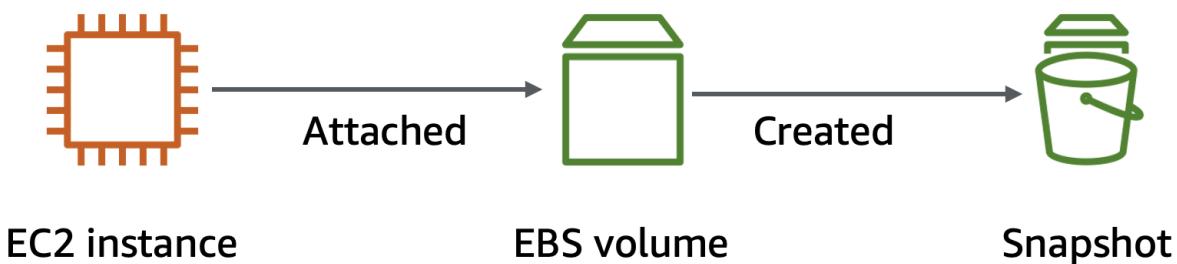


Working with Amazon EBS

Amazon Elastic Block Store (Amazon EBS) is a scalable, high-performance block-storage service that is designed for Amazon Elastic Compute Cloud (Amazon EC2). In this lab, you learn how to create an EBS volume and perform operations on it, such as attaching it to an instance, creating a file system, and taking a snapshot backup.



By the end of this lab, you will be able to do the following:

- Create an EBS volume.
- Attach and mount an EBS volume to an EC2 instance.
- Create a snapshot of an EBS volume.
- Create an EBS volume from a snapshot.

Task 1: Creating a new EBS volume

In this task, you create and attach an EBS volume to a new EC2 instance.

5. On the **AWS Management Console**, in the **Search** bar, enter and choose **EC2** to open the **EC2 Management Console**.
6. In the left navigation pane, choose **Instances**.
An EC2 instance named **Lab** has already been launched for your lab.

7. Note the **Availability Zone** for the **Lab** instance. It looks similar to the following:
us-west-2a
Tip: You might have to scroll to the right to see the **Availability Zone** column.
8. In the left navigation pane, for **Elastic Block Store**, choose **Volumes**.
You see an existing (8 GiB) volume that the EC2 instance is using.
9. Choose **Create volume**, and configure the following options:
 - **Volume type:** Choose **General Purpose SSD (gp2)**.

Size (GiB): Enter **1**.

- **Note:** You might be restricted from creating large volumes.
 - **Availability Zone:** Choose the same Availability Zone as your EC2 instance (which is us-west-2a in this case).
10. In the **Tags -optional** section, choose **Add tag**, and configure the following options:
 - **Key:** Enter **Name**.
 - **Value:** Enter **My Volume**.
 11. Choose **Create volume**.
A new volume appears with the status of *Creating* in the **Volume state** column. This status soon changes to *Available*. You might need to choose **Refresh** to see your new volume.
Tip: You might have to scroll to the right to see the **Volume state** column.

Task 2: Attaching the volume to an EC2 instance

You now attach your new volume to an EC2 instance.

12. Select **My Volume**.
13. From the **Actions** menu, choose **Attach volume**.
14. From the **Instance** dropdown list, choose the **Lab** instance.
 - For the **Device name** field select **/dev/sdb**. Commands that you run later in this lab include this device identifier.
15. Choose **Attach volume**.
The **Volume state** of your new volume is now *In-use*.

Task 3: Connecting to the Lab EC2 instance

In this task, you use EC2 Instance Connect to connect to the Lab EC2 instance.

16. On the **AWS Management Console**, in the **Search** bar, enter and choose **EC2** to open the **EC2 Management Console**.
 17. In the navigation pane, choose **Instances**.
 18. From the list of instances, select the **Lab** instance.
 19. Choose **Connect**.
 20. On the **EC2 Instance Connect** tab, choose **Connect**.

This option opens a new browser tab with the **EC2 Instance Connect** terminal window.

