Project Title:

EC2 Monitoring using CloudWatch with Alarm and Email Notification

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Objective:

To monitor the CPU usage of an EC2 instance using Amazon CloudWatch, and receive alert notifications via Amazon SNS when CPU utilization exceeds a threshold.

Tools & Services Used:

- **Amazon EC2** – to host the virtual machine.
- **Amazon CloudWatch** – to monitor metrics and create alarms.
- **Amazon SNS (Simple Notification Service)** – to send email alerts.
- **Stress tool** – to generate high CPU usage.
- **Amazon Linux 2023** – EC2 OS.
- **IAM Role** – to allow EC2 to publish metrics.

Project Setup Steps

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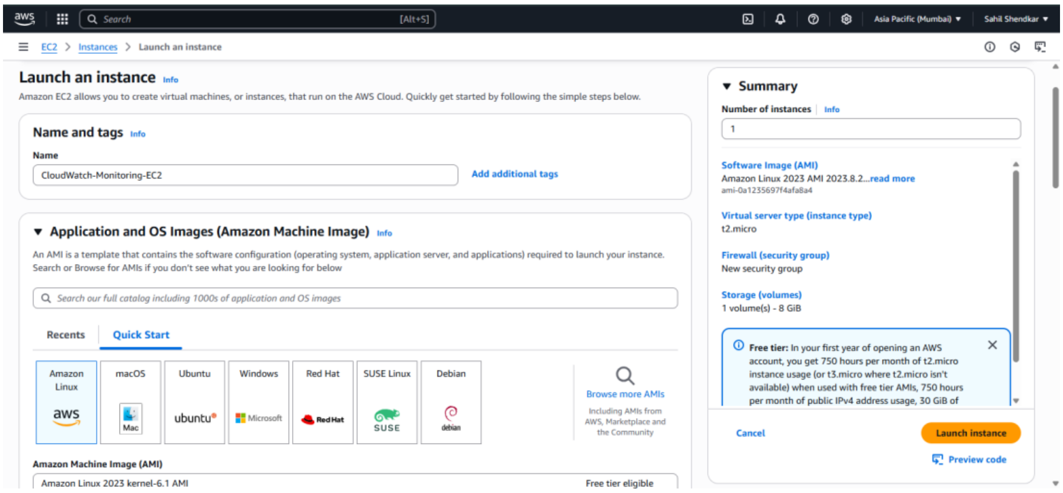
1. Launch EC2 Instance

- Open the **AWS EC2 dashboard**.
- Click on **Launch Instance**.
- Select **Amazon Linux 2023 AMI**.
- Choose **t2.micro** (Free tier eligible).
- Create or use existing **Key Pair**.
- In **Network settings**, allow **SSH** (port 22).
- Click **Launch Instance**.



Launch an instance

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags

Name: CloudWatch-Monitoring-EC2

Application and OS Images (Amazon Machine Image)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Amazon Machine Image (AMI): Amazon Linux 2023 kernel-6.1 AMI — Free tier eligible

Summary

Number of instances: 1

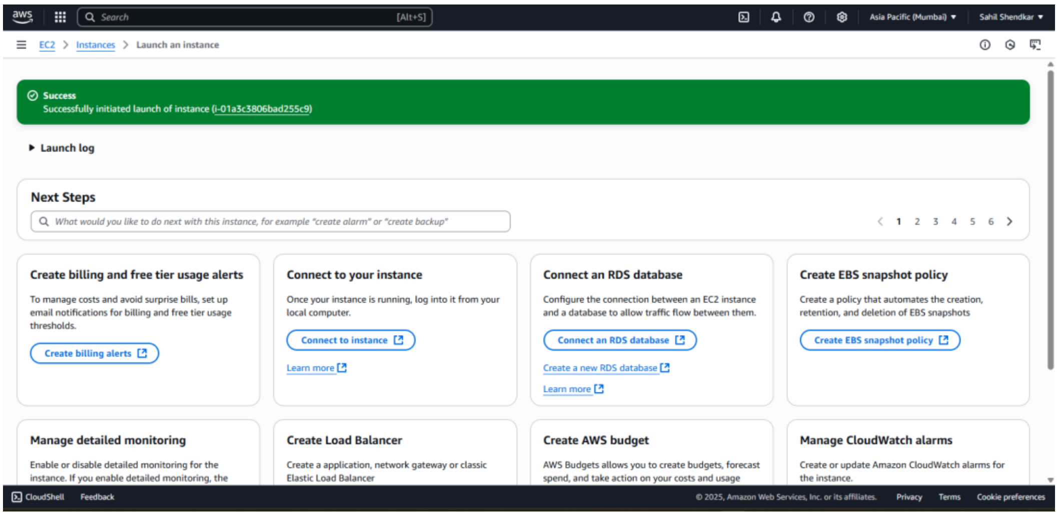
Software Image (AMI): Amazon Linux 2023 AMI 2023.8.2...read more ami-0a1235697f4afa8a4

Virtual server type (instance type): t2.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of



Success
Successfully initiated launch of instance (i-01a3c3806bad255c9)

Next Steps

What would you like to do next with this instance, for example "create alarm" or "create backup"

Create billing and free tier usage alerts: To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds.

Connect to your instance: Once your instance is running, log into it from your local computer.

Connect an RDS database: Configure the connection between an EC2 instance and a database to allow traffic flow between them.

Create EBS snapshot policy: Create a policy that automates the creation, retention, and deletion of EBS snapshots

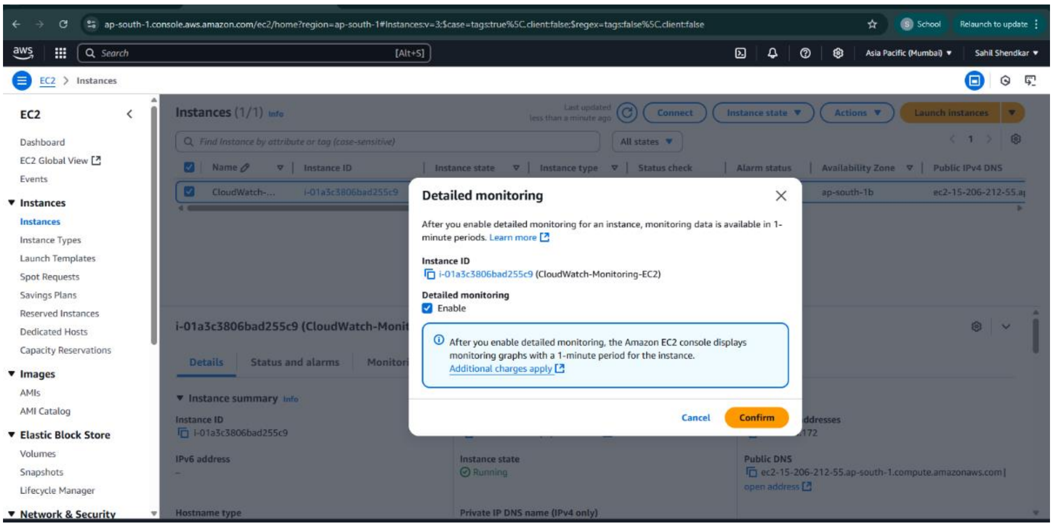
Manage detailed monitoring: Enable or disable detailed monitoring for the instance. If you enable detailed monitoring, the

Create Load Balancer: Create a application, network gateway or classic Elastic Load Balancer

Create AWS budget: AWS Budgets allows you to create budgets, forecast spend, and take action on your costs and usage

Manage CloudWatch alarms: Create or update Amazon CloudWatch alarms for the instance.

After launching instance go to the action and enable the Detailed Monitoring.



Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
☑ CloudWatch-...	i-01a3c3806bad255c9					ap-south-1b	ec2-15-206-212-55.a

i-01a3c3806bad255c9 (CloudWatch-Moni

Instance ID: i-01a3c3806bad255c9

IPv6 address: –

Instance state: Running

Public DNS: ec2-15-206-212-55.ap-south-1.compute.amazonaws.com | open address

Hostname type

Private IP DNS name (IPv4 only)

Detailed monitoring

After you enable detailed monitoring for an instance, monitoring data is available in 1-minute periods. Learn more

