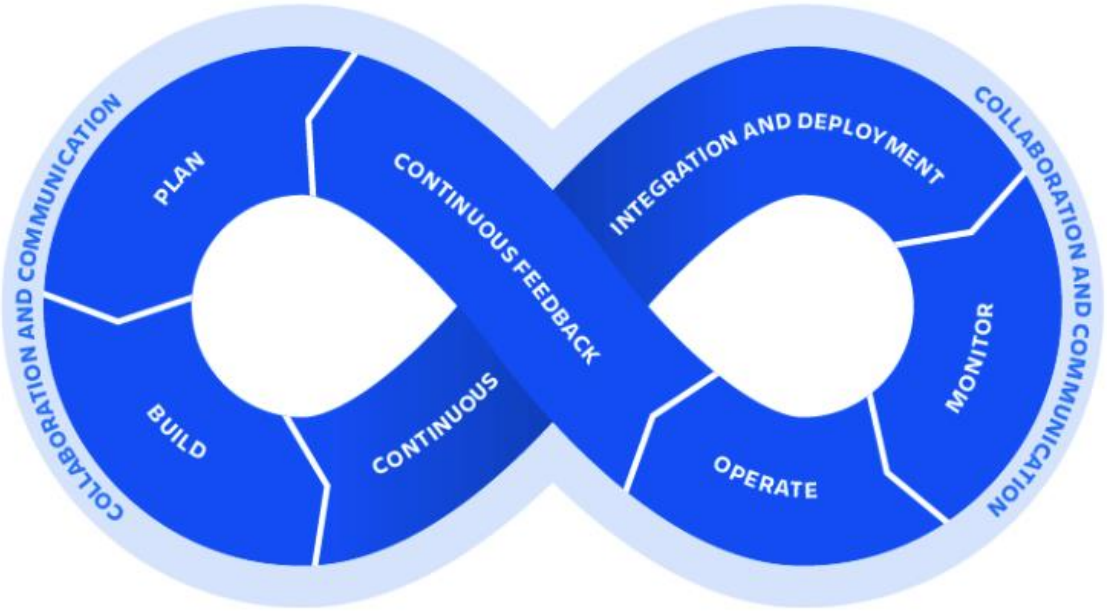
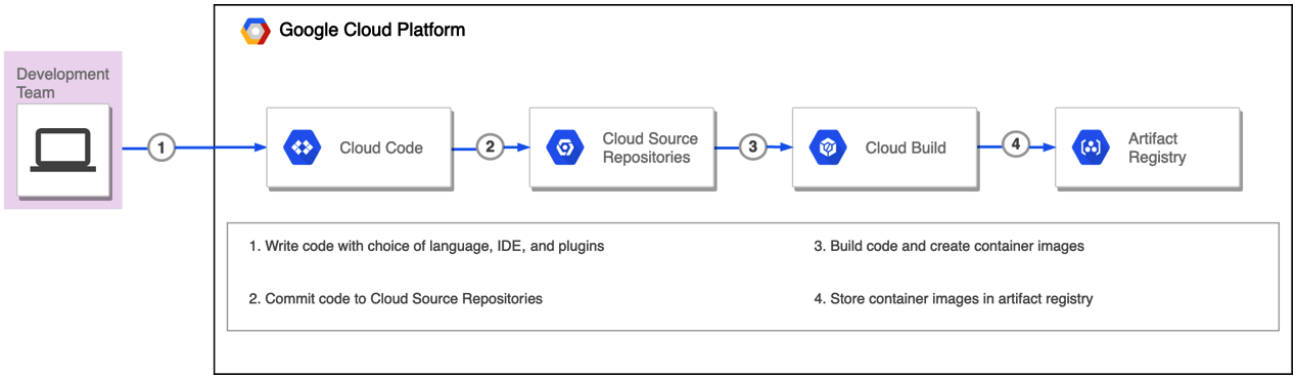
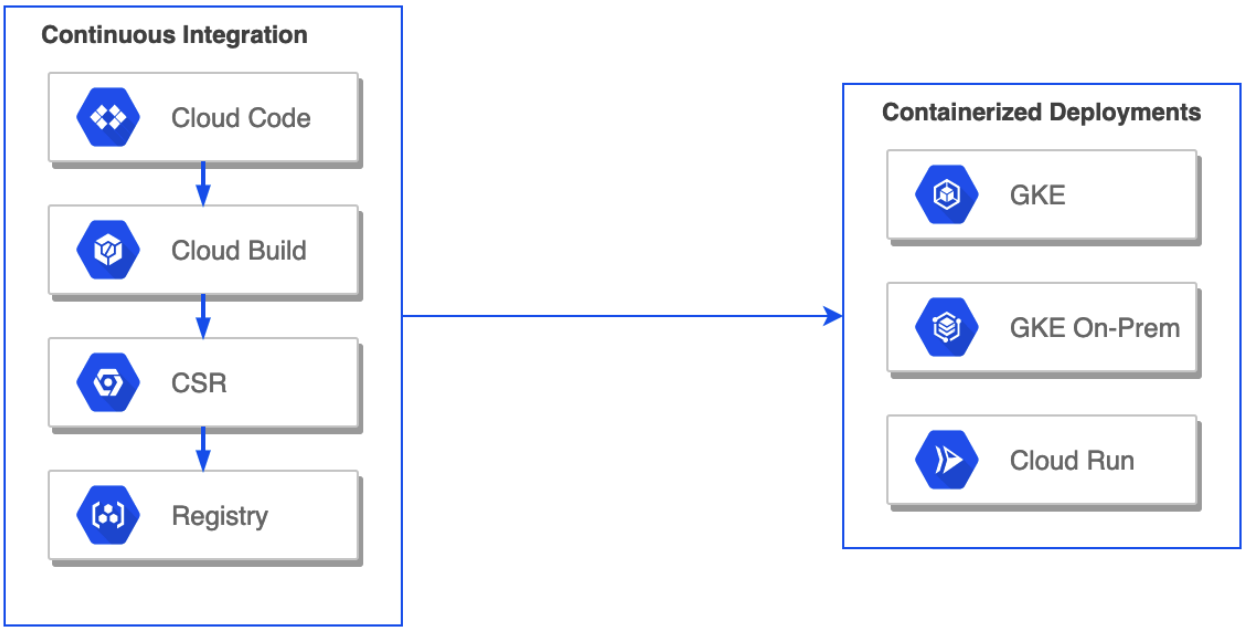
Chapter 1: DevOps, SRE, and Google Cloud Services for CI/CD

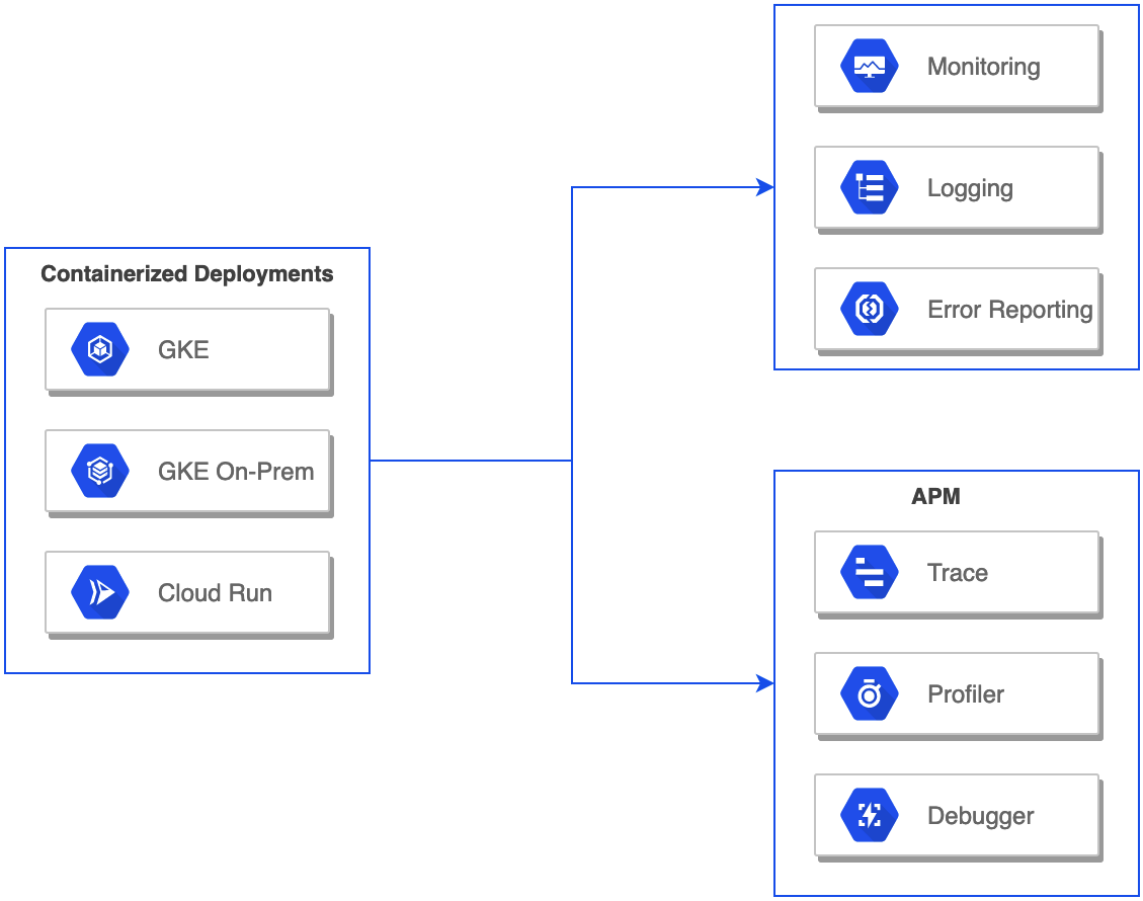




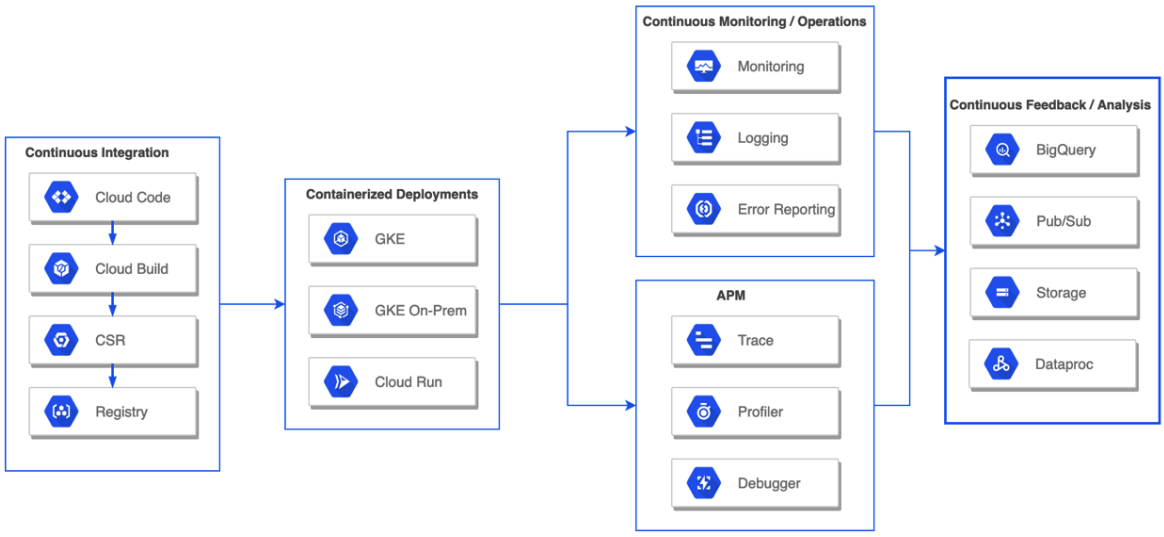
GCP Containerized Delivery / Deployment Options



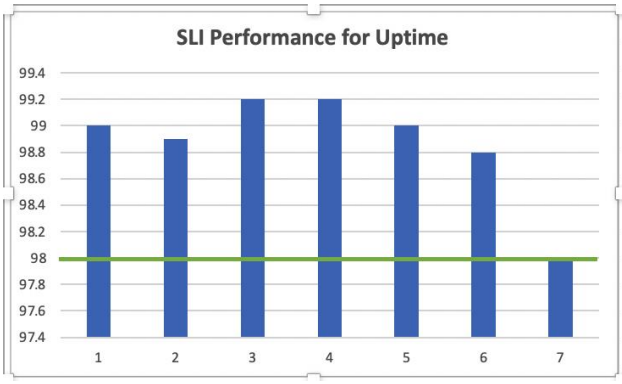
GCP Cloud Operations on Containerized Deployments

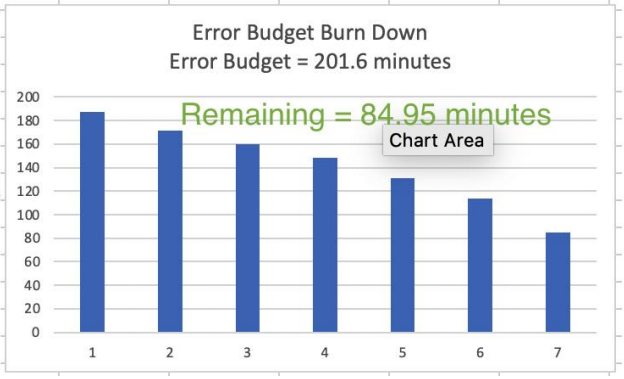


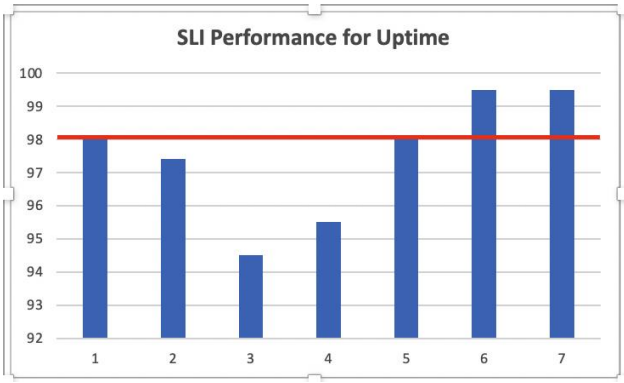
GCP Cloud-Native CI/CD Pipeline - Building Blocks

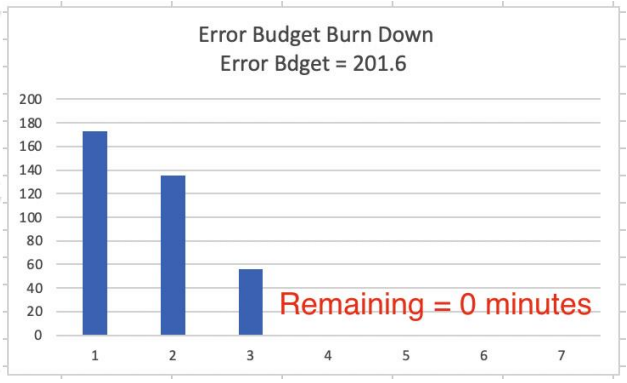


Chapter 2: SRE Technical Practices – Deep Dive

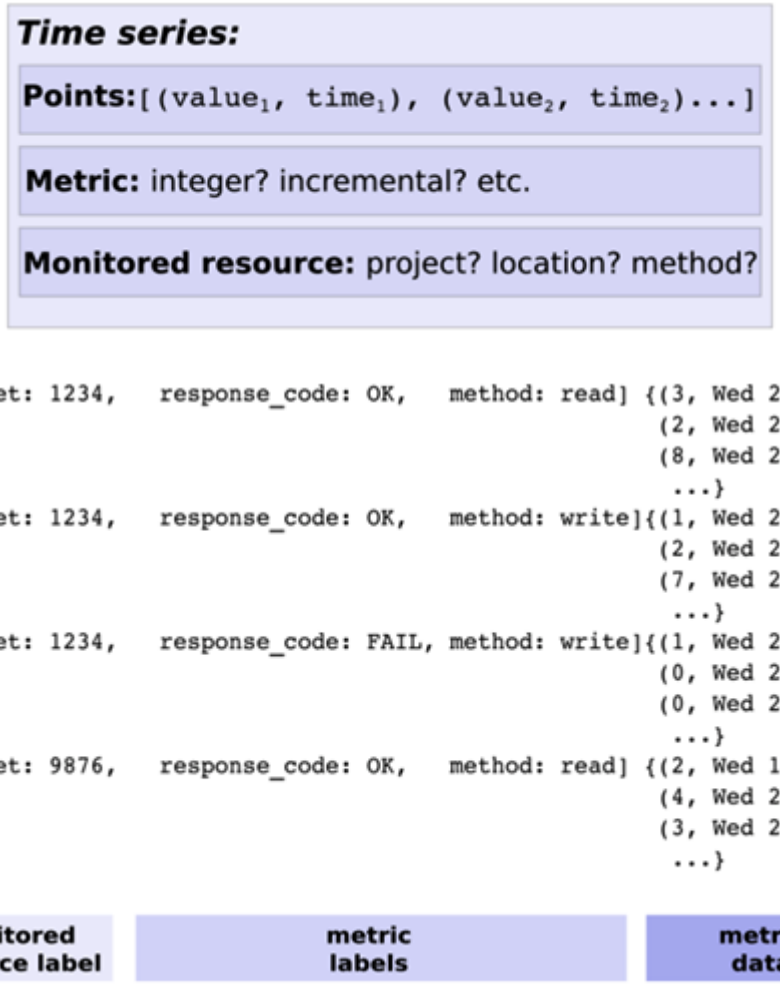




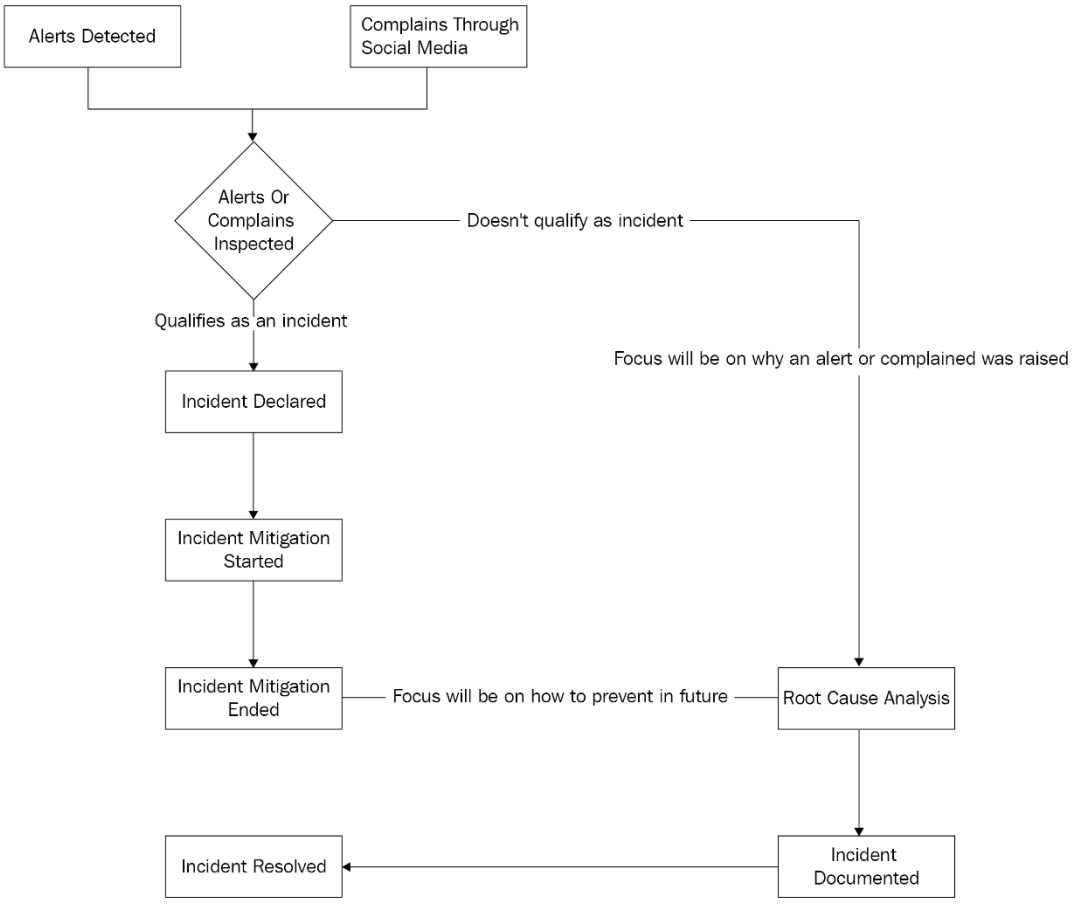


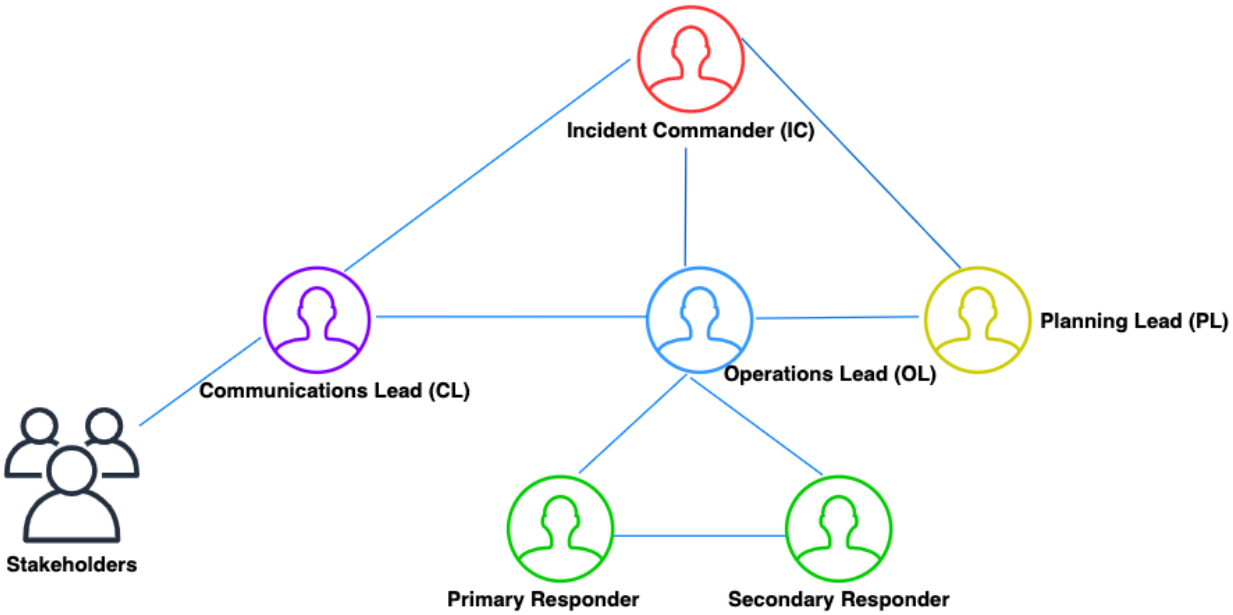


Chapter 3: Understanding Monitoring and Alerting to Target Reliability

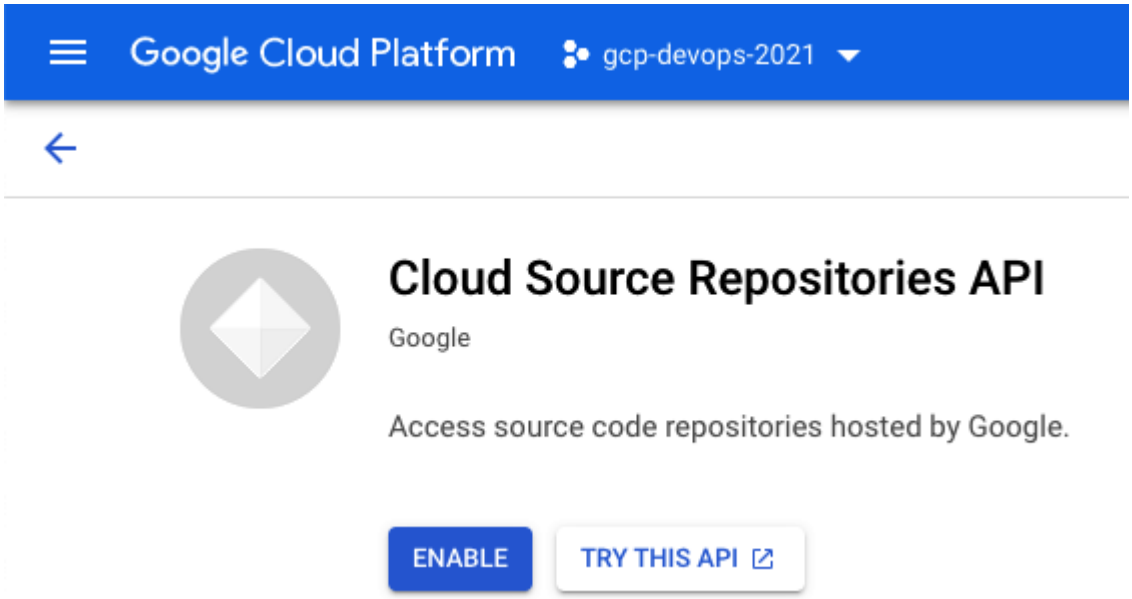


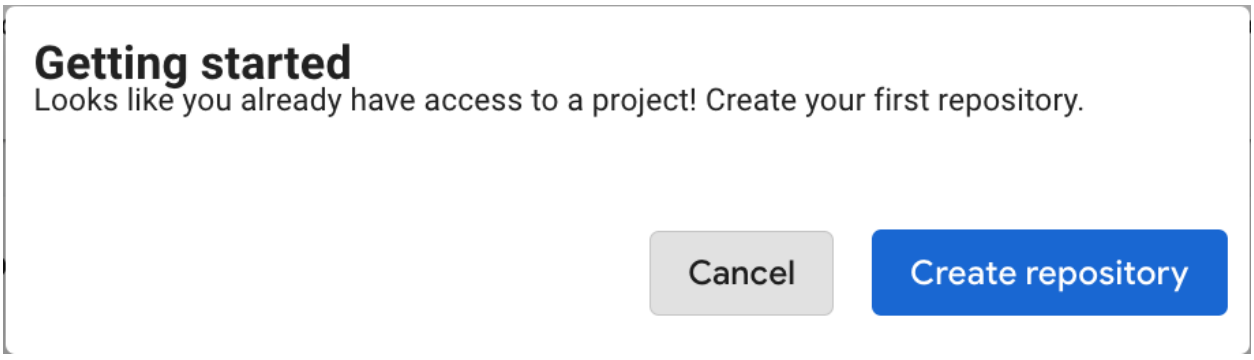
Chapter 4: Building SRE Teams and Applying Cultural Practices





Chapter 5: Managing Source Code Using Cloud Source Repositories





Add a repository

Select one of the following options to continue:

- (•) **Create new repository**
  Choose this option to create an empty repository.
- ( ) **Connect external repository**
  Choose this option to mirror a repository from a hosted service, such as GitHub or Bitbucket.

Cancel | Continue

Cloud Source Repositories

Create new repository

Repository name *
my-first-csr

Project *
gcp-devops-2021

OR Create project

Your repository is billed based on Cloud Source Repositories pricing.

Cancel | Create

Add a repository

Select one of the following options to continue:

- Create new repository
  Choose this option to create an empty repository.
- Connect external repository
  Choose this option to mirror a repository from a hosted service, such as GitHub or Bitbucket.

Cancel | Continue

Connect external repository

Select the Cloud project and hosted service that you want to connect. After you make this connection, commits pushed to the hosted service will be automatically synced to Cloud Source Repositories.

Project *
gcp-devops-2021

OR Create project

Git provider *
GitHub

- [x] I authorize Google Cloud Platform project 'gcp-devops-2021' to store third-party authentication credentials in order to enable connected repository services for 'gcp-devops-2021'.

If you are using GitHub organizations, it is recommended that you use a machine user account that is specifically dedicated to automated tasks, such as mirroring a repository. This account must have administrative access to your repository.

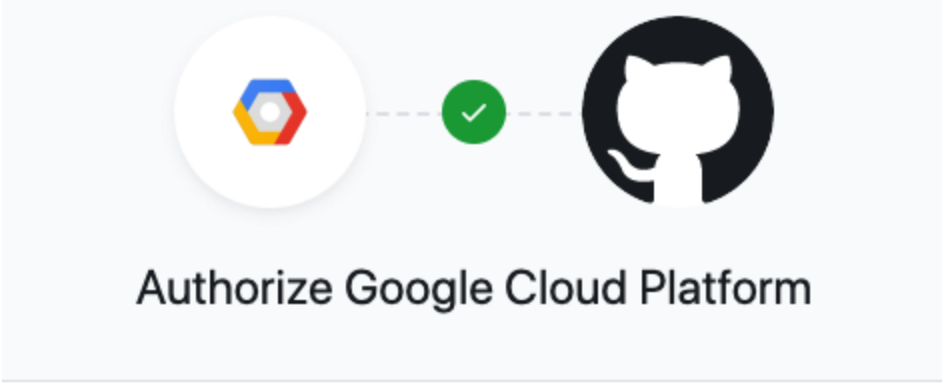
Learn more about GitHub's machine user accounts.

Before you can authorize Cloud Source Repositories to access repositories in a GitHub organization, you may need to request access from your GitHub administrator.

Learn how to request organizational approval for OAuth apps

Connect to GitHub to confirm the GitHub account you would like to use to connect repositories.

Cancel | Connect to GitHub



Authorize Google Cloud Platform

Google Cloud Platform by **GoogleCloudPlatform**
wants to access your **sandeepmanchi** account

Organizations and teams
Read-only access

Repositories
Public and private

Organization access

PacktPublishing ×

Request

Cancel

Authorize GoogleCloudPlatform

Authorizing will redirect to
https://source.cloud.google.com

Connect external repository

Select the Cloud project and hosted service that you want to connect. After you make this connection, commits pushed to the hosted service will be automatically synced to Cloud Source Repositories.

