USING CLOUDWATCH FOR RESOURCE MONITORING, CREATE CLOUDWATCH ALARMS AND DASHBOARDS

Task Duration: 90 Minutes

AWS Region: US East (N.Virginia) us-east-1.

Resources Monitored By CloudWatch

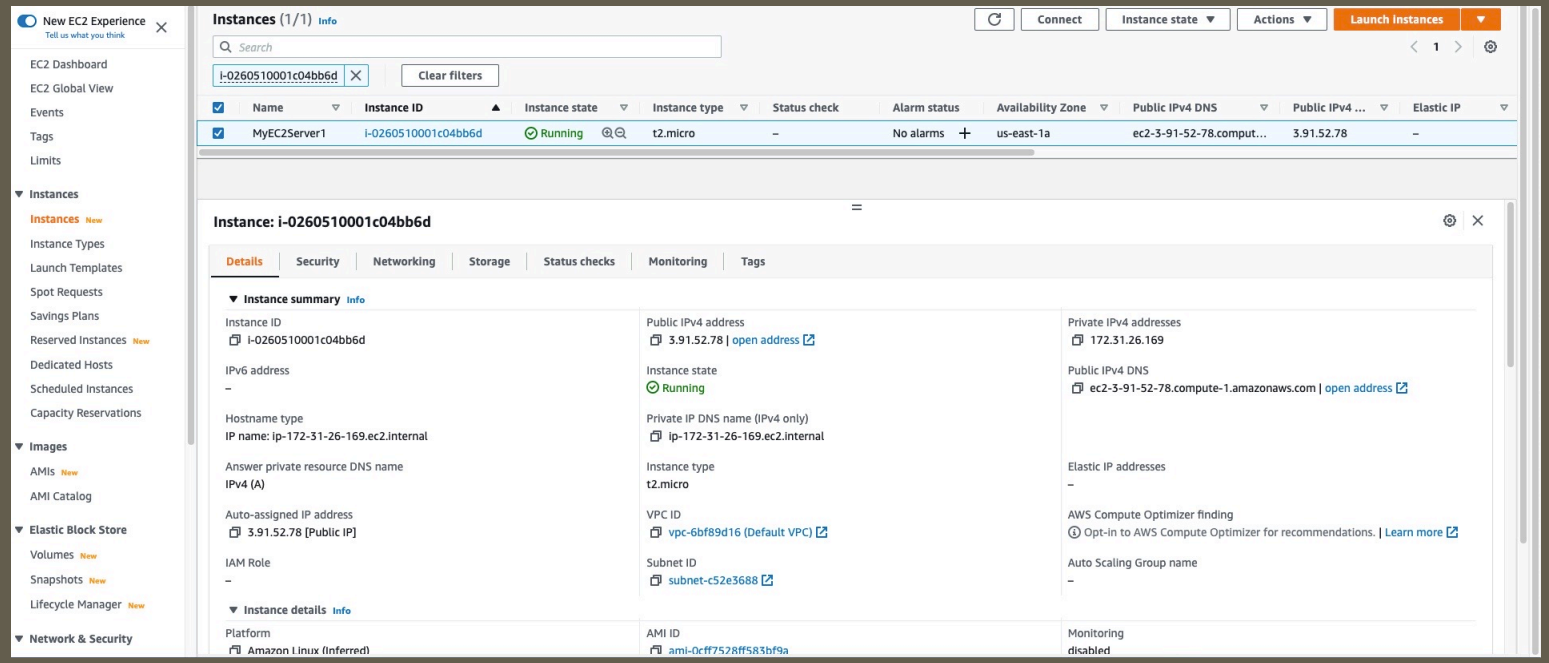
TASK DETAILS

- Launching Lab Environment.
- Create EC2 Instance.
- SSH into EC2 Instance and install necessary Softwares.
- Create SNS Topic.
- Subscribe to an SNS Topic.
- Check EC2 CPU Utilization Metrics in CloudWatch Metrics.
- Create CloudWatch Alarm.
- Testing CloudWatch Alarm by Stressing CPU Utilization.
- Checking For an Email from the SNS Topic.
- Checking the CloudWatch Alarm Graph.
- Create a CloudWatch Dashboard.
- Validation of the lab.

TASK 1&2

- Task1: is launching the AWS Management Console
  - Then Login using IAM username and Password
  - Make sure to select: N.Virginia Region
- Task2: is Creating EC2 Instance
- Choose an AMI: Amazon Linux (Free tier eligible
- Choose Instance Type: t2.micro; Next Configure Instance details
- Add storage: leave the values as default
- Add Tags:
- Key: Name
- Value: MyEC2Server
- Configure Security Group: Add SSH
- Source: Anywhere
- Review and Launch: Using Key pair.
- Details shown in the next slide.

