



PrimeArray

Systems, Inc.

FlexNAS/NetServ as iSCSI Target

Revision History

Version	Comments
V1.0	First Edition.

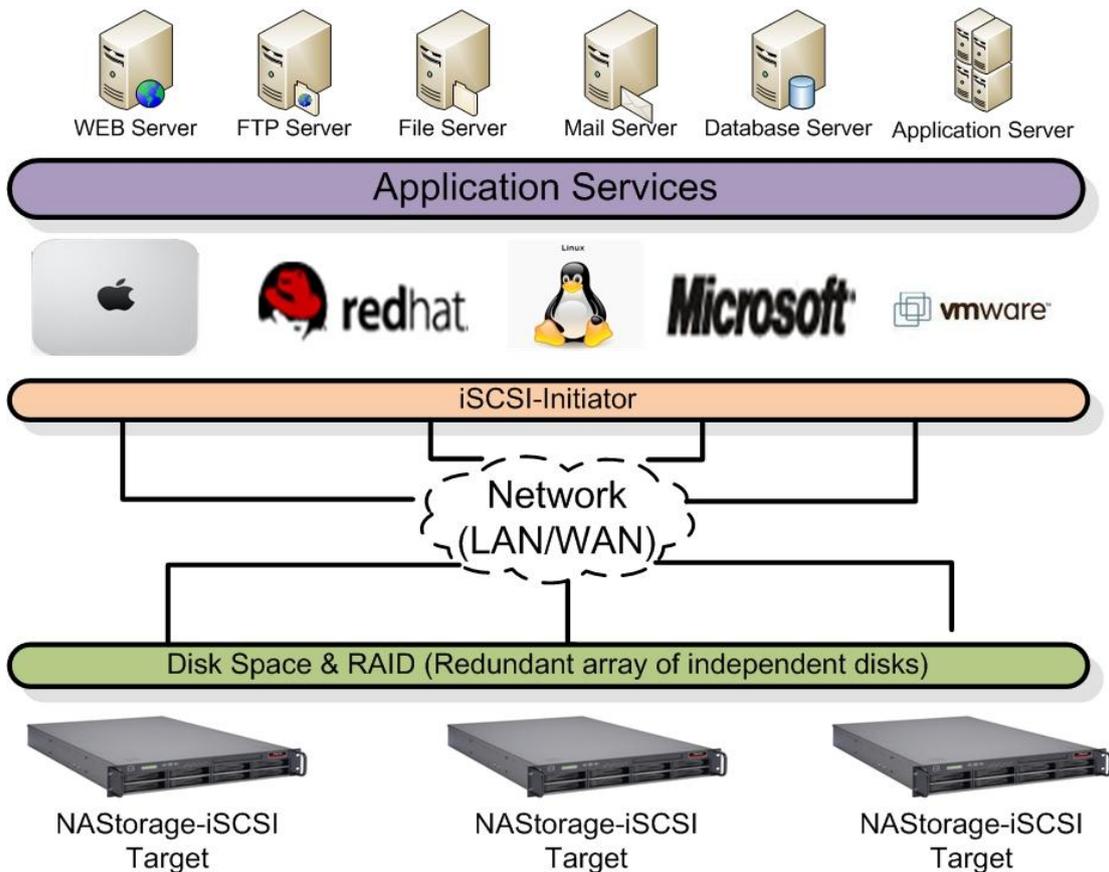
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PrimeArray Systems inc.
Technical Support: support@primearray.com

What is iSCSI

iSCSI is a technology that to use network resources and **NAStorage** space to serve the another machine (**iSCSI-initiator**) of space demand. **iSCSI** can be used to transmit data over local area networks (**LANs**), wide area networks (**WANs**), or the Internet and can enable location-independent data storage and retrieval. The protocol allows clients (called initiators) to send **SCSI** commands (**CDBs**) to SCSI storage devices (**targets**) on remote servers. It is a popular storage area network (**SAN**) protocol, allowing organizations to consolidate storage into data center storage arrays while providing hosts (such as database and web servers) with the illusion of locally-attached disks.



Add iSCSI target



Go to **Admin Home** -> **Volume Manager** -> **iSCSI** page for following settings.





Click “Add” button to create the iSCSI target, then input following information like below screenshot.



After click Apply button, you will see the target start to initiate then become “Ready” status.

Refresh

iSCSI target list

iSCSI qualified name	Capacity	LUN allocation	Comment	Status	Action
500GBtarget	500GB	0MB	Windows Storage	Initiating	✕

iSCSI target list

iSCSI qualified name	Capacity	LUN allocation	Comment	Status	Action
500GBtarget	500GB	0MB	Windows Storage	Ready	🔍 🔄 ✕



You have to add iSCSI initiator's IP address for allow the client to connect to NASStorage with iSCSI.

Server | Network | Volume | Security | Disc Server | Backup | Virus Scan | Event | Status |
Information | Create | Delete | Expand | Migrate | Scan | iSCSI | Recycle |

iSCSI target Management

Specify List of iSCSI Allow

Enter the initiator name or IP: 10.1.4.78 Add initiator

List of the allowed iSCSI initiators

Deny all initiators

Delete initiator

Server | Network | Volume | Security | Disc Server | Backup | Virus Scan | Event | Status |
Information | Create | Delete | Expand | Migrate | Scan | iSCSI | Recycle |

