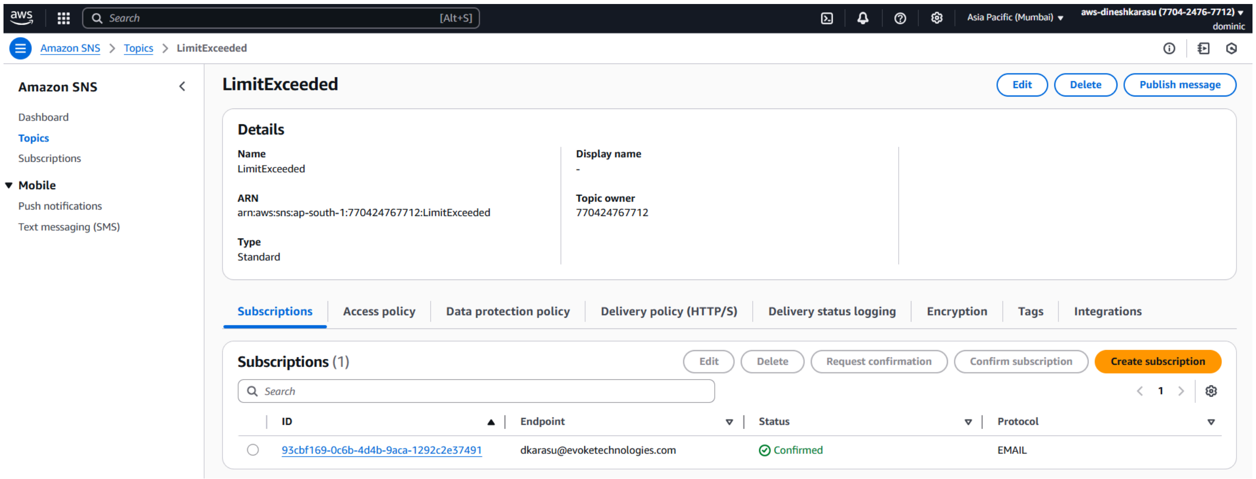
Use case

Send alerts using SNS and set up CloudWatch alarms with Python

1. Create SNS topic, add your email to the subscription and confirm subscription from the email



LimitExceeded

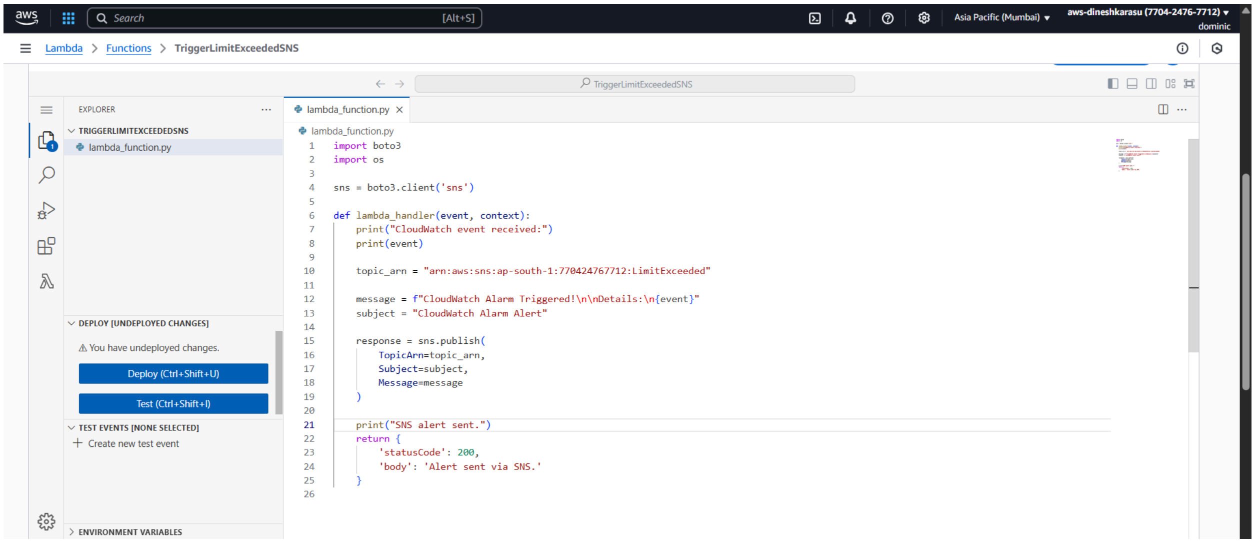
Details

Name LimitExceeded	**Display name** -
ARN arn:aws:sns:ap-south-1:770424767712:LimitExceeded	**Topic owner** 770424767712
Type Standard	

