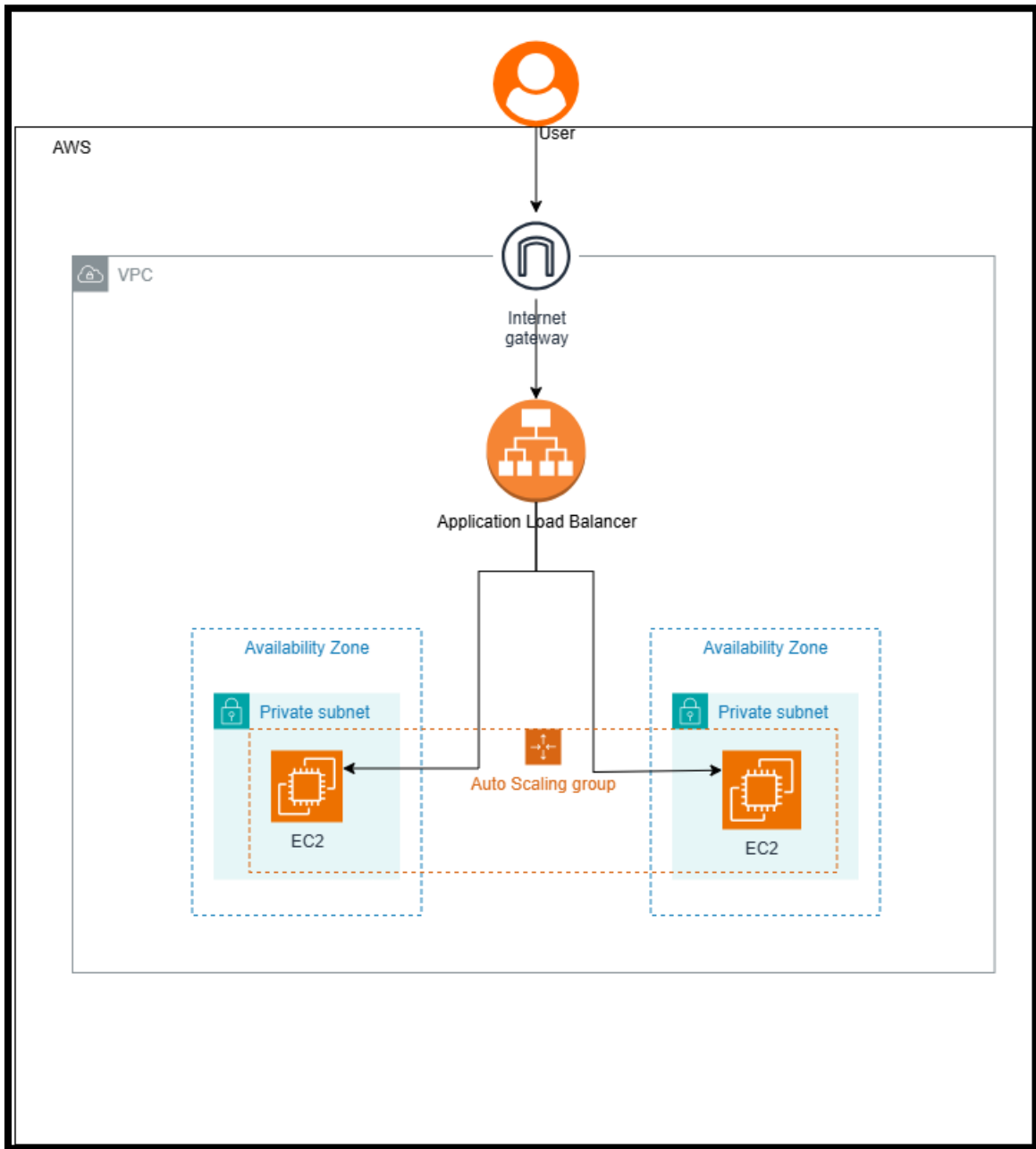


AWS Auto Scaling Web Application Project



1. Architecture Overview

The web application is deployed on AWS and leverages several AWS services to ensure high availability, scalability, and fault tolerance.

