Quantum

Installation and Setup Instructions

StorNext QD7000

Firmware 8.40.xx.xx

6-68666-01 Rev A

Installation and Setup Instructions, 6-68666-01 Rev A, March 2018 Product of USA.

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Quantum specifications are subject to change.

Preface

Note: The 8.40.xx.xx firmware (Madrid) is used in the QD7000 (E5600, Titan RAID controller, only). Refer to the NetApp to Quantum Naming Decoder section for additional information.

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
E5660 • DE6600 4U drive enclosure • With E5600 RAID controllers (Titan)	Quantum StorNext QD7000	
E5560 • DE6600 4U drive enclosure • With E5500 RAID controllers (Soyuz)	Quantum StorNext QD7000	
E5460 • DE6600 4U drive enclosure • With E5400 RAID controllers (Pikes Peak)	Quantum StorNext QD6000	

E-Series NetApp Product	Quantum-Storage	Description
E5424 • DE5600 24-drive 2U drive enclosure • Code Name: Camden • With E5400 RAID controllers (Pikes Peak)	Quantum StorNext QS2400	
E5412 • DE1600 12-drive 2U drive enclosure • Code Name: Ebbets • With E5400 RAID controllers (Pikes Peak)	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).

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

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APAC	+800-7826-8887 (toll free) +603-7953-3010
For worldwide support: http://www.quantum.com/serviceandsupport/get-help/index.aspx#contact-support	

NetApp®

Installation and Setup Instructions for E-Series 60-Drive Trays

E2760 and E5660 controller-drive trays
DE6600 expansion drive trays

Unpack & Prepare

Install Hardware

Connect Drive Trays

Apply Power

Connect Data Hosts

Choose Management Method

Install & Use SANtricity® Software

210-06665+A0

Before you begin

Before installing the hardware

- Confirm that your location provides 240-volt AC power.
- Obtain a standard 19-inch (48.3-cm) rack to fit 4U trays with these dimensions:

Tray	Height	Width	Depth	Max Weight
60-drive	7.00 in. (17.78 cm)	17.75 in. (45.08 cm)	32.50 in. (82.55 cm)	236.2 lb (107.1 kg)

- Install any required host bus adapters (HBAs) in the data hosts as well as any required switches. Refer to the NetApp Interoperability Matrix at http://mysupport.netapp.com/matrix for compatibility information.

For additional instructions

1. Go to the E-Series and EF-Series Systems Documentation Center: http://mysupport.netapp.com/eseries.
2. Download these documents from the **Getting Started** and **Installing & Configuring** sections of the page.

Task	Document
Preparing your site	*Site Preparation Guide*
Installing a NetApp cabinet	*3040-40U Cabinet Installation Guide*
Installing the rails, trays, and drives	*Controller-Drive Tray and Related Drive Tray Installation Guide*
Cabling the hardware	*E-Series and EF-Series Hardware Cabling Guide*
Choosing a management method	*SANtricity Storage Manager Express Guides* *SANtricity Power Guides for Advanced Users*
Installing and using SANtricity software	*SANtricity Storage Manager Express Guides* *SANtricity Power Guides for Advanced Users*

For additional help

NetApp Support: http://mysupport.netapp.com/
NetApp Training: http://www.netapp.com/us/services-support/university/learning.aspx
NetApp Videos: https://www.brainshark.com/go/netapp-sell/library.html

For your safety

Review the Safety Notices document included in the box, and pay close attention to the precautions for moving and installing hardware.

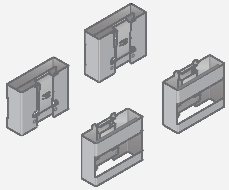
Unpack the boxes

Unpack all boxes and compare the contents to the items on the packing slip.
You will find these items in the boxes.

