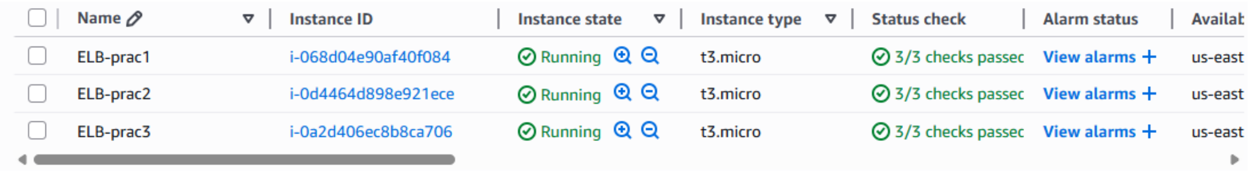
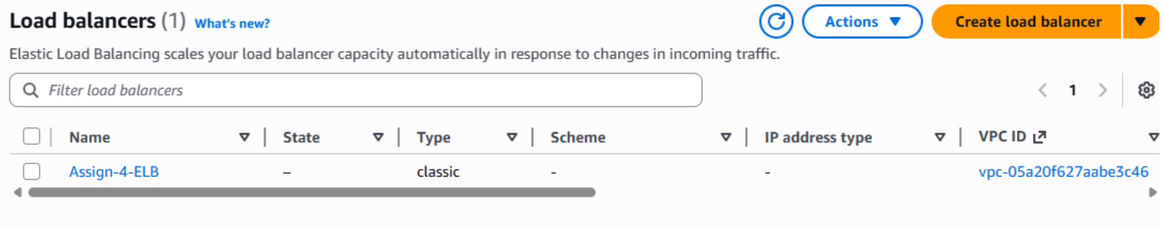
Assignment 1:

1. Create a Classic Load Balancer and register 3 EC2 instances with different web pages running in them.
2. Migrate the Classic Load Balancer into an Application Load Balancer.

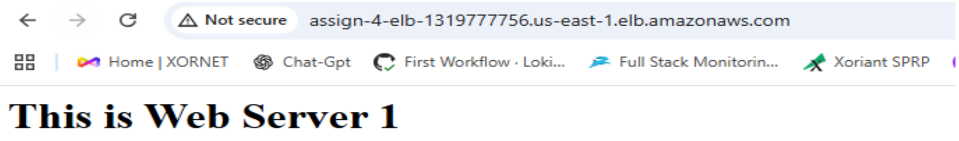


□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availat
□	ELB-prac1	i-068d04e90af40f084	✓ Running	t3.micro	✓ 3/3 checks passec	View alarms +	us-east
□	ELB-prac2	i-0d4464d898e921ece	✓ Running	t3.micro	✓ 3/3 checks passec	View alarms +	us-east
□	ELB-prac3	i-0a2d406ec8b8ca706	✓ Running	t3.micro	✓ 3/3 checks passec	View alarms +	us-east

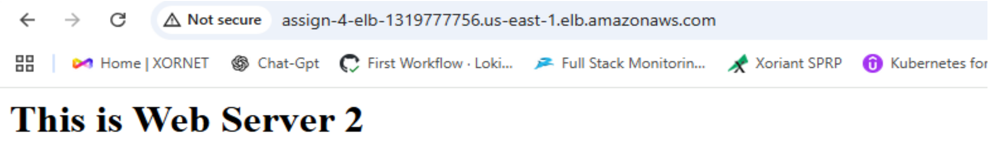


Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

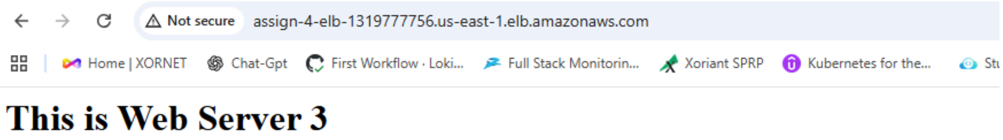
□	Name	State	Type	Scheme	IP address type	VPC ID
□	Assign-4-ELB	–	classic	-	-	vpc-05a20f627aabe3c46



