USING “STORAGE SPACES” IN “WINDOWS 8..” FOR REAL-TIME MIRRORING OF TWO HARD DRIVES
Web location for this presentation:
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"Storage Spaces" is a new feature in "Windows 8..". This feature provides for various hard drive enhancements including real-time, automatic drive mirroring so that two hard drives always contain the same data files and folders in real time.
STORAGE SPACES BASICS
"STORAGE SPACES" BASICS

• "Storage Spaces" is a feature of "Windows 8" that is used to group physical hard drives into single logical "Storage Pool".

• A "Storage Pool" can then be used to create one or more "Storage Spaces" virtual hard drives

• A "Windows 8" computer can have more than one "Storage Pool".
A "Storage Space" is a logical NTFS hard drive or a logical NTFS hard drive partition that is under the control of the "Storage Spaces" process.
Using the "Storage Spaces" applet in "Windows 8", you create logical "Storage Pools" which are then used to create "Storage Spaces" virtual hard drives.
"STORAGE SPACES" BASICS (continued)

• "Storage Spaces" can be used to synchronize hard drives when you create a single virtual hard drive from a "Storage Pool" that consists of two physical hard drives:
When you create a logical "Storage Space", it gets a drive letter and it shows up in "Disk Management" in the "Control Panel" as a hard drive with a "GUID Partition Table" ("GPT"). It also shows up in "File Explorer". It does not show up in "Device Manager" nor does it show up in "Devices and Printers".
"STORAGE SPACES" BASICS
(continued)

• The physical hard drives that are added to a "Storage Pool" disappear from "Disk Management" in the "Control Panel".

• Instead, you see a new local "Storage Pool" drive in "Disk Management": 
Disk 3
Basic
59.13 GB
Online

Storage space (S:)
59.12 GB NTFS
Healthy (Primary Partition)
"STORAGE SPACES" BASICS
(continued)

• You can create a logical "Storage Space" for any letter of the alphabet that is not already assigned.
When a physical hard drive is added to a "Storage Pool":
  - The physical hard drive no longer has a drive letter
  - The physical hard drive no longer shows up in "File Explorer"
  - The physical hard drive no longer shows up in "Disk Management" in the "Control Panel".
The main place where the physical hard drive shows up will be the "Storage Spaces" list of "Physical Drives".

The physical hard drive still shows up in the "Device Manager".

The physical hard drive still shows up in "Devices and Printers".
"STORAGE SPACES" BASICS (continued)

• The C: hard drive or hard drive partition where "Windows 8.." resides cannot be used for one of the physical hard drives in a "Storage Pool".
"STORAGE SPACES" BASICS (continued)

• At some point in the future, "Storage Spaces" will be able to utilize both NTFS and ReFS (Resilient File System) hard drives: At the present time, the new ReFS file system is only available on "Windows 8 Server".
"STORAGE SPACES" BASICS (continued)

- After a hard drive is placed into "Storage Pool", you cannot use the "Safely Remove Hardware and Eject Media" icon in the "Notification Area" to eject the mirrored hard drives.
This device is currently in use. Close any programs or windows that might be using the device, and then try again.
A healthy "Storage Pool" looks like this:
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 3.00 GB of 1.58 TB pool capacity

Storage Spaces

- StorageSpace07 (S)
  - Two-way mirror
  - 814 GB logical size
  - Using 200 GB

StorageSpace07 (S) OK

Physical Drives

- ST310003 33AS USB Dev...
  - Attached via USB
  - 930 GB
  - 0.16 % used

ST310003 33AS USB Dev... OK

- Seagate FreeAgent Pro U...
  - Attached via USB
  - 698 GB
  - 0.21 % used

Seagate FreeAgent Pro U... OK

See also

- File History
- BitLocker Drive Encryption

Change settings
• To make a change to a "Storage Pool", you first have to click on the "Change Settings" button:
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

Warning

Create a storage space
Add drives
Rename pool

Using 4.36 TB of 5.45 TB pool capacity

L Storage space (L1)
Two-way mirror
2.71 TB
Using 4.36 TB pool capacity

Physical drives

Warning

Low capacity; add 2 drives

View files
Change
Delete

See also
File History
BitLocker Drive Encryption
• When a physical hard drive in a "Storage Pool" fails or when you physically disconnect the physical hard drive:
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 5.00 GB of 1.58 TB pool capacity

Unhealthy drives; check drive health

Create a storage space
Add drives
Rename pool

Storage Spaces

StorageSpace07 (S.)
Two-way mirror
814 GB logical size
Using 4.00 GB

Warning
Reduced resiliency; check drive health

View files
Rename
Delete

Physical Drives

ST310003 33AS USB Dev...
Attached via an unrecog...
930 GB
0.25 % used

Warning
Selected for data reallocation

Rename
Remove

Seagate FreeAgent Pro U...
Attached via USB
698 GB
0.35 % used

OK

Rename

See also
File History
BitLocker Drive Encryption
Physical Drives

ST310003 33AS USB Device
Attached via an unrecognized controller
930 GB
0.26% used

Warning
Selected for data reallocation

Rename
Remove
• If a hard drive belongs to a "Storage Space", and you physically remove the hard drive from your computer, you cannot logically remove the hard drive from the "Storage Pool" unless you first add in another hard drive to the "Storage Pool":
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 5.00 GB of 1.58 TB pool capacity

Warning

Unhealthy drives; check drive health

Create a storage space
Add drives
Rename pool

Storage Spaces

StorageSpace07 (S:)
- Two-way mirror
- 814 GB logical size
- Using 4.00 GB

Warning

Reduced resiliency; check drive health

View files
Rename
Delete

Physical Drives

ST3100033AS USB Device
- Attached via an unrecognized path
- 930 GB
- 0.26 % used

Warning

Selected for data reallocation

Remove

Seagate FreeAgent Pro USB Device
- Attached via USB
- 698 GB
- 0.35 % used

OK

Rename
Remove a Drive

Drive could not be removed because some data remains to be reallocated. Please add an additional disk to this pool and reattempt this operation.

