

# AWS EC2 & EBS Assignment Submission

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Assignment: EC2 & EBS Volume Configuration Task

## Problem Statement

You work for XYZ Corporation. Your corporation wants to launch a new web-based application using AWS Virtual Machines. Configure the resources accordingly with appropriate storage for the tasks.

## Tasks Performed

### Task 1: Launch a Linux EC2 instance

Steps taken:

- Logged into AWS Console and set region to US-East-1 (N. Virginia).
- Went to EC2 → Instances → Launch instances.
- Selected Ubuntu Server 22.04 LTS (Free tier eligible) AMI.
- Chose t3.micro as instance type.
- Created/used existing key pair.
- Configured security group to allow SSH (22) for remote login.
- Launched the instance and verified it was running.

Screenshot Placeholder:

The screenshot shows the AWS EC2 Instances page. At the top, there's a header with 'Instances (1/1)' and a 'Launch instances' button. Below the header is a search bar and a filter dropdown set to 'All states'. A table lists one instance: 'my web server' (ID i-0b96506668ab9f1d5), which is 'Running' (t3.micro, initializing). The table includes columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IPv4. The Public IPv4 is listed as ec2-54-197-... .

At the bottom, a detailed view for the instance 'i-0b96506668ab9f1d5 (my web server)' is shown. It displays various configuration details:

|  |   |   |
|--|---|---|
| AMI ID<br>ami-0360c520857e3138f  | Monitoring<br>disabled  | Platform details<br>Linux/UNIX  |
| AMI name<br>ubuntu/images/hvm-ssd/gp3/ubuntu-noble-24.04-amd64-server-20250821 | Allowed image<br>-  | Termination protection<br>Disabled  |
| Stop protection<br>Disabled  | Launch time<br>Tue Sep 09 2025 18:17:52 GMT+0530 (India Standard Time) (less than a minute) | AMI location<br>amazon/ubuntu/images/hvm-ssd/gp3/ubuntu-noble-24.04-amd64-server-20250821 |

## Task 2: Create an EBS volume with 20 GB of storage and attach it

Steps taken:

- Went to EC2 → Volumes → Create Volume.
- Selected 20 GB size and made sure the Availability Zone matched the EC2 instance.
- Created the volume and attached it to the instance.

Screenshot Placeholder:

| Name                  | Volume ID | Type   | Size | IOPS | Throughput      | Snapshot ID               | Created                   | Status    |
|-----------------------|-----------|--------|------|------|-----------------|---------------------------|---------------------------|-----------|
| vol-0b2b494e117867f3c | gp3       | 20 GiB | 3000 | 125  | -               | -                         | 2025/09/09 18:19 GMT+5:30 | us-east-1 |
| 1e73a220c42           | gp3       | 8 GiB  | 3000 | 125  | snap-05ebf17... | 2025/09/09 18:17 GMT+5:30 | us-east-1                 |           |

Volume ID: vol-0b2b494e117867f3c

## 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-0b2b494e117867f3c

#### Availability Zone

us-east-1a

#### Instance [Info](#)

i-0b96506668ab9f1d5  
(my web server) (running)



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

#### Device name [Info](#)

Select a device name



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

## Additional Steps After Attaching the Volume

- Selected the instance and clicked Connect → EC2 Instance Connect.
- Opened the Ubuntu terminal and executed:

```
sudo apt update
df -h
lsblk
sudo mkfs -t ext4 /dev/nvme1n1
sudo mkdir /data
sudo mount /dev/nvme1n1 /data
df -h
```

Verified that the volume was successfully mounted at /data.

Screenshot Placeholder:

```
ubuntu@ip-172-31-29-106:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1390 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [274 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [14.9 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1481 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [298 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [377 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [31.0 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [1791 kB]
Get:22 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1118 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [400 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [33.2 kB]
```

```
ubuntu@ip-172-31-30-90:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  2.0G  4.8G  30% /
tmpfs           458M    0  458M   0% /dev/shm
tmpfs           183M  892K  182M   1% /run
tmpfs            5.0M    0  5.0M   0% /run/lock
efivarfs        128K   3.6K  120K   3% /sys/firmware/efi/efivars
/dev/nvme0n1p16 881M   87M  733M  11% /boot
/dev/nvme0n1p15 105M   6.2M  99M   6% /boot/efi
tmpfs            92M   12K   92M   1% /run/user/1000
ubuntu@ip-172-31-30-90:~$ lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0      7:0    0 27.6M  1 loop /snap/amazon-ssm-agent/11797
loop1      7:1    0 73.9M  1 loop /snap/core22/2045
loop2      7:2    0 49.3M  1 loop /snap/snapd/24792
nvme0n1    259:0   0   8G  0 disk
└─nvme0n1p1 259:1   0   7G  0 part /
└─nvme0n1p14 259:2   0   4M  0 part
└─nvme0n1p15 259:3   0 106M  0 part /boot/efi
└─nvme0n1p16 259:4   0 913M  0 part /boot
nvme1n1    259:5   0  20G  0 disk
```

```

ubuntu@ip-172-31-30-90:~$ sudo mkfs -t ext4 /dev/nvme1n1
mke2fs 1.47.0 (5-Feb-2023)
Creating filesystem with 5242880 4k blocks and 1310720 inodes
Filesystem UUID: 80ae465e-ec6e-44a6-9572-c97bf43fe539
Superblock backups stored on blocks:
      32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
     4096000

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

ubuntu@ip-172-31-30-90:~$ sudo mkdir /data
ubuntu@ip-172-31-30-90:~$ sudo mount /dev/nvme1n1 /data

