Exercise 1 - Managing Disk Partitions

Logic chunks on a physical hard disk are known as *disk partitions* or *disk volumes*.

By default, a hard disk has only **one partition**.

For example, if you need to install two distinct operating systems on one hard disk, such as Windows and a non-Windows operating system, you can utilize disk partitioning. As a result, each operating system will be installed on its own partition. This can also be done with Individual needs with partitions.

Disk Management is a graphical user interface (GUI) utility in *Windows 11* that allows you to manage and create partitions on your hard drives. To create new partitions or volumes, the disk must have unallocated or free space.

In this exercise, we will cover how to created, deleted, extended, shrunk, and formatted the Disk partitions.

You'll also learn about basic and dynamic disks, which are two types of storage. For data redundancy, you'll create a mirrored volume, a spanned volume, and a striped volume on an existing drive.

Prerequisite

- *Windows 11*
- *VMware Workstation 16 Pro*

Task 1: Shrink a Disk Volume

The shrink volume feature in Windows allows you to lower the size of a primary partition or logical drive. This is true for a PC with only one physical hard drive and no unallocated partitions. *Windows shrinks* the volume size to fit into nearby hard disk space.

In this task, we will use the shrink volume to create an unallocated partition with the *Disk Management* tool.

Step 1:

Note: Ensure your windows 11 is compatible with your devices.

Right-click the **Start** icon and select **Disk Management**

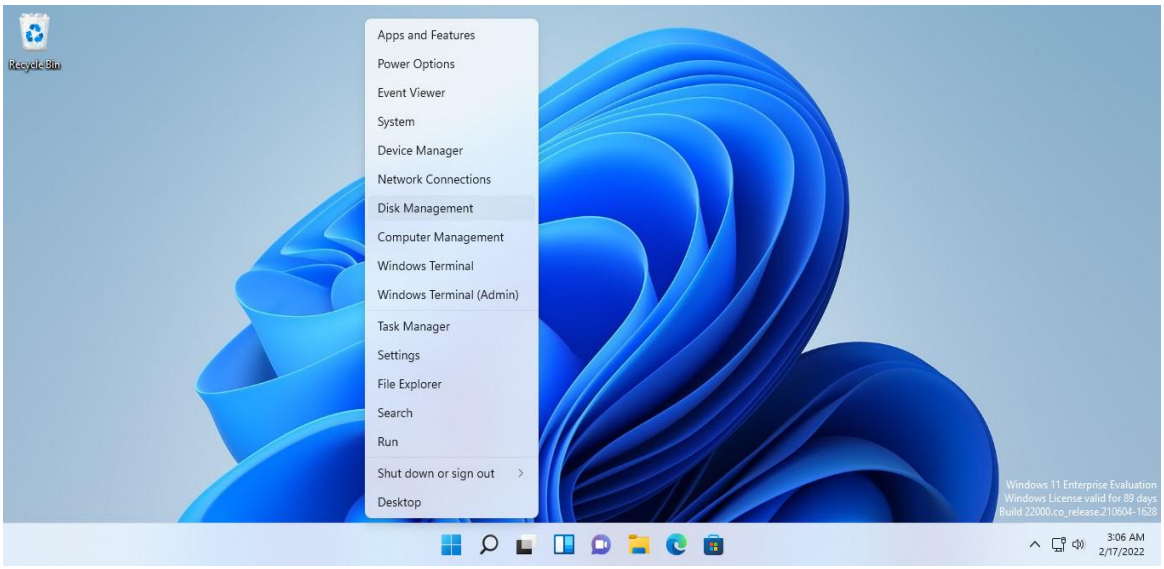

Figure 1 Capture Screen of NETWORKTUTEWIN11PC. Task 1 - Step 1

Step 2:

The **Disk Management** Window will be appeared.

We will shrink the volume in **Disk 0**.

Right-click Partition **(C:)** and select **Shrink Volume.**

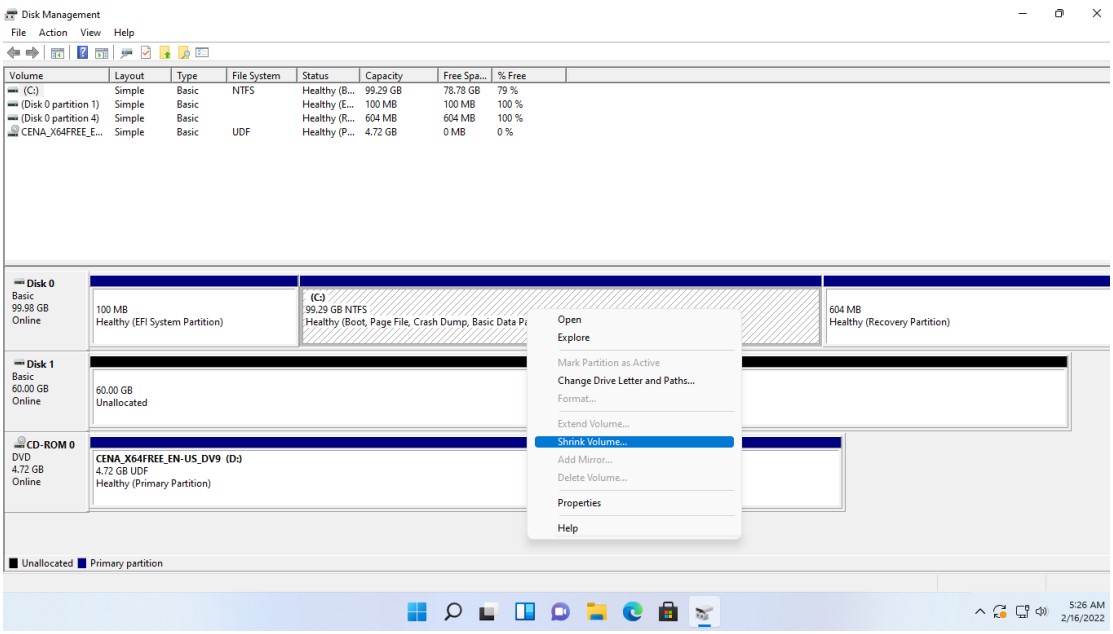

Figure 2 Capture Screen of NETWORKTUTEWIN11PC. Task 1 - Step 2

Step 3:

Please wait until Querying volume for available shrink space finishes.

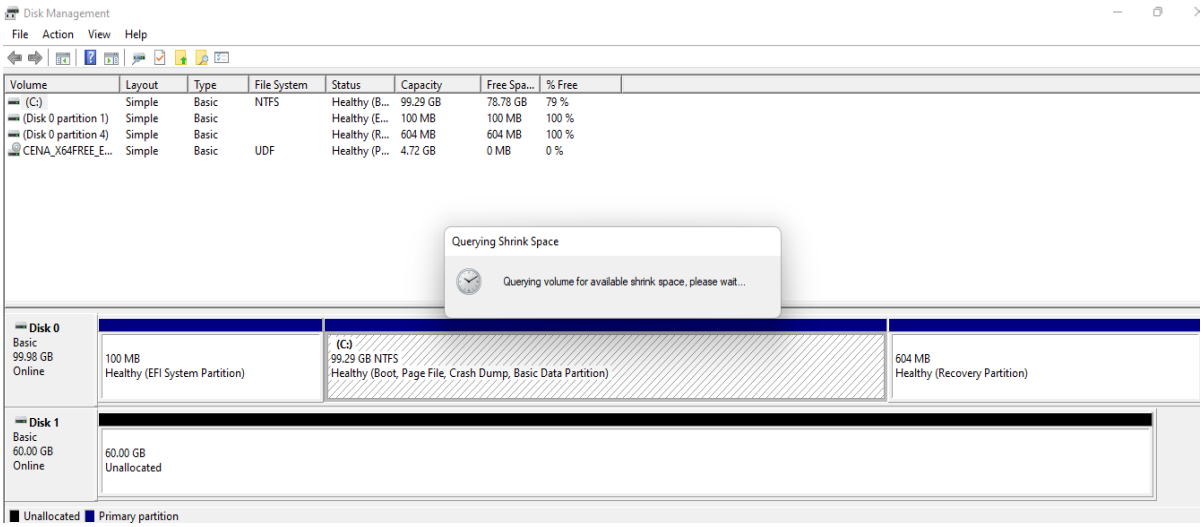

Figure 3 Capture Screen of NETWORKTUTEWIN11PC. Task 1 - Step 3

Step 4:

On the **Shrink C:** dialog box, Enter the amount of space of shrink in MB

Right now, let's type-over this value with the following:

15360

Click **Shrink**.

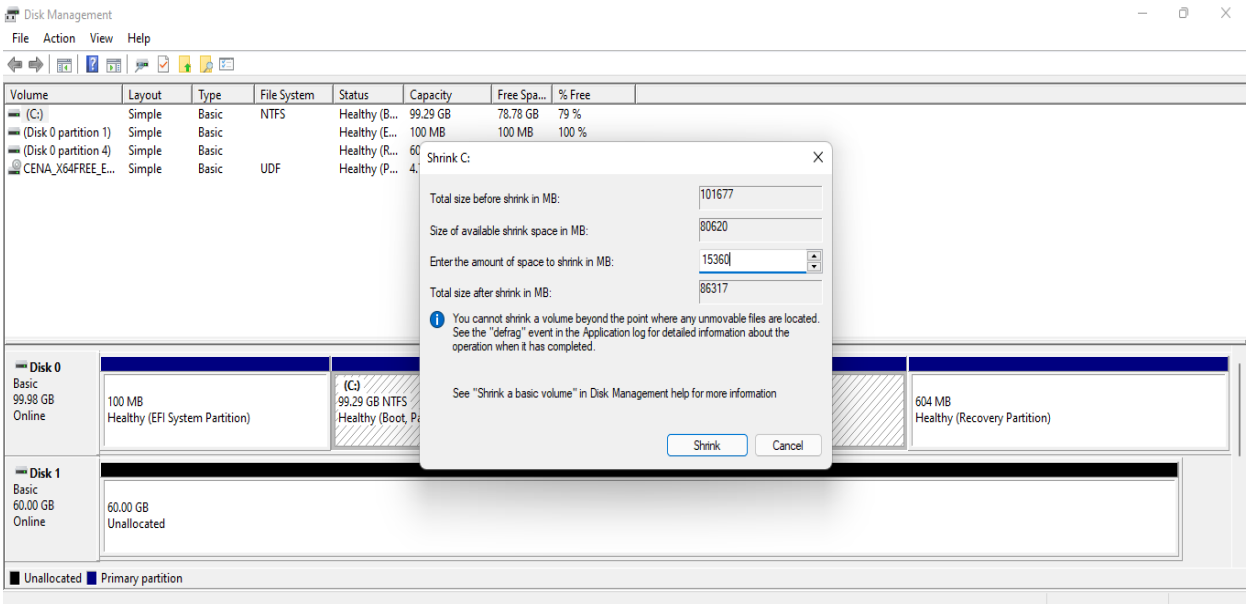

Figure 4 Capture Screen of NETWORKTUTEWIN11PC. Task 1 - Step 4

Step 5:

After a few moments, you can notice that unallocated partition of **15.00 GB** in **Disk 0** appears.

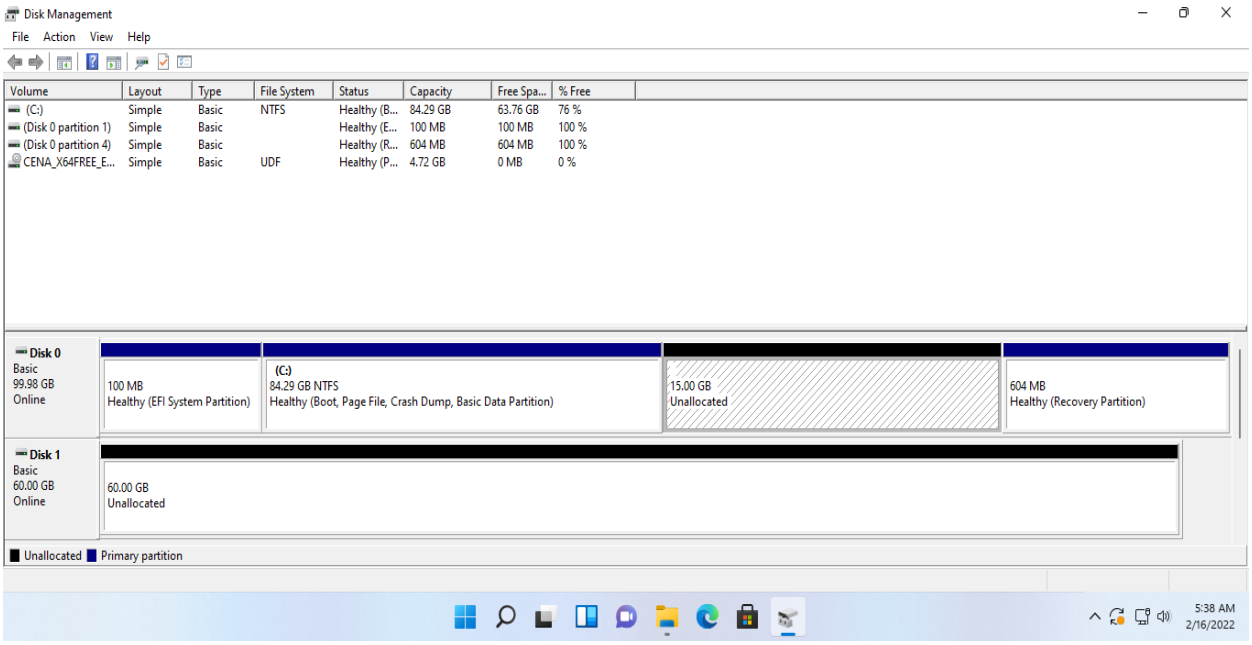

Figure 5 Capture Screen of NETWORKTUTEWIN11PC. Task 1 - Step 5

Task 2: Create and Format a Partition

A bootable partition is one that may be used to start the operating system. The active partition is used to start the computer. On the hard disk, there can only be one active partition at a time.

