Operations management tools

Google Cloud

Aug 2019

Google is the best cloud partner for your journey

New workloads

Build new cloud-native applications or spin up new data warehouse

Only Google Cloud lets you **write once, run anywhere** on prem or in any cloud

Anthos

On-prem migration

Enhance business decision making with data analytics, AI/ML

We pioneered the use of data to help you **gain unique insight** at extreme **global scale**

Google BigQuery

Digital transformation

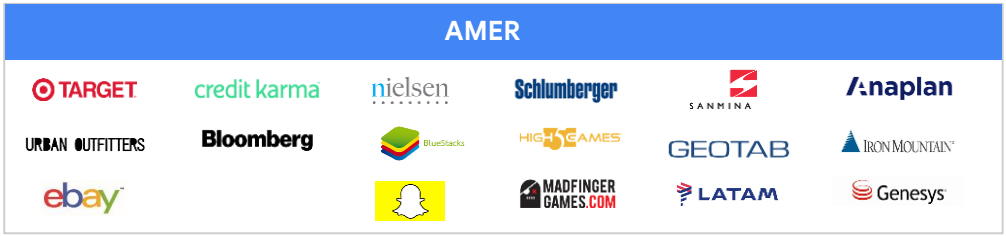
Deliver new customer experiences, redesign business models and transform culture

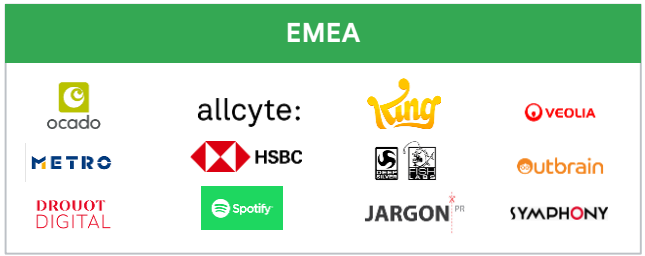
Google is an **innovation company** at the core; we build cultures of collaboration and agility

Google

Google Cloud

Top enterprises on a journey with Stackdriver





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Is a GCP embedded **observability suite** designed to **monitor, troubleshoot, and improve** cloud infrastructure, software and application performance.

Stackdriver customers

- ➔ Traditional IT
- ➔ SREs
- ➔ DevOps
- ➔ SecOps
- ➔ Developers

Value Proposition

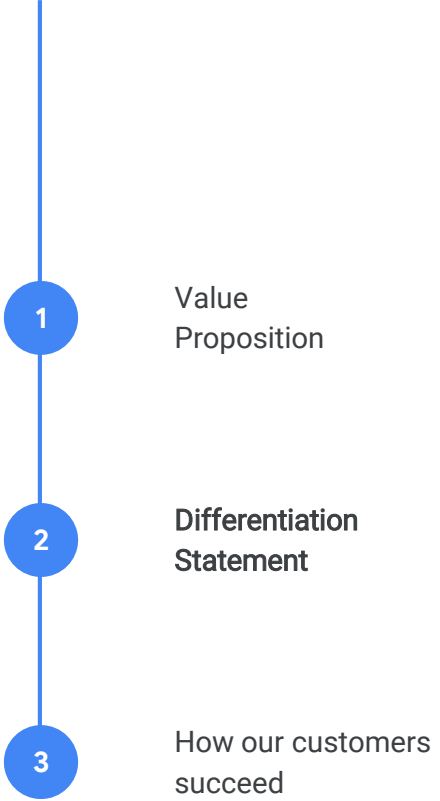
Stackdriver provides **comprehensive observability** of Cloud Operations at scale for all **GCP customers**. It helps Developers and Operators efficiently run their workloads and keep their systems and applications fast and available.

1. **Value Proposition**
2. Differentiation Statement
3. How our customers succeed

Google Cloud

Differentiation Statement

- **The best solution for GCP.** Works on every GCP-managed environment.
- Observability of workloads running in **Google Cloud, on prem** and in other clouds through **Anthos**
- **Set SREs up for success!**
- Made for **scaling data analytics** and greater **automation** - this is what we at Google do best!



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With Stackdriver you are able to

- **Collect** signals across GCP internal/external apps, platforms and services
- **Analyze** and visualize those signals
- Set up appropriate performance and availability **indicators**
- Use built-in observability to **troubleshoot** and improve your applications.
- **Automate** Ops using programmatic interfaces and out-of-the-box practices

1. Value Proposition
2. Differentiation Statement
3. **How our customers succeed**

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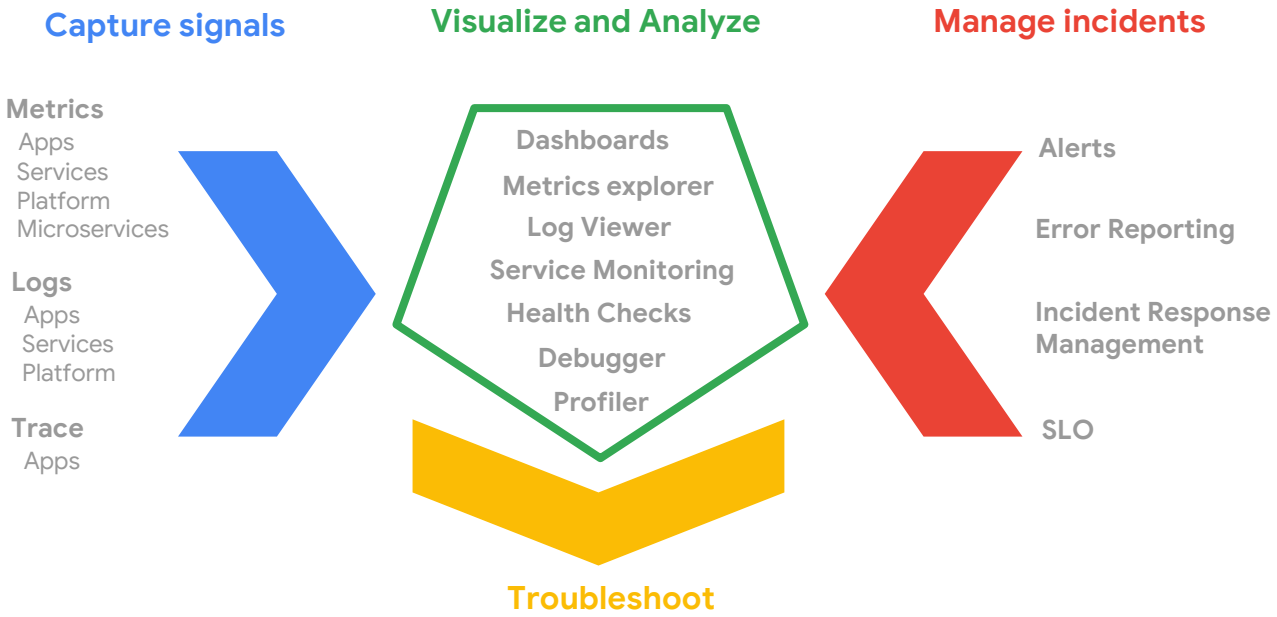
How our tools play together



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Customer use case

- ➔ Can you help us discover/map our workloads?
- ➔ Can you show us how our cloud deployment is behaving?
- ➔ Can you tell us when we are broken?
- ➔ Can you help us root cause, remediate, and resolve issues?
- ➔ Can you help us reduce our cost?

