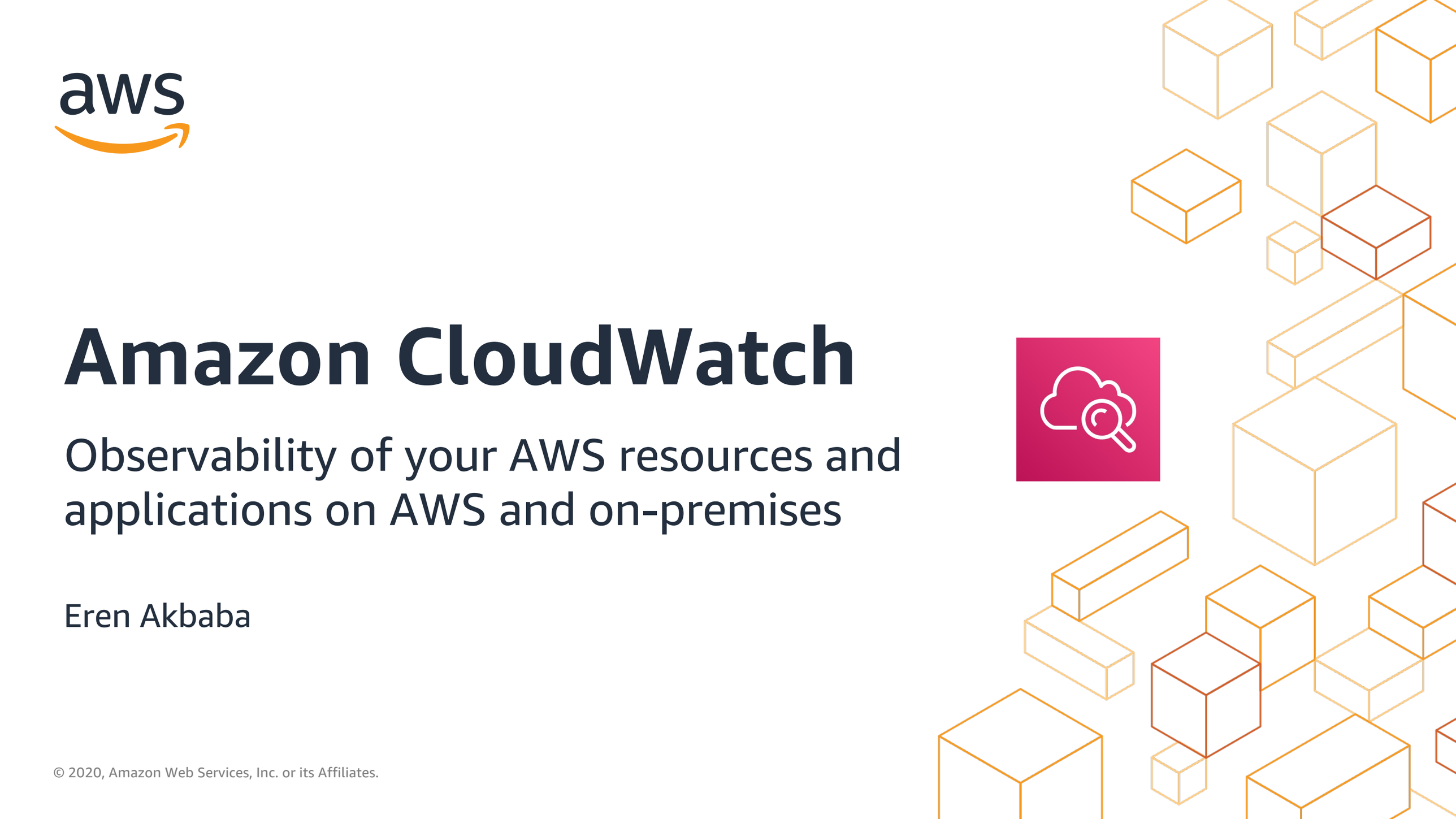


Amazon CloudWatch

Observability of your AWS resources and applications on AWS and on-premises

Eren Akbaba

Benefits

Observability on a single platform across applications and infrastructure

Easiest way to collect metrics in AWS and on-premises

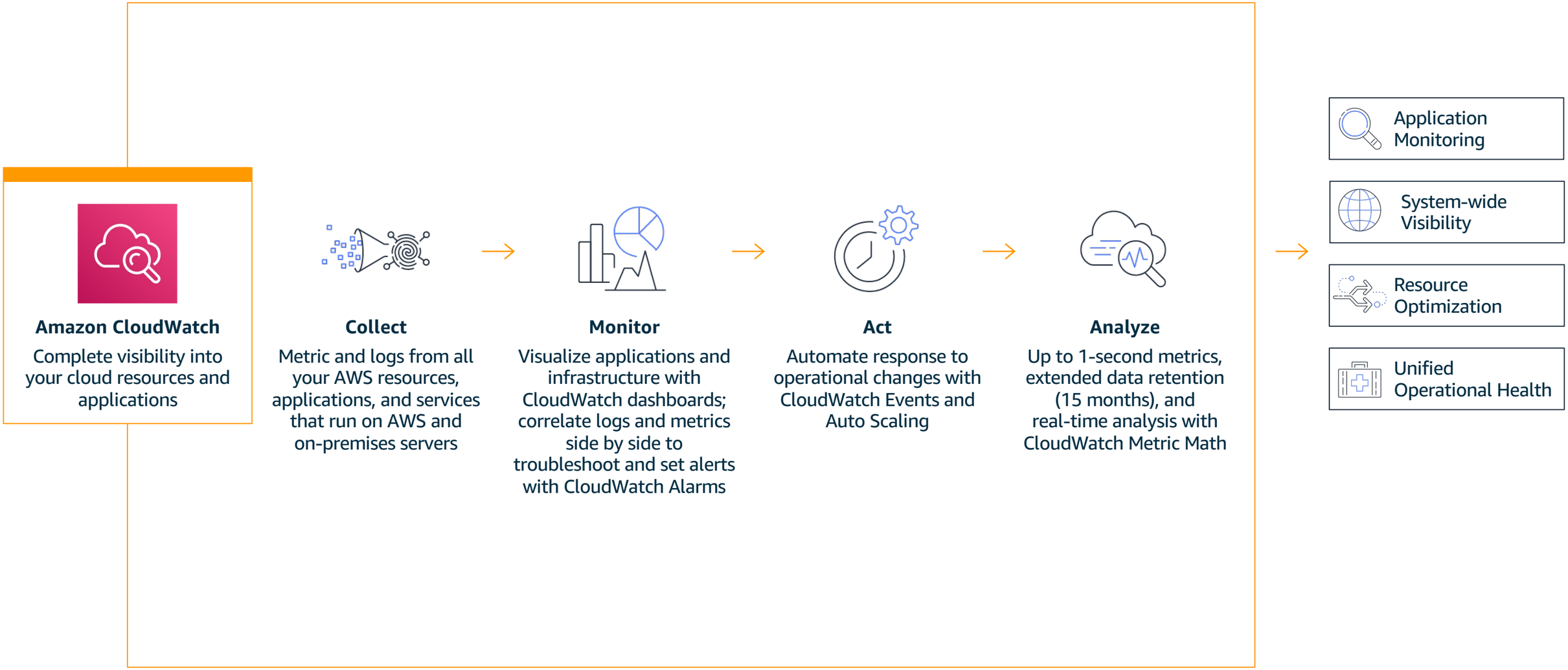
Improve operational performance and resource optimization

