



Installation and Setup Instructions for EF-Series All-Flash Arrays

EF550 and EF560 flash arrays
DE5600 flash expansion trays

 Unpack & Prepare

 Install Hardware

 Connect Hardware

 Apply Power

 Choose Management Method

 Install & Use SANtricity® Software



210-06610+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 2U trays with these dimensions:

Tray	Height	Width	Depth	Max Weight
EF550 or EF560	3.47 in. (8.81 cm)	19.00 in. (48.26 cm)	19.60 in. (49.78 cm)	57.3 lb (26 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	<i>Site Preparation Guide</i>
Installing a NetApp cabinet	<i>3040-40U Cabinet Installation Guide</i>
Installing the rails, trays, and drives	<i>Flash Array and Related Trays Installation Guide</i>
Cabling the hardware	<i>Hardware Cabling Guide</i>
Choosing a management method	<i>Software Installation Reference</i>
Installing and using SANtricity software	<i>SANtricity Storage Manager Express Guide</i> (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>

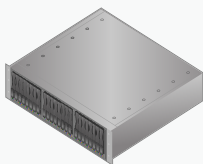
NetApp Videos: <https://www.brainshark.com/go/netapp-sell/library.html>

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 the boxes

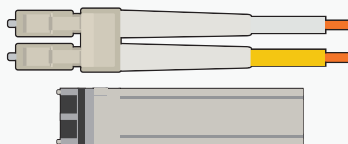
Unpack all boxes and compare the contents to the items on the packing slip. You will find these items in the boxes.



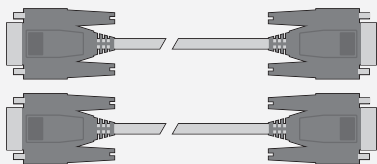
Flash array with 24 SSD drives
(optional trays for 24 SSDs)



Cabinet rails and mounting hardware



I/O cables and transceivers
(you might need to obtain the cables)



Serial cables
(as needed for diagnostics or installation)



Left and right end caps for each tray



Power cords
(two for each tray)



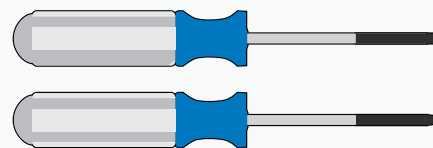
Ethernet cables
(as needed to connect
to the management host)



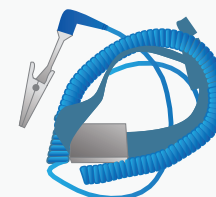
SAS cables
(included only with the drive trays)

✓ Obtain tools and other equipment

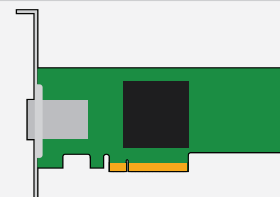
You need additional tools and equipment to complete the installation tasks.



Phillips No. 2 screwdriver
Medium flat-blade screwdriver



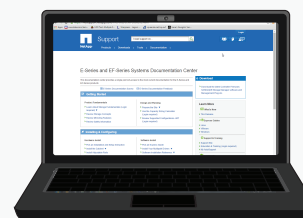
ESD wrist strap



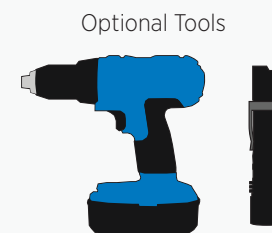
Host Bus Adapter (HBA)
(installed in each data host)



SAN switch
(optional, depending on host topology)



Management station
(for SANtricity software)



Optional Tools
Power drill with Phillips head bit
Flashlight

Register the hardware

- 1 Locate the product (chassis) serial number. You can find the number on the packing slip, in your confirmation email, or on the flash array after you unpack it.



