

AWS Storage

Types of storage

Simple Storage Server (S3)

Elastic file system (EFS)

Snowball
Glacier

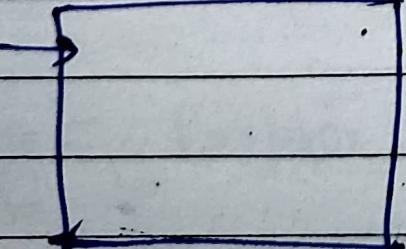
Elastic Block Storage (EBS)

AWS offers a complete range of cloud storage service to support both application and archival compliance requirement. Select from objects, files and block storage service as well as cloud data migration options to start designing the foundation of your cloud IT environment.

Object Storage

Block Object Storage

No division of Block



HTTP / HTTPS

divided Equal Size



EBS

Block storage

It is suitable for transactional databases, random read / write loads and structured databases storage.

It divides the data to be stored in evenly size block for instance, a file can be split into evenly sized blocks before it is stored

Data Block stored in Block Storage would be not contain meta-data (data created, data modification, content type, etc)

It only keeps address where data blocks are stored it does not care what is in that block just how to retrieve it when required.

Eg → EBS

Object Storage

It stores file as a whole and does not divide them.

In Object Storage, an object is

- The file / data itself
- Its metadata
- Object Global Unique ID

The Object Global Unique ID is a Unique Identifier for the Object (Can be object name itself) and it must be unique such that it can be retrieved disregarding where its physical storage location is.

Object Storage Cannot be Mounted as a drive

Eg:- Probox, S3, facebook, etc.

Simple Storage Service (S3)

- S3 is a storage for the internet. It has a simple Web service interface for Simple Storage & Retrieving of any amount of data, any time where on internet
- Object Based Storage
- Cannot install OS on S3
- S3 has distributed data-store architecture where object are redundantly stored in multiple location (Min 3 location)
- Data Stored in Bucket
- Bucket is flat container of objects
- Max Capacity of a Bucket is 5TB.
- you can create folder in your Bucket and nested Bucket.
- Bucket ownership is Non-transferrable
- S3 Bucket is region specific
- you can have upto 100 Buckets per account.

Naming Rule - S3 Bucket

- Unique name.
- name cannot be change.
- 3-63 Characters long.
- Part of URL used to access bucket.
name must be series of one or more
Labels { xyz.bucket }
- Cannot use uppercase and hyphen in
start or end.
- By default, Bucket and its object are
private.

S3 Bucket - Subresources

Sub-Resources includes :-

Life cycle - To decide on object life cycle
management.

Website - To hold configuration related to
static website hosted in S3
Bucket.

Versioning - Keep object Version as it changes (Get Updated.)

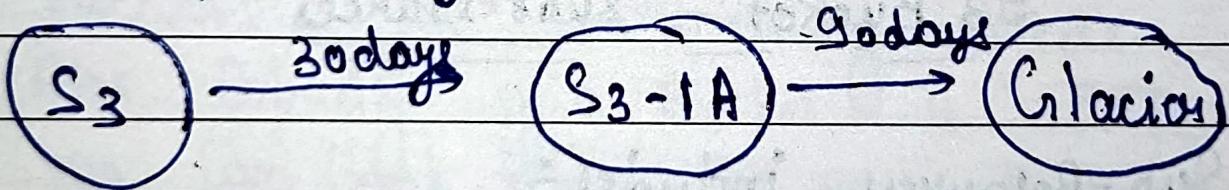
Access Control list - Bucket policies

The name is simply two parts :-

Bucket Region's Endpoint / bucket name

Ex:- S3 bucket named mybucket in Europe West Region.

<https://s3-eu-west-1.amazonaws.com/>
mybucket



S3 Object

- upto 5 TB
- Retrieve by Unique key
- Object in AWS is uniquely identified and addressed through

- Service endpt.
- Bucket name
- Object key
- Optionally Object Version

→ Never leave Region

→ You Can grant S3 bucket /object permission to :-

- Individual user
- AWS Account
- Make Resource public
- or to all authenticate User

S3 Bucket Versioning

- It is S3 Sub resource used to protect against accidental Object/data deletion or Over writes
- It can also be used for data Retention and archive
- Once you Enable Versioning on a Buckets it Cannot be disable , however it can be suspended
- When Enable , Bucket Versioning will protect Existing and new Objects and maintain their Version as they are updated.
- Updating Object refers to PUT , POST , COPY , DELETE actions on objects.
- When Versioning is Enabled and you try to delete an Object a delete Marker is placed on Object
 - ↳ you can still View the Object and the delete Marker
- If you Reconsider deleting the Object you can delet the "Delete Marker" and Object will be available again

