ISCSI TARGET

A network share accesses data at the file level (SMB, NFS, or AFP), which is ideal for sharing data among multiple workstations. However, certain working environments require faster transfer rates than file level access can provide. To meet these demands, your LaCie NAS supports the creation of iSCSI targets (Internet Small Computer System Interface). As opposed to network shares, iSCSI targets offer enhanced performance by accessing data at the block level. The NAS can also experience lower demand on its CPU when iSCSI is employed since the data is written directly to the volume. Shares that read and write data at the file level require more processing due to IP and networking protocols.

In addition to requiring faster transfer rates, many professional applications are optimized for use with local storage. Potential compatibility issues with standard network volumes include sharing data and network file formats. Therefore, LaCie NAS iSCSI targets mount on a workstation as local volumes. A workstation that connects to an iSCSI target is called an *iSCSI initiator*.

The iSCSI initiator must format the LaCie NAS's iSCSI target in a non-network file system, such as NTFS, HFS+, or FAT32. For example, an administrator allocates all or a portion of a RAID volume (RAID 1, RAID 5, SimplyRAID, etc.) to an iSCSI target. A workstation on the same network as the LaCie NAS becomes an iSCSI initiator. Therefore, upon first mounting the iSCSI target, the iSCSI initiator is prompted to format the disk, as would happen with standard local storage (direct-attached storage, or DAS).

An administrator can allocate up to 8TB to an iSCSI target.

ISCSI AND BONDING: ENHANCED PERFORMANCE (5BIG NAS PRO ONLY)

The performance offered by an iSCSI target is ideal for applications that use larger files, such as graphics, photos, and video or, multiple small files in quick succession, as found with professional audio programs. It is possible to boost performance even higher by:

- creating the iSCSI target on a RAID 5 volume.
- configuring the LaCie 5big NAS Pro's dual LAN ports for bonding.

For further information on RAID configurations, go to <u>5big NAS Pro: About RAID Modes</u>. See <u>Network</u> for details on bonding.

SHARING AN ISCSI TARGET

In general, an iSCSI target is meant to be used by a single iSCSI initiator. Once the iSCSI initiator disconnects from the iSCSI target, another initiator on the network can connect to it.

Advanced SAN clusters can be configured to manage multiple iSCSI targets and share them among workstations on the network. When adding a LaCie NAS iSCSI target to a SAN cluster, the administrator should choose **Multiple sessions** in the iSCSI target's advanced parameters.

Unless it is properly administered by a SAN cluster, **sharing iSCSI targets can lead to high levels of corrupted data**.

CREATE AN ISCSI TARGET

Follow the directions below to create an iSCSI target:

1. Go to **Dashboard > Storage** and choose **Add storage**.



2. Select **iSCSI** and choose **Next**.

	1. Type	2. Settings	3. Finish	
elect	t one of the following:			
0	Network volume Access via your network and sh	are among multiple users. Optimal fo	or sharing data.	
۲	ISCSI Block-level protocol for a single	user, a SAN, or a cluster environmer	nt.	

3. Select the volume that will host the iSCSI target and choose **Next**.

	1. Type	2. Settings	3. Finish	
ect t	the volume for the iSCSI:			
•	RAID 0 RAID 0 on: Drive 5, Drive 4			
	0%			
0	RAID 5 RAID 5 on: Drive 1, Drive 3, Drive 2			
	0%			

4. Drag the slider or enter a number to change the storage space allocated to the iSCSI target. After clicking on the slider, you have the option to press the right and left arrow keys on your keyboard to adjust the capacity. **Important:** Capacity allotted to an iSCSI target cannot be reallocated to the volume. The iSCSI target and its data must be deleted to recover the capacity.

