AWS Monitoring Service

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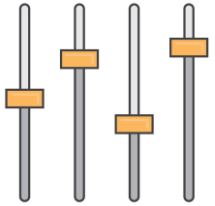
Monitoring usage, operations, and performance

Operational Health



Resource Utilization

Application Performance

Security Auditing

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Monitoring your costs

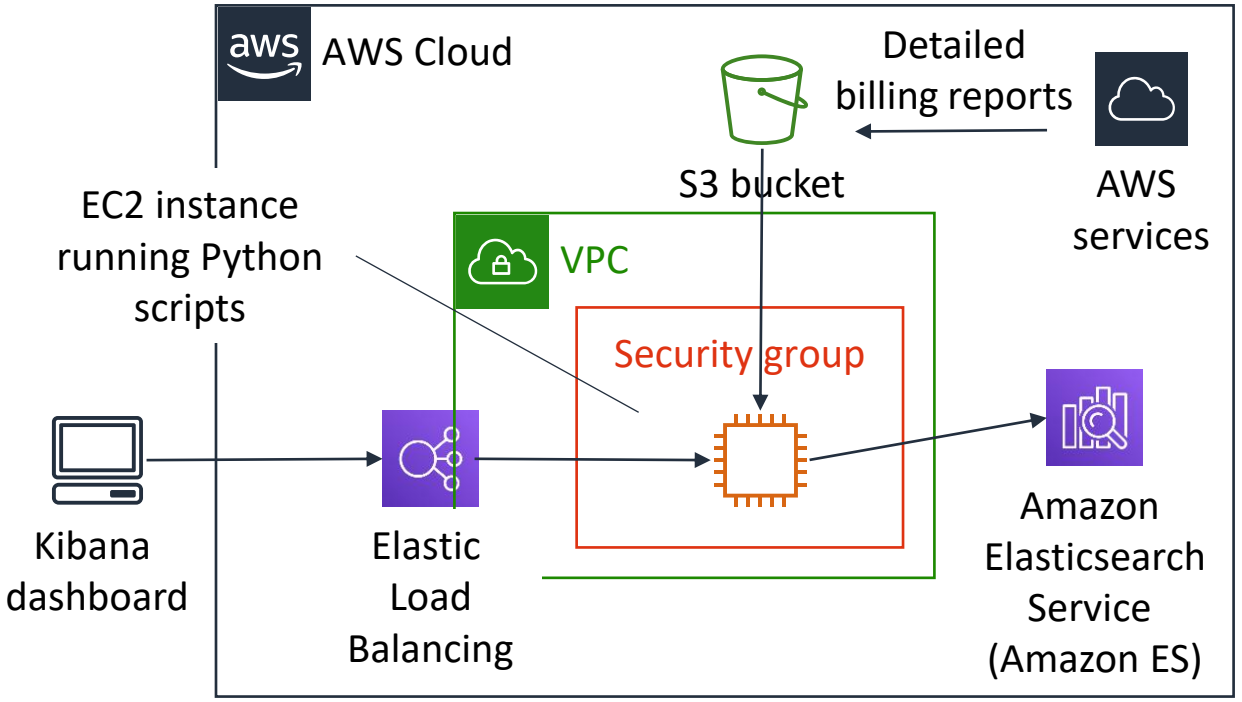
To create a more flexible and elastic architecture, you should know where you are spending money.

