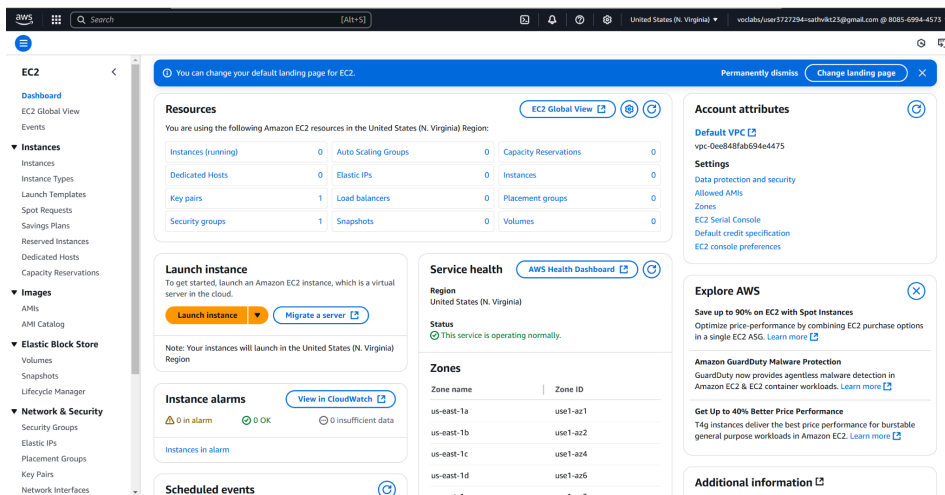


Experiment 4

Create and configure storage services and upload files and objects using Amazon EBS, Amazon EFS and Amazon S3

Part-1: Attach and Mount Extra EBS(Amazon Elastic Block Store) Volume to Linux EC2 in AWS

Step 1 : Go to the **EC2** section and click on launch instances .



Step 2 : Launch an instance

- Select the OS as Ubuntu , type as t2.micro
- Allow all the Network permissions
- Create key value pair (.perm)
- Click on launch instance

EC2 > Instances > Launch an instance

Launch an instance

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

Name

[Add additional tags](#)

Application and OS Images (Amazon Machine Image)

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.

Quick Start

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE Linux

Debian

[Browse more AMIs](#)
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type
ami-04baf125cf5c11100 (64-bit x86) / ami-0a7a4e87939439934 (64-bit Arm)
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Description

Ubuntu Server 24.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Summary

Number of instances: 1

Software Image (AMI)
Canonical, Ubuntu, 24.04, amd64...[read more](#)
ami-04baf125cf5c11100

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.

[Cancel](#)
[Launch instance](#)
[Preview code](#)

Create key pair

Key pair name
Key pairs allow you to connect to your instance securely.

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

☒ RSA
RSA encrypted private and public key pair

☐ ED25519
ED25519 encrypted private and public key pair

Private key file format

☒ .pem
For use with OpenSSH

☐ .ppk
For use with PuTTY

⚠ When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

[Cancel](#)
[Create key pair](#)

Step 3 Redirect to Instances dashboard

AWS > EC2 > Instances

Instances (1/1)

Last updated less than a minute ago

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv6 DNS
22bd1a05dr_ebs	i-05ebbcf8ca0489895	Running	t2.micro	Initializing	View alarms +	us-east-1b	ec2-107-21-83-4.com...	107...

i-05ebbcf8ca0489895

Details | Status and alarms | Monitoring | Security | Networking | **Storage** | Tags

Root device details

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

Block devices

Volume ID	Device name	Volume size (GiB)	Volume State	Attachment status	Attachment time	Encrypted	KMS
vol-0a00a756f25ae600a	/dev/sda1	8	In-use	Attached	2025/03/14 18:45 GMT+5:30	No	-

Volume monitoring (1)

1h 3h 12h 1d 3d 1w Custom UTC Timezone

[Add to dashboard](#)