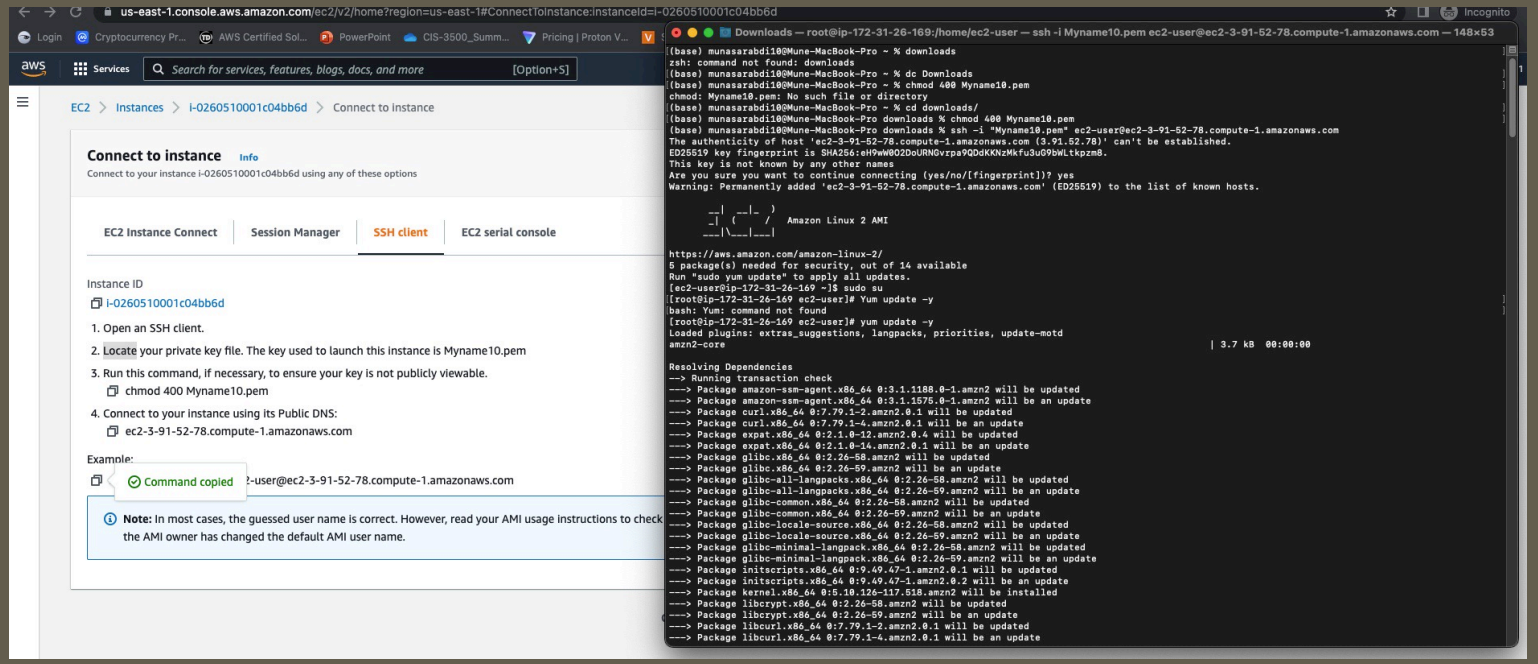
EC2 LAUNCH DETAILS.



TASK3

- Task3: Is to SSH into EC2 Instance and install necessary Softwares
- Once SSH into my Terminal then I switched to root user
- Using these commands: Sudo su,
- Then update: yum update –y
- After the update I installed Stress Tool using these commands:
  - sudo amazon-linux-extras install epel -y
  - yum install stress -y
  - Details are shown next slide.

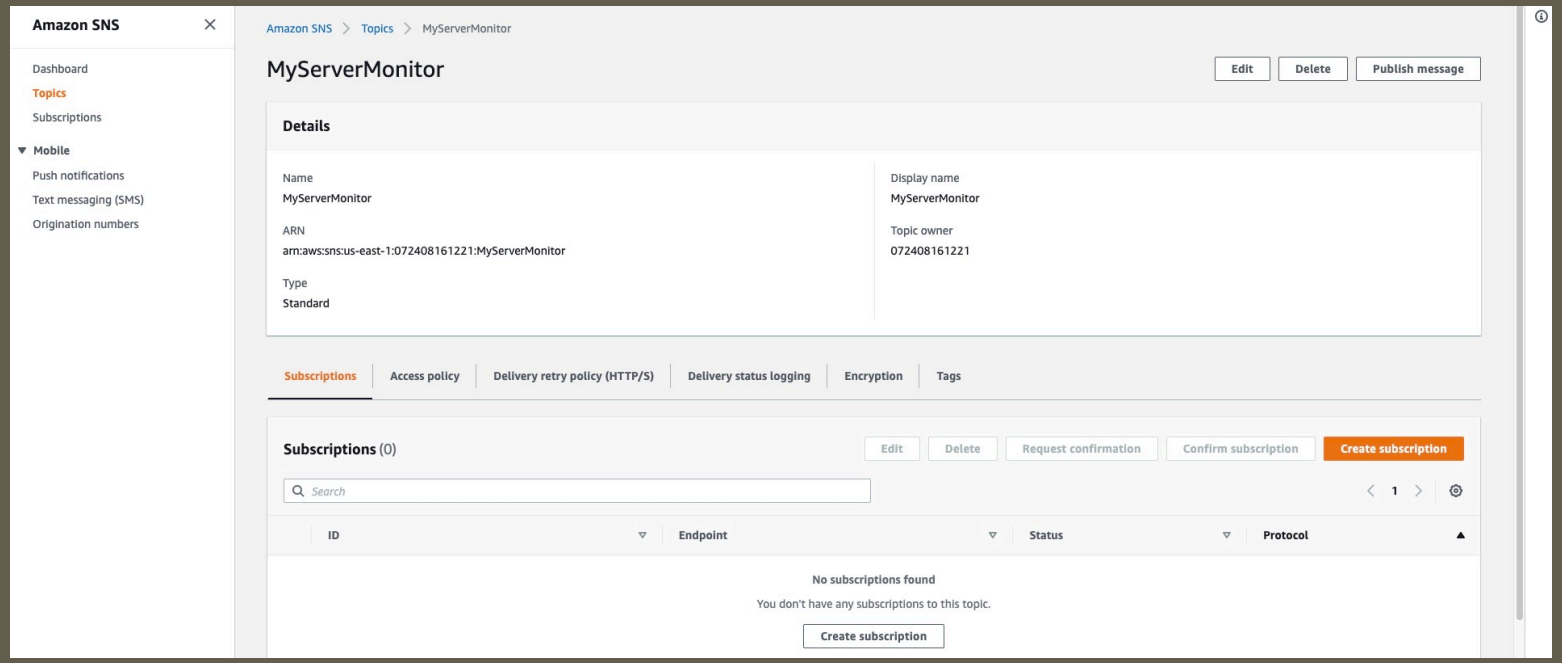
DETAILS OF SSH INTO THE EC2 INSTANCE AND INSTALLING SOFTWARES.