iSCSI target Management

Specify List of iSCSI Allow

Enter the initiator name or IP: Add initiator

List of the allowed iSCSI initiators

	Initiator name/IP
<input checked="" type="checkbox"/>	10.1.4.78

Delete initiator

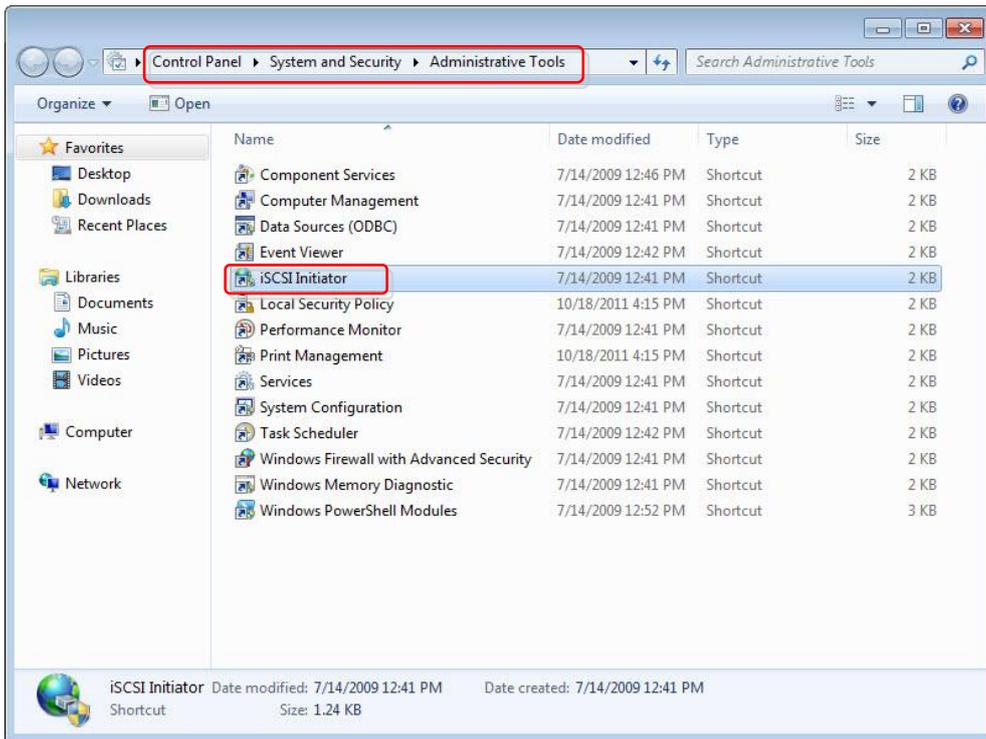


If you don't want the client to access the iSCSI target anymore, you can enable the checkbox to delete it.

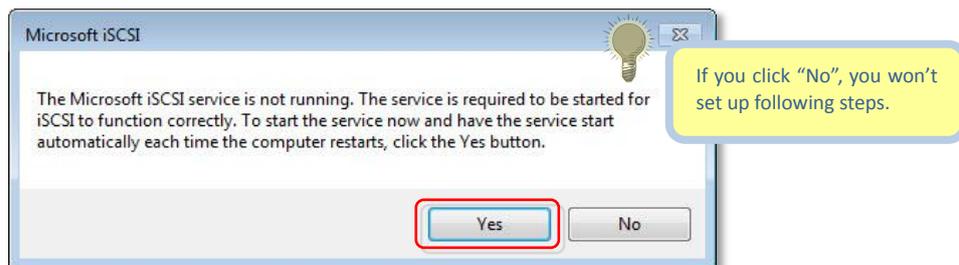
Connect to iSCSI target



Windows 7 has installed **iSCSI initiator** by default; you can start that from **Control Panel -> System and Security -> Administrative Tools**.



After execute the **iSCSI Initiator**, you will see the pop up message like below, you have to click **“Yes”** button to start the **iSCSI service**.





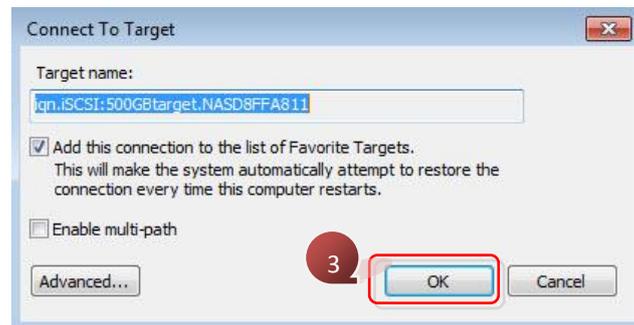
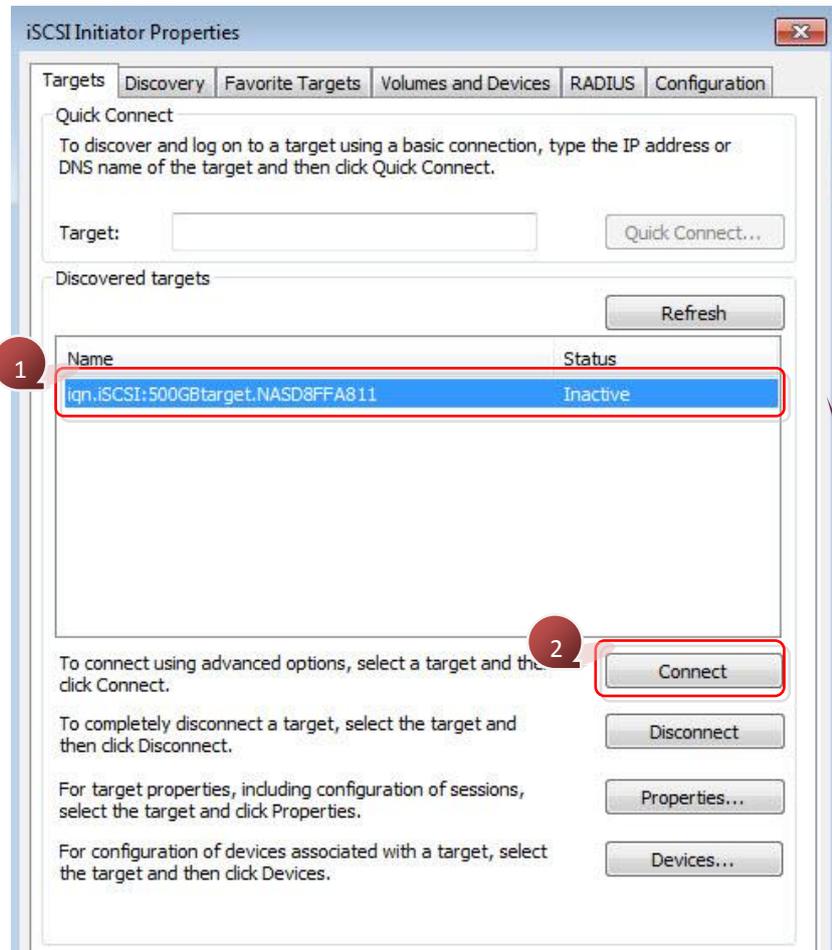
Select **Discovery** menu and click “**Discover Portal...**” button, then input IP address of **NAS iSCSI Target**

