Converting an iSCSI Host Interface Card to Fibre Channel

You can apply a feature pack in the SANtricity® Storage Manager to convert the protocol used by the host interface card (HIC) in an E-Series storage system or EF-Series flash array.

These instructions are intended for system administrators who want to convert the protocol of a HIC from iSCSI to Fibre Channel. If you want to convert an iSCSI HIC to any other protocol, you must replace the HIC itself. To find the HIC upgrade instructions for your model, go to the *NetApp E-Series and EF-Series Systems Documentation Center*.

Attention: You cannot use these instructions to convert an iSCSI HIC to Fibre Channel if the HIC uses RJ-45 connectors. These instructions apply only to iSCSI HICs that use SFP transceivers.

You can perform this conversion on the following storage systems:

- E2700
- E5500
- E5600
- EF550
- EF560

Attention: You must schedule a downtime maintenance window for this procedure because you must shut down the host to change hardware. In addition, you will not be able to access data on the storage array until you have successfully completed the conversion.

Before you begin

Be aware of the following:

- The asynchronous mirroring feature (also referred to as ARVM) requires both the local storage array and the remote storage array to use the same protocol. If you use asynchronous mirroring and you want to continue using this feature after the conversion, you must remove all asynchronous mirrored pairs from the asynchronous mirror groups; delete the asynchronous mirror groups; convert the HICs in both storage arrays to the new protocol; and reestablish the relationships.
- The host interface cards in the E-Series and EF-Series models listed do not currently support using Fibre Channel and iSCSI protocols simultaneously. You must select one protocol or the other.

Confirm the following:

- You have obtained the necessary hardware for the conversion. For example, you might need replacement cables and Small Form-factor Pluggable (SFP) transceivers. Your NetApp Sales Representative can help you determine what hardware you need and help you order the correct parts.

  Note: If your storage array currently uses unified SFP transceivers that you purchased from NetApp, you do not need to change your SFP transceivers. Unified SFP transceivers support both Fibre Channel and iSCSI; however, they do not support 1-Gb/s iSCSI. See *Determining if you have unified SFP transceivers* on page 2 to determine what type of SFP transceivers are installed.

- SANtricity Storage Manager is installed.
- You are using out-of-band management.

Attention: You cannot use in-band management to complete this procedure.

- The storage array is running SANtricity OS (controller firmware) version 08.10.11.00 or later. To determine which firmware you have, check the **Summary** tab in the Array Management Window. To download new firmware, go to *NetApp Downloads* and select **Downloads > Software**. Download the correct version of **E-Series/EF-Series SANtricity OS (Controller Firmware)** for your storage array.

Determining if you have unified SFP transceivers

You can use the Array Management Window to determine what type of SFP transceivers you have. If you have unified SFP transceivers, you can continue to use them after converting the host protocol.

Before you begin

The array has been added to the Enterprise Management Window.

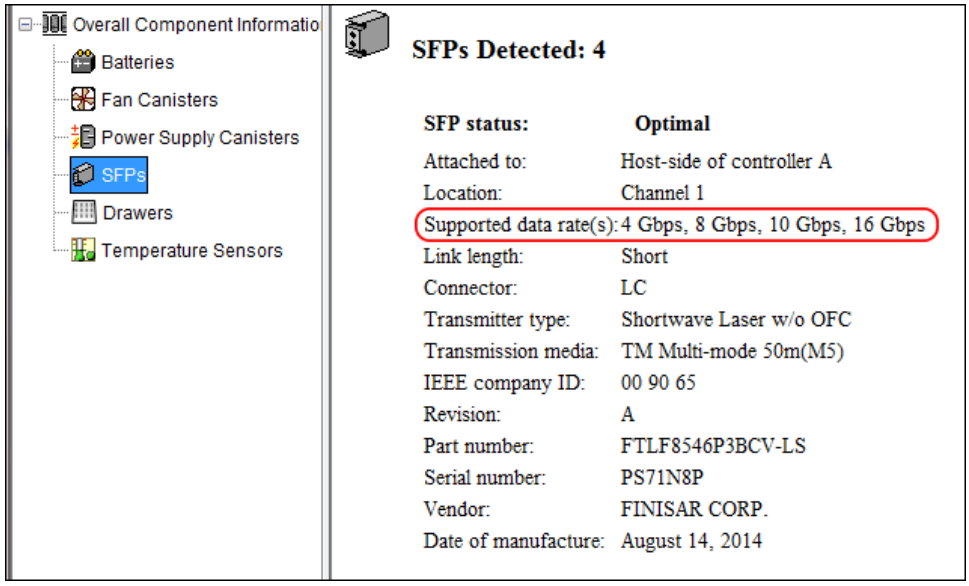
About this task

Unified SFP transceivers support both Fibre Channel and iSCSI; however, they do not support 1-Gb/s iSCSI.