New storage v	olume					×
1. Ty	pe	2. S	ettings		3. Finish	
ISCSI capacity		^		2000 GB		
Advanced paramet	ters (optional)					
Data digest Header digest Multiple sessions						
					Cancel Ba	ck Next

5. Advanced parameters offers the following options:

New storage volume			×
1. Type	2. Settings	3. Finish	
iSCSI capacity		000)GB	
Data digest Header digest Multiple sessions CHAP			
		Cancel Back 1	Vext

- Data digest: Enable checksum to verify the integrity of the SCSI Protocol Data Unit (PDU). Since it adds a step to the reading and writing of data, performance will be affected.
- Header digest: Enable checksum to verify the integrity of the header portion of the SCSI PDU. Similar to Data digest, performance will be affected.
- Multiple sessions: Select this option only if your iSCSI target will be managed within a SAN cluster environment. The SAN cluster allows multiple iSCSI initiators to access the iSCSI target at once.
- 6. Check the box next to **CHAP** within **Advanced parameters** to configure a password for the iSCSI target. CHAP (Challenge Handshake Authentication Protocol) will secure access to the iSCSI target via a password that is 12 to 16 characters. There are two levels of CHAP:

1. Type		2. Settings	3. Finish	
CSI capacity			2000 GB	
dvanced parameters	(optional)			
Data digest				
Header digest				
Multiple sessions				
CHAP				
Name	admin			
Password	•••••			
Confirm passwo	rd [
Mutual CHAP				

- CHAP: The iSCSI initiator must enter a name and a password to connect to the iSCSI target. This is also referred to as a *Secret* or *Target secret*.
- Mutual CHAP: Both the iSCSI target and the iSCSI initiator authenticate each other. Select this box to enter the name and password configured on the iSCSI initiator that will access the LaCie NAS's iSCSI target.

- 7. Choose Next.
- 8. Review the summary for the iSCSI target and choose **Finish**.

8	

Dashboard: iSCSI target connection indicator

The Storage page provides the iSCSI target status:

• Not connected: The circle next to *Connected* is white.



• Connected: The circle next to *Connected* is green.

Storage			Add storage
RAID 0	iscsi 🖋		Option Delete
Giscsi	Capacity	2 TB	
	Connected	• 0	
RAID 5	IQN	iqn.1995-05.com.lacie:LaCie-5b	oig-Pro:iscsi
	Data digest		
	Header digest		
	Multiple sessions		
	CHAP		
	Mutual CHAP		
	Settings common to all i	SCSI targets can be configured in Gen	eral Settings.

Choose the *i* tooltip next to the green circle to view the IP address of the workstation that has connected to the iSCSI target.

Stora	ige			Add storage
	0	iSCSI 🖉		Option Delete
G :0	0.01	Capacity	2 TB	
15	031	Connected	• 🕜	
RAID	5	IQN	iqn.1995-05.com.lacie:LaCie-5b	oig-Pro:iscsi
074		Data digest	0	
		Header digest	0	
	List of co	nnected clie	nts	×
	IP address	IQN		
	10.21.57.41	iqn.1991	-05.com.microsoft:lacie-w7	
		Settings common to a	Il ISCSI targets can be configured in <u>Gen</u>	eral Settings.

Dashboard: Revise iSCSI Advanced parameters

Advanced parameters for an iSCSI target may be changed following its creation.

- 1. Go to **Dashboard > Storage** and choose the iSCSI target on the left.
- 2. Choose Option.



3. Adjust the parameters for the iSCSI target.

IQN	iqn.199	95-05.com.lac	ie: LaCie-5big	-Pro:iscsi
Data digest				
Header digest				
Multiple sessions				
Name		admin		
Password		•••••		
Confirm pa	ssword	•••••		
Mutual CH	IAP			

To review the definitions of the parameters, see Create an iSCSI target.

IQN stands for iSCSI Qualified Name. The IQN field represents the:

- Туре
- Date that the network naming authority took ownership of the iSCSI target and the network naming authority
- Prefix for the naming authority

The Option window allows you to revise the prefix for the naming authority.

Technical note on changing parameters: It is recommended that the iSCSI initiator disconnects from the iSCSI target before selecting **Option** to revise advanced parameters. Certain changes may not take effect until the iSCSI target reconnects to the initiator.

