

Module 4: ELB Assignment

Problem Statement:

You work for XYZ Corporation that uses on premise solutions and some limited number of systems. With the increase in requests in their application, the load also increases. So, to handle the load the corporation has to 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. 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.

3 ec2 instance in running status

Instances | EC2 | ap-south-1

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Instances:instanceState=running:v=3;\$case=tags:true%5C,client:false;\$...

Services

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Instances (1/3)

Find Instance by attribute or tag (case-sensitive)

Instance state = running

Clear filters

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	Server-1	i-0a7c4c3d781844b	Running	t2.micro	Initializing	View alarms	ap-south-1b
<input type="checkbox"/>	Server-2	i-01d0f5fe29c597620	Running	t2.micro	Initializing	View alarms	ap-south-1b
<input checked="" type="checkbox"/>	Server-3	i-09379e6a11e165d2d	Running	t2.micro	Initializing	View alarms	ap-south-1b

i-09379e6a11e165d2d (Server-3)

Details

Status and alarms

Monitoring

Security

Networking

Storage

Tags

Instance summary

Instance ID

i-09379e6a11e165d2d (Server-3)

IPv6 address

-

Public IPv4 address

13.233.192.182 | open address

Instance state

Running

Private IPv4 addresses

172.31.6.65

Public IPv4 DNS

ec2-13-233-192-182.ap-south-1.compute.amazonaws.com | open address

CloudShell

Feedback

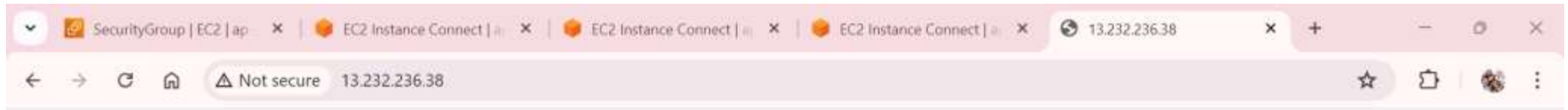
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Privacy

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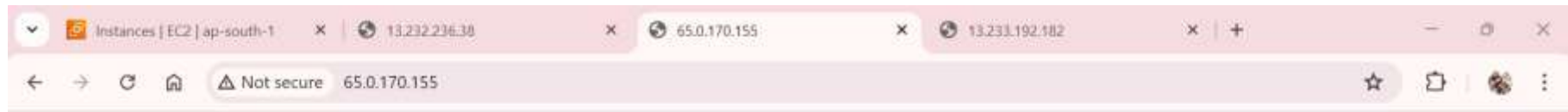
Cookie preferences

Server -1



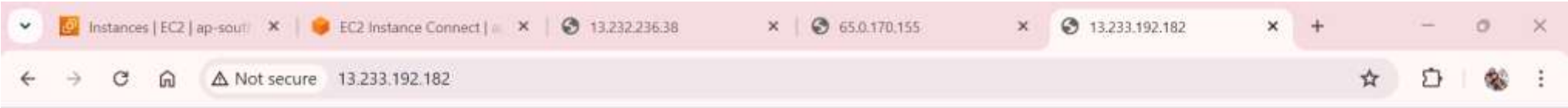
this is server -1

Server 2



this is server -2

Server 3



this is server -3

Create Load Balancer

The screenshot shows the AWS Management Console interface for creating a Classic Load Balancer. The browser address bar indicates the URL is `us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateCLBWizard:`. The console header includes the AWS logo, a 'Services' menu, a search bar, and navigation links for 'EC2' and 'EC2 Image Builder'. The user's account name 'prakash24' and region 'N. Virginia' are visible in the top right.

Create Classic Load Balancer [Info](#)

The Classic Load Balancer distributes incoming application traffic across multiple EC2 instance targets in multiple Availability Zones. This increases the fault tolerance of your applications. Elastic Load Balancing detects unhealthy instances and routes traffic only to healthy instances.

► **How Classic 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.

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**
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.

At the bottom of the console, there are links for 'CloudShell' and 'Feedback'. The footer contains the copyright notice '© 2024, Amazon Web Services, Inc. or its affiliates.' and links for 'Privacy', 'Terms', and 'Cookie preferences'.

- EC2 Dashboard
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 - Instances
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- Images
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- Elastic Block Store
 - Volumes
 - Snapshots
 - Lifecycle Manager

Successfully created load balancer: **server-clb-01**
It might take a few minutes for your load balancer to be fully set up and ready to route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.

EC2 > Load balancers

Load balancers (1)

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

<input type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones	Type
<input type="checkbox"/>	server-clb-01	server-clb-01-142664692...	-	vpc-09da02eb16a97ff13	3 Availability Zones	clb

0 load balancers selected

Load balancer details | EC2 Instance Connect | 13.232.236.38 | 65.0.170.155 | 13.233.192.182

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancer:loadBalancerArn=server-clb-01;tab=targetInstances

aws

Services

Search

[Alt+S]

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This Classic Load Balancer can be migrated to a next generation load balancer. Migration wizard uses your load balancer's current configurations to create a new load balancer. [Learn more](#)

Launch migration wizard

Distribution of targets by Availability Zone (AZ)

For each enabled Availability Zone, you can view the number of registered instances and their current health states. Selecting any values here will apply the corresponding filter to the Target instances table.

Listeners

Network mapping

Security

Health checks

Target instances

Monitoring

Attributes

Tags

Target instances (3)

Connection draining: On (300 seconds)

Deregister

Manage instances

Instances currently registered to your load balancer are displayed. To deregister instances, select them, then choose Deregister. To register and deregister instances simultaneously, choose Manage instances.

