

Module 3: CloudWatch Dashboard Assignment

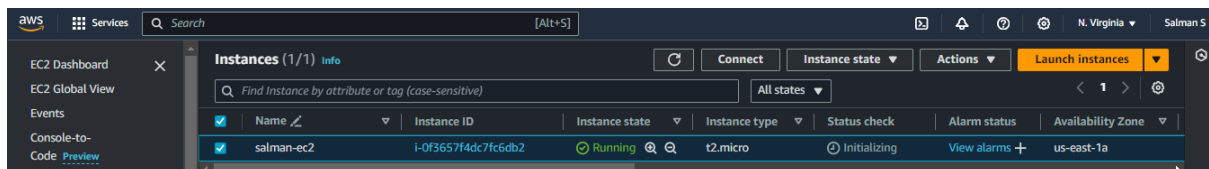
Problem Statement:

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.

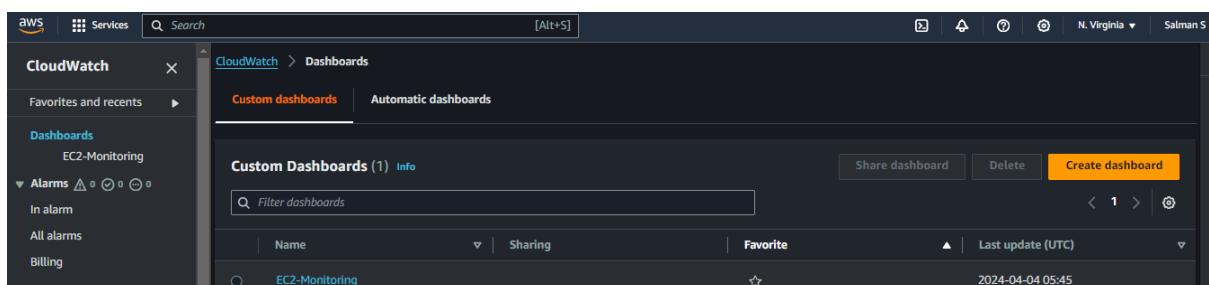
Tasks To Be Performed:

1. Create a dashboard which lets you check the CPU utilization and networking for a particular EC2 instance.

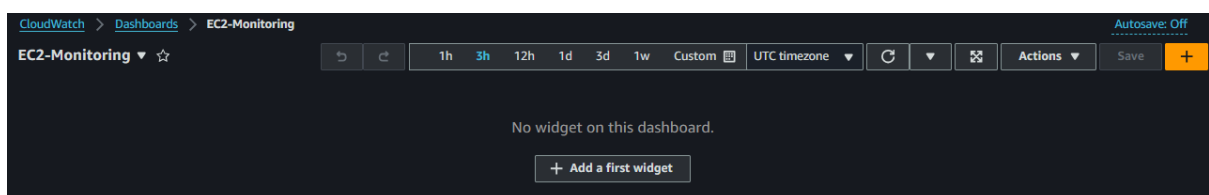
1. First We need to Create an Custom EC2-Server



2. Go to Cloudwatch Click Create a Dashboard with I named as a EC2-Monitoring



3. Click On Created Dashboard and Now Check the CPU and Networking Status For Particular Instances Before that Need to Add Widget



4. Select **Metrics** and leave it as **Line** and Click **Next**

Add widget

Data sources types - new

- ☒ Cloudwatch
- ☐ Other content types
- ☐ Create data sources

Widget Configuration

Data type

Metrics | Logs | Alarms

Widget type

☒ **Line**
Compare metrics over time

☐ **Data table**
Compare metrics values over time in a table

☐ **Number**
Instantly see the latest value for a metric

☐ **Gauge**
See the latest value of a metric within a range

Cancel Next

5. Now Here Select **EC2**

Add metric graph

1h 3h 12h 1d 3d 1w Custom UTC timezone Line

Your CloudWatch graph is empty.
Select some metrics to appear here.

