Monitoring and Logging for Cloud Functions

GSP092

You can view your Cloud Functions with their execution times,execution counts, and memory usage in the Cloud Console using Cloud Monitoring, where you can set up custom alerting on these metrics.

Setup and requirements

Before you click the Start Lab button

Read these instructions. Labs are timed and you cannot pause them. The timer, which starts when you click **Start Lab**, shows how long Google Cloud resources will be made available to you.

This Qwiklabs hands-on lab lets you do the lab activities yourself in a real cloud environment, not in a simulation or demo environment. It does so by giving you new, temporary credentials that you use to sign in and access Google Cloud for the duration of the lab.

What you need

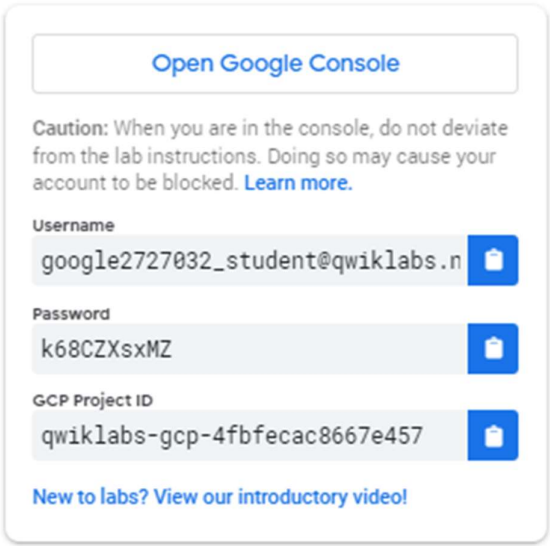
To complete this lab, you need:

- Access to a standard internet browser (Chrome browser recommended).
- Time to complete the lab.
  Note: If you already have your own personal Google Cloud account or project, do not use it for this lab.

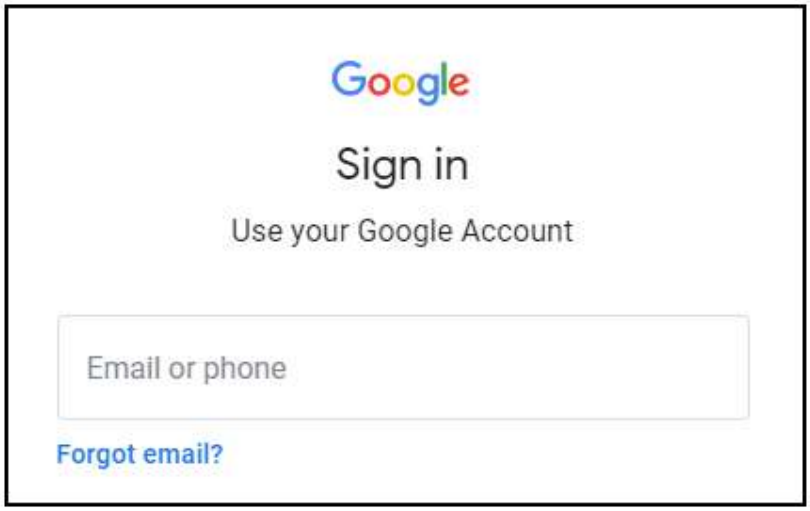
Note: If you are using a Pixelbook, open an Incognito window to run this lab.

How to start your lab and sign in to the Google Cloud Console

1. Click the **Start Lab** button. If you need to pay for the lab, a pop-up opens for you to select your payment method. On the left is a panel populated with the temporary credentials that you must use for this lab.

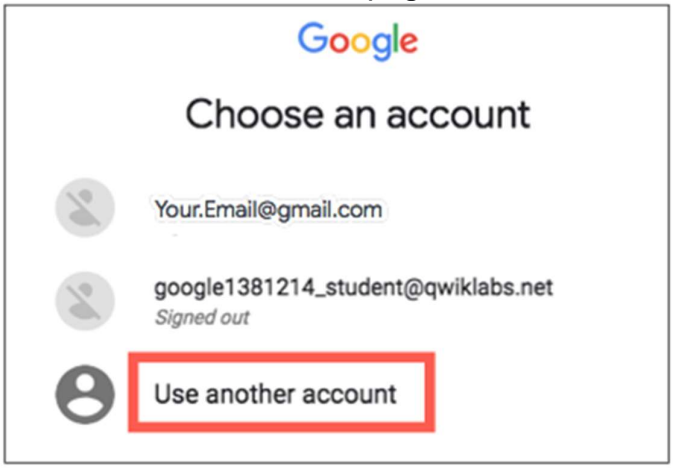


2. Copy the username, and then click **Open Google Console**. The lab spins up resources, and then opens another tab that shows the **Sign in** page.



Tip: Open the tabs in separate windows, side-by-side.

If you see the **Choose an account** page, click **Use Another Account**.



3. In the **Sign in** page, paste the username that you copied from the Connection Details panel. Then copy and paste the password.

   Important: You must use the credentials from the Connection Details panel. Do not use your Qwiklabs credentials. If you have your own Google Cloud account, do not use it for this lab (avoids incurring charges).

