Kyndryl AWS Bootcamp Training – 2024 Batch - 2

Task Assignment 1: Monitoring and Logging using AWS CloudWatch and SNS Notification

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Documentation: Setting Up EC2 Instance with CloudWatch Alarm

Overview:

This documentation outlines the steps to:

1. Launch an EC2 instance.

2. Install necessary packages and generate CPU load.

3. Set up a CloudWatch alarm to monitor CPU Utilization.

4. Configure SNS to send email notifications when the CPU utilization exceeds a threshold.

5. Clean up resources after testing.
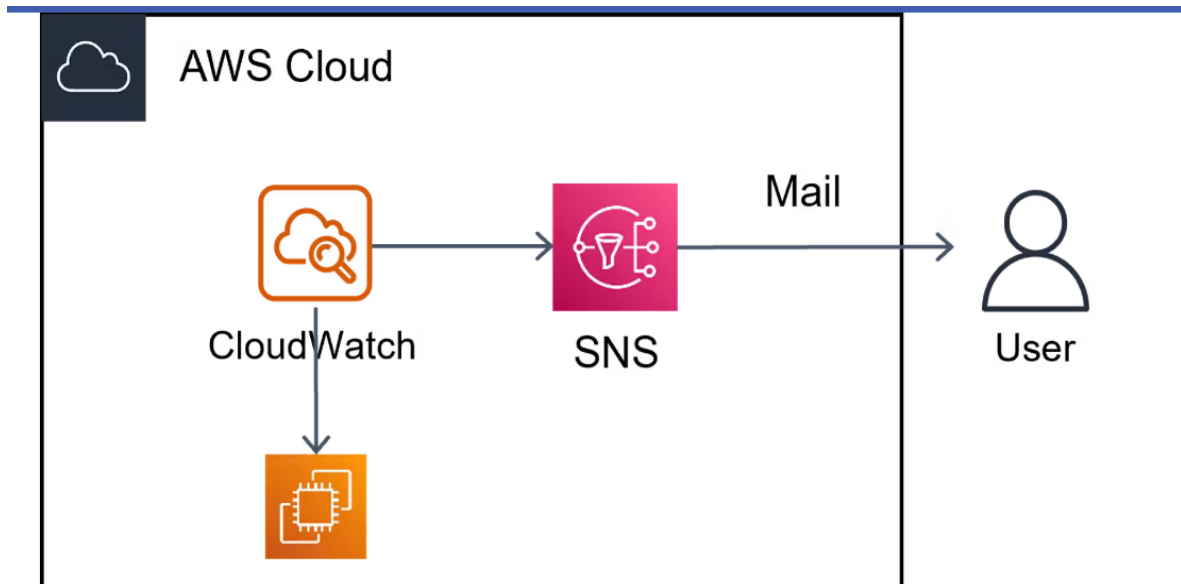
Set up CloudWatch alarms and SNS topic in AWS

Steps:

Step 1: Launch an EC2 Instance

1. **Log in** to the AWS Management Console and go to the EC2 Dashboard.

2. **Launch Instance**:
   - Click "Launch Instance", choose Amazon Linux 2 AMI, and select t2.micro.

3. **Configure Instance**:
   - Set to default VPC, ensure a public IP, and use default storage and VPC.

4. **Set Security Group**:
   - Create or select a security group with rules for SSH (port 22) and optionally HTTP (port 80).