Steps

1. From the Array Management Window, select **Hardware > Tray > View/Edit > Controller/Drive components**.
2. From the **Overall Component Information** navigator on the left, click **SFPs**.

   The SFP status is displayed. The screen shot shows the supported data rates for unified SFP transceivers.



3. Locate the **Supported data rate(s)** entry in the results.

If the supported data rate is...	This type of SFP transceiver is installed...
4 Gbps, 8 Gbps, 10 Gbps, 16 Gbps	Unified (supports both Fibre Channel and iSCSI)
10 Gbps	10G iSCSI
4 Gbps, 8 Gbps, 16 Gbps	16G Fibre Channel
2 Gbps, 4 Gbps, 8 Gbps	8G Fibre Channel

4. Determine whether you can reuse the SFP transceivers, as follows:
   - If you have unified SFP transceivers, you can continue using them after you convert the host protocol.
   - If you have iSCSI SFP transceivers, you must remove them and replace them with new SFPs after converting the host protocol.

Obtaining the feature pack key

You can apply a feature pack in the SANtricity Storage Manager to convert the protocol of the host interface card (HIC). To obtain the key file for the feature pack, you need a Feature Activation Code, the serial number for your storage system enclosure, and the Feature Enable Identifier for your storage system.

Steps

1. From the following table, locate the Feature Activation Code that applies to your storage system and conversion path, and copy the value to a text file.

Storage system	Converting from iSCSI to Fibre Channel
E2700	BF0-X7J-ZGRT9
E5500	XFD-D7J-ZTH8W
EF550	EFS-99J-ZLX02
E5600	7F3-S8J-Z88DP
EF560	YFI-09J-ZY0Z0

2. Locate the serial number for your storage system. You can look at the silver label affixed to the top of your system enclosure, or you can get the serial number from the software, as follows:
   a. From the Array Management Window, select the **Summary** tab and click **View Storage Array Profile** in the Monitor area.
   b. On the Storage Array tab, locate the **Chassis Serial Number**.
   c. Copy and paste the value into a text file.
3. Locate and record the Feature Enable Identifier for your storage system:
   a. From the Array Management Window, select **Storage Manager > Premium Features** to display the Premium Features and Feature Packs window.

      The 32-digit Feature Enable Identifier is displayed under **Storage Array Feature Information**.
   b. Copy and paste this 32-digit identifier into a text file.
4. Go to *NetApp License Activation: Storage Array Premium Feature Activation* and enter the information required to obtain the feature pack.
   - Feature Activation Code from the table
   - Serial number for the storage system
   - Feature Enable Identifier

   Note: The Premium Feature Activation web site includes a link to “Premium Feature Activation Instructions.” Do not attempt to use those instructions for this procedure.

5. Choose whether to receive the key file for the feature pack in an email or download it directly from the site.

Stopping host I/O

You must stop all I/O operations from the host before converting the protocol of the host interface card (HIC). You cannot access data on the storage array until you successfully complete the conversion.

About this task

The exact steps to stop host I/O depend on the host operating system and configuration, and they are beyond the scope of these instructions. If you are not sure how to stop host I/O in your environment, consider shutting down the host.

Steps

1. Stop all I/O between the host and the storage system involved in the protocol conversion. Here are two ways you can ensure that all host I/O processes have stopped:
   - Stop all processes that involve the LUNs mapped from the storage to the host.
   - Ensure that no applications are writing data to any LUNs mapped from the storage to the host.
2. If you are using file systems, unmount any file systems mounted on the LUNs mapped from the storage to the host.

