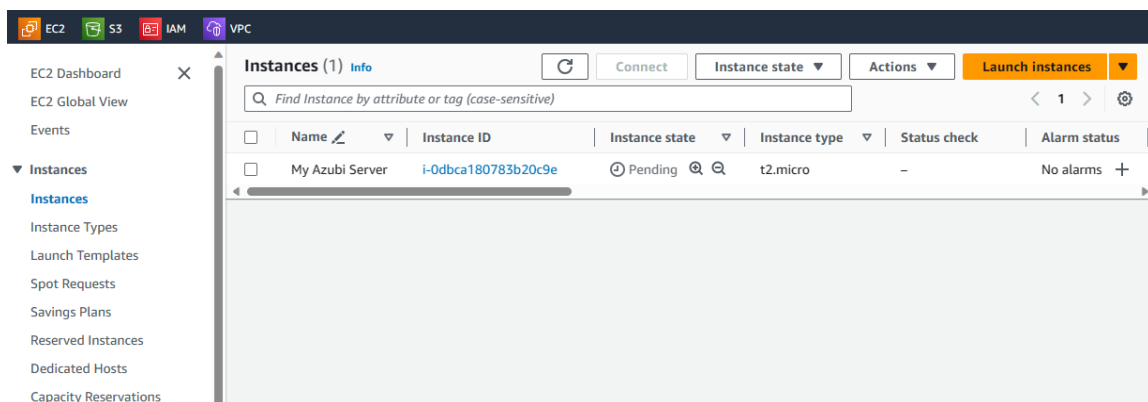


AWS Storage Project

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⚙️ Status	Done

1. Amazon EBS Setup:

- Create an EC2 Instance



- The command “df -h” (Will list all the volumes present and attached to the ec2 instance)

```
Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart getty@tty1.service
systemctl restart networkd-dispatcher.service
systemctl restart unattended-upgrades.service
systemctl restart user@1000.service

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-27-176:~$ ls
ubuntu@ip-172-31-27-176:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        7.6G  2.3G  5.4G  30% /
tmpfs            475M   0  475M   0% /dev/shm
tmpfs            190M  860K  190M   1% /run
tmpfs            5.0M   0   5.0M   0% /run/lock
/dev/xvda15     105M   6.1M   99M   6% /boot/efi
tmpfs            95M   4.0K   95M   1% /run/user/1000
ubuntu@ip-172-31-27-176:~$
```

- Create an Amazon EBS volume and attach it to an EC2 instance.

Not applicable

Availability Zone [Info](#)

us-west-2a

Snapshot ID - optional [Info](#)

Don't create volume from a snapshot

Encryption [Info](#)

Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.

☐ Encrypt this volume

Tags - optional [Info](#)

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key

Value - optional

Q name X

Q my-volume X

Remove

Add tag

You can add 49 more tags.

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

Successfully created volume vol-04f75d8849119d832

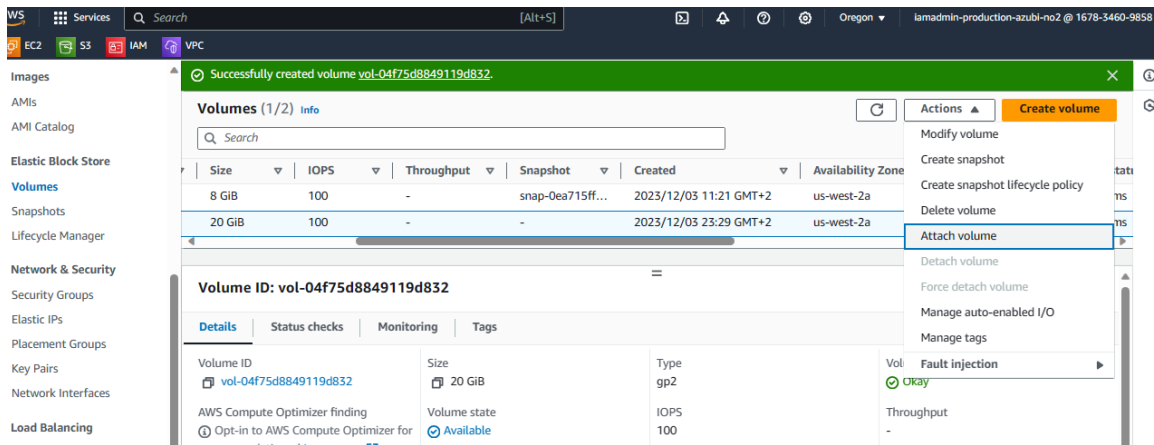
Volumes (1/2) [Info](#)