5. **Review and Launch**:
   - Review settings, click "Launch", and select or create a key pair for access.
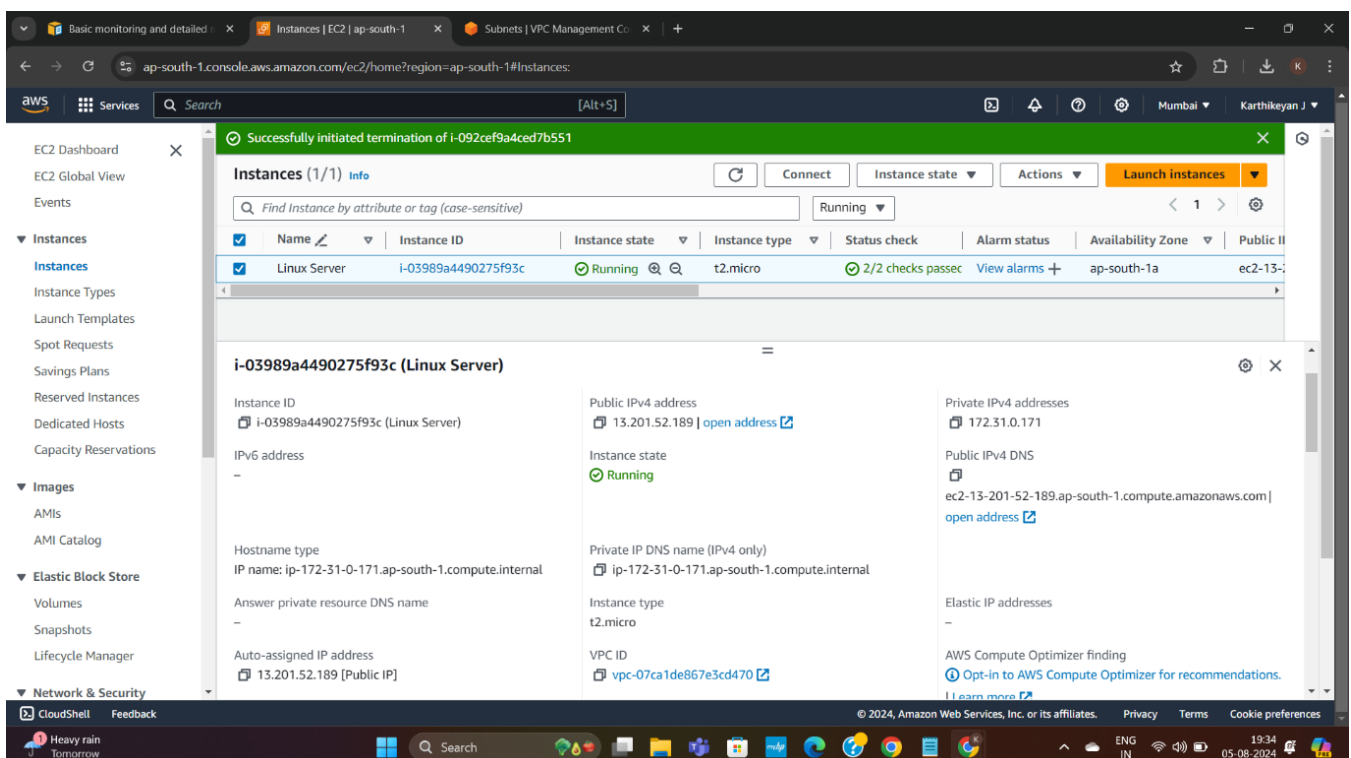
Step 2: Connect to the Instance

1. **Connect to Your Instance**:

   o Open your terminal (or use an SSH client).

   o If you're using a macOS or Linux system, you can open the terminal application.

   o If you're using Windows, you can use a tool like PuTTY or the built-in Command Prompt/PowerShell (if you have OpenSSH installed).

   o Ensure you have your key pair file (your-key-pair.pem) downloaded.

   o Replace /path/to/your-key-pair.pem with the actual path to your .pem file.

   o Connect using the following command:

ssh -i /path/to/your-key-pair.pem ec2-user@<Public-IP-of-your-EC2-instance>
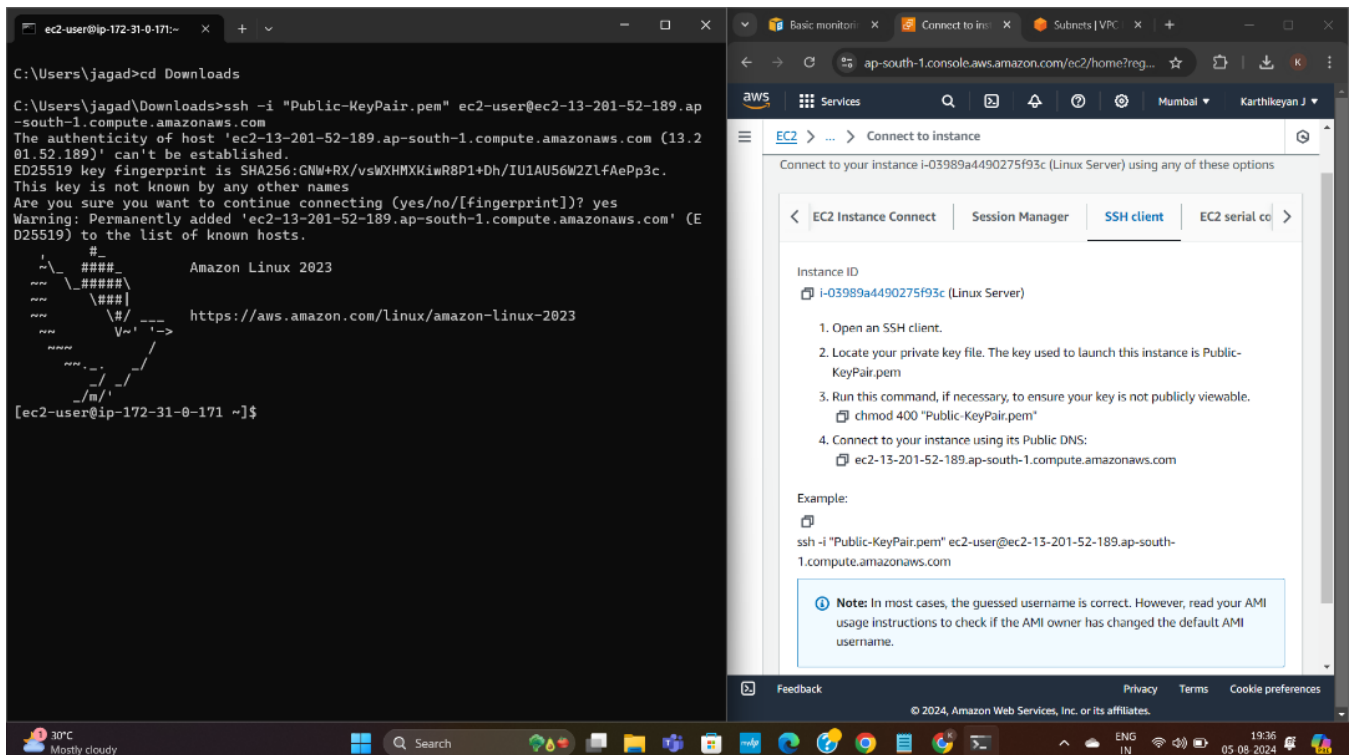
2. **Install the stress Package**:

   o Run the following commands to install the stress package:

Command: sudo yum install -y stress

   o This command will install the stress package, which is a simple workload generator for testing your system.

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   o To Confirm that the 'stress' package has been installed correctly, you can run

Command: stress --version

Step 3. Create SNS Topic and Subscribe Email

1. **Create SNS Topic**:

    o Go to SNS Dashboard:

    o Click the Create topic button.

    o Select Standard as the topic button.

    o Enter a topic Name that provides a name for your topic.

    o Click the Create topic button to finalize your topic.
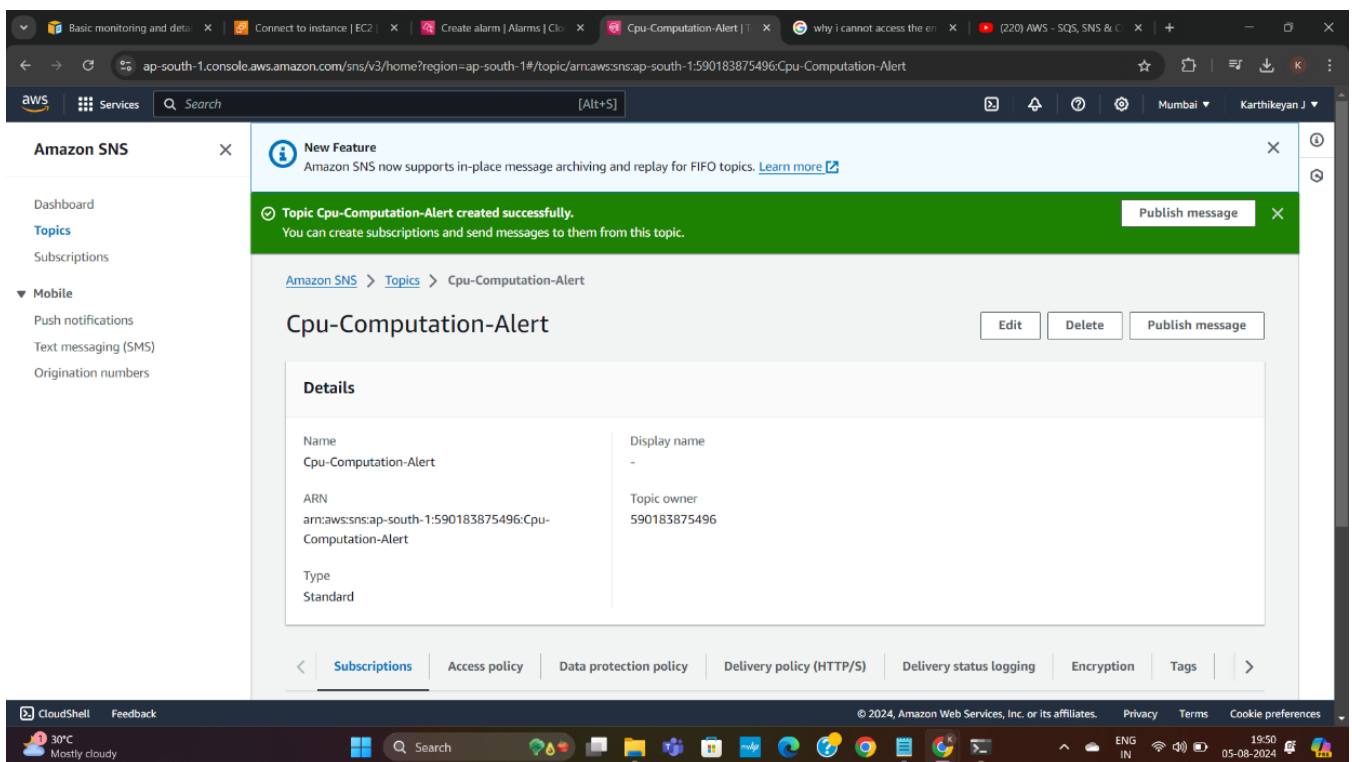
2. **Subscribe Email:**