Step 4 : Connect to the instance by SSH client

Connect to instance [Info](#)

Connect to your instance i-05ebbcf8ca0489895 (22bd1a05dr_ebs) using any of these options

EC2 Instance Connect
Session Manager
SSH client
EC2 serial console

Instance ID
i-05ebbcf8ca0489895 (22bd1a05dr_ebs)

1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is 22bd1a05drebs.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.

```
chmod 400 "22bd1a05drebs.pem"
```
4. Connect to your instance using its Public DNS:

```
ssh -i "22bd1a05drebs.pem" ubuntu@ec2-107-21-83-4.compute-1.amazonaws.com
```

Command copied

```
ssh -i "22bd1a05drebs.pem" ubuntu@ec2-107-21-83-4.compute-1.amazonaws.com
```

Note: In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

Step 5 Connect to SSH client in your terminal and run command `$lsblk` to verify the attached volumes

```
PS C:\languages\aws> ssh -i "22bd1a05drebs.pem" ubuntu@ec2-107-21-83-4.compute-1.amazonaws.com
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1021-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Fri Mar 14 13:49:27 UTC 2025

System load: 0.0          Processes: 105
Usage of /: 24.9% of 6.71GB   Users logged in: 0
Memory usage: 20%          IPv4 address for enx0: 172.31.93.166
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

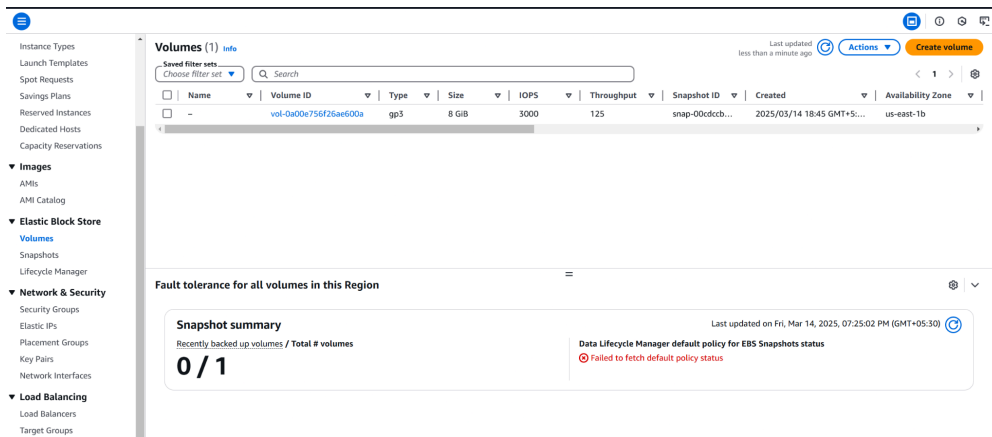
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-93-166:~$
```

```
ubuntu@ip-172-31-93-166:~$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0       7:0      0  26.3M  1 loop /snap/amazon-ssm-agent/9881
loop1       7:1      0  44.4M  1 loop /snap/snapd/23545
loop2       7:2      0  73.9M  1 loop /snap/core22/1722
xvda        202:0     0    8G   0 disk
├─xvda1     202:1     0    7G   0 part /
├─xvda14    202:14    0    4M   0 part
├─xvda15    202:15    0  106M  0 part /boot/efi
└─xvda16    259:0     0   913M  0 part /boot
ubuntu@ip-172-31-93-166:~$
```

Step 6 : Go to volume section and Click on **Create volume**



Step 7 : Enter the **Volume configurations**

- Volume type as gp2
- Enter tag details as required
- Then click on 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 (gp2) ▼

Size (GiB) [Info](#)

10

Min: 1 GiB, Max: 16384 GiB.

IOPS [Info](#)

100 / 3000

Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.

