Placement Empowerment Program

Cloud Computing and DevOps Centre

Implement Auto-scaling in the Cloud : *Set up an auto-scaling group for your cloud VMs to handle variable workloads.*

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Introduction

Auto Scaling in AWS is a powerful feature that automatically adjusts the number of EC2 instances in response to traffic demand. This ensures high availability, cost efficiency, and optimal performance. By defining a Launch Template, creating an Auto Scaling Group (ASG), and setting up scaling policies, we can dynamically scale instances based on CPU utilization or other metrics.

Objectives

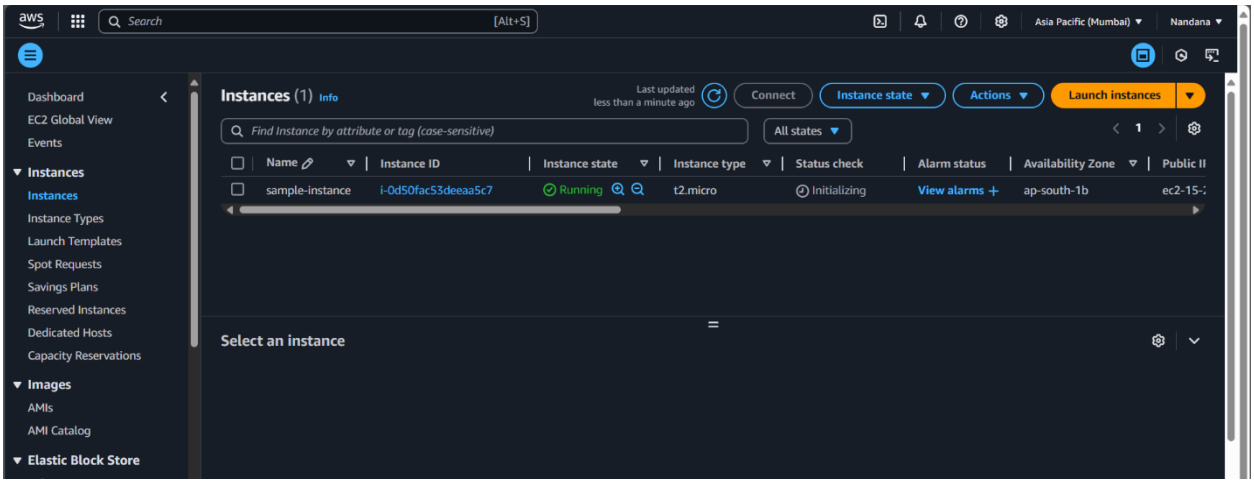
- Create a Launch Template to define the configuration for EC2 instances.
- Set up an Auto Scaling Group (ASG) to manage instance scaling.
- Define Scaling Policies to automatically increase or decrease instances based on CPU utilization.
- Test Auto Scaling by simulating high CPU usage and verifying instance scaling.

Step by Step Overview

1. Create an EC2 instance

- log into your aws account.

- create an EC2 instance.