Close
Once a "Storage Space" is created, you cannot change its "synchronization" option. Instead, you have to delete the "Storage Space" and use the freed up hard drives to make a new "Storage Space".
"STORAGE SPACES" BASICS (continued)

• The physical hard drives that are part of a "Storage Pool" are formatted in a proprietary "Space Protective Partition" format that only "Windows 8.." computers can access:
• If you attach a "Storage Spaces" hard drive to a "Windows XP", "Windows Vista", or "Windows 7" computer, it will show up in "Disk Management" but you will be unable to access the hard drive with "Windows Explorer":

"STORAGE SPACES" BASICS
(continued)
If any single drive fails in a "Storage Pool" that has "redundancy", the "Storage Pool" logical drive will not disappear from "File Explorer".

If all drives fail, the "Storage Pool" logical drive will disappear from "File Explorer".
• If all drives fail, the "Storage Pool" logical drive will disappear from "File Explorer". If any single drive is restored, then the "Storage Pool" drive will be restored to "File Explorer".
"STORAGE SPACES" BASICS (continued)

• You cannot add a hard drive that already contains data files to a new or existing "Storage Space". If you do so, all data files on the hard drive will be deleted.
CREATING A TWO-WAY-MIRRORED "STORAGE SPACE"
Creating a Two-Way-Mirrored "Storage Space" (continued)

- A Two-Way-Mirrored "Storage Space" has two hard drives that are synchronized in real time: When you create or modify a file or folder for the virtual "Storage Space" hard drive, the change is immediately made on both hard drives.
Creating a Two-Way-Mirrored "Storage Space" (continued)

- All software and hardware inside your "Windows 8" computer treat the "Storage Space" as if it were a single hard drive:
  You have a single drive letter but you actually have two physical hard drives that contain the same exact data files and folders at the same time:
Real Physical “Windows 8” Computer

Drive Pool

Storage Space L:

C: Drive

Hard Drive 2 = Top Left hard drive of L: Storage Space

Hard Drive 3 = Bottom Right hard drive of L: Storage Space
Creating a Two-Way Mirrored "Storage Space" (continued)

• Here are the steps for creating a two-way-mirrored "Storage Space":
Creating a Two-Way Mirrored "Storage Space" (continued)

Step 1: Attach two USB, SATA, or eSATA hard drives to your existing "Windows 8" computer:
Real Physical “Windows 8” Computer

- existing C: Drive
- add Hard Drive 2
- add Hard Drive 3
Creating a Two-Way Mirrored "Storage Space" (continued)

Step 2: Press "Windows" key + x
Step 3: Click on "Control Panel".
Step 4: Locate the "Storage Spaces" applet and double-click on it.
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 5: Double-click on "Create a new pool and storage space".
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Create a new pool and storage space

See also
File History
BitLocker Drive Encryption
Step 6: All data hard drives will be shown with the unformatted drives in the top section if there are any AND formatted drives in the bottom section:
Create a Storage Pool

Unformatted drives

- Seagate FreeAgent Pro USB Disk 8
  - Attached via USB
  - 698 GB

Formatted drives

- WDC WD30EZR5-00J99B1 Disk 0
  - Attached via RAID
  - Online
  - 2.72 TB

- ST310003 33AS USB Device Disk 7
  - Attached via USB
  - Online
  - 931 GB

⚠️ The following drives might contain files. If you use a formatted drive to create a storage pool, Windows permanently deletes all the files on that drive. You can't recover the files by using the Recycle Bin.

Create pool  |  Cancel
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 7: Use the check boxes to select drives for the mirrored hard drive set that you are about to create:
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 8: Click on the "Create pool" button:
Create a Storage Pool

Unformatted drives

Seagate FreeAgent Pro U...(Disk 8)
Attached via USB
698 GB

Formatted drives

- The following drives might contain files. If you use a formatted drive to create a storage pool, Windows permanently deletes all the files on that drive. You can’t recover the files by using the Recycle Bin.

- WDC WD80EZRS-00J99B...(Disk 0)
  Attached via RAID
  Online
  2.72 TB

- ST310003 33AS USB Dev...(Disk 7)
  Attached via USB
  Online
  931 GB

[Options: View files, Take offline]

[Actions: Create pool, Cancel]
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 9: Change the name of the new "Storage Space" from "unnamed" to your desired name:
Create a Storage Space

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

Name and drive letter

Name: Unnamed

Drive letter: D:

Resiliency

Resiliency type: Two-way mirror

Size

Storage pool capacity: 1.82 TB
Available capacity: 1.82 TB
Logical size: 934 GB

(1.82 TB maximum pool capacity usage)

The two-way mirror layout stores two copies of your data, protecting you from a single drive failure. This resiliency type requires at least two drives.

