

**TO
THE
NEW™**



SNS,CloudWatch and SES

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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

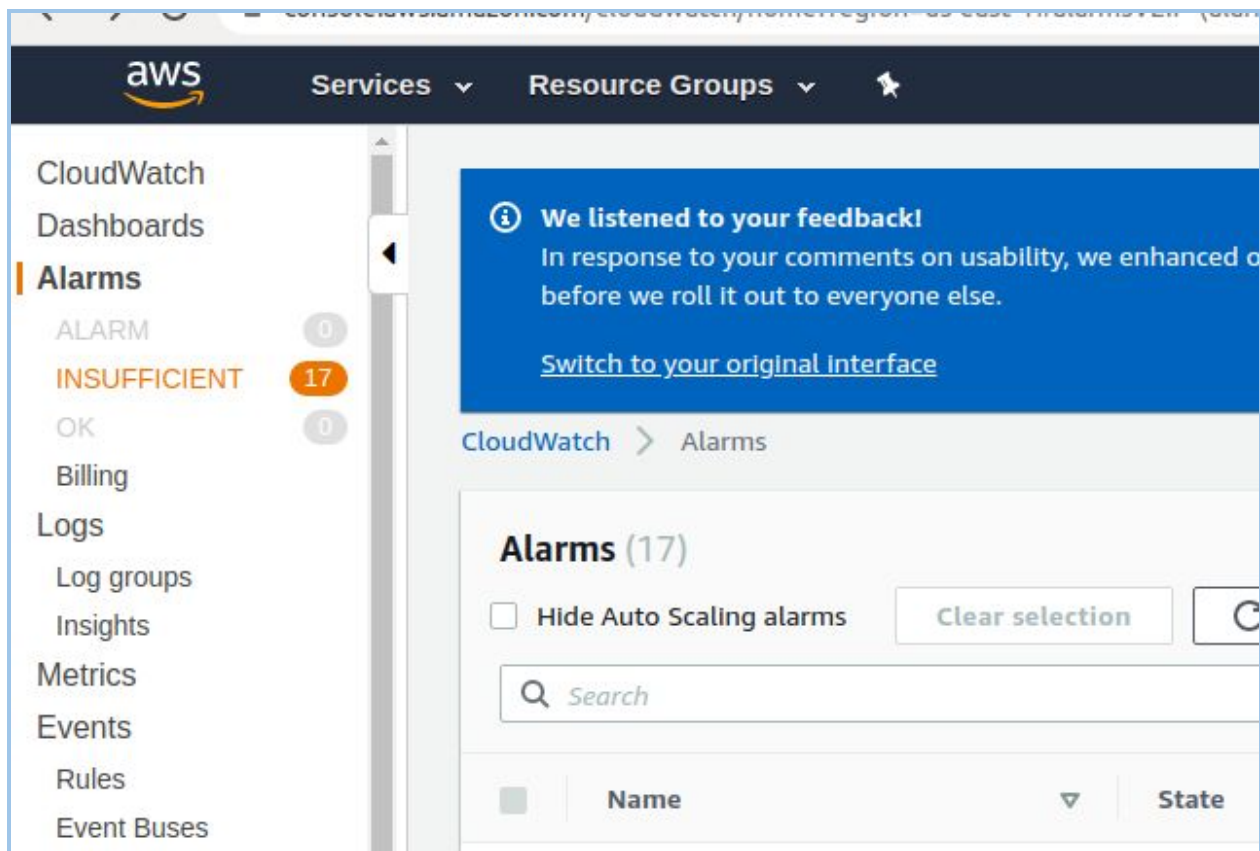
Step 5: Send a notification to all the stakeholder, if AWS resource pricing reaches the threshold value.

Ans.

Billing Matrix is not available.

Alarm created on CPU Utilization.

Step 1: Goto CloudWatch -> Alarms->Create Alarm



Step 2: Select a metric

Create alarm

Specify metric and conditions

Metric

Graph

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

Select metric

Cancel Next

Ec2 -> Per instance metric -> cpu utilization(a particular instance)

Used an instance already created in aws.