In this task, we will use Disk Management to create a new volume out of the unallocated partition on Disk 0.

Step 1:

Ensure Disk Management application open.

On **Disk 0**, right-click the **15.00 GB Unallocated** partition and select **New Simple Volume**

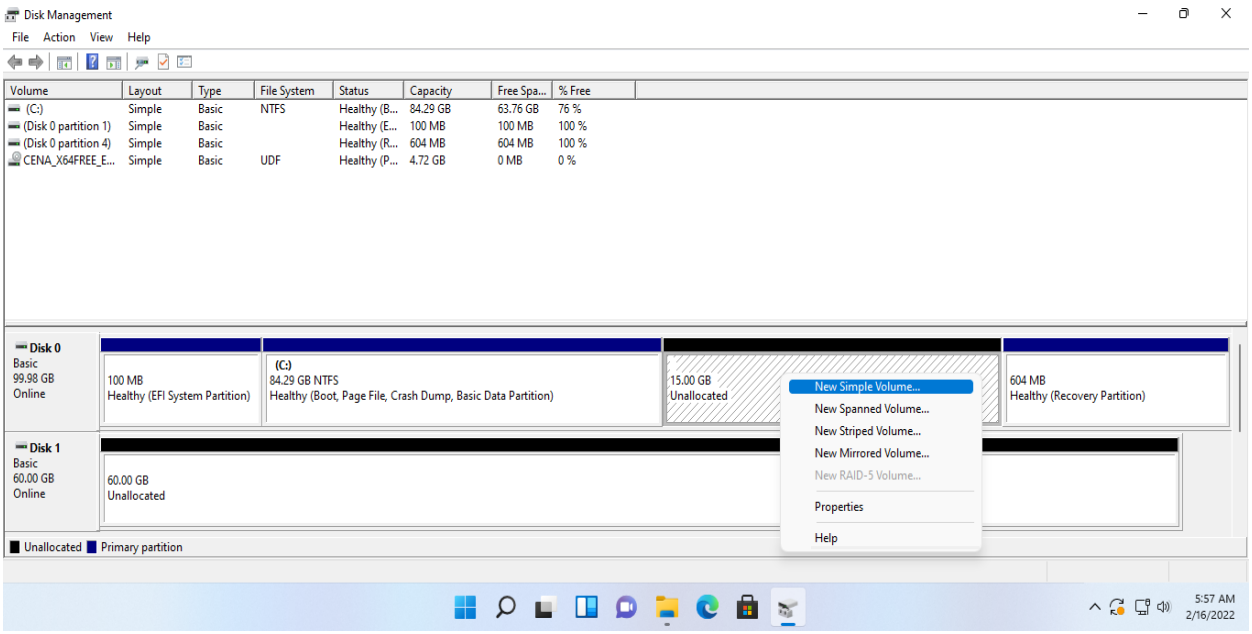

Figure 6 Capture Screen of NETWORKTUTEWIN11PC. Task 2 - Step 1

Step 2:

On the **New Simple Volume** Wizard welcome page, click Next

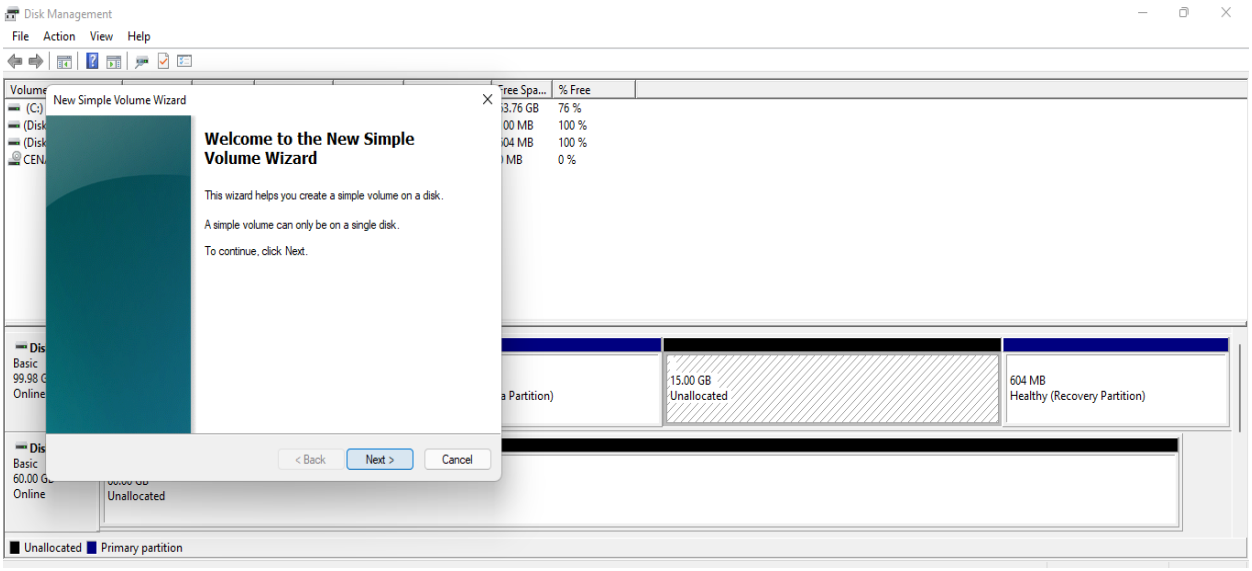

Figure 7 Capture Screen of NETWORKTUTEWIN11PC. Task 2 - Step 2

Step 3:

On the **Specify Volume Size page,** you can notice that volume size can be changed in MB size.

Right now, let's type-over this value in the “Simple Volume Size in MB”:

2048

Click **Next**.

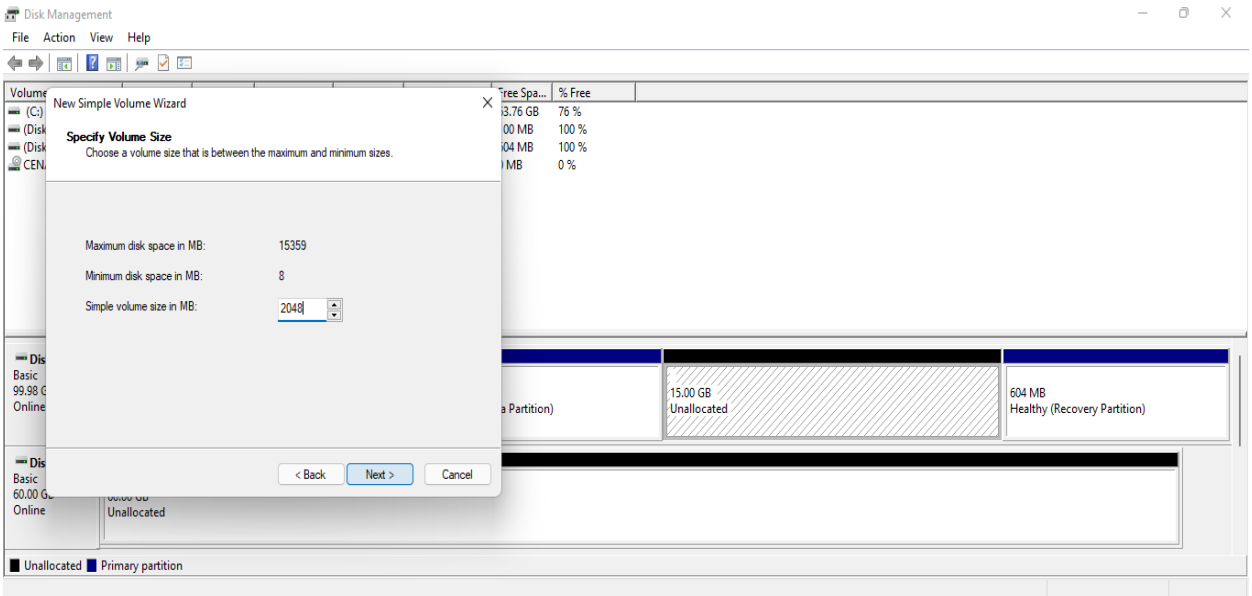

Figure 8 Capture Screen of NETWORKTUTEWIN11PC. Task 2 - Step 3

Step 4:

On the **Assign Drive Letter or Path** page, ensure the **E** drive letter has been selected and click **Next**.

> **Note:** If the E drive letter isn't available for any reason, it means the **E** drive letter is already in use by another partition. If this happens, leave the default letter that shows up and click **Next**.

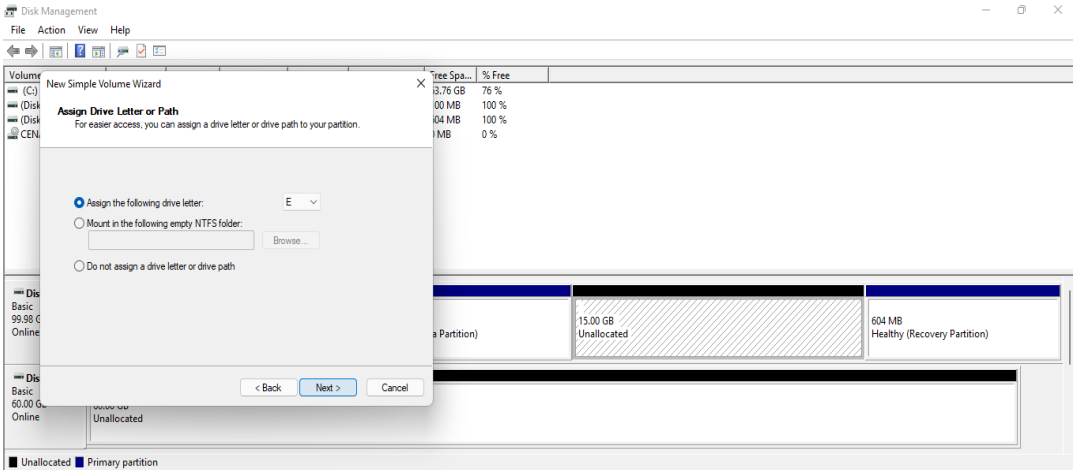

Figure 9 Capture Screen of NETWORKTUTEWIN11PC. Task 2 - Step 4

Step 5:

On the **Format Partition** page, keep the default settings and click **Next**.

Notice that the **Volume label** is called New Volume by default. You can change the name of Volume label as per your requirement.

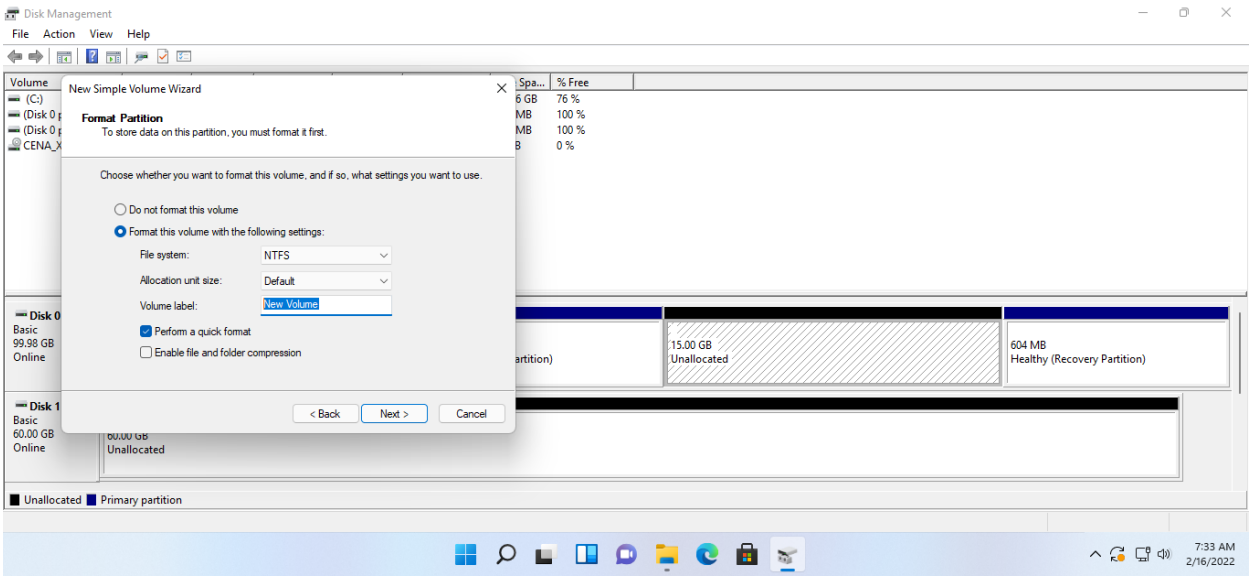

Figure 10 Capture Screen of NETWORKTUTEWIN11PC. Task 2 - Step 5

Step 6:

On **New Simple Volume Wizard - Completing the New Simple Volume Wizard** successfully completes.

