IBM Storwize V7000 Gen2

Quick Installation Guide

GC27-6500-02

Note

Before using this information and the product it supports, read the following information:

- The general information in "Notices" on page 39
- The information in the "Safety and environmental notices" on page ix
- The information in the *IBM Environmental Notices and User Guide* (provided on a DVD)

This edition applies to IBM Storwize V7000 and is valid until replaced by new editions.

Contents

Figures

Tables

Safety and environmental notices

Review the safety notices, environmental notices, and electronic emission notices for IBM® Storwize® V7000 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.

Here are examples of a caution and a danger notice:

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)

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 preceding examples, the numbers (C001) and (D002) are the identification numbers.
2. Locate the *IBM Storwize V7000 Safety Notices* with the user publications that were provided with the Storwize V7000 hardware.
3. Find the matching identification number in the *IBM Storwize V7000 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 V7000 website. Go to www.ibm.com/storage/support/storwize/v7000, search for Storwize V7000, and click the documentation link.

Safety notices and labels

Review the safety notices and safety information labels before using this product.

To view a PDF file, you need Adobe Acrobat Reader. You can download it at no charge from the Adobe website:

www.adobe.com/support/downloads/main.html

IBM Systems Safety Notices

This publication contains the safety notices for the IBM Systems products in English and other languages. Anyone who plans, installs, operates, or services the system must be familiar with and understand the safety notices. Read the related safety notices before you begin work.

Note: The IBM Systems Safety Notices document is organized into two sections. The danger and caution notices without labels are organized alphabetically by

language in the “Danger and caution notices by language” section. The danger and caution notices that are accompanied with a label are organized by label reference number in the “Labels” section.

The following notices and statements are used in IBM documents. They are listed in order of decreasing severity of potential hazards.

Danger notice definition
A special note that emphasizes a situation that is potentially lethal or extremely hazardous to people.

Caution notice definition
A special note that emphasizes a situation that is potentially hazardous to people because of some existing condition, or to a potentially dangerous situation that might develop because of some unsafe practice.

Note: In addition to these notices, labels might be attached to the product to warn of potential hazards.

Finding translated notices

Each safety notice contains an identification number. You can use this identification number to check the safety notice in each language.

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

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

   DANGER

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

   CAUTION:
   A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. (C001)
2. Open the IBM Systems Safety Notices.
3. Under the language, find the matching identification number. Review the topics about the safety notices to ensure that you are in compliance.

Note: This product was designed, tested, and manufactured to comply with IEC 60950-1, and where required, to relevant national standards that are based on IEC 60950-1.

Caution notices for the Storwize V7000

Ensure that you understand the caution notices for Storwize V7000.

Use the reference numbers in parentheses at the end of each notice, such as (C003) for example, to find the matching translated notice in *IBM Storwize V7000 Safety Notices*.

CAUTION:
The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do not: Throw or immerse into water, heat to more than 100°C (212°F), repair or disassemble. (C003)

CAUTION:
Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect the attached power cords, telecommunication systems, networks, and modems before you open the machine covers, unless instructed otherwise in the installation and configuration procedures. (26)

CAUTION:

- **Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.**
- **Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.**
- **Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.**
- **(For 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.**
- **(For fixed drawers) This drawer is a fixed drawer and must not be moved 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.**

(R001 part 2 of 2)

CAUTION:
Removing components from the upper positions in the rack cabinet improves rack stability during a relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building.

- **Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions.**
  - **Remove all devices in the 32U position and above.**
  - **Ensure that the heaviest devices are installed in the bottom of the rack cabinet.**
  - **Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.**
- **If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.**
- **If the rack cabinet you are relocating was supplied with removable outriggers they must be reinstalled before the cabinet is relocated.**
- **Inspect the route that you plan to take to eliminate potential hazards.**
- **Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.**
- **Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).**
- **Ensure that all devices, shelves, drawers, doors, and cables are secure.**
- **Ensure that the four leveling pads are raised to their highest position.**
- **Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.**
- **Do not use a ramp inclined at more than 10 degrees.**
- **When the rack cabinet is in the new location, complete the following steps:**
  - **Lower the four leveling pads.**
  - **Install stabilizer brackets on the rack cabinet.**
  - **If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.**
- **If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off the pallet and bolt the rack cabinet to the pallet.**

(R002)

CAUTION:

- **Rack is not intended to serve as an enclosure and does not provide any degrees of protection required of enclosures.**
- **It is intended that equipment installed within this rack will have its own enclosure. (R005).**

CAUTION:
Tighten the stabilizer brackets until they are flush against the rack. (R006)

CAUTION:
Use safe practices when lifting. (R007)

CAUTION:
Do not place any object on top of a rack-mounted device unless that rack-mounted device is intended for use as a shelf. (R008)

CAUTION:
If the rack is designed to be coupled to another rack only the same model rack should be coupled together with another same model rack. (R009)

Danger notices for Storwize V7000

Ensure that you are familiar with the danger notices for Storwize V7000.

Use the reference numbers in parentheses at the end of each notice, such as (C003) for example, to find the matching translated notice in *IBM Storwize V7000 Safety Notices*.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- **If IBM supplied a power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.**
- **Do not open or service any power supply assembly.**
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.**
- **Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.**
- **Connect any equipment that will be attached to this product to properly wired outlets.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.**

  To disconnect:

  1. **Turn off everything (unless instructed otherwise).**
  2. **Remove the power cords from the outlets.**
  3. **Remove the signal cables from the connectors.**
  4. **Remove all cables from the devices.**

  To connect:

  1. **Turn off everything (unless instructed otherwise).**
  2. **Attach all cables to the devices.**
  3. **Attach the signal cables to the connectors.**
  4. **Attach the power cords to the outlets.**
  5. **Turn on the devices.**
- **Sharp edges, corners and joints might be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)**

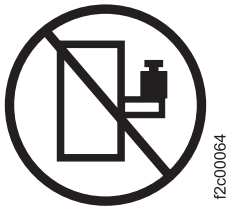
DANGER

Heavy equipment–personal injury or equipment damage might result if mishandled. (D006)

DANGER

Observe the following precautions when working on or around your IT rack system:

- **Heavy equipment–personal injury or equipment damage might result if mishandled.**
- **Always lower the leveling pads on the rack cabinet.**
- **Always install stabilizer brackets on the rack cabinet.**
- **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.**
- **Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.**



- **Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.**
- **Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.**
- **An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.**

(R001 part 1 of 2)

DANGER

Racks with a total weight of > 227 kg (500 lb.), Use Only Professional Movers! (R003)

DANGER

Do not transport the rack via fork truck unless it is properly packaged, secured on top of the supplied pallet. (R004)

DANGER

Main Protective Earth (Ground):

This symbol is marked on the frame of the rack.

The PROTECTIVE EARTHING CONDUCTORS should be terminated at that point. A recognized or certified closed loop connector (ring terminal) should be used and secured to the frame with a lock washer using a bolt or stud. The connector should be properly sized to be suitable for the bolt or stud, the locking washer, the rating for the conducting wire used, and the considered rating of the breaker. The intent is to ensure the frame is electrically bonded to the PROTECTIVE EARTHING CONDUCTORS. The hole that the bolt or stud goes into where the terminal conductor and the lock washer contact should be free of any non-conductive material to allow for metal to metal contact. All PROTECTIVE EARTHING CONDUCTORS should terminate at this main protective earthing terminal or at points marked with ⏚. (R010)

Special caution and safety notices

This information describes special safety notices that apply to the Storwize V7000. These notices are in addition to the standard safety notices supplied and address specific issues relevant to the equipment provided.

General safety

When you service the Storwize V7000, follow general safety guidelines.

Use the following general rules to ensure safety to yourself and others.

- Observe good housekeeping in the area where the devices are kept during and after maintenance.
- Follow the guidelines when lifting any heavy object:
  1. Ensure that you can stand safely without slipping.
  2. Distribute the weight of the object equally between your feet.
  3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
  4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 18 kg (40 lb) or objects that you think are too heavy for you.*
- Do not perform any action that causes a hazard or makes the equipment unsafe.
- Before you start the device, ensure that other personnel are not in a hazardous position.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the unit.
- Keep your tool case away from walk areas so that other people cannot trip over it.
- Do not wear loose clothing that can be trapped in the moving parts of a device. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.

- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconducting clip, approximately 8 cm (3 in.) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

  Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are hammering, drilling, soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly after you have finished servicing the unit.

Handling static-sensitive devices

Ensure that you understand how to handle devices that are sensitive to static electricity.

Attention: Static electricity can damage electronic devices and your system. To avoid damage, keep static-sensitive devices in their static-protective bags until you are ready to install them.

To reduce the possibility of electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- Handle the device carefully, holding it by its edges or frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and possibly damage the device.
- While the device is still in its antistatic bag, touch it to an unpainted metal part of the system unit for at least two seconds. (This action removes static electricity from the package and from your body.)
- Remove the device from its package and install it directly into your Storwize V7000, without putting it down. If it is necessary to put the device down, place it onto its static-protective bag. (If your device is an adapter, place it component-side up.) Do not place the device onto the cover of the Storwize V7000 or onto a metal table.
- Take additional care when you handle devices during cold weather. Indoor humidity tends to decrease in cold weather, causing an increase in static electricity.

Environmental notices

The IBM Systems Environmental Notices and User Guide (ftp://public.dhe.ibm.com/systems/support/warranty/envnotices/environmental_notices_and_user_guide.pdf), Z125-5823 document contains all the required environmental notices for IBM Systems products in English and other languages.

It includes statements on limitations, product information, product recycling and disposal, battery information, flat panel display, refrigeration, and water-cooling systems, external power supplies, and safety data sheets.

To view a PDF file, you need Adobe Reader. You can download it at no charge from the Adobe web site (get.adobe.com/reader/).

About this guide

This publication provides information that helps you install and initialize IBM Storwize V7000.

Who should use this guide

This guide is intended for installers of Storwize V7000.

Before configuring your system, ensure that you follow the procedures as listed. Be sure to gather IP addresses that you will need before you begin the installation.

Storwize V7000 library and related publications

Product manuals, other publications, and websites contain information that relates to Storwize V7000.

Storwize V7000 Information Center

The IBM Information Center contains all of the information that is required to install, configure, and manage the system. The information center is updated between product releases to provide the most current documentation. The information center is available at the following website:

publib.boulder.ibm.com/infocenter/storwize/ic/index.jsp

Storwize V7000 library

Unless otherwise noted, the publications in the Storwize V7000 library are available in Adobe portable document format (PDF) from the following website:

www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss

Click on **Search for publications** to find the online publications you are interested in, and then view or download the publication by clicking the appropriate item.

Table 1 lists websites where you can find help, services, and more information.

