

CloudWatch Alarms

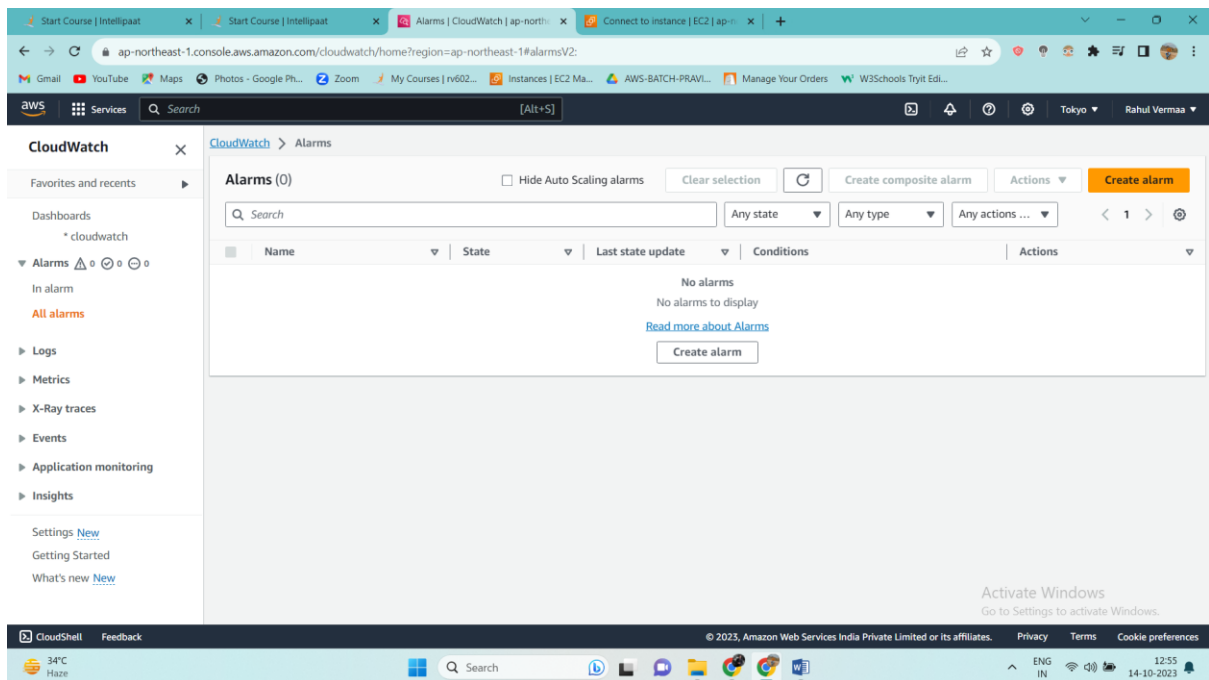
Problem Statement:

You work for XYZ Corporation. To maintain the security of the AWS account and the resources you have been asked to implement a solution that can help easily recognize and monitor the different users. Also, you will be monitoring the machines created by these users for any errors or misconfigurations

