

U18ISI5006 - Cloud Computing And Architecture

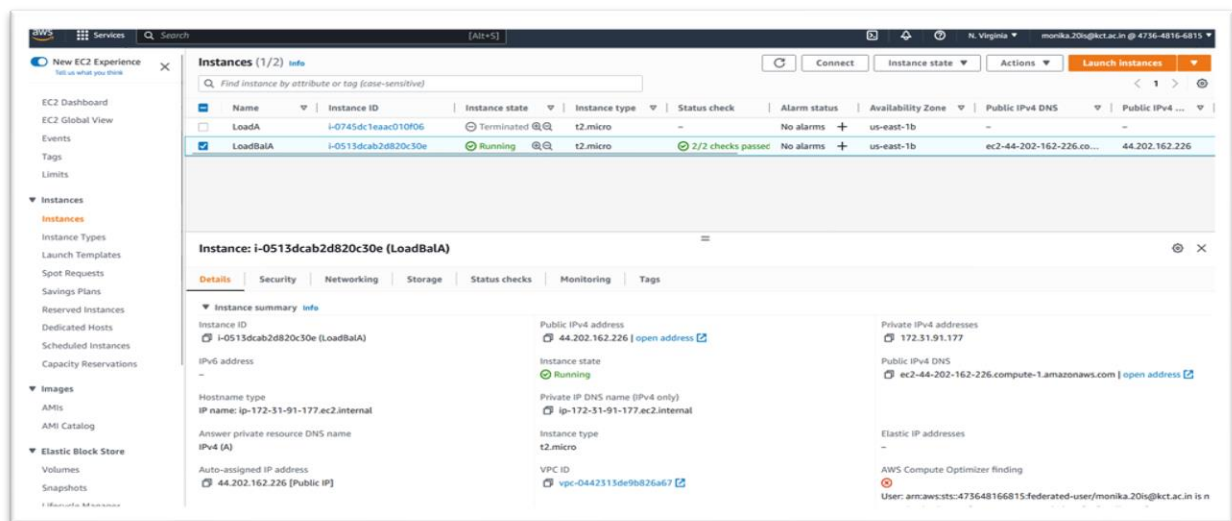
Load balancer

Name : Monika M

Roll no : 20BIS025

Topic : Load Balancer

1.Creating Instance “LadBalA”



Transaction Summary

Install 1 Package

Total download size: 714 k

Installed size: 2.7 M

Is this ok [y/N]: y

Downloading Packages:

nano-5.6.1-5.el9.x86_64.rpm 12 MB/s | 714 kB 00:00

Total 7.9 MB/s | 714 kB 00:00

Running transaction check

Transaction check succeeded.

Running transaction test

Transaction test succeeded.

Running transaction

Preparing : 1/1

Installing : nano-5.6.1-5.el9.x86_64 1/1

Running scriptlet: nano-5.6.1-5.el9.x86_64 1/1

Verifying : nano-5.6.1-5.el9.x86_64 1/1

Installed products updated.

Installed:

nano-5.6.1-5.el9.x86_64

Complete!

[ec2-user@ip-172-31-91-177 ~]\$ sudo nano /var/www/html/index.html

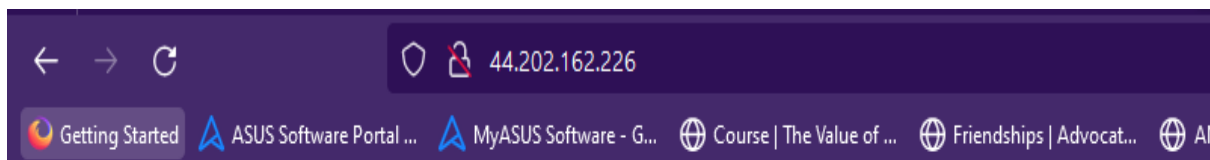
[ec2-user@ip-172-31-91-177 ~]\$

```
GNU nano 5.6.1
<!DOCTYPE html>
<html>
<body>

<h1>Load balancer Assignment</h1>
<p>Load Balancer 1</p>

</body>
</html>
```

Web browser :



Load balancer Assignment

Load Balancer 1

2.Creating AMI :

EC2 > Instances > i-0513dcab2d820c30e > Create image

Create image [Info](#)

An image (also referred to as an AMI) defines the programs and settings that are applied when you launch an EC2 instance. You can create an image from the configuration of an existing instance.