Notice that all the **settings** are listed as a summary.

Click **Finish.**

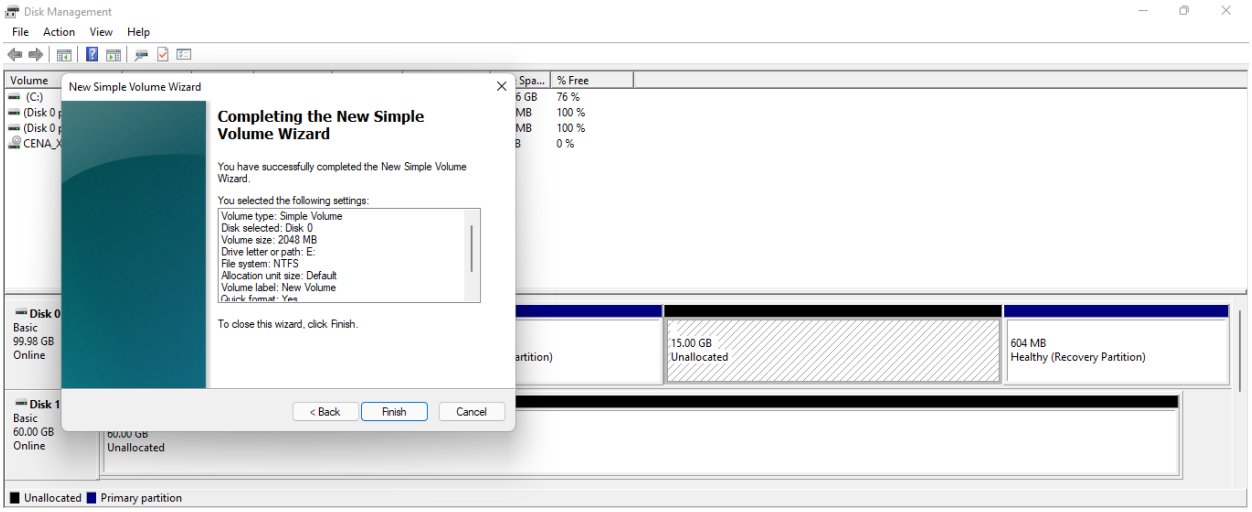

Figure 11 Capture Screen of NETWORKTUTEWIN11PC. Task 2 - Step 6

Step 7:

In case if you get a minimized system, prompt appeared in the Taskbar asking you to format the volume, you can click Cancel as the volume has already been formatted.

Step 8:

While the **Disk Management** application window is open. To verify the new disk volume that was created.

- launch File Explorer.
- On the left pane, Click This PC node.

You can see the New Volume (E:) drive is now available. Notice that the total size of the drive is currently 1.99 GB.

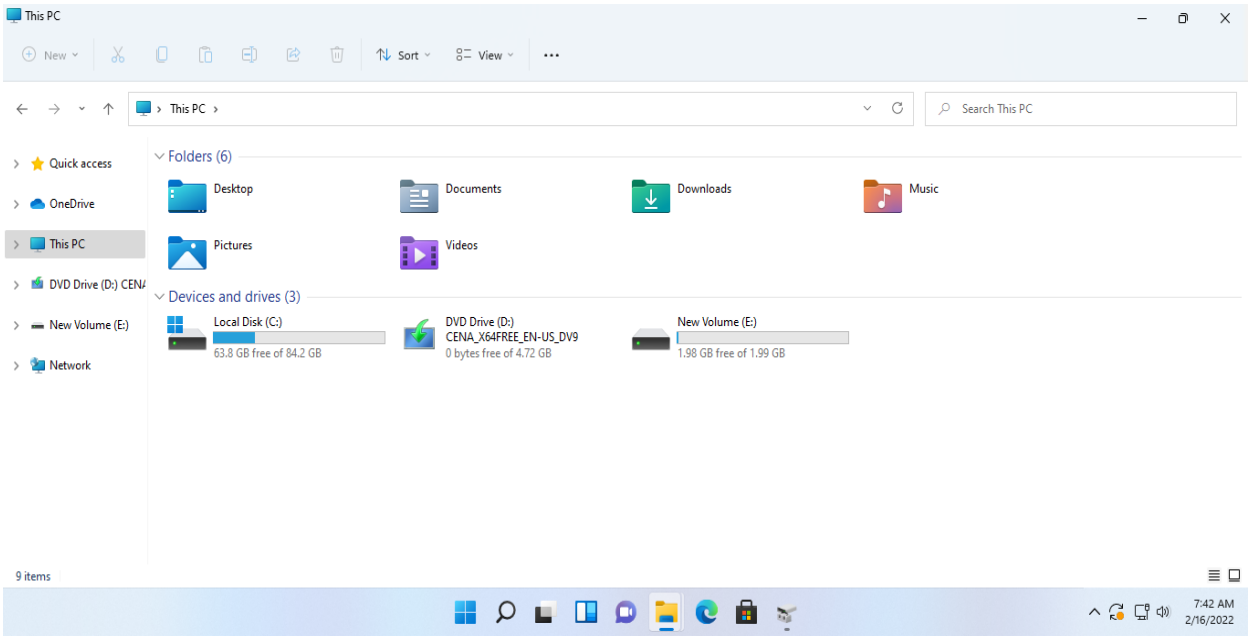

Figure 12 Capture Screen of NETWORKTUTEWIN11PC. Task 2 - Step 8

Task 3: Extend a Volume

In an earlier activity, we reduced disk space from Disk 0 and created a logical volume called E. The extend volume feature in Windows allows you to increase your disk storage space. The extend volume feature requires an unallocated and adjacent partition on the same disk.

In this task, we will extend New Volume (E:) to expand its storage capacity.

Step 1:

Ensure you minimize the File Explorer window and open **Disk Management** application.

On **Disk 0**, right-click **New Volume (E:)** and select **Extend Volume.**

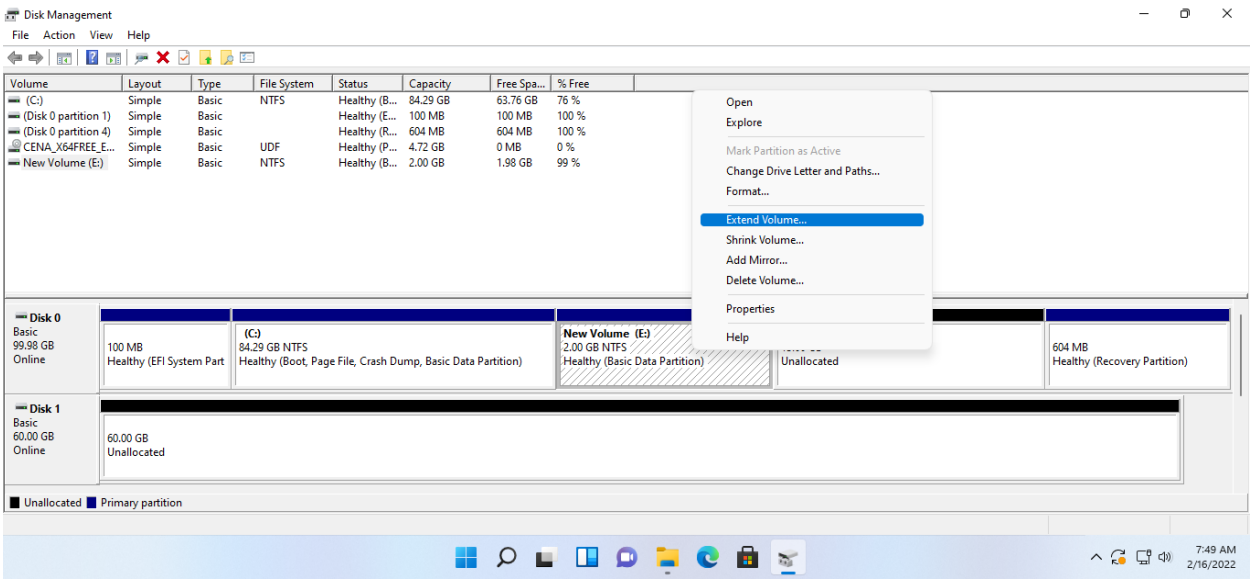

Figure 13 Capture Screen of NETWORKTUTEWIN11PC. Task 3 - Step 1

Step 2:

On the **Extend Volume Wizard - Welcome to the Extend Volume Wizard** page.

click **Next**.

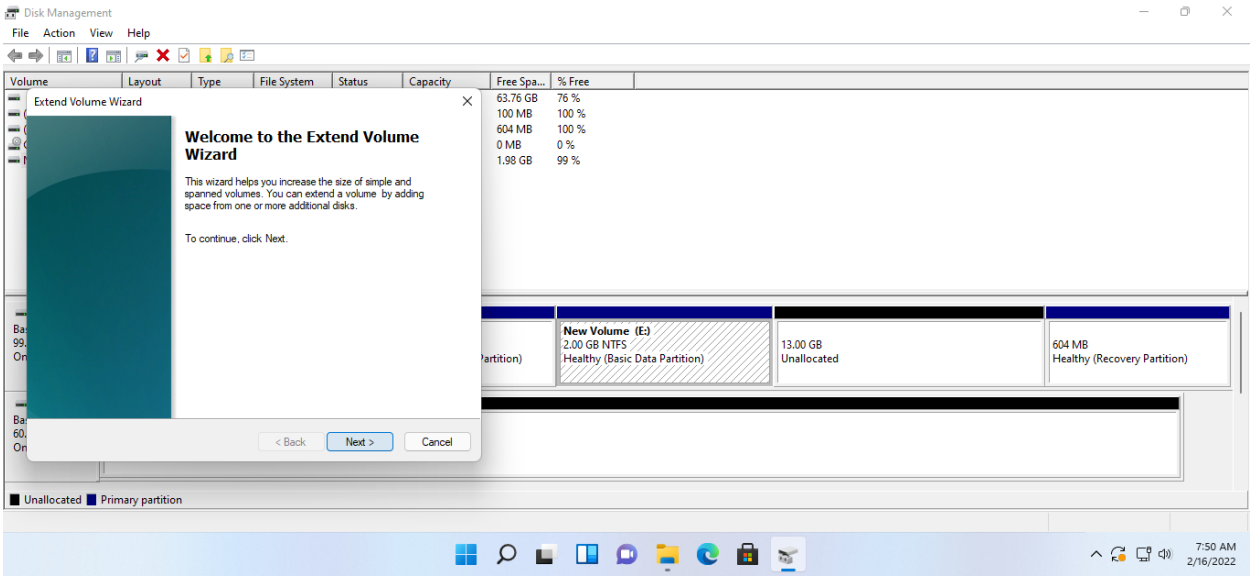

Figure 14 Capture Screen of NETWORKTUTEWIN11PC. Task 3 - Step 2

Step 3:

On the **Select Disks** page, access the **Select the amount of space in MB.**

And **Type,** **3072**

Click **Next**.

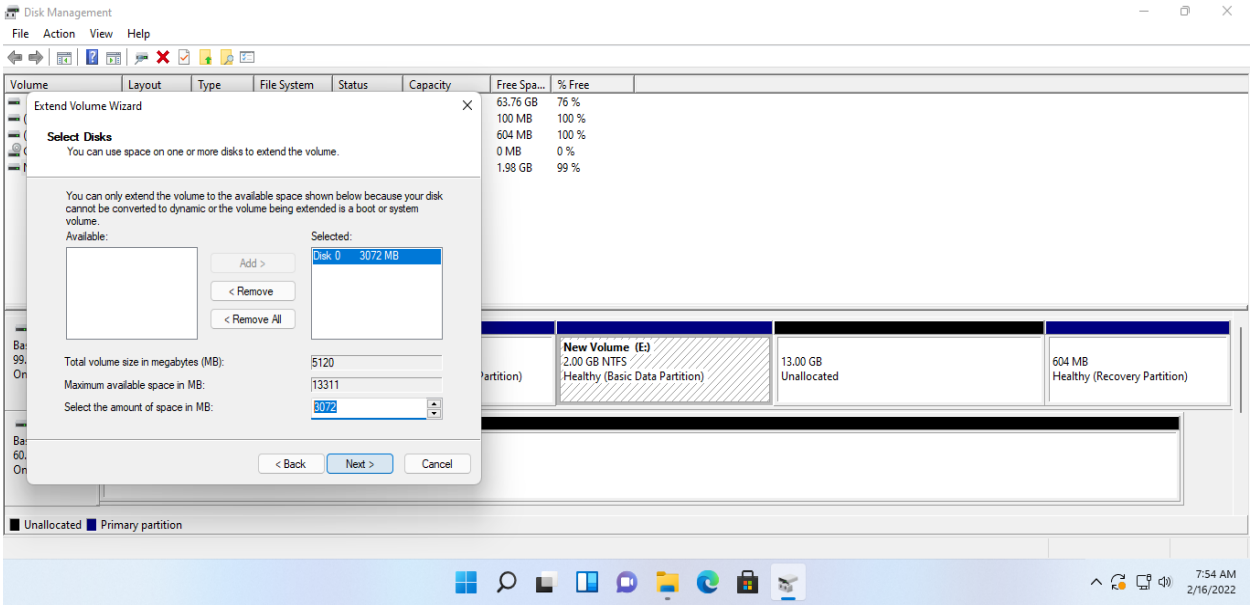

Figure 15Capture Screen of NETWORKTUTEWIN11PC. Task 3 - Step 3

Step 4:

On the **Completing the Extend Volume Wizard** page, click **Finish**.