Stackdriver product portfolio

Operations Management Observability at scale

Logging

Collect logs from Platforms, Apps and Services

- Log search/view/filter
- Error reporting & Dashboard
- Log Metrics
- Log Router for easy export

Monitoring

Monitor metrics from Platforms, App, Services and Microservices

- Dashboards
- Metrics Explorer/Custom Metrics
- Uptime Checks
- Service Monitoring
- Alert Management

APM

Monitor and troubleshoot Application performance

- Trace - Latency analysis across distributed apps
- Profiler - CPU and memory profiling
- Debugger - In production debug and conditional snapshots

GCP, Anthos, GKE

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Logging

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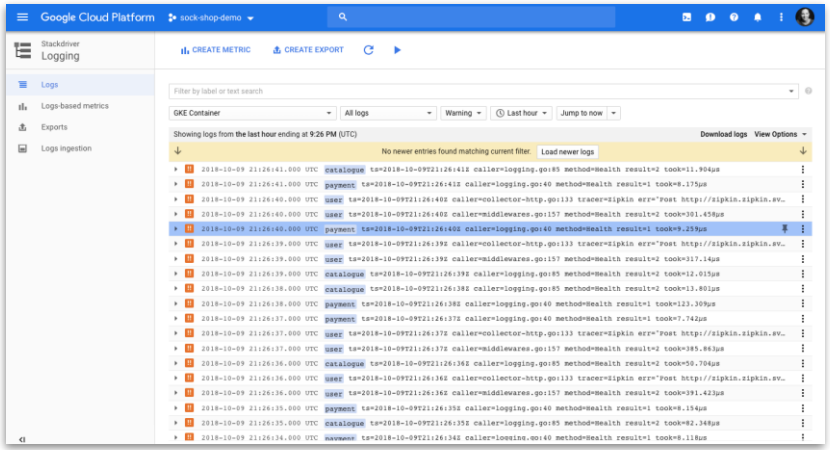
Logging

The best scalable log solution with advanced analytics integration
most widely adopted by GCP top enterprise customers



Why choose Stackdriver:

- **High performance**
- **Google scalability**
- **Powerful analytics**
- **Affordable** at enterprise-scale

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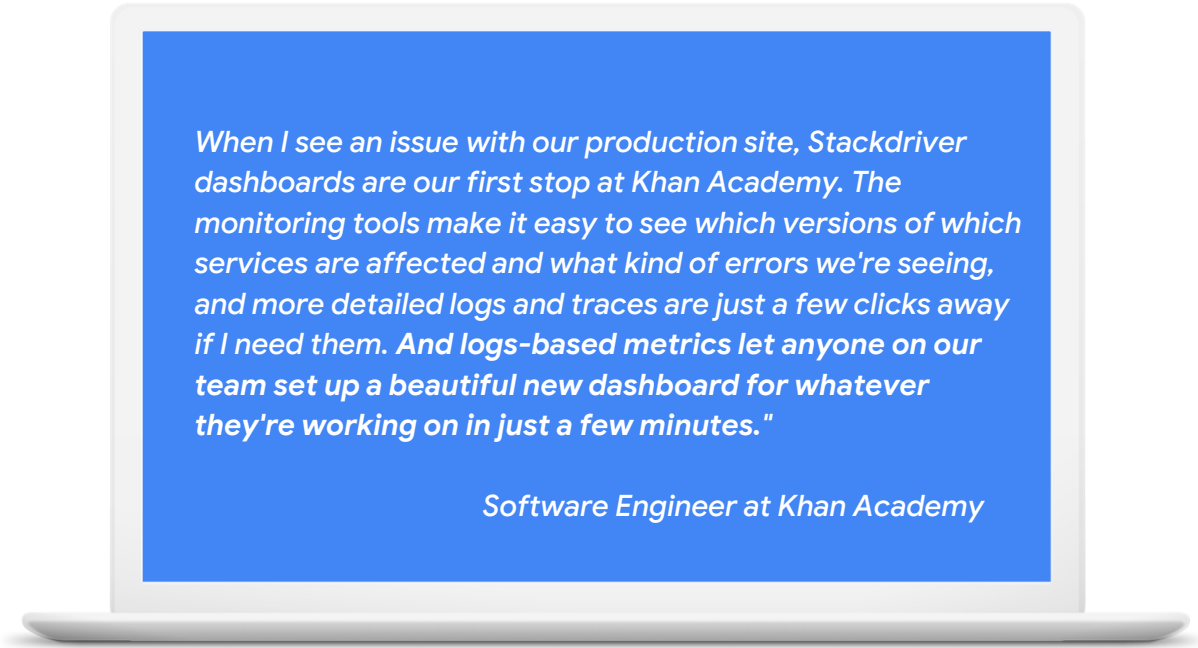


Monitoring, Log-based metrics user

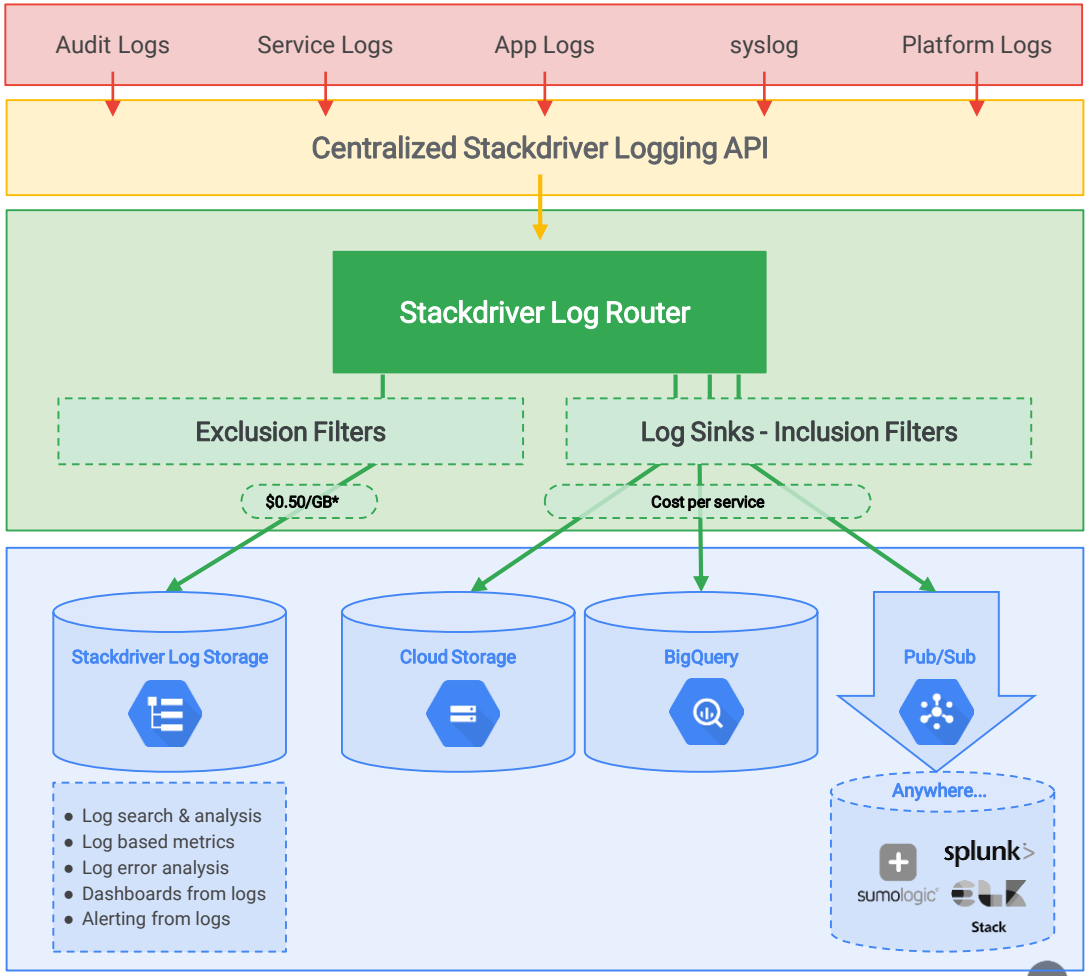
Logging architecture

Logging API collects data from many sources with help from **agents and client libraries**