AWS Cost Explorer

AWS Budgets

AWS Cost and Usage Report

Cost Optimization Monitor



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Amazon CloudWatch

Amazon CloudWatch

- Collects and tracks metrics for your resources and applications
- Helps you correlate, visualize, and analyze metrics and logs
- Enables you to create alarms and detect anomalous behavior
- Can send notifications or make changes to resources that you are monitoring

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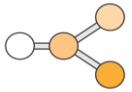
How CloudWatch responds


Metrics


Logs


Alarms


Events


Rules


Targets

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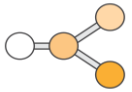
CloudWatch metrics

Metrics



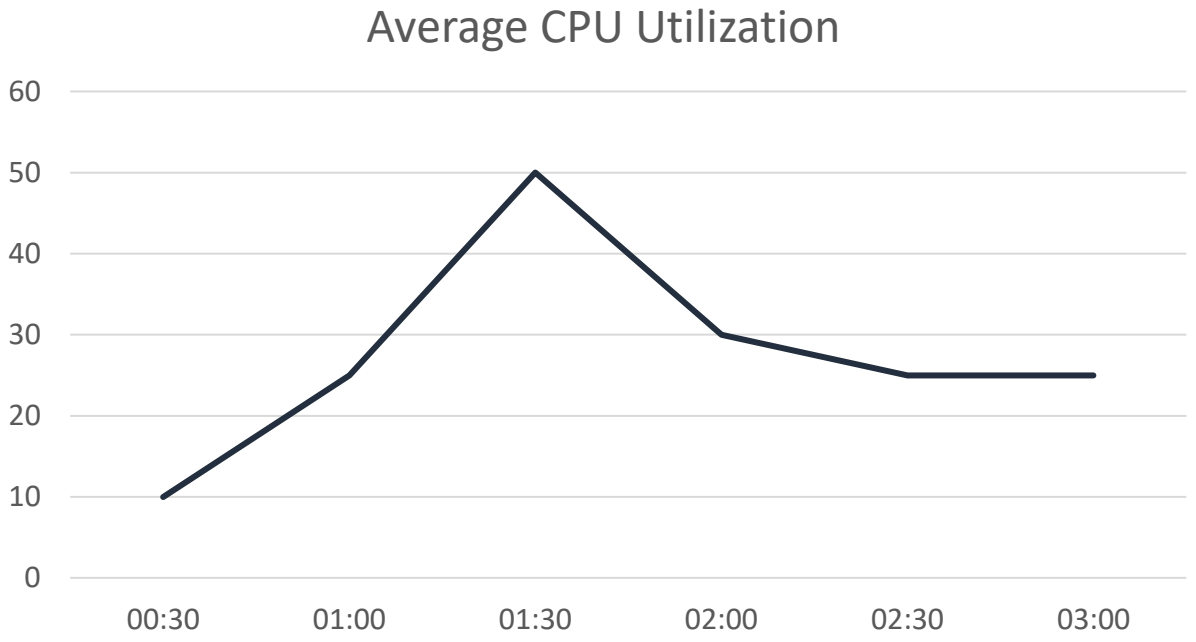
Logs

Alarms

Events

Rules

Targets



Metric data is kept for 15 months

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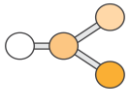
Amazon CloudWatch Logs

Metrics



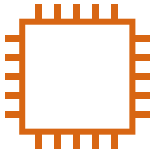
Logs

Alarms

Events

Rules

Targets



Application

Log_File.txt

Errors: 3

Warnings: 12

Connections: 20

Print out…

Amazon CloudWatch

Amazon S3

Source examples

- VPC Flow Logs
- Amazon Route 53
- Elastic Load Balancing access logs

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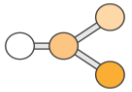
CloudWatch alarms

Metrics



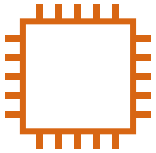
Logs

Alarms

Events

Rules

Targets



Application

`CPUUtilization` metric

80% 60% **45%** **25%** 10% 10% 10% 10% 5%

Alarm

If `CPUUtilization` metric is > 50% for 5 minutes

Trigger an action like:

- Send a notification to the development team
- Create another instance to handle the load