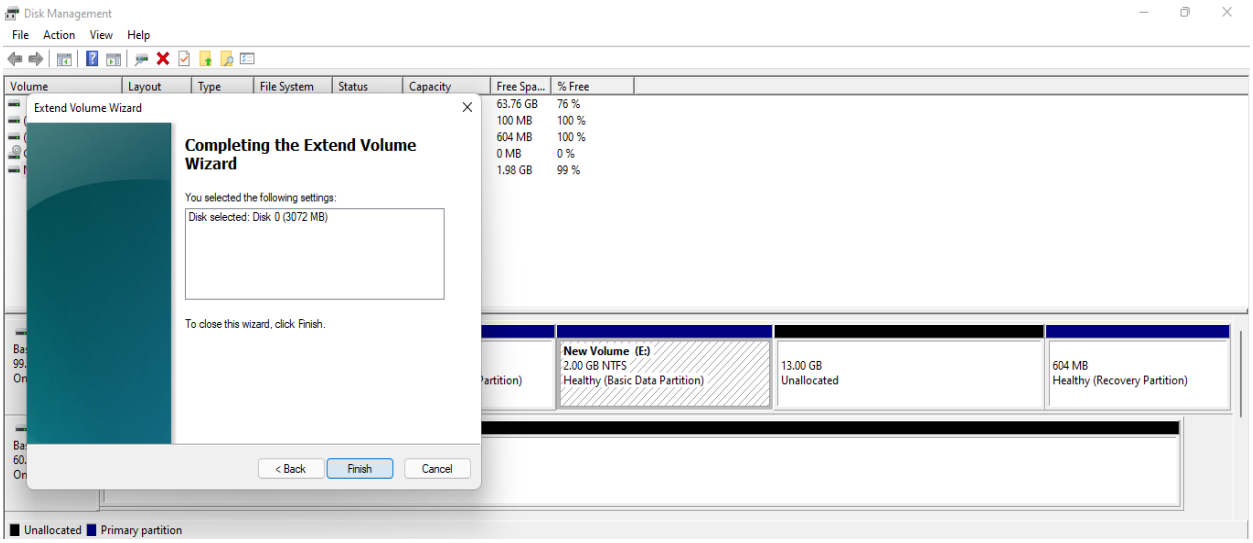

Figure 16 Capture Screen of NETWORKTUTEWIN11PC. Task 3 - Step 4

Step 5:

Get back to the **File Explorer window** from the **Taskbar.**

On the **left pane**, ensure you still have **This PC** selected and Press **F5** to refresh the screen.

As a result, you can see that **New Volume (E:)** has expanded to **4.99 GB** due to the extending volume

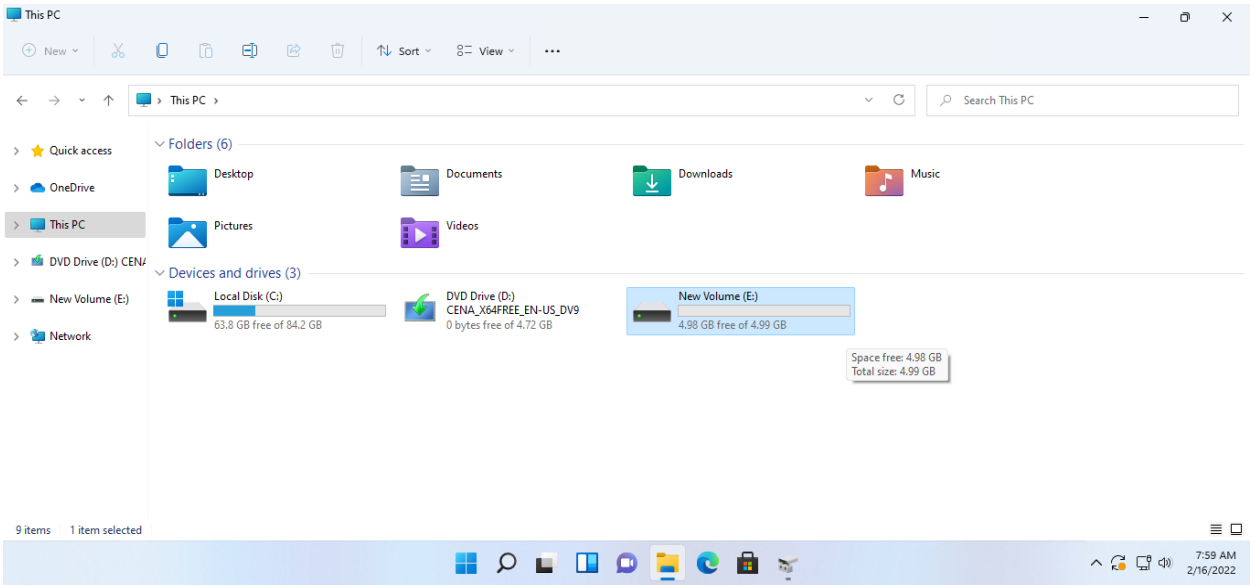

Figure 17Capture Screen of NETWORKTUTEWIN11PC. Task 3 - Step 5

Task 4: Create a Mirrored Volume

The ability of a system to recover lost data in the event of a hardware breakdown is known as fault tolerance. Because Windows offers software-based Redundant Array of Inexpensive Disks, it safeguards against data loss (RAID)

1. RAID 1 (mirrored volume)
2. RAID 5 (stiped volume)

RAID based on software is slower and completely reliant on Windows. To access the RAID volume, you must recover the operating system if it has failed. Dedicated controller cards are used in hardware-based RAID, allowing the disks to run quicker. Its disk configuration is determined by the BIOS of the computer. The state of the disks is shown by the color shift of the Light-Emitting Diode (LED) lights.

Two physical disks, ideally with equal storage capacity, are required for a mirrored volume. The first disk, on the other hand, may have less storage. The storage capacity of the second disk must be greater than that of the first. Data can be recovered from the other disk if one of the mirrored volume's disks fails.

Three physical disks are required for a striped volume. When you build a striped volume, Windows takes the disk with the smallest storage capacity and merges it with the other two disks. If one of the disks in a striped volume fails, data can be recovered from the other two disks.

In this task, we will create a mirrored volume and make a replica of drive E and protect operating system files.

Step 1:

Open the **Disk Management** in your *Windows 11*

On Disk 0, right-click New Volume **(E:)** and select **Add Mirror**

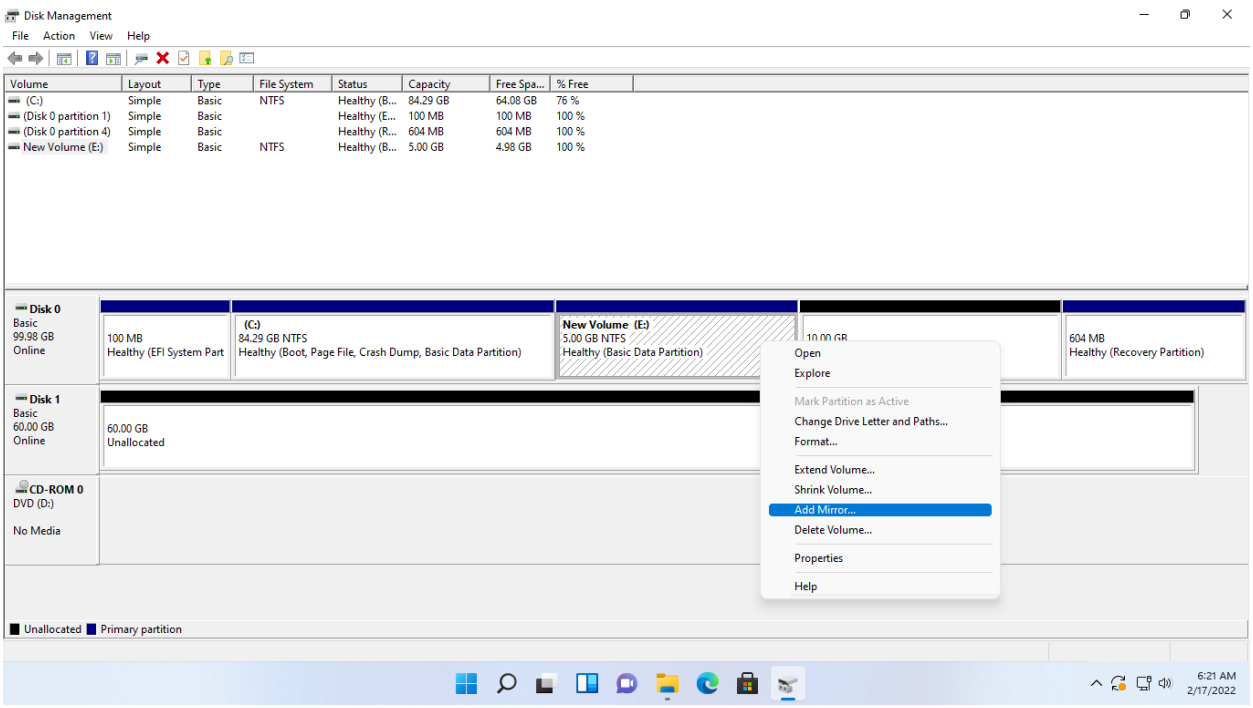

Figure 18 Capture Screen of NETWORKTUTEWIN11PC. Task 4 - Step 1

Step 2:

On the **Add Mirror** dialog box, select **Disk 1** and click **Add Mirror**.

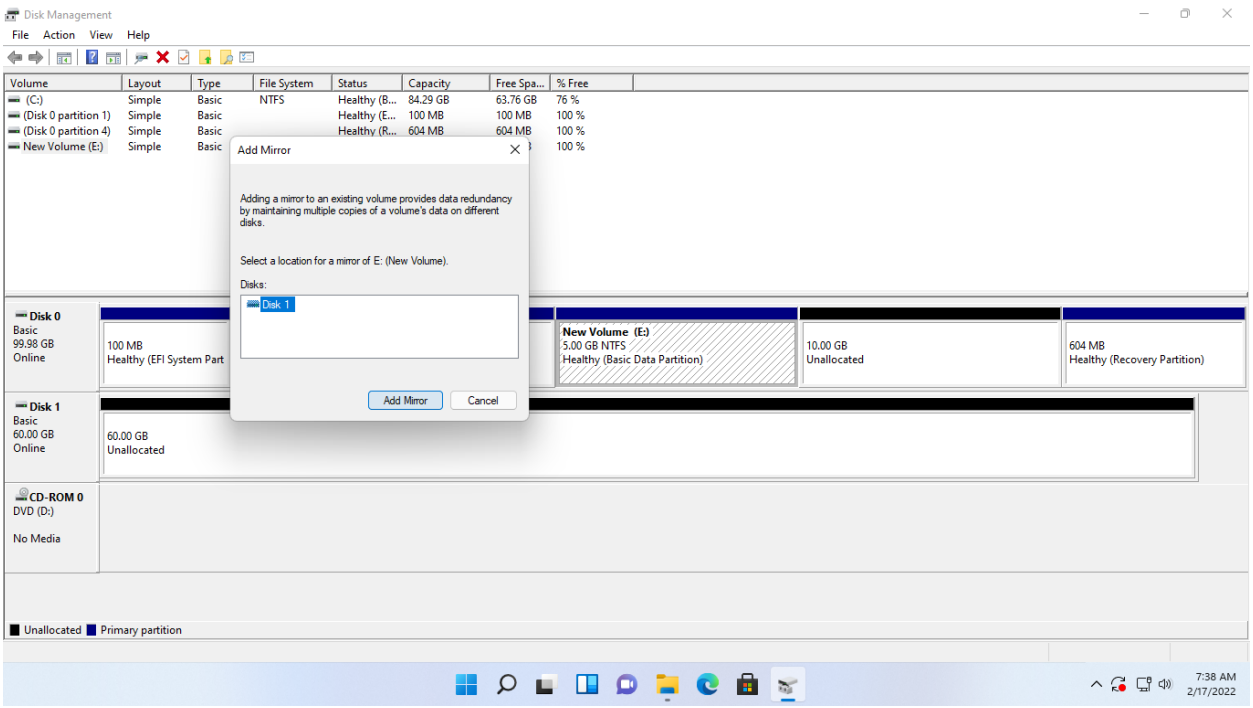

Figure 19 Capture Screen of NETWORKTUTEWIN11PC. Task 4 - Step 2

Step 3:

On the **Disk Management** message box, click **Yes**.

