IBM Storwize V3500

Quick Installation Guide

GC27-4218-00

Note

Before using this information and the product it supports, read the general information in "Notices" on page 31, the information in the "Safety and environmental notices" on page ix, as well as the information in the *IBM Environmental Notices and User Guide* , which is provided on a DVD.

This edition applies to IBM Storwize V3500, Version 6.4.1, and to all subsequent releases and modifications until otherwise indicated in new editions.

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Safety and environmental notices

Review the multilingual safety notices for the IBM® system before you install and use the product.

Suitability for telecommunication environment: This product is not intended to connect directly or indirectly by any means whatsoever to interfaces of public telecommunications networks.

To find the translated text for a caution or danger notice:

1. Look for the identification number at the end of each caution notice or each danger notice. In the following examples, the numbers (C001) and (D002) are the identification numbers.

   CAUTION:
   A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. (C001)

   DANGER

   A danger notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. (D002)

2. Locate *IBM System Storage SAN Volume Controller Safety Notices* with the user publications that were provided with the Storwize® V3500 hardware.
3. Find the matching identification number in the *IBM System Storage SAN Volume Controller Safety Notices*. Then review the topics concerning the safety notices to ensure that you are in compliance.
4. Optionally, read the multilingual safety instructions on the Storwize V3500 website. Go to http://ibm.biz/Bdx4k8 and click the documentation link.

Chapter 1. Before you begin the installation

Before you can begin installing your system, you must unpack and verify your order and make other preparations.

The *Quick Installation Guide* contains a set of instructions to help you unpack and install your system. The guide is divided into three chapters.

1. The steps in Chapter 1, "Before you begin the installation" (the chapter you are now reading) involve verifying your order, becoming familiar with the hardware component terminology, and ensuring that you have met the environmental requirements.
2. The steps in Chapter 2, "Installing the hardware," on page 7 involve installing the hardware and attaching the data cables and power cords.
3. Chapter 3, "Initializing the system," on page 25 helps you create your configuration file and access the management GUI. The management GUI guides you through the initial configuration process.

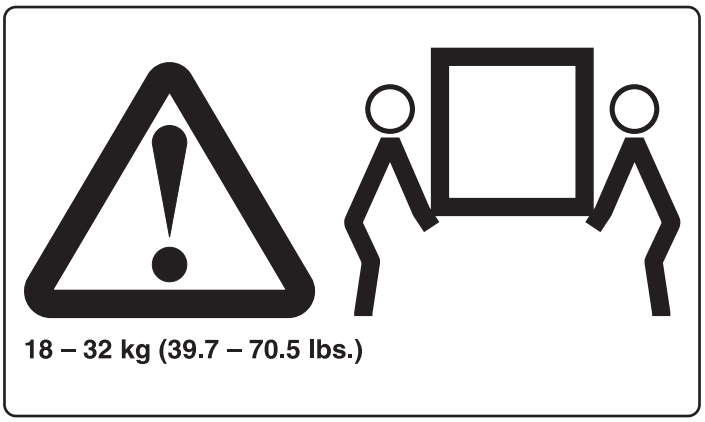
Important information:

- The guide presumes that you have read the planning information regarding your physical environment that is available from the Storwize V3500 Information Center.
- Ensure that you have available any cables that you are supplying.

Be familiar with the following information

- Where it is applicable, a CAUTION notice indicates situations that can be potentially hazardous to you. Before doing a step that contains a caution notice, read and understand the statement that accompanies it.
- **Sliding drawers:** Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- **Fixed drawers:** Any fixed drawer (like the Storwize V3500) must not be removed for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.
- Do not use rack-mounted devices as a shelf or workspace. Do not place any object on top of rack-mounted devices.

- Use safe practices when lifting. The fully populated enclosure weighs about 26 kg (57 lbs). At least two people are required to lift and install the enclosure into the rack or to remove an enclosure from the rack.



Tools needed

A flat-blade screwdriver is the only tool needed for the system installation.

Reviewing your packing slip

After you open your shipment, you must verify the contents against the packing slip.

In each box, locate the packing slip. Verify that the items listed in the packing slip match what is in the box, and that any optional items that you ordered are included in the list. Your shipment might contain additional items depending on the order.

Note: If you purchased your equipment through a reseller, some of the options might be preinstalled. Contact your supplier for details.

__ • Control enclosure.
  - **LFF** enclosures have 12 Large Form Factor slots for 3.5-inch drives.
  - **SFF** enclosures have 24 Small Form Factor slots for 2.5-inch drives.

Table 1. Storwize V3500 model numbers

Machine type/model	Feature code	Part number	Description
2071/02A	ACAE	2071CU2	IBM Storwize V3500 LFF Dual Control Enclosure
2071/10A	ACBA	2071CU3	IBM Storwize V3500 SFF Dual Control Enclosure

__ • Rack-mounting hardware kit, including:
  __ – Two rails (right and left assembly)
  __ – Two rail springs
  __ – Two sets of rail mounting screws
  __ – Two sets of alternative rail mounting pins (large and small) for non-IBM racks

__ • Two power cords for connection to rack mounted power distribution units

__ • Drive bay blanking plates (installed in the enclosure)

__ • Publications package (includes a USB flash drive that is used to initialize the system)

Options applicable to control enclosures:

__ • 4-port Fibre Channel host interface card with 2 small form-factor pluggable (SFP) transceivers installed

__ • 2 extra Fibre Channel SFP transceivers

__ • Fibre Channel cables

__ • Drives

__ • Power cords for connection to wall sockets

Identifying the hardware components

The following graphics and descriptions identify the various hardware components and port locations for the control enclosure.

Control enclosure components

Figure 1 shows the rear view of a control enclosure and identifies the location of the power supply units and node canisters.

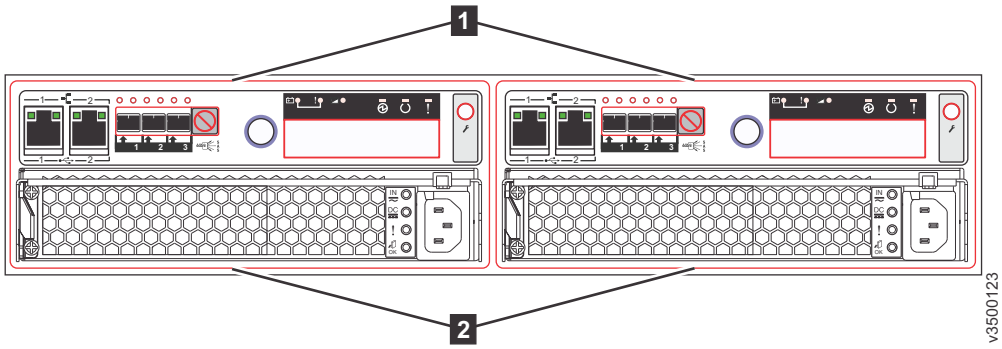


Figure 1. Rear view of a Storwize V3500 control enclosure

- **1** Node canisters
- **2** Power supply units

Note: Figure 1 shows the node canisters in their initial configuration, with no host interface card options installed.

Figure 2 shows the rear view of a Storwize V3500 control enclosure and identifies the location of the ports.

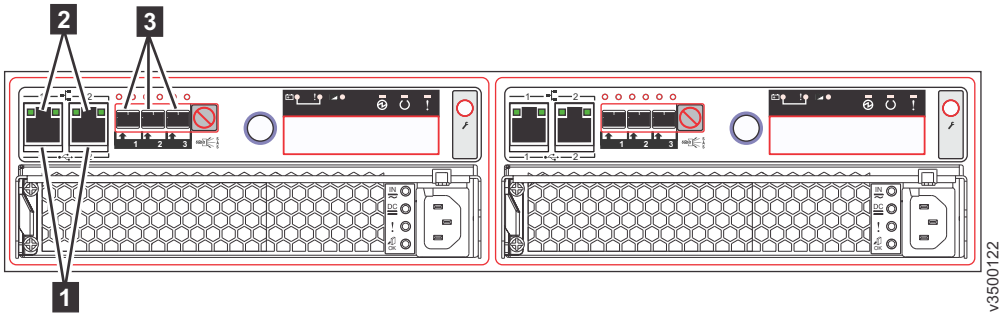


Figure 2. Data ports in the rear of the control enclosure

- **1** USB ports. Each canister has two USB ports. One port is used during installation.
- **2** Ethernet ports. Each canister has two 1 Gbps Ethernet ports. Port 1 must be connected. The use of port 2 is optional.
- **3** Serial-attached SCSI (SAS) ports. These ports are not used.

