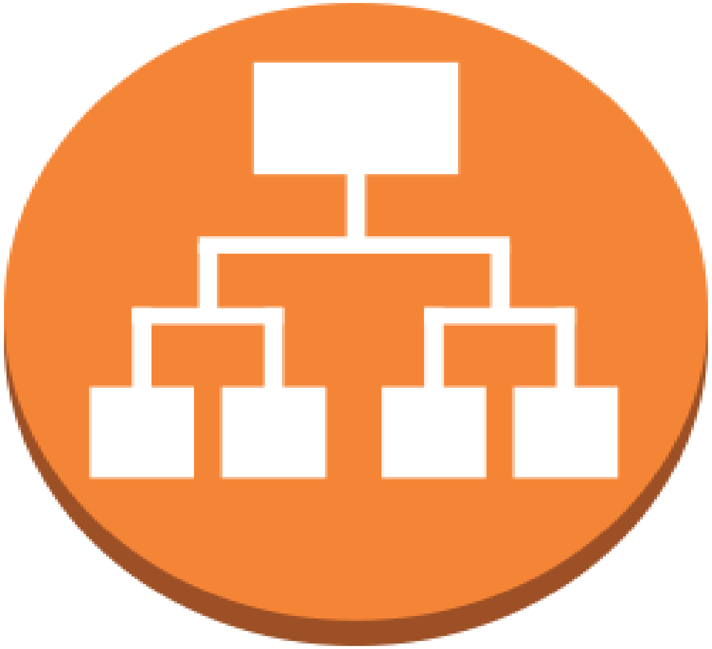
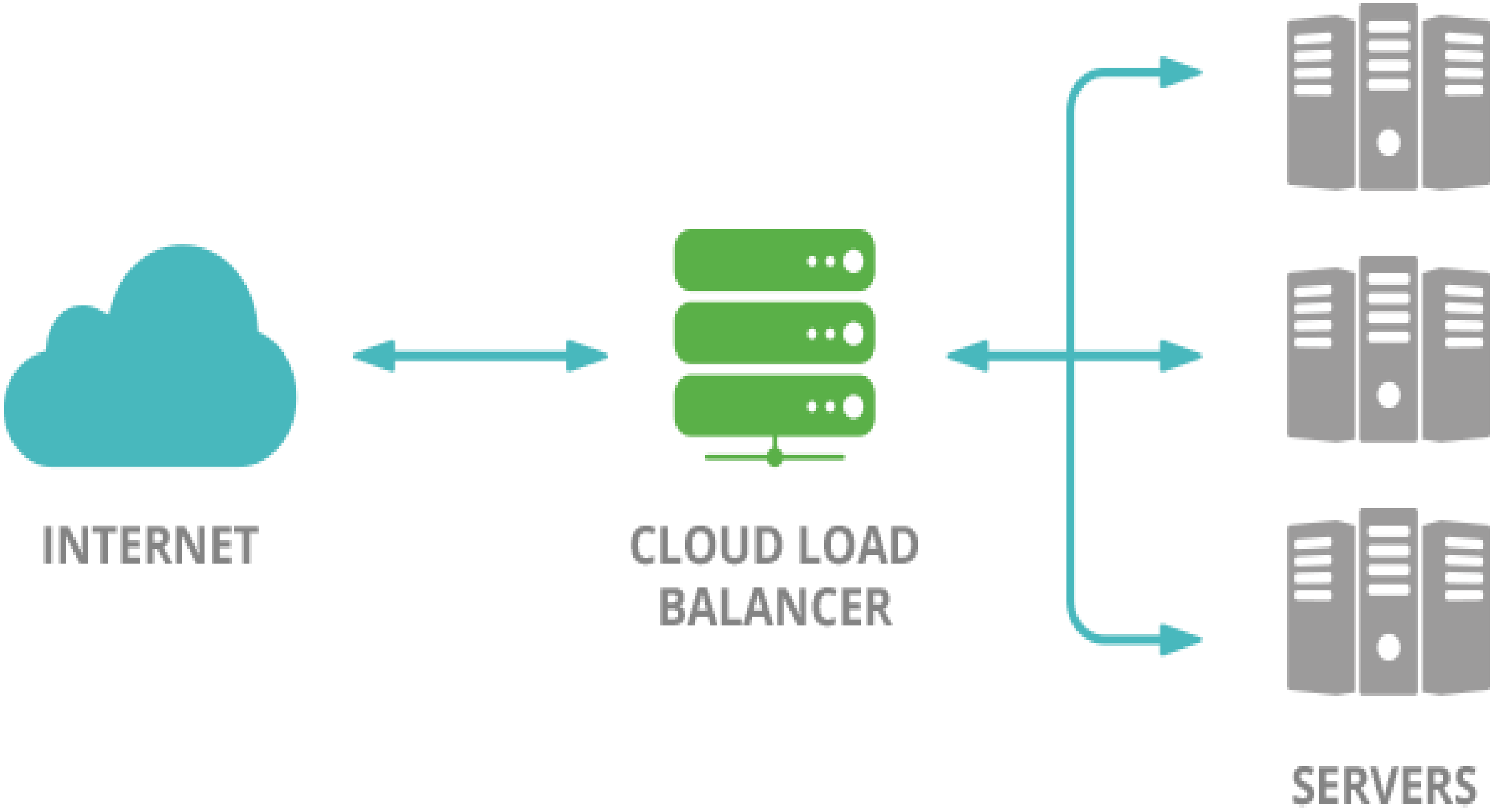


