The Drobo family of iSCSI storage arrays allows organizations to effectively leverage the capabilities of a VMware infrastructure, including vMotion, Storage vMotion, Distributed Resource Scheduling (DRS), and High Availability (HA). Storage must be network accessible, highly available, and easily scaled without impacting applications as workloads change and grow. The chosen storage solution must be simple to deploy, easy to manage, and, all things being equal, reduce operating costs to truly reap the economic benefits of server consolidation.

VMware virtual server software and Drobo's virtualized architecture are complementary technologies that deliver significant rewards. Because virtual servers require a simple, flexible, and cost-effective virtual storage solution, you can now choose Drobo iSCSI storage over other, less cost-effective iSCSI solutions. Simple integration, flexibility, and unmatched scalability are leading more and more organizations worldwide to embrace iSCSI storage for their new virtual server environments.

Topics
- Initial configuration
- Creating iSCSI volumes on Drobo
- Configuring a VMware iSCSI initiator
- Creating a VMware VMFS 3.0 datastore
- Creating a VMware VMFS 5.0 datastore
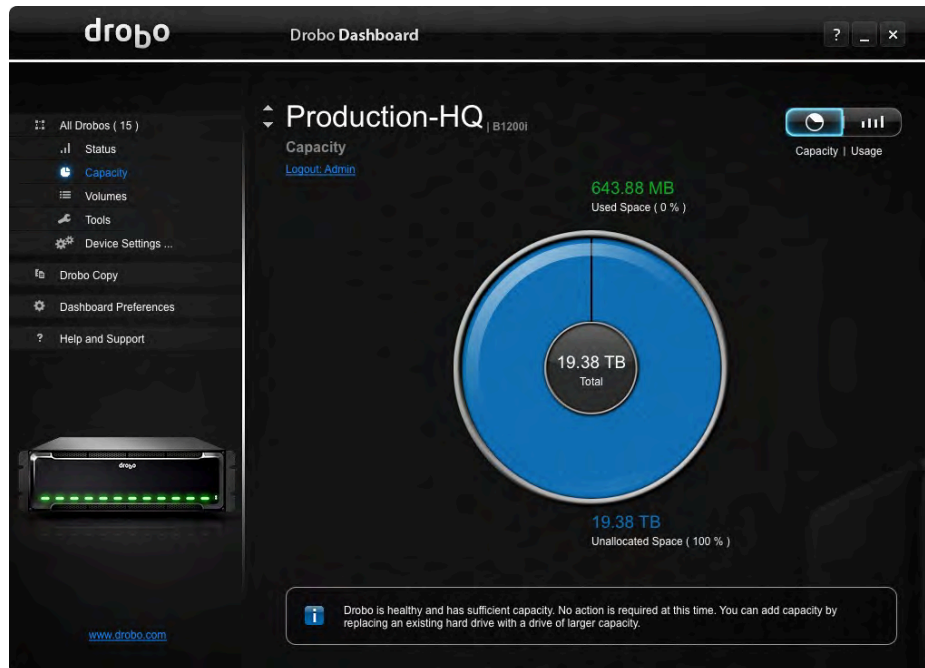- Post-configuration options
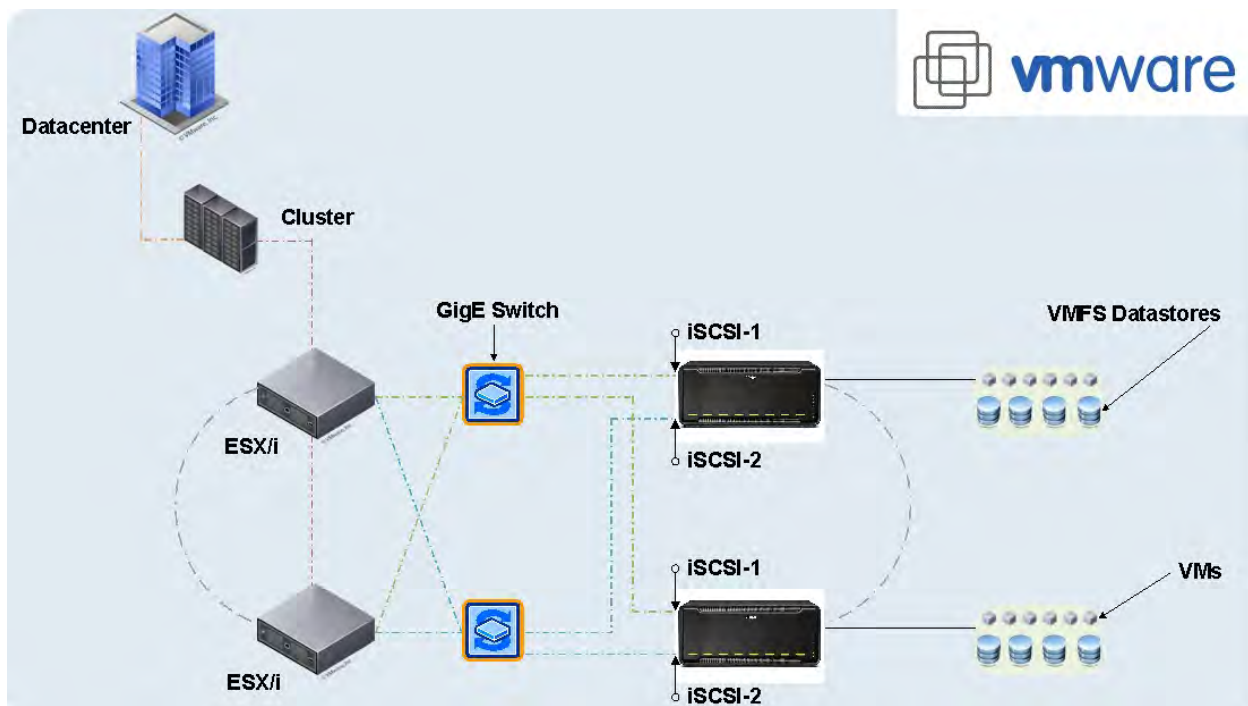
What You Will Need

- Drobo model B800i or B1200i
  - B1200i for Tier 1 primary with <250 users, Tier 2 in larger organizations
  - B800i for Tier 1 primary with <100 users, or lower tiers in larger organizations
- Drobo Dashboard management software (most recent version)
- Enterprise-grade SAS or SATA disk drives
- VMware ESX/ESXi up to 5.0 and vCenter Server 5.x
- Redundant gigabit Ethernet switches or VLANs

Initial Configuration

Follow the directions in the Drobo Online User Guide to configure the Drobo and create an NTFS volume:
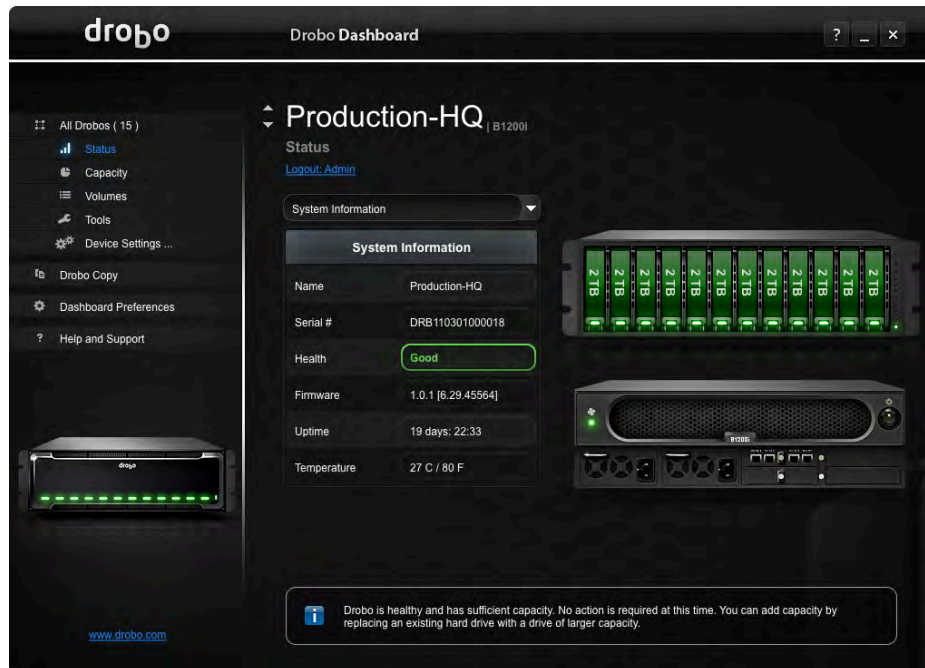http://www.drobo.com/support/documentation.php

STEP 1

Start with the basic configuration of the Drobo before creating an iSCSI volume to be presented to the VMware cluster.

For more information, see the Drobo Online User Guide.

STEP 2

Record the serial number of the Drobo so that you'll have it if you need to call support. You'll also be able to track down Drobo iSCSI volumes if you have more than one Drobo.

Record the firmware and Drobo Dashboard versions and make sure that both are up to date. To see if your Drobo is up-to-date, visit this [website](#).

STEP 3
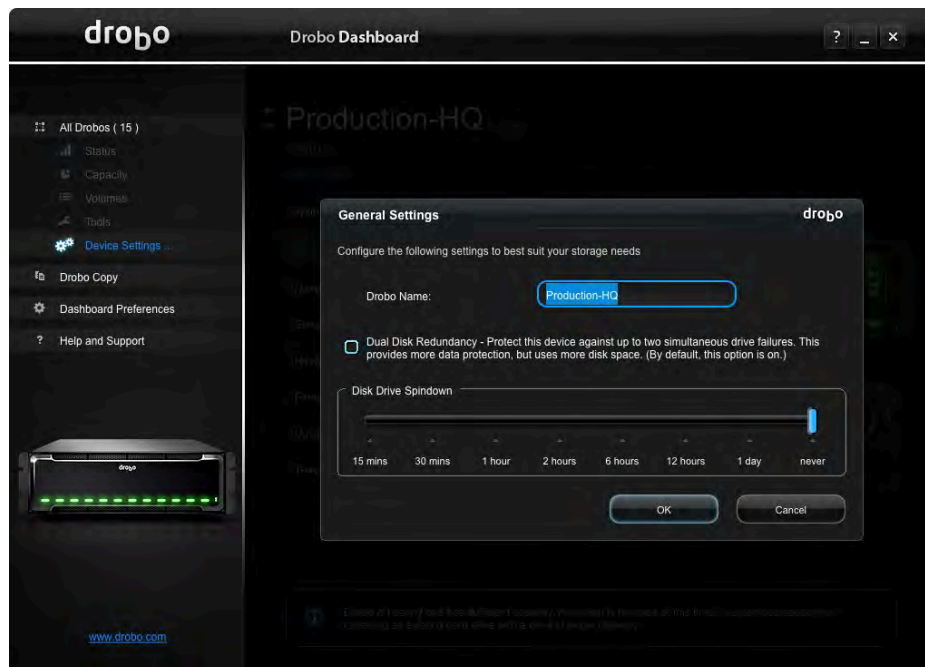
In the left panel, select **Settings > General.**

a) Verify that **Dual Disk Redundancy** is enabled. Dual Disk Redundancy is enabled by default on the B1200i and disabled by default for B800i. It ensures that Drobo will be able to protect VMs against the failure of more than one drive at one time.

b) Set the Disk Drive Spin Down to **Never** in order to prevent spinup time when drives have spun down to conserve energy.