Get operational visibility and insight

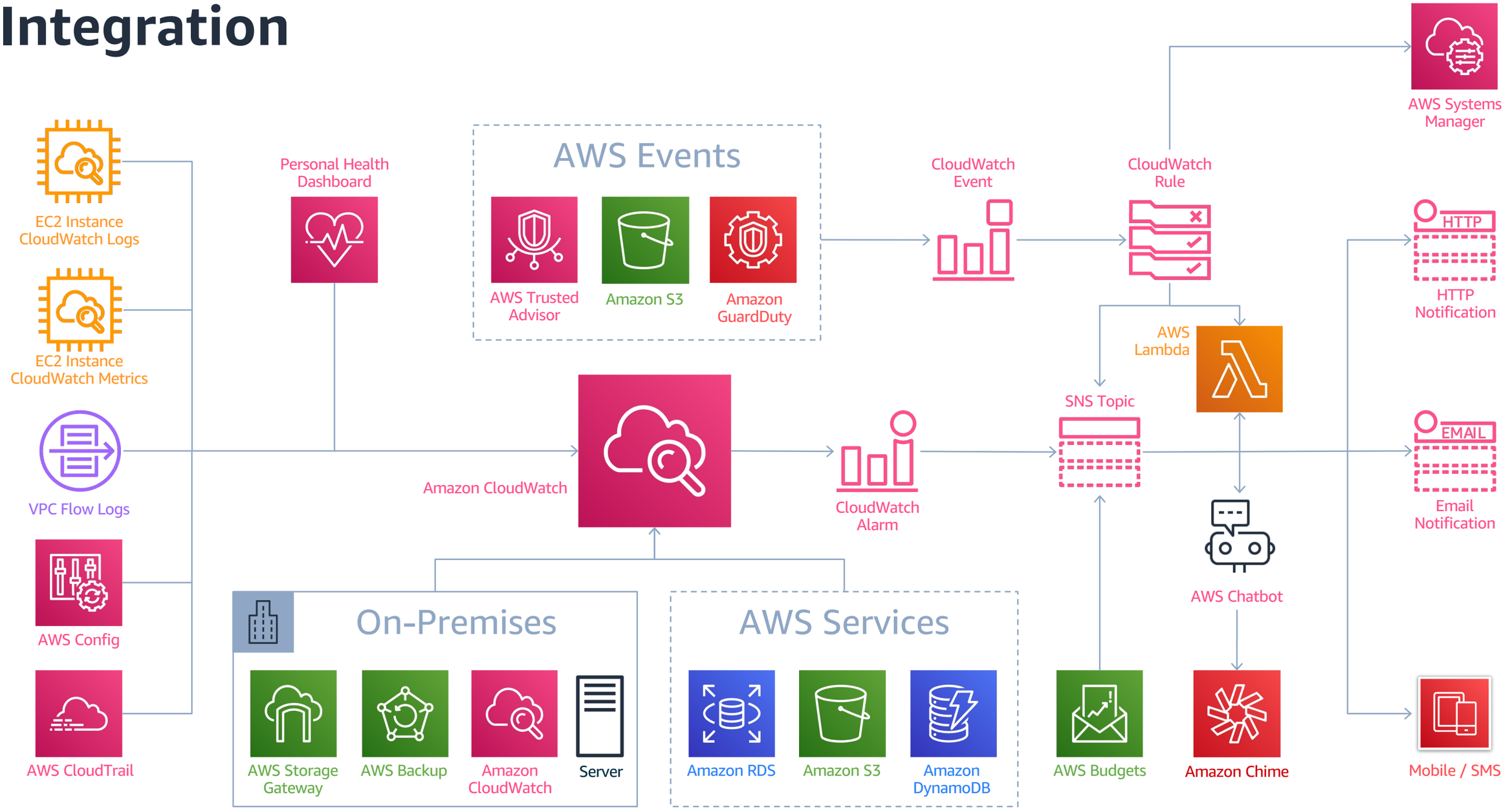
Derive actionable insights from logs

aws

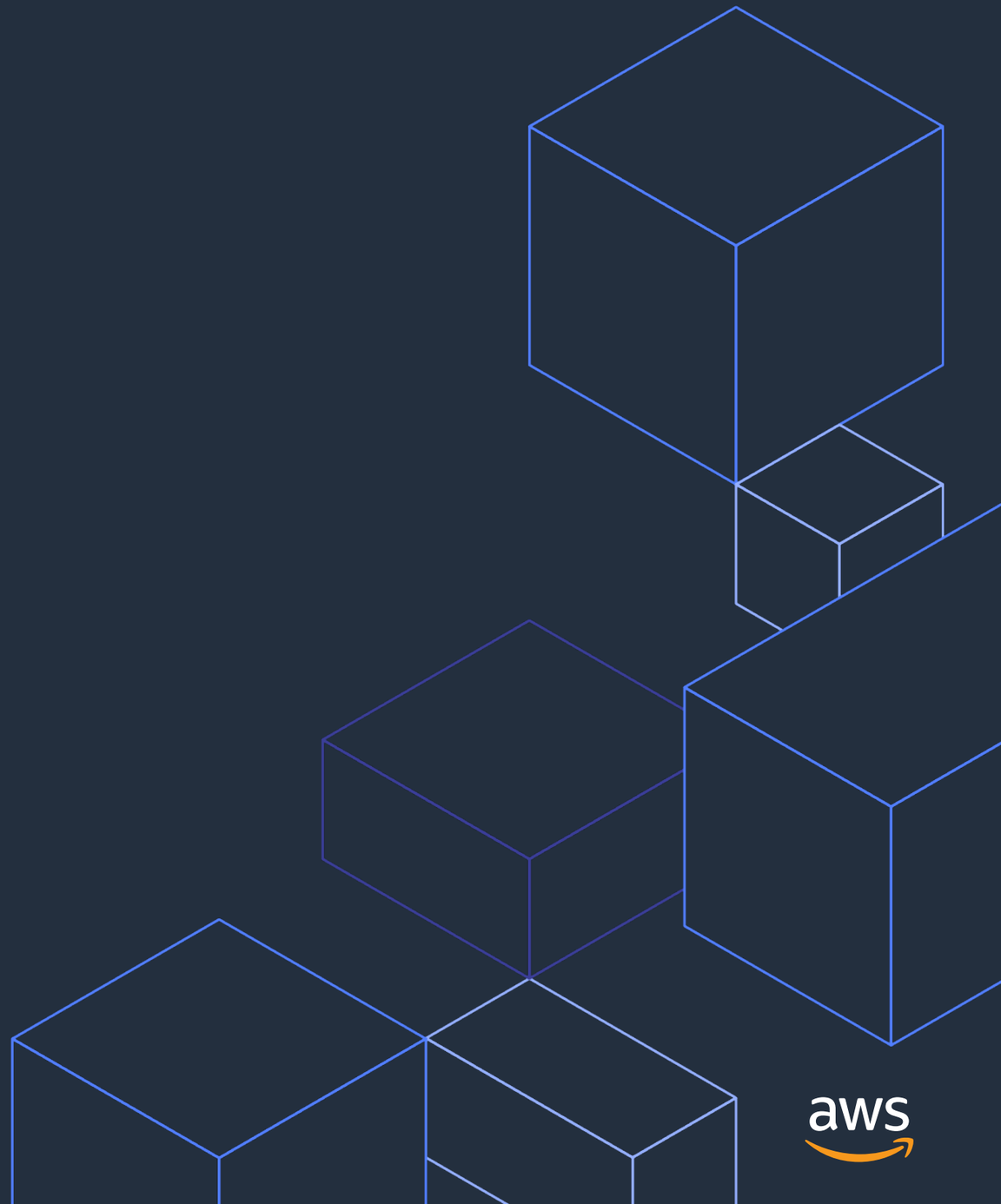
How it works



Integration



Collect



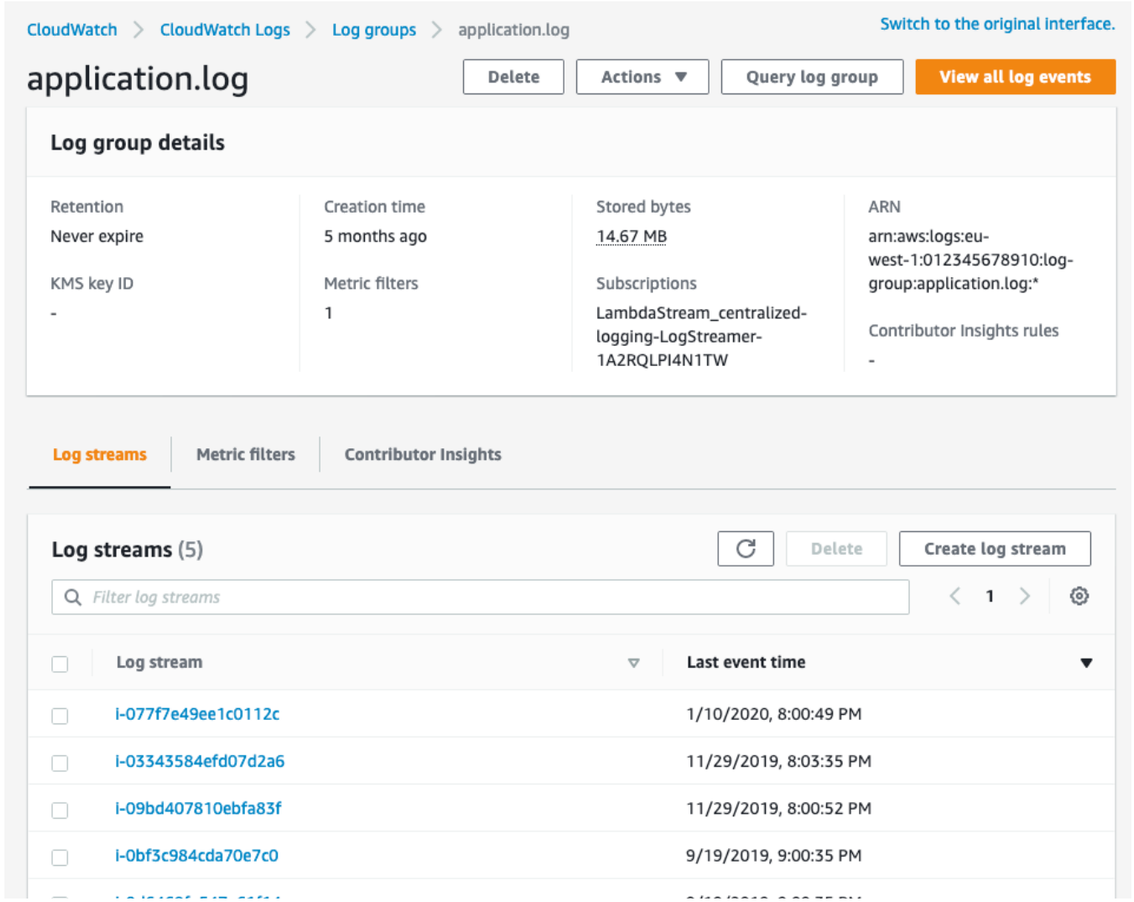
Easily collect and store logs

The Amazon CloudWatch Logs service allows you to collect and store logs from your resources, applications, and services in near real-time.

Collect logs from:

- Amazon EC2 instances
- On-premises servers
- VPC Flow Logs
- AWS CloudTrail
- AWS Lambda
- Other AWS Services

Log data can be stored and accessed indefinitely in highly durable, low-cost storage so you don't have to worry about filling up hard drives.

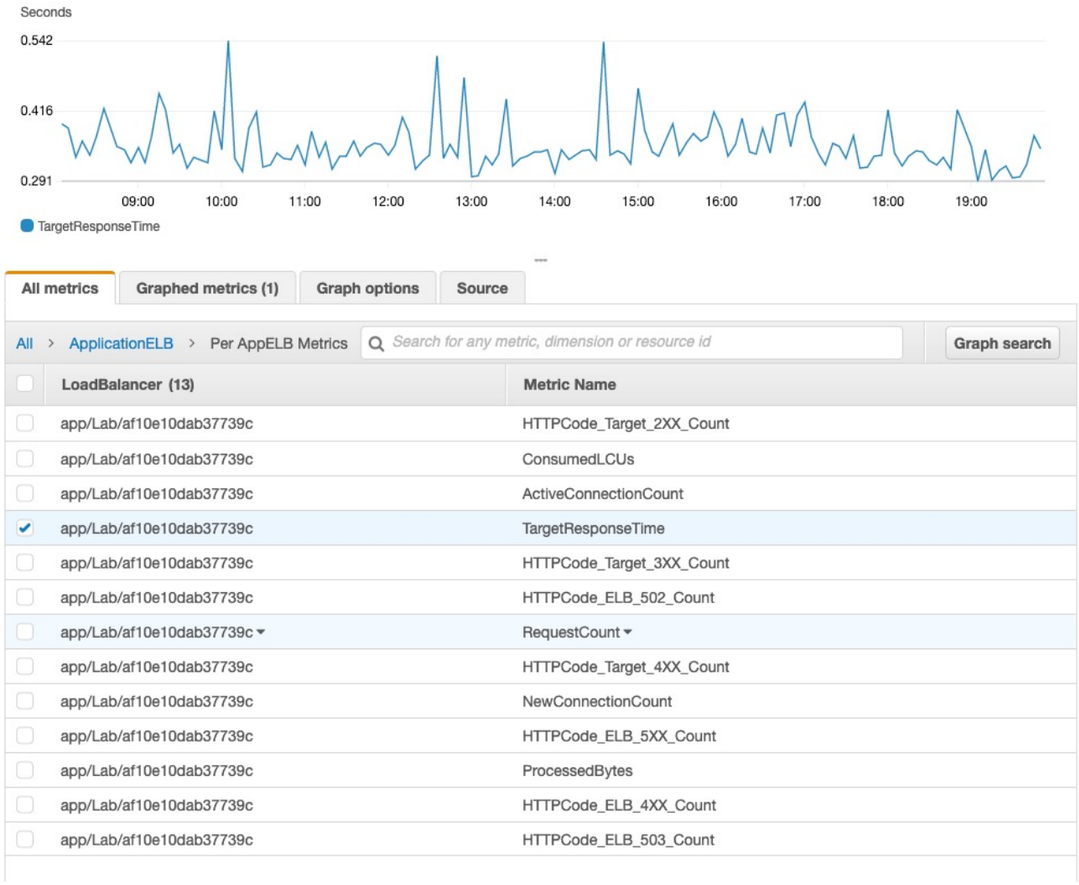


Built-in metrics

Collecting metrics is time consuming. Amazon CloudWatch allows you to collect default metrics from more than 70 AWS services, such as:

- Amazon EC2
- Amazon DynamoDB
- Amazon S3
- Amazon ECS
- AWS Lambda
- Amazon API Gateway

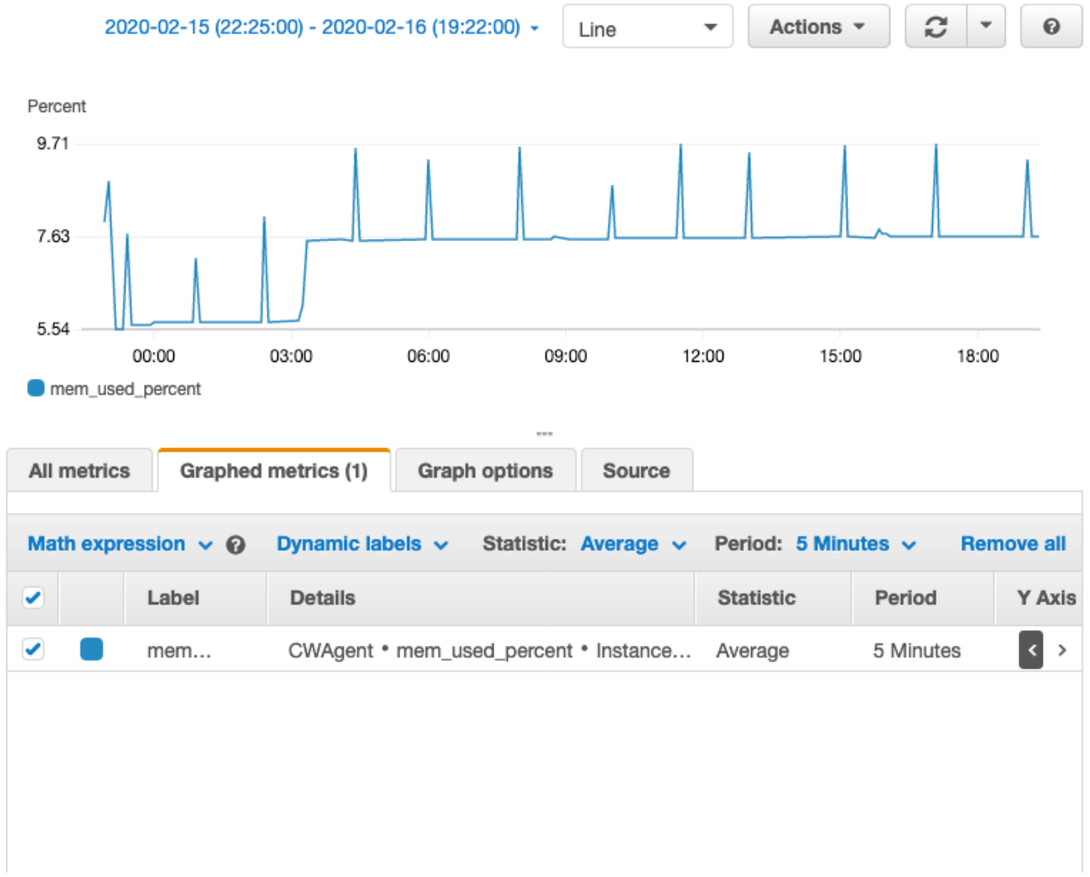
No action is required on your part. For example, EC2 instances automatically publish CPU utilization, data transfer, and disk usage metrics to help you understand changes in state.



Custom metrics

Collect custom metrics from your own applications to monitor operational performance, troubleshoot issues, and spot trends. User activity is an example of a custom metric you can collect and monitor over a period of time.

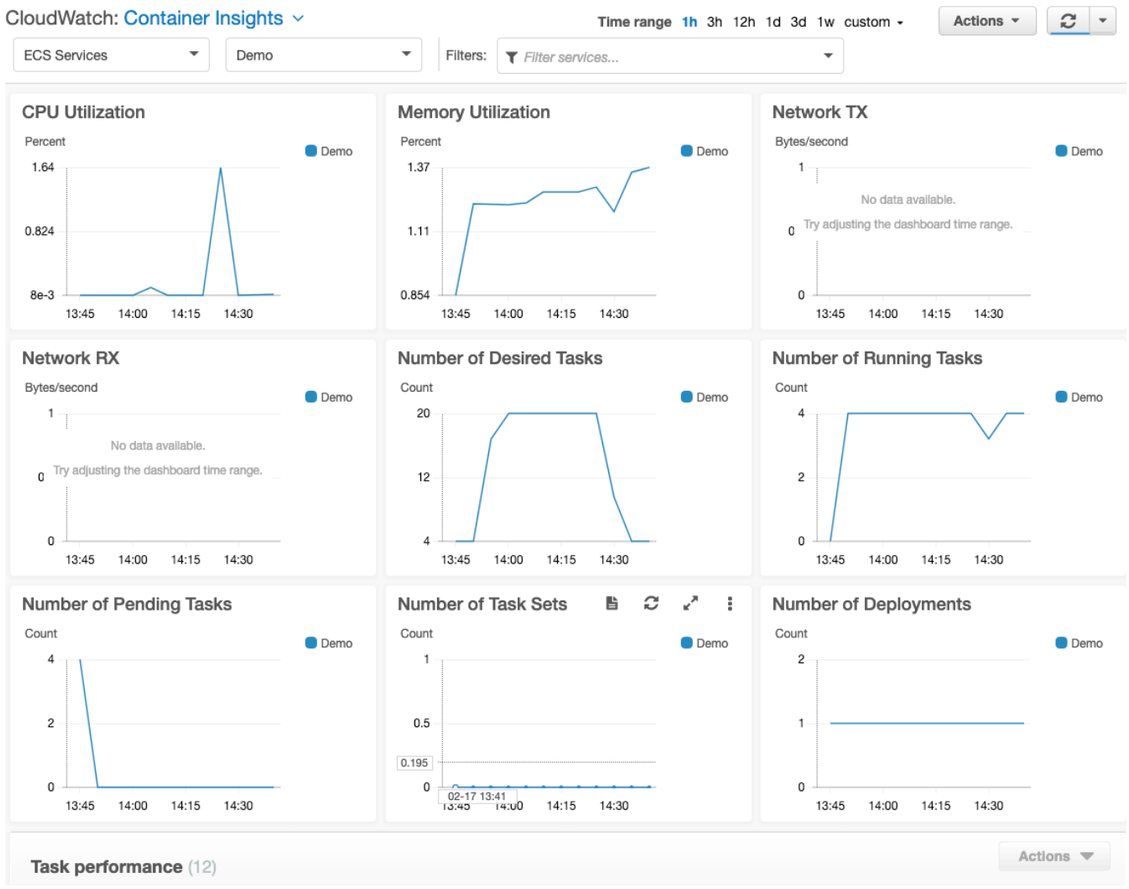
- Publish metrics using the AWS CLI or an API
- Standard resolution, with a one-minute granularity
- High resolution, with a granularity of one second
- Aggregate data before you publish to CloudWatch
- StatsD and collectd support via CloudWatch Agent



Collect and aggregate container metrics and logs

Use CloudWatch Container Insights to collect, aggregate, and summarize metrics and logs from your containerized applications and microservices.

- Collects metrics from each container
  - CPU
  - Memory
  - Disk
  - Network
- Automatically generated dashboards
- Set alarms on metrics