Elastic
Load Balancer


INTERNET
CLOUD LOAD BALANCER
SERVERS

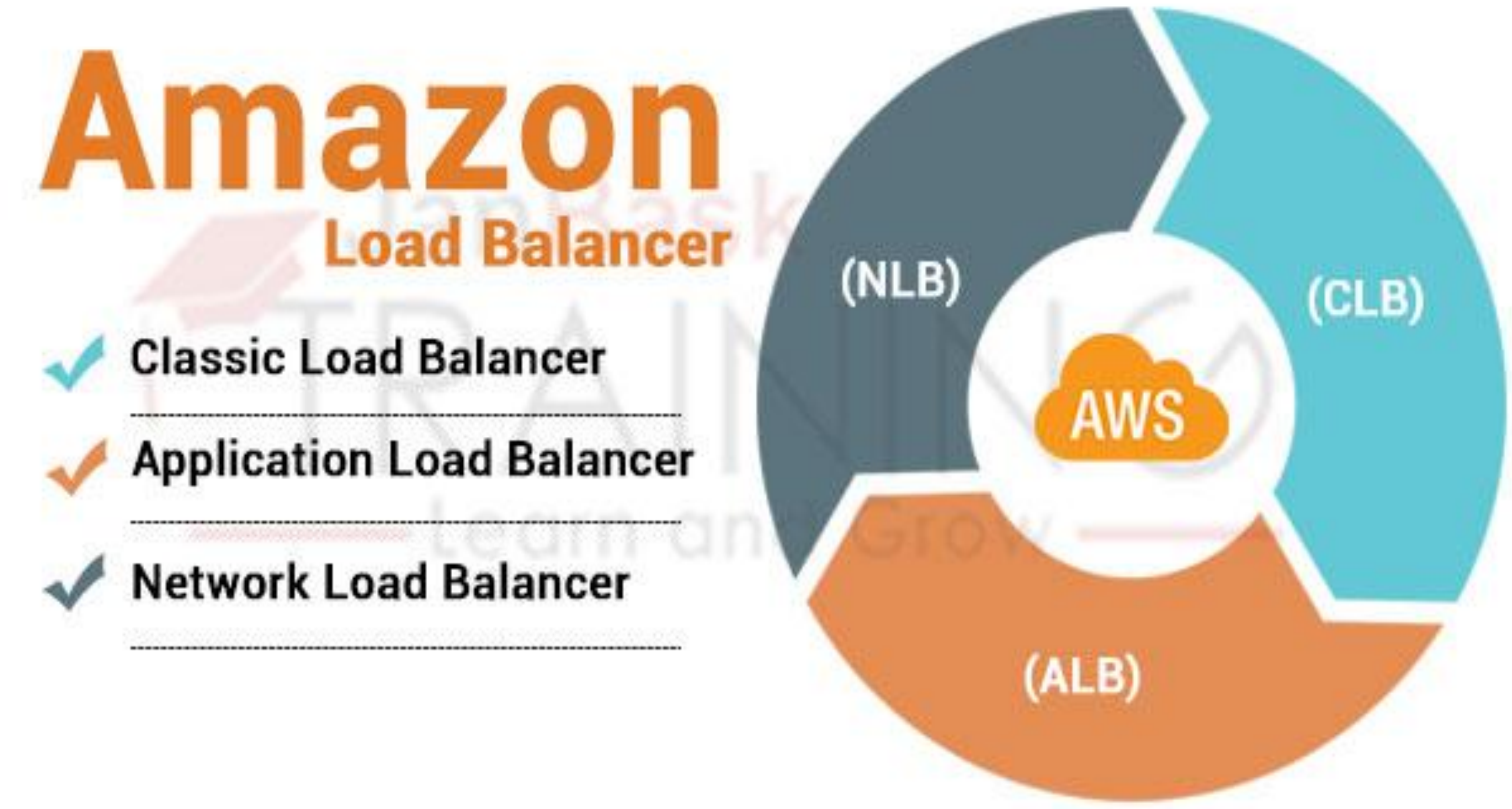
Elastic Load Balancer

- ✓ A load balancer distributes workloads across multiple compute resources, such as virtual servers. Using a load balancer increases the **availability** and **fault tolerance** of your applications.

- ✓ You can add and remove compute resources from your load balancer as your needs change, without disrupting the overall flow of requests to your applications.

