Steps

1. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board.
2. Lower the expansion card riser into place and press the touch points until the expansion card riser connector is fully seated on the system board connector.
3. Tighten the captive screws on the risers and system if any.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

NOTE: Riser 2A is installed first as it is seated underneath Riser 1P and Riser 3B.

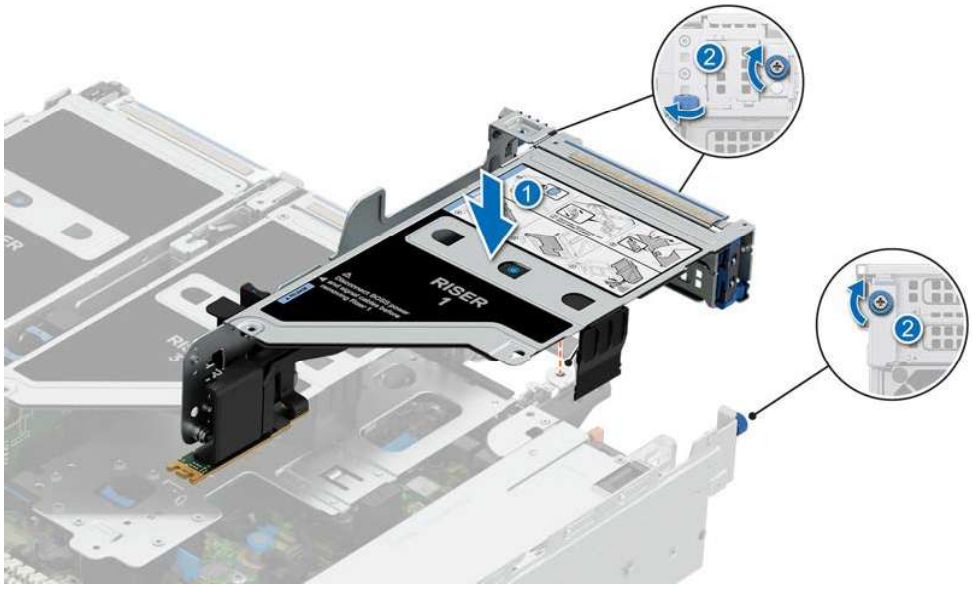


Figure 87. Installing the expansion card riser (Riser 1)

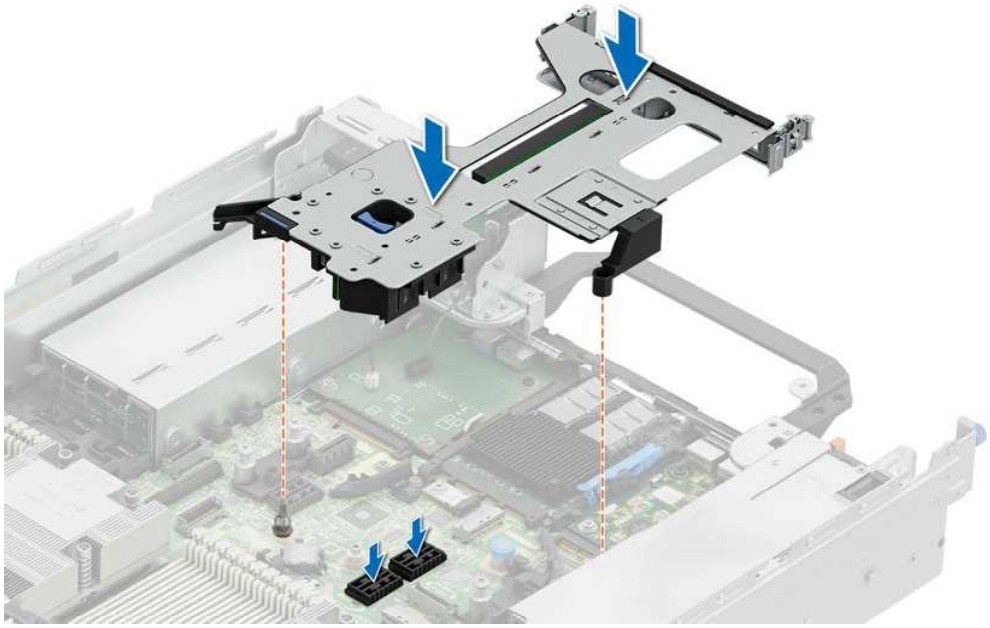


Figure 88. Installing the expansion card riser (Riser 2)

