GOOGLE CLOUD PLATFORM

CLOUD STORAGE

WHAT IS CLOUD STORAGE

Description

- A scalable, fully-managed, highly reliable, and cost-efficient object / blob store.

Good for

- Images, pictures, and videos
- Objects and blobs
- Unstructured data

Common Workloads

- Storing and streaming multimedia
- Storage for custom data analytics pipelines
- Archive, backup, and disaster recovery

FEATURES

- Integrate storage into your apps with a single unified API
- Optimize price/performance across four storage classes with Object Lifecycle Management
- Access data instantly from any storage class
- Designed for secure and durable storage
- Scalable to exabytes of data

STRUCTURE

- You can use buckets to organize your data and control access to your data
- Data is stored as Objects in Buckets
- Unlike directories and folders, you cannot nest buckets
- When you create a bucket, you specify the name, geographic location and a default storage class
- Bucket names that contain dots need be valid domain names
- The location can be a regional, dual-regional or a multi-regional one

STORAGE CLASSES

STORAGE CLASS	DESCRIPTION	PRICE/GB
Multi-Regional	• Appropriate for storing data that is frequently accessed, such as serving website content, interactive workloads, or data supporting mobile and gaming applications.	$0.026
Regional	• Store data at a lower cost, with the trade-off of data being stored in a specific regional location, instead of having redundancy distributed over a large geographic area.	$0.020
Nearline	• A low-cost, highly durable storage service for storing infrequently accessed data • 30 day minimum and there is a cost for data access	$0.010
Coldline	• A very-low-cost, highly durable storage service for data archiving, online backup, and disaster recovery • 90-day minimum storage duration, costs for data access, and higher per-operation costs	$0.007

STORAGE CLASSES

Four types - Multi-Regional Storage, Regional Storage, Nearline Storage, Coldline Storage

Bucket default storage class

- Each bucket has a default storage class - specified when you create your bucket
- Objects that you add to the bucket use this default storage class
- You can change this, but only new Objects will be affected

Object storage class

- You can use the API to specify the storage class of individual objects when you add them to a bucket, or change their class later.
- The storage class that you can set for an object depends on the location where the bucket that holds the object exists.

DEMO: CREATING STORAGE BUCKETS

- Open the Cloud Storage dashboard in the Google Cloud Platform Console
- Click Create bucket
- Specify a Name, subject to the bucket name requirements
- A Location where the bucket data will be stored.
- Select a Default storage class for the bucket.
- Click Create.

DEMO: BUCKET INFORMATION

Open the Cloud Storage browser in the Google Cloud Platform Console.

List Buckets

```
$ gsutil ls
```

Determining a bucket's size

```
$ gsutil du -s gs://[BUCKET_NAME]
```

Displaying a bucket's location and default storage class

```
$ gsutil ls -L -b gs://[BUCKET_NAME]
```

Changing the Default Storage Class of a Bucket

```
$ gsutil defstorageclass set [STORAGE_CLASS] gs://[BUCKET_NAME]
```

DEMO: MOVING AND DELETING BUCKETS

Step 1) Create a new bucket

```
$ gsutil mb gs://[BUCKET_NAME]
$ gsutil mb -p [PROJECT_NAME] -c [STORAGE_CLASS] -l [BUCKET_LOCATION]
gs://[BUCKET_NAME]/
```

Step 2) Copy files from your old bucket to your new bucket

```
$ gsutil cp -r gs://[SOURCE_BUCKET]/* gs://[DESTINATION_BUCKET]
```

Step 3) Delete the files from your old bucket

```
$ gsutil rm -r gs://[SOURCE_BUCKET]
$ gsutil rm -a gs://[SOURCE_BUCKET]/**
```

DEMO: OBJECTS – UPLOAD/DOWNLOAD/LIST

Uploading Objects

```
$ gsutil cp [LOCAL_OBJECT_LOCATION] gs://[DESTINATION_BUCKET_NAME]
```

Listing Objects

```
$ gsutil ls -r gs://[BUCKET_NAME]/**
```

Downloading Objects

```
$ gsutil cp gs://[BUCKET_NAME]/[OBJECT_NAME] [OBJECT_DESTINATION]
```

Deleting Objects

```
$ gsutil rm gs://[BUCKET_NAME]/[OBJECT_NAME]
```

DEMO: OBJECTS – RENAME, COPY MOVE

Renaming an object

$ gsutil mv gs://[BUCKET_NAME]/[OLD_OBJECT_NAME] gs://[BUCKET_NAME]/[NEW_OBJECT_NAME]

Copying an object

$ gsutil cp gs://[SOURCE_BUCKET_NAME]/[SOURCE_OBJECT_NAME] gs://[DESTINATION_BUCKET_NAME]/[NAME_OF_COPY]

Moving an object

$ gsutil mv gs://[SOURCE_BUCKET_NAME]/[SOURCE_OBJECT_NAME] gs://[DESTINATION_BUCKET_NAME]/[DESTINATION_OBJECT_NAME]

Changing Object Storage Classes

$ gsutil rewrite -s [STORAGE_CLASS] gs://[PATH_TO_OBJECT]

DEMO: VIEW/EDIT OBJECT METADATA

1. Open the Cloud Storage browser in the Google Cloud Platform Console
2. In the list of buckets, click on the name of the bucket that contains the desired object, and navigate to the object
3. Click the more options button for the object
4. Click Edit metadata
5. View/Edit metadata as desired
6. Click Save

Viewing object metadata

```
$ gsutil ls -L  gs://[BUCKET_NAME]/[OBJECT_NAME]
```

Editing object metadata

```
$ gsutil setmeta -h "[METADATA_KEY]:[METADATA_VALUE]"
gs://[BUCKET_NAME]/[OBJECT_NAME]
```