

## Experiment 2

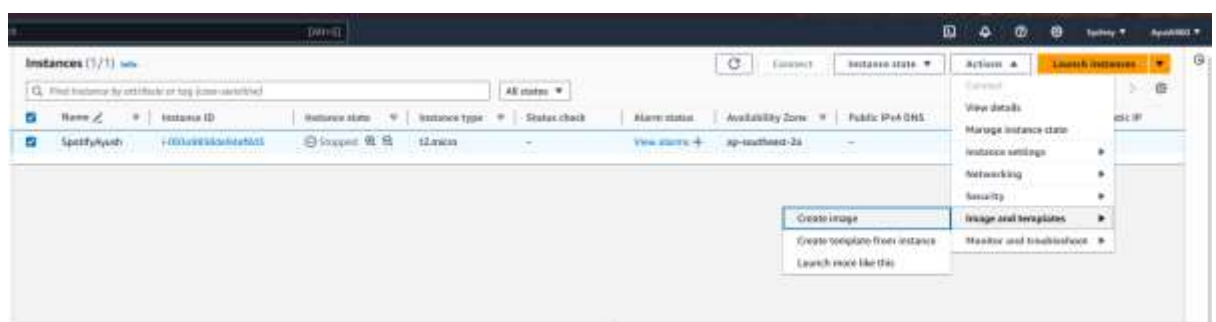
### Aws solutions

#### Creating Scaling Policies for Amazon EC2 Auto Scaling

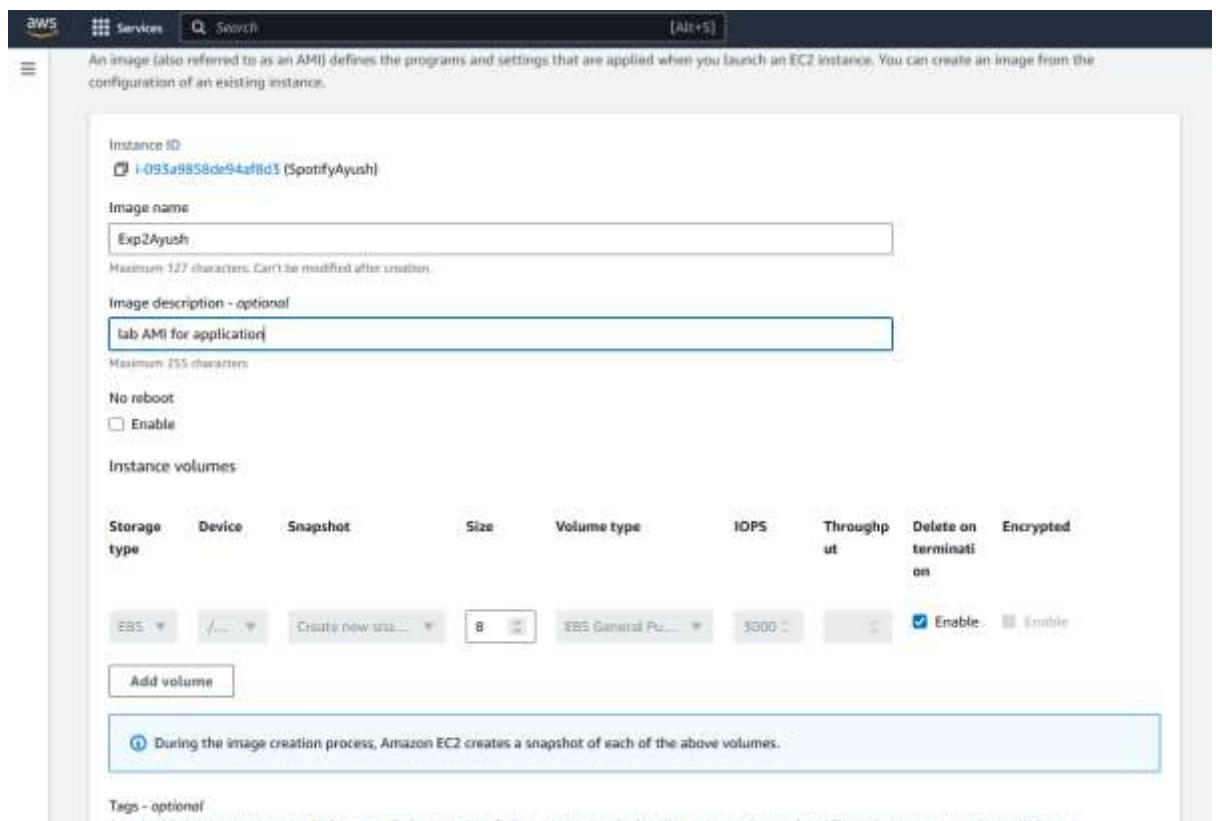
22BRS1117

Ayush Raj

1. The first step is click on instance , then from instance ,click on actions , from actions click on Image and templates, from there click on Create Image



