Quantum®

Quick Start Setup Guide

StorNext QD6000/QD7000

StorNext QD6000/QD7000, Quick Start Setup Guide, 6-68488-01 Rev A, July 2016, Product of USA.

About this guide

NOTE: The Lancaster firmware is used on the E5600, Titan RAID controller, only. Refer to the NetApp to Quantum Naming Decoder section for additional information.

This section provides the following information:

- Intended audience
- Prerequisites
- NetApp to Quantum Naming Decoder

Intended audience

This guide 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	60 3.5 inch disk drives
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	

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

E2760, E5560, and E5660 controller-drive trays
DE6600 expansion drive trays

☑ **Unpack & Prepare**

🔧 **Install Hardware**

🖲 **Connect Hardware**

⏻ **Apply Power**

📑 **Choose Management Method**

🖥 **Install & Use SANtricity® Software**

210-06608+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 and 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	*Hardware Cabling Guide*
Choosing a management method	*Software Installation Reference*
Installing and using SANtricity® software	*SANtricity® Storage Manager Express Guide* (select the guide for your operating system and host protocol)

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
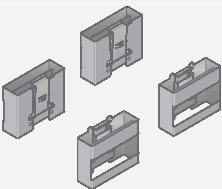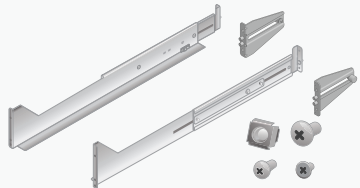
For your safety

Review the Safety Notices document included in the box and pay close attention to the precautions for moving and installing hardware.
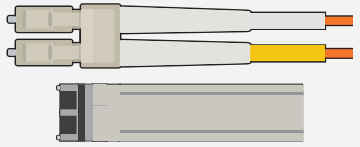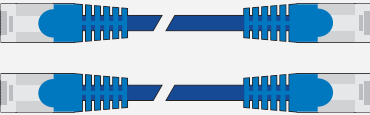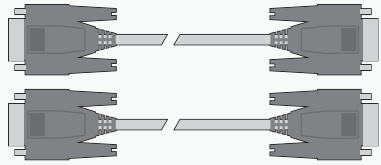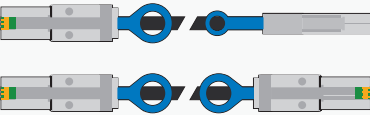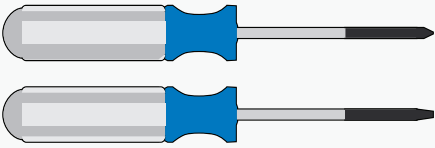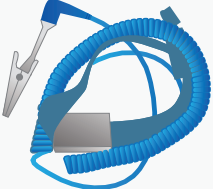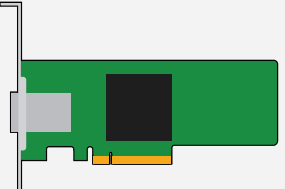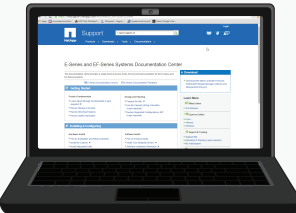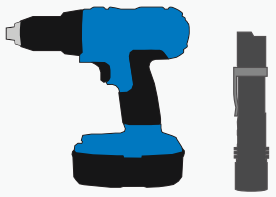
Unpack all boxes and compare the contents to the items on the packing slip. You will find these items in the boxes.

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

Controller-drive tray for 60 drives (optional: drive trays for 12, 24, or 60 drives)	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 (two for each tray)
I/O cables and transceivers (you might need to obtain the cables)	Ethernet cables (as needed to connect to the management host)
Serial cables (as needed for diagnostics or installation)	SAS cables (included only with the drive trays)

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

1 Locate the product (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.

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Serial 012345678101

2 Go to the NetApp Support Site: http://mysupport.netapp.com, or scan the QR code with a mobile device.

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.
New NetApp customer or any reseller 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.

⚠ 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.