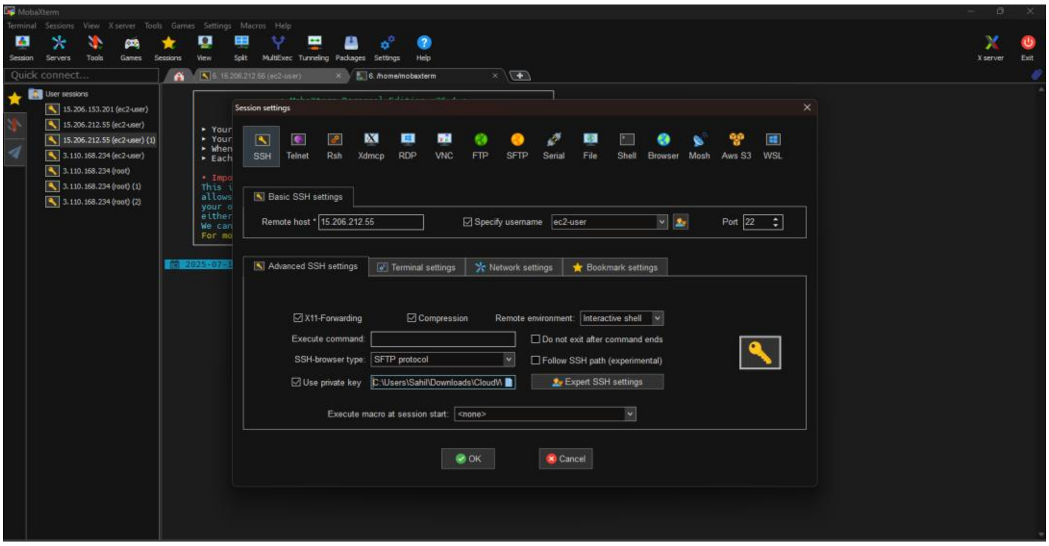
Instance ID: i-01a3c3806bad255c9 (CloudWatch-Monitoring-EC2)

Detailed monitoring: ☑ Enable

After you enable detailed monitoring, the Amazon EC2 console displays monitoring graphs with a 1-minute period for the instance. Additional charges apply

2. Install and Configure CloudWatch Agent

- Connect to EC2 via SSH.(MobaXterm)



Session settings

SSH

Basic SSH settings

Remote host * 15.206.212.55 ☑ Specify username ec2-user Port 22

Advanced SSH settings

☑ X11-Forwarding ☑ Compression Remote environment: Interactive shell

Execute command: □ Do not exit after command ends

SSH-browser type: SFTP protocol □ Follow SSH path (experimental)

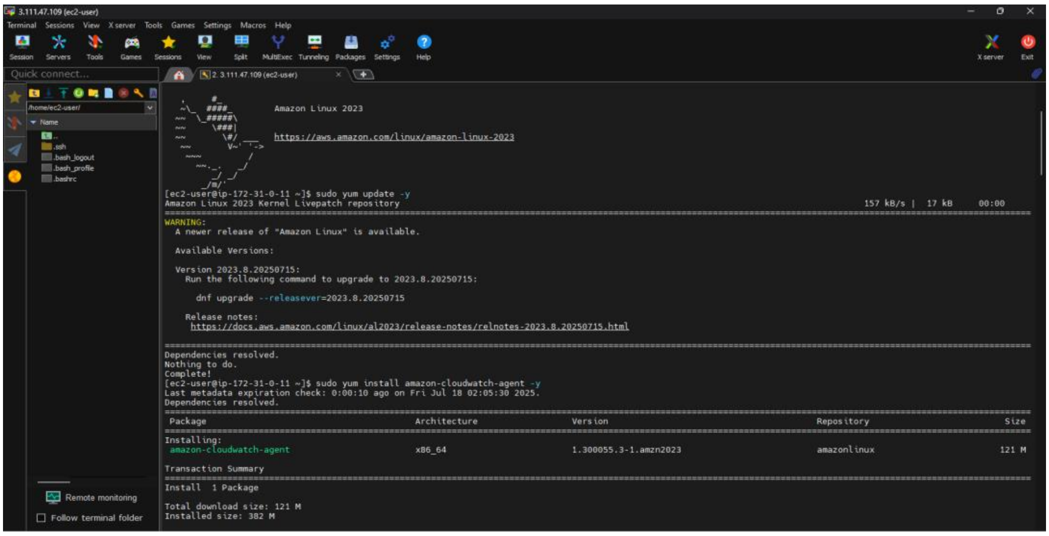
☑ Use private key C:\Users\Sahil\Downloads\CloudV

Execute macro at session start: <none>

- Run the following commands:

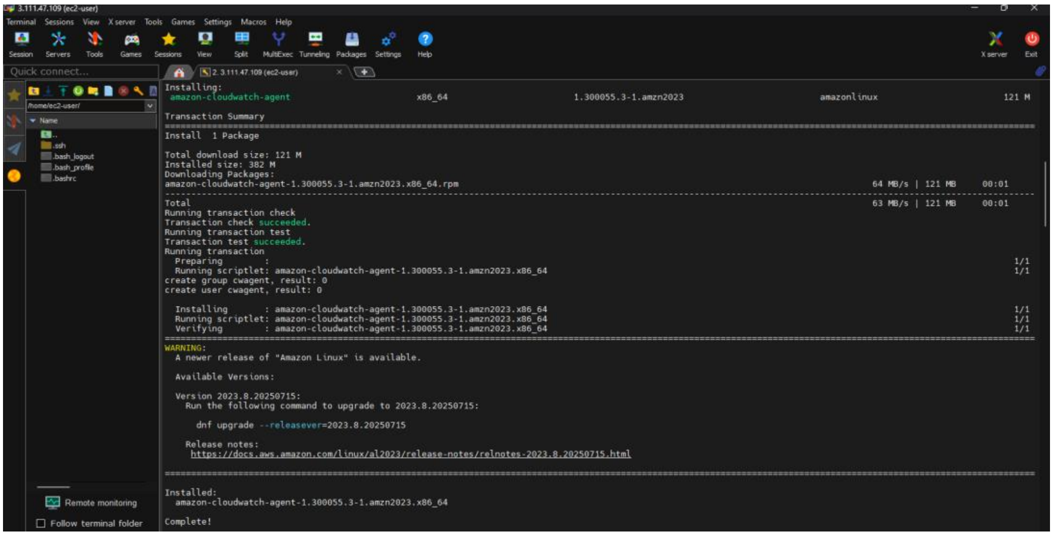
sudo yum update -y

sudo yum install amazon-cloudwatch-agent -y



```
    ,     #_
    ~\_  ####_        Amazon Linux 2023
   ~~  \_#####\
   ~~     \###|
   ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
    ~~       V~' '->
     ~~~         /
       ~~._.   _/
          _/ _/
        _/m/'
[ec2-user@ip-172-31-0-11 ~]$ sudo yum update -y
Amazon Linux 2023 Kernel Livepatch repository                               157 kB/s |  17 kB     00:00
==========================================================================================================
WARNING:
  A newer release of "Amazon Linux" is available.

  Available Versions:

  Version 2023.8.20250715:
    Run the following command to upgrade to 2023.8.20250715:

      dnf upgrade --releasever=2023.8.20250715

    Release notes:
     https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.8.20250715.html

==========================================================================================================
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-0-11 ~]$ sudo yum install amazon-cloudwatch-agent -y
Last metadata expiration check: 0:00:10 ago on Fri Jul 18 02:05:30 2025.
Dependencies resolved.
==========================================================================================================
 Package                      Architecture      Version                      Repository              Size
==========================================================================================================
Installing:
 amazon-cloudwatch-agent      x86_64            1.300055.3-1.amzn2023        amazonlinux            121 M

Transaction Summary
==========================================================================================================
Install  1 Package

Total download size: 121 M
Installed size: 382 M
```

3.111.47.109 (ec2-user)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
2. 3.111.47.109 (ec2-user)
/home/ec2-user/
Name
..
.ssh
.bash_logout
.bash_profile
.bashrc
Remote monitoring
Follow terminal folder



```
Installing:
 amazon-cloudwatch-agent      x86_64            1.300055.3-1.amzn2023        amazonlinux            121 M

Transaction Summary
==========================================================================================================
Install  1 Package

Total download size: 121 M
Installed size: 382 M
Downloading Packages:
amazon-cloudwatch-agent-1.300055.3-1.amzn2023.x86_64.rpm                     64 MB/s | 121 MB     00:01
----------------------------------------------------------------------------------------------------------
Total                                                                        63 MB/s | 121 MB     00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                                  1/1
  Running scriptlet: amazon-cloudwatch-agent-1.300055.3-1.amzn2023.x86_64                             1/1
create group cwagent, result: 0
create user cwagent, result: 0

  Installing       : amazon-cloudwatch-agent-1.300055.3-1.amzn2023.x86_64                             1/1
  Running scriptlet: amazon-cloudwatch-agent-1.300055.3-1.amzn2023.x86_64                             1/1
  Verifying        : amazon-cloudwatch-agent-1.300055.3-1.amzn2023.x86_64                             1/1
==========================================================================================================
WARNING:
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      dnf upgrade --releasever=2023.8.20250715

    Release notes:
     https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.8.20250715.html

==========================================================================================================

Installed:
  amazon-cloudwatch-agent-1.300055.3-1.amzn2023.x86_64

Complete!
```

