

IBM System Storage



N3400 Installation and Setup Instructions

Notices

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Before you begin

Read this information before beginning your installation.

Before you begin your installation, print and complete a Configuration worksheet for your storage system to gather the information that the software setup process requires. The configuration worksheet is provided in the *Data ONTAP Software Setup Guide* for your version of Data ONTAP, which is available on the IBM® System Storage® N series support website:

www.ibm.com/storage/support/nseries

If you are configuring a storage system as part of a high-availability (or active/active) configuration, some information types must be unique for each storage system mode in the configuration, and some information types must be identical on both storage system nodes. If you have a high-availability (or active/active) configuration, IBM recommends that you print and complete two copies of the configuration worksheet, one for each system node.

Note: In the Data ONTAP 7.2 and 7.3 release families, the term *active/active configuration* (or *active/active pair*) refers to a pair of storage systems or gateways (sometimes called nodes or controller modules) configured to serve data for each other if one of the two systems stops functioning. In the Data ONTAP 8.x 7-Mode release family, this functionality is referred to as a *high-availability (HA) configuration* or an *HA pair*.

About this document

This document provides installation and setup instructions for the IBM System Storage N3400 storage system. Additional information about the N3400 can be found in the *IBM System Storage N3300, N3400, and N3600 Hardware and Service Guide*.

Additional information about the N series storage expansion units you connect to your N3400 series system can be found in the *Hardware and Service Guides* and the *Installation and Setup Instructions* for your storage expansion units.

For additional information about N series systems and related topics, refer to the following resources.

- *IBM System Storage N series Introduction and Planning Guide*
- *IBM Environmental Notices and User Guide*
- IBM System Storage N series support website at www.ibm.com/storage/support/nseries

Read the safety notices

Before continuing, make sure that you have reviewed the safety notices shipped with this product. Do not plug any cables into the system, adapters, or any electrical outlets until you have reviewed the safety information and followed the procedures in this document.

Need help?

If you encounter any difficulties while setting up your system, contact IBM service and support for assistance. Information can also be found on the IBM System Storage N series support website:

www.ibm.com/storage/support/nseries

About the IBM N series support website

The IBM System Storage N series support website requires users to register in order to obtain access to N series support content on the web. To understand how the N series support web content is organized and navigated, and to access the N series support website, go to the following publicly accessible web page:

www.ibm.com/storage/support/nseries/

This web page also provides links to AutoSupport information as well as other important N series product resources.

Items supplied by you for the installation

You need to supply the following items to complete the installation:

- Ethernet LAN cables
- Fibre Channel (FC) cables
- Console (for example, a PC or laptop)
- #2 Phillips screwdriver and slotted screwdriver
- Pointed tool for setting termination and ID switches

Important: The following instructions are for a basic configuration with onboard ports set to initiator mode.

Installing in a non-IBM rack

The rack installation instructions provided in this document apply specifically to the installation of the N series product in an IBM 19-inch rack. IBM service personnel cannot install the N series product in a non-IBM rack.

If the N series product is being installed in a non-IBM rack, the rails shipped with the N series product may or may not work with the non-IBM rack. Physical installation of the N series product in a non-IBM rack is the customer's responsibility.

Installation and setup instructions

Use these instructions to install and set up your N3400 storage system.

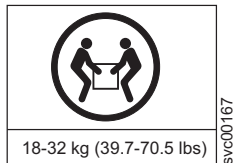
Unpacking the N3400

Use these instructions to unpack the N3400.

Important: If your system was shipped already assembled and cabled in a rack, go directly to “Setting up and booting the system” on page 18.

Notes:

- The contents of the box will differ depending on the model you purchased. See step 2 on page 2 for a list of contents for specific models.
- Small Form Factor Pluggable (SFP) modules are either in the accessory box or are installed in the fiber ports of the system unit.



CAUTION:

The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb). It takes two persons to safely lift this part or unit. (C009)

1. Lift the box from the crate, as shown in Figure 1. The contents will remain in place.

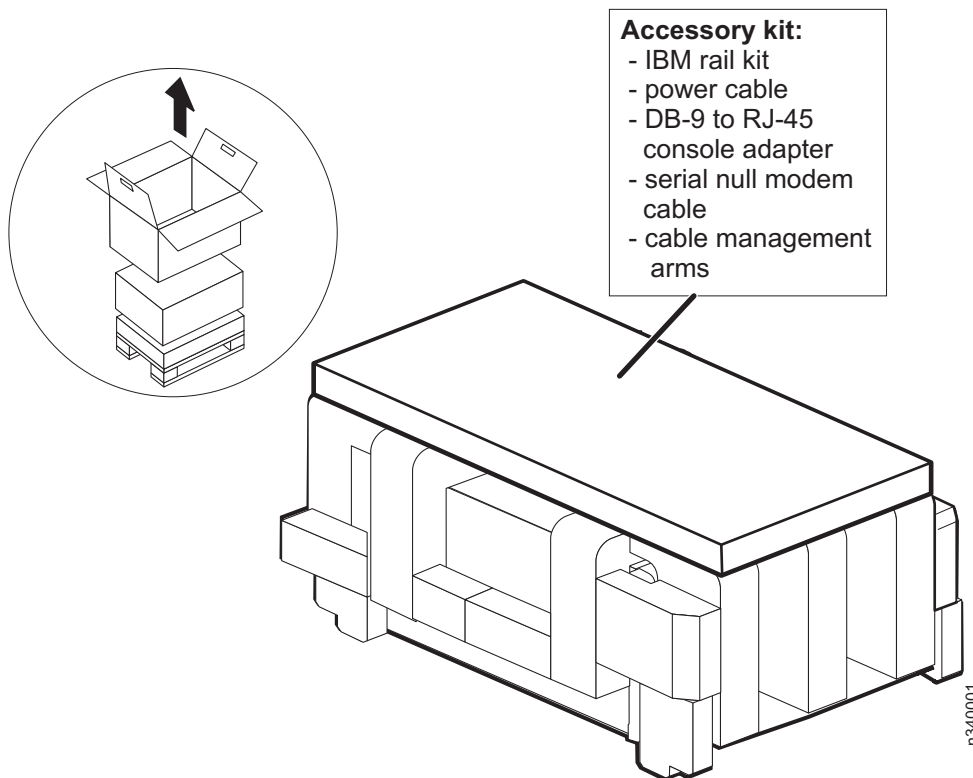


Figure 1. N3400 packaging

2. Verify that the shipping packages include the following items:

N3400 (2859-A11)

- 1 single-controller N3400
- 1 system bezel
- 1 console adapter, RJ-45 to DB-9
- 1 serial null modem cable
- 1 electrostatic discharge (ESD) wrist strap
- 2 power cords
- 1 publications CD
- 1 or more envelopes with the software End User License Agreement (EULA) and license keys
- 1 rack mount kit (optional)

N3400 (2859-A21)

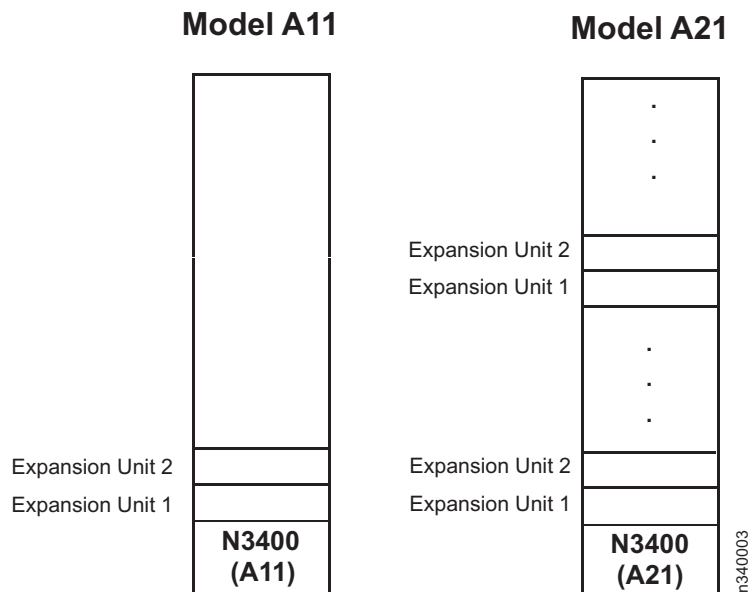
- 1 dual-controller N3400
- 1 system bezel
- 2 console adapters, RJ-45 to DB-9
- 2 serial null modem cables
- 1 ESD wrist strap
- 2 power cords
- 1 publications CD
- 1 or more envelopes with the software EULA and license keys
- 1 rack mount kit (optional)

3. Remove the foam hardware protectors and the plastic surrounding the system.

Installing the rails in an IBM 19-inch rack

Use these instructions to install the rails on which you will mount the N3400.