Cabinet Front

Adjustment Screws

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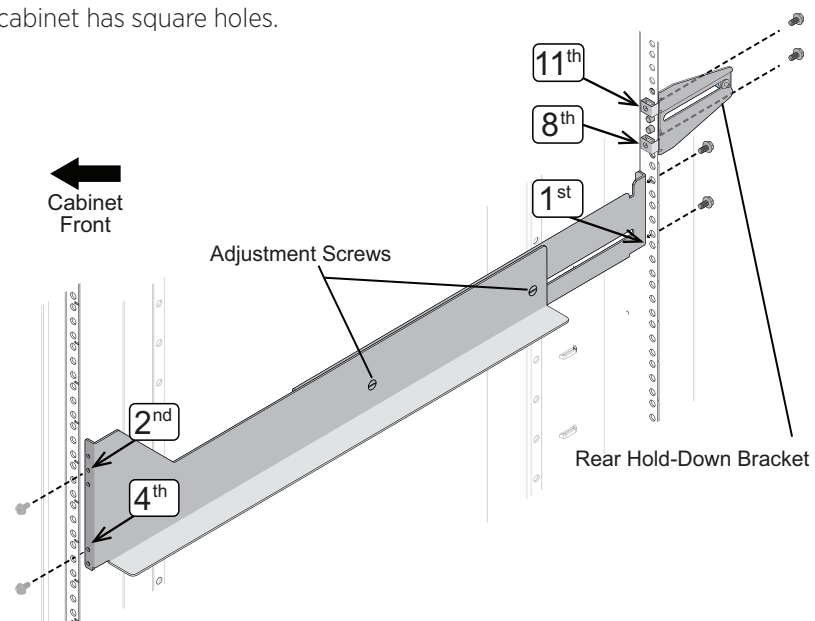
4 Secure the rear of the rail to the cabinet with two screws (and washers if the cabinet has square holes). Use the same set of holes as in the front.

5 Secure the optional 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.
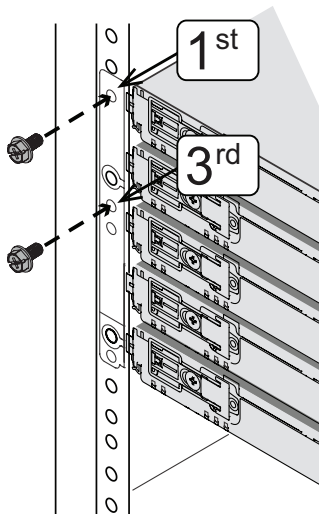
🔧 Install the trays

> ⚠️ **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.
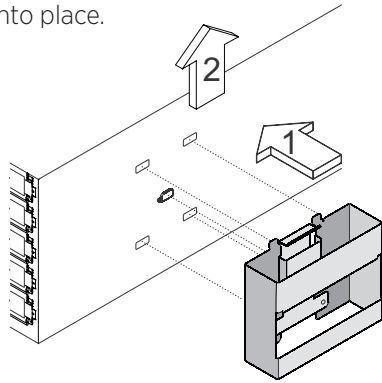

3 Place the back of the tray (the end with the connectors) on the rails.

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

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.
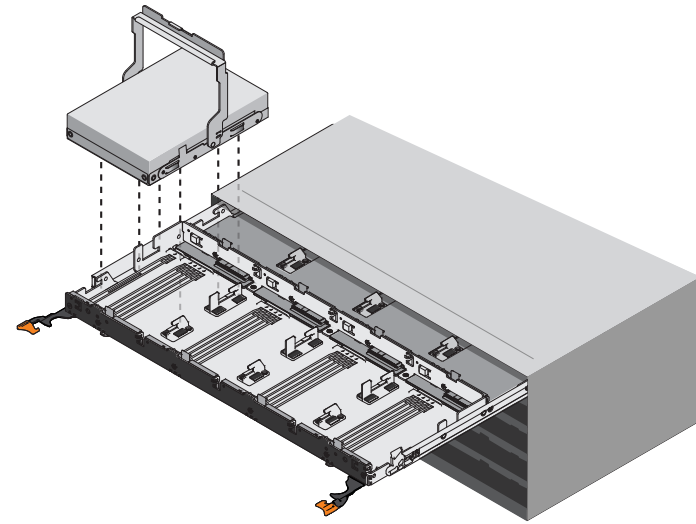
4 Starting with the leftmost slot at the front, align the two raised buttons on the drive with the notches on the drawer. Then, pressing gently on the top of the drive, rotate the drive handle down until the drive snaps into place.