NOTE: While it is possible to take advantage of Drobo BeyondRAID™ technology by switching back and forth between single- and dual-disk redundancy, it is strongly recommended that you plan ahead so that you will be able to deploy Drobo into virtualized environments.

Drobo supports frames larger than 1500MTU (aka "jumbo frames"). When you configure larger frames sizes:

- Configure the interface to the desired frame size (make sure that interfaces in the data path are also capable of supporting the size you select).
- Test that you have connectivity via the IP address associated with the interface where you have set the frame size.
- If for any reason the frame size is set on both interfaces and you can no longer connect to the Drobo, connect to the system that has Drobo Dashboard installed via a USB cable to reverse these settings.
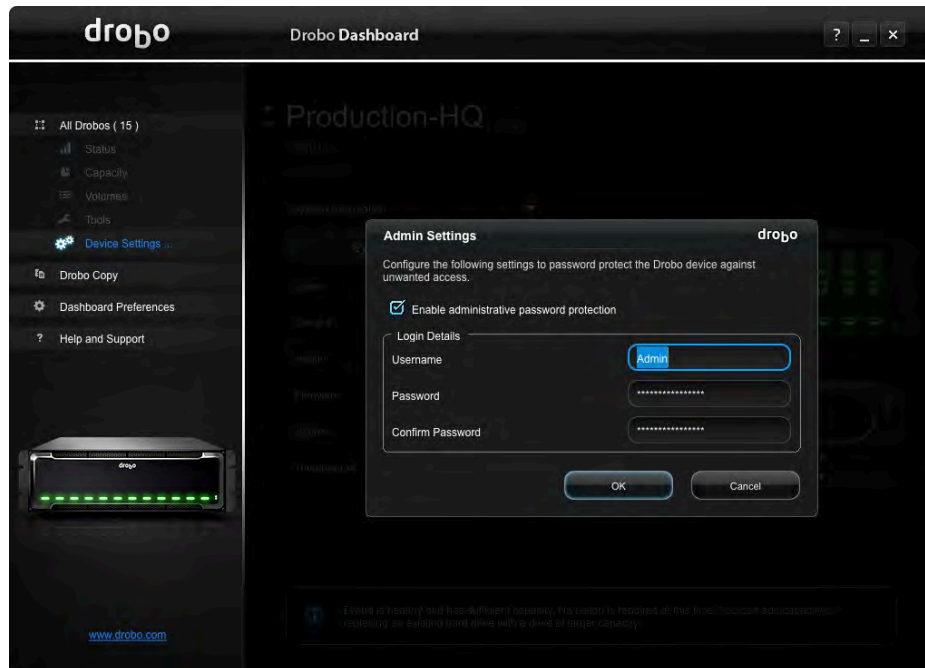
STEP 4
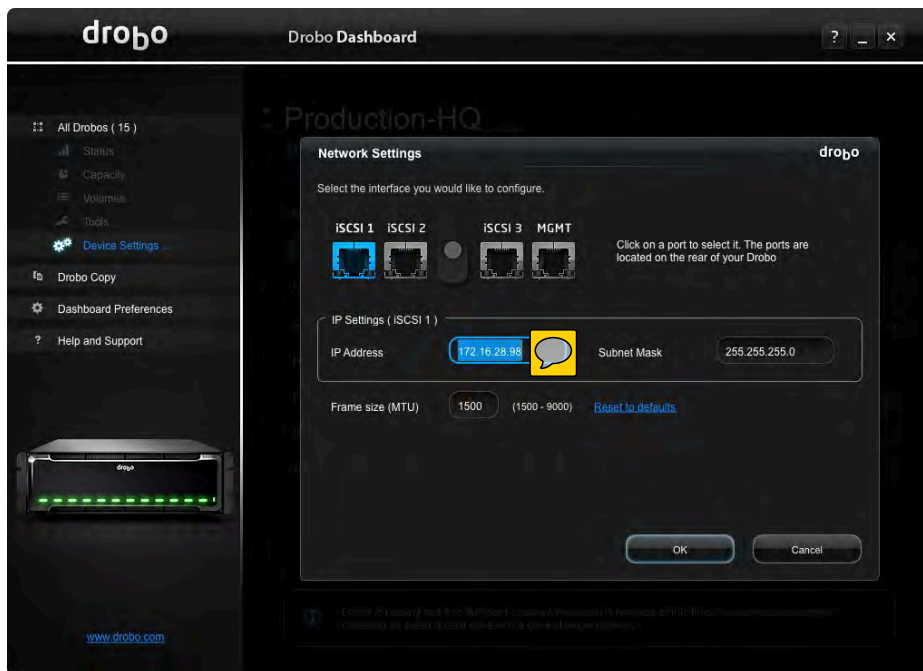
When setting up IP addresses, keep in mind that each interface acts independently.

Interfaces can be configured either on the same subnet or on separate subnets.

STEP 5

Set a user name and password to prevent unauthorized access to the configuration side of the Drobo.

Creating iSCSI Volumes on Drobo

By default, all Drobo volumes are thinly provisioned and are presented as LUNs (Logical Unit Number) on all iSCSI interfaces of the Drobo. Drobo BeyondRAID technology gives administrators the power to virtually present large volumes and grow their physical capacity without having to resize the volume. For many file systems, Drobo reclaims unused blocks, known as thin reclamation. The Drobo reclaims blocks that are marked as free, or unused, by the OS. While this is true for most file systems such as NTFS, HFS+ and ext3, Drobo cannot currently reclaim space from VMFS.

For this reason, we recommend that you create smaller Drobo iSCSI volumes targeted for use as datastores for VMware VMs. When a VMware datastore is running low on capacity, administrators can easily create a larger thinly provisioned iSCSI Drobo volume. VMs can then be moved live (e.g. using SVmotion) or migrated (e.g. using Veeam) to a larger datastore. Capacity used in the previous datastore is not automatically reclaimed, but will be reclaimed when the administrator removes the volume from the cluster within VMware and then deletes the volume using Drobo Dashboard.

Drobo iSCSI systems support up to 255 volumes, so users who anticipate spawning and then deleting VMs frequently can plan ahead and use different datastores on different volumes to make it more practical to delete those volumes in the future to reclaim capacity. Drobo is working with VMware to leverage APIs so that space can be reclaimed automatically in the future.
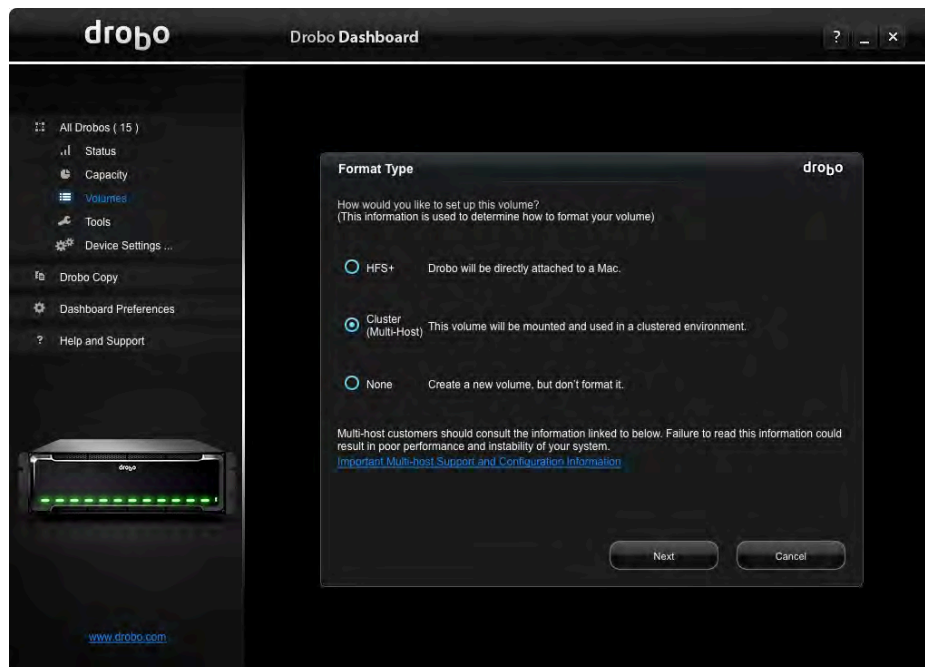
To better understand how BeyondRAID works, visit: http://www.drobo.com/resources/beyondraid.php.

STEP 1

To create a volume on the Drobo, click the **Add Volume** button.

STEP 2

Select **Multi-Host** as the volume format type. Multi-host is required to present a Drobo iSCSI volume to all hosts in a VMware cluster.

If you do not select this option, only one host will be allowed to connect to the Drobo volume at a time, which prevent you from using features like vMotion, Storage vMotion, HA, DRS, and so on.

STEP 3

VMware ESX/ESXi server version up to 4.1 can support only VMFS2 and VMFS3 datastores with a maximum size of 2TB. For VMFS datastores larger than 2TB, use ESXi 5.

Select **2TB** as the Volume size in Drobo Dashboard.

STEP 4

After the changes are submitted, the volume appears at the bottom of the list. Its identifier is in the Target Name field (iqn.2005-06.com.drobo:b1200i.drb110301000018.id0).

This is important if you need to track the Drobo iSCSI volume presented to the vSphere cluster.

STEP 5

BEST PRACTICE: While it is not necessary to set a CHAP password, if the Drobo iSCSI volumes will be accessed from multiple hosts in a hybrid environment (for example, ESX/ESXi hosts, Windows guest VMs, and physical servers), setting a CHAP password guarantees that only authorized systems will be able to probe/connect to the specified iSCSI Volumes.