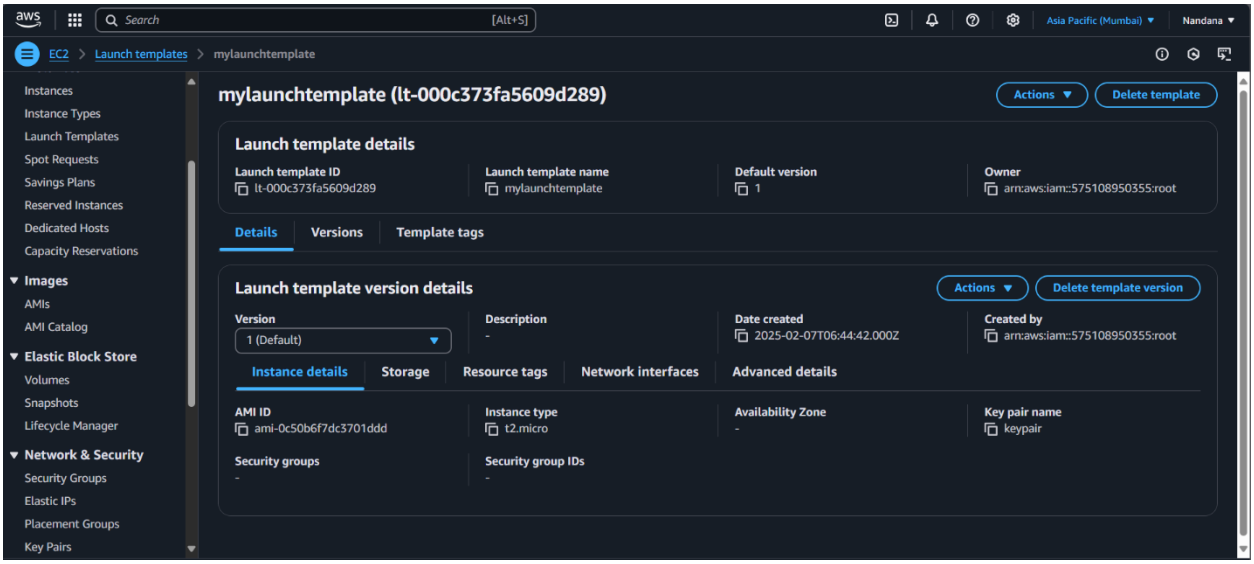


2. Create Launch Template

- In the left panel, click on Launch Templates
- Click Create Launch Template
- Enter a name (e.g., `MyLaunchTemplate`)
- Select an AMI (Amazon Machine Image)

  - Choose a relevant Linux or Windows AMI

- Choose an Instance Type (e.g., `t2.micro`)
- Choose an IAM Role (if required)
- Add Key Pair for SSH access
- Add Security Groups (allow SSH & required ports)

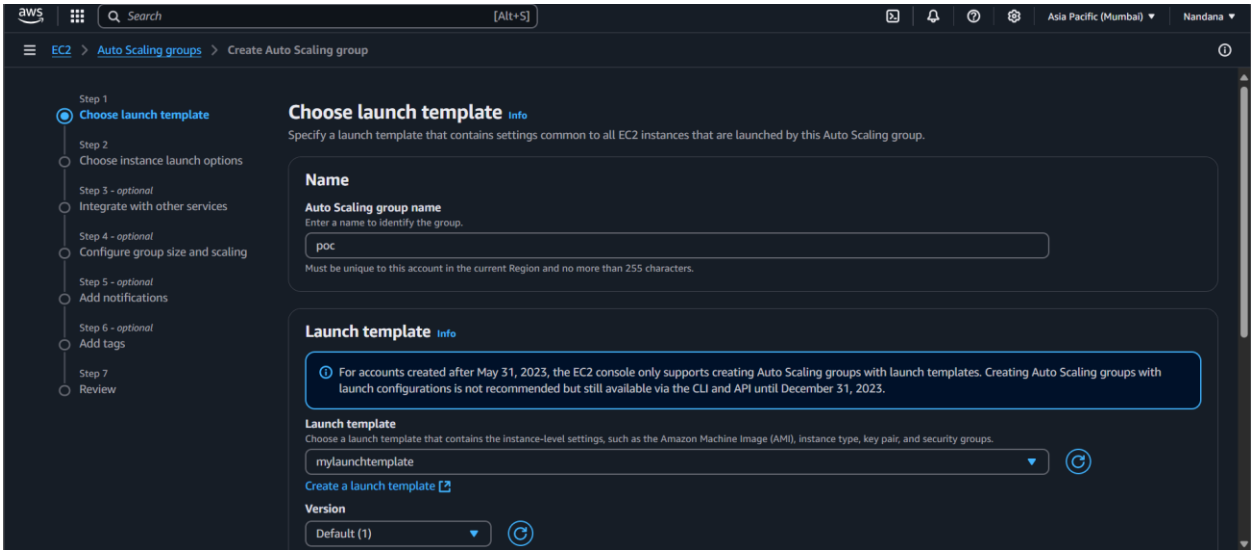


3. Create Auto Scaling Group

- In the EC2 Dashboard, click Auto Scaling Groups
- Click Create Auto Scaling Group