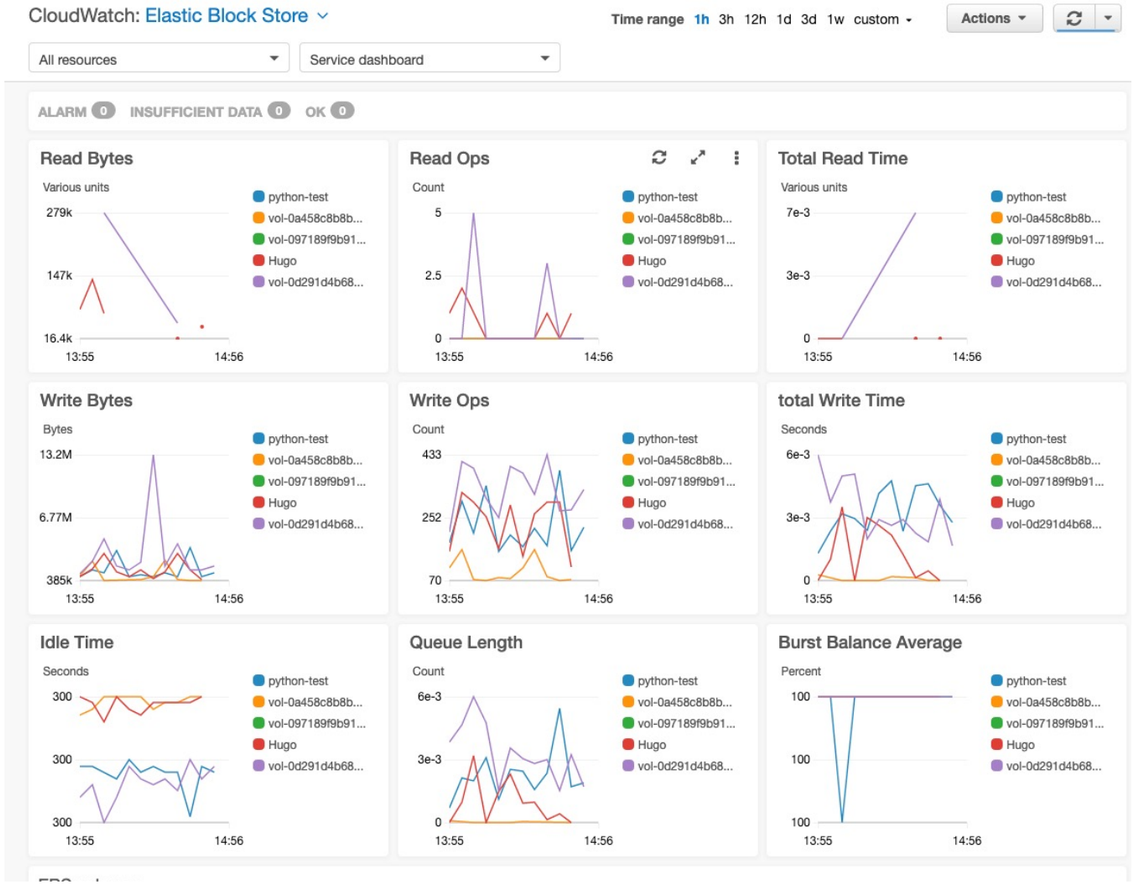
Monitor

aws

Unified operational view with dashboards

Amazon CloudWatch dashboards enable you to create re-usable graphs and visualize your cloud resources and applications in a unified view.

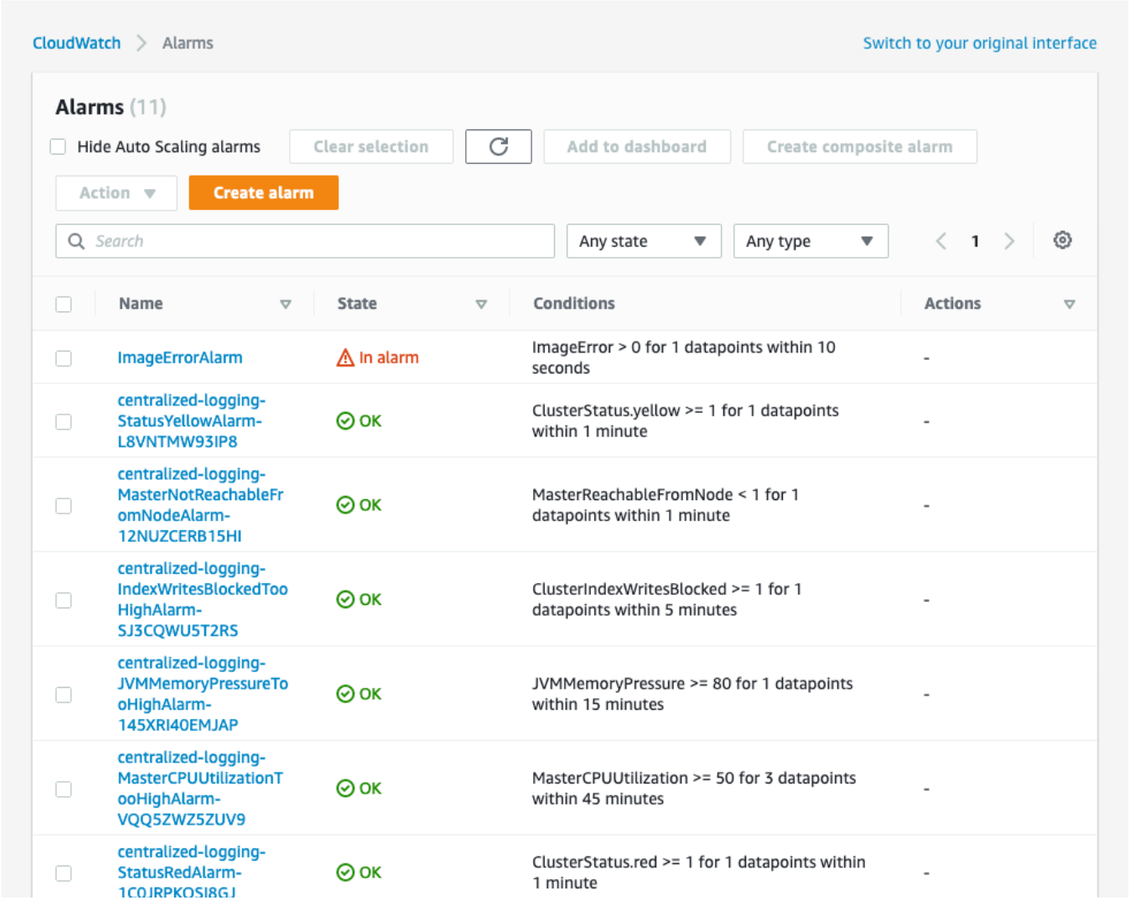
- A single view for selected metrics and alarms
- Multiple AWS accounts and multiple Regions.
- An operational playbook
- A common view of critical resource and application measurements that can be shared



High resolution alarms

Amazon CloudWatch alarms allow you to set a threshold on metrics and trigger an action.

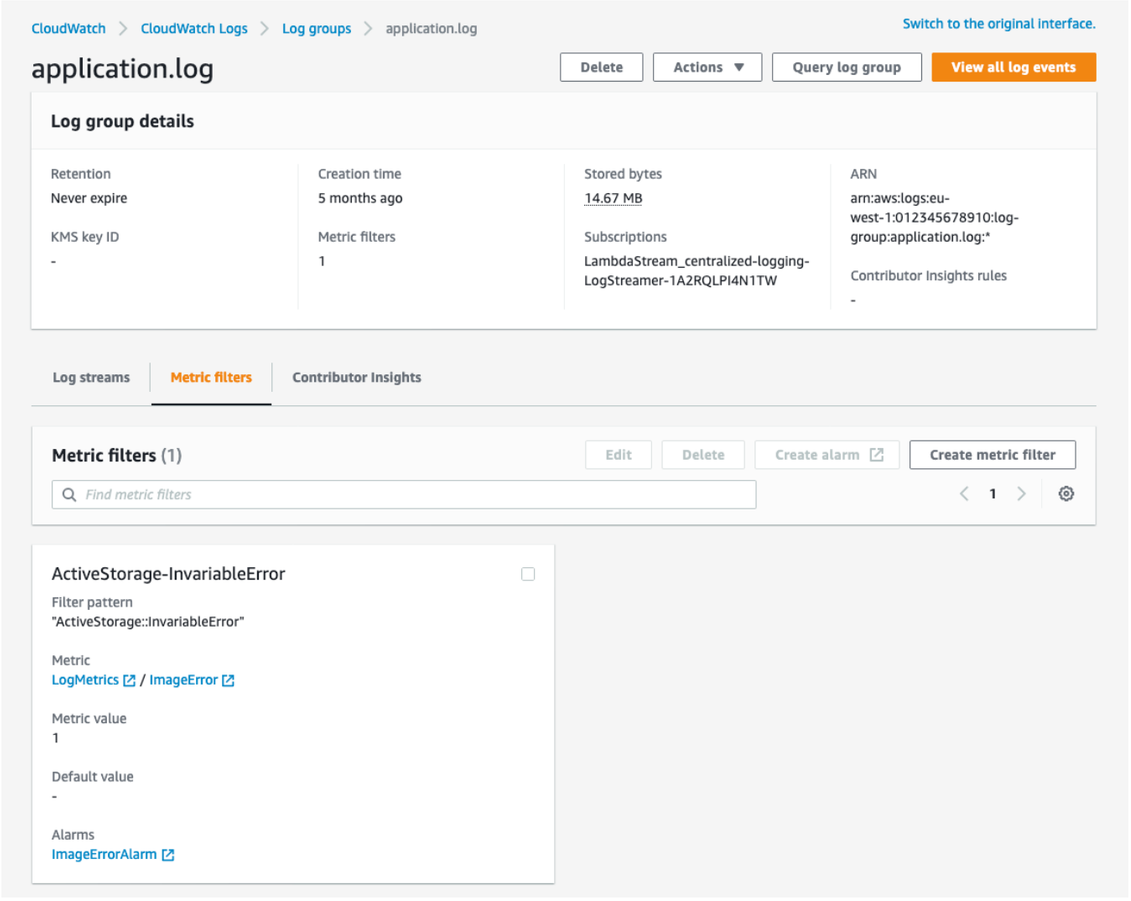
- Watch a single metric or the result of a math expression
- Perform actions based on the value of metrics
  - Send a notification to an SNS topic
  - Auto Scaling action
  - EC2 Action (Stop, Terminate, Reboot or Recover)
- Add alarms to dashboards to visualize them



Logs and metrics correlation

Amazon CloudWatch also makes it easy to correlate metrics and logs.

