

- Simple Storage Service
- It is easy to use, with a simple web services interface to store and retrieve any amount of data from anywhere on the web.
- Object based Storage
- Data is spread across multiple devices and facilities
- File Size 0-5 TB
- Unlimited Storage
- Files are stored in Buckets.
 - ↓
 - universal Namespace
 - Unique globally
- S3 - eu-west-1. amazonaws.com / acloudguru.
- S3 - Region - AWS - Bucket Name
- HTTP 200 if Upload Successful

→ RAW for PUTS of new objects

Eventual Consistency for overwrite PUTS and

DELETES (Take time to Propagate)

→ § 3 - Key (Name)

- Value (Data)

- Version ID

- Metadata (Data about Data)

- Subresources

- Access Control Lists (Access modifiers on Data)

- Torrent

→ 99.9 % Availability

99.9999999 - 11 '9's - Durability

→ Tired Storage

→ Lifecycle Management

→ Versioning

→ Encryption

S3 STANDARD — 99.99% Availability
 " 9's % Durability
 can sustain loss of 2 facilities "once"

S3 IA — Infrequently Accessed Data
 — Lower fee than S3
 — Has a retrieval fee

S3 oneZone-IA → Lower cost but only one zone
 does not have multiple Availability Zone

Glacier — very cheap, only for Archival

Expedited — few mins / high fee

Standard — 3-4 hrs

Bulk — 5-12 hrs

→ same Durability for all types

→ No retrieval fee for S3 Standard and all

Other classes have a fee

→ charged → Transfer Acceleration.
 → Storage
 → Requests

→ Storage Management Pricing
 → Data Transfer Pricing

- Transfer Acceleration : enables fast and secure transfers files over long distances . uses Amazon CloudFront's globally distributed edge locations .
- S3 does not require global region Selection . You can view all S3 buckets by one place even though they are stored in different places
- Bucket Name - Lower case start
 - No Exclamation
 - Universal
- Default Encryption is Present in S3 .
- Any file uploaded in S3 bucket are Private in nature . we need to make it Public to make the file Public .
- To make Public first access needs to be Public and then they can be Public .

Encryption — client side
— server side
✓

- 1) Amazon S3 Managed Keys
- 2) KMS
- 3) Customer provided Keys.

→ Control access to buckets using either a bucket ACL or using bucket Policies.

→ Once versioning is enabled in a bucket it can't be suspended. The object is deleted only then versioning is suspended.

→ Everytime you add a file it's Private by nature

→ Even when file deleted, a marker is added and then deleted.

→ To delete objects, delete by versioning show in the S3 buckets.

→ Integrates with lifecycle rules

→ MFA delete capability as layer of security.

- Cross region replication requires versioning enabled in the replicate bucket.
- only new & changed objects are replicated old objects are not automatically updated.
- Delete markers are not updated in the replicated buckets.
- Regions in Region replication should be unique.
- Cannot replicate to multiple buckets. or use daisy chaining.
- Life Cycle Management
 - Can be used with versioning
 - Can be applied to both Previous and Current versions
 - - 1) Transition to S3-IA
 - 2) Transition to Glacier after IA
 - 3) Permanently Delete.

→ A Content delivery network is a System of distributed Servers that deliver webPages and other web Content to a user based on the geographic locations of the user, the origin of the webpage and a Content delivery Server.

→ Edge Location is where Content will be CACHED
Origin is origin of all files that CDN will be distributing

Distribution is the name given the CDN which consists of a collection of edge locations

→ Amazon cloudfront can be used to deliver your entire website, Static, & streaming etc with the best Possible Performance

→ works also with non AWS- Origin Server.

Web Distribution: Typically used for websites

RTMP: Used for Media Streaming.

- Edge locations are not just read only, you can write them too
- objects are cached for the life of TTL
- when we clear cached objects, AWS charges for the clearance.
- Minimum TTL $\Rightarrow 0$
Default TTL $\Rightarrow 1$ Day
- Restrict Viewer Access is used to restrict the access to Cloudfront using signed URL's etc.
- we can create multiple origins in the distribution.
- Geo Restriction
 - white list (Allow)
 - Black list (Do not allow)
- Invalidation is deleting the object before TTL.

