Types of Storage Services

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Elastic Block Store (EBS) - Block

Data is split into evenly split blocks
Directly accessed by the Operation System
Supports only a single write volume

When you need a virtual hard drive attached to a VM



NFS, SMB

Storage



AWS Elastic File Storage (EFS) - File

File is stored with data and metadata
Multiple connections via a network share
Supports multiple reads, writing locks the file.

When you need a file-share where multiple users or VMs need to access the same drive



Amazon Simple Storage Service (S3) - Object

Object is stored with data, metadata and Unique ID Scales with limited no file limit or storage limit Supports multiple reads and writes (no locks)

HTTP/S, API Internet

NAS Exports

When you just want to upload files, and not have to worry about underlying infrastructure. Not intended for high IOPs



Introduction to S3

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What is Object Storage (Object-based Storage)?

data storage architecture that manages data as objects, as opposed to other storage architectures:

- file systems which manages data as a files and fire hierarchy, and
- block storage which manages data as blocks within sectors and tracks.



S3 provides you with unlimited storage.

You don't need to think about the underlying infrastructure
The S3 Console provides an interface for you to upload and access your data



Objects contain your data. They are like files. Object may consist of:

- · Key this is the name of the object
 - · Value the data itself made up of a sequence of bytes
 - Version ID when versioning enabled, the version of object
 - Metadata additional information attached to the object



S3 Bucket

Buckets hold objects. Buckets can also have folders which in turn hold objects

S3 is a universal namespace so bucket names must be unique (think like having a domain name)

You can store an individual object from 0 Bytes to 5 Terabytes in size

S3 Storage Classes

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AWS offers a range of S3 storage classes that trade Retrieval Time, Accessibility and Durability for Cheaper Storage

S3 Standard (default)

Fast! 99.99% Availability, 11 9's Durability. Replicated across at least three AZs

S3 Intelligent Tiering

Uses ML to analyze object usage and determine the appropriate storage class. Data is moved to the most cost-effective access tier, without any performance impact or added overhead.

S3 Standard-IA (Infrequent Access)

Still Fast! Cheaper if you access files less than once a month.

Additional retrieval fee is applied, 50% less than Standard (reduced availability)

S3 One-Zone-IA

Still Fast! Objects only exist in one AZ. Availability (is 99.5%), but cheaper than Standard IA by 20% less (Reduce durability) Data could get destroyed. A retrieval fee is applied.

S3 Glacier

For long-term cold storage, Retrieval of data can take minutes to hours but the off is very cheap storage

S3 Glacier Deep Archive

AWS Snow Family

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AWS Snow Family are storage and compute devices used to physically move data in or out the cloud when moving data over the internet or private connection it to slow, difficult or costly.



Snowcone

- Comes in two sizes: 8 TB of Storage (HHD)
- 14 TB of Storage (SSD)





Snowball Edge

- Comes generally in two type: Storage Optimized
 - 80 TR
- Compute Optimized









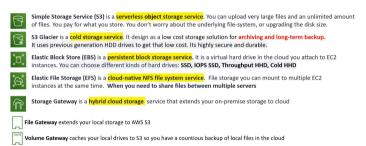






Storage Services

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Tape Gateway stores files onto virtual tapes for backing up your files on very cost effective long term storage.

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AWS Snow Family are storage devices used to physically migrate large amounts of data to the cloud.

- Snowball and Snowball Edge are briefcase size data storage devices. 50-80 Terabytes
- Snowmobile is a cargo container filled with racks of storage and compute that is transported via semi-trailer tractor
 truck to transfer up to 100PB of data per trailer.
- Snowcone is a very small version of Snowball that can transfer 8TB of data.



AWS Backup a fully managed backup service that makes it easy to centralize and automate the backup of data across multiple AWS services eg. EC2, EBS, RDS, DynamoDB, EFS, Storage Gateway, You create backup plans.



CloudEndure Disaster Recovery continuously replicates your machines into a low-cost staging area in your target AWS account and preferred Region enabling fast and reliable recovery in case of IT data center failures.



Amazon FSx is a feature rich and highly-performant file system. That can be used for Windows (SMB) or Linux (Lustre)





Amazon FSx for Lustre uses Linux's Lustre file system and allows you to mount FSx to Linux servers