

RAID 5 and RAID 10 Setup in Windows 10

User Manual

Rev. 1.00 – December 18, 2018



Revision

Date	Version	Changes
December 18, 2018	1.00	Initial release

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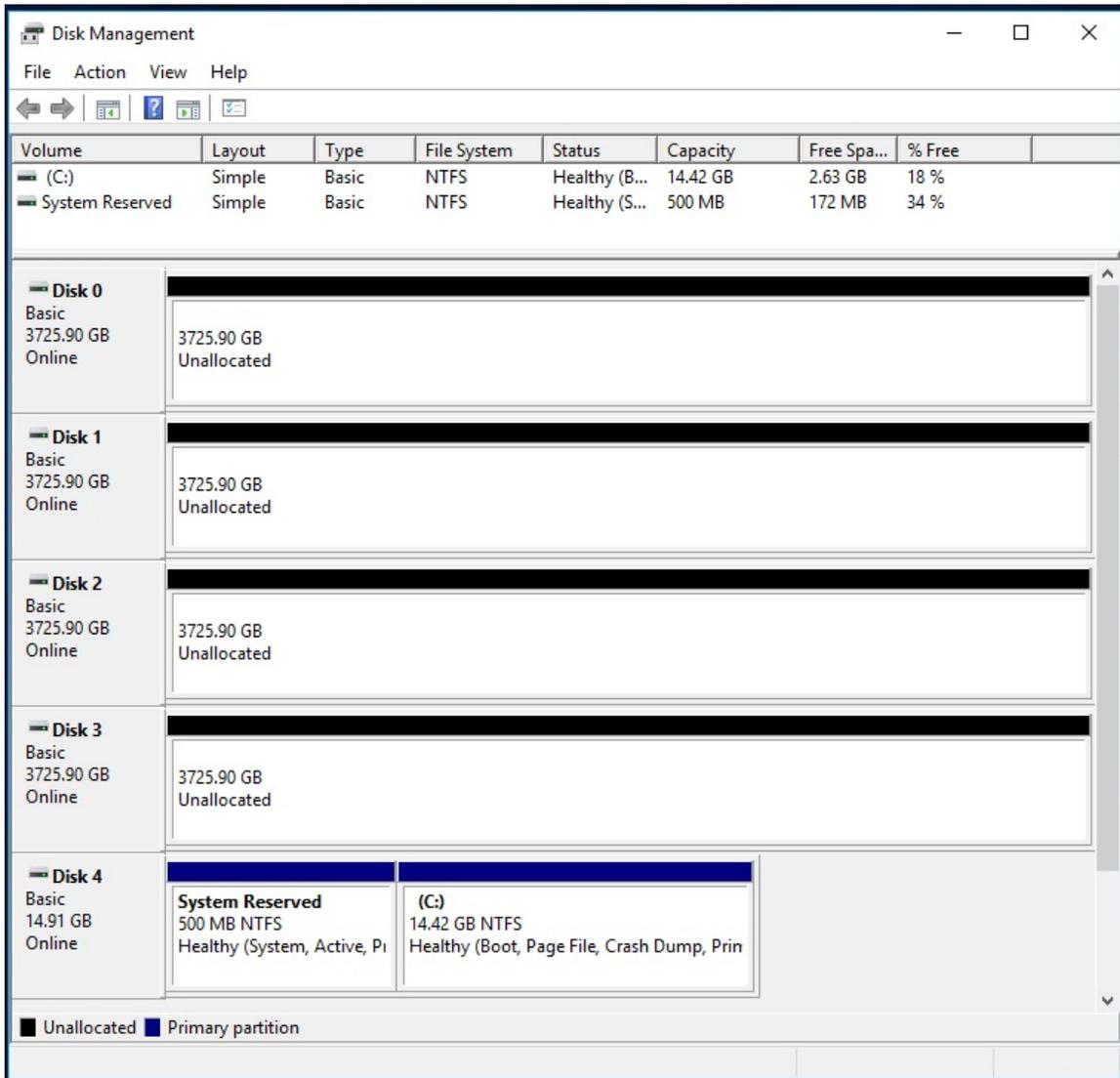
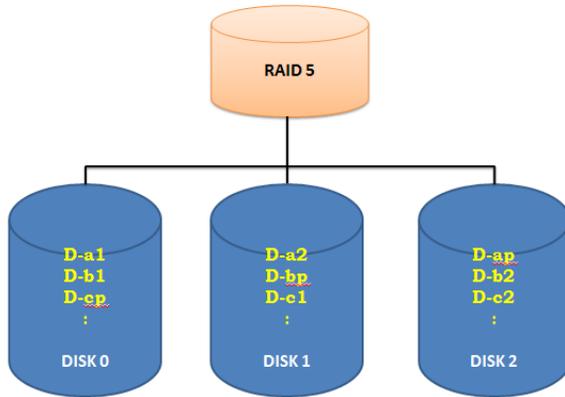
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Chapter

1

RAID 5 Setup in Windows 10

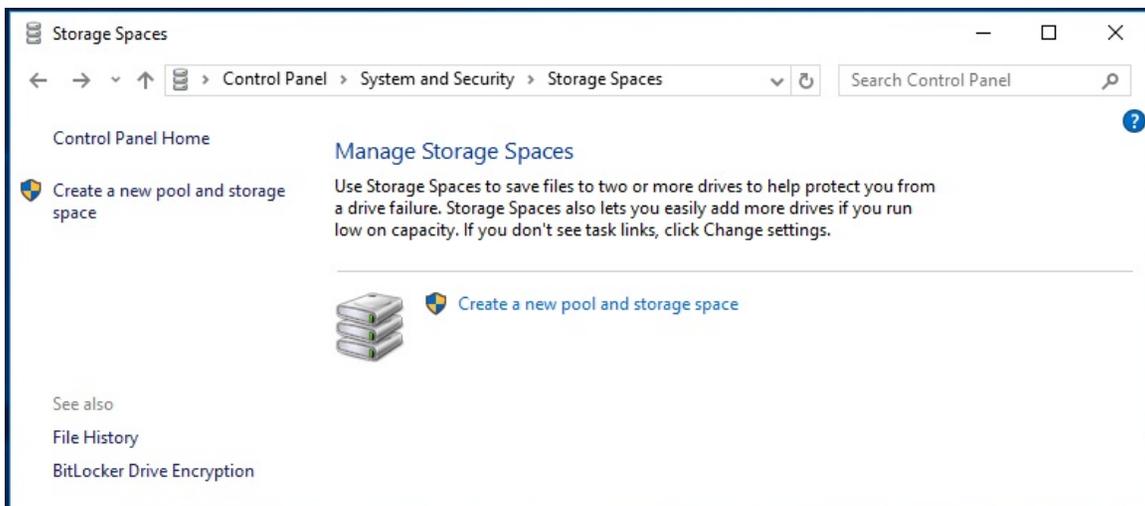
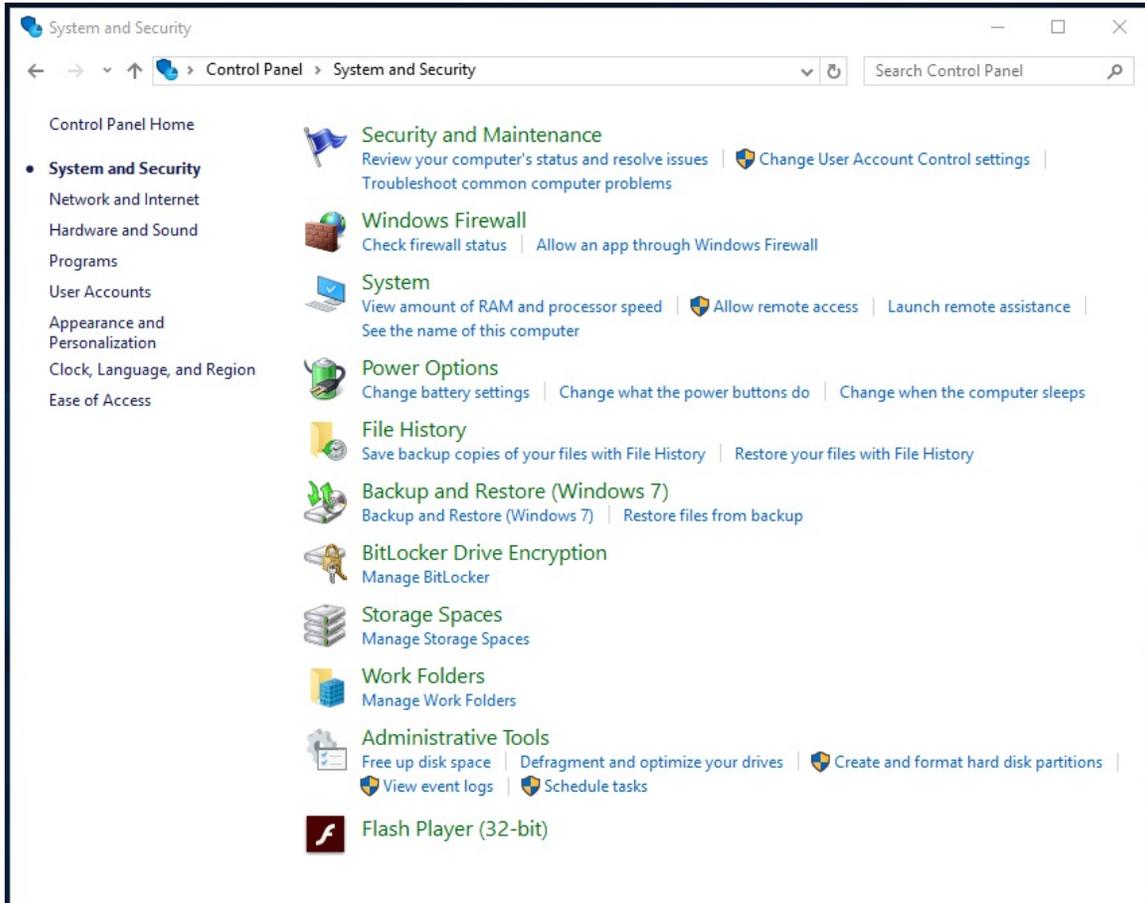
At least three drives are required to create a RAID 5 disk array.