Attention: Read these instructions in their entirety before proceeding.



Observe the following rules and restrictions when installing an N series system in a standard IBM 19-inch (48.26 cm) equipment rack with mounting rails:

DANGER

To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet. (R001 part 1 of 2)

- When installing storage expansion units in a rack, do not exceed the maximum storage limit for your system.
 - Make sure that the ID on the back panel of each storage expansion unit matches the ID specified on its label.
 - Always install the storage expansion units fully loaded. Do not remove disk drives to reduce the weight.
1. Loosen (but do not remove) the four rail adjustment screws on each rail. See Figure 2.

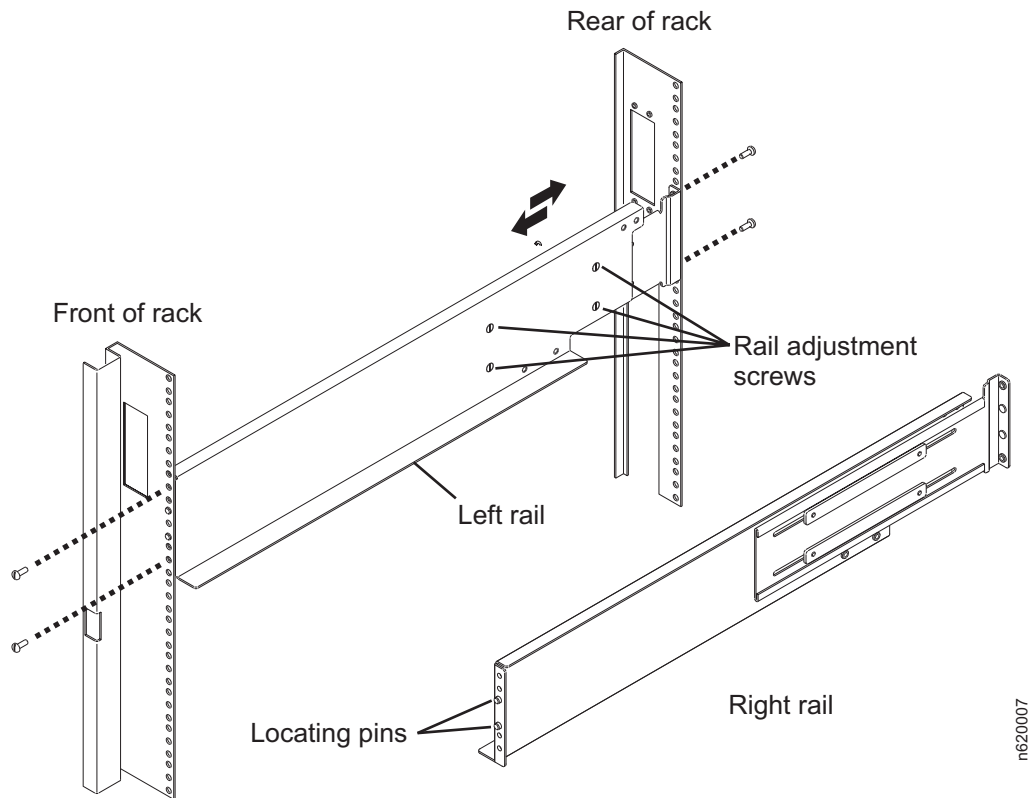


Figure 2. Installing the rails

2. Refer to Figure 3 on page 4. At the front of the rack, position the right-hand rail into the rack at the appropriate EIA location. Make sure that the two locating pins seat properly in holes H3 and H4. The bottom of the rail should line up with the bottom EIA boundary.

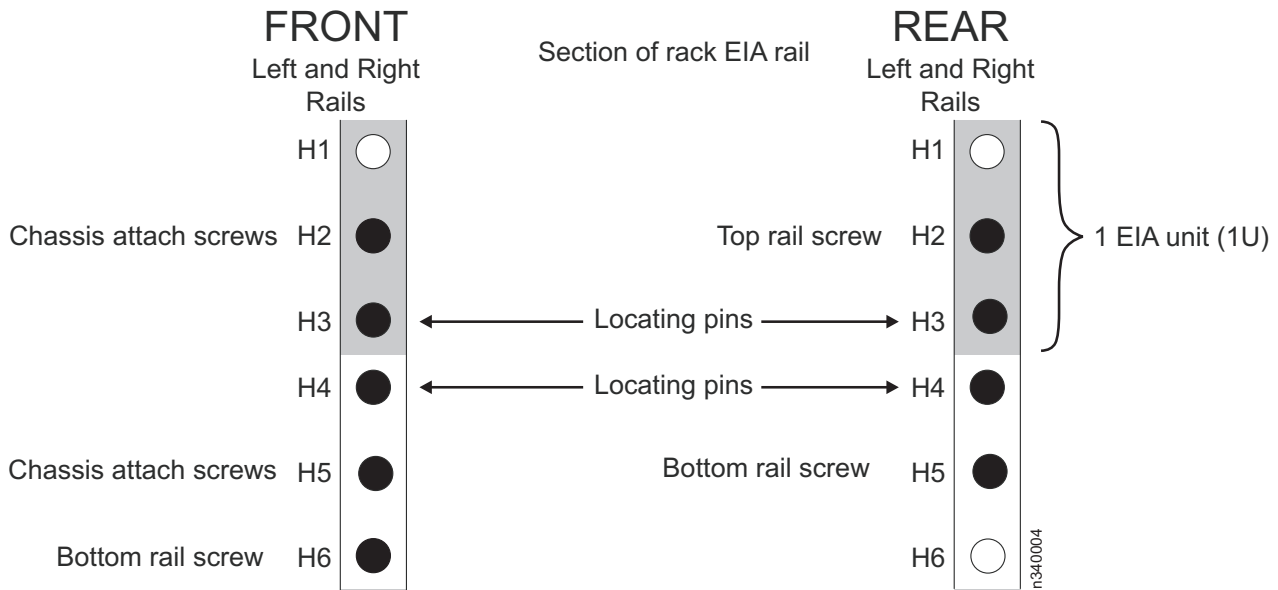


Figure 3. N3400 rail mounting template

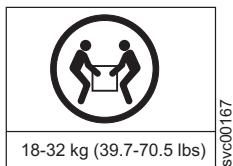
Note: When installed, each N3400 will occupy a 2U space.

Using one silver pan head M5 screw, attach the rail to the front of the rack using hole H6. Tighten this screw with a screwdriver.

3. At the rear of the rack, position the rail at the same EIA location used in step 2. Make sure that the locating pins seat properly in holes H3 and H4. Using two silver pan head M5 screws, attach the rail to the rack using holes H2 and H5. Tighten these screws with a screwdriver.
4. Tighten the four rail adjustment screws on the installed rail.
5. Repeat steps 2 through 4 for the left-hand rail.

Installing the system in the rack

Use these instructions to install the N3400 in the rack.



CAUTION:

The weight of this part or unit is between 19 and 31 kg (40 and 68 lb). It takes two persons to safely lift this part or unit.

1. If attached, carefully remove the front bezel of the N3400 by pulling out on the rectangular openings (marked by blue stripes) on either side of the bezel.
2. From the front of the rack, set the storage system onto the rails and slide it into the rack until the front mounting bracket of the storage system is a few inches from the rack frame.

As shown in Figure 4 on page 5, position the spacer plates **1** over the locating pins (holes H3 and H4) on the left and right rails. Slowly slide the chassis into the rack until the front mounting bracket of the storage system is flush against the spacer plates.

