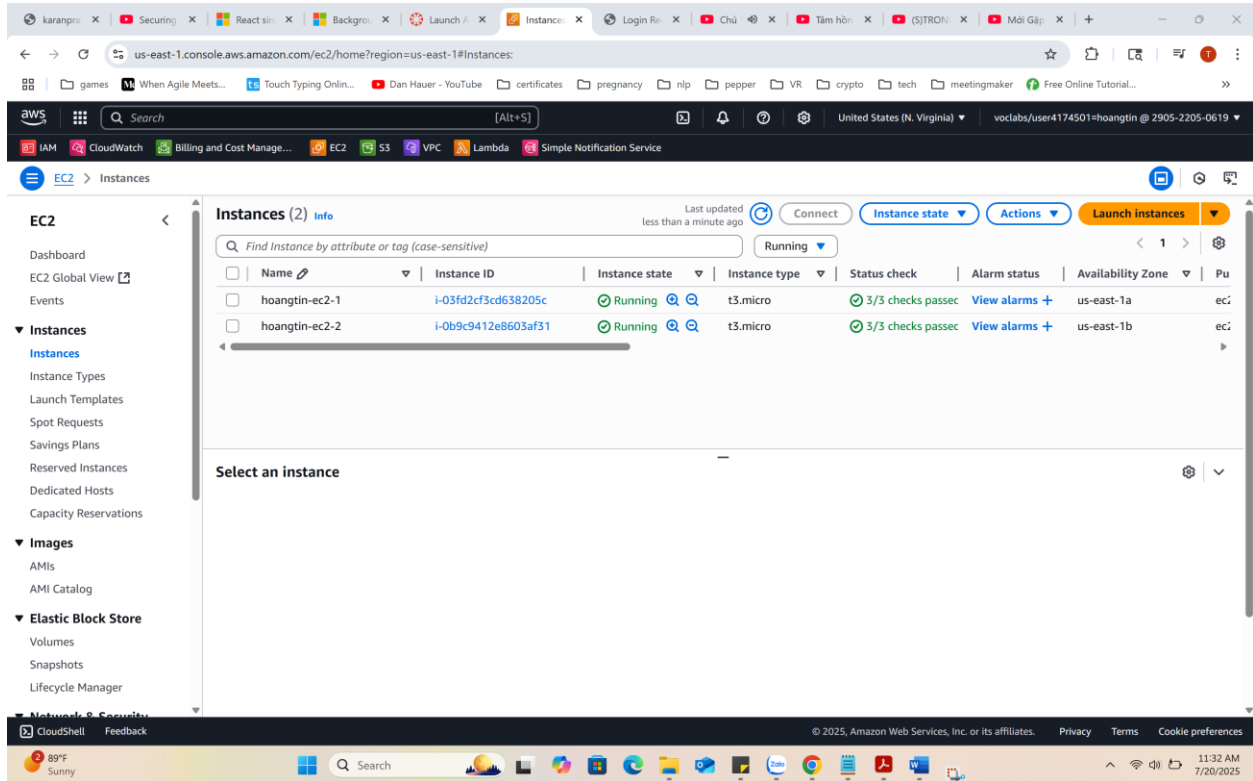


## Task 1. Run web servers behind ALB

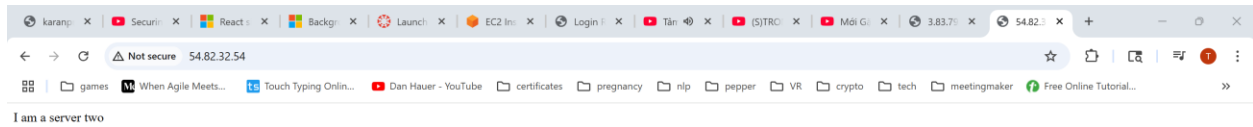
Create 2 instances & install web servers, modified index.html



The screenshot displays the AWS Management Console interface for the 'us-east-1' region. The left-hand navigation pane shows the 'EC2' service selected, with the 'Instances' link highlighted. The main content area, titled 'Instances (2)', shows a table of two running EC2 instances. The table columns include Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IP. Both instances, 'hoangtin-ec2-1' and 'hoangtin-ec2-2', are in a 'Running' state with 't3.micro' instance types. Below the table, there is a 'Select an instance' section. The bottom of the screenshot shows a Windows taskbar with various application icons and a system tray indicating the time as 11:32 AM on 7/20/2025.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
hoangtin-ec2-1	i-03fd2cf3cd638205c	Running	t3.micro	3/3 checks passed	View alarms	us-east-1a	ec2-100-111-122-133.us-east-1.compute.amazonaws.com
hoangtin-ec2-2	i-0b9c9412e8603af31	Running	t3.micro	3/3 checks passed	View alarms	us-east-1b	ec2-100-111-122-133.us-east-1.compute.amazonaws.com

