1. **Monitor Your Estimated Charges Using CloudWatch**

Step 1: Enable Billing Alerts

Step 2: Create a Billing Alarm

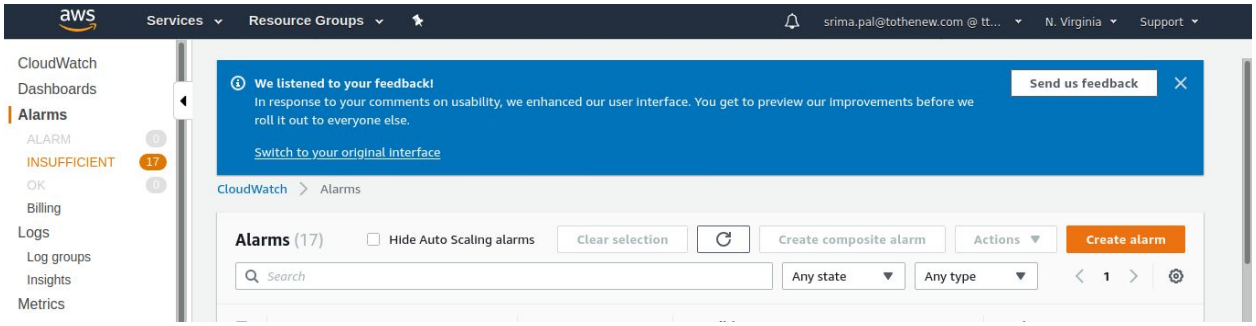
Step 3: Check the Alarm Status

Step 4: Create & Subscribe to SNS Topic

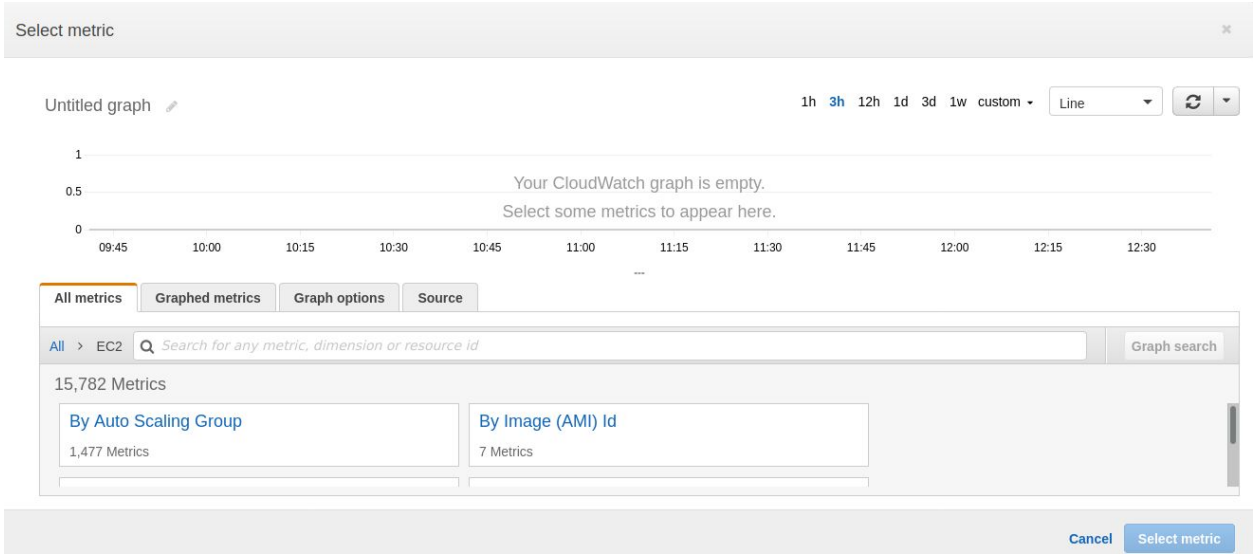
Step 5: Send a notification all the stakeholder, if AWS resource pricing reaches the threshold value.

(Billing metric not available, Creating ec2 alarm instance)

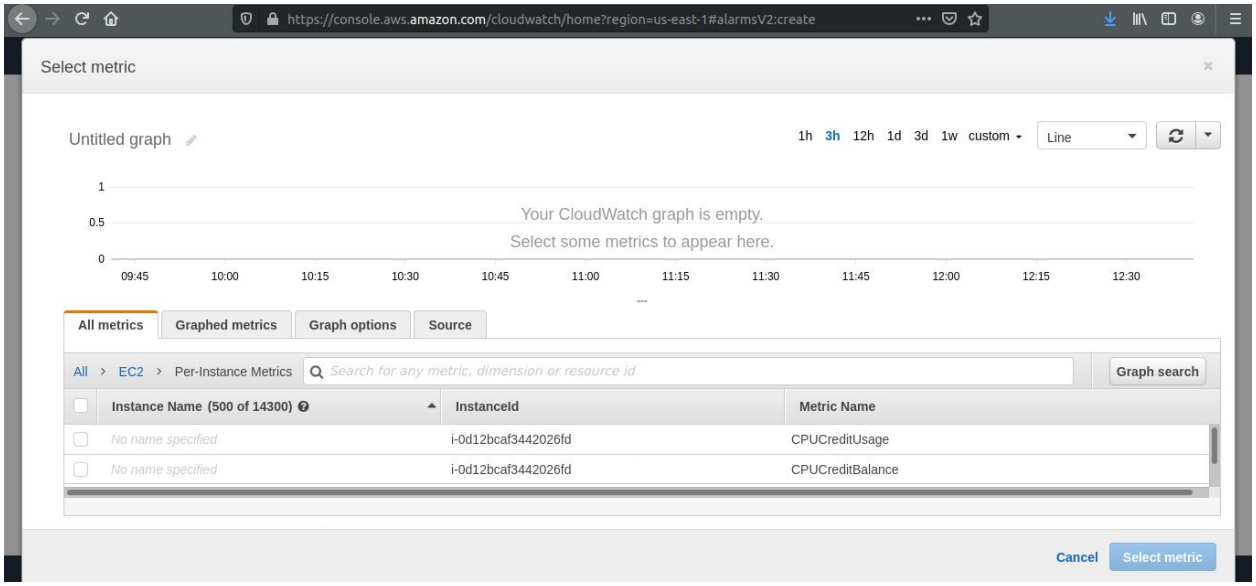
Go to cloudwatch, Alarms



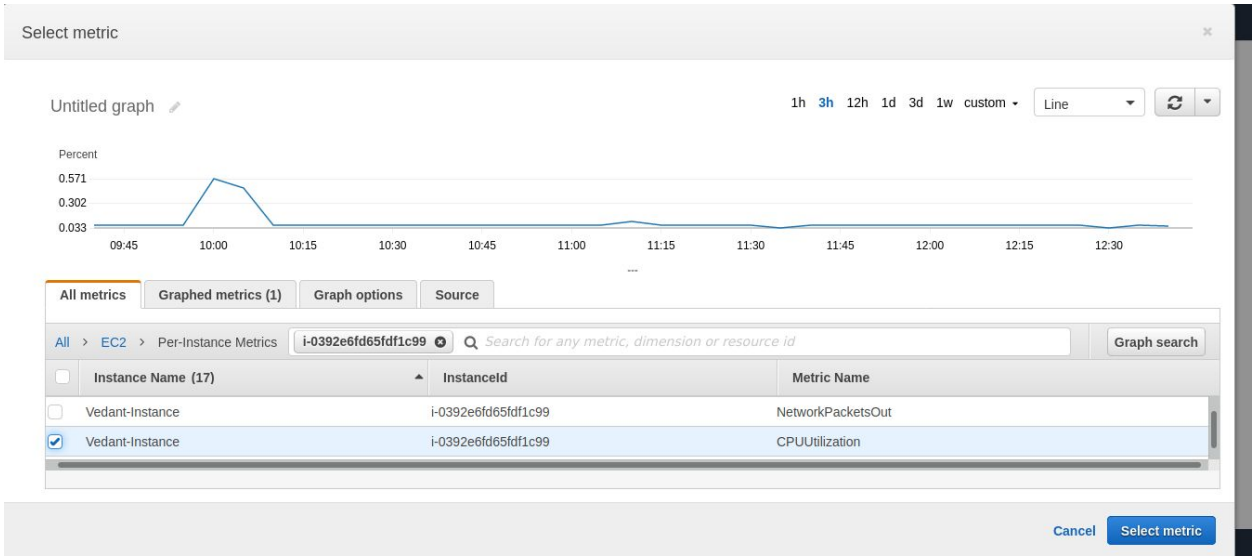
Select metric (EC2)



