RAID - FIVE-DISK SERVER

A 5big Office/Office+ with five drives offers many options for the user, including the RAID configuration. While it is possible to create Spanned disks or RAID 0 arrays, LaCie highly recommends mirroring and RAID 5 for optimal protection of your data. RAID 0 can offer some speed advantages but data will not be duplicated across both volumes as with mirroring. Users risk losing data if one of the disks should fail in a RAID 0 array.

SUGGESTED RAID CONFIGURATION FOR FIVE DISKS

Volume	Disks and RAID Level	Usage	Notes
Windows	2 Disks Mirror	Windows must run from its own volume. Storing data on the system volume will impact server performance. Page file*	A Mirror requires two drives, making it ideal for the Windows operating system. A Mirror offers redundancy, duplicating each file on the two disks that make up the volume. If one disk should fail, the system data will be available on its mirrored drive. If Disk 0 should fail, it will be possible to recover the system boot disk before restarting the server.
Data	5 Disks RAID 5	The Data volume should be used to create Shared Folders and store data.	 RAID 5 requires three or more disks. RAID 5 offers improved storage capacity. While mirroring has an overhead of 50% storage capacity due to file duplication, RAID 5 parity has approximately 20% overhead. This means that close to 80% of the total capacity is available for storing data. RAID 5 includes many features that improve performance. For example, RAID 5 uses block level parity to secure files. Block level parity takes far less time to write data across the disks in the volume than mirroring files across two drives. RAID 5 volumes may not host the Windows operating system.
Data 2	3 Disks RAID 5	The Data 2 volume can be used to create Shared Folders and store data. Write the page* file to this volume to extend the server's physical memory.	See notes above.

*The page file can be created on the Windows volume or the Data 2 volume.

Important info: Mirroring and RAID 5 provide solid protection if one drive in their respective arrays should encounter problems. However, LaCie highly recommends backing up the data stored on your professional server regularly in order to guard against worst case scenarios (i.e. accidental data deletion, malicious programs, viruses, etc.). LaCie professional servers include USB 2.0 and eSATA ports to attach desktop drives for use as backup storage. You can also backup your data to another server on the network.

ADJUSTING THE RAID

Administrators may change RAID configurations to suit the needs of a business or after a server system recovery.

Use Disk Management to view or change RAID configurations in Windows:

- Launch the Dashboard from a Windows workstation on the same network as your LaCie 5big Office/Office+.
 Start > All Programs > Windows Home Server 2011/Windows Storage Server 2008 R2 > Windows
 Home Server 2011 Dashboard/Windows Storage Server 2008 R2 Dashboard
- 2. Select the **Home** tab.
- 3. Click once on **COMMON TASKS**.



4. Click once on **Disk Management**.



The first time Disk Management is launched, you may be prompted to initialize your drives using MBR or GPT. For information on MBR and GPT formats, please read <u>MBR, GPT and the 5big Office/Office+ Operating Systems</u>. You may initialize the disks at this step or choose **Cancel**. The drives will be initialized as MBR when creating the arrays.

Initialize Disk				
You must initialize a disk before Logical Disk Manager can access it.				
Select disks:				
☑ Disk 1				
☑ Disk 2				
✓ Disk 3				
Use the following partition style for the selected disks:				
Image: MBR (Master Boot Record)				
○ GPT (GUID Partition Table)				
Note: The GPT partition style is not recognized by all previous versions of Windows. It is recommended for disks larger than 2TB, or disks used on Itanium-based computers.				
OK Cancel				

Note: If you do not see Disk Management among the *Common Tasks*, you can add it by clicking **Customize this list**. Check the box next to each task that you wish to include on the *Common Tasks* list then click **OK**.

Customize the Task List
Select tasks that appear in the list:
🗹 💑 Add a user account
Add a shared folder Sect conver pactword
Set set ver passion Set and a set of the set o
Vetwork Connections
Generation Generation
V 🙆 Regional Settings
OK Cancel

Important info: Please note that Disk 1 should not be initialized as GPT since it will be used to create a mirror of the Windows operating system.

5BIG OFFICE/OFFICE+ SINGLE DISK DEFAULT CONFIGURATION

A single disk 5big Office/Office+ is shipped with three partitions, System, Windows, and Data. The screenshot below shows all three partitions on a single hard drive, Disk 0. Volume C contains the Windows operating system and volume D is meant to store data. As shipped, volume C takes up 60 GB.