Table 1. IBM websites for help, services, and information

Website	Address
Directory of worldwide contacts	http://www.ibm.com/planetwide
Support for Storwize V7000 (2076)	www.ibm.com/storage/support/storwize/v7000
Support for IBM System Storage® and IBM TotalStorage products	www.ibm.com/storage/support/

Each of the PDF publications in the Table 2 on page xx library is also available in the information center by clicking the number in the “Order number” column:

Table 2. Storwize V7000 library

Title	Description	Order number
IBM Storwize V7000 Gen2 Quick Installation Guide	This guide provides detailed instructions for unpacking your shipping order and installing your system. The first of three chapters describes verifying your order, becoming familiar with the hardware components, and meeting environmental requirements. The second chapter describes installing the hardware and attaching data cables and power cords. The last chapter describes accessing the management GUI to initially configure your system.	GC27-6500
IBM Storwize V7000 Quick Installation Guide	This guide provides detailed instructions for unpacking your shipping order and installing your system. The first of three chapters describes verifying your order, becoming familiar with the hardware components, and meeting environmental requirements. The second chapter describes installing the hardware and attaching data cables and power cords. The last chapter describes accessing the management GUI to initially configure your system.	GC27-2290
IBM Storwize V7000 Expansion Enclosure Installation Guide, Machine type 2076	This guide provides instructions for unpacking your shipping order and installing the 2076 expansion enclosure for the Storwize V7000 system.	GC27-4234
IBM Storwize V7000 Troubleshooting, Recovery, and Maintenance Guide	This guide describes how to service, maintain, and troubleshoot the Storwize V7000 system.	GC27-2291
Storwize V7000 Gen2 Installation Poster	The installation poster provides an illustrated sequence of steps for installing the enclosure in a rack and beginning the setup process.	GC27-6608

Table 2. Storwize V7000 library (continued)

Title	Description	Order number
IBM Systems Safety Notices	This guide contains translated caution and danger statements. Each caution and danger statement in the Storwize V7000 documentation has a number that you can use to locate the corresponding statement in your language in the *IBM Systems Safety Notices* document.	G229-9054
IBM Storwize V7000 Read First Flyer	This document introduces the major components of the Storwize V7000 system and describes how to get started with the *IBM Storwize V7000 Quick Installation Guide*.	GC27-2293
IBM System Storage SAN Volume Controller and IBM Storwize V7000 Command-Line Interface User's Guide	This guide describes the commands that you can use from the Storwize V7000 command-line interface (CLI).	GC27-2287
IBM Statement of Limited Warranty (2145 and 2076)	This multilingual document provides information about the IBM warranty for machine types 2145 and 2076.	Part number: 4377322
IBM License Agreement for Machine Code	This multilingual guide contains the License Agreement for Machine Code for the Storwize V7000 product.	SC28-6872 (contains Z125-5468)

IBM documentation and related websites

Table 3 lists websites that provide publications and other information about the Storwize V7000 or related products or technologies. The IBM Redbooks® publications provide positioning and value guidance, installation and implementation experiences, solution scenarios, and step-by-step procedures for a variety of products.

Table 3. IBM documentation and related websites

Website	Address
IBM Storage Management Pack for Microsoft System Center Operations Manager (SCOM)	The IBM Storage Host Software Solutions Information Center describes how to install, configure, and use the IBM Storage Management Pack for Microsoft System Center Operations Manager.

Table 3. IBM documentation and related websites (continued)

Website	Address
IBM Storage Management Console for VMware vCenter	The IBM Storage Host Software Solutions Information Center describes how to install, configure, and use the IBM Storage Management Console for VMware vCenter, which enables Storwize V7000 and other IBM storage systems to be integrated in VMware vCenter environments.
IBM Storage Device Driver for VMware VAAI	IBM Storage Host Software Solutions Information Center describes how to install, configure, and use the IBM Storage Device Driver for VMware VAAI.
IBM Storwize V7000 Adapter for VMware vCenter Site Recovery Manager	The VMware website describes how to install, configure, and use the IBM Storwize V7000 Adapter for VMware vCenter Site Recovery Manager.
IBM Publications Center	www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss
IBM Redbooks publications	www.redbooks.ibm.com/

Related accessibility information

To view a PDF file, you need Adobe Reader, which can be downloaded from the Adobe website:

www.adobe.com/support/downloads/main.html

How to order IBM publications

The IBM Publications Center is a worldwide central repository for IBM product publications and marketing material.

The IBM Publications Center offers customized search functions to help you find the publications that you need. Some publications are available for you to view or download at no charge. You can also order publications. The publications center displays prices in your local currency. You can access the IBM Publications Center through the following website:

www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss

Related websites

The following websites provide information about Storwize V7000 or related products or technologies:

Type of information	Website
Storwize V7000 support	www.ibm.com/storage/support/storwize/v7000
Technical support for IBM storage products	www.ibm.com/storage/support/
IBM Electronic Support registration	www.ibm.com/electronicsupport

Sending your comments

Your feedback is important in helping to provide the most accurate and highest quality information.

To submit any comments about this book or any other Storwize V7000 documentation, send your comments by email to starpubs@us.ibm.com. Include the following information in your email:

- Publication title
- Publication form number
- Page, table, or illustration numbers that you are commenting on
- A detailed description of any information that should be changed

How to get information, help, and technical assistance

If you need help, service, technical assistance, or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you.

Information

IBM maintains pages on the web where you can get information about IBM products and fee services, product implementation and usage assistance, break and fix service support, and the latest technical information. For more information, refer to Table 4.

Table 4. IBM websites for help, services, and information

Website	Address
Directory of worldwide contacts	http://www.ibm.com/planetwide
Support for Storwize V7000 (2076)	www.ibm.com/storage/support/storwize/v7000
Support for IBM System Storage and IBM TotalStorage products	www.ibm.com/storage/support/

Note: Available services, telephone numbers, and web links are subject to change without notice.

Help and service

Before calling for support, be sure to have your IBM Customer Number available. If you are in the US or Canada, you can call 1 (800) IBM SERV for help and service. From other parts of the world, see http://www.ibm.com/planetwide for the number that you can call.

When calling from the US or Canada, choose the **storage** option. The agent decides where to route your call, to either storage software or storage hardware, depending on the nature of your problem.

If you call from somewhere other than the US or Canada, you must choose the **software** or **hardware** option when calling for assistance. Choose the **software** option if you are uncertain if the problem involves the Storwize V7000 software or hardware. Choose the **hardware** option only if you are certain the problem solely involves the Storwize V7000 hardware. When calling IBM for service regarding the product, follow these guidelines for the **software** and **hardware** options:

Software option
Identify the Storwize V7000 product as your product and supply your customer number as proof of purchase. The customer number is a 7-digit number (0000000 to 9999999) assigned by IBM when the product is purchased. Your customer number should be located on the customer information worksheet or on the invoice from your storage purchase. If asked for an operating system, use **Storage**.

Hardware option
Provide the serial number and appropriate 4-digit machine type. For Storwize V7000, the machine type is 2076.

In the US and Canada, hardware service and support can be extended to 24x7 on the same day. The base warranty is 9x5 on the next business day.

Getting help online

You can find information about products, solutions, partners, and support on the IBM website.

To find up-to-date information about products, services, and partners, visit the IBM website at www.ibm.com/storage/support/storwize/v7000.

Before you call

Make sure that you have taken steps to try to solve the problem yourself before you call.

Some suggestions for resolving the problem before calling IBM Support include:

- Check all cables to make sure that they are connected.
- Check all power switches to make sure that the system and optional devices are turned on.
- Use the troubleshooting information in your system documentation. The troubleshooting section of the information center contains procedures to help you diagnose problems.
- Go to the IBM Support website at www.ibm.com/storage/support/storwize/v7000 to check for technical information, hints, tips, and new device drivers or to submit a request for information.

Using the documentation

Information about your IBM storage system is available in the documentation that comes with the product.

That documentation includes printed documents, online documents, readme files, and help files in addition to the information center. See the troubleshooting information for diagnostic instructions. The troubleshooting procedure might require you to download updated device drivers or software. IBM maintains pages on the web where you can get the latest technical information and download device drivers and updates. To access these pages, go to www.ibm.com/storage/support/storwize/v7000 and follow the instructions. Also, some documents are available through the IBM Publications Center.

Sign up for the Support Line Offering

If you have questions about how to use and configure the machine, sign up for the IBM Support Line offering to get a professional answer.

The maintenance supplied with the system provides support when there is a problem with a hardware component or a fault in the system machine code. At times, you might need expert advice about using a function provided by the system or about how to configure the system. Purchasing the IBM Support Line offering gives you access to this professional advice while deploying your system, and in the future.

Contact your local IBM sales representative or the IBM Remote Technical Support Center for availability and purchase information.

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 11 involve installing the hardware and attaching the data cables and power cords.
3. Chapter 3, "Configuring the system," on page 29 helps you create your configuration file and access the management GUI. The management GUI guides you through the initial configuration process.

Important information:

- This guide presumes that you have read the planning information regarding your physical environment that is available from the Storwize V7000 Information Center.
- Ensure that any cables that you are supplying are available for installation.

Installation scenarios

Depending on your order, this documentation steps you through setting up your system for the following scenarios:

- **Setting up a new system that consists of a control enclosure only.** In this case, you are not installing any expansion enclosures.
- **Setting up a new system that consists of a control enclosure and one or more expansion enclosures.**
- **Adding an expansion enclosure to an existing system.** In this case, you initially installed a control enclosure (and, optionally, one or more expansion enclosures). You want to add an expansion enclosure to your existing system. You do not need to power off the system. You can add an expansion enclosure while the system is operational.
- **Adding a control enclosure (either by itself or with one or more expansion enclosures) to an existing system.** You do not need to power off the system. You can add a control enclosure while the system is operational.
- **Setting up a new system that consists of more than one control enclosure.** Install the first control enclosure and then the required expansion enclosures. For each additional control enclosure, complete the setup as if you were adding it to an existing system.

Table 5 on page 2 lists the steps for each scenario.

Table 5. Steps for different installation scenarios

New system (control enclosure only)	New system (control enclosure and one or more expansion enclosures)	Adding expansion enclosures to an existing system	Adding control enclosures and expansion enclosures to an existing system
"Reviewing your packing slip" on page 5	"Reviewing your packing slip" on page 5	"Reviewing your packing slip" on page 5	"Reviewing your packing slip" on page 5
"Identifying the hardware components" on page 6	"Identifying the hardware components" on page 6	"Identifying the hardware components" on page 6	"Identifying the hardware components" on page 6
"Verifying environmental requirements" on page 9	"Verifying environmental requirements" on page 9	"Verifying environmental requirements" on page 9	"Verifying environmental requirements" on page 9
"Reviewing enclosure location guidelines" on page 9	"Reviewing enclosure location guidelines" on page 9	"Reviewing enclosure location guidelines" on page 9	"Reviewing enclosure location guidelines" on page 9
"Installing support rails for the control enclosure" on page 11	"Installing support rails for the control enclosure" on page 11 "Installing support rails for expansion enclosures" on page 15	"Installing support rails for expansion enclosures" on page 15[1]	"Installing support rails for the control enclosure" on page 11 "Installing support rails for expansion enclosures" on page 15[2]
"Installing the enclosures" on page 19	"Installing the enclosures" on page 19	"Installing the enclosures" on page 19[1]	"Installing the enclosures" on page 19[2]
"Connecting Ethernet cables to node canisters" on page 24	"Connecting SAS cables to expansion enclosures" on page 21	"Connecting SAS cables to expansion enclosures" on page 21[1]	"Connecting SAS cables to expansion enclosures" on page 21[1]
"Connecting Fibre Channel cables to a 10 Gbps iSCSI-FCoE 4-port host interface card" on page 25	"Connecting Ethernet cables to node canisters" on page 24	"Powering on the system" on page 27[1]	"Connecting Ethernet cables to node canisters" on page 24[2]
"Powering on the system" on page 27	"Connecting Ethernet cables to node canisters" on page 24	"Adding an expansion enclosure to an existing system" on page 33	
Chapter 3, "Configuring the system," on page 29	"Powering on the system" on page 27		"Powering on the system" on page 27
	Chapter 3, "Configuring the system," on page 29		"Adding a control enclosure to an existing system" on page 33

Table 5. Steps for different installation scenarios (continued)

New system (control enclosure only)	New system (control enclosure and one or more expansion enclosures)	Adding expansion enclosures to an existing system	Adding control enclosures and expansion enclosures to an existing system
[1]Complete these steps for each expansion enclosure that you add. [2]Complete these steps for each control enclosure and expansion enclosure that you add.			

Be familiar with the following information

- See "Caution notices for the Storwize V7000" on page x and "Danger notices for Storwize V7000" on page xiii for a summary of the situations that can be potentially hazardous to you. Before installing, read and understand the following caution and danger statements.
- Use safe practices when lifting. The fully populated enclosure weighs about 37 kg (82 lbs). At least three people are required to lift and install the enclosure into the rack or to remove an enclosure from the rack.

  CAUTION:
  Use safe practices when lifting.

  (27)

  Also keep in mind that a rack full of equipment is extremely heavy.

