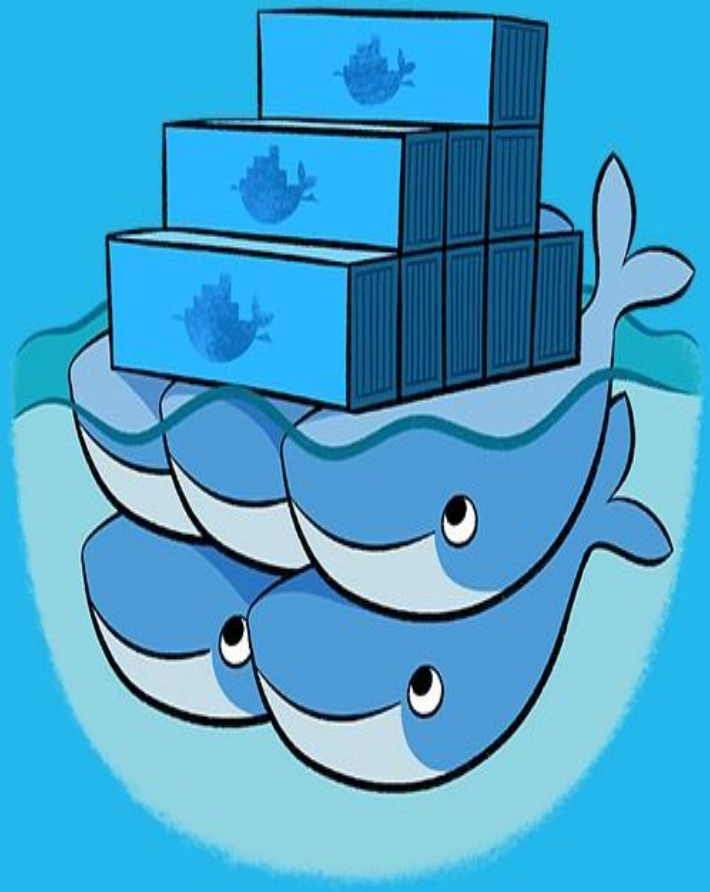
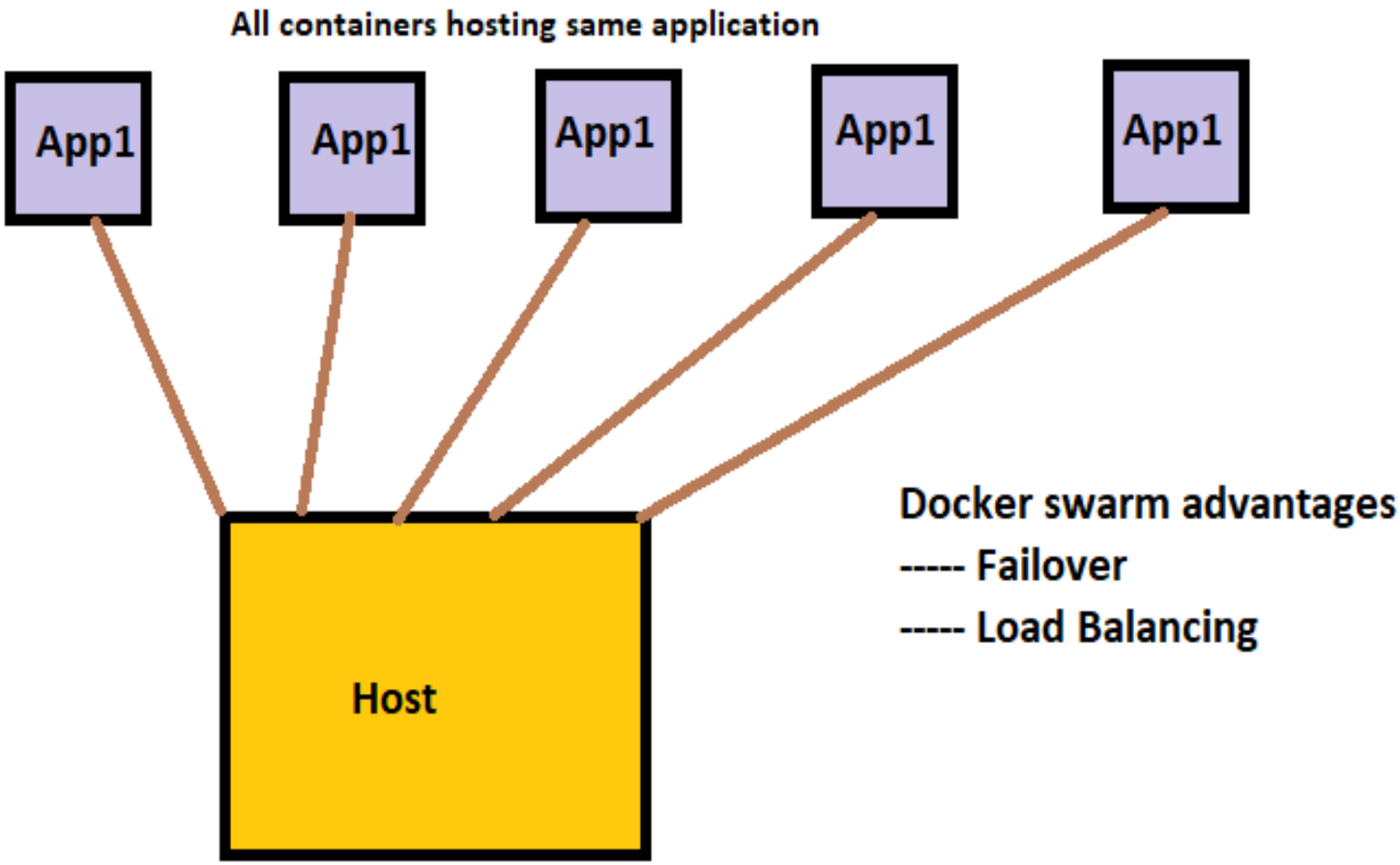