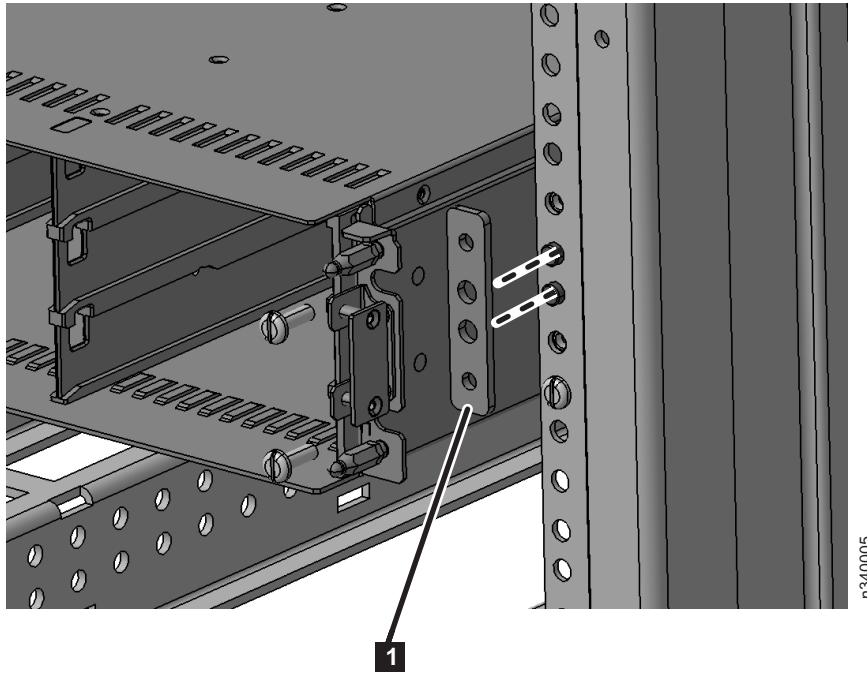


Figure 4. Mounting the N3400 in the rack

3. At the front of the rack, use four black M5x40 screws (two for each rail) in the H2 and H5 holes to secure the system unit to the rack. Thread the screws through the system unit bracket, the spacer plate, and the rack frame rail into the threaded rail nuts. Tighten the screws using a screwdriver.
4. Replace the front bezel of the N3400 by snapping it back onto the storage system chassis.
5. From the rear of the rack, attach the rear tie-down plate to the rails using four M5 flat head screws, as shown in Figure 5. The tie-down plate should fit over the rear of the system unit.

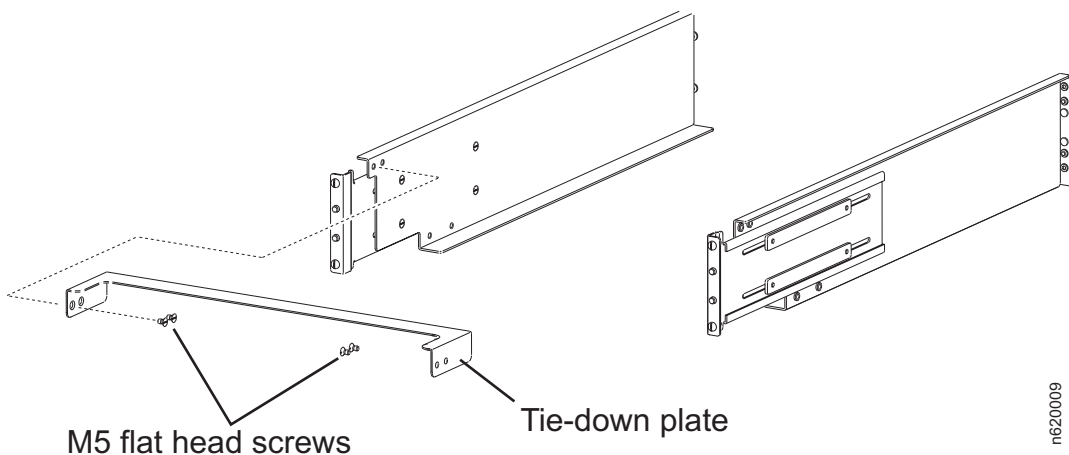


Figure 5. Attaching the tie-down plate

6. Any storage expansion units should be installed in the rack. Refer to the *Installation and Setup Instructions* for the N series storage expansion units to which you are connecting.
 - Verify that all expansion unit IDs are correct and sequential in the individual loop(s) or stack(s), as described in “Setting storage expansion unit shelf IDs” on page 6.
 - Verify that the speed switches are set correctly, if applicable.

Note: SAS storage expansion units, such as the EXN3000 and EXN3500, do not have speed switches.

If this system was configured by manufacturing, there are labels on the outside of the packaging carton and on the side of the storage expansion unit chassis to indicate the order of storage expansion units and on which node (1 or 2) the storage expansion units should be located. Make certain the expansion units are placed and cabled according to these labels.

Setting storage expansion unit shelf IDs

Use these instructions to set the storage expansion unit shelf IDs.

Attention: The N3400 shelf ID of 00 is preset and cannot be changed.

Setting SAS expansion unit shelf IDs

A unique shelf ID (from 01 to 98) is required for each SAS storage expansion unit in a SAS stack.

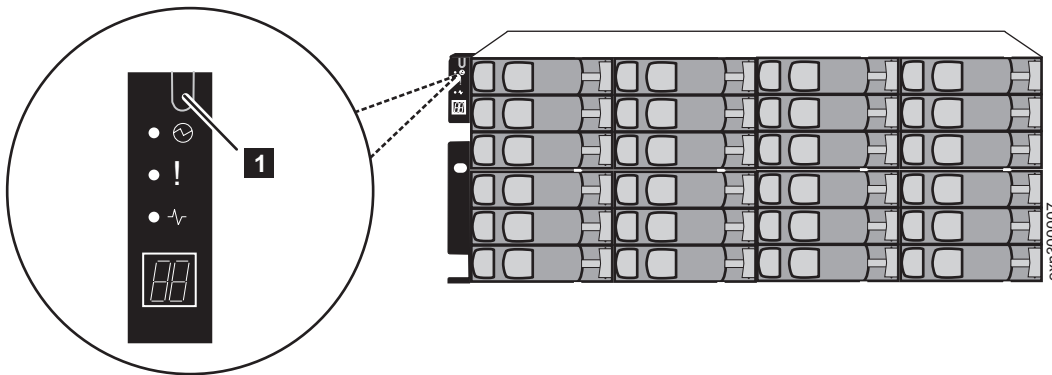


Figure 6. Shelf ID tab on the EXN3000

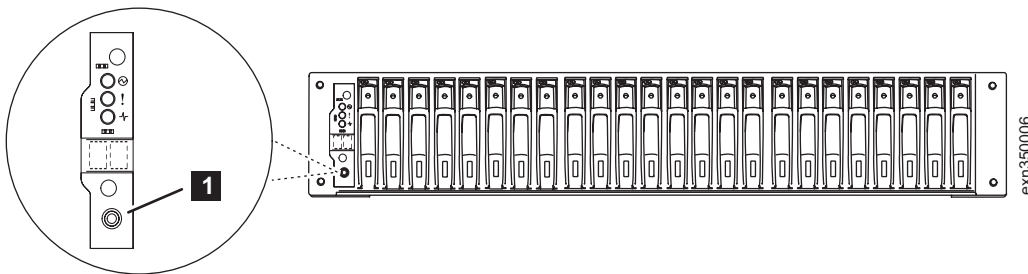


Figure 7. Shelf ID button on the EXN3500

Visually verify that the shelf ID for each SAS storage expansion unit is unique. If an ID is not unique, set the ID:

1. Remove the front bezel if you have not already removed it.
2. Press and hold the shelf ID U-shaped tab (for EXN3000) or button (for EXN3500) **1** until the first digit blinks.
3. Press the tab or button until the correct number is displayed.
4. Repeat steps 2 and 3 for the second digit.
5. Press and hold the tab or button until the second number stops blinking.

Result: Both numbers start blinking and the Fault LED on the operations panel illuminates after about five seconds.

