Quantum

Base System Controller Upgrade Guide

StorNext QD7000

Firmware 8.30.xx.xx

Preface

This section provides the following information:

- Audience
- Prerequisites
- NetApp to Quantum Naming Decoder
- Product Safety Statements
- Contacts
- Comments
- Quantum Global Services

Audience

This manual is intended for storage customers and technicians.

Prerequisites

Prerequisites for installing and using this product include knowledge of:

- Servers and computer networks
- Network administration
- Storage system installation and configuration
- Storage area network (SAN) management and direct attach storage (DAS)
- Fibre Channel (FC) and Ethernet protocols

NetApp to Quantum Naming Decoder

Use Table 1 to correlate the NetApp product nomenclature to the equivalent Quantum-storage naming conventions.

Table 1 Product Nomenclature

E-Series NetApp Product	Quantum-Storage	Description
Controller-Drive Tray	Base System	Quantum uses Base System when referring to a drive tray with the RAID controllers.
Drive Tray	Expansion Unit	Quantum uses Expansion Unit when referring to a drive tray with the environmental services modules (ESMs).
E5600 (Code Name: Titan)	RAID Controller	Four 16Gb/s FC SFP+ host ports
E5500 (Code Name: Soyuz)	RAID Controller	Four 16Gb/s FC SFP+ host ports
E5400 (Code Name: Pikes Peak)	RAID Controller	Four 8Gb/s FC SFP+ host ports
DE6600 (Code Name: Wembley)	4U 60-drive enclosure	Sixty 3.5 inch disk drives

E-Series NetApp Product	Quantum-Storage	Description
E5560 or E5660 (DE6600 4U drive enclosure with E5500 or E5600 RAID controllers)	Quantum StorNext QD7000	
E5460 (DE6600 4U drive enclosure with E5400 RAID controllers)	Quantum StorNext QD6000	
E5424 (DE5600 24-drive 2U drive enclosure (Code Name: Camden with E5400 RAID controllers)	Quantum StorNext QS2400	
E5412 (DE1600 12-drive 2U drive enclosure (Code Name: Ebbets with E5400 RAID controllers)	Quantum StorNext QS1200	

Product Safety Statements

Quantum will not be held liable for damage arising from unauthorized use of the product. The user assumes all risk in this aspect.

This unit is engineered and manufactured to meet all safety and regulatory requirements. Be aware that improper use may result in bodily injury, damage to the equipment, or interference with other equipment.

WARNING: Before operating this product, read all instructions and warnings in this document and in the system, safety, and regulatory guide.

| 警告 | 在使用本产品之前，请先阅读本文档及系统、安全和法规信息指南中所有的说明和警告信息。 |

| 警告 | 操作本產品前，請先閱讀本文件及系統、安全與法規資訊指南中的指示與警告說明。 |

| ADVERSAL | Læs alle instruktioner og advarsler i dette dokument og i *Vejledning om system-sikkerheds- og lovgivningsoplysninger*, før produktet betjenes. |

| AVERTISSEMENT | Avant d'utiliser ce produit, lisez la totalité des instructions et avertissements de ce document et du *Guide d'informations sur le système, la sécurité et la réglementation*. |

| HINWEIS | Lesen Sie vor der Verwendung dieses Produkts alle Anweisungen und Warnhinweise in diesem Dokument und im System, Safety, and Regulatory Information Guide (Info-Handbuch: System, Sicherheit und Richtlinien). |

| לפני ההפעלה של מוצר זה, קרא את כל ההוראות והאזהרות הכלולות במסמך זה וכן במדריך *מידע בנושאי מערכת, בטיחות ותקינה* | **אזהרה** |

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| 경고 | 이 제품을 작동하기 전에 이 문서 및 시스템, 안전, 및 규제 정보 안내서에 수록된 모든 지침과 경고 표지를 숙지하십시오. |

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| ADVERTENCIA | Antes de utilizar este producto, lea todas las instrucciones y advertencias en este documento y en la Guia informativa sobre sistema, seguridad y normas. |

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Contacts

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Controller Upgrade Guide

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Contents

Upgrading or replacing all controller canisters in a controller-drive tray

About this task

Use these procedures to replace all of the controllers in a controller-drive tray. You typically use these procedures when you choose to upgrade all of the controllers to a different model or platform. You might also use these procedures in the following situations:

• When all controllers in a controller-drive tray encounter hardware failures and are no longer functional.

• To upgrade the dual inline memory modules (DIMMs) in your controller-drive tray by replacing both controllers with the same model of controllers, but with different DIMMs.

If you are upgrading the host interface cards (HICs) in your controller-drive tray by replacing both controllers with the same model of controllers, but with different HICs, refer to the applicable flyer for upgrade instructions:

• *Replacing a Controller Canister in the E5560 Controller-Drive Tray to Replace a Failed Host Interface Card*

• *Replacing a Controller Canister in the E5512 or the E5524 Controller-Drive Tray to Replace a Failed Host Interface Card*

If you are upgrading the HICs in your controller-drive tray to 56-Gb/s InfiniBand (IB) HICs, you can use procedures in the following document to convert the protocol of the new HIC from iSCSI Extensions for Remote Direct Memory Access (iSER) to Secure Remote Password (SRP).

• *Converting an InfiniBand HIC from iSER to SRP*

You can upgrade an E5400 storage array or an EF540 flash array that has Fibre Channel base ports and two-port iSCSI HIC by installing new E5600 or EF560 controllers that have four-port HICs. You can then apply a feature pack in SANtricity Storage Manager to configure the HICs to operate with two iSCSI ports and two Fibre Channel ports (Fibre Channel-iSCSI split mode). You can use the procedures in the following document to perform this upgrade.

• *Upgrading E5400 or EF540 Controllers to E5600 or EF560 Controllers when Using Fibre Channel and iSCSI*

For duplex controller-drive trays, you replace both controllers. For simplex controller-drive trays, you replace the one controller. In both cases, you must power off the controller-drive tray. As a result, you cannot access data on the storage array until you successfully complete the replacement.

If your storage array participates in remote volume mirroring, only iSCSI or Fibre Channel connections are supported between the primary site and the remote site. If the HIC configuration in your new controllers does not include iSCSI or Fibre Channel connections, remote volume mirroring will not be supported.

For Asynchronous Mirroring, the local storage array and remote storage array can run different versions of firmware. The minimum firmware version supported is SANtricity firmware version 7.84.

If you order a new controller, it will normally be shipped without a battery installed. When possible, you should remove the battery from your old controller and then install that battery in the new controller. However, for some controller upgrades, the battery from the old controller is not compatible with the new controller. In those cases, you must order a battery along with your new controller, and have that battery available before you begin these tasks.

