S3 Storage Classes

1. Amazon S3 Standard- General Purpose
2. Amazon S3 Standard – Infrequent Access (IA)
3. Amazon S3 one Zone – Infrequent
4. Amazon S3 Intelligent Tiering
5. Amazon Glacier
6. Amazon Glacier Deep Archive

→Amazon S3 Reduced Redundancy Storage (Deprecated – Omitted)

S3 Durability and Availability

- **Durability:**
  - HIGH Durability (99.99999999999%, 11 9's, Eleven 9's) of Object across multiple AZ
  - If you store 10,000,000 with Amazon S3, you can average expect to incur a loss of single once every 10,000 Years
  - Same for all storage classes

  Availability:
  - Measure how readily available a service is
  - S3 Standard has 99.99 % availability, Which means it will not be available 53 minutes a year
  - Varies depending on storage class

1. S3 standard – General Purposes
- 99.99 Availability
- Used for frequently accessed data
- Low Latency and High throughput
- Sustain 2 concurrent facility failures

  Use Cases: Big Data analytics, Mobile & Gaming Application, Content distribution …

2. S3 Standard – Infrequent Access (IA)
- Suitable for data that is less frequent access, but requires rapid access when needed
- 99.9 % Availability
- Lower Cost compared to Amazon S3 Standard, But Retrieval fee
- Sustain 2 concurrent facility failures
- Use cases: As a data store for disaster recovery, backup . . .

3. S3 Intelligent - Tiering
- 99.9% Availability
- Same low latency and High through performance of S3 Standard
- Cost optimized by automatically moving object between two access tiers based on changing access patterns:
  - Frequent access
  - Infrequent access
- Resilient Against events that impact an entire Availability Zone

4. S3 One Zone – Infrequent Access (IA)
- Same as IA but data is stored in single AZ
- 99.5 % Availability
- Low Latency and High Availability performance
- Lower cost Compared to S3-IA (By 20%)
- User Case: Storing secondary backup copies of on-premise data or storing data you can recreate

5. Amazon Glacier and Glacier Deep Archive
- Low Cost object storage (in GB/ month) meant for archiving / Backup
- Data is retrained for the longer term (Years)
- Various retrieval options of time + fees for retrieval:

Amazon Glacier -Cheep:
  - Expedited (fast) (1-5 Minutes)
  - Standard (3-5 Hours)
  - Bulk (5 to 12 Hours)

Amazon Glacier Deep Archive – Cheapest:
  - Standard (12 Hours)
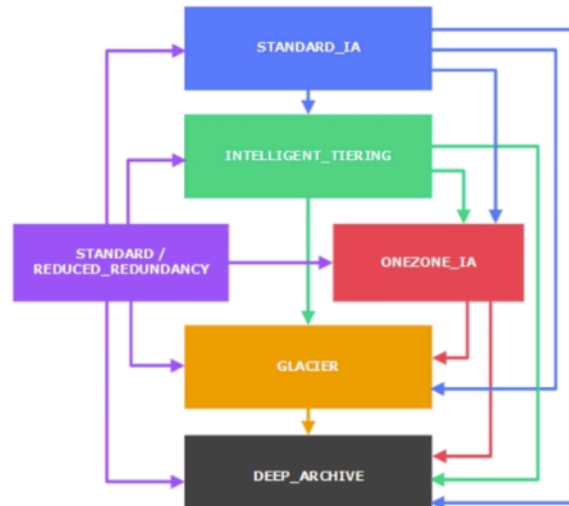 - Bulk (48 Hours)

Charge

S3 Storage Classes Comparison

	S3 Standard	S3 Intelligent-Tiering	S3 Standard-IA	S3 One Zone-IA	S3 Glacier	S3 Glacier Deep Archive
Designed for durability	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)	99.999999999% (11 9's)
Designed for availability	99.99%	99.9%	99.9%	99.5%	99.99%	99.99%
Availability SLA	99.9%	99%	99%	99%	99.9%	99.9%
Availability Zones	≥3	≥3	≥3	1	≥3	≥3
Minimum capacity charge per object	N/A	N/A	128KB	128KB	40KB	40KB
Minimum storage duration charge	N/A	30 days	30 days	30 days	90 days	180 days
Retrieval fee	N/A	N/A	per GB retrieved	per GB retrieved	per GB retrieved	per GB retrieved

S3 Moving Storage Classes

S3 – Moving between storage classes

- You can transition objects between storage classes

- For infrequently accessed object, move them to STANDARD_IA

- For archive objects you don't need in real-time, GLACIER or DEEP_ARCHIVE

- Moving objects can be automated using a **lifecycle configuration**

Shared Responsibility Model for S3

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- Infrastructure (global security, durability, availability, sustain concurrent loss of data in two facilities)
- Configuration and vulnerability analysis
- Compliance validation

- S3 Versioning
- S3 Bucket Policies
- S3 Replication Setup
- Logging and Monitoring
- S3 Storage Classes
- Data encryption at rest and in transit