You can create a storage space 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 a Storage Space

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

Name and drive letter

Name: $StorageSpace20120415

Drive letter: D:

Resiliency

Resiliency type: Two-way mirror

Size

Storage pool capacity: 1.82 TB

Available capacity: 1.82 TB

Logical size: 934 GB (1.82 TB maximum pool capacity usage)

The two-way mirror layout stores two copies of your data, protecting you from a single drive failure. This resiliency type requires at least two drives.

You can create a storage space 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.
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 10: Select a drive letter for the new "Storage Space":
### Create a Storage Space

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

**Name and drive letter**

<table>
<thead>
<tr>
<th>Name:</th>
<th>S_StorageSpace20120415</th>
</tr>
</thead>
</table>

**Drive letter:**

<table>
<thead>
<tr>
<th>Letter</th>
<th>D:</th>
</tr>
</thead>
</table>

**Resiliency**

<table>
<thead>
<tr>
<th>Resiliency type:</th>
<th>Two-way mirror</th>
</tr>
</thead>
</table>

**Size**

<table>
<thead>
<tr>
<th>Storage pool capacity:</th>
<th>1.82 TB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available capacity:</td>
<td>1.82 TB</td>
</tr>
<tr>
<td>Logical size:</td>
<td>934 GB</td>
</tr>
</tbody>
</table>

---

The two-way mirror layout stores two copies of your data, protecting you from a single drive failure. This resiliency type requires at least two drives.

You can create a storage space 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 11: Click on the drop down list button at the right end of the "Resiliency type" field:
The two-way mirror layout stores two copies of your data, protecting you from a single drive failure. This resiliency type requires at least two drives.

You can create a storage space 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.
Creating a Two-Way-Mirrored "Storage Space" (continued)

- If you select "Two-way mirror", the "Storage Pool" has to have at least two physical drives. (Otherwise, the "Create storage space" button will be grayed out.)

- If you select "Three-way mirror", the "Storage Pool" has to have at least five physical drives. (Otherwise, the "Create storage space" button will be grayed out.)
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 12: Change the "Resiliency type" to "Two-way mirror":
Select a name, resiliency type, and size for the storage space

Name and drive letter

Name:  S_StorageSpace20120415

Drive letter:  S:

Resiliency

Resiliency type:  Two-way mirror

Size

Storage pool capacity:  Three-way mirror
Parity

Available capacity:  1.82 TB

Logical size:  934 GB  (1.82 TB maximum pool capacity usage)

The two-way mirror layout stores two copies of your data, protecting you from a single drive failure. This resiliency type requires at least two drives.

You can create a storage space 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.
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 13: Click on the "Create storage space" button:
This two copies of your data, protecting you from a single drive failure. At least two drives.

This larger than the amount of available capacity in the storage pool. When pool, you can add more drives.
Step 14: Your new "Storage Space" will be displayed. In our example, our "Storage Space" is a virtual S: drive:
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 5.00 GB of 1.58 TB pool capacity

Storage Spaces

StorageSpace07 (S:)
Two-way mirror
814 GB logical size
Using 2.00 GB

Physical Drives
Creating a Two-Way-Mirrored "Storage Space" (continued)

Step 15: To see the individual hard drives of the "Storage Space", click on the downward pointing triangle that is to the left of "Physical Drives":

Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 3.00 GB of 1.58 TB pool capacity

Storage Spaces

- StorageSpace07 (S:\)
  - Two-way mirror
  - 814 GB logical size
  - Using 200 GB

Physical Drives

- ST3100033AS USB Dev...
  - Attached via USB
  - 930 GB
  - 0.16 % used

- Seagate FreeAgent Pro U...
  - Attached via USB
  - 698 GB
  - 0.21 % used
REPLACING A PHYSICAL HARD DRIVE IN A TWO-WAY-MIRRORED "STORAGE SPACE"
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

- You cannot logically remove a physical hard drive from a mirrored "Storage Space" unless you first add in another hard drive to the "Storage Pool".
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 0: Physically remove one of the hard drives from a two-way-mirrored "Storage Space". (If the activity light of the hard drive is blinking, wait for it to stop blinking.)
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 1: Attach a USB 2, USB 3, eSATA, or SATA hard drive to your computer.

Step 2: Press Windows + x.

Step 3: Click on "Control Panel" in the pop-up "Power Users Menu".
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 4: Locate and double-click on the "Storage Spaces" applet.
Step 5: A "Storage Spaces" window will be displayed.
Step 6: Click on "Add drives".
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

- **Using 5.00 GB of 1.58 TB pool capacity**
- Unhealthy drives; check drive health

Storage Spaces

- StorageSpace07 (S:)
  - Two-way mirror
  - 814 GB logical size
  - Using 4.00 GB

StorageSpace06 (D:)

- Warning
  - Reduced resiliency; check drive health

Physical Drives

- ST3100033AS USB Device
  - 930 GB
  - 0.26 % used

- Seagate FreeAgent Pro USB Device
  - Attached via USB
  - 698 GB
  - 0.35 % used

