

Knowledge Base

HOW TO: Establish a Striped Volume (RAID 0) in Windows 2000

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The information in this article applies to:

- Microsoft Windows 2000 Server
 - Microsoft Windows 2000 Advanced Server
 - Microsoft Windows 2000 Professional
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SUMMARY

A striped volume (RAID 0) combines areas of free space from multiple hard disks (anywhere between 2 and 32) into one logical volume. Data that is written to a striped volume is interleaved to all disks at the same time rather than sequentially. Consequently, disk performance is the fastest on a RAID 0 volume as compared to any other type of disk configuration. Administrators favor using striped volumes when input/output speed is important. Any file system can be used on a striped volume including FAT, FAT32, or NTFS.

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Requirements

- There must be at least two hard disk drives (IDE, SCSI or mixed architecture is permissible).
- All disks involved in the striped volume must be dynamic disks.
- Each portion of the free space must be identical (for example, size and file system type).

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How to Set Up the Disk Management System

1. Right-click **My Computer**, and then click **Manage**.
2. Click the plus sign (+) next to **Storage** to open the Storage console tree.
3. Click the **Disk Management** folder.
4. On the **View** menu, point to **Top**, and then click **Disk List**. In the right pane, a column listing the attributes of each disk in the system is displayed.
5. On the **View** menu, point to **Bottom**, and then click **Graphical View**.

A color coded graphical view of the disks on the system is displayed.

The Disk Description pane (that is displayed in gray) is on the left side of the volume description that is displayed in color. The disk description contains information about each disk's disk number, whether it is a basic or dynamic configuration, its size, and its status (online or offline).

The volume descriptions are color-coded. They hold information about each volume such as the drive letter (if assigned), whether it is allocated or unallocated, the partition or volume size, and the health status of the volume.

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Requirements to Ensure Disks Are Set Up to Support a Striped Volume

- **Disks:** Minimum of two disks are needed to support striping.
- **Type:** Any disks involved in striping must be dynamic. Conversion from basic to dynamic goes very quickly without data loss. After you complete the conversion procedure, you must restart the computer.
- **Capacity:** The striped volume can take the entire disk or as little as 50 megabytes (MB) for each disk.
- **Unallocated space:** Any disks that you want to upgrade to a dynamic disk must contain at least 1 MB of free space at the end of the disk for the upgrade to succeed. Disk Management automatically reserves this free space when it creates partitions or volumes on a disk, but disks with partitions or volumes that are created by other operating systems might not have this free space available.
- **Status:** The status of all disks involved in a stripe volume must be online when you create the striped volume.
- **Device Type:** You may install striping on any dynamic disk even if there are mixed drive architectures on the system. For example, IDE, EIDE, and SCSI drives can all be used in one stripe volume.

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How to Upgrade to Dynamic Disks

If the disks that are going to be involved in the stripe volume are already dynamic disks, go to the next section ("How to Convert to Stripe Volume").

NOTE: You must be logged on as an administrator or a member of the Administrators group to complete this procedure. If your computer is connected to a network, network policy settings may also prevent you from completing this procedure.

To upgrade a basic disk to a dynamic disk:

1. Before you upgrade disks, close any programs that are running on those disks.
2. Right-click the gray Disk Description pane that is located to the left of the color-coded volume panes, and then click **Upgrade to Dynamic Disk**.
3. If the second disk is not a dynamic disk, follow the preceding steps to upgrade it to a dynamic disk.

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How to Convert to Stripe Volume

In this scenario, there are two disks on the computer, Disk 0 and Disk 1. Both disks are dynamic disks and have at least 1 gigabyte (GB) of free unallocated space on each disk for a total volume of 2 GB.

1. In the bottom right pane of the Disk Management tool, right-click the free unallocated volume space on either disk, and then click **Create Volume**.
2. After the Create Volume Wizard starts, click **Next**.
3. Click **Striped Volume** under **Volume Type**, and then click **Next**.
4. In the left pane under **Select Two or More Disks**, a list of all disks that have enough free unallocated space to participate in the stripe volume is displayed.

In the right pane under **Selected Dynamic Disks**, the disk that you right-clicked in step one is displayed.

5. In the left pane under **All Available Dynamic Disks**, click the disk, and then click **Add**.

All disks that are displayed in the right pane are labeled "Selected Dynamic Disks". Look at the bottom of the **Select Disk** dialog box under the **Size** label. The **For All Selected Disks** box displays the maximum size of the striped volume you can make.

NOTE: The volume on each disk is the same size in the completed striped volume. For example, if you have 100 MB on the first disk, you have 100 MB on the second disk, and so on. Therefore, the total size of our combined volumes is double that of the smaller of the volumes on the two disks.

You may reduce the size of the volume from the maximum size that the wizard automatically shows. To do so, click the arrows on the **Disk Size** box to lower the volume size on this disk. Keep in mind that on a system that has two disks, the total striped volume size is double the size that you enter. The **Total Volume Size** box under the right pane displays the actual size of the striped volume.

6. Click **Next** to advance to the **Assign Drive Letter Path** page of the wizard.
7. At this time, you may want to assign a drive letter to your striped volume (you can also do this at any other time). To do so, click **Assign Drive Letter**, and then enter an available drive letter.

Alternatively, you can click **Do not assign drive letter or path**. You can also click **Mount this volume on an empty folder that supports drive paths**. However, this selection is beyond the scope of this article.

8. After you enter a drive letter for your striped volume, click **Next**.
9. Click **Format this partition with the following settings**, and then follow these steps:
 - a. Enter the file system type; FAT32 or NTFS is acceptable.
 - b. Leave the default selection in the **Allocation Unit Size** box.
 - c. In the **Volume Label** box, you may keep the default "New Volume" label or you can type your own label.
 - d. At this time, you can click to select the **Quick Format** check box and the **File and Folder Compression** check box. You can defer both of these tasks if you like.
10. Click **Next**, check your selection in the Summary window, and then click **Finish**.

The striped volumes are displayed on the two disks on your system. They have the same color code, the same drive letter (if you mapped the drive during the procedure), and they are both the same size.

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Troubleshooting

- Do not mix hardware RAID-0 with software RAID-0.
- A striped volume cannot hold the system or boot partition of a Windows 2000-based system.
- You cannot extend or mirror striped volumes.
- There is no fault tolerance on a striped volume. This means that if one of the disks becomes damaged or ceases to function properly, the entire volume is lost.

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