

## **iSCSI Boot Instructions**

Setting up an Alacritech/emBoot iSCSI boot environment requires careful attention to detail to ensure a successful first time implementation. The following procedures represent Alacritech's best practice recommendations for deploying iSCSI boot for the first time.

### **Introduction**

Alacritech iSCSI boot is provided in concert with our partner emBoot. Alacritech supports both the winBoot/i and the netBoot/i iSCSI boot solutions from emBoot.

The support models for netBoot/i and winBoot/i are slightly different. At present, netBoot/i V1.2 is shipped on the Alacritech CD that is included with all Alacritech Accelerators, and a license key is included as a sticker on the CD envelope.

### **System Requirements**

The following hardware and software components are necessary in order to implement the Alacritech iSCSI boot solution:

#### **A suitable iSCSI boot Client.**

- The client motherboard BIOS must be capable of supporting the WfM (Wired for Management) PXE (Program eXecution Environment) 2.1 standard.
- An iSCSI boot capable Alacritech Accelerator card. Only 2000 series and later Alacritech iSCSI or Network Accelerator cards are iSCSI boot capable. The Alacritech Driver must be version 7.3.0.1r2 or later.
- Initially, the client must have a local hard drive, and must be running an OS that is supported by both Alacritech and netBoot/i or winBoot/i.
- The client must not be multi-boot, and the boot drive must be the **C:** drive.

#### **The Alacritech UNDI flash based driver**

Alacritech Accelerators ship without the UNDI (Universal Network Device Interface) loaded in the flash memory, so the user will need to use the provided tools to flash the card. The necessary components to install the UNDI driver are included with the Alacritech 7.3.0.1r2 and later drivers.

#### **A DHCP server**

A DHCP server that can serve addresses on the iSCSI network segment is required. It is recommended that this server also play host to the netBoot/i or winBoot/i server.

**netBoot/i or winBoot/i iSCSI boot software.**

Alacritech only supports iSCSI boot in conjunction with emBoot's netBoot/i and winBoot/i iSCSI boot client and management software. The netBoot/i software and a 30 day 5 client trial license are provided with the Alacritech driver distribution, but a permanent license must be separately acquired from emBoot.

**An iSCSI Target.**

The Alacritech/emBoot iSCSI boot driver is standards compliant, and should work with any standards compliant iSCSI target. For an official list of supported targets, Consult emBoot.

**The Microsoft iSCSI initiator.**

For winBoot/i only you must also have the Microsoft iSCSI initiator version 2.02 or later.

**Choosing winBoot/i or netBoot/i**

The basic rule here is pretty simple - If Microsoft supports iSCSI boot for the MS initiator on your OS then you should use winBoot/i. Otherwise, use netBoot/i.

<b>Operating System</b>	<b>iSCSI Boot Solution</b>
Windows Server 2003 x32	winBoot/i
Windows Server 2003 x64	winBoot/i
Windows XP x32	netBoot/i
Windows XP x64	netBoot/i
Windows Server 2000	netBoot/i
Windows 2000 Professional	netBoot/i