Miscellaneous hardware

The USB flash drive (Figure 3) is packaged with the publications and contains the initialization tool for performing the initial system configuration.

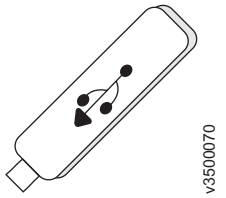


Figure 3. USB flash drive

Verifying environmental requirements

Certain requirements for the physical site must be met to ensure that your system works reliably.

This procedure includes verifying that adequate space in a suitable rack is available and that requirements for power and environmental conditions are met. This documentation assumes that you have completed the physical planning for the environment of your system.

If you have not done the environmental planning for your system, see the *Storwize V3500 physical installation planning* topic in the Storwize V3500 Information Center.

You must use a supported web browser (see Table 2).

Table 2. Supported web browsers

Browser	**Supported versions**
Mozilla Firefox	3.5 or later
Microsoft Internet Explorer	8.0 or later

Reviewing enclosure location guidelines

Before installing the enclosure, you must be familiar with the location guidelines.

Position the enclosure in the rack so that you can easily view it and access it for servicing. This action helps the rack to remain stable and provides a way for two or more people to install and remove the enclosure.

Chapter 2. Installing the hardware

These topics provide installation procedures for the hardware components.

You have completed the initial steps of verifying the shipping contents and becoming familiar with the hardware components. You have verified that the power and environmental requirements are met and have planned the location of the enclosure. You are now ready to begin installing the hardware components and connecting the data cables and power cords.

Installing the support rails

Before installing an enclosure, you must first install support rails.

Procedure

To install the support rails, complete the following steps.

1. Locate the rack mounting rails and screws (Figure 4). The rail assembly consists of two rails that must be installed in the rack cabinet.

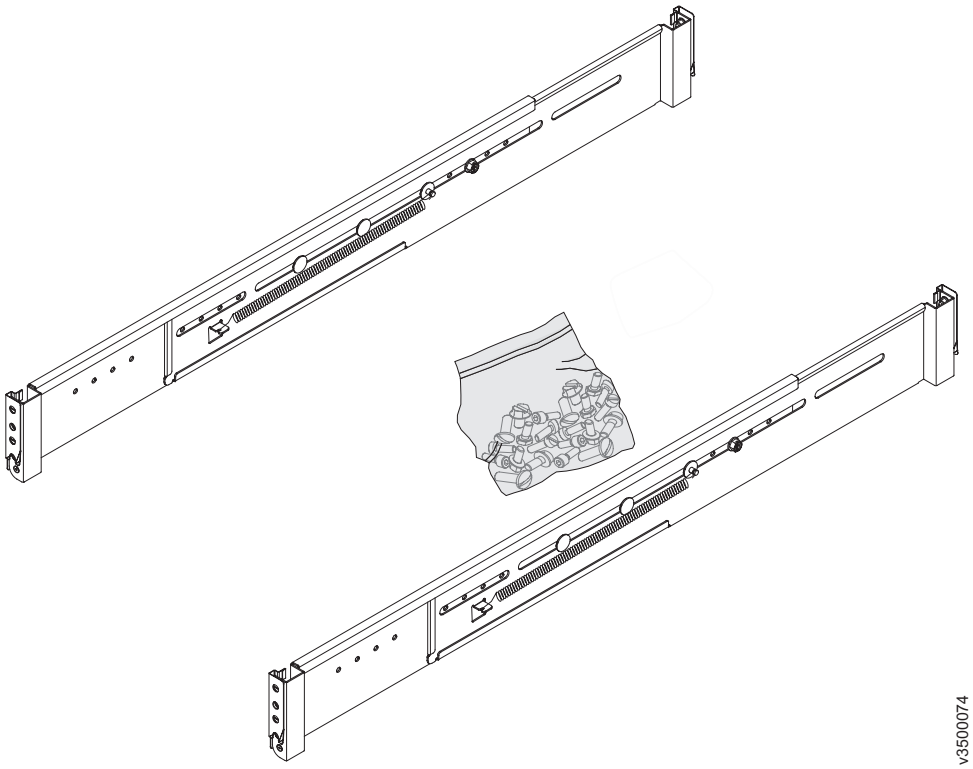


Figure 4. Rack mounting rails and screws

2. Attach a spring to the outside of each rail.
   a. Remove the spring that is taped to the rail.
   b. Attach the circle end of the spring around the stud on the rail (see Figure 5).
   c. Pulling on the spring, attach the hook end of the spring to the tab on the rail.

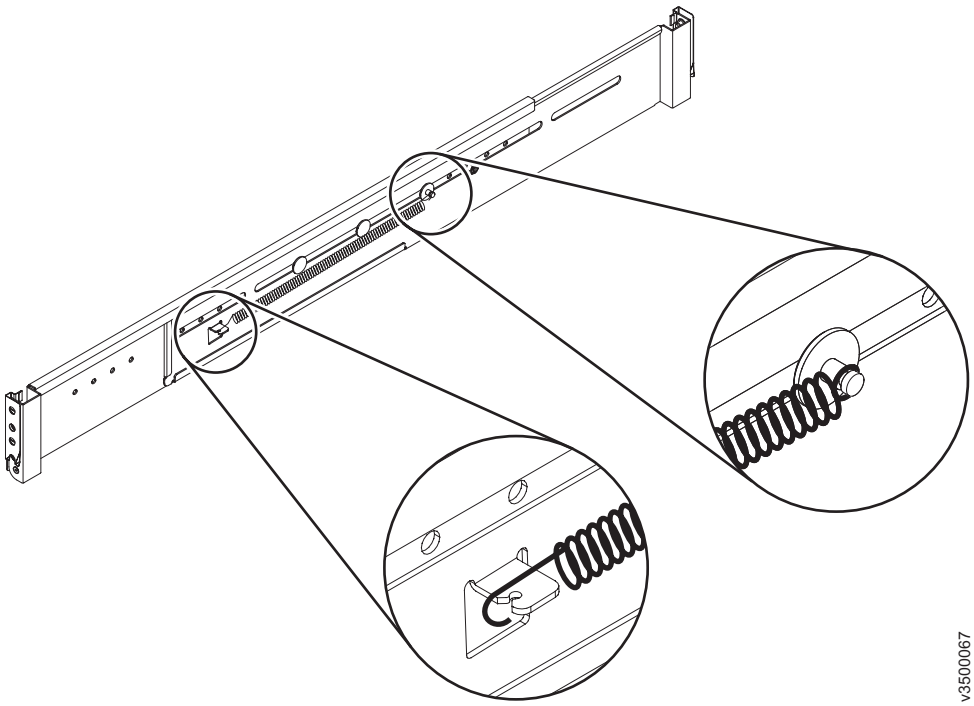


Figure 5. Installing the rail spring

3. Working at the front of the rack cabinet, identify the two standard rack units of space in the rack into which you want to install the support rails. Figure 6 shows two rack units with the front mounting holes identified.