Note: If you prefer to use an SSH client to connect to the EC2 instance, see the guidance to [Connect to Your Linux Instance](#).

You use this terminal window to complete the tasks throughout the lab. If the terminal becomes unresponsive, refresh the browser or use the steps in this task to connect again.

```
          #  
~\ _##_##_          Amazon Linux 2  
~~ \##_##\ AL2 End of Life is 2026-06-30.  
~~ \#/ _  
~~ V~/ ' ->  
~~ / A newer version of Amazon Linux is available!  
~~ . /  
~~ / / Amazon Linux 2023, GA and supported until 2028-03-15.  
_m/ ' https://aws.amazon.com/linux/amazon-linux-2023/  
  
[ec2-user@ip-10-1-11-155 ~]$ pwd  
/home/ec2-user  
[ec2-user@ip-10-1-11-155 ~]$ █
```

Task 4: Creating and configuring the file system

In this task, you add the new volume to a Linux instance as an ext3 file system under the /mnt/data-store mount point.

21. To view the storage that is available on your instance, in the EC2 Instance Connect terminal, run the following command:

`22. df -h`

23. You should see output similar to the following:

24.	devtmpfs	464M	0	464M	0%	/dev
	tmpfs	473M	0	473M	0%	/dev/shm
	tmpfs	473M	464K	472M	1%	/run
	tmpfs	473M	0	473M	0%	/sys/fs/cgroup
	/dev/nvme0n1p1	8.0G	1.7G	6.4G	21%	/
	tmpfs	95M	0	95M	0%	/run/user/0
	tmpfs	95M	0	95M	0%	/run/user/1000

25. These results show the original 8 GB disk volume. Your new volume is not yet shown.

26. To create an ext3 file system on the new volume, run the following command:

`27. sudo mkfs -t ext3 /dev/sdb`

28. To create a directory to mount the new storage volume, run the following command:

`29. sudo mkdir /mnt/data-store`

30. To mount the new volume, run the following command:

```
31. sudo mount /dev/sdb /mnt/data-store  
echo "/dev/sdb /mnt/data-store ext3 defaults,noatime 1 2" |  
sudo tee -a /etc/fstab
```

32. The last line in this command ensures that the volume is mounted even after the instance is restarted.

33. To view the configuration file to see the setting on the last line, run the following command:

`34. cat /etc/fstab`

35. To view the available storage again, run the following command:

`36. df -h`

37. The output now contains an additional line similar to the following: /dev/nvme1n1

38.	Filesystem	Size	Used	Avail	Use%	Mounted on
	devtmpfs	464M	0	464M	0%	/dev

```

tmpfs          473M      0  473M   0% /dev/shm
tmpfs          473M  464K  472M   1% /run
tmpfs          473M      0  473M   0% /sys/fs/cgroup
/dev/nvme0n1p1 8.0G   1.7G  6.4G  21% /
tmpfs          95M      0   95M   0% /run/user/0
tmpfs          95M      0   95M   0% /run/user/1000
/dev/nvme1n1   975M   60K  924M   1% /mnt/data-store

```

39. To create a file and add some text on the mounted volume, run the following command:

40. `sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"`

41. To verify that the text has been written to your volume, run the following command:

42. `cat /mnt/data-store/file.txt`

The output displays the text that this command copies to the file.

```

llocating group tables: done
riting inode tables: done
reating journal (8192 blocks): done
riting superblocks and filesystem accounting information: done

ec2-user@ip-10-1-11-155 ~]$ sudo mkdir /mnt/data-store
ec2-user@ip-10-1-11-155 ~]$ sudo mount /dev/sdb /mnt/data-store
ec2-user@ip-10-1-11-155 ~]$ echo "/dev/sdb /mnt/data-store ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab
dev/sdb /mnt/data-store ext3 defaults,noatime 1 2
ec2-user@ip-10-1-11-155 ~]$ cat /etc/fstab
UID=d06b50ee-caab-4b92-a621-772b895268c5      /           xfs     defaults,noatime  1   1
dev/sdb /mnt/data-store ext3 defaults,noatime 1 2
ec2-user@ip-10-1-11-155 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs          460M    0  460M   0% /dev/shm
mpfs          471M    0  471M   0% /dev/shm
mpfs          471M  408K  470M   1% /run
mpfs          471M    0  471M   0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.7G  6.4G  22% /
mpfs          95M    0   95M   0% /run/user/1000
/dev/nvme1n1   975M   60K  924M   1% /mnt/data-store
ec2-user@ip-10-1-11-155 ~]$ sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"
ec2-user@ip-10-1-11-155 ~]$ cat /mnt/data-store/file.txt
some text has been written
ec2-user@ip-10-1-11-155 ~]$ 