Disk Manageme File Action Vi	ent iew Help i 2 X 🗃 D	2 Q B					
Volume Data (D:) System Windows (C:)	Layout T Simple B Simple B Simple B	Fype File System Basic NTFS Basic NTFS Basic NTFS	Status Capacity Healthy (P 871.41 GB Healthy (S 100 MB Healthy (B 60.00 GB	Free Spa 870.69 GB 72 MB 35.30 GB	% Free 100 % 72 % 59 %	Fault Tolerance No No No	0% 0% 0% 0%
Carlisk 0 Basic 931.51 GB Online	<mark>System</mark> 100 MB NTFS Healthy (System, Ac	Windows (C:) 60.00 GB NTFS Healthy (Boot, Page F	III ile, Crash Dump, Primary Part	Data (D:) 871.41 GB NTFS Healthy (Prima	y Partition)		,
Unallocated	Primary partition						

If you have not inserted disks into the 5big enclosure, please see <u>Removing and Installing Disks</u> for instructions.

BOOT ORDER AND CREATING THE WINDOWS MIRROR

All Windows system files will be duplicated on each disk in the Mirror. To protect your system files and to save important data collected by the operating system, LaCie recommends a RAID 1 configuration for the System and Windows volumes. In case of disk failure, all files will be accessible on the disk paired for the Mirror.

Though the bootloader file will be duplicated on both disks, your version of Windows will only boot from Disk 0. Therefore, it is highly recommended that you do not restart the server if Disk 0 experiences problems. Instead, replace Disk 0 (Disk Tray Slot 1) as soon as possible and rebuild the RAID 1 onto the new drive. **Windows may not startup properly if you reboot before the Mirror is rebuilt**.

CREATING THE SYSTEM MIRROR

- 1. Insert the new disks into the empty Drive Trays, starting from left to right. See <u>Removing and Installing Disks</u> for details.
- 2. Go to Disk Management Adjusting the RAID.
- 3. The second through fifth disks will appear as *Unallocated*.

Disk 0 Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	(Windows, IC.) 60.00 GB XTFS Healthy (Boct, Page File, Crash Dump)	Data (ID) 1972,14, 08 NTF5 Heathy		
Gibik 1 Unknown 931.51 GB Not Initialized	931.51 GB Unallocated				
Gibik 2 Unknown 931.51 GB Not Initialized	913.5 GB Unallocated				
GEDisk 3 Unknown 931.51 GB Not Initialized	93.53.66 Unalocated				
GEDisk 4 Unknown 931.51 GB Not Initialized	913.1 G0 Unallocated				

4. Right-click on the System volume to select Add Mirror...

Disk 0					
Dynamic 931.51 GB Online	System 100 ME NTFS Healthy (System)	Windows (C) 60 pp.de wree Open Explore		Data (D) 87.41 GB NT/S Healthy	
Gibik 1 Unknown 931.51 GB Not Initialized	9J1.51 GB Unallocated	Extend Volume Shrink Volume Add Mirror Change Drive Letter and Pathi			
Gibisk 2 Unknown 931.51 GB Not Initialized	931.51 GB Unallocated	Format Reactivate Volume Delete Volume			
Gibik 3 Unknown 931.51 GB Not Initialized	931.51 GB Unallocated	Properties Help			
Gibik 4 Unknown 931.51 GB Not Initialized	92.55.GB Unallocated				
Unallocated	Simple volume				

5. A prompt will ask you to select a location for the mirror. Choose **Disk 1** and click **Add Mirror**.

Add Mirror
Adding a mirror to an existing volume provides data redundancy by maintaining multiple copies of a volume's data on different disks.
Select a location for a mirror of System.
<u>D</u> isks:
Disk 1
🐨 Disk 2
🐨 Disk 3
🐨 Disk 4
Add Mirror Cancel

6. A Disk Management warning will appear. Please click **Yes** to continue.

Disk Mana	igement	23
<u>^</u>	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?	1
	<u>Y</u> es <u>N</u> o	

CREATING THE WINDOWS MIRROR

- 1. Create the System Mirror before the Windows Mirror.
- 2. Right-click on the Windows volume to select Add Mirror...

Dynamic 931.51 GB Online	System (Cd) 100 MB NTFS 00.00 GB NTFS Healthy (System) Healthy (Boct, Page File, Crash Dung)			Den Epice		
Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)		931.41 GB Unallocated		Extend Volume Shrink Volume Add Mirror Change Drive Letter and Paths Format	
GEDisk 2 Unknown 931.51 GB Not Initialized	923.53 GB Unallocated				Reactivate Volume Delete Volume Properties	
Genes 4	931.51 GB Undirocated				Help	
Unknown 931.51 GB Not Initialized	el 293.53 68 Unallocated					

3. A prompt will ask you to select a location for the mirror. Choose **Disk 1** and click **Add Mirror**.

Add Mirror
Adding a mirror to an existing volume provides data redundancy by maintaining multiple copies of a volume's data on different disks.
Select a location for a mirror of C: (Windows).
Disks:
E Disk 1
😨 Disk 2
😨 Disk 3
Add Mirror Cancel