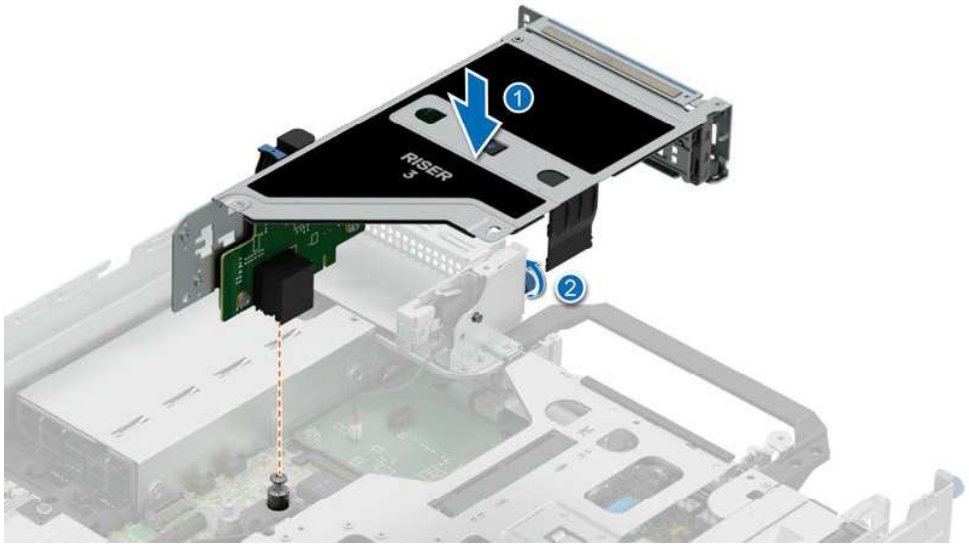


Figure 89. Installing the expansion card riser (Riser 3)