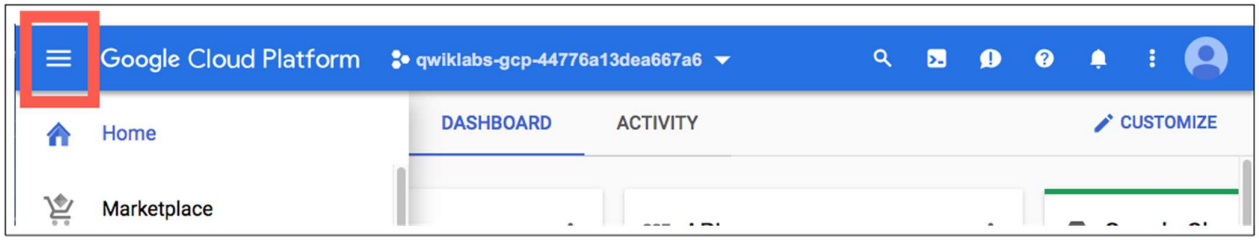
4. Click through the subsequent pages:

   - Accept the terms and conditions.
   - Do not add recovery options or two-factor authentication (because this is a temporary account).
   - Do not sign up for free trials.

After a few moments, the Cloud Console opens in this tab.

Note: You can view the menu with a list of Google Cloud Products and Services by clicking the **Navigation menu** at the top-

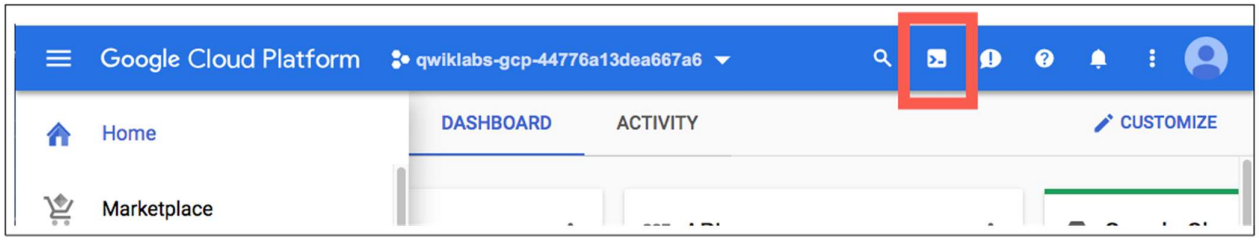
left.



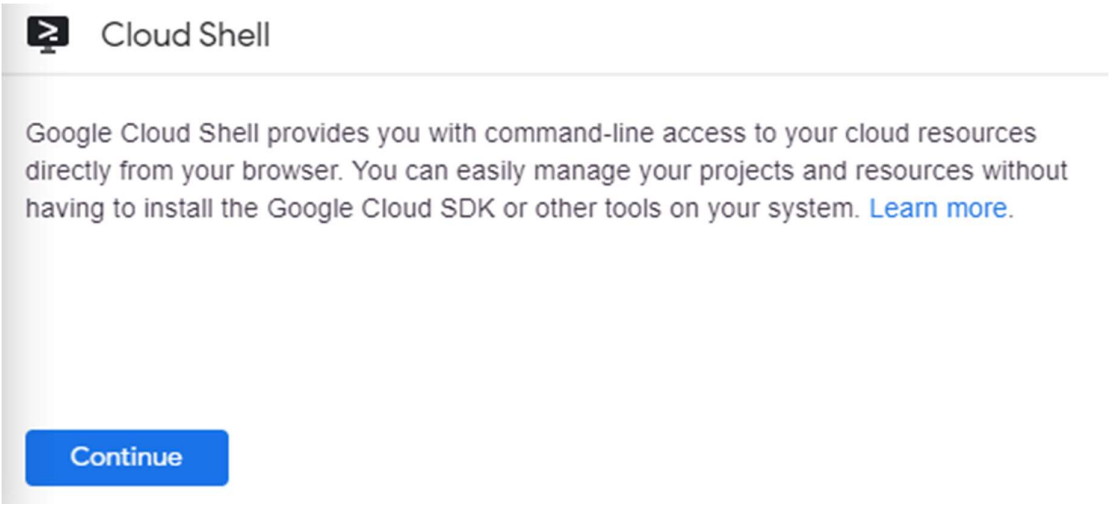
Activate Cloud Shell

Cloud Shell is a virtual machine that is loaded with development tools. It offers a persistent 5GB home directory and runs on the Google Cloud. Cloud Shell provides command-line access to your Google Cloud resources.

