Notes-AutoScaling

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STEPS TO CONFIGURE AUTO SCALING

This document deals with how to work with autoscaling group



Steps to Configure Auto Scaling

Diagram



High-level steps

- 1. Create a VPC.
- 2. Create an Internet Gateway and attach it to the VPC.
- 3. Create two public subnets: one in Availability Zone 2a and another in 2b. Also, create a private subnet in 2a.
- 4. Create a route table
- 5. Associate the Internet Gateway, and link it to the public subnets in Availability Zones 2a and 2b.
- 6. Create a NAT Gateway using the public subnet in AZ 2a.
- 7. Create a route table for the private subnet in AZ 2a
- 8. Associate it with the NAT Gateway and private subnet 2a
- 9. Create a security group with inbound rules for SSH and HTTP access.
- 10. Launch an EC2 instance in the public subnet in AZ 2a and another EC2 instance in the private subnet in AZ 2a.

a. Access instance created on private subnet through instance created on public subnet.

- b. Install Apache webserver on private server using below commands
 - i. sudo su
 - ii. sudo yum install httpd -y
 - iii. sudo systemctl start httpd
 - iv. sudo systemctl enable httpd
 - v. cd /var/www/html

- vi. vi index.html
- vii. add blow html code <h1>Welcome </h1>
- viii. ESC then :wq
- ix. Hit enter
- 11. Create a target group and add the private instance in AZ 2a.
- 12. Set up a Load Balancer with Availability Zones 2a and 2b.
- 13. Copy the DNS name of the Load Balancer and open it in an internet browser.
- 14. If all configurations are correct, the index home page should be displayed.

Once above steps completed and successfully able to access the index home page using DNS name of the load balancer, please proceed with below steps.

- 15. Create an AMI image using an instance in the private subnet within Availability Zone 2a.
- 16. Create a template that includes the AMI image, instance type, and key pair information.
- 17. Set up an Auto Scaling Group using the created template.
 - a. Specify the private subnets,
 - b. Attach to existing load balancer (Your Target Group)
 - c. Group size (desired capacity: 1)
 - d. Scaling information (minimum: 1, maximum: 3),
 - e. Target tracking scaling policy (target value: 10 for testing),
 - f. Tag information (key: Name, value: ASGInstance).
- 18. Verify that one instance is created and initiated through Auto Scaling.
- 19. For testing, adjust the target tracking policy on the Auto Scaling Group by changing the target value to 0.1 to observe the creation of multiple instances.

Below screenshots are related to from step 15

Screenshots for AMI Creation Process

Instance Types	Instances (1/2) Info Last updated C Connect	Instance state 🔻	Actions Actions	ces 🔻
Launch Templates	Q Find Instance by attribute or tag (case-sensitive)	All state	Connect	> @
Spot Requests			View details	
Savings Plans	■ Name Ø ♥ Instance ID Instance s	state	Manage instance state	n status
Reserved Instances	EC2-public-2a i-0f898579a1f67c723 ORunnin	ng 🕘 🔾 t2.micro	Instance settings	alarms 🕂
Dedicated Hosts	Z EC2-private-2a i-043a63d761155bfab ⊘ Runnir	ng ⊕ ⊖ t2.micro	Networking	alarms 🕂
Capacity	4		Security •)
Reservations New	Create	image	Image and templates	
Images	Create	template from instance	Monitor and troubleshoot	
AMIs	Launch	n more like this		
AMI Catalog				
Elastic Block Store				

Configure Image Settings:

Image Name: Enter a descriptive name for your AMI.

Image Description (optional): Provide a brief description for future reference

> Instances > i-043a63d761155bfab > Create image
eate image Info
age (also referred to as an AMI) defines the programs and settings that are applied when you launch an EC2 instance. You can create an image from the guration of an existing instance.
stance ID
j i-043a63d761155bfab (EC2-private-2a)
iage name
Myimage1
aximum 127 characters. Can't be modified after creation.
nage description - optional
AMI image
wimum 255 characters

Create the Image: Click **Create Image** at the bottom of the page. AWS will initiate the AMI creation process.

Tags - optional A tag is a label that you assign to an A	WS resource. Each tag consists of a key	and an optional value. \	'ou can use tags to search and filter yo	our resources or track your AWS cos	ts.
• Tag image and snapshots t Tag the image and the snapsho	ogether ts with the same tag.	(Tag image and snapshots sep Tag the image and the snapshots	arately with different tags.	
No tags associated with the reso	ırce.				
Add new tag					

Monitor Image Creation: In the left navigation pane, go to AMIs to monitor the status of your new image. It will appear with the status **Pending** and switch to **Available** once ready.

