# 182-[JAWS]-Lab - Working with Amazon EBS

Working with Amazon EBS

Lab overview

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.
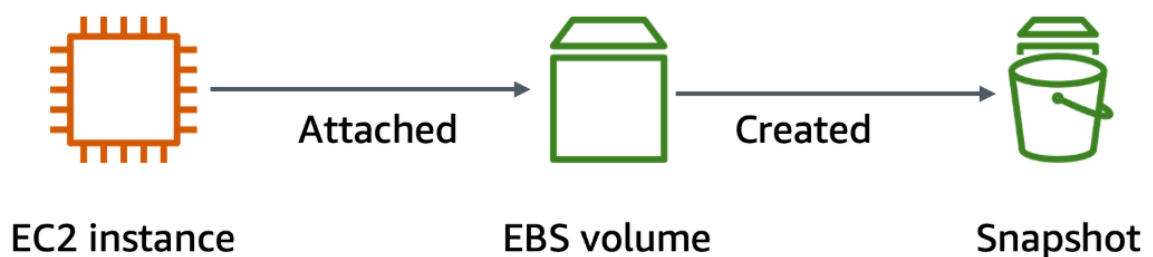
Objectives

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.

Duration

This lab requires approximately **45 minutes** to complete.

Accessing the AWS Management Console

1. At the top of these instructions, choose ▶ **Start Lab** to launch your lab.

   Tip: If you need more time to complete the lab, choose ▶ **Start Lab** again to restart the timer for the environment.

2. The status of the lab resources is be displayed on the upper-left corner:

   - **AWS** 🟡 indicates that AWS lab resources are currently being created.

   - **AWS** 🟢 indicates that AWS lab resources are ready.

   Wait for the lab to be ready before proceeding.

3. At the top of these instructions, choose **AWS** 🟢 to open the AWS Management Console on a new browser tab. The system automatically signs you in.

   Tip: If a new browser tab does not open, a banner or icon at the top of your browser will indicate that your browser is preventing the site from opening pop-up windows. Choose the banner or icon, and choose **Allow pop-ups**.

4. Arrange the AWS Management Console so that it appears alongside these instructions. Ideally, you should be able to see both browser tabs at the same time to follow the lab steps.

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.

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:

```
df -h
```

You should see output similar to the following:

```
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
```

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

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

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

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

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

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

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

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

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

```
cat /etc/fstab
```

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

```
df -h
```

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

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```
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
```

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

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

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

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

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

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:

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

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

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

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

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

    Your file has been deleted.

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.

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*.

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:

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

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

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

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

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

You should see the file.txt file.

Conclusion

Congratulations! You now have successfully done the following:

- Created an EBS volume

- Attached and mounted an EBS volume to an EC2 instance

- Created a snapshot of an EBS volume

- Created an EBS volume from a snapshot

Lab complete

Congratulations! You have completed the lab.

49. At the top of this page, choose | End Lab | and then choose | Yes | to confirm that you want to end the lab.

50. A panel appears indicating that "Ended AWS Lab Successfully."