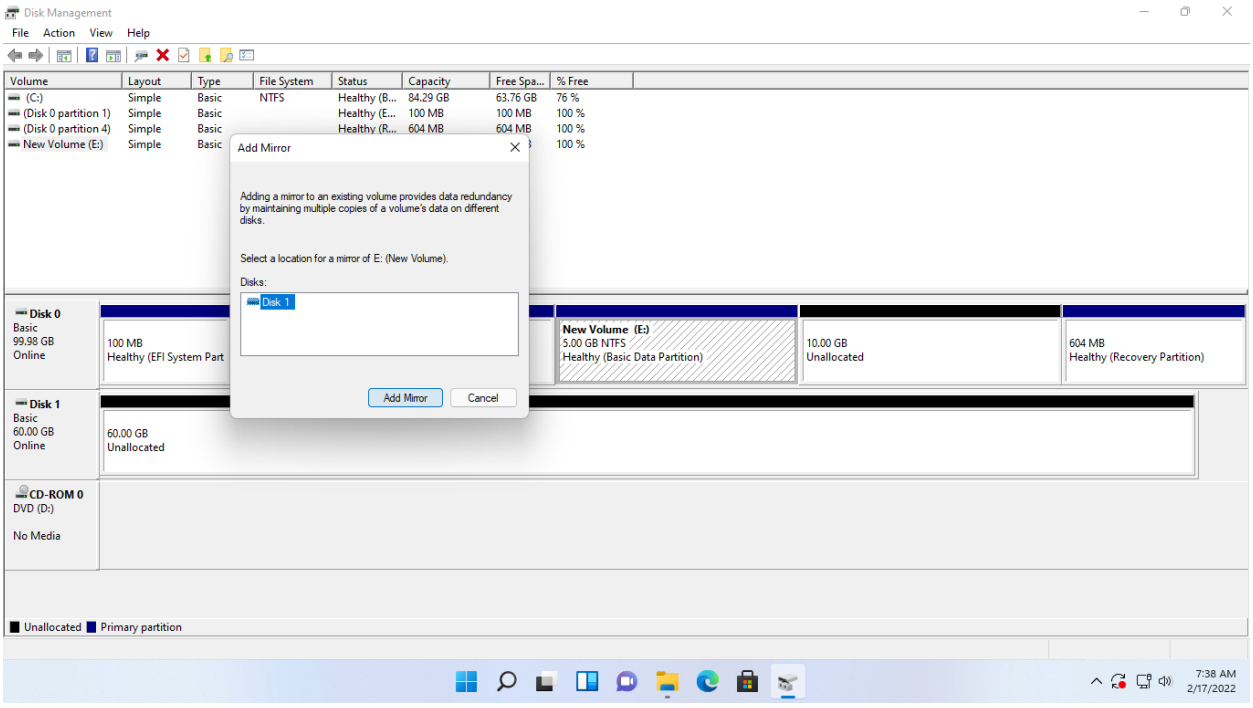

Figure 20 Capture Screen of NETWORKTUTEWIN11PC. Task 4 - Step 3

Step 4:

Disk Management shows the resynchronization process between **Disk 0** and **Disk 1** partitions.

Notice that they have been converted to **Dynamic** disks

It will start **Resynching**, right now you can see it in 51%

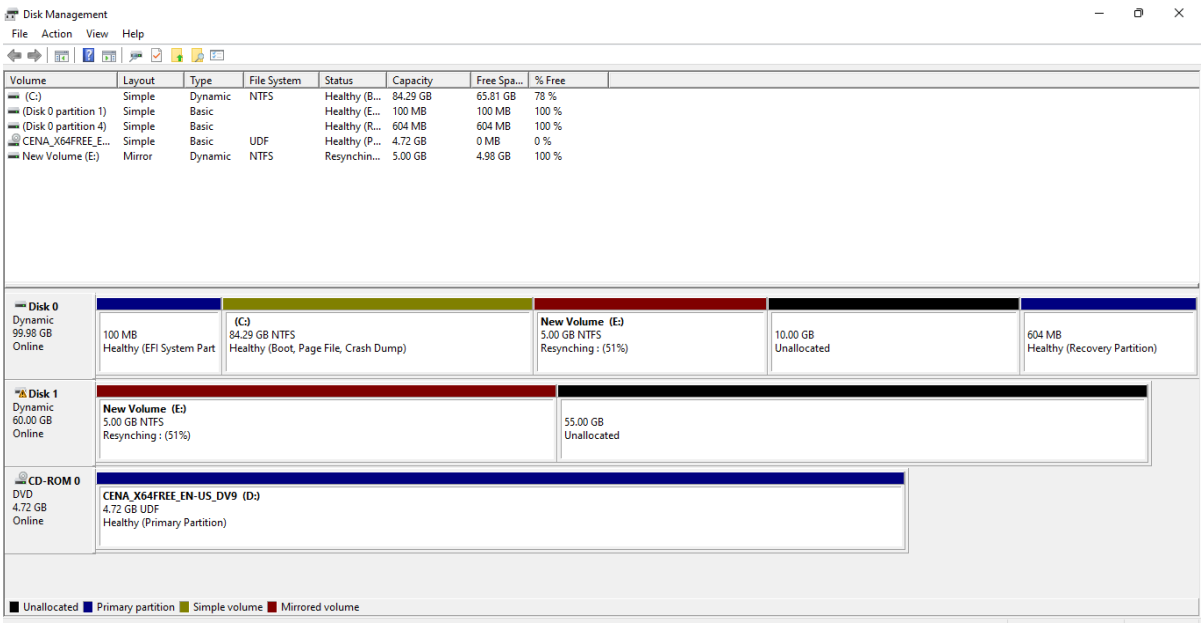

Figure 21 Capture Screen of NETWORKTUTEWIN11PC. Task 4 - Step 4

Once after **Resynching** finish the state will be **Healthy**.

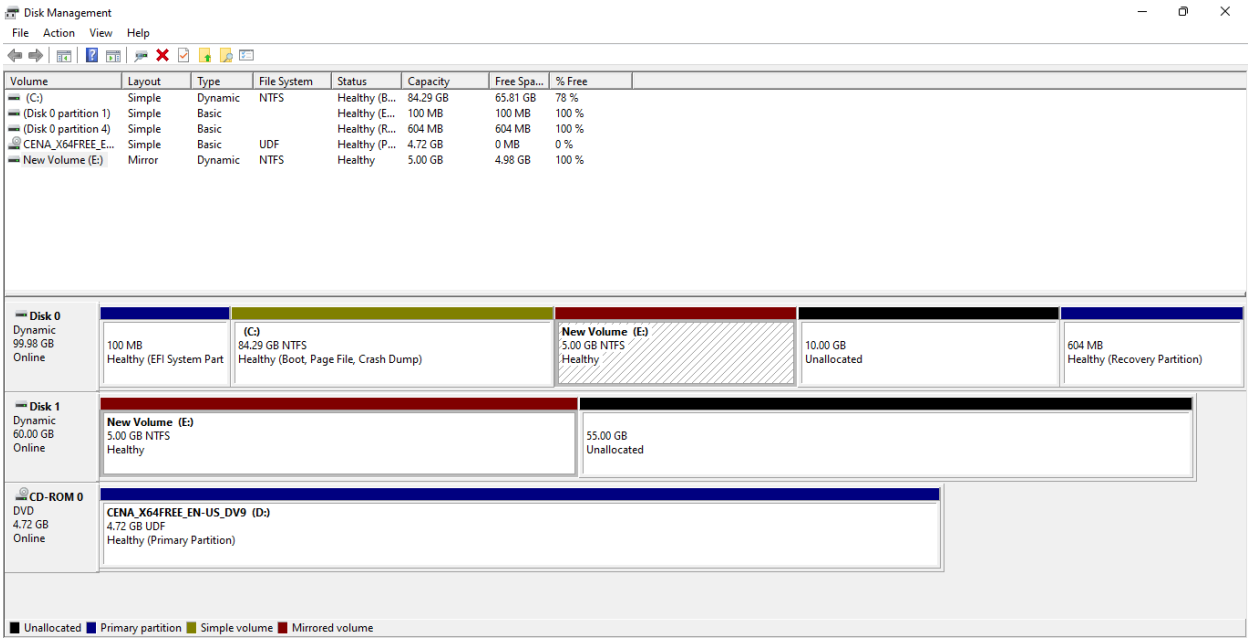

Figure 22 Capture Screen of NETWORKTUTEWIN11PC. Task 4 - Step 4.1

Task 5: Create Spanned Volume and Striped Volume

Dynamic disks also support other types of volume, for instance; *striped volume* and *spanned volume*.

Data redundancy is not provided by these two volume kinds. As a result, you must back up the files saved on these volume types to ensure that they can be recovered if the disk storage fails.

At least two physical disks are required for a striped volume, often known as RAID 0. The On striped disks, concurrent read/write operations improve disk speed.

To construct a volume, a spanned volume joins unallocated partitions of various sizes. Having a larger capacity for storing

In this task, we will create a striped volume and a spanned volume.

Step 1:

Open the **Disk Management** in your *Windows 11.*

Go to **Disk 0** and right-click **10.00 GB Unallocated**, then select **New Striped Volume.**

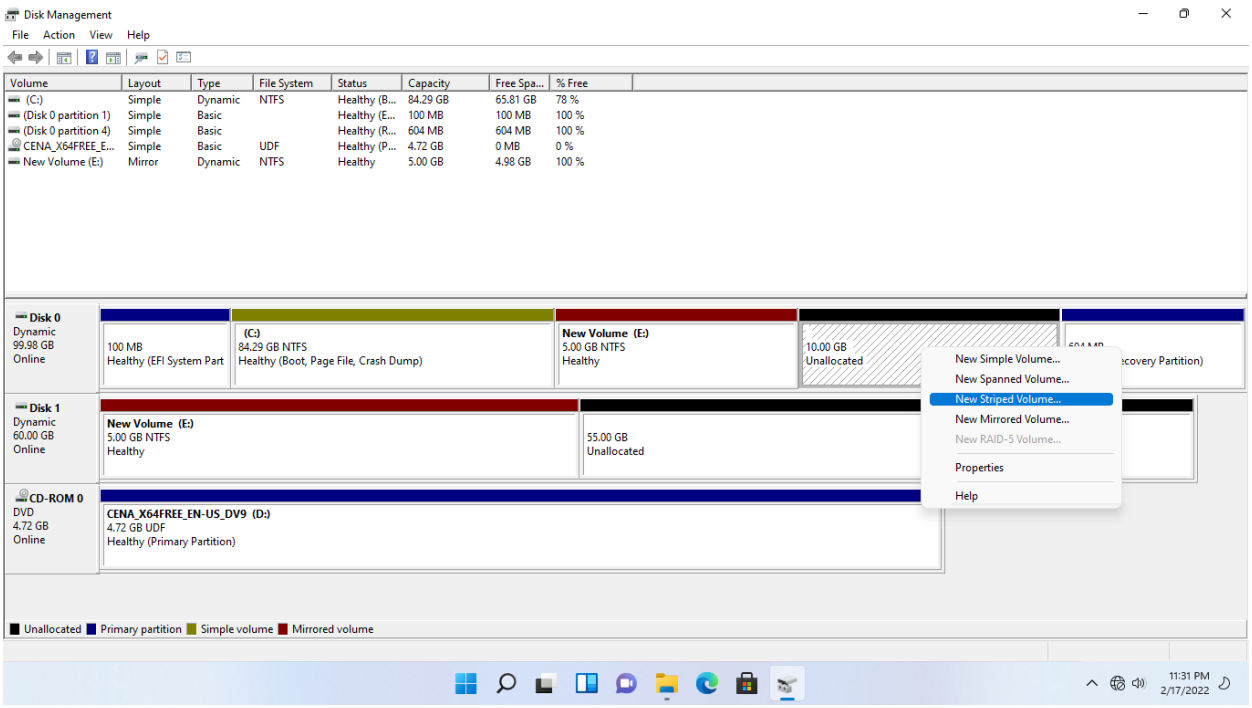

Figure 23 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 1

Step 2:

On the **Welcome to the New Striped Volume Wizard** page, click **Next**.