Log Router allows customers to **control** where it goes:

- Store in SD
- Export to GCS, BQ, PubSub

Log Management and Analytics is the Stackdriver Logging product (log viewer, log-based metrics, error grouping)



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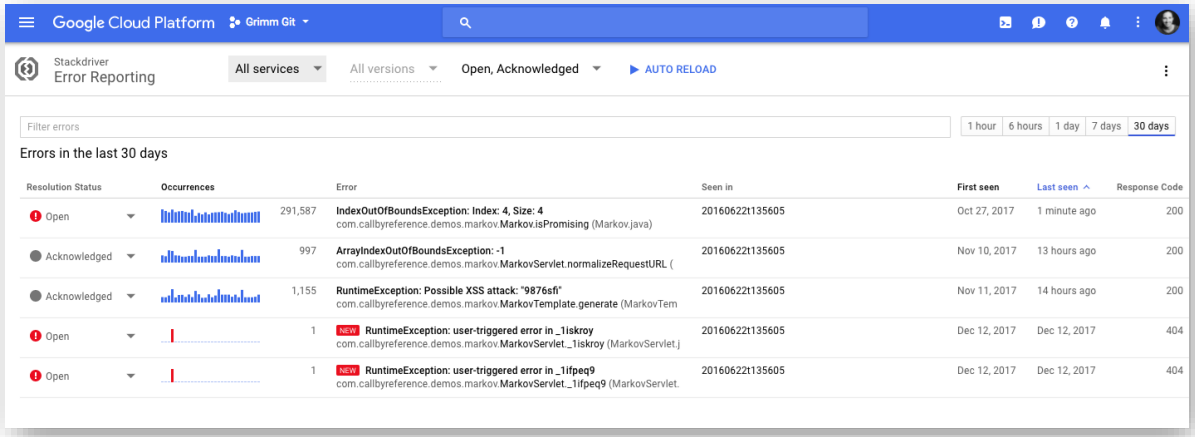
Log insights with Error Reporting



Current features

- Real-time error processing
- Intelligent error grouping
- Automatically search logs
- Overviews with drill-down filters
- Detailed error history
- Stack trace exploration
- Alerts
- Mobile error reporting

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Customer use cases

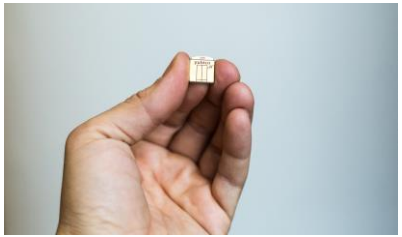
Troubleshooting

Use Stackdriver to query logs fast and deep dive into issues for quick troubleshooting

Compliance

Compliance is key but it should be affordable

We partner with BigQuery to allow exporting logs for longer retention at a lower price



Security

When a security issue occurs be sure to use Stackdriver to query logs fast and quickly troubleshoot

For future security reviews make sure to export >30 day logs to BigQuery for longer retention at a lower cost

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Compliance deep dive: managing audit logs

Admin activity audit logs customer	Data access audit logs customer	Access transparency logs Google support
(Cloud Storage API)	(Cloud Storage API)	(Support tool)

`Service Account creates Google Cloud Storage bucket /buckets/XYZ`	`Read object_content.pdf into Google Cloud Storage bucket /buckets/XYZ`
	`>> [Still can't access data]`
	Let me call support to fix this.
		`Pull metadata and ACL on /buckets/XYZ, to handle ticket 12345`
		Have the bucket owner change permissions, you're not on the ACL for the bucket.

Admin Activity Audit log
`Object: /buckets/XYZ`
`Action: CREATE OBJECT`
`Actor: provisioning-service-account`
	Data Access Audit log
	`Object: /buckets/XYZ`
	`Action: READ OBJECT`
	`Actor: employee@my-org.com`
		Access Transparency log
		`Object: /buckets/XYZ`
		`Action: READ`
		`Reason: Ticket #12345`

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Audit Logs are free and offer an immutable audit trail of actions taken by anyone who interacts with your data and systems on GCP

Monitoring

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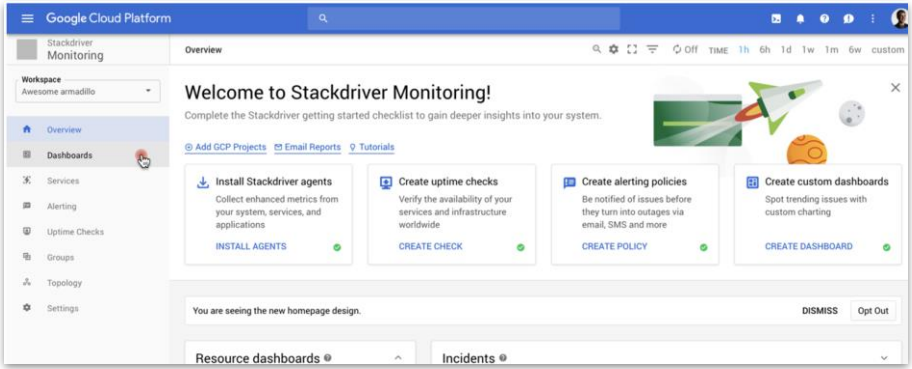
Monitoring

The best out-of-the-box cross signal integration monitoring experience for all GCP supported platforms and services



Why choose Stackdriver:

- **Open platform** for integration
- **Cross signals analysis** - integration between logging and monitoring
- **Optimized for SRE** practices
- **Google scalability**

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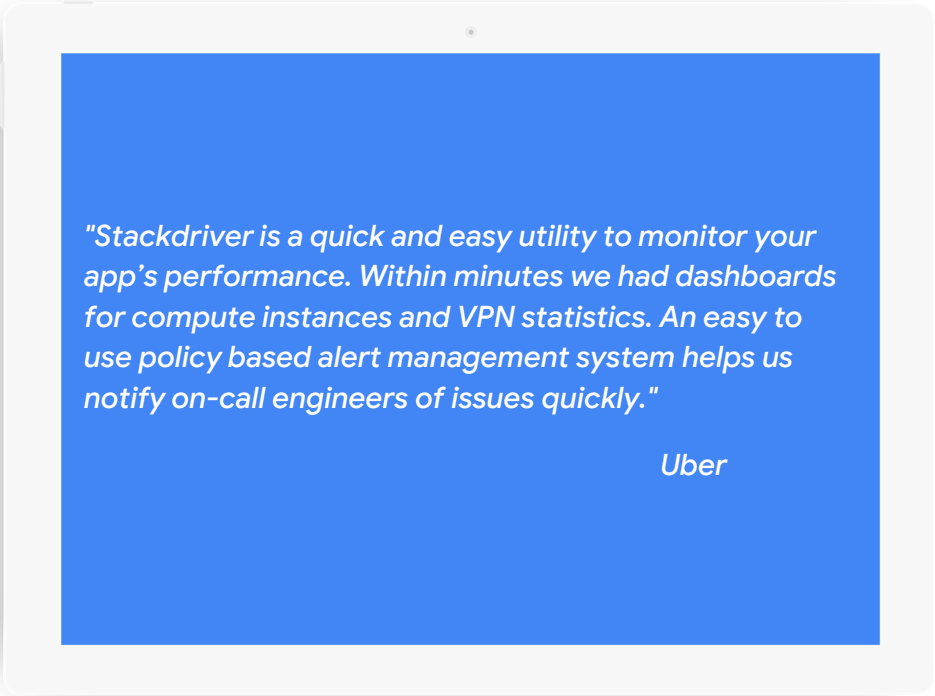
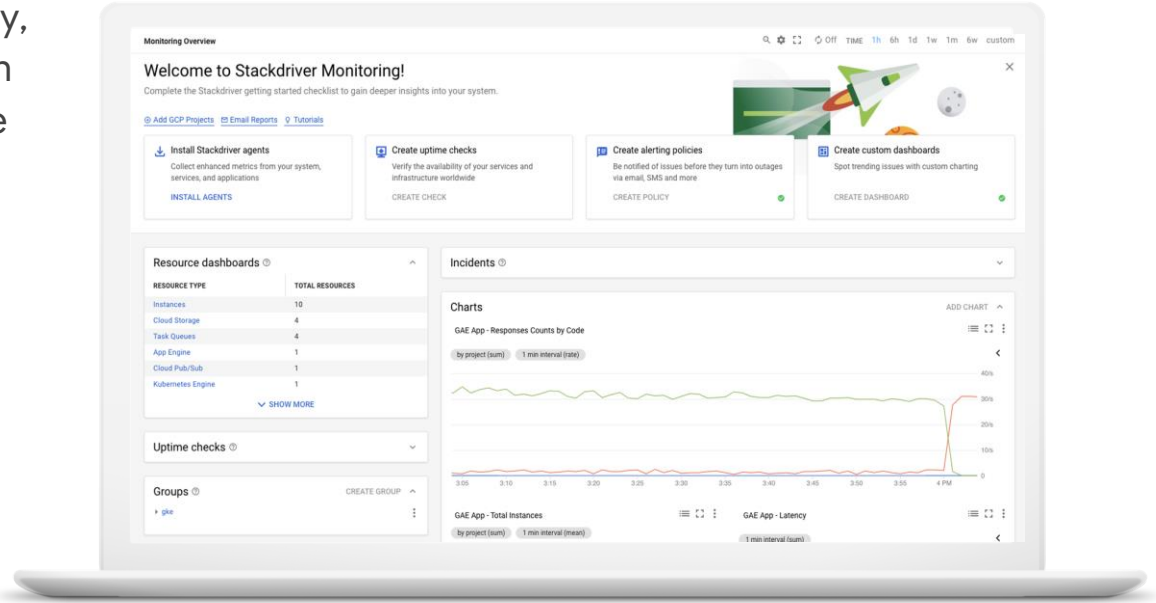


