



Module 4: Case Study – 1

ELB-ASG-ROUTE53

The screenshot shows the AWS Management Console interface. On the left, the navigation menu is visible with the following items: **Dashboard**, **EC2 Global View**, **Events**, **Instances** (expanded), **Instance Types**, **Launch Templates** (highlighted with a red rectangle), **Spot Requests**, **Savings Plans**, **Reserved Instances**, **Dedicated Hosts**, **Capacity Reservations**, **Images**, and **Elastic Block Store**. Below the navigation menu, a dark blue header bar is present. Underneath the header bar, a white dialog box titled **New launch template** is displayed. Inside this dialog box, there is a yellow button labeled **Create launch template**, which is highlighted with a red rectangle.



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.

Launch template name and description

Launch template name - *required*

XYZ

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

Template version description

XYZ Corporation

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**

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)** [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch what you are looking for below

🔍 Search our full catalog including 1000s of application and OS images

Recents

Quick Start

Don't include in launch template	<div>Amazon Linux aws</div>	macOS 	Ubuntu ubuntu®	Windows 	Red Hat 	SUSE Linux 	Debian 
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▼ Network settings [Info](#)

Subnet [Info](#)

Don't include in launch template ▼



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

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*

xyz

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.

Description - *required* [Info](#)

xyz http allow

VPC [Info](#)

vpc-0aa06775f5be61ea2
172.31.0.0/16

(default) ▼



Inbound Security Group Rules

▼ Security group rule 1 (TCP, 80, 0.0.0.0/0)

Type [Info](#)

HTTP ▼

Protocol [Info](#)

TCP

Port

Source type [Info](#)

Anywhere ▼

Source [Info](#)

🔍 Add CIDR, prefix list or security group

Description



▼ Summary

Software Image (AMI)

Amazon Linux 2 Kernel 5.10 AMI...[read more](#)
ami-0f214d1b3d031dc53

Virtual server type (instance type)

-

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 IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

[Cancel](#)

Create launch template

Target Groups

Trust Stores [New](#)

▼ Auto Scaling

Auto Scaling Groups

Create Auto Scaling group

Get started with EC2 Auto Scaling by creating an Auto Scaling group.

Create Auto Scaling group



Network [Info](#)

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance you quickly.

VPC

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

vpc-0aa06775f5be61ea2
172.31.0.0/16 Default

[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

us-east-1a | subnet-0cd15e69fbed5ff0 ✕
172.31.0.0/20 Default

us-east-1b | subnet-0622558c888527347 ✕
172.31.80.0/20 Default

[Create a subnet](#)

Availability Zone distribution - *new*

Auto Scaling automatically balances instances across Availability Zones. If launch failures occur in a zone, select a :



Group size [Info](#)

Set the initial size of the Auto Scaling group. After creating the group, you can change its size to meet demand.

Desired capacity type

Choose the unit of measurement for the desired capacity value. vCPUs and Memory(GiB) are only supported for mixed instances.

Units (number of instances) ▼

Desired capacity

Specify your group size.

2

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

1

Equal or less than desired capacity

Max desired capacity

3

Equal or greater than desired capacity

Automatic scaling - optional

Edit

Cancel

Previous

Create Auto Scaling group



XYZ-ASG

XYZ-ASG Capacity overview


 `arn:aws:autoscaling:us-east-1:851725170629:autoScalingGroup:755b4f95-524e-`

Desired capacity
2

Scaling limits (Min - Ma
1 - 3

Date created
Wed Jan 29 2025 14:37:46 GMT+0530 (India Standard Time)

Details | **Integrations - *new*** | **Automatic scaling** | **Instance mar**

 Scaling policies resize your Auto Scaling group to meet changes in demand. With re scaling policies along with dynamic scaling policies in the following situations: whe

Dynamic scaling policies (0) [Info](#)



Actions ▼

Create dynamic scaling policy

< 1 >

Create dynamic scaling policy

Policy type

Step scaling ▼

Scaling policy name

load increases

CloudWatch alarm

Choose an alarm that can scale capacity whenever:

Create a CloudWatch alarm [↗](#)



Take the action

Add ▼

0

capacity units ▼

Add step

Instance warmup | [Info](#)

300

seconds

[CloudWatch](#) > [Alarms](#) > Create alarm

- Step 1 **Specify metric and conditions**
- Step 2 Configure actions
- Step 3 Add name and description
- Step 4 Preview and create

Specify metric and conditions

Metric

Graph

Preview of the metric or metric expression and the alarm threshold.

Select metric



[Browse](#)

[Multi source query](#)

[Graphed metrics](#)

[Options](#)

[Source](#)

Metrics (124)

[N. Virginia](#) ▾

[All](#)

>

[EC2](#)

🔍 Search for any metric, dimension, resource id or account id

[By Auto Scaling Group](#)

30

[Per-Instance Metrics](#)

94

Metrics (30)

[N. Virginia](#) ▾

[All](#)

>

...

>

[By Auto Scaling Group](#)

🔍 Search for any metric, dimension, resource id or account id



AutoScalingGroupName 30/30



Metric name



Alarms



XYZ

CPUUtilization ⓘ

No alarms



XYZ

EBSWriteOps ⓘ

No alarms

Conditions

Threshold type



Static

Use a value as a threshold

Whenever CPUUtilization is...

Define the alarm condition.