ISCSI INITIATOR

A workstation on the network can connect to the LaCie NAS's iSCSI target by acting as an iSCSI initiator. While it is not possible to list the directions on how to become an iSCSI initiator for every operating system or third-party application, you should note the following:

- Windows: Professional and enterprise versions of Windows Vista, Windows 7, and Windows 8 feature an **iSCSI** Initiator application. Windows XP users can download the iSCSI Initiator <u>here</u>. See the configuration example below.
- Mac: Third-party applications are available to connect to an iSCSI target.

iSCSI initiator: Example

The steps below demonstrate a single connection to an iSCSI target using a Windows 7 workstation as the initiator. For the example, a CHAP has been configured on the iSCSI target only. Configurations will vary but you can review the instructions below and make adjustments for your operating system and network.

- 1. Search for and launch iSCSI Initiator or equivalent.
- 2. Enter the network name or IP address of the server that hosts the iSCSI target. In this example, the LaCie NAS.

rgets	Discovery	Favorite Targets	Volumes and Devices	RADIU	S Configuration
uick C	onnect				
o disc NS na	over and lo ame of the t	g on to a target usin arget and then click	ig a basic connection, t Quick Connect.	type the l	IP address or
arget	LaC	Cie-5big-NAS			Quick Connect
iscove	ered targets				
					Refresh
Name				Status	
'o con lick Co 'o com hen d	nect using a onnect. Ipletely disc ick Disconne	idvanced options, se onnect a target, sel ict.	elect a target and then ect the target and ination of sessions.		Connect Disconnect
fo con lick Co fo com hen d for tar relect	nect using a onnect. opletely disc ick Disconne get propert the target a	advanced options, se onnect a target, sel tet. ies, including config ind dick Properties.	elect a target and then ect the target and uration of sessions,		Connect Disconnect Properties
o con lick Co o com hen d or tar elect or cor he tar	nect using a ponnect. ipletely disc ick Disconne get propert the target a nfguration get and the	advanced options, se onnect a target, sel ect. ies, including config ind dick Properties. of devices associate in click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Connect Disconnect Properties Devices
o con lick Cc o com hen d or tar elect : for cor he tar <u>ore ab</u>	nect using a nnect. ipletely disc ick Disconne get propert the target a nfiguration o get and the out basic IS	advanced options, se onnect a target, sele tect. ies, including configu- nd dick Properties. of devices associate in click Devices. <u>CSI connections and</u>	elect a target and then ect the target and uration of sessions, d with a target, select <u>d targets</u>		Connect Disconnect Properties Devices

- 3. Choose **Quick connect** or equivalent.
- 4. Without and with CHAP:
 - If the iSCSI target does not include a CHAP, you will connect immediately. If it is the first time that the iSCSI target has connected to an initiator, you will be prompted to format the disk.
 - If the iSCSI target includes a CHAP, a prompt alerts you that a connection is not possible. Close the prompt.

argets that are available for connection at the IP rovided are listed below. If multiple targets are a o each target individually.	address or DNS name that yo vailable, you need to connect
onnections made here will be added to the list of o restore them will be made every time this comp	Favorite Targets and an atten iter restarts.
viscovered targets	Status
	Teactive
ign. 1995-05.com.lace:Lacle-5big+frotiscs	Inacuve
ign. 1995-05.com.lade:LaCle-50ig+Prosiscal	Incluve
Progress report Unable to Login to the target.	
Progress report Unable to Login to the target.	