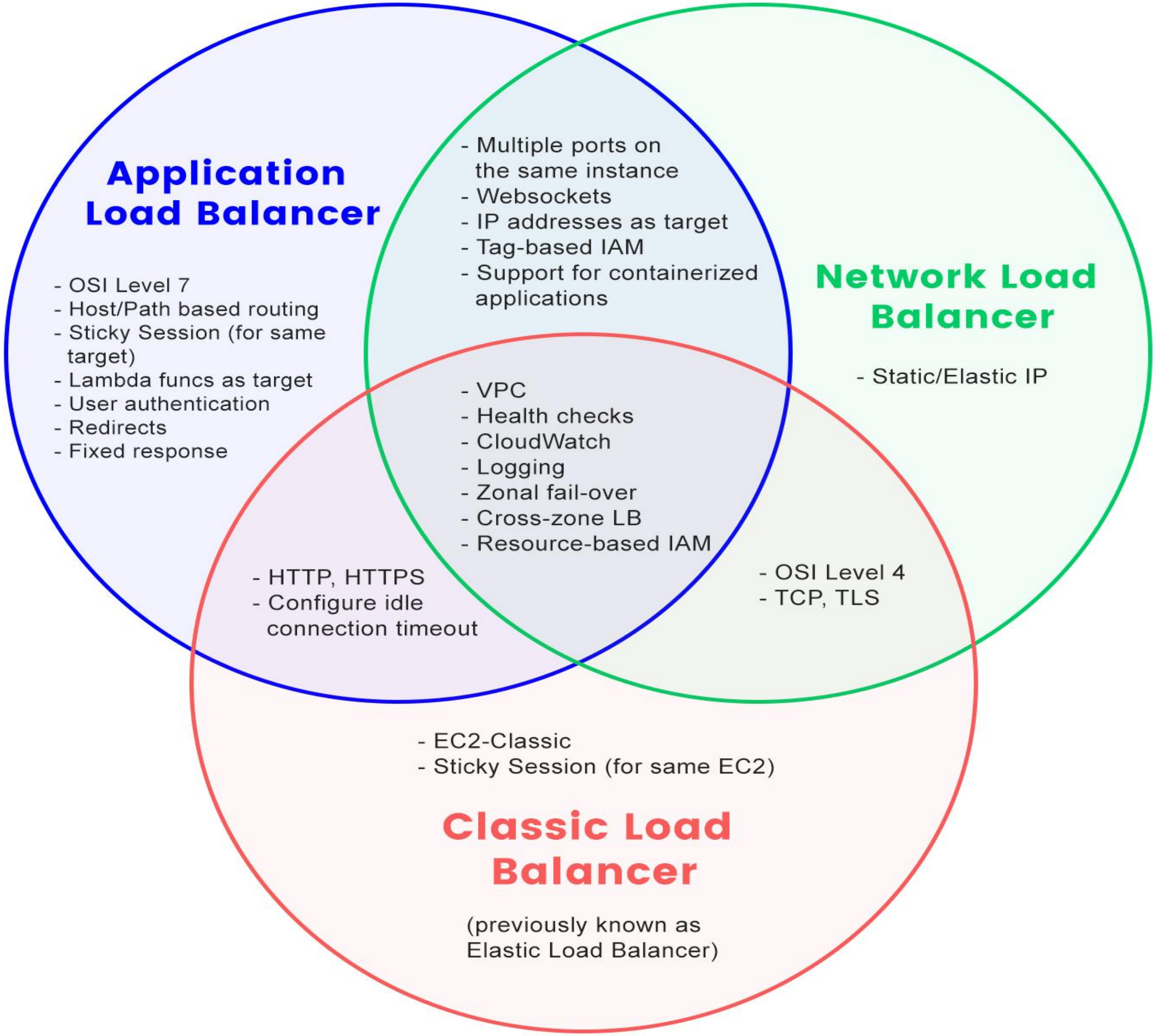
- ✓ You can configure health checks, which are used to monitor the health of the compute resources so that the load balancer can send requests only to the healthy ones. You can also offload the work of encryption and decryption to your load balancer so that your compute resources can focus on their main work.

Elastic Load Balancer Types



Amazon
Load Balancer

- ✓ Classic Load Balancer
- ✓ Application Load Balancer
- ✓ Network Load Balancer



Application Load Balancer

- OSI Level 7
- Host/Path based routing
- Sticky Session (for same target)
- Lambda funcs as target
- User authentication
- Redirects
- Fixed response

- Multiple ports on the same instance
- Websockets
- IP addresses as target
- Tag-based IAM
- Support for containerized applications

Network Load Balancer

- Static/Elastic IP

- VPC
- Health checks
- CloudWatch
- Logging
- Zonal fail-over
- Cross-zone LB
- Resource-based IAM

- HTTP, HTTPS
- Configure idle connection timeout

- OSI Level 4
- TCP, TLS

- EC2-Classic
- Sticky Session (for same EC2)

Classic Load Balancer

(previously known as Elastic Load Balancer)

Elastic Load Balancer

1. Classic Load Balancers.

Classic Load Balancer provides basic load balancing across multiple Amazon EC2 instances and operates at both the request level and connection level. Classic Load Balancer is intended for applications that were built within the EC2-Classic network.

2. Network Load Balancers

Network Load Balancer operates at the connection level (Layer 4), routing connections to targets - Amazon EC2 instances, containers and IP addresses based on IP protocol data. Ideal for load balancing of TCP traffic, Network Load Balancer is capable of handling millions of requests per second while maintaining ultra-low latencies. Network Load Balancer is optimized to handle sudden and volatile traffic patterns while using a single static IP address per Availability Zone. It is integrated with other popular AWS services such as Auto Scaling, Amazon EC2 Container Service (ECS), and Amazon CloudFormation

