



Lenovo Storage V7000 Quick Installation Guide



Machine Types: 6538

Note

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

- The general information in Appendix C “Notices” on page 39
- The information in the “Safety and environmental notices” on page vi
- The information in the *Environmental Notices and User Guide*

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Safety and environmental notices

Review the safety notices, environmental notices, and electronic emission notices for Lenovo® Storage 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.

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

Systems Safety Notices

This publication contains the safety notices for the 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.

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.

Caution notices for the Lenovo Storage V series

Ensure that you understand the caution notices for Lenovo Storage V7000.

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.

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.

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.

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.

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.

CAUTION:

Tighten the stabilizer brackets until they are flush against the rack.

CAUTION:

Use safe practices when lifting.

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.

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.

Danger notices for Lenovo Storage V7000

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



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 Lenovo supplied a power cord(s), connect power to this unit only with the Lenovo provided power cord. Do not use the Lenovo 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.

 **DANGER**

Heavy equipment personal injury or equipment damage might result if mishandled.

 **DANGER**

Multiple power cords. The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. (L003)

 **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.

 **DANGER**

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


 **DANGER**

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



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 .

Special caution and safety notices

This information describes special safety notices that apply to the Lenovo Storage V7000 system. 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 Lenovo Storage 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 service representatives and 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.

Note: 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 Lenovo Storage V7000 system, 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 Lenovo Storage V7000 system 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.

About this guide

This publication provides information that helps you install and initialize Lenovo Storage V7000 systems.

Who should use this guide

This guide is intended for installers of Lenovo Storage V7000 systems.

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.

Lenovo Storage V series library and related publications

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

Information Center for Lenovo Storage V7000

The Lenovo Storage V Series information center content contains all of the information that is required to install, configure, and manage the system. The information collection is available at the following website:

Lenovo Storage V series library

Unless otherwise noted, the publications in the library are available in Adobe portable document format (PDF) from a website.

<http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp?topic=/com.lenovo.storage.vseries.doc>

Table 1 “Lenovo websites for help, services, and information” on page xiii lists websites where you can find help, services, and more information.

Table 1. *Lenovo websites for help, services, and information*

| Website | Address |
|----------------------------------|---|
| Directory of worldwide contacts | http://www.ibm.com/planetwide |
| Support for Lenovo Storage V7000 | http://support.lenovo.com/p/storage/v7000 |

Each of the PDF publications in the Table 2 “Lenovo Storage V Series library” on page xiii is also available by clicking the corresponding “Link”:

Table 2. **Lenovo Storage V Series library**

| Title | Description | Link |
|--|---|---|
| Lenovo Storage V7000 <i>Quick Installation Guide</i> | The guide provides instructions for unpacking your order and installing your system. The first chapter describes how to verify your order, identify hardware components, and meet environmental requirements. The second chapter describes how to install the hardware and attach data cables and power cords. The last chapter describes how to access the | http://support.lenovo.com/p/storage/v7000 |

Table 2. Lenovo Storage V Series library (continued)

| Title | Description | Link |
|--|--|--|
| | management GUI to initially configure your system. | |
| Lenovo Storage V7000 <i>Installation Poster</i> | The installation poster provides an illustrated sequence of steps for installing the enclosures in a rack and beginning the setup process for a Lenovo Storage V7000 system. | http://support.lenovo.com/p/storage/v7000 |
| Lenovo Storage V7000 <i>Read First Flyer</i> | This document introduces how to get information from Lenovo Support Web site. You need to read first. | http://support.lenovo.com/p/storage/v7000 |
| <i>Statement of Limited Warranty</i> | This multilingual document provides information about the Lenovo warranty for machine type 6538 | https://support.lenovo.com/us/en/documents/ht100742 http://support.lenovo.com/us/en/warrantylookup |
| <i>Lenovo License Agreement for Machine Code</i> | This multilingual guide contains the License Agreement for Machine Code for the Lenovo Storage V Series products. | https://support.lenovo.com/us/en/documents/ht101595 |

Lenovo documentation and related websites

Table 3 “Lenovo documentation and related websites” on page xiv lists websites that provide publications and other information about the Lenovo Storage V Series or related products or technologies. The Lenovo Press publications provide positioning and value guidance, installation and implementation experiences, solution scenarios, and step-by-step procedures for various products.

Table 3. Lenovo documentation and related websites

| Website | Address |
|---------------------------|---|
| Lenovo Press publications | https://lenovopress.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

Related websites

The following websites provide information about Lenovo Storage V7000 or related products or technologies.

| Type of information | Website |
|---|---|
| Technical support for Lenovo storage products | http://support.lenovo.com/p/storage/v7000 |
| Lenovo Electronic Support registration | www.lenovo.com/support |

How to get information, help, and technical assistance

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

Help and service

Before calling for support, be sure to have your Lenovo Customer Number available. To contact Lenovo service in China, you can call 8008106677-2 or 4008106678-2 for help and service.

Software option

Identify the Lenovo Storage 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 Lenovo 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 Lenovo Storage V7000, the machine type is 6538.

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 Lenovo 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.

Using the documentation

Information about your Lenovo 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. Lenovo 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 <http://support.lenovo.com/us/en/products/servers/lenovo-storage> and follow the instructions.

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” on page 1 (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 Lenovo Storage V7000 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 Information Center for Lenovo Storage V7000.
- Ensure that any cables that you are supplying are available for installation.

Table 4 “Steps for different installation scenarios” on page 1 lists the steps for each scenario.

Table 4. Steps for different installation scenarios

Table summarizes the 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 4 | “Reviewing your packing slip” on page 4 | “Reviewing your packing slip” on page 4 | “Reviewing your packing slip” on page 4 |
| “Identify the hardware components” on page 5 | “Identify the hardware components” on page 5 | “Identify the hardware components” on page 5 | “Identify the hardware components” on page 5 |
| “Verify environmental requirements” on page 8 | “Verify environmental requirements” on page 8 | “Verify environmental requirements” on page 8 | “Verify environmental requirements” on page 8 |
| “Review enclosure location guidelines” on page 8 | “Review enclosure location guidelines” on page 8 | “Review enclosure location guidelines” on page 8 | “Review enclosure location guidelines” on page 8 |

Table 4. 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 |
|--|---|--|--|
| "Installing support rails for the Lenovo Storage V7000 control enclosure" on page 11 | "Installing support rails for the Lenovo Storage V7000 control enclosure" on page 11 "Installing support rails for Lenovo Storage V7000 expansion enclosures" on page 15 | "Installing support rails for Lenovo Storage V7000 expansion enclosures" on page 15 ¹ | "Installing support rails for the Lenovo Storage V7000 control enclosure" on page 11 "Installing support rails for Lenovo Storage V7000 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 adapter" 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 |
| 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 Lenovo Storage V series" on page vi and "Danger notices for Lenovo Storage V7000" on page viii 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.

| | | |
|---|---|--|
|  |  |  |
| 18-32 kg (39.7-70.5 lbs) | 32-55 kg (70.5-121.2 lbs) | ≥55 kg (≥121.2 lbs) |

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(27)

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



Heavy equipment personal injury or equipment damage might result if mishandled.

- 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:



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 Lenovo supplied a power cord(s), connect power to this unit only with the Lenovo provided power cord. Do not use the Lenovo 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.

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.

Use the following checklist to check off the items in your order as you verify that they are included in your shipment.

- Rack-mounting hardware kit:
 - Two rails (right and left assembly)
 - Two rail springs
 - Two sets of rail-mount screws and alternative rail-mount pins (large and small) for various 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
- Four-port 8 Gbps Fibre Channel host interface adapter with two small form-factor pluggable (SFP) transceivers installed
- Fibre Channel cables
- SAS cables
- Four-port 10 Gbps iSCSI / FCoE host interface adapter
- Compression accelerator
- 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

Identify the hardware components

The following graphics identify the hardware components and port locations for the control enclosure and expansion enclosure on Lenovo Storage V7000 systems.

Control enclosure components

Figure 1 “Rear view of a Lenovo Storage V7000 control enclosure” on page 5 shows the rear view of a control enclosure and identifies the location of the power supply units and node canisters.