Project *
gcp-devops-2021

OR Create project

Git provider *
GitHub

Connect a repository associated with the following GitHub credentials:

sandeepmanchi Connect a different account

- (•) sandeepmanchi/connect-to-cloud-sql
- ( ) sandeepmanchi/kibana-7x

Not seeing all of your GitHub repositories in your GitHub organization?
Learn how to request organizational approval for OAuth apps

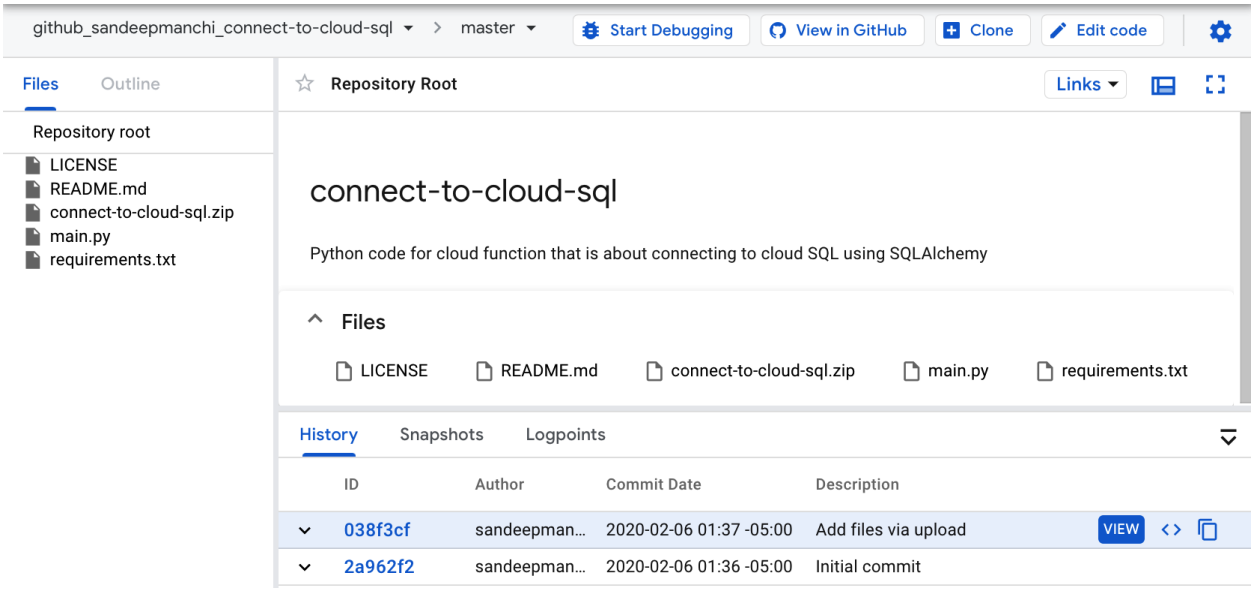
Your repository is billed based on Cloud Source Repositories pricing.

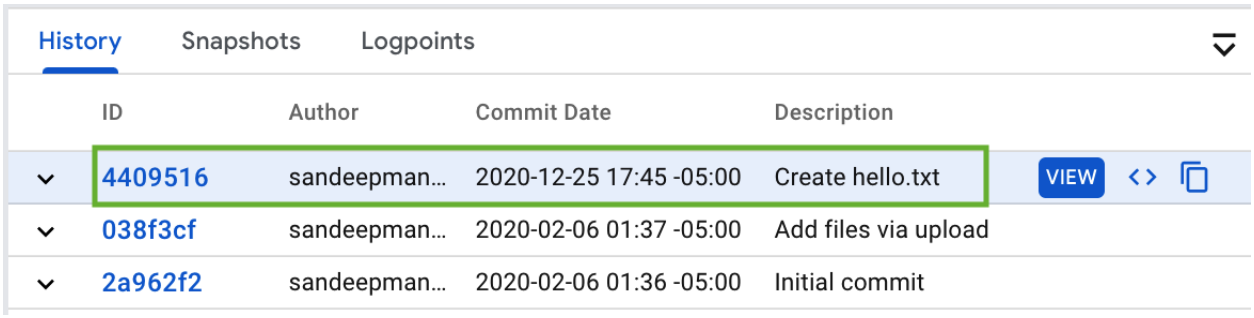
Cancel Connect selected repository

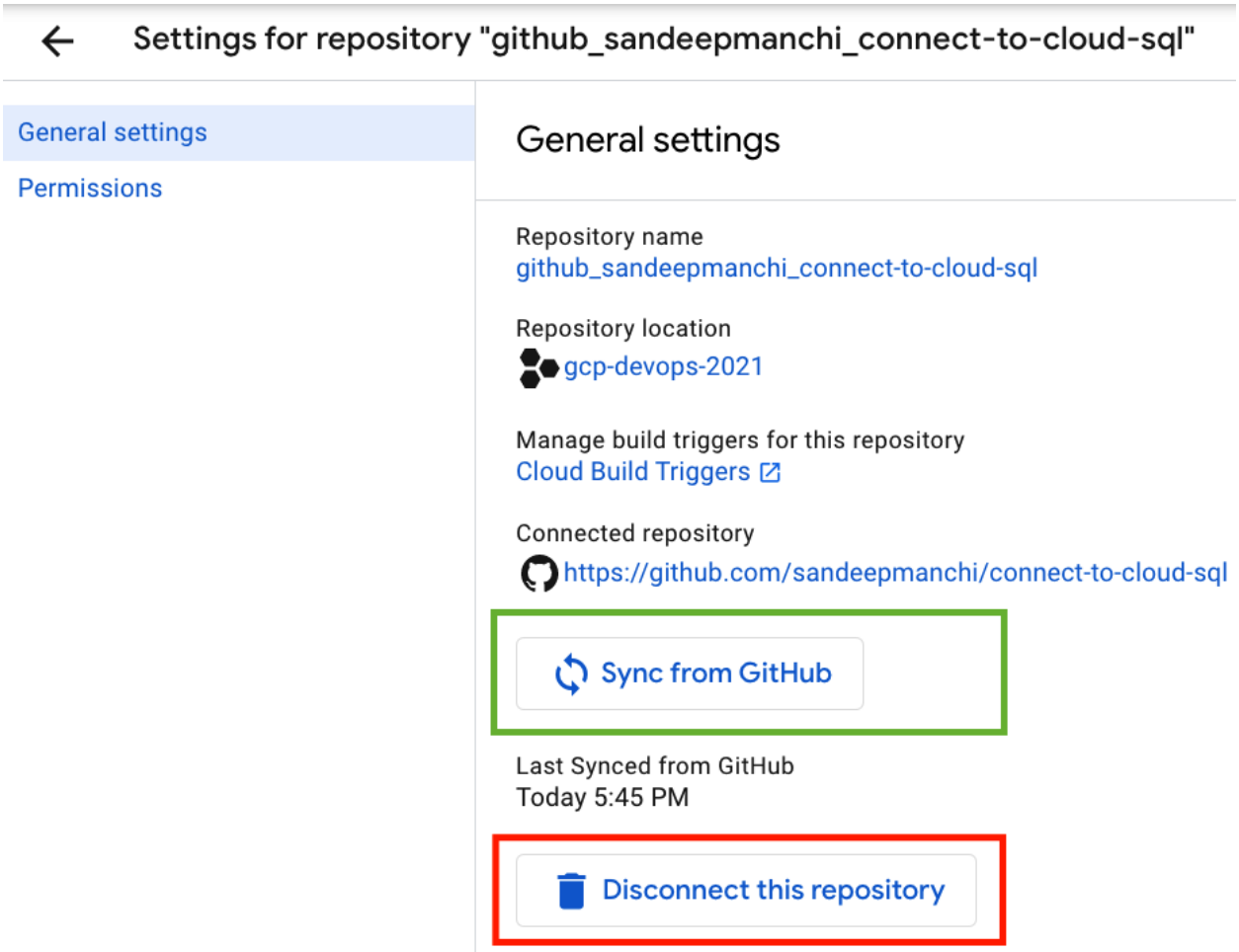
github_sandeepmanchi_connect-to-cloud-sql connected

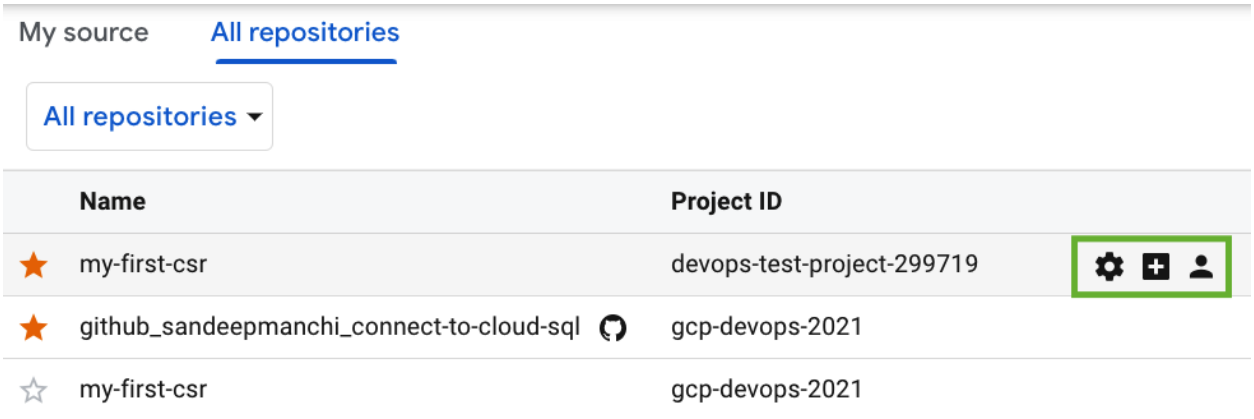
Repository contents can take some time to appear and show up in search results. Learn more.

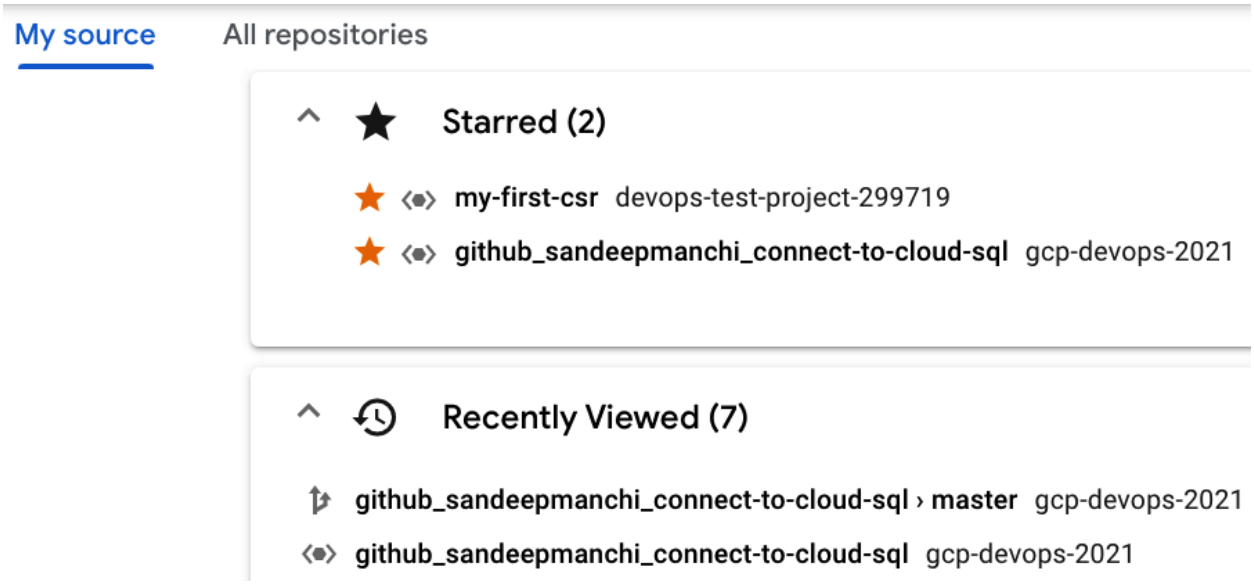
OK

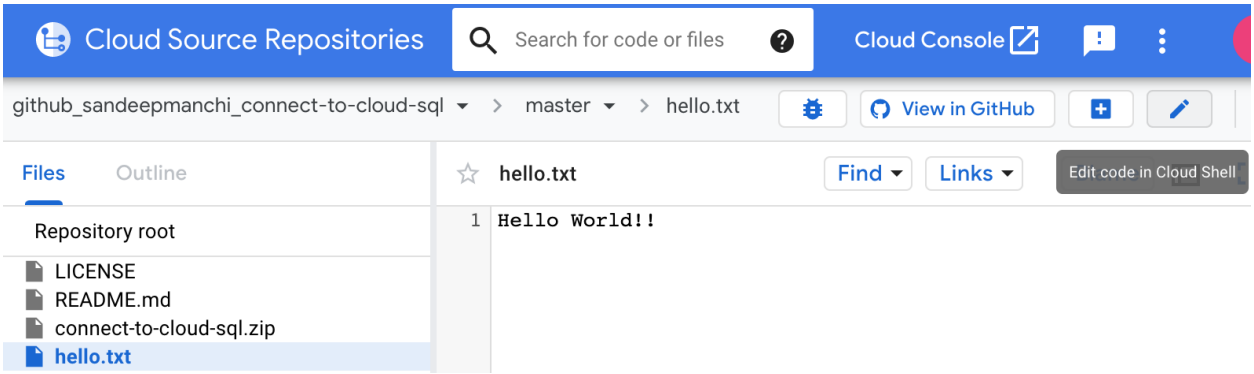

github_sandeepmanchi_connect-to-cloud-sql
master
Start Debugging
View in GitHub
Clone
Edit code
Files
Outline
Repository root
LICENSE
README.md
connect-to-cloud-sql.zip
main.py
requirements.txt
Repository Root
Links
connect-to-cloud-sql
Python code for cloud function that is about connecting to cloud SQL using SQLAlchemy
Files
LICENSE
README.md
connect-to-cloud-sql.zip
main.py
requirements.txt
History
Snapshots
Logpoints
ID
Author
Commit Date
Description
038f3cf
sandeepman...
2020-02-06 01:37 -05:00
Add files via upload
VIEW
2a962f2
sandeepman...
2020-02-06 01:36 -05:00
Initial commit

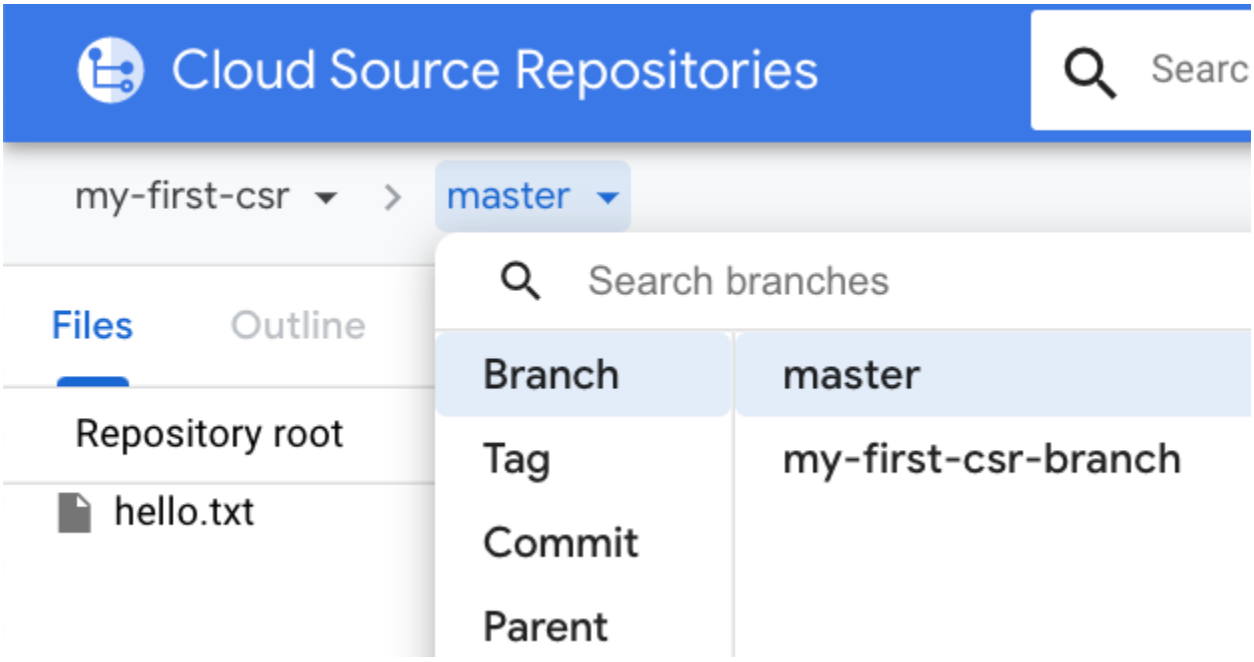

History
Snapshots
Logpoints
ID
Author
Commit Date
Description
4409516
sandeepman...
2020-12-25 17:45 -05:00
Create hello.txt
VIEW
038f3cf
sandeepman...
2020-02-06 01:37 -05:00
Add files via upload
2a962f2
sandeepman...
2020-02-06 01:36 -05:00
Initial commit

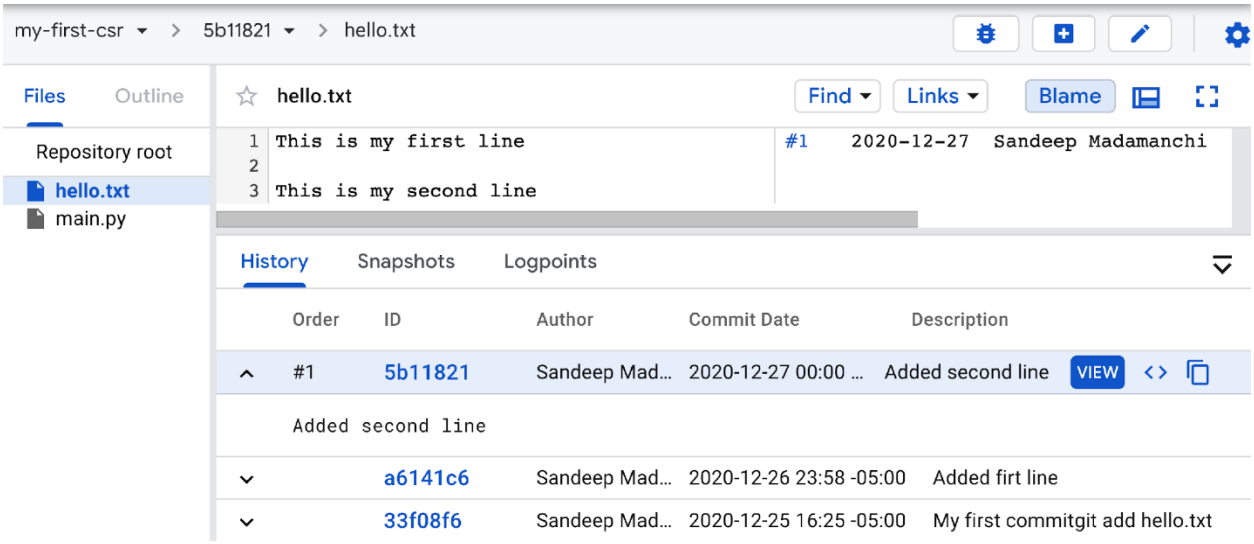

Settings for repository "github_sandeepmanchi_connect-to-cloud-sql"
General settings
Permissions
General settings
Repository name
github_sandeepmanchi_connect-to-cloud-sql
Repository location
gcp-devops-2021
Manage build triggers for this repository
Cloud Build Triggers
Connected repository
https://github.com/sandeepmanchi/connect-to-cloud-sql
Sync from GitHub
Last Synced from GitHub
Today 5:45 PM
Disconnect this repository

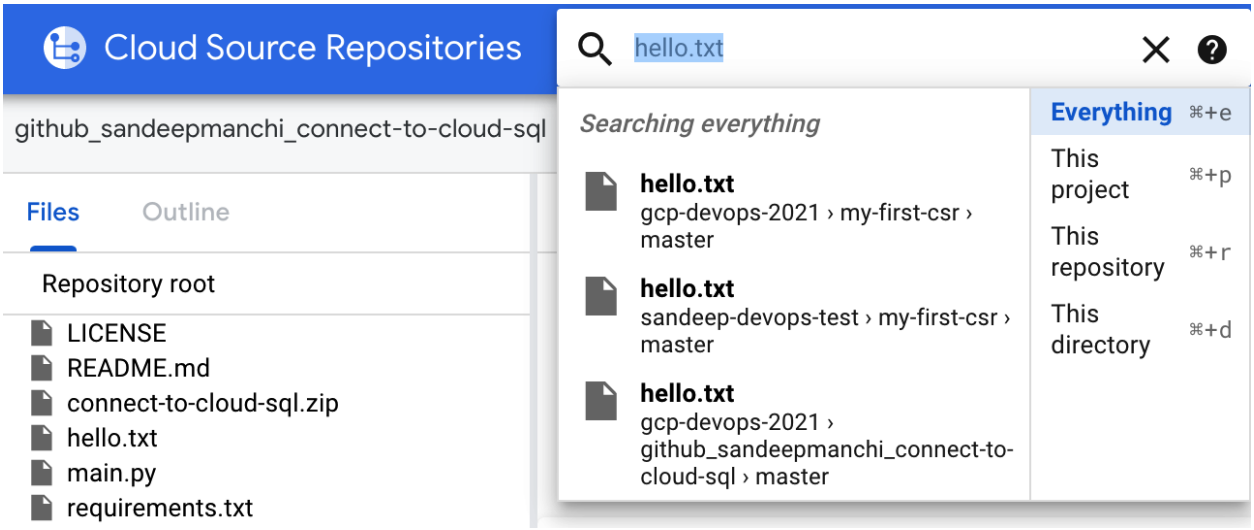

My source
All repositories
All repositories
Name
Project ID
my-first-csr
devops-test-project-299719
github_sandeepmanchi_connect-to-cloud-sql
gcp-devops-2021
my-first-csr
gcp-devops-2021

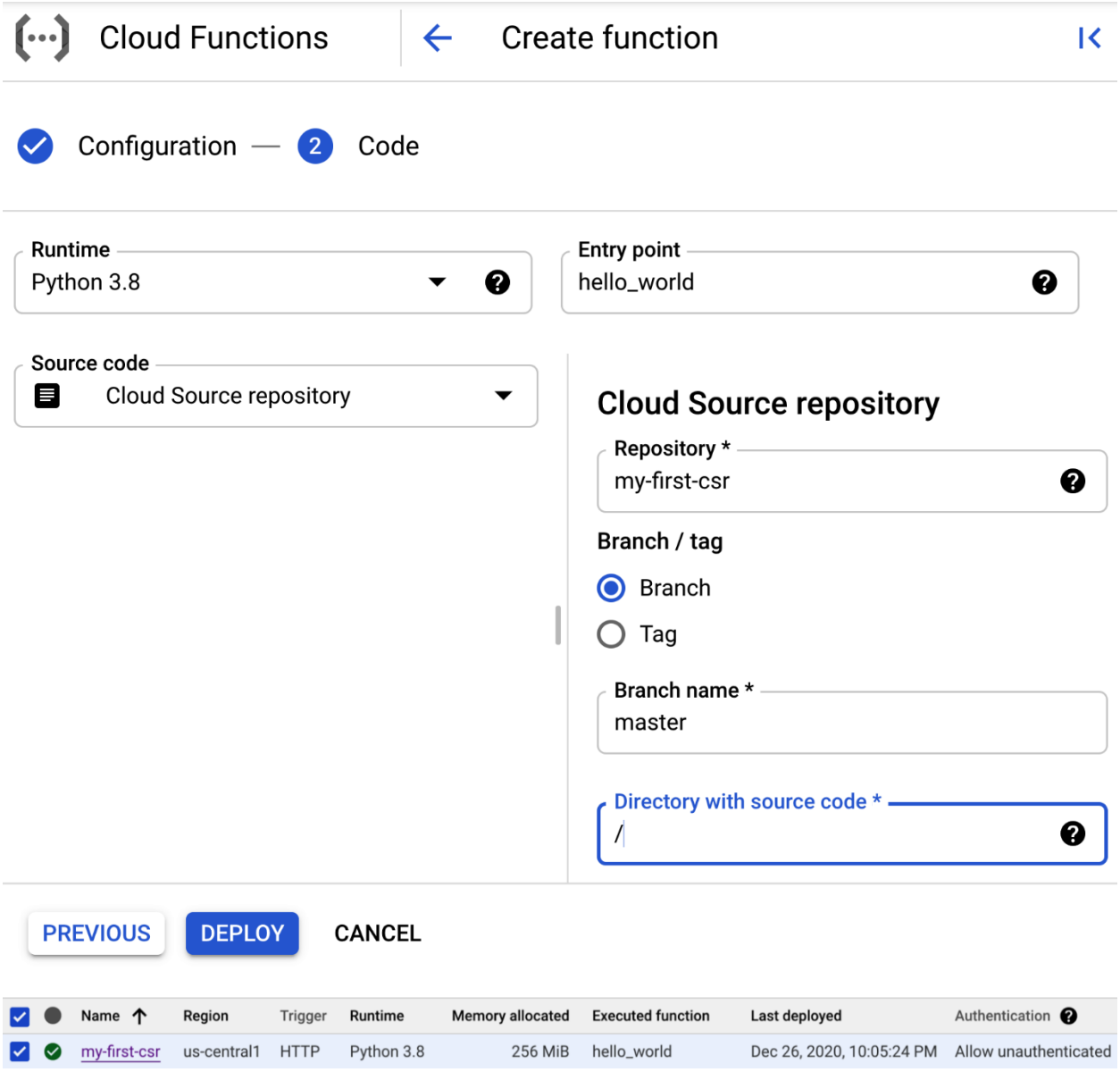

My source
All repositories
Starred (2)
my-first-csr devops-test-project-299719
github_sandeepmanchi_connect-to-cloud-sql gcp-devops-2021
Recently Viewed (7)
github_sandeepmanchi_connect-to-cloud-sql › master gcp-devops-2021
github_sandeepmanchi_connect-to-cloud-sql gcp-devops-2021


Cloud Source Repositories
Search for code or files
Cloud Console
github_sandeepmanchi_connect-to-cloud-sql
master
hello.txt
View in GitHub
Files
Outline
hello.txt
Find
Links
Edit code in Cloud Shell
Repository root
LICENSE
README.md
connect-to-cloud-sql.zip
hello.txt
1 Hello World!!


Cloud Source Repositories
Searc
my-first-csr
master
Search branches
Files
Outline
Branch
master
Tag
my-first-csr-branch
Commit
Parent
Repository root
hello.txt

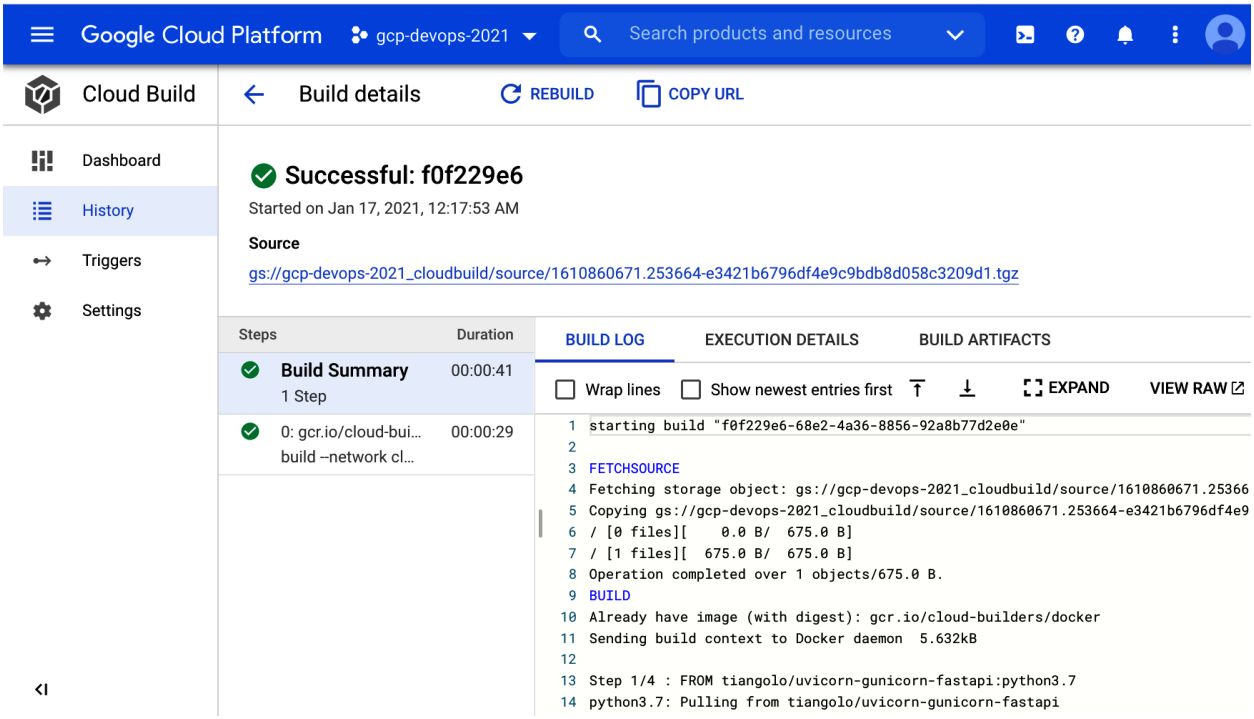

my-first-csr
5b11821
hello.txt
Files
Outline
Repository root
hello.txt
main.py
hello.txt
Find
Links
Blame
1 This is my first line
2
3 This is my second line
#1 2020-12-27 Sandeep Madamanchi
History
Snapshots
Logpoints
Order
ID
Author
Commit Date
Description
#1
5b11821
Sandeep Mad...
2020-12-27 00:00 ...
Added second line
VIEW
Added second line
a6141c6
Sandeep Mad...
2020-12-26 23:58 -05:00
Added firt line
33f08f6
Sandeep Mad...
2020-12-25 16:25 -05:00
My first commitgit add hello.txt

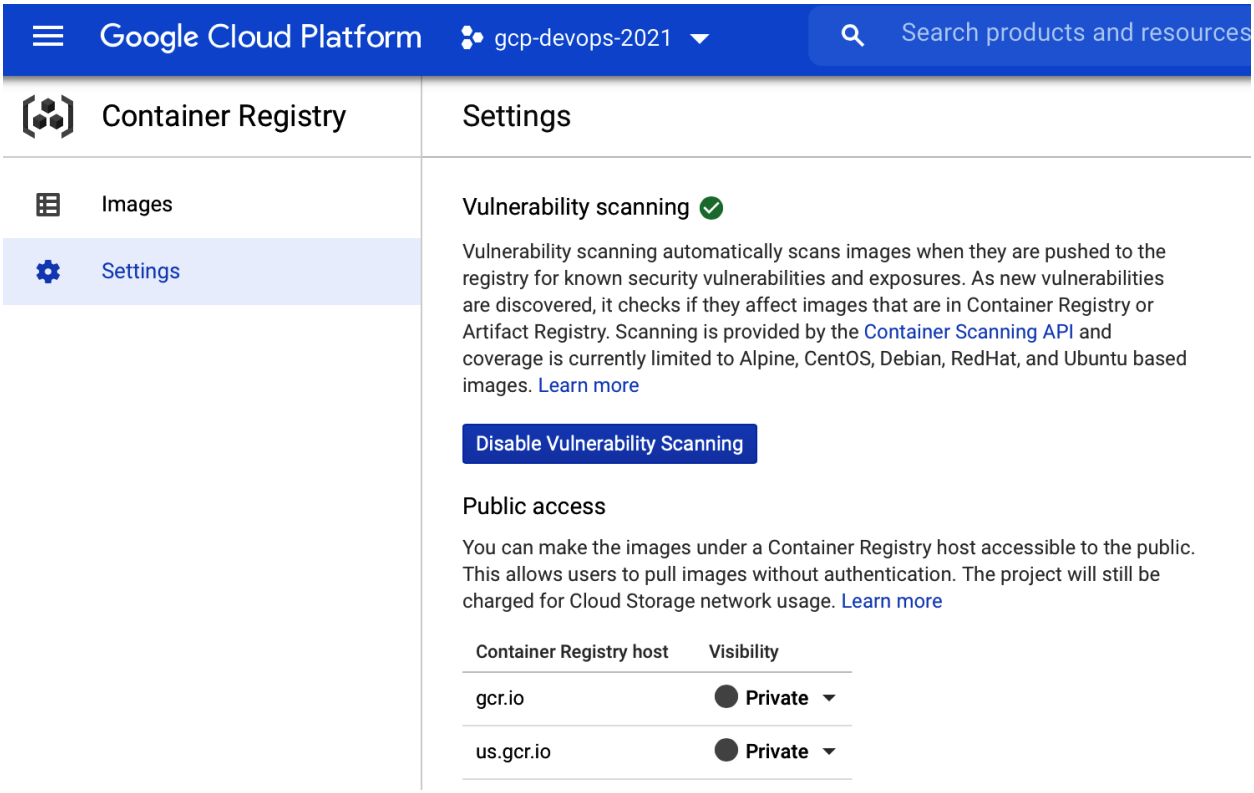

Cloud Source Repositories
hello.txt
github_sandeepmanchi_connect-to-cloud-sql
Files
Outline
Repository root
LICENSE
README.md
connect-to-cloud-sql.zip
hello.txt
main.py
requirements.txt
Searching everything
hello.txt
gcp-devops-2021 › my-first-csr › master
hello.txt
sandeep-devops-test › my-first-csr › master
hello.txt
gcp-devops-2021 › github_sandeepmanchi_connect-to-cloud-sql › master
Everything ⌘+e
This project ⌘+p
This repository ⌘+r
This directory ⌘+d