Select **Enable** from the pull-down menu in the CHAP column.

STEP 6
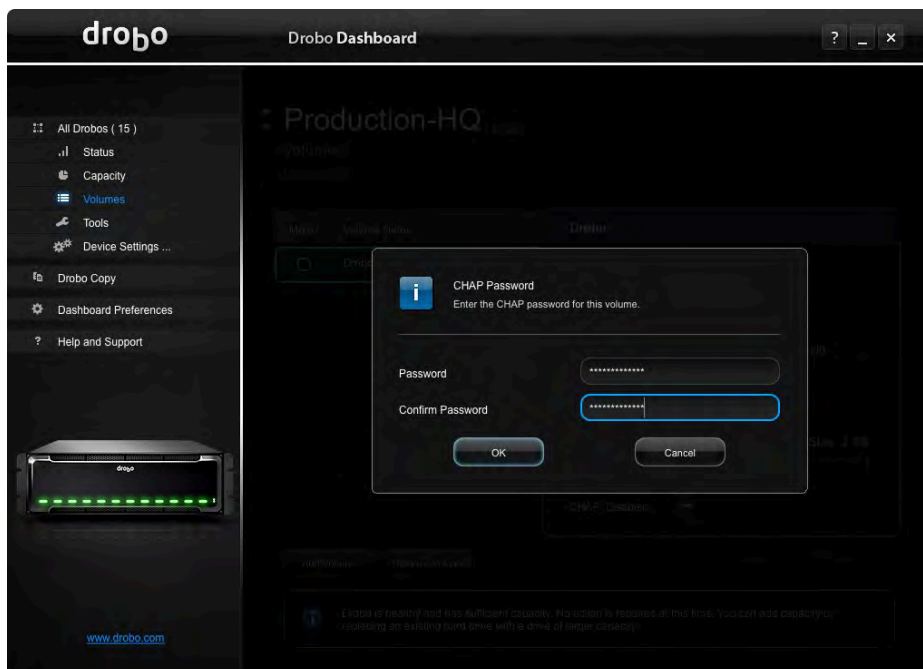
Notice that the username is Drobo and that it's case sensitive.

Enter a password, confirm, and click **OK**.

Configuring a VMware iSCSI Initiator

This section describes the steps required to configure the software iSCSI initiator on ESX/ESXi. For more information, see the *VMware Configuration Guide* at www.vmware.com.

STEP 1
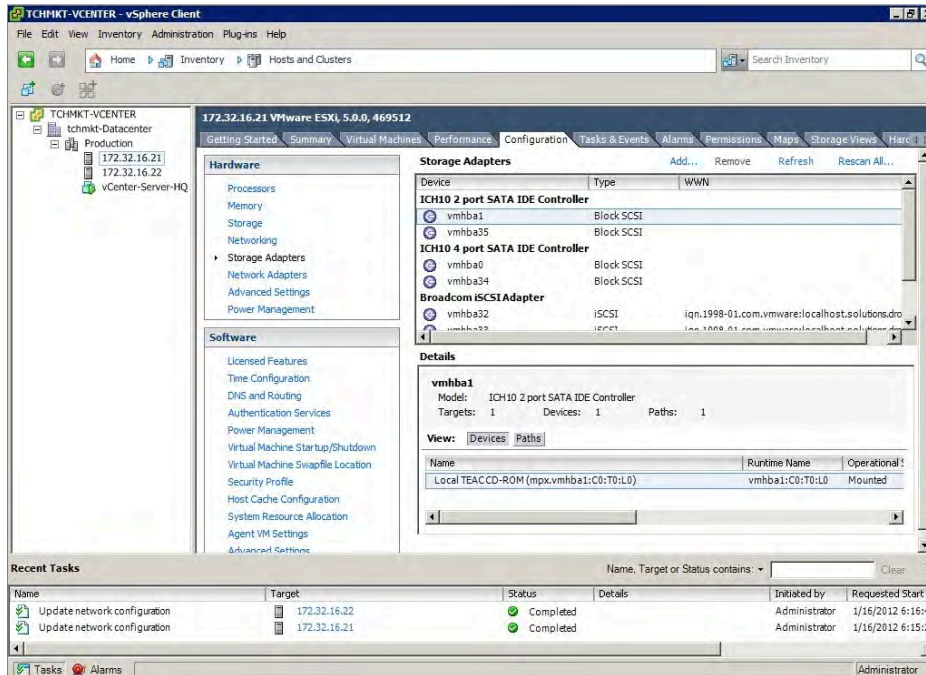
Open the VMware vSphere client. For the purpose of this document, a vCenter server will be connected, instead of a single ESX/ESXi host.

To check the iSCSI Software Adapter and enable it if it's not enabled already, go to: **Home > Inventory > Hosts and Clusters > ESX Host > Configuration > Storage Adapters**.

Select **iSCSI Software Adapter** and click **Properties**.

STEP 2
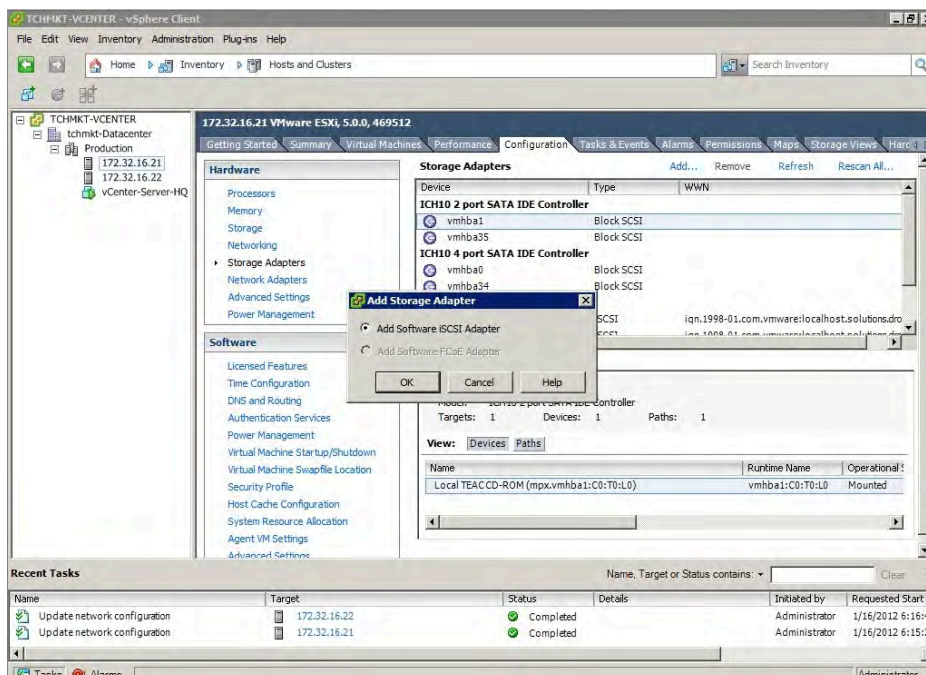
Click **OK** to add the Software iSCSI Adapter.

STEP 3
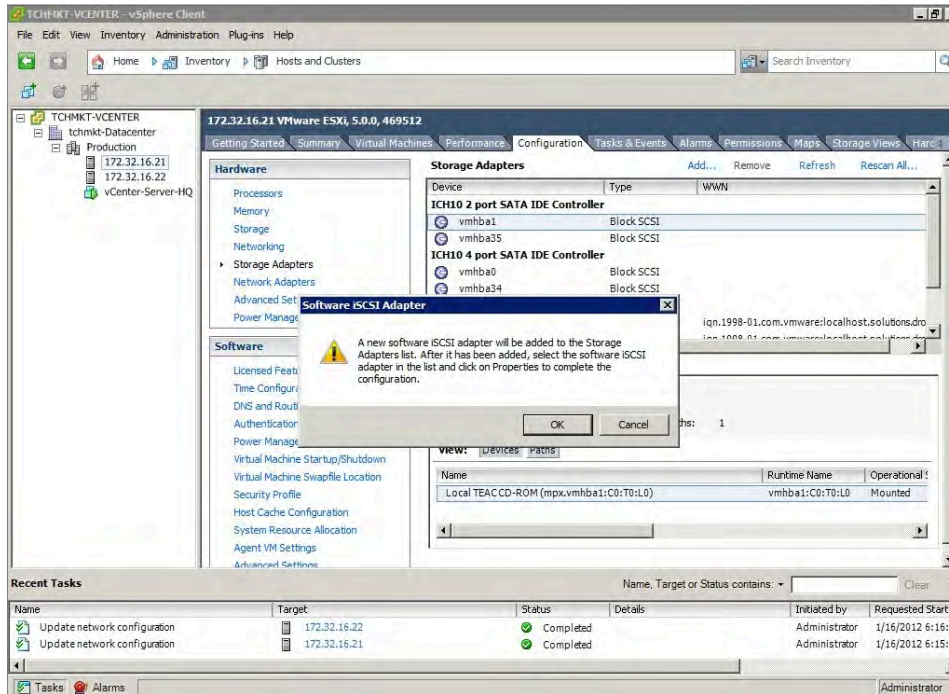
Click **OK** when prompted to verify that a new Storage Adapter will be added.

STEP 4
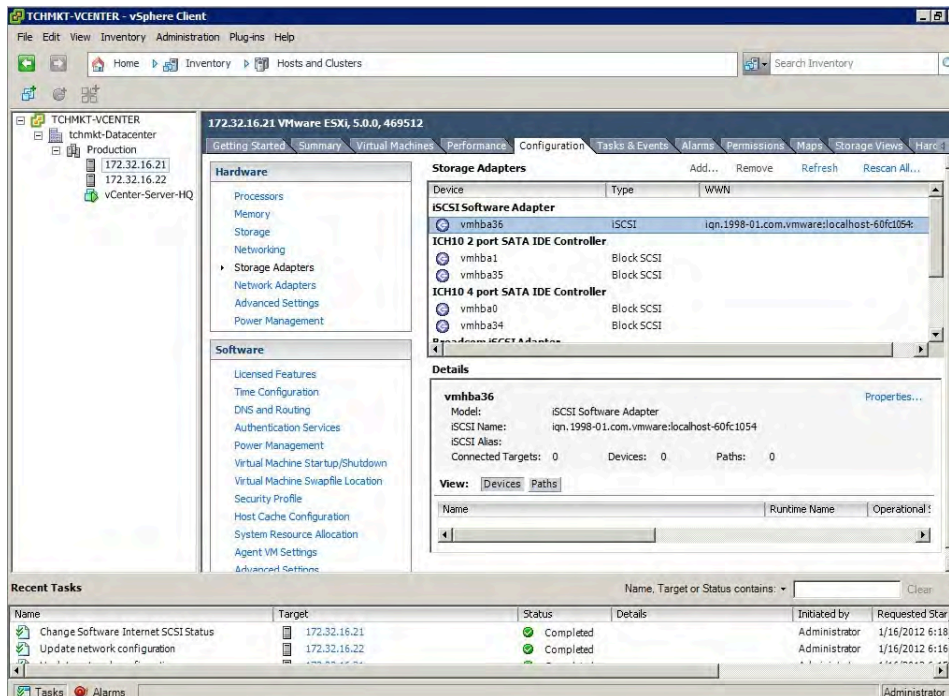
Verify that the new iSCSI Software Adapter has been added. In this case, "vmhba36". Click **Properties** for the new adapter to make further configuration settings.

