## Storage Services

[**Storage Services**](#_ayoon1m8745c) **1**

[**Simple Storage Service - S3**](#_48oaqmpk5deh) **2**

[Features](#_tvwzbv6xau18) 2

[Types of storage classes](#_7u4apfcja9f2) 2

[Uses:](#_lunb9fgk5643) 3

[Important for exams:](#_k1nmch7h4jnr) 3

[More services:](#_z9j4f6w6tmkb) 4

[Important for the exam:](#_huvqiy2ln465) 4

## Simple Storage Service - S3

* S3 is an object storage service for the cloud that is highly available.
* Objects(files) are stored in buckets(directories).
* Unlimited storage that can hold millions of objects per bucket.
* Objects can be public or private.
* You can upload objects via the console, CLI, or programmatically within code using SDKs.

###### Features

1. You can set bucket level or object-level access control using Access control lists, bucket policies, or access point policies.
2. You can use S3 logs to track access to your buckets and objects.
3. You can enable versioning to create multiple versions of your file in order to protect against accidental deletion and to use a previous version.
4. S3 is a regional service, but bucket names must be globally unique.
5. **Durability is important so your objects are never lost or compromised. S3 is designed for 99.999999999% (11 9’s) of durability.**
6. **Availability is important so you can access your data quickly when you need it. S3 standard availability is 99.99%.**

###### Types of storage classes

1. S3 standard
   1. General-purpose storage.
   2. Data stored across multiple availability zones.
   3. Low latency and high throughput.
   4. Recommended for frequently accessed data.
2. S3 Intelligent-Tiering
   1. Automatically moves your data to the most cost-efficient storage class.
   2. Automatic cost savings.
   3. No retrieval fees.
   4. Data stored across multiple availability zones.
   5. Recommended for data with the unknown or changing access pattern.
3. S3 Standard-Infrequent Access(IA)
   1. Data accessed less frequently but required rapid access.
   2. Data stored across multiple availability zones.
   3. Cheaper than the S3 standard.
   4. Recommended for:
      1. Long-lived data.
      2. Infrequently accessed.
      3. Millisecond access when needed.
4. S3 One Zone-Infrequent Access(IA)
   1. Like S3 Standard IA but data stored in a single availability zone.
   2. Cost 20% less than S3 Standard-IA.
   3. Data stored in this storage class can be lost.
   4. Recommended for:
      1. Re-creatable data.
      2. Infrequently accessed with millisecond access.
      3. Availability and durability are not essential. Still, availability is 99.5%.
5. S3 Glacier
   1. Long-term data storage and archival for lower costs.
   2. Data retrieval takes longer.
   3. 3 retrieval options:
      1. 1-5 minutes
      2. 3-5 hours
      3. 5-12 hours
   4. Data stored across multiple availability zones
   5. Recommended for:
      1. Long-term backups.
      2. Cheaper storage options.
6. S3 Glacier Deep Archive
   1. Like S3 glacier but longer access times.
   2. 2 retrieval options:
      1. 12 hours
      2. 48 hours
   3. Cheapest of all S3 options.
   4. Data stored across multiple availability zones.
   5. Recommended for:
      1. Long-term data archival is accessed once or twice a year.
      2. Retaining data for regulatory compliance requirements.
7. S3 Outposts
   1. Provide object storage on-premises.
   2. A single storage class.
   3. Store data across multiple devices and servers.
   4. Recommended for:
      1. Data that needs to be kept local.
      2. Demanding application performance needs.

###### Uses:

1. Static Website hosting
2. Data Archive
3. Analytics systems
4. Mobile Applications

###### Important for exams:

1. S3 is a regional service but has a global namespace.
2. S3 offers unlimited storage with many storage classes. Understand the use cases for each storage class.

###### More services:

1. EBS(Elastic Block Store) volume:
   1. It is like a flash drive.
   2. It can be connected to one instance at a time.
   3. Data persists when an instance is not running.
   4. Tied to one availability zone.
   5. Recommended for:
      1. Quickly accessible data.
      2. Running database on an instance.
      3. Long-term data storage.
2. EC2 instance store:
   1. Storage on disks physically attached to an instance.
   2. Faster with higher I/O speeds.
   3. Storage is temporary i.e. data will lose once the instance is stopped.
   4. Recommended for:
      1. Temporary storage needs
      2. Data replicated across multiple instances.
3. EFS(Elastic File System):
   1. Serverless network file system for sharing files.
   2. Only supports the linux file system.
   3. Expensive than EBS.
   4. Accessible across different availability zones in the same region.
   5. Recommended for:
      1. Main directories for business-critical apps.
      2. Lift and shift existing enterprise apps.
4. Storage gateway:
   1. Hybrid storage service.
   2. Connect on-premises and cloud data.
   3. Supports hybrid model.
   4. Recommended for:
      1. Moving backups to the cloud.
      2. Reducing costs for hybrid cloud storage.
      3. Low latency access to data.
5. AWS Backup:
   1. Helps you to manage data backups across multiple AWS services.
   2. Integrates with resources like EC2, EBS, EFS, and more.
   3. Create a backup plan that includes frequency and retention.

###### Important for the exam:

1. Understand the use cases for EBS.
2. Don't forget instance store volumes are temporary.
3. Don't’ forget EFS supports only linux file systems.
4. Storage gateway supports a hybrid model.