Greater

> threshold



Greater/Equal

>= threshold

than...

Define the threshold value.

80

Must be a number

▶ **Additional configuration**



Cancel

Previous

Create alarm

Conditions

Threshold type



Static

Use a value as a threshold



Anomaly detection

Use a band as a threshold

Whenever CPUUtilization is...

Define the alarm condition.



Greater

> threshold



Greater/Equal

>= threshold



Lower/Equal

<= threshold

than...

Define the threshold value.

60

Must be a number

► Additional configuration



Cancel

Previous

Create alarm

Create dynamic scaling policy

Policy type

Step scaling

Scaling policy name

load increases

CloudWatch alarm

Choose an alarm that can scale capacity whenever:

80ABOVE



[Create a CloudWatch alarm](#)

breaches the alarm threshold: CPUUtilization >= 80 for 1 consecutive periods of 60 seconds for the metric dimensions:

AutoScalingGroupName = XYZ

Take the action

Add

1

capacity units

when

80

<=

CPUUtilization

<

+infinity

Add step

Instance warmup | [Info](#)

10

seconds

Cancel

Create



Create dynamic scaling policy

Policy type

Step scaling

Scaling policy name

load degrees

CloudWatch alarm

Choose an alarm that can scale capacity whenever:

60 below

Create a CloudWatch alarm

breaches the alarm threshold: CPUUtilization =< 60 for 1 consecutive periods of 60 seconds for the metric dimensions:

AutoScalingGroupName = XYZ

Take the action

Remove

1

capacity units

when

60

>= CPUUtilization > -infinity

Add step

Cancel

Create

EC2 > Load balancers > Create Application Load Balancer

► 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.

xyz-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 is publicly resolvable.
- Requires a public subnet.

☐ Internal

- Serves internal traffic.
- Has private IP addresses.
- DNS name is publicly resolvable.
- 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 cc

☒ 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 [create a VPC](#).

-

vpc-0aa06775f5be61ea2
IPv4 VPC CIDR: 172.31.0.0/16

⌵

⌛

Mappings [Info](#)

Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC

Availability Zones

☒ us-east-1a (use1-az1)

Subnet

subnet-0cd15e69fbed5ff0
IPv4 subnet CIDR: 172.31.0.0/20

IPv4 address

Assigned by AWS

☒ us-east-1b (use1-az2)

Subnet

subnet-0622558c888527347
IPv4 subnet CIDR: 172.31.0.0/20

IPv4 address

Assigned by AWS

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

launch-wizard-1

sg-0ed8bc290f3c246ec VPC: vpc-0aa06775f5be61ea2

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 registered targets.

▼ Listener HTTP:80

Protocol

HTTP

Port

:

80

1-65535

Default action [Info](#)

Forward to

Select a target group

[Create target group](#)

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](#)



Register targets

This is an optional step to create a target group. However, to ensure that your load balancer routes traffic to this target group you must

Available instances (2/2)

<input checked="" type="checkbox"/>	Instance ID	Name	State	Security groups
<input checked="" type="checkbox"/>	i-0be1c0cafb5205ace	server	Running	launch-wiza
<input checked="" type="checkbox"/>	i-090a2c92a16fffe7d	server	Running	launch-wiza

2 selected

Ports for the selected instances

Ports for routing traffic to the selected instances.

1-65535 (separate multiple ports with commas)

Include as pending below

Review targets

Targets (2)

☐ Show only pending

Remove all pending

< 1 >

Instance ID	Name	Port	State	Security groups	Zone	Private IPv4 address	Subnet
i-0be1c0cafb5205ace	server	80	Running	launch-wizard-1	us-east-1b	172.31.84.239	subne
i-090a2c92a16fffe7d	server	80	Running	launch-wizard-1	us-east-1b	172.31.81.9	subne

2 pending

Cancel

Previous

Create target 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 registered targets.

▼ Listener HTTP:80

Protocol

Port

HTTP

:

80

1-65535

Default action

[Info](#)

Forward to

xyz-tg

Target type: Instance, IPv4

HTTP

[Create target group](#)

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.



Load balancers (1/1)

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

Filter load balancers

<input checked="" type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
<input checked="" type="checkbox"/>	xyz-LB	xyz-LB-211349577.us-east-...	Active	vpc-0aa06775f5be61ea2	2 Availability Zones	application	January 30, 2025, 12:23 (UTC+05:30)

Load balancer: xyz-LB

Details

Load balancer type
Application

Scheme
Internet-facing

Load balancer ARN
arn:aws:elasticloadbalancing:us-east-1:851725170629:loadbalancer/app/xyz-LB/8059ebfa484fe460

Status
Active

Hosted zone
Z35SXDOTRQ7X7K

VPC
vpc-0aa06775f5be61ea2

Availability Zones
subnet-0cd15e69fbed5ff0 us-east-1a (use1-az1)
subnet-0622558c888527347 us-east-1b (use1-az2)

Load balancer IP address type
IPv4

Date created
January 30, 2025, 12:23 (UTC+05:30)

DNS name info
xyz-LB-211349577.us-east-1.elb.amazonaws.com (A Record)

Not secure xyz-lb-211349577.us-east-1.elb.amazonaws.com

xyz-lb-211349577.us-east-1.elb.amazonaws.com

Hello World from ip-172-31-84-239.ec2.internal