STEP 5
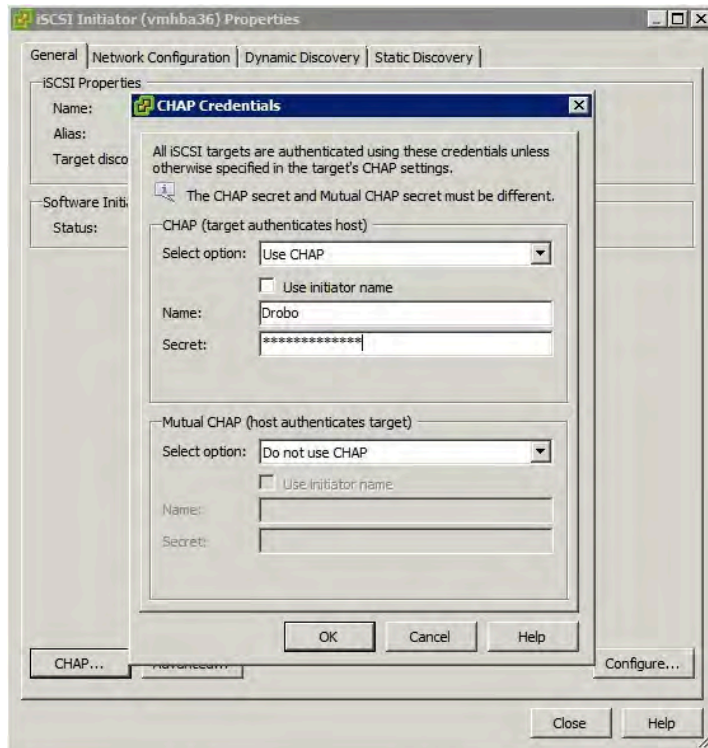
In the iSCSI Initiator properties, in the General tab, click the **CHAP** button, set the CHAP name Drobo (case sensitive), provide the password previously configured, and click **OK**.

NOTE: These settings should be considered global, as they apply to all the iSCSI volumes/iSCSI targets for this initiator. CHAP settings can also be set on iSCSI targets to override the global settings.

STEP 6

Click the **Network Configuration** tab, to bind the network adapters that have access to your iSCSI network. This will add better redundancy by allowing the iSCSI initiator to provide host-based redundancy and load balancing via multipathing.

For more information, consult: http://blogs.vmware.com/vsphere/2011/08/vsphere-50-storage-features-part-12-iscsi-multipathing-enhancements.html

STEP 7
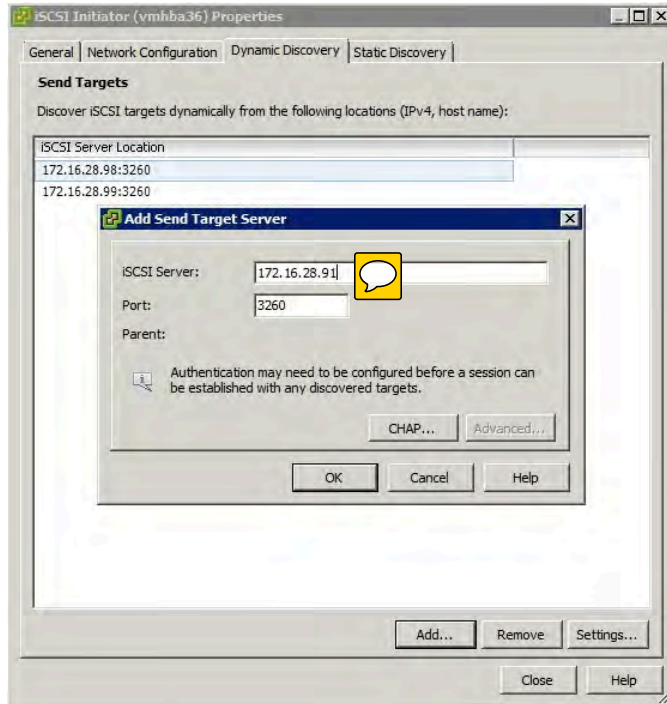
Click the **Dynamic Discovery** tab, click **Add**, and type the entire Drobo IP address.

Do this for all Drobo iSCSI interfaces.

There may be a slight delay while the iSCSI discovery process completes.

NOTE: Ensure that all Drobo IP addresses are entered in this section for redundancy in iSCSI paths. Otherwise VMware cannot identify redundant paths, if a path were to fail.

STEP 8
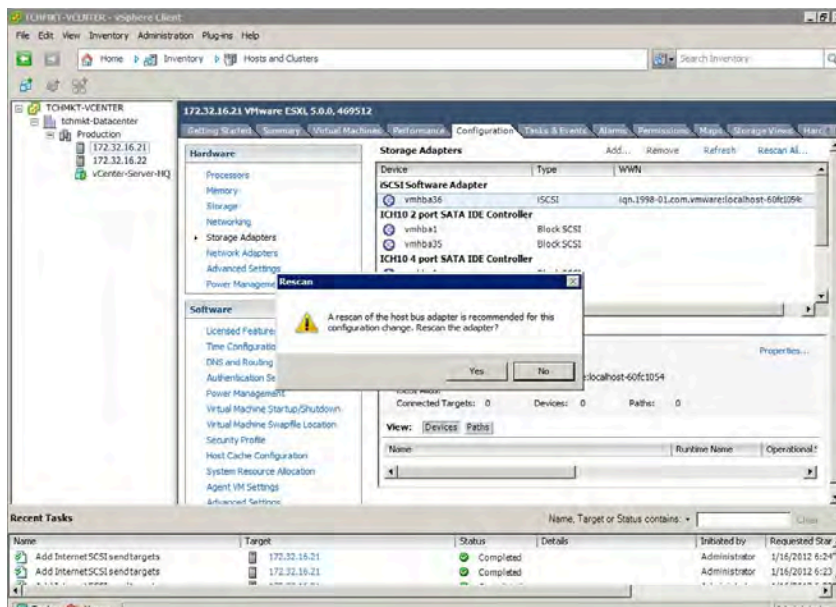
Once this is complete, click **Close**. When a message appears asking you to rescan the host bus adapter, click **Yes** to discover the LUNs.

STEP 9
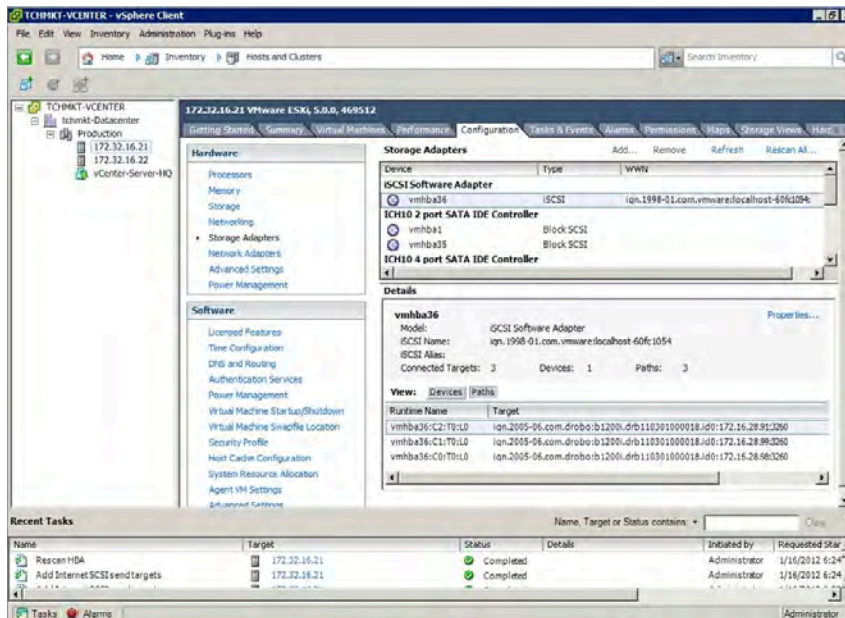
Make sure that you can see all the Drobo volumes in the Details section.

Check the IQN in the Target section—it should reflect the serial number and IP addresses of the Drobo: iqn.2005-06.com.drobo:b800i.**tdb1017b0066**.**id13**:**172.16.28.46**:**3260**

If you do not see the volumes, check that:

- The Drobo IP addresses are on the same subnet as the Network Port group of the ESX/ESXi hosts (e.g. 255.255.255.0).
- The IP addresses of the Drobo can be pinged within that network.
- The USB port on the Drobo is not connected, which is used only to assign an IP address to the Drobo. After this, the USB port is no longer used.
- The CHAP name/password are correct on both the VMware iSCSI initiator and Drobo iSCSI volumes.

Creating a VMware VMFS Datastore

NOTE: Operating system alignment is critical within a VMFS datastore. Although vSphere4 ensures proper alignment at the (VMFS) volume level, proper guest operating system alignment is still a potential issue with VMware performance with Drobo. It is critical to ensure proper alignment of the guest operating systems in the virtual machines (VMs). Misaligned guest O/S partitions are likely to result in degraded performance and could ultimately cause a loss of connectivity to the datastore on the Drobo. Be sure to consult VMware documentation on this topic.

Although, the following VMware document was created for version 3.0, the section entitled "Instructions for Guest File System Alignment" is still applicable to vSphere4 and later:
http://www.vmware.com/pdf/esx3_partition_align.pdf.