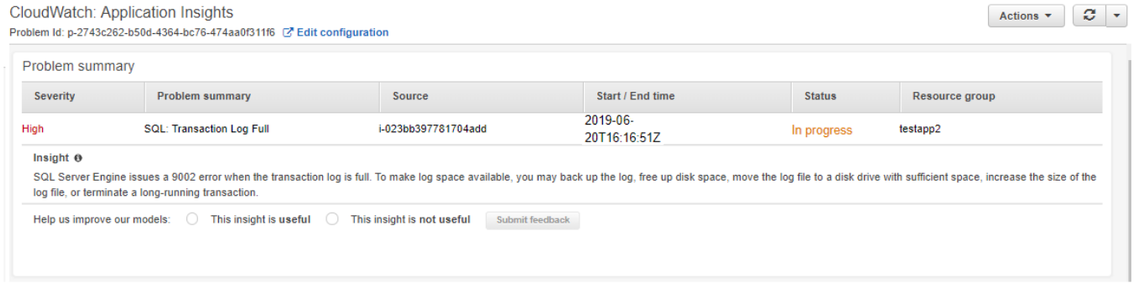
- Manage logs and metrics in a single platform
- Use metric filters to convert logs to metrics

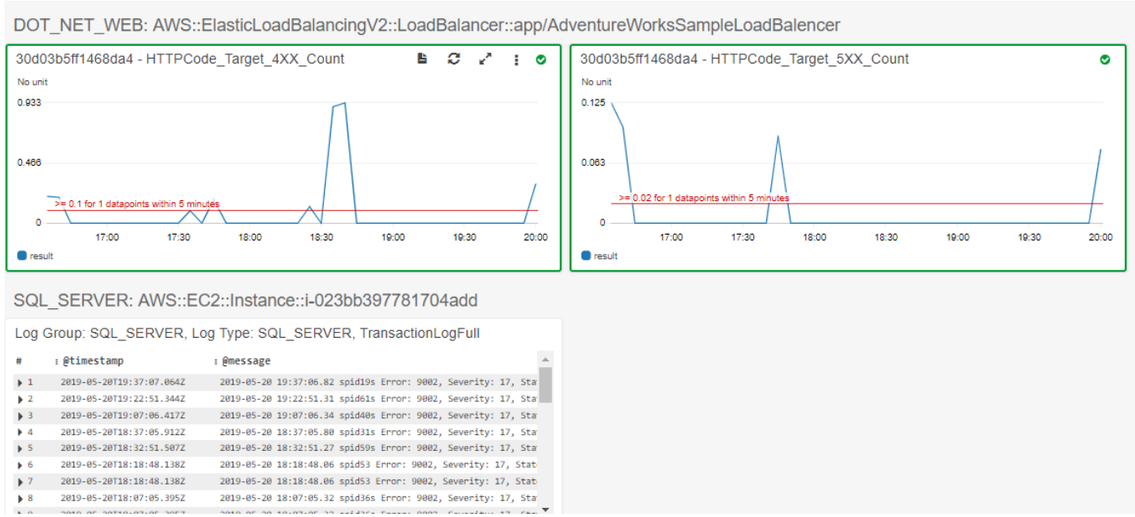


Application Insights for .NET and SQL Server applications

Easily monitor .NET and SQL Server applications, so you can get visibility into the health of such applications.

- Automatic Set Up of Monitors for Application Resources
- Problem Detection and Notification
- Automatic dashboards
- Insights that point to potential root causes

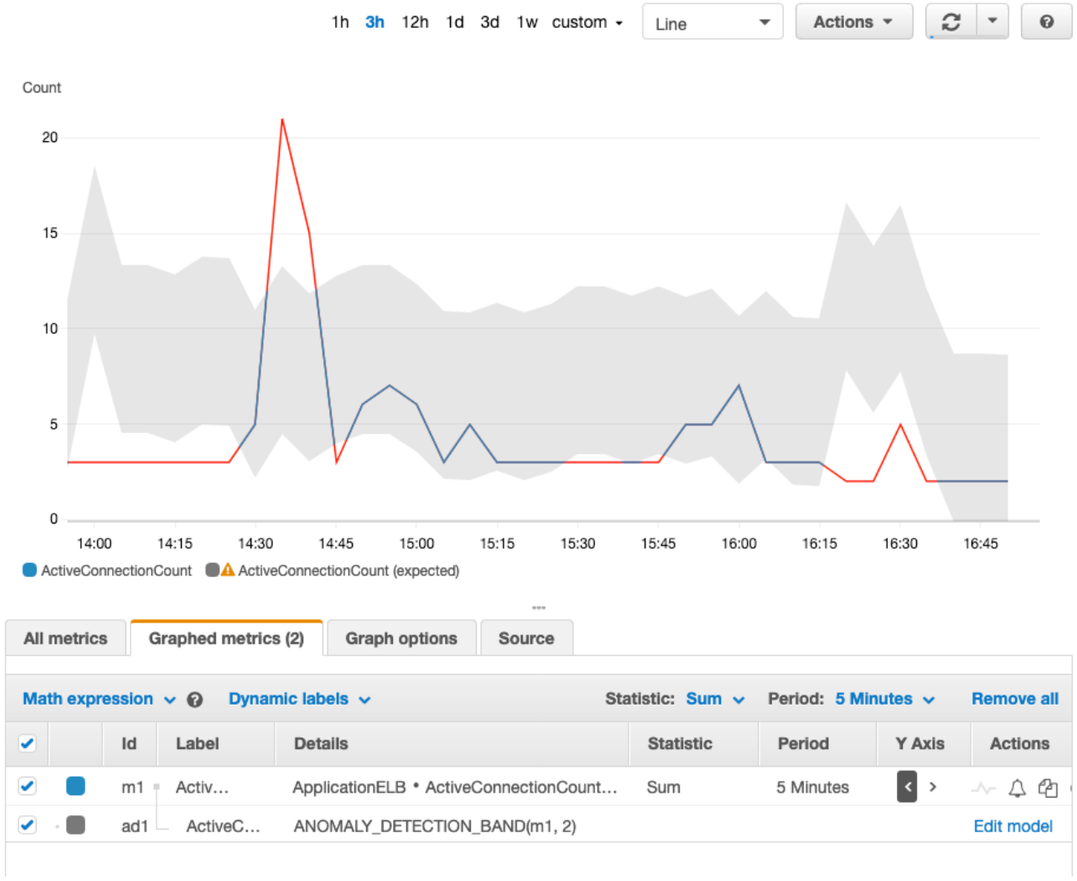




Anomaly Detection

When you enable anomaly detection for a metric, CloudWatch applies machine learning algorithms to the metric's past data to create a model of the metric's expected values.

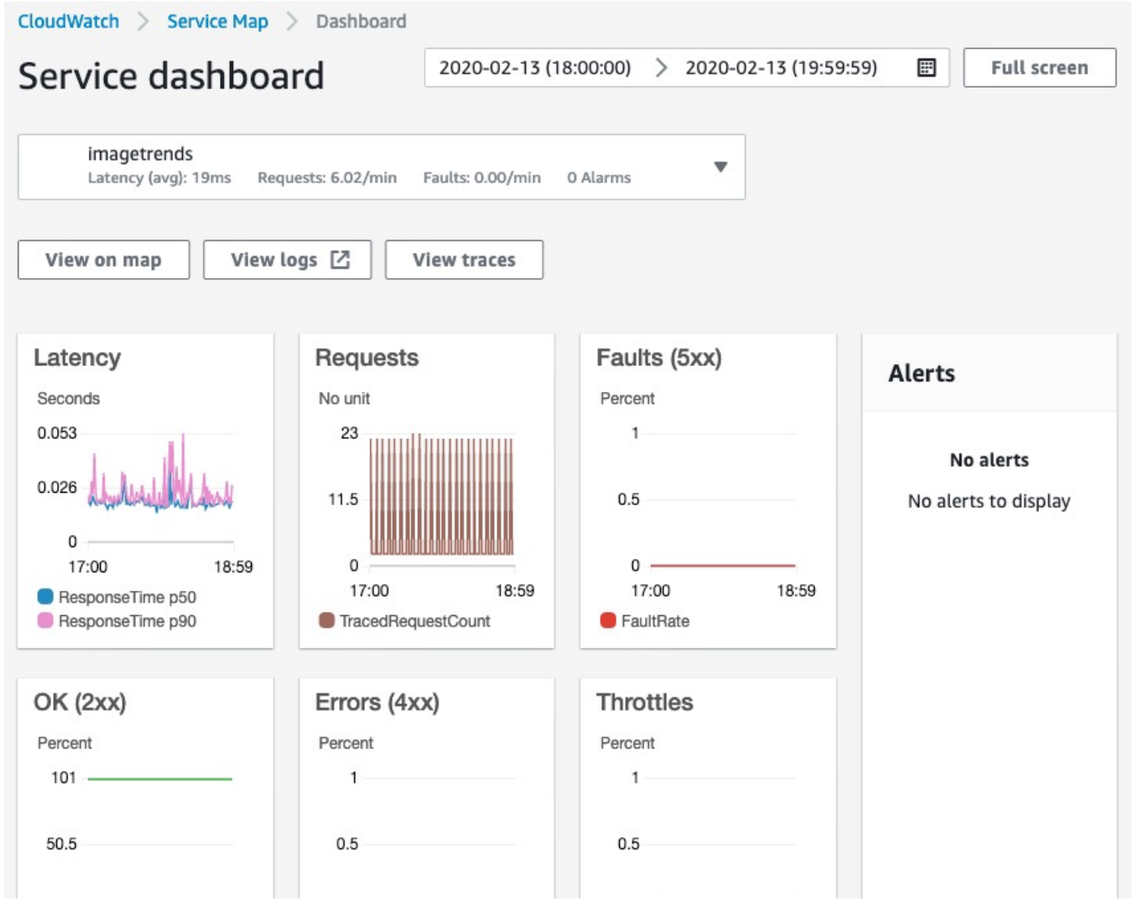
- Create alarms that auto-adjust thresholds based on natural metric patterns
- Alarm when the metric value is above or below the band, or both
- Visualize metrics with anomaly detection bands on dashboards



ServiceLens

You can use Amazon CloudWatch ServiceLens to visualize and analyze the health, performance, and availability of your applications in a single place.