Docker Swarm

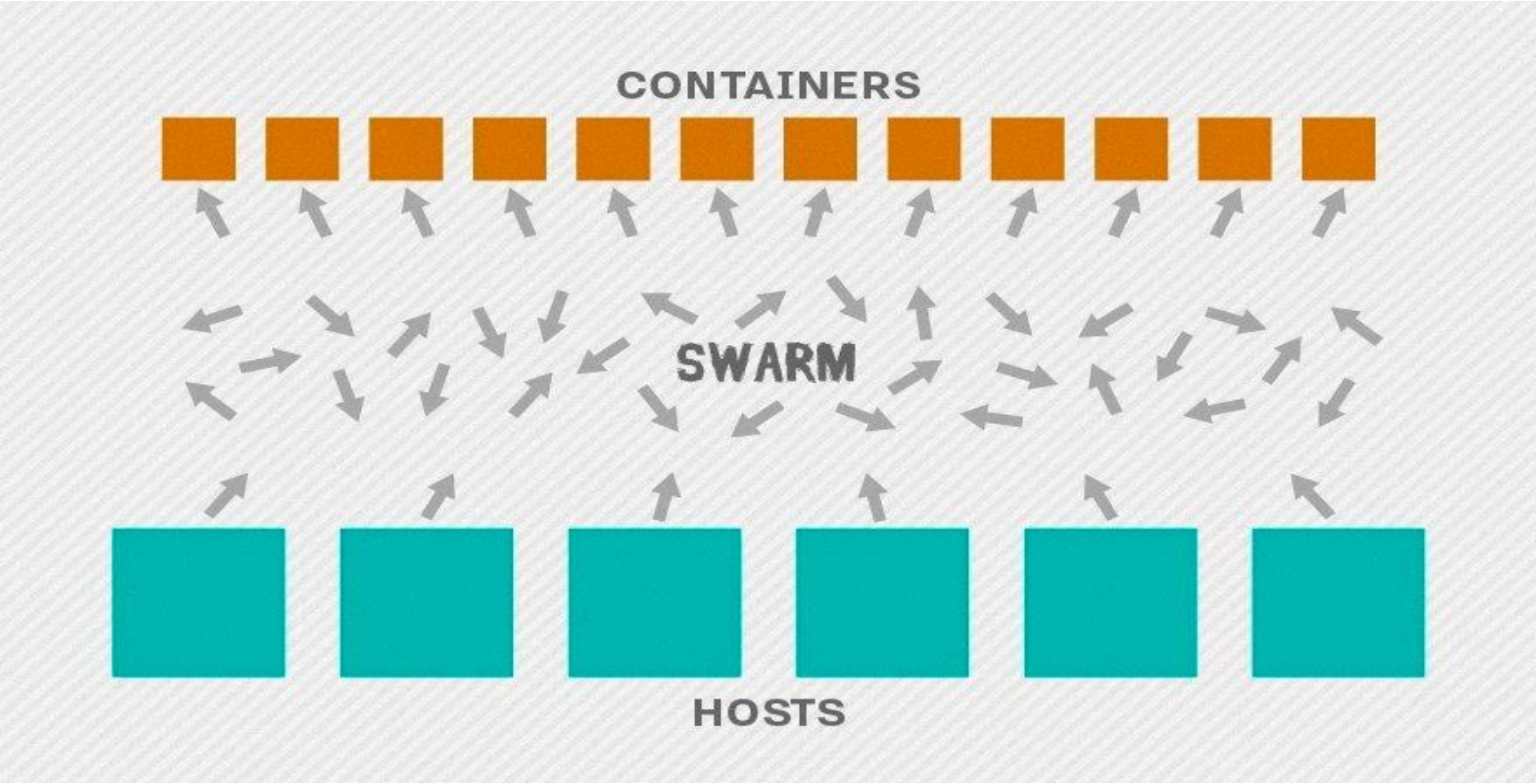
Docker swarm

- Docker Swarm is a clustering and scheduling tool for Docker containers.
- With Swarm, IT administrators and developers can establish and manage a cluster of Docker nodes as a single virtual system.
- Clustering is an important feature for container technology, because it creates a cooperative group of systems that can provide **redundancy** and **Load balancing**.
- A Docker Swarm cluster also provides administrators and developers with the ability to add or subtract container iterations as computing demands change.


All containers hosting same application
App1
App1
App1
App1
App1
Host
Docker swarm advantages
----- Failover
----- Load Balancing