You can also refer to the "ESX Considerations" section of the VMware Best Practices for vSphere 4, http://www.vmware.com/pdf/Perf_Best_Practices_vSphere4.0.pdf or other resources @ http://blogs.vmware.com/vsphere/2011/08/guest-os-partition-alignment.html.

STEP 1
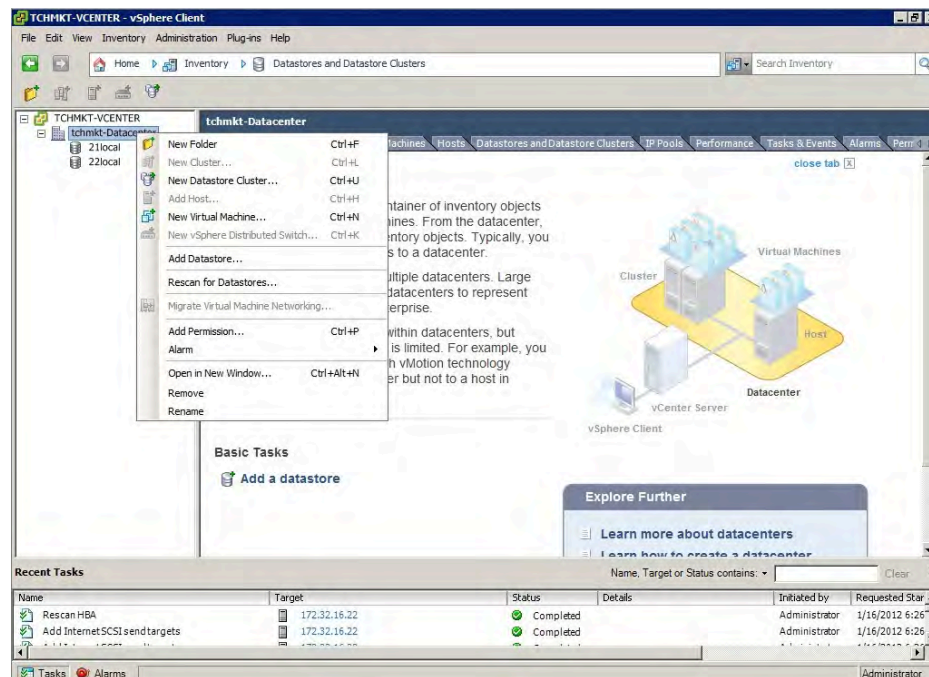
Select **Home > Inventory > Datastores**.

In the left navigation, right-click on the cluster and from the pop-up menu, choose **Add Datastore**.

STEP 2
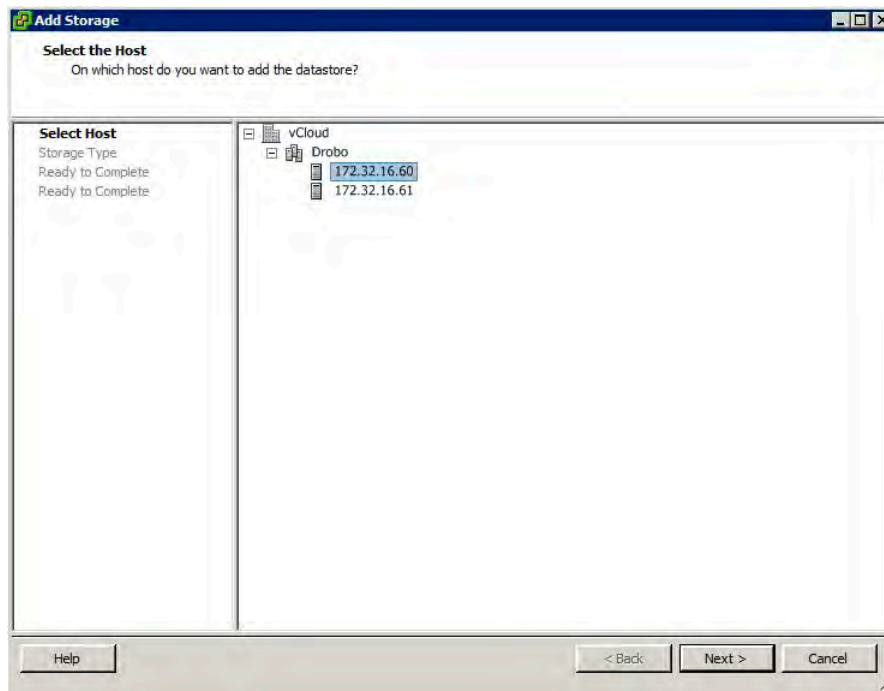
Select which host to add the datastore to.

NOTE: Regardless of the host onto which the datastore is added to, if two or more hosts are part of a cluster, they will all have access to the datastore. In order for this to work, you should have selected Multi Host when creating a volume within Drobo Dashboard.
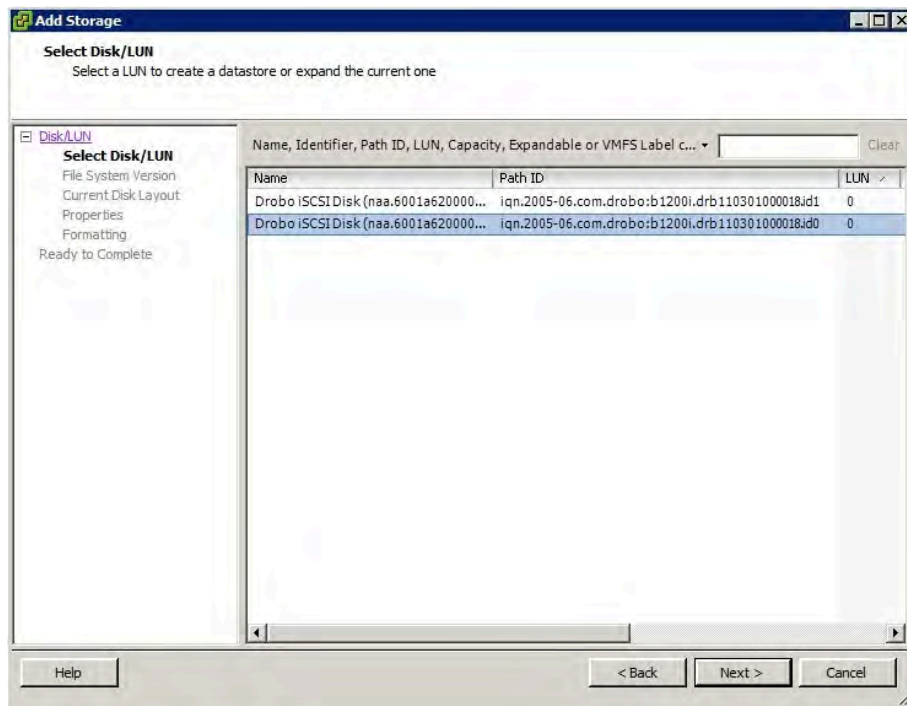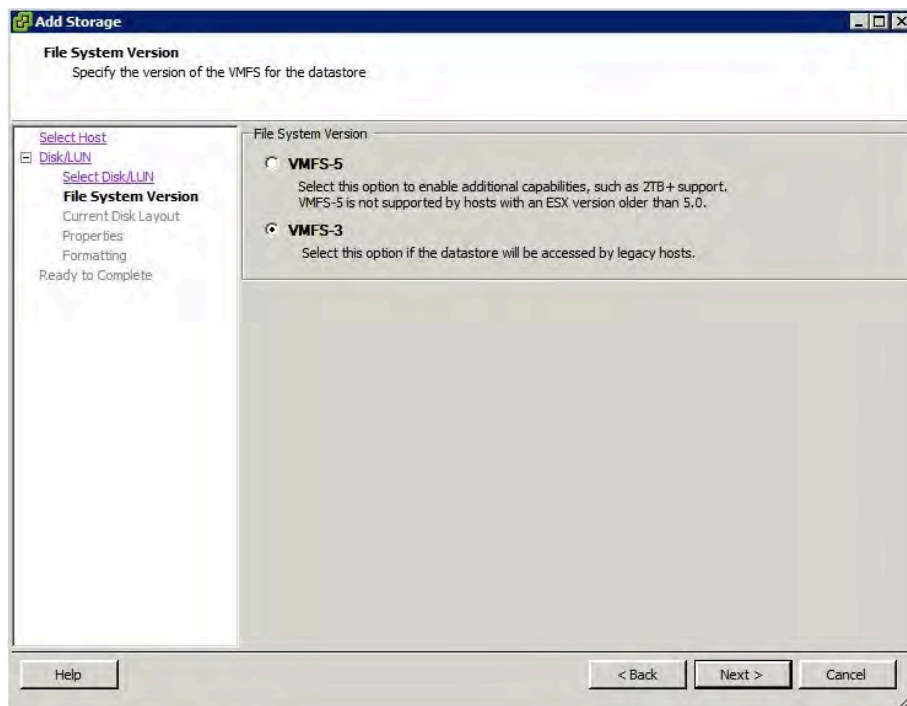
STEP 3
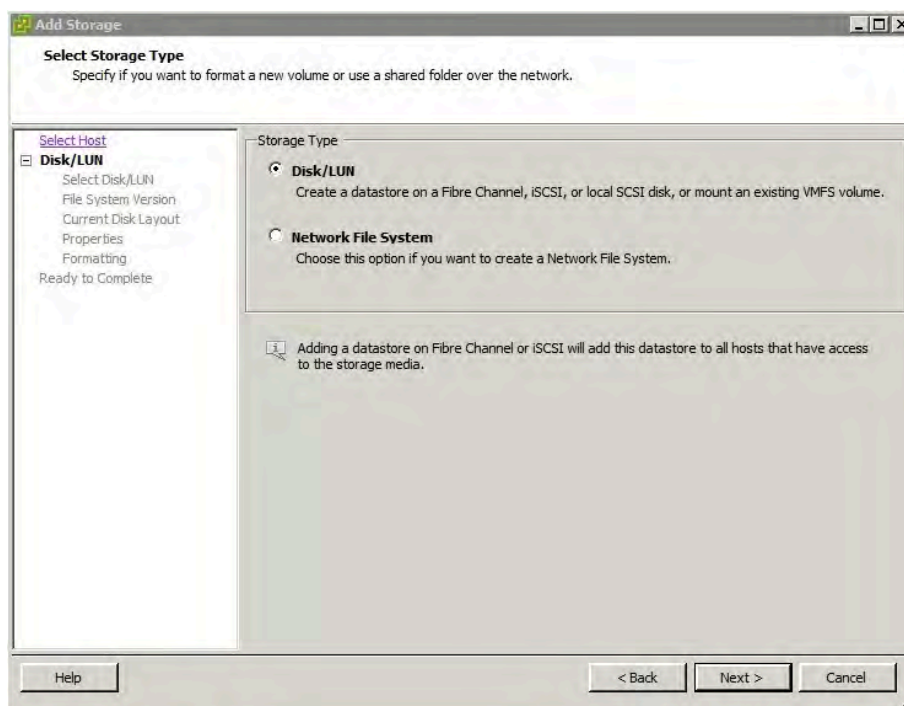
Select **Disk/LUN** and click **Next**.