```

Task 5: Creating an Amazon EBS snapshot

In this task, you create a snapshot of your EBS volume.

Amazon EBS snapshots are stored in Amazon Simple Storage Service (Amazon S3) for durability. New EBS volumes can be created out of snapshots for cloning or restoring backups. Amazon EBS snapshots can also be shared among Amazon Web Services (AWS) accounts or copied over AWS Regions.

29. On the **EC2 Management Console**, choose **Volumes**, and select **My Volume**.

30. From the **Actions** menu, choose **Create snapshot**.

31. In the **Tags** section, choose **Add tag**, and then configure the following options:

- **Key:** Enter `Name`.
- **Value:** Enter `My Snapshot`.

32. Choose **Create snapshot**.

33. In the left navigation pane, choose **Snapshots**.

The **Snapshot status** of your snapshot is *Pending*. After completion, the status changes to *Completed*. Only used storage blocks are copied to snapshots, so empty blocks do not use any snapshot storage space.

34. In your EC2 Instance Connect terminal window, to delete the file that you created on your volume, run the following command:

35. `sudo rm /mnt/data-store/file.txt`

36. **Note:** If terminal is unresponsive, refresh the browser or reconnect as needed.

37. To verify that the file has been deleted, run the following command:

38. `ls /mnt/data-store/file.txt`

39. The following message displays: */s: cannot access /mnt/data-store/file.txt: No such file or directory*

Your file has been deleted.

```
Writing inode tables: done
Creating journal (8192 blocks): done
Writing superblocks and filesystem accounting information: done

[ec2-user@ip-10-1-11-155 ~]$ sudo mkdir /mnt/data-store
[ec2-user@ip-10-1-11-155 ~]$ sudo mount /dev/sdb /mnt/data-store
[ec2-user@ip-10-1-11-155 ~]$ echo "/dev/sdb    /mnt/data-store ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab
/dev/sdb    /mnt/data-store ext3 defaults,noatime 1 2
[ec2-user@ip-10-1-11-155 ~]$ cat /etc/fstab
#
#UUID=d06b50ee-caab-4b92-a621-772b895268c5      /          xfs      defaults,noatime 1  1
/dev/sdb    /mnt/data-store ext3 defaults,noatime 1 2
[ec2-user@ip-10-1-11-155 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        460M   0  460M  0% /dev
tmpfs          471M   0  471M  0% /dev/shm
tmpfs          471M  408K 470M  1% /run
tmpfs          471M   0  471M  0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.7G  6.4G  22% /
tmpfs          95M   0   95M  0% /run/user/1000
/dev/nvme1n1   975M  60K  924M  1% /mnt/data-store
[ec2-user@ip-10-1-11-155 ~]$ sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"
[ec2-user@ip-10-1-11-155 ~]$ cat /mnt/data-store/file.txt
some text has been written
[ec2-user@ip-10-1-11-155 ~]$ sudo rm /mnt/data-store/file.txt
[ec2-user@ip-10-1-11-155 ~]$ ls /mnt/data-store/file.txt
ls: cannot access /mnt/data-store/file.txt: No such file or directory
[ec2-user@ip-10-1-11-155 ~]$
```

Task 6: Restoring the Amazon EBS snapshot

If you need to retrieve data stored in a snapshot, you can restore the snapshot to a new EBS volume.