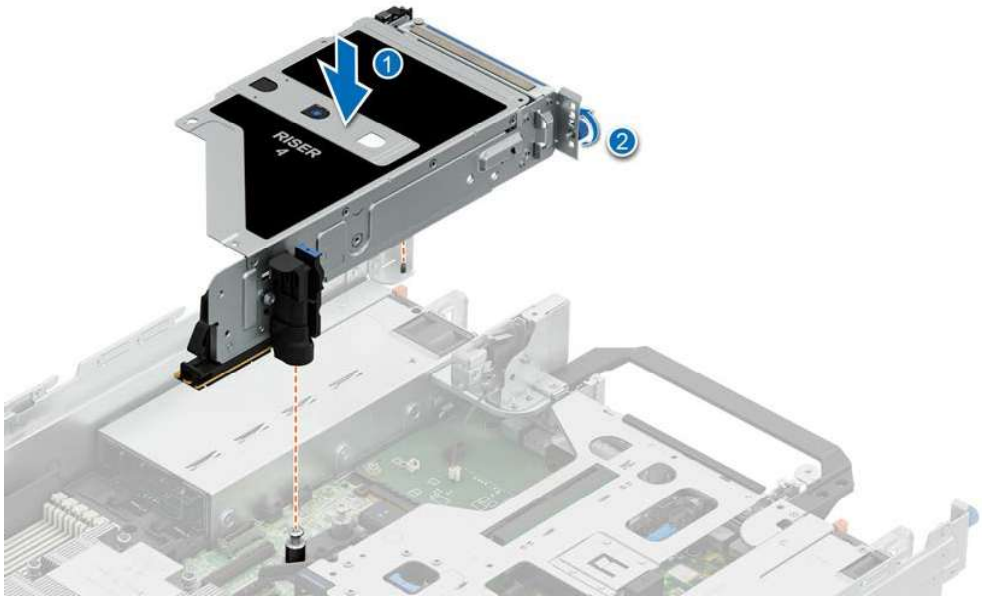


Figure 90. Installing the expansion card riser (Riser 4)

Removing expansion card from the expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If applicable, disconnect the cables from the expansion card.
4. Remove the expansion card riser.

Steps

1. Pull and lift the expansion card retention latch lock to open.
2. Pull the black card holder before removing the card from the riser.

3. Hold the expansion card by the edges. and pull the card until the card edge connector disengages from the expansion card connector on the riser.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

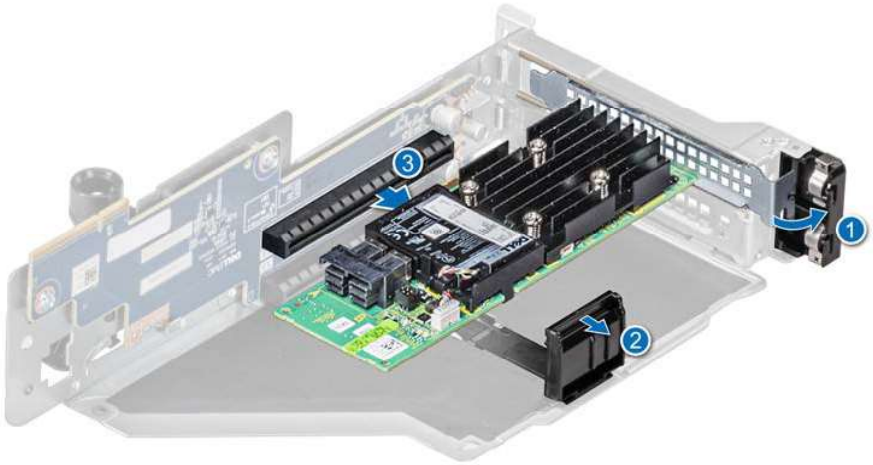


Figure 91. Removing expansion card from the expansion card riser

4. If the expansion card is not going to be replaced, install a filler bracket and close the card retention latch.

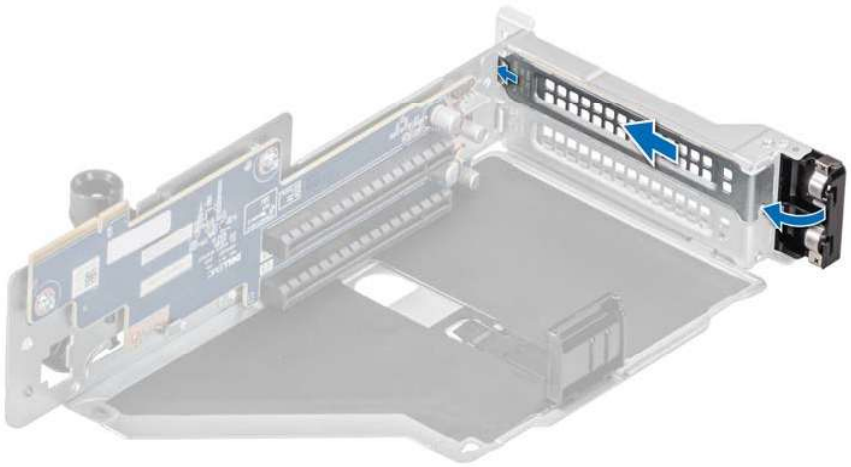


Figure 92. Installing the filler bracket

Installing an expansion card into the expansion card riser

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If installing a new expansion card, unpack it and prepare the card for installation.