RAID 5 and RAID 10 Setup in Windows 10

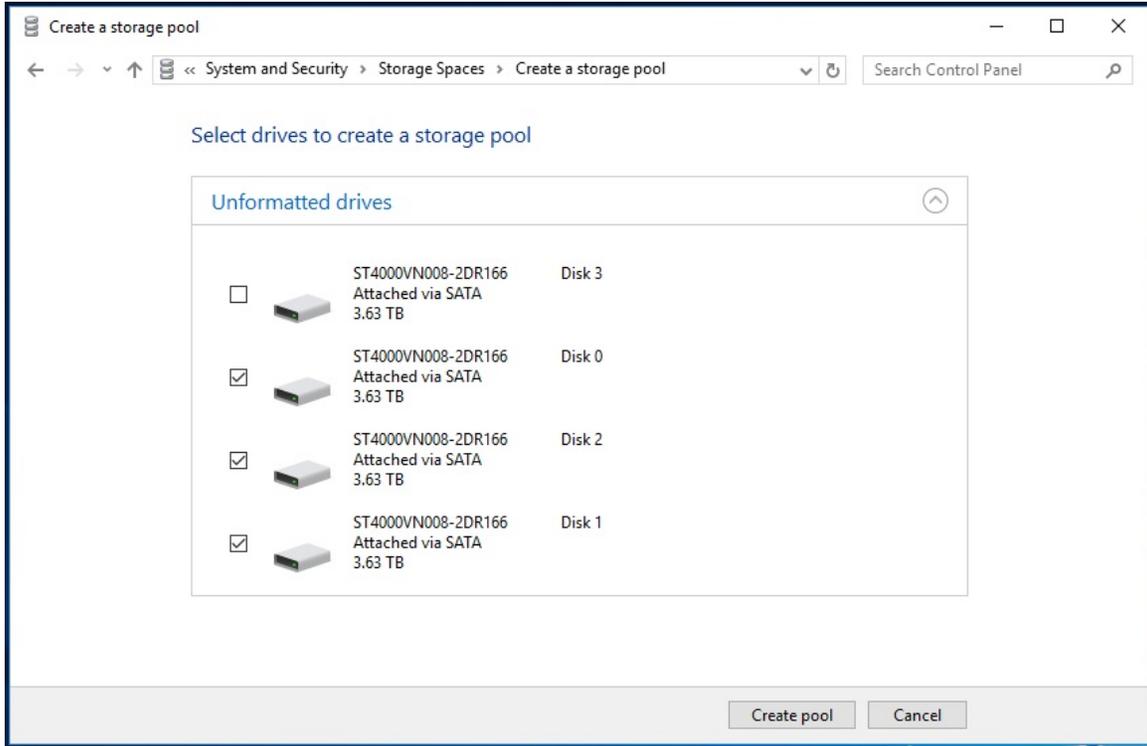
Follow the steps below to setup RAID 5 in Windows 10:

Step 1: Start “Storage Spaces” from “Control Panel”.



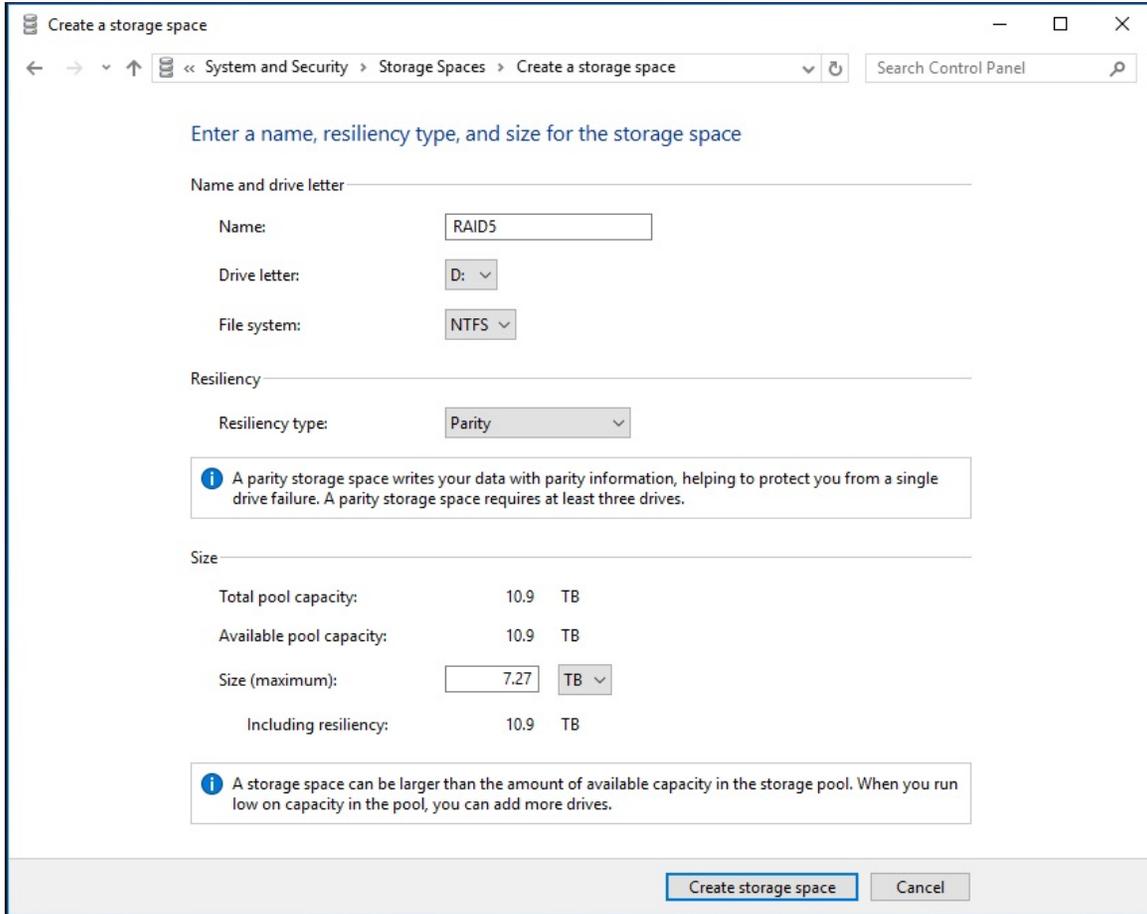
Step 2: Click “Create a new pool and storage space”.

Step 3: Select three drives and click “Create pool”.



RAID 5 and RAID 10 Setup in Windows 10

- Step 4:** Select “Parity” for “Resiliency type”.
- Step 5:** Label the new storage space as something like RAID5.
- Step 6:** Click “Create storage space”.



Create a storage space

<< System and Security > Storage Spaces > Create a storage space

Search Control Panel

Enter a name, resiliency type, and size for the storage space

Name and drive letter

Name: RAID5

Drive letter: D:

File system: NTFS

Resiliency

Resiliency type: Parity

i A parity storage space writes your data with parity information, helping to protect you from a single drive failure. A parity storage space requires at least three drives.

Size

Total pool capacity:	10.9	TB
Available pool capacity:	10.9	TB
Size (maximum):	7.27	TB
Including resiliency:	10.9	TB

i A storage space can be larger than the amount of available capacity in the storage pool. When you run low on capacity in the pool, you can add more drives.

Create storage space Cancel

Step 7: The result after successful creation of storage space RAID 5 will be shown.

The screenshot shows the Windows Storage Spaces management interface. At the top, it indicates the path: Control Panel > System and Security > Storage Spaces. The main heading is "Manage Storage Spaces". Below this, there is a "Storage pool" section with a progress bar showing "Using 4.25 GB of 10.9 TB pool capacity". To the right of the progress bar are links for "Create a storage space", "Add drives", "Rename pool", and "Optimize drive usage".

Under the "Storage spaces" section, there is one entry for "RAID5 (D:)" with a status of "OK". It shows "Parity" and "7.26 TB" capacity, with "Using 3.00 GB pool capacity". Action links for "View files", "Change", and "Delete" are provided.

The "Physical drives" section lists three drives, each with a status of "OK" and a "Rename" link:

- ST4000VN008-2DR166, SN: ZDH1NYDL, Attached via SATA, 0.04 % used, Providing 3.63 TB pool capacity.
- ST4000VN008-2DR166, SN: ZGY053E5, Attached via SATA, 0.05 % used, Providing 3.63 TB pool capacity.
- ST4000VN008-2DR166, SN: ZGY04AL5, Attached via SATA, 0.05 % used, Providing 3.63 TB pool capacity.

At the bottom left, there is a "See also" section with links for "File History" and "BitLocker Drive Encryption".

RAID 5 and RAID 10 Setup in Windows 10

Disk Management

Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
(C:)	Simple	Basic	NTFS	Healthy (B...	14.42 GB	2.63 GB	18 %
RAID5 (D:)	Simple	Basic	NTFS	Healthy (P...	7444.37 GB	7443.97 ...	100 %
System Reserved	Simple	Basic	NTFS	Healthy (S...	500 MB	172 MB	34 %

Disk 3
Basic
3725.90 GB
Online
Unallocated

Disk 4
Basic
14.91 GB
Online
System Reserved (500 MB NTFS, Healthy (System, Active, P))
(C:) (14.42 GB NTFS, Healthy (Boot, Page File, Crash Dump, Pri))

Disk 5
Basic
7444.38 GB
Online
RAID5 (D:) (7444.37 GB NTFS, Healthy (Primary Partition))

Legend: ■ Unallocated ■ Primary partition

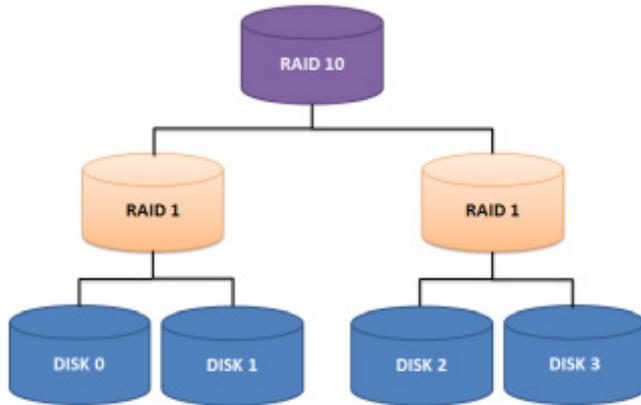
Chapter

2

RAID 10 Setup in Windows 10

RAID 5 and RAID 10 Setup in Windows 10

At least four drives are required to create a RAID 10 disk array.



