



AWS Session

14-3-2023

- If we want any data to be permanent then we use Storage Service.
- To need raw hard disk, we use block storage and for that in AWS we have EBS- Elastic Block Storage which is in STAAS- Storage as a service.

NOTE: Here Raw Disk includes pen-drive, external hard drive.

- Storage here is also known as Volume
- EBS- Elastic Block Storage is categorised in 3 storages:

1. **Root Storage/ Root Volume**
2. **EBS Volume/Network storage**
3. **Instance Storage**

- In windows C-Drive is the root volume, so when the OS is deleted then our data will be loss.
- External Storage keeps the data persistent.
- Giving real Hard disk to OS, can be treated as external HD so we use instance store.
- EBS is comparatively slow and cheap whereas instance store is very fast. So if we have a requirement for high performance we use instance store but this will increase the cost also.
- In HD when we read and write then that is known as **I/O Operation** i.e., input/output operation.
- When we create any volume, internally hard disk is being created in EBS. It looks like it is a part of OS but internally everything is happening through network.
- Whenever we launch instance we select instance type like t2.micro that means behind the seen it has been given a dedicated hardware.

PRACTICAL

Step-1: Create EC2 instance

Configure aws through cli and see the instance types in ec2 so for that we used filter feature to find the instance types in ec2.

```
C:\Users\Vimal Daga>
C:\Users\Vimal Daga>aws ec2 describe-instance-types --filters "Name=instance-type,Values=t2.micro" --profile syed
```

[AWS]

```
Command Prompt - aws ec2 describe-instance-types --filters "Name=instance-type,Values=t2.micro" --profile syed

{
  "InstanceTypes": [
    {
      "InstanceType": "t2.micro",
      "CurrentGeneration": true,
      "FreeTierEligible": true,
      "SupportedUsageClasses": [
        "on-demand",
        "spot"
      ],
      "SupportedRootDeviceTypes": [
        "ebs"
      ],
      "SupportedVirtualizationTypes": [
        "hvm"
      ],
      "BareMetal": false,
      "Hypervisor": "xen",
      "ProcessorInfo": {
        "SupportedArchitectures": [
          "i386",

```

```
p-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
Select Command Prompt - aws ec2 describe-instance-types --filters "Name=instance-type,Values=c*" "Name=instance-storage-s...
--profile syed

{
  "InstanceTypes": [
    {
      "InstanceType": "c5d.12xlarge",
      "CurrentGeneration": true,
      "FreeTierEligible": false,
      "SupportedUsageClasses": [
        "on-demand",
        "spot"
      ],
      "SupportedRootDeviceTypes": [
        "ebs"
      ],
      "SupportedVirtualizationTypes": [

```

If we want our output in tabular format then we used --output table in the command while filetring.

```
C:\Users\Vimal Daga>aws ec2 describe-instance-types --filters "Name=instance-type,Values=c*" "Name=instance-storage-supported,Values=true" --output table --profile syed

----- DescribeInstanceTypes -----
+----- InstanceTypes -----+
+-----+-----+
| AutoRecoverySupported | False |
| BareMetal             | True  |
| BurstablePerformanceSupported | False |
| CurrentGeneration     | True  |
| DedicatedHostsSupported | True  |
| FreeTierEligible      | False |
| HibernationSupported  | False |
| Hypervisor            |       |
+-----+-----+
-- More --
```

[AWS]

Services

▼ Summary

Number of instances [Info](#)

1

Software Image (AMI)
Amazon Linux 2 Kernel 5.10 AMI...[read more](#)
ami-0d81306eddc614a45

Virtual server type (instance type)
t2.micro

Firewall (security group)

Cancel Launch instance

After creating instance volume will be created.

le.aws.amazon.com/ec2/home?region=ap-south-1#Volumes:

Volumes (1/4) Actions Create volume

	Name	Volume ID	Type	Size	IOPS	Throughput	S
<input type="checkbox"/>	-	vol-0876deeb5014e879e	gp2	8 GiB	100	-	s
<input type="checkbox"/>	-	vol-0c49528d0b6731f90	gp2	8 GiB	100	-	s
<input checked="" type="checkbox"/>	-	vol-04cd2ba2f2df33473	gp3	1 GiB	3000	125	-
<input type="checkbox"/>	-	vol-067eabc0204f3746a	gp2	8 GiB	100	-	s

Volume ID: vol-04cd2ba2f2df33473

Step-2) Now connect with the instance.

