

## 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 NAS OS device 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, NAS OS 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 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 NAS becomes an iSCSI initiator. Upon first mounting the iSCSI target, the iSCSI initiator is prompted to format the disk, as would happen with standard local storage (DAS).

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

## iSCSI and bonding: enhanced performance

The performance offered by an iSCSI target is ideal for applications that use:

- Larger files, such as graphics, photos, and video.
- 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 NAS's LAN ports for bonding.

For further information on RAID configurations, go to [RAID modes](#). See [Network](#) for details on bonding.

## Sharing an iSCSI target

In general, a single iSCSI initiator should use an iSCSI target. Once the iSCSI initiator disconnects from the iSCSI target, another initiator on the network can connect to it.

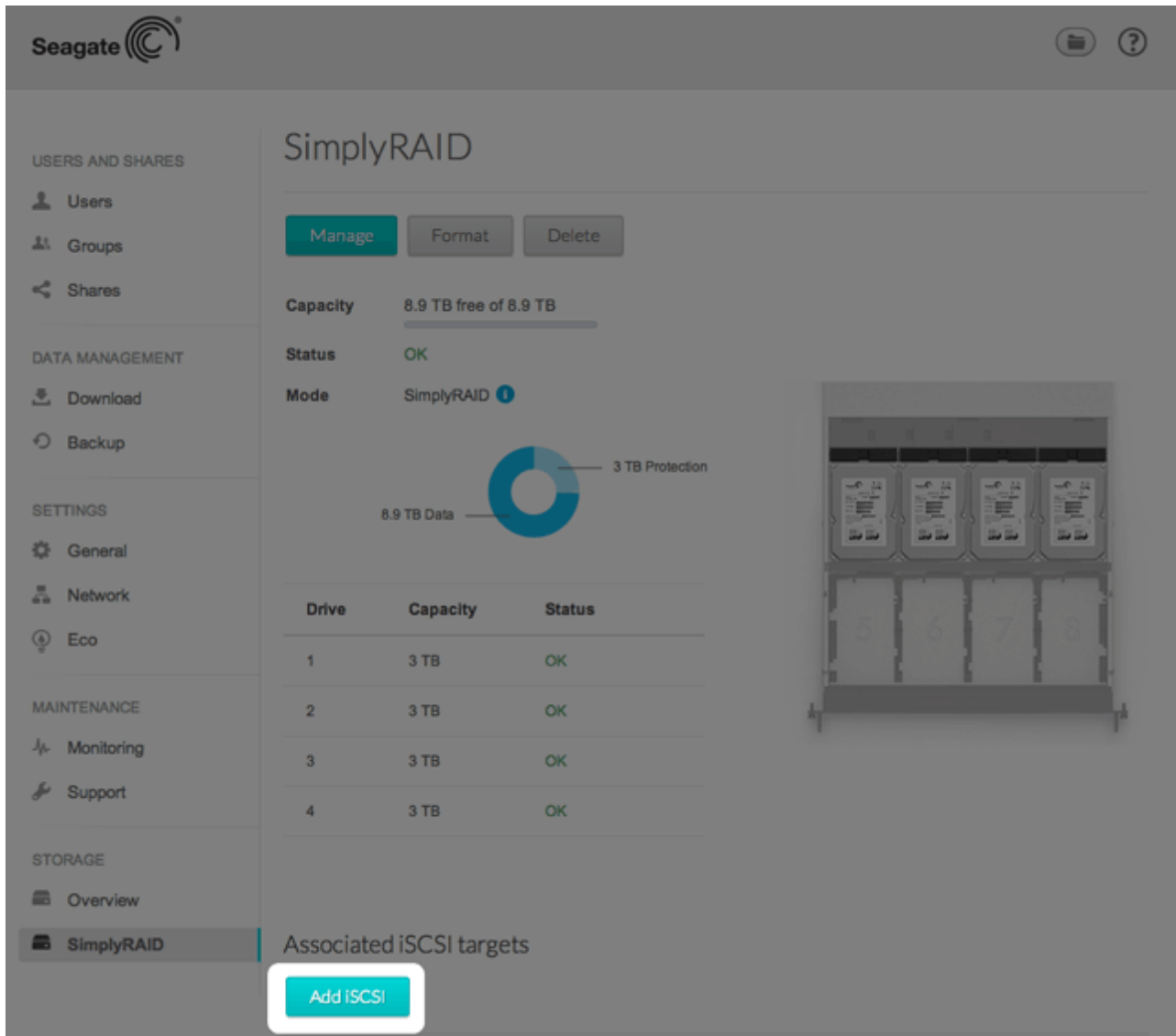
Advanced SAN clusters can be configured to manage multiple iSCSI targets and share them among workstations on the network. When adding a NAS OS iSCSI target to a SAN cluster, the administrator should choose **Multiple sessions** in the iSCSI target's advanced parameters.

Unless a SAN cluster properly administers it, **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 NAS OS in an Internet browser and choose **Storage > Overview**. **Important:** Do not choose **Manage** on the Storage Overview page if it is available.
2. On the Storage Overview page, click on the volume that will host the iSCSI target. The volume's storage page will load in the browser.
3. Choose **Add iSCSI**.



4. Drag the slider or enter a number to change the storage space allocated to the iSCSI target (click on the bar if the slider does not appear). 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 iSCSI

