Data Migration from Dell PS Series or PowerVault MD3 to Dell EMC SC Series Storage using Thin Import

Abstract

The Thin Import feature of Dell™ Storage Center Operating System offers solutions for data migration when replacing Dell PS Series or Dell PowerVault™ MD3 arrays with Dell EMC™ SC Series arrays.

March 2018

Revisions

Date	Description
October 2015	Initial release
June 2016	Added SCOS 7.0 and VMware content
August 2017	Renamed doc; added PowerVault MD3 content
March 2018	Minor updates

Acknowledgments

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1 Introduction

This document provides an overview of the Dell EMC™ SC Series Thin Import feature, and introduces best practice guidelines and additional guidance for migrating data from a Dell™ PS Series or PowerVault™ MD3 series array to an SC Series array. Thin Import functionality was included as part of the Dell Storage Center Operating System (SCOS) 6.7 release and was enhanced to include VMware® support in SCOS 7.0. Support for importing from a PowerVault MD3 array was added in SCOS 7.2.10.

The information contained within this document provides general recommendations. Configurations will vary in customer environments due to individual circumstances, budget constraints, service-level agreements, applicable industry-specific regulations, and other business needs.

1.1 Audience

This document is intended for storage administrators who need to migrate data from a PS Series or a PowerVault MD3 array to an SC Series array. Readers should be familiar with SC Series arrays and either PS Series or PowerVault MD3 arrays, as well as Microsoft® Windows Server® and VMware vSphere®.

2 Overview and requirements

The Thin Import process allows copying data from an external device and placing it onto an SC Series array. This process works at a block level and uses synchronous replication to import the data. When the source LUN is thin provisioned, all blocks on the source LUN are read and then written to the target volume on the SC Series arrays with the exception of zeroed blocks, which are not actually committed to disk. The result is a thin-provisioned volume on the SC Series array. When the source LUN is provisioned thick, the resulting volume on the SC Series array is also thick. More detailed information on both the online and offline import process is covered in section 5.

Note: The Thin Import process does not support importing data from 4K sector volumes.

There are two methods for importing data from an external device: online and offline.

Online importing creates a destination volume, maps it to the server, and then migrates the data to the destination volume. I/O from the server continues to both the destination and source volumes during the import. The online method can take longer than the offline method because I/O continues to the volume from the server.

Note: Online import of a boot-from-SAN volume is not supported.

Offline importing migrates a volume from the source to the destination. It does not recreate the mapping on the source volume.

Note: The Thin Import process is service-affecting in both offline and online mode. It is recommended to test the Thin Import process in a non-production environment to establish an accurate timeframe of system downtime. Both offline and online mode are discussed in detail in section 5.

Note: Importing from arrays other than PS Series or PowerVault MD3 storage must be performed by trained professionals. Contact your sales representative to schedule an appointment with professional services.

2.1 Network requirements

Importing from a PS Series or an iSCSI-connected PowerVault MD3 array requires a high-bandwidth, low-latency iSCSI network connection between the source array and the SC Series array. Both the source and target arrays must reside in the same geographic location to minimize the risk of network latency.

Note: High latency or other network interruption during the import process will cause the data copy to fail and restart from the beginning, regardless of the amount of data previously copied.

When importing from an iSCSI-connected PowerVault MD3 array, the MD3 must be connected to an enterprise-class Ethernet switch. Using a low-cost switch could yield heavy Ethernet PAUSE frames, which could result in an outage on the MD3 array.

2.1.1 Jumbo frames

The Thin Import process will work with SC Series, PS Series, and MD3 arrays configured to utilize Jumbo frames. However, the source array, target SC Series array, and all network components (such as switches and routers) must be set to the same maximum transmission unit (MTU) size.

Note: Any discrepancies in MTU size will cause the Thin Import process to fail. It is recommended to set the MTU size to 1500 bytes on the SC Series array.

For detailed information on setting the MTU size, see the following documents:

SC Series: *Dell Storage Manager Administrator's Guide*, available on the Knowledge Center at the SC Series customer portal (login required)

PS Series: *Dell EqualLogic Group Administrator's Guide,* available on the PS Series support site (login required).

MD3xxxi series: Documentation for the various MD3 series iSCSI arrays can be found on the Dell Product support site.

2.2 SC Series storage requirements

Note: Using the Thin Import process to import from PS Series Windows volumes requires SCOS 6.7 or higher. SCOS 7.0 or higher is required to import data from PS Series VMware volumes. SCOS 7.2.10 or higher is required to import data from PowerVault MD3 series volumes.

2.2.1 Fault domains

Front-end ports are categorized into fault domains that identify allowed port movement when a controller or port fails. Fault domains enable the controller to use all designated ports as needed for efficiency and redundancy. All ports are primary and can read and write I/O. If a port fails, any port within the fault domain takes over for the failed port.

Note: Standard fault domains are required when using Thin Import. Virtual fault domains (available on some SC Series arrays) are not supported for Thin Import.

A minimum of one iSCSI fault domain on the SC Series array is required to use the Thin Import process to import data from a PS Series or an iSCSI-connected MD3 Series array. It is highly recommended that the PS Series or MD3 Series array be on the same subnet as the SC Series array. If using the same subnet is not possible, the iSCSI fault domain on the SC Series array must be properly routed to the subnet where the PS Series or MD3 array resides.

A minimum of one Fibre Channel (FC) fault domain is required to use the Thin Import process to import data from an FC-connected MD3 array. Host bus adapters (HBAs) on the MD3 and SC Series arrays must be zoned to allow communication between the two arrays.

Note: The zone must include both MD3 controllers and the physical (not virtual) Fibre Channel ports on the SC Series array in order to access volumes on each controller.

For detailed information on virtual port mode, refer to the *Dell Storage Center SCv2000 and SCv2020 Storage System Deployment Guide* on Dell.com/Support.

2.3 MD3 array requirements

To import data from an MD3 array, the SCOS version must be 7.2 or higher. Supported MD3 models and firmware requirements are detailed in the following table:

Model	Minimum firmware version
MD32xxi	08.20.21.61
MD36xxi	08.20.21.61
MD36xxf	08.20.21.61
MD38xxi	08.25.09.61
MD38xxf	08.25.09.61

Note: When importing from MD3 iSCSI arrays to SC Series arrays, optimal import performance is achieved when the MTU size is set to 1472 on the SC Series array.

When importing from an FC-connected MD3 array, the physical ports on the SC Series array must be zoned to both controllers of the MD3 array. This is due to the fact that the MD3 array will only present the SC Series array with volumes that are active on the mapped controller.

Only one remote connection per fault domain can be made to an iSCSI-connected MD3 array from an SC Series. Unlike Fibre Channel MD3 arrays, iSCSI-connected MD3 arrays present all virtual disks over a single connection, regardless of active controller.

Before importing data from MD3 volumes, all I/O on the volumes must be stopped and any reservations (server mappings) on the volume should be removed.

2.4 PS Series array requirements

Note: To import data from a PS Series array, the PS Series firmware must be version 6.6 or higher. It is highly recommended that the PS Series array is upgraded to version 9.0 or higher before importing VMware volumes.

Before importing data from PS Series volumes, all I/O on the volumes must be stopped and any SCSI reservations (server mappings) on the volume should be removed.

In addition to the requirements in sections 2.1 and 2.2, perform the steps in sections 2.4.1–3.3 on the PS Series array before attempting to run the Thin Import process.

2.4.1 Configure iSCSI discovery

Note: This section only applies to PS Series arrays that have Virtual Disk Service (VDS) or Volume Shadow Copy Service (VSS) access enabled.

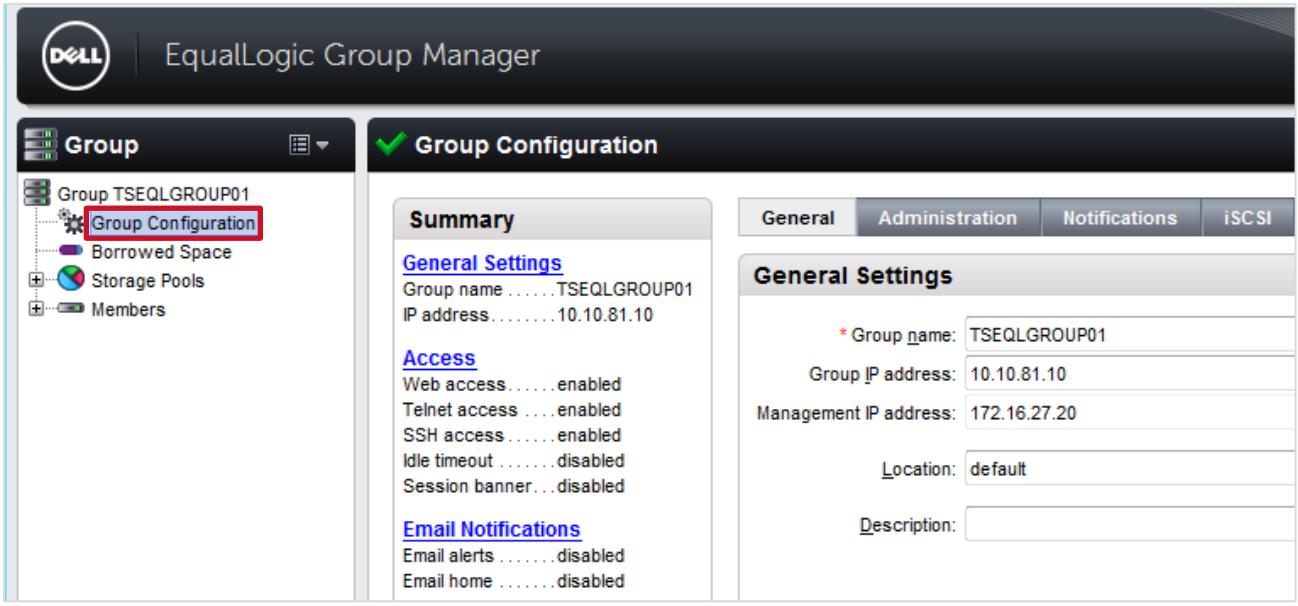
When enabled, VDS/VSS access on the PS Series group creates a virtual iSCSI target that allows Windows Server hosts to connect with and copy data to the array. VDS/VSS access is secured using a local CHAP user on the array and requires authentication from the Dell Auto-Snapshot Manager installed on the host.

By default, iSCSI initiators that use discovery try to log in to group targets protected by CHAP, even if they do not have the correct access credentials. In the case of Thin Import, when a remote connection is created from an SC Series to a PS Series array, the SC Series initiators automatically discover and try to connect to the VDS/VSS target on the PS Series array. Authentication to the VDS/VSS target will fail, causing all other connections to the array to drop and reconnect. If an import is taking place during a reconnect, the process will fail.

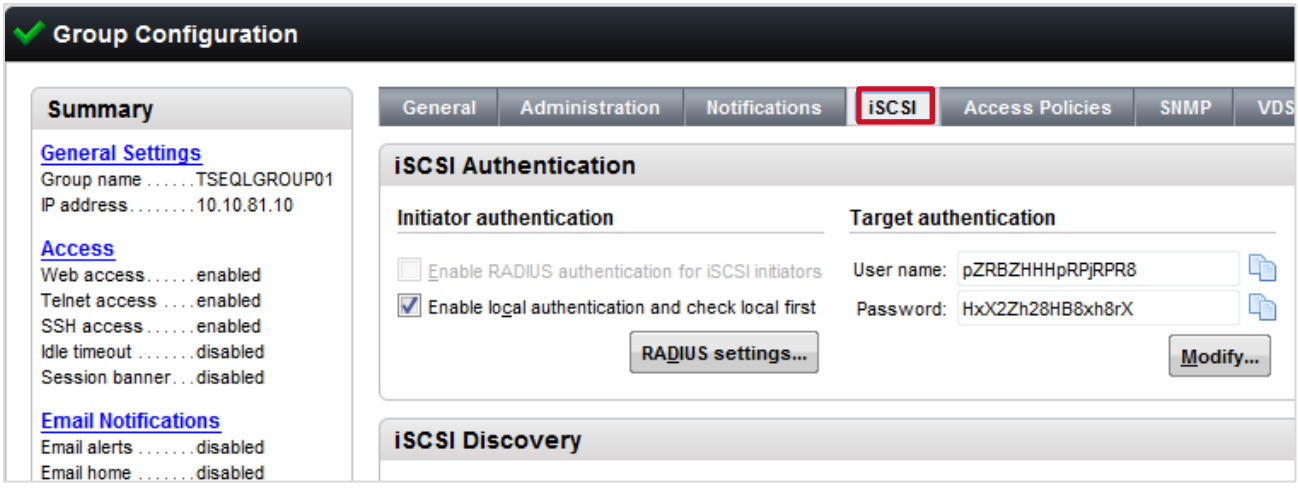
By enabling the iSCSI discovery filter, SC Series initiators will discover only those targets (volumes) for which they have been granted access, and will not try to authenticate to the VDS/VSS target.

To enable the iSCSI discover filter on the PS Series array, perform the following steps:

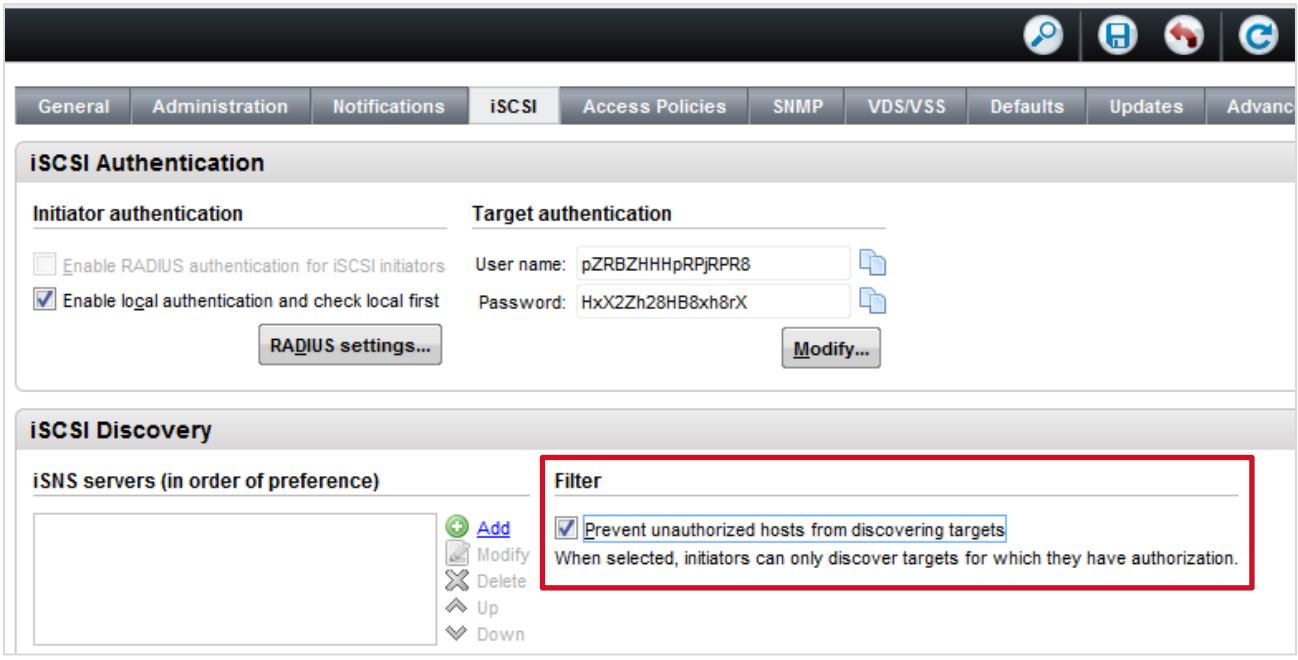
1. Log in to the **EqualLogic Group Manager** using group administrator credentials. In the group subtree, click **Group Configuration**.



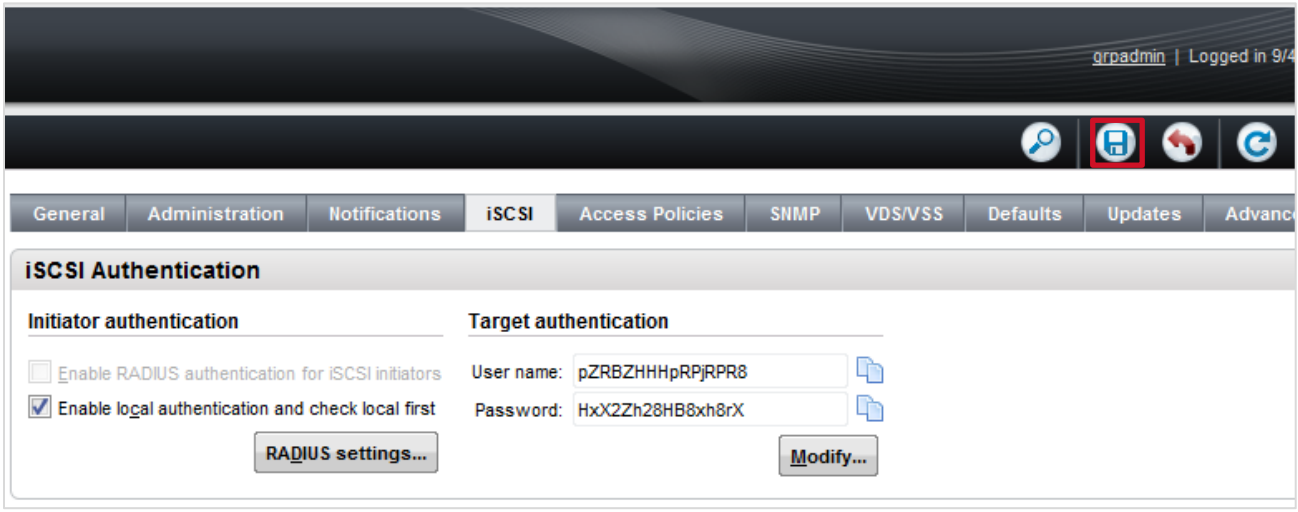
2. Click the **iSCSI** tab.



3. In the iSCSI Discovery section, click to enable the filter, **Prevent unauthorized hosts from discovering targets**.



4. Click the **Save** icon.



3 Preparing PS Series volumes for import

This section details how to create a remote connection from the SC Series array to an iSCSI-connected PS Series array.

3.1 Configuring volume access

SC Series arrays are granted access to the PS Series volumes by specifying permission to one or more of the following endpoints: IP addresses of SC Series iSCSI initiators, or SC Series iSCSI initiator (IQN) names.

Note: SC Series access to PS Series volumes using CHAP authentication is not supported.

3.1.1 Apply permissions to PS Series volumes

Permissions are applied to PS Series volumes using the following three methods:

Basic access point: A specific endpoint connects to a specific volume. Basic access points cannot be shared or reassigned to other volumes.

Access policy: One or more endpoints are associated to any number of available volumes. The access policy is created independent of any specific volume association, and is then associated with the desired volumes as a separate operation.

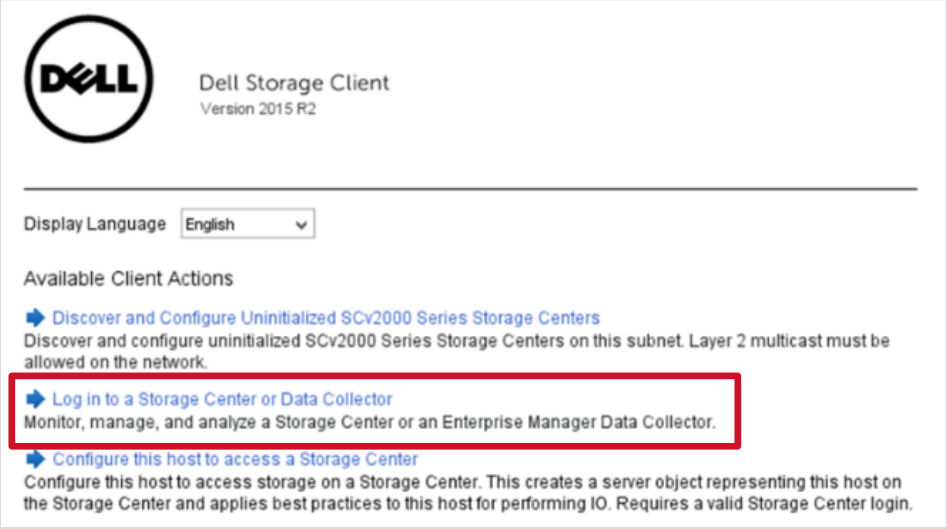
Access policy group: Individual access policies are combined together so that they can be managed as a single entity.

Note: Use an access policy to manage SC Series access to PS Series volumes. Use an access policy group to apply the SC Series access policy to volumes that are already associated with an existing access policy.

For detailed information on volume access control, refer to the *Dell EqualLogic Group Administrator's Guide*, located on the PS Series support site.

Perform the following steps to obtain the names and IP addresses of the SC Series iSCSI initiators:

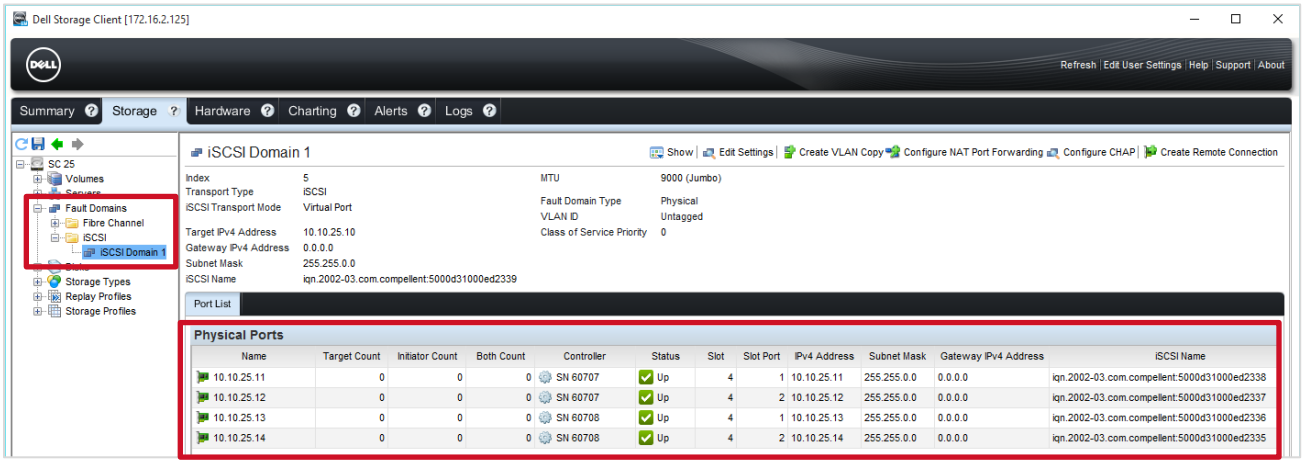
1. Open the Dell Storage Client and click Log in to a Storage Center or Data Collector.



Note: The Dell Storage Client can connect to a Dell Storage Manager Data Collector or connect directly to an SC Series array. The instructions in this section focus only on connecting directly to an SC Series array.

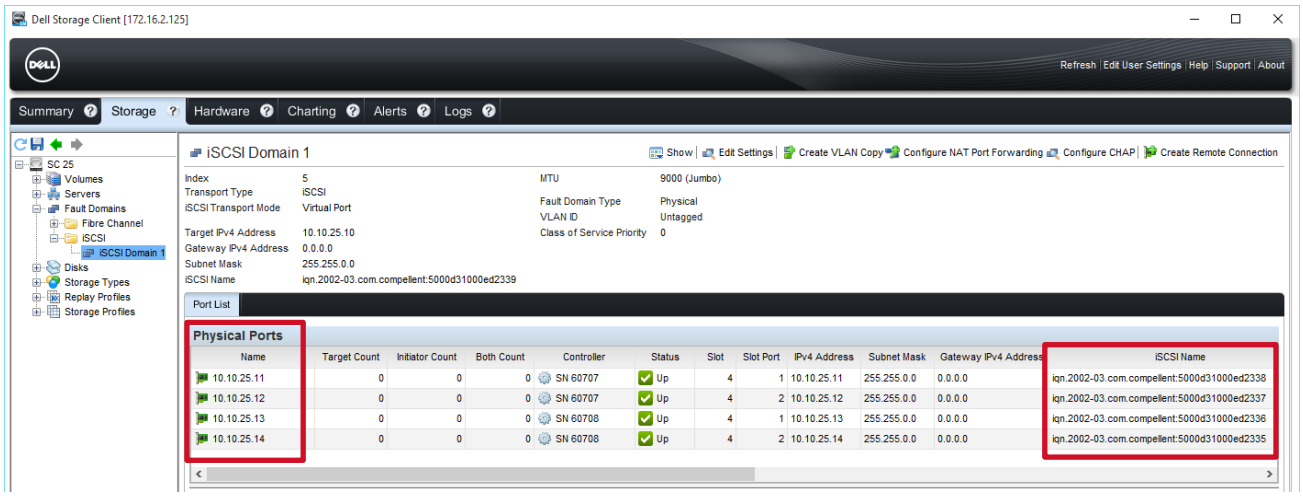
2. Log in to the Dell Storage Client with administrative credentials.
3. Open the **Storage** tab and navigate to **Fault Domains** > **iSCSI**. Select the iSCSI fault domain that will be used for the import process.

Note: On systems with more than one iSCSI fault domain, select a fault domain that is configured on the same network as the PS Series array.



4. In the iSCSI fault domain area, locate and record the IP addresses or iSCSI names of all listed physical ports.

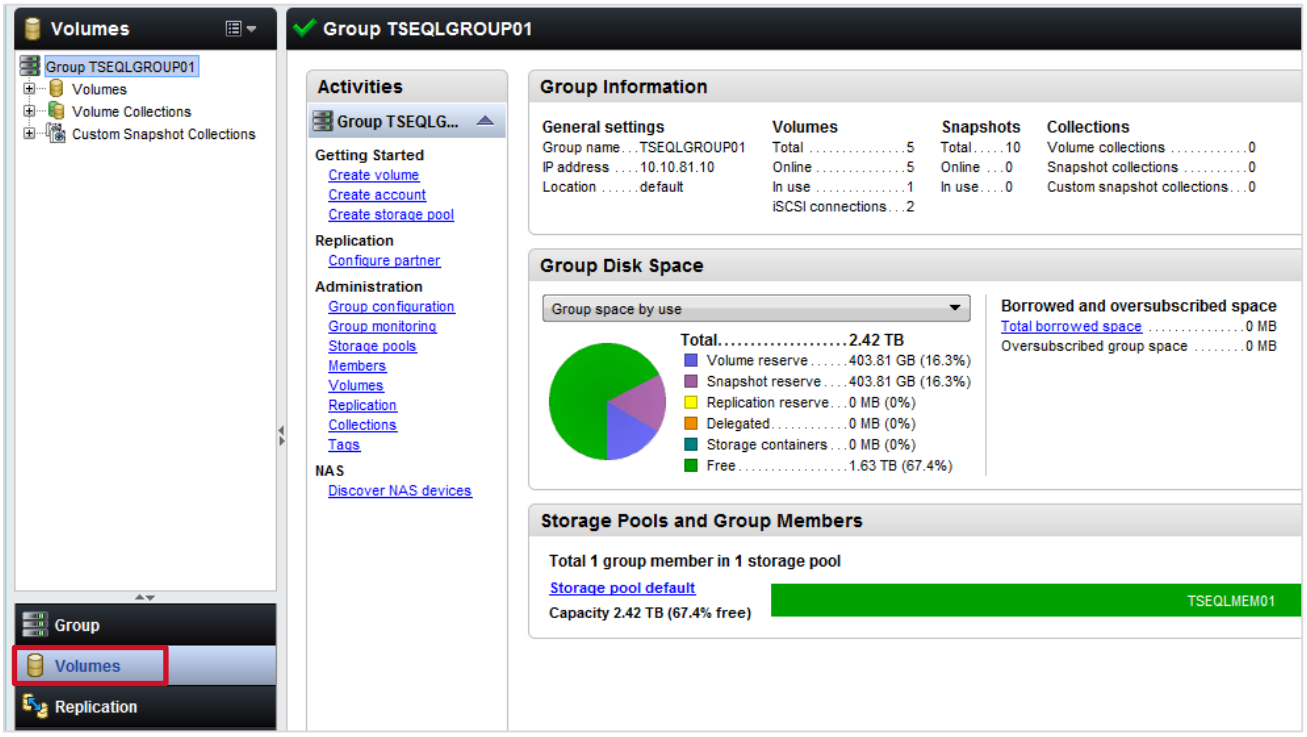
Note: Be sure to use the physical port IP addresses or iSCSI names, as using the virtual port information will not allow the import process.



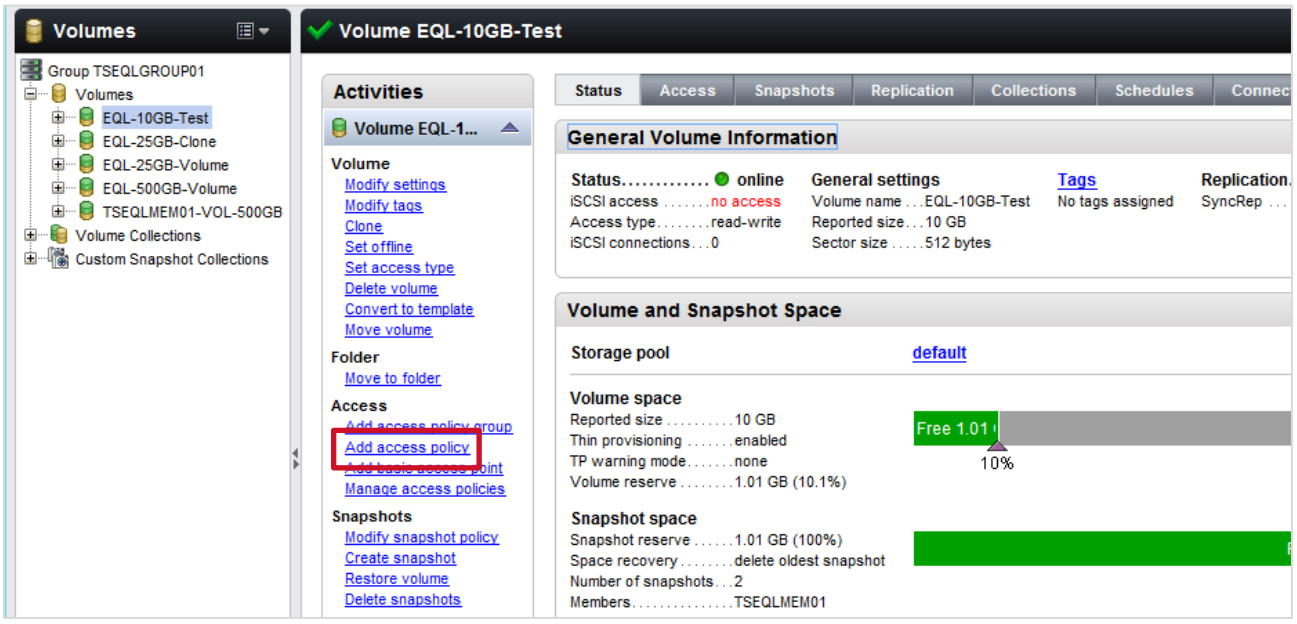
Perform the following steps to create and apply a PS Series access policy.

Note: An access policy created to allow SC Series arrays access to PS Series volumes can be used simultaneously with other access policies already in place. Refer to section 3.3 for more details.

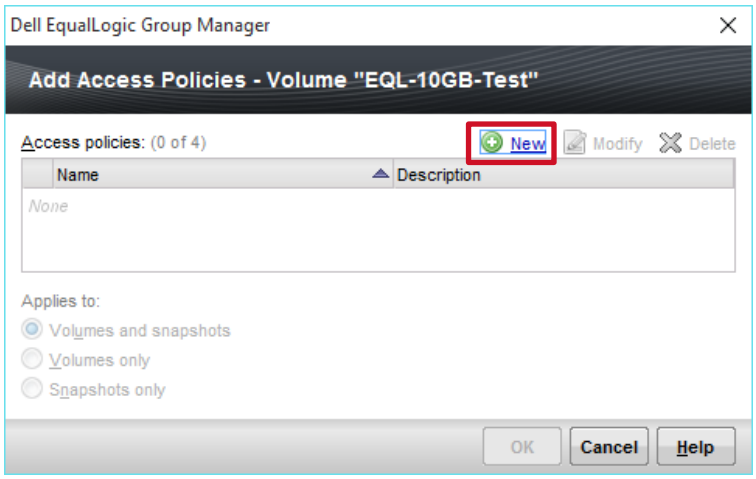
1. Log in to the **EqualLogic Group Manager** with group administrator credentials.
2. Click **Volumes** to display the volumes subtree.



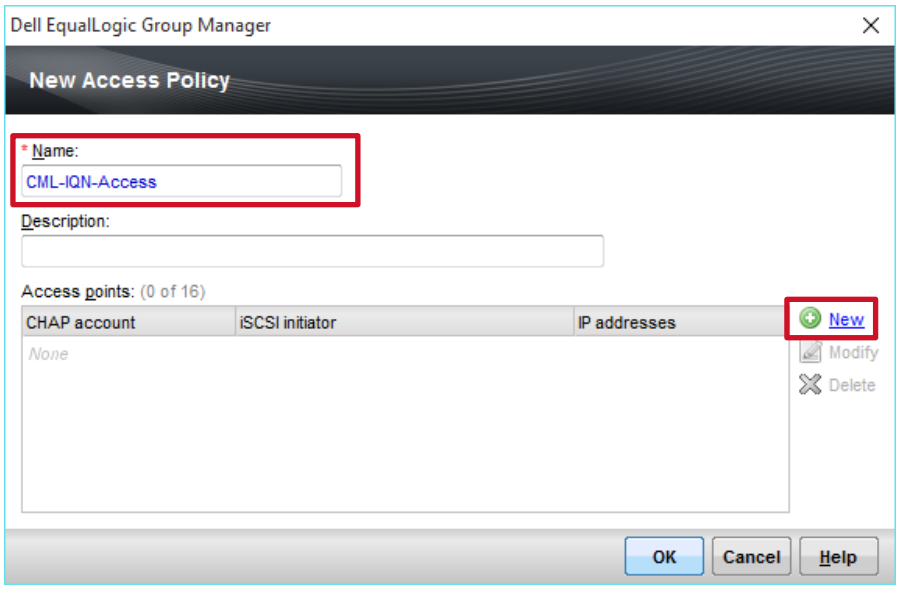
3. Expand the **Volumes** subtree and select a volume to modify.
4. In the Activities menu, click Add access policy.



5. In the **Add Access Policies** window, click **New**.



6. Assign a name to the policy and click **New** to add an access point.



The new extended access point window is displayed.

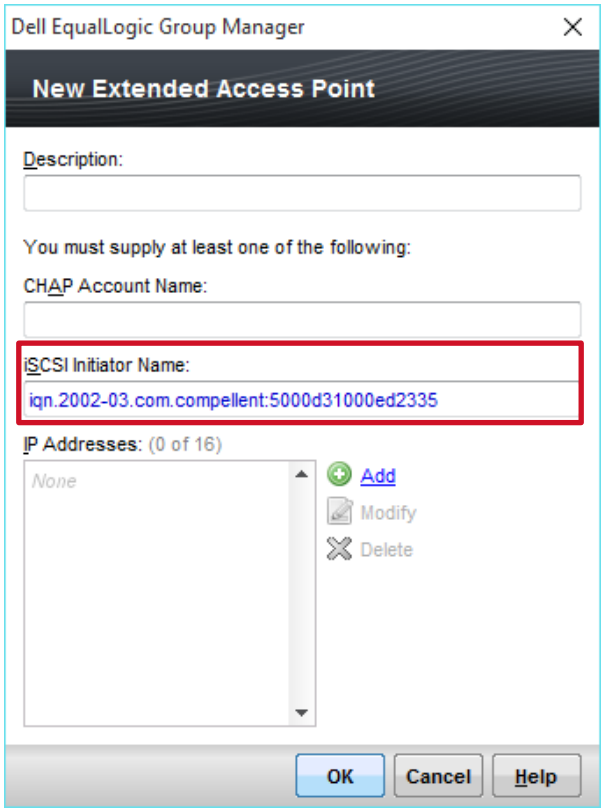
At this point, the SC Series array can be granted access by using the iSCSI initiator name or the IP address.

Note: The access method used to grant SC Series permission to PS Series volumes is a matter of personal preference. The Thin Import process works the same using either access method.

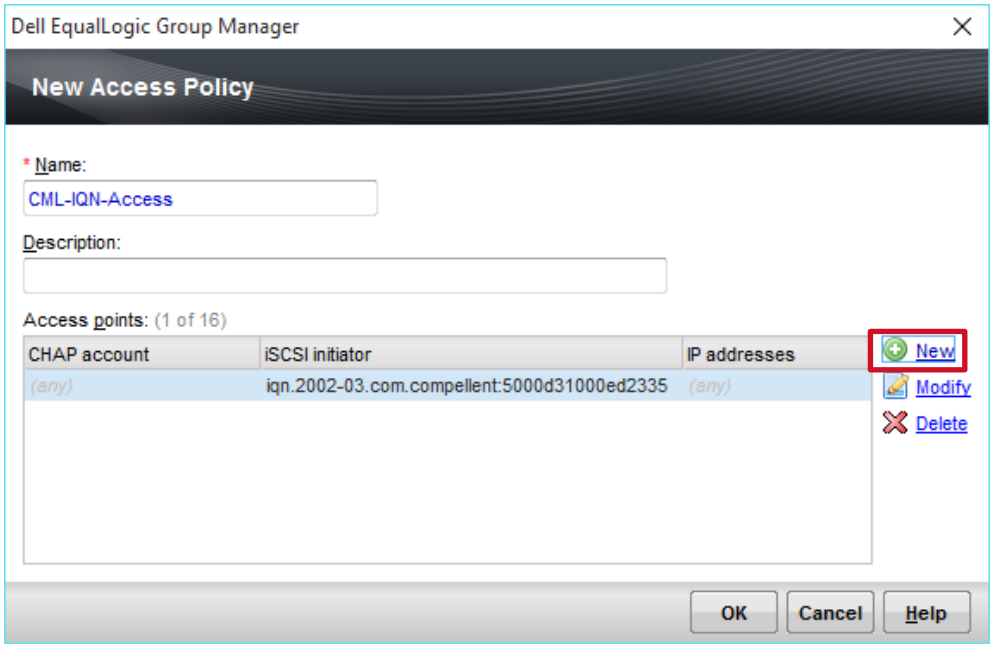
3.1.2 Grant access using iSCSI initiator name

Perform the following steps to allow SC Series storage access using the iSCSI initiator name:

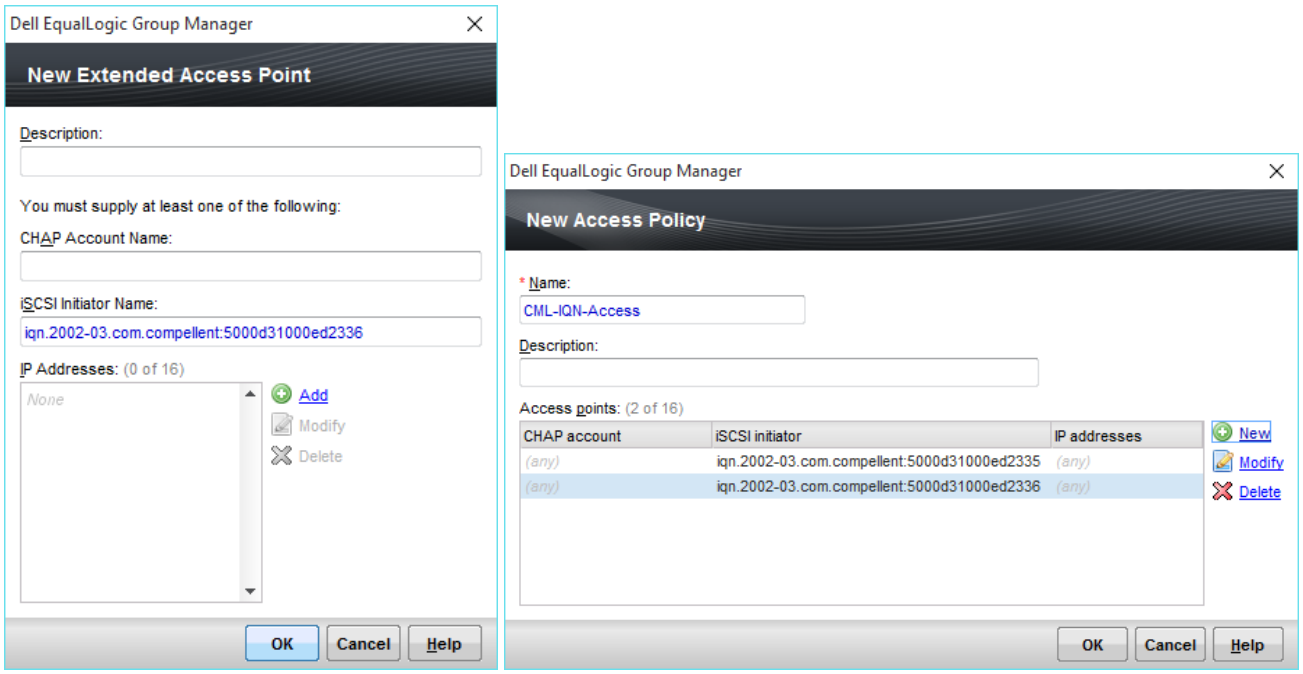
1. In the **New Extended Access Point** window, enter the SC Series **iSCSI Initiator Name** and click **OK**.



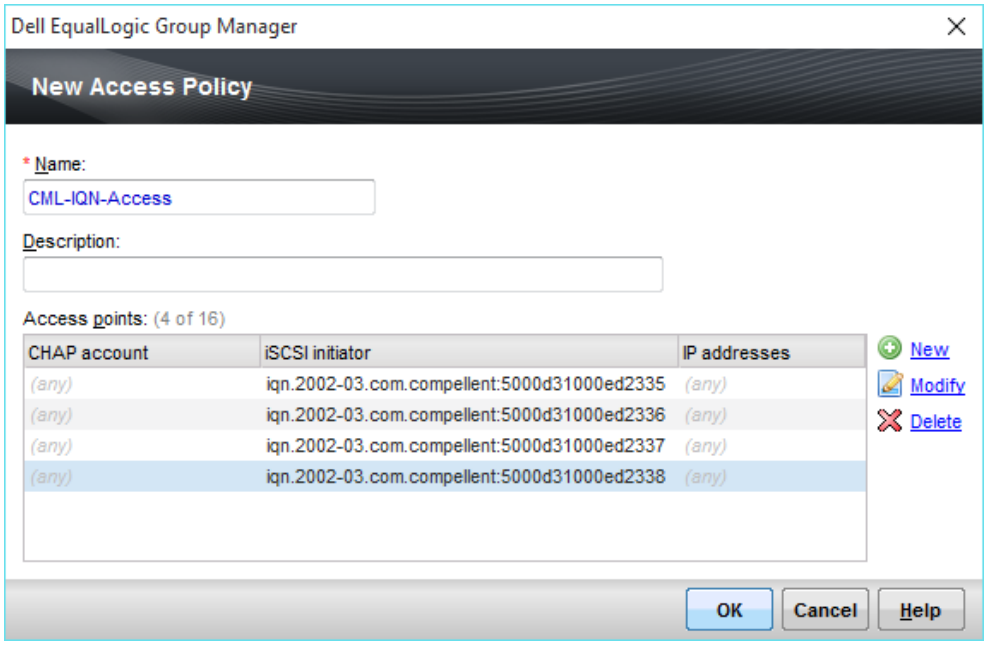
2. In the **New Access Policy** window, click **New**.



3. Enter an additional SC Series iSCSI initiator name and click **OK**.

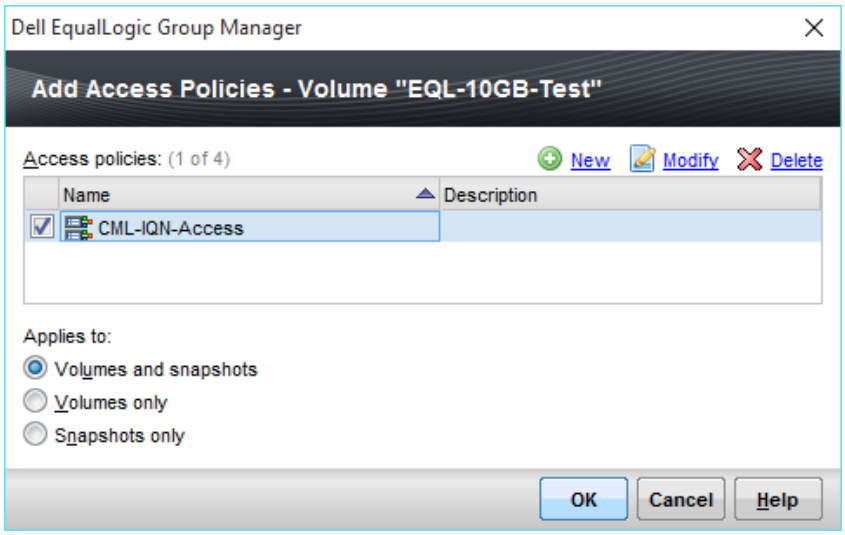


4. Repeat this process until all SC Series iSCSI initiator names are entered.

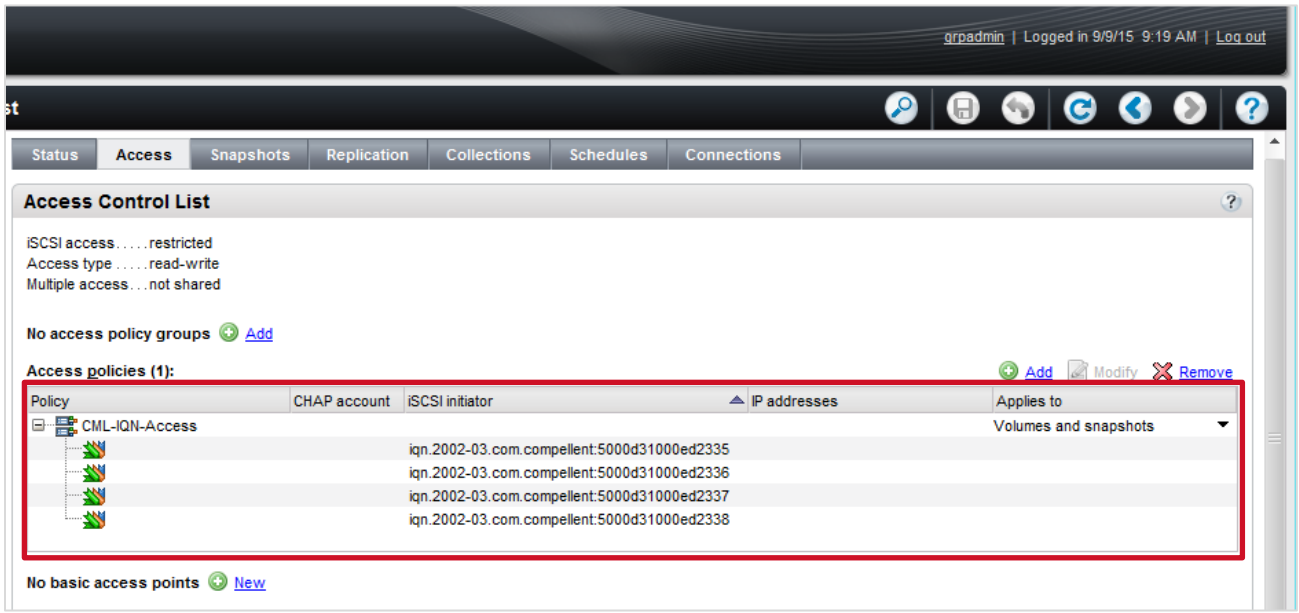


5. When finished, click **OK**.

6. Click **OK** again to apply the new access policy to the volume.



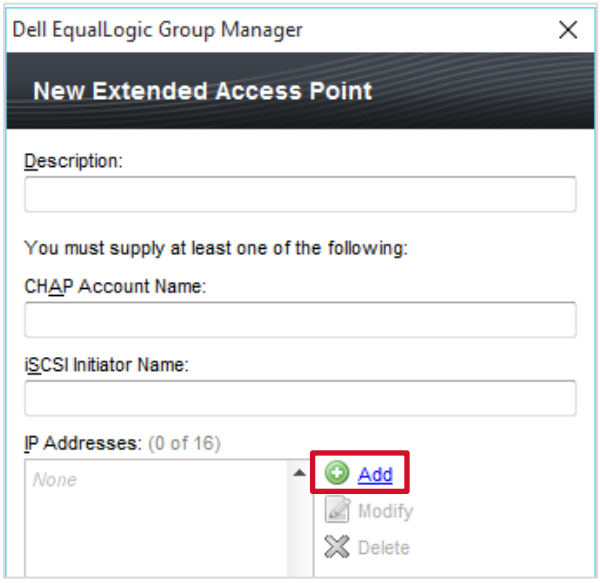
7. The newly applied access policy is displayed in the **Access Control List**.