Search

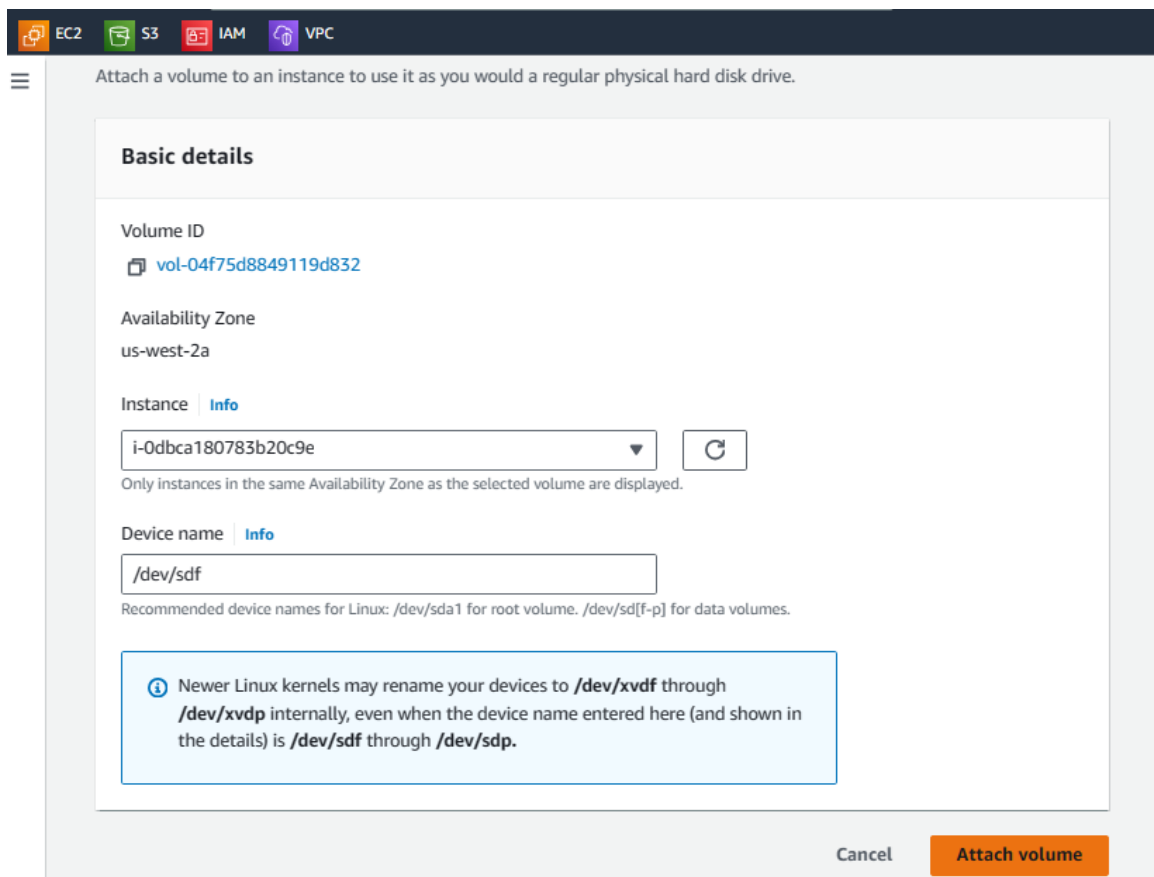
	Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created
<input type="checkbox"/>	-	vol-0f29425aeeaaa85f0	gp2	8 GiB	100	-	snap-0ea715ff...	2023/12/03 11:21 G
<input checked="" type="checkbox"/>	-	vol-04f75d8849119d832	gp2	20 GiB	100	-	-	2023/12/03 23:29 G