STEP 4

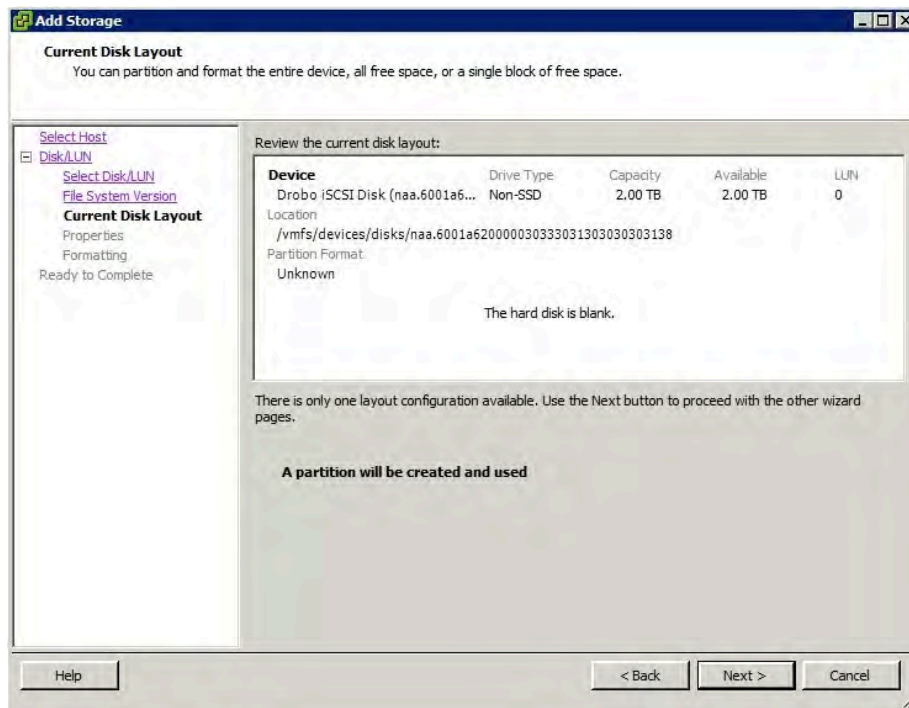Select the volume created in the previous section and click **Next**.

STEP 5

Choose a VMFS File System version, in this case, VMFS-3, and click **Next**.

STEP 6

Review the disk layout and click **Next**.

STEP 7
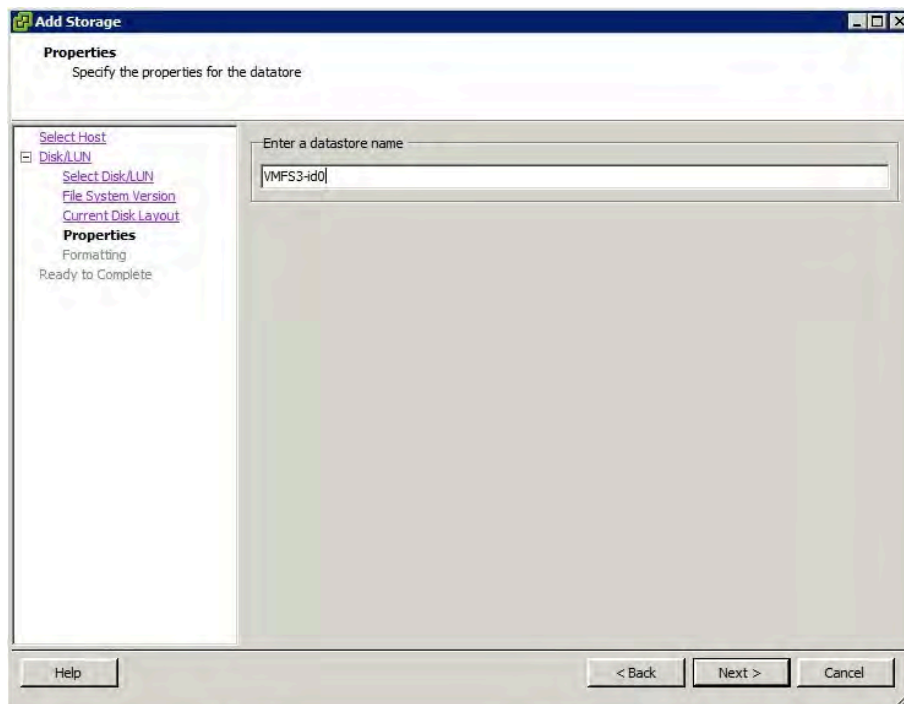
Provide a name for the VMFS datastore and click **Next**.

STEP 8
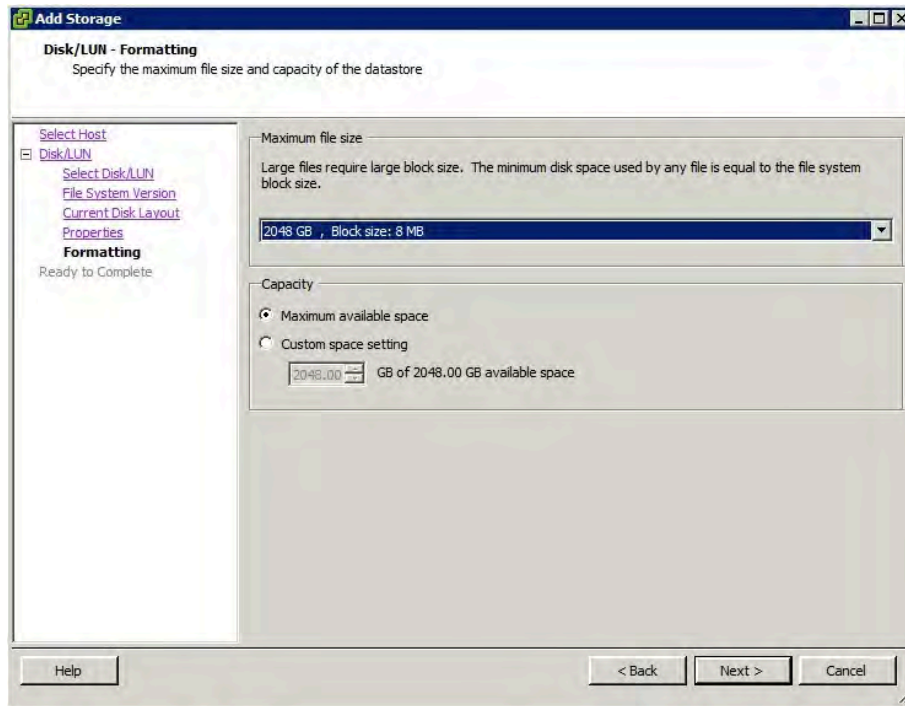
Select the appropriate block size (8 MB) and capacity for the VMFS datastore and click **Next**.

NOTE: Drobo has determined that using 8 MB block sizes results in optimal performance. Block sizes smaller than 8 MB adversely impacts performance. Also the block size defines the MAX VMDK size, as per VMware specifications:

Block size	Max VMDK size
1	256 GB
2	512 GB
4	1024 GB
8	2048 GB

STEP 9

Review the disk layout and click **Finish** to create the VMFS datastore.

The new datastore is ready for storing virtual machine images.

Create a VMware VMFS 5.0 Datastore

To create a VMFS-5 datastore, repeat steps 1 through 4 of the previous section, making note of recommendations around alignment