- **Select the Launch Template**

- Choose the Launch Template created earlier



- **Configure the Auto Scaling Group**

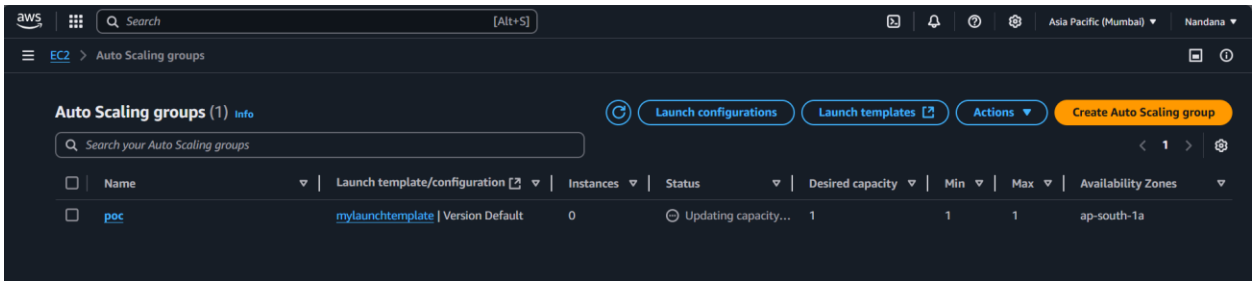
- Set Auto Scaling Group Name (e.g., MyAutoScalingGroup)
- Select VPC & Subnets
- Click Next

- **Set Desired Capacity & Scaling**

- Desired Capacity: 1
- Minimum Instances: 1
- Maximum Instances: 5
- Click Next

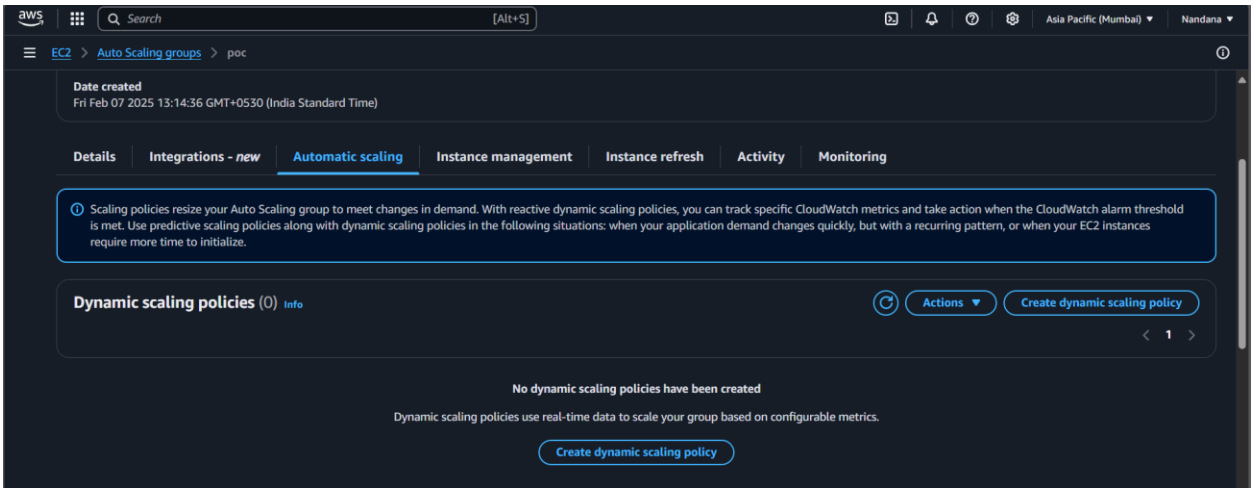
- **Configure Health Checks & Load Balancing (optional)**