Select metric

Untitled graph 1h 3h 12h 1d 3d 1w

All metrics Graphed metrics (2) Graph options Source

All > EC2 > Per-Instance Metrics i-0392e6fd65fdf1c99 Search for any metric, dimension or resource id

<input type="checkbox"/>	Instance Name (17) ▲	InstanceId	Metric Name
<input type="checkbox"/>	Vedant-Instance	i-0392e6fd65fdf1c99	NetworkPacketsIn
<input type="checkbox"/>	Vedant-Instance	i-0392e6fd65fdf1c99	NetworkPacketsOut
<input checked="" type="checkbox"/>	Vedant-Instance	i-0392e6fd65fdf1c99	CPUUtilization
<input type="checkbox"/>	Vedant-Instance	i-0392e6fd65fdf1c99 ▼	NetworkIn ▼
<input type="checkbox"/>	Vedant-Instance	i-0392e6fd65fdf1c99	NetworkOut
<input type="checkbox"/>	Vedant-Instance	i-0392e6fd65fdf1c99	DiskReadBytes

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Specify metric condition.

> Create alarm

Specify metric and conditions

Metric

Edit

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

Percent

■ CPUUtilization

Namespace
AWS/EC2

Metric name
CPUUtilization

InstanceId
i-0392e6fd65fdf1c99

Instance name
Vedant-Instance

Statistic
Average

Specify a threshold value.

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.

15

Must be a number

► **Additional configuration**

Cancel **Next**

Configure actions -> create a topic

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...

Q

ChhaviSNSTopic

X

Only email lists for this account are available.

Email (endpoints)

chhavi.sharma@tothenew.com - [View in SNS Console](#)

In EC2 Action -> select the desired action to be taken.

EC2 action

Alarm state trigger

Define the alarm state that will trigger this action.

☒ In alarm

☐ OK

☐ Insufficient data

The metric or expression is outside of the defined threshold.

The metric or expression is within the defined threshold.

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

Remove

Take the following action...

Define what will happen to the EC2 instance with the Instance ID i-0392e6fd65fdf1c99 when this alarm is triggered.

☐ Recover this Instance

☐ Stop this Instance

☐ Terminate this instance

☒ Reboot this Instance

You can only recover certain EC2 instance types. [See documentation](#)

You can only stop an instance if it is backed by an EBS volume. AWS will use the existing Service Linked Role (AWSServiceRoleForCloudWatchEvents) to perform this action. [Show IAM policy document](#)

You will not be able to terminate this instance if termination protection is enabled. AWS will use the existing Service Linked Role (AWSServiceRoleForCloudWatchEvents) to perform this action. [Show IAM policy document](#)

An instance reboot is equivalent to an operating system reboot. AWS will use the existing Service Linked Role (AWSServiceRoleForCloudWatchEvents) to perform this action. [Show IAM policy document](#)

Add EC2 action

Cancel

Previous

Next

(US)

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Next. Create an alarm.

Alarms (21)

☐ Hide Auto Scaling alarms

Clear selection

Create composite alarm

Actions ▾

Create alarm

✕

OK ▾

Any type ▾

< 1 >

<input type="checkbox"/>	Name ▾	State ▾	Conditions	Actions ▾
<input type="checkbox"/>	ChhaviAlarm	OK	CPUUtilization > 15 for 1 datapoints within 5 minutes	Topic not found

Now confirm from your mail.

AWS Notification - Subscription Confirmation

Inbox ✕

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

6:20 PM (6 minutes ago) ☆ ↶ ⋮

You have chosen to subscribe to the topic:
arn:aws:sns:us-east-1:187632318301:ChhaviAlarm

To confirm this subscription, click or visit the link below (If this was in error no action is necessary):
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns-opt-out](#)

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

6:24 PM (3 minutes ago) ☆ ↶ ⋮

You have chosen to subscribe to the topic:
arn:aws:sns:us-east-1:187632318301:ChhaviSNSTopic



Simple Notification Service

Subscription confirmed!

You have subscribed `chhavi.sharma@tothenew.com` to the topic:
ChhaviAlarm.