STEP 1
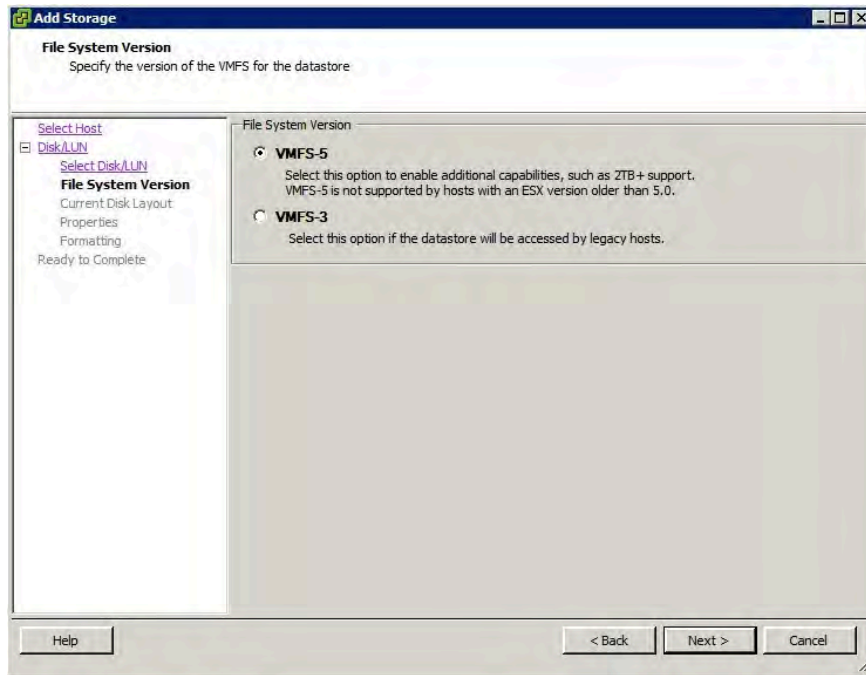
When asked to choose a VMFS File System version, select **VMFS-5** and click **Next**.
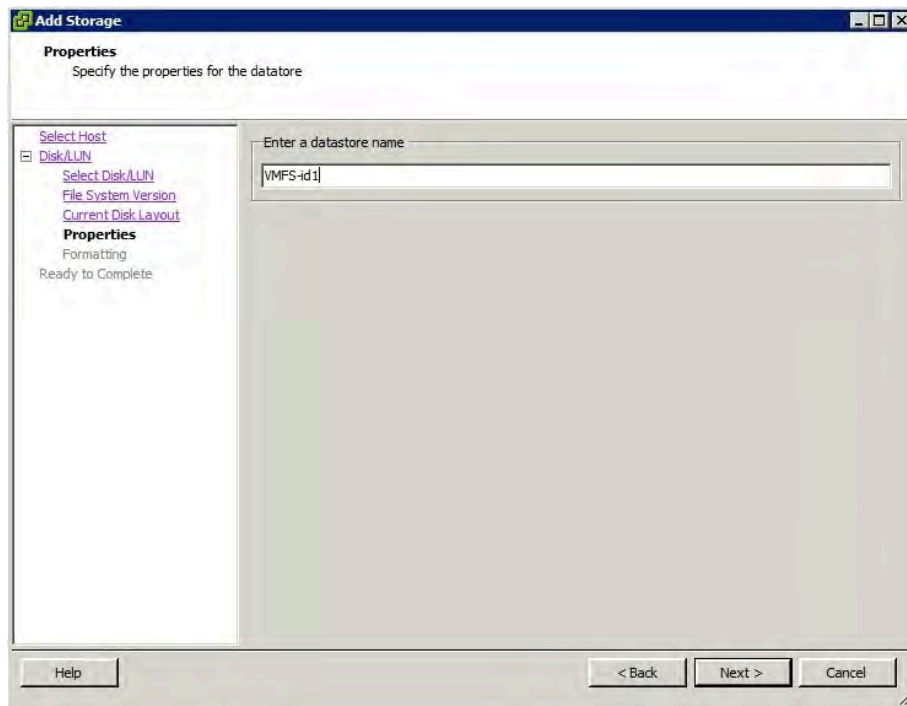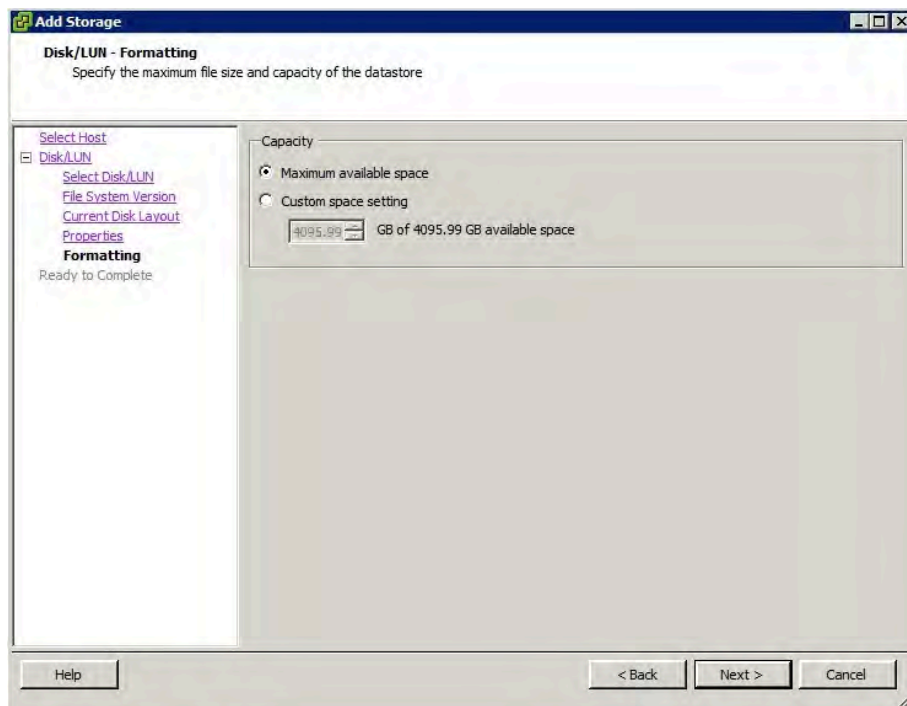
STEP 2
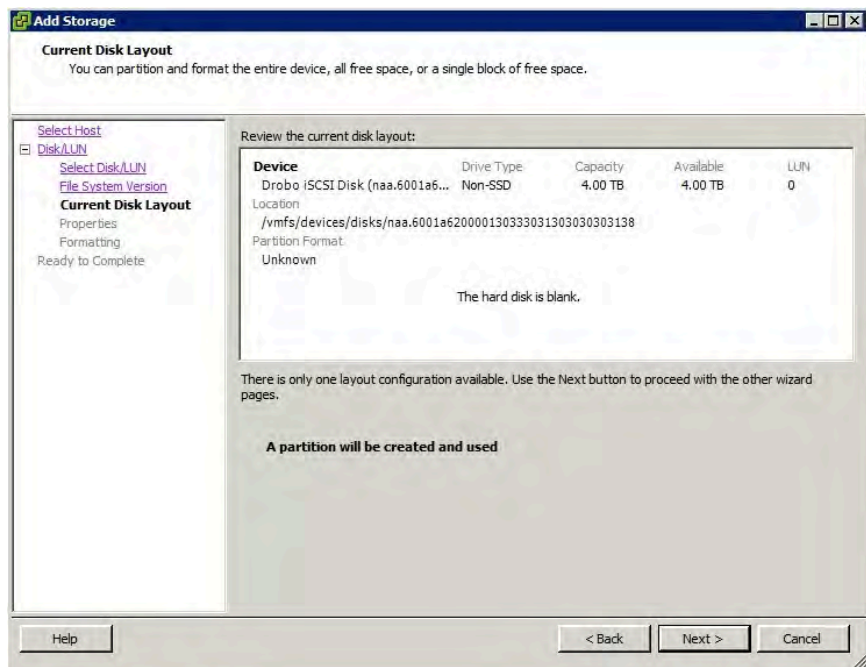
Review the disk layout and click **Next**.

STEP 3

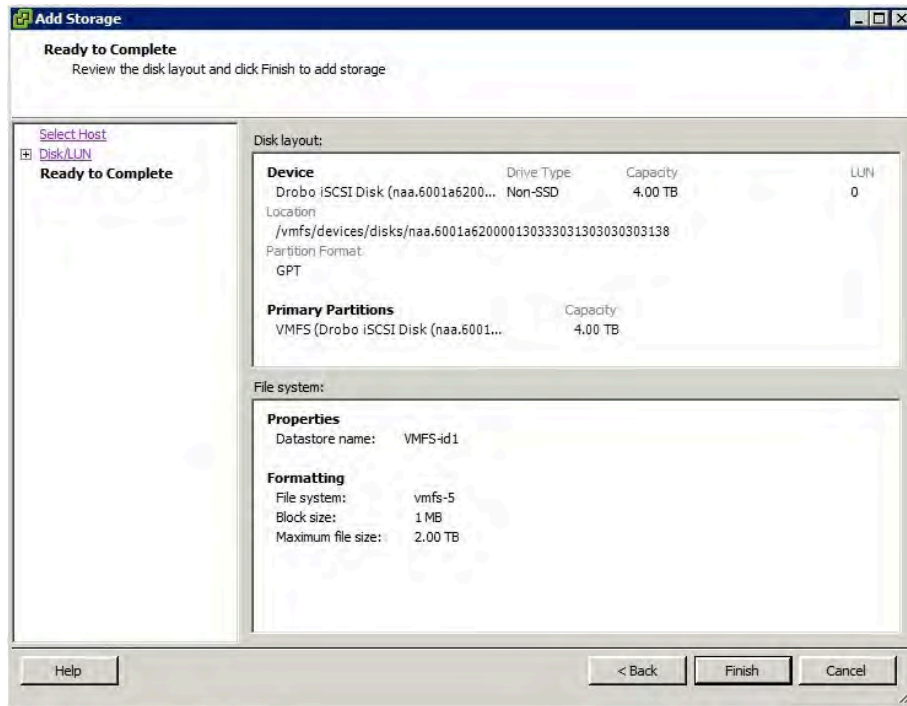

Provide a name for the VMFS datastore and click **Next**.

STEP 4

Before formatting the LUN, make sure that the capacity is set to **Maximum available space** and click **Next**.
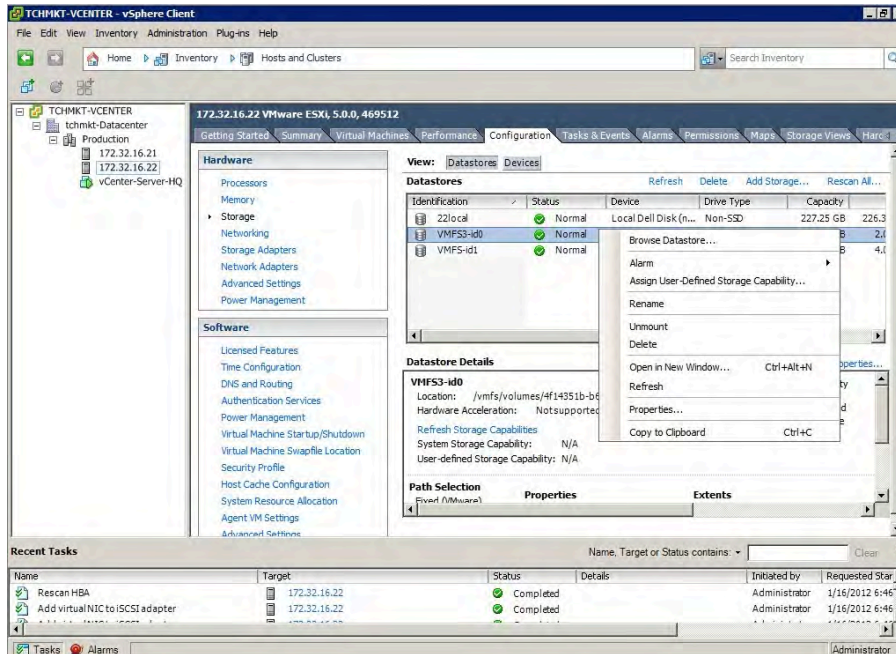
STEP 5

Review the disk layout and click **Finish** to create the VMFS datastore. The new datastore is ready for storing virtual machine images.

## Post-Configuration Options

STEP 1

Once the datastore has been created, if you want multipathing for redundant iSCSI paths or load balancing across all available paths, the LUN policy must be changed. Drobo recommends that to get the best throughput and redundancy, select **Round Robin**.

To change this option select: **Home > Inventory >Hosts and Clusters >ESX Host > Configuration > Storage**.

