Monitoring and Logging for Cloud Run Functions

Objective:

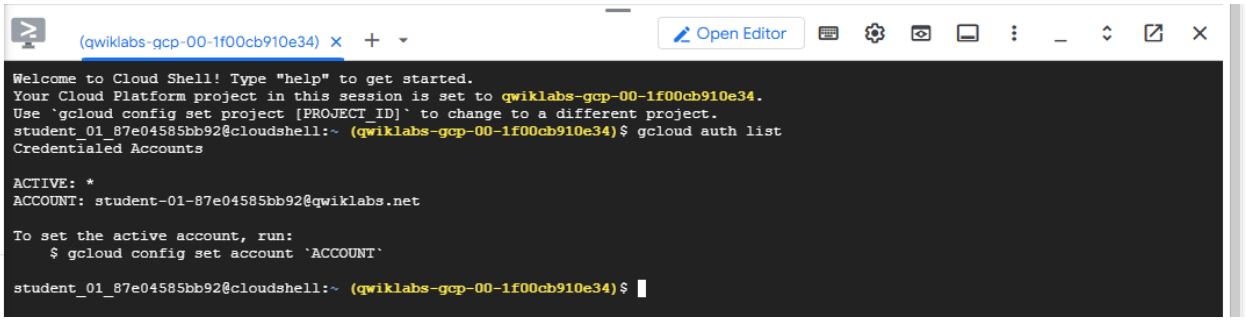
To deploy a serverless web service using **Cloud Run**, simulate traffic using **Vegeta**, and monitor performance using **logs-based metrics** and **Cloud Monitoring**.

Tools & Technologies:

- Google Cloud Platform (GCP)
- Cloud Run
- Cloud Shell
- Vegeta (Load Testing Tool)
- Cloud Monitoring
- Logs Explorer
- Node.js 22

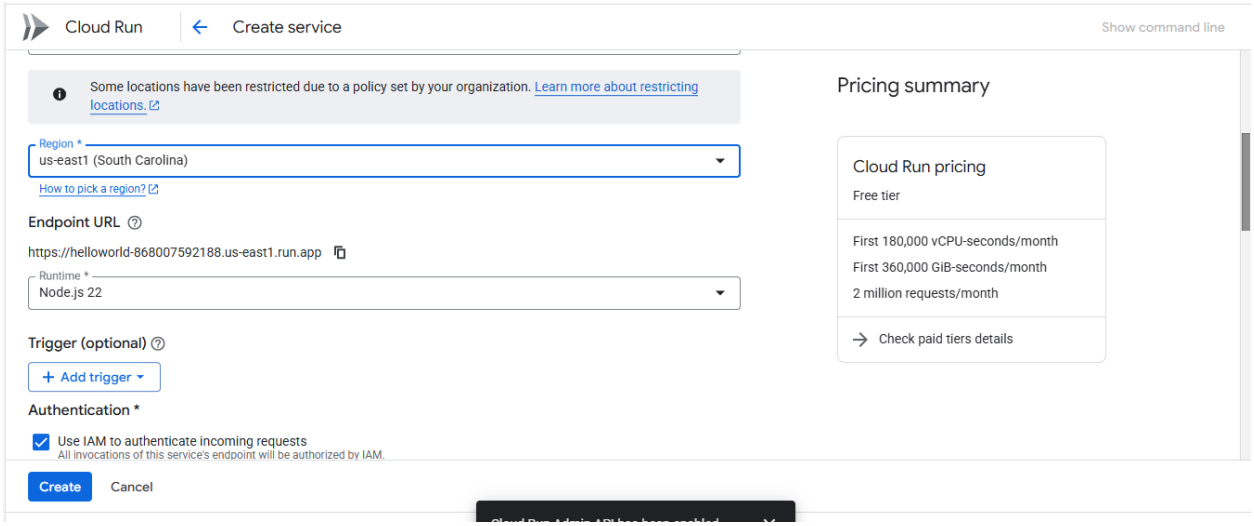
Task 1: Setup and Deploy Cloud Run Function

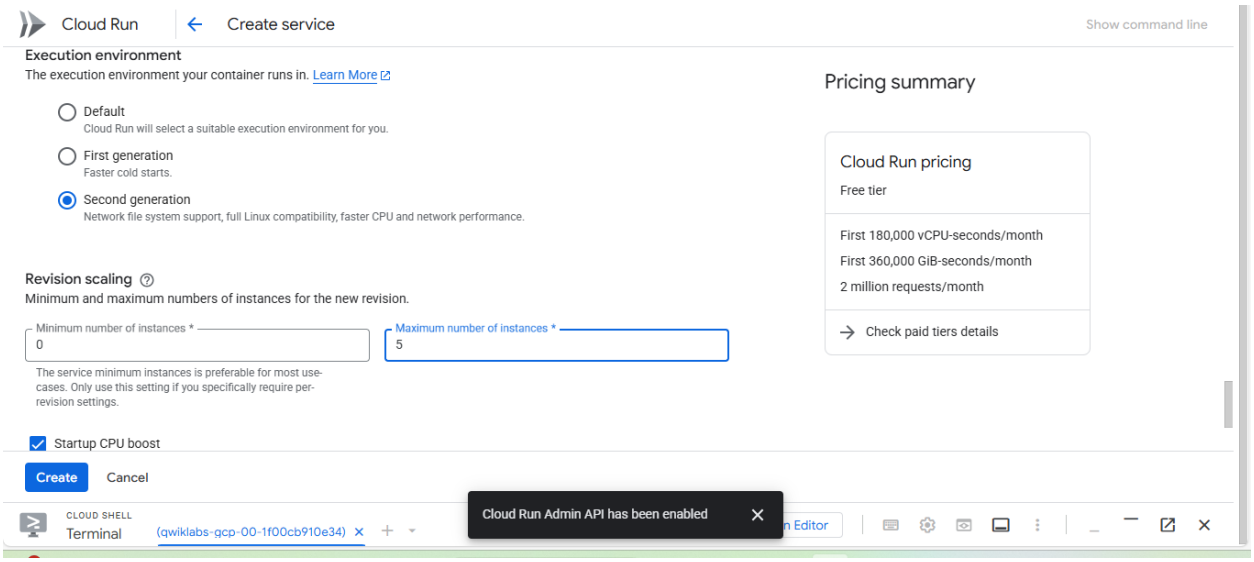
- Use GCP Console → Cloud Run → Create a service named helloworld
- Use Node.js 22 Runtime
- Allow unauthenticated access
- Enable 2nd generation execution environment
- Set Max instances = 5
- Deploy and test with Hello World URL

