Elastic Block Storage (EBS)

An overview of AWS Elastic Block Storage (EBS) review the primary use cases and compare EBS to S3. And while looking at Durability of a system look into what Raid offers.

Elastic Block Storage (EBS) - EBS allows you to create persistent block level storage volumes and attach it to EC2 instances.

Once attached you can create a file system on top of these volumes, run a database.

EBS is placed in a specific Availability zone where they are automatically replicated to protect you from the failure of a single component. You can also setup snapshots of your EBS to be durably stored in S3.

EBS Use Cases

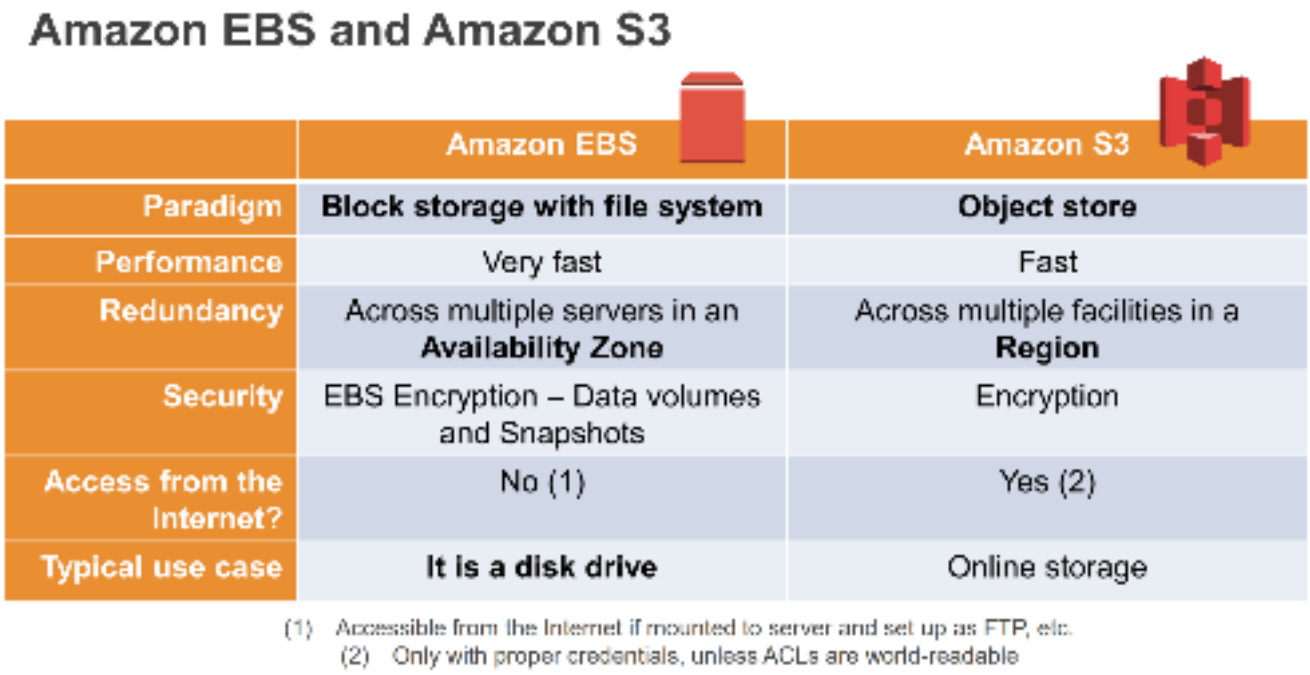
1. OS - Used for Boot/Root Volume, secondary Volumes
2. Databases – Scales with your performance needs
3. Enterprise applications – Provides reliable block storage to run mission-critical applications
4. Business continuity – Minimize data loss and recovery time by regularly backing up using EBS Snapshots
5. Applications – Install and persist in any application.

Different Volumes Types

1. General Purpose SSD (GP2) Price and Performance balance
2. Provisioned IOPS – SSD (IO1) Designed for high I/O applications e.g. Large relational + NoSQL DB more than 10,000 IOPS
3. Throughout Optimized HDD (ST1) Magnetic Storage = Old school physical spinning disks. e.g. Big Data, & os Processing, Data warehousing Main thing to note is that this cannot be boot volumes.
4. Cold HDD (SC1) (magnetic Storage) Lowest cost storage for infrequently

accessed workloads.

EBS vs S3



AWS EBS vs S3

As EBS is a persistent block storage solution where the data on EBS volume is replicated across multiple servers in different AZ's to prevent the loss of data from the failure of any single component. This replication makes Amazon EBS volumes makes it more reliable.

Normally, the customers who follow the guidance on Amazon EBS and Amazon EC2 product detail pages typically achieve good performance out of the box but there are certain scenarios where you need a higher network throughput with much better IOPS and one of the ways people tend to achieve that is by configuring a software level RAID arrays on volumes. RAID is supported by almost all the operating system and ebs volumes, it is used to boost IOPS, achieve better network throughput and for higher fault tolerant storage.

In Short RAID is used when -

1. To achieve better IOPS
2. Improved redundancy
3. Lower costs

Raid

Raid

RAID - Redundant Array of Independent Disks. Essentially the concept of RAID is putting a whole bunch of disks together and they act as one disk.

1. Raid 0: Striped, No redundancy, good performance
2. Raid 1: Mirrored, Redundancy
3. Raid 5: Good for reads, bad for writes, AWS does not recommend putting raid 5 on EBS
4. Raid 10: Striped mirrored, Good redundancy and Good performance

Stripe: Allocating data across two disks

Mirrored: copy of data across two or more disks

Amazon Machine Image Storage:

The AWS Machine image store has two types of stores -

1. Instance store (Ephemeral Storage)
2. EBS Backed Volumes

Instance Store: You will lose data if the underlying host fails.

EBS volume: Root device for an instance launched from AMI. You will not lose data if it is stopped.