TASK4

- Task 4: Create SNS Topic
- Make sure it's N.Virginia
- Navigate to Simple Notification Service
- Under details:
- Type; Select standard
- Name: MyServerMonitor
- Display name: MyServerMonitor
- Leave all other options as default and click crate topic.
- Details is shown next slide.

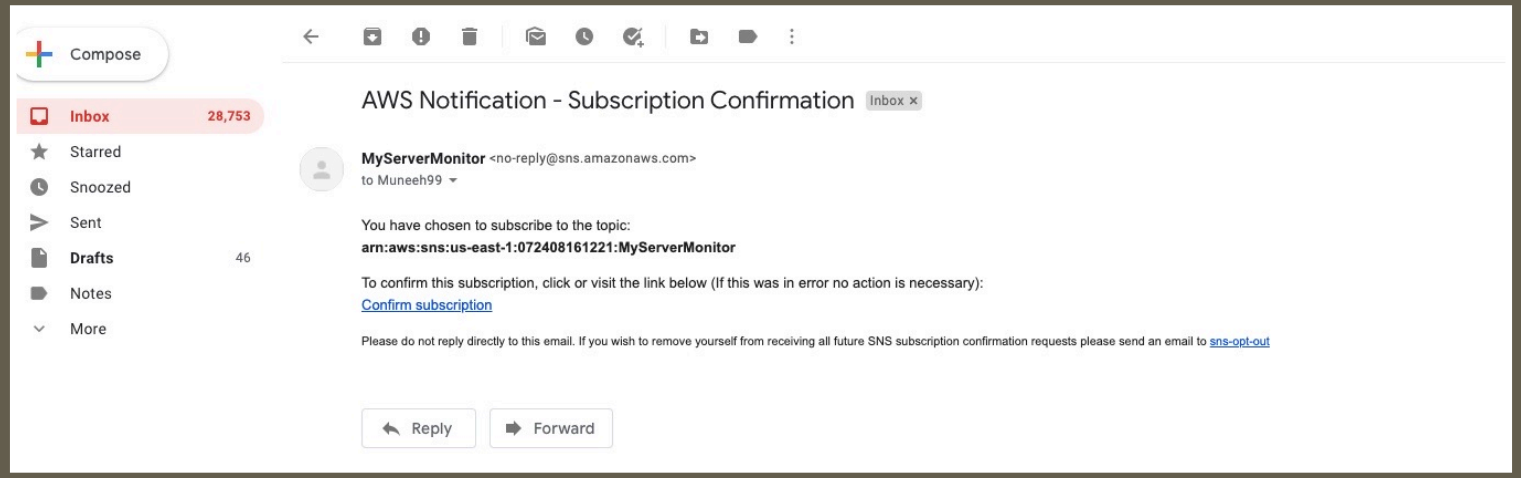
CREATION OF SNS TOPIC.

