

Module- 2: EC2 and EBS Assignment- 2

1. Launch a linux EC2 instance
2. Create a EBS volume with 20GB of storage and attach it the created EC2 instance
3. Resize the attached volume and make sure it reflects in the connected instance

First we create an Linux instance by following these steps:

1. Choose an amazon machine Image
2. Choose Instance type

The screenshot shows the AWS Management Console interface for the 'Launch Instance Wizard'. The browser address bar indicates the URL: `ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LaunchInstanceWizard`. The console header shows the AWS logo, a search bar, and user information (Aayushi, Mumbai, Support). The wizard progress bar indicates the current step is '1. Choose AMI'. The main content area is titled 'Step 1: Choose an Amazon Machine Image (AMI)' and includes a 'Cancel and Exit' link. Below the title, there is a search bar and a 'Search by Systems Manager parameter' link. The 'Quick Start' sidebar on the left lists 'My AMIs', 'AWS Marketplace', and 'Community AMIs', with a 'Free tier only' filter. The main list of AMIs shows 'Amazon Linux 2 AMI (HVM, SSD Volume Type)' as the selected option, with a 'Select' button. Below it, the 'macOS Big Sur 11.6' AMI is listed with another 'Select' button. The bottom of the screen shows the system tray with various application icons and the footer with copyright information and links to Privacy Policy, Terms of Use, and Cookie preferences.

3. Configure Instance

Activities Google Chrome Nov 8 11:36 AM

Start Course - Intellipaat x AWS Lab work: - Google x Launch instance wizard | x +

ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LaunchInstanceWizard:

aws Services Search for services, features, marketplace products, and docs [Alt+S]

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances 1 Launch into Auto Scaling Group

Purchasing option ☐ Request Spot instances

Network vpc-0f30b1944d89e7f58 (default) Create new VPC

Subnet subnet-07ee28c9b7f5724fa Default in ap-south-1a Create new subnet
4091 IP Addresses available

Auto-assign Public IP Use subnet setting (Enable)

Placement group ☐ Add instance to placement group

Capacity Reservation Open

Domain join directory No directory Create new directory

Cancel Previous Review and Launch Next: Add Storage

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4. Add storage

Activities Google Chrome Nov 8 11:36 AM

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ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LaunchInstanceWizard:

aws Services Search for services, features, marketplace products, and docs [Alt+S]

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/xvda	snap-03242ce55c4a6f556	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypte

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Cancel Previous Review and Launch Next: Add Tags

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5. Add tags

Activities Google Chrome Nov 8 11:38 AM

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ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LaunchInstanceWizard:

aws Services Search for services, features, marketplace products, and docs [Alt+S]

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.
A copy of a tag can be applied to volumes, instances or both.
Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	Value	Instances	Volumes	Network Interfaces
Name	EBS_Server	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Add another tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

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6. Configure Security group

Activities Google Chrome Nov 8 11:41 AM

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ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LaunchInstanceWizard:

aws Services Search for services, features, marketplace products, and docs [Alt+S]

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a new security group ☐ Select an existing security group

Security group name: EBS_Server

Description: launch-wizard-2 created 2021-11-08T11:36:52.641+05:30

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
HTTP	TCP	80	Anywhere 0.0.0.0/0, ::/0	e.g. SSH for Admin Desktop

Add Rule

Warning
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.

Cancel Previous Review and Launch

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7. Review

Activities Google Chrome Nov 8 11:41 AM

Start Course - Intellipaat x AWS Lab work: - Google x Launch instance wizard | x +

ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#LaunchInstanceWizard:

aws Services Search for services, features, marketplace products, and docs [Alt+S]

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

AMI Details [Edit AMI](#)

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-041db4a969fe3eb68

Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is n...

Root Device Type: ebs Virtualization type: hvm

Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

Security Groups [Edit security groups](#)

Security group name: EBS_Server

Description: launch-wizard-2 created 2021-11-08T11:36:52.641+05:30

[Cancel](#) [Previous](#) [Launch](#)

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8. Generate key pair
9. Launch Instance

Activities Google Chrome Nov 8 11:44 AM

Start Course - Intellipaat x AWS Lab work: - Google x Instances | EC2 Management x +

ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#Instances:

aws Services Search for services, features, marketplace products, and docs [Alt+S]

New EC2 Experience Tell us what you think

EC2 Dashboard EC2 Global View Events Tags Limits

Instances

Instances New

Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances New Dedicated Hosts Capacity Reservations

Images

Instances (1/1) Info

[Filter Instances](#)

[Refresh](#) [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input checked="" type="checkbox"/>	EBS_Server	i-0859a3a63e9399584	Running	t2.micro	Initializing	No alarms	ap-south-1a

Instance: i-0859a3a63e9399584 (EBS_Server)