The screenshot shows the 'iSCSI Initiator Properties' dialog box with the 'Discovery' tab selected. The 'Discover Portal...' button is highlighted with a red box and a '2' in a red circle. A sub-dialog 'Discover Target Portal' is open, showing the 'IP address or DNS name' field with '10.1.2.31' entered (3) and the 'OK' button highlighted with a red box and a '4' in a red circle. A red arrow points from the 'OK' button to the next screenshot.

Address	Port	Adapter	IP address
10.1.2.31	3260	Default	Default

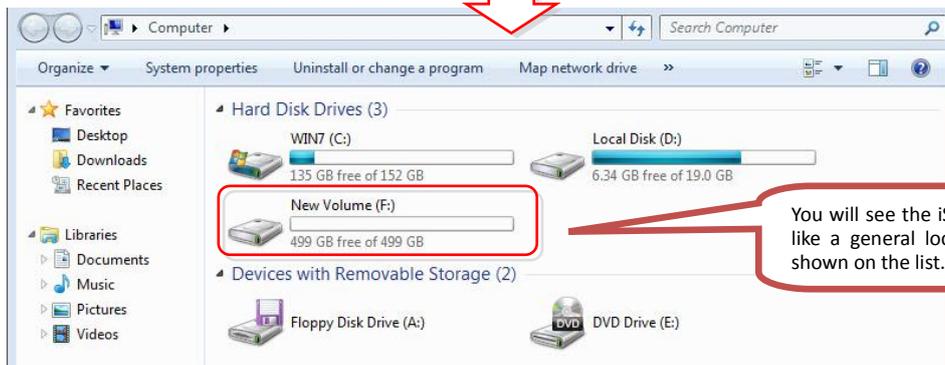
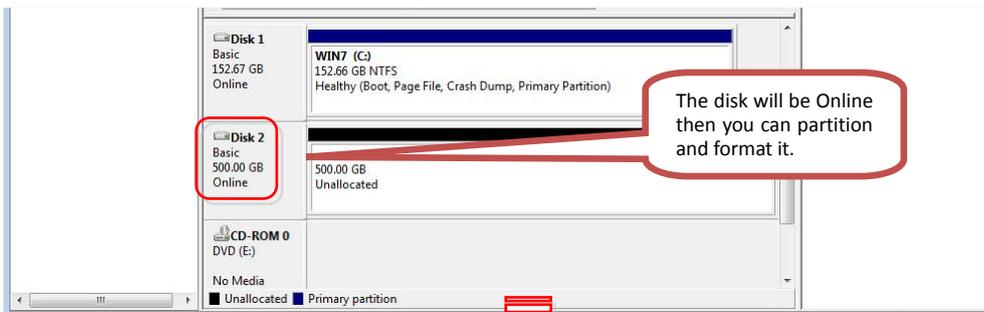
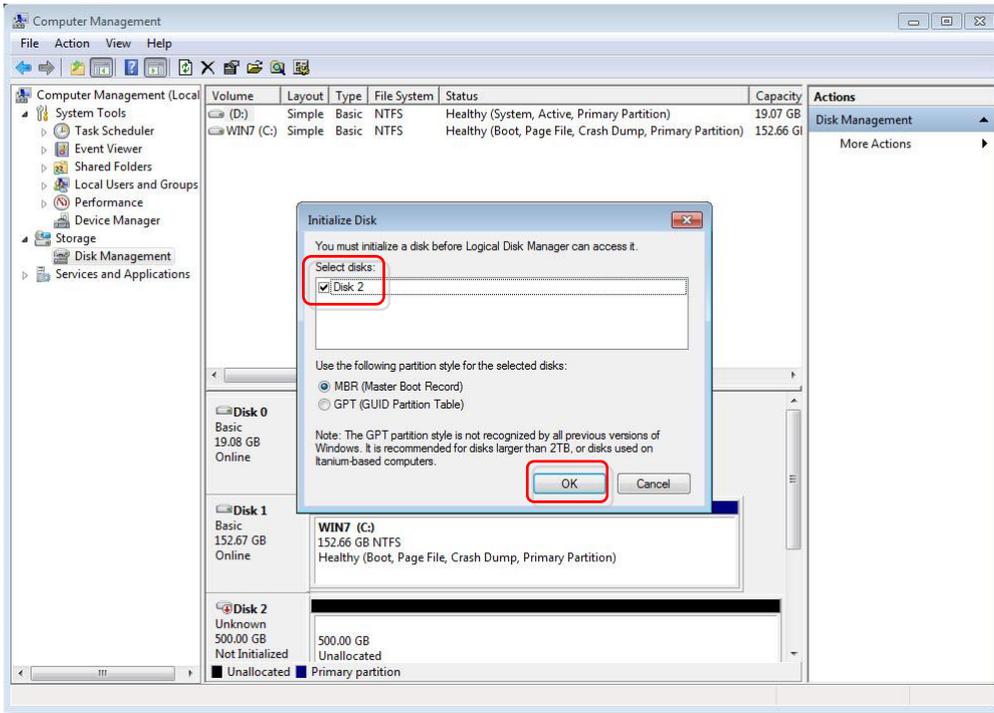


Select **Targets** menu, you will see the **iSCSI Target** appeared; select it and click **“Connect”** button for connect to the **iSCSI Target**.





Right click on **Computer** of **Start Menu** and select **“Manage”** to enter **“Disk Management”** window, you will see a new disk there, click **“OK”** to initialize the disk.



