

Power Systems

*NVMe U.2 drives for the 9080-M9S*

**IBM**

**Note**

Before using this information and the product it supports, read the information in [“Safety notices” on page v](#), [“Notices” on page 15](#), the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

This edition applies to IBM® Power Systems servers that contain the POWER9™ processor and to all associated models.

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# Safety notices

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Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- **Attention** notices call attention to the possibility of damage to a program, device, system, or data.

## World Trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, safety information documentation is included in the publications package (such as in printed documentation, on DVD, or as part of the product) shipped with the product. The documentation contains the safety information in your national language with references to the U.S. English source. Before using a U.S. English publication to install, operate, or service this product, you must first become familiar with the related safety information documentation. You should also refer to the safety information documentation any time you do not clearly understand any safety information in the U.S. English publications.

Replacement or additional copies of safety information documentation can be obtained by calling the IBM Hotline at 1-800-300-8751.

## German safety information

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

## Laser safety information

IBM servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

### Laser compliance

IBM servers may be installed inside or outside of an IT equipment rack.



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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard: If IBM supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product. Do not open or service any power supply assembly. Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.



- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. For AC power, disconnect all power cords from their AC power source. For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected. For racks with AC power, 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. For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- 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.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- When performing a machine inspection: Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements. Do not attempt to switch power to the machine until all possible unsafe conditions are corrected. Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.
- 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) For AC power, remove the power cords from the outlets. 3) For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source. 4) Remove the signal cables from the connectors. 5) 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) For AC power, attach the power cords to the outlets. 5) For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP. 6) Turn on the devices.



- Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

**(R001 part 1 of 2):**



**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 if provided, unless the earthquake option is to be installed.
- 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. In addition, do not lean on rack mounted devices and do not use them to stabilize your body position (for example, when working from a ladder).



- Stability hazard:
  - The rack may tip over causing serious personal injury.
  - Before extending the rack to the installation position, read the installation instructions.
  - Do not put any load on the slide-rail mounted equipment mounted in the installation position.
  - Do not leave the slide-rail mounted equipment in the installation position.
- Each rack cabinet might have more than one power cord.
  - For AC powered racks, be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.

- For racks with a DC power distribution panel (PDP), turn off the circuit breaker that controls the power to the system unit(s), or disconnect the customer's DC power source, when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (R001 part 1 of 2)

**(R001 part 2 of 2):**



**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 or if the rack is not bolted to the floor. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.



- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack. (R001 part 2 of 2)



**CAUTION:** Removing components from the upper positions in the rack cabinet improves rack stability during 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 little-to-no empty U-levels between devices installed in the rack cabinet below the 32U level, unless the received configuration specifically allowed it.
- 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 2083 mm (30 x 82 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 or in an earthquake environment bolt the rack to the floor.
  - 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 of the pallet and bolt the rack cabinet to the pallet.

(R002)

**(L001)**



**DANGER:** Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do not open any cover or barrier that contains this label. (L001)

**(L002)**



**DANGER:** Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

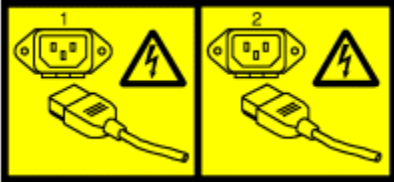
- The rack may tip over causing serious personal injury.
- Before extending the rack to the installation position, read the installation instructions.



- Do not put any load on the slide-rail mounted equipment mounted in the installation position.
- Do not leave the slide-rail mounted equipment in the installation position.

(L002)

(L003)



or



or

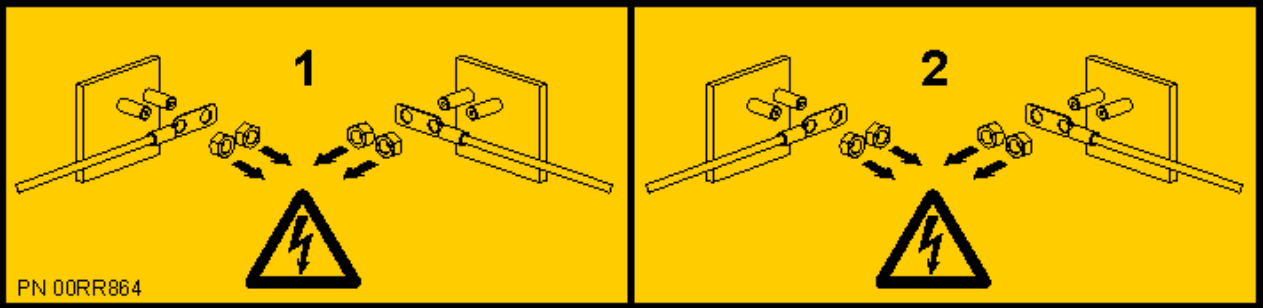



or



or






 **DANGER:** Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)


(L007)




 **CAUTION:** A hot surface nearby. (L007)

(L008)



 **CAUTION:** Hazardous moving parts nearby. (L008)

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

 **CAUTION:** This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

(C026)



**CAUTION:** Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. Although shining light into one end and looking into the other end of a disconnected optical fiber to verify the continuity of optic fibers may not injure the eye, this procedure is potentially dangerous. Therefore, verifying the continuity of optical fibers by shining light into one end and looking at the other end is not recommended. To verify continuity of a fiber optic cable, use an optical light source and power meter. (C027)



**CAUTION:** This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)



**CAUTION:** Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information:

- Laser radiation when open.
- Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

(C030)



**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 degrees C (212 degrees F)
- Repair or disassemble

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)



**CAUTION:** Regarding IBM provided VENDOR LIFT TOOL:

- Operation of LIFT TOOL by authorized personnel only.
- LIFT TOOL intended for use to assist, lift, install, remove units (load) up into rack elevations. It is not to be used loaded transporting over major ramps nor as a replacement for such designated tools like pallet jacks, walkies, fork trucks and such related relocation practices. When this is not practicable, specially trained persons or services must be used (for instance, riggers or movers).
- Read and completely understand the contents of LIFT TOOL operator's manual before using. Failure to read, understand, obey safety rules, and follow instructions may result in property damage and/or personal injury. If there are questions, contact the vendor's service and support. Local paper manual must remain with machine in provided storage sleeve area. Latest revision manual available on vendor's web site.
- Test verify stabilizer brake function before each use. Do not over-force moving or rolling the LIFT TOOL with stabilizer brake engaged.
- Do not raise, lower or slide platform load shelf unless stabilizer (brake pedal jack) is fully engaged. Keep stabilizer brake engaged when not in use or motion.
- Do not move LIFT TOOL while platform is raised, except for minor positioning.
- Do not exceed rated load capacity. See LOAD CAPACITY CHART regarding maximum loads at center versus edge of extended platform.
- Only raise load if properly centered on platform. Do not place more than 200 lb (91 kg) on edge of sliding platform shelf also considering the load's center of mass/gravity (CoG).
- Do not corner load the platforms, tilt riser, angled unit install wedge or other such accessory options. Secure such platforms -- riser tilt, wedge, etc options to main lift shelf or forks in all four (4x or all other provisioned mounting) locations with provided hardware only, prior to use. Load objects are designed to slide on/off smooth platforms without appreciable force, so take care not

to push or lean. Keep riser tilt [adjustable angling platform] option flat at all times except for final minor angle adjustment when needed.

