Experiment-09

Cloud Monitoring: Discover how Cloud Monitoring help in tracking and analyzing the performance and health of cloud resources?

Google Cloud Monitoring (formerly **Stackdriver Monitoring**) provides robust monitoring, alerting, and dashboard capabilities to track and analyze the performance and health of resources in your Google Cloud environment. It helps you ensure that your cloud infrastructure and applications are functioning efficiently and can scale as needed.

Key Features of Google Cloud Monitoring

Performance Tracking

- **Resource Metrics** – Track metrics for **Compute Engine**, **Kubernetes Engine**, **Cloud Functions**, **Cloud SQL**, and other services to assess resource usage (e.g., CPU, memory, disk, network usage).
- **Custom Metrics** – You can define your own custom metrics for specific applications to monitor application-level health or performance.
- **Real-Time Metrics** – Get near real-time data updates on how your infrastructure is performing.

Health Monitoring

- **Health Checks** – Cloud Monitoring can check the health of your **Compute Engine** instances, **App Engine**, or any other services you configure, ensuring that everything is running smoothly.

- **Uptime Checks** – Automate the monitoring of service availability across regions and ensure that downtime is minimized.

Alerting and Notifications

- **Smart Alerts** – Create alerts based on specific thresholds for metrics such as CPU utilization, memory usage, or response time.
- **Notification Channels** – Alerts can be routed through email, SMS, Slack, or other communication platforms, ensuring that you are immediately notified about any issues.
- **Escalation Policies** – Implement escalation policies so that alerts are sent to the right teams if an issue persists.

Dashboards and Visualization

- **Custom Dashboards** – Create visual dashboards that provide a snapshot of the health and performance of your Google Cloud services, apps, and infrastructure.
- **Predefined Dashboards** – Use built-in dashboards for common Google Cloud resources like **Compute Engine**, **Kubernetes Engine**, and **Cloud Pub/Sub**.

Distributed Tracing and Logging

- **Distributed Tracing** – Track the performance of services that interact with one another, pinpointing latency or bottlenecks in distributed systems, microservices, and serverless architectures.
- **Log Analysis** – Cloud Monitoring integrates with **Cloud Logging** to collect logs from your applications and infrastructure. It helps you quickly diagnose issues by correlating logs with performance metrics.

Integration with Cloud Services

- **Cloud Monitoring for Kubernetes** – Keep track of the health and performance of your Kubernetes clusters, containers, and pods.
- **Integration with Google Cloud Services** – Seamlessly integrates with **Compute Engine**, **Google Kubernetes Engine**, **Cloud Functions**, and **Cloud Run** to give you full visibility into your infrastructure.

Use Cloud Monitoring

Step 1: Enable Cloud Monitoring API

1. Open the **Google Cloud Console → Navigation Menu (☰) → APIs & Services → Library**.
2. Search for **Cloud Monitoring API** and click **Enable**.

Step 2: Set Up Monitoring for Your Resources

1. Go to **Navigation Menu (☰) → Monitoring → Dashboards**.
2. Click on **Create Dashboard** to start building your custom dashboard.
3. Select **Metrics** from the dropdown and choose the service you want to monitor (e.g., **Compute Engine**, **Cloud Storage**, **Cloud Functions**).
4. Add the required metrics to your dashboard and adjust visualizations like **line charts**, **heat maps**, or **bar charts**.

Step 3: Set Up Alerts

1. Go to **Navigation Menu (☰) → Monitoring → Alerting**.
2. Click **Create Policy**.
3. Choose the **condition** (e.g., CPU usage > 80%).
4. Select the **notification channels** (e.g., email, Slack, SMS) where the alert should be sent.
5. Set up **escalation policies** to ensure the right team is notified.
6. Click **Create** to finish the alert policy.