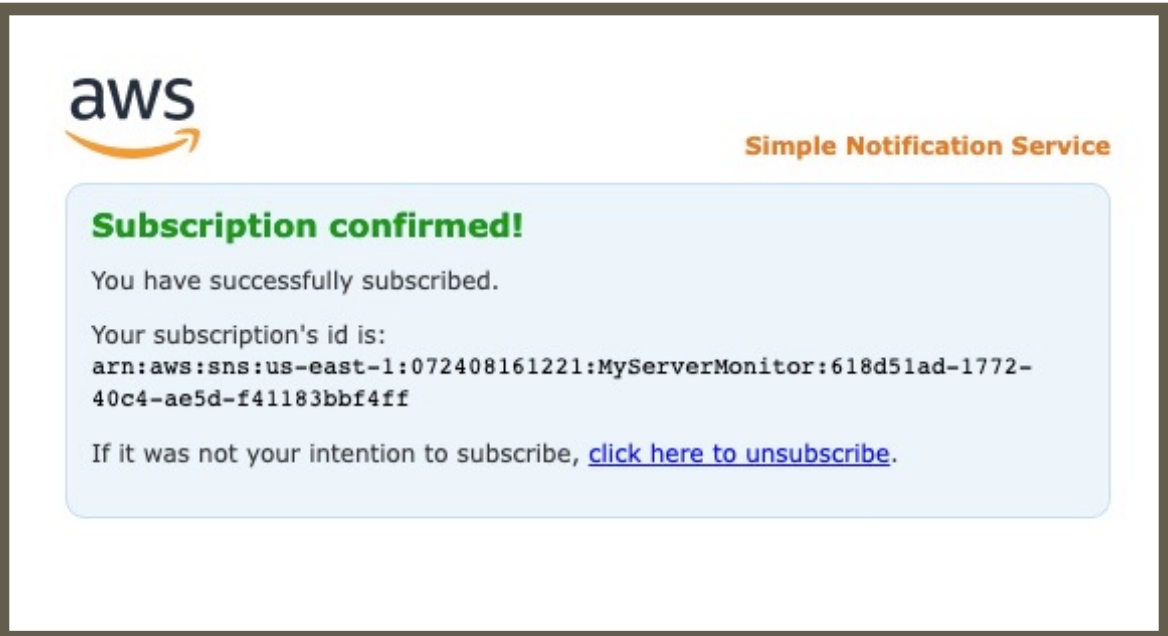


TASK5

- Task 5 : Subscribe to an SNS Topic
- Once SNS topic is created, click the topic to create subscription
- Under details
- Protocols
- Endpoint
- The email received and confirmation subscription is shown the next slide.

SNS TOPIC EMAIL & CONFIRMATION.

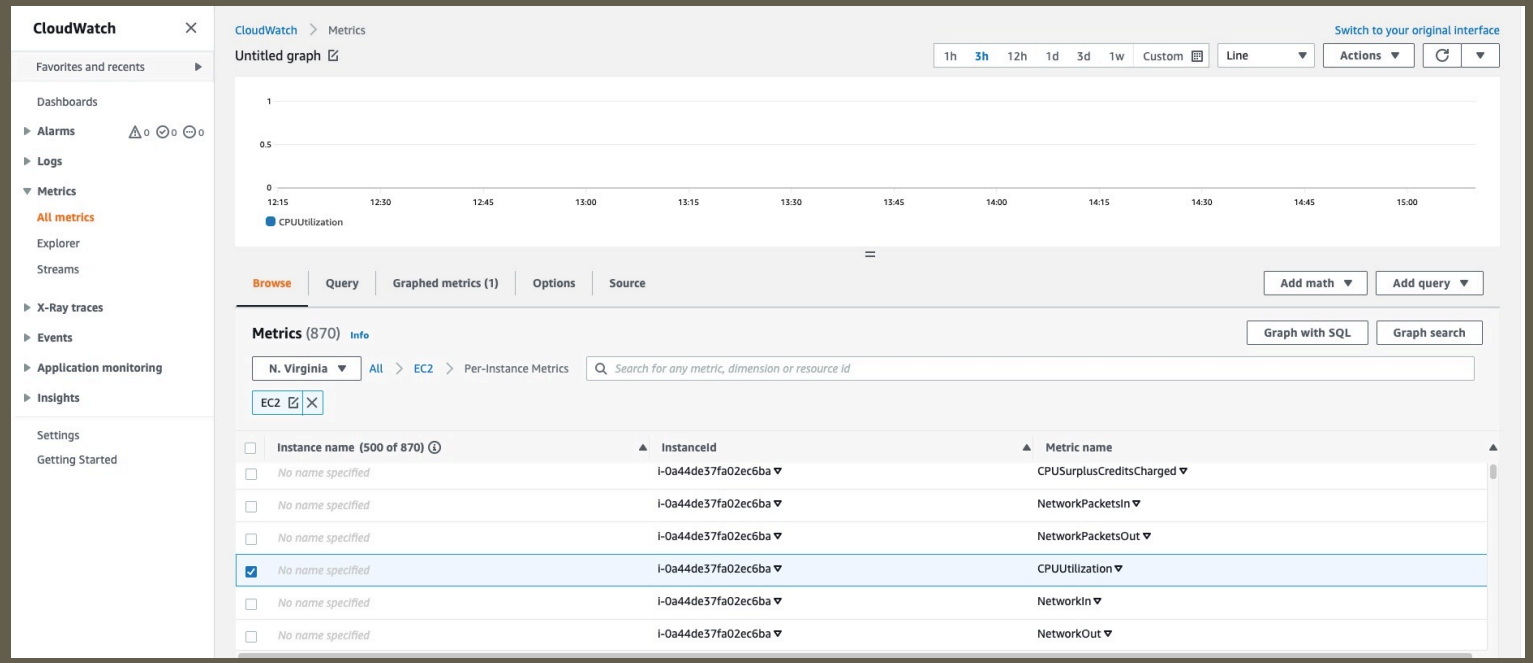




TASK6

- Task 6: Using CloudWatch to Check EC2 CPU Utilization Metrics in CloudWatch Metrics.
- Navigate to CloudWatch & under management and Governance
- Click all metrics in the panel
- Select EC2 metrics under all metrics
- Wait 5-10 minutes after creation of EC2 to start fetching metrics details
- Select EC2 per-Instance Metrics
- You can see all the various metrics in the next slide.