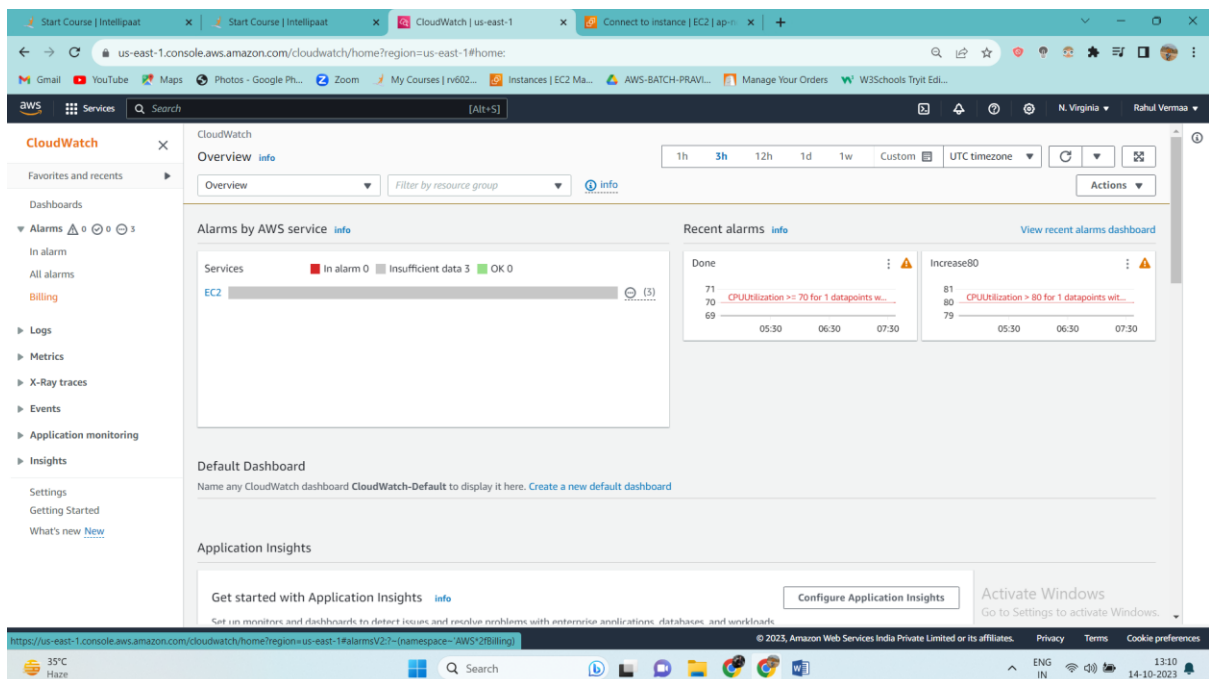
Tasks To Be Performed:

1. Create a CloudWatch billing alarm which goes off when the estimated charges go above \$500.
2. Create a CloudWatch alarm which goes off to an Alarm state when the CPU utilization of an EC2 instance goes above 65%. Also add an SNS topic so that it notifies the person when the threshold is cressed.

First we will create an alarm



There is no options for billing so we will change the region to N.Virginia



Now let's create an alarm

The screenshot shows the AWS CloudWatch console in the 'Metric' configuration step. The left sidebar indicates the current step is 'Step 2: Configure actions', with 'Step 3: Add name and description' and 'Step 4: Preview and create' also visible. The main content area is divided into two sections: 'Graph' and 'Conditions'.

Graph Section:

- Graph:** A line graph showing a blue line (EstimatedCharges) rising above a red line (threshold) over a 6-hour period. The y-axis ranges from 0 to 1, and the x-axis shows dates from 10/08 to 10/12.
- Namespace:** AWS/Billing
- Metric name:** EstimatedCharges
- Currency:** USD
- Statistic:** Maximum
- Period:** 6 hours

Conditions Section:

- Threshold type:** Static (selected) or Anomaly detection. The Static option is described as 'Use a value as a threshold'.

The bottom of the console shows the AWS logo, a search bar, and a status bar with the text '© 2023, Amazon Web Services India Private Limited or its affiliates.' and 'Activate Windows'.

Select desired options and click on Next button

The screenshot shows the AWS CloudWatch console in the 'Notification' configuration step. The left sidebar indicates the current step is 'Step 4: Preview and create', with 'Step 2: Configure actions' and 'Step 3: Add name and description' also visible. The main content area is divided into four sections: 'Notification', 'Auto Scaling action', 'EC2 action', and 'Systems Manager action'.

Notification Section:

- Add notification:** A button to add a notification.

Auto Scaling action Section:

- Add Auto Scaling action:** A button to add an Auto Scaling action.

EC2 action Section:

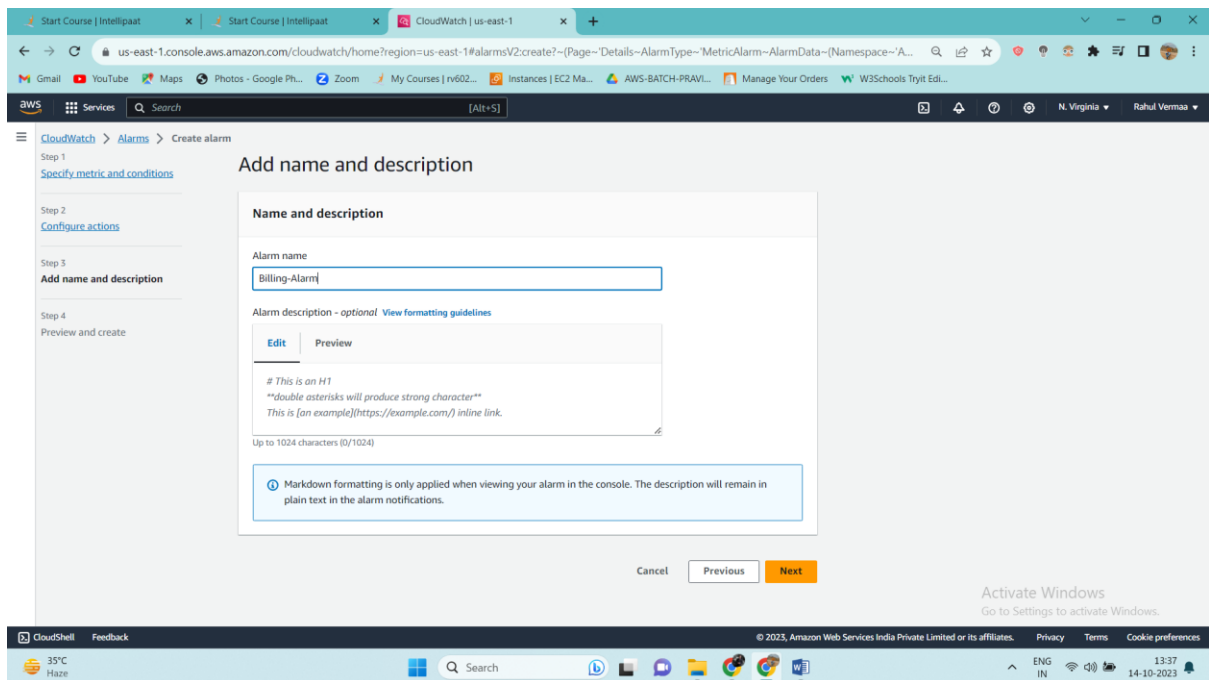
- Add EC2 action:** A button to add an EC2 action.

Systems Manager action Section:

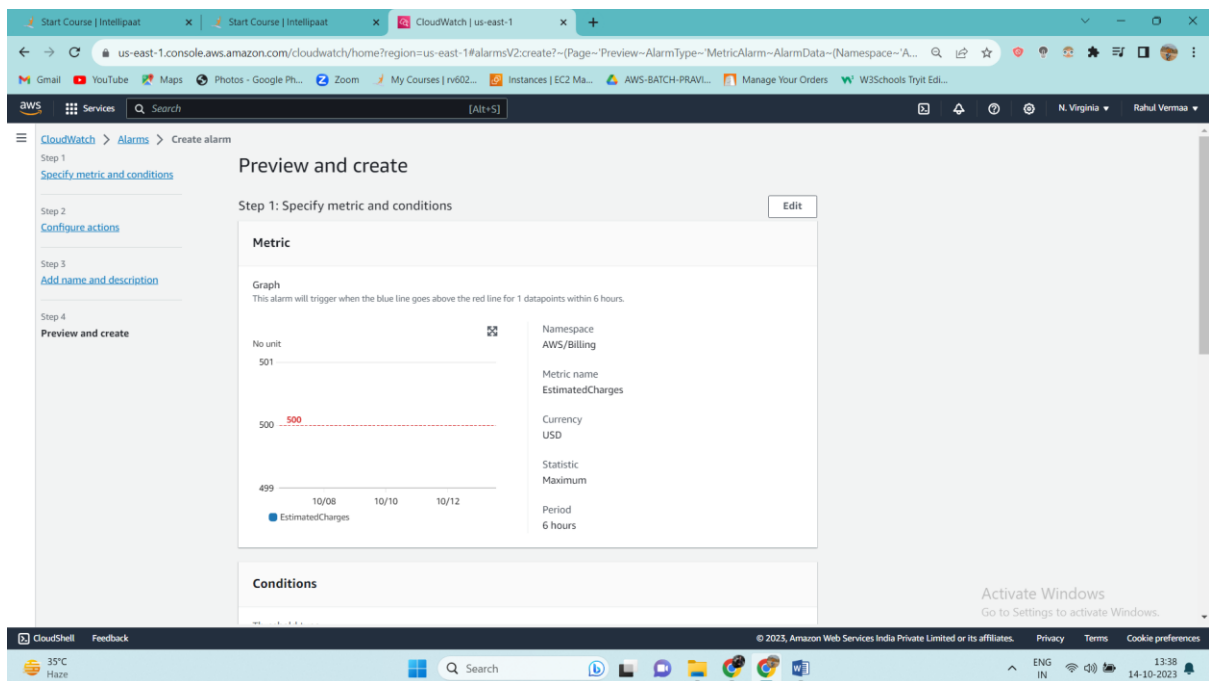
- Add Systems Manager action:** A button to add a Systems Manager action.