- **User:** Interacts with the web application.

- **Internet Gateway:** Provides a target in the Virtual Private Cloud (VPC) route tables for internet-routable traffic.
- **Application Load Balancer (ALB):** Distributes incoming application traffic across multiple targets, such as EC2 instances, in multiple Availability Zones.
 - **Load Balancer Type:** Application
 - **Status:** Active
 - **VPC:** vpc-0e2e65a3cebdff1f
 - **Scheme:** Internet-facing
 - **DNS Name:** <https://www.google.com/search?q=auto-scaling-alb-1970851051.us-east-1.elb.amazonaws.com>
 - **Listeners:** HTTP:80, forwarding to auto-scaling-targets target group.
- **Auto Scaling Group:** Automatically adjusts the number of EC2 instances in response to changing demand.
 - **Desired Capacity:** 2 instances
 - **Scaling Limits:** Minimum 2, Maximum 4 instances
 - **Desired Capacity Type:** Units (number of instances)
 - **Status:** InService
 - **Instances:** Currently running 2 instances, one in us-east-1a and one in us-east-1b.
- **Availability Zones:** The architecture is deployed across multiple Availability Zones (us-east-1a and us-east-1b) for high availability.
- **Private Subnets:** EC2 instances are launched in private subnets, enhancing security.
- **EC2 Instances:** The compute capacity for the web application.
 - **Instance Type:** t2.micro
 - **Instance IDs:**
 - i-09a4bf8b59c3b2e
 - i-0cf5b9e57cd870d8
 - **Health Status:** Healthy

EC2 Instance

aws

Search

[Alt+S]

United States (N. Virginia)

Account ID: 6502-5169-8809

dev-user1

EC2

Instances

EC2

Dashboard

EC2 Global View

Events

Instances

Instance Types

Launch Templates

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Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

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Volumes

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Lifecycle Manager

Instances (2) Info

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

Instance state = running

Clear filters

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 D
<input type="checkbox"/>	auto-scaling-i...	i-09af4bf8b5f9c3b2e	Running	t2.micro	2/2 checks pass	View alarms +	us-east-1a	-
<input type="checkbox"/>	auto-scaling-i...	i-0cf5b9fe57cd870d8	Running	t2.micro	2/2 checks pass	View alarms +	us-east-1b	-

Select an instance

aws

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United States (N. Virginia)

Account ID: 6502-5169-8809

dev-user1

EC2

Auto Scaling groups

auto-scaling-group

AMI Catalog

Elastic Block Store

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Network & Security

Security Groups

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Placement Groups

Key Pairs

Network Interfaces

Load Balancing

Load Balancers

Target Groups

Trust Stores

Auto Scaling

Auto Scaling Groups

Settings

Activity history (10)

Filter activity history

< 1 >

Status	Description	Cause	Start time
Successful	Launching a new EC2 instance: i-0cf5b9fe57cd870d8	At 2025-05-29T17:22:55Z an instance was launched in response to an unhealthy instance needing to be replaced.	2025 May 29, 10:52:57 PM +05:30
Successful	Terminating EC2 instance: i-0757c8a9b2a39b465	At 2025-05-29T17:22:55Z an instance was taken out of service in response to an EC2 health check indicating it has been terminated or stopped.	2025 May 29, 10:52:55 PM +05:30
Successful	Launching a new EC2 instance: i-09af4bf8b5f9c3b2e	At 2025-05-29T17:20:55Z an instance was launched in response to an unhealthy instance needing to be replaced.	2025 May 29, 10:50:56 PM +05:30
Successful	Terminating EC2 instance: i-0358546ddb475ef84	At 2025-05-29T17:20:54Z an instance was taken out of service in response to an EC2 health check indicating it has been terminated or stopped.	2025 May 29, 10:50:54 PM +05:30
Successful	Launching a new EC2 instance: i-0757c8a9b2a39b465	At 2025-05-29T16:45:18Z a user request update of AutoScalingGroup constraints to min: 2, max: 4, desired: 2 changing the desired capacity from 1 to 2. At 2025-05-29T16:45:29Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 1 to 2.	2025 May 29, 10:15:31 PM +05:30
Successful	Launching a new EC2 instance: i-0757c8a9b2a39b465	At 2025-05-29T16:25:14Z an instance was launched in response to an unhealthy instance needing to be replaced.	2025 May 29, 09:55:16 PM +05:30