Services

Instance ID
i-0ddb316be40685562 (os1)

Public IP address
13.233.149.23

User name
Enter the user name defined in the AMI used to launch the instance. If you didn't define a custom user name, use the default user name, ec2-user.

Note: In most cases, the default user name, ec2-user, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

Cancel Connect

[AWS]

After connecting the instance, we create partition, format it, and mount it.

```
aws Services Search [Alt+S]
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-32-52 ~]$ sudo su -
[root@ip-172-31-32-52 ~]# fdisk -l
Disk /dev/xvda: 8 GiB, 8589934592 bytes, 16777216 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: gpt
Disk identifier: 740A12D4-3E3E-4A54-A989-6F6AB0688304

Device            Start      End  Sectors  Size Type
/dev/xvda1        4096 16777182 16773087   8G Linux filesystem
/dev/xvda128      2048     4095     2048    1M BIOS boot

Partition table entries are not in disk order.

Disk /dev/xvdb: 1 GiB, 1073741824 bytes, 2097152 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
[root@ip-172-31-32-52 ~]#
```

```
[root@ip-172-31-32-52 ~]# df
Filesystem      1K-blocks    Used Available Use% Mounted on
devtmpfs         485168         0    485168  0% /dev
tmpfs            493956         0    493956  0% /dev/shm
tmpfs            493956      412    493544  1% /run
tmpfs            493956         0    493956  0% /sys/fs/cgroup
/dev/xvda1      8376300 1664884   6711416 20% /
tmpfs           98792         0     98792  0% /run/user/1000
[root@ip-172-31-32-52 ~]#
```

```
[root@ip-172-31-32-52 ~]#
[root@ip-172-31-32-52 ~]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda         202:0    0    8G  0 disk
└─xvda1      202:1    0    8G  0 part /
xvdb         202:16   0    1G  0 disk
[root@ip-172-31-32-52 ~]# fdisk /dev/xvdb

Welcome to fdisk (util-linux 2.30.2).
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 0x078dff3d.

Command (m for help):
```


[AWS]

```
Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x078dff3d.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (1-4, default 1):
First sector (2048-2097151, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-2097151, default 2097151):

Created a new partition 1 of type 'Linux' and of size 100 MiB.

Command (m for help):
```

```
Using default response p.
Partition number (1-4, default 1):
First sector (2048-2097151, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-2097151, default 2097151): +100M

Created a new partition 1 of type 'Linux' and of size 100 MiB.

Command (m for help): p
Disk /dev/xvdb: 1 GiB, 1073741824 bytes, 2097152 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x078dff3d



| Device     | Boot Start | End Sectors | Size   | Id      | Type  |
|------------|------------|-------------|--------|---------|-------|
| /dev/xvdb1 | 2048       | 206847      | 204800 | 100M 83 | Linux |



Command (m for help):
```

```
Command (m for help): p
Disk /dev/xvdb: 1 GiB, 1073741824 bytes, 2097152 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x078dff3d



| Device     | Boot Start | End Sectors | Size   | Id      | Type  |
|------------|------------|-------------|--------|---------|-------|
| /dev/xvdb1 | 2048       | 206847      | 204800 | 100M 83 | Linux |



Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

[root@ip-172-31-32-52 ~]#
```