Reserved Instances	⊘ Successfully disa	bled <mark>ami-0435de10f5aa66890</mark> . To view o	disabled AMIs, filter by Disabled imag	es.	×
Dedicated Hosts Capacity Reservations New	Amazon Mach	ine Images (AMIs) (1) Info ycle Bin	Actions V Launch inst	ance from AMI	< 1 > 🕸
AMIs	AMI ID	▼ Source	▼ Owner	▼ Visibility	▼ Status
AMI Catalog	ami-0a64db3585580	ba74 985539790559/Myimage1	985539790559	Private	Pending Q (
Elastic Block Store	4				
Network & Security	Select an AMI		=		© ×
Flastic IPs					
Placement Groups					
Key Pairs					

Once available, you can proceed to next steps

Screenshots for Template creation process

On the left sidebar, scroll down to **Instances** and click on **Launch Templates**. Click **Create launch template**.

Deshboard BEZ Gislad Yeve	×	launches	
Events • Instances Instances Instance Types		Use banch empigies to automate behavior benches condity prevention prices, unit offerte behavior departies across your separations. See See See See approvement to a simplified that can be marifer an element bank to and advect anaged another, including CCL and problem and CCL and Exactly applicitly part banch generations by cruzing a new low-do-sergitor works.	
Laandh Templates Sock Requires			New launch template
Savings Plans			Create Learnin template
Dedicated Hosts Capacity		Benefits and features	
Reparvations New		Streamline provisioning Simplify permissions	Documentation

Fill out the fields for the **Launch Template**:

- **Template Name**: Provide a name for your template (e.g., MyTemplate).
- Version Description : Optional description for the version.

C2 > > Create launch template	▼ Summary
Create launch template reating a launch template allows you to create a saved instance configuration that can be reused, shared and unched at a later time. Templates can have multiple versions.	Software Image (AMI) - Virtual server type (instance type)
Launch template name and description	- Firewall (security group) -
Mytmplate Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '*', '@'.	Storage (volumes) -
Template version description Test template	(i) Eraa tiar: In vour first voor X
Max 255 chars	

AMI: Select the AMI ID you want to use

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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

O Don't include in launch O Owned by me	
template	Q Browse more AMIs
○ Shared with me	Including AMIs from AWS, Marketplace and the Community

▼ Summary	
Software Image (AMI) AMI image ami-0a64db3585580ba74	
Virtual server type (instance type) -	
Firewall (security group) -	
Storage (volumes) 1 volume(s) - 8 GiB	
· · · · · · · · · · · · · · · · · · ·	
Cancel Create launch template	

Instance Type: Choose the instance type (e.g., t2.micro).

Key Pair: Select an existing key pair or create one

Instance type			ami-0a64db3585580ba74	
t2.micro Family: t2 1 vCPU 1 GiB Memory Current generation: true On-Demand Linux base pricing: 0.0116 USD per Hour On-Demand SUSE base pricing: 0.0116 USD per Hour On-Demand Windows base pricing: 0.0162 USD per Hour On-Demand RHEL base pricing: 0.026 USD per Hour On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour	Free tier eligible	All generations Compare instance types	Virtual server type (instance type) t2.micro Firewall (security group) -	
Additional costs apply for AMIs with pre-installed softwar	e		Software Image (AMI) AMI image ami-0a64db3585580ba74	
▼ Key pair (login) Info			Virtual server type (instance type)	
 Key pair (login) Info You can use a key pair to securely connect to your instance pair before you launch the instance. 	e. Ensure that you have	access to the selected key	Virtual server type (instance type) t2.micro Firewall (security group)	
 Key pair (login) Info You can use a key pair to securely connect to your instance pair before you launch the instance. Key pair name 	e. Ensure that you have	access to the selected key	Virtual server type (instance type) t2.micro Firewall (security group) -	
Key pair (login) Info You can use a key pair to securely connect to your instance pair before you launch the instance. Key pair name newkey	e. Ensure that you have	access to the selected key	Virtual server type (instance type) t2.micro Firewall (security group) - Storage (volumes) 1 volume(s) - 8 GiB	
 Key pair (login) Info You can use a key pair to securely connect to your instance pair before you launch the instance. Key pair name newkey Notwork sottings a security 	e. Ensure that you have	access to the selected key	Virtual server type (instance type) t2.micro Firewall (security group) - Storage (volumes) 1 volume(s) - 8 GiB	

click **Create launch template**. This template is now available for launching instances or referencing in other templates.