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Amazon EventBridge events

Metrics

Logs

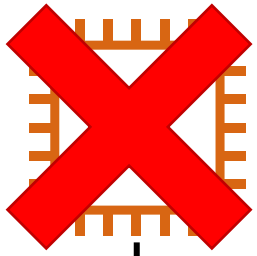
Alarms

Events

Rules

Targets

Event: EC2 instance termination



Amazon EventBridge

Event examples

- Change in AWS resource, such as –
  - Console sign-in
  - EC2 instance state change
  - EC2 Auto Scaling state change
  - EBS volume creation
- AWS API call
- Events from SaaS partners
- Events from your own applications

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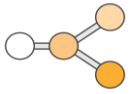
Amazon EventBridge rules

Metrics



Logs

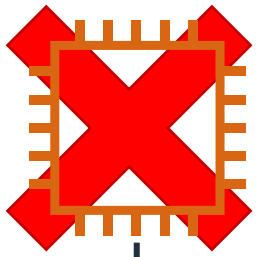
Alarms

Events

Rules

Targets

Event



Rule example

```
{
 "source": [
   "aws.ec2"
],
 "detail-type": [
   "EC2 Instance State-change Notification”
],
 "detail": {
   "state": [
      “terminated" ]
 }
}
```

Amazon EventBridge

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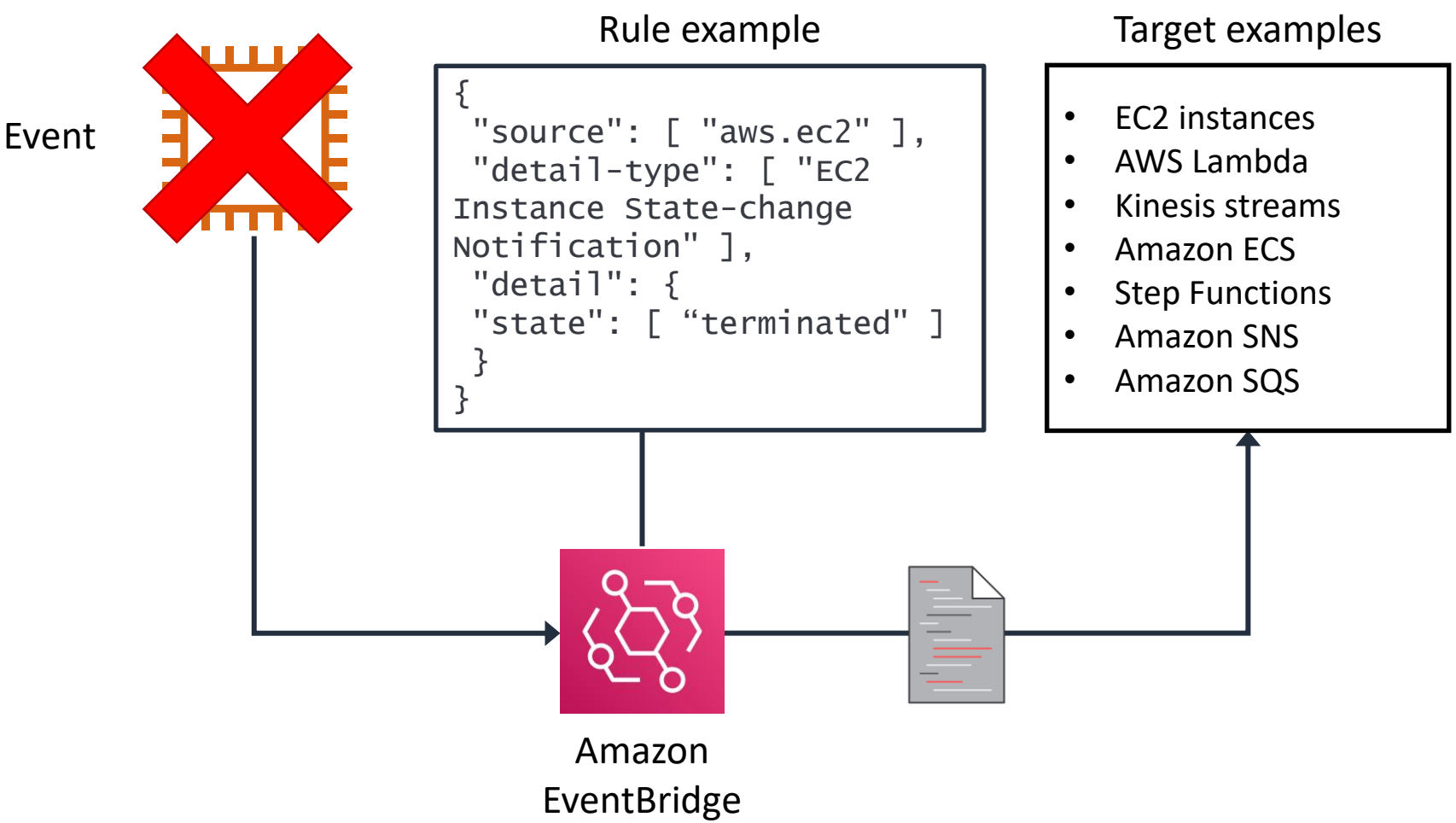
Amazon EventBridge targets

