1. **Create and configure storage services using Amazon EBS**

**Amazon EBS (Elastic Block Store):** Amazon EBS is a **high-performance block storage service** designed for use with EC2 instances. It provides **persistent storage** for virtual machines, meaning data remains available even after the instance is stopped or terminated. EBS volumes can be attached to EC2 instances and support features like snapshots, encryption, and scalability. Scale Up and Scale Down.

**Scale Up /Scale Down (Vertical Scaling):**

Definition: Scale up, also known as vertical scaling, involves increasing the resources (such as **CPU, RAM, or disk space**) of an existing single server or virtual machine to handle increased workload or performance requirements.

EBS Equivalent: increasing the **size or performance** specifications of an existing EBS volume

**Procedure: increasing/decreasing of CPU and RAM**

**Step 1**. - Navigate to the EC2 dashboard.

**Step 2**. - Stop the EC2 instance associated with the EBS volume.

**Step 3**. - Click "Actions" and then—instance settings—change the instance type"Modify Volume".

**Step 4**. -Increase/ decrease the size or change the volume type to a higher performance specification.

**Step 5**. - Click "Modify" to apply the changes.

**Step 6**: Now the start the machine you see with increase /decrease of size and performance

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**Attaching and Detaching Volumes with in same region of EC2**

**Step 1**. **Launching an Instance with Additional Volumes**:

- Start by launching an instance from the EC2 dashboard. Choose your desired AMI (Amazon Machine Image), instance type, and other configurations.

- In the "Add Storage" step, you can add additional volumes. Specify the size and other attributes for these volumes.

**Step 2. Detaching a Volume from an Instance**:

- Navigate to the EC2 and select "Volumes" under EBS section from the left-hand menu.

- Locate the volume you want to detach from the instance.

- Select the volume, then choose "Actions" -> "Detach Volume".

- Confirm the detachment by clicking "Yes, Detach".

**Step 3. Attaching a Volume to Another Instance**:

- After detaching the volume, it will become available.

- Select the detached volume from the Volumes list.

- Choose "Actions" -> "Attach Volume".

- Select the instance you want to attach the volume to

- specify the device name (e.g., /dev/sdf), and then click "Attach".

- Once attached, the volume will appear as an additional disk on the chosen instance.

# Step 4: Attach and Mount EBS Volume to Linux EC2

**Attach the volume** via AWS Console.

* **Connect to EC2** via SSH.
* **Check available disks** (lsblk).

**Here you see root volume and attached (eg:-xvdf)**

* **Create a mount point** (mkdir /mnt/ebs-volume).
* **Format the volume** (mkfs -t ext4 /dev/xvdf).
  + - **Mount the volume** (mount /dev/xvdf /mnt/ebs-volume).
    - **Check the mounted voulem (dh –h)**

**Task: Resize the volume and mount it**

**Attaching Volumes across regions of EC2 using the snapshot**

To create a snapshot of an EBS volume and attach it to an instance in another region in AWS, you'll need to follow these steps:

**Step 1. Create a Snapshot**:

a. Sign in to the AWS Management Console.

b. Navigate to the EC2 Dashboard.

c. Click on "Volumes" in the left-hand navigation pane.

d. Select the EBS volume you want to create a snapshot of.

e. Click on the "Actions" dropdown menu above the volume list and select "Create Snapshot."

f. Provide a name and description for the snapshot.

g. Click on the "Create Snapshot" button to initiate the snapshot creation process.

**Step 2.** **Copy the Snapshot to Another Region**:

a. Once the snapshot is created, go to the "Snapshots" section in the EC2 Dashboard.

b. Select the snapshot you just created.

c. Click on the "Actions" dropdown menu above the snapshot list and select "Copy Snapshot."

d. Choose the destination region where you want to copy the snapshot.

e. Click on the "Copy Snapshot" button to initiate the copy process. This may take some time depending on the size of the snapshot and the network speed.

**Step 3. Monitor the Snapshot Copy Progress:**

a. You can monitor the progress of the snapshot copy by navigating to the "Snapshots" section in the EC2 Dashboard of the source region.

b. Look for the snapshot you copied and check its status. It will change from "pending" to "completed" once the copy process is finished.

**Step 4.** **Switch to the Destination Region**:

1. Use the region selector in the top-right corner of the AWS Management Console to switch to the destination region where you copied the snapshot.

**Step 5. Create a Volume from the Snapshot**:

a. In the EC2 Dashboard of the destination region, go to the "Snapshots" section.

b. Find the snapshot you copied from the source region.

c. Click on the snapshot, then click on the "Actions" dropdown menu and select "Create Volume."

d. Configure the volume settings, such as volume type, size, and availability zone.

e. Click on the "Create Volume" button to create the volume from the snapshot.

**Step 6**. **Attach the Volume to an Instance**:

a. Once the volume is created, navigate to the "Volumes" section in the EC2 Dashboard.

b. Find the newly created volume and select it.

c. Click on the "Actions" dropdown menu and select "Attach Volume."

d. Choose the EC2 instance to which you want to attach the volume and specify the device name.

e. Click on the "Attach" button to attach the volume to the instance.

We have created a snapshot of an EBS volume, copied it to another region, created a volume from the snapshot, and attached it to an instance in the destination region.