4. It may take ten minutes to resync the RAID 1 array.

Dynamic 931.51 GB Online	System Windows (C) D 100 MB NTFS 60.00 GB NTFS 8 Healthy (System) Healthy (Boot, Page File, Crash Dump) 8		Dete (D) 87.41 G8 NT5 Healty			
Dynamic 931.51 G8 Online	System 100 MB NTFS Healthy (System)	Windows (C) 60.00 GB NTF5 Healthy (Boot, Page File, Crash Dump)	871.41.68 Unallocated			
Disk 2 Unknown 931.51 G8 Not Initialized	931.51 G8 Unallocated	113.5.08 Indicated				
Disk 3 Unknown 931.51 G8 Not Initialized	P31.51.68 Unallocated					
Disk 4 Unknown 931.51 G8 Not Initialized	932.55 GB Unallecated					
Unallocated Simple volume Minored volume						

Note: Please keep the following in mind as Mirrored and/or RAID 5 volumes resync:

- Rebooting the 5big Office/Office+ while Disk Management is Resynching a Mirrored or RAID 5 volume will not harm the configuration or its data. However, since the process was interrupted, Disk Management will restart the resync at 0% once the 5big Office/Office+ has rebooted.
- Due to the capacity of the RAID 5 volume, rebooting while a resync is in progress could extend the operation for many hours.
- A volume that is in the midst of a resync may be accessed by workstations on the network. Users can
 perform common actions with the volume(s), such as reading files, writing files, or moving Shared Folders.
 However, performance will be degraded while Windows is resynching Mirrored and/or RAID 5 volumes.

CREATING THE DATA 2 [E] RAID 5 ARRAY

For organizational purposes, LaCie recommends creating the Data 2 [E] RAID 5 array before building the Data [D] RAID 5 array.

1. Right-click on **Disk 2** (left side of the panel) to select **Initialize Disk**.

2. Confirm that Disks 2, 3, and 4 are checked.

Initialize Disk
You must initialize a disk before Logical Disk Manager can access it. Select disks: ✓ Disk 2 ✓ Disk 3 ✓ Disk 4
Use the following partition style for the selected disks: <u>MBR</u> (Master Boot Record) <u>GPT</u> (GUID Partition Table)
Note: The GPT partition style is not recognized by all previous versions of Windows. It is recommended for disks larger than 2TB, or disks used on Itanium-based computers.

- 3. Based upon the type of disk(s) you are using, select MBR or GPT. Click ${\bf OK}.$
- 4. From Disk 2, right-click on **Unallocated**. Select **New RAID-5 Volume...**.

Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)		Data (D:) 871.41 GB NTFS Healthy		
Disk 1 Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	em Windows (C) VBINTFS 60.00 GBINTFS File, Crash Dump) Healthy (Boot, Page File, Crash Dump)		871.41 GB Unallocated		
Cirillo Contractor Basic 931.51 GB Online	931.51 GB Unallocated		New Simple Volume New Spaned Volume			
Basic 931.51 GB Online	931.51 GB Unallocated		New Mirrored Volume New Mirrored Volume New RAID-5 Volume Properties			
Ciril Disk 4 Basic 931.51 GB Online	931.51 GB Unallocated		нер			

5. The New RAID-5 Volume Wizard will launch. Click Next.



6. The *Select Disks* window will ask you to choose the disks to add to the RAID 5 array.

New RAID-5 Volume	×
Select Disks You can select the disks and set the disk size for this volume.	
Select the disks you want to use, and then click Add.	
Available: Selected: Disk 1 892326 MB Disk 3 953867 MB Disk 4 953867 MB < Remove < Remove All Total volume size in megabytes (MB): 0 Maximum available space in MB: 953867	867 MB
Select the amount of space in MB: 953867	> Cancel

7. Select **Disk 3** and click **Add>**.

New RAID-5 Volume		—
Select Disks You can select the disks and se	et the disk size for this v	olume.
Select the disks you want to us	e, and then click Add.	
Available:		Selected:
Disk 1 892326 MB Disk 3 953867 MB Disk 4 953867 MB	Add > < Remove	Disk 2 953867 MB
Total volume size in megabytes	(MB):	0
Maximum available space in MB):	953867
Select the amount of space in N	1B:	953867
	< Back	Next > Cancel

New RAID-5 Volume		×
Select Disks You can select the disks and s	set the disk size for this v	olume.
Select the disks you want to us	se, and then click Add.	
Available: Disk 1 892326 MB Disk 4 953867 MB	Add > < Remove < Remove All	Selected: Disk 2 953867 MB Disk 3 953867 MB
Total volume size in megabytes Maximum available space in Mi Select the amount of space in I	s (MB): B: MB:	953867 953867 953867
	< Back	Next > Cancel

