Exchange 2003 – Implementing iSCSI for Exchange Server 2003

Written by Marc Grote - mailto:grotem@it-training-grote.de

Abstract

In this article I will show you how to move your Exchange Server 2003 databases to new diskspace on a file server which storage is published over iSCSI.

Let`s begin

What is ISCSI?

iSCSI is short for Internet Small Computers Standard Interface and transports SCSI commands over TCP/IP. Several protocols exist today that a disk controller uses to communicate with connected disk drives such as ATA, SATA and SCSI and its derivates. All of these protocols have predefined standards that dictate how commands such as read and write requests are submitted and sent between the controller and the disk drive. iSCSI is a new protocol that extends the SCSI standards by encapsulating SCSI commands in TCP/IP packets. These commands are sent across a TCP/IP network enabling servers to access storage that is located outside of the reach of its physical hardware. iSCSI opens up a vast array of solutions such as consolidated storage, centralized backup and remote disaster recovery. With the help of iSCSI it is possible to distribute storage over long distances.
In an iSCSI network, there are three components:

- ? Target
- ? Initiator
- ? Network

The target is analogous to the disk drives in the traditional locally attached storage model; it serves up the disks to the initiator. The initiator can be compared with a traditional disk controller; it uses the disks hosted by the target. The TCP/IP network interconnects the target and the initiator. As you can see the performance of iSCSI depends on the speed of the TCP/IP network and you can determine the speed because you can choose between networks with 100 MBit/s, 1 GBit/s and more.
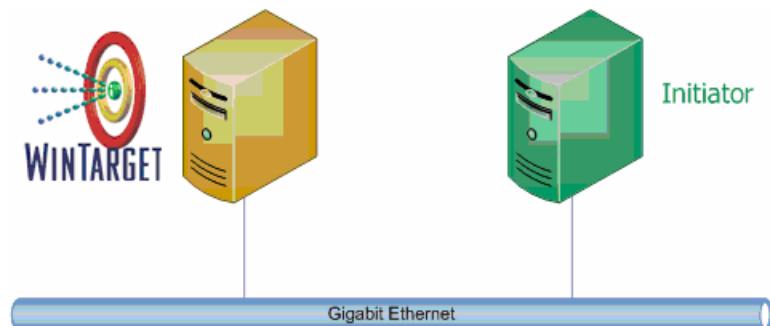
Wintarget datagram

Figure 1: Wintarget datagram

There are several solutions for iSCSI from several vendors. For this article I will use the software Wintarget from String Bean Software.

WinTarget is a powerful software-based iSCSI Storage Area Networking (SAN) solution designed and optimized for the Windows platform. An intuitive and familiar interface enables WinTarget users to quickly install and configure a full-featured storage solution that delivers immediate benefits to any size organization:

- ? Reduced Total Cost of Ownership (TCO)
- ? Improved Business Productivity
- ? Rapid Deployment of New Systems and Upgrades
- ? Increase Application Availability
- ? Improved Data Protection - Eliminate Data Backup Windows
- ? Rapid Data Recovery
- ? Disaster Recovery Preparedness

Wintarget benefits

- ? Hardware Independence
- ? IPv6 Support
- ? iSNS Integration
- ? IPSec Encryption
- ? CHAP Authentication
- ? LUN Resizing
- ? IP Take-Over Support
- ? Multi-Path I/O Support Through Multiple Sessions
- ? Active/Passive WinTarget Storage Cluster Configuration
- ? iSCSI Boot Support
- ? Windows Server 2003 x64 Support

System requirements

Wintarget from String Bean Software is available in two additions:

- ? Wintarget Standard Edition
- ? Wintarget Advanced Edition

You can read here more about the differences between these products.