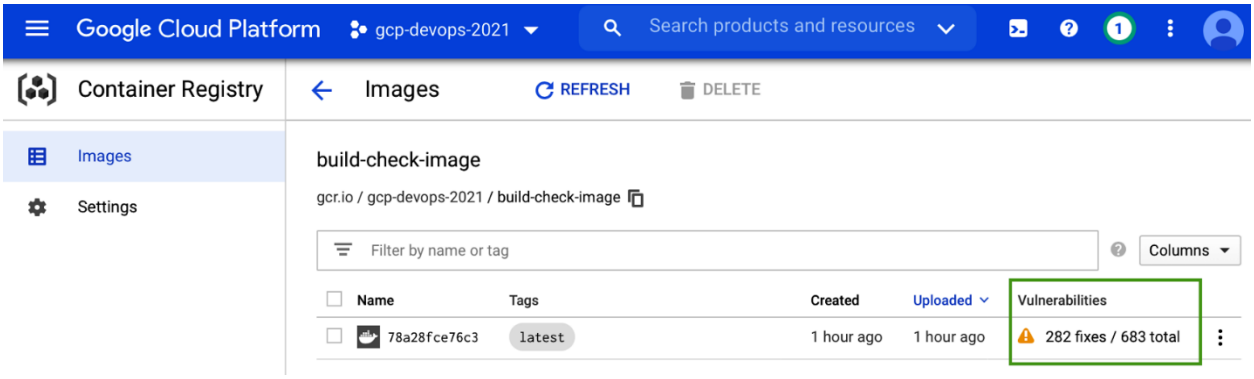

Cloud Functions
Create function
Configuration — 2 Code
Runtime
Python 3.8
Entry point
hello_world
Source code
Cloud Source repository
Cloud Source repository
Repository *
my-first-csr
Branch / tag
Branch
Tag
Branch name *
master
Directory with source code *
/
PREVIOUS
DEPLOY
CANCEL
Name
Region
Trigger
Runtime
Memory allocated
Executed function
Last deployed
Authentication
my-first-csr
us-central1
HTTP
Python 3.8
256 MiB
hello_world
Dec 26, 2020, 10:05:24 PM
Allow unauthenticated

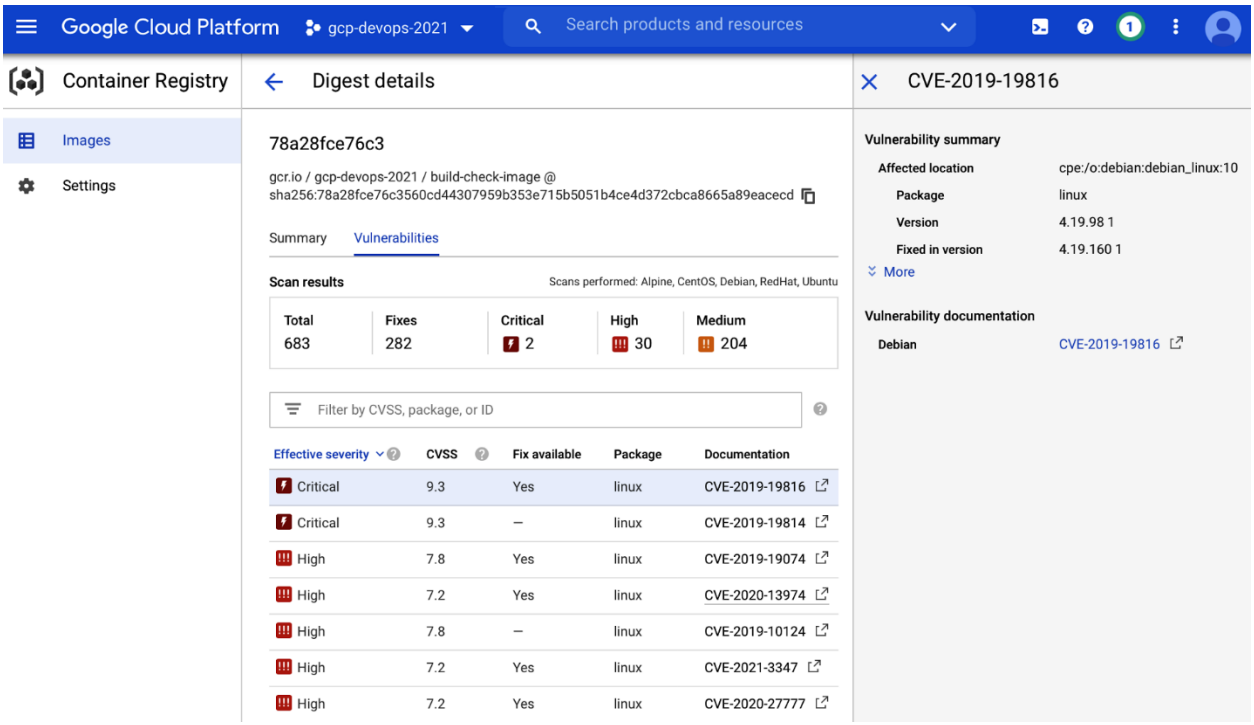
Chapter 6: Building Code Using Cloud Build, and Pushing to Container Registry

```
steps:
- name: string
  args: [string, string, ...]
  env: [string, string, ...]
  dir: string
  id: string
  waitFor: [string, string, ...]
  entrypoint: string
  secretEnv: string
  volumes: object(Volume)
  timeout: string (Duration format)
- name: string
  ...
- name: string
  ...
```


Google Cloud Platform
gcp-devops-2021
Search products and resources
Cloud Build
Build details
REBUILD
COPY URL
Dashboard
History
Triggers
Settings
Successful: f0f229e6
Started on Jan 17, 2021, 12:17:53 AM
Source
gs://gcp-devops-2021_cloudbuild/source/1610860671.253664-e3421b6796df4e9c9bdb8d058c3209d1.tgz
Steps
Duration
Build Summary
1 Step
00:00:41
0: gcr.io/cloud-bui...
build --network cl...
00:00:29
BUILD LOG
EXECUTION DETAILS
BUILD ARTIFACTS
Wrap lines
Show newest entries first
EXPAND
VIEW RAW
1 starting build "f0f229e6-68e2-4a36-8856-92a8b77d2e0e"
2
3 FETCHSOURCE
4 Fetching storage object: gs://gcp-devops-2021_cloudbuild/source/1610860671.25366
5 Copying gs://gcp-devops-2021_cloudbuild/source/1610860671.253664-e3421b6796df4e9
6 / [0 files][0.0 B/ 675.0 B]
7 / [1 files][675.0 B/ 675.0 B]
8 Operation completed over 1 objects/675.0 B.
9 BUILD
10 Already have image (with digest): gcr.io/cloud-builders/docker
11 Sending build context to Docker daemon 5.632kB
12
13 Step 1/4 : FROM tiangolo/uvicorn-gunicorn-fastapi:python3.7
14 python3.7: Pulling from tiangolo/uvicorn-gunicorn-fastapi


Google Cloud Platform
gcp-devops-2021
Search products and resources
Container Registry
Settings
Images
Settings
Vulnerability scanning
Vulnerability scanning automatically scans images when they are pushed to the registry for known security vulnerabilities and exposures. As new vulnerabilities are discovered, it checks if they affect images that are in Container Registry or Artifact Registry. Scanning is provided by the Container Scanning API and coverage is currently limited to Alpine, CentOS, Debian, RedHat, and Ubuntu based images. Learn more
Disable Vulnerability Scanning
Public access
You can make the images under a Container Registry host accessible to the public. This allows users to pull images without authentication. The project will still be charged for Cloud Storage network usage. Learn more
Container Registry host
Visibility
gcr.io
Private
us.gcr.io
Private


Google Cloud Platform
gcp-devops-2021
Search products and resources
Container Registry
Images
REFRESH
DELETE
Images
Settings
build-check-image
gcr.io / gcp-devops-2021 / build-check-image
Filter by name or tag
Columns
Name
Tags
Created
Uploaded
Vulnerabilities
78a28fce76c3
latest
1 hour ago
1 hour ago
282 fixes / 683 total


Google Cloud Platform
gcp-devops-2021
Search products and resources
Container Registry
Images
Settings
Digest details
78a28fce76c3
gcr.io / gcp-devops-2021 / build-check-image @
sha256:78a28fce76c3560cd44307959b353e715b5051b4ce4d372cbca8665a89eacecd
Summary
Vulnerabilities
Scan results
Scans performed: Alpine, CentOS, Debian, RedHat, Ubuntu
Total
683
Fixes
282
Critical
2
High
30
Medium
204
Filter by CVSS, package, or ID
Effective severity
CVSS
Fix available
Package
Documentation
Critical 9.3 Yes linux CVE-2019-19816
Critical 9.3 – linux CVE-2019-19814
High 7.8 Yes linux CVE-2019-19074
High 7.2 Yes linux CVE-2020-13974
High 7.8 – linux CVE-2019-10124
High 7.2 Yes linux CVE-2021-3347
High 7.2 Yes linux CVE-2020-27777
CVE-2019-19816
Vulnerability summary
Affected location
cpe:/o:debian:debian_linux:10
Package
linux
Version
4.19.98 1
Fixed in version
4.19.160 1
More
Vulnerability documentation
Debian
CVE-2019-19816

Create trigger

Name *
build-on-push-to-master

Must be unique within the project

Description
Trigger to build on push to master

Event

Repository event that invokes trigger

- (•) Push to a branch
- ( ) Push new tag
- ( ) Pull request (GitHub App only)

Or in response to

- ( ) Manual invocation

Source

Repository *
my-cloud-build-trigger (Cloud Source Repositories)

Select the repository to watch for events and clone when the trigger is invoked

Branch *
^master$

Use a regular expression to match to a specific branch Learn more

- [ ] Invert Regex

No branch matches

SHOW INCLUDED AND IGNORED FILES FILTERS

Build configuration

File type

- (•) Cloud Build configuration file (yaml or json)
- ( ) Dockerfile

Cloud Build configuration file location *
/ cloudbuild.yaml

Specify the path to a Cloud Build configuration file in the Git repo Learn more

Advanced

Substitution variables

Substitutions allow re-use of a cloudbuild.yaml file with different variable values. Use bash string manipulation to combine variables and bindings to access arbitrary data in the JSON payload of the webhook. Learn more

+ ADD VARIABLE

CREATE Cancel

Build history STOP STREAMING BUILDS

Region
global

Filter builds

Build	Source	Ref	Commit	Trigger Name	Created	Duration
81d42a6f	my-cloud-build-trigger	master	78885ca	build-on-push-to-master	1/30/21, 12:37 AM	57 sec

```
Step #0: Status: Downloaded newer image for tiangolo/uvicorn-gunicorn-fastapi:python3.7
Step #0:  ---> e2f19ac0b4e3
Step #0: Step 2/4 : COPY ./app /app
Step #0:  ---> 15bad8d7803d
Step #0: Step 3/4 : EXPOSE 8080
Step #0:  ---> Running in d494533d6248
Step #0: Removing intermediate container d494533d6248
Step #0:  ---> 5eed921f34ec
Step #0: Step 4/4 : CMD ["uvicorn", "main:app", "--host", "0.0.0.0", "--port", "8080"]
Step #0:  ---> Running in 82b4ee71960d
Step #0: Removing intermediate container 82b4ee71960d
Step #0:  ---> 3989bd42e41f
Step #0: Successfully built 3989bd42e41f
Step #0: Successfully tagged gcr.io/gcp-devops-2021/cloud-build-trigger:latest
```

Container Registry Images REFRESH DELETE

Images
Settings

cloud-build-trigger

gcr.io / gcp-devops-2021 / cloud-build-trigger

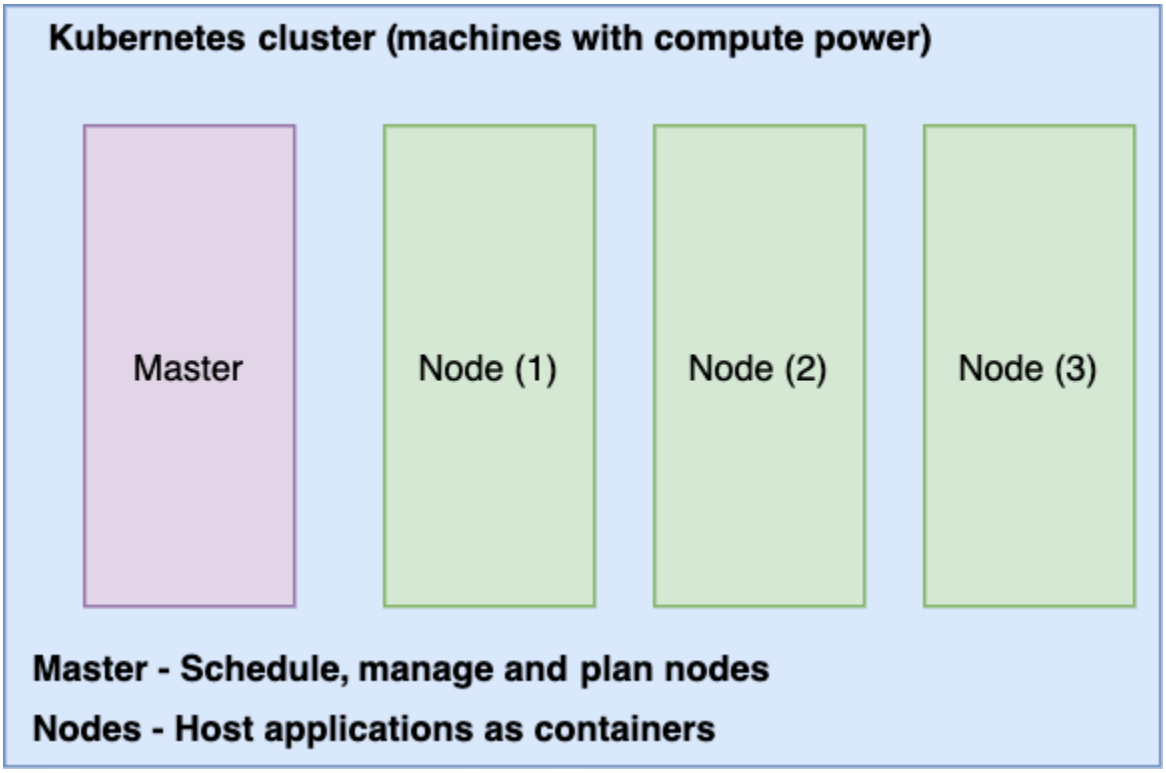
Filter by name or tag Columns

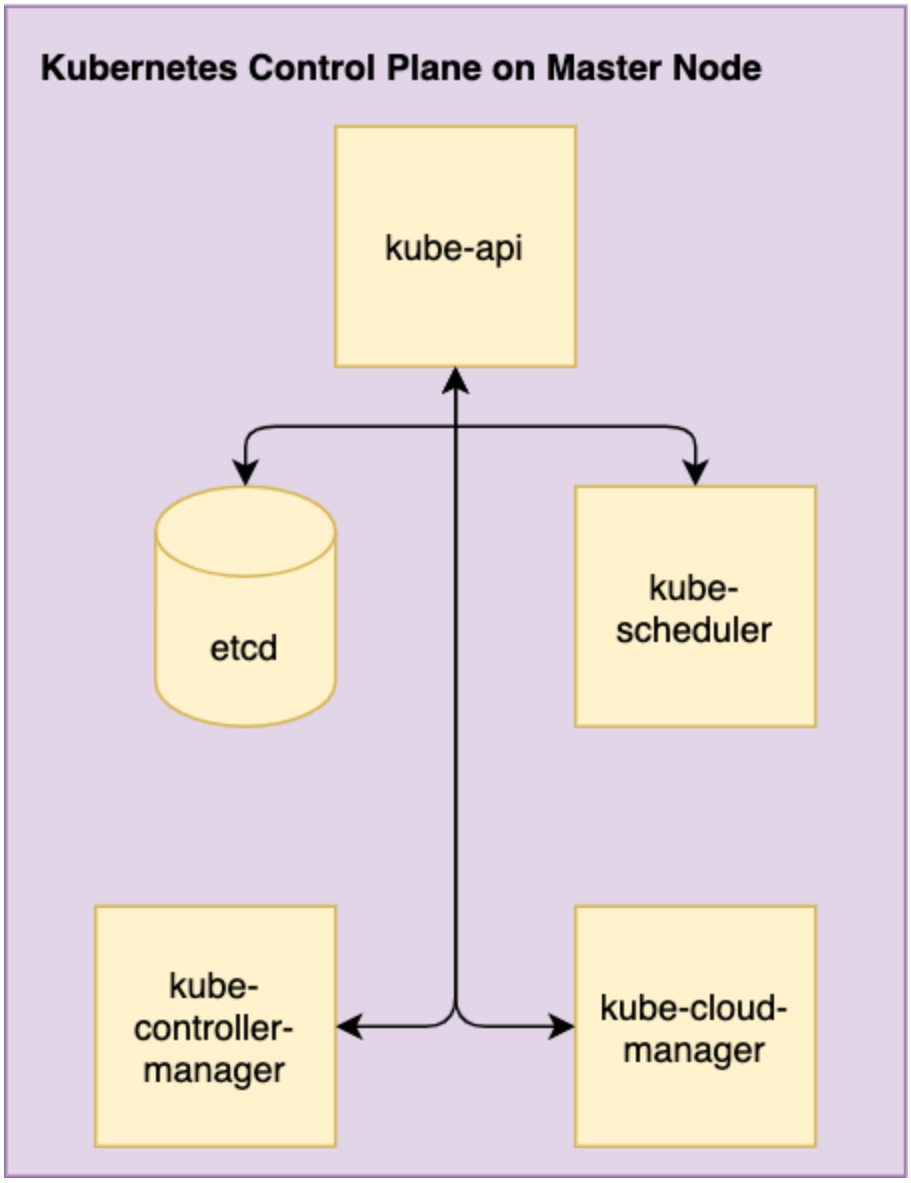
Name	Tags	Created	Uploaded
fd6879222803	latest	1 hour ago	1 hour ago

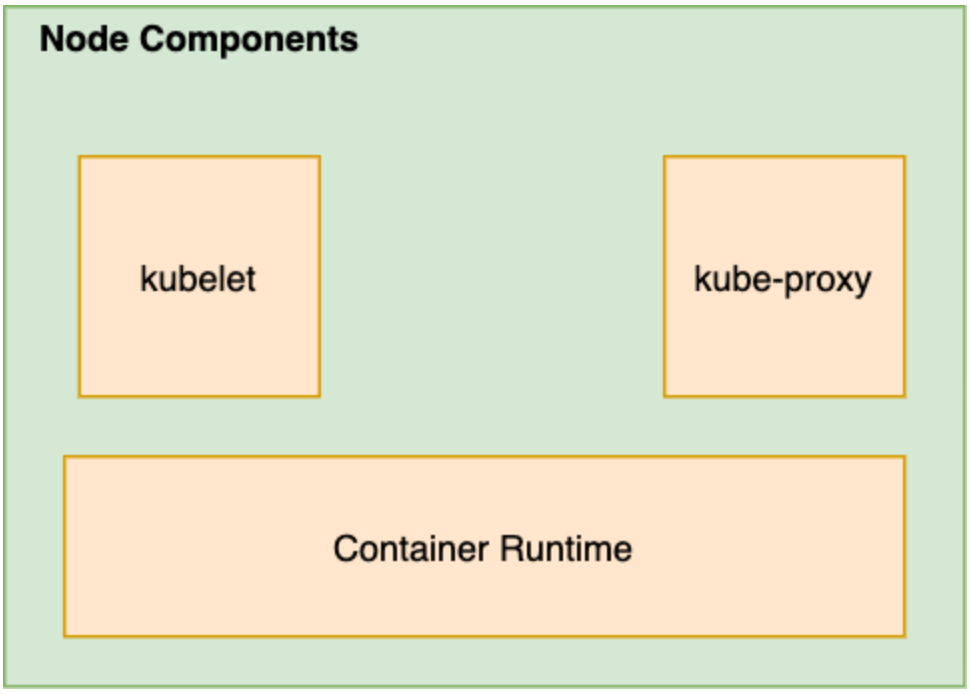
```
Step #2: Deploying container to Cloud Run service [cbt-cloud-run] in project [gcp-devops-2021] region [us-central1]
Step #2: Deploying...
Step #2: Setting IAM Policy.....done
Step #2: Creating Revision.....done
Step #2: Routing traffic.....done
Step #2: Done.
Step #2: Service [cbt-cloud-run] revision [cbt-cloud-run-00003-now] has been deployed and is serving 100 percent of traffic.
Step #2: Service URL: https://cbt-cloud-run-jejlhr4t3q-uc.a.run.app
```

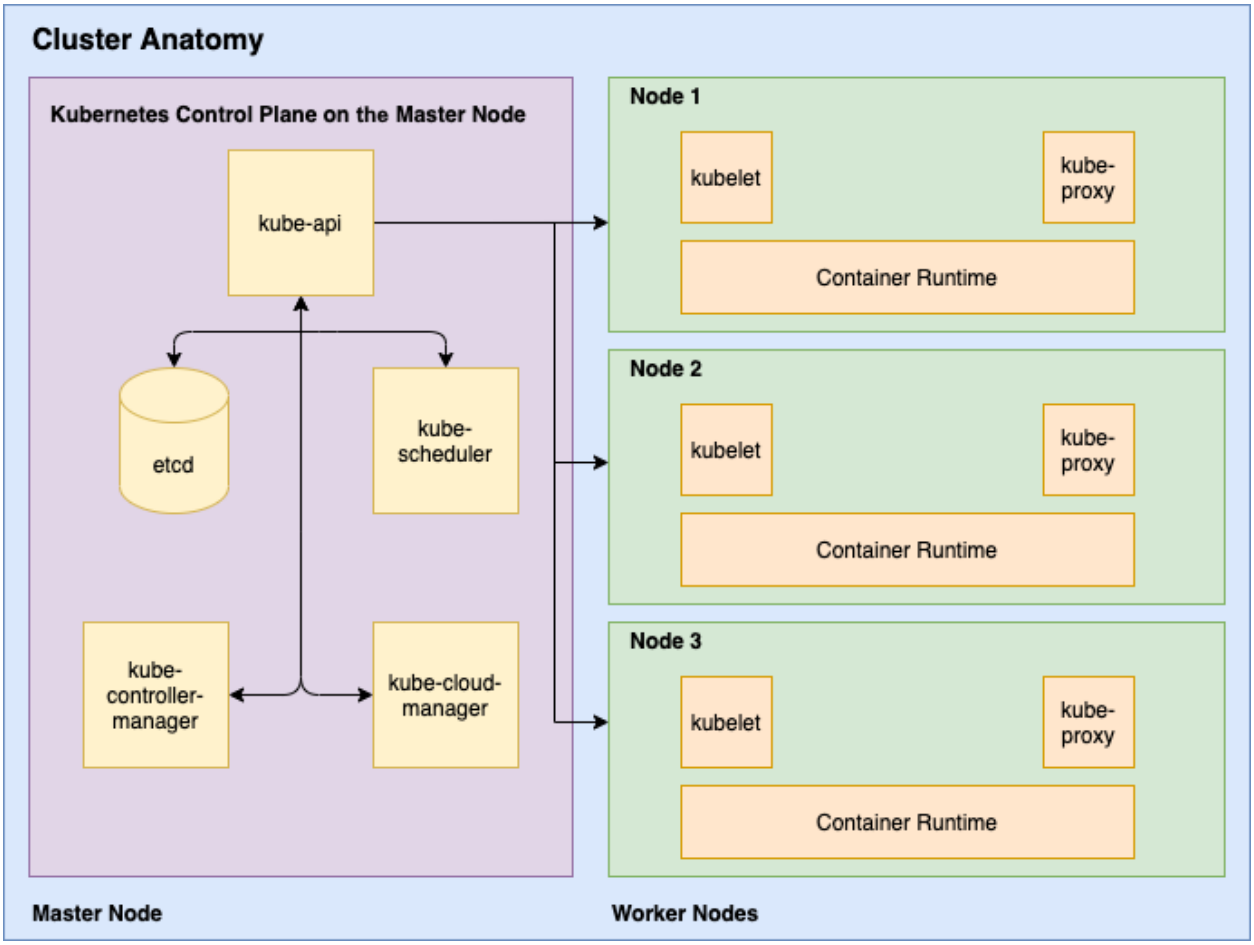

https://cbt-cloud-run-jejlhr4t3
cbt-cloud-run-jejlhr4t3q-uc.a.run.app
{"Hello":"World"}

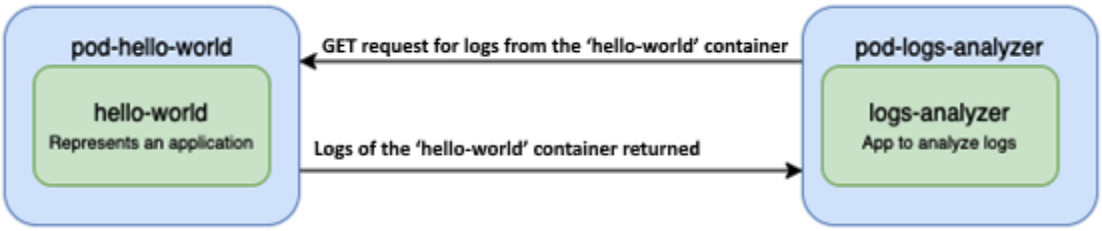
Chapter 7: Understanding Kubernetes Essentials to Deploy Containerized Applications

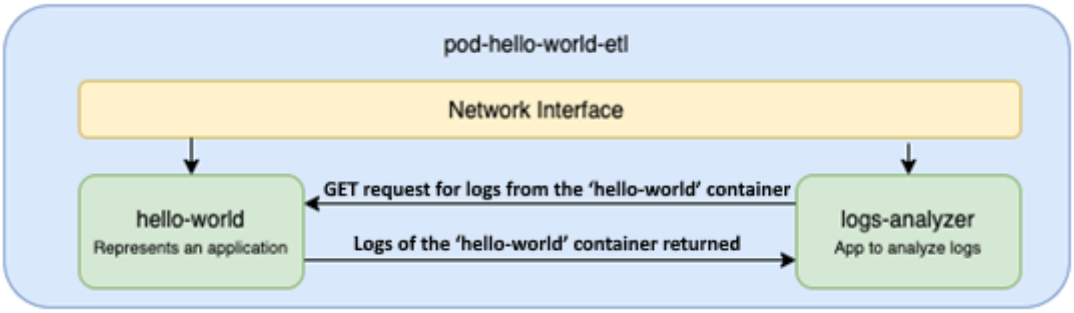


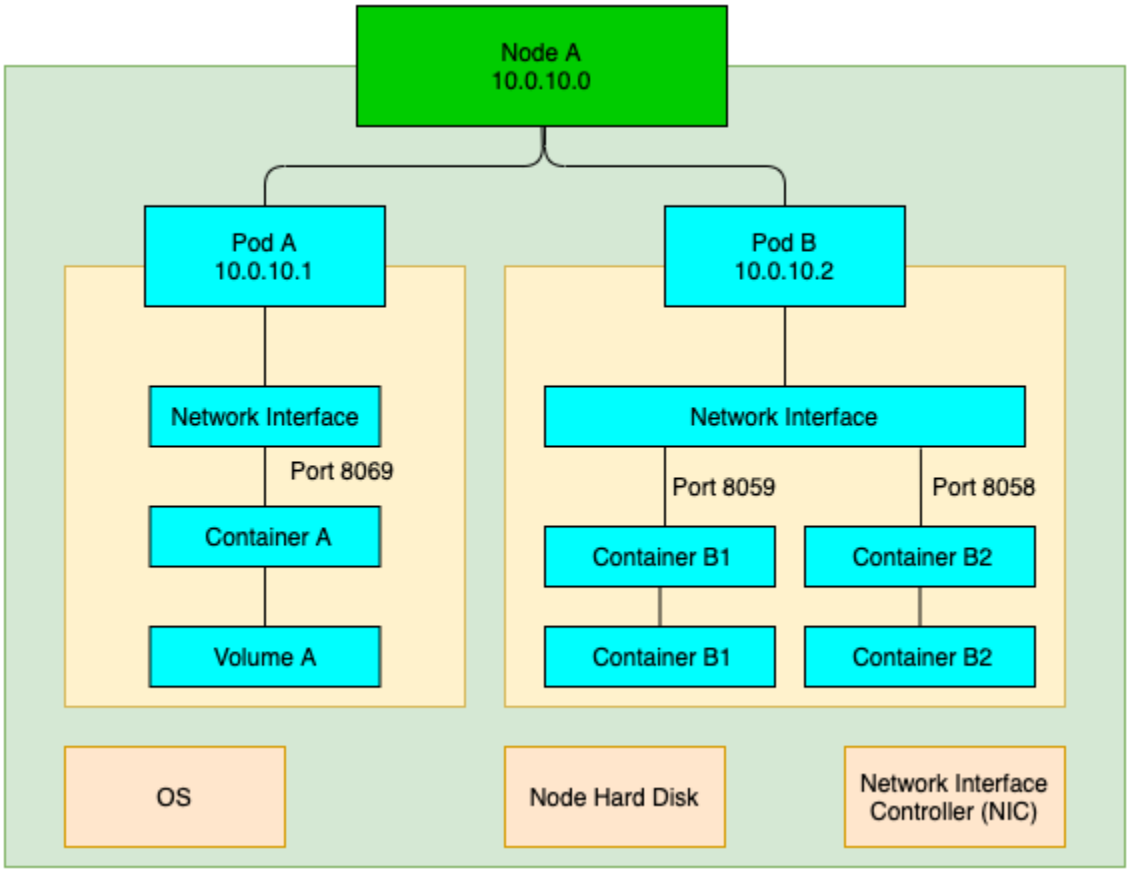

Kubernetes Control Plane on Master Node
kube-api
etcd
kube-
scheduler
kube-
controller-
manager
kube-cloud-
manager