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/home/ec2-user/
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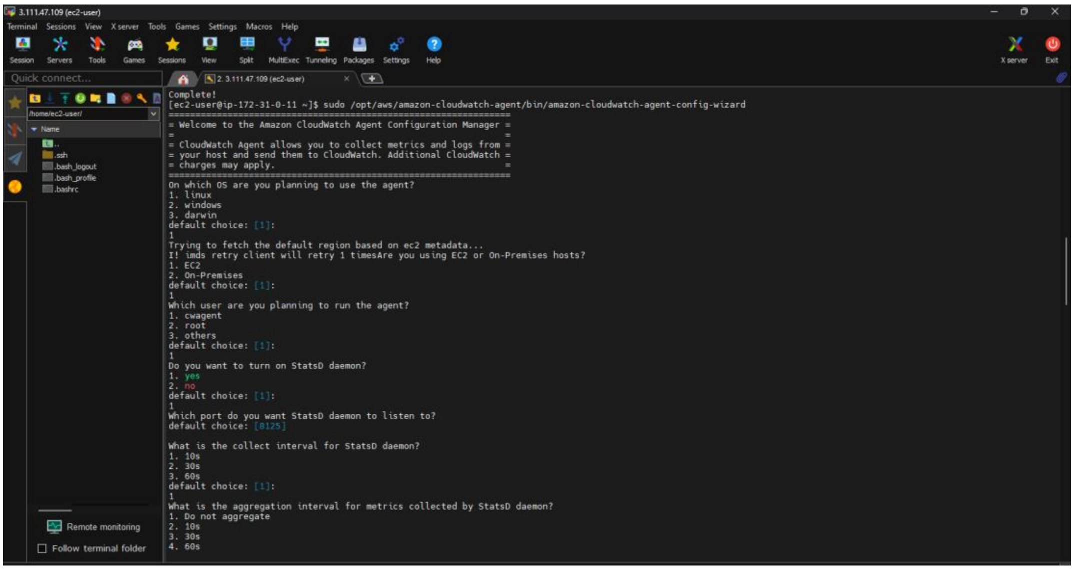
- Configure CloudWatch agent:

```
sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-config-wizard
```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/home/ec2-user/
Name
..
.ssh
.bash_logout
.bash_profile
.bashrc
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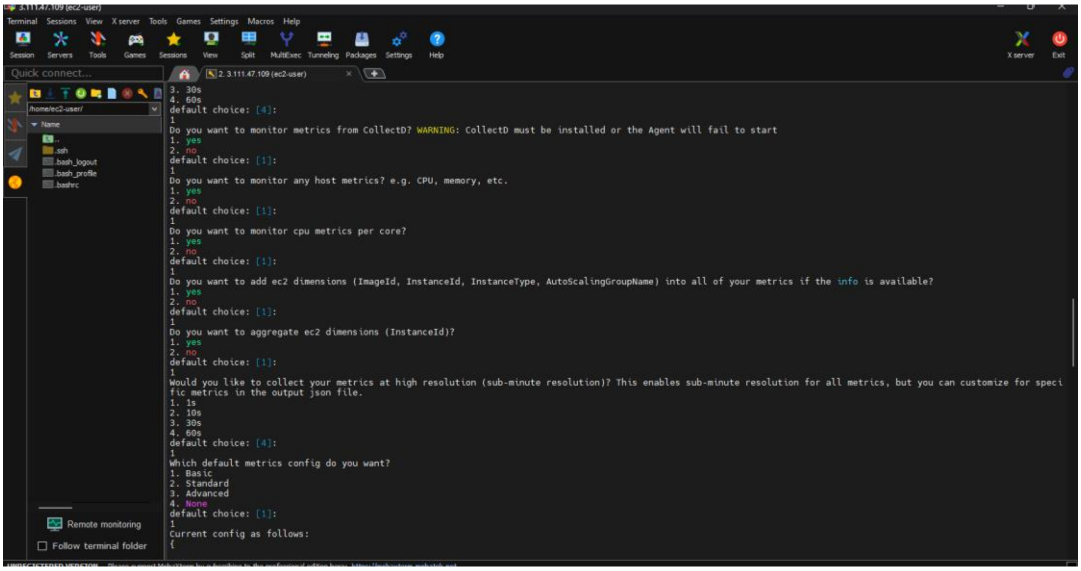
Follow terminal folder

```
Complete!
[ec2-user@ip-172-31-0-11 ~]$ sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-config-wizard
=============================================================
= Welcome to the Amazon CloudWatch Agent Configuration Manager =
=                                                           =
= CloudWatch Agent allows you to collect metrics and logs from =
= your host and send them to CloudWatch. Additional CloudWatch =
= charges may apply.                                        =
=============================================================
On which OS are you planning to use the agent?
1. linux
2. windows
3. darwin
default choice: [1]:
1
Trying to fetch the default region based on ec2 metadata...
I! imds retry client will retry 1 timesAre you using EC2 or On-Premises hosts?
1. EC2
2. On-Premises
default choice: [1]:
1
Which user are you planning to run the agent?
1. cwagent
2. root
3. others
default choice: [1]:
1
Do you want to turn on StatsD daemon?
1. yes
2. no
default choice: [1]:
1
Which port do you want StatsD daemon to listen to?
default choice: [8125]

What is the collect interval for StatsD daemon?
1. 10s
2. 30s
3. 60s
default choice: [1]:
1
What is the aggregation interval for metrics collected by StatsD daemon?
1. Do not aggregate
2. 10s
3. 30s
4. 60s
```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/home/ec2-user/
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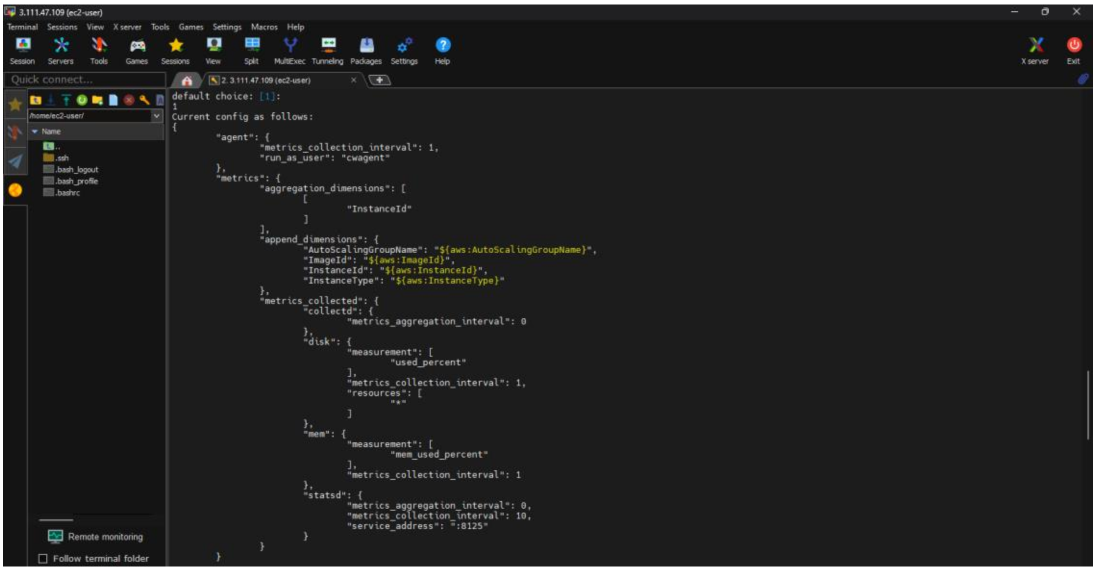
Remote monitoring
Follow terminal folder
UNREGISTERED VERSION

```
3. 30s
4. 60s
default choice: [4]:
1
Do you want to monitor metrics from CollectD? WARNING: CollectD must be installed or the Agent will fail to start
1. yes
2. no
default choice: [1]:
1
Do you want to monitor any host metrics? e.g. CPU, memory, etc.
1. yes
2. no
default choice: [1]:
1
Do you want to monitor cpu metrics per core?
1. yes
2. no
default choice: [1]:
1
Do you want to add ec2 dimensions (ImageId, InstanceId, InstanceType, AutoScalingGroupName) into all of your metrics if the info is available?
1. yes
2. no
default choice: [1]:
1
Do you want to aggregate ec2 dimensions (InstanceId)?
1. yes
2. no
default choice: [1]:
1
Would you like to collect your metrics at high resolution (sub-minute resolution)? This enables sub-minute resolution for all metrics, but you can customize for speci
fic metrics in the output json file.
1. 1s
2. 10s
3. 30s
4. 60s
default choice: [4]:
1
Which default metrics config do you want?
1. Basic
2. Standard
3. Advanced
4. None
default choice: [1]:
1
Current config as follows:
{
```