WinTarget Standard Edition Minimum System Requirements
Windows Server 2003, Windows Storage Server 2003, Windows 2000
Professional/Server with Service Pack 4 or higher, or Windows XP Professional
800 MHz or higher processor
512 MB of RAM
20 MB of disk space
Gigabit NIC

WinTarget Advanced Edition Minimum System Requirements
Windows Server 2003 SP1 or Windows Storage Server 2003
800 MHz or higher processor
512 MB of RAM
20 MB of disk space
Gigabit NIC

WinTarget VSS Hardware Provider Minimum System Requirements
WinTarget Advanced Edition
Windows Server 2003 SP1
Snapshot transport requires Windows Server 2003 SP1 Enterprise or Datacenter
Edition
Microsoft iSCSI Software Initiator 1.05a or higher
800 MHz or higher processor
256 MB of RAM
10 MB of disk space
Gigabit NIC

Note: It is possible to implement Wintarget in 100 MBit/s networks, but If you wih to have
comparable performance to traditional SANs you will need a Gigabit network ore more.

Step by Step

To use the Wintarget software we must complete several steps:

- ? Install iSCSI Initiator
- ? Install WinTarget
- ? Add Initiator to WinTarget
- ? Create iSCSI Disk
- ? Access iSCSI Disk

For this article i have installed two virtual machines wirth Microsoft Virtual Server 2005
SP1 beta. One Windows Server 2003 Enterprise as the target which offers a 300 MB disk
✍ for Exchange storage and one Windows Server 2003 Enterprise with Exchange Server
2003 SP2 Beta (Please note: Exchange Server SP2 beta is NOT a requirement for
Wintarget).

Install iSCSI Initiator

You can get the iSCSI Initiator from the Microsoft download website. The iSCSI Initiator
must be installed on the server which should use iSCSI storage (in this example the
Exchange server). After you have downloaded the package, follow the instructions to
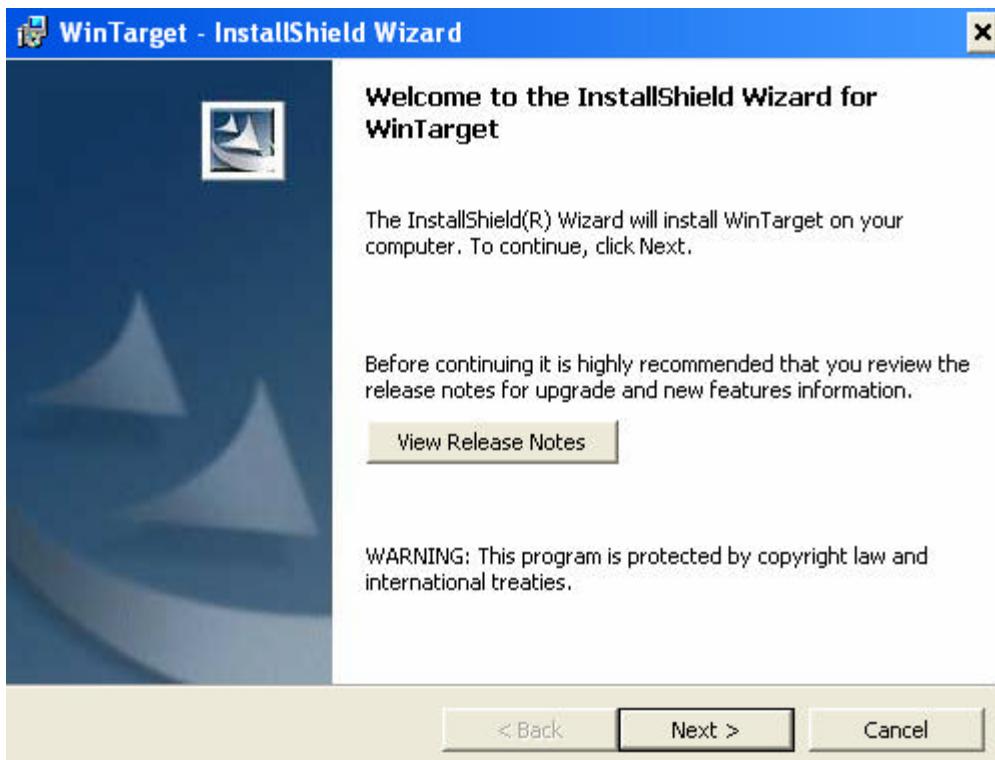install the iSCSI Initiator.