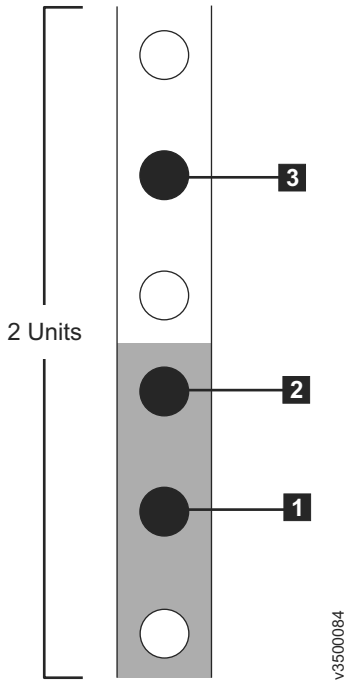


Figure 6. Hole locations in the front of the rack

- **1** Rack mounting screw hole
- **2** Lower rail mounting bracket pin
- **3** Upper rail mounting bracket pin

Note: Each rail comes with two medium bracket pins in the front bracket and two medium bracket pins in the rear bracket. The medium bracket pins are for installation in a 482.6 mm (19-in.) IBM rack cabinet. If you are installing the storage enclosure in a non-IBM rack cabinet, replace the set of medium bracket pins on the front and rear of the rail with either the small or large bracket pins that come in the rail kit.

4. Open the hinge brackets on the ends of the rail (see Figure 7).

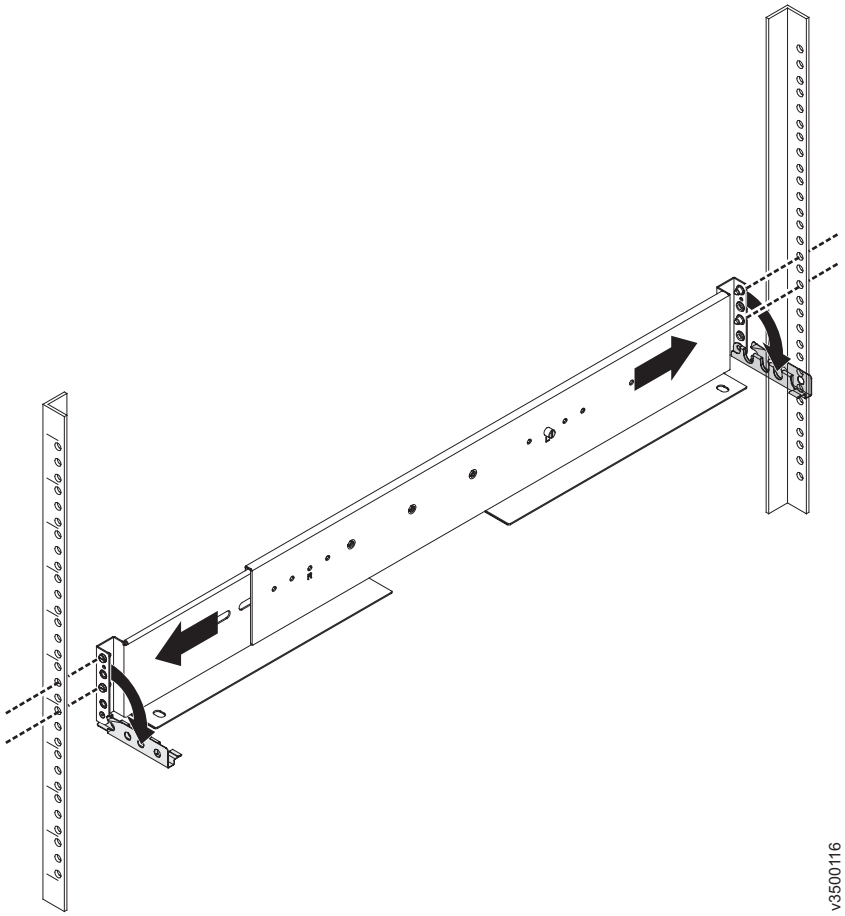


Figure 7. Opening the hinge brackets

5. Align the holes in the rail bracket with the holes on the front and rear rack cabinet flanges. Ensure that the rails are aligned on the inside of the rack cabinet.

6. On the rear of the rail, press the two bracket pins into the holes in the rack flanges and close the rear hinge bracket to secure the rail to the rack cabinet flange (see Figure 8).

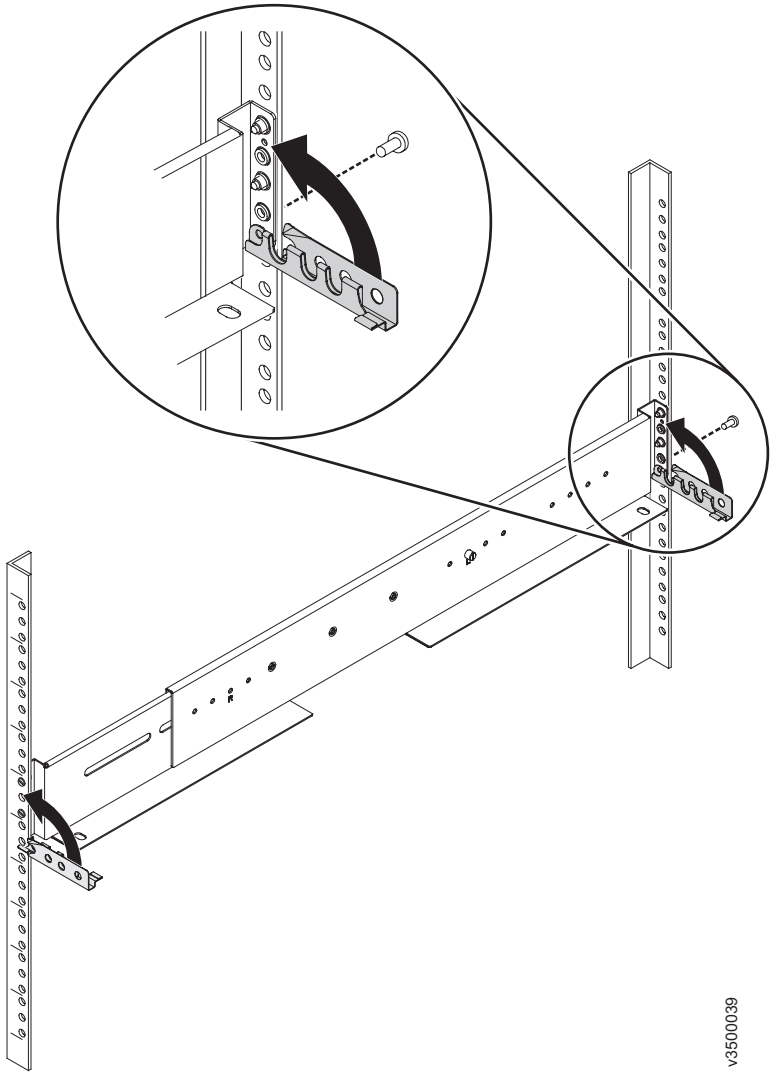


Figure 8. Closing hinge brackets and installing rear screw

7. On the front of the rail, press the two bracket pins into the holes in the rack flanges and close the front hinge bracket to secure the rail to the rack cabinet flange (see Figure 8).
8. Secure the rear of the rail to the rear rack flange with an M5 screw (see Figure 8).
9. Repeat the steps to secure the opposite rail to the rack cabinet.

Installing the enclosure

Following your enclosure location plan, install the control enclosure.

About this task

CAUTION:

- **To lift and install the enclosure into the rack requires at least two people.**
- **Load the rack from the bottom to ensure rack stability. Empty the rack from the top down.**

Procedure

To install the enclosures, complete the following steps.

1. Align the enclosure with the front of the rack cabinet.
2. Carefully slide the enclosure into the rack along the rails until the enclosure is fully inserted (see Figure 9).

   Note: The rails are not designed to hold an enclosure that is partially inserted. The enclosure must always be in a fully inserted position.