Disk Management

File Action View Help

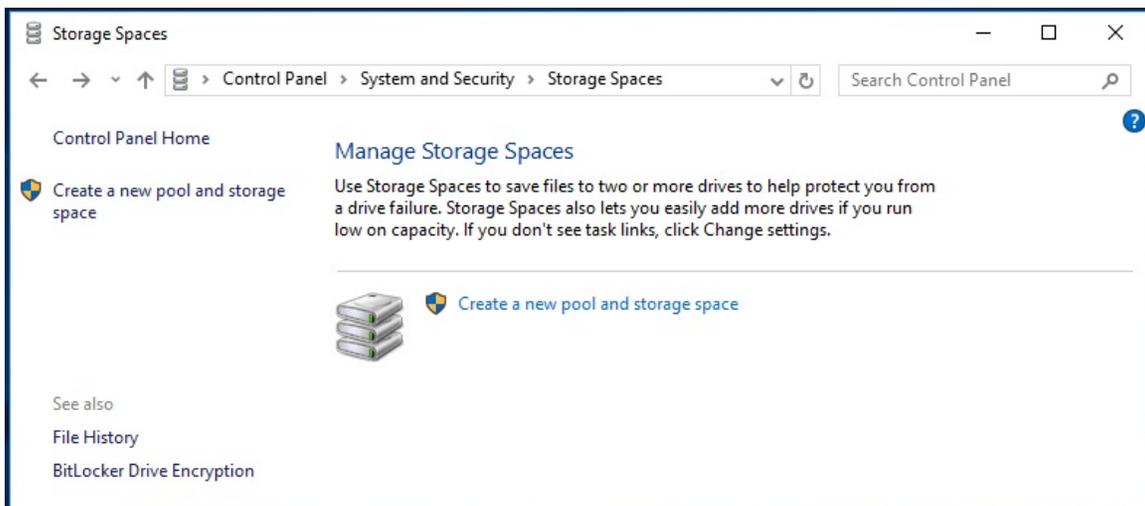
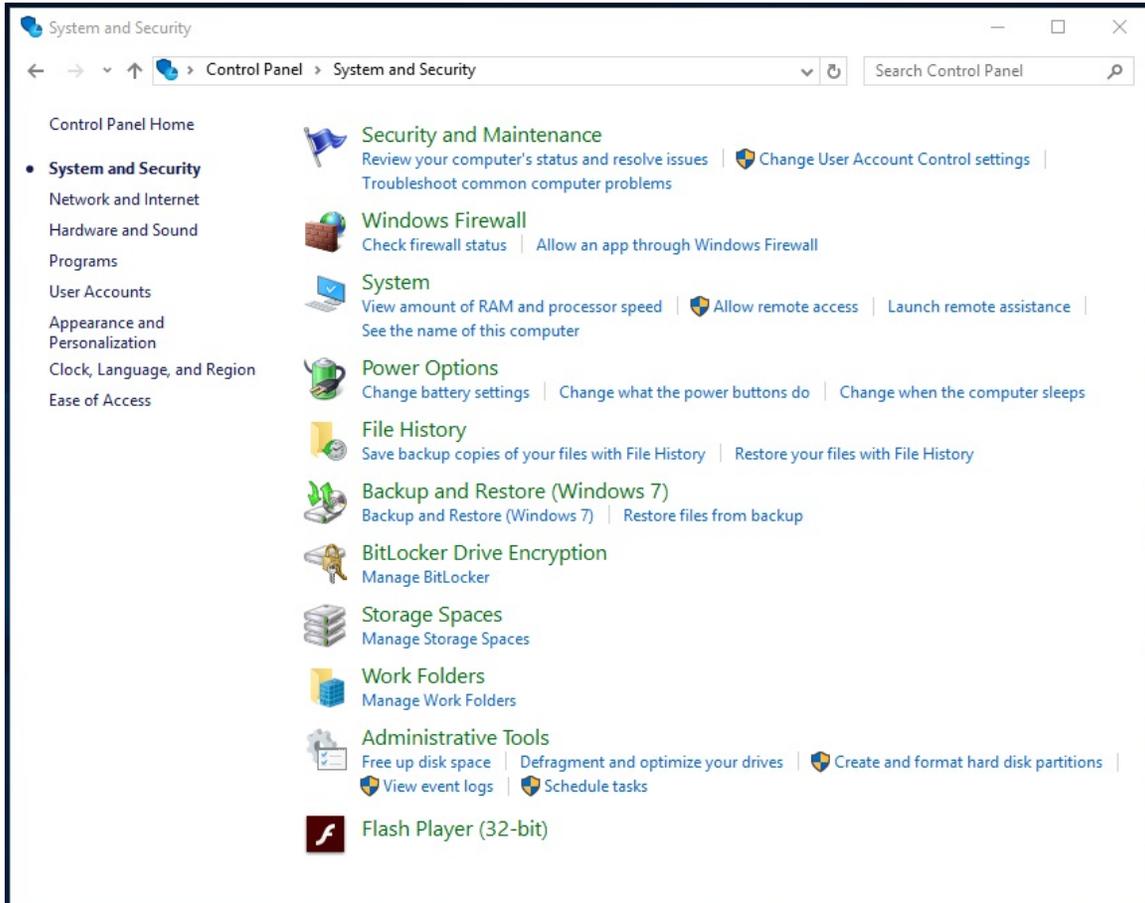
Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
(C:)	Simple	Basic	NTFS	Healthy (B...	14.42 GB	2.63 GB	18 %
System Reserved	Simple	Basic	NTFS	Healthy (S...	500 MB	172 MB	34 %

Disk 0 Basic 3725.90 GB Online	3725.90 GB Unallocated	
Disk 1 Basic 3725.90 GB Online	3725.90 GB Unallocated	
Disk 2 Basic 3725.90 GB Online	3725.90 GB Unallocated	
Disk 3 Basic 3725.90 GB Online	3725.90 GB Unallocated	
Disk 4 Basic 14.91 GB Online	System Reserved 500 MB NTFS Healthy (System, Active, Pri	(C:) 14.42 GB NTFS Healthy (Boot, Page File, Crash Dump, Prin

Unallocated Primary partition

Follow the steps below to setup RAID 10 in Windows 10:

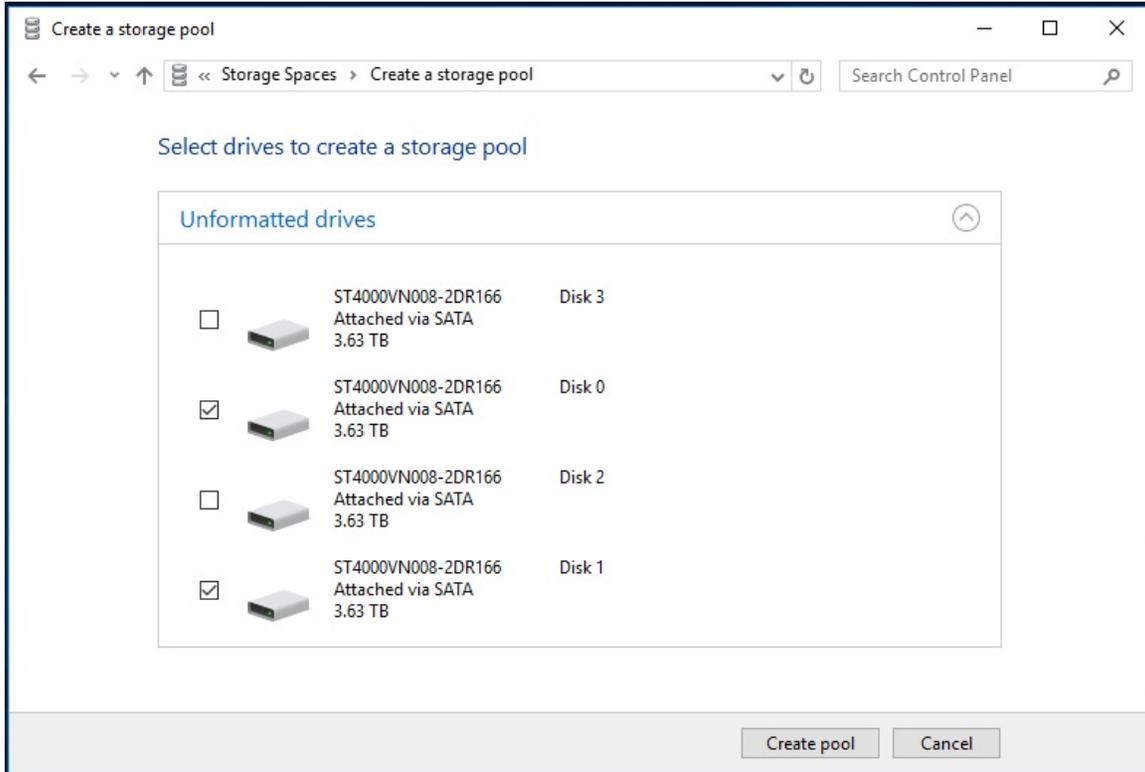
Step 1: Start “Storage Spaces” from “Control Panel”.



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Step 2: Click “Create a new pool and storage space”.