Metrics (654)

N. Virginia

Metric	Count	Dimension	Resource ID
ApplicationELB	78	EBS	63
ElasticBeanstalk	1	Events	1
Lambda	36	Logs	18
EC2	150	EFS	14

6. Click **Per-Instance Metrics**

Add metric graph

1h 3h 12h 1d 3d 1w Custom UTC timezone Line

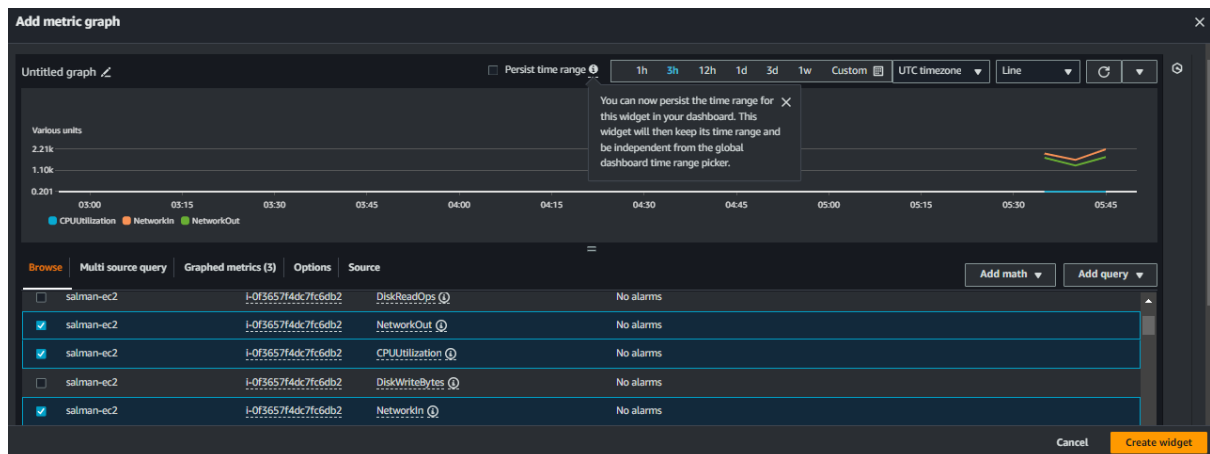
Your CloudWatch graph is empty.
Select some metrics to appear here.

Metrics (150)

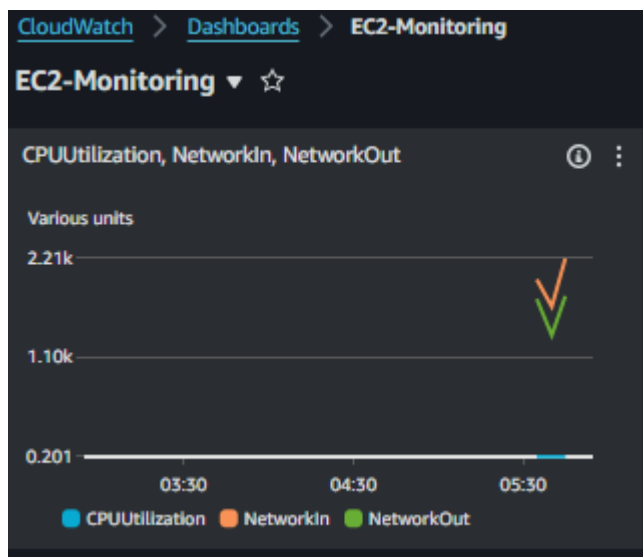
N. Virginia

Metric	Count	Dimension	Resource ID
By Auto Scaling Group	31	Per-Instance Metrics	119

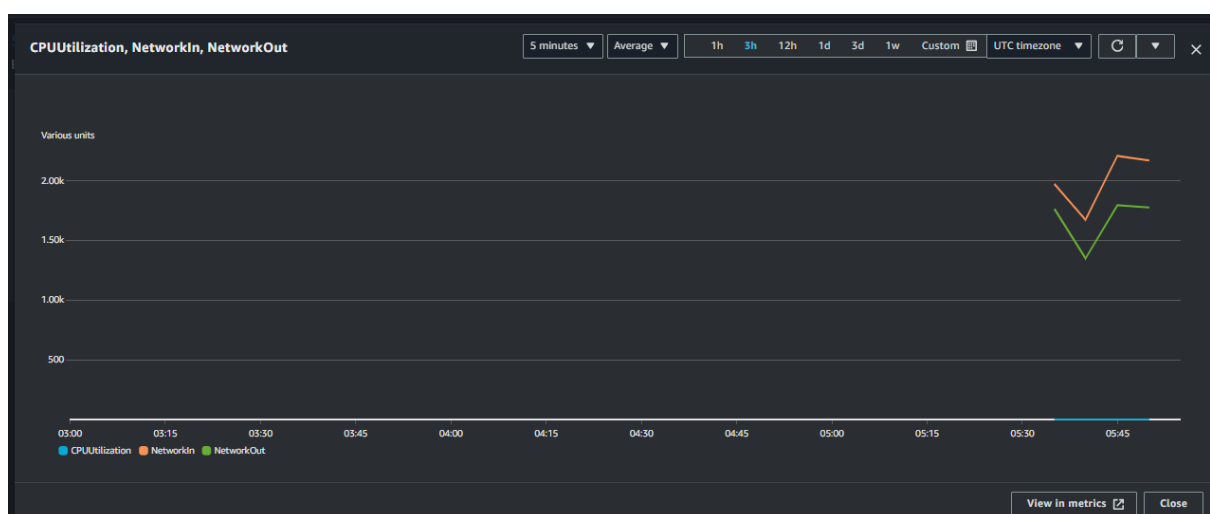
7. **Filter Your EC2-Instances** and Select **CPU-Utilization** and **NetworkIn** and **NetworkOut** and **Create Widget**



