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AWS Auto Scaling

AWS Auto Scaling enables you to configure automatic scaling for the AWS resources that are part of your application in a matter of minutes. The AWS Auto Scaling console provides a single user interface to use the automatic scaling features of multiple AWS services. You can configure automatic scaling for individual resources or for whole applications.

With AWS Auto Scaling, you configure and manage scaling for your resources through a scaling plan. The scaling plan uses dynamic scaling and predictive scaling to automatically scale your application's resources. This ensures that you add the required computing power to handle the load on your application and then remove it when it's no longer required. The scaling plan lets you choose scaling strategies to define how to optimize your resource utilization. You can optimize for availability, for cost, or a balance of both. Alternatively, you can create custom scaling strategies.

AWS Auto Scaling is useful for applications that experience daily or weekly variations in traffic flow, including the following:

- Cyclical traffic such as high use of resources during regular business hours and low use of resources overnight
- On and off traffic patterns, such as batch processing, testing, or periodic analysis
- Variable traffic patterns, such as marketing campaigns with periods of spiky growth

Amazon EC2 Auto Scaling

When you use Amazon EC2 Auto Scaling, you must use certain building blocks to get started. This tutorial walks you through the process for setting up the basic infrastructure for Amazon EC2 Auto Scaling.

Before you create an Auto Scaling group for use with your application, review your application thoroughly as it runs in the AWS Cloud. Take note of the following:

- How long it takes to launch and configure a server.
- What metrics have the most relevance to your application's performance.
- How many Availability Zones the Auto Scaling group should span.
- What existing resources can be used, such as EC2 instances or Amazon Machine Images (AMIs).
- Do you want to scale to increase or decrease capacity, or do you just want to ensure that a specific number of servers are always running? Keep in mind that Amazon EC2 Auto Scaling can do both simultaneously.

The better you understand your application, the more effective you can make your Auto Scaling architecture.

The following instructions are for a configuration template that defines your EC2 instances, creates an Auto Scaling group to maintain the healthy number of instances, and optionally deletes this basic infrastructure.

Step 1: Creating a Launch Configuration

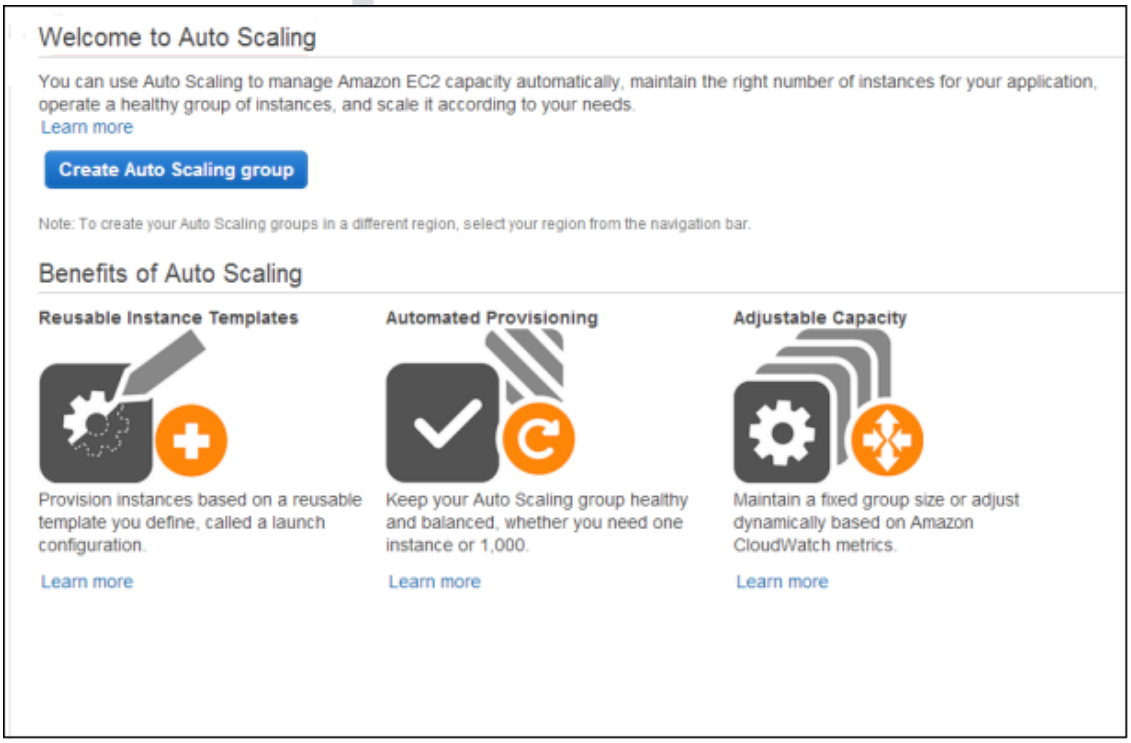
When you create a launch configuration, you must specify information about the EC2 instances to launch. Include the Amazon Machine Image (AMI), instance type, key pair, security groups, and block device mapping. Alternatively, you can create a launch configuration using attributes from a running EC2 instance.

