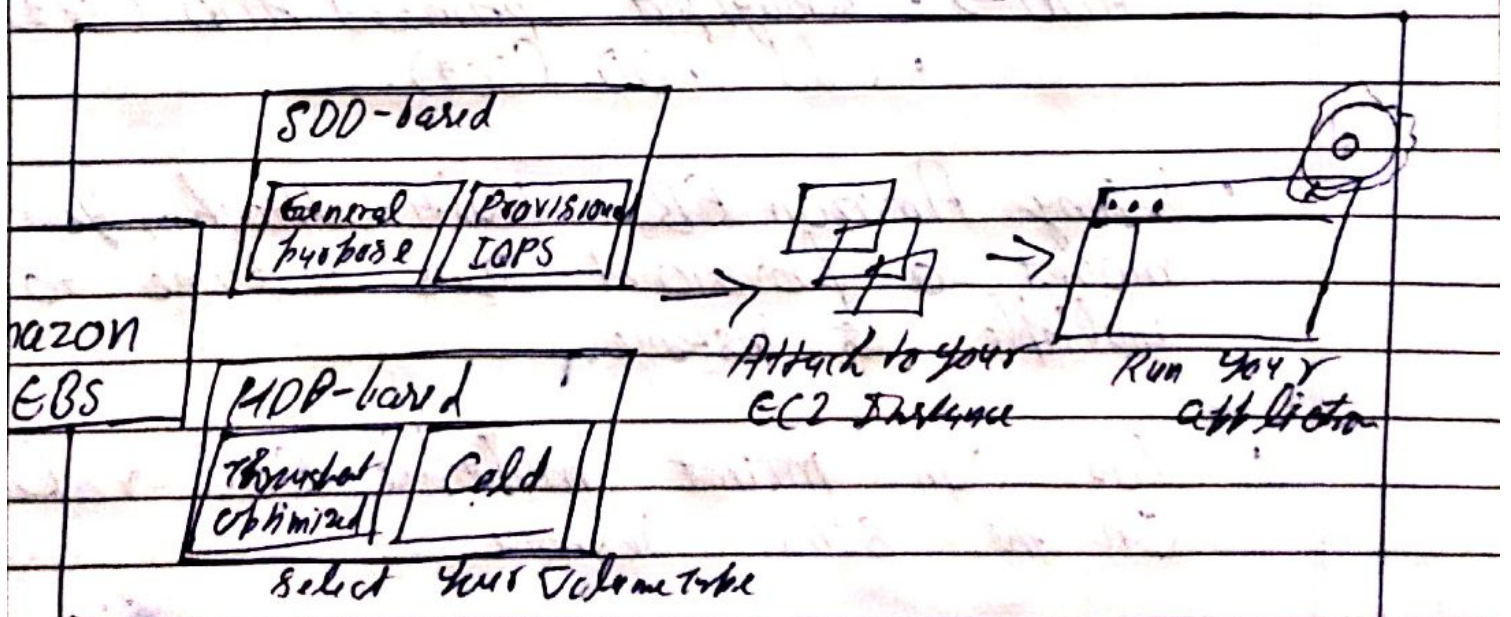


Day 06/100AWSAmazon EBS:

Amazon Elastic Block Store [EBS] is an easy-to-use, scalable, high-performance block-storage service designed for Amazon EC2. In simple terms, An EBS volume is a network drive that can be attached to your instance while they run. It allows your instance to persist data even after they are terminated. It can scale fast so it can be used for high-performance workloads including mission-critical applications. It is easy to deploy, manage, encrypt, and protect Amazon EBS volumes. It is protected from failures with 99.999% availability.

How EBS works?

- Amazon EBS provides a range of options that allows you to optimize storage performance and cost for workload.
- You can create an EBS storage by selecting the right volume type which suits your requirement.
- Attach the EBS volume to the new or existing EC2 instance and run your application.

Amazon EBS Features →

- Amazon EBS has different types of storage options:
 - SSD →
 - General Purpose SSD (gp2, gp3)
 - Provisioned IOPS SSD (io1, io2)
 - HDD →
 - Throughput optimized HDD (st1)
 - Cold HDD (sc1).
- Using Amazon EBS multi-attach, you can mount a provisioned IOPS volume to multiple instances.
- You can mount multiple EBS volumes on the same instance.

- You can use encrypted EBS volumes to meet data-at-rest encryption requirement for audit.
- You can create point-in-time snapshots of EBS volumes, that can be copied across AWS regions.
- Volumes are created in a specific AZ can then be attached to any instances in that same AZ. You need to create a snapshot and restore the snapshot in a new volume to make it available outside the AZ.
- You can copy snapshots to other regions and then restore them to new volumes there, In this way the EBS volume can be migrated to other region.
- EBS volumes can be integrated with Amazon Cloudwatch to monitor the performance of your volume. Cloudwatch can provide performance metrics such as bandwidth, throughput, latency.
- Elastic volumes allow you to increase volume size, adjust performance or change the volume type while the volume is in use.

Type of EBS Volume

Amazon EBS volume type are broken in to two main categories.

- SSD backed volumes are optimized for IOPS, which are best for workloads involving frequent read/write operations with small I/O size.
- HDD-backed volumes are optimized for throughput (measured in MiB/s) for large streaming workloads.

Within each of those groups are two options. The default price & performance type is General Purpose SSD (gp2), & there are 3 other available.

- General Purpose SSD (gp2) - general purpose, balance price & performance
- Use Cases: Most workloads such as virtual desktops, dev & test environment and low-latency apps.
- Provisioned IOPS SSD (io1) - Highest performance SSD volume for missioncritical

low-latency or high-throughput workloads that per volume require sustained IOPS performance, or more than 16000 IOPS or 250 MiB/s of throughput per volume.

- Use Cases: Mission Critical application large database workloads such as MongoDB, Microsoft SQL Server, Cassandra, Oracle, MySQL & PostgreSQL.

• **Throughput Optimized HDD (ST1)** - low-cost HDD volume for frequently accessed workloads with high throughput.

- Use cases: Streaming, workloads, big data, data warehouses, log processing.

• **Cold HDD (SC1)** - Lowest Cost HDD volume for less-frequently accessed workloads.

- Use cases: Throughput-oriented storage for large volume of data that is infrequently accessed.

Amazon EBS Snapshots:

• Amazon EBS provides the ability to save point-in-time snapshot of your volume to Amazon S3.

- EBS Snapshots are stored incrementally, only the blocks that have changed after your last snapshot are saved and you are billed only for the changed blocks.
- Snapshots are stored and can be stored used to instantiate multiple new volumes, expand the size of a volume or move volumes across Availability Zones. When a new volume is created, you may choose to create it based on existing Amazon EBS Snapshot.
- When you delete a snapshot, only the data unique to that snapshot is removed.
- You can share a snapshot across AWS accounts by modifying its access permissions.
- You can make copies of your own snapshots as well as snapshots that have been shared with you.
- Each account can have up to 5 concurrent snapshot copy requests to a single destination Region.