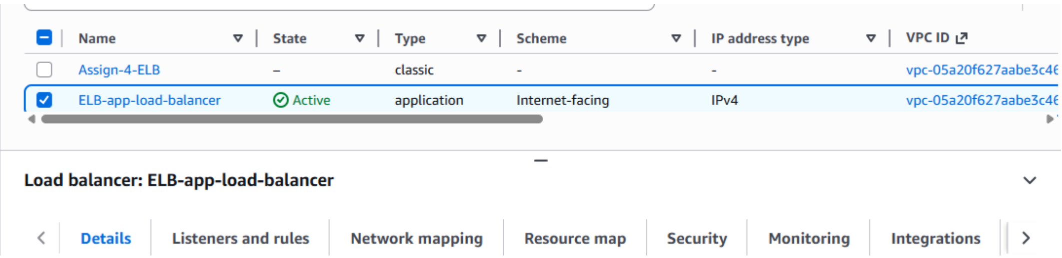
This is Web Server 1



This is Web Server 2

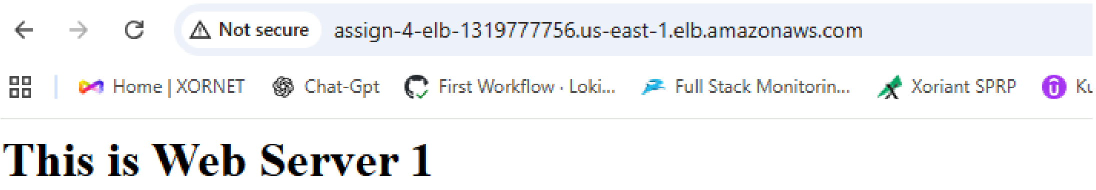


This is Web Server 3



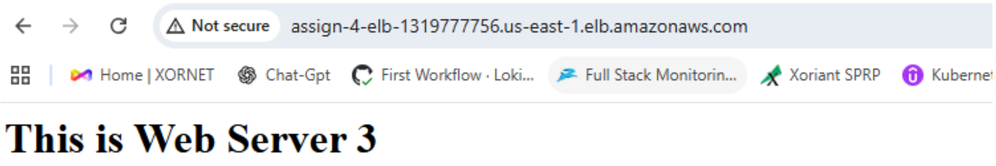
☐	Name	State	Type	Scheme	IP address type	VPC ID
☐	Assign-4-ELB	–	classic	-	-	vpc-05a20f627aabe3c4
☑	ELB-app-load-balancer	✓ Active	application	Internet-facing	IPv4	vpc-05a20f627aabe3c4

Load balancer: ELB-app-load-balancer



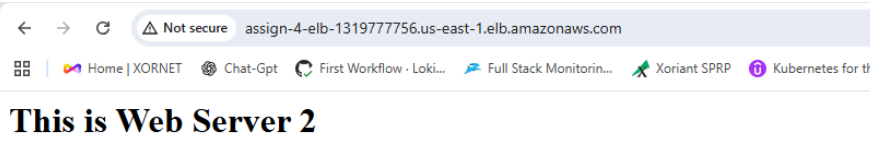
Not secure assign-4-elb-1319777756.us-east-1.elb.amazonaws.com

This is Web Server 1



Not secure assign-4-elb-1319777756.us-east-1.elb.amazonaws.com

This is Web Server 3



Not secure assign-4-elb-1319777756.us-east-1.elb.amazonaws.com

This is Web Server 2

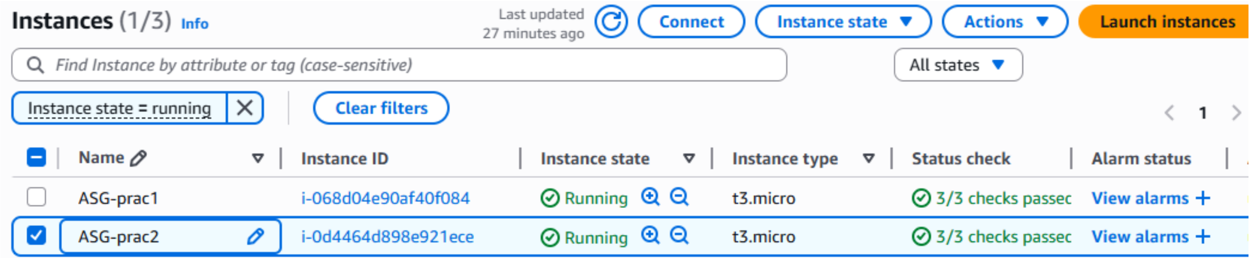
Assignment 1:

Assignment 2:

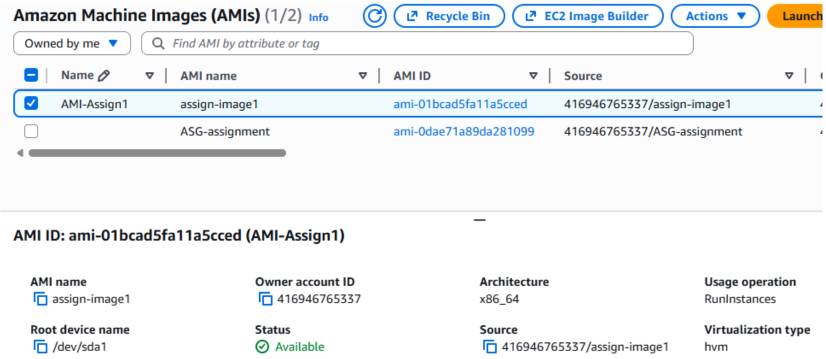
1. Create a web server AMI with Apache 2 server running in it.