[AWS]

```
[root@ip-172-31-32-52 ~]# mkfs.ext4 /dev/xvdb1
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=1024 (log=0)
Fragment size=1024 (log=0)
Stride=0 blocks, Stripe width=0 blocks
25688 inodes, 102400 blocks
5120 blocks (5.00%) reserved for the super user
First data block=1
Maximum filesystem blocks=33685504
13 block groups
8192 blocks per group, 8192 fragments per group
1976 inodes per group
Superblock backups stored on blocks:
    8193, 24577, 40961, 57345, 73729

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done

[root@ip-172-31-32-52 ~]#
```

```
aws Services Search [Alt+S]
[ root@ip-172-31-32-52 ~ ]# mkdir /mydrive
[ root@ip-172-31-32-52 ~ ]# mount /dev/xvdb1 /mydrive/
[ root@ip-172-31-32-52 ~ ]#
[ root@ip-172-31-32-52 ~ ]# history
1  fdisk -l
2  df
3  lsblk
4  fdisk /dev/xvdb
5  mkfs.ext4 /dev/xvdb1
6  mkdir /mydrive
7  mount /dev/xvdb1 /mydrive/
8  history
[ root@ip-172-31-32-52 ~ ]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda  202:0    0   8G  0 disk
└─xvda1 202:1    0   8G  0 part /
xvdb  202:16   0   1G  0 disk
└─xvdb1 202:17   0 100M  0 part /mydrive
[ root@ip-172-31-32-52 ~ ]# cd /mydrive/
[ root@ip-172-31-32-52 mydrive ]# ls
lost+found
[ root@ip-172-31-32-52 mydrive ]# cat > linuxworld.txt
i m vimal , i located in EBS
[ root@ip-172-31-32-52 mydrive ]#
```

```
aws Services Search [Alt+S]
2  df
3  lsblk
4  fdisk /dev/xvdb
5  mkfs.ext4 /dev/xvdb1
6  mkdir /mydrive
7  mount /dev/xvdb1 /mydrive/
8  history
[ root@ip-172-31-32-52 ~ ]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda  202:0    0   8G  0 disk
└─xvda1 202:1    0   8G  0 part /
xvdb  202:16   0   1G  0 disk
└─xvdb1 202:17   0 100M  0 part /mydrive
[ root@ip-172-31-32-52 ~ ]# cd /mydrive/
[ root@ip-172-31-32-52 mydrive ]# ls
lost+found
[ root@ip-172-31-32-52 mydrive ]# cat > linuxworld.txt
i m vimal , i located in EBS
[ root@ip-172-31-32-52 mydrive ]# pwd
/mydrive
[ root@ip-172-31-32-52 mydrive ]# ls
linuxworld.txt lost+found
[ root@ip-172-31-32-52 mydrive ]# cat linuxworld.txt
i m vimal , i located in EBS
[ root@ip-172-31-32-52 mydrive ]#
```

Step-3) Now terminate that instance.

The screenshot shows the AWS Management Console interface. The top navigation bar includes a search bar with 'iam' entered, and the region is set to Mumbai. The main content area displays the 'Instances (1/3)' page. A table lists three instances: 'Recovery', 'DCA', and 'os1'. The 'os1' instance is selected, and the 'Actions' dropdown menu is open, showing options like 'Stop instance', 'Start instance', 'Reboot instance', 'Hibernate instance', and 'Terminate instance'. Below the table, the details for 'Instance: i-0ddb316be40685562 (os1)' are shown, including its state as 'Running'. The bottom section shows the 'Volumes (1/4)' page, listing four volumes. The volume 'vol-04cd2ba2f2df33473' is selected, showing it is a 'gp3' type with a size of '1 GiB' and '3000' IOPS.

Instances (1/3) Info

Find instance by attribute or tag (case-sensitive)

Name	Env	Instance state	Available
Recovery	-	Stopped	ap-sou
DCA	-	Stopped	ap-sou
os1	-	Running	ap-sou

Instance: i-0ddb316be40685562 (os1)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

▼ Instance summary Info

Instance ID: i-0ddb316be40685562 (os1)

Public IPv4 address: 13.233.149.23 | open address

Private IPv4 addresses: 172.31.32.52

IPv6 address: ec2-13-233-149-23.ap-south-

Volumes (1/4)

Search

Name	Volume ID	Type	Size	IOPS	Throughput	Sn
-	vol-0876deeb5014e879e	gp2	8 GiB	100	-	sn
-	vol-0c49528d0b6731f90	gp2	8 GiB	100	-	sn
-	vol-04cd2ba2f2df33473	gp3	1 GiB	3000	125	-
-	vol-067eabc0204f3746a	gp2	8 GiB	100	-	sn

Volume ID: vol-04cd2ba2f2df33473

Step-4) Now launch one new instance.

