Cloud Storage: Qwik Start - CLI/SDK | Google Cloud Skills Boost

Qwiklabs : 13-17 minutes

GSP074

Overview

Cloud Storage allows world-wide storage and retrieval of any amount of data at any time. You can use Cloud Storage for a range of scenarios including serving website content, storing data for archival and disaster recovery, or distributing large data objects to users via direct download.

In this hands-on lab you will learn how to create a storage bucket, upload objects to it, create folders and subfolders in it, and make objects publicly accessible using the Google Cloud command line.

Throughout this lab you'll be able to verify your work in the console by going to **Navigation menu** > **Cloud Storage**. You'll just need to refresh your browser after each command is run to see the new items you've created.

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 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.
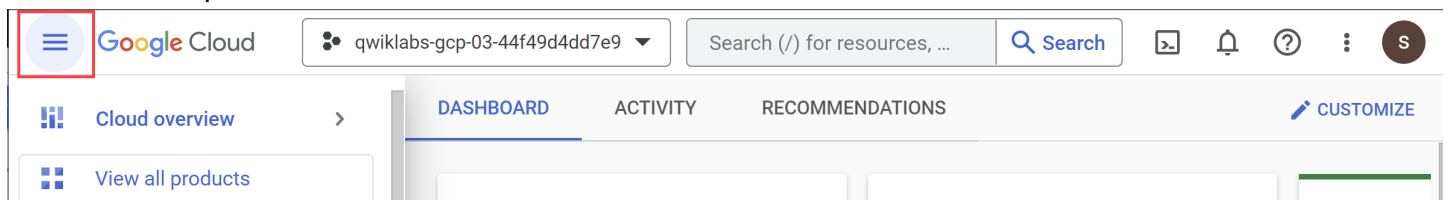
Activate Cloud Shell

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.

Set the region

Set the project region for this lab:

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

Task 1. Create a bucket

The Cloud Storage utility tool, gsutil, is installed and ready to use in Google Cloud. In this lab you use `gsutil` in Cloud Shell.

When you create a bucket you must follow the universal bucket naming rules, below.

Bucket naming rules

- Do not include sensitive information in the bucket name, because the bucket namespace is global and publicly visible.
- Bucket names must contain only lowercase letters, numbers, dashes (-), underscores (_), and dots (.). Names containing dots require verification.
- Bucket names must start and end with a number or letter.

- Bucket names must contain 3 to 63 characters. Names containing dots can contain up to 222 characters, but each dot-separated component can be no longer than 63 characters.
- Bucket names cannot be represented as an IP address in dotted-decimal notation (for example, 192.168.5.4).
- Bucket names cannot begin with the "goog" prefix.
- Bucket names cannot contain "google" or close misspellings of "google".
- Also, for DNS compliance and future compatibility, you should not use underscores (_) or have a period adjacent to another period or dash. For example, ".." or "-." or ".-" are not valid in DNS names.

Use the make bucket (mb) command to make a bucket, replacing <YOUR_BUCKET_NAME> with a unique name that follows the bucket naming rules:

gsutil mb gs://<YOUR-BUCKET-NAME>

This command is creating a bucket with default settings. To see what those default settings are, use the Cloud console **Navigation menu** > **Cloud Storage**, then click on your bucket name, and click on the **Configuration** tab.

That's it — you've just created a Cloud Storage bucket!

Note: If the bucket name is already taken, either by you or someone else, the command returns:

```
Creating gs://YOUR-BUCKET-NAME/...
ServiceException: 409 Bucket YOUR-BUCKET-NAME already exists.
```

Try again with a different bucket name.

Test completed task

Click **Check my progress** to verify your performed task. If you've successfully created a Cloud Storage bucket, you'll see an assessment score.

Create a Cloud Storage bucket.

Test your understanding

Below is a multiple choice question to reinforce your understanding of this lab's concepts. Answer it to the best of your ability.

Task 2. Upload an object into your bucket

Use Cloud Shell to upload an object into a bucket.

1. To download this image (ada.jpg) into your bucket, enter this command into Cloud Shell:

curl https://upload.wikimedia.org/wikipedia/commons/thumb/a/a4/Ada_Lovelace_portrait.jpg/800px-Ada_Lovelace_portrait.jpg --output ada.jpg

2. Use the gsutil cp command to upload the image from the location where you saved it to the bucket you created:

gsutil cp ada.jpg gs://YOUR-BUCKET-NAME **Note:** When typing your bucket name, you can use the tab key to autocomplete it.

You can see the image load into your bucket from the command line.

You've just stored an object in your bucket!

    3. Now remove the downloaded image:

rm ada.jpg

Task 3. Download an object from your bucket

- Use the `gsutil cp` command to download the image you stored in your bucket to Cloud Shell:

gsutil cp -r gs://YOUR-BUCKET-NAME/ada.jpg .

If successful, the command returns:

Copying gs://YOUR-BUCKET-NAME/ada.jpg... / [1 files][360.1 KiB/2360.1 KiB] Operation completed over 1 objects/360.1 KiB.

You've just downloaded the image from your bucket.

