

## Module 7 : Storage

3 types of Cloud Storage : (1) Block (2) Object (3) File

**Block:** Amazon EBS & Amazon EC2 Instance Store

- Backed up via snapshots, and modified while in use without disrupting the instance.

**Amazon EC2 Instance Store:**

- Data is lost when an instance is stopped or terminated
- Temporary memory-based storage needs like buffers, caches, and scratch data
- Physically attached to the EC2 instance host computer.

**Amazon EBS:**

- Database hosting, backup storage for applications, and rapid deployment of development environments using volume snapshots.

**EBS snapshots:** \*\*\*INCREMENTAL\*\*\*

- Point-in-time backups of EBS volume.
- Disaster recovery, data migration, volume resizing, & consistent backups of prod workloads

**Amazon Data Lifecycle Manager:**

- Automate the creation, retention, and deletion of EBS snapshots
- Schedule snapshots during off-peak hours to minimize performance impact

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**Object:** Amazon S3

- Store vast amounts of unstructured data - Metadata storage capabilities

**Amazon S3:** \*\*\*Fully managed

- **Elements:** (1) **Object:** Fundamental unit of data storage  
(2) **Bucket:** Container for storing objects. Basic unit for access control.
- (1) Content distribution (2) Hosting static websites, (3) media files. (4) Application data storage (5) Archiving, (6) Data lakes, (7) Compliance-driven data retention.
- **Amazon S3 Access Points:** Simplify creation of unique control policies
- **Amazon S3 Audit Logs:** Track everything being done
- **Bucket policies:** Resource-based policies

Standard	Intelligent	Std IA	1 Z- IA	Xprs 1 Z	GL Inst Rtr	GL Flx Rtr	GL Dp Arch	Otp
	Unknown Patterns; 3 Tiers	3 Zones; Accessed less frequently but requires rapid access	Only 1 AZ	1 AZ; single-digit millisecond; 10x 80%	68% < IA	Data 1-2/ year; 1- 5 min exped; 5-12 hours	12 hours; 7-10 years	On-premise

**S3 Lifecycle configurations: Automate the process**

**File:** Amazon EFS & FSx - Shared file systems accessible over networks

**Amazon EFS:**

- Linux Network File System (NFS) protocol
- Automatically scales to petabytes
- Accessed by multiple EC2 instances simultaneously.

**FSx:** Supports: Windows FS, NetApp ONTAP, OpenZFS, Lustre.

- Windows File Server – SMB Protocol, Migrate Windows servers, virtual desktops, SQL.
- NetApp ONTAP – Data management, business continuity.
- OpenZFS – NFS workloads, analytics, dev/test.
- Lustre – ML, HPC, big data, media.

**AWS Storage Gateway:** \*\*\*Fully managed

- Provides on-premises access to virtually unlimited cloud storage.

**AWS Elastic Disaster Recovery:** \*\*\*Fully managed

- Streamlines the recovery of physical, virtual, and cloud-based servers into AWS.