Your subscription's id is:
`arn:aws:sns:us-east-1:187632318301:ChhaviAlarm:8c926e7b-66bc-4b9c-bb32-654f41e1ca52`

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

Description

Status Checks

Monitoring

Tags

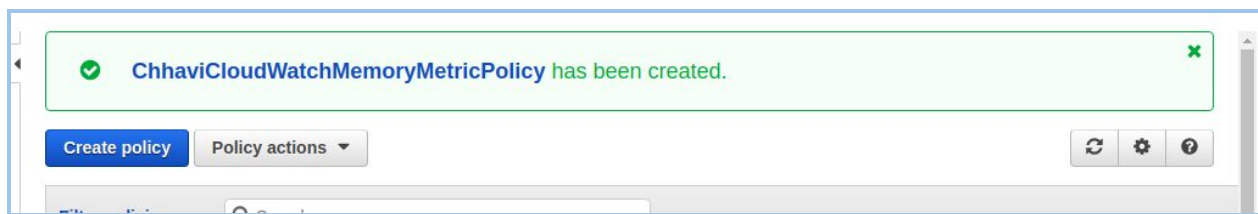
▶ CloudWatch alarms:  3 of 3 in OK

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

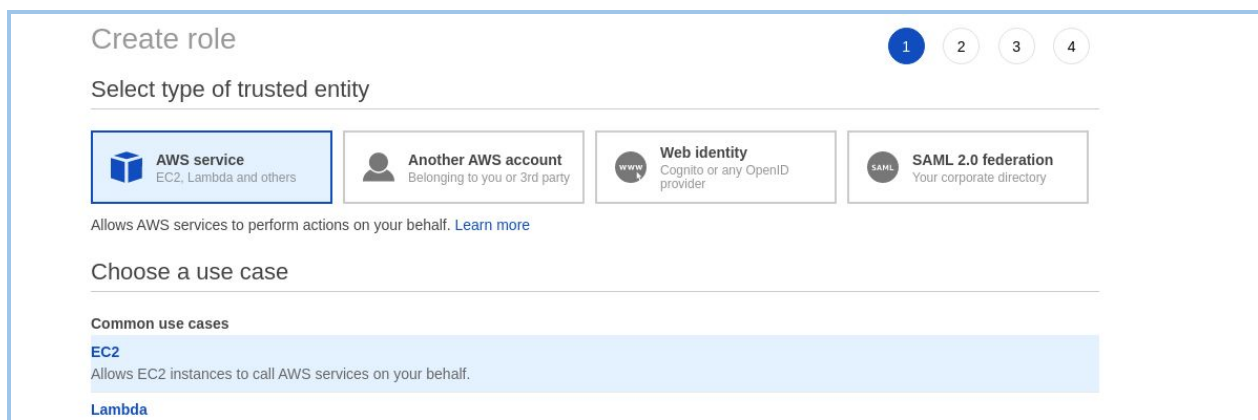
Ans.

Create a policy so that we can push the data from ec2 to cloudWatch.


```
1 {
2   "Version": "2012-10-17",
3   "Statement": [
4     {
5       "Sid": "VisualEditor0",
6       "Effect": "Allow",
7       "Action": "cloudwatch:PutMetricData",
8       "Resource": "*"
9     }
10  ]
11 }
```



Create a role for ec2.



Select the policies

Filter policies ▼		cloudwatch	Showing 27 results
	Policy name ▼	Used as	
<input type="checkbox"/>	AmazonAPIGatewayPushToCloudWatchLogs	Permissions policy (1)	
<input type="checkbox"/>	AmazonDMSCloudWatchLogsRole	None	
<input type="checkbox"/>	AWSAppSyncPushToCloudWatchLogs	None	
<input type="checkbox"/>	AWSOpsWorksCloudWatchLogs	None	
<input checked="" type="checkbox"/>	ChhaviCloudWatchMemoryMetricPolicy	None	
<input type="checkbox"/>	CloudWatch-CrossAccountAccess	None	
<input type="checkbox"/>	CloudWatchActionsEC2Access	None	
<input checked="" type="checkbox"/>	CloudWatchAgentAdminPolicy	Permissions policy (1)	

* Required Cancel Previous Next: Tags

->CloudWatchAgentAdminPolicy

Create role

1234

Review

Provide the required information below and review this role before you create it.

Role name*

ChhaviCloudWatchRole

Use alphanumeric and '+=, @-_' characters. Maximum 64 characters.

Role description

Allows EC2 instances to call AWS services on your behalf.