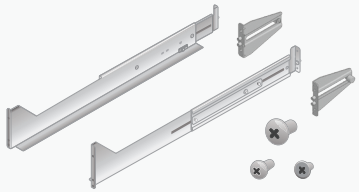
Controller-drive tray
Drive trays, if ordered

Drives (HDD or SSD)
(20 to 60 for each tray)

Front bezel

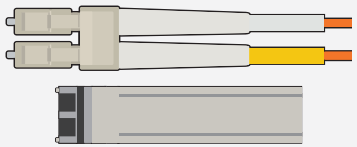


4 handles to lift and move the tray
(or you can use a lift)

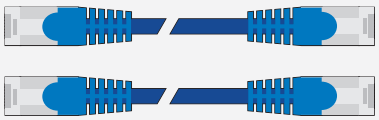


Cabinet rails and mounting hardware

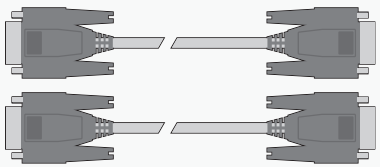
Power cords for your country
(two for each tray)



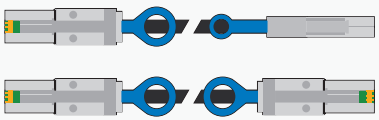
I/O cables and transceivers, if ordered



Ethernet cables, if ordered
(as needed to connect
to the management station)



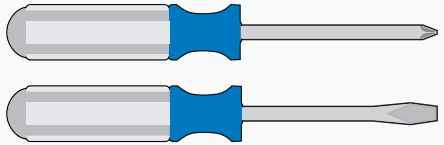
Serial cables
(as needed for diagnostics or installation)



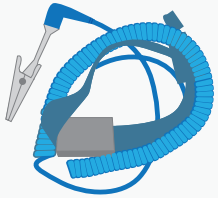
SAS cables
(included only with the drive trays)

Obtain tools and other equipment

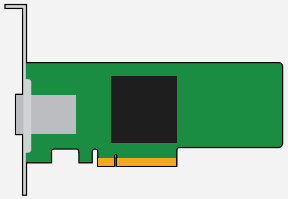
You need additional tools and equipment to complete the installation tasks.



Phillips No. 2 screwdriver
Medium flat-blade screwdriver



ESD wrist strap

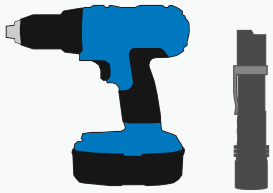


Host bus adapter (HBA)
(installed in each data host)

SAN switch
(optional, depending on host topology)

Management station
(for SANtricity software)

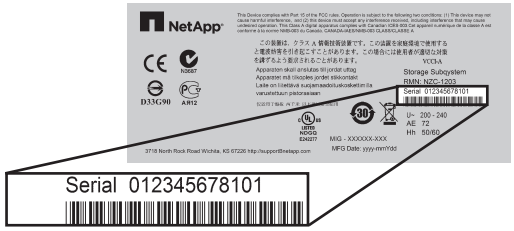
Optional Tools



Power drill with Phillips head bit
Flashlight
Mechanized lift

Register the hardware

1 Locate the chassis serial number. You can find the number on the packing slip, in your confirmation email, or on the controller-drive tray after you unpack it.



2 Go to the NetApp Support Site: http://mysupport.netapp.com

3 Sign into the site:

- If you do not already have a NetApp account, click **Register Now** to create an account.
- If you already have a NetApp account, click **Sign In,** and enter your username and password.

4 Determine whether you need to register the hardware, as follows:

If you are a...	Follow these steps...
NetApp customer who has registered hardware before	1 From the top menu, select **Products > My Products.** 2 Confirm that the new serial number is listed. 3 If it is, go to "Install the rails." If it is not, follow the instructions below to register the hardware.
A reseller customer or a new NetApp customer	1 From the top menu, select **Products > Register Products**. 2 Enter the product serial number, and click **Submit.** 3 Enter the requested details, and click **Submit.** After your registration is approved, you can download SANtricity software. The approval process might take up to 24 hours.

Install the rails

WARNING: Install hardware from the bottom of the cabinet up to the top to prevent the equipment from toppling over.