Figure 2: Installation of the iSCSI Initiator
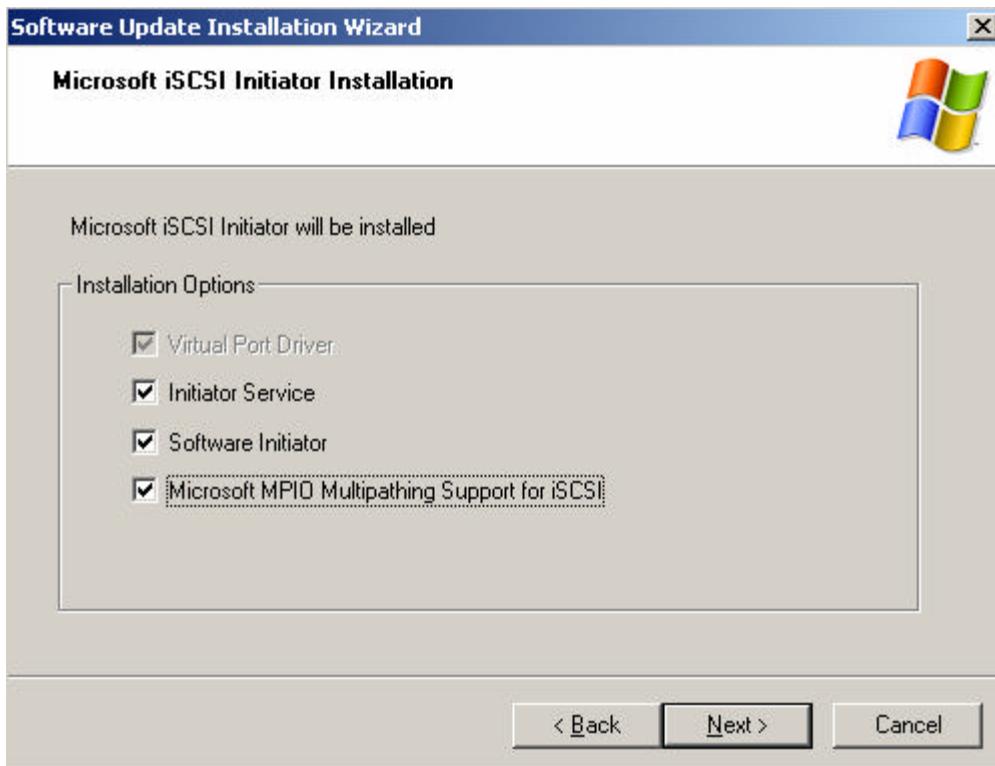
Select all available options.

Figure 3: Install the Initiator service, Software Initiator and MPIO if needed

What is MPIO

MPIO is short for Multipath Input Output. Multipathing solutions use redundant physical path components–adapters, cables, and switches–to create logical "paths" between the

server and the storage device. In the event that one or more of these components fails, causing the path to fail, multipathing logic uses an alternate path for I/O so that applications can still access their data. For more information about MPIO read the following FAQ.

After setup has finished you can start the iSCSI Initiator configuration. The iSCSI Initiator is installed in the control panel of your Windows Server.
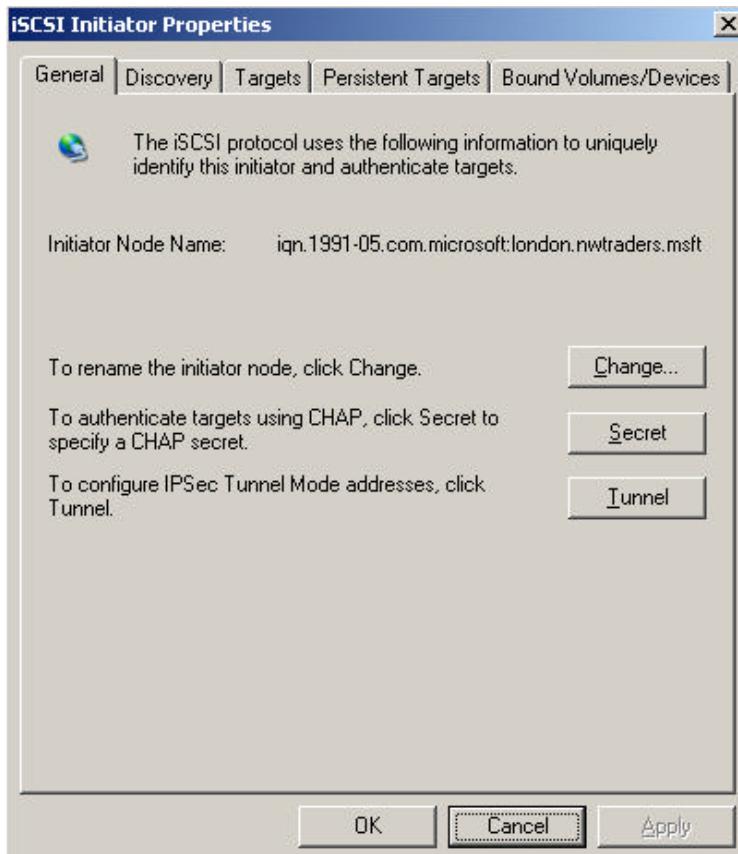