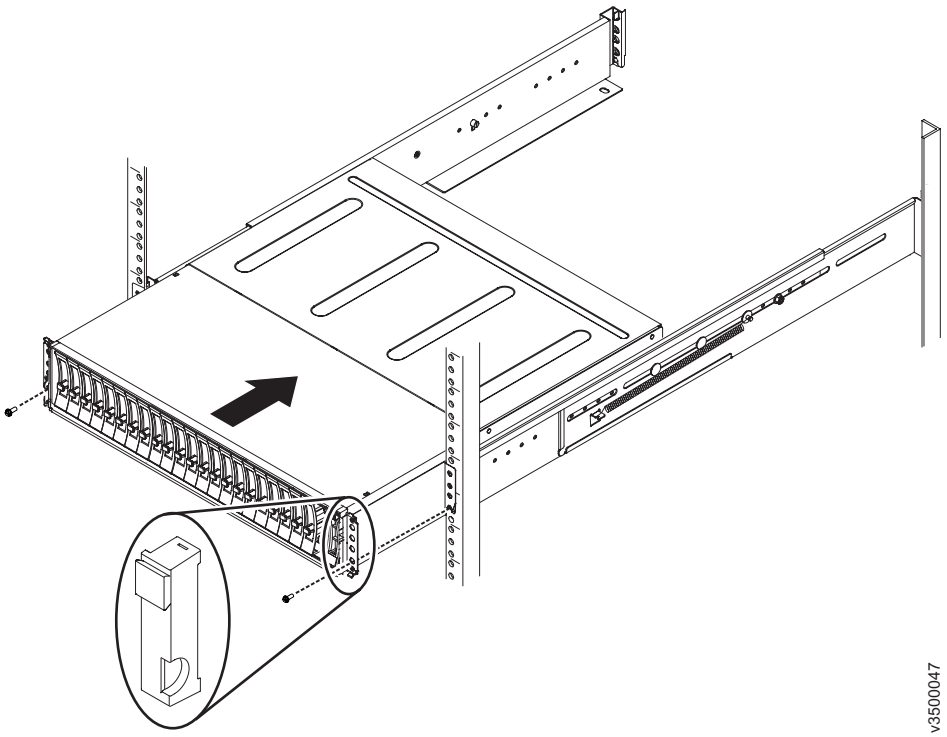


Figure 9. Inserting the enclosure

3. On either side of the drive assemblies, remove the enclosure end caps by grasping the handle and pulling the bottom of the end cap free, then clearing the tab on the top of the enclosure.
4. Secure the enclosure with a screw in the rack mounting screw hole.

5. Reinstall the left end cap (the one with the LEDs) and the right end cap as shown in Figure 9 on page 12.
   a. Ensure that the serial number of the end cap matches the serial number on the rear of the enclosure.
   b. Fit the slot on the top of the end cap over the tab on the chassis flange.
   c. Rotate the end cap down until it snaps into place.
   d. Make sure that the inside surface of the end cap is flush with the chassis.

Installing options in the control enclosure

If you have purchased Host Interface Cards for your control enclosure, you must open each node canister and install the options.

Note: You must install the same options in all node canisters.

First, open the canister as described in "Opening the node canister." Then refer to the procedure for the option you are installing:

- "Installing a Fibre Channel host interface card" on page 15

Finally, close the canister and install it in the control enclosure ("Closing the node canister" on page 18).

Opening the node canister

Before you can install options in a node canister, you must gain access by opening the canister cover.

Procedure

To open the canister, complete the following steps.

1. If the canister is already installed in the enclosure, remove it as shown in Figure 10.
   a. Unlatch the release levers and pull them open. The canister moves out of the slot approximately 0.6cm (0.25 inch).
   b. Slide the canister out of the enclosure.

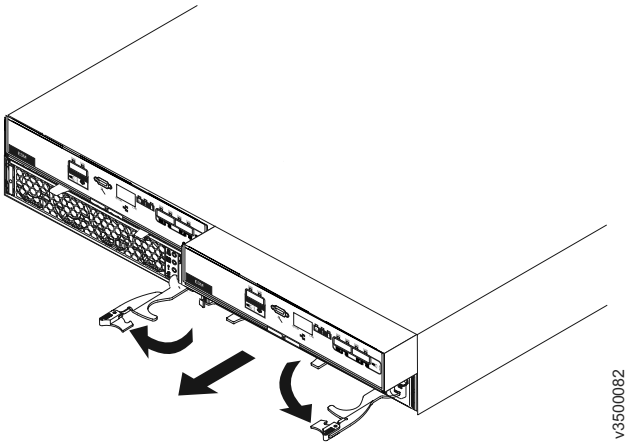


Figure 10. Removing a node canister

2. Turn the canister over and open the cover as shown in Figure 11.
   a. Press the recessed blue touch points on the cover.
   b. Slide the cover away from the thumbscrew end of the canister.

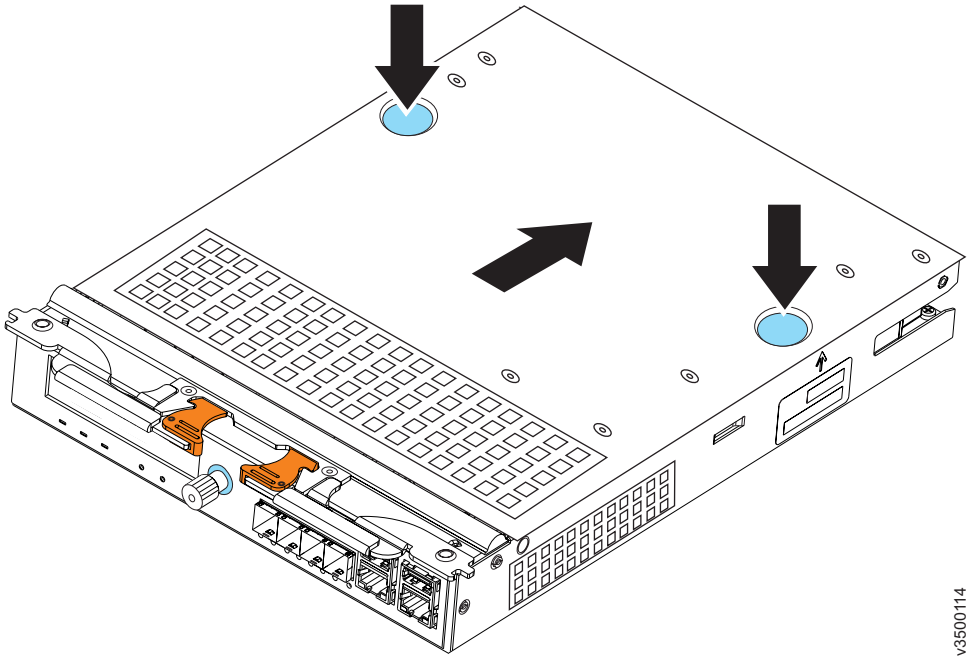


Figure 11. Removing the canister cover

Installing a Fibre Channel host interface card

If you have purchased the FC ACHK 8Gb Fibre Channel 4 Port Daughter Card option (also known as the Fibre Channel host interface card), you must install it in the node canister.

About this task

Note: The host interface card has four ports, but only two small form-factor pluggable (SFP) transceivers are installed.

Procedure

To install the host interface card, complete the following steps.

1. Remove each SFP transceiver from the host interface card (Figure 12). To remove an SFP transceiver, swing the release handle open and use it to pull the transceiver out of the port.