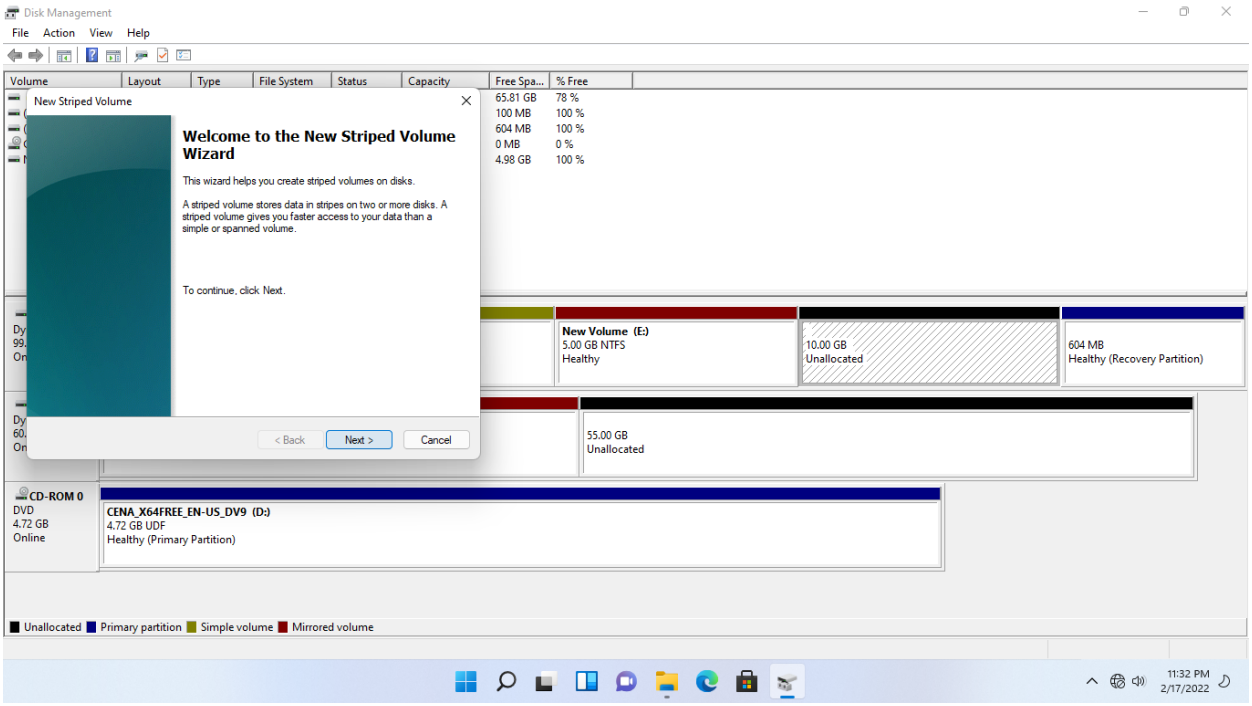

Figure 24 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 2

Step 3:

On the **Select Disks** page, go to the **Available** section, then select **Disk 1**. Click **Add**

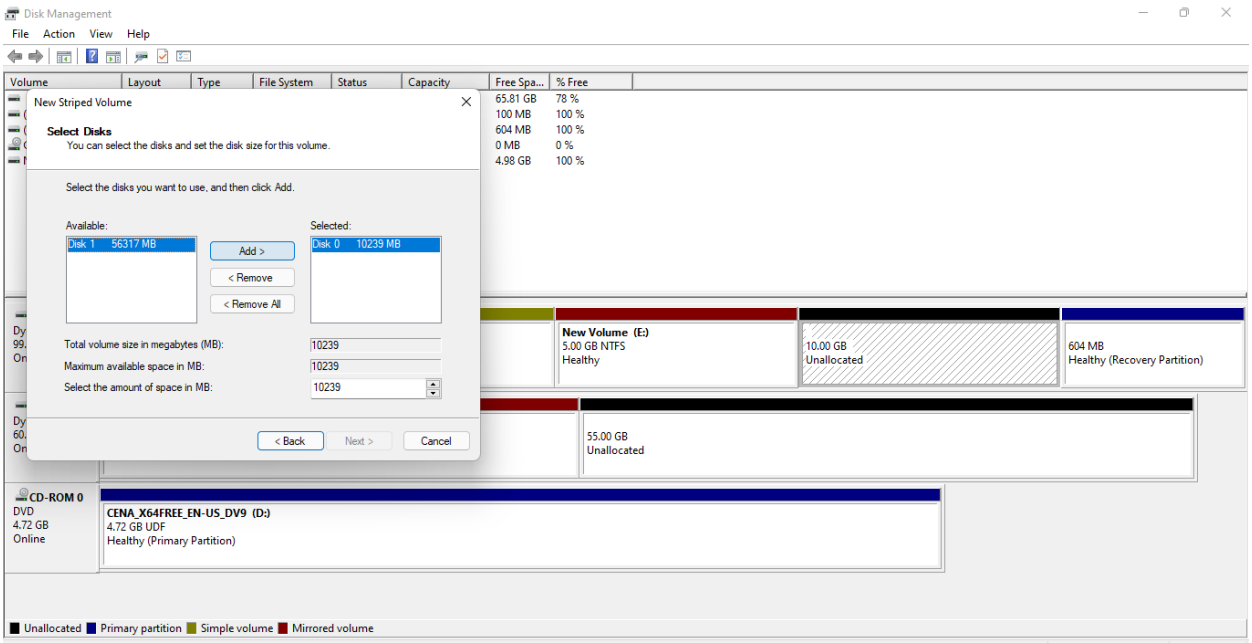

Figure 25 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 3

Step 4:

Once both **Disk 0** and **Disk 1** appear in the **Selected** list.

On the **Select Disks** page, click in the **Select the amount of space in MB** box and type:

2048

Click **Next**.

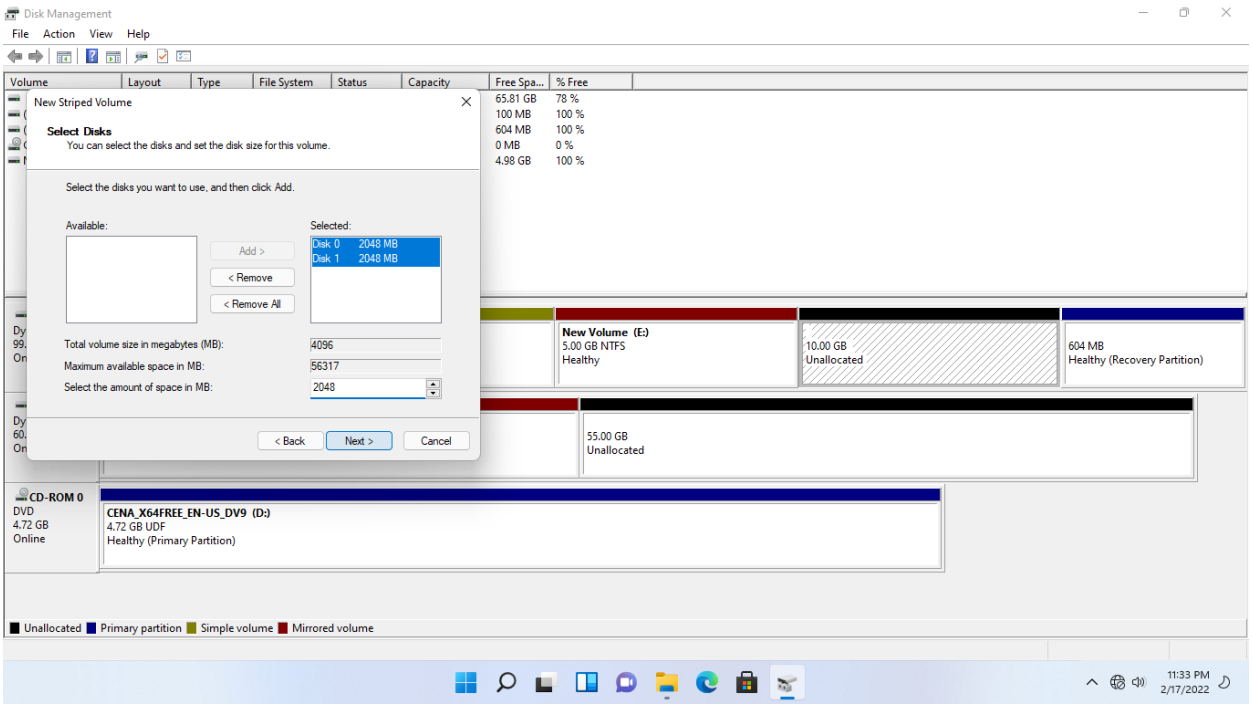

Figure 26 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 4

Step 5:

On the **Assign Drive Letter or Path**, keep the default settings.

Click **Next**.

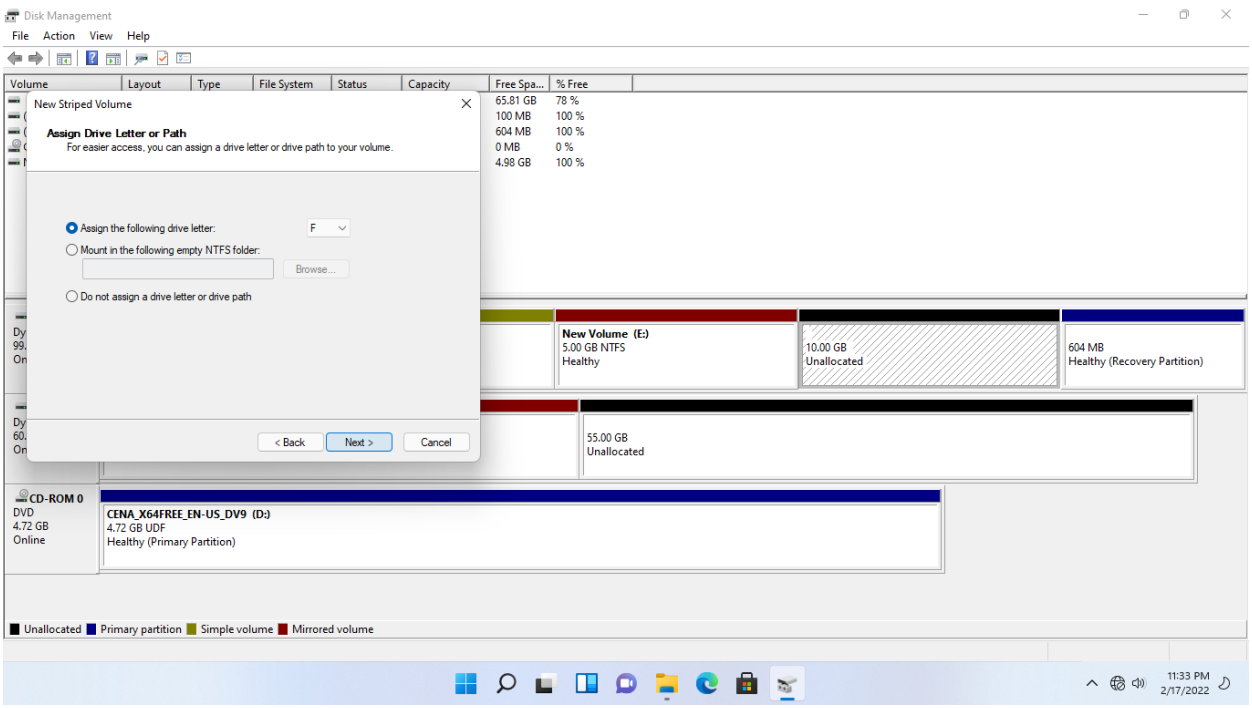

Figure 27 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 5

Step 6:

On the **Format Volume** page, click in the **Volume label** textbox and Replace the current value with the following.

RAID-0 Volume

Tick the **Perform a quick format** checkbox.

Click **Next.**

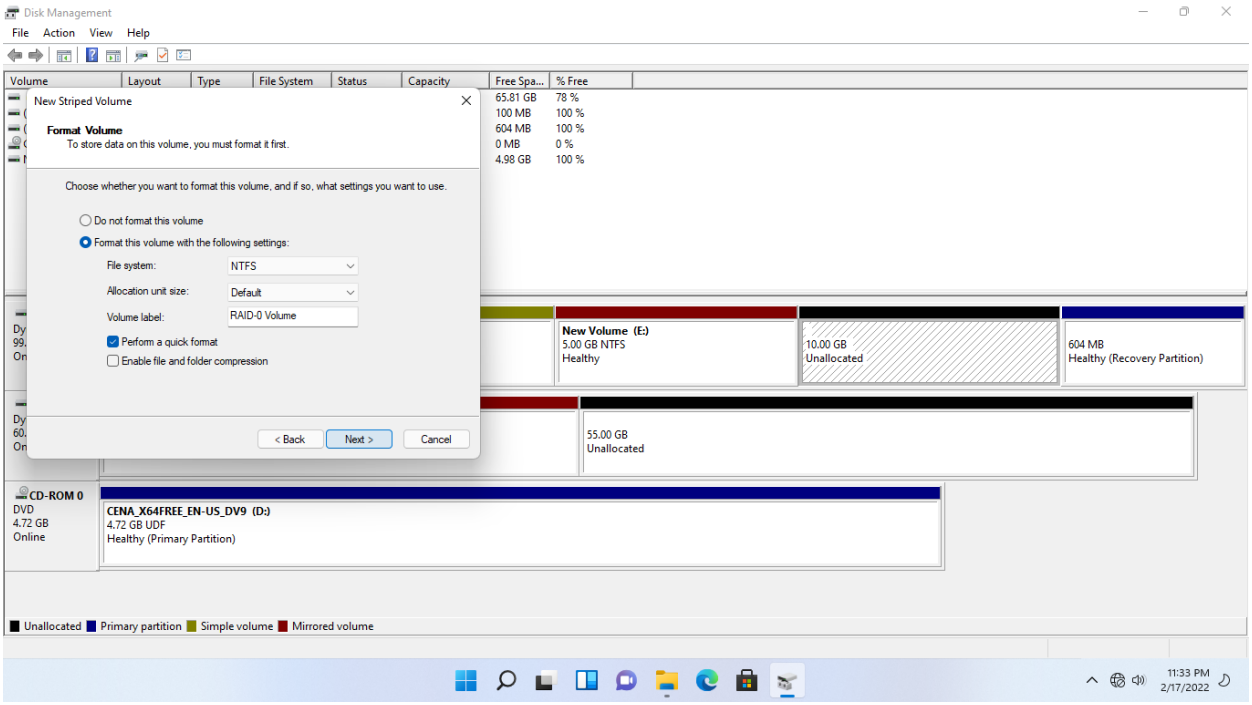

Figure 28 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 6

Step 7:

Click **Finish** to close **Completing the New Striped Volume Wizard.**

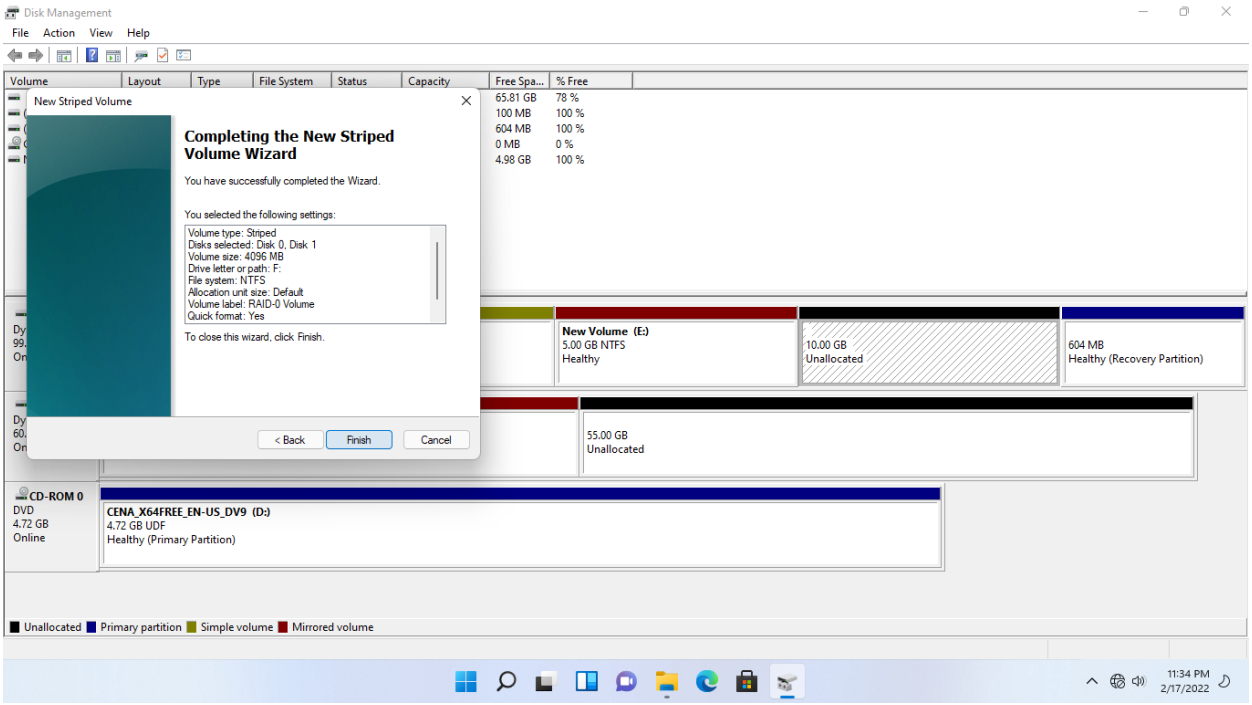

Figure 29 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 7

Step 8:

After a moment, notice that the **RAID-0 Volume** or striped volume appears in Disk Management.

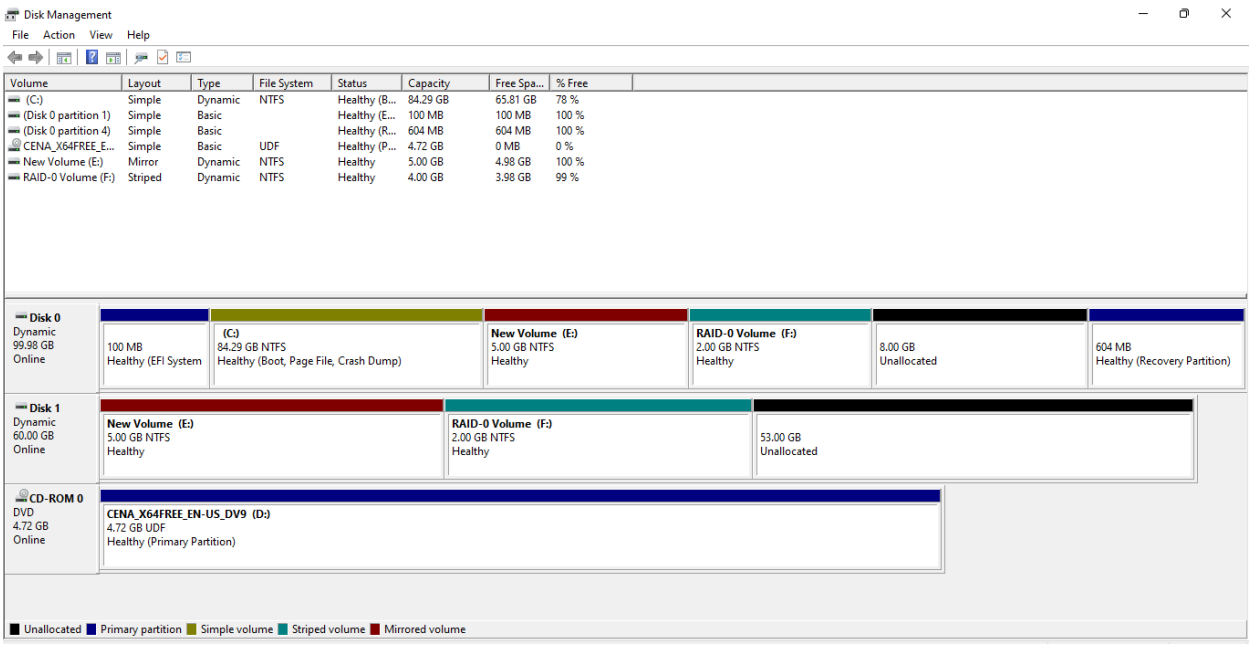

Figure 30 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 8

Step 9:

To create the spanned volume, go to **Disk 0**, right-click on **8.00 GB Unallocated**, then select **Spanned Volume.**

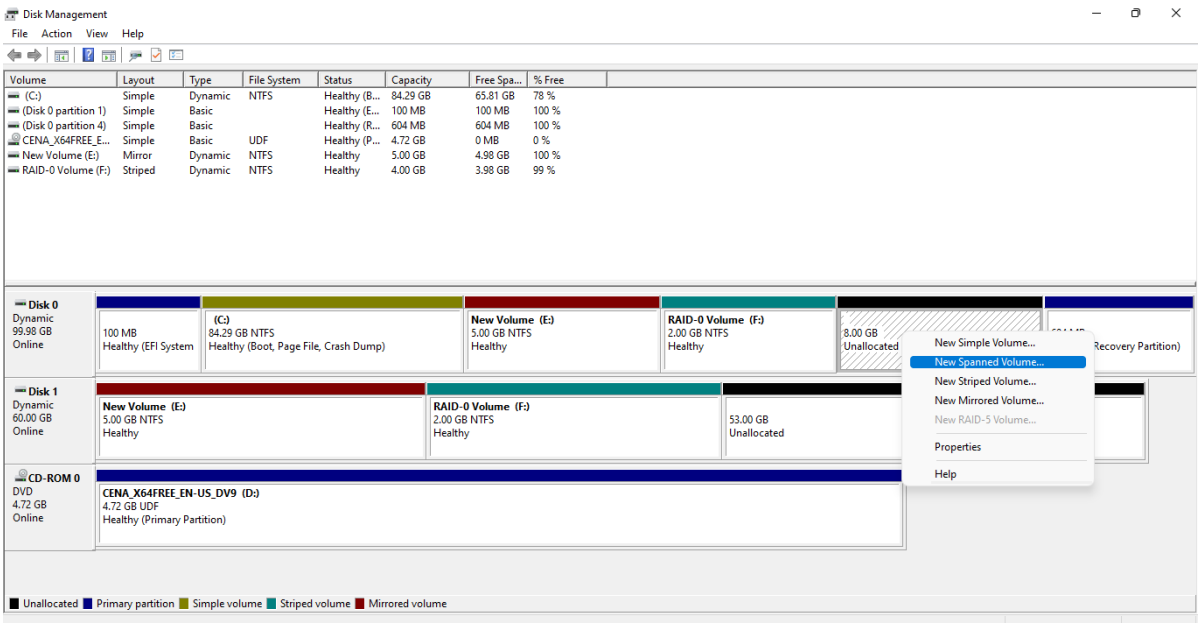

Figure 31 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 9

Step 10:

On the **Welcome to the New Spanned Volume Wizard** page, click **Next**.

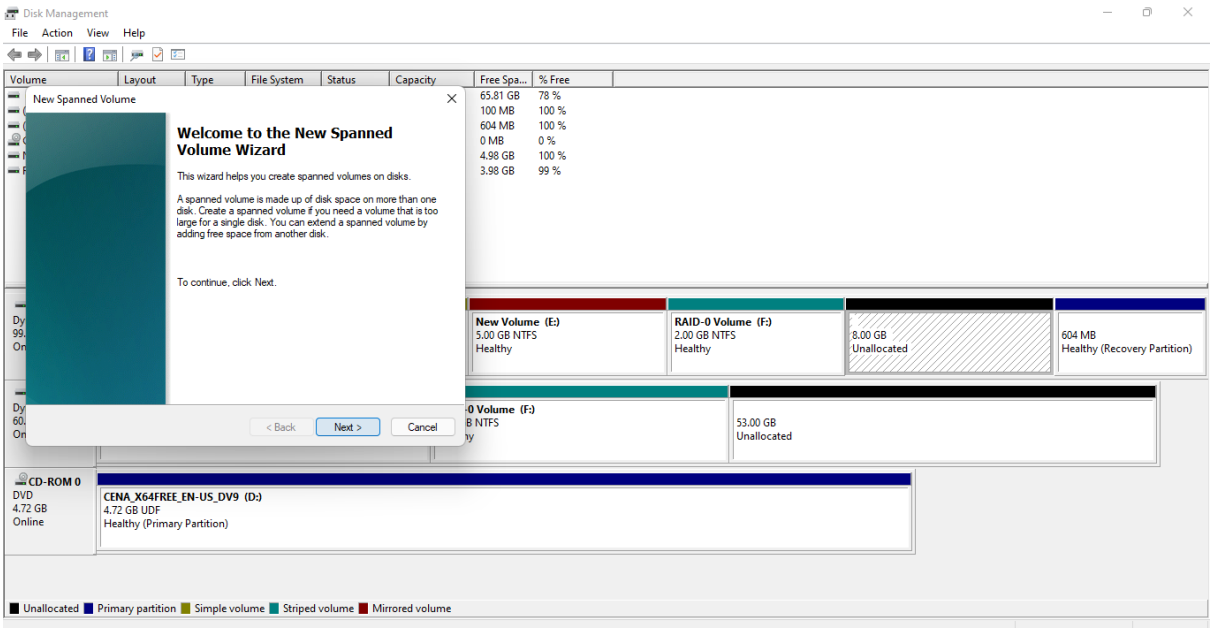

Figure 32 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 10

Step 11:

On the **Select Disks** page, go to the **Available** section, then select **Disk 1.**

Click **Add**.

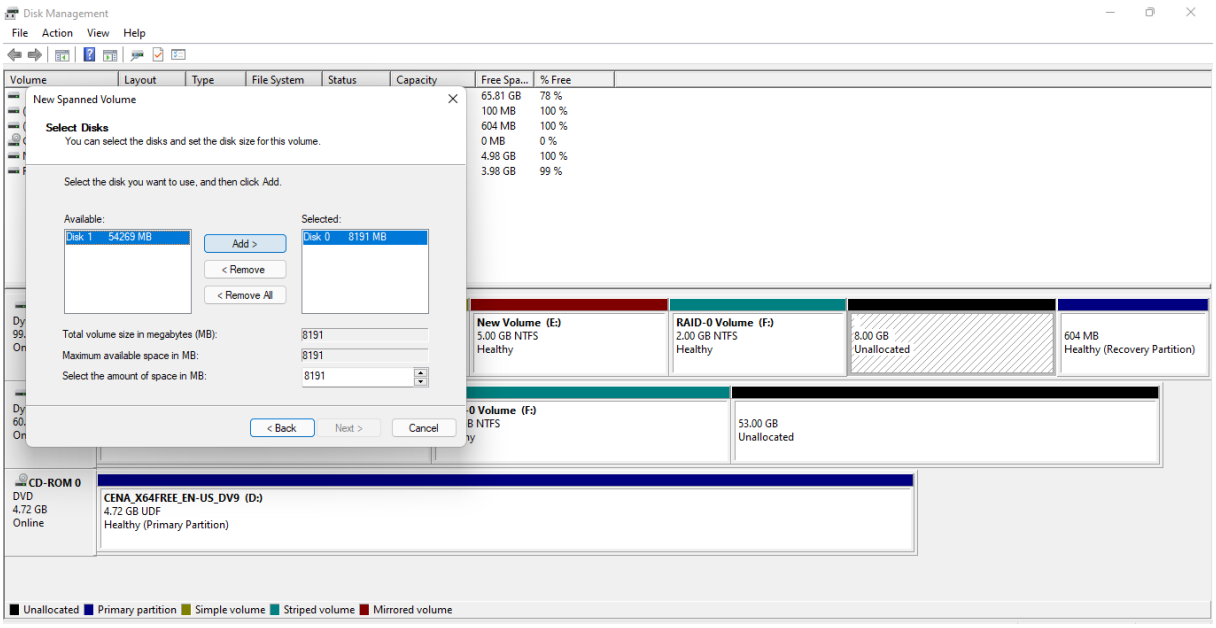

Figure 33 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 11

Step 12:

On the **Select Disks**, observe that **Disk 0** and **Disk 1** are of different drive capacities.

Since it combines unallocated partitions of varied sizes, this is one of the unique aspects of a spanned disk.