CloudShell

Feedback

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Auto Scaling Group

- **Name:** auto-scaling-group
- **Launch Template:** auto-scaling-template (lt-05e0e5c11c25bf0d5)
 - **AMI ID:** ami-0e51b56aa4064231b
 - **Instance Type:** t2.micro
 - **Key pair name:** auto-scaling-key

auto-scaling-group

auto-scaling-group Capacity overview

arn:aws:autoscaling:us-east-1:650251698809:autoScalingGroup:d0331276-deb0-441f-9808-9eabb32c8b46:autoScalingGroupName/auto-scaling-group

Desired capacity 2	Scaling limits (Min - Max) 2 - 4	Desired capacity type Units (number of instances)	Status -
------------------------------	--	---	--------------------

Date created
Thu May 29 2025 20:03:32 GMT+0530 (India Standard Time)

Details | Integrations - new | Automatic scaling | **Instance management** | Instance refresh | Activity | Monitoring

Instances (2)

Filter instances

Instance ID	Lifecycle	Instanc...	Weight...	Launch template/...	Availabi...	Health ...	Protecte...
i-09af4bf8b5f9c3b2e	InService	t2.micro	-	auto-scaling-template	us-east-1a	Healthy	
i-0cf5b9fe57cd870d8	InService	t2.micro	-	auto-scaling-template	us-east-1b	Healthy	

auto-scaling-group

auto-scaling-group Capacity overview

arn:aws:autoscaling:us-east-1:650251698809:autoScalingGroup:d0331276-deb0-441f-9808-9eabb32c8b46:autoScalingGroupName/auto-scaling-group

Desired capacity 2	Scaling limits (Min - Max) 2 - 4	Desired capacity type Units (number of instances)	Status -
------------------------------	--	---	--------------------

Date created
Thu May 29 2025 20:03:32 GMT+0530 (India Standard Time)

Details | Integrations - new | Automatic scaling | **Instance management** | Instance refresh | Activity | Monitoring

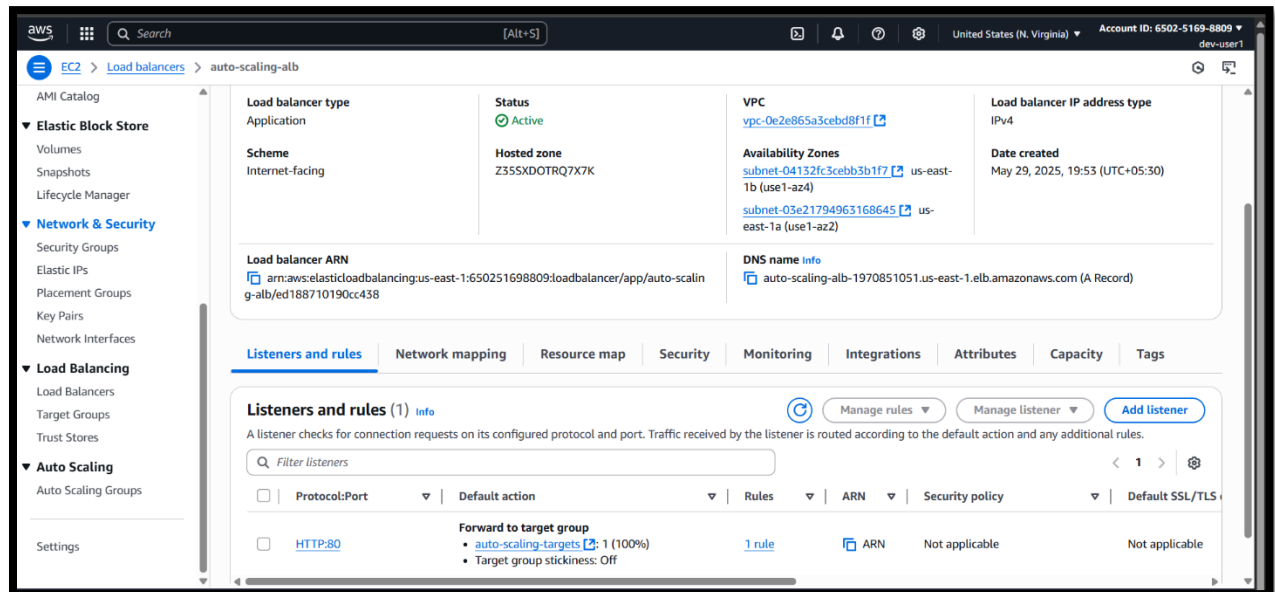
Instances (2)