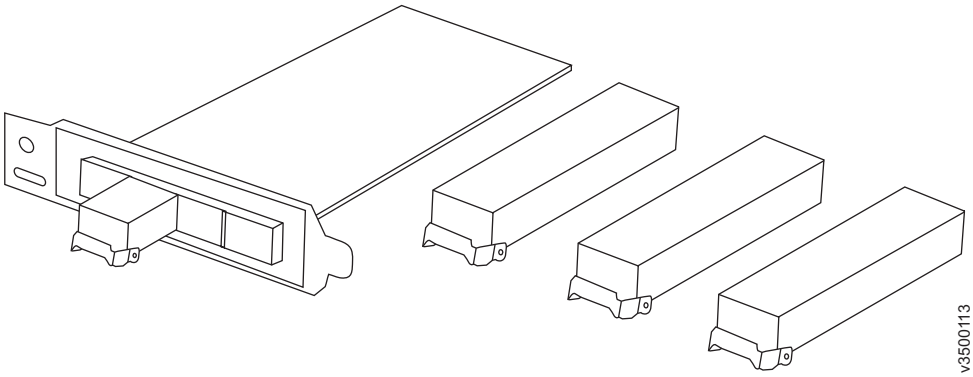


Figure 12. Host interface card and SFP transceivers

2. Loosen the retaining thumbscrew 1 as shown in Figure 13.

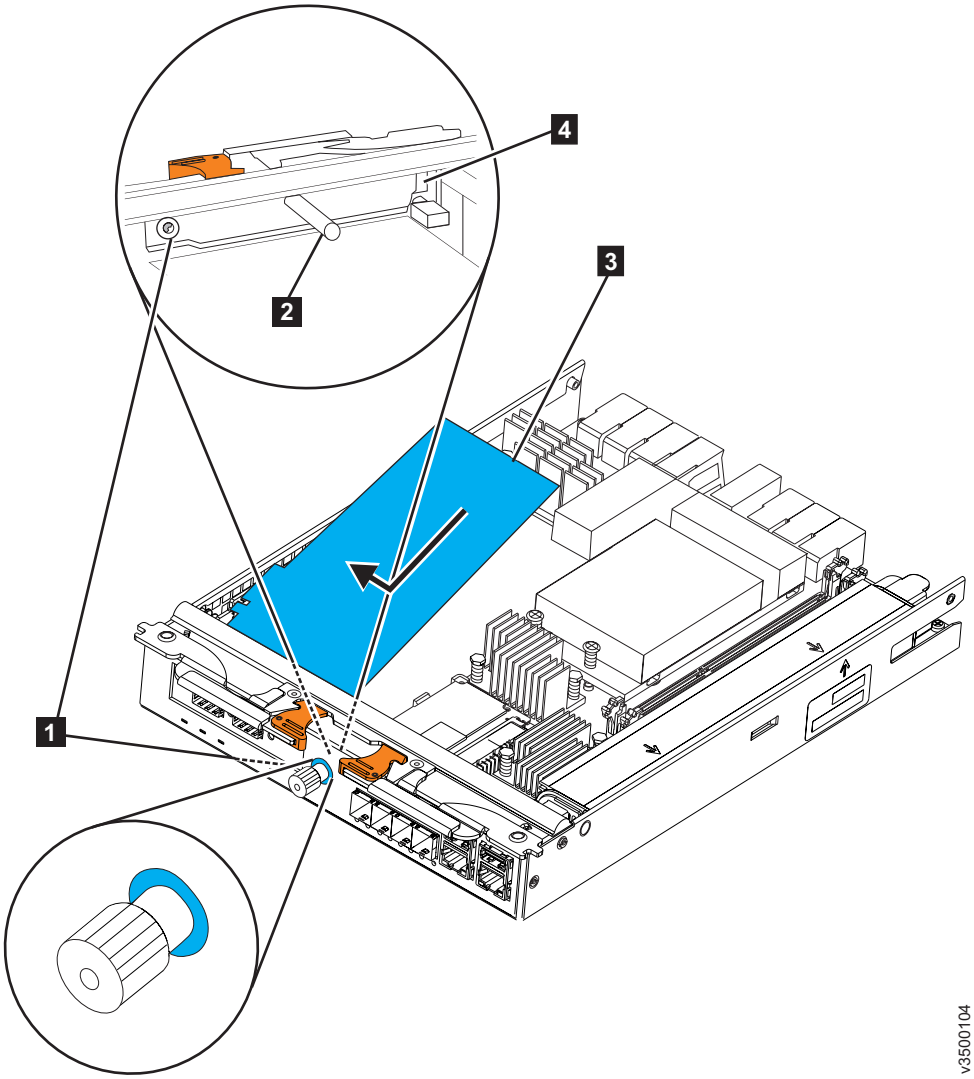


Figure 13. Installing Fibre Channel host interface card

- 1 Retaining thumbscrew
- 2 Filler handle
- 3 Host interface card
- 4 Catch slot

3. From inside the canister, grasp the filler handle 2 and slide the filler plate toward the thumbscrew to disengage the plate from the catch slot.
4. Remove the filler plate.
5. Insert the host interface card 3 into the canister as shown in Figure 13
6. Align the mounting bracket of the host interface card with the inside of the host interface card aperture at the thumbscrew end of the canister, ensuring that the tab at the end of the faceplate is aligned with the catch slot.
7. Align the connecting edge of the host interface card with the slot in the host interface card connector inside the canister.
8. Apply pressure to the opposite edge of the host interface card to push the card into the host interface card connector.

9. Check that the host interface card is installed squarely in its slot and tighten the retaining thumbscrew **1**.
10. Reinstall the SFP transceivers that were removed in step 1 on page 15. To install a transceiver, push it fully into the port and close the release handle.

    Note: Return the SFP transceivers to the same ports they were removed from.
11. If you purchased the additional 2-transceiver option, install the extra SFP transceivers in the remaining ports.

Closing the node canister

After installing options in a node canister, you must close the canister cover and install the canister in the control enclosure.

Procedure

To close the canister, complete the following steps.

1. Reinstall the cover as shown in Figure 14.
   a. Align the four hook slots on the cover with the pins on the canister.
   b. Slide the cover toward the rear of the canister until it locks into place.

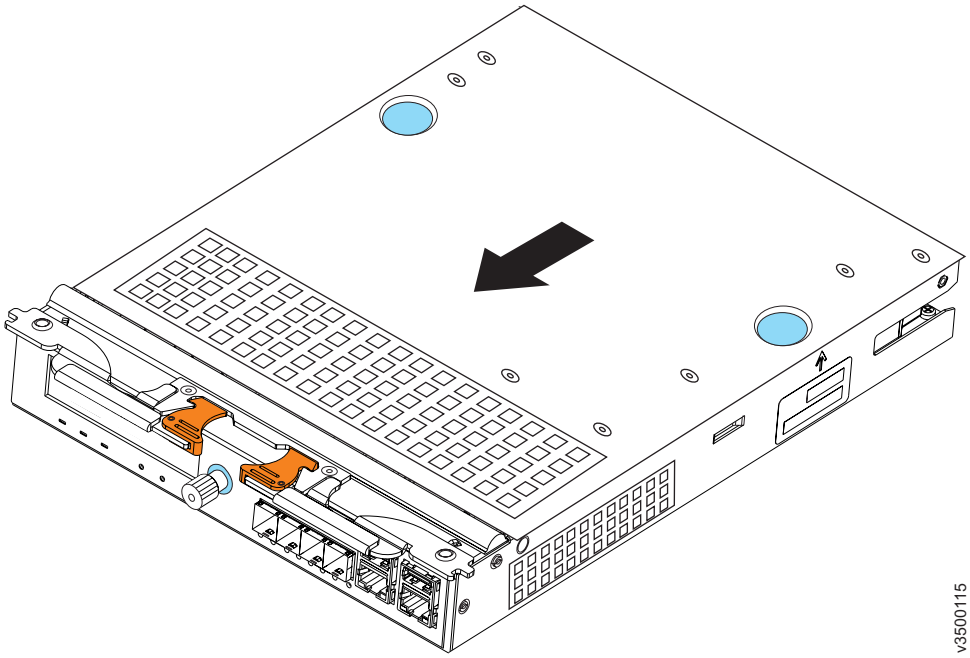


Figure 14. Reinstalling the canister cover

2. Turn the canister over and install it in the control enclosure as shown in Figure 15.
   a. Slide the canister into the enclosure.
   b. Close and latch the release levers.