```

```

ubuntu@ip-172-31-30-90:~$ lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0        7:0    0 27.6M  1 loop /snap/amazon-ssm-agent/11797
loop1        7:1    0 73.9M  1 loop /snap/core22/2045
loop2        7:2    0 49.3M  1 loop /snap/snapd/24792
nvme0n1     259:0   0    8G  0 disk 
└─nvme0n1p1  259:1   0    7G  0 part /
└─nvme0n1p14 259:2   0    4M  0 part
└─nvme0n1p15 259:3   0 106M  0 part /boot/efi
└─nvme0n1p16 259:4   0  913M 0 part /boot
nvme1n1     259:5   0   20G  0 disk /data
ubuntu@ip-172-31-30-90:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  2.0G  4.8G  30% /
tmpfs          458M    0  458M   0% /dev/shm
tmpfs          183M  892K  182M   1% /run
tmpfs          5.0M    0  5.0M   0% /run/lock
efivars         128K  3.6K  120K   3% /sys/firmware/efi/efivars
/dev/nvme0n1p16 881M   87M  733M  11% /boot
/dev/nvme0n1p15 105M   6.2M  99M   6% /boot/efi
tmpfs           92M   12K  92M   1% /run/user/1000
/dev/nvme1n1     20G   24K  19G   1% /data

```

### Task 3: Resize the attached volume and reflect changes in the instance

Steps taken:

- Increased the EBS volume size in the AWS Console (e.g., 20 GB → 25 GB).

- Logged into the instance and verified new size:

lsblk

- Resized filesystem:

```
sudo resize2fs /dev/nvme1n1
```

- Confirmed updated storage:

```
df -h /data
```

Screenshot Placeholder:

The screenshot shows the AWS Volumes page. At the top, there are filter sets, a search bar, and buttons for Actions and Create volume. Below the header is a table with columns: Name, Volume ID, Type, Size, IOPS, Throughput, Snapshot ID, Created, and Last updated (less than a minute ago). Two volumes are listed:

| Name                                   | Volume ID      | Type   | Size  | IOPS | Throughput | Snapshot ID                | Created                    | Last updated               |
|--|----------------|--------|-------|------|------------|----------------------------|----------------------------|----------------------------|
| vol-0b2b494e117867f3c                  | gp3            | 20 GiB | 3000  | 125  | -          | 2025/09/09 18:19 GMT+5:... | 2025/09/09 18:19 GMT+5:... | less than a minute ago     |
| Deselect volume: vol-0b2b494e117867f3c | vol-e73a220c42 | gp3    | 8 GiB | 3000 | 125        | snap-05ebf17...            | 2025/09/09 18:17 GMT+5:... | 2025/09/09 18:17 GMT+5:... |

At the bottom left, it says "Volume ID: vol-0b2b494e117867f3c".

### Modify volume [Info](#)

Modify the type, size, and performance of an EBS volume.

#### Volume details

##### Volume ID

vol-0b2b494e117867f3c

##### Volume type [Info](#)

General Purpose SSD (gp3)

##### Size (GiB) [Info](#)

25

Min: 1 GiB, Max: 16384 GiB.

##### IOPS [Info](#)

3000

Min: 3000 IOPS, Max: 16000 IOPS.

##### Throughput (MiB/s) [Info](#)

125

Min: 125 MiB, Max: 1000 MiB. Baseline: 125 MiB/s.

```
ubuntu@ip-172-31-30-90:~$ lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0      7:0    0 27.6M  1 loop /snap/amazon-ssm-agent/11797
loop1      7:1    0 73.9M  1 loop /snap/core22/2045
loop2      7:2    0 49.3M  1 loop /snap/snapd/24792
nvme0n1   259:0   0   8G  0 disk
└─nvme0n1p1 259:1   0   7G  0 part /
└─nvme0n1p14 259:2   0   4M  0 part
└─nvme0n1p15 259:3   0 106M  0 part /boot/efi
└─nvme0n1p16 259:4   0 913M  0 part /boot
nvme1n1   259:5   0   25G 0 disk /data
ubuntu@ip-172-31-30-90:~$ sudo resize2fs /dev/nvme1n1
resize2fs 1.47.0 (5-Feb-2023)
Filesystem at /dev/nvme1n1 is mounted on /data; on-line resizing required
old_desc_blocks = 3, new_desc_blocks = 4
The filesystem on /dev/nvme1n1 is now 6553600 (4k) blocks long.
```

```
ubuntu@ip-172-31-30-90:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  2.0G  4.8G  30% /
tmpfs           458M    0  458M   0% /dev/shm
tmpfs           183M  888K  182M   1% /run
tmpfs           5.0M    0  5.0M   0% /run/lock
efivarfs        128K  3.6K  120K   3% /sys/firmware/efi/efivars
/dev/nvme0n1p16 881M   87M  733M  11% /boot
/dev/nvme0n1p15 105M   6.2M  99M   6% /boot/efi
tmpfs           92M   12K   92M   1% /run/user/1000
/dev/nvme1n1     25G   24K   24G   1% /data
ubuntu@ip-172-31-30-90:~$
```

## **Conclusion**

Successfully launched a Linux EC2 instance, created and attached a 20 GB EBS volume, formatted and mounted it on /data, and resized the storage to confirm it reflects inside the instance. This demonstrates dynamic EBS volume management for EC2.