Settings Finish

iSCSI capacity 5600 GB

**Advanced parameters (optional)**

☐ Data digest

☐ Header digest

☐ Multiple sessions

☐ CHAP

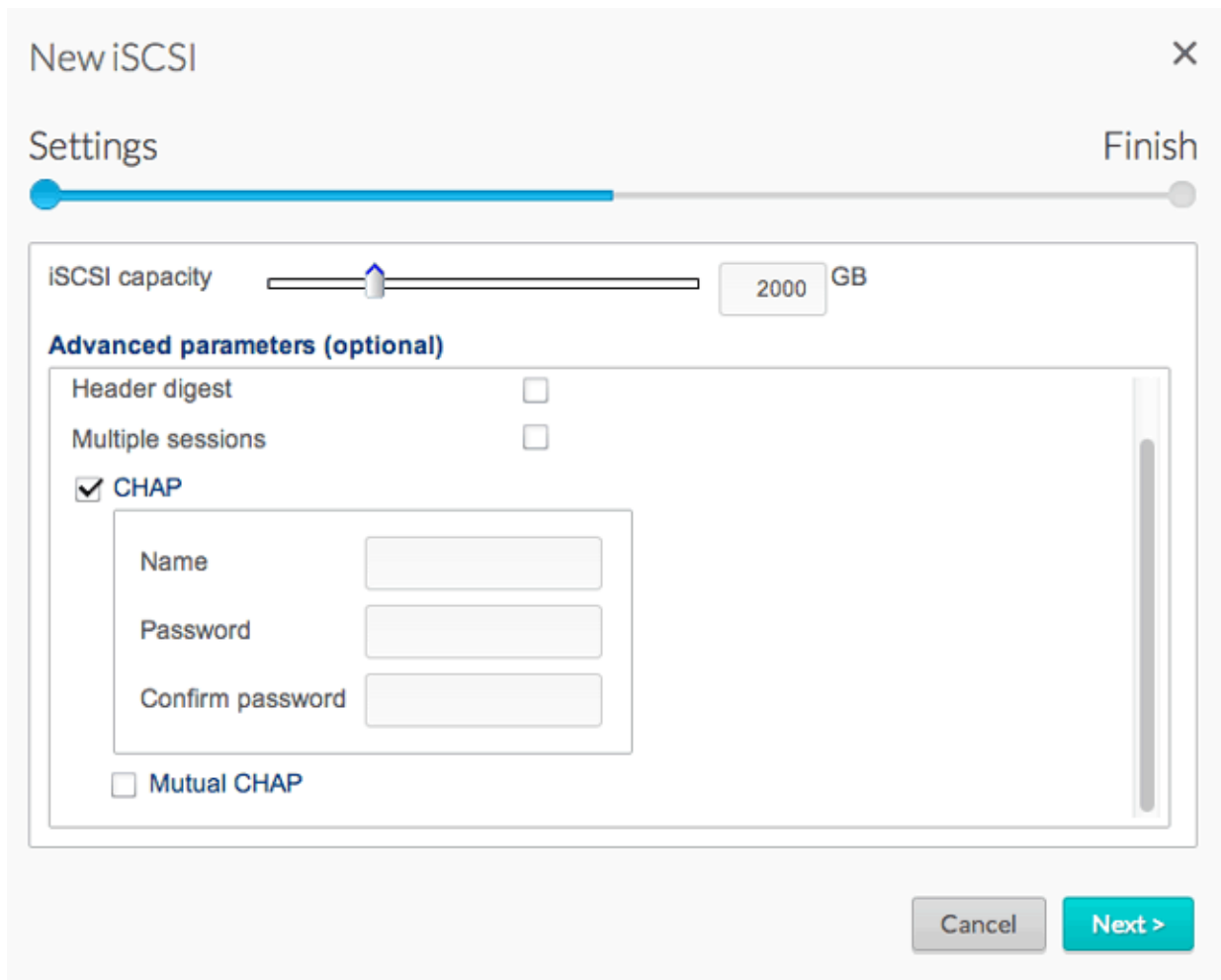
Cancel Next >

5. **Advanced parameters** offers the following options:

1. **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.
2. **Header digest:** Enable checksum to verify the integrity of the header portion of the SCSI PDU. Similar to Data digest, performance will be affected.
3. **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. **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*.



The image shows a 'New iSCSI' configuration window. At the top, there's a title bar with a close button (X). Below the title bar, a progress bar is shown with 'Settings' on the left and 'Finish' on the right. The main content area is titled 'iSCSI capacity' and features a slider set to 2000 GB. Below this, a section titled 'Advanced parameters (optional)' contains several checkboxes: 'Header digest' (unchecked), 'Multiple sessions' (unchecked), 'CHAP' (checked), and 'Mutual CHAP' (unchecked). The 'CHAP' section is expanded, showing three input fields: 'Name', 'Password', and 'Confirm password'. At the bottom right, there are 'Cancel' and 'Next >' buttons.

New iSCSI

Settings Finish

iSCSI capacity 2000 GB

**Advanced parameters (optional)**

☐ Header digest

☐ Multiple sessions

☒ CHAP

☐ Mutual CHAP

Name

Password

Confirm password

Cancel Next >

2. 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 NAS's iSCSI target.

New iSCSI

Settings

Finish

iSCSI capacity

2000 GB

Advanced parameters (optional)

Password

Confirm password

☐ Mutual CHAP

Name

Password

Confirm password

Cancel

Next >

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

NAS OS: iSCSI target connection indicator

The Storage page for the volume provides the iSCSI target status below *Associated iSCSI targets*:

- Not connected: The text reads *disconnected*
- Connected: The text reads *Connected*

Associated iSCSI targets		
Add iSCSI		
iSCSI 4	Capacity	: 1 TB
Connected	IQN	: iqn.1995-05.com.seagate:Seagate-R8-UX:iscsi4
	Enabled settings	:

Choose the *Connected* to view the IP address of the workstation that has connected to the iSCSI target.

List of connected clients×

IP address	IQN
192.168.3.63	iqn.1991-05.com.microsoft:seagate-dwss4

Close

NAS OS: Revise iSCSI Advanced parameters

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

- 1. Go to NAS OS in an Internet browser and choose **Storage > Overview**. **Important:** Do not choose **Manage** on the Storage Overview page if it is available.
- 2. On the Storage Overview page, click on the volume that is hosting the iSCSI target. The volume's storage page will load in the browser.
- 3. Pass the cursor to the far right of the iSCSI target's row to make the **Edit** pull-down menu visible.
- 4. Choose **Option** to view the Advanced parameters.

Associated iSCSI targets

Add iSCSI

<b>NAS OS iSCSI</b> (disconnected)	<b>Capacity</b> : 2 TB	<div>Edit ▾ Option Delete</div>
	<b>IQN</b> : iqn.1995-05.com.lacie:Seagate-R8:iscsi1	
	<b>Enabled settings</b> : CHAP	

5. Adjust the parameters for the iSCSI target and choose **Save**.

NAS OS iSCSI
✕

Name

IQN

iqn.1995-05.com.lacie:

Data digest
☒

Header digest
☐

Multiple sessions
☐

☒ CHAP

Name

Password

Confirm password

☐ Mutual CHAP

To review the definitions of the parameters, see [Create an iSCSI target](#).

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

- Type
- 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*. Certain changes to the Advanced parameters may not take effect until the iSCSI target reconnects to the initiator.

## iSCSI initiator

A workstation on the network can connect to the 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, 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

