

# Assignment: CloudWatch Billing & EC2 Alarms

**Name:** Vikram

**Assignment Number:** CloudWatch Billing and EC2 CPU Utilization Alarms

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## Problem Statement

You work for XYZ Corporation. To maintain the security of the AWS account and its resources, you have been asked to implement a solution that helps easily recognize and monitor different users. Additionally, you are required to monitor the machines (EC2 instances) created by these users for any performance issues, errors, or misconfigurations.

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## Objective

Create and configure CloudWatch Alarms to monitor AWS account billing and EC2 instance performance, and ensure automatic notification through Amazon SNS when thresholds are exceeded.

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## Tasks to be Performed

### Step 1 — Create a Billing Alarm

1. Go to **CloudWatch Console** → **Alarms** → **All Alarms** → **Create Alarm**.
2. Click **Select metric** → **Billing** → **Total Estimated Charge** → **USD**.
3. Choose **Metric Name: EstimatedCharges**.
4. Click **Select metric** and set the following:
  - **Statistic:** Maximum
  - **Period:** 6 hours
  - **Threshold type:** Static
  - **Condition:** Greater than \$500
5. Under **Notification**, click **Create new topic**, give it a name (e.g., BillingAlarmTopic), and enter your email address for notifications.
6. Click **Create topic** and **Confirm your subscription** from the email you receive.
7. Click **Create alarm**.

☒ This alarm will trigger when estimated AWS billing exceeds **\$500**.

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conditions

## Specify metric and conditions

## Metric

## Graph

Preview of the metric or metric expression and the alarm threshold.

[Select metric](#) You need to select a metric or a math expression.[Cancel](#)[Next](#)[Browse \(1,770\)](#)[Multi source query](#)[Graphed metrics](#)[Options](#)[Source](#) =[Add math](#) ▼[Add query](#) ▼☐ Alarm recommendations ⓘ[Graph with SQL](#)[Graph search](#)[ApplicationELB](#)

83

[Bedrock/DataAutomation](#)

5

[Billing](#)

18

[DynamoDB](#)

20

[EBS](#)

273

[EC2](#)

457

[HealthLake](#)

6

[Lambda](#)

17

[Cancel](#)[Select a single metric to continue](#)[Browse \(18\)](#)[Multi source query](#)[Graphed metrics](#)[Options](#)[Source](#) =[Add math](#) ▼[Add query](#) ▼

▼ Billing

☐ Alarm recommendations ⓘ[Graph with SQL](#)[Graph search](#)[By Service](#)

17

[Total Estimated Charge](#)

1

[Cancel](#)[Select a single metric to continue](#)[Browse \(1\)](#)[Multi source query](#)[Graphed metrics \(1\)](#)[Options](#)[Source](#) =[Add math](#) ▼[Add query](#) ▼[All](#) > [Billing](#) > [Total Estimated Charge](#)☐ Alarm recommendations ⓘ[Graph with SQL](#)[Graph search](#)

&lt; 1 &gt; ⚙

☒ Currency 1/1 ▲

Metric name ▼

Alarms ▼

☒

USD

⊕ ⊖

[EstimatedCharges](#)

No alarms

[Exclude from search](#)[Cancel](#)[Select metric](#)



## Metric

[Edit](#)

### Graph

This alarm will trigger when the blue line goes above the red line for 1 datapoints within 6 hours.

No unit

501

500

500

499

10/10

10/11

10/12

10/13

10/14

10/15

10/16

EstimatedCharges

### Namespace

AWS/Billing

### Metric name

EstimatedCharges

### Currency

USD

### Statistic

Maximum

### Period

6 hours



## Conditions

### Threshold type

☒ Static

Use a value as a threshold

☐ Anomaly detection

Use a band as a threshold

### Whenever EstimatedCharges is...

Define the alarm condition.

☒ Greater

> threshold

☐ Greater/Equal

>= threshold

☐ Lower/Equal

<= threshold

☐ Lower

< threshold

### than...

Define the threshold value.

500

USD

Must be a number.

### ► Additional configuration

[Cancel](#)[Next](#)

## Configure actions

### Notification

#### Alarm state trigger

Define the alarm state that will trigger this 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.

[Remove](#)

#### 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 (\_).

Notification

Alarm state trigger

Define the alarm state that will trigger this action.

Remove

☒ 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.

gangadharavikram1999@gmail.com

user1@example.com, user2@example.com

Add alarm details

Name and description

Alarm name

BillingAlarmTopic

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

Edit

Preview

# 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.

Tags - optional

Alarms (1/1)

☐ Hide Auto Scaling alarms

Clear selection

Refresh icon

Create composite alarm

Actions

Create alarm

Search

Alarm state: Any

Alarm type: Any

Actions status: Any

< 1 >

Settings icon

<input checked="" type="checkbox"/>	Name	State	Last state update (UTC)	Conditions	Actions
<input checked="" type="checkbox"/>	BillingAlarmTopic	OK	2025-10-17 11:05:08	EstimatedCharges > 500 for 1 datapoints within 6 hours	Actions enabled <span>Warning</span>

## Step 2 — Create an EC2 CPU Utilization Alarm

1. Go to **CloudWatch** → **Alarms** → **Create Alarm**.
2. Choose **Select metric** → **EC2** → **Per-Instance Metrics**.
3. Select your instance ID → check **CPUUtilization** metric → click **Select metric**.
4. Under conditions:
  - **Statistic:** Average
  - **Period:** 5 minutes
  - **Threshold type:** Static
  - **Condition:** Greater than 65%
5. Under **Notification**, choose **Select existing SNS topic** or **Create new** (e.g., EC2-CPU-Alarm-Topic).
6. Add your email address for notifications and confirm the email subscription.
7. Click **Create alarm**.