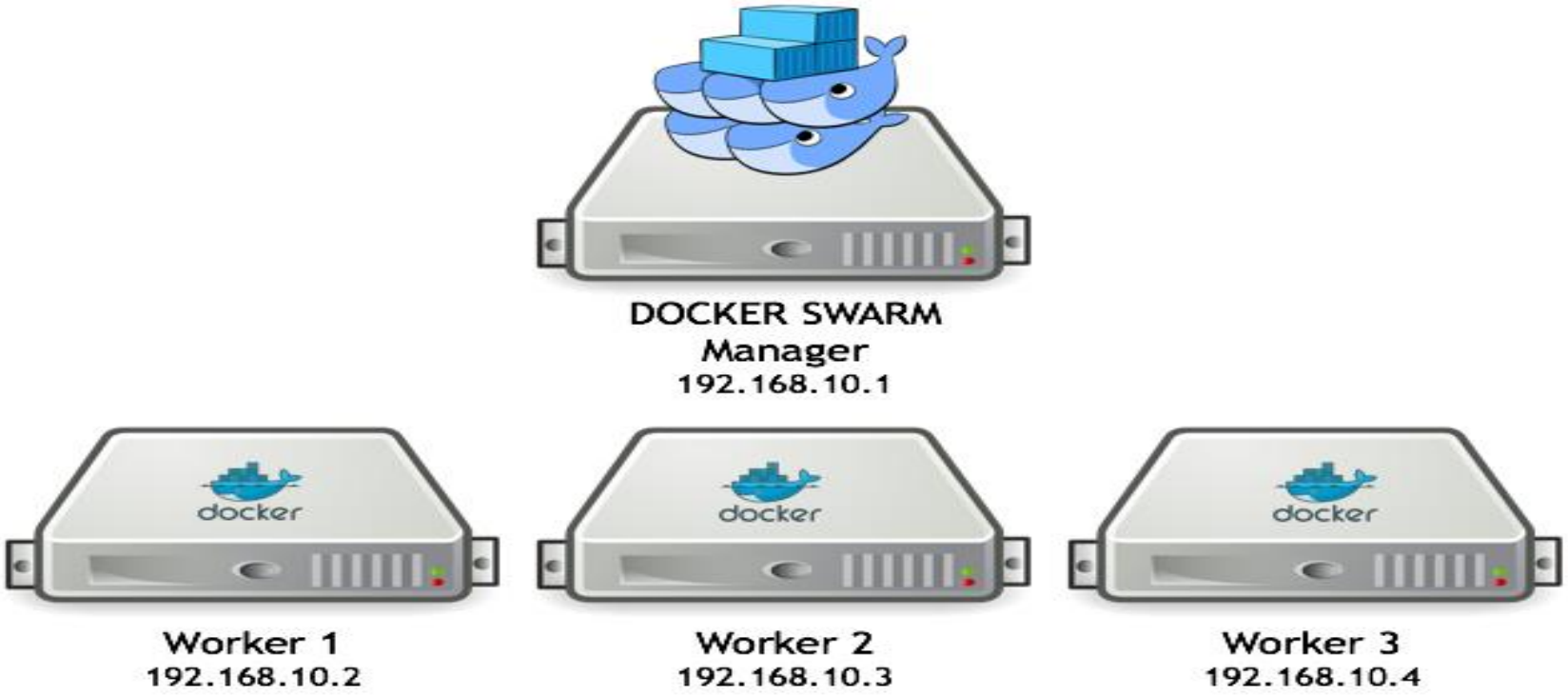
Docker swarm

Swarm mode also exists natively for Docker Engine, the layer between the OS and container images. Multiple host for host level redundancy.



Swarm management

- An IT administrator controls Swarm through a swarm **manager**, which orchestrates and schedules containers. The swarm manager allows a user to create a primary manager instance and multiple replica instances in case the primary instance fails. In Docker Engine's swarm mode, the user can deploy manager and **worker** nodes at runtime



Hands on –1 (Creating Swarm Cluster)

Requirement: 2 Linux system (1 for manager and 1 for worker)

1) Install docker in both system

2) In manager

docker swarm init --advertise-addr=172.16.32.65(manager private IP)

--- copy the output

3) In worker

paste the copied content

docker swarm join --token 172.16.32.65:2371

4) In manager

docker node ls

both node status : ready

Hands on –2 (Deploy app in docker swam)

How application works actually in swarm?

- Container on the cluster are deployed using services on docker swarm
- A service is a long running docker container that can be deployed to any node worker

1) Create a new image using docker file where web service is already configured.

2) **In manager**

docker service create --name apache --replicas 5 -p 83:80 newubuntu

docker service ls

docker ps

now open web browser

mangerpublic-ip:83

workerpublic-ip:83

In worker

docker ps

Hands on –3 (Check the availability)

In manager

docker rm -f $(docker ps -a -q)

now open web browser

 mangerpublic-ip:83

In worker

docker rm -f $(docker ps -a -q)

now open web browser

workerpublic-ip:83

In manager

docker ps

some container launched automatically

In worker

docker ps

some container launched automatically

Hands on –4 (Scaling)

Scale down

In manager

docker service scale apache=2

docker service ls

docker ps

In worker

docker ps

Scale up

In manager

docker service scale apache=10

docker service ls

docker ps

In worker

docker ps

Hands on –5 (Leaving node)