Subscriptions (1)

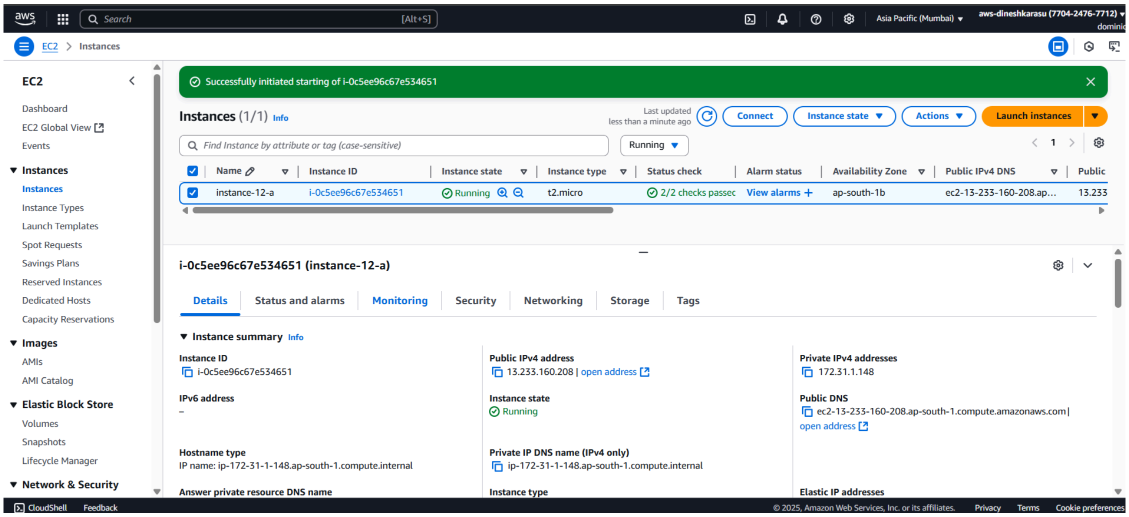
	ID	Endpoint	Status	Protocol
○	93cbf169-0c6b-4d4b-9aca-1292c2e37491	dkarasu@evoketechnologies.com	✓ Confirmed	EMAIL

2. Create Lambda function to publish SNS



```python
import boto3
import os

sns = boto3.client('sns')

def lambda_handler(event, context):
    print("CloudWatch event received:")
    print(event)

    topic_arn = "arn:aws:sns:ap-south-1:770424767712:LimitExceeded"

    message = f"CloudWatch Alarm Triggered!\n\nDetails:\n{event}"
    subject = "CloudWatch Alarm Alert"

    response = sns.publish(
        TopicArn=topic_arn,
        Subject=subject,
        Message=message
    )

    print("SNS alert sent.")
    return {
        'statusCode': 200,
        'body': 'Alert sent via SNS.'
    }

```

3. Create an EC2 instance to create CPU usage alerts on CLoudwatch



Successfully initiated starting of i-0c5ee96c67e534651

Instances (1/1) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public
☑	instance-12-a	i-0c5ee96c67e534651	Running	t2.micro	2/2 checks passec	View alarms +	ap-south-1b	ec2-13-233-160-208.ap...	13.233

i-0c5ee96c67e534651 (instance-12-a)