8. Select **Disk 4** and click **Add>**.

New RAID-5 Volume	—			
Select Disks You can select the disks and set the disk size for this volume.				
Select the disks you want to use, and then click Add.				
Available:	Selected:			
Disk 1 892326 MB Add > Disk 4 953867 MB < Remove	Disk 2 953867 MB Disk 3 953867 MB			
Total volume size in megabytes (MB):	953867			
Maximum available space in MB:	953867			
Select the amount of space in MB:	953867			
< Back	Next > Cancel			

New RAID-5 Volume	×
Select Disks You can select the disks and set the disk size for this v	volume.
Select the disks you want to use, and then click Add.	
Available:	Selected:
Disk 1 892326 MB Add >	Disk 2 953867 MB Disk 3 953867 MB
< Remove	Disk 4 953867 MB
< Remove All	
Total volume size in megabytes (MB):	1907734
Maximum available space in MB:	953867
Select the amount of space in MB:	953867
< Bac	k Next > Cancel

9. In anticipation of creating the Data RAID 5 array, please build the Data 2 RAID 5 array with **61540MB**.

New RAID-5 Volume	×
Select Disks You can select the disks and set the disk size for this v	rolume.
Select the disks you want to use, and then click Add.	
Available: Disk 1 892326 MB Add > Remove	Selected: Disk 2 61540 MB Disk 3 61540 MB Disk 4 61540 MB
Total volume size in megabytes (MB): Maximum available space in MB: Select the amount of space in MB:	123080 953867 61540
< Bac	k Next > Cancel

10. Click Next.

New RAID-5 Volume			— X—	
Select Disks You can select the disks and set the disk size for this volume.				
Select the disks you want to use	, and then click Add.			
Available: Disk 1 892326 MB	Add > < Remove	Selected: Disk 2 61540 MB Disk 3 61540 MB Disk 4 61540 MB		
Total volume size in megabytes (MB):	123080		
Maximum available space in MB:		953867		
Select the amount of space in M	B:	61540		

11. Choose a drive letter and click **Next**. In this example, we have selected the next available letter, *E*.

New RAID-5 Volume	×
Assign Drive Letter or Path For easier access, you can assign a drive letter or drive path to your volume.	
 Assign the following drive letter: Mount in the following empty NTFS folder: Browse Do not assign a drive letter or drive path 	
< Back Next > Car	ncel

12. You may name the volume. As seen below, we have called it *Data 2*. LaCie recommends keeping the defaults *NTFS* (file system) and *Perform a quick format*. Click **Next**.

New RAID-5 Volume	×				
Format Volume To store data on this volume, you must format it first.					
Choose whether you want to forma	t this volume, and if so, what settings you want to use.				
O Do not format this volume					
Format this volume with the f	ollowing settings:				
File system:	NTFS •				
Allocation unit size:	Default				
Volume label:	Data 2				
Perform a quick format	t				
Enable file and folder	Enable file and folder compression				
	< Back Next > Cancel				

13. Review your choices then click **Finish**.

New RAID-5 Volume		×
	Completing the New RAID-5 Volume Wizard	
	You have successfully completed the Wizard.	
	You selected the following settings: Volume type: RAID-5 Disks selected: Disk 2, Disk 3, Disk 4 Volume size: 123080 MB Drive letter or path: E: File system: NTFS Allocation unit size: Default Volume label: Data 2 Quick format: Yes To close this wizard, click Finish.	
	< Back Finish Can	cel

14. A Disk Management warning will appear. Please click **Yes** to continue.

Disk Mana	igement	83
	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?	
	Yes No	

15. The RAID 5 array will resync until the volume has been created.

Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)		871.41.68 Unallocated
Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)		871.41 GB Uhallocated
Dynamic 931.51 GB Online	Data 2 (E:) 60.10 GB NTFS Healthy		871.41 GB Unallocated	
Dynamic 931.51 GB Online	Data 2 (E) 60.10 GB NTFS Healthy		871.41 GB Unallocated	
Disk 4 Dynamic 931.51 GB Online	Data 2 (E:) 60.10 GB NTFS Healthy		871.41 GB Unallocated	
Unallocated	Mirrored volume 🗧 RAID-5 vol	ume		

Important info: Following the steps below will help you create a large capacity RAID 5 volume to store and share your data. As noted in <u>LaCie RAID Configurations and Windows Backup</u>, Windows backup does not support volumes greater then 2TB. If you intend to use the Windows backup solution in the server Dashboard, please see <u>RAID - Creating Multiple Volumes</u> for instructions on creating volumes that do not exceed 2TB.

PREPARING THE 5BIG OFFICE/OFFICE+ FOR THE DATA RAID 5 ARRAY

Move Shared Folders to a New Location

Windows cannot build the RAID 5 array with Shared Folders stored on the existing Data [D] partition.

Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	System Windows (C) 100 MB NTFS 60.00 GB NTFS Healthy (Sustem) Healthy (Boot, Page File, Crash Dump)		Data (D:) 871.41 GB NTFS Healthy		
					Explore	
Disk 1 Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C.) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)	Windows (C) 60.05 GB NTFS Healthy (Boot, Page File, Crash Dump) Unalloca		Extend Volume Shrink Volume Add Mirror Change Drive Letter and Paths	
Dynamic 931.51 GB Online	Data 2 (E:) 60.10 GB NTFS Healthy	Data 2 (f.) 60.10 GB NTFS Healthy			Format Reactivate Volume Delete Volume	
Disk 3 Dynamic 931.51 GB Online	Data 2 (E:) 60.10 GB NTFS Healthy		871.41 GB Unallocated		Properties Help	
Disk 4 Dynamic 931.51 GB Online	Data 2 (E:) 60.10 GB NTFS Healthy		871.41 GB Unallocated			

RAID 5 is not available

Following the creation of the System, Windows, and Data 2 volumes, you must prepare the storage for the Data RAID 5 array. The first step is to move all Shared Folders to another location. In this example, we will move them from the Data [D] volume to the Data 2 [E] RAID 5 volume. Based upon the storage needs of your company, the move can be permanent or temporary.

- 1. Create the System Mirror, Windows Mirror, and Data 2 RAID 5 array before the Data RAID 5 array.
- 2. Open the Dashboard and select the tab **Server Folder and Hard Drives**.

Windows Storage Server 2	008 R2 Dashboard				
Home	Users Computers and Backup	Server Folders and Hand Drives Add-ins La	CIE Cie		Windows Storage Server 2008 82 Forman
Server Folders Ha	rd Drives				🕑 No alerts 🔍 Server settings 😧 Help 🔹
Name	Description	Location	Free space	Status	Server Folders Tasks
Clent Computer Backups Documents Marketing Marketing Protores Protores Recorded TV Videos	Client Computer Backups Documents Content for marketing literature Music Rictures Recorded TV Videos	C\ServerFolders\Client Computer Backups D\ServerFolders\Documents D\ServerFolders\Darketing D\ServerFolders\Darkups D\ServerFolders\Decurss D\ServerFo	352 (6) 3713 (6) 8713 (6) 8713 (6) 8713 (6) 8713 (6) 8713 (6) 8713 (6) 352 (6)		 Add a folder Understanding Server Folders
No item is selected. There are no additional detai	is for this item.				

3. Look for Shared Folders that are stored on the Data [D] volume.

🔣 Windows Storage Serve	r 2008 R2 Dashboard				
Home	Users Computers	Server folders and Hand Drives Add-Ins	CE 100		Windows Storage Server 200812 Exernal
Server Folders	Hard Drives				🙆 No alerts 🔌 Server settings 🔞 Help 🔹
Name	Description	Location	Free space	Status	Server Folders Tasks
Documents Marketing Music Pictures Recorded TV Videos	Documents Content for marketing literature Music Pictures Recorded TV Videos	D:Serverfolders/Documents D:Serverfolders/Markting D:Serverfolders/Markting D:Serverfolders/Notuce D:Serverfolders/Notuce C:Serverfolders/Notuce C:Serverfolders/Videos	871.3 G8 871.3 G8 871.3 G8 871.3 G8 871.3 G8 871.3 G8 35.2 G8		 Add a folder Understanding Server Folders
No item is selected. There are no additional de	tails for this item.				
/ items					

4. Right-click on the first Shared Folder to select **Move the folder**. In this example, the Shared Folder *Documents* will be moved.

Server Folders Har	d Drives			
Name	Description	Location	Free space	Status
🐞 Client Computer Backups	Client Computer Backups	C:\ServerFolders\Client Computer Backups	35.2 GB	
Documents	Documents	D:\ServerFolders\Documen	lder	
👍 Marketing	Content for marketing literature	D:\ServerFolders\Marketing	iuei	
🔰 Music	Music	D:\ServerFolders\Music View the fold	der properties	
崖 Pictures	Pictures	D:\ServerFolders\Pictures Ave the fol	der	
Recorded TV	Recorded TV	D:\ServerFolders\Recorded iv	071.3 00	1
Videos	Videos	C:\ServerFolders\Videos	35.2 GB	
	1	474747		

5. The **Move a Folder** wizard will appear. Please read the text before clicking **Next**.

Geo 📕 Move a Folder
Getting started
This wizard helps you move a server folder to a new location. Before you move the folder: • Back up your server. • Ensure that none of the files in the folder are open or in use.
While the move is in progress, do not add files to the folder. Added files will not be moved.
Moving Server Folders

Select a New location for the Shared Folder. In this example, we are moving *Documents* to the Data 2 [E] volume. The Windows [C] volume is also available if we require additional space for the Shared Folders. Click Move Folder once you have selected a *New location*.

