

School: CLOUDBOOSTA	Course: Cloud Computing & DevOps
Name: AKOSA SAMUEL ONYEJEKWE	Module: High Availability (HA)
	Class 4: Assignment 2 of 4_ Auto Scaling group (ASG) Provisioning
Student No: CBALC0168	Issue Date: March 17, 2026

Required to:

1. Create an Application Load Balancer (ALB).
2. Provision an Auto Scaling group (ASG) for a highly available infrastructure on AWS.

Goal:

To set up a highly available and redundant cloud infrastructure that will automatically recover from failures.

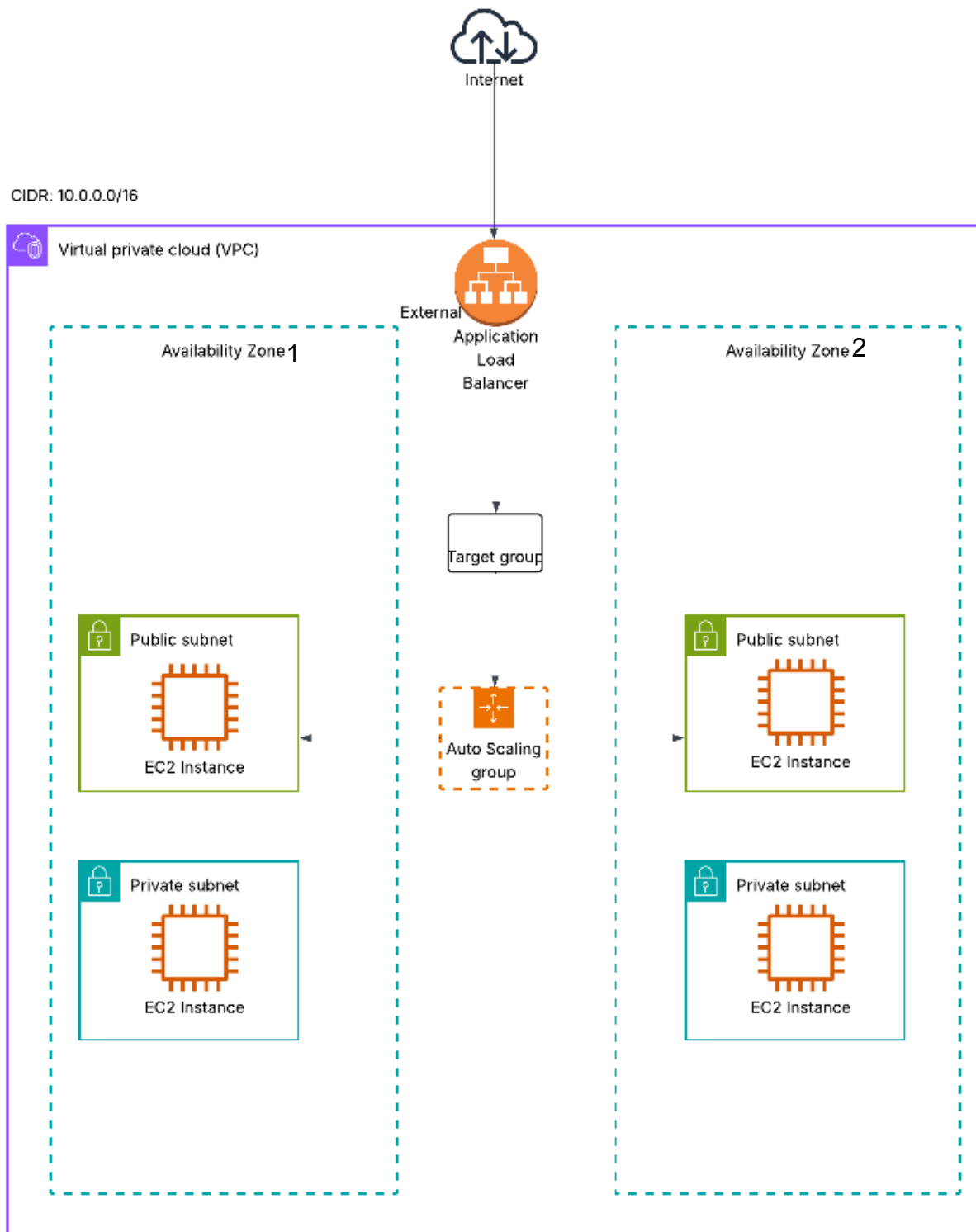
To Achieve:

Minimal downtime, and meet/exceed user satisfaction

Deployed Resources:

- A VPC with 4 subnets (2 public and 2 private) across 2 Availability Zones
- An Internet-facing Application Load Balancer (ALB) to distribute traffic
- An Auto Scaling Group (ASG) that maintains application uptime by launching EC2 instances in multiple AZs

Architecture diagram



Result:

ALB DNS Name: new-CBA-LB-1538971237.eu-north-1.elb.amazonaws.com pasted on browser to give:

The screenshot shows a web interface for the 'Cloudboosta High Availability Lab'. At the top, there's an orange header with the lab name. Below it, a dark blue section contains the title 'AWS ALB + EC2 High Availability Demo' and the subtitle 'Watch load balancing in action!'. A white box displays 'Current Instance: Hostname: Private IP: 10.0.9.134'. A green box instructs to 'REFRESH 5-10 TIMES → See IP change across instances! PROOF: ALB distributes traffic for zero-downtime HA.' A red box lists 'Lab Verification Steps' with four numbered instructions. At the bottom, three blue boxes are visible: 'HA Core Principles' (with a sub-point 'Multi-AZ Deployment'), 'Key Benefits' (with a sub-point '99.99% Uptime SLA'), and 'Architecture' (with a sub-point 'ALB → Target Group → EC2 ASG (2+ AZs)').

Cloudboosta High Availability Lab

AWS ALB + EC2 High Availability Demo

Watch load balancing in action!

Current Instance:
Hostname:
Private IP: 10.0.9.134

REFRESH 5-10 TIMES → See IP change across instances!
PROOF: ALB distributes traffic for zero-downtime HA.

