AWS Certified Solutions Architect - Associate

Module 5
Storage Services
EBS

What is Storage Services ?

- **Amazon provides you with flexible, cost effective, and easy-to-use data storage options.**

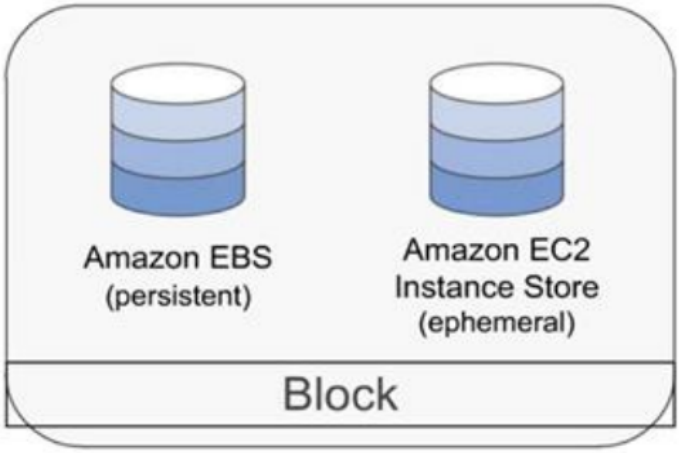
- **Each option has a unique combination of performance and durability.**

- **These storage options can be used independently or in combination to suit your requirements.**

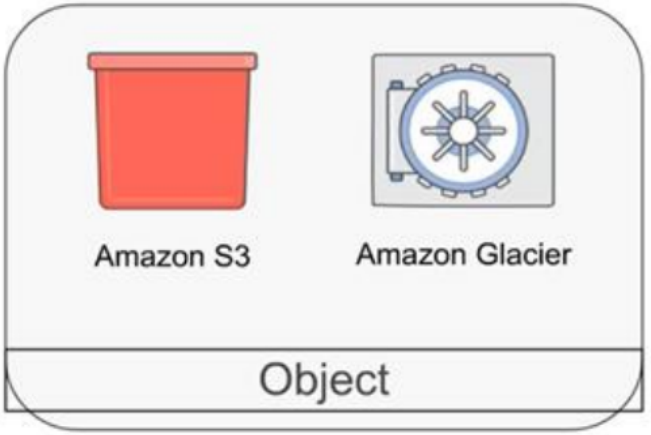
Type of Storages ?