Next

Cancel

Choose	a Folder a new location for the f	older						
Before you the folder	u select a new location for the size.	folder, ensure that the fr	ee space on the drive is	s greater than				
Name:	Name: Documents							
Descriptio	on: Documents							
Location:	D:\ServerFolders\Docume	nts						
Size:	0 bytes							
New locat	tion:							
Drive		Free space	Capacity					
E:\Se	erverFolders\Documents	120.1 GB	120.2 GB					
C:\Se	erverFolders\Documents	37.7 GB	60 GB					
Help me c	hoose a server folder location							
a cip ine c	noose a server rolder location							
			Maria					
			Move fold	ter Cancel				

7. A prompt will let you know when the Shared Folder has been moved. Click **Close**.

ne loider was	moved successfully
Name:	Documents
Description	: Documents
Location:	D:\ServerFolders\Documents
Open the Serve	r Backup configuration to verify that the folder is selected for back up.

8. Repeat the steps for each Shared Folder on Data [D].

	Server Folders	Har	rd Drives				
N	ame		Descriptio	n	Location	Free space	Status
	ame Client Computer Ba Documents Marketing Music Prictures Recorded TV Videos	ıckups	Descriptio Client Com Document: Content fo Music Pictures Recorded 1 Videos	n puter Backups s r marketing literature V	Location C:\ServerFolders\Client Computer Backups E:\ServerFolders\Documents E:\ServerFolders\Marketing E:\ServerFolders\Music E:\ServerFolders\Recorded TV E:\ServerFolders\Videos	Free space 32.2 GB 60 GB 60 GB 60 GB 60 GB 60 GB 60 GB	Status

Basic to Dynamic

If you are following the RAID configurations recommended in this Technical Brief, you will not have to convert the disks to Dynamic. Instead, Disk Management will make automatic conversions from Basic to Dynamic while building the System and Windows Mirrored sets and Data 2 RAID 5 array. If you find it necessary to convert any disk to Dynamic, please follow the instructions listed below. Though the directions come from a 5big Office/Office+ with three drives, the same procedure applies here.

The screenshot below shows three hard drives as they appear in Disk Management. Please note that Disks 0 and 1 are listed as *Dynamic* while Disk 2 is *Basic*. A RAID 5 array only supports Dynamic disks.

Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C) 0.00 GB NTFS Healthy (Boot, Page File, Crash Dump) H		e Data (D) 872.41 GB NTES Healthy
Disk 1 Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)		871.41 G8 UnaBocated
Disk 2 Basic 931.51 GB Online	Data 2 (E:) 60.10 GB NTFS Healthy (Primary Partition)		871.41 GB Unallocated	

To convert a disk from Basic to Dynamic:

1. Right-click on the disk icon on the left and select **Convert to Dynamic Disk...**

Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	indows (CJ) 100 GB NTFS 88/by (Boot, Page File, Crash Dump) 9		Data (Dd) 87J.A1 G8 NTF5 Healthy
Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C:) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)		871.41.68 Unallocated
Disk 2 Basic 931.51 GB Online	New Spanned Volume New Striped Volume New Mirrored Volume New RAID-5 Volume	80 U	/1.41 GB nallocated	
	Convert to Dynamic Disk			
	Convert to GPT Disk			
	Offline			
Usallocata	Properties	Minneducture		

2. A prompt will ask you to select the disks for conversion. For this example, select **Disk 2** and click **OK**.

Convert to Dynamic Disk	3
Select one or more basic disks to convert to dynamic disks.	
<u>D</u> isks:	
✓ Disk 2	
OK Cancel	J

3. The *Disks to Convert* window will ask you to confirm your selection. Click **Convert**.

Disks to Convert			×
The disks th <u>D</u> isks:	nat will be made dynamic	are shown in the following list.	
Name	Disk Contents	Will Convert	
Disk 2		Yes	
D <u>e</u> tails			
		<u>C</u> onvert Canc	el

4. Click $\ensuremath{\textbf{Yes}}$ on the Disk Management prompt.

Disk Mana	gement	23
i	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?	
	Yes No	

5. The disk has been converted to Dynamic.

Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (CJ 60.00 GR NTFS Healthy (Boot, Page File, Crash Dump)		Data (Dd) 871.41 GB NTFS Healthy	ĥ
Disk 1 Dynamic 931.51 G8 Online	System 100 MB NTFS Healthy (System)	Windows (C) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)		871.41 GB Unallocated	
Dynamic 931.51 G8 Online	k 2 nic Data 2 (fd) GB 60.10 GB NTFS Healthy		871.41 GB Unallocated		
Unallocated	ted Simple volume Mirrored volume				

Delete Data [D]

Building a RAID 5 array requires a minimum of three *Unallocated* partitions. LaCie recommends combining partitions that share the same size since RAID 5 will always adhere to the lowest capacity. For example, a RAID 5 array using three disks of 50GB, 75GB, and 100GB will only offer 50GB to the user once the configuration is complete.

