Storage Products (https://cloud.google.com/products/storage/)
Documentation (https://cloud.google.com/storage/docs/) Guides

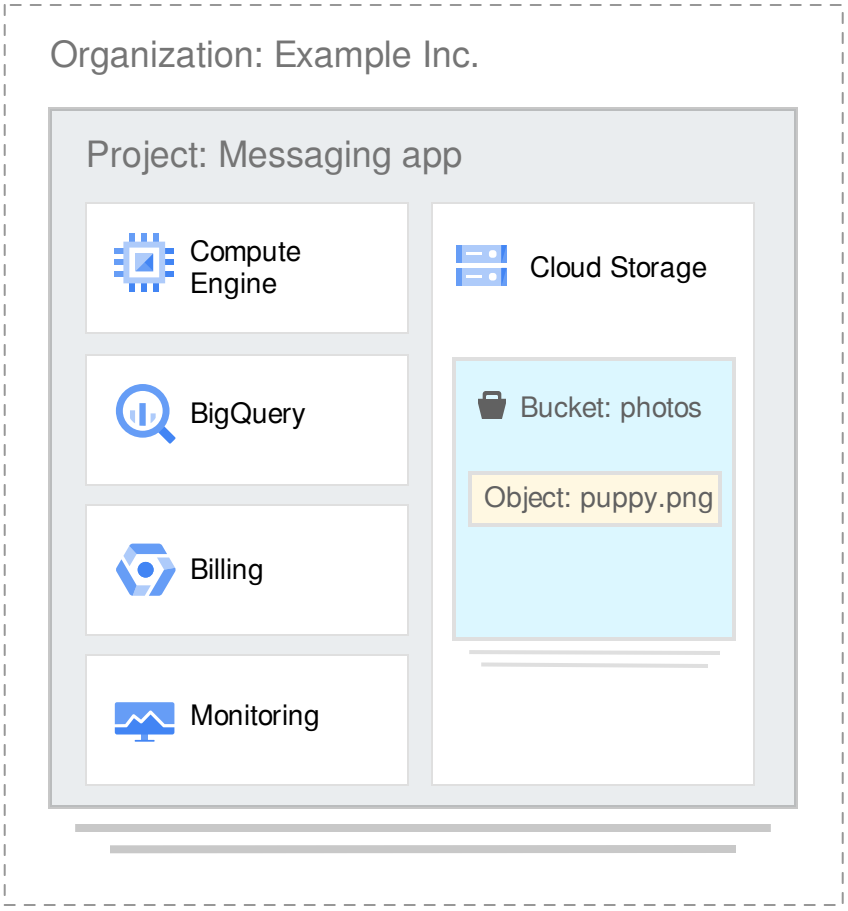
What is Cloud Storage?

This page discusses basic Cloud Storage concepts and terminology. For a more in-depth explanation of key concepts, see Key Terms (https://cloud.google.com/storage/docs/key-terms) or other concept pages (https://cloud.google.com/storage/docs/concepts).

Cloud Storage is a service for storing your *objects* in Google Cloud. An object is an immutable piece of data consisting of a file of any format. You store objects in containers called *buckets*. All buckets are associated with a *project* (https://cloud.google.com/docs/overview/#projects), and you can group your projects under an *organization* (https://cloud.google.com/resource-manager/docs/cloud-platform-resource-hierarchy#organizations).

After you create a project, you can create Cloud Storage buckets (https://cloud.google.com/storage/docs/creating-buckets), upload objects (https://cloud.google.com/storage/docs/uploading-objects) to your buckets, and download objects (https://cloud.google.com/storage/docs/downloading-objects) from your buckets. You can also grant permissions to make your data accessible to members you specify, or - for certain use cases such as hosting a website - accessible to everyone on the public internet (https://cloud.google.com/storage/docs/access-control/making-data-public).

The Cloud Storage structure looks like this:



Example of Google Cloud hierarchy

Here's how the Cloud Storage structure can apply to a real-world case:

- **Organization**: Your company, called Example Inc., creates a Google Cloud organization called `exampleinc.org`.
- **Project**: Example Inc. is building several applications, and each one is associated with a project. Each project has its own set of Cloud Storage APIs, as well as other resources.
- **Bucket**: Each project can contain multiple buckets, which are containers to store your objects. For example, you might create a `photos` bucket for all the image files your app generates and a separate `videos` bucket.
- **Object**: An individual file, such as an image called `puppy.png`.