File Storage

Block Storage

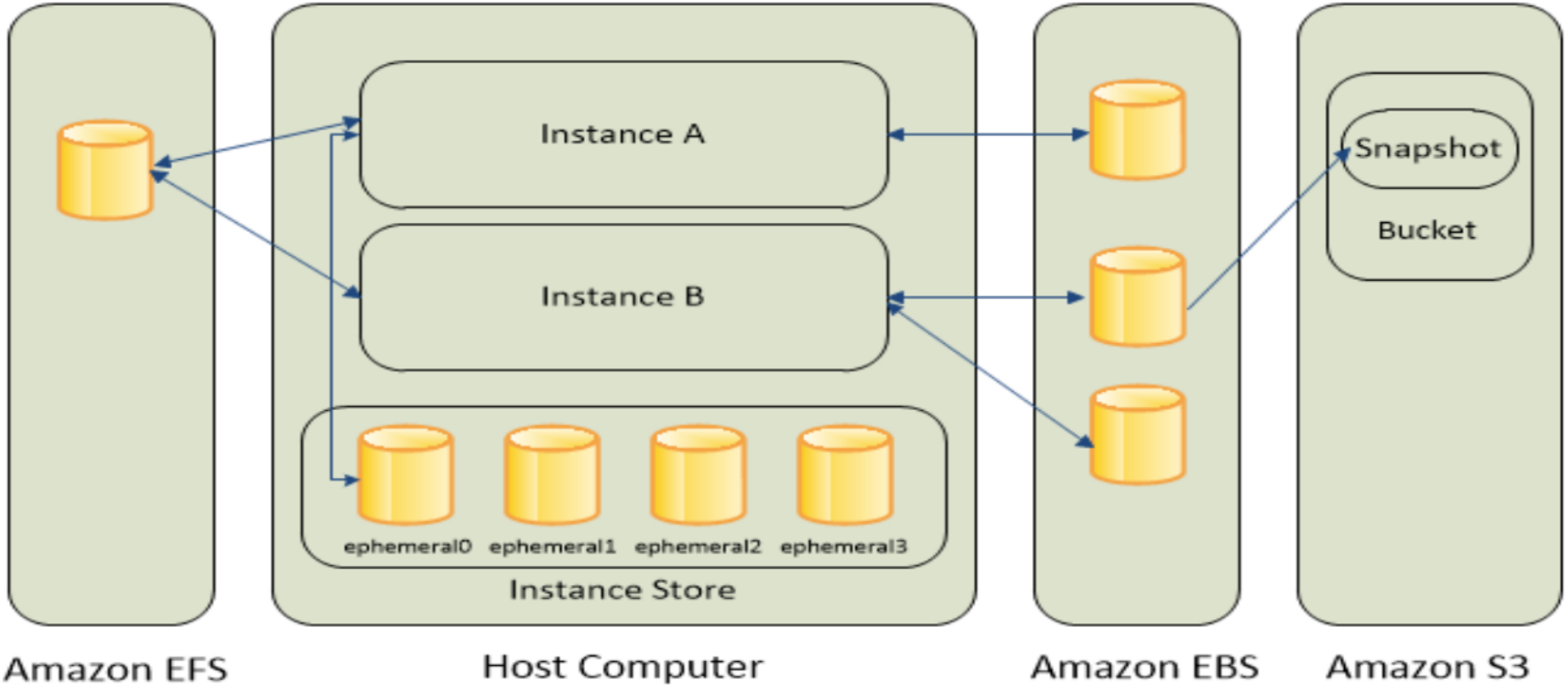


Object Storage



Storage Relationship

Relationship w.r.t to their uses and EC2-instance



EBS – Elastic Block Storage

Agenda :

- What is EBS
- Features and Benefits
- EBS Types
- EBS Comparison
- EBS Lifecycle and Snapshot
- Hands-on Lab

What is EBS ?

- **Amazon Elastic Block Store (EBS) provides block level storage volumes for use with EC2 instances.**
- **EBS volumes are highly available and reliable storage volumes that can be attached to any running instance that is in the same Availability Zone.**
- **With Amazon EBS, you pay only for what you use.**
- **You can create EBS provisioned and throughput optimized volumes up to 16 TiB.**
- **You can mount these volumes as devices on your Amazon EC2 instances that persist independently from the life of the instance.**

More about EBS

- You can mount multiple volumes on the same instance, but each volume can be attached to only one instance at a time.

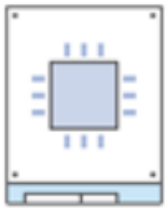
- You can dynamically change the configuration of a volume attached to an instance.

- EBS volumes behave like raw, unformatted block devices. We can create a file system on top of these volumes.

Features and Benefits

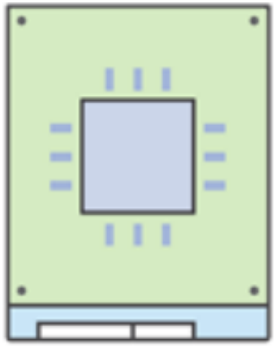
- **Data availability**
- **Data Persistence**
- **Data Encryption**
- **Flexibility**
- **Snapshot**
- **99.99% Service availability**
- **0.1% to 0.2% Annual Failure Rate (AFR)**