Volume ID: vol-04f75d8849119d832

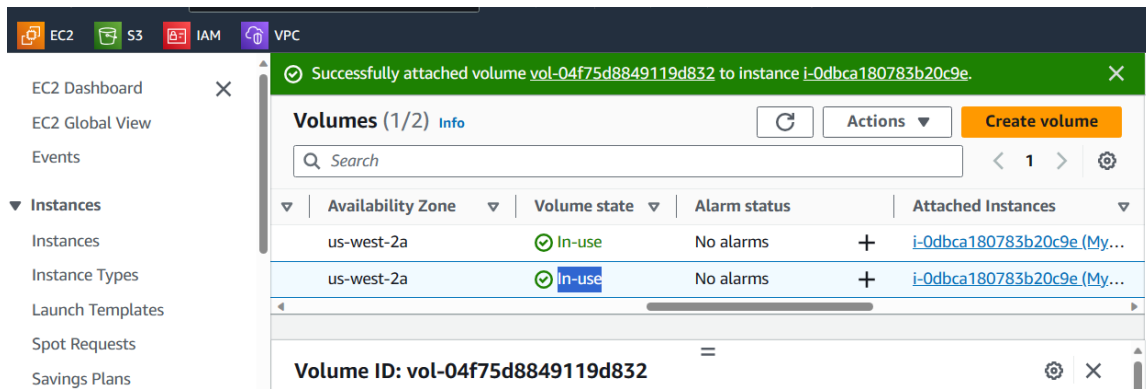
Details	Status checks	Monitoring	Tags
Volume ID vol-04f75d8849119d832	Size 20 GiB	Type gp2	Volume status Creating
AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more	Volume state Creating	IOPS 100	Throughput -
Encryption Not encrypted	KMS key ID -	KMS key alias -	KMS key ARN -
Fast snapshot restored No	Snapshot -	Availability Zone us-west-2a	Created Sun Dec 03 2023 23:29:50 GMT+0200 (South Africa Standard Time)
Multi-Attach enabled	Attached instances	Outposts ARN	



Next, you must attach the EC2 instance to the EBS volume that you created.



Then you will see that the “Volume state” is now: “In-use”



- Run “lsblk” to List all the Block devices on the Linux machine

```

/ dev/xvda15 105M 6.1M 99M 6% /boot/efi
tmpfs 95M 4.0K 95M 1% /run/user/1000
ubuntu@ip-172-31-27-176:~$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0       7:0      0   24.6M 1 loop /snap/amazon-ssm-agent/7528
loop1       7:1      0   55.7M 1 loop /snap/core18/2790
loop2       7:2      0   63.5M 1 loop /snap/core20/2015
loop3       7:3      0  111.9M 1 loop /snap/lxd/24322
loop4       7:4      0   40.8M 1 loop /snap/snapd/20092
loop5       7:5      0   40.9M 1 loop /snap/snapd/20290
loop6       7:6      0   55.7M 1 loop /snap/core18/2796
loop7       7:7      0   24.9M 1 loop /snap/amazon-ssm-agent/7628
xvda        202:0     0    8G   0 disk
├─xvda1     202:1     0    7.9G 0 part /
├─xvda14    202:14    0     4M 0 part
└─xvda15    202:15    0   106M 0 part /boot/efi
xvdf        202:80    0   20G  0 disk
ubuntu@ip-172-31-27-176:~$

```

- We can check if there is any file system on this new volume using “\$sudo file -s /dev/xvdf”. If we see “data”, it means you need to setup file system for this block device. You need to have a file system in your volume, only then can it be mounted into your EC2 instance.

```

ubuntu@ip-172-31-27-176:~$ sudo file -s /dev/xvdf
/dev/xvdf: data
ubuntu@ip-172-31-27-176:~$

```

- You can run this command “mkfs -t xfs /dev/xvdf”

```
ubuntu@ip-172-31-27-176:~$ sudo mkfs -t xfs /dev/xvdf
meta-data=/dev/xvdf            isize=512    agcount=4, agsize=1310720 blks
        =                       sectsz=512   attr=2,    projid32bit=1
        =                       crc=1        finobt=1, sparse=1, rmapbt=0
        =                       reflink=1   bigtime=0 inobtcount=0
data      =                       bsize=4096   blocks=5242880, imaxpct=25
        =                       sunit=0      swidth=0 blks
naming    =version 2           bsize=4096   ascii-ci=0, ftype=1
log        =internal log      bsize=4096   blocks=2560, version=2
        =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime  =none                extsz=4096   blocks=0, rtextents=0
ubuntu@ip-172-31-27-176:~$
```

- And run the command “sudo file -s /dev/xvdf” to check the file system again and you will see that the SGI XFS file system is now present.

```
ubuntu@ip-172-31-27-176:~$ sudo file -s /dev/xvdf
/dev/xvdf: SGI XFS filesystem data (blksz 4096, inosz 512, v2 dirs)
ubuntu@ip-172-31-27-176:~$
```

- Now, we must mount to a directory in our EC2 instance, but first we must create a directory.
- Using the command “sudo mount /dev/xvdf apps/volume/new-volume” in order to format and mount the volume to a specific directory will help us mount the EBS volume to the EC2 instance without even restarting our EC2 instance.

```
ubuntu@ip-172-31-27-176:~$ sudo mount /dev/xvdf apps/volume/new-volume
ubuntu@ip-172-31-27-176:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        7.6G  2.3G  5.4G  30% /
tmpfs            475M    0  475M   0% /dev/shm
tmpfs            190M  864K  190M   1% /run
tmpfs            5.0M    0   5.0M   0% /run/lock
/dev/xvda15      105M   6.1M   99M   6% /boot/efi
tmpfs            95M   4.0K   95M   1% /run/user/1000
/dev/xvdf        20G   175M   20G   1% /home/ubuntu/apps/volume/new-volume
ubuntu@ip-172-31-27-176:~$
```

- And if you check the running EC2 instance, you will find the attached EBS block storage is reflecting now.

