AWS S3 Storage Classes Overview

- Amazon S3 storage classes are designed to sustain the concurrent loss of data in one or two facilities
- S3 storage classes allows lifecycle management for automatic migration of objects for cost savings
- S3 storage classes support SSL encryption of data in transit and data encryption at rest
- S3 also regularly verifies the integrity of your data using checksums and provides auto healing capability

	Standard	Standard - IA	Amazon Glacier	Reduced Redundancy Storage
Designed for Durability	100.00%	100.00%	100.00%	99.99%
Designed for Availability	99.99%	99.90%	N/A	99.99%
Availability SLA	99.90%	99%	N/A	N/A
Minimum Object Size	N/A	128KB*	N/A	N/A
Minimum Storage Duration	N/A	30 days	90 days	N/A
Retrieval Fee	N/A	per GB retrieved	per GB retrieved**	N/A
First Byte Latency	milliseconds	milliseconds	4 hours	milliseconds
Storage Class	object level	object level	object level	object level
Lifecycle Transitions	yes	yes	yes	yes
Concurrent Facility Fault Tolerance	2	2	N/A	1
SSL Support	yes	yes	yes	yes

Standard

- Storage class is ideal for performance-sensitive use cases and frequently accessed data and is designed to sustain the loss of data in a two facilities
- STANDARD is the default storage class, if none specified during upload
- Low latency and high throughput performance
- Designed for durability of 99.999999999% of objects
- Designed for 99.99% availability over a given year
- Backed with the Amazon S3 Service Level Agreement for availability.

Standard IA

- S3 STANDARD_IA (Infrequent Access) storage class is optimized for long-lived and less frequently accessed data *for e.g. backups and older data where access is limited, but the use case still demands high performance*

- STANDARD_IA is designed to sustain the loss of data in a two facilities
- STANDARD_IA objects are available for real-time access.
- STANDARD_IA storage class is suitable for larger objects greater than 128 KB (smaller objects are charged for 128KB only) kept for at least 30 days.
- Same low latency and high throughput performance of Standard
- Designed for durability of 99.999999999% of objects
- Designed for 99.9% availability over a given year
- Backed with the Amazon S3 Service Level Agreement for availability

Reduced Redundancy Storage – RRS

- Reduced Redundancy Storage (RRS) storage class is designed for noncritical, reproducible data stored at lower levels of redundancy than the STANDARD storage class, which reduces storage costs
- Designed for durability of 99.99% of objects
- Designed for 99.99% availability over a given year
- Lower level of redundancy results in less durability and availability
- RRS stores objects on multiple devices across multiple facilities, providing 400 times the durability of a typical disk drive,
- RRS does not replicate objects as many times as S3 standard storage and is designed to sustain the loss of data in a single facility.
- If an RRS object is lost, S3 returns a 405 error on requests made to that object
- S3 can send an event notification, configured on the bucket, to alert a user or start a workflow when it detects that an RRS object is lost which can be used to replace the lost object

Glacier

- GLACIER storage class is suitable for archiving data where data access is infrequent and retrieval time of several (3-5) hours is acceptable.
- GLACIER storage class uses the very low-cost Amazon Glacier storage service, but the objects in this storage class are still managed through S3
- Designed for durability of 99.999999999% of objects
- GLACIER cannot be specified as the storage class at the object creation time but has to be transitioned fromSTANDARD, RRS, or STANDARD_IA to GLACIER storage class using lifecycle management.
- For accessing GLACIER objects,
  - object must be restored which can taken anywhere between 3-5 hours

    - objects are only available for the time period (number of days) specified during the restoration request
    - object's storage class remains GLACIER
    - charges are levied for both the archive (GLACIER rate) and the copy restored temporarily (RRS rate)

- Vault Lock feature enforces compliance via a lockable policy