In worker

docker swarm leave

wait for few moment

In manager

docker node ls

host 2 : down

host 1: ready

docker swarm leave --force

Deleting swarm service

docker service rm apache

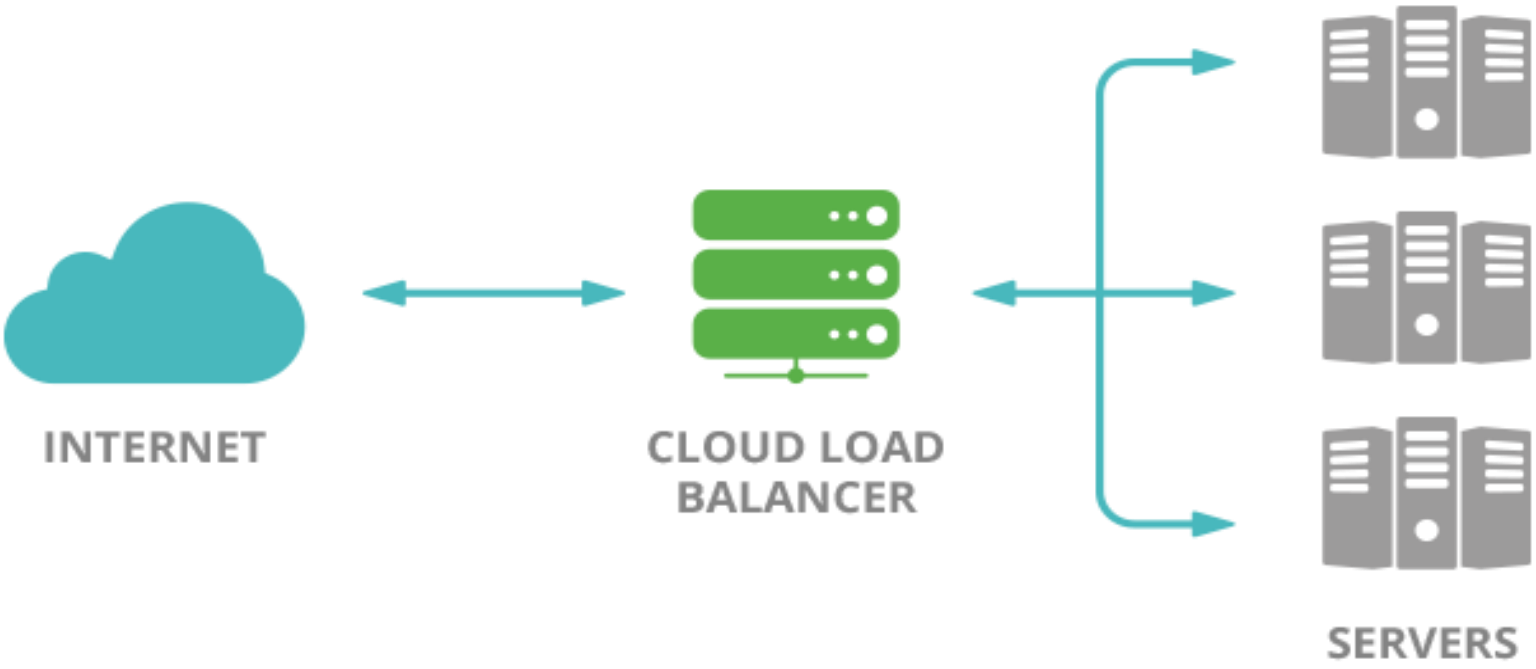
Elastic
Load Balancer

ELB Advantages

1) Load balancer

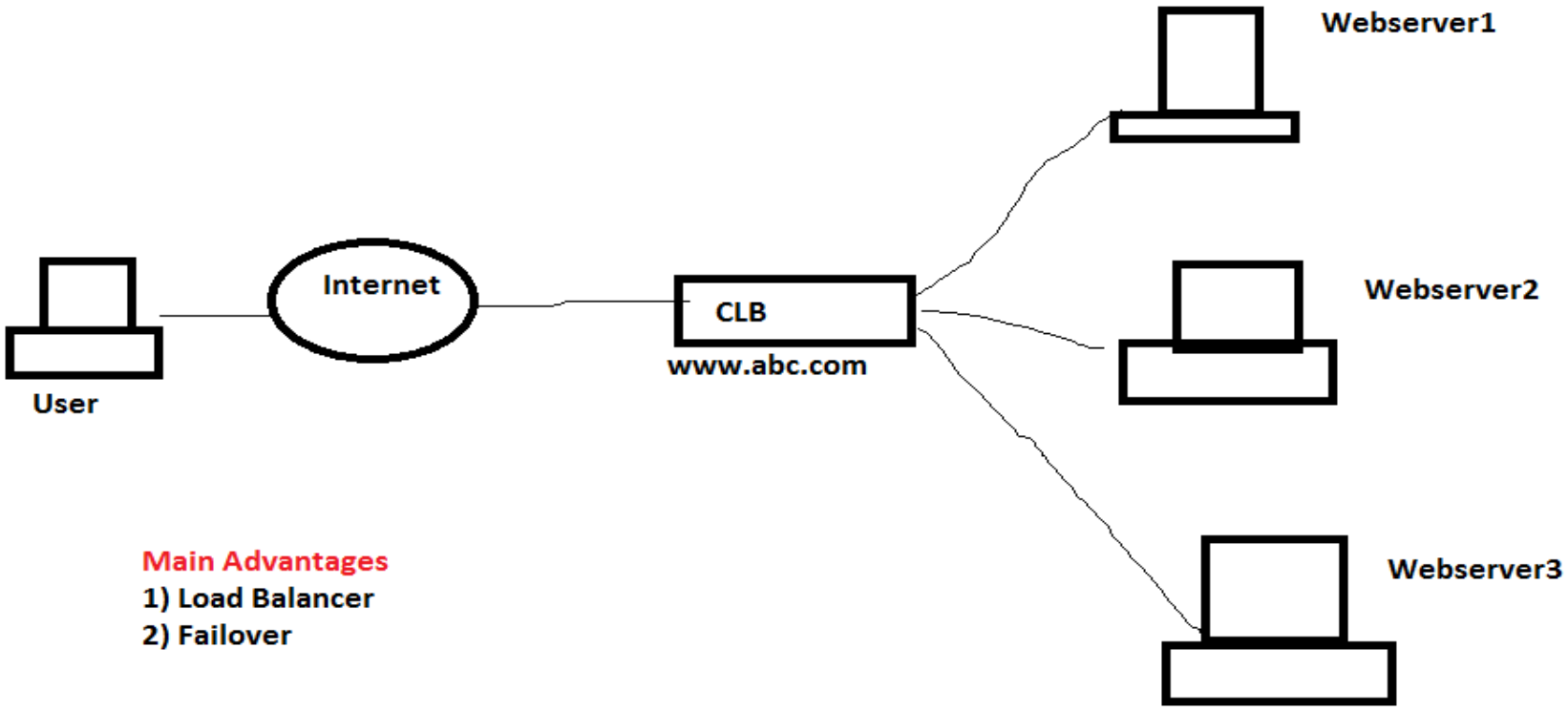
2) Failover