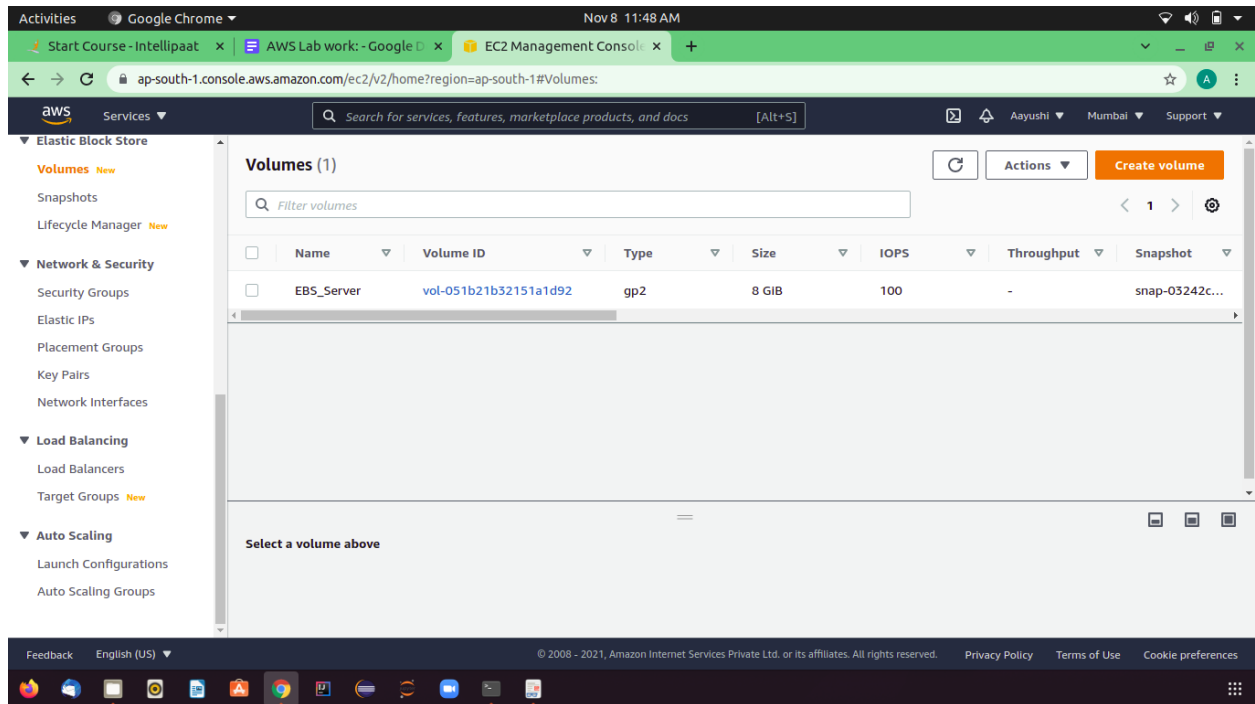
[Details](#) [Security](#) [Networking](#) [Storage](#) [Status checks](#) [Monitoring](#) [Tags](#)

Instance summary Info

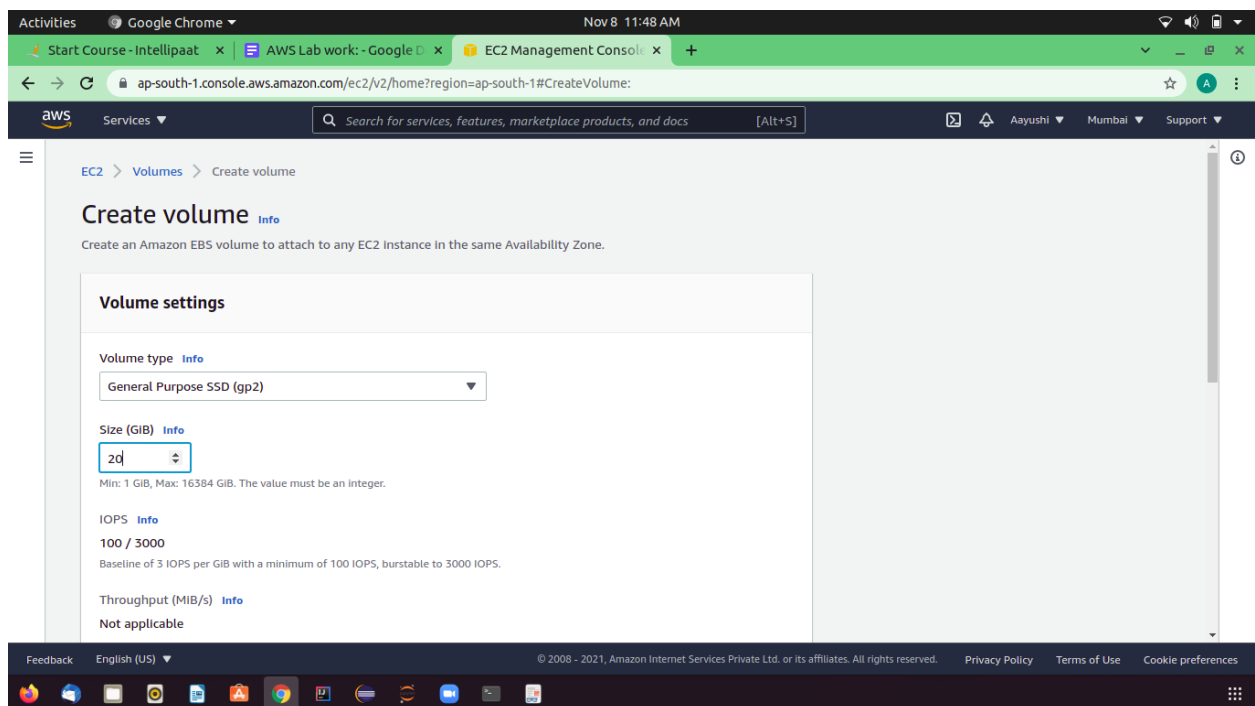
Instance ID	Public IPv4 address	Private IPv4 addresses
i-0859a3a63e9399584 (EBS_Server)	65.0.92.89 open address	172.31.38.50
IPv6 address	Instance state	Public IPv4 DNS