I am a server one



## Create a target group

**hoangtin-tg-1**

**Details**

arn:aws:elasticloadbalancing:us-east-1:290522050619:targetgroup/hoangtin-tg-1/b3e8f1f1d979b3fd

<b>Target type</b> Instance	<b>Protocol : Port</b> HTTP: 80	<b>Protocol version</b> HTTP1	<b>VPC</b> <a href="#">vpc-01d13ea9144c70d83</a>
<b>IP address type</b> IPv4	<b>Load balancer</b> <a href="#">hoangtin-alb-1</a>		

2 Total targets	0 Healthy	0 Unhealthy	0 Unused	2 Initial	0 Draining
--------------------	--------------	----------------	-------------	--------------	---------------

0 Anomalous

**Distribution of targets by Availability Zone (AZ)**

Select values in this table to see corresponding filters applied to the Registered targets table below.

**Targets** | Monitoring | Health checks | Attributes | Tags

**Registered targets (2)** [Info](#) [Anomaly mitigation: Not applicable](#) [Deregister](#) [Register targets](#)

Target groups route requests to individual registered targets using the protocol and port number specified. Health checks are performed on all registered targets according to the target group's health check settings. Anomaly detection is automatically applied to HTTP/HTTPS target groups with at least 3 healthy targets.

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#TargetGroup:targetGroupArn=arn:aws:elasticloadbalancing:us-east-1:290522050619:targetgroup/hoangtin-tg-1...

EC2 > Target groups > hoangtin-tg-1

EC2

- Dashboard
- EC2 Global View
- Events
- Instances
  - Instances
  - Instance Types
  - Launch Templates
  - Spot Requests
  - Savings Plans
  - Reserved Instances
  - Dedicated Hosts
  - Capacity Reservations
- Images
  - AMIs
  - AMI Catalog
- Elastic Block Store
  - Volumes
  - Snapshots
  - Lifecycle Manager
- Network & Security
  - CloudShell
  - Feedback

IPv4

2 Total targets

2 Healthy

0 Unhealthy

0 Anomalous

0 Unused

0 Initial

0 Draining

Distribution of targets by Availability Zone (AZ)

Select values in this table to see corresponding filters applied to the Registered targets table below.

Targets Monitoring Health checks Attributes Tags

Registered targets (2) Info

Anomaly mitigation: Not applicable

Deregister Register targets

Target groups route requests to individual registered targets using the protocol and port number specified. Health checks are performed on all registered targets according to the target group's health check settings. Anomaly detection is automatically applied to HTTP/HTTPS target groups with at least 3 healthy targets.

Filter targets

Instance ID	Name	Port	Zone	Health status	Health status details	Admin...	Overri...
i-0b9c9412e8603af31	hoangtin-ec2-2	80	us-east-1b (us...)	Healthy	-	No override.	No over
i-03fd2cf3cd638205c	hoangtin-ec2-1	80	us-east-1a (us...)	Healthy	-	No override.	No over

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90°F Sunny 12:10 PM 7/20/2025

## Create ALB

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancer:loadBalancerArn=arn:aws:elasticloadbalancing:us-east-1:290522050619:loadbalancer/app/hoangtin...

EC2 > Load balancers > hoangtin-alb-1

Successfully created load balancer: **hoangtin-alb-1**

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.

Application Load Balancers now support public IPv4 IP Address Management (IPAM)

You can get started with this feature by configuring IP pools in the Network mapping section.