2. Create an AMI



3. Click on create image

The screenshot shows the 'Create image' page in the AWS Management Console. At the top, there's a section for 'Instance volumes' with a table of columns: Storage type, Device, Snapshot, Size, Volume type, IOPS, Throughput, Delete on termination, and Encrypted. Below this, there are input fields for 'Storage type' (set to EBS), 'Device' (set to /dev/sda1), 'Create new snapshot' (with a dropdown), 'Size' (set to 8 GB), 'Volume type' (set to EBS-General Purpose), 'IOPS' (set to 3000), 'Throughput' (set to 125 MB/s), 'Delete on termination' (checked), and 'Encrypted' (unchecked). An 'Add volume' button is below the table. A blue box contains the text: 'During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.' Below this is a 'Tags - optional' section with a text box explaining that a tag is a label for an AWS resource. There are two radio buttons: 'Tag image and snapshots together' (selected) and 'Tag image and snapshots separately'. Below the radio buttons is a text box stating 'No tags associated with the resource.' and an 'Add new tag' button. At the bottom right, there are 'Cancel' and 'Create image' buttons.

4. Click on auto scaling groups

The screenshot shows the 'Auto Scaling Groups' page in the AWS Management Console. The left sidebar has a navigation menu with 'Load Balancing' and 'Auto Scaling' sections. Under 'Auto Scaling', 'Auto Scaling Groups' is selected. The main content area has tabs for 'Details', 'Status and alarms', 'Monitoring', and 'Security'. The 'Details' tab is active, showing an 'Instance summary' section with an 'Info' link. The summary includes: 'Instance ID' (i-093a9858de94af8d3 (SpotifyAyush)), 'IPv6 address' (—), 'Hostname type' (IP name: ip-172-31-4-246.ap-southeast-2.compute.internal), and 'Answer private resource DNS name' (IPv4 (A)).

<https://ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-2#AutoScalingGroups:>

5. Click on create autoscaling group

The screenshot shows the 'Amazon EC2 Auto Scaling' console. The main heading is 'Amazon EC2 Auto Scaling helps maintain the availability of your applications'. Below this is a brief description: 'Auto Scaling groups are collections of Amazon EC2 instances that enable automatic scaling and fleet management features. These features help you maintain the health and availability of your applications.' On the right, there is a 'Create Auto Scaling group' button. Below the button, there is a text box that says 'Get started with EC2 Auto Scaling by creating an Auto Scaling group.' and another 'Create Auto Scaling group' button.

- After this we get to see auto scaling group name and also there we have to create a launch template

create Auto Scaling group

## 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](#)

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.

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](#)

Cancel

Next

- Click on create a launch template

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*

Must be unique to this account. Max 128 chars. No space or special characters like '%', '\*', or '@'.

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

**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.

**Summary**

Software Image (AMI)

lab AMI for application  
ami-08b46d4579bc44e52

Virtual server type (instance type)

+

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 GiB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Create launch template

8. Give the template name and then we will be asked to specify an image ....there we will select the image created in step number 3

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 is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

Recents

**My AMIs**

Quick Start

☒ Owned by me

☐ Shared with me

[Browse more AMIs](#)

including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Exp2Anyush

ami-09b46c46789bc44e52

2024-09-17T14:25:53.000Z

Virtualization: hvm

ENX enabled: true

Root device type: ebs

Description

lab AMI for application

Architecture

AMI ID

▼ Summary

Software Image (AMI)

lab AMI for application

ami-09b46c46789bc44e52

Virtual server type (instance type)

-

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 GiB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Create launch template

9. Specify the key pair and instance type

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

Instance type

t2.micro

Family: t2 1 vCPU 1 GiB Memory Current generation: true

On-Demand SUSE base pricing: 0.0146 USD per Hour

On-Demand Linux base pricing: 0.0146 USD per Hour

On-Demand Windows base pricing: 0.0192 USD per Hour

On-Demand RHEL base pricing: 0.029 USD per Hour

Free tier eligible

▼

☒ All generations

[Compare instance types](#)

Additional costs apply for AMIs with pre-installed software

▼ Key pair (login) [Info](#)

▼

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

Ayush860

▼

↻

Create new key pair

10. Further we do the network settings

▼

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.