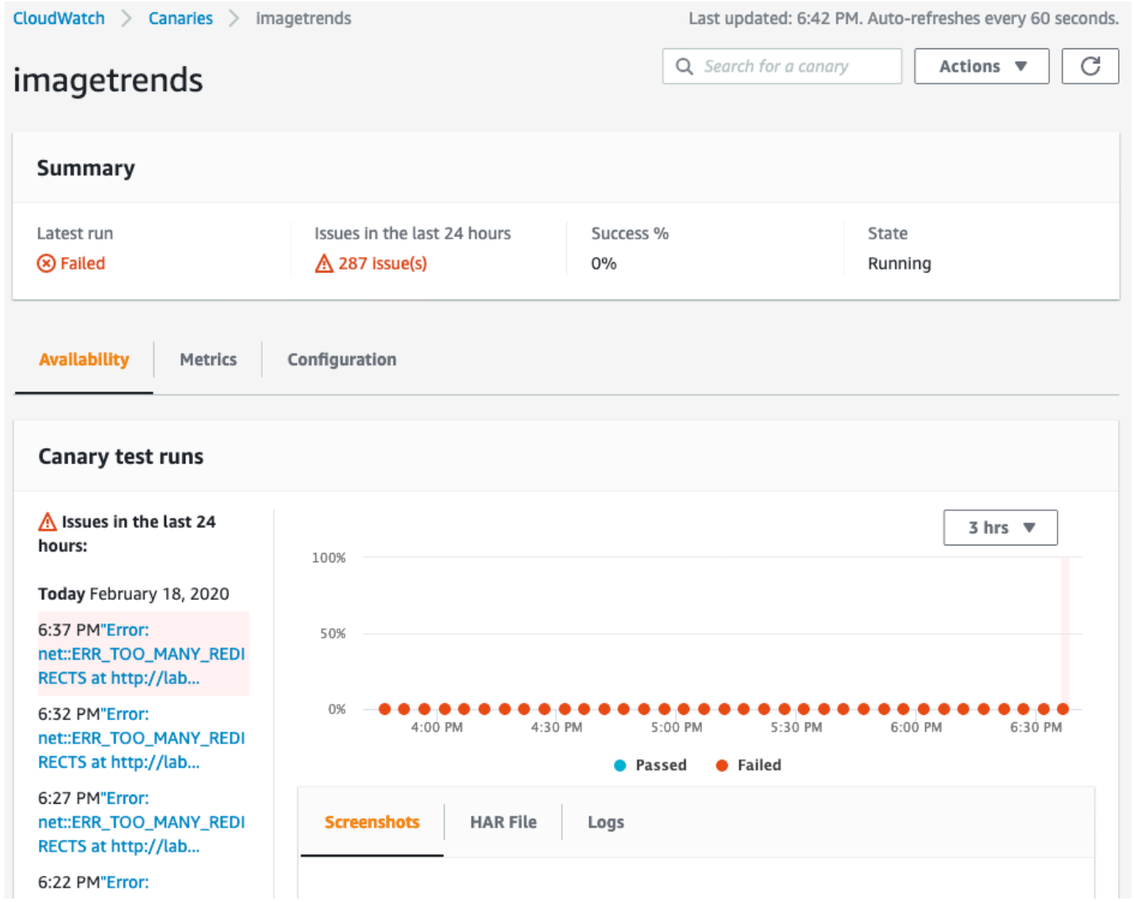
- Integrates CloudWatch with AWS X-Ray to provide an end-to-end view of your application
- A service map displays your service endpoints and resources as “nodes” and highlights the traffic, latency, and errors for each node and its connections
- You can choose a node to see detailed insights about the correlated metrics, logs, and traces associated with that part of the service



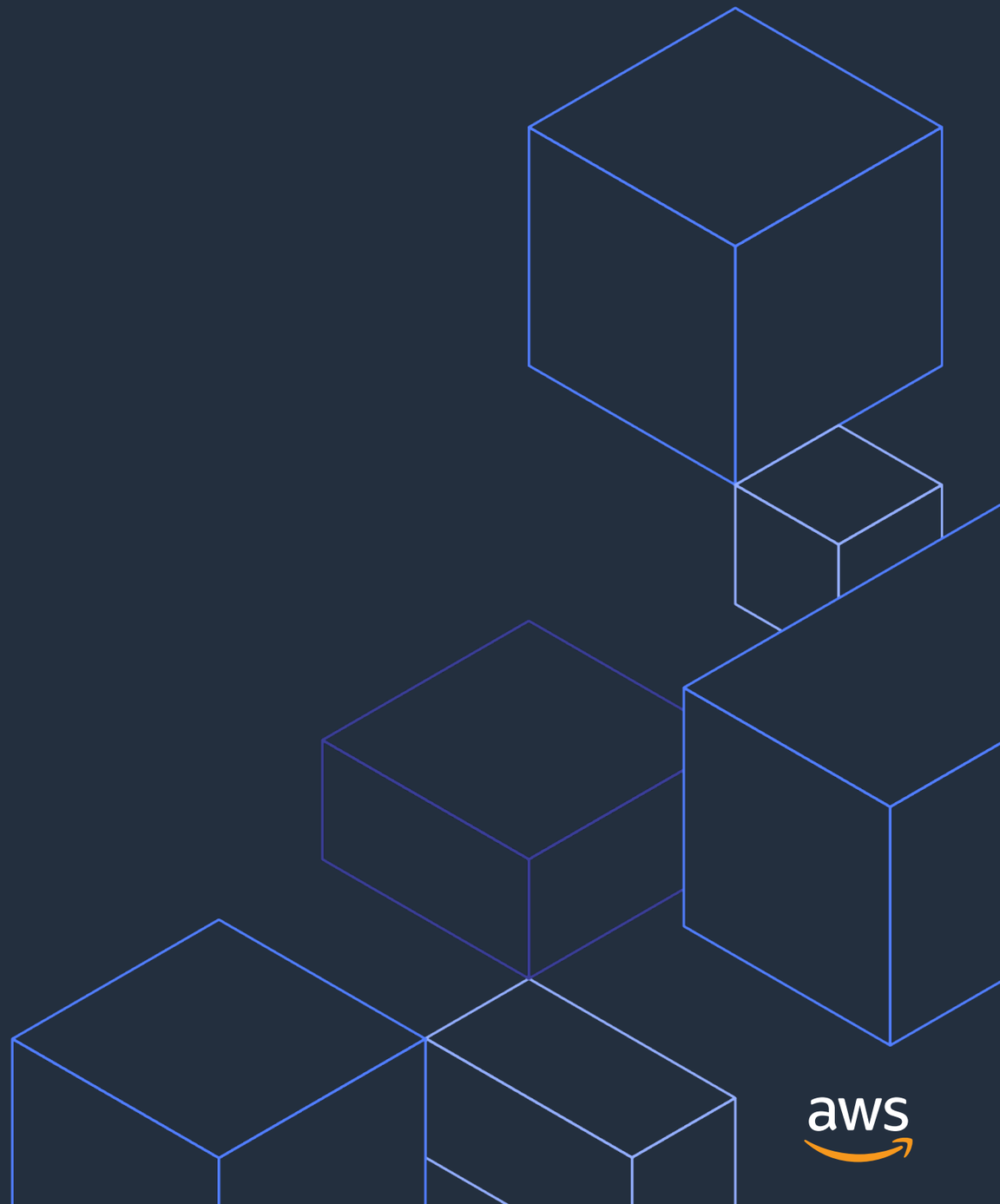
Synthetics

Run tests on your endpoints every minute, 24x7, and alerts you as soon as your application endpoints don’t behave as expected.

- View of your customers’ experiences
- Configurable scripts
- Run once
- Run on a schedule
- Check availability and latency
- Store load time data
- Store screenshots



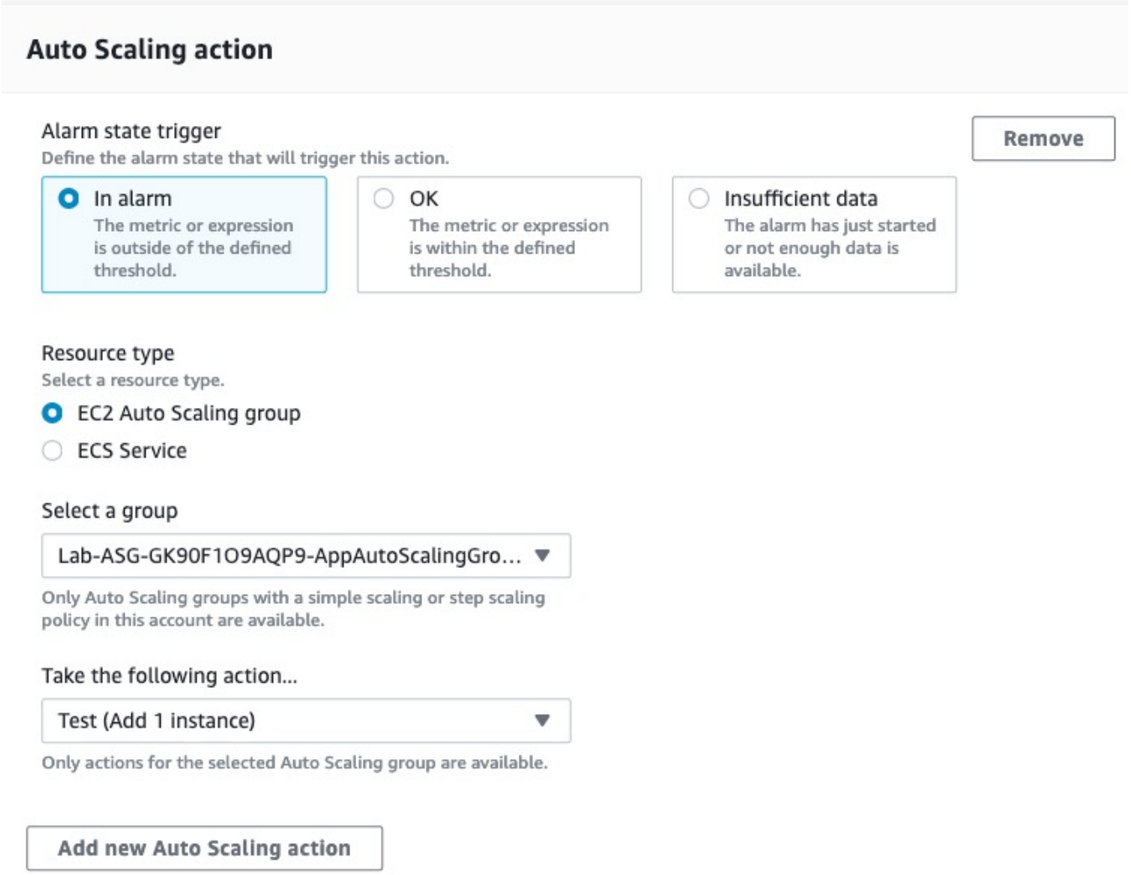
Act



Auto Scaling

Auto Scaling helps you automate capacity and resource planning.