Note

When you create an Auto Scaling group, you can specify a launch template, launch configuration, or an EC2 instance. We recommend that you use a launch template to ensure that you can use the latest features of Amazon EC2.

To create a launch configuration

1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
2. On the navigation bar, select a Region. The Auto Scaling resources that you create are tied to the Region that you specify and are not replicated across Regions. For more information, see Example: Distributing Instances Across Availability Zones.
3. On the navigation pane, under **Auto Scaling**, choose **Auto Scaling Groups**.
4. On the **Welcome to Auto Scaling** page, choose **Create Auto Scaling group**.



5. On the **Create Auto Scaling Group** page, choose **Launch Configuration, Create a new launch configuration**, and then choose **Next Step**.
6. For the **Choose AMI** step, there is a list of basic configurations, called Amazon Machine Images (AMIs), that serve as templates for your instances. Choose **Select** for the Amazon Linux AMI.
7. For the **Choose Instance Type** step, select a hardware configuration for your instances. We recommend that you keep the default, a `t2.micro` instance. Choose **Next: Configure details**.

   Note

   T2 instances must be launched into a subnet of a VPC. If you select a `t2.micro` instance but don't have a VPC, one is created for you. This VPC includes a public subnet in each Availability Zone in the region.

8. For the **Configure details** step, do the following:
   1. For **Name**, type a name for your launch configuration (for example, `my-first-lc`).
   2. For **Advanced Details**, select an IP address type. If you want to connect to an instance in a VPC, you must select an option that assigns a public IP address. If you want to connect to your instance but aren't sure whether you have a default VPC, select **Assign a public IP address to every instance**.
   3. Choose **Skip to review**.
9. For the **Review** step, choose **Edit security groups**. Follow the instructions to choose an existing security group, and then choose **Review**.
10. For the **Review** step, choose **Create launch configuration**.
11. Complete the **Select an existing key pair or create a new key pair** step as instructed. You won't connect to your instance as part of this tutorial. Therefore, you can select **Proceed without a key pair** unless you intend to connect to your instance.
12. Choose **Create launch configuration**. The launch configuration is created and the wizard to create an Auto Scaling group is displayed.

Step 2: Create an Auto Scaling Group

An Auto Scaling group is a collection of EC2 instances, and the core of Amazon EC2 Auto Scaling. When you create an Auto Scaling group, you include information such as the subnets for the instances and the initial number of instances to start with.

Use the following procedure to continue where you left off after creating the launch template.

To create an Auto Scaling group

1. For the **Configure Auto Scaling group details** step, do the following:
   1. For **Group name**, type a name for your Auto Scaling group (for example, `my-first-asg`).

2. For **Launch template version**, choose whether the Auto Scaling group uses the default, the latest, or a specific version of the launch template when scaling out.
3. For **Fleet Composition**, choose **Adhere to the launch template**.
4. Keep **Group size** set to the default value of `1` instance for this tutorial.
5. Keep **Network** set to the default VPC for the region, or select your own VPC.
6. For **Subnet**, choose a subnet for the VPC.
7. Choose **Next: Configure scaling policies**.

