

IBM FlashSystem 7200 IBM Storwize V7000 Gen3 NVMe Control Enclosure Getting Started Guide



Overview

This document describes the installation procedures for the following IBM FlashSystem® and Storwize® systems. It also contains information to help you plan the system configuration. This information applies to the following machine type and model (MTM) numbers.

System	MTMs
IBM FlashSystem 7200 control enclosure	2076-824 and 2076-U7C
Storwize V7000 Gen3 NVMe control enclosure	2076-724 and 2076-U7B

Important: This document is intended to be used by persons who are experienced with installing these systems. Before you use this information and the product it supports, read the following topics:

- [Installation worksheets](#) on page 8
- [Safety and environmental notices](#) on page 12
- [Notices](#) on page 13
- [IBM Systems Environmental Notices](#) and [IBM Systems Safety Notices](#) (provided on a DVD with your product order)

IBM Knowledge Center (<https://ibm.biz/BdqxdY>) contains more information about preparing the physical environment before the installation; it also provides information about configuring, managing, and servicing the system after installation. The IBM Knowledge Center is updated between product releases to provide the most current documentation.

Unpacking and verifying the contents

Before you start the installation process, ensure that the following items are available.

- Philips screw driver
- Box knife
- Flat-blade screw driver (optional)
- Three Ethernet cables



The control enclosure and the following related parts are included in one box. The enclosed inventory sheet lists the part numbers of the items that were ordered. Items, such as drives and networking adapters, are preinstalled inside each node canister.

- Control enclosure with the following components preinstalled:
 - Two node canisters with optional networking adapters, SFPs, and memory.

Each IBM FlashSystem 7200 node canister contains three networking adapter slots. The same number and type of adapters must be installed in each node canister. The control enclosure can contain 0, 2, 4, or 6 networking adapters.

Each Storwize V7000 Gen3 node canister has three adapter slots. By default, slot 3 contains a 4-port 12 Gbps SAS networking adapter. If ordered, the same number and type of networking adapters are installed in slots 1 and 2 of each node canister. The control enclosure can contain 2, 4, or 6 networking adapters.

- Two power supply units (PSUs).
- A combination of 24 drives and drive blanks.

The number of drives and drive blanks varies, according to the number of drives that were specified in the product order. For example, if 12 drives were ordered, the drives and 12 drive blanks are preinstalled in the control enclosure.

- Rail kit, which includes the left and right rails, and 8 securing M5 screws and locating pins.
- Cables, if they were ordered, for the type and number of networking adapters that are installed in each node canister.
- Two power cables.



CAUTION: The weight of this part or unit is between 32 and 55 kg (70.5 and 121.2 lb). It takes three persons to safely lift this part or unit. (C010)

Unpack the control enclosure

To unpack the control enclosure, complete the following steps. If three persons or a lift are not available, more steps are required to remove some parts before the control enclosure can be installed.

1. Cut the box tape and open the lid of the shipping carton.
2. Remove the rail kit box and set it aside in a safe location.
3. Lift the front and rear foam packing pieces from the carton.
4. Remove the four corner reinforcement pieces from the carton.
 - If three people lift the control enclosure out of the carton or you are using lifting equipment, go to Step 15 on page 2.
 - Otherwise, continue to Step 5 on page 2.
5. Using the box knife, carefully cut the four corners of the carton from top to bottom.
6. Fold the sides and back of the carton down to uncover the rear of the control enclosure. If necessary, carefully cut along the lower fold line of the sides and remove them.
7. Carefully cut the raised section of the foam packing away from the rear of the enclosure.
8. Carefully cut open the bag that covers the rear of the enclosure.
9. Remove the left and right PSU, as described in [Removing and replacing a power supply unit](#) on page 3.
10. Record the last 6 digits of the serial number on the back of each PSU; then, set the power supplies aside.

Item	Left PSU	Right PSU
Serial Number		

11. Remove the upper and lower node canisters; see [Removing and replacing a node canister in the control enclosure](#) on page 4.
12. Record the serial number on the release handle of each node canister; then, set the canisters aside.