See also

- File History
- BitLocker Drive Encryption
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 7: A "Select drives to add to the storage pool" window will be displayed:
Select drives to add to the storage pool

<table>
<thead>
<tr>
<th>Drive Details</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST310005 28AS USB Device</td>
<td>Online</td>
</tr>
<tr>
<td>Attached via USB</td>
<td>View files</td>
</tr>
<tr>
<td>931 GB</td>
<td></td>
</tr>
<tr>
<td>WDC WD30EZRZ-00J99B1</td>
<td>Online</td>
</tr>
<tr>
<td>Attached via RAID</td>
<td>View files</td>
</tr>
<tr>
<td>2.72 TB</td>
<td></td>
</tr>
</tbody>
</table>

⚠️ The following drives might contain files. If you use a formatted drive to create a storage pool, Windows permanently deletes all the files on that drive. You can't recover the files by using the Recycle Bin.

Options:
- View files
- Take offline

Add drives
Cancel
Replacing A Physical Hard Drive In A. "Storage Space" (continued)

Step 8: Place a checkmark for the hard disk drive that you wish to add to the storage pool:
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 9: Click on the "Add drives" button:
Select drives to add to the storage pool

Formated drives

⚠️ The following drives might contain files. If you use a formatted drive to create a storage pool, Windows permanently deletes all the files on that drive. You can’t recover the files by using the Recycle Bin.

- ST310005 28AS USB Dev... Attached via USB 931 GB
  - Disk 8 Online View files Take offline
- WDC WD30EZR-00J99B... Attached via RAID 2.72 GB
  - Disk 0 Online View files Take offline

---

Add drives | Cancel
Replacing A Physical Hard Drive In A.."Storage Space" (continued) Step 10: "Storage Spaces" will start "Repairing.." the newly-added hard drive by copying data files and folders from the existing hard drive to the newly-added hard drive.
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 5.25 GB of 2.49 TB pool capacity

Unhealthy drives; check drive health
Create a storage space
Add drives
Rename pool

Storage Spaces

StorageSpace07 (S:)
Two-way mirror
814 GB logical size
Using 4.00 GB

Warning
Repairs (12%)
Step 11: Click on "Remove" for the hard drive that you wish to logically remove from the "Storage Space".
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 5.25 GB of 2.49 TB pool capacity

Unhealthy drives; check drive health

Create a storage space
Add drives
Rename pool

Storage Spaces

StorageSpace07 (S:)
Two-way mirror
814 GB logical size
Using 4.00 GB

Warning
Repairing (37 %)

View files
Rename
Delete

Physical Drives

ST310005 28AS USB Device
Attached via USB
930 GB
0.26 % used

OK
Rename

ST310003 33AS USB Device
Attached via an unrecognizable device
930 GB
0.02 % used

Warning
Selected for data reallocation

Rename
Remove
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 12: Click on the "Remove" button:
Confirm removal of the drive

Drive to remove

ST310003 33AC USB Dev... Attached via an unrecog... 930 GB 0.02 % used

Warning Selected for data reallocation

Remove drive  Cancel
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 13: Click on the downward pointing caret to the left of "Physical Drives":


Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

Storage Pool

Using 5.00 GB of 1.58 TB pool capacity

Storage Spaces

StorageSpace07 (S:)  Two-way mirror
814 GB logical size
Using 4.00 GB

Physical Drives
Replacing A Physical Hard Drive In A.."Storage Space" (continued)

Step 14: Note that the hard drive that you wanted logically-removed from the "Storage Space" is no longer displayed:
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives so that your files remain safe, even when a drive fails. Storage Spaces also enables you to easily add more drives if you run low on capacity.

### Storage Pool

Using 5.00 GB of 1.58 TB pool capacity

### Storage Spaces

<table>
<thead>
<tr>
<th>StorageSpace07 (S:)</th>
<th>Two-way mirror</th>
<th>OK</th>
<th>Create a storage space</th>
<th>Add drives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>814 GB logical size</td>
<td></td>
<td>Rename</td>
<td>Delete</td>
</tr>
</tbody>
</table>

### Physical Drives

<table>
<thead>
<tr>
<th>ST310005 2BAS USB Device</th>
<th>Attached via USB</th>
<th>930 GB</th>
<th>0.26 % used</th>
<th>OK</th>
<th>Rename</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seagate FreeAgent Pro USB</td>
<td>Attached via USB</td>
<td>698 GB</td>
<td>0.35 % used</td>
<td>OK</td>
<td>Rename</td>
</tr>
</tbody>
</table>
USING "STORAGE SPACES" TO CREATE A FULL BACKUP OF A HARD DRIVE
SOME PROBLEMS WITH "STORAGE SPACES" (continued)

• If a hard drive that is part of a "Storage Space" fails, you usually have to use "diskpart" from an elevated command prompt in "Windows 8" in order to repair the hard drive.
"Windows 8.." does not notify you when there is a temporary failure of one of the USB 2 or USB 3 ports that connect an external hard drive to a "Storage Space".
Misconception:
When a "Storage Spaces" pool of hard drives fails, it cannot be repaired because no software utility programs are available.
Misconception: When a "Storage Spaces" pool of hard drives fails, it cannot be repaired because no software utility programs are available.

