# **Technical Information Document**



Document Title:	Unable to create a partition bigger than 2 TB (Tera Bytes)
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Product Class:	Servers
Product and Version:	Windows 2003, Windows 2003 64 bits, All systems

## Symptoms / Facts

- In Disk Management, the disk 0 appears with the system partition "C:\" and two "unallocated" spaces covering the rest of disk.

Computer Management	*						
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Computer Management (Local)  System Tools  (Interpret Tools  (Int	Volume Layout	Type File System Basic NTFS	Status Healthy (System)	Capacity 4.01 GB	Free Space 2.95 GB	% Free 73 %	Fault Tolerance Overf
Bik Velragmenter     Disk Management     Disk Management     Bik Services and Applications	CD-ROM 0 CD-ROM 0 CD-ROM 0 Do Media	(C:) 4.01 GB NIF5 Healthy (System)	2043.99 GB Unallocated			742.23 GE Unallocate	3 sd
<b>4</b> M	🔳 Unallocated 📕	Primary partition					

- When you right click on the Disk, you **can not** convert the disk to Dynamic Disk or GPT disk.

■       File       Action       Yew       Window       Help         Image: System Tools       Image: System Tools<	Lomputer Management							- 0 >
<ul> <li>Computer Management (Loca)</li> <li>Computer Management (Loca)</li> <li>System Tools</li> <li>Shared Folders</li> <li>Shared Folders</li> <li>Convert Newer</li> <li>Shared Folders</li> <li>Device Manager</li> <li>Sorage</li> <li>Removable Storage</li> <li>Services and Applications</li> </ul>	🔜 Eile Action Yiew Window H	elp						- 18 ×
Computer Management (Loca) Computer Management	⇔ → 🗈 🖪 😢 🖬 👳	1						
Device Manager     Storage     Disk Defragmenter     Disk Management     Disk     Descie     Disk	Computer Management (Local)	Volume Layout	Type File System Basic NTFS	Status Healthy (System)	Capacity Free 4.01 GB 2.99	e Space   % Free 5 GB 73 %	Fault Tolerance	Overt 0%
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CD-ROM (D:) Help No Media		CD-ROM 0	Properties					
		CD-ROM (D:)	Help					
<	( ) )	Unallocated	Primary partition					

- On the first "unallocated" space, you can create a new partition.

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Computer Management (Local)	Volume Layout	Type File System	Status	Capacity	Free Space	% Free	Fault Tolerance	Overhe
Computer Management (Local)     System Tools     Gong Event Viewer     Shared Folders     Sorage Formance Logs and Alert     Device Manager     Storage     Performance Logs and Alert     Disk Defragmenter     Disk Defragmenter     Disk Management     Sorage Services and Applications	C:) Partition	(C:) 4.01 GB NTFS Healthy (System)	Healthy (System) 2043.99 GB Unallocated	4.01 GB	2.95 GB	73 % Partition	No	0%
<u>×                                     </u>	CD-ROM (D:) No Media	Primary partition						

- On the second "unallocated" space, you can not create any partition. The "new partition" entry is gray out. There I no way to use this space.

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In a second	Volume Layout (C:) Partition C:) Partition Pasic 2790,23 GB Online Online Onco-ROM 0 CD-ROM 0 CD-ROM 0	Type File System Basic NTFS 4.01 GB NTFS Healthy (System)	I Status Healthy (System)	Capacity 4.01 GB	Free Space 2.95 GB	% Free 73 % 742.23 GE Unallocate	Fault Tolerance No No Sew Partition Properties Help	Overhe 0%
<u>.</u>	Unallocated	Primary partition						

#### Cause

- The hard disk is in partition style "Master Boot Record" MBR. In order to create a volume bigger than 2TB, it should be a GPT disk.

- You can use the following methods to determine whether a drive is configured as a GPT or an MBR disk:
  In the Disk Management console, on the View menu, point to Top, and then click Disk List. The upper pane displays a list of disk drives that specifies the partition style in the last column.
  - In the Disk Management console, right-click the drive to display conversion options.

• If the drive is configured as an unpartitioned GPT disk, the Convert to MBR Disk option appears. If the drive is partitioned, this option is unavailable.

• If the drive is configured as an unpartitioned MBR disk, the Convert to GPT Disk option appears. If the drive is partitioned, this option is unavailable.

• In the Disk Management console, right-click the driver, click Properties, and then click the Volume tab to display the partition style and other information.

• In Device Manager, right-click the drive and, on the Volume tab, click Populate to display the partition style and other information.