3) Any time any number of instances can be added or removed



Classic Load Balancers

ELB: Classic Load Balancer



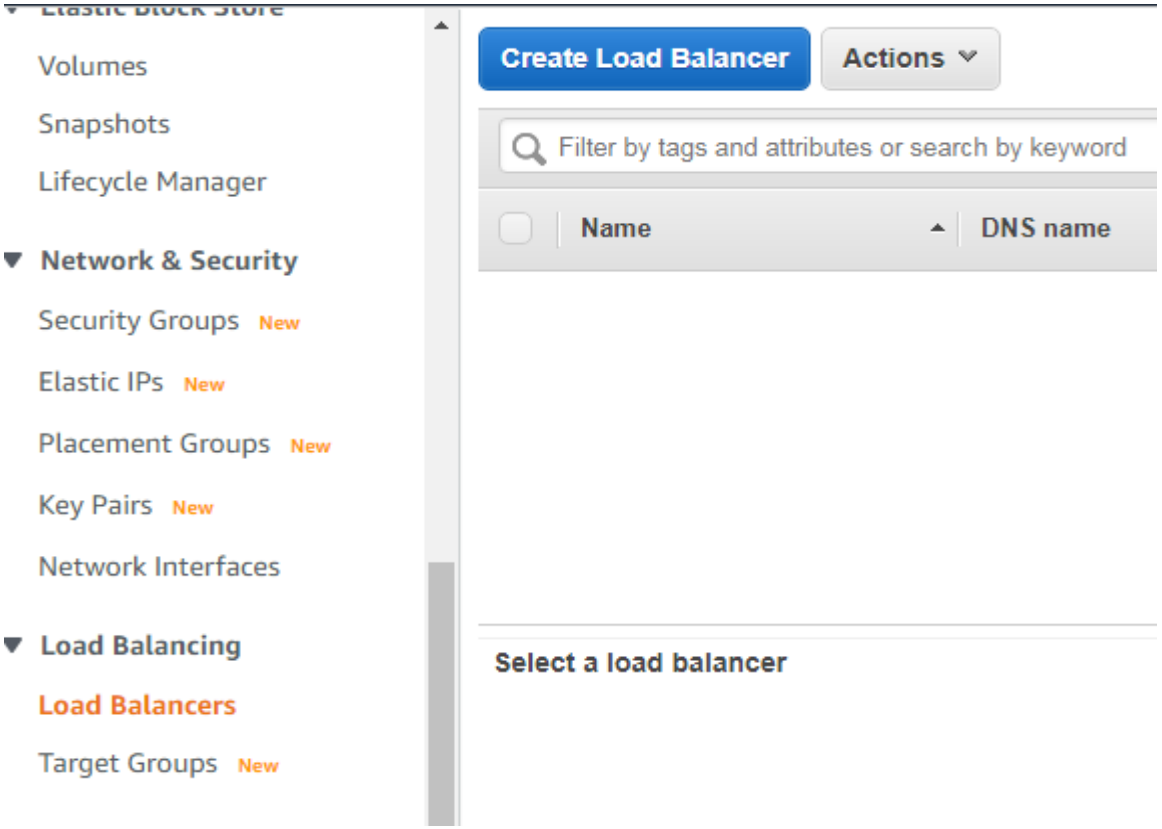
Main Advantages

1) Load Balancer
2) Failover

Classic Load Balancers Steps

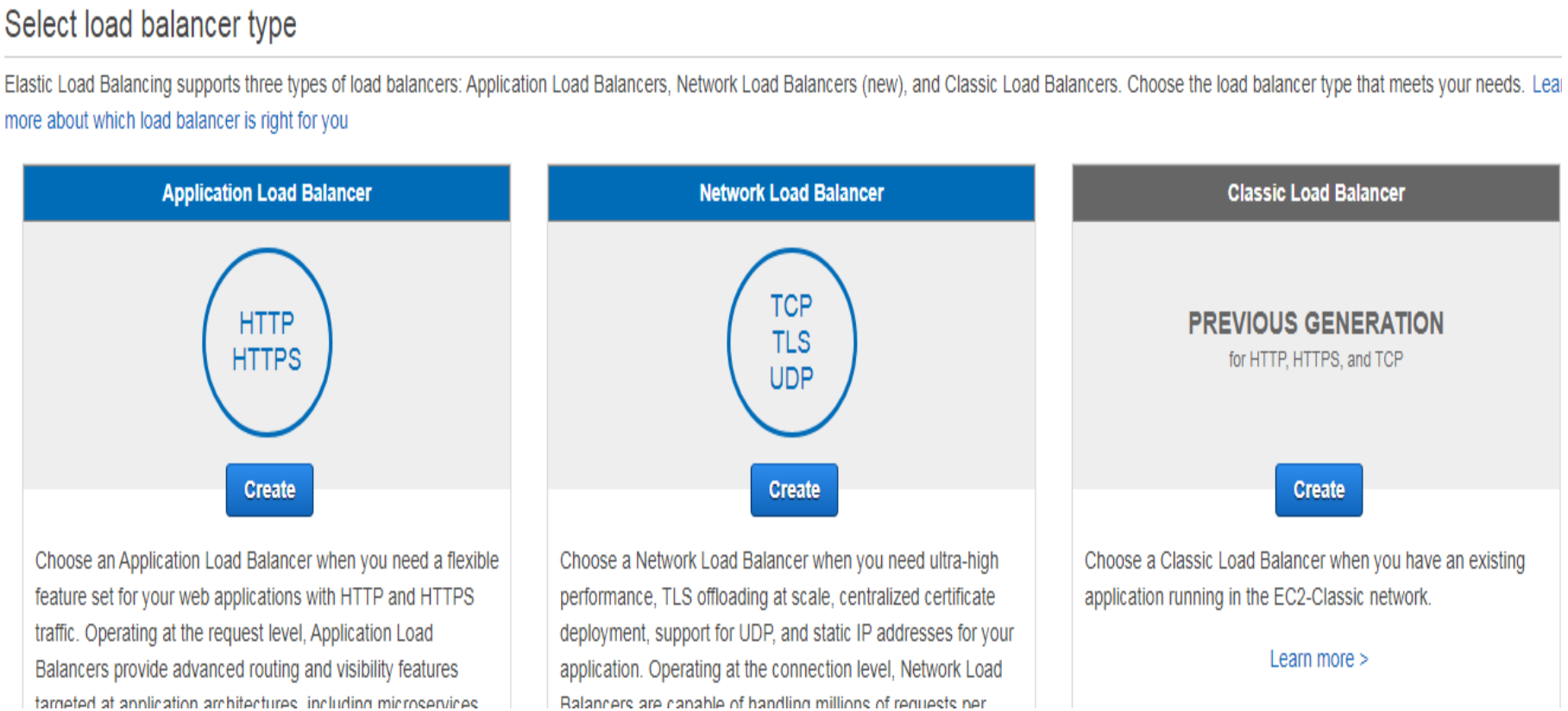
1) Create 3 Instances and Configure different web page

