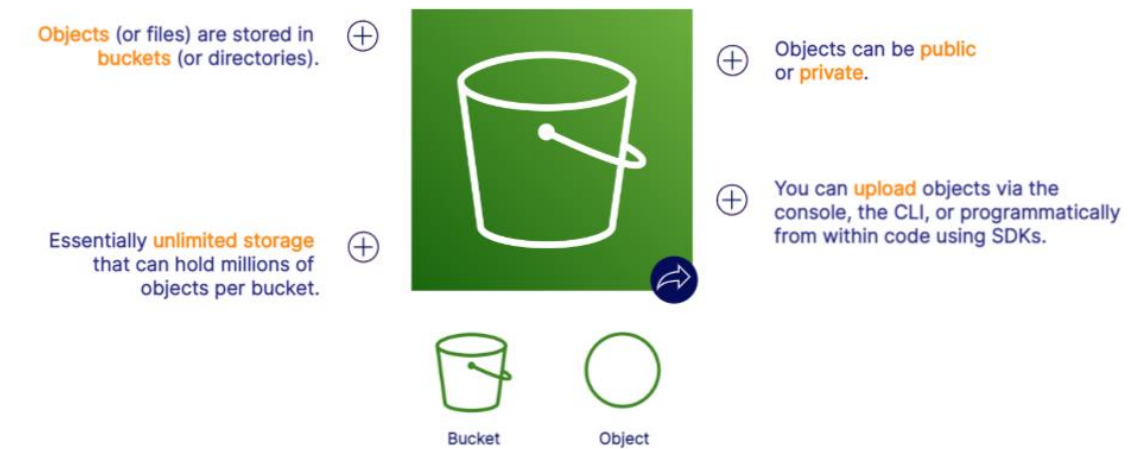Leveraging Storage Services: S3

- S3 is an object storage service for the cloud that is highly available.

Objects (or files) are stored in buckets (or directories). ⊕

Objects can be public or private. ⊕

You can upload objects via the console, the CLI, or programmatically from within code using SDKs. ⊕

Essentially unlimited storage that can hold millions of objects per bucket. ⊕

Bucket   Object

You can set security at the **bucket** level or **individual** object level using access control lists (ACLs), bucket policies, or access point policies.

You can **enable versioning** to create multiple versions of your file in order to protect against accidental deletion and to use a previous version.

You can use **S3 access logs** to track the access to your buckets and objects.

S3 is a **regional** service, but bucket names must be globally unique.

Data Accessibility

Durability and **availability** are 2 very different aspects of data accessibility.

1 Durability

Durability is important so your objects are never lost or compromised.

Amazon S3 Standard is designed for 99.999999999% (11 9's) of durability.

2 Availability

Availability is important so you can access your data quickly when you need it.

Amazon S3 Standard is designed for 99.99% availability.

S3 Storage Classes

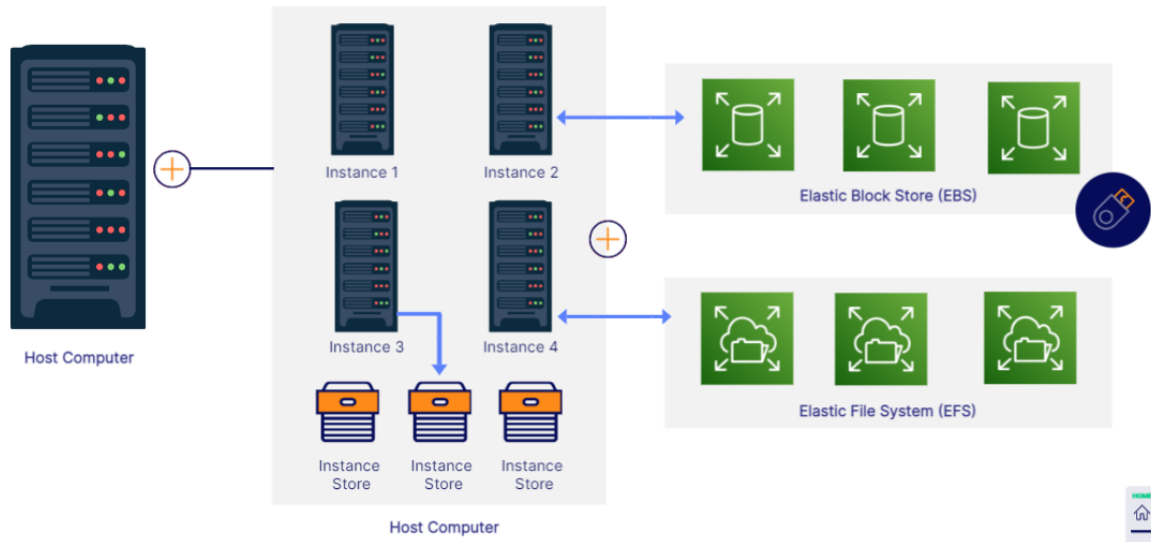**Amazon S3** offers several storage classes designed for different use cases.