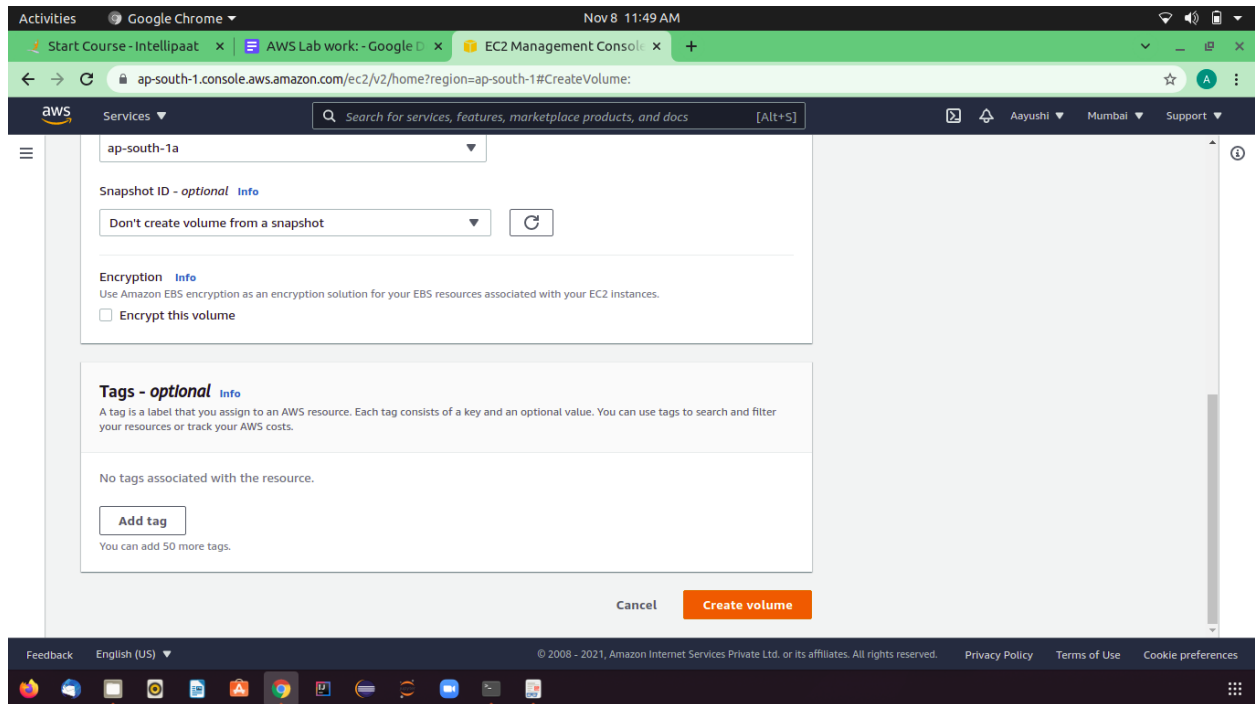
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Now create EBS Volume
Goto the volume and create Volume