EBS Types



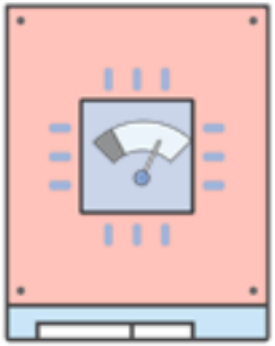
SSD

HDD



gp2

General Purpose SSD



io1

Provisioned IOPS SSD

st1

Throughput Optimized HDD

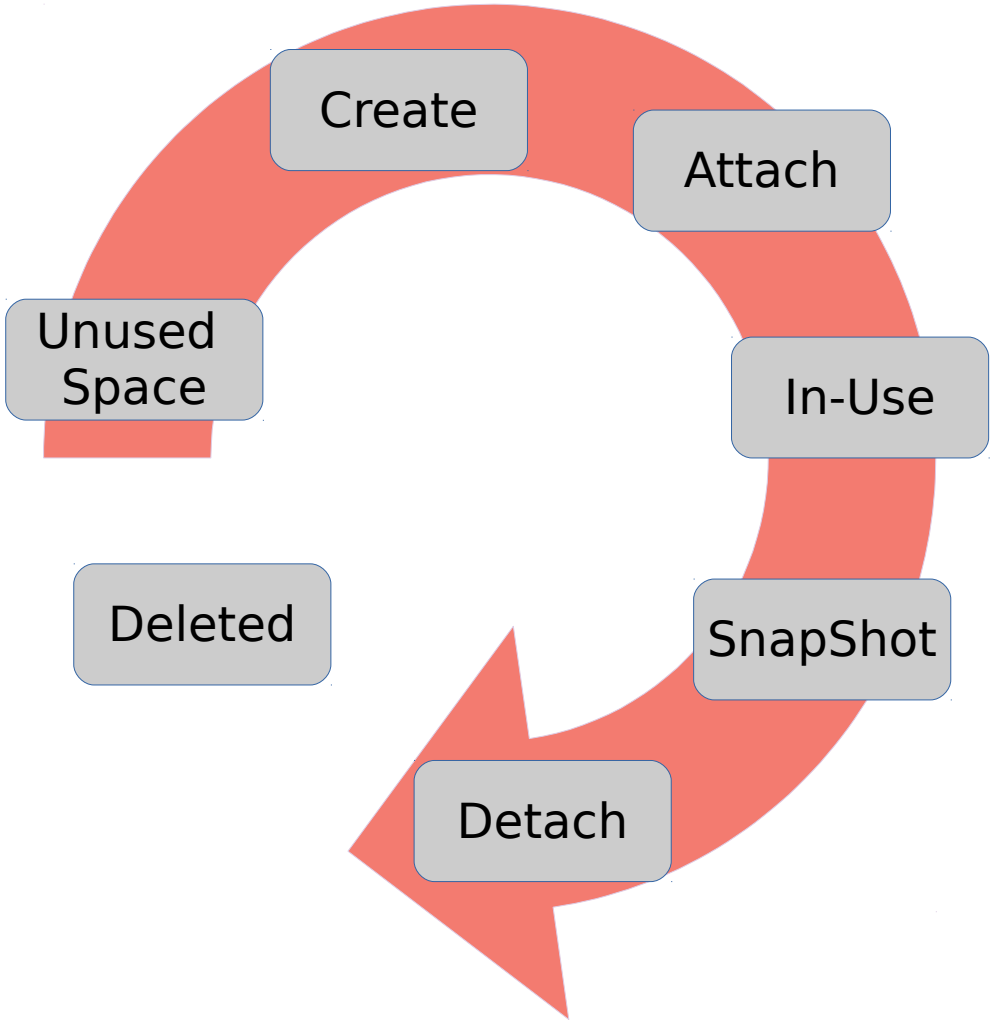
sc1

Cold HDD

EBS Comparison

Description	Solid-State Drives (SSD)		Hard disk Drives (HDD)	
Volume Type	General Purpose SSD (gp2)	Provisioned IOPS SSD (io1)	Throughput Optimized HDD (st1)	Cold HDD (sc1)
Purpose	For transactional workloads	for mission-critical applications	for frequently accessed, throughput-intensive workloads	for less frequently accessed workloads
Use Cases	✓ System boot volumes ✓ Virtual desktops ✓ Low-latency interactive apps ✓ Development and test environments	✓ Critical business applications ✓ Large database: ▪ MongoDB ▪ Cassandra ▪ MS SQL ▪ MySQL ▪ PostgreSQL ▪ Oracle	✓ Streaming workloads requiring consistent, fast throughput ✓ Big data ✓ Data warehouses ✓ Log processing ✓ Cannot be a boot volume	✓ Throughput-oriented storage for large volumes of data that is infrequently accessed ✓ Scenarios where the lowest storage cost is important ✓ Cannot be a boot volume