Filter target instances

Instance ID	Name	Health status	Health status descri...	Security gr
<input type="checkbox"/> i-0a7cff4c3d781844b	Server-1	In-service	Not applicable	launch-wiz
<input type="checkbox"/> i-01d0f5fe29c597620	Server-2	In-service	Not applicable	launch-wiz
<input type="checkbox"/> i-09379e6a11e165d2d	Server-3	In-service	Not applicable	launch-wiz

CloudShell

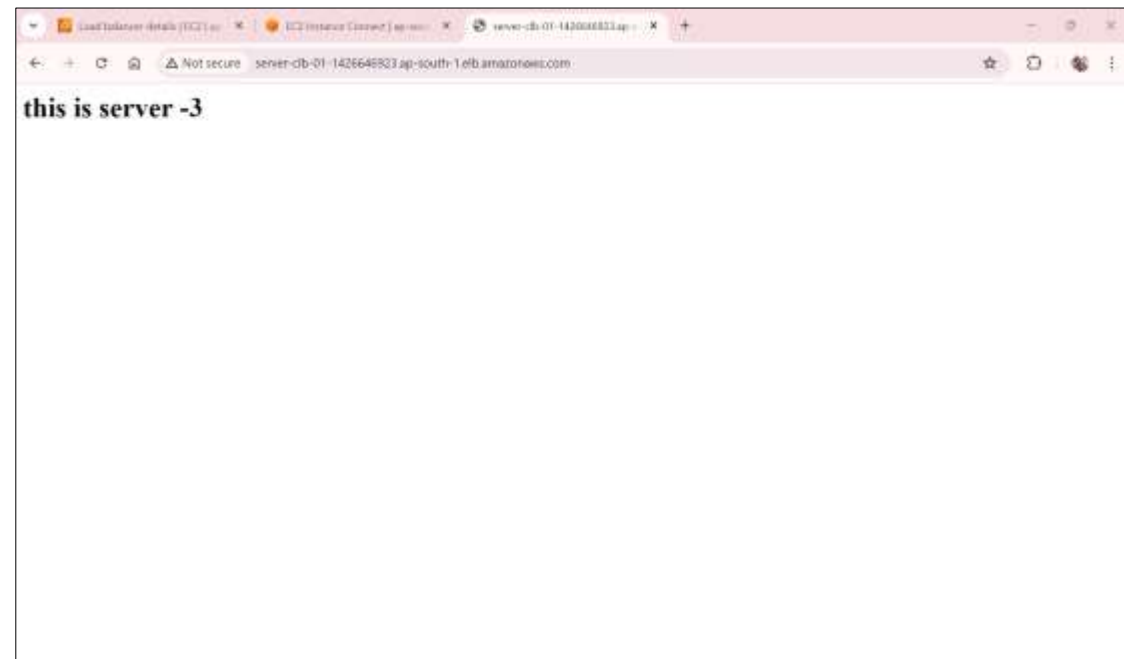
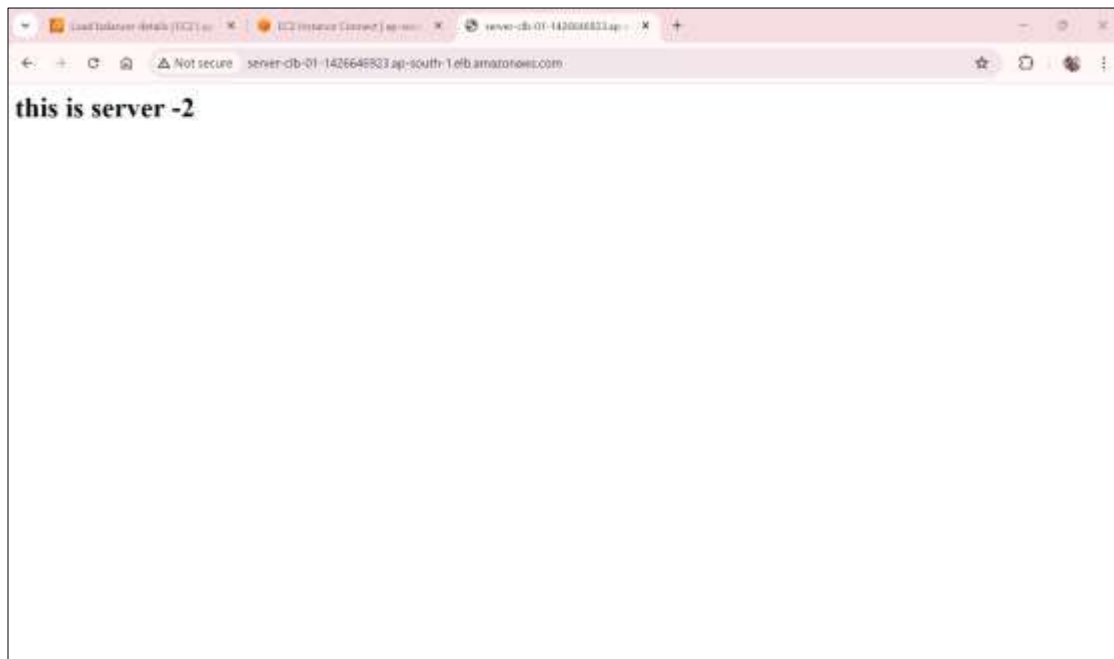
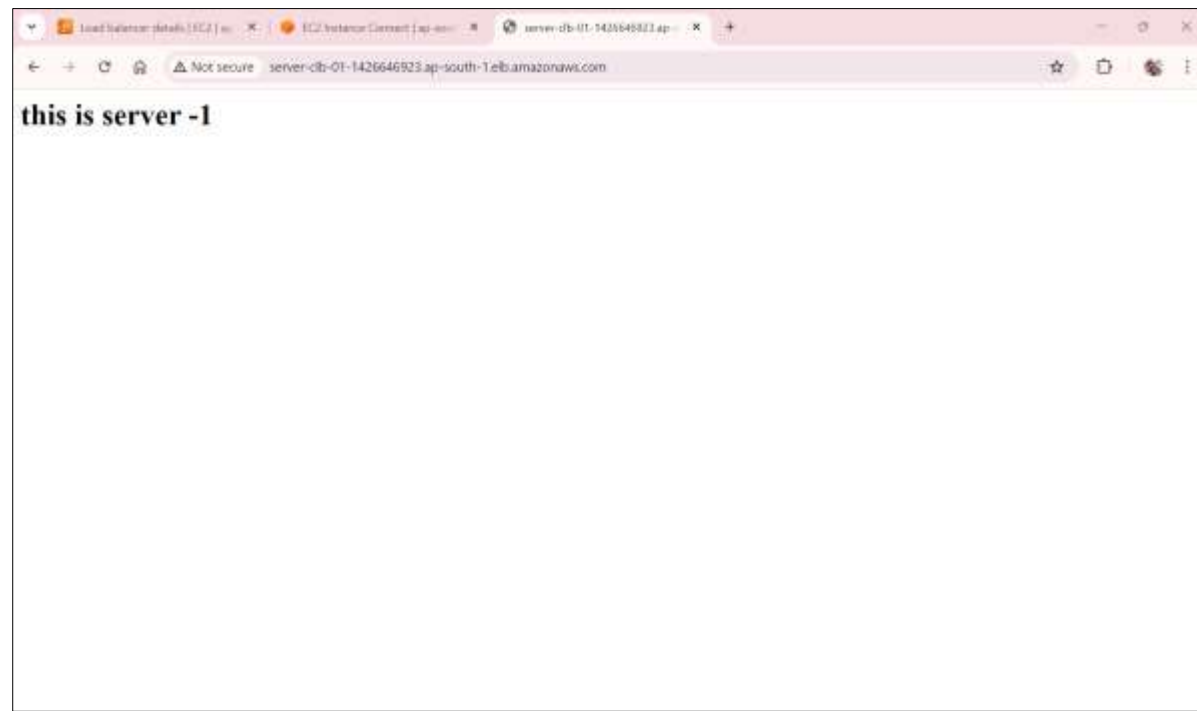
Feedback

