

Cloud Functions: Qwik Start - Command Line | Google Cloud Skills Boost

Qwiklabs : 12-15 minutes

GSP080



Google Cloud Self-Paced Labs

Overview

A cloud function is a piece of code that runs in response to an event, such as an HTTP request, a message from a messaging service, or a file upload. Cloud events are *things* that happen in your cloud environment. These might be things like changes to data in a database, files added to a storage system, or a new virtual machine instance being created.

Since cloud functions are event-driven, they only run when something happens. This makes them a good choice for tasks that need to be done quickly or that don't need to be running all the time.

For example, you can use a cloud function to:

- automatically generate thumbnails for images that are uploaded to Cloud Storage.
- send a notification to a user's phone when a new message is received in Cloud Pub/Sub.
- process data from a Cloud Firestore database and generate a report.

You can write your code in any language that supports Node.js, and you can deploy your code to the cloud with a few clicks. Once your cloud function is deployed, it will automatically start running in response to events.

This hands-on lab shows you how to create, deploy, and test a cloud function using the Google Cloud console.

This hands-on lab shows you how to create, deploy, and test a cloud function using the Google Cloud Shell command line.

What you'll do

- Create a simple cloud function
- Deploy and test the function
- View logs

Setup

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 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.

To complete this lab, you need:

- Access to a standard internet browser (Chrome browser recommended).

Note: Use an Incognito or private browser window to run this lab. This prevents any conflicts between your personal account and the Student account, which may cause extra charges incurred to your personal account.

- Time to complete the lab---remember, once you start, you cannot pause a lab.

Note: If you already have your own personal Google Cloud account or project, do not use it for this lab to avoid extra charges to your account.

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 the **Lab Details** panel with the following:

- The **Open Google Console** button
- Time remaining
- The temporary credentials that you must use for this lab
- Other information, if needed, to step through this lab

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

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

Note: If you see the **Choose an account** dialog, click **Use Another Account**.

3. If necessary, copy the **Username** from the **Lab Details** panel and paste it into the **Sign in** dialog. Click **Next**.

4. Copy the **Password** from the **Lab Details** panel and paste it into the **Welcome** dialog. Click **Next**.

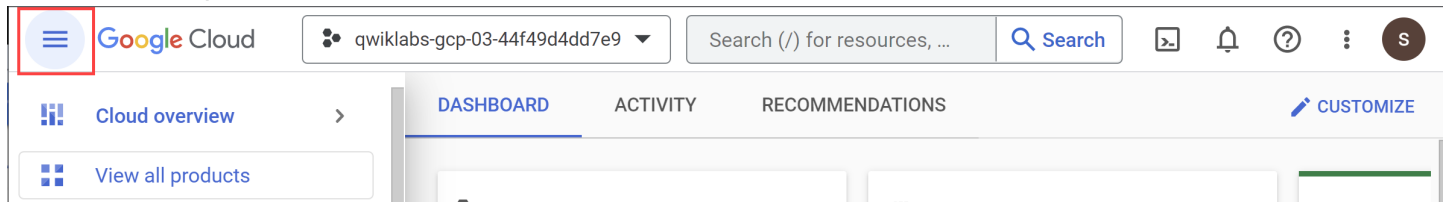
Important: You must use the credentials from the left panel. Do not use your Google Cloud Skills Boost credentials. **Note:** Using your own Google Cloud account for this lab may incur extra charges.

5. 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.

1. Click **Activate Cloud Shell**  at the top of the Google Cloud console.

When you are connected, you are already authenticated, and the project is set to your **PROJECT_ID**. The output contains a line that declares the **PROJECT_ID** for this session:

Your Cloud Platform project in this session is set to YOUR_PROJECT_ID

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

2. (Optional) You can list the active account name with this command:

```
gcloud auth list
```

3. Click **Authorize**.

4. Your output should now look like this:

Output:

```
ACTIVE: * ACCOUNT: student-01-xxxxxxxxxxxx@qwiklabs.net To set the active account, run: $ gcloud
config set account `ACCOUNT`
```

5. (Optional) 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 Note: For full documentation of gcloud, in Google Cloud,
refer to the gcloud CLI overview guide.
```

Task 1. Create a function

First, you're going to create a simple function named `helloWorld`. This function writes a message to the Cloud Functions logs. It is triggered by cloud function events and accepts a callback function used to signal completion of the function.

For this lab the cloud function event is a cloud pub/sub topic event. A pub/sub is a messaging service where the senders of messages are decoupled from the receivers of messages. When a message is sent or posted, a subscription is required for a receiver to be alerted and receive the message. To learn more about pub/subs, in Cloud Pub/Sub Guides, see [Google Cloud Pub/Sub: A Google-Scale Messaging Service](#).

To learn more about the event parameter and the callback parameter, in Cloud Functions Documentation, see [Background Functions](#).

To create a cloud function:

1. In Cloud Shell, run the following command to set the default region:

```
gcloud config set compute/region {{{project_0.default_region | ""}}}
```

2. Create a directory for the function code:

```
mkdir gcf_hello_world
```

3. Move to the `gcf_hello_world` directory:

```
cd gcf_hello_world
```

4. Create and open `index.js` to edit:

```
nano index.js
```

5. Copy the following into the `index.js` file:

```
/** * Background Cloud Function to be triggered by Pub/Sub. * This function is exported by index.js, and
executed when * the trigger topic receives a message. * * @param {object} data The event payload. *
@param {object} context The event metadata. */ exports.helloWorld = (data, context) => { const
pubSubMessage = data; const name = pubSubMessage.data ? Buffer.from(pubSubMessage.data,
'base64').toString() : "Hello World"; console.log(`My Cloud Function: ${name}`); };
```

6. Exit `nano` (Ctrl+x) and save (Y) the file.

Task 2. Create a cloud storage bucket

- Use the following command to create a new cloud storage bucket for your function:

```
gsutil mb -p [PROJECT_ID] gs://[BUCKET_NAME]
```

- **PROJECT_ID** is the Project ID in the lab details panel on the left of this lab:
- **BUCKET_NAME** is the name you give to the bucket. You can use the Project ID as the bucket name to ensure a globally unique name:

To learn more about naming buckets, In Cloud Storage Documentation, see [Bucket naming guidelines](#).

Test Completed Task

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

Create a cloud storage bucket.

Task 3. Deploy your function

When deploying a new function, you must specify `--trigger-topic`, `--trigger-bucket`, or `--trigger-http`. When deploying an update to an existing function, the function keeps the existing trigger unless otherwise specified.

For this lab, you'll set the `--trigger-topic` as `hello_world`.

1. Deploy the function to a pub/sub topic named **hello_world**, replacing `[BUCKET_NAME]` with the name of your bucket:

```
gcloud functions deploy helloWorld \ --stage-bucket [BUCKET_NAME] \ --trigger-topic hello_world \ --runtime nodejs8
```

Note: If you get `OperationError`, ignore the warning and re-run the command.

If prompted, enter Y to allow unauthenticated invocations of a new function.

2. Verify the status of the function:

```
gcloud functions describe helloWorld
```

An ACTIVE status indicates that the function has been deployed.

```
entryPoint: helloWorld eventTrigger: eventType: providers/cloud.pubsub/eventTypes/topic.publish
failurePolicy: {} resource: ... status: ACTIVE ...
```

Every message published in the topic triggers function execution, the message contents are passed as input data.

Test Completed Task

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

Deploy the function.

Task 4. Test the function

After you deploy the function and know that it's active, test that the function writes a message to the cloud log after detecting an event.

- Enter this command to create a message test of the function:

```
DATA=$(printf 'Hello World!'|base64) && gcloud functions call helloWorld --data '{"data":"'$DATA'"}'
```

The cloud tool returns the execution ID for the function, which means a message has been written in the log.

Example output:

executionId: 3zmhpf7l6j5b

View logs to confirm that there are log messages with that execution ID.

Task 5. View logs

- Check the logs to see your messages in the log history:

```
gcloud functions logs read helloWorld
```

If the function executed successfully, messages in the log appear as follows:

LEVEL: D NAME: helloWorld EXECUTION_ID: 4bgl3jw2a9i3 TIME_UTC: 2023-03-23 13:45:31.545 LOG: Function execution took 912 ms, finished with status: 'ok' LEVEL: I NAME: helloWorld EXECUTION_ID: 4bgl3jw2a9i3 TIME_UTC: 2023-03-23 13:45:31.533 LOG: My Cloud Function: Hello World! LEVEL: D NAME: helloWorld EXECUTION_ID: 4bgl3jw2a9i3 TIME_UTC: 2023-03-23 13:45:30.633 LOG: Function execution started **Note:** The logs will take around 10 mins to appear. Also, the alternative way to view the logs is, go to **Logging > Logs Explorer**.

Your application is deployed, tested, and you can view the logs.

Task 6. 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.

Congratulations!

Finish your quest

This self-paced lab is part of the [Baseline: Deploy & Develop](#), [Baseline: Infrastructure](#), and [Optimizing your Google Cloud Costs](#) quests. A quest is a series of related labs that form a learning path. Completing this quest earns you a badge to recognize your achievement. You can make your badge or badges public and link to them in your online resume or social media account. Enroll in any quest that contains this lab and get immediate completion credit. See the [Google Cloud Skills Boost catalog](#) to see all available quests.

Take your next lab

This lab is also part of a series of labs called Qwik Starts. These labs are designed to give you a little taste of the many features available with Google Cloud. Search for "Qwik Starts" in the [lab catalog](#) to find the next lab you'd like to take!

Next steps / Learn more

- Now that you used the command line to start a Cloud Function, try the [Cloud Functions: Qwik Start - Console](#) lab to start a Cloud Function using the Cloud Console.
- For more information on creating triggers and associating them with your functions, see [the Events and Triggers section of the Cloud Functions Guides](#).

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