- 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	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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. <p>After your registration is approved, you can download SANtricity software. The approval process might take up to 24 hours.</p>

Install the rails

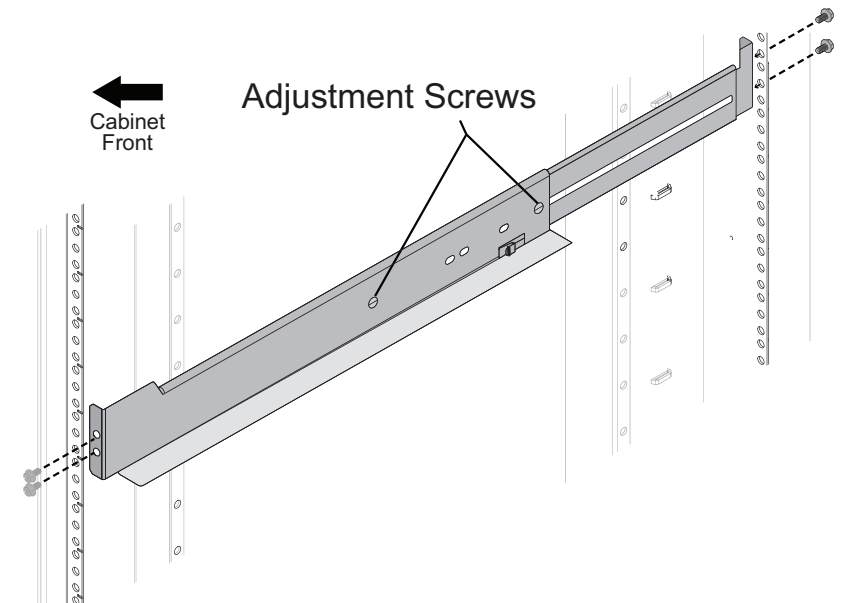


WARNING: Install hardware from the bottom of the cabinet up to the top to prevent the equipment from toppling over.

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

- Left and right rails
- 8 rail screws (4 for each rail, 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 rails with the holes on the cabinet. Confirm that the rail is level.
- 3 Secure the front of the rail to the cabinet by inserting one screw through the cabinet and into the top captured nut on the rail. Use the washers if the cabinet has square holes.



- 4 Insert one screw through the cabinet and into the bottom captured nut on the rail.
- 5 Secure the rear of the rail to the cabinet with two screws (and washers).

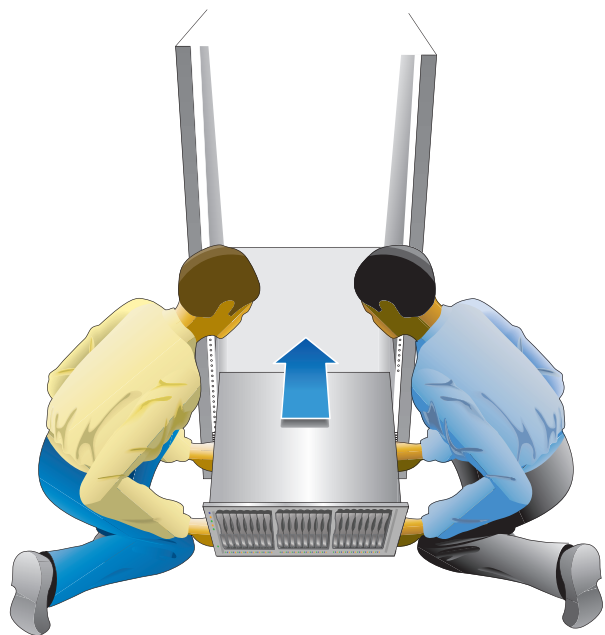


Install the trays



WARNING: When fully loaded with drives, each tray weighs approximately 57 lbs (26 kg). Two persons are required to safely move the tray.

- 1 Place the back of the tray (the end with the connectors) on the rails.
- 2 Carefully slide the tray all the way into the cabinet.



- 3 Secure the tray to the front of the cabinet by inserting a screw through the center hole in each front flange and into the cabinet.
- 4 Secure the rear of the tray by inserting a screw through the center hole in each rear flange and into the rail.
- 5 Repeat these steps to install any expansion trays.