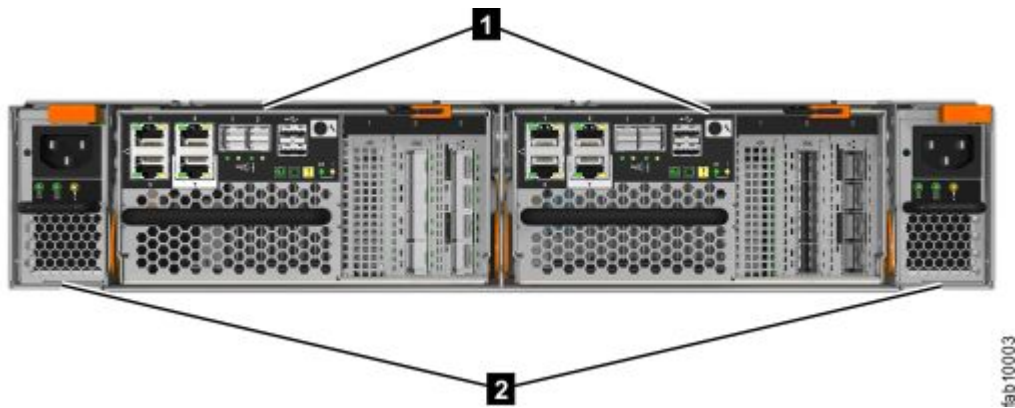


Figure 1. Rear view of a Lenovo Storage V7000 control enclosure

Data ports

Figure 2 “Data ports in the rear of the Lenovo Storage V7000 control enclosure” on page 5 shows the rear view of a Lenovo Storage V7000 control enclosure and identifies the location of the ports.



Figure 2. Data ports in the rear of the Lenovo Storage V7000 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 three SAS ports. These ports are used to connect to host systems. 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 “Control enclosure support rails of a Lenovo Storage V7000 system” on page 6) 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.

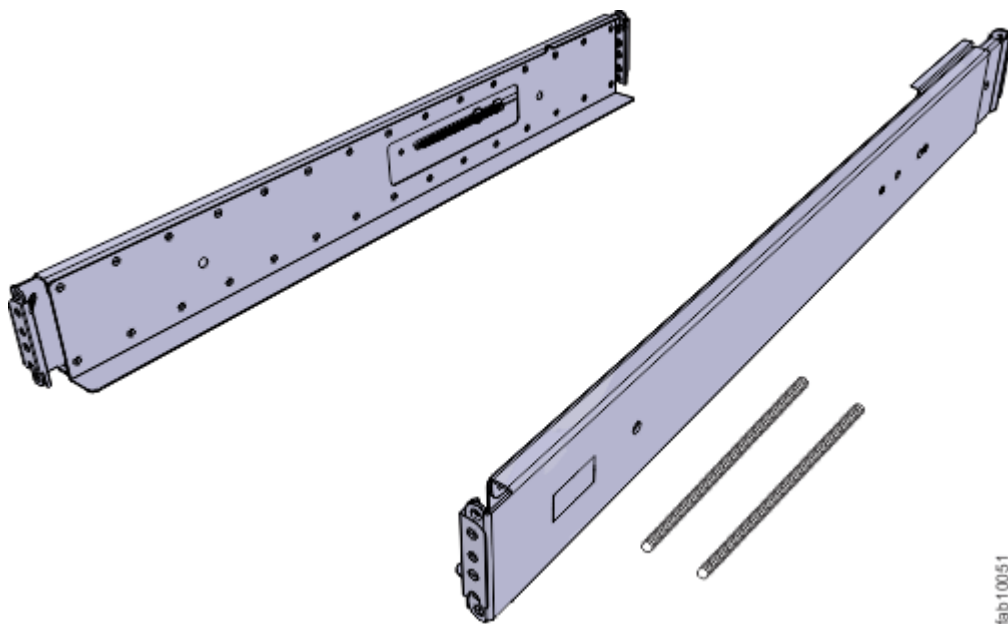


Figure 3. Control enclosure support rails of a Lenovo Storage V7000 system

Expansion enclosure components

Figure 4 “Rear view of a Lenovo Storage V7000 expansion enclosure” on page 7 shows the location of the power supply units and expansion canisters.

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



Figure 4. Rear view of a Lenovo Storage V7000 expansion enclosure

Figure 5 “SAS ports and LEDs in rear view of a Lenovo Storage V7000 expansion canister” on page 7 shows the LEDs and SAS port locations from the rear view of an expansion canister.

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

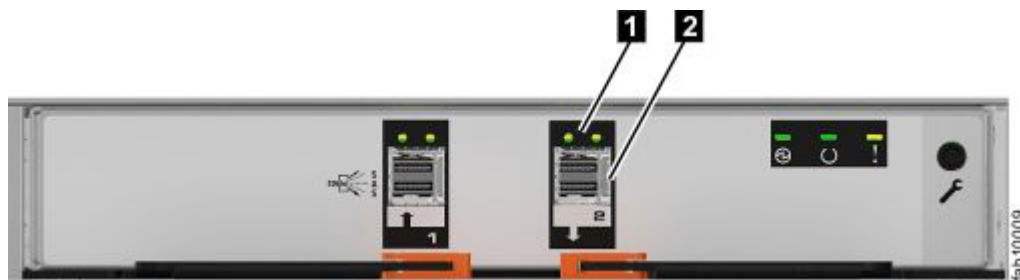


Figure 5. SAS ports and LEDs in rear view of a Lenovo Storage V7000 expansion canister

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.

Expansion enclosure support rails

The left and right expansion enclosure support rails (Figure 6 “Expansion enclosure support rails on Lenovo Storage V7000” on page 8) 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.

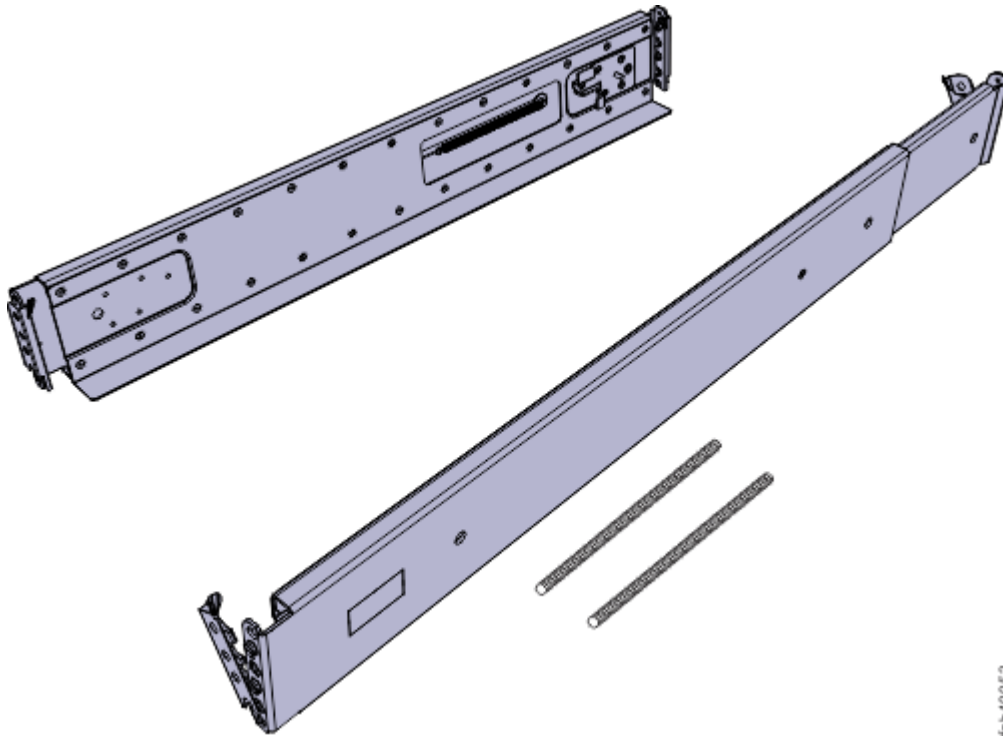


Figure 6. Expansion enclosure support rails on Lenovo Storage V7000

Verify environmental requirements

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

Before installing a Lenovo Storage V7000 system, you must verify that adequate space in a suitable rack is available. You must also ensure that the 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 “Lenovo Storage V7000 physical installation planning” topic in the Information Center for Lenovo Storage V7000. The topic is available at this location: http://publib.boulder.ibm.com/infocenter/systemx/documentation/topic/com.lenovo.storage.vseries.doc/svc_installplan_22qgvs.html

Review enclosure location guidelines

Before you install 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 Lenovo Storage 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 36 kg. Provide 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, divide the total number of expansion enclosures to be installed 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 to which they will connect. Do not leave 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 chain to an existing system

If you are adding an expansion enclosure chain to an existing Storage V5030 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 Lenovo Storage V7000 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 Lenovo Storage V7000 control enclosure

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

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

- Step 1. Locate the control enclosure rails (Figure 7 “Control enclosure support rails” on page 11). The rail assembly consists of two rails that must be installed in the rack cabinet.