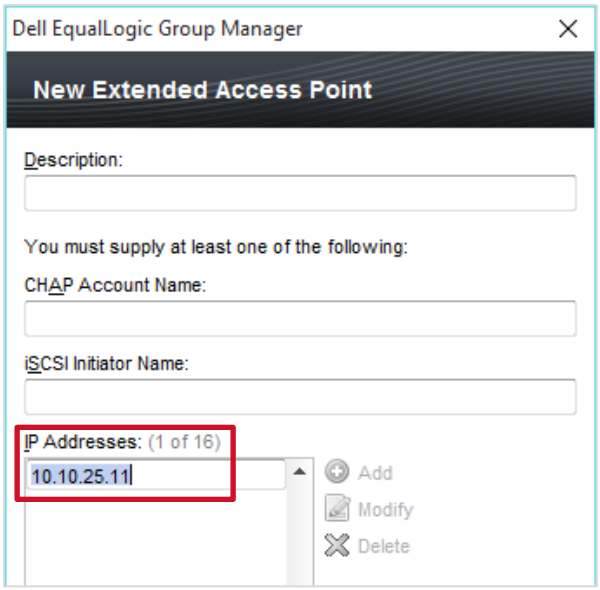
3.1.3 Grant access using iSCSI initiator IP address

Perform the following steps to allow SC Series storage access using the iSCSI initiator IP address:

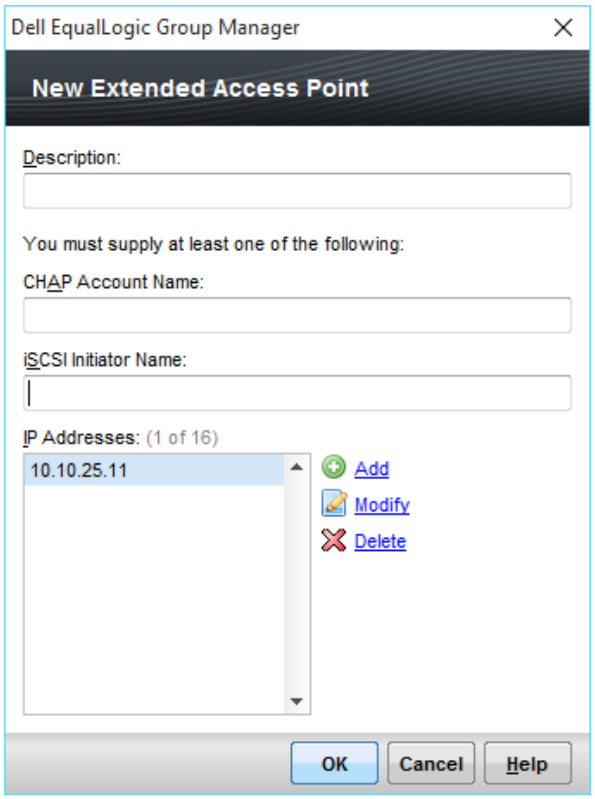
1. In the New Extended Access Point window, click Add.



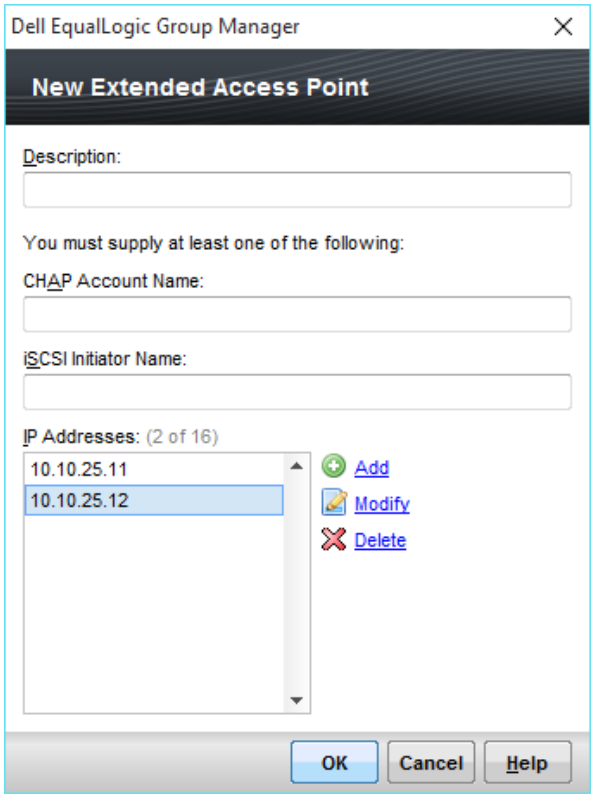
2. Enter an SC Series array iSCSI initiator IP address.



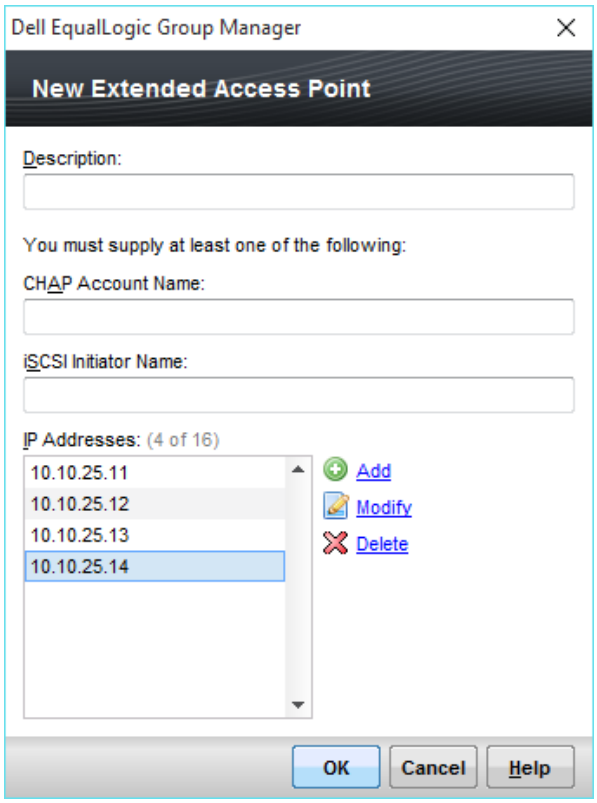
3. Click any area within the window to activate the menu options.



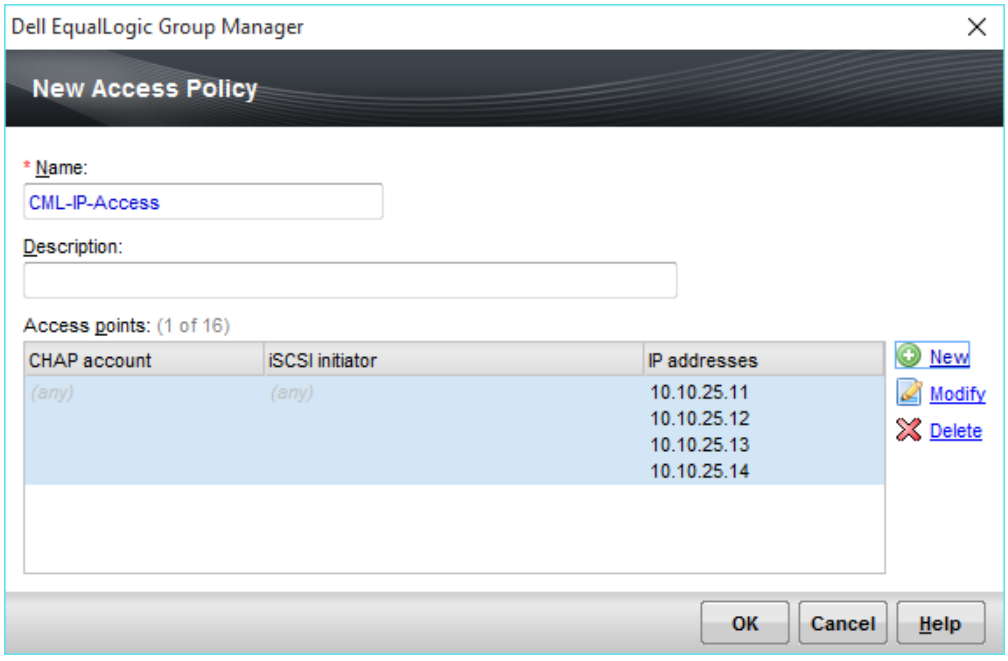
4. Click **Add** and enter another SC Series iSCSI initiator IP address.



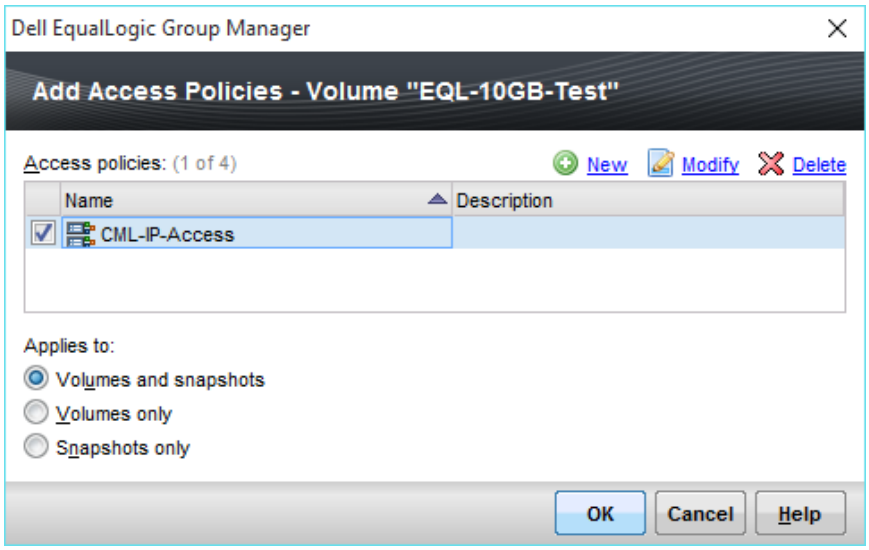
5. Repeat this process until all SC Series iSCSI initiator IP addresses are entered.



6. Click **OK** to close the New Extended Access Point window.
7. In the **New Access Policy** window, verify the correct IP addresses are listed and click **OK**.



8. Click **OK** to apply the new access policy to the volume.



9. The newly applied access policy is displayed in the **Access Control List**.

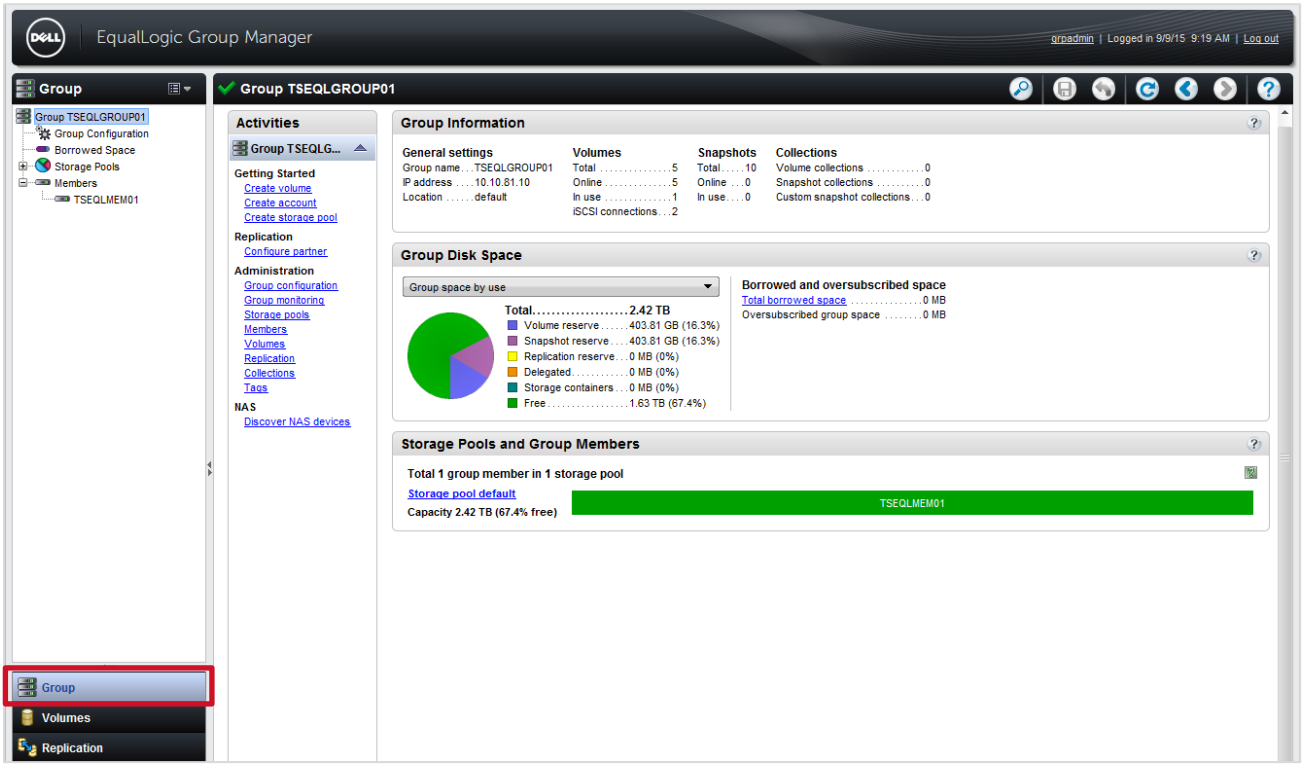
3.2 Applying access policies to multiple volumes

The access policy created in section 3.1 must be applied to all PS Series volumes that will be used during the Thin Import process. In environments where one or more access policies are already applied to a volume, an access policy group can be used to easily apply existing policies, as well as the new SC Series access policy, simultaneously.

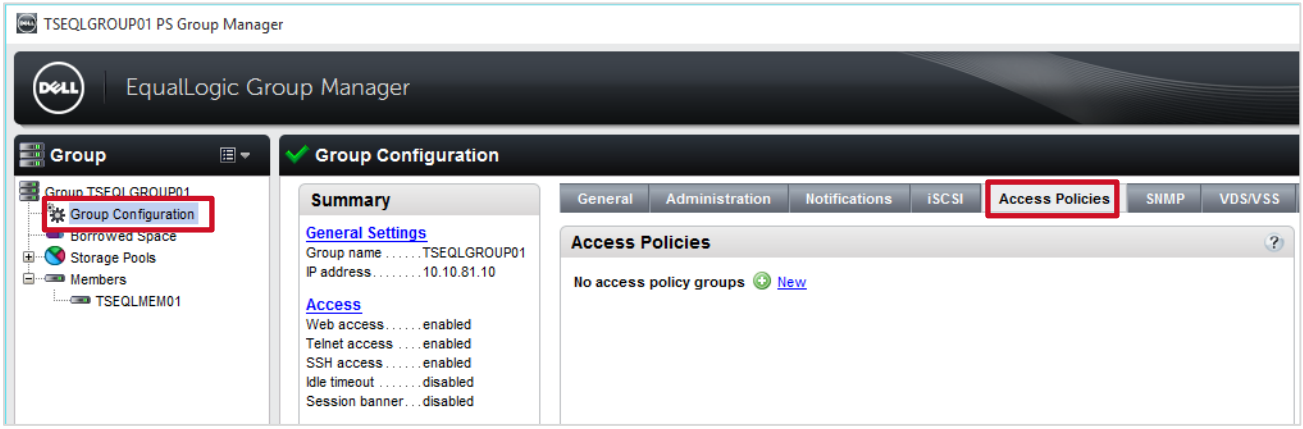
3.2.1 Apply access policy to multiple volumes

To apply the SC Series access policy to multiple volumes, perform the following steps:

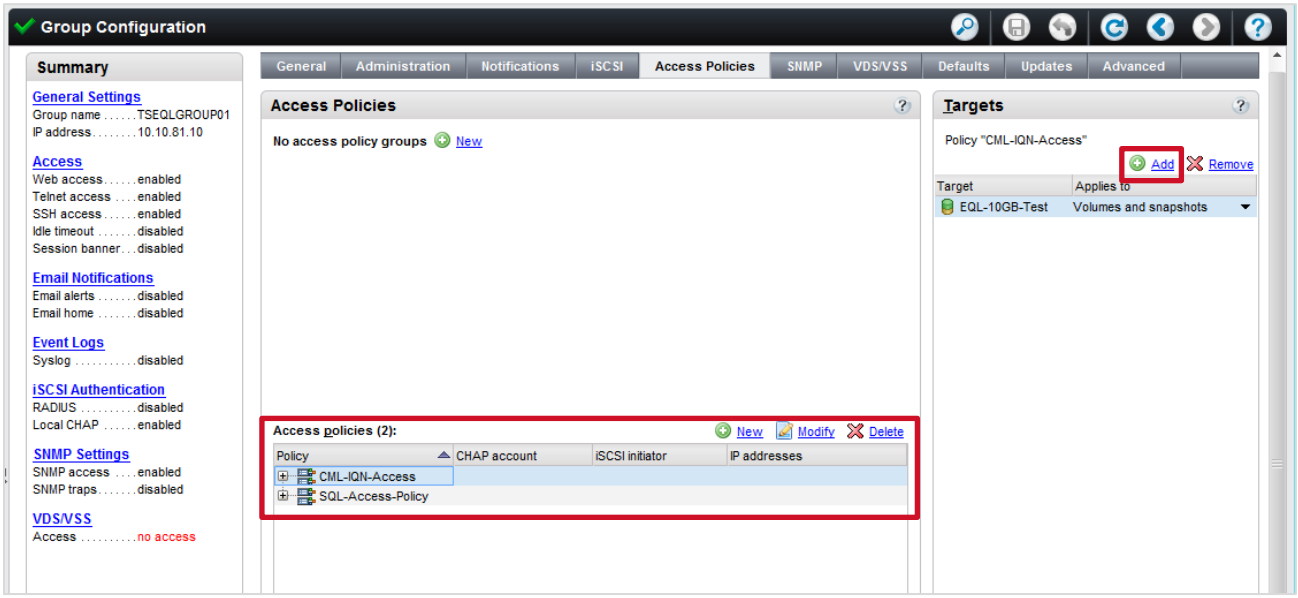
1. In **EqualLogic Group Manager**, click **Group** to display the group subtree.



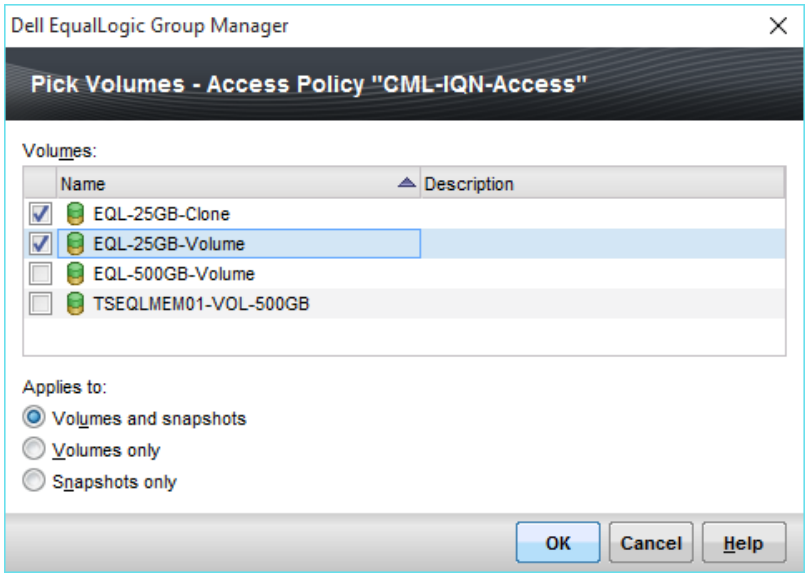
2. Select Group Configuration and click the Access Policies tab.



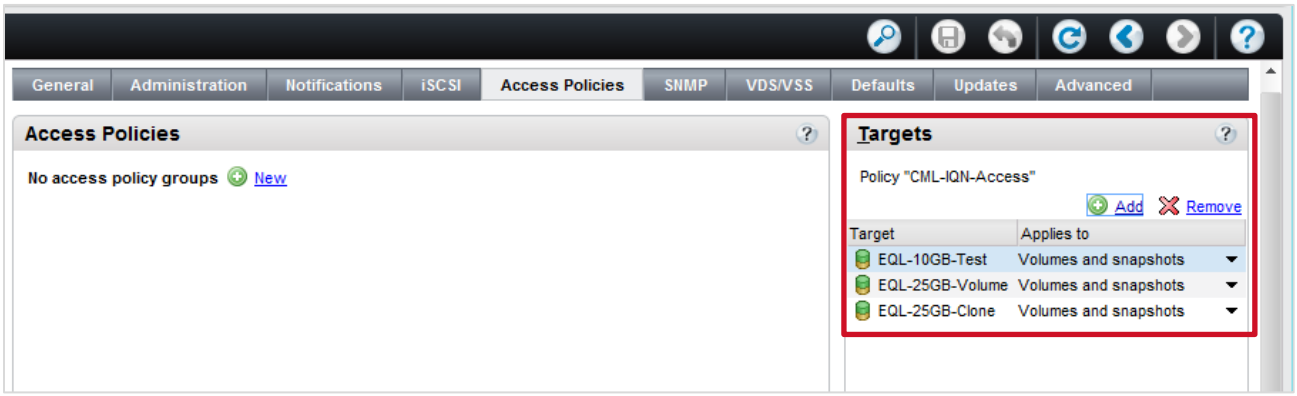
3. To apply a single access policy to multiple volumes, in the **Targets** area, select the policy, and click **Add**. Any volumes for which the policy is currently applied are displayed in the **Targets** window.



4. In the **Pick Volumes** window, select the volumes the policy will be applied to and click **OK**.



The newly selected volumes appear in the **Targets** area.

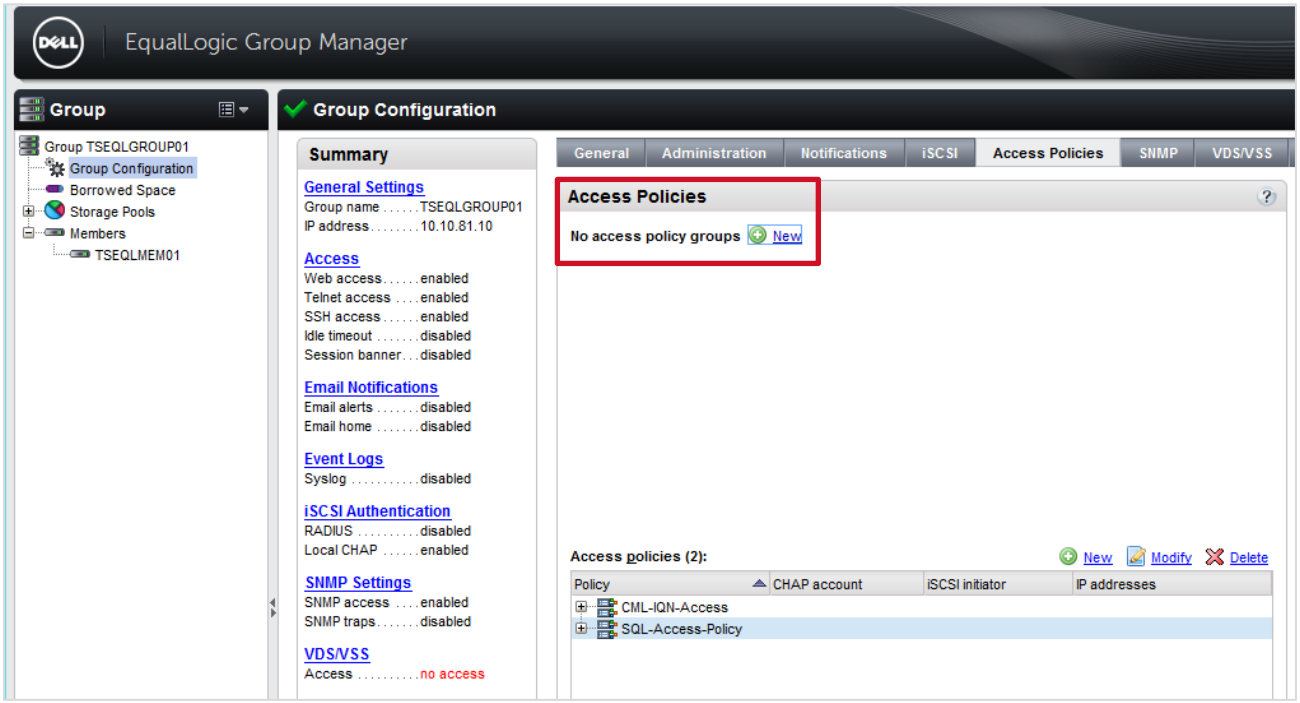


3.2.2 Apply access policy to volumes with existing access policies

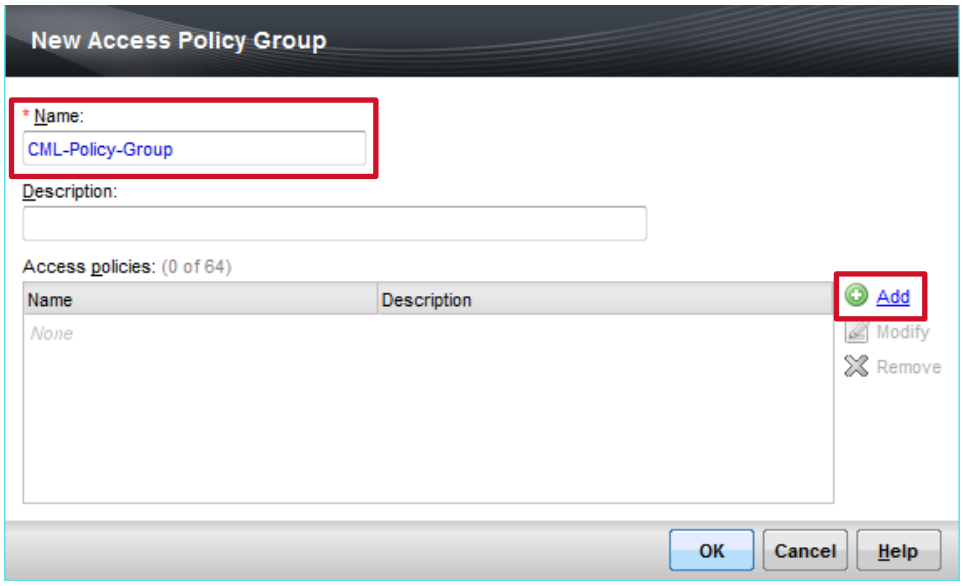
Apply the SC Series access policy to volumes with existing access policies using an access policy group.

Note: Multiple access policies can be applied to a volume without the use of an access policy group. For ease of administration, an access policy group allows multiple access policies to be managed as a single entity.

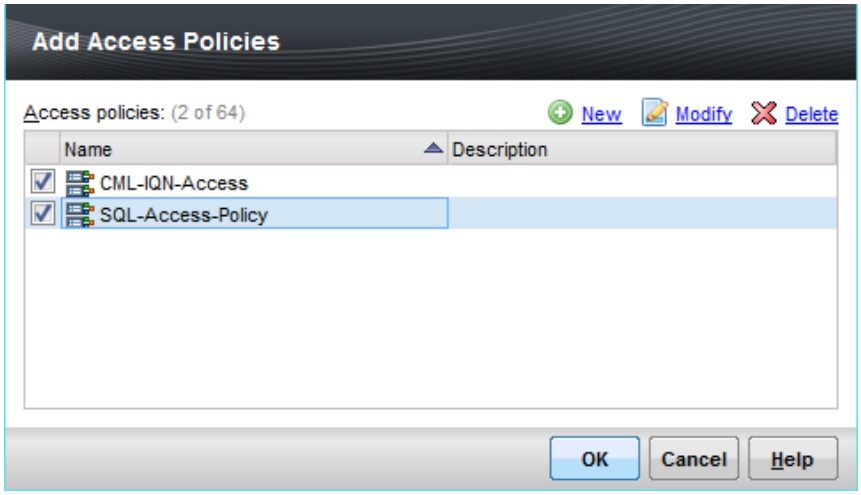
1. In the **Access Policies** area, click **New** to create a new access policy group.



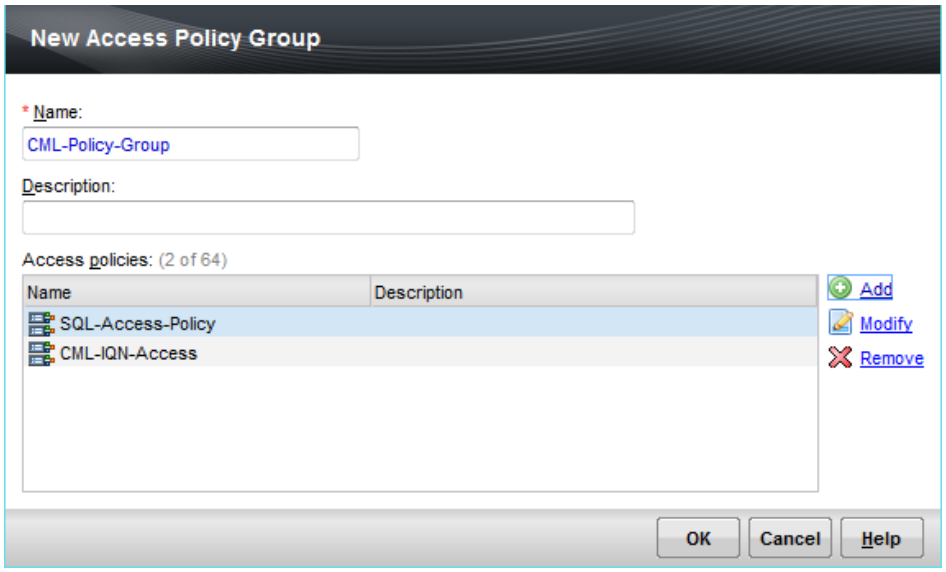
2. Assign a **Name** to the new access policy group and click **Add**.



3. Select the access policies to add to the group and click **OK**.



4. Verify the policies added to the group and click **OK**.

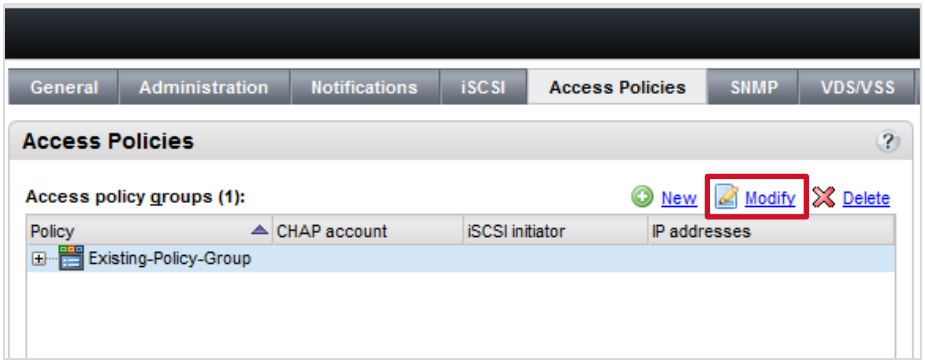


5. The new access policy group is listed.

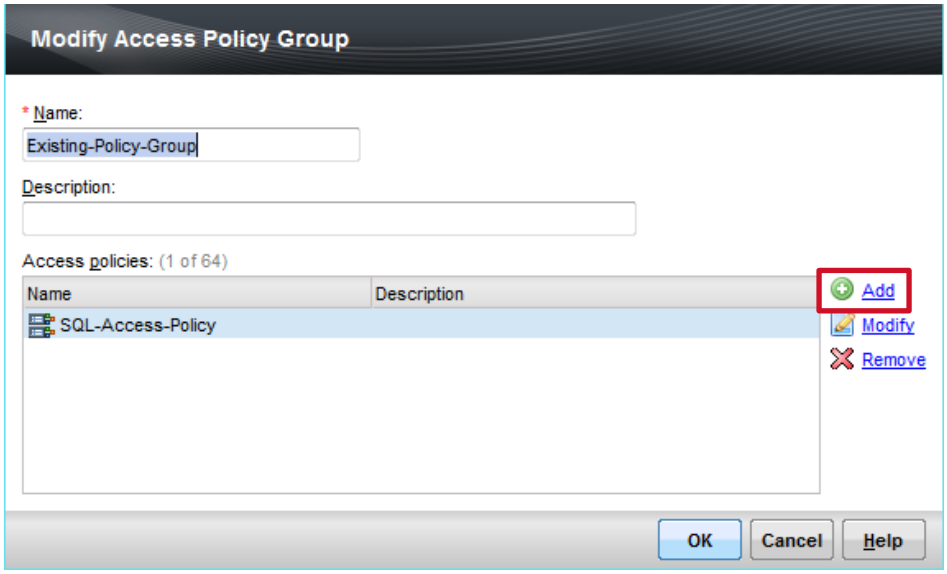
3.2.3 Apply access policy to an existing access policy group

Apply the SC Series access policy to an existing access policy group with the following steps.

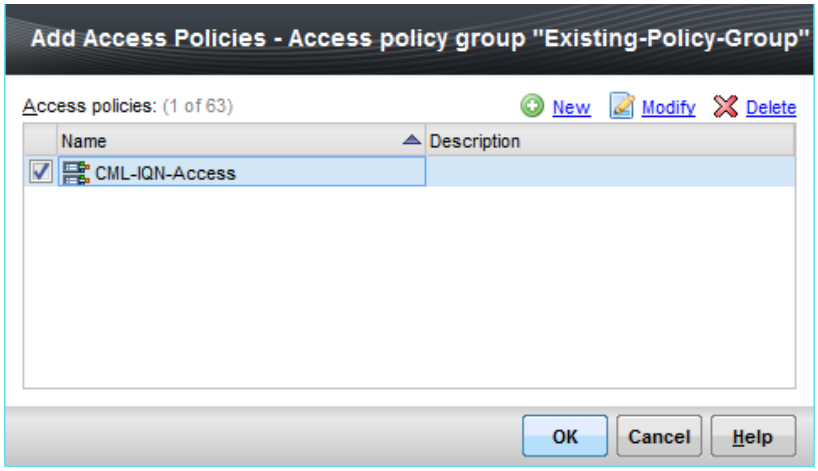
1. Select the existing access policy group and click **Modify**.



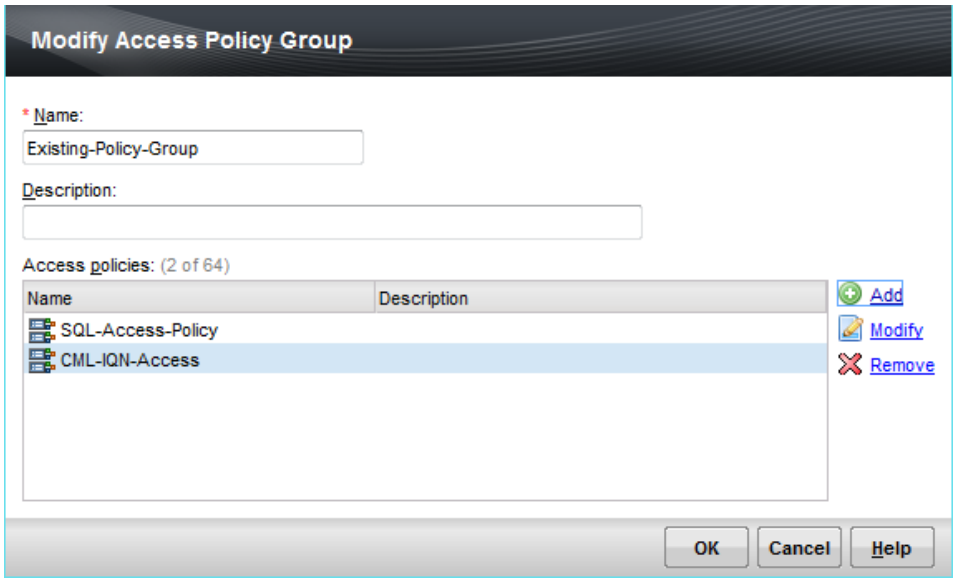
2. In the Modify Access Policy Group window, click Add.



3. Select the SC Series access policy and click **OK**.



4. Verify the access policies in the group and click **OK**.

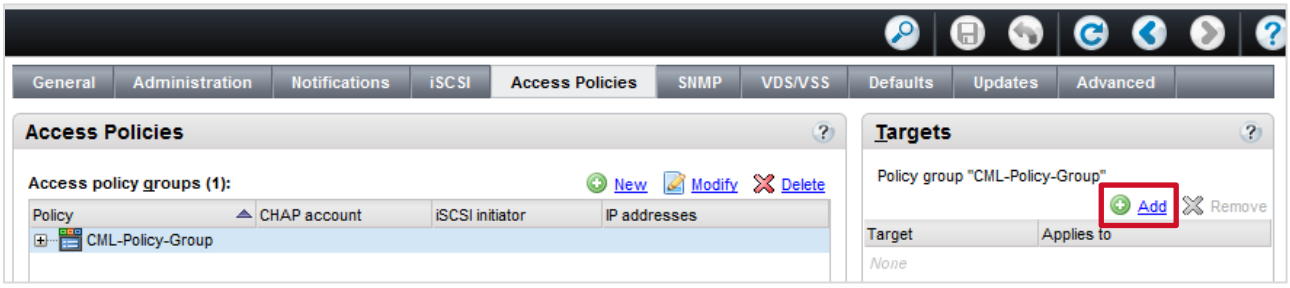


The SC Series access policy is automatically applied to all volumes that are part of the existing access policy group.

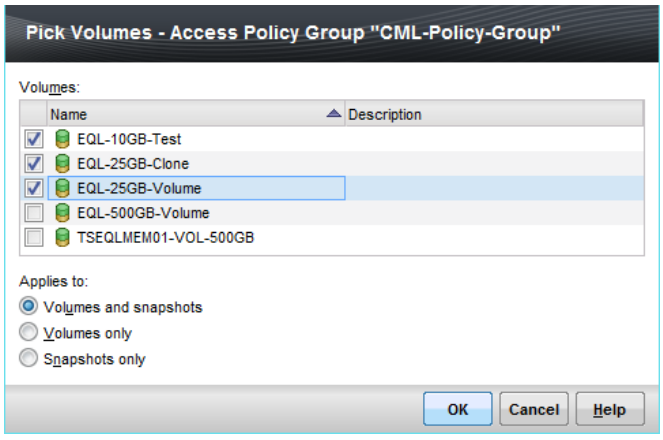
3.2.4 Apply access policy group to multiple volumes

Perform the following steps to apply an access policy group to multiple volumes:

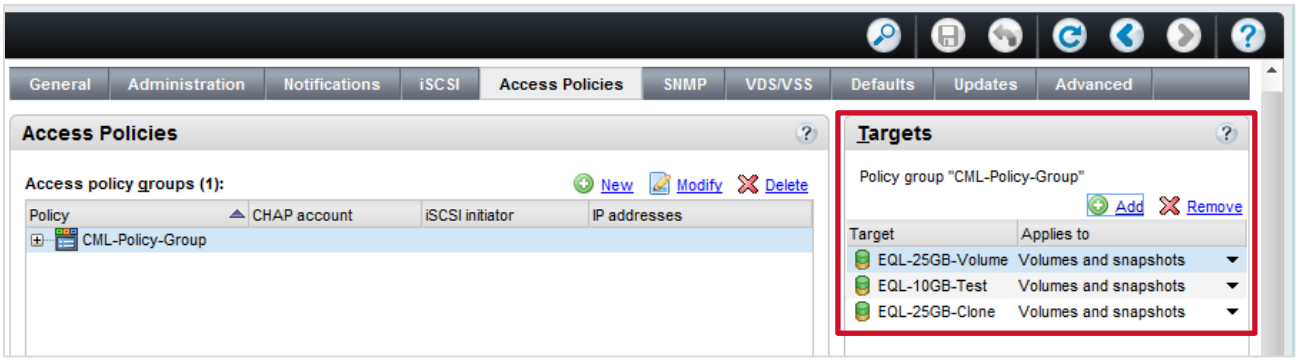
1. In the **Targets** area, select the access policy group and click **Add**.



2. In the **Pick Volumes** window, select the volumes the group will be applied to and click **OK**.



3. The newly selected volumes now appear in the **Targets** area.

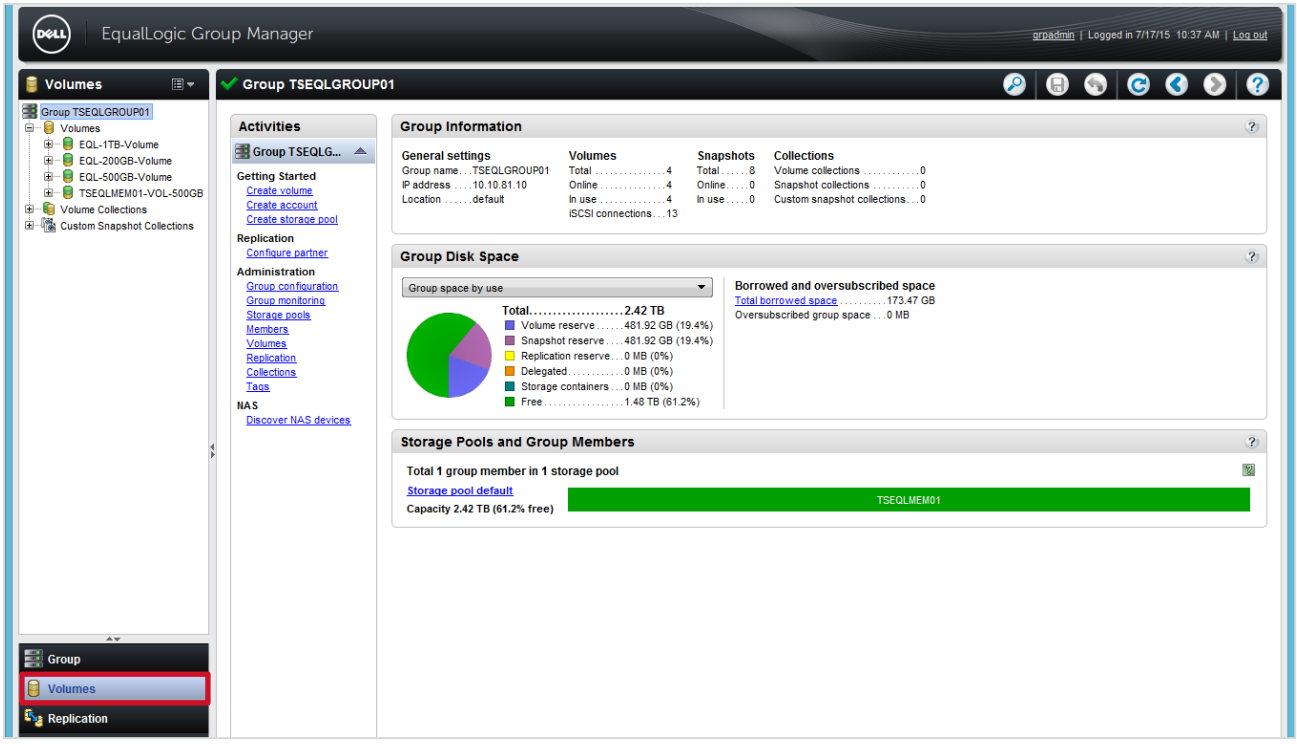


3.3 Allow simultaneous iSCSI connections to volumes

By default, PS Series volumes allow access to a single iSCSI initiator. When connected to a PS Series array, each individual SC Series iSCSI network connection is treated as a separate initiator. In order for all available paths from the SC Series array to connect to the PS Series volume, the volume must be configured to allow simultaneous connections from multiple initiators.

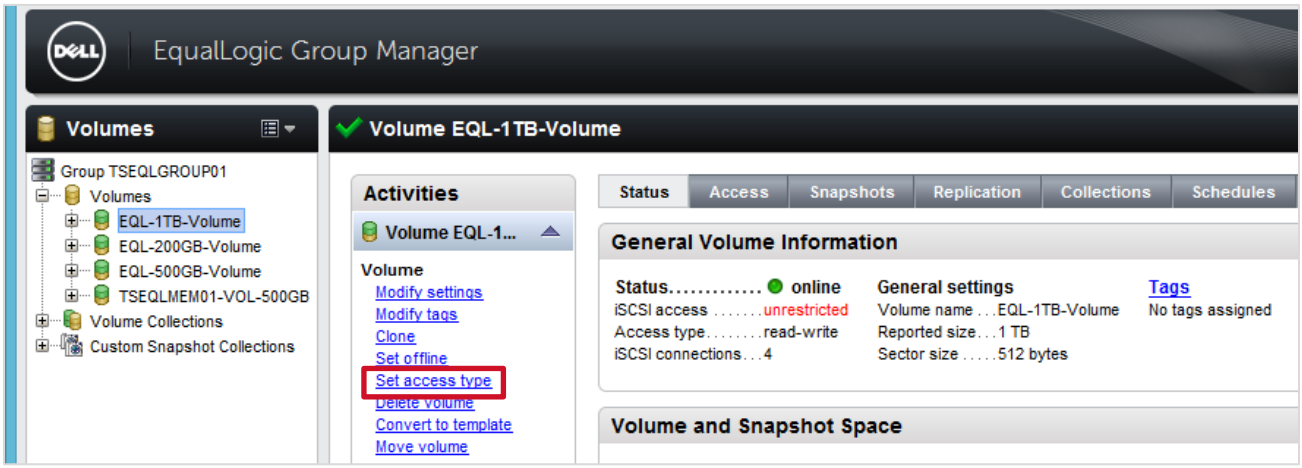
Note: Repeat the following steps for each PS Series volume that will be imported to the SC Series array.

1. Log in to **EqualLogic Group Manager** using group administrator credentials.
2. Click **Volumes**.

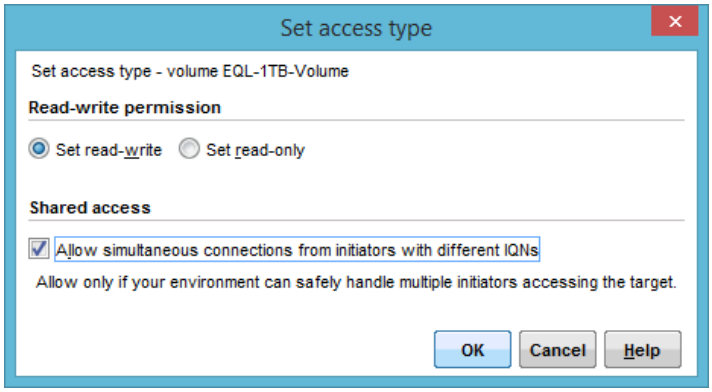


3. In the **Volumes** subtree, select a volume to modify.

4. In the Activities menu, select Set access type.



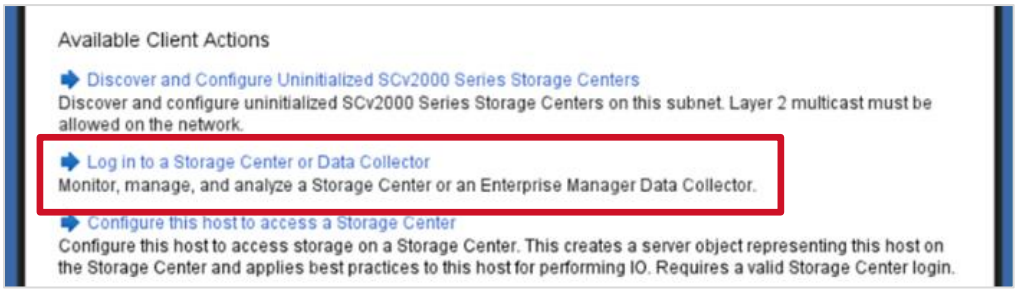
5. In the Set access type window > Shared access area, select the option to Allow simultaneous connections from initiators with different IQNs.