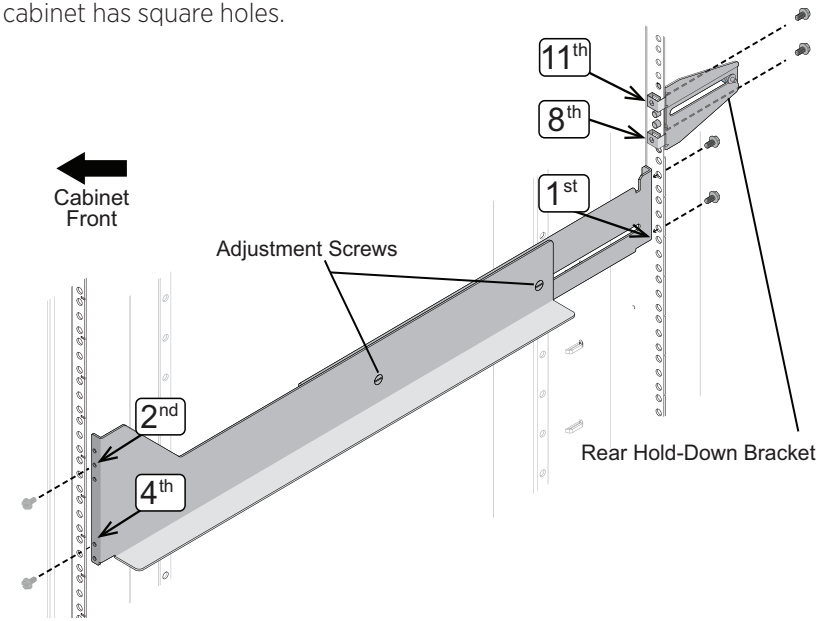
You need this hardware to install the rails (the kit also includes extra screws):

- Left and right rails
- Left and right rear hold-down brackets for additional bracing, if needed
- 16 screws (8 for the rails, 4 for the brackets, 4 for securing the tray)
- 8 washers (used only for cabinets with square holes)

1 Extend the rail by loosening the two adjustment screws.

2 Starting at the lowest available position in the cabinet, align the holes on the ends of the rail with the holes on the cabinet. Confirm that the rail is level.

3 Secure the front of the rail to the cabinet by counting down from the top of the rail and inserting two screws into the 2nd and 4th *rail* holes. Use the washers if the cabinet has square holes.



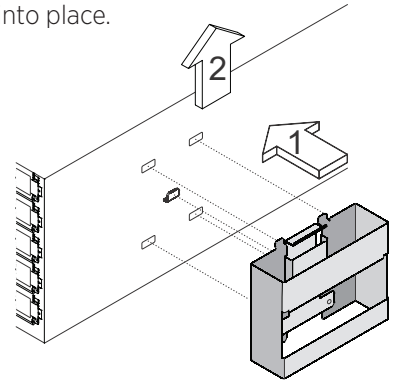
4 Secure the rear of the rail to the cabinet with two screws (and washers if the cabinet has square holes). Use the same set of holes as in the front.

5 If you plan to ship an empty tray in the cabinet, secure the hold-down brackets to the back of the cabinet by counting up from the bottom of the rail and inserting screws into the 8th and 11th cabinet holes. The tray must be empty when shipped.

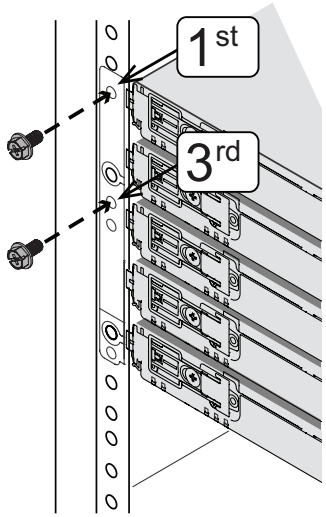
Install the trays

WARNING: An empty tray weighs approximately 132 lb (60 kg). Four persons are required to safely move an empty tray. If drives are installed, a mechanized lift is required.

1. To access the tray, remove the outer packing box. Then, fold down the flaps on the inner box.
2. If you are using a mechanized lift, you do not need the tray handles. If you are lifting and moving the tray by hand, attach the four handles. Push up on each handle until it clicks into place.