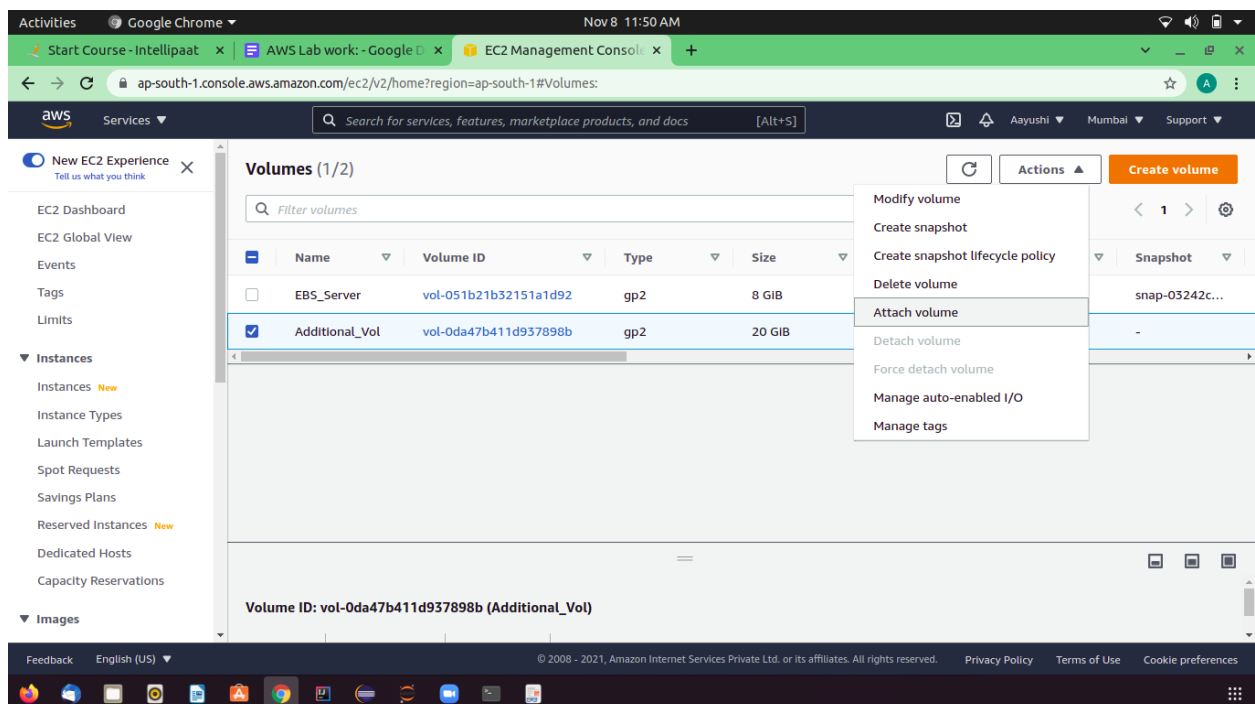


Add 20GB size of additional volume select zone



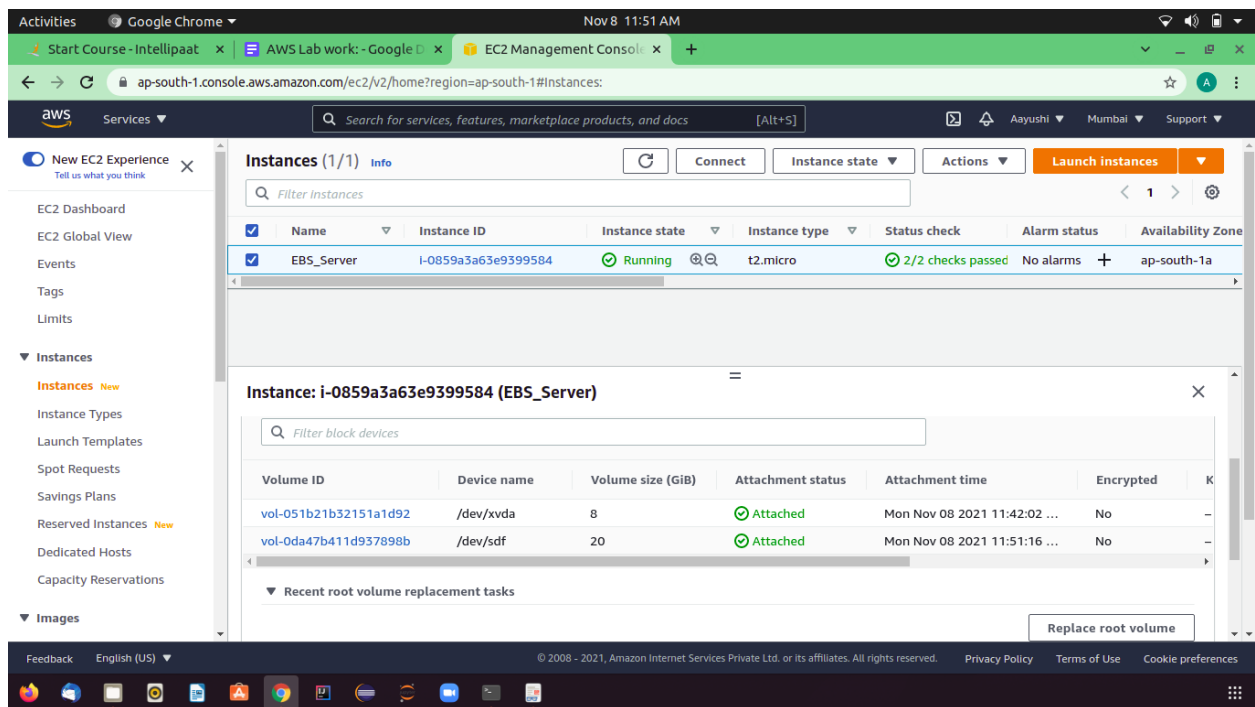


Attached volume to the EC2 Instance



Now, go back to Instances and see there are two volumes

1. 8 GB Root volume
2. 20 GB Additional Volume



Open the Command prompt
Switch to the Super user by using: **sudo su**

```
aayushi@Varonica:~/Downloads$ sudo su
[sudo] password for aayushi:
root@Varonica:/home/aayushi/Downloads#
```

Now get the permission of private key
Using command: **chmod 400 Key name.pem**

```
#
# chmod 400 Mykey.pem
```

This is the explanation of the SSH command:

- ssh: Command to use SSH protocol
- -i: Flag that specifies an alternate identification file to use for public key authentication.
- username: Username that uses your instance
- ip-address: IP address given to your instance

Using command **ssh -i key name.pem username@Public-ip-address**

```

root@Varonica:/home/aayushi/Downloads# ssh -i Mykey.pem ec2-user@65.0.92.89
The authenticity of host '65.0.92.89 (65.0.92.89)' can't be established.
ECDSA key fingerprint is SHA256:05Ky9lYshxrRh9zD8gDts9ExyoodzaY5eF0rs9+QdTg.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '65.0.92.89' (ECDSA) to the list of known hosts.

  ____|  |____)
  ____| (_____/   Amazon Linux 2 AMI
  ____| \____|____|

https://aws.amazon.com/amazon-linux-2/
1 package(s) needed for security, out of 14 available
Run "sudo yum update" to apply all updates.