- o Select the topic, click "Create subscription".

- o Choose "Email" for protocol and enter your email address.

- o In the "Endpoint" field, enter your email address.

- o Click the Create Subscription button.

- o Check your email inbox for a confirmation message from AWS SNS.

- o Open the email and click the confirmation link to confirm your subscription.
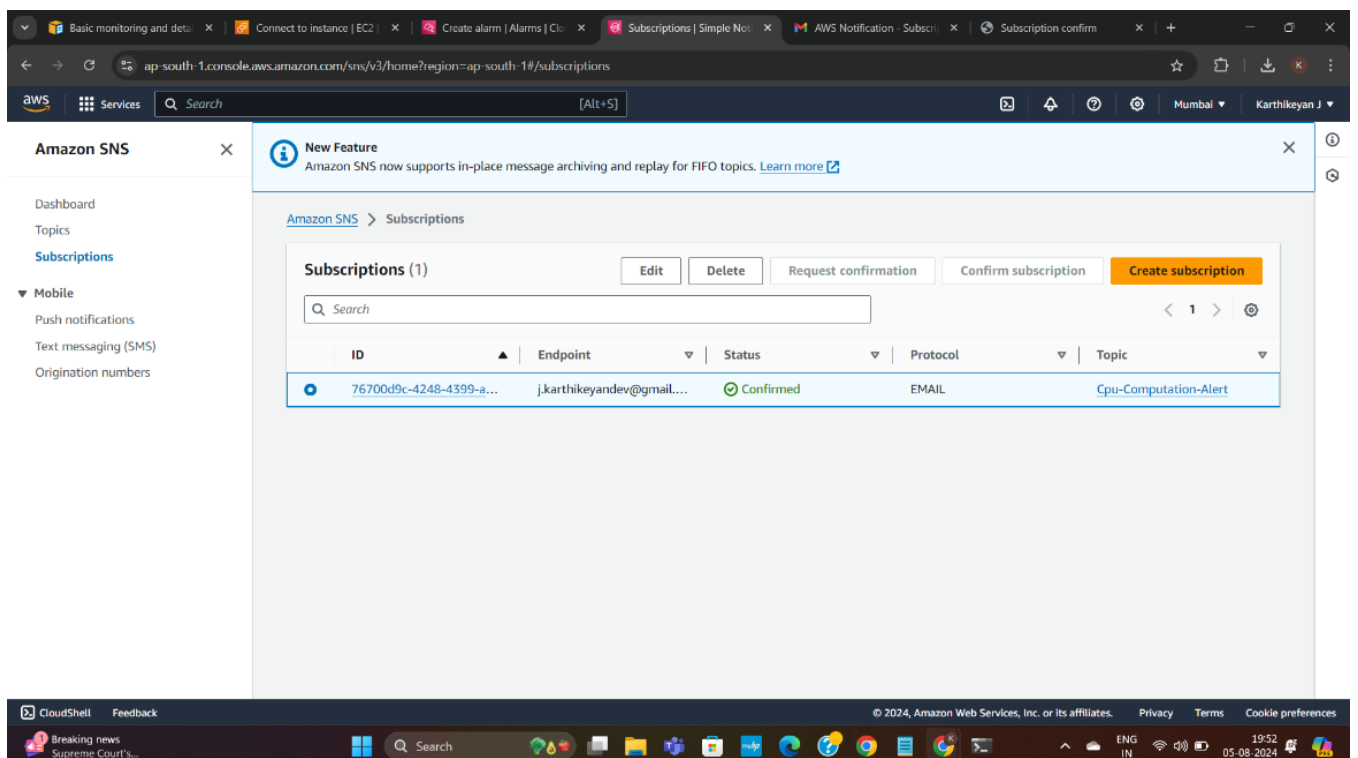
Step 4: Create a CloudWatch Alarm