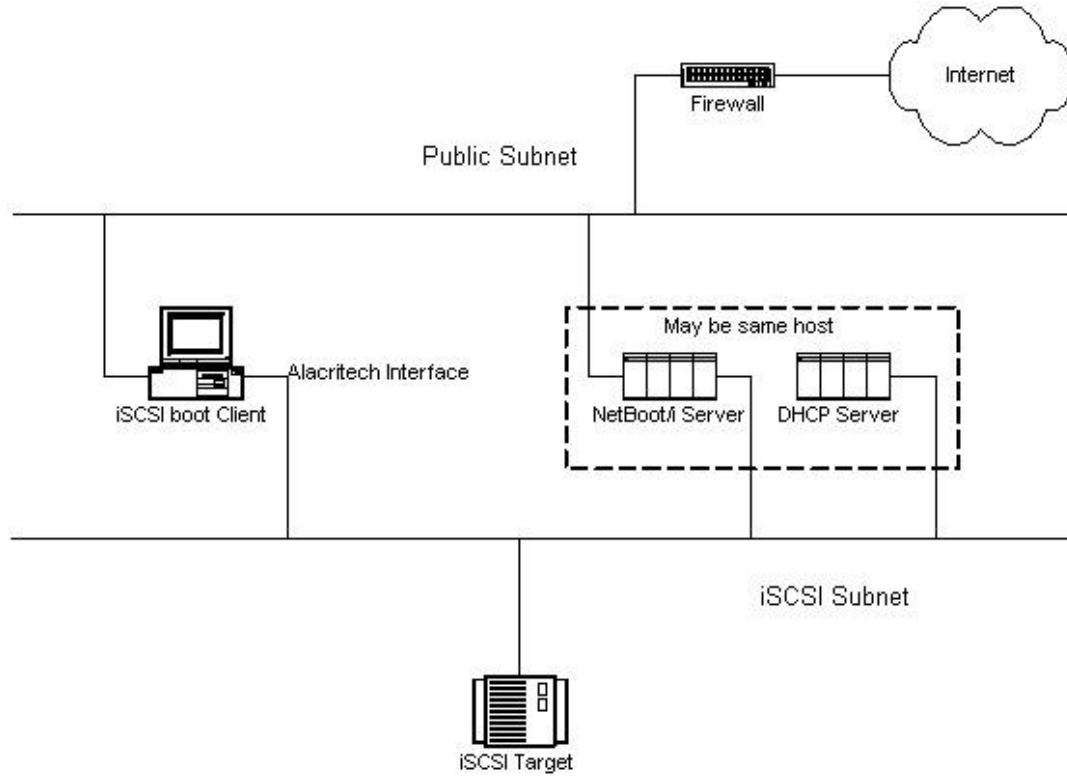
**<>Network Architecture**

The potential network environments for an iSCSI boot solution are myriad, but Alacritech is only going to support two at this time.

**Dual Network configuration (Preferred)**

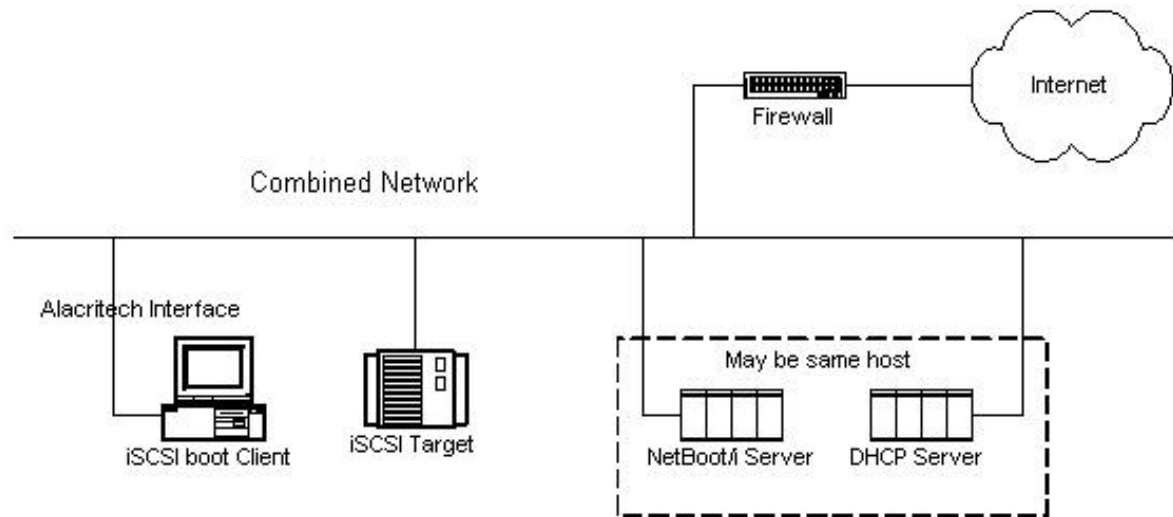
For real world operations it is greatly preferred that the iSCSI traffic be kept on a separate network subnet. Since there are potential conflicts between the TFTP and DHCP services that are required for iSCSI boot operations and those that are required for a typical corporate network, the iSCSI subnet should run on a separate VLAN, or a physically isolated LAN. The recommended configuration is

illustrated below:



### Single Network Operation

Single network operation is supported, but care must be taken to ensure that there are no conflicting DHCP/TFTP/BOOTP services being advertised on the same network. Furthermore, iSCSI client performance will be sub-optimal, since all normal network traffic and all disk traffic must travel the same network segment.



## Order of Setup

The first item in the list can be done-as-you-go. The next four can be done in any order. The rest should be performed in the order specified.

