**AWS Storage Classes**

**Amazon Simple Storage Service (S3)**is used for storing data in the form of objects S3 is quite different from any other file storage device or service. Amazon S3 also provides industry-leading scalability, data availability, security, and performance. The data which is uploaded by the user in S3, that data is stored as objects and provided an ID. Moreover, they store in shapes like buckets and can upload the maximum file size is of 5 Terabyte(TB). This service is basically designed for the online backup and archiving of data and applications on Amazon Web Services (AWS).

**Amazon S3 Storage Classes:**

This storage maintains the originality of data by inspecting it. Types of storage classes are as follows:

* Amazon S3 Standard
* Amazon S3 Intelligent-Tiering
* Amazon S3 Standard-Infrequent Access
* Amazon S3 One Zone-Infrequent Access
* Amazon S3 Glacier Instant Retrieval
* Amazon S3 Glacier Flexible Retrieval
* Amazon S3 Glacier Deep Archive

**1. Amazon S3 Standard:**

It is used for general purposes and offers high durability, availability, and performance object storage for frequently accessed data. S3 Standard is appropriate for a wide variety of use cases, including cloud applications, dynamic websites, content distribution, mobile and gaming applications, and big data analytics.

Mainly it is used for general purposes in order to maintain durability, availability, and performance to a higher extent. Its applications are cloud applications, dynamic websites, content distribution, mobile & gaming apps as well as big data analysis or data mining.

**Characteristics of** **S3 Standard:**

* Availability criteria are quite good like 99.9%.
* Improves the recovery of an object file.
* It is against the events which are a little bit tough that can affect an entire Availability Zone.
* Durability of S3 standard is 99.999999999%.

**2. Amazon S3 Intelligent-Tiering:**

The first cloud storage automatically decreases the user’s storage cost. It provides very cost-effective access based on frequency, without affecting other performances. It also manages tough operations. Amazon S3 Intelligent – Tiering reduces the cost of granular objects automatically. No retrieval charges are there in Amazon S3 Intelligent – Tiering.

**Characteristics of  S3 Intelligent-Tiering:**

* Required less monitoring and automatically tier charge.
* No minimum storage duration and no recovery charges are required to access the service.
* Availability criteria are quite good like 99.9%.
* Durability of S3 Intelligent- Tiering is 99.999999999%.

**3. Amazon S3 Standard-Infrequent Access:**

To access the less frequently used data, users use S3 Standard-IA. It requires rapid access when needed. We can achieve high strength, high output, and low bandwidth by using S3 Standard-IA. It is best in storing the backup, and recovery of data for a long time. It act as a data store for disaster recovery files.

**Characteristics of  S3 Standard-Infrequent Access:**

* High performance and same action rate.
* Very Durable in all AZs.
* Availability is 99.9% in S3 Standard-IA.
* Durability is  of 99.999999999%.

**4. Amazon S3 Glacier Instant Retrieval:**

It is an archive storage class that delivers the lowest-cost storage for data archiving and is organized to provide you with the highest performance and with more flexibility. S3 Glacier Instant Retrieval delivers the fastest access to archive storage. Same as in S3 standard, Data retrieval in milliseconds .

**Characteristics of S3 Glacier Instant Retrieval:**

* It just takes milliseconds to recover the data.
* The minimum object size should be 128KB.
* Availability is 99.9% in S3 glacier Instant Retrieval.
* Durability is of  99.999999999%.

**5. Amazon S3 One Zone-Infrequent Access:**

Different from other S3 Storage Classes which store data in a minimum of three Availability Zones, S3 One Zone-IA stores data in a single Availability Zone and costs 20% less than S3 Standard-IA. It’s a very good choice for storing secondary backup copies of on-premises data or easily re-creatable data. S3 One Zone-IA provides you the same high durability, high throughput, and low latency as in S3 Standard.

**Characteristics of S3 One Zone-Infrequent Access:-**

* Supports SSL(Secure Sockets Layer) for data in transferring and encryption of data.
* Availability Zone destruction can damage the data.
* Availability is 99.5% in S3 one Zone- Infrequent Access.
* Durability is of  99.999999999%.

**6. Amazon S3 Glacier Flexible Retrieval:**

It provides low-cost storage compared to S3 Glacier Instant Retrieval. It is a suitable solution for backing up the data so that it can be recovered easily a few times in a year. It just takes minutes to access the data.

**Characteristics of S3 Glacier Flexible Retrieval:**

* Free recoveries in high quantity.
* AZs destruction can lead to difficulty in accessing data.
* when you have to retrieve large data sets , then S3 glacier flexible retrieval is best for backup and disaster recovery use cases.
* Availability is 99.99% in S3 glacier flexible retrieval.
* Durability is of  99.999999999%.