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

Common security groups

Info

Select security groups

▼

↻

Compare security group rules

Security groups that you add or remove here will be added to or removed from all your network interfaces.

▼

Advanced network configuration

Network interface 1

Device index

Info

0

⬅

➡

Network interface

Info

New interface

▼

Description

Info

Remove

Existing network interfaces are not recommended when creating a template for auto-scaling.

Subnet

Info

Don't include in launch template

▼

Security groups

Info

Select security groups

▼

↻

Auto-assign public IP

Info

Don't include in launch tem...

▼

▼

Summary

Software image (AMI)

lab AMI for application

ami-09b45d4678bc44e52

Virtual server type (instance type)

t2.micro

Firewall (security group)

-

Storage (volumes)

1 volume(s) - 8 GiB

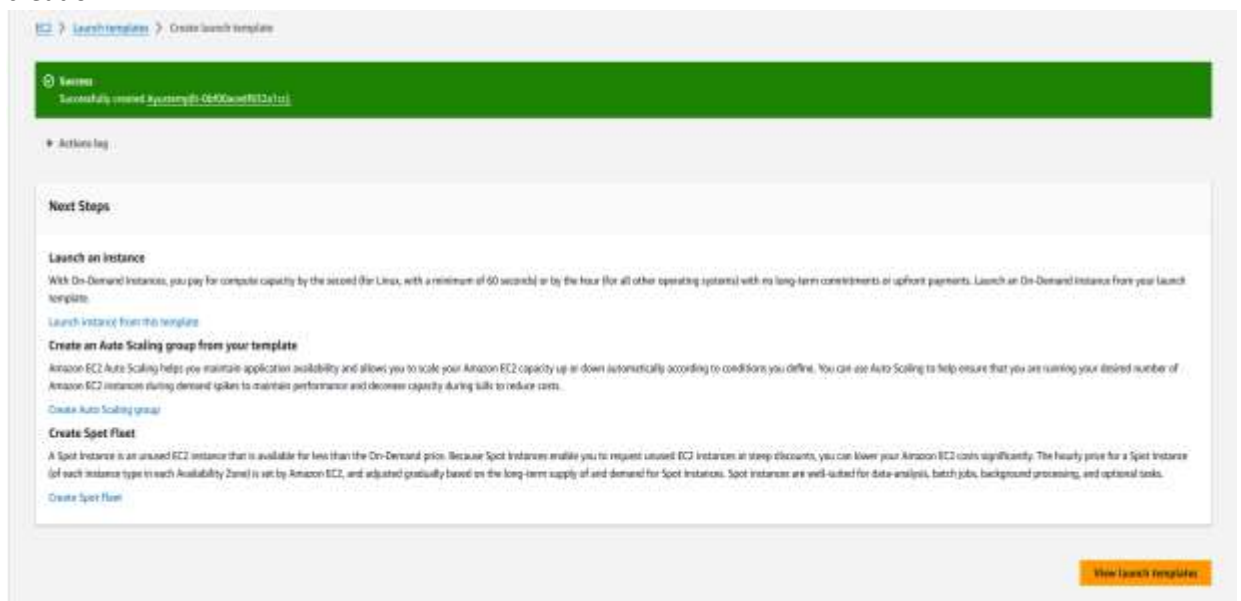
ⓘ

Free tier: In your first year, 750 hours of t2.micro (or the Regions in which t2.micro is unavailable) instance usage per month, 750 public IPv4 address usage per month, 30 GiB of EBS standard I/O, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Create