- Do not stand under overhanging load.
- Do not use on uneven surface, incline or decline (major ramps).
- Do not stack loads.
- Do not operate while under the influence of drugs or alcohol.
- Do not support ladder against LIFT TOOL (unless the specific allowance is provided for one following qualified procedures for working at elevations with this TOOL).
- Tipping hazard. Do not push or lean against load with raised platform.
- Do not use as a personnel lifting platform or step. No riders.
- Do not stand on any part of lift. Not a step.
- Do not climb on mast.
- Do not operate a damaged or malfunctioning LIFT TOOL machine.
- Crush and pinch point hazard below platform. Only lower load in areas clear of personnel and obstructions. Keep hands and feet clear during operation.
- No Forks. Never lift or move bare LIFT TOOL MACHINE with pallet truck, jack or fork lift.
- Mast extends higher than platform. Be aware of ceiling height, cable trays, sprinklers, lights, and other overhead objects.
- Do not leave LIFT TOOL machine unattended with an elevated load.
- Watch and keep hands, fingers, and clothing clear when equipment is in motion.
- Turn Winch with hand power only. If winch handle cannot be cranked easily with one hand, it is probably over-loaded. Do not continue to turn winch past top or bottom of platform travel. Excessive unwinding will detach handle and damage cable. Always hold handle when lowering, unwinding. Always assure self that winch is holding load before releasing winch handle.
- A winch accident could cause serious injury. Not for moving humans. Make certain clicking sound is heard as the equipment is being raised. Be sure winch is locked in position before releasing handle. Read instruction page before operating this winch. Never allow winch to unwind freely. Freewheeling will cause uneven cable wrapping around winch drum, damage cable, and may cause serious injury.
- This TOOL must be maintained correctly for IBM Service personnel to use it. IBM shall inspect condition and verify maintenance history before operation. Personnel reserve the right not to use TOOL if inadequate. (C048)

## **Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE**

The following comments apply to the IBM servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:

- Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment *must not* be metallically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

**Note:** All Ethernet cables must be shielded and grounded at both ends.

The ac-powered system does not require the use of an external surge protection device (SPD).

The dc-powered system employs an isolated DC return (DC-I) design. The DC battery return terminal *shall not* be connected to the chassis or frame ground.

The dc-powered system is intended to be installed in a common bonding network (CBN) as described in GR-1089-CORE.



# Installing an NVMe U.2 drive in the 9080-M9S system

Find information about installing an NVMe U.2 drive in the IBM Power® System E980 (9080-M9S) server.

## About this task

**Note:** Installing this feature is a customer task. You can complete this task yourself, or contact a service provider to complete the task for you. You might be charged a fee by the service provider for this service.

If your system is managed by the Hardware Management Console (HMC), use the HMC to install the part in the system. For instructions, see [Installing a part by using the HMC](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcinstall.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/hmcinstall.htm).

If you do not have an HMC, complete the steps in these procedures to install an NVMe U.2 drive.

## Preparing the 9080-M9S system to install an NVMe U.2 drive

To prepare the system to install an NVMe U.2 drive, complete the steps in this procedure.

### Procedure

1. Ensure that the required software is installed to support the new feature. See the [Power Systems Prerequisites](#) website.
2. If applicable, open the rack door at the rear of the system.
3. Review the NVMe U.2 drive slot locations. The NVMe U.2 drive slots are located in the rear of the system.

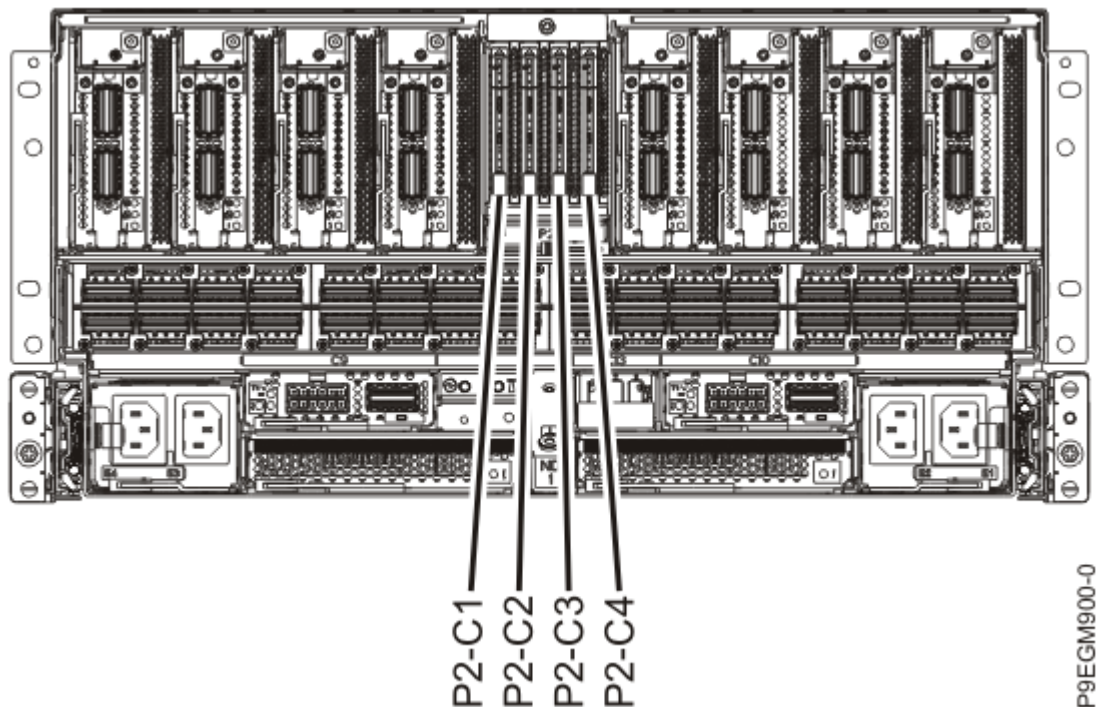


Figure 1. Location of the NVMe U.2 drives in the 9080-M9S system

4. Review the NVMe U.2 drive LED locations.

The NVMe U.2 drive has two LEDs that indicate the following status:

- A power/activity LED (green)
- An error and identify function LED (amber).