Lab Verification Steps

1. Access via **ALB DNS** (not direct EC2 IP)
2. Refresh page → Traffic hits different EC2s
3. Stop 1 instance → ALB routes around it instantly
4. Scale up → ASG adds instances automatically

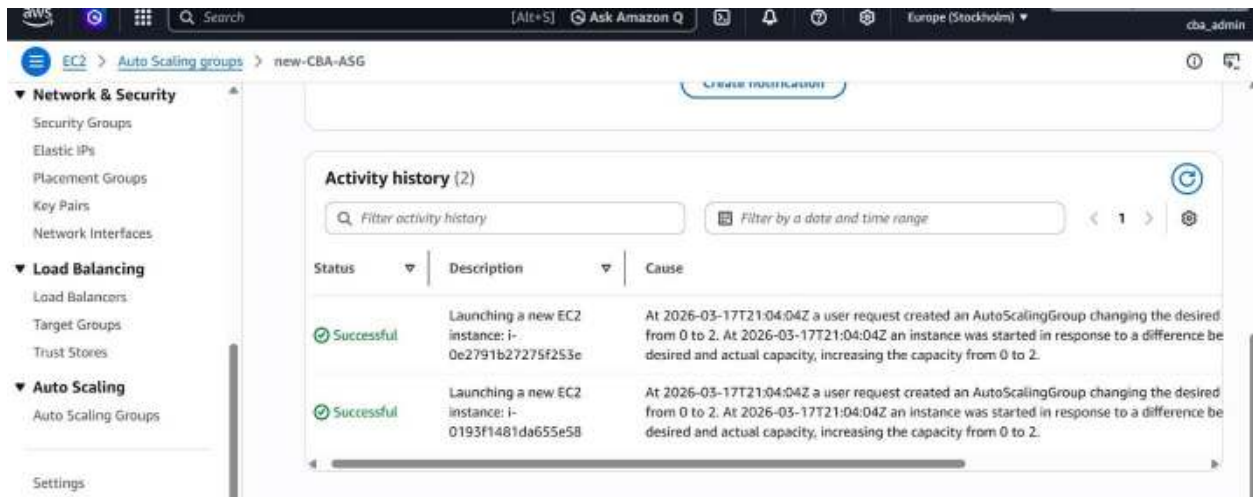
HA Core Principles
• Multi-AZ Deployment

Key Benefits
• 99.99% Uptime SLA

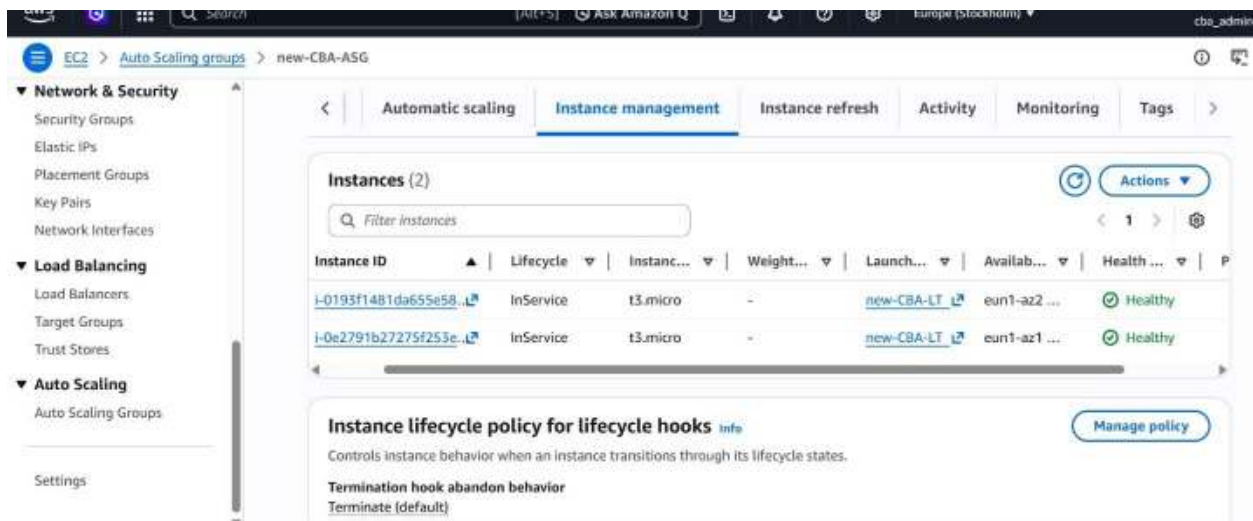
Architecture
ALB → Target Group → EC2 ASG (2+ AZs)

Key Observations

- Auto Scaling Activity
 - Activity history confirms successful scaling events, with new EC2 instances initiated in response to capacity changes.

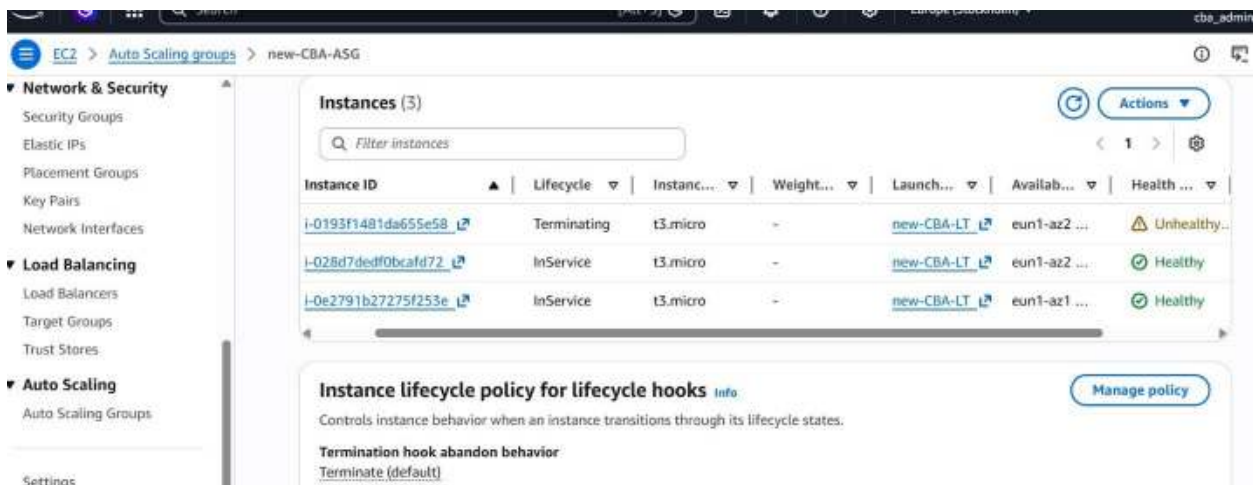


- Indicates proper ASG lifecycle execution and event-driven provisioning.
- Instance Health & Multi-AZ Distribution
 - Instances across eu-west-2a and eu-west-2b are in Healthy state, confirming:
 - Successful target group registration
 - Passing load balancer health checks