The screenshot displays the AWS Management Console for an EC2 instance. The 'Storage' tab is selected, showing details for the root device and attached block devices.

Root device details:

- Root device name: /dev/sda1
- Root device type: EBS
- EBS optimization: disabled

Block devices:

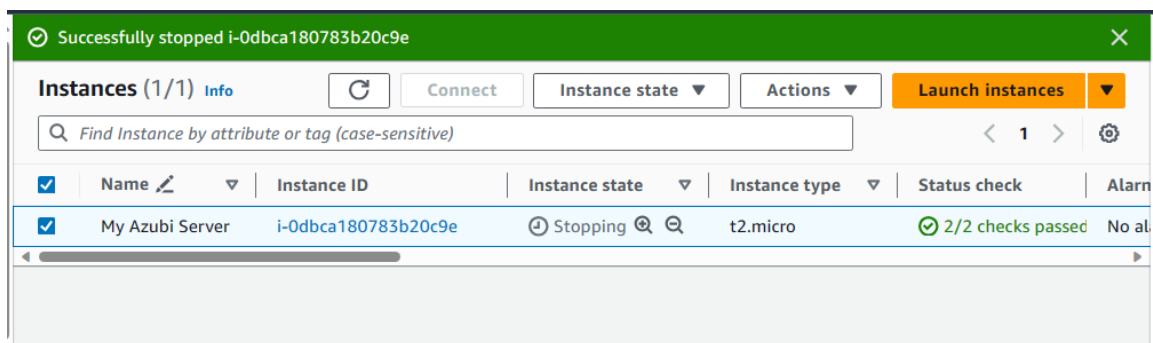
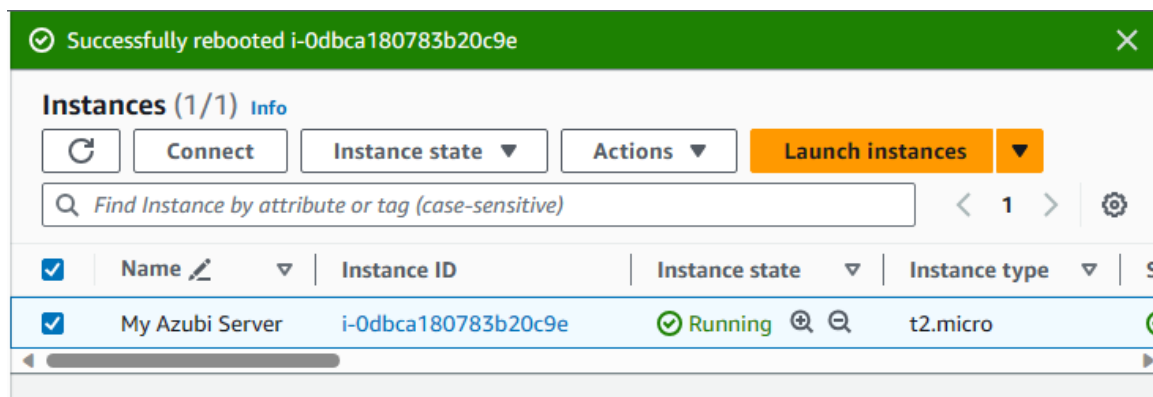
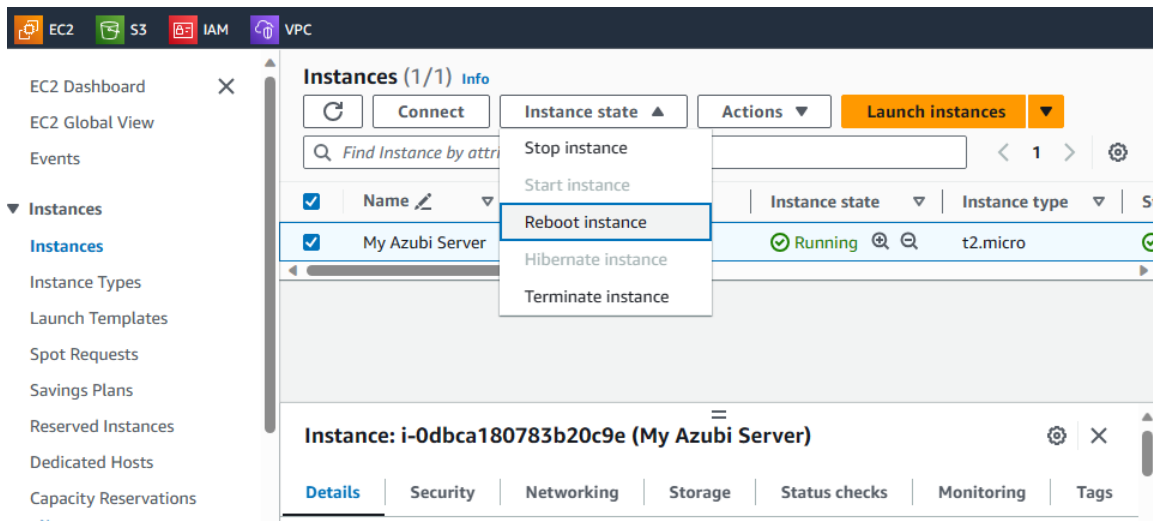
Volume ID	Device name	Volume size (GiB)	Attachment status	Attachment time	Encrypted	KMS key ID
vol-0f29425aaeaa85f0	/dev/sda1	8	Attached	2023/12/03 11:21 GMT+2	No	-
vol-04f75d8849119d832	/dev/sdf	20	Attached	2023/12/03 23:34 GMT+2	No	-