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. You must install an equal number of each type of drive in each drawer to use the drawer loss protection feature in SANtricity software. If you have extra drives, you can install them, but they will not be used for drawer loss protection.
- 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.

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.
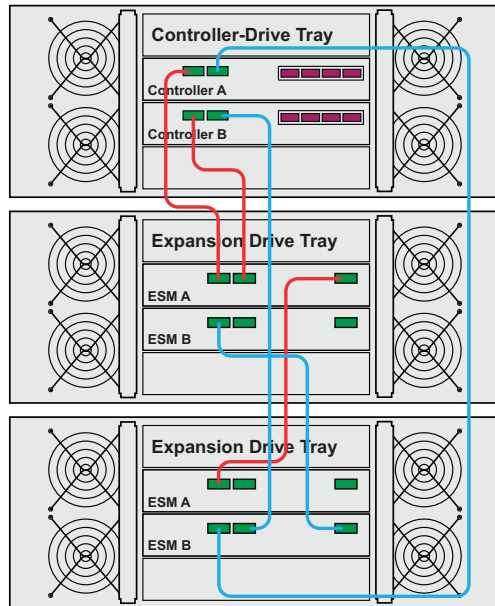
Recommended cabling for E5560 and E5660

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.

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)

One expansion drive tray (60-drive tray shown, but you can connect to 12-drive or 24-drive trays)
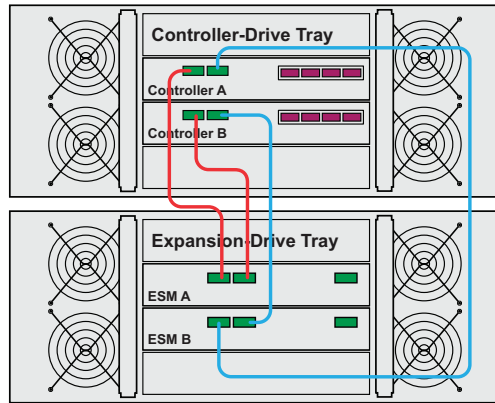
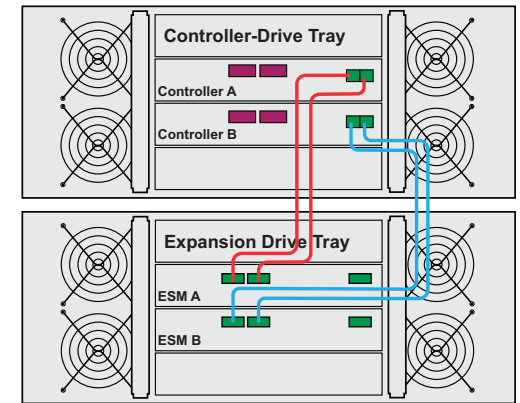*Two expansion drive trays (shown below the controller-drive tray)*