Per instance metric

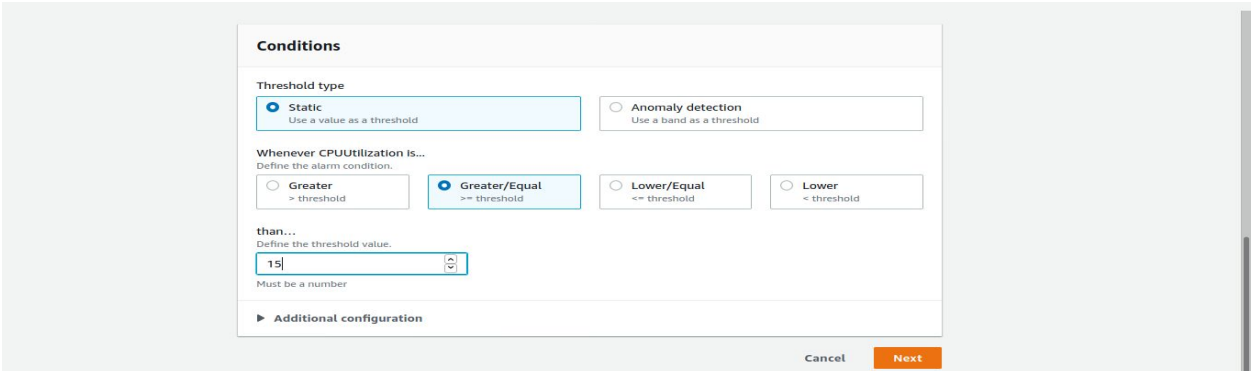


Copy the instance id and search for the instance, select CPU Utilization

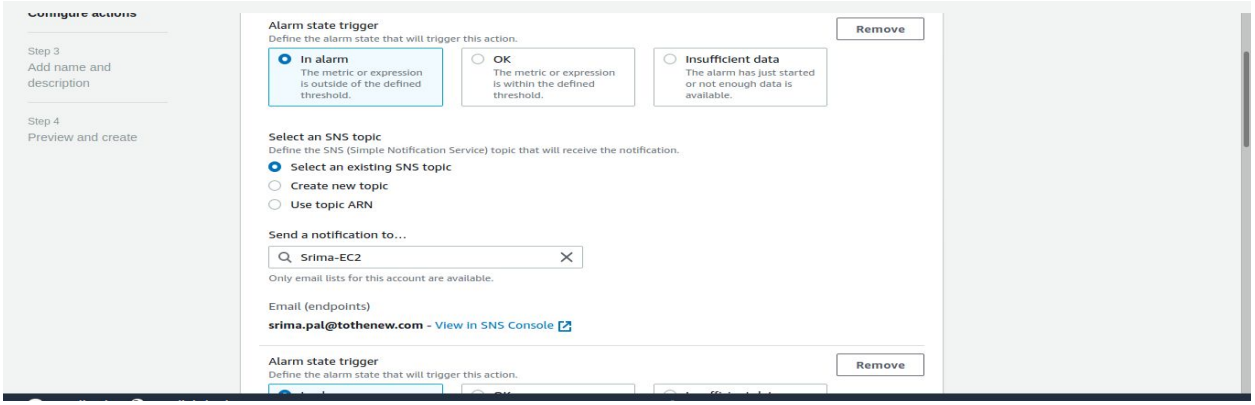


Click on select metric

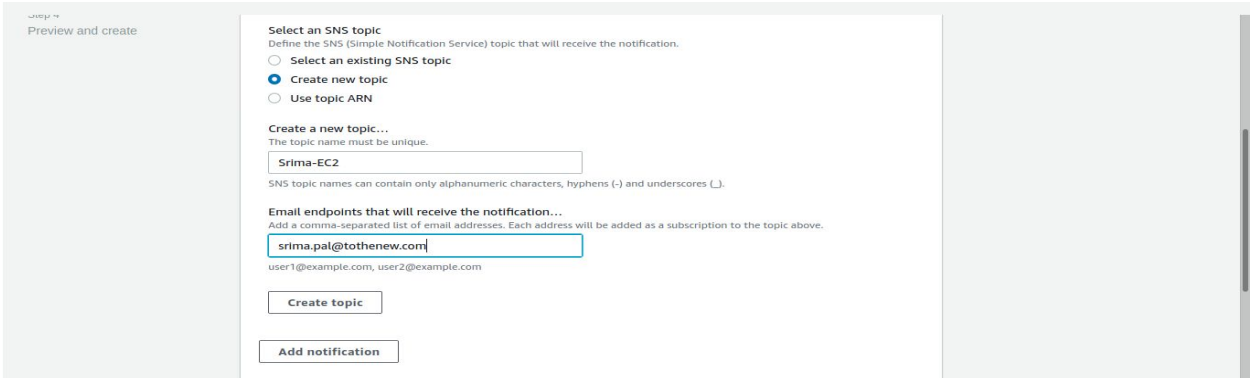
Give threshold, and click next



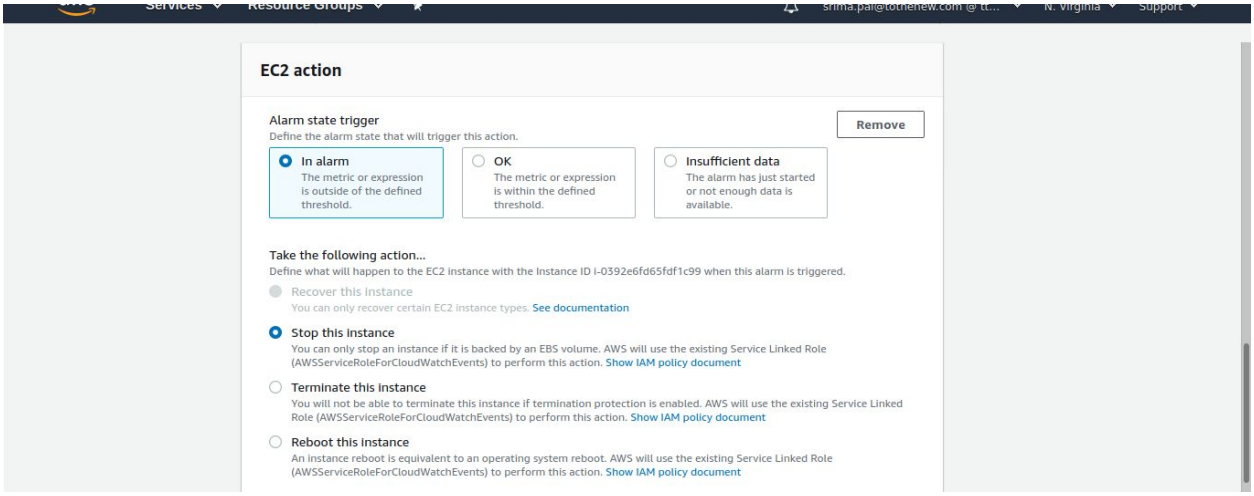
Now select the created(existing topic)