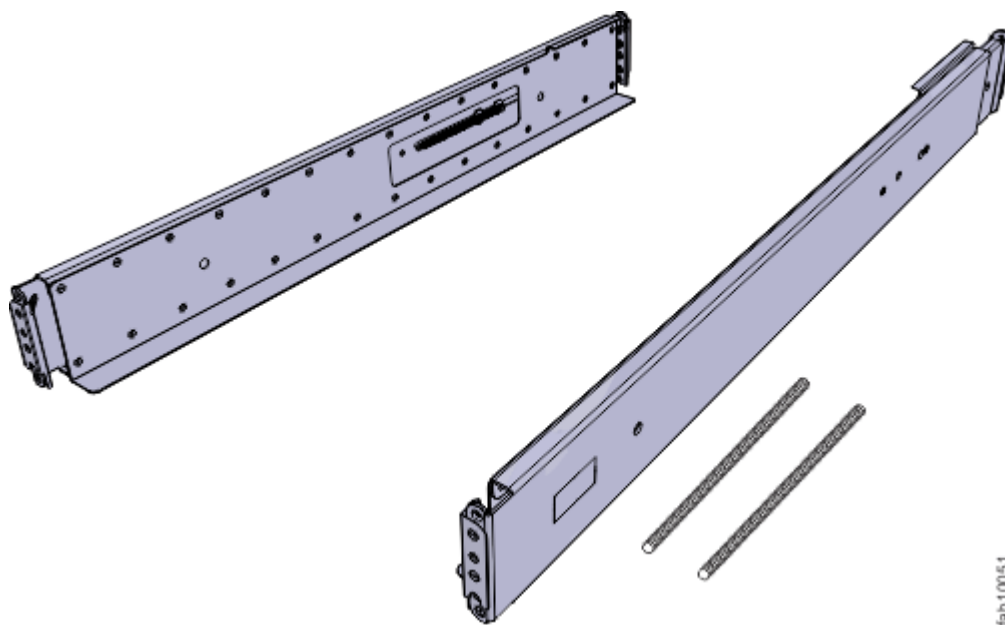
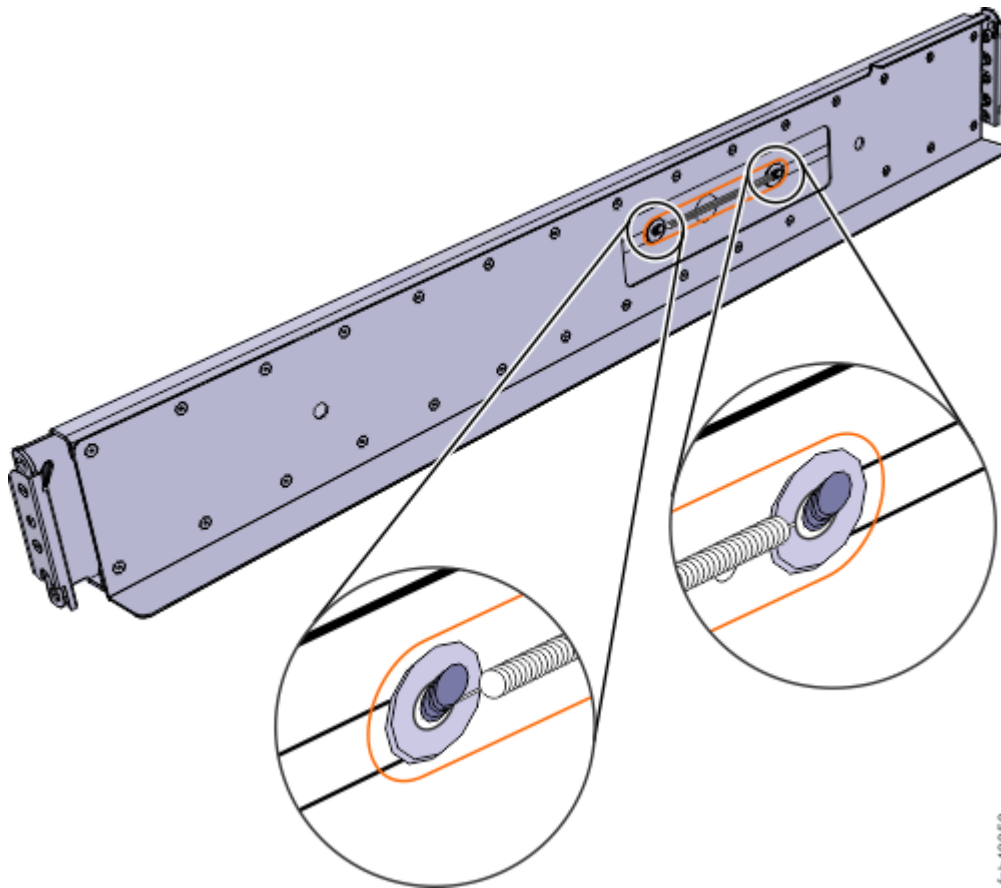


Figure 7. Control enclosure support rails

- Step 2. Install a spring on each rail.
- Extend the rail to its full length.
 - Push one looped end of a spring over one stud on the inside of the rail. (See Figure 8 “Installing the rail spring” on page 12.)
- Note:** Some models of rail have the studs on the outside of the rail.
- Stretch the spring slightly and push the other looped end of the spring onto the other stud on the inside of the rail.



fab10050

Figure 8. Installing the rail spring

Step 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 “Hole locations in the front of the rack” on page 13 shows two rack units with the front mounting holes identified.

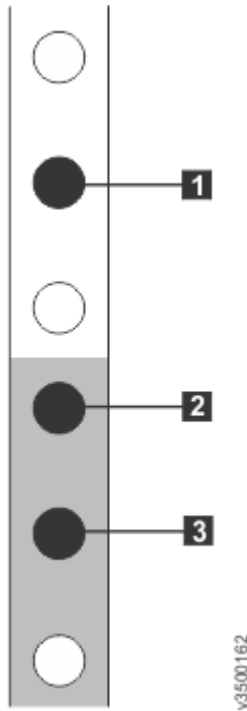


Figure 9. Hole locations in the front of the rack

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

Step 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 5 “Selecting bracket pins for your rack” on page 13).

Table 5. 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. |

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

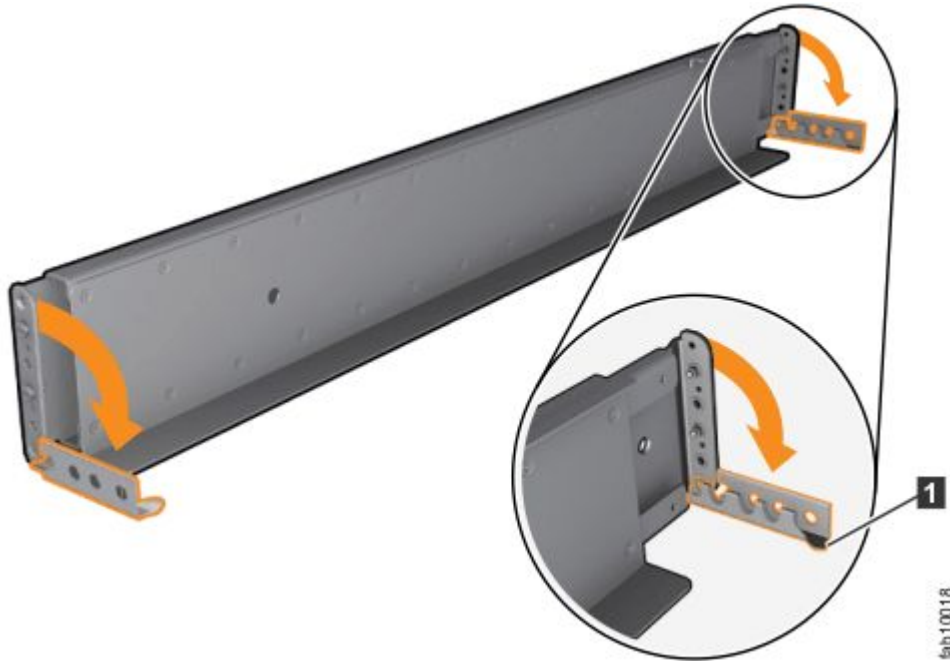


Figure 10. Opening the hinge brackets

- Step 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.
- Step 7. On the rear of the rail, press the two bracket pins into the holes in the rack flanges.
- Step 8. Close the rear hinge bracket to secure the rail to the rack cabinet flange. (See Figure 11 “Closing the hinge brackets” on page 14.)

