

Lab 4: Working with EBS

Resumen



Esta actividad se centra en aprender a trabajar con Amazon Elastic Block Store (EBS), un servicio de AWS que proporciona almacenamiento persistente y confiable para instancias de Amazon EC2. Durante la actividad, se exploran las siguientes tareas clave:

1. Crear un volumen EBS.
2. Adjuntarlo a una instancia EC2.
3. Configurar un sistema de archivos en el volumen.
4. Crear una instantánea (snapshot) del volumen.
5. Restaurar el snapshot en un nuevo volumen.
6. Verificar la integridad de los datos restaurados.

Paso 1: Creación de un Volumen EBS

Un volumen EBS es un dispositivo de bloque de almacenamiento en red que se puede adjuntar a una instancia EC2. Es independiente del ciclo de vida de la instancia y ofrece alta disponibilidad y fiabilidad dentro de una zona de disponibilidad específica.

Procedimiento:

En el panel de navegación izquierdo, se selecciona la opción Volumes .

Choose **Create volume** then configure:

- **Volume Type:** *General Purpose SSD (gp2)*
- **Size (GiB):** 1. **NOTE:** You may be restricted from creating large volumes.
- **Availability Zone:** Select the same availability zone as your EC2 instance.
- Choose **Add tag**
- In the Tag Editor, enter:

- **Key:** Name
- **Value:** My Volume

Choose **Create Volume**

Your new volume will appear in the list, and will move from the *Creating* state to the *Available* state. You may need to choose **refresh** to see your new volume.

EC2 > Volumes > Create volume

Volume type | Info

General Purpose SSD (gp2)

Size (GiB) | Info

1

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-1a

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 Name

Value - optional

Q My Volume

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

2 de 19

Successfully created volume `vol-0c0d06ed68c2c136b`.

Volumes (3) Info

Last updated less than a minute ago

Actions

Create volume

Saved filter sets

Choose filter set

Search

<input type="checkbox"/>	Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot ID	Created
<input type="checkbox"/>	-	<code>vol-0afd3e516143fb210</code>	gp3	8 GiB	3000	125	snap-0c45868...	2025/04/23 11:23 GMT+
<input type="checkbox"/>	My Volume	<code>vol-0c0d06ed68c2c136b</code>	gp2	1 GiB	100	-	-	2025/04/23 11:58 GMT+
<input type="checkbox"/>	-	<code>vol-0a88dbc264a6e6c56</code>	gp3	9 GiB	3000	125	snap-0c45868...	2025/04/23 11:23 GMT+

Successfully created volume `vol-0c0d06ed68c2c136b`.

Volumes (3) Info

Saved filter sets

Choose filter set

Search

<input type="checkbox"/>	Name	Volume ID	Type
<input type="checkbox"/>	-	<code>vol-0afd3e516143fb210</code>	gp3
<input type="checkbox"/>	My Volume	<code>vol-0c0d06ed68c2c136b</code>	gp2
<input type="checkbox"/>	-	<code>vol-0a88dbc264a6e6c56</code>	gp3

Una vez creado, el volumen aparece en la lista de volúmenes con estado Available, listo para ser utilizado.

Paso 2: Adjuntar el Volumen a una Instancia EC2

Para utilizar el volumen EBS, es necesario adjuntarlo a una instancia EC2. Esto permite que la instancia acceda al almacenamiento del volumen como si fuera un disco físico.

Procedimiento:

Seleccionar el Volumen:

- En la lista de volúmenes, se selecciona el volumen recién creado (My Volume).

Adjuntar el Volumen:

- Desde el menú Actions, se selecciona Attach volume.

Successfully created volume vol-0c0d06ed68c2c136b.

Volumes (1/3) Info

Saved filter sets
Choose filter set

Search

	Name	Volume ID	Type	Size	IOPS	Through
<input type="checkbox"/>	-	vol-0afd3e516143fb210	gp3	8 GiB	3000	125
<input checked="" type="checkbox"/>	My Volume	vol-0c0d06ed68c2c136b	gp2	1 GiB	100	-
<input type="checkbox"/>	-	vol-0a88dbc264a6e6c56	gp3	9 GiB	3000	125

Volume ID: vol-0c0d06ed68c2c136b (My Volume)

Actions

- Modify volume
- Create snapshot
- Create snapshot lifecycle policy
- Delete volume
- Attach volume**
- Detach volume
- Force detach volume
- Manage auto-enabled I/O
- Manage tags
- Fault injection

- Se elige la instancia EC2 (Lab instance) y se especifica el nombre del dispositivo (/dev/sdf).