2. Create a launch configuration with this AMI.

3. Use this launch configuration to create an Auto Scaling group with 1 minimum and 3 maximum instances.


Instances (1/3) Info
Last updated 27 minutes ago
Connect
Instance state ▼
Actions ▼
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states ▼
Instance state = running ✕
Clear filters
1

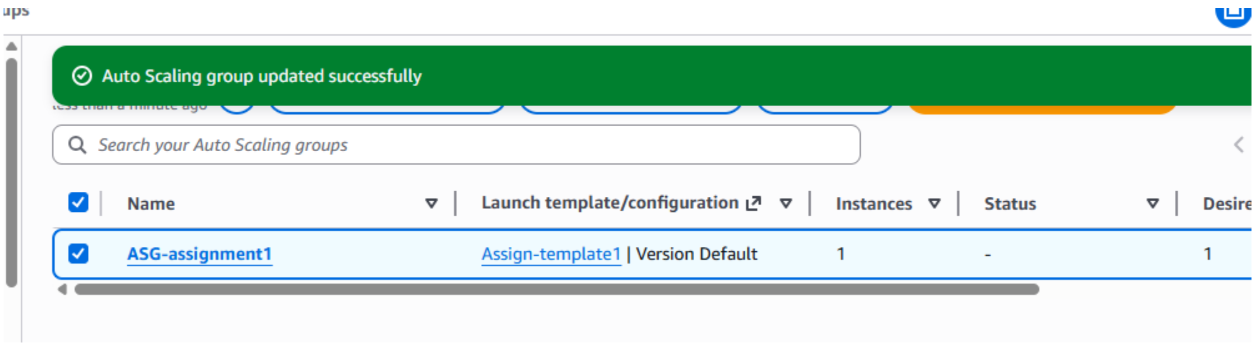
☐	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
☐	ASG-prac1	i-068d04e90af40f084	✓ Running	t3.micro	✓ 3/3 checks passec	View alarms +
☑	ASG-prac2	i-0d4464d898e921ece	✓ Running	t3.micro	✓ 3/3 checks passec	View alarms +


Amazon Machine Images (AMIs) (1/2) Info
Recycle Bin
EC2 Image Builder
Actions ▼
Launch
Owned by me ▼
Find AMI by attribute or tag

☐	Name	AMI name	AMI ID	Source
☑	AMI-Assign1	assign-image1	ami-01bcad5fa11a5cced	416946765337/assign-image1
☐		ASG-assignment	ami-0dae71a89da281099	416946765337/ASG-assignment

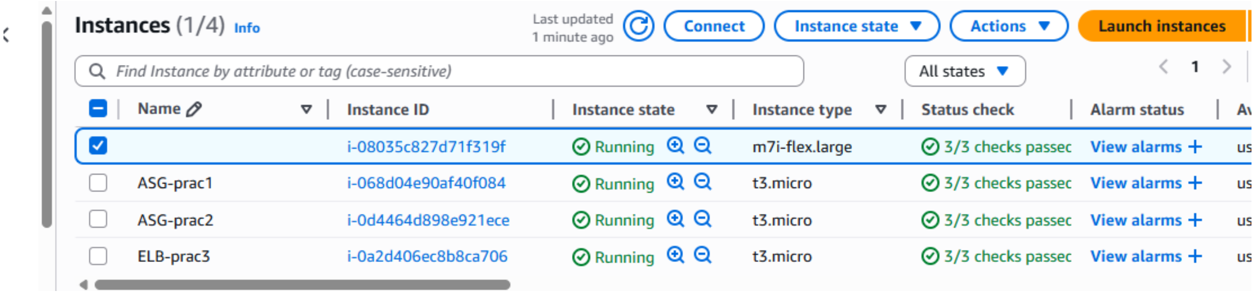
AMI ID: ami-01bcad5fa11a5cced (AMI-Assign1)

AMI name assign-image1	Owner account ID 416946765337	Architecture x86_64	Usage operation RunInstances
Root device name /dev/sda1	Status ✓ Available	Source 416946765337/assign-image1	Virtualization type hvm