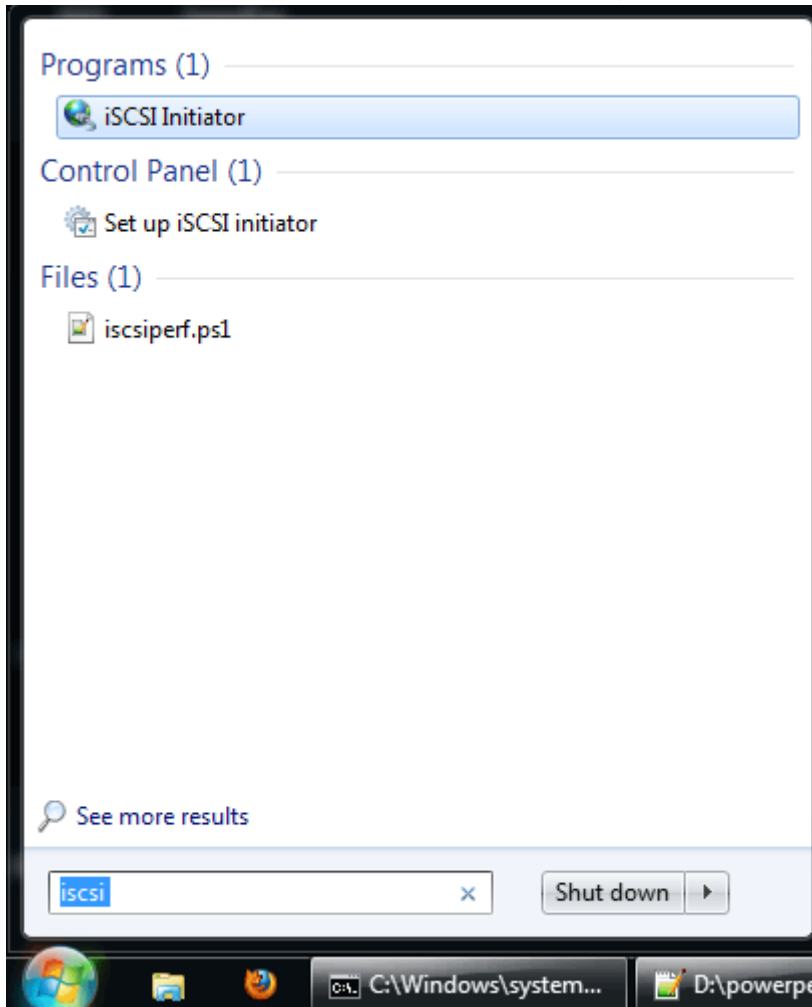
iSCSI Initiator [here](#). See the configuration example below.

- Mac: Third-party applications are available to connect to an iSCSI target.

## iSCSI initiator: Example

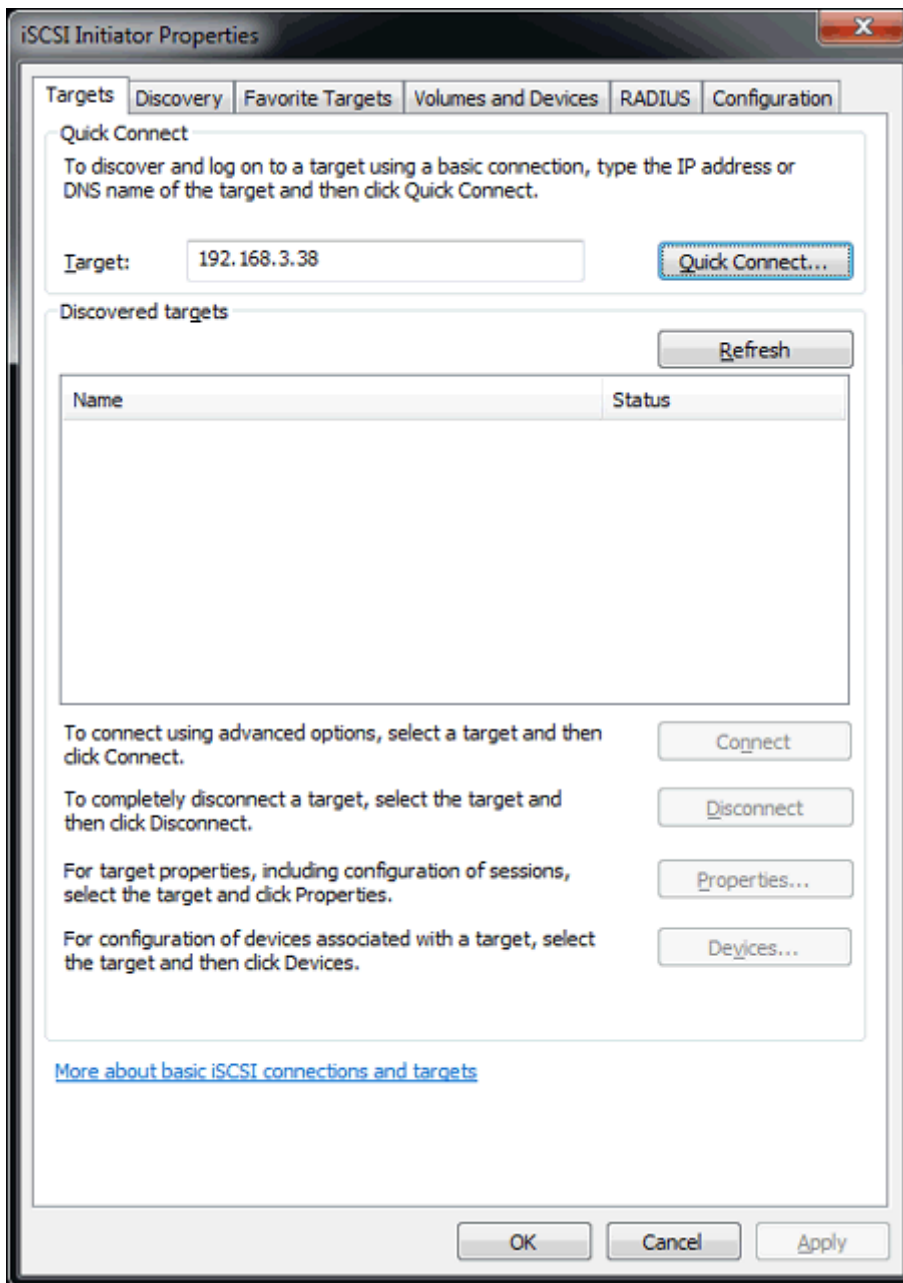
The steps below demonstrate a single connection to an iSCSI target using a Windows 7 workstation as the initiator. For the example, a CHAP has been configured on the iSCSI target only. Configurations will vary but you can review the instructions below and make adjustments for your operating system and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