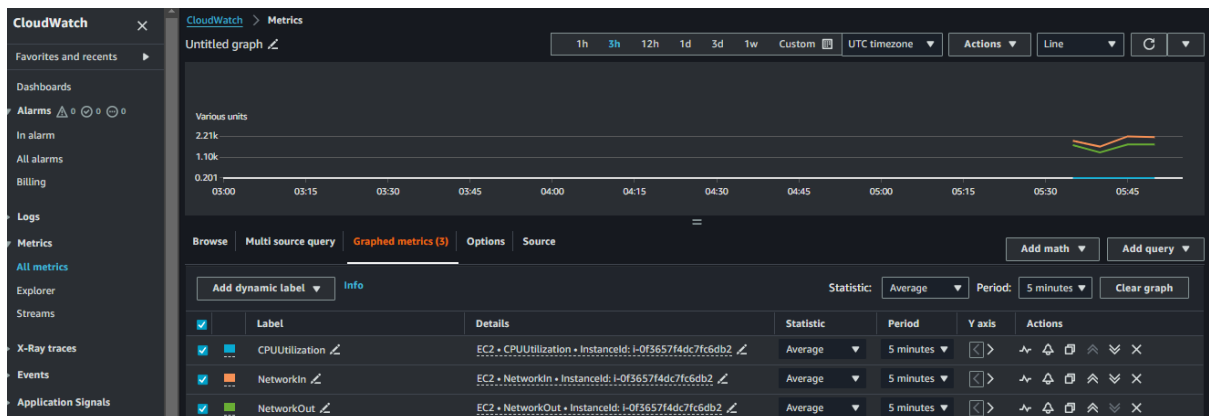
8. This is the CPU-Utilization and NetworkIn, NetworkOut Data of Selected EC2 and **Click on the Chart**



9. Click **View Metrics**



10. Here We Can Add Math and Query and We can Change Statistic and change Period Time and This is our Task Which We Completed



Module 3: CloudWatch Alarms Assignment

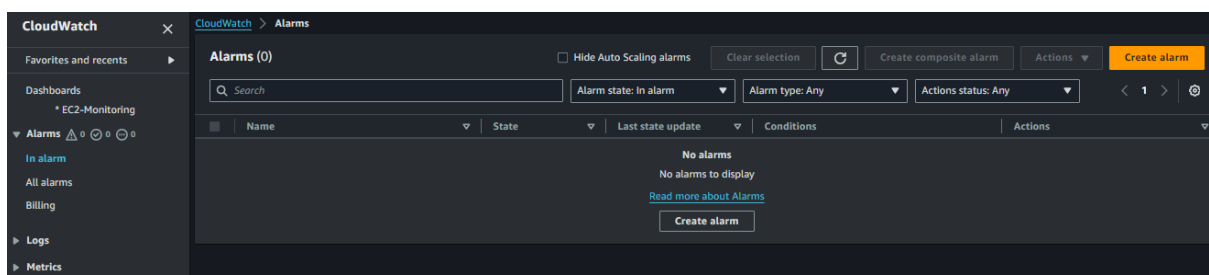
Problem Statement:

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 crossed.

1. Create a Cloudwatch Billing Alarm Click Create Alarm



2. **Select Metrics** and Click Next

The screenshot shows the 'Specify metric and conditions' step of the 'Create alarm' wizard in AWS CloudWatch. On the left, a sidebar lists four steps: 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 'Specify metric and conditions' and contains a 'Metric' section with a 'Graph' preview and a 'Select metric' button. At the bottom right, there are 'Cancel' and 'Next' buttons.