Filter instances

Instance ID	Lifecycle	Instanc...	Weight...	Launch template...	Availabi...	Health ...	Protecte...
i-09af4bf8b5f9c3b2e	InService	t2.micro	-	auto-scaling-template	us-east-1a	Healthy	
i-0cf5b9fe57cd870d8	InService	t2.micro	-	auto-scaling-template	us-east-1b	Healthy	

Application Load Balancer (ALB)

- **Name:** auto-scaling-alb
- **Security Group:** alb-security-group (sg-07f8fd588c4bb55ed)
 - **Inbound Rules:**
 - HTTP (Port 80) from 0.0.0.0/0 (IPv4)
 - HTTPS (Port 443) from 0.0.0.0/0 (IPv4)
- **Target Group:** auto-scaling-targets
 - **Load Balancer:** auto-scaling-alb
 - **Total Targets:** 2
 - **Healthy Targets:** 2
 - **Registered Targets:**
 - Instance ID: i-0cf5b9e57cd870d8, Port: 80, Zone: us-east-1b, Health: Healthy
 - Instance ID: i-09a4bf8b59c3b2e, Port: 80, Zone: us-east-1a, Health: Healthy



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United States (N. Virginia)

Account ID: 6502-5169-8809

dev-user

EC2 > Target groups > auto-scaling-targets

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Load Balancing

Load Balancers

Target Groups

Trust Stores

Auto Scaling

Auto Scaling Groups

Settings

IP address type

IPv4

Load balancer

auto-scaling-alb

2

Total targets

2

Healthy

0

Anomalous

0

Unhealthy

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

1

☐

Instance ID

Name

Port

Zone

Health ...

Health st...

Administ...

Overri...

Launch...

☐

i-0cf5b9fe57...

auto-scaling-ins...

80

us-east-1b (us...

Healthy

-

No override...

No overri...

May 29, 2...

☐

i-09af4bf8b5...

auto-scaling-ins...

80

us-east-1a (us...

Healthy

-

No override...

No overri...

May 29, 2...

aws

Search

[Alt+S]

United States (N. Virginia)

Account ID: 6502-5169-8809

dev-user1

EC2 > Launch templates > auto-scaling-template

Instances

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Feedback

auto-scaling-template (lt-05e0e5c11c25bf0d5)

Actions

Delete template

Launch template details

Launch template ID

lt-05e0e5c11c25bf0d5

Launch template name

auto-scaling-template

Default version

1

Owner

arn:aws:iam:650251698809:user/dev-user1

Details

Versions

Template tags

Launch template version details

Version

1 (Default)