5. Select the LaCie NAS's iSCSI target in the list of discovered agents and choose **Connect**.

rgets	Discovery	Favorite Targets	Volumes and Devices	RADIUS	Configuration
uick C	onnect				
o disc NS na	over and log ame of the ta) on to a target usin arget and then click	ng a basic connection, t Quick Connect.	ype the IP	address or
arget	:			Qu	uick Connect
iscove	ered targets				
					Refresh
Name				Status	
iqn. 19	95-05.com.l	lacie:LaCie-5big-Pro):iscsi	Inactive	
o con lick Co	nect using a mnect.	dvanced options, se	elect a target and then		Connect
'o con lick Co 'o com hen cl	nect using a nnnect. Ipletely disco	dvanced options, se innect a target, seli ct.	elect a target and then		Connect Disconnect
o con lick Co hen cl for tar select	nect using a onnect. pletely disco ick Disconne get properti the target ar	dvanced options, se innect a target, sel ct. es, including config nd click Properties.	elect a target and then ect the target and uration of sessions,		Connect Disconnect Properties
o con lick Co o com hen cl or tar elect for cor he tar	nect using ai nnect. Ipletely disco ick Disconner get properti the target ar nfguration o get and ther	dvanced options, se onnect a target, seli ct. es, including config nd click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Connect Disconnect Properties Devices
io con lick Co io com hen cl or tar elect i or cor he tar <u>ore ab</u>	nect using a nnect. pletely disco ick Disconner get properti the target ar nfiguration o get and ther hour basic ISC	dvanced options, se innect a target, sel et. es, including config nd click Properties. f devices associate n click Devices. <u>CSI connections and</u>	elect a target and then ect the target and uration of sessions, d with a target, select <u>d targets</u>		Connect Disconnect Properties Devices

6. Choose Advanced.

Connect To Target	X
Target name:	
ign. 1995-05.com.lacie:LaCie-	ibig-Pro:iscsi
Add this connection to the This will make the system a connection every time this	st of Favorite Targets. itomatically attempt to restore the computer restarts.
Enable multi-path	
Advanced	OK Cancel

7. Select **Enable CHAP log on** and enter the **Name** and **Target secret** (password) for the iSCSI target.

Connect using	
Local adapter:	Default 👻
Initiator IP:	Default
Target portal IP:	Default
CRC / Checksum	
🗖 Data digest	Header digest
Enable CHAP log of CHAP Log on inform CHAP helps ensure of an initiator. Fo use, specify the sinitiator. To use, specify the sinitiator. The name w specified.	n ation nnection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this ill default to the Initiator Name of the system unless another name is
Enable CHAP log c CHAP Log on inform CHAP helps ensure co an initiator. To use, specify the si nitiator. The name w specified.	n ation onnection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this ill default to the Initiator Name of the system unless another name is admin
Enable CHAP log or CHAP log on inform CHAP helps ensure or an initiator. To use, specify the sinilator. The name wispecified. Name: Target secret:	in ation onnection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this ill default to the Initiator Name of the system unless another name is admin
Enable CHAP log or CHAP log on inform CHAP helps ensure co an initiator. To use, specify the si- nitiator. The name w specified. Name: Target secret: Perform mutual au To use mutual CHAP, RADIUS.	In ation Innection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this Ill default to the Initiator Name of the system unless another name is admin admin athentication either specify an initiator secret on the Configuration page or use
Enable CHAP log or CHAP Log on inform CHAP holps ensure or an initiator. To use, specify the sinitator. To use, specify the sinitator. To use, specify the sinitator. To use, specified. Name: Target secret: Perform mutual au To use mutual CHAP, RADIUS. Use RADIUS to ge	n ation annection security by providing authentication between a target and ame name and CHAP secret that was configured on the target for this affect to the Initiator Name of the system unless another name is admin admin athentication either specify an initiator secret on the Configuration page or use nerate user authentication credentials

- 8. A window may appear prompting you to add the target to your favorites. Make your selection and exit.
- 9. If it is the first time that the iSCSI target has connected to an initiator, you will be prompted to format the disk.

The iSCSI target will appear in Computer/My Computer as a local disk.



ISNS: INTERNET STORAGE NAME SERVICE

A LaCie NAS iSCSI target can be managed by a server that supports the Internet Storage Name Service (iSNS). Certain iterations of Windows Server include the iSNS feature. A server that supports iSNS can manage multiple iSCSI targets on the network, thus saving time for each iSCSI initiator. For example, rather than searching the network for an iSCSI target, the initiator can look for a connection in a single location, the iSNS server. The iSNS server keeps tabs on all the iSCSI targets on the network, thus allowing the initiator to connect to one that is available.