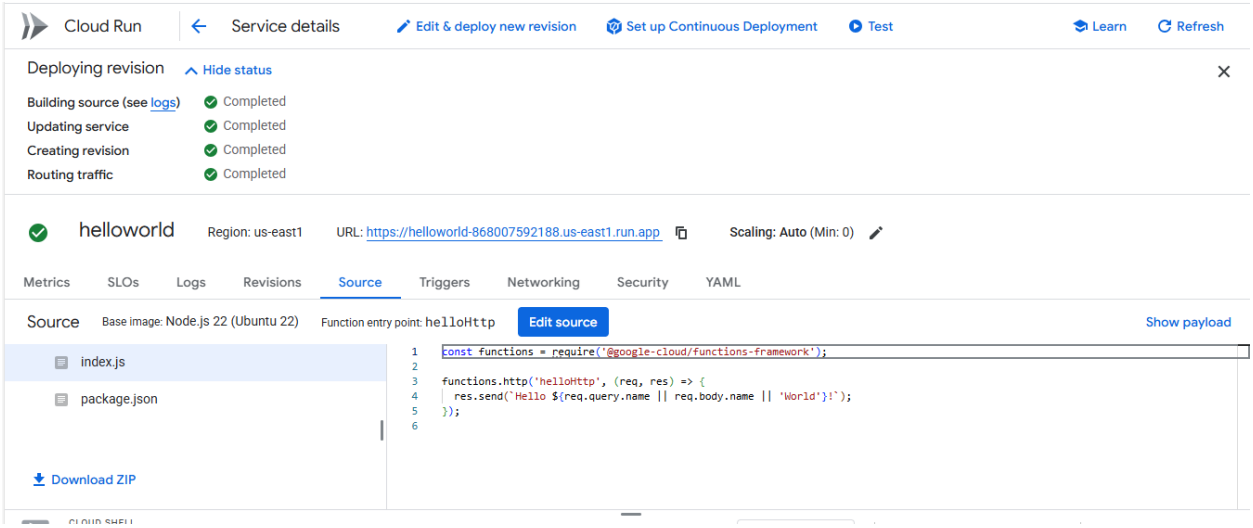


```
student_01_87e04585bb92@cloudshell:~ (qwiklabs-gcp-00-1f00cb910e34)$ gcloud config list project
[core]
project = qwiklabs-gcp-00-1f00cb910e34

Your active configuration is: [cloudshell-9294]
student_01_87e04585bb92@cloudshell:~ (qwiklabs-gcp-00-1f00cb910e34)$
```







Task 2: Load Testing with Vegeta

- Download Vegeta in Cloud Shell

bashCopyEdit

curl -LO 'https://github.com/tsenart/vegeta/releases/download/v12.12.0/vegeta_12.12.0_linux_386.tar.gz'
tar -xvzf vegeta_12.12.0_linux_386.tar.gz

- Get the Cloud Run service URL:

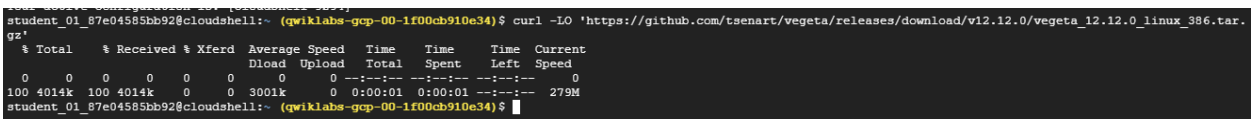
bash

CLOUD_RUN_URL=$(gcloud run services describe helloworld --region=YOUR_REGION --format='value(status.url)')
echo $CLOUD_RUN_URL