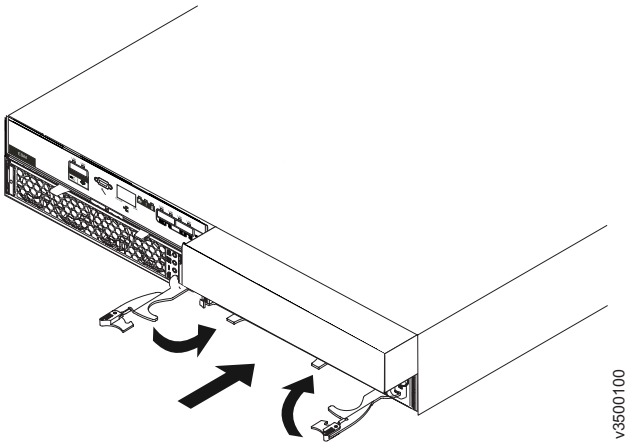


Figure 15. Installing a node canister

Installing disk drives

Before using your system, you must install the the disk drives.

About this task

Install all the drives you require before configuring the expansion enclosure into the system. This allows the best provisioning of drives into arrays.

Procedure

To install a drive, complete the following steps.

1. Remove the filler panel from the bay into which you want to install the drive (as shown in Figure 16).
   a. Insert a finger into the square hole on the left side of the filler panel to grip and pull the filler panel out of the drive bay.
   b. Save the filler panel for future use.

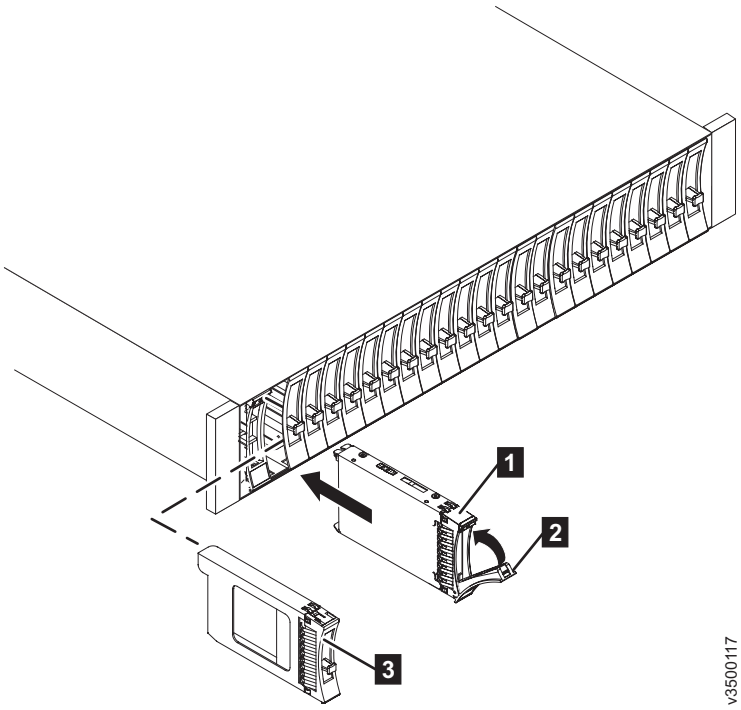


Figure 16. Removing a filler panel

- **1** Drive-tray assembly
- **2** Drive handle
- **3** Filler panel

2. Touch the static-protective package that contains the drive to any unpainted surface on the outside of the enclosure.
3. Remove the drive from the package.

4. Install the drive in the empty bay as shown in (Figure 17).
   a. Ensure that the drive-tray handle is in the open (unlocked) position.
   b. Align the drive assembly with the guide rails in the bay.
   c. Gently push the drive assembly into the bay until the drive stops.
   d. Rotate the drive handle to the closed (locked) position.

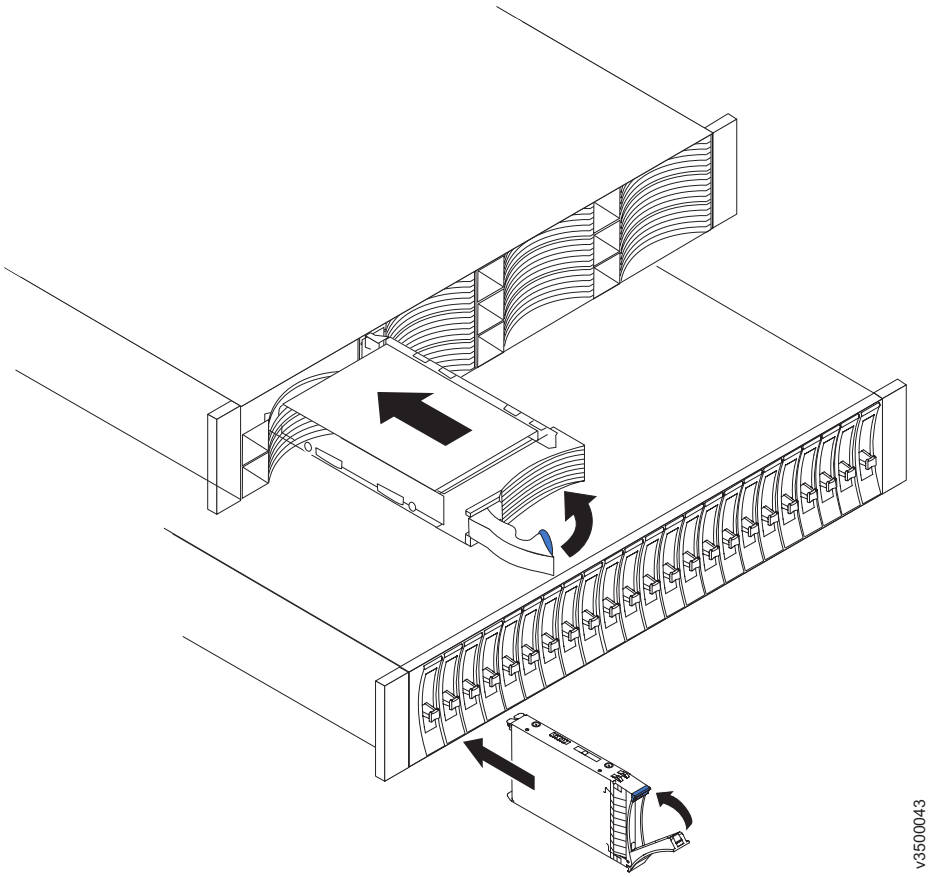


Figure 17. Installing a drive

Connecting Ethernet cables for system management

To provide system management connectivity, you must connect Ethernet cables to each node canister.

Procedure

To install the cables, complete the following steps.

1. Connect Ethernet port 1 on each node canister to the same Ethernet switch, as shown in Figure 18.

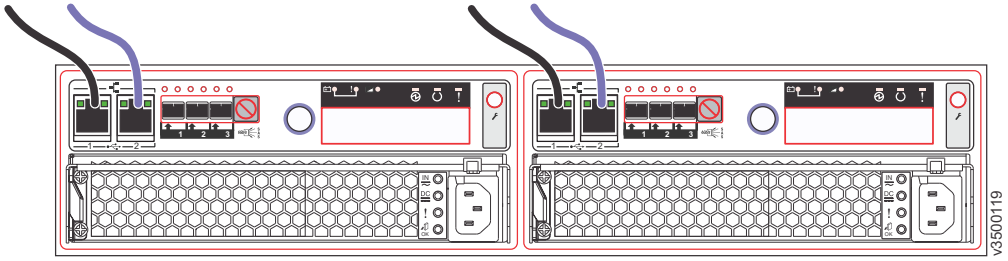


Figure 18. Connecting the Ethernet cables

2. Optionally, connect Ethernet port 2 on each node canister to the same alternate Ethernet switch. (Figure 18 shows these optional cables in a lighter color.)

Connecting the Fibre Channel cables

If you installed a Fibre Channel host interface card, you must connect Fibre Channel cables to it.

Procedure

To install the cables, complete the following steps.

1. Connect the required number of Fibre Channel cables. Refer to the "Planning" section of the information center for instructions on determining the number of cables required.

   Note: Both canisters must have the same number of cables connected. Figure 19 shows an example configuration with two Fibre Channel cables connected to each canister.