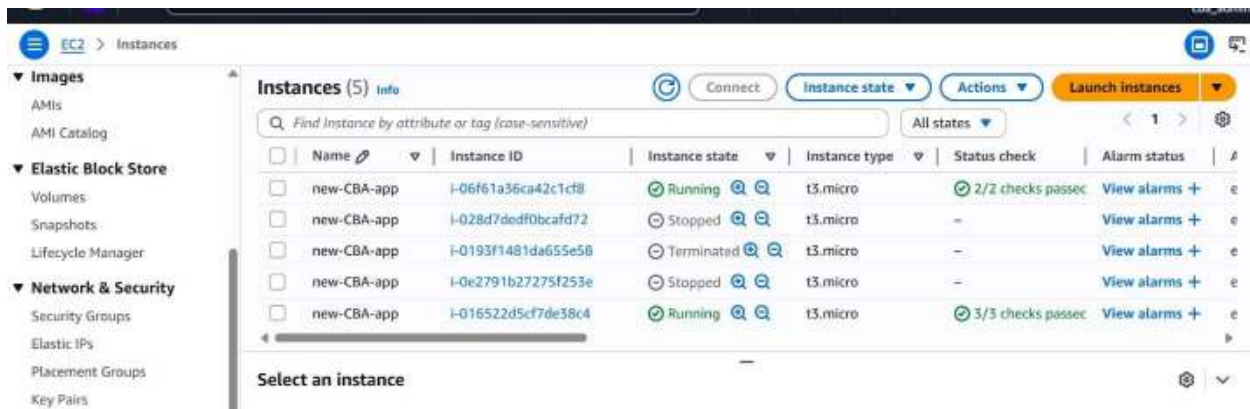


- Demonstrates effective multi-AZ high availability design.
- Automated Self-Healing Behaviour
 - Upon instance termination, the ASG automatically:
 - Detects capacity drift (actual < desired)
 - Launches a replacement instance using the launch template

- Confirms implementation of self-healing, immutable infrastructure.
- Provisioning Timeline
 - Replacement instances are typically launched within ~2 minutes of termination.
 - Full readiness (including health checks) occurs within 3-5 minutes.
- Load Balancer Integration
 - Terminating instances are marked Unhealthy and deregistered from the target group.



- Connection draining (deregistration delay) ensures in-flight requests complete gracefully.
- Newly launched instances are registered and begin serving traffic only after passing health checks.
- Continuous Capacity Enforcement
 - ASG continuously reconciles desired vs actual state:
 - As one instance terminates, another is simultaneously provisioned
 - Ensures no sustained capacity degradation.



- Zero-Downtime Traffic Handling
 - During browser refresh cycles, observed IP address changes confirm:
 - Traffic is distributed across multiple backend instances
 - The Application Load Balancer (ALB) is actively routing to healthy targets



- Validates seamless failover and zero-downtime availability.
- Operational Visibility
 - Monitoring and console updates reflect real-time lifecycle transitions:
 - Launching → InService → Draining → Terminated
 - Provides clear observability into scaling and health events.

Summary

The system demonstrates a resilient, self-healing Auto Scaling architecture, where instance failures or terminations trigger automated replacement, seamless load balancer re-integration,

and uninterrupted traffic distribution-ensuring high availability and operational continuity across the instances.

Screenshots of model setup on AWS console follow.

DNS options [Info](#)

- ☒ Enable DNS hostnames
- ☒ Enable DNS resolution

► Additional tags

[Cancel](#)

[Preview code](#)

[Create VPC](#)



CloudShell

[Feedback](#)



Console Mobile App

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[Privacy](#)

[Terms](#)

[Cookie preferences](#)

Actions ▼

Info

vpc-0a316e7a494412173

Enabled

acl-0195222eaa2062c98

2

100

Available

Tenancy
default

Default VPC
No

Network Address Usage metrics
Disabled

—

⊖ Off

DHCP option set
dopt-0d6ed4c9aff60f4e2

IPv4 CIDR
10.0.0.0/16

Route 53 Resolver DNS Firewall rule groups

1

Enabled

Main route table
rtb-0689a00771addc1df

IPv6 pool

Owner ID
009850210027

Search

[Alt+S] Ask Amazon Q

Europe (Stockholm)

cba_admin

VPC > Your VPCs > vpc-0a316e7a494412173

Transit gateway route tables

Transit gateway multicast

Metering policies

Traffic Mirroring

Mirror sessions

Mirror targets

Mirror filters

Network Manager

Cloud WAN

VPC IP Address Manager

AWS Firewall Manager

Resource map

Info

Show all details

VPC

Your AWS virtual network

new-CBA-vpc

Subnets (4)

Subnets within this VPC

eu-north-1a

A

new-CBA-subnet-public1-eu-north-1a

A

new-CBA-subnet-private1-eu-north-1a

eu-north-1b

B

new-CBA-subnet-public2-eu-north-1b

B

new-CBA-subnet-private2-eu-north-1b

Route tables (4)

Route network traffic to res

new-CBA-rtb-public

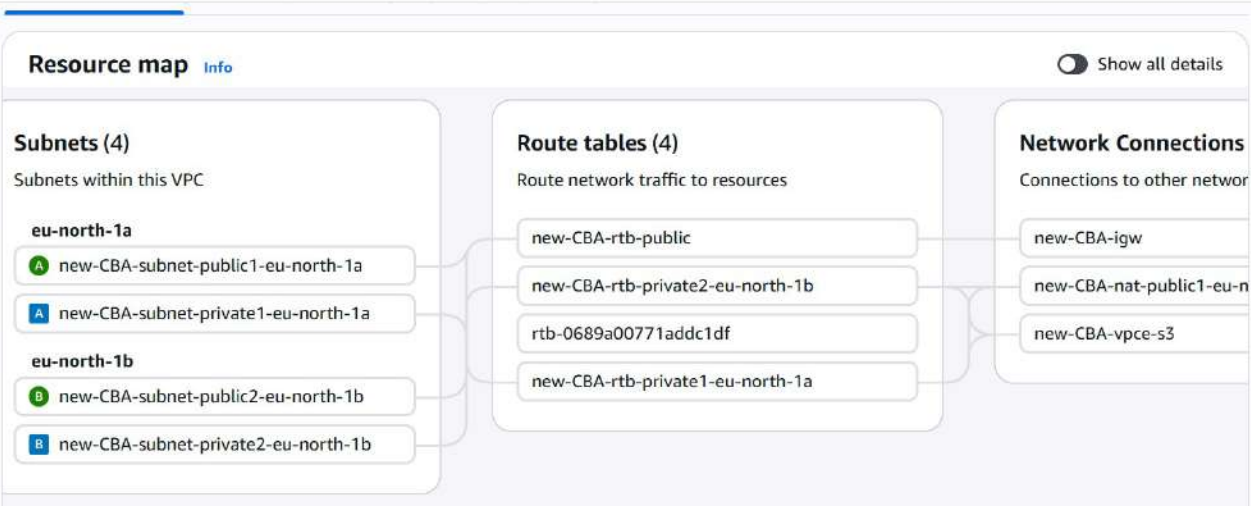
new-CBA-rtb-private2-eu

rtb-0689a00771addc1df

new-CBA-rtb-private1-eu

- Transit gateway route tables
- Transit gateway multicast
- Metering policies
- ▼ Traffic Mirroring
- Mirror sessions
- Mirror targets
- Mirror filters

- Network Manager
- Cloud WAN
- VPC IP Address Manager
- AWS Firewall Manager



aws

Search

[Alt+S]

Ask Amazon Q

Europe (Stockholm)

Samuel A. O. (0098-5021-0027)

cba_admin

VPC > Subnets

VPC dashboard

AWS Global View

Filter by VPC

Virtual private cloud

Your VPCs

Subnets

Route tables

Internet gateways

Egress-only internet gateways

NAT gateway

Subnets (7)

Info

Last updated 2 minutes ago

Actions

Create subnet

Find subnets by attribute or tag

☐	Name	Subnet ID	State	VPC
☐	-	subnet-096cd4878befcfc7b	Available	vpc-03f6e371162b723f8
☐	new-CBA-subnet-private1-eu-north-1a	subnet-042e13797ee7a798c	Available	vpc-0a316e7a494412173 new...
☐	new-CBA-subnet-private2-eu-north-1b	subnet-0f75b1ff4b0333c7c	Available	vpc-0a316e7a494412173 new...
☐	new-CBA-subnet-public1-eu-north-1a	subnet-073c0dfc6342775ee	Available	vpc-0a316e7a494412173 new...
☐	new-CBA-subnet-public2-eu-north-1b	subnet-05e44a40e9e9c6bbc	Available	vpc-0a316e7a494412173 new...