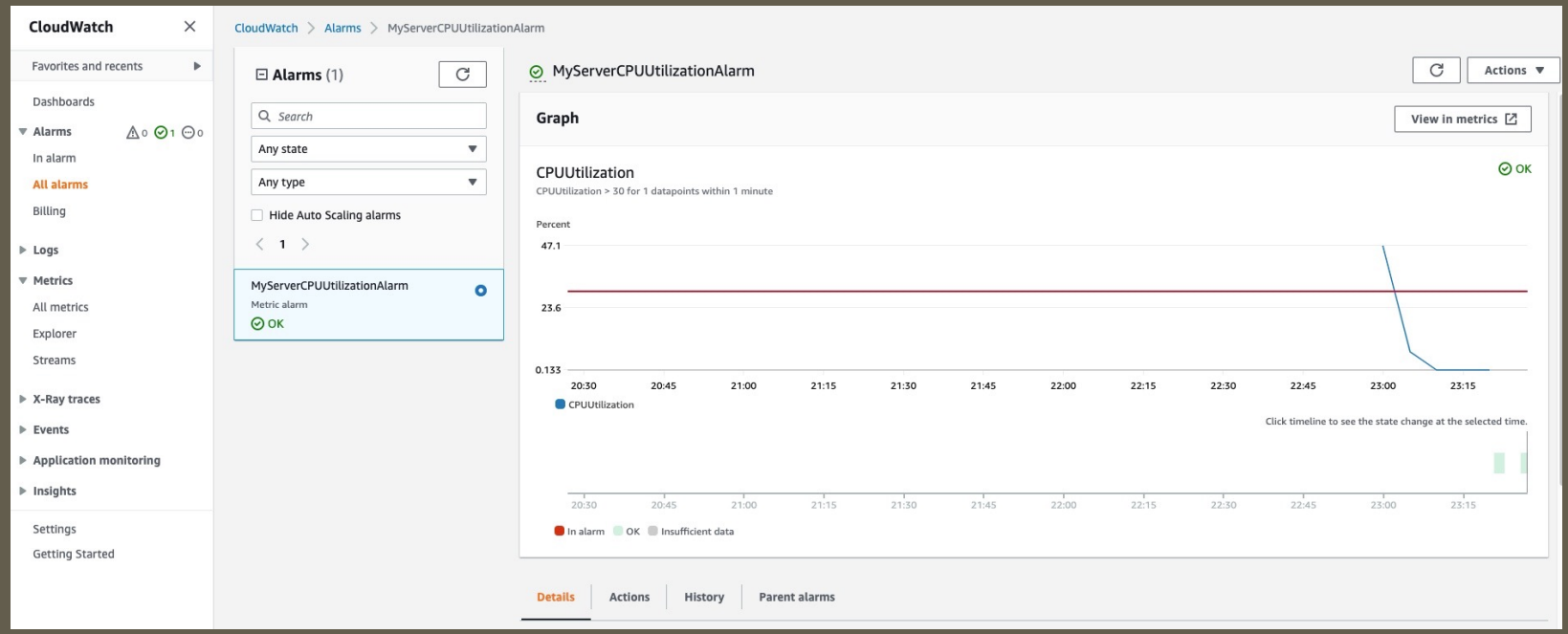
CLOUDWATCH CPU METRICS.



TASK7

- Task 7: Create CloudWatch Alarm
- In Alarms in the left panel of the CloudWatch dashboard
- In the specify metric and conditions page:
- Selected EC2
- Selected per-instance Metrics
- In the search bar; selected CPU Utilization metric
- Click select metric
- Configuration alarm
  - Under metrics: period 1 minute
  - Under condition: Static
  - CPUUtilization is: Choose greater than 30 minute
- Configure action:
- Alarm state trigger: in Alarm
- Select SNS Topic: select an existing SNS topic
- Send a notification to: Choose MyServerMonitor SNS topic created earlier
- A new CloudWatch Alarm is now created.
- Details are shown next slide.