Monitoring and Alert user feedback

Out of the box Monitoring

Stackdriver makes monitoring easy, you can create a project and begin monitoring in less than one minute



Monitoring quick start features

- ➔ Out of the Box Dashboards
- ➔ Custom Dashboards
- ➔ Metrics Explorer
- ➔ Alert Policies
- ➔ Agent Metrics

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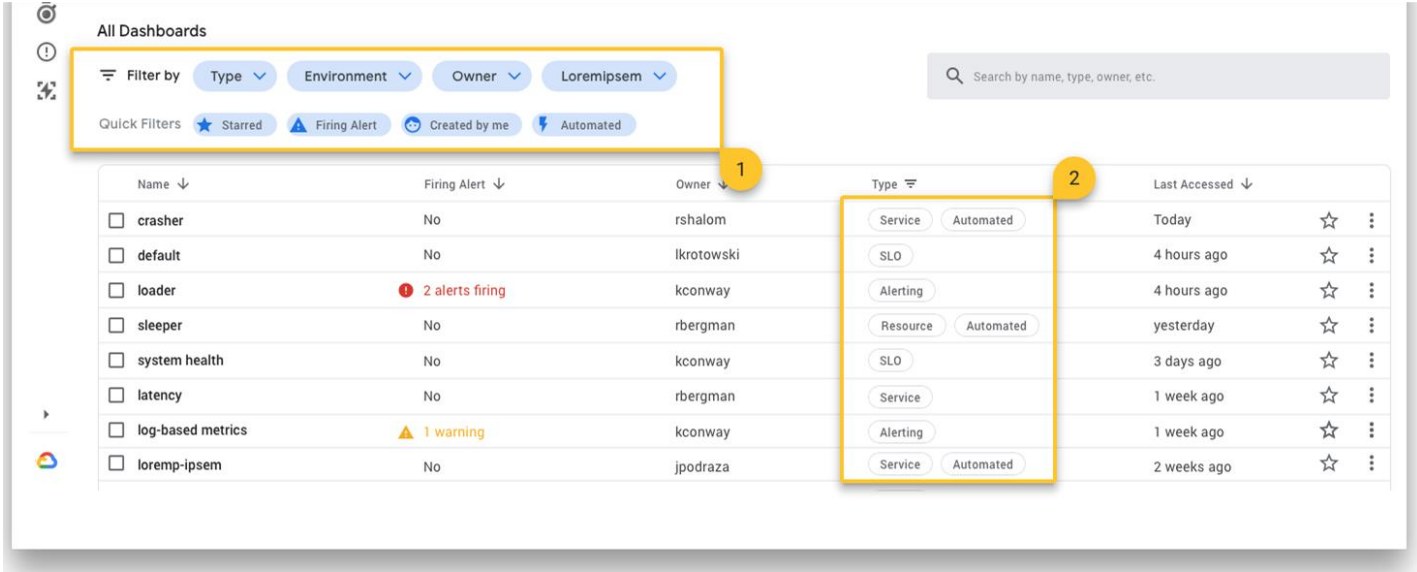
Dashboards features

New exciting features in dashboards. You can now filter and group on dashboard level, drill down into specific metrics, plus log correlation.



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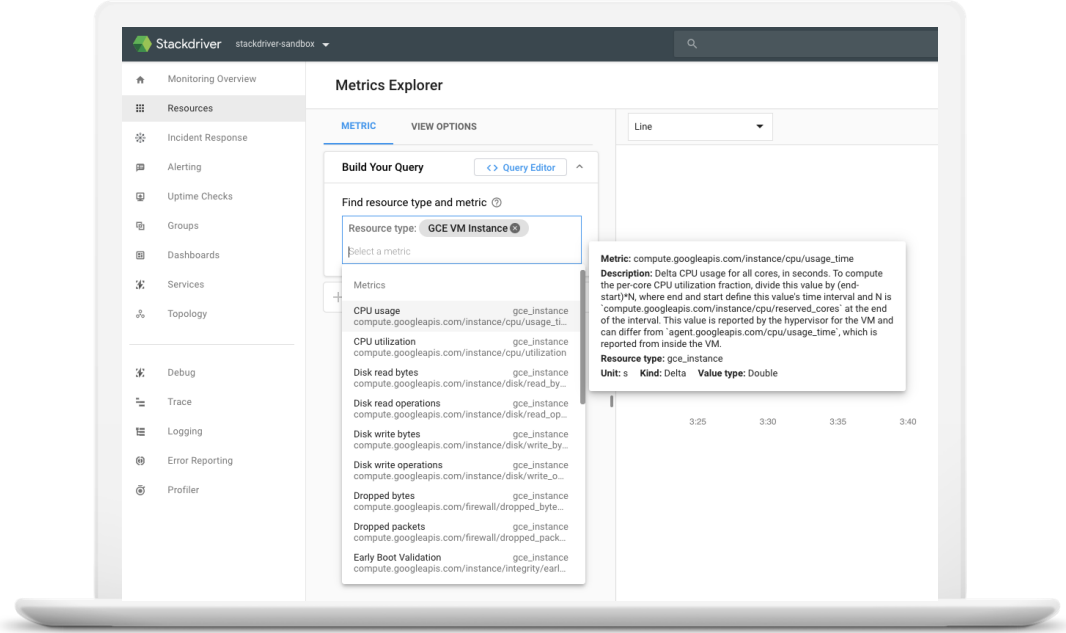
Metrics Explorer

In Alpha

Lets you navigate different metrics to visualize your systems health

You can visualize across 100s of GCP metrics, agents and 3rd party metrics

Provides visibility into GCP Metrics, Agent Metrics, Custom Metrics, OpenCensus and Prometheus external metrics