Some controller upgrades result in the Vendor ID in SCSI Inquiry Data changing from `LSI` to `NETAPP`. When the Vendor ID changes from `LSI` to `NETAPP`, additional steps are required on the Windows, VMware, and AIX operating systems to reclaim devices. Steps for these operating systems are included in this document.

If you are replacing the controllers to upgrade to a new model, keep in mind that your current storage array might have premium features installed that the new model cannot support. For example, E2700 controllers do not support the legacy Snapshot premium feature. If you replace E2600 controllers with E2700 controllers, and your storage array was using the legacy Snapshots feature, you must disable that feature and delete or convert all volumes (that is, snapshots, repositories) associated with that feature before you replace the controllers. You can convert legacy Snapshots to Snapshots. Before you upgrade a controller-drive tray, you should disable any premium features used on your storage array that are not supported on the new controllers.

If you change your controllers from 5x00 models to 2x00 models, your new storage array configuration will support lower numbers of some objects (for example, volumes) in the storage management software than your old configuration. You must make sure that your old configuration does not exceed the object limits listed below before you replace the controller(s).

- Maximum number of volumes - 512

- Maximum number of partitions - 128

- Maximum number of snapshot volumes - 512

- Maximum number of member volumes per consistency group - 32

- Maximum number of consistency groups - 16

- Maximum number of views - 256

- Maximum number of legacy RVM mirrors - 16

- Maximum number of ARVM mirrors - 32

- Maximum number of ARVM mirrors per mirror group - 32

- Maximum total number or mirrors (Legacy RVM + ARVM) - 32

- Maximum number of volume copies - 511

- Maximum number of thin provisioned volumes - 512

- Maximum number of drive slots in the storage array (controller-drive tray + all attached drive trays) - 192

	To E2x00	**To E5x00**	**To EF5x0**
From E2x00	**Battery** - Reuse the old battery. **Vendor ID** - Additional steps required. **Feature Support** - Legacy snapshots are not supported on the E2700. E2800 controllers must not be placed into SAS-2* shelves.	**Battery** - Order a new battery. **Vendor ID** - Additional steps are required when upgrading from E2600 to E5500 or E5600, or when upgrading from E2700 to E5400. **Feature Support** - Legacy snapshots are not supported on the E5500 or E5600. Legacy RVM is not supported on the E5500 or E5600 with iSCSI HICs. Data Assurance is not supported on the E5500 or E5600 with iSCSI HICs. E5x00 controllers must not be placed into SAS-3** shelves.	Upgrades are not supported.
From E5x00	**Battery** - Order a new battery. **Vendor ID** - Additional steps are required when upgrading from E5500 or E5600 to E2600, or when upgrading from E5400 to E2700. **Feature Support** - Legacy snapshots are not supported on the E2700. E5x00 controllers must not be placed into SAS-3** shelves.	**Battery** - Reuse the old battery. **Vendor ID** - Additional steps required when upgrading from E5400 to E5500 or E5600. **Feature Support** - No legacy snapshots for E5500 or E5600. No legacy RVM or Data Assurance for E5400/E5500 with iSCSI HICs.	Upgrades are not supported.
From EF5x0	Upgrades are not supported.	Upgrades are not supported.	**Battery** - Reuse the old battery **Vendor ID** - Additional steps required when upgrading from EF540 to EF550 or EF560. **Feature Support** - No Legacy Snapshots for EF550/EF560. No Data Assurance for EF550/EF560 with iSCSI.

	To E2x00	To E5x00	To EF5x0
	* SAS-2 shelves include the following models: • DE1600, DE5600, and DE6600 drive trays • E5400, E5500, and E5600 controller-drive trays • EF540, EF550 and EF560 flash arrays • E2600 and E2700 controller-drive trays ** SAS-3 shelves include the following models: • E2800 controller shelves • DE212C and DE224C drive shelves		

Attention: Possible loss of data access – Before you replace the controllers, make sure that any premium features that are installed and any configuration of objects in the storage management software can be supported with your new controllers. Failure to do this will result in an out-of-compliance condition or configuration errors. Contact technical support if you encounter configuration errors.

Attention: Possible loss of data access – If any controller that you are replacing manages any secure volumes, the new controller needs the correct security key to manage those volumes. After you replace the controller and restore power to the controller-drive tray, you can use SANtricity Storage Manager to load the key from the file in which it was saved. Be sure that such a file exists and that you know the pass phrase required to install the security key before you replace the controller.

To complete this procedure, you will need antistatic protection and one or two new controller canisters. You might also need new controller batteries. If your new controller canisters do not have the same host interface cards as the controller canisters you are replacing, you might need new host bus adapters, cables and Small Form-factor Pluggable (SFP) transceivers to re-cable your host connections. If the new controller canisters support different drive cabling from the old controller canisters, you might also need different drive cables.

Cabling considerations for controller-drive tray hardware upgrades

Compare your current host cabling to the supported cabling for your new controllers to determine whether you can reuse SFPs, QSFPs or cables from your old cabling configuration. The HBAs, HCAs, or Ethernet adapters, as well as switches in the network fabric used to connect your hosts to your storage array must match the HICs in your controller canisters.

Supported cables for E5500 and E5600 controller-drive trays and the EF550 and EF560 flash arrays

HIC		Cable		
Data Rate and Protocol	**Number of Connectors**	**Connector**	**Type**	**Length**
12 Gb/s SAS	4	MiniSAS-HD	passive copper	1-5m
		MiniSAS-HD	active copper	8-15m
		MiniSAS-HD	optical	5-100m
		Fan-out cable type #2	passive copper	2m
		Fan-out cable type #3	passive copper	2m
6 Gb/s SAS	4	MiniSAS-HD	passive copper	1-10m
		MiniSAS-HD	active copper	5-20m
		Fan-out cable type #1	passive copper	2m
56 Gb/s InfiniBand[1]	2	QSFP+	passive copper	1-3m
		QSFP+	optical	5-100m
40 Gb/s InfiniBand[2]	2	QSFP+	passive copper	1-5m
		QSFP+	optical	10-300m
16 Gb/s Fibre Channel	4	SFP+	OM2 SW optical	2, 3, 5, 10, 25m
		SFP+	OM3 SW optical	50-150m
		SFP+	OS2 LW optical	50-300m
10 Gb/s iSCSI	4	SFP+	OM2 optical	2, 3, 5, 10, 25m
		SFP+	OM3 optical	50-150m
		Twin-Ax	passive copper	2-7m

HIC		Cable		
Data Rate and Protocol	**Number of Connectors**	**Connector**	**Type**	**Length**
1 Gb/s iSCSI	4	SFP+[3]	OM2 optical	2, 3, 5, 10, 25m
		SFP+[3]	OM3 optical	50-150m
		Twin-Ax	passive copper	2-7m
		RJ-45[4]	passive copper	2-70m
[1]This information applies to HICs with a maximum data rate of 56 Gb/s. These HICs can also be operated at 40 Gb/s.				
[2]This information applies to HICs with a maximum data rate of 40 Gb/s. These HICs can also be operated at 20 Gb/s. These HICs can be used only in the E5500 and EF550 models.				
[3]Optical cables for 1-Gb/s iSCSI connections require a 1-Gb/s SFP.				
[4] Copper cables with RJ-45 connectors for iSCSI connections require an SFP adapter.				