Configure iSNS on your network server then review the instructions below to add your LaCie NAS iSCSI target.

iSNS: LaCie NAS Dashboard (iSCSI target)

Enable iSNS server and enter its IP address:

- 1. Go to **Dashboard > General Settings > File sharing**.
- 2. Select the configuration icon (pencil) for **iSCSI** and then **Advanced parameters**.
- 3. Choose the checkbox and enter the iSNS server's IP address.

General	File sharing	Application services				
onfigure the se	ettings for file sharin	ng services on your devic	e. Show summary			
Name	Description			Status		
SMB	Server Message are also compati	Block. File and print sharing a ble with Linux and Mac OS X.	are native to Windows. They	٠	ø	
AFP	Apple Filing Prot	ocol. File and print sharing na	tive to Mac OS X.	٠	ø	
	Network File Sys	tem. File sharing native to UN	IX and Linux.	0	ø	
TP	File Transfer Pro	tocol. Upload and download f	les locally and remotely.	٠	ø	
SFTP	Secure File Tran remotely using a	sfer Protocol. Upload and dov secure connection.	vnload files locally or	0	ø	
SCSI	Block-level proto	col for a single user, a SAN, o	r a cluster environment.	٠	6	ISCSI - Advanced parameters
						ISNS server 192.168.8.121

Important info regarding iSCSI volume sharing: Mounting an iSCSI volume on multiple workstations at the same time will lead to serious file corruption. An exception can be found with SAN cluster environments that include servers and software dedicated to managing iSCSI volume sharing. An iSNS server is not considered to be a SAN cluster environment.

iSNS: Workstation (iSCSI initiator)

The steps below demonstrate a single connection to an iSNS server using a Windows 7 workstation as the initiator. Configurations will vary but you can review the instructions below and make adjustments for your operating system and network.

- 1. Search for and launch **iSCSI Initiator** or equivalent.
- 2. Choose Discovery and **Add server**.

lets	Discovery	Favorite Targets	Volumes and Devices	RADIUS Configuration
arge	t portals			
he s	ystem will lo	ok for Targets on fi	ollowing portals:	Refresh
Addr	ess	Port	Adapter	IP address
'o ad	d a target g	ortal, click Discover	r Portal.	Discover Portal
o re hen	move a targ click Remove	et portal, select the	e address above and	Remove
NS s	ervers			
he s	ystem is reg	istered on the follo	wing iSNS servers:	Ketresh
To ad	ld an iSNS se	erver, dick Add Ser	ver.	Add Server
To re hen	move an iSN click Remove	IS server, select the e.	e server above and	Remove
More	e about Disc	overy and ISNS		

3. Enter the IP address of the iSNS server.

Add iSNS Server	X
Enter the IP address or DNS n	ame of server:
192.168.8.121	
	OK Cancel

4. The list of discovered targets should show all iSCSI targets that are connected to the iSNS server. In this example, only the LaCie NAS is connected.

rgets	Discovery	Favorite Target	ts Volumes and Device	RADI	US	Configuration
Duick C	onnect					
To disco DNS na	over and k me of the	og on to a target u target and then d	ising a basic connection, ick Quick Connect.	type the	e IP	address or
Target:	1			[Qu	ick Connect
iscove	red target	s				
				[Refresh
Name	2			Status	9	
ign. 19	95-05.com	lacie:LaCie-5big-	Protiscsi	Inacti		
				Incu	ve	
Fo conr	nect using	advanced options,	, select a target and the	n (ve	Connect
Fo conr click Co Fo com	nect using nnect. pletely disi	advanced options, connect a target, s	, select a target and the select the target and	n (ve	Connect
Fo conr click Co Fo com then cli select t	nect using nnect. pletely disi ck Disconn get proper he target :	advanced options, connect a target, : ect. ties, including con and click Propertie	, select a target and the select the target and figuration of sessions, s.	n (ve I	Connect Disconnect Properties
Fo conr tlick Co Fo com then cli	nect using nnect. pletely disr	advanced options, connect a target, : ect.	, select a target and the select the target and	n (Connect

5. To connect to the iSCSI target, follow the instructions in *iSCSI initiator: Example*.