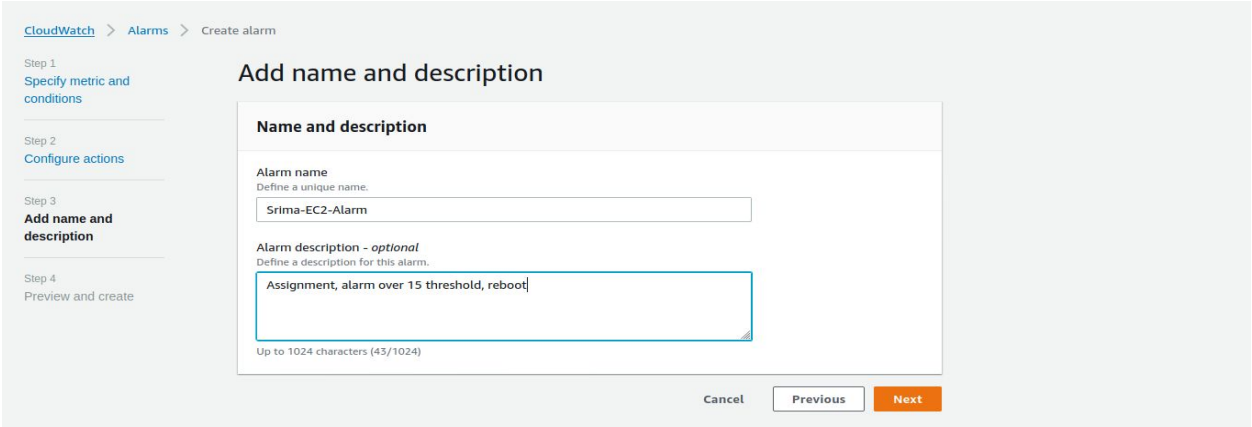
Create SNS topic to send notification



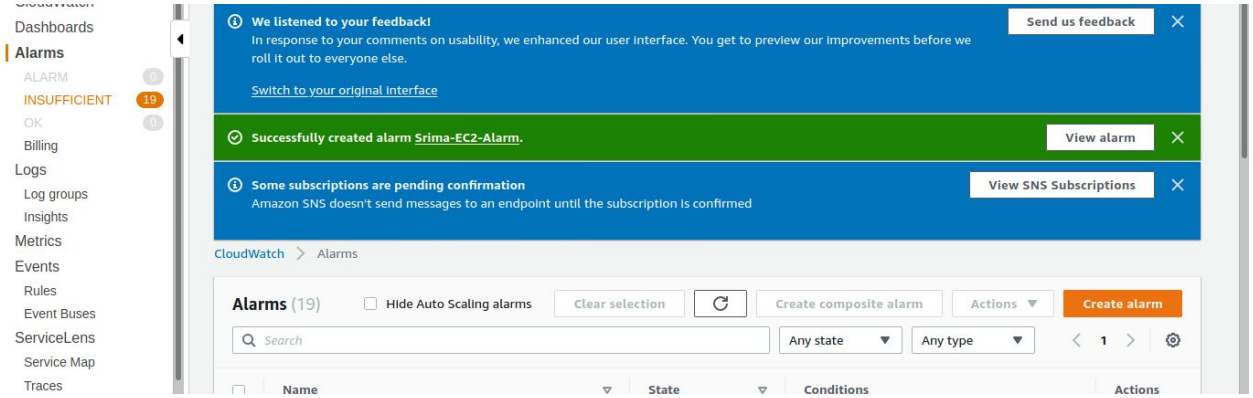
Create EC2 action on reaching the threshold



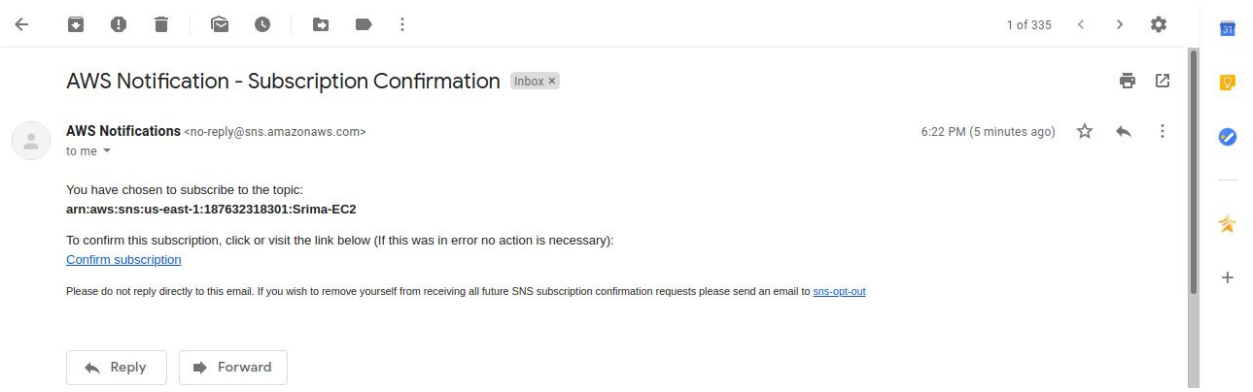
Give alarm name and description

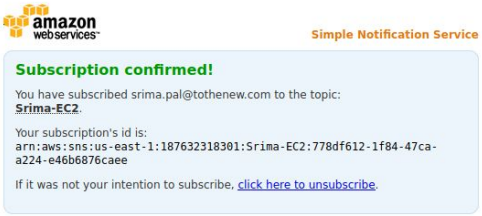


Alarm created

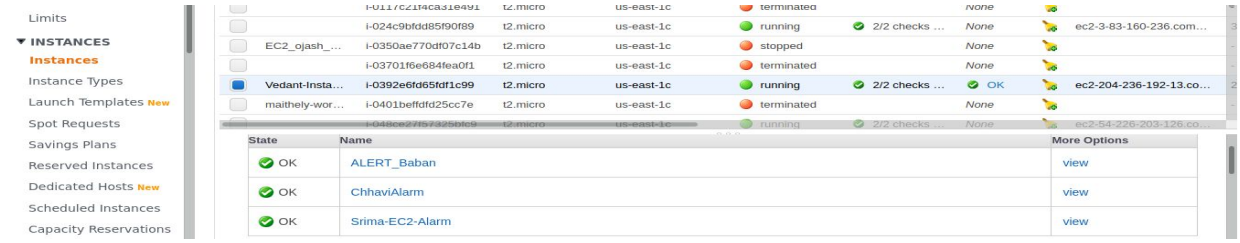


Confirm the email



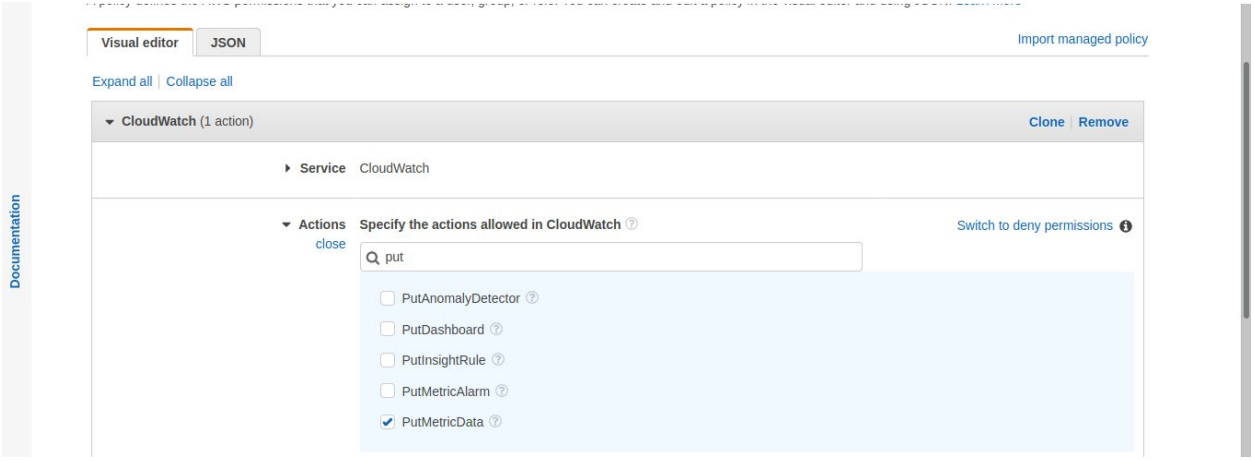


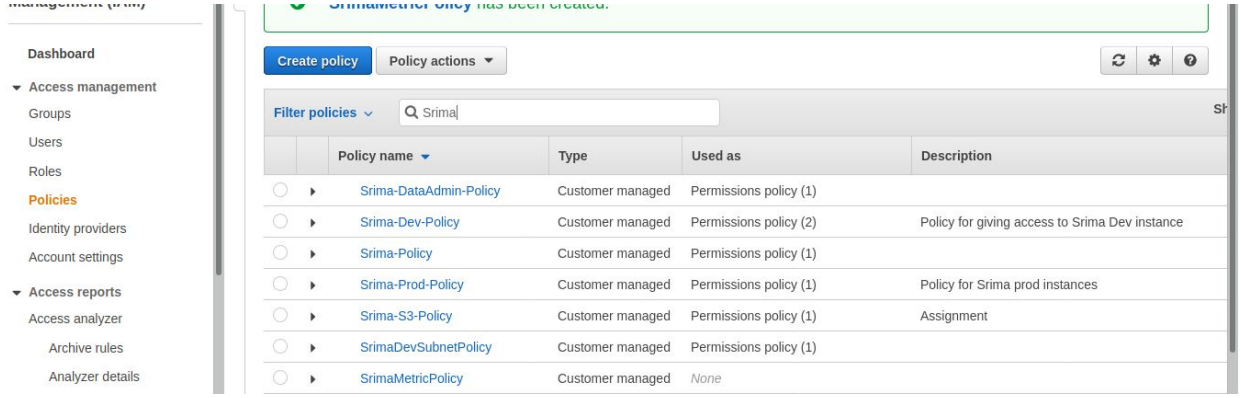
View status



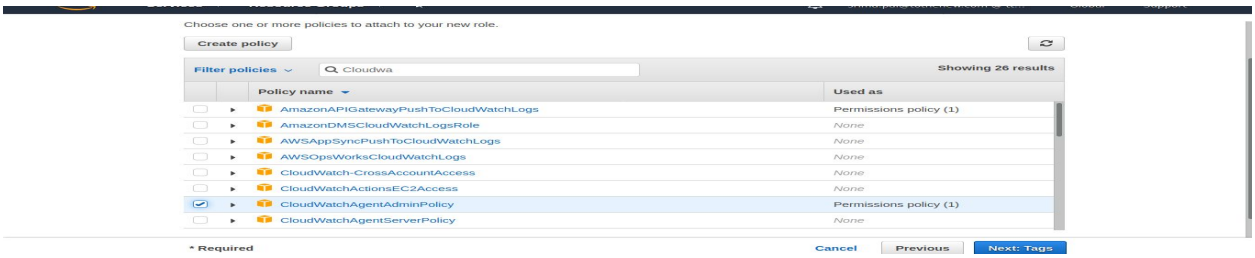
2. Create a custom Memory metric in CloudWatch and set up alarm at 80 % which will autoscale the instance in the autoscaling group.