1. **Go to the CloudWatch Console**:

   ○ In the AWS Management Console, go to CloudWatch.

2. **Create an Alarm**:

   ○ In the left-hand menu, click on "Alarms" and then "Create Alarm".

   ○ Click on "Select metric" and then "Browse" to select the metric.

   ○ Choose "EC2" and then "Per-Instance Metrics".

   ○ Select the instance you created and then select the "CPU Utilization" metric.

   ○ Click on "Select metric".

3. **Configure the Alarm**:

   - Set the threshold type to "Static".

   - Set the condition to "Greater than" and the threshold value to 15%.

   - Set the period to 5 minutes.

   - Click on "Next".

4. **Add Notification**:

   - Under "Notification", click on "Add notification".

   - For "Select an SNS topic", choose the SNS topic you created earlier (e.g., Cpu-Computation-Alert).

   - Click on "Next".

5. **Name the Alarm**:

    o Provide a clear and detailed description of name for your alarm to easily identify its purpose, such as 'HighComputation-EC2'

    o **Click "Next":**

    o Proceed to the Next configuration step by clicking the "Next" button.

    o **Create the Alarm:**

    o Review your settings and click "Create alarm" to finalize and activate the alarm.
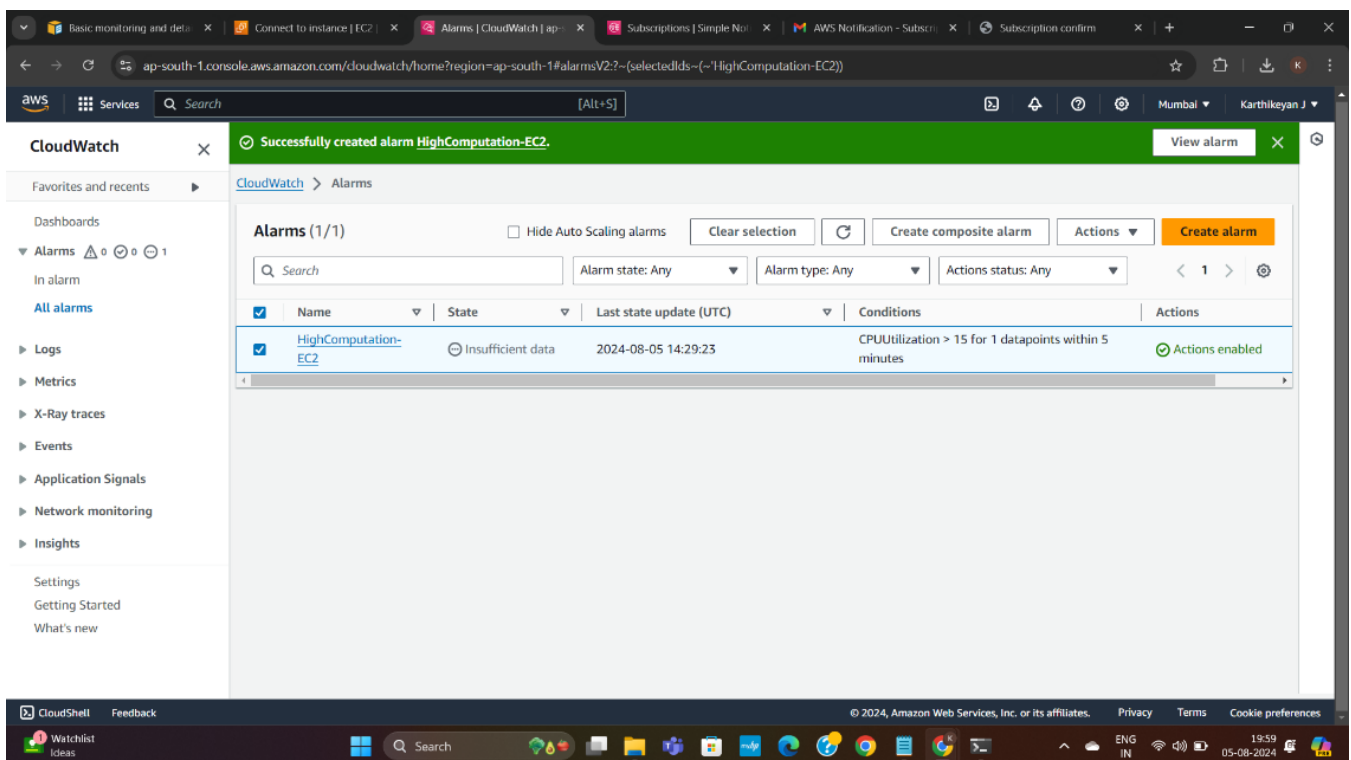
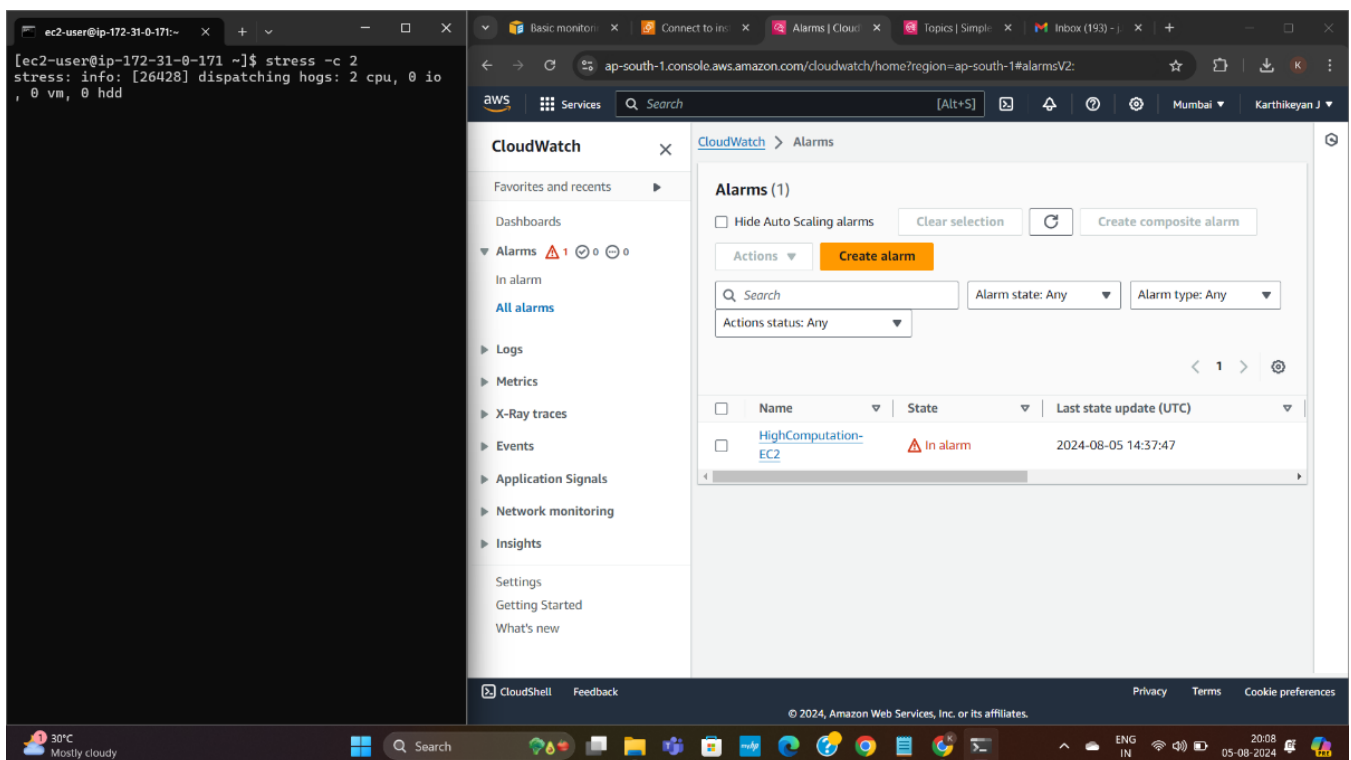**Step 5: Generate Load and Test the Alarm**