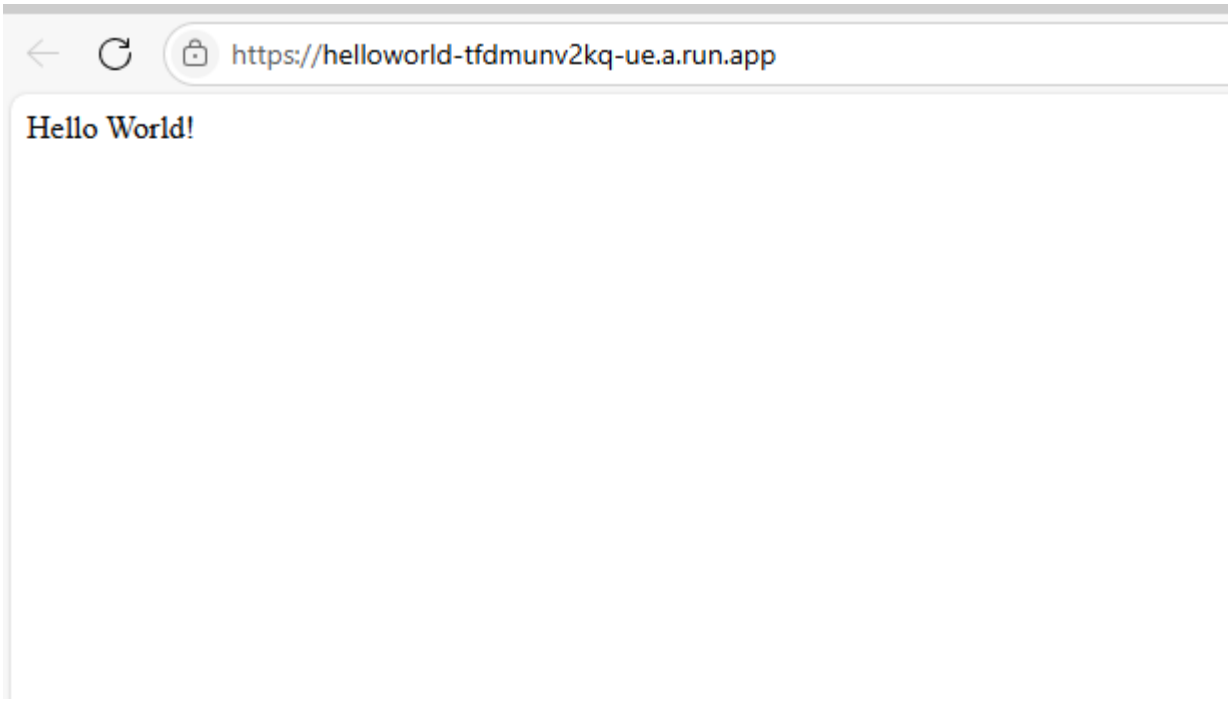
- Start traffic simulation:

bash

echo "GET $CLOUD_RUN_URL" | ./vegeta attack -duration=300s -rate=200 > results.bin



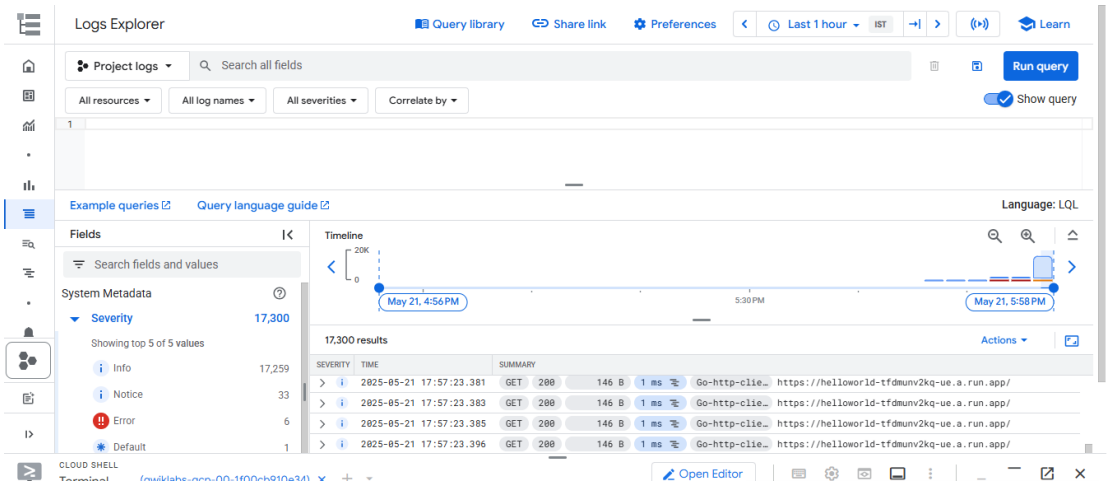
```
student_01_87e04585bb92@cloudshell:~ (qwiklabs-gcp-00-1f00cb910e34)$ tar -xvzf vegeta_12.12.0_linux_386.tar.gz
vegeta
student_01_87e04585bb92@cloudshell:~ (qwiklabs-gcp-00-1f00cb910e34)$
```