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



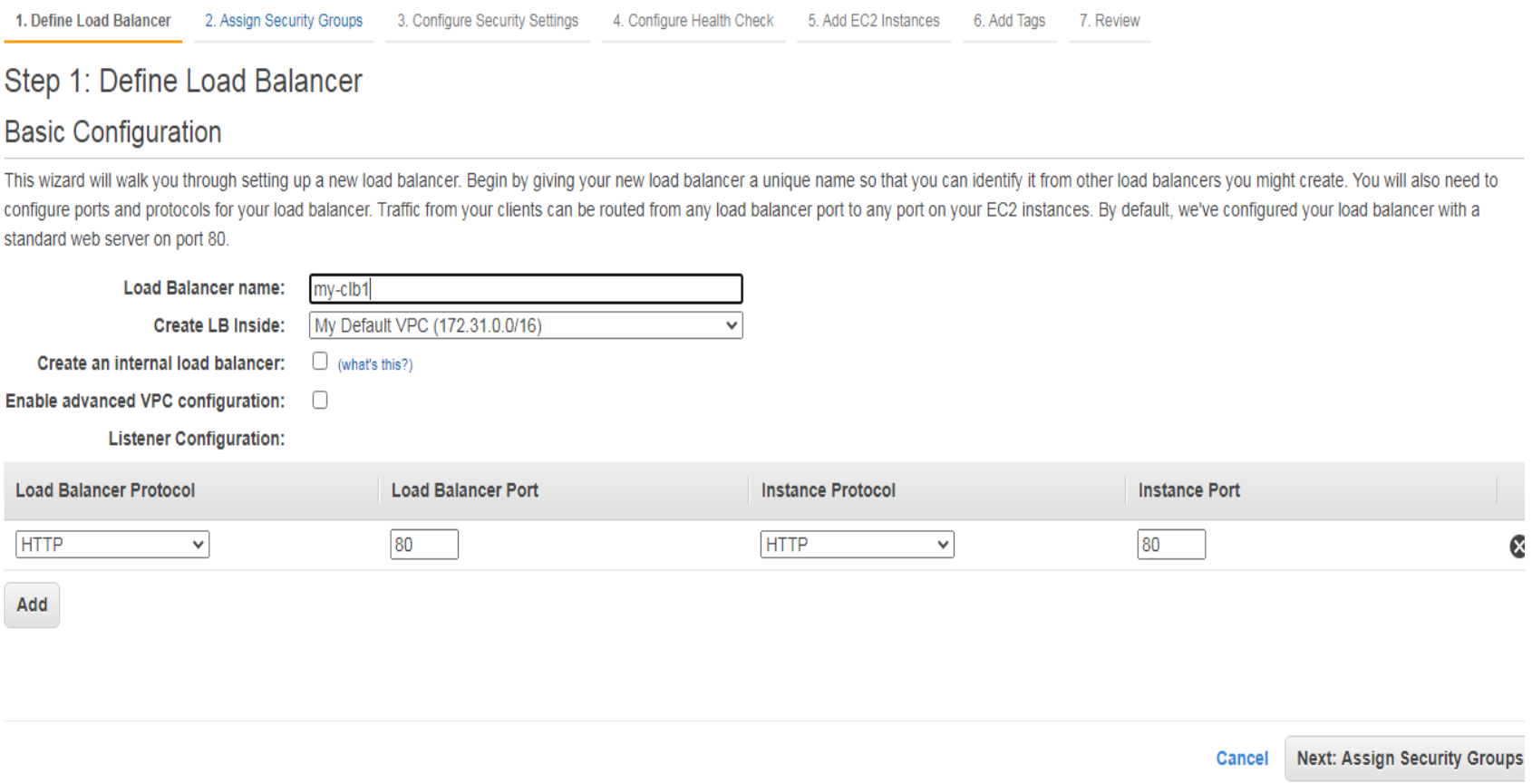
Classic Load Balancers Steps

Select Classic load balancer



Classic Load Balancers Steps

Give load balancer name



Classic Load Balancers Steps

Select Security group(SSH or RDP and HTTP allowed)

Step 2: Assign Security Groups

You have selected the option of having your Elastic Load Balancer inside of a VPC, which allows you to assign security groups to your load balance
This can be changed at any time.