Security & Encryption

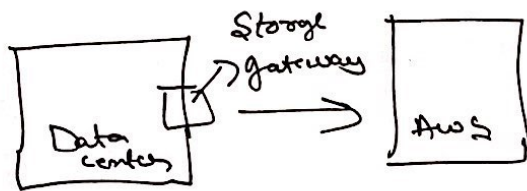
- All newly Created buckets are Private.
- Access Control by → Bucket Policies
 - Access Control lists.
- S3 Can be Configured to create access logs which log all requests made to S3 bucket.
- In Transit
 - ↳ SSL/TLS

At Rest

- ↳ Server Side
 - 1) S3 Managed Keys - SSE-S3
 - AES 256
 - 2) AWS KMS, logs who used & where, when
 - 3) SSE-C, Customer Keys.
- ↳ Client Side - we encrypt & upload.

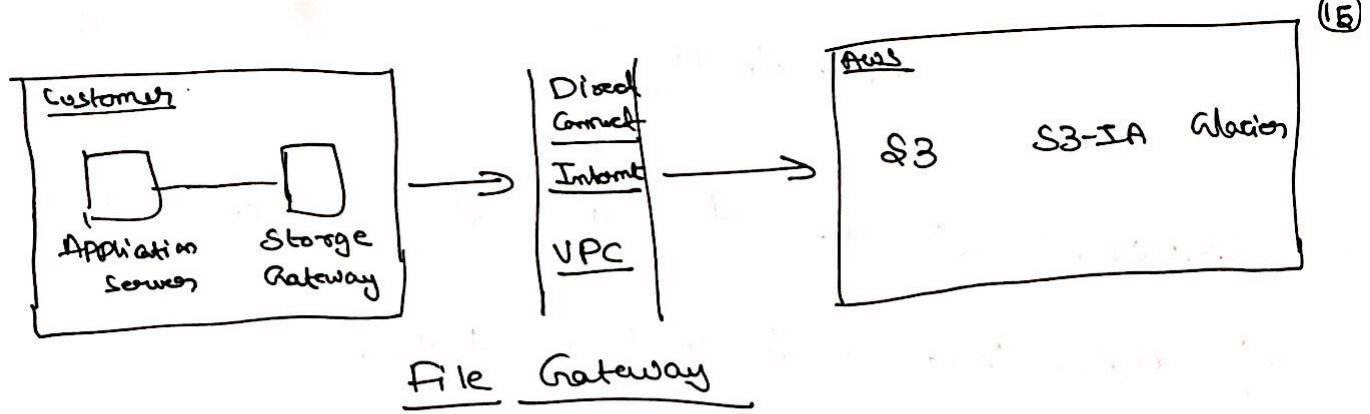
Storage Gateway

→ AWS Storage gateway is a service that connects an on premises software appliance with cloud based storage to provide seamless and secure integration b/w an organizations on premise IT environment and AWS storage infrastructure.



→ AWS Storage gateway software is a VM which supports either VMware ESXi or Microsoft Hyper V

- 1) File Gateway (NFS)
- 2) Volume Gateway (VM's, MySQL - object*) Block Based
- 3) Stored Volumes
- 4) Cached Volumes
- 5) Taped Gateway (VTL)



→ Snapshots are incremental backups

→ stored volumes is 1GB - 16 TB

→ stored volumes are 100%. we keep complete copy of it onsite and complete copy backed up.

→ Asynchronous

→ Cached Volumes: Not complete copies only recent data in Premises all other data in S3.

→ storage is 1GB - 32 TB

→ Tape Gateway: used for backup and uses

Popular backup applications like NetBackup

Veeam etc.

Backup → gateway

All Data → stored

Some Data → Cached

Files Data → File

Snowball

- Snowball is to transfer large amounts of data into and out of AWS.
- 256 bit encryption, Trusted Platform Module. AWS performs a Software erasure after data is received.
- Snowball edge has storage and compute capabilities. Can run lambda functions on it.
- Snowmobile
- Import / Export
- you can use bucket Policies to make entire S3 buckets Public
- Can use S3 to host Static websites.
- S3 Scales automatically to meet your demands.