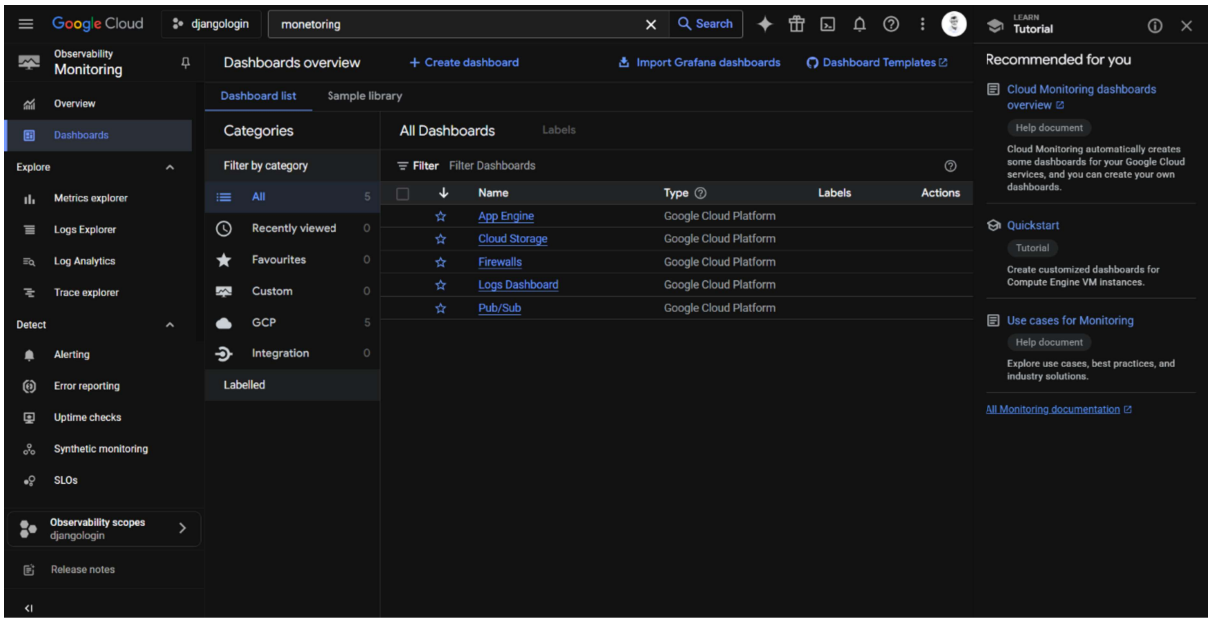
Step 4: Review Logs

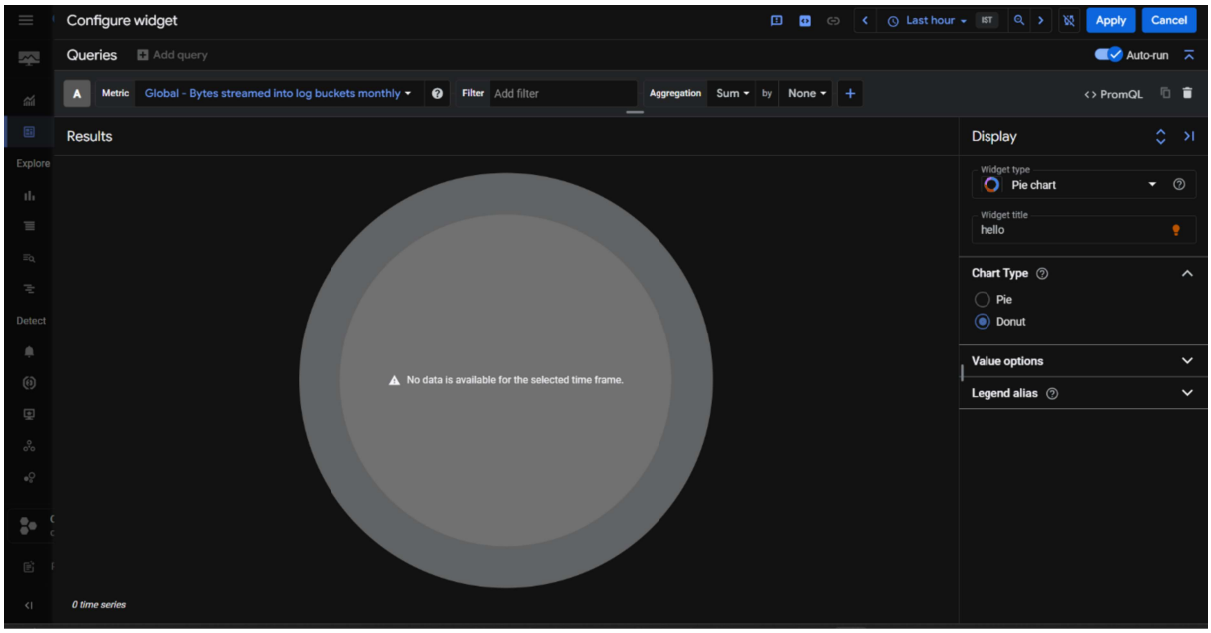
1. Go to **Navigation Menu (☰) → Logging**.
2. Choose the **resource type** (e.g., VM instances, Kubernetes Engine) and define your log filter.
3. Use **Log Explorer** to search for specific logs, such as **error messages** or **performance warnings**, and correlate them with metrics in Cloud Monitoring.

Step 5: Set Up Distributed Tracing (Optional)

1. Open **Cloud Trace** from the **Navigation Menu**.
2. Enable **trace collection** in your services (e.g., by using the **Cloud Trace SDK** for your app).
3. View trace data to identify latency or bottlenecks in your system.

Output


Google Cloud
djangologin
monetoring
Search
Observability
Monitoring
Dashboards overview
+ Create dashboard
Import Grafana dashboards
Dashboard Templates
Dashboard list
Sample library
Overview
Dashboards
Explore
Metrics explorer
Logs Explorer
Log Analytics
Trace explorer
Detect
Alerting
Error reporting
Uptime checks
Synthetic monitoring
SLOs
Observability scopes
djangologin
Release notes
Categories
Filter by category
All 5
Recently viewed 0
Favourites 0
Custom 0
GCP 5
Integration 0
Labelled
All Dashboards
Labels
Filter Filter Dashboards
Name
Type
Labels
Actions
App Engine
Google Cloud Platform
Cloud Storage
Google Cloud Platform
Firewalls
Google Cloud Platform
Logs Dashboard
Google Cloud Platform
Pub/Sub
Google Cloud Platform
LEARN
Tutorial
Recommended for you
Cloud Monitoring dashboards overview
Help document
Cloud Monitoring automatically creates some dashboards for your Google Cloud services, and you can create your own dashboards.
Quickstart
Tutorial
Create customized dashboards for Compute Engine VM instances.
Use cases for Monitoring
Help document
Explore use cases, best practices, and industry solutions.
All Monitoring documentation


Configure widget
Last hour
IST
Apply
Cancel
Queries
Add query
Auto-run
A
Metric
Global - Bytes streamed into log buckets monthly
Filter
Add filter
Aggregation
Sum
by
None
PromQL
Results
No data is available for the selected time frame.
0 time series
Display
Widget type
Pie chart
Widget title
hello
Chart Type
Pie
Donut
Value options
Legend alias