Supported cables for E2700 controller-drive trays

HIC		Cable		
Data Rate and Protocol	**Number of Connectors**	**Connector**	**Type**	**Length**
12 Gb/s SAS	4	MiniSAS-HD	passive copper	1-5m
		MiniSAS-HD	active copper	8-15m
		MiniSAS-HD	optical	5-100m
	2	MiniSAS-HD	passive copper	1-5m
		MiniSAS-HD	active copper	8-15m
		MiniSAS-HD	optical	5-100m
	4	Fan-out cable type #2	passive copper	2m
		Fan-out cable type #3	passive copper	2m
16 Gb/s Fibre Channel	4	SFP+	OM2 SW optical	2,3,5,10,25 m
		SFP+	OM3 SW optical	50-150m
		SFP+	OS2 LW optical	50-300m
	2	SFP+	OM2 SW optical	2,3,5,10,25 m
		SFP+	OM3 SW optical	50-150m
		SFP+	OS2 LW optical	50-300m

HIC		Cable		
Data Rate and Protocol	**Number of Connectors**	**Connector**	**Type**	**Length**
10 Gb/s iSCSI	4	SFP+	OM2 optical	2,3,5,10,25 m
		SFP+	OM3 optical	50-150m
		Twin-Ax	passive copper	2-7m
	2	SFP+	OM2 optical	2,3,5,10,25 m
		SFP+	OM3 optical	50-150m
		Twin-Ax	passive copper	2-7m
		RJ-45	Cat6a passive copper	2-100m
1 Gb/s iSCSI	4	SFP+[1]	OM2 optical	2, 3, 5, 10, 25m
		SFP+[1]	OM3 optical	50-150m
		Twin-Ax	passive copper	2-7m
		RJ-45[2]	passive copper	2-70m
	2	SFP+[1]	OM2 optical	2, 3, 5, 10, 25m
		SFP+[1]	OM3 optical	50-150m
		Twin-Ax	passive copper	2-7m
		RJ-45[2]	Cat5 passive copper	2-70m
		RJ-45	Cat6a passive copper	2-100m
[1]Optical cables for 1-Gb/s iSCSI connections require a 1-Gb/s SFP. [2] Copper cables with RJ-45 connectors for iSCSI connections require an SFP adapter.				

Preparing to replace the controllers

Before removing a controller canister, you must perform a number of steps in SANtricity Storage Manager to prepare your system. These steps include saving the drive security key, gathering support data, and taking the controller offline.

Steps

1. Make sure that the existing storage array is updated to the latest released operating system (controller firmware) version available for your current controllers.

    Note: If you are upgrading to controllers that support SANtricity OS version 8.30, you must download and install the latest versions of SANtricity OS and the latest NVSRAM after you install and power on the new controllers. If you do not perform this upgrade, you might not be able to configure the storage array for Automatic Load Balancing (ALB). See the *SANtricity Storage Manager 11.30 Upgrade Guide* for the procedure to install SANtricity OS and NVSRAM.

2. If the Drive Security feature is enabled and a security key exists on the storage array, follow these steps to save the key:

    a. Go to the Array Management Window.

    b. From the **Storage Array** menu, select **Security > Drive Security > Save Key**.

    c. Save the security key to a location not on the storage array.

3. Perform the following steps to record the serial number for your storage array:

    a. In the **EMW** tree view, double-click your storage array.

    The **AMW** opens.

    b. In the **Summary** tab of the **AMW**, click the **View Storage Array Profile** link.

    c. Make a record of the value for `Chassis Serial Number`.

    You need this serial number to perform the steps in "Powering on the storage array."

4. Gather support data about your storage array by using one of these methods:

    *   Use the storage management software to collect and save a support bundle of your storage array. From the Array Management Window toolbar, select **Monitor > Health > Collect Support Data Manually**. Then name and specify a location on your system where you want to store the support bundle.

    *   Use the command line interface (CLI) to run the `save storageArray supportData` command to gather comprehensive support data about the storage array. For more information about this command, refer to the current version of the *Command Line Interface and Script Commands Programming Guide*.

    Note: Gathering support data can temporarily impact performance on your storage array.

5. Ensure that no I/O operations are occurring between the storage array and all connected hosts. For example, you can perform these steps:

    *   Stop all processes that involve the LUNs mapped from the storage to the hosts.

    *   Ensure that no applications are writing data to any LUNs mapped from the storage to the hosts.

- Unmount all file systems associated with volumes on the array.

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

  Attention: Possible data loss – If you continue this procedure while I/O operations are occurring, you might lose data.

6. If the storage array participates in a mirroring relationship, stop all host I/O operations on the secondary storage array.

7. Wait for five minutes to allow any data in cache memory to be flushed to disk.

8. From the title bar of the **Array Management Window**, select **Monitor > Reports > Operations in Progress**.

9. Wait for all operations shown on the **Operations in Progress** window to complete before continuing with the next step.

10. Turn off power to the controller-drive tray.

11. Wait for all of the LEDs on the controller-drive tray to go dark.

12. Turn off power to each drive tray that is connected to the controller-drive tray.

13. Wait for two minutes for all of the drives to spin down.

Related tasks

Removing controller canisters from a controller-drive tray

When you remove a controller canister, you must disconnect all cables and remove any SFP transceivers. Then, you can slide the controller canister out of the controller-drive tray.

About this task

> **Attention: Possible hardware damage** – To prevent electrostatic discharge damage to the tray, use proper antistatic protection when handling tray components.

Steps

1. Put on antistatic protection.

   > **Attention: Potential degraded performance** – To prevent degraded performance, do not twist, fold, pinch, or step on the cables. Many cables have a minimum bending radius. Check the specifications for your cables, and do not bend any cable tighter than the minimum specified radius.

2. Label each cable that is attached to the old controller canister. Depending on the HIC configuration, you might be able to reconnect some cables after you replace the controller canister.

3. Disconnect all of the interface and Ethernet cables from the old controller canister.

   If fiber-optic cables are present, you can use the two release levers to partially remove the controller canister. Opening these release levers makes it easier to press down the fiber-optic cable release tab.

4. If the old controller canister contains a Fibre Channel HIC or an InfiniBand HIC, remove the small form-factor pluggable (SFP+) transceivers (for Fibre Channel) or quad SFP (QSFP+) transceivers (for InfiniBand) from the HIC, and save them for possible reuse.