1. **Run stress Command**:
   - On your EC2 instance, run the following command to generate higher CPU load:
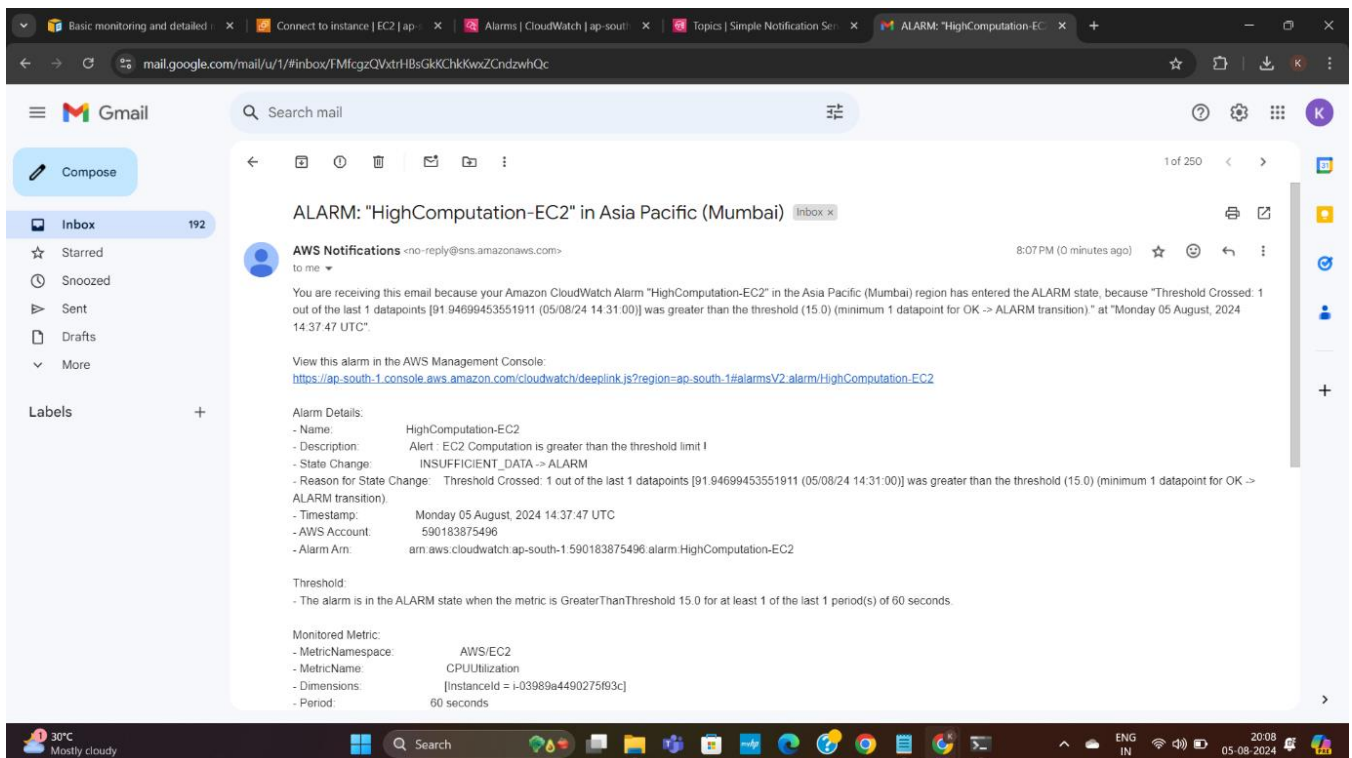
stress -c 2

2. **Wait for the Alarm**:
   - Wait for the alarm to trigger in the CloudWatch console. This should cause the CPU utilization to exceed 15%.

3. **Monitor the Alarm**:

   o You should receive an alert email from SNS to the email
     address you subscribed when the CPU utilization exceeds the
     threshold.

4. **Stop the Stress Command**:

   o Use Ctrl + C to stop the stress command.

5. **Wait for the Alarm to Return to OK**:

   o Wait for the alarm to go back to the "OK" state in the
     CloudWatch console.

Step 6: Clean Up

1. **Delete the Alarm**:
   - In the CloudWatch console, go to "Alarms".
   - Select the alarm you created and click on "Actions" and then "Delete".