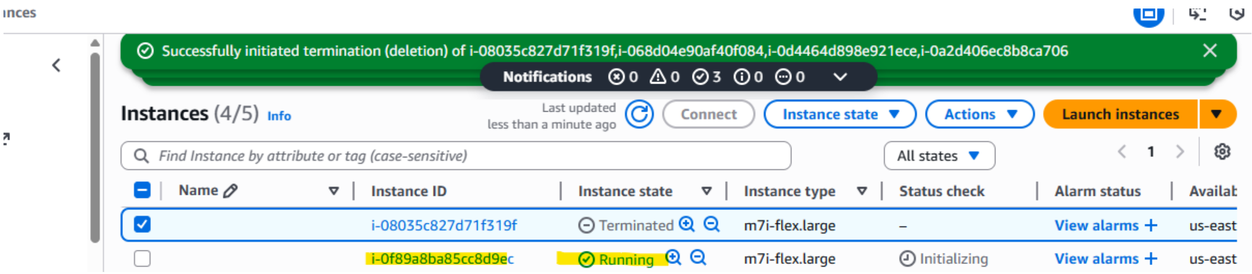
Auto Scaling group updated successfully

☑	Name	Launch template/configuration	Instances	Status	Desire
☑	ASG-assignment1	Assign-template1 | Version Default	1	-	1



Instances (1/4)

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Av
☑		i-08035c827d71f319f	Running	m7i-flex.large	3/3 checks passec	View alarms +	us
☐	ASG-prac1	i-068d04e90af40f084	Running	t3.micro	3/3 checks passec	View alarms +	us
☐	ASG-prac2	i-0d4464d898e921ece	Running	t3.micro	3/3 checks passec	View alarms +	us
☐	ELB-prac3	i-0a2d406ec8b8ca706	Running	t3.micro	3/3 checks passec	View alarms +	us



Successfully initiated termination (deletion) of i-08035c827d71f319f,i-068d04e90af40f084,i-0d4464d898e921ece,i-0a2d406ec8b8ca706

Instances (4/5)

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availab
☑		i-08035c827d71f319f	Terminated	m7i-flex.large	–	View alarms +	us-east
☐		i-0f89a8ba85cc8d9ec	Running	m7i-flex.large	Initializing	View alarms +	us-east

CASE STUDY 1

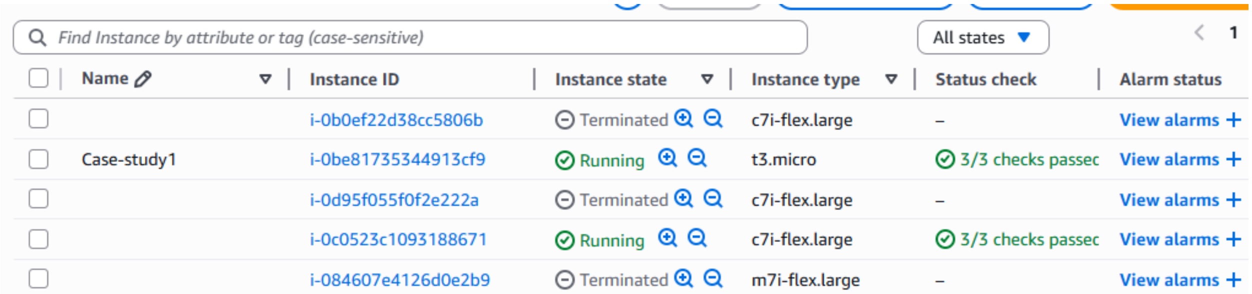
Problem Statement:

You work for XYZ Corporation that uses on premise solutions and a limited number of systems. With the increase in requests in their application, the load also increases. So, to handle the load the corporation must buy more systems almost on a regular basis. Realizing the need to cut down the expenses on systems, they decided to move their infrastructure to AWS.

Tasks To Be Performed:

1. **Manage the scaling requirements of the company by:**
    a. **Deploying multiple compute resources on the cloud as soon as the load increases and the CPU utilization exceeds 80%**
    b. **Removing the resources when the CPU utilization goes under 60%**
2. **Create a load balancer to distribute the load between compute resources.**
3. **Route the traffic to the company's domain.**

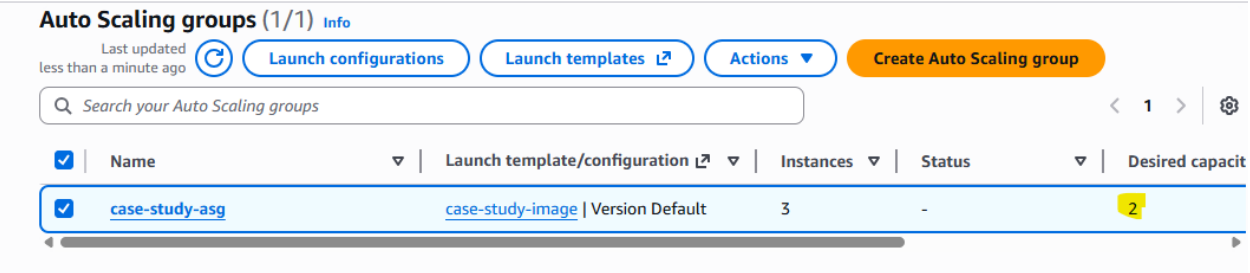
Step 1: Launch an EC2 instance with your application installed.