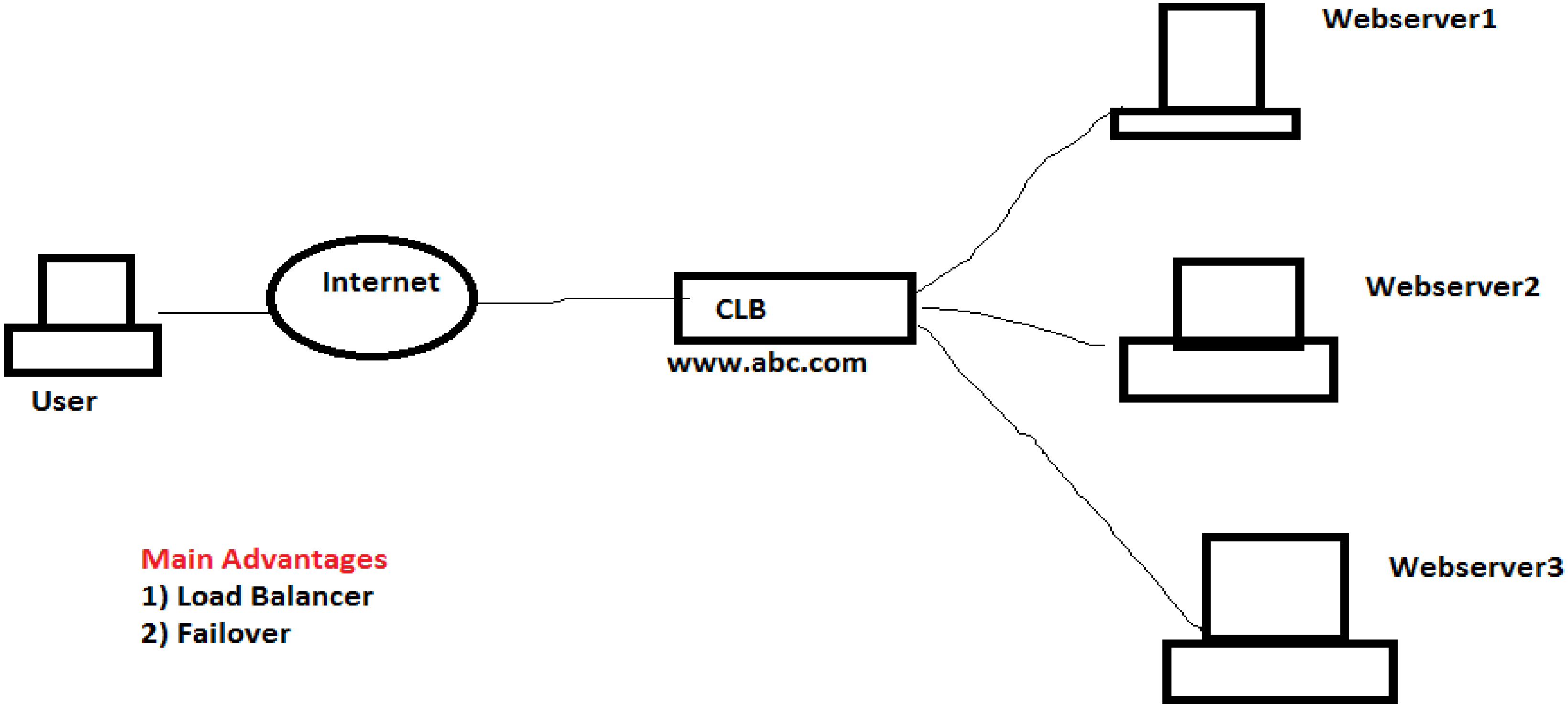
Elastic Load Balancer

1.Application Load Balancers

Application Load Balancer operates at the request level (layer 7), routing traffic to targets - EC2 instances, containers and IP addresses based on the content of the request. Ideal for advanced load balancing of HTTP and HTTPS traffic, Application Load Balancer provides advanced request routing targeted at delivery of modern application architectures, including microservices and container-based applications. Application Load Balancer simplifies and improves the security of your application, by ensuring that the latest SSL/TLS ciphers and protocols are used at all times.

Classic Load Balancers

ELB: Classic Load Balancer



Main Advantages

1) Load Balancer
2) Failover

Classic Load Balancers Steps

1) Create 3 Instances and Configure different web page

2) Click on load balancer –Create load balancer -------------------------------create

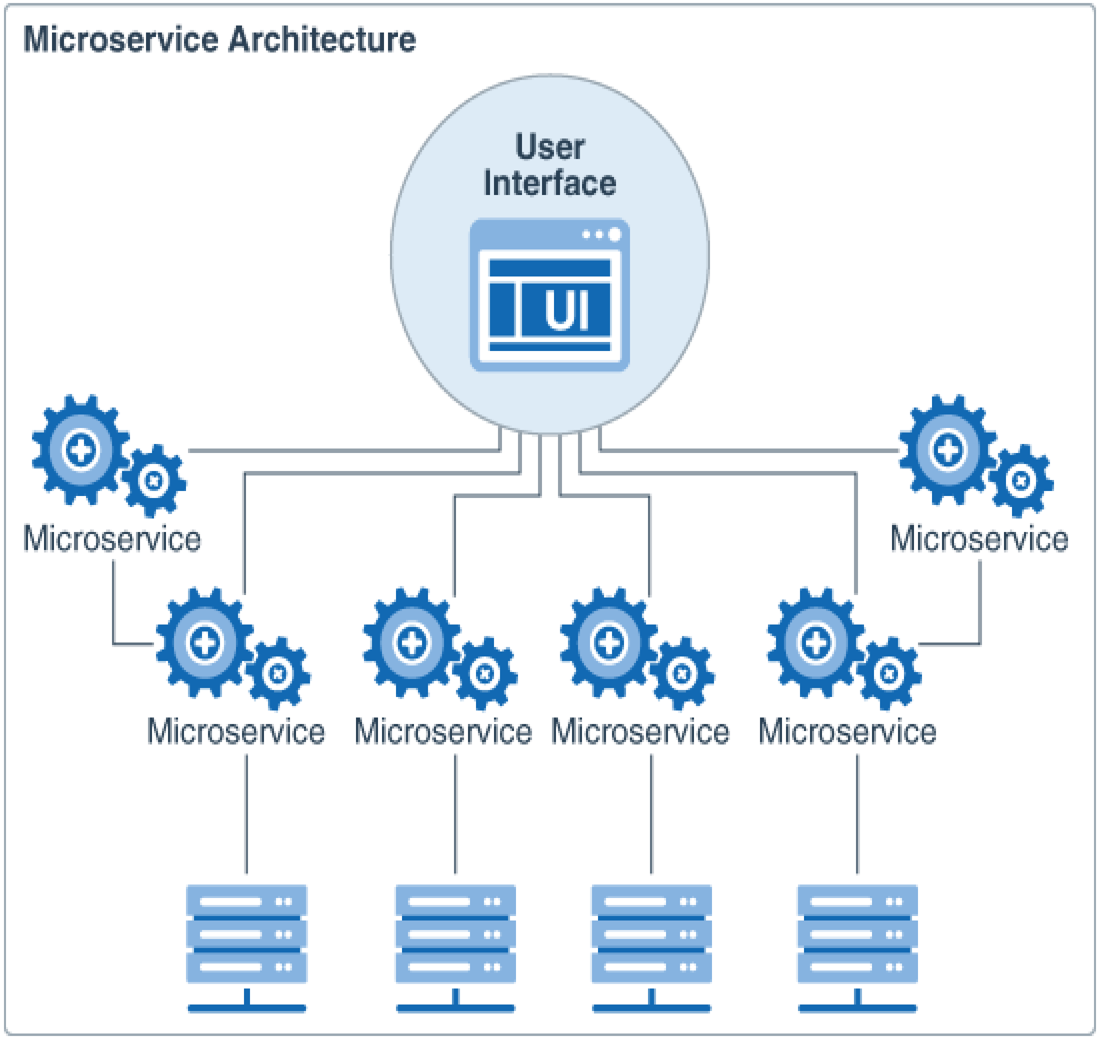
3) After opening ---scroll down –click on target—wait and refresh to check target status –changed from outservice to inservice