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

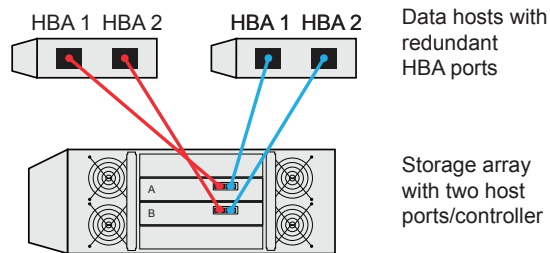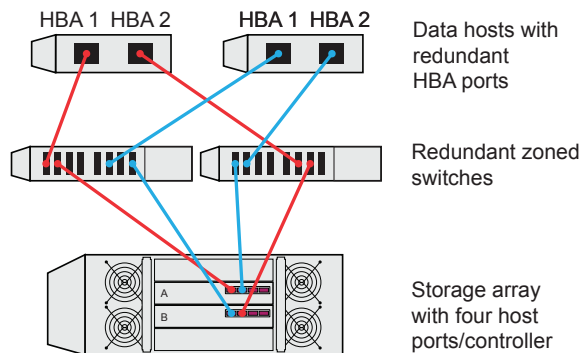# 🖱 Connect to the data hosts ▶ ⏻ Connect power cords and apply power
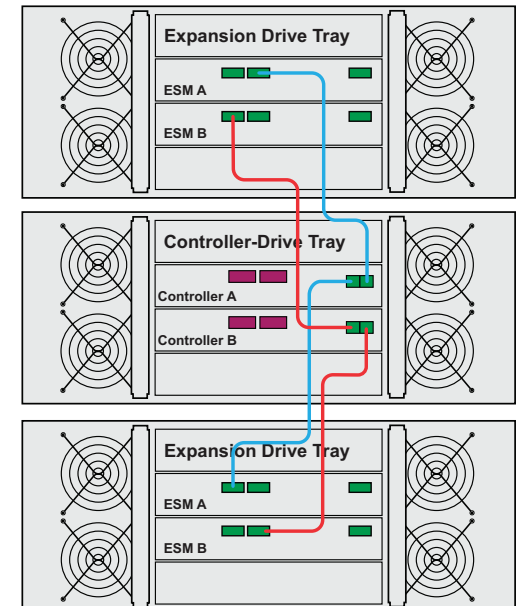
Host bus adapters (HBAs), installed in the data hosts, are used to transfer data between the host, any installed switches, and the storage array. Before making any cable connections, confirm that HBAs are installed.

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.

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:

HBA 1 HBA 2   HBA 1 HBA 2   Data hosts with redundant HBA ports

A
B
Storage array with two host ports/controller

- **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.*

HBA 1 HBA 2   HBA 1 HBA 2   Data hosts with redundant HBA ports

Redundant zoned switches

A
B
Storage array with four host ports/controller

⚠ **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.
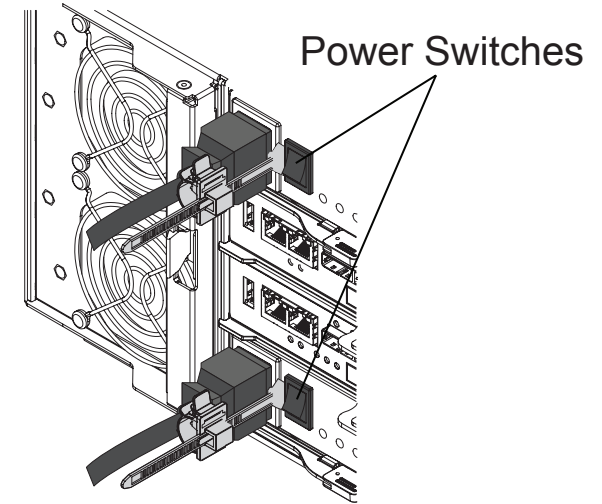
Power Switches

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 Wait 10 minutes. Confirm that none of the amber LEDs on the front or back of any trays are illuminated.

If an amber LED is on, there is a problem with a component. Use SANtricity Storage Manager to help resolve the problem.
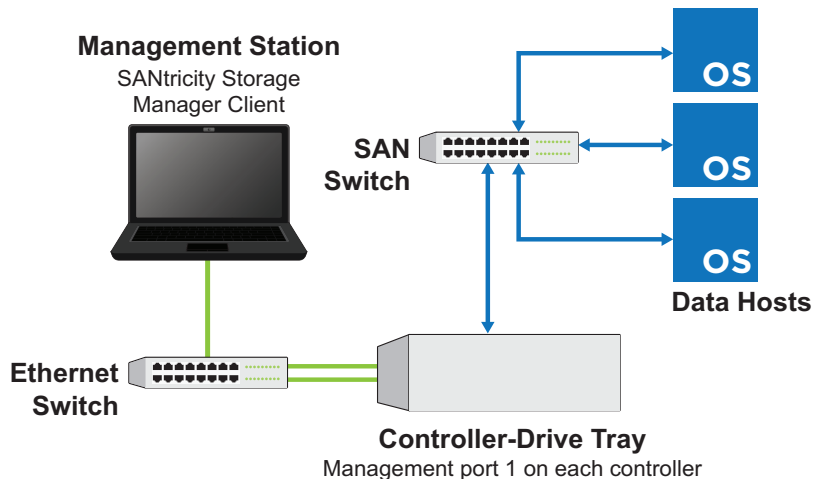
Before installing SANtricity Storage Manager (the management software), decide how you want to connect the storage array to the management station.