Create a policy for cloudwatch ,with put metric data , giving permission to ec2 to put metric data in cloudwatch

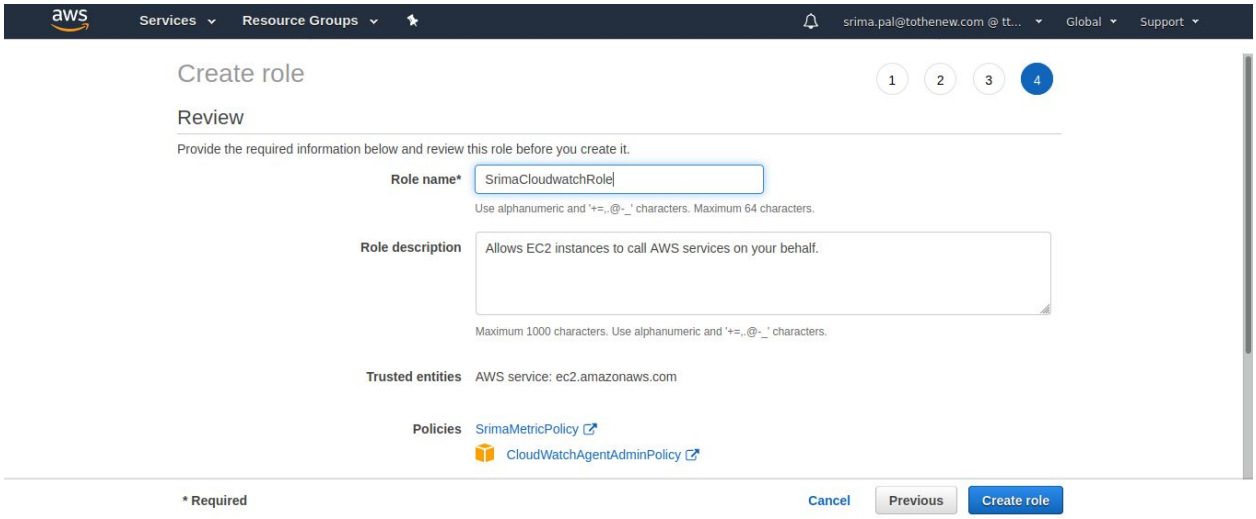




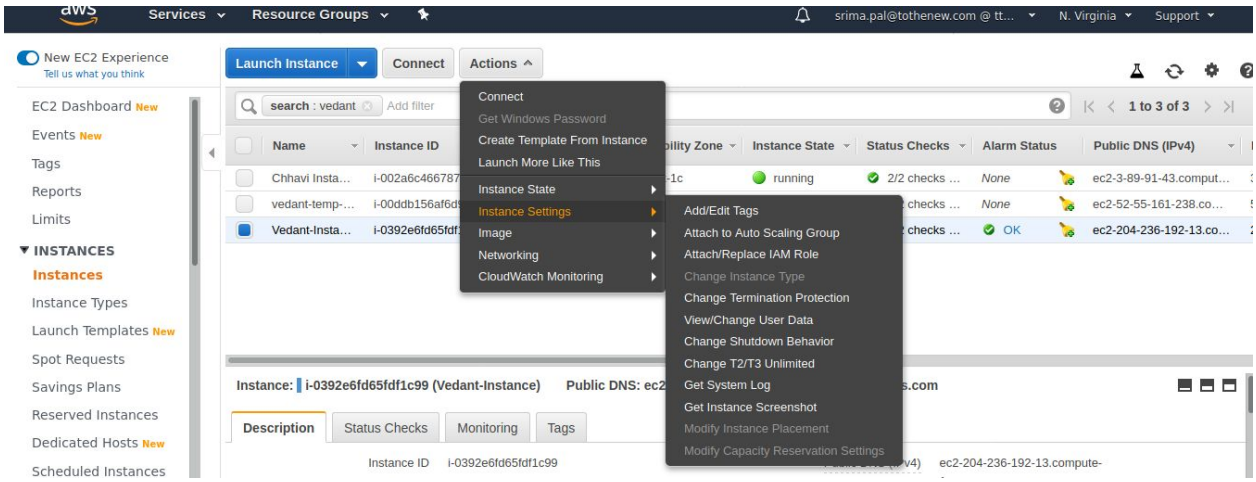
Attach this to the role, srima metric policy and cloudwatch agent admin policy

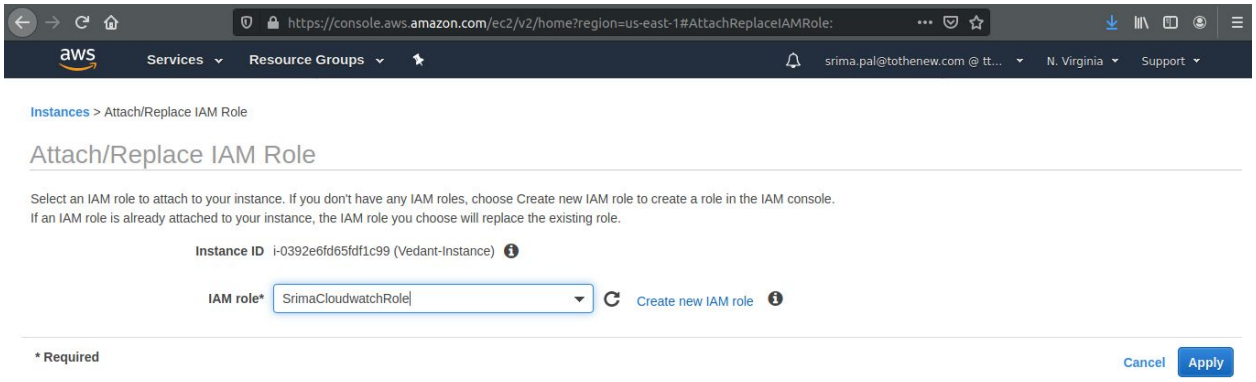


Create role

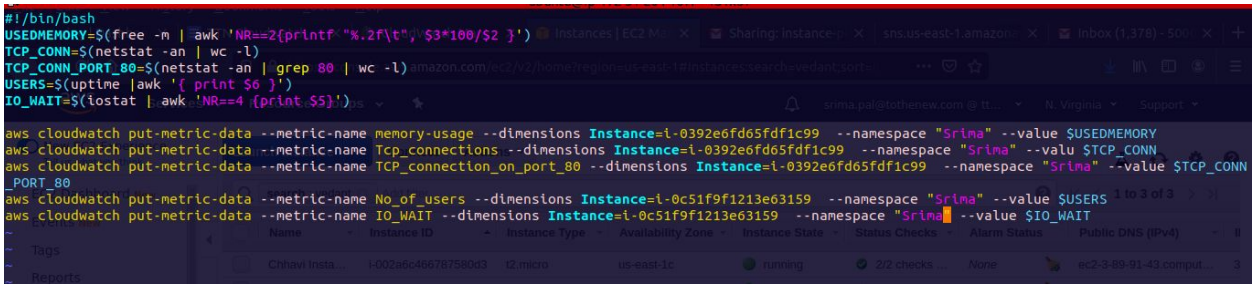


Attach IAM Role



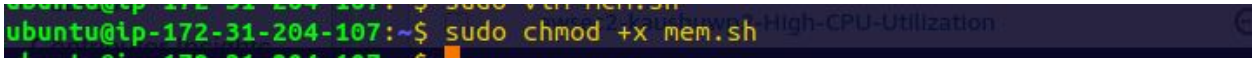


Create a script inside the instance



```
#!/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-0392e6fd65fdf1c99  --namespace "Srima" --value $USEDMEMORY
aws cloudwatch put-metric-data --metric-name Tcp_connections --dimensions Instance=i-0392e6fd65fdf1c99  --namespace "Srima" --valu $TCP_CONN
aws cloudwatch put-metric-data --metric-name TCP_connection_on_port_80 --dimensions Instance=i-0392e6fd65fdf1c99  --namespace "Srima" --value $TCP_CONN
_PORT_80
aws cloudwatch put-metric-data --metric-name No_of_users --dimensions Instance=i-0c51f9f1213e63159  --namespace "Srima" --value $USERS
aws cloudwatch put-metric-data --metric-name IO_WAIT --dimensions Instance=i-0c51f9f1213e63159  --namespace "Srima" --value $IO_WAIT
```

Give permissions (execute script)



