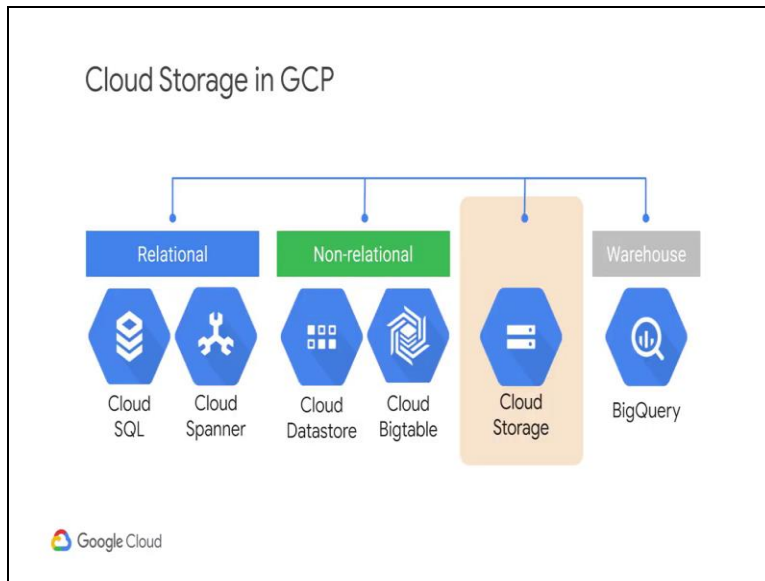


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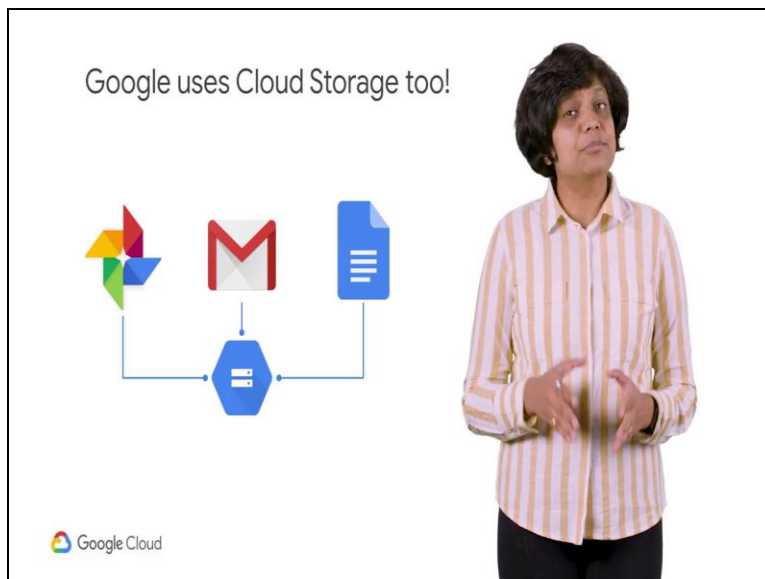
**Lecture-28**  
**Unstructured Storage using Cloud Storage**

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In this topic you will consider how you can leverage unstructured storage using cloud storage. Cloud storage is just one of the many storage options on GCP and stores and search object data also known as blob data.

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You can store an unlimited amount of objects in the cloud up to 5 terabytes in size each. Cloud storage is well-suited for binary or object data such as images media servings and backups. Cloud storage is the same storage that we use for images in Google photos, Gmail attachments, Google Docs and so on. Users have a variety of storage requirements for a multitude of use cases. To cater to these requirements we offer different classes of cloud storage. The classes are based on how often the data is accessed.

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Cloud Storage organizes files into buckets

- Globally unique name
- Location (region or multi-region)
- Storage class
- IAM policies or access-control lists
- Object versioning setting
- Object lifecycle management rules



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Multi-regional storage costs a bit more but it is due redundant that means you pick a broad geographical location like the United States, the European Union or Asia and cloud storage stores your data in at least two geographic locations separated by at least 160 kilometres. This option is ideal for storing data that is frequently accessed around the world such as serving website content, streaming videos or gaming and mobile applications.

Regional storage lets you store your data in a specific GCP region. For example US central one, Europe West one or Asia East one it is cheaper than multi-regional storage but it offers less redundancy. This option is ideal for data analytics and machine learning jobs. Nearline storage is a low cost highly durable storage service for storing in frequently accessed data. This storage class is a better choice than multi-regional storage or regional storage in scenarios where you plan to read or modify your data on average once a month or less.

For example if you want to continuously add files to cloud storage and plan to access these files once a month for analysis Nearline storage is a great choice. Typical users for this storage class in Clewd long tail content multimedia source file storage and online backups. Coldline storage is a very low-cost highly durable storage service for data archiving online backups and disaster recovery. Cold line storage is the best choice for data that you plan to access at most once a year.


Due to this slightly lower availability 90-day minimum storage duration, cost for data access and higher pre operational cost. Typical use cases include archive data, data with lengthy storage durations from legal or regulatory requirements, tape migrations and disaster recovery. Cloud storage is unique in a number of ways it has a single API milliseconds data access latency and 11 ninth durability across all storage classes.

Cloud storage also offers object lifecycle management which uses policies to automatically move data to lower cost storage classes as it is accessed less frequently throughout its life.

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Cloud storage files are organized into buckets. When you create a bucket you give it a globally unique name. You specify a geographic location where the bucket and its contents are stored and you choose one of the default storage classes that you were introduced to earlier. There are several ways to control users access to your objects and buckets. For most purposes cloud IAM is sufficient. Rules are inherited from project to bucket to object.

If you need final control you can create access control lists ACL's define who has access to your bucket and objects as well as what level of access they have each ACL consists of two pieces of information a scope which defines who can perform the specified actions and a permission which defines what action can be performed for example read or write. If you want you can turn on object versioning on your buckets.

Cloud storage keeps a history of modifications that is overrides or deletes for all objects in the bucket. You can list the archived versions of an object restore an object to an older state or permanently delete a version as needed if you do not turn on object versioning new always overrides old. Cloud storage also offers lifecycle management policies for example you could tell cloud storage to delete objects older than 365 days or to delete objects created before January 1st 2013 or to keep only the three most recent versions of each object in a bucket that has versioning enabled.