St. JOSEPH'S GROUP OF INSTITUTIONS
OMR, CHENNAI - 119

aws

Placement Empowerment Program

Cloud Computing and DevOps Centre

Set Up a Cloud-Based Monitoring Service Enable basic cloud monitoring (e.g., CloudWatch on AWS). View metrics like CPU usage and disk I/O for your cloud VM.

Name: Gopinath M Department: ADS

St. JOSEPH'S COLLEGE OF ENGINEERING | St. JOSEPH'S INSTITUTE OF TECHNOLOGY
AUTONOMOUS INSTITUTIONS, AFFILIATED TO ANNA UNIVERSITY

Set Up a Cloud-Based Monitoring Service

Introduction

Cloud-based monitoring services are essential for managing the performance and health of virtual machines and applications in a cloud environment. Tools like Amazon CloudWatch enable you to monitor metrics such as CPU usage, disk I/O, and network traffic. By enabling these services, you can gain insights into system performance and identify potential bottlenecks or failures before they impact your operations.

Objectives

1. Learn how to enable basic cloud monitoring services for a virtual machine.
2. Understand how to view and interpret key performance metrics, including CPU usage and disk I/O.
3. Analyze system performance using the monitoring dashboard in the cloud console.

Steps and Detailed Procedure

1. **Enable Monitoring for Your Virtual Machine:**
    - **Step 1.1:** Log in to your cloud provider's console (e.g., AWS Management Console).
    - **Step 1.2:** Navigate to the "Instances" or "Virtual Machines" section, depending on the platform.
    - **Step 1.3:** Select the instance or virtual machine you want to monitor.
    - **Step 1.4:** Enable the monitoring service:
        - For AWS: Go to the "Monitoring" tab of the instance and enable detailed monitoring (if not already enabled).
        - For Azure: Enable Azure Monitor by linking your VM to an Azure Log Analytics workspace.
        - For GCP: Enable "Cloud Monitoring" under the "Operations" section of your VM.
    - **Step 1.5:** Save the changes to ensure monitoring is activated.
2. **View Metrics in the Monitoring Dashboard:**

- **Step 2.1:** Open the monitoring dashboard in the cloud console.
  - AWS: Navigate to the Amazon CloudWatch dashboard.
  - Azure: Open the Azure Monitor service from the Azure portal.
  - GCP: Access "Cloud Monitoring" from the GCP console.
- **Step 2.2:** Select the instance or resource you wish to monitor.
- **Step 2.3:** View real-time and historical metrics such as:
  - **CPU Utilization:** Tracks the percentage of CPU resources being used. Look for sustained high usage as a potential bottleneck.
  - **Disk I/O:** Monitors read and write operations. High I/O could indicate heavy disk usage.
  - **Network Traffic:** Displays data transfer rates to and from the instance.
- **Step 2.4:** Use the graphical interface to customize charts or add widgets for frequently monitored metrics.

3. **Set Up Alarms:**
   - **Step 3.1:** In the monitoring dashboard, locate the "Alarms" or "Alerts" section.
   - **Step 3.2:** Create a new alarm:
     - Define the metric to monitor (e.g., CPU utilization above 80%).
     - Set the threshold value and duration to trigger the alarm.
   - **Step 3.3:** Configure the notification settings:
     - Add an email address, SMS number, or other notification channels.
     - For AWS, create an SNS (Simple Notification Service) topic and subscribe to it.
   - **Step 3.4:** Save and activate the alarm.
4. **Analyze Performance Trends:**
   - **Step 4.1:** Review collected metrics over time to identify trends or anomalies.

- **Step 4.2:** Export logs or reports for deeper analysis (if supported by the platform).
- **Step 4.3:** Use the insights to:
  - Optimize resource allocation (e.g., scale up or down).
  - Schedule maintenance during low-usage periods.
  - Identify potential issues, such as resource contention or misconfigurations.

5. **Optional Advanced Steps:**
   - **Step 5.1:** Integrate monitoring tools with third-party analytics platforms (e.g., Datadog, Grafana).
   - **Step 5.2:** Set up dashboards to monitor multiple resources simultaneously.
   - **Step 5.3:** Automate responses to alarms using scripts or cloud functions (e.g., restarting a VM when memory usage exceeds a threshold).

Key Learnings

- Basics of enabling and using cloud-based monitoring tools.
- How to interpret performance metrics like CPU usage and disk I/O.
- Proactive system performance analysis to ensure operational efficiency.
- Setting up alerts for critical conditions to minimize downtime.