

ASSESSMENT - 17

SNS, SES, Cloudwatch

**TO
THE
NEW.**



1. Monitor Your Estimated Charges Using CloudWatch

Step 1: Enable Billing Alerts

Step 2: Create a Billing Alarm

Step 3: Check the Alarm Status

Step 4: Create & Subscribe to SNS Topic

Step 5: Send a notification to all the stakeholder, if AWS resource pricing reaches the threshold value.

Billing Preferences

☐ **Receive PDF Invoice By Email**

Turn on this feature to receive a PDF version of your invoice by email.

Cost Management Preferences

☒ **Receive Free Tier Usage Alerts**

Turn on this feature to receive email alerts when your AWS service usage reaches the free tier limit. You can receive these alerts at an email address that is not the primary email address.

Email Address:

☒ **Receive Billing Alerts**

Turn on this feature to monitor your AWS usage charges and receive email alerts when they reach a threshold. You can set up billing alerts to receive email notifications when you reach a threshold. [Manage Billing Alerts](#) or [try the new budgets feature!](#)

Specify metric and conditions

Metric

Graph

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

Select metric

All metricsGraphed metricsGraph optionsSource

Q Search for any metric, dimension or resource id

1,634 Metrics

ApplicationELB

84 Metrics

Billing

12 Metrics

All metricsGraphed metricsGraph optionsSource

All > Billing

Q Search for any metric, dimension or resource id

12 Metrics

By Service

11 Metrics

Total Estimated Charge

1 Metric

All metricsGraphed metrics (1)Graph optionsSource

All > Billing > Total Estimated Charge

Q Search for any metric, dimension or resource id

<input checked="" type="checkbox"/>	Currency (1)	Metric Name
<input checked="" type="checkbox"/>	USD	EstimatedCharges

Specify metric and conditions

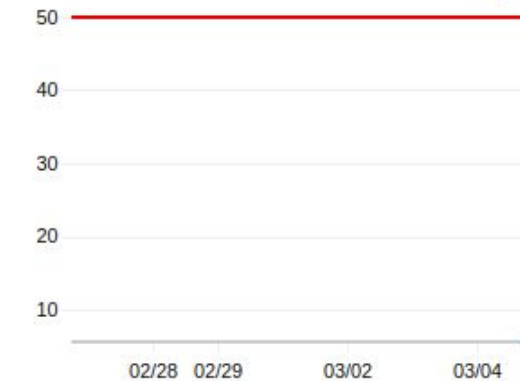
Metric

[Edit](#)

Graph

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

No unit



■ EstimatedCharges

Namespace

AWS/Billing

Metric name

EstimatedCharges

Currency

USD

Statistic

Q 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.

50



USD


Must be a number

Create topic

Details

Name

Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).

 **Topic Billing created successfully.**
You can create subscriptions and send messages to them from this topic.

[Amazon SNS](#) > [Topics](#) > Billing

Billing

Details

Name	Display name
Billing	-
ARN	Topic owner
arn:aws:sns:us-east-1:044650439222:Billing	044650439222

Create subscription

Details

Topic ARN

arn:aws:sns:us-east-1:044650439222:Billin

Protocol

The type of endpoint to subscribe

Email

Endpoint

An email address that can receive notifications from Amazon SNS.

garimadabral1724@gmail.com

✓ Subscription to Billing created successfully.
The ARN of the subscription is arn:aws:sns:us-east-1:044650439222:Billing:b0b1f854-202f-4350-bbde-b26c849a0f2f.

[Amazon SNS](#) > [Topics](#) > [Billing](#) > Subscription: b0b1f854-202f-4350-bbde-b26c849a0f2f

Subscription: b0b1f854-202f-4350-bbde-b26c849a0f2f

Details

ARN

arn:aws:sns:us-east-1:044650439222:Billing:b0b1f854-202f-4350-bbde-b26c849a0f2f

Endpoint

garimadabral1724@gmail.com

Topic

[Billing](#)

Status

⌚ Pending confirmation

Protocol

EMAIL

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.