6. Click **OK**.

3.4 Establishing an SC Series remote iSCSI connection to a PS Series array

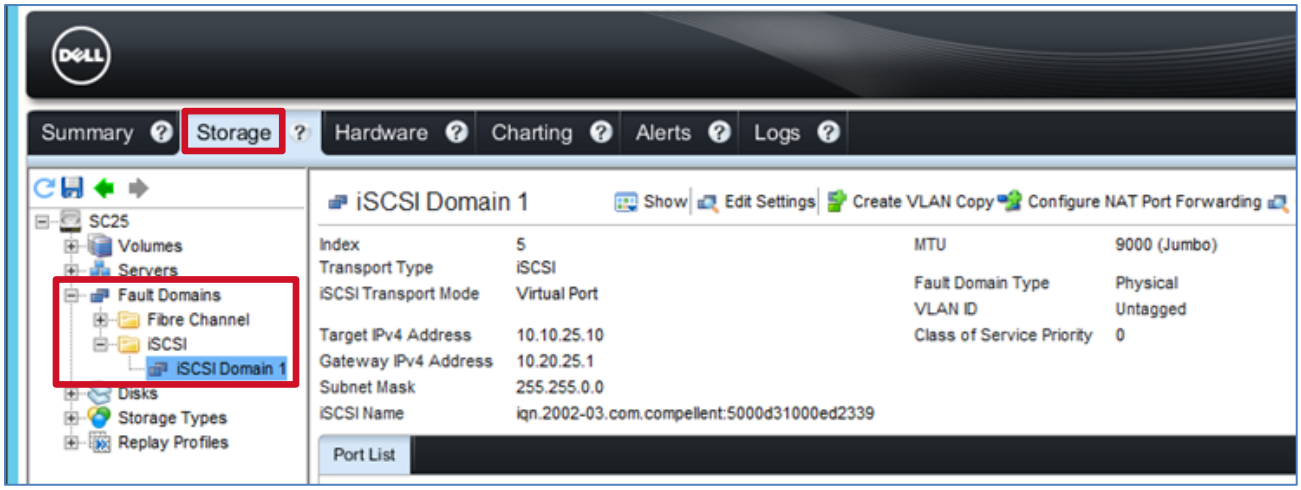
1. Open the Dell Storage Client and click Log in to a Storage Center or Data Collector.



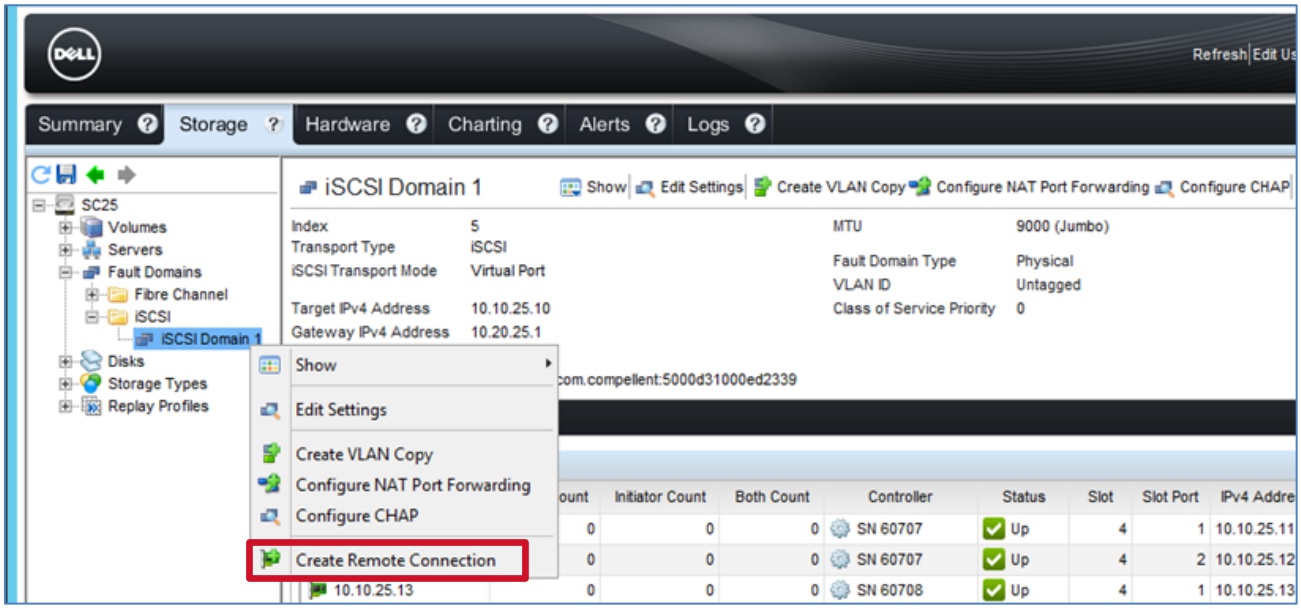
Note: The Dell Storage Client can connect to a Dell Storage Manager Data Collector or connect directly to SC Series storage. Both options are supported with the Thin Import process. The instructions in this section focus only on connecting directly to SC Series storage. Using Thin Import with PS Series volumes requires Dell Storage Client/Dell Storage Manager Data Collector version 2015 R2 or later.

2. Log in to the Dell Storage Client using administrative credentials.
3. Click the **Storage** tab and navigate to **Fault Domains > iSCSI**.
4. Select the iSCSI fault domain to be used for the import process.

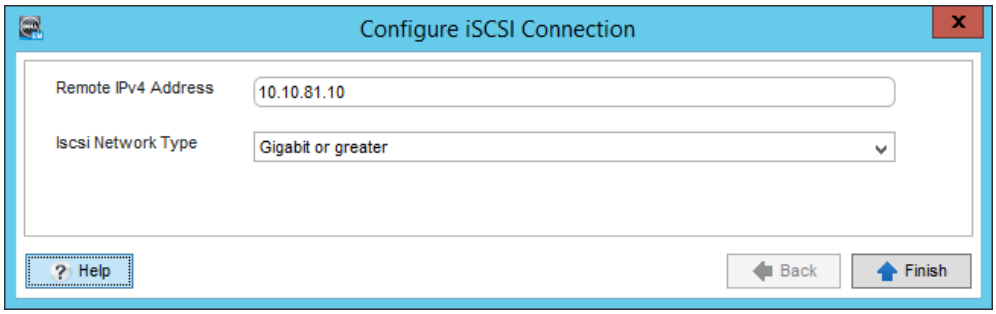
Note: On systems with more than one iSCSI fault domain, select a fault domain that is configured on the same network as the PS Series array.



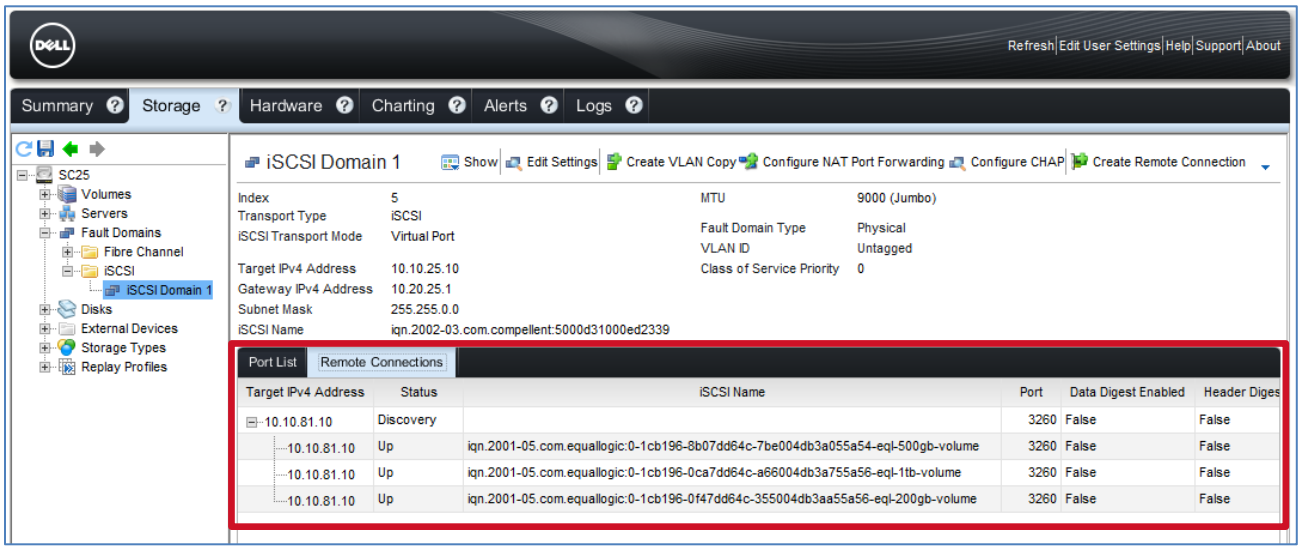
5. Right-click the iSCSI fault domain and select **Create Remote Connection**.



6. In the **Configure iSCSI Connection** window, enter the group IP address of the PS Series array and set the iSCSI network type to **Gigabit or greater**. Click **Finish**.



7. Once the connection has been established, on the displayed confirmation window, click **OK**.
8. The remote connection to the PS Series array is displayed in a new tab. Volumes available for import are listed with a status of **Up**.



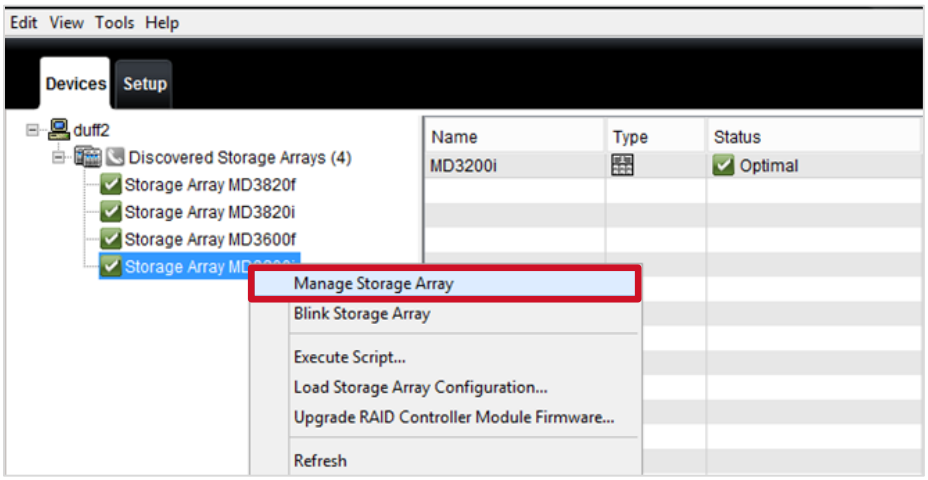
4 Preparing MD3 volumes for import

This section details how to create a remote connection from the SC Series array to an iSCSI-connected or FC-connected MD3 array.

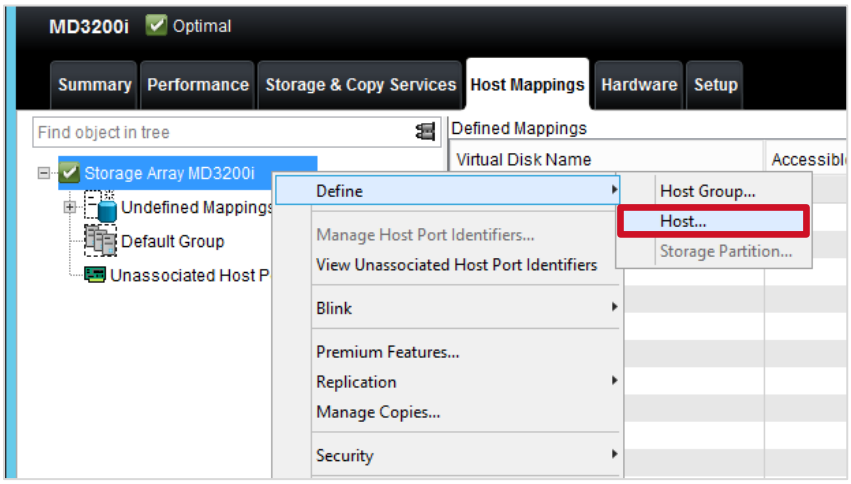
4.1 Configuring iSCSI volume access

In order to present volumes to the SC Series array, a server host object needs to be created on the MD3 array. The server host object is mapped to the SC Series array by using the SC Series iSCSI initiators. To create a server host object on the MD3 array, perform the following tasks:

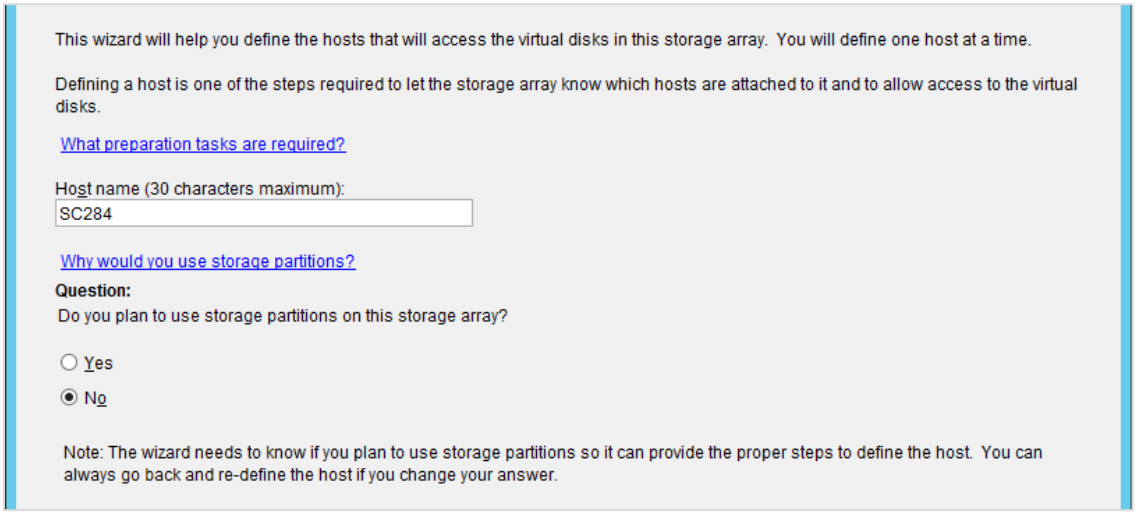
1. Connect to the MD3 array using the **PowerVault Modular Disk Storage Manager** client.
2. Under **Discovered Storage Arrays**, right-click the array to manage and select **Manage Storage Array**.



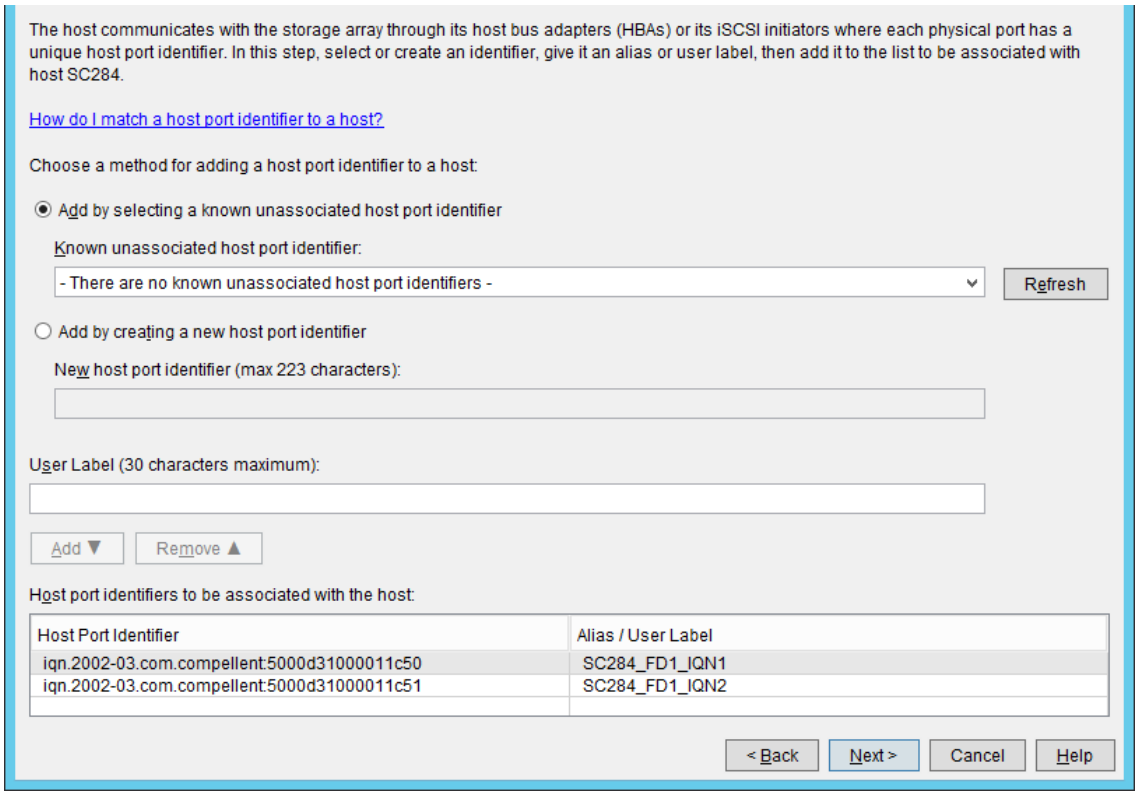
a. When the **Array Management** window appears, click the **Host Mappings** tab.
b. Right-click the array, and select **Define > Host**.



3. In the **Specify Host Name** window, enter the name of the SC Series array. Select **No** to use storage partitions. Click **Next**.

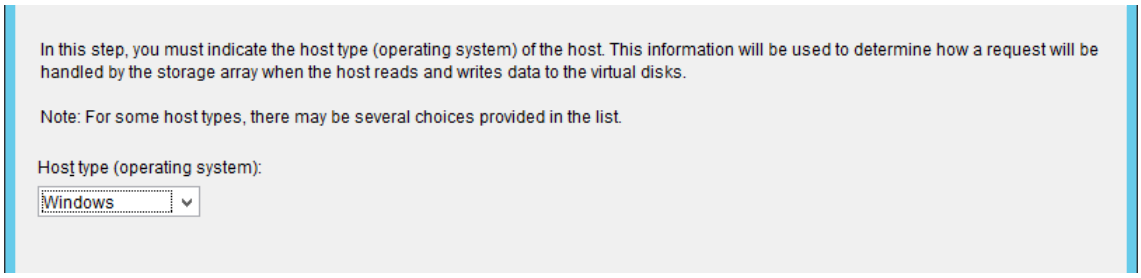


4. Verify that **Add by selecting a known unassociated host port identifier** is selected. Select an SC Series IQN from the drop-down list.
5. Assign a user label and click **Add**.
6. Repeat this process for all listed SC Series IQNs. When complete, click **Next**.



c. In the **Host type** drop-down menu, select **Windows**.

Note: Selecting a host type other than Windows will cause imports from the MD3 array to fail.

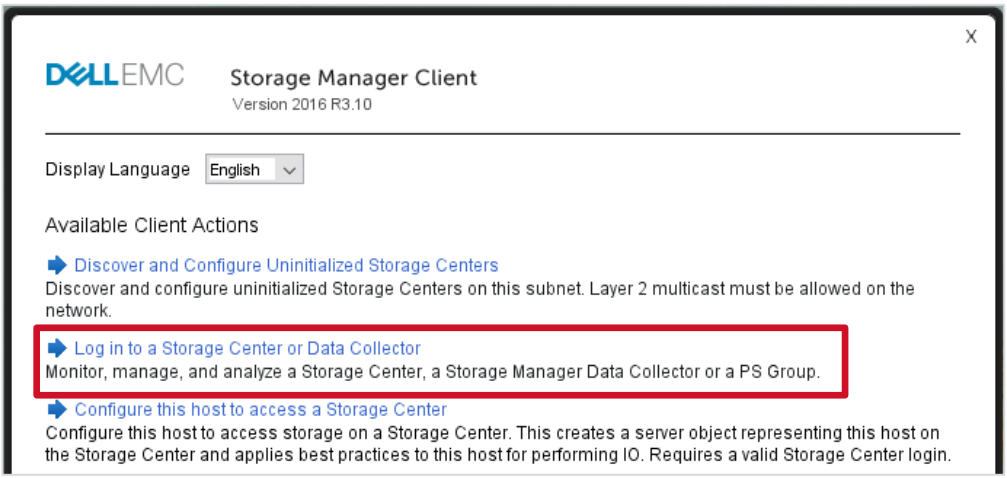


d. Click **Next**.
e. Click **Finish** to create the host.

4.2 Configuring Fibre Channel volume access

In order for the MD3 array to present volumes to the SC Series array, a server host object representing the SC Series array needs to be created on the MD3 array. The MD3 server host object is mapped to the SC Series array using the World Wide Names (WWNs) of the Fibre Channel HBAs in the SC Series array. To obtain the WWNs associated with the SC Series array, perform the following steps:

1. Open the Dell Storage Client and click Log in to a Storage Center or Data Collector.

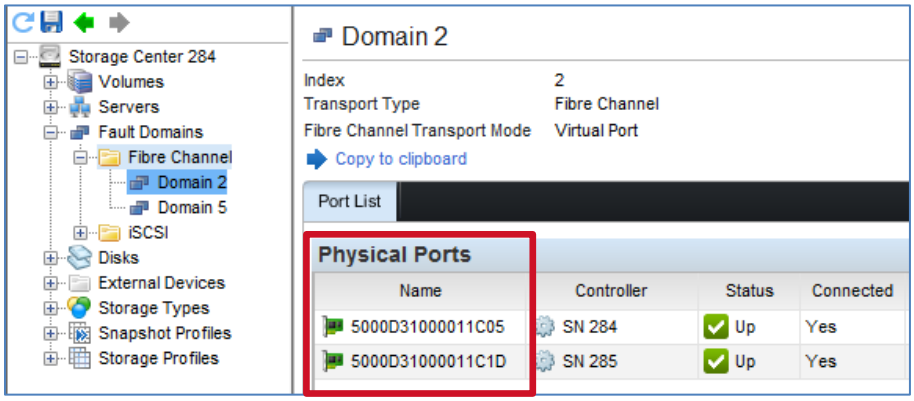


Note: The Dell Storage Client can connect to a Dell Storage Manager Data Collector or connect directly to SC Series storage. Both options are supported with the Thin Import process. The instructions in this section focus only on connecting directly to SC Series storage. Using Thin Import with MD3 volumes requires client version 2016 R3.10 or later.

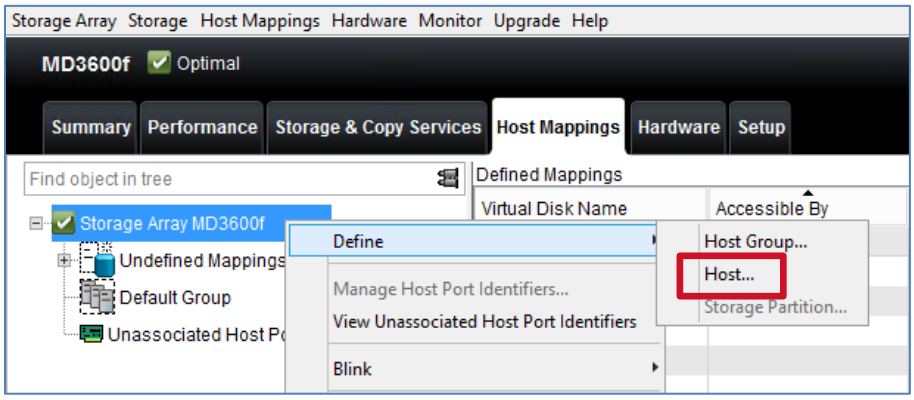
2. Log in to the Dell Storage Client using administrative credentials.
3. Click the Storage tab and navigate to Fault Domains > Fibre Channel.
4. Expand the **Fibre Channel** folder and select a fault domain.

5. The WWNs used for that fault domain are listed under **Physical Ports**.

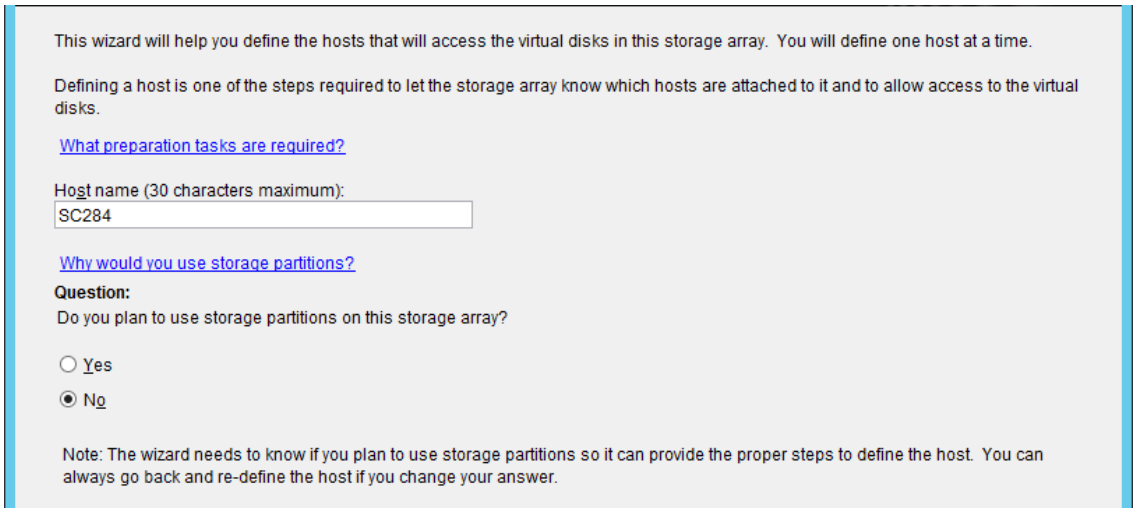
Note: On SC Series arrays with more than one fault domain, record the Physical Port WWNs for each fault domain zoned to the MD3 Series array.



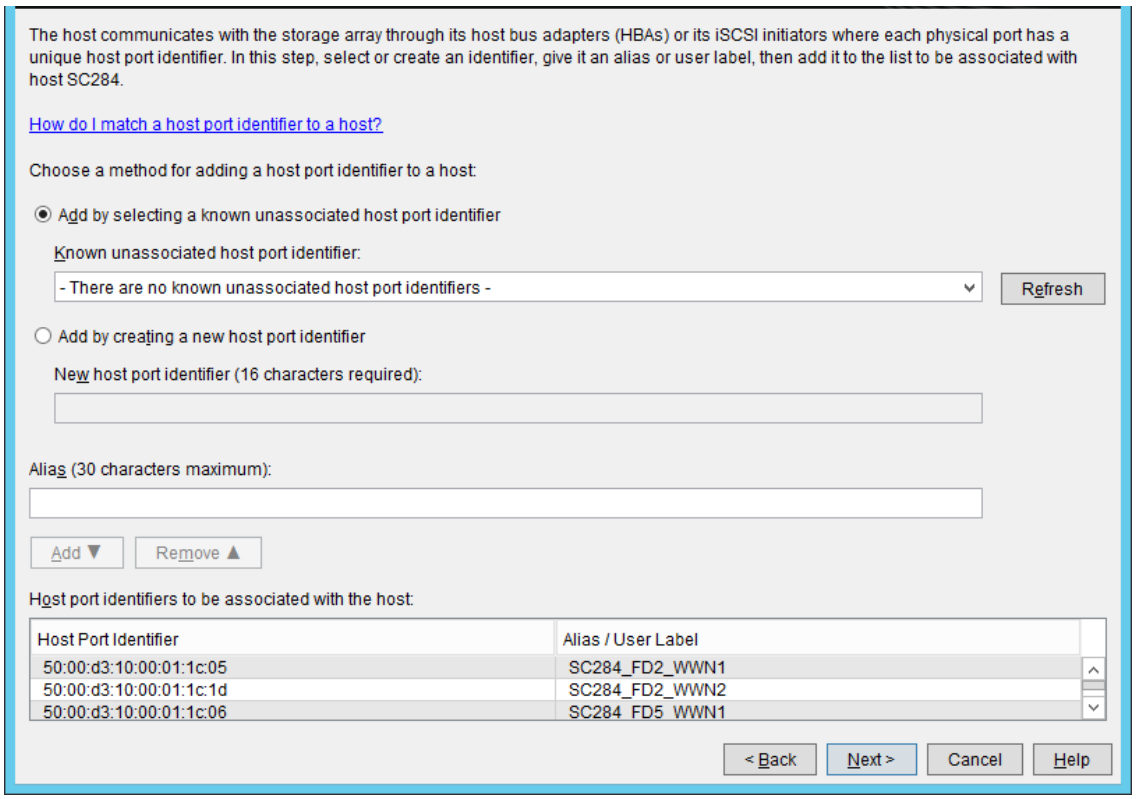
6. Open the **PowerVault Modular Disk Storage Manager** (Array Management window) and connect to the MD3 array.
7. Click the **Host Mappings** tab.
8. Right-click the array, and select **Define > Host**.



9. In the **Specify Host Name** window, enter the name of the SC Series array. Select **No** to use storage partitions. Click **Next**.

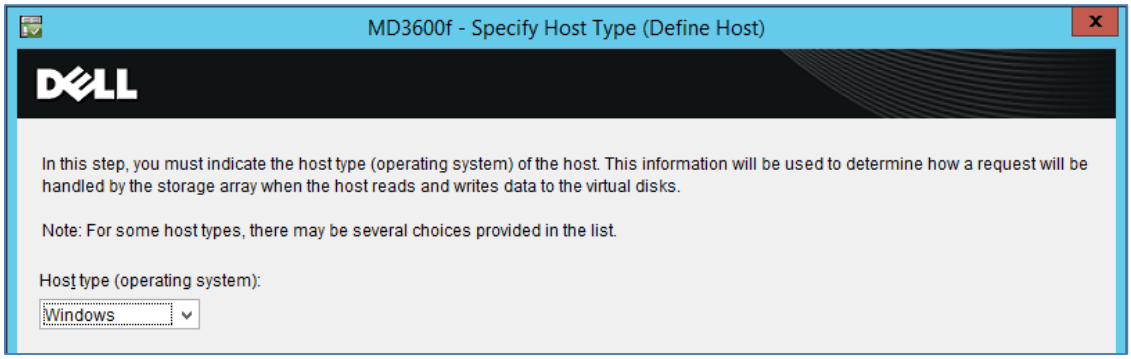


10. Verify that **Add by selecting a known unassociated host port identifier** is selected. Select an SC Series WWN from the drop-down list.
11. Assign a user label and click **Add**.
12. Repeat this process for all listed SC WWNs. When complete, click **Next**.



a. In the **Host type** drop-down, select **Windows**.

Note: Selecting a host type other than Windows will cause imports from the MD3 array to fail.



b. Click **Next**.
c. Click **Finish** to create the host.

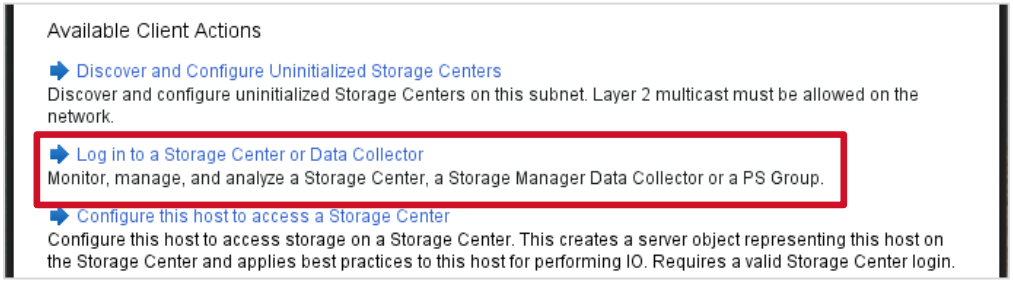
4.3 Mapping MD3 volumes to an SC Series array

Prior to importing MD3 volumes to an SC Series array, the volume(s) to import must be mapped to the SC Series server host object that was created on the MD3 array previously.

Changing the mapping of volumes in an MD3 array is covered in the online and offline importing steps in section 7 or 8.2.

4.4 Establishing an SC Series remote iSCSI connection to an MD3 array

1. Open the Dell Storage Client and click Log in to a Storage Center or Data Collector.

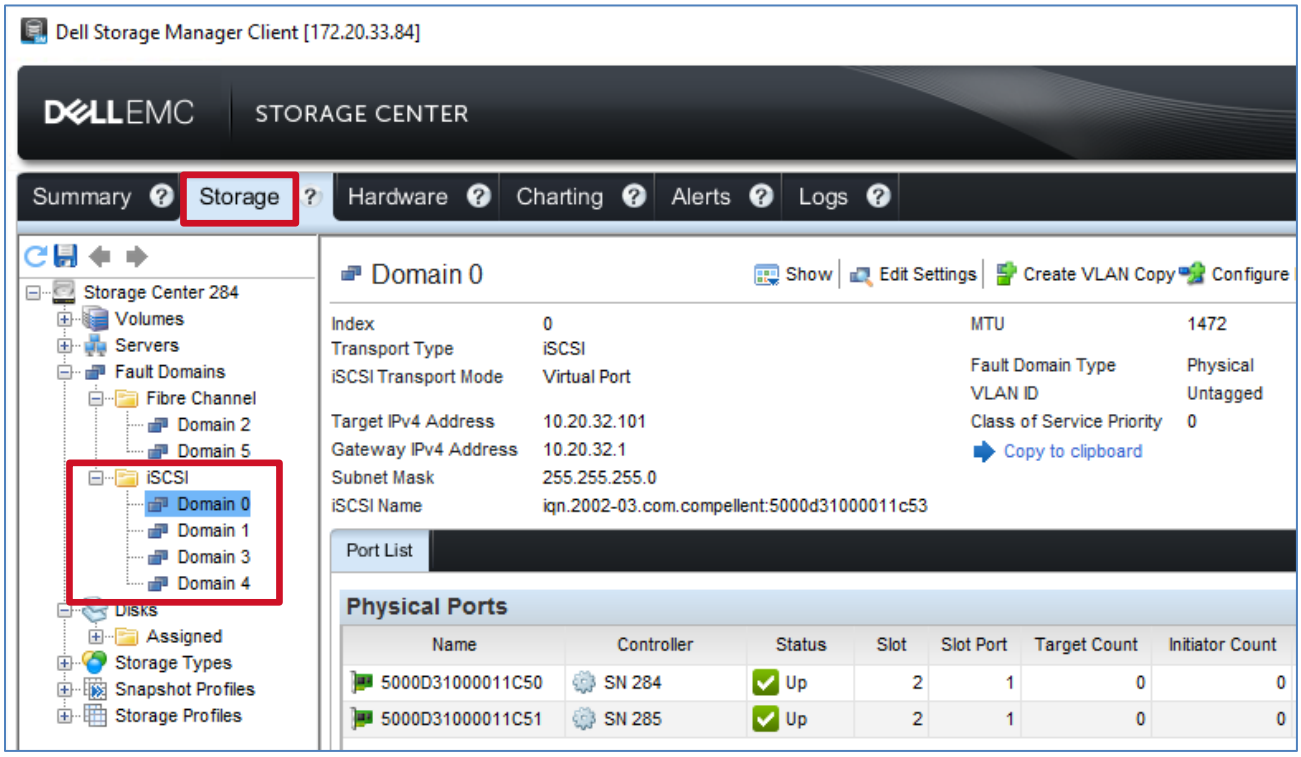


Note: The Dell Storage Client can connect to a Dell Storage Manager Data Collector or connect directly to SC Series storage. Both options are supported with the Thin Import process. The instructions in this section focus only on connecting directly to SC Series storage. Using Thin Import with MD3 volumes requires client version 2016 R3.10 or later.

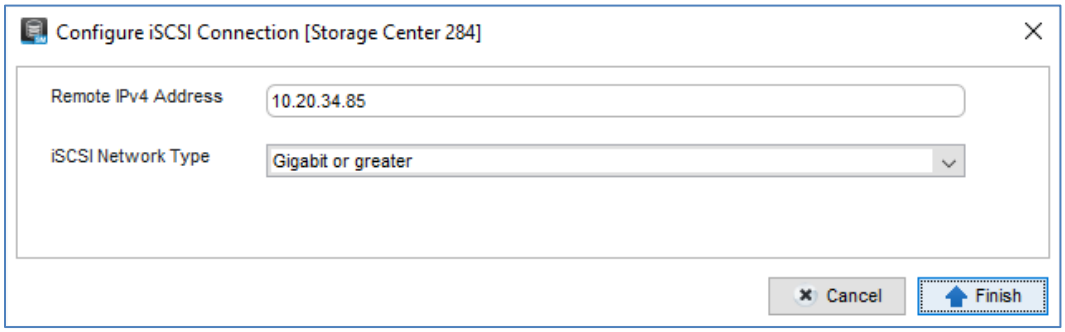
2. Log in to the Dell Storage Client using administrative credentials.
3. Click the **Storage** tab and navigate to **Fault Domains > iSCSI**.

4. Select the iSCSI fault domain to be used for the import process.

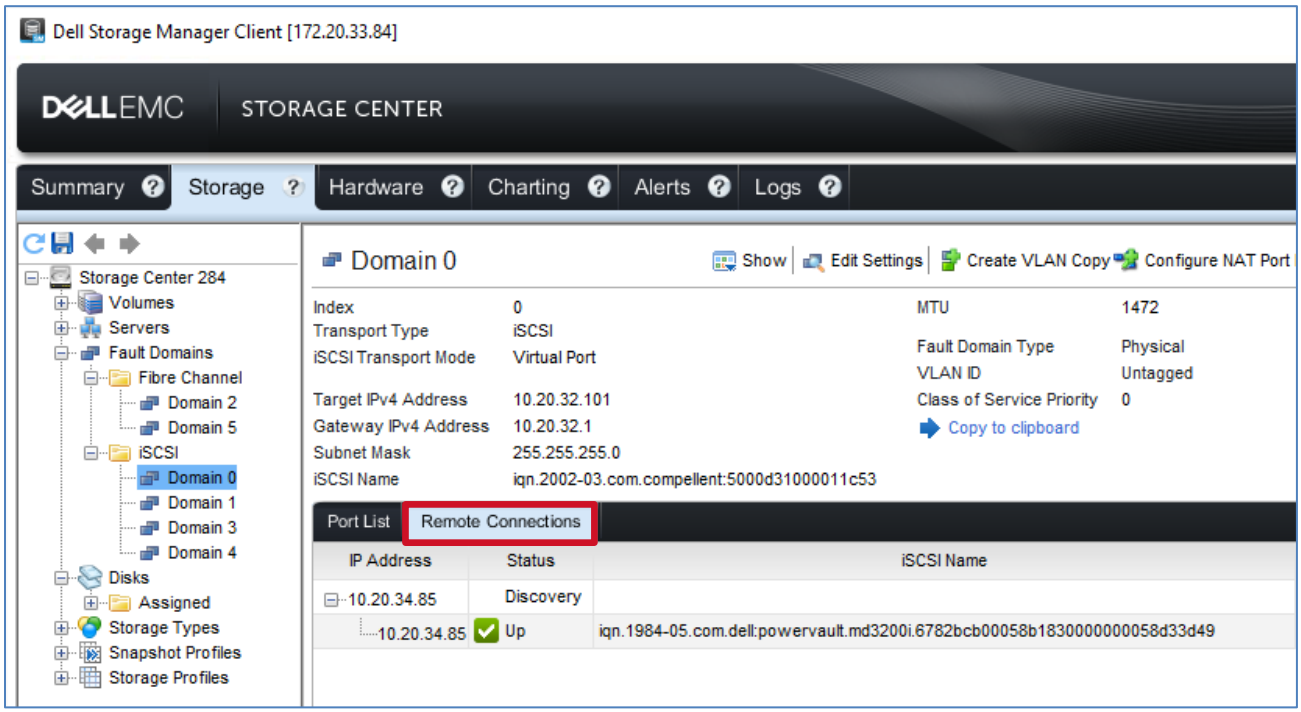
Note: On systems with more than one iSCSI fault domain, select a fault domain that is configured on the same network as the MD3 array.



5. Right-click the iSCSI fault domain and select **Create Remote Connection**.
6. In the **Configure iSCSI Connection** window, enter the iSCSI IP address of the first MD3 array controller (controller 0) and set the iSCSI network type to **Gigabit or greater**. Click **Finish**.



7. Once the connection has been established, on the displayed confirmation window, click **OK**.
8. The remote connection to the MD3 array is displayed in the **Remote Connections** tab.



9. The SC Series array is now remotely connected to the MD3 array.
10. Right-click the fault domain that was used to create the connection to the MD3 array, and select **Rediscover iSCSI Remote Connections**.

Note: When importing from an FC-connected MD3 array, step 10 is not required. Volumes that were mapped to the SC Series server host object on the MD3 array will automatically appear in the External Devices subtree.

11. Any volumes that were mapped to the SC Series host object on the MD3 array will now appear under the **External Devices** subtree.

4.5 Establishing an SC Series remote Fibre Channel connection to an MD3 array

Note: The physical Fibre Channel ports on the SC Series array should be zoned to both controllers of the MD3 array. If the SC Series array is only zoned to one of MD3 controllers, only those volumes owned by that controller will be visible to the SC Series array. Volumes on the other MD3 controller will not be visible to the SC Series array.

Effectively, when the SC Series and MD3 arrays are zoned together, a remote connection has already been established between the two arrays.

5 Offline and online mode explained

As mentioned in section 2, both offline and online modes of the import process affect service. If possible, it is recommended to test the Thin Import process in a non-production environment to establish an accurate outage timeframe.

Note: Total time required for the import process can vary greatly depending on the array configuration, available bandwidth, and amount of data transferred.

Offline mode requires both the source and destination volumes to be offline for the duration of the process. Applications that require these volumes will incur an outage during this time. With ESXi datastores, this means virtual machines will be unavailable for the duration of the process and can be re-added to the inventory upon completion.

Online mode requires a temporary outage. Total outage time includes the time needed to complete the following manual processes:

1. Shut down and remove from inventory all virtual machines on the datastore to be imported (VMware only).
2. Unmount datastore to be imported (VMware only).
3. Halt I/O and remove the server access policy on the PS Series volume, or remove the MD3 volume from the existing host.
4. Apply an access policy to allow the SC Series storage access to the volumes (PS Series only).
5. Map the volume to the SC Series host object (MD3 only).
6. Start the Thin Import wizard.
7. Run a rescan on the server to recognize the SC Series volume.
8. Bring the SC Series volume online.
9. Re-add virtual machines to inventory and power on (VMware only).

Note: Manual processes in online mode are detailed in a later section.

In some cases, the total outage time for online mode can be less than established application timeout values, resulting in no service loss.

Note: In both offline and online modes, high latency or any network interruption during the import process will cause the data copy to fail and restart from the beginning regardless of the amount of data previously copied.

Note: While the import is in process, the host server could see increased I/O latency to the volume being imported. During an online Thin Import, read and write I/O received from the server are sent from the SC Series array to the PS Series or MD3 array to be processed. Read I/O is sent to the PS Series or MD3 volume so that reads to data not yet imported to the SC Series volume can be read successfully. Write I/O is written to the PS Series or MD3 volumes and the SC Series volumes to keep data consistent until the import finishes successfully. The added traffic between the SC Series array and the PS Series array during the online import could add noticeable latency to server I/O.

6 Importing PS Series Windows Server volumes

Prior to starting the online or offline import process from a PS Series array, the target server must be iSCSI mapped to the SC Series array. For information on mapping a server to an SC Series array, refer to the *Dell Storage Manager Administrator's Guide*, available on the Knowledge Center at the SC Series customer portal.

Note: Although mapping the target server to the SC Series arrays is not required prior to offline importing, it is recommended.

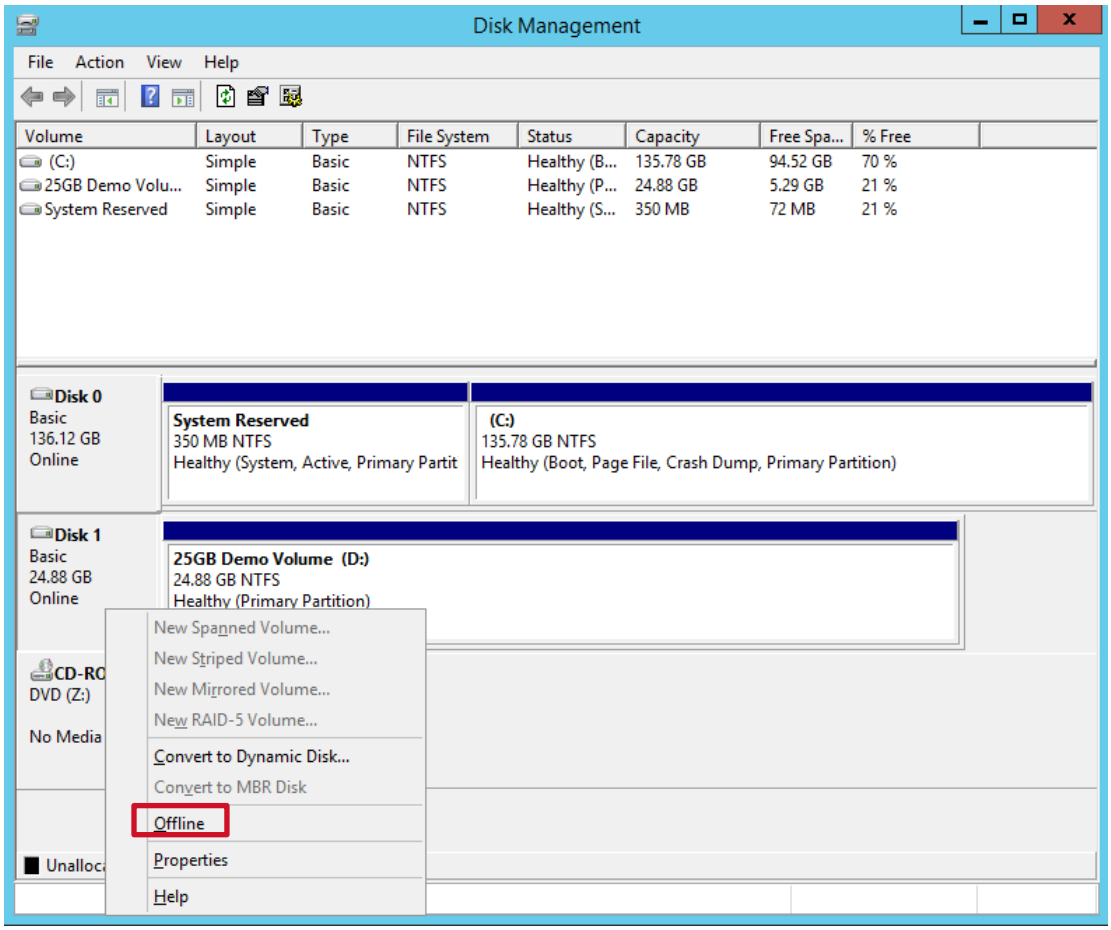
Perform the following steps to import data from a PS Series volume to an SC Series array:

1. Stop any I/O and remove the server connection to the PS Series volume.

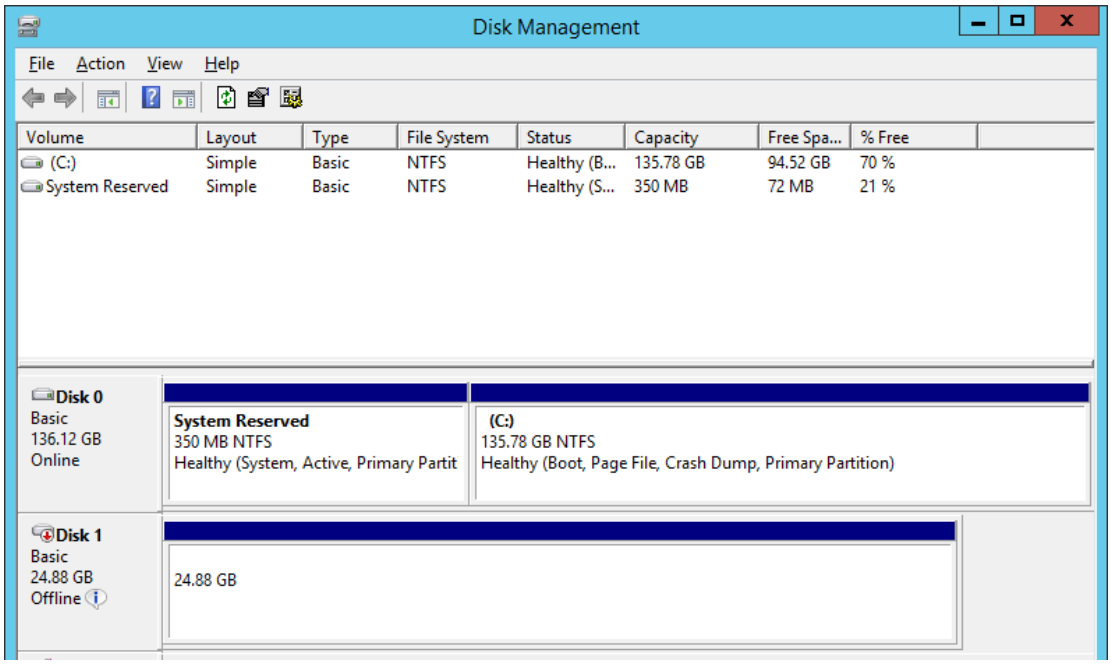
Note: The PS Series volume must be unmapped from the server before the online import process starts. Failure to do so can result in data corruption.