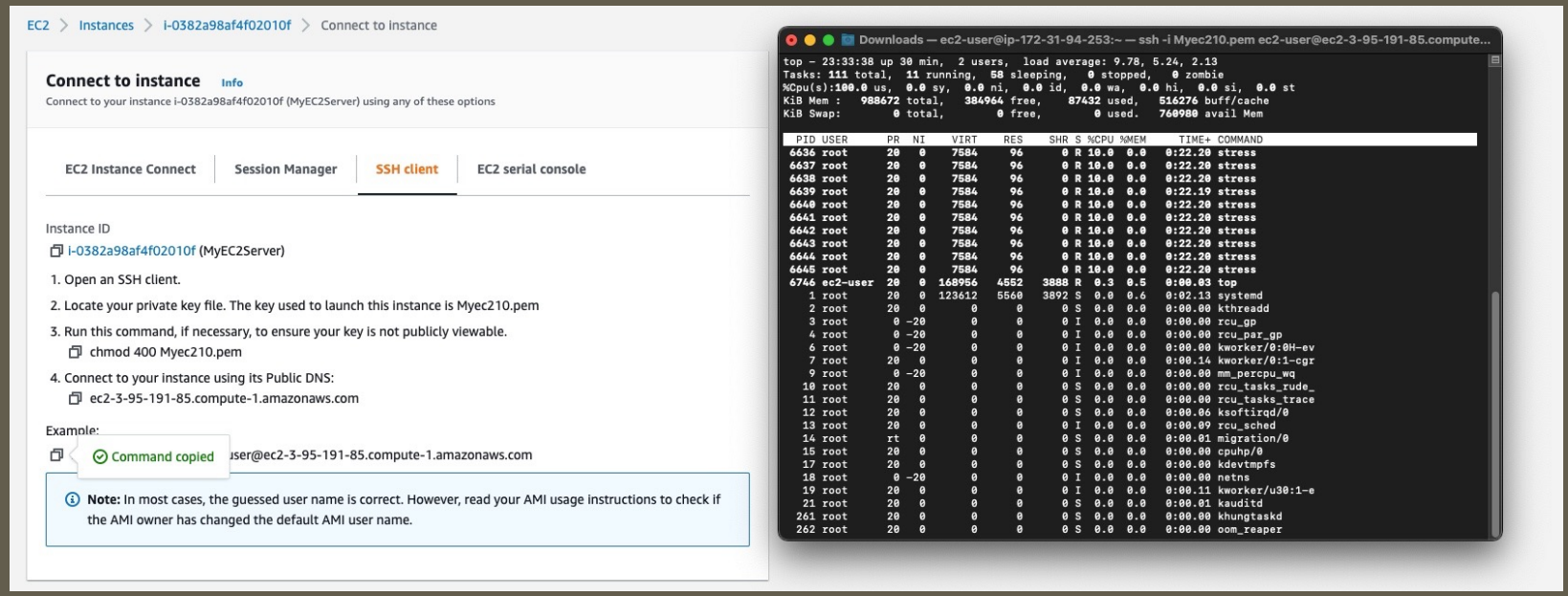
CLOUDWATCH ALARM.



TASK8

- Task8 : Testing CloudWatch Alarm by Stressing CPU Utilization
- SSH back into the EC2 instance –MyEC2Server
- The stress tool has already been installed, so let's run the below command to increase the CPU Utilization manually
- sudo stress --cpu 10 -v --timeout 400s
- This command will monitor the process created by the stress tool
- This runs 6 minutes and 40 seconds
- It will monitor CPU utilization; which should remain very near 100% for that amount of time.
- Details are shown in the next slide.

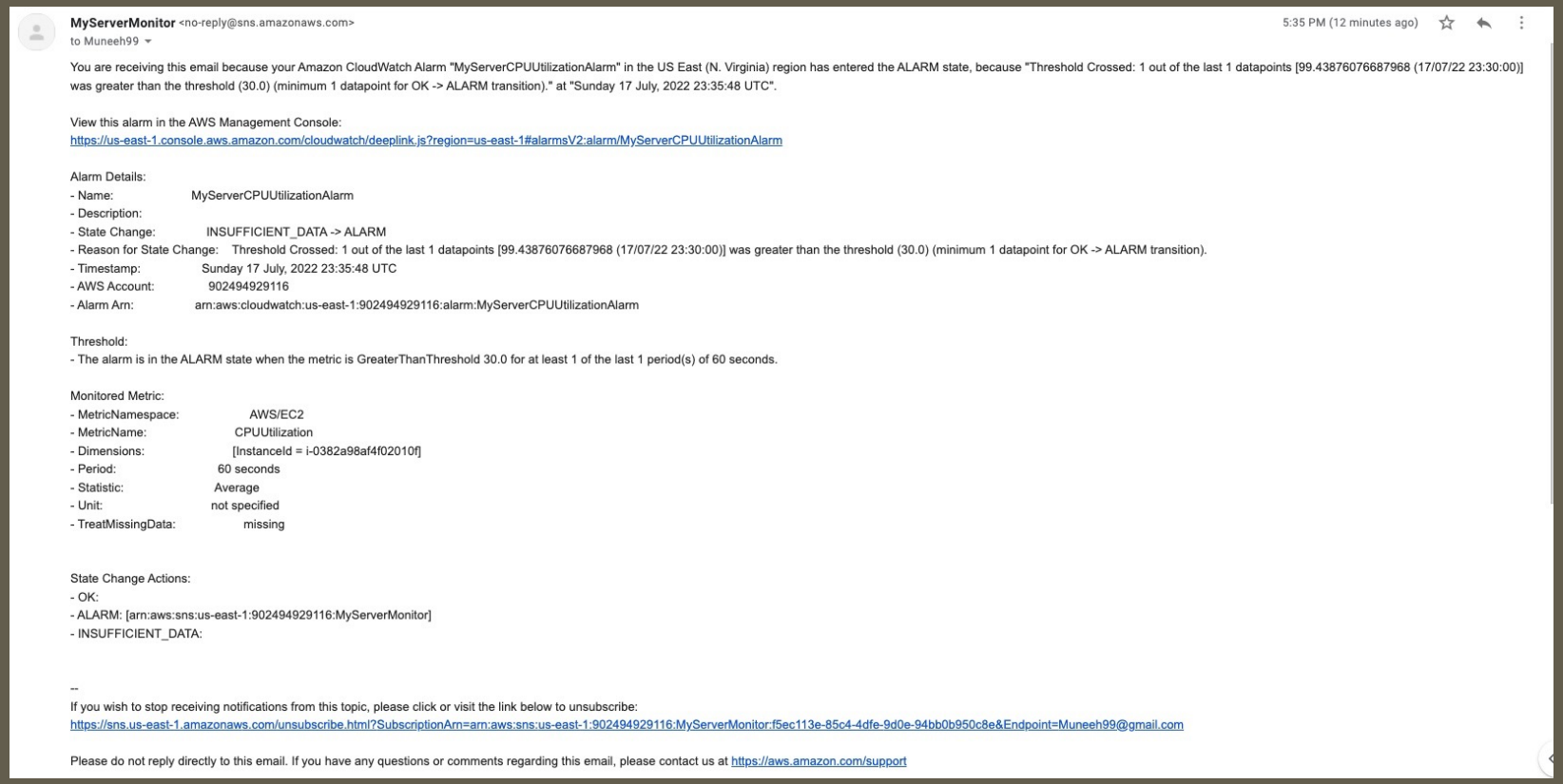
CLOUDWATCH ALARM BY STRESSING CPU UTILIZATION.