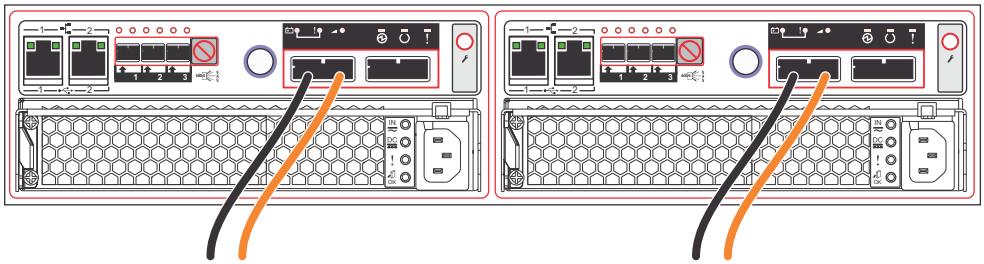


Figure 19. Example configuration with two Fibre Channel cables per canister

2. If you want to connect additional Fibre Channel cables, make sure to connect the same number of cables to each canister. Figure 20 shows an example configuration with four Fibre Channel cables connected to each canister.

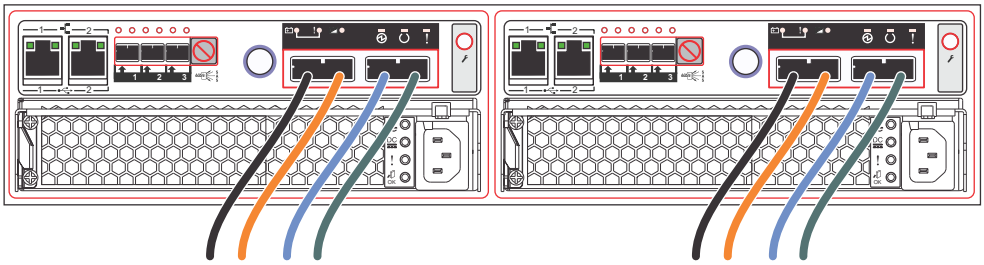


Figure 20. Example configuration with four Fibre Channel cables per canister

Powering on the system

After installing all hardware components, you must power on the system and check its status.

About this task

Attention: Do not operate the system with any open bays or slots.

- Every unused drive bay must be occupied by a filler panel.
- Filler plates must be installed in all empty canister bays and host interface card slots.

Open bays or slots disrupt the internal air flow, causing the drives to receive insufficient cooling.

Procedure

To power on the system, complete the following steps.

1. Plug the power cord of each power supply in the control enclosure into a properly grounded electrical outlet.

   Note: Each enclosure has two power supply units. To provide power failure redundancy, connect the two power cords to separate power circuits.
2. Check the LEDs on each node canister in the control enclosure (see Figure 21).

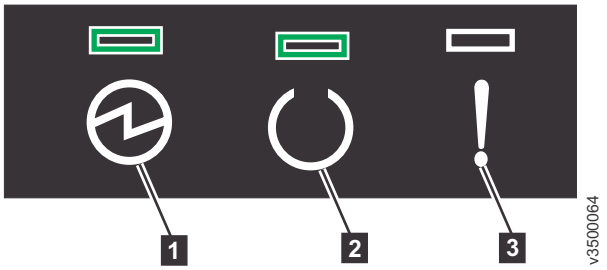


Figure 21. Node canister LEDs

- 1 Power
- 2 Status
- 3 Fault

The canister is ready with no critical errors when **Power** is illuminated, **Status** is illuminated, and **Fault** is off. If a canister is *not* ready, refer to the *Procedure: Understanding the system status using the LEDs* topic in the troubleshooting section of the Storwize V3500 Information Center.

Chapter 3. Initializing the system

Before using your system, you must initialize it.

Before you begin

Use this procedure when you have installed a new control enclosure. Do not run this procedure until you have installed all the drives and other options you have purchased.

About this task

You need a personal computer to complete the initialization procedure. The personal computer must have:

- A USB port
- A supported browser (see Table 3)

Table 3. Supported web browsers

Browser	Supported versions
Mozilla Firefox	3.5 or later
Microsoft Internet Explorer	8.0 or later

For best results, the personal computer and the Storwize system must be connected to the same network.

Procedure

To initialize the system, complete the following steps.

1. Locate the USB flash drive that was shipped with your order in the documentation package.
2. Insert the USB flash drive into a USB port in the personal computer.
3. Perform the procedure for the operating system installed on the personal computer.
   - "Initializing the system with a Microsoft Windows computer" on page 26
   - "Initializing the system with an Apple Macintosh computer" on page 27
   - "Initializing the system with a Linux computer" on page 29

Initializing the system with a Microsoft Windows computer

This procedure is valid for Microsoft Windows 7 (64-bit) or XP (32-bit).

Procedure

To initialize the system, complete the following steps.

1. If the initialization tool wizard did not start automatically when you inserted the USB flash drive, open the USB flash drive from My Computer and double-click `InitTool.exe`. The initialization tool wizard starts (Figure 22).

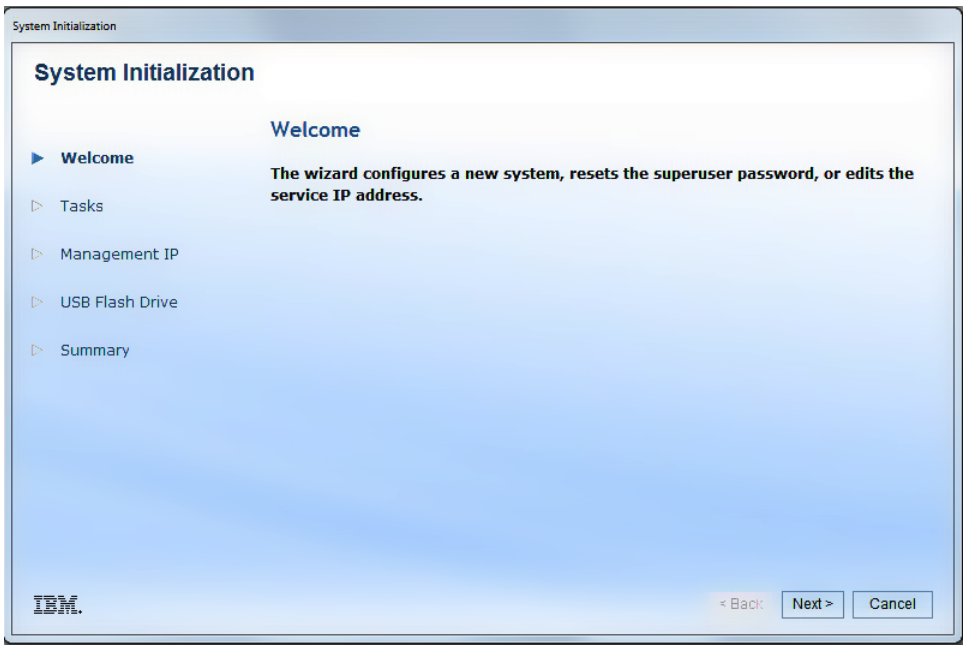


Figure 22. Initialization tool wizard

2. Click **Next**.
3. In the wizard, select **Tasks** > **Create a new system**.
4. Follow the instructions to specify the management address for your new system.
5. When the wizard prompts you, remove the USB flash drive from the personal computer.
6. Insert the USB flash drive in any USB port on the control enclosure. Initialization begins automatically. Initialization is complete when the amber **Fault** LED on the node canister stops blinking.
7. Remove the USB flash drive from the control enclosure and insert it into the USB port of the personal computer.
8. Click **Next**. The Summary pane and status of the system initialization are displayed.
9. If the system initialization completed successfully, click **Finish**. If you have a network connection to the Storwize system, the system management GUI is displayed.
10. Log in with the user ID **superuser** and the password **passw0rd**. The initialization wizard starts.
11. Follow the on-screen instructions to perform initial system configuration.

