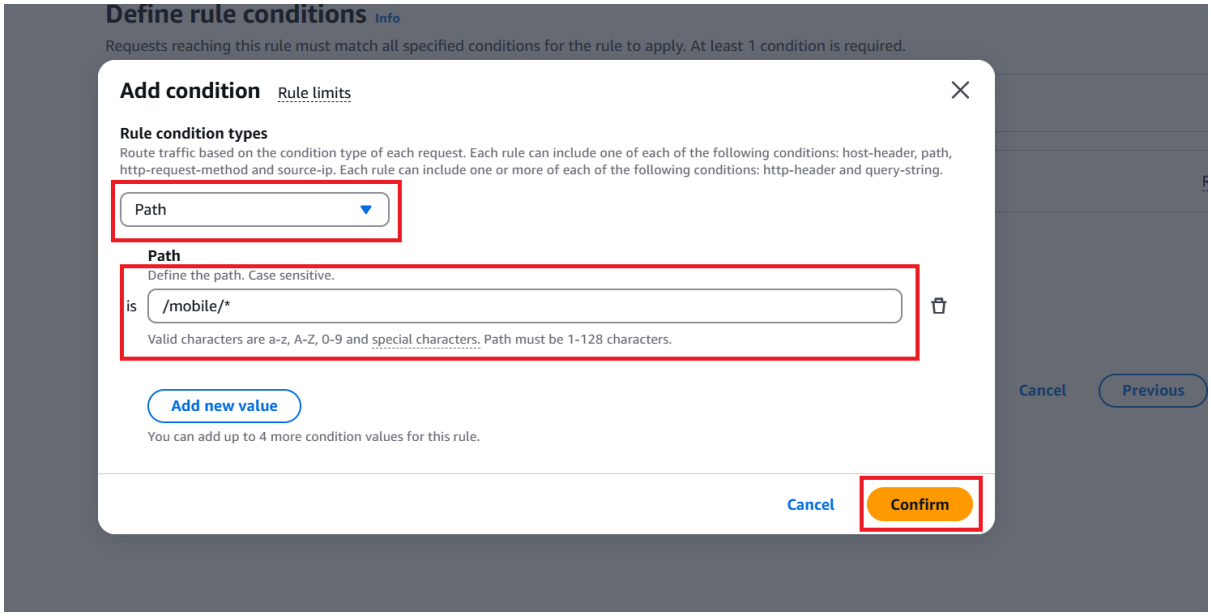

## Step 21: enter name and click next



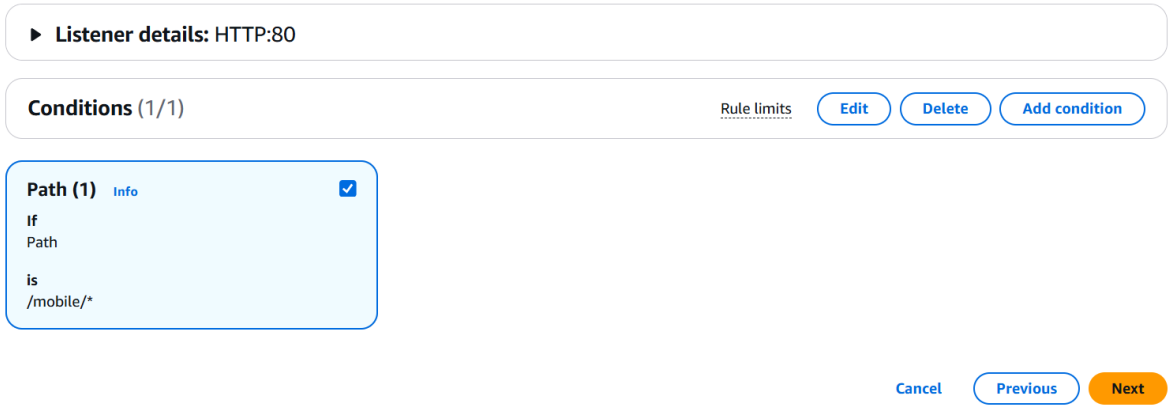

## Step 22:Click on add condition



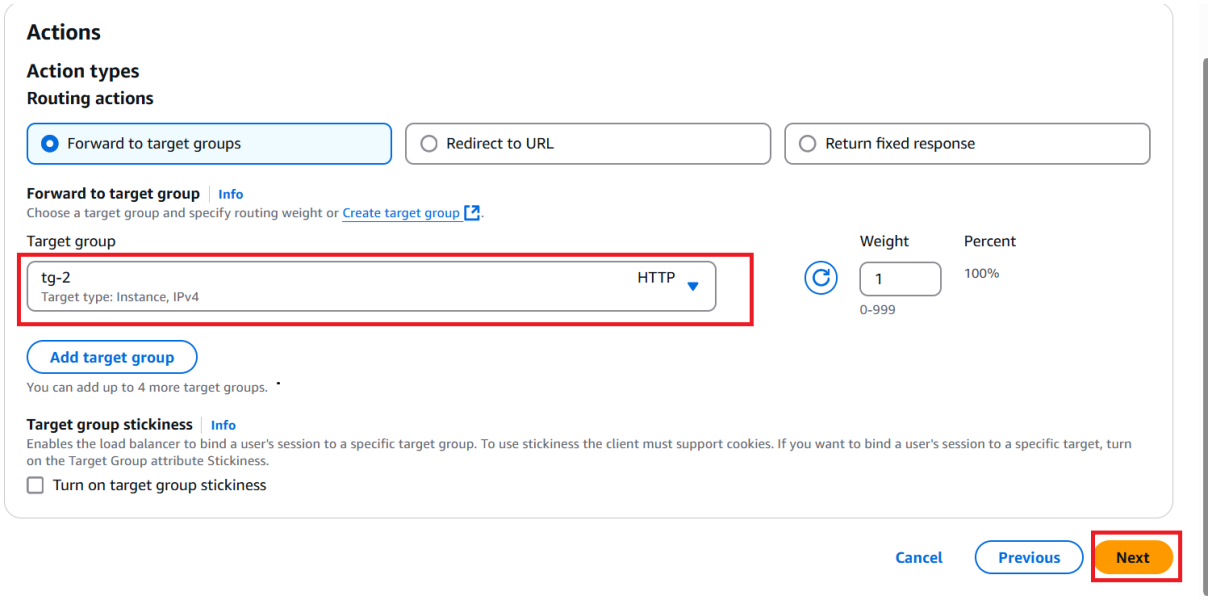

## Step 23: Select option as path and enter path as /mobile/* and click on confirm



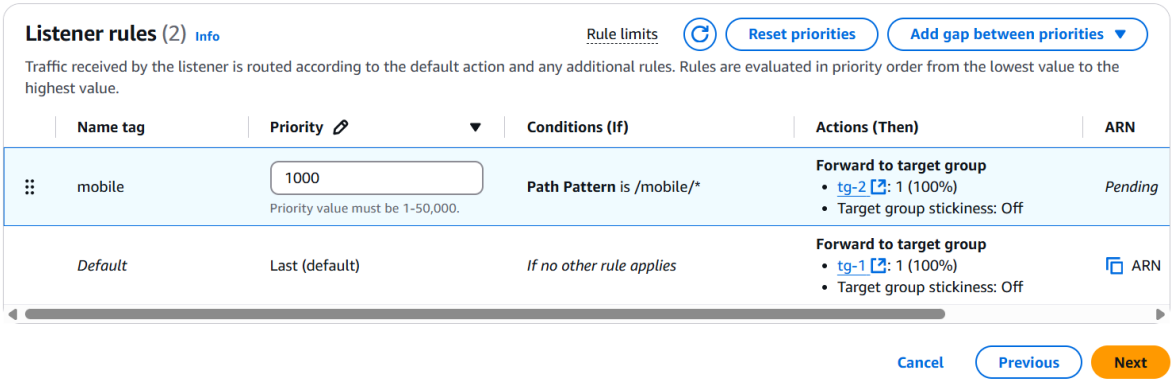

