Deploy an application on AWS (e.g., an EC2 instance or an S3-hosted website) and use CloudWatch Metrics to track CPU utilization, memory usage, and network traffic.
Set up custom metrics to monitor specific performance indicators.
Objective: Gain experience in defining and monitoring application metrics using CloudWatch.

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## Overview

**Amazon EC2 (Elastic Compute Cloud)** allows you to launch virtual servers in the cloud, known as instances. This guide will walk you through creating your first EC2 instance, connecting to it, and cleaning up when you're done. These steps are beginner-friendly and help you understand the basics of cloud computing with AWS.

**Amazon CloudWatch** is a fully managed observability service designed to provide real-time monitoring of AWS cloud resources, applications, and on-premises systems. It collects and tracks metrics, logs, and events, helping developers and IT administrators monitor and analyze system performance.

## Prerequisites

Before starting, ensure you have the following:

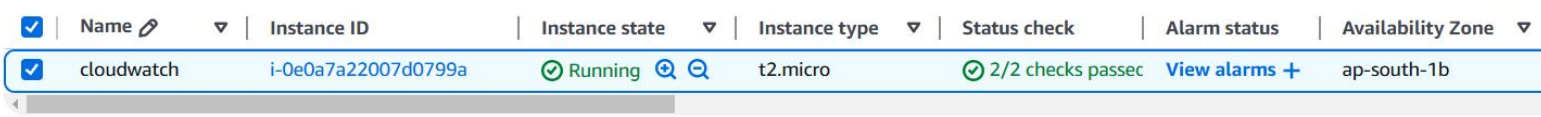
1. **AWS Account**: Sign up at aws.amazon.com if you don't have one.
2. **Basic Computer Knowledge**: Familiarity with using a web browser and basic computer operations.
3. **SSH Client or RDP Tool**: For connecting to your instance:
    1. For Linux instances: Use an SSH client (e.g., PuTTY or terminal).
    2. For Windows instances: Use a Remote Desktop client.
4. **Free Tier Access**: Check that your AWS account is eligible for the Free Tier to avoid charges.

## Step 1: Launch an Amazon Linux EC2 Instance

An instance is like a virtual computer that runs in the cloud. Follow these steps to launch one:

1. **Go to the Console**: Open the Amazon EC2 console at .
2. **Choose a Region**: At the top, select a Region (choose the one closest to you for better performance).
3. **Launch the Instance**:
    1. On the EC2 dashboard, click **Launch Instance**.
    2. Fill in the details:
        1. **Name**: Give your instance a name (e.g., "cloudwatch").
        2. **Application and OS**: Select an operating system. For beginners, choose "Amazon Linux."
        3. **Instance Type**: Select t2.micro (Free Tier eligible).
        4. **Key Pair**: Create or select a key pair. This is needed to log in securely.
        5. **Configure Security Group:** Allow all HTTP rules.
        6. **Network Settings**: Use the default settings for now.
4. **Launch**: Click **Launch Instance** and confirm.

After launching, the instance's status will show as **Pending**. Wait until it changes to **Running** and passes the status checks.



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## Step 2: Connect to Your EC2 Instance

- Select the instance and choose **Connect**.
- Choose the **EC2 Instance Connect** tab.
- For **Connection type**, choose **Connect using EC2 Instance Connect**.
- If there is a choice, select the IP address to connect to. Otherwise, the IP address is selected automatically.

## Step 3: Install and Configure a Web Server

Update the system

```bash
sudo yum update -y
```

Install Apache

```bash
sudo yum install httpd -y
```

Start Apache and Enable on Boot

```bash
sudo systemctl start httpd
sudo systemctl enable httpd
```

Verify Apache

- Visit `http://<public-ip>` in your browser. You should see the default Apache welcome page.

Deploy your application

```
[root@ip-172-31-1-32 ec2-user]# cd /usr/share/httpd/noindex
[root@ip-172-31-1-32 noindex]# sudo ls
index.html
[root@ip-172-31-1-32 noindex]# rm index.html
rm: remove regular file 'index.html'? y
[root@ip-172-31-1-32 noindex]# ls
[root@ip-172-31-1-32 noindex]# sudo ls
[root@ip-172-31-1-32 noindex]# nano index.html
```

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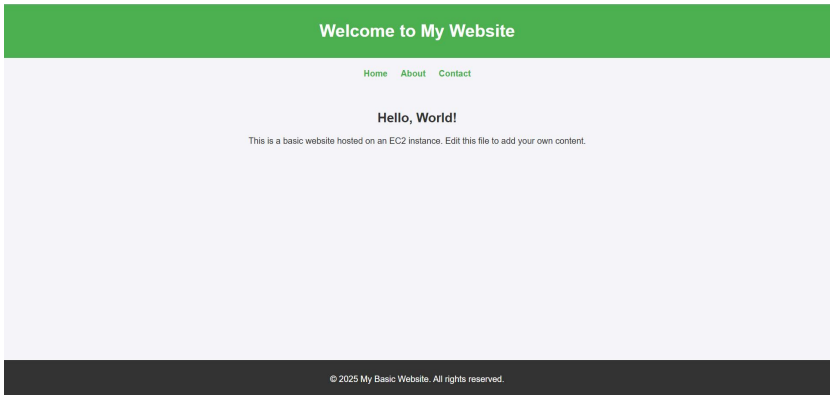