Description

Initial version for auto-scaling web a pp

Date created

2025-05-29T14:18:41.000Z

Created by

arn:aws:iam:650251698809:user/dev-user1

Instance details

Storage

Resource tags

Network interfaces

Advanced details

AMI ID

ami-0e58b56aa4d64231b

Instance type

t2.micro

Availability Zone

-

Key pair name

auto-scaling-key

Security groups

-

Security group IDs

sg-051df05a78c3ff730

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Virtual Private Cloud (VPC)

- **VPC ID:** vpc-0e2e65a3cebdff1f
- **IPv4 CIDR:** 10.0.0.0/16
- **State:** Available
- **DNS Hostnames:** Disabled
- **Subnets:**
 - public subnet-1a in us-east-1a
 - public subnet-1b in us-east-1b
- **Internet Gateway:** auto-scaling-igw

The screenshot displays the AWS Management Console interface for a specific VPC. The top navigation bar shows the AWS logo, a search bar, and the current region (United States (N. Virginia)) and account ID (6502-5169-8809). The left sidebar contains the 'VPC dashboard' and a list of VPC-related resources including Subnets, Route tables, Internet gateways, and Security groups. The main content area is titled 'VPC dashboard' and shows details for the VPC 'vpc-0e2e65a3cebdff1f'. The details are organized into a grid of cards: VPC ID, State (Available), Block Public Access (Off), DNS hostnames (Disabled), DNS resolution (Enabled), Tenancy (default), DHCP option set (dopt-0983ec690a48e3ebc), Main network ACL (acl-0088fe4120f2784b3), Default VPC (No), IPv4 CIDR (10.0.0.0/16), Main route table (rtb-09d908a3a6858845c), IPv6 CIDR (Network border group), Network Address Usage metrics (Disabled), and Route 53 Resolver DNS Firewall rule groups. Below the details, there is a 'Resource map' section with tabs for 'Resource map', 'CIDRs', 'Flow logs', 'Tags', and 'Integrations'. The 'Resource map' tab is active, showing a visual representation of the VPC resources. It includes a box for 'VPC' (auto-scaling-vpc), a box for 'Subnets (2)' (public-subnet-1a and public-subnet-1b), a box for 'Route tables (1)' (rtb-09d908a3a6858845c), and a box for 'Network connections' (auto-scaling-igw). Lines connect the subnets to the route table, and the route table to the internet gateway.

VPC dashboard

EC2 Global View

Filter by VPC

Virtual private cloud

Your VPCs

Subnets

Route tables

Internet gateways

Egress-only internet gateways

Carrier gateways

DHCP option sets

Elastic IPs

Managed prefix lists

NAT gateways

Peering connections

Route servers

Security

Network ACLs

Security groups

VPC ID vpc-0e2e65a3cebdff1f

State Available

Block Public Access Off

DNS hostnames Disabled

DNS resolution Enabled

Tenancy default

DHCP option set dopt-0983ec690a48e3ebc

Main network ACL acl-0088fe4120f2784b3

Default VPC No

IPv4 CIDR 10.0.0.0/16

Main route table rtb-09d908a3a6858845c

IPv6 CIDR (Network border group) -

Network Address Usage metrics Disabled

Route 53 Resolver DNS Firewall rule groups -

Owner ID 650251698809

Resource map

VPC Show details

Your AWS virtual network

auto-scaling-vpc

Subnets (2)

Subnets within this VPC

us-east-1a

public-subnet-1a

us-east-1b

public-subnet-1b

Route tables (1)

Route network traffic to resources

rtb-09d908a3a6858845c

Network connections

Connections to other resources

auto-scaling-igw

EC2 Security Group

- **Name:** ec2-security-group
- **Security Group ID:** sg-051df05a78c3ff730
- **Description:** Security group for EC2 instances
- **VPC ID:** vpc-0e2e65a3cebdff1f
- **Inbound Rules:**
 - HTTP (Port 80) from the security group associated with the ALB
 - SSH (Port 22) from IP address 203.169.109.196/32