Select an 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

Send a notification to...



Billing



Only email lists for this account are available.

Email (endpoints)

garimadabral1724@gmail.com - [View in SNS Console](#)

Add name and description

Name and description

Alarm name

Define a unique name.

garima_dabral_billing_alert

✔ Successfully created alarm garima_dabral_billing_alert.

CloudWatch > Alarms

Billing alarms (1) ☐ Hide Auto Scaling alarms Clear selection ↻ Create

<input type="checkbox"/>	Name	State
<input type="checkbox"/>	garima_dabral_billing_alert	⋮ Insufficient data

2. Create a custom Memory metric in CloudWatch and set up an alarm at 80 % which will autoscale the instance in the autoscaling group.

Launch Instance Connect Actions

Add filter

<input type="checkbox"/>	Name	Instance ID	Instance Type	Availability Zone
<input checked="" type="checkbox"/>	cloudwatch instance	i-0561fbf874fb7bf32	t2.micro	us-east-1c

Create role

Select type of trusted entity



AWS service
EC2, Lambda and others



Another AWS account
Belonging to you or 3rd party

Allows AWS services to perform actions on your behalf. [Learn more](#)

Choose a use case

Common use cases

EC2

Allows EC2 instances to call AWS services on your behalf.


Create role

▼ Attach permissions policies

Choose one or more policies to attach to your new role.

Create policy

Filter policies ▼

	Policy name ▼
<input checked="" type="checkbox"/>	 CloudWatchFullAccess

Create role

Delete role

Role name ▼	Trusted entities
<input checked="" type="checkbox"/> Garima	AWS service: ec2

Attach/Replace IAM Role

Select an IAM role to attach to your instance. If you don't have any IAM roles, choose Create new IAM role. If an IAM role is already attached to your instance, the IAM role you choose will replace the existing role.

Instance ID i-0561fbf874fb7bf32 (cloudwatch instance) ⓘ

IAM role*



```
garima@garima:~$ cd /home/garima/Downloads/
garima@garima:~/Downloads$ ssh -i newawskeypair.pem ubuntu@18.206.117.20
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)
```

```
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:        https://ubuntu.com/advantage
```

```
#!/bin/bash
USEDMEMORY=$(free -m | awk 'NR==2{printf "%.2f\t", $3*100/$2 }')
TCP_CONN=$(netstat -an | wc -l)
TCP_CONN_PORT_80=$(netstat -an | grep 80 | wc -l)
USERS=$(uptime | awk '{ print $6 }')
IO_WAIT=$(iostat | awk 'NR==4 {print $5}')

aws cloudwatch put-metric-data --metric-name memory-usage --dimensions Instance=i-0561fbf874fb7bf32 --namespace "Custom" --value $USEDMEMORY
aws cloudwatch put-metric-data --metric-name Tcp_connections --dimensions Instance=i-0561fbf874fb7bf32 --namespace "Custom" --value $TCP_CONN
aws cloudwatch put-metric-data --metric-name TCP_connection_on_port_80 --dimensions Instance=i-0561fbf874fb7bf32 --namespace "Custom" --value $TCP_CONN_PORT_80
aws cloudwatch put-metric-data --metric-name No_of_users --dimensions Instance=i-0561fbf874fb7bf32 --namespace "Custom" --value $USERS
aws cloudwatch put-metric-data --metric-name IO_WAIT --dimensions Instance=i-0561fbf874fb7bf32 --namespace "Custom" --value $IO_WAIT
```

```
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
1 * * * * /home/ubuntu/script.sh
```

```
ubuntu@ip-172-31-84-235:~$ vim script.sh
ubuntu@ip-172-31-84-235:~$ ./script.sh
ubuntu@ip-172-31-84-235:~$ cat script.sh
#!/bin/bash
USEDMEMORY=$(free -m | awk 'NR==2{printf "%.2f\t", $3*100/$2 }')

aws cloudwatch put-metric-data --metric-name memory-usage --dimensions Instance=
$(ec2metadata --instance-id) --namespace "garima-Custom" --value $USEDMEMORY --
region us-east-1
ubuntu@ip-172-31-84-235:~$ crontab -e
no crontab for ubuntu - using an empty one

Select an editor. To change later, run 'select-editor'.
 1. /bin/nano          <---- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny
 4. /bin/ed

Choose 1-4 [1]: 1
crontab: installing new crontab
```