- Metrics
- Logs
- Alarms
- Events
- Rules
- Targets



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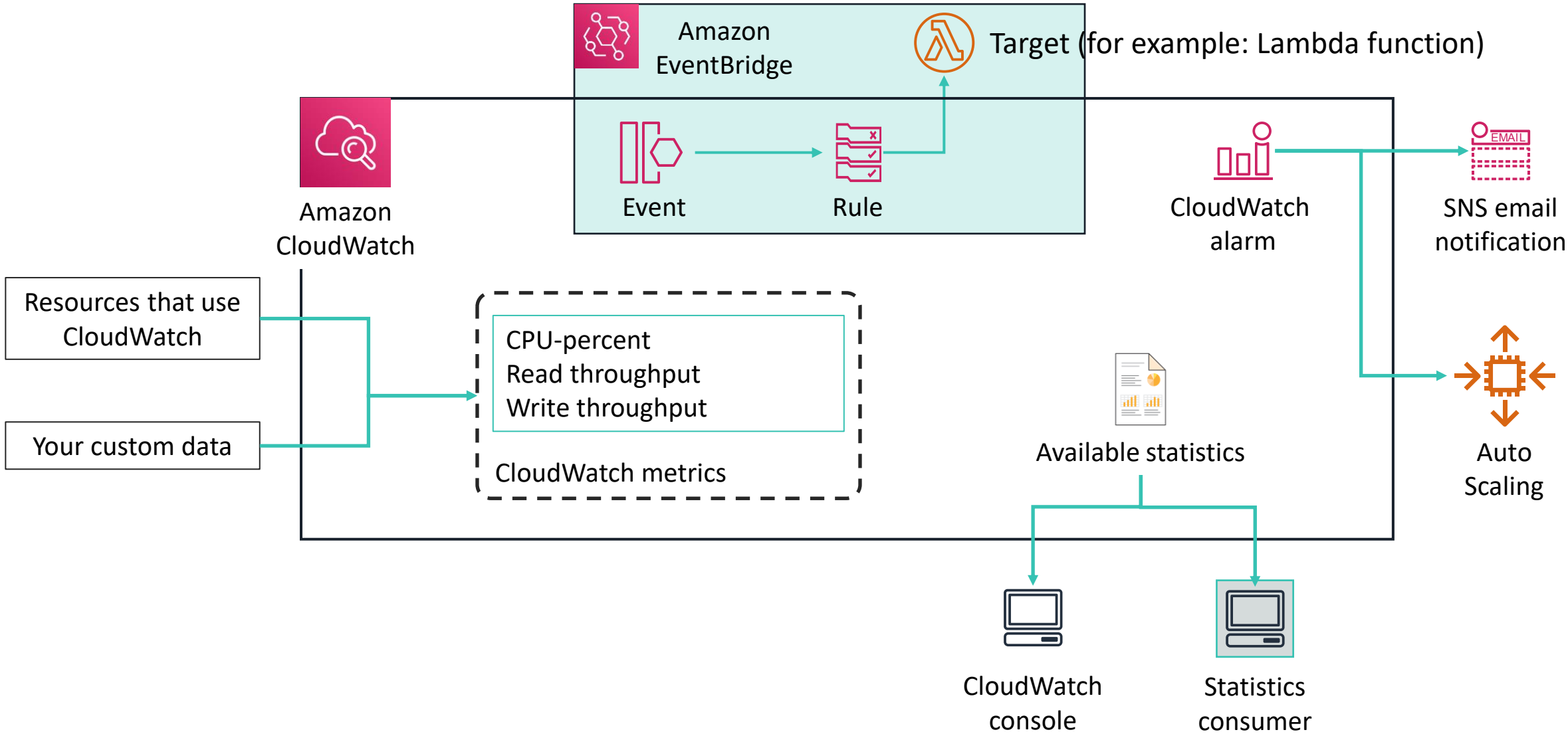
How CloudWatch and EventBridge work