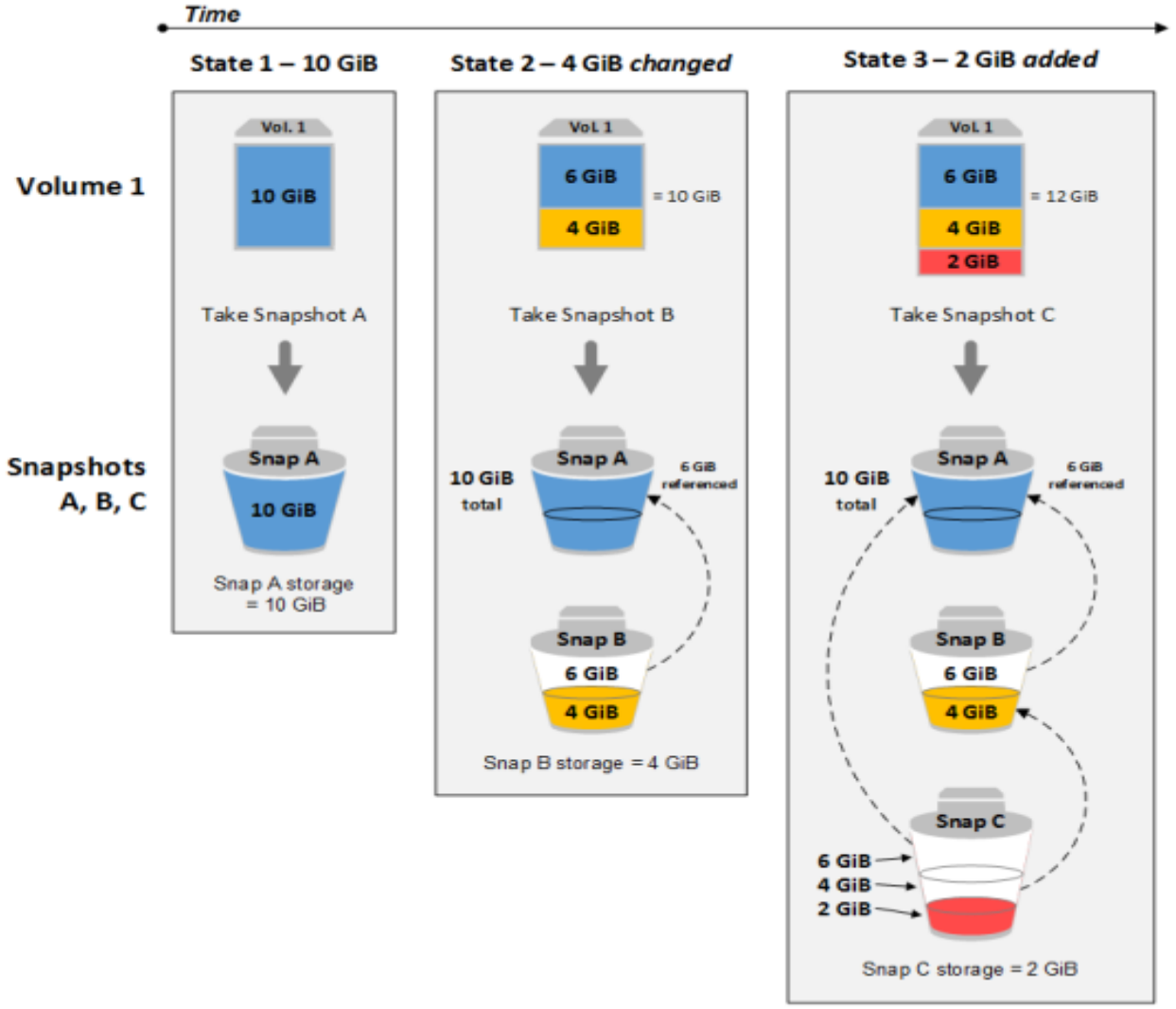
EBS Life Cycle



SnapShot

- You can back up the data on your Amazon EBS volumes to Amazon S3 by taking point-in-time snapshots.
- Snapshots are incremental backups, which means that only the blocks on the device that have changed after your most recent snapshot are saved.
- This minimizes the time required to create the snapshot and saves on storage costs by not duplicating data.
- When you delete a snapshot, only the data unique to that snapshot is removed.
- Each snapshot contains all of the information needed to restore your data (from the moment when the snapshot was taken) to a new EBS volume

Incremental Backup



Hands-on Lab