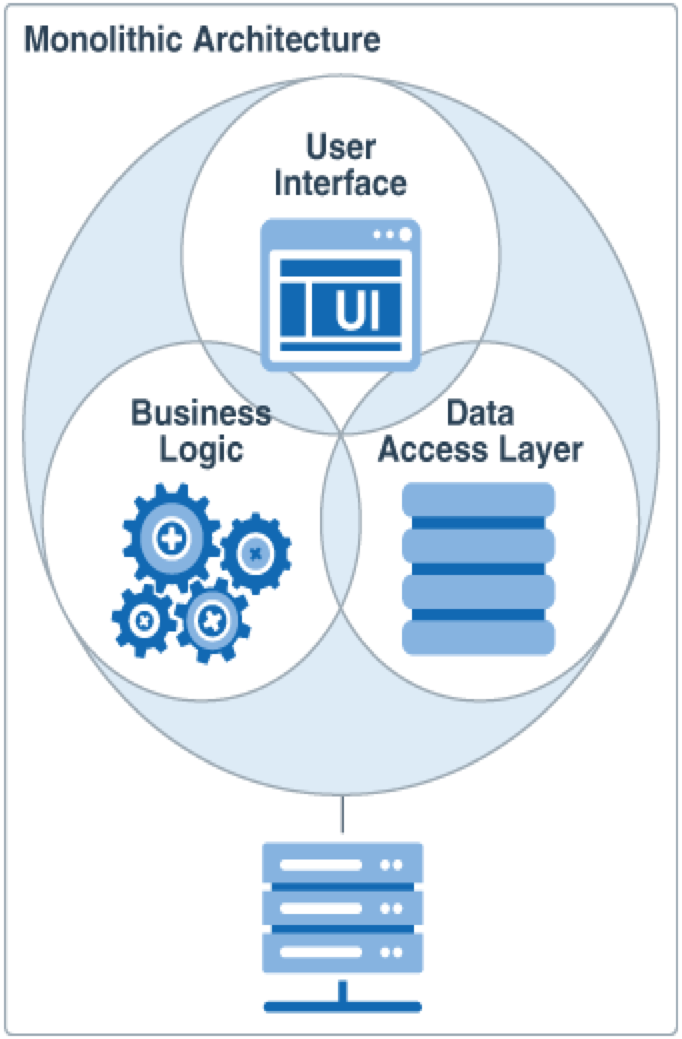
4)Description –copy dns name and paste in browser tab—keep refreshing

AWS Application Load Balancer

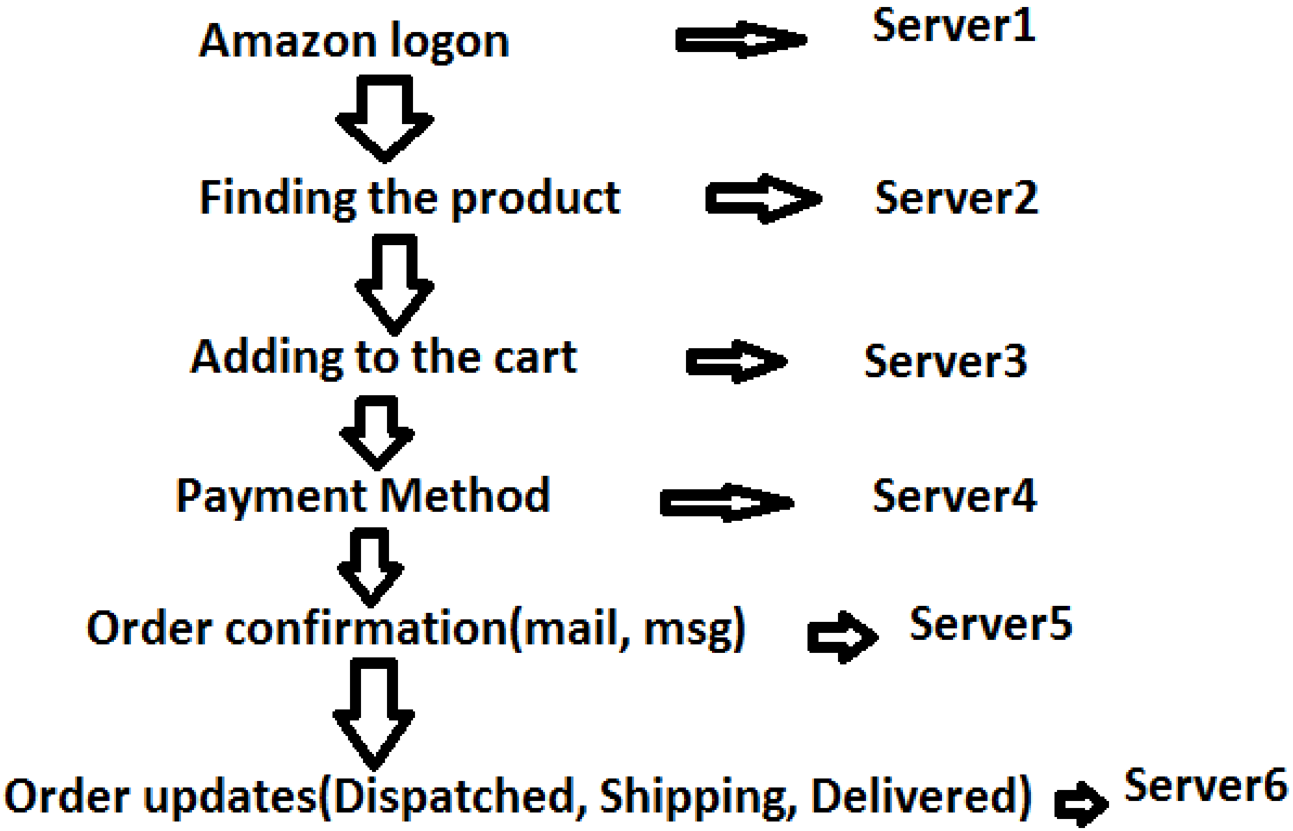
Application Load Balancer

HTTP
HTTPS


Microservice Architecture
User Interface
UI
Microservice
Microservice
Microservice
Microservice
Microservice
Microservice