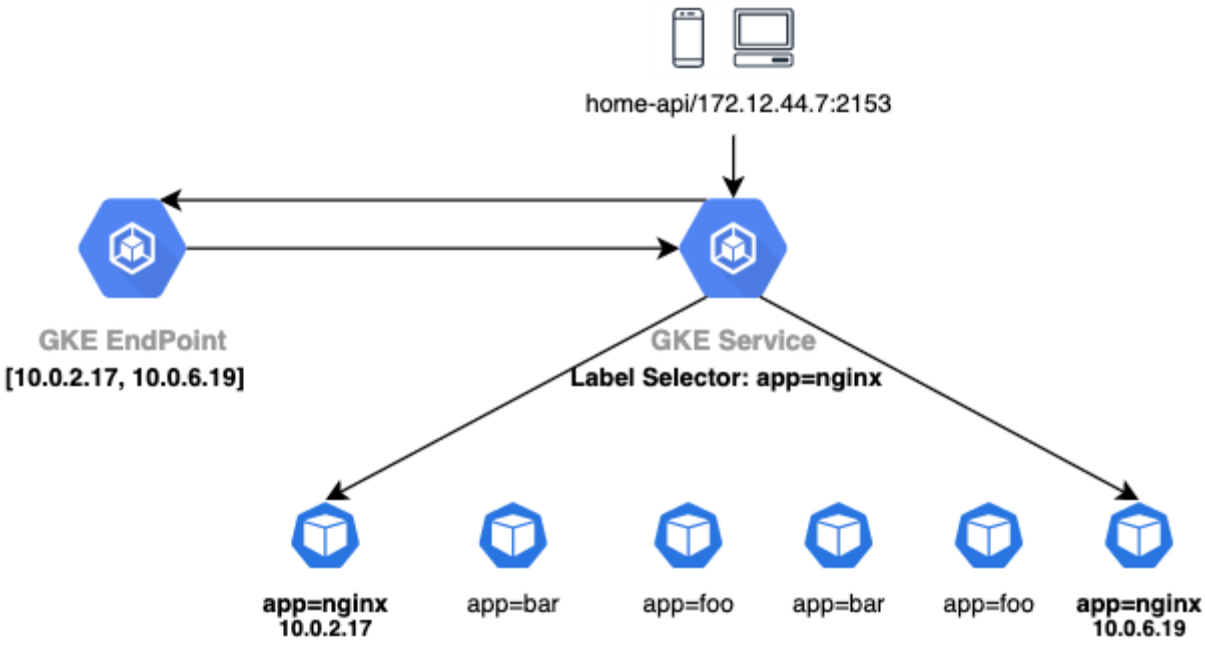

Node Components
kubelet
kube-proxy
Container Runtime


Cluster Anatomy
Kubernetes Control Plane on the Master Node
kube-api
etcd
kube-scheduler
kube-controller-manager
kube-cloud-manager
Node 1
kubelet
kube-proxy
Container Runtime
Node 2
kubelet
kube-proxy
Container Runtime
Node 3
kubelet
kube-proxy
Container Runtime
Master Node
Worker Nodes


pod-hello-world
hello-world
Represents an application
GET request for logs from the 'hello-world' container
Logs of the 'hello-world' container returned
pod-logs-analyzer
logs-analyzer
App to analyze logs


pod-hello-world-etl
Network Interface
hello-world
Represents an application
GET request for logs from the 'hello-world' container
Logs of the 'hello-world' container returned
logs-analyzer
App to analyze logs

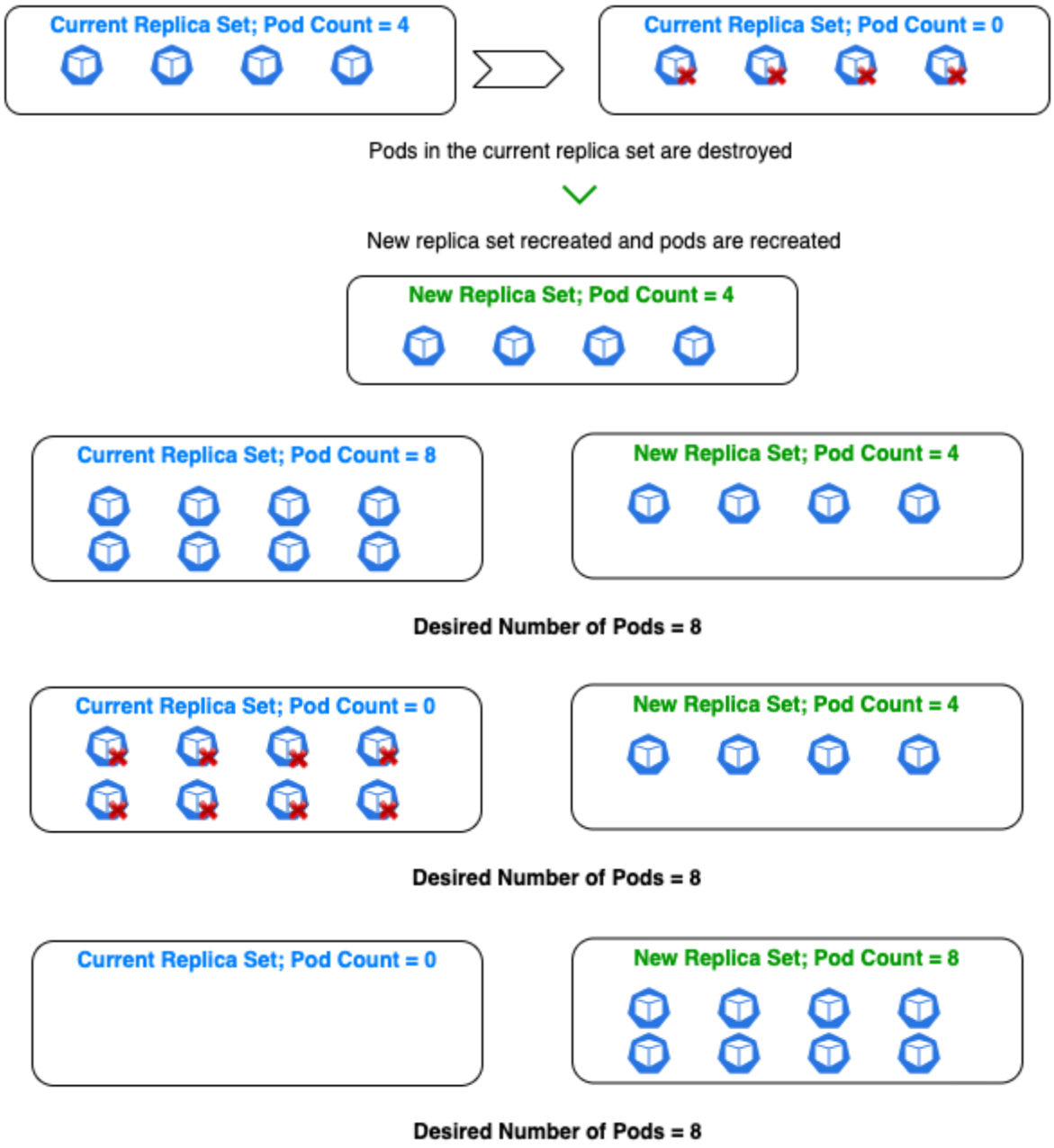

Node A
10.0.10.0
Pod A
10.0.10.1
Pod B
10.0.10.2
Network Interface
Port 8069
Container A
Volume A
Network Interface
Port 8059
Port 8058
Container B1
Container B2
Container B1
Container B2
OS
Node Hard Disk
Network Interface Controller (NIC)

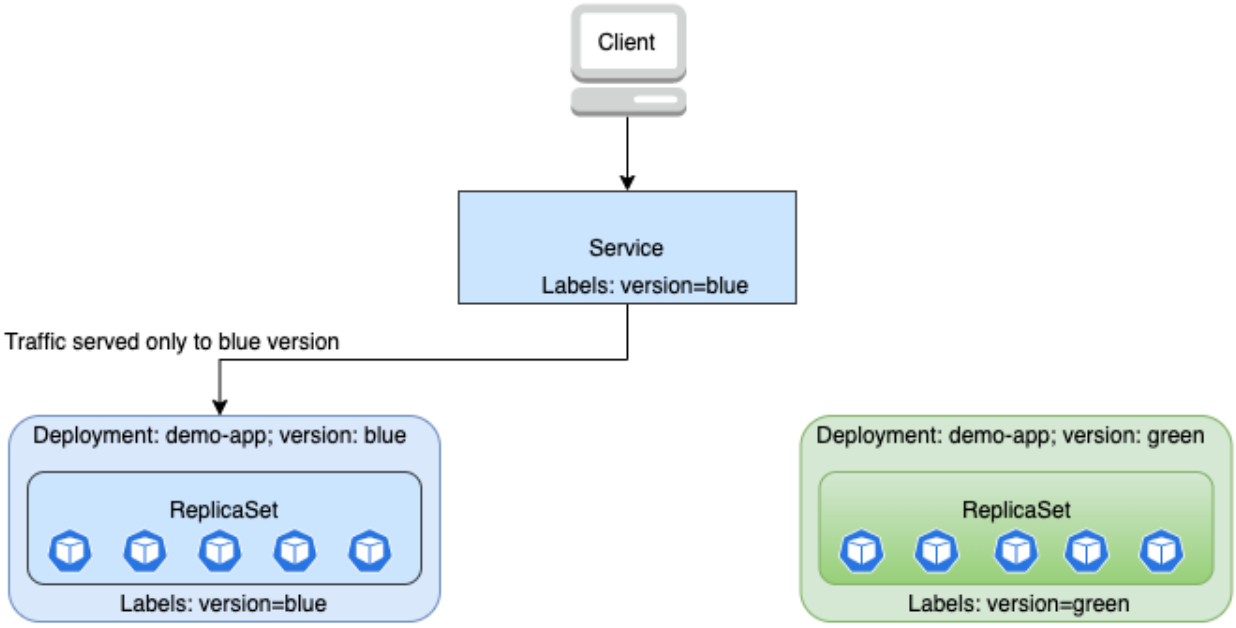



```yaml
apiVersion: v1
kind: Pod
metadata:
  name: my-pod
spec:
  containers:
  - name: nginx
    image: nginx
  nodeSelector:
    cpuPlatform: Skylake
```

```yaml
apiVersion: v1
kind: Node
metadata:
  name: node01
  labels:
    cpuPlatform: Skylake
```

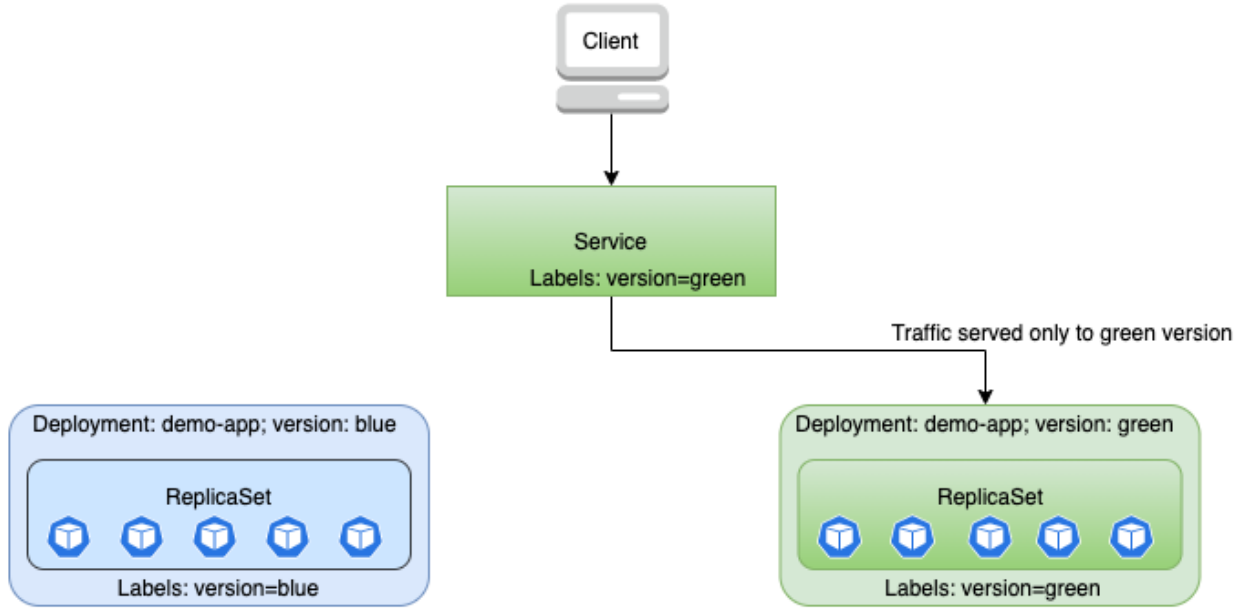
```yaml
apiVersion: v1
kind: Pod
metadata:
  name: with-inter-pod-affinity-anti-affinity
spec:
  affinity:
    podAffinity:
      requiredDuringSchedulingIgnoredDuringExecution:
      - labelSelector:
          matchExpressions:
          - key: app
            operator: In
            values:
            - webserver
            - elasticserver
    podAntiAffinity:
      preferredDuringSchedulingIgnoredDuringExecution:
      - weight: 100
        podAffinityTerm:
          labelSelector:
            matchExpressions:
            - key: app
              operator: In
              values:
              - database
```

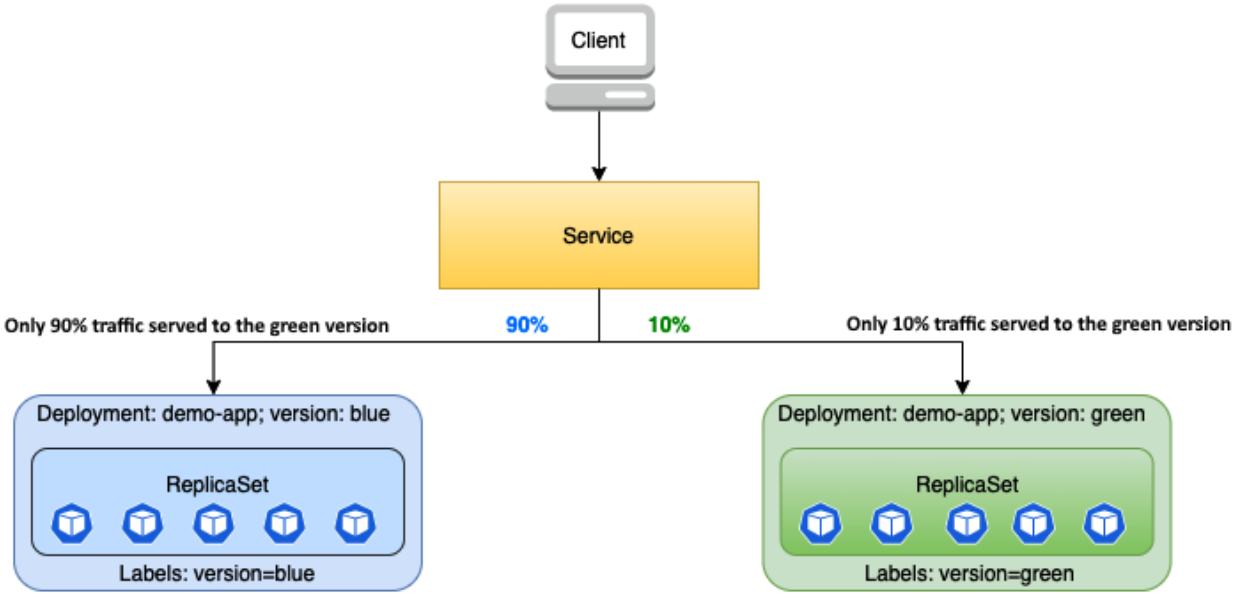

Current Replica Set; Pod Count = 4
Current Replica Set; Pod Count = 0
Pods in the current replica set are destroyed
New replica set recreated and pods are recreated
New Replica Set; Pod Count = 4
Current Replica Set; Pod Count = 8
New Replica Set; Pod Count = 4
Desired Number of Pods = 8
Current Replica Set; Pod Count = 0
New Replica Set; Pod Count = 4
Desired Number of Pods = 8
Current Replica Set; Pod Count = 0
New Replica Set; Pod Count = 8
Desired Number of Pods = 8



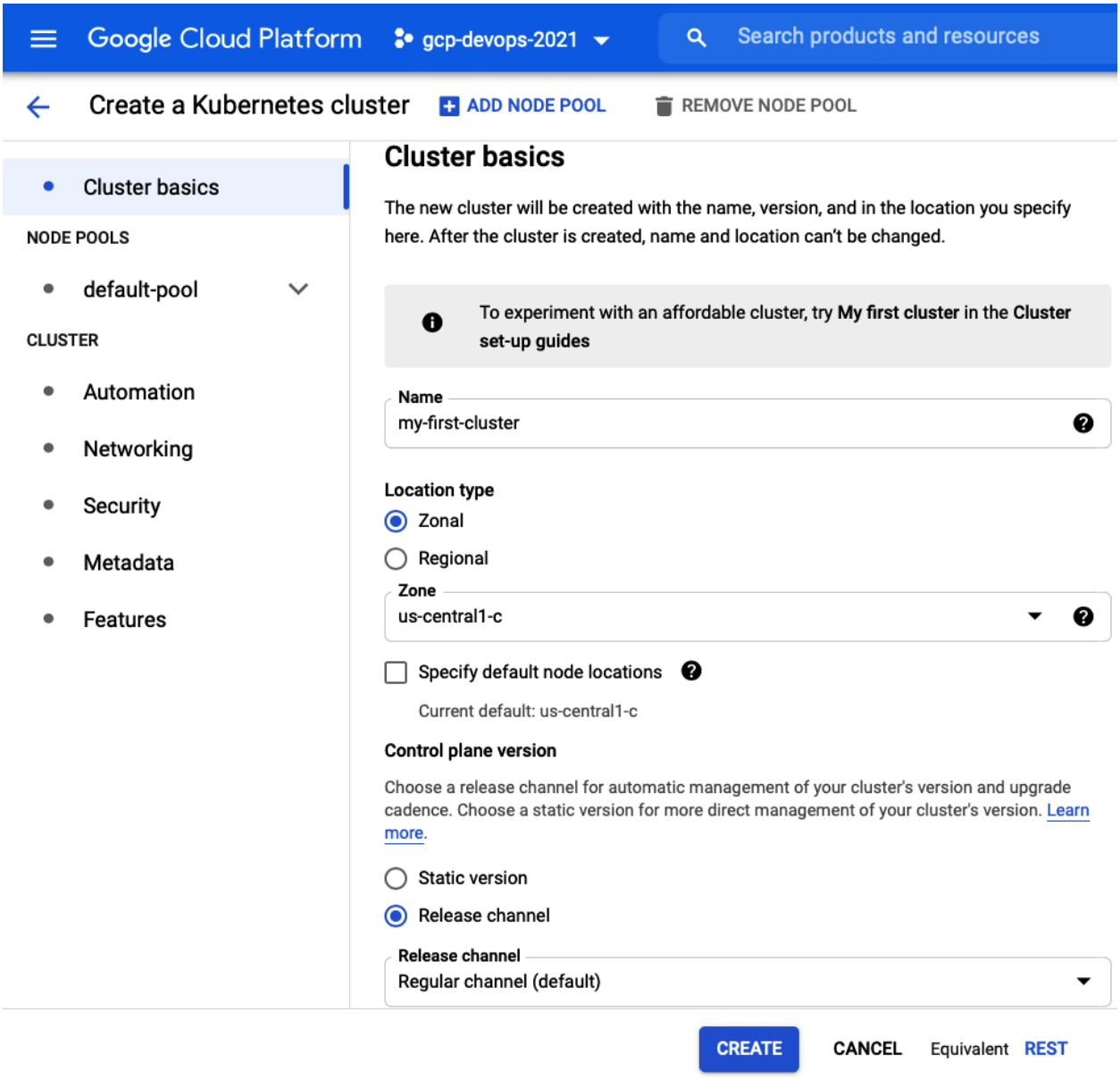

```
[. . .]
kind: Service
spec:
    selector:
        app: demo-app
        version: blue
[. . .]
```

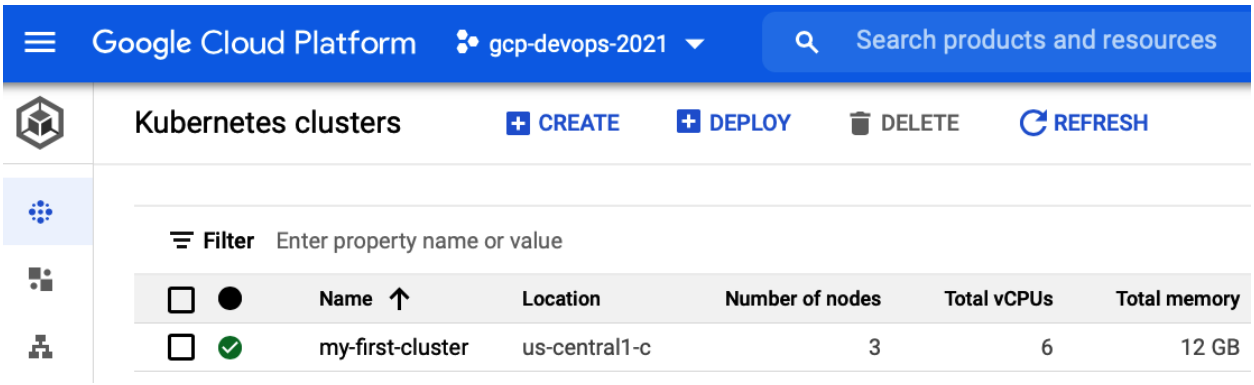
```
[. . .]
kind: Service
spec:
    selector:
        app: demo-app
        version: green
[. . .]
```

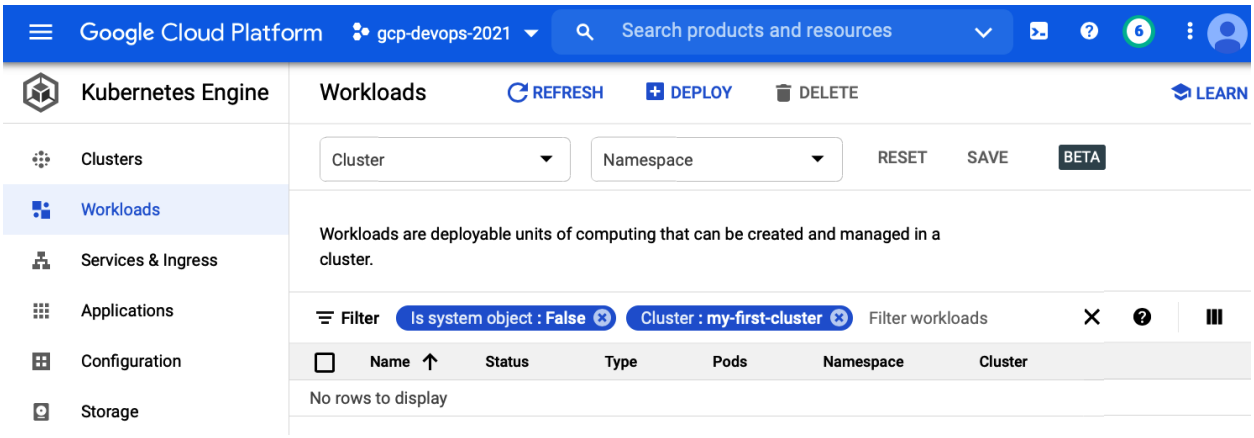

Client
Service
Labels: version=green
Traffic served only to green version
Deployment: demo-app; version: blue
ReplicaSet
Labels: version=blue
Deployment: demo-app; version: green
ReplicaSet
Labels: version=green

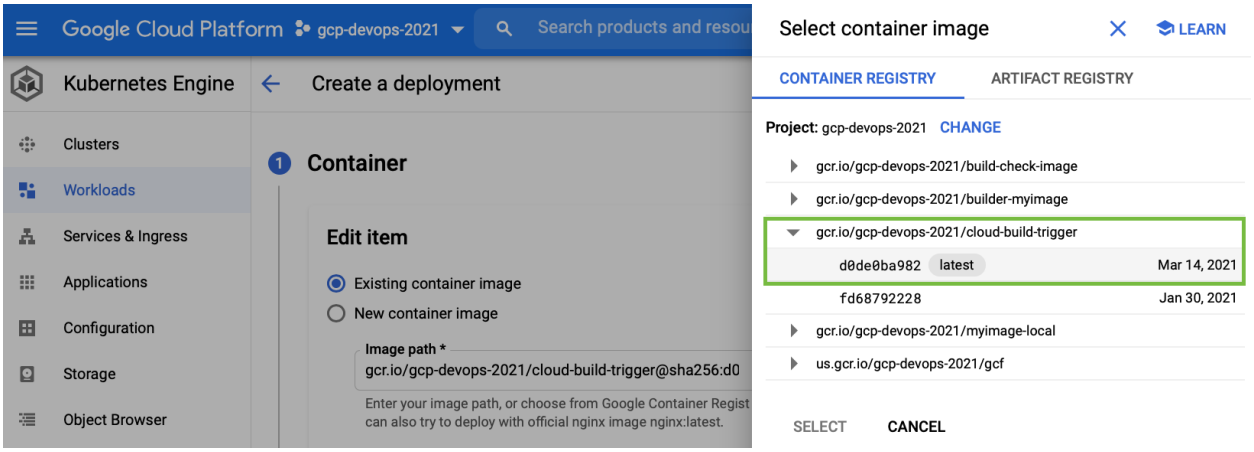

Client
Service
Only 90% traffic served to the green version
90%
10%
Only 10% traffic served to the green version
Deployment: demo-app; version: blue
ReplicaSet
Labels: version=blue
Deployment: demo-app; version: green
ReplicaSet
Labels: version=green

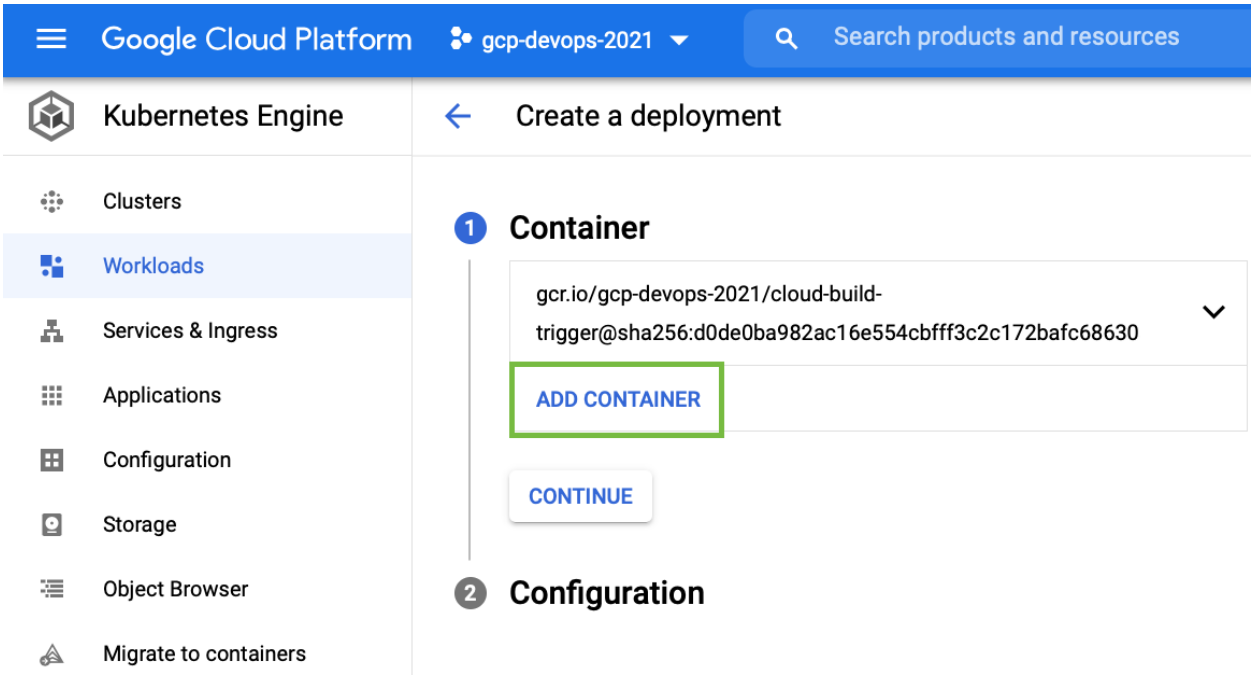
Chapter 8: Understanding GKE Essentials to Deploy Containerized Applications