6. Power-cycle the SAS storage expansion unit to make the new expansion unit ID take effect.
7. Replace the front bezel.

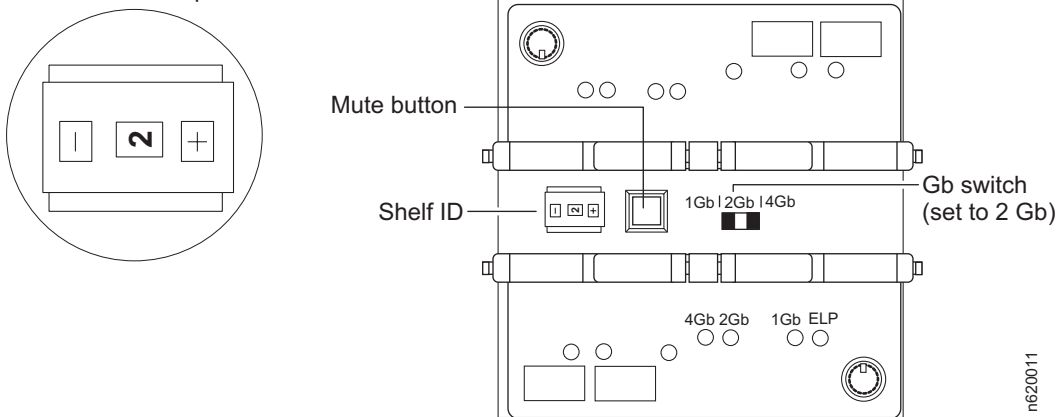
Setting EXN4000 or EXN1000 storage expansion unit shelf IDs

A unique shelf ID (from 1 to 7) is required for each EXN4000 or EXN1000 in a loop.

Shelf ID 1 is used for the first unit in a new loop. Shelf IDs for additional units are incremented sequentially from the number of the first unit.

To adjust the storage expansion unit shelf ID, press the - or + buttons.

Shelf ID - close-up view



Note: This illustration shows a detailed view of the EXN4000. The shelf ID buttons on the EXN1000 are in the same relative position.

Attaching the cable management arms

Each N3400 controller module has two slots for attaching cable management arms.

Screw the cable management arms in the cam handles on each controller, as shown in Figure 8.

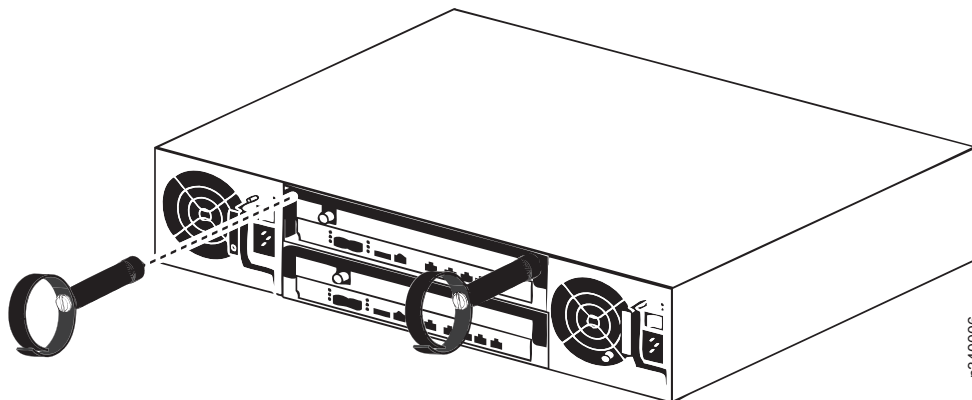
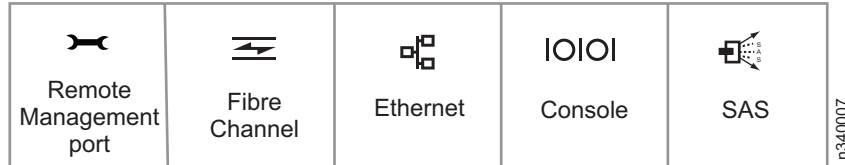


Figure 8. Attaching cable management arms

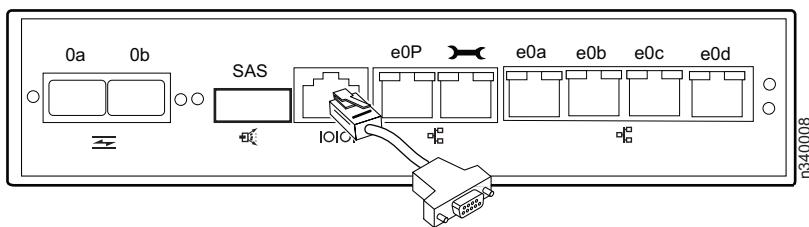
Connecting the N3400 to a network

Use these instructions to connect the N3400 to a network.

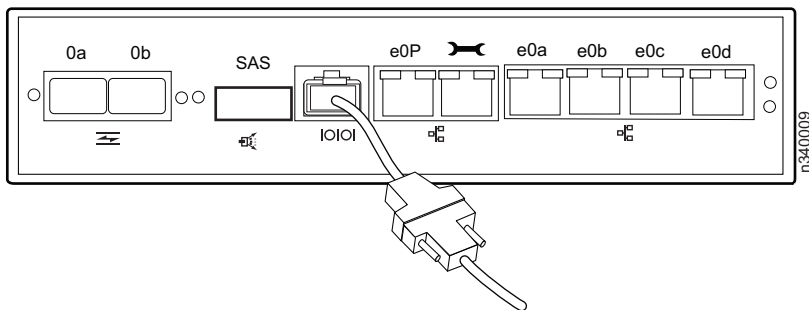
Note: Use the cable management arms and hook-and-loop fasteners to organize your cabling.



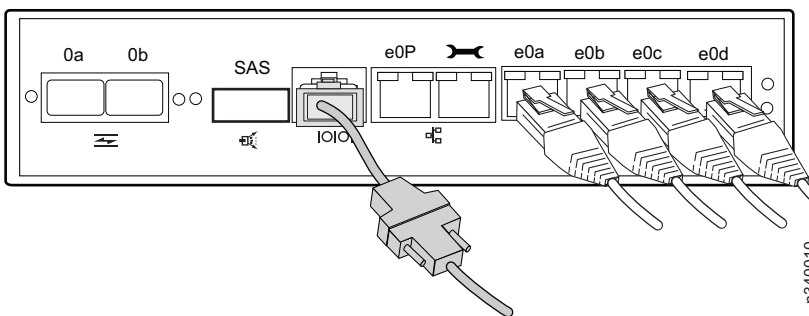
1. Connect the RJ-45 to DB-9 adapter from the adapter kit to the Console port on the system.



2. Connect one end of the serial null modem cable to your console, then connect the other end to the DB-9 end of the adapter.



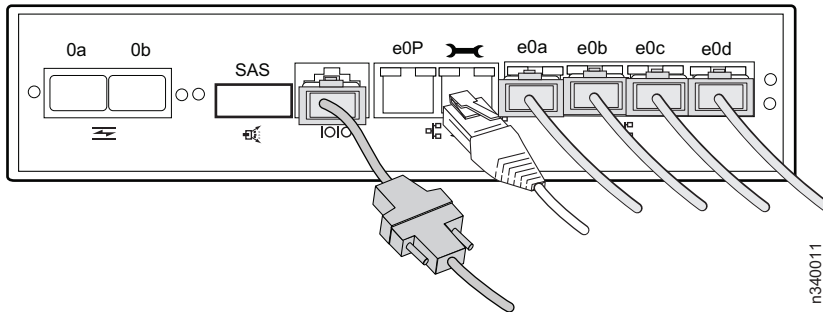
3. Connect your system to the network by plugging the network cables into the networking ports, labeled e0a and e0d.



4. If applicable, use an Ethernet cable to connect the Remote Management port to the network.

Note: The Remote Management port gives you the capability to remotely manage your system from anywhere within a network connection. See *Data ONTAP System Administration Guide* for Remote Management configuration information.

Important: The network for the Remote Management port must negotiate down to 10/100 or auto-negotiate.



5. Prepare to connect the system to the expansion units.

- **For connections to EXN1000/EXN4000s:** Make sure that SFPs are installed and firmly seated in the Fibre Channel ports (0a and 0b) of the controller node and the In port of the first expansion unit of the loop(s) before attaching a Fibre Channel cable.
- **For connections to SAS storage expansion units:** Refer to the *IBM System Storage N series Universal SAS and ACP Cabling Guide* for details about connecting your system to SAS storage expansion units.