To remove the server connection in Windows Server 2012 R2:

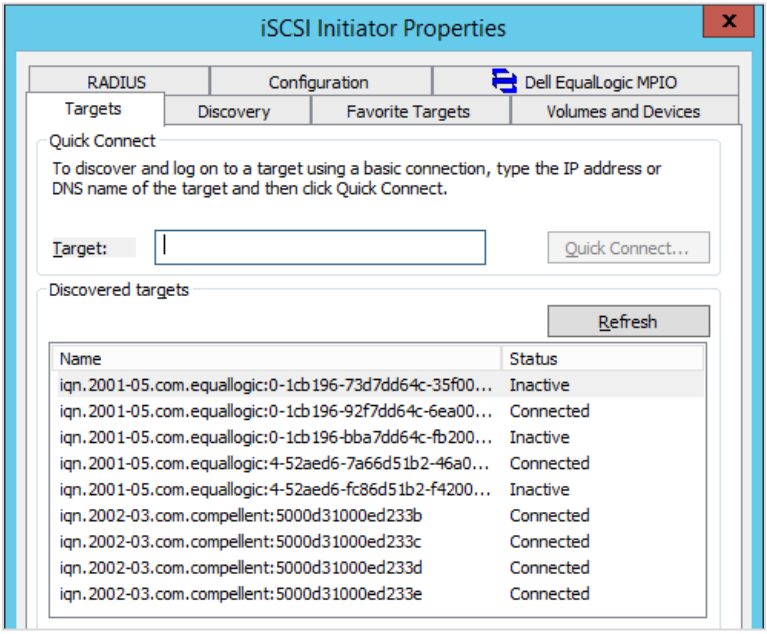
a. To open Disk Management, click **Start > Run > diskmgmt.msc**.
b. **Right-click** the PS Series volume and select **Offline**.



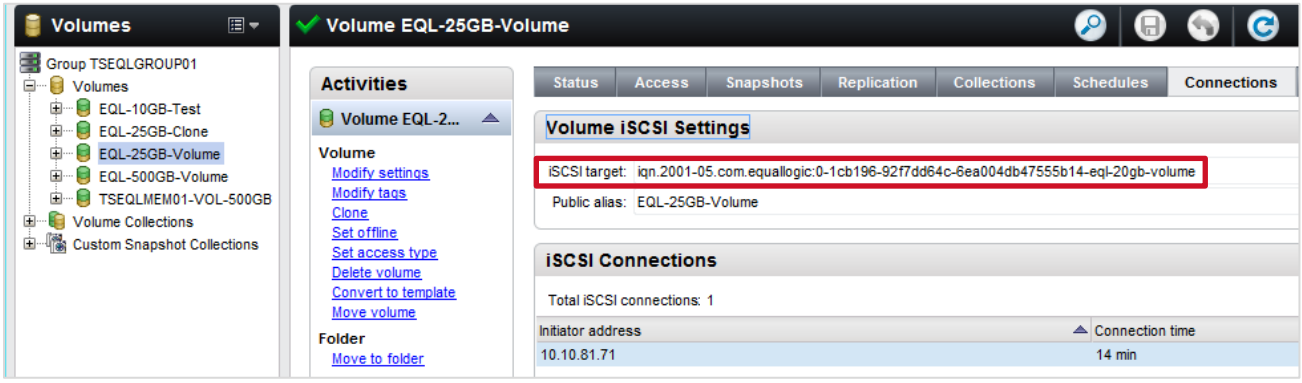
c. The volume is taken offline.



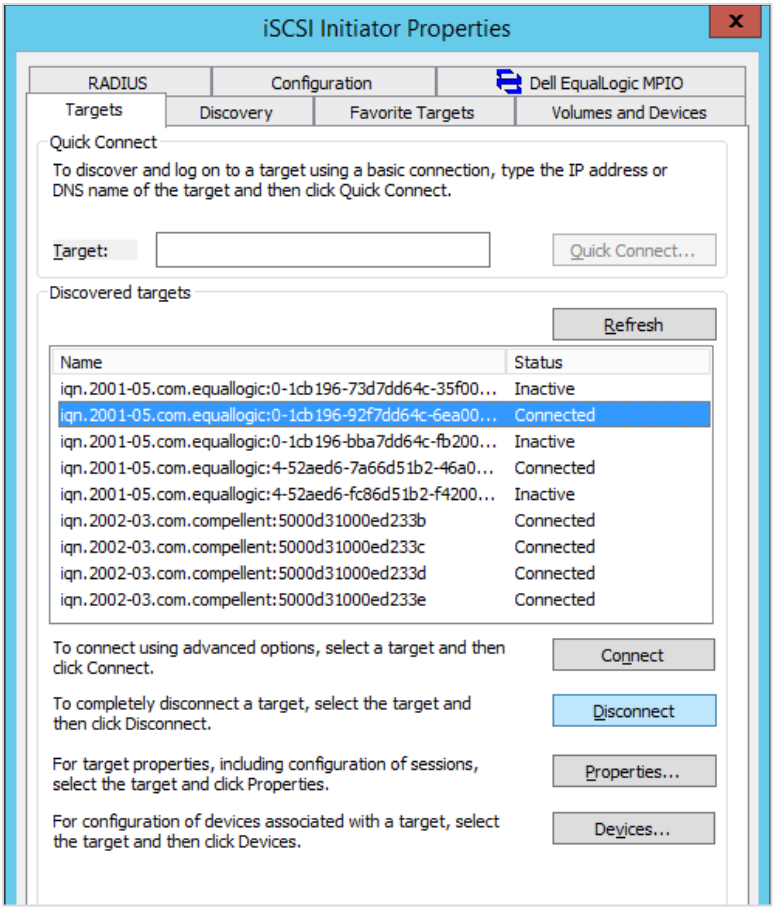
d. Open the iSCSI initiator from the Windows control panel.
e. Click the **Targets** tab and locate the iSCSI target name of the PS Series volume that needs to be disconnected.



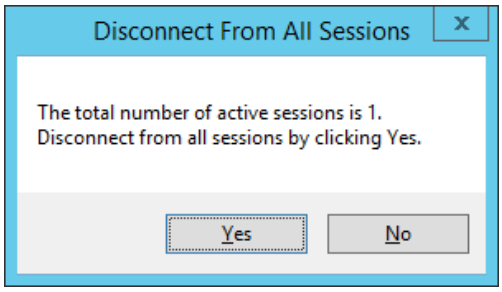
Note: To locate the PS Series iSCSI target name of the volume in EqualLogic Group Manager, click the **Volumes** menu, select the volume in the **Volumes** tree, and select the **Connections** tab. The iSCSI volume name is listed under **Volume iSCSI Settings** as the **iSCSI target**.



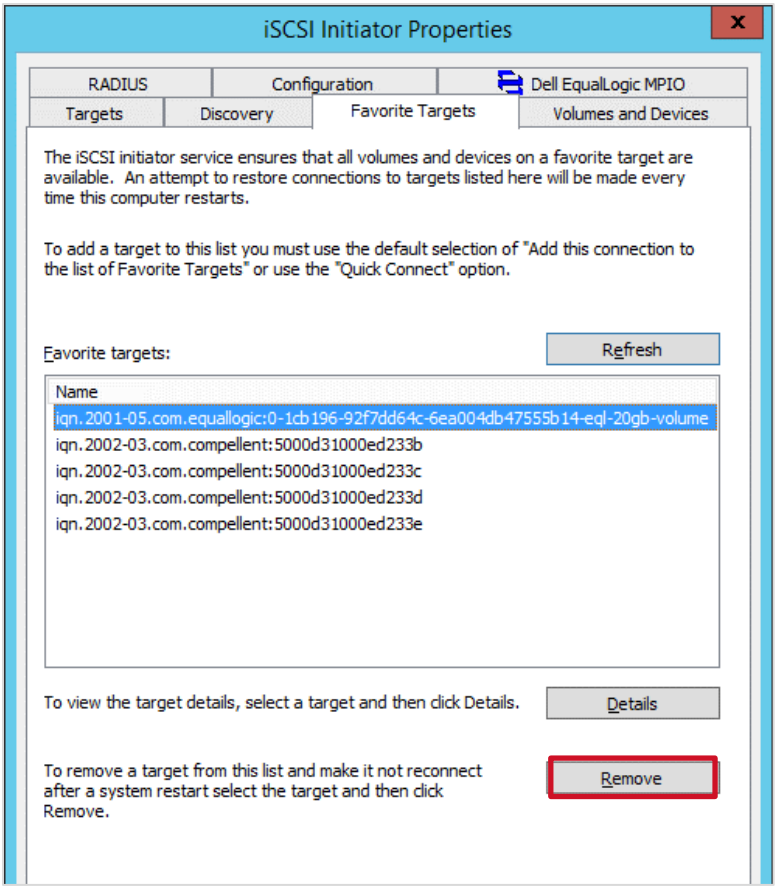
f. Select the volume and click **Disconnect**.



g. Click **Yes** to disconnect from all sessions.

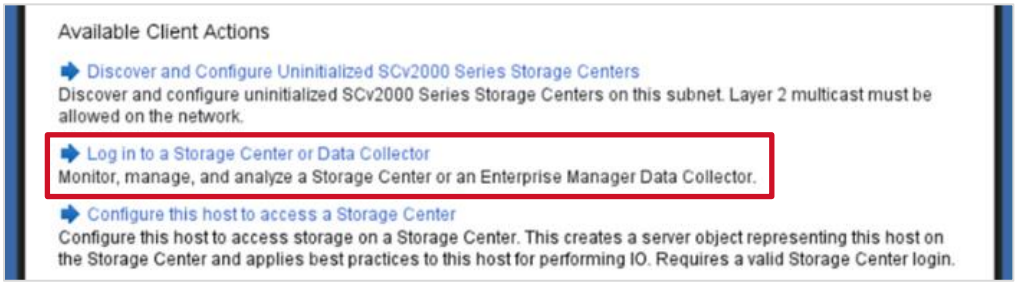


h. To prevent the server from trying to reconnect to the PS Series volume in the future, remove the iSCSI target from the favorite targets list. Click the **Favorite Targets** tab, locate the iSCSI target name of the PS Series volume, and click **Remove**.



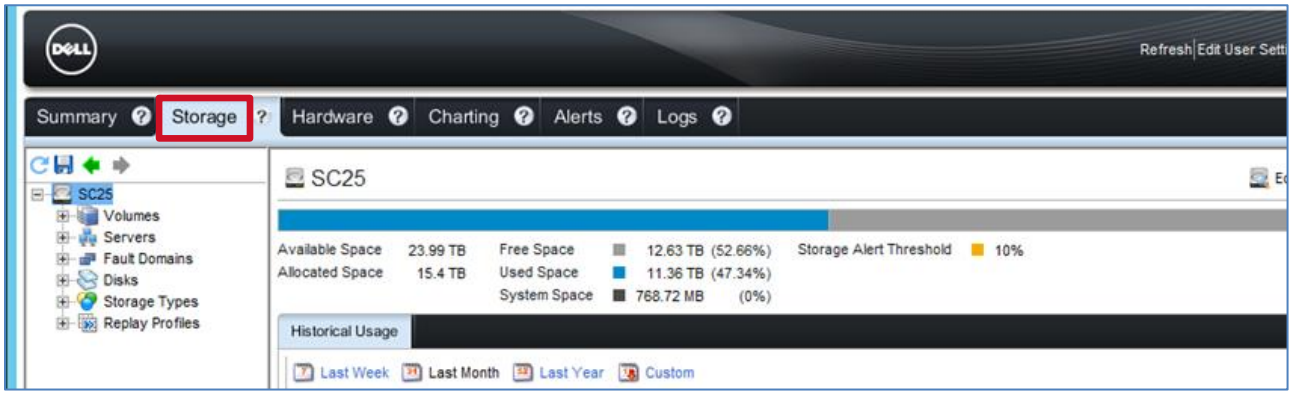
6.1 Online import process – PS Series

1. Open the Dell Storage Client and select Log in to a Storage Center or Data Collector.



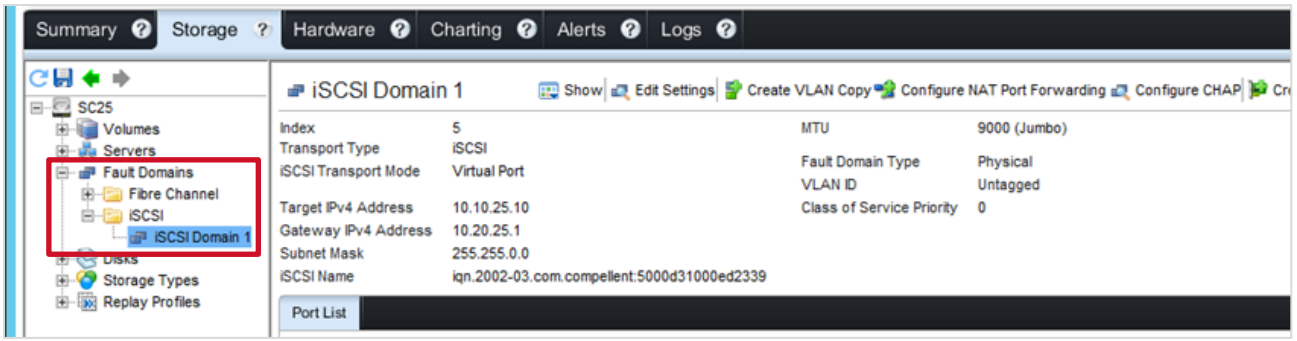
Note: The Dell Storage Client can connect to a Dell Storage Manager Data Collector or connect directly to an SC Series array. Both options are supported with the Thin Import process. The instructions in this section focus only on connecting directly to an SC Series array. Thin Import requires Dell Storage Client/Dell Storage Manager Data Collector version 2015 R2.

2. Log in to the Dell Storage Client with administrative credentials.
3. Click the **Storage** tab.

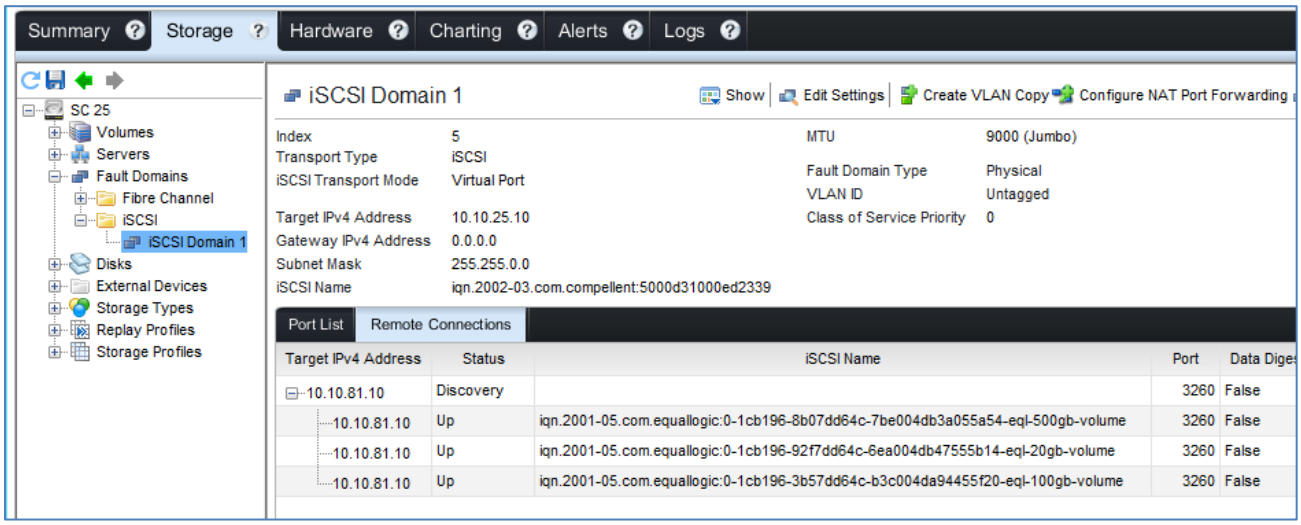


4. Navigate to **Fault Domains** > **iSCSI**. Select the iSCSI fault domain to be used for the import process.

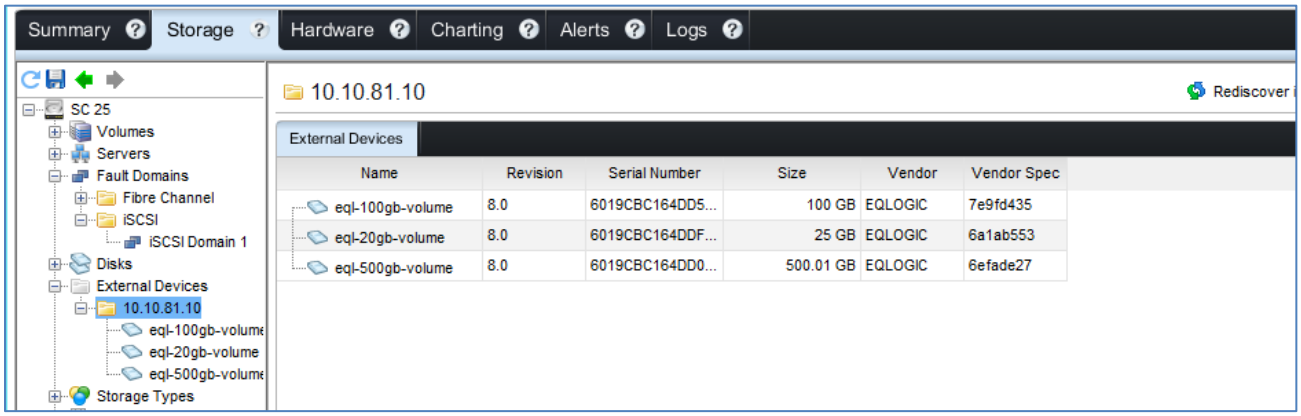
Note: On systems with more than one iSCSI fault domain, select a fault domain that is configured on the same network as the PS Series array.



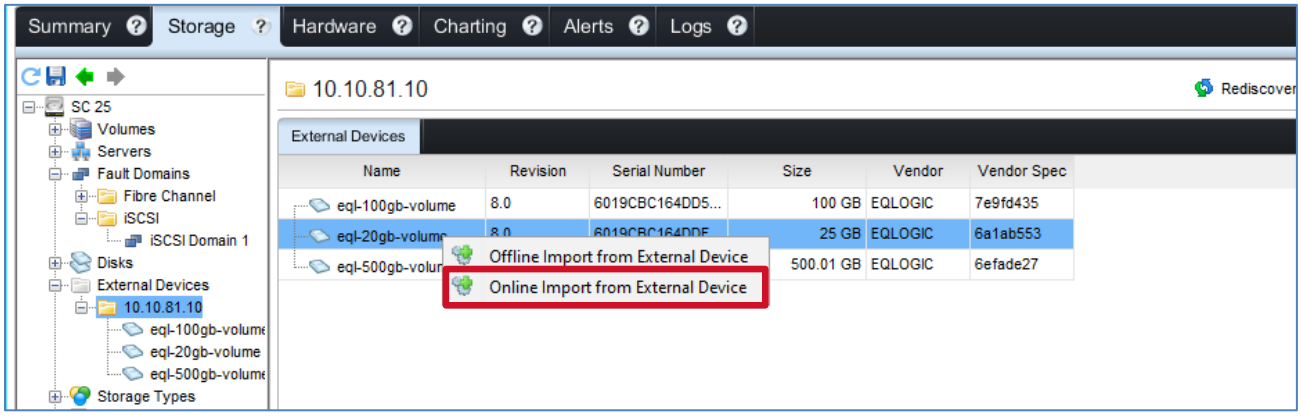
5. The **Remote Connections** tab appears in the iSCSI fault domain window showing the remote connection to the PS Series array. Volumes available for import are listed with a status of **Up**.



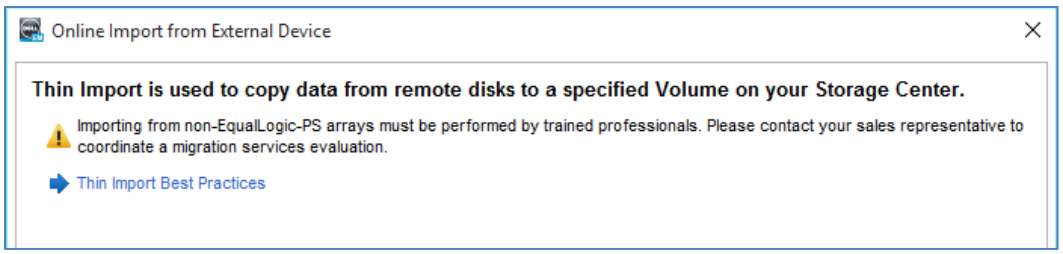
6. In the SC subtree, expand **External Devices.** A folder with the IP address of the PS Series array is shown. Expand this folder to display volumes available for import.



7. Right-click the volume to import and select **Online Import from External Device**.

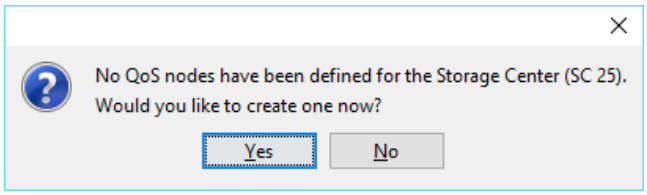


8. The Online Import from External Device window appears. Click **Next.**



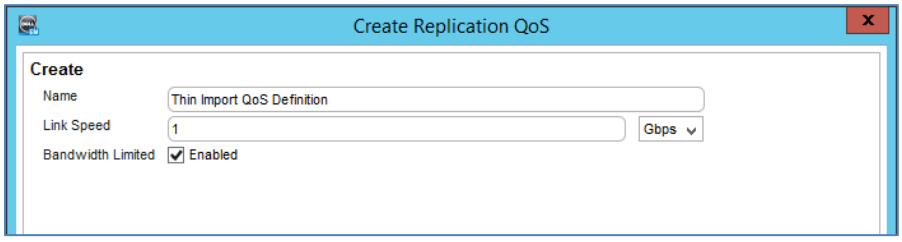
9. Select the server to map to the destination volume. Click **Next**.

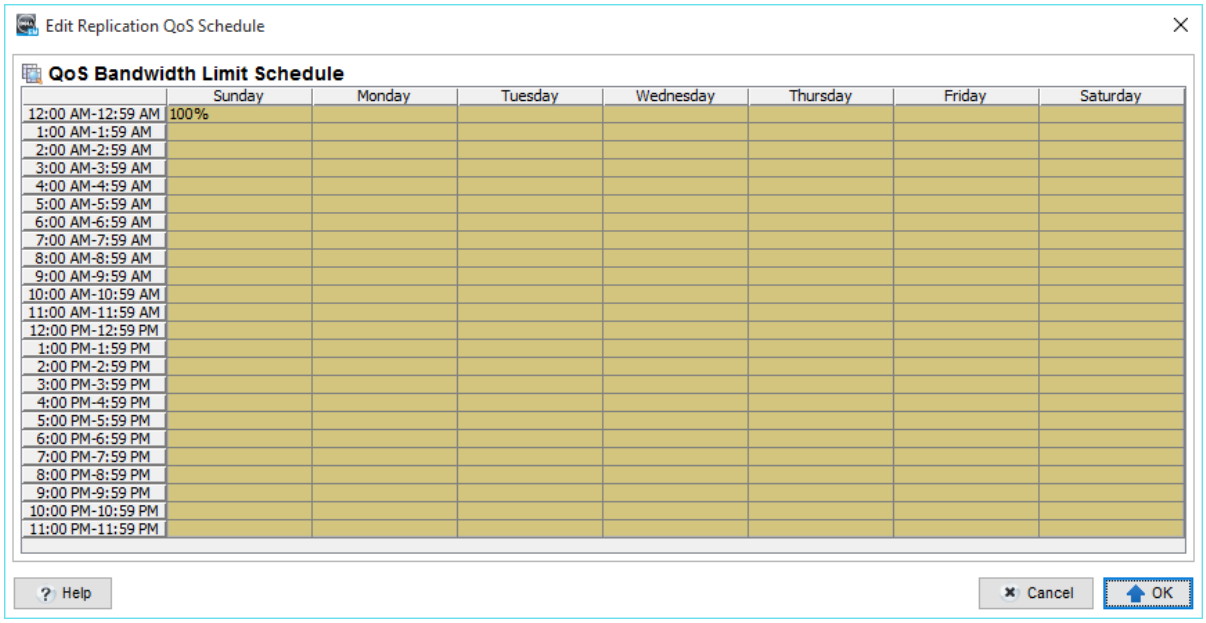
a. If a Quality of Service (QoS) definition does not exist on the SC Series array, a prompt will appear to create one. Click **Yes** to continue. Clicking No will cancel the import process.



Note: The QoS definition limits or throttles the bandwidth available to the Thin Import process because the import process will use all available bandwidth to transfer data, by default. Allocating too much bandwidth to the process can be detrimental to overall system performance. Allocating too little bandwidth will cause the import process to run slowly. If possible, test the process and monitor system performance to determine proper bandwidth allocation.

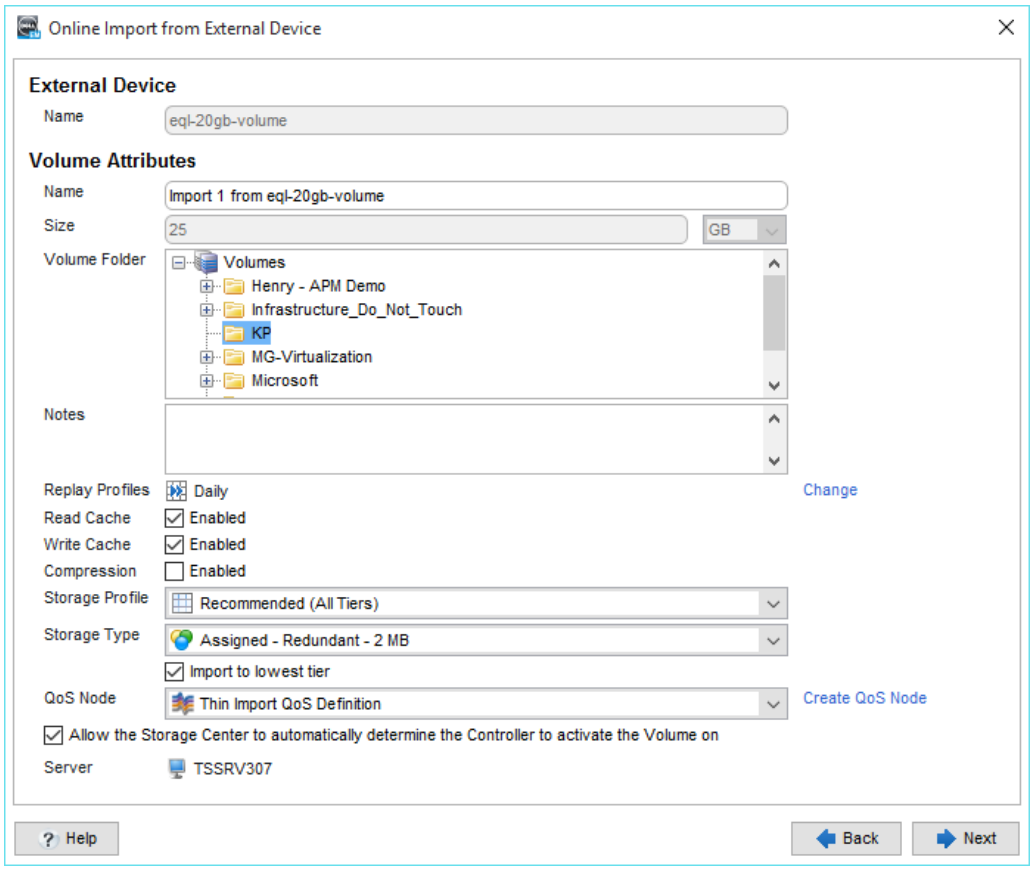
b. Assign a **Name** to the QoS definition. Enter a **Link Speed** that is equivalent or less than the line speed of the iSCSI network connecting the PS Series array and the SC Series array. When enabled, the **Bandwidth Limited** option allows daily scheduling of bandwidth allocation in one-hour increments. Click **OK** when finished.



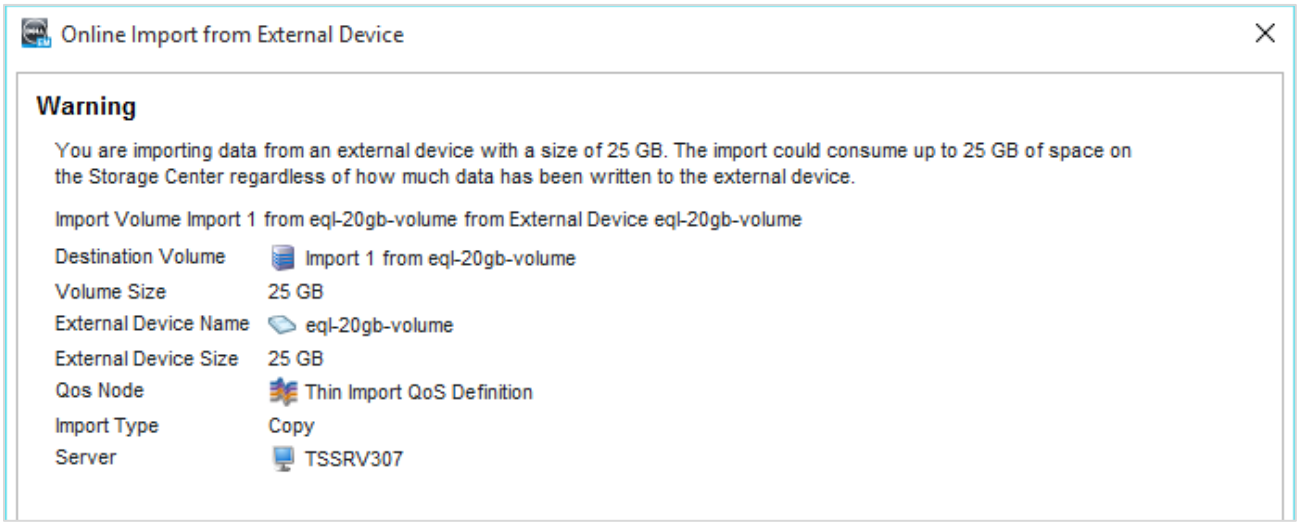


10. Configure attributes for the destination volume such as name, folder location, replay profiles, and QoS definition. Click **Next**.

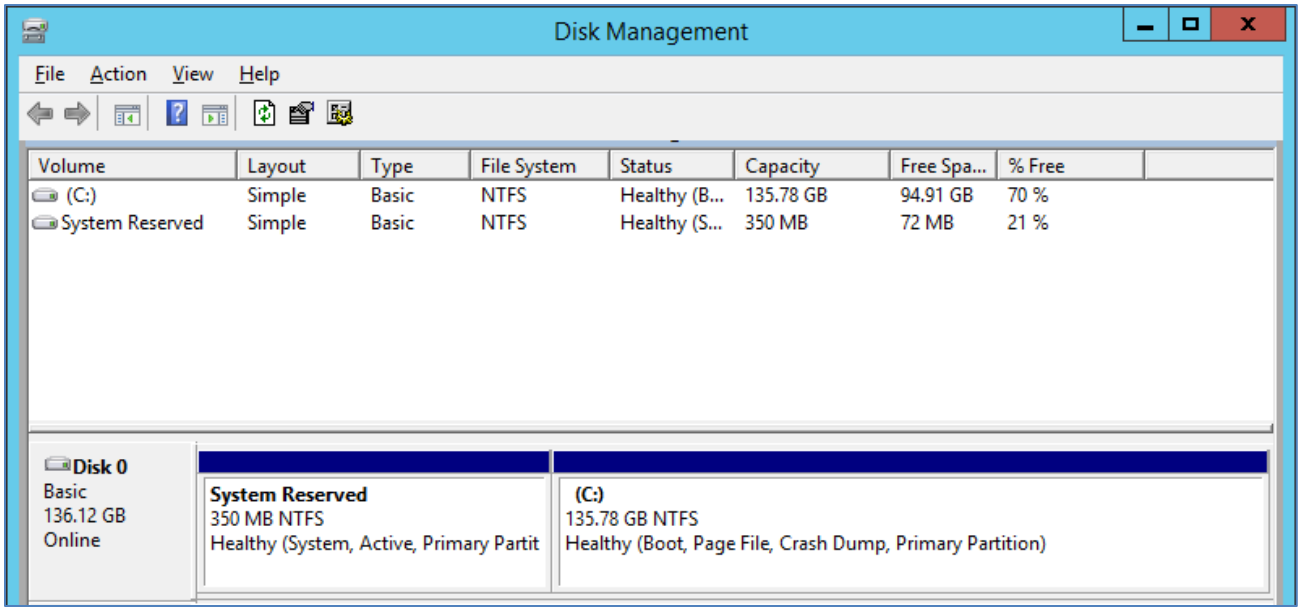
Note: The import process includes the option to import data to the lowest tier of storage. It is a best practice to leave this option enabled because importing data into tier one can cause performance problems and potentially fill all available tier one space.



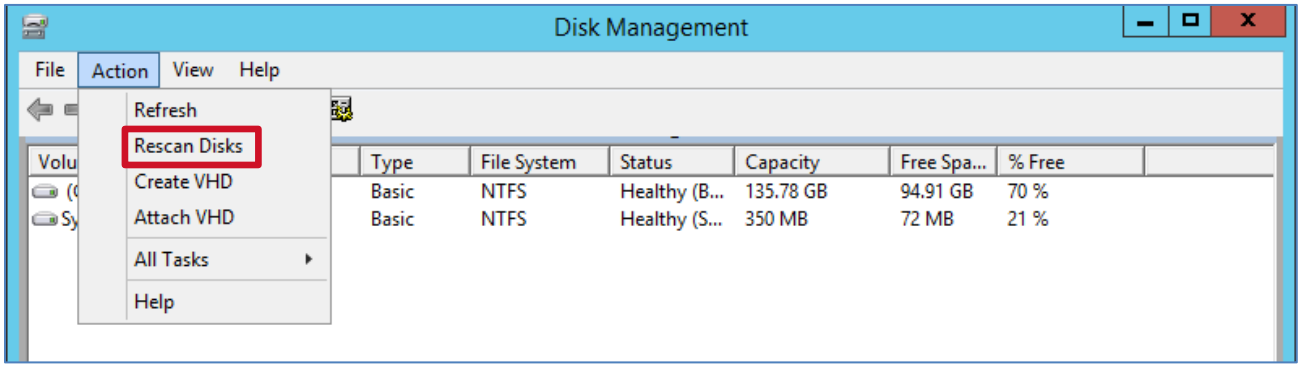
11. Review the import settings. Click **OK** to start the import.



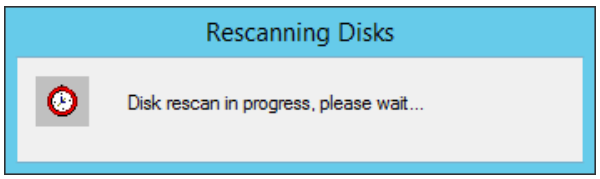
12. As soon as the online import starts, bring the SC Series volume online on the server. Log in to the Windows server as an administrative user, and open **Disk Management** by clicking **Start > Run > diskmgmt.msc.**



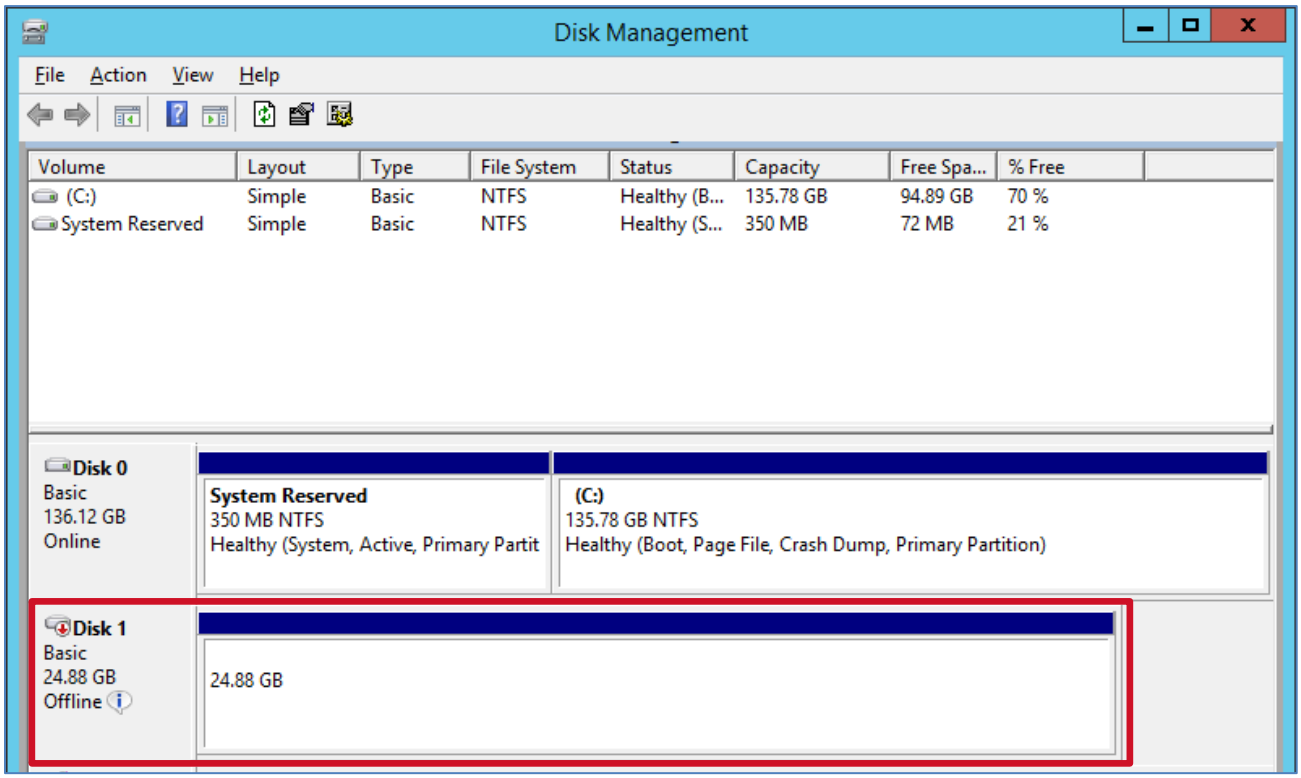
13. Click **Action** > **Rescan Disks**.



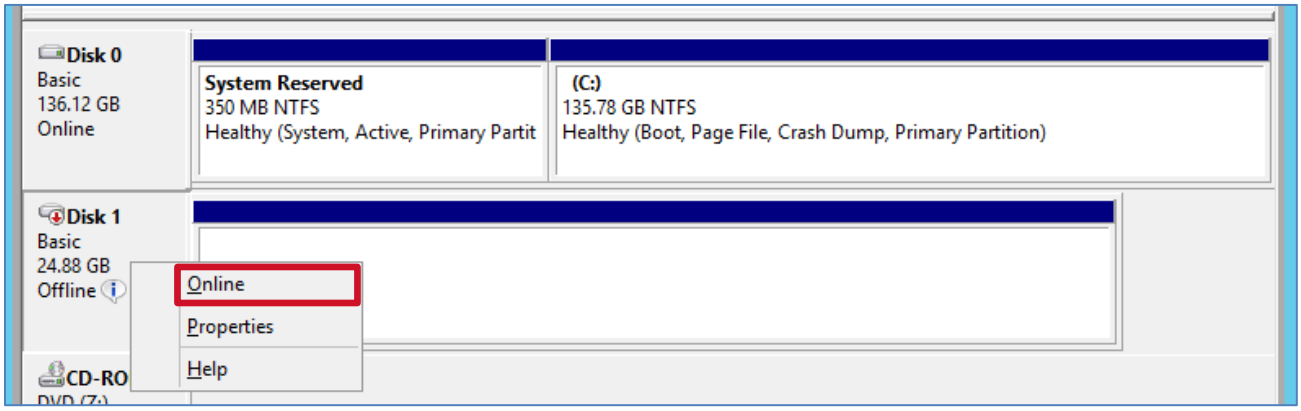
The disk rescan process begins.



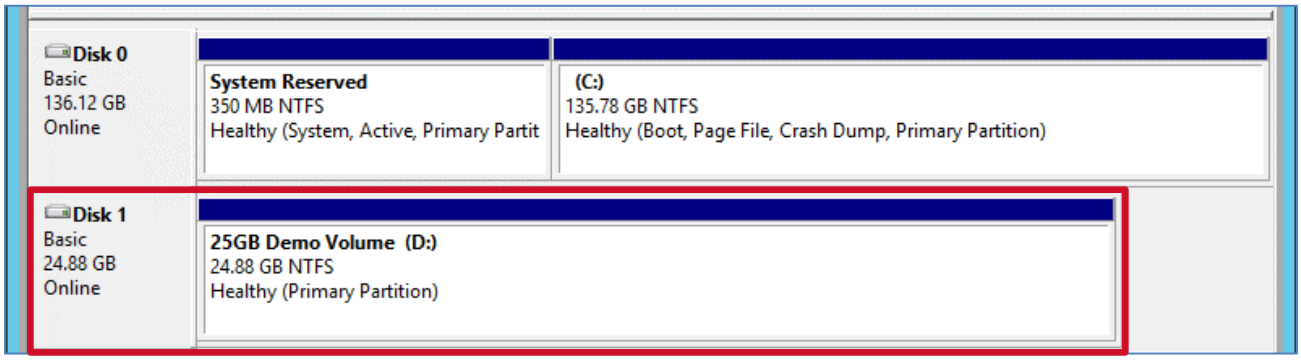
When the scan has completed, the SC Series volume appears in the Disk Management window.



14. Right-click the disk and select **Online**.

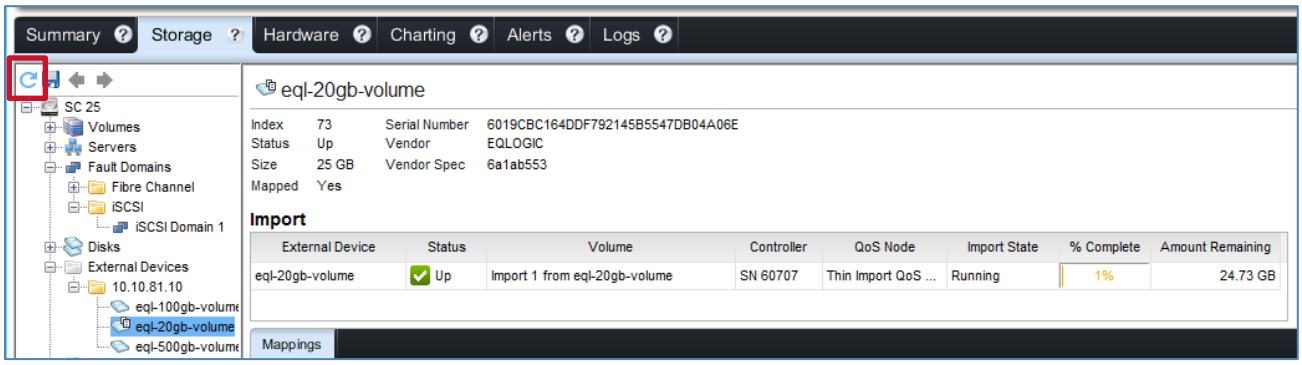


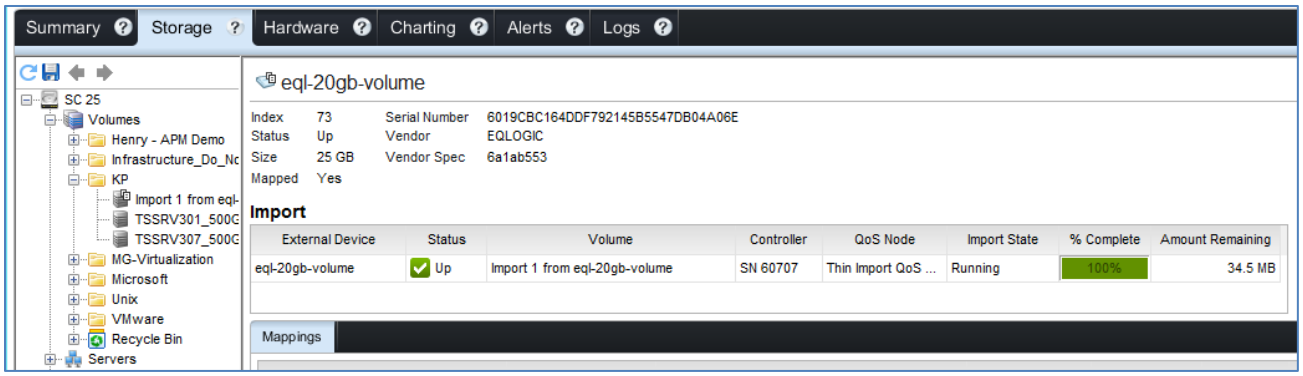
The disk is brought online with the same drive letter, and can now be used during the online import process.