Enable iSCSI authentication (one-way)



Change the option of **iSCSI authentication** to **CHAP** (Challenge-Handshake Authentication Protocol), and input user name and password.

Server | Network | Volume | Security | Disc Server | Backup | Virus Scan | Event | Status | Information | Create | Delete | Expand | Migrate | Scan | iSCSI | Recycle |

➔ iSCSI target configuration

- iSCSI qualified name
 - Target user name: 500GBtarget
- iSCSI target LUN Capacity: 500GB
 - Allocate the disk space now
 - Comment: Windows Storage
- iSCSI authentication
 - None
 - CHAP
 - Target user name: iSCSI (A~Z, a~z, 0~9)
 - Password: (A~Z, a~z, 0~9)
 - Re-enter password:
 - Mutual CHAP:
 - Initiator name: (A~Z, a~z, 0~9)
 - Password: (A~Z, a~z, 0~9)
 - Re-enter password:
- CRC/Checksum (optional)
 - Data digest
 - Header digest

Apply Cancel

You have to input 16 characters at least for the password.



Add **iSCSI target** from **Discovery** menu of **iSCSI Initiator** (Refer to Page. 6).

iSCSI Initiator Properties

Targets | Discovery | Favorite Targets | Volumes and Devices | RADIUS | Configuration

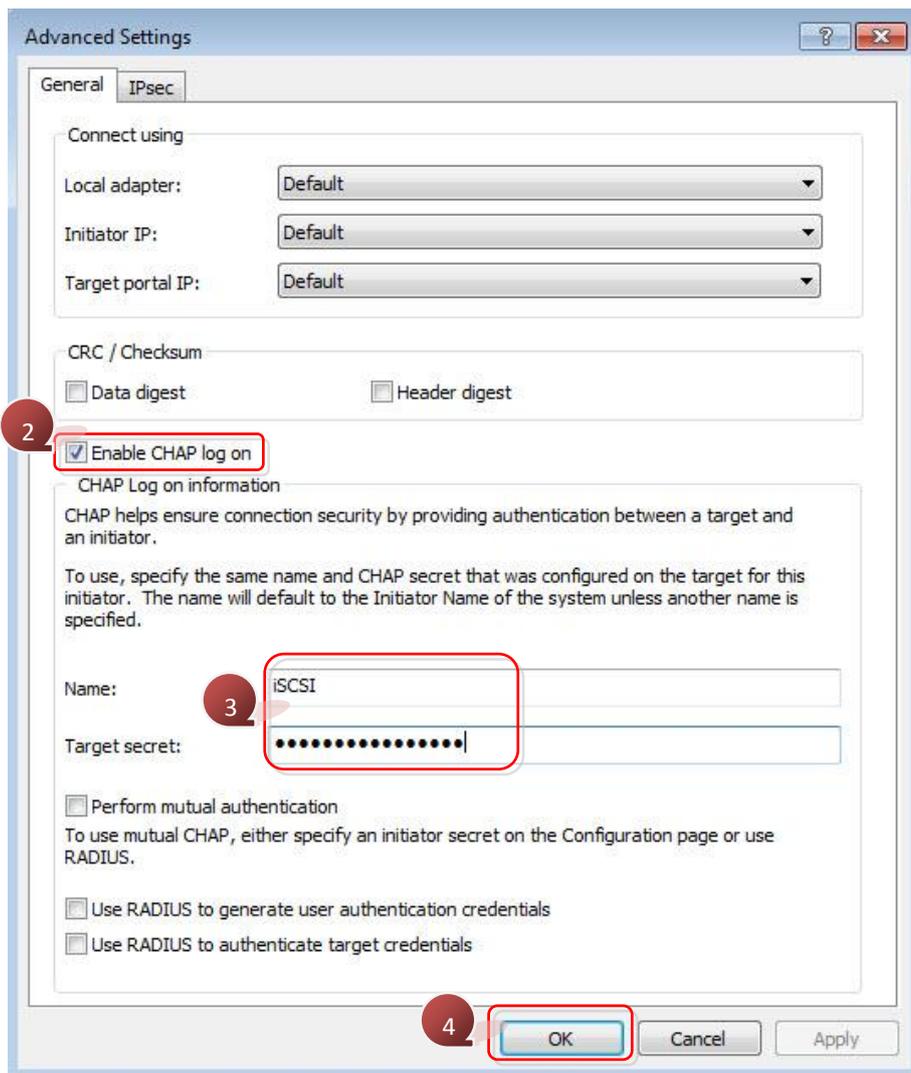
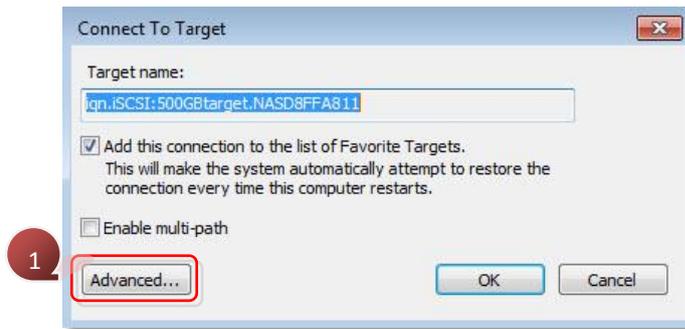
Target portals

The system will look for Targets on following portals: Refresh

Address	Port	Adapter	IP address
10.1.2.31	3260	Default	Default

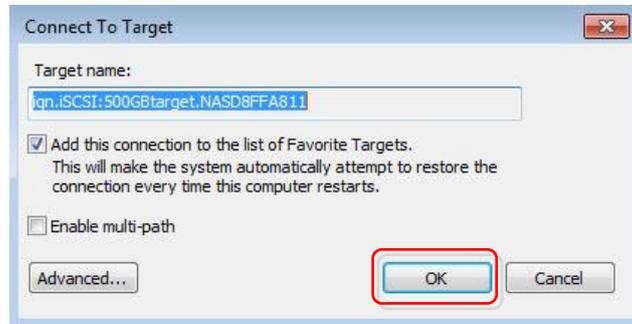


Select **Targets** menu of **iSCSI Initiator** (Refer to Page. 7) to click "**Connect**" button then click "**Advanced...**" button for Input user name and password for connect to **iSCSI target**.