1. S3 Standard
2. S3 Intelligent-Tiering
3. S3 Standard-Infrequent Access (IA)
4. S3 One Zone-Infrequent Access (IA)
5. S3 Glacier
6. S3 Glacier Deep Archive
7. S3 Outposts

EC2 Storage:

EC2 Storage — the Big Picture

EC2 supports several storage options for your instances.

Host Computer

Instance 1 Instance 2

Instance 3 Instance 4

Instance Store Instance Store Instance Store

Host Computer

Elastic Block Store (EBS)

Elastic File System (EFS)

Amazon Elastic Block Store (EBS)

EBS is a storage device (called a volume) that can be attached to (or removed from) your instance.

Data **persists** when the instance is not running

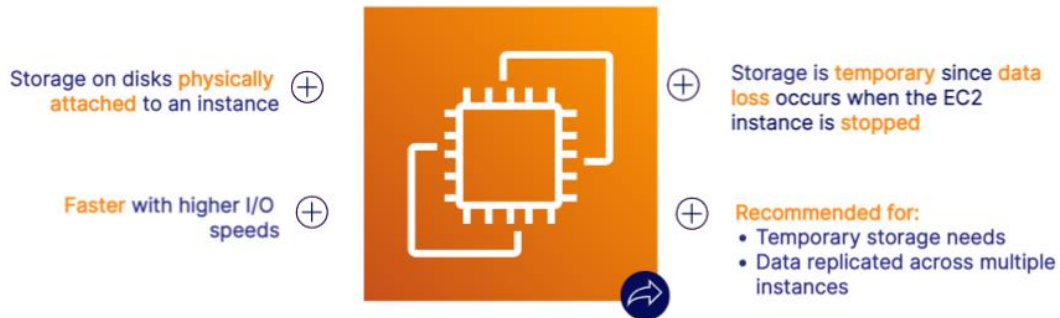Tied to **one** Availability Zone

Can only be attached to **one** instance in the **same** Availability Zone

Recommended for:
- Quickly accessible data
- Running a database on an instance
- Long-term data storage

EC2 Instance Store

An **instance store** is local storage that is physically attached to the host computer and cannot be removed.

Storage on disks **physically attached** to an instance ⊕

Faster with higher I/O speeds ⊕

⊕ Storage is **temporary** since **data loss** occurs when the EC2 instance is **stopped**

⊕ Recommended for:
- Temporary storage needs
- Data replicated across multiple instances

Amazon Elastic File System (EFS)

EFS is a serverless network file system for sharing files.

Only supports the **Linux** file system ⊕

More **expensive** than EBS ⊕

⊕ Accessible across different **Availability Zones** in the same **Region**

⊕ Recommended for:
- Main directories for business-critical apps
- Lift-and-shift existing enterprise apps

Storage Gateway

Storage Gateway is a hybrid storage service.

Connect **on-premises** and **cloud** data

Supports a **hybrid** model

Recommended for:
- Moving backups to the cloud
- Reducing costs for hybrid cloud storage
- Low latency access to data

AWS Backup

AWS Backup helps you manage data backups across multiple AWS services.

Integrates with resources like **EC2**, **EBS**, **EFS**, and more

Create a backup plan that includes **frequency** and **retention**

1 Static websites

Deploy static websites to S3 and use CloudFront for global distribution.

2 Data archive

Archive data using Amazon Glacier as a storage option for Amazon S3.

3 Analytics systems

Store data in Amazon S3 for use with analytics services like Redshift and Athena.

4 Mobile applications

Mobile application users can upload files to an Amazon S3 bucket.