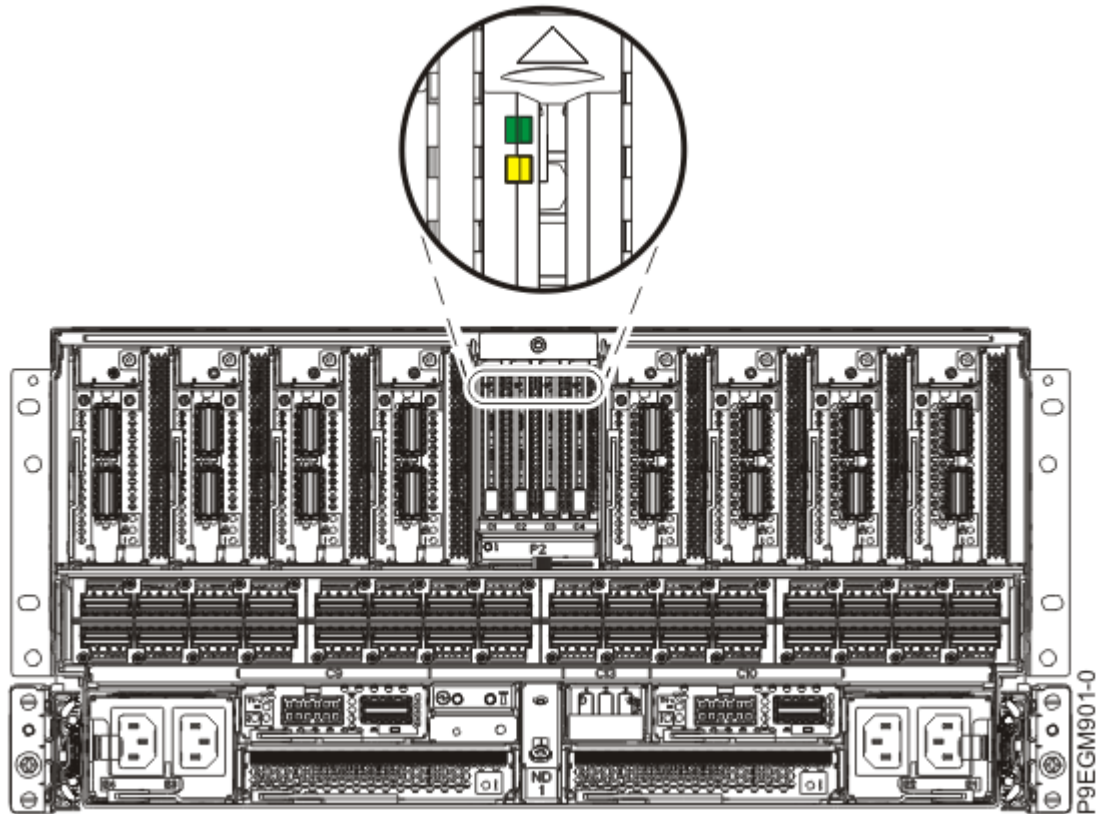


Figure 2. Locations of the NVMe U.2 LEDs in the 9080-M9S system

5. Choose from the following options:

- If you want to install an NVMe drive when the system power is turned off, continue with step “6” on page 2.
- If the system power is turned on and if the AIX® operating system controls the slot, continue with step “9” on page 3.
- If the system power is turned on and if the Linux® operating system controls the slot, continue with step “11” on page 4.

6. To prepare the system to install an NVMe drive when the system is powered off, complete the following steps:

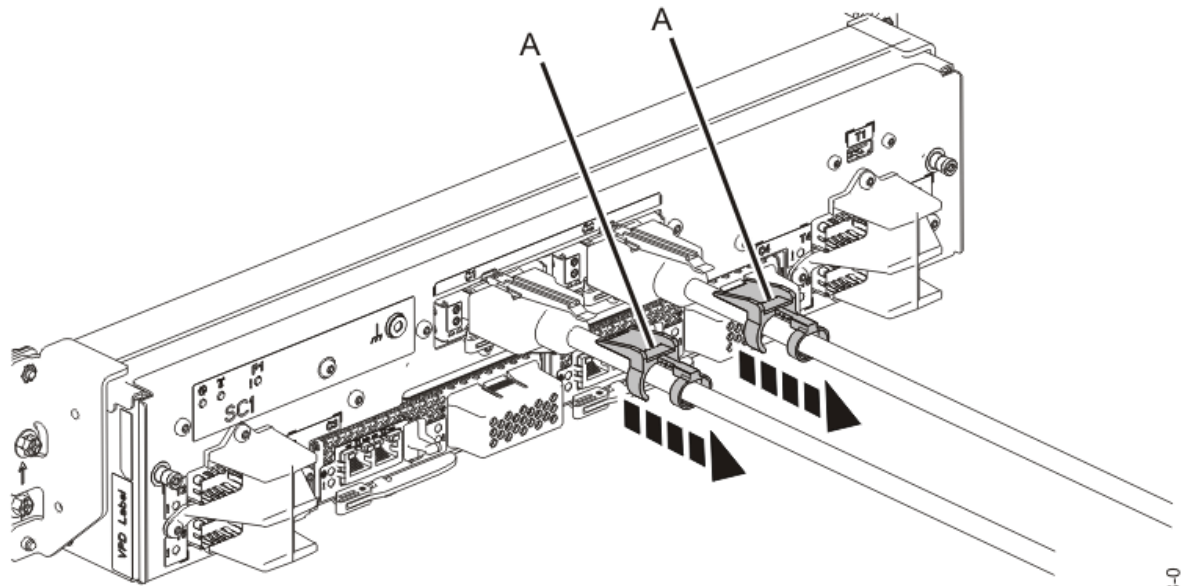
- a) Activate the identify function. For instructions, see [Identifying a part](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).
- b) Physically verify that the slot you identified is where you want to install or replace the NVMe U.2 drive.
  - Use the blue identify LED on the enclosure to locate the system. Ensure that the serial number of the system matches the serial number to be serviced.
  - Look for a flashing amber LED, which identifies the slot that was selected by using the identify function.
- c) Stop the system. For instructions, see [Stopping a system](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).

7. If you chose to complete this repair with the power off, label and disconnect both UPIC cables from the system control unit.

UPIC cable locations are P1-C1-T1 and P1-C2-T1.

- a. Remove the white plastic lock (**A**) from the plug housing.