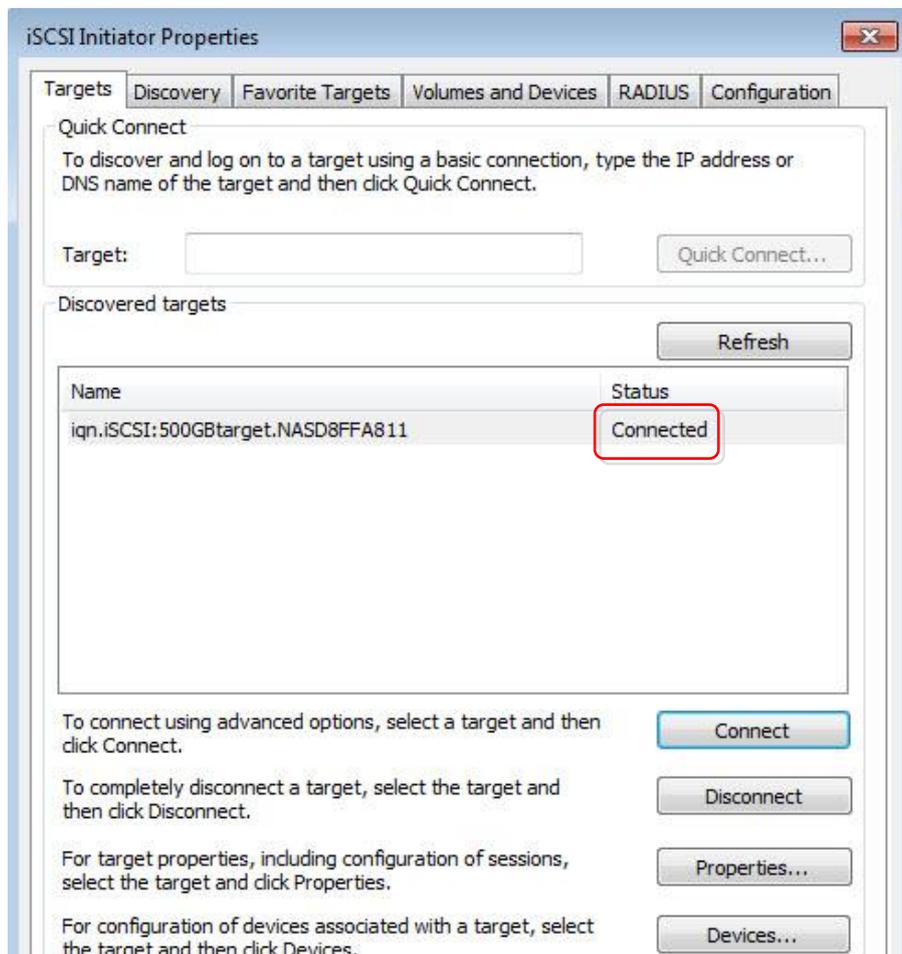




Click “OK” button to connect to iSCSI target.



The iSCSI target will be connected and you can see the iSCSI target as the local disk volume on your PC



Enable iSCSI authentication (mutual CHAP)



Change the option of **iSCSI authentication** to **CHAP** (Challenge-Handshake Authentication Protocol), and enable **Mutual CHAP** for input name and password.

The screenshot shows the 'iSCSI target configuration' window. The 'iSCSI authentication' section is highlighted with a red circle '1' around the 'CHAP' radio button. The 'Target user name' field contains 'iSCSI' and is circled in red. The 'Password' and 'Re-enter password' fields are circled in red and labeled with a red circle '2'. The 'Mutual CHAP' checkbox is checked and circled in red, labeled with a red circle '3'. The 'Initiator name' field contains 'iscsi' and is circled in red. The 'Initiator Password' and 'Re-enter password' fields are circled in red and labeled with a red circle '4'. The 'Apply' button is circled in red and labeled with a red circle '5'. A yellow callout box with a lightbulb icon contains the text: 'You have to input 16 characters at least for the password and must be different to the iSCSI target's password.'



Execute iSCSI Initiator then select Configuration menu for input Initiator name and password.

The Initiator name and password have to same to what input in the web page of NASTorage.