EC2 > Volumes > vol-0c0d06ed68c2c136b > 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-0c0d06ed68c2c136b (My Volume)

Availability Zone
us-east-1a

Instance Info
i-06a204e20dd7d1abf (Lab) (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/xvda 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.

- Nota: En sistemas Linux modernos, el dispositivo puede renombrarse internamente a /dev/xvdf.

Estado Final:

- El estado del volumen cambia a In-use , indicando que está siendo utilizado por la instancia.

Paso 3: Conexión a la Instancia EC2

Para configurar el sistema de archivos en el volumen EBS, es necesario conectarse a la instancia EC2 mediante una terminal.

Procedimiento:

Acceso a la Consola EC2:

En el panel de navegación izquierdo, se selecciona Instances .

Se selecciona la instancia Lab y se hace clic en Connect .

Uso de EC2 Instance Connect:

Se abre una sesión de terminal en el navegador utilizando EC2 Instance Connect .

La conexión se establece con éxito, mostrando un prompt (\$) para ejecutar comandos.

The screenshot shows the 'Connect' page in the AWS Management Console. It has tabs for 'EC2 Instance Connect', 'Session Manager', 'SSH client', and 'EC2 serial console'. The 'EC2 Instance Connect' tab is active. It displays the 'Instance ID' as 'i-06a204e20dd7d1abf (Lab)'. Under 'Connection Type', there are two options: 'Connect using a Public IP' (selected) and 'Connect using a Private IP'. Under 'Public IP address', there are two options: 'Public IPv4 address' (selected) with the value '3.82.109.12', and 'IPv6 address'. The 'Username' field is set to 'ec2-user'. A note at the bottom states: 'Note: In most cases, the default username, ec2-user, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.' At the bottom right, there are 'Cancel' and 'Connect' buttons.

The screenshot shows a terminal window with a black background and white text. The title bar reads 'Amazon Linux 2023'. The terminal output shows a ASCII art logo of a cat on the left and the URL 'https://aws.amazon.com/linux/amazon-linux-2023' on the right. At the bottom, the prompt '[ec2-user@ip-10-1-11-203 ~]\$' is visible with a cursor.

Paso 4: Creación y Configuración del Sistema de Archivos

El volumen EBS no es utilizable hasta que se le asigne un sistema de archivos y se monte en un directorio específico dentro de la instancia.

Procedimiento:

Verificación de Almacenamiento Disponible:

Se ejecuta el comando `df -h` para listar los sistemas de archivos montados.

```
[ec2-user@ip-10-1-11-203 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M   0    4.0M   0% /dev
tmpfs           475M   0    475M   0% /dev/shm
tmpfs           190M  452K   190M   1% /run
/dev/xvda1       8.0G  1.6G   6.4G  20% /
tmpfs           475M   0    475M   0% /tmp
/dev/xvda128     10M   1.3M   8.7M  13% /boot/efi
tmpfs           95M   0     95M   0% /run/user/1000
[ec2-user@ip-10-1-11-203 ~]$
```

El volumen EBS adjunto (`/dev/sdf`) no aparece inicialmente porque aún no tiene un sistema de archivos configurado.

Creación del Sistema de Archivos:

Create an ext3 file system on the new volume:

`sudo mkfs -t ext3 /dev/sdf`

```
[ec2-user@ip-10-1-11-203 ~]$ sudo mkfs -t ext3 /dev/sdf
mke2fs 1.46.5 (30-Dec-2021)
Creating filesystem with 262144 4k blocks and 65536 inodes
Filesystem UUID: e79b7f74-e6b3-45a1-9484-9bb02d06e2e6
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376

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

The output should indicate that a new file system was created on the attached volume.

Montaje del Volumen:

Create a directory for mounting the new storage volume:

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

Mount the new volume:

```
sudo mount /dev/sdf /mnt/data-store
```

Configuración Automática al Inicio:

Para que el volumen se monte automáticamente al reiniciar la instancia, se añade una entrada al archivo `/etc/fstab`:

To configure the Linux instance to mount this volume whenever the instance is started, you will need to add a line to `/etc/fstab`. Run the command below to accomplish that:

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

