1 - AMAZON S3 STORAGE CLASSES

General purpose

Amazon S3 Standard (S3 Standard)

S3 Standard offers high durability, availability, and performance object storage for frequently accessed data. Because it delivers low latency and high throughput, 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. S3 Storage Classes can be configured at the object level and a single bucket can contain objects stored across S3 Standard, S3 Intelligent-Tiering, S3 Standard-IA, and S3 One Zone-IA. You can also use S3 Lifecycle policies to automatically transition objects between storage classes without any application changes.

Key Features:

- Low latency and high throughput performance
- Designed for durability of 99.999999999% of objects across multiple Availability Zones
- Resilient against events that impact an entire Availability Zone
- Designed for 99.99% availability over a given year
- Backed with the *Amazon S3 Service Level Agreement* for availability
- Supports SSL for data in transit and encryption of data at rest
- S3 Lifecycle management for automatic migration of objects to other S3 Storage Classes

Unknown or changing access

Amazon S3 Intelligent-Tiering (S3 Intelligent-Tiering)

Amazon S3 Intelligent-Tiering (S3 Intelligent-Tiering) is the only cloud storage class that delivers automatic cost savings by moving objects between four access tiers when access patterns change. The S3 Intelligent-Tiering storage class is designed to optimize costs by automatically moving data to the most cost-effective access tier, without operational overhead. It works by storing objects in four access tiers: two low latency access tiers optimized for frequent and infrequent access, and two optional archive access tiers designed for asynchronous access that are optimized for rare access.

S3 Intelligent-Tiering works by storing objects in four access tiers: two low latency access tiers optimized for frequent and infrequent access, and two opt-in archive access tiers designed for asynchronous access that are optimized for rare access. Objects uploaded or transitioned to S3 Intelligent-Tiering are automatically stored in the Frequent Access tier. S3 Intelligent-Tiering works by monitoring access patterns and then moving the objects that have not been accessed in 30 consecutive days to the Infrequent Access tier. Once you have activated one or both of the archive access tiers, S3 Intelligent-Tiering will move objects that haven't been accessed for 90 consecutive days to the Archive Access tier and then after 180 consecutive days of no access to the Deep Archive Access tier. If the objects are accessed later, S3 Intelligent-Tiering moves the objects back to the Frequent Access tier. If the object you are retrieving is stored in the Archive or Deep Archive tiers, before you can retrieve the object you must first restore a copy using RestoreObject. For information about restoring archived objects, see *Restoring Archived Objects*.

There are no retrieval fees when using the S3 Intelligent-Tiering storage class, and no additional tiering fees when objects are moved between access tiers within S3 Intelligent-Tiering. It is the ideal storage class for data sets with unknown storage access patterns, like new applications, or unpredictable access patterns, like data lakes.

Key Features:

- Automatically optimizes storage costs for data with changing access patterns
- Stores objects in four access tiers, optimized for frequent, infrequent, archive, and deep archive access
- Frequent and Infrequent Access tiers have same low latency and high throughput performance of S3 Standard
- Activate optional automatic archive capabilities for objects that become rarely accessed
- Archive access and deep Archive access tiers have same performance as Glacier and Glacier Deep Archive
- Designed for durability of 99.999999999% of objects across multiple Availability Zones
- Designed for 99.9% availability over a given year
- Backed with the *Amazon S3 Service Level Agreement* for availability
- Small monthly monitoring and auto-tiering fee
- No operational overhead, no retrieval fees, no additional tiering fees apply when objects are moved between access tiers within the S3 Intelligent-Tiering storage class

Infrequent access

Amazon S3 Standard-Infrequent Access (S3 Standard-IA)

S3 Standard-IA is for data that is accessed less frequently, but requires rapid access when needed. S3 Standard-IA offers the high durability, high throughput, and low latency of S3 Standard, with a low per GB storage price and per GB retrieval fee. This combination of low cost and high performance make S3 Standard-IA ideal for long-term storage, backups, and as a data store for disaster recovery files. S3 Storage Classes can be configured at the object level and a single bucket can contain objects stored across S3 Standard, S3 Intelligent-Tiering, S3 Standard-IA, and S3 One Zone-IA. You can also use S3 Lifecycle policies to automatically transition objects between storage classes without any application changes.

Key Features:

- Same low latency and high throughput performance of S3 Standard
- Designed for durability of 99.999999999% of objects across multiple Availability Zones
- Resilient against events that impact an entire Availability Zone
- Data is resilient in the event of one entire Availability Zone destruction
- Designed for 99.9% availability over a given year
- Backed with the *Amazon S3 Service Level Agreement* for availability
- Supports SSL for data in transit and encryption of data at rest
- S3 Lifecycle management for automatic migration of objects to other S3 Storage Classes

Amazon S3 One Zone-Infrequent Access (S3 One Zone-IA)

S3 One Zone-IA is for data that is accessed less frequently, but requires rapid access when needed. Unlike other S3 Storage Classes which store data in a minimum of three Availability Zones (AZs), S3 One Zone-IA stores data in a single AZ and costs 20% less than S3 Standard-IA. S3 One Zone-IA is ideal for customers who want a lower-cost option for infrequently accessed data but do not require the availability and resilience of S3 Standard or S3 Standard-IA. It's a good choice for storing secondary backup copies of on-premises data or easily re-creatable data. You can also use it as cost-effective storage for data that is replicated from another AWS Region using S3 Cross-Region Replication.