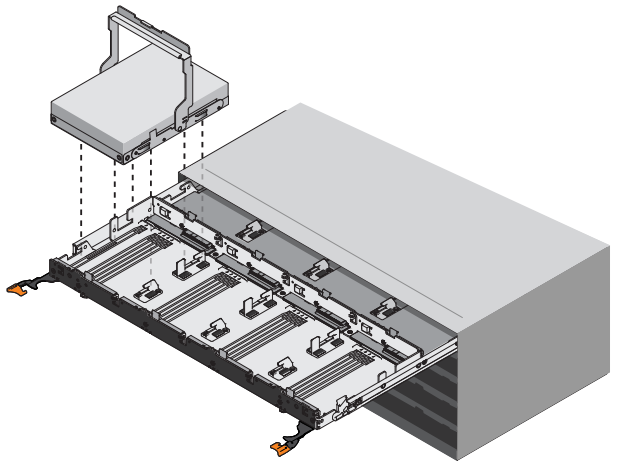
3. Place the back of the tray (the end with the connectors) on the rails.
4. Supporting the tray from the bottom, slide it into the cabinet. If you are using the handles, use the thumb latches to detach the handles as you slide the tray in.
5. Secure the tray to the front of the cabinet by inserting two screws in the 1st and 3rd holes (counting down from the top) on each side.



Install the drives

CAUTION: To avoid damaging the hardware, never move a 60-drive tray if drives are installed. You must remove all drives before moving the tray.

1. Put on the ESD wristband to protect the drives from static electricity.
2. Release the levers on the top drive drawer. Then, slide the drawer out by using the levers.
3. Raise the handle on the drive to vertical.



4. Starting with the leftmost slot at the front, align the two raised buttons on the drive with the notches on the drawer. Then, pressing gently on the top of the drive, rotate the drive handle down until the drive snaps into place.
5. Install the remaining drives. If you are installing fewer than 60 drives, if you have solid state drives (SSDs), or if your drives have different capacities:
   - Install drives in the front four slots of each drawer (a minimum of 20 drives in each tray) to maintain adequate airflow for cooling.
   - Distribute any remaining drives across the drawers. If possible, install an equal number of each type of drive in each drawer to allow for the creation of Drawer Loss Protected volume groups or disk pools.
   - Distribute any SSDs evenly across the drawers.
   - Do not install more than five SSDs in each drawer (no more than 25 SSDs in each tray) or the power source in the drawer could fail.
6. Slide the drawer back in by pushing it from the center and closing both levers.
7. Attach the bezel to the front of the tray.

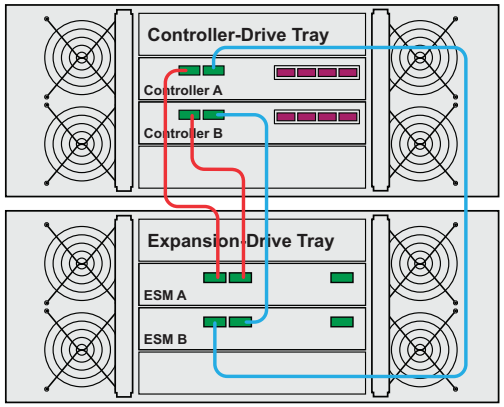
Connect to the drive trays (if installed)

Skip this section if you did not install expansion drive trays. Refer to the *Hardware Cabling Guide* if you have more than two expansion drive trays or you are using another configuration than what is shown.

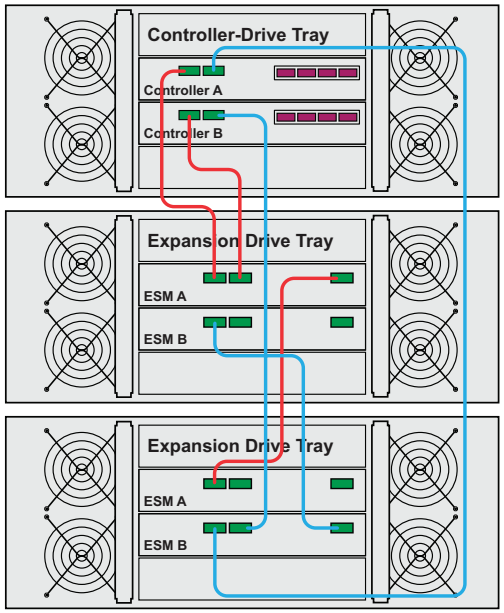
Recommended cabling for E5660

Refer to the figures to connect SAS cables between the controllers in the controller-drive tray and the environmental service modules (ESMs) in the expansion drive trays. Confirm that the blue tabs on the SAS cables face the bottom of the cabinet, and make sure each connector clicks into place.