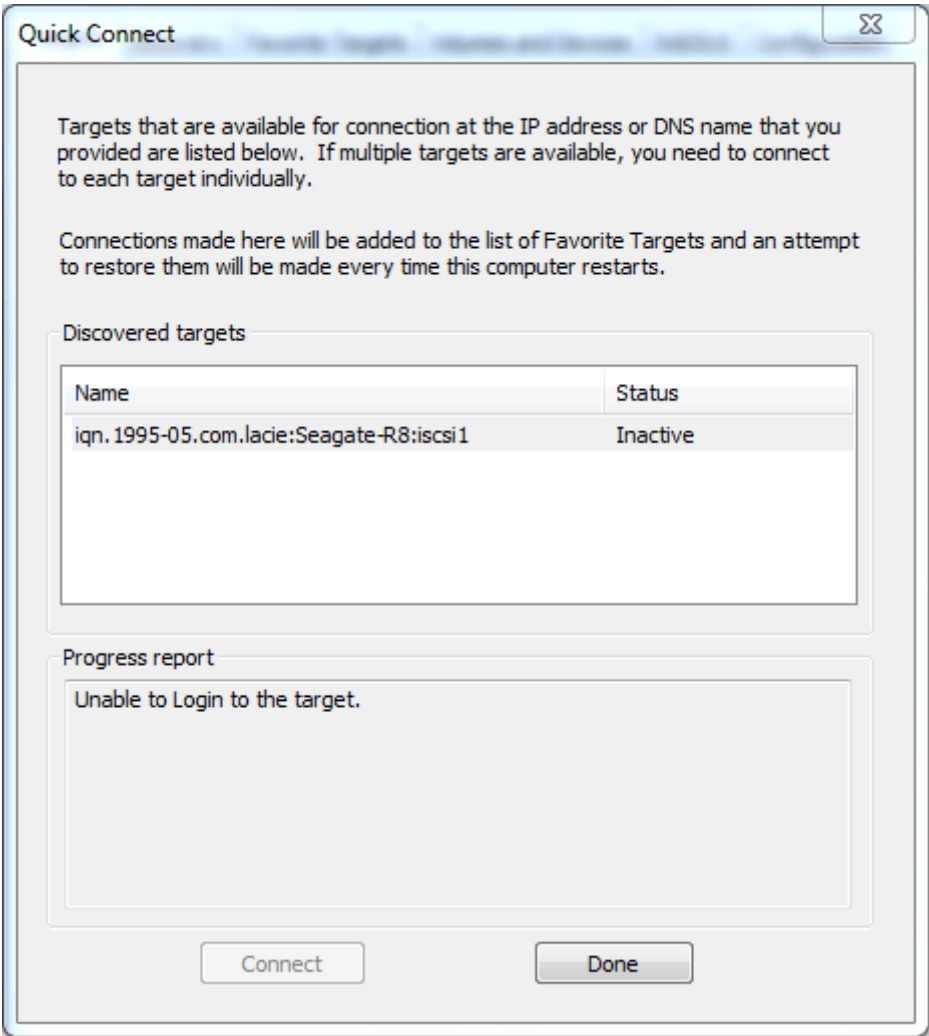




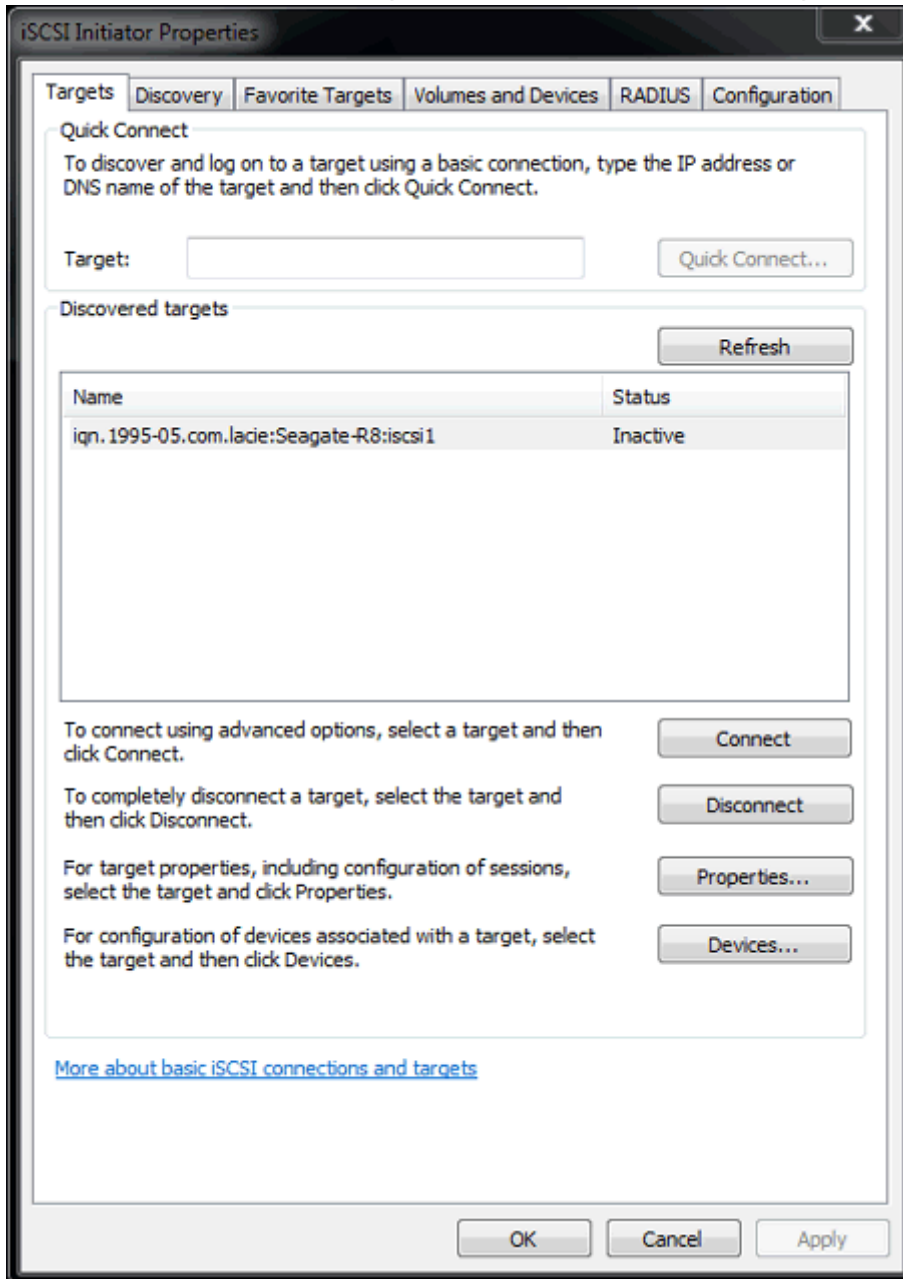
3. Choose **Quick connect** or equivalent.

4. Without and with CHAP:

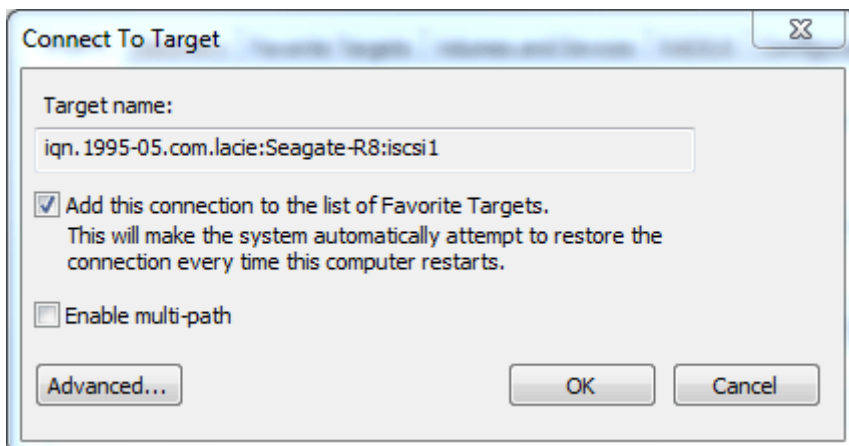
1. If the iSCSI target does not include a CHAP, you will connect immediately. If it is the first time that the iSCSI target has connected to an initiator, you will be prompted to format the disk.
2. If the iSCSI target includes a CHAP, a prompt alerts you that a connection is not possible. Close the prompt.