Connecting the N3400 to storage expansion units

Use the cabling diagrams in this section to connect the N3400 to storage expansion units.

Important:

- When using onboard ports to connect to EXN expansion units, onboard ports must be set to initiator mode. See "Configuring for initiator mode" in the *N3300, N3400, and N3600 Hardware and Service Guide* for more information.
- SFPs must be used when connecting fiber cables.
- If you are connecting your configuration to a Fibre Channel switch, see "Cabling your system to a Fibre Channel switch" in the *N3300, N3400, and N3600 Hardware and Service Guide* for more information.

Note: Software disk ownership is activated at boot for all disks on the system.

The following cabling instructions describe basic single-node and high-availability (active/active) cabling examples to EXN1000, EXN2000 or EXN4000 storage expansion units, using the onboard Fibre Channel ports on your N3400 system.

For an example showing a high-availability (active/active) N3400 dual-path Fibre Channel SAN cabling configuration, see "Cabling example: HA (active/active) N3400 FC SAN configuration" on page 13.

For an example showing a high-availability (active/active) N3400 single-path NAS or iSCSI cabling configuration with one SAS stack of up to four SAS storage expansion units, see "Cabling example: HA (active/active) N3400 single-path NAS or iSCSI configuration" on page 15.

For more cabling configurations, see the *N3300, N3400, and N3600 Hardware and Service Guide*.

Cabling a single-node N3400 (model A11)

Use these instructions to cable a single-node N3400 (model A11) to the storage expansion units.

Make sure that all storage expansion unit speed switches are set to the correct position. Refer to the documents that came with the expansion unit for information about checking and setting the switch.

Note: SAS storage expansion units, such as the EXN3000 and EXN3500, do not have speed switches.

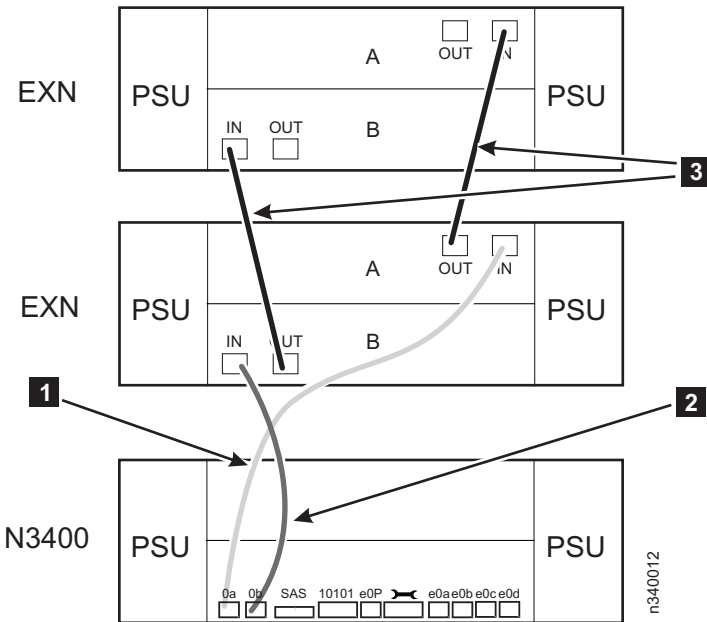


Figure 9. Cabling a single-node N3400

Notes:

- Figure 9 shows storage system connections to EXN2000/EXN4000 expansion units. On EXN1000 expansion units, the positions of the In and Out ports are reversed from those of the EXN2000/EXN4000.
 - Figure 9 shows only the first two storage expansion units in a loop. The number of storage expansion units per loop might be different for your configuration.
1. Cable the N3400 port 0a to the first expansion unit module A ESH2/ESH4 or AT-FCX In port. See **1** in Figure 9.
 2. Cable the N3400 port 0b to the first expansion unit module B ESH2/ESH4 or AT-FCX In port. See **2** in Figure 9.
 3. For any additional expansion units in a loop, connect the module A Out port to the next expansion unit's module A In port. Repeat for module B. See **3** in Figure 9.

Note: Both the ESH2/ESH4 and the AT-FCX modules are self-terminating. The ESH2/ESH4 does not have a terminate switch.

Continue with “Installing the power cables” on page 17.

Cabling a dual-node N3400 (model A21)

Use these instructions to connect a high-availability (active/active) N3400 (model A21) to the storage expansion units.

Make sure that all storage expansion unit speed switches are set to the correct position. Refer to the documents that came with the expansion unit for information about checking and setting the switch.

Note: SAS storage expansion units, such as the EXN3000 and EXN3500, do not have speed switches.

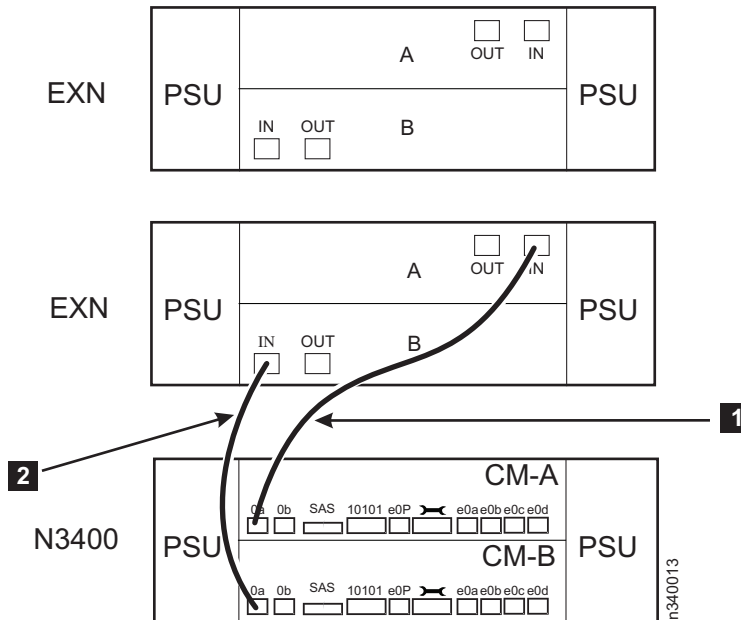


Figure 10. Cabling a dual-node N3400 to first expansion unit

Notes:

- Figure 10 shows storage system connections to EXN2000/EXN4000 expansion units. On EXN1000 expansion units, the positions of the In and Out ports are reversed from those of the EXN2000/EXN4000.
 - Figure 10 shows only the first two storage expansion units in a loop. The number of storage expansion units per loop might be different for your configuration.
1. Cable the N3400 CM-A port 0a to the first storage expansion unit module A (IOM A) ESH2/ESH4 or AT-FCX In port. See **1** in Figure 10.
 2. Cable the N3400 CM-B port 0a to the first storage expansion unit module B (IOM B) ESH2/ESH4 or AT-FCX In port. See **2** in Figure 10.

Note: Both the ESH2/ESH4 and the AT-FCX modules are self-terminating. The ESH2/ESH4 does not have a terminate switch.

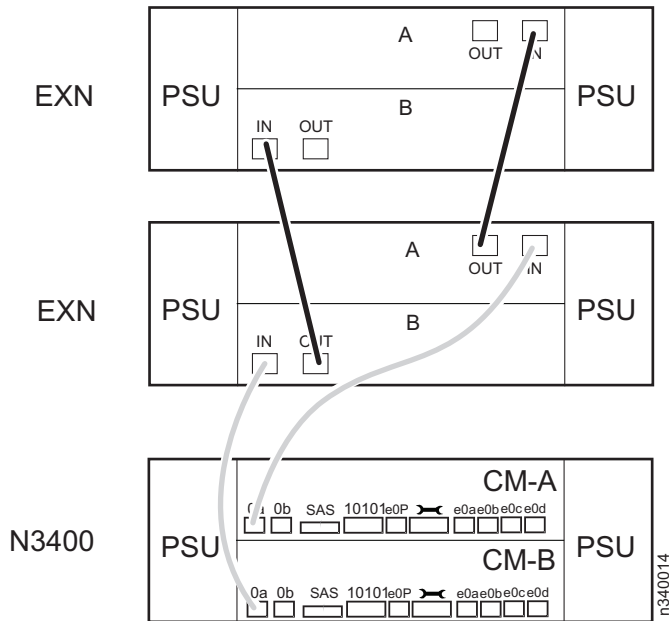


Figure 11. Cabling additional storage expansion units

Notes:

- Figure 11 shows storage system connections to EXN2000/EXN4000 expansion units. On EXN1000 expansion units, the positions of the In and Out ports are reversed from those of the EXN2000/EXN4000.
 - Figure 11 shows only the first two storage expansion units in a loop. The number of storage expansion units per loop might be different for your configuration.
3. For any additional storage expansion units in a loop, connect the module A (IOM A) Out port to the next storage expansion unit's module A In port, as shown in Figure 11. Repeat for module B (IOM B).