  DANGER: Heavy equipment–personal injury or equipment damage might result if mishandled. (D006)
- The following general precautions should be observed, even though the power-on steps differ slightly from the directions that you will follow for this product:

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- **If IBM supplied a power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.**
- **Do not open or service any power supply assembly.**
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.**
- **Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.**
- **Connect any equipment that will be attached to this product to properly wired outlets.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.**

  To disconnect:

  1. **Turn off everything (unless instructed otherwise).**
  2. **Remove the power cords from the outlets.**
  3. **Remove the signal cables from the connectors.**
  4. **Remove all cables from the devices.**

  To connect:

  1. **Turn off everything (unless instructed otherwise).**
  2. **Attach all cables to the devices.**
  3. **Attach the signal cables to the connectors.**
  4. **Attach the power cords to the outlets.**
  5. **Turn on the devices.**
- **Sharp edges, corners and joints might be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)**

Tools needed

A flat-blade screwdriver with a 7 mm (1/4 inch) head is the only tool needed for 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 extra 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 or expansion enclosure (Table 6):

Table 6. Storwize V7000 model numbers

Machine type/model	Warranty	Description
2076-524	3 years	IBM Storwize V7000 Control Enclosure
2076-12F	3 years	IBM Storwize V7000 12-slot Expansion Enclosure for 3.5-inch drives
2076-24F	3 years	IBM Storwize V7000 24-slot Expansion Enclosure for 2.5-inch drives

__ • Rack-mounting hardware kit, including:
  - __ – Two rails (right and left assembly)
  - __ – Two rail springs
  - __ – Two sets of rail mounting screws and 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

Options applicable to control enclosures

Note: All options other than cables are preinstalled.

__ • Cache Memory Upgrade

__ • 4-port 8 Gbps Fibre Channel host interface card with 2 small form-factor pluggable (SFP) transceivers installed

__ • Fibre Channel cables

__ • SAS cables

__ • 4-port 10 Gbps iSCSI / FCoE host interface card

__ • Compression accelerator card

__ • Drives

__ • Power cords for connection to wall sockets

Options applicable to expansion enclosures

Note: All options other than cables are preinstalled.

__ • Expansion enclosure attachment 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 and expansion 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.

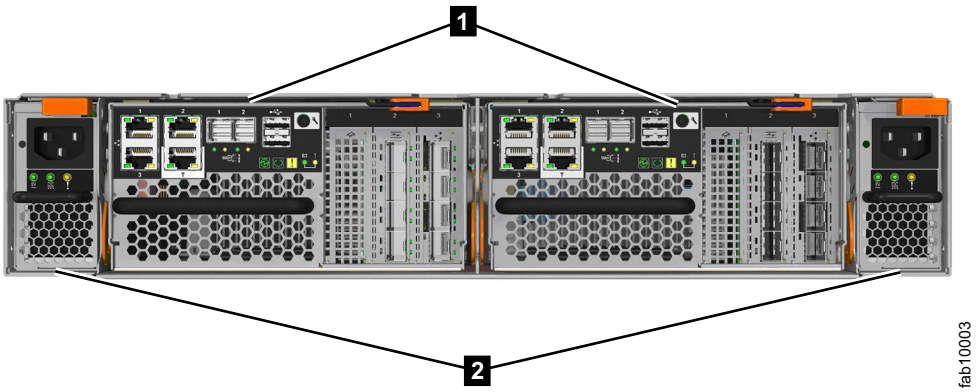


Figure 1. Rear view of a Storwize V7000 control enclosure

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

Figure 2 shows the rear view of a Storwize V7000 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.
- **2** Ethernet ports. Each canister has four 1 Gbps Ethernet ports.

  Port 1 Must be connected for system management. Can optionally be used for iSCSI host connectivity.

  Port 2 Optional. Can be used for iSCSI host connectivity or to provide an alternative (redundant) management address.

  Port 3 Optional. Can be used for iSCSI host connectivity.

  Port T Technician port. Can be connected directly to a computer for service access and system initialization.

- **3** Serial-attached SCSI (SAS) ports. Each canister has two SAS ports for connecting to optional expansion enclosures.

Control enclosure support rails

The left and right control enclosure support rails (Figure 3) are designed specifically for installation of a control enclosure.

- The ledge on the inside of the rails supports the entire length of a control enclosure.
- At the rear end of the control enclosure support rail, the top edge curves over to capture the top edge of an inserted control enclosure. This prevents the installed control enclosure bouncing when the rack is subjected to quake or vibration.
- The control enclosure support rails adjust to fit racks from 685 mm to 765 mm deep, measured between the front and rear rack rails.

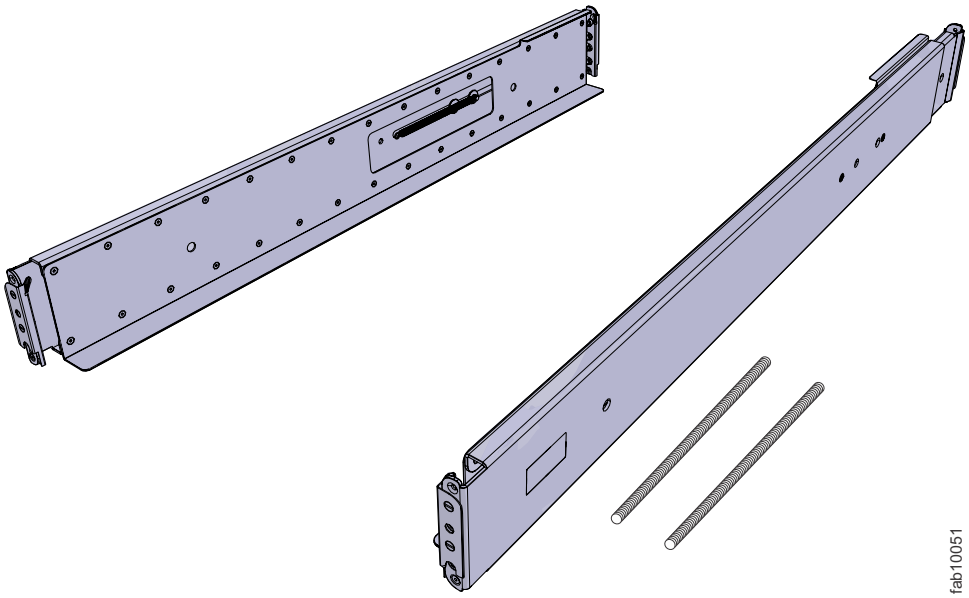


Figure 3. Control enclosure support rails

Expansion enclosure components

Figure 4 on page 8 shows the rear view of an expansion enclosure and identifies the location of power supply units and expansion canisters.

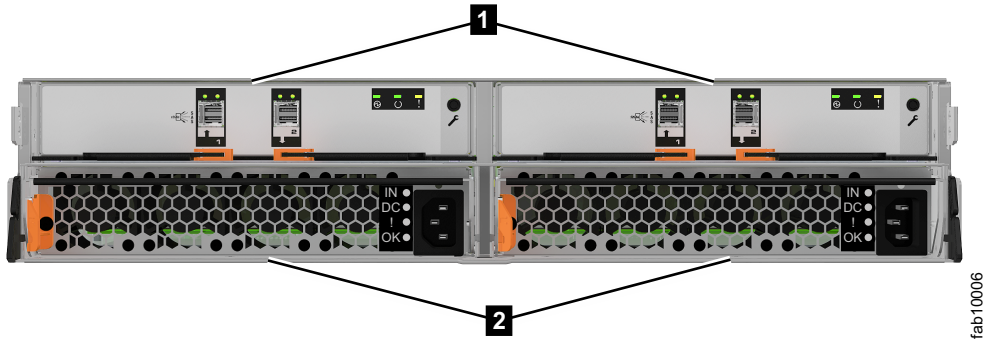


Figure 4. Rear view of a Storwize V7000 expansion enclosure

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

Figure 5 shows the rear view of an expansion canister and identifies the SAS port locations.

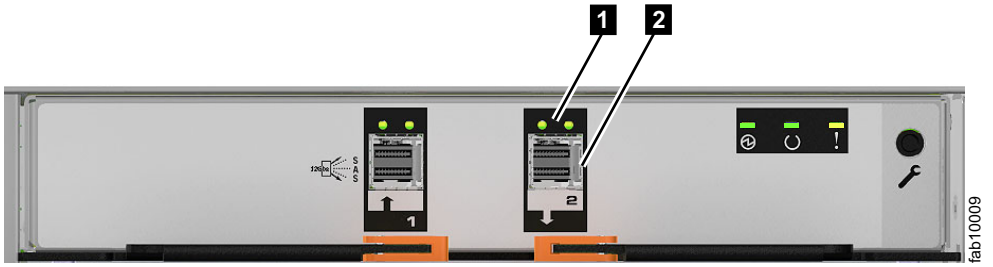


Figure 5. SAS ports and LEDs in rear of expansion canister

- **1** LEDs
- **2** SAS ports

Each canister has two SAS ports that are numbered 1 on the left and 2 on the right. Port 1 is used to connect to a SAS expansion port on a node canister or port 2 of another expansion canister.

The left and right expansion enclosure support rails (Figure 6 on page 9) are designed specifically for installation of an expansion enclosure.

- The ledge on the inside of each rail supports the entire length of an expansion enclosure.
- The expansion enclosure support rails capture the left and right rear edges of an inserted expansion enclosure. This prevents the installed control enclosure bouncing when the rack is subjected to quake or vibration.
- The expansion enclosure support rails adjust to fit racks from 595 mm to 755 mm deep, measured between the front and rear rack rails.

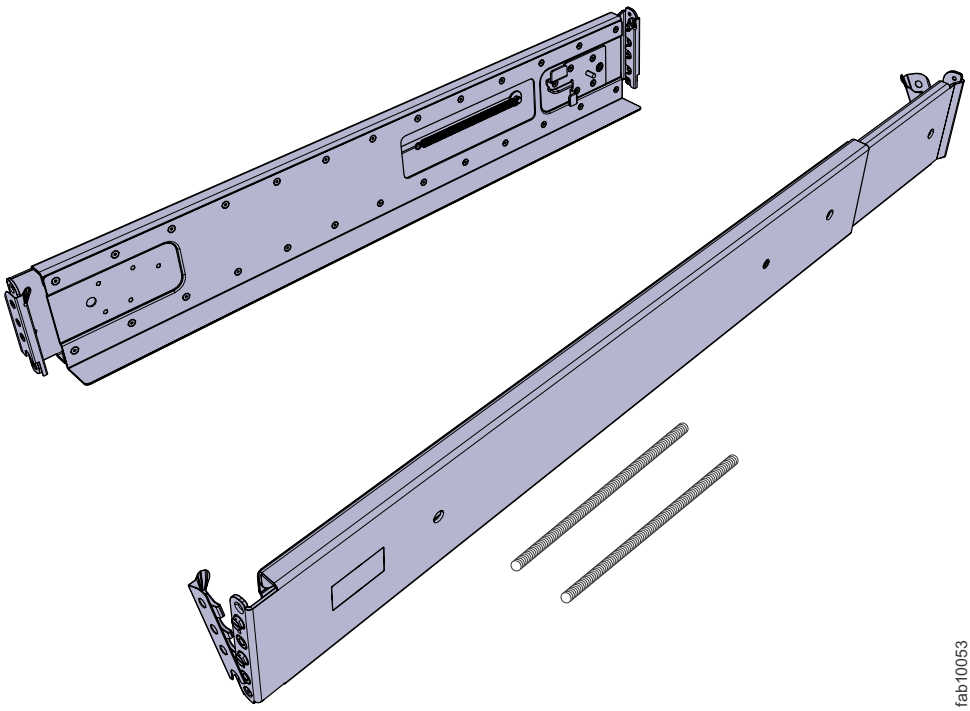


Figure 6. Expansion enclosure support rails

Verifying environmental requirements

The environmental and electrical requirements for the physical site must be met to ensure that your system works reliably.

Before installing Storwize V7000, you must verify that adequate space in a suitable rack is available and that requirements for power and environmental conditions are met.

This guide 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 V7000 physical installation planning" topic in the Storwize V7000 Information Center.

Reviewing enclosure location guidelines

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

Installing a control enclosure only

If you are installing a control enclosure only, follow these guidelines.

