S3 Glacier

Of the different storage tiers introduced in the previous pages, there is one in particular that perhaps warrants a closer inspection namely, the Amazon S3 Glacier storage classes.

The Amazon S3 Glacier storage classes are designed to be the most cost-effective storage solutions in the cloud providing a good compromise between performance, price and flexibility. Best suited for the purposes of data-archiving, S3 Glacier has also become a sort-of industry standard for organizations that wish to retain large amounts of rarely accessed, legacy data for the long term mostly due to its relative cheapness, virtually unlimited scalability and 99.99999999999% (11 nines) data durability guarantee.

There are three major S3 Glacier storage classes, each with its own unique set of strengths and drawbacks that must be taken into consideration when choosing between them. Said major S3 Glacier storage classes are as follows:

1. **Amazon S3 Glacier Instant Retrieval:** Built specifically for cases where the stored data may need to be accessed within a more immediate timeframe, S3 Glacier Instant Retrieval provides the lowest-cost storage option with millisecond-level retrieval times, making it suitable for workloads that require fast, frequent access to their stored data (examples include: medical archives, genomics data, etc) offering a good middle ground for users who need a combination of cost-effectiveness and fast access.

2. **Amazon S3 Glacier Flexible Retrieval:** Sometimes simply referred to as S3 Glacier, the S3 Glacier Flexible Retrieval class is designed for situations where

occasional, large-scale data retrievals are needed at a minimal cost alongside slightly more flexible retrieval options, with retrieval times that ranging between as little as 1-5 minutes and up to 12 hours.

For example, bulk retrievals, which is the standard flexible retrieval option can be executed for free within 5-12 hours, making it well-suited for backup and disaster recovery scenarios whilst for cases that require more swift access to the data, the service also offers the option of expedited retrieval, which can retrieve the data in a matter of minutes albeit at an additional cost. Though the retrieval speed is lower than the one provided by Instant Retrieval, the trade-off may be worth it for many organizations due to the reduced cost of storage, which can add up to significant sums quite easily, especially when dealing with large quantities of data.

3. **Amazon S3 Glacier Deep Archive:** The lowest cost storage class, S3 Glacier Deep Archive is designed for data that are to be stored for the long-term, with the expectation of being accessed infrequently. However, the low cost comes at the trade-off of retrieval time, which can take up to 12 hours. This makes it ideal for use cases where immediate access to the data is not a priority but long-term durability and cost efficiency are crucial such as compliance archives, legal records or digital media preservation.

TLDR;

S3 Glacier is a storage service tier specializing in data archival, and offers three different storage classes each offering data access at varying retrieval speeds and price points, often trading one for the other. With the Instant retrieval class for example, being slightly more expensive but providing millisecond-level retrieval speeds, as opposed to the Deep Archive class, which has the lowest storage costs available, but data retrieval can take up to 12 hours.