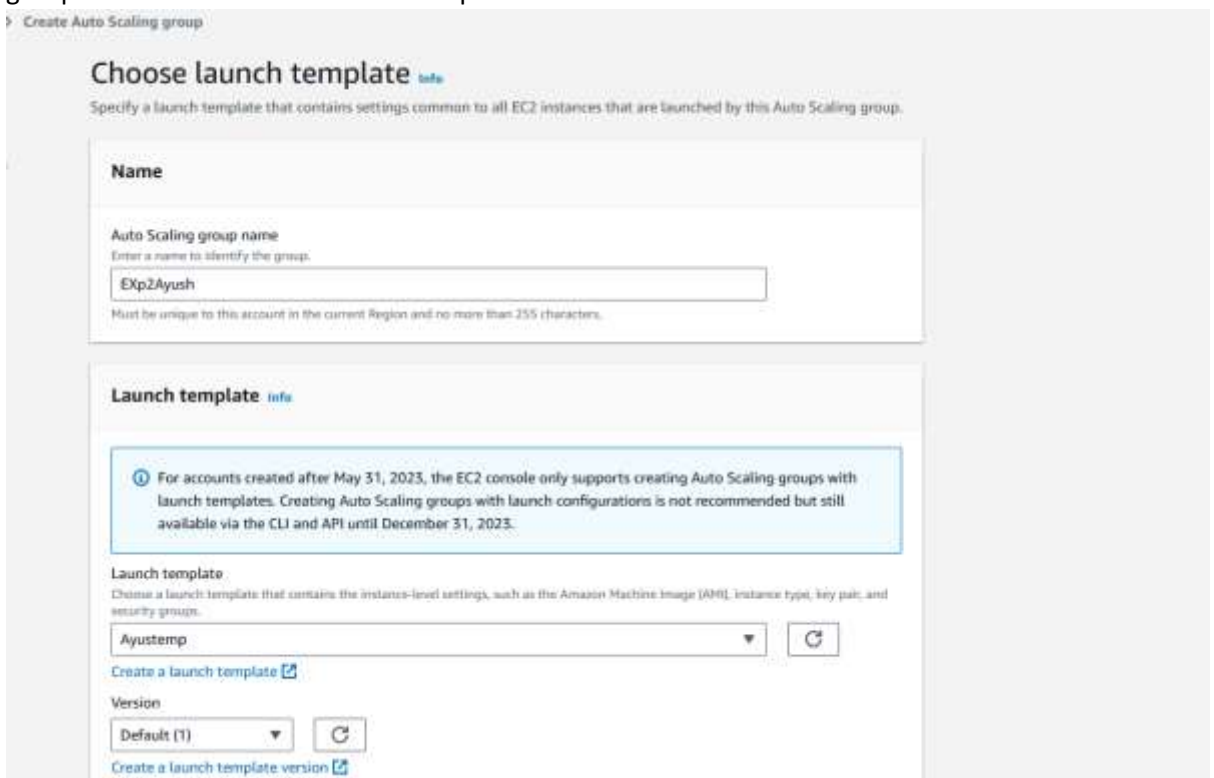
11. Now click on create launch template , after creating we will get a notification of successful creation



12. We can see the launch template created



13. Now go back to create auto scaling groups there we will give a name to our auto scaling group and use the created launch template





14. Define the vpc and subnet zones

**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-0f3783f7b5030fe4b  
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

↻

[Create a subnet](#)

Cancel

Skip to review

Previous

Next

15. Choose subnet zone

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

☒ ap-southeast-2a | subnet-086b91a4b432ad56b  
172.31.0.0/20 Default

☐ ap-southeast-2b | subnet-062e0fe5e4d29fae8  
172.31.32.0/20 Default

☐ ap-southeast-2c | subnet-09594da8e2ed8b948  
172.31.16.0/20 Default

Select Availability Zones and subnets

▲

ap-southeast-2a | subnet-086b91a4b432ad56b X  
172.31.0.0/20 Default

[Create a subnet](#)

## 16. Additional settings

Create Auto Scaling group

### Configure advanced options - *optional* [Info](#)

Integrate your Auto Scaling group with other services to distribute network traffic across multiple servers using a load balancer or to establish service-to-service communications using VPC Lattice. You can also set options that give you more control over 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.

☒ **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.

#### 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](#) [?](#)

## 17. Health checkup , grace period

[Create new VPC Lattice service](#) [?](#)

### 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

[?](#) **Always enabled**

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

☐ **Turn on Elastic Load Balancing health checks**  
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.

☐ **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.