Item	Upper Node Canister	Lower Node Canister
Serial Number		

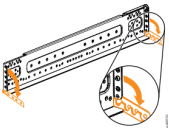
13. Carefully cut the raised section of the foam packing away from the front of the enclosure.
14. Remove all of the drives from the front of the enclosure, as described in [Removing and replacing a drive](#) on page 4.
15. Lift the enclosure from the shipping carton or push it on to a lift.
16. Record the serial number that is listed on the left end cap of the control enclosure.

Item	Serial Number	MTM
Control Enclosure		

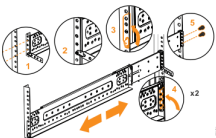
Installing the support rails and enclosure into the rack

Before you can install the control enclosure into the rack, you must first install the side support rails.

1. At each end of the side rail, grasp the tab and pull firmly to open the hinge bracket.

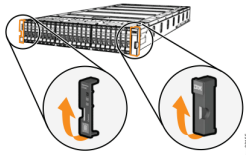


2. Align the holes in the rail bracket with the holes on the front (1) and rear rack cabinet flanges. Ensure that the rails are aligned on the inside (2) of the rack cabinet.

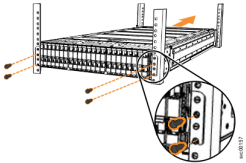


3. Close the front hinge bracket (3) to secure the rail to the rack cabinet flange.
4. Extend the length of the side rail, as needed.
5. Close the hinge at the rear of the rail (4).

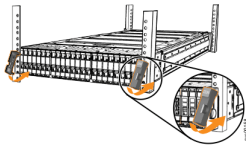
6. Secure the rear of the rail to the rear rack flange with two black M5 screws (5).
7. Repeat Step 1 on page 2 through Step 6 on page 3 to secure the opposite rail to the rack cabinet.
8. Remove each end cap from the front of the enclosure. Lift the bottom of each end cap



9. At the front of the enclosure, use two rack mounting screws to secure each side of the enclosure to the rack.



10. Reinstall the left and right end caps to the front of the enclosure.



Removing and replacing parts

If three persons or a lift are not available to install the control enclosure, the weight of the control enclosure must be reduced before it can be safely lifted. Follow the procedures to remove several parts of the control enclosure. Reinstall the parts after the control enclosure is installed in the rack. If you did not remove any parts, continue to [Connecting SAS cables](#) on page 5.

Removing and replacing a power supply unit

To reduce weight during the installation procedure, you must remove and replace the power supply units (PSUs) in a control enclosure. When the system is running, the redundant PSUs operate in parallel; one PSU continues to provide power if the other PSU fails.

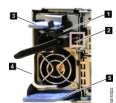
About this task



- Follow recommended procedures for handling electrostatic discharge (ESD)-sensitive devices.
- No tools are required to complete this task. Do not remove or loosen any screws.
- Do not insert a PSU if the PSU slot does not contain a power interposer.

Procedure

1. Fold out the handle (3) so that it extends perpendicular to the PSU.



- 1 Cable retention clip
- 2 LED indicator
- 3 PSU handle
- 4 PSU release tab
- 5 Power interposer release tab

2. Hold the PSU handle and press the PSU release tab (4). Steadily pull the handle horizontally to slide the PSU from the control enclosure. Support the PSU with your other hand as it is released.



3. To replace the PSU, fold out the handle so that it extends perpendicular to the PSU.
4. Extend the PSU handle and support the PSU. Slide the PSU into the control enclosure until the release tab engages with a "click".

Removing and replacing a node canister in the control enclosure

During installation, you need to remove, and then reinstall, the node canisters from the control enclosure.

About this task



CAUTION: This part or unit is heavy but has a weight smaller than 18 kg (39.7 lb). Use care when lifting, removing, or installing this part or unit. (C008)

- Use care when you remove a node canister from the enclosure. The node canister is long and its center of gravity is far forward. It can be helpful to have a lift or other sturdy, flat surface ready to receive the node canister during removal.
- No tools are needed to complete this task. Do not remove or loosen any screws.