Create Launch Configuration

Name

first config

Purchasing option

☐ Request Spot Instances

IAM role

None

Monitoring

☐ Enable CloudWatch detailed monitoring

[Learn more](#)

Launch configuration creation status

Successfully created launch configuration: first config

[View creation log](#)

- ▼ View
- [View your launch configurations](#)
- [View your Auto Scaling groups](#)

Create Auto Scaling Group

Group name

first auto scale

Launch Configuration

first config

Group size

Start with

1

instances

Network

vpc-7f05ba05 (172.31.0.0/16) | default VPC (default)

Subnet

subnet-074b245b(172.31.32.0/20) | Default in us-east-1a

subnet-8a6406ed(172.31.0.0/20) | Default in us-east-1b

subnet-0f452c21(172.31.80.0/20) | Default in us-east-1c

Auto Scaling group creation status



Successfully created Auto Scaling group

[View creation log](#)

▼ View

[View your Auto Scaling groups](#)

[View your launch configurations](#)

[CloudWatch](#) > [Alarms](#) > Create alarm

Step 1

**Specify metric and
conditions**

Step 2

Configure actions

Step 3

Add name and
description

Specify metric and conditions

Metric

Graph

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

[Select metric](#)

Select metric

Untitled graph 



All metrics

Graphed metrics

Graph options

Source

 Search for any metric, dimension or resource id

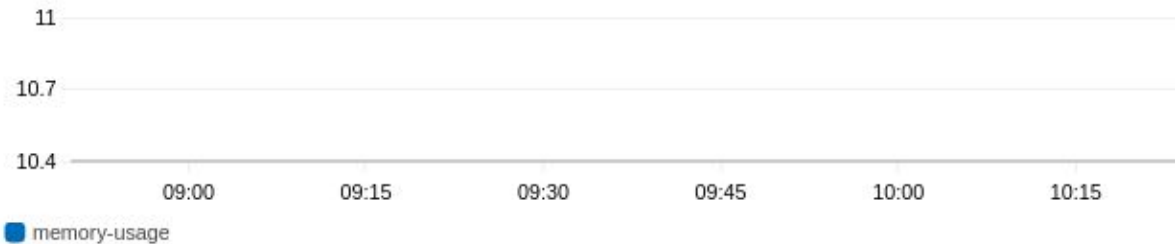
1,620 Metrics

garima-Custom

Select metric

Untitled graph 

No unit



All metrics		Graphed metrics (1)	Graph options	Source
All > garima-Custom > Instance		<input type="text" value="Search for any metric, dimension or resource id"/>		
<input checked="" type="checkbox"/>	Instance (1)			Metric
<input checked="" type="checkbox"/>	i-0561fbf874fb7bf32			memor

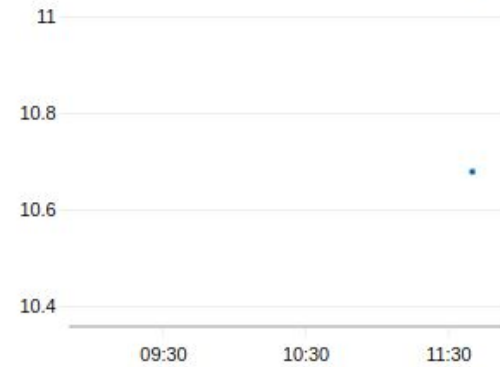
Metric

[Edit](#)

Graph

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

No unit



memory-usage

Namespace

garima-Custom

Metric name

memory-usage

Instance

i-0561fbf874fb7bf32

Statistic

Average

Period

5 minutes

Conditions

Threshold type

☒ Static

Use a value as a threshold

☐ Anomaly detection

Use a band as a threshold

Whenever memory-usage is...