• Launch the DiskPart utility and enter the command list disk. The disk list indicates GPT or MBR in the last column of the command output. Right click on disk, properties and volumes information.

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General Policies Vo	lumes Driver		
The volumes containe	ed on this disk are listed	below.	
Disk:	Disk 0		
Туре:	Basic		
Status:	Online		
Partition style:	Master Boot Record	(MBR)	
Capacity:	2857193 MB		
Unallocated space:	2853091 MB		
Reserved space:	0 MB		
Volumes:			
Volume		Capacity	
(C:)		4102 MB	
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### **Solutions / Fixes**

You must create 2 Logical Drives using the RAID controller interface. The first logical drive must be a MBR disk (mandatory by the Windows Operating System). The second logical drive will be converted in GPT disk for data partition.

Note:

After that, GPT disk and MBR disk could be converted to dynamic mode.

- In the example bellow, the first logical drive has 8 GB and the second logical drive has the rest of the disk (more than 2,5 TB).

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Computer Management (Local)  System Tools  System Tools  Shared Folders  Device Manager  Storage  Removable Storage  St	Volume Layout	Type File System Basic NTFS (C:) 7.81 GB NTFS 7.81 GB NTFS	Status Healthy (System)	Capacity 7.81 GB	Free Space 6.75 GB	% Free 86 %	Fault Tolerance No	Overhe 0%
	Cisk 1 Basic 2782.41 GB Online	2048.00 GB Unallocated	734.42 GB Unallocated					
	CD-ROM 0 CD-ROM (D:) No Media							
1	Unallocated	Primary partition						-

- It's not mandatory but if you want, you will now be able to convert the first disk in Dynamic mode.

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, Computer Management (Local)	Volume Layout	Type File System	Status	Capacity	Free Space	% Free	Fault Tolerance	Over
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Storage	4							
Removable Storage     Disk Defragmenter     Disk Management     Services and Applications	CDisk 0 Basic 7.81 GB Online	(C:) Convert to Dynam	c Disk					
	Disk 1 Basic	Properties						
	2782.41 GB Online	Help		734.42 GB Unallocated	ł			
	CD-ROM 0 CD-ROM (D:) No Media	-						
_ <b>)</b>	Unallocated	Primary partition						
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- The second hard disk could be converting to GPT disk.

You can convert only empty, unpartitioned disks (raw drives or empty MBR drives) to the GPT format. To convert a volume that contains data, you must first manually delete the partition.

You can use the following methods to create GPT disks:

• In the Disk Management console, right-click the MBR drive you want to convert to GPT and click Convert to GPT Disk. If the drive is not empty or contains partitions, this option is unavailable.

-OR-

• In the DISKPART utility, select the drive you want to convert and enter the following command: CONVERT GPT

For raw disks, you can use two additional methods:

• After installing a new raw disk, open the Disk Management console to launch a wizard that you can use to configure the new disk. The wizard includes options to initialize the disk as MBR or GPT.

-OR-

• Initialize the new disk later by using the Initialize Disk option in the Disk Management console.

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Computer Management (Local)	Volume Layout	Type File System	Status Healthy (System)	Capacity 7.81 GB	Free Space 6.75 GB	% Free 86 %	Fault Tolerance No	Overt 0%
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	CD-ROM ( CD-ROM (D:) No Media	Properties Help						
4	Unallocated	Primary partition						

- The properties of the second disk will show you a partition style "GUID Partition Table (GPT)"

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Image: Second state       Image: Second state       Image: Second state       Image: Second state         Image: Second state       Image: Second state       Image: Second state       Image: Second state       Image: Second state         Image: Second state       Image: Second st	J         Volume       Layout       Type       File System       Status       Capacity       Free       Fault Tolerance       Overfree         Image: C(c)       Partblon       Basic       NTFS       Healthy (System)       7.81 GB       6.75 GB       86 %       No       0%         Image: C(c)       TABLE GB       TABLE GB       TABLE GB       TABLE GB       NTFS         Image: Convert to Dynamic Disk       Convert to Dynamic Disk       Convert to MBR Disk       Eagle         Image: Convert to MBR Disk       Eagle       Eagle       Eagle       Eagle         Image: Convert to Dynamic Disk       Convert to MBR Disk       Eagle       Eagle       Eagle         Image: Convert to MBR Disk       Eagle       Eagle       Eagle       Eagle       Eagle	General     Policies     Volumes       The volumes contained on this disk are listed below.       Disk:     Disk 1       Type:     Basic       Status:     Online       Partition style:     GUID Partition Table (GPT)       Capacity:     2849080 MB       Unallocated space:     2849080 MB       Volumes:     Volume       Volume     Capacity	
<u>د ا</u>	Unallocated Primary partition	OKCa	ncel

- Now, you will be able to create a volume bigger than 2TB. And if you want, you can convert the disk in Dynamic mode.