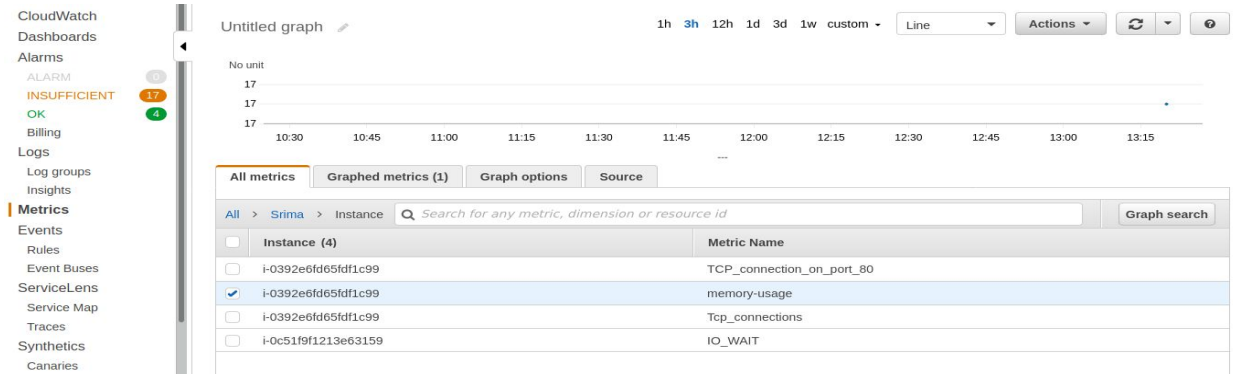
```
ubuntu@ip-172-31-204-107:~$ sudo chmod +x mem.sh
```

Run the script to push the information of ec2 to cloudwatch

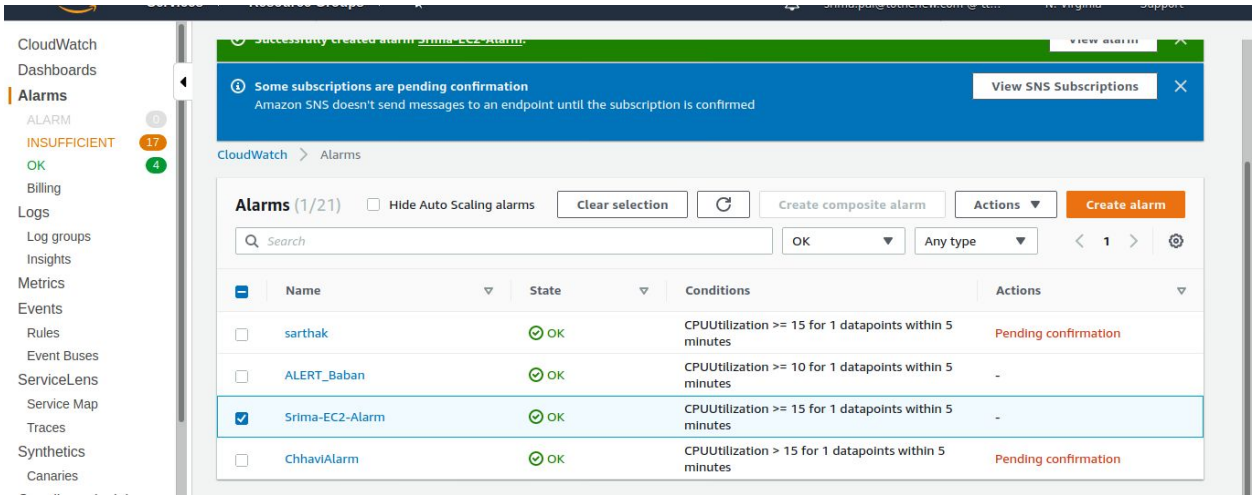
```
ubuntu@ip-172-31-204-107:~$ sudo ./mem.sh

[<class 'decimal.ConversionSyntax'>]
```

Metric Created

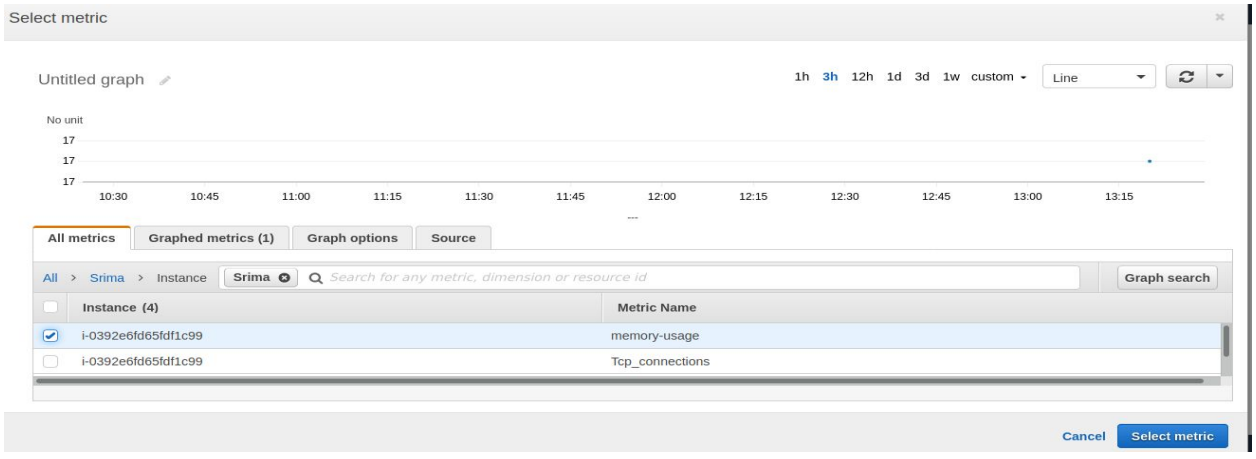
Set billing alarm, for memory usage metric



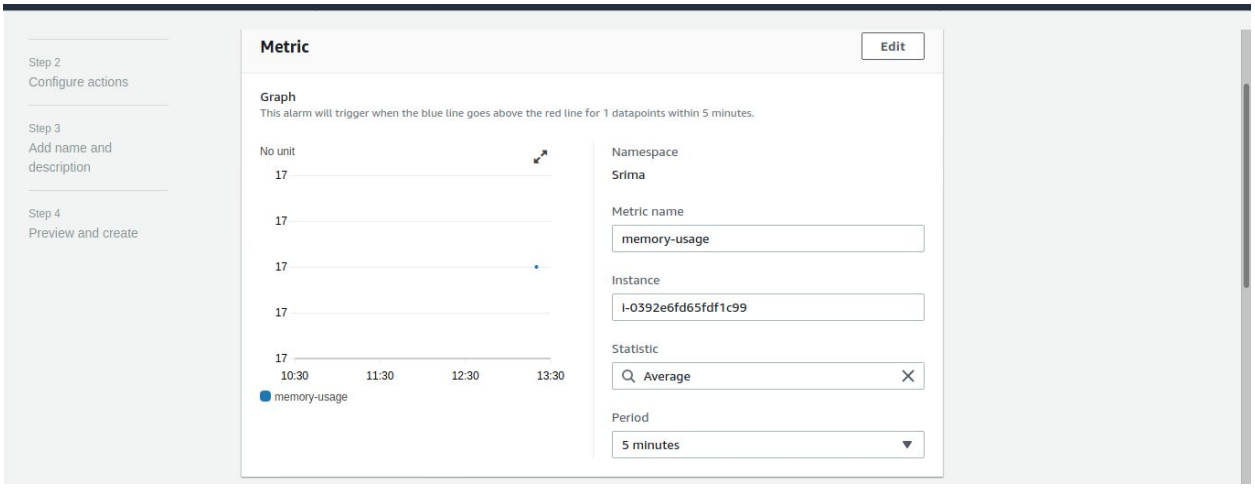
Go to alarm, and create alarm for the created metric



