

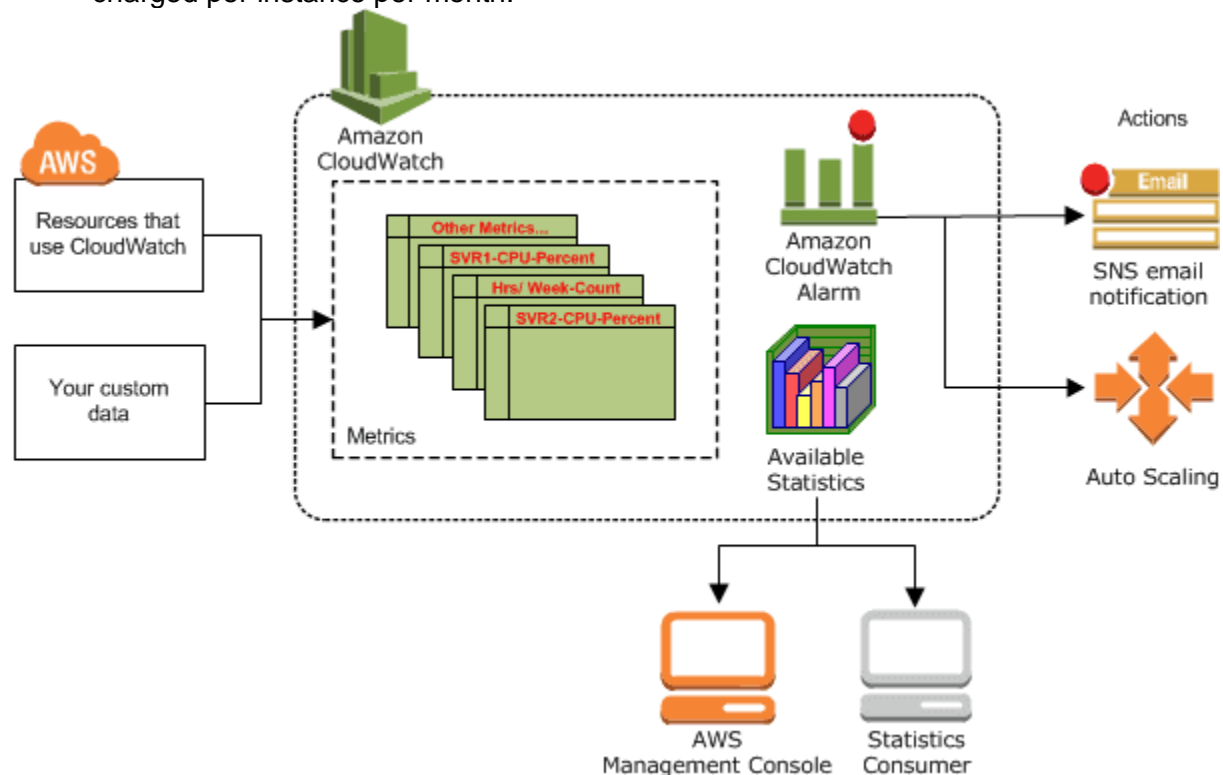
AWS CloudWatch vs AWS CloudTrail

Amazon CloudWatch and CloudTrail can very easy to confuse these two services. CloudWatch mainly **monitors performance**, whereas CloudTrail mainly **monitors actions** in your AWS environment.

What is CloudWatch?