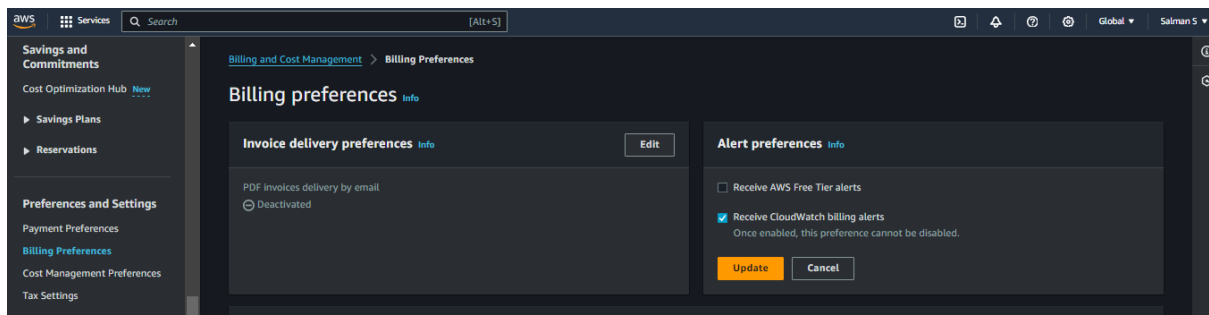
3. We are **Not able to Find Billing Option** So Before that we **need to Billing Console**

The screenshot shows the 'Select metric' interface in AWS CloudWatch. It features a timeline at the top and tabs for 'Browse', 'Multi source query', 'Graphed metrics', 'Options', and 'Source'. The 'Browse' tab is active, showing a search bar with the text 'bill'. Below the search bar, it states 'Your search - bill - did not match any metrics.' and provides tips for searching. At the bottom right, there are 'Cancel' and 'Select a single metric to continue' buttons.

4. Go to **Billing Preferences in the right Corner** We will **get Alert Preferences** Edit it

The screenshot shows the 'Billing preferences' page in the AWS Billing console. The left sidebar contains navigation links for 'Savings and Commitments', 'Cost Optimization Hub', 'Savings Plans', 'Reservations', 'Preferences and Settings', 'Payment Preferences', 'Billing Preferences', 'Cost Management Preferences', 'Tax Settings', 'Legacy Pages', 'Billing Home', 'Cost Management Home', 'Cost and Usage Reports', and 'Rightsizing'. The main area is titled 'Billing preferences' and contains three sections: 'Invoice delivery preferences', 'Alert preferences', and 'Detailed billing reports (legacy)'. The 'Alert preferences' section is highlighted, showing options for 'AWS Free Tier alerts' and 'CloudWatch billing alerts'. At the bottom right, there is an 'Edit' button.

5. Select **Receive Cloudwatch Billing Alerts** and **Update** it

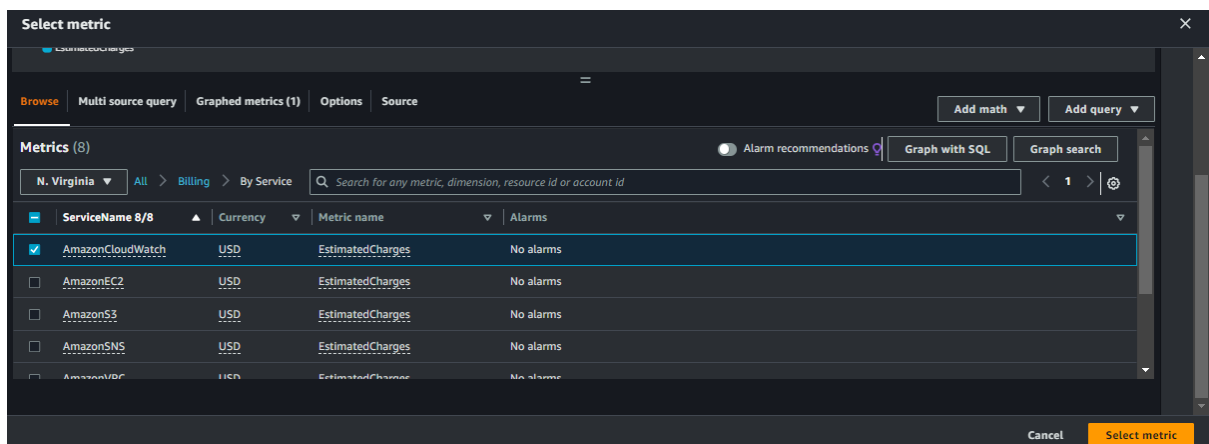


6. **Now Again** go to **Cloudwatch Alarm** and Now we **able to see Billing Option** Click on it

The screenshot shows the AWS CloudWatch console with a table of metrics for the 'N. Virginia' region. The table has columns for ServiceName, Count, and Metric name. The metrics listed are:

ServiceName	Count	Metric name
ApplicationELB	78	Billing
EBS	63	EC2
EFS	14	ElasticBeanstalk
Events	1	Lambda
Logs	18	S3
SQS	9	Usage