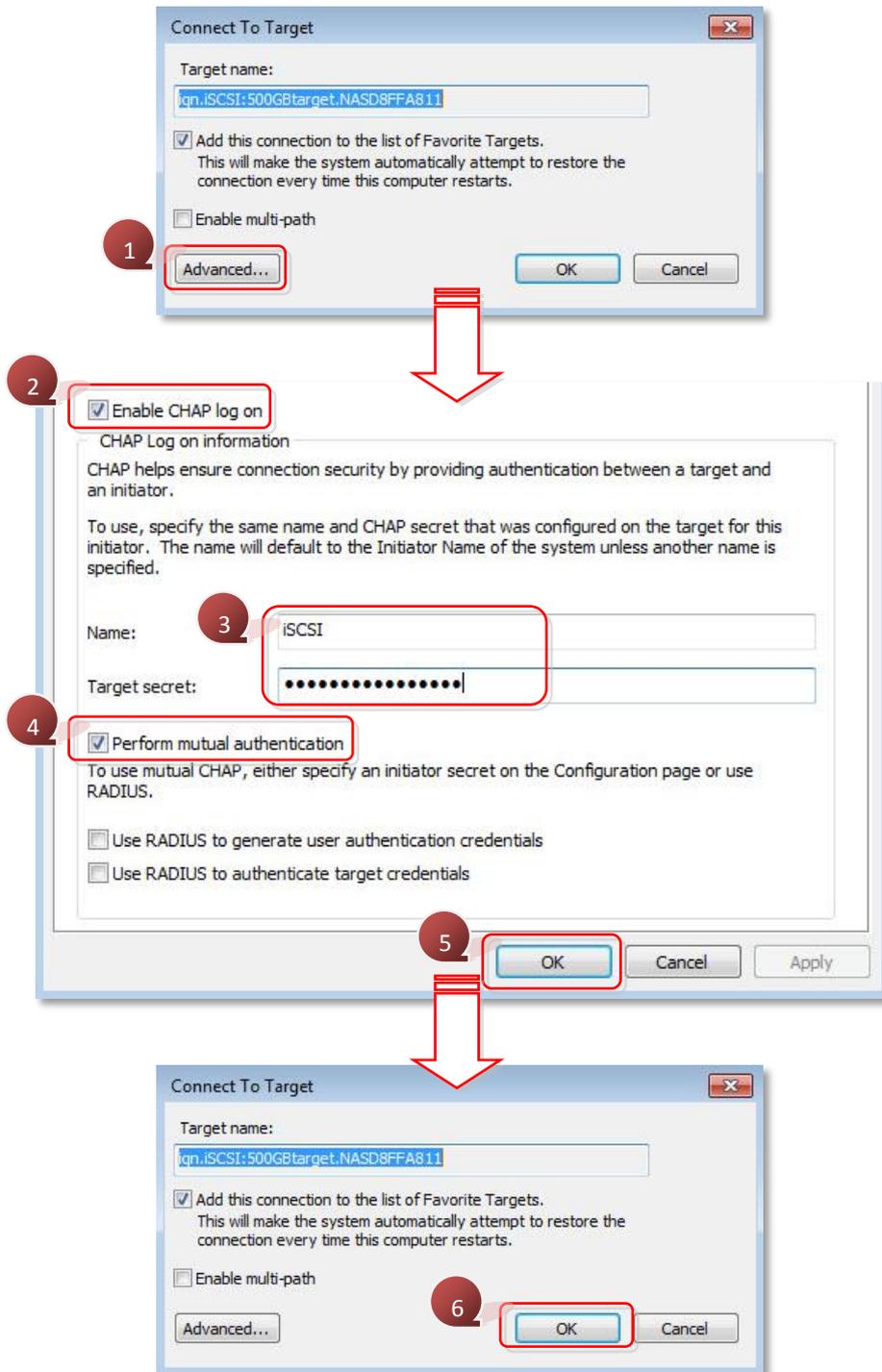


Add iSCSI target from **Discovery** menu of iSCSI Initiator (Refer to Page. 6).

Address	Port	Adapter	IP address
10.1.2.31	3260	Default	Default

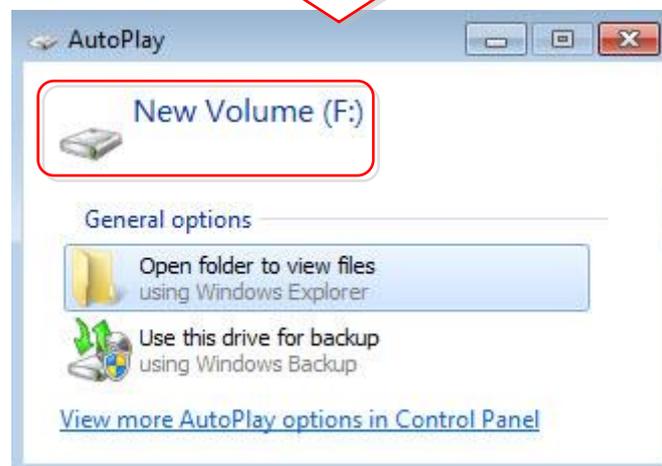
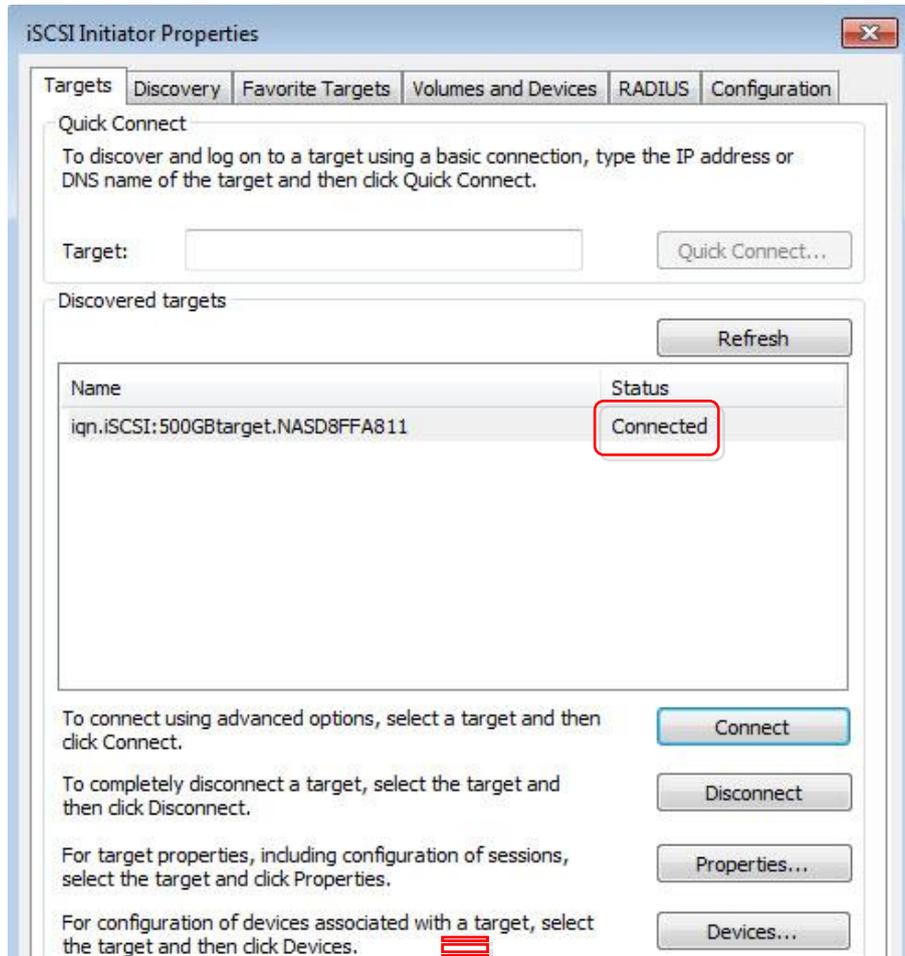


Select **Targets** menu of **iSCSI Initiator** (Refer to Page. 7) to click "**Connect**" button then click "**Advanced...**" button for Input user name and password for connect to **iSCSI target**.