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Key takeaways

- AWS Cost Explorer, AWS Budgets, AWS Cost and Usage Report, and the Cost Optimization Monitor can help you understand and manage the cost of your AWS infrastructure.
- CloudWatch collects monitoring and operational data in the form of logs, metrics, and events. It visualizes the data by using automated dashboards so you can get a unified view of your AWS resources, applications, and services that run in AWS and on-premises.
- EventBridge is a serverless event bus service that connects your applications with data from various sources. EventBridge delivers a stream of real-time data from your own applications, SaaS applications, and AWS services. It then routes that data to targets.

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Amazon Config

- A fully managed service that provides AWS resource inventory, configuration history, and configuration change notifications to enable security and governance
- It gives point-in-time and historical states and allows user to see changes visually in a timeline

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What AWS Config does?

- Retrieve configuration status of one or more resources
- Retrieve historical configuration of one or more resources
- Produce a snapshot of the current configuration of the supported resources.
- Evaluate AWS resource configuration for desired setting
- Sends notifications whenever change occurs in the resources.
- Shows relevant relationship between the resources.

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AWS Config terminology

- AWS resources
- Configuration items
- Configuration snapshots
- Resource relationship
- Configuration stream
- Configuration recorder

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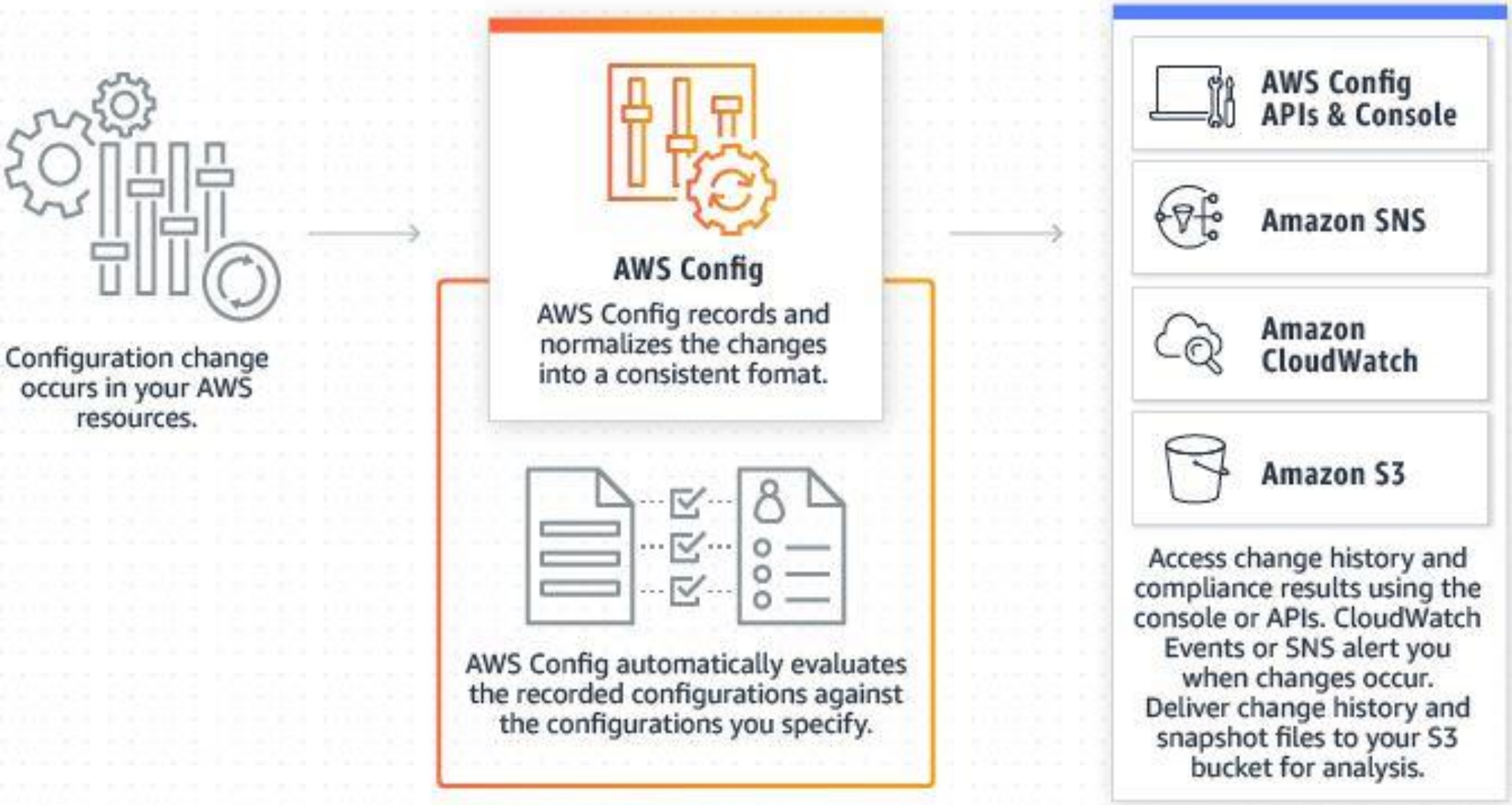
How Amazon Config Works



Amazon Config Use case

- **Security Analysis & Resource Administration**
  - AWS Config enables continuous monitoring and governance over resource configurations and help evaluate them for any misconfigurations leading to security gaps or weakness
- **Auditing & Compliance**
  - AWS Config help maintain a complete inventory of all resources and their configurations attributes as well as point in time history
  - Ability to retrieve historical configurations can be very useful to ensure compliance with internal policies and best practices and for audits
- **Troubleshooting**
  - AWS Config can help quickly identify and troubleshoot issues, by being able to use the historical configurations and compare the last working configuration to the one recent changed causing issues

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Amazon Config Use case

- **Change Management**
  - AWS Config helps understand relationships between resources so that the impact of the change can be proactively assessed
  - It can be configured to notify whenever resources are created, modified, or deleted without having to monitor these changes by polling the calls made to each resource
- **Discovery**
  - AWS Config help discover resources that exist within an account leading to better inventory and asset management
  - Get a snapshot of the current configurations of the supported resources that are associated with the AWS account