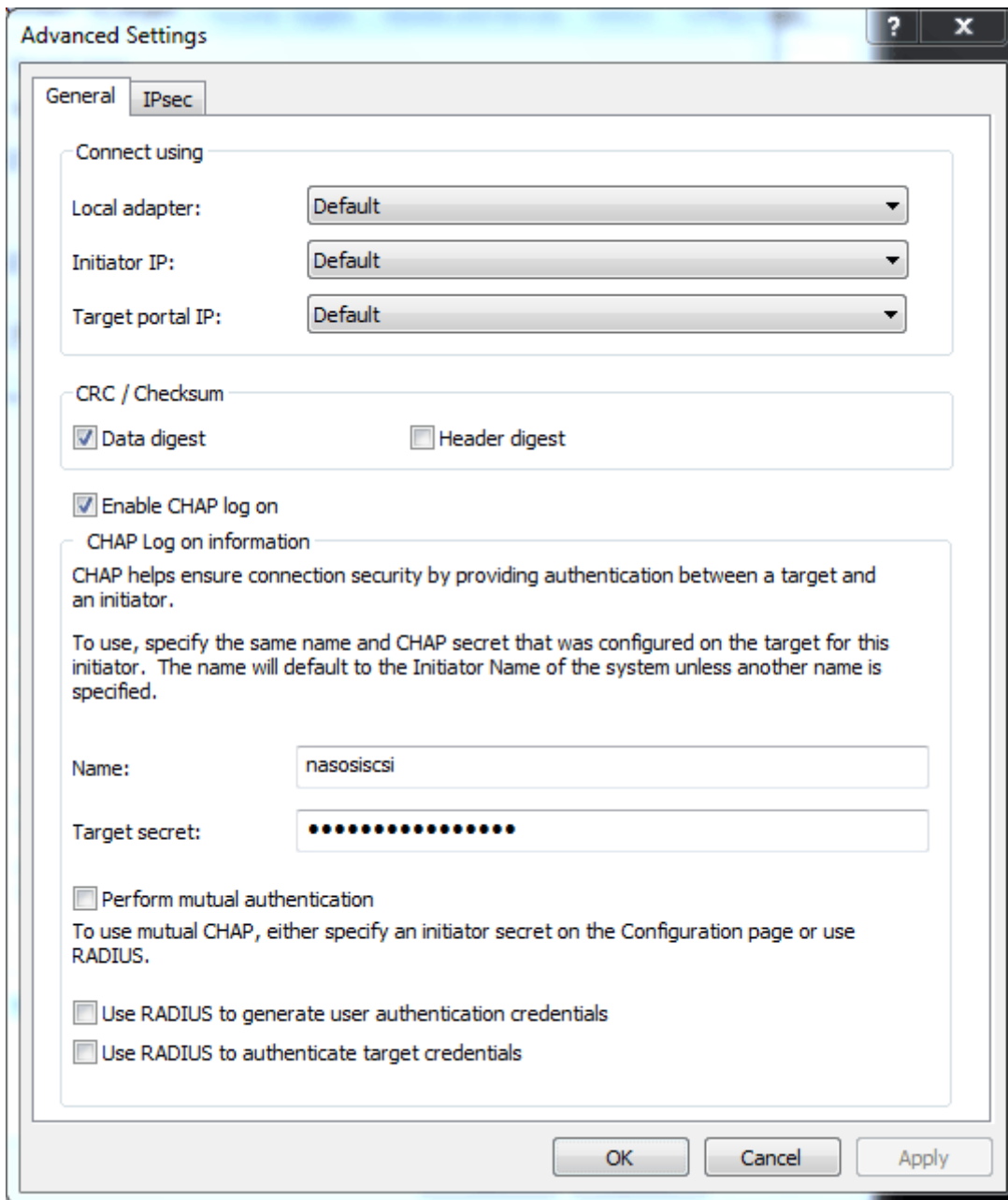
5. Select the NAS's iSCSI target in the list of discovered agents and choose **Connect**.



6. Choose **Advanced**.



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



The image shows a screenshot of the 'Advanced Settings' dialog box, specifically the 'IPsec' tab. The dialog has a title bar with a question mark and a close button. Inside, there are two tabs: 'General' and 'IPsec'. The 'IPsec' tab is active. The 'Connect using' section contains three dropdown menus: 'Local adapter:' (Default), 'Initiator IP:' (Default), and 'Target portal IP:' (Default). Below this is the 'CRC / Checksum' section with two checkboxes: 'Data digest' (checked) and 'Header digest' (unchecked). The 'Enable CHAP log on' checkbox is also checked. Under 'CHAP Log on information', there is a text box for 'Name:' containing 'nasosiscsi' and a 'Target secret:' field represented by a series of dots. Below these are three unchecked checkboxes: 'Perform mutual authentication', 'Use RADIUS to generate user authentication credentials', and 'Use RADIUS to authenticate target credentials'. At the bottom of the dialog are 'OK', 'Cancel', and 'Apply' buttons.

Advanced Settings

General IPsec

Connect using

Local adapter: Default

Initiator IP: Default

Target portal IP: Default

CRC / Checksum

☒ Data digest ☐ Header digest

☒ Enable CHAP log on

CHAP Log on information

CHAP helps ensure connection security by providing authentication between a target and an initiator.

To use, specify the same name and CHAP secret that was configured on the target for this initiator. The name will default to the Initiator Name of the system unless another name is specified.

Name: nasosiscsi

Target secret: .....