Procedure

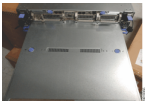
1. To remove the node canister, locate the left and right release levers for the node canister.

On the upper node canister, the release levers are at the top of the control enclosure. On the bottom node canister, the release levers are at the bottom of the enclosure. The serial number is on a label on the release lever; Step 6 on page 4 shows an example.

2. Pull the left and right levers by the blue ends so that they both unlatch and swing out into an open position, as shown.



3. Use the release levers to slowly pull the node canister and partially extract it from the enclosure.



Warning: Observe safe handling practices as you complete the following steps. The node canister is long and heavy. Use a lifting platform or other nearby surface to support the node canister as it is extracted from the control enclosure.

4. Hold the node canister by its sides so that it is level and its weight is balanced. Then, slide the node canister out of the control enclosure.
5. Place the node canister on a flat, level surface; the lid must face up.



Note: The top node canister is inverted; after you remove the top node canister, you must turn it over.

6. To replace the node canister, ensure that both of the canister release levers are in the open position.



7. Push the node canister into the enclosure, ensuring that both release levers engage with the canister and close.
8. Press the release levers closed to fully engage the node canister into the enclosure. Press the latch ends to ensure that the latches are engaged with the control enclosure.

Removing and replacing a drive

Use the following procedures to remove and replace a drive or an IBM FlashCore Module (FCM) from a node canister.

About this task



- Follow the recommended procedures for handling electrostatic discharge (ESD)-sensitive devices.
- No tools are required to complete this task. Do not remove or loosen any screws during this procedure.
- Every drive slot of an operational control enclosure must contain either a drive or a blank filler. Do not leave a drive slot empty for more than 10 minutes during servicing.
- IBM FlashCore Modules are not interchangeable with the flash modules in IBM FlashSystem 900 storage enclosures.

Procedure

1. To remove the drive, press the blue touchpoint to unlock the latching handle.



- Lower the handle and slide the drive out of the enclosure as shown.



- To replace the drive, ensure that the LED indicators are at the top of the new drive.
- Press the blue touchpoint to unlock the latching handle on the drive.
- Slide the new drive into the node canister. Press on the drive label near the bottom of the new drive to ensure that it is fully inserted.



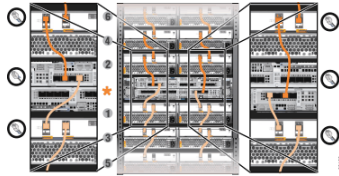
- Close the handle on the drive until the latch clicks into place.



Connecting SAS cables

This task applies if you are installing one or more SAS-attached expansion enclosures. Each control enclosure can manage two chains of 2U and 5U expansion enclosures. The system supports an intermix of 2U and 5U expansion enclosures with a total chain weight of 10 in each of two SAS chains. For more information about expansion enclosures, see IBM Knowledge Center (<https://ibm.biz/BdqxdY>).

- Using the supplied SAS cables, connect the control enclosure to the first expansion enclosure.
 - Connect SAS port 1 of the top node canister (node 1) in the control enclosure to SAS port 1 of the left expansion canister in the first expansion enclosure.
 - Connect SAS port 1 of the bottom node canister (node 2) in the control enclosure to SAS port 1 of the right expansion canister in the first expansion enclosure.
- To add a second expansion enclosure chain to the control enclosure, complete the following steps.
 - Connect SAS port 3 of the top node canister in the control enclosure to SAS port 1 of the left expansion canister in the second expansion enclosure.
 - Connect SAS port 3 of the bottom node canister in the control enclosure to SAS port 1 of the right expansion canister in the second expansion enclosure.



Important: In the control enclosure, node canister 1 is on top and node canister 2 is on the bottom. Because the node canisters are inverted, the location of the ports and the numbering of the ports are oriented differently on each node canister. It is important to remember this orientation when you are installing adapters and cables.