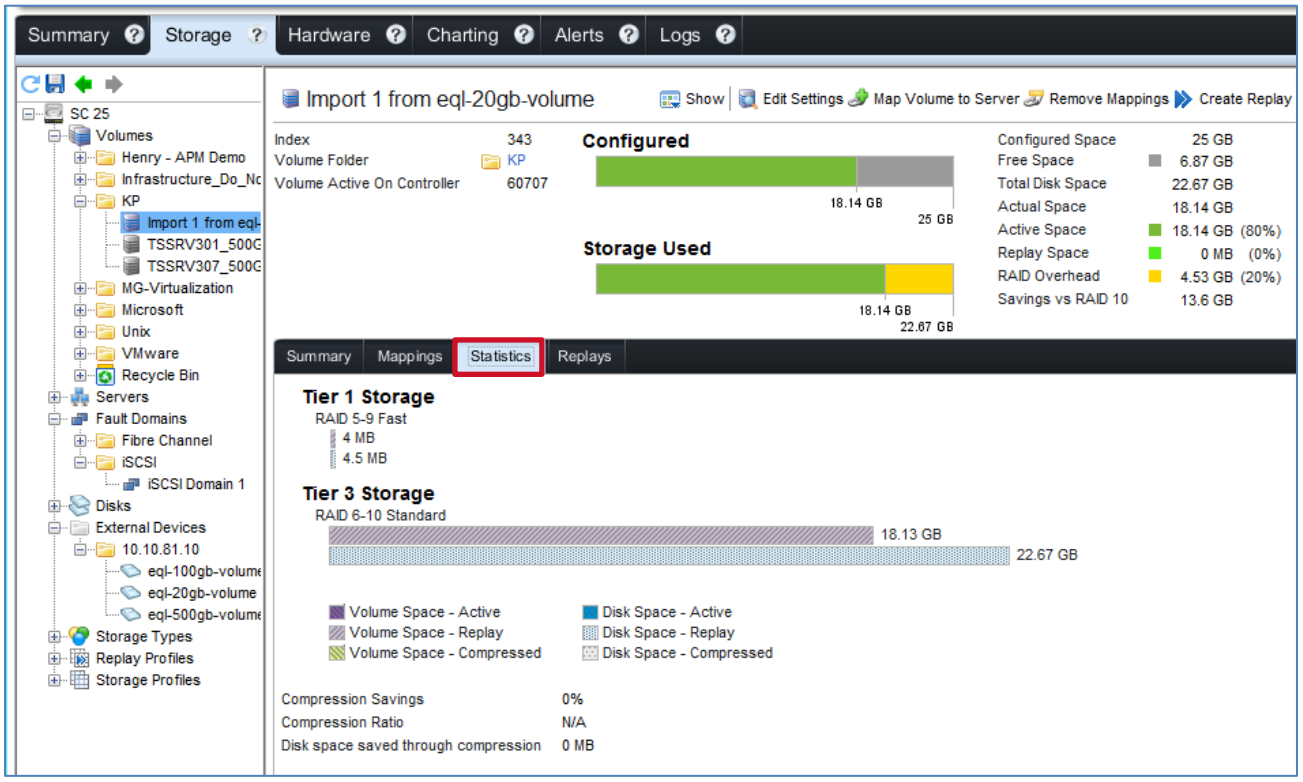
Note: A new MPIO provider will need to be installed for the SC Series array, which will require a reboot of the server.

15. While the import process is running, monitor progress in the volume details window. Click the **refresh** icon to update the progress.





16. When the import process is complete, locate the new volume in the **Volumes** subtree. Verify that the configured and used storage is listed correctly. The **Statistics** tab shows the storage tier where the imported data resides.



Note: When the online import process is complete, all server I/O to the PS Series volume is stopped.

17. Repeat steps 7–16 for any other volumes to import.

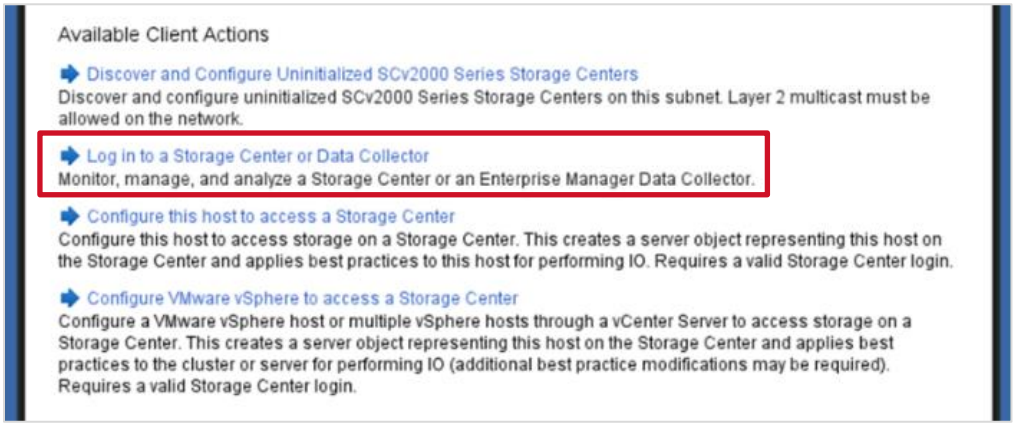
Note: Importing another volume can be initiated immediately following the completion of the import wizard. Be advised that each individual import will utilize all allocated bandwidth as defined in the QoS definition used during the import. Running multiple volume imports simultaneously could cause system performance problems if available bandwidth becomes limited. SC Series storage supports a maximum of ten simultaneous volume imports.

18. When all imports are complete, refer to section 9 for post-import steps.

6.2 Offline import process – PS Series

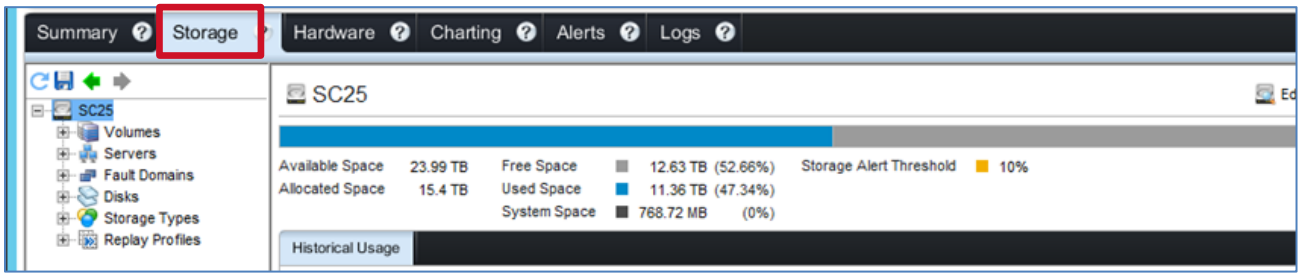
Perform the following steps to import data from a PS Series volume to an SC Series array in offline mode:

1. Open the Dell Storage Client and select Log in to a Storage Center or Data Collector.



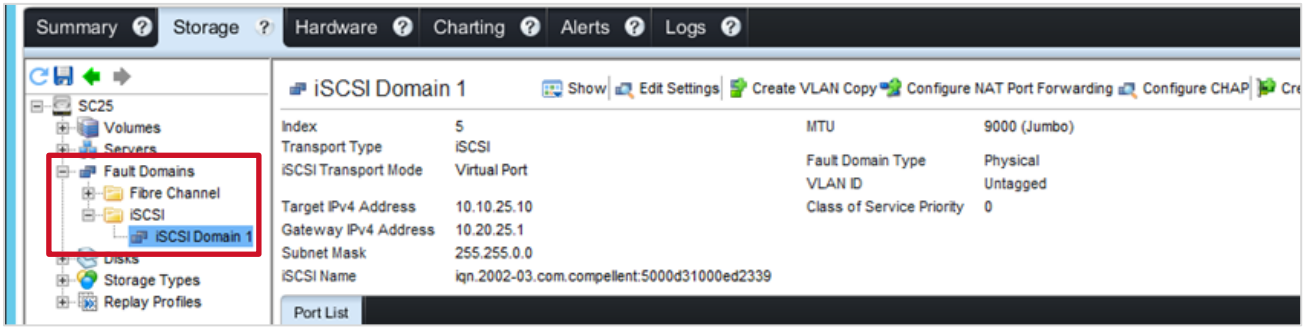
Note: The Dell Storage Client can connect to a Dell Storage Manager Data Collector or connect directly to an SC Series array. Both options are supported with the Thin Import process. The instructions in this section focus only on connecting directly to an SC Series array. Thin Import requires Dell Storage Client/Dell Storage Manager Data Collector version 2015 R2.

2. Log in to the Dell Storage Client with administrative credentials.
3. Click the **Storage** tab.

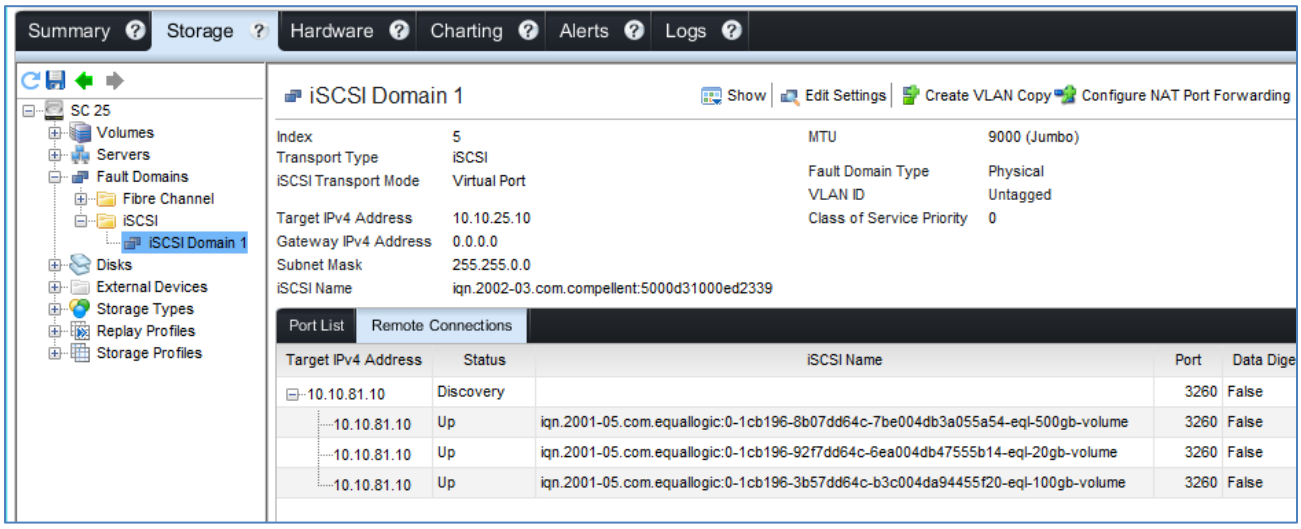


4. Navigate to **Fault Domains** > **iSCSI**. Select the iSCSI fault domain to be used for the import process.

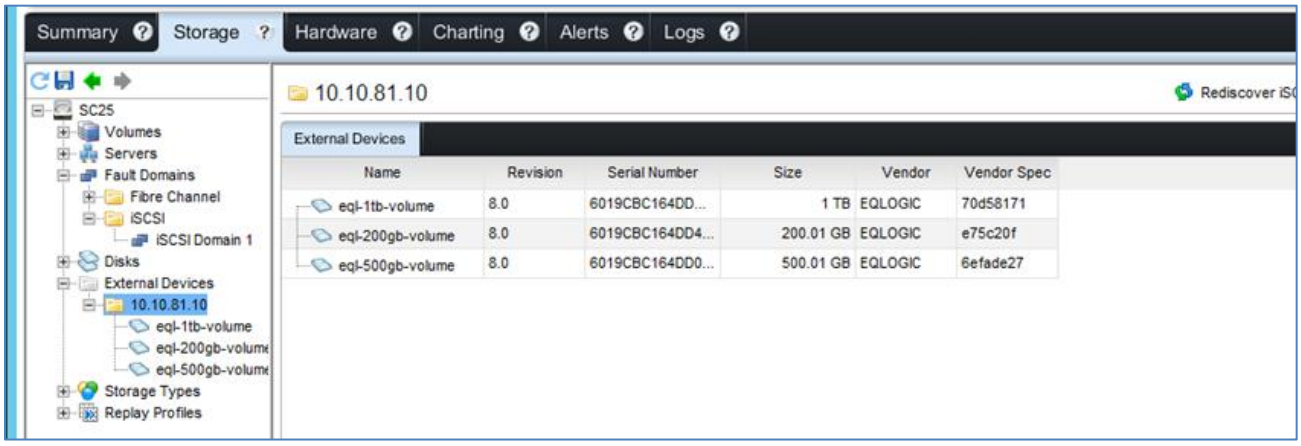
Note: On systems with more than one iSCSI fault domain, select a fault domain that is configured on the same network as the PS Series array.



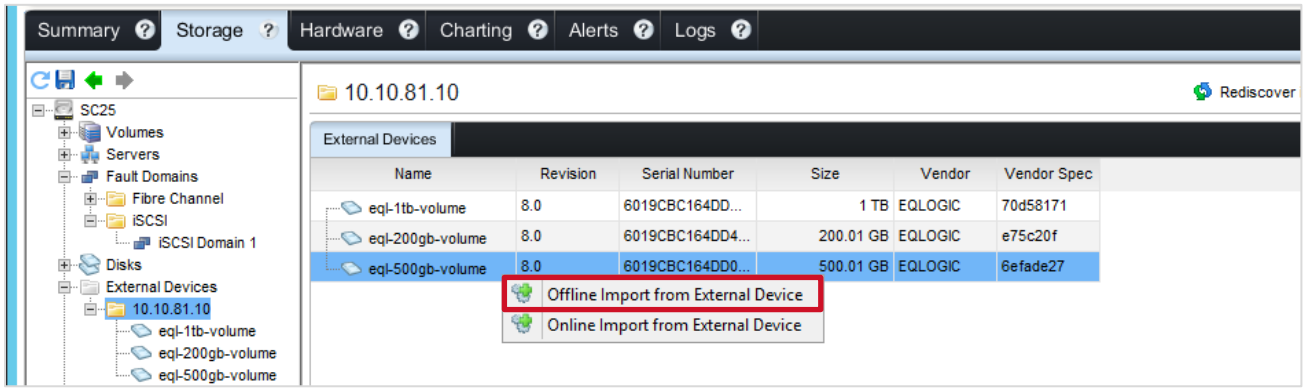
5. The **Remote Connections** tab appears in the iSCSI fault domain window showing the remote connection to the PS Series array. Volumes available for import are listed with a status of **Up**.



6. In the SC Series subtree, expand **External Devices.** A folder with the IP address of the PS Series array is shown. Expanding this folder shows volumes available for import.

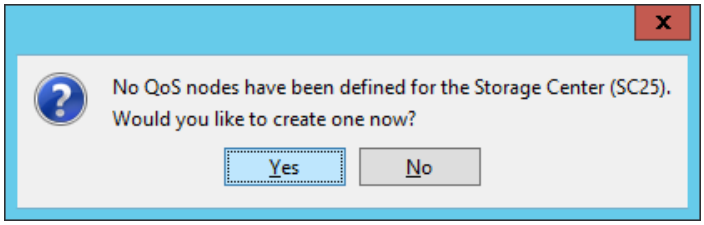


7. Right-click a volume to import it and click **Offline Import from External Device**.



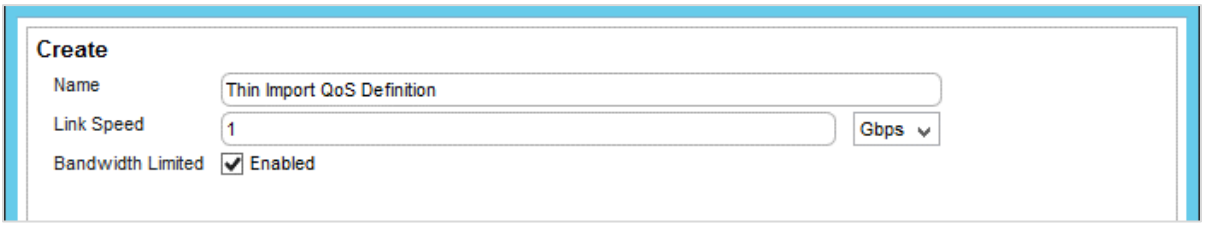
8. The Offline Import from External Device window appears. Click **Next**.

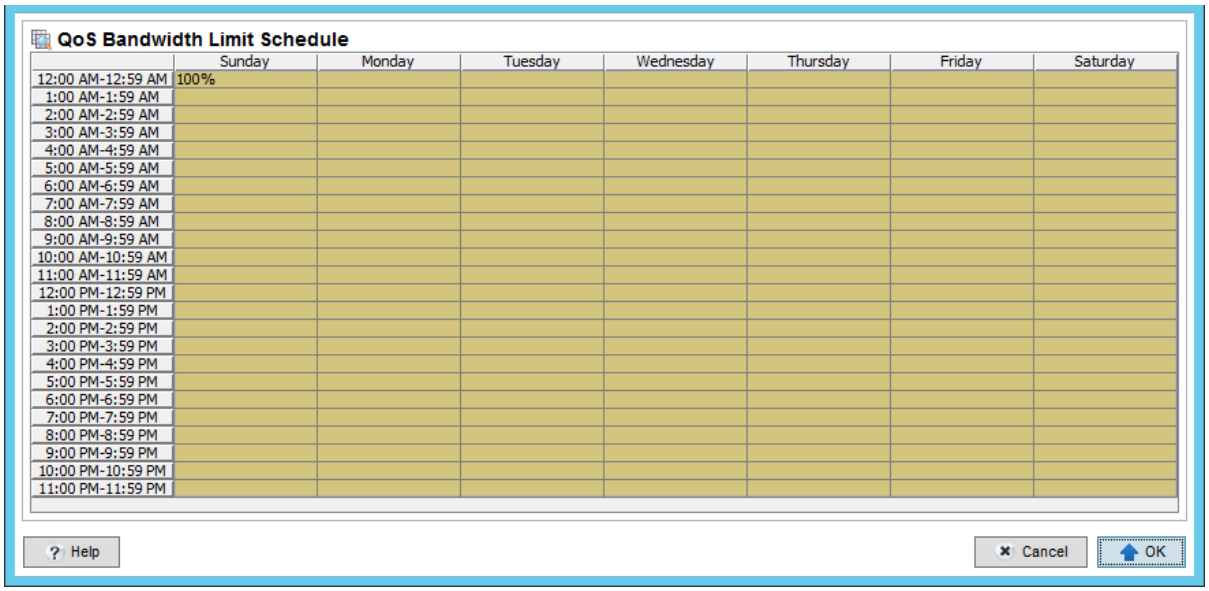
   a. If a Quality of Service (QoS) definition does not exist on the SC Series array, a prompt will appear to create one. Click **Yes** to continue. Clicking No will cancel the import process.



Note: The purpose of the QoS definition is to limit or throttle the bandwidth available to the Thin Import process, because the import process will use all available bandwidth to transfer data. Allocating too much bandwidth to the process can be detrimental to overall system performance. Allocating too little bandwidth will cause the import process to run slowly. If possible, test the process and monitor the system performance to determine the proper bandwidth allocation.

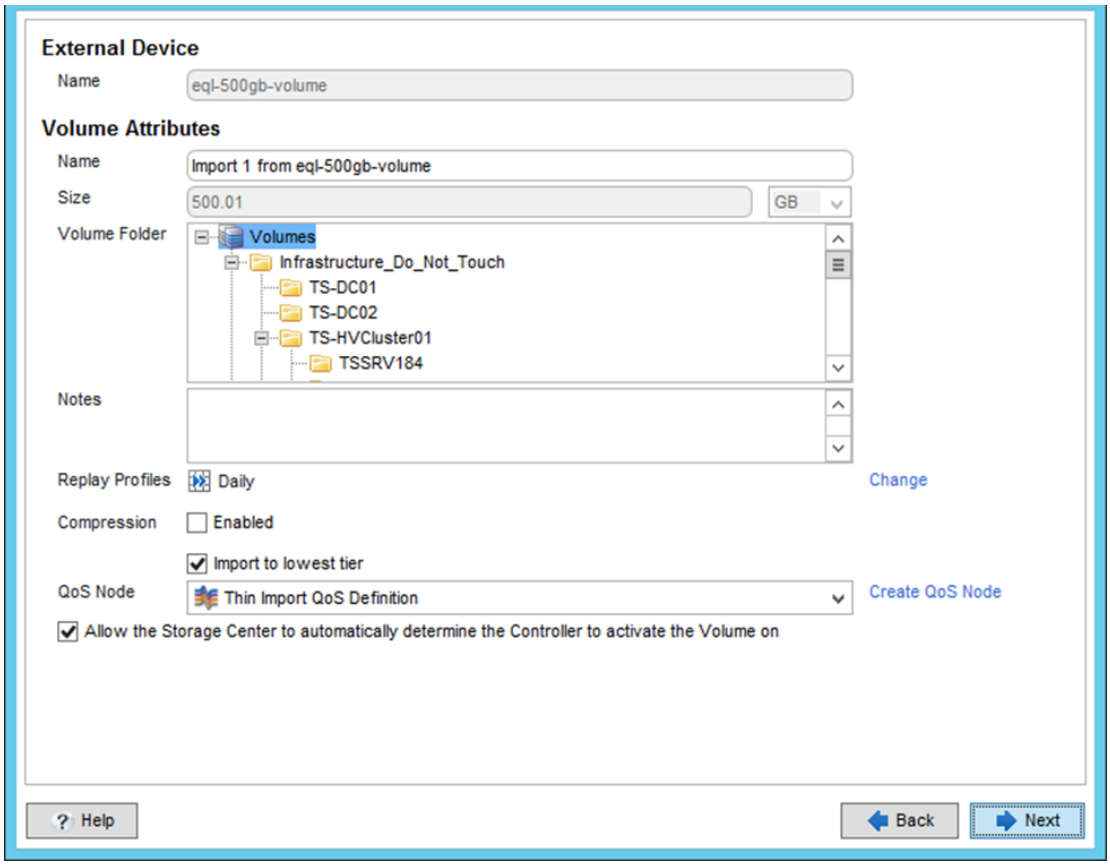
   b. Assign a name to the QoS definition. Enter a link speed equivalent or less than the line speed of the iSCSI network connecting the PS Series and SC Series arrays. When enabled, the **Bandwidth Limited** option allows daily scheduling of bandwidth allocation in one-hour increments. Click **OK** when finished.



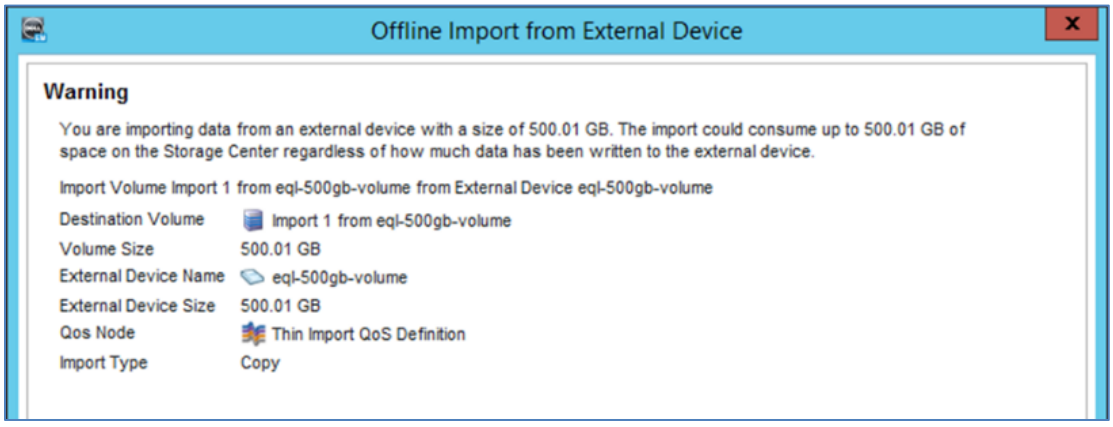


9. Configure attributes for the destination volume such as the **Name**, **Volume Folder** location, **Replay Profiles**, and **QoS Node** definition. Click **Next**.

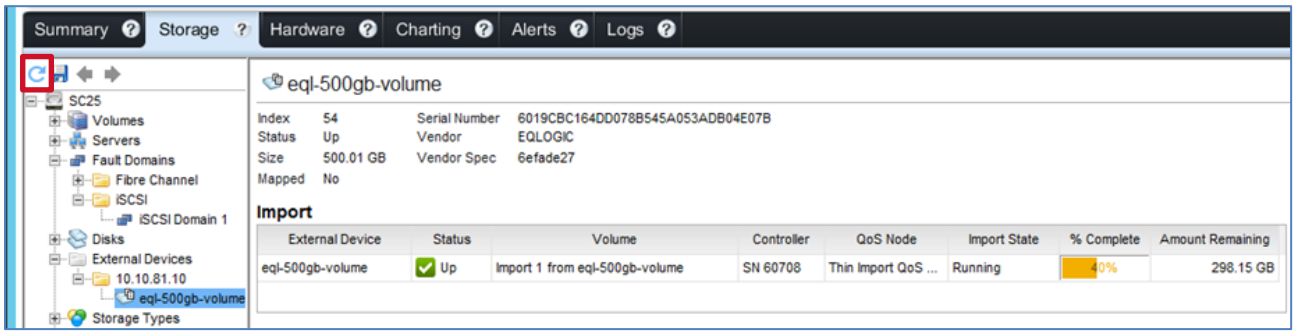
Note: The import process includes the option to import data to the lowest tier of storage. It is a best practice to leave this option enabled because importing data into tier one can cause performance problems and potentially fill all available tier one space.



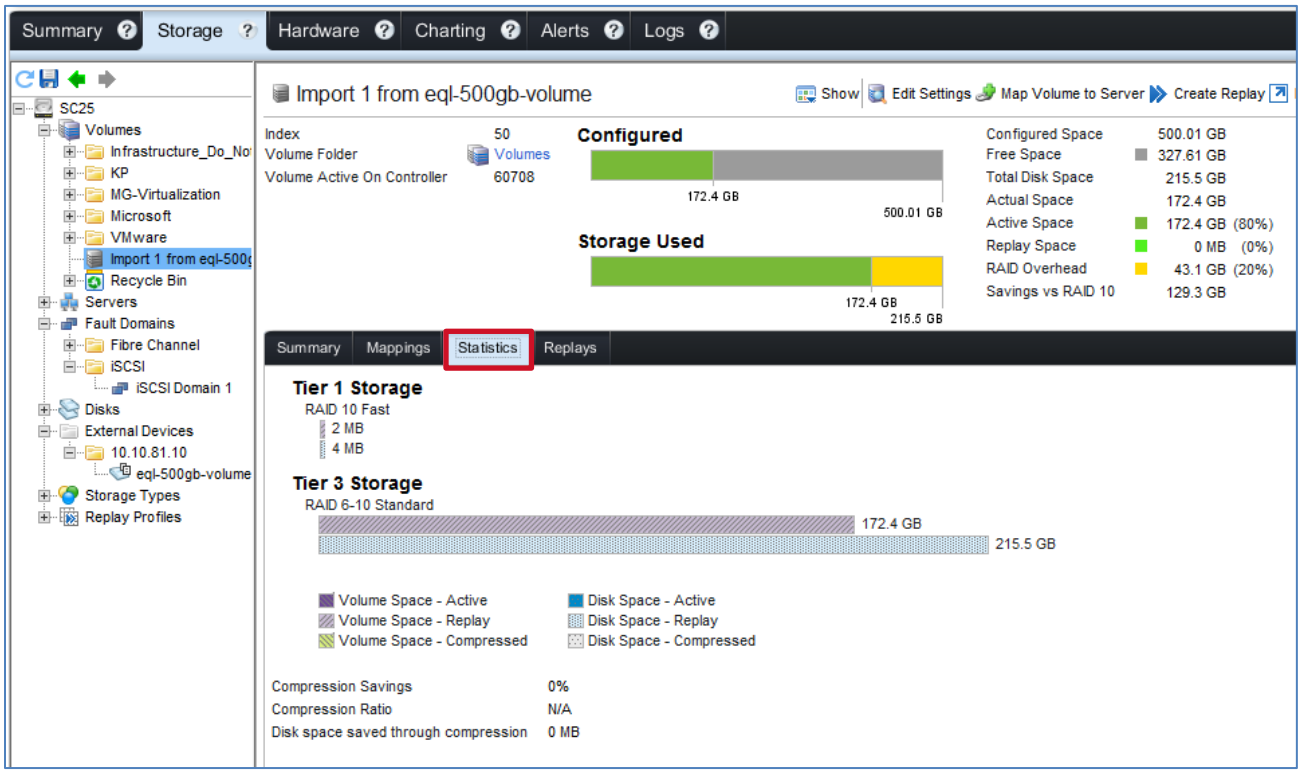
10. Review the import settings and click **OK** to start the import.



11. While the import process is running, monitor the progress in the volume details window. Click the **refresh** icon to update the progress.



12. When the import process is complete, locate the new volume in the Volumes subtree. Verify the configured and used storage is correct. The **Statistics** tab shows the storage tier in which the imported data resides.



13. When the import has finished, the volume can be mapped to a server. For information on mapping a volume to a server, refer to the *Dell Storage Manager Administrator's Guide*, available on the Knowledge Center at the SC Series customer portal.
14. Repeat steps 7–12 for all other PS Series volumes to import in offline mode.

Note: A new MPIO provider will need to be installed for the SC Series array, which will require a reboot of the server.

Note: Importing another volume can be initiated immediately following the completion of the import wizard. Be advised that each individual import will utilize all allocated bandwidth as defined in the QoS definition used during the import. Running multiple volume imports simultaneously could cause system performance problems if available bandwidth becomes limited. SC Series storage supports a maximum of ten simultaneous volume imports.

15. When all imports are complete, refer to section 9 for post-import steps.

7 Importing MD3 Windows Server volumes

Prior to starting the online or offline import process from an MD3 array, the target server must be iSCSI or FC mapped to the SC Series array. For information on mapping a server to an SC Series array, refer to the *Dell Storage Manager Administrator's Guide*, available on the Knowledge Center at the SC Series customer portal.

Note: Although mapping the target server to the SC Series arrays is not required prior to offline importing, it is recommended.

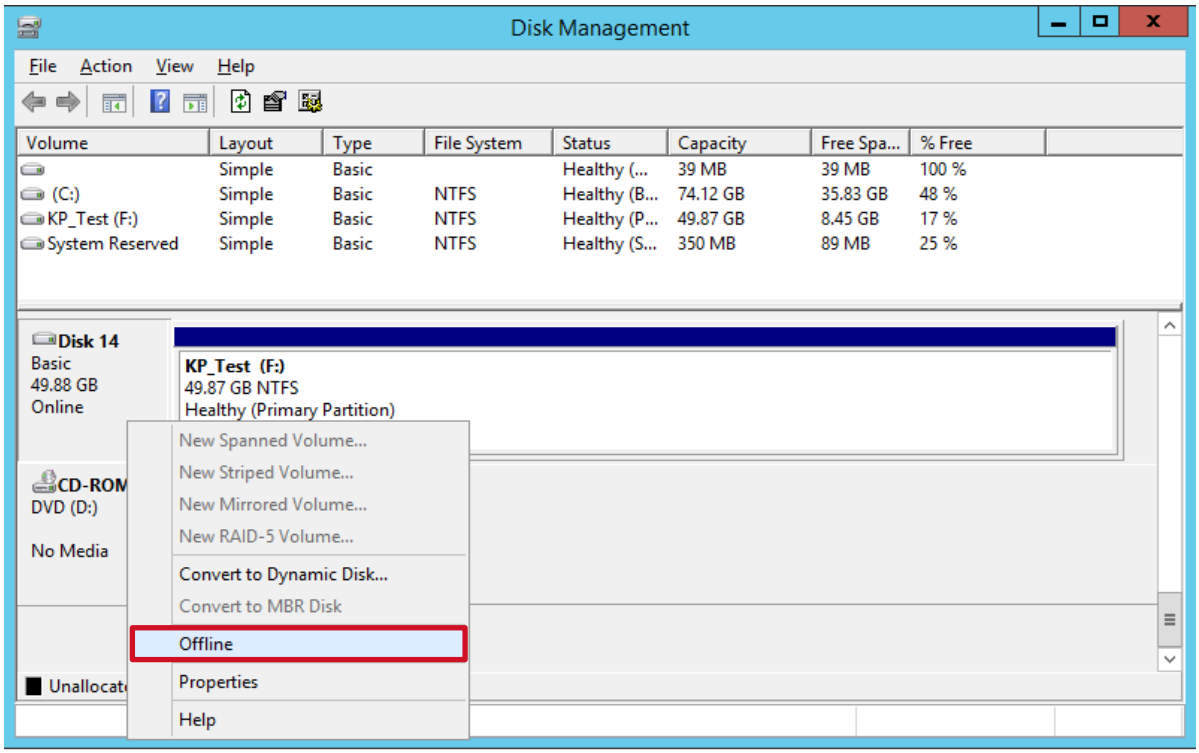
Perform the following steps to import data from an MD3 volume to an SC Series array:

1. Stop any I/O and remove the server connection to the MD3 volume.

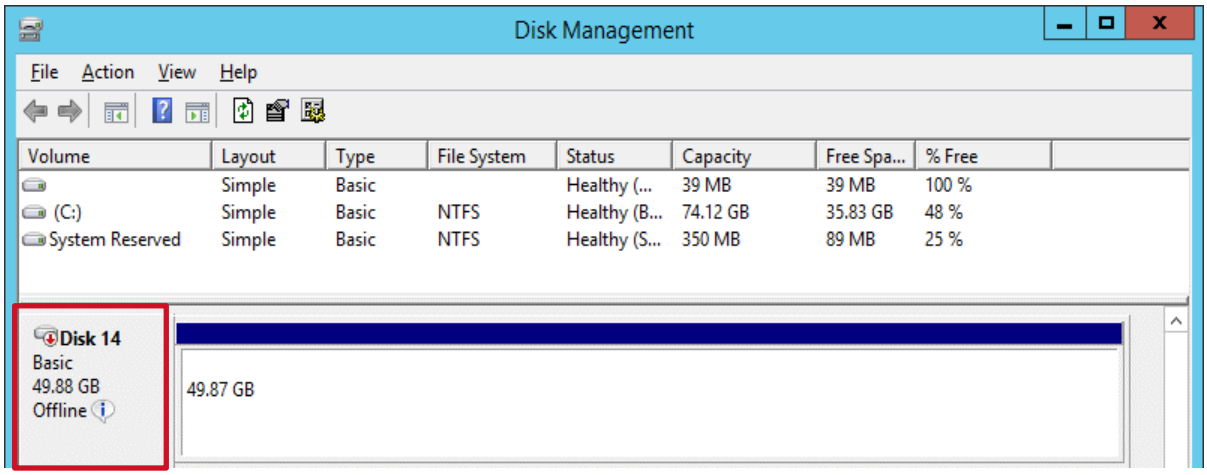
Note: The MD3 volume must be unmapped from the server before the online import process starts. Failure to do so can result in data corruption.

To remove the server connection in Windows Server:

a. To open Disk Management, click **Start > Run > diskmgmt.msc**.
b. **Right-click** the MD3 volume and select **Offline**.

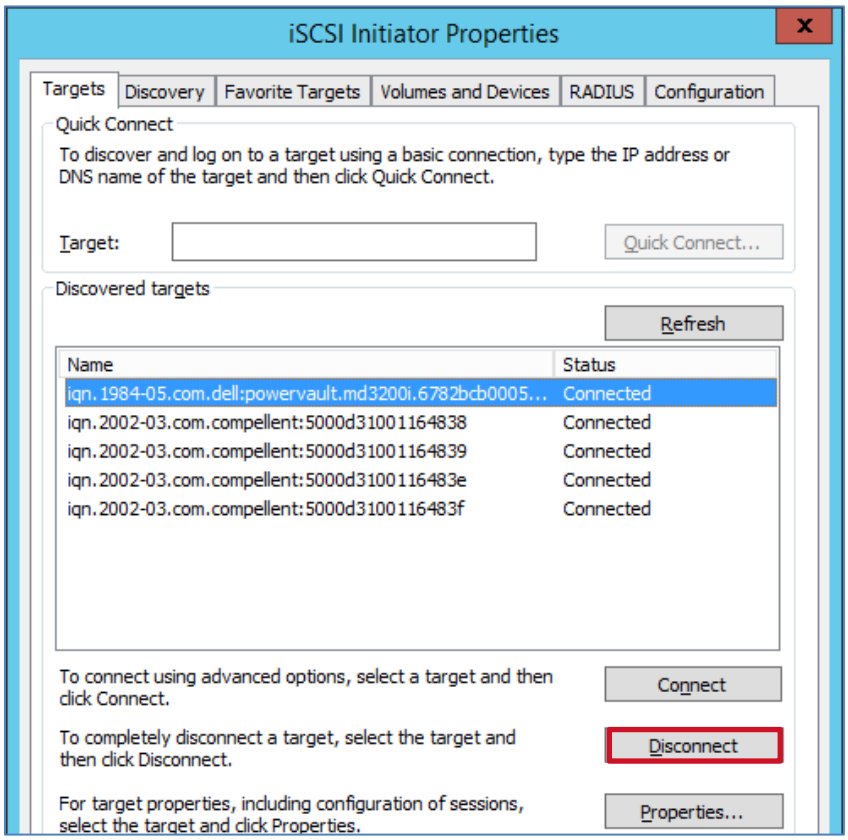


c. The volume is taken offline.

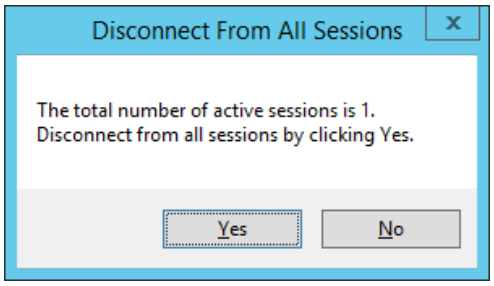


Note: Steps d through h only apply to iSCSI-connected MD3 Series volumes. Skip to step 2 for FC-connected MD3 volumes.

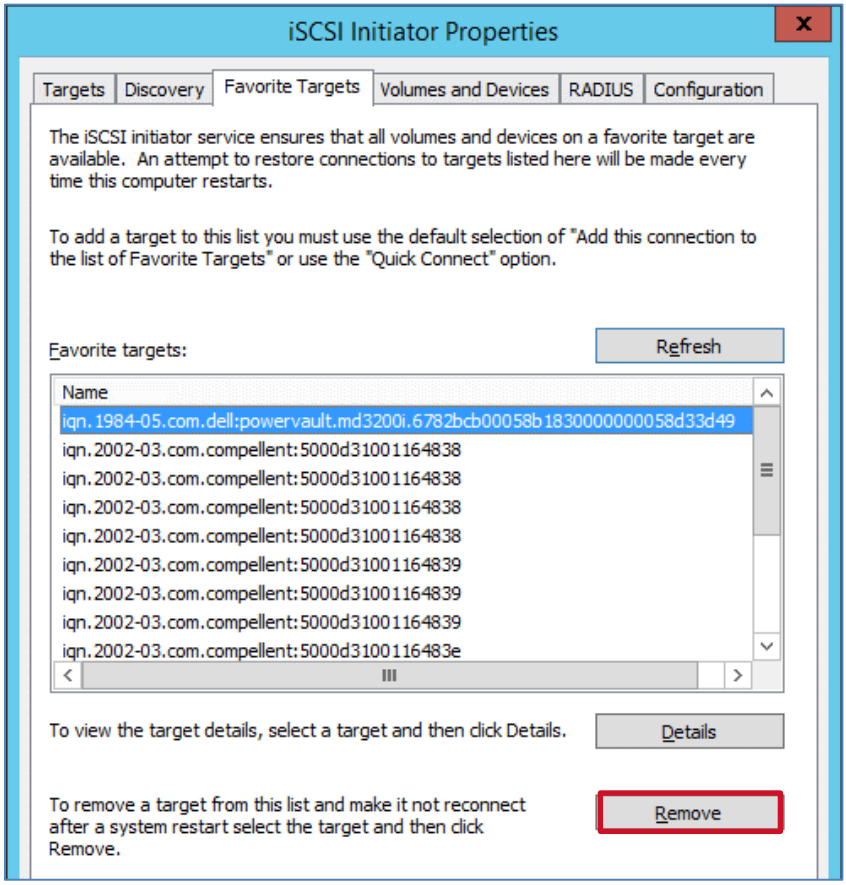
d. Open the iSCSI initiator from the Windows control panel.
e. Click the **Targets** tab and locate the iSCSI target name of the MD3 volume that needs to be disconnected.
f. Select the volume and click **Disconnect**.



g. Click **Yes** to disconnect from all sessions.

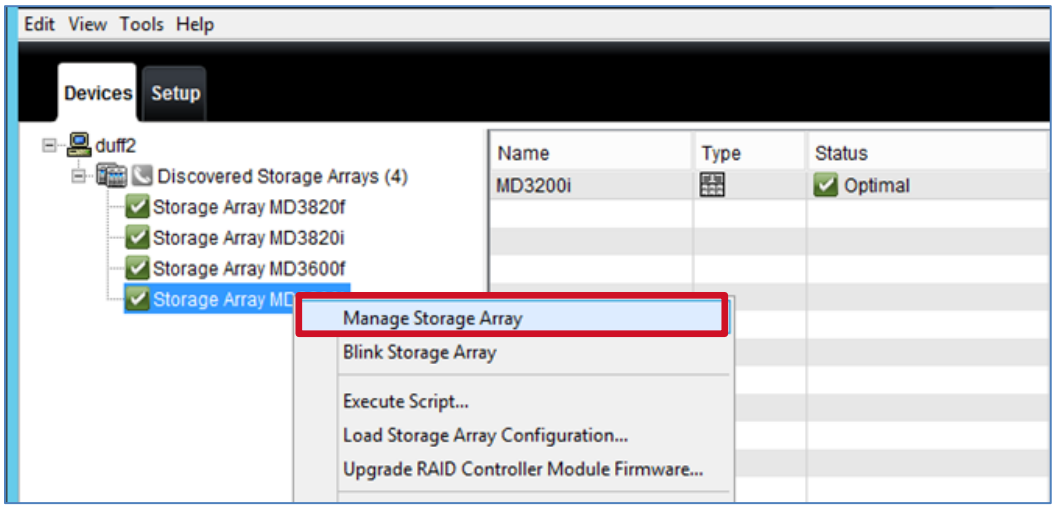


h. To prevent the server from trying to reconnect to the MD3 volume in the future, remove the iSCSI target from the favorite targets list. Click the **Favorite Targets** tab, locate the iSCSI target name of the MD3 volume, and click **Remove**.

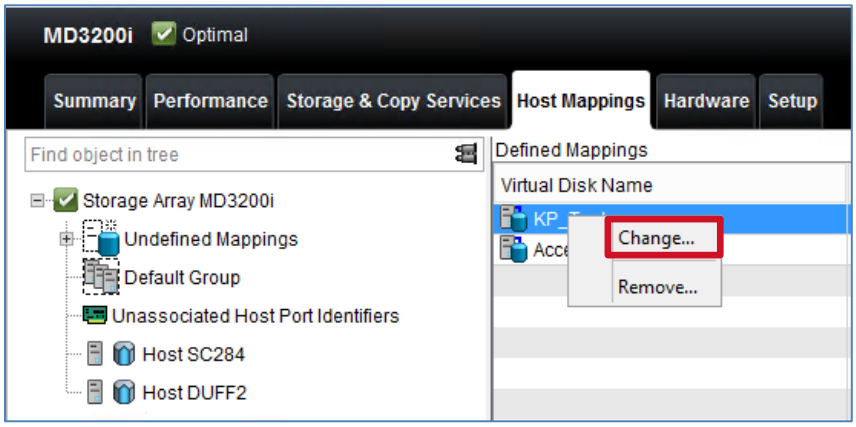


2. Connect to the MD3 array using the **PowerVault Modular Disk Storage Manager** client.

3. Under **Discovered Storage Arrays**, right-click the array to manage and select **Manage Storage Array**.

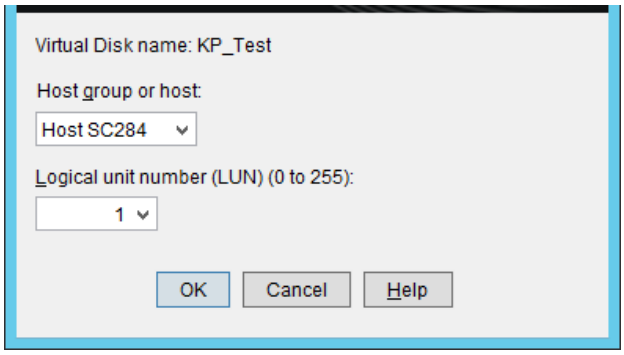


4. When the Array Management window appears, click the **Host Mappings** tab.
5. Select the Windows server host from the list. Right-click the name of the volume to be imported, and select **Change**.

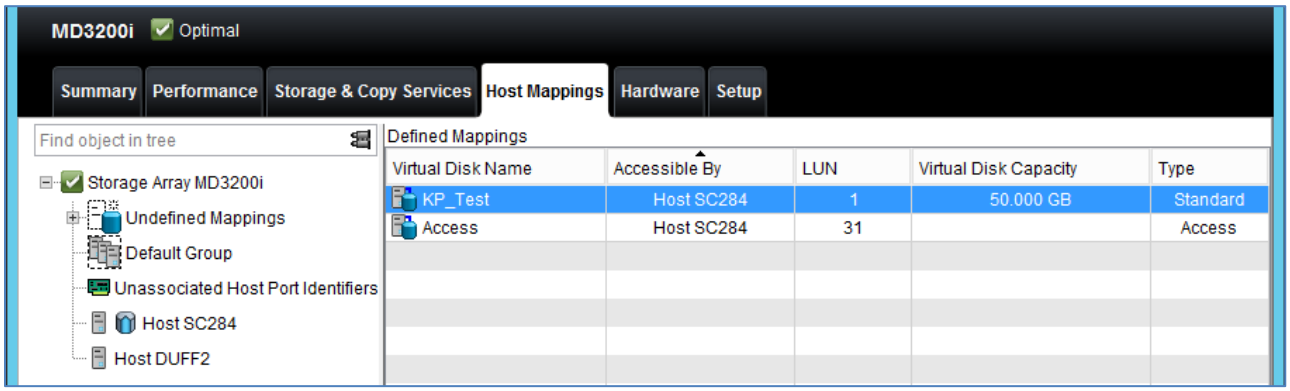


6. Select the **SC Series server host object** from the drop-down list, and select a LUN number.

Note: To maintain consistency, the LUN number used to map the volume to the SC Series should be the same as the LUN number used to map the volume to the Windows server.



7. In the **Change Mapping** window, click **OK** and select **Yes**.
8. Select the **SC Series server host object** and verify the volume has been successfully mapped.

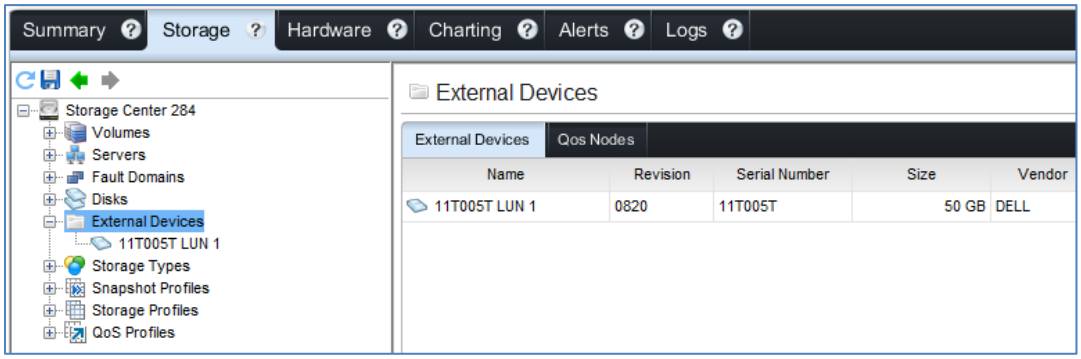


7.1 Online import process – MD3 arrays

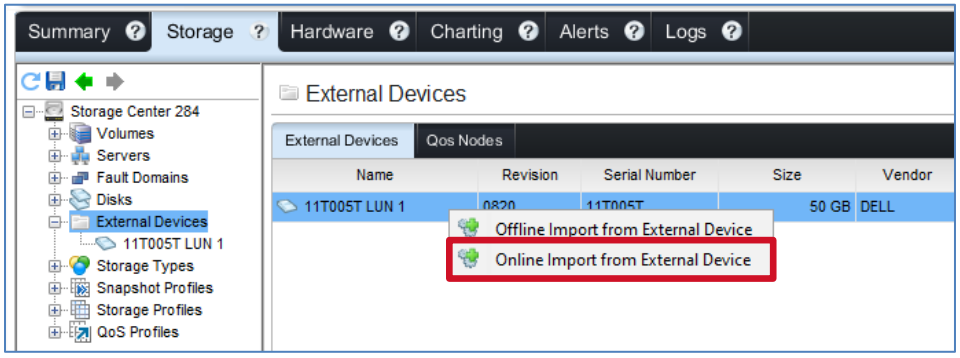
1. Connect to the SC Series array using **Dell Storage Manager Client**.