```
[ec2-user@ip-10-1-11-203 ~]$ echo "/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2" | sudo tee -a /etc/fstab
/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2
[ec2-user@ip-10-1-11-203 ~]$
```

Verificación Final:

View the configuration file to see the setting on the last line:

```
cat /etc/fstab
```

```
[ec2-user@ip-10-1-11-203 ~]$ cat /etc/fstab
#
UUID=b1e84820-06b0-4d3b-9b5d-edd836bd5895 / xfs defaults,noatime 1 1
UUID=DED7-C018 /boot/efi vfat defaults,noatime,uid=0,gid=0,umask=0077,shortname=winnt,x-systemd.automount 0 2
/dev/sdf /mnt/data-store ext3 defaults,noatime 1 2
[ec2-user@ip-10-1-11-203 ~]$
```

View the available storage again:

```
df -h
```

```
[ec2-user@ip-10-1-11-203 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M   0    4.0M   0% /dev
tmpfs           475M   0    475M   0% /dev/shm
tmpfs           190M  452K   190M   1% /run
/dev/xvda1      8.0G  1.6G   6.4G  20% /
tmpfs           475M   0    475M   0% /tmp
/dev/xvda128    10M   1.3M   8.7M  13% /boot/efi
tmpfs           95M   0     95M   0% /run/user/1000
/dev/xvdf       975M   60K   924M   1% /mnt/data-store
```

Prueba de Escritura:

On your mounted volume, create a file and add some text to it.

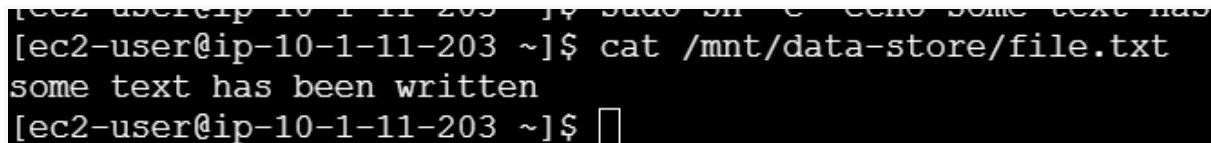
Se crea un archivo de prueba en el volumen:

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

Se verifica que el archivo existe:

Verify that the text has been written to your volume.

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