NOTE: For instructions, see the documentation accompanying the card.

Steps

1. Pull and lift up the expansion card retention latch lock to open.
2. If installed, remove the filler bracket.

   NOTE: Store the filler bracket for future use. Filler brackets must be installed in empty expansion card slots to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

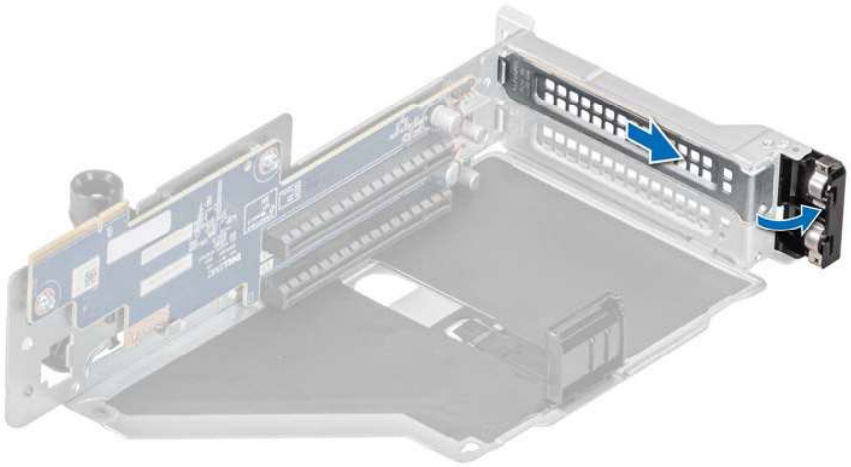


Figure 93. Removing the filler bracket

3. Hold the card by its edges, and align the card edge connector with the expansion card connector on the riser.
4. Insert the card edge connector firmly into the expansion card connector until the card is fully seated.
5. Close the expansion card retention latch.
6. Push the black card holder to hold the card in the riser.

   NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

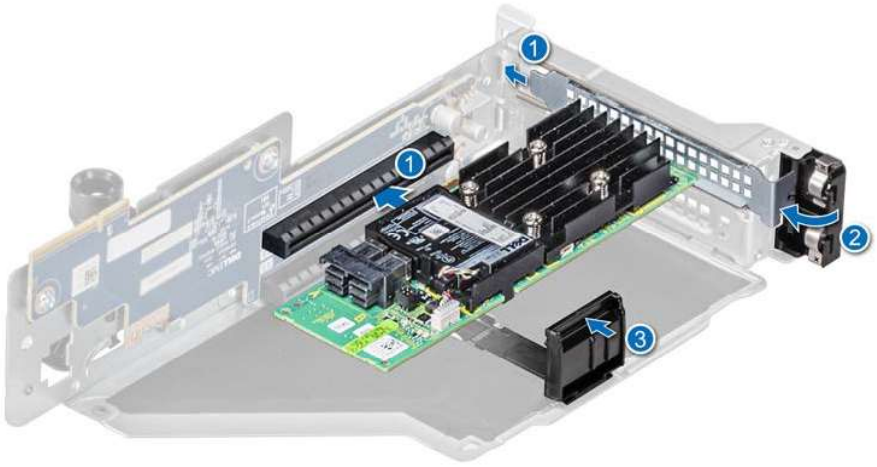


Figure 94. Installing an expansion card into the expansion card riser

Removing the full length expansion card risers

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the GPU air shroud top cover.
4. If applicable, disconnect the cables from the expansion card or system board.
5. **NOTE:** If BOSS-N1 module is installed, ensure to disconnect the BOSS-N1 power cable and Signal cable before removing the Riser 1 cage.