Task 6.1: Creating a volume by using the snapshot

36. On the **EC2 Management Console**, select **My Snapshot**.
37. From the **Actions** menu, choose **Create volume from snapshot**.
38. For **Availability Zone**, choose the same Availability Zone that you used earlier.
39. In the **Tags - optional** section, choose **Add tag**, and then configure the following options:
 - **Key:** Enter `Name`.
 - **Value:** Enter `Restored Volume`.
40. Choose **Create volume**.
41. To see your new volume, in the left navigation, choose **Volumes**.
The **Volume status** of your new volume is *Available*.

When restoring a snapshot to a new volume, you can also modify the configuration, such as changing the volume type, size, or Availability Zone.

The screenshot shows the AWS EBS Volumes page. The left sidebar is for EC2 services, with 'Elastic Block Store' selected under 'Volumes'. The main content area displays a table of volumes:

Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot ID	Source volume ID	Created
Restored Volu...	vol-078794f06b6516a12	gp3	1 GiB	3000	125	snap-03b71c0...	-	2025/12
My Volume	vol-0a030e201b1c0cd27	gp2	1 GiB	100	-	-	-	2025/12
	vol-04184dd8223e5a324	gp2	8 GiB	100	-	snap-027fe3b...	-	2025/12

Below the table, a section titled 'Fault tolerance for all volumes in this Region' shows 'Snapshot summary' with '0 / 2' recently backed up volumes.

Task 6.2: Attaching the restored volume to the EC2 instance

42. Select **Restored Volume**.

43. From the **Actions** menu, choose **Attach volume**.

44. From the **Instance** dropdown list, choose the **Lab** instance.

- For the **Device name** field, choose **/dev/sdc**. You use this device identifier in a later task.

45. Choose **Attach volume**.

The **Volume status** of your volume is now *In-use*.

The screenshot shows the AWS EBS Volumes page after attaching the volume. A green success message at the top states: 'Successfully attached volume vol-078794f06b6516a12 to instance i-05276357951e449c3.' The main content area is identical to the previous screenshot, showing the same three volumes and fault tolerance information.

Task 6.3: Mounting the restored volume

46. To create a directory for mounting the new storage volume, in the EC2 Instance

Connect terminal, run the following command:

47. `sudo mkdir /mnt/data-store2`

48. To mount the new volume, run the following command:

49. `sudo mount /dev/sdc /mnt/data-store2`

50. To verify that the volume that you mounted has the file that you created earlier, run the following command:

51. `ls /mnt/data-store2/file.txt`

52. You should see the file.txt file.

```
JUID=d06b50ee-caab-4b92-a621-772b895268c5      /          xfs      defaults,noatime 1  1
/dev/sdb  /mnt/data-store ext3 defaults,noatime 1 2
[ec2-user@ip-10-1-11-155 ~]$ df -h
Filesystem      Size  Used  Avail Use% Mounted on
/devtmpfs       460M   0    460M  0% /dev
tmpfs          471M   0    471M  0% /dev/shm
tmpfs          471M  408K  470M  1% /run
tmpfs          471M   0    471M  0% /sys/fs/cgroup
/dev/nvme0n1p1  8.0G  1.7G  6.4G  22% /
tmpfs          95M   0    95M  0% /run/user/1000
/dev/nvme1n1   975M  60K  924M  1% /mnt/data-store
[ec2-user@ip-10-1-11-155 ~]$ sudo sh -c "echo some text has been written > /mnt/data-store/file.txt"
[ec2-user@ip-10-1-11-155 ~]$ cat /mnt/data-store/file.txt
some text has been written
[ec2-user@ip-10-1-11-155 ~]$ sudo rm /mnt/data-store/file.txt
[ec2-user@ip-10-1-11-155 ~]$ ls /mnt/data-store/file.txt
ls: cannot access /mnt/data-store/file.txt: No such file or directory
[ec2-user@ip-10-1-11-155 ~]$ sudo mkdir /mnt/data-store2
[ec2-user@ip-10-1-11-155 ~]$ sudo mount /dev/sdc /mnt/data-store2
[ec2-user@ip-10-1-11-155 ~]$ ls /mnt/data-store2/file.txt
[ec2-user@ip-10-1-11-155 ~]$
```