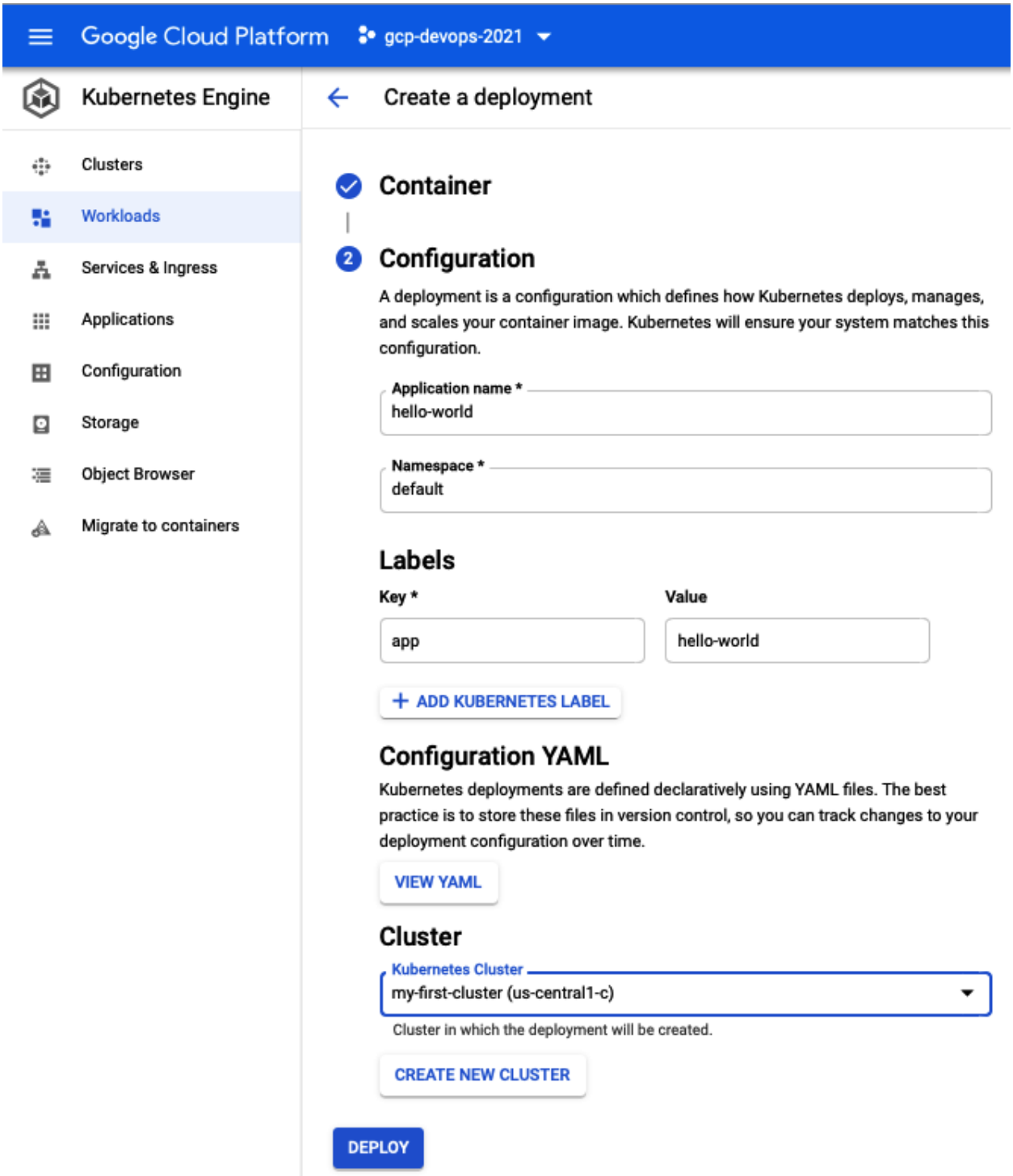


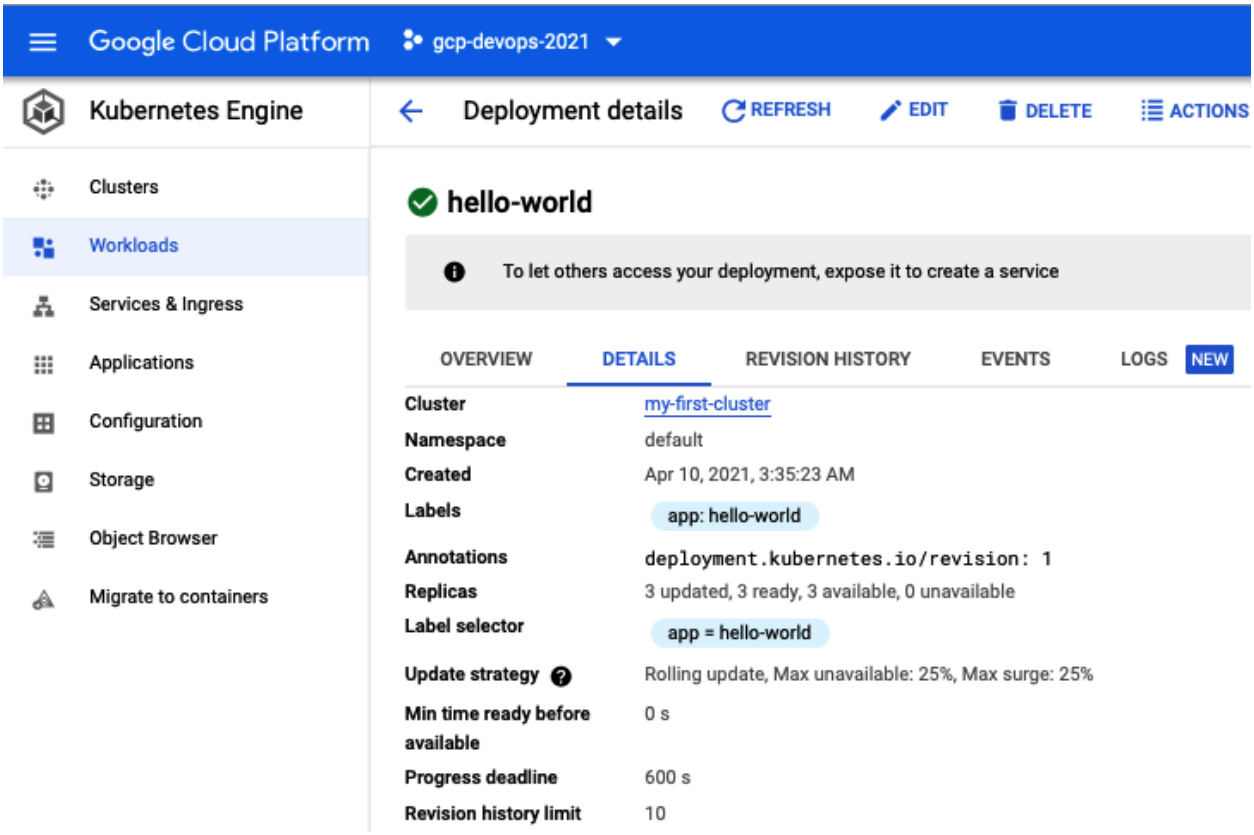

Google Cloud Platform
gcp-devops-2021
Search products and resources
Kubernetes clusters
CREATE
DEPLOY
DELETE
REFRESH
Filter
Enter property name or value
Name
Location
Number of nodes
Total vCPUs
Total memory
my-first-cluster
us-central1-c
3
6
12 GB

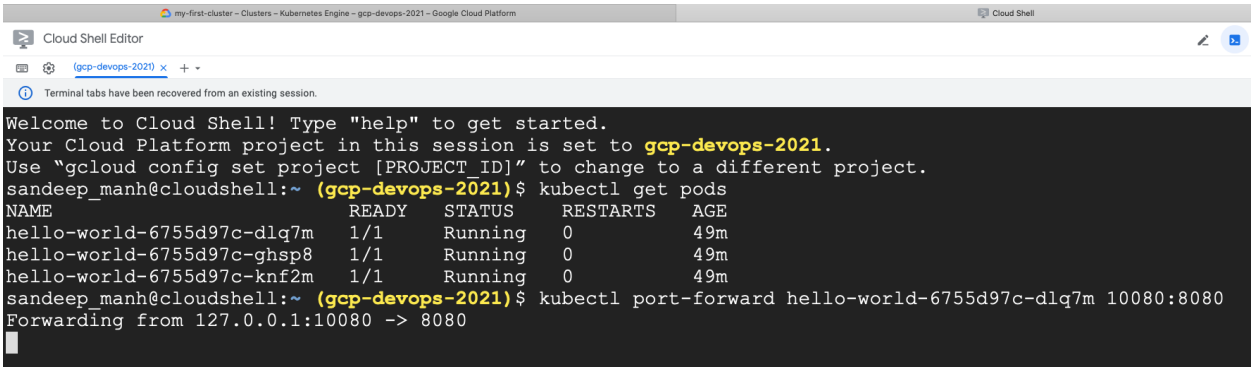

Google Cloud Platform
gcp-devops-2021
Search products and resources
Kubernetes Engine
Workloads
REFRESH
DEPLOY
DELETE
LEARN
Clusters
Workloads
Services & Ingress
Applications
Configuration
Storage
Cluster
Namespace
RESET
SAVE
BETA
Workloads are deployable units of computing that can be created and managed in a cluster.
Filter
Is system object : False
Cluster : my-first-cluster
Filter workloads
Name
Status
Type
Pods
Namespace
Cluster
No rows to display

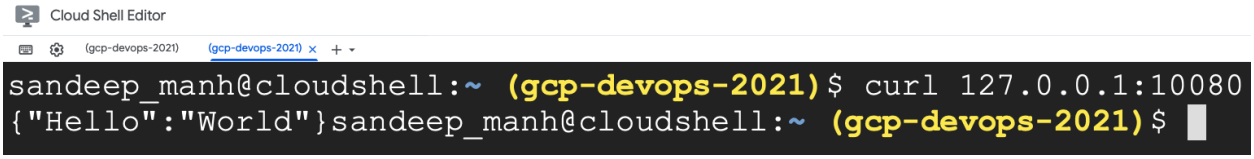

Google Cloud Platform
gcp-devops-2021
Kubernetes Engine
Create a deployment
Clusters
Workloads
Services & Ingress
Applications
Configuration
Storage
Object Browser
1 Container
Edit item
Existing container image
New container image
Image path *
gcr.io/gcp-devops-2021/cloud-build-trigger@sha256:d0
Enter your image path, or choose from Google Container Regist
can also try to deploy with official nginx image nginx:latest.
Select container image
LEARN
CONTAINER REGISTRY
ARTIFACT REGISTRY
Project: gcp-devops-2021
CHANGE
gcr.io/gcp-devops-2021/build-check-image
gcr.io/gcp-devops-2021/builder-myimage
gcr.io/gcp-devops-2021/cloud-build-trigger
d0de0ba982
latest
Mar 14, 2021
fd68792228
Jan 30, 2021
gcr.io/gcp-devops-2021/myimage-local
us.gcr.io/gcp-devops-2021/gcf
SELECT
CANCEL

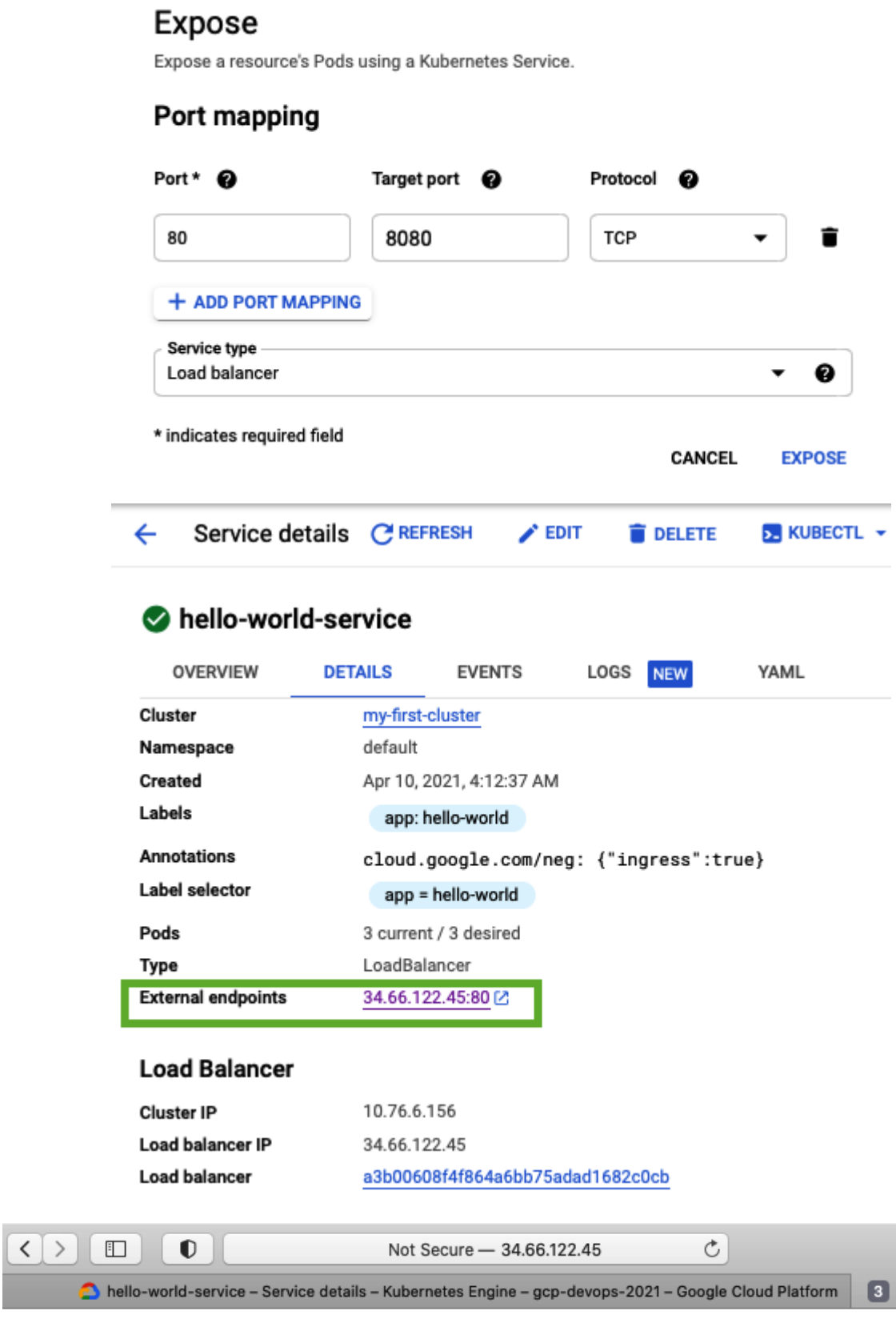

Google Cloud Platform
gcp-devops-2021
Search products and resources
Kubernetes Engine
Create a deployment
Clusters
Workloads
Services & Ingress
Applications
Configuration
Storage
Object Browser
Migrate to containers
1
Container
gcr.io/gcp-devops-2021/cloud-build-trigger@sha256:d0de0ba982ac16e554cbfff3c2c172bafc68630
ADD CONTAINER
CONTINUE
2
Configuration


Google Cloud Platform
gcp-devops-2021
Kubernetes Engine
Create a deployment
Clusters
Workloads
Services & Ingress
Applications
Configuration
Storage
Object Browser
Migrate to containers
Container
2
Configuration
A deployment is a configuration which defines how Kubernetes deploys, manages, and scales your container image. Kubernetes will ensure your system matches this configuration.
Application name *
hello-world
Namespace *
default
Labels
Key *
Value
app
hello-world
ADD KUBERNETES LABEL
Configuration YAML
Kubernetes deployments are defined declaratively using YAML files. The best practice is to store these files in version control, so you can track changes to your deployment configuration over time.
VIEW YAML
Cluster
Kubernetes Cluster
my-first-cluster (us-central1-c)
Cluster in which the deployment will be created.
CREATE NEW CLUSTER
DEPLOY


Google Cloud Platform
gcp-devops-2021
Kubernetes Engine
Deployment details
REFRESH
EDIT
DELETE
ACTIONS
Clusters
Workloads
Services & Ingress
Applications
Configuration
Storage
Object Browser
Migrate to containers
hello-world
To let others access your deployment, expose it to create a service
OVERVIEW
DETAILS
REVISION HISTORY
EVENTS
LOGS
NEW
Cluster
my-first-cluster
Namespace
default
Created
Apr 10, 2021, 3:35:23 AM
Labels
app: hello-world
Annotations
deployment.kubernetes.io/revision: 1
Replicas
3 updated, 3 ready, 3 available, 0 unavailable
Label selector
app = hello-world
Update strategy
Rolling update, Max unavailable: 25%, Max surge: 25%
Min time ready before available
0 s
Progress deadline
600 s
Revision history limit
10


Cloud Shell Editor
(gcp-devops-2021)
Terminal tabs have been recovered from an existing session.
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to gcp-devops-2021.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ kubectl get pods
NAME READY STATUS RESTARTS AGE
hello-world-6755d97c-dlq7m 1/1 Running 0 49m
hello-world-6755d97c-ghsp8 1/1 Running 0 49m
hello-world-6755d97c-knf2m 1/1 Running 0 49m
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ kubectl port-forward hello-world-6755d97c-dlq7m 10080:8080
Forwarding from 127.0.0.1:10080 -> 8080


Cloud Shell Editor
(gcp-devops-2021)
(gcp-devops-2021)
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ curl 127.0.0.1:10080
{"Hello":"World"}sandeep_manh@cloudshell:~ (gcp-devops-2021)$

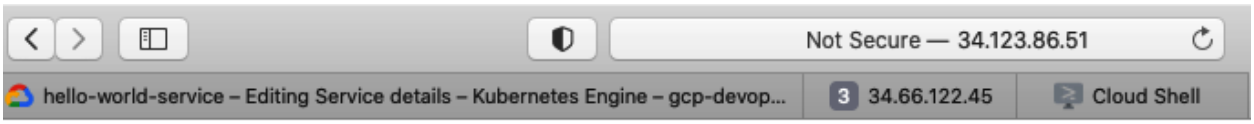

Expose
Expose a resource's Pods using a Kubernetes Service.
Port mapping
Port *
Target port
Protocol
80
8080
TCP
ADD PORT MAPPING
Service type
Load balancer
* indicates required field
CANCEL
EXPOSE
Service details
REFRESH
EDIT
DELETE
KUBECTL
hello-world-service
OVERVIEW
DETAILS
EVENTS
LOGS
NEW
YAML
Cluster
my-first-cluster
Namespace
default
Created
Apr 10, 2021, 4:12:37 AM
Labels
app: hello-world
Annotations
cloud.google.com/neg: {"ingress":true}
Label selector
app = hello-world
Pods
3 current / 3 desired
Type
LoadBalancer
External endpoints
34.66.122.45:80
Load Balancer
Cluster IP
10.76.6.156
Load balancer IP
34.66.122.45
Load balancer
a3b00608f4f864a6bb75adad1682c0cb
Not Secure — 34.66.122.45
hello-world-service – Service details – Kubernetes Engine – gcp-devops-2021 – Google Cloud Platform
3
34.66.122.45

```
{"Hello":"World"}
```

```
(gcp-devops-2021) ×  +
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ kubectl apply -f hello-world-cli.yaml

deployment.apps/hello-world-cli created
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ kubectl get deployment | grep hello-world-cli
hello-world-cli    1/1     1            1           51s
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ kubectl get pods | grep hello-world-cli
hello-world-cli-754558c444-6cxv7    1/1     Running   0          3m13s
```

```
(gcp-devops-2021) ×  +
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ nano hello-world-cli-service.yaml
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ kubectl apply -f hello-world-cli-service.yaml
service/hello-world-cli-service unchanged
sandeep_manh@cloudshell:~ (gcp-devops-2021)$ kubectl get service | grep hello-world-cli-service
hello-world-cli-service   LoadBalancer   10.76.11.40   34.123.86.51   80:30195/TCP   65s
sandeep_manh@cloudshell:~ (gcp-devops-2021)$
```




```
{"Hello":"World"}
```

my-first-cluster

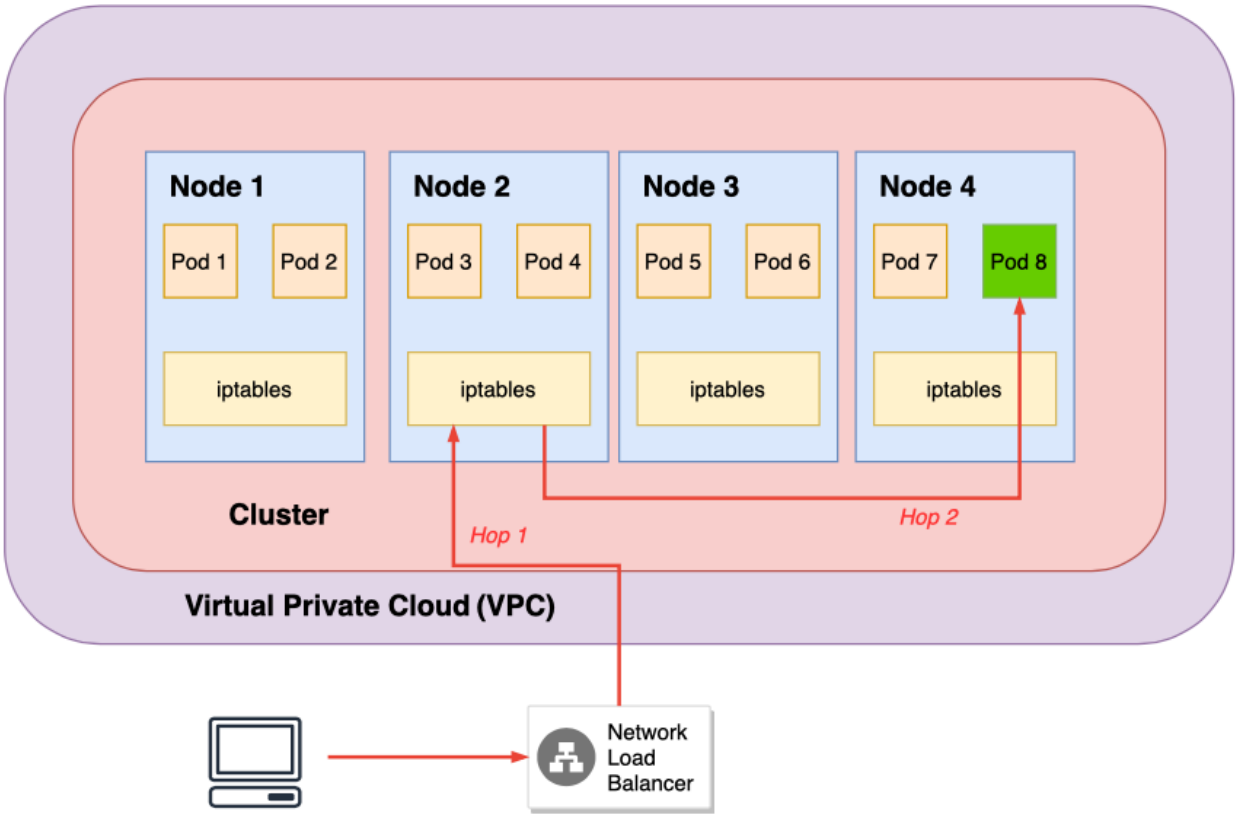
Your cluster has low resource requests; it may be under-utilized. Autoscaling documentation

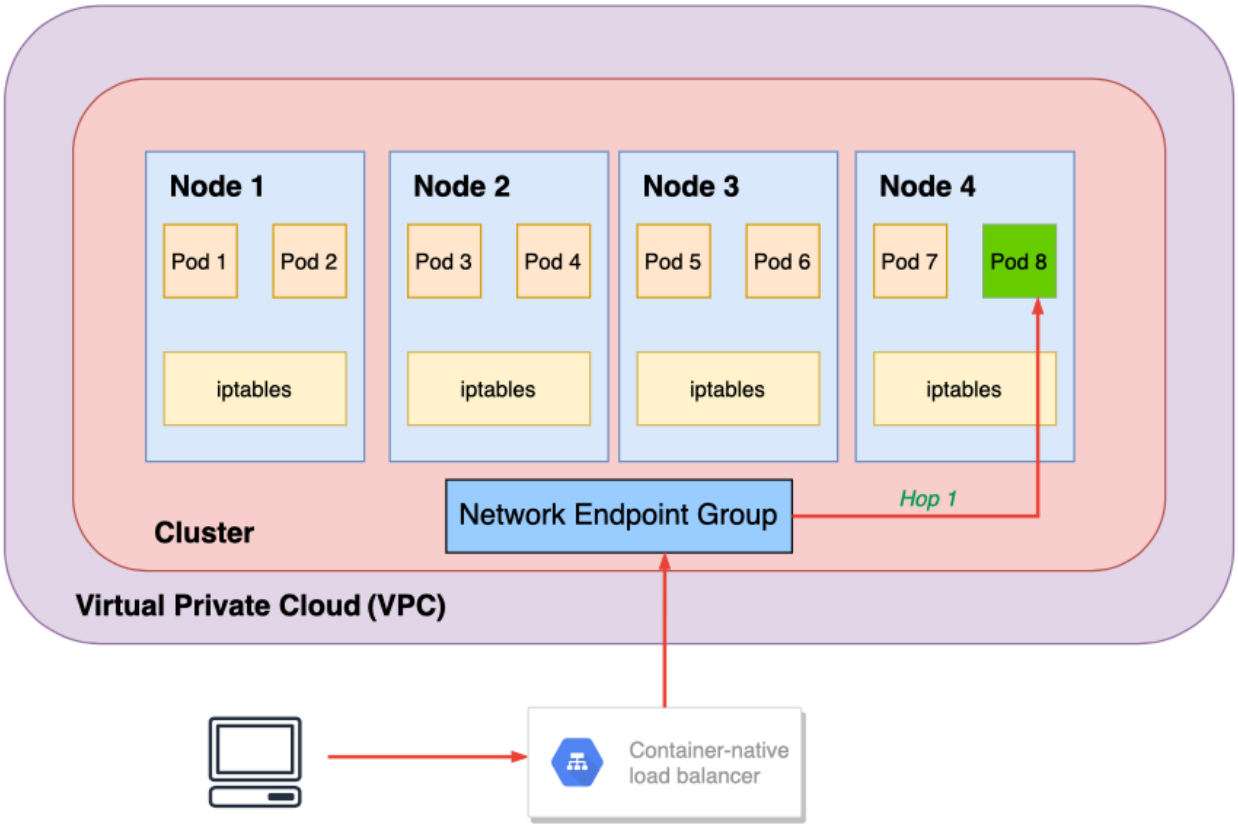
DETAILS | NODES | STORAGE | LOGS

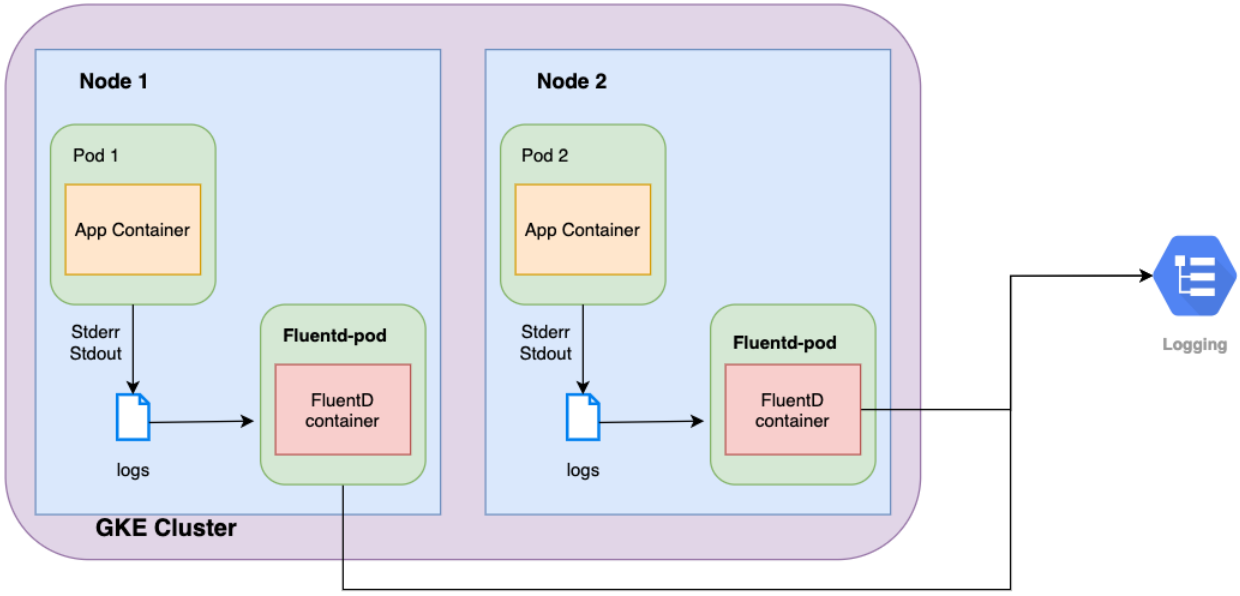
Node Pools

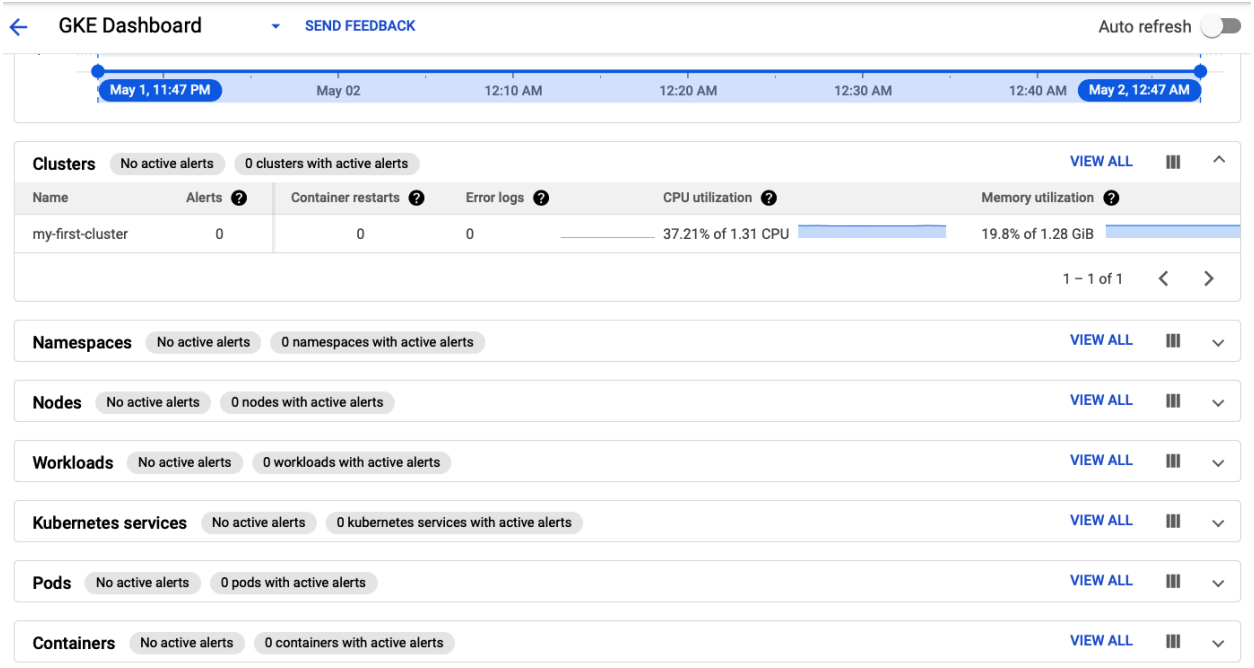
Filter: Filter node pools

Name	Status	Version	Number of nodes	Machine type	Image type	Autoscaling
default-pool	Ok	1.18.16-gke.502	3	e2-medium	Container-Optimized OS with Docker (cos)	Off
my-high-mem-pool	Ok	1.18.16-gke.502	2	n1-highmem-8	Container-Optimized OS with Docker (cos)	Off


Node 1
Pod 1
Pod 2
iptables
Node 2
Pod 3
Pod 4
iptables
Node 3
Pod 5
Pod 6
iptables
Node 4
Pod 7
Pod 8
iptables
Cluster
Hop 1
Hop 2
Virtual Private Cloud (VPC)
Network
Load
Balancer


Node 1
Pod 1
Pod 2
iptables
Node 2
Pod 3
Pod 4
iptables
Node 3
Pod 5
Pod 6
iptables
Node 4
Pod 7
Pod 8
iptables
Cluster
Network Endpoint Group
Hop 1
Virtual Private Cloud (VPC)
Container-native
load balancer


Node 1
Pod 1
App Container
Stderr
Stdout
logs
Fluentd-pod
FluentD
container
Node 2
Pod 2
App Container
Stderr
Stdout
logs
Fluentd-pod
FluentD
container
Logging
GKE Cluster


GKE Dashboard
SEND FEEDBACK
Auto refresh
May 1, 11:47 PM
May 02
12:10 AM
12:20 AM
12:30 AM
12:40 AM
May 2, 12:47 AM
Clusters
No active alerts
0 clusters with active alerts
VIEW ALL
Name
Alerts
Container restarts
Error logs
CPU utilization
Memory utilization
my-first-cluster
0
0
0
37.21% of 1.31 CPU
19.8% of 1.28 GiB
1 – 1 of 1
Namespaces
No active alerts
0 namespaces with active alerts
VIEW ALL
Nodes
No active alerts
0 nodes with active alerts
VIEW ALL
Workloads
No active alerts
0 workloads with active alerts
VIEW ALL
Kubernetes services
No active alerts
0 kubernetes services with active alerts
VIEW ALL
Pods
No active alerts
0 pods with active alerts
VIEW ALL
Containers
No active alerts
0 containers with active alerts
VIEW ALL

Create cluster

Select the cluster mode that you want to use.