Select a subnet

Edit subnet settings

Info

Subnet

Subnet ID

subnet-073c0dfc6342775ee

Name

new-CBA-subnet-public1-eu-north-1a

Auto-assign IP settings

Info

Enable AWS to automatically assign a public IPv4 or IPv6 address to a new primary network interface for an instance in this subnet.

☒ Enable auto-assign public IPv4 address

Info

☐ Enable auto-assign customer-owned IPv4 address

Info

Option disabled because no customer owned pools found.

Resource-based name (RBN) settings

Info

Specify the hostname type for EC2 instances in this subnet and optional RBN DNS query settings.

☐ Enable resource name DNS A record on launch

Info

☐ Enable resource name DNS AAAA record on launch

Info

Hostname type

Info

☐ Resource name

☒ IP name

DNS64 settings

Enable DNS64 to allow IPv6-only services in Amazon VPC to communicate with IPv4-only services and networks.

☐ Enable DNS64

Info

Cancel

Save

Edit subnet settings

Info

Subnet

Subnet ID

subnet-05e44a40e9e9c6bbc

Name

new-CBA-subnet-public2-eu-north-1b

Auto-assign IP settings

Info

Enable AWS to automatically assign a public IPv4 or IPv6 address to a new primary network interface for an instance in this subnet.

☒

Enable auto-assign public IPv4 address

Info

☐

Enable auto-assign customer-owned IPv4 address

Info

Option disabled because no customer owned pools found.

Resource-based name (RBN) settings

Info

Specify the hostname type for EC2 instances in this subnet and optional RBN DNS query settings.

☐

Enable resource name DNS A record on launch

Info

☐

Enable resource name DNS AAAA record on launch

Info

Hostname type

Info

☐

Resource name

☒

IP name

DNS64 settings

Enable DNS64 to allow IPv6-only services in Amazon VPC to communicate with IPv4-only services and networks.

☐

Enable DNS64

Info

Cancel

Save

Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name [Info](#)

Name cannot be edited after creation.

Description [Info](#)

VPC [Info](#)

Inbound rules [Info](#)

Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info	
HTTP ▼	TCP	80	An... ▼	0.0.0.0/0	Delete
HTTPS ▼	TCP	443	An... ▼	0.0.0.0/0	Delete
Add rule					

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Outbound rules [Info](#)

Type Info	Protocol Info	Port range Info	Destination Info	Description - optional Info	
All traffic ▼	All	All	Cu... ▼	0.0.0.0/0	Delete
Add rule					

Rules with destination of 0.0.0.0/0 or ::/0 allow your instances to send traffic to any IPv4 or IPv6 address. We recommend setting security group rules to be more restrictive and to only allow traffic to specific known IP addresses.

Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

You can add up to 50 more tags

▼ Advanced health check settings

[Restore defaults](#)**Health check port**

The port the load balancer uses when performing health checks on targets. By default, the health check port is the same as the target group's traffic port. However, you can specify a different port as an override.

- ☒ Traffic port
- ☐ Override

Healthy threshold

The number of consecutive health checks successes required before considering an unhealthy target healthy.

2-10

Unhealthy threshold

The number of consecutive health check failures required before considering a target unhealthy.

2-10

Timeout

The amount of time, in seconds, during which no response means a failed health check.

seconds

2-120

Interval

The approximate amount of time between health checks of an individual target.

seconds

5-300

Success codes

The HTTP codes to use when checking for a successful response from a target. You can specify multiple values (for example, "200,202") or a range of values (for example, "200-299").

Target optimizer - optional [Info](#)

Use a target control port when the target has a strict concurrency limit.

Target control port

The port on which the target communicates its capacity. This value can't be modified after target group creation.

Valid range: 1-65535

Attributes

[i](#) Certain default attributes will be applied to your target group. You can view and edit them after creating the target group.

► **Tags - optional**

Consider adding tags to your target group. Tags enable you to categorize your AWS resources so you can more easily manage them.

[Cancel](#)[Next](#)

- Step 1
- Create target group
- Step 2 - recommended
- Register targets
- Step 3
- Review and create

Review and create

Review your target group configuration before creating

Step 1: Target group details

Edit

Target group details

Name

new-CBA-tg

Target type

Instance

Protocol : Port

HTTP: 80

Protocol version

HTTP1

VPC

[vpc-0a316e7a494412173](#)

IP address type

IPv4

Health check details

Health check protocol

HTTP

Health check path

/index.html

Health check port

traffic-port

Interval

10 seconds

Timeout

5 seconds

Healthy threshold

2

Unhealthy threshold

2

Success codes

200

Step 2: Register targets

Edit

Targets (0)

Instance ID

Name

Port

Zone

No targets added

Cancel

Previous

Create target group

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 Application Load Balancers work

Basic configuration

Load balancer name

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

new-CBA-LB

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

Scheme [Info](#)

Scheme can't be changed after the load balancer is created.

☒ Internet-facing

- Serves internet-facing traffic.
- Has public IP addresses.
- DNS name resolves to public IPs.
- Requires a public subnet.

☐ Internal

- Serves internal traffic.
- Has private IP addresses.
- DNS name resolves to private IPs.
- Compatible with the IPv4 and Dualstack IP address types.

Load balancer IP address type [Info](#)

Select the front-end IP address type to assign to the load balancer. The VPC and subnets mapped to this load balancer must include the selected IP address types. Public IPv4 addresses have an additional cost.

☒ IPv4

Includes only IPv4 addresses.

☐ Dualstack

Includes IPv4 and IPv6 addresses.

☐ Dualstack without public IPv4

Includes a public IPv6 address, and private IPv4 and IPv6 addresses. Compatible with **internet-facing** load balancers only.

Network mapping [Info](#)

The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

VPC [Info](#)

The load balancer will exist and scale within the selected VPC. The selected VPC is also where the load balancer targets must be hosted unless routing to Lambda or on-premises targets, or if using VPC peering. To confirm the VPC for your targets, view [target groups](#).

vpc-0a316e7a494412173 (new-CBA-vpc)

10.0.0.0/16



Create VPC

IP pools [Info](#)

You can optionally choose to configure an IPAM pool as the preferred source for your load balancers IP addresses. Create or view Pools in the [Amazon VPC IP Address Manager console](#).