```
[ec2-user@ip-10-1-11-203 ~]$ cat /mnt/data-store/file.txt
some text has been written
[ec2-user@ip-10-1-11-203 ~]$
```

Leave the EC2 Instance Connect session running. You will return to it later in this lab.

Paso 5: Creación de una Instantánea (Snapshot)

Una instantánea es una copia de respaldo de un volumen EBS en un punto específico del tiempo. Las instantáneas son útiles para recuperación de datos y clonación de volúmenes.

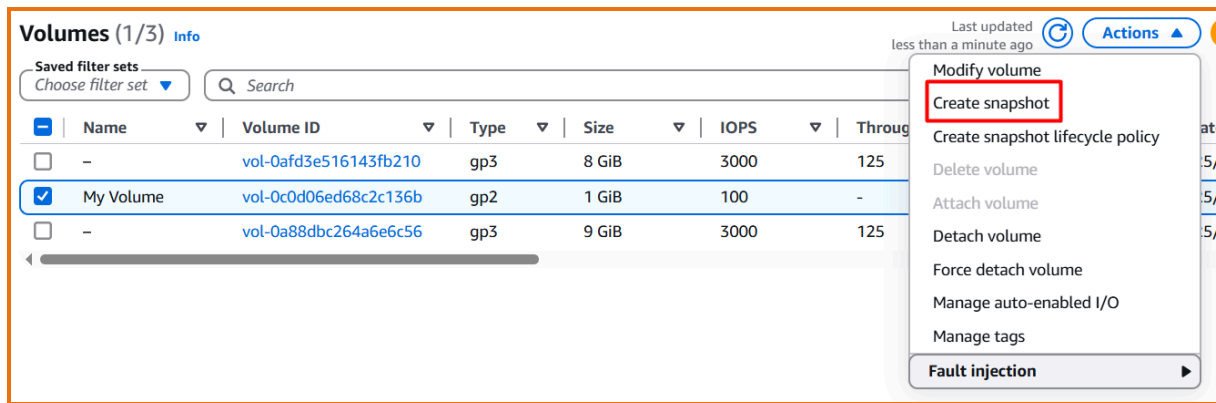
Procedimiento:

Creación de la Instantánea:

- En la consola EC2, se selecciona el volumen My Volume.
- Desde el menú Actions , se elige Create snapshot .
- Se agrega una etiqueta para identificar la instantánea:
- Key: Name
- Value: My Snapshot.

In the **EC2 Console**, choose **Volumes** and select **My Volume**.

In the **Actions** menu, select **Create snapshot**.



Volumes (1/3) Info

Saved filter sets: Choose filter set

Search

	Name	Volume ID	Type	Size	IOPS	Throughput
<input type="checkbox"/>	-	vol-0afd3e516143fb210	gp3	8 GiB	3000	125
<input checked="" type="checkbox"/>	My Volume	vol-0c0d06ed68c2c136b	gp2	1 GiB	100	-
<input type="checkbox"/>	-	vol-0a88dbc264a6e6c56	gp3	9 GiB	3000	125

Actions menu:

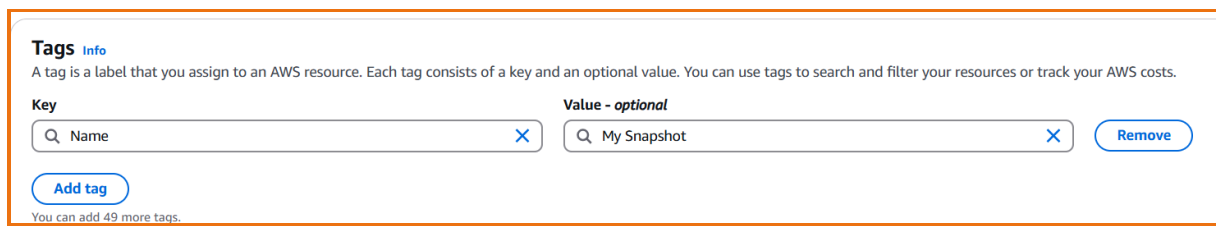
- Modify volume
- Create snapshot**
- Create snapshot lifecycle policy
- Delete volume
- Attach volume
- Detach volume
- Force detach volume
- Manage auto-enabled I/O
- Manage tags
- Fault injection

Choose **Add tag** then configure:

Key: Name

Value: My Snapshot

Choose **Create snapshot**



Tags 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: Name

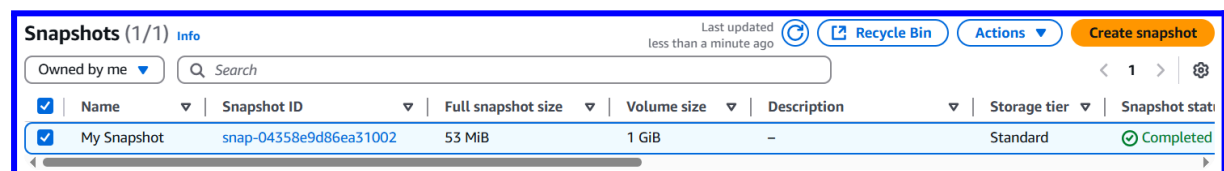
Value - optional: My Snapshot

Add tag

You can add 49 more tags.

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

Your snapshot is displayed. The status will first have a state of *Pending*, which means that the snapshot is being created. It will then change to a state of *Completed*.



Snapshots (1/1) Info

Owned by me

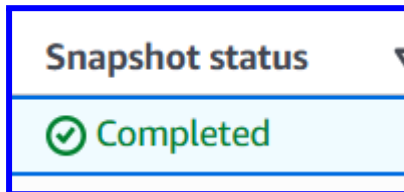
Search

	Name	Snapshot ID	Full snapshot size	Volume size	Description	Storage tier	Snapshot status
<input checked="" type="checkbox"/>	My Snapshot	snap-04358e9d86ea31002	53 MiB	1 GiB	-	Standard	Completed

Note: Only used storage blocks are copied to snapshots, so empty blocks do not occupy any snapshot storage space.

Estado de la Instantánea:

- La instantánea pasa por un estado Pending mientras se crea y luego cambia a Completed .



Eliminación del Archivo de Prueba:

Para simular una pérdida de datos, se elimina el archivo file.txt del volumen:

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

Se verifica que el archivo ya no existe:

```
ls /mnt/data-store/
```

In your EC2 Instance Connect session, delete the file that you created on your volume.

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

Verify that the file has been deleted.