In the Datastores section, select the newly created datastore, right-click, and choose **Properties** from the menu.
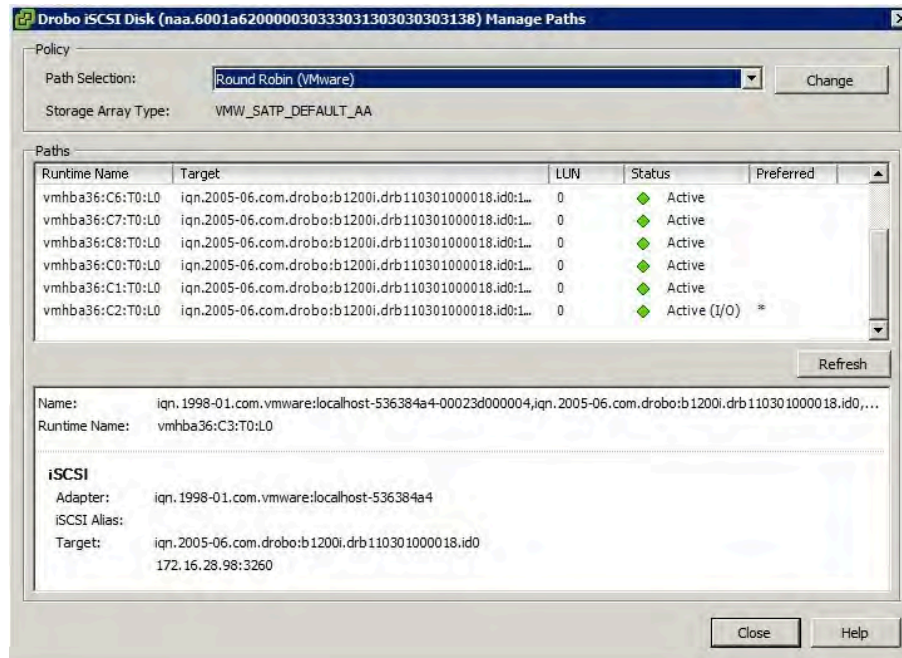
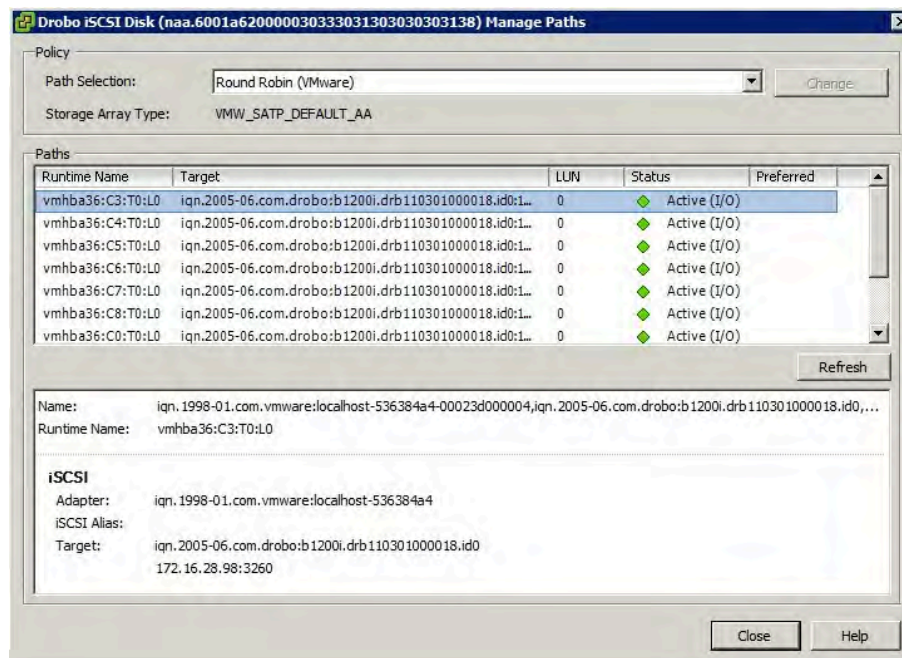### STEP 2
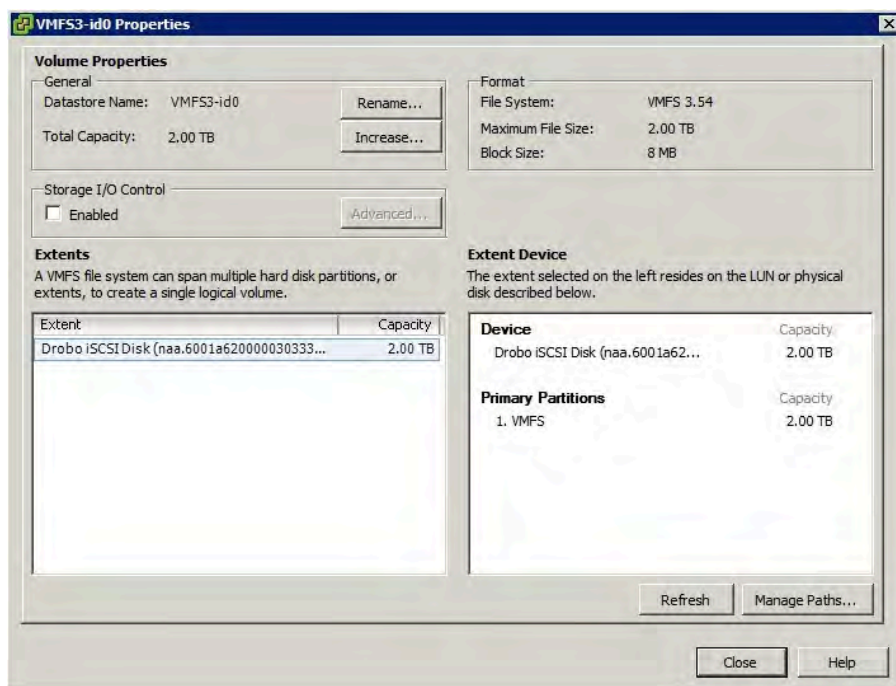
Click **Manage Paths**.

STEP 3

By default Fixed (VMware) is used when a new datastore is created. However, this does not provide redundancy or load balancing. Multiple paths can be available but only one will have an active I/O.

To change this, from the Policy section from the Path Selection drop-down menu, choose **Round Robin (VMware)**, and click **Change**.
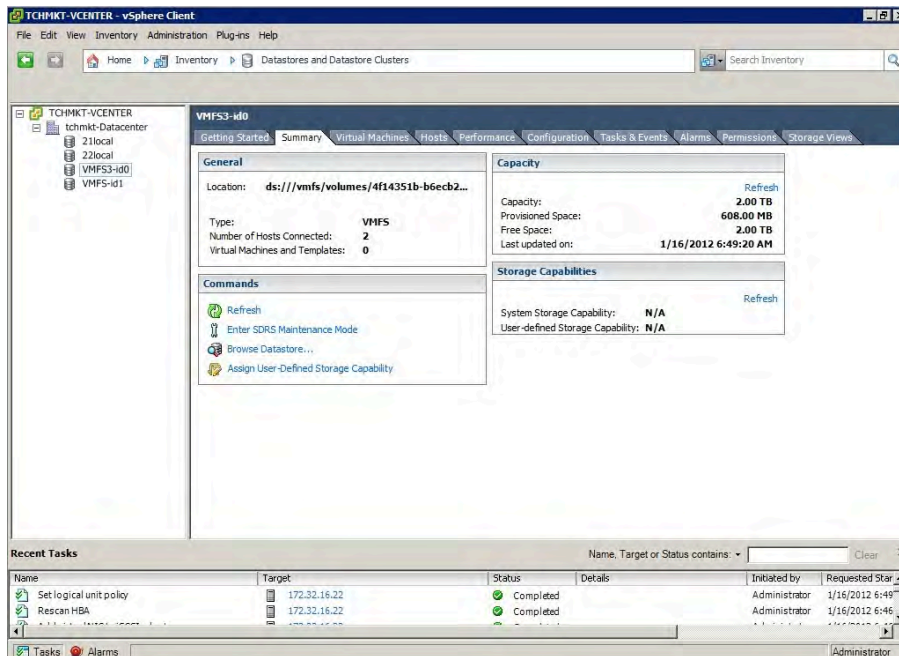
STEP 4

After changing the policy, verify that the Storage Array Type shows VMW_SATP_DEFAULT_AA and in the Paths section, all paths have an Active (I/O).
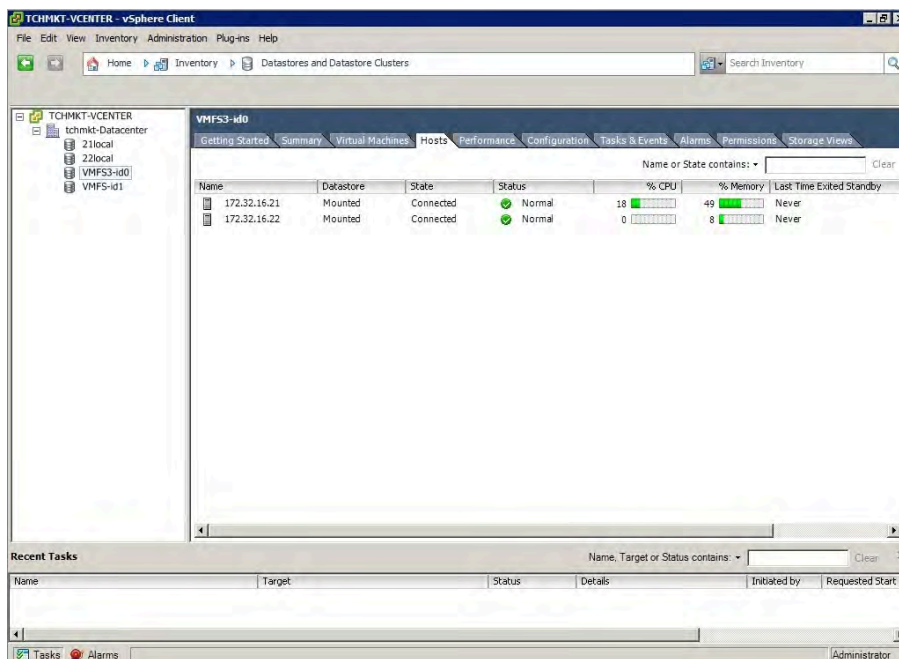
STEP 5

Take a minute to verify that all hosts in the cluster can connect to the datastore. Select **Home > Inventory > Datastores**.

Select the newly created datastore and click the **Summary** tab. A simple summary displays the status of the datastore.

STEP 6

Click the **Hosts** tab to display all hosts that are attached to the datastore.

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