Figure 4: iSCSI Initiator properties

Please note the Initiator Node Name. The Node Name uniquely identifies an iSCSI Initiator. The Initiator name uses the FQDN of the Server and the specification *iqn.1991-05.com.microsoft.*

Install WinTarget

Now it is time to install the Wintarget software. String Bean Software offers a time bombed version of the Wintarget software. You can download the software here. After downloading the package follow the installation instructions.

Figure 5: Wintarget software screen

Create iSCSI Disk

If you are new to iSCSI or Wintarget, you should read the *Getting Started Guide*. The first step is to *Add a New Host*. Follow the instructions to install the new host. You have to specify the Initiator IQN.
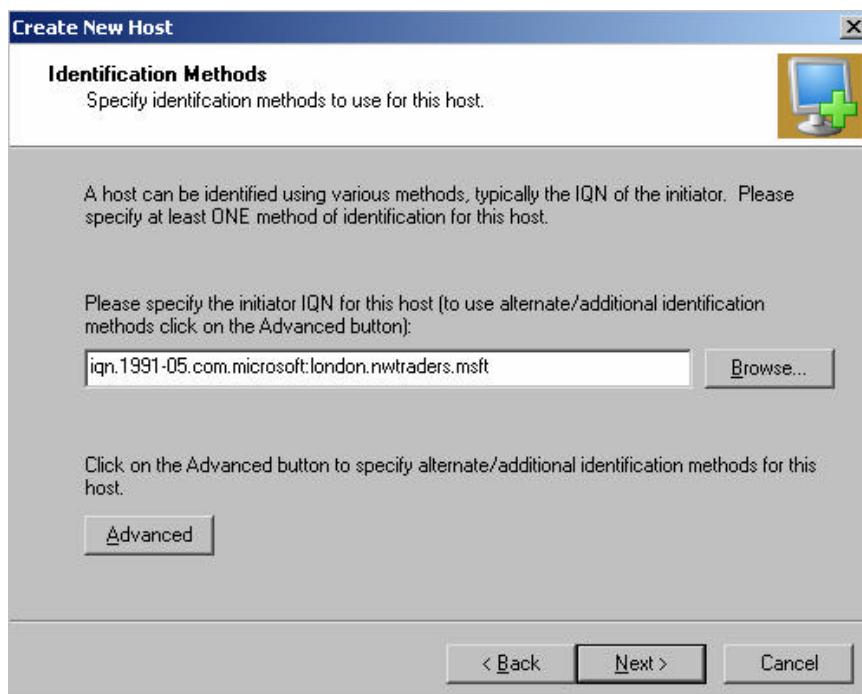
Now it is time to *Create a Wintarget Disk*. Click *Devices* and select the Disk which should be a new Wintarget Disk and rightclick *Create Wintarget Disk – New Volume Based Wintarget Disk*.
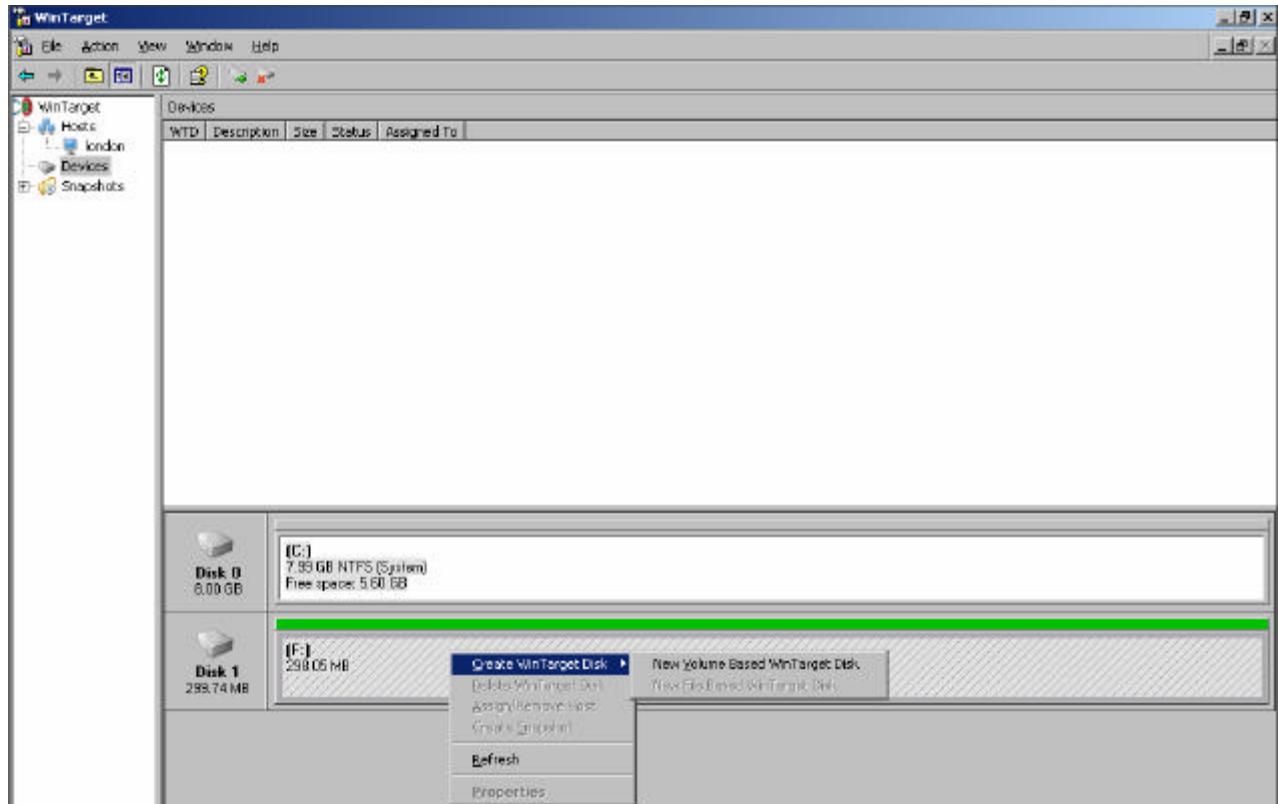

Figure 7: Create a new Wintarget Disk

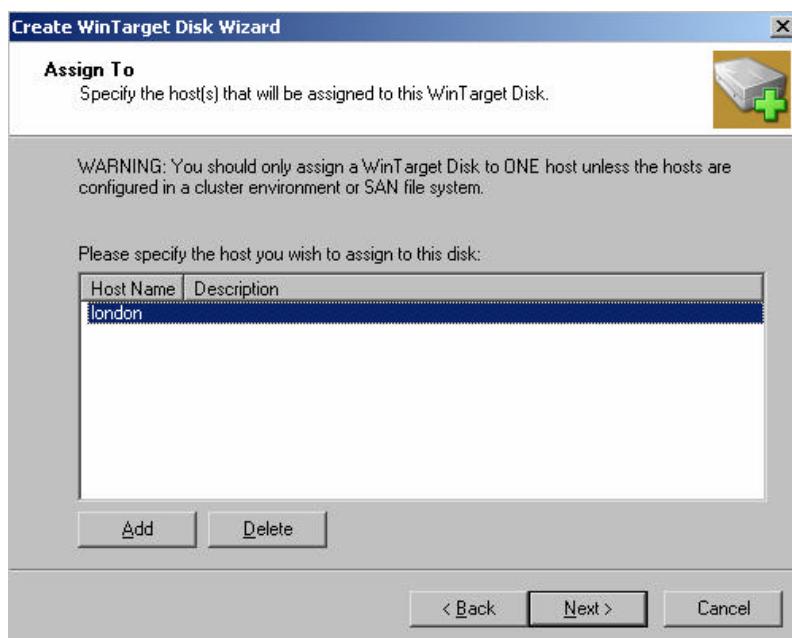You must assign the new Wintarget Disk to one Host.