**You'll be able to see your website on the public IP of your instance.**

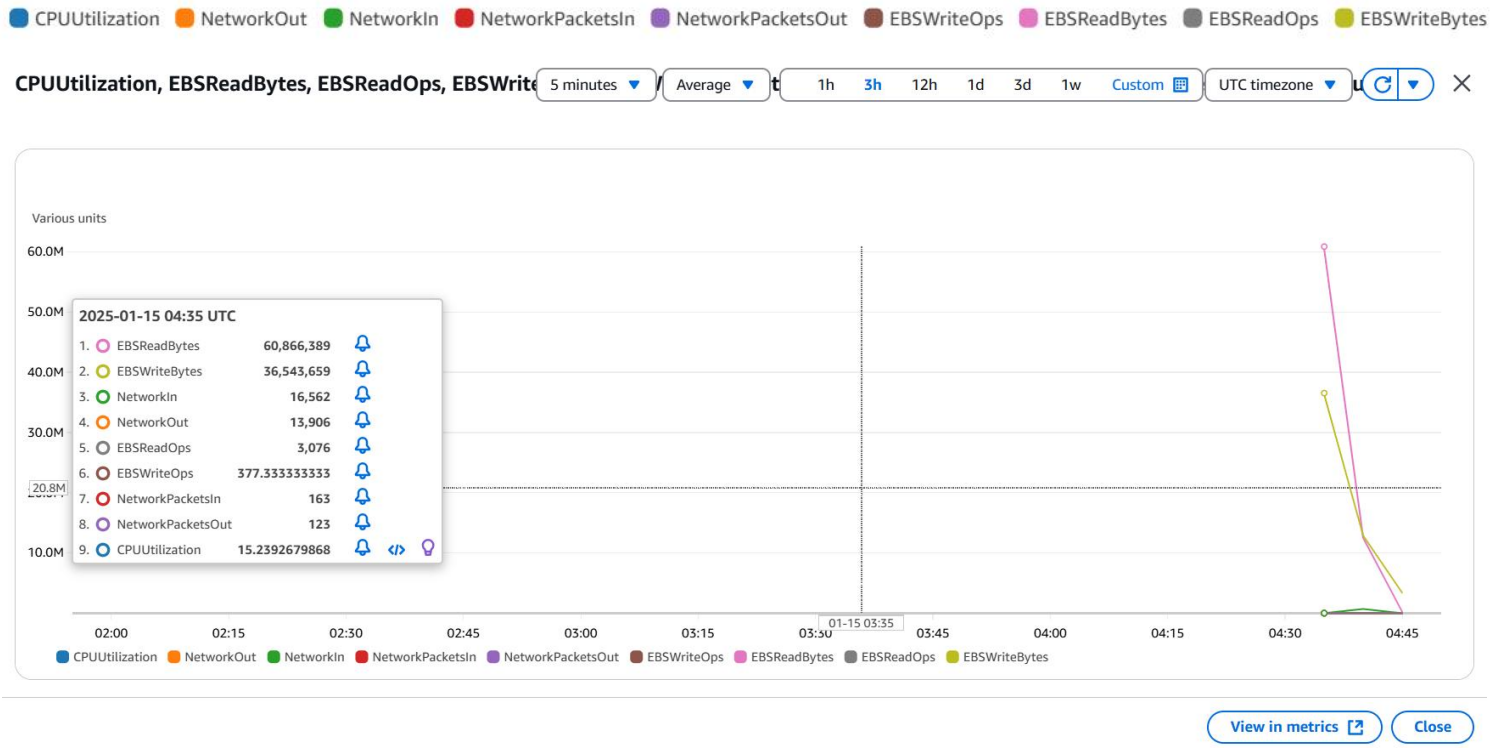
## Step 4: Navigate to CloudWatch

In the AWS Management Console, type **CloudWatch** in the search bar and click on the **CloudWatch** service.

- In the CloudWatch console, select **Dashboards** > **Create dashboard**.
- Add widgets for the metrics you want to monitor:

  - Select **Line**, **Number**, or **Stacked Area** for graph types.
  - Add metrics like CPU utilization, memory usage, and network traffic.

- Save the dashboard for easy access to all critical metrics in one view.




You'll be able to see the above Dashboard with specified metrics.