Try it out objective

Use this hands-on to get started with elastic block storage, which are volumes that are attached to EC2 instances. These “disks” store application data, can be root volumes for the OS etc. For instance, it is normal to have multiple volumes/disks attached to an EC2 instance running a database server.

The goal

The following are the goals of this hands-on:

1. Working with volumes
2. Create, attach, use and detach volumes
3. Increase storage capacity
4. Upgrade media type
5. Snapshot volumes
6. Cleaning up all the resources

This hands-on is applicable for those who are from technical operations (or development) background only and are familiar with basic Linux commands.

Please note if a field (short for text field/text area/checkbox/radio/dropdown/list or any other UI element) is not specified in the following steps, it means the default value of the field set by AWS needs to be used. No change is needed for those fields as part of this hands-on.

A. Hands-On: Setup one EC2 instance

1. Open the EC2 management console at https://console.aws.amazon.com/ec2/ (you will be required to sign in)
2. Ensure the region is **N Virginia**
3. Follow the steps detailed in the earlier "Try it out" exercises to setup **one EC2 instance** in the default VPC and subnet **us-east-1a** (subnet selection is very important)

B. Hands-on: Create a new volume

1. Go to the EC2 management console at https://console.aws.amazon.com/ec2/
2. Ensure the region is **N Virginia**
3. In the left navigation, under Elastic Block Storage, choose **Volumes**
4. Click on the **Create volume** button (right side top of the screen)
5. Under the **Volume settings** card, make the following changes -
    a) Click on the **Volume type** dropdown select **Magnetic** (Standard)
    b) Type in **10** GiB for the **Size** field
    c) Click on the **Availability Zone** dropdown and select **us-east-1a** (same as that of the EC2 instance)
6. Under the Tags card, use the following settings -
    a) Click on the **Add tag** button
    b) Paste the following value for the **Key** field (case sensitive)

Name

c) Paste the following value for the **Value** field

```
data-disk
```

7. Click on **Create volume** button

8. The status of the disk in the disk listing screen will show **Creating**. It will change to **Available in 30seconds** (can get done sooner). Refresh the page if the status does not change in 30 seconds.

C. Hands-on: Attach the new volume to the instance

1. Ensure the volume status is Available and click on the **checkbox** to the **left** of the disk with the name **data-disk**
2. Click on the **Actions dropdown** menu (right side top of the screen) and select **Attach volume**
3. Select the EC2 instance from the **Instance dropdown**
4. Click on Attach volume button
5. The status of the disk in the disk listing screen will show **In-use**

D. Hands-on: Use the new volume

1. In the left navigation click on **Instances** under the **Instances section** to see the EC2 instance listing
2. Click on the **checkbox** to the left of the EC2 instance
3. Click on the **Connect** button to the right top of the screen
4. Follow the steps to SSH in the instance based on steps detailed in "**Hands-on: SSH to an instance**" in an earlier exercise.
5. Run the following commands one at a time in the terminal window

Important note - please copy each command properly. A typical mistake is to not select the first and the last few characters leading to errors. All commands are case sensitive and observe the spaces carefully between the command and the respective arguments. It is best to copy/paste these commands.

a) Change to super user

```
sudo su
```

b) To view your available disk devices and their mount points (if applicable) to help you determine the correct device name to use. Notice the 10G disk is being listed without any mount point

```
lsblk
```

c) Determine whether there is a file system on the volume. New volumes are raw block devices, and you must create a file system on them before you can mount and use them. The output will be **data** which it is a **raw** volume.

```
file -s /dev/xvdf
```

d) Create the file system on the volume

```
mkfs -t ext4 /dev/xvdf
```

e) Mount the volume to the specific mount point appdata. The following three commands need to be executed one after the other. Observe the mount point as appdata when the last command (of the 3 below) is executed.

```
mkdir /appdata

mount /dev/xvdf /appdata

lsblk
```

f) Create a sample file in the volume and list the contents using the two commands below. Execute them one after the other. The double quote used in the command below may cause a problem (while copy/pasting), type the double quotes if needed after pasting the command.

```
echo "This is a sample database file getting created in the volume. Obviously DB files are not text files." > /appdata/datafile.db

ls -al /appdata
```

g) Keep this terminal window open

E. Hands-On: Upgrading the media type and increase the size

1. Go back to the browser tab EC2 management console
2. In the left navigation, under **Elastic Block Storage**, choose **Volumes**
3. Click on the **checkbox** to the **left** of the disk with the name **data-disk**
4. Click on the **Actions dropdown** menu (right side top of the screen) and select **Modify volume**
5. In the **Volume type** dropdown change the value to **General purpose SSD (gp2)**
6. Change the **Size** text field to **15**

7. Click on the **Modify** button and in the popup click on the **Modify** button again
8. The disk status will show **In-use - modifying**
9. The modification will take about 5 minutes (can get done sooner). The status will change back to In-use. Refresh the page every 30 seconds.

F. Hands-On: Verifying the upgrade

1. Go back to the the terminal window, if this window is frozen then open a new terminal.
2. Run the following commands one at a time in the terminal window

Important note - please copy each command properly. A typical mistake is to not select the first and the last few characters leading to errors. All commands are case sensitive and observe the spaces carefully between the command and the respective arguments. It is best to copy/paste these commands.

a) Change to super user

```
sudo su
```

b) To view your available disk devices and their mount points (if applicable) to help you determine the correct device name to use. Notice the 15G disk is being listed with appdata as the mount point

```
lsblk
```

c) Check the simulated database file has been migrated from the magnetic disk to the new SSD

```
ls -al /appdata
```

d) Unmount the volume. This should be done before detaching the volume from the instance (this command will not give any output)

```
umount /appdata
```

3. Close the terminal window by closing the browser tab

G. Hands-On: Cleaning up!

1. Go back to the browser tab EC2 management console

2. Select the volume by **clicking on the checkbox** to the left, click the **Actions** and select **Detach volume** and in the popup click the **Detach** button. Refresh the volume listing a couple of times to see the status as **Available**

3. Delete the volume that was created as part of this hands-on (**Actions** dropdown and select **Delete volume**)

4. Terminate the EC2 instance