Instance summary Info

Instance ID
i-0c5ee96c67e534651

Public IPv4 address
13.233.160.208 | open address

Private IPv4 addresses
172.31.1.148

IPv6 address
–

Instance state
Running

Public DNS
ec2-13-233-160-208.ap-south-1.compute.amazonaws.com | open address

Hostname type
IP name: ip-172-31-1-148.ap-south-1.compute.internal

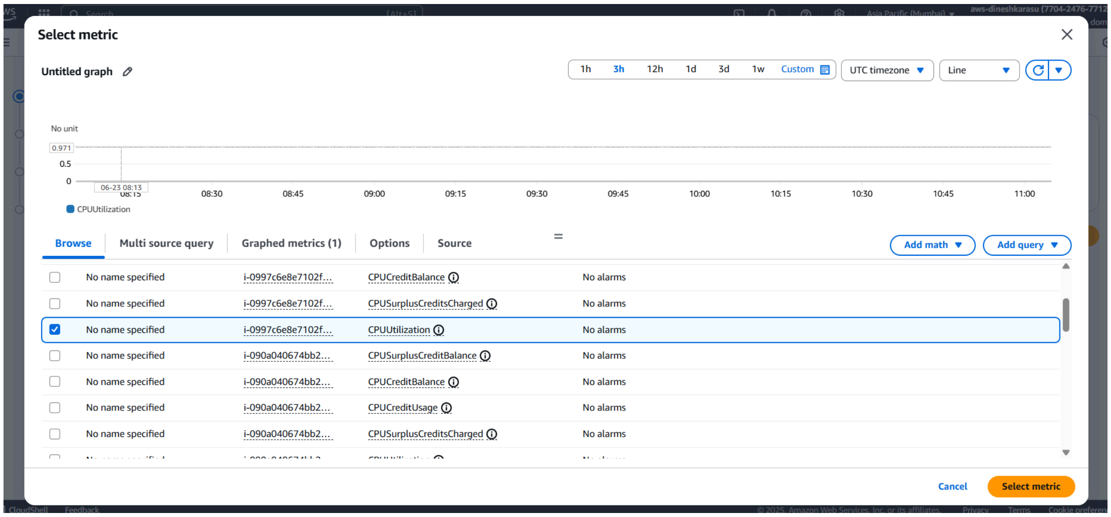
Private IP DNS name (IPv4 only)
ip-172-31-1-148.ap-south-1.compute.internal

Answer private resource DNS name

Instance type

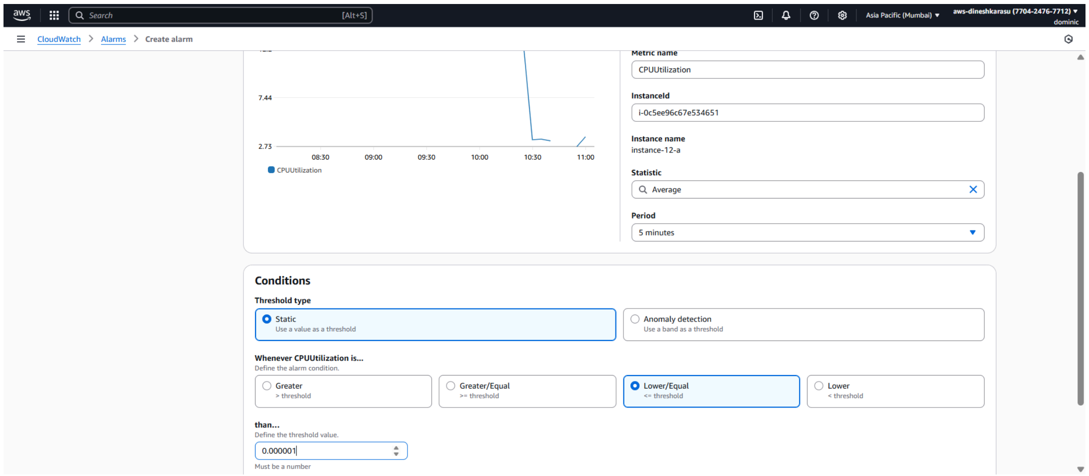
Elastic IP addresses

4. Create a cloud watch alert to trigger LAmbda when the state goes to OK



□	No name specified	i-0997c6e8e7102f...	CPUCreditBalance	No alarms
□	No name specified	i-0997c6e8e7102f...	CPUSurplusCreditsCharged	No alarms
☑	No name specified	i-0997c6e8e7102f...	CPUUtilization	No alarms
□	No name specified	i-090a040674bb2...	CPUSurplusCreditBalance	No alarms
□	No name specified	i-090a040674bb2...	CPUCreditBalance	No alarms
□	No name specified	i-090a040674bb2...	CPUCreditUsage	No alarms
□	No name specified	i-090a040674bb2...	CPUSurplusCreditsCharged	No alarms

