

Aim: Configure Amazon CloudWatch to monitor an EC2 instance, create a dashboard displaying key metrics, and set an alarm to trigger an email notification and reboot the instance if CPU utilization exceeds 50%.

Steps:

1. Create an EC2 Instance

Log in to AWS Console:

- Go to the EC2 Dashboard.

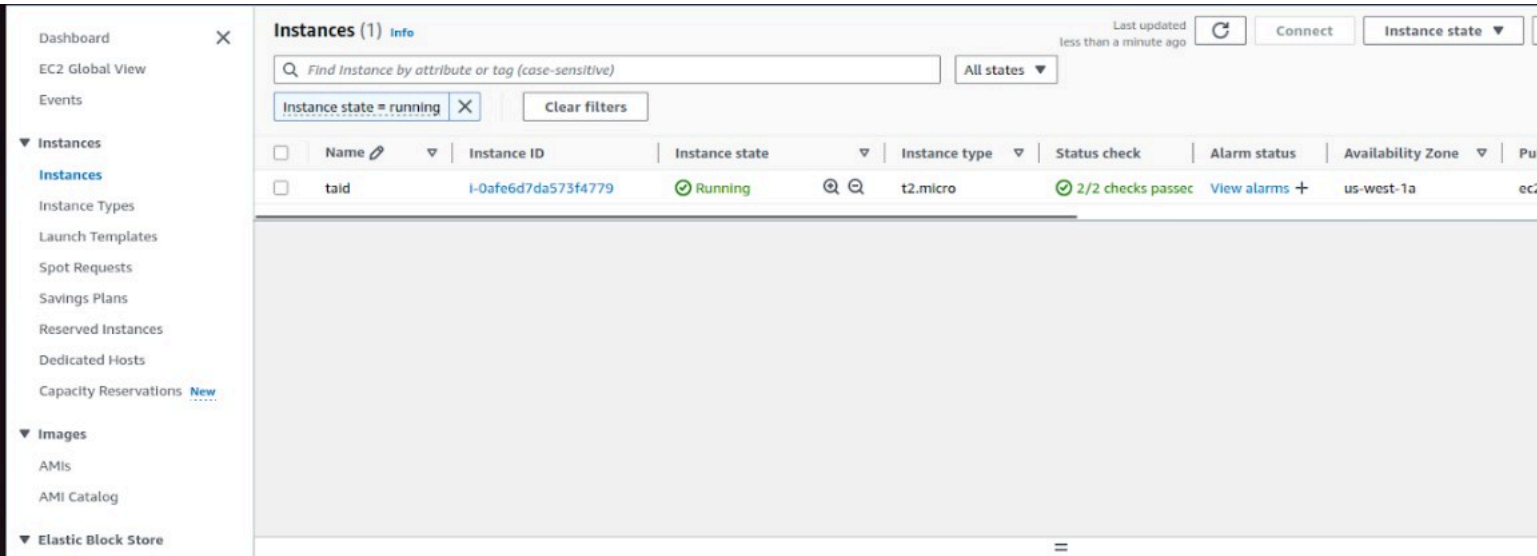
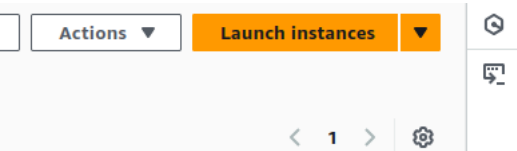


Fig. 8.1 EC2 dashboard

Launch an Instance:

- Click **Launch Instances**.



Choose Amazon Linux 2 AMI (Free Tier Eligible).

- Select **t2.micro** instance type (Free Tier eligible).
- Configure instance details and click **Launch**.
- Generate and download a key pair for SSH access.

⚠ You may not be able to connect to this instance as ports 22 may need to be open in order to be accessible. The current associated security groups don't have ports 22 open.

Instance ID

📄 i-0afe6d7da573f4779 (taid)

1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is taid-backend-key.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.
📄 `chmod 400 "taid-backend-key.pem"`
4. Connect to your instance using its Public DNS:
📄 `ec2-13-57-30-61.us-west-1.compute.amazonaws.com`

Example:

📄 `ssh -i "taid-backend-key.pem" ubuntu@ec2-13-57-30-61.us-west-1.compute.amazonaws.com`

📘 **Note:** In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

Create a CloudWatch Dashboard

- 1. **Access CloudWatch:**
 - Go to the CloudWatch Dashboard.

