Amazon Simple Storage Service (Amazon S3):

is a service that provides object-level storage. Amazon S3 stores data as objects in buckets. You can upload any type of file to Amazon S3, such as images, videos, text files, and so on. For example, you might use Amazon S3 to store backup files, media files for a website, or archived documents. Amazon S3 offers unlimited storage space. The maximum file size for an object in Amazon S3 is 5 TB. When you upload a file to Amazon S3, you can set permissions to control visibility and access to it. You can also use the Amazon S3 versioning feature to track changes to your objects over time. What this means is that you always retain the previous versions of an object, as like a paper trail. You can even create multiple buckets and store them across different classes or tiers of data. You can then create permissions to limit who can see or even access objects.

Amazon S3 storage classes With Amazon S3, you pay only for what you use. You can choose from a range of storage classes to select a fit for your business and cost needs. When selecting an Amazon S3 storage class, consider these two factors:

• How often you plan to retrieve your data

• How available you need your data to be S3 Standard

• Designed for frequently accessed data

• Stores data in a minimum of three Availability Zones S3 Standard provides high availability for objects. This makes it a good choice for a wide range of use cases, such as websites, content distribution, and data analytics.

S3 Standard has a higher cost than other storage classes intended for infrequently accessed data and archival storage. It comes with 11 nines of durability. That means an object stored in S3 Standard has a 99.999999999 percentage probability that it will remain intact after a period of one year. That's pretty high. Furthermore, data is stored in such a way that AWS can sustain the concurrent loss of data in two separate storage facilities. This is because data is stored in at least three facilities, so multiple copies reside across locations.

Another useful way to use S3 is static website hosting, where a static website is a collection of HTML files and each file is akin to a physical page of the actual site. You can do this by simply uploading all your HTML, static web assets, and so forth into a bucket and then checking a box to host it as a static website. You can then enter the bucket's URL and babam! Instant website. And we say static, but that doesn't mean you can't have animations and moving parts to your website.

S3 Standard-Infrequent Access (S3 Standard-IA)

• Ideal for infrequently accessed data

• Similar to S3 Standard but has a lower storage price and higher retrieval price S3 Standard-IA is ideal for data infrequently accessed but requires high availability (i.e. rapid access) when needed. It's a perfect place to store backups, disaster recovery files, or any object that requires a long-term storage. Both S3 Standard and S3 Standard-IA store data in a minimum of three Availability Zones. S3 Standard-IA provides the same level of availability as S3 Standard but with a lower storage price and a higher retrieval price. S3 One Zone-Infrequent Access (S3 One Zone-IA)

• Stores data in a single Availability Zone

• Has a lower storage price than S3 Standard-IA Compared to S3 Standard and S3 Standard-IA, which store data in a minimum of three Availability Zones, S3 One Zone-IA stores data in a single Availability Zone. This makes it a good storage class to consider if the following conditions apply:

• You want to save costs on storage.

• You can easily reproduce your data in the event of an Availability Zone failure. S3 Intelligent-Tiering

• Ideal for data with unknown or changing access patterns

• Requires a small monthly monitoring and automation fee per object In the S3 Intelligent-Tiering storage class, Amazon S3 monitors objects’ access patterns. If you haven’t accessed an object for 30 consecutive days, Amazon S3 automatically moves it to the infrequent access tier, S3 Standard-IA. If you access an object in the infrequent access tier, Amazon S3 automatically moves it to the frequent access tier, S3 Standard.

S3 Glacier

• Low-cost storage designed for data archiving

• Able to retrieve objects within a few minutes to hours Say, we need to retain data for several years for auditing purposes. And we don't need it to be retrieved very rapidly. Well, then you can use Amazon S3 Glacier to archive that data.

S3 Glacier is a low-cost storage class that is ideal for data archiving.

For example, you might use this storage class to store archived customer records or older photos and video files. To use Glacier, you can simply move data to it, or you can create vaults and then populate them with archives. And if you have compliance requirements around retaining data for, say, a certain period of time, you can employ an S3 Glacier vault lock policy and lock your vault. You can specify controls such as write once/ read many, or WORM, in a vault lock policy and lock the policy from future edits. Once locked, the policy can no longer be changed. You also have three options for retrieval, which range from minutes to hours, and you have the option of uploading directly to Glacier or using S3 Lifecycle policies. Lifecycle policies are policies you can create that can move data automatically between tiers. For example, say we need to keep an object in S3 Standard for 90 days, and then we want to move it to S3-IA for the next 30 days. Then after 120 days total, we want it to be moved to S3 Glacier. With Lifecycle policies, you create that configuration without changing your application code and it will perform those moves for you automatically.

S3 Glacier Deep Archive

• Lowest-cost object storage class ideal for archiving

• Able to retrieve objects within 12 hours When deciding between Amazon S3 Glacier and Amazon S3 Glacier Deep Archive, consider how quickly you need to retrieve archived objects. You can retrieve objects stored in the S3 Glacier storage class within a few minutes to a few hours. By comparison, you can retrieve objects stored in the S3 Glacier Deep Archive storage class within 12 hours. Comparing Amazon EBS and Amazon S3 Let's say you're running a photo analysis website where users upload a photo of themselves, and your application finds the animals that look just like them. You have potentially millions of animal pictures that all need to be indexed and possibly viewed by thousands of people at once. This is the perfect use case for S3.

S3 is already web enabled. Every object already has a URL that you can control access rights to who can see or manage the image. S3 is regionally distributed, which means that it has 11 nines of durability, so no need to worry about backup strategies. S3 is your backup strategy. Plus the cost savings is substantial overrunning the same storage load on EBS. With the additional advantage of being serverless, no Amazon EC2 instances are needed. Sounds like S3 is the judge's winner here for this round. But wait, round two, you have an 80-gigabyte video file that you're making edit corrections on. To know the best storage class here, we need to understand the difference between object storage and block storage. Object storage treats any file as a complete, discreet object. Now this is great for documents, and images, and video files that get uploaded and consumed as entire objects, but every time there's a change to the object, you must reupload the entire file. There are no delta updates. Block storage breaks those files down to small component parts or blocks. This means, for that 80-gigabyte file, when you make an edit to one scene in the film and save that change, the engine only updates the blocks where those bits live. If you're making a bunch of micro edits, using EBS, elastic block storage, is the perfect use case. If you were using S3, every time you saved the changes, the system would have to upload all 80 gigabytes, the whole thing, every time. EBS clearly wins round two. This means, if you are using complete objects or only occasional changes, S3 is victorious. If you are doing complex read, write, change functions, then, absolutely, EBS is your knockout winner. Your winner depends on your individual workload. Each service is the right service for specific needs.

Which Amazon S3 storage classes are optimized for archival data?

**S3 Glacier**

**S3 Glacier Deep Archive**

Note: Objects stored in the S3 Glacier storage class can be retrieved within a few minutes to a few hours. By comparison, objects that are stored in the S3 Glacier Deep Archive storage class can be retrieved within 12 hours.