5. Remove controller A.

   a. Unlock and rotate the release handles out to release the controller canister.

   b. Using the release handles and your hands, pull the controller canister out of the controller-drive tray.

   The following figures show the release handles for the E2612 and E2624 controller-drive trays and the E2660 controller-drive tray. The other controller-drive trays have a similar configuration for the release handles.
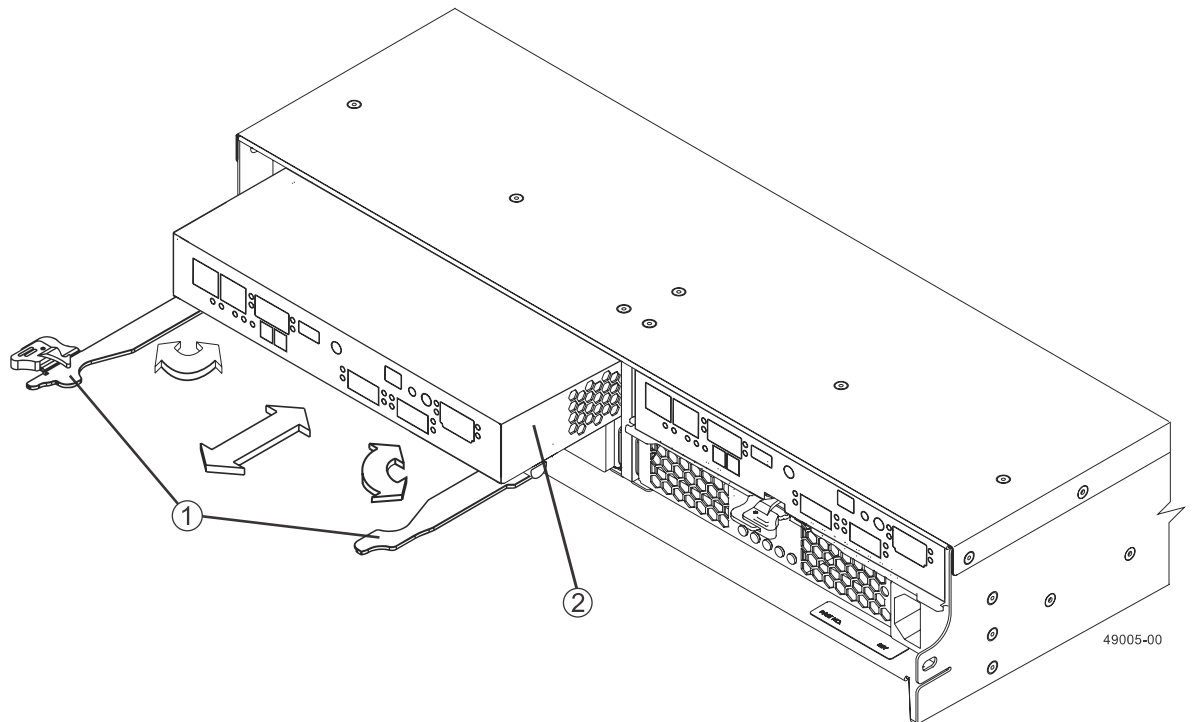
Removing a controller canister from the E2612 or the E2624 controller-drive tray
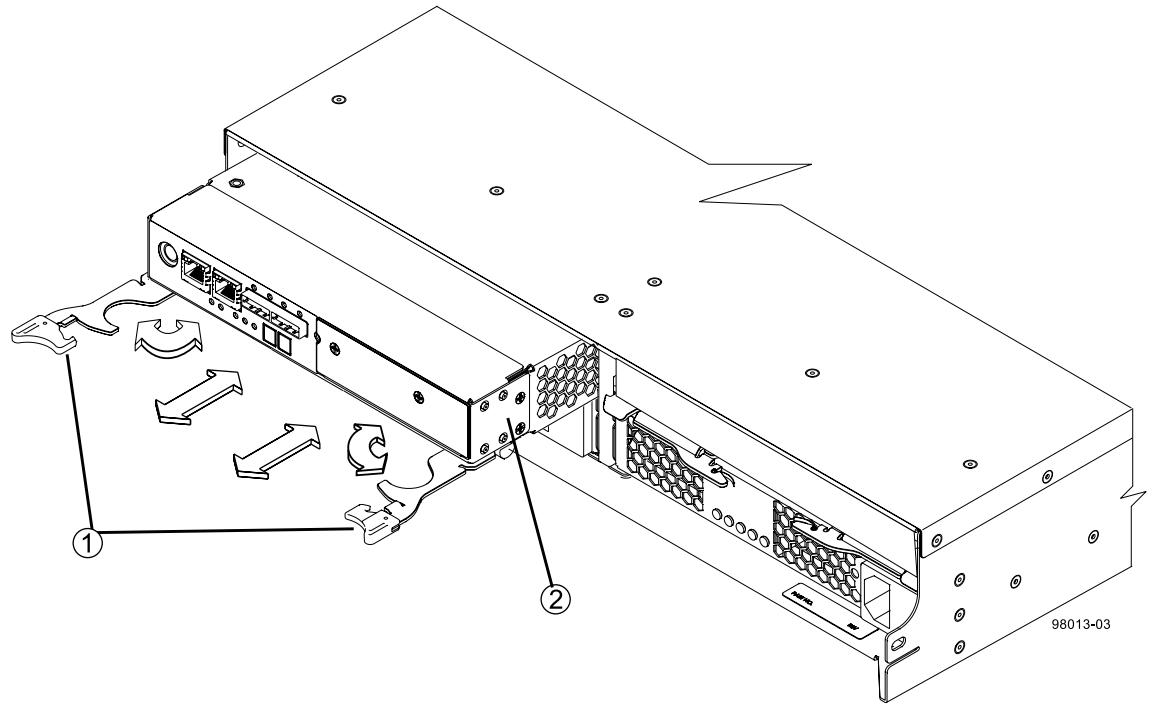
98013-03