Bucket Versioning State :-

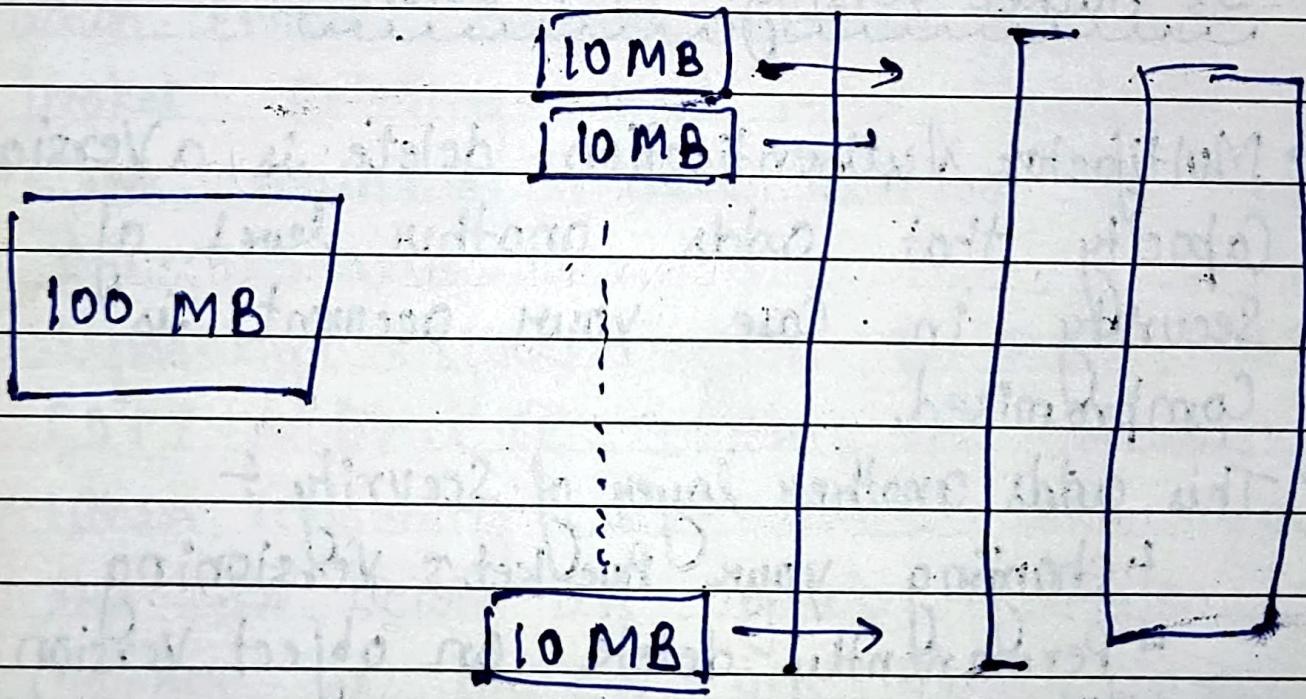
- Enabled
- Suspended → Unversioning
- It apply to all object ; not partially applied
- Object Existing before Enabling Versioning will have a Version ID or "NULL"

S3 Bucket Version MFA Delete

- Multifactor Authentication delete is a Version Capacity that adds another level of Security in case your account is Compromised.
- This adds another layer of Security :-
 - ↳ changing your Bucket's Versioning
 - ↳ Permanently delete an object version
- MFA delete Require :-
 - ↳ your Security Credentials'
 - ↳ code display on an approved physical device