Maximum 1000 characters. Use alphanumeric and '+=, @-_' characters.

Trusted entities

AWS service: ec2.amazonaws.com

Policies

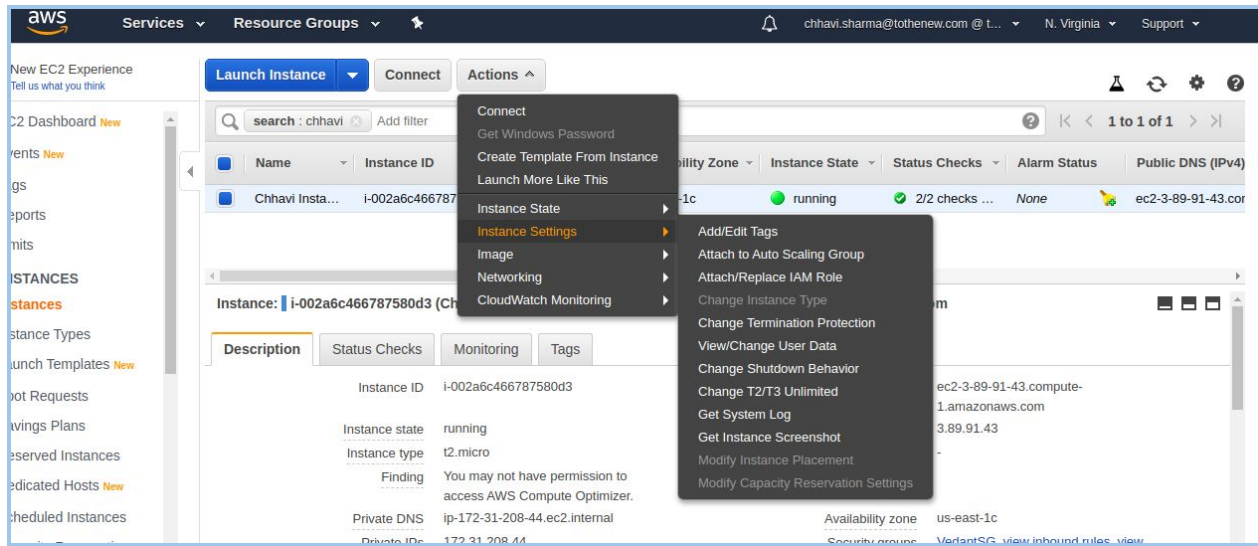
CloudWatchAgentAdminPolicy

ChhaviCloudWatchMemoryMetricPolicy

Permissions boundary

Permissions boundary is not set

Now attach the role created to your ec2 instance.



Instances > Attach/Replace IAM Role

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 to create a role in the IAM console. If an IAM role is already attached to your instance, the IAM role you choose will replace the existing role.

Instance ID i-002a6c466787580d3 (Chhavi Instance) ⓘ

IAM role* ⓘ Create new IAM role ⓘ

* Required

Now ssh into your instance.

Paste the following script and run the script.