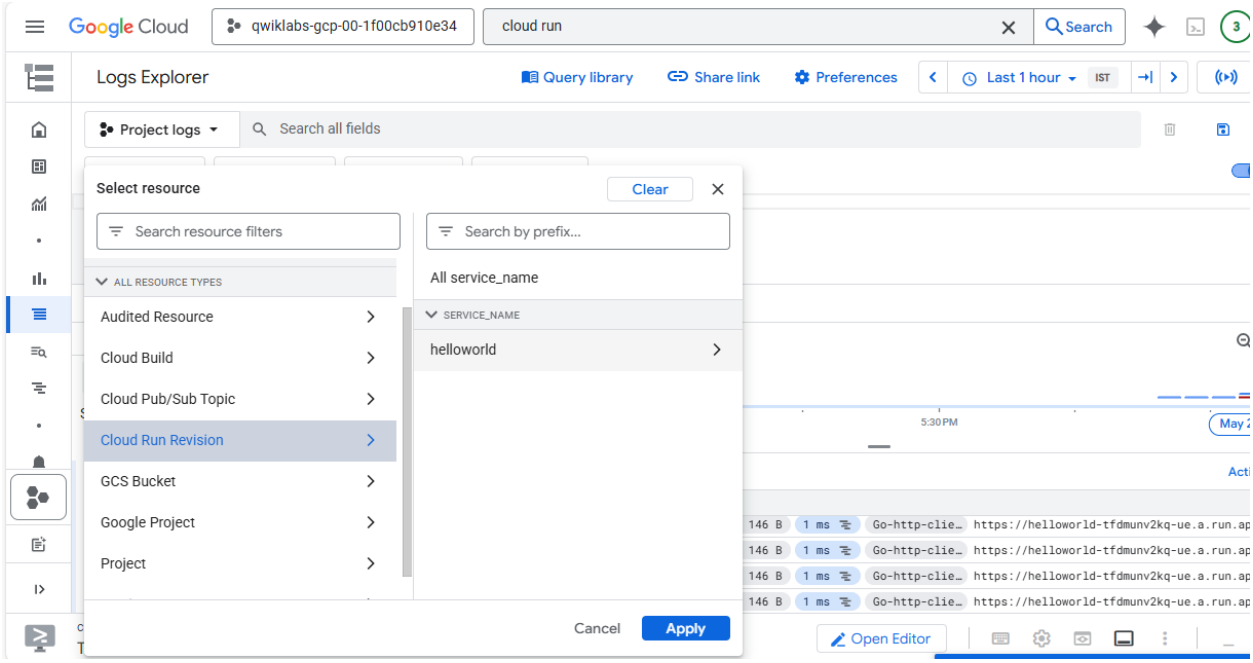


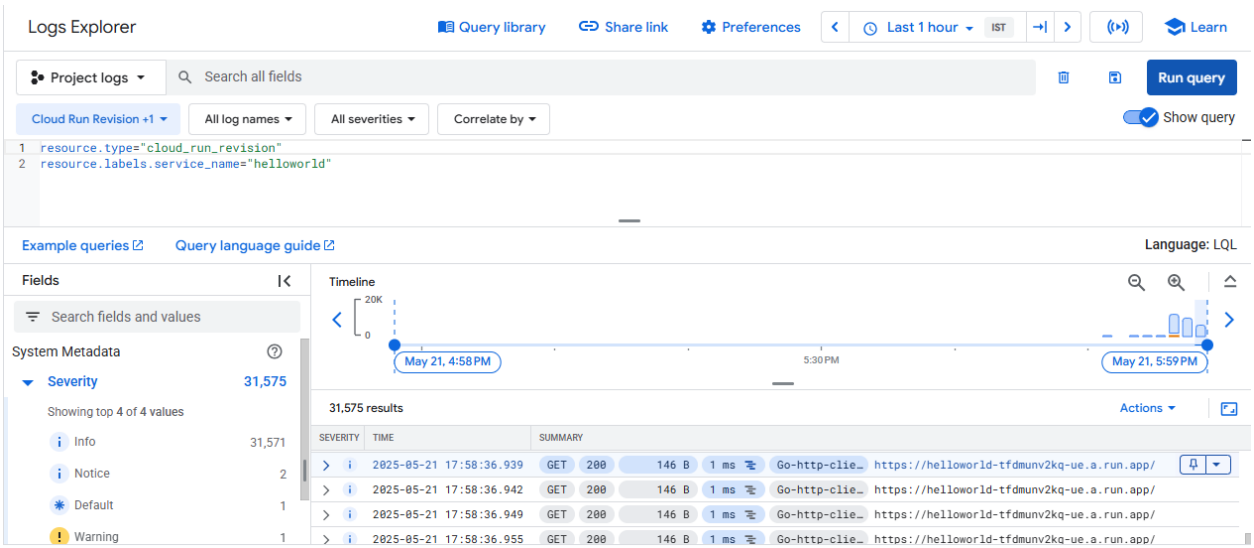

```
student_01_87e04585bb92@cloudshell:~ (qwiklabs-gcp-00-1f00cb910e34)$ CLOUD_RUN_URL=$(gcloud run services describe helloworld --region=us-east1 --format='value(status.url
)')
echo $CLOUD_RUN_URL
https://helloworld-tfdmunv2kq-ue.a.run.app
student_01_87e04585bb92@cloudshell:~ (qwiklabs-gcp-00-1f00cb910e34)$
```

Task 3: Create Logs-Based Metrics

- Go to Logs Explorer
- Filter logs for Cloud Run service
- Create new **distribution-type** metric:
    - Field: httpRequest.latency
    - Metric Name: CloudRunFunctionLatency-Logs