Dual-path Fibre Channel cabling

Use these instructions to implement dual-path Fibre Channel cabling in a high-availability (active/active) configuration.

This step is optional. You must have ordered the "Dual-Path Fibre Channel Cabling" feature and/or additional fiber cables and SFP Gigabit Interface Converters (GBICs) to implement this feature. Dual-path Fibre Channel cabling only applies to high-availability (active/active) A21 models. The purpose of dual-path Fibre Channel cabling is to provide each controller node in a high-availability (active/active) configuration with redundant Fibre Channel paths (Loop A and Loop B) to each loop of disk storage expansion units. It improves reliability and availability by providing redundant Fibre Channel paths from each node.

Two additional SFP GBICs and two Fibre Channel cables are used to connect the last storage expansion unit in a loop of storage expansion units to the other node of the high-availability (active/active) configuration.

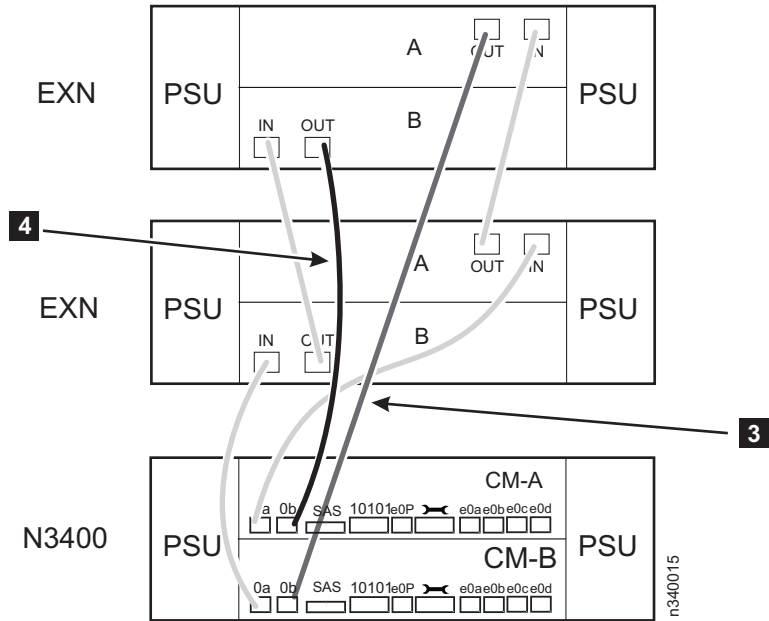


Figure 12. Dual-Path Fibre Channel cabling

Do the following for each loop of storage expansion units:

1. Insert an SFP GBIC into the FC OUT port of upper controller A (IOM A) of the last disk storage expansion unit in the loop of expansion units.
2. Insert an SFP GBIC into the FC OUT port of lower controller B (IOM B) of the last disk storage expansion unit in the loop of expansion units.
3. Connect a Fibre Channel cable from the FC OUT port on the upper controller A of the last disk storage expansion unit of the loop to FC port 0b of the lower processor controller module (CM-B) of the N3400. See **3** in Figure 12.
4. Connect a Fibre Channel cable from the FC OUT port on the lower controller B of the last disk storage expansion unit of the loop to FC port 0a of the upper processor controller module (CM-A) of the N3400. See **4** in Figure 12.

Cabling example: HA (active/active) N3400 FC SAN configuration

This example shows a high-availability (active/active) N3400 Fibre Channel SAN cabling configuration.

For more N3400 cabling configurations, see the *N3300, N3400, and N3600 Hardware and Service Guide*.