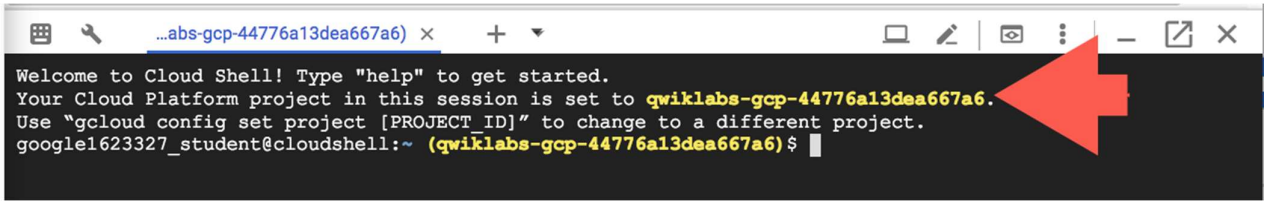
In the Cloud Console, in the top right toolbar, click the **Activate Cloud Shell** button.



Click **Continue**.



It takes a few moments to provision and connect to the environment. When you are connected, you are already authenticated, and the project is set to your *PROJECT_ID*. For example:



`gcloud` is the command-line tool for Google Cloud. It comes pre-installed on Cloud Shell and supports tab-completion.

You can list the active account name with this command:

```
gcloud auth list
```

(Output)

```
Credentialed accounts:
 - <myaccount>@<mydomain>.com (active)
```

(Example output)

```
Credentialed accounts:
 - google1623327_student@qwiklabs.net
```

You can list the project ID with this command:

```
gcloud config list project
```

(Output)

```
[core]
project = <project_ID>
```

(Example output)

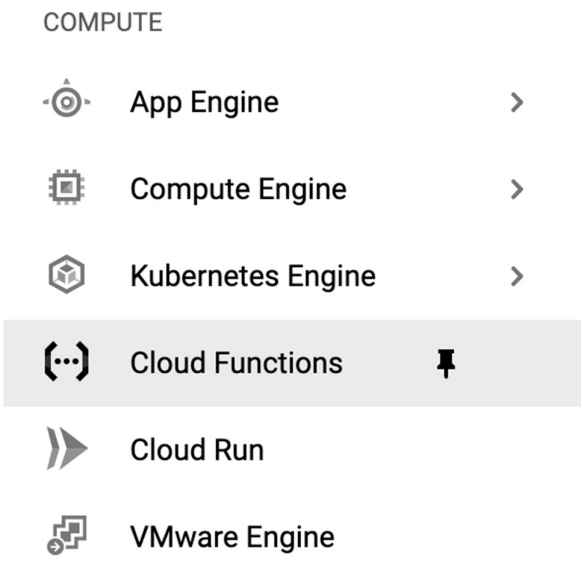
```
[core]
project = qwiklabs-gcp-44776a13dea667a6
```

For full documentation of `gcloud` see the gcloud command-line tool overview.

Viewing Cloud Function logs & metrics in Cloud monitoring

Before you collect logs and alerts, you need something to monitor. In this section, you create a Hello World cloud function to monitor.

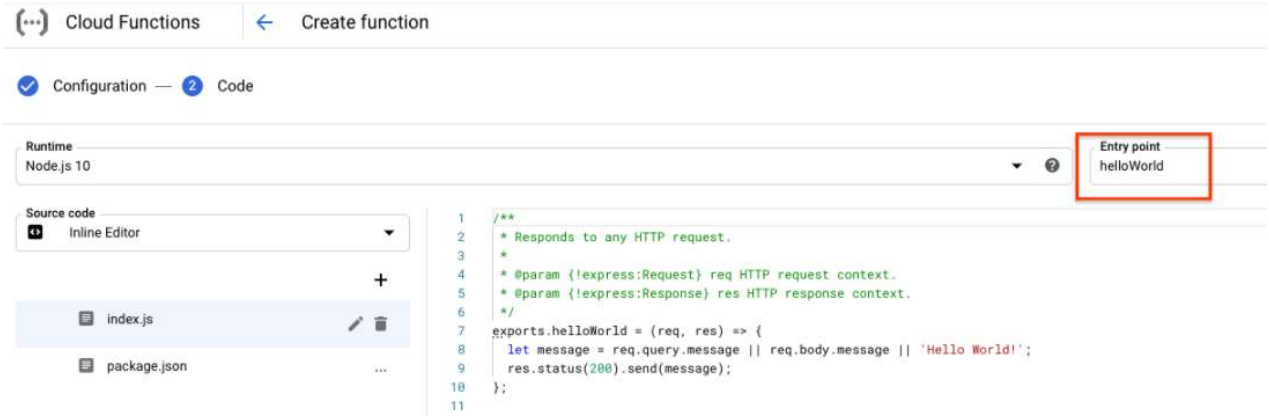
1. In the Cloud Console, select **Navigation menu** > **Cloud Functions**, and then **Create function**.



2. Set the following:

- **Function Name:** helloWorld
- **Trigger type:** HTTP
- **Authentication**: check the box next to **Allow unauthenticated invocations**
Click **Save**, then click **Next**.

3. You will see the following:



4. Click **Deploy**.

The cloud function automatically deploys and is listed on the Cloud Function page. This takes a few minutes. When you see a green check mark next to the name, the cloud function is complete.

Test Completed Task

Click **Check my progress** to verify your performed task. If you have completed the task successfully you will granted with an assessment score.