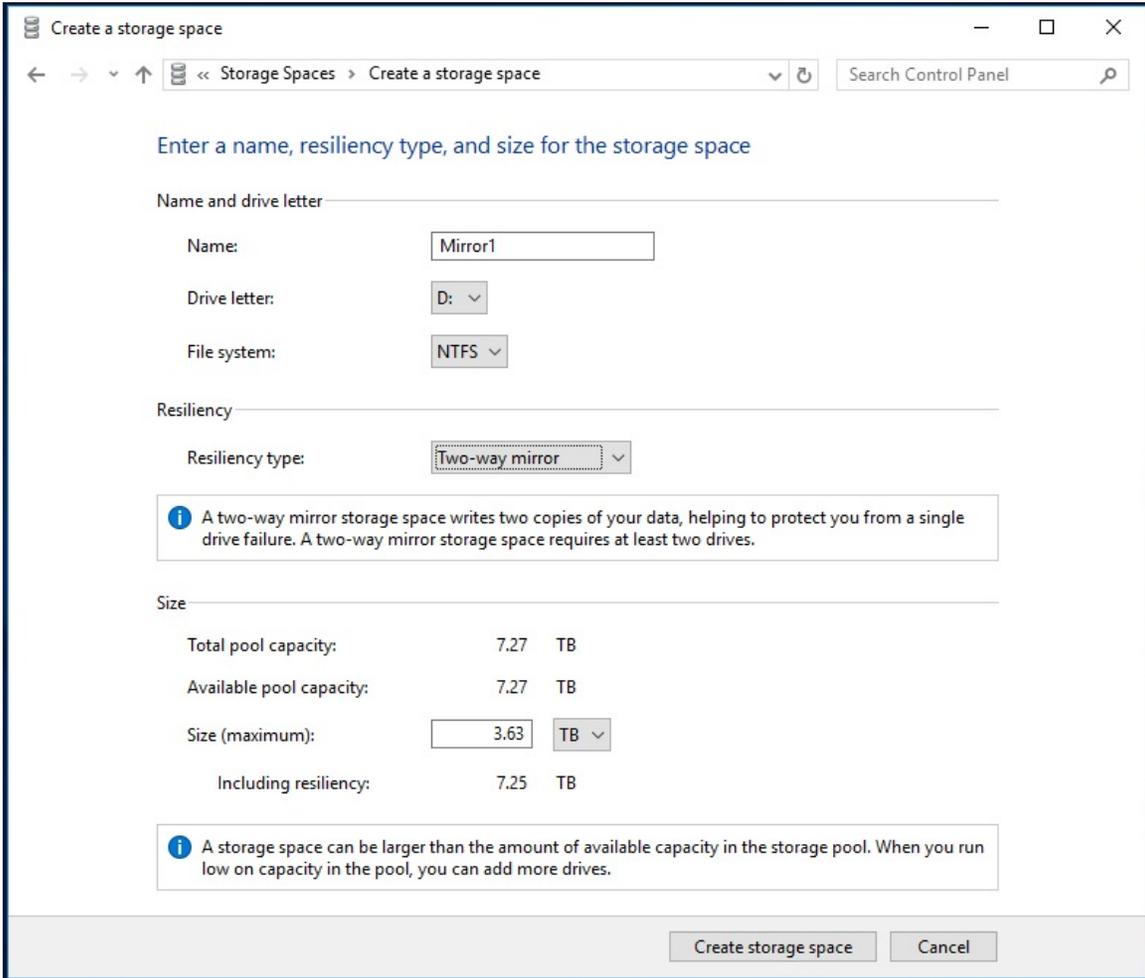
Step 3: Select two drives and click “Create pool” for the first RAID 1 (mirror):



Step 4: Select “Two-way mirror” for “Resiliency type”.

Step 5: Label the new storage space as something like Mirror1 so you can find it later.

Step 6: Click “Create storage space”.



RAID 5 and RAID 10 Setup in Windows 10

Step 7: The result after successful creation of storage space Mirror1 will be shown:

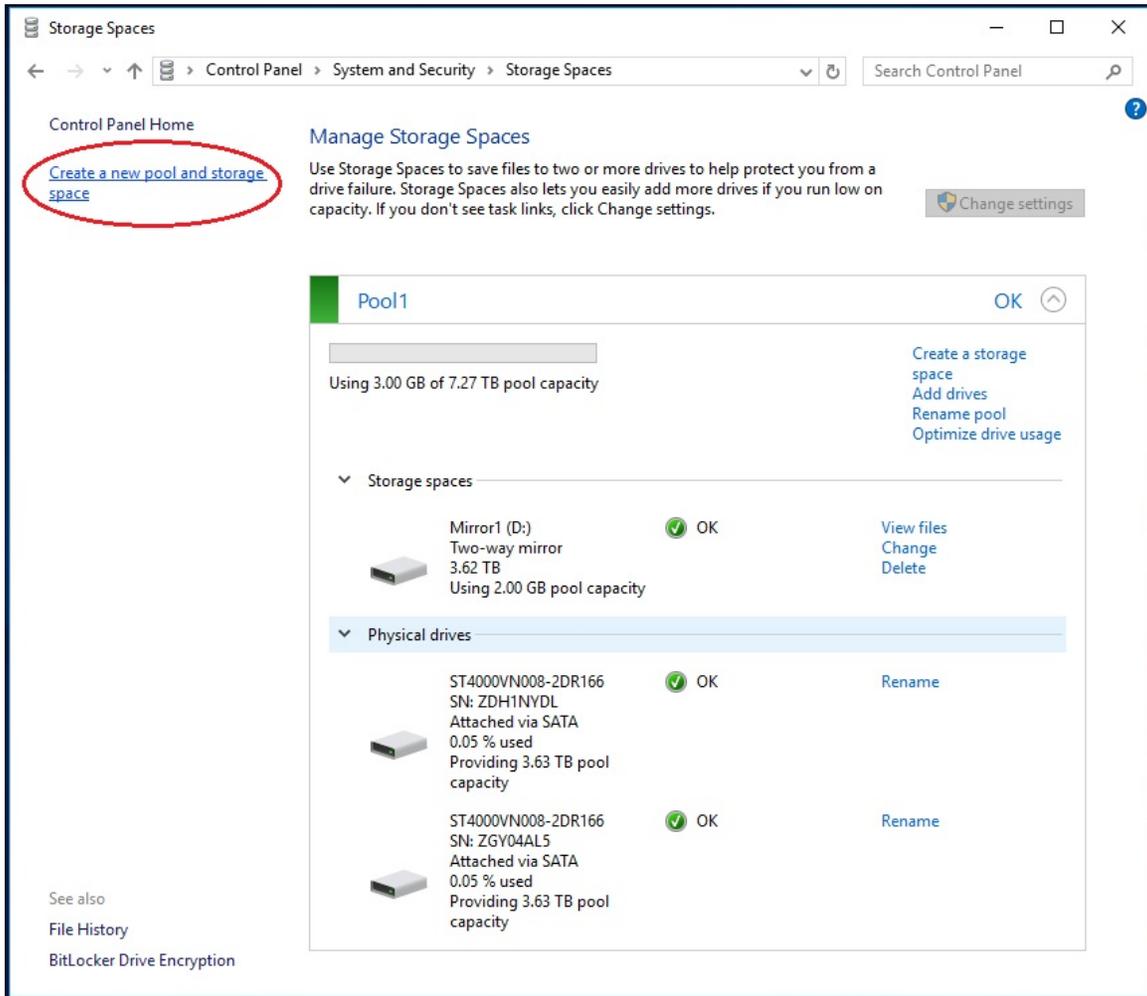
The screenshot shows the Windows Storage Spaces control panel. The main heading is "Manage Storage Spaces". Below this, there is a "Storage pool" section with a progress bar indicating "Using 3.00 GB of 7.27 TB pool capacity". To the right of the progress bar are links for "Create a storage space", "Add drives", "Rename pool", and "Optimize drive usage".

Under the "Storage spaces" section, there is one entry for "Mirror1 (D:)", which is a "Two-way mirror" with a capacity of "3.62 TB" and is "Using 2.00 GB pool capacity". To its right are links for "View files", "Change", and "Delete".

Under the "Physical drives" section, there are two entries for "ST4000VN008-2DR166" drives. The first drive has SN: ZDH1NYDL, is "Attached via SATA", and is "Providing 3.63 TB pool capacity". The second drive has SN: ZGY04AL5, is also "Attached via SATA", and is "Providing 3.63 TB pool capacity". Both drives have a "Rename" link to their right.