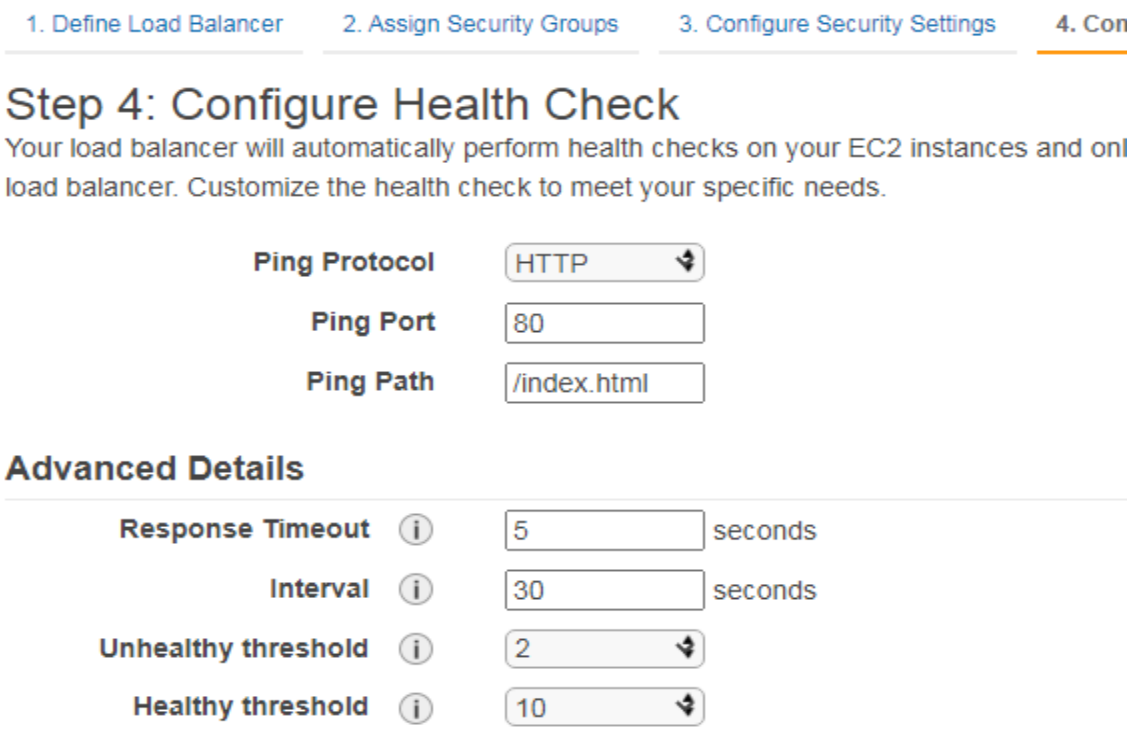
Assign a security group: ○ Create a **new** security group

◉ Select an **existing** security group

	Security Group ID	Name	Description
☐	sg-08c1caa50b77360f1	all traffic	launch-wizard-2 created 2020-08-13T18:34:27.224+05:30
☐	sg-9e8b8bfc	default	default VPC security group
☐	sg-0b82a58710c602670	EFS-SG	abc
☑	sg-06b9f816d6a387a04	Linux-SG	for project1
☐	sg-0c597cc5f9b72976b	linux-Sg-aws	launch-wizard-2 created 2020-08-18T21:33:14.152+05:30
☐	sg-0bd13efa05570edf1	windows -sg	launch-wizard-1 created 2020-08-06T08:48:12.876+05:30

Classic Load Balancers Steps

Keep default value



Classic Load Balancers Steps

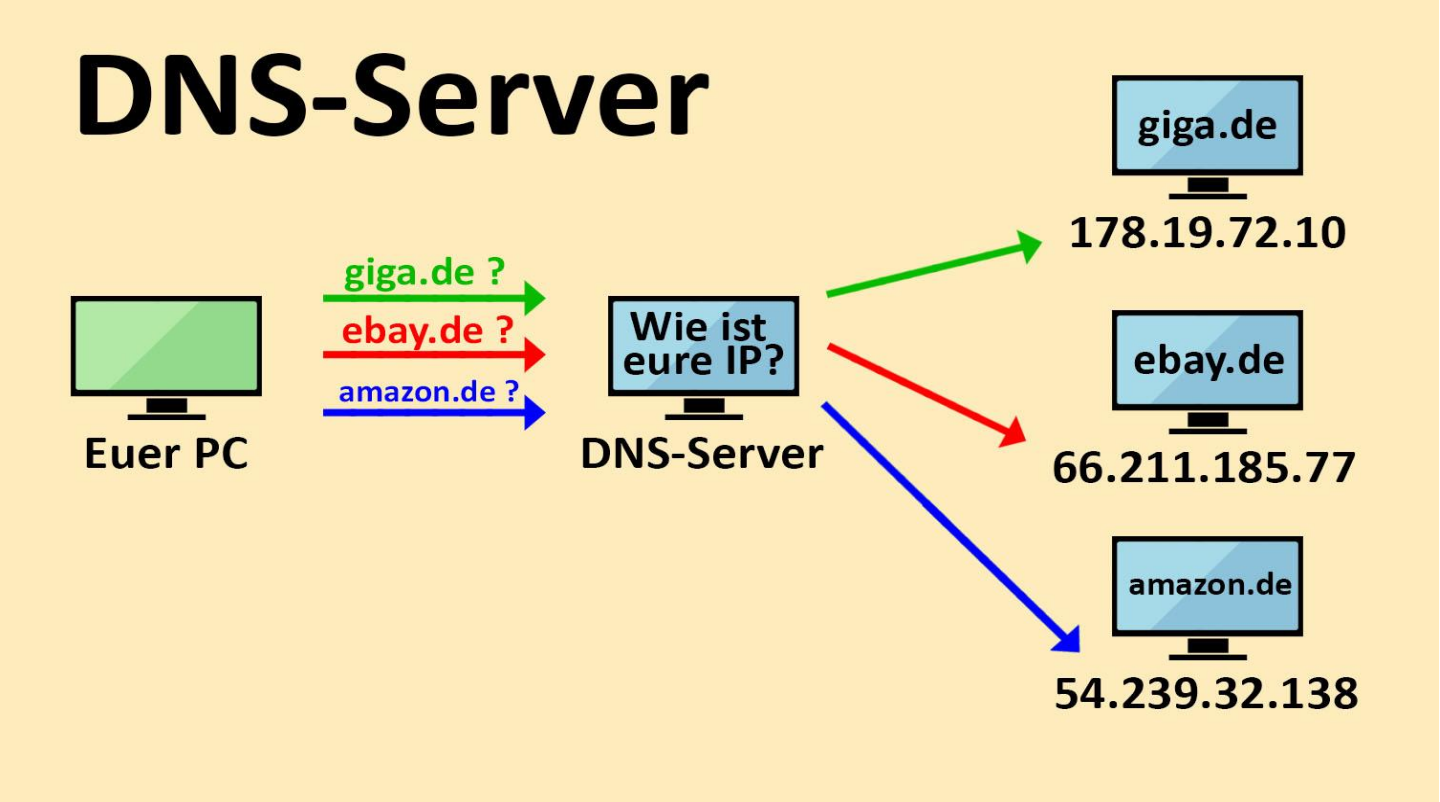
Next –add required number of instances –next-next--create