☐ Perform mutual authentication

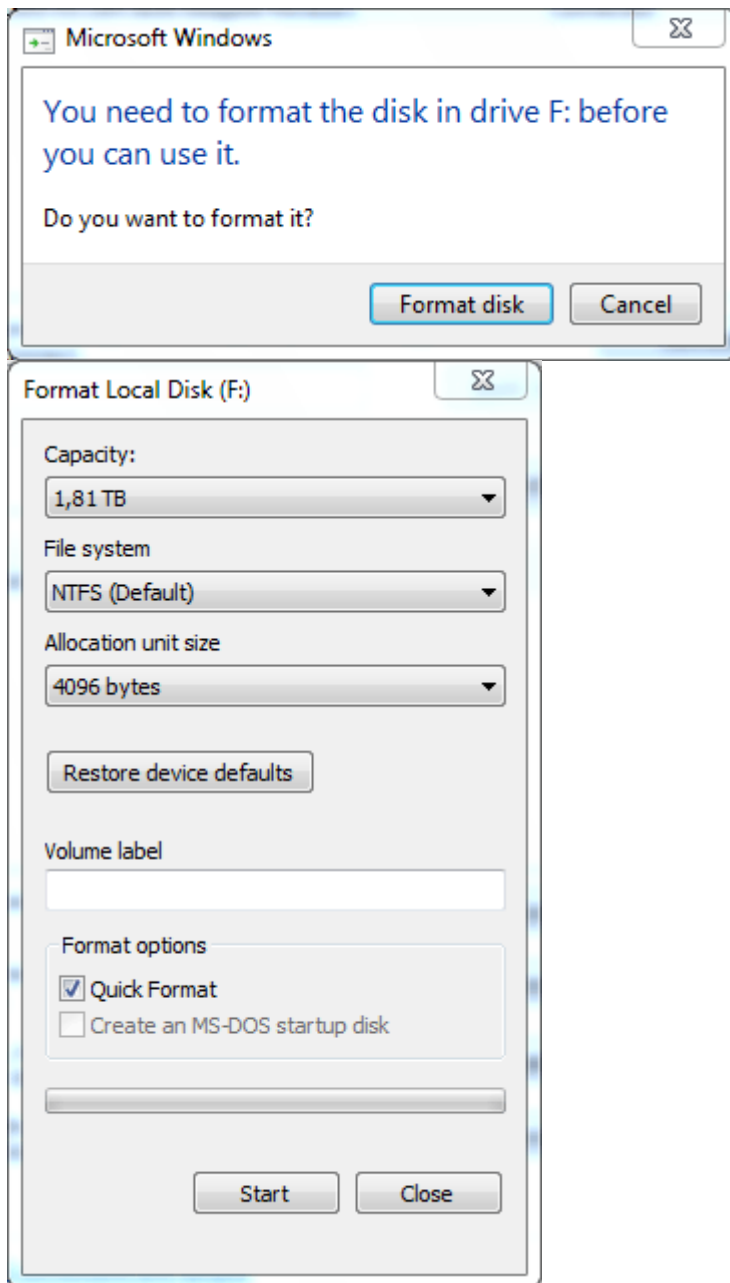
To use mutual CHAP, either specify an initiator secret on the Configuration page or use RADIUS.

☐ Use RADIUS to generate user authentication credentials

☐ Use RADIUS to authenticate target credentials

OK Cancel Apply

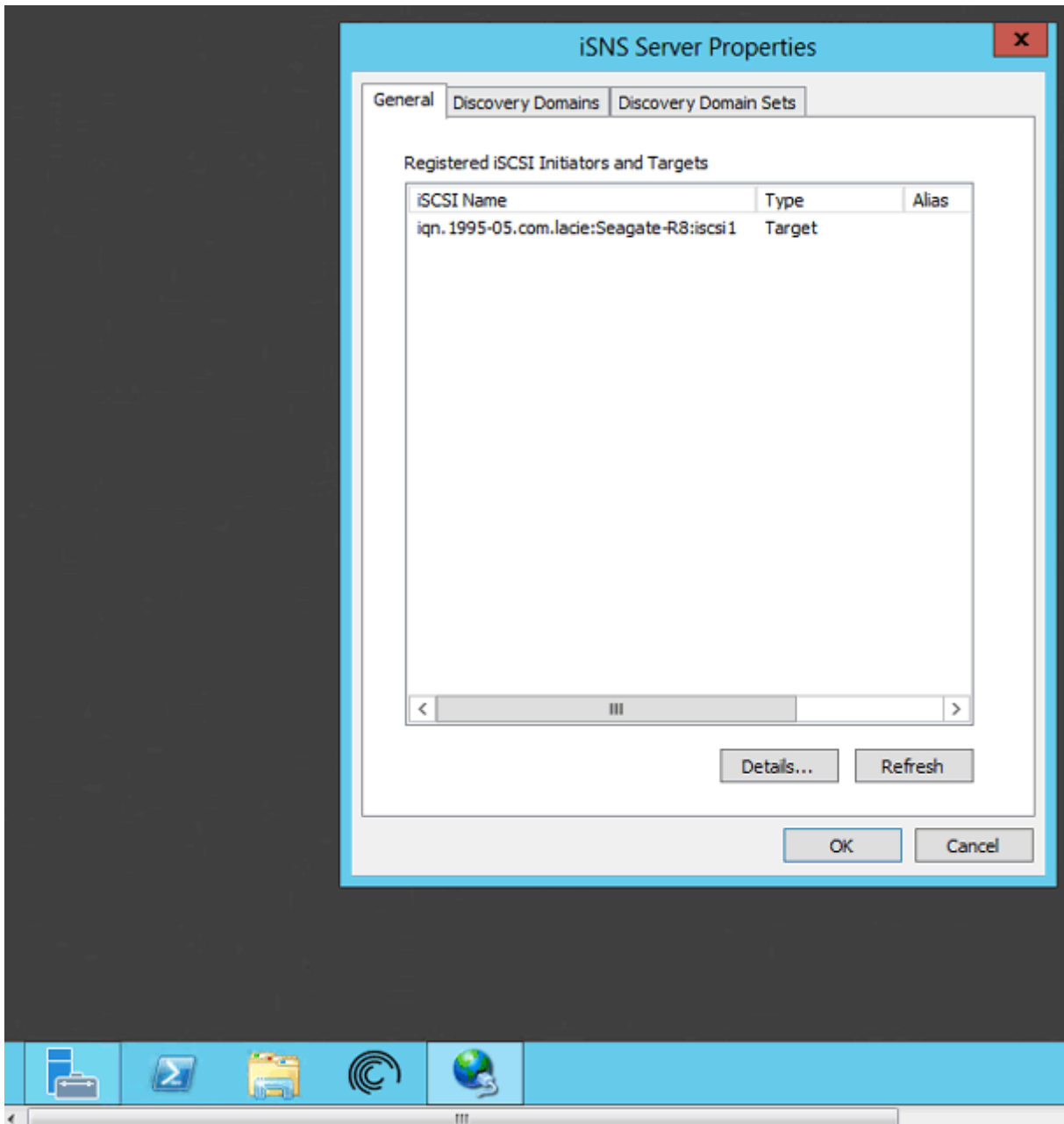
8. A window may appear prompting you to add the target to your favorites. Make your selection and exit.
9. If it is the first time that the iSCSI target has connected to an initiator, you will be prompted to format the disk.



## iSNS: Internet storage name service

The Internet Storage Name Service (iSNS) manages multiple iSCSI targets on a network. Certain iterations of Windows Server include the iSNS feature. Using an iSNS can save 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 NAS's iSCSI target.



## iSNS: NAS OS (iSCSI target)

Enable iSNS server and enter its IP address:

1. Go to NAS OS in an Internet browser and choose **General > Services**.
2. Pass the cursor to the far right of the iSCSI service to make the **Edit** pull-down menu visible.