One expansion drive tray (60-drive tray shown, but you can connect to 12-drive or 24-drive trays)



Two expansion drive trays (shown below the controller-drive tray)



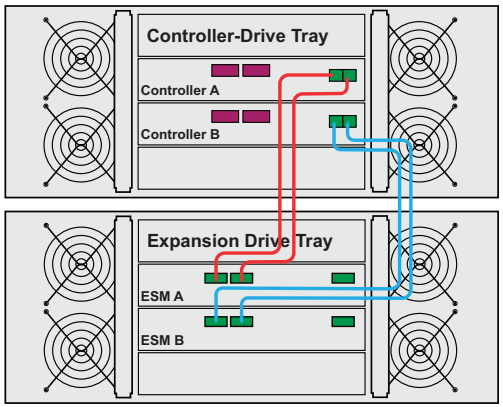
Connect to the drive trays (continued)

Recommended cabling for E2760

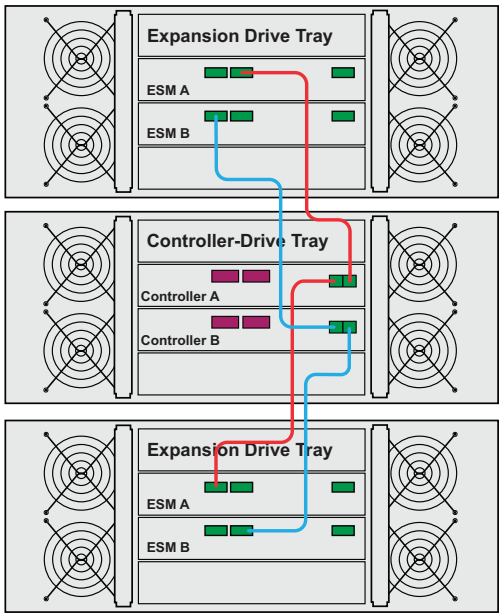
Refer to the figures to connect SAS cables between the controllers in the controller-drive tray and the environmental service modules (ESMs) in the expansion drive trays.

Confirm that the blue tabs on the SAS cables face the bottom of the cabinet, and make sure each connector clicks into place.

One expansion drive tray (60-drive tray shown, but you can connect to 12-drive or 24-drive trays)



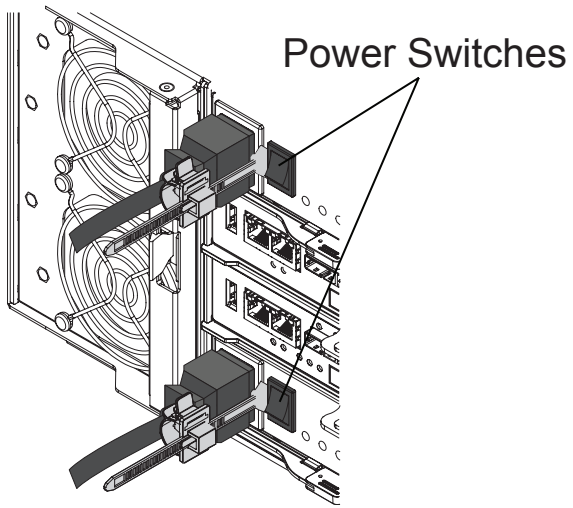
Two expansion drive trays (installed above and below the controller-drive tray)



Connect power cords and apply power

WARNING: Risk of electrical shock — Before connecting the power cords, make sure that both power switches on each tray are off.

1 Confirm that the two power switches on each tray are off.



2 Connect the two power supplies in each tray to separate power distribution units (PDUs) in the cabinet.

3 If you have expansion drive trays, turn on their two power switches first. Then, wait 2 minutes before applying power to the controller-drive tray.

4 Turn on the two power switches on the controller-drive tray.

- Do not turn off the power switches during the power-on process.
- The fans in each tray are very loud when they first start up. The loud noise during start-up is normal.

5 Check the LEDs and the seven-segment display on the back of each controller.

The seven-segment display shows the repeating sequence **OS, Sd, *blank*** to indicate that the controller is performing start-of-day processing. After the controller has booted up, the display shows the tray ID.

6 If any of the amber LEDs are on, confirm you completed the installation steps correctly. If you are unable to resolve the problem, contact technical support.

