

## Elastic block store (EBS):-

### Types of EBS volumes:-

#### 1) SSD ( gp2, gp3, io1, io2)

- **gp2 :- (General Purpose SSD)** Good for everyday use. Works well for small to medium databases and general applications.
- **gp3 :- (Next Gen General Purpose SSD)** Better for bigger, more frequent data tasks. Useful for databases and big data applications.
- **Io1:- (Provisioned IOPS SSD)** High-performance storage. Best for critical business apps and databases that need a lot of speed.
- **Io2 :- (Next gen Provisioned IOPS SSD):** Even higher performance and durability than io1. Great for demanding, fast application

#### 2) HDD ( st1, sc1)

- **st1 (Throughput Optimized HDD):** Good for big data and large-scale tasks. Works well with data warehouses and streaming tasks.
- **sc1 (Cold HDD):** Budget-friendly storage for less frequently used data. Useful for backups and archives.

#### 3) Previous generation volumes

- **magnetic (Standard):** Basic storage with bursts of speed. Suitable for older systems or less demanding workloads.

## Assigning new EBS volume to Instance :-

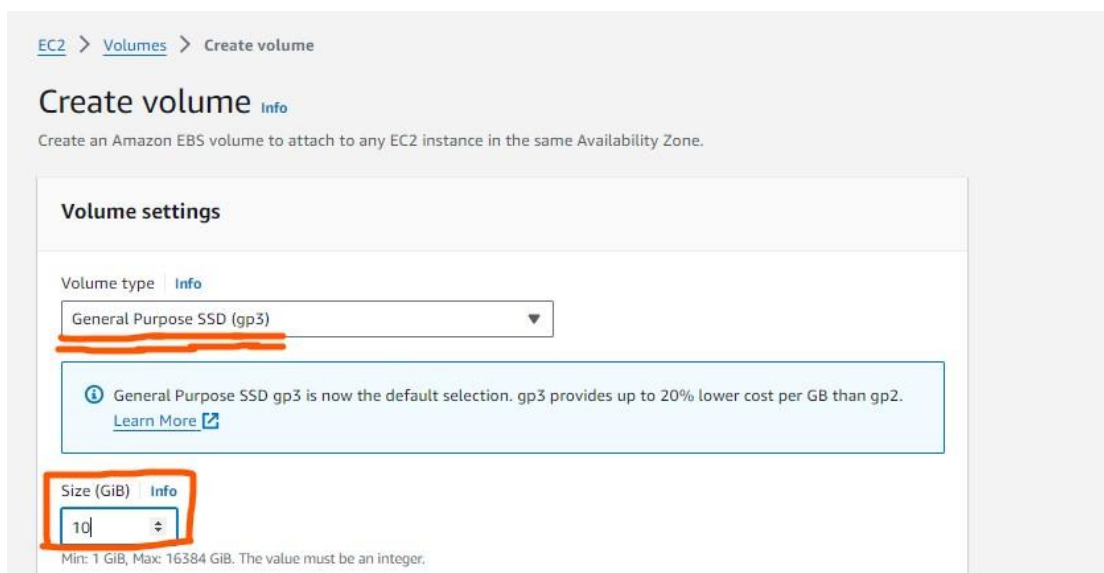
1. create new instance ( after creating new instance the default EBS volume also created )
2. click on **Create volume** select the volume type



The screenshot shows the AWS Volumes console. At the top, there's a 'Volumes (1)' header with a search bar and a 'Create volume' button. Below is a table with columns: Name, Volume ID, Type, Size, IOPS, Throughput, Snapshot, Created, and Availability Zone. One volume is listed with ID 'vol-0d23bba6ba5639b1e', type 'gp3', size '8 GiB', and IOPS '3000'.

|                          | Name | Volume ID             | Type | Size  | IOPS | Throughput | Snapshot        | Created                    | Availability Zone |
|--------------------------|------|-----------------------|------|-------|------|------------|-----------------|----------------------------|-------------------|
| <input type="checkbox"/> | -    | vol-0d23bba6ba5639b1e | gp3  | 8 GiB | 3000 | 125        | snap-0fc9d6b... | 2024/03/01 12:09 GMT+5:... | us-east-1a        |