Instance ID
i-0513dcab2d820c30e (LoadBalA)

Image name

Maximum 127 characters. Can't be modified after creation.

Image description - optional

Maximum 255 characters

No reboot
☐ Enable

Instance volumes

Volume type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted
EBS	/dev/...	Create new snapshot fr...	10	EBS General Purpose S...	100		<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable

[Add volume](#)

During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.

BWS Services Search [Alt+S] N. Virginia monika.20is@kct.ac.in @ 4736-4816-6815

Tags Limits

▼ Instances

- Instances
- Instance Types
- Launch Templates
- Spot Requests
- Savings Plans
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▼ Images

AMIs

AMI Catalog

▼ Elastic Block Store

- Volumes
- Snapshots
- Lifecycle Manager

▼ Network & Security

- Security Groups
- Elastic IPs
- Placement Groups
- Key Pairs

Successfully deregistered ami-0f077cee180295e6a.

Amazon Machine Images (AMIs) (1/1) [Info](#)

Owned by me Find AMI by attribute or tag

[Recycle Bin](#) [EC2 Image Builder](#) [Actions](#) [Launch instance from AMI](#)

Name	AMI ID	AMI name	Source	Owner	Visibility	Status
-	ami-018d503df6ccf970f	LoadClone	473648166815/LoadClone	473648166815	Private	Pending

AMI ID: ami-018d503df6ccf970f

[Details](#) [Permissions](#) [Storage](#) [Tags](#)

AMI ID	ami-018d503df6ccf970f	Image type	machine	Platform details	Red Hat Enterprise Linux	Root device type	EBS
AMI name	LoadClone	Owner account ID	473648166815	Architecture	x86_64	Usage operation	RunInstances:0010
Root device name	/dev/sda1	Status	Pending	Source	473648166815/LoadClone	Virtualization type	hvm
Boot mode	-	State reason	-	Creation date	Tue Dec 20 2022 12:55:15 GMT+0530 (India Standard Time)	Kernel ID	-
Block devices	-	Description	-	Product codes	-	RAM disk ID	-

3. Creating instance from AMI :

(created LoadBalB and LoadBalC from LoadBalA AMI)

The screenshot shows the 'Launch an instance' page in the AWS Management Console. The page is titled 'Launch an instance' and includes a brief introduction to Amazon EC2. The 'Name and tags' section has a text input field with 'LoadBalB' and an 'Add additional tags' button. The 'Application and OS Images (Amazon Machine Image)' section features a search bar and tabs for 'AMI from catalog', 'My AMIs', and 'Quick Start'. Under 'AMI from catalog', the 'LoadClone' AMI (ami-018d503df6ccf970f) is selected. The 'Summary' panel on the right shows the configuration: 1 instance, Software Image (AMI) 'CloneofLoadBalA', Virtual server type (instance type) 't2.micro', Firewall (security group) 'New security group', and Storage (volumes) '1 volume(s) - 10 GiB'. At the bottom of the summary panel are 'Cancel' and 'Launch Instance' buttons.