Monolithic Architecture
User Interface
UI
Business Logic
Data Access Layer

Amazon.in Shopping Work Flow



Amazon logon ⇒ Server1

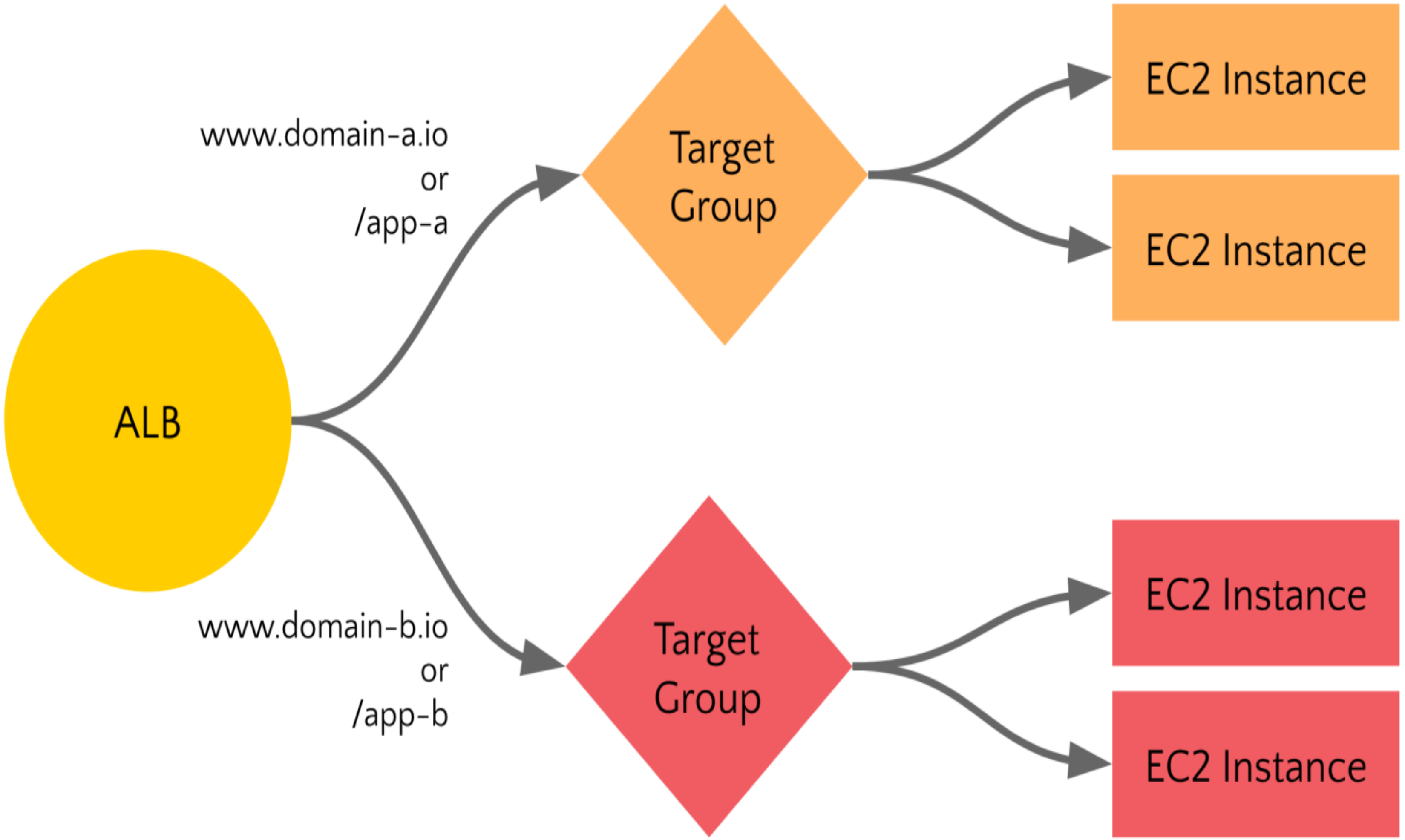
Finding the product ⇒ Server2

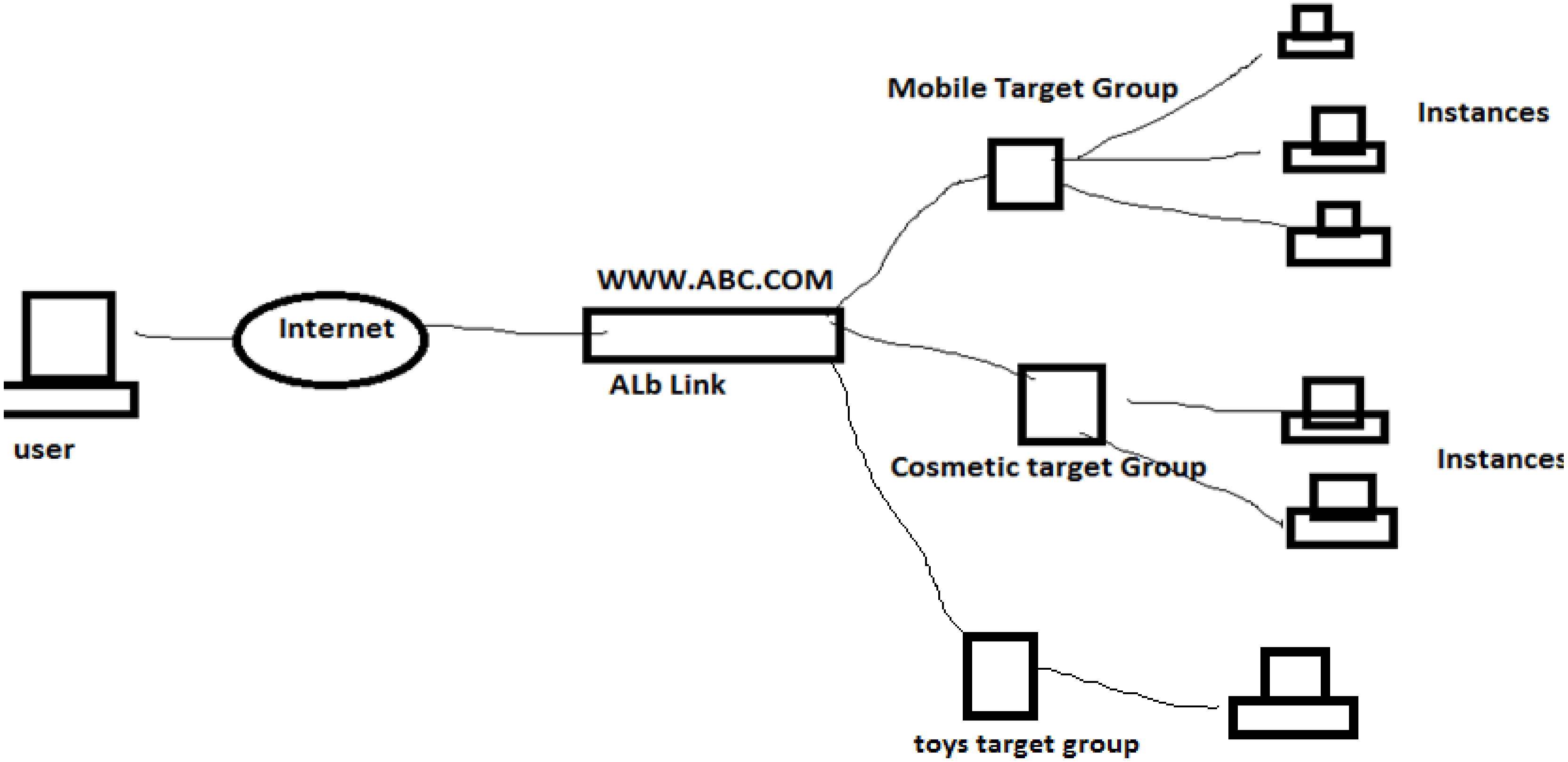
Adding to the cart ⇒ Server3

Payment Method ⇒ Server4

Order confirmation(mail, msg) ⇒ Server5

Order updates(Dispatched, Shipping, Delivered) ⇒ Server6


ALB
www.domain-a.io
or
/app-a
www.domain-b.io
or
/app-b
Target Group
Target Group
EC2 Instance
EC2 Instance
EC2 Instance
EC2 Instance


Mobile Target Group
Instances
WWW.ABC.COM
Internet
ALb Link
user
Cosmetic target Group
Instances
toys target group

Steps to configure ALB