- Position the enclosure in the rack so that you can easily view it and access it for servicing.
- Locate the enclosure low enough for the rack to remain stable.
- Ensure that you provide a way for two or more people to install and remove the enclosure.

Installing a control enclosure and one or more expansion enclosures

If you are installing a control enclosure plus one or more expansion enclosures, follow these guidelines.

- A Storwize V7000 system can support up to 1056 drives installed into control and expansion enclosures. Each enclosure requires 2U of rack space.
- Each assembled enclosure weighs more than 36kg. There must be sufficient space at the front of the rack for three persons to carry the enclosure safely.
- Each system can consist of up to four control enclosures. Each control enclosure can be connected to up to 20 expansion enclosures (two SAS chains of up to 10 expansion enclosures each).
- For best performance, the total number of expansion enclosures to be installed should be divided between each control enclosure in the system.
- Where expansion enclosures are to be installed, distribute them evenly into rack space above and below the control enclosure that they will connect to, without leaving gaps between the enclosures. This aids cabling and serviceability.
- Leave space in the rack for future expansion enclosures, but otherwise install all enclosures that constitute one system in adjacent or nearby rack space.
- If a rack is to be only partially filled, install the enclosures low enough for the rack to remain stable and enable easy access to the enclosures for servicing.

Adding an expansion enclosure to an existing system

If you are adding an expansion enclosure to an existing system, follow these guidelines.

- You do not need to power off the system. You can add an expansion enclosure while the system is operational.
- Add the first expansion enclosure directly below the control enclosure.
- Add the second expansion enclosure directly above the control enclosure.
- Add the third expansion enclosure directly below the first.
- Add the fourth expansion directly above the second, and so on.

Chapter 2. Installing the hardware

After verifying that you have all of the hardware components that you require, you can install them.

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 enclosures. You are now ready to begin installing the hardware components and connecting the data cables and power cords.

Installing support rails for the control enclosure

Before you install the control enclosure, you must first install the support rails for it.

Procedure

To install the support rails for the control enclosure, complete the following steps.

1. Locate the control enclosure rails (Figure 7). The rail assembly consists of two rails that must be installed in the rack cabinet.

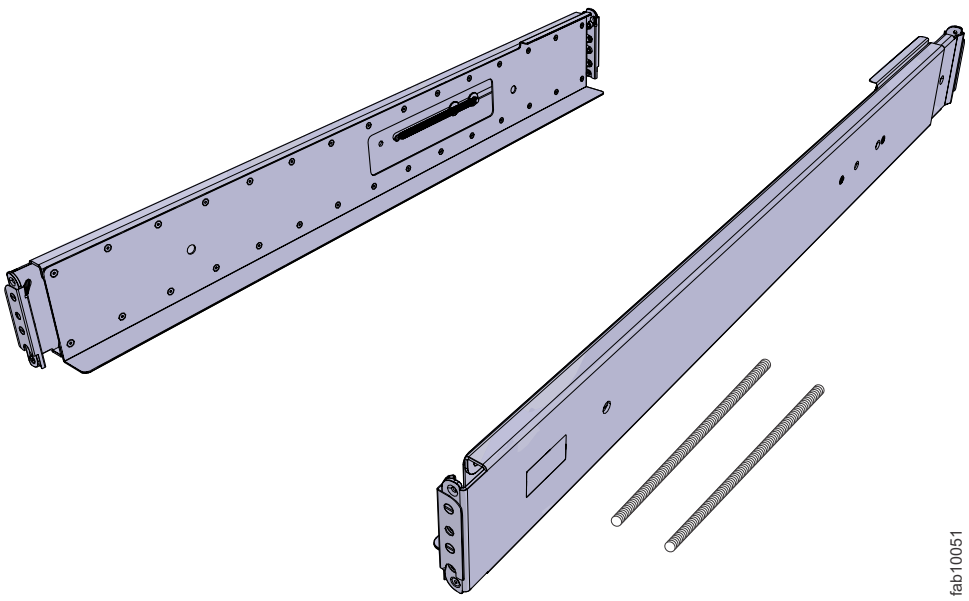


Figure 7. Control enclosure support rails

2. Install a spring on each rail.
   a. Extend the rail to its full length.
   b. Push one looped end of a spring over one stud on the inside of the rail. (See Figure 8 on page 12.)

      Note: Some models of rail have the studs on the outside of the rail.
   c. Stretch the spring slightly and push the other looped end of the spring onto the other stud on the inside of the rail.

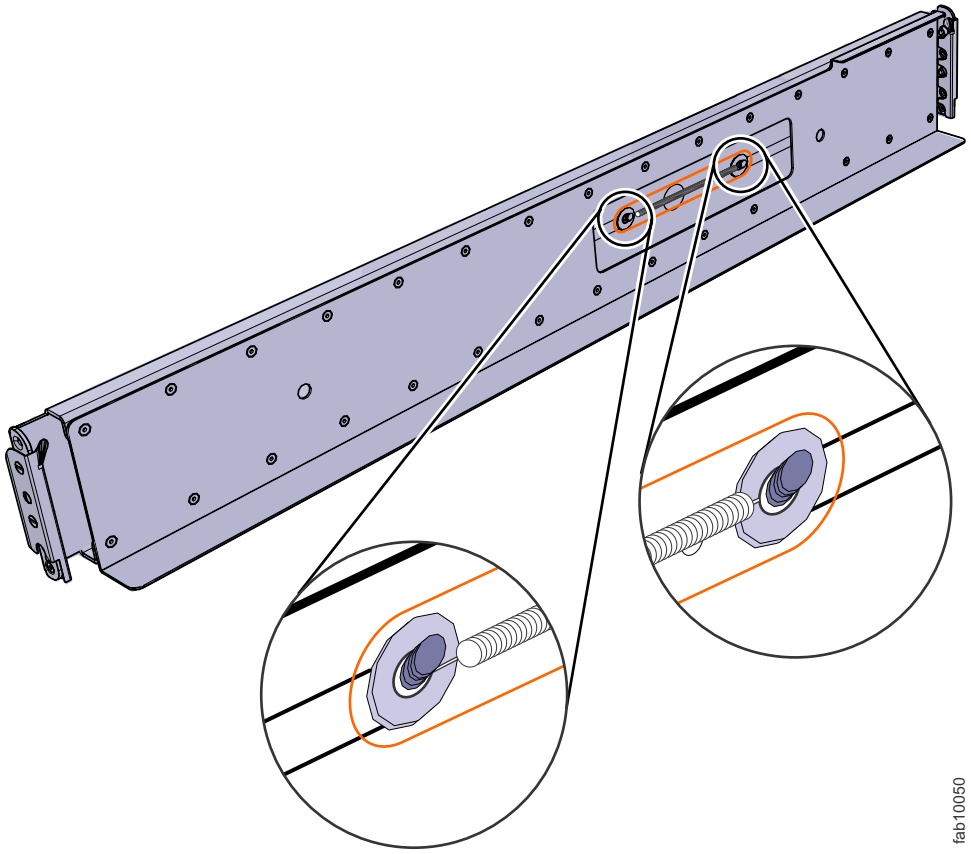


Figure 8. Installing the rail spring

3. Working at the front of the rack cabinet, identify the two standard rack units (2U) of space in the rack into which you want to install the support rails.

   Figure 9 on page 13 shows two rack units with the front mounting holes identified.

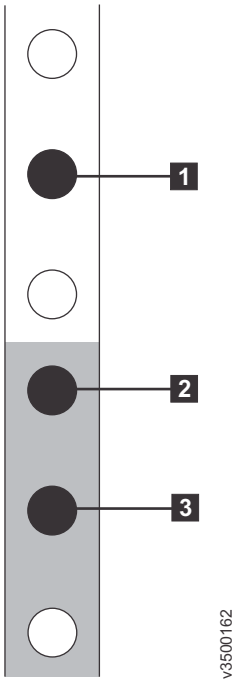


Figure 9. Hole locations in the front of the rack

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

4. Ensure that the appropriate bracket pins are installed in the front and rear bracket of each rail. Each rail comes with four medium pins preinstalled (two in the front bracket and two in the rear bracket). Large and small pins are provided separately. Use the pins that are appropriate for the mounting holes in your rack (see Table 7).

Table 7. Selecting bracket pins for your rack

Mounting holes	**Bracket pins**
Round, unthreaded	Use the preinstalled medium pins.
Round, threaded	Unscrew the medium pins and replace with the smaller pins supplied with the rails.
Square	Unscrew the medium pins and replace with the large pins supplied with the rails.

5. At each end of the rail, grasp the tab **1** and pull *firmly* to open the hinge bracket. (See Figure 10 on page 14.)

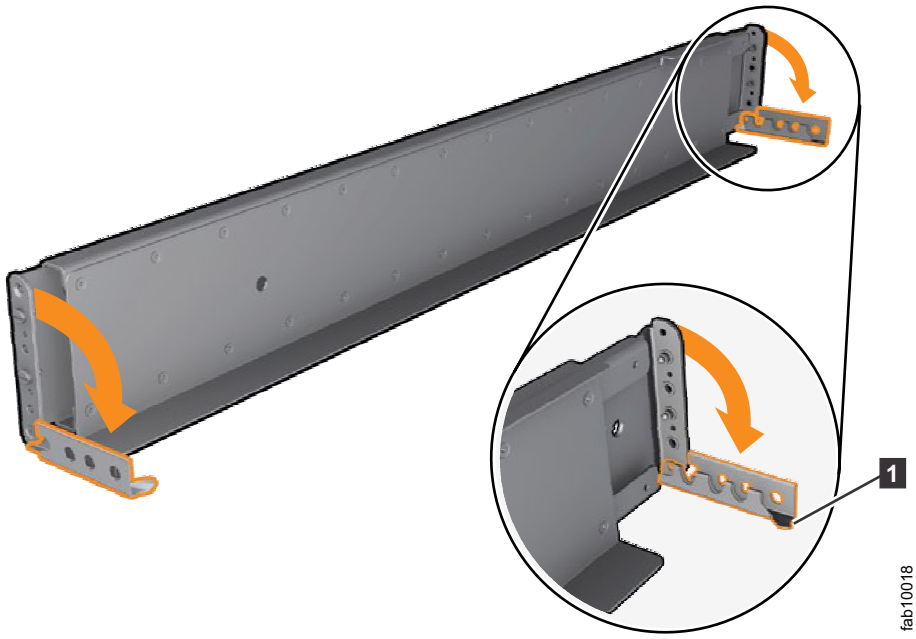


Figure 10. Opening the hinge brackets

6. 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.
7. On the rear of the rail, press the two bracket pins into the holes in the rack flanges.
8. Close the rear hinge bracket to secure the rail to the rack cabinet flange. (See Figure 11.)

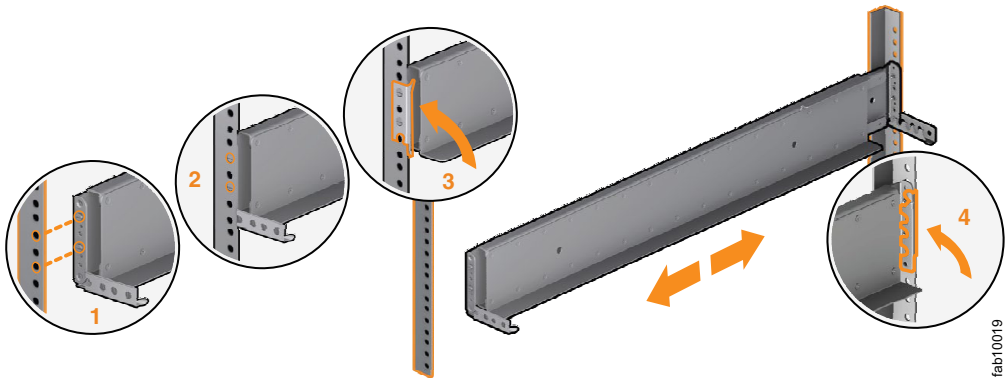


Figure 11. Closing the hinge brackets

9. On the front of the rail, press the two bracket pins into the holes in the rack flanges.
10. Close the front hinge bracket to secure the rail to the rack cabinet flange. (See Figure 11.)
11. Secure the rear of the rail to the rear rack flange with an M5 screw.
12. Repeat the steps to secure the opposite rail to the rack cabinet.
13. Repeat the procedure to install rails for each additional control enclosure.