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Name
..
.ssh
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.bash_profile
.bashrc
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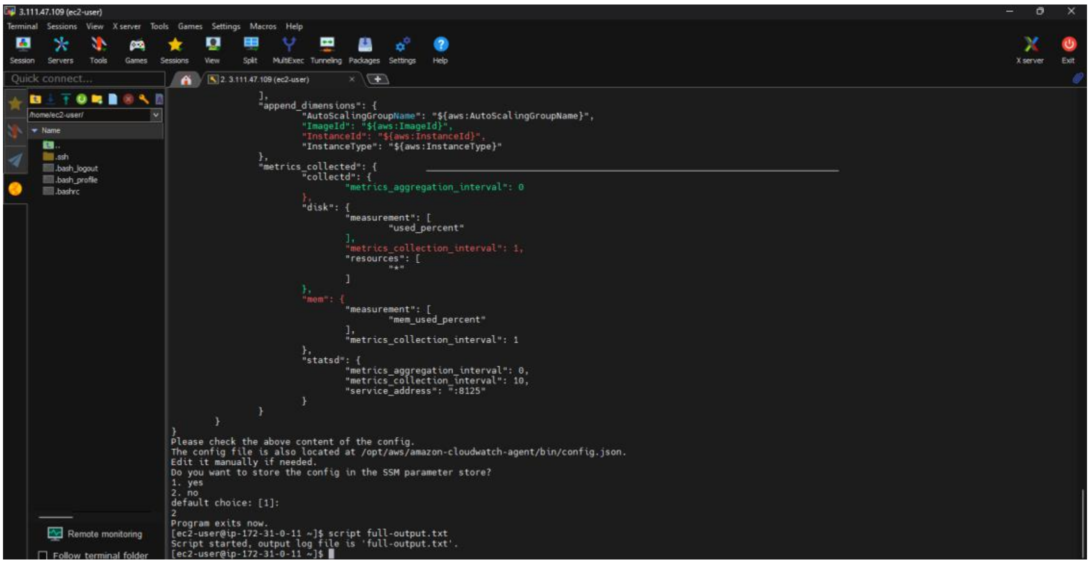
Follow terminal folder

```
default choice: [1]:
1
Current config as follows:
{
        "agent": {
                "metrics_collection_interval": 1,
                "run_as_user": "cwagent"
        },
        "metrics": {
                "aggregation_dimensions": [
                        [
                                "InstanceId"
                        ]
                ],
                "append_dimensions": {
                        "AutoScalingGroupName": "${aws:AutoScalingGroupName}",
                        "ImageId": "${aws:ImageId}",
                        "InstanceId": "${aws:InstanceId}",
                        "InstanceType": "${aws:InstanceType}"
                },
                "metrics_collected": {
                        "collectd": {
                                "metrics_aggregation_interval": 0
                        },
                        "disk": {
                                "measurement": [
                                        "used_percent"
                                ],
                                "metrics_collection_interval": 1,
                                "resources": [
                                        "*"
                                ]
                        },
                        "mem": {
                                "measurement": [
                                        "mem_used_percent"
                                ],
                                "metrics_collection_interval": 1
                        },
                        "statsd": {
                                "metrics_aggregation_interval": 0,
                                "metrics_collection_interval": 10,
                                "service_address": ":8125"
                        }
                }
        }
```



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.bashrc
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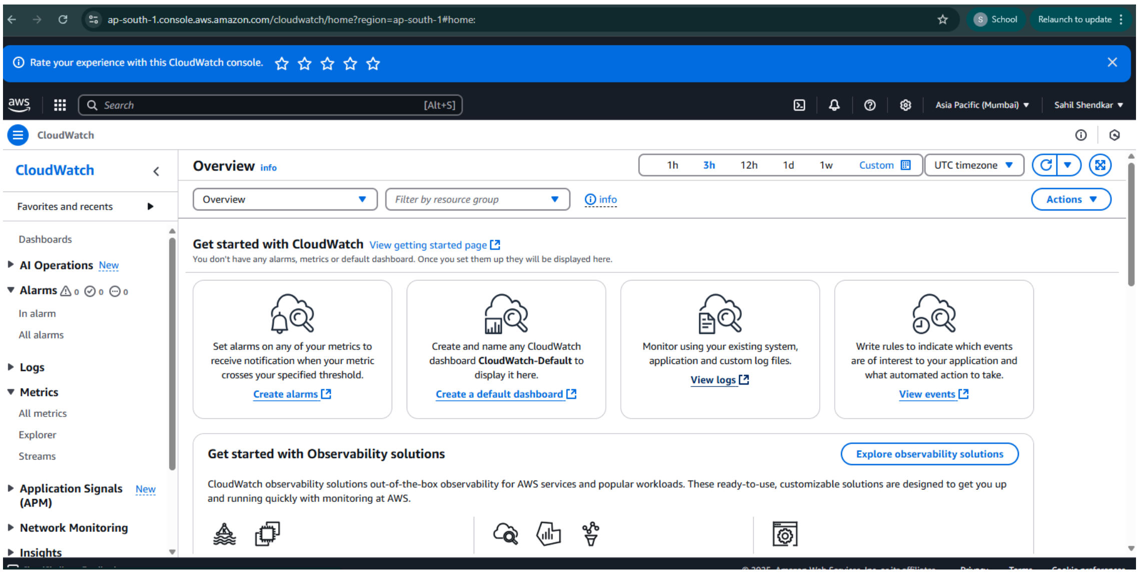
Follow terminal folder

```
                ],
                "append_dimensions": {
                        "AutoScalingGroupName": "${aws:AutoScalingGroupName}",
                        "ImageId": "${aws:ImageId}",
                        "InstanceId": "${aws:InstanceId}",
                        "InstanceType": "${aws:InstanceType}"
                },
                "metrics_collected": {
                        "collectd": {
                                "metrics_aggregation_interval": 0
                        },
                        "disk": {
                                "measurement": [
                                        "used_percent"
                                ],
                                "metrics_collection_interval": 1,
                                "resources": [
                                        "*"
                                ]
                        },
                        "mem": {
                                "measurement": [
                                        "mem_used_percent"
                                ],
                                "metrics_collection_interval": 1
                        },
                        "statsd": {
                                "metrics_aggregation_interval": 0,
                                "metrics_collection_interval": 10,
                                "service_address": ":8125"
                        }
                }
        }
}
Please check the above content of the config.
The config file is also located at /opt/aws/amazon-cloudwatch-agent/bin/config.json.
Edit it manually if needed.
Do you want to store the config in the SSM parameter store?
1. yes
2. no
default choice: [1]:
2
Program exits now.
[ec2-user@ip-172-31-0-11 ~]$ script full-output.txt
Script started, output log file is 'full-output.txt'.
[ec2-user@ip-172-31-0-11 ~]$ █
```

3. Create CloudWatch Alarm

- Go to **CloudWatch > Alarms > Create Alarm**.



Rate your experience with this CloudWatch console.

Get started with CloudWatch View getting started page

You don't have any alarms, metrics or default dashboard. Once you set them up they will be displayed here.

Set alarms on any of your metrics to receive notification when your metric crosses your specified threshold.

Create and name any CloudWatch dashboard **CloudWatch-Default** to display it here.

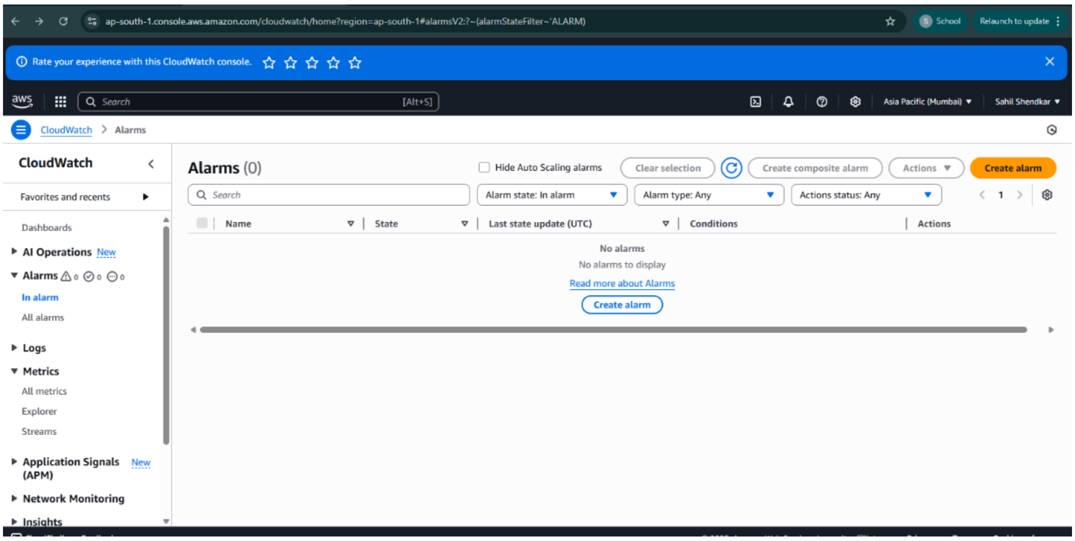
Monitor using your existing system, application and custom log files.

Write rules to indicate which events are of interest to your application and what automated action to take.

Get started with Observability solutions

CloudWatch observability solutions out-of-the-box observability for AWS services and popular workloads. These ready-to-use, customizable solutions are designed to get you up and running quickly with monitoring at AWS.

Create New Alarm



Rate your experience with this CloudWatch console.