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

Not applicable

Availability Zone [Info](#)

us-east-1b ▼

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

Q 22bd1a05dr X

Value - optional

Q 22bd1a05dr_ebs_v1 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

Step 8 : Click On Attach volume

- Select the instance type and device name

EC2 > Volumes > vol-0c234973379217fcb > 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-0c234973379217fcb (ebs_v1)

Availability Zone

us-east-1b

Instance [Info](#)

i-05ebbcf8ca0489895

(22bd1a05dr_ebs) (running) ▼



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**.

Cancel

Attach volume

Step 9 : Verify the Disk allocation and volume attachment by running the commands

- `$sudo fdisk -l`
- `$ sudo -s /dev/allocated_deviceName`

```
ubuntu@ip-172-31-93-166:~$ sudo fdisk -l
Disk /dev/loop0: 26.32 MiB, 27602944 bytes, 53912 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

Disk /dev/loop1: 44.44 MiB, 46596096 bytes, 91008 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

Disk /dev/loop2: 73.87 MiB, 77459456 bytes, 151288 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

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: D7B2CFD6-F96A-42FB-B8E1-13FF6555E807

Device            Start       End   Sectors   Size Type
/dev/xvda1        2099200    16777182 14677983    7G Linux filesystem
/dev/xvda14         2048      10239     8192     4M BIOS boot
/dev/xvda15        10240     227327    217088    106M EFI System
/dev/xvda16       227328    2097152   1869825    913M Linux extended boot

Partition table entries are not in disk order.

Disk /dev/xvdf: 10 GiB, 10737418240 bytes, 20971520 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
ubuntu@ip-172-31-93-166:~$
```

```
ubuntu@ip-172-31-93-166:~$ sudo file -s /dev/xvdf
/dev/xvdf: data
ubuntu@ip-172-31-93-166:~$
```

Step 10 : Create a directory by running the command `$sudo mkdir dir_name`

```
ubuntu@ip-172-31-93-166:~$ sudo file -s /dev/xvdf
/dev/xvdf: data
ubuntu@ip-172-31-93-166:~$ sudo mkdir /myebsvol
```

Step 11 : Create a file system by running the command

\$sudo mkfs -t /dev/allocated_name

```

try 'mkfs --help' for more information.
ubuntu@ip-172-31-93-166:~$ sudo mkfs -t xfs /dev/xvdf
meta-data=/dev/xvdf            isize=512    agcount=4, agsize=655360 blks
        =                       sectsz=512   attr=2,    projid32bit=1
        =                       crc=1        finobt=1, sparse=1, rmapbt=1
        =                       reflink=1    bigtime=1 inobtcount=1 nrext64=0
data      =                       bsize=4096   blocks=2621440, imaxpct=25
        =                       sunit=0      swidth=0 blks
naming    =version 2           bsize=4096   ascii-ci=0, ftype=1
log       =internal log       bsize=4096   blocks=16384, version=2
        =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime  =none               extsz=4096   blocks=0,  rtextents=0
ubuntu@ip-172-31-93-166:~$ sudo file -s /dev/xvdf
/dev/xvdf: SGI XFS filesystem data (blksz 4096, inosz 512, v2 dirs)

```

Step 12 : Mount the volume to the created directory by running the command

\$sudo mount /dev/allocated_name dir_name

```

ubuntu@ip-172-31-93-166:~$ sudo mount /dev/xvdf /myebsvol

```

Step 13 : Run the command **\$ sudo df -h** to check the mounting status

```

ubuntu@ip-172-31-93-166:~$ sudo df -h

```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/root	6.8G	1.7G	5.1G	26%	/
tmpfs	479M	0	479M	0%	/dev/shm
tmpfs	192M	880K	191M	1%	/run
tmpfs	5.0M	0	5.0M	0%	/run/lock
/dev/xvda16	881M	76M	744M	10%	/boot
/dev/xvda15	105M	6.1M	99M	6%	/boot/efi
tmpfs	96M	12K	96M	1%	/run/user/1000
/dev/xvdf	10G	228M	9.8G	3%	/myebsvol

```

ubuntu@ip-172-31-93-166:~$

```