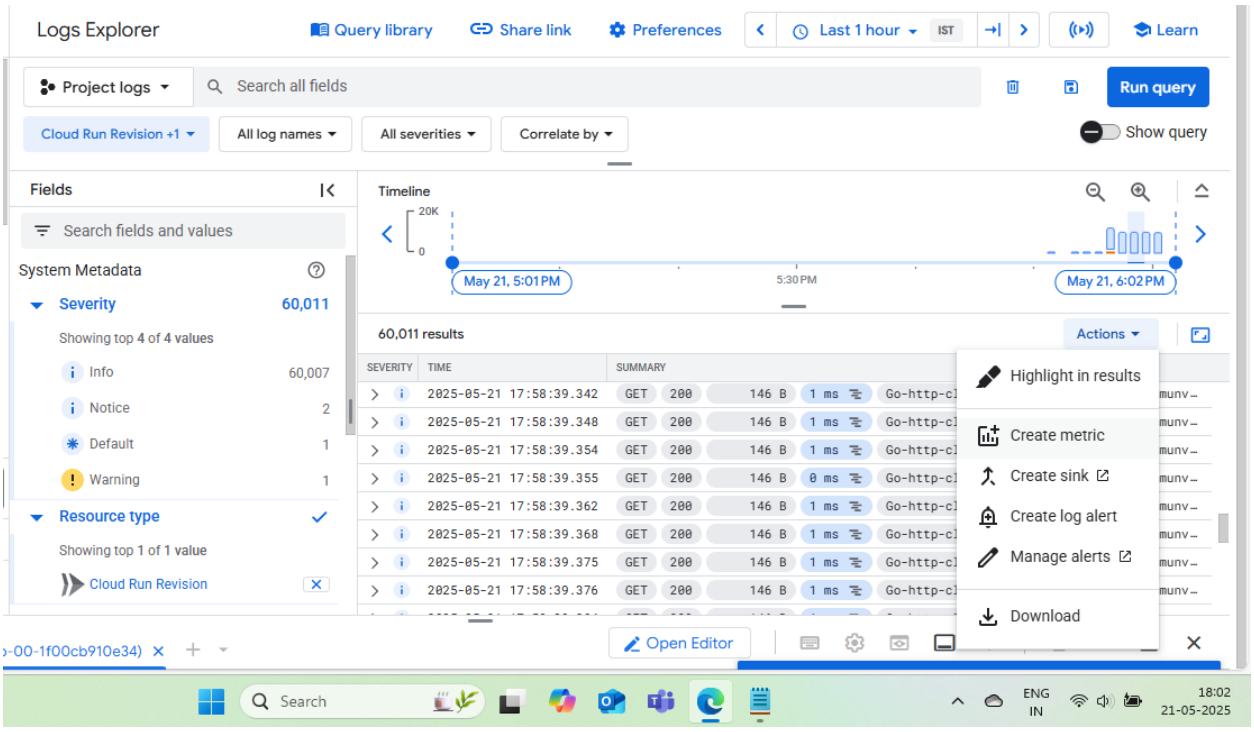

Logs Explorer
Query library
Share link
Preferences
Last 1 hour
Learn
Project logs
Search all fields
Run query
All resources
All log names
All severities
Correlate by
Show query
Example queries
Query language guide
Language: LQL
Fields
Search fields and values
System Metadata
Severity 17,300
Showing top 5 of 5 values
Info 17,259
Notice 33
Error 6
Default 1
Timeline
May 21, 4:56PM
5:30PM
May 21, 5:58PM
17,300 results
Actions
SEVERITY
TIME
SUMMARY
2025-05-21 17:57:23.381 GET 200 146 B 1 ms Go-http-clie… https://helloworld-tfdmunv2kq-ue.a.run.app/
2025-05-21 17:57:23.383 GET 200 146 B 1 ms Go-http-clie… https://helloworld-tfdmunv2kq-ue.a.run.app/
2025-05-21 17:57:23.385 GET 200 146 B 1 ms Go-http-clie… https://helloworld-tfdmunv2kq-ue.a.run.app/
2025-05-21 17:57:23.396 GET 200 146 B 1 ms Go-http-clie… https://helloworld-tfdmunv2kq-ue.a.run.app/
CLOUD SHELL
Open Editor