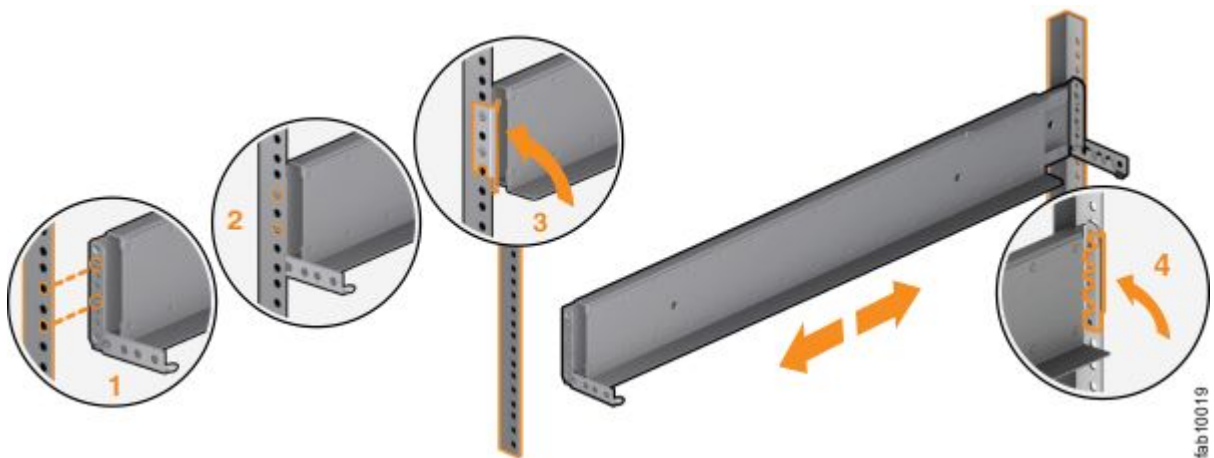


Figure 11. Closing the hinge brackets

- Step 9. On the front of the rail, press the two bracket pins into the holes in the rack flanges.
- Step 10. Close the front hinge bracket to secure the rail to the rack cabinet flange. (See Figure 11 “Closing the hinge brackets” on page 14.)
- Step 11. Secure the rear of the rail to the rear rack flange with an M5 screw.

Step 12. Repeat the steps to secure the opposite rail to the rack cabinet.

Step 13. Repeat the procedure to install rails for each additional control enclosure.

Installing support rails for Lenovo Storage V7000 expansion enclosures

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

To install the support rails, complete the following steps.

Step 1. Locate the expansion enclosure rails (Figure 12 “Expansion enclosure support rails” on page 15). The rail assembly consists of two rails that must be installed in the rack cabinet.

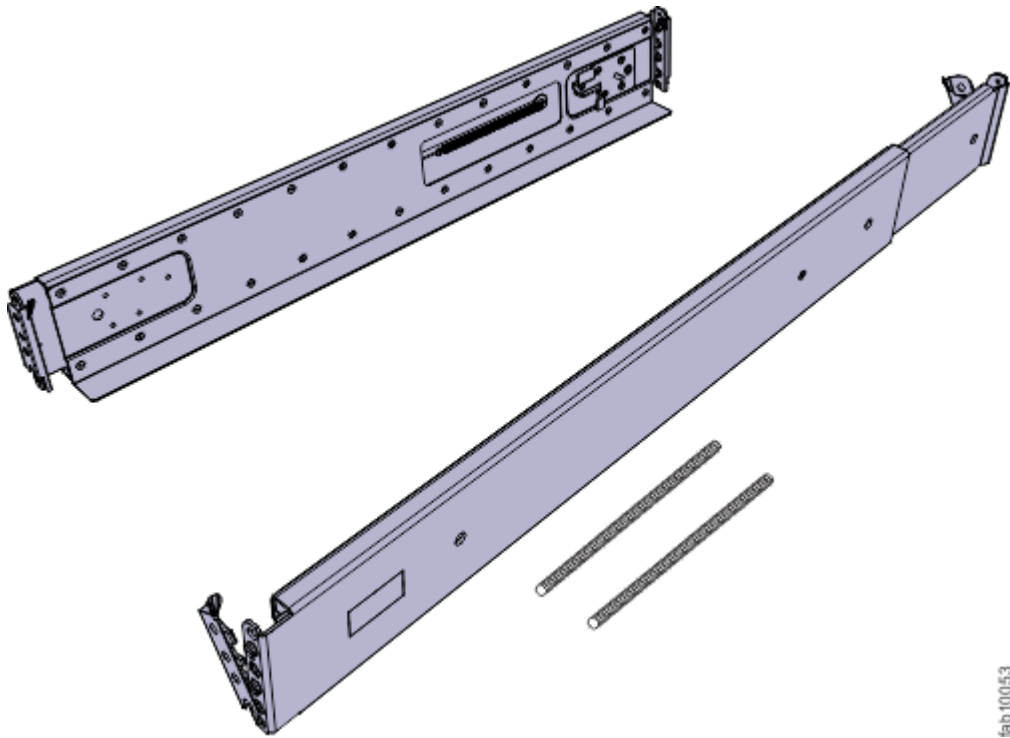


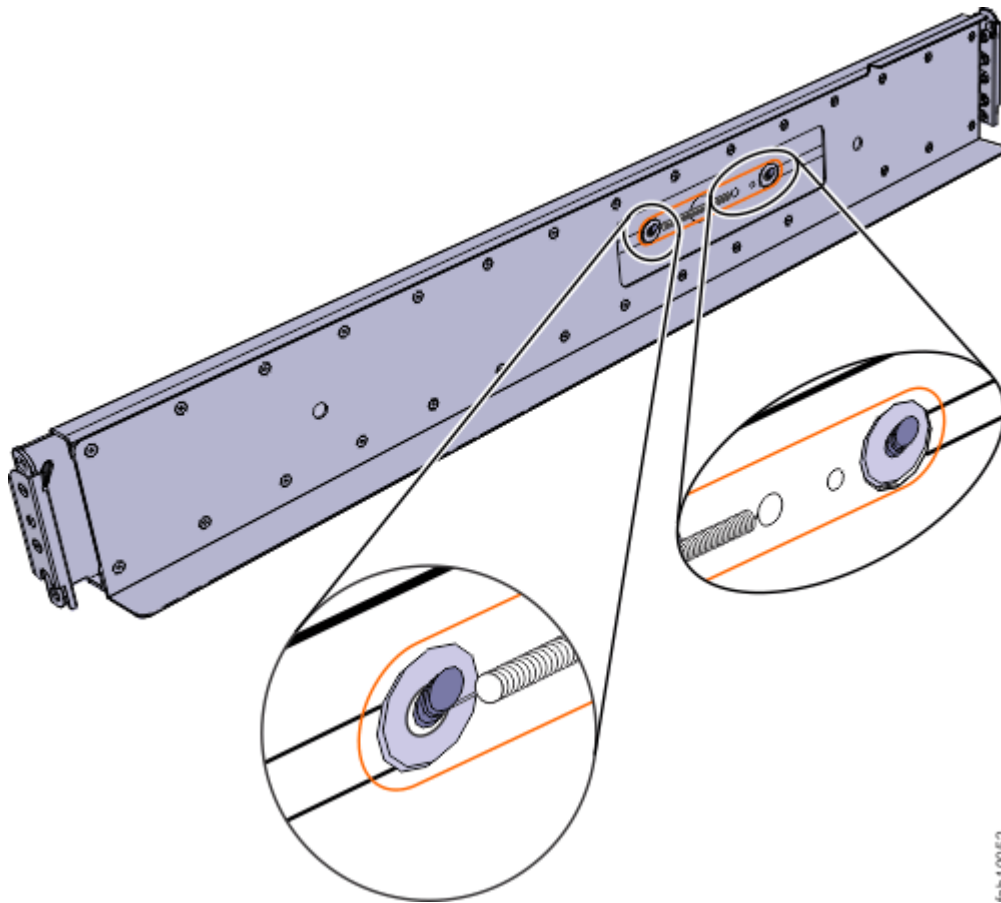
Figure 12. Expansion enclosure support rails

Step 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 “Installing the rail spring” 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.



fab10052

Figure 13. Installing the rail spring

Step 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 “Hole locations in the front of the rack” on page 17 shows two rack units with the front mounting holes identified.

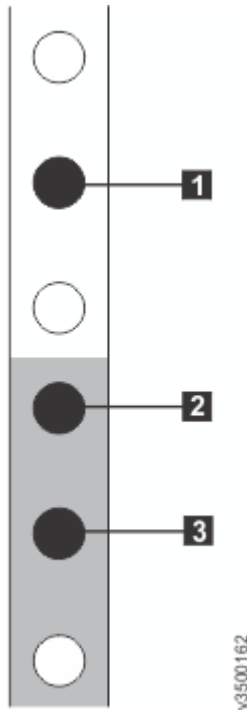


Figure 14. Hole locations in the front of the rack

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

Step 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 6 “Selecting bracket pins for your rack” on page 17).