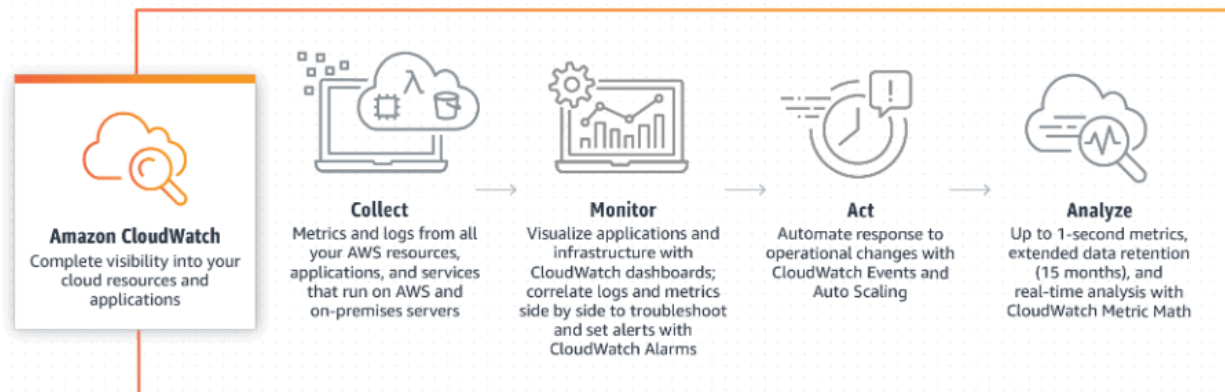
Amazon CloudWatch is basically a monitoring service for your AWS cloud resources and for the applications you run on AWS. It enables monitoring for EC2 and other cloud services so that you get an alert when anything goes wrong. It provides insights about your applications and your AWS cloud resources from which we can run our application smoothly and efficiently. You can use CloudWatch to detect anomalous behavior, set alarms, visualize logs, and take automated actions, to get a unified view of operational health. It offers free basic monitoring services for your resources, like EC2 instances, EBS volumes, etc. CloudWatch provides two types of monitoring services:-

- **Basic Monitoring:** – It is a free service that includes polls every 5 minutes, 10 metrics, 5GB of data ingestion, 5Gb of data storage.
- **Detailed Monitoring:** – It is a chargeable service that includes polls every minute and is charged per instance per month.



How does CloudWatch work?

CloudWatch collects monitoring and operational data in the form of logs, metrics, and events, and visualizes automatically using dashboards so we can get a unified view of our AWS resources, your applications, and services that run in AWS. You also can set alarms based on the metric value you specify. We can also set up automated actions that will notify us when the alarm is triggered and it will start taking actions against it automatically which helps us to reduce resolution time.



Benefits of CloudWatch

Amazon CloudWatch allows us to access all our data from a single platform only. It is integrated with more than 70 AWS services.

- **Metrics:** By using the AWS CLI or an API, our AWS consultants can publish your metrics to CloudWatch. With the AWS Management Console, you can display the statistical graphs of reported metrics. As a collection of data points, CloudWatch stores data concerning a metric. There's an associated time stamp for each data point. You may also publish a data point aggregated set called a statistic set.
- **Alarms:** The CloudWatch Alarms feature allows us to monitor the CloudWatch metrics and alert when metrics fall below the configured levels (high or low thresholds). We can apply multiple warnings to each metric, and there can be multiple actions for each one.
- **Scalability:** The scalability allows us to monitor the usage of the CPU.
- **Auto Recovery:** This feature allows us to recover or reboot the instance if it fails a system status check.
- **Operational costs:** CloudWatch offers perceptions in real-time so that operating costs and AWS resources can be enhanced.