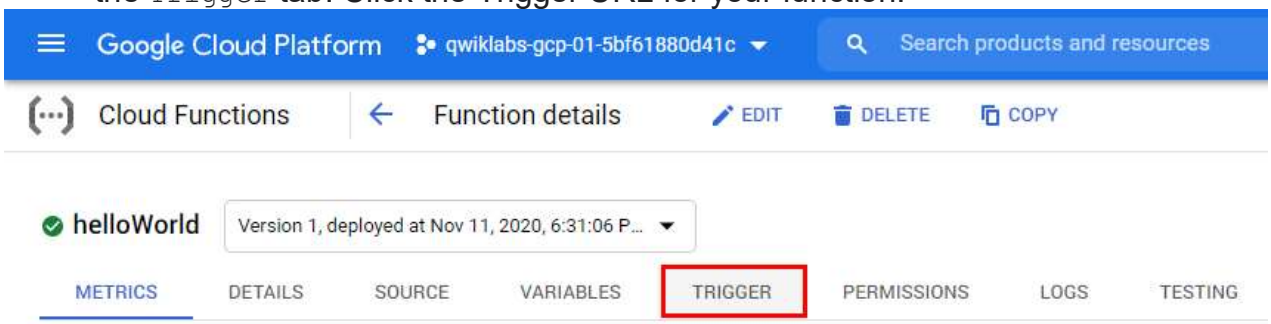
5. In Cloud Shell, run the following to get a tool called **vegeta** that will let you send some test traffic to your cloud function:

```
wget 'https://github.com/tsenart/vegeta/releases/download/v6.3.0/vegeta-v6.3.0-linux-386.tar.gz'
```

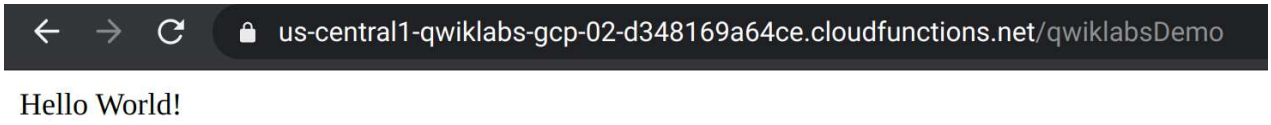
6. Unpack the **vegeta** tool by running the following:

```
tar xvzf vegeta-v6.3.0-linux-386.tar.gz
```

7. Still in the Cloud Functions page, click the name of your function, and then click on the `Trigger` tab. Click the Trigger URL for your function.



If you see `Hello World!` in the new browser tab that opens, you're up and running!



8. Now send traffic to your cloud function. Run the following in Cloud Shell, replacing `<YOUR_PROJECT_ID>` with your Project ID and `qwiklabsDemo` with your function name.

```
echo "GET https://us-central1-<YOUR_PROJECT_ID>.cloudfunctions.net/qwiklabsDemo" |
./vegeta attack -duration=300s > results.bin
```