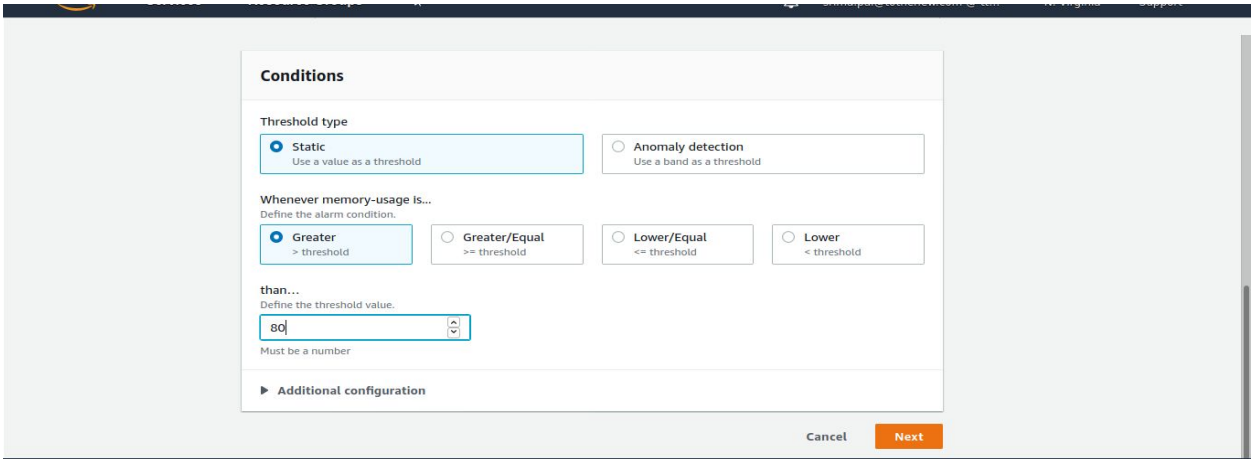
Select the metric



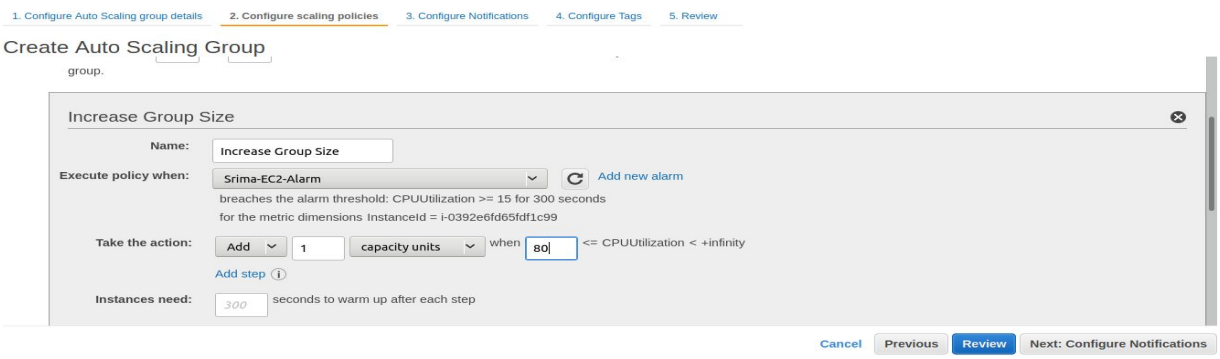
Created alarm



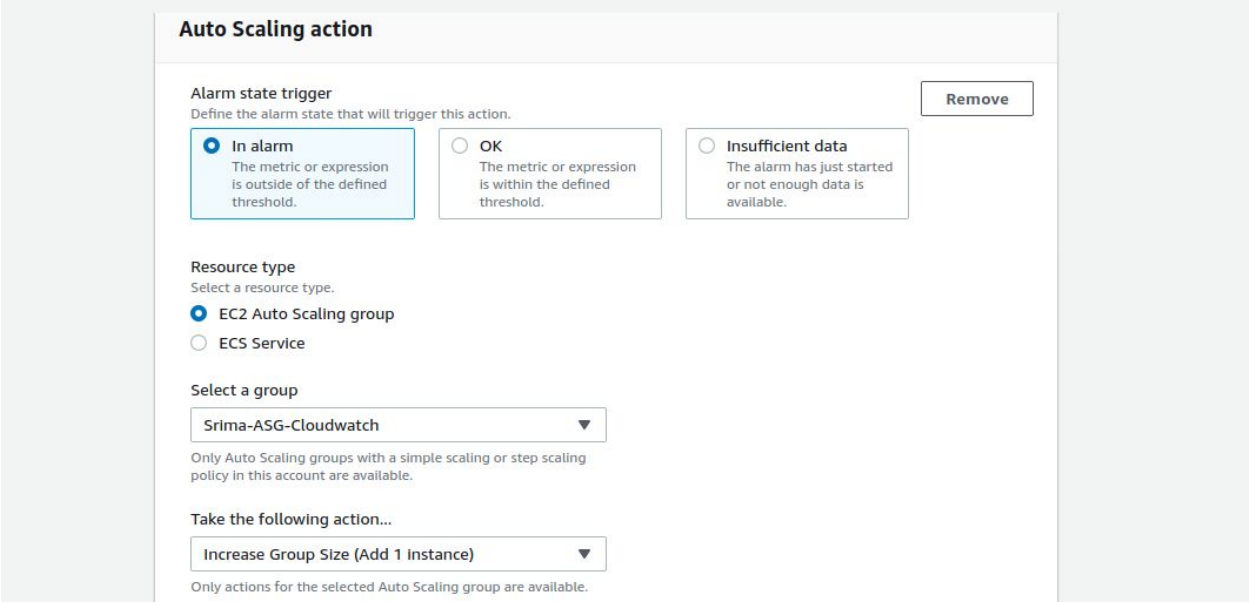
Give 80% threshold



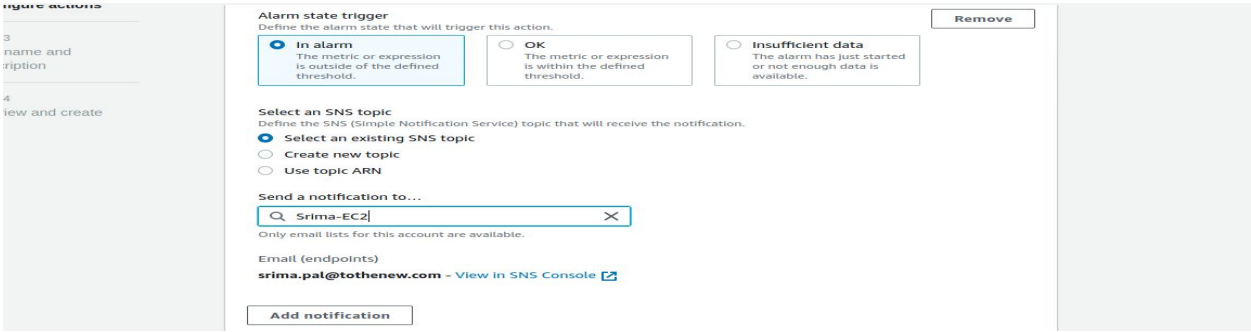
Create AMI , create ASG and set alarm in scaling policy



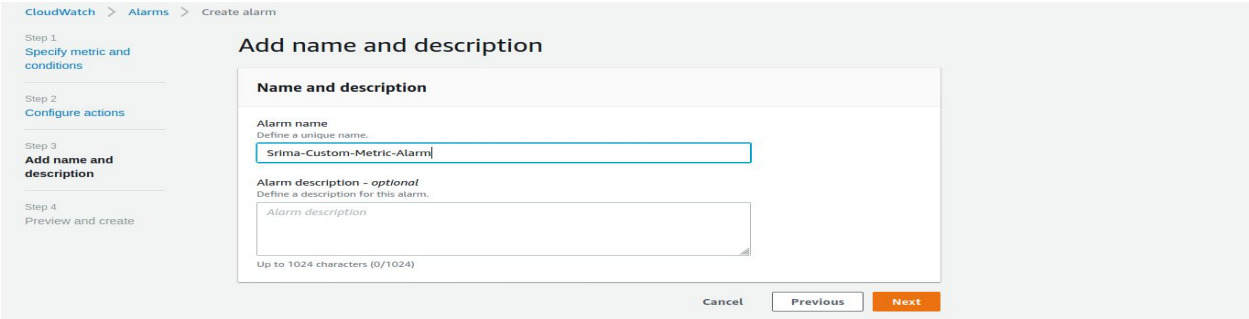
Add an autoscaling alarm, select autoscaling group