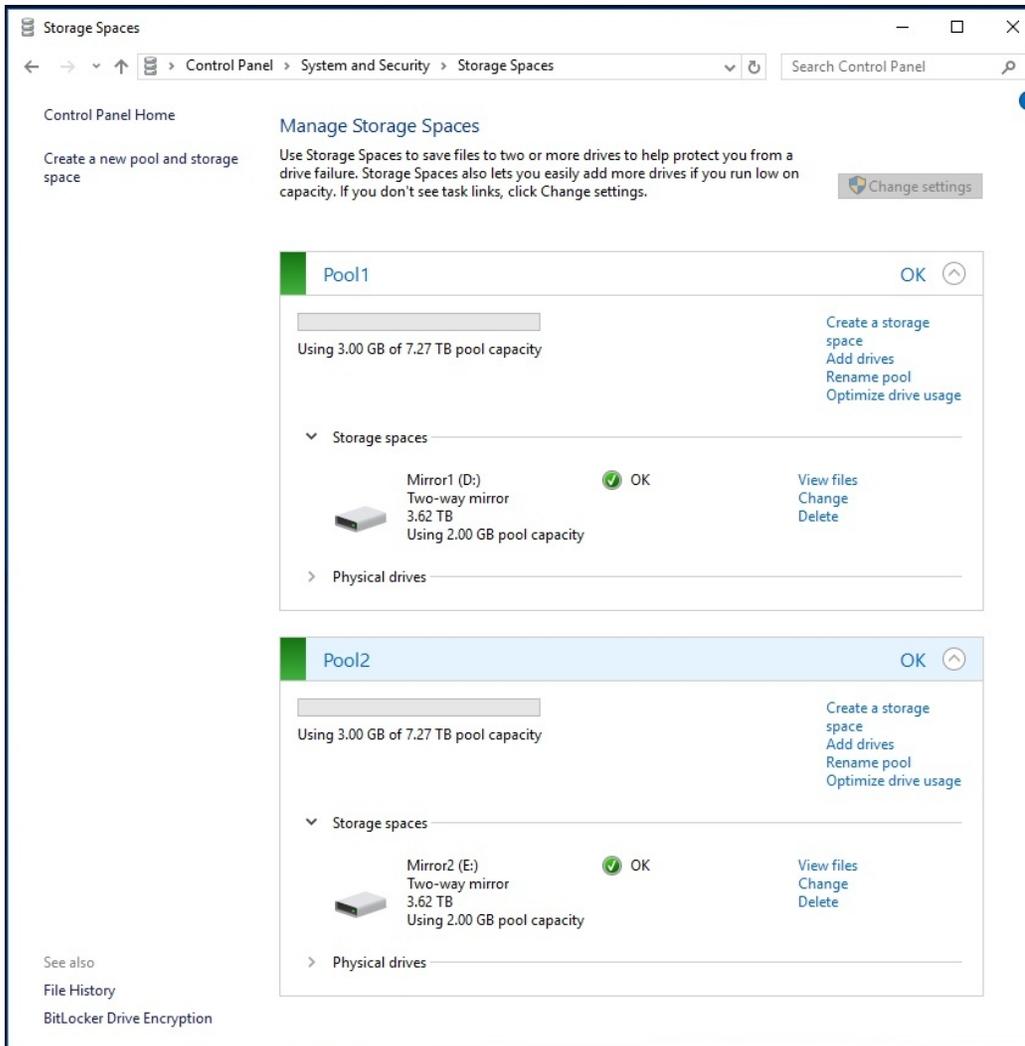
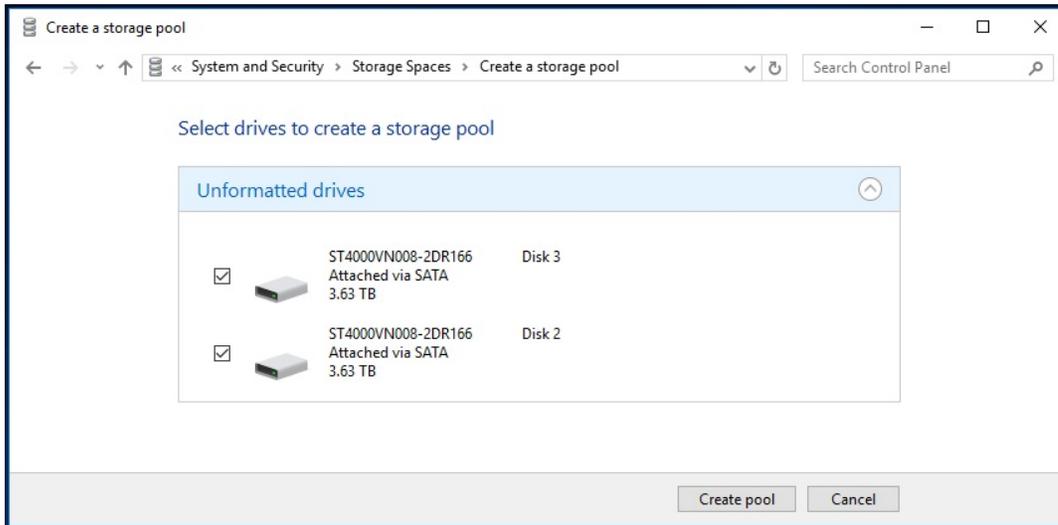
At the bottom left, there is a "See also" section with links for "File History" and "BitLocker Drive Encryption".

Step 8: Now click “Create a new pool and storage space” to create the second RAID 1:

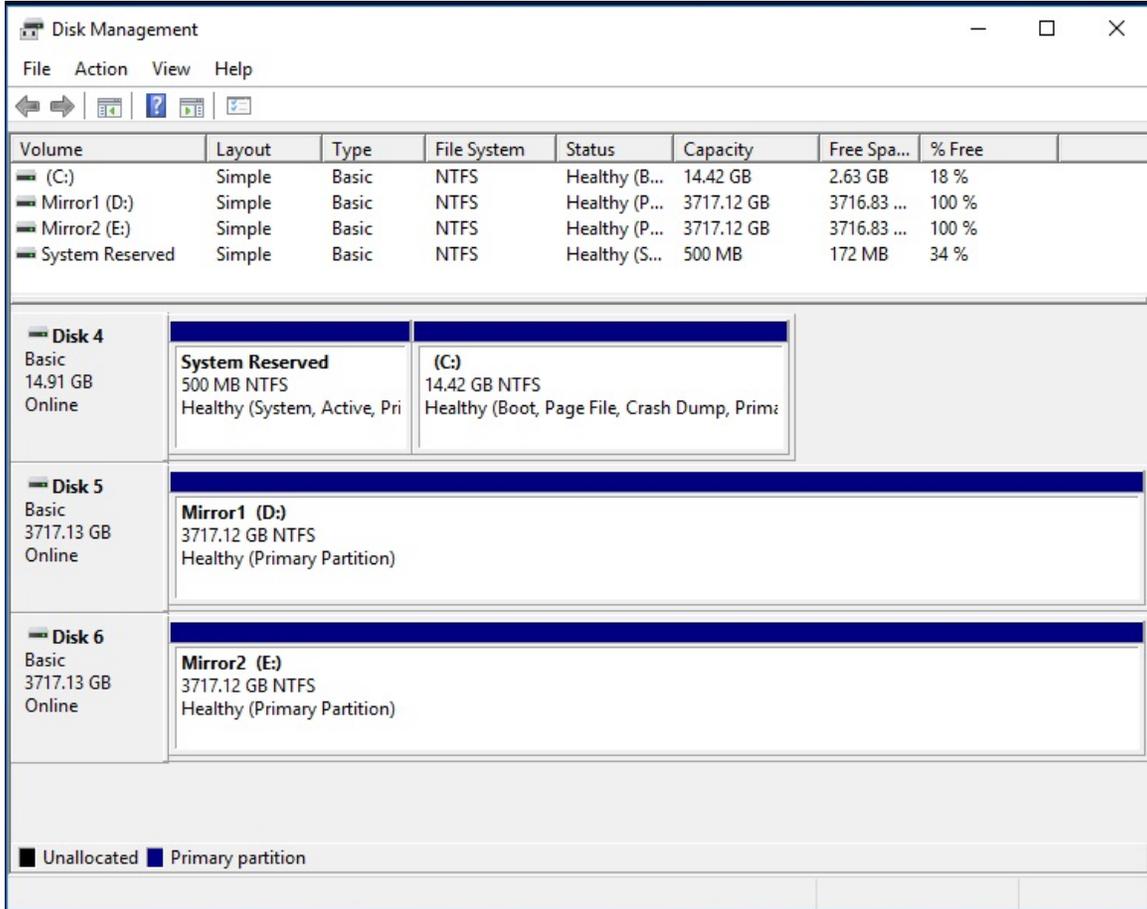


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Step 9: Repeat the steps with the remaining two drives to create Mirror2:



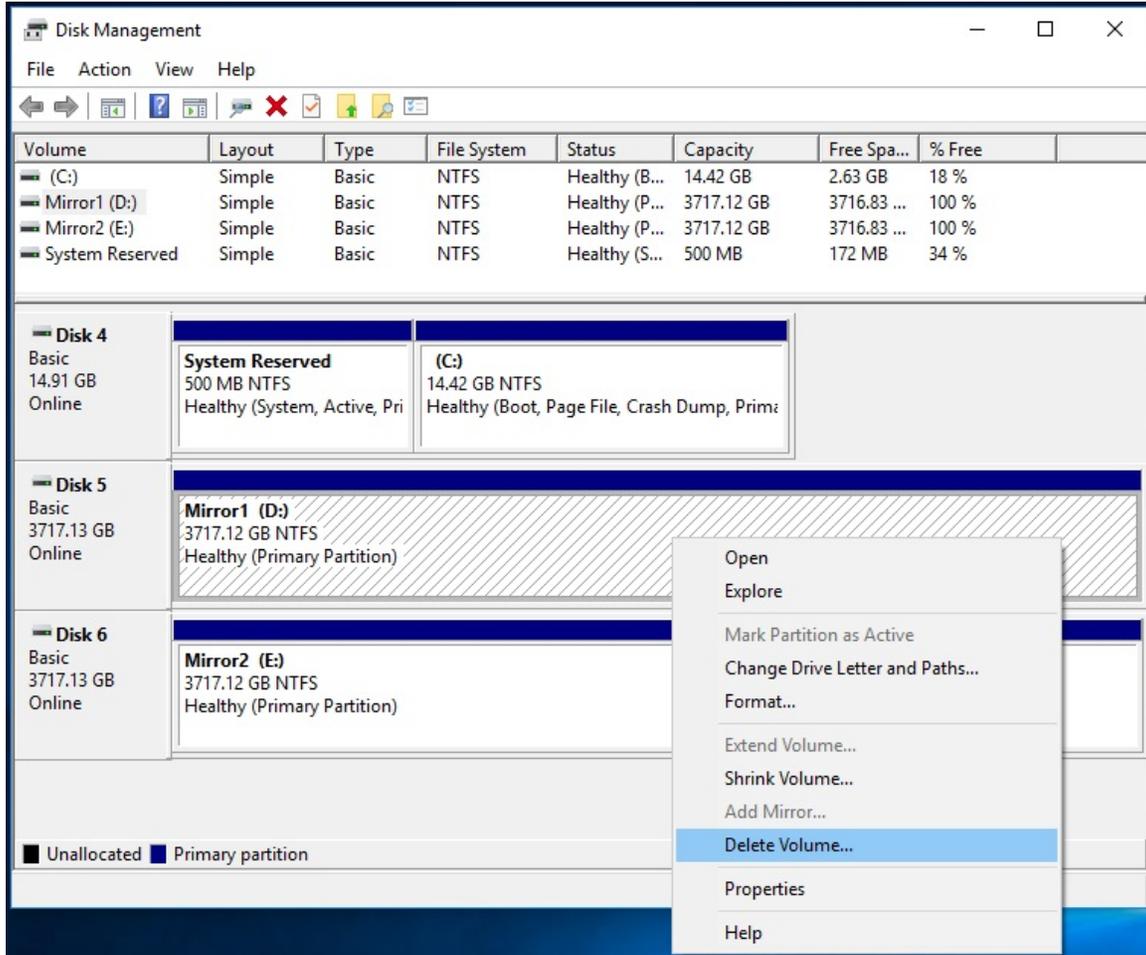
Step 10: To combine these two RAID 1 arrays (Mirror1 & Mirror2) into a RAID 0 array, we use Windows Disk Management. Start Disk Management:



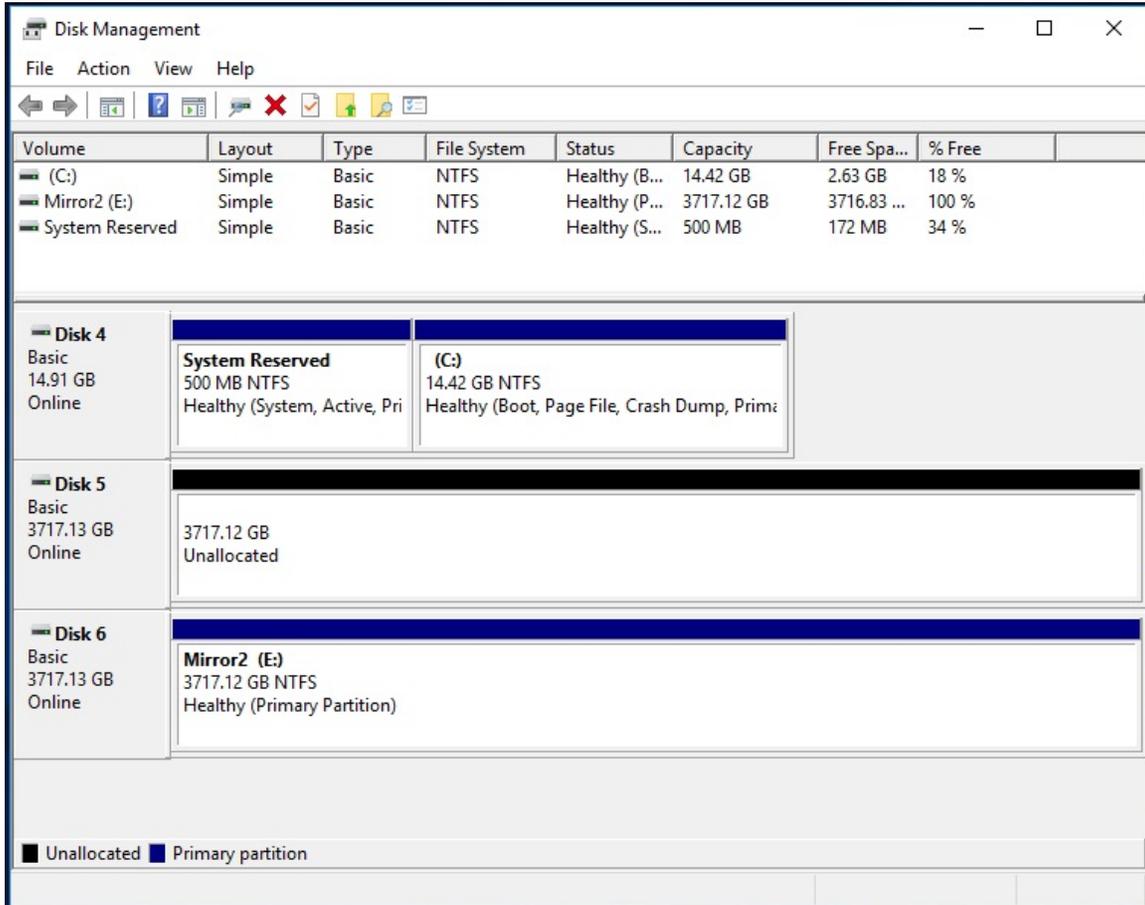
RAID 5 and RAID 10 Setup in Windows 10

Step 11: Delete the file systems on each disk.

Step 12: Right click on Mirror1 and select “Delete Volume”.



Step 13: Delete Mirror1:



The screenshot shows the Windows Disk Management console. At the top, a table lists the volumes on the system:

Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
(C:)	Simple	Basic	NTFS	Healthy (B...	14.42 GB	2.63 GB	18 %
Mirror2 (E:)	Simple	Basic	NTFS	Healthy (P...	3717.12 GB	3716.83 ...	100 %
System Reserved	Simple	Basic	NTFS	Healthy (S...	500 MB	172 MB	34 %

Below the table, the details for three disks are shown:

- Disk 4:** Basic, 14.91 GB, Online. Contains two partitions: **System Reserved** (500 MB NTFS, Healthy) and **(C:)** (14.42 GB NTFS, Healthy).
- Disk 5:** Basic, 3717.13 GB, Online. The entire disk is **Unallocated**.
- Disk 6:** Basic, 3717.13 GB, Online. The entire disk is **Mirror2 (E:)** (3717.12 GB NTFS, Healthy).

A legend at the bottom indicates that black represents **Unallocated** space and blue represents **Primary partition**.

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Step 14: Delete Mirror2:

The screenshot shows the Windows Disk Management console. At the top, a table lists the volumes on the system:

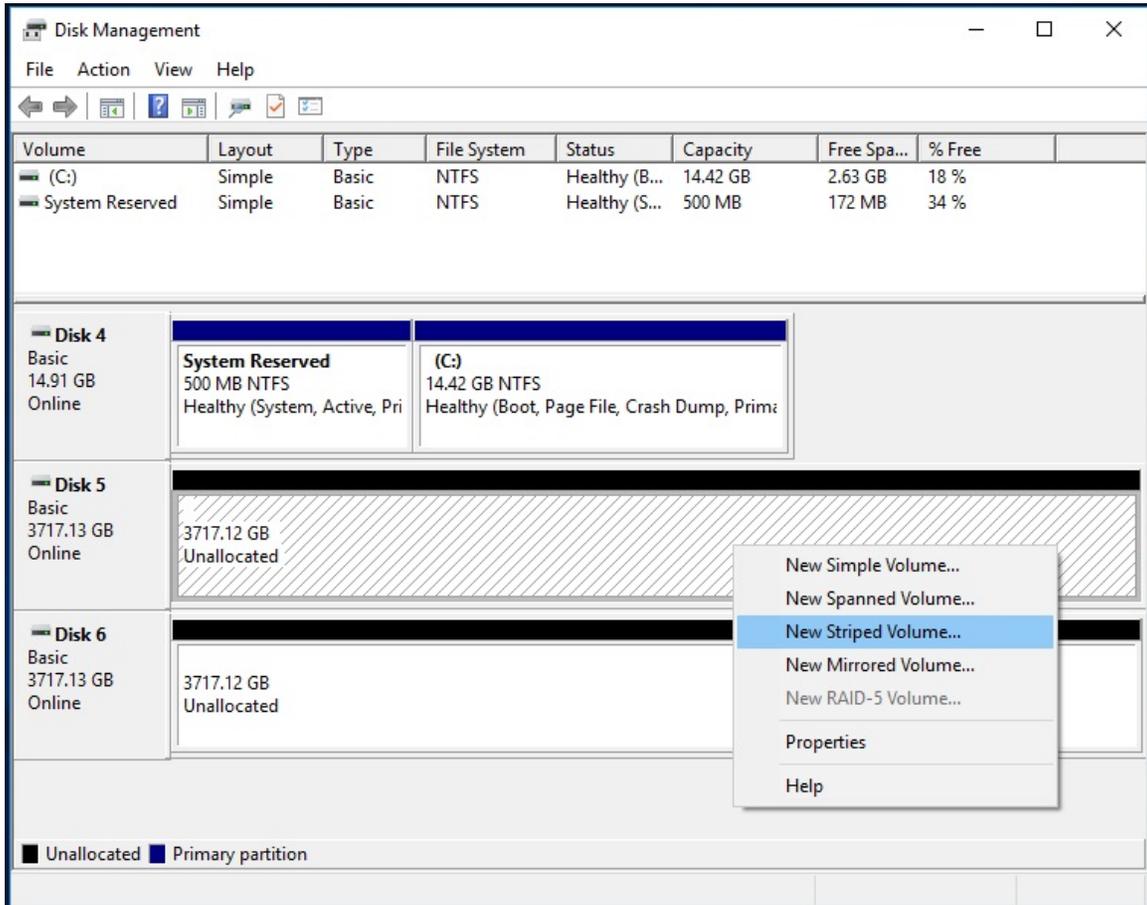
Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
(C:)	Simple	Basic	NTFS	Healthy (B...	14.42 GB	2.63 GB	18 %
System Reserved	Simple	Basic	NTFS	Healthy (S...	500 MB	172 MB	34 %

Below the table, the details for three disks are shown:

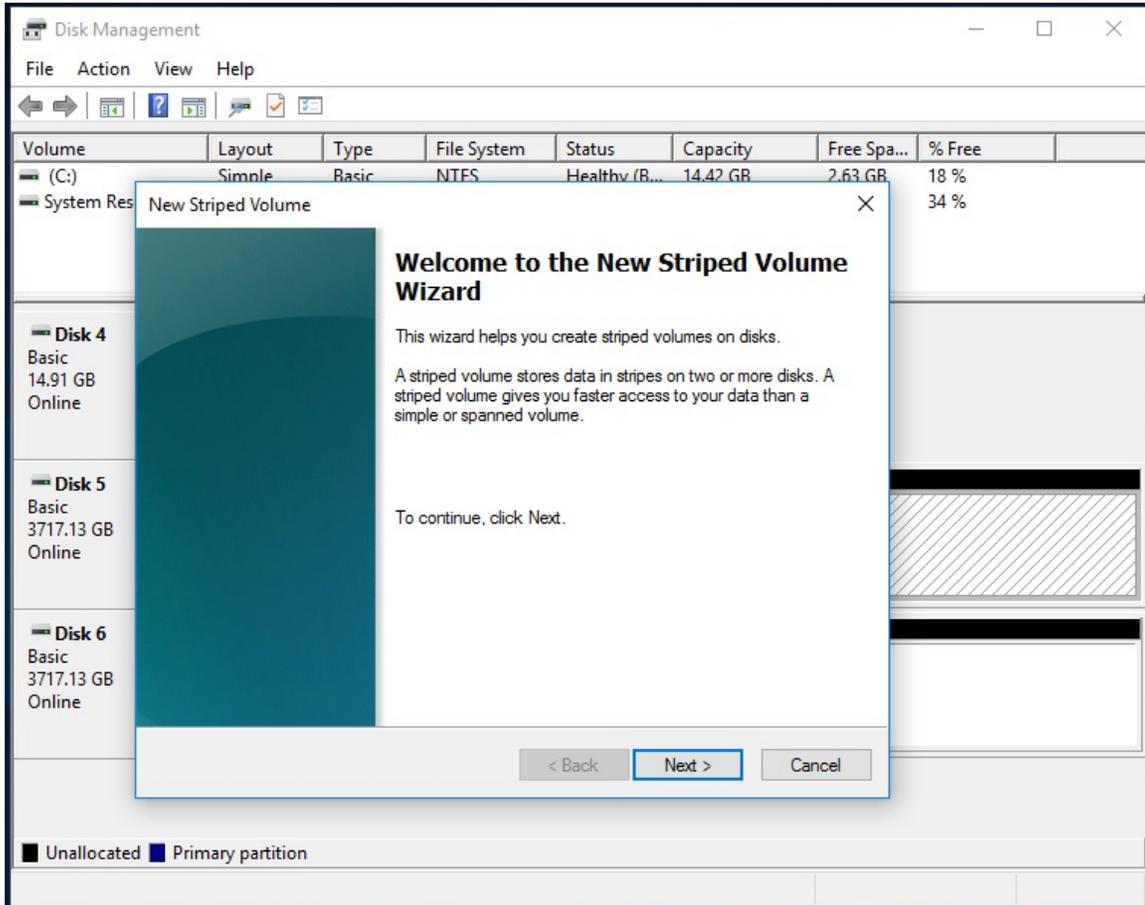
- Disk 4:** Basic, 14.91 GB, Online. Contains two partitions:
 - System Reserved:** 500 MB NTFS, Healthy (System, Active, Pri)
 - (C:):** 14.42 GB NTFS, Healthy (Boot, Page File, Crash Dump, Prim:
- Disk 5:** Basic, 3717.13 GB, Online. 3717.12 GB Unallocated.
- Disk 6:** Basic, 3717.13 GB, Online. 3717.12 GB Unallocated.