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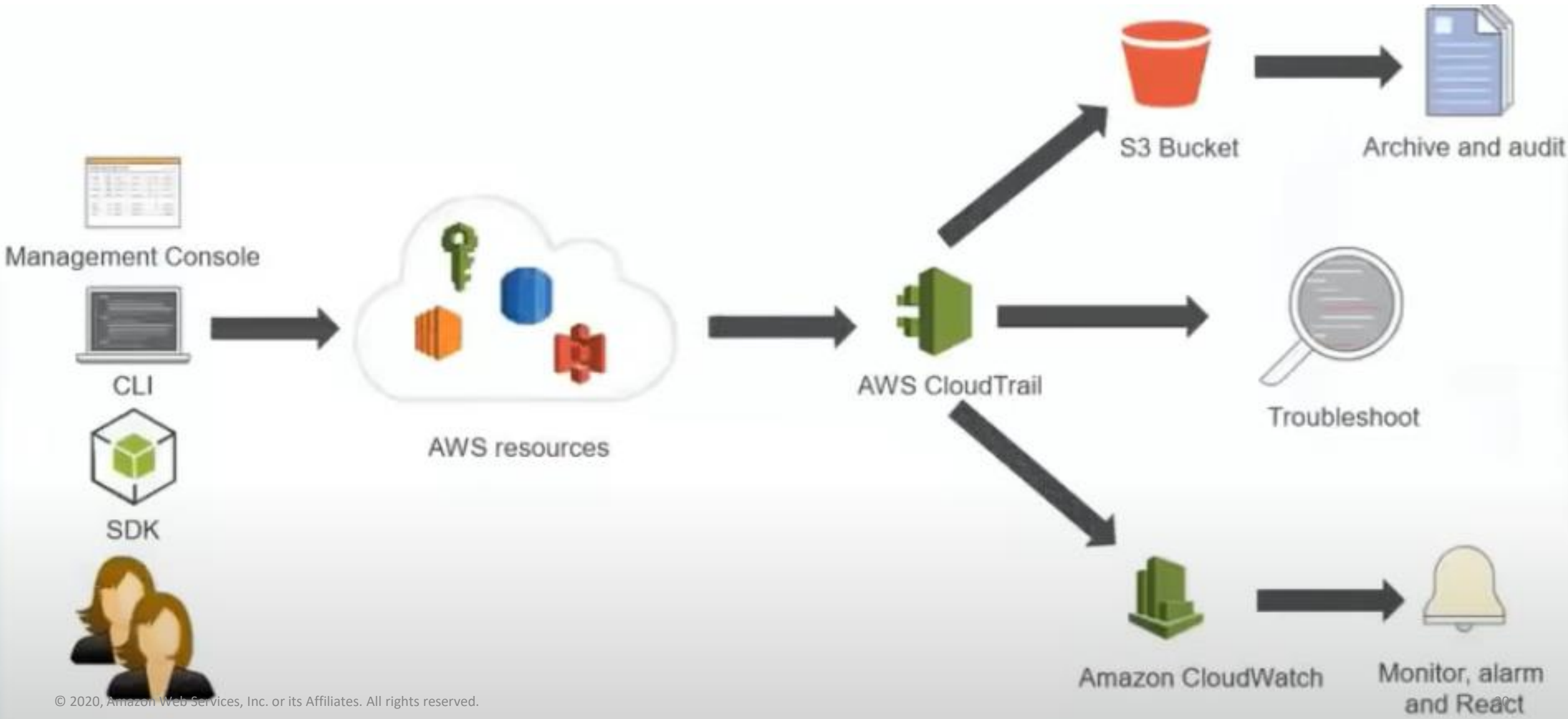
AWS CloudTrail



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AWS CloudTrail

aws academy

AWS CloudTrail is a web service that records AWS API calls for your account and delivers log files to you.

The recorded information includes:

- The identity of the API caller
- The time of the API call
- The source IP address of the API caller
- The request parameters
- The response elements returned by the AWS service

CloudWatch vs. 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.