Alarms (0)

☐ Hide Auto Scaling alarms

Clear selection

🔄

Create alarm

Alarm state: Any

Alarm type: Any

Actions

Create a Dashboard:

- - - Click **Dashboards > Create dashboard**.
 - Name your dashboard (e.g., EC2-Monitoring).
 - Add widgets for:
 - **CPU Utilization**: Select the metric for your EC2 instance under EC2 > Per-Instance Metrics.
 - **Network Usage**: Select NetworkIn and NetworkOut.

Set the Alarm

1. **Create Alarm for CPU Utilization:**
 - In the CloudWatch dashboard, go to **Alarms > Create Alarm**.

Alarms (0)

☐ Hide Auto Scaling alarms

Clear selection

🔄

Create alarm

Alarm state: Any

Alarm type: Any

Actions

- Select the EC2 instance metric: CPUUtilization.

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

Cancel

Next

CPU ✎ ✕

	Instance name 5/5	InstanceId	Metric name	Alarms
<input type="checkbox"/>	tald	i-0afe6d7da573f4...	CPUCreditBalance ⓘ	No alarms
<input type="checkbox"/>	tald	i-0afe6d7da573f4...	CPUSurplusCreditBalance ⓘ	No alarms
<input checked="" type="checkbox"/>	tald	i-0afe6d7da573f4...	CPUUtilization ⓘ	No alarms
<input type="checkbox"/>	tald	i-0afe6d7da573f4...	CPUCreditUsage ⓘ	No alarms
<input type="checkbox"/>	tald	i-0afe6d7da573f4...	CPUSurplusCreditsCharged ⓘ	No alarms

Cancel

Specify metric and conditions

Alarm recommendations ⓘ

[View details](#)

Metric

Edit

Graph

This alarm will trigger when the blue line goes above the red line for 1 datapoints within 5 minutes.

Namespace

AWS/EC2

Metric name

CPUUtilization

InstanceId

i-0afe6d7da573f4779

Instance name

tald

Statistic

Average

Period

5 minutes

- Set conditions:
 - Threshold type: **Static**.
 - Whenever CPU utilization is **greater than 50%** for **1 minute**.

Period

5 minutes

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

☐ Lower

< threshold

than...

Define the threshold value.

10000

Must be a number

► Additional configuration

Cancel

Next

- Set actions:
 - **Send Email Notification:** Choose an SNS topic or create one.
 - Add your email address and confirm the subscription in your inbox.
 - **Reboot the Instance:** Select **Reboot this instance** action.

☒ In alarm

The metric or expression is outside of the defined threshold.

☐ OK

The metric or expression is within the defined threshold.

☐ Insufficient data

The alarm has just started or not enough data is available.

Send a notification to the following SNS topic

Define the SNS (Simple Notification Service) topic that will receive the notification.

☐ Select an existing SNS topic

☒ Create new topic

☐ Use topic ARN to notify other accounts

Create a new topic...

The topic name must be unique.

Default_CloudWatch_Alarms_Topic

SNS topic names can contain only alphanumeric characters, hyphens (-) and underscores (_).

Email endpoints that will receive the notification...

Add a comma-separated list of email addresses. Each address will be added as a subscription to the topic above.

parteekg.it.21@nitj.ac.in

user1@example.com, user2@example.com

Create topic

Add notification

- Review and create the alarm.

Name and description

Alarm name

CPU Alarm

Alarm description - optional [View formatting guidelines](#)

EditPreview

This is an H1

double asterisks will produce strong character

This is [an example](https://example.com/) inline link.

Up to 1024 characters (0/1024)

ⓘ Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.

CancelPreviousNext

CloudWatch > Alarms

Alarms (1)

☐ Hide Auto Scaling alarms

Clear selection

⌂

Create composite alarm

🔍 Search

Alarm state: Any

Alarm type: Any

Actions status: Any

<input type="checkbox"/>	Name	State	Last state update (Local)	Conditions	Actions
<input type="checkbox"/>	CPU Alarm	⌚ Insufficient data	2024-11-18 16:48:38	CPUUtilization > 50 for 1 datapoints within 1 minute	🟢 Actions

Billing Alarm

1. Access Billing Metrics:

Go to Billing Dashboard > Billing Preferences.

- Ensure that **Receive Billing Alerts** is enabled.

Create Billing Alarm:

- In CloudWatch, go to **Alarms > Create Alarm**.
- Select metric: **Billing > Total Estimated Charge**.
- Set threshold:
 - Condition: **Greater than \$1**.
- Set action:
 - Use SNS to send an email notification.

Terminate All Services

1. Terminate EC2 Instance:

- Go to the **EC2 Dashboard > Instances**.
- Select your instance, click **Actions > Terminate Instance**.

Delete CloudWatch Alarms and Dashboard:

- - Navigate to CloudWatch, delete the created alarms and dashboard.