Installing support rails for expansion enclosures

Before installing expansion enclosures, you must first install support rails.

Procedure

To install the support rails, complete the following steps.

1. Locate the expansion enclosure rails (Figure 12). The rail assembly consists of two rails that must be installed in the rack cabinet.

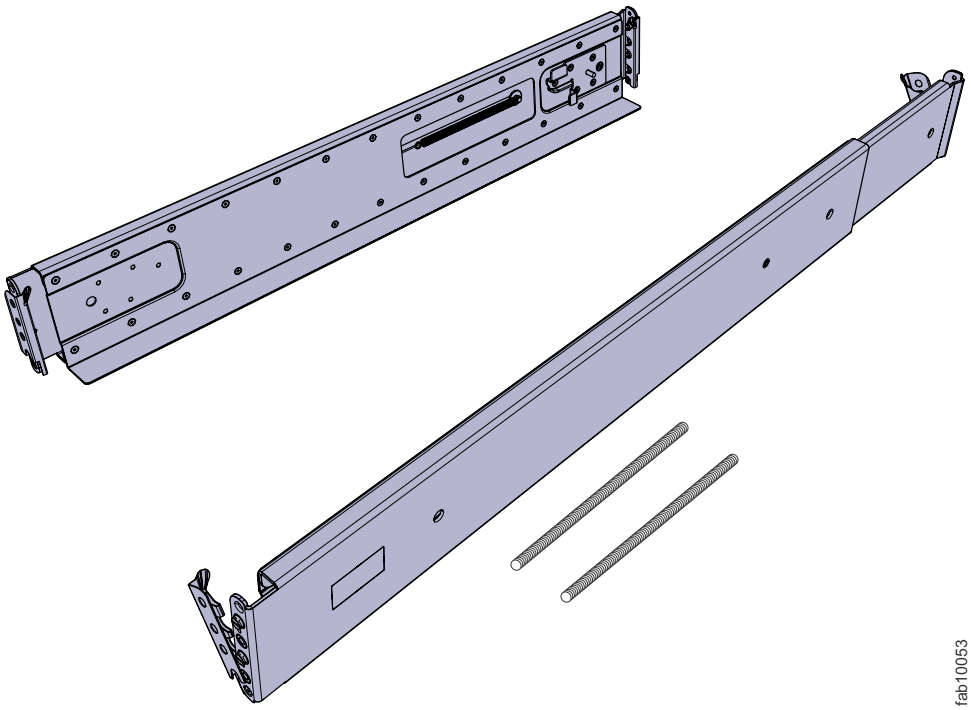


Figure 12. Expansion enclosure support rails

2. Install a spring on each rail.
   a. Extend the rail to its full length.
   b. Push one looped end of a spring over one stud on the inside of the rail. (See Figure 13 on page 16.)

      Note: Some models of rail have the studs on the outside of the rail.
   c. Stretch the spring slightly and push the other looped end of the spring onto the other stud on the inside of the rail.

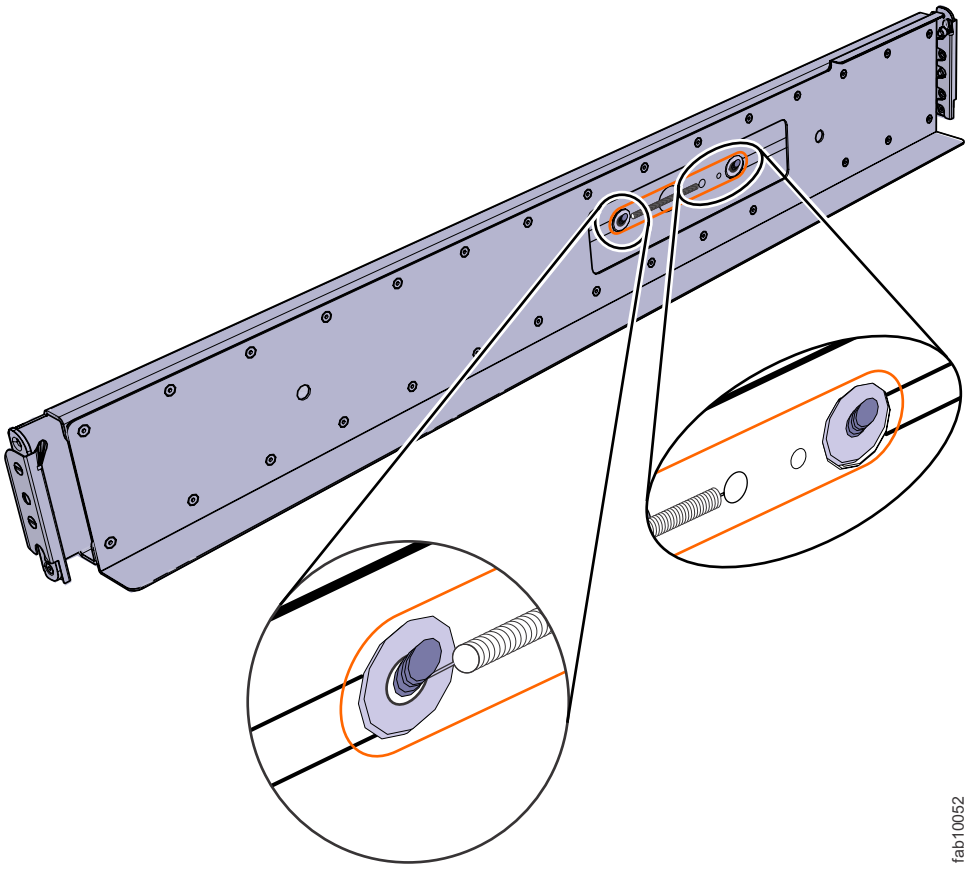


Figure 13. Installing the rail spring

3. Working at the front of the rack cabinet, identify the two standard rack units (2U) of space in the rack into which you want to install the support rails. Figure 14 on page 17 shows two rack units with the front mounting holes identified.

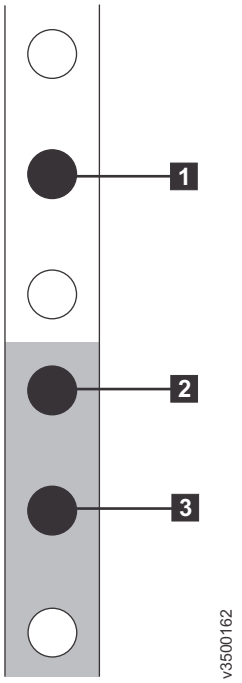


Figure 14. Hole locations in the front of the rack

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

4. Ensure that the appropriate bracket pins are installed in the front and rear bracket of each rail. Each rail comes with four medium pins preinstalled (two in the front bracket and two in the rear bracket). Large and small pins are provided separately. Use the pins that are appropriate for the mounting holes in your rack (see Table 8).

Table 8. Selecting bracket pins for your rack

Mounting holes	**Bracket pins**
Round, unthreaded	Use the preinstalled medium pins.
Round, threaded	Unscrew the medium pins and replace with the smaller pins supplied with the rails.
Square	Unscrew the medium pins and replace with the large pins supplied with the rails.

5. At each end of the rail, grasp the tab **1** and pull *firmly* to open the hinge bracket (see Figure 15 on page 18).

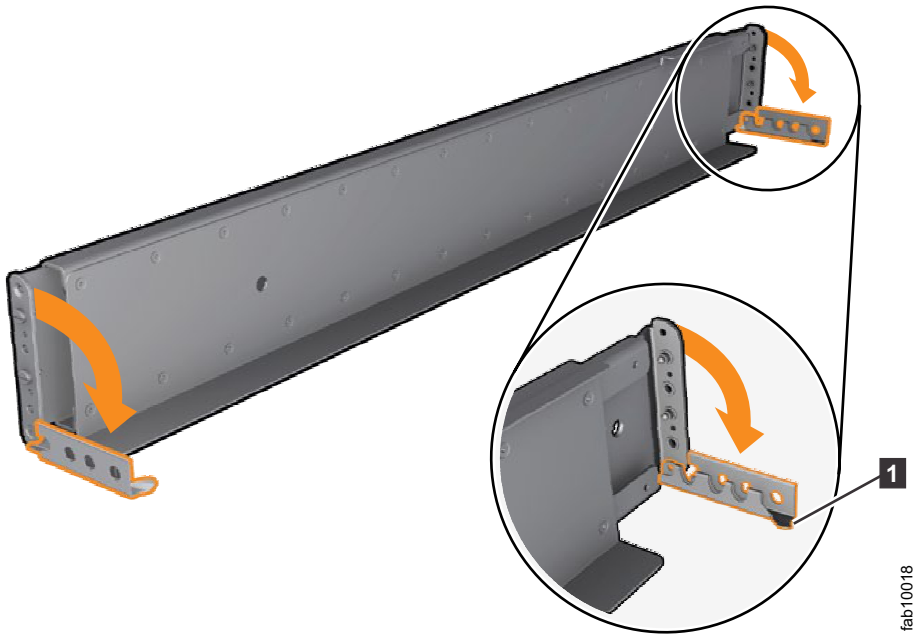


Figure 15. Opening the hinge brackets

6. 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.
7. On the rear of the rail, press the two bracket pins into the holes in the rack flanges.
8. Close the rear hinge bracket to secure the rail to the rack cabinet flange. (See Figure 16.)

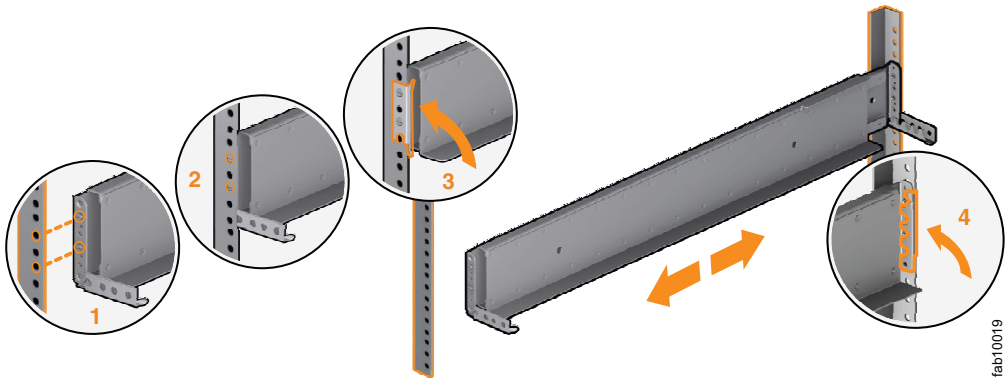


Figure 16. Closing the hinge brackets

9. On the front of the rail, press the two bracket pins into the holes in the rack flanges.
10. Close the front hinge bracket to secure the rail to the rack cabinet flange. (See Figure 16.)
11. Secure the rear of the rail to the rear rack flange with an M5 screw.
12. Repeat the steps to secure the opposite rail to the rack cabinet.
13. Repeat the procedure to install rails for each additional expansion enclosure.

Installing the enclosures

Following your enclosure location plan, install each control enclosure and, optionally, one or more expansion enclosures.

About this task

The installation procedure applies equally to control enclosures and expansion enclosures, but there are some important differences to note.

- Lifting a control enclosure requires at least three people.
- Lifting an expansion enclosure requires at least two people.
- Each control enclosure must only be installed on the control enclosure rails provided with the enclosure.
- Each expansion enclosure must only be installed on the expansion enclosure rails provided with the enclosure.

CAUTION:

- **To lift a control enclosure with drives installed requires at least three people.**
- **Install a control enclosure *only* onto the control enclosure rails supplied with the enclosure.**
- **Install an expansion enclosure *only* onto the expansion enclosure rails supplied with the enclosure.**
- **Load the rack from the bottom up to ensure rack stability. Empty the rack from the top down.**

Procedure

To install an enclosure, complete the following steps.

