

Implement advanced monitoring and alerting using cloud-native tools and services.

Ebuka Obiakor – 13th March 2024

EXAMPLE – SETTING UP CLOUDWATCH connected to SNS

CloudWatch is primarily a **monitoring service**. It collects and stores system-level metrics, logs, and events from various AWS resources.

CloudWatch? What is CloudWatch ?

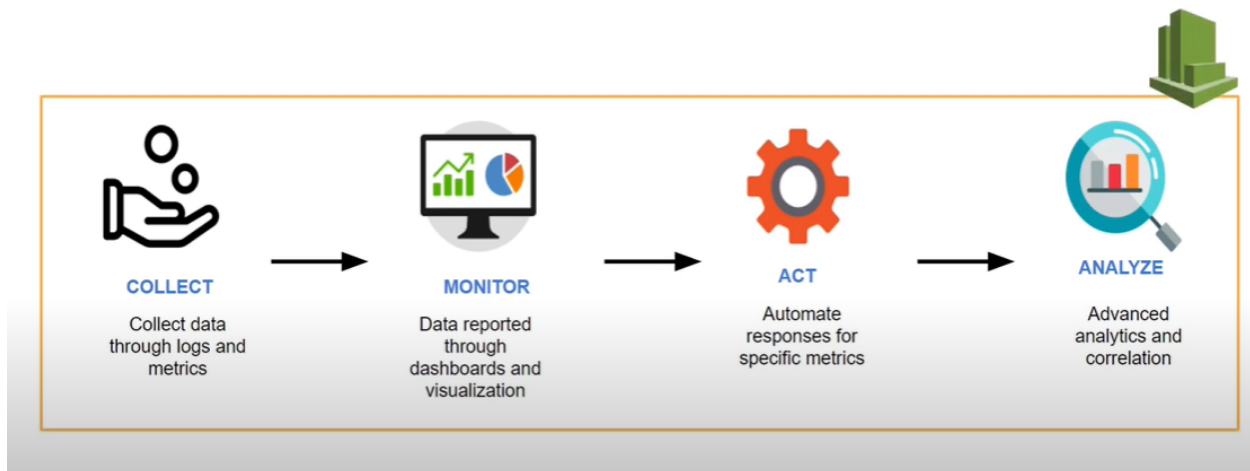


Figure 1: CloudWatch process flow; source : SkillCurb

CloudWatch What it can monitor ?