Alarms (0)

Alarm state: In alarm

Alarm type: Any

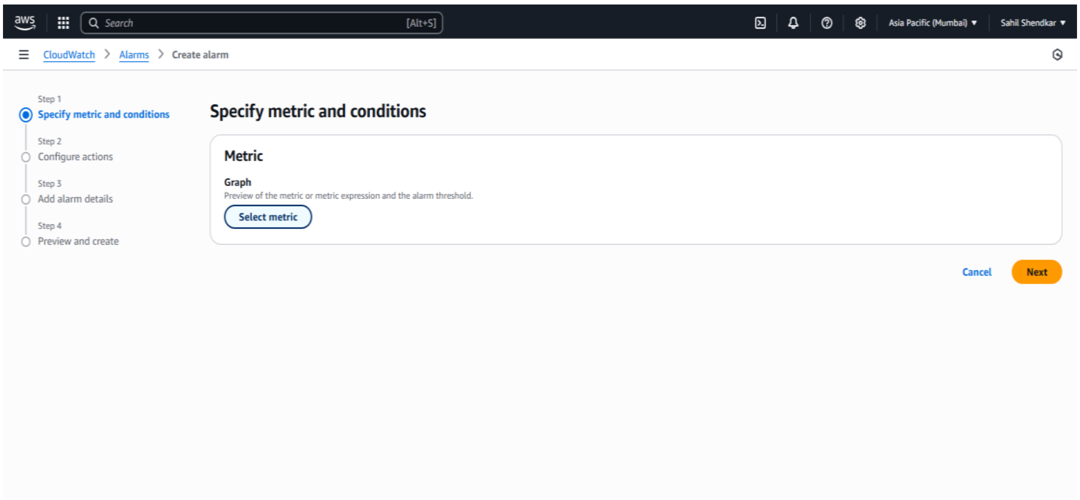
Actions status: Any

No alarms

No alarms to display

- Choose **Metric**: EC2 > Per-Instance Metrics > CPUUtilization.

Go to the select metrics-



Step 1
Specify metric and conditions

Step 2
Configure actions

Step 3
Add alarm details

Step 4
Preview and create

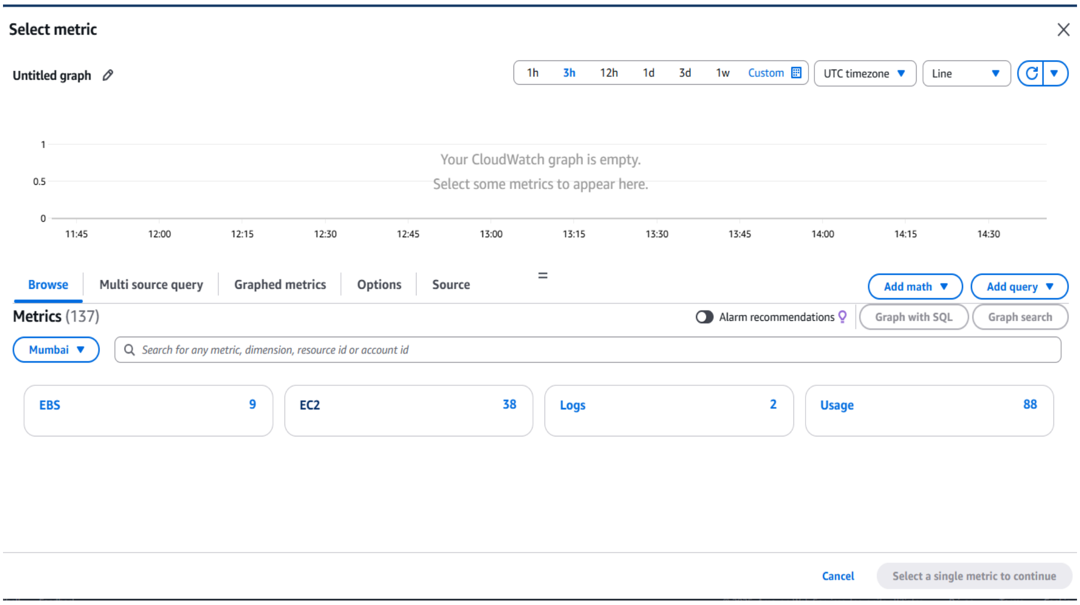
Specify metric and conditions

Metric

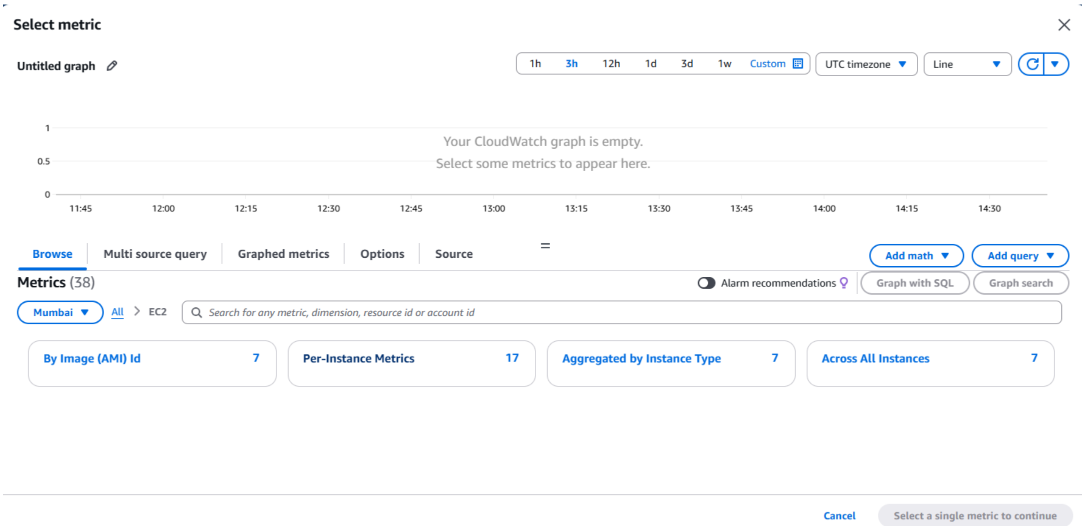
Graph

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

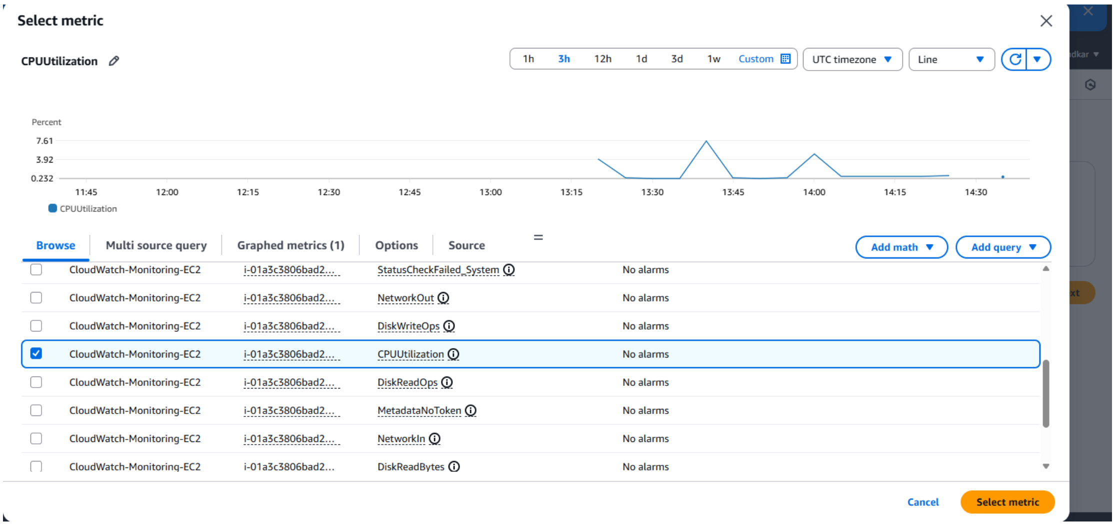
Select the EC2-



Select the Pre-Instance Metrics-

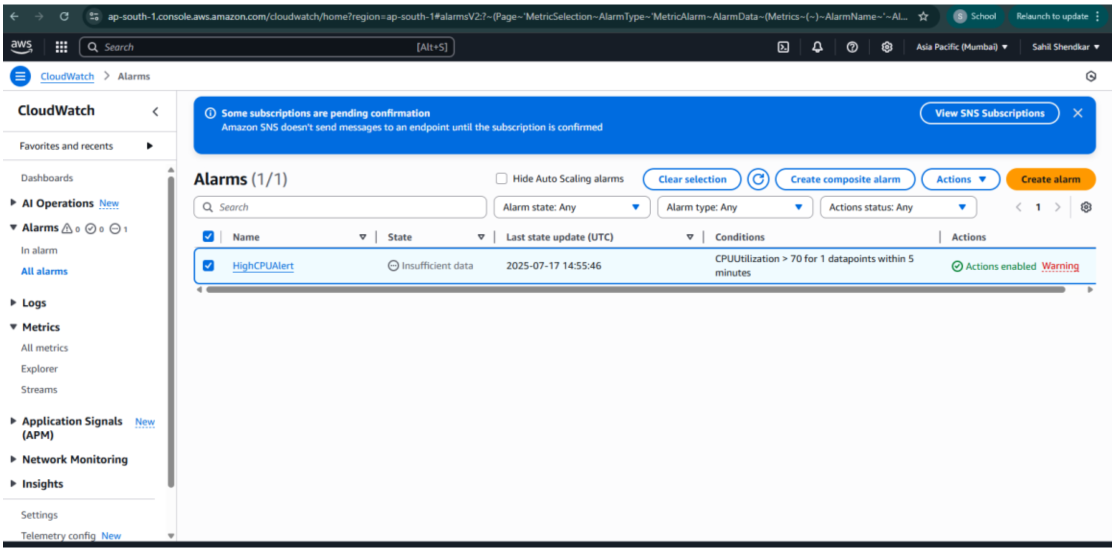


Select the CPUUtilization



□	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	StatusCheckFailed_System	No alarms
□	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	NetworkOut	No alarms
□	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	DiskWriteOps	No alarms
☑	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	CPUUtilization	No alarms
□	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	DiskReadOps	No alarms
□	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	MetadataNoToken	No alarms
□	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	NetworkIn	No alarms
□	CloudWatch-Monitoring-EC2	i-01a3c3806bad2...	DiskReadBytes	No alarms