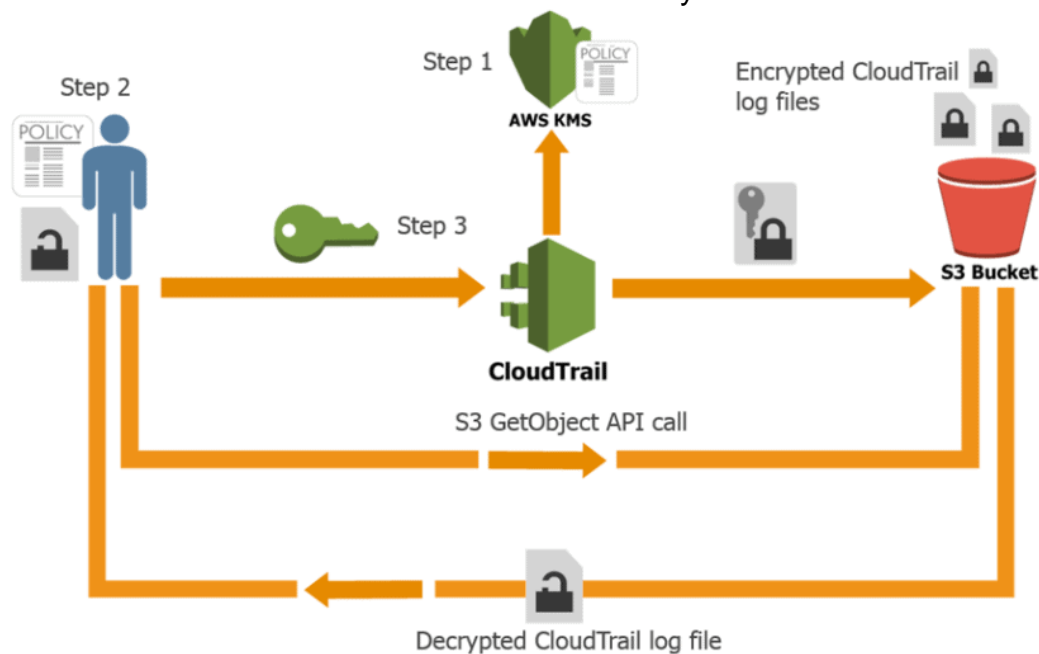
Pricing of CloudWatch

We can start using Amazon CloudWatch for free but the free tier has certain limits after which we will have to pay for what we use and will be charged at the end of the month, the free tier includes: –

- **Metrics:** –
 - a. Basic Monitoring Metrics (at the 5-minute frequency)
 - b. 10 Detailed Monitoring Metrics (T 1-minute frequency)
 - c. 1 Million API requests
- **Dashboards:** – 3 Dashboards for up to 50 metrics per month
- **Alarms:** – 10 Alarm metrics
- **Logs:** – 5GB Data (ingestion, archive storage, and data scanned by Logs Insights queries)
- **Events:** – It includes all events except custom events
- **Contributor Insights:** – 1 Contributor Insights rule per month
- **Synthetics:** – 100 canary runs per month

What is CloudTrail?

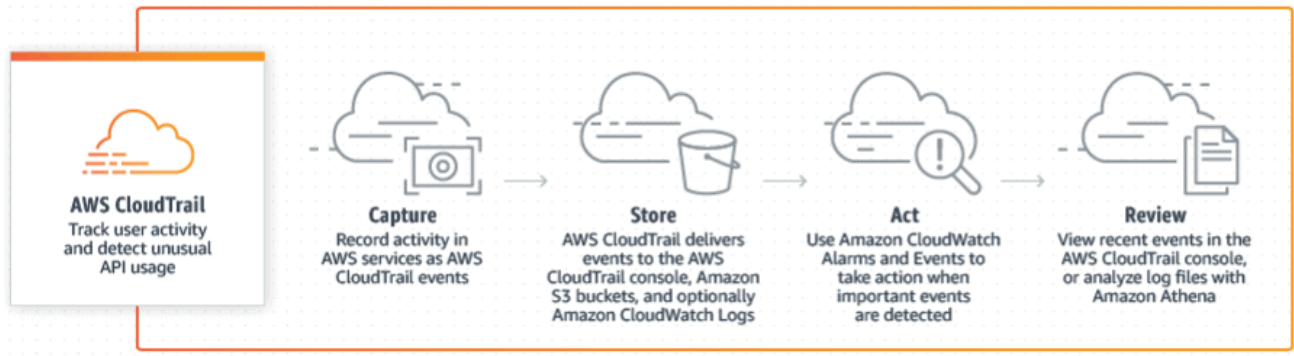
AWS CloudTrail is a tool from AWS which provides governance, auditing, compliance monitoring, and risk monitoring of your AWS account. It is called a Management and Governance tool in the AWS console. With the help of CloudTrail, we can watch the event history of our AWS account activity, including actions taken through the AWS Management Console, AWS SDKs, command-line tools, and other AWS services. We can also use CloudTrail to detect unusual activity in our AWS Account.



How does CloudTrail work?