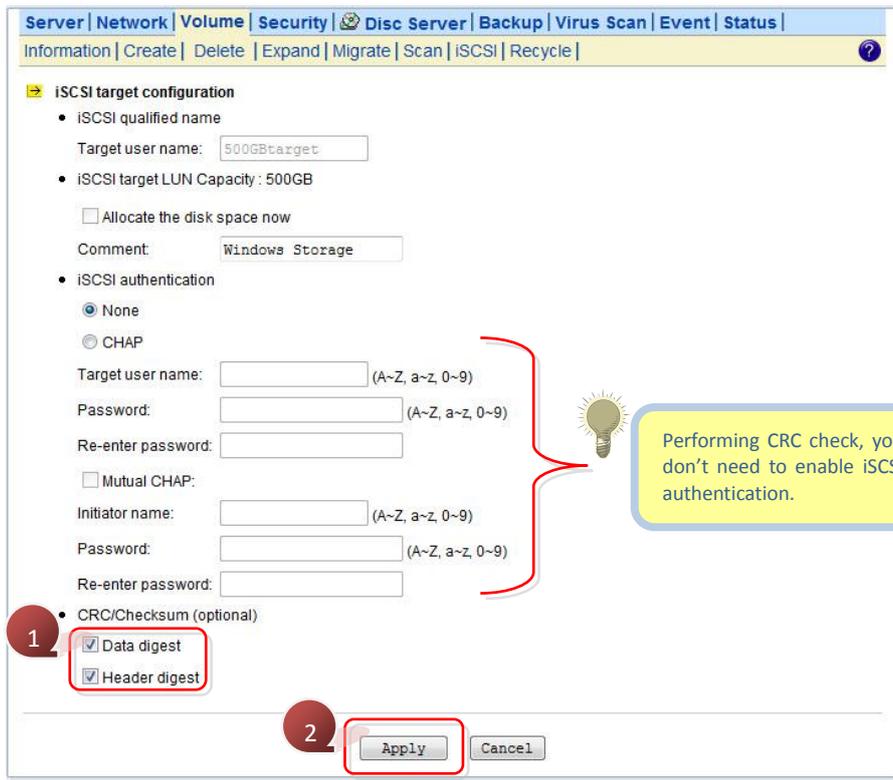
The **iSCSI target** will be connected and you can see the **iSCS target** as the **local disk volume** on your PC



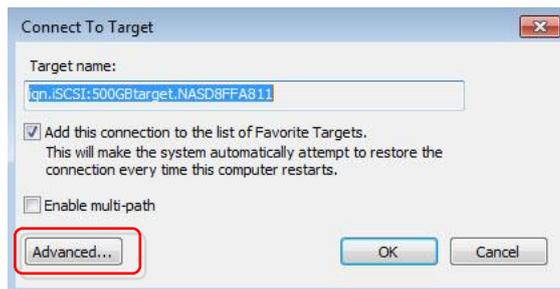
CRC/Checksum



CRC is an error-detecting code, you can enable “Data digest” and “Header digest” to let iSCSI Initiator make sure data are delivered correctly via iSCSI protocol.

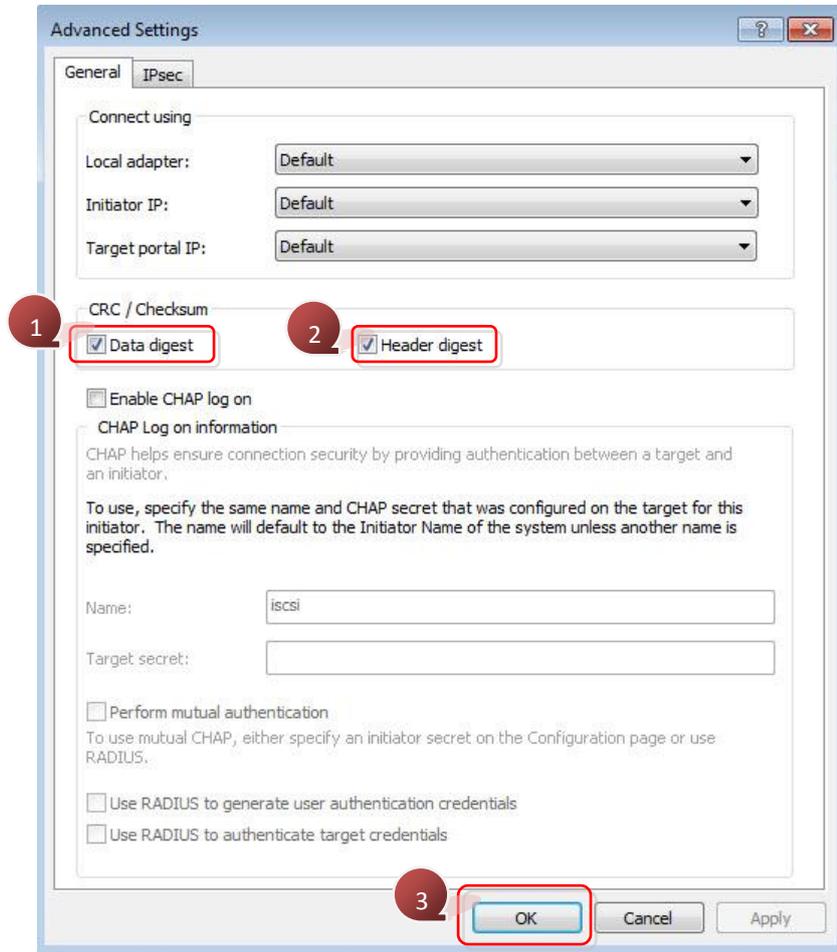


Select **Targets** menu of **iSCSI Initiator** (Refer to Page. 7) to click “**Connect**” button then click “**Advanced...**” button for enable **CRC** check algorithm in **iSCSI Initiator**.