Compare cluster modes to learn more about their differences. COMPARE

Standard

Kubernetes cluster with node configuration flexibility and pay-per-node. Learn more

CONFIGURE

Autopilot

Optimized Kubernetes cluster with a hands-off experience and pay-per-pod. Learn more

CONFIGURE

CANCEL

Create an Autopilot cluster

Create an Autopilot cluster by specifying a name and region. After the cluster is created, you can deploy your workload through Kubernetes and we'll take care of the rest, including:

- **Nodes:** Automated node provisioning, scaling, and maintenance
- **Networking:** VPC-native traffic routing for public or private clusters
- **Security:** Shielded GKE Nodes and Workload Identity
- **Telemetry:** Cloud Operations logging and monitoring

Name
my-autopilot-cluster

Region
us-central1

Networking

Define how applications in this cluster communicate with each other and how clients can reach them.

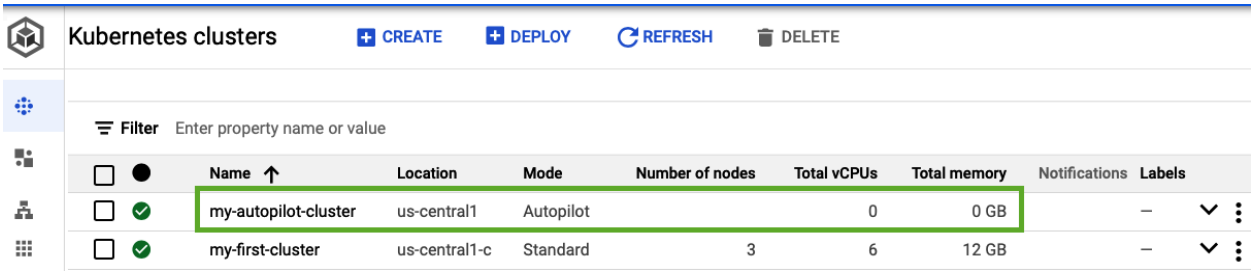
- (•) Public cluster
- ( ) Private cluster

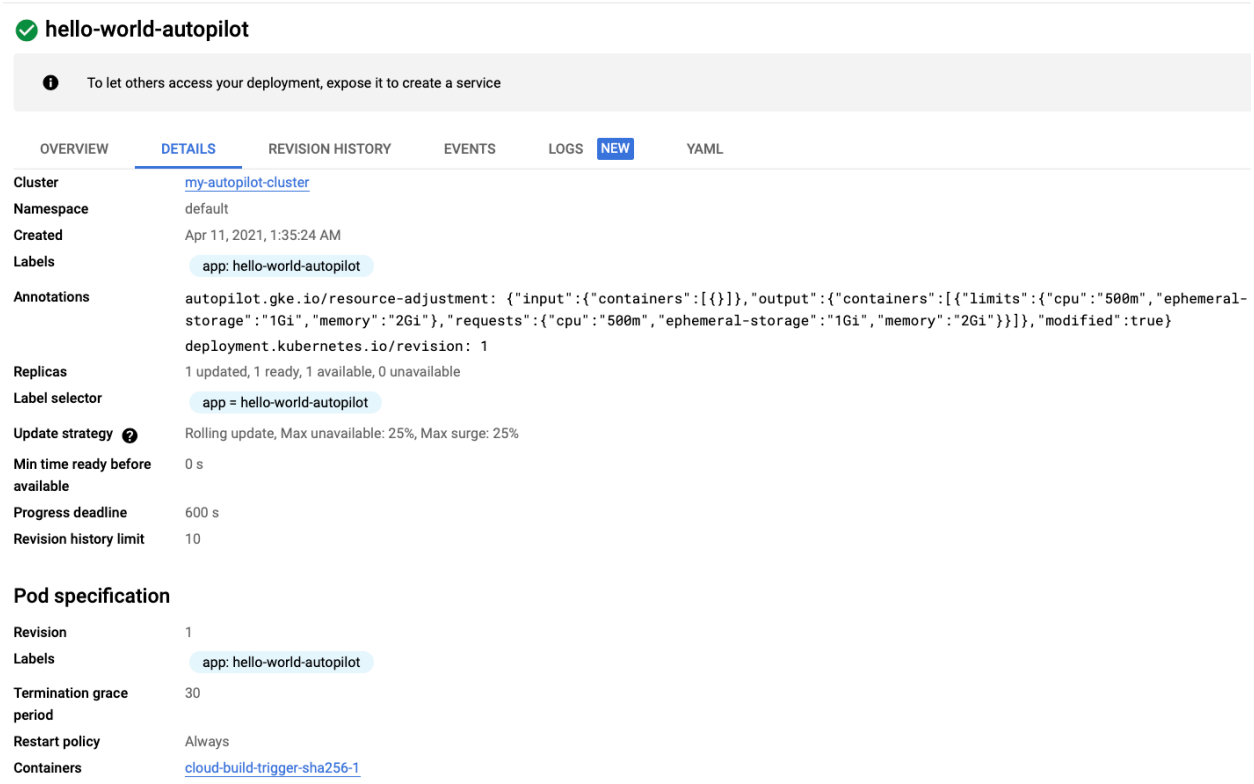
NETWORKING OPTIONS

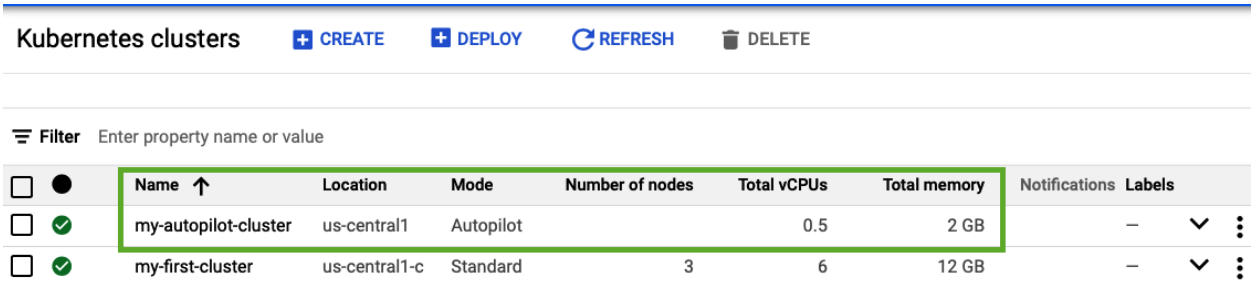
ADVANCED OPTIONS

Click **Create** to create the cluster with these settings turned on.

CREATE CANCEL


Kubernetes clusters
CREATE
DEPLOY
REFRESH
DELETE
Filter
Enter property name or value
Name
Location
Mode
Number of nodes
Total vCPUs
Total memory
Notifications
Labels
my-autopilot-cluster
us-central1
Autopilot
0
0 GB
–
my-first-cluster
us-central1-c
Standard
3
6
12 GB
–

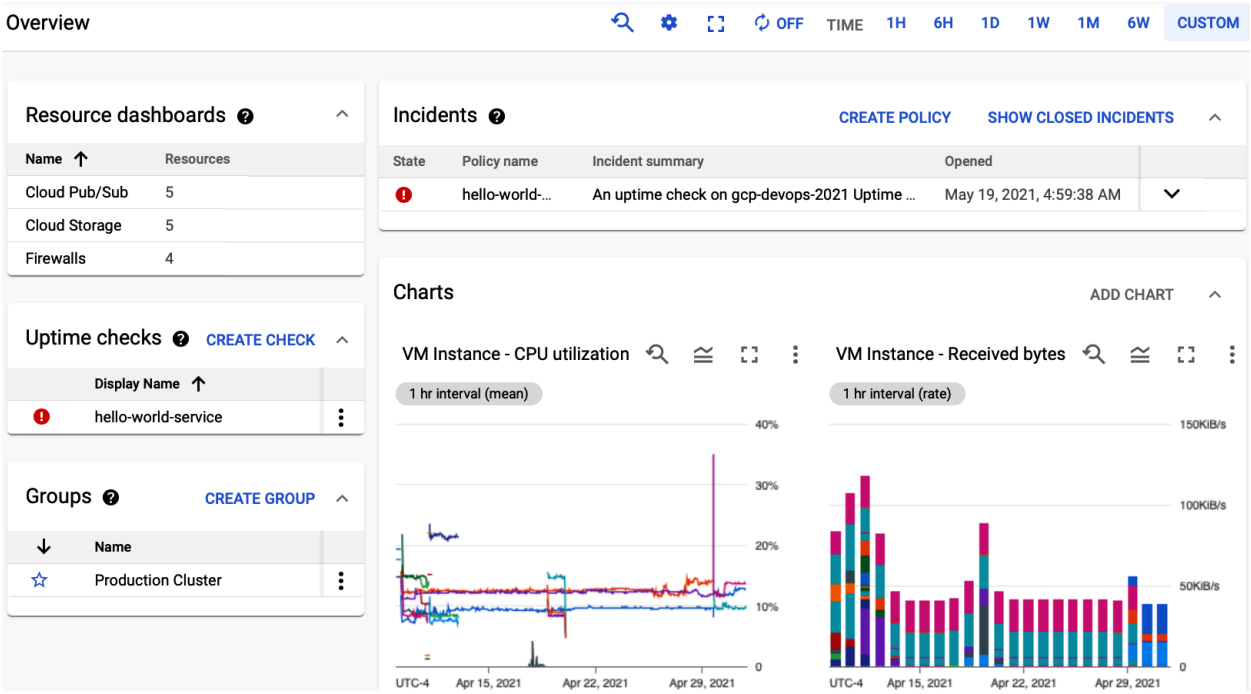

hello-world-autopilot
To let others access your deployment, expose it to create a service
OVERVIEW
DETAILS
REVISION HISTORY
EVENTS
LOGS
NEW
YAML
Cluster
my-autopilot-cluster
Namespace
default
Created
Apr 11, 2021, 1:35:24 AM
Labels
app: hello-world-autopilot
Annotations
autopilot.gke.io/resource-adjustment: {"input":{"containers":[{}]},"output":{"containers":[{"limits":{"cpu":"500m","ephemeral-storage":"1Gi","memory":"2Gi"},"requests":{"cpu":"500m","ephemeral-storage":"1Gi","memory":"2Gi"}}]},"modified":true}
deployment.kubernetes.io/revision: 1
Replicas
1 updated, 1 ready, 1 available, 0 unavailable
Label selector
app = hello-world-autopilot
Update strategy
Rolling update, Max unavailable: 25%, Max surge: 25%
Min time ready before available
0 s
Progress deadline
600 s
Revision history limit
10
Pod specification
Revision
1
Labels
app: hello-world-autopilot
Termination grace period
30
Restart policy
Always
Containers
cloud-build-trigger-sha256-1

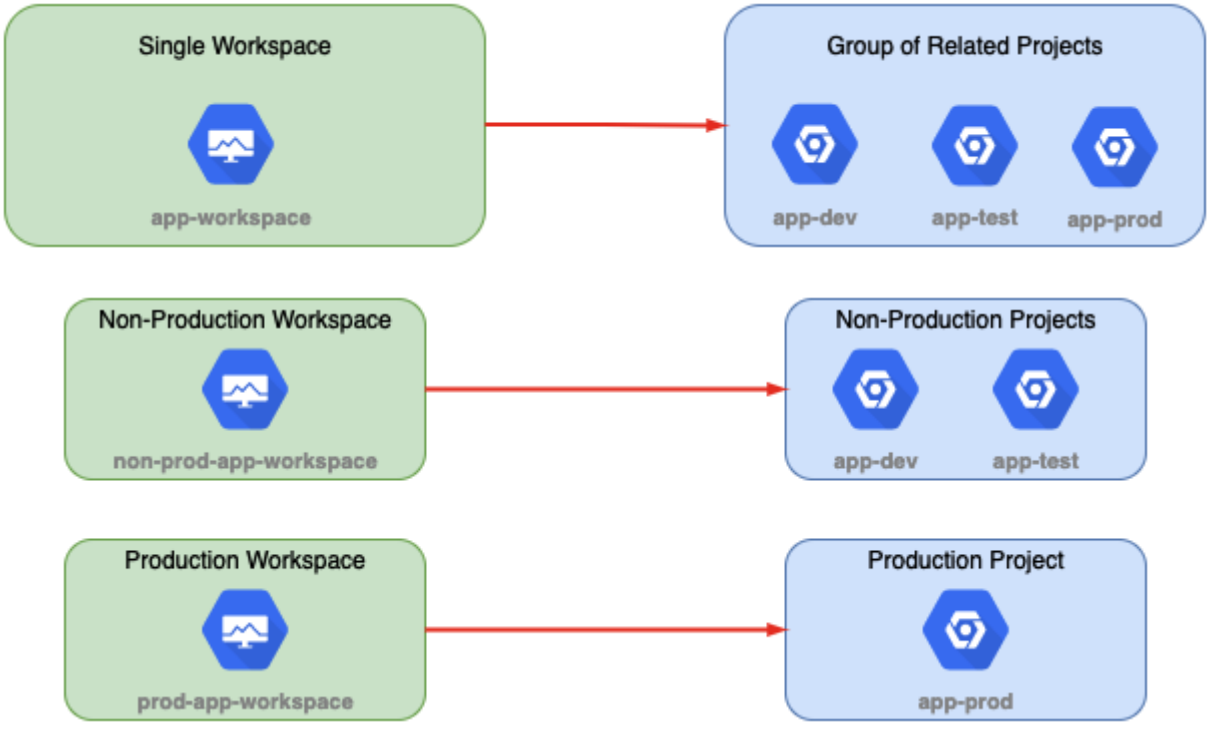

Kubernetes clusters
CREATE
DEPLOY
REFRESH
DELETE
Filter
Enter property name or value
Name
Location
Mode
Number of nodes
Total vCPUs
Total memory
Notifications
Labels
my-autopilot-cluster
us-central1
Autopilot
0.5
2 GB
–
my-first-cluster
us-central1-c
Standard
3
6
12 GB
–

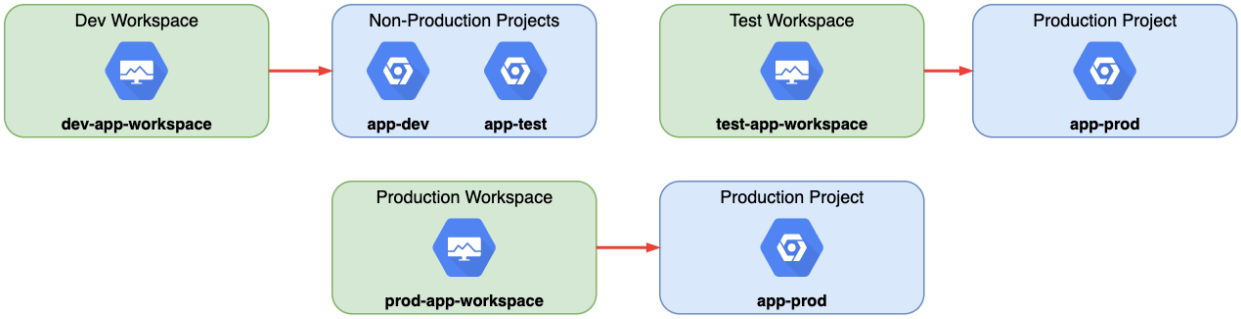
Chapter 9: Securing the Cluster Using GKE Security Constructs

No Images

Chapter 10: Exploring GCP Cloud Operations







Dashboards Overview

+ CREATE DASHBOARD BIGTABLE KEY VISUALIZER DASHBOARD TEMPLATES

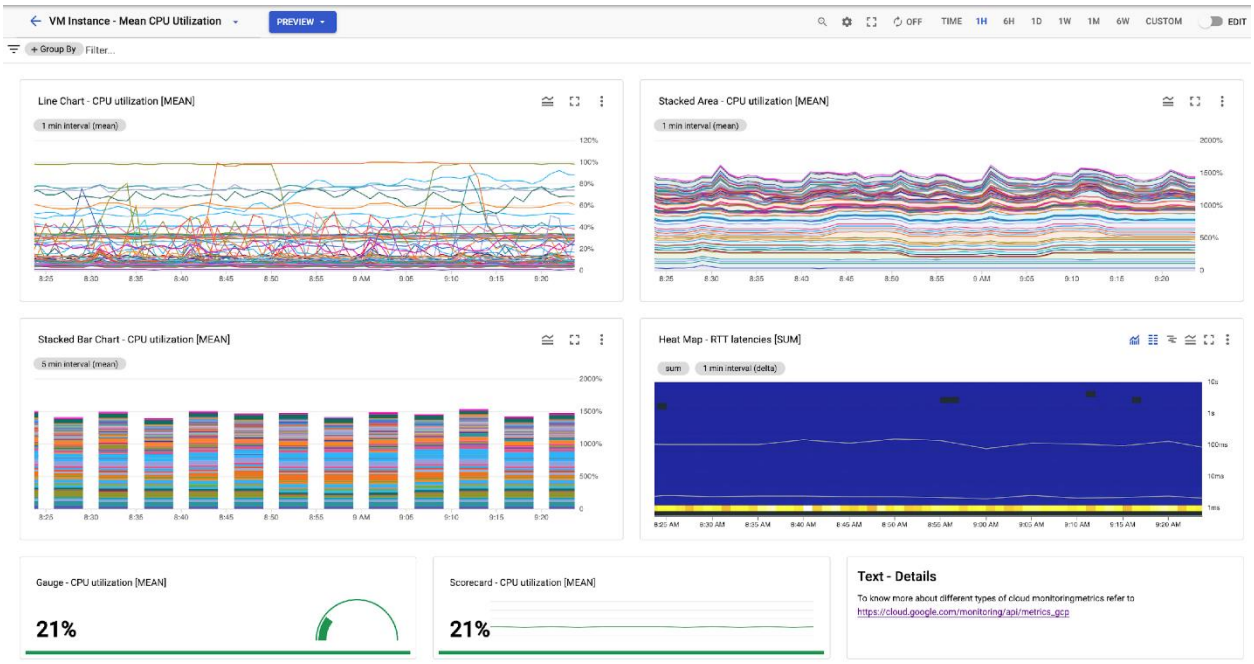
Recent Dashboards

My First Dashboard	**Production GCS Buckets**	**GKE**
Custom	Custom	Google Cloud Platform

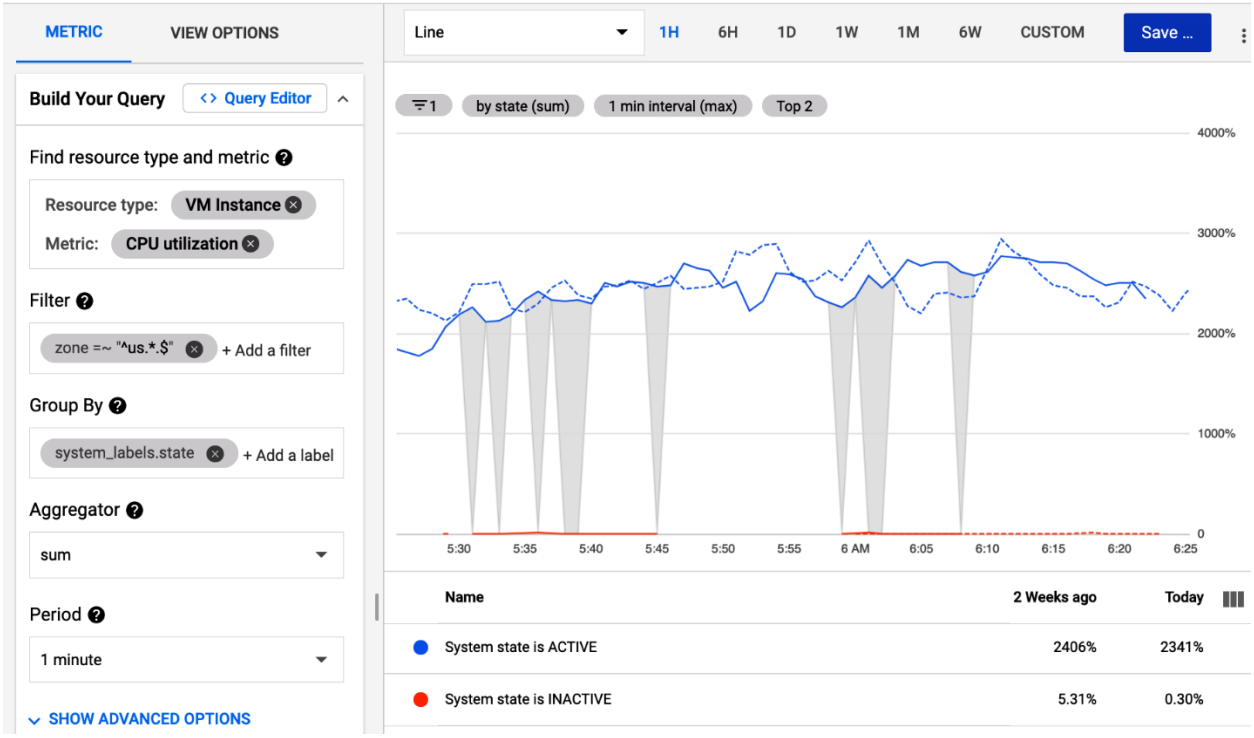
Filter Dashboards

	Name	Type
☆	My First Dashboard	Custom
☆	Production GCS Buckets	Custom
☆	Cloud Pub/Sub	Google Cloud Platform
☆	Cloud SQL	Google Cloud Platform
☆	Cloud Storage	Google Cloud Platform
☆	Disk Snapshots	Google Cloud Platform
☆	Disks	Google Cloud Platform
☆	Firewalls	Google Cloud Platform
☆	GKE	Google Cloud Platform
☆	GKE Clusters	Google Cloud Platform
☆	Google Cloud Load Balancers	Google Cloud Platform
☆	Infrastructure Summary	Google Cloud Platform
☆	VM Instances	Google Cloud Platform

Rows per page: 50 1 – 13 of 13



Metrics explorer



Title

Enter a name for the uptime check.

Title	hello-world-service

Target

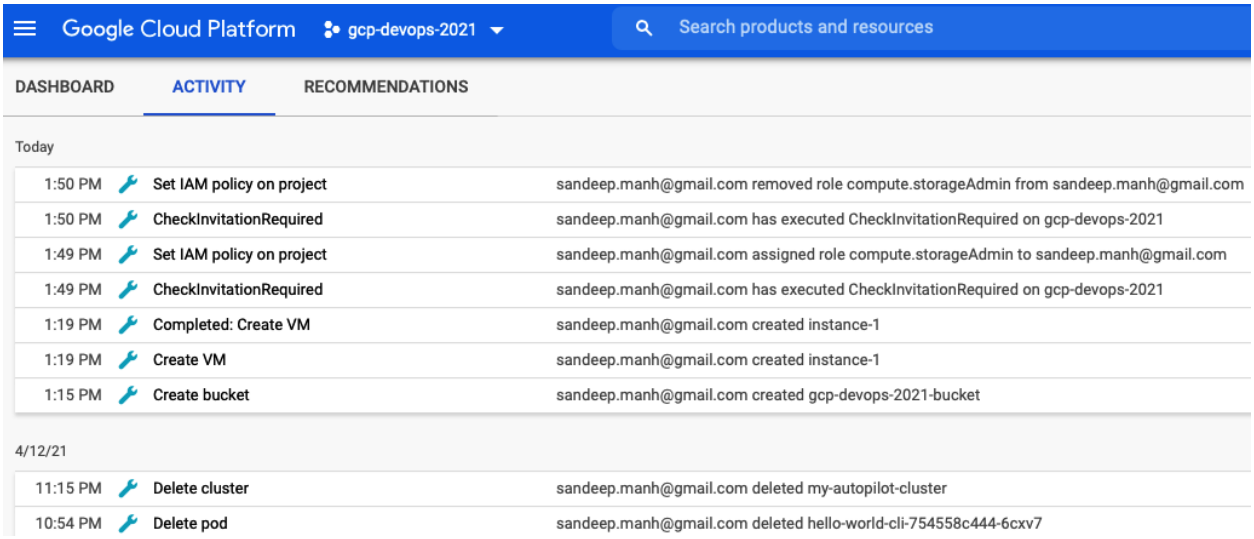
Select the resource to be monitored.

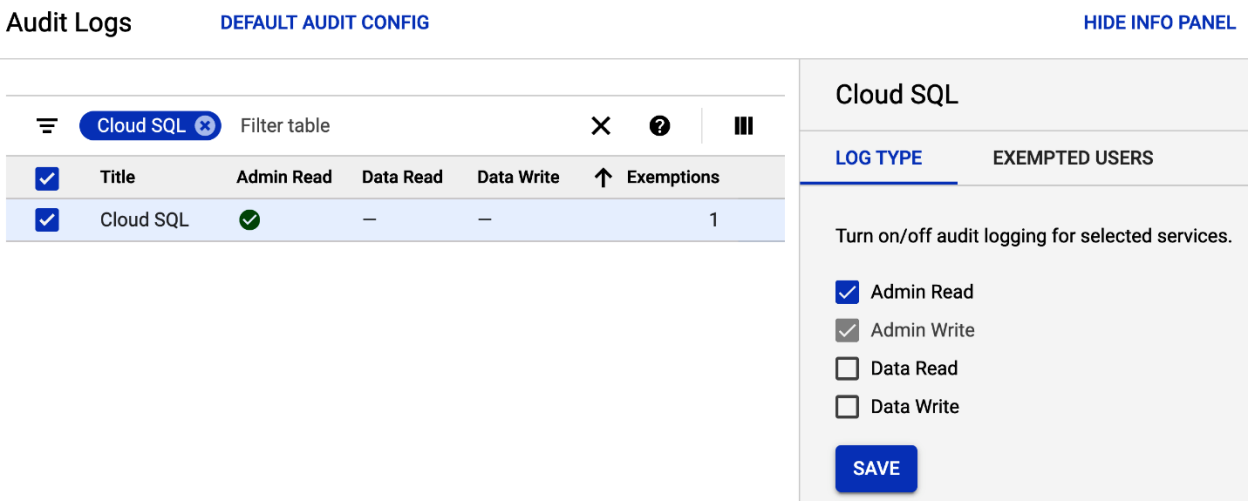
URL	http://35.222.101.201/
Check Frequency	1 minute
Regions	All Regions

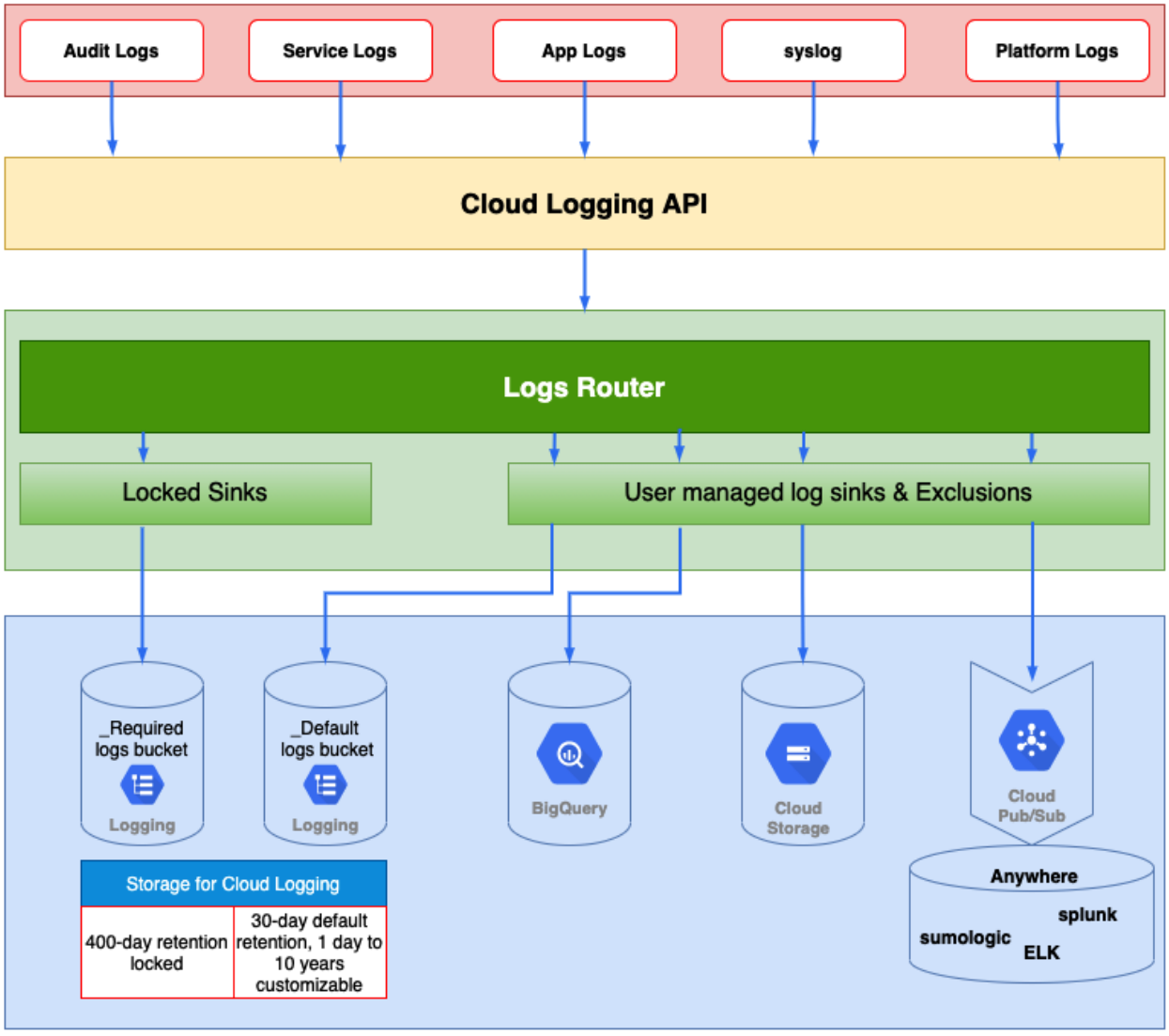
Response Validation

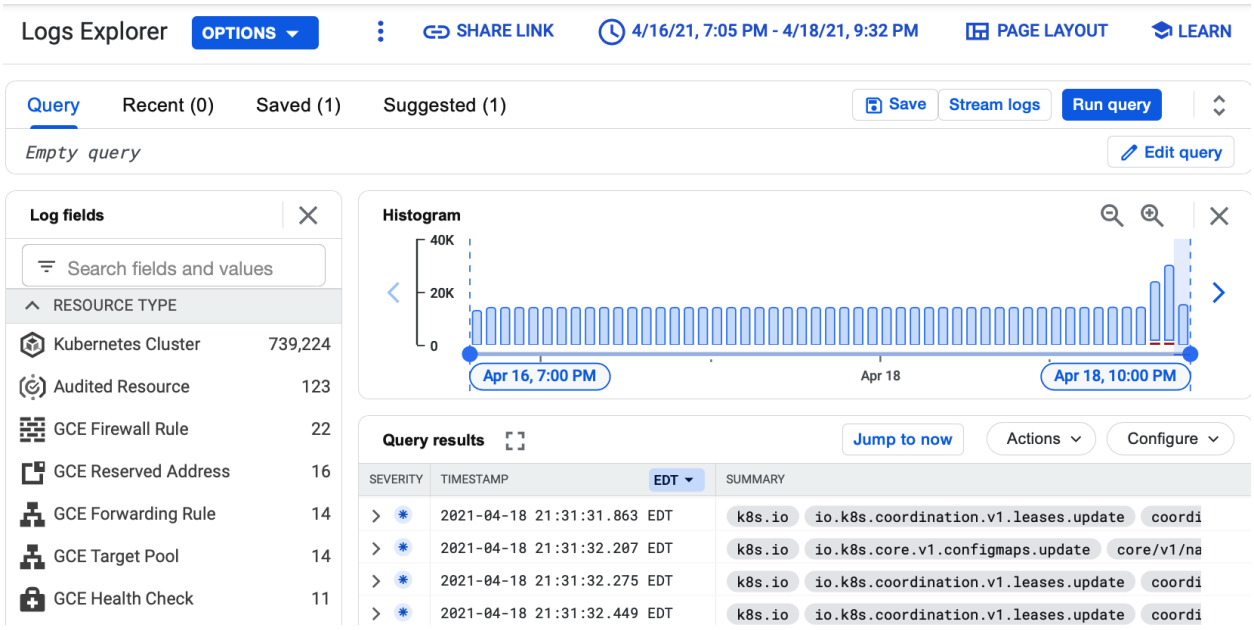
Specify data and how that data is to be compared to the actual response data.