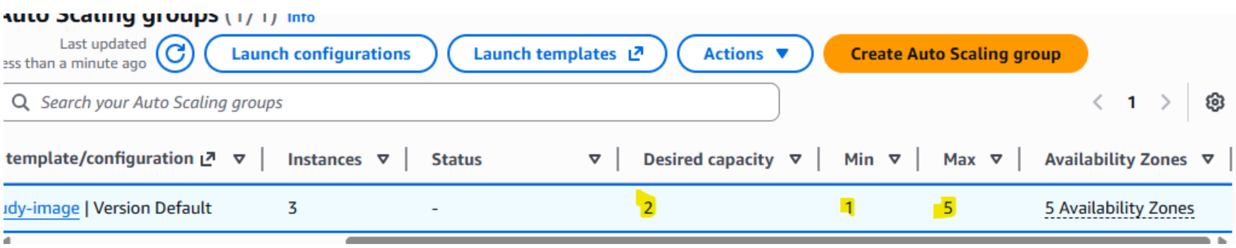
Name	Instance ID	Instance state	Instance type	Status check	Alarm status
	i-0b0ef22d38cc5806b	Terminated	c7i-flex.large	–	View alarms +
Case-study1	i-0be81735344913cf9	Running	t3.micro	3/3 checks passec	View alarms +
	i-0d95f055f0f2e222a	Terminated	c7i-flex.large	–	View alarms +
	i-0c0523c1093188671	Running	c7i-flex.large	3/3 checks passec	View alarms +
	i-084607e4126d0e2b9	Terminated	m7i-flex.large	–	View alarms +

Create an AMI from this instance.

Create a Launch Template using this AMI.


Auto Scaling groups (1/1) Info
Last updated
less than a minute ago
Launch configurations
Launch templates
Actions
Create Auto Scaling group
Search your Auto Scaling groups
1

Name	Launch template/configuration	Instances	Status	Desired capacit
case-study-asg	case-study-image | Version Default	3	-	2


uto Scaling groups (1/1) Info
Last updated
ss than a minute ago
Launch configurations
Launch templates
Actions
Create Auto Scaling group
Search your Auto Scaling groups
1

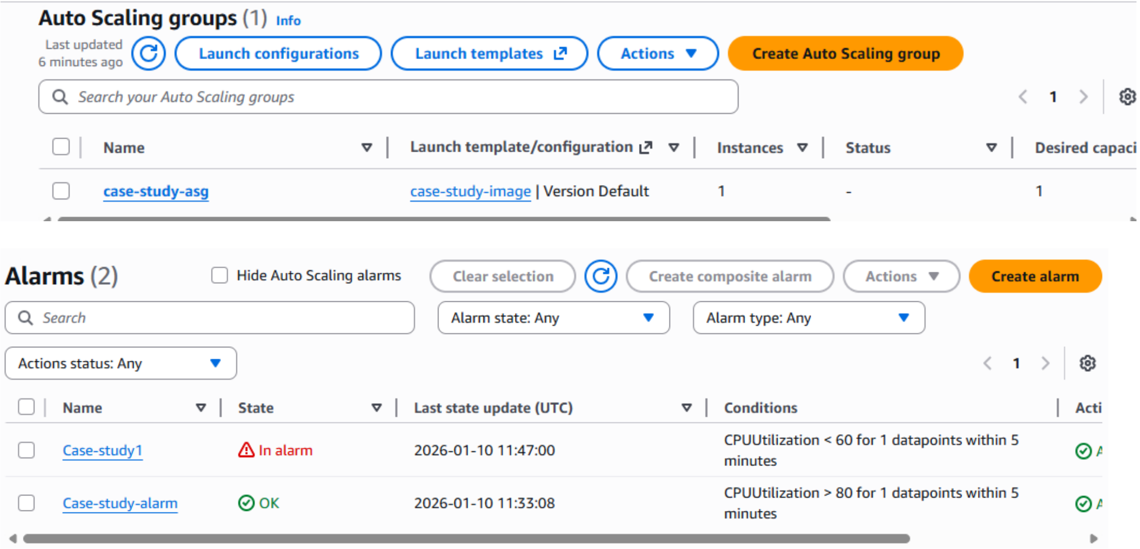
template/configuration	Instances	Status	Desired capacity	Min	Max	Availability Zones
dy-image | Version Default	3	-	2	1	5	5 Availability Zones