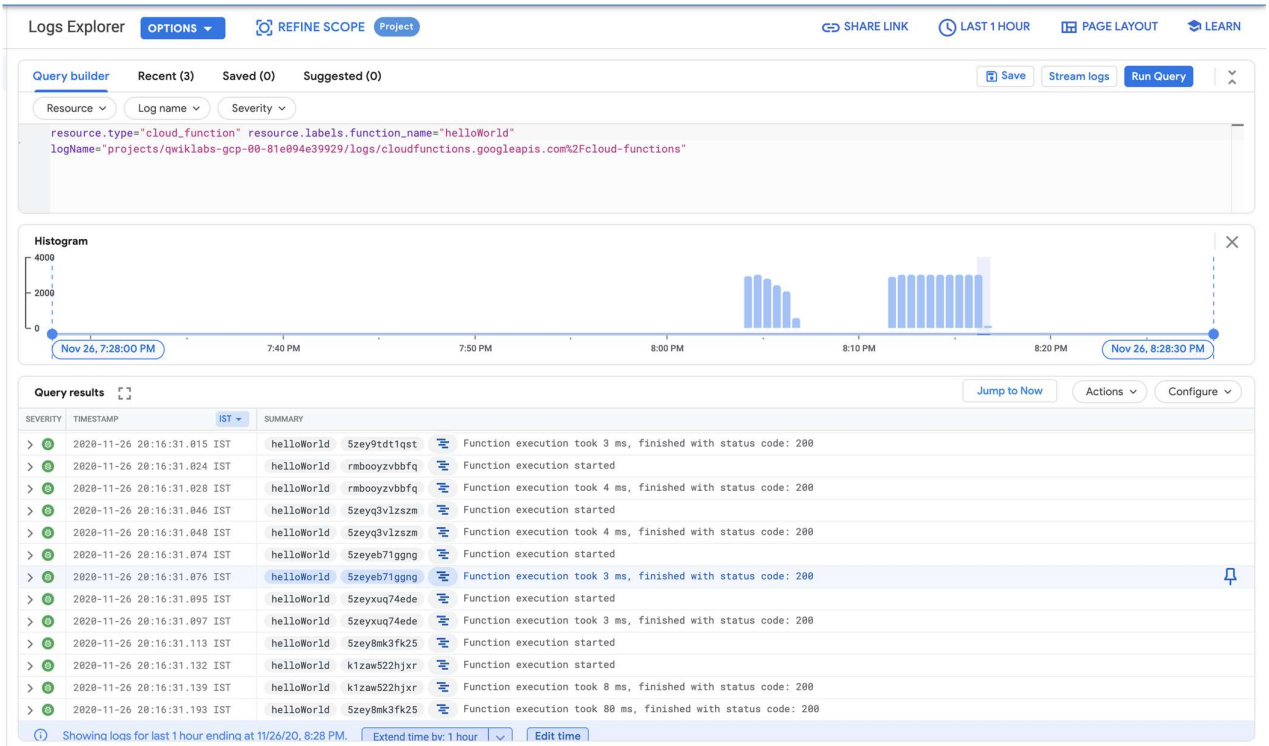
Create logs-based metric

Now you'll create a Distribution type logs based metric using a regular expression to extract the value of latency from the log entries `textPayload` field.

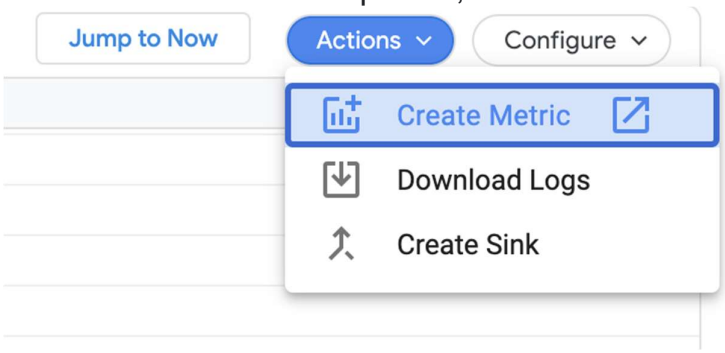
1. In the Console, select **Navigation menu** > **Logging** > **Logs Explorer** the Cloud Logging opens in the Console.

2. To look at just the logs from your Cloud Function, in the **Resource** dropdown, select **Cloud Function** > **helloWorld** then click **Add**. In the **Log name** dropdown, select **cloud-functions** checkbox then click **Add**:

3. Click **Run Query**.



4. In the **Actions** dropdown, click **Create Metric**.

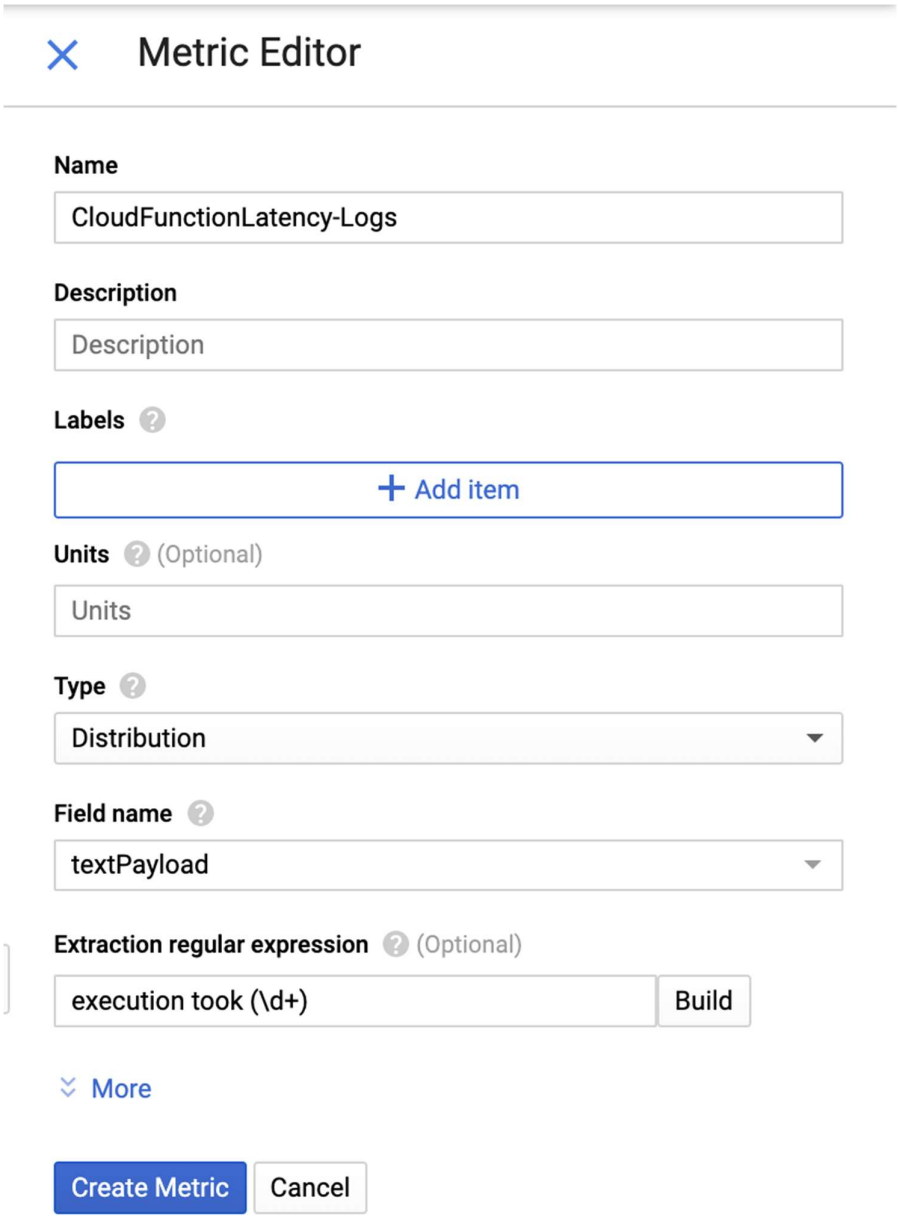


5. In the Metric Editor:

- Name your metric **CloudFunctionLatency-Logs**.
- Change the Type to **Distribution**.
- Enter **textPayload** for Field name.
- Click **Build** next to the Extraction regular expression field.
- Enter the following in the Regular Expression field, then click **Done**.

```
execution took (\d+)
```

The Metric Editor should look like this:



6. Click **Create Metric**.

Now you'll see your user-defined metric added to your Logs-based Metrics page.

Test Completed Task

Click **Check my progress** to verify your performed task. If you have completed the task successfully you will granted with an assessment score.

Metrics Explorer

Next, use Metrics Explorer to look at the data for your cloud function.

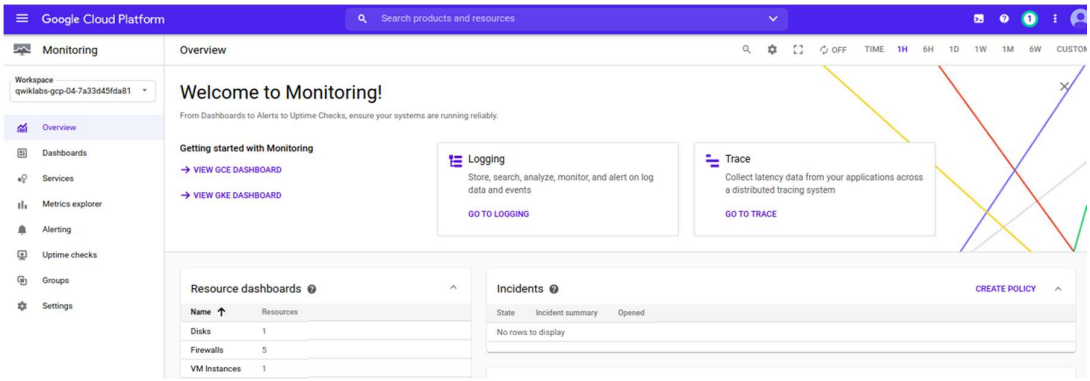
Create a Monitoring workspace

Now set up a Monitoring workspace that's tied to your Google Cloud Project. The following steps create a new account that has a free trial of Monitoring.

1. In the Cloud Console, click **Navigation menu** > **Monitoring**.

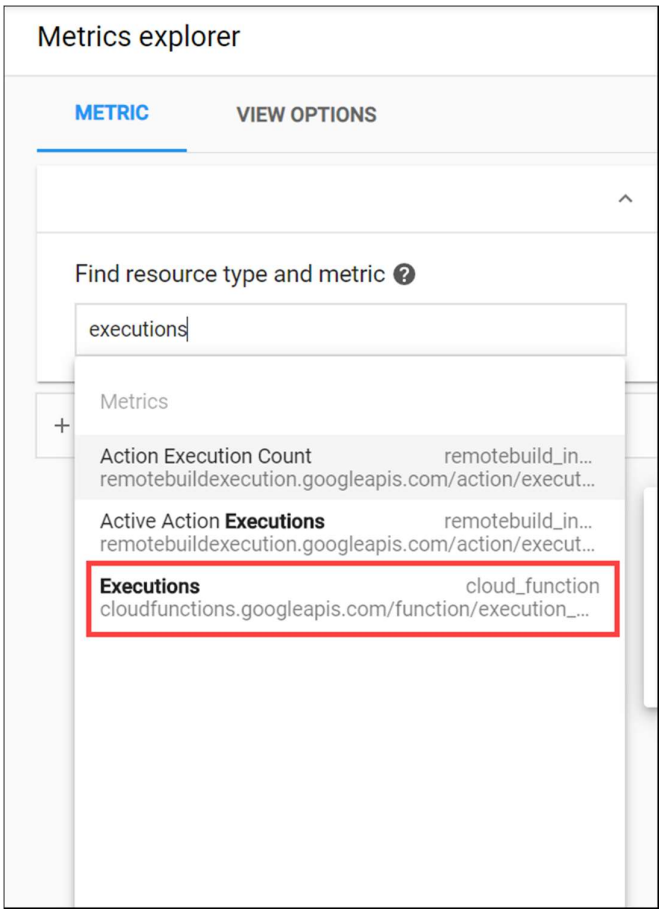
2. Wait for your workspace to be provisioned.