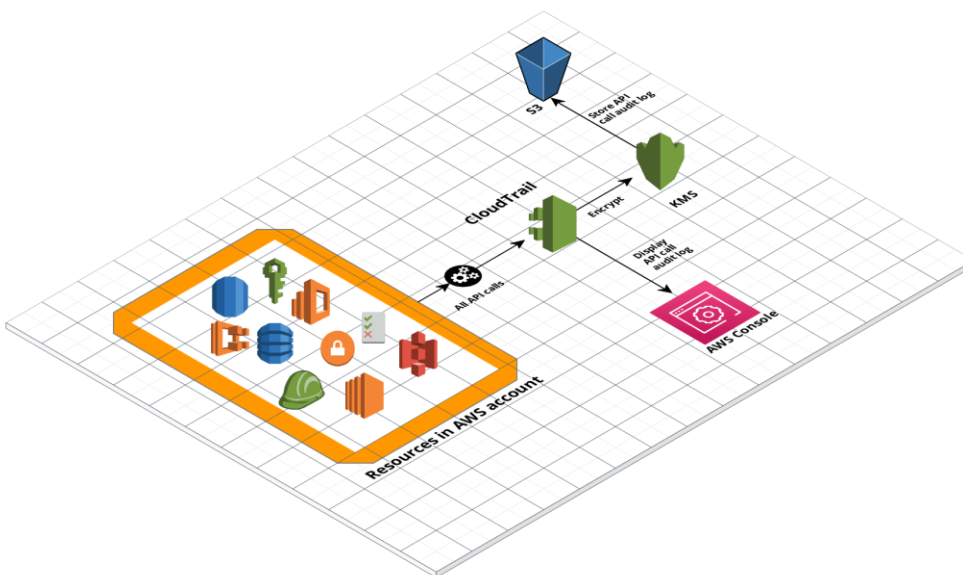
- AWS CloudTrail tracks the user activity and detects unusual API usage

- It captures and records the activity as a CloudTrail event.
- Now it delivers the events to the AWS CloudTrail console, S3 bucket, and optionally CloudWatch Logs.
- With the use of CloudWatch Alarms and Events, it takes action when important events are detected.
- Users can review recent events in the AWS CloudTrail console and can download the activity of Cloudtrail with the help of CloudTrail history.



Benefits of CloudTrail

- **Security Analysis:** – It allows the user to discover and troubleshoot security and operational problems by recording a detailed history of changes that occurred at intervals in the AWS account.
- **Simplified Compliance:** – Simplify your compliance audits with AWS CloudTrail by automatically capturing and storing event logs for activities performed within your AWS account.
- **Security Automation:** – It allows the user to track and automatically reply to the account for the safety purpose of Amazon resources.
- **Visibility into user and resource activity:** – By capturing AWS Management Console activities and API calls, Amazon CloudTrail can improve user and resource activity visibility.



Pricing of CloudTrail

If you set up a single trail to offer a single copy of management events in every area, Amazon CloudTrail pricing is free of charge. With CloudTrail, for all management events, you can also download, filter, and access data from the last 90 days at no cost. In addition, by allowing Analytics on your trails, you can use AWS CloudTrail Insights. AWS CloudTrail Insights are charged per the number of events you used in each region. Pricing is as follows:

- **Management Events:** \$2.00 per 100,000 events
- **Data Events:** \$0.10 per 100,000 events
- **CloudTrail Insights:** \$0.35 per 100,000 write management events

Difference Between Amazon CloudWatch and CloudTrail

CloudWatch	CloudTrail
CloudWatch is basically a monitoring service for AWS resources and applications.	CloudTrail is a web service that is mainly concerned with what is done on AWS and by whom.
By default, CloudWatch offers free basic services like monitoring our AWS resources.	CloudTrail is also enabled by default when we create our AWS Free Tier account.
Using CloudWatch we can track metrics and monitor logs.	CloudTrail provides greater visibility into user activity by tracking AWS console actions including who made the call, from which IP address, and when.
CloudWatch records the application logs.	CloudTrail provides information about what occurred in your AWS account.
CloudWatch delivers metric data in 1 minute period for detailed monitoring and 5-minute periods for basic monitoring.	CloudTrail delivers an event within 15 minutes of the API call.
CloudWatch stores data in its own dashboard in form of metrics and logs.	CloudTrail centralizes all the logs across the regions and stores them on an S3 bucket.

Conclusion

The two services, Amazon CloudWatch and CloudTrail can be used together. CloudWatch focuses on the activity of AWS services and resources, reporting on their health and performance. On the other hand, CloudTrail is a log of all actions that have taken place inside your AWS environment.