Response Timeout	10s
Log Check Failures	true

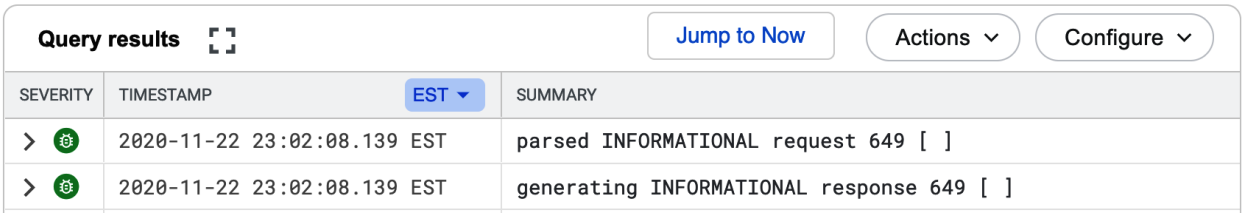



Audit Logs
DEFAULT AUDIT CONFIG
HIDE INFO PANEL
Cloud SQL
Filter table
Title
Admin Read
Data Read
Data Write
Exemptions
Cloud SQL
1
Cloud SQL
LOG TYPE
EXEMPTED USERS
Turn on/off audit logging for selected services.
Admin Read
Admin Write
Data Read
Data Write
SAVE


Audit Logs
Service Logs
App Logs
syslog
Platform Logs
Cloud Logging API
Logs Router
Locked Sinks
User managed log sinks & Exclusions
_Required logs bucket
Logging
_Default logs bucket
Logging
BigQuery
Cloud Storage
Cloud Pub/Sub
Anywhere
splunk
sumologic
ELK
Storage for Cloud Logging
400-day retention locked
30-day default retention, 1 day to 10 years customizable


Logs Explorer
OPTIONS
SHARE LINK
4/16/21, 7:05 PM - 4/18/21, 9:32 PM
PAGE LAYOUT
LEARN
Query
Recent (0)
Saved (1)
Suggested (1)
Save
Stream logs
Run query
Empty query
Edit query
Log fields
Search fields and values
RESOURCE TYPE
Kubernetes Cluster 739,224
Audited Resource 123
GCE Firewall Rule 22
GCE Reserved Address 16
GCE Forwarding Rule 14
GCE Target Pool 14
GCE Health Check 11
Histogram
40K
20K
0
Apr 16, 7:00 PM
Apr 18
Apr 18, 10:00 PM
Query results
Jump to now
Actions
Configure
SEVERITY
TIMESTAMP
EDT
SUMMARY
2021-04-18 21:31:31.863 EDT k8s.io io.k8s.coordination.v1.leases.update coordi
2021-04-18 21:31:32.207 EDT k8s.io io.k8s.core.v1.configmaps.update core/v1/na
2021-04-18 21:31:32.275 EDT k8s.io io.k8s.coordination.v1.leases.update coordi
2021-04-18 21:31:32.449 EDT k8s.io io.k8s.coordination.v1.leases.update coordi

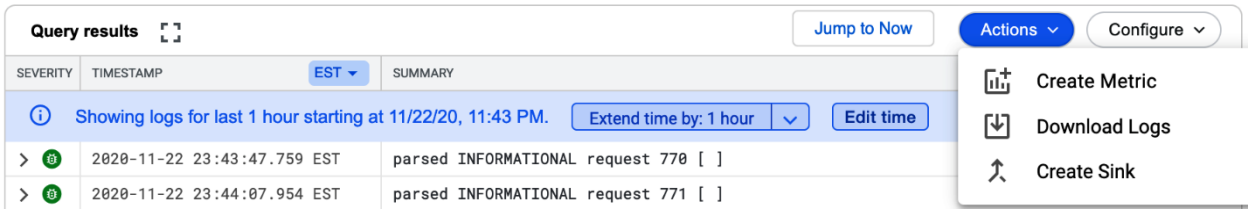

Logs Explorer
OPTIONS
SHARE LINK
LAST 1 HOUR
PAGE LAYOUT
LEARN
Query builder
Recent (17)
Saved (2)
Suggested (7)
Save
Stream logs
Run Query
Resource
Log name
Severity
1 resource.type="vpn_gateway" resource.labels.gateway_id="7700820814318317751"

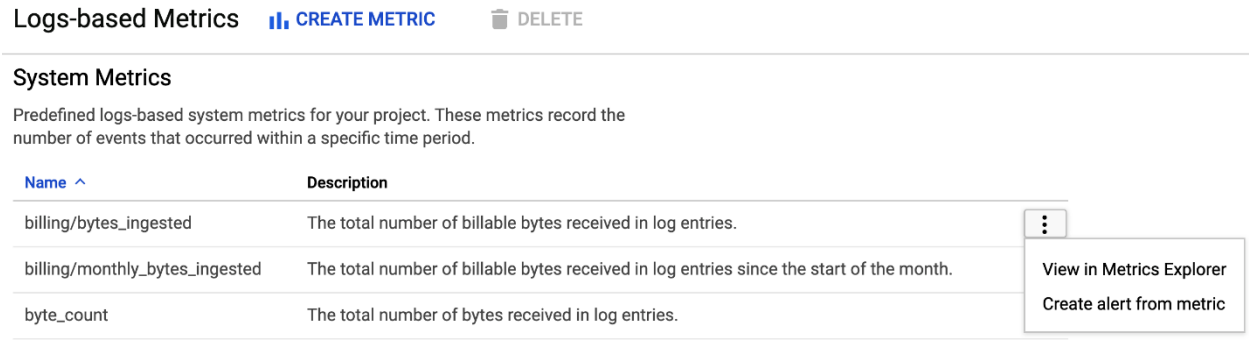

Query results
Jump to Now
Actions
Configure
SEVERITY
TIMESTAMP
EST
SUMMARY
2020-11-22 23:02:08.139 EST parsed INFORMATIONAL request 649 [ ]
2020-11-22 23:02:08.139 EST generating INFORMATIONAL response 649 [ ]

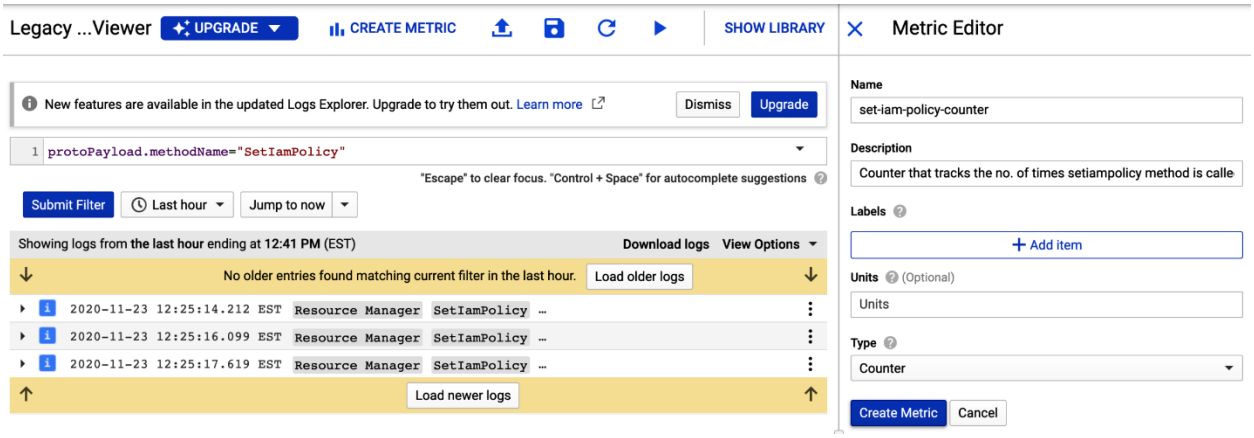

Query results
Jump to Now
Actions
Configure
SEVERITY
TIMESTAMP
EST
SUMMARY
2020-11-22 23:02:08.139 EST parsed INFORMATIONAL request 649 [ ]
Hide log summary
Expand nested fields
Copy to clipboard
Copy link
{
textPayload:
"parsed INFORMATIONAL request 649 [ ]"
insertId: "1pvyxf9fxwtmqg"
resource: {2}
timestamp: "2020-11-23T04:02:08.139768215Z"
severity: "DEBUG"
labels: {1}
logName: "projects/ma-supply-chain-rd-dm/logs/cloud.googleapis.com%2Fipsec_events"
receiveTimestamp: "2020-11-23T04:02:08.188532743Z"
}

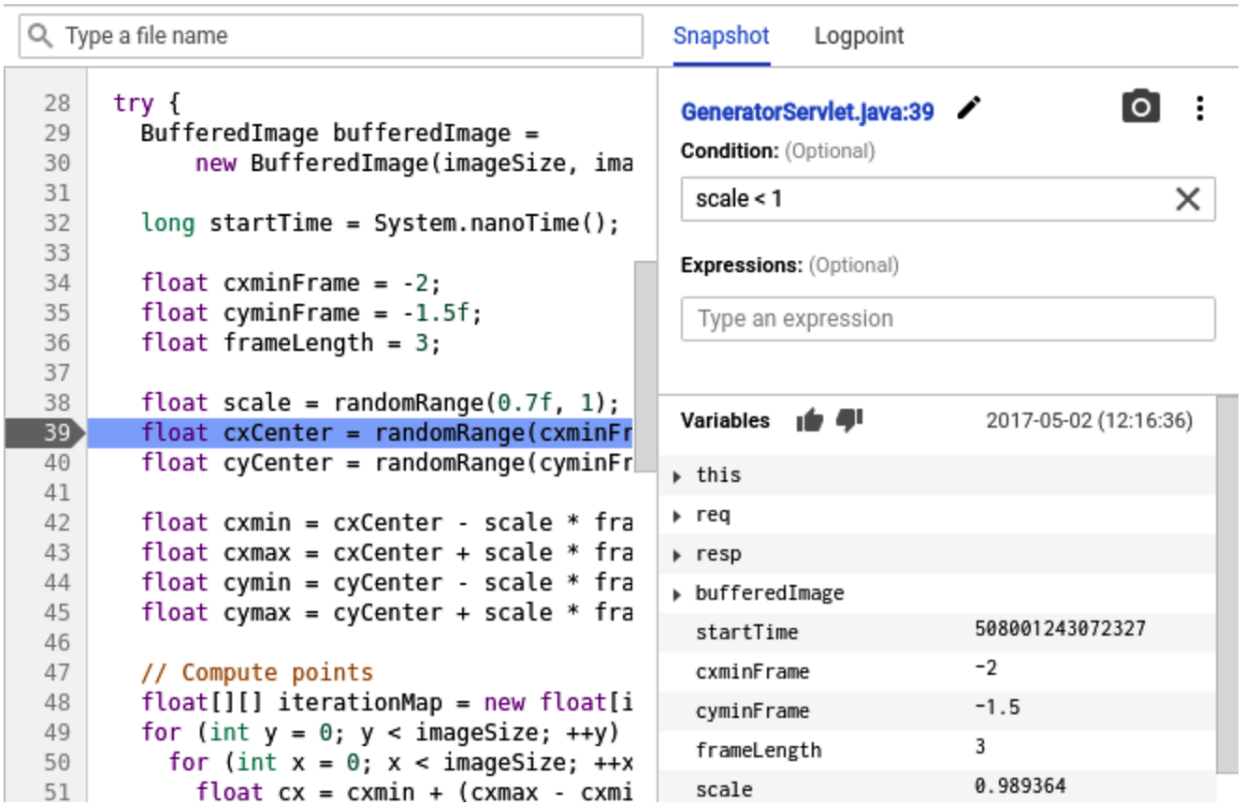

parsed INFORMATIONAL request 1249 [ ]
Show matching entries
Hide matching entries
Add field to summary line
Hide log summary
Expand nested fields
Copy to clipboard
Copy link
textPayloa
request 1249 [ ]"
insertId:
resource:
timestamp:
1542756Z"
severity: "DEBUG"
labels: {1}

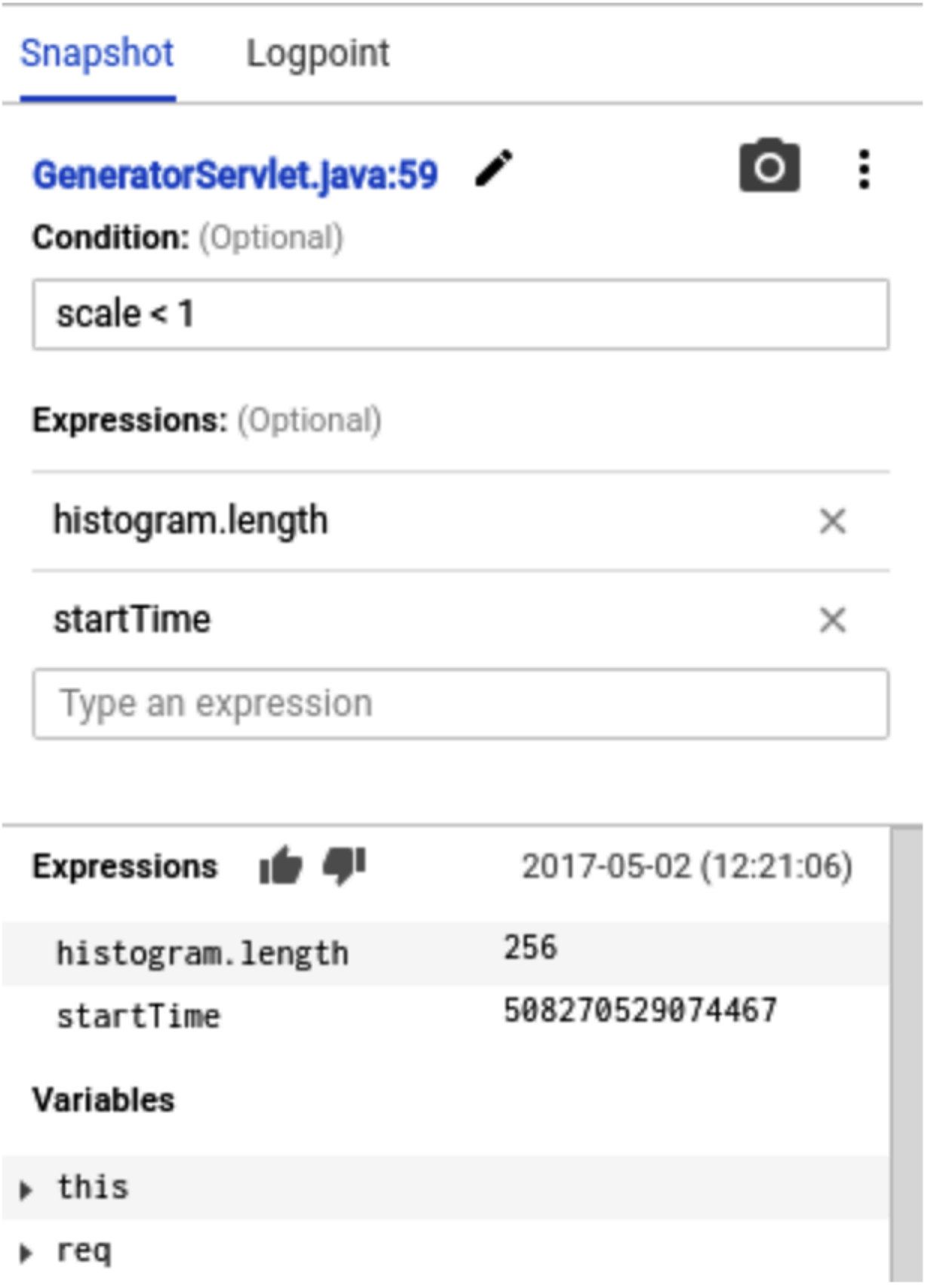

Logs Explorer
OPTIONS
REFINE SCOPE
Project
SHARE LINK
LAST 1 HOUR
PAGE LAYOUT
LEARN
Query builder
Recent (17)
Saved (2)
Suggested (7)
Save
Resource
Log name
Severity
1 resource.type="vpn_gateway" resource.labels.gateway_id="7700820814318317751"
2 textPayload=~"parsed INFORMATIONAL"
Query builder
Log fields
Histogram
Query results

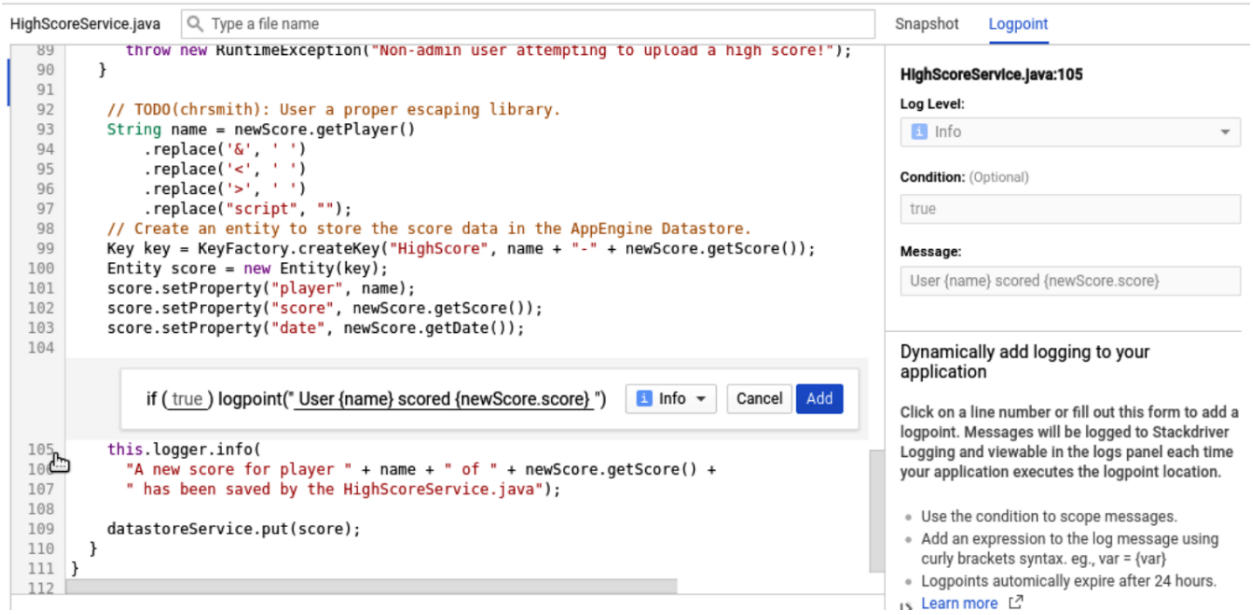

Query results
Jump to Now
Actions
Configure
SEVERITY
TIMESTAMP
EST
SUMMARY
Showing logs for last 1 hour starting at 11/22/20, 11:43 PM.
Extend time by: 1 hour
Edit time
2020-11-22 23:43:47.759 EST
parsed INFORMATIONAL request 770 [ ]
2020-11-22 23:44:07.954 EST
parsed INFORMATIONAL request 771 [ ]
Create Metric
Download Logs
Create Sink

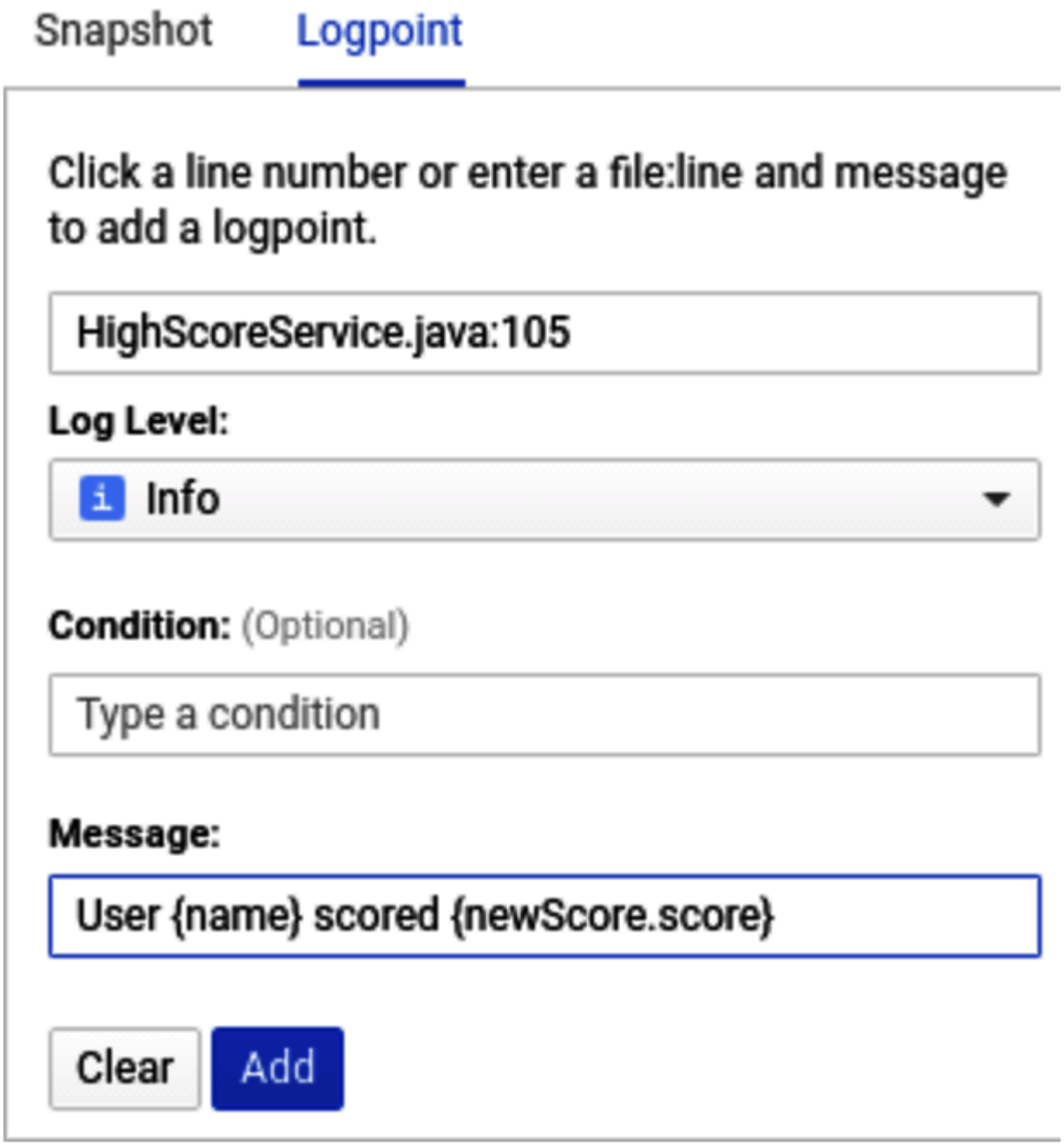

Logs-based Metrics
CREATE METRIC
DELETE
System Metrics
Predefined logs-based system metrics for your project. These metrics record the number of events that occurred within a specific time period.
Name
Description
billing/bytes_ingested
The total number of billable bytes received in log entries.
billing/monthly_bytes_ingested
The total number of billable bytes received in log entries since the start of the month.
byte_count
The total number of bytes received in log entries.
View in Metrics Explorer
Create alert from metric

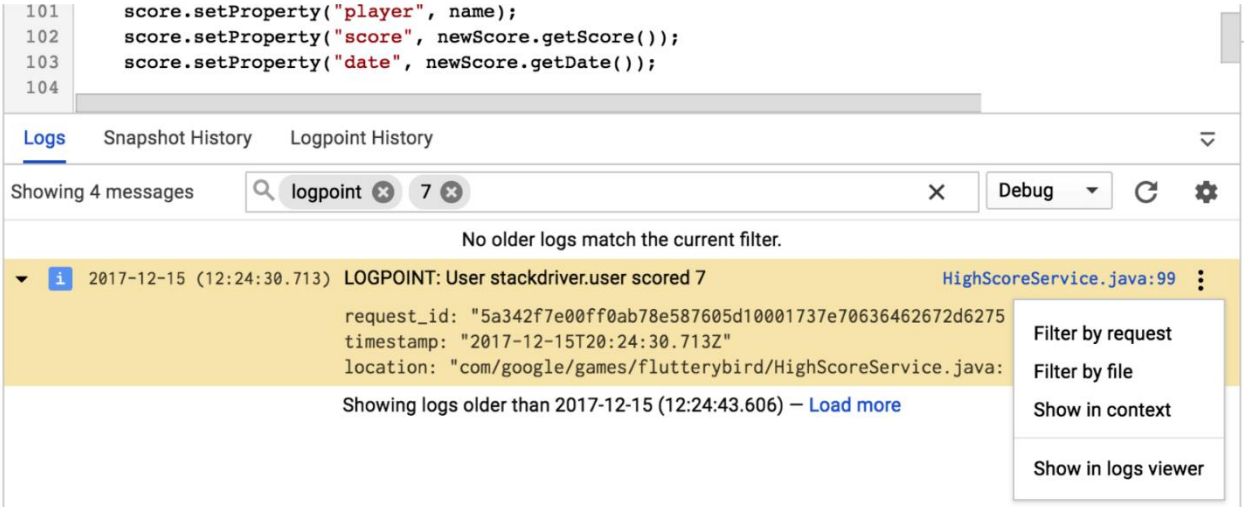

Legacy ...Viewer
UPGRADE
CREATE METRIC
SHOW LIBRARY
New features are available in the updated Logs Explorer. Upgrade to try them out. Learn more
Dismiss
Upgrade
1 protoPayload.methodName="SetIamPolicy"
"Escape" to clear focus. "Control + Space" for autocomplete suggestions
Submit Filter
Last hour
Jump to now
Showing logs from the last hour ending at 12:41 PM (EST)
Download logs
View Options
No older entries found matching current filter in the last hour.
Load older logs
2020-11-23 12:25:14.212 EST Resource Manager SetIamPolicy ...
2020-11-23 12:25:16.099 EST Resource Manager SetIamPolicy ...
2020-11-23 12:25:17.619 EST Resource Manager SetIamPolicy ...
Load newer logs
Metric Editor
Name
set-iam-policy-counter
Description
Counter that tracks the no. of times setiampolicy method is calle
Labels
+ Add item
Units (Optional)
Units
Type
Counter
Create Metric
Cancel

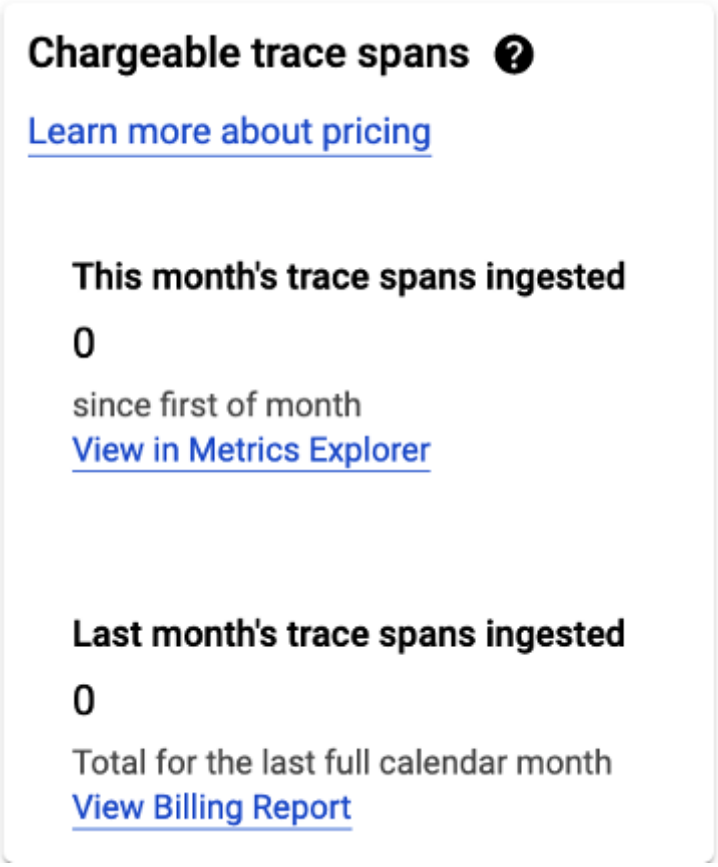

Type a file name
Snapshot
Logpoint
28 try {
29 BufferedImage bufferedImage =
30 new BufferedImage(imageSize, ima
31
32 long startTime = System.nanoTime();
33
34 float cxminFrame = -2;
35 float cyminFrame = -1.5f;
36 float frameLength = 3;
37
38 float scale = randomRange(0.7f, 1);
39 float cxCenter = randomRange(cxminFr
40 float cyCenter = randomRange(cyminFr
41
42 float cxmin = cxCenter - scale * fra
43 float cxmax = cxCenter + scale * fra
44 float cymin = cyCenter - scale * fra
45 float cymax = cyCenter + scale * fra
46
47 // Compute points
48 float[][] iterationMap = new float[i
49 for (int y = 0; y < imageSize; ++y)
50 for (int x = 0; x < imageSize; ++x
51 float cx = cxmin + (cxmax - cxmi
GeneratorServlet.java:39
Condition: (Optional)
scale < 1
Expressions: (Optional)
Type an expression
Variables
2017-05-02 (12:16:36)
this
req
resp
bufferedImage
startTime 508001243072327
cxminFrame -2
cyminFrame -1.5
frameLength 3
scale 0.989364