```

Packages need to update by using command: **sudo yum update**

```
[ec2-user@ip-172-31-38-50 ~]$ sudo yum update
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
---> Package aws-cfn-bootstrap.noarch 0:2.0-6.amzn2 will be updated
```

Connect to your EC2 instance and install the Apache web server

Command: **sudo yum install httpd**

```
[ec2-user@ip-172-31-38-50 ~]$ sudo yum install httpd
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core | 3.7 kB | 00:00
```

Go to super user by using: **sudo su**

```
[ec2-user@ip-172-31-38-50 ~]$ sudo su
```

Checking your Web server

1. **systemctl start httpd.service**

```
[root@ip-172-31-38-50 ec2-user]#  
[root@ip-172-31-38-50 ec2-user]# systemctl start httpd.service
```

- ## 2. systemctl enable httpd.service

```
[root@ip-172-31-38-50 ec2-user]#  
[root@ip-172-31-38-50 ec2-user]# systemctl enable httpd.service  
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service  
to /usr/lib/systemd/system/httpd.service.
```


3. systemctl status httpd.service

```
[root@ip-172-31-38-50 ec2-user]# systemctl status httpd.service
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor prese
t: disabled)
   Active: active (running) since Mon 2021-11-08 06:23:41 UTC; 25s ago
     Docs: man:httpd.service(8)
  Main PID: 6576 (httpd)
    Status: "Total requests: 0; Idle/Busy workers 100/0; Requests/sec: 0; Bytes s
erved/sec: 0 B/sec"
    CGroup: /system.slice/httpd.service
            └─6576 /usr/sbin/httpd -DFOREGROUND
              └─6577 /usr/sbin/httpd -DFOREGROUND
                └─6578 /usr/sbin/httpd -DFOREGROUND
                  └─6579 /usr/sbin/httpd -DFOREGROUND
                    └─6580 /usr/sbin/httpd -DFOREGROUND
                      └─6581 /usr/sbin/httpd -DFOREGROUND

Nov 08 06:23:41 ip-172-31-38-50.ap-south-1.compute.internal systemd[1]: Start..
.
Nov 08 06:23:41 ip-172-31-38-50.ap-south-1.compute.internal systemd[1]: Start..
.
Hint: Some lines were ellipsized, use -l to show in full.
```

Check our available disk devices and their mount points to help us determine the correct device name to us: **lsblk**

```
[root@ip-172-31-38-50 ec2-user]# 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  20G  0 disk
```

You can verify the disk utilization at the OS level using the command : **df -h**

```
[root@ip-172-31-38-50 ec2-user]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0   482M   0% /dev
tmpfs           492M   0   492M   0% /dev/shm
tmpfs           492M 416K   491M   1% /run
tmpfs           492M   0   492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.7G   6.4G  21% /
tmpfs           99M   0    99M   0% /run/user/1000
```

Now you can format the partition. For this tutorial, let us use ext4 filesystem to partition using: **mkfs -t ext4 /dev/device name**

```
[root@ip-172-31-38-50 ec2-user]# mkfs -t ext4 /dev/sdf
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
1310720 inodes, 5242880 blocks
262144 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2153775104
160 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
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
```

Use the command to get information about a specific device, such as its file system type:

file -s /dev/device name

```
[root@ip-172-31-38-50 ec2-user]# file -s /dev/xvdf
/dev/xvdf: Linux rev 1.0 ext4 filesystem data, UUID=62e4c705-257f-4027-a1b0-521915c2a02e (extents) (64bit) (large files) (huge files)
```

Make the directory: **mkdir Volume name**

```
[root@ip-172-31-38-50 ec2-user]# mkdir Additional_Vol
[root@ip-172-31-38-50 ec2-user]#
```

Use the following command to mount the volume at the directory you created in the previous step: **mount /dev/device_name Volume_name**