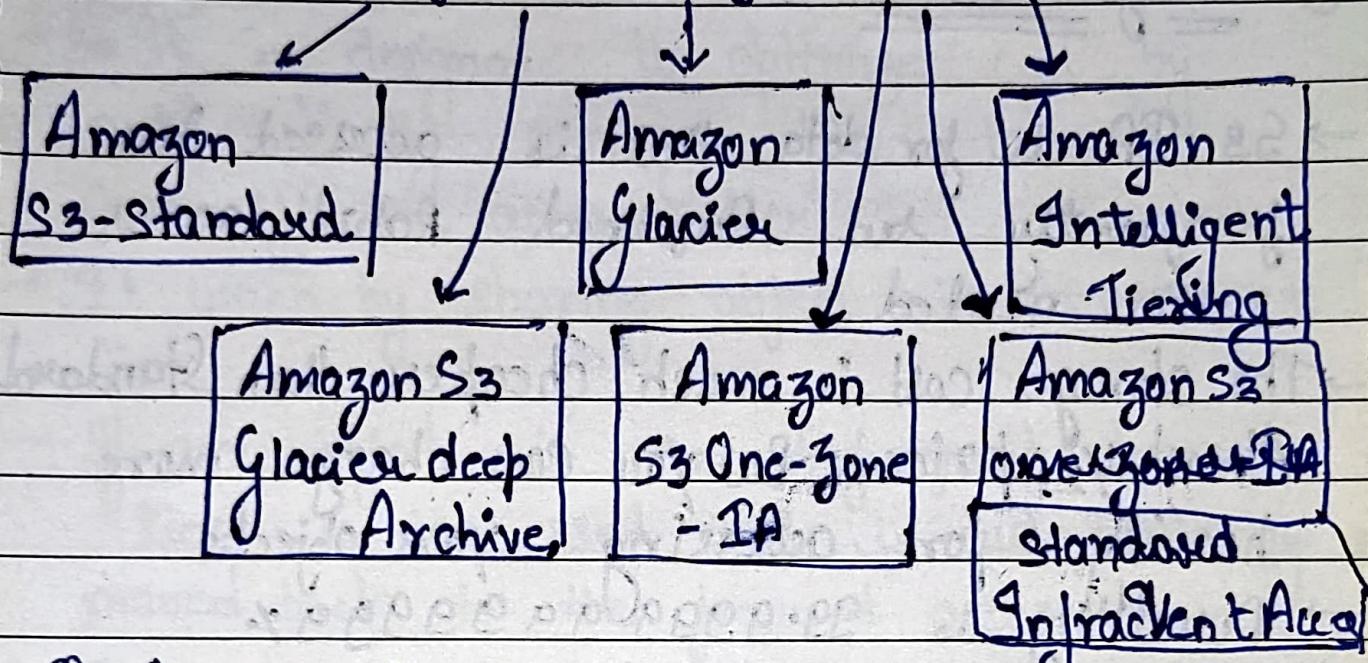
S3 Multipart Upload

- Is used to upload an object in parts
- Parts are uploaded independently and in parallel in any Gated Order.
- It is recommended Object Size of 100 MB or larger.
- This is done through S3 Multipart Upload API



parallel processing

Storage Classes of Amazon S3



① Amazon S3 Standard :

- High durability Availability and performance object storage for frequently access data.
- Durability is 99.9999999999%
- Designed for 99.99% available
- Support SSL for data in-transit and encryption of data at rest
- The Storage Cost fairly high but there is very less charges for accessing objects
- Large object can be uploaded in Single PUT is 5GB.

② Amazon S3-IA :-

- S3-IA is for data that is accessed less frequently but required rapid access when needed.
- The storage cost is much cheaper than Standard. Almost $\frac{1}{2}$ price. But you can charge more heavily for accessing your objects.
- Durability is 99.9999999999%.
- Resilient from events that impact on entire A-z.
- Availability 99.9% in year.
Support SSL for data in transit and Encryption of data at rest.
- Data that is deleted within 30 days will be charged for a full 30-days.
- Backed with Amazon S3 Services level Agreement for Availability.

③ Amazon S3 Intelligent Tiering

- It is designed to optimize cost by automatically moving data to most cost-effective access tier.
 - It works by sharing object in two access tiers.
 - If any object in the infrequent access tier is accessed it is automatically moved back to the frequent access tier.
- There are no retrieval fees when using S3 Intelligent Tiering storage class and no additional tiering fee when objects are moved b/w access tiers.
- same low latency and high performance of S3 - standard
 - Objects less than 128 KB cannot move to TA
 - Durability = 99.999999999%
 - Availability is 99.9%.

④ Amazon One-Zone IA

- S3 Tb is for data that is accessed less frequently, But Required rapid access when need.
- Single A-z
- Ideal for those who want lower cost option
- It is good choice for storing secondary backup copies of On-premises data or easily Re-Creatable data.
- you Can use S3 life Cycle policy
- Durability is 99.999999999 %.
- Availability is 99.5 %.
- Because S3 One zone-IA stores data in a single A-z data stores ; in this storage class will be lost in the event of A-z destruction.

⑤ Amazon S3 Glacier

- Secure, durable, low Cost storage class for data Archiving.

- Provide 3 Retrieval option that range from few minute to hour.
- you can upload Object directly to Glacier or Use lifecycle policies.
- Durability = 99.999999999%.
- Data is Resilient in Event of One Entire AZ destruction
- support SSL for data in transit and encryption data at rest.

Amazon S3 Glacier Deep Archive

- Cheapest storage
- long period = 10 years
- stored at 3 location
- Durability = 99.999999999%.
- Ideal alternate to magnetic tape library.
- 75% storage cost
- Availability = 99.9%