☐ Use IPAM pool for public IPv4 addresses

The IPAM pool you choose will be the preferred source of public IPv4 addresses. If the pool is depleted IPv4 addresses will be assigned by AWS.

Availability Zones and subnets [Info](#)

Select at least two Availability Zones and a subnet for each zone. A load balancer node will be placed in each selected zone and will automatically scale in response to traffic. The load balancer routes traffic to targets in the selected Availability Zones only.

☒ eu-north-1a (eun1-az1)

Subnet

Only CIDR blocks corresponding to the load balancer IP address type are used. At least 8 available IP addresses are required for your load balancer to scale efficiently.

subnet-073c0dfc6342775ee (new-CBA-subnet-public1-eu-north-1a)

10.0.0.0/20

☒ eu-north-1b (eun1-az2)

Subnet

Only CIDR blocks corresponding to the load balancer IP address type are used. At least 8 available IP addresses are required for your load balancer to scale efficiently.

subnet-05e44a40e9e9c6bbc (new-CBA-subnet-public2-eu-north-1b)

10.0.16.0/20

Security groups [Info](#)

A security group is a set of firewall rules that control the traffic to your load balancer. Select an existing security group, or you can [create a new security group](#).

Security groups

Select up to 5 security groups

new-CBA-sg (sg-0fb2ce461b627d334) X

Listeners and routing [Info](#)

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

▼ Listener HTTP:80 Remove

Protocol

HTTP

Port

80

1-65535

Default action [Info](#)

The default action is used if no other rules apply. Choose the default action for traffic on this listener.

Routing action

☒ Forward to target groups

☐ Redirect to URL

☐ Return fixed response

Forward to target group [Info](#)

Choose a target group and specify routing weight or [create target group](#).

Target group

new-CBA-tg

Target type: Instance, IPv4 | Target stickiness: Off

HTTP



Weight

1

0-999

Percent

100%

+ Add target group

You can add up to 4 more target groups.

Target group stickiness [Info](#)

Enables the load balancer to bind a user's session to a specific target group. To use stickiness the client must support cookies. If you want to bind a user's session to a specific target, turn on the Target Group attribute Stickiness.

☐ Turn on target group stickiness

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

You can add up to 49 more listeners.

► Load balancer tags - optional

Consider adding tags to your load balancer. Tags enable you to categorize your AWS resources so you can more easily manage them. The 'Key' is required, but 'Value' is optional. For example, you can have Key = production-webserver, or Key = webserver, and Value = production.

Optimize with service integrations - optional [Info](#)

Optimize your load balancing architecture by integrating AWS services with this load balancer at launch. You can also add these and other services after your load balancer is created by reviewing the load balancer's "Integrations" tab.



Amazon CloudFront + AWS Web Application Firewall (WAF) - new [Info](#)

Optimizes: Performance, Availability, Security

☐ Apply application layer acceleration and security protections - *in front of the load balancer*

Automatically configures and creates a CloudFront distribution with the basic recommended AWS WAF security protections, and associates it to your load balancer. [Additional charges apply](#)

► Benefits and considerations



AWS Web Application Firewall (WAF) [Info](#)

Optimizes: Security

☐ Apply application layer security protections - *in front of targets*

Your choice of either a pre-defined security configuration with basic recommended AWS WAF security protections, or associate any of your existing WAF configurations for custom protections. [Additional charges apply](#)

► Benefits and considerations



AWS Global Accelerator [Info](#)

Optimizes: Performance, Availability

☐ Apply global load balancing across multiple regions

Creates an accelerator in your account with two global static IPs that act as a fixed entry point to your load balancer. If you do not need global static IPs or traffic management across multiple regions, select Amazon CloudFront. [Additional charges apply](#)

► Benefits and considerations

Review

Review the load balancer configurations and make changes if needed. After you finish reviewing the configurations, choose **Create load balancer**.

Summary

Review and confirm your configurations. [Estimate cost](#)

Basic configuration [Edit](#)

Name: new-CBA-LB
Scheme: Internet-facing
IP address type: IPv4

Network mapping [↗](#) [Edit](#)

VPC: [vpc-0a316e7a494412173](#)
Public IPv4 IPAM pool: -
Availability Zones and subnets:

- eu-north-1a
[subnet-073c0dfc6342775ee](#)
new-CBA-subnet-public1-eu-north-1a
- eu-north-1b
[subnet-05e44a40e9e9c6bbc](#)
new-CBA-subnet-public2-eu-north-1b

Security groups [↗](#) [Edit](#)

new-CBA-sg
[sg-0fb2ee461b627d334](#)

Listeners and routing [Edit](#)

HTTP:80 | [Forward to 1 target group](#)

Service integrations [Edit](#)

Amazon CloudFront + AWS Web Application Firewall (WAF): -
AWS WAF: -
AWS Global Accelerator: -

Tags [Edit](#)

-

Attributes

 Certain default attributes will be applied to your load balancer. You can view and edit them after creating the load balancer.

Creation workflow and status

► Server-side tasks and status

After completing and submitting the above steps, all server-side tasks and their statuses become available for monitoring.

[Cancel](#)

[Create load balancer](#)

Create launch template

Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.

Launch template name and description

Launch template name - *required*

Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '*', '@'.

Template version description

Max 255 chars

Auto Scaling guidance [Info](#)

Select this if you intend to use this template with EC2 Auto Scaling

☒ Provide guidance to help me set up a template that I can use with EC2 Auto Scaling

▶ Template tags

▶ Source template

▼ Summary

Software Image (AMI)

Amazon Linux 2023 AMI 2023.10...[read more](#)

ami-0aaa636894689fa47

Virtual server type (instance type)

t3.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Cancel

Create launch template

Launch template contents

Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.

▼ Application and OS Images (Amazon Machine Image) - *required* [Info](#)

An AMI contains the operating system, application server, and applications for your instance. If you don't see a suitable AMI below, use the search field or choose [Browse more AMIs](#).

Recents

Quick Start

Amazon Linux

aws

macOS

Mac

Ubuntu

ubuntu

Windows

Microsoft

Red Hat

Red Hat

SUSE Linux

SUSE

[Browse more AMIs](#)

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 kernel-6.1 AMI

ami-0aaa636894689fa47 (64-bit (x86), uefi-preferred) / ami-0ecd046e71cbe511e (64-bit (Arm), uefi)

Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Amazon Linux 2023 (kernel-6.1) is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized for AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud applications.