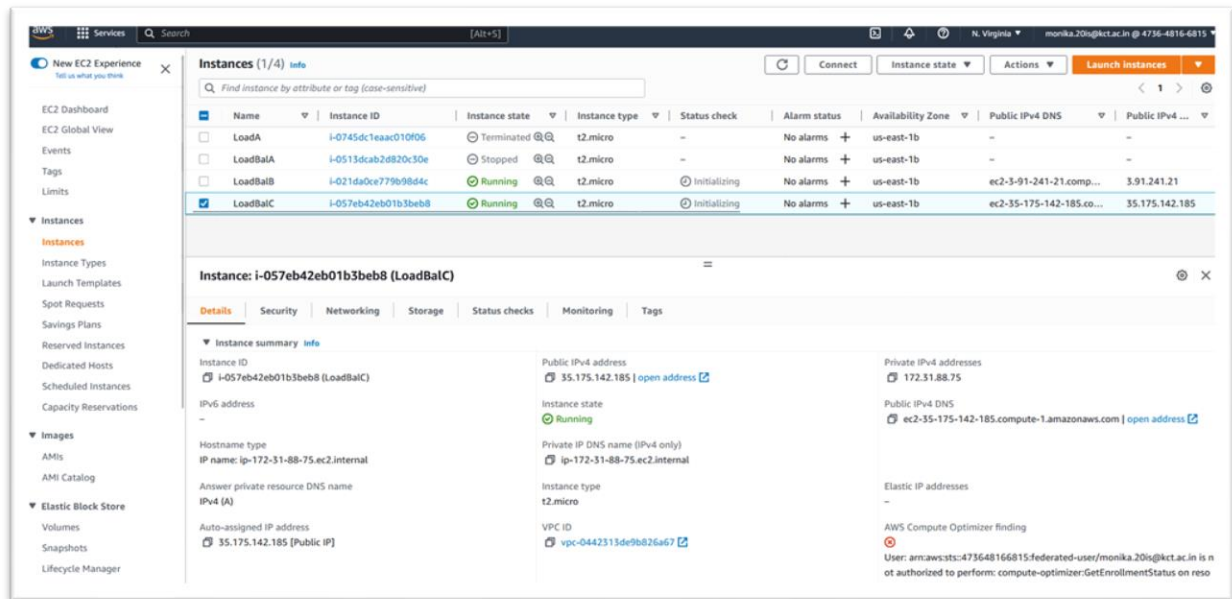
The screenshot shows the 'Instances' page in the AWS Management Console. The top section displays a table of instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
LoadA	i-0745dc1eaa010f06	Terminated	t2.micro	-	No alarms	us-east-1b	-	-
LoadBalA	i-0515dcab2d820c30e	Stopped	t2.micro	-	No alarms	us-east-1b	-	-
LoadBalB	i-021da0ce779b98d4c	Running	t2.micro	Initializing	No alarms	us-east-1b	ec2-3-91-241-21.comp...	3.91.241.21
LoadBalC	i-057eb42eb01b5beb8	Pending	t2.micro	-	No alarms	us-east-1b	ec2-35-175-142-185.co...	35.175.142.185

Below the table, the details for the selected instance 'LoadBalB' (i-021da0ce779b98d4c) are shown. The 'Instance summary' section includes:

- Instance ID: i-021da0ce779b98d4c (LoadBalB)
- Public IPv4 address: 3.91.241.21
- Private IPv4 addresses: 172.31.81.125
- Instance state: Running
- Private IP DNS name (IPv4 only): ip-172-31-81-125.ec2.internal
- Instance type: t2.micro
- VPC ID: vpc-0442313de9b826a67

The bottom section shows the 'Elastic Block Store' and 'AWS Compute Optimizer finding' for the instance.



3. Connecting LoadBalB using putty and editing the html file :

```

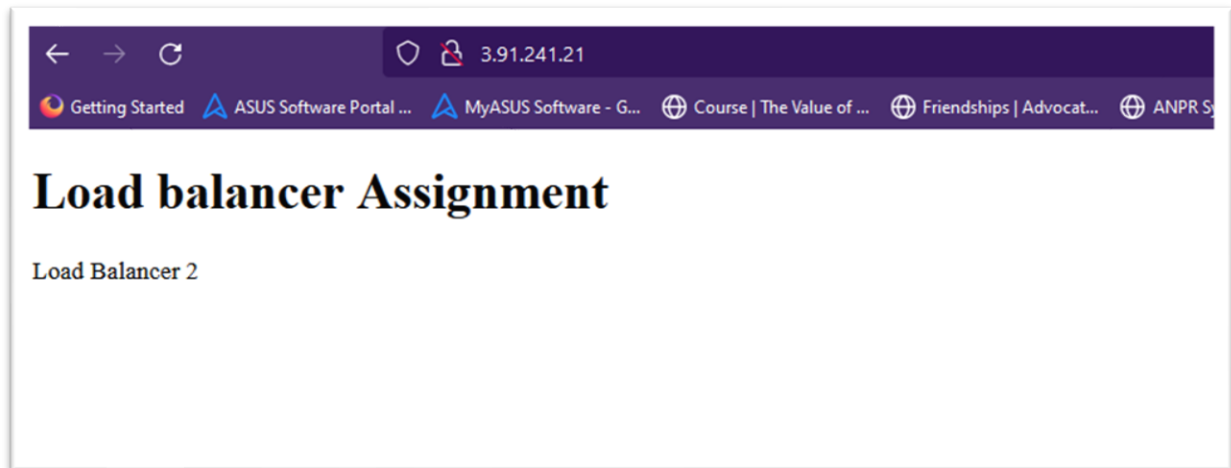
ec2-user@ip-172-31-81-125:~
GNU nano 5.6.1 /var/www/html/index.html Modified
<!DOCTYPE html>
<html>
<body>

<h1>Load balancer Assignment</h1>
<p>Load Balancer 2</p>

</body>
</html>