Add new volume	Software Image (AMI) AMI image ami-0a64db3585580ba74
	Virtual server type (instance type) t2.micro
 Resource tags into No resource tags are currently included in this template. Add a resource tag to include it in the launch template. Add new tag You can add up to 50 more tags. 	Firewall (security group) - Storage (volumes) 1 volume(s) - 8 GiB
► Advanced details Info	Cancel Create launch template

Screenshots for Auto Scaling Groups creation process

In the left-hand menu, scroll down to **Auto Scaling** and select **Auto Scaling Groups**. Click on **Create Auto Scaling group**.



Specify the ASG Name - Enter a name for your Auto Scaling Group

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aws	Services	Q Search	[Alt+S]
🗗 EC2			
=	EC2 > Auto	Scaling groups >	reate Auto Scaling group
	Step 1 Choose launc	ch template	Choose launch template Info Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group.
	Step 2 Choose instan	nce launch options	Name
	Step 3 - <i>optiona</i> Configure adv	al vanced options	Auto Scaling group name
	Step 4 - <i>optiona</i> Configure gro scaling	al oup size and	MyAutoScaling Must be unique to this account in the current Region and no more than 255 characters.

In the **Launch Template** section:

- Select Launch Template.
 Choose your existing Launch Template from the dropdown menu.

Step 5 - optimal Add not float ons	Launch template wh		
ing Kongelieved del tagé	(i) For accounts created after May 35, 2023, the EC2 cares lawrin tomplates. Crasting Acco. Scaling groups with la available via the CLI and API anti December 31, 2023.	de anly supports covating duta Scaling a unde cardiguizations is not recommanda	roups with 6 but 160
ep 1 eview	Laure Distantion		
	Choose a basis do services that consists the instance-level settings, such	IN THE ATOLOGY MICHINE INTEGE SIZEL INTEGEO	tops, livy prices
	On one a low of remplote that contains the instance-level settings, such results groups. Hypothylicts	an the Analoso Machine Integer (1996), integers	C C
	Chose a local transfer service the construction instance level settings, such associate program. Physical State Construct a Local Micropolistic [2]	n the Artisto Michiel Inege (IPA), instance	C C
	Chrone a low of sweptime that excitation the instance level and entropy space exception property Phytomyletes Consider a Lawreck Interplate (2) Version	an the Amazon Nachine Inspe 2014, inspec	C C
	Charace a land the experiment or contact the entrace land settings such Physical settings Contact a landshift regulate (2) Ventact Option (2)	a the Antonio Michine Image (1945), inspector	C

Verify the details from the template

Version Default (1) C Create a launch template version [2]		
Description	Launch template	Instance type
test template	Mytemplate C lt-0d645109be1cbfb74	t2.micro
AMI ID	Security groups	Request Spot Instances
ami-0a64db3585580ba74	-	No
Key pair name	Security group IDs	
newkey	-	
Additional details		
Storage (volumes)	Date created	
-	Fri Nov 08 2024 11:01:32 GMT-0800	
	(Pacific Standard Time)	

Click Next

Description test template	Launch template Mytemplate 2 lt-0d645109be1cbfb74	Instance type t2.micro	
AMI ID ami-0a64db3585580ba74 Kev pair name	Security groups - Security group IDs	Request Spot Instances No	
newkey	-		
Storage (volumes)	Date created Fri Nov 08 2024 11:01:32 GMT-0800		
	(Pacific Standard Time)	Cancel	

VPC and Subnet Selection:

Choose the **VPC** and **subnets** where your ASG should launch instances. Select multiple subnets (private subnets) to enable your ASG to span multiple Availability Zones.

Click Next

Step 6 - optional Add tags	Network Info
Step 7 Review	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-05903633ec364f6f3
	Create a VPC [7]
	Availability Zones and subnets
	Select Availability Zones and subnets
	us-west-2a subnet-0/41taC9a5atd/a/3 (subnet- private-2a) 172.31.64.0/26
	us-west-2b subnet-01f88798e1cea88db (private-
	subnet-2b)
	172.31.80.0/26
	Create a subnet [2]
	Cancel Skip to review Previous Next
Choose Attack	ned to an existing load balancer
EC2	Q Search [Alt+S] L 4 (2) 193 Oregon ♥ Prabhakar Re
$\equiv \underbrace{EC2 > Auto }$	Scaling groups > Create Auto Scaling group
Step 1 Choose launch	template Configure advanced options - optional Info
	Lattice. Shift resources away from impaired Availability Zones with zonal shift. You can also customize health check
Step 2	replacements and monitoring.
Choose instance	e launch options
Step 3 - optional Configure adv	Load balancing Info
Step 4 - optional	Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.
Configure grou	p size and
scaling	O No load balancer Traffic to your Auto Scaling group Traffic to your Auto Scaling group Delencer
	will not be fronted by a load Choose from your existing load Quickly create a basic load
Step 5 - optional Add notificatio	balancer. balancers. balancer to attach to your Auto Scaling group.