2. **Delete the SNS Subscription and Topic**:
   - In the SNS console, navigate to the "Subscriptions" section.
   - Find your subscription and click on "Actions" and then "Delete subscription".
   - Go to the "Topics" section, select your topic, and click on "Actions" and then "Delete topic".

3. **Terminate the EC2 Instance**:
   - Go to the EC2 dashboard.
   - Select the instance you created.
   - Click on "Actions" and then "Instance State" > "Terminate".
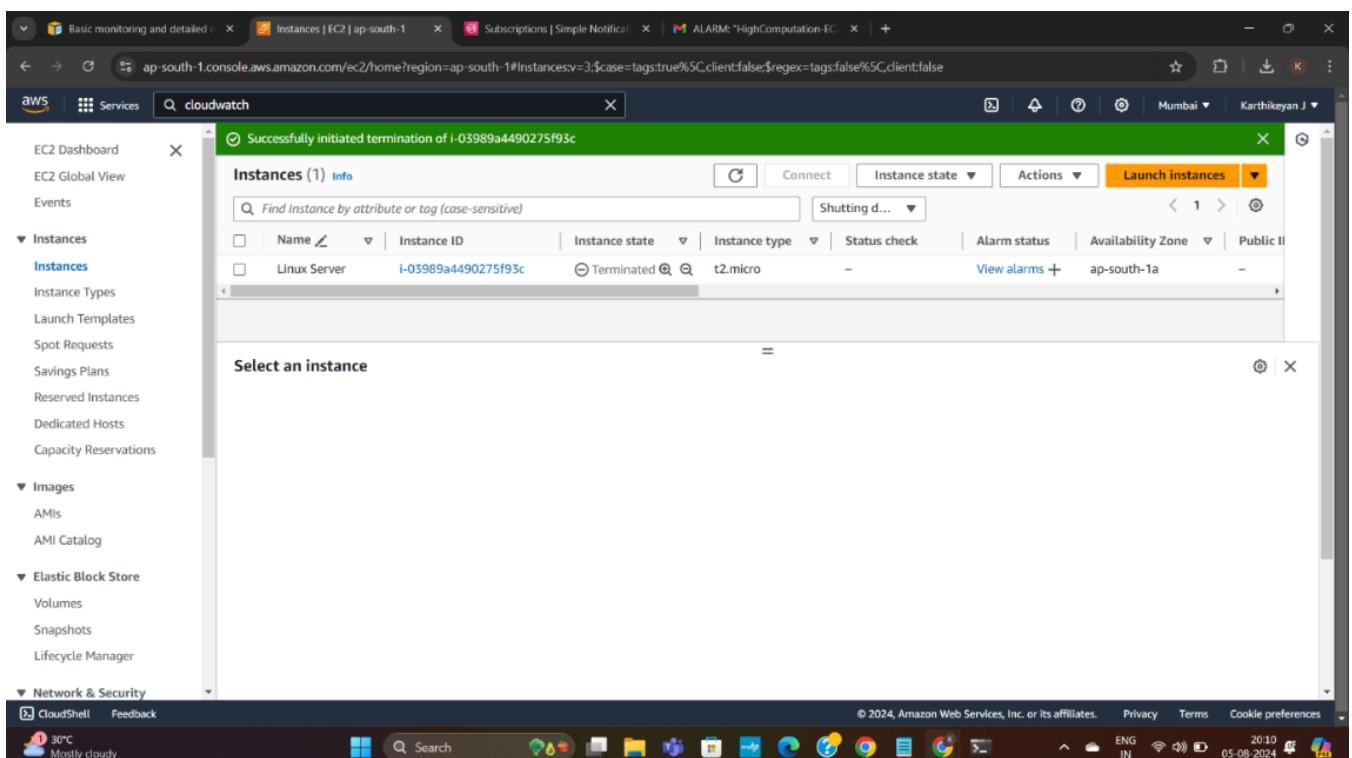
Result and Resources Used:

Result

- EC2 instance launched and configured.

- Stress tool installed to generate CPU load.

- CloudWatch alarm set for CPU utilization exceeding 15%.

- SNS email notifications configured for alarm alerts.

Resources Used

- Amazon EC2: t2.micro instance, Amazon Linux 2 AMI, security group with SSH (port 22) and HTTP (port 80) rules.

- Amazon CloudWatch: CPU Utilization metrics, alarm for 15% threshold.

- Amazon SNS: Topic created, email subscription for notifications.

- Software: stress, epel-release for installation.