

Replace a failed mirror with a new mirror on another disk

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Applies To: Windows Server 2003, Windows Server 2003 R2, Windows Server 2003 with SP1, Windows Server 2003 with SP2

To replace the failed mirror with a new mirror on another disk

If the disk containing part of the mirrored volume is missing and the volume does not return to **Healthy** status, you should replace the failed mirror with a new mirror on another disk.

- Using the Windows interface
- Using a command line

Using the Windows interface

1. Open Computer Management (Local).
2. In the console tree, click **Computer Management (Local)**, click **Storage**, and then click **Disk Management**.
3. Right-click the mirror on the **Missing** or **Offline** disk, and then click **Remove Mirror**. Follow the instructions on your screen.
4. Right-click the volume to be re-mirrored, and then click **Add Mirror**. Follow the instructions on your screen.

Important

- Before installing a new disk, break the mirror and then examine the system log to see if the disk or the disk controller is failing. If the failing mirror is on a controller that is failing, installing a new disk on the failing controller will not solve the problem. For instructions describing how to open Event Viewer to examine the system log, see Related Topics.

Notes

- To perform this procedure on a local computer, you must be a member of the Backup Operators group or Administrators group on the local computer, or you must have been delegated the appropriate authority. To perform this procedure remotely, you must be a member of the Backup Operators group or Administrators group on the remote computer. If the computer is joined to a domain, members of the Domain Admins group might be able to perform this procedure. As a security best practice, consider using Run as to perform this procedure. For more information, see [Default local groups](#), [Default groups](#), and [Using Run as](#).
- To open Computer Management, click **Start**, click **Control Panel**, double-click **Administrative Tools**, and then double-click **Computer Management**.
- To replace a mirror in the mirrored volume, you must have a dynamic disk with unallocated space that is at least as large as the region to repair. If you do not have a dynamic disk with

enough unallocated space, the **Add Mirror** command is unavailable. (To verify you have enough space, right-click the disk, click **Properties**, and then check the size in **Unallocated space**. This size may be slightly smaller than shown in the graphical and list views.)

- If you are replacing one of the disks in a mirrored system volume, be sure to use an identical disk to the one you are replacing. Otherwise, startup problems might occur if the disks use different geometries or if the system volumes are at different offsets on the disks. Always test your configuration by attempting to start the operating system from each volume to ensure that the operating system can actually start if one of the disks fails. For more information about mirroring the system volume, see "Disk Management" at the [Microsoft Windows Resource Kits Web site](#).

Using a command line

1. Open Command Prompt.
2. Type:

diskpart

3. At the **DISKPART** prompt, type:

list volume

Make note of the volume number of the mirrored volume.

4. At the **DISKPART** prompt, type:

select volume *n*

5. At the **DISKPART** prompt, type:

detail volume

Make note of the disk number that specifies the half of the mirrored volume you want to remove and convert to free space.

6. At the **DISKPART** prompt, type:

break disk *n* [nokeep]

7. At the **DISKPART** prompt, type:

select volume *n*

Select the volume that contains the volume you want to mirror.

8. At the **DISKPART** prompt, type:

list disk

Make note of the disk number of the dynamic disk on which you want to mirror the volume.

9. At the **DISKPART** prompt, type:

add disk *n*

Important

- Before installing a new disk, break the mirror and then examine the system log to see if the disk or the disk controller is failing. If the failing mirror is on a controller that is failing, installing a new disk on the failing controller will not solve the problem. For instructions describing how to open Event Viewer to examine the system log, see Related Topics.

Value	Description
list volume	Displays a list of basic and dynamic volumes on all disks.
select volume <i>n</i>	Selects the specified volume, where <i>n</i> is the volume number, and gives it focus. If no volume is specified, the select command lists the current volume with focus. You can specify the volume by number, drive letter, or mount point path. On a basic disk, selecting a volume also gives the corresponding partition focus.
detail volume	Displays the disks on which the current volume resides.
break disk <i>n</i>	Applies to dynamic disks only. Breaks a mirrored volume into two simple volumes. These volumes are no longer fault tolerant. The disk specified by <i>n</i> receives the focus so you can assign it a drive letter. If the specified disk is the current system or boot disk, the command fails. The other disk retains the drive letter and any mount points that belonged to the mirrored volume.
list disk	Using the nokeep parameter, the specified disk, <i>n</i> , is deleted and converted to free space, while the other half of the mirror is retained as a simple volume. Neither volume receives focus. Displays a list of disks and information about them, such as their size, amount of available free space, whether the disk is a basic or dynamic disk, and whether the disk uses the master boot record (MBR) or GUID partition table (GPT) partition style. The disk marked with an asterisk (*) has focus.
add disk <i>n</i>	Mirrors the simple volume with focus to the specified disk. The specified disk must have unallocated space at least as large as the size of the simple volume you want to mirror.
Nokeep	Specifies that only one of the mirrored volumes retained; the other simple volume is deleted and converted to free space. Neither volume receives the focus.