Figure 8: Assign the new Wintarget Disk to one Host

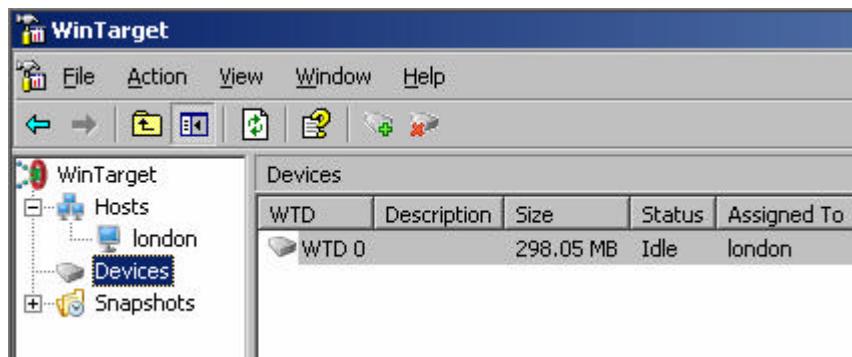Wintarget is now ready to offer the new disk to the Initiator.

Figure 9: The new Wintarget Disk waiting for the Initiator

Access iSCSI Disk

Navigate to the Control Panel of the Initiator (the Exchange Server) and click Discovery – Add and enter the IP-address or Hostname of the Wintarget server. Wintarget uses Pprt 3260 per default.
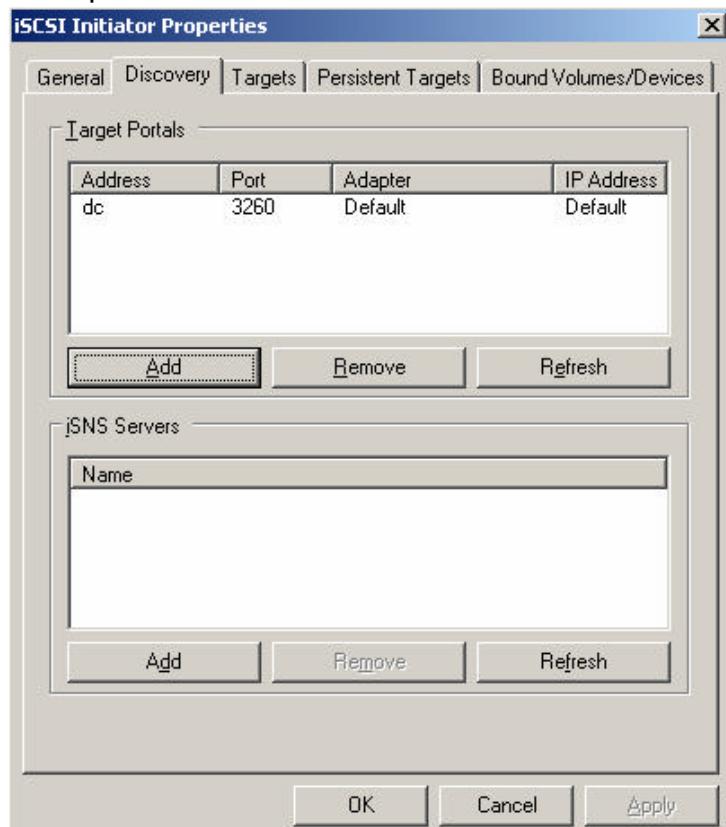