In our example, all disks have partitions that equal 871.41GB. However, the original Data [D] partition must be deleted in favor of an Unallocated section. Since deleting a volume is destructive, please make certain to copy all files that may be stored on Data [D] before following the steps below.

1. Right-click on Data [D] to select **Delete Volume...**

Disk 0						
Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C) Data () 60.00 GB NTFS 871.41 Healthy (Boot, Page File, Crash Dump) Healthy		Data (D:) 871.41 GB NTFS Healthy	Open Explore	
Disk 1 Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C:) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)	Windows (C.) 60,00 GB NTF5 871.41 GB Healthy (Boot, Page File, Crash Dump) Unallocated		Extend Volume Shrink Volume Add Mirror Change Drive Letter and Paths	
Disk 2 Dynamic 931.51 G8 Online	Data 2 (E) 60.10 GB NTFS Healthy		871.41 GB Unallocated		Format Reactivate Volume Delete Volume	
Disk 3 Dynamic 931.51 G8 Online	Data 2 (E) 60.10 GB NTFS Healthy		871.41 GB Unallocated		Help	
Dynamic 931.51 GB Online	sk 4 mic Duta 2 (E) (6B 6010 GB NTFS e Healthy		871.41 GB Unallocated			
Unallocated Simple volume Mirrored volume RAID-5 volume						

2. If you have copied all data from Data [D], click **Yes** at the *Delete simple volume* prompt.



- 3. You may receive a notice indicating that Data [D] is in use. Click $\ensuremath{\text{Yes}}$ to continue.
- 4. Disk 0 now has an Unallocated partition.

Dynamic 931.51 G8 Online	System 100 MB NTFS Healthy (System)	Windows (C.) 60.00 GB NTFS Healthy (Boot, Page File, Crash Dump)		871.41.68 Unallocated
Dynamic 931.51 GB Online	System 100 MB NTFS Healthy (System)	Windows (C.) 60.00 GB NITS Healthy (Boot, Page File, Crash Dump)		871.41.68 Unallocated
Dynamic 931.51 G8 Online	k2 ic GB 60.10 GB NTFS Healthy		871.41 GB Unallocated	
Dynamic 931.51 G8 Online	k 3 ic Data 2 (E2) GB 60.10 GB NTFS Healthy		871.41 GB Unallocated	
Dynamic 931.51 G8 Online	Disk 4 Date 2 (E) 31.31 GB 60.10 GB NTFS Inline Healthy		871.41 GB Unallocated	
Unallocated	Unallocated 📕 Mirrored volume 🧧 RAID-5 volume			

CREATING THE DATA RAID 5 ARRAY

Before attempting to build the RAID 5 volume, please make certain to:

- Create the System and Windows Mirrored sets and the Data 2 RAID 5 array before the Data RAID 5 array.
- Follow the steps to prepare the disks for a RAID 5 array (Preparing the 5big Office/Office+ for RAID 5]]).

Create the RAID 5 Volume:

Right-click on the Unallocated section of Disk 2, Disk 3, or Disk 4 to Select New RAID-5 Volume.... (You
may not have the option to create a RAID 5 volume when right-clicking on the Unallocated sections of Disks 0
and 1.)

Dynamic 931.51 GB Online	Data 2 (E) 6010 GB NTFS Healthy	871.41 GB Unallocated		
Disk 3 Dynamic 931.51 GB Online	Deta 2 (E) 6010 GB NTFS Healthy	871.41 GB Unallocated	New Simple Volume New Spanned Volume	
Dynamic 931.51 GB Online	Data 2 (E2) 60.10 GB NTFS Healthy	871.41 G8 Unallocated	New Mirrored Volume New RAID-5 Volume Properties	
Unallocated	Unallocated Mirrored volume RAID-5 volume		Help	

2. The New RAID-5 Volume Wizard will open. Click Next.

New RAID-5 Volume	×
	Welcome to the New RAID-5 Volume Wizard
	This wizard helps you create RAID-5 volumes on disks.
	A RAID-5 volume stores data in stripes on three or more disks. It provides a way of recovering data if part of the data is lost.
	To continue, click Next.
	< <u>B</u> ack <u>Next</u> > Cancel