Connect networking cables

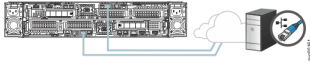
To provide connectivity for the system, you must connect cables to the appropriate ports on the control enclosure.

Four 10 Gbps Ethernet ports on each node canister provide system management connections and iSCSI host connectivity. The onboard 10 Gbps Ethernet ports use RJ-45 connections and operate at 1 Gbps when connected to a 1 Gbps switch. A separate technician port provides access to initialization and service assistant functions.

Onboard Ethernet Port	Speed	Function
1	10 Gbps	Management IP, Service IP, Host I/O
2	10 Gbps	Secondary Management IP, Host I/O
3	10 Gbps	Host I/O
4	10 Gbps	Host I/O
T	1 Gbps	Technician Port - DHCP/DNS for direct attach service management.

Connecting Ethernet cables

1. Connect Ethernet port 1 of each node canister to the IP network that will provide connection to the system management interfaces.



Ethernet port 1 can be used for iSCSI connectivity to the system by hosts on the network. If the system has more than one control enclosure, ensure port 1 of every node canister is connected to the same network to provide access if the configuration node fails.

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. Port 2 can also be used for iSCSI connectivity to the system by hosts on the network. If the system contains more than one control enclosure, ensure that port 2 of every node canister is connected to the same network to provide access if the configuration node fails.

Connecting other networking cables

Each control enclosure has PCIe slots that support optional networking adapters. However, the location requirements for the networking adapters differ between the FlashSystem 7200 and Storwize V7000 Gen3 control enclosures. Use the information that you entered in Network cable worksheets on page 9 to establish the proper connections.

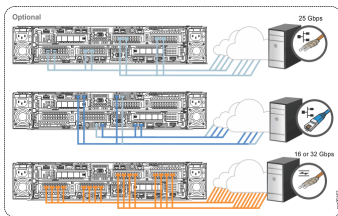
On FlashSystem 7200 systems, the networking adapters can be installed in any PCIe slot.

Type	Adapter Ports	Total Adapters	Purpose
16 Gbps Fibre Channel (FC)	4	0-3	Supports NVMe over Fabrics (NVMe-oF). Required for adding control enclosures, up to a maximum of four per system.
32 Gbps FC	4	0-3	Supports simultaneous SCSI and NVMeFC connections on the same port.
25 Gbps Ethernet (iWARP)	2	0-3	Supports iSCSI or iSER host attachment.
25 Gbps Ethernet (RoCE)	2	0-3	
12 Gbps SAS adapter	4 (2 active)	1	Required to connect to expansion enclosures. If ordered, this adapter is preinstalled in PCIe slot 3.

On Storwize V7000 Gen3 systems, the networking adapters must be installed according to the following guidelines.

Slot	Type	Adapter Ports	Total Adapters	Purpose
1 or 2	16 Gbps Fibre Channel (FC)	4	0-2	Supports NVMe-oF. Required for adding control enclosures, up to a maximum of four per system.
	32 Gbps FC	4	0-2	
	25 Gbps Ethernet (iWARP)	2	0-2	
	25 Gbps Ethernet (RoCE)	2	0-2	
3	12 Gbps SAS adapter	4 (2 active)	1	Required to connect to expansion enclosures. This adapter is preinstalled in PCIe slot 3.

1. Ensure that the networking adapters are installed in the appropriate PCIe slot.
2. Connect the required number of FC or Ethernet cables to the ports on each node canister. Both node canisters must have the same number of cables connected.



Powering on the system

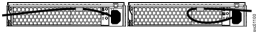
After you install all hardware components, you must power on the system and check its status. Each control enclosure has two power supply units (PSUs). To provide redundancy in a power failure, connect the power cords to separate power circuits.



Attention: Do not power on the system with any open drive bays or host interface adapter slots. Open bays or PCIe slots disrupt the internal air flow, causing the drives to receive insufficient cooling. Filler panels must be installed in all empty drive bays and PCIe slots.

1. Ensure that the circuit breakers or switches of the power sources are turned on.
2. Ensure that each power cable is secured to each PSU on the back of the node. To do so, route each power cable through the retainer.