Table 6. 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. |

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

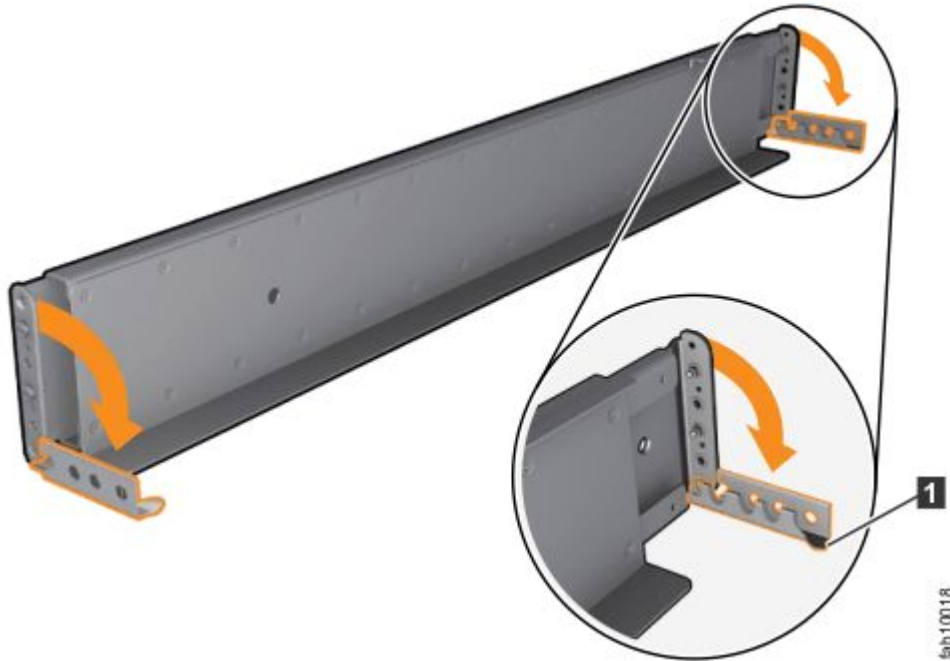


Figure 15. Opening the hinge brackets

- Step 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.
- Step 7. On the rear of the rail, press the two bracket pins into the holes in the rack flanges.
- Step 8. Close the rear hinge bracket to secure the rail to the rack cabinet flange. (See Figure 16 “Closing the hinge brackets” on page 18.)

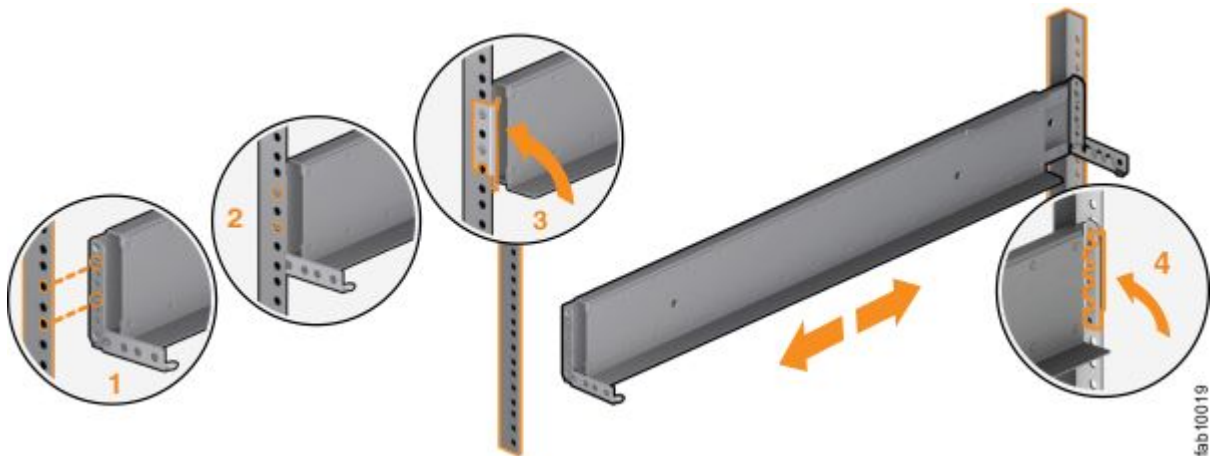


Figure 16. Closing the hinge brackets

- Step 9. On the front of the rail, press the two bracket pins into the holes in the rack flanges.
- Step 10. Close the front hinge bracket to secure the rail to the rack cabinet flange. (See Figure 16 “Closing the hinge brackets” on page 18.)
- Step 11. Secure the rear of the rail to the rear rack flange with an M5 screw.

Step 12. Repeat the steps to secure the opposite rail to the rack cabinet.

Step 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.

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.**

To install an enclosure, complete the following steps.

Step 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 “Removing enclosure end caps” on page 19.)

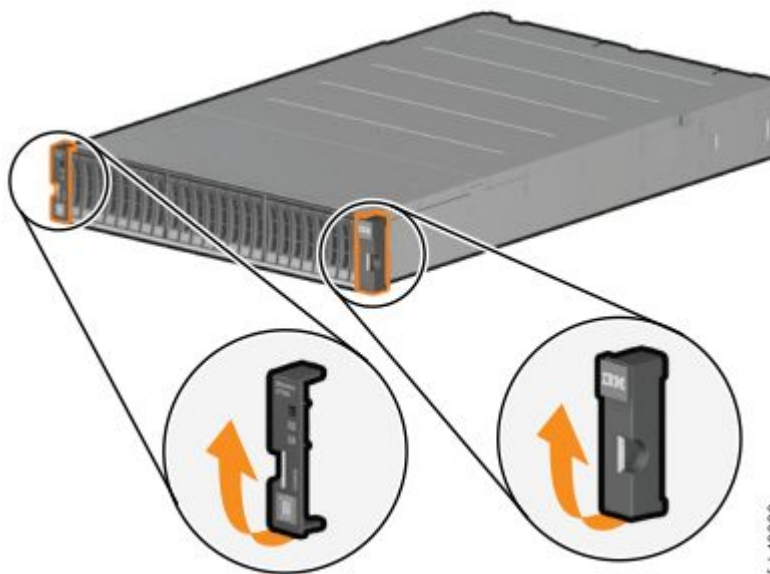


Figure 17. Removing enclosure end caps

- Step 2. Align the enclosure with the front of the rack cabinet.
- Step 3. Carefully slide the enclosure into the rack along the rails until the enclosure is fully inserted (see Figure 18 “Inserting the enclosure” on page 20).

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.

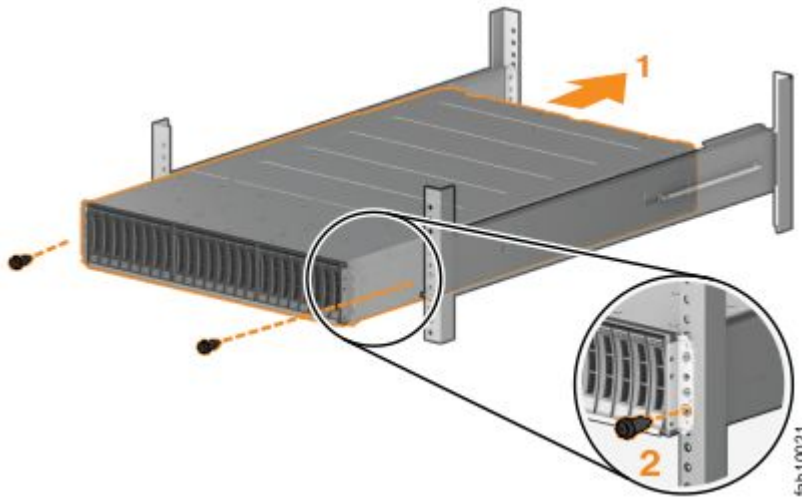


Figure 18. Inserting the enclosure

- Step 4. Secure the enclosure with screws in the rack mounting screw holes. (See Figure 18 “Inserting the enclosure” on page 20 and Figure 19 “Reinstalling enclosure end caps” on page 21.)
- Step 5. Reinstall the left and right end caps. (See Figure 19 “Reinstalling enclosure end caps” 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.
- Ensure that the serial number of the end cap matches the serial number on the rear of the enclosure.
 - Fit the slot on the top of the end cap over the tab on the chassis flange.
 - Rotate the end cap down until it snaps into place.
 - Ensure that the inside surface of the end cap is flush with the chassis.