Step 2: Create an Auto Scaling Group with:

Minimum capacity: 1

Desired capacity: 2

Maximum capacity: 5



Auto Scaling groups (1) Info

Name	Launch template/configuration	Instances	Status	Desired capaci
case-study-asg	case-study-image | Version Default	1	-	1

Alarms (2)

Alarm state: Any

Alarm type: Any

Actions status: Any

Name	State	Last state update (UTC)	Conditions	Acti
Case-study1	⚠ In alarm	2026-01-10 11:47:00	CPUUtilization < 60 for 1 datapoints within 5 minutes	✓
Case-study-alarm	✓ OK	2026-01-10 11:33:08	CPUUtilization > 80 for 1 datapoints within 5 minutes	✓

Step 3: Create a CloudWatch Alarm:

Condition: CPU > 80% for 5 minutes

Attach Scaling Policy:

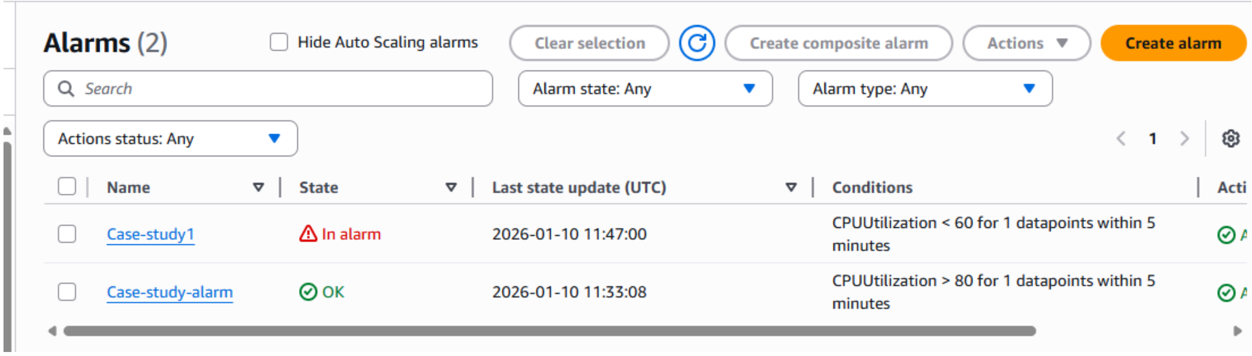
Add 1 instance when alarm triggers.

b. Scale in (Remove resources when CPU < 60%)

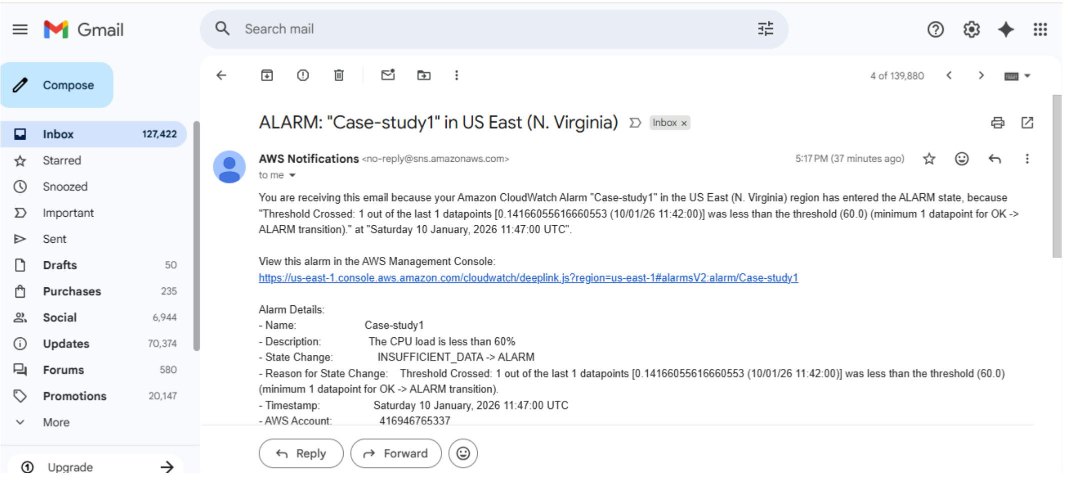
Step 4: Create another CloudWatch Alarm

CPU < 60% for 5 minutes

Attach a Scale-in policy



□	Name	State	Last state update (UTC)	Conditions	Acti
□	Case-study1	⚠ In alarm	2026-01-10 11:47:00	CPUUtilization < 60 for 1 datapoints within 5 minutes	✓ A
□	Case-study-alarm	✓ OK	2026-01-10 11:33:08	CPUUtilization > 80 for 1 datapoints within 5 minutes	✓ A