The cable retainer has a curved opening that faces the rear of the PSU. After you plug the power cable in to the PSU, slip the power cable behind the retainer. Pull the cable back into the retainer opening to secure it. Then, route each power cable through the cable retainer.



For PSU 1, hook the power cable underneath the cable retainer so the cable can extend to the left.

For PSU 2, make a loop to secure the cable under the retainer and extend the power cable to the right side of the node.

To remove a power cable, push the cable forward to unhook it from the cable retainer. Then, unplug the cable from the PSU.

3. Connect the PSUs of the control enclosure and each expansion enclosure to their power sources.
4. Check the status LED indicators to verify the status of the enclosure. The control enclosure is ready and running without critical errors when the LEDs indicate the following status.

Location	LEDs	Indicator Status		
Back of each node canister (and 2U expansion enclosures, if applicable)		Power LED is on (1) .	Status LED is blinking (2) .	Fault LED is off (3) .
Front of the control enclosure, left end cap		Node operational LED is on.	Identify node LED is off (default).	Node fault LED is off.

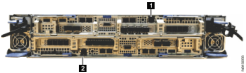
Setting up the system or adding the control enclosure to an existing system

The system can contain 1-4 control enclosures. If you are adding a control enclosure to an existing system, go to [Adding a control enclosure to an existing system](#) on page 8. Otherwise, continue to [Setting up the system](#) on page 7.

Setting up the system

Each node canister in the control enclosure has a 1 Gbps Ethernet technician port. Before you initiate a new system, you must connect an Ethernet cable to the technician port on the control enclosure.

1. Locate the technician ports on the control enclosure. Because node canister 1 is inverted, the plug of the Ethernet cable also needs to be inverted to connect to the technician port.



2. Connect an Ethernet cable to a technician port. The cable must be long enough to connect easily to a notebook computer.

If Dynamic Host Configuration Protocol (DHCP) is available, the notebook computer is automatically configured. If DHCP is not available, use the following information to configure the computer.

Static IPv4 Address	Subnet Mask	Gateway	DNS
192.168.0.2	255.255.255.0	192.168.0.1	192.168.0.1

3. Use the notebook computer to open a new web browser page. The web browser might display a warning about a potential security risk. It is safe to accept the risk and continue. See [Browser considerations](#) on page 8 for more information.
4. If the node canisters communicate with each other using RDMA over Ethernet, browse to address `http://service` or press the wrench icon on the initialization page to access the Service Assistant Tool. Use the following credentials to sign in to the system.

User ID	Initial Password
superuser	passw0rd

5. Use the **Change node IP** tab of the Service Assistant to configure the node IP settings for the node. Repeat this step for each node canister in the system.
6. Use the initialization GUI to enter the requested information, such as the management IP address and service IP addresses.



You need to set the IP address, subnet mask, and DNS server only when you do not want to use DHCP.

For more information, see [Management and service address worksheet](#) on page 11.

Adding a control enclosure to an existing system

If the system was already set up on another control enclosure, do not install it again on this control enclosure. Instead, use the management GUI to add the control enclosure to the system.

1. Connect the node canisters to the storage area network or to a 25 Gbps (or faster) Ethernet.
2. Configure the zoning on the SAN switches. The correct zoning provides a way for the FC ports to connect to each other.

If the new node canisters use RDMA over Ethernet to communicate with other node canisters, use the service assistant tool or the `satask chnodeip` command to set the node IP of each node that will be in the system.

3. In the management GUI, select **Monitoring > System**. On the **System - Overview** page, select **Add Enclosure**.

When a new enclosure is cabled correctly to the system, this action automatically displays on the **System - Overview** page. If this action does not appear, ensure that the new enclosure is cabled correctly. You can also add a new enclosure by selecting **Add Enclosure** from the **System Actions** menu.

4. Complete the instructions in the **Add Enclosure** wizard until the control enclosure is added to the system.
5. If two control enclosures are in the system, you must set up a quorum disk or application outside of the system. If the two control enclosures lose communication with each other, the quorum disk prevents both I/O groups from going offline.