1. 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. (See Figure 17.)

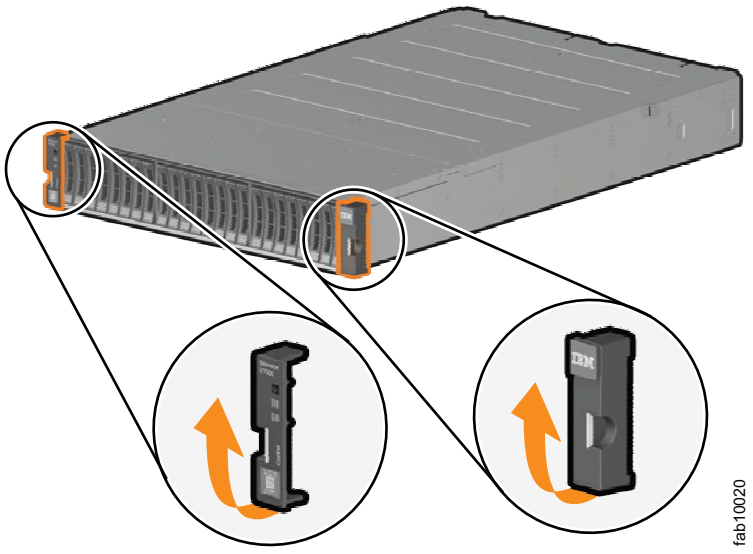


Figure 17. Removing enclosure end caps

2. Align the enclosure with the front of the rack cabinet.

3. Carefully slide the enclosure into the rack along the rails until the enclosure is fully inserted (see Figure 18).

   Note: The rails are not designed to hold an enclosure that is partially inserted. The enclosure must always be in a fully inserted position. Control enclosures must only be installed on the supplied control enclosure rails. Expansion enclosures must only be installed on the supplied expansion enclosure rails.

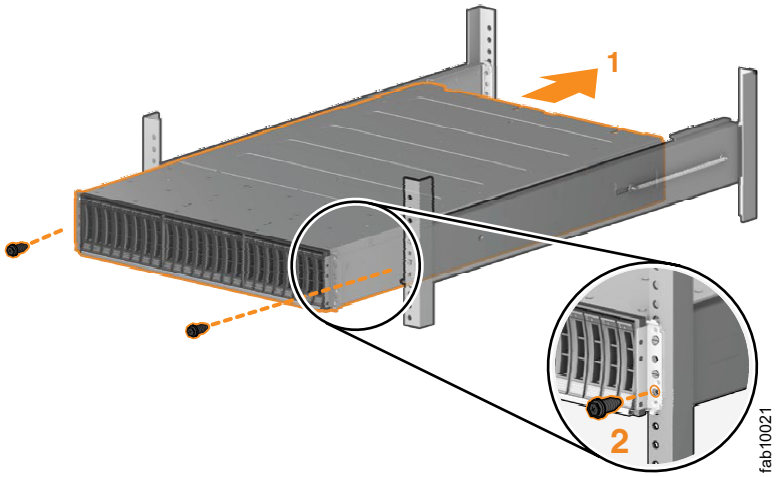


Figure 18. Inserting the enclosure

4. Secure the enclosure with screws in the rack mounting screw holes. (See Figure 18 and Figure 19 on page 21.)
5. Reinstall the left and right end caps. (See Figure 19 on page 21.) The left end cap has indicator windows that align with the status LEDs (light-emitting diodes) on the edge of the enclosure.
   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. Ensure that the inside surface of the end cap is flush with the chassis.

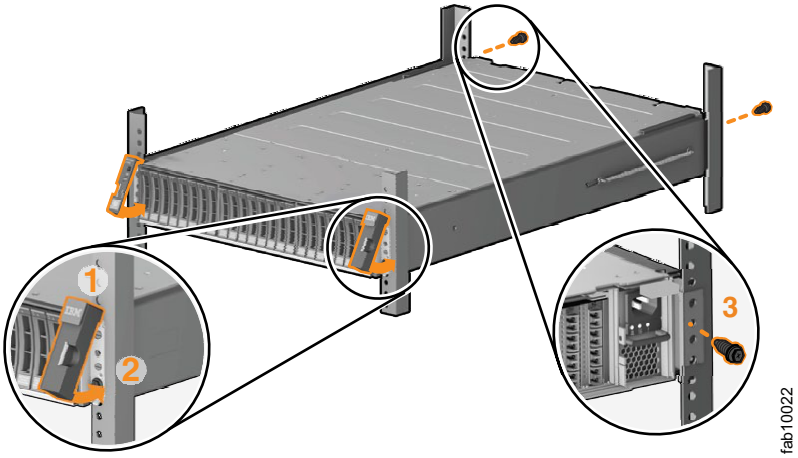


Figure 19. Reinstalling enclosure end caps

Connecting SAS cables to expansion enclosures

If you have installed expansion enclosures, you must connect them to a control enclosure.

About this task

This task applies if you are installing one or more expansion enclosures.Each control enclosure in the system can manage two sets of expansion enclosures, with each set consisting of a maximum of 10 expansion enclosures. Therefore, each control enclosure can manage up to 20 expansion enclosures, and a system containing two control enclosures can have up to 40 expansion enclosures.Each set of expansion enclosures is connected together sequentially through the in and out SAS ports, forming a chain with a control enclosure at the end of the chain.

Note: When connecting SAS cables between enclosures, you must follow a list of guidelines to ensure that your configuration is valid. Do not begin connecting the cables until you have read “SAS cabling guidelines” on page 23.

Note: When connecting SAS cables between enclosures, you must follow a list of guidelines to ensure that your configuration is valid. Do not begin connecting the cables until you have read the “SAS cabling guidelines” topic.

Procedure

To install the cables, complete the following steps.

1. Using the supplied SAS cables, connect the control enclosure to the expansion enclosure at rack position 1, as shown in Figure 20 on page 22.
   a. Connect SAS port 1 of the left node canister in the control enclosure to SAS port 1 of the left expansion canister in the first expansion enclosure.
   b. Connect SAS port 1 of the right node canister in the control enclosure to SAS port 1 of the right expansion canister in the first expansion enclosure.

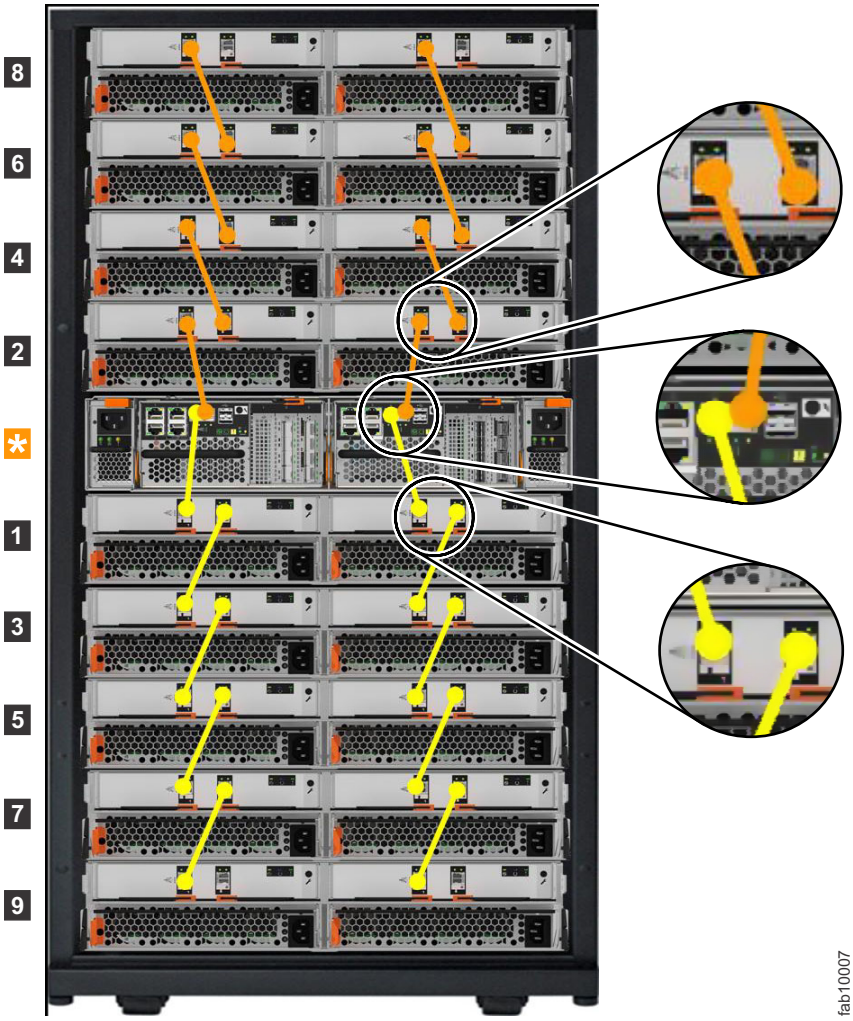


Figure 20. Connecting the SAS cables

2. To add a second expansion enclosure to the control enclosure, use the supplied SAS cables to connect the control enclosure to the expansion enclosure at rack position 2, as shown in Figure 20.
   a. Connect SAS port 2 of the left node canister in the control enclosure to SAS port 1 of the left expansion canister in the second expansion enclosure.
   b. Connect SAS port 2 of the right node canister in the control enclosure to SAS port 1 of the right expansion canister in the second expansion enclosure.
3. If additional expansion enclosures are installed, connect each one to the previous expansion enclosure in a chain, using two Mini SAS HD to Mini SAS HD cables as shown in Figure 20.

   Note: A control enclosure can support up to 20 expansion enclosures (10 above the control enclosure and 10 below).
4. If additional control enclosures are installed, repeat this cabling procedure on each control enclosure and its expansion enclosures.

SAS cabling guidelines

When connecting SAS cables between enclosures, you must follow a list of guidelines to ensure that your configuration is valid.

Orienting the connector

When inserting SAS cables, make sure the connector (Figure 21) is oriented correctly.

- The orientation of the connector must match the orientation of the port before you push the connector into the port. The cable connector and socket are keyed, and it is important that you have proper alignment of the keys when the cable is inserted.
- The blue pull tab must be **below** the connector.
- Insert the connector **gently** until it clicks into place. If you feel resistance, the connector is probably oriented the wrong way. Do **not** force it.
- When inserted correctly, the connector can only be removed by pulling the tab.
- When both ends of a SAS cable are inserted correctly, the green link LEDs next to the connected SAS ports are lit.

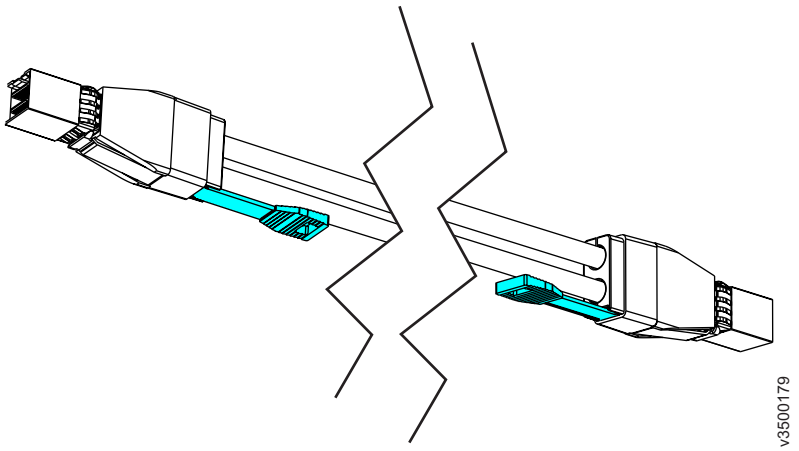


Figure 21. SAS cable connectors

Guidelines

Be aware of the following guidelines when you begin to attach the cables to the SAS ports.