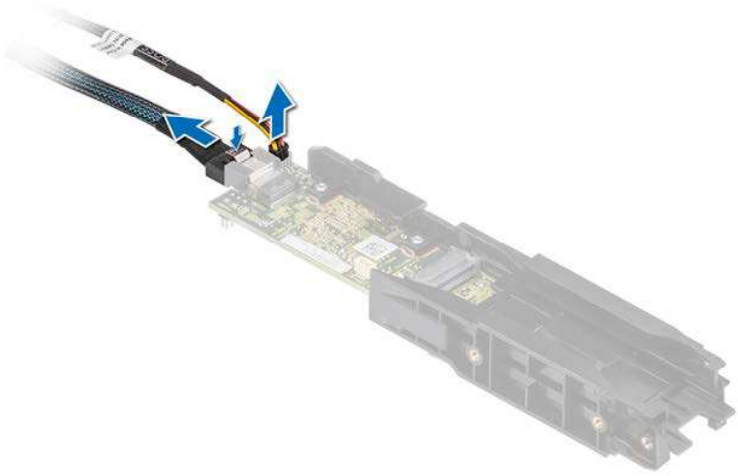


Figure 95. Removing the BOSS-N1 power and signal cable

Steps

1. To remove full length expansion card riser:
   a. Loosen the captive screws on the riser.
   b. Press the blue release tab and holding the edges, lift the expansion card riser from the riser connector on the system board.
   c. Disconnect the GPU power cable and signal cable from the system board.

   NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

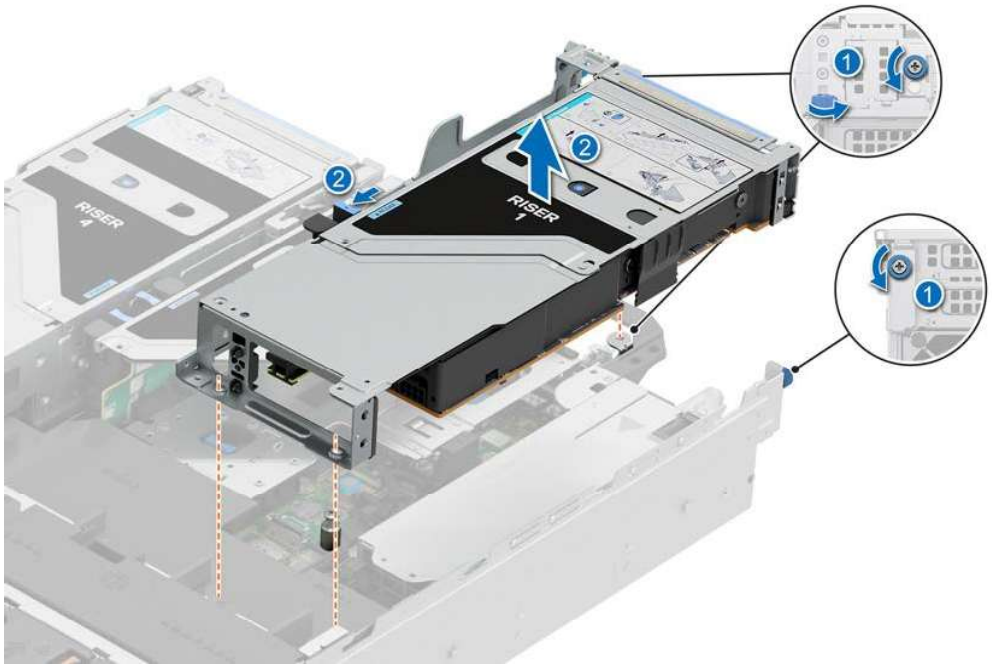


Figure 96. Removing the expansion card riser (Riser 1)