What you get

Each license key of ReclaiMe Storage Spaces Recovery can be used to recover all the pools and spaces from one set of physical drives and/or disk image files.

Once you purchase ReclaiMe Storage Spaces Recovery, you will get a license key. The key allows you to use capabilities of ReclaiMe Storage Spaces Recovery software to recover the configuration of all the pools and spaces belonging to a particular set of physical drives. The key allows you to save contents of spaces as VHD, VHDX, and raw image files. Each new set of physical drives requires a new license key.

Additionally, you will get a discount coupon to purchase ReclaiMe File Recovery Standard for a nominal fee. ReclaiMe File Recovery allows you to recover data from the spaces on a file-by-file basis.

Refund policy

The refunds are provided only if the problem cannot be resolved by our technical support team.

Payment options

You can purchase ReclaiMe Storage Spaces Recovery using a credit card, PayPal, or iDEAL payments. You can place the order in almost any currency.

Purchase a license

ReclaiMe Storage Spaces Recovery, one case for one disk set

- Reconstructs failed Storage Spaces pools.
- Saves space contents as VHD, VHDX, or raw image files.
- Saves Storage Spaces configuration in an XML file.

Discount for second and subsequent recoveries

Along with the license key you get a discount coupon for subsequent orders of ReclaiMe Storage Spaces Recovery. If you are a data recovery specialist, you will definitely need it.

ReclaiMe Storage Spaces Recovery license agreement.
Misconception: When a "Storage Spaces" pool of hard drives fails, it cannot be repaired because no software utility programs are available (continued)

The "ReclaiMe Storage Spaces Recovery" program costs ~$300 for each computer that you use it on.
Purchase a license

ReclaiMe Storage Spaces Recovery, one case for one disk set
- Reconstructs failed Storage Spaces pools.
- Saves space contents as VHD, VHDX, or raw image files.
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Brief history and photo gallery

**Elena Y. Pakhomova**, Development and Marketing

One of the founders of ReclaiMe software development team, she started working in data recovery field even before completing her master degree. Elena is a certified translator and she sometimes contributes to various online technology outlets in addition to her professional life.

She enjoys skiing, skating, music and movies, and spending time with her family.

**Julia Y. Pakhomova**, Chief Developer

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**Our products**

- **Free RAID Recovery**, a freeware to recover RAID configuration parameters. As of 2012, it covers the widest possible range of RAID levels, compared to other similar software. You can check out [this comparison](#) if you want an example. ReclaiMe Free RAID Recovery is the first ever automatic tool to support delayed parity in RAID 5 arrays.

- **ReclaiMe** multipurpose data recovery software. Built with simplicity in mind, ReclaiMe recovers data from most filesystems one can encounter in day-to-day use.

- **BenchMe**, a free tool to benchmark various data storage devices. With BenchMe, you can get an overview of most significant performance characteristics of a storage system at a glance. BenchMe produces conveniently arranged read speed chart, access time chart, and IOPS values.

- **Lowvel**, a freeware to erase data irreversibly from a storage device. One's ultimate zero filling software. Just point to a drive, click, and all the data goes poof, not recoverable even by our own data recovery software.
ReclaiMe Storage Spaces Recovery - Word's First Software to Recover Failed Windows 8 Storage Spaces

Storage Spaces is becoming more and more popular among users in the world. ReclaiMe's newly released Storage Spaces Recovery deals with failures of Storage Spaces of all kinds, extracting data in a variety of output formats.

Volgograd, Russia (PRWEB) February 17, 2013

The ReclaiMe data recovery company released a brand new ReclaiMe Storage Spaces Recovery software - at this moment the only tool that can recover a failed Storage Spaces configuration.

"A few months ago we started to develop algorithms to recover a failed Storage Spaces configuration since we predicted that this capability will become very popular among users," said Elena Pakhomova, senior developer of ReclaiMe. "Storage Spaces is an absolutely new, well-designed capability that is available in Windows 8 and Windows 2012 Servers. With Storage Spaces, you can manage disk space effectively. However, Storage Spaces fails like all other things. Quite a few clients contact us asking for a solution to Storage Spaces recovery. And now we got it."

When developing ReclaiMe Storage Spaces Recovery, designers encountered quite a number of difficulties. One of them is the computational complexity of the recovery process, manifesting itself in some severe system requirements.

" Storage Spaces fails like all other things. Quite a few clients contact us asking for a solution to Storage Spaces recovery."
Mystery:
The hardware configuration of your USB 3 ports greatly affects the reliability of Storage Spaces' composed of "Drive Pools" consisting entirely of external hard drives.
An "All PCI-e USB 3 Configuration" That Causes "Storage Spaces" To Fail

- When you create a "Drive Pool" from two external USB 3 hard drives that are both connected to one or more PCI-e "USB 3" adapters, any two-way mirrored "Storage Space" that you create from this drive pool will fail when the "Storage Space" reaches between 40 percent and 60 percent of fill.
An "All PCI-e USB 3 Configuration" That Causes "Storage Spaces" To Fail (continued)

• This configuration occasionally overwhelms the USB controller chip set and causes other devices that are connected to the same USB controller chip set to occasionally fail.
"All PCIe USB 3 Configuration"