The bottom of the console shows the AWS logo, a search bar, and a status bar with the text '© 2023, Amazon Web Services India Private Limited or its affiliates.' and 'Activate Windows'. At the bottom right, there are buttons for 'Cancel', 'Previous', and 'Next'.

Define Alarm name and click on Next button



Preview and create your alarm



Billing-alarm is created now

The screenshot shows the AWS CloudWatch Alarms console in the us-east-1 region. A green banner at the top states "Successfully created alarm Billing-Alarm." with a "View alarm" button. The left sidebar shows the navigation menu with "Alarms" selected. The main content area displays "Billing alarms (1)" with a table containing one alarm:

Name	State	Last state update	Conditions	Actions
Billing-Alarm	Insufficient data	2023-10-14 08:09:31	EstimatedCharges > 500 for 1 datapoints within 6 hours	No actions

The bottom of the screen shows the Windows taskbar with the date 14-10-2023 and time 13:39.

Now let's create alarm for Ec2

The screenshot shows the "Select metric" dialog box in the AWS CloudWatch console. The dialog is titled "Select metric" and has a search bar. Below the search bar, there is a list of metrics categorized by source. The "EC2" category is selected, showing 18 metrics. The "Backup" category is also visible with 4 metrics. The "Logs" category has 2 metrics. The "Metrics (262)" label is at the top of the list. The bottom of the dialog has a "Cancel" button and a "Select a single metric to continue" button.

We have selected our ec2 and we will select cpu utilization and as per our requirement it should go above 65%

The screenshot shows the AWS CloudWatch console in the 'Conditions' step of creating an alarm. The metric selected is 'CPUUtilization'. The statistic is set to 'Average' and the period is '5 minutes'. Under 'Threshold type', 'Static' is selected. The condition is 'Greater' than the threshold value of 65. The 'Additional configuration' section is visible at the bottom.

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.

65

Must be a number

► Additional configuration

Now we will add one SNS topic

The screenshot shows the AWS CloudWatch console in the 'Notification' step of creating an alarm. The alarm state trigger is 'In alarm'. The notification is sent to a new SNS topic named 'CPU-Utilization'. The email endpoint 'rv60252@gmail.com' is added.

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.

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.

CPU-Utilization

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.

rv60252@gmail.com

user1@example.com, user2@example.com

Create topic

Add notification

Give an alarm name and click on next button

The screenshot shows the AWS CloudWatch console's 'Create alarm' wizard, specifically the 'Add name and description' step. The left sidebar shows the progress: Step 1 (Specify metric and conditions), Step 2 (Configure actions), Step 3 (Add name and description), and Step 4 (Preview and create). The main area is titled 'Add name and description' and contains a form with the following fields:

- Alarm name:** A text input field containing 'cpu-utl'.
- Alarm description - optional:** A text area with a placeholder that says '# This is an H1' and a note: '**double asterisks will produce strong character**'. Below the text area, it says 'This is [an example](https://example.com/) inline link.' and 'Up to 1024 characters (0/1024)'.

At the bottom of the form, there are 'Cancel', 'Previous', and 'Next' buttons. A note at the bottom right states: 'Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.'

And it's done

The screenshot shows the AWS CloudWatch console's 'Alarms' page. At the top, there are two status messages: 'Successfully created alarm cpu-utl.' and 'Some subscriptions are pending confirmation'. The left sidebar shows the 'Alarms' section selected. The main area displays a table of alarms:

Name	State	Last state update	Conditions	Actions
cpu-utl	Insufficient data	2023-10-14 08:43:21	CPUUtilization > 65 for 1 datapoints within 5 minutes	Actions enabled Warning
Billing-Alarm	Insufficient data	2023-10-14 08:09:31	EstimatedCharges > 500 for 1 datapoints within 6 hours	No actions

