CloudWatch Monitoring and Alerting System

Step 1: Configure Amazon SNS

1. **Amazon Simple Notification Service (SNS) Setup**
    - **Access SNS via AWS Management Console**: Go to the AWS console, search for "SNS," and select "Simple Notification Service."
    - **Create an SNS topic named "MyCwAlarm"**:
        - Choose "Topics" in the left-hand menu and click "Create topic."
        - Specify the details:
            - Type: Choose "Standard."
            - Name: Enter "MyCwAlarm."
            - Click "Create topic."
    - **Subscribe an email address to the topic**:
        - Open the "MyCwAlarm" topic.
        - Go to the "Subscriptions" tab and click "Create subscription."
        - Enter the email address where you want to receive notifications.
        - Confirm the subscription by following the link sent to the provided email.

Step 2: Create a CloudWatch Alarm

2. **Amazon CloudWatch Configuration**
    - **Access CloudWatch via AWS Management Console**: Search for "CloudWatch" and select it.
    - **View EC2 metrics and identify CPUUtilization**:
        - Choose "Metrics" from the left-hand menu.
        - Select "EC2" and navigate to "Per-Instance Metrics."
        - Locate and note down the "CPUUtilization" metric for the Stress Test EC2 instance.
    - **Create a metric alarm**:
        - Go to the "Alarms" section and click "Create alarm."
        - Select the EC2 instance and CPUUtilization metric.
        - Set up the threshold: Average CPUUtilization > 60%.
        - Configure the alarm to notify the "MyCwAlarm" SNS topic.

Step 3: Test CloudWatch Alarm

3. **Testing the Alarm**
    - **Log in to the designated EC2 instance**:
        - Access the AWS Systems Manager session manager using the preconfigured EC2 instance named "Stress Test."

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- **Execute a stress test command**:
  - Run the command: `sudo stress --cpu 10 -v --timeout 400s`.
  - This command simulates high CPU usage for 400 seconds.
- **Monitor CPU usage**:
  - Open a terminal window and run the command `top` to view live CPU usage.
- **Check CloudWatch Alarms page**:
  - Return to the CloudWatch console and monitor the "LabCPUUtilizationAlarm" for status changes and CPUUtilization spikes.

Step 4: Create a CloudWatch Dashboard

4. **Dashboard Setup**
   - **Access CloudWatch Dashboards via AWS Management Console**:
     - Search for "CloudWatch" and select "Dashboards."
   - **Create a new dashboard**:
     - Click "Create dashboard."
     - Name the dashboard as "LabEC2Dashboard."
   - **Add a line graph widget**:
     - Choose "Line" and then "Metrics."
     - Select the Stress Test EC2 instance and the CPUUtilization metric.
     - Create the widget to display the CPUUtilization metric graph for the Stress Test EC2 instance.
   - **Save the dashboard**:
     - Save the dashboard configuration for quick access to CPUUtilization metrics.

Summary:

- **Tasks Covered**: Configuring SNS, setting up CloudWatch alarms, stress testing, and dashboard creation.

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