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Cookie preferences



Load balancer details | EC2 | ap-
server-clb-01-1426646923.ap-
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancer:loadBalancerArn=server-clb-01;tab=listeners

aws

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Target Groups

Trust Stores

Auto Scaling

Auto Scaling Groups

ap-south-1b (aps1-az3)

subnet-0938ef38c2baa63a9

ap-south-1a (aps1-az1)

DNS name

server-clb-01-1426646923.ap-south-1.elb.amazonaws.com (A Record)

This Classic Load Balancer can be migrated to a next generation load balancer. Migration wizard uses your load balancer's current configurations to create a new load balancer.

Launch migration wizard

Migrate to Application Load Balancer

Migrate to Network Load Balancer

Distribution of targets by Availability Zone (AZ)

For each enabled Availability Zone, you can view the number of registered instances and their current health states. Selecting any values here will apply the corresponding filter to the Target instances table.

Listeners

Network mapping

Security

Health checks

Target instances

Monitoring

Attributes

Tags

Listeners

Manage listeners

A Classic Load Balancer listener uses the protocols and ports you configure, to both check for connection requests and forward received traffic to instances. The listener uses its protocol and port to check for connection requests. When traffic is received by the listener, it's forwarded to registered EC2 instances using the instance protocol and port.

Filter listeners

1

Protocol:Port

Instance Pr...

Security policy

Default SSL/TLS certificate

Cookie stickiness

CloudShell Feedback

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Name new load balancer

Load balancer name
Name must be unique within your AWS account and can't be changed after the load balancer is created. Your original Classic Load Balancer's name is `server-clb-01`.

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

Name new target group and review targets [Info](#)

A target group will be created with your instances and the transferrable health check settings from your Classic Load Balancer. Any non-transferrable settings will be indicated as a change in the summary section. No costs are incurred for target groups.

Target group name

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

Target group protocol
The protocol assigned is based on your Classic Load Balancer settings. In some cases, alternate protocols are available for selection. The target group protocol can't be changed after migration.

HTTP

Target group port
The port used when routing requests to registered targets. This does not apply to targets registered with an override specified. The target group port can't be changed after migration.

1-65535

► Targets (3)

Load balancer details | EC2 | ap

server-clb-01-1426646923.ap-s

← → ↺ 🏠

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancer:loadBalancerArn=arn:aws:elasticloadbalancing:ap-south...

🔍 ☆ 🗂 👤

aws

Services

Search

[Alt+S]

📺 🔔 ⓘ ⚙

Mumbai ▾

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▼ Elastic Block Store

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Lifecycle Manager

✔ Successfully created load balancer: **clb-to-alb**

Your new load balancer will be available to route traffic after its targets are registered and have passed the initial health checks.

EC2 > Load balancers > clb-to-alb

clb-to-alb

🔄 Actions ▾

▼ Details

Load balancer type Application	Status 🔄 Provisioning	VPC vpc-09da02eb16a97ff13 🔗	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone ZP97RAFLXTNZK	Availability Zones subnet-0d380e0325f047d0e 🔗 ap-south-1c (aps1-az2) subnet-0b589d49699caccb2 🔗 ap-south-1b (aps1-az3) subnet-0938ef38c2baa63a9 🔗 ap-south-1a (aps1-az1)	Date created July 16, 2024, 08:42 (UTC+05:30)
Load balancer ARN 📄 arn:aws:elasticloadbalancing:ap-south-1:654654393526:loadbalancer/app/clb-to-alb/648376029040153d		DNS name Info 📄 clb-to-alb-1605967208.ap-south-1.elb.amazonaws.com (A Record)	

CloudShell

Feedback

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Load balancers | E

Instances | EC2 | ap

Target group deta

server-clb-01-142

Start Course | Inte

13.233.192.182

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#TargetGroup:targetGroupArn=arn:aws:elasticloadbalancing:ap-south-1...

aws

Services

Search

[Alt+S]

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Trust Stores [New](#)

Auto Scaling

Auto Scaling Groups

3

Total targets

3

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 (3)

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
<input type="checkbox"/>	i-0a7cff4c3d781844b	Server-1	80	ap-south-1b	Healthy	-
<input type="checkbox"/>	i-09379e6a11e165d2d	Server-3	80	ap-south-1b	Healthy	-
<input type="checkbox"/>	i-01d0f5fe29c597620	Server-2	80	ap-south-1b	Healthy	-

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Load balancers | EC2

Instances | EC2

Target group details

server-clb-01-142664692

Start Course | Introduction

13.233.192.182

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LoadBalancers:v=3;\$case=tags:false%5C,client:false;\$regex=tags:false...

aws Services Search [Alt+S]

EC2 EC2 Image Builder S3 IAM VPC

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EC2 > Load balancers

Load balancers (2)