1) Launch 3 instance and configure different web pages

2) Create Target groups for each application and add the instances

3) Create ALB

4) Configure condition

5) Copy ALB DNS and check

Steps to configure ALB

1) **Launch 3 instance and configure different web pages**

Mobile server --- mobile.html ---nokia, Samsung, iphone, htc

Cloth server ---cloth.html ---Jeans, T shirt, tie

Cosmetic server ---- cosmetic.html ---- powder, deo, oil

2) Create Target groups for each application and add the instances

EC2-Load balancer –Target group –Create Target group – mobile-target—create – close

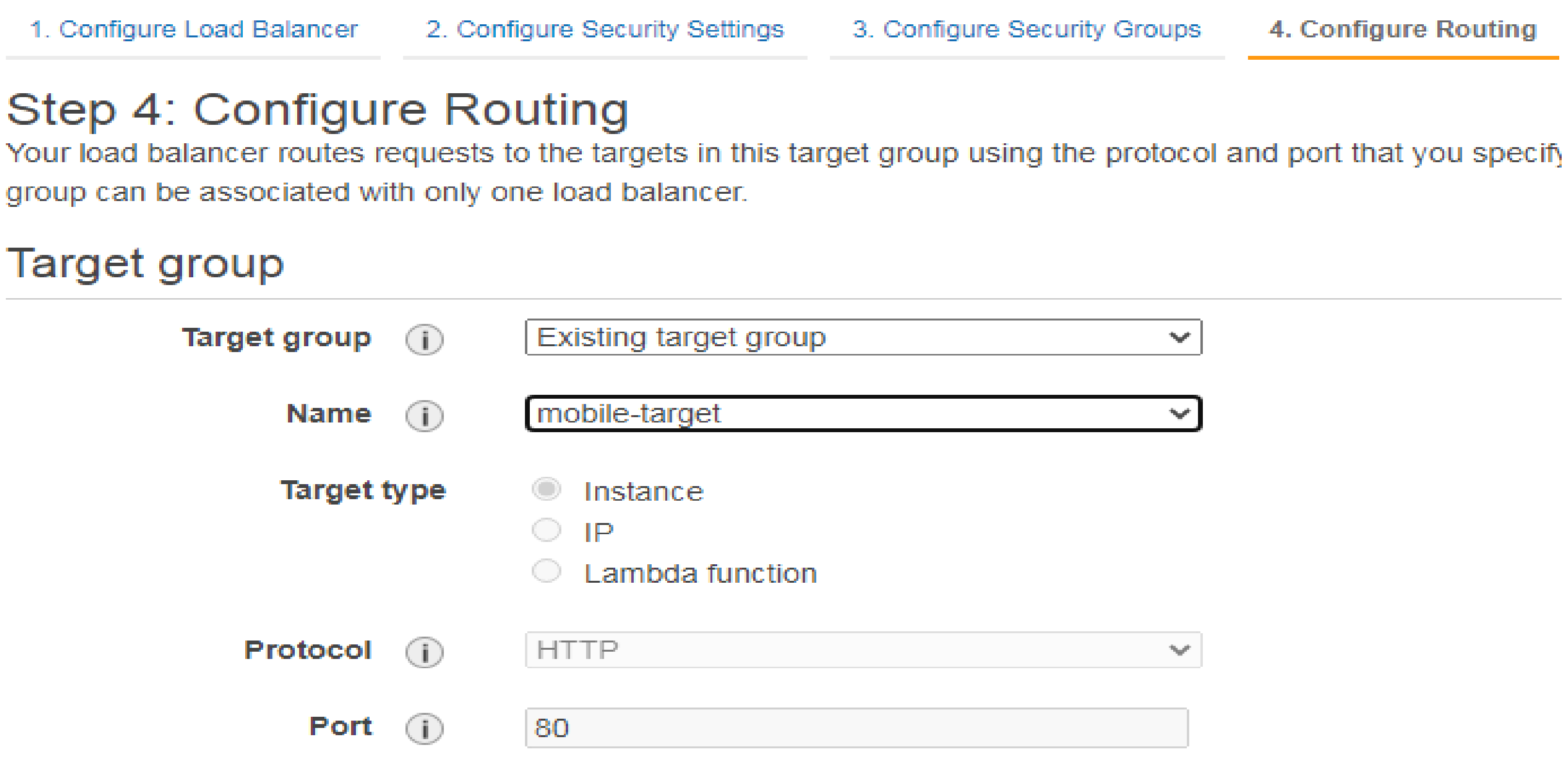
----Scroll down –Target –edit—select mobile server---add to registered –save