ALARM: "Case-study1" in US East (N. Virginia)

AWS Notifications <no-reply@sns.amazonaws.com>
to me

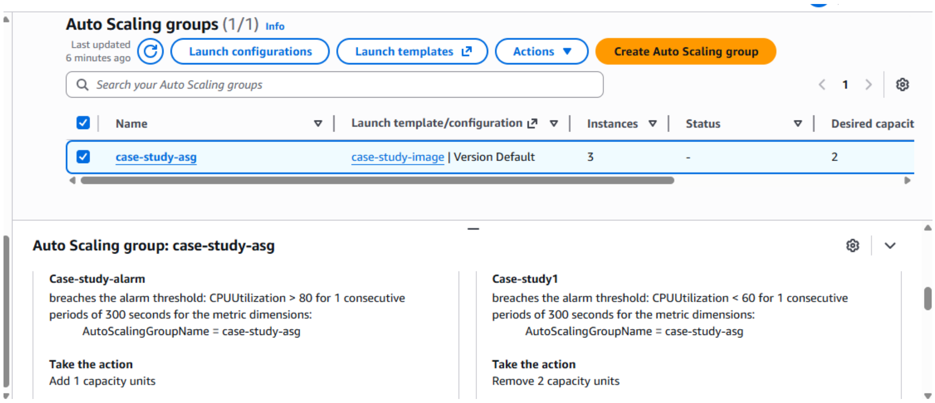
5:17 PM (37 minutes ago)

You are receiving this email because your Amazon CloudWatch Alarm "Case-study1" in the US East (N. Virginia) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [0.14166055616660553 (10/01/26 11:42:00)] was less than the threshold (60.0) (minimum 1 datapoint for OK -> ALARM transition)." at "Saturday 10 January, 2026 11:47:00 UTC".

View this alarm in the AWS Management Console:
https://us-east-1.console.aws.amazon.com/cloudwatch/deeplink.js?region=us-east-1#alarmsV2:alarm/Case-study1

Alarm Details:
- Name: Case-study1
- Description: The CPU load is less than 60%
- State Change: INSUFFICIENT_DATA -> ALARM
- Reason for State Change: Threshold Crossed: 1 out of the last 1 datapoints [0.14166055616660553 (10/01/26 11:42:00)] was less than the threshold (60.0) (minimum 1 datapoint for OK -> ALARM transition).
- Timestamp: Saturday 10 January, 2026 11:47:00 UTC
- AWS Account: 416946765337

Attached to ASG


Auto Scaling groups (1/1) Info
Last updated 6 minutes ago
Launch configurations
Launch templates
Actions ▼
Create Auto Scaling group
Search your Auto Scaling groups
< 1 >

☑	Name	Launch template/configuration	Instances	Status	Desired capacit
☑	case-study-asg	case-study-image | Version Default	3	-	2

Auto Scaling group: case-study-asg

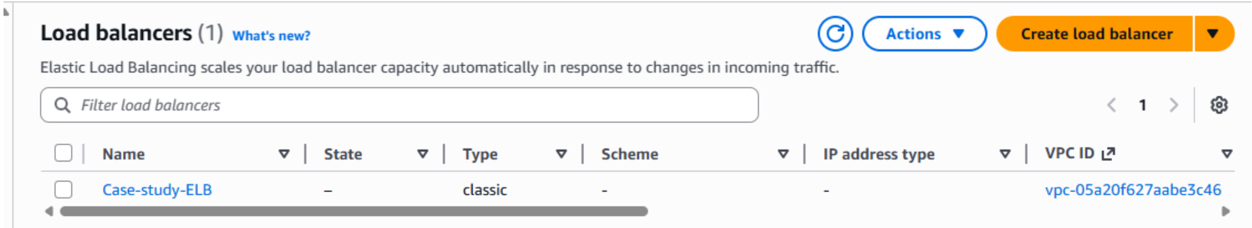
Case-study-alarm
breaches the alarm threshold: CPUUtilization > 80 for 1 consecutive periods of 300 seconds for the metric dimensions:
AutoScalingGroupName = case-study-asg

Take the action
Add 1 capacity units

Case-study1
breaches the alarm threshold: CPUUtilization < 60 for 1 consecutive periods of 300 seconds for the metric dimensions:
AutoScalingGroupName = case-study-asg