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

Filter load balancers

< 1 >

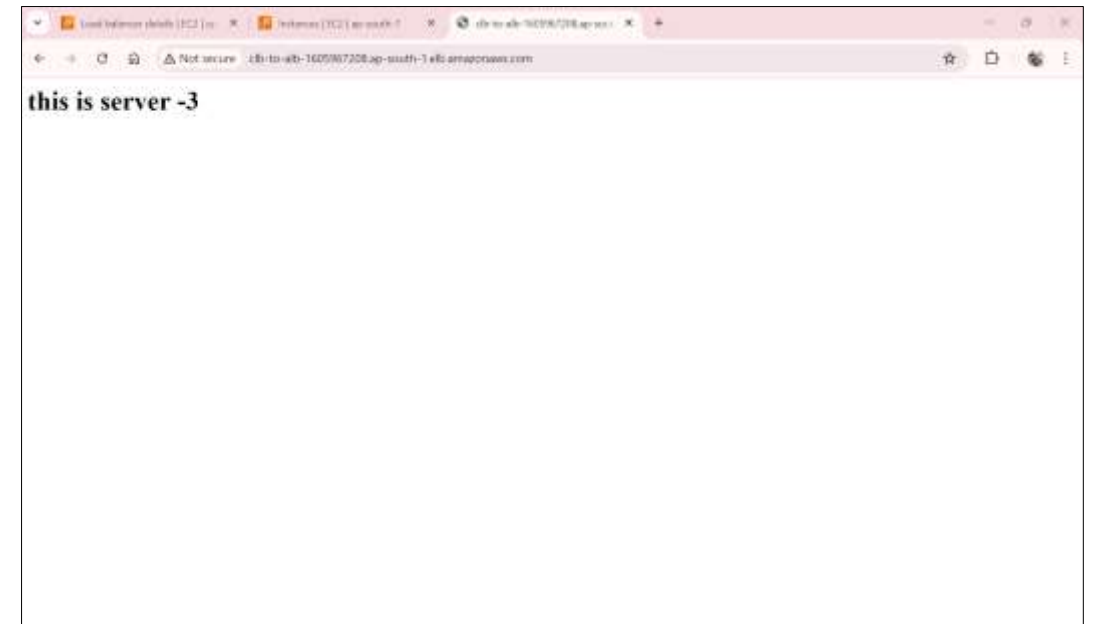
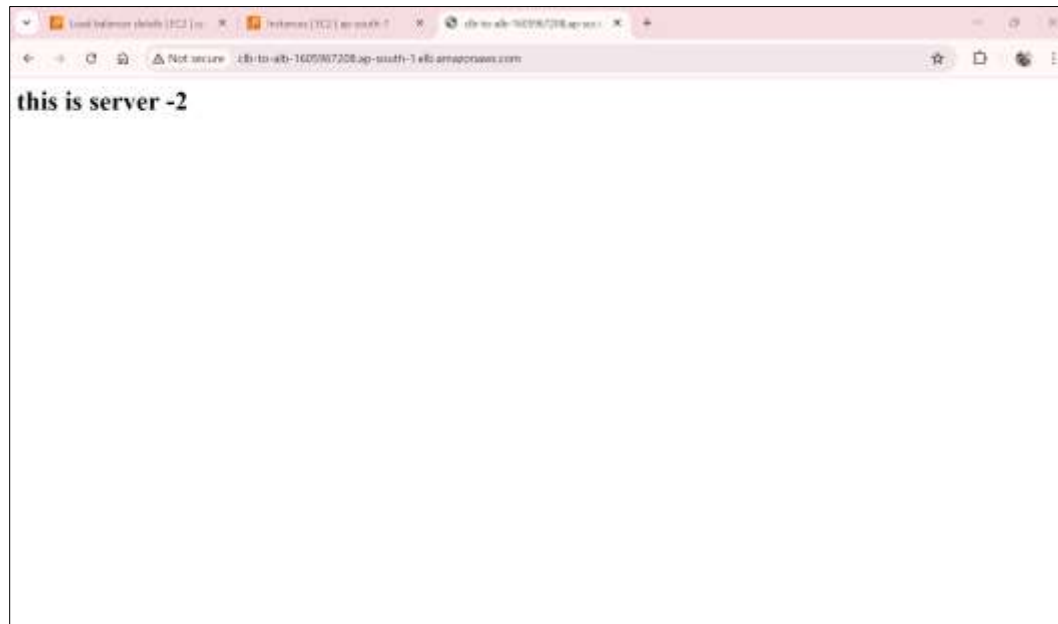
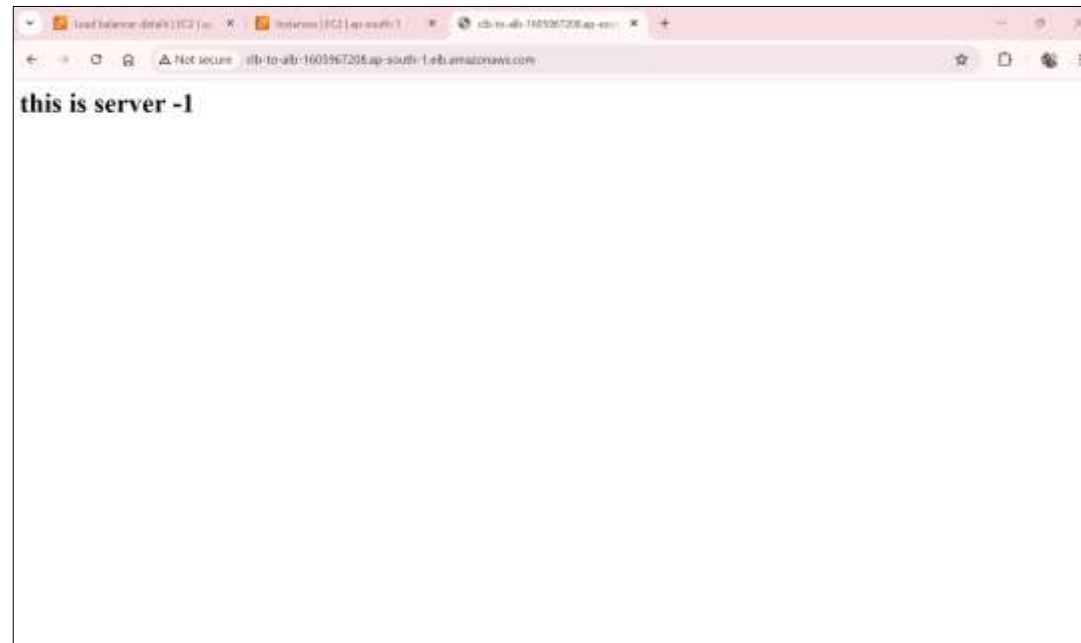
<input type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones	T
<input type="checkbox"/>	server-clb-01	server-clb-01-142664692...	-	vpc-09da02eb16a97ff13	3 Availability Zones	c
<input type="checkbox"/>	clb-to-alb	clb-to-alb-1605967208.ap...	Active	vpc-09da02eb16a97ff13	3 Availability Zones	a

0 load balancers selected

Select a load balancer above.