7. Selecting **Cloudwatch service** and Click **Select Metric**



8. **Estimated Charges**, Now Present I leave Everything as **Default** but only **one change 500 USD**

The screenshot shows the 'Specify metric and conditions' step of the AWS CloudWatch 'Create alarm' wizard. The left sidebar lists four steps: 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 'Specify metric and conditions' and contains a 'Metric' section with a graph and a configuration panel. The graph shows a blue line for 'EstimatedCharges' with a red threshold line at 500. The configuration panel on the right includes fields for 'Namespace' (AWS/Billing), 'Metric name' (EstimatedCharges), 'ServiceName' (AmazonCloudWatch), 'Currency' (USD), 'Statistic' (Maximum), and 'Period' (6 hours). An 'Edit' button is located at the top right of the metric configuration area.

9. Selected **Static and Threshold** is **greater than 500 USD** and Click Next

The screenshot shows the 'Conditions' step of the AWS CloudWatch 'Create alarm' wizard. The 'Threshold type' section has two options: 'Static' (selected) and 'Anomaly detection'. The 'Whenever EstimatedCharges is...' section has four options: 'Greater' (selected), 'Greater/Equal', 'Lower/Equal', and 'Lower'. The 'than...' section has a text input field containing '500' and a dropdown menu set to 'USD'. At the bottom right, there are 'Cancel' and 'Next' buttons.

10. 2nd Step is Configure Actions Select Alarm and Here Need to Create a Topic I gave Name and Email Address

CloudWatch > Alarms > Create alarm

Step 1
Specify metric and conditions

Step 2
Configure actions

Step 3
Add name and description

Step 4
Preview and create

Configure actions

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.

Salman-SNS

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.

shaiksalmanfarsi80@gmail.com

11. Leave it as Default and Next

Lambda action

Add Lambda action

Auto Scaling action

Add Auto Scaling action

EC2 action

This action is only available for EC2 Per-Instance Metrics.

Add EC2 action

Systems Manager action [Info](#)

This action will create an Incident or OpsItem in Systems Manager when the alarm is **In alarm** state.

Add Systems Manager action

Cancel Previous Next

12. Triggering Error Click Create Topic

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.

Salman-SNS


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.

shaiksalmanfarsi80@gmail.com

user1@example.com, user2@example.com

Create topic

 You must finish creating this topic, or select an existing one.

13. Give Name I gave Wrongly Because we are doing Task if More than 500 USD Usage for cloudwatch then it will trigger the Notification to Us. But I gave CPUgreaterthen65tosendSNS, But the Concept is Clear

CloudWatch > Alarms > Create alarm

Step 1
Specify metric and conditions

Step 2
Configure actions

Step 3
Add name and description

Step 4
Preview and create

Add name and description

Name and description

Alarm name


CPUgreaterthen65tosendSNS

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.

Cancel

Previous

Next

14. Preview

CloudWatch > Alarms > Create alarm

Step 1
Specify metric and conditions

Step 2
Configure actions

Step 3
Add name and description

Step 4
Preview and create

Preview and create

Step 1: Specify metric and conditions Edit

Metric

Graph

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

No unit

500

500

250

0

03/2803/3003/3104/02

EstimatedCharges

Namespace

AWS/Billing

Metric name

EstimatedCharges

ServiceName

AmazonCloudWatch

Currency

USD

Statistic

Maximum

Period

6 hours

Conditions

Threshold type

Static

15. Preview and [Click Create Alarm](#)

Whenever EstimatedCharges is
Greater (->)

than....
500

▼ Additional configuration

Datapoints to alarm
1 out of 1

Missing data treatment
Treat missing data as missing

Step 2: Configure actions Edit

Actions

Notification

When In alarm, send a notification to "Salman-SNS"