Define the alarm condition.

☒ Greater

> threshold

☐ Greater/Equal

>= threshold

☐ Lower/Equal

<= threshold

☐ Lower

< threshold

than...

Define the threshold value.

80

Must be a number

► Additional configuration

Add name and description

Name and description

Alarm name

Define a unique name.




garima alarm

Alarm description - *optional*

Define a description for this alarm.

 Successfully created alarm garima alarm.

CloudWatch > Alarms

Alarms (1)		<input type="checkbox"/> Hide Auto Scaling alarms	Clear selection		Cancel
<div> Search</div>					
<input type="checkbox"/>	Name			State	
<input type="checkbox"/>	garima alarm			 Insufficient data	

Create Auto Scaling group

Actions ▾

Filter:

<input type="checkbox"/>	Name	Launch Configuration / ▾	Instances ▾	Desired ▾	Min ▾	Max ▾	Availability Zones ▾	Default
<input type="checkbox"/>	first auto scale	first config	1	1	1	2	us-east-1a, us-east-1b, us-e...	300

Create Scaling policy

Name:

Execute policy when:  [Create new alarm](#)

breaches the alarm threshold: memory-usage > 80 for 300 seconds
for the metric dimensions Instance = i-0561fbf874fb7bf32

Take the action: when <= memory-usage < +infinity

[Add step](#) ⓘ

Instances need: seconds to warm up after each step

3. Create SNS topics, subscribe to a topic, publish a message, unsubscribe the message and delete the topic.

Amazon SNS > Topics > Create topic

Create topic

Details

Name

NewTopic

Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).

Display name - optional

To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message. [Info](#)

My Topic

Maximum 100 characters, including hyphens (-) and underscores (_).

✔

Topic NewTopic created successfully.

You can create subscriptions and send messages to them from this topic.

Amazon SNS > Topics > NewTopic

NewTopic

Details

Name

NewTopic

ARN

arn:aws:sns:us-east-1:044650439222:NewTopic

Display name

-

Topic owner

044650439222

Create subscription

Details

Topic ARN

arn:aws:sns:us-east-1:044650439222:NewT X

Protocol

The type of endpoint to subscribe

Email ▼

Endpoint

An email address that can receive notifications from Amazon SNS.

garimadabral1724@gmail.com

ⓘ After your subscription is created, you must confirm it. [Info](#)

AWS Notification - Subscription Confirmation

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

to me ▼

You have chosen to subscribe to the topic:

arn:aws:sns:us-east-1:044650439222:NewTopic

To confirm this subscription, click or visit the link below (If this was in error no a

[Confirm subscription](#)



Simple Notification Service

Subscription confirmed!

You have subscribed garimadabral1724@gmail.com to the topic:
NewTopic.

Your subscription's id is:
arn:aws:sns:us-east-1:044650439222:NewTopic:1ef29046-a171-43e6-a7e0-735008523c74

If it was not your intention to subscribe, [click here to unsubscribe](#).

Subscription: 1ef29046-a171-43e6-a7e0-735008523c74

Details

ARN

arn:aws:sns:us-east-1:044650439222:NewTopic:1ef29046-a171-43e6-a7e0-735008523c74

Endpoint

garimadabral1724@gmail.com

Topic

[NewTopic](#)

Status

✔ Confirmed

Protocol

EMAIL

Publish message to topic

Message details

Topic ARN

arn:aws:sns:us-east-1:044650439222:NewTopic

Subject - *optional*

Test Message

Maximum 100 printable ASCII characters

Message body

Message structure

- ☒ Identical payload for all delivery protocols.

The same payload is sent to endpoints subscribed to the topic, regardless of their delivery protocol.

- ☐ Custom payload for each delivery protocol.