1. Install the Alacritech Card(s)
2. Gather Useful Information
3. iSCSI Target
4. Switch Ports
5. DHCP Server
6. Flash Alacritech Card
7. netBoot/i Server
8. netBoot/i Client
9. Boot From iSCSI Disk

## Install the Alacritech Card(s)

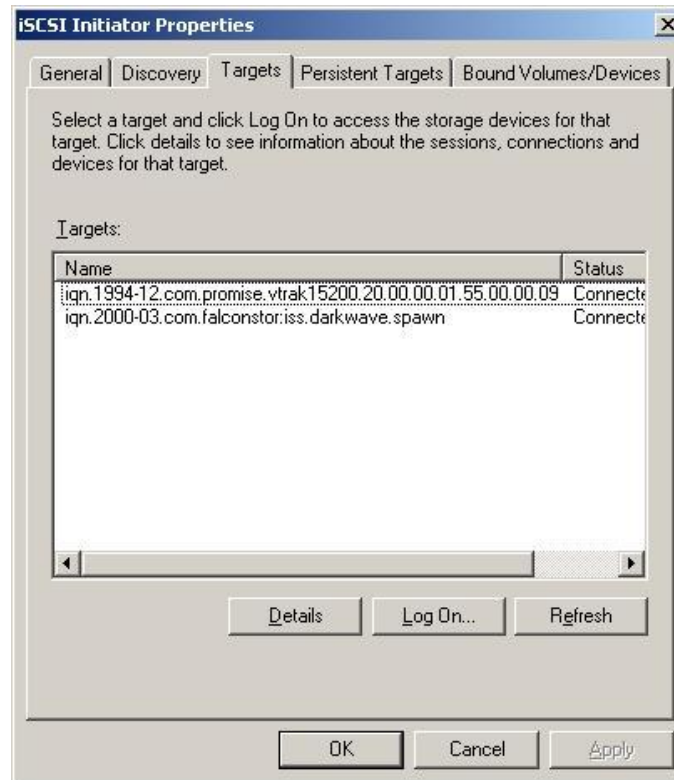
If you have not already done so, install the Alacritech card using the instructions provided in the User Guide, or the Install.htm file on the driver distribution media.

## Gather Useful Information

The following information is useful to know ahead of time.

- The MAC Address of the port on the Alacritech Accelerator that you plan on booting from. You can get this from the output of **ipconfig /all** or from the **slicuser** program.
- The form of the IQN identifier for the iSCSI target. For instance, in our examples, the iSCSI target is a Falconstor ISS target. The identifier has the following form: **iqn.2000-03.com.falconstor:iss.<servername>.<clientname>**. Where <servername> is the name of the server that is hosting the iSCSI target software, and <clientname> is the name of that client that is allowed to access this particular portal.

If you can't find this information from your target documentation, you can usually deduce it by connecting to the target with the Microsoft iSCSI initiator and examining the connection information.



- The form of the IQN identifier for the iSCSI boot client. This identifier has the following form: **iqn.2002-04.com.emboot:inbp.<clientMAC>**. Where <clientMAC> is the MAC address of the Alacritech port that you discovered earlier - **iqn.2002-04.com.emboot:inbp.001042001126** in our example. You may not actually need this information, but you might need it in order to allow your client to connect to your target.