**7. Amazon S3 Glacier Deep Archive:**

The Glacier Deep Archive storage class is designed to provide long-lasting and secure long-term storage for large amounts of data at a price that is competitive with off-premises tape archival services that is very cheap. You no longer need to deal with expensive services. Accessibility is very much efficient, that it can restore data within 12 hours. This storage class is designed in such a way that users can easily get long-lasting and more secured storage for a huge amount of data at very less cost. Efficient accessibility and can restore data within very less time, therefore its time complexity is also efficient. S3 Glacier Deep Archive also have the feature of objects replication.

**Characteristics of S3 Glacier Deep Archive:-**

* More secured storage.
* Recovery time is less requires less time.
* Availability is 99.99% in S3 glacier deep archive.
* Durability is of  99.999999999%.

**Amazon Elastic File System Documentation**

Amazon EFS is a simple, serverless, elastic, set-and-forget file system that automatically grows and shrinks as you add and remove files with no need for management or provisioning. You can use Amazon EFS with Amazon EC2, AWS Lambda, Amazon ECS, Amazon EKS and other AWS compute instances, or with on-premises servers.

**Amazon FSx Documentation**

Amazon FSx makes it easy and cost effective to launch, run, and scale feature-rich, high-performance file systems in the cloud. It supports a wide range of workloads with its reliability, security, scalability, and broad set of capabilities. With Amazon FSx, you can choose between four widely-used file systems: Lustre, NetApp ONTAP, OpenZFS, and Windows File Server.

AWS Snow Family

AWS SnowCone

Deploy ultra-portable data transfer and edge computing devices anywhere.

Collect and process data, transfer with AWS DataSync, or ship the device with data to AWS for offline transfer.

Get the compute, storage, and network accessibility you need in a portable device, deployed virtually anywhere.

Withstands harsh environments with a storage and computing device designed to meet stringent standards for ruggedization.

AWS Snowball

Accelerate moving offline data or remote storage to the cloud.

Migrate petabyte-scale data to AWS with Snowball. For jobs that require multiple devices, track the stage of your device with Snow's Large Data Migration Manager.

AWS Snowmobile

AWS Snowmobile is an Exabyte-scale data transfer service used to move extremely large amounts of data to AWS. You can transfer up to 100PB per Snowmobile, a 45-foot long ruggedized shipping container, pulled by a semi-trailer truck. Snowmobile makes it easy to move massive volumes of data to the cloud, including video libraries, image repositories, or even a complete data center migration. Transferring data with Snowmobile is more secure, fast and cost effective.

After an initial assessment, a Snowmobile will be transported to your data center and AWS personnel will configure it for you so it can be accessed as a network storage target. When your Snowmobile is on site, AWS personnel will work with your team to connect a removable, high-speed network switch from Snowmobile to your local network and you can begin your high-speed data transfer from any number of sources within your data center to the Snowmobile. After your data is loaded, Snowmobile is driven back to AWS where your data is imported into [Amazon S3](https://aws.amazon.com/s3/).

Andy Jassy, AWS CEO, Introducing AWS Snowmobile (3:38)

Snowmobile uses multiple layers of security to help protect your data including dedicated security personnel, GPS tracking, alarm monitoring, 24/7 video surveillance, and an optional escort security vehicle while in transit. All data is encrypted with 256-bit encryption keys you manage through the [AWS Key Management Service (KMS)](https://aws.amazon.com/kms/) and designed for security and full chain-of-custody of your data.

**AWS Storage Gateway Documentation**

AWS Storage Gateway is a service that connects an on-premises software appliance with cloud-based storage to provide seamless and secure integration between your on-premises IT environment and the AWS storage infrastructure in the AWS Cloud.

Types of Storage Gateway

[**User Guide for Tape Gateway**](https://docs.aws.amazon.com/storagegateway/latest/tgw/index.html)

Describes Tape Gateway, a durable, cost-effective tape-based solution for archiving data in the AWS Cloud.

[**User Guide for Volume Gateway**](https://docs.aws.amazon.com/storagegateway/latest/vgw/index.html)

Describes Volume Gateway concepts, including details about cached and stored volume architectures, and provides instructions on using their features with both the console and the API.

[**User Guide for Amazon S3 File Gateway**](https://docs.aws.amazon.com/filegateway/latest/files3/index.html)

Describes Amazon S3 File Gateway concepts and provides instructions on using the various features with both the console and the API.

[**User Guide for Amazon FSx File Gateway**](https://docs.aws.amazon.com/filegateway/latest/filefsxw/index.html)

Describes Amazon FSx File Gateway, which provides access to in-cloud Amazon FSx for Windows File Server shares from on-premises facilities. Includes instructions on working with the console and the API.