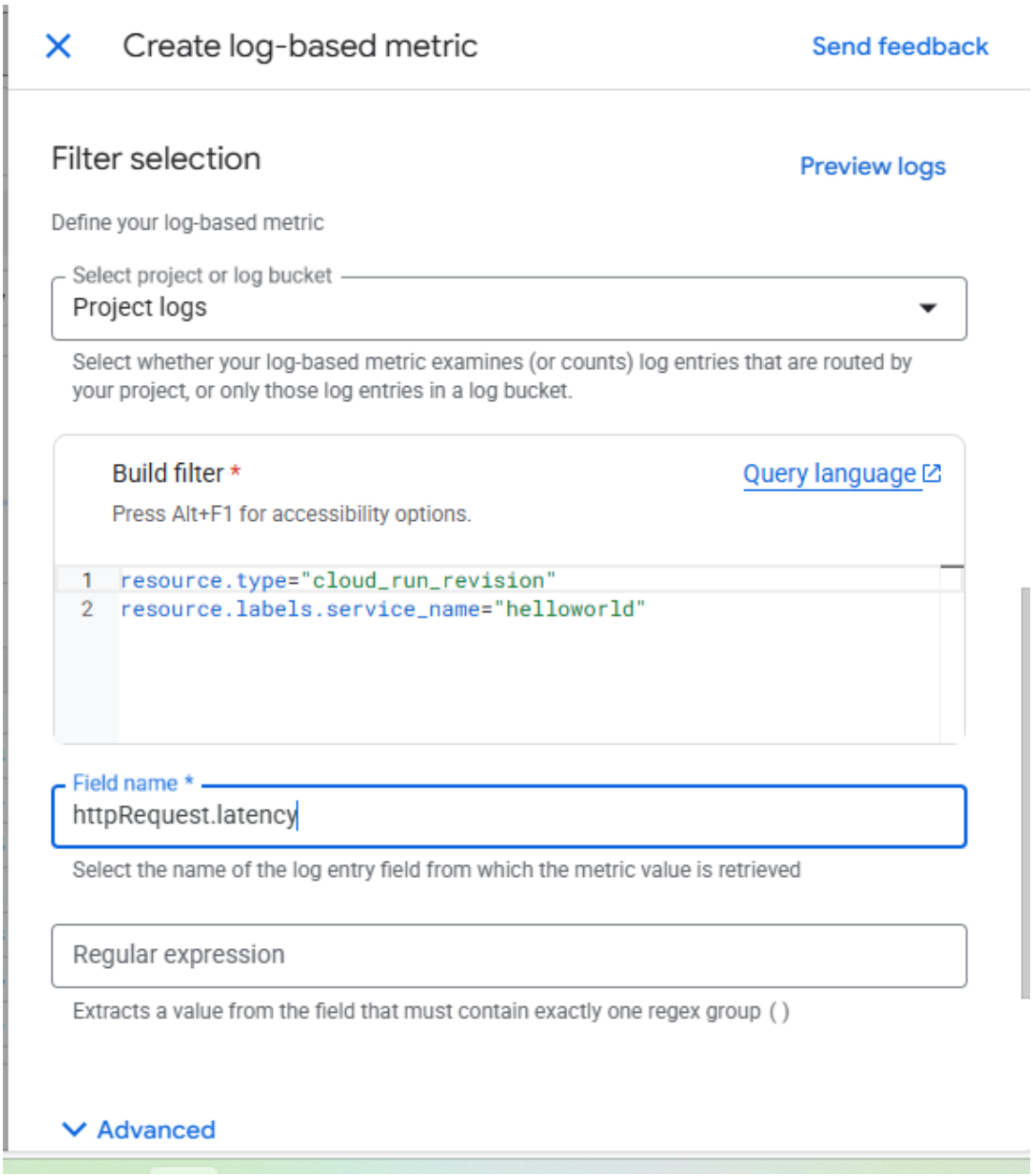

Google Cloud
qwiklabs-gcp-00-1f00cb910e34
cloud run
Search
Logs Explorer
Query library
Share link
Preferences
Last 1 hour
Project logs
Search all fields
Select resource
Clear
Search resource filters
Search by prefix...
ALL RESOURCE TYPES
Audited Resource
Cloud Build
Cloud Pub/Sub Topic
Cloud Run Revision
GCS Bucket
Google Project
Project
All service_name
SERVICE_NAME
helloworld
Cancel
Apply
5:30PM
Open Editor