Browser considerations

The management GUI supports the following HTML5-compliant browsers. Certain features must be enabled on the browser. Review the documentation that is provided with your browser to determine how to enable each item.

Browser	Required enabled features
<ul style="list-style-type: none">• Mozilla Firefox 80.0.1• Mozilla Firefox Extended Support Release (ESR) 78.2.0• Microsoft Edge 85.0• Google Chrome 85.0	<ul style="list-style-type: none">• JavaScript• Cookies• Scripts allowed to disable or replace context menus (Mozilla Firefox only)

In addition, review the following considerations about browser security features and certificates.

- Browser security features might prompt you before the browser accepts the self-signed certificate that the system issues.
- You might need to remove old certificates that are stored in the browser before the browser accepts the request.
- The web browser might display a warning about a potential security risk. It is safe to accept the risk and continue.
- After the technician port physical connection is completed (that is, connected both ends), it can take up to 45 seconds before the port is fully up and able to process requests. Submitting requests before this interval might result in 404 error responses.
- If the `http://service` request causes a 404 error or does not produce a response, you might need to use URL `https://192.168.0.1` to connect to the system.

Installation worksheets

Worksheets can help you plan and install the system. You can also use the worksheets to track important information as you remove and reinstall parts from the control enclosure during the installation process.

Drive configuration worksheet

The control enclosure supports up to 24 drives, which are installed in drive slots on the front of the enclosure. Non-Volatile Memory Express (NVMe) drives and Storage Class Memory (SCM) drives can be installed in any drive slot. However, the highest capacity drive must be installed in the lowest-numbered available drive slot. Drive slots cannot be empty; each slot must contain a drive or drive blank.

Use the following table to record information about the drives in the control enclosure. For each slot number, specify the type and capacity of the drive or whether a drive blank is installed.

Control Enclosure S/N:																							
Content	Drive Slots																						
Type NVMe / SCM																							
Capacity																							

Drive Blank																										
Slot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		

Network cable worksheets

Use the cable-connection tables to record the location and type of cable connections for each control enclosure in the system. The configuration of the networking adapters differs between FlashSystem 7200 and Storwize V7000 Gen3 control enclosures.

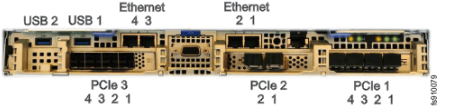
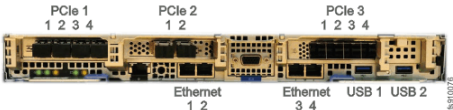
Ethernet cable standards

The control enclosure supports Ethernet connections by using onboard ports and ports on networking adapters. The following table summarizes the Ethernet cable standards for each connection.

Ethernet Port Type	Cable Type	Minimum Standard	Connector
1 Gbps Ethernet technician port	TP	Cat 5e	RJ45
10 Gbps onboard Ethernet ports	TP	Cat 6 (up to 55 m), Cat 6a or Cat 7 (up to 100 m) at 10 Gbps, or Cat 5e at 1 Gbps	RJ45
25 Gbps Ethernet host interface adapter (must be ordered)	Optical	OM3 (up to 70 m) OM4 (up to 100 m)	LC

Onboard Ethernet ports

On the control enclosure, Ethernet port 1 of each node canister is connected to an enabled port on your Ethernet switch or router. Ethernet port 1 is used for accessing the management GUI, for accessing the service assistant GUI for the node canister, and for iSCSI host attachment. You can also attach an Ethernet cable from Ethernet port 2 on the node to canister your Ethernet network. Port 2 can be used for the management GUI and for iSCSI host attachment. Ethernet ports 3 and 4 are for iSCSI attachment only.

<p>The ports on the upper node canister (canister 1) are numbered from right to left.</p>	
<p>The ports on the lower node canister (canister 2) are numbered from left to right.</p>	

Use the following table to record the properties of the onboard Ethernet ports on each node canister of the control enclosure. The configuration of the onboard Ethernet ports for FlashSystem 7200 and Storwize V7000 Gen3 systems are the same.