Figure 10: Connect to the Wintarget Server

Click on *Targets* and you will see that the Target is available but the status is Inactive. Click *Log On* to access the storage device.
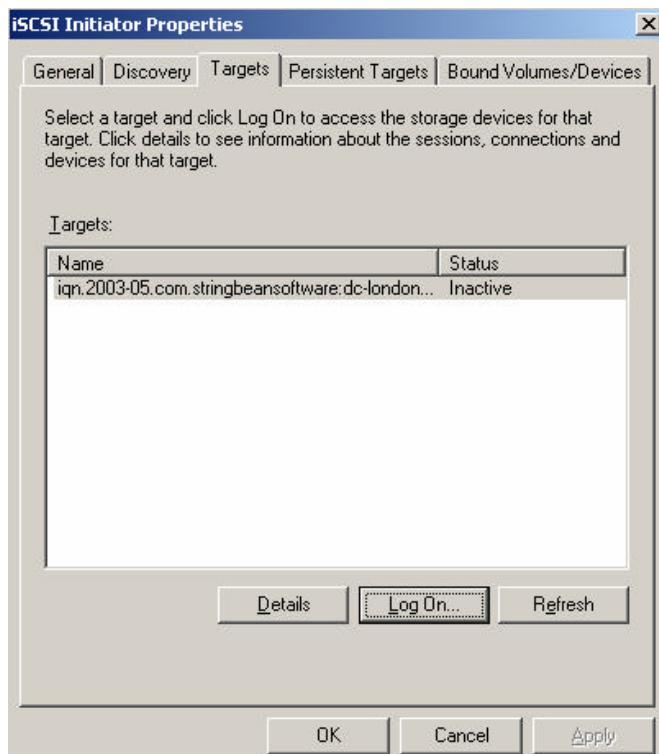

Figure 11: Log on to the Storage device

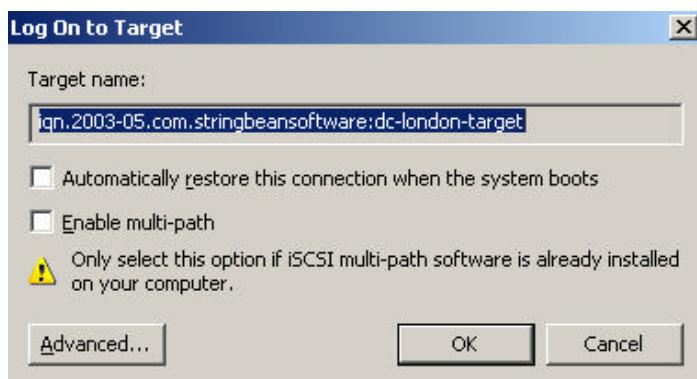For this article we don't need to enter more commands and options, it is enough to simply click *OK*.

Figure 12: Log on to the Target

You have successfully logged on to the Target and now you can use the iSCSI storage. Start Compmgmt.msc, navigate to Disk Management and create a new volume based on the iSCSI storage.
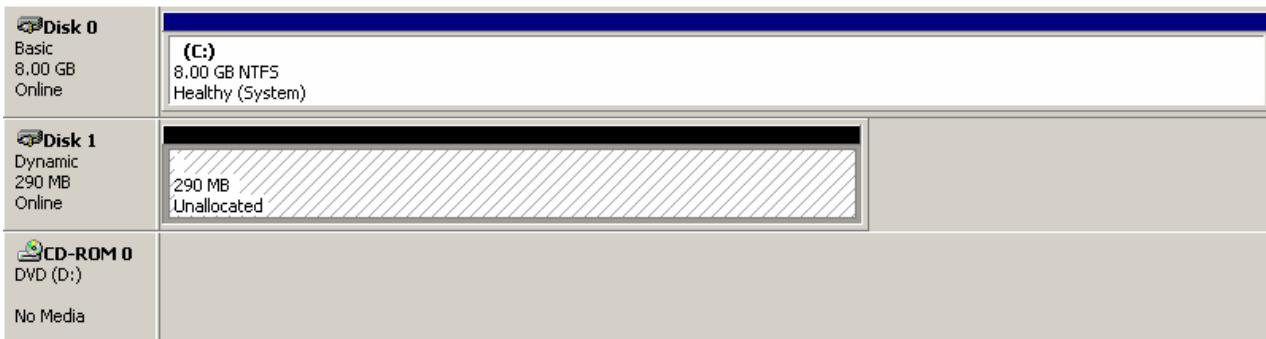
Figure 13: Create a new Volume based on the iSCSI disk