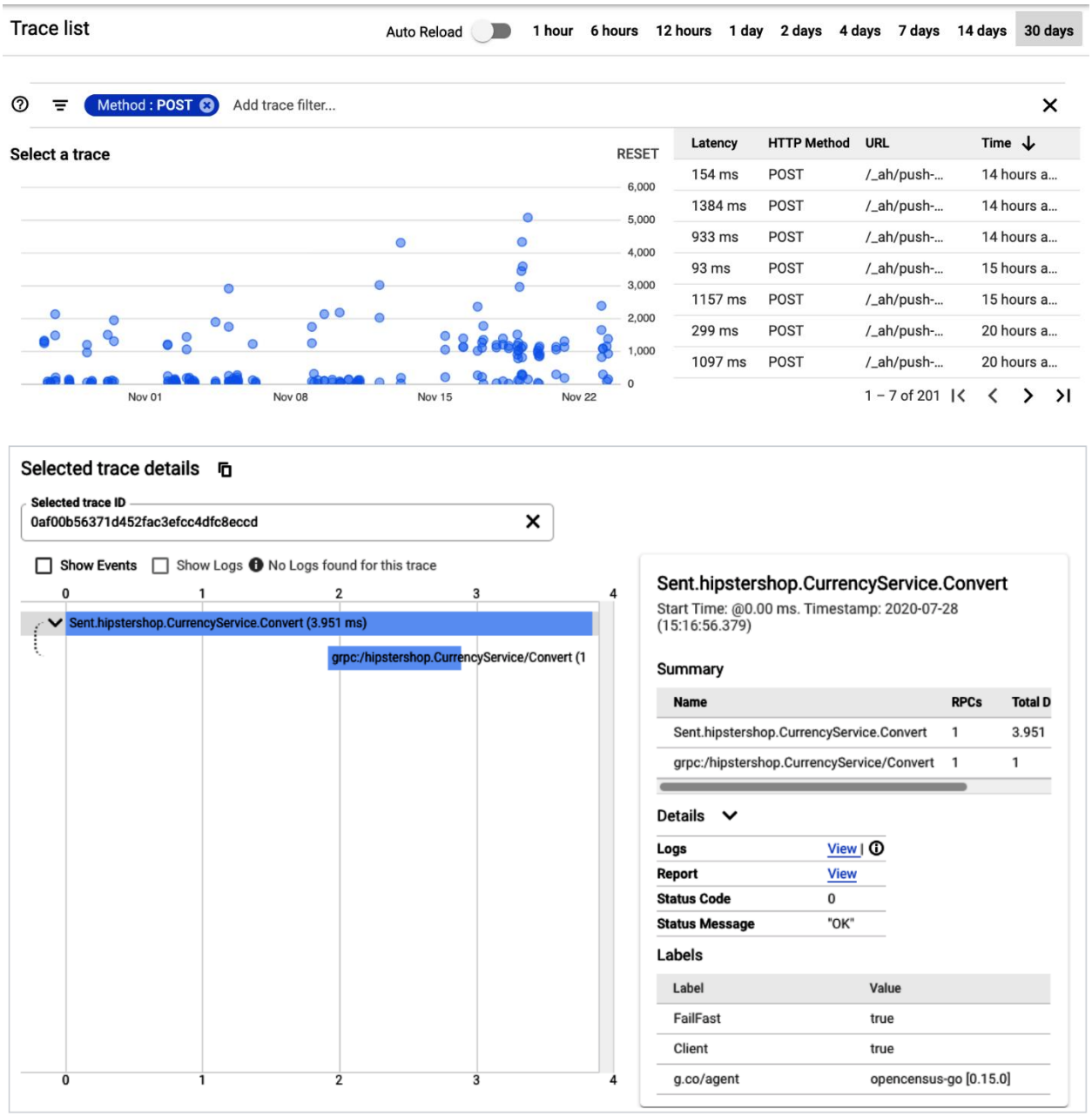

Snapshot
Logpoint
GeneratorServlet.java:59
Condition: (Optional)
scale < 1
Expressions: (Optional)
histogram.length
startTime
Type an expression
Expressions
2017-05-02 (12:21:06)
histogram.length 256
startTime 5082705290744 67
Variables
this
req


HighScoreService.java
Type a file name
Snapshot
Logpoint
throw new RuntimeException("Non-admin user attempting to upload a high score!");
}
// TODO(chrsmith): User a proper escaping library.
String name = newScore.getPlayer()
.replace('&', ' ')
.replace('<', ' ')
.replace('>', ' ')
.replace("script", "");
// Create an entity to store the score data in the AppEngine Datastore.
Key key = KeyFactory.createKey("HighScore", name + "-" + newScore.getScore());
Entity score = new Entity(key);
score.setProperty("player", name);
score.setProperty("score", newScore.getScore());
score.setProperty("date", newScore.getDate());
if (true) logpoint(" User {name} scored {newScore.score} ")
Info
Cancel
Add
this.logger.info(
"A new score for player " + name + " of " + newScore.getScore() +
" has been saved by the HighScoreService.java");
datastoreService.put(score);
}
}
HighScoreService.java:105
Log Level:
Info
Condition: (Optional)
true
Message:
User {name} scored {newScore.score}
Dynamically add logging to your application
Click on a line number or fill out this form to add a logpoint. Messages will be logged to Stackdriver Logging and viewable in the logs panel each time your application executes the logpoint location.
Use the condition to scope messages.
Add an expression to the log message using curly brackets syntax. eg., var = {var}
Logpoints automically expire after 24 hours.
Learn more

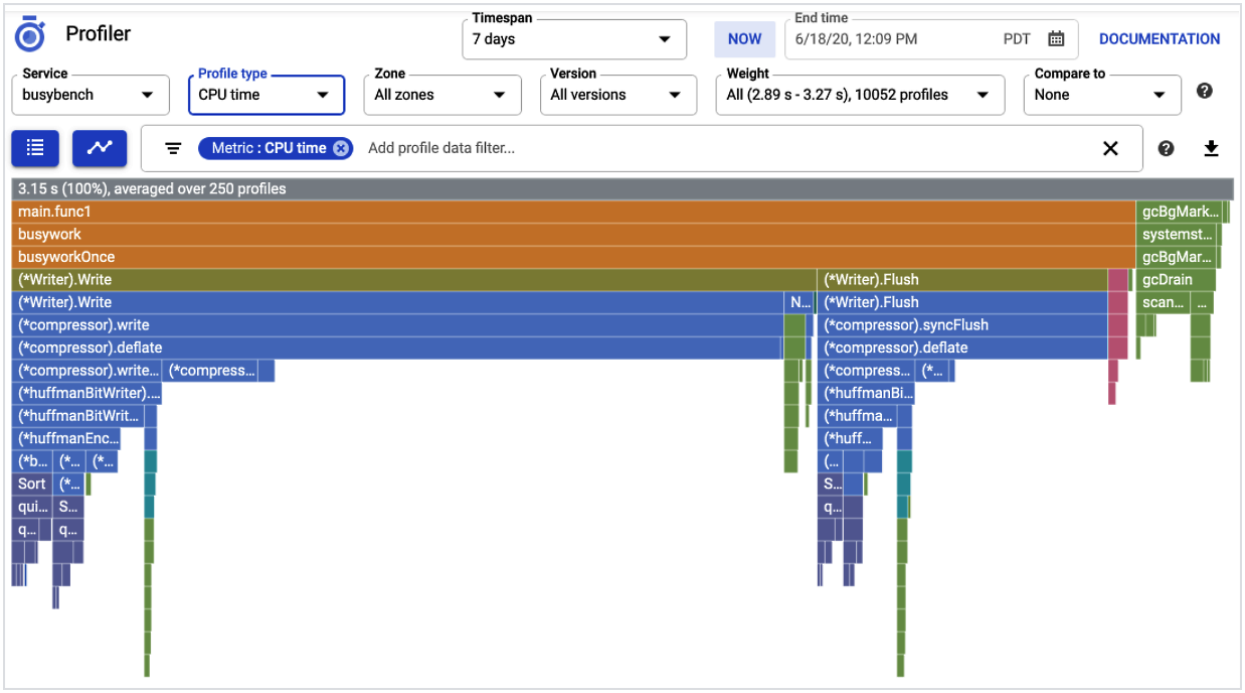

Snapshot
Logpoint
Click a line number or enter a file:line and message to add a logpoint.
HighScoreService.java:105
Log Level:
Info
Condition: (Optional)
Type a condition
Message:
User {name} scored {newScore.score}
Clear
Add


score.setProperty("player", name);
score.setProperty("score", newScore.getScore());
score.setProperty("date", newScore.getDate());
Logs
Snapshot History
Logpoint History
Showing 4 messages
logpoint
7
Debug
No older logs match the current filter.
2017-12-15 (12:24:30.713) LOGPOINT: User stackdriver.user scored 7
HighScoreService.java:99
request_id: "5a342f7e00ff0ab78e587605d10001737e70636462672d6275
timestamp: "2017-12-15T20:24:30.713Z"
location: "com/google/games/flutterybird/HighScoreService.java:
Showing logs older than 2017-12-15 (12:24:43.606) – Load more
Filter by request
Filter by file
Show in context
Show in logs viewer


Chargeable trace spans
Learn more about pricing
This month's trace spans ingested
0
since first of month
View in Metrics Explorer
Last month's trace spans ingested
0
Total for the last full calendar month
View Billing Report


Trace list
Auto Reload
1 hour
6 hours
12 hours
1 day
2 days
4 days
7 days
14 days
30 days
Method : POST
Add trace filter...
Select a trace
RESET
6,000
5,000
4,000
3,000
2,000
1,000
0
Nov 01
Nov 08
Nov 15
Nov 22
Latency
HTTP Method
URL
Time
154 ms POST /_ah/push-... 14 hours a...
1384 ms POST /_ah/push-... 14 hours a...
933 ms POST /_ah/push-... 14 hours a...
93 ms POST /_ah/push-... 15 hours a...
1157 ms POST /_ah/push-... 15 hours a...
299 ms POST /_ah/push-... 20 hours a...
1097 ms POST /_ah/push-... 20 hours a...
1 – 7 of 201
Selected trace details
Selected trace ID
0af00b56371d452fac3efcc4dfc8eccd
Show Events
Show Logs
No Logs found for this trace
0
1
2
3
4
Sent.hipstershop.CurrencyService.Convert (3.951 ms)
grpc:/hipstershop.CurrencyService/Convert (1
Sent.hipstershop.CurrencyService.Convert
Start Time: @0.00 ms. Timestamp: 2020-07-28 (15:16:56.379)
Summary
Name
RPCs
Total D
Sent.hipstershop.CurrencyService.Convert 1 3.951
grpc:/hipstershop.CurrencyService/Convert 1 1
Details
Logs View
Report View
Status Code 0
Status Message "OK"
Labels
Label
Value
FailFast true
Client true
g.co/agent opencensus-go [0.15.0]

Profile type	Go	Java	Node.js	Python
CPU time	Y	Y		Y
Heap	Y	Y	Y	
Allocated heap	Y			
Contention	Y			
Threads	Y			
Wall time		Y	Y	Y



Define a custom service

SEND FEEDBACK LEARN MORE

Define a custom service by selecting a GKE entity from the list below. Services are a monitoring construct to enable better observability. No code changes are required to enable this feature.

Select a GKE entity

Filter Enter property name or value

Name	Type	Labels
default	Namespace	project_id: gcp-devops-2021 location: us-central1-c cluster: my-first-cluster
hello-world	Deployment	project_id: gcp-devops-2021 location: us-central1-c cluster: my-first-cluster
hello-world-cli	Deployment	project_id: gcp-devops-2021 location: us-central1-c cluster: my-first-cluster
hello-world-cli-service	Kubernetes Service	project_id: gcp-devops-2021 location: us-central1-c cluster: my-first-cluster
hello-world-service	Kubernetes Service	project_id: gcp-devops-2021 location: us-central1-c cluster: my-first-cluster

1. **Set your service-level indicator (SLI)**
   Choose the aspect of service health for which you want to set a performance goal
2. **Define SLI details**
   Specify more details for the metric you've chosen
3. **Set your service-level objective (SLO)**
   Set targets for how well your service should perform
4. **Review and save**
   Review details and name your SLO

Set your SLI

First, choose the aspect of service health for which you want to set a performance goal. This is used to calculate the service level indicator, or SLI, because it indicates how your service is performing for your users.

Service details

NAME	TYPE	LABELS
hello-world-service-1	Custom	GKE: Kubernetes Service, project_id: gcp-devops-2021, location: us-central1-c, cluster: my-first-cluster, namespace: default, service: hello-world-service

Default availability and latency metrics are not available for custom services. You can configure your own custom availability or latency SLI using the "other metric" option.

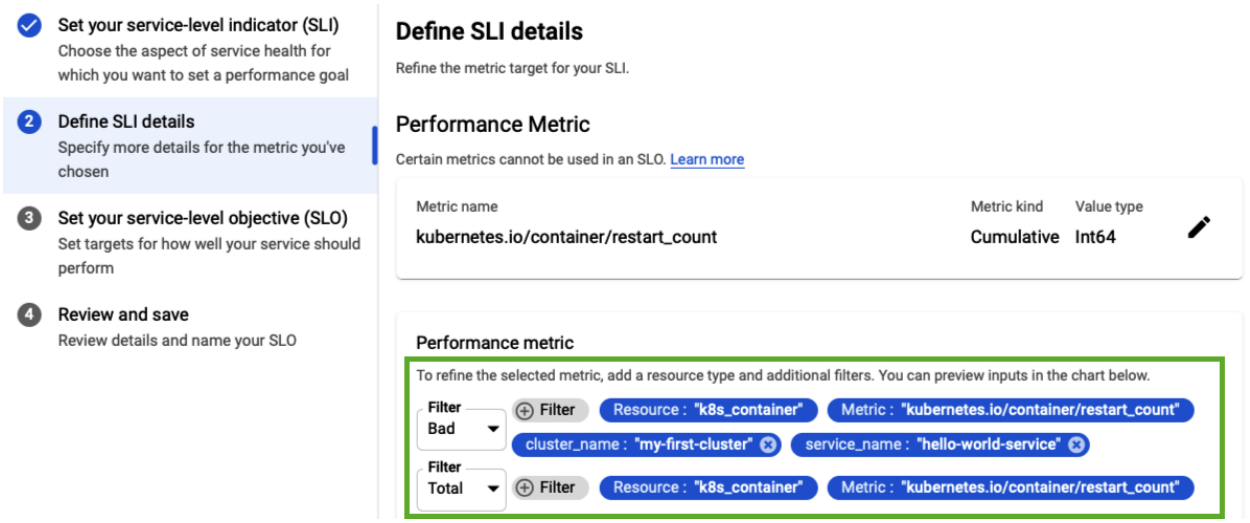
Choose a metric

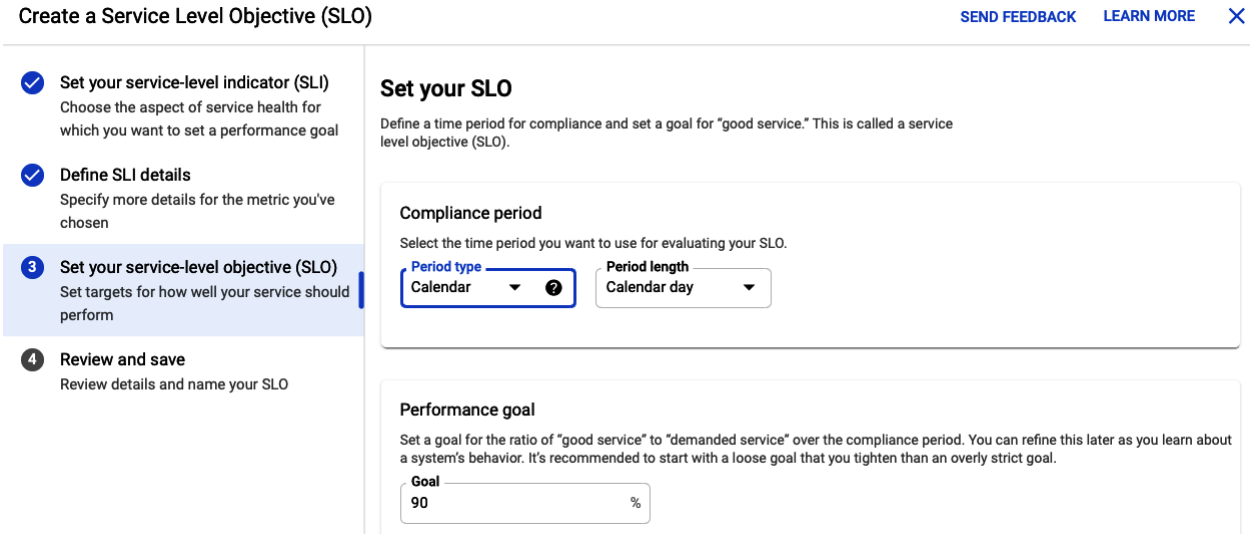
- ○ Availability
  Measures how available your service was to users. You'll get a metric related to how many requests were successful within a time period that you define.
- ○ Latency
  Measures how quickly your service responded to users. You'll get a metric related to how many responses were faster than a threshold that you define.
- ◉ **Other** (advanced)
  Configure your own metrics to measure the performance of your service.

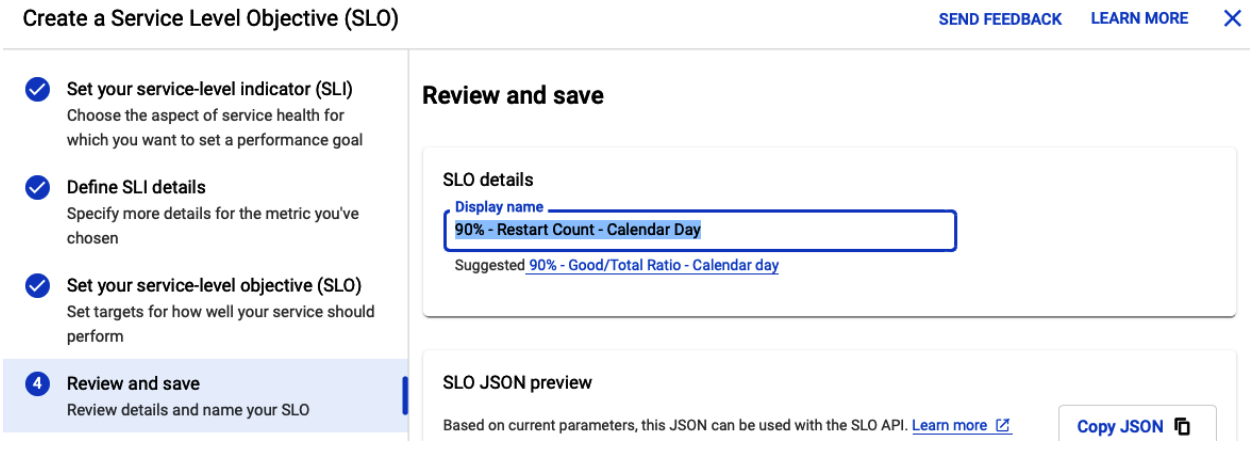
Request-based or windows-based?

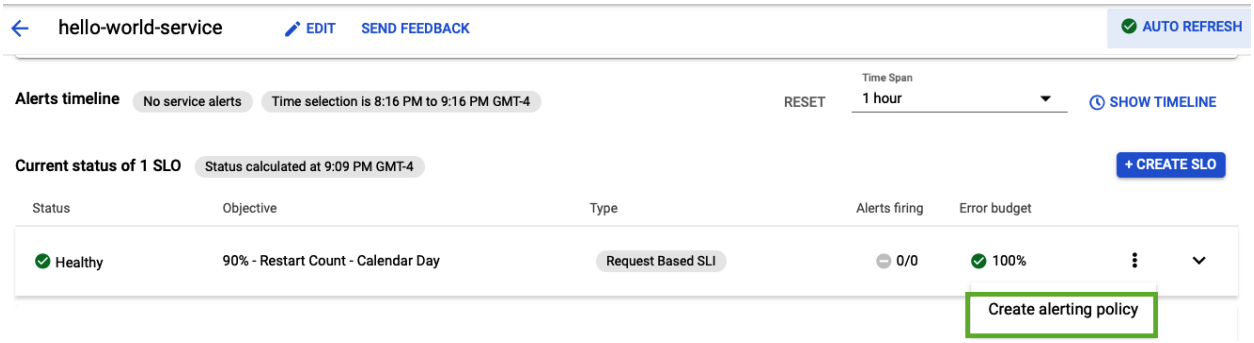
The method of evaluation you choose will affect how compliance is measured

- ◉ **Request-based**
  Counts individual events. This lets you know how well your service performed over the entire compliance period, no matter how the load was distributed.
- ○ **Windows-based** (advanced)
  Counts "good minutes" versus "bad minutes" according to criteria you define. This lets you measure performance in terms of time, regardless of how load is distributed.


Set your service-level indicator (SLI)
Choose the aspect of service health for which you want to set a performance goal
2 Define SLI details
Specify more details for the metric you've chosen
3 Set your service-level objective (SLO)
Set targets for how well your service should perform
4 Review and save
Review details and name your SLO
Define SLI details
Refine the metric target for your SLI.
Performance Metric
Certain metrics cannot be used in an SLO. Learn more
Metric name
kubernetes.io/container/restart_count
Metric kind
Cumulative
Value type
Int64
Performance metric
To refine the selected metric, add a resource type and additional filters. You can preview inputs in the chart below.
Filter
Bad
Filter
Resource : "k8s_container"
Metric : "kubernetes.io/container/restart_count"
cluster_name : "my-first-cluster"
service_name : "hello-world-service"
Filter
Total
Filter
Resource : "k8s_container"
Metric : "kubernetes.io/container/restart_count"


Create a Service Level Objective (SLO)
SEND FEEDBACK
LEARN MORE
Set your service-level indicator (SLI)
Choose the aspect of service health for which you want to set a performance goal
Define SLI details
Specify more details for the metric you've chosen
3 Set your service-level objective (SLO)
Set targets for how well your service should perform
4 Review and save
Review details and name your SLO
Set your SLO
Define a time period for compliance and set a goal for "good service." This is called a service level objective (SLO).
Compliance period
Select the time period you want to use for evaluating your SLO.
Period type
Calendar
Period length
Calendar day
Performance goal
Set a goal for the ratio of "good service" to "demanded service" over the compliance period. You can refine this later as you learn about a system's behavior. It's recommended to start with a loose goal that you tighten than an overly strict goal.
Goal
90
%


Create a Service Level Objective (SLO)
SEND FEEDBACK
LEARN MORE
Set your service-level indicator (SLI)
Choose the aspect of service health for which you want to set a performance goal
Define SLI details
Specify more details for the metric you've chosen
Set your service-level objective (SLO)
Set targets for how well your service should perform
4 Review and save
Review details and name your SLO
Review and save
SLO details
Display name
90% - Restart Count - Calendar Day
Suggested 90% - Good/Total Ratio - Calendar day
SLO JSON preview
Based on current parameters, this JSON can be used with the SLO API. Learn more
Copy JSON



Create SLO burn rate alert policy

1 Set SLO alert conditions

Creating an alert condition on your service-level objectives (SLOs) will let you know whether you are in danger of violating an SLO.

Target: 90% - Restart Count - Calendar Day

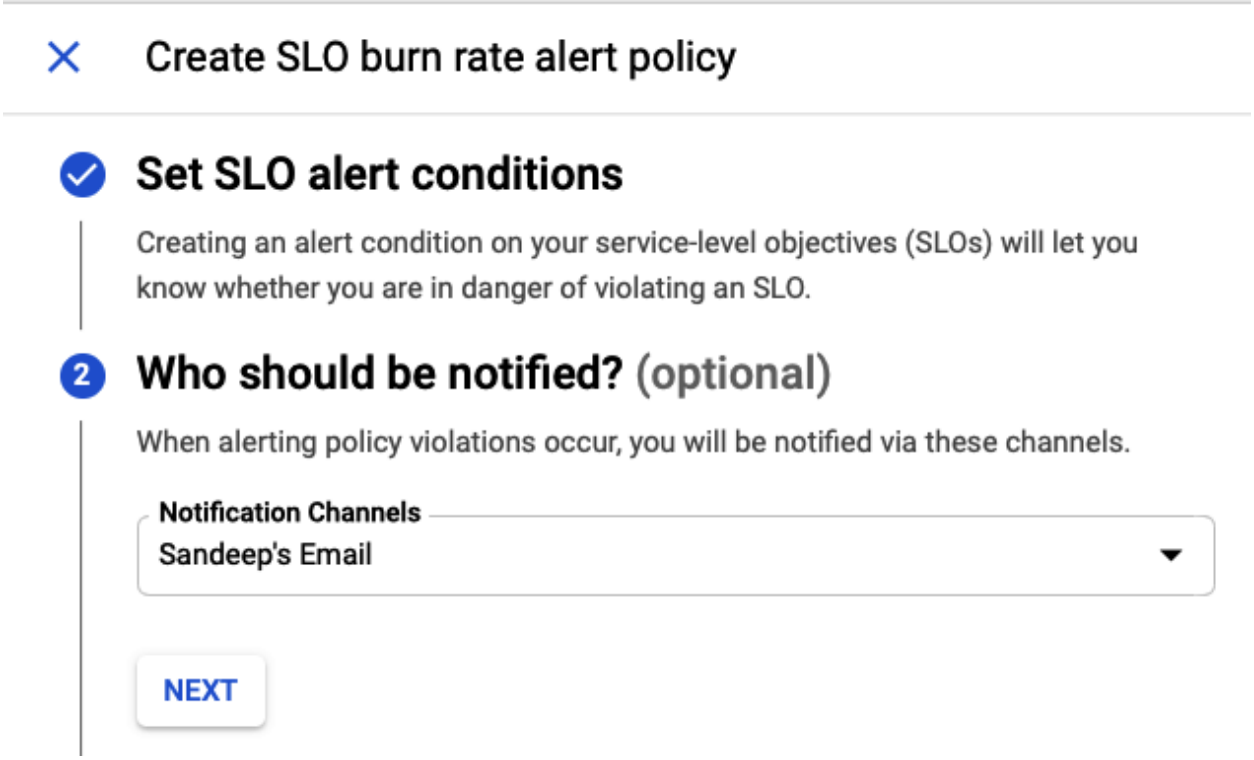
Select a burn rate threshold value that constitutes a violation, and a lookback duration period for which the violation is permitted. If the burn rate threshold is exceeded for more than the allowable period, an incident is created. Learn more

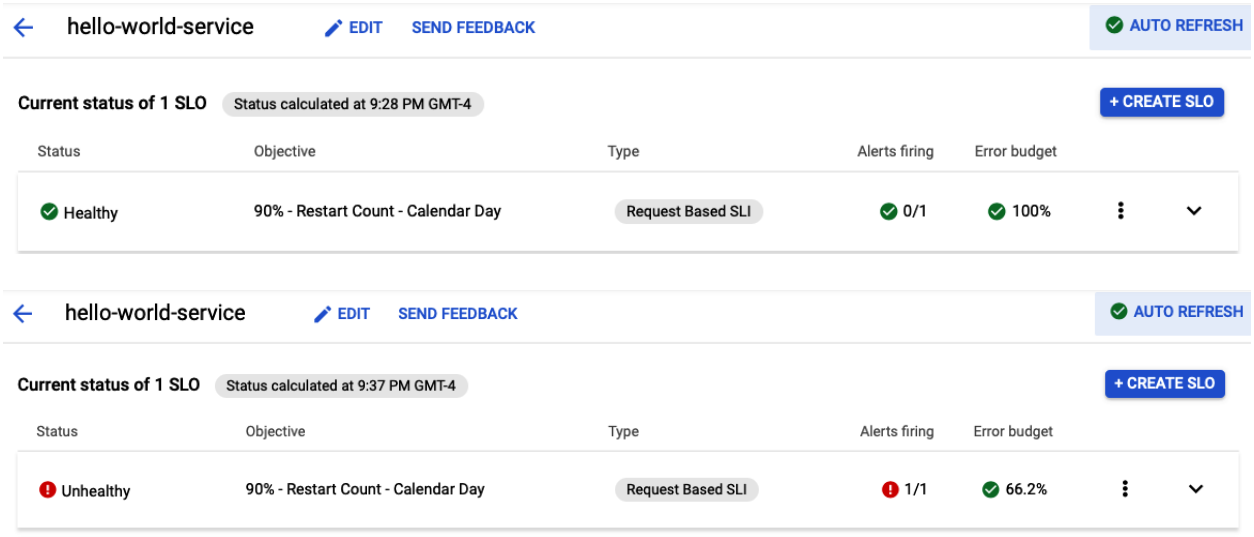
Display name *
Burn rate on 90% - Restart Count - Calendar Day

Lookback duration...
60 minute(s)

Burn rate threshold *
10

NEXT


Create SLO burn rate alert policy
Set SLO alert conditions
Creating an alert condition on your service-level objectives (SLOs) will let you know whether you are in danger of violating an SLO.
2
Who should be notified? (optional)
When alerting policy violations occur, you will be notified via these channels.
Notification Channels
Sandeep's Email
NEXT


hello-world-service
EDIT
SEND FEEDBACK
AUTO REFRESH
Current status of 1 SLO
Status calculated at 9:28 PM GMT-4
+ CREATE SLO
Status
Objective
Type
Alerts firing
Error budget
Healthy
90% - Restart Count - Calendar Day
Request Based SLI
0/1
100%

hello-world-service
EDIT
SEND FEEDBACK
AUTO REFRESH
Current status of 1 SLO
Status calculated at 9:37 PM GMT-4
+ CREATE SLO
Status
Objective
Type
Alerts firing
Error budget
Unhealthy
90% - Restart Count - Calendar Day
Request Based SLI
1/1
66.2%

Alert firing

Burn rate on 90% - Restart Count - Calendar Day

SLO Burn Rate for gcp-devops-2021 Kubernetes Container labels {project_id=gcp-devops-2021} is above the threshold of 10.

Summary

Start time
April 19, 2021 at 1:35AM UTC (1 min, 35 sec ago)

Project
gcp-devops-2021

Policy
Burn rate on 90% - Restart Count - Calendar Day

Condition
Burn rate on 90% - Restart Count - Calendar Day

Metric
select_slo_burn_rate("projects/1048563807603/services/vr9jzuJWRDW2TwhUwDq4sQ/serviceLevelObjectives/EnzikPX3QfiI-p5KDRZ9dw","60s")

Threshold
above 10

Observed
10.000

Policy documentation

This alert is fired if the container restarts. Verify the logs to find the reason on why the container restarted

VIEW INCIDENT

Chapter 11: Getting Ready for Professional Cloud DevOps Engineer Certification

No Images