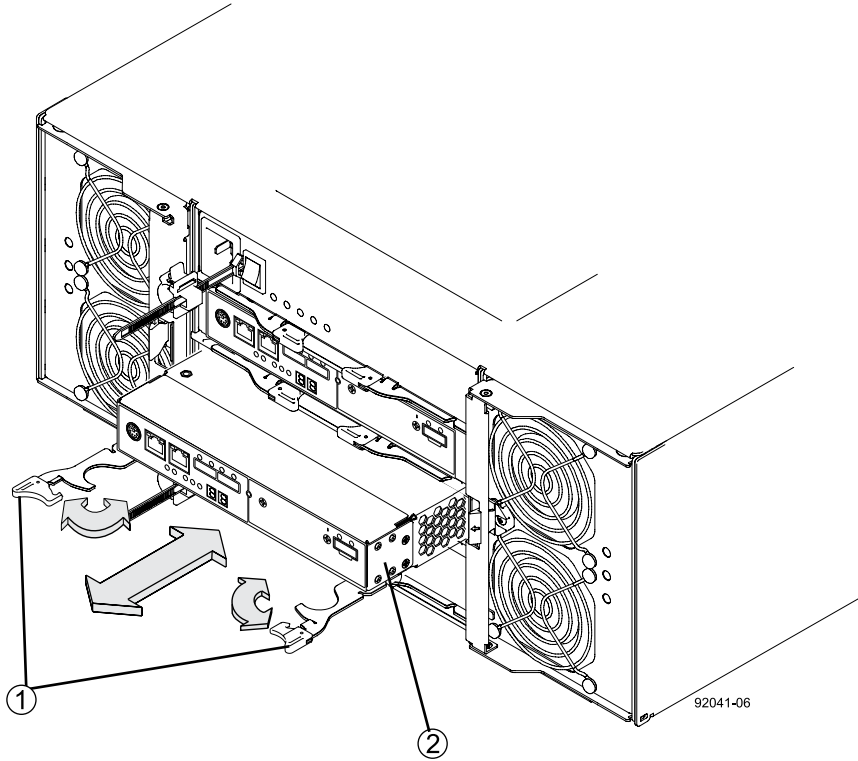| 1.	Release Handles
2.	Controller Canisters

Removing a controller canister from the E2712 or the E2724 controller-drive tray

49005-00

1.	Release Handles
2.	Controller Canisters

Removing a controller canister from the E2660 controller-drive tray

92041-06

1.	Release Handles
2.	Controller Canisters

Removing a controller canister from the E2760 controller-drive tray

49008-00
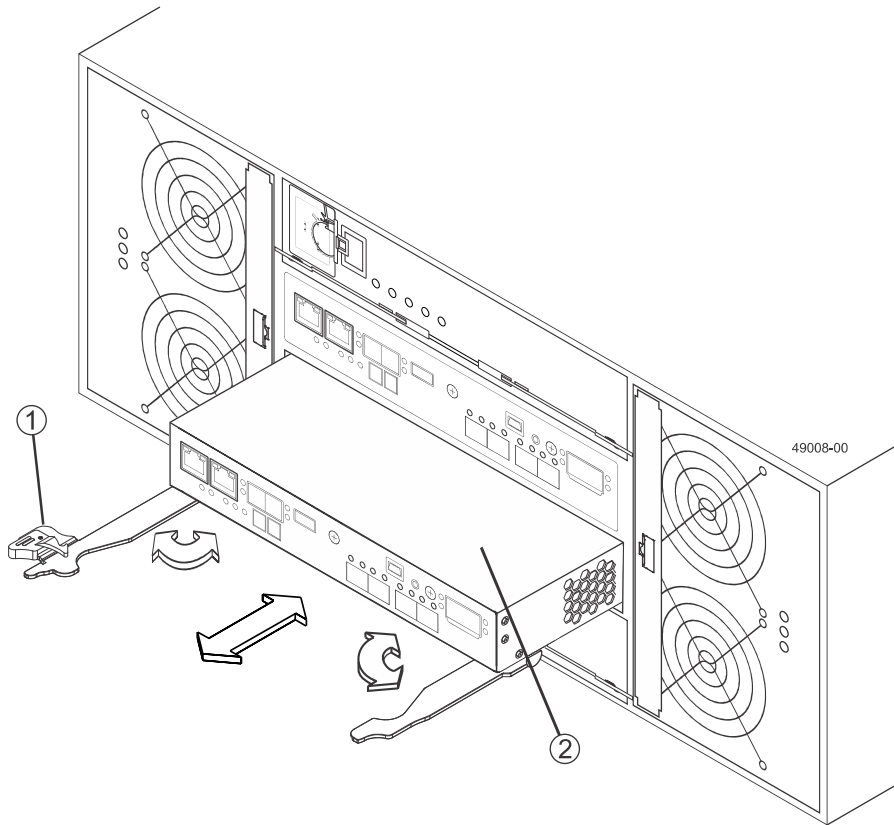
1.	Release Handles
2.	Controller Canisters

Removing a controller canister from the E5400, EF540, E5500, or EF550 controller-drive tray

51011-02
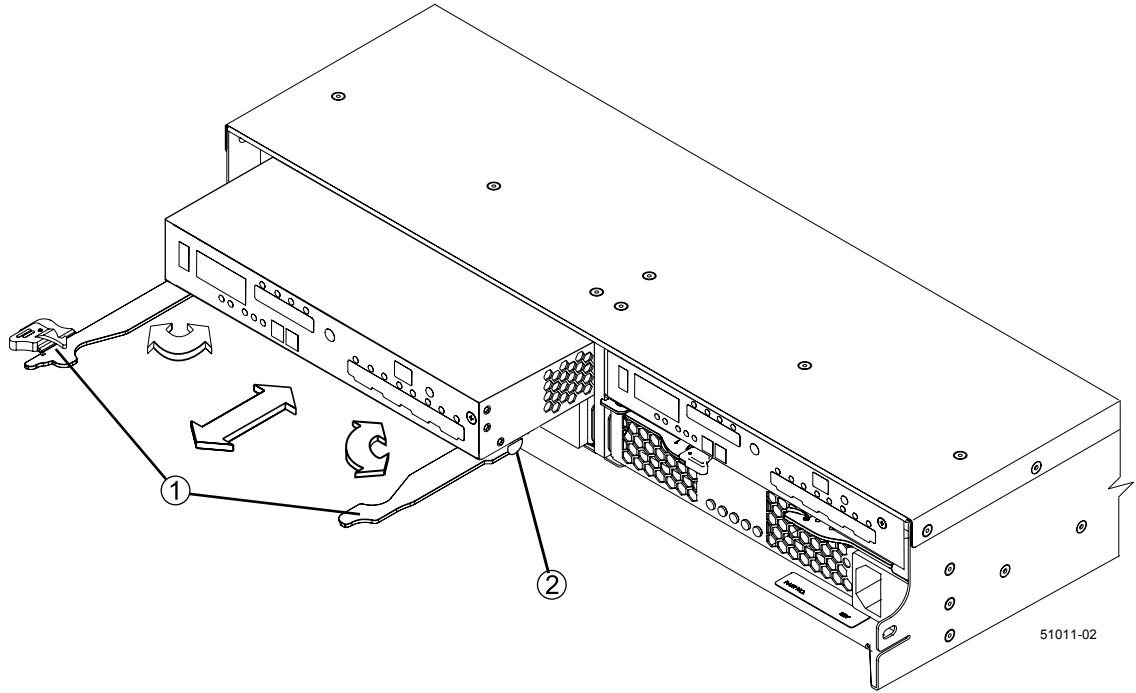
1.	Release Handles
2.	Controller Canisters