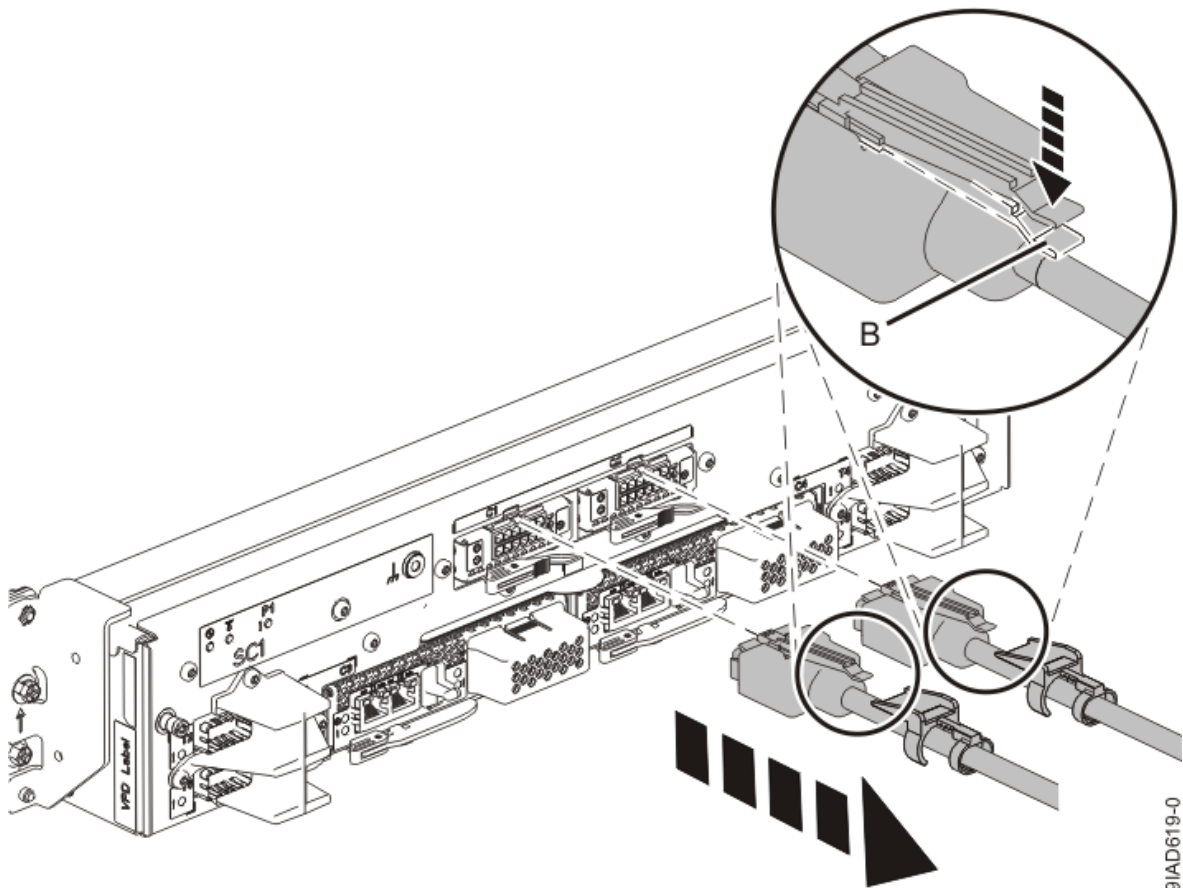




P9IAD618-0

Figure 3. Removing the UPIC cable lock

- b. Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system control unit.



P9IAD619-0

Figure 4. Removing the UPIC cable from the system control unit

8. Continue with step “12” on page 5.
9. To identify the available NVMe U.2 drive slots by using the AIX operating system, complete the following steps.

**Note:** The NVMe U.2 drives are based on PCI technology.

- a) Log in to the console as root user to access the Hot Plug Manager.
- b) At the command line, type smitty.
- c) Select **Devices > PCI Hot Plug Manager**.

For more information about the menu options in the **PCI Hot-Plug Manager** screen, see [PCIe Hot-Plug Manager menu](#).

- d) From the **PCI Hot-Plug Manager** menu, select **Add a PCI Hot-Plug Adapter > Add a PCI Hot-Plug Adapter**.
- e) Select the appropriate NVMe U.2 drive slot from the list that is displayed on the screen, and then press Enter.  
The green LED remains on and the amber LED for the slot that is identified flashes.
- f) Physically verify that the slot you identified is where you want to install or replace the NVMe U.2 drive.
  - Use the blue identify LED on the enclosure to locate the system. Ensure that the serial number of the system matches the serial number to be serviced.
  - Look for a flashing amber LED, which identifies the slot that was selected by using the identify function.
- g) Press Enter on the console. The NVMe U.2 drive slot is placed in the **action** state and is ready to receive the drive. During the **action** state, the green LED turns off and the amber LED is flashing.

**Important:** Install or replace the drive when you are instructed to do so later in this procedure.

10. Continue with step “12” on page 5.

11. To identify the available NVMe U.2 drive slots by using the Linux operating system, complete the following steps.

**Note:** The NVMe U.2 drives are based on PCI technology.

- a) Log in to the system console as the root user.
- b) Run the following command to list the available slots:

```
lsslot -c pci -a
```

The following screen is an example of the information that is displayed by this command:

```
# Slot                Description                Device(s)
U78D4.001.AAAXXX-P2-C1 PCI-X capable, 64 bit, 133MHz slot Empty
U78D4.001.AAAXXX-P2-C2 PCI-X capable, 64 bit, 133MHz slot Empty
U78D4.001.AAAXXX-P2-C3 PCI-X capable, 64 bit, 133MHz slot Empty
```

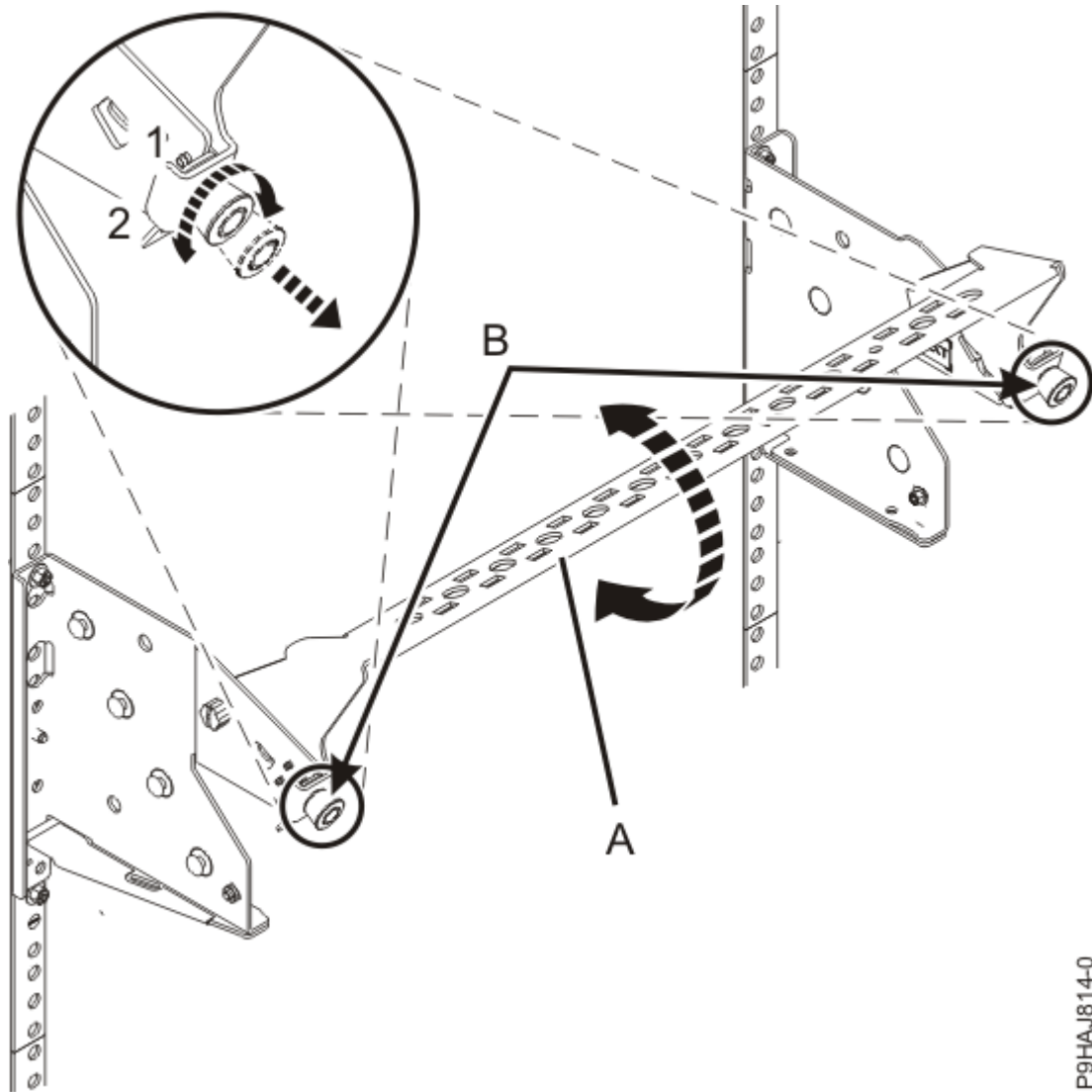
- c) Select the appropriate empty NVMe U.2 drive slot from the slots that are listed by the command.
- d) Record the slot that you have selected.
- e) To prepare the slot to accept an NVMe U.2 drive, complete the following steps:
  - i) Type the following command:

```
dmgr -c pci -a -s locationcode
```