Do same for cloth and cosmetic server also

Steps to configure ALB

3) Create ALB

Load balancer –create load balancer—ALB – give name: my-alb ---scroll down and select all subnet –next---next –select same SG(Instance SG) ---- Select Target group: Existing , Name: Mobile target --Next—Next—Create Close



1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups **4. Configure Routing**

Step 4: Configure Routing

Your load balancer routes requests to the targets in this target group using the protocol and port that you specify group can be associated with only one load balancer.

Target group

Target group ⓘ	Existing target group
Name ⓘ	mobile-target
Target type	● Instance ○ IP ○ Lambda function
Protocol ⓘ	HTTP
Port ⓘ	80

Steps to configure ALB

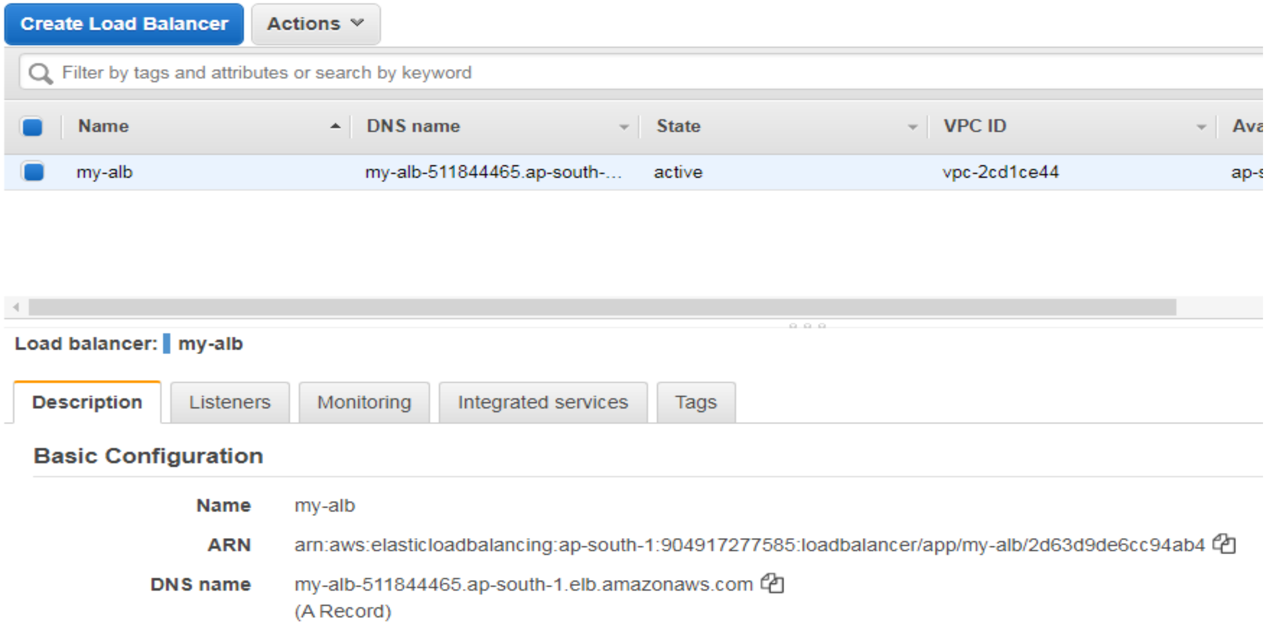
4) Configure condition: After ALB creation ---click on listeners---view/edit rules ---Add rule –Insert rule—

Add condition –Path --*mobile* -- click on tick mark

Add Action—Forward to –Mobile target -- click on tick mark

Save

Do same for Cloth and cosmetic server also



Name	DNS name	State	VPC ID	Ava
my-alb	my-alb-511844465.ap-south-...	active	vpc-2cd1ce44	ap-s

Load balancer: my-alb

Basic Configuration

Name	my-alb
ARN	arn:aws:elasticloadbalancing:ap-south-1:904917277585:loadbalancer/app/my-alb/2d63d9de6cc94ab4
DNS name	my-alb-511844465.ap-south-1.elb.amazonaws.com (A Record)

Steps to configure ALB

5) Copy ALB DNS and check

Come back to ALB –Click on Description –copy DNS name

And Paste in New Tab

- ALB/mobile.html
- ALB/cloth.html
- ALB/cosmetic.html