Take the action
Remove 2 capacity units

Step 5: Create a load balancer and attch this to the ASG

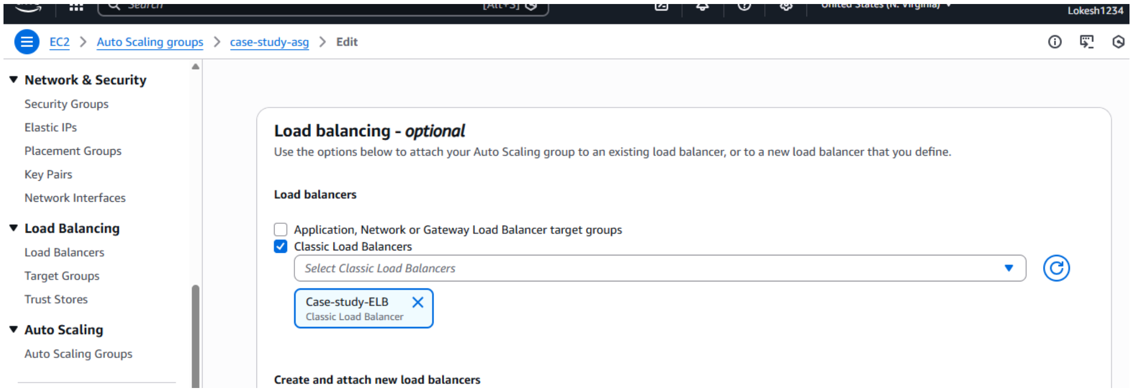


Load balancers (1) What's new?

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

□	Name	State	Type	Scheme	IP address type	VPC ID
□	Case-study-ELB	–	classic	-	-	vpc-05a20f627aabe3c46

ELB attached to ASG



Load balancing - *optional*

Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.

Load balancers

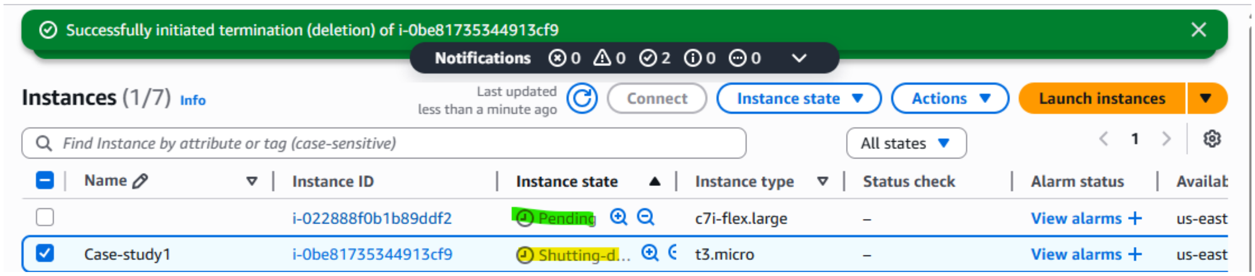
□ Application, Network or Gateway Load Balancer target groups

☑ Classic Load Balancers

Select Classic Load Balancers ▼

Case-study-ELB
Classic Load Balancer

Create and attach new load balancers



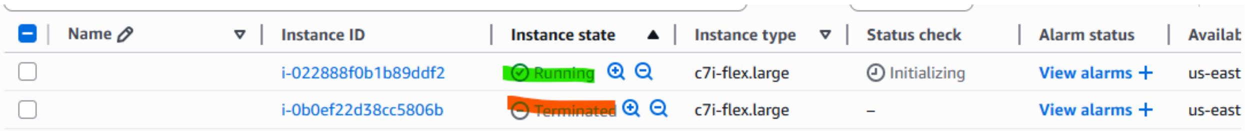
Successfully initiated termination (deletion) of i-0be81735344913cf9

Notifications ⊗ 0 ⚠ 0 ✓ 2 ⓘ 0 ⊖ 0
Last updated less than a minute ago
Connect
Instance state ▼
Actions ▼
Launch instances ▼
All states ▼
1

Instances (1/7) Info

Find Instance by attribute or tag (case-sensitive)

□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availat
□		i-022888f0b1b89ddf2	Pending	c7i-flex.large	–	View alarms +	us-east
☑	Case-study1	i-0be81735344913cf9	Shutting-d...	t3.micro	–	View alarms +	us-east



□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availat
□		i-022888f0b1b89ddf2	Running	c7i-flex.large	Initializing	View alarms +	us-east
□		i-0b0ef22d38cc5806b	Terminated	c7i-flex.large	–	View alarms +	us-east