Connect to the data hosts

Before connecting the host cables, confirm that host bus adapters (HBAs) are installed in the data hosts. If you are using AIX, wait to connect the data hosts until after you have installed and configured the NetApp multipath driver. Refer to the *SANtricity Storage Manager Express Guide*.

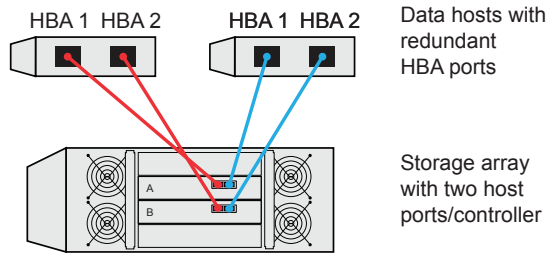
Refer to the *Hardware Cabling Guide* for lists of supported cables and transceivers, the best practices for cabling, and detailed views of the host ports for your controller. Refer to the NetApp Interoperability Matrix (http://mysupport.netapp.com/matrix) for the supported host topologies.

1 Insert the appropriate transceiver into each controller port that you plan to use, based on the host protocol and the host topology. Start with the lowest numbered controller port.

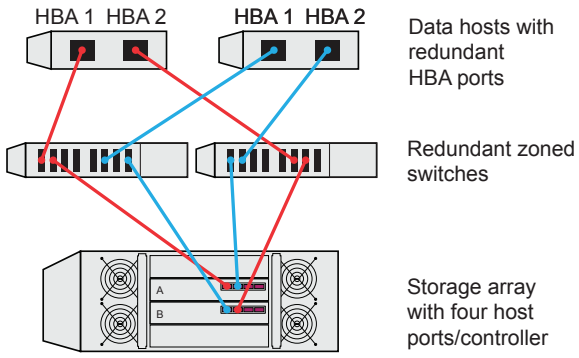
You do not need transceivers for copper iSCSI.

2 Connect to the data hosts as follows:

- **To use direct attach topology,** connect each HBA directly to the host ports on controllers A and B, as in this example:



- **To use fabric topology,** connect each HBA to a switch that is connected to the host ports on controllers A and B, as in this example. To zone a switch, follow the instructions in the appropriate *SANtricity Express Guide*.



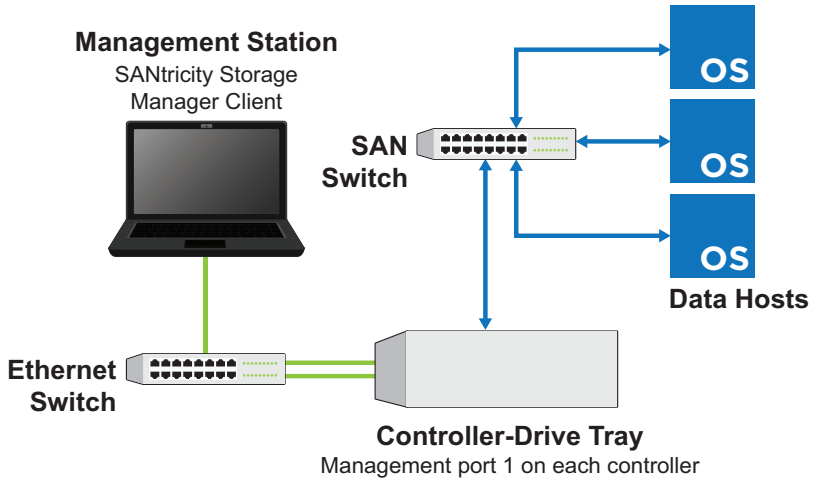
Choose the management method

Before installing SANtricity Storage Manager (the management software), decide how you want to connect the storage array to the management station.

This section provides an overview to help you understand the two primary management methods: Ethernet connection (out-of-band) and host I/O connection (in-band).

Ethernet connection (out-of-band) management method

You manage the storage array using Ethernet connections between a storage management station and the controllers' management ports.



If you choose out-of-band management, you can use one of these options to set IP addresses and add the storage array to SANtricity Storage Manager.

Option 1: Automatically set IP addresses using DHCP

This is the recommended option, and it is described in the *SANtricity Express Guides*. If the network includes a DHCP server, the controllers obtain dynamic IP addresses automatically.