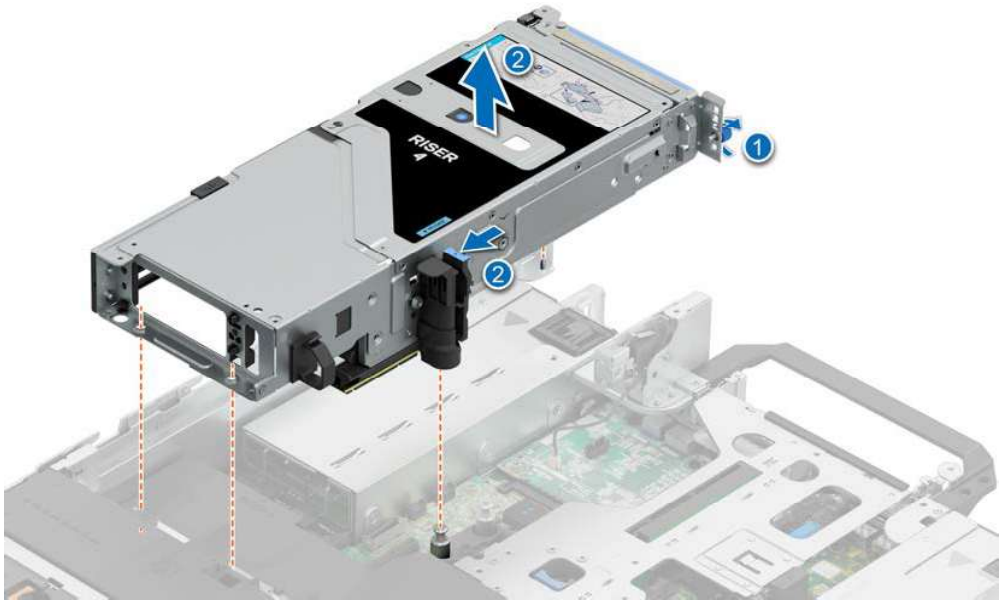


Figure 97. Removing the expansion card riser (Riser 4)

2. If the risers are not going to be replaced, install riser blanks and tighten the captive screws.

NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

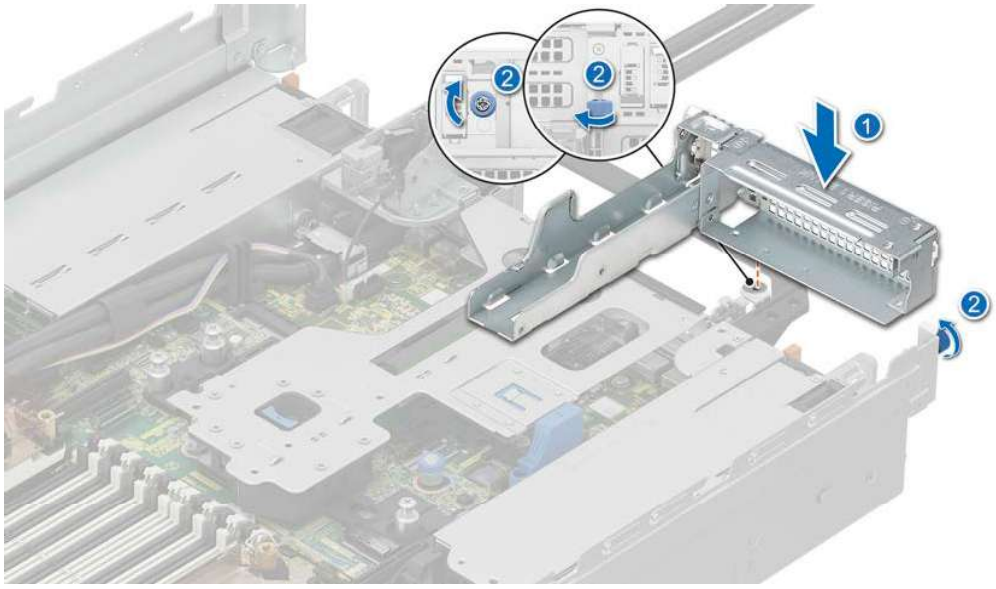


Figure 98. Installing the Riser 1 blank