Control Enclosure S/N:					
Node Canister 1	Ethernet Port 4	Ethernet Port 3	Ethernet Port 2	Ethernet Port 1	Technician Port
Switch					None
Port					None
Speed: 1 or 10 Gbps					1 Gbps
Node Canister 2	Ethernet Port 1	Ethernet Port 2	Ethernet Port 3	Ethernet Port 4	Technician Port
Switch					None
Port					None
Speed: 1 or 10 Gbps					1 Gbps

FlashSystem 7200 Ethernet networking adapters

Each node canister supports 2-port 25 Gbps internet Wide-area RDMA Protocol (iWARP) or RDMA over Converged Ethernet (RoCE) Ethernet adapters. Install the adapters according to the following guidelines.

- iWARP and RoCE Ethernet adapters cannot be mixed within a node canister.
- Fibre Channel adapters are installed before Ethernet adapters, beginning with slot 1, then slot 2, and slot 3.
- Ethernet adapters are installed beginning with the first available slot.

- To connect to expansion enclosures, you must order a 4-port 12 Gbps SAS adapter that is installed in slot 3. However, only ports 1 and 3 are used to establish a SAS connection

Use the following table to record information about the Ethernet ports that are used for node-node RDMA communications.

Control Enclosure S/N:						
Node Canister 1	Ethernet Adapter Slot 3		Ethernet Adapter Slot 2		Ethernet Adapter Slot 1	
	Port 10	Port 9	Port 8	Port 7	Port 6	Port 5
Switch						
Port						
Speed: 25 or 10 Gbps						
Cable type						
Node IP						
Subnet mask						
Gateway						
VLAN ID						
Node Canister 2	Ethernet Adapter Slot 1		Ethernet Adapter Slot 2		Ethernet Adapter Slot 3	
	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10
Switch						
Port						
Speed: 25 or 10 Gbps						
Cable type						
Node IP						
Subnet mask						
Gateway						
VLAN ID						

FlashSystem 7200 Fibre Channel connections

Each node canister supports 4-port 32 Gbps Fibre Channel (FC) adapters or 4-port 16 Gbps FC adapters. Install the FC networking adapters according to the following guidelines. Record the information about the FC port connections on each node canister in the following table.

- The first FC adapter must be installed in adapter slot 1.
- If more FC adapters are needed, install them in slots 2 and 3.

Control Enclosure S/N:												
Node Canister 1	FC Adapter Slot 3				FC Adapter Slot 2				FC Adapter Slot 1			
	Port 12	Port 11	Port 10	Port 9	Port 8	Port 7	Port 6	Port 5	Port 4	Port 3	Port 2	Port 1
Switch, node, or host												
Port												
Speed: 32, 16, or 8 Gbps												
Cable type												
Node Canister 2	FC Adapter Slot 1				FC Adapter Slot 2				FC Adapter Slot 3			
	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port 9	Port 10	Port 11	Port 12
Switch, node, or host												
Port												
Speed: 32, 16, or 8 Gbps												
Cable type												

Storwize V7000 Gen3 Ethernet networking adapters

Each node canister also supports optional 2-port 25 Gbps internet Wide-area RDMA Protocol (iWARP) or RDMA over Converged Ethernet (RoCE) Ethernet networking adapters. Install the 25 Gbps Ethernet adapters according to the following guidelines. Record the port connections for the Ethernet adapters in the following table.

- Fibre Channel adapters must be installed before Ethernet adapters, beginning with slot 1 and then slot 2.
- iWARP and RoCE Ethernet adapters cannot be mixed within a node canister.
- Ethernet adapters are installed beginning with the first available slot.
- By default, a 4-port 16 Gbps SAS adapter is installed in slot 3. However, only ports 1 and 3 are used to establish a SAS connection.