Install the end caps

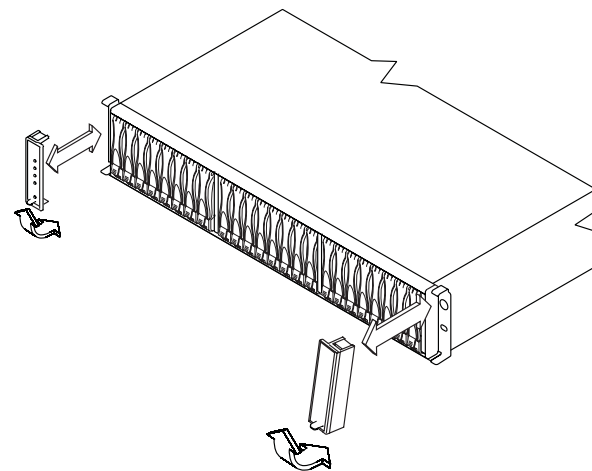
Left and right end caps cover the mounting flanges on the front of each tray.

Left End Cap
(with front panel LEDs)

Right End Cap



- 1 Position the left end cap so that the slot in the end cap is aligned with the tab on the left side of the tray.
- 2 Snap the bottom of the end cap in place.
- 3 Repeat these steps for the right end cap.

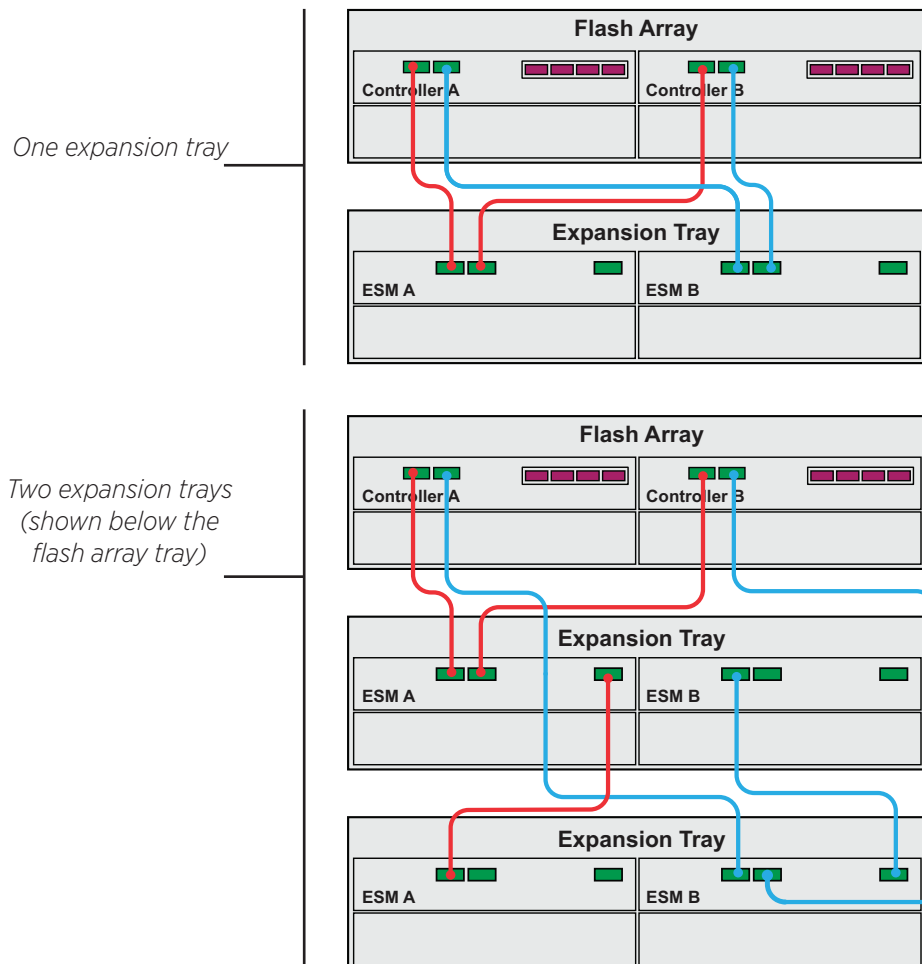


Connect to the expansion trays (if installed)

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

Recommended cabling for EF550 or EF560

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



Connect to the data hosts

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.