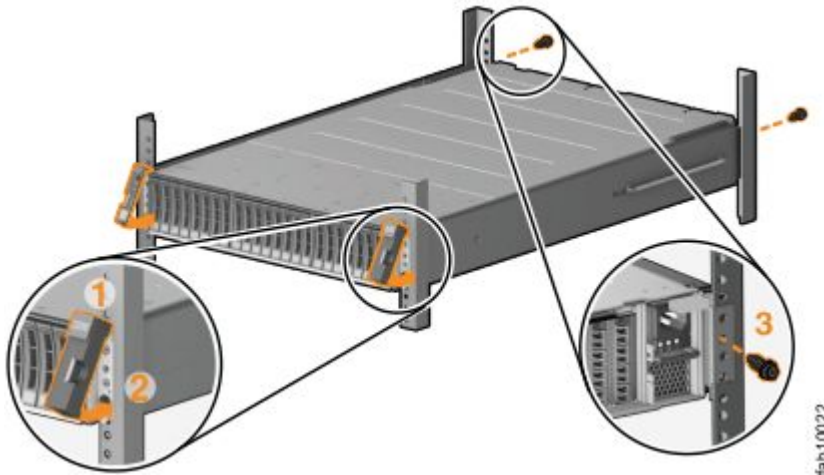


Figure 19. Reinstalling enclosure end caps

Connecting SAS cables to expansion enclosures

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

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; each set can consist of a maximum of 10 expansion enclosures. Therefore, each control enclosure can manage up to 20 expansion enclosures. A system that contains two control enclosures can have up to 40 expansion enclosures.

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.

To install the cables, complete the following steps.

- Step 1. Using the supplied SAS cables, connect the control enclosure to the expansion enclosure at rack position 1, as shown in .
- 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.

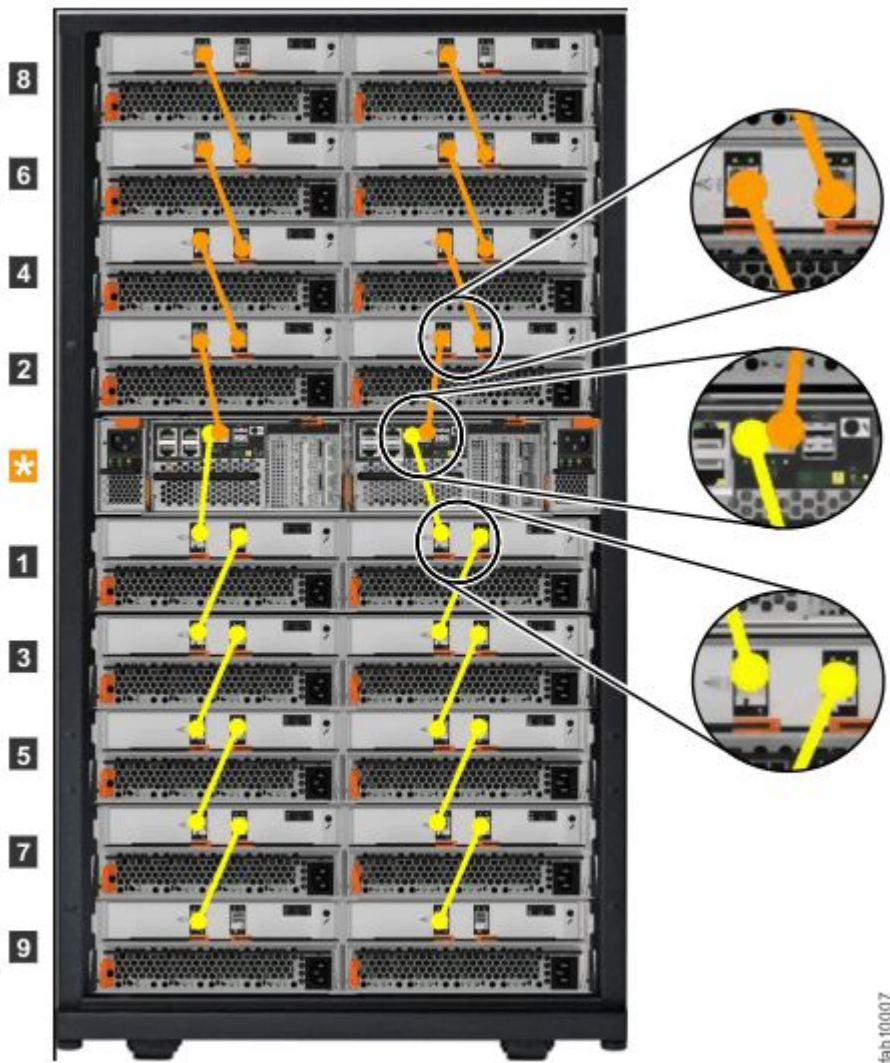


Figure 20. Connecting the SAS cables

- Step 2. To add a second expansion enclosure chain to the control enclosure, use the supplied SAS cables to connect the control enclosure to the expansion enclosure at rack position 2. Refer to Figure 20 “Connecting the SAS cables” on page 22 for an example.
- 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.
 - 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.
- Step 3. If additional expansion enclosures are installed, connect each one to the previous expansion enclosure in a chain; use two Mini SAS HD to Mini SAS HD cables, as shown in Figure 20 “Connecting the SAS cables” on page 22.
- Note:** A control enclosure can support up to 20 expansion enclosures (10 above the control enclosure and 10 below the control enclosure).
- Step 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 “SAS cable connectors” on page 23) 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.

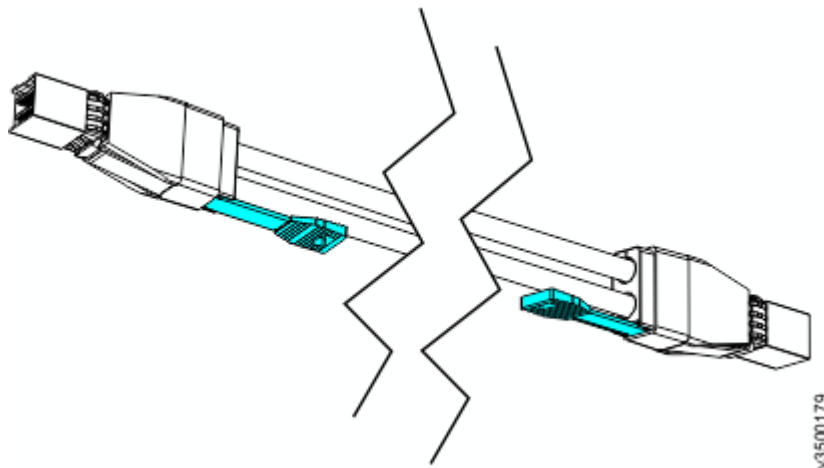


Figure 21. SAS cable connectors

Guidelines

Be aware of the following guidelines when you 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 “Connecting the SAS cables” 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 “Connecting the SAS cables” 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.

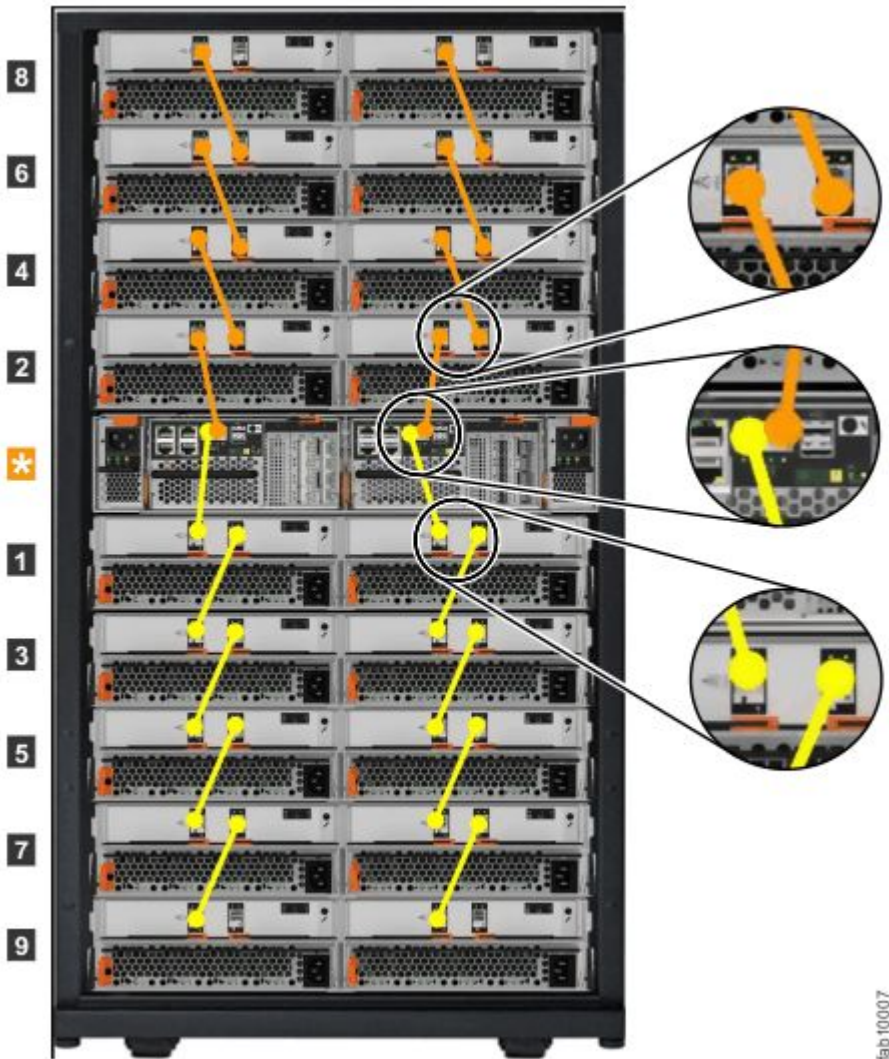


Figure 22. Connecting the SAS cables

Connecting Ethernet cables to node canisters

On Lenovo Storage V7000 systems, 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.