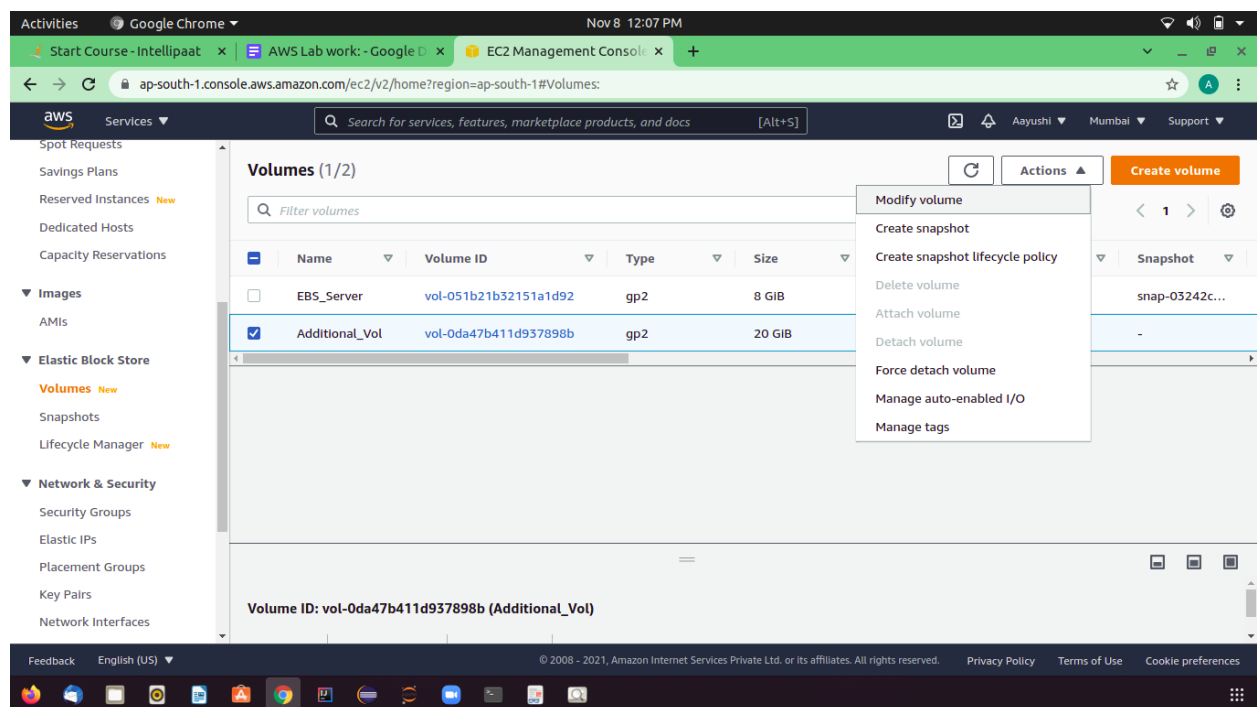
```
[root@ip-172-31-38-50 ec2-user]#
[root@ip-172-31-38-50 ec2-user]# mount /dev/xvdf Additional_Vol
```

Now, you see the file is mounted, use command **df -h** again and see the result.

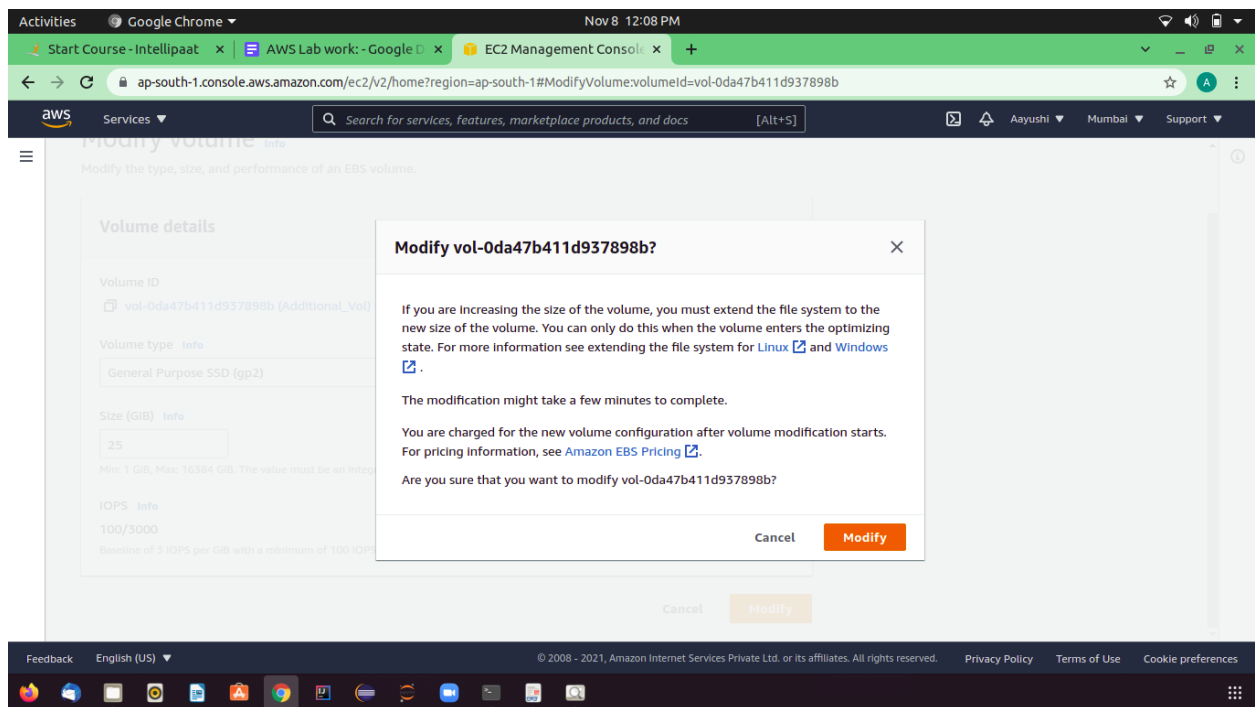
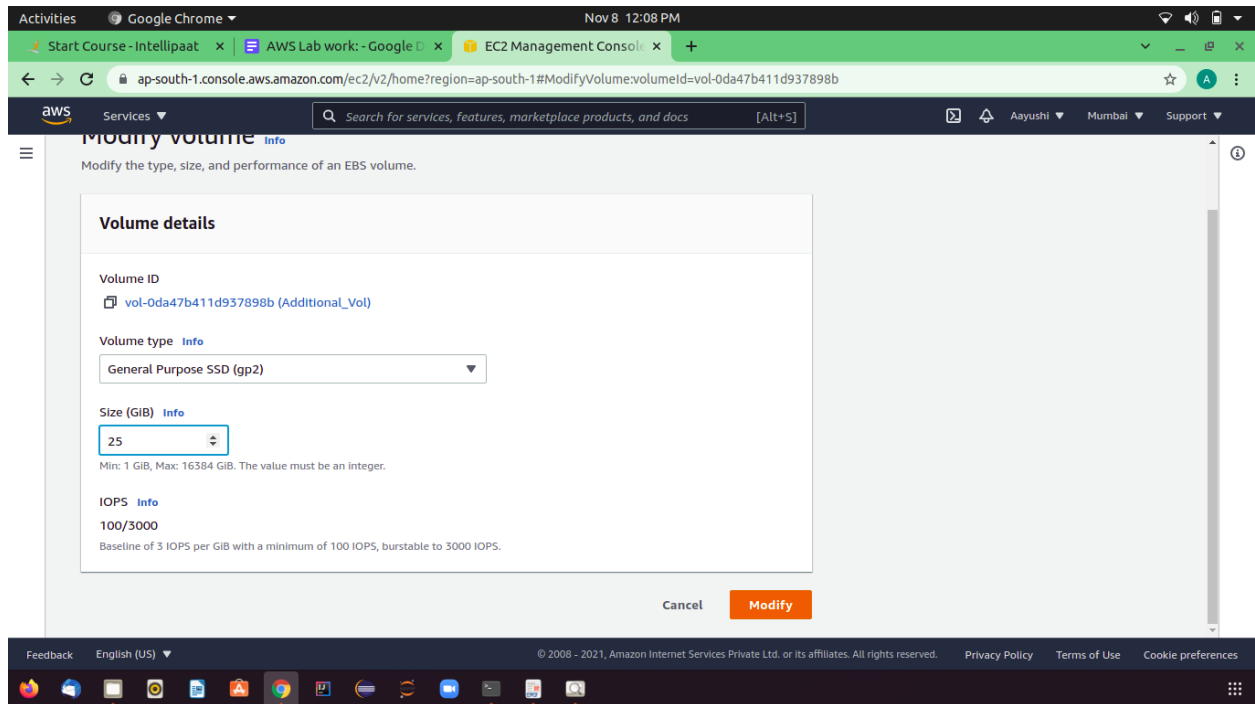
```
[root@ip-172-31-38-50 ec2-user]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0    482M   0% /dev
tmpfs           492M   0    492M   0% /dev/shm
tmpfs           492M  416K   491M   1% /run
tmpfs           492M   0    492M   0% /sys/fs/cgroup
/dev/xvda1       8.0G  1.7G   6.4G  21% /
tmpfs           99M    0     99M   0% /run/user/1000
/dev/xvdf        20G   45M   19G    1% /home/ec2-user/Additional_Vol
```