Removing a controller canister from the E5460 or E5560 controller-drive tray
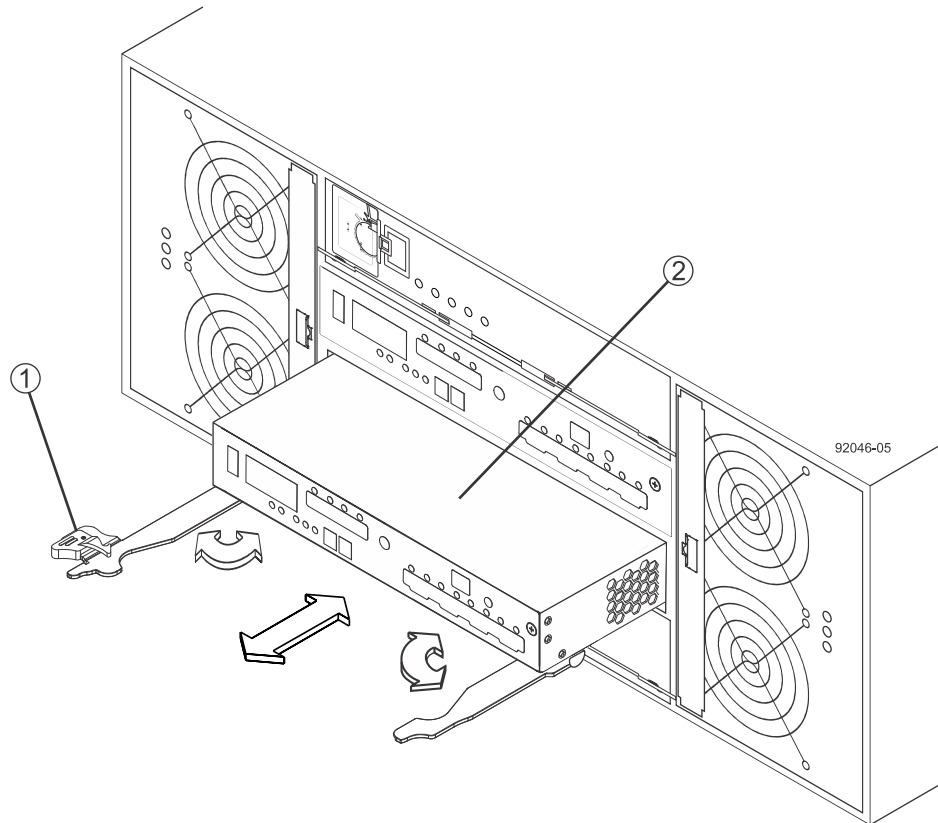
1.	Release Handles
2.	Controller Canisters

6. Set the old controller canister on a flat, static-free surface near the controller-drive tray with the release levers up. Position the controller canister so that you can access the top cover.

7. Choose one of the following options:

   - If you will reuse the battery from the old controller in the new controller, continue with step *8* on page 18.

   - If you will install a new battery in the new controller, go to step *11* on page 19.

8. Press down on both of the top cover latch buttons on the old controller canister, and slide the top cover to the rear of the canister.

9. Perform one of the following options, depending on your model of controller-drive tray, to release the old battery:

   - For the E2600 controller-drive tray or the E2700 controller-drive tray, unscrew the thumb screw that secures the battery to the controller canister.

   - For the E5400 controller-drive tray, the EF540 controller-drive tray, the E5500 controller-drive tray, the EF550 controller-drive tray, the E5600 controller-drive tray, or the EF560 controller-drive tray, release the tab that secures the battery to the controller canister.

10. Remove the battery by sliding it towards the rear of the old controller canister.

11. For a duplex controller-drive tray, repeat step *2* on page 13 through step *10* on page 18 for the second controller canister.

Installing new controller canisters in the controller-drive tray

After you have removed the old controllers, you can install new controllers in the controller-drive tray.

About this task

Perform the following steps for each controller in the controller-drive tray.

Steps

1. Unpack a new controller canister.

    a. Set the new controller canister on a flat, static-free surface near the controller-drive tray with the top cover up.

    b. Save all of the packing materials so that you can, if necessary, ship the old controller canister.

2. Push down the two top cover latch buttons that secure the top cover to the new controller canister.

3. Remove the top cover by sliding it to the rear of the new controller canister.

4. Are you installing the battery in an E2600 controller-drive tray or an E2700 controller-drive tray?

    • **Yes** – For an E2600 controller-drive tray or an E2700 controller-drive tray, go to step *9* on page 20.

    • **No** – Continue with the next step.

5. Insert the battery (either the new battery that you ordered or the battery that you removed from the old controller canister) into the new controller canister. Slide the battery into the canister, making sure it stays below the rivets on the wall of the new canister.

6. Keeping the locking handle at a 45 degree angle, align the connectors at the bottom of the battery with the connectors on the canister.

7. Push the battery down until you hear it click, and move the locking handle up to secure the controller battery to the controller canister.

    Attention: To make sure that the controller battery is seated correctly in an E5400 controller-drive tray, an E5500 controller-drive tray, an E5600 controller-drive tray, an EF540 controller-drive tray, an EF550 controller-drive tray, or an EF560 controller-drive tray, you might need to slide it out and insert it again. You will know it is secure when you hear it click into place, and when the locking handle does not move out of its upright position when you wiggle it.

8. Go to step *11* on page 21.

9. Insert the battery circuit board (either the new battery circuit board that you ordered or the battery circuit board that you removed from the old controller canister) by sliding it towards the front of the new controller canister.

    Note: To ensure that the battery is seated correctly in an E2600 controller-drive tray or an E2700 controller-drive tray, you might need to back it out of the connector to make sure that it is correctly aligned with the thumbscrew.

10. Tighten the thumbscrew to secure the battery circuit board in the new controller canister card.

11. Reinstall the top cover on the new controller canister by sliding it forward until the top latch covers click.

12. Slide the new controller canister all the way into the controller-drive tray. Rotate the release levers towards the center of the controller canister to lock it into place.

13. If your new controller canister has a Fibre Channel HIC or an InfiniBand HIC, install the SFP+ transceivers (Fibre Channel) or QSFP+ transceiver (InfiniBand) into the controller canister.

    Depending on the HICs involved in your upgrade, you might be able to reuse SFP+ transceiver or QSFP+ transceivers that you removed from your old controller canister. See *Cabling considerations for controller-drive tray hardware upgrades* on page 8 for details about cabling requirements.