Where `locationcode` is the location of the NVMe slot. For example, the location might be `U78D4.001.AAAXXX-P2-C1`.

- ii) Press Enter. A fast-flashing amber LED at the front of the system near where the NVMe slot is located indicates that the slot is identified.
- f) Physically verify that the slot you identified is where you want to install or replace the NVMe U.2 drive.

- Use the blue identify LED on the enclosure to locate the system. Ensure that the serial number of the system matches the serial number to be serviced.
  - Look for a flashing amber LED, which identifies the slot that was selected by using the identify function.
12. At the rear of the system, put the cable management bracket in the service position as shown in the following figure.
- a) Pull out the quarter-turn fasteners **(B)** and turn them to disengage them while you lift the cable management bracket **(A)** to its raised position.
  - b) Turn the quarter-turn fasteners **(B)** to engage and lock the bracket into position.



P9HAJ814-0

Figure 5. Placing the cable management bracket in the raised service position

13. Attach the electrostatic discharge (ESD) wrist strap.

The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.



**Attention:**

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.

- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

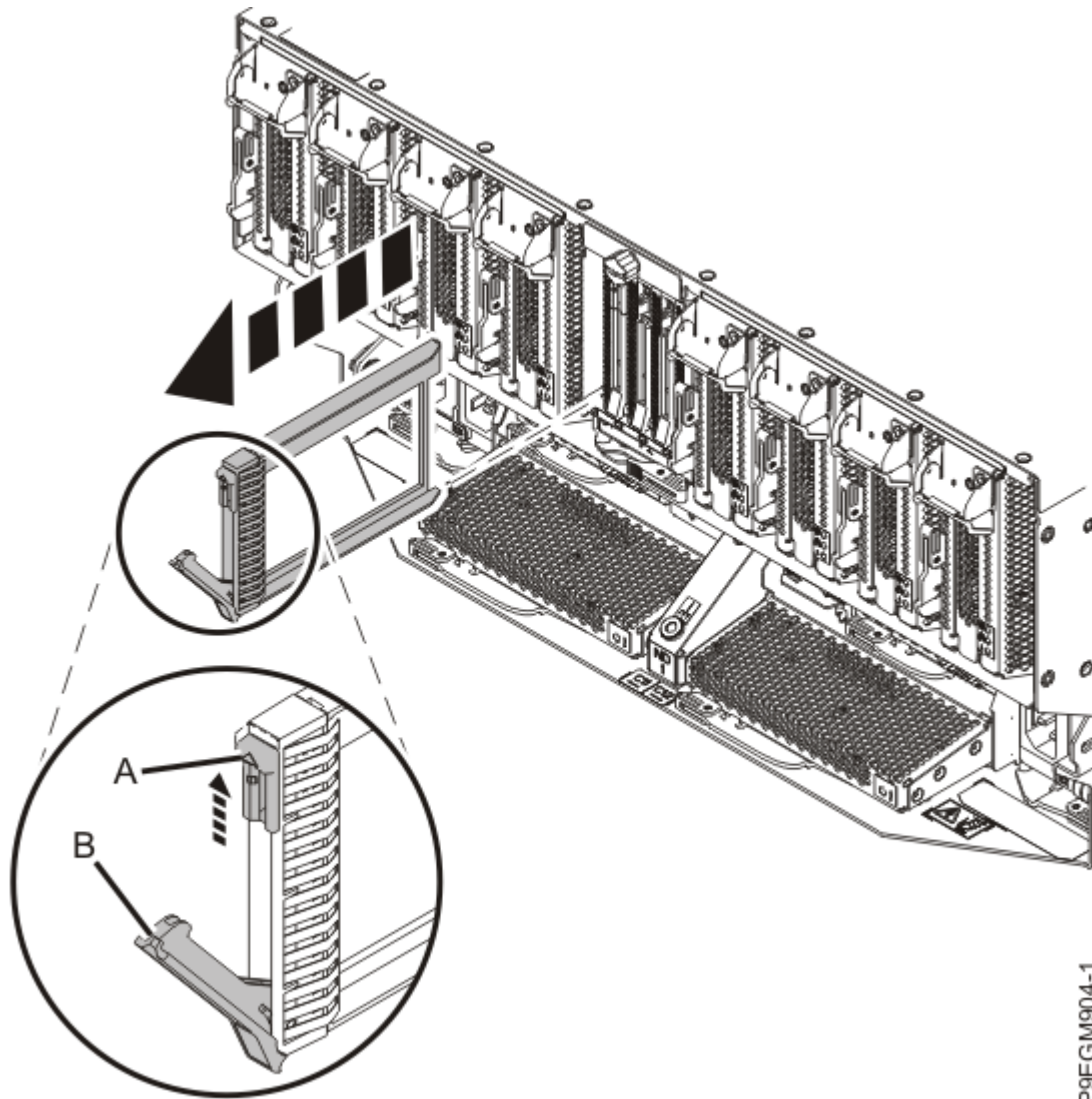
## Installing an NVMe U.2 drive in the 9080-M9S system

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To install an NVMe U.2 drive into the system, complete the steps in this procedure.