#### 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.

[?](#) seconds



18. Enabling group metrics then click on next

### Additional settings

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

[Cancel](#) [Skip to review](#) [Previous](#) [Next](#)

EC2 > Auto Scaling groups

### Auto Scaling groups (1/1) [Info](#)

Q Search your Auto Scaling groups

| <input checked="" type="checkbox"/> | Name ▾                    | Launch template/configuration <a href="#">↗</a> ▾ | Instances ▾ |
|-------------------------------------|---------------------------|---|-------------|
| <input checked="" type="checkbox"/> | <a href="#">Exp2Ayush</a> | <a href="#">Ayustemp</a>   Version Default        | 0           |

## 19. Configuring group size and autoscaling

Create Auto Scaling group

### Configure group size and scaling - optional [Info](#)

Define your group's desired capacity and scaling limits. You can optionally add automatic scaling to adjust the size of your group.

#### 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.

#### 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

Equal or less than desired capacity

##### Max desired capacity

Equal or greater than desired capacity

### Automatic scaling - optional

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.

Scaling policy name

Metric type [Info](#)

Monitored metric that determines if resource utilization is too low or high. If using EC2 metrics, consider enabling detailed monitoring for better scaling performance.

Target value

Instance warmup [Info](#)

seconds

☐ Disable scale in to create only a scale-out policy

### Instance maintenance policy [Info](#)

Control your Auto Scaling group's availability during instance replacement events. This includes health checks, instance refreshes, maximum instance lifetime features and events that happen automatically to keep your group balanced, called rebalancing events.

Choose a replacement behavior depending on your availability requirements

## 20. Maintenance policy to nopolicy

### Instance maintenance policy [Info](#)

Control your Auto Scaling group's availability during instance replacement events. This includes health checks, instance refreshes, maximum instance lifetime features and events that happen automatically to keep your group balanced, called rebalancing events.

Choose a replacement behavior depending on your availability requirements

**Mixed behavior**

☒ No policy  
For rebalancing events, new instances will launch before terminating others. For all other events, instances terminate and launch at the same time.

**Prioritize availability**

☐ Launch before terminating  
Launch new instances and wait for them to be ready before terminating others. This allows you to go above your desired capacity by a given percentage and may temporarily increase costs.

**Control costs**

☐ Terminate and launch  
Terminate and launch instances at the same time. This allows you to go below your desired capacity by a given percentage and may temporarily reduce availability.

**Flexible**

☐ Custom behavior  
Set custom values for the minimum and maximum amount of available capacity. This gives you greater flexibility in setting how far below and over your desired capacity EC2 Auto Scaling goes when replacing instances.

## 21. Add tags

### Add tags - *optional* [Info](#)

Add tags to help you search, filter, and track your Auto Scaling group across AWS. You can also choose to automatically add these tags to instances when they are launched.

**ⓘ** You can optionally choose to add tags to instances (and their attached EBS volumes) by specifying tags in your launch template. We recommend caution, however, because the tag values for instances from your launch template will be overridden if there are any duplicate keys specified for the Auto Scaling group. **×**

#### Tags (1)

| Key                               | Value - optional                          | Tag new instances                   |                                       |
|-----------------------------------|---|-------------------------------------|---------------------------------------|
| <input type="text" value="Name"/> | <input type="text" value="Lab Instance"/> | <input checked="" type="checkbox"/> | <input type="button" value="Remove"/> |

49 remaining

## 22. There will be a preview just click on next

EC2 > Auto Scaling groups

Auto Scaling groups (1) [Info](#)

| <input type="checkbox"/>            | Name      | Launch template/Configuration | Instances | Status            | Desired capacity | Min | Max | Availability Zones |
|-------------------------------------|-----------|-------------------------------|-----------|-------------------|------------------|-----|-----|--------------------|
| <input checked="" type="checkbox"/> | EXP2Ayush | Application1 Version Default  | 0         | Updating capacity | 0                | 0   | 0   | ap-south-1a        |

## 23. We saw the results

Auto Scaling group: EXP2Ayush

Details

Activity

Automatic scaling

Instance management

Monitoring

Instance refresh

Group details

|                         |                  |                           |  |
|-------------------------|------------------|---------------------------|--|
| Auto Scaling group name | Desired capacity | Desired capacity type     | Amazon Resource Name (ARN)   |
| EXP2Ayush               | 1                | Units number of instances | arn:aws:autoscaling:ap-south-1:250506245446:autoScalingGroup:1:aws-250506245446:autoScalingGroup:EXP2Ayush |