- Set a threshold to alarm on a key metric and trigger an automated Auto Scaling action
- For example, you could set up an Auto Scaling workflow based on queue depth
- Configure policies to scale in or scale out
- Allows you to set 1 scaling policy and trigger with multiple alarms



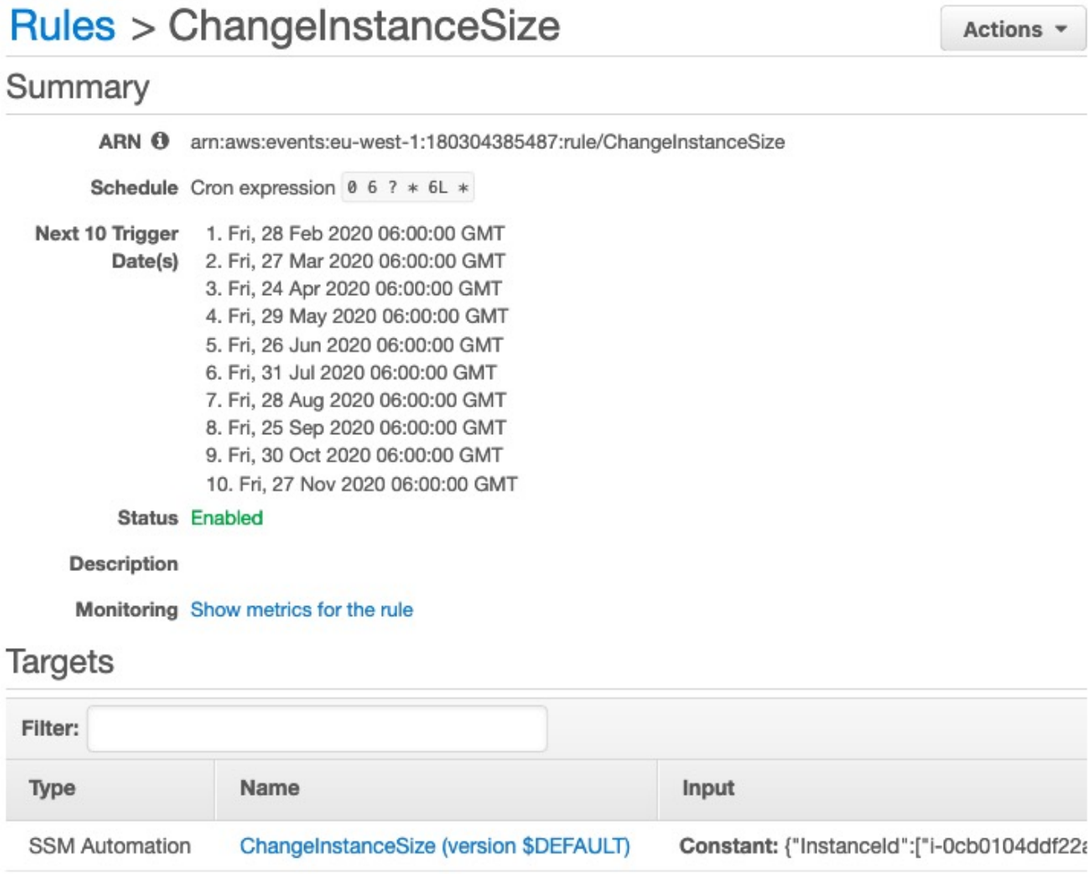
Automate response to changes with CloudWatch Events

CloudWatch Events provides a near real-time stream of system events that describe changes to your AWS resources.

- Respond quickly
- Take corrective action

Write rules to indicate which events are of interest to your application and what automated actions to take when a rule matches an event.

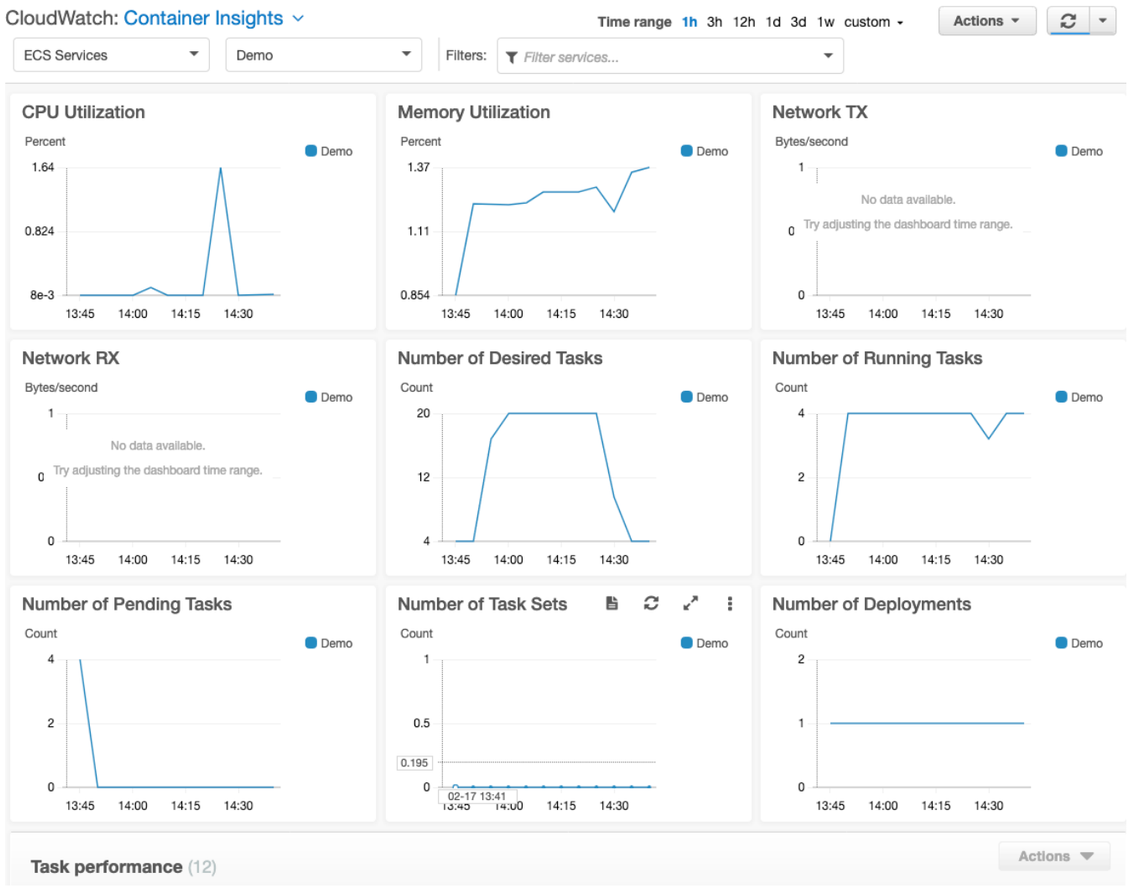
- Invoke a Lambda Function
- Notify an SNS Topic
- Create an Ops Item in Systems Manager



Alarm and automate actions on EKS, ECS, and k8s clusters

For Amazon EKS and k8s clusters, Container Insights allows you to alarm on compute metrics to trigger auto scaling policies on your Amazon EC2 Auto Scaling group and provides you the ability to stop, terminate, reboot, and recover any Amazon EC2 instance.

For Amazon ECS clusters, compute metrics from your tasks and services can be used for Service Auto Scaling.

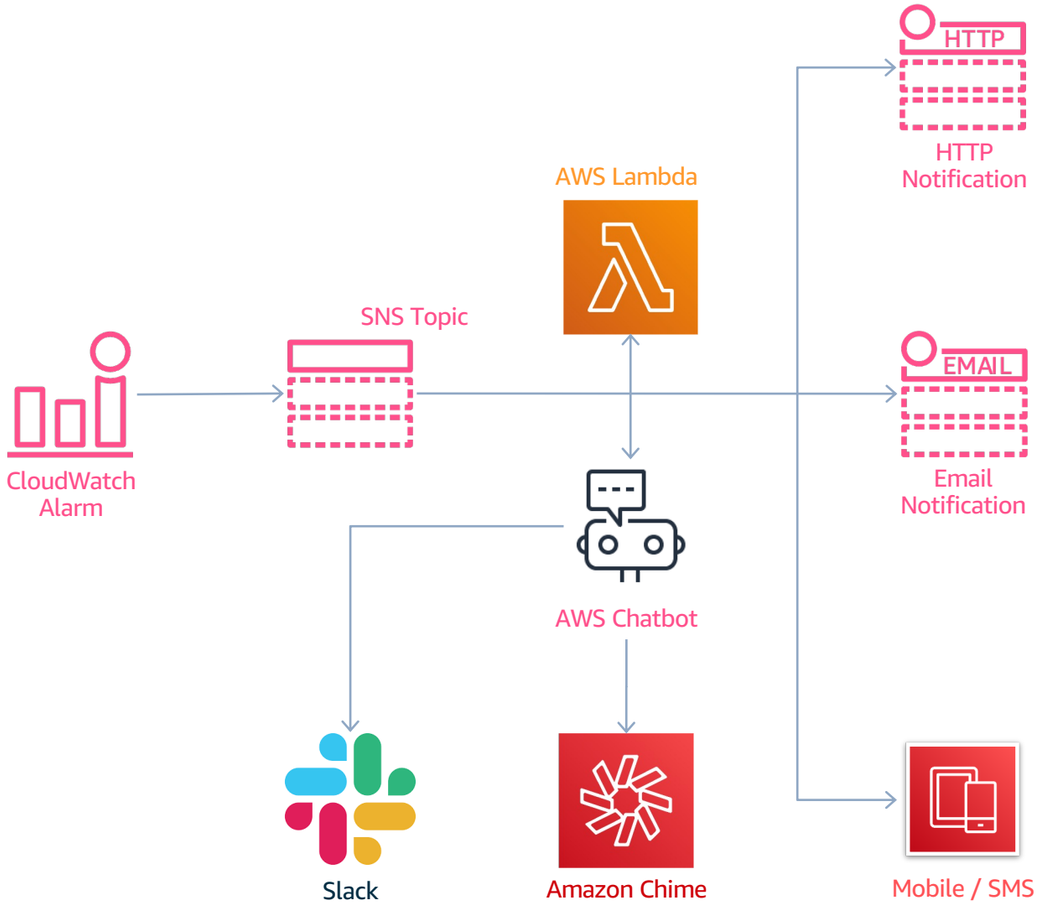


aws

Automation

CloudWatch Alarms can send a notification to SNS, from there, you can trigger a Lambda function or push a message to Slack or Amazon Chime via AWS Chatbot. This allows you to do almost anything, including:

- Trigger a Systems Manager Automation
- Resize an instance
- Send a message to Chime or Slack
  - Respond with CLI commands
- Invoke disaster recovery
- Update security groups
- Automate deployments
- Instigate backups and snapshots
- Responding to security events