Edit IP pools

hoangtin-alb-1

Details

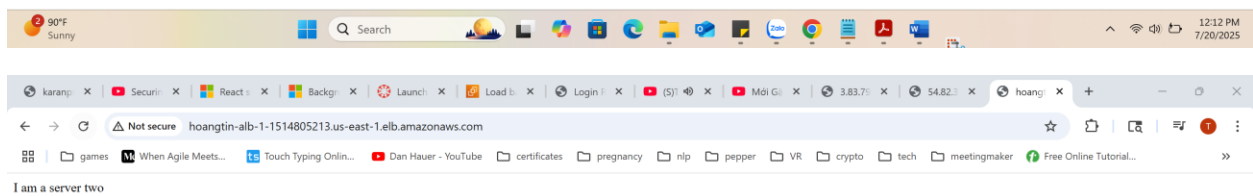
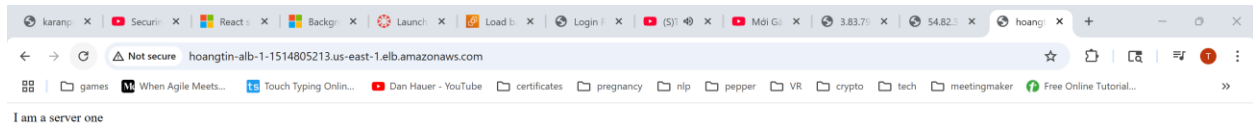
Load balancer type	Status	VPC	Load balancer IP address type
Application	Provisioning	vpc-01d13ea9144c70d83	IPv4
Scheme	Hosted zone	Availability Zones	Date created
Internet-facing	Z35XDOTRQ7X7K	subnet-0799db6f4803439f8 us-east-1a (use1-az1)	July 20, 2025, 12:00 (UTC-05:00)
		subnet-080246373472b3b38 us-east-1b (use1-az2)	
Load balancer ARN		DNS name info	
arn:aws:elasticloadbalancing:us-east-1:290522050619:loadbalancer/app/hoangtin-alb-1/60201eb7bb6ba857		hoangtin-alb-1-1514805213.us-east-1.elb.amazonaws.com (A Record)	

Listeners and rules Network mapping Resource map Security Monitoring Integrations Attributes Capacity Tags

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90°F Sunny 12:04 PM 7/20/2025

## Access via ALB



## Task 2. Run web servers behind NLB

## Create a TCP target group

The screenshot shows the AWS Management Console for the 'us-east-1' region. The left sidebar is expanded to 'EC2' > 'Target groups', showing 'hoangtin-tg-2'. The main content area displays the details for this target group. The 'Details' section shows the ARN, target type (Application Load Balancer), protocol (TCP: 80), VPC (vpc-01d13ea9144c70d83), and IP address type (IPv4). A notification states that 'hoangtin-nlb-1' is routing traffic to this target group. The 'Targets' tab is selected, showing a 'Registered target' section with a message: 'No target. You don't have an Application Load Balancer registered to hoangtin-tg-2'. A 'Register target' button is visible.

This screenshot shows the same AWS Management Console page, but now a target is registered. The 'Registered target' section shows the 'Application Load Balancer' 'hoangtin-nlb-1' is registered. The 'Health status' is 'Healthy'. The 'Port' is '80' and the 'ARN' is 'arn:aws:elasticloadbalancing:us-east-1:290522050619:loadbalancer/app/hoangtin-...'. A 'Deregister' button is now visible in the top right of the 'Registered target' section.

## Create a NLB

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancer:loadBalancerArn=arn:aws:elasticloadbalancing:us-east-1:290522050619:loadbalancer/net/hoangti...

EC2 > Load balancers > hoangtin-nlb-1

Successfully created load balancer

### hoangtin-nlb-1

**Details**

<b>Load balancer type</b> Network	<b>Status</b> Provisioning	<b>VPC</b> vpc-01d13ea9144c70d83	<b>Load balancer IP address type</b> IPv4
<b>Scheme</b> Internet-facing	<b>Hosted zone</b> Z26RNL4JYFTOT1	<b>Availability Zones</b> subnet-0799db6f4803439f8 us-east-1a (use1-az1) subnet-080246373472b5b38 us-east-1b (use1-az2)	<b>Date created</b> July 20, 2025, 12:21 (UTC-05:00)
<b>Load balancer ARN</b> arn:aws:elasticloadbalancing:us-east-1:290522050619:loadbalancer/net/hoangtin-nlb-1/60b0f1a606308dca		<b>DNS name Info</b> hoangtin-nlb-1-60b0f1a606308dca.elb.us-east-1.amazonaws.com (A Record)	

**Listeners (1)**

A listener checks for connection requests using the protocol and port that you configure. Traffic received by a Network Load Balancer listener is forwarded to the selected target group.

Filter listeners

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancer:loadBalancerArn=arn:aws:elasticloadbalancing:us-east-1:290522050619:loadbalancer/net/hoangti...