S3 One Zone-IA offers the same high durability†, high throughput, and low latency of S3 Standard, with a low per GB storage price and per GB retrieval fee. S3 Storage Classes can be configured at the object level,

and a single bucket can contain objects stored across S3 Standard, S3 Intelligent-Tiering, S3 Standard-IA, and S3 One Zone-IA. You can also use S3 Lifecycle policies to automatically transition objects between storage classes without any application changes.

Key Features:

- Same low latency and high throughput performance of S3 Standard
- Designed for durability of 99.999999999% of objects in a single Availability Zone†
- Designed for 99.5% availability over a given year
- Backed with the *Amazon S3 Service Level Agreement* for availability
- Supports SSL for data in transit and encryption of data at rest
- S3 Lifecycle management for automatic migration of objects to other S3 Storage Classes

† Because S3 One Zone-IA stores data in a single AWS Availability Zone, data stored in this storage class will be lost in the event of Availability Zone destruction.

Archive

Amazon S3 Glacier (S3 Glacier)

S3 Glacier is a secure, durable, and low-cost storage class for data archiving. You can reliably store any amount of data at costs that are competitive with or cheaper than on-premises solutions. To keep costs low yet suitable for varying needs, S3 Glacier provides three retrieval options that range from a few minutes to hours. You can upload objects directly to S3 Glacier, or use S3 Lifecycle policies to transfer data between any of the S3 Storage Classes for active data (S3 Standard, S3 Intelligent-Tiering, S3 Standard-IA, and S3 One Zone-IA) and S3 Glacier. For more information, visit the *Amazon S3 Glacier page »*

Key Features:

- Designed for durability of 99.999999999% of objects across multiple Availability Zones
- Data is resilient in the event of one entire Availability Zone destruction
- Supports SSL for data in transit and encryption of data at rest
- Low-cost design is ideal for long-term archive
- Configurable retrieval times, from minutes to hours

- S3 PUT API for direct uploads to S3 Glacier, and S3 Lifecycle management for automatic migration of objects

Amazon S3 Glacier Deep Archive (S3 Glacier Deep Archive)

S3 Glacier Deep Archive is Amazon S3's lowest-cost storage class and supports long-term retention and digital preservation for data that may be accessed once or twice in a year. It is designed for customers — particularly those in highly-regulated industries, such as the Financial Services, Healthcare, and Public Sectors — that retain data sets for 7-10 years or longer to meet regulatory compliance requirements. S3 Glacier Deep Archive can also be used for backup and disaster recovery use cases, and is a cost-effective and easy-to-manage alternative to magnetic tape systems, whether they are on-premises libraries or off-premises services. S3 Glacier Deep Archive complements Amazon S3 Glacier, which is ideal for archives where data is regularly retrieved and some of the data may be needed in minutes. All objects stored in S3 Glacier Deep Archive are replicated and stored across at least three geographically-dispersed Availability Zones, protected by 99.999999999% of durability, and can be restored within 12 hours.

Key Features:

- Designed for durability of 99.999999999% of objects across multiple Availability Zones
- Lowest cost storage class designed for long-term retention of data that will be retained for 7-10 years
- Ideal alternative to magnetic tape libraries
- Retrieval time within 12 hours
- S3 PUT API for direct uploads to S3 Glacier Deep Archive, and S3 Lifecycle management for automatic migration of objects

S3 on Outposts

S3 Outposts storage class

Amazon S3 on Outposts delivers object storage to your on-premises AWS Outposts environment. Using the S3 APIs and features available in AWS Regions today, S3 on Outposts makes it easy to store and retrieve data on your Outpost, as well as secure the data, control access, tag, and report on it. S3 on Outposts provides a single Amazon S3 storage class, named S3 Outposts, which uses the S3 APIs, and is designed to durably and redundantly store data across multiple devices and servers on your Outposts. S3 Outposts storage class is

ideal for workloads with local data residency requirements, and to satisfy demanding performance needs by keeping data close to on-premises applications.

Key Features:

- S3 Object compatibility and bucket management through the S3 SDK
- Designed to durably and redundantly store data on your Outposts
- Encryption using SSE-S3 and SSE-C
- Authentication and authorization using IAM, and S3 Access Points
- Transfer data to AWS Regions using AWS DataSync
- S3 Lifecycle expiration actions

Performance across the S3 Storage Classes

	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
First byte latency	milliseconds	milliseconds	milliseconds	milliseconds	select minutes or hours	select hours
Storage type	Object	Object	Object	Object	Object	Object
Lifecycle transitions	Yes	Yes	Yes	Yes	Yes	Yes

† Because S3 One Zone-IA stores data in a single AWS Availability Zone, data stored in this storage class will be lost in the event of Availability Zone destruction.

* S3 Intelligent-Tiering charges a small tiering fee and has a minimum eligible object size of 128KB for auto-tiering. Smaller objects may be stored but will always be charged at the Frequent Access tier rates. See the *Amazon S3 Pricing* for more information.

** Standard retrievals in archive access tier and deep archive access tier are free. Using the S3 console, you can pay for expedited retrievals if you need faster access to your data from the archive access tiers.

*** S3 Intelligent-Tiering first byte latency for frequent and infrequent access tier is milliseconds access time, and the archive access and deep archive access tiers first byte latency is minutes or hours.