3. You will be prompted to select disks for the RAID 5 volume. Please select each disk and click **Add**.

New RAID-5 Volume		×			
Select Disks You can select the disks and set the disk size for this volume.					
Select the disks you want to us	e, and then click Add.				
Available:		Selected:			
Disk 0 892326 MB Disk 1 892326 MB Disk 2 892326 MB Disk 4 892326 MB	Add > <remove <remove="" all<="" td=""><td>Disk 3 892326 MB</td></remove>	Disk 3 892326 MB			
Total volume size in megabytes	(MB):	0			
Maximum available space in ME	Maximum available space in MB: 892326				
Select the amount of space in N	MB:	892326			
	< Back	Next > Cancel			

New RAID-5 Volume	—X —	
Select Disks You can select the disks and set the disk size for this volume.		
Select the disks you want to use, and then click Add.		
Available: Add > < Remove	Selected: Disk 0 892326 MB Disk 1 892326 MB Disk 2 892326 MB Disk 3 892326 MB	
< Remove All	Disk 4 892326 MB	
Total volume size in megabytes (MB):	3569304	
Maximum available space in MB:	892326	
Select the amount of space in MB:	892326	
< Bac	k Next > Cancel	

- 4. Once all disks have been selected, click **Next**.
- 5. LaCie recommends assigning the letter *D* to the RAID 5 volume. Click **Next**.

New RAID-5 Volume	×	
Assign Drive Letter or Path For easier access, you can assign a drive letter or drive path to your volume.		
Assign the following drive letter: Mount in the following empty NTFS folder: Browse Do not assign a drive letter or drive path A bound a drive letter or drive path		

6. LaCie recommends keeping the defaults *NTFS* and *Perform a quick format*. In this example, the RAID 5 volume is named *Data*. Click **Next**.

New RAID-5 Volume	—	
Format Volume To store data on this volume, you must format it first.		
Choose whether you want to format t	his volume, and if so, what settings you want to use.	
 Do not format this volume Format this volume with the fol 	lowing settings:	
File system:	NTFS	
Allocation unit size:	Default 👻	
Volume label:	Data	
Perform a quick format		
Enable file and folder compression		
	< Back Next > Cancel	

7. Review the settings and click **Finish**.

New RAID-5 Volume	—			
	Completing the New RAID-5 Volume Wizard			
	You have successfully completed the Wizard.			
	You selected the following settings: Volume type: RAID-5 Disks selected: Disk 0, Disk 1, Disk 2, Disk 3, Disk 4 Volume size: 3569304 MB Drive letter or path: D: File system: NTFS Allocation unit size: Default Volume label: Data To close this wizard, click Finish.			
	< Back Finish Cancel			

8. The RAID 5 volume will begin resynching. It may take up to a day to create the RAID 5 array.

CONLA				17		
Dynamic 931.51 GB Online	System 200 MB NTFS Healthy (System)	Windows (IC) 60.00 GB N175 Healthy (Boot, Page File, Cristh Dump)		Data (Dd 87.4: G8 NTFS Haaby		
Disk1	for them	line e cete		D+ (D)		
931.51 GB Online	System 200 MB NTFS Healthy (System)	Windows (L3) 60.00 GB WTPS ge File, Crash Dump) Healthy (Boot, Page File, Crash Dump)		Data (DD) ELAL (DE NTES Healbry		
CRDisk 2					H	
Dynamic 931.51 GB Online	Data 2 (E3 60.30 GB NTFS Healthy			Data (D) EFA.L GB NTS Heathy		
CRDisk 3						
Dynamic 931.51 GB Online	Data 2 (fs) 60.35 GB NTFS Healthy		Data (D-) 871.41 GB NTFS Healthy			
CRDisk 4	a4					
Dynamic 931.51 GB Online	Data 2 (E3) 60.30 GB NTFS Healthy		Data (Di) 871.41 GB NTFS Healthy			
Unallocated Minored volume RAD-3 volume						

Note on Shared Folders: Since Data [D] offers greater capacity, LaCie recommends moving the Shared Folders from the Data 2 [E] partition once the RAID 5 volume has been created. Go to <u>Preparing the 5big</u> <u>Office/Office+ for RAID 5</u> for instructions on moving Shared Folders.

Note: Please keep the following in mind as Mirrored and/or RAID 5 volumes resync:

- Rebooting the 5big Office/Office+ while Disk Management is Resynching a Mirrored or RAID 5 volume will not harm the configuration or its data. However, since the process was interrupted, Disk Management will restart the resync at 0% once the 5big Office/Office+ has rebooted.
- Due to the capacity of the RAID 5 volume, rebooting while a resync is in progress could extend the operation for many hours.
- A volume that is in the midst of a resync may be accessed by workstations on the network. Users can perform common actions with the volume(s), such as reading files, writing files, or moving Shared Folders. However, performance will be degraded while Windows is resynching Mirrored and/or RAID 5 volumes.