1. Cable the N3400 to the Fibre Channel switch as shown in Figure 13 on page 14.

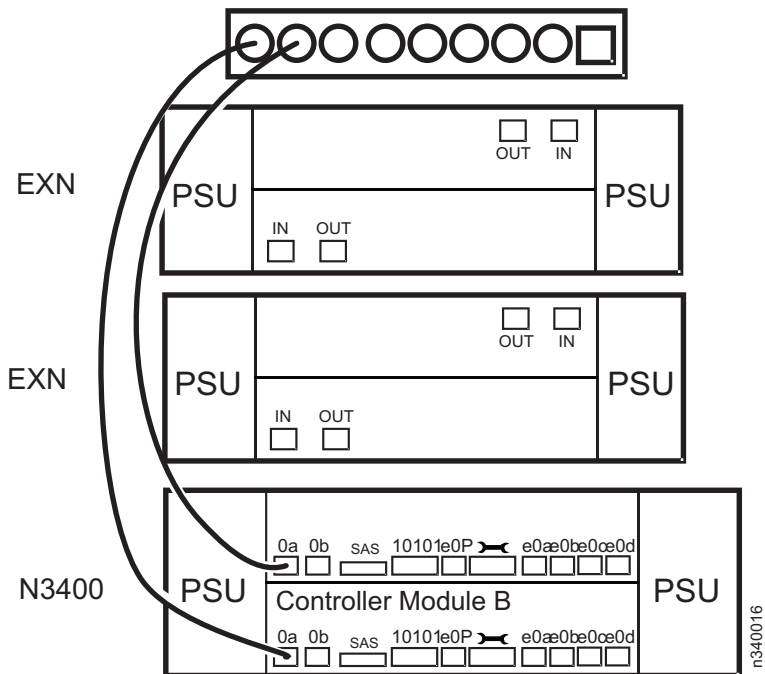


Figure 13. Cabling to the Fibre Channel switch

2. Cable the N3400 to the storage expansion units as shown in Figure 14.

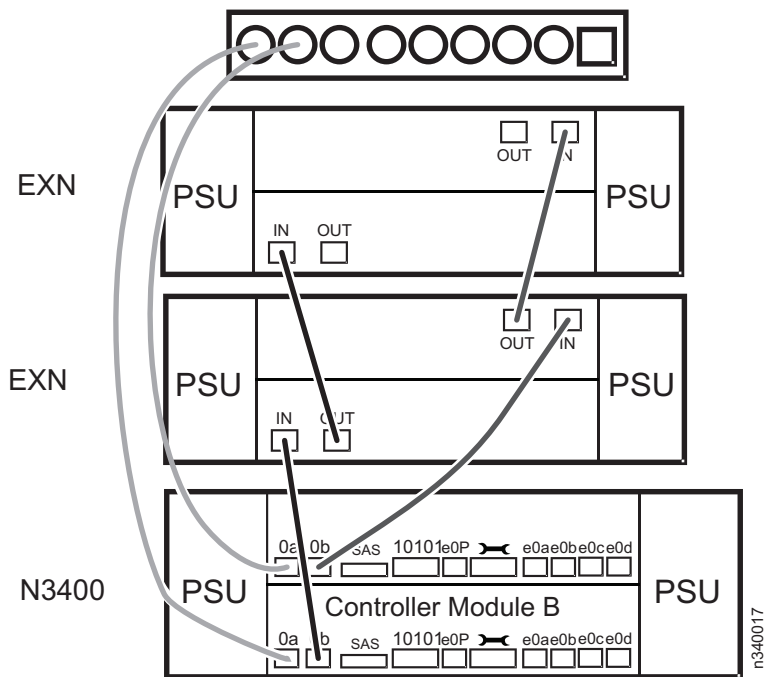


Figure 14. Cabling to the storage expansion units

Cabling example: HA (active/active) N3400 single-path NAS or iSCSI configuration

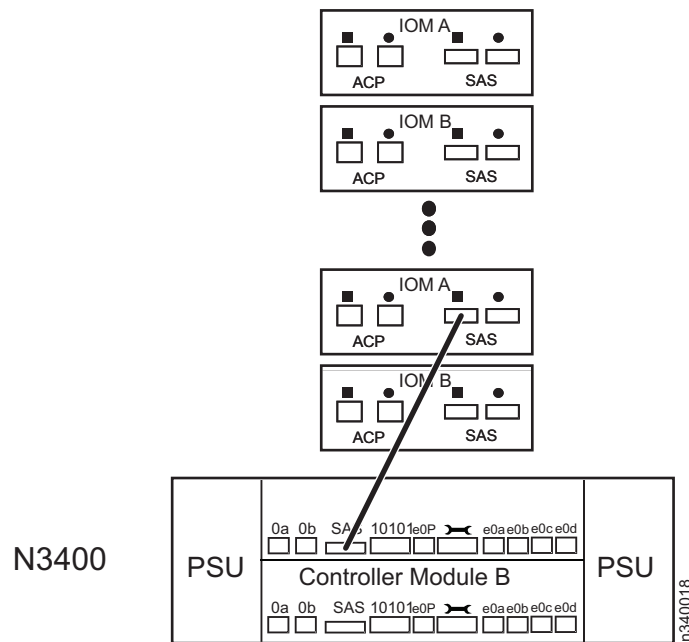
This example shows the cabling for a high-availability (active/active) N3400 single-path NAS or iSCSI configuration with one SAS stack of up to four SAS storage expansion units.

For more examples of N3400 cabling configurations, see the *N3300, N3400 and N3600 Hardware and Service Guide*.

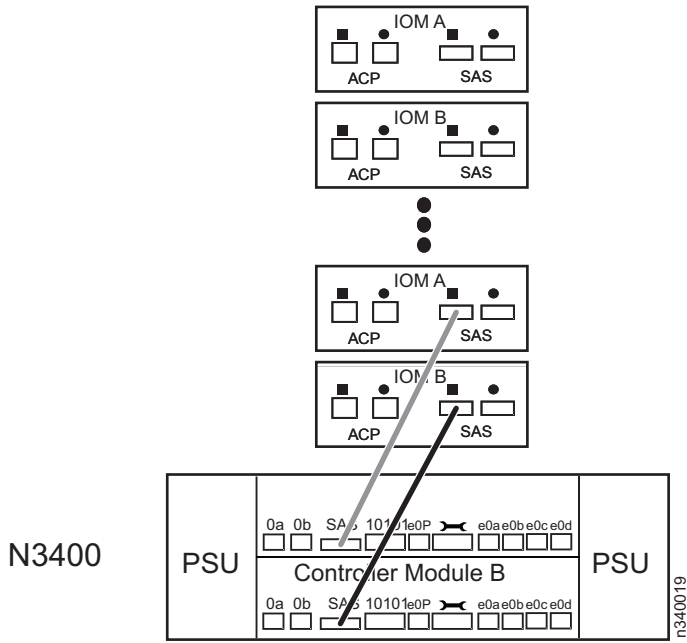
For complete details about cabling SAS storage expansion units, see the *IBM System Storage N series Universal SAS and ACP Cabling Guide*.

1. Cable the N3400 controller A SAS port to the square port on the Input/Output Module A (IOM A) of the first SAS storage expansion unit.

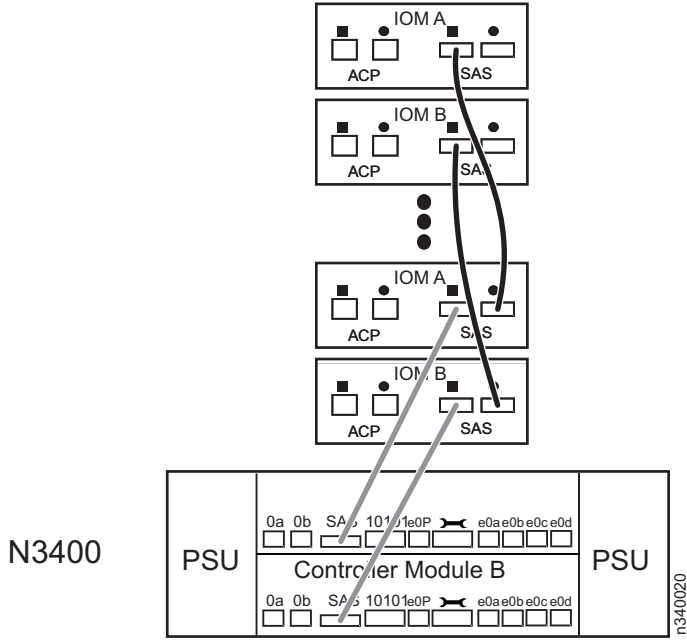
Note: The SAS ports and Alternate Control Path (ACP) ports on the SAS storage expansion unit IOMs are designated by square and circle symbols. All cabling is done in reference to connecting to either square or circle ports. SAS connectivity does not use the concept of In and Out ports.



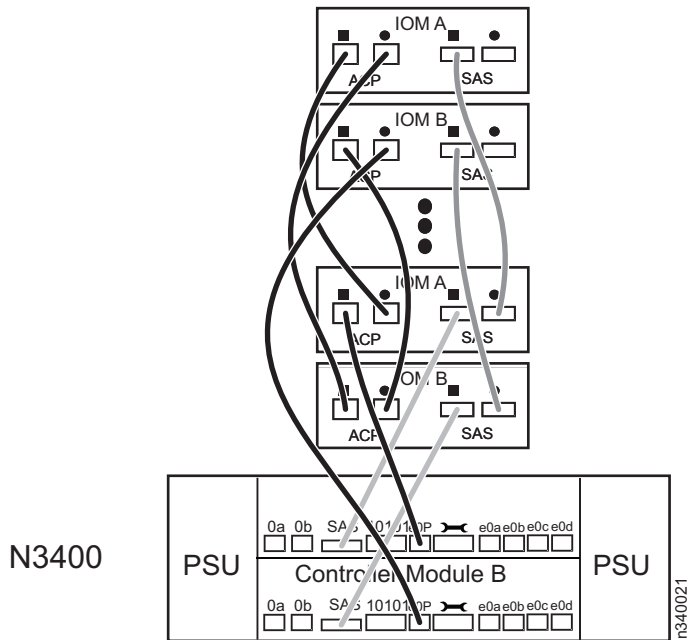
2. Cable the N3400 controller B SAS port to the SAS square port on the I/O Module B (IOM B) of the first SAS storage expansion unit.



3. Daisy-chain the SAS storage expansion units. Always connect like I/O modules from circle port to square port.



4. If desired, cable an Alternate Control Path (ACP). ACP is the optional storage management capability that requires using CAT-6 Ethernet cables and a designated Ethernet port for each controller. For more details about ACP, see the *IBM System Storage N series Universal SAS and ACP Cabling Guide*.



Installing the power cables

Use these instructions to install the power cables for the N3400.

1. Make sure all power supply switches on the N3400 and any attached expansion units are in the Off position.
2. Connect the power cords to all power supply 1 and power supply 2 power receptacles for all storage systems that are being installed using power cord retainer clips as shown in Figure 15.