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Computer Management (Local)  System Tools  Computer Management (Local)  Computer Management (Local)  System Tools  Computer Management (Local Users and Groups  System Management (Local Users)  Computer Management (Local Users	Volume (C:) DATA (E:)	Layout Partition Simple	Type Basic Dynamic	File System NTFS NTFS	Status Healthy (System) Healthy	Capacity 7.81 GB 2782.30 GB	Free Space 6.75 GB 2782.16 GB	% Free 86 % 99 %	Fault Toleran No No
Bold Management     Services and Applications	Basic 7.81 GB Online <b>Disk 1</b> Dynamic 2782.30 GB Online	(C: 7.8) Hea DA1 278; Hea	<b>:)</b> 1 GB NTFS Ilthy (Syste <b>TA (E:)</b> 2.30 GB N Ilthy	em) TFS					
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Note:

A GPT disk uses the GUID partition table (GPT) disk partitioning system. A GPT disk offers these benefits:
 Allows up to 128 primary partitions. (MBR disks can support up to four primary partitions and an infinite number of partitions inside an extended partition.)

• Allows a much larger volume size - greater than 2 TB, which is the limit for MBR disks.

• Provides greater reliability due to replication and cyclical redundancy check (CRC) protection of the partition table.

• Can be used as a storage volume on all x64-based platforms, including platforms running Microsoft Windows XP Professional x64 Edition. Windows Server 2003 SP1 also enables support for GPT in x86 versions of the Windows Server 2003 family.

• Installing a Windows x64 Edition operating system on a GPT disk is not supported. Attempting to do so yields an error. Although Setup allows you to choose a GPT disk partition on the partition selection screen during Text Mode Setup, doing so displays an error message. To assist users in avoiding this error, the partition selection screen clearly indicates whether the partition is configured as an MBR drive or a GPT drive.

• Unlike Windows support for the Intel Itanium platform, Windows x64 Edition and Windows Server 2003 SP1 operating systems support the use of GPT drives only as data volumes. Because the x64 and x86 architectures do not provide support for an EFI boot partition, you cannot use a GPT drive to boot an x64-based computer or an x86-based computer with a legacy BIOS. Therefore, computers running these operating systems must be equipped with more than one physical drive to allow the use of the GPT disk format.

• On Intel Itanium platforms, Windows supports the use of GPT drives as boot drives or data volumes.

# See also

The following table depicts storage types and partition styles in Windows XP Professional and Windows Server 2003 operating systems:

Operating system	Basic volumes	Dynamic simple, spanned, and striped volumes	Dynamic mirrored and RAID-5 volumes	MBR boot volume	MBR data volume	GPT boot volume	GPT data volume
Windows XP Home Edition	Х			Х	Х		
Windows XP Professional	Х	Х		Х	Х		
Windows Server 2003, Standard Edition	Х	Х	Х	Х	Х		
Windows Server 2003, Enterprise Edition	Х	Х	Х	Х	Х		
Windows Server 2003, Datacenter Edition	Х	Х	Х	Х	Х		
Windows Server 2003, Standard Edition with Service Pack 1 (SP1)	Х	Х	Х	Х	Х		Х
Windows Server 2003, Enterprise Edition with Service Pack 1 (SP1)	X	X	X	X	x		X
Windows Server 2003, Datacenter Edition with Service Pack 1 (SP1)	X	X	х	X	X		X
Windows XP 64-bit Edition (Itanium)	Х	Х			Х	Х	Х
Windows Server 2003, Enterprise Edition for Itanium-based Systems	Х	X	X		Х	Х	Х
Windows Server 2003, Datacenter Edition for Itanium-based Systems	x	X	x		x	X	×
Windows XP Professional x64 Edition	Х	Х		Х	Х		Х
Windows Server 2003, Standard x64 Edition	Х	Х	Х	Х	Х		Х
Windows Server 2003, Enterprise x64 Edition	Х	Х	Х	Х	Х		Х
Windows Server 2003, Datacenter x64 Edition	Х	Х	Х	Х	Х		Х

You can also find this table on the following link: <u>http://technet2.microsoft.com/WindowsServer/en/library/4b35160a-4e27-4258-9e8b-e2088f8a757a1033.mspx</u>

COE Servers Document owner: Applies to: Windows 2003, Windows 2003 64 bits, All systems