```

Help Write Out Where Is Cut Execute Location
Exit Read File Replace Paste Justify Go To Line



4.Connecting LoadBalC using putty and editing the html file :

A screenshot of a terminal window. The window title is 'ec2-user@ip-172-31-88-75:~'. The terminal shows the GNU nano 5.6.1 text editor editing the file /var/www/html/index.html. The editor's status bar at the top right indicates 'Modified'. The content of the file is as follows:

```
<!DOCTYPE html>
<html>
<body>

<h1>Load balancer Assignment</h1>
<p>Load Balancer 3</p>

</body>
</html>
```

A green cursor is visible at the end of the last line. At the bottom of the terminal, a list of nano editor shortcuts is displayed: ^G Help, ^O Write Out, ^W Where Is, ^K Cut, ^T Execute, ^C Location, ^X Exit, ^R Read File, ^\ Replace, ^U Paste, ^J Justify, and ^_ Go To Line.

Load balancer Assignment

Load Balancer 3

5.Target group creation:

EC2 > Target groups > Create target group

Step 1
Specify group details

Step 2
Register targets

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 cannot 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.

☐ **Application Load Balancer**

- Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
- Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

Target group name

Target group name

loadABC-target

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Protocol

HTTP

Port

80

VPC

Select the VPC with the instances that you want to include in the target group.

-
vpc-0442313de9b826a67
IPv4: 172.31.0.0/16

Protocol version

☒ HTTP1

Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.

☐ HTTP2

Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.

☐ gRPC

Send requests to targets using gRPC. Supported when the request protocol is gRPC.

EC2 > Target groups > Create target group

Step 1
Specify group details

Step 2
Register targets

Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must register your targets.

Available instances (2)

Filter resources by property or value

<input type="checkbox"/>	Instance ID	Name	State	Security groups	Zone	Subnet ID
<input type="checkbox"/>	i-021da0ce779b98d4c	LoadBalB	running	launch-wizard-4	us-east-1b	subnet-0477d1a1ac4fa71ec
<input type="checkbox"/>	i-057eb42eb01b3beb8	LoadBalC	running	launch-wizard-5	us-east-1b	subnet-0477d1a1ac4fa71ec

0 selected

Ports for the selected instances

Ports for routing traffic to the selected instances.

80

1-65535 (separate multiple ports with comma)

Include as pending below

2 selections are now pending below. Include more or register targets when ready.

Review targets

Targets (2)

Filter resources by property or value

Remove all pending

Remove	Health status	Instance ID	Name	Port	State	Security groups	Zone	Subnet ID
<input checked="" type="checkbox"/>	Pending	i-057eb42eb01b3beb8	LoadBalC	80	running	launch-wizard-5	us-east-1b	subnet-0477d1a1ac4fa71ec
<input checked="" type="checkbox"/>	Pending	i-021da0ce779b98d4c	LoadBalB	80	running	launch-wizard-4	us-east-1b	subnet-0477d1a1ac4fa71ec

2 pending

Cancel

Previous

Create target group

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Successfully created target group: loadABC-target

EC2 > Target groups

Target groups (1/1) Info

Search or filter target groups

	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input checked="" type="checkbox"/>	loadABC-target	arn:aws:elasticloadbalancing...	80	HTTP	Instance	None associated	vpc-0442313de9b826a67

Target group: loadABC-target

DetailsTargetsMonitoringHealth checksAttributesTags

Details

arn:aws:elasticloadbalancing:us-east-1:473648166815:targetgroup/loadABC-target/364fa0eda9c54462

Target type	Protocol : Port	Protocol version	VPC
Instance	HTTP: 80	HTTP1	vpc-0442313de9b826a67
IP address type	Load balancer		
IPv4	None associated		

6.Load Balancer :

EC2 > Load balancers > Create Application Load Balancer

Create Application Load Balancer Info

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

► How Elastic Load balancing works

Basic configuration

Load balancer name

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

Loadbalancer25

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Scheme Info

Scheme cannot 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.