To install the Ethernet cables, complete the following steps.

- Step 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 “Connecting the Ethernet cables” 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 if the configuration node fails.

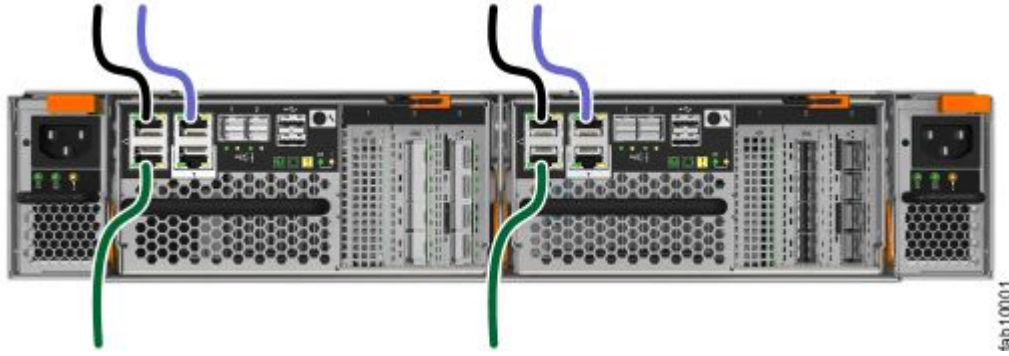


Figure 23. Connecting the Ethernet cables

- Step 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 “Connecting the Ethernet cables” on page 25. This port can also be used for iSCSI connectivity to the system by hosts on the network. If there is more than one control enclosure in the system, ensure that port 2 of every node canister is connected to the same network to provide access if the configuration node fails.
- Step 3. Optionally, connect Ethernet port 3 of both node canisters in a system to the networks that will provide extra 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 adapter

If 10 Gbps iSCSI-FCoE 4-port host interface adapters are installed on your Lenovo Storage V7000 system, you can use Fibre Channel cables to connect them to your 10 Gbps Ethernet or FCoE SAN.

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

To install the cables, complete the following steps.

- Step 1. If optional 4-port 10 Gbps Ethernet host interface adapters 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.

Figure 24 “Example configuration with Ethernet cables connected to 10 Gbps iSCSI-FCoE 4-port host interface adapters” on page 26 shows an example configuration with a pair of Ethernet cables connected to port 3 in each canister.

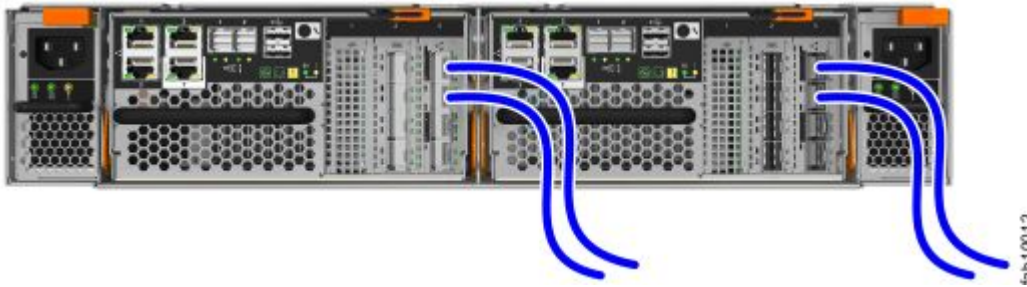


Figure 24. Example configuration with Ethernet cables connected to 10 Gbps iSCSI-FCoE 4-port host interface adapters

Connecting Fibre Channel cables to a Fibre Channel host interface adapter

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

To install the cables, complete the following steps.

Step 1. Connect the required number of Fibre Channel cables. Refer to the “Planning” section of the IBM Knowledge Center for instructions on determining the number of cables required.

Note: Both canisters must have the same number of cables connected.

Figure 25 “Example configuration with two Fibre Channel cables per canister” on page 26 shows an example configuration with two Fibre Channel cables connected to each canister.

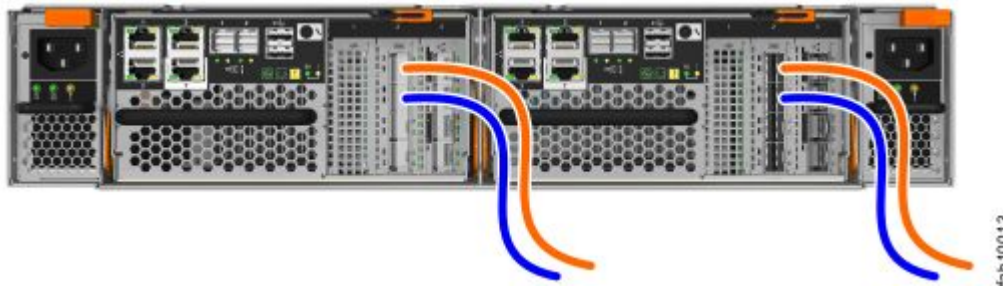


Figure 25. Example configuration with two Fibre Channel cables per canister

Step 2. If you want to connect additional Fibre Channel cables, make sure to connect the same number of cables to each canister. Figure 26 “Example configuration with four Fibre Channel cables per canister” 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

- Step 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 you attempt to add a control enclosure to an existing system.

Powering on the system

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

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 panels must be installed in all empty host interface adapter slots.

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

To power on the system, complete the following steps.

- Step 1. Power on all expansion enclosures. Use the supplied power cords to connect both power supply units of the enclosure to their power sources. 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.

- Step 2. From the rear of the expansion enclosure, check the LEDs on each expansion canister (see Figure 27 “Expansion canister LEDs” on page 28).

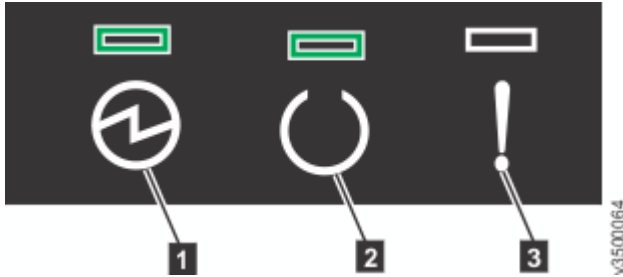


Figure 27. Expansion canister LEDs

- 1** Power
- 2** Status
- 3** Fault

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

- Step 3. Wait for all expansion canisters to finish powering on.
- Step 4. Power on the control enclosure. Use the supplied power cords to connect both power supply units of the enclosure to their power sources. 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.

- Step 5. From the rear of the control enclosure, check the LEDs on each node canister (see Figure 28 “Node canister LEDs” on page 28).

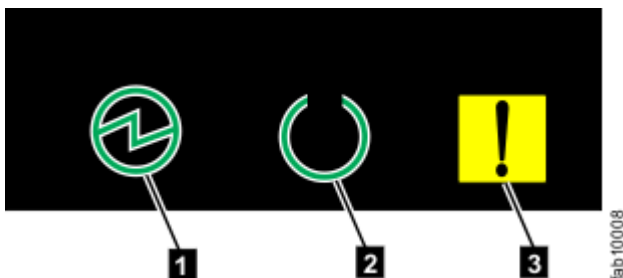


Figure 28. Node canister LEDs

- 1** Power
- 2** Status
- 3** Fault

The canister is ready with no critical errors when **Power** is illuminated, **Status** is flashing, 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 Storwizemanagement 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”).

The steps for initializing a new system are described in “Initializing the system by using the technician port” on page 32.

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.

The management GUI supports the following web browsers:

- Mozilla Firefox 41
- Mozilla Firefox Extended Support Release (ESR) 38
- Microsoft Internet Explorer (IE) 11 and Microsoft Edge
- Google Chrome 46

Lenovo 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, Lenovo might investigate potential solutions or work-arounds that the client can implement until a permanent solution becomes available.