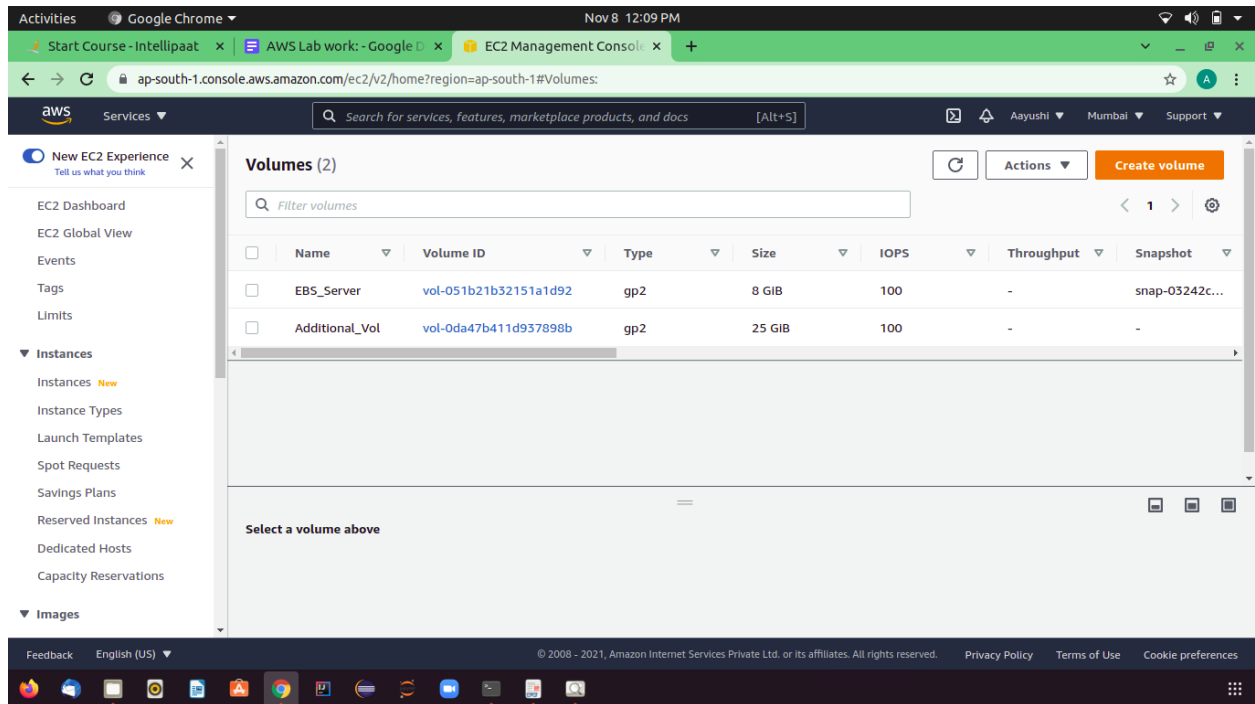
```
[root@ip-172-31-38-50 ec2-user]# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda        202:0    0    8G  0 disk
└─xvda1     202:1    0    8G  0 part /
xvdf        202:80   0   20G  0 disk /home/ec2-user/Additional_Vol
```