After creating the new storage you can change the Exchange Server database path of your information stores. Start Exchange System Manager, navigate to the Mailbox or Public Folder store, select *Database* and click *Browse* to set the new Target path for the Exchange database and the Exchange streaming database.
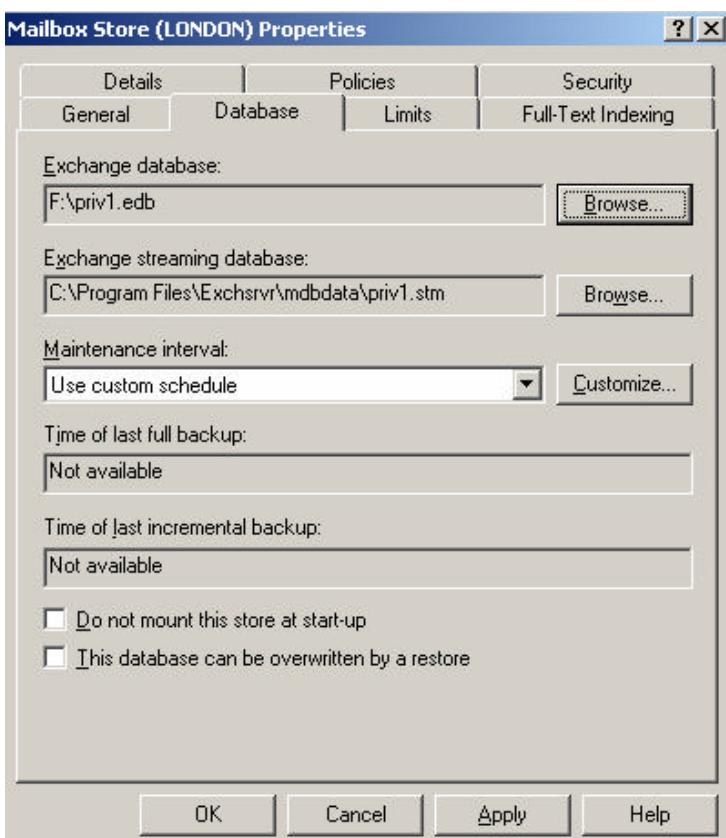

Figure 14: Move the Exchange database to the new Storage

Conclusion

iSCSI is a growing alternative to traditional SAN implementations with lower costs and comparable performance with easy advantages over SAN implementations. You should carefully evaluate the operational areas for iSCSI. My experience with iSCSI performance and reliability and Exchange is excellent in midsize environments. This article provides you only with basic information about iSCSI implementations. It doesn't talk about iSCSI security, performance problems, latency and more. Before you implement iSCSI solutions you should be familiar with this technology.

Related Links

Wintarget iSCSI
http://www.stringbeansoftware.com/products.asp
Microsoft Storage Technologies - iSCSI
http://www.microsoft.com/windowsserver2003/technologies/storage/iscsi/default.mspx
iSCSI Performance
http://www.alacritech.com/assets/applets/iSCSI_SAN_Performance.pdf
Cluster with iSCSI
http://www.microsoft.com/windowsserver2003/technologies/storage/iscsi/iscsicluster.mspx
iSCSI definition
http://www.ietf.org/rfc/rfc3720.txt
iSCSI Software Initiator v2.0
http://download.microsoft.com/download/9/4/b/94ba64d1-959e-44b8-b221-206297e832bb/iSCSIinitiator.doc
Microsoft Windows Storage Server Website
http://www.microsoft.com/windowsserversystem/storage/default.mspx