EC2 > Load balancers > hoangtin-nlb-1

**Details**

<b>Load balancer type</b> Network	<b>Status</b> Active	<b>VPC</b> vpc-01d13ea9144c70d83	<b>Load balancer IP address type</b> IPv4
<b>Scheme</b> Internet-facing	<b>Hosted zone</b> Z26RNL4JYFTOT1	<b>Availability Zones</b> subnet-0799db6f4803439f8 us-east-1a (use1-az1) subnet-080246373472b5b38 us-east-1b (use1-az2)	<b>Date created</b> July 20, 2025, 12:21 (UTC-05:00)
<b>Load balancer ARN</b> arn:aws:elasticloadbalancing:us-east-1:290522050619:loadbalancer/net/hoangtin-nlb-1/60b0f1a606308dca		<b>DNS name Info</b> hoangtin-nlb-1-60b0f1a606308dca.elb.us-east-1.amazonaws.com (A Record)	

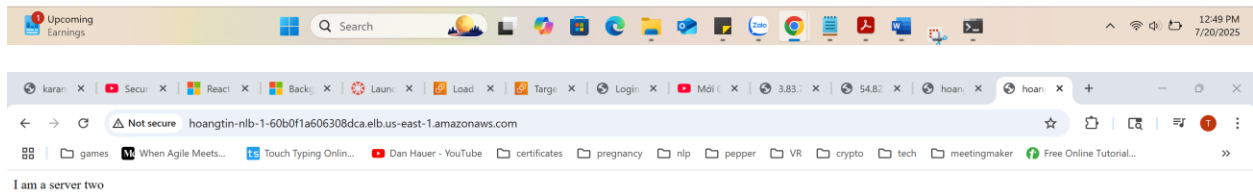
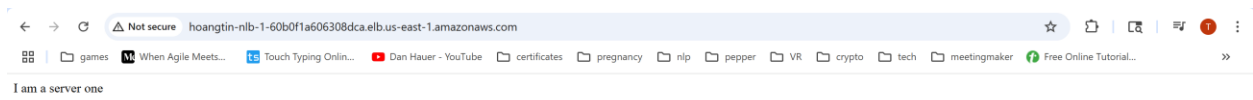
**Listeners (1)**

A listener checks for connection requests using the protocol and port that you configure. Traffic received by a Network Load Balancer listener is forwarded to the selected target group.

Filter listeners

Protocol/Port	Default action	ARN	Security policy	Default SSL/TLS certificate	ALPN policy
TCP:80	Forward to target group hoangtin-tg-2	ARN	Not applicable	Not applicable	None

Access web servers via NLB



Task 3. Run the web server in ASG

Create a launch template

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchTemplateDetails:launchTemplateId=lt-0bbbc8d694e3e7392

Launch template details

Launch template ID: lt-0bbbc8d694e3e7392

Launch template name: hoangtin-lt-1-public-nw

Default version: 1

Owner: arn:aws:sts::290522050619:assumed-role/voclabs/user4174501=hoangtin

Details Versions Template tags

Launch template version details

Version: 1 (Default)

Description: -

Date created: 2025-07-20T18:02:46.000Z

Created by: arn:aws:sts::290522050619:assumed-role/voclabs/user4174501=hoangtin

Instance details Storage Resource tags Network interfaces Advanced details

AMI ID: ami-0150ccaf51ab55a51

Instance type: t2.micro

Availability Zone: -

Key pair name: my-ec2-1-kp-1

Security groups: -

Security group IDs: sg-0a9efc406fd082474

## Launch an instance from the template

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstanceFromTemplate:launchTemplateId=lt-0bbbc8d694e3e7392;versionNumber=3

Success

Successfully initiated launch of instance (i-0b3ca7e550e6b8576)

Launch log

Next steps

Get notified of estimated charges

Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define.

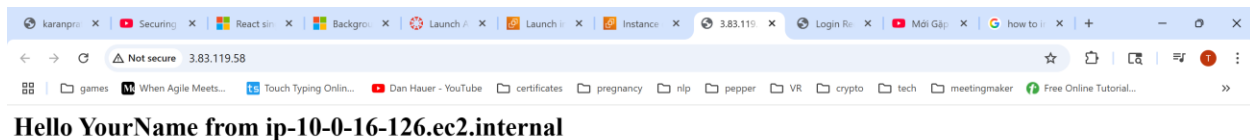
For example, you can create a billing alert for when you exceed the free usage tier.

Connect to your instance

Your instance is launching. It might take a few minutes for it to reach the running state and to become ready for use. To monitor the instance's state, choose View all instances. When the instances reach the running state, you can connect to them from the Instances screen.

View launch templates





## Create ASG