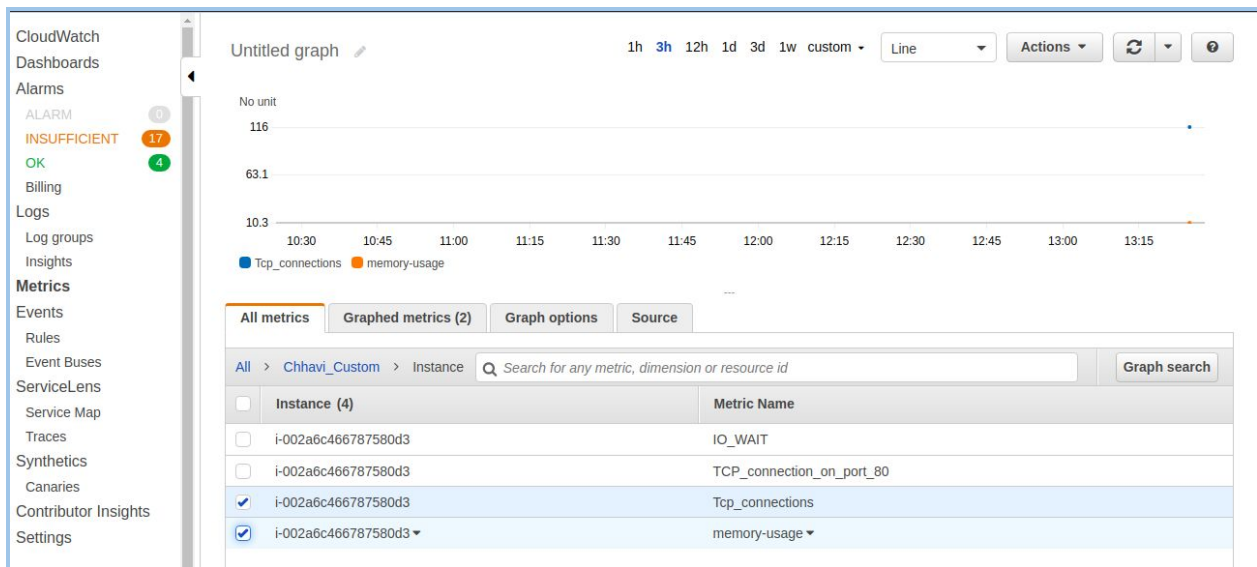
```
#!/bin/bash
USEDMEMORY=$(free -m | awk 'NR==2{printf "%.2f\t", $3*100/$2 }')
TCP_CONN=$(netstat -an | wc -l)
TCP_CONN_PORT_80=$(netstat -an | grep 80 | wc -l)
USERS=$(uptime | awk '{ print $6 }')
IO_WAIT=$(iostat | awk 'NR==4 {print $5}')

aws cloudwatch put-metric-data --metric-name memory-usage --dimensions Instance=i-002a6c466787580d3 --namespace "Chhavi_Custom" --value $USEDMEMORY
aws cloudwatch put-metric-data --metric-name Tcp_connections --dimensions Instance=i-002a6c466787580d3 --namespace "Chhavi_Custom" --value $TCP_CONN
aws cloudwatch put-metric-data --metric-name TCP_connection_on_port_80 --dimensions Instance=i-002a6c466787580d3 --namespace "Chhavi_Custom" --value $TCP_CONN_PORT_80
aws cloudwatch put-metric-data --metric-name No_of_users --dimensions Instance=i-002a6c466787580d3 --namespace "Chhavi_Custom" --value $USERS
aws cloudwatch put-metric-data --metric-name IO_WAIT --dimensions Instance=i-002a6c466787580d3 --namespace "Chhavi_Custom" --value $IO_WAIT
```

(install iostat)

```
ubuntu@ip-172-31-208-44:~$ ./script.sh
[<class 'decimal.ConversionSyntax'>]
ubuntu@ip-172-31-208-44:~$
```

Now goto your console. Goto CloudWatch and select metric. choose your metric.



Now create an alarm for 80% utilization in memory.

Now when you create an alarm you will get your metric to choose.

All metrics | Graphed metrics | Graph options | Source

Search for any metric, dimension or resource id

28,247 Metrics

Chhavi_Custom Custom

Set threshold to 80 %

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

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.

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...

Q ChhaviSNSTopic X

Only email lists for this account are available.

Email (endpoints)
chhavi.sharma@tothenew.com - [View in SNS Console](#)

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.

Resource type
Select a resource type.

☒ **EC2 Auto Scaling group**

☐ ECS Service

Select a group

Chhavi-CloudWatch-ASG ▼

Only Auto Scaling groups with a simple scaling or step scaling policy in this account are available.

Take the following action...

Chhavi-ScalingPolicy (Add 1 Instance) ▼

Only actions for the selected Auto Scaling group are available.

Add Auto Scaling action

Add name and description

Name and description

Alarm name

Define a unique name.

Alarm description - optional

Define a description for this alarm.

Up to 1024 characters (28/1024)

Cancel

Previous

Next

Create Scaling policy

Cancel

Create

Name:

Execute policy when:



[Create new alarm](#)

breaches the alarm threshold: memory-usage > 80 for 300 seconds
for the metric dimensions Instance = i-002a6c466787580d3

Take the action:

And then wait: seconds before allowing another scaling activity

ish (US)

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CloudWatch > Alarms > ChhaviCWAAlarm

ChhaviCWAAlarm



Add to dashboard

Edit

Delete

Copy

Graph

[View in metrics](#)

memory-usage

memory-usage > 80 for 1 datapoints within 5 minutes

Insufficient data

81

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

Ans.