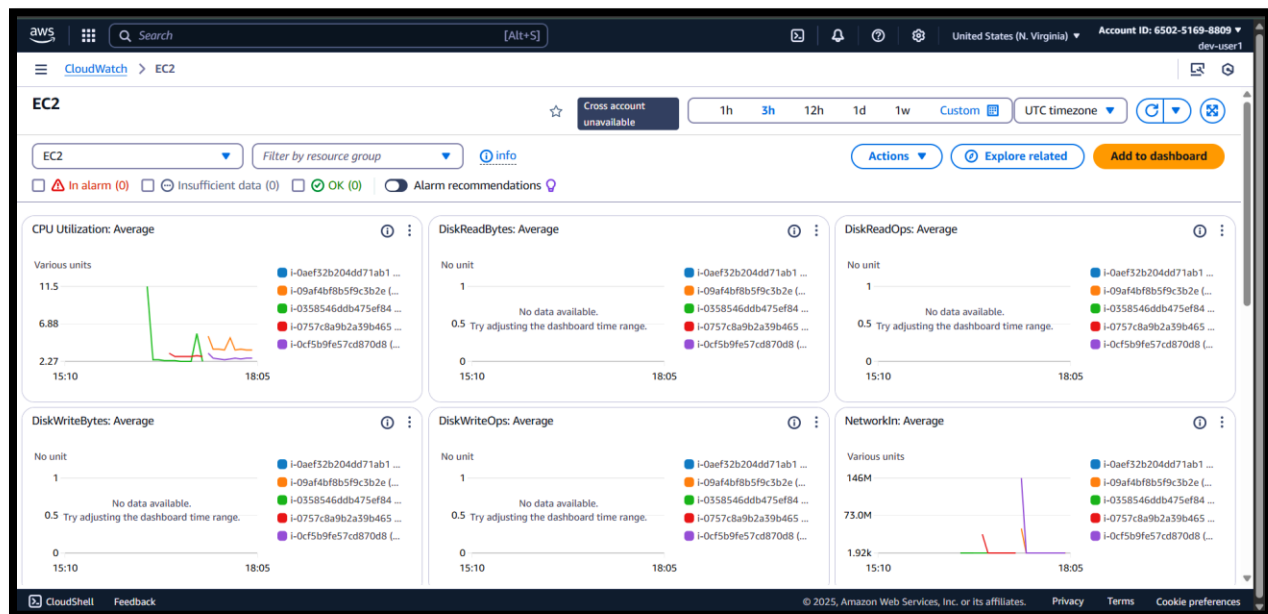
The screenshot displays the AWS Management Console interface for the 'Security Groups' section. The left-hand navigation pane shows the 'Network & Security' category selected, with 'Security Groups' highlighted. The main content area shows a list of security groups, with 'ec2-security-group' (ID: sg-051df05a78c3ff730) selected. Below the list, the 'Details' tab is active, showing the following information:

Property	Value
Security group name	ec2-security-group
Security group ID	sg-051df05a78c3ff730
Description	Security group for EC2 instances
VPC ID	vpc-0e2e65a3cebdff1f
Owner	650251698809
Inbound rules count	2 Permission entries
Outbound rules count	1 Permission entry

The top of the console shows the account ID 6502-5169-8809 and the user 'dev-user1'. The bottom of the console displays the copyright notice '© 2025, Amazon Web Services, Inc. or its affiliates.' and links for 'Privacy', 'Terms', and 'Cookie preferences'.

Monitoring

- **CloudWatch:** Metrics like CPU Utilization, Disk Read/Write Bytes/Ops, and Network In/Out are monitored. Currently, there is no data available for these metrics in the provided screenshots



Final Deployed Web Application – AWS Auto-Scaling Architecture

Final deployed version of the auto-scaling web application hosted on **Amazon EC2**, served via an **Application Load Balancer (ALB)** with **Auto Scaling Groups** across **two Availability Zones**. This lightweight, cloud-native app demonstrates:

- **Seamless Performance** under real-time traffic
- **Automatic Scaling** based on CPU utilization
- **High Availability** with fault-tolerant architecture