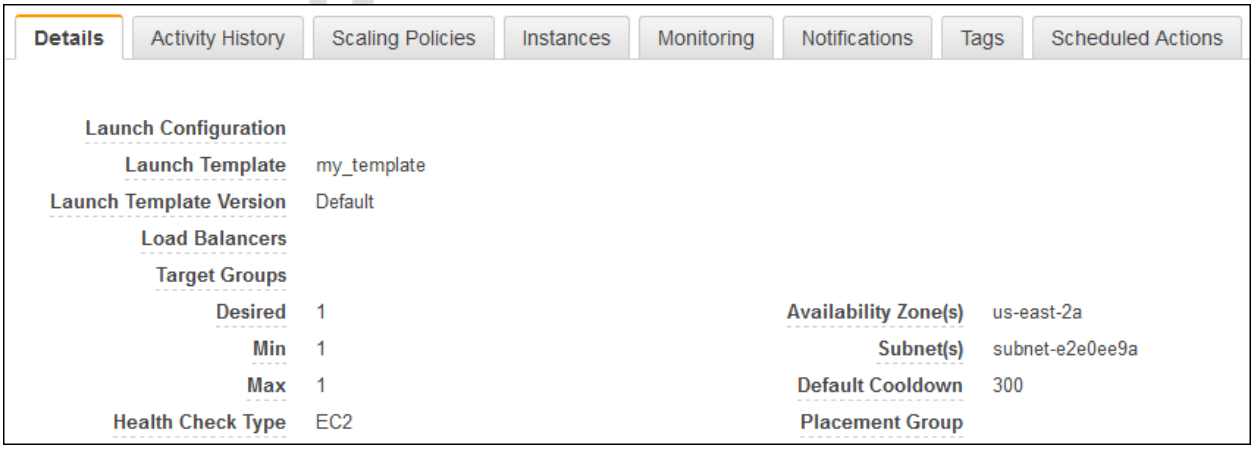
2. On the **Configure scaling policies** page, select **Keep this group at its initial size** and choose **Review**.
3. On the **Review** page, choose **Create Auto Scaling group**.
4. On the **Auto Scaling group creation status** page, choose **Close**.

Step 3: Verify Your Auto Scaling Group

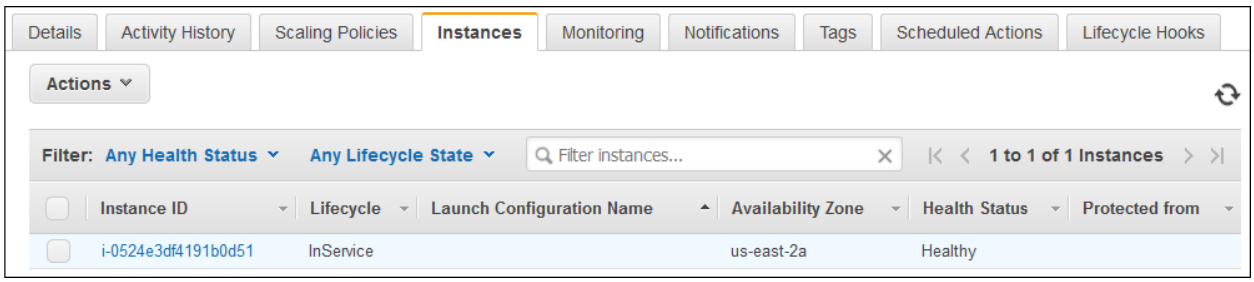
Now that you have created your Auto Scaling group, you are ready to verify that the group has launched an EC2 instance.

To verify that your Auto Scaling group has launched an EC2 instance

1. On the **Auto Scaling Groups** page, select the Auto Scaling group that you just created.
2. The **Details** tab provides information about the Auto Scaling group.



3. On the **Activity History** tab, the **Status** column shows the current status of your instance. While your instance is launching, the status column shows `In progress`. The status changes to `Successful` after the instance is launched. You can also use the refresh button to see the current status of your instance.
4. On the **Instances** tab, the **Lifecycle** column shows the state of your instance. You can see that your Auto Scaling group has launched your EC2 instance, and that it is in the `InService` lifecycle state. The **Health Status** column shows the result of the EC2 instance health check on your instance.



5. (Optional) If you want, you can try the following experiment to learn more about Amazon EC2 Auto Scaling. The minimum size for your Auto Scaling group is one instance. Therefore, if you terminate the running instance, Amazon EC2 Auto Scaling must launch a new instance to replace it.
    1. On the **Instances** tab, select the ID of the instance. This shows you the instance on the **Instances** page.
    2. Choose **Actions**, **Instance State**, **Terminate**. When prompted for confirmation, choose **Yes, Terminate**.
    3. On the navigation pane, choose **Auto Scaling Groups**. Select your Auto Scaling group and choose the **Activity History** tab. The default cooldown for the Auto Scaling group is 300 seconds (5 minutes), so it takes about 5 minutes until you see the scaling activity. When the scaling activity starts, you see an entry for the termination of the first instance and an entry for the launch of a new instance. The **Instances** tab shows the new instance only.
    4. On the navigation pane, choose **Instances**. This page shows both the terminated instance and the running instance.

Step 4: (Optional) Delete Your Scaling Infrastructure

You can either delete your scaling infrastructure or delete just your Auto Scaling group and keep your launch template to use later.

To delete your Auto Scaling group

1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
2. On the navigation pane, under **Auto Scaling**, choose **Auto Scaling Groups**.
3. Select your Auto Scaling group (for example, `my-first-asg`).
4. Choose **Actions**, **Delete**. When prompted for confirmation, choose **Yes, Delete**.