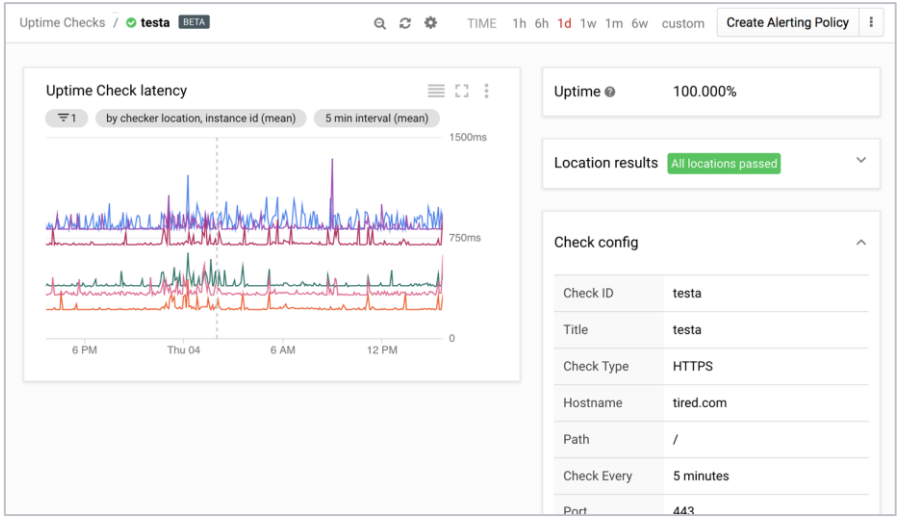


Uptime Checks

Monitor your application from your users' perspective with a black box signal

Send periodic requests API or Service Endpoints to determine service availability and latency

Set up alerts when Uptime is not what you expect



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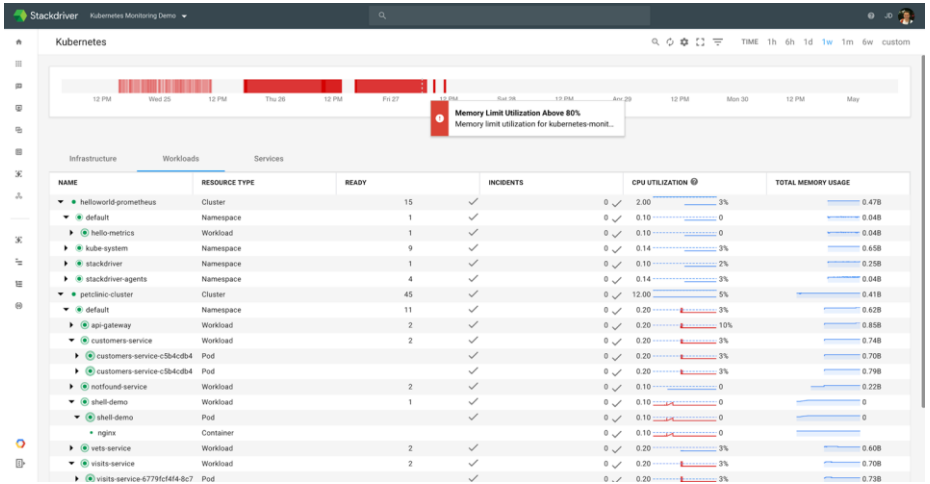
GKE Monitoring



- **Comprehensive observability at scale**: helps developers and operators keep their Kubernetes apps fast and available
- **Works with Open Source**: Integration with Prometheus
- **Unified solution**: multi-cluster monitoring that integrates metrics, logs, and events in a single pane to make ops easy for GKE operations
- **Best Practices:** Unlocks Google's SRE practices to GCP customers and the broader market

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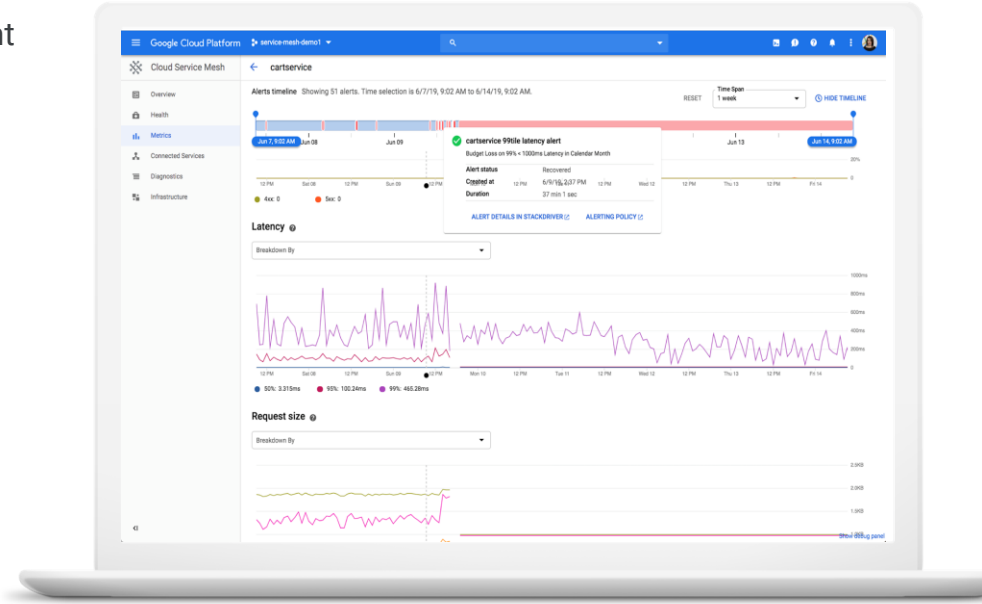
Service Monitoring

Beta

Stackdriver Service Monitoring provides out-of-the-box telemetry and dashboards that allows troubleshooting in context through topology and context graphs, plus automation of health monitoring through SLOs and error budget management



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Service Monitoring best practices

SLIs | Metrics that you use to define the SLO targets

A carefully defined quantitative measure of some aspect of the level of service that is provided