Initializing the system with an Apple Macintosh computer

This procedure is valid for Apple MacOS X 10.7.

Procedure

To initialize the system, complete the following steps.

1. To launch the initialization tool, open the USB flash drive from My Computer and double-click `InitTool.app`. The initialization tool wizard starts (Figure 23).

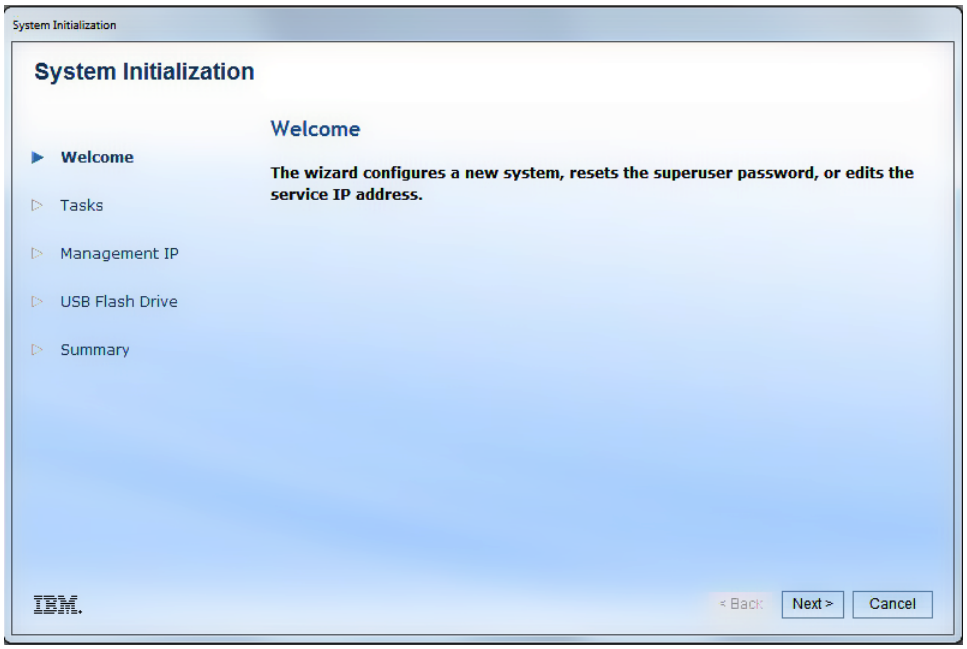


Figure 23. Initialization tool wizard

2. Click **Next**.
3. In the wizard, select **Tasks** > **Create a new system**.
4. Follow the instructions to specify the management address for your new system.
5. When the wizard prompts you, remove the USB flash drive from the personal computer.

   Note: You might receive warnings when removing the USB flash drive from the personal computer. These warnings can be safely ignored.
6. Insert the USB flash drive in any USB port on the control enclosure. Initialization begins automatically. Initialization is complete when the amber **Fault** LED on the node canister stops blinking.
7. Remove the USB flash drive from the control enclosure and insert it into the USB port of the personal computer.
8. Click **Next**. The Summary pane and status of the system initialization are displayed.
9. If the system initialization completed successfully, click **Finish**. If you have a network connection to the Storwize system, the system management GUI is displayed.

10. Log in with the user ID **superuser** and the password **passw0rd**. The initialization wizard starts.
11. Follow the on-screen instructions to perform initial system configuration.

Initializing the system with a Linux computer

This procedure is valid for Red Hat Enterprise Server 5 or Ubuntu desktop 11.04.

Procedure

To initialize the system, complete the following steps.

1. Ensure that the USB flash drive is mounted in a read/write mode.
   a. Find where the USB flash drive is mounted automatically. Type: `mount`
   b. Type: `lsusb`
   c. Note the device ID of the flash drive. This usually is `/dev/sdb1`.
   d. Unmount the drive. Type `sudo umount` *`device`* where *device* is the device ID you noted in step 1c.
   e. Create a mounted target folder. Type: `sudo mkdir /mnt/usb`
   f. Find your user ID. Type: `id`
   g. Mount the USB drive manually. Type:

      `sudo mount -t vfat -o` *`uid`*`=1000,rw` *`device`* `/mnt/usb`

      where *uid* is your user ID and *device* is the device ID you noted in step 1c.
2. To launch the initialization tool, open the `/mnt/usb` directory and double-click `InitTool.sh`. The initialization tool wizard starts (Figure 24).

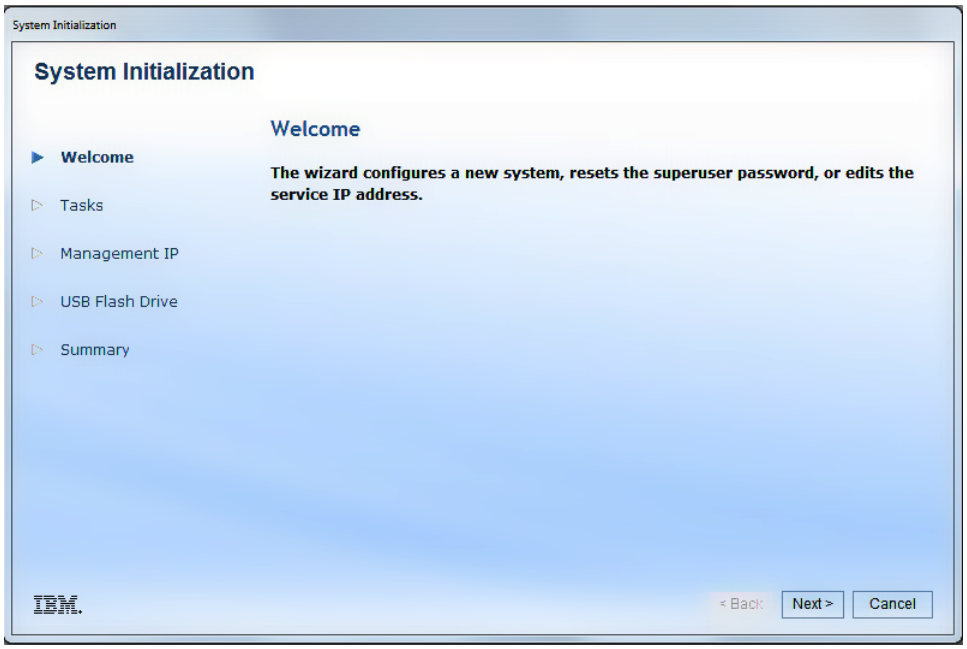


Figure 24. Initialization tool wizard

3. Click **Next**.
4. In the wizard, select **Tasks** > **Create a new system**.
5. Follow the instructions to specify the management address for your new system.
6. When the wizard prompts you, type `sudo umount -l` *`device`* where *device* is the device ID you noted in step 1c. The USB flash drive is unmounted in lazy mode.

7. When the wizard prompts you, remove the USB flash drive from the personal computer.
8. Insert the USB flash drive in any USB port on the control enclosure. Initialization begins automatically. Initialization is complete when the amber **Fault** LED on the node canister stops blinking.
9. Remove the USB flash drive from the control enclosure and insert it into the USB port of the personal computer.
10. Type the following command to remount the USB flash drive:

    ```
    sudo mount -t vfat -o uid=1000,rw device /mnt/usb
    ```

    where *uid* is your user ID and *device* is the device ID you noted in step 1c on page 29.
11. Click **Next**. The Summary pane and status of the system initialization are displayed.
12. If the system initialization completed successfully, click **Finish**. If you have a network connection to the Storwize system, the system management GUI is displayed.
13. Log in with the user ID **superuser** and the password **passw0rd**. The initialization wizard starts.
14. Follow the on-screen instructions to perform initial system configuration.

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Germany Electromagnetic compatibility directive

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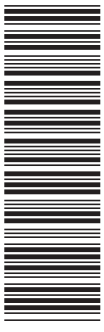

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