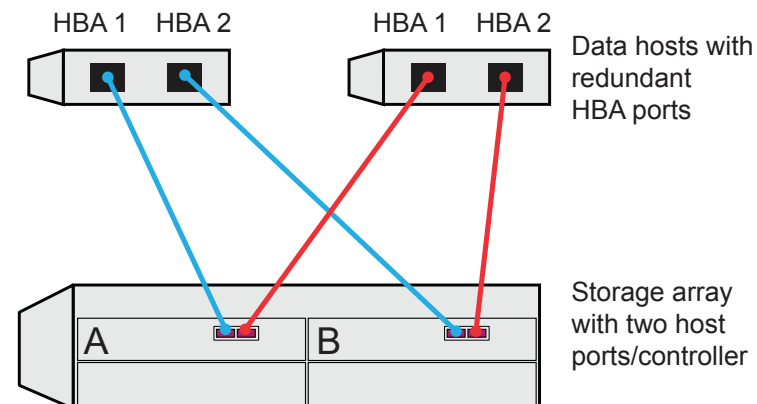
- 1 Insert the appropriate transceiver into each controller port that you plan to use, based on the host protocol and the host topology. Start with the lowest numbered controller port.

You do not need transceivers for copper iSCSI.

- 2 Connect to the data host using direct attach topology or fabric topology, as required.

To use direct attach topology

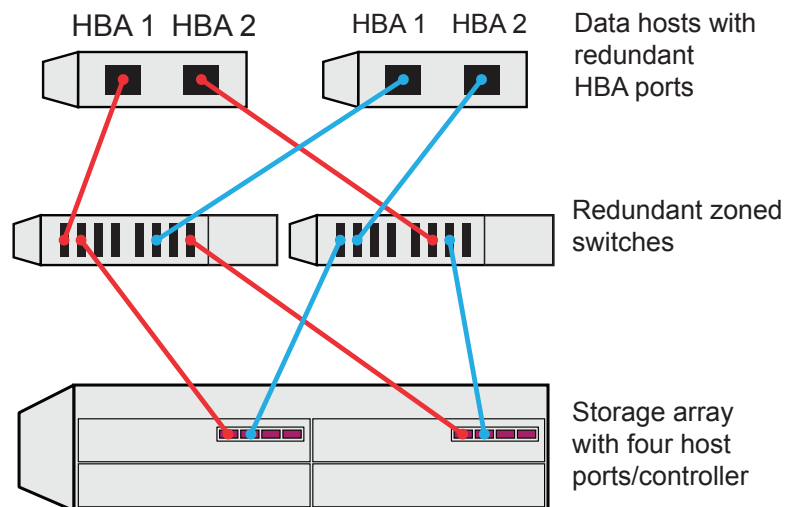
Connect each HBA directly to the host ports on controllers A and B, as in this example:



Connect to the data hosts

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*.

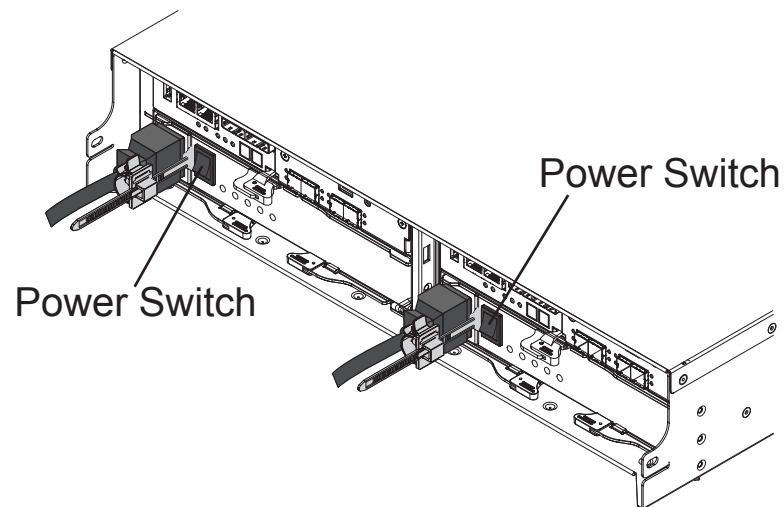


Connect power cords and apply power



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 trays, turn on their two power switches first. Then, wait 2 minutes before applying power to the flash array.
- 4 Turn on the two power switches on the flash array.
 - 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.