Control Enclosure S/N:						
Node Canister	Component	Ethernet Adapter Slot 1		Ethernet Adapter Slot 2		Adapter slot 3
		Port 5	Port 6	Port 7	Port 8	
1 (upper)	Switch					N/A
	Port					
	Speed: 25 or 10 Gbps					
2 (lower)	Switch					N/A
	Port					
	Speed: 25 or 10 Gbps					

Storwize V7000 Gen3 Fibre Channel connections

Each node canister supports one or two 4-port 32 Gbps Fibre Channel (FC) adapters or 4-port 16 Gbps FC adapters. Install the FC adapters according to the following guidelines. Then, record the FC port connections in the following table.

- Install the first FC adapter in adapter slot 1.
- Install the second FC adapter, if applicable, in adapter slot 2.
- Adapter slot 3 cannot be used for FC adapters.

Control Enclosure S/N:										
Node Canister	Component	FC Adapter slot 1				FC Adapter slot 2				Adapter Slot 3
		Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	
1 (upper)	Switch or host									N/A
	Port									
	Speed: 32, 16, or 8 Gbps									
2 (lower)	Switch or host									N/A
	Port									
	Speed: 32, 16, or 8 Gbps									

Management and service address worksheet

Use the following table to record the management address and service addresses for each control enclosure. The primary system address is bound to Ethernet port 1. The secondary system address, if specified, is bound to Ethernet port 2. Both IPv4 and IPv6 addresses can be used. Specify the type of installation and the serial number (S/N) of the control enclosure.

- If you are installing a new system installation, designate new, unused IP addresses.
- If you are adding an I/O group (control enclosure) to an existing system, use the management address of the existing system.

Control Enclosure S/N:	Are you adding this control enclosure to an existing system? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Address Type	IP Address	Network Mask	Default Gateway
Primary system address (required)			
Secondary system address (optional)			
Node canister 1 service address (required)			

Control Enclosure S/N:	Are you adding this control enclosure to an existing system? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Address Type	IP Address	Network Mask	Default Gateway
Node canister 2 service address (required)			

Safety and environmental notices

Review all safety notices, environmental notices, and electronic emission notices before you install and use the product.

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

To find the translated text for a caution or danger notice, complete the following steps.

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

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

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

2. Locate the *IBM Systems Safety Notices* document with the user publications that were provided with your system hardware.
3. Find the matching identification number in *IBM Systems Safety Notices*. Then, review the topics about the safety notices to ensure that you are in compliance.
4. (Optional) Read the multilingual safety instructions on the system website.
 - a. Go to www.ibm.com/support
 - b. Enter the name of your system in the Search field (for example, " Storwize V7000 ").
 - c. Click the documentation link.

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This information contains all the required environmental notices for IBM Systems products in English and other languages.

The *IBM Systems Environmental Notices* information 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.

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Note: This product was designed, tested, manufactured, and certified for safe operation. It complies with IEC 60950-1 and/or IEC 62368-1 and where required, to relevant national differences/deviations (NDs) to these IEC base standards. This includes, but is not limited to: EN (European Norms including all Amendments under the Low Voltage Directive), UL/CSA (North America bi-national harmonized and marked per accredited NRTL agency listings), and other such derivative certifications according to corporate determinations and latest regional publication compliance standardized requirements.

Regulatory Model ID (RMID) or Machine Type - Modelsl (MT-Ms) may also be used to supplement identification (ID) for worldwide (WW) co-compliance filings or registrations with regulatory bodies.

Accessibility features for the system

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 system:

- You can use screen-reader software and a digital speech synthesizer to hear what is displayed on the screen. HTML documents are tested by 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.

For information about the accessibility features of the online documentation, see IBM Knowledge Center (<https://ibm.biz/BdqxdY>).

Keyboard navigation

You can use keys or key combinations for operations and to initiate menu actions that can also be done through mouse actions. You can go to the system online documentation from the keyboard by using the keyboard shortcuts for your browser or screen-reader software. See your browser or screen-reader software Help for a list of keyboard shortcuts 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.

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CAN ICES-3 (A)/NMB-3(A)

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Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

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Armonk, New York 10504
Tel: 914-499-1900

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