Select the SNS topic created

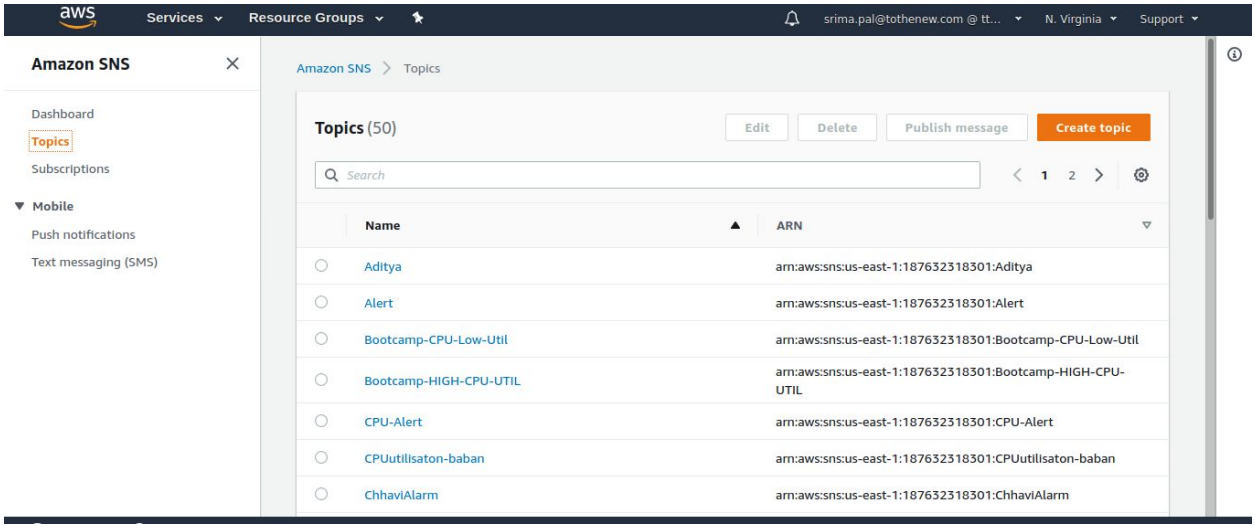


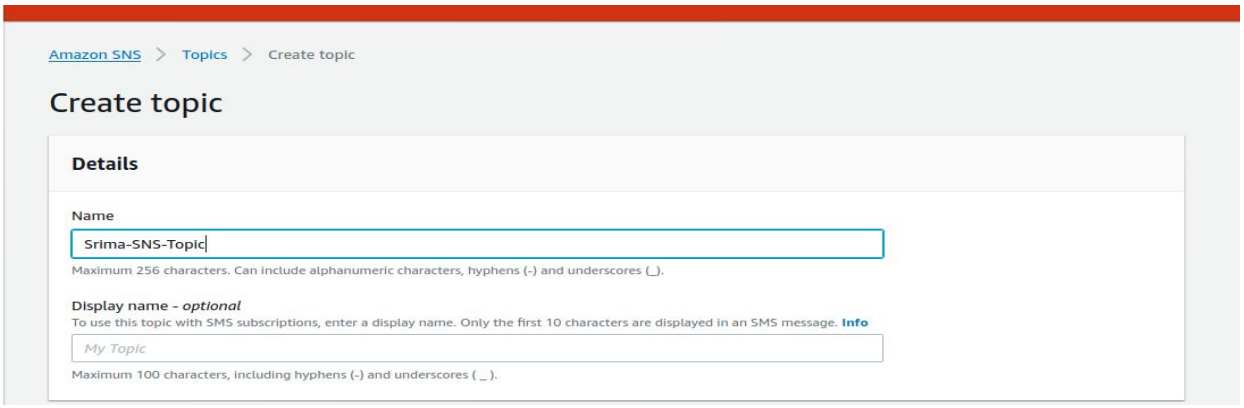
Give name

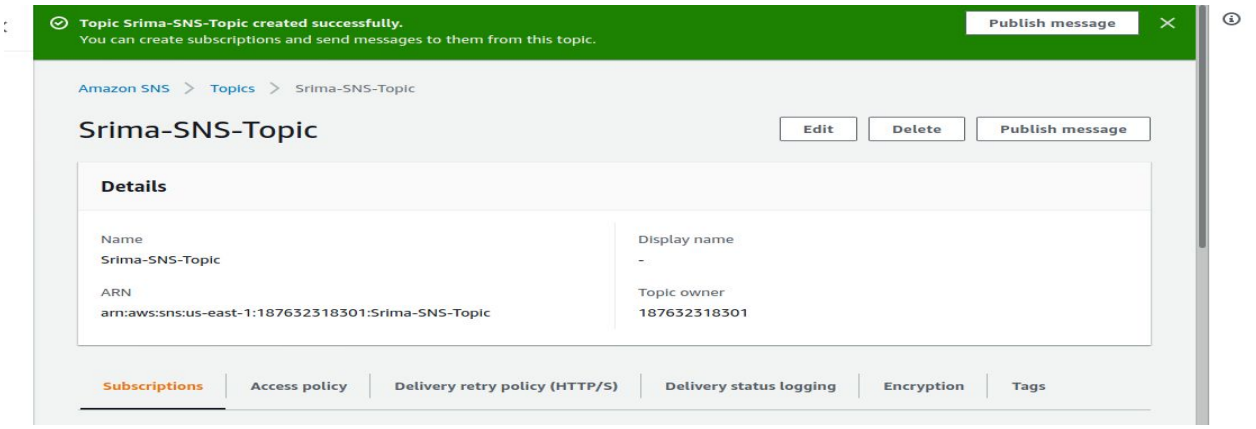


3. Create SNS topic, subscribe to a topic, publish message, unsubscribe the message and delete the topic.

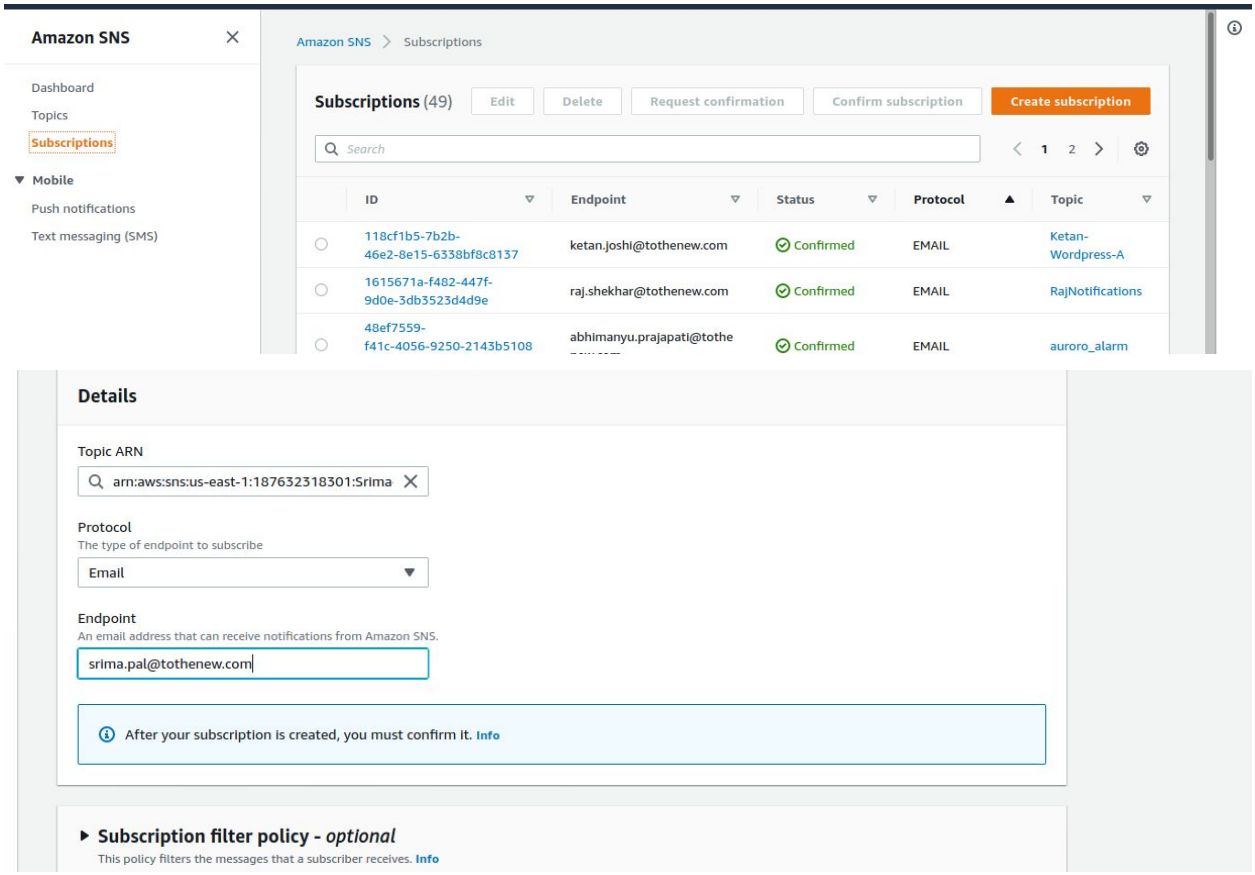
Create a topic

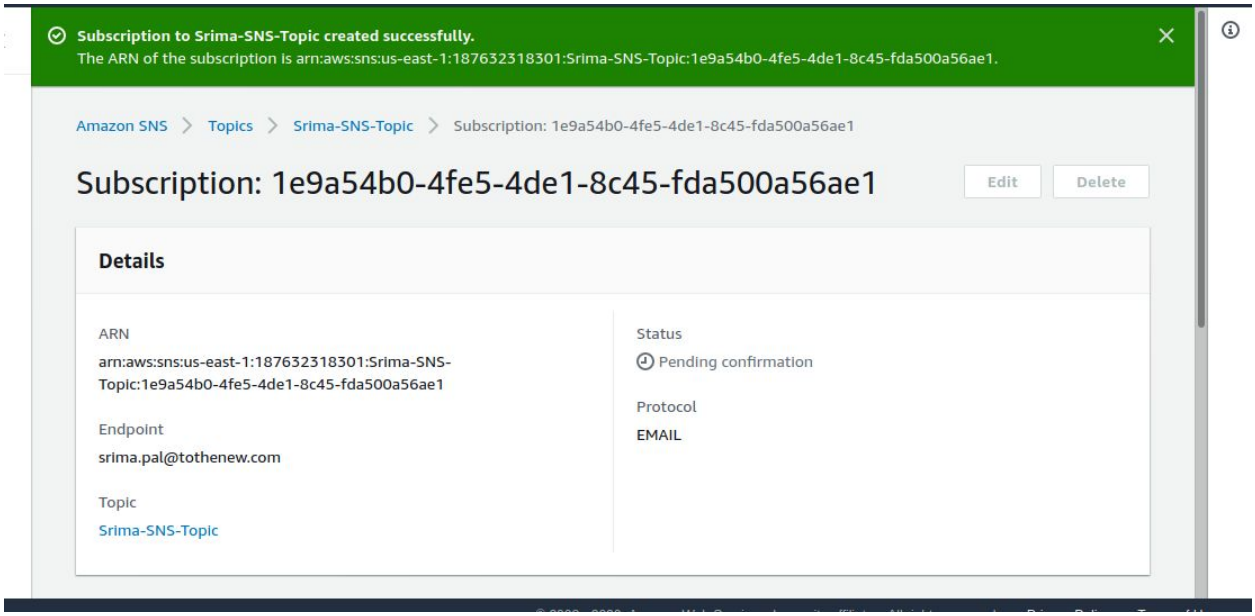




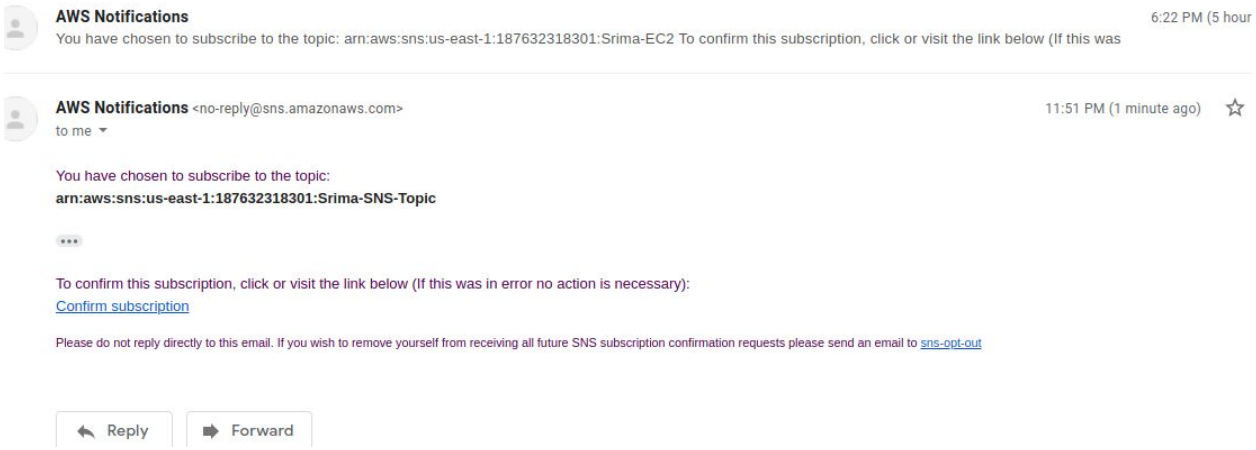