   The **Name** column indicates that the Auto Scaling group is being deleted. The **Desired**, **Min**, and **Max** columns show `0` instances for the Auto Scaling group.

Skip this procedure if you would like to keep your launch template.

To delete your launch template

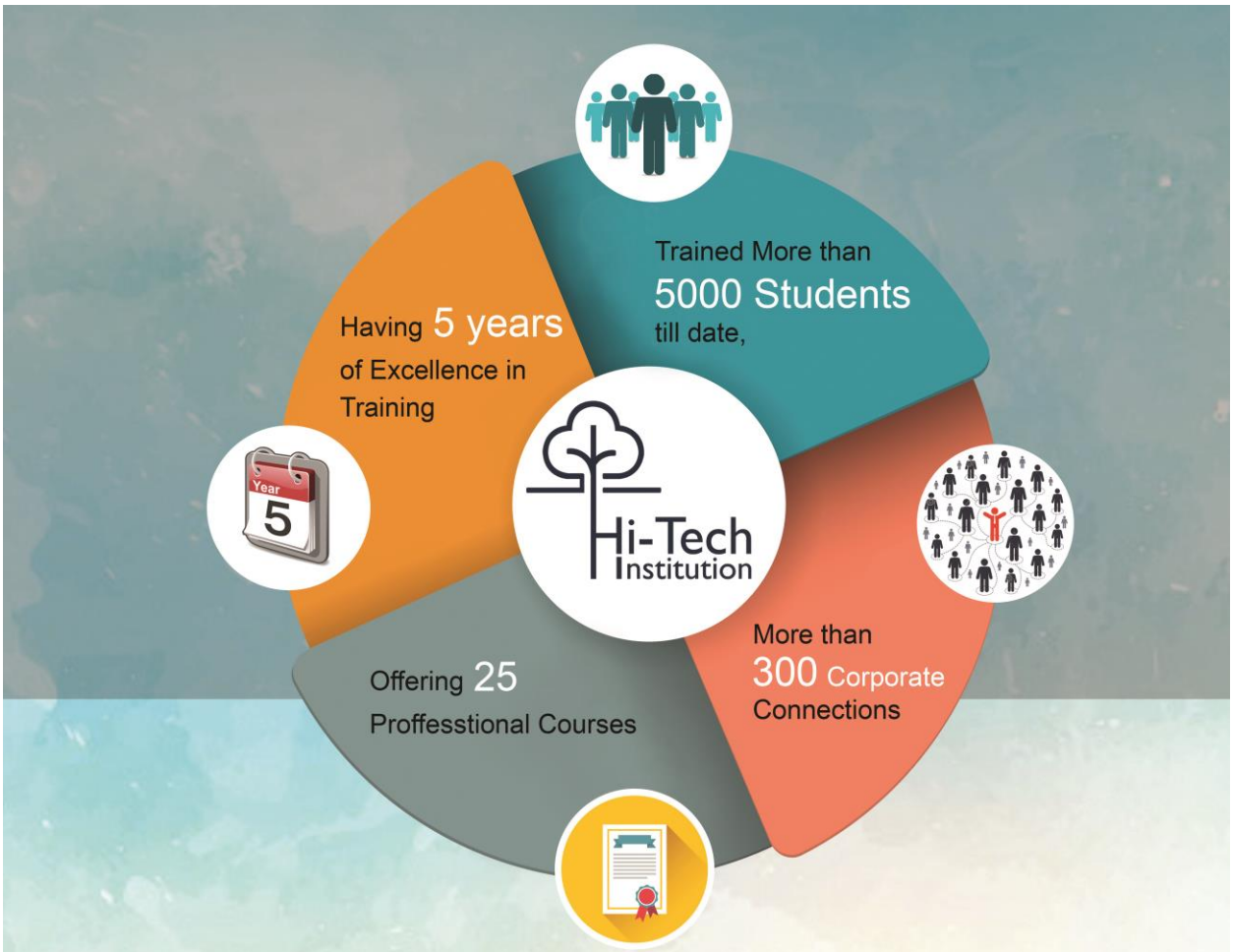
1. On the navigation pane, choose **Instances**, **Launch Templates**.

2. Select your launch template (for example, **`my-first-lt`**).
3. Choose **Actions**, **Delete template**. When prompted for confirmation, choose **Delete launch template**.

Skip this procedure if you would like to keep your launch configuration.

To delete your launch configuration

1. On the navigation pane, under **Auto Scaling**, choose **Launch Configurations**.
2. Select your launch configuration (for example, `my-first-lc`).
3. Choose **Actions**, **Delete launch configuration**. When prompted for confirmation, choose **Yes, Delete**.



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