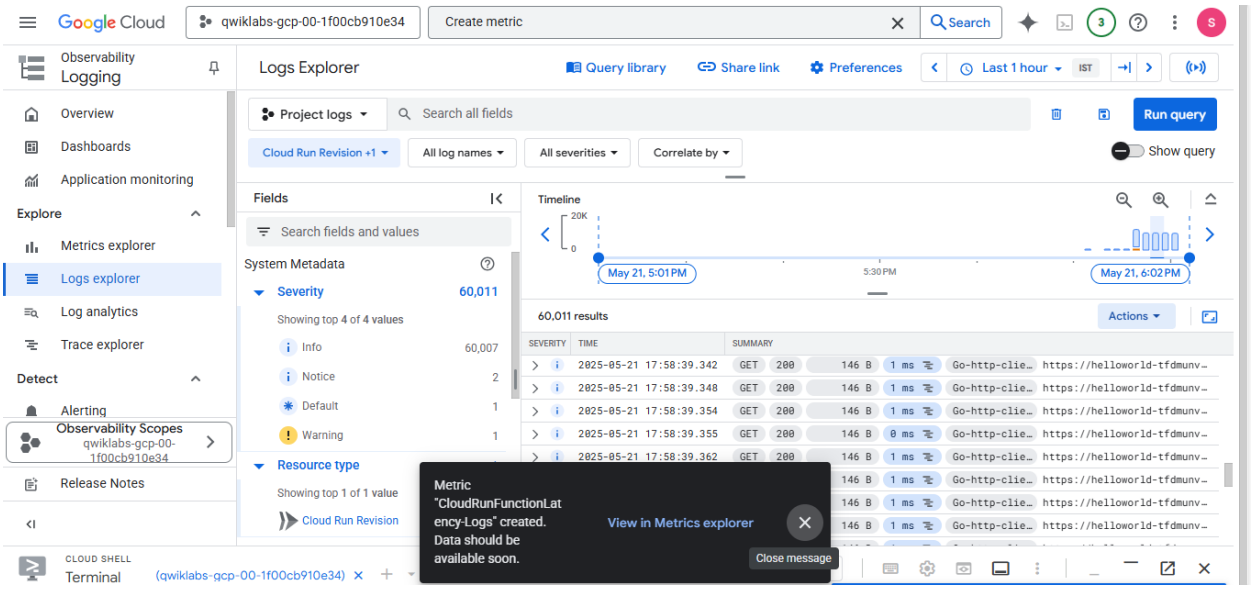


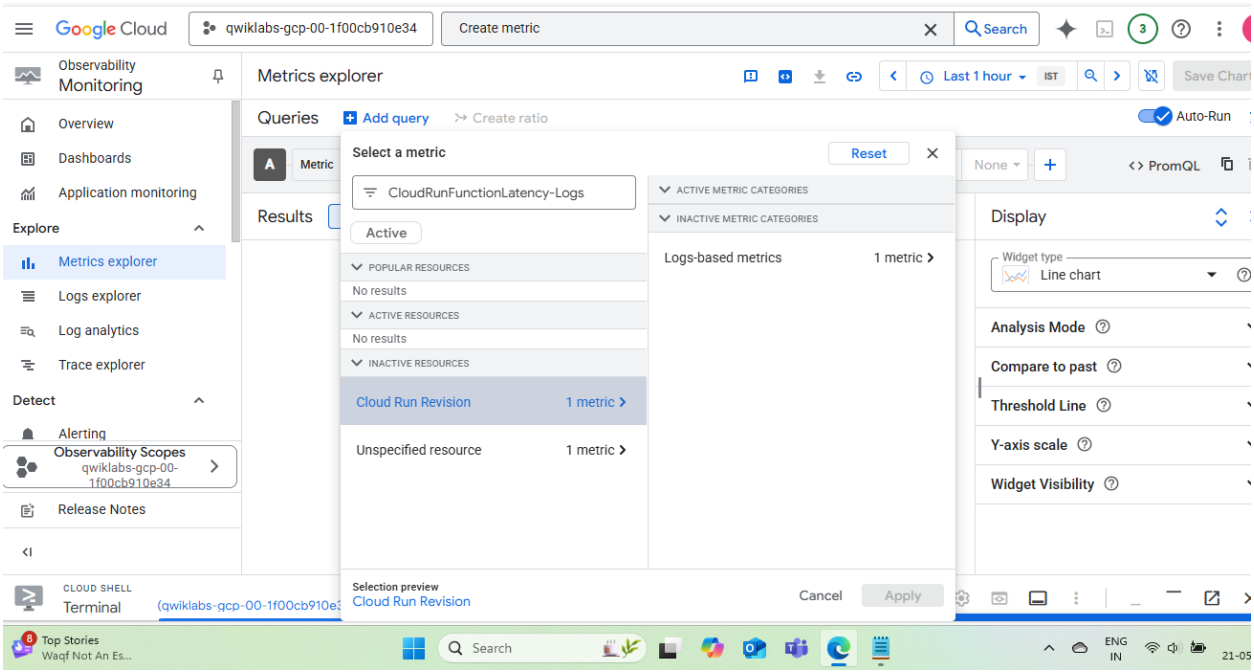
Task 4: Visualize Metrics in Monitoring

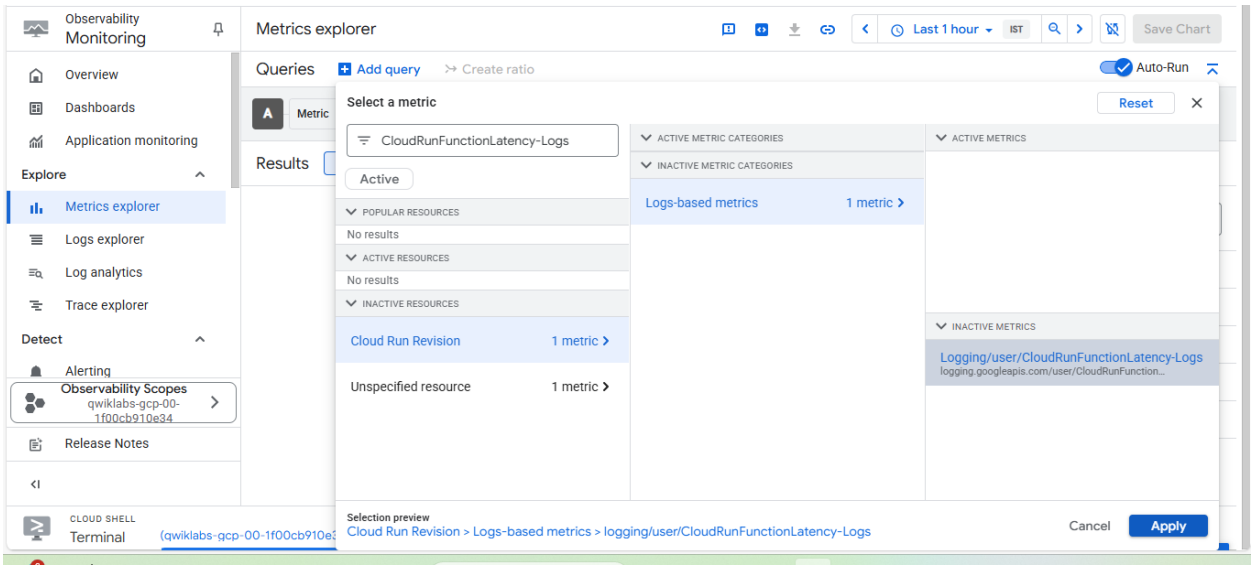
- Open Metrics Explorer
- Add widgets using the following metrics:
  - Logs-based metric CloudRunFunctionLatency-Logs
  - Request Count
  - Container CPU Allocation
  - Request Latency (Aggregation: Mean, 95th percentile)
- Create a custom dashboard: Cloud Run Function Custom Dashboard