3) After Creating---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


amazon
web services
Route 53

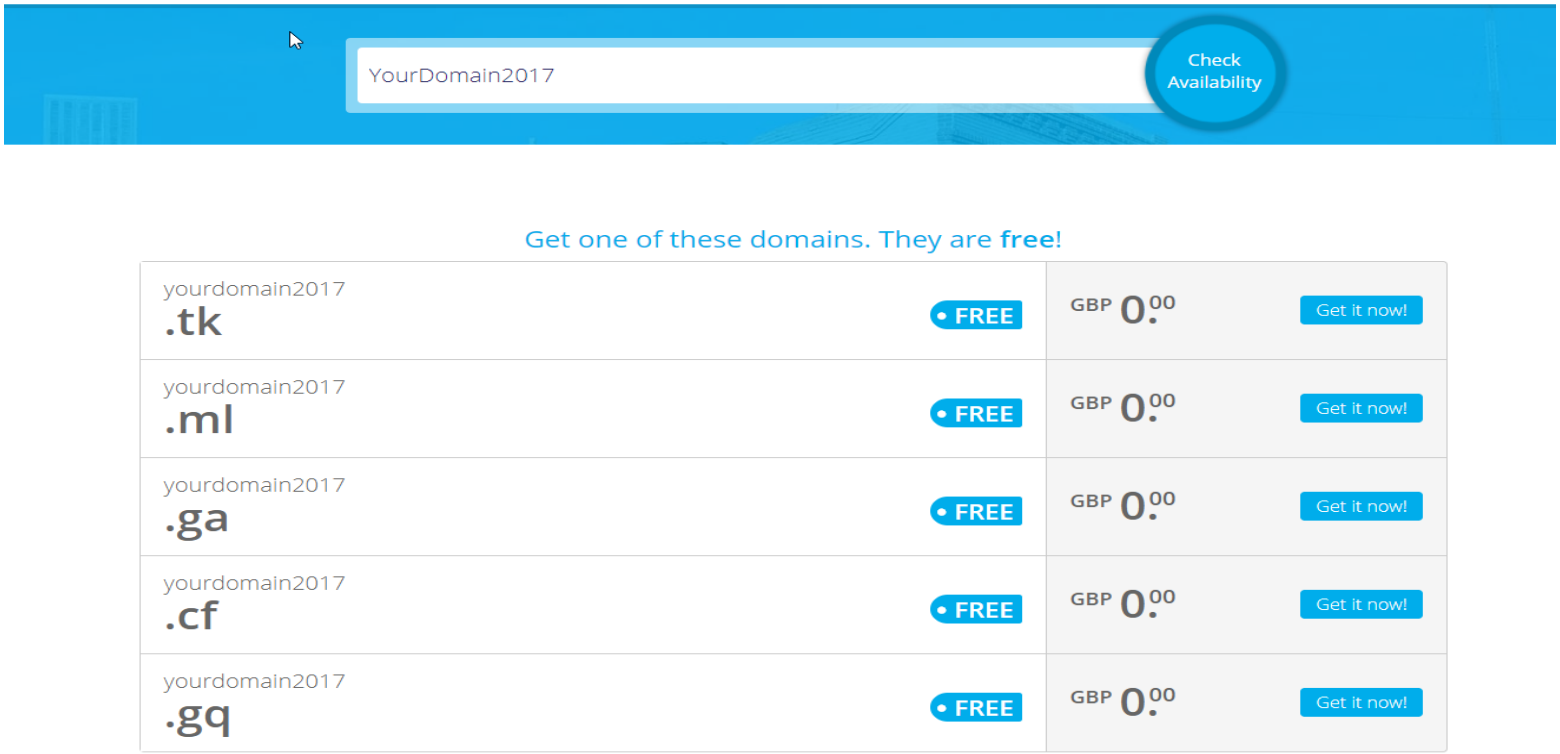
DNS



DNS is used to resolve host name to IP address and IP address to host name.

Route53 Lab –1 Register domain name

1) Register your domain name(deepak.tk) in freenom.com



Map Freenom domain name with AWS

2) AWS console-services-Route53-DNS management-Hosted zone-create hosted zone-

Give domain name – deepak.tk ------ create

4) Now select NS value -- copy all NS value one by one and paste into – freenom.com –services—my domain– manage domain—management tool – name servers – use custom nameserver –paste here one by one ---change name servers

Route53 Lab –2 Map IP with Domain name

1) Launch one Instance and configure web service there

2) Route53– Hosted Zone – open registered domain name – Create Record set – fill the detail – type – A – In IP address : Instance public IP –ok

3) Now copy domain name and paste in Browser

How to map multiple instance port with domain name

Eg: IP:82 , IP:83, IP:84 etc.

Configure multiple classic load balancer with these all port number and map load balancer dns with domain name.