Note: When importing from an FC-connected MD3 array, step 2 is not required. Volumes that were mapped to the SC server host object on the MD3 will automatically appear in the External Devices subtree.

2. Right-click the fault domain that was used to create the connection to the MD3 array, and select **Rediscover iSCSI Remote Connections**.
3. Any volumes that were mapped to the SC Series host object on the MD3 array will now appear under the **External Devices** subtree**.**

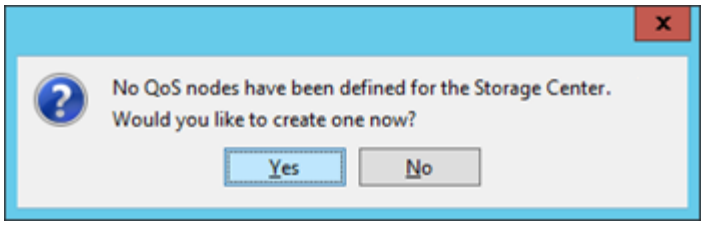


4. Right-click a volume to import and select **Online Import from External Device**.



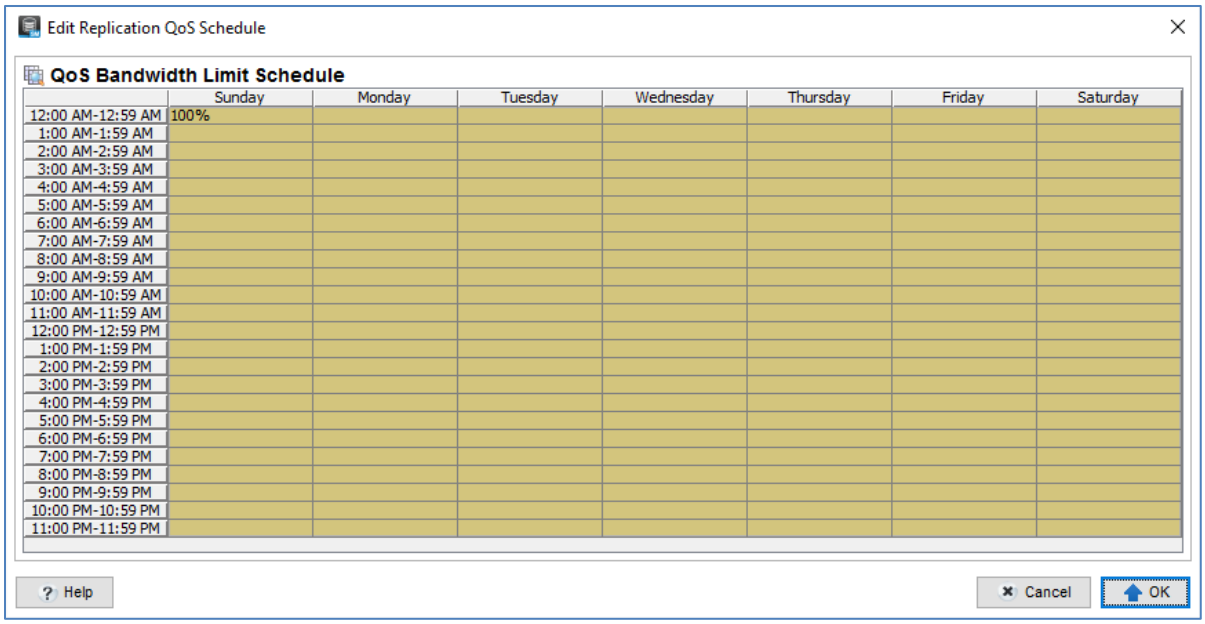
5. The Online Import from External Device window appears. Click **Next**.
6. Select the Windows Server to map the destination volume to. Click **Next**.

a. If a Quality of Service (QoS) definition does not exist on the SC Series array, a prompt will appear to create one. Click **Yes** to continue. Clicking No will cancel the import process.



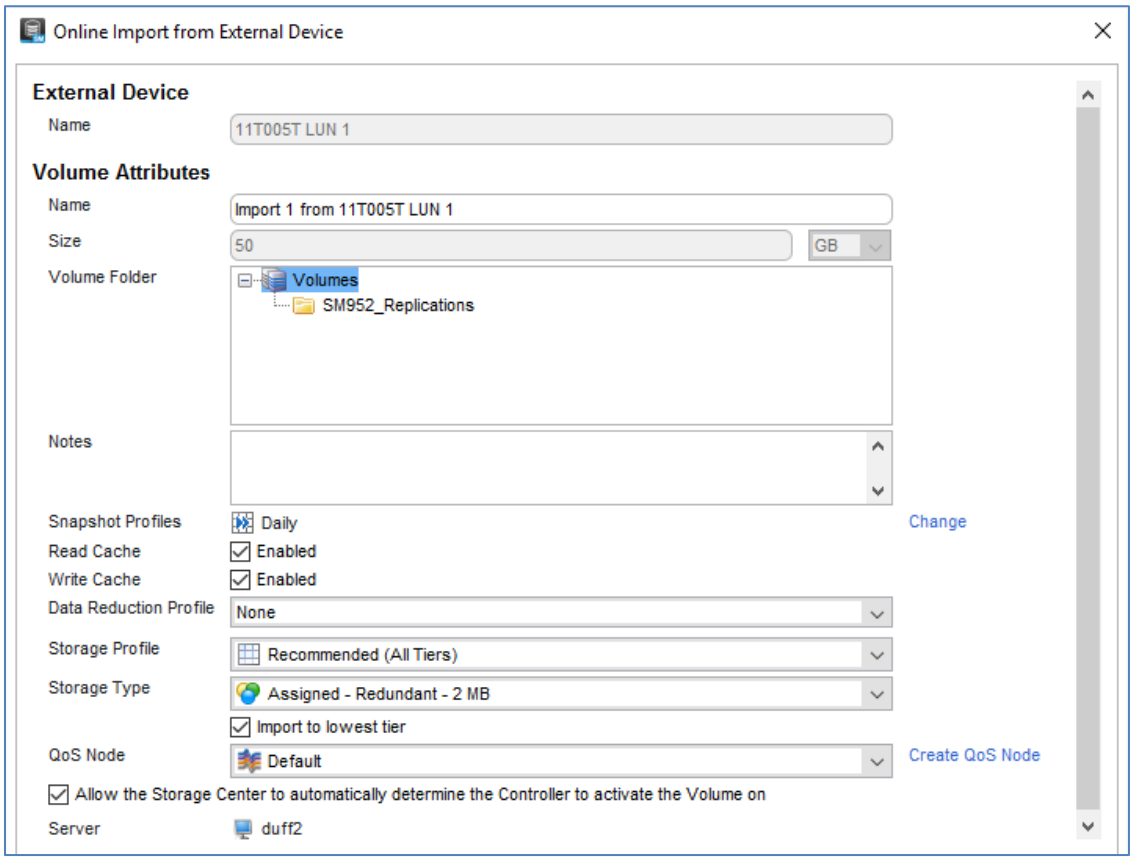
Note: The purpose of the QoS definition is to limit or throttle the bandwidth available to the Thin Import process, because the import process will use all available bandwidth to transfer data. Allocating too much bandwidth to the process can be detrimental to overall system performance. Allocating too little bandwidth will cause the import process to run slowly. If possible, test the process and monitor the system performance to determine the proper bandwidth allocation.

b. Assign a name to the QoS definition. Enter a link speed equivalent or less than the line speed of the iSCSI network or the Fibre Channel fabric connecting the MD3 and SC Series arrays. When enabled, the **Bandwidth Limited** option allows daily scheduling of bandwidth allocation in one hour increments. Click **OK** when finished.

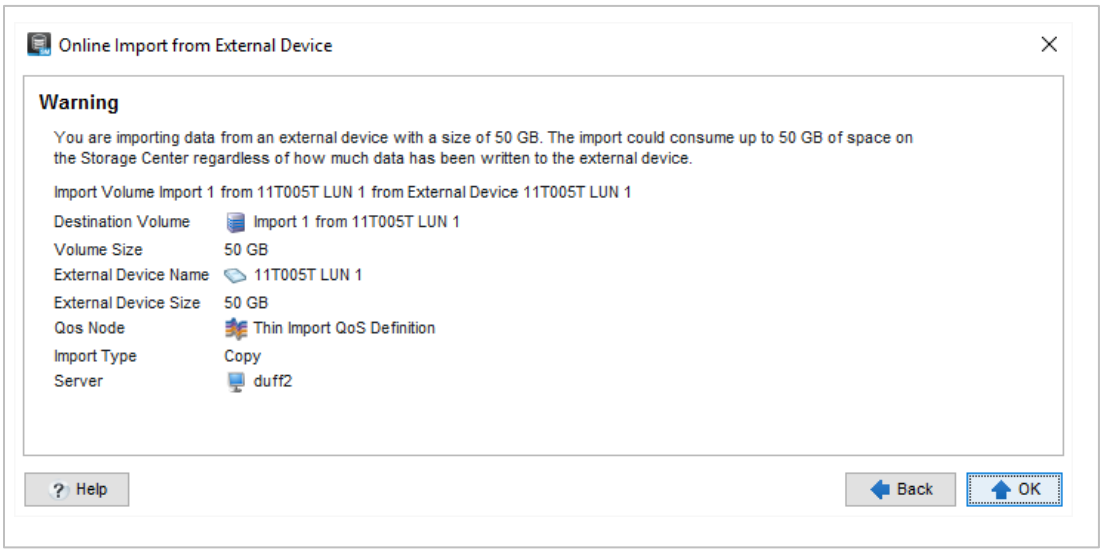


7. Configure attributes for the destination volume such as the **Name**, **Volume Folder** location, **Replay Profiles**, and **QoS Node** definition. Click **Next**.

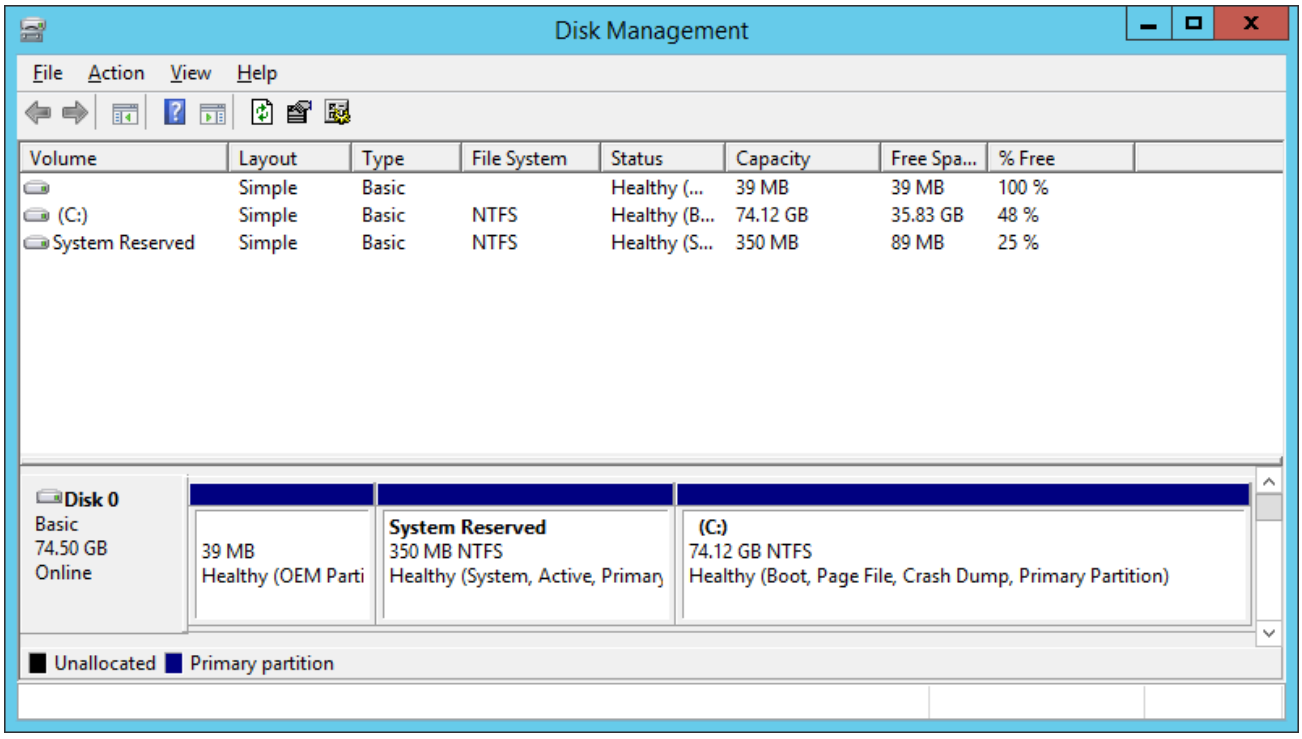
Note: The import process includes the option to import data to the lowest tier of storage. It is a best practice to leave this option enabled because importing data into tier one can cause performance problems and potentially fill all available tier one space.



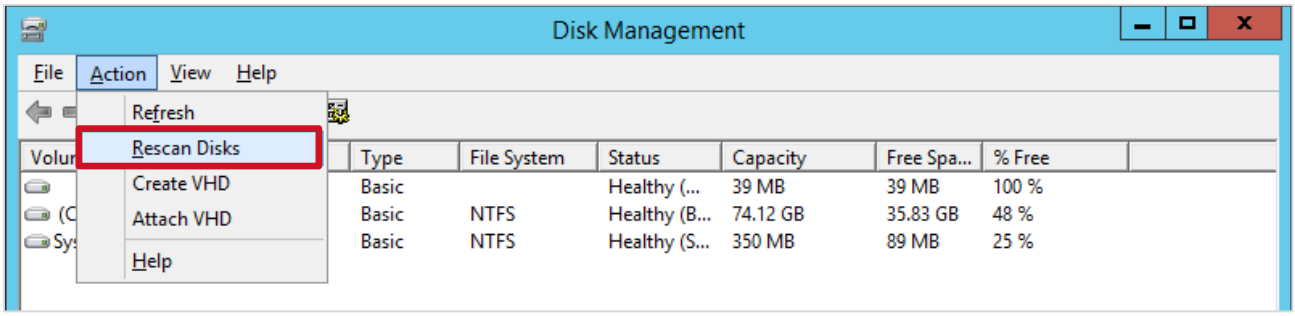
8. Review import settings. Click **OK** to start the import.



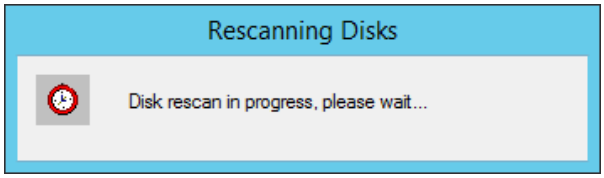
9. As soon as the online import starts, bring the SC Series volume online on the server. Log in to the Windows server as an administrative user, and open **Disk Management** by clicking **Start > Run > diskmgmt.msc.**



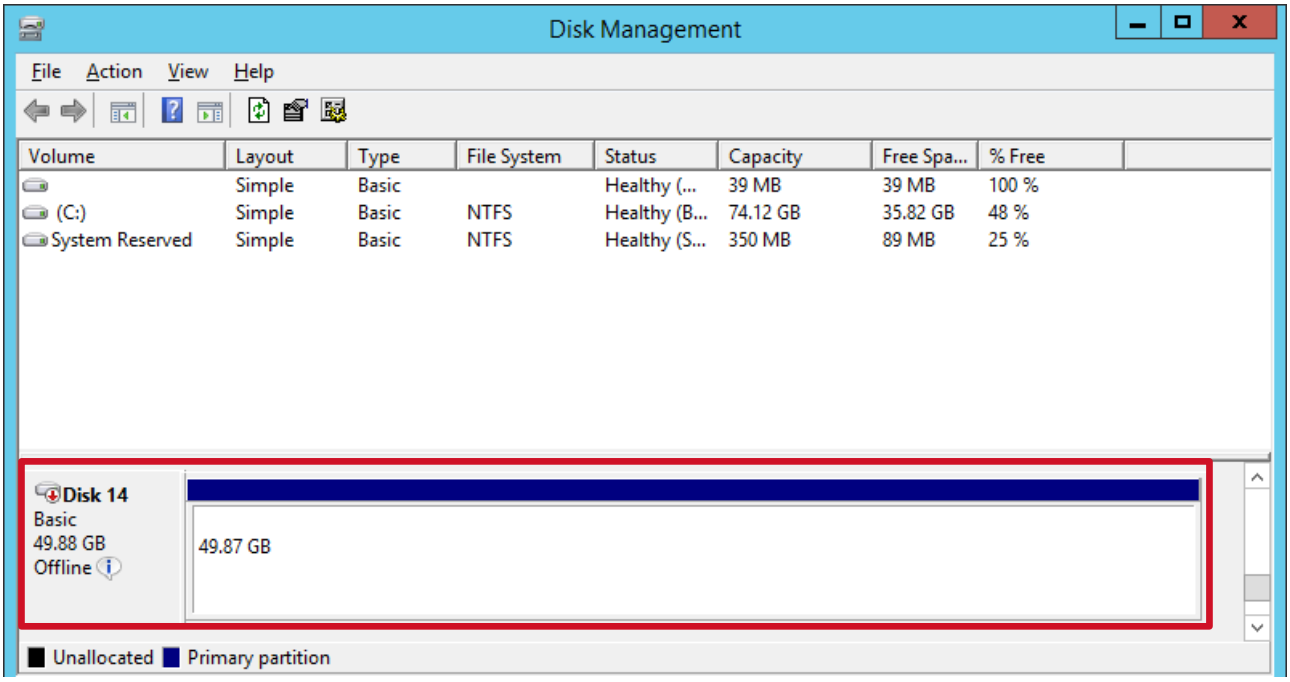
10. Click **Action** > **Rescan Disks**.



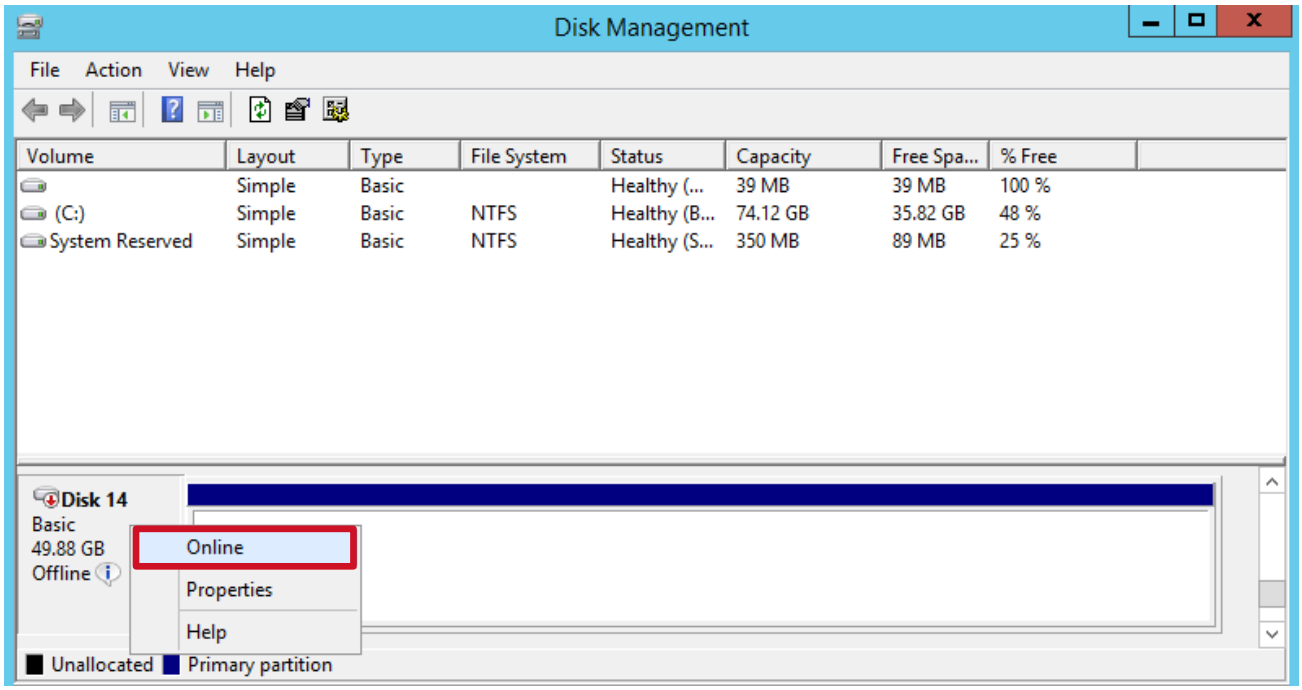
The disk rescan process begins.



When the scan has completed, the SC Series volume appears in the Disk Management window.

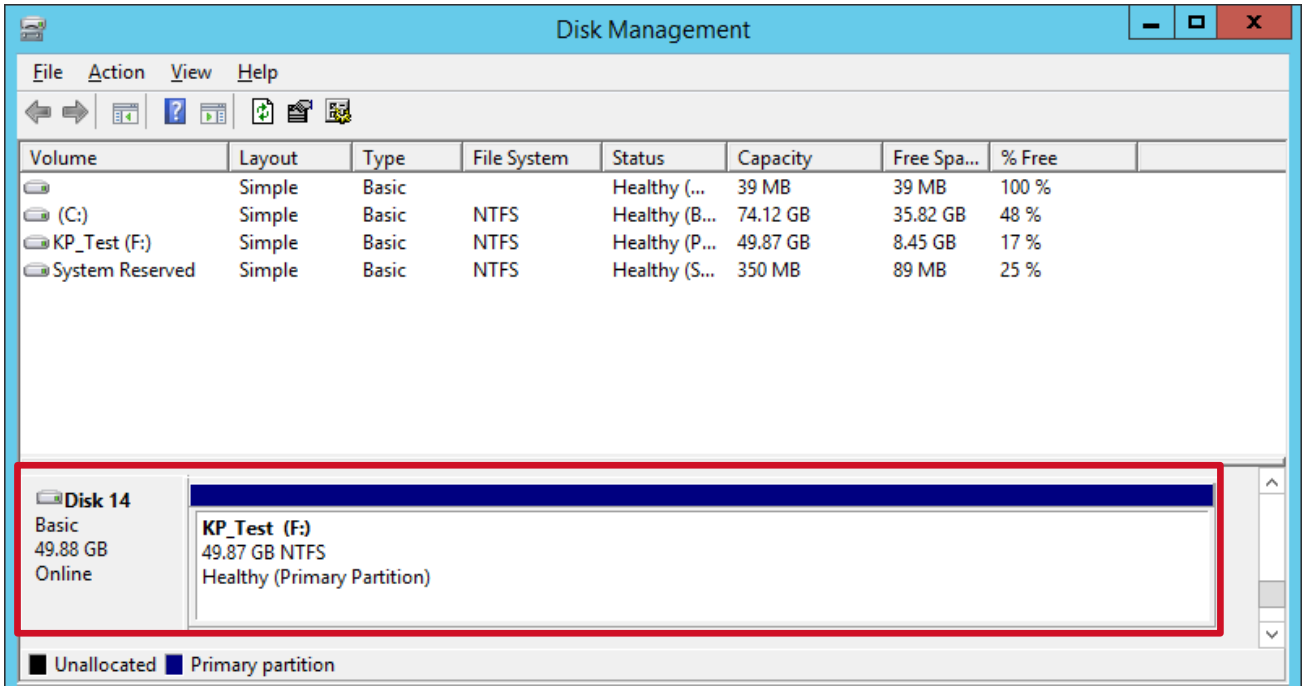


11. Right-click the disk and select **Online**.

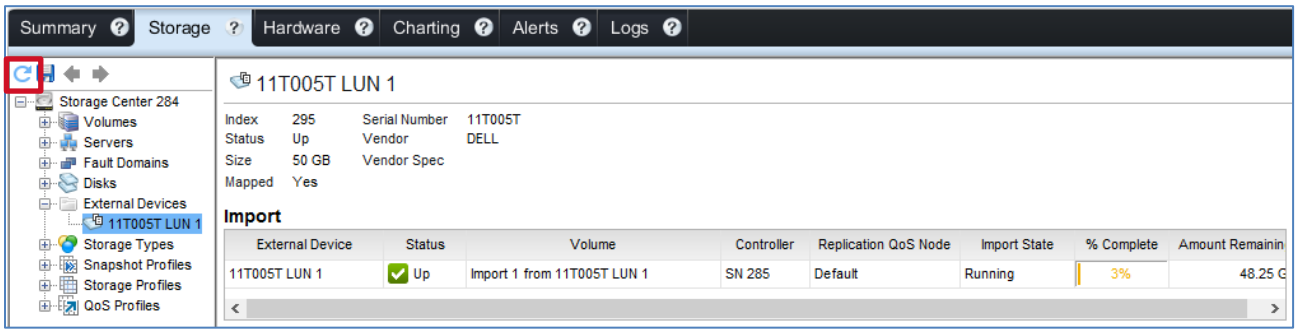


Note: A new MPIO provider will need to be installed for the SC Series array, which will require a reboot of the server.

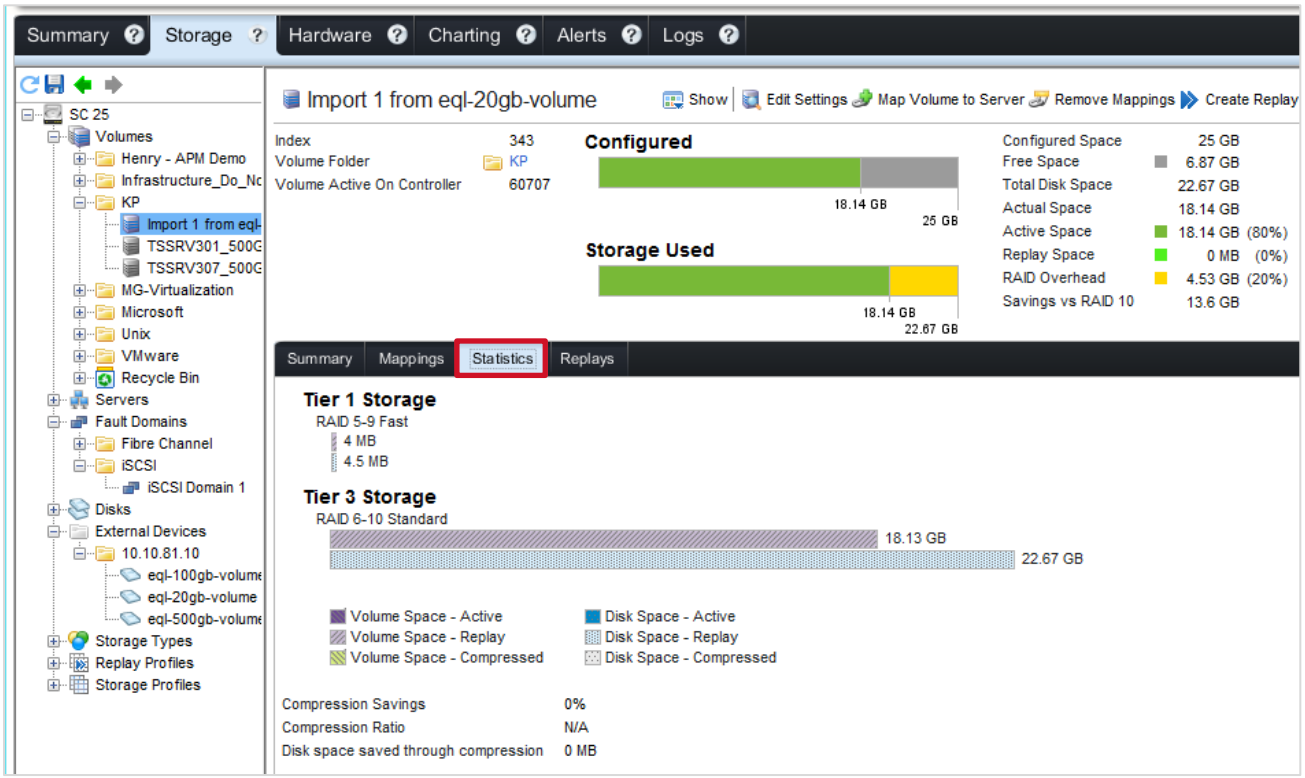
12. The disk is brought online with the same drive letter, and can now be used during the online import process.



13. While the import process is running, monitor progress in the volume details window. Click the **refresh** icon to update the progress.



14. When the import process is complete, locate the new volume in the **Volumes** subtree. Verify that the configured and used storage is listed correctly. The **Statistics** tab shows the storage tier where the imported data resides.



Note: When the online import process is complete, all server I/O to the MD3 volume is stopped.

15. Repeat steps 4–14 for any other MD3 volumes to import.

Note: Importing another volume can be initiated immediately following the completion of the import wizard. Be advised that each individual import will utilize all allocated bandwidth as defined in the QoS definition used during the import. Running multiple volume imports simultaneously could cause system performance problems if available bandwidth becomes limited. SC Series storage supports a maximum of ten simultaneous volume imports.

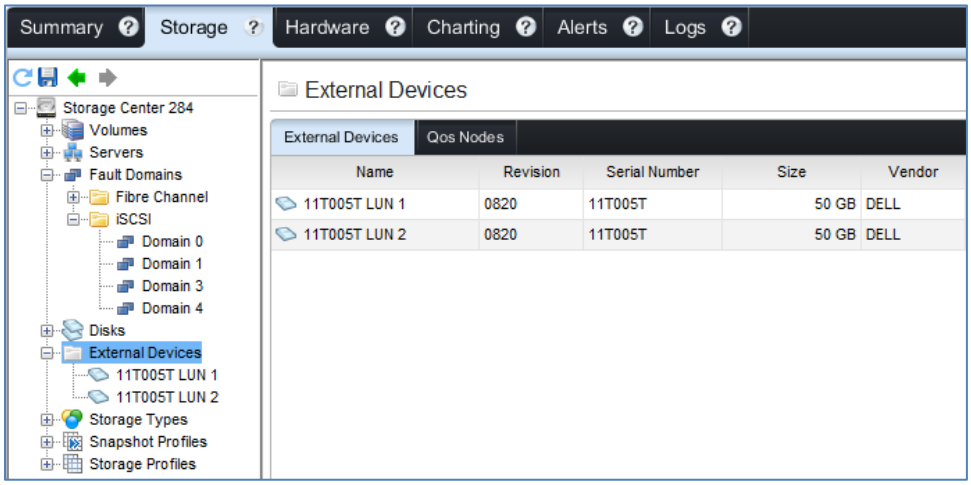
16. When all imports are complete, refer to section 9 for post-import steps.

7.2 Offline import process – MD3 arrays

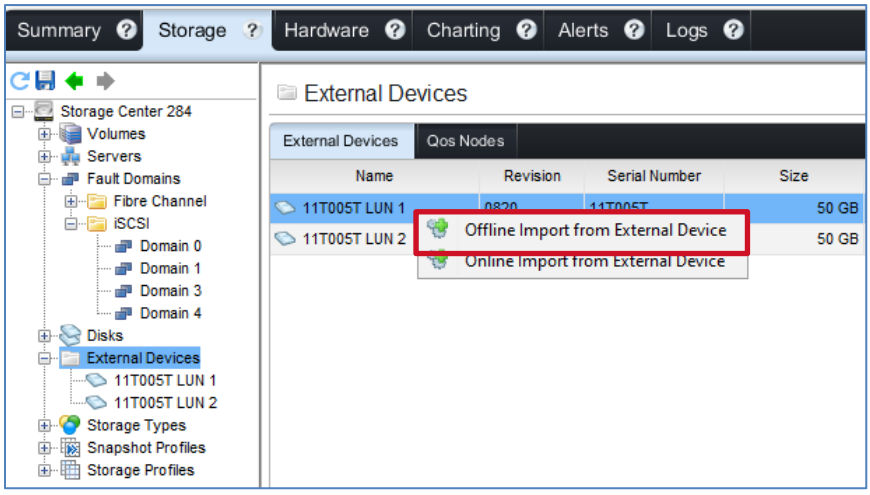
1. Connect to the SC Series array using **Dell Storage Manager Client**.

Note: When importing from an FC-connected MD3 array, step 2 is not required. Volumes that were mapped to the SC Series server host object on the MD3 array will automatically appear in the External Devices subtree.

2. Right-click the fault domain that was used to create the connection to the MD3 array, and select **Rediscover iSCSI Remote Connections**.
3. Any volumes that were mapped to the SC Series host object on the MD3 array will now appear under the **External Devices** subtree**.**

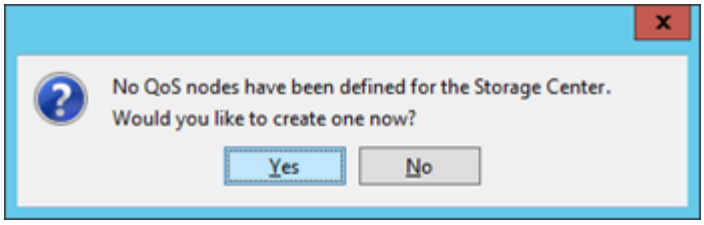


4. Right-click a volume to import and select **Offline Import from External Device**.



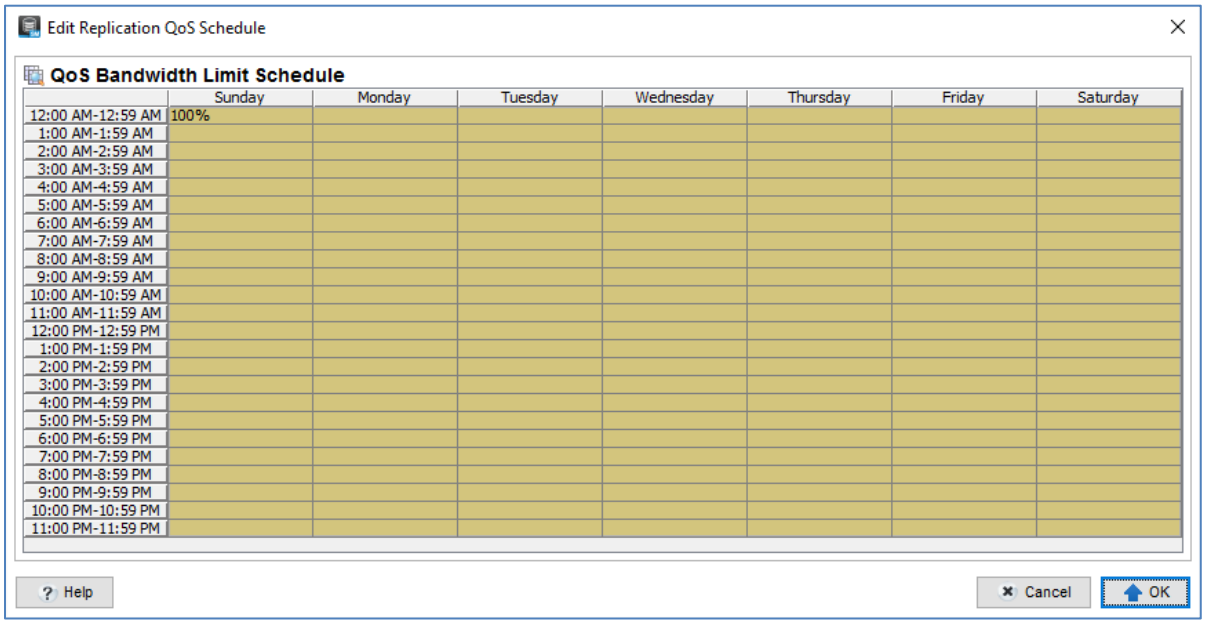
5. The Offline Import from External Device window appears. Click **Next**.

   a. If a Quality of Service (QoS) definition does not exist on the SC Series array, a prompt will appear to create one. Click **Yes** to continue. Clicking No will cancel the import process.



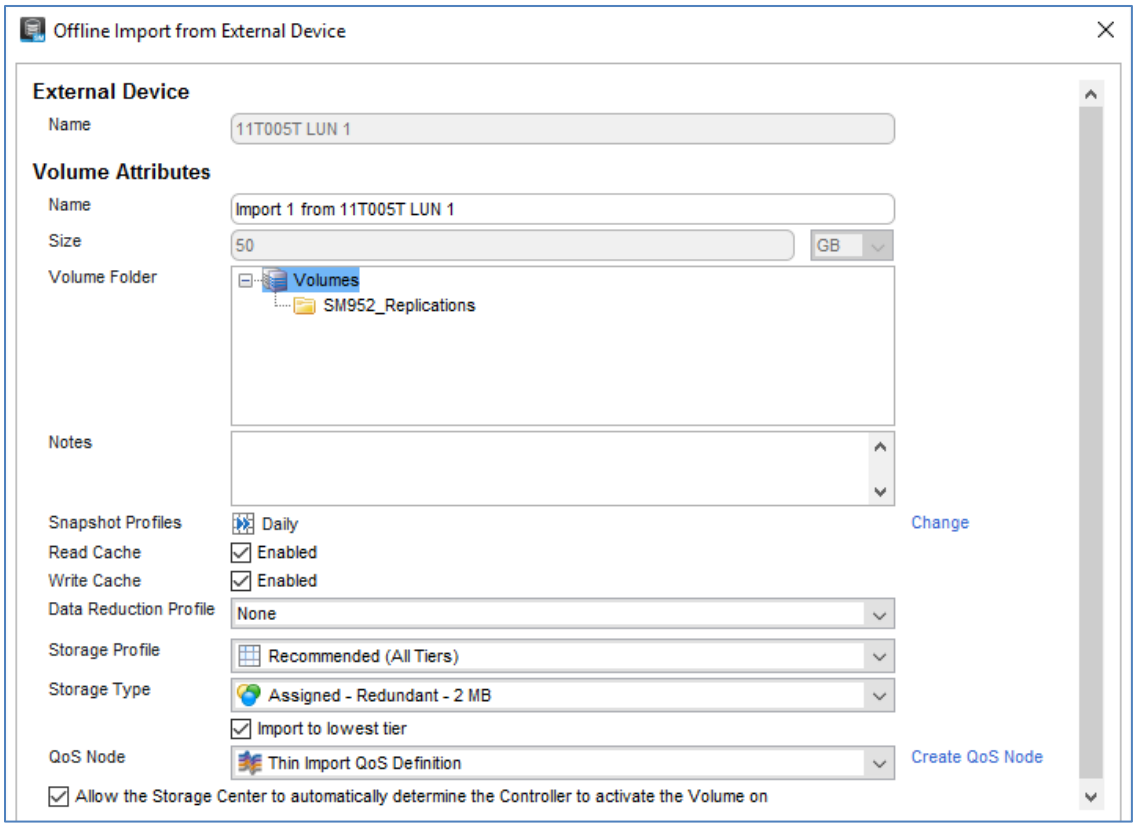
Note: The purpose of the QoS definition is to limit or throttle the bandwidth available to the Thin Import process, because the import process will use all available bandwidth to transfer data. Allocating too much bandwidth to the process can be detrimental to overall system performance. Allocating too little bandwidth will cause the import process to run slowly. If possible, test the process and monitor the system performance to determine the proper bandwidth allocation.

   b. Assign a name to the QoS definition. Enter a link speed equivalent or less than the line speed of the iSCSI network or Fibre Channel fabric connecting the MD3 and SC Series arrays. When enabled, the **Bandwidth Limited** option allows daily scheduling of bandwidth allocation in one-hour increments. Click **OK** when finished.

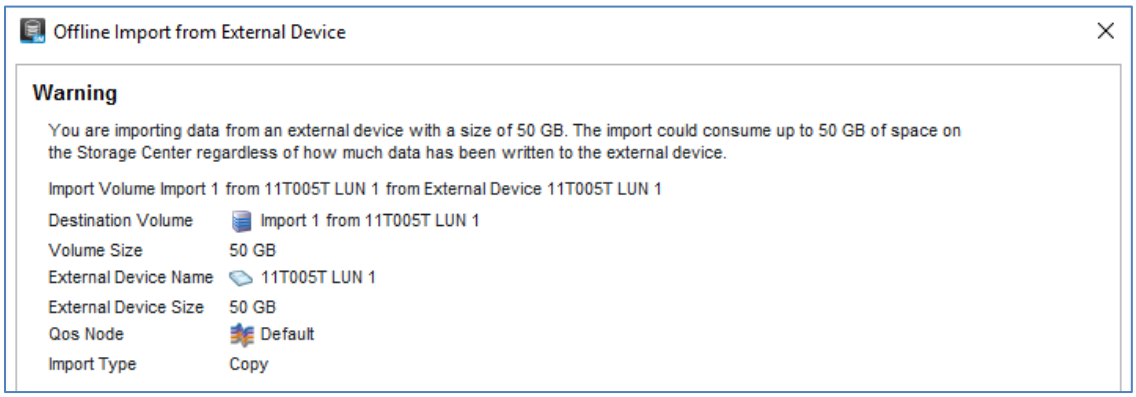


6. Configure attributes for the destination volume such as the **Name**, **Volume Folder** location, **Replay Profiles**, and **QoS Node** definition. Click **Next**.

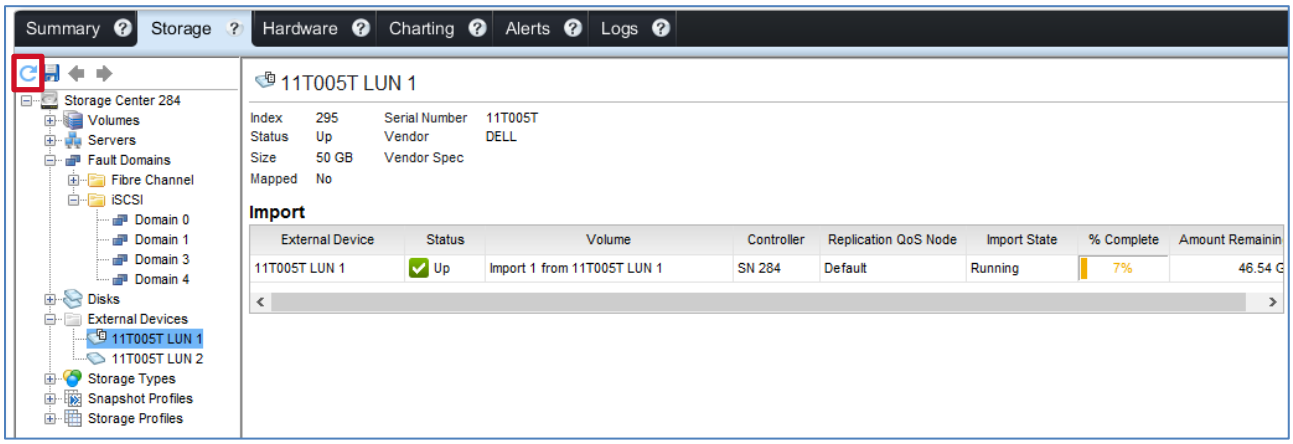
Note: The import process includes the option to import data to the lowest tier of storage. It is a best practice to leave this option enabled because importing data into tier one can cause performance problems and potentially fill all available tier one space.



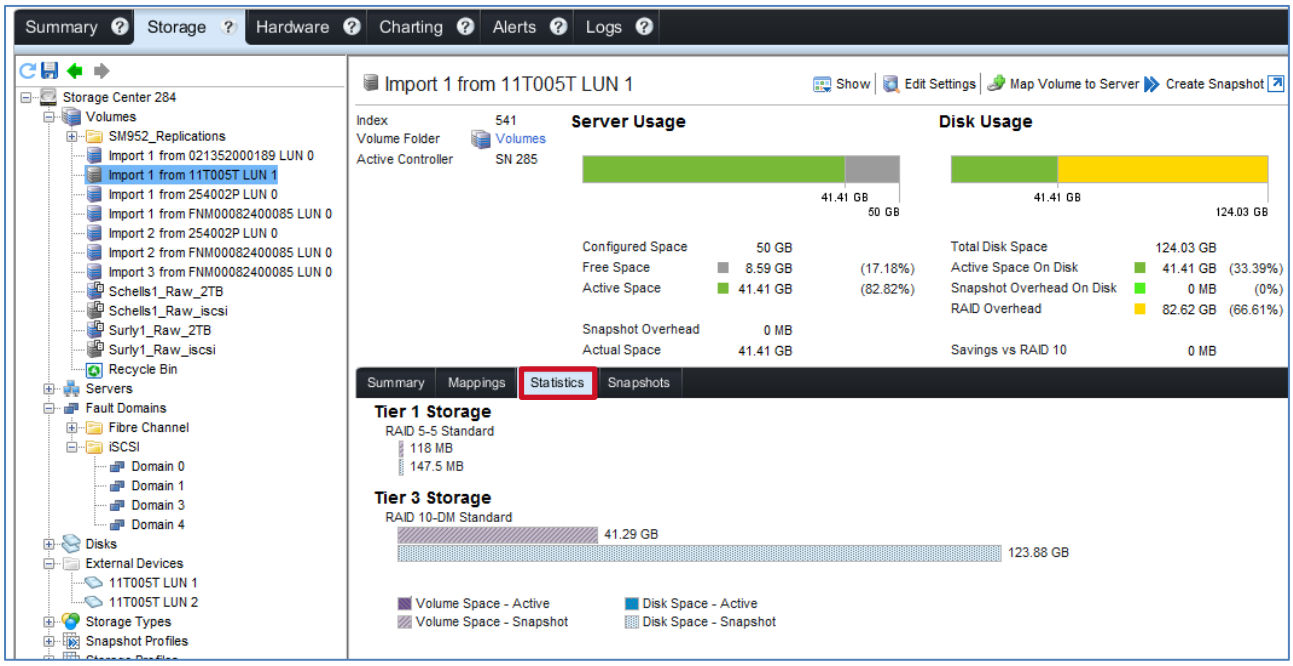
7. Review the import settings and click **OK** to start the import.



8. While the import process is running, monitor the progress in the volume details window. Click the **refresh** icon to update the progress.



9. When the import process is complete, locate the new volume in the **Volumes** subtree. Verify the configured and used storage is correct. The **Statistics** tab shows the storage tier in which the imported data resides.



10. When the import has finished, the volume can be mapped to a server. For information on mapping a volume to a server, refer to the *Dell Storage Manager Administrator's Guide*, available on the Knowledge Center at the SC Series customer portal.
11. Repeat steps 4–7 for all other MD3 volumes to import in offline mode.

Note: A new MPIO provider will need to be installed for the SC Series array, which will require a reboot of the server.

Note: Importing another volume can be initiated immediately following the completion of the import wizard. Be advised that each individual import will utilize all allocated bandwidth as defined in the QoS definition used during the import. Running multiple volume imports simultaneously could cause system performance problems if available bandwidth becomes limited. SC Series storage supports a maximum of ten simultaneous volume imports.