2. Use EBS for Application Data:

- Create a simple text file on the EBS volume.

```
ubuntu@ip-172-31-27-176:~/apps/my-data$ touch myFile.txt
ubuntu@ip-172-31-27-176:~/apps/my-data$ echo "AWS Cloud Platfor is so awesome and fun..." > myFile.txt
ubuntu@ip-172-31-27-176:~/apps/my-data$ ls
myFile.txt
ubuntu@ip-172-31-27-176:~/apps/my-data$
```

- Ensure the data persists even if the instance is stopped and started.

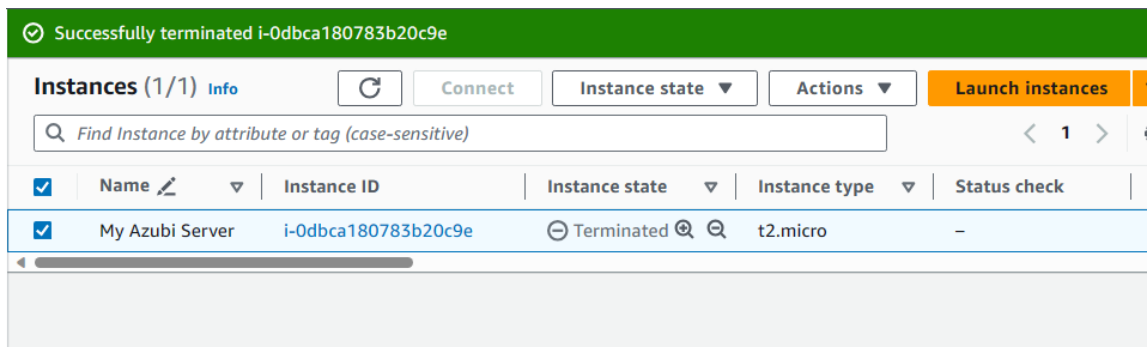


- After Reboot action, connecting to the EC2 instance and being able to access the folders and files that were created before the reboot signifies that the contents of the EBS volume persisted after the EC2 instance is rebooted, or stopped and restarted.

```

Last login: Sun Dec 3 21:17:58 2023 from 18.237.140.164
ubuntu@ip-172-31-27-176:~$ ls
apps
ubuntu@ip-172-31-27-176:~$ cd apps
ubuntu@ip-172-31-27-176:~/apps$ ls
my-data volume
ubuntu@ip-172-31-27-176:~/apps$ cd my-data/
ubuntu@ip-172-31-27-176:~/apps/my-data$ ls
myFile.txt
ubuntu@ip-172-31-27-176:~/apps/my-data$ cat myFile.txt
AWS Cloud Platfor is so awesome and fun...
ubuntu@ip-172-31-27-176:~/apps/my-data$
```

And even if you terminate the EC2 instance, the EBS volume will not be delete/removed except you specifically delete/remove it.



The EBS volume remaining even after the EC2 instance has been terminated. Which means that if you create a new EC2 instance, you can literally re-attach the EBS volume so that you can have access to the data on it.