3. Choose **Advanced** parameters.

# General

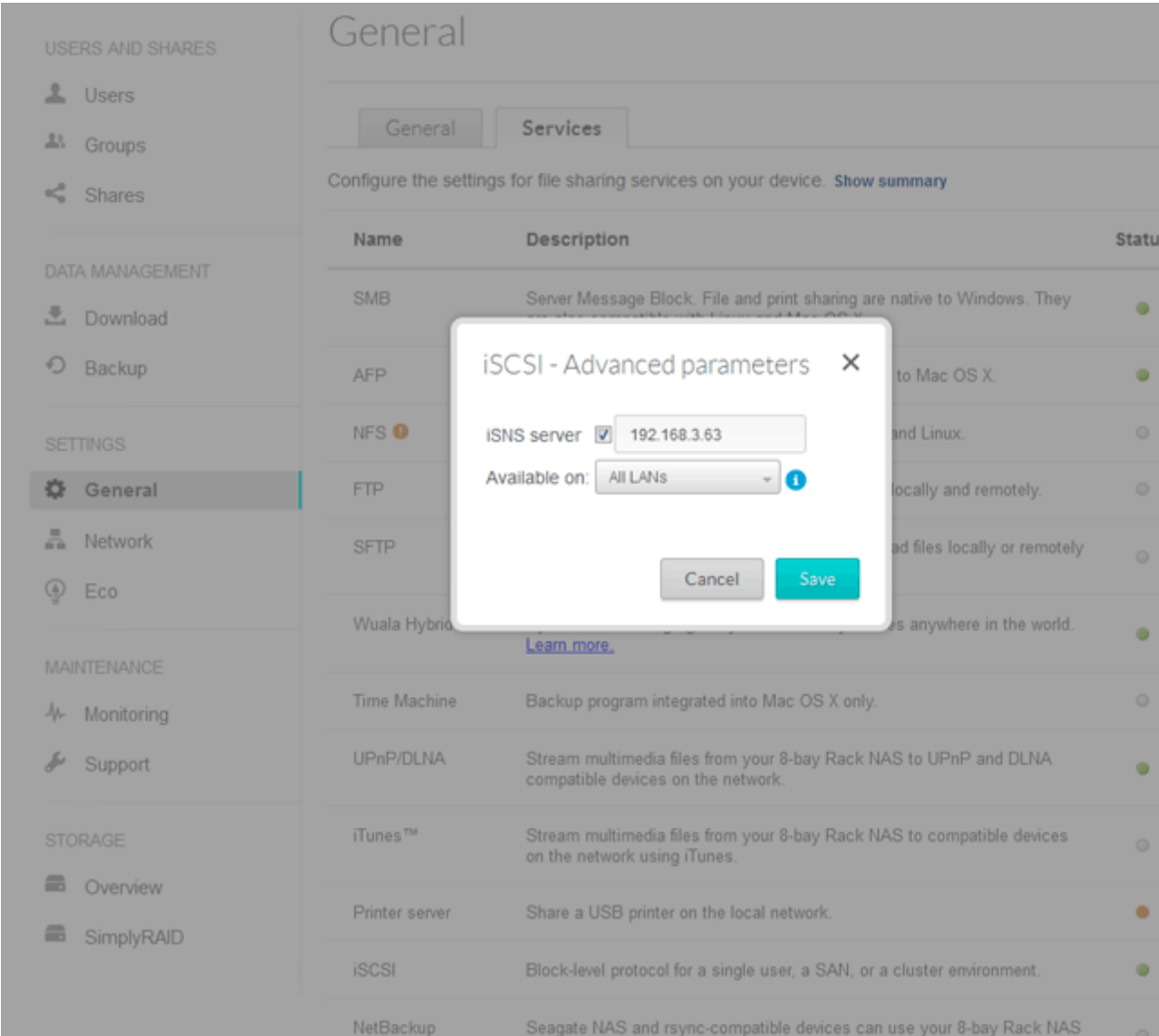
General

Services

Configure the settings for file sharing services on your device. [Show summary](#)

Name	Description	Status
SMB	Server Message Block. File and print sharing are native to Windows. They are also compatible with Linux and Mac OS X.	<div></div>
AFP	Apple Filing Protocol. File and print sharing native to Mac OS X.	<div></div>
NFS ⓘ	Network File System. File sharing native to UNIX and Linux.	<div></div>
FTP	File Transfer Protocol. Upload and download files locally and remotely.	<div></div>
SFTP	Secure File Transfer Protocol. Upload and download files locally or remotely using a secure connection.	<div></div>
Wuala Hybrid Cloud	Hybrid Cloud storage gives you access to your files anywhere in the world. <a href="#">Learn more.</a>	<div></div>
Time Machine	Backup program integrated into Mac OS X only.	<div></div>
UPnP/DLNA	Stream multimedia files from your 8-bay Rack NAS to UPnP and DLNA compatible devices on the network.	<div></div>
iTunes™	Stream multimedia files from your 8-bay Rack NAS to compatible devices on the network using iTunes.	<div></div>
Printer server	Share a USB printer on the local network.	<div></div>
iSCSI	Block-level protocol for a single user, a SAN, or a cluster environment.	<div></div> <div>Edit ▾</div>
NetBackup	Seagate NAS and rsync-compatible devices can use your 8-bay Rack NAS to back up their data.	<div></div> <div>Advanced parameters</div>