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Module 4: 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 has to 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.

Choosing Auto Scaling Group Name

The screenshot shows the AWS Management Console interface for creating an Auto Scaling Group. The browser address bar indicates the URL: `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateAutoScalingGroup:`. The console header includes the AWS logo, a search bar, and navigation links for various services like EC2, EC2 Image Builder, S3, IAM, and VPC. The user's location is set to Mumbai, and the account name is prakash24.

The main content area is titled "Choose launch template" and includes a sub-header "Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group." The interface is divided into several sections:

- Step 1: Choose launch template** (Current step)
- Step 2: Choose instance launch options**
- Step 3 - optional: Configure advanced options**
- Step 4 - optional: Configure group size and scaling**
- Step 5 - optional: Add notifications**
- Step 6 - optional: Add tags**
- Step 7: Review**

The "Name" section contains a text input field for the "Auto Scaling group name". The entered name is `demo-asg-10-08-2024`. A note below the field states: "Must be unique to this account in the current Region and no more than 255 characters."

The "Launch template" section includes a blue information box with the following text: "For accounts created after May 31, 2023, the EC2 console only supports creating Auto Scaling groups with launch templates. Creating Auto Scaling groups with launch configurations is not recommended but still available via the CLI and API until December 31, 2023." Below this, there is a dropdown menu for selecting a launch template, currently showing "Select a launch template", and a "Create a launch template" link.

The footer of the console includes links for "CloudShell", "Feedback", and copyright information: "© 2024, Amazon Web Services, Inc. or its affiliates." It also includes links for "Privacy", "Terms", and "Cookie preferences".

Creating a launching template

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateTemplate:autoScalingGuidance=true

aws Services Search [Alt+S]

EC2 EC2 Image Builder S3 IAM VPC

EC2 > Launch templates > Create launch template

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*

my-new-lt-10-08-2024

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

Template version description

web server

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)
autos-calling
ami-0c01246c7dfc3e3ff

Virtual server type (instance type)
t2.micro

Firewall (security group)
-

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os. 1

Cancel Create launch template

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Creating a launching template –Setting Up Security

General Info x>Create AMI x>Create lau x>Load balanc x>Target grou x>SecurityGr x>Images | x>Start Cour x>+<=>ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateTemplate:autoScalingGuidance=trueRelaunch to update

awsServicesSearch [Alt+S]Mumbai prakash24

EC2EC2 Image BuilderS3IAMVPC

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

my-sg-for-alb-asg-10-08-2024

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

all traffic from load balancer

VPC Info

vpc-09da02eb16a97ff13172.31.0.0/16(default)↻

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 80, sg-0921ed8acd28c1461)Remove

Type Info

HTTP▼

Protocol Info

TCP

Port range Info

80

Source type Info

Custom▼

Source Info

Add CIDR, prefix list or security group

Description - optional Info

e.g. SSH for admin desktop

sg-0921ed8acd28c1461 X

▼ Summary

Software Image (AMI)

autos-callingami-0c01246c7dfc3e3ff

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os

CancelCreate launch template

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Choosing launching template we created in previous step

The screenshot shows the AWS Management Console interface for the 'Choose launch template' step of creating an Auto Scaling group. The browser address bar shows the URL: `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateAutoScalingGroup:`. The console header includes the AWS logo, a search bar, and navigation links for EC2, EC2 Image Builder, S3, IAM, and VPC. The left sidebar shows a progress bar with steps: Step 1 (Choose launch template), Step 2 (Choose instance launch options), Step 3 - optional (Configure advanced options), Step 4 - optional (Configure group size and scaling), Step 5 - optional (Add notifications), Step 6 - optional (Add tags), and Step 7 (Review).

Choose launch template [Info](#)

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group.

Name

Auto Scaling group name
Enter a name to identify the group.

Must be unique to this account in the current Region and no more than 255 characters.

Launch template [Info](#)

Launch template
Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.

[Create a launch template](#)

Version

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Assign AZ & Subnets

General In... x>Create Aut... x>Launch ter... x>Load bala... x>Target gro... x>SecurityGr... x>Images | E... x>Start Cour... x>+

←→↻🏠ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateAutoScalingGroup:🔑🔍☆📌📑👤Relaunch to update ⋮

awsServices🔍Search[Alt+S]

EC2EC2 Image BuilderS3IAMVPC

Step 5 - optional

Add notifications

Step 6 - optional

Add tags

Step 7

Review

t2.micro

Network [Info](#)

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

VPC

Choose the VPC that defines the virtual network for your Auto Scaling group.

vpc-09da02eb16a97ff13

172.31.0.0/16Default

↻

[Create a VPC](#)

Availability Zones and subnets

Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.

Select Availability Zones and subnets

↻

ap-south-1a | subnet-0938ef38c2baa63a9

172.31.32.0/20Default

×

ap-south-1b | subnet-0b589d49699caccb2

172.31.0.0/20Default

×

[Create a subnet](#)

Cancel

Skip to review

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Creating Application Load Balancer

General Immersion x Auto Scaling group x Create application x CreateSecurityGro x Images | EC2 | ap x Start Course | Inte x +

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateALBWizard: Relaunch to update

aws Services Search [Alt+S]

EC2 EC2 Image Builder S3 IAM VPC

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 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.

demo-alb-10-08-2024

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**
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. Compatible with the IPv4 and Dualstack IP address types.

Load balancer IP address type [Info](#)

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Assign Security Group to Application Load Balancer

The screenshot shows the AWS Management Console interface for the 'Create application' wizard. The browser address bar indicates the URL: `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateALBWizard:`. The console header includes the AWS logo, a search bar, and navigation links for EC2, EC2 Image Builder, S3, IAM, and VPC. The user's location is set to Mumbai, and the account name is prakash24.

The main content area is divided into two sections:

- 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](#).
- 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.

In the **Security groups** section, a dropdown menu labeled 'Security groups' shows 'Select up to 5 security groups'. A selected security group is displayed as a tag: `demo-sg-for-alb-10-08-2024` (ID: `sg-0921ed8acd28c1461`, VPC: `vpc-09da02eb16a97ff13`).