Enable the **CRC** check algorithm with “**Data digest**” or “**Header digest**”, you can also enable both check simultaneously.



Click “**OK**” for connect to **iSCSI** target.



Troubleshooting

If you are encountering some problems to connect **iSCSI target**, you can check what kind of problem and find the possible reasons from the topic below:

1. iSCSI target disappear suddenly

I cannot access my local disk volume anymore, the letter is disappeared.

Possible reasons

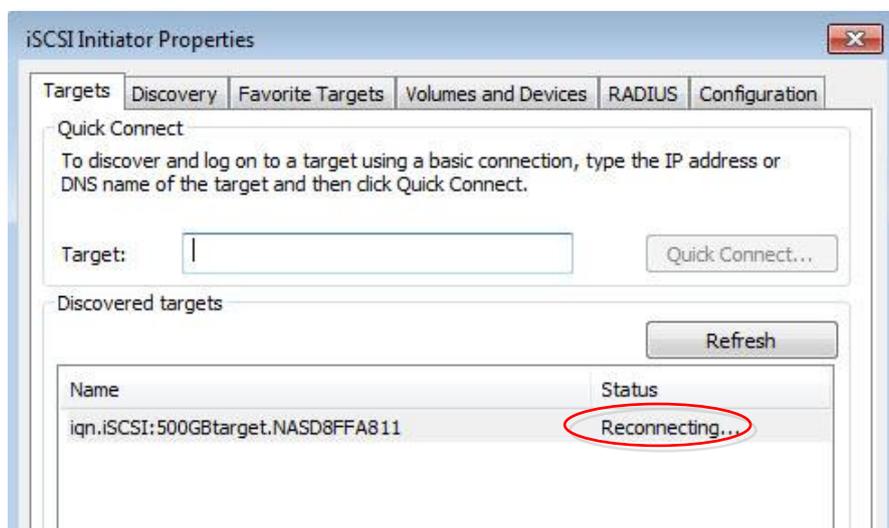
Network connection has something wrong or **NAStorage** already shutdown for a while.

Troubleshooting steps



You probably will see the **iSCSI Initiator** status is “**Reconnecting...**” like below screenshot.

First step is to check the network environment is still working properly or not, it includes network cables, switching devices or devices (PC & **NAStorage**) itself ...etc.





If **NASStorage** is disconnected, you can check the related **Event Logs** for find out the root cause.

The screenshot shows the 'System Log' interface with the following data:

Date/Time	Description
2011/11/11 16:45:44	Set static IP address for LAN 2 - 192.168.2.1
2011/11/11 16:45:42	Set static IP address for LAN 1 - 10.1.2.31
2011/11/11 16:45:34	System start up. FW: 1.09.
2011/11/11 16:44:32	Reboot system.
2011/11/11 14:51:46	Set static IP address for LAN 2 - 192.168.2.1
2011/11/11 14:51:44	Set static IP address for LAN 1 - 10.1.2.31
2011/11/11 14:51:36	System start up. FW: 1.09.
2011/11/11 14:45:33	System shut down - by scheduled.

2. Cannot perform iSCSI authentication

NASStorage already enabled **iSCSI authentication**, but **iSCSI Initiator** cannot connect to **iSCSI target**.

Possible reasons

1. **iSCSI target** didn't set **iSCSI authentication** correctly.
2. **iSCSI Initiator** doesn't set authentication correctly.

Troubleshooting steps



Check the setting on **NASStorage** to make sure the authentication is enabled correctly like screenshot.

Server | Network | Volume | Security | **Disc Server** | Backup | Virus Scan | Event | Status |

Information | Create | Delete | Expand | Migrate | Scan | iSCSI | Recycle |

iSCSI target configuration

- iSCSI qualified name
 - Target user name: 500GBtarget
- iSCSI target LUN Capacity : 500GB
 - Allocate the disk space now
 - Comment: Windows Storage
- iSCSI authentication
 - None
 - CHAP
 - Target user name: iSCSI (A~Z, a~z, 0~9)
 - Password: (A~Z, a~z, 0~9)
 - Re-enter password:
 - Mutual CHAP:
 - Initiator name: iscsi (A~Z, a~z, 0~9)
 - Password: (A~Z, a~z, 0~9)
 - Re-enter password:
- CRC/Checksum (optional)
 - Data digest
 - Header digest

After enable CHAP and input name and password, you have to click "Apply" button for activate the settings.

Apply Cancel



There are two locations can set the **CHAP** log on information, one is under **Discovery** menu of iSCSI Initiator, another one is under **Targets** menu of iSCSI Initiator.

You have to select **Targets** menu for input the **CHAP** log on information for connect to **iSCSI target**.

iSCSI Initiator Properties

Targets | Discovery | Favorite Targets | Volumes and Devices | RADIUS | Configuration

Quick Connect

To discover and log on to a target using a valid DNS name of the target and then click Quick Connect.

Target:

Discovered targets

Name	Status
iqn.iscsi:500GBtarget.NASD8FF:811	Inactive

To connect using advanced options, select a target and then click Connect.

Connect To Target

Target name: iqn.iscsi:500GBtarget.NASD8FF:811

Add this connection to the list of Favorite Targets. This will make the system automatically attempt to restore the connection every time this computer restarts.

Enable multi-path

Advanced...

OK Cancel

Connect

Enable CHAP log on

CHAP Log on information

CHAP helps ensure connection security on 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: iSCSI

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

Perform mutual CHAP has to input Initiator name and password (secret) on iSCSI Initiator, you can refer to Page. 13 of this guide.