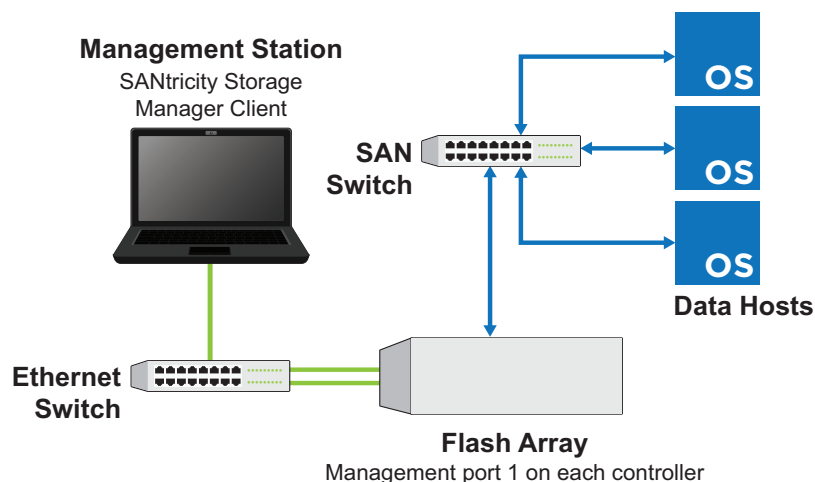
Choose the management method

Before installing SANtricity Storage Manager (the management software), decide how you want to connect the flash 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 flash 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: 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 set up a private network using these default 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

Choose the management method (continued)

Option 2: Automatically set IP addresses using DHCP

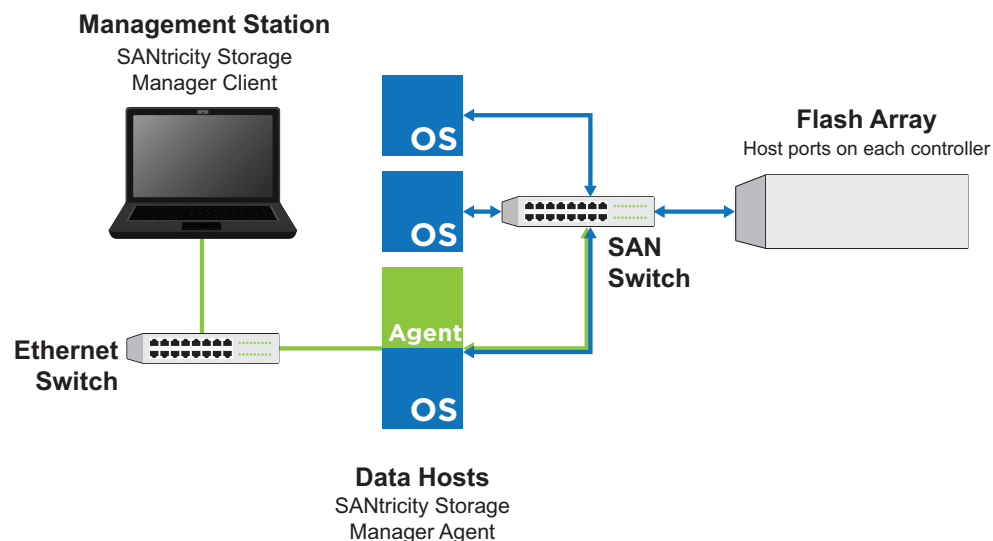
If you have a DHCP server, the IP addresses are assigned when you connect the controllers to the network. You can then set a permanent lease for each controller. This option is described in the *Software Installation Reference*.

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 flash 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 flash 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.



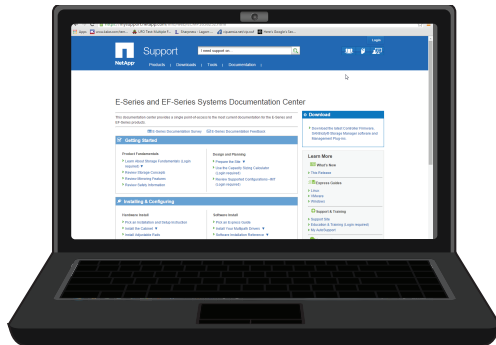
To use the in-band management method, refer to the *Software Installation Reference*.

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 Guides* 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 Guides* to download and install the software and to configure your system.



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