### Procedure

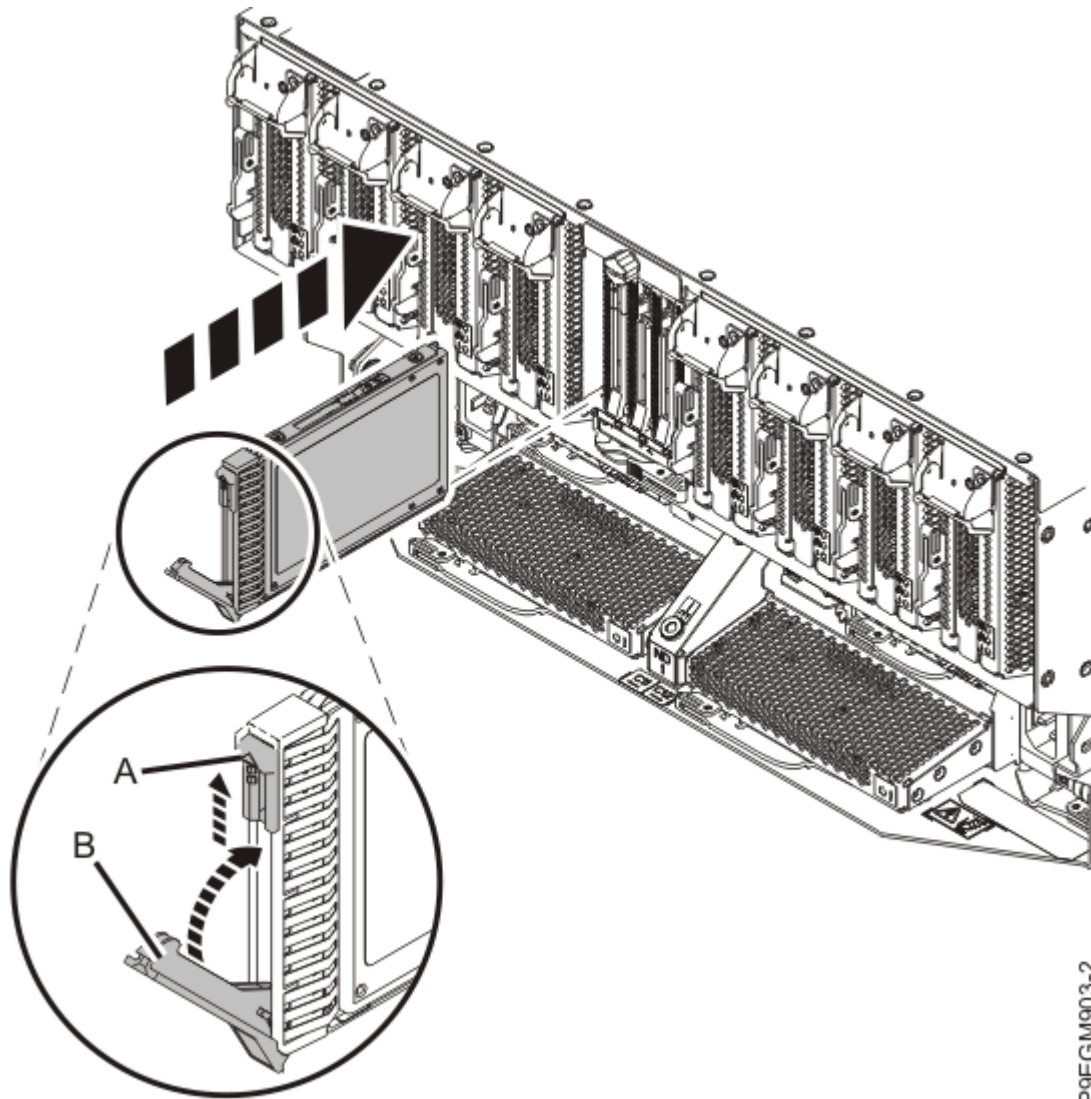
1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Remove the NVMe U.2 drive filler from the slot.
  - a) Press the NVMe drive filler handle release latch **(A)** in the direction that is shown to release the drive handle **(B)**.
  - b) Pull the NVMe drive filler out of the system.



P9EGM904-1

*Figure 6. Removing a NVMe drive filler from the 9080-M9S system*

3. If necessary, remove the NVMe U.2 drive from the antistatic package.
4. To install or replace an NVMe U.2 drive, complete the following steps:
  - a) Press the handle release latch **(A)** in the direction that is shown to release the latch handle.
  - b) Slide the NVMe U.2 drive into the slot until it's fully seated.



P9EGM903-2

Figure 7. Installing or replacing an NVMe U.2 drive in the 9080-M9S system

c) Close the drive handle **(B)** to lock the NVMe U.2 drive in place.

## Preparing the 9080-M9S system for operation after installing an NVMe U.2 drive

To prepare the system for operation after installing an NVMe U.2 drive, complete the steps in this procedure.

### Procedure

1. Ensure that you have the electrostatic discharge (ESD) wrist strap on and that the ESD clip is plugged into a ground jack or connected to an unpainted metal surface. If not, do so now.
2. Put the cable management bracket in the operating position as shown in the following figure.
  - a) Pull out the quarter-turn fasteners **(B)** and turn them to disengage them while moving the cable management bracket **(A)** to its lower position.
  - b) Turn the quarter-turn fasteners **(B)** to engage and lock the bracket into position.