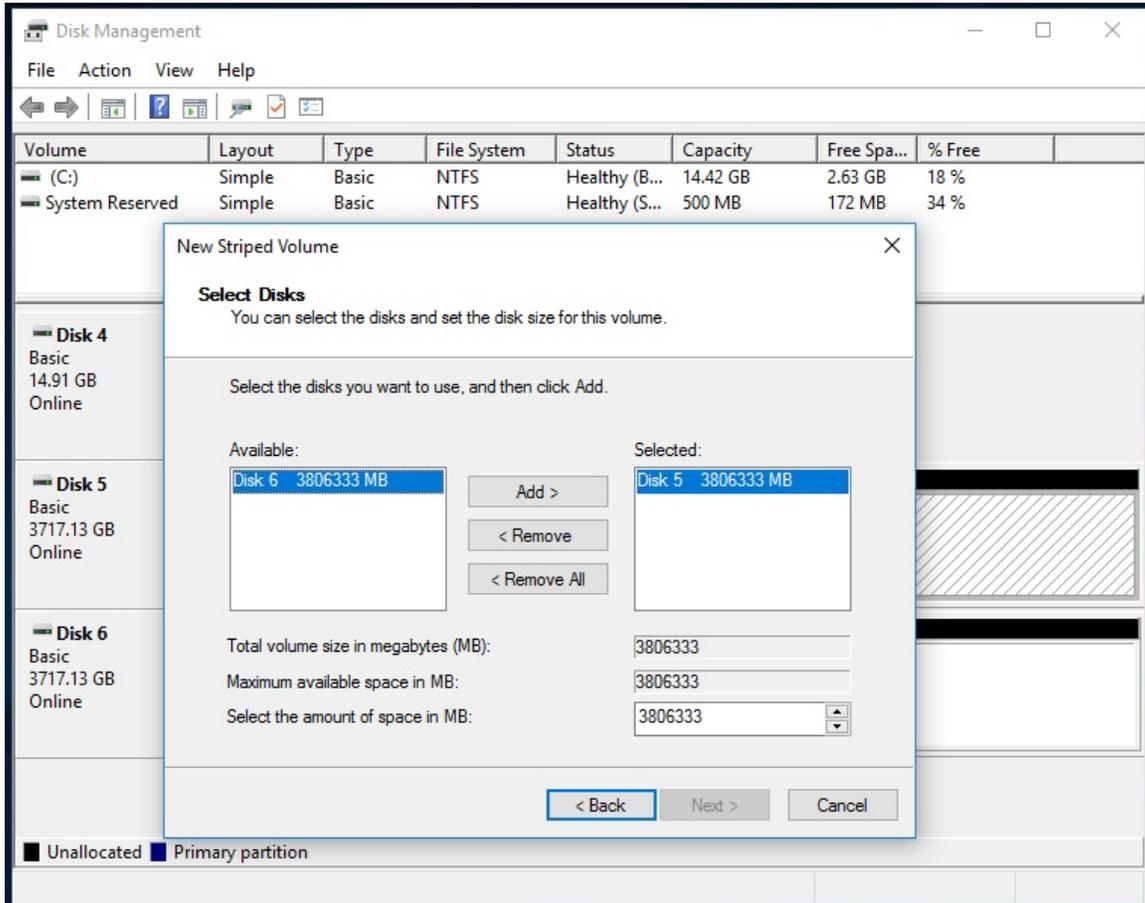
A legend at the bottom indicates that black represents Unallocated space and blue represents Primary partition.

Step 15: Right click on either one of RAID 1 disk and select “New Striped Volume”

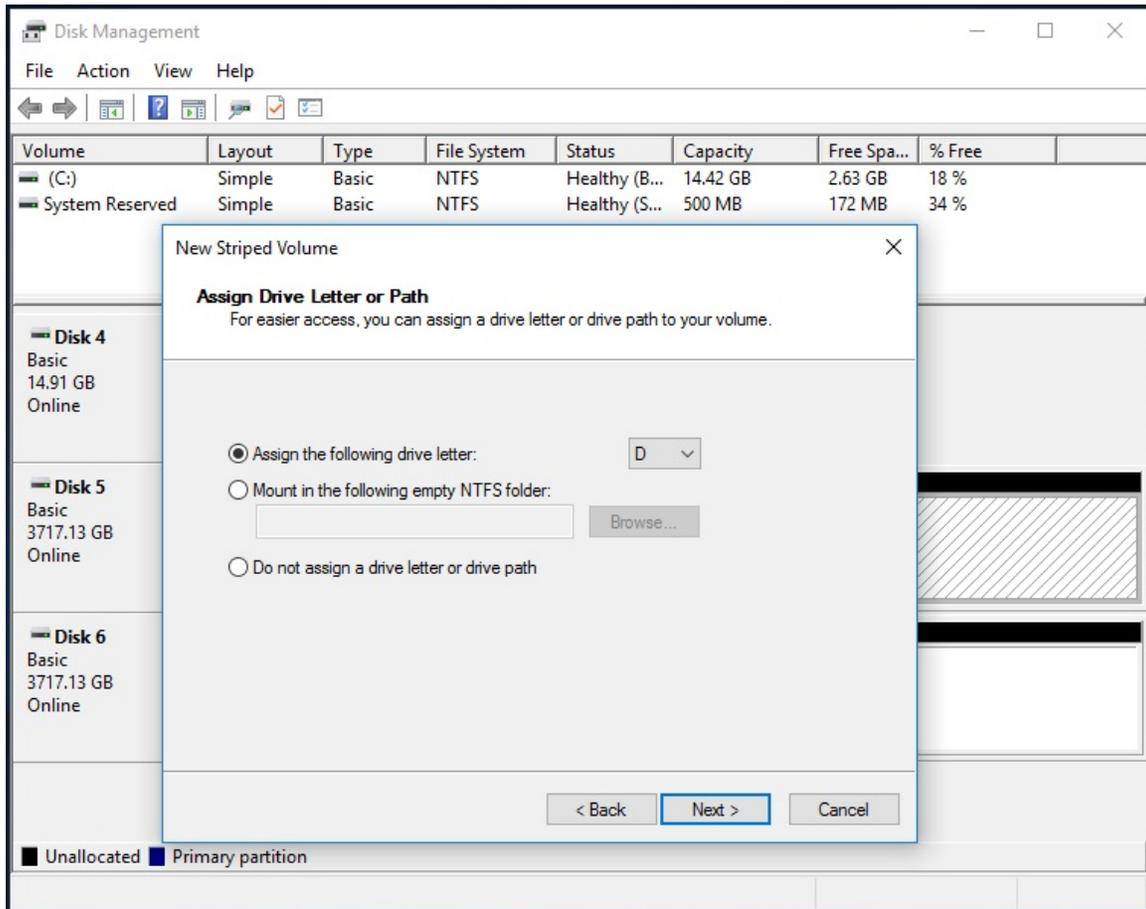


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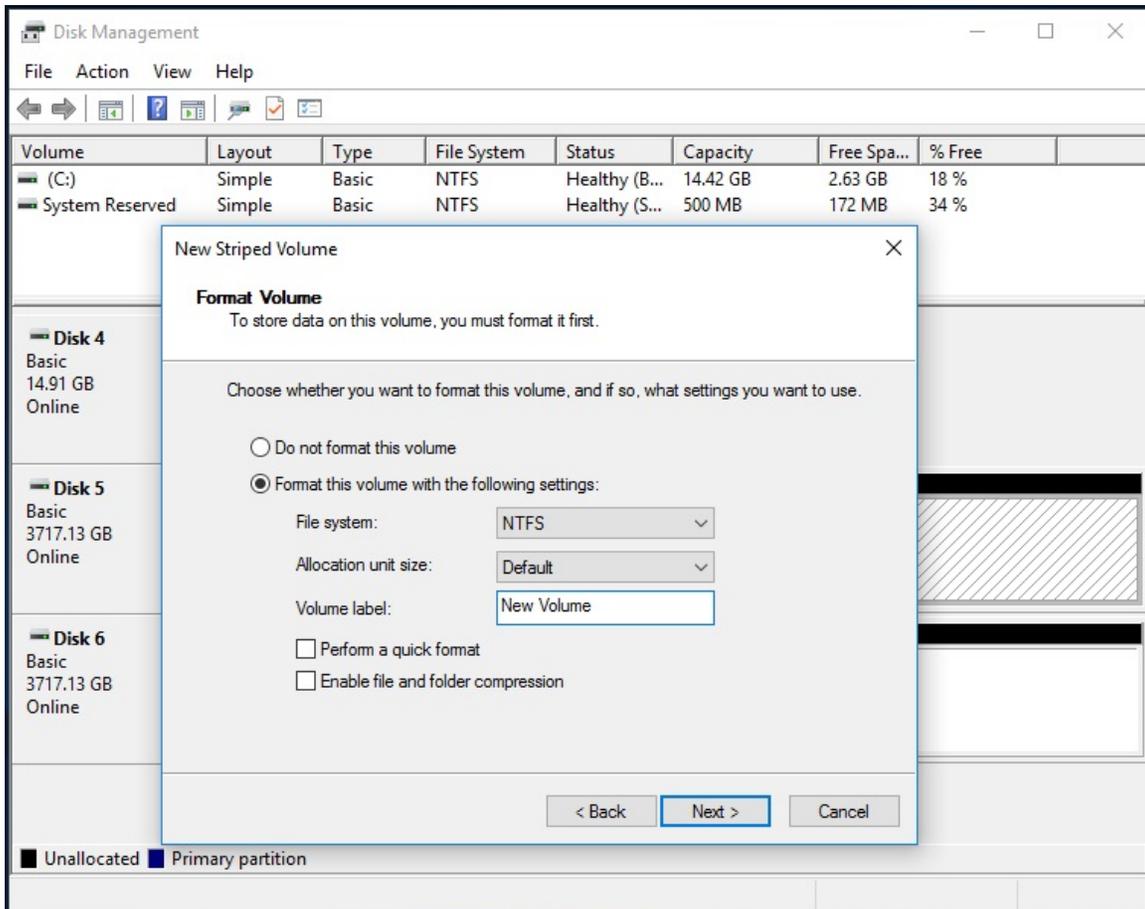