12. When all imports are complete, refer to section 9 for post-import steps.

8 Importing PS Series and MD3 VMware volumes

SCOS 7.0 and newer supports using the Thin Import process to import volumes from a VMware ESXi® server (version 5.5 Update 2 or higher) connected to a PS Series array. SCOS 7.2.10 and newer supports using the Thin Import process to import volumes from an ESXi server (version 5.5 Update 2 or higher) connected to an MD3 array. This section details how to import a VMware volume that is actively hosting virtual machine guests.

8.1 Prerequisites

Along with the requirements listed in section 2, importing a VMware volume requires additional configuration on the ESXi server and on the SC Series array.

8.1.1 Create an iSCSI connection from the ESXi server to the SC Series array

Prior to importing a PS Series or MD3 VMware volume in either offline or online mode, the ESXi server must establish an iSCSI connection the SC Series array. For detailed instructions on creating an iSCSI connection from an ESXi server to an SC Series array, refer to the document, *Dell EMC SC Series Best Practices with VMware vSphere 5.x-6.x*.

8.1.2 Create a server object on the SC Series array

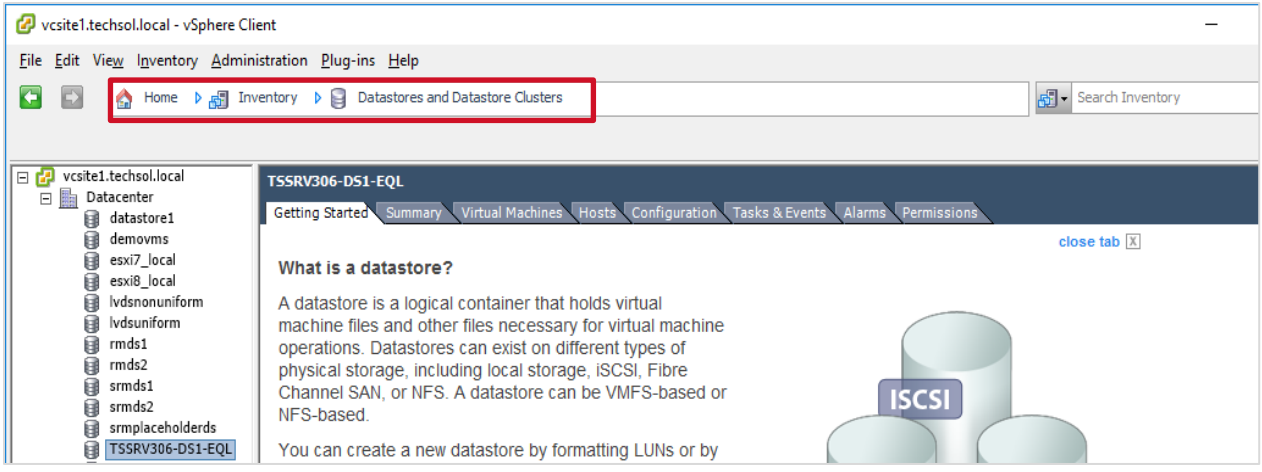
Once an iSCSI connection is established from the ESXi server to the SC Series array, a server object must be created on the SC Series array to allow for the mapping of the newly imported volume to the ESXi server. For detailed instructions on creating a server object on an SC Series array, refer to the *Dell Storage Manager Administrator's Guide*, available on the Knowledge Center at the SC Series customer portal.

8.2 Running the import process

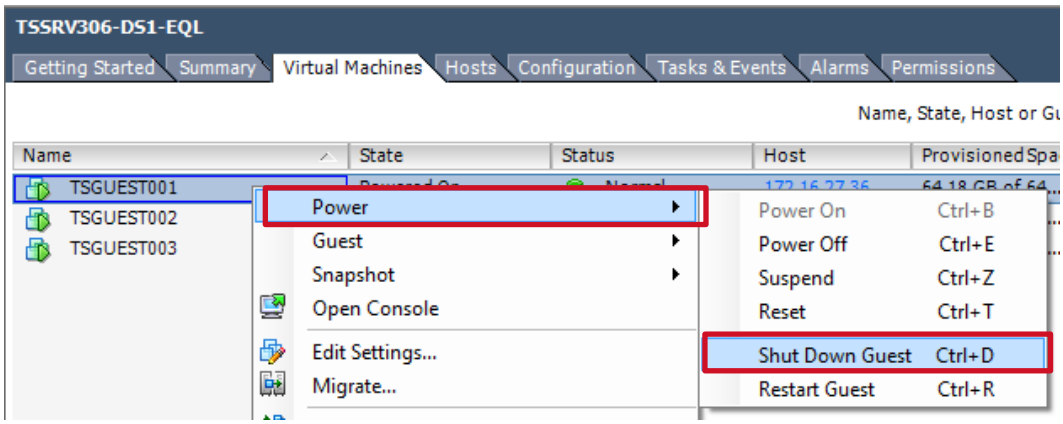
Perform the following steps to import a PS Series or MD3 VMware volume to an SC Series array in online mode:

8.2.1 Initial steps on ESXi host

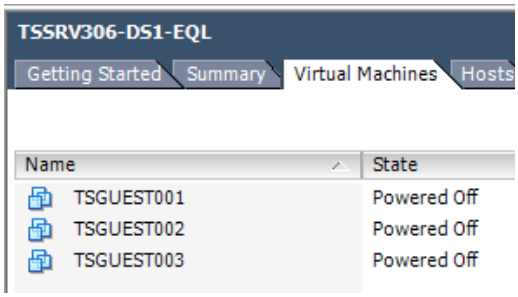
1. Log in to the vSphere Client.
2. Navigate to **Home > Inventory > Datastores and Datastore Clusters** and select the datastore to be imported.



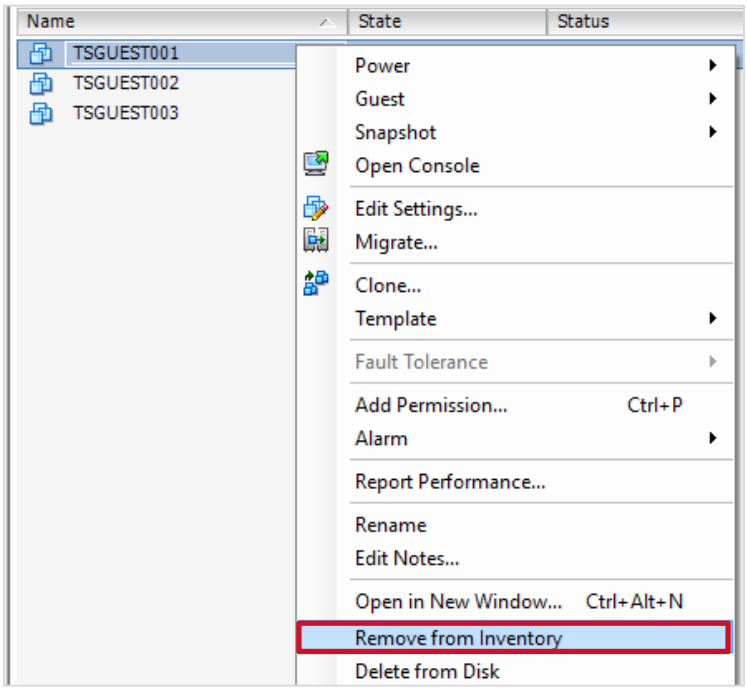
3. Click the **Virtual Machines** tab.
4. For each virtual machine listed, right-click the VM and select **Power** > **Shut Down Guest**.



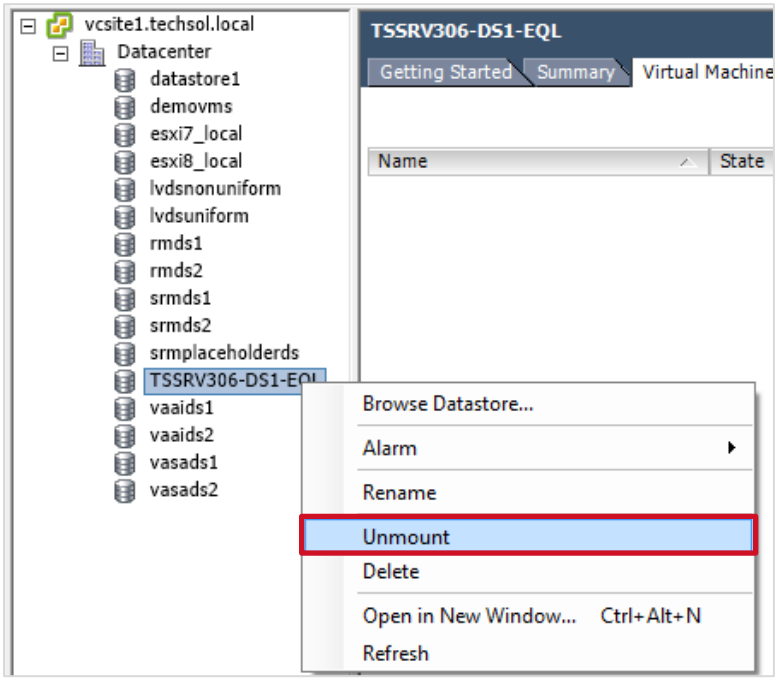
5. Repeat this process for all guests stored on the datastore. All guests should be in a **Powered Off** state.



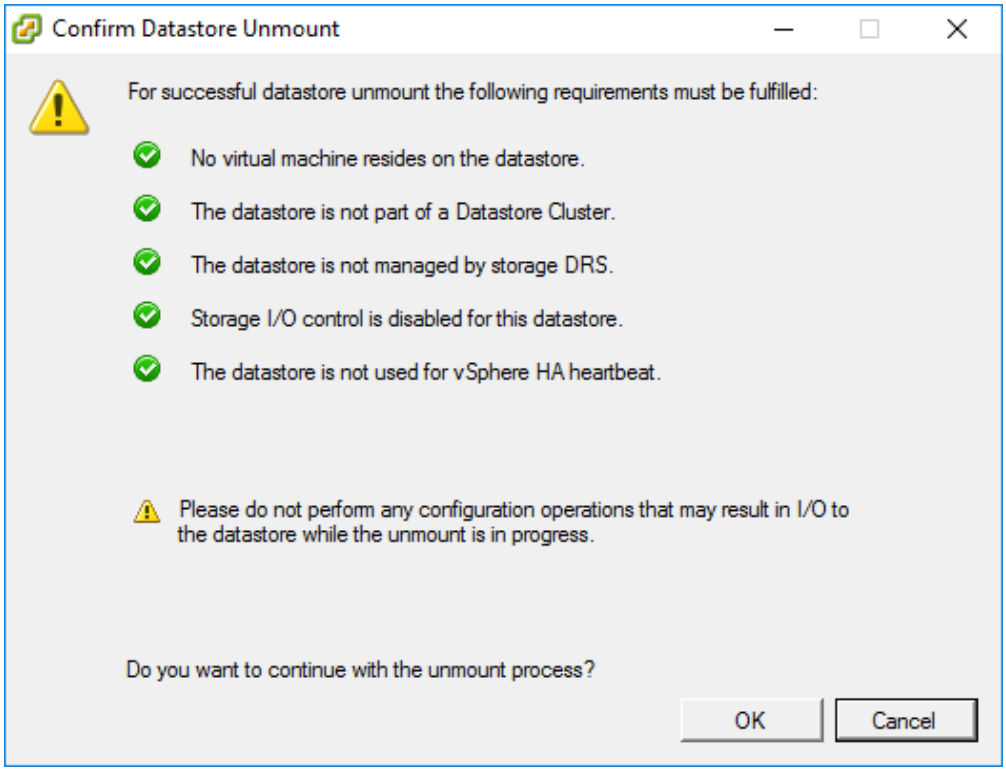
6. To remove each guest from inventory, right-click the guest and select **Remove from Inventory**.



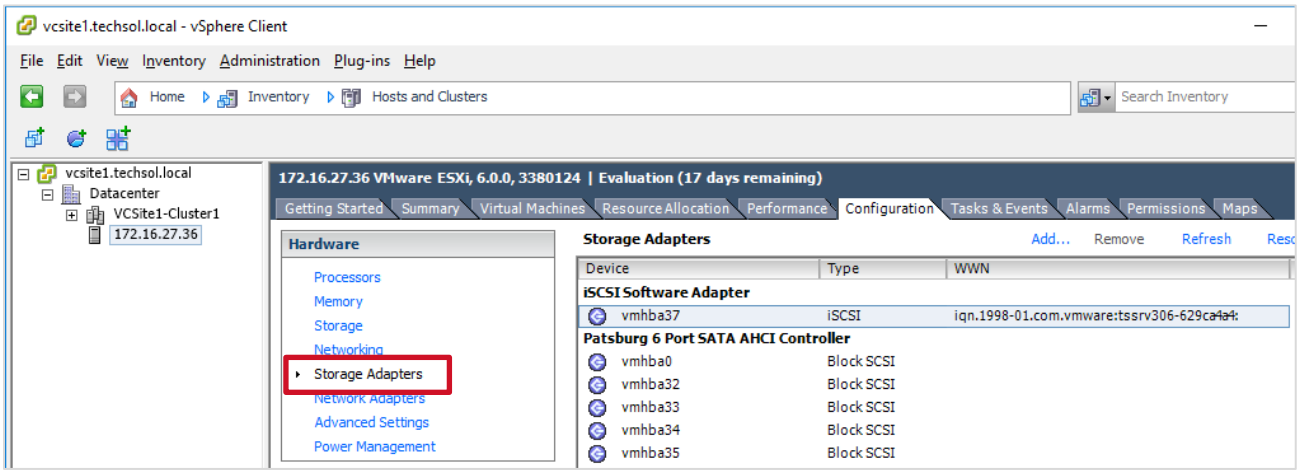
7. When all guests have been successfully removed from inventory, unmount the datastore by right-clicking the datastore and selecting **Unmount**.



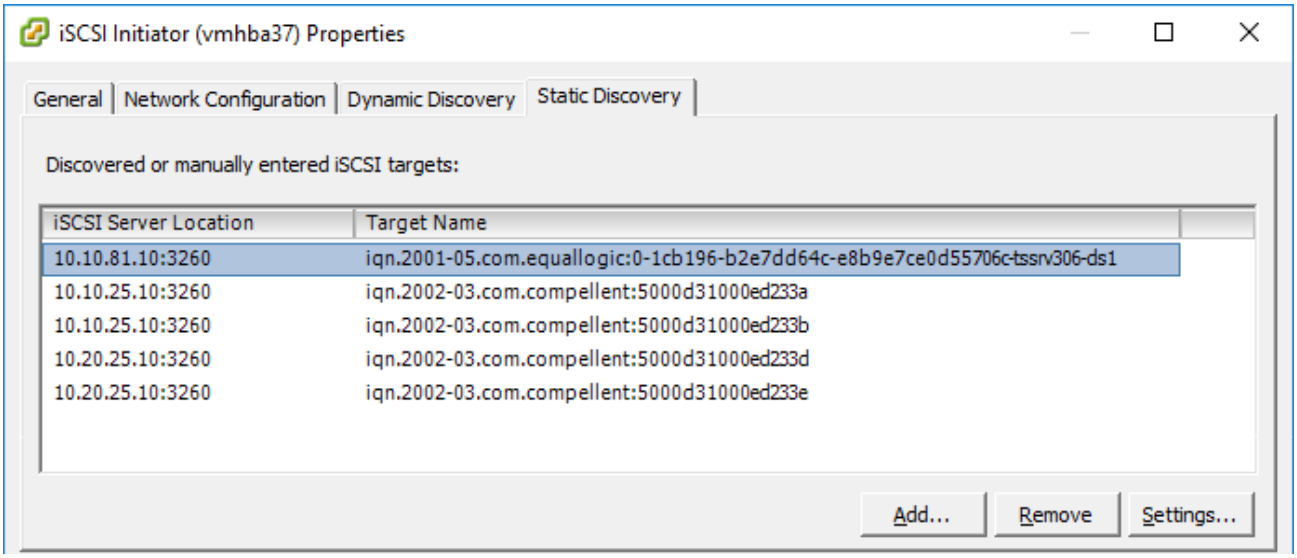
8. Confirm the datastore can be unmounted and click **OK**.



9. To navigate to the software iSCSI initiator for the ESXi server, click **Home** > **Inventory** > **Hosts and Clusters**. Select the ESXi server in the left pane and select the **Configuration** tab. In the **Hardware** window, select **Storage Adapters**.



10. Right-click the iSCSI software adapter and select **Properties**.
11. Select the **Static Discovery** tab, and locate the **Target Name** of the PS Series or MD3 volume that was unmounted (if needed, expand the window to see the entire Target Name). Select the target and click **Remove**. Answer **Yes** to confirm the removal.

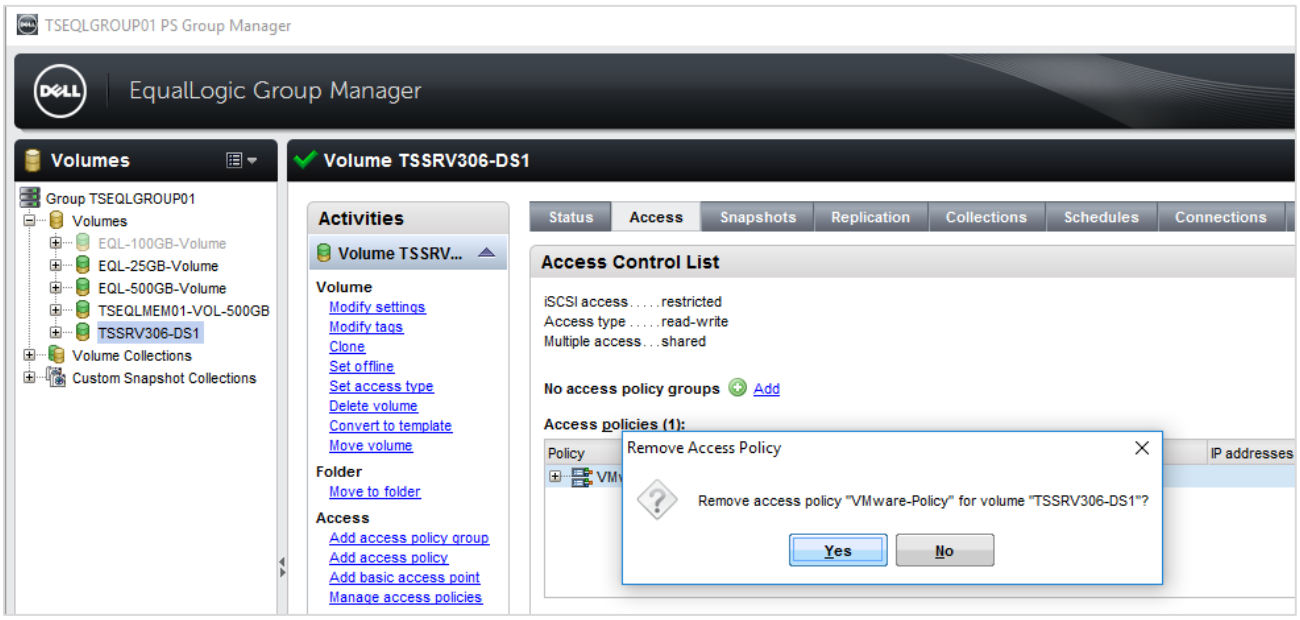


12. When the target has been removed, click **Close**. When prompted to rescan the host bus adapter, click **No**. Answering yes will cause the ESXi server to log in to the PS Series or MD3 array again.

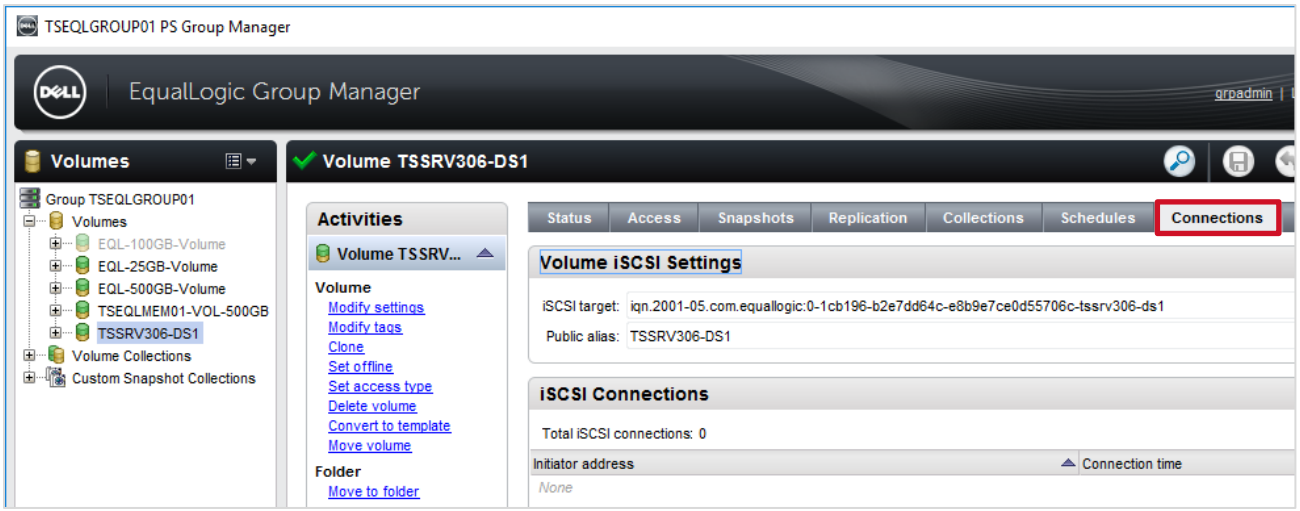
8.2.2 Change volume access on the PS Series array

Note: See section 3 for more detailed steps on volume access and access control lists.

1. Log in to the **EqualLogic PS Group Manager**. Select **Volumes** from the menu, and select the volume to import. Select the **Access** tab and remove any access policies applied to the volume.

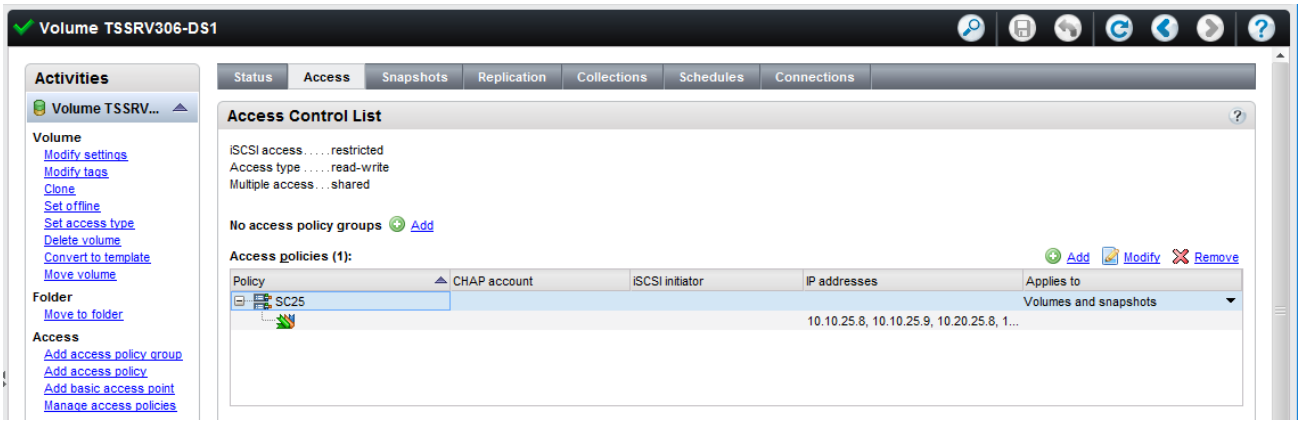


2. In the **Connections** tab, verify there are no connections to the volume.

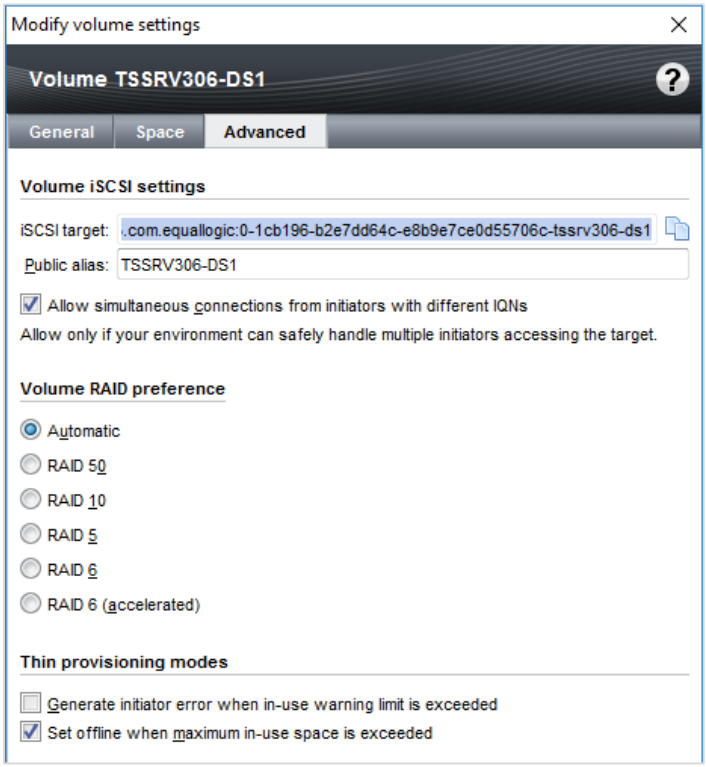


Note: It is strongly recommended to take a snapshot of the VMware volume hosted on the PS Series array before proceeding in online or offline mode. In the unlikely event of a failure during the import, a snapshot ensures volume integrity in the case of a restore.

3. Apply the access control list to allow the SC Series array to access this volume.



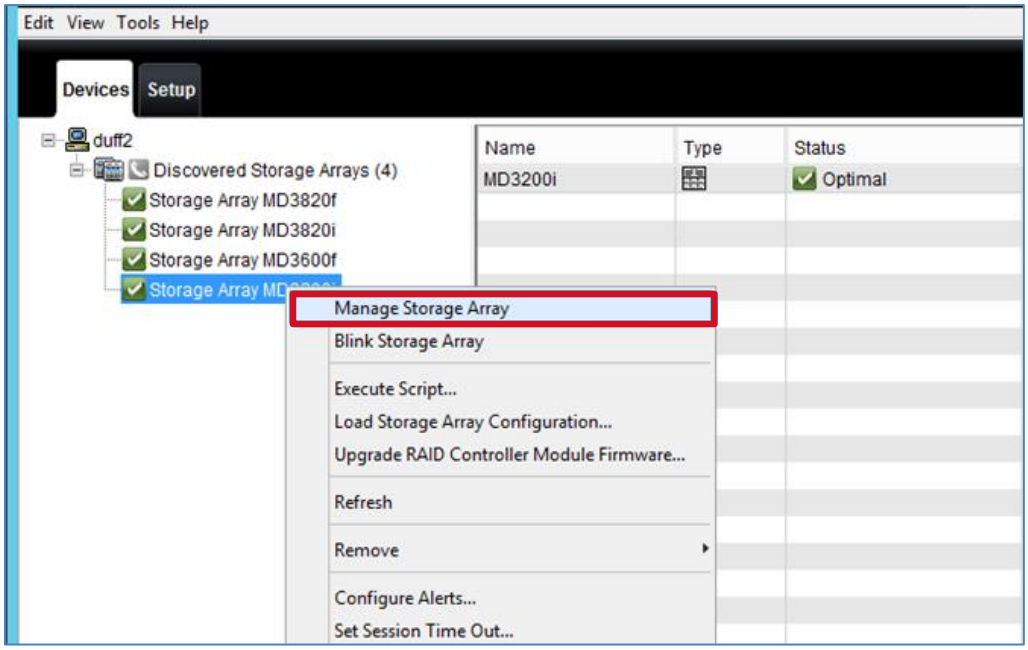
4. In the volume **Activities** window, select **Modify settings**. Select the **Advanced** tab, and verify that **Allow simultaneous connections from initiators with different IQNs** is enabled on the volume.



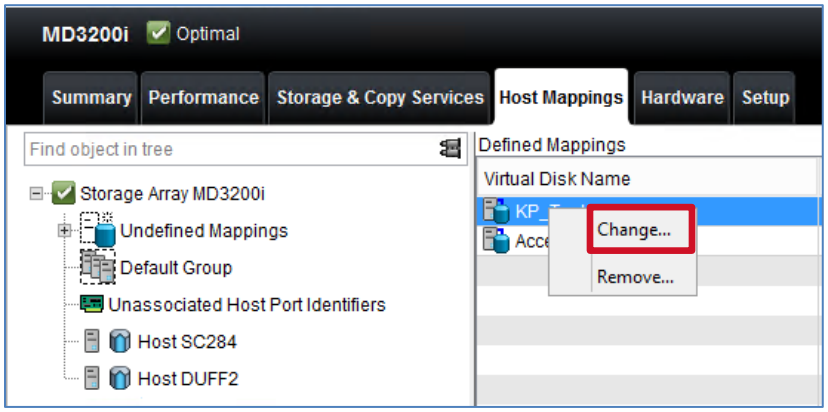
8.2.3 Change volume access on the MD3 array

Note: See section 4 for more detailed steps on volume access and access control lists.

1. Connect to the MD3 array using the PowerVault Modular Disk Storage Manager client.
2. Under **Discovered Storage Arrays**, right-click the array to manage and select **Manage Storage Array**.

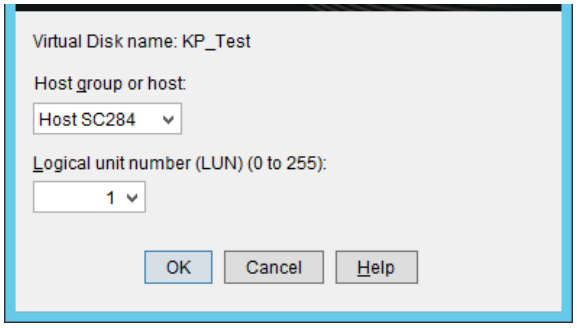


3. When the Array Management window appears, click the **Host Mappings** tab.
4. Select the ESXi server host from the list. Right-click the name of the volume to be imported, and select **Change**.

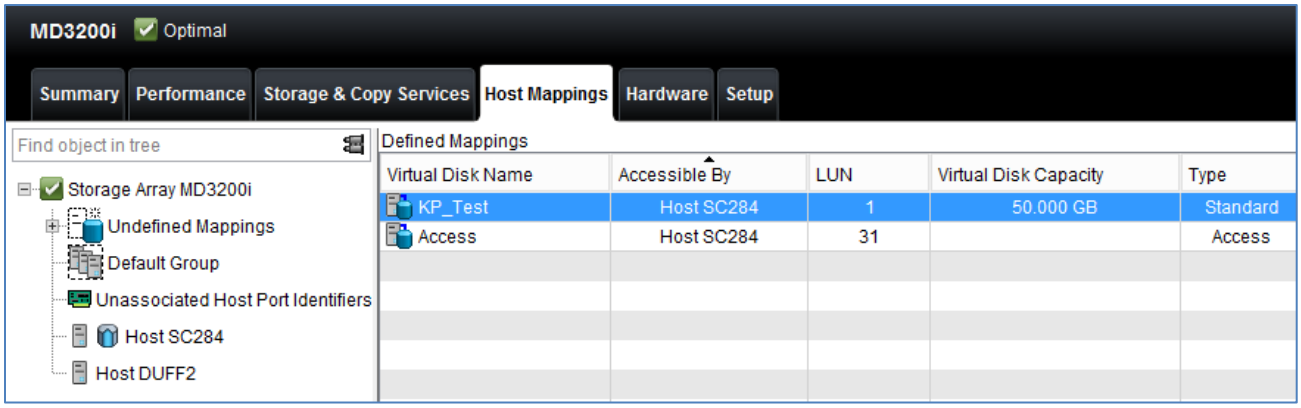


5. Select the **SC Series server host object** from the drop-down list, and select a LUN number.

Note: To maintain consistency, the LUN number used to map the volume to the SC Series array should be the same as the LUN number used to map the volume to the ESXi server.



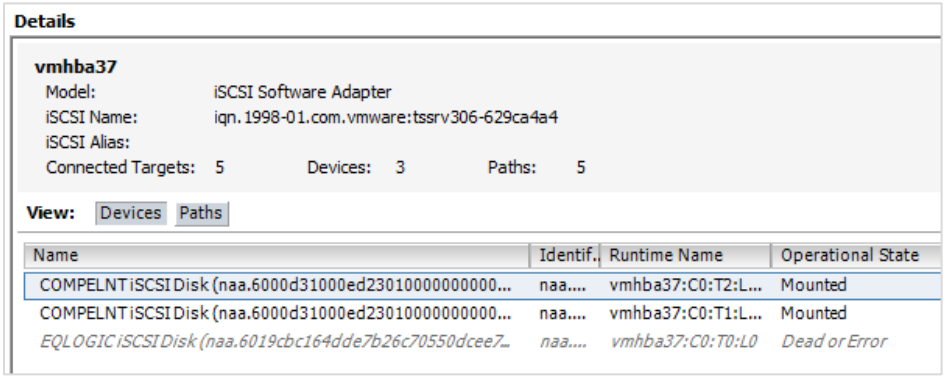
6. On the **Change Mapping** window, click **OK** and select **Yes**.
7. Select the **SC Series server host object** and verify the volume has been successfully mapped.



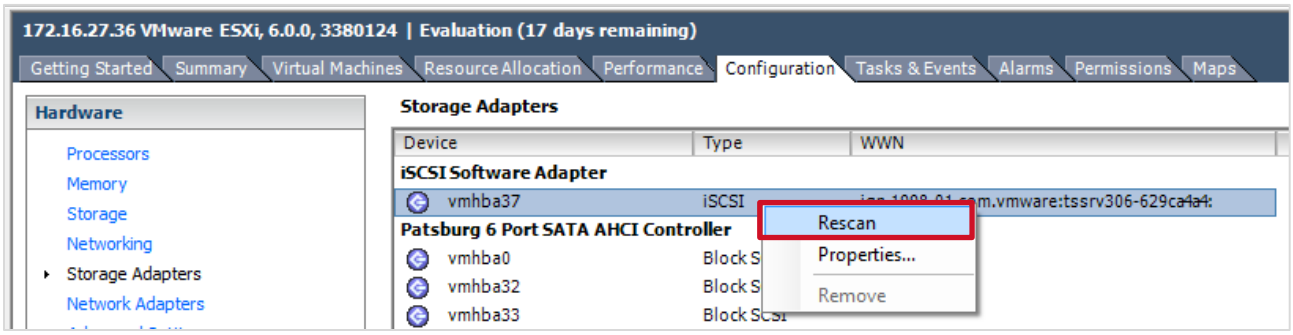
Note: It is strongly recommended to take a snapshot of the VMware volume hosted on the MD3 array before proceeding in online or offline mode. In the unlikely event of a failure during the import, a snapshot ensures volume integrity in the case of a restore.

8.2.4 Final preparation steps on ESXi host

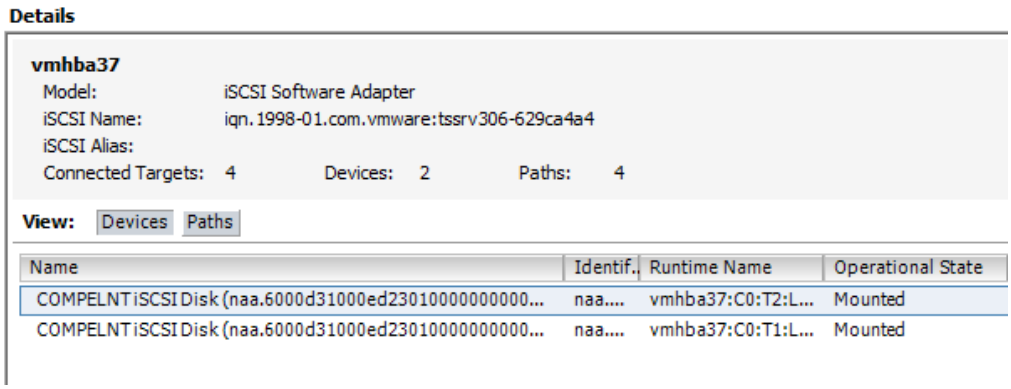
1. Return to the vSphere Client and select the **iSCSI Software Adapter**. In the **Details** pane, the PS Series or MD3 volume should show an operation state of **Dead or Error**.



2. Right-click the iSCSI software adapter and select **Rescan**.

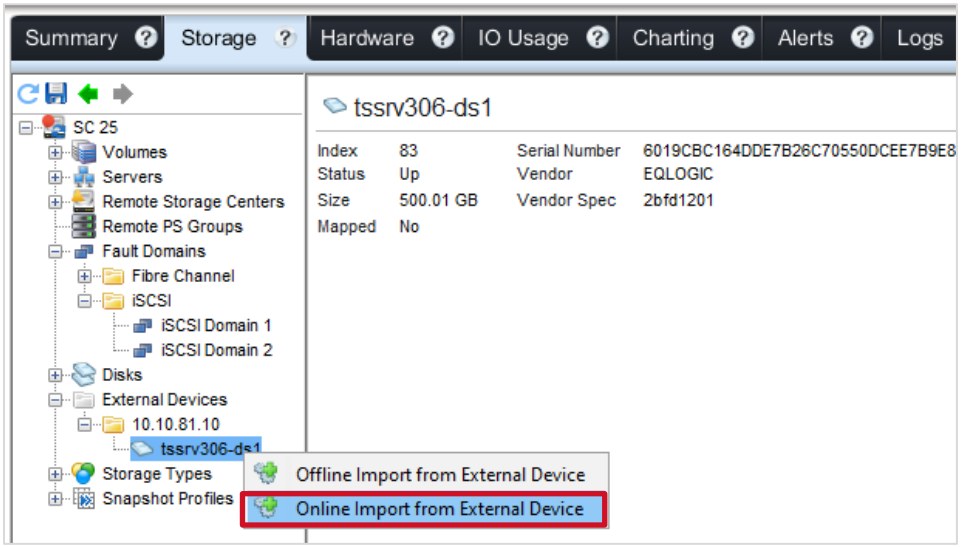


3. When the rescan completes, the PS Series or MD3 volume should no longer appear in the **Details** pane.



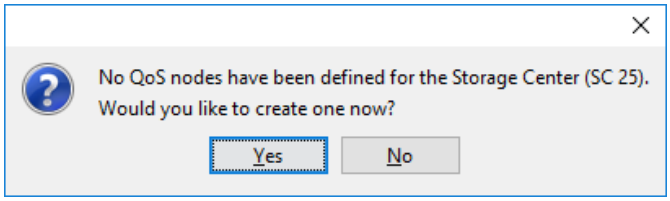
8.2.5 Perform an online import of the volume:

1. Expand the **External Devices** folder to show the IP address of the PS Series array and the volume to import. Right-click the volume name and select **Online Import from External Device**.



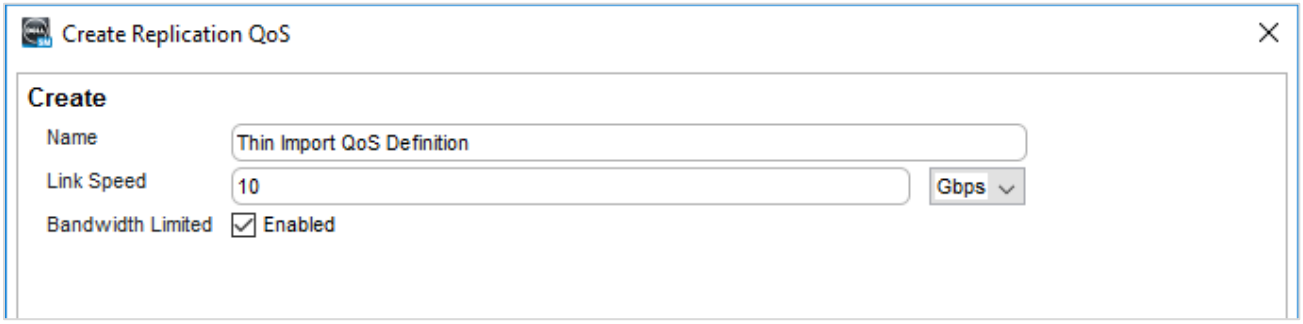
2. Click **Next** when prompted and select the ESXi host server to map the volume to. Click **Next** when finished.

3. If a Quality of Service (QoS) definition does not exist on the SC Series array, a prompt will appear to create one. Click **Yes** to continue. The import process will not proceed until a QoS node is defined and selected.



Note: The purpose of the QoS definition is to limit or throttle the bandwidth available to the thin import process, as the import process will use all available bandwidth to transfer data. Allocating too much bandwidth to the process can be detrimental to overall system performance. Allocating too little bandwidth will cause the import process to run slowly. If possible, test the process and monitor system performance to determine the proper bandwidth allocation.

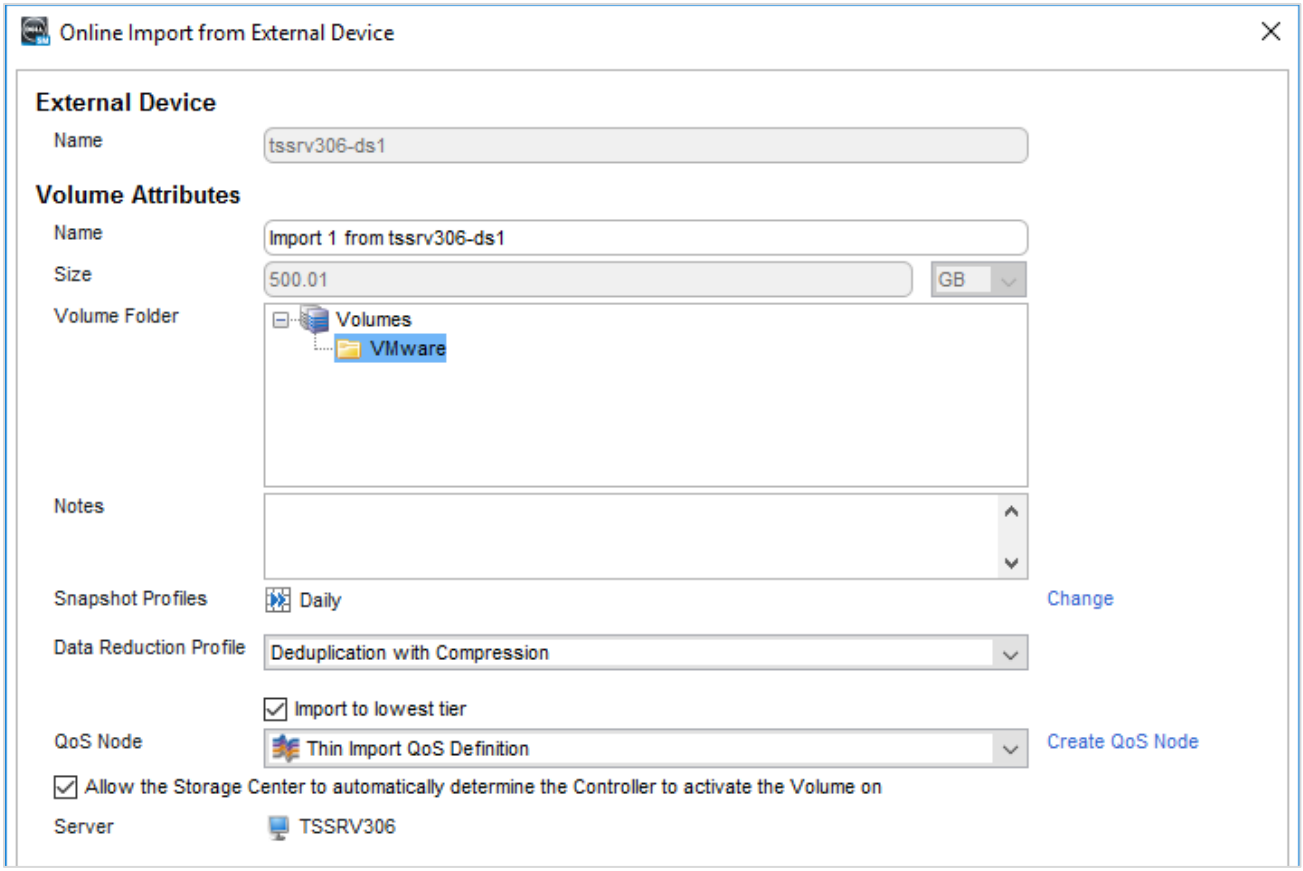
4. Assign a name to the QoS definition. Enter a link speed that is equivalent or less than the line speed of the iSCSI network connecting the PS Series and SC Series arrays. When enabled, the **Bandwidth Limited** option allows daily scheduling of bandwidth allocation in one-hour increments.



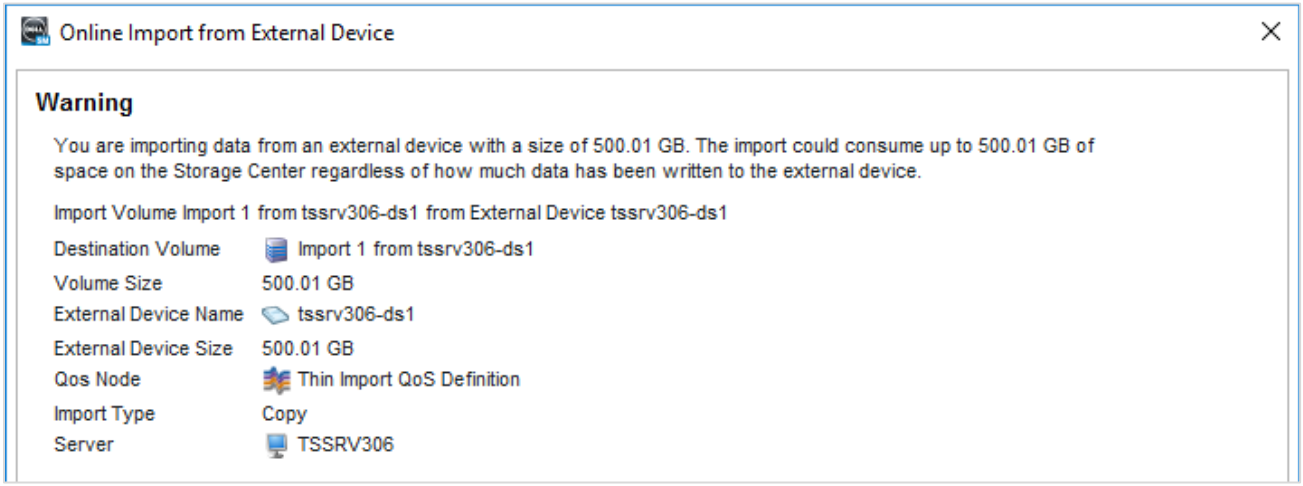
5. Click **OK** when finished.

6. Configure attributes for the destination volume such as the **Name**, **Volume Folder** location, **Snapshot Profiles**, **Data Reduction Profile**, and **QoS Node** definition. Click **Next**.

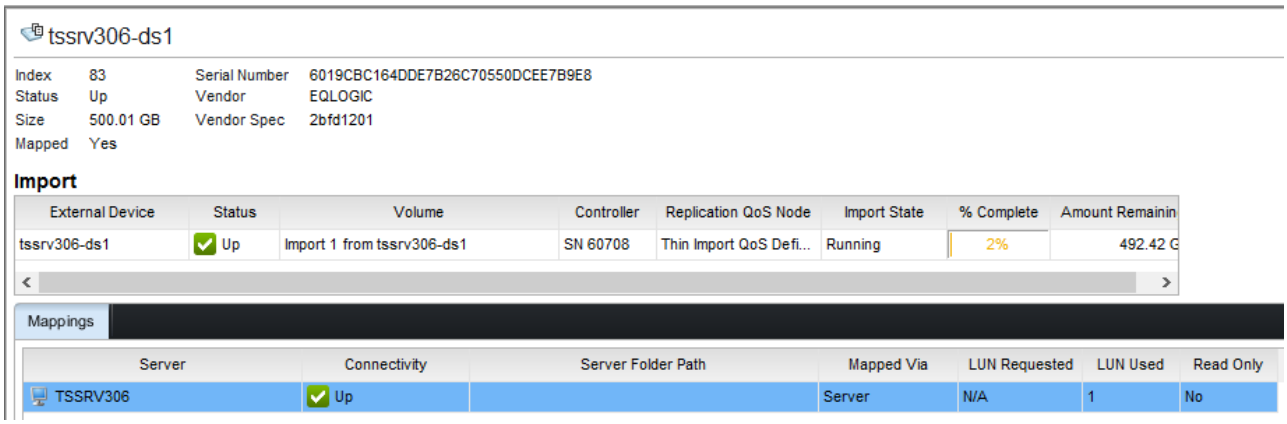
Note: The import process includes the option to import data to the lowest tier of storage. It is a best practice to leave this option enabled because importing data into tier one can cause performance problems and potentially fill all available tier one space.