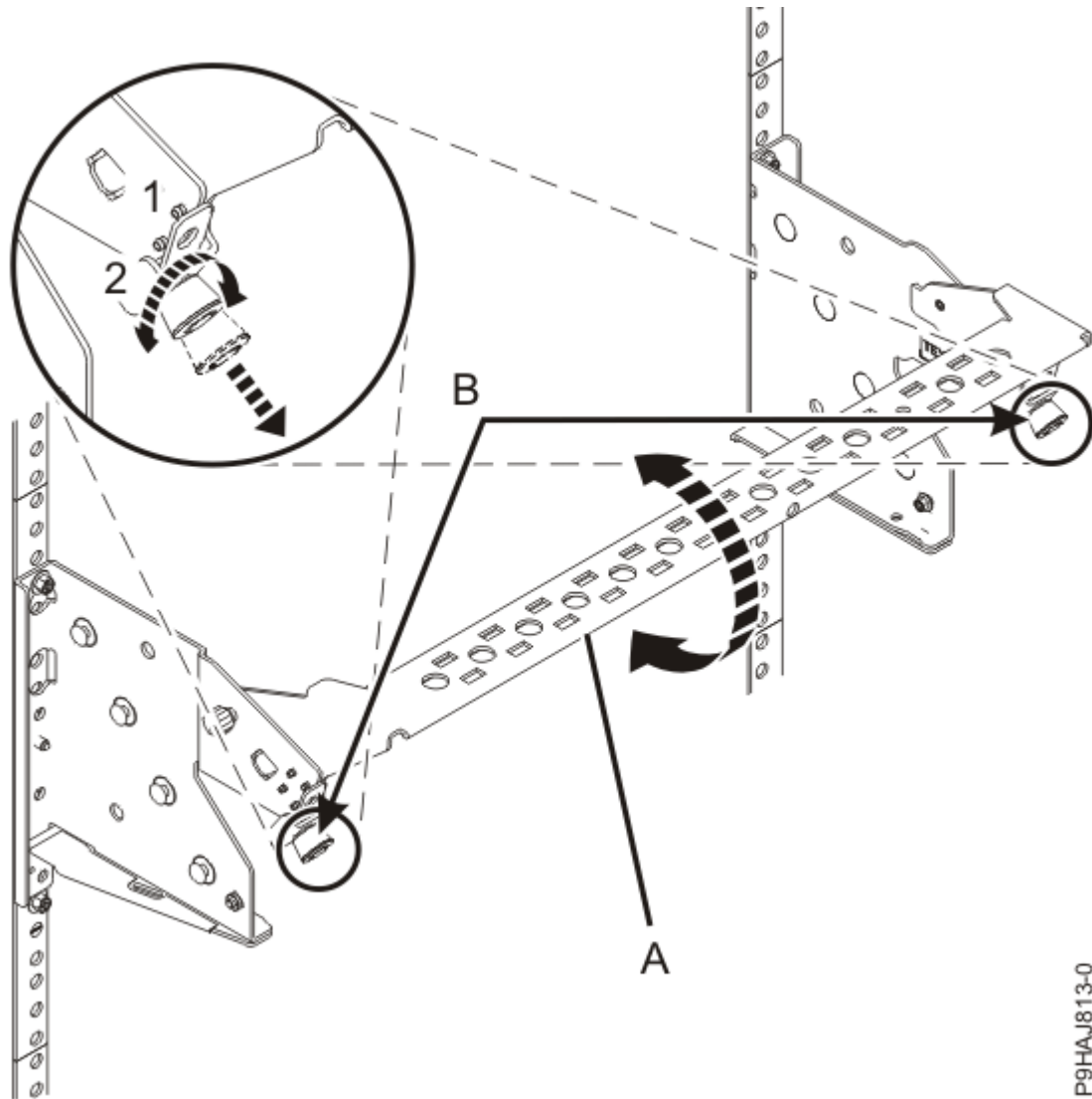


Figure 8. Placing the cable management bracket in the lowered operating position

3. To complete the procedure with the power on, access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.
  - a) If you are already connected to the ASMI, go to the next step. Otherwise, access the ASMI by choosing one of the following options:
    - For HMC Version 10.1.1020.0, or earlier, click **Resources > All Systems** and select the system being serviced. Then, click **Actions > View All Actions > Launch Advanced System Management (ASM)**.
    - For HMC Version 10.2.1030.0, or later, click **System resources > Systems** and select the system being serviced. Then, click **Connections and operations > Launch Advanced System Management (ASM)**.
  - b) In the navigation area, expand **System Service Aids > Cable Plugging Validation**. Then, click **Validate UPIC Cables**. The system verifies that the UPIC cables are present.
 

**Note:** Older firmware levels do not support validating the UPIC cables while the system is at FSP standby. You can skip this step if it is not available.
  - c) Expand **System Service Aids > Cable Plugging Validation**. In the **Display Cable Status** section, select **UPIC Cables** and click **Continue**. The system validates that the UPIC cables are installed in the correct locations and displays a table with the results. Ensure that the plugging status is OK for each cable in the displayed table. If the status is OK, no further action is required. If the status is

not OK, review the error logs, correct the problems, and repeat steps b and c as needed until the status is OK for all cables.

d) Exit the ASMI.

e) This ends the procedure.

4. Choose from the following options:

- If the system power is turned off, continue with step “5” on page 10.
- If you are using the AIX operating system, continue with step “10” on page 12.
- If you are using the Linux operating system, continue with step “12” on page 12.

5. If you completed this repair with the power off, using your labels, reconnect the UPIC cables to the system control unit.

UPIC cable locations are P1-C1-T1 and P1-C2-T1.

a. Ensure that the white plastic lock is pulled back from the plug housing.

b. Plug the UPIC cable (**A**) into the previously identified location in the system control unit by inserting the cable into the connector until it locks into place.

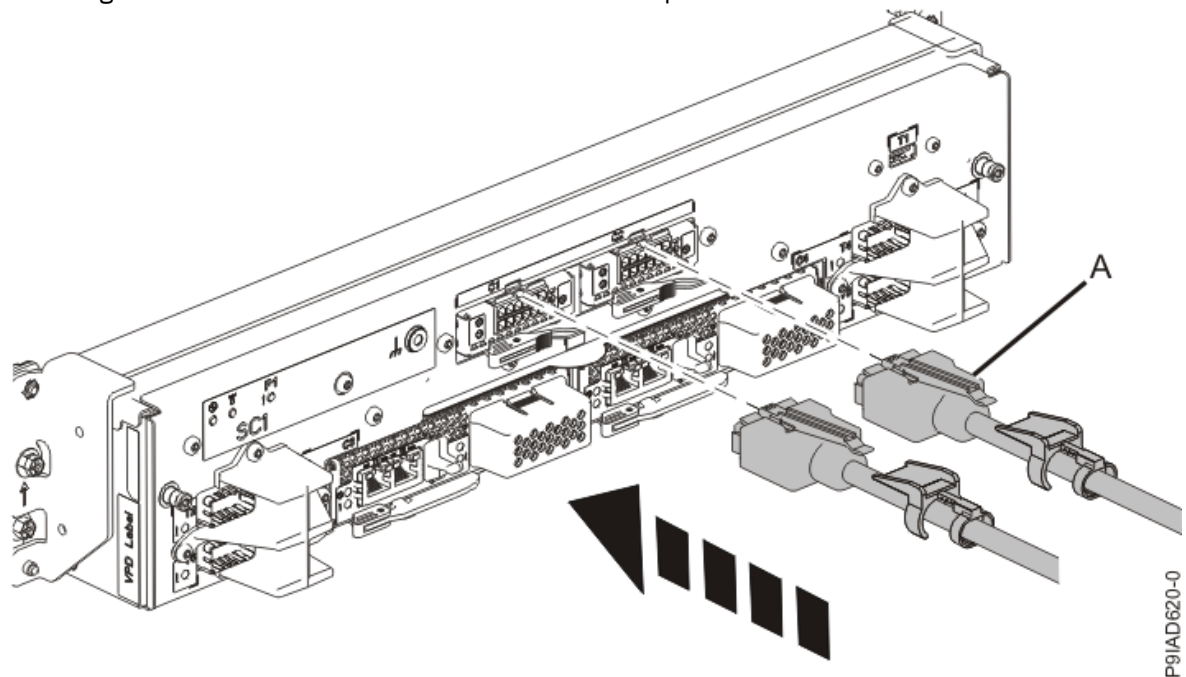
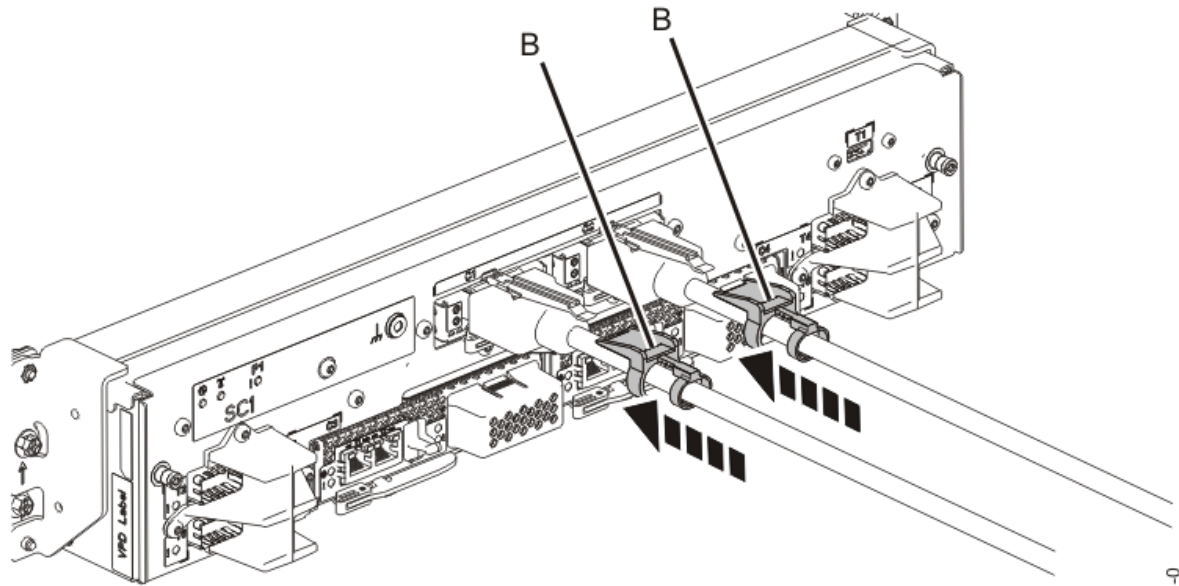