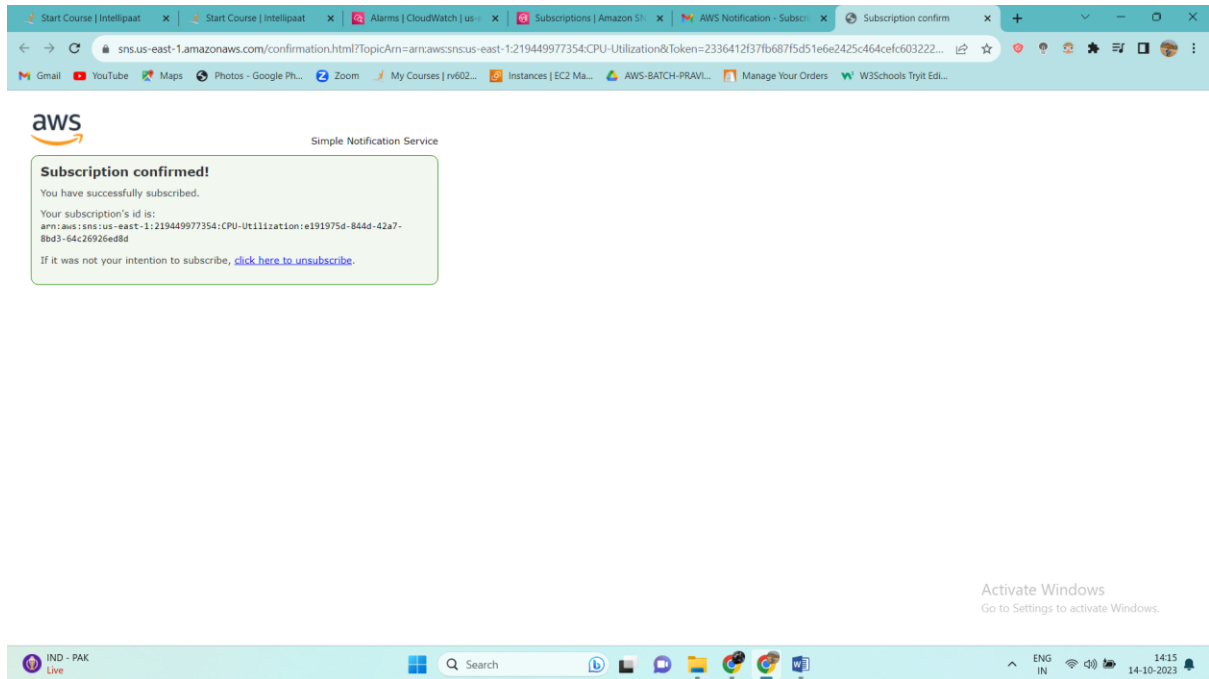
SNS subscription is pending so we have to confirm it from our gmail account

The screenshot shows the Amazon SNS console in a web browser. The browser's address bar displays the URL: `us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/subscriptions`. The console interface includes a left-hand navigation menu with options like 'Dashboard', 'Topics', 'Subscriptions', and 'Mobile'. A 'New Feature' banner at the top states: 'Amazon SNS FIFO topics now support message delivery to Amazon SQS Standard queues. [Learn more](#)'. The main content area is titled 'Amazon SNS > Subscriptions' and shows a table of subscriptions. The table has columns for ID, Endpoint, Status, Protocol, and Topic. One subscription is listed with ID 'Pending confirmation', Endpoint 'rv60252@gmail.com', Status 'Pending confirmation', Protocol 'EMAIL', and Topic 'CPU-Utilization'. Action buttons at the top of the table include 'Edit', 'Delete', 'Request confirmation', 'Confirm subscription', and 'Create subscription'. The Windows taskbar at the bottom shows the date as 14-10-2023 and the time as 14:13.

ID	Endpoint	Status	Protocol	Topic
Pending confirmation	rv60252@gmail.com	Pending confirmation	EMAIL	CPU-Utilization

The screenshot shows a Gmail inbox in a web browser. The email being viewed is titled 'AWS Notification - Subscription Confirmation' and is from 'AWS Notifications <no-reply@sns.amazonaws.com>'. The email content states: 'You have chosen to subscribe to the topic: **arn:aws:sns:us-east-1:219449977354:CPU-Utilization**. To confirm this subscription, click or visit the link below (if this was in error no action is necessary): [Confirm subscription](#)'. Below the text are 'Reply' and 'Forward' buttons. The email is dated '14:11 (3 minutes ago)'. The browser's address bar shows the URL: `mail.google.com/mail/u/0/?tab=rm&ogbl#inbox/FMfcgZGxbdbQDCbJlRmzqjXBrlpCsGVCV`. The Windows taskbar at the bottom shows the date as 14-10-2023 and the time as 14:15.

And its' done



And in AWS also it's status is showing confirmed