IP address type Info

Select the type of IP addresses that your subnets use.

☒ IPv4

Recommended for internal load balancers.

☐ Dualstack

Includes IPv4 and IPv6 addresses.

▼ Listener HTTP:80

Remove

Protocol

Port

Default action

Info

HTTP

:

80

1-65535

Forward to

loadABC-target

Target type: Instance, IPv4

HTTP

↺

[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

Services

Search

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New EC2 Experience

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Failed to load tags: AccessDeniedException: User: awssts::473648166815:federated-user/monika.20is@kct.ac.in is not authorized to perform: tag:GetResources because no identity-based policy allows the tag:GetResources action

EC2 > Load balancers

Load balancers (1/1)

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

Filter by property or value

search: Loadbalancer25

Clear filters

<input checked="" type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones	Type	Created At
<input checked="" type="checkbox"/>	Loadbalancer25	Loadbalancer25-136758933.us-east-1.elb.amazonaws.com	Active	vpc-0442313de9b826a67	3 Availability Zones	application	December 20, 2022, 13:24 (UTC+05:30)

↺

1

↻

Services

Search

[Alt+S]

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Network & Security

EC2 > Load balancers > Loadbalancer25

Loadbalancer25

↺

Actions

▼ Details

aws:elasticloadbalancing:us-east-1:473648166815:loadbalancer/app/Loadbalancer25/8dc04e82ae1761a

Load balancer type	DNS name	Status	VPC
Application	Loadbalancer25-136758933.us-east-1.elb.amazonaws.com (A Record)	Active	vpc-0442313de9b826a67
IP address type	Scheme	Availability Zones	Hosted Zone
IPv4	Internet-facing	subnet-0b7cf138747b56be2 us-east-1a (use1-az1) subnet-09d40e968a2ab0d1 us-east-1c (use1-az4) subnet-0477d1a1ac4fa71ec us-east-1b (use1-az2)	Z355XD0TRQ7X7K
Created At	December 20, 2022, 13:24 (UTC+05:30)		

Listeners

Network mapping

Security

Monitoring

Integrations

Attributes

Tags

Listeners (1)

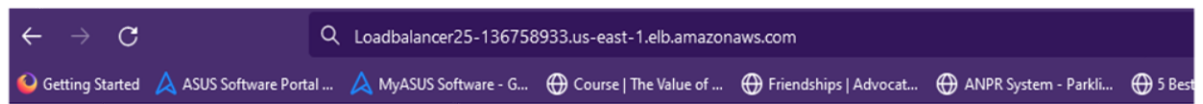
A listener checks for connection requests on its port and protocol. Traffic received by the listener is routed according to its rules.

Search

↺

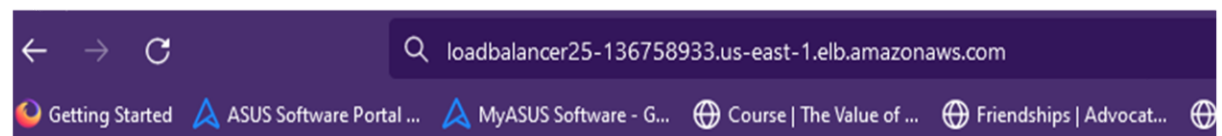
1

↻



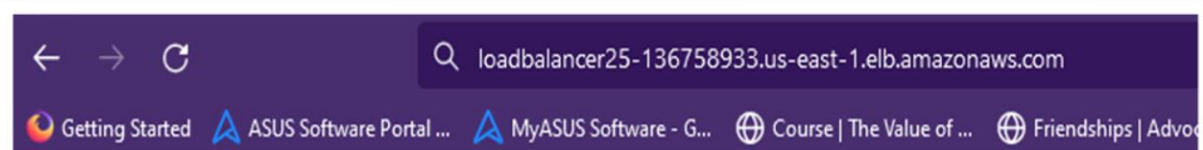
Load balancer Assignment

Load Balancer 3



Load balancer Assignment

Load Balancer 2



Load balancer Assignment

Load Balancer 1