3. select **volume type** and assign **size** of volume



The screenshot shows the 'Create volume' page in the AWS console. Under 'Volume settings', the 'Volume type' is set to 'General Purpose SSD (gp3)'. A message states: 'General Purpose SSD gp3 is now the default selection. gp3 provides up to 20% lower cost per GB than gp2.' Below this, the 'Size (GiB)' is set to '10'. A note at the bottom says: 'Min: 1 GiB, Max: 16384 GiB. The value must be an integer.'

EC2 > Volumes > Create volume

### Create volume [Info](#)

Create an Amazon EBS volume to attach to any EC2 instance in the same Availability Zone.

**Volume settings**

Volume type [Info](#)

General Purpose SSD (gp3)

*General Purpose SSD gp3 is now the default selection. gp3 provides up to 20% lower cost per GB than gp2. [Learn More](#)*

Size (GiB) [Info](#)

10

Min: 1 GiB, Max: 16384 GiB. The value must be an integer.

4. select the availability zone  
(note:- EBS service is a **availability zone specific service** as a reason for assigning new volume to instance, we required our instance and EBS volume in same availability zone )

5. scroll down and click on create volume

Availability Zone [Info](#)

us-east-1a ▼

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**Snapshot summary** [Info](#) ↻

🕒 Click refresh to view backup information

The volume type that you select and the tags that you assign determine whether the volume will be backed up by any Data Lifecycle Manager policies.

Cancel Create volume

6. new EBS volume is created.....

7. For attaching new EBS volume to existing instance select EBS volume and **click on Action Button** and also **click on attach** option

Volumes (1/2) [Info](#) ↻ Create volume

Search

|                                     | Name | Volume ID             | Type | Size   | IOPS | Throughput | Snapshot    |
|-------------------------------------|------|-----------------------|------|--------|------|------------|-------------|
| <input type="checkbox"/>            | -    | vol-0d23bba6ba5639b1e | gp3  | 8 GiB  | 3000 | 125        | snap-0fc9d6 |
| <input checked="" type="checkbox"/> | -    | vol-0611f74bda1369d86 | gp3  | 10 GiB | 3000 | 125        | -           |

Volume ID: vol-0611f74bda1369d86

[Details](#) [Status checks](#) [Monitoring](#) [Tags](#)

- Actions ▲
- Modify volume
- Create snapshot
- Create snapshot lifecycle policy
- Delete volume
- Attach volume
- Detach volume
- Force detach volume
- Manage auto-enabled I/O
- Manage tags
- Fault injection ▶

8. Select the instance and click on attach volume

EC2 > Volumes > vol-0611f74bda1369d86 > Attach volume

## Attach volume [Info](#)

Attach a volume to an instance to use it as you would a regular physical hard disk drive.

### Basic details

Volume ID  
vol-0611f74bda1369d86

Availability Zone  
us-east-1a

Instance [Info](#)  
i-094379da38abd0bf8

Only instances in the same Availability Zone as the selected volume are displayed.

Device name [Info](#)  
/dev/sdf

Recommended device names for Linux: /dev/sda1 for root volume. /dev/sd[f-p] for data volumes.

**Info** Newer Linux kernels may rename your devices to `/dev/xvdf` through `/dev/xvdp` internally, even when the device name entered here (and shown in the details) is `/dev/sdf` through `/dev/sdp`.