Step 1: Select SNS Service -> Select Topic from the left menu. -> Create Topic

The screenshot shows the 'Create topic' page in the Amazon SNS console. The breadcrumb trail is 'Amazon SNS > Topics > Create topic'. The main heading is 'Create topic'. Below it is a 'Details' section with two input fields. The first field is 'Name' with the value 'ChhaviSNSTopicMain' and a note: 'Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).' The second field is 'Display name - optional' with the value 'My Topic' and a note: 'To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message. Info'. Below this field is another note: 'Maximum 100 characters, including hyphens (-) and underscores (_).'.

The screenshot shows the 'ChhaviSNSTopicMain' topic page in the Amazon SNS console. A green success banner at the top says 'Topic ChhaviSNSTopicMain created successfully. You can create subscriptions and send messages to them from this topic.' with a 'Publish message' button. The breadcrumb trail is 'Amazon SNS > Topics > ChhaviSNSTopicMain'. The main heading is 'ChhaviSNSTopicMain' with 'Edit', 'Delete', and 'Publish message' buttons. Below it is a 'Details' section with a table of topic information.

Details	
Name	ChhaviSNSTopicMain
ARN	arn:aws:sns:us-east-1:187632318301:ChhaviSNSTopicMain
Display name	-
Topic owner	187632318301

Step 2: Create a subscription.

Amazon SNS > Subscriptions > Create subscription

Create subscription

Details

Topic ARN

Protocol
The type of endpoint to subscribe

Email

Endpoint
An email address that can receive notifications from Amazon SNS.

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

Step 3:

Amazon SNS > Topics > ChhaviSNSTopicMain > Publish message

Publish message to topic

Message details

Topic ARN
arn:aws:sns:us-east-1:187632318301:ChhaviSNSTopicMain

Subject - optional

Maximum 100 printable ASCII characters

Time to Live (TTL) - optional
This setting applies only to mobile application endpoints. The number of seconds that the push notification service has to deliver the message to the endpoint. [Info](#)

Message body

Step 4:

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 Hey!  
2 My First Message.
```

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Step 5: Confirm Subscription.

 **AWS Notifications** <no-reply@sns.amazonaws.com> 10:37 AM (2 minutes ago) ☆ ↩ ⋮
to me ▾

You have chosen to subscribe to the topic:
arn:aws:sns:us-east-1:187632318301:ChhaviSNSTopicMain

...

To confirm this subscription, click or visit the link below (If this was in error no action is necessary):
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns-opt-out](#)



Simple Notification Service

Subscription confirmed!

You have subscribed `chhavi.sharma@tothenew.com` to the topic:
`ChhaviSNSTopicMain`.

Your subscription's id is:
`arn:aws:sns:us-east-1:187632318301:ChhaviSNSTopicMain:c65f1d26-cc85-4779-9e80-eb70e4a53881`

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

4. Send a sample mail using SES.

Ans. Not Authorized to perform this action.

The screenshot shows the Amazon SES console interface. On the left is a navigation sidebar with links like 'Identity Management', 'Domains', 'Email Addresses', 'Email Sending', 'Sending Statistics', 'Reputation Dashboard', 'Dedicated IPs', 'Configuration Sets', 'SMTP Settings', 'Suppression List Removal', 'Cross-Account Notifications', and 'Email Templates'. The main content area is divided into two sections: 'Your Amazon SES Sending Limits' and 'Your Amazon SES Metrics'. Both sections display a red error message box at the top stating: 'User: arn:aws:iam::187632318301:user/chhavi.sharma@tothenew.com is not authorized to perform: ses:GetSendQuota (Request ID: 168eea81-6084-4e3b-a815-3ada2864095b)' for the first section, and 'ses:GetSendStatistics (Request ID: 129d2df1-3924-4335-8074-7b9cc691b7eb)' for the second. Below the error messages, the 'Sending Limits' section provides statistics like 'Sending Quota', 'Quota Used', 'Max Send Rate', and 'Last updated'. The 'Metrics' section includes a paragraph about charts showing email delivery, rejection, bounce, and complaint rates over the past two weeks.