- No more than ten expansion enclosures can be chained to SAS port 1 of a node canister. The expansion enclosures in this chain should be installed below the control enclosure (as shown in Figure 22 on page 24).
- No more than ten expansion enclosures can be chained to SAS port 2 of a node canister. The expansion enclosures in this chain should be installed above the control enclosure (as shown in Figure 22 on page 24).
- No cable can be connected between a port on a left canister and a port on a right canister.
- A cable must not be connected between ports in the same enclosure.
- A connected port on the node canister must connect to a single port on an expansion canister. Cables that split the connector out into separate physical connections are not supported.

- Attach cables serially between enclosures; do not skip an enclosure.
- The last enclosure in a chain must not have cables in port 2 of canister 1 and port 2 of canister 2.
- Ensure that cables are installed in an orderly way to reduce the risk of cable damage when replaceable units are removed or inserted.

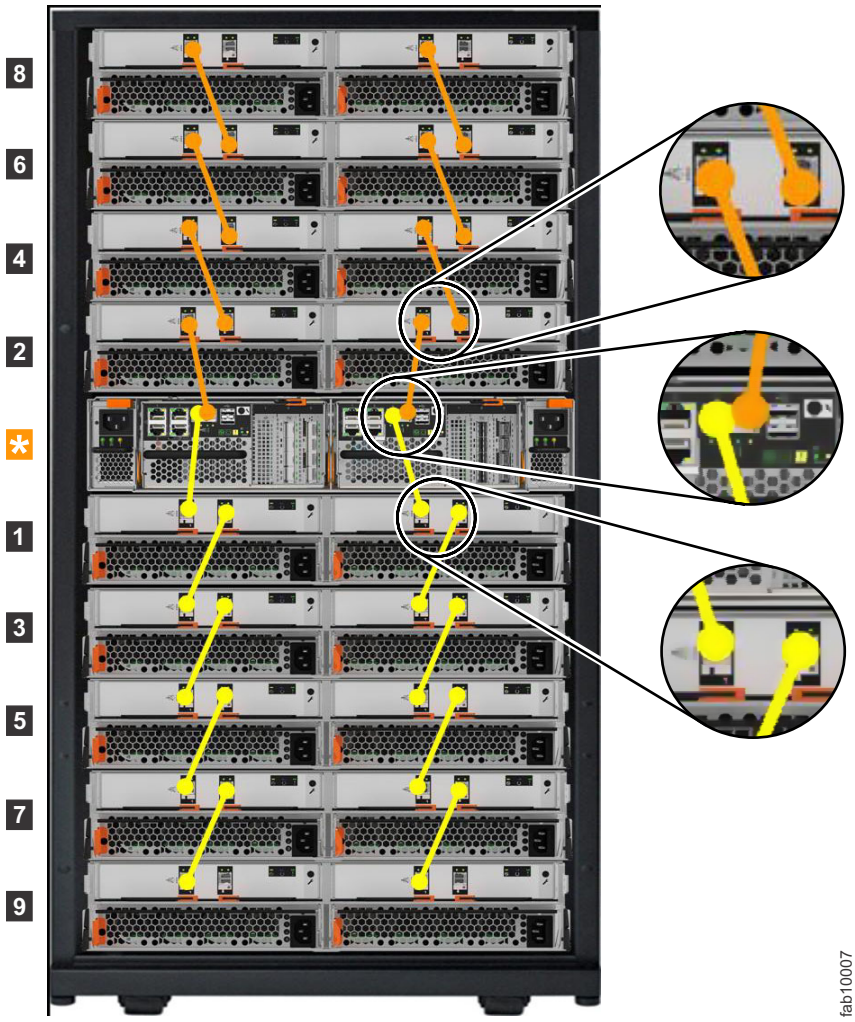


Figure 22. Connecting the SAS cables

Connecting Ethernet cables to node canisters

The control enclosure has several Ethernet ports present or optionally present on the rear of each node canister. Ports 1 and 2 provide access to system management facilities. Ports 1, 2 and 3 on the rear of each canister can also provide iSCSI connectivity.

Procedure

To install the cables, complete the following steps.

1. Connect Ethernet port 1 of each node canister in the system to the IP network that will provide connection to the system management interfaces, as shown in Figure 23 on page 25. This port can also be used for iSCSI connectivity to the

system by hosts on the network. Where more than one control enclosure is present in the system, ensure port 1 of every node canister is connected to the same network to provide access in the event of configuration node fail-over.

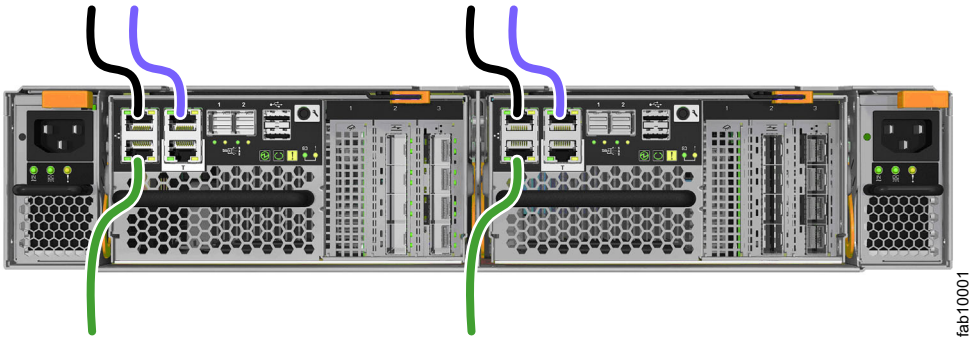


Figure 23. Connecting the Ethernet cables

2. Optionally, connect Ethernet port 2 of each node canister in the system to a second IP network that will provide redundant connection to the system management interfaces, as shown by the lighter cable connection in Figure 23. This port can also be used for iSCSI connectivity to the system by hosts on the network. Where more than one control enclosure is present in the system, ensure that port 2 of every node canister is connected to the same network to provide access in the event of configuration node fail-over.
3. Optionally, connect Ethernet port 3 of both node canisters in a system to the networks that will provide additional iSCSI connectivity to the system.

   Note: Do not connect the Ethernet technician port (labeled **T**) to a network switch. The technician port must only be directly connected to a personal computer when initializing a system or servicing a node.

Connecting Fibre Channel cables to a 10 Gbps iSCSI-FCoE 4-port host interface card

If your Storwize V7000 has 10 Gbps iSCSI-FCoE 4-port host interface cards installed, you can use Fibre Channel cables to connect them to your 10Gbps Ethernet or FCoE SAN.

About this task

The Fibre Channel cables are connected in pairs. Both canisters must have the same number of cables connected.

Procedure

To install the cables, complete the following steps.

If optional 4-port 10Gbps Ethernet host interface cards are installed in the node canisters, connect each port to the network that will provide connectivity to that port. To provide redundant connectivity, connect both node canisters in a control enclosure to the same networks.

Results

Figure 24 shows an example configuration with a pair of Ethernet cables connected to port 3 in each canister.

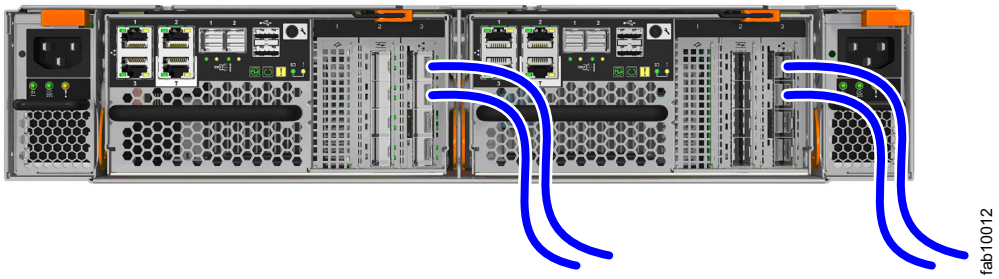


Figure 24. Example configuration with two pairs of Ethernet cables connected to 10 Gbps iSCSI-FCoE 4-port host interface cards

Connecting Fibre Channel cables to an 8 Gbps Fibre Channel 4-port host interface card

If your Storwize V7000 has 8 Gbps Fibre Channel 4-port host interface cards installed, you can use Fibre Channel cables to connect them to your Fibre Channel SAN.

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 25 shows an example configuration with two Fibre Channel cables connected to each canister.

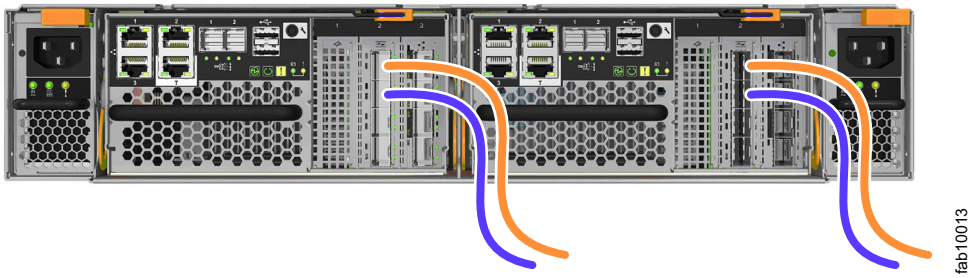


Figure 25. Example configuration with two Fibre Channel cables per canister

2. If you want to connect additional Fibre Channel cables, make sure to connect the same number of cables to each canister. Figure 26 on page 27 shows an example configuration with four Fibre Channel cables connected to each canister.

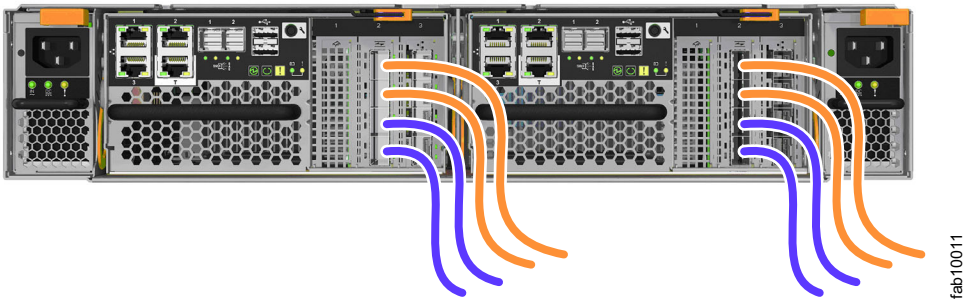


Figure 26. Example configuration with four Fibre Channel cables per canister

3. If a control enclosure is already installed, you can optionally add fibre channel connections between all the control enclosures.
   - This involves both the physical installation of the cables and configuring the correct zoning on the Fibre Channel switches.
   - Configure the network so that every node canister has at least two connections to every node canister in a different control enclosure.
   - You must configure the network before attempting to add a new control enclosure to an existing system.

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 power on 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 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. Power on all expansion enclosures by connecting both power supply units of the enclosure to their power sources, using the supplied power cables. If the power sources have circuit breakers or switches, ensure that they are turned on. The enclosure does not have power switches. Repeat this step for each expansion enclosure in the system.

   Note: Each enclosure has two power supply units. To provide power failure redundancy, connect the two power cords to separate power circuits.
2. From the rear of the expansion enclosure, check the LEDs on each expansion canister (see Figure 27 on page 28).

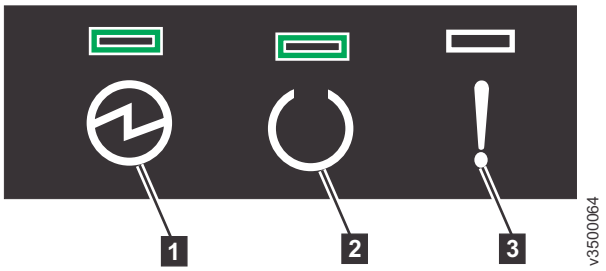


Figure 27. Expansion canister LEDs

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 "Troubleshooting".

3. Wait for all expansion canisters to finish powering on.
4. Power on the control enclosure by connecting both power supply units of the enclosure to their power sources, using the supplied power cables. If the power sources have circuit breakers or switches, ensure that they are turned on. The enclosure does not have power switches.

   Note: Each enclosure has two power supply units. To provide power failure redundancy, connect the two power cords to separate power circuits.
5. From the rear of the control enclosure, check the LEDs on each node canister (see Figure 28).