Deleting asynchronous mirroring relationships

The asynchronous mirroring feature requires both the local storage array and the remote storage array to use the same protocol. If you use asynchronous mirroring and you want to continue using this feature after the conversion, you must remove all asynchronous mirrored pairs from the asynchronous mirror groups; delete the asynchronous mirror groups; convert the host interface cards in both storage arrays to the new protocol; and reestablish the relationships.

Steps

1. In the Array Management Window, access the online help and search for the topics related to asynchronous mirroring.
2. Follow the guidelines and instructions in the online help to remove all asynchronous mirrored pairs from the asynchronous mirror groups.

   Note: When removing each pair, select the **Delete all repositories associated with this mirrored pair** check box.
3. Follow the guidelines and instructions in the online help to delete all asynchronous mirror groups.

Applying the feature pack key

You can apply a key file for a conversion feature pack to change the protocol of your host interface card (HIC).

About this task

This task describes how to apply a feature pack to a single storage array. If you intend to use asynchronous mirroring after the conversion, you must apply a key to the local storage array and to the remote storage array. Each array requires its own key.

Steps

1. From the Array Management Window, select **Storage Array > Premium Features**.

2. In the **Feature Pack** section at the bottom of the screen, click **Change**.

   Note: Do not click the **Use Key File** button in the **Enable a Premium Feature** section.

   The Select Feature Key File dialog opens, which lets you select the generated key file.

3. Select the folder in which you placed the generated key file.
4. Select the key file, and click **OK**.
5. Click **Close**.

   Both controllers automatically reboot to allow the new feature pack to take effect. The storage array returns to a responsive state after the reboot is complete.

Changing the hardware configuration

After applying the protocol conversion feature pack, you can shut down the host and replace the existing hardware with new hardware for the new protocol.

Steps

1. Shut down the host.
2. As required, convert host adapters and switches to the new protocol.

   Note: The exact steps for converting host adapters and switches are beyond the scope of these instructions.

3. Disconnect the I/O cables from the host interface card (HIC) on the storage array.
4. Determine whether to replace the SFP transceivers on the HIC.

If you...	Then...
Do not have unified SFP transceivers	Remove the SFP transceivers and insert new ones.
Have unified SFP transceivers	You do not need to remove the SFP transceivers. You can use the same transceivers after the conversion. Refer to *Determining if you have unified SFP transceivers* on page 2 for more information.

5. Connect the new I/O cables.
6. Power on the host.

Configuring Fibre Channel networking

After converting the host interface card (HIC) from iSCSI to Fibre Channel, you must configure Fibre Channel networking.

Before you begin

You have downloaded and reviewed the instructions in the *FC Configuration and Provisioning Express Guide* for your operating system (see *NetApp Documentation: Express Guides for SANtricity Storage Manager*). The Express Guide provides important details for configuring Fibre Channel networking.

Steps

1. Install the HBA utility and determine initiator WWPNs.
2. Zone the switches.

Zoning the switches enables the hosts to connect to the storage and limits the number of paths. You zone the switches using the management interface of the switches.

3. Update the host definitions in SANtricity Storage Manager, as follows:
   a. From the Array Management Window, select the **Host Mappings** tab.
   b. Expand the storage array tree, right-click the host, and select **Manage Host Port Identifiers**.
   c. Select the host from the **Host Port Identifier** list.
   d. Click **Replace**.

      The Replace Host Identifier dialog is displayed.
   e. Confirm that **Replace by selecting a known unassociated host port identifier** is selected, and select the host port identifier from the list.

      Note: If the host port identifier is not in the list, select **Replace by creating a new host port identifier**, and enter the new number.
   f. Click **Replace**.
   g. Repeat these steps to add any additional host port identifiers.
4. Reboot the host or perform a rescan so that the host properly discovers mapped storage.
5. Remount volumes or start using block volume.

Reestablishing asynchronous mirroring relationships

If you were using asynchronous mirroring and you converted the host interface cards in both the local storage array and the remote storage array to the same protocol, you can reestablish those relationships.

Steps

1. In the Array Management Window, access the online help and search for the topics related to asynchronous mirroring.
2. Follow the guidelines and instructions in the online help to create asynchronous mirror groups.
3. Follow the guidelines and instructions in the online help to create asynchronous mirror pairs.

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