## iSCSI Target

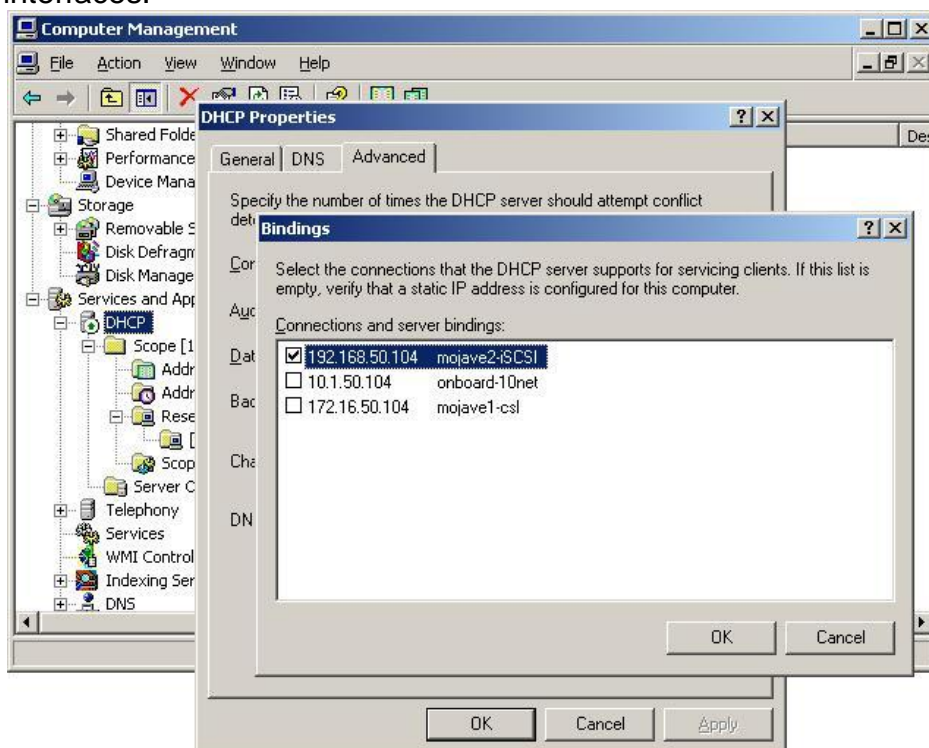
We won't go into the details of setting up the target, as that will vary depending on the type of target. All that is necessary is that a LUN of appropriate size is available to iSCSI boot client, and that the target recognizes the client IQN name. If you are not familiar with setting up iSCSI targets, it is recommended that you first use the MS iSCSI initiator to connect to the target to make sure that all of the target and network components are functioning properly. Just remember that if you are using netBoot/i you need to remove any bound volumes and/or persistent targets, and disable the MS initiator before creating the netBoot image. You can re-enable and use the MS initiator again after the system is booting off of the iSCSI disk if you so desire.

## Configure Switch

Spanning tree protocol should be disabled on any ports that are connected to iSCSI boot clients. If it is not possible to disable spanning tree on a per port basis, then spanning tree should be disabled on the switch as a whole. The reason for this is that slow converging spanning tree can cause the PXE DHCP request to time out.

## Setup DHCP Server

It is recommended that you set up a DHCP reservation for the client MAC that you are going to be using for iSCSI boot. If you are running your iSCSI traffic on a separate subnet from your regular traffic (always a good idea) then you should use a dedicated DHCP server for the purpose, and unbind it from all of the other interfaces.



## UNDI Driver Flash Update

See the [flash update page](#)

## Install and Configure the netBoot/i or winBoot/i Server

For this step you should work directly from the emBoot documentation.

### netBoot/i

For the definitive guide to installing and configuring netBoot/i server and client, you should consult the netBoot/i version 1.2 Users (Help) Guide.

### **winBoot/i**

For the definitive guide to installing and configuring winBoot/i server and client, you should consult the winBoot/i documentation.

## **Install and Configure the netBoot/i or winBoot/i Client**

For this step you should work directly from the emBoot documentation.

### **netBoot/i**

For the definitive guide to installing and configuring netBoot/i server and client, you should consult the netBoot/i version 1.2 Users (Help) Guide.

### **winBoot/i**

For the definitive guide to installing and configuring winBoot/i server and client, you should consult the winBoot/i documentation.

## **Boot from the iSCSI Drive**

For this step you should work directly from the emBoot documentation.

### **netBoot/i**

For the definitive guide to installing and configuring netBoot/i server and client, you should consult the netBoot/i version 1.2 Users (Help) Guide.

### **winBoot/i**

For the definitive guide to installing and configuring winBoot/i server and client, you should consult the winBoot/i documentation.

## **Troubleshooting**

The most common problems we ran into during initial testing were:

- Forgetting to disable Spanning Tree protocol on the switch caused DHCP to fail.
- Motherboard BIOSes that had bugs in their PXE/UNDI support. (Make sure you are running the latest BIOS for your system).
- iSCSI targets that wouldn't work with the netBoot/i initiator. If it doesn't work with the Microsoft 2.0 initiator, it's probably not going to work with the netBoot/i initiator either. All of the targets we found that fell into this category were older targets, and in most cases the manufacturer already had a newer version that was compatible.
- Alacritech fiber cards dropping link during the transition from pre-boot to post-boot drivers. If your client hangs during the windows boot, check to see if you still have link. If not, disconnect and reconnect your fiber cable.