Amazon Linux 2023 AMI 2023.10.20260302.1 x86_64 HVM kernel-6.1

Architecture	Boot mode	AMI ID	Publish Date	Username
64-bit (...)	uefi-preferred	ami-0aaa636894689fa47	2026-03-03	ec2-user

Verified provider

▼ Instance type [Info](#) | [Get advice](#)

Instance type

t3.micro

Family: t3 2 vCPU 1 GiB Memory Current generation: true

On-Demand Linux base pricing: 0.0108 USD per Hour

☐ All generations

On-Demand Windows base pricing: 0.02 USD per hour
On-Demand Ubuntu Pro base pricing: 0.0143 USD per hour
On-Demand RHEL base pricing: 0.0396 USD per hour
On-Demand SUSE base pricing: 0.0108 USD per hour

[Compare instance types](#)

Additional costs apply for AMIs with pre-installed software

▼ Key pair (login) [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name

new-CBA-keypair

[Create new key pair](#)

▼ Network settings [Info](#)

Subnet [Info](#)

Don't include in launch template

[Create new subnet](#)

When you specify a subnet, a network interface is automatically added to your template.

Availability Zone [Info](#)

Don't include in launch template

[Enable additional zones](#)

Not applicable for EC2 Auto Scaling

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☐ Select existing security group

☒ Create security group

Security group name - *required*

new-CBA-LT-sg

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and _-./!@#\$%^&*.

Description - *required* [Info](#)

Enable web access to LT

VPC [Info](#)

vpc-0a316e7a494412173 (new-CBA-vpc)
10.0.0.0/16

[Create new VPC](#)

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 80, sg-0fb2ee461b627d334)

[Remove](#)

Type [Info](#)

HTTP

Protocol [Info](#)

TCP

Port range [Info](#)

80

Source type [Info](#)

Custom

Source [Info](#)

[Add CIDR, prefix list or security](#)

sg-0fb2ee461b627d334

Description - *optional* [Info](#)

e.g. SSH for admin desktop

[Add security group rule](#)

► Advanced network configuration

▼ Storage (volumes) [Info](#)

EBS Volumes

[Hide details](#)

► Volume 1 (AMI Root) : 8 GiB, EBS, General purpose SSD (gp3), 3000 IOPS
AMI Volumes are not included in the template unless modified

[Add new volume](#)

▼ Resource tags [Info](#)

No resource tags are currently included in this template. Add a resource tag to include it in the launch template.

[Add new tag](#)

You can add up to 50 more tags.

▼ Advanced details [Info](#)

IAM instance profile [Info](#)

Don't include in launch template ▼

[↻](#) [Create new IAM profile](#)

Hostname type [Info](#)

Don't include in launch template ▼

DNS Hostname [Info](#)

- ☐ Enable resource-based IPv4 (A record) DNS requests
- ☐ Enable resource-based IPv6 (AAAA record) DNS requests

Instance auto-recovery [Info](#)

Don't include in launch template ▼

Shutdown behavior [Info](#)

Don't include in launch template ▼

Not applicable for EC2 Auto Scaling

Stop - Hibernate behavior [Info](#)

Don't include in launch template ▼

Not applicable for Amazon EC2 Auto Scaling

Termination protection [Info](#)

Don't include in launch template ▼

Stop protection [Info](#)

Don't include in launch template ▼

Detailed CloudWatch monitoring [Info](#)

Don't include in launch template ▼

Credit specification [Info](#)

Don't include in launch template ▼

Placement group [Info](#)

Don't include in launch template ▼

[↻](#) [Create new placement group](#) [↗](#)

EBS-optimized instance [Info](#)

Don't include in launch template ▼

Instance bandwidth configuration [Info](#)

Don't include in launch template ▼

Purchasing option [Info](#)

- ☒ Don't include in launch template
- ☐ Capacity Blocks
Launch instances for your active capacity blocks
- ☐ Interruptible Capacity Reservations
Launch instances for your interruptible Capacity Reservations
- ☐ Spot instances
Request Spot instances at the Spot price, capped at the On-Demand price

If Spot is selected you will not be able to create an Auto Scaling group that spans across multiple pricing options and instance types.

Capacity reservation [Info](#)

Don't include in launch template ▼

Tenancy [Info](#)

Don't include in launch template ▼

RAM disk ID [Info](#)

Don't include in launch template ▼

Kernel ID [Info](#)

Don't include in launch template ▼

Nitro Enclave [Info](#)

Don't include in launch template

License configurations [Info](#)

Don't include in launch template

**CPU options - update** [Info](#)

Configure CPUs for your instance to optimize performance and save on licensing costs.

- ☒ Use default CPU options
- ☐ Specify CPU options

Default active vCPUs

2

Total vCPUs

2

Nested virtualization [Info](#)

Don't include in launch template

Nested virtualization is not supported with the selected instance type.

Metadata accessible [Info](#)

Enabled

Metadata IPv6 endpoint [Info](#)

Don't include in launch template

Metadata version [Info](#)

V2 only (token required)

⚠ For V2 requests, you must include a session token in all instance metadata requests. Applications or agents that use V1 for instance metadata access will break.

Metadata response hop limit [Info](#)

2

Allow tags in metadata [Info](#)

Don't include in launch template

User data - optional [Info](#)

Upload a file with your user data or enter it in the field.

Choose file

```
#!/bin/bash
# Switch to root user
sudo su

# Fetch IMDSv2 Token
TOKEN=$(curl -X PUT "http://169.254.169.254/latest/api/token" -H "X-aws-ec2-metadata-token-ttl-seconds: 21600")

# Retrieve instance metadata using IMDSv2
PRIVATE_IP=$(curl -H "X-aws-ec2-metadata-token: $TOKEN" -s http://169.254.169.254/latest/meta-data/local-ipv4)
HOSTNAME=$(curl -H "X-aws-ec2-metadata-token: $TOKEN" -s http://169.254.169.254/latest/meta-data/hostname)

# Update and install Apache (httpd)
```

☐ User data has already been base64 encoded

EC2 > Launch templates > new-CBA-LT

▼ Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

▼ Load Balancing

Load Balancers

Target Groups

Trust Stores

▼ Auto Scaling

Auto Scaling Groups

Settings

Launch template ID

lt-049763a251594e63f

Launch template name

new-CBA-LT

Default version

1

Owner

arn:aws:iam::009850210027:user/cba_admin

Details

Versions

Template tags

Launch template version details

Actions

Delete template version

Version

1 (Default)

Description

Version 1

Date created

2026-03-17T20:47:02.000Z

Created by

arn:aws:iam::009850210027:user/cba_admin

Instance details

Storage

Resource tags

Network interfaces

Advanced details

AMI ID

ami-0aaa636894689fa47

Instance type

t3.micro

Availability Zone

-

Availability Zone Id

-

Key pair name

new-CBA-keypair

Security groups

-

Security group IDs

sg-0120b2b220dde1922

- Step 1: Choose launch template
- Step 2: Choose instance launch options
- Step 3 - optional: **Integrate with other services**
- Step 4 - optional: Configure group size and scaling
- Step 5 - optional: Add notifications
- Step 6 - optional: Add tags
- Step 7: Review

Integrate with other services - optional [Info](#)

Use a load balancer to distribute network traffic across multiple servers. Enable service-to-service communications with VPC Lattice. Shift resources away from impaired Availability Zones with zonal shift. You can also customize health check replacements and monitoring.