In the **Listeners and routing** section, a listener is configured for **HTTP:80**. The configuration includes:

- Protocol:** HTTP
- Port:** 80
- Default action:** Forward to (Select a target group)

There is a [Create target group](#) link below the default action dropdown. A **Remove** button is also present for the listener.

At the bottom, there is a section for **Listener tags - optional** with a note: 'Consider adding tags to your listener. Tags enable you to categorize your AWS resources so you can more easily manage them.'

Selecting Instances type while creating Target Group

The screenshot shows the AWS Management Console interface for creating a Target Group. The browser tabs at the top include 'General Imme...', 'Auto Scaling', 'Create applico...', 'Step 1 Create', 'SecurityGroup', 'Images | EC2', and 'Start Course'. The address bar shows the URL: `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateTargetGroup:protocol=HTTP;vpc=vpc-0...`. The AWS navigation bar at the top includes the 'aws' logo, 'Services', a search bar, and a list of services: EC2, EC2 Image Builder, S3, IAM, and VPC. The user's location is 'Mumbai' and the account name is 'prakash24'.

The main content area displays the 'Create Target Group' wizard. The 'Instances' section is selected, showing the following options:

- ☒ **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.

Below the options, the 'Target group name' field is populated with 'dem-tg-alg-10-08-2024'. A note states: 'A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.'

The 'Protocol : Port' section is partially visible at the bottom.

The footer includes 'CloudShell', 'Feedback', and copyright information: '© 2024, Amazon Web Services, Inc. or its affiliates.' Links for 'Privacy', 'Terms', and 'Cookie preferences' are also present.

Application Load Balancer is ready to use

General Imm... x | Auto Scaling... x | Load balancer... x | Target group... x | SecurityGroup... x | Images | EC2... x | Start Course... x | +

← → ↻ 🏠 🔍 ⭐ 📁 📋 👤 Relaunch to update ⋮

aws Services 🔍 Search [Alt+S] 📺 🔔 ⓘ ⚙️ Mumbai ▾ prakash24 ▾

EC2 EC2 Image Builder S3 IAM VPC

EC2 Dashboard ✕

EC2 Global View

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Volumes

Snapshots

Lifecycle Manager

EC2 > Load balancers

Load balancers (1) ↻ Actions ▼ Create load balancer ▼

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

🔍 Filter load balancers < 1 > ⚙️

<input type="checkbox"/>	Name ▾	DNS name ▾	State ▾	VPC ID ▾	Availability Zones ▾	Type
<input type="checkbox"/>	demo-alb-10-08-2024	demo-alb-10-08-2024-12...	Active	vpc-09da02eb16a97ff13	2 Availability Zones	ap

=

0 load balancers selected ✕

Select a load balancer above.

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Choosing Application Load Balancer while creating auto scaling group

The screenshot shows the AWS Management Console interface for creating an Auto Scaling group. The browser tabs at the top include 'General In...', 'Create Au...', 'Launch te...', 'Load baler...', 'Target gro...', 'SecurityG...', 'Instances...', and 'Start Cour...'. The address bar shows the URL: `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateAutoScalingGroup:`. The console header includes the AWS logo, a search bar, and navigation links for EC2, EC2 Image Builder, S3, IAM, and VPC. The user's location is set to Mumbai, and the username is prakash24.

The main content area is titled 'Attach to an existing load balancer' and includes the instruction: 'Select the load balancers that you want to attach to your Auto Scaling group.'

There are two radio button options:

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

Below these options, the text reads: 'Existing load balancer target groups' and 'Only instance target groups that belong to the same VPC as your Auto Scaling group are available for selection.'

A dropdown menu labeled 'Select target groups' is shown, with a refresh button to its right. The dropdown menu is open, displaying a single option: 'dem-tg-alg-10-08-2024 | HTTP' with a subtext 'Application Load Balancer: demo-alb-10-08-2024' and a close button (X).

Below this section, there is a heading 'VPC Lattice integration options' with an 'Info' link. The text explains: '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.'

Under the heading 'Select VPC Lattice service to attach', there are two radio button options:

- ☒ **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.

The footer of the console includes 'CloudShell', 'Feedback', and copyright information: '© 2024, Amazon Web Services, Inc. or its affiliates.' It also links to 'Privacy', 'Terms', and 'Cookie preferences'.

Defining the Desired capacity and scaling

The screenshot shows the AWS Management Console interface for creating an Auto Scaling Group. The browser tabs at the top include 'General In...', 'Create Aut...', 'Launch ter...', 'Load balanc...', 'Target gro...', 'SecurityGi...', 'Instances', and 'Start Cour...'. The address bar shows the URL: `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateAutoScalingGroup:`. The AWS navigation bar at the top includes the 'aws' logo, 'Services' menu, a search bar, and the user's location 'Mumbai' and name 'prakash24'.

The left sidebar contains a navigation menu with the following items:

- [Choose instance launch options](#)
- Step 3 - optional
[Configure advanced options](#)
- Step 4 - optional
Configure group size and scaling
- Step 5 - optional
[Add notifications](#)
- Step 6 - optional
[Add tags](#)
- Step 7
[Review](#)

The main content area is divided into two sections:

Group size Info

Set the initial size of the Auto Scaling group. After creating the group, you can change its size to meet demand, either manually or by using automatic scaling.

Desired capacity type
Choose the unit of measurement for the desired capacity value. vCPUs and Memory(GiB) are only supported for mixed instances groups configured with a set of instance attributes.

Units (number of instances) ▼

Desired capacity
Specify your group size.

1

Scaling Info

You can resize your Auto Scaling group manually or automatically to meet changes in demand.

Scaling limits
Set limits on how much your desired capacity can be increased or decreased.

Min desired capacity	Max desired capacity
1	4
Equal or less than desired capacity	Equal or greater than desired capacity

Automatic scaling - optional
Choose whether to use a target tracking policy...

The bottom of the page features a footer with 'CloudShell', 'Feedback', and copyright information: '© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences'.