The screenshot shows the 'Launch an instance' page in the AWS Management Console. The breadcrumb navigation shows 'EC2 > Instances > Launch an instance'. The page title is 'Launch an instance' with an 'Info' link. Below the title, a brief description states: 'Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.' The 'Name and tags' section is expanded, showing a 'Name' field with the value 'os2' and an 'Add additional tag' link. The 'Application and OS Images (Amazon Machine Image)' section is also expanded, showing a brief description of an AMI and a link to search or browse for AMIs.

EC2 > Instances > Launch an instance

Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name: os2 [Add additional tag](#)

▼ **Application and OS Images (Amazon Machine Image) Info**

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

[AWS]

To set up an endpoint, for example when creating a web server

☐ Allow HTTP traffic from the internet
To set up an endpoint, for example when creating a web server

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

▼ **Configure storage** [Info](#) [Advanced](#)

1x 8 GiB gp2 Root volume (Not encrypted)

📘 Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

[Add new volume](#)

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aws Services iam

▼ **Summary**

Number of instances [Info](#)
1

Software Image (AMI)
Amazon Linux 2 Kernel 5.10 AMI...[read more](#)
ami-0d81306eddc614a45

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)

Cancel [Launch instance](#)

Now attach that volume to the new created instance.

Volumes (1/4)

Search

	Name	Volume ID	Type	Size
<input type="checkbox"/>	-	vol-0876deeb5014e879e	gp2	8 GiB
<input type="checkbox"/>	-	vol-0c49528d0b6731f90	gp2	8 GiB
<input checked="" type="checkbox"/>	-	vol-04cd2ba2f2df33473	gp3	1 GiB
<input type="checkbox"/>	-	vol-0b94b006d83fc282f	gp2	8 GiB

Actions [Create volume](#)


- 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

Volume ID: vol-04cd2ba2f2df33473

[AWS]

Availability Zone
ap-south-1a

Instance [Info](#)


i-071e38919945a49d2 

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.


 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**.

Step-5) Now connect to the instance.


Services


[EC2 Instance Connect](#) | Session Manager | SSH client | EC2 serial console

Instance ID
 i-071e38919945a49d2 (os2)

Public IP address
 13.233.167.104

User name
Enter the user name defined in the AMI used to launch the instance. If you didn't define a custom user name, use the default user name, ec2-user.

 **Note:** In most cases, the default user name, ec2-user, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

Cancel 

Step-6) After connecting that instance and mount it to a folder and in that folder we will able to see the data which we added.

```
aws Services  [Alt+S]
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-35-57 ~]$ sudo su -
[root@ip-172-31-35-57 ~]# cd /
[root@ip-172-31-35-57 /]# ls
bin boot dev etc home lib lib64 local media mnt opt proc root run sbin srv sys usr var
[root@ip-172-31-35-57 /]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda  202:0    0  8G  0 disk 
└─xvda1 202:1    0  8G  0 part /
xvdf  202:80    0  1G  0 disk 
└─xvdf1 202:81    0 100M 0 part 
[root@ip-172-31-35-57 /]# mkdir /my
[root@ip-172-31-35-57 /]# mount /dev/xvdf1 /my/
[root@ip-172-31-35-57 /]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda  202:0    0  8G  0 disk 
└─xvda1 202:1    0  8G  0 part /
xvdf  202:80    0  1G  0 disk 
└─xvdf1 202:81    0 100M 0 part /my
[root@ip-172-31-35-57 /]# cd /my/
[root@ip-172-31-35-57 my]# ls
linuxworld.txt  lost+found
[root@ip-172-31-35-57 my]# cat linuxworld.txt
i m vimal , i located in EBS
[root@ip-172-31-35-57 my]#
```