5. The Alert moves to OK state when specified threshold meets



Metric name
CPUUtilization

InstanceId
i-0c5ee96c67e534651

Instance name
instance-12-a

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

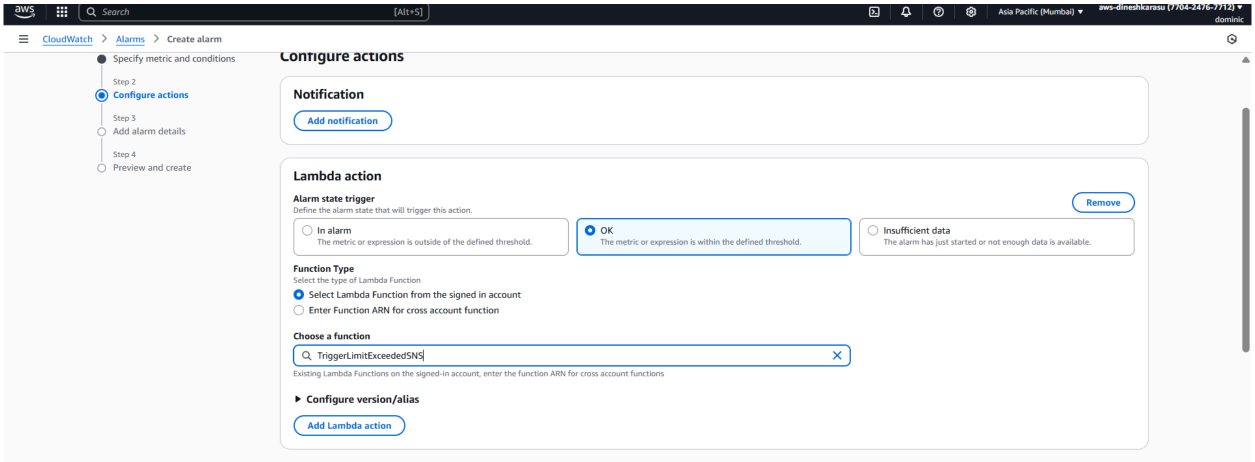
○ Lower
< threshold

than...
Define the threshold value.

0.000001

Must be a number

6. Select Lambda action as alarm state trigger



Configure actions

Notification

Lambda action

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.

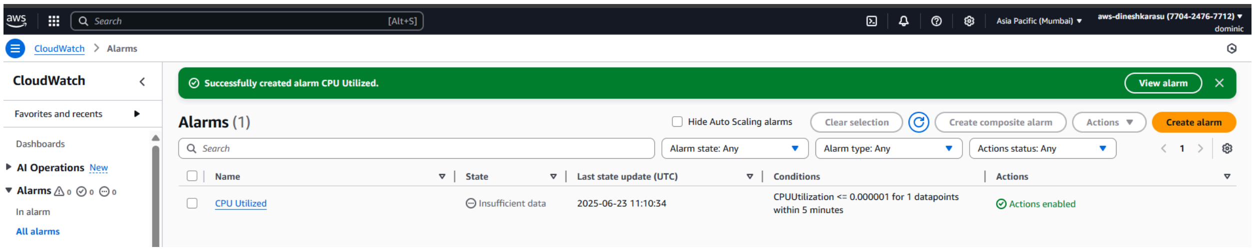
○ Insufficient data
The alarm has just started or not enough data is available.