Computer with "Windows 8" operating system

Motherboard

PCIe USB 3 Adapter

PCIe USB 3 Adapter

USB Cable

USB Cable

Drive Pool

USB 3 External Hard Drive A

USB 3 External Hard Drive B

Two-Way Mirror "Storage Spaces" fail at 40 to 60 percent of fill
An "All Motherboard USB 3 Configuration" That Causes "Storage Spaces" to Fail

- When you create a "Drive Pool" from two external USB 3 hard drives that are both connected to motherboard-based "USB 3" adapters, any two-way mirrored "Storage Space" that you create from this drive pool will fail when the "Storage Space" reaches between 40 percent and 60 percent of fail.
An "All Motherboard USB 3 Configuration" That Causes "Storage Spaces" to Fail (continued)

- This configuration occasionally overwhelms the USB controller chip set and causes other devices that are connected to the same USB controller chip set to occasionally fail.
Computer with "Windows 8" operating system

Motherboard

Motherboard-based USB 3 Adapter

Motherboard-based USB 3 Adapter

USB Cable

USB Cable

Drive Pool

USB 3 External Hard Drive A

USB 3 External Hard Drive B

Two-Way Mirror "Storage Spaces" fail at 40 to 60 percent of fill
A "Hybrid Motherboard/PCIe USB 3 Configuration" That Works Reliably With "Storage Spaces"

- When you create a "Drive Pool" from two external USB 3 hard drives with one hard drive connected to a motherboard-based USB port and the other hard drive connected to a PCI-e USB 3 adapter, any two-way mirrored "Storage Space" that you create from this "Drive Pool" will work reliably without problems.
"Hybrid Motherboard/PCIe USB 3 Configuration"

Computer with "Windows 8" operating system

Motherboard
- Motherboard-based USB 3 Adapter
- PCIe USB 3 Adapter

USB Cable

Drive Pool

USB 3
External
Hard Drive A

USB 3
External
Hard Drive B

Two-Way Mirror "Storage Spaces" work reliably without problems
<table>
<thead>
<tr>
<th>Volume</th>
<th>Layout</th>
<th>Type</th>
<th>File System</th>
<th>Status</th>
<th>Capacity</th>
<th>Free Space</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C:)</td>
<td>Simple</td>
<td>Basic</td>
<td>NTFS</td>
<td>Healthy (B...</td>
<td>979.66 GB</td>
<td>864.95 GB</td>
<td>88</td>
</tr>
<tr>
<td>System Reserved</td>
<td>Simple</td>
<td>Basic</td>
<td>NTFS</td>
<td>Healthy (S...</td>
<td>350 MB</td>
<td>109 MB</td>
<td>31</td>
</tr>
<tr>
<td>Y_LeftDrive (Y;)</td>
<td>Simple</td>
<td>Dynamic</td>
<td>NTFS</td>
<td>Healthy</td>
<td>59.87 GB</td>
<td>59.77 GB</td>
<td>10</td>
</tr>
<tr>
<td>Z_RightDrive (Z;)</td>
<td>Simple</td>
<td>Dynamic</td>
<td>NTFS</td>
<td>Healthy</td>
<td>59.87 GB</td>
<td>59.77 GB</td>
<td>10</td>
</tr>
</tbody>
</table>

**Disk 0**
- Basic
- 980.00 GB
- Online

- System Reserved
  - 350 MB NTFS
  - Healthy (System, Active, Boot, Page File, Crash Dump, Primary Partition)
- (C:)
  - 979.66 GB NTFS
  - Healthy

**Disk 1**
- Dynamic
- 59.88 GB
- Online

- Y_LeftDrive (Y;)
  - 59.87 GB NTFS
  - Healthy

**Disk 2**
- Dynamic
- 59.88 GB
- Online

- Z_RightDrive (Z;)
  - 59.87 GB NTFS
  - Healthy
Y_LeftDrive (Y:)
59.7 GB free of 59.8 GB

Z_RightDrive (Z:)
59.7 GB free of 59.8 GB
RemoteApp and Desktop Co

Storage Spaces

Tablet PC Settings
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Create a new pool and storage space

See also

File History
BitLocker Drive Encryption
Create a new pool and storage space
User Account Control

Do you want to allow the following program to make changes to this computer?

Program name: Storage Spaces Settings
Verified publisher: Microsoft Windows

Show details

Yes  No

Change when these notifications appear
Select drives to create a storage pool

Unformatted drives

- VMware, VMware Virtual ...  Disk 2
  Attached via SAS
  60.0 GB

- VMware, VMware Virtual ...  Disk 1
  Attached via SAS
  60.0 GB
Enter a name, resiliency type, and size for the storage space

Name and drive letter

Name: Storage space

Drive letter: E:

Resiliency

Resiliency type: Two-way mirror

A two-way mirror storage space writes two copies of your data, helping to protect you from a single drive failure. A two-way mirror storage space requires at least two drives.

Size

Create storage space  Cancel
Create a storage space

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

Name and drive letter
- Name: Storage space
- Drive letter: E:

Resiliency
- Resiliency type: Two-way mirror

Size

A two-way mirror storage space requires at least two drives. It creates two copies of your data, helping to protect you from a single drive failure. A two-way mirror storage space requires at least two drives.
Create a storage space

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

Name and drive letter
- Name: Storage space
- Drive letter: E

Resiliency
- Resiliency type: Two-way mirror

Size

A two-way mirror storage space duplicates two copies of your data, helping to protect you from a single drive failure. A two-way mirror requires at least two drives.
Enter a name, resiliency type, and size for the storage space

Name and drive letter

Name: Storage space

Drive letter: Z:

Resiliency

Resiliency type: Two-way mirror

A two-way mirror storage space writes two copies of your data, helping to protect you from a single drive failure. A two-way mirror storage space requires at least two drives.