Alarm is created



Some subscriptions are pending confirmation
Amazon SNS doesn't send messages to an endpoint until the subscription is confirmed

Alarms (1/1)

□ Hide Auto Scaling alarms

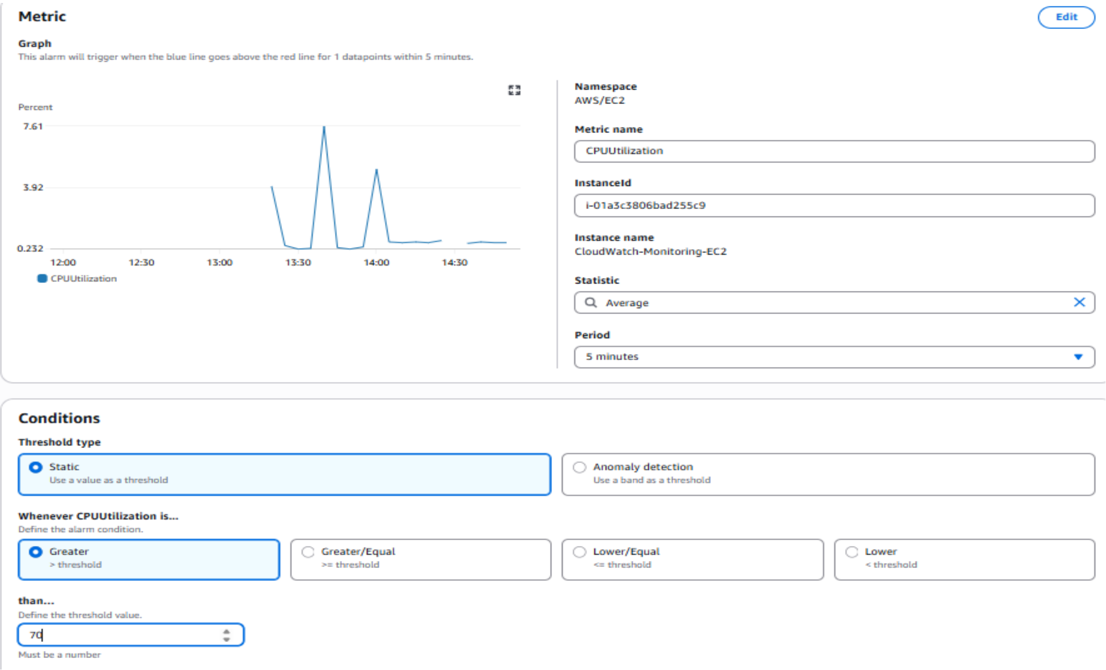
Alarm state: Any | Alarm type: Any | Actions status: Any

☑	Name	State	Last state update (UTC)	Conditions	Actions
☑	HighCPUAlert	Insufficient data	2025-07-17 14:55:46	CPUUtilization > 70 for 1 datapoints within 5 minutes	Actions enabled Warning

- Set conditions:
  - Threshold type: **Static**
  - Condition: Greater than 70
  - Period: 5 minutes
  - Datapoints to alarm: 1 out of 1

Go to the CloudWatch Console-

Go to the Metrics



Metric

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

Namespace
AWS/EC2

Metric name
CPUUtilization

InstanceId
i-01a3c3806bad255c9

Instance name
CloudWatch-Monitoring-EC2

Statistic
Average

Period
5 minutes

Conditions

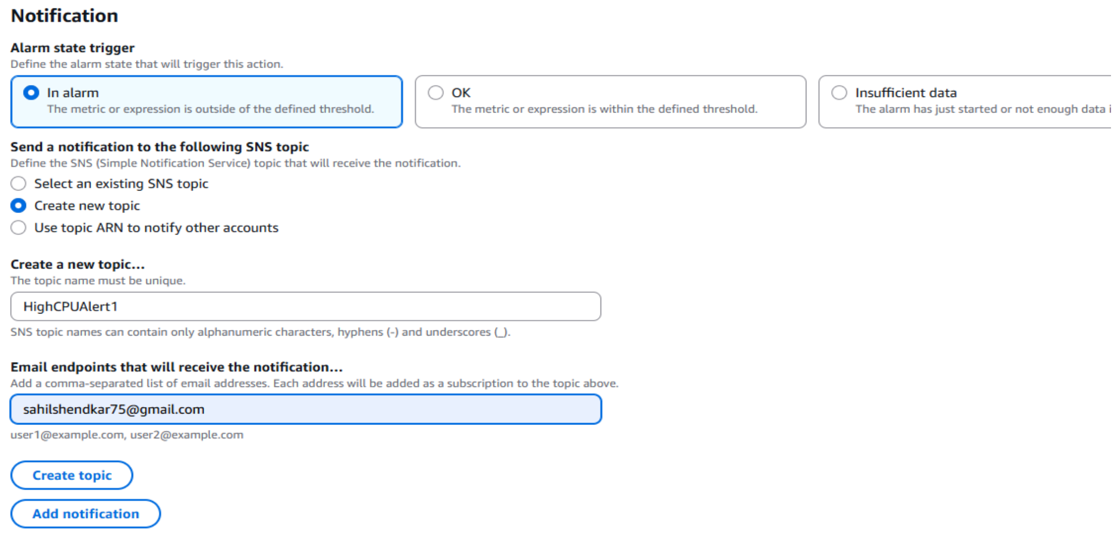
Threshold type
● Static
Use a value as a threshold
○ Anomaly detection
Use a band as a threshold

Whenever CPUUtilization is...
Define the alarm condition.
● Greater
> threshold
○ Greater/Equal
>= threshold
○ Lower/Equal
<= threshold
○ Lower
< threshold

than...
Define the threshold value.
70
Must be a number

5. Create SNS Topic and Subscribe

- Go to **SNS > Topics > Create Topic**.
- Choose type: **Standard**, give name (e.g., HighCPUAlerts).
- Create a subscription:
    - Protocol: **Email**
    - Endpoint: Your email
- Confirm subscription from your 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 i

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.

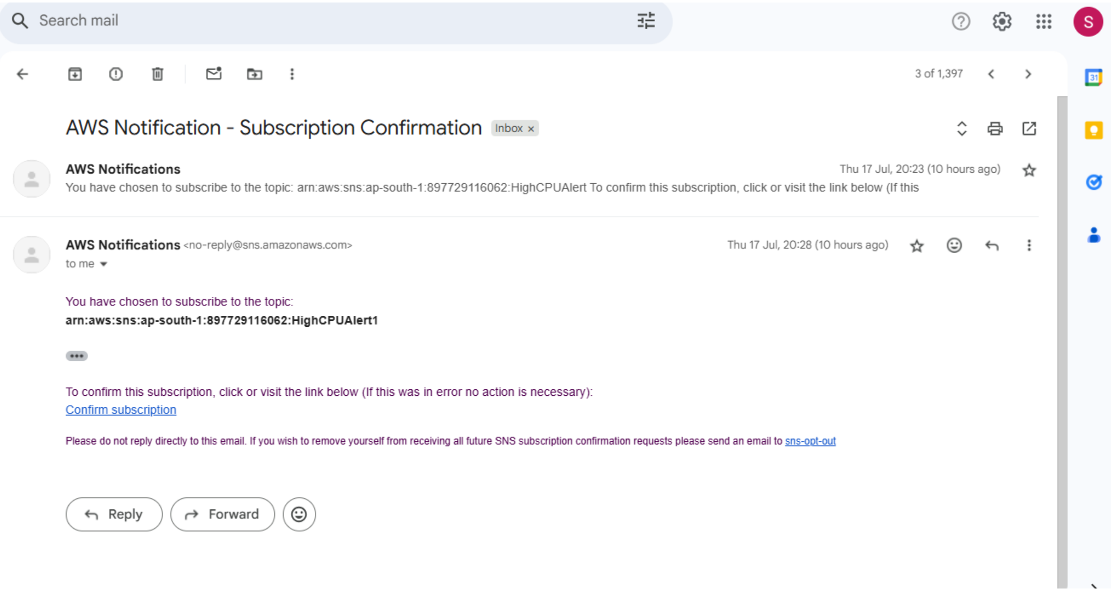
HighCPUAlert1

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.