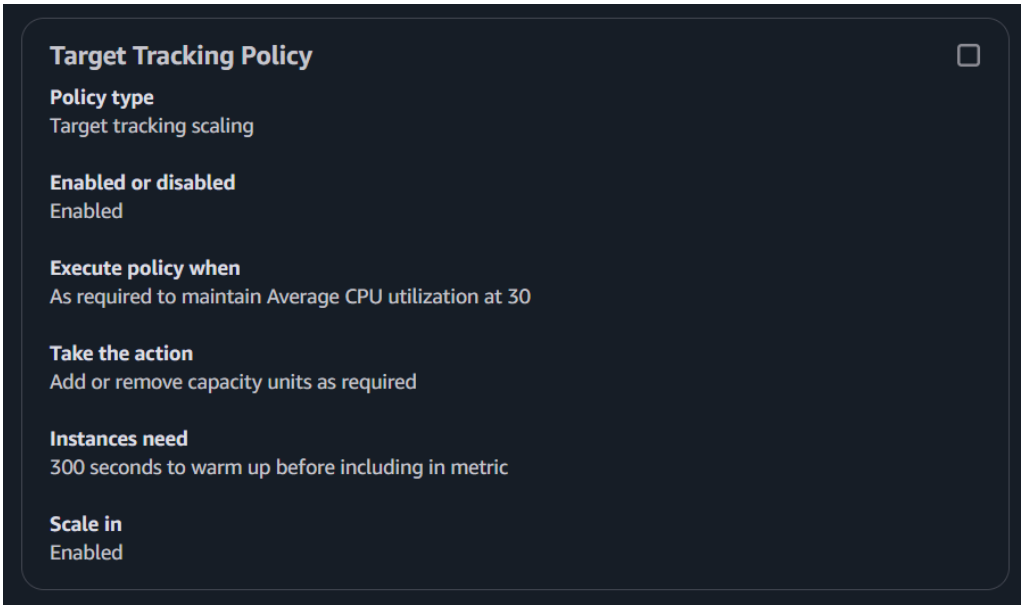
- Enable ELB (optional)
- Enable Health Checks
- Click Create Auto Scaling Group



4. Create Scaling Policy

- Go to Automatic scaling and create scaling policy.





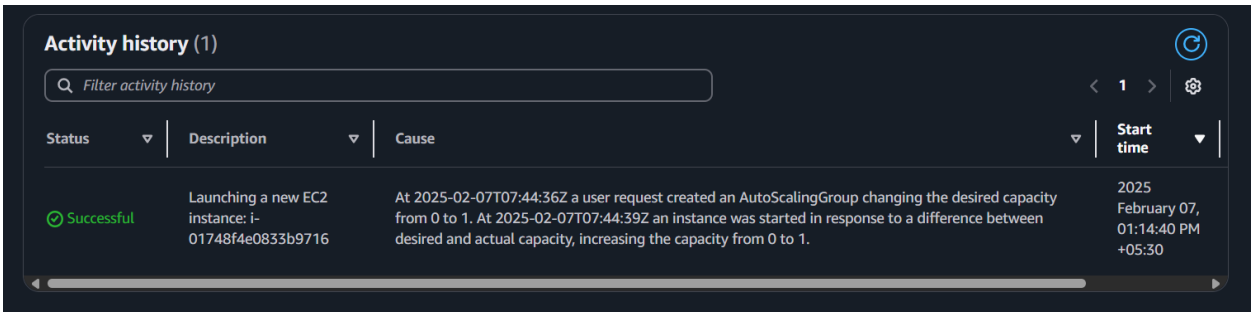
5. Simulate High CPU Usage

SSH into your system through command prompt. And then simulate stress.

```
sudo yum install -y stress
stress --cpu 4 --timeout 300
```

6. Monitor Scaling Events

- Go to Auto Scaling Groups
- Click on Activity to check scaling actions



Outcome:

- A Launch Template configured with an EC2 instance setup.
- An Auto Scaling Group (ASG) that ensures automatic instance scaling.
- Scaling policies that trigger new instance launches or terminations based on CPU usage.
- Successfully tested Auto Scaling by generating high CPU load and observing instance scaling in real time.