TASK9

- Task 9 : Checking For an Email from the SNS Topic
- Navigate to your mailbox and refresh it
- You should be able to see a new email notification for MyServerCPUUtilizationAlarm
- In the next slide I can see that mail I received contains details about CloudWatch Alarm.(name of the alarm, when it was triggered, etc.)

EMAIL NOTIFICATION FOR SNS TOPIC



MyServerMonitor <no-reply@sns.amazonaws.com> 5:35 PM (12 minutes ago)
to Muneeh99

You are receiving this email because your Amazon CloudWatch Alarm "MyServerCPUUtilizationAlarm" in the US East (N. Virginia) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [99.43876076687968 (17/07/22 23:30:00)] was greater than the threshold (30.0) (minimum 1 datapoint for OK -> ALARM transition)." at "Sunday 17 July, 2022 23:35:48 UTC".

View this alarm in the AWS Management Console:
https://us-east-1.console.aws.amazon.com/cloudwatch/deeplink.js?region=us-east-1#alarmsV2:alarm/MyServerCPUUtilizationAlarm

Alarm Details:
- Name: MyServerCPUUtilizationAlarm
- Description:
- State Change: INSUFFICIENT_DATA -> ALARM
- Reason for State Change: Threshold Crossed: 1 out of the last 1 datapoints [99.43876076687968 (17/07/22 23:30:00)] was greater than the threshold (30.0) (minimum 1 datapoint for OK -> ALARM transition).
- Timestamp: Sunday 17 July, 2022 23:35:48 UTC
- AWS Account: 902494929116
- Alarm Arn: arn:aws:cloudwatch:us-east-1:902494929116:alarm:MyServerCPUUtilizationAlarm

Threshold:
- The alarm is in the ALARM state when the metric is GreaterThanThreshold 30.0 for at least 1 of the last 1 period(s) of 60 seconds.

Monitored Metric:
- MetricNamespace: AWS/EC2
- MetricName: CPUUtilization
- Dimensions: [InstanceId = i-0382a98af4f02010f]
- Period: 60 seconds
- Statistic: Average
- Unit: not specified
- TreatMissingData: missing

State Change Actions:
- OK:
- ALARM: [arn:aws:sns:us-east-1:902494929116:MyServerMonitor]
- INSUFFICIENT_DATA:

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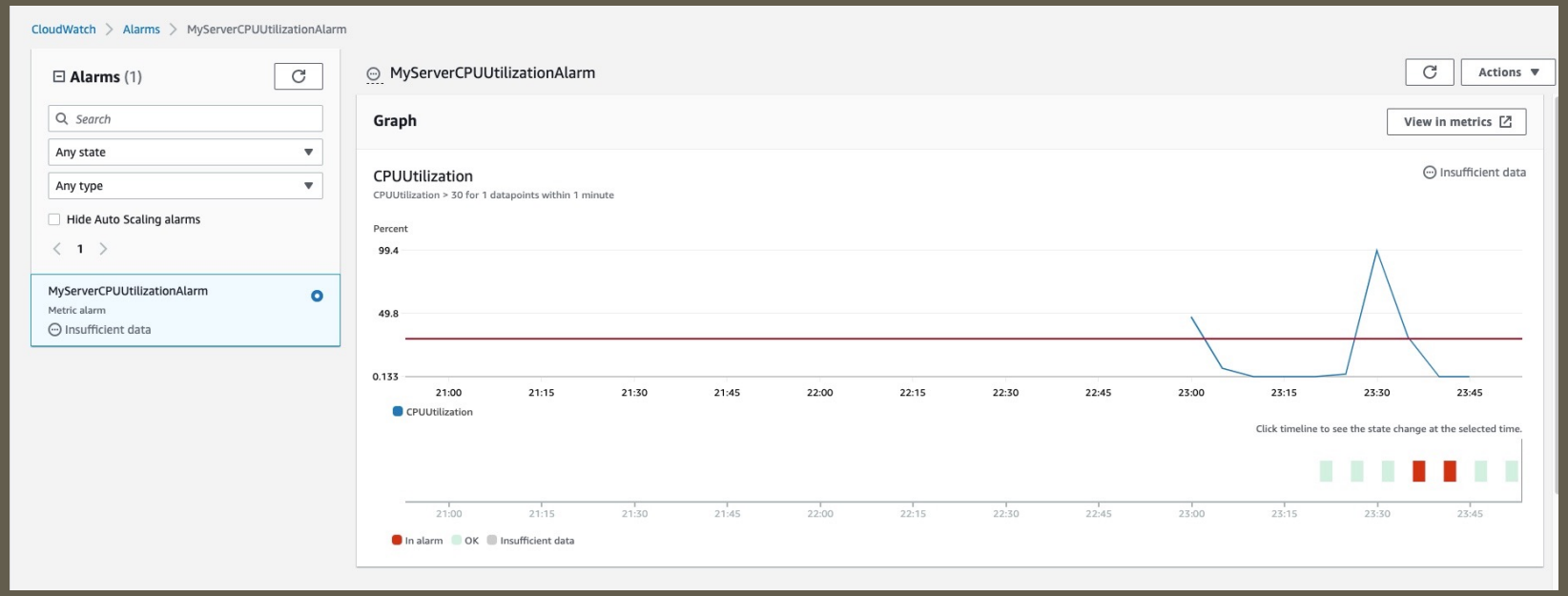
If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:
https://sns.us-east-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-1:902494929116:MyServerMonitor:f5ec113e-85c4-4dfe-9d0e-94bb0b950c8e&Endpoint=Muneeh99@gmail.com

Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at https://aws.amazon.com/support

TASK 10

- Task 10 : Checking the CloudWatch Alarm Graph
- I can trigger CPUUtilization multiple times to see the spike on the graph
- Then, I have successfully triggered a CloudWatch Alarm for CPUUtilization.
- Next slide shows more of those details.

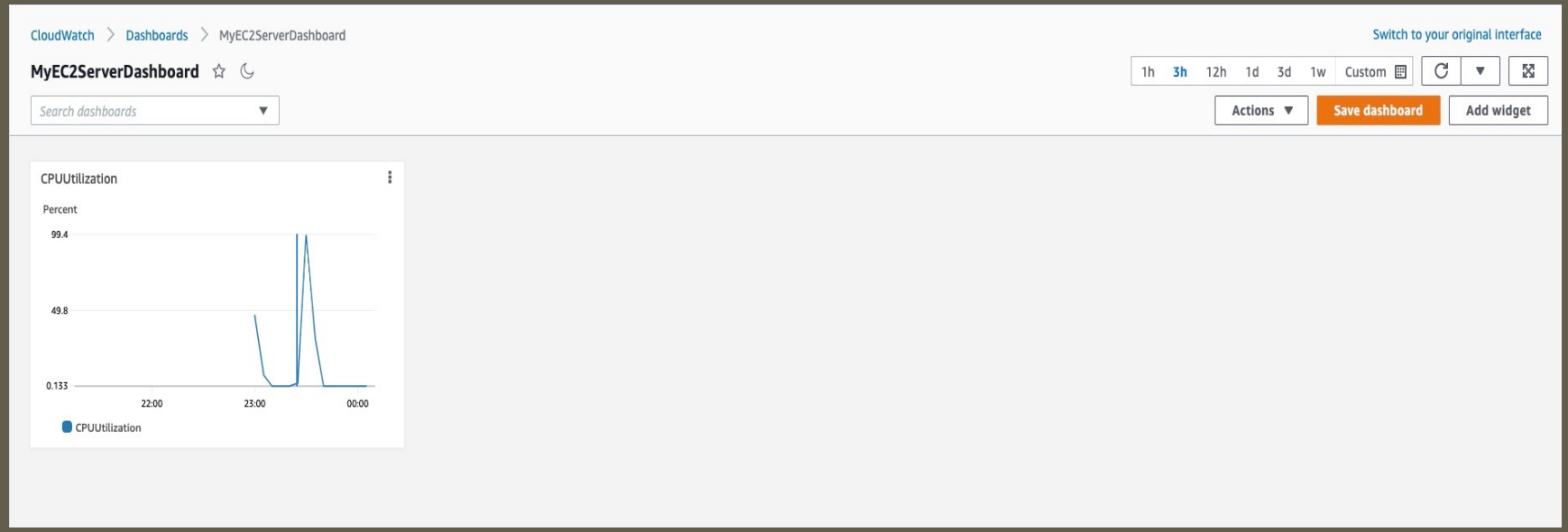
CHECKING THE ALARM GRAPH.



TASK 11

- Task 11: Create a CloudWatch Dashboard
- Dashboard Name: MyEC2ServerDashboard
- Add widget: select line graph
- Select: Metrics
- Choose EC2 under metrics tab. Choose per-instance Metrics
- Click create Widget
- Next slide for more details.

CLOUDWATCH DASHBOARD.



COMPLETION AND CONCLUSION.

1. I have created an EC2 Instance for which CloudWatch Monitoring will be carried out.
2. I have successfully created an Amazon SNS Topic used by CloudWatch.
3. I have successfully subscribed to SNS topic using your email address.
4. I have used CloudWatch to see CPUUtilization Metrics using CloudWatch Metrics.
5. I have successfully created and triggered a CloudWatch Alarm based on the CPUUtilzation Metric.