Figure 9. Replacing the UPIC cable into the system control unit

c. Push the white plastic lock (**B**) onto the plug housing.





P9JAD621-0

Figure 10. Replacing the UPIC cable into the system control unit

- d. Lightly pull on the UPIC cable from both attachment points to ensure it is locked into place. Pull the cable connector; do not pull on the wire. The cables should be firmly attached to the system.
6. When the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly), continue to the next step.
7. Access the ASMI and run the Cable Plugging Validation utility to validate all of the cables.
  - a) If you are already connected to the ASMI, go to the next step. Otherwise, access the ASMI by choosing one of the following options:
    - For HMC Version 10.1.1020.0, or earlier, click **Resources > All Systems** and select the system being serviced. Then, click **Actions > View All Actions > Launch Advanced System Management (ASM)**.
    - For HMC Version 10.2.1030.0, or later, click **System resources > Systems** and select the system being serviced. Then, click **Connections and operations > Launch Advanced System Management (ASM)**.
  - b) In the navigation area, expand **System Service Aids > Cable Plugging Validation**. Then, click **Validate Cables**. The system verifies that the expected cables are present.
  - c) If your configuration includes two or more nodes, expand **System Service Aids > Cable Plugging Validation**. Then, click **Verify Node Position**. Otherwise, if your configuration includes only one node, continue to the next step.
 

If the system is cabled correctly, the blue identify LED on each system node will light up, in sequence, from the top node to the bottom node. If the LEDs do not light up in sequence, the FSP cables need to be re-installed.
  - d) Expand **System Service Aids > Cable Plugging Validation**. Then, select **All of the above** in the **Display Cable Status** section and click **Continue**. The system validates that the cables are installed in the correct locations. Expand **System Service Aids > Cable Plugging Validation** to display a table with the results. Ensure that the plugging status is OK for each cable in the displayed table. If the status is OK, no further action is required. If the status is not OK, review the error logs, correct the problems, and repeat steps b, c and d as needed until the status is OK for all cables.
  - e) Exit the ASMI.
8. Start the system. For instructions, see [Starting a system](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

9. Continue with step “13” on page 12.
10. If you are using the AIX operating system, you must configure the NVMe U.2 drive by completing the following steps:
  - a) Install the AIX device drivers for the installed NVMe U.2 drive. For instructions, see [Installing the AIX device driver software](#).
  - b) On the console, enter `c fgmgr` to configure the NVMe U.2 drive.
11. Continue with step “13” on page 12.
12. If you are using the Linux operating system, complete the following steps:
  - a) In the Linux session on the console, press Enter after you install the NVMe U.2 drive to put the slot into the action state.
  - b) Enter the slot information with the **lsslot** command, as shown in the following example.  
 For example, if the slot in which you installed the NVMe U.2 drive was U78D4.001.AAAXXXX-P2-C1, enter the following command:  

```
lsslot -c pci -s U78D4.001.AAAXXXX-P2-C1
```

 The following screen is an example of the information that is displayed by this command:
 

```
# Slot                Description                Device(s)
U78D4.001.AAAXXXX-P2-C1 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0
```
13. Verify the installed part.
  - If you replaced the part because of a service action, verify the installed part. For instructions, see [Verifying a repair](http://www.ibm.com/support/knowledgecenter/POWER9/p9ect/pxect_verifyrepair.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9ect/pxect\_verifyrepair.htm).
  - If you installed the part for any other reason, verify the installed part. For instructions, see [Verifying the installed part](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj\_hsmverify.htm).
14. Turn off the identify LED. For instructions, see [Deactivating an identify LED](http://www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj\_turn\_off\_identify\_led.htm).

## Related procedures for installing, removing, and replacing NVMe devices

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### About this task

Find procedures that are related to installing, removing, and replacing NVMe devices.

### Checking the amount of remaining life in NVMe devices

Learn how to use operating system commands to find the amount of remaining life in an NVMe device.

The AIX, IBM i, and Linux operating systems have commands that you can use to determine the amount of life that is remaining in an NVMe device.

For more information, see the following procedures:

- [Running the AIX command to check the amount of remaining life in NVMe devices](http://www.ibm.com/support/knowledgecenter/POWER9/p9hak/pxhak_nvme_remaining_life_aix.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9hak/pxhak\_nvme\_remaining\_life\_aix.htm)
- [Running the IBM i command to check the amount of remaining life in NVMe devices](http://www.ibm.com/support/knowledgecenter/POWER9/p9hak/pxhak_nvme_remaining_life_ibmi.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9hak/pxhak\_nvme\_remaining\_life\_ibmi.htm)
- [Running the Linux command to check the amount of remaining life in NVMe devices](http://www.ibm.com/support/knowledgecenter/POWER9/p9hak/pxhak_nvme_remaining_life_linux.htm) (www.ibm.com/support/knowledgecenter/POWER9/p9hak/pxhak\_nvme\_remaining\_life\_linux.htm)

### Related information

[“Removing an operational NVMe device from an IBM i logical partition” on page 13](#)

Learn how to remove an operational NVMe device from an IBM i logical partition.

## Removing an operational NVMe device from an IBM i logical partition

Learn how to remove an operational NVMe device from an IBM i logical partition.

The IBM i operating system provides commands that you can use to remove an operational NVMe device.

For details, see [Removing an operational NVMe device from a partition](#) in the IBM i Knowledge Center.

**Note:** To navigate to the page in the IBM i 7.4 Knowledge Center, select **Systems management > Disk management > Disk management checklist > Removing an operational NVMe device from a partition**.



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IBM-Allee 1, 71139 Ehningen, Germany  
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この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

## Taiwan Notice

台灣IBM 產品服務聯絡方式：  
台灣國際商業機器股份有限公司  
台北市松仁路7號3樓  
電話：0800-016-888

## United States Federal Communications Commission (FCC) Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM-authorized dealer or service representative for help.

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

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party:

International Business Machines Corporation  
New Orchard Road  
Armonk, New York 10504  
Contact for FCC compliance information only: [fccinfo@us.ibm.com](mailto:fccinfo@us.ibm.com)

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