EBS Volumes

EC2 Instance Storage Section

Section Title

Intro

An Amazon EBS volume is a durable, block-level storage device that you can attach to your instances. After you attach a volume to an instance, you can use it as you would use a physical hard drive. EBS volumes are flexible. For current-generation volumes attached to current-generation instance types, you can dynamically increase size, modify the provisioned IOPS capacity, and change volume type on live production volumes.

Benefits of using EBS volumes

https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-volumes.html

Data Availability

When you create an EBS volume, it is automatically replicated within its Availability Zone to prevent data loss due to failure of any single hardware component.

You can attach an EBS volume to any EC2 instance ***in the same Availability Zone***. After you attach a volume, it appears as a native block device similar to a hard drive or other physical device.

At that point, the instance can interact with the volume just as it would with a local drive. You can connect to the instance and format the EBS volume with a file system, such as ext3, and then install applications.

Data Persistence

An EBS volume is off-instance storage that can persist independently from the life of an instance. You continue to pay for the volume usage as long as the data persists.

EBS volumes that are attached to a running instance can automatically detach from the instance with their data intact when the instance is terminated if you uncheck the **Delete on Termination** check box when you configure EBS volumes for your instance on the EC2 console.

The volume can then be reattached to a new instance, enabling quick recovery. If the check box for **Delete on Termination** is checked, the volume(s) will delete upon termination of the EC2 instance.

If you are using an EBS-backed instance, you can stop and restart that instance without affecting the data stored in the attached volume.

Benefits of using EBS volumes

Data Encryption

For simplified data encryption, you can create encrypted EBS volumes with the Amazon EBS encryption feature.

All EBS volume types support encryption. You can use encrypted EBS volumes to meet a wide range of data-at-rest encryption requirements for regulated/audited data and applications. Amazon EBS encryption uses **256-bit Advanced Encryption Standard algorithms (AES-256)** and an Amazon-managed key infrastructure.

The encryption occurs on the server that hosts the EC2 instance, providing encryption of data-in-transit from the EC2 instance to Amazon EBS storage.

Amazon EBS encryption uses **AWS Key Management Service (AWS KMS) master keys** when creating encrypted volumes and any snapshots created from your encrypted volumes.

Snapshots

Amazon EBS provides the ability to create **snapshots** (backups) of any EBS volume and write a copy of the data in the volume to **Amazon S3**, where it is stored redundantly in multiple Availability Zones.

The volume does not need to be attached to a running instance in order to take a snapshot. As you continue to write data to a volume, you can periodically create a snapshot of the volume to use as a baseline for new volumes.

These snapshots can be used to create multiple new EBS volumes or move volumes across Availability Zones. *Snapshots of encrypted EBS volumes are automatically encrypted*.

EBS Types

General Purpose SSD (gp2 and gp3)

These volumes are backed by **solid-state drives (SSDs)**.

They balance price and performance for a wide variety of transactional workloads. These include ***virtual desktops, medium-sized single instance databases, latency sensitive interactive applications, development*** and **t*est environments,*** and ***boot volumes***.

General Purpose SSD gp3

https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/general-purpose.html

General Purpose SSD (gp3) volumes are *the latest generation of General Purpose SSD volumes*, and t*he lowest cost SSD* volume offered by Amazon EBS. This volume type helps to provide the right balance of price and performance for most applications.

It also helps you to scale volume performance *independently of volume size*. This means that you can provision the required performance without needing to provision additional block storage capacity. Additionally, gp3 volumes offer a 20 percent lower price per GiB than General Purpose SSD (gp2) volumes.

IOPS Performance

Gp3 delivers a consistent baseline IOPS performance of **3,000 IOPS**. You can provision additional IOPS (up to a maximum of 16,000) for an additional cost.

EBS Types

General Purpose SSD gp3 ...

Throughput Performance
gp3 volumes deliver a consistent baseline throughput performance of **125 MiB/s**. You can provision additional throughput (up to a maximum of **1,000 MiB/s**) for an additional cost.

Volume Size
A gp3 volume can range in size from **1 GiB** to **16 TiB**.

General Purpose SSD gp2

General Purpose SSD (gp2) volumes are the default Amazon EBS volume type for Amazon EC2 instances. They offer cost-effective storage that is ideal for a broad range of transactional workloads.

IOPS Performance
Gp3 delivers a consistent baseline IOPS performance of **3,000 IOPS**. You can provision additional IOPS (up to a maximum of 16,000) for an additional cost.

Throughput Performance
gp2 volumes deliver throughput between 128 MiB/s and 250 MiB/s, depending on the volume size.

Thanks!

Contact us:

mayombegradi@outlook.com
AWS Architect Associate