```
ls /mnt/data-store/
```

Your file has been deleted.

```
[ec2-user@ip-10-1-11-203 ~]$ sudo rm /mnt/data-store/file.txt
[ec2-user@ip-10-1-11-203 ~]$ sudo rm /mnt/data-store/file.txt
rm: cannot remove '/mnt/data-store/file.txt': No such file or directory
[ec2-user@ip-10-1-11-203 ~]$
```

Paso 6: Restauración de la Instantánea

Es posible restaurar una instantánea en un nuevo volumen para recuperar datos o crear copias de un volumen existente.

Procedimiento:

Create a Volume Using Your Snapshot

32. In the **EC2 console**, select **My Snapshot**.

33. In the **Actions** menu, select **Create volume from snapshot**.

34. For **Availability Zone**, select the same availability zone that you used earlier.

35. Choose **Add tag** then configure:

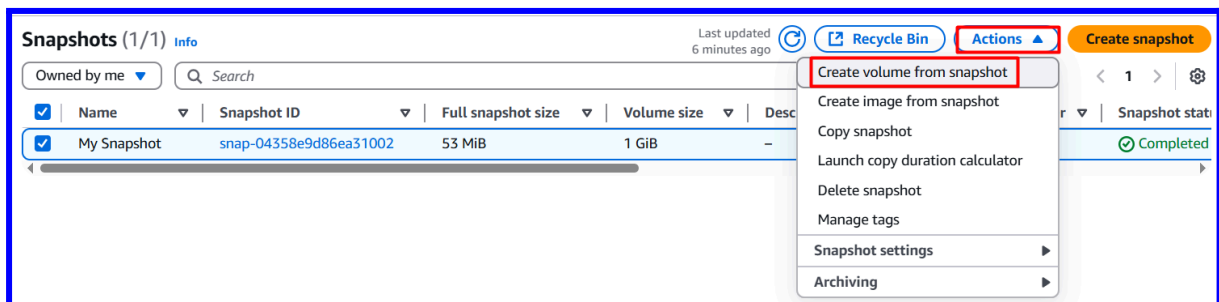
- **Key:** Name
- **Value:** Restored Volume
- Choose **Create volume**

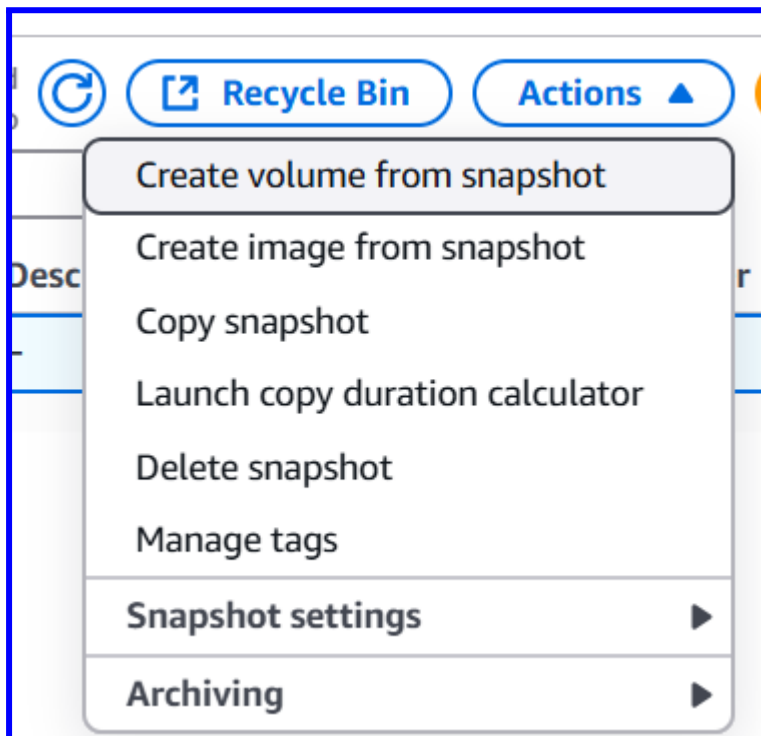
36. **Note:** When restoring a snapshot to a new volume, you can also modify the configuration, such as changing the volume type, size or Availability Zone.

Creación de un Nuevo Volumen:

En la consola EC2, se selecciona la instantánea My Snapshot.

Desde el menú Actions , se elige Create volume from snapshot .





Se configuran los siguientes parámetros:

Availability Zone: Misma zona que la instancia EC2.

Etiqueta:

Key: Name

Value: Restored Volume.

Create volume [Info](#)

Create an Amazon EBS volume to attach to any EC2 instance in the same Availability Zone.

Volume settings

Snapshot ID

 snap-04358e9d86ea31002 (My Snapshot)

Volume type [Info](#)

General Purpose SSD (gp3) ▼

Size (GiB) [Info](#)

1

Min: 1 GiB, Max: 16384 GiB.

IOPS [Info](#)

3000

Min: 3000 IOPS, Max: 16000 IOPS

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 Name X

Value - optional

Q Restored Volume X

Remove


Add tag

You can add 49 more tags.

Choose **Add tag** then configure:

- **Key:** Name
- **Value:** Restored Volume
- Choose **Create volume**

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

Volumes (4) Info									
Last updated less than a minute ago  Actions									
Saved filter sets Choose filter set <input type="text" value="Search"/>									
<input type="checkbox"/>	Name ▼	Volume ID ▼	Type ▼	Size ▼	IOPS ▼	Throughput ▼	Snapshot ID ▼		
<input type="checkbox"/>	-	vol-0afd3e516143fb210	gp3	8 GiB	3000	125	snap-0c45868...		
<input type="checkbox"/>	Restored Volu...	vol-05f8e3b72f285a2e2	gp3	1 GiB	3000	125	snap-04358e9...		
<input type="checkbox"/>	My Volume	vol-0c0d06ed68c2c136b	gp2	1 GiB	100	-	-		
<input type="checkbox"/>	-	vol-0a88dbc264a6e6c56	gp3	9 GiB	3000	125	snap-0c45868...		

Attach the Restored Volume to Your EC2 Instance

36. In the left navigation pane, choose **Volumes**.

37. Select **Restored Volume**.

38. In the **Actions** menu, select **Attach volume**.