Setting Target Tracking scaling policy

The screenshot shows the AWS Management Console interface for configuring an Auto Scaling group. The browser tabs at the top include 'General In...', 'Create Aut...', 'Launch te...', 'Load balanc...', 'Target gro...', 'SecurityGr...', 'Instances', and 'Start Cou...'. The address bar shows the URL: `ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateAutoScalingGroup:`. The AWS navigation bar at the top includes the 'aws' logo, 'Services', a search bar, and a list of services: EC2, EC2 Image Builder, S3, IAM, and VPC. The user's location is 'Mumbai' and the account name is 'prakash24'.

The main content area is titled 'Automatic scaling - optional' and includes the following configuration options:

- Choose whether to use a target tracking policy** [Info](#)
You can set up other metric-based scaling policies and scheduled scaling after creating your Auto Scaling group.
- ☐ **No scaling policies**
Your Auto Scaling group will remain at its initial size and will not dynamically resize to meet demand.
- ☒ **Target tracking scaling policy**
Choose a CloudWatch metric and target value and let the scaling policy adjust the desired capacity in proportion to the metric's value.

Below the policy selection, the 'Scaling policy name' field is set to 'Target Tracking Policy'.

The 'Metric type' is set to 'Average CPU utilization' (with an 'Info' link). The description states: 'Monitored metric that determines if resource utilization is too low or high. If using EC2 metrics, consider enabling detailed monitoring for better scaling performance.'

The 'Target value' is set to '80'.

The 'Instance warmup' is set to '120' seconds (with an 'Info' link).

There is an unchecked checkbox labeled 'Disable scale in to create only a scale-out policy'.

The footer of the console includes 'CloudShell', 'Feedback', and copyright information: '© 2024, Amazon Web Services, Inc. or its affiliates.' along with links for 'Privacy', 'Terms', and 'Cookie preferences'.

Mapping load balancer URL to domain name using route 53

General Imm...

Auto Scaling

samplewebap

EC2 Instance

Start Course

Welcome to

Gemini

us-east-1.console.aws.amazon.com/route53/v2/hostedzones?region=ap-south-1#ListRecordSets/Z0608619CAF98V...

Relaunch to update

aws

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Search

[Alt+S]

EC2

EC2 Image Builder

S3

IAM

VPC

Global

prakash24

Route 53

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IP-based routing

CIDR collections

Traffic flow

Traffic policies

Policy records

Domains

Registered domains

Requests

Resolver

VPCs

Inbound endpoints

Outbound endpoints

Public samplewebapp.in

Delete zone

Test record

Configure query logging

Hosted zone details

Edit hosted zone

Records (3)

DNSSEC signing

Hosted zone tags (0)

Records (1/3)

Delete record

Import zone file

Create record

Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.

Filter records by property or value

Type

Routing policy

Alias

1

Record ...

Type

Routin...

Differ...

Alias

samplewe...

A

Simple

-

No

Edit record

Record name

subdomain

samplewebapp.in

Keep blank to create a record for the root domain.

Record type

A - Routes traffic to an IPv4 address and so...

Alias

Route traffic to

Alias to Application and Classic Load Balancer

Asia Pacific (Mumbai)

dualstack.demo-alb-10-08-2024-1269178

Alias hosted zone ID: ZP97RAFLXTNZK

Routing policy

Simple routing

Evaluate target health

No

Cancel

Save

CloudShell

Feedback

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Cookie preferences

Launching home page using the domain name

General In x

Auto Scal x

samplewe x

EC2 Instan x

Start Cour x

Welcome x

Gemini x

Welcome x

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Not secure samplewebapp.in

☆ 📦 📄 👤

Relaunch to update ⋮

powered by

aws

LOAD TEST

RDS

Meta-Data	Value
InstanceId	i-00d2d43eb5a64d274
Availability Zone	ap-south-1a

Current CPU Load: 0%

Instance is launched by Auto Scaling Group

General In x

Auto Scal x

samplew x

EC2 Instar x

Start Cour x

Welcome x

Gemini x

Welcome x

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x

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aws Services 🔍 Search [Alt+S]

EC2 EC2 Image Builder S3 IAM VPC

Activity notifications (0)

🔄 Actions ▼ Create notification

🔍 Filter notifications

< 1 > ⚙️

Send to ▼ On instance action ▼

No notifications are currently specified

Create notification

Activity history (1)

🔄

🔍 Filter activity history

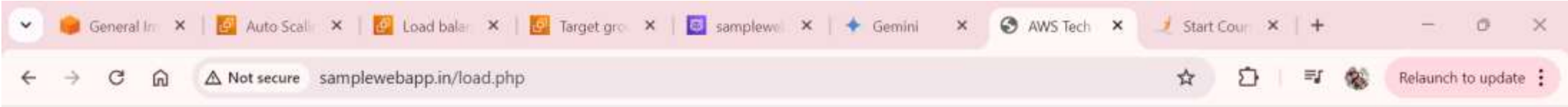
< 1 > ⚙️

Status ▼	Description ▼	Cause ▼	Start time ▼	End time ▼
✓ Successful	Launching a new EC2 instance: i-00d2d43eb5a64d274	At 2024-08-10T10:20:44Z a user request created an AutoScalingGroup changing the desired capacity from 0 to 1. At 2024-08-10T10:20:46Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 0 to 1.	2024 August 10, 03:50:47 PM +05:30	2024 August 10, 03:51:19 PM +05:30

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Load Test so Auto scaling group will add more instance to mange CPU load as per policy



powered by **aws**

LOAD TEST

RDS

Under High CPU Load! (auto refresh in 5 seconds)

Current CPU Load: **100%**

We can see more instance are add by Auto scaling group

General In xAuto ScalixLoad balaxInstances xsamplewexGemini xAWS Tech xStart Cour x