## Step 24: select path checkbox and click next



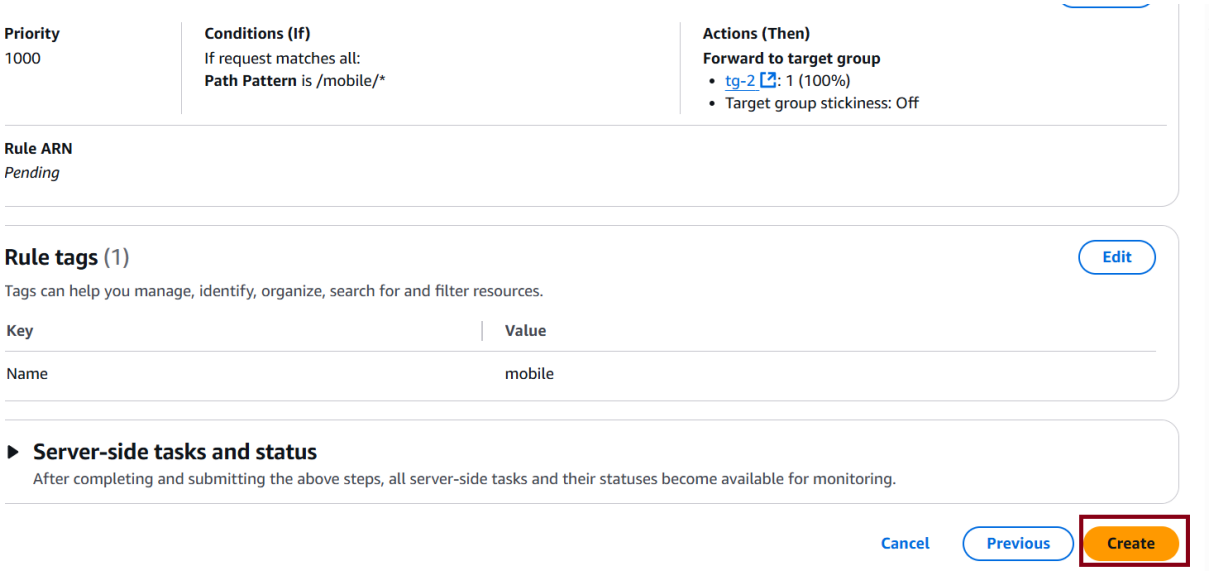

## Step 25: Select target group in which mobile server is placed




## Step 26: Enter priority as 1000 and click next

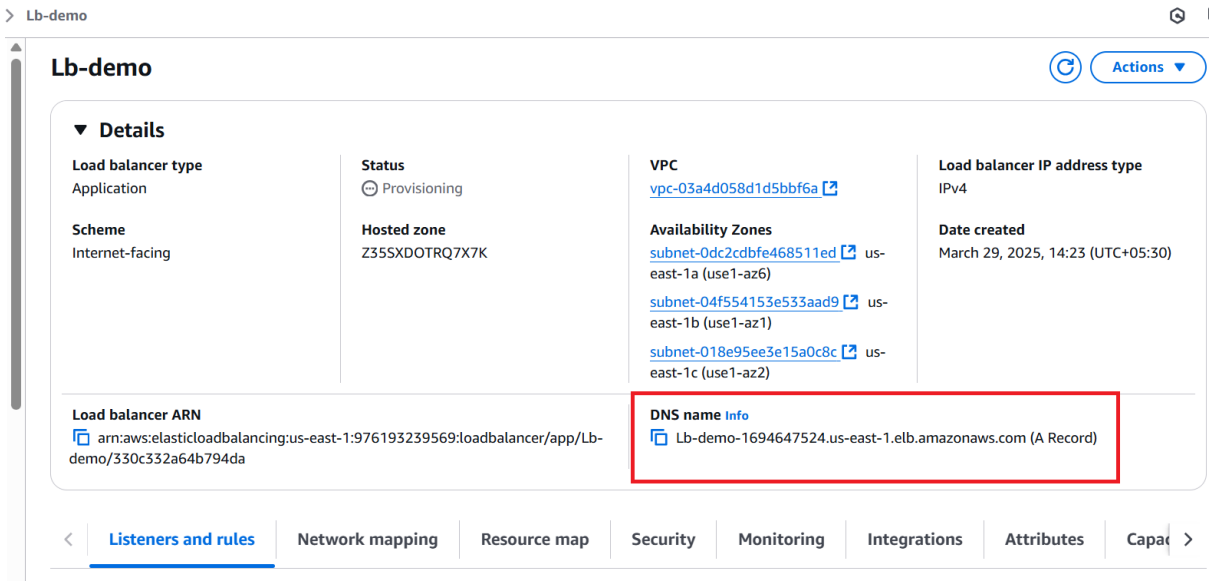



## Step 27: Click create




## Repeat the same step for target group 3 ie electronic

## Go to load balancer and copy the DNS name




## Go to the browser and paster the dns name in browser as URL

## -You will see the home page

## Now append /mobile/ and the end of DNS URL and you will see mobile page

## Similarly for electronics