Load balancing [Info](#)

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

Select Load balancing options

- ☐ **No load balancer**
Traffic to your Auto Scaling group will not be fronted by a load balancer.
 - ☒ **Attach to an existing load balancer**
Choose from your existing load balancers.
 - ☐ **Attach to a new load balancer**
Quickly create a basic load balancer to attach to your Auto Scaling group.

Attach to an existing load balancer

Select the load balancers to attach

- ☒ **Choose from your load balancer target groups**
This option allows you to attach Application, Network, or Gateway Load Balancers.

☐ **Choose from Classic Load Balancers**

Existing load balancer target groups

Only instance target groups that belong to the same VPC as your Auto Scaling group are available for selection.

Select target groups

new-CBA-tg | HTTP

Application Load Balancer: new-CBA-LB

VPC Lattice integration options [Info](#)

To improve networking capabilities and scalability, integrate your Auto Scaling group with VPC Lattice. VPC Lattice facilitates communications between AWS services and helps you connect and manage your applications across compute services in AWS.

Select VPC Lattice service to attach

- ☒ **No VPC Lattice service**
VPC Lattice will not manage your Auto Scaling group's network access and connectivity with other services.
- ☐ **Attach to VPC Lattice service**
Incoming requests associated with specified VPC Lattice target groups will be routed to your Auto Scaling group.

[Create new VPC Lattice service](#)

Application Recovery Controller (ARC) zonal shift - *new* [Info](#)

During an Availability Zone impairment, target instance launches towards other healthy Availability Zones.

- ☐ **Enable zonal shift**
New instance launches will be retargeted towards healthy Availability Zones until the zonal shift is canceled

Health checks

Health checks increase availability by replacing unhealthy instances. When you use multiple health checks, all are evaluated, and if at least one fails, instance replacement occurs.

EC2 health checks

① Always enabled

Additional health check types - optional [Info](#)

- ☒ **Turn on Elastic Load Balancing health checks** Recommended
- Elastic Load Balancing monitors whether instances are available to handle requests. When it reports an unhealthy instance, EC2 Auto Scaling can replace it on its next periodic check.

① EC2 Auto Scaling will start to detect and act on health checks performed by Elastic Load Balancing. To avoid unexpected terminations, first verify the settings of these health checks in the [Load Balancer console](#).

- ☒ **Turn on VPC Lattice health checks**
VPC Lattice can monitor whether instances are available to handle requests. If it considers a target as failed a health check, EC2 Auto Scaling replaces it after its next periodic check.
- ☐ **Turn on Amazon EBS health checks**
EBS monitors whether an instance's root volume or attached volume stalls. When it reports an unhealthy volume, EC2 Auto Scaling can replace the instance on its next periodic health check.

Health check grace period [Info](#)

This time period delays the first health check until your instances finish initializing. It doesn't prevent an instance from terminating when placed into a non-running state.

200 seconds

Cancel

Skip to review

Previous

Next



CloudShell

Feedback



Console Mobile App

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- If `connectFromApple` is applied, newly launched instances will be connected from apple in by default.

If you select **None**, the **None** option is selected. If you select **Prevent force deletion**, the **Prevent force deletion** option is selected. If you select **Prevent all deletion**, the **Prevent all deletion** option is selected.

☐ **Enable instance scale-in protection**

Monitoring [Info](#)

☒ **Enable group metrics collection within CloudWatch**

Default instance warmup [Info](#)

The amount of time that CloudWatch metrics for new instances do not contribute to the group's aggregated instance metrics, as their usage data is not reliable yet.

☐ **Enable default instance warmup**

Auto Scaling group deletion protection - new [Info](#)

Configure how this Auto Scaling group can be deleted.

☒ **None (default)**

The Auto Scaling group can be deleted.

☐ **Prevent force deletion**

The Auto Scaling group cannot be force deleted. To delete the group, all instances must be detached or terminated, and all warm pools must be deleted.

☐ **Prevent all deletion**

The Auto Scaling group cannot be deleted.

[Cancel](#)

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Desired capacity
2

Desired capacity type
Units (number of instances)

Scaling

Minimum desired capacity
2

Maximum desired capacity
2

Target tracking policy
-

Instance maintenance policy

Replacement behavior
No policy

Min healthy percentage
-

Max healthy percentage
-

Additional settings

Instance scale-in protection
Disabled

Monitoring
Enabled

Default instance warmup
Disabled

Auto Scaling group deletion protection
None (default)

Capacity Reservation preference

Preference
Default

Capacity Reservation IDs
-

Resource Groups
-

Step 5: Add notifications

[Edit](#)

Notifications

No notifications

Step 6: Add tags

[Edit](#)

Tags (1)

Key	Value	Tag new instances
Name	new-CBA-app	Yes

[Preview code](#)[Cancel](#)[Previous](#)[Create Auto Scaling group](#)

```
arn:aws:iam::009850210027:role/aws-  
service-role/autoscaling.amazonaws.com/  
AWSServiceRoleForAutoScaling
```

 CloudShell

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aws

Search

[Alt+S]

Ask Amazon Q

Europe (Stockholm)

cba_admin

EC2

>

Auto Scaling groups

>

new-CBA-ASG

1

▼ Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

▼ Load Balancing

Load Balancers

Target Groups

Trust Stores

▼ Auto Scaling

Auto Scaling Groups

Settings

Create notification

Activity history (2)

Filter activity history

Filter by a date and time range

< 1 >

Status	Description	Cause
Successful	Launching a new EC2 instance: i-0e2791b27275f253e	At 2026-03-17T21:04:04Z a user request created an AutoScalingGroup changing the desired from 0 to 2. At 2026-03-17T21:04:04Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 0 to 2.
Successful	Launching a new EC2 instance: i-0193f1481da655e58	At 2026-03-17T21:04:04Z a user request created an AutoScalingGroup changing the desired from 0 to 2. At 2026-03-17T21:04:04Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 0 to 2.

EC2 > Auto Scaling groups > new-CBA-ASG

Network & Security

Load Balancing

Auto Scaling

Automatic scaling

Instance management

Instance refresh

Activity

Monitoring

Tags

Instances (2)

Filter instances

Instance ID	Lifecycle	Instanc...	Weight...	Launch...	Availab...	Health ...
i-0193f1481da655e58	InService	t3.micro	-	new-CBA-LT	eun1-az2 ...	Healthy
i-0e2791b27275f253e	InService	t3.micro	-	new-CBA-LT	eun1-az1 ...	Healthy

Instance lifecycle policy for lifecycle hooks

Controls instance behavior when an instance transitions through its lifecycle states.