Choose existing load balancer target group

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Click Next

aws	Services	Q Search	[Alt+S]
<mark>ල</mark> ් EC2	2		
=			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. 300 seconds
			Additional settings
			Monitoring Info Decision Info Decision 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

Instance Scale Options:

Choose the number of instances you want to start with in the **Desired Capacity** field.



Define Minimum and Maximum Capacity based on your scaling requirements.

aw	Services	Q Search		[Alt+S]	D 4	® \$	Oregon 🔻	Prabhakar Reddy 1
ුව	EC2							
Ξ	Step 7 <mark>Review</mark>		Scaling Info You can resize your Auto Scaling	g group manually or automatically to mee	t changes in deman	d.		
			Scaling limits Set limits on how much your de	sired capacity can be increased or decreas	ed.			
			Min desired capacity 1 Equal or less than desired	Max desired capacity 3 Equal or greater than desired				
			capacity	capacity				

Configure Scaling Policies (Optional)

In the **Scaling Policies** section, you can configure policies to scale in response to demand.

• Target Tracking: Set a target metric

<mark>ළ</mark> 7 EC2	
	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. Scaling policy name Target Tracking Policy Metric type Info Monitored metric that determines if resource utilization is too low or high. If using EC2 metrics, consider enabling detailed monitoring for Interesting performance. Average CPU utilization Target value 10

Click Next

ල් EC2			
≡	For rebalancing events, new instances will launch before terminating others. For all other events, instances terminate and launch at the same time. Instance scale-in protection Scale-in protection prevents newly launched insta for the group or individual instances when instance Enable instance scale-in protection	launch new instances ait for them to dy before lating others. Terminate and launch instances at the same time. This allows you to go your desired capacity by a given percentage and may temporarily reduce availability. uses you to go your desired ty by a given percentage and may temporarily increase material terminated by scaling activities. Material terminated.	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.
		Cancel Skip to revi	ew Previous Next

Configure Tags

Add tags for easier identification of resources. For instance, you might tag with **Name** etc.

Step 2 Choose instance launch options	
Step 3 - optional Configure advanced options	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.
Step 4 - optional Configure group size and scaling	Tags (1)
Step 5 - optional Add notifications	Key Value - optional Tag new instances Name ASGinstance Image: Comparison of the second
Step 6 - <i>optional</i> Add tags	Add tag 49 remaining
Step 7 Review	Cancel Previous Ne

Review and Create

- Review all the settings to ensure everything is correctly configured.
- Click Create Auto Scaling group to launch your ASG.

්	EC2					
Ξ		Step 5: Add notificatio	ons			Edit
		Notifications				
		No notifications				
		Step 6: Add tags				Edit
		Tags (1)				
		Кеу	Value		Tag new instances	
		Name	ASGinstance		Yes	
		Preview code		Cancel	Previous Create Auto Scali	ng group

Verify ASG Creation

• After creating the ASG, it will appear in your **Auto Scaling Groups** list.

• The ASG will start launching instances based on your specified settings and scaling policies.

ලා EC2	L		
Dashboard	×	▲ Instances (1/3) Info Last updated C Connect Instance state ▼ Actions	S ▼ Launch instances ▼
Events		Q Find Instance by attribute or tag (case-sensitive)	
LICITO		■ Name Ø ▼ Instance ID Instance state ▼ Instance type ▼ Stance type T Stance type Stan	tatus check Alarm status
Instances		□ EC2-public-2a i-0f898579a1f67c723	2/2 checks passec View alarms +
Instances		EC2-private-2a i-043a63d761155bfab 🥥 Running 🍳 🍳 t2.micro 🥥	2/2 checks passec View alarms +
Instance Types		□ ASGinstance i-0980e60f262a4df39 ⊘ Running	D Initializing View alarms +
Launch Templates			•
Spot Requests			
Savings Plans			
Reserved Instances			
Dedicated Hosts			
Capacity Reservations New			