Now, resize the volume we will go back the volume click on action there are an modify volume click on that



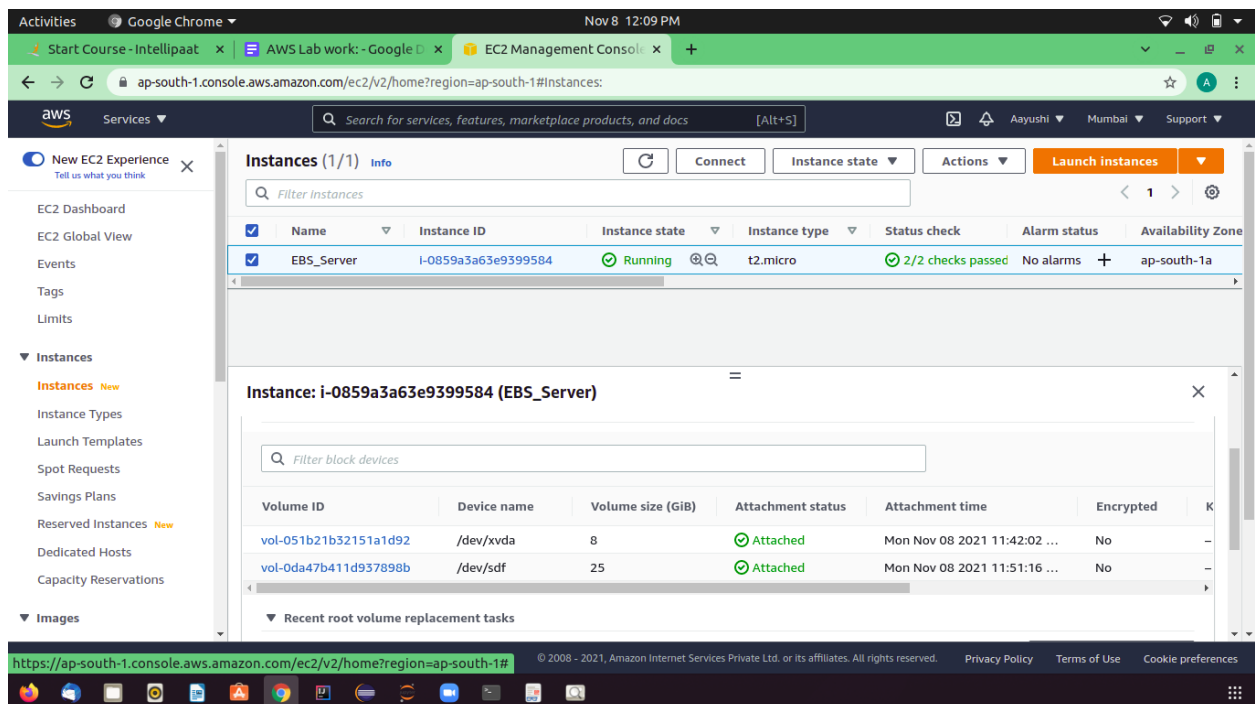
Modify the volume and increase 5 GB, so the current size of additional volume is 25 Gb.





Goto the instance back and see there are two volumes

1. Root volume 8 GB
2. Additional volume which is 25 GB



But if u check in command prompt by using `df -h` command resized volume is not mounted

```
[root@ip-172-31-38-50 ec2-user]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0    482M   0% /dev
tmpfs           492M   0    492M   0% /dev/shm
tmpfs           492M  416K  491M   1% /run
tmpfs           492M   0    492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.7G   6.4G  21% /
tmpfs           99M    0     99M   0% /run/user/1000
/dev/xvdf       20G   45M   19G   1% /home/ec2-user/Additional_Vol
```

Now, resized command is used: **resize2fs /dev/xvdf**

```
[root@ip-172-31-38-50 ec2-user]# resize2fs /dev/xvdf
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/xvdf is mounted on /home/ec2-user/Additional_Vol; on-line
resizing required
old_desc_blocks = 3, new_desc_blocks = 4
The filesystem on /dev/xvdf is now 6553600 blocks long.
```

Check by using **df -h** resized volume is 25 GB.

```
[root@ip-172-31-38-50 ec2-user]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0    482M   0% /dev
tmpfs           492M   0    492M   0% /dev/shm
tmpfs           492M  416K  491M   1% /run
tmpfs           492M   0    492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.7G   6.4G  21% /
tmpfs           99M    0     99M   0% /run/user/1000
/dev/xvdf       25G   44M   24G   1% /home/ec2-user/Additional_Vol
```