sahilshendkar75@gmail.com

user1@example.com, user2@example.com



AWS Notification - Subscription Confirmation

AWS Notifications Thu 17 Jul, 20:23 (10 hours ago)
You have chosen to subscribe to the topic: arn:aws:sns:ap-south-1:897729116062:HighCPUAlert To confirm this subscription, click or visit the link below (If this

AWS Notifications <no-reply@sns.amazonaws.com> Thu 17 Jul, 20:28 (10 hours ago)
to me

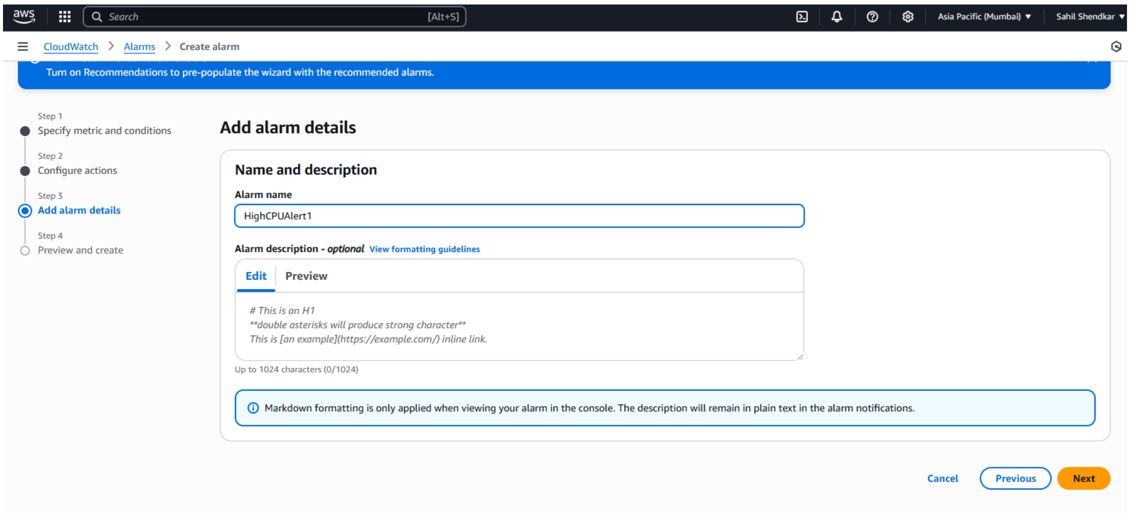
You have chosen to subscribe to the topic:
arn:aws:sns:ap-south-1:897729116062:HighCPUAlert1

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

6. Attach SNS Action to Alarm

- Go back to the CloudWatch alarm.
- Edit actions → Choose SNS topic: HighCPUAlerts.



Turn on Recommendations to pre-populate the wizard with the recommended alarms.

Step 1
Specify metric and conditions

Step 2
Configure actions

Step 3
Add alarm details

Step 4
Preview and create

Add alarm details

Name and description

Alarm name: HighCPUAlert1

Alarm description - *optional* View formatting guidelines

Edit | Preview

# 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)

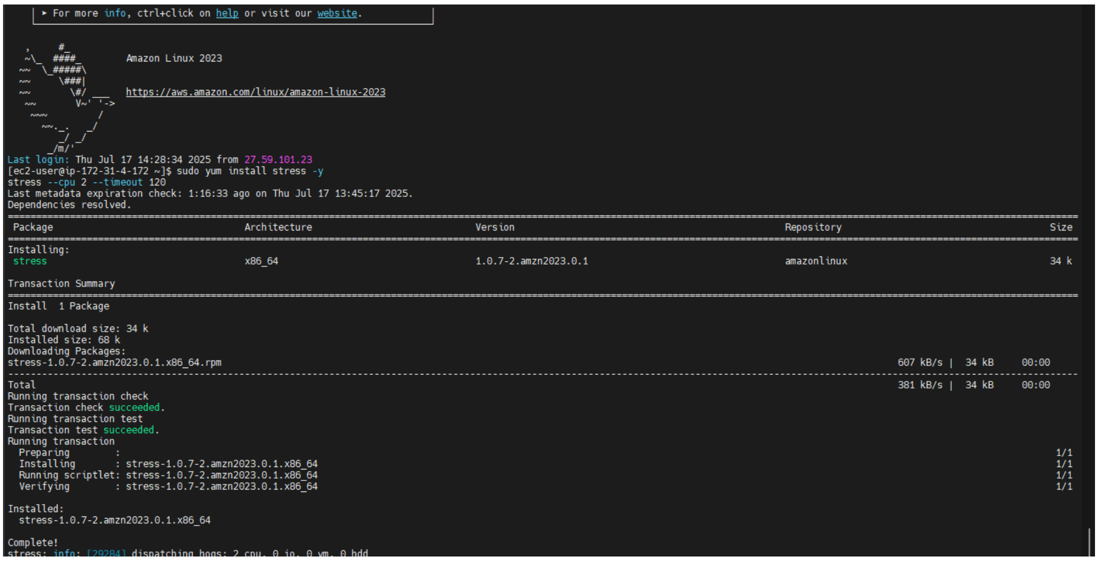
ⓘ Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.

7. Generate High CPU Load

- Install and run stress:

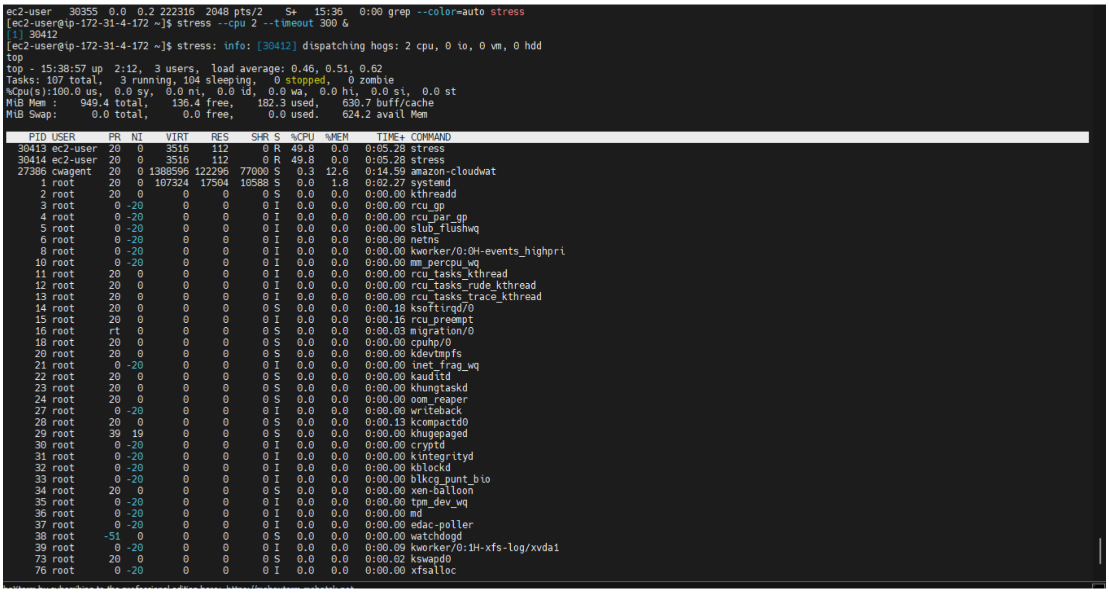
sudo yum install stress -y

stress --cpu 2 --timeout 120 &



```
    ▸ For more info, ctrl+click on help or visit our website.


     ,     #_
     ~\_  ####_        Amazon Linux 2023
    ~~  \_#####\
    ~~     \###|
    ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
     ~~       V~' '->
      ~~~         /
        ~~._.   _/
           _/ _/
         _/m/'
Last login: Thu Jul 17 14:28:34 2025 from 27.59.101.23
[ec2-user@ip-172-31-4-172 ~]$ sudo yum install stress -y
stress --cpu 2 --timeout 120
Last metadata expiration check: 1:16:33 ago on Thu Jul 17 13:45:17 2025.
Dependencies resolved.
================================================================================================================================
 Package                     Architecture                 Version                                Repository                Size
================================================================================================================================
Installing:
 stress                      x86_64                       1.0.7-2.amzn2023.0.1                   amazonlinux               34 k

Transaction Summary
================================================================================================================================
Install  1 Package

Total download size: 34 k
Installed size: 68 k
Downloading Packages:
stress-1.0.7-2.amzn2023.0.1.x86_64.rpm                                                          607 kB/s |  34 kB     00:00
--------------------------------------------------------------------------------------------------------------------------------
Total                                                                                           381 kB/s |  34 kB     00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                                                        1/1
  Installing       : stress-1.0.7-2.amzn2023.0.1.x86_64                                                                     1/1
  Running scriptlet: stress-1.0.7-2.amzn2023.0.1.x86_64                                                                     1/1
  Verifying        : stress-1.0.7-2.amzn2023.0.1.x86_64                                                                     1/1

Installed:
  stress-1.0.7-2.amzn2023.0.1.x86_64

Complete!
stress: info: [29284] dispatching hogs: 2 cpu, 0 io, 0 vm, 0 hdd
```