To configure your web browser, follow these steps:

Step 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:

1. In Internet Explorer, click **Tools** → **Internet Options**.
2. Click **Security Settings**.

3. Click **Internet** to choose the Internet zone.
4. Click **Custom Level**.
5. Scroll down to the **Scripting** section, and then in **Active Scripting**, click **Enable**.
6. Click **OK** to close **Security Settings**.
7. Click **Yes** to confirm the change for the zone.
8. Click **OK** to close **Internet Options**.
9. Refresh your browser.

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

1. In Internet Explorer, click **Tools → Internet Options**.
2. Click **Security**.
3. Click **Trusted sites**.
4. On the **Trusted sites** dialog, verify that the web address for the management GUI is correct and click **Add**.
5. Verify that the correct web address was added to the **Trusted sites** dialog.
6. Click **Close** on the **Trusted sites** dialog.
7. Click **OK**.
8. Refresh your browser.

For Google Chrome:

1. On the menu bar in the Google Chrome browser window, click **Settings**.
2. Click **Show advanced settings**.
3. In the **Privacy** section, click **Content settings**.
4. In the **JavaScript** section, select **Allow all sites to run JavaScript**.
5. Click **OK**.
6. Refresh your browser.

Step 2. Enable cookies in your web browser.

For Mozilla Firefox:

1. On the menu bar in the Firefox browser window, click **Tools → Options**.
2. On the Options window, select **Privacy**.
3. Set "Firefox will" to **Use custom settings for history**.
4. Select **Accept cookies from sites** to enable cookies.
5. Click **OK**.
6. Refresh the browser.

For Microsoft Internet Explorer:

1. In Internet Explorer, click **Tools → Internet Options**.
2. Click **Privacy**. Under **Settings**, move the slider to the bottom to allow all cookies.
3. Click **OK**.
4. Refresh your browser.

For Google Chrome:

1. On the menu bar in the Google Chrome browser window, click **Settings**.

2. Click **Show advanced settings**.
 3. In the **Privacy** section, click **Content settings**.
 4. In the **Cookies** section, select **Allow local data to be set**.
 5. Click **OK**.
 6. Refresh your browser.
- Step 3. Enable file download on IE 10 and 11 running on Windows 2012.
1. In Internet Explorer, click **Tools → Internet Options**.
 2. On the Internet Options window, select the **Security** tab.
 3. On the **Security** tab, click the **Internet zone**.
 4. Click **Custom level** to customize the security level for this zone.
 5. Scroll down to **Downloads** and select **Enable** under File download.
 6. Click **OK**.
 7. Click **Yes** to confirm.
 8. Click **OK** to close the Internet Options.

- Step 4. Enable scripts to disable or replace context menus. (Mozilla Firefox only).

For Mozilla Firefox:

1. On the menu bar in the Firefox browser window, click **Tools → Options**.
2. On the Options window, select **Content**.
3. Click **Advanced** by the **Enable JavaScript** setting.
4. Select **Disable or replace context menus**.
5. Click **OK** to close the Advanced window.
6. Click **OK** to close the Options window.
7. Refresh your browser.

- Step 5. 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 need to log in to the management GUI for the Lenovo Storage V7000 system.

The default user name and password for the management GUI are listed in Table 7 “Default user name and password for the management GUI” on page 32.

Table 7. Default user name and password for the management GUI

| User name | Password |
|-----------|----------|
| superuser | passw0rd |

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

Initializing the system by 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.

You require the following items:

- 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.

To initialize the system, complete the following steps.

- Step 1. Ensure that the system is powered on, as described in “Powering on the system” on page 27.
- Step 2. Configure an Ethernet port on the personal computer to enable Dynamic Host Configuration Protocol (DHCP) configuration of its IP address and DNS settings.

If you do not have DHCP, you must manually configure the personal computer. Specify the static IPv4 address 192.168.0.2, subnet mask 255.255.255.0, gateway 192.168.0.1, and DNS 192.168.0.1.

- Step 3. Locate the Ethernet port that is labeled **T** on the rear of a node canister. Figure 29 “Lenovo Storage V7000 technician port” on page 32 shows the rear of the node canister, where **1** is the technician port.



Figure 29. Lenovo Storage V7000 technician port

- Step 4. Connect an Ethernet cable between the port of the personal computer that is configured in Step 2 on page 32 and the technician port.
After the connection is made, the system will automatically configure the IP and DNS settings for the personal computer if DHCP is available. If it is not available, the system will use the values you provided in Step 2 on page 32.
- Step 5. After the Ethernet port of the personal computer is connected, open a supported browser and browse to address <http://install>. (If you do not have DCHP, open a supported browser and go to the following static IP address 192.168.0.1.)
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 Lenovo Storage V7000 system” in the **Troubleshooting → Resolving a problem** section of the Lenovo Storage V7000 IBM Knowledge Center.

- Step 6. Follow the instructions that are presented by the initialization tool to configure the system with a name and management IP address.
- Step 7. If you experience a problem during the process due to a change in system states, wait 5 - 10 seconds. Then, either reopen the SSH connection or reload the service assistant.
- Step 8. After you complete the initialization process, disconnect the cable between the personal computer and the technician port.

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

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

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

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

Adding a control enclosure to an existing system

A system may cluster with another system or with a Lenovo Storage V7000 system. To add a second control enclosure to an existing Storage V5030 system, you must first install it in the rack. Then, you must connect it to the system through a zone in the SAN.

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

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

Note: You cannot cluster a second control enclosure with a Storwize® V5010 or Storwize® V5020 system.

To add a second control enclosure to an existing Storage V5030 system, complete the following steps.

- Step 1. Install support rails for the new enclosure.
- Step 2. Install the new enclosure in the rack.
- Step 3. Connect the canisters to the storage area network. See “Connecting Fibre Channel cables to a 10 Gbps iSCSI-FCoE 4-port host interface adapter” on page 25 or “Connecting Fibre Channel cables to a Fibre Channel host interface adapter” on page 26.

- Step 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 the world wide port names (WWPNs), use the service assistant to find them.
- Step 5. Start the management GUI.
- Step 6. Go to **Monitoring → System**.
- Step 7. On the System page, select **Actions → Add Enclosures**.
- Step 8. Continue to follow the on-screen instructions.

Appendix A. Accessibility features for Lenovo Storage 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 Lenovo Storage 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 Lenovo Storage V7000 system online documentation and its related publications are accessibility-enabled. The accessibility features of the online documentation 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 Lenovo Storage V7000 online documentation 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 Lenovo Storage V7000 information center.

The Statement of Limited Warranty is shipped (in hardcopy form) with your product.

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Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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New Orchard Road
Armonk, New York 10504
914-499-1900

European community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
Email: halloibm@de.ibm.com

Germany Electromagnetic Compatibility Directive

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JIS C 61000-3-2 適合品

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|--|--|------------------|------------------|--|--|--|
| | 鉛Lead (Pb) | 汞Mercury (Hg) | 鎘Cadmium (Cd) | 六價鉻 Hexavalent chromium (Cr ⁶⁺) | 多溴聯苯 Polybrominated biphenyls (PBB) | 多溴二苯醚 Polybrominated diphenyl ethers (PBDE) |
| 機架 | ○ | ○ | ○ | ○ | ○ | ○ |
| 外部蓋板 | ○ | ○ | ○ | ○ | ○ | ○ |
| 機械組套件 | - | ○ | ○ | ○ | ○ | ○ |
| 空氣傳動設備 | - | ○ | ○ | ○ | ○ | ○ |
| 冷卻組套件 | - | ○ | ○ | ○ | ○ | ○ |
| 內存模塊 | - | ○ | ○ | ○ | ○ | ○ |
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| 鍵盤 | - | ○ | ○ | ○ | ○ | ○ |
| 調製解調器 | - | ○ | ○ | ○ | ○ | ○ |
| 監視器 | - | ○ | ○ | ○ | ○ | ○ |
| 滑鼠 | - | ○ | ○ | ○ | ○ | ○ |
| 電纜組套件 | - | ○ | ○ | ○ | ○ | ○ |
| 電源 | - | ○ | ○ | ○ | ○ | ○ |
| 儲備設備 | - | ○ | ○ | ○ | ○ | ○ |
| 電池匣組套件 | - | ○ | ○ | ○ | ○ | ○ |
| 電池 | - | ○ | ○ | ○ | ○ | ○ |
| 有mech的電路卡 | - | ○ | ○ | ○ | ○ | ○ |
| 無mech的電路卡 | - | ○ | ○ | ○ | ○ | ○ |
| 雷射器 | - | ○ | ○ | ○ | ○ | ○ |
| <p>備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note1 : “exceeding 0.1 wt%” and “exceeding 0.01 wt%” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考3. “-” 係指該項限用物質為排除項目。 Note3 : The “-” indicates that the restricted substance corresponds to the exemption.</p> | | | | | | |

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