Different payloads are sent to endpoints subscribed to the topic, based on their delivery protocol.

Message body to send to the endpoint

```
1 This is a test Message for assignment
```

✓ Message published to topic NewTopic successfully.
Message "ID": d94a9dc1-42a9-5d9a-b7b6-cb1bdbaeef7c

[Amazon SNS](#) > [Topics](#) > NewTopic

NewTopic

Details

Name
NewTopic

ARN
arn:aws:sns:us-east-1:044650439222:NewTopic

Display name
-

Topic owner
044650439222

Test Message Inbox ✕

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

to me ▾

This is a test Message for assignment


--



Simple Notification Service

Subscription removed!

Your subscription, arn:aws:sns:us-east-1:044650439222:NewTopic:1ef29046-a171-43e6-a7e0-735008523c74, has been deleted.

Subscriptions (1)		Edit	Delete	Request confirmation
<input type="text" value="Search"/>				
ID	▼	Endpoint		
	Deleted	garimadabral1724@gmail.com		

Delete topic NewTopic

×

Are you sure you want to delete topic **NewTopic** permanently? **You can't undo this action.**

To confirm deletion, enter the phrase **delete me**.

Cancel

Delete

4. Send a sample mail using SES.

SES Home

Identity Management

Domains

Email Addresses

Email Sending

Sending Statistics

Reputation Dashboard

Dedicated IPs

Configuration Sets

SMTP Settings

Suppression List

Using SMTP to Send Email with Amazon SES

You can send email through Amazon SES by using applications or programming languages that support [the Amazon SES SMTP Interface to Send Email](#).

To send email by using the SMTP interface, you need the following information:

Server Name:	email-smtp.us-east-1.amazonaws.com
Port:	25, 465 or 587
Use Transport Layer Security (TLS):	Yes
Authentication:	Your SMTP credentials. See below for more information.

To send email using the Amazon SES SMTP interface, you first have to create a SMTP credential set. To connect to an Amazon SES SMTP endpoint, SMTP credentials are unique to each AWS Region. For each Region, you can create up to 10 SMTP credential sets.

To obtain SMTP credentials for the current Region, choose [Create My SMTP Credentials](#).

Create My SMTP Credentials

Create User for SMTP

This form lets you create an IAM user for SMTP authentication with Amazon SES. Enter the name of a new IAM user.

IAM User Name:

Maximum 64 characters

[Show More Information](#)

SES Home

Identity Management

Domains

Email Addresses

Verify a New Email Address

Send a Test Email

Remove

View Details

[All identities](#)

☐

Email Address Identities

You have not verified any email addresses.

To verify a email address, click the [Verify a New Email Address](#) button above.

resses **All identities** ▾

Verify a New Email Address

To verify a new email address, enter it below and click the **Verify This Email Address** button. A verification email will be sent to the email address you entered.

Email Address:

[Cancel](#) [Verify This Email Address](#)

Verify a New Email Address	Send a Test Email	Remove	View Details
<input type="text" value="Search email addresses"/>	All identities ▾		
<input type="checkbox"/>	Email Address Identities		Verification
<input type="checkbox"/>	▶ garimadabral1724@gmail.com		verified

[Email Addresses](#) > [garimadabral1724@gmail.com](#)

Enabled for Sending: [Yes](#)

Identity ARN: [arn:aws:ses:us-east-1:044650439222:identity/garimadabral1724@gmail.com](#)

▾ Verification

Status: [verified](#)

You can send email from this address.

Send a Test Email

Remove

View Details

Send Test Email

X

Complete the details below to send a test email to the selected email address.
[More options...](#)

Email Format:

☒ Formatted

☐ Raw

From*:

garimadabral1724@gmail.com

To*:

garimadabral1724@gmail.com

Subject*:

SES Testing Mail

Body:

This is a testing mail

* Required

Cancel

Send Test Email



garimadabral1724@gmail.com via [amazonses.com](#)
to me ▾

This is a testing mail

Hi, I got it.

It works!

Received your mail.