1. Connect an Ethernet cable between management port 1 (labeled P1) on each controller and the network. Do not use management port 2.
2. Locate the MAC address on the label on the back of each controller. The network administrator needs this value to determine the dynamically assigned IP address and to configure a static IP.
3. After installing the software, use the IP addresses to connect the management station to the controllers.

Choose the management method (continued)

Option 2: Manually set static IP addresses using a private network

After connecting an Ethernet cable to management port 1 on each controller and waiting 3 minutes for DHCP to time out, you can initially set up a private network using these default IP addresses. You then change the IP addresses to match your network's. This option is described in the *SANtricity Power Guides for Advanced Users*.

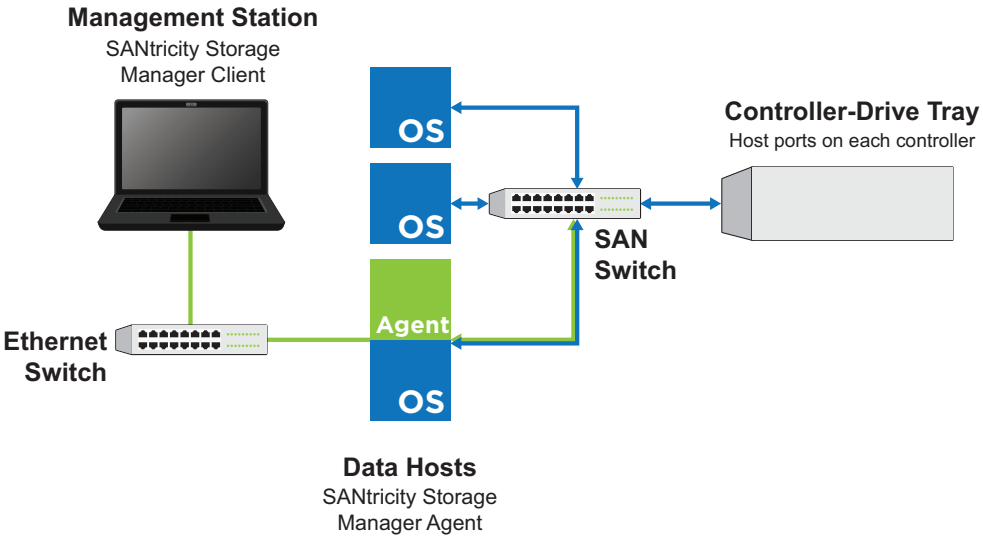
Controller A, port 1: 192.168.128.101
Controller B, port 1: 192.168.128.102
Default subnet mask: 255.255.255.0

Option 3: Manually set static IP addresses using the Serial Interface

This option is described in the *SANtricity Power Guides for Advanced Users*.

Host I/O (in-band) management method

You manage the storage array using an Ethernet connection between a storage management station and a data host. Host-agent software installed on the host passes communications to and from the storage array over an existing I/O connection. The Ethernet ports on the controllers are not used. This method is not supported for all operating systems.



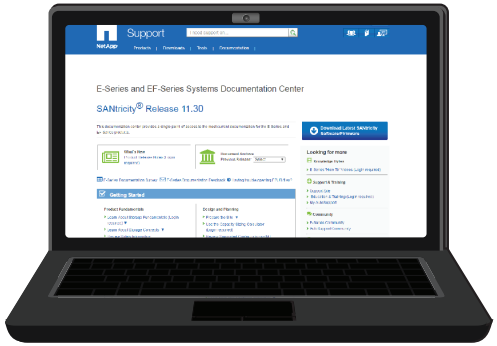
To use the in-band management method, refer to the *SANtricity Power Guides for Advanced Users*.

Install and use SANtricity Storage Manager

The *SANtricity Storage Manager Express Guides* and the *SANtricity Power Guides for Advanced Users* include step-by-step instructions for downloading, installing, and using SANtricity Storage Manager.

To download the instructions for your operating system:

1. Go to http://mysupport.netapp.com/eseries, and locate the **Installing & Configuring** section of the page.



2. Select the *SANtricity Storage Manager Express Guide* for your host operating system if you need instructions for DHCP and for installing and using SANtricity Storage Manager to configure your array.

3. Select the *SANtricity Power Guide for Advanced Users* for your host operating system if you need instructions for setting static IP addresses or for installing the NetApp multipath drivers and host agent.

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