Size

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

Name and drive letter

Name: Storage space
Drive letter: Z:

Resiliency

Resiliency type:
- Two-way mirror
- Simple (no resiliency)
- Three-way mirror
- Parity

A two-way mirror storage space provides protection for your data, helping to protect you from a single drive failure. A two-way mirror requires at least two drives.

Size

Create storage space  Cancel
Create a storage space

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

Name and drive letter

Name: Storage space

Drive letter: Z:

Resiliency

Resiliency type: Two-way mirror

A two-way mirror storage space writes two copies of your data, helping to protect you from a single drive failure. A two-way mirror storage space requires at least two drives.

Size

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

Name and drive letter:

Name:

Drive letter:

Resiliency

Resiliency type:

A two-way mirror storage space writes two copies of your data, helping to protect you from a single drive failure. A two-way mirror storage space requires at least two drives.

Size

Create a Storage Space

Create storage space

Cancel
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

Using 3.00 GB of 118 GB pool capacity

Storage spaces

- Storage space (Z:)
  - Two-way mirror
  - 59.2 GB
  - Using 2.00 GB pool capacity

Physical drives

Create a storage space
Add drives
Rename pool

View files
Change
Delete
Virtual Machine Settings

Hardware

<table>
<thead>
<tr>
<th>Device</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>5.9 GB</td>
</tr>
<tr>
<td>Processors</td>
<td>4</td>
</tr>
<tr>
<td>Hard Disk (SCSI)</td>
<td>980 GB</td>
</tr>
<tr>
<td>Hard Disk 2 (SCSI)</td>
<td>60 GB</td>
</tr>
<tr>
<td>Hard Disk 3 (SCSI)</td>
<td>60 GB</td>
</tr>
<tr>
<td>CD/DVD (IDE)</td>
<td>Using file L:\Archive.par\Win...</td>
</tr>
<tr>
<td>Floppy</td>
<td>Auto detect</td>
</tr>
<tr>
<td>Network Adapter</td>
<td>NAT</td>
</tr>
<tr>
<td>USB Controller</td>
<td>Present</td>
</tr>
<tr>
<td>Sound Card</td>
<td>Auto detect</td>
</tr>
<tr>
<td>Printer</td>
<td>Present</td>
</tr>
<tr>
<td>Display</td>
<td>Auto detect</td>
</tr>
</tbody>
</table>

Options

Memory

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

Memory for this virtual machine: 6048 MB

64 GB — Maximum recommended memory
32 GB
16 GB
8 GB
4 GB
2 GB
1 GB
512 MB
256 MB
128 MB
64 MB
32 MB
16 MB
8 MB
4 MB
1024 MB

Recommended memory
2048 MB
13684 MB

Guest OS recommended minimum

Add... Remove

OK Cancel Help
Windows 8 Enterprise Evaluation
Windows License valid for 89 days
Build 9200
Windows 8 Enterprise Evaluation
Windows License valid for 89 days
Build 9200

Program Files
1 message

Check Storage Spaces for issues

Open Action Center
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

- **Using 3.00 GB of 118 GB pool capacity**
- **Drive issues; check the Physical drives section**
- **Warning**
- **Create a storage space**
- **Add drives**
- **Rename pool**

**Storage spaces**

- **Storage space (Z:) Two-way mirror**
  - 59.2 GB
  - Using 2.00 GB pool capacity
  - **Warning**
  - Reduced resiliency; check the Physical drives section
  - **View files**
  - **Change**
  - **Delete**

**Physical drives**

- **VMware, VMware Virtual S... 2.53 % used**
  - Providing 59.2 GB pool capacity
  - **Warning**
  - Disconnected; reconnect drive
  - **Rename**
  - **Remove**

- **VMware, VMware Virtual S... Attached via SAS 2.53 % used**
  - Providing 59.2 GB pool capacity
  - **Okay**
  - **Rename**
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

**Storage pool**

- **Using 3.00 GB of 118 GB pool capacity**

**Storage spaces**

- Storage space (Z:)
  - Two-way mirror
  - 59.2 GB
  - Using 2.00 GB pool capacity

**Physical drives**

- VMware, VMware Virtual Storage
  - 2.53 % used
  - Providing 59.2 GB pool capacity

- VMware, VMware Virtual Storage
  - Attached via SAS
  - 2.53 % used
  - Providing 59.2 GB pool capacity

**Warning**

- Drive issues; check the Physical drives section
- Reduced resiliency; check the Physical drives section
- Disconnected; reconnect drive

See also

- File History
- BitLocker Drive Encryption
Click on the "Change settings" button:
User Account Control

Do you want to allow the following program to make changes to this computer?