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). For complete details and step-by-step instructions for implementing these methods, go to http://mysupport.netapp.com/eseries and locate the appropriate *SANtricity Express Guide* or the *Software Installation Reference.*

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.

Management Station
SANtricity Storage Manager Client

SAN Switch

OS
OS
OS

Data Hosts

Ethernet Switch

Controller-Drive Tray
Management port 1 on each controller

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: Manually set static IP addresses using a private network

This is the recommended option, and it is explained in the *SANtricity Express Guides*. After connecting the management ports 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 requirements.

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

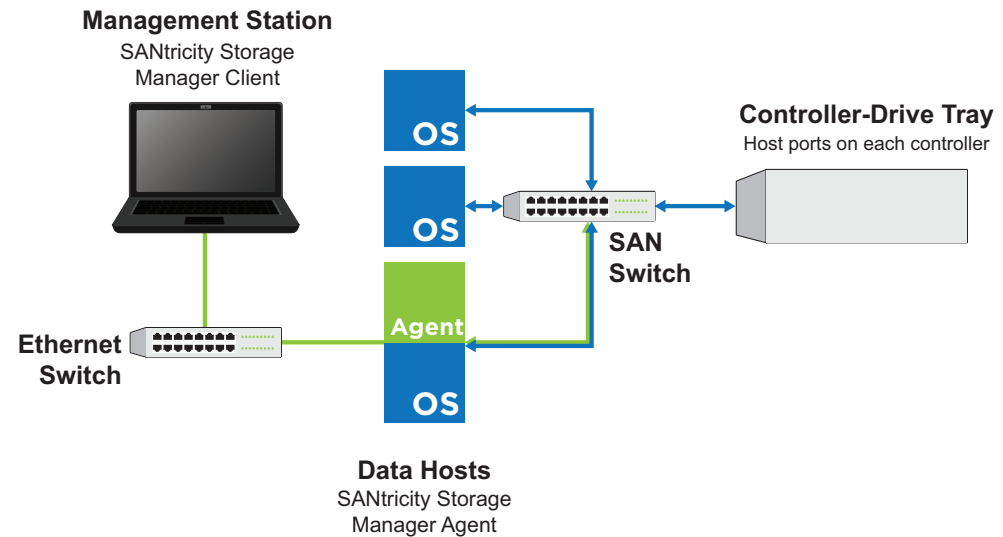### Option 2: Automatically set IP addresses using DHCP

If you have a DHCP server, the IP addresses are assigned when you connect the controllers to the network.. You can then set a permanent lease for each controller. This option is described in the *Software Installation Reference*.

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

This option is described in the *Software Installation Reference.*

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.
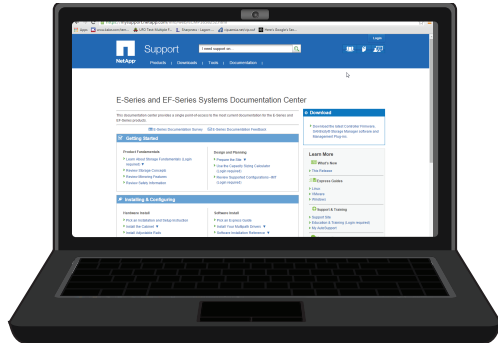

Management Station
SANtricity Storage Manager Client

OS
OS

Agent

OS

SAN Switch

Controller-Drive Tray
Host ports on each controller

Ethernet Switch

Data Hosts
SANtricity Storage Manager Agent

To use the in-band management method, refer to the *Software Installation Reference.*

Install and use SANtricity Storage Manager

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

To download the Express Guide for your operating system and host protocol:

1 Go to http://mysupport.netapp.com/eseries.

2 Locate the **Installing & Configuring** section of the page.

3 Click **Install Management Software & Set Up the Network (Express Guides)** (under **Software Install**).

4 Locate the *SANtricity Express Guide* for your operating system and host protocol.

5 Select to download a PDF file to your computer or an EPUB file to your mobile device.

6 Follow the instructions in the *SANtricity Express Guide* to download, and install the software and to configure your system.