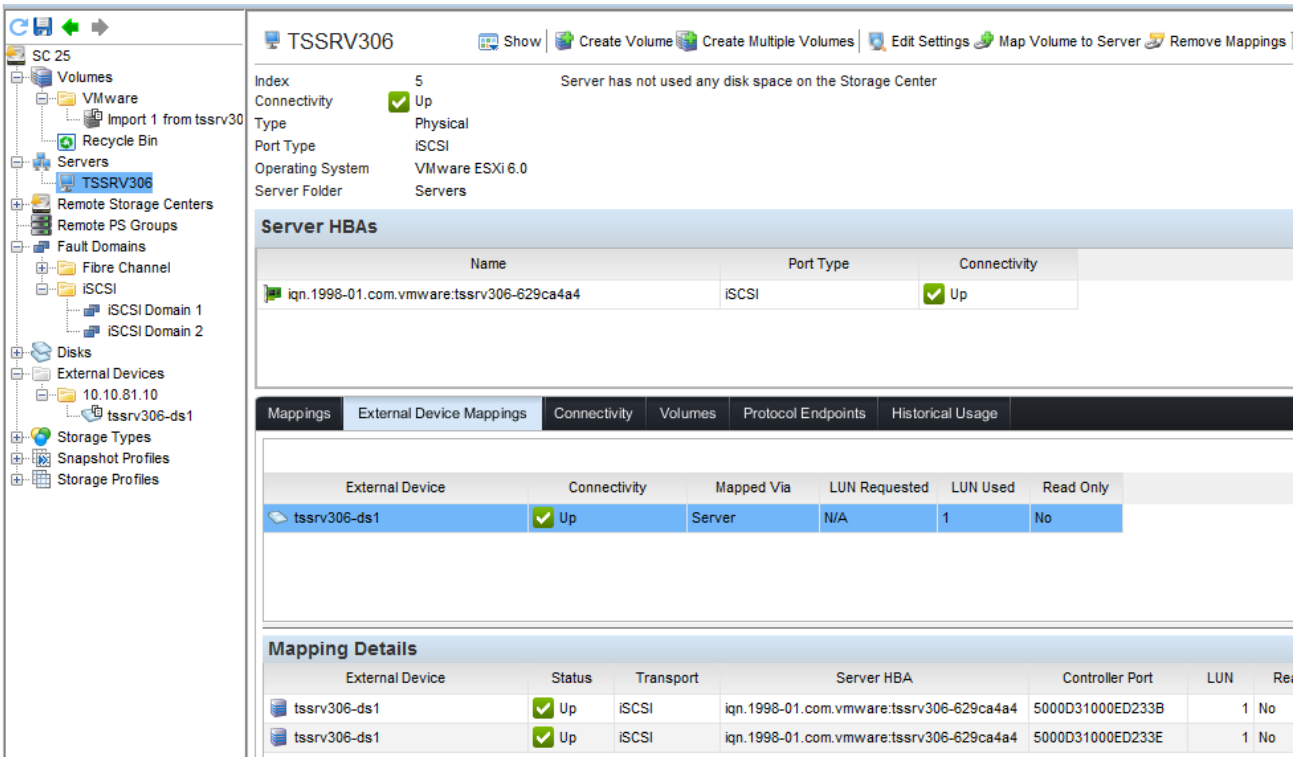
7. Review the import settings and click **OK** to start the import.



8. While the import process is running, monitor the progress in the volume details window. Click the **refresh** icon to update the progress.



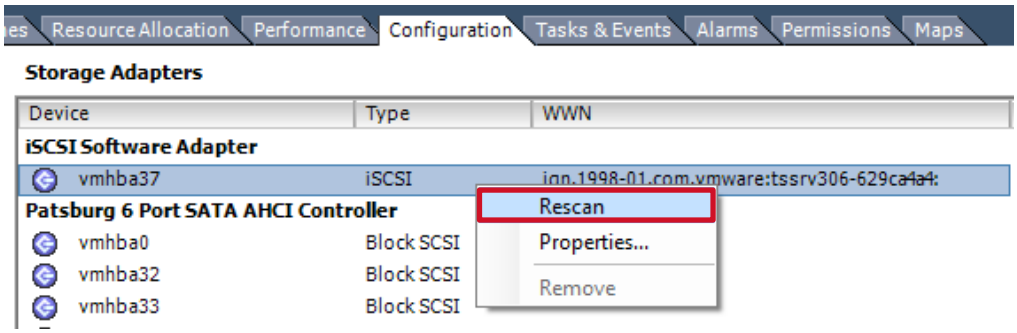
9. When the import starts, the **External Device Mappings** tab shows the PS Series or MD3 volume is mapped to the server.



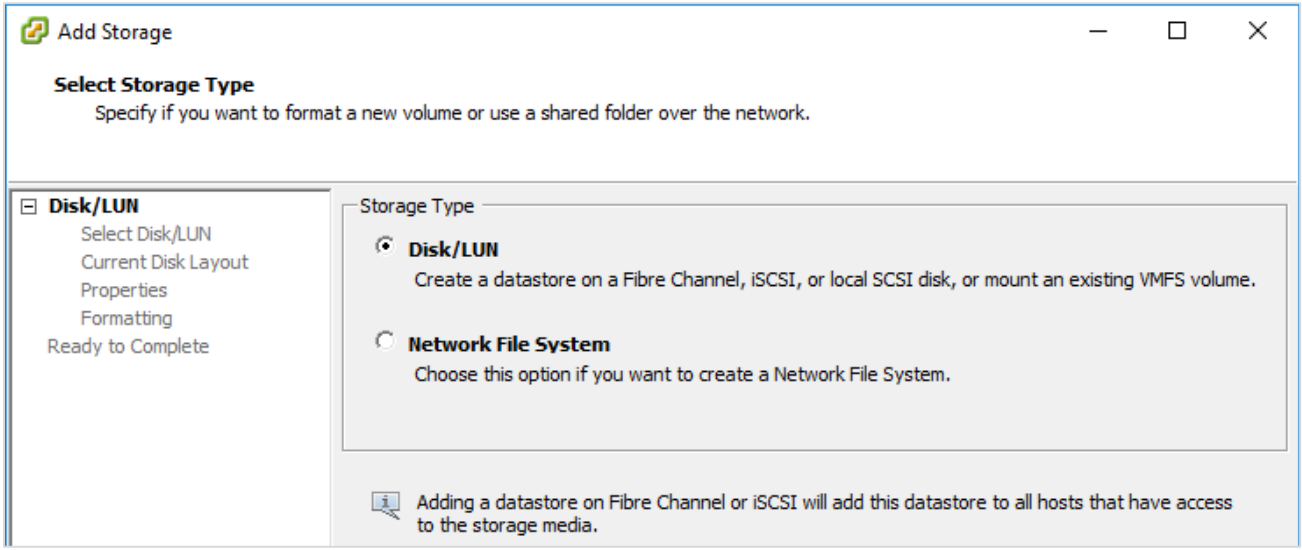
Note: In the case of an offline import, upon successful completion of the import process, the new volume on the SC Series array can be mapped to the ESXi host and the following steps can be performed.

10. Return to the vSphere Client, select the ESXi server, and click the **Configuration** tab. In the **Hardware** pane, select **Storage Adapters.**

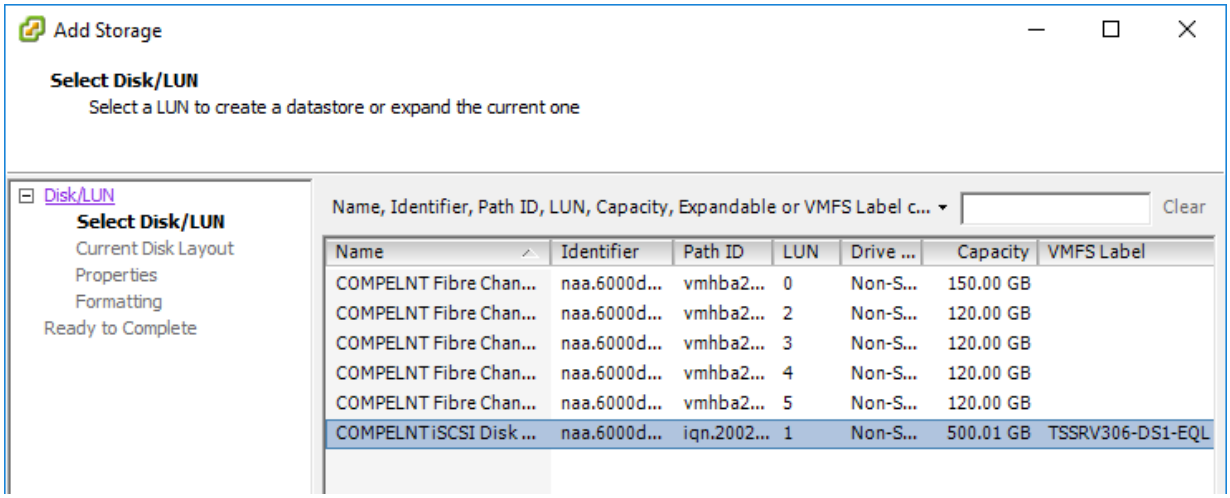
11. Right-click the iSCSI software adapter and select **Rescan**.



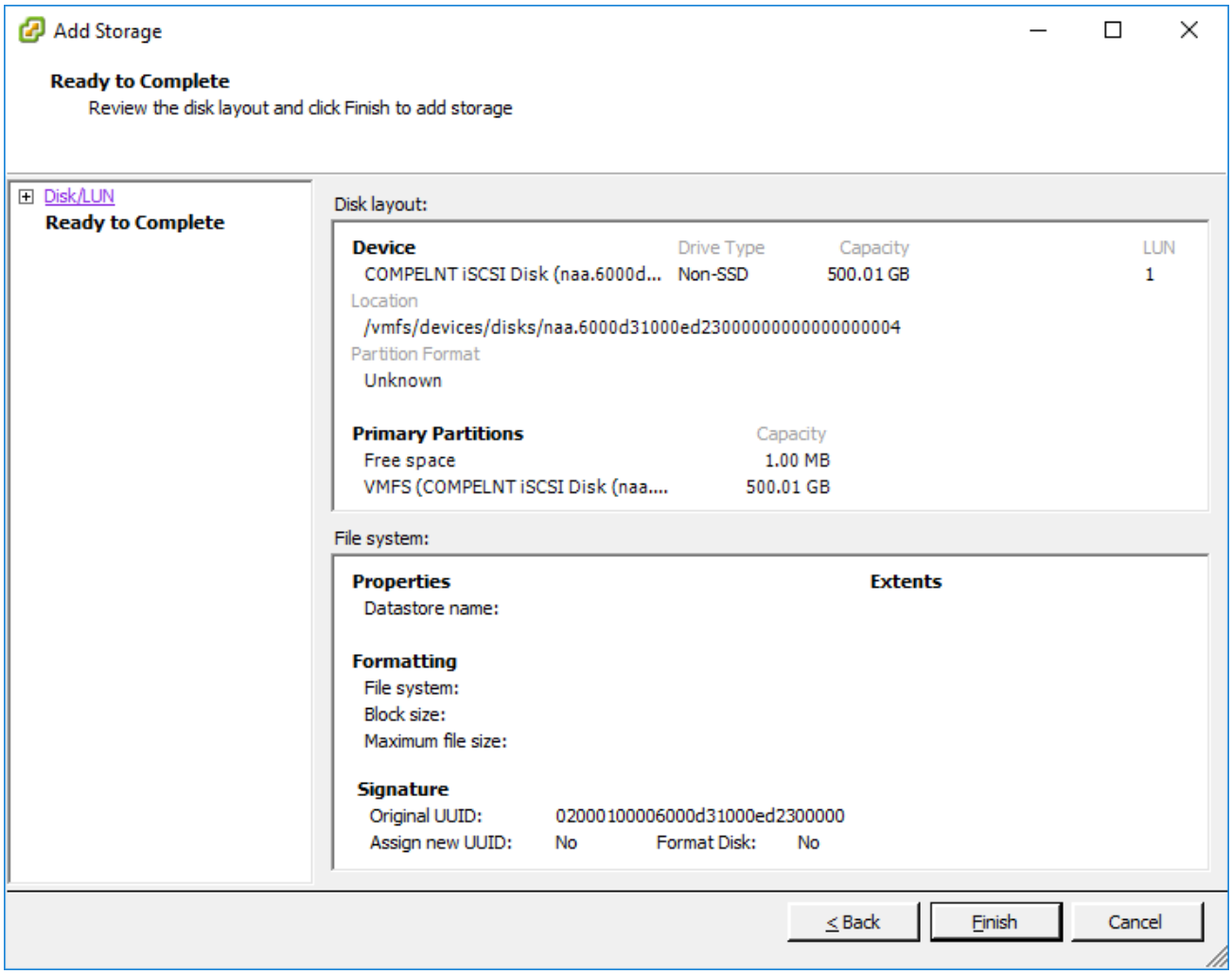
12. In the **Hardware** pane, select **Storage**. In the right-hand corner of the **Storage** view, click **Add Storage.**
13. Verify the **Storage Type** is **Disk/LUN** and click **Next**.



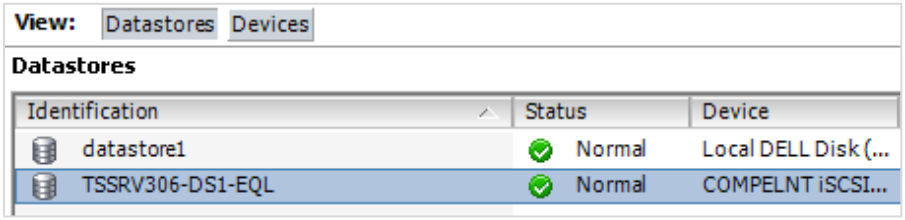
14. Select the disk labeled **COMPELNT iSCSIDisk** that matches the name of the volume to import. Scroll to the right to see the **VMFS Label** (volume name). Click **Next**.



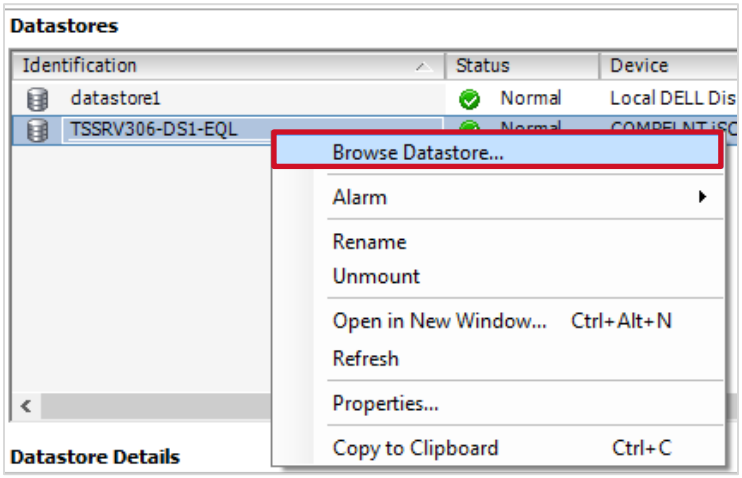
15. Select **Keep the existing signature** and click **Next**. Click **Finish** to add the SC Series volume to the ESXi host server.



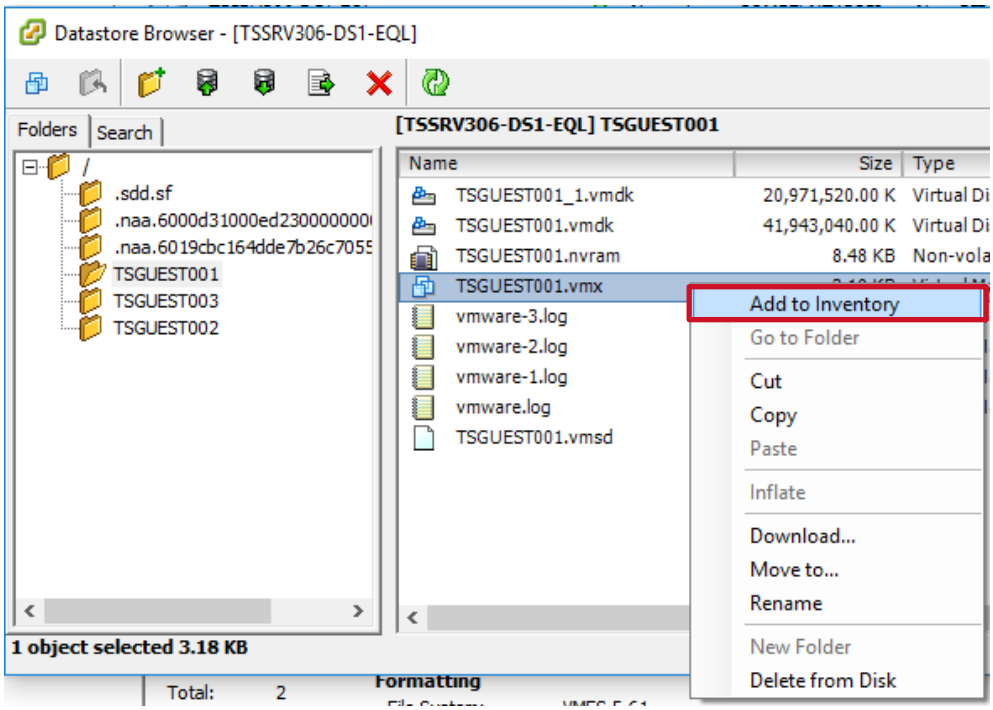
The SC Series volume will now show as a datastore.



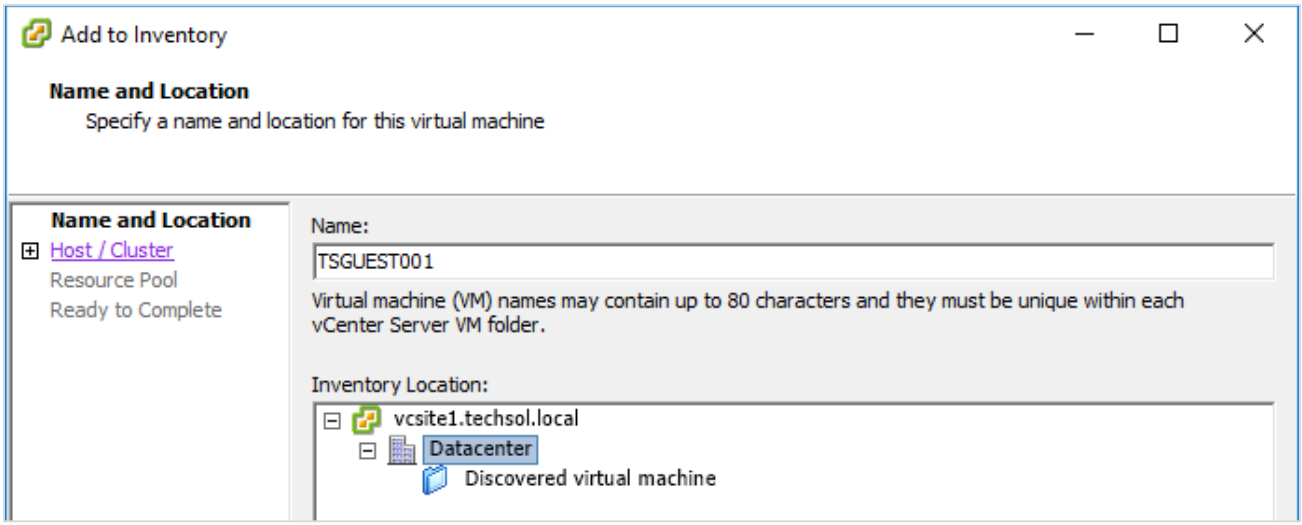
16. To add the guests hosted on the datastore to inventory, right-click the datastore and select **Browse Datastore**.



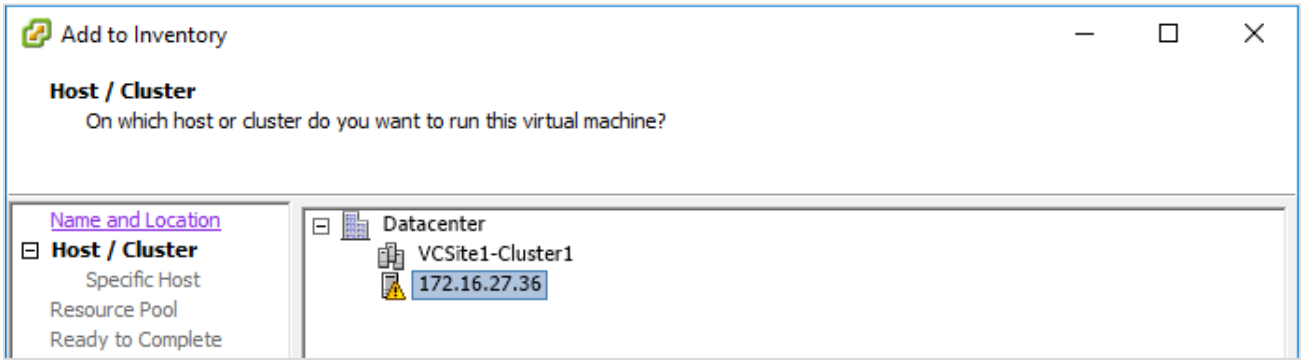
17. Select a guest in the folders pane. Right-click on the **.vmx** file and select **Add to Inventory**.



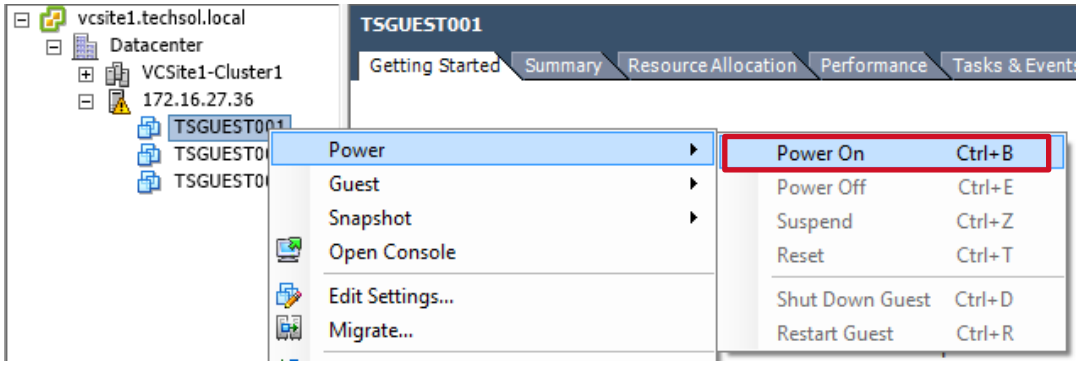
18. Assign the guest a name and select the inventory location. Click **Next**.



19. Verify the guest will be added to the ESXi host server, and click **Next**.

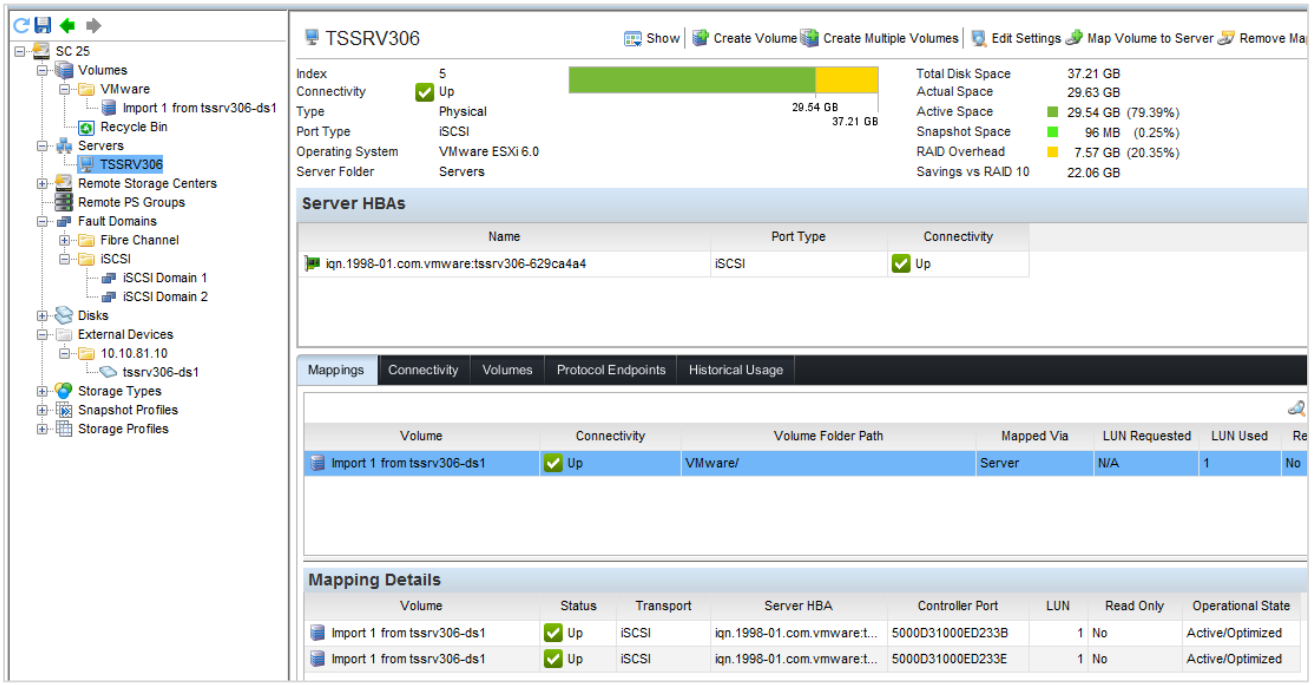


20. Click **Finish** to add the virtual machine to the ESXi server.
21. Repeat this process for any other virtual machines that are stored on the datastore.
22. To power on the virtual machines, right-click each virtual machine and select **Power** > **Power On.**



Note: At this point, the virtual machines are in a usable state. As mentioned previously in this document, the ESXi volume and associated virtual machines could experience increased I/O latency while the import is running. When the import has completed, there may be a slight pause in I/O when all activity is moved to the SC Series volume.

When the import has completed, the volume shown in External Devices folder will no longer show any progress, and the external device mapping shown for the server will be removed. The Mappings tab will now show the local SC Series volume mapped to the server.



23. Repeat the steps in this section (8.2.5) for any other PS Series or MD3 volumes that need to be imported to the SC Series array. When all volumes have been imported, proceed to section 9 for post-import steps.

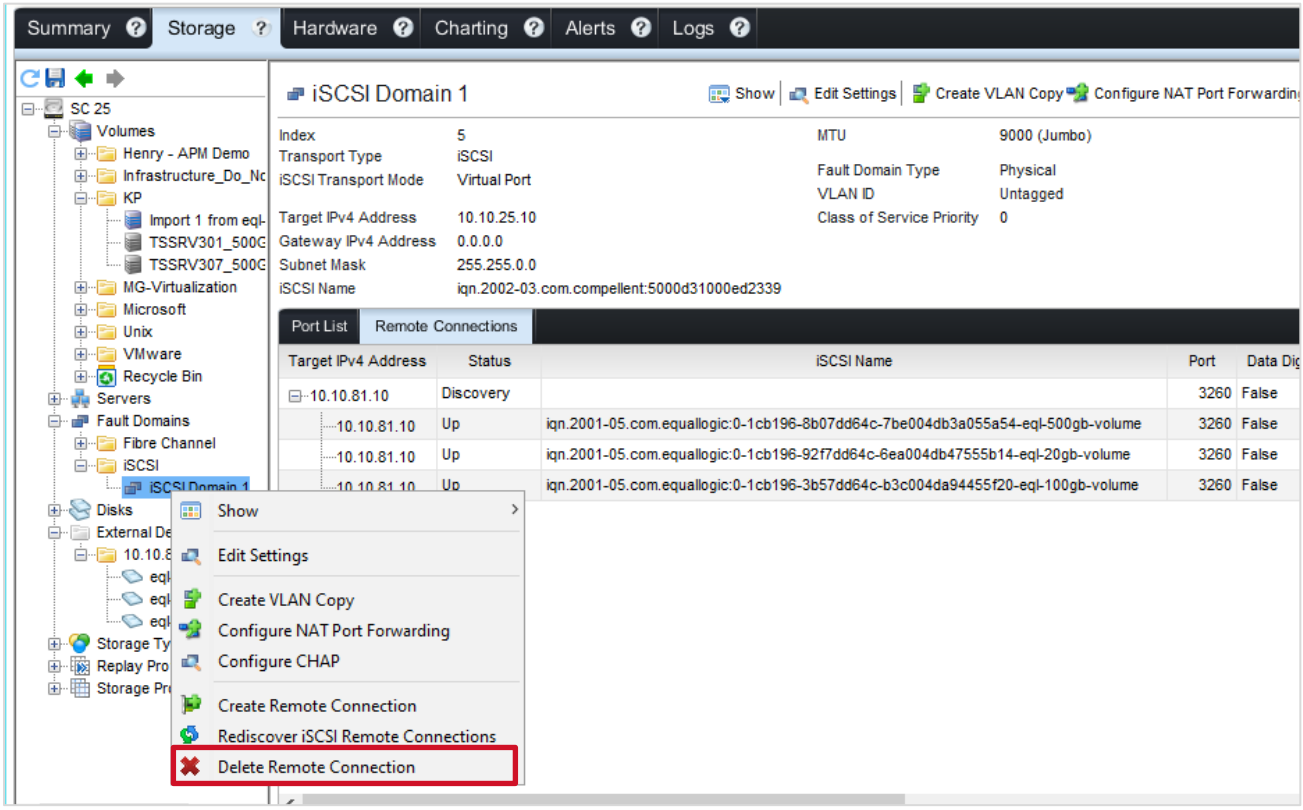
9 Post-import steps

Perform the steps in the section after all PS Series or MD3 volume imports have been completed. Be sure to review the best practices guides to configure hosts properly: *Dell EMC SC Series Storage and Microsoft Windows Server 2016*, *Windows Server 2012 R2 Best Practices for Dell Compellent Storage Center*, or *Dell EMC SC Series Best Practices with VMware vSphere 5.x-6.x*.

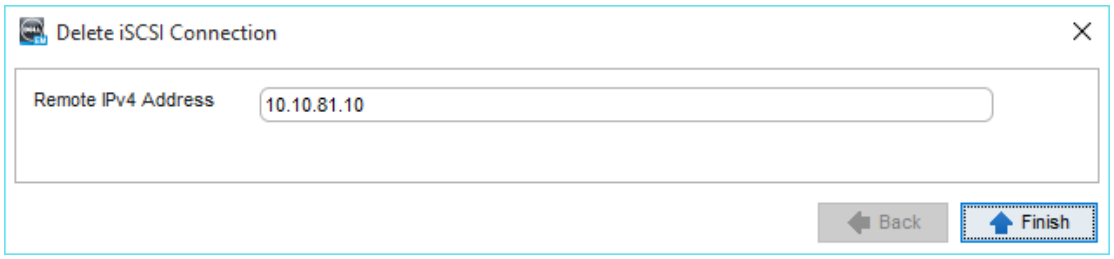
9.1 Disconnect the SC Series array from the PS Series or MD3 array

This section details how to disconnect the SC Series array from the PS Series or MD3 array. Perform these steps after importing Windows Server volumes or VMware volumes.

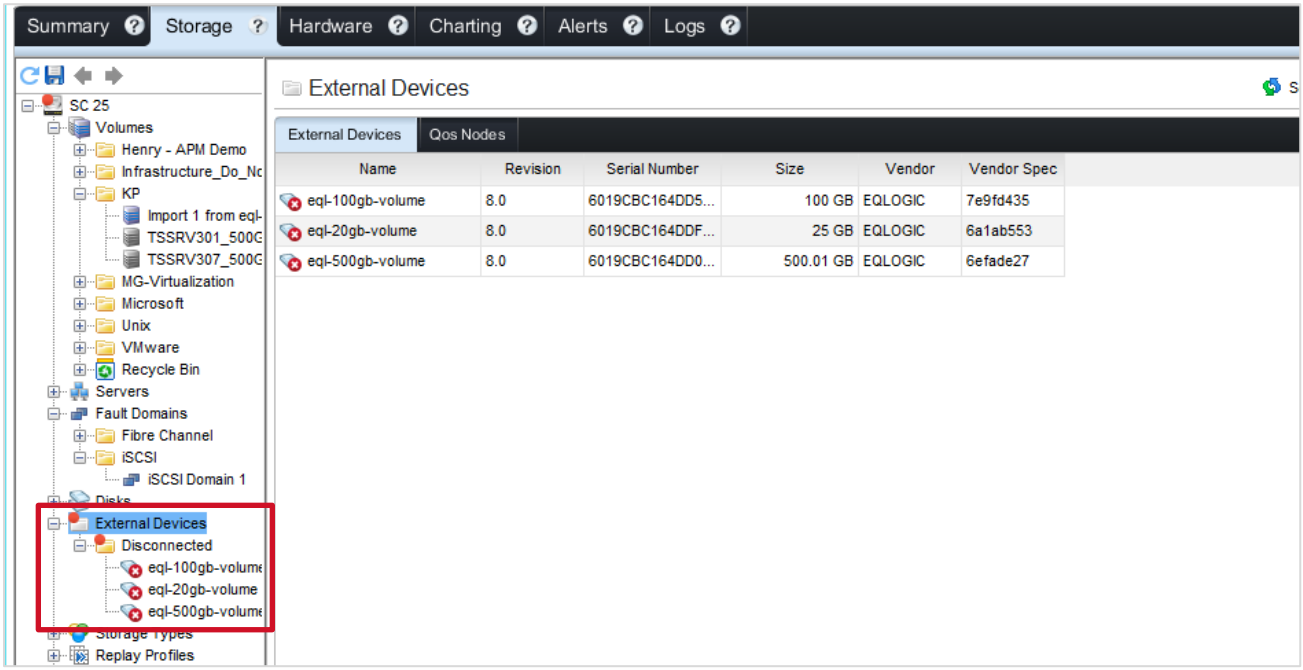
1. In the Dell Storage Client, right-click the iSCSI fault domain used to remotely connect to the PS Series or iSCSI-connected MD3 array and select **Delete Remote Connection**.



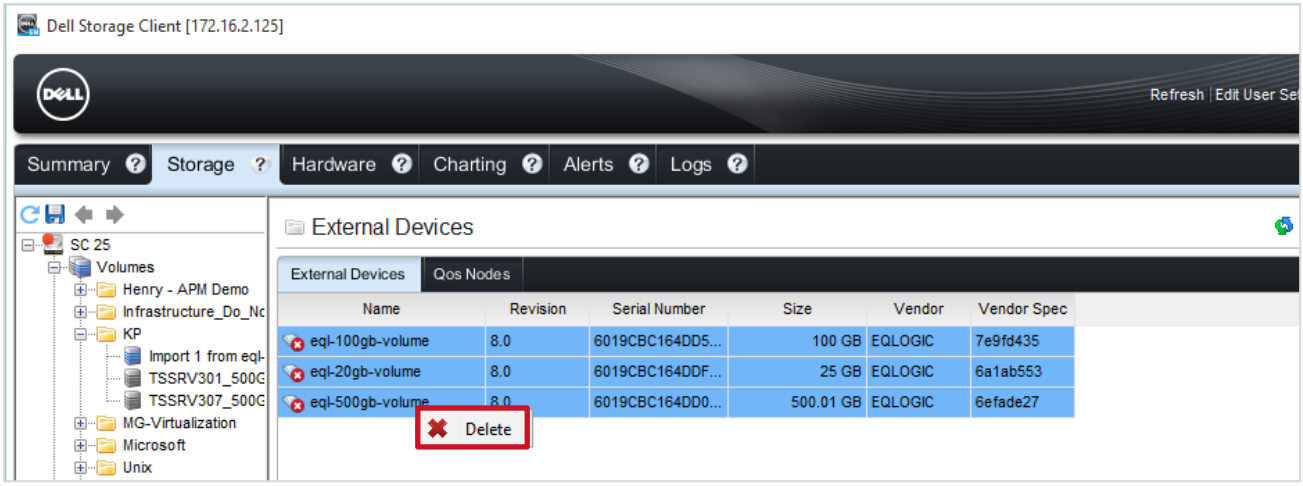
2. Verify the address of the PS Series or MD3 array and click **Finish**.



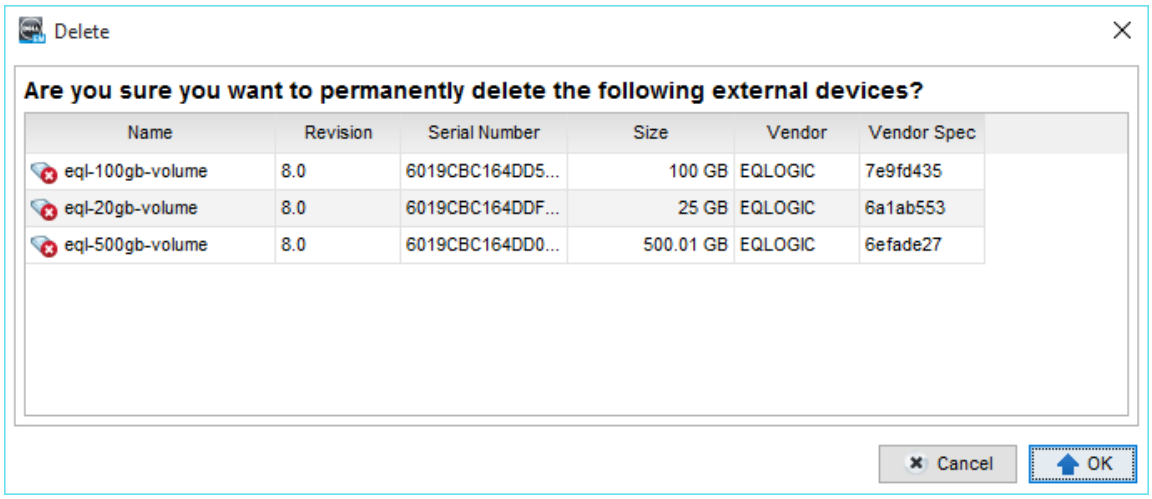
3. The connection to the PS Series array is removed and the **External Devices** folder displays a status of **disconnected** for all remote volumes.



4. Select all the volumes listed. Right-click the selection and click **Delete**.

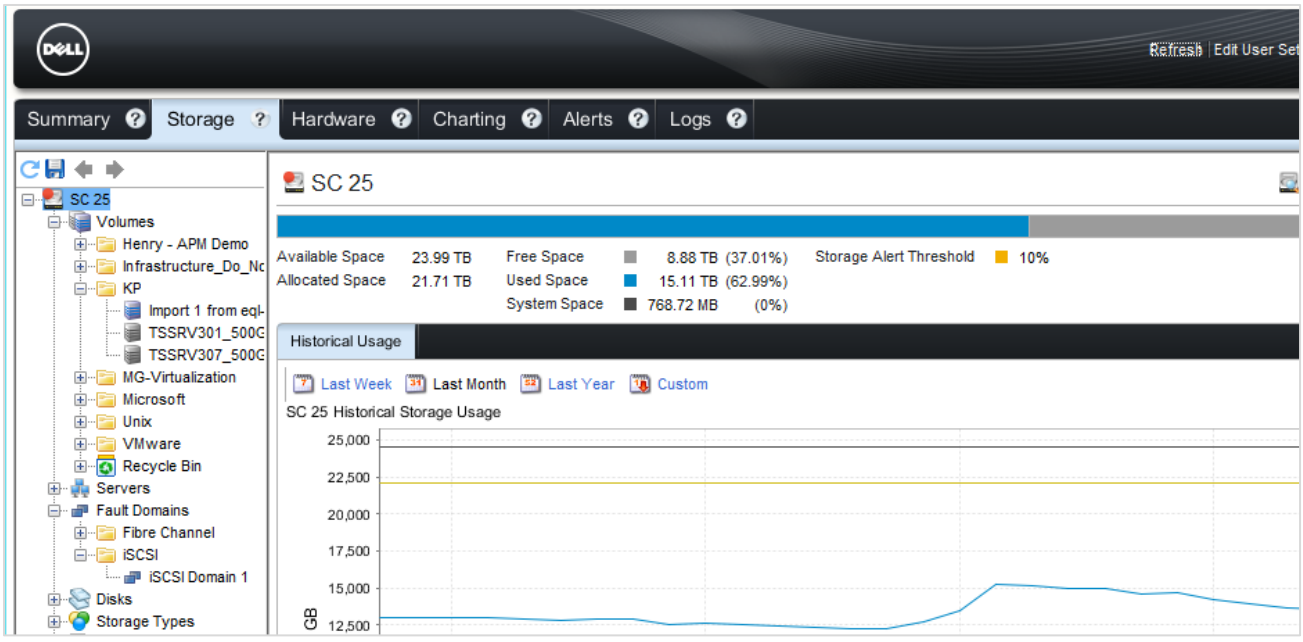


5. Click **OK** to permanently delete all disconnected external volumes.



Note: The PS Series or MD3 Series volumes are only removed from the SC Series array, and still remain on the PS Series or MD3 array.

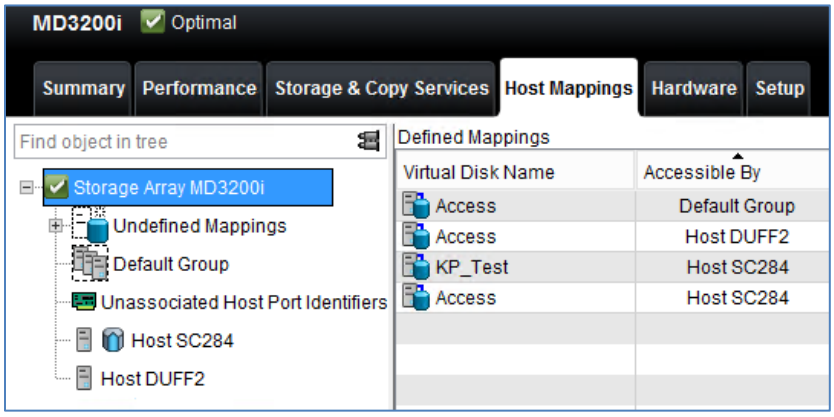
6. When the external volumes are deleted, the **External Devices** folder is automatically removed.



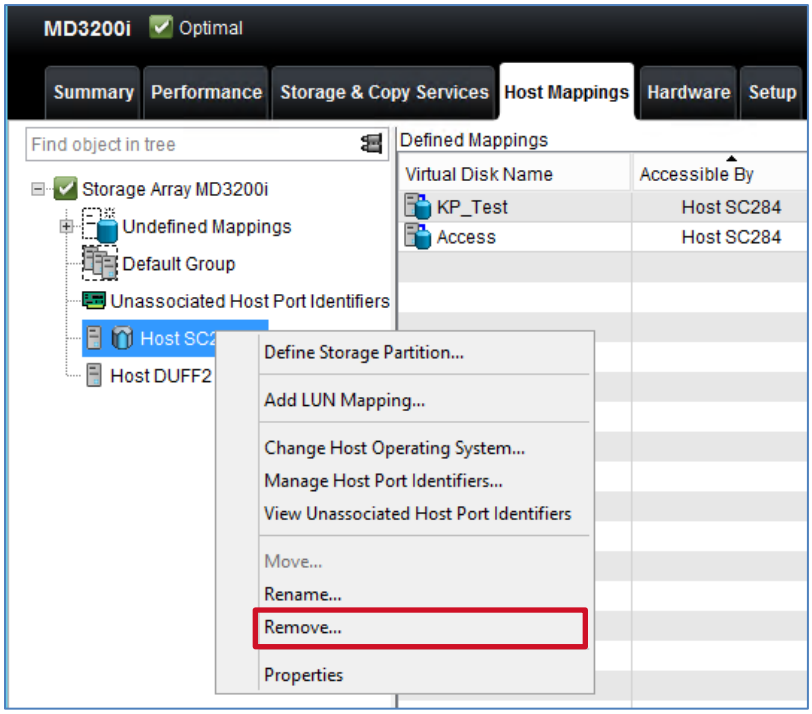
PS Series only: If desired, remove any access policies created for SC Series access on the PS Series array, as well as revoking shared access (allow simultaneous connections from initiators with different IQNs) on volumes that were imported.

MD3 Series only: If no further imports from the MD3 array are to occur, the SC Series server host object on the MD3 array should be removed. Removing the SC Series server host object automatically removes any volume mappings to the SC Series array. To remove the SC Series server host object, perform the following steps:

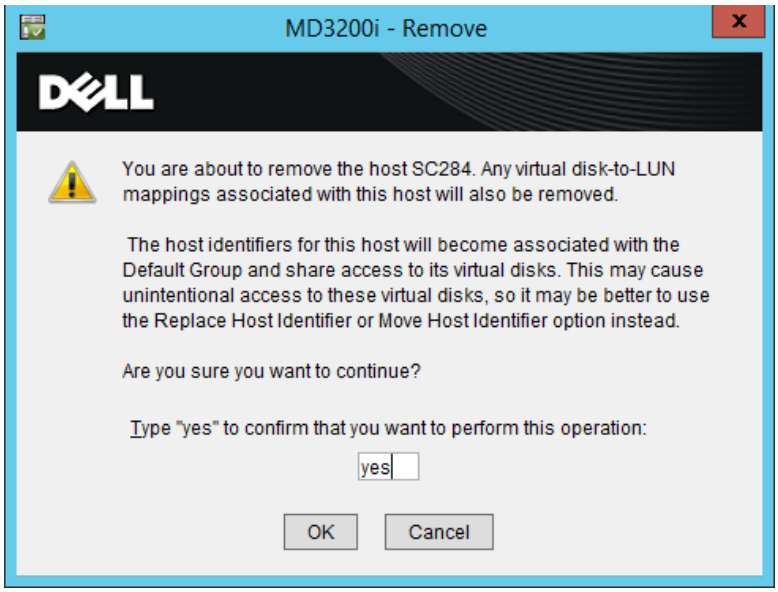
1. Connect to the MD3 array using the **PowerVault Modular Disk Storage Manager** (Array Management window).
2. Click the **Host Mappings** tab.



3. In the left window pane, right-click the SC Series server host object and select **Remove**.



4. Type **yes** and click **OK** to delete the host.



The host is removed and all mapped volumes are returned to the disk pool.

A Additional resources

A.1 Technical support and resources

Dell.com/support is focused on meeting customer needs with proven services and support.

Dell TechCenter is an online technical community where IT professionals have access to numerous resources for Dell EMC software, hardware, and services.

Storage Solutions Technical Documents on Dell TechCenter provide expertise that helps to ensure customer success on Dell EMC storage platforms.

A.2 Related documentation

Table 1 Referenced or recommended resources

Vendor	Resource
Dell	*Dell Storage Manager Administrator's Guide* on the Knowledge Center at the SC Series customer portal (login required)
Dell	*Dell Storage Center SCv2000 and SCv2020 Storage System Deployment Guide* on Dell Support
Dell	*Dell PS Series Configuration Guide*
Dell	*Dell EqualLogic Group Administrator's Guide* on PS Series support
Dell	*Windows Server 2012 R2 Best Practices for Dell Compellent Storage Center*
Dell	*Dell EMC SC Series Storage and Microsoft Windows Server 2016*
Dell	*Dell EMC SC Series Best Practices with VMware vSphere 5.x-6.x*