# Elastic Block Storage

AN AWS STORAGE SERVICE

# Introduction to EBS

- Elastic Block Store.
- Persistent and dynamic disks you can define in Amazon's EC2 compute cloud.
- Attach them to EC2 instances.
- Create using both AWS console as well as ec2 cli.
- Once an EBS volume has been attached to an EC2 instance it functions just like a local hard disk.
- Increase the durability of your EBS volumes by frequently backing up them (called snapshots).
- Pay for what you use.

# Working of EBS

- You create a volume from 1GB to 16TB in size and then you mount it on a device (such as /dev/sdj) on an instance, format it, and use it.
- Later you can detach it and then reattach it to a different instance.
- One volume can be attached with one instance*.

# EBS working continue

- EBS volumes can be managed both AWS console as well as ec2 cli.
- Install ec2 cli using command

  On windows: https://s3.amazonaws.com/aws-cli/AWSCLI64.msi

  On Linux:

  curl "https://s3.amazonaws.com/aws-cli/awscli-bundle.zip" -o "awscli-bundle.zip"

  unzip awscli-bundle.zip

  sudo ./awscli-bundle/install -i /usr/local/aws -b /usr/local/bin/aws

- You can also snapshot the volume at any time to S3, and if you want to restore your snapshot you can create a fresh volume from the snapshot.

# EBS Benefits

- Scalable
- cost-effective
- Redundancy to avoid data loss even when multiple hardware failures  occur.
- Flexible to detach and attach.

# EBS Volume Types

- General Purpose (SSD) Volumes
- Provisioned IOPS (SSD) Volumes
- Magnetic Volumes

| Characteristic | General Purpose (SSD) | Provisioned IOPS (SSD) | Magnetic |
|---|---|---|---|
| Volume size | 1 GiB - 16 TiB | 4 GiB - 16 TiB | 1 GiB - 1 TiB |
| Maximum throughput | 160 MiB/s | 320 MiB/s | 40-90 MiB/s |
| IOPS performance | Baseline performance of 3 IOPS/GiB (up to 10,000 IOPS) with the ability to burst to 3,000 IOPS for volumes under 1,000 GiB. See I/O Credits and Burst Performance | Consistently performs at provisioned level, up to 20,000 IOPS maximum | Averages 100 IOPS, with the ability to burst to hundreds of IOPS |
| API and CLI volume name | gp2 | io1 | standard |

# EBS Snapshots

- EBS snapshots are stored in S3.
- Not transferable between availability zones, but you are able to copy snapshots between zones or regions.
- Snapshots can also be used to create new EBS volumes or resize existing volumes.
- EBS snapshots are “block level incremental”.

# EBS pricing

- Amazon EBS General Purpose (SSD) volumes

$0.12 per GB-month of provisioned storage

- Amazon EBS Provisioned IOPS (SSD) volumes

  $0.138 per GB-month of provisioned storage

  $0.072 per provisioned IOPS-month

- Amazon EBS Magnetic volumes

  $0.08 per GB-month of provisioned storage

  $0.08 per 1 million I/O requests

- Amazon EBS Snapshots to Amazon S3

$0.095 per GB-month of data stored

# Upcoming features

- Elastic File System

With Amazon EFS, storage capacity is elastic, growing and shrinking automatically as you add and remove files, so your applications have the storage they need, when they need it.

Amazon EFS is an elastic, shared file storage service for Amazon EC2, and provides a common data source for workloads and applications running on more than one instance that need to access a common file system.

- Using EFS AWS is looking forward to implement EBS volume accessibility over one or more than one ec2 instances flexibly.

# EFS Benefits:

- Seamless Integration
- Scale Up and Down Seamlessly
- Fully Managed Service
- Share File Storage Across Instances
- Consistent, Scalable Performance
- Low Cost
- Highly Available and Durable
- Secure

# EFS Pricing

- With Amazon EFS, you pay only for the amount of file system storage  you use in GB. There is no minimum fee and no set-up costs.

- Pricing

  $0.30/GB-month

# References:


- www.aws.amazon.com/ebs/
- https://aws.amazon.com/blogs/aws/
- www.aws.amazon.com/efs/


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