14. Reconnect all of the cables between the controller-drive tray and the drive trays.

    Note: If you are upgrading to E2700 controllers from an earlier model, the drive cabling configuration might be different from the configuration used for the old controllers.

    If the drive cabling configuration is the same as it was with your old controllers, use the labels that you attached to the cables to reconnect the cables correctly.

Powering on the storage array

After replacing a controller canister, you must bring the controller online and confirm that the storage array is working correctly. Then, you can collect support data and resume operations.

About this task

If the controller upgrade involves a protocol change (for example, Fibre Channel to iSCSI), any hosts groups, hosts, and volume-to-LUN mappings defined in the host mappings tab remain intact. However, you must take steps to associate the new host ports with the hosts. If the controller upgrade does not involve a protocol change, all host port mappings will remain intact and no additional steps are required.

Steps

1. Turn on the Power switch on the rear of each drive tray that is connected to the controller-drive tray.

2. Wait two minutes for the drives to spin up.

3. Turn on the Power switch on the rear of the controller-drive tray.

4. Wait three minutes for the power-up process to complete.

5. If you saved a security key in *Preparing to Replace the Controllers* on page 11, perform the following steps on each controller to import that key.

   a. If there is a mix of secured and unsecured drives in the storage array, create a new security key.

      Unsecured drives are unassigned drives, GHS drives, or drives which are part of a volume group or a disk pool that is not secured by Drive Security. Secured drives are assigned drives that are a part of a secured volume group or Disk Pool using Drive Security.

   b. Import the security key that you saved in *Preparing to Replace the Controllers* on page 11. (From the **Storage Array** menu, select **Security > Drive Security > Import Key**.)

   c. If there were only secured drives (no unsecured drives) in the storage array, the controller(s) will automatically reboot to complete the import operation. Wait for all controllers to boot up. When a controller finishes booting, its icon will appear in the Enterprise Management Window (EMW).

6. If the Drive Security feature is enabled, and the storage array has a mix of secured and unsecured drives, follow these steps:

   a. Run the `set allDrives nativeState` SMcli command.

   b. Reset all controllers using SANtricity Storage Manager.

   c. Wait for all controllers to boot up. When a controller has finished booting, it appears in the EMW.

7. Look at the LEDs on controller A to make sure that it is booting correctly.

   The Host Link Service Action Required LEDs turns green during the reboot. The seven-segment display shows the sequence OS+ Sd+ blank- to indicate that the controller is performing Start-of-day (SOD) processing. After the controller successfully completes rebooting, the seven-segment display shows the tray ID matching the seven-segment display on the second controller. You can then discover the new controller canister by using the storage management software.

Controller LEDs and seven segment display on the E5500, EF550, E5600 and EF560 controller-drive trays
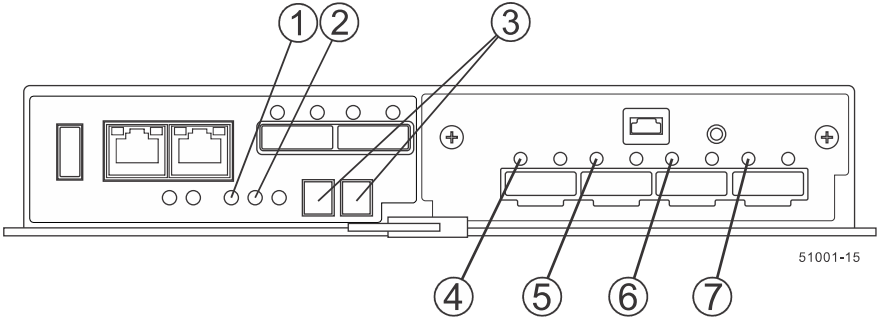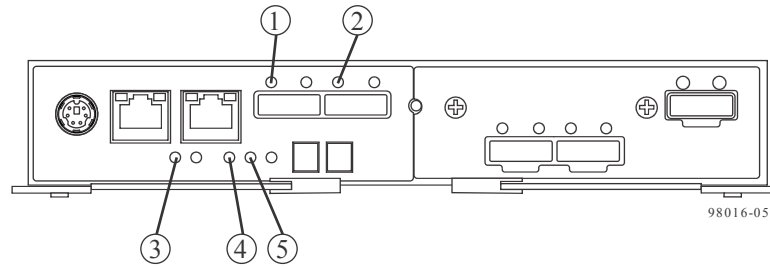

51001-15

1.	Controller Service Action Allowed LED (Blue)
2.	Controller Service Action Required LED (Amber)
3.	Seven-Segment Display
4.	Host Link 1 Service Action Required LED (Amber
5.	Host Link 2 Service Action Required LED (Amber)
6.	Host Link 3 Service Action Required LED (Amber)
7.	Host Link 4 Service Action Required LED (Amber)

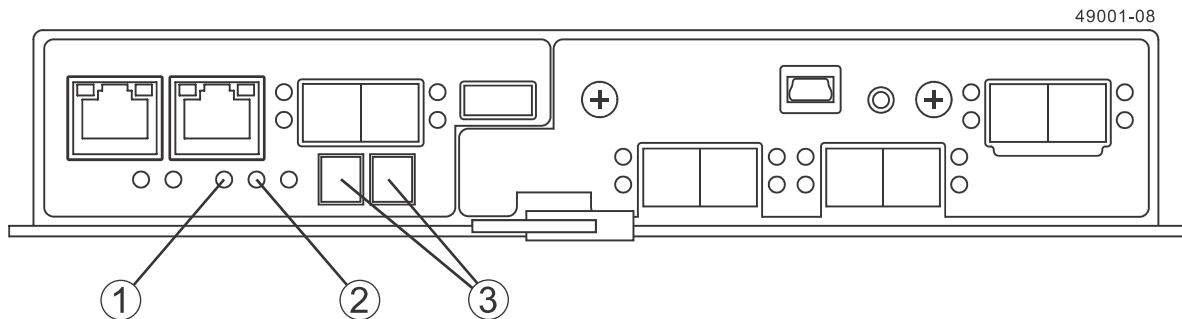**Controller LEDs and seven segment display on the E5400 controller-drive tray**
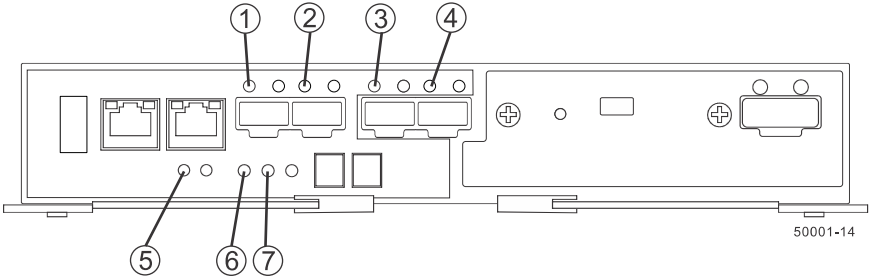
50001-14