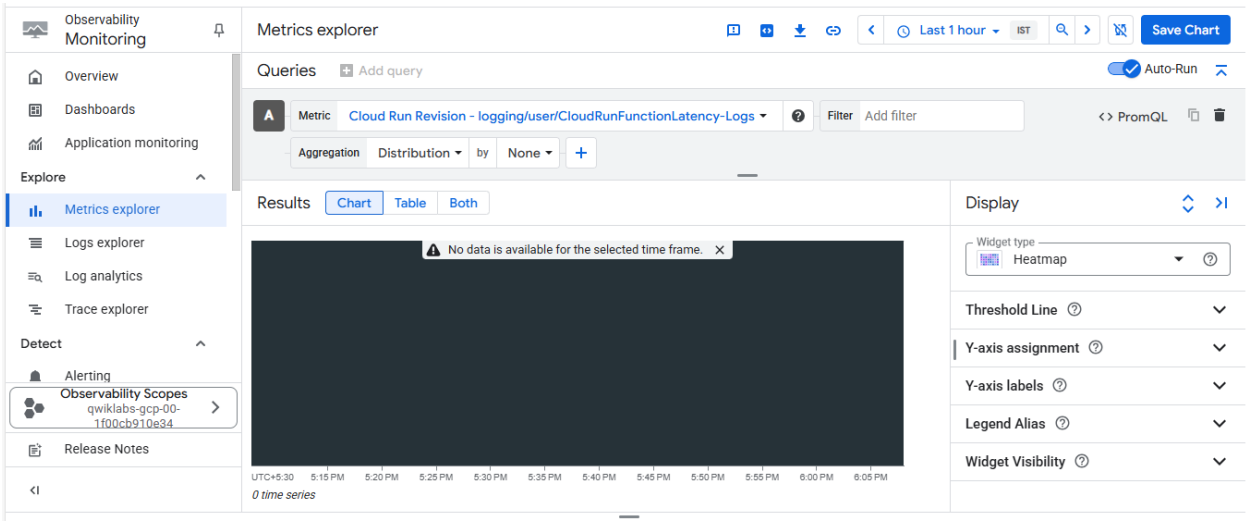

Logs Explorer
Query library
Share link
Preferences
Last 1 hour
IST
Learn
Project logs
Search all fields
Run query
Cloud Run Revision +1
All log names
All severities
Correlate by
Show query
Fields
Search fields and values
System Metadata
Severity
60,011
Showing top 4 of 4 values
Info
60,007
Notice
2
Default
1
Warning
1
Resource type
Showing top 1 of 1 value
Cloud Run Revision
Timeline
20K
0
May 21, 5:01 PM
5:30 PM
May 21, 6:02 PM
60,011 results
Actions
SEVERITY
TIME
SUMMARY
2025-05-21 17:58:39.342
2025-05-21 17:58:39.348
2025-05-21 17:58:39.354
2025-05-21 17:58:39.355
2025-05-21 17:58:39.362
2025-05-21 17:58:39.368
2025-05-21 17:58:39.375
2025-05-21 17:58:39.376
GET
200
146 B
1 ms
0 ms
Highlight in results
Create metric
Create sink
Create log alert
Manage alerts
Download
Open Editor
Search
ENG
IN
18:02
21-05-2025


Create log-based metric
Send feedback
Filter selection
Preview logs
Define your log-based metric
Select project or log bucket
Project logs
Select whether your log-based metric examines (or counts) log entries that are routed by your project, or only those log entries in a log bucket.
Build filter *
Query language
Press Alt+F1 for accessibility options.
1 resource.type="cloud_run_revision"
2 resource.labels.service_name="helloworld"
Field name *
httpRequest.latency
Select the name of the log entry field from which the metric value is retrieved
Regular expression
Extracts a value from the field that must contain exactly one regex group ( )
Advanced


Google Cloud
qwiklabs-gcp-00-1f00cb910e34
Create metric
Search
Observability
Logging
Logs Explorer
Query library
Share link
Preferences
Last 1 hour
Overview
Dashboards
Application monitoring
Explore
Metrics explorer
Logs explorer
Log analytics
Trace explorer
Detect
Alerting
Observability Scopes
qwiklabs-gcp-00-1f00cb910e34
Release Notes
Project logs
Search all fields
Run query
Show query
Cloud Run Revision +1
All log names
All severities
Correlate by
Fields
Search fields and values
System Metadata
Severity
60,011
Showing top 4 of 4 values
Info
60,007
Notice
2
Default
1
Warning
1
Resource type
Showing top 1 of 1 value
Cloud Run Revision
Timeline
May 21, 5:01 PM
5:30 PM
May 21, 6:02 PM
60,011 results
Actions
SEVERITY
TIME
SUMMARY
Metric "CloudRunFunctionLatency-Logs" created. Data should be available soon.
View in Metrics explorer
Close message
CLOUD SHELL
Terminal
(qwiklabs-gcp-00-1f00cb910e34)


Google Cloud
qwiklabs-gcp-00-1f00cb910e34
Create metric
Search
Observability
Monitoring
Metrics explorer
Last 1 hour
Save Chart
Overview
Dashboards
Application monitoring
Explore
Metrics explorer
Logs explorer
Log analytics
Trace explorer
Detect
Alerting
Observability Scopes
qwiklabs-gcp-00-1f00cb910e34
Release Notes
Queries
Add query
Create ratio
Auto-Run
Metric
Results
PromQL
Select a metric
Reset
CloudRunFunctionLatency-Logs
Active
POPULAR RESOURCES
No results
ACTIVE RESOURCES
No results
INACTIVE RESOURCES
Cloud Run Revision
1 metric
Unspecified resource
1 metric
ACTIVE METRIC CATEGORIES
INACTIVE METRIC CATEGORIES
Logs-based metrics
1 metric
Display
Widget type
Line chart
Analysis Mode
Compare to past
Threshold Line
Y-axis scale
Widget Visibility
Selection preview
Cloud Run Revision
Cancel
Apply
CLOUD SHELL
Terminal
Top Stories
Waqf Not An Es...
Search
ENG
IN





Expected Outcome:

- Cloud Run service that responds with "Hello World"
- Traffic generated using Vegeta
- Custom log-based metrics created and visualized in dashboards
- Performance analytics using stacked charts, heatmaps, and line graphs

Conclusion:

This project demonstrates how serverless applications can be deployed and monitored effectively using GCP tools. Vegeta helped simulate real-world traffic, and Cloud Monitoring provided visibility into application performance through custom metrics.