SLOs | Targets you set for the overall health of your services

A target value or range of values for a service level that is measured by an SLI

SLAs | Promises you make about your service's health

An agreement with repercussions for failure to meet a service level objective

Managing SLO's and monitoring your systems health

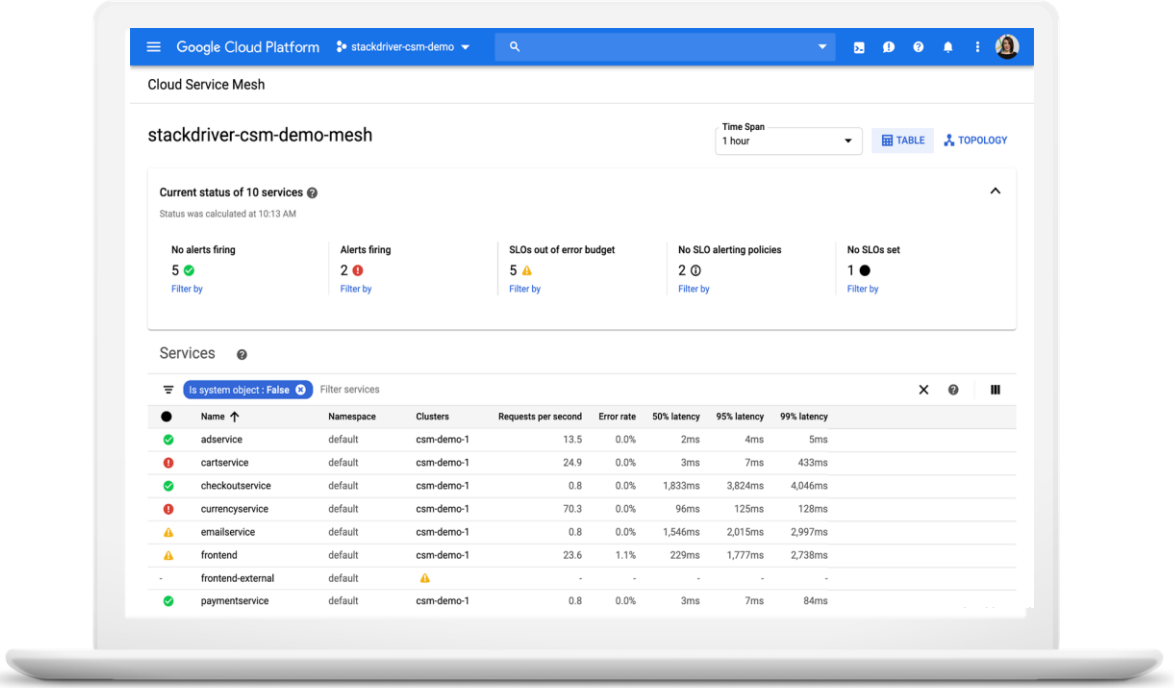
Beta

Monitor customer-visible behavior

Validate promises to our users

Error budget lets you balance velocity vs. reliability

Alert only when promises are broken or on the path to be broken



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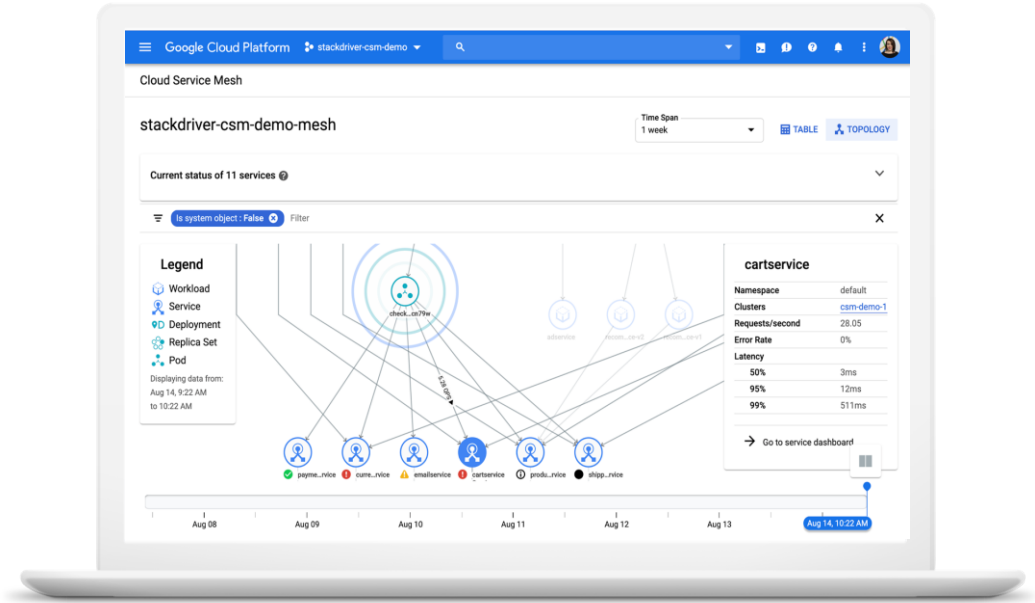
Understanding the interactions between your systems with Topology graph

Beta



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Alert Management

Stackdriver Alert Management allows users to set up alerts to be notified when incidents occur and focus on fast troubleshooting

Alert Management Integrations

- SMS
- Webhook
- Email
- Cloud Mobile App
- 3rd party apps

Users can set up alerts in any of the following categories:

- Metric Threshold
- Metrics Absence
- Metric Rate of Change
- Group Aggregate Threshold
- Process Health
- Uptime Check Health

Application Performance Management

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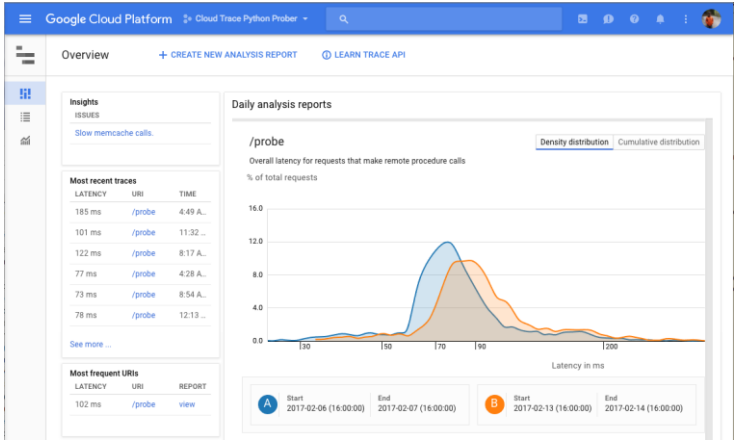
APM

The only APM observability tool in GCP that help solve reliability, performance, and cost problems by monitoring from the cloud systems into the code



Why choose Stackdriver:

- Cross Stackdriver **product integration**
- **Troubleshoot down to the code** level
- Only provider of **Profiler** and **Debugger** tools

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Profiler monitoring tool user

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Trace

Visualize request flow

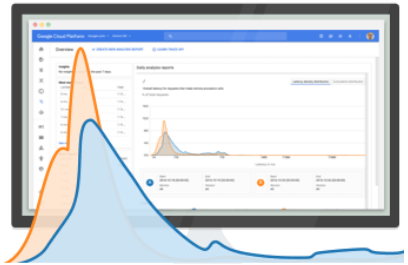
Understand Service topology and how requests flow through a distributed system

Determine root cause

By narrowing down the problem early in your workflow helps to reduce downtime and MTTR

Analyze trends

Actionable insights and analysis reports help Improve performance and reduce cost



2.5 million free spans / month

- Lightweight instrumentation (OSS)
- Works on services running anywhere
- Supports C++, Java, Go, Node.js, .Net, Ruby, Python, PHP

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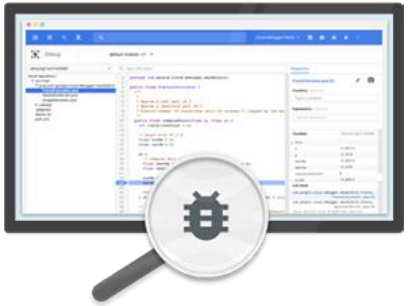
Debugger

Debug in production
Breakpoints without breaking. Take snapshots and inspect variables

Add logging on the fly
Insert rich customer logging statements without restarting or deploying your application

Remove iterative deployment
Do all this on the fly removing multiple iterative deployment steps from the troubleshooting workflow



Currently at no charge

- Lightweight OSS instrumentation
- Works on services running anywhere
- Supports Java, Node.js, .Net, Ruby, Python, PHP

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Profiler

Improve performance

Continuous profiling helps to reduce cost and improve performance

Determine root cause

Help reduce MTTR by quickly determining the root cause of CPU and Memory issues

Understand call patterns

Dig into code level call patterns to identify opportunities for improvement

At no additional charge

- Lightweight OSS instrumentation
- Works on services
- running anywhere
- Supports Java, Go, Node.js, Python

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Roadmap

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2020 Roadmap

Core feature development	➔ 24 month metrics retention ➔ 10 sec resolution ➔ Log insights and platform improvements ➔ CMEK support for Stackdriver log storage ➔ Log customizable retention up to 10 years
GCP greatness	➔ New seamless navigation ➔ Stackdriver integration to all systems and Google products. ➔ Observability all in place, for the same price ➔ Open Census integration ➔ Continue to support and improve integration with partners
Special features	➔ Alert automation ➔ Topology graphs ➔ Resolution in-context ➔ Custom Service Monitoring ➔ Log insights - anomaly detection, context of GCP errors