Task 4. Copy an object to a folder in the bucket

- Use the `gsutil cp` command to create a folder called `image-folder` and copy the image (ada.jpg) into it:

gsutil cp gs://YOUR-BUCKET-NAME/ada.jpg gs://YOUR-BUCKET-NAME/image-folder/ **Note:** Compared to local file systems, folders in Cloud Storage have limitations, but many of the same operations are supported.

If successful, the command returns:

Copying gs://YOUR-BUCKET-NAME/ada.jpg [Content-Type=image/png]... - [1 files] [360.1 KiB/ 360.1 KiB] Operation completed over 1 objects/360.1 KiB

The image file has been copied into a new folder in your bucket.

Test completed task

Click **Check my progress** to verify your performed task. If you have successfully uploaded an object into a folder in your Cloud Storage bucket, you'll see an assessment score.

Copy an object to a folder in the bucket (ada.jpg).

Task 5. List contents of a bucket or folder

- Use the `gsutil ls` command to list the contents of the bucket:

gsutil ls gs://YOUR-BUCKET-NAME

If successful, the command returns a message similar to:

gs://YOUR-BUCKET-NAME/ada.jpg gs://YOUR-BUCKET-NAME/image-folder/

That's everything currently in your bucket.

Task 5. List details for an object

- Use the `gsutil ls` command, with the `-l` flag to get some details about the image file you uploaded to your bucket:

gsutil ls -l gs://YOUR-BUCKET-NAME/ada.jpg

If successful, the command returns a message similar to:

306768 2017-12-26T16:07:570Z gs://YOUR-BUCKET-NAME/ada.jpg TOTAL: 1 objects, 30678 bytes (360.1 KiB)

Now you know the image's size and date of creation.

Task 6. Make your object publicly accessible

- Use the `gsutil acl ch` command to grant all users read permission for the object stored in your bucket:

gsutil acl ch -u AllUsers:R gs://YOUR-BUCKET-NAME/ada.jpg

If successful, the command returns:

Updated ACL on gs://YOUR-BUCKET-NAME/ada.jpg

Your image is now public, and can be made available to anyone.

Test completed ask

Click **Check my progress** to verify your performed task. If you have successfully shared an object from your storage bucket, you will see an assessment score.

Make your object publicly accessible

Validate that your image is publicly available.

- Go to **Navigation menu** > **Cloud Storage**, then click on the name of your bucket.

You should see your image with the **Public link** box. Click the **Copy URL** and open the URL in a new browser tab.

Note: Who are you looking at? This is Ada Lovelace, credited with being the first computer programmer. She worked with mathematician and computer pioneer Charles Babbage, who proposed the Analytical Engine.

Her interest in the Analytical Engine lead to translating a paper on the machine by Italian mathematician Luigi Menabrea, adding her own extensive annotations. These notes are considered the first computer program - an algorithm designed to be carried out by the machine. She developed a vision of the capability of computers, going beyond number crunching, and examined how individuals and society relate to technology as a collaborative tool.

Citation: Ada Lovelace. (2015, October 22). Wikimedia Commons, the free media repository. Retrieved 08:01, May 31, 2022 from https://commons.wikimedia.org/w/index.php?title=Ada_Lovelace&oldid=176490980, .

Test your understanding

Below is a multiple choice question to reinforce your understanding of this lab's concepts. Answer it to the best of your ability.

Task 7. Remove public access

1. To remove this permission, use the command:

gsutil acl ch -d AllUsers gs://YOUR-BUCKET-NAME/ada.jpg

If successful, the command returns:

Updated ACL on gs://YOUR-BUCKET-NAME/ada.jpg

You have removed public access to this object.

2. Verify that you've removed public access by clicking the **Refresh** button in the console. The checkmark will be removed.

Test your understanding

Below is a multiple choice question to reinforce your understanding of this lab's concepts. Answer it to the best of your ability.

Delete objects

1. Use the `gsutil rm` command to delete an object - the image file in your bucket:

gsutil rm gs://YOUR-BUCKET-NAME/ada.jpg

If successful, the command returns:

Removing gs://YOUR-BUCKET-NAME/ada.jpg...

2. Refresh the console. The copy of the image file is no longer stored on Cloud Storage (though the copy you made in the `image-folder/` folder still exists).

Congratulations!

You created a storage bucket, organized it by creating folders and subfolders, then uploaded objects to it. You also made objects in your bucket publicly accessible using Cloud Shell.

Finish your quest

This self-paced lab is part of the Baseline: Infrastructure quest. 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 this quest or any quest that contains this lab and get immediate completion credit. See the Google Cloud Skills Boost catalog to see all available quests

Next steps / Learn more

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!

Google Cloud training and certification

...helps you make the most of Google Cloud technologies. Our classes include technical skills and best practices to help you get up to speed quickly and continue your learning journey. We offer fundamental to advanced level training, with on-demand, live, and virtual options to suit your busy schedule. Certifications help you validate and prove your skill and expertise in Google Cloud technologies.

Manual Last Updated May 1, 2023

Lab Last Tested August 24, 2022