Function Type
Select the type of Lambda Function

● Select Lambda Function from the signed in account
○ Enter Function ARN for cross account function

Choose a function
TriggerLimitExceededSNS
Existing Lambda Functions on the signed-in account, enter the function ARN for cross account functions

▶ Configure version/alias

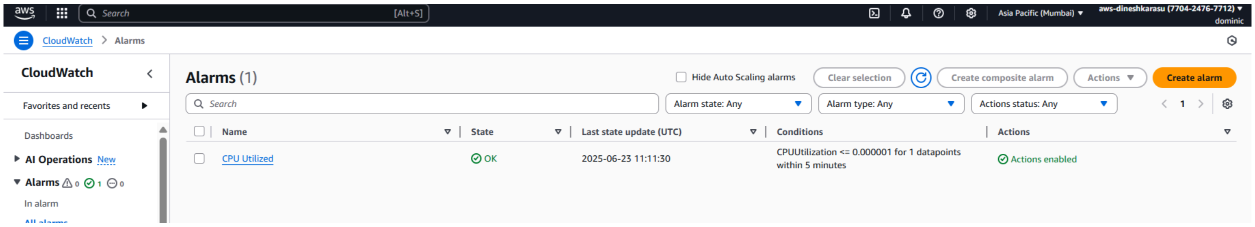


Successfully created alarm CPU Utilized.

Alarms (1)

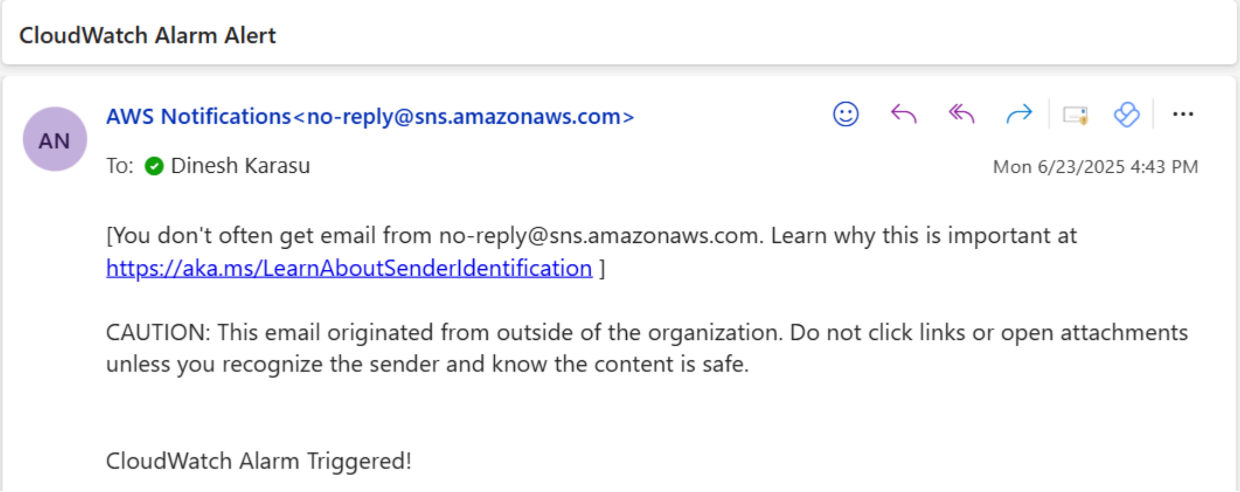
Name	State	Last state update (UTC)	Conditions	Actions
CPU Utilized	Insufficient data	2025-06-23 11:10:34	CPUUtilization <= 0.000001 for 1 datapoints within 5 minutes	Actions enabled

When the state changes to OK, the Lambda Alert will invoke lambda and Lambda will publish SNS email



Alarms (1)

Name	State	Last state update (UTC)	Conditions	Actions
CPU Utilized	OK	2025-06-23 11:11:30	CPUUtilization <= 0.000001 for 1 datapoints within 5 minutes	Actions enabled



CloudWatch Alarm Alert

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

To: Dinesh Karasu

Mon 6/23/2025 4:43 PM

[You don't often get email from no-reply@sns.amazonaws.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

CloudWatch Alarm Triggered!