Pricing

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Stackdriver pricing

Product	What's included (no charge)	Charges
Monitoring	● GCP Metrics ● Anthos and GKE system Metrics ● First 150 MiB per billing account for chargeable metrics ● First 1 million API calls	● Usage charges for all non system metrics, agent metrics after free usage tier ○ $0.2580/MiB: 150–100,000 MiB ○ $0.1510/MiB: 100,000–250,000 MiB ○ $0.0610/MiB: above 250,000 MiB ● $0.01/1,000 API calls after exceed free usage tier.
Logging	● Audit Logs are at no charge ● No Storage fee ● First 50 GiB per project	● $0.50/GiB ingestion, after exceed free tier project allotment
Trace	● First 2.5 million spans	● $0.20/million ingestion spans, after exceed free usage tier
Debugger	No charge	
Profiler	No charge	

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Partnerships

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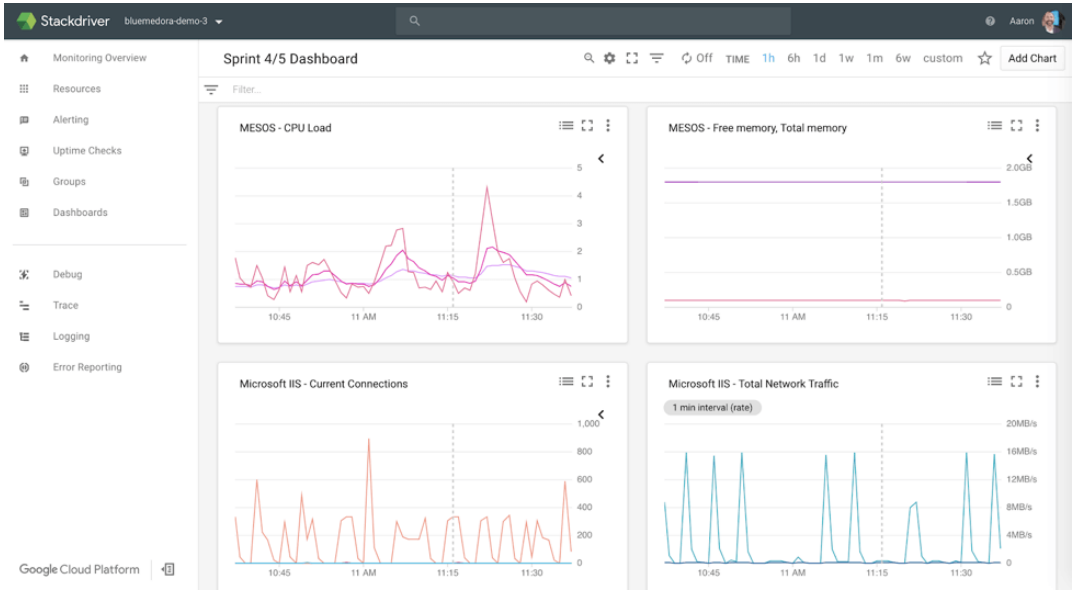
Blue Medora

Blue Medora partnership with Stackdriver allows users to ingest: logs and metrics from on-prem infrastructure and other clouds (AWS, Azure, Alibaba…) to Stackdriver, at no additional charge to the customer



Click here for more info

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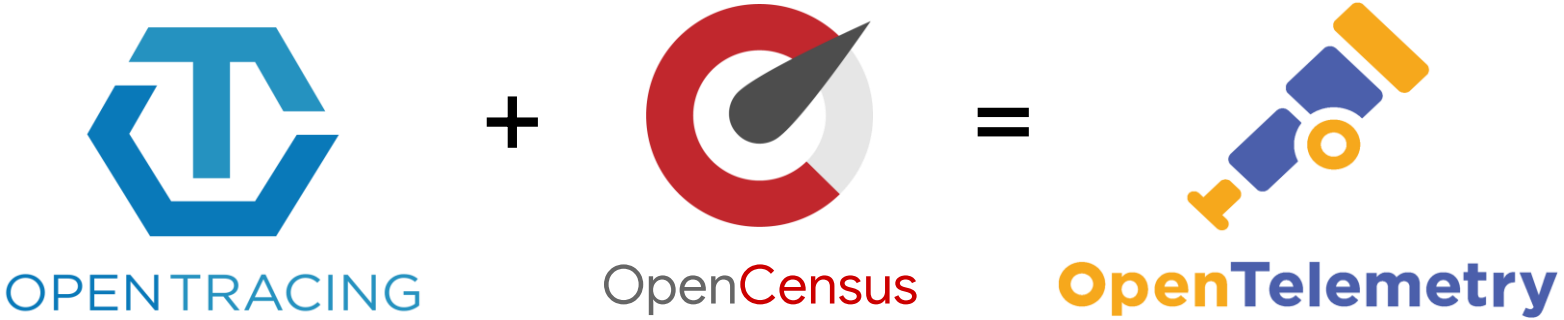
OpenTelemetry



Effective observability requires high-quality telemetry

OpenTelemetry makes robust, portable telemetry a built-in feature of cloud-native software.

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Monitor GCP products with Stackdriver

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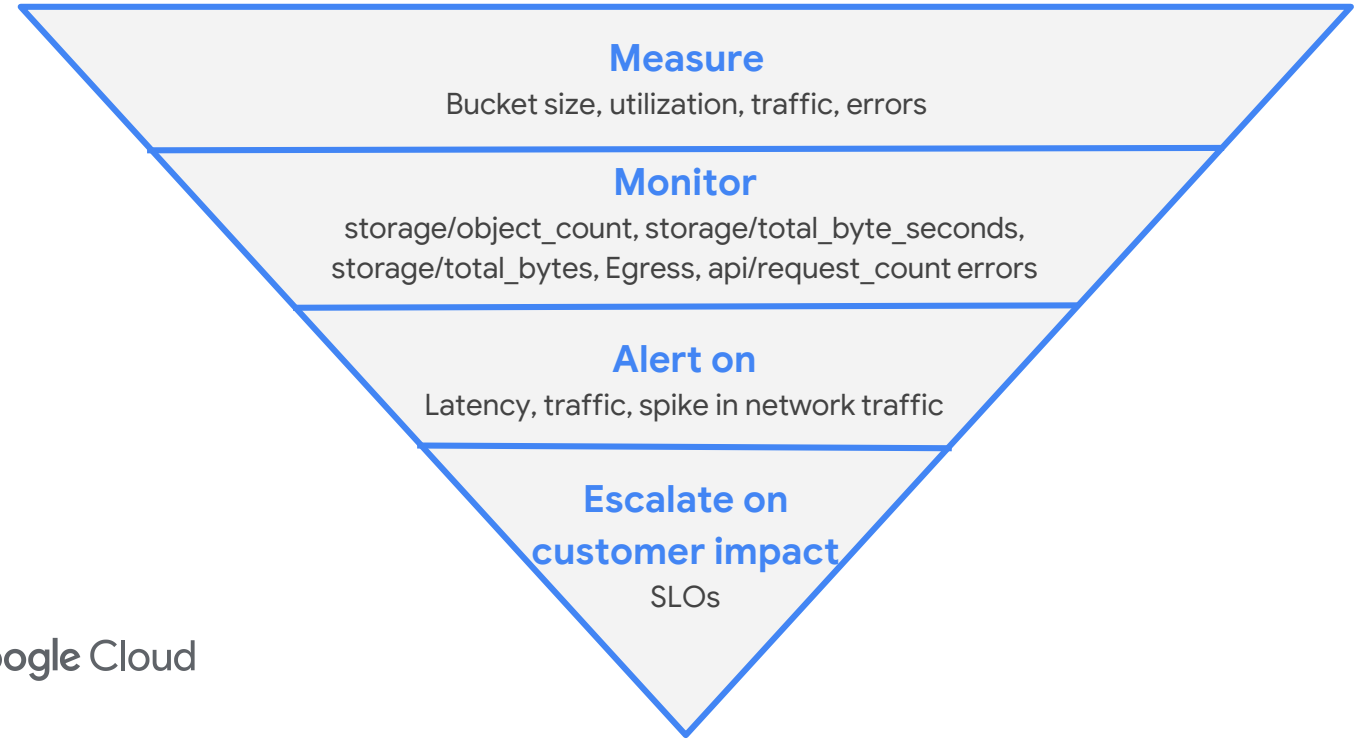
Golden metrics