Create Subscription

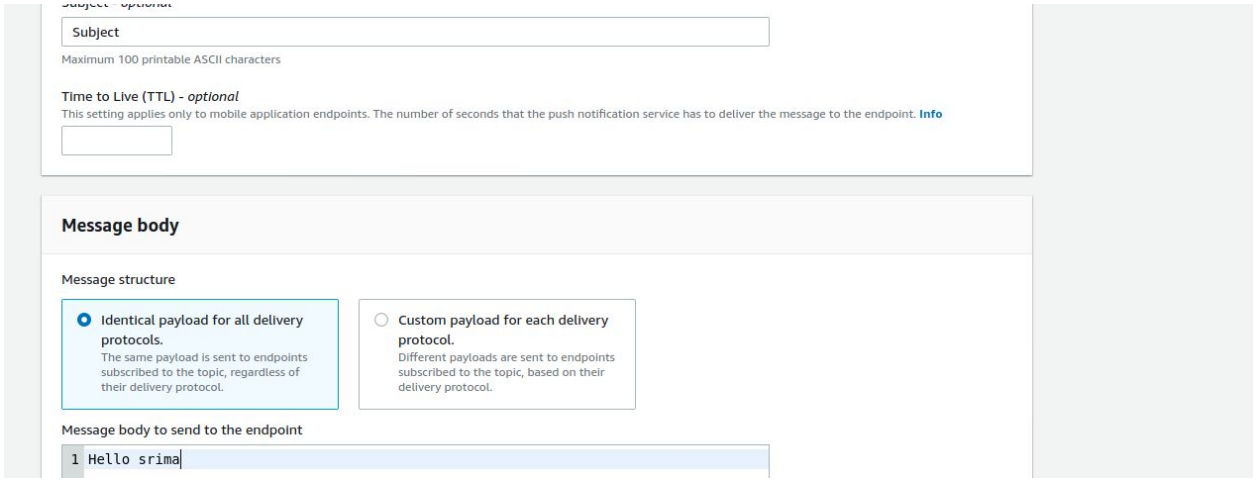




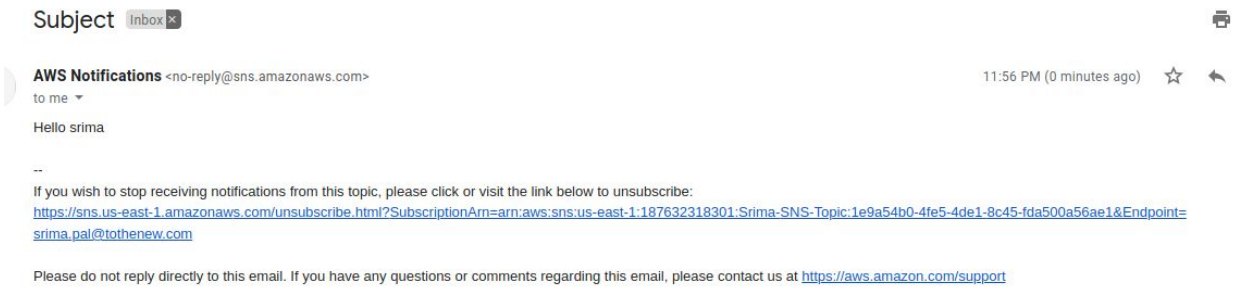
Subscriber needs to confirm the subscription



Select a topic and publish message

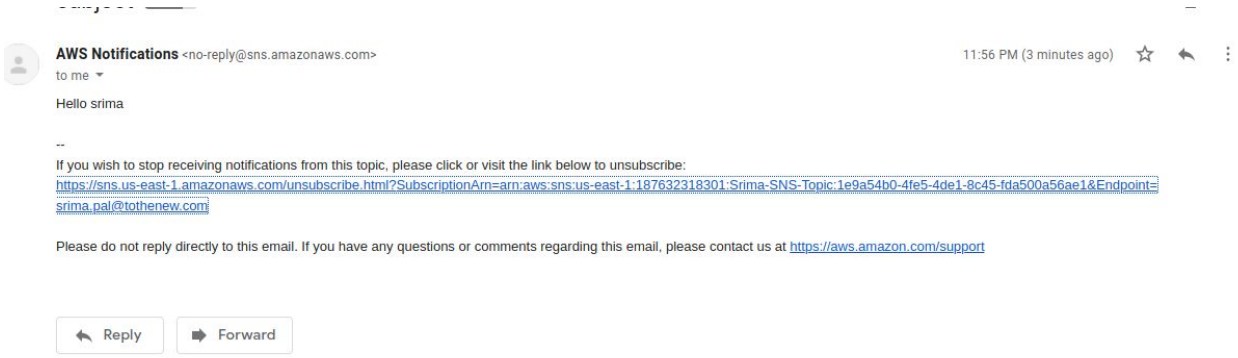


Email received

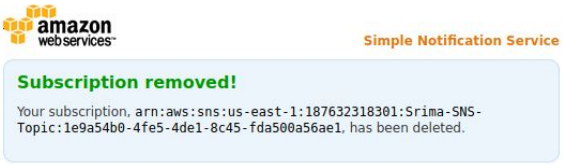


Unsubscribe to the topic

Click on the unsubscription link



Unsubscribed



4. Send a sample mail using SES (No access)