Step 3: Add name and description Edit

Name and description

Name

CPUgreaterthen65tosendSNS

Description

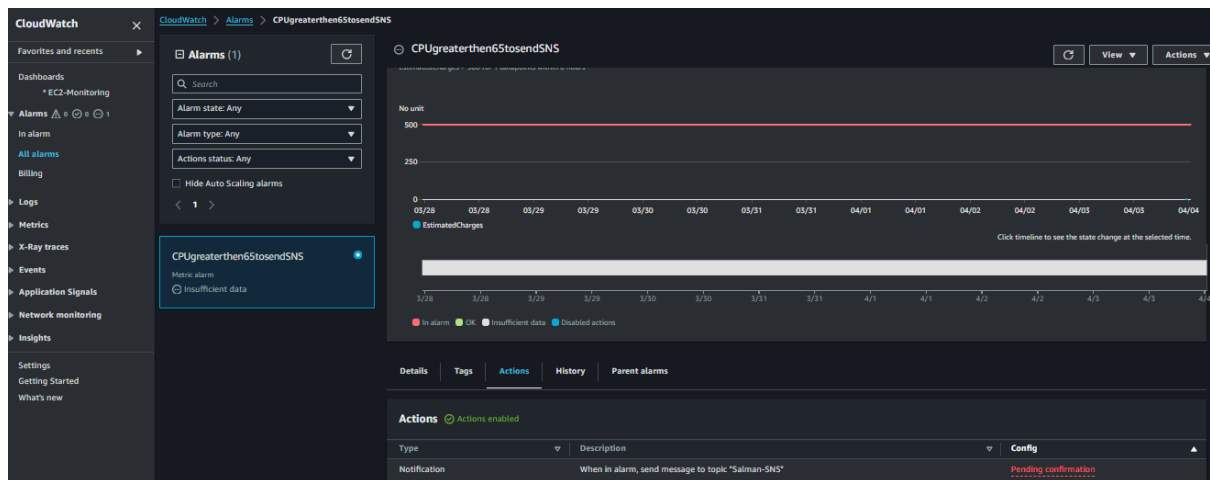
-

Cancel

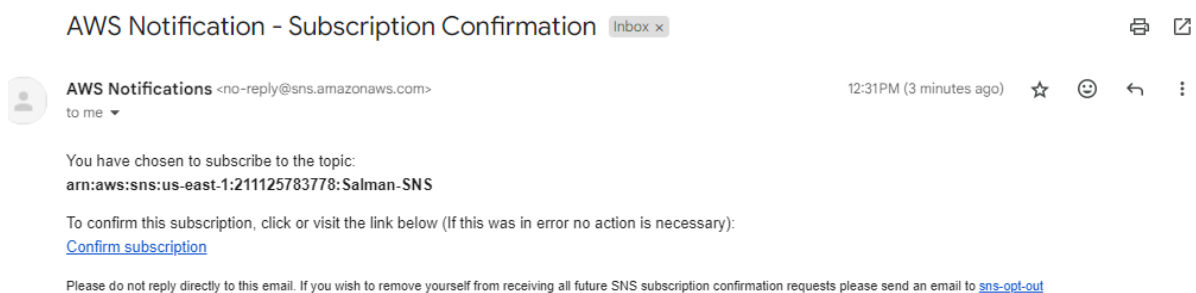
Previous

Create alarm

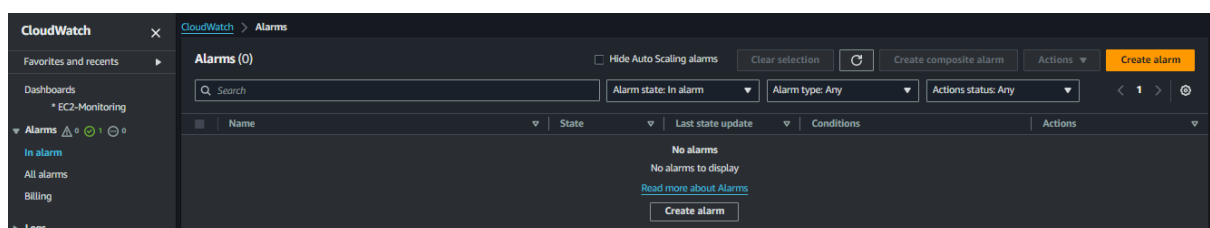
16. We Created But in the Config Part Pending Confirmation, So go Your Email which u given and Confirm It



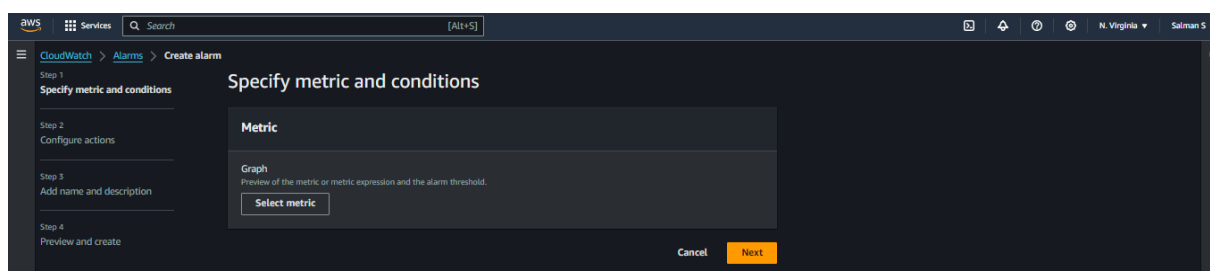
17. See I received Notification from AWS Notification Subscription Confirmation and Click Confirm