39. Choose the **Instance** field, then select the **Lab** instance that appears.

Note that the **Device** field is set to `/dev/sdg`. You will use this device identifier in a later task.

40. Choose **Attach volume**

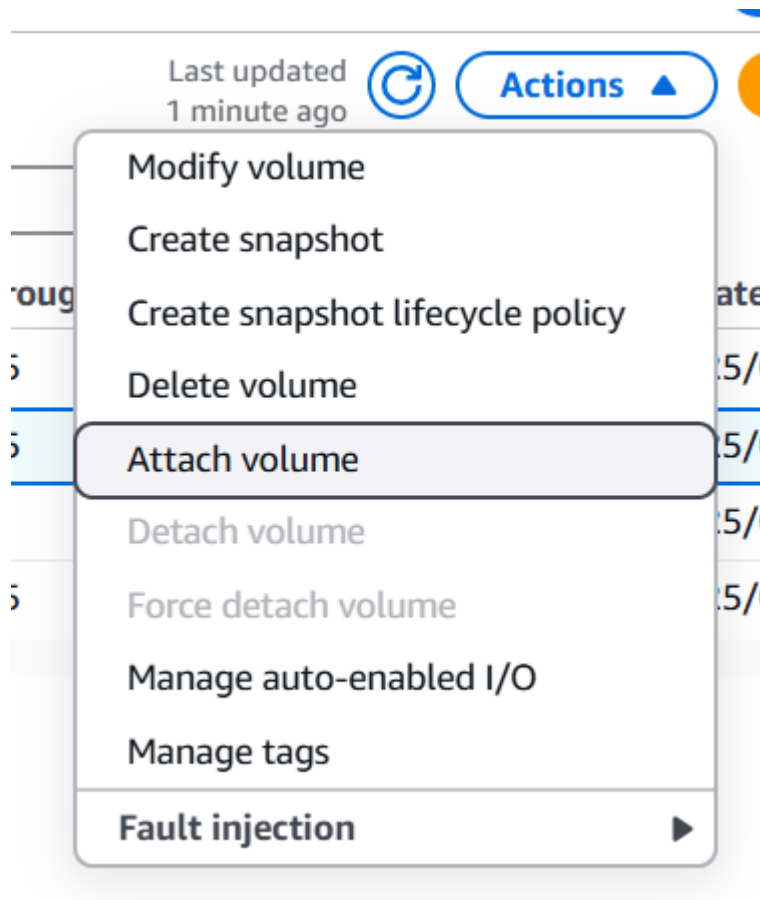
The volume state is now *in-use*.

Adjuntar el Volumen Restaurado:

Se adjunta el nuevo volumen (Restored Volume) a la instancia EC2.

The screenshot shows the AWS Management Console 'Volumes' page. At the top, it says 'Volumes (1/4)' with an 'Info' link. Below this is a 'Saved filter sets' section with a 'Choose filter set' dropdown and a search bar. The main part of the page is a table of volumes. The table has columns: Name, Volume ID, Type, Size, IOPS, and Throughput. There are four rows of volumes. The second row, 'Restored Volu...', is selected. To the right of the table is an 'Actions' menu with a list of options: Modify volume, Create snapshot, Create snapshot lifecycle policy, Delete volume, Attach volume (highlighted), Detach volume, Force detach volume, Manage auto-enabled I/O, Manage tags, and Fault injection. The 'Attach volume' option is highlighted in the menu.

Name	Volume ID	Type	Size	IOPS	Throughput
-	vol-0afd3e516143fb210	gp3	8 GiB	3000	125
Restored Volu...	vol-05f8e3b72f285a2e2	gp3	1 GiB	3000	125
My Volume	vol-0c0d06ed68c2c136b	gp2	1 GiB	100	-
-	vol-0a88dbc264a6e6c56	gp3	9 GiB	3000	125



Se especifica el nombre del dispositivo (/dev/sdg).

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-05f8e3b72f285a2e2 (Restored Volume)

Availability Zone

us-east-1a

Instance [Info](#)

i-06a204e20dd7d1abf
(Lab) (running)




Only instances in the same Availability Zone as the selected volume are displayed.

Device name [Info](#)

/dev/sdg

Recommended device names for Linux: /dev/xvda 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**.

Availability Zone

us-east-1a

Instance [Info](#)

i-06a204e20dd7d1abf
(Lab) (running)



Only instances in the same Availability Zone as the selected volume are displayed.

Device name [Info](#)

/dev/sdg

Recommended device names for Linux: /dev/xvda for root volume. /dev/sd[f-p] for data volumes.

✔ Successfully attached volume vol-05f8e3b72f285a2e2 to instance i-06a204e20dd7d1abf.

Mount the Restored Volume

41. Create a directory for mounting the new storage volume:
42. `sudo mkdir /mnt/data-store2`
- 43.
44. Mount the new volume:
45. `sudo mount /dev/sdg /mnt/data-store2`
- 46.
47. Verify that volume you mounted has the file that you created earlier.
48. `ls /mnt/data-store2/`
49. You should see file.txt.

Montaje del Volumen Restaurado:

Se crea un directorio para montar el volumen

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

Se monta el volumen:

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

Verificación de Datos:

```
ls /mnt/data-store2/
```

```
[ec2-user@ip-10-1-11-203 ~]$ sudo mkdir /mnt/data-store2
[ec2-user@ip-10-1-11-203 ~]$ sudo mount /dev/sdg /mnt/data-store2
[ec2-user@ip-10-1-11-203 ~]$ ls /mnt/data-store2/
file.txt  lost+found
[ec2-user@ip-10-1-11-203 ~]$ cat /mnt/data-store2/file.txt
some text has been written
```

Aspectos destacados

Error → Solución

Está bien explicado y muy bien guiado.

Conclusión

En esta actividad, se completaron exitosamente los siguientes objetivos:

1. Creación y configuración de un volumen EBS.
2. Adjuntar el volumen a una instancia EC2 y configurar un sistema de archivos.
3. Creación de una instantánea para respaldar los datos.
4. Restauración de la instantánea en un nuevo volumen y verificación de la integridad de los datos.

Estos pasos demuestran cómo utilizar Amazon EBS para almacenamiento persistente, respaldo y recuperación de datos en entornos cloud.

Submit del lab

Submit

Submission Report

Grades

Total score

25/25

Task 1 - Create EBS volume

5/5

Task 2 - Attach volume

5/5

Task 4 - Volume mounted

5/5

Task 5 - Snapshot created

5/5

Task 6 - Snapshot restored

5/5