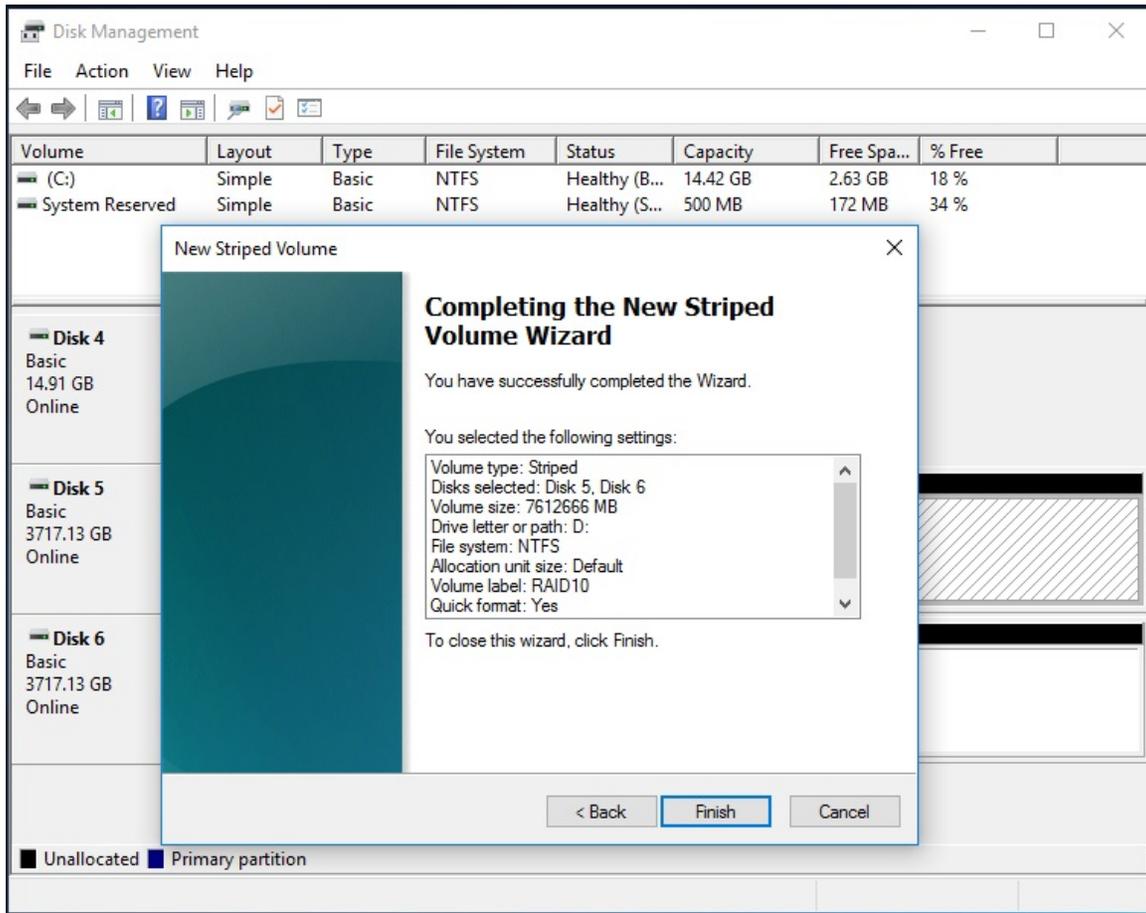
RAID 5 and RAID 10 Setup in Windows 10



Step 16: Assign a volume label, for example RAID10.



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The screenshot shows the Windows Disk Management console. At the top, a table lists the volumes on Disk 4:

Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free
(C:)	Simple	Basic	NTFS	Healthy (B...	14.42 GB	2.63 GB	18 %
System Reserved	Simple	Basic	NTFS	Healthy (S...	500 MB	172 MB	34 %

Below the table, the disk layout for Disk 4, Disk 5, and Disk 6 is shown. Disk 4 contains the System Reserved and (C:) partitions. Disk 5 and Disk 6 are entirely unallocated.

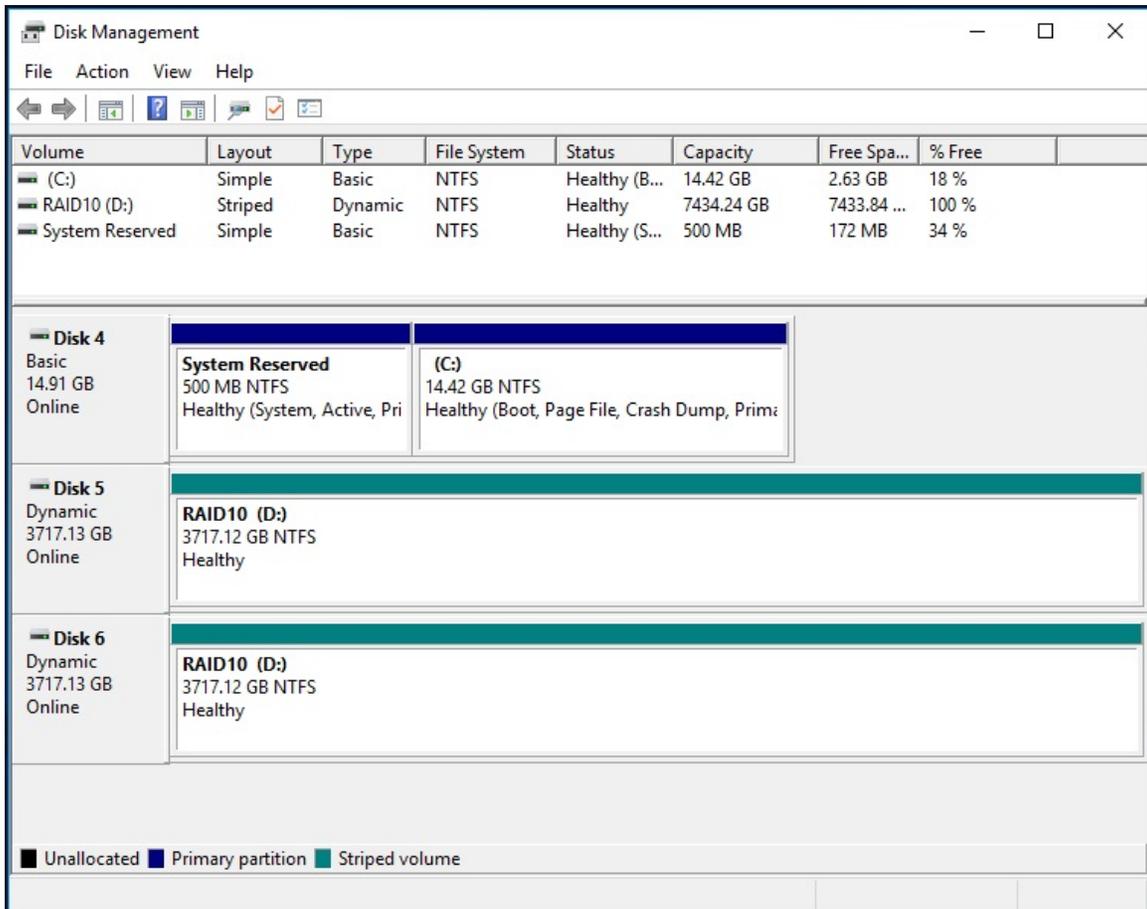
A warning dialog box is displayed in the foreground, titled "Disk Management". It contains the following text:

 The operation you selected will convert the selected basic disk(s) to dynamic disk(s). If you convert the disk(s) to dynamic, you will not be able to start installed operating systems from any volume on the disk(s) (except the current boot volume). Are you sure you want to continue?

The dialog box has "Yes" and "No" buttons at the bottom.

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Step 17: Done.



The screenshot shows the Windows Disk Management console. At the top, a table lists the volumes:

Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
(C:)	Simple	Basic	NTFS	Healthy (B...	14.42 GB	2.63 GB	18 %
RAID10 (D:)	Striped	Dynamic	NTFS	Healthy	7434.24 GB	7433.84 ...	100 %
System Reserved	Simple	Basic	NTFS	Healthy (S...	500 MB	172 MB	34 %

Below the table, the details for three disks are shown:

- Disk 4:** Basic, 14.91 GB, Online. Contains a 500 MB NTFS System Reserved partition and a 14.42 GB NTFS (C:) partition.
- Disk 5:** Dynamic, 3717.13 GB, Online. Contains a 3717.12 GB NTFS RAID10 (D:) volume.
- Disk 6:** Dynamic, 3717.13 GB, Online. Contains a 3717.12 GB NTFS RAID10 (D:) volume.

A legend at the bottom indicates: Unallocated (black), Primary partition (blue), and Striped volume (green).