18. Now Again Go to Alarm Create another Alarm which CPU 65 greater then task have to perform



19. Select Metric and Next



20. Select EC2

Select metric

Browse | Multi source query | Graphed metrics | Options | Source

Metrics (670)

N. Virginia

Search for any metric, dimension, resource id or account id

ApplicationELB	78	Billing	9	EBS	63	EC2	150
EFS	14	ElasticBeanstalk	1	Events	1	Lambda	36
Logs	18	S3	2	SNS	2	SQS	9

Cancel Select a single metric to continue

21. Select Per-Instance Metrics Because we are not creating to Autoscaling only Particular Instances so Click it.

Select metric

Browse | Multi source query | Graphed metrics | Options | Source

Metrics (150)

N. Virginia

Search for any metric, dimension, resource id or account id

By Auto Scaling Group	31	Per-Instance Metrics	119
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22. Select CPU-Utilization According to Task

Select metric

Browse | Multi source query | Graphed metrics (1) | Options | Source

Metrics (119)

N. Virginia

Search for any metric, dimension, resource id or account id

Instance name 100/119	Instance id	Metric name	Alarms
salman-ec2	i-0f3657f4dc7fc6db2	MetadataNoToken	No alarms
salman-ec2	i-0f3657f4dc7fc6db2	CPUCreditUsage	No alarms
salman-ec2	i-0f3657f4dc7fc6db2	CPUCreditBalance	No alarms
salman-ec2	i-0f3657f4dc7fc6db2	DiskReadOps	No alarms
salman-ec2	i-0f3657f4dc7fc6db2	NetworkOut	No alarms
<input checked="" type="checkbox"/> salman-ec2	i-0f3657f4dc7fc6db2	CPUUtilization	No alarms

23. Leave it as a **Default**

CloudWatch > Alarms > Create alarm

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

Alarm recommendations View details

Metric

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

Percent

65 65

32.6

0.198 04:30 05:30 06:30

CPUUtilization

Namespace
AWS/EC2

Metric name
CPUUtilization

InstanceId
i-0f3657f4dc7fc6db2

Instance name
salman-ec2

Statistic
Average

Period
5 minutes

Edit

24. Selected **Static** and Selected **Greater than 65** and Click Next

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**

Cancel Next

25. Select **In alarm** and Selected **SNS According to our Task** for **Future Notification Receive**

The screenshot shows the 'Configure actions' step in the AWS CloudWatch console. On the left, a sidebar lists the steps: 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 'Configure actions' and contains a 'Notification' section. Under 'Alarm state trigger', three options are shown: 'In alarm' (selected), 'OK', and 'Insufficient data'. Below this, the 'Send a notification to the following SNS topic' section has three options: 'Select an existing SNS topic' (selected), 'Create new topic', and 'Use topic ARN to notify other accounts'. A search box shows 'Salman-SNS' with a dropdown list containing 'Salman-SNS' and 'Salman-SNS (deprecated)'. Below the search box, the email 'shaiksalmanfarsi80@gmail.com' is listed with a 'View in SNS Console' link. An 'Add notification' button is at the bottom.

26. Here I Selected **Terminate Instance** **No need according to Task** But Once it will cross 65% CPU Utilization then it will going to **Terminate**, Generally **No Need to terminate** Better we will **stop Instance** is Better and **also we Receive Notification According to Our Configuration**

The screenshot shows the 'EC2 action' section in the AWS CloudWatch console. It features an 'Alarm state trigger' section with three options: 'In alarm' (selected), 'OK', and 'Insufficient data'. Below this, the 'Take the following action...' section has four options: 'Recover this instance', 'Stop this instance', 'Terminate this instance' (selected), and 'Reboot this instance'. Each option has a brief description and a link to the IAM policy document. An 'Add EC2 action' button is at the bottom.