4. Check the box and enter the iSNS server's IP address.



**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.

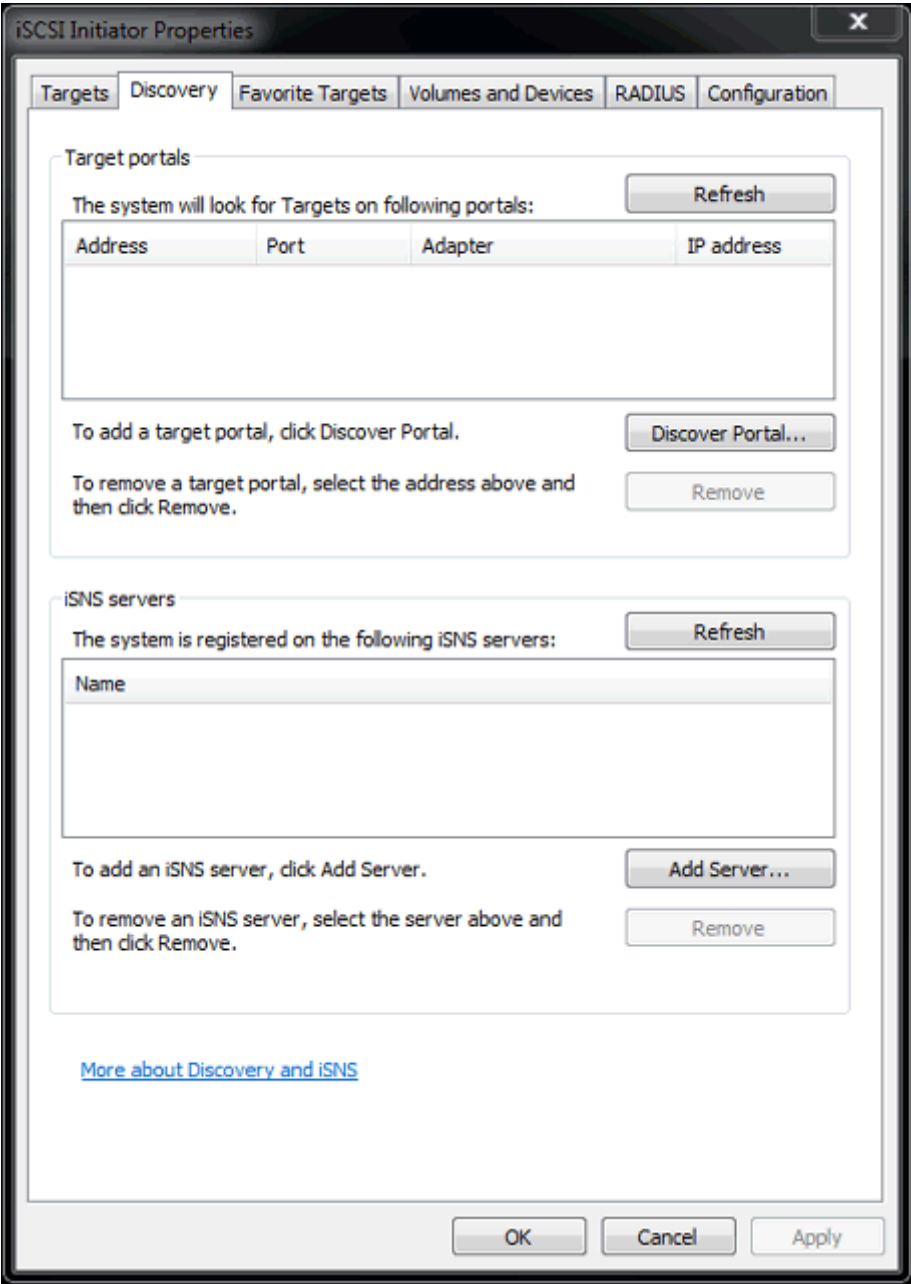
iSNS: Workstation (iSCSI initiator)

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.

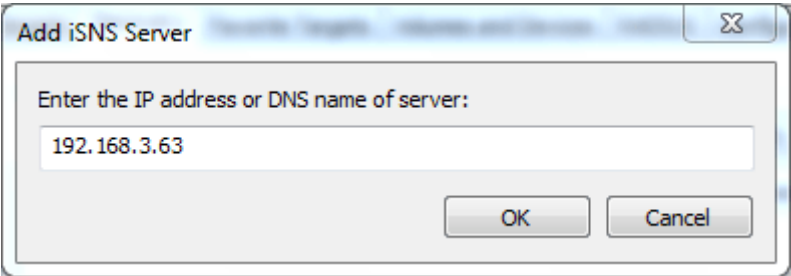
- 1. Search for and launch **iSCSI Initiator** or equivalent.



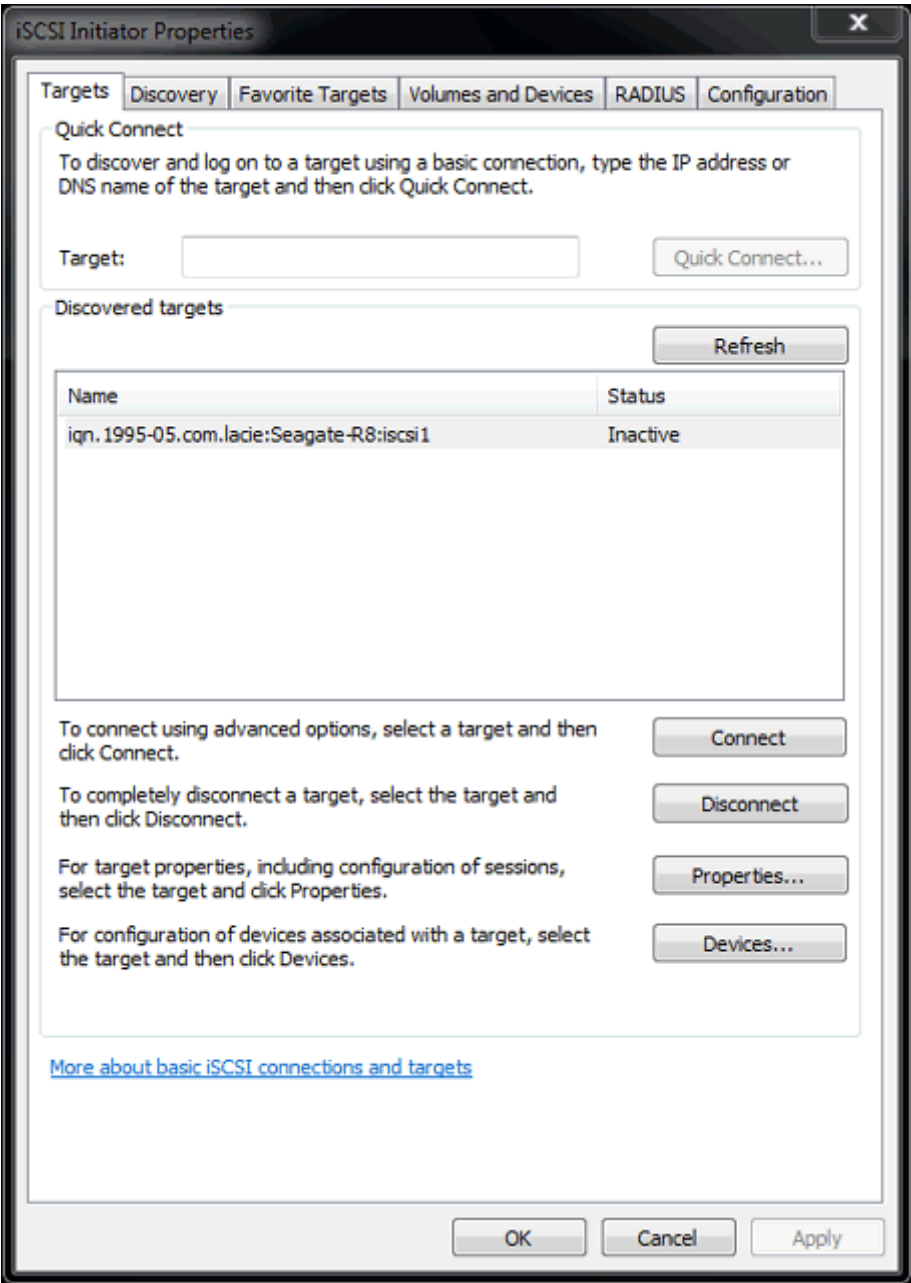
2. Choose Discovery and **Add server.**



3. Enter the IP address of the iSNS server.



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



5. To connect to the iSCSI target, follow the instructions in [iSCSI initiator: Example](#).