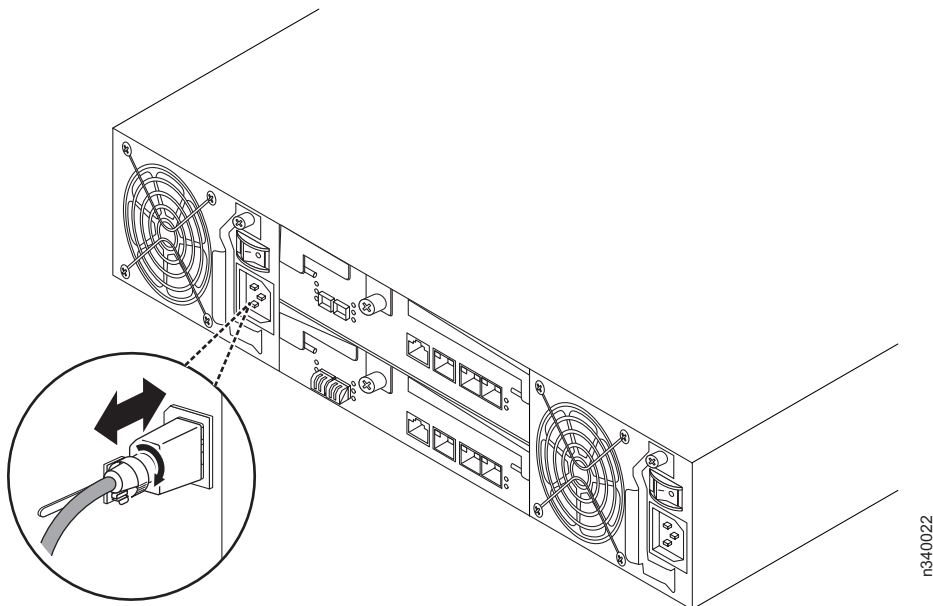


Figure 15. Using the power cord retention clip

3. Connect the power cords to the power sources, making sure that the two power supplies are connected to separate and independent AC sources.

Attention: Do not power on the system at this time.

Note: The N3400 storage system has no requirement or provision for grounding.

For proper grounding of expansion units, see the *Installation and Setup Instructions* for the expansion unit.

Setting up and booting the system

Use these instructions to set up and boot the N3400.

1. Make sure the Configuration worksheet from the *Data ONTAP Software Setup Guide* for your version of Data ONTAP is completed and available for use.

Note: IBM recommends that you print a copy of this worksheet from the *Data ONTAP Software Setup Guide* for your version of Data ONTAP.

2. Check that your system is properly set up. Make sure that the expansion unit IDs and speed switches are properly set, and that the cabling is correct for your configuration.

Note: Make sure that the network and Fibre Channel switches are powered on and configured before you turn on the system.

3. Turn on the power to any switches, and then turn on the power to only the expansion units, making sure you turn them on within 5 minutes of each other. After you have powered on the storage expansion units, turn on the N3400.

Note: It takes the LEDs on the system power supplies a few seconds to illuminate.

The system begins to boot, and then it stops at the first setup question, which is displayed on the console.

4. Check the console for NVMEM battery messages.

Data ONTAP checks the battery charge when booting. If the battery is not charged enough to hold the NVMEM contents for a sufficient period, the boot process is stopped until the battery is properly recharged. However, you can resume booting by following the console messages. You can check the battery charge level through the Baseboard Management Controller (BMC) by pressing **Ctrl+G** and then entering the sensor show command. The battery status is displayed on the console. Exit the BMC by entering the system console command to return to the system console.

Note: If the battery needs charging, you must leave the system power on.

5. Go to the system console for each node and answer the installation questions for that node, using the information recorded in the Configuration worksheet from the *Data ONTAP Software Setup Guide* for your version of Data ONTAP.

If you configured the BMC during setup, the setup script pauses for a short time while the BMC reboots and sets its configuration information.

Note: You will be asked to continue setup through the web interface. If you select **No**, you will continue setup through the command line interface. If you select **Yes**, you can log in to the N3400 using the IP address specified earlier in the setup or you can continue through the command line interface. Refer to the *Data ONTAP Software Setup Guide* for your version of Data ONTAP for more information about choosing a setup method.

6. Check the licenses on the node(s) by entering the following command:

```
license
```

Add any missing licenses by entering the following command for each missing license:

```
license add <license_code>
```

where <license_code> is the license code for the product.

Note: Clustering must be licensed on both nodes in a dual-node N3400.

7. Continue with post-setup configuration as needed.
8. Reboot the node(s) by entering the following command:

```
reboot
```

Initial setup is now complete for a single-node N3400.

Refer to the *Data ONTAP Software Setup Guide* for your version of Data ONTAP to verify that the system is set up correctly and ready to operate.

To complete the initial setup of a dual-node N3400, continue to the next step.

9. Enable clustering by entering the following command on one node's console:
10. Check each node's status by entering the following command:

```
cf enable
```

```
cf status
```

Initial setup is now complete for a dual-node N3400.

Refer to the *Data ONTAP High Availability Configuration Guide* or the *Data ONTAP Active/Active Configuration Guide* for your version of Data ONTAP to verify that the system is set up correctly and ready to operate.

Appendix. Troubleshooting and additional resources

The following sections provide troubleshooting tips and a list of additional resources for the N3400.

Troubleshooting tips

Use these instructions if your storage system does not boot when you power it on.

Follow these troubleshooting tips in the order shown here.

1. Look for a description on the console. Follow the instructions, if provided, on the console.
2. Check all cables and connections, making sure that they are secure.
3. Ensure that power is supplied and is reaching your system from the power source.
4. Check the power supplies on your system and attached storage expansion units. If the LEDs on a power supply are not illuminated, remove the power supply and reinstall it, making sure that it connects with the backplane.
5. Verify expansion unit compatibility and check the disk shelf IDs, as described in “Setting storage expansion unit shelf IDs” on page 6.
6. Ensure that the storage expansion unit speeds are set correctly:

Expansion unit type	Set speed to
EXN1000	2 Gb
EXN2000	2 Gb
EXN4000	4 Gb or 2 Gb, as necessary
EXN2000s and EXN4000s mixed in the same loop	2 Gb

Note: SAS storage expansion units do not have speed switches.

7. Check disk ownership:
 - a. Make sure there are disks assigned to the system. Enter `disk show`.
 - b. Verify that there is storage attached to the system. Enter `disk show -v`.
 - c. Verify that changes were made. Enter `disk show -v`.
8. Turn off your system and storage expansion units, and then turn on the storage expansion units. Check the quick reference card that came with the expansion units for information about LED responses.
9. Use onboard diagnostics to check the disks.
 - To check SAS disks:
 - a. Turn on your system and press `Ctrl+C`. Enter `boot_diags` at the firmware (LOADER) prompt.
 - b. Enter `mb` in the Diagnostic Monitor program.
 - c. Enter `6` to select the SAS test menu.
 - d. Enter `42` to scan and show disks on the selected SAS. This displays the number of SAS disks.
 - e. Enter `72` to show the attached SAS devices.
 - f. Exit the Diagnostic Monitor by entering `99` at the prompt. Enter the `exit` command to return to LOADER. Start Data ONTAP by entering `autoboot` at the prompt.
 - To check Fibre Channel disks:
 - a. Enter `mb` in the Diagnostic Monitor program

- b. Enter 5 to select the Onboard FC-AL test menu.
 - c. Enter 72 at the prompt to show attached FC-AL devices.
 - d. Exit the Diagnostic Monitor by entering 99 at the prompt. Enter the exit command to return to LOADER. Start Data ONTAP by entering autoboot at the prompt
10. If your system does not boot successfully, it might not have the boot image downloaded on the boot device. Call IBM Service and Support at 1-800-IBM-SERV (1-800-426-7378).

Additional resources

The following sources provide additional information about the N3400.

For more information about...	Refer to the following IBM System Storage N series document
New features, enhancements, known issues, and late-breaking news for your version of Data ONTAP software	The <i>Release Notes</i> for your version of Data ONTAP
Setting up and verifying software configuration	<i>Data ONTAP Software Setup Guide</i>
Configuring and managing the iSCSI or FC protocol, and creating and managing LUNs and initiator groups with the iSCSI or FC service	<i>Data ONTAP Block Access Management Guide for iSCSI and FCP</i>
Cabling, configuring, and disk ownership	<i>Data ONTAP Active/Active Configuration Guide</i> <i>Data ONTAP High Availability Configuration Guide</i> <i>Data ONTAP System Administration Guide</i> <i>Data ONTAP Data Protection Guides</i>
Testing field-replaceable units and diagnosing and correcting system hardware problems	<i>Diagnostics Guide</i>
Hardware configuration options for your system	<i>Introduction and Planning Guide</i> <i>N3300, N3400, and N3600 Hardware and Service Guide</i>
Troubleshooting the system	<i>Platform Monitoring Guide</i>
Configuring your remote management port after initial setup	<i>Data ONTAP System Administration Guide</i>
Safety information	<i>Safety Notices</i>

The IBM System Storage N series support website contains additional information about N series hardware and software products:

www.ibm.com/storage/support/nseries



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