1.	Controller Service Action Allowed LED (Blue)
2.	Controller Service Action Required LED (Amber)
3.	Seven-Segment Display
4.	Host Link 1 Service Action Required LED (Amber
5.	Host Link 2 Service Action Required LED (Amber)
6.	Host Link 3 Service Action Required LED (Amber)
7.	Host Link 4 Service Action Required LED (Amber)

Controller LEDs on the E2600 controller-drive tray

1.	Host Link 1 Service Action Required LED (Amber)
2.	Host Link 2 Service Action Required LED (Amber)
3.	Battery Service Action Required LED
4.	Controller Service Action Allowed LED (Amber)
5.	Controller Service Action Required LED (Amber)

Controller LEDs and seven segment display on the E2700 controller-drive trays

1.	Controller Service Action Allowed LED (Blue)
2.	Controller Service Action Required LED (Amber)
3.	Seven-Segment Display

8. Perform these steps if any of the controller-drive tray's Service Action Required LEDs are *on*, or if the Controller Service Action Required LED is *on*:

   a. Check that the controller canister has been installed correctly and that all of the cables are correctly seated. Reinstall the controller canister, if necessary.

   b. Check the controller-drive tray's Service Action Required LEDs and the Controller Service Action Required LED again. If the problem is not corrected, contact technical support.

9. For a duplex configuration, repeat step *7* on page 22 through step *8* on page 24 for controller B.

10. Using the LEDs and the storage management software, check the status of all of the trays in the storage array.

11. Does any component have a Needs Attention status?

    - **Yes –** Click the Recovery Guru toolbar button in the Array Management Window , and complete the recovery procedure. If the problem is not resolved, contact technical support.

    - **No –** Go to step *12* on page 25.

12. Remove the antistatic protection.

13. Perform the appropriate action from the following choices to make sure that your new controllers are running with the correct operating system (controller firmware) level and NVSRAM.

    - If you are upgrading to controllers that do not support SANtricity 11.30 and controller firmware 8.30, make sure that the version running on the new controllers matches the version that was last running on the original controllers. Normally, this will be the most recent release supported by the old controllers. If necessary, install the appropriate version on the new controllers.

    - If you are upgrading to controllers that run SANtricity 11.30 and controller firmware 8.30, download and install the latest NVSRAM after you power on the new controllers. See the *SANtricity Storage Manager 11.30 Upgrade Guide* for the procedure to install NVSRAM.

14. If your controller upgrade involves a protocol change (for example, Fibre Channel to iSCSI), and you already have hosts defined for your storage array, perform the following steps to associate the new host ports with your hosts:

    a. In the Array Management Window, select the **Host Mappings** tab.

    b. From the **Storage Array** tree on the left of the window, select the host to associate with a port.

    c. From the Array Management Window toolbar, select **Host Mappings > Manage Host Port Identifiers**.

    d. To update the host port identifier information associated with each host, replace the host port IDs from the old host adapters with the new host port IDs for the new host adapter.

    e. Repeat step d for each host.

15. Gather support data about your updated storage array by using one of these methods:

    - Use the storage management software to collect and save a support bundle of your storage array. From the Array Management Window toolbar, select **Monitor > Health > Collect Support Data Manually**. Then name and specify a location on your system where you want to store the support bundle.

    - Use the CLI to run the `save storageArray supportData` command to gather comprehensive support data about the storage array.

    For more information about the CLI command, refer to the current version of the *Command Line Interface and Script Commands Programming Guide*.

    > **Note:** Gathering support data can temporarily impact performance on your storage array.

16. Perform the following steps to open a non-technical case with NetApp Technical Support. This action alerts NetApp Technical Support to the changes that you made to the configuration of your storage array.

    a. Get the serial number of the controller-drive tray that you recorded in *Preparing to replace the controllers* on page 11.

b. Go to the NetApp support site at *mysupport.netapp.com/eservice/assistant*.

c. If the **Login** page appears, enter your username and password, and select **Login**.

   The **Give Us Feedback** page opens.

d. Select **Product Registration** from the drop-down list under **Category 1**.

e. Enter the following text in the **Comments** text box, substituting the serial number of your controller-drive tray for `serial number`:

   Please create alert against Serial Number: `serial number`. The alert name should be "E-Series Upgrade". The alert text should read as follows:

   "Attention: The controllers in this system have been upgraded from the original configuration. Verify the controller configuration before ordering replacement controllers and notify dispatch that the system has been upgraded."

f. Click the **Submit** button at the bottom of the form.

Remounting volumes after changing the vendor from LSI to NETAPP

If your controller upgrade results in changing the vendor ID from LSI to NETAPP, you must take steps on each Windows, VMware or AIX host that uses volumes from the updated storage array. Refer to the task for the corresponding operating system on each host.

Remounting volumes on a Windows host

These steps enable attached hosts can perform I/O operations with volumes on the upgraded storage array.

Steps

1. In the **Device Manager**, select **Show Hidden Devices**.

2. For each NETAPP SCSI Disk Device listed in the **Device Manager**, right-click on the entry, and select **Uninstall**.

   If Windows displays a dialog with a message indicating that you should reboot the host, finish uninstalling all of the volumes before you scan for hardware and reboot.

3. Right-click in the **Device Manager**, and select **Scan for Hardware Changes**.

4. Reboot the host.

Steps for AIX hosts

After you replace the controllers, you might observer that host shows the new volumes on the storage array, but also shows the original volumes as failed.

About this task

If failed volumes appear, perform the following steps.

Step

1. From the command line, run the `cfgmgr` command.

Remounting volumes on a VMware host

Address problems that might appear on VMware hosts after the controller upgrade.

About this task

After you replace the controllers, you might observe the following conditions:

- VMware shows new paths for the volumes on the storage array, but also shows the original paths as dead paths.

- The hosts still list the volumes on the storage array as having LSI vendor IDs. This might occur when the volumes were claimed by the LSI rule at the start and so continue to use the same LSI rule when the volumes come back on line.

- The Display Name does not reflect the change from LSI to NetApp. This might occur because the display name became free test after initial discovery. In this case, you can change the Display Name manually.

If dead paths appear, perform the following steps.

Steps

1. Perform a rescan on the each host.

2. Halt all host I/O operations to this subsystem.

3. To reclaim the volumes under NetApp rule, perform the following steps.

   a. From the command line, run the `esxcli storage core device list` command. Check the output from the command to identify volumes whose names have the form `aa.xxxx`.

   b. From the command line, run the command `do esxcli storage core claiming reclaim -d naa.xxxxx` to change the LSI vendor ID to NetApp.

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