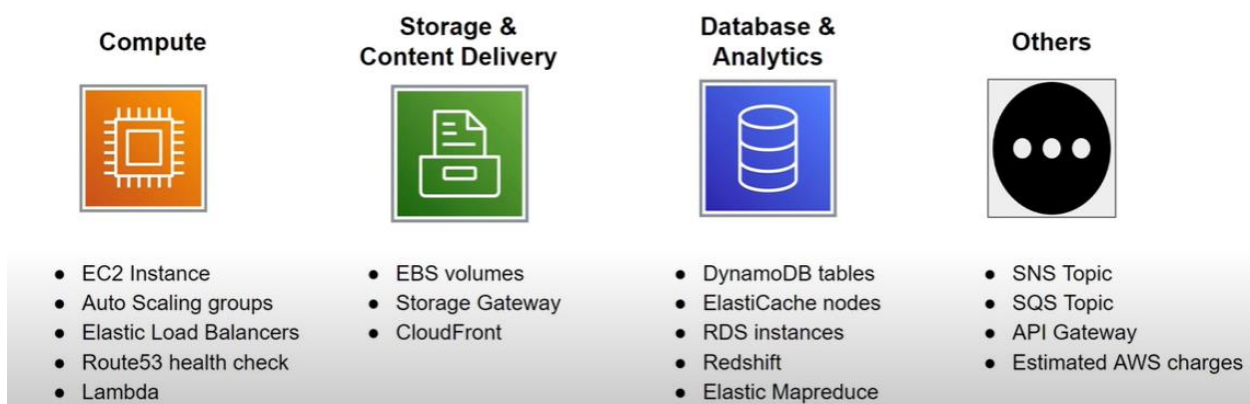


Figure 2: Services that can be monitored with CloudWatch; Source: SkillCurb

The screenshot shows the 'Add widget' dialog in SAP Analytics Cloud. On the left, under 'Data sources (type: none)', there are three data sources: 'Sales', 'Sales (2018)', and 'Sales (2019)'. On the right, under 'Widget configuration', there is a list of widgets: 'Line', 'Area chart', 'Bar chart', 'Pie chart', 'Map', 'Table', 'KPI', 'Text', 'Image', and 'Video'. The 'Line' widget is selected, and its configuration options are visible below it. The 'Line' widget configuration shows a 'Line' chart type with a '75%' value and a 'Line chart' description. The 'Area chart' widget is also visible, showing a 'Area chart' type with a '75%' value and an 'Area chart' description. The 'Bar chart' widget is also visible, showing a 'Bar chart' type with a '75%' value and a 'Bar chart' description. The 'Pie chart' widget is also visible, showing a 'Pie chart' type with a '75%' value and a 'Pie chart' description. The 'Map' widget is also visible, showing a 'Map' type with a '75%' value and a 'Map' description. The 'Table' widget is also visible, showing a 'Table' type with a '75%' value and a 'Table' description. The 'KPI' widget is also visible, showing a 'KPI' type with a '75%' value and a 'KPI' description. The 'Text' widget is also visible, showing a 'Text' type with a '75%' value and a 'Text' description. The 'Image' widget is also visible, showing an 'Image' type with a '75%' value and an 'Image' description. The 'Video' widget is also visible, showing a 'Video' type with a '75%' value and a 'Video' description. At the bottom right, there are 'Cancel' and 'Add' buttons.

APPENDIX

Services that can be used for monitoring and alerting using AWS cloud include:

1. Amazon CloudWatch:

- **Purpose:** CloudWatch is primarily a **monitoring service**. It collects and stores system-level metrics, logs, and events from various AWS resources.
- **Key Features:**
 - **Metrics Monitoring:** CloudWatch allows you to monitor performance metrics (e.g., CPU utilization, network traffic) of your instances and other resources.
 - **Log Aggregation:** It serves as a central location for storing logs from applications, services, and AWS resources.
 - **Event Response:** CloudWatch can trigger actions based on live events (e.g., executing a Lambda function when an instance terminates).
- **Use Cases:** Useful for monitoring resource health, analyzing logs, and setting up alarms based on thresholds.

2. Amazon Simple Notification Service (SNS):

- **Purpose:** SNS is a fully managed messaging service that enables you to send notifications, alerts, and messages to a variety of endpoints (such as email, SMS, HTTP, Lambda, and more).
- **Key Features:**
 - **Publish-Subscribe Model:** SNS follows a publish-subscribe pattern, where publishers send messages to topics, and subscribers receive those messages.
 - **Flexible Endpoints:** You can choose various endpoints to receive notifications based on your requirements.
 - **Fanout:** SNS allows broadcasting messages to multiple subscribers.
- **Use Cases:** Ideal for sending notifications, event-driven architectures, and decoupling components in your applications.

3. AWS CloudTrail:

- **Purpose:** CloudTrail is an audit trail service that records API calls made within your AWS account. It captures details of requests, including the user, source IP, timestamp, and request parameters.
- **Key Features:**
 - **API Activity Tracking:** CloudTrail monitors and logs API calls across various AWS services.
 - **Security and Compliance:** It helps with security analysis, resource change tracking, and compliance auditing.
 - **Integration with Other Services:** CloudTrail logs can be delivered to Amazon S3 or analyzed using services like Amazon Athena or Amazon Elasticsearch.
- **Use Cases:** Useful for security monitoring, compliance, and troubleshooting.

4. AWS Trusted Advisor:

- **Purpose:** Trusted Advisor provides recommendations to optimize your AWS resources, improve security, and reduce costs. It analyzes your account based on best practices and AWS guidelines.
- **Key Features:**

- **Cost Optimization:** Trusted Advisor identifies cost-saving opportunities, such as unused resources or overprovisioned instances.
 - **Performance and Security Checks:** It assesses security settings, performance bottlenecks, and fault tolerance.
 - **Personalized Recommendations:** Trusted Advisor tailors recommendations to your specific AWS usage.
- **Use Cases:** Valuable for maintaining a healthy AWS environment, ensuring best practices, and avoiding common pitfalls.

In summary:

- **CloudWatch** is for general monitoring service for resources and environment.
- **SNS** is for sending notifications.
- **CloudTrail** is for monitoring API calls and auditing.
- **Trusted Advisor** provides personalized recommendations for optimizing your AWS resources.

Resources

[What is Amazon CloudWatch? - Amazon CloudWatch](#)

https://www.youtube.com/watch?v=Yxl7e88cTAQ&ab_channel=TinyTechnicalTutorials

<https://youtu.be/lHWrAAzoxJA?si=u1rhvf8oTb6R2s7C>

https://youtu.be/_Tqce6pGb44?si=-gReyZvjGgrQWyEv