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Revisions

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1 Introduction and Intended Audience

As a supplement to the VMware documentation, this paper provides an introduction to iSCSI storage connectivity from a VMware server administrator’s perspective and shows the basic connection from the operating system to an iSCSI storage target.

As part of a series of iSCSI Quick Connect guides for multiple operating systems, our goal is to discuss the connection from a host perspective and review the requirements provided by and to storage and network administrators. Regrettably, switch and storage configuration are outside the scope of this paper.

The intended audience is experienced system administrators familiar with server, network, datacenter and SAN storage concepts and technologies.

2 iSCSI Basics

iSCSI has been in development since the early 2000s and Intel has been offering iSCSI solutions for over a decade. It is a flexible and powerful Storage Area Networking (SAN) protocol providing data availability, performance and ease of use. As a routable storage protocol, iSCSI imposes no inherent distance limitations and is scalable across LAN and WAN infrastructures.

The iSCSI Qualified Name (IQN) is typically shown as the literal IQN string plus date, reverse domain, and optional text such as storage target name as shown in the example below. The IQN or iSCSI name will be used in the assignment of the Logical Unit Number or LUN on the external storage. In some applications, there is the ability to customize the IQN. Basic iSCSI configuration includes setup of the storage array by creating the LUN and initiator group then assigning the server’s iSCSI IQN to that initiator group.

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3 Administrative Ownership

Basic iSCSI connectivity touches three technology disciplines; server, network, and storage. The server administrator provides the IQN to the storage administrator and sets up the host with an IP address provided by the network administrator. Besides IP assignment, the network administrator ensures the network is setup end-to-end. The storage administrator creates the LUN and host entity then assigns each to a storage group to create the LUN masking and provides the target IQN to the server administrator.
4 Setting Up the Network

The network administrator owns IP address assignment, network switch port configuration, and end-to-end connectivity between the storage array and the server. iSCSI network speeds are typically 1 or 10 gigabit. The server administrator provides speed requirements to the network administrator and enables the iSCSI initiator.
5 Obtaining the IQN and Adding the IP Address for ESXi 5.x

This section shows how to obtain the host IQN in the vSphere console. In the Host and Clusters view of vSphere, navigate to the Configuration tab and select Storage Adapters. In the Storage Adapter viewing pane, click “Add” to add a storage adapter. Choose “Add Software iSCSI Adapter” and click OK as shown in Figure 2.

![Figure 2: Adding a storage adapter](image)

The iSCSI Adapter and IQN appear and are now available. After selecting “Properties” in the Detail Pane, the IQN can be copied from the General Tab as shown in Figure 3.

![Figure 3: Copying the IQN](image)

The Port Group, VMkernel, and IP address are added next. While still in the Configuration tab, select the Network Adapter view to determine which vmnic (vmnic2) is active as indicated in Figure 4.
Navigate to the Networking view and click on “Add Networking” to launch the Add Networking Wizard. Select the VMkernel option and click next as shown in Figure 5.

Select the previously identified vmnic and click next as shown in Figure 6.
Label the Port Group, choose the VLAN ID as shown in Figure 7 and click Next.

![Figure 7: Choosing the VLAN ID](image)

Add the network IP address as shown in Figure 8 and click Next.

![Figure 8: Adding the network IP address](image)

Verify the settings as shown in Figure 9 and click Finish.

![Figure 9: Verifying the settings](image)

Send the IQN and the IP address to the storage administrator.
Return the Storage Adapter view on the Configuration tab and select “Properties” in Details window to launch the iSCSI Initiator Properties as shown in Figure 10.

![Figure 10: Launching the iSCSI Initiator Properties](image)

Navigate to the Dynamic Discovery tab and click on the “Add” button to add the IP address for target discovery as shown in Figure 11. Click OK and exit the iSCSI Initiator Properties.

![Figure 11: Adding the IP address](image)
While still in the Storage Adapter view on the Configuration tab, click on “Rescan all” to discover any assigned targets as shown in Figure 12.

Navigate to the Storage view of the Configuration tab and click on “Add Storage” to launch the Add Storage wizard as shown in Figure 13.

Select Storage Type Disk/LUN as shown in Figure 14 and click next.
If more than one target is available, select the one desired as shown in Figure 15 and click next.

![Figure 15: Target selection](image)

Add a unique target name in the Properties view as shown in Figure 16 and click Finish to return to the Datastores page.

![Figure 16: Adding a target name](image)
The remote datastore and its properties now appear in the Datastore page as shown in Figure 17.

![Datastore Details](image.png)

**Figure 17: Confirming datastore addition and properties**

## 7 Summary

Intel's Server adapter line, in both 1gigabit and 10 gigabit solutions, fully supports a wide range of storage capabilities. Customers get the ease of Ethernet support along with VMware storage support in a single adapter.

For more information on iSCSI on ESXi 5.x, see the [vSphere Storage for ESXi 5.x and vCenter Server 5.x Administrators Guide](http://www.vmware.com/support/pubs/vsphere_5x_pubs.html).

For more configuration information on Intel® Server Adapters visit [http://www.intel.com/support/network/sb/cs-009715.htm](http://www.intel.com/support/network/sb/cs-009715.htm)