Notes

- To perform this procedure on a local computer, you must be a member of the Backup Operators group, Administrators group, or you must have been delegated the appropriate authority. If the computer is joined to a domain, members of the Domain Admins group might be able to perform this procedure. As a security best practice, consider using Run as to perform this procedure. For more information, see [Default local groups](#), [Default groups](#), and [Using Run as](#).
- To open a command prompt, click **Start**, point to **All programs**, point to **Accessories**, and then click **Command prompt**.

- To replace a mirror in the mirrored volume, you must have a dynamic disk with unallocated space that is at least as large as the region to repair.
- If you are replacing one of the disks in a mirrored system volume, be sure to use an identical disk to the one you are replacing. Otherwise, startup problems might occur if the disks use different geometries or if the system volumes are at different offsets on the disks. Always test your configuration by attempting to start the operating system from each volume to ensure that the operating system can actually start if one of the disks fails. For more information about mirroring the system volume, see "Disk Management" at the [Microsoft Windows Resource Kits Web site](#).
- For more information about **DiskPart**, see Related Topics.

Recovering a Mirrored Volume

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A mirrored volume provides fault tolerance by duplicating data on two disks. If one disk fails, the data on the failed disk becomes unavailable, but the system continues to operate using the unaffected disk.

If the failure of a mirrored volume did not cause any disruption in service, you can continue running in a non-fault-tolerant configuration and schedule a time to reconstruct the mirrored volume. This activity can occur during a normally scheduled maintenance period or during a less busy time. However, if you have a spare disk in the configuration, you can reconstruct the mirror immediately.

Note

The failed disk can be replaced with any disk that is the same size or larger.

It is a good idea to use a disk as similar to the remaining disk as possible.

When you move or replace a disk that was at the end of a SCSI bus, be sure that you terminate only the disk that is now at the end of the bus.

When a member of a mirrored volume is orphaned, you need to break the mirrored volume to expose the remaining volume as a separate volume. The remaining member of the mirrored volume receives the drive letter that was assigned to the complete mirrored volume. The orphaned volume receives the next available drive letter or a new letter assigned to it.

You can then create a new mirrored volume from unused free space on another disk. When you restart the computer, the data from the working volume is copied to the new member of the mirrored volume.

Note

In Windows NT 4.0 and earlier, mirrored volumes were known as mirror sets. Disk Management renames all mirror sets to Mirrored Volume. These mirrored volumes reside only on basic disks.

Repairing a Basic Mirrored Volume

When you follow the procedure to repair a basic mirrored volume, the status of the mirrored volume changes to Regenerating and then Healthy. If the volume does not return to the Healthy status, right-click the volume, and then click **Resynchronize Mirror** .

Note

If a basic disk containing part of a mirrored volume is disconnected or fails, the status of the mirrored volume becomes Failed Redundancy and the disk status remains Online. If this happens, you can try to repair the volume.

When you repair a mirrored volume on a basic disk, Disk Management creates a new mirror on a healthy disk and then resynchronizes the new mirror.

Repairing a mirrored volume on a basic disk requires another basic disk with sufficient free space for the new mirror. If an additional disk is not available, the **Repair Volume** option is unavailable and you cannot repair the volume.

You must use a basic disk to repair a basic mirrored volume (mirror set). You cannot use a dynamic disk.

Replacing a Failed Mirror

If the disk containing part of the mirrored volume cannot be reactivated and the volume does not return to the Healthy status, replace the failed mirror with a new mirror on another disk.

To replace the failed mirror with a new mirror on another disk

1. Open Disk Management.
2. Right-click the mirror on the missing or offline disk, and then click **Remove Mirror** . Follow the instructions on your screen.
3. Right-click the volume to be remirrored, and then click **Add Mirror** . Follow the instructions on your screen.

To replace a mirror in the mirrored volume, you need a dynamic disk with unallocated space that is at least as large as the region to repair. If you don't have a dynamic disk with enough unallocated space, the Add Mirror command is unavailable.

Breaking a Mirrored Volume

Breaking the mirrored volume results in two independent partitions or logical drives. No information is deleted, but the data is no longer redundant. Back up the volume before breaking a mirrored volume.

Deleting Mirrored Volumes on a Basic Disk

Deleting a mirrored volume deletes all the data contained in the volume as well as the partitions that make up the volume. You can delete only entire mirrored volumes.

Resynchronizing Mirrored Volumes

Resynchronize a mirrored volume when data on one disk becomes stale. For example, if one disk of a mirrored volume is disconnected, data is written to the remaining disk, but the volume is no longer fault tolerant. If you reconnect the disk, the data on the reconnected disk is stale. To make the mirrored volume fault tolerant again, resynchronize the mirrored volume to update the information on the reconnected disk.

In most cases, mirrored volumes on dynamic disks are resynchronized automatically. However, you need to use the Resynchronize Mirror command for mirrored volumes on basic disks.

Removing Mirrored Volumes

Once you remove a mirror from a mirrored volume, that mirror becomes unallocated space; the remaining mirror becomes a simple volume and is no longer fault tolerant. All data on the removed mirror is deleted.