When the Monitoring dashboard opens, your workspace is ready.



3. In the left menu, click **Metrics explorer**.

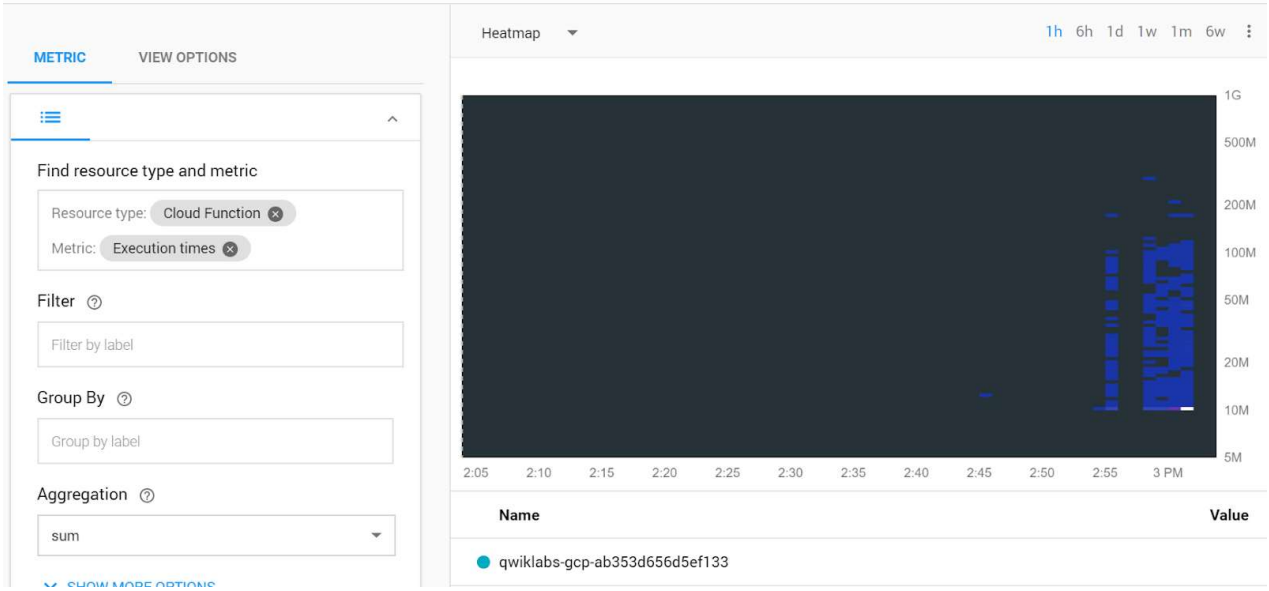
4. Start typing `executions` into the Find resource type and metric field, and then select **Executions** from the suggested metrics.



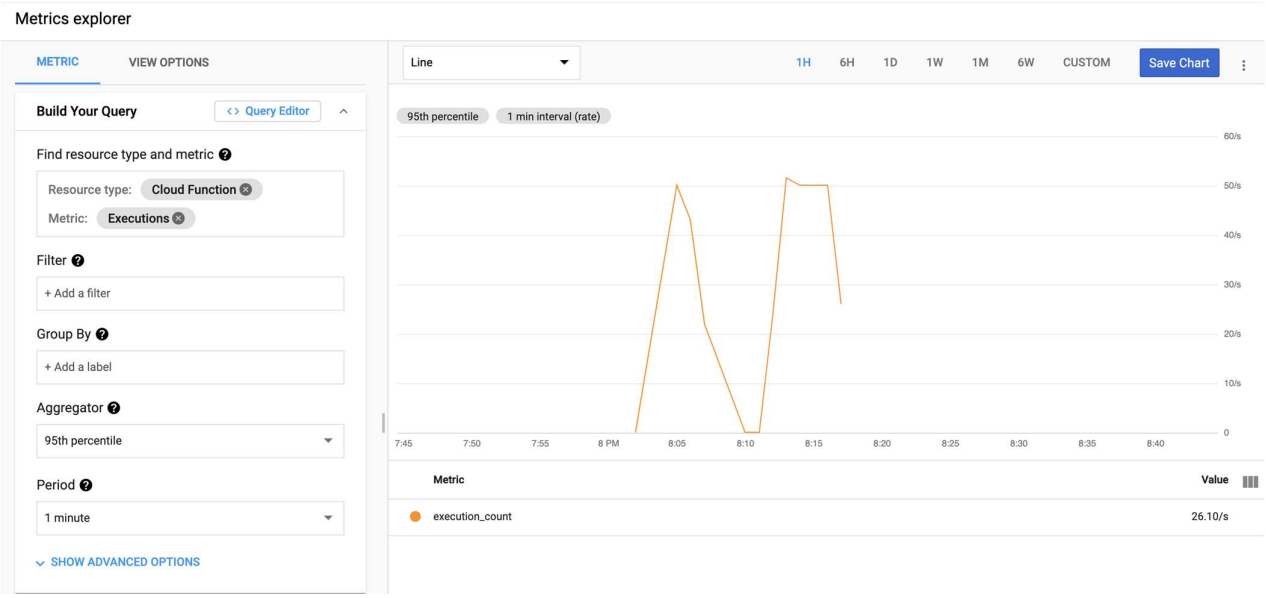
5. Change the graph type to **Stacked Bar** using the dropdown menu above the graph.