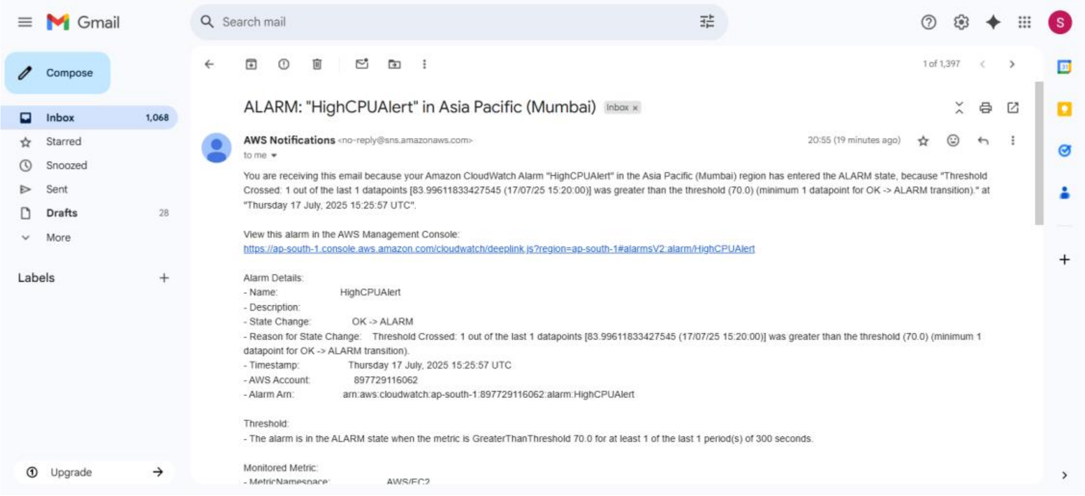
- Run top to verify CPU spike.



```
ec2-user   30355  0.0  0.2 222316  2048 pts/2    S+   15:36   0:00 grep --color=auto stress
[ec2-user@ip-172-31-4-172 ~]$ stress --cpu 2 --timeout 300 &
[1] 30412
[ec2-user@ip-172-31-4-172 ~]$ stress: info: [30412] dispatching hogs: 2 cpu, 0 io, 0 vm, 0 hdd
top
top - 15:38:57 up  2:12,  3 users,  load average: 0.46, 0.51, 0.62
Tasks: 107 total,   3 running, 104 sleeping,   0 stopped,   0 zombie
%Cpu(s):100.0 us,  0.0 sy,  0.0 ni,  0.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    949.4 total,    136.4 free,    182.3 used,    630.7 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    624.2 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
  30413 ec2-user  20   0    3516    112      0 R  49.8   0.0   0:05.28 stress
  30414 ec2-user  20   0    3516    112      0 R  49.8   0.0   0:05.28 stress
  27386 cwagent   20   0 1388596 122296  77000 S   0.3  12.6   0:14.59 amazon-cloudwat
      1 root      20   0  107324  17504  10588 S   0.0   1.8   0:02.27 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kthreadd
      3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
      4 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 slub_flushwq
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 netns
      8 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
     10 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     11 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
     12 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
     13 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
     14 root      20   0       0      0      0 S   0.0   0.0   0:00.18 ksoftirqd/0
     15 root      20   0       0      0      0 I   0.0   0.0   0:00.16 rcu_preempt
     16 root      rt   0       0      0      0 S   0.0   0.0   0:00.03 migration/0
     18 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
     20 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kdevtmpfs
     21 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 inet_frag_wq
     22 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kauditd
     23 root      20   0       0      0      0 S   0.0   0.0   0:00.00 khungtaskd
     24 root      20   0       0      0      0 S   0.0   0.0   0:00.00 oom_reaper
     27 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 writeback
     28 root      20   0       0      0      0 S   0.0   0.0   0:00.13 kcompactd0
     29 root      39  19       0      0      0 S   0.0   0.0   0:00.00 khugepaged
     30 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 cryptd
     31 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kintegrityd
     32 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kblockd
     33 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 blkcg_punt_bio
     34 root      20   0       0      0      0 S   0.0   0.0   0:00.00 xen-balloon
     35 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 tpm_dev_wq
     36 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 md
     37 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 edac-poller
     38 root     -51   0       0      0      0 S   0.0   0.0   0:00.00 watchdogd
     39 root       0 -20       0      0      0 I   0.0   0.0   0:00.09 kworker/0:1H-xfs-log/xvda1
     73 root      20   0       0      0      0 S   0.0   0.0   0:00.02 kswapd0
     76 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 xfsalloc
```

8. Receive Email Alert

- After ~5 mins, CPU crosses threshold.
- SNS sends alert email.



ALARM: "HighCPUAlert" in Asia Pacific (Mumbai)

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

20:55 (19 minutes ago)

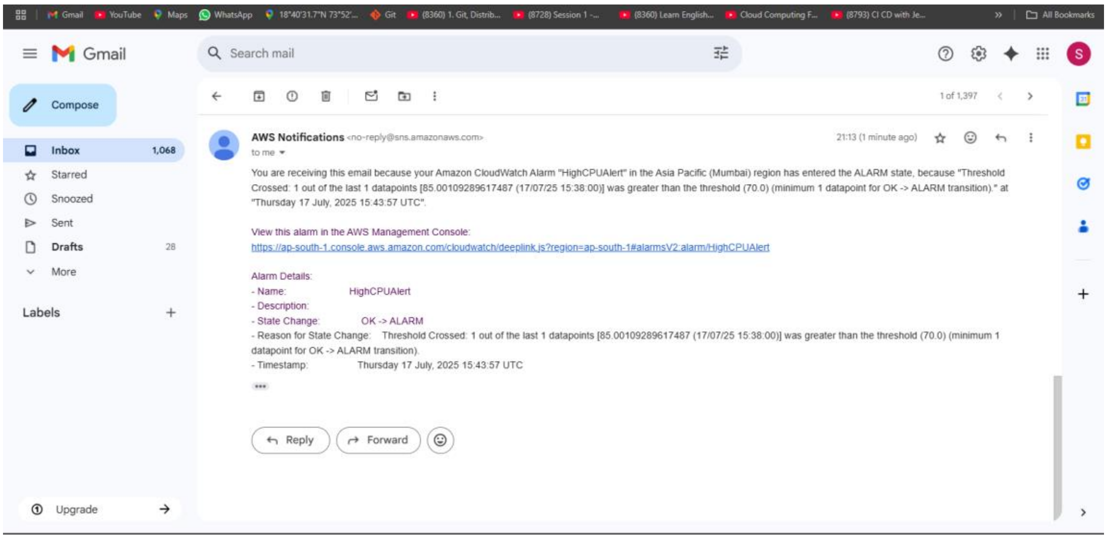
You are receiving this email because your Amazon CloudWatch Alarm "HighCPUAlert" in the Asia Pacific (Mumbai) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [83.99611833427545 (17/07/25 15:20:00)] was greater than the threshold (70.0) (minimum 1 datapoint for OK -> ALARM transition)." at "Thursday 17 July, 2025 15:25:57 UTC".

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

Alarm Details:
- Name: HighCPUAlert
- Description:
- State Change: OK -> ALARM
- Reason for State Change: Threshold Crossed: 1 out of the last 1 datapoints [83.99611833427545 (17/07/25 15:20:00)] was greater than the threshold (70.0) (minimum 1 datapoint for OK -> ALARM transition).
- Timestamp: Thursday 17 July, 2025 15:25:57 UTC
- AWS Account: 897729116062
- Alarm Arn: arn:aws:cloudwatch:ap-south-1:897729116062:alarm:HighCPUAlert

Threshold:
- The alarm is in the ALARM state when the metric is GreaterThanThreshold 70.0 for at least 1 of the last 1 period(s) of 300 seconds.

Monitored Metric:
- MetricNamespace: AWS/EC2



AWS Notifications <no-reply@sns.amazonaws.com>
to me
21:13 (1 minute ago)

You are receiving this email because your Amazon CloudWatch Alarm "HighCPUAlert" in the Asia Pacific (Mumbai) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [85.00109289617487 (17/07/25 15:38:00)] was greater than the threshold (70.0) (minimum 1 datapoint for OK -> ALARM transition)." at "Thursday 17 July, 2025 15:43:57 UTC".

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

Alarm Details:
- Name: HighCPUAlert
- Description:
- State Change: OK -> ALARM
- Reason for State Change: Threshold Crossed: 1 out of the last 1 datapoints [85.00109289617487 (17/07/25 15:38:00)] was greater than the threshold (70.0) (minimum 1 datapoint for OK -> ALARM transition).
- Timestamp: Thursday 17 July, 2025 15:43:57 UTC

Project Outcome:

- Successfully monitored EC2 CPU usage using CloudWatch.
- Automatically received email alerts on high CPU usage.