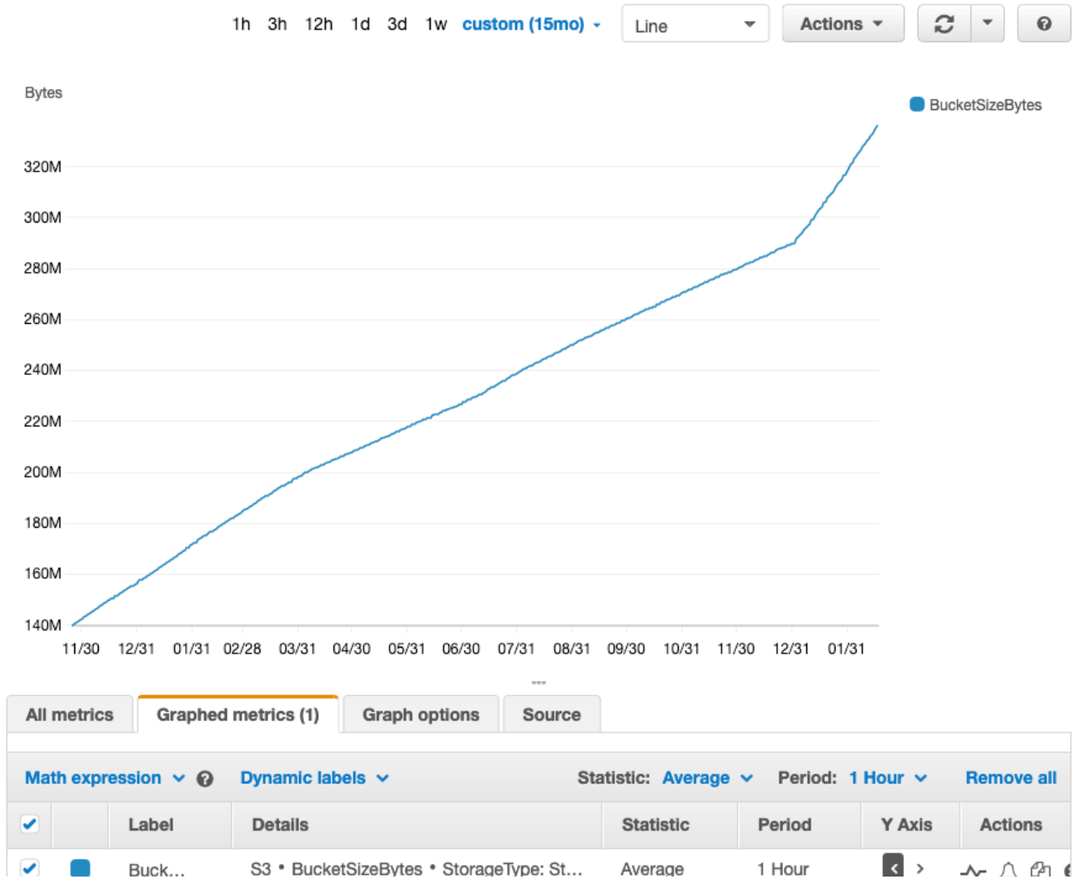


Analyze

Granular data and extended retention

Amazon CloudWatch allows you to monitor trends and seasonality with 15 months of metric data (storage and retention).

- Historical analysis to fine-tune resource utilization
- Collect metrics with a granularity of 1 second
- Granular real-time data enables better visualization
- Spot and monitor trends to optimize applications



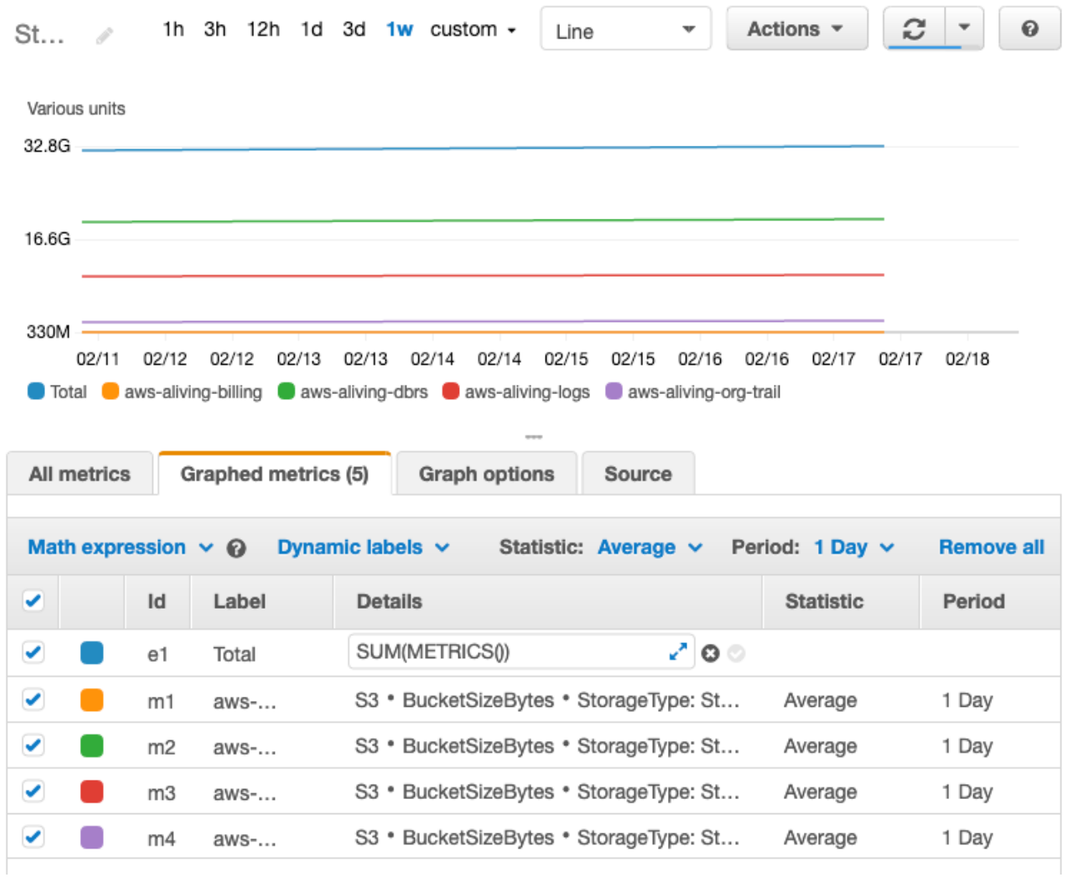
Custom operations on metrics

Metric Math enables you to perform calculations across multiple metrics for real-time analysis.

- Visualize computed metrics in the Console
- Add them to CloudWatch dashboards
- Retrieve them using the GetMetricData API action

Metric Math supports arithmetic operations such as +, -, /, *, and mathematical functions such as Sum, Average, Min, Max, and Standard Deviation.

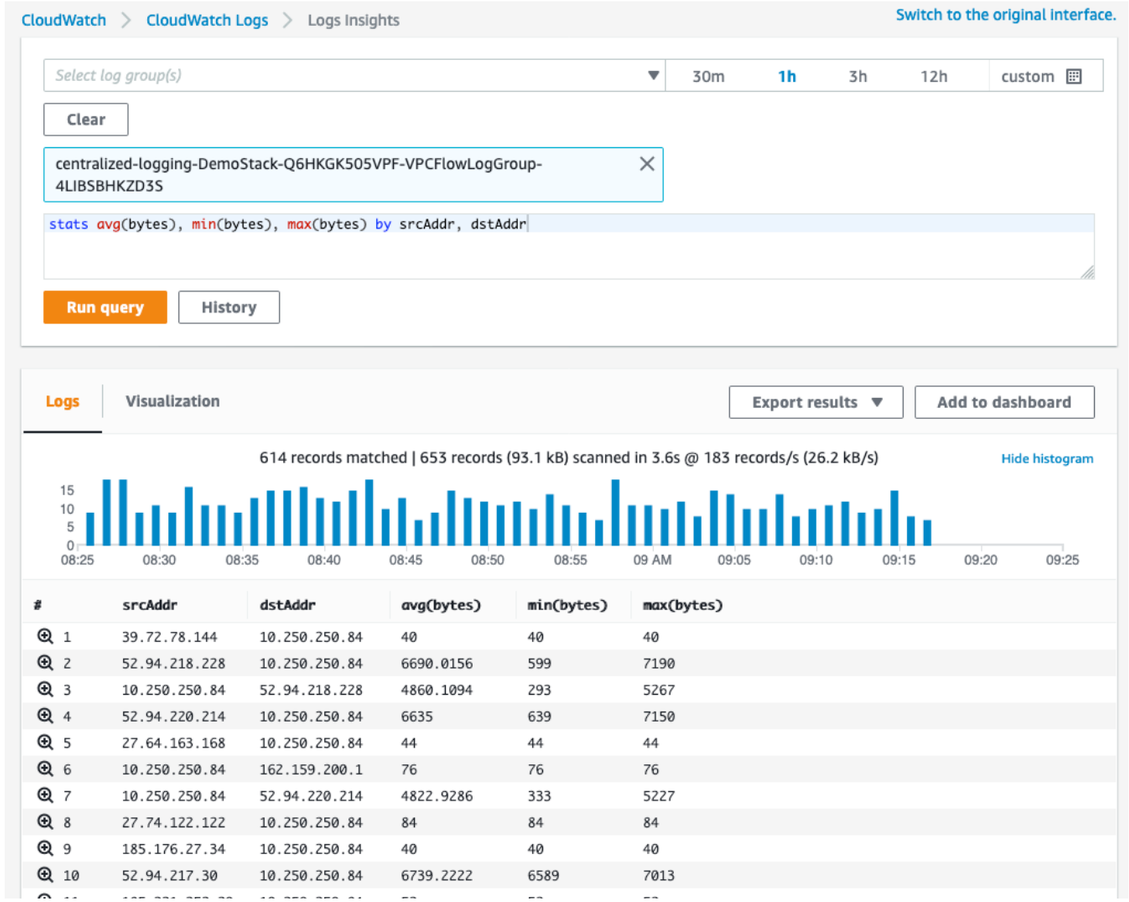
Using AWS Lambda metrics as an example, you could divide the Errors metric by the Invocations metric to get an error rate.



Log analytics

CloudWatch Logs Insights enables you to drive actionable intelligence from your logs to address operational issues without needing to provision servers or manage software.

- You can instantly begin writing queries with aggregations, filters, and regular expressions
- In addition, you can:
  - Visualize timeseries data
  - Drill down into individual log events
  - Export query results to CloudWatch Dashboards
- You only pay for the queries you run



Contributor Insights

Analyzes time-series data to provide a view of the top contributors influencing system performance.

- Runs continuously without needing user intervention
- Understand who or what is impacting your system
- Evaluate patterns in structured log events
- Display on CloudWatch dashboards
- Add to CloudWatch alarms