Cloud Storage

TJ Cloud Computing Club

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1 Introduction

Data storage is a cornerstone of cloud computing. From Google Drive to OneDrive to iCloud to Dropbox, these cloud providers allow for public cloud storage. But when you're doing anything CS related in the real world, you need more control, so public cloud providers allow for storage within their cloud platforms. This is the foundation of all future services we will use so it's very important. Luckily, it's super easy to do!

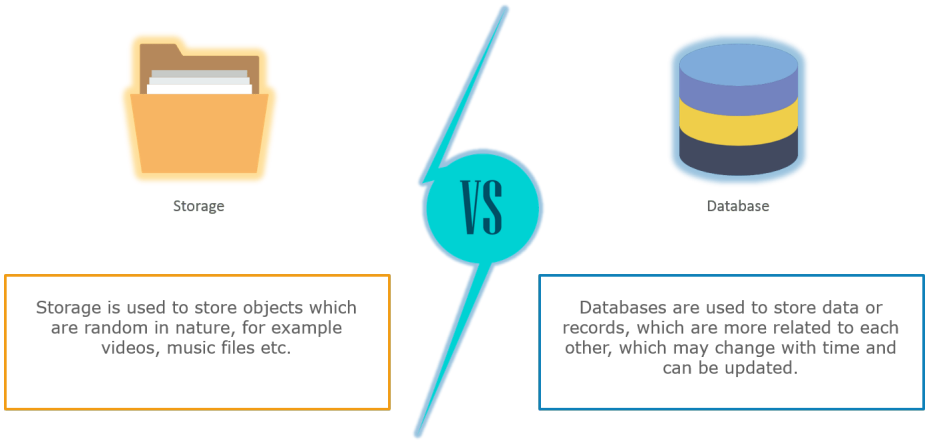
2 AWS vs. GCP vs. Azure

All these cloud platforms provide a wide variety of storage options. All of them provide the same basic storage services but under different names. The names of most basic, unstructured object data storage services are listed below:

- AWS S3 (Simple Storage Service)
- GCP Buckets
- Azure Containers Blobs

All the platforms allow for these objects to be accessed publicly by link. Because of this, file storage can even become a website by hosting storing html files that are accessed by link.

3 Storage vs. Databases



File systems not only require lower processing, they are easy to access as well. Anytime you want data from a database you have to do an expensive query. But for a file system it does not take that much processing because accessing a file is quite simple and light weight. Also, database storage is more expensive than file system storage.

4 Storage in Azure

Azure Storage is the cloud storage solution for modern applications that rely on durability, availability, and scalability to meet the need of their customers.

The very first thing you need, to use storage in Azure is a storage account.

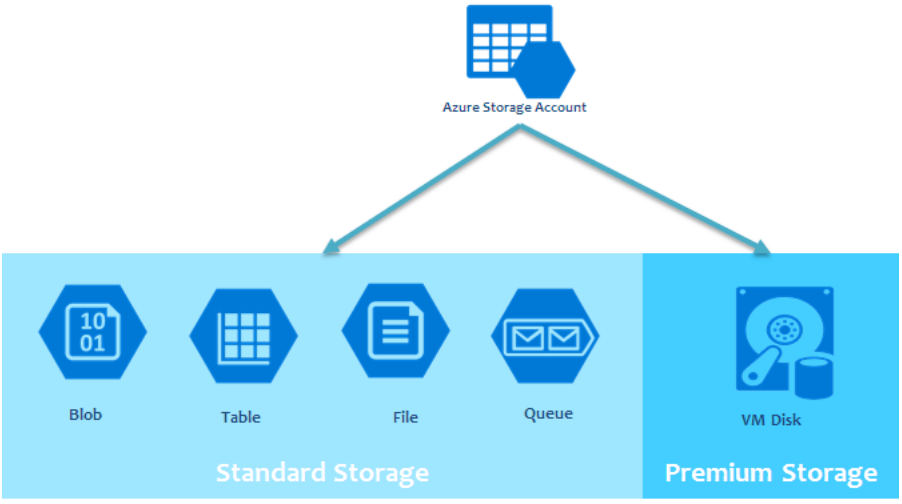
4.1 Storage Accounts

To use any storage type in Azure, you first have to create an account in Azure. After creating an account, you can transfer data to or from services in your storage account. Create a storage account to store up to 500 TB of data in the cloud

Storage accounts allow you to use 4 different basic storage services:

- **Tables** - stores large amounts of structured data. The service is a NoSQL datastore which accepts authenticated calls from inside and outside the Azure cloud. Azure tables are ideal for storing structured, non-relational data.
- **Blobs** - stores unstructured data in the cloud as objects/blobs. Blob are any type of text or binary data including: document, media file, or application installer
- **Queue** - stores large numbers of messages that can be accessed from anywhere in the world via authenticated calls using HTTP or HTTPS.

- **File Storage** - Stores data ideal for being shared and used on hardisks. They are fully managed file shares in the cloud that are accessible via the industry-standard Server Message Block (SMB) protocol. They can be used to expand the storage on any windows laptop up to 5 TB.



5 Storage in AWS

AWS Storage is similar to Azure storage but also has different storage services based on your needs (reliability or scalability). These services are:

- **S3 Buckets** - stores objects data as objects without a hierarchy (unstructured). Uses an identification key that can be obtained from anywhere.
- **Elastic File System (EFS)** - Scalable storage and relatively fast outputs. Helpful for running servers or analyzing fluctuating data. These can be used with several EC2s (VM) or AWS services. Faster than S3, but slower than EBS.
- **Elastic Block Storage (EBS)** - Storage for the drive of your virtual machines, and can only be used with EC2s (VM). Uses a file system interface and generally faster than S3 or EFS.