

# Monitoring and Logging

To integrate AWS monitoring tools to monitor an EC2 instance's CPU, memory, and disk usage, and set up a basic alert to notify you via email if CPU usage exceeds 80%, you can use Amazon CloudWatch. Here are the steps to achieve this:

## 1. Install and Configure the CloudWatch Agent

First, you'll need to install the CloudWatch Agent on your EC2 instance to collect detailed metrics such as memory and disk usage.

### Step 1: Install the CloudWatch Agent

Connect to your EC2 instance and install the CloudWatch Agent:

```
bash
Copy code
# Download the CloudWatch Agent package
curl -O
https://s3.amazonaws.com/amazoncloudwatch-agent/amazon_linux/amd64/latest/amazon-cloudwatch-agent.rpm

# Install the CloudWatch Agent
sudo rpm -U ./amazon-cloudwatch-agent.rpm
```

### Step 2: Configure the CloudWatch Agent

Create a configuration file for the CloudWatch Agent. For example, you can create a file named `cw-agent-config.json`:

```
{
  "agent": {
    "metrics_collection_interval": 60,
    "logfile":
"/opt/aws/amazon-cloudwatch-agent/logs/amazon-cloudwatch-agent.log"
  },
  "metrics": {
    "namespace": "EC2/Instance",
    "metrics_collected": {
      "cpu": {
        "measurement": [
          "cpu_usage_idle",
          "cpu_usage_iowait",
          "cpu_usage_user",
```

```

        "cpu_usage_system"
    ],
    "totalcpu": true,
    "metrics_collection_interval": 60,
    "resources": [
        "*"
    ]
},
"mem": {
    "measurement": [
        "mem_used_percent"
    ],
    "metrics_collection_interval": 60
},
"disk": {
    "measurement": [
        "disk_used_percent"
    ],
    "metrics_collection_interval": 60,
    "resources": [
        "*"
    ]
}
}
}
}

```

Upload this configuration file to your EC2 instance or create it directly on the instance.

### Step 3: Start the CloudWatch Agent

Start the CloudWatch Agent using the configuration file:

```

sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-ctl \
-a fetch-config \
-m ec2 \
-c file:/path/to/cw-agent-config.json \
-s

```

## 2. Set Up CloudWatch Alarms

Next, create a CloudWatch alarm to monitor CPU usage and send notifications via email.

### Step 1: Create an SNS Topic for Email Notifications

- Go to the Amazon SNS console.
- Click on Topics > Create topic.
- Choose a name for your topic and create it.
- Click on the created topic, go to Subscriptions, and create a subscription.
- Choose Email for the protocol and enter your email address.

### Step 2: Create a CloudWatch Alarm

- Go to the Amazon CloudWatch console.
- Click on Alarms > Create an alarm.
- Select Select metric > EC2 > Per-Instance Metrics.
- Select CPUUtilization and click Select metric.
- Configure the alarm:
  - Set the threshold type to Static.
  - Set the condition to Greater than 80.
  - Set the evaluation period (e.g., 1 out of 1).
- Click Next, and in the Actions section, select the SNS topic you created for notifications.
- Add a name for the alarm and click Create alarm.

### 3. Verify and Test

- **Verify Email Subscription:** Confirm the subscription from your email to start receiving notifications.
- **Test Alarm:** Simulate high CPU usage to test if the alarm triggers and sends an email notification.