27. Give Alarm Name and Next

CloudWatch > Alarms > Create alarm

Step 1
Specify metric and conditions

Step 2
Configure actions

Step 3
Add name and description

Step 4
Preview and create

Add name and description

Name and description

Alarm name

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)

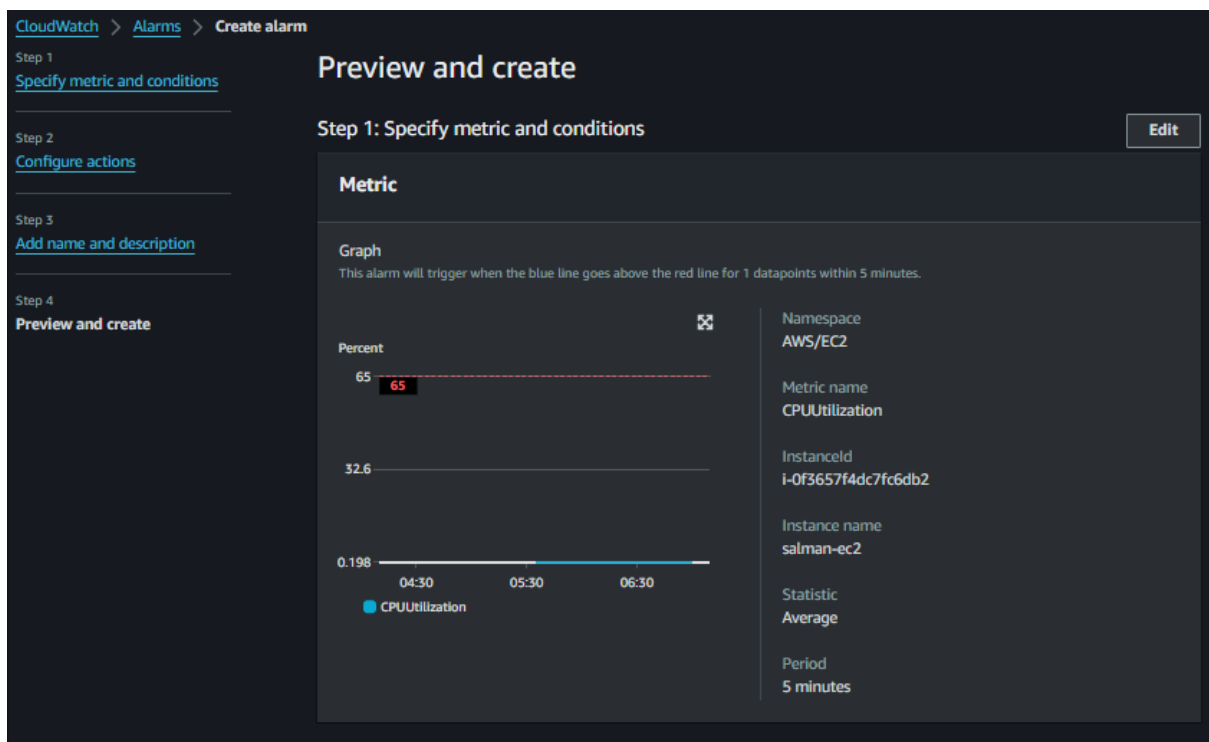
ⓘ Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.

Cancel

Previous

Next

28. Preview



29. This are Actions for CPU-Utilization which we configured Send Message and Terminate Alarm

Details	Tags	Actions	History	Parent alarms
Actions 🟢 Actions enabled				
Type	Description			Config
Notification	When in alarm, send message to topic "Salman-SNS"			-
EC2	When in alarm, terminate the instance with id "i-0f3657f4dc7fc6db2"			-

30. These 2 Alarms Which we Created

CloudWatch > Alarms						
Alarms (2) <input type="checkbox"/> Hide Auto Scaling alarms Clear selection 🔄 Create composite alarm Actions Create alarm						
<input type="text" value="Search"/> Alarm state: OK Alarm type: Any Actions status: Any < 1 > ⚙️						
<input type="checkbox"/>	Name	State	Last state update	Conditions	Actions	
<input type="checkbox"/>	greaterthen65theterminatetheinstance	🟢 OK	2024-04-04 07:15:45	CPUUtilization > 65 for 1 datapoints within 5 minutes	🟢 Actions enabled	
<input type="checkbox"/>	CPUgreaterthen65tosendSNS	🟢 OK	2024-04-04 07:05:38	EstimatedCharges > 500 for 1 datapoints within 6 hours	🟢 Actions enabled	

31. And This is Billing alarm, So This is the Task Which given in the Assignment.

CloudWatch > Alarms						
Billing alarms (1) <input type="checkbox"/> Hide Auto Scaling alarms Clear selection 🔄 Create composite alarm Actions Create alarm						
<input type="text" value="Search"/> Alarm state: Any Alarm type: Any Actions status: Any < 1 > ⚙️						
<input type="checkbox"/>	Name	State	Last state update	Conditions	Actions	
<input type="checkbox"/>	CPUgreaterthen65tosendSNS	🟢 OK	2024-04-04 07:05:38	EstimatedCharges > 500 for 1 datapoints within 6 hours	🟢 Actions enabled	

Thank You