1. Latency
2. Traffic
3. Errors
4. Saturation

How to successfully monitor storage



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How to successfully monitor GCE

Golden metrics
1. Latency
2. Traffic
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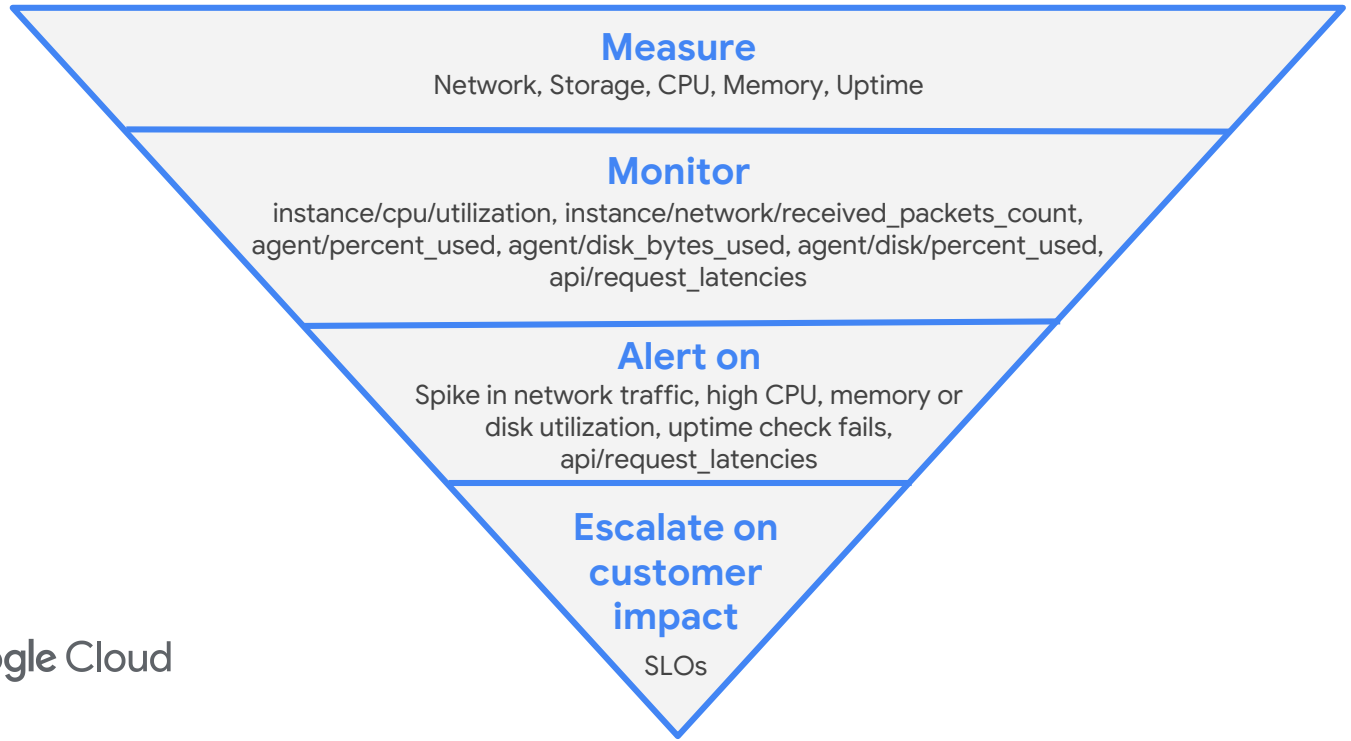

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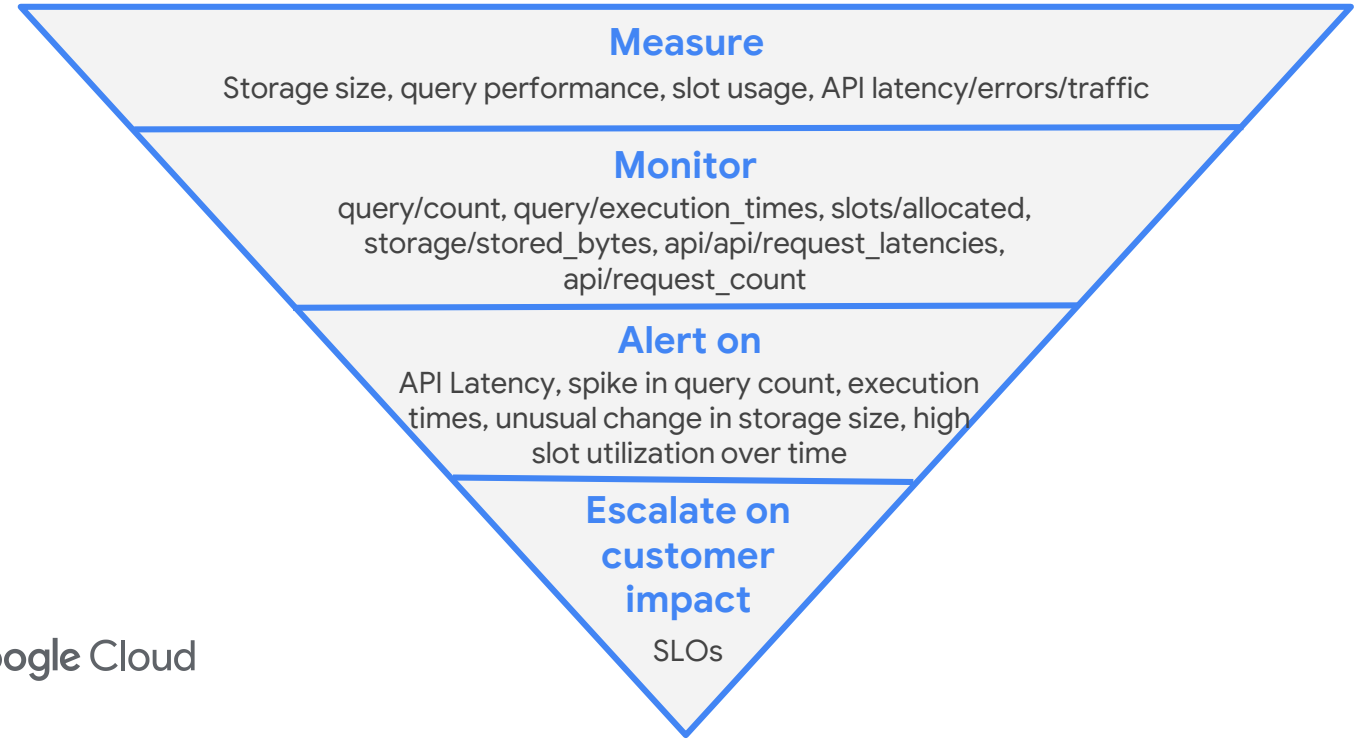
Golden metrics

1. Latency
2. Traffic
3. Errors
4. Saturation

How to successfully monitor BigQuery



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Alpha/Beta features in roadmap

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Data Management and the power of insights with IRM

In Alpha

Data Management

End-to-end incident lifecycle management for holistic data gathering and analytics

Machine Learning & AI

IRM Insights will use machine learning to auto-tune insights for continued relevancy

Accelerate SRE journeys

Guidance and processes managing production incidents

Easily create post-mortems to help cultivate a blameless culture

Continuous learning from historic, aggregated information, and incident playbacks.

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