Basic tools for Cloud Storage

Here are some basic ways you can interact with Cloud Storage:

- **Console**: The Google Cloud Console (https://console.cloud.google.com/storage/browser) provides a visual interface for you to manage your data in a browser.
- **gsutil**: gsutil (https://cloud.google.com/storage/docs/gsutil) is a command-line tool that allows you to interact with Cloud Storage through a terminal. If you use other Google Cloud services, you can download the Cloud SDK (https://cloud.google.com/sdk/docs/), which includes gsutil along with the gcloud tool for other services.
- **Client libraries**: The Cloud Storage client libraries (https://cloud.google.com/storage/docs/reference/libraries) allow you to manage your data using one of your preferred languages, including C++, C#, Go, Java, Node.js, PHP, Python, and Ruby.
- **REST APIs**: Manage your data using the JSON (https://cloud.google.com/storage/docs/json_api/) or XML (https://cloud.google.com/storage/docs/xml-api/overview) API.

Securing your data

Once you upload your objects to Cloud Storage, you have fine-grained control over how you secure and share your data. Here are some ways to secure the data you upload to Cloud Storage:

- **Cloud Identity and Access Management**: Use Cloud IAM (https://cloud.google.com/storage/docs/access-control/iam) to control who has access to the resources in your Google Cloud project. Resources include Cloud Storage buckets and objects, as well as other Google Cloud entities such as Compute Engine instances (https://cloud.google.com/compute/docs/instances/). You can grant members certain types of access to buckets and objects, such as `update`, `create`, or `delete`.
- **Data encryption**: Cloud Storage uses server-side encryption to encrypt your data (https://cloud.google.com/storage/docs/encryption) by default. You can also use supplemental data encryption options such as customer-managed encryption keys (https://cloud.google.com/storage/docs/encryption/customer-managed-keys) and customer-supplied encryption keys (https://cloud.google.com/storage/docs/encryption/customer-supplied-keys).

- **Authentication**: Ensure that anyone who accesses your data has proper credentials (https://cloud.google.com/storage/docs/authentication).
- **Bucket Lock**: Govern how long objects in buckets must be retained by specifying a retention policy (https://cloud.google.com/storage/docs/using-bucket-lock).
- **Object Versioning**: Prevent data from being overwritten or accidentally deleted by enabling the creation of noncurrent versions of your object (https://cloud.google.com/storage/docs/using-object-versioning).

Use cases for Cloud Storage

You can get started with Hosting a static website (https://cloud.google.com/storage/docs/hosting-static-website) to learn how to upload and share your site's files through a Cloud Storage bucket. To learn how to use Cloud Storage with other Google Cloud services, covering a variety of topics including Big Data, web development, machine learning, and containers, see Google Cloud tutorials using Cloud Storage (https://cloud.google.com/docs/tutorials#%22cloud%20storage%22).

Looking for other products?

If you are interested in other Google storage solutions, try these storage (https://cloud.google.com/products/storage/) services as well:

- Google Drive (https://www.google.com/intl/en/drive/): Store, manage, and share your personal files.
- Cloud Storage for Firebase (https://firebase.google.com/docs/storage/): Manage data for your mobile applications.
- Persistent Disk (https://cloud.google.com/compute/docs/disks/): Add block storage to your Compute Engine virtual machine.
- Storage Transfer Service (https://cloud.google.com/storage-transfer/docs/overview): Quickly import online data into Cloud Storage or between Cloud Storage buckets.
- Filestore (https://cloud.google.com/filestore/docs/): Create a file-based workload.

What's next

- Learn the fundamentals of Cloud Storage through the Google Cloud Console (https://cloud.google.com/storage/docs/quickstart-console) or gsutil (https://cloud.google.com/storage/docs/quickstart-gsutil).
- Get started with client libraries (https://cloud.google.com/storage/docs/reference/libraries).

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