☒ This alarm will enter the **ALARM** state when the CPU utilization of the EC2 instance exceeds **65%**.

Create alarm

Alarm recommendations

View details

Specify metric and conditions

Metric

Graph

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

Percent

65

32.6

0.113

08:30 09:00 09:30 10:00 10:30 11:00

CPUUtilization

Namespace

AWS/EC2

Metric name

CPUUtilization

Instanceld

i-0e5c65ead1fd5969f

Instance name

demo instance

Statistic

Average

Period

5 minutes

Edit

### 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.

Must be a number.

Alarms (1/2)

☐ Hide Auto Scaling alarms
 

Clear selection

↺

Create composite alarm

Actions ▾

Create alarm

Alarm state: Any ▾

Alarm type: Any ▾

Actions status: Any ▾

< 1 >

⚙️

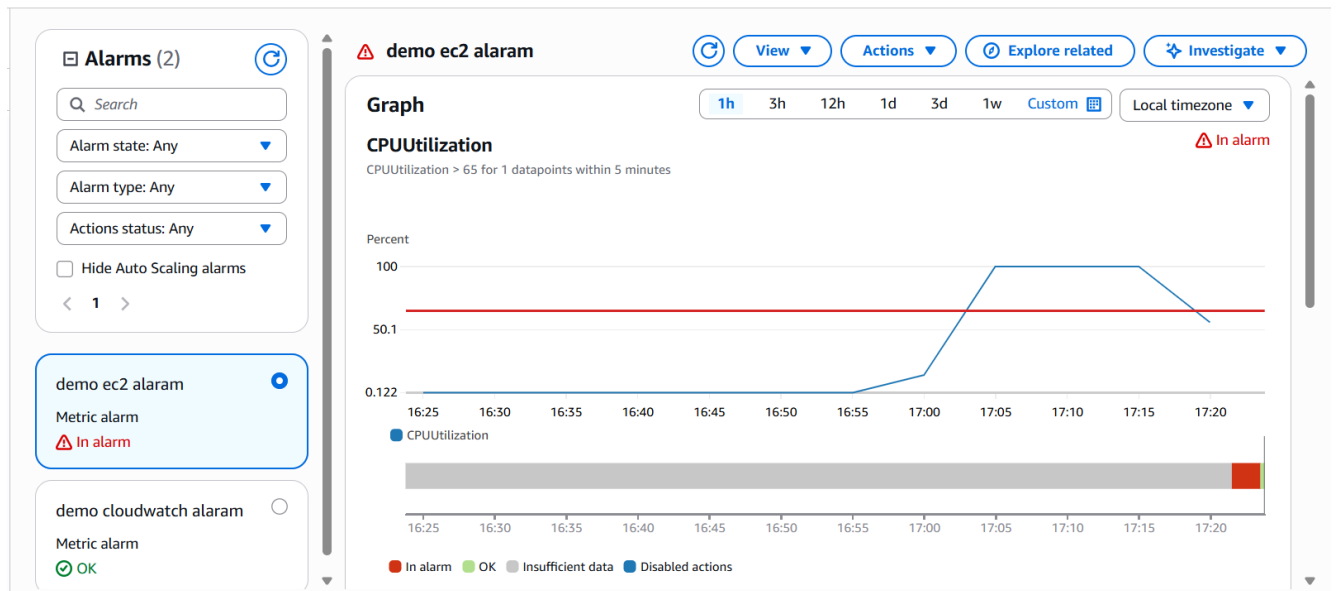
<input checked="" type="checkbox"/>	Name ▾	State ▾	Last state update (Local) ▾	Conditions	Actions
<input checked="" type="checkbox"/>	<a href="#">EC2-CPU-Alarm-Topic</a>	⚠️ Insufficient data	2025-10-17 16:56:02	CPUUtilization > 65 for 1 datapoints within 5 minutes	✅ Actions enabled
<input type="checkbox"/>	<a href="#">BillingAlarmTopic</a>	✅ OK	2025-10-17 16:48:30	EstimatedCharges > 500 for 1 datapoints within 6 hours	✅ Actions enabled

## Result

Successfully created two CloudWatch Alarms:

- **Billing Alarm** for estimated charges exceeding **\$500**
- Billing alarm may take up to **6 hours** to trigger due to metric update frequency.
- **EC2 CPU Utilization Alarm** for CPU usage exceeding **65%**, with **SNS notification integration**

These alarms help proactively monitor costs and EC2 performance issues, improving visibility and response time.



**AWS Notifications** <no-reply@sns.amazonaws.com>  
to me

17:31 (0 minutes ago) ☆ 😊 ↩ ⋮

You are receiving this email because your Amazon CloudWatch Alarm "demo ec2 alarm" in the US East (N. Virginia) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [99.87984379693602 (17/10/25 11:56:00)] was greater than the threshold (65.0) (minimum 1 datapoint for OK -> ALARM transition)." at "Friday 17 October, 2025 12:01:30 UTC".

View this alarm in the AWS Management Console:

<https://us-east-1.console.aws.amazon.com/cloudwatch/deeplink.js?region=us-east-1#alarmsV2:alarm/demo%20ec2%20alarm>

**Alarm Details:**

- Name: demo ec2 alarm
- Description:
- State Change: OK -> ALARM
- Reason for State Change: Threshold Crossed: 1 out of the last 1 datapoints [99.87984379693602 (17/10/25 11:56:00)] was greater than the threshold (65.0) (minimum 1 datapoint for OK -> ALARM transition).
- Timestamp: Friday 17 October, 2025 12:01:30 UTC

**NOTE:** Billing alarm may take up to **6 hours** to trigger due to metric update frequency.

That is the reason I didn't provide any screenshots of billing alarm.