Program name: Storage Spaces Settings
Verified publisher: Microsoft Windows

Show details

Yes  No

Change when these notifications appear
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

Using 3.00 GB of 118 GB pool capacity

Drive issues; check the Physical drives section

Create a storage space Add drives Rename pool

Storage spaces

Storage space (Z:\) Two-way mirror 59.2 GB Using 2.00 GB pool capacity

Warning Reduced resiliency; check the Physical drives section

View files Change Delete

Physical drives

VMware, VMware Virtual SAN 2.53 % used Providing 59.2 GB pool capacity

Warning Disconnected; reconnect drive

Rename Remove

VMware, VMware Virtual SAN Attached via SAS 2.53 % used Providing 59.2 GB pool capacity

Okay

Rename
Click on "Add drives":

Storage Spaces

Manage Storage Spaces
Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

- Using 3.00 GB of 118 GB pool capacity

- Storage spaces
  - Storage space (Z:\)
    - Two-way mirror
    - 59.2 GB
    - Using 2.00 GB pool capacity
  - Warning
    - Reduced resiliency; check the Physical drives section

- Physical drives
  - VMware, VMware Virtual S...
    - 2.53 % used
    - Providing 59.2 GB pool capacity
  - Warning
    - Disconnected; reconnect drive
  - VMware, VMware Virtual S...
    - Attached via SAS
    - 2.53 % used
    - Providing 59.2 GB pool capacity
    - Okay

Warning

- Create a storage space
- Add drives
- Rename pool
- View files
- Change
- Delete
- Rename
- Remove

See also
- File History
- BitLocker Drive Encryption
Select drives to add to the storage pool

Unformatted drives

VMware, VMware Virtual ... Disk 3
Attached via SAS
1.99 TB
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

Using 3.25 GB of 2.10 TB pool capacity

Drive issues; check the Physical drives section

Create a storage space
Add drives
Rename pool

Storage spaces

Storage space (Z:)
Two-way mirror
59.2 GB
Using 2.00 GB pool capacity

Warning
Reduced resiliency; reconnect drives

View files
Change
Delete

Physical drives

VMware, VMware Virtual S...
1.26 % used
Providing 59.2 GB pool capacity

Warning
Disconnected; reconnect drive

Rename
Remove

VMware, VMware Virtual S...
Attached via SAS
2.53 % used
Providing 59.2 GB pool capacity

OK

Rename

VMware, VMware Virtual S...
Attached via SAS
0.04 % used
Providing 1.99 TB pool capacity

OK

Rename
Click on "Remove" for the drive that you physically removed in Step ??.
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

Using 3.25 GB of 2.10 TB pool capacity

Drive issues; check the Physical drives section

Create a storage space
Add drives
Rename pool

Storage spaces

Storage space (Z:)
Two-way mirror
59.2 GB
Using 2.00 GB pool capacity

Warning
Reduced resiliency; reconnect drives

View files
Change
Delete

Physical drives

VMware, VMware Virtual S...
1.26 % used
Providing 59.2 GB pool capacity

Warning
Disconnected; reconnect drive

Rename
Remove

VMware, VMware Virtual S...
Attached via SAS
2.53 % used
Providing 59.2 GB pool capacity

Okay

Rename

VMware, VMware Virtual S...
Attached via SAS
0.04 % used
Providing 1.99 TB pool capacity

Okay

Rename
Remove a drive

Confirm removal of the drive

Drive to remove

VMware, VMware Virtual S S...
1.26 % used
Providing 59.2 GB pool capacity

Warning
Disconnected; reconnect drive

Remove drive
Cancel
Click on the "Remove drive" button:
Confirm removal of the drive

Drive to remove:
VMware, VMware Virtual S S...
1.26 % used
Providing 59.2 GB pool capacity

Warning: Disconnected; reconnect drive

Remove drive  Cancel
Storage spaces

L Storage space (L:)
Two-way mirror
2.71 TB
Using 3.79 TB pool capacity

Warning
Repairing (26 %)

View files
Change
Delete

Physical drives

ST3000DM 001-9YN166 US...
Attached via USB
69.5 % used
Providing 2.72 TB pool capacity

Okay

Rename

WDC WD30 EZRX-00MMM...
Attached via USB
69.5 % used
Providing 2.72 TB pool capacity

Okay

Rename
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

Create a storage space
Add drives
Rename pool

Storage spaces

Storage space (Z:)
Two-way mirror
59.2 GB
Using 2.00 GB pool capacity

Physical drives
Storage pool

Using 3.00 GB of 2.04 TB pool capacity

Create a storage space
Add drives
Rename pool

Storage spaces

Storage space (Z:)
Two-way mirror
59.2 GB
Using 2.00 GB pool capacity

View files
Change
Delete

Physical drives
Manage Storage Spaces

Use Storage Spaces to save files to two or more drives to help protect you from a drive failure. Storage Spaces also lets you easily add more drives if you run low on capacity. If you don’t see task links, click Change settings.

Storage pool

Using 3.00 GB of 2.04 TB pool capacity

Storage spaces

- Storage space (Z:)
  - Two-way mirror
  - 59.2 GB
  - Using 2.00 GB pool capacity

Physical drives

- VMware, VMware Virtual S...
  - Attached via SAS
  - 2.53 % used
  - Providing 59.2 GB pool capacity

- VMware, VMware Virtual S...
  - Attached via SAS
  - 0.07 % used
  - Providing 1.99 TB pool capacity

See also
- File History
- BitLocker Drive Encryption