6. Explore other graph options, try a different metric. For example, click the **X** next to the Metric, select **Execution times**, and change the graph type to **Heatmap**.

Metrics Explorer



7. Continue to explore and experiment. For example, go back to the **Executions** metric and change the aggregator to the **95th percentile**. Select the graph type **Line**.



Create charts on the Monitoring Overview window

Creating charts on the Monitoring Overview window is a great way to track metrics that are important to you. In this section, you set up the same charts you created in the previous section, but now they'll be saved into the Monitoring Overview window.

1. In the left menu, click **Overview**.

2. In the Charts section, click **Add Chart**.

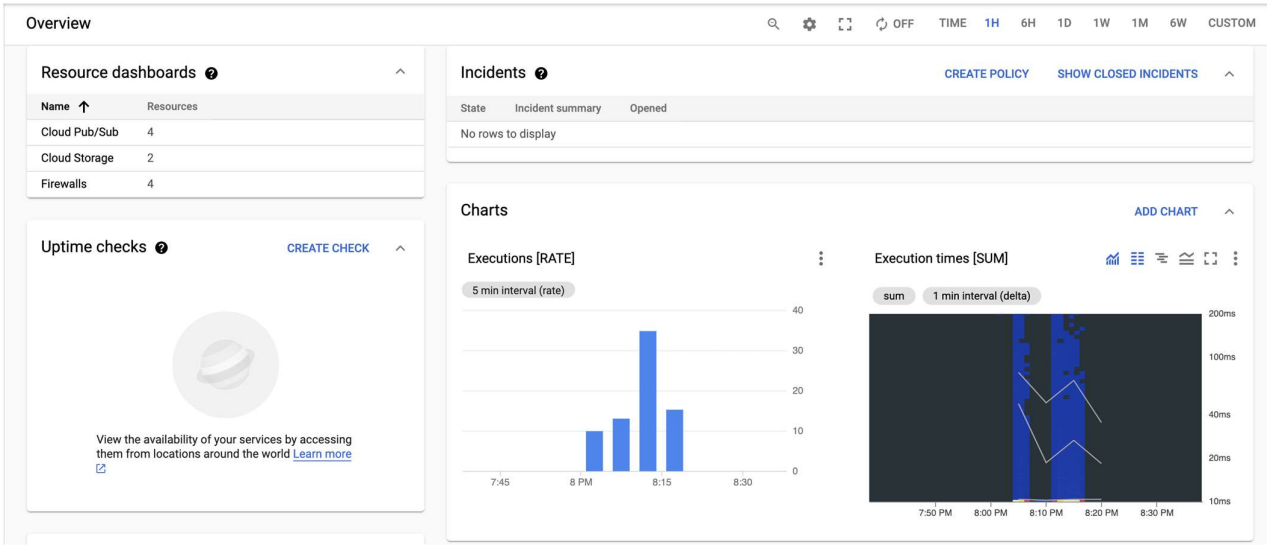
Note: If the **Add chart** option is greyed out then delete existing charts from the overview page.

3. Click into the **Find resource type and metric** field, choose the resource type and metric you used for the first chart in the last section, and then click **Save**.

4. After you create the first chart, click **Add Chart** to create the next one, using the same metric you use for the second chart in the last section. Click **Save**.

By default, the charts name themselves after the metric you're using, but you can rename them.

For a quick reference, you can see these charts in the Monitoring Overview window in the **Charts** section.



Test your Understanding

Below are multiple-choice questions to reinforce your understanding of this lab's concepts. Answer them to the best of your abilities.

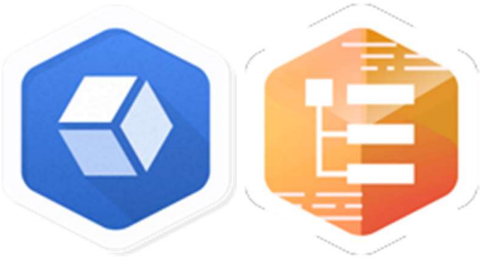
List out two types of log-based metrics.
System logs-based metrics
User-defined logs-based metrics

Vegeta is a versatile HTTP load testing tool built out of a need to drill HTTP services with a constant request rate.
True

Logs-based metrics are Cloud Monitoring metrics that are based on the content of log entries.
True

Congratulations!

Finish Your Quest



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Continue your Quest with Autoscaling an Instance Group with Custom Cloud Monitoring Metrics, or check out these suggestions:

- Cloud Monitoring: Qwik Start
- Monitoring Multiple Projects with Cloud Monitoring

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Manual Last Updated November 26, 2020

Lab Last Tested November 26, 2020

Continue questing

LAB

Monitoring and Logging for Cloud Functions

Fundamental