**Amazon Elastic Block Store (Amazon EBS)**

Amazon Elastic Block Store (Amazon 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. EBS volumes that are attached to an EC2 instance are exposed as storage volumes that persist independently from the life of the instance.

Amazon EBS is recommended when data must be quickly accessible and requires long-term persistence. EBS volumes are particularly well-suited for use as the primary storage for file systems, databases, or for any applications that require fine granular updates and access to raw, unformatted, block-level storage.

**Features of Amazon EBS**

* You can create EBS General Purpose SSD (gp2), Provisioned IOPS SSD (io1), Throughput Optimized HDD (st1), and Cold HDD (sc1) volumes up to 16 TiB in size. You can mount these volumes as devices on your Amazon EC2 instances. 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.
* With General Purpose SSD (gp2) volumes, you can expect base performance of 3 IOPS/GiB, with the ability to burst to 3,000 IOPS for extended periods of time. Gp2 volumes are ideal for a broad range of use cases such as boot volumes, small and medium-size databases, and development and test environments.
* EBS volumes behave like raw, unformatted block devices. You can create a file system on top of these volumes, or use them in any other way you would use a block device (like a hard drive).
* You can use encrypted EBS volumes to meet a wide range of data-at-rest encryption requirements for regulated/audited data and applications.
* EBS volumes are created in a specific Availability Zone, and can then be attached to any instances in that same Availability Zone. To make a volume available outside of the Availability Zone, you can create a snapshot and restore that snapshot to a new volume anywhere in that region.

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|  | **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) |
| **Description** | General purpose SSD volume that balances price and performance for a wide variety of workloads | Highest-performance SSD volume for mission-critical low-latency or high-throughput workloads | Low cost HDD volume designed for frequently accessed, throughput-intensive workloads | Lowest cost HDD volume designed for less frequently accessed workloads |
| **Use Cases** | * Recommended for most workloads * System boot volumes * Virtual desktops * Low-latency interactive apps * Development and test environments | * Critical business applications that require sustained IOPS performance, or more than 10,000 IOPS or 160 MiB/s of throughput per volume * Large database workloads, such as:   + MongoDB   + Cassandra   + Microsoft SQL Server   + MySQL   + PostgreSQL   + Oracle | * Streaming workloads requiring consistent, fast throughput at a low price * 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 |
| **API Name** | gp2 | io1 | st1 | sc1 |
| **Volume Size** | 1 GiB - 16 TiB | 4 GiB - 16 TiB | 500 GiB - 16 TiB | 500 GiB - 16 TiB |
| **Max. IOPS\*\*/Volume** | 10,000 | 32,000 | 500 | 250 |
| **Max. Throughput/Volume** | 160 MiB/s | 500 MiB/s\*\*\* | 500 MiB/s | 250 MiB/s |
| **Max. IOPS/Instance** | 80,000 | 80,000 | 80,000 | 80,000 |
| **Max. Throughput/Instance**† | 1,750 MiB/s | 1,750 MiB/s | 1,750 MiB/s | 1,750 MiB/s |
| **Dominant Performance Attribute** | IOPS | IOPS | MiB/s | MiB/s |

# Amazon EBS Snapshots

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.