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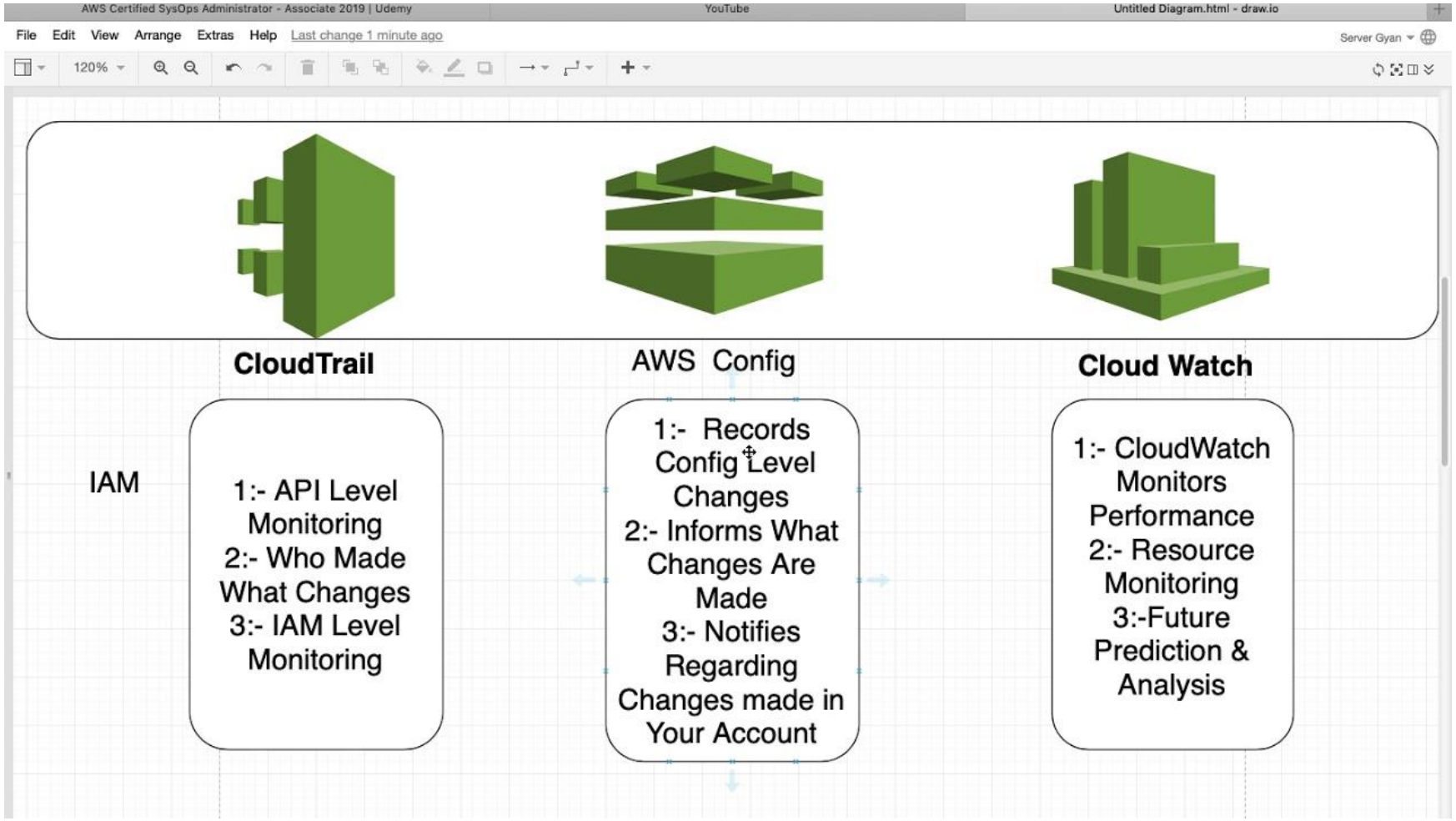
CloudWatch vs. CloudTrail vs. Config



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