Cancel **Attach volume**

9. New volume is attached (checked using `lsblk` command)

```
[root@ip-172-31-22-10 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
xvda        202:0    0   8G  0 disk
├─xvda1      202:1    0   8G  0 part /
├─xvda127    259:0    0  1M  0 part
└─xvda128    259:1    0 10M  0 part /boot/efi
xvdf        202:80    0 10G  0 disk
[root@ip-172-31-22-10 ec2-user]#
```

10. For using this volume we need to **create partition** first  
(for that we have **fdisk** command )

```
[root@ip-172-31-22-10 ec2-user]# fdisk /dev/xvdf

Welcome to fdisk (util-linux 2.37.4).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xfa17224b.

Command (m for help):
```

Click on :- n (new partition) → p (primary partition) → 1 (partition number) → default (first sector) → 5g (last sector) → w (for save)

11. Two partitions are created (**xvdf1, xvdf2** )

```
[root@ip-172-31-22-10 ec2-user]# partprobe
[root@ip-172-31-22-10 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
xvda        202:0    0   8G  0 disk
├─xvda1     202:1    0   8G  0 part /
├─xvda127   259:0    0    1M  0 part
└─xvda128   259:1    0   10M  0 part /boot/efi
xvdf        202:80    0  10G  0 disk
├─xvdf1     202:81    0   5G  0 part
└─xvdf2     202:82    0   2G  0 part
[root@ip-172-31-22-10 ec2-user]#
```

12. Next we need to assign file system to created partitions

```
[root@ip-172-31-22-10 ec2-user]# mkfs.ext4 /dev/xvdf1 ; mkfs.ext4 /dev/xvdf2
mke2fs 1.46.5 (30-Dec-2021)
/dev/xvdf1 contains a ext4 file system
   created on Fri Mar  1 07:45:02 2024
Proceed anyway? (y,N) y
Creating filesystem with 1310720 4k blocks and 327680 inodes
Filesystem UUID: 005b9106-f86b-4943-9c47-a26423e99f9c
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
```

13. Next we need to mount the partitions for

- Temporary mount

```
[root@ip-172-31-22-10 ec2-user]# mount /dev/xvdf1 /mnt
[root@ip-172-31-22-10 ec2-user]#
```

```
[root@ip-172-31-22-10 mnt]# df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
devtmpfs        devtmpfs  4.0M   0    4.0M   0% /dev
tmpfs           tmpfs     475M   0    475M   0% /dev/shm
tmpfs           tmpfs     190M  2.9M  188M   2% /run
/dev/xvda1      xfs       8.0G  1.6G  6.5G  19% /
tmpfs           tmpfs     475M   0    475M   0% /tmp
/dev/xvda128    vfat      10M   1.3M  8.7M  13% /boot/efi
tmpfs           tmpfs     95M    0    95M   0% /run/user/1000
/dev/xvdf1      ext4      4.9G   24K   4.6G   1% /mnt
```

- Permanent mount

```
[root@ip-172-31-22-10 mnt]# vim /etc/fstab
```

```
modified
UUID=81e4e009-191b-464c-8cc3-22de217d1136 / xfs
UUID=EA7D-FA7D /boot/efi vfat defaults,noatime
/dev/xvdf1 /mnt ext4 default 0 0
```

```
[root@ip-172-31-22-10 mnt]# ls
```

```
lost+found
```

```
[root@ip-172-31-22-10 mnt]# mount -a
```

```
[root@ip-172-31-22-10 mnt]#
```

14. We successfully attached the new volume to existing instance.....



15. Now we can put our data into **/mnt** folder means the data we are putting is stored in another volume.....

```
[root@ip-172-31-22-10 mnt]# touch mayur{1..100}.txt
[root@ip-172-31-22-10 mnt]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M   0    4.0M   0% /dev
tmpfs           475M   0    475M   0% /dev/shm
tmpfs           190M  2.9M   188M   2% /run
/dev/xvda1       8.0G  1.6G   6.5G  19% /
tmpfs           475M   0    475M   0% /tmp
/dev/xvda128     10M  1.3M   8.7M  13% /boot/efi
tmpfs           95M   0     95M   0% /run/user/1000
/dev/xvdf1       4.9G   24K   4.6G   1% /mnt
[root@ip-172-31-22-10 mnt]#
```

(24kb is used in /dev/xvdf1 volume )