←→↻🏠ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#AutoScalingGroupDetails:id=demo-asg-...🔍🌟📌📑👤Relaunch to update ⋮

awsServices🔍Search[Alt+S]📺🔔🔗🔧Mumbai ▾prakash24 ▾

📦EC2📦EC2 Image Builder📦S3📦IAM📦VPC

No notifications are currently specified

Create notification

Activity history (3)🔄

🔍Filter activity history

Status ▾	Description ▾	Cause ▾	Start time ▾	End time ▾
⌚ Waiting for instance warmup	Launching a new EC2 instance: i-0d2a4fd8c6c5c3d	At 2024-08-10T10:41:38Z a monitor alarm TargetTracking-demo-asg-10-08-2024-AlarmHigh-d6f7c003-d87f-487b-981f-64b56df5c633 in state ALARM triggered policy Target Tracking Policy changing the desired capacity from 2 to 3. At 2024-08-10T10:41:41Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 2 to 3.	2024 August 10, 04:11:43 PM +05:30	
✅ Successful	Launching a new EC2 instance: i-05b3bfa996a25baaa	At 2024-08-10T10:38:38Z a monitor alarm TargetTracking-demo-asg-10-08-2024-AlarmHigh-d6f7c003-d87f-487b-981f-64b56df5c633 in state ALARM triggered policy Target Tracking Policy changing the desired capacity from 1 to 2. At 2024-08-10T10:38:46Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 1 to 2.	2024 August 10, 04:08:48 PM +05:30	2024 August 10, 04:11:19 PM +05:30
✅ Successful	Launching a new EC2 instance: i-00d2d43eb5a64d274	At 2024-08-10T10:20:44Z a user request created an AutoScalingGroup changing the desired capacity from 0 to 1. At 2024-08-10T10:20:46Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 0 to 1.	2024 August 10, 03:50:47 PM +05:30	2024 August 10, 03:51:19 PM +05:30

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Total 4 instance is launched by ASG to maintained desired and max capacity as per policy

General In

Auto Scal

Load bal

Instances

samplewe

Gemini

Start C

Welcome

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Instances;instanceState=running;v=3;\$case=t...

Relaunch to update

aws

Services

Search

[Alt+S]

EC2

EC2 Image Builder

S3

IAM

VPC

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Instances (4) Info

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
<input type="checkbox"/>		i-05b3bfa996a25baaa	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-0d2a4fd8c6c5c3d	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-00d2d43eb5a64d274	Running	t2.micro	2/2 checks passed	View alarms
<input type="checkbox"/>		i-01863b67f33211289	Running	t2.micro	Initializing	View alarms

Select an instance

CloudShell

Feedback

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Cookie preferences

Now CPU load is very less

General In x Auto Scal x Load bala x Instances x samplewe x Gemini x Start C x Welcome x

← → ↻ 🏠 ⚠️ Not secure samplewebapp.in ☆ 📁 📄 👤 Relaunch to update ⋮

powered by 

LOAD TEST

RDS

Meta-Data	Value
InstanceId	i-01863b67f33211289
Availability Zone	ap-south-1a

Current CPU Load: 3%

Auto Scaling Group terminating the instance to maintained desired capacity

General In

Auto Scal

Load bal

Instances

samplew

Start Cour

Dynamic

Welcome

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#AutoScalingGroupDetails:id=demo-asg-10-08...

Relaunch to update

aws

Services

Search

[Alt+S]

EC2

EC2 Image Builder

S3

IAM

VPC

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

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

Filter activity history

Status	Description	Cause
Connection draining in progress	Terminating EC2 instance: i-0d2a4dfd8c6c5c3d - Waiting For ELB Connection Draining.	At 2024-08-10T11:00:45Z a user request update of AutoScalingGroup constraints to min: 1, max: 4, desired: 1 changing the desired capacity from 4 to 1. At 2024-08-10T11:00:54Z an instance was taken out of service in response to a difference between desired and actual capacity, shrinking the capacity from 4 to 1. At 2024-08-10T11:00:54Z instance i-00d2d43eb5a64d274 was selected for termination. At 2024-08-10T11:00:55Z instance i-05b3bfa996a25baaa was selected for termination. At 2024-08-10T11:00:55Z instance i-0d2a4dfd8c6c5c3d was selected for termination.
Connection draining in progress	Terminating EC2 instance: i-05b3bfa996a25baaa - Waiting For ELB Connection Draining.	At 2024-08-10T11:00:45Z a user request update of AutoScalingGroup constraints to min: 1, max: 4, desired: 1 changing the desired capacity from 4 to 1. At 2024-08-10T11:00:54Z an instance was taken out of service in response to a difference between desired and actual capacity, shrinking the capacity from 4 to 1. At 2024-08-10T11:00:54Z instance i-00d2d43eb5a64d274 was selected for termination. At 2024-08-10T11:00:55Z instance i-05b3bfa996a25baaa was selected for termination. At 2024-08-10T11:00:55Z instance i-0d2a4dfd8c6c5c3d was selected for termination.
Connection draining in progress	Terminating EC2 instance: i-00d2d43eb5a64d274 - Waiting For ELB Connection Draining.	At 2024-08-10T11:00:45Z a user request update of AutoScalingGroup constraints to min: 1, max: 4, desired: 1 changing the desired capacity from 4 to 1. At 2024-08-10T11:00:54Z an instance was taken out of service in response to a difference between desired and actual capacity, shrinking the capacity from 4 to 1. At 2024-08-10T11:00:54Z instance i-00d2d43eb5a64d274 was selected for termination. At 2024-08-10T11:00:55Z instance i-05b3bfa996a25baaa was selected for termination. At 2024-08-10T11:00:55Z instance i-0d2a4dfd8c6c5c3d was selected for termination.
Success	Launching a new EC2	At 2024-08-10T10:44:37Z a monitor alarm TargetTracking-demo-asg-10-08-2024-AlarmHigh-d6f7c003-d87f-487b-981f-64b56df5c633 in state ALARM triggered policy Target Tracking Policy

CloudShell

Feedback

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Cookie preferences

We can see the terminated the instance

General Imme x

Dynamic scal x

Instances | EC x

samplewebap x

Start Course x

Dynamic scal x

Welcome to x

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aws Services 🔍 Search [Alt+S]

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Lifecycle Manager

Instances (4) Info

🔄 Connect Instance state ▾ Actions ▾ Launch instances ▾

All states ▾ < 1 > ⚙

<input type="checkbox"/>	Name ↗	Instance ID	Instance state ▾	Instance type ▾	Status check	Alarm status
<input type="checkbox"/>		i-05b3bfa996a25baaa	⊖ Terminated 🔍 🔍	t2.micro	—	View alarms +
<input type="checkbox"/>		i-0d2a4fd8c6c5c3d	⊖ Terminated 🔍 🔍	t2.micro	—	View alarms +
<input type="checkbox"/>		i-00d2d43eb5a64d274	⊖ Terminated 🔍 🔍	t2.micro	—	View alarms +
<input type="checkbox"/>		i-01863b67f33211289	✔ Running 🔍 🔍	t2.micro	✔ 2/2 checks passed	View alarms +

Select an instance ⚙ ×

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