Click **Next**

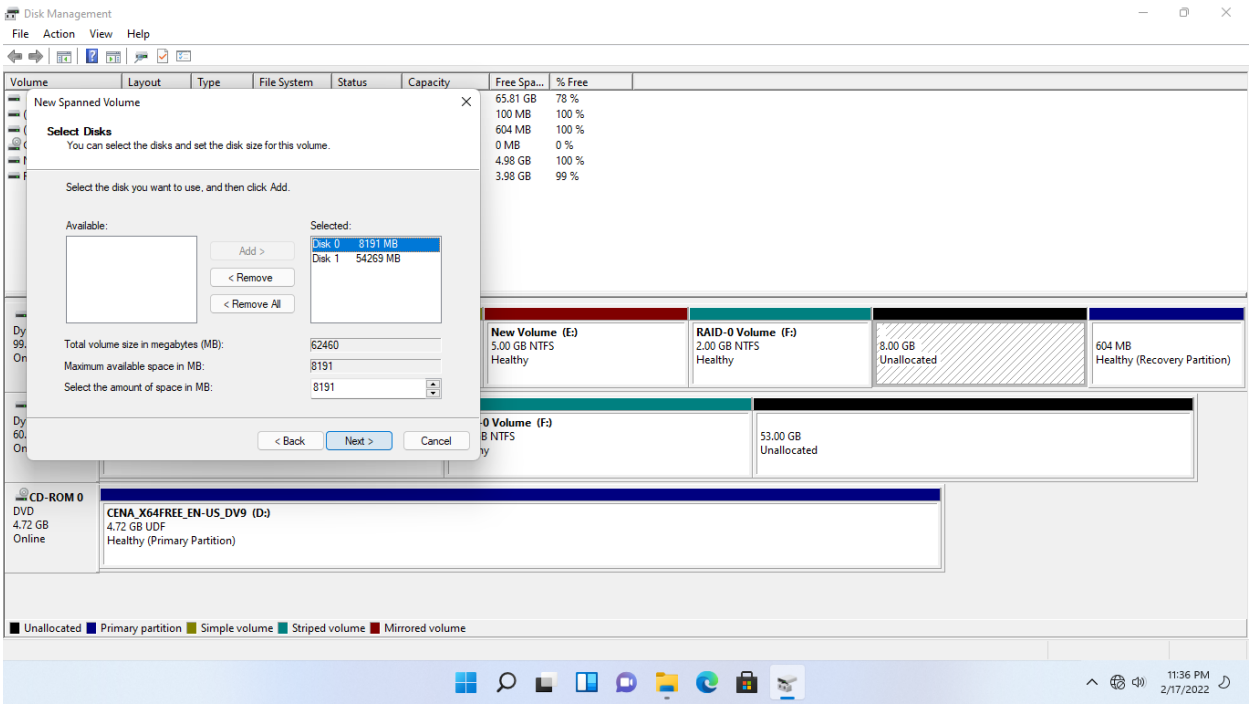

Figure 34 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 12

Step 13:

On the **Assign Drive Letter or Path** page, click **Next**.

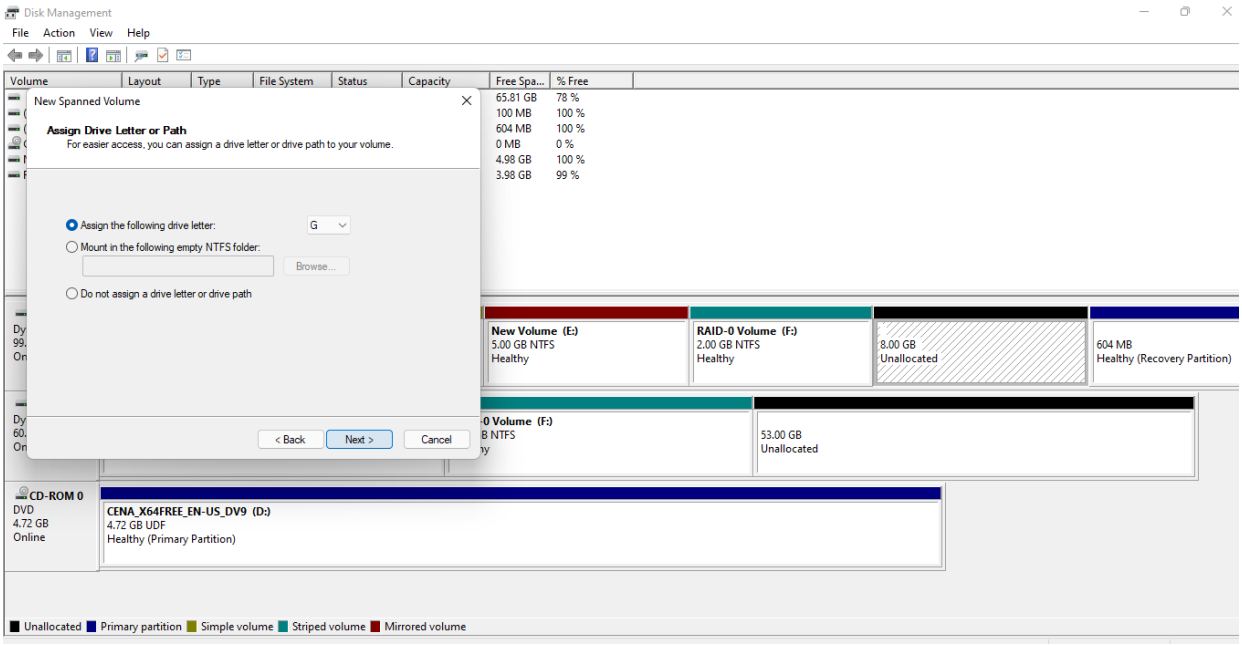

Figure 35 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 13

Step 14:

On the **Format Volume** page Click in the **Volume label** textbox and Replace the current string with the following.

Spanned Volume

Tick the **Perform a quick form** at checkbox.

Click **Next**.

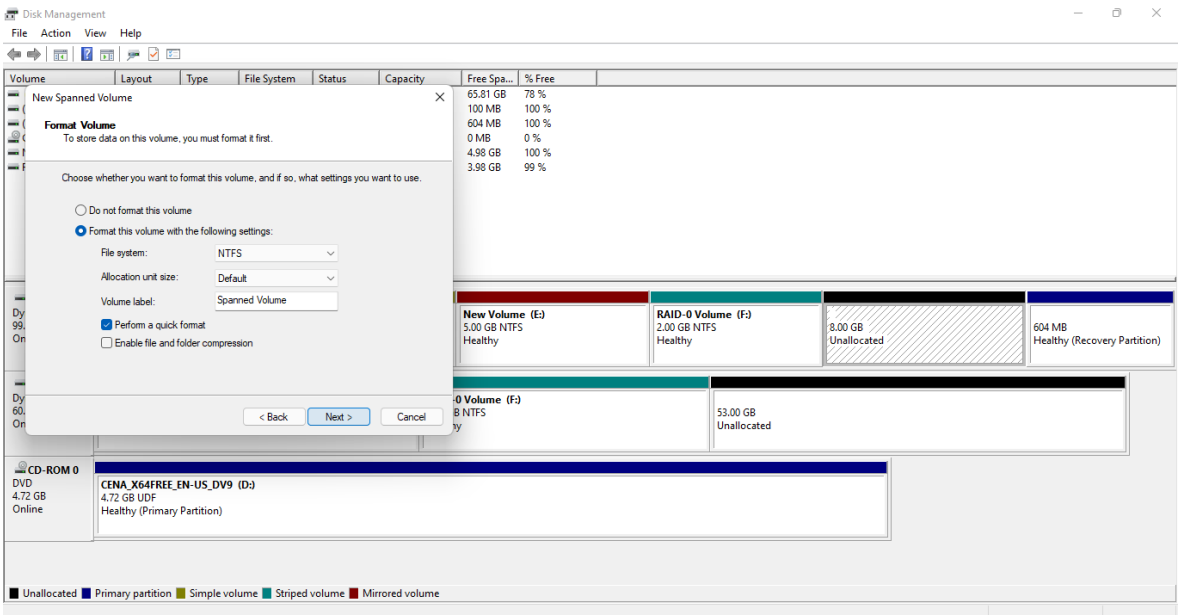

Figure 36 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 14

Step 15:

Click **Finish** to close **Completing the New Spanned Volume Wizard**.

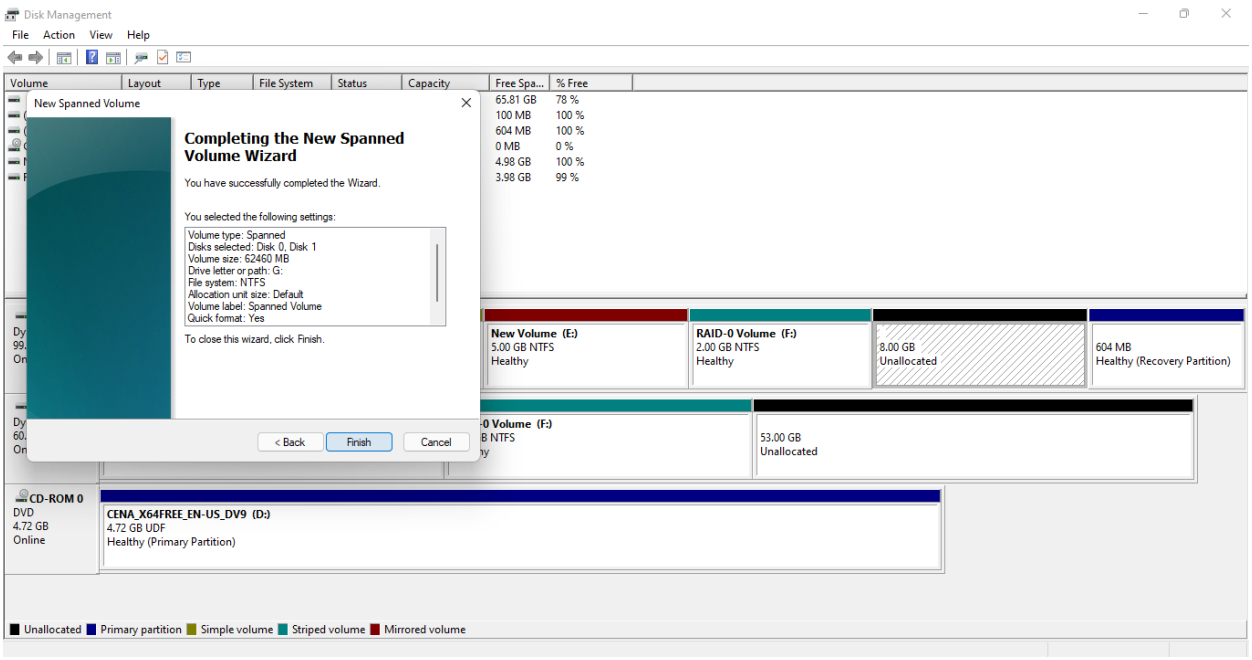

Figure 37 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 15

Step 16:

After a brief moment, you'll find that **Disk Management** displays the **Spanned Volume** and other previously established *volume types*.

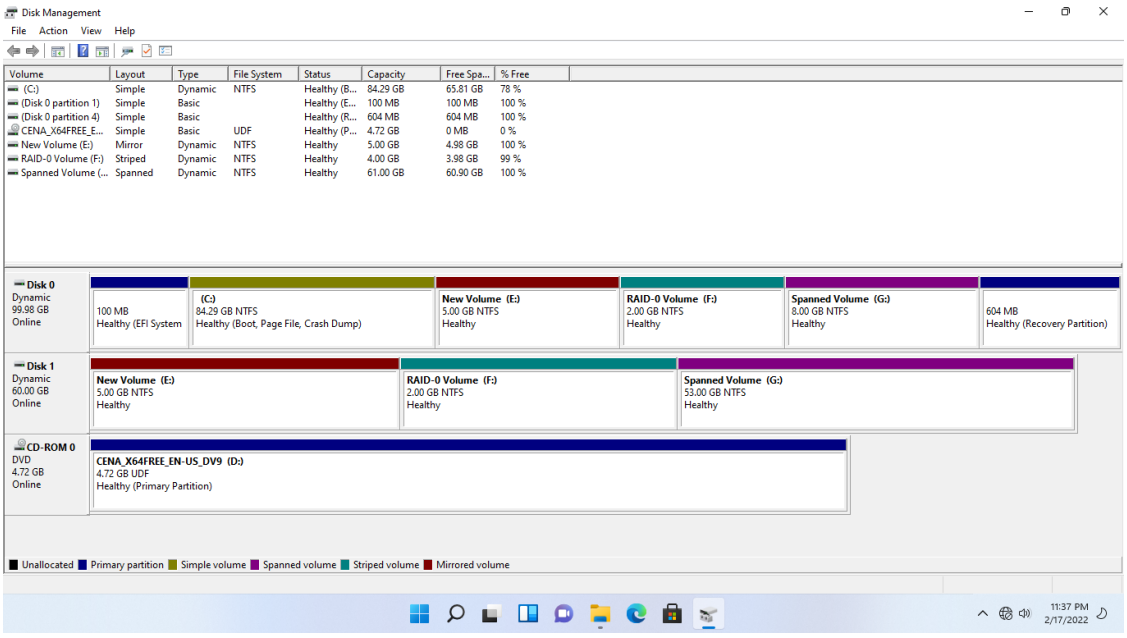

Figure 38 Capture Screen of NETWORKTUTEWIN11PC. Task 5 - Step 16