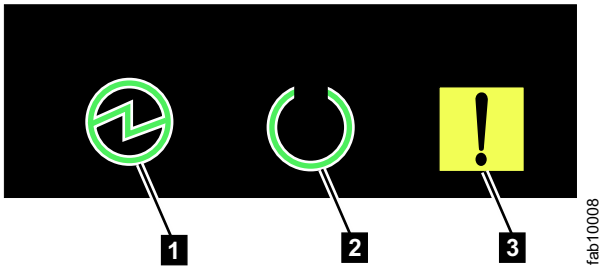


Figure 28. Node canister LEDs

1. Power
2. Status
3. Fault

The canister is ready with no critical errors when **Power** is illuminated, **Status** is blinking, and **Fault** is off. If a canister is *not* ready, refer to the "Procedure: Understanding the system status using the LEDs" topic in "Troubleshooting".

Chapter 3. Configuring the system

Configuring your system is necessary in two situations: when you power up a new system for the first time, and when you add an expansion enclosure to an existing system.

After initializing the system, you will use the Storwize management GUI to complete the configuration procedures.

- The management GUI requires a supported web browser (see "Checking your web browser settings for the management GUI").
- To configure a new system, you will log on to the management GUI with the default user name and password (see "User name and password for system initialization" on page 31).

The steps for initializing a new system are described in "Initializing the system using the technician port" on page 31.

The steps for adding an expansion enclosure to an existing system are described in "Adding an expansion enclosure to an existing system" on page 33.

The steps for adding a control enclosure to an existing system are described in "Adding a control enclosure to an existing system" on page 33.

Checking your web browser settings for the management GUI

To access the management GUI, you must ensure that your web browser is supported and has the appropriate settings enabled.

Before you begin

The management GUI supports the following web browsers:

- Mozilla Firefox 32
- Mozilla Firefox Extended Support Release (ESR) 31
- Microsoft Internet Explorer (IE) 10 and 11
- Google Chrome 37

IBM supports higher versions of the browsers if the vendors do not remove or disable function that the product relies upon. For browser levels higher than the versions that are certified with the product, customer support accepts usage-related and defect-related service requests. If the support center cannot re-create the issue, support might request the client to re-create the problem on a certified browser version. Defects are not accepted for cosmetic differences between browsers or browser versions that do not affect the functional behavior of the product. If a problem is identified in the product, defects are accepted. If a problem is identified with the browser, IBM might investigate potential solutions or work-arounds that the client can implement until a permanent solution becomes available.

Procedure

To configure your web browser, follow these steps:

1. Enable JavaScript for your web browser.

For Mozilla Firefox, JavaScript is enabled by default and requires no additional configuration.

For Microsoft Internet Explorer (IE) running on Microsoft Windows 7:

a. In Internet Explorer, click **Tools** > **Internet Options**.
b. Click **Security Settings**.
c. Click **Internet** to choose the Internet zone.
d. Click **Custom Level**.
e. Scroll down to the **Scripting** section, and then in **Active Scripting**, click **Enable**.
f. Click **OK** to close **Security Settings**.
g. Click **Yes** to confirm the change for the zone.
h. Click **OK** to close **Internet Options**.
i. Refresh your browser.

For Microsoft Internet Explorer (IE) running on Microsoft Windows Server 2008:

a. In Internet Explorer, click **Tools** > **Internet Options**.
b. Click **Security**.
c. Click **Trusted sites**.
d. On the **Trusted sites** dialog, verify that the web address for the management GUI is correct and click **Add**.
e. Verify that the correct web address was added to the **Trusted sites** dialog.
f. Click **Close** on the **Trusted sites** dialog.
g. Click **OK**.
h. Refresh your browser.

For Google Chrome:

a. On the menu bar in the Google Chrome browser window, click **Settings**.
b. Click **Show advanced settings**.
c. In the **Privacy** section, click **Content settings**.
d. In the **JavaScript** section, select **Allow all sites to run JavaScript**.
e. Click **OK**.
f. Refresh your browser.

2. Enable cookies in your web browser.

For Mozilla Firefox:

a. On the menu bar in the Firefox browser window, click **Tools** > **Options**.
b. On the Options window, select **Privacy**.
c. Set "Firefox will" to **Use custom settings for history**.
d. Select **Accept cookies from sites** to enable cookies.
e. Click **OK**.
f. Refresh the browser.

For Microsoft Internet Explorer:

a. In Internet Explorer, click **Tools** > **Internet Options**.
b. Click **Privacy**. Under **Settings**, move the slider to the bottom to allow all cookies.
c. Click **OK**.
d. Refresh your browser.

For Google Chrome:

a. On the menu bar in the Google Chrome browser window, click **Settings**.
b. Click **Show advanced settings**.
c. In the **Privacy** section, click **Content settings**.
d. In the **Cookies** section, select **Allow local data to be set**.
e. Click **OK**.
f. Refresh your browser.

3. Enable scripts to disable or replace context menus. (Mozilla Firefox only).
   For Mozilla Firefox:
   a. On the menu bar in the Firefox browser window, click **Tools** > **Options**.
   b. On the Options window, select **Content**.
   c. Click **Advanced** by the **Enable JavaScript** setting.
   d. Select **Disable or replace context menus**.
   e. Click **OK** to close the Advanced window.
   f. Click **OK** to close the Options window.
   g. Refresh your browser.
4. Enable TLS 1.1/1.2 (Microsoft Internet Explorer 9 and 10 only).
   For Microsoft Internet Explorer:
   a. Open Internet Explorer.
   b. Select **Tools** > **Internet Options**.
   c. Select the **Advanced** tab.
   d. Scroll to the **Security** section.
   e. Check the **Use TLS 1.1** and **Use TLS 1.2** checkboxes.

   Note: IE 11 and later enable TLS 1.1/1.2 by default.

User name and password for system initialization

During the initialization procedure, you will need to log in to the Storwize V7000 management GUI.

The default user name and password for the management GUI are listed in Table 9.

Table 9. Default user name and password for the management GUI

User name	Password
superuser	passw0rd

Note: The `0` character in the password is a zero, not the letter O.

Initializing the system using the technician port

To initialize a new system, you must connect a personal computer to the technician port on the rear of a node canister and run the initialization tool.

Before you begin

You require the following items:

- A personal computer with an Ethernet port that supports Dynamic Host Configuration Protocol (DHCP)
- A supported browser that is installed on the personal computer

- An Ethernet cable to connect the personal computer to the technician port

Attention: Do not connect the technician port to a switch. If a switch is detected, the technician port connection might shut down, causing a 746 node error.

Procedure

To initialize the system, complete the following steps.

1. Ensure that the system is powered on, as described in "Powering on the system" on page 27.
2. Configure an Ethernet port on the personal computer to enable Dynamic Host Configuration Protocol (DHCP) configuration of its IP address and DNS settings.
3. Locate the Ethernet port that is labeled **T** on the rear of a node canister. Figure 29 shows the rear of the node canister where **1** is the technician port.

Figure 29. Storwize V7000 technician port

4. Connect an Ethernet cable between the port of the personal computer that is configured in step 2 and the technician port. A few moments after the connection is made, the node uses DHCP to configure IP and DNS settings of the personal computer. If you do not have DHCP, configure static IPv4 address 192.168.0.2, mask to 255.255.255.0, gateway to 192.168.0.1, and DNS to 192.168.0.1.
5. After the Ethernet port of the personal computer is connected, open a supported browser and browse to address `http://install`. The browser is automatically directed to the initialization tool.

   Note: If the system cannot be initialized, you are directed to the service assistant. Refer to "Problem: Cannot initialize or create a Storwize V7000 system" in the **Troubleshooting** > **Resolving a problem** section of the Storwize V7000 Information Center.
6. Follow the instructions that are presented by the initialization tool to configure the system with a name and management IP address.
7. If you experience a problem during the process due to a change in system states, wait 5 to 10 seconds and then either reopen the SSH connection or reload the service assistant.
8. After you complete the initialization process, disconnect the cable between the personal computer and the technician port.

What to do next

The system can now be reached by opening a supported web browser and pointing it to `http://`*`management_IP_address`*.

Adding an expansion enclosure to an existing system

When adding an expansion enclosure to an existing system, you must use the Storwize management GUI to update the system configuration.

About this task

The management GUI requires a supported web browser (see "Checking your web browser settings for the management GUI" on page 29).

Procedure

To add an expansion enclosure to your system, complete the following steps.

1. Install support rails for the new enclosure.
2. Install the new enclosure in the rack.
3. Connect the expansion enclosure attachment cables.
4. Connect the power cables and wait for the SAS light-emitting diodes (LEDs) to illuminate.
5. Start the management GUI.
6. Go to **Monitoring** > **System**.
7. On the System page, select **Actions** > **Add Enclosures**.
8. Continue to follow the on-screen instructions.

Adding a control enclosure to an existing system

In order to add a control enclosure to an existing system, you must install it in the rack and connect it to the system via a zone in the SAN.

About this task

The management GUI requires a supported web browser (see "Checking your web browser settings for the management GUI" on page 29).

Note: When adding a control enclosure, do not use the initialization tool.

Procedure

To add a control enclosure to an existing system, complete the following steps.

1. Install support rails for the new enclosure.
2. Install the new enclosure in the rack.
3. Connect the canisters to the storage area network. Use Fibre Channel cables to connect the SAN to a 10 Gbps iSCSI-FCoE 4-port host interface card (see "Connecting Fibre Channel cables to a 10 Gbps iSCSI-FCoE 4-port host interface card" on page 25) or an 8 Gbps Fibre Channel 4-port host interface card (see "Connecting Fibre Channel cables to an 8 Gbps Fibre Channel 4-port host interface card" on page 26).
4. Configure the zoning on the SAN switches. The correct zoning provides a way for the Fibre Channel or FCoE ports to connect to each other. If the configuration tool for the SAN switches does not provide details of the world wide port names (WWPNs), use the service assistant to find them.
5. Start the management GUI.
6. Go to **Monitoring** > **System**.

7. On the System page, select **Actions** > **Add Enclosures**.
8. Continue to follow the on-screen instructions.

Appendix A. Accessibility features for IBM Storwize V7000

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully.

Accessibility features

These are the major accessibility features for the Storwize V7000:

- You can use screen-reader software and a digital speech synthesizer to hear what is displayed on the screen. HTML documents have been tested using JAWS version 15.0.
- This product uses standard Windows navigation keys.
- Interfaces are commonly used by screen readers.
- Industry-standard devices, ports, and connectors.

The Storwize V7000 Information Center and its related publications are accessibility-enabled. The accessibility features of the Information Center are described in Viewing information in the information center .

Keyboard navigation

You can use keys or key combinations to perform operations and initiate menu actions that can also be done through mouse actions. You can navigate the Storwize V7000 Information Center from the keyboard by using the shortcut keys for your browser or screen-reader software. See your browser or screen-reader software Help for a list of shortcut keys that it supports.

IBM and accessibility

See the IBM Human Ability and Accessibility Center for more information about the commitment that IBM has to accessibility.

Appendix B. Where to find the Statement of Limited Warranty

The Statement of Limited Warranty is available in both hardcopy format and in the Storwize V7000 information center.

The Statement of Limited Warranty is shipped (in hardcopy form) with your product. It can also be ordered from IBM (see Table 2 on page xx for the part number).

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Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors, or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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Germany Electromagnetic Compatibility Directive

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)." Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:

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Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

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中华人民共和国“A类”警告声明

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This explains the Japan Voluntary Control Council for Interference (VCCI) statement.

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This explains the Japan Electronics and Information Technology Industries Association (JEITA) statement for less than or equal to 20 A per phase.

高調波ガイドライン適合品 jieta1

This explains the JEITA statement for greater than 20 A per phase.

高調波ガイドライン準用品 jieta2

Korean Communications Commission Class A Statement

This explains the Korean Communications Commission (KCC) statement.

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This statement explains the Russia Electromagnetic Interference (EMI) statement.

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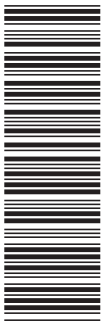

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