Termination hook abandon behavior

Terminate (default)

EC2 > Instances

EC2

Dashboard

AWS Global View

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Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Instances (2) Info

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability
new-CBA-app	i-0193f1481da655e58	Running	t3.micro	3/3 checks passed	View alarms	eu-north-1
new-CBA-app	i-0e2791b27275f253e	Running	t3.micro	3/3 checks passed	View alarms	eu-north-1

Select an instance

aws

Search

[Alt+S]

Europe (Stockholm)

Samuel A. O. (0098-5021-0027)

cba_admin

EC2 > Instances

EC2

Dashboard

AWS Global View

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Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Instances (3) Info

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	
☐	new-CBA-app	i-028d7dedf0bcafd72	Pending	t3.micro	Initializing	View alarms +	e
☐	new-CBA-app	i-0193f1481da655e58	Shutting-d...	t3.micro	-	View alarms +	e
☐	new-CBA-app	i-0e2791b27275f253e	Running	t3.micro	3/3 checks passed	View alarms +	e

Select an instance

EC2 > Auto Scaling groups > new-CBA-ASG

Network & Security

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Placement Groups

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Network Interfaces

Load Balancing

Load Balancers

Target Groups

Trust Stores

Auto Scaling

Auto Scaling Groups

Settings

Instances (3)

Filter instances

Instance ID	Lifecycle	Instanc...	Weight...	Launch...	Availab...	Health ...
i-0193f1481da655e58	Terminating	t3.micro	-	new-CBA-LT	eun1-az2 ...	Unhealthy..
i-028d7dedf0bcafd72	InService	t3.micro	-	new-CBA-LT	eun1-az2 ...	Healthy
i-0e2791b27275f253e	InService	t3.micro	-	new-CBA-LT	eun1-az1 ...	Healthy

Instance lifecycle policy for lifecycle hooks

Controls instance behavior when an instance transitions through its lifecycle states.

Termination hook abandon behavior

Terminate (default)

EC2 > Instances

EC2

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Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Capacity Manager

Instances (2/3) Info

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
☒	new-CBA-app	i-028d7dedf0bcafd72	Running	t3.micro	3/3 checks passed	View alarms
☐	new-CBA-app	i-0193f1481da655e58	Terminated	t3.micro	-	View alarms
☒	new-CBA-app	i-0e2791b27275f253e	Running	t3.micro	3/3 checks passed	View alarms

2 instances selected

Monitoring

Configure CloudWatch agent

Alarm recommendations

3h 1d 1w 1h

UTC timezone

Explore related

EC2 > Instances

EC2

Dashboard

AWS Global View

Events

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Instances (2/3) Info

Connect

Instance state

Actions

Launch Instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
☒	new-CBA-app	i-028d7dedf0bcafd72	Stopping	t3.micro	3/3 checks passed	View alarms
☐	new-CBA-app	i-0193f1481da655e58	Terminated	t3.micro	-	View alarms
☒	new-CBA-app	i-0e2791b27275f253e	Stopping	t3.micro	3/3 checks passed	View alarms

2 instances selected

Monitoring

EC2 > Instances

Instances (5) Info

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

☐	Name	Instance ID	Instance state	Instance type	Status check	Alarm status
☐	new-CBA-app	i-06f61a36ca42c1cf8	Running	t3.micro	2/2 checks passed	View alarms
☐	new-CBA-app	i-028d7dedf0bcafd72	Stopped	t3.micro	-	View alarms
☐	new-CBA-app	i-0193f1481da655e58	Terminated	t3.micro	-	View alarms
☐	new-CBA-app	i-0e2791b27275f253e	Stopped	t3.micro	-	View alarms
☐	new-CBA-app	i-016522d5cf7de38c4	Running	t3.micro	3/3 checks passed	View alarms

Select an instance

Images

AMI Catalog

Elastic Block Store

Security Groups

EC2 > Target groups > new-CBA-tg

▼ Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

▼ Load Balancing

Load Balancers

Target Groups

Trust Stores

▼ Auto Scaling

Auto Scaling Groups

TargetsMonitoringHealth checksAttributesTags

Registered targets (3) Info

Anomaly mitigation: Not applicable

Deregister

Register targets

Filter targets

< 1 > ⚙

☐	Instance ID	Name	Port	Zone	Health status	Health status details
☐	i-06f61a36ca42c1cf8	new-CBA-app	80	eu-north-1b (e...	✔ Healthy	-
☐	i-016522d5cf7de38c4	new-CBA-app	80	eu-north-1a (e...	✔ Healthy	-
☐	i-028d7dedf0bcafd72	new-CBA-app	80	eu-north-1b (e...	⊖ Draining	Target deregistration i..

EC2 > Target groups > new-CBA-tg

EC2

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Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

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

< 1 > ⚙

☐	Instance ID	Name	Port	Zone	Health status	Health status det
☐	i-06f61a36ca42c1cf8	new-CBA-app	80	eu-north-1b (e...	✔ Healthy	-
☐	i-016522d5cf7de38c4	new-CBA-app	80	eu-north-1a (e...	✔ Healthy	-

EC2 > Load balancers > new-CBA-LB

Volumes

Snapshots

Lifecycle Manager

▼ Network & Security

Security Groups

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Key Pairs

Network Interfaces

▼ Load Balancing

Load Balancers

Target Groups

Trust Stores

▼ Auto Scaling

Auto Scaling Groups

new-CBA-LB

Actions

▼ Details

Load balancer type Application	Status Active	VPC vpc-0a316e7a494412173	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z23TAZ6LKFMNIO	Availability Zones subnet-073c0dfc6342775ee eu-north-1a (eun1-az1) subnet-05e44a40e9e9c6bbc eu-north-1b (eun1-az2)	Date created March 17, 2026, 22:25 (UTC+02:00)
Load balancer ARN arn:aws:elasticloadbalancing:eu-north-1:009850210027:loadbalancer/app/new-CBA-LB/5e212c45ffea9b0c		DNS name Info new-CBA-LB-1538971237.eu-north-1.elb.amazonaws.com (A Record)	

AWS ALB + EC2 High Availability Demo

Watch load balancing in action!

Current Instance:

Hostname:

Private IP: 10.0.9.134

 **REFRESH 5-10 TIMES → See IP change across instances!**
PROOF: ALB distributes traffic for zero-downtime HA.

Lab Verification Steps

1. Access via **ALB DNS** (not direct EC2 IP)
2. Refresh page → Traffic hits different EC2s
3. Stop 1 instance → ALB routes around it instantly
4. Scale up → ASG adds instances automatically

HA Core Principles

- Multi-AZ Deployment
- Load Balancing (ALB)
- Health Checks & Failover
- Auto Scaling Groups

Key Benefits

- 99.99% Uptime SLA
- Zero Manual Failover
- Auto Scale on Demand
- Fault-Tolerant Architecture

Architecture

ALB → Target Group → EC2 ASG (2+ AZs)
Health checks ensure only healthy instances
serve traffic.[web:1][web:11]

Pro Tips

- Use sticky sessions for stateful apps
- Enable access logs for monitoring
- Pair with RDS Multi-AZ

Current Instance:

Hostname:

Private IP: 10.0.9.134

Current Instance:

Hostname:

Private IP: 10.0.17.165

AWS ALB + EC2 High Availability Demo

Watch load balancing in action!

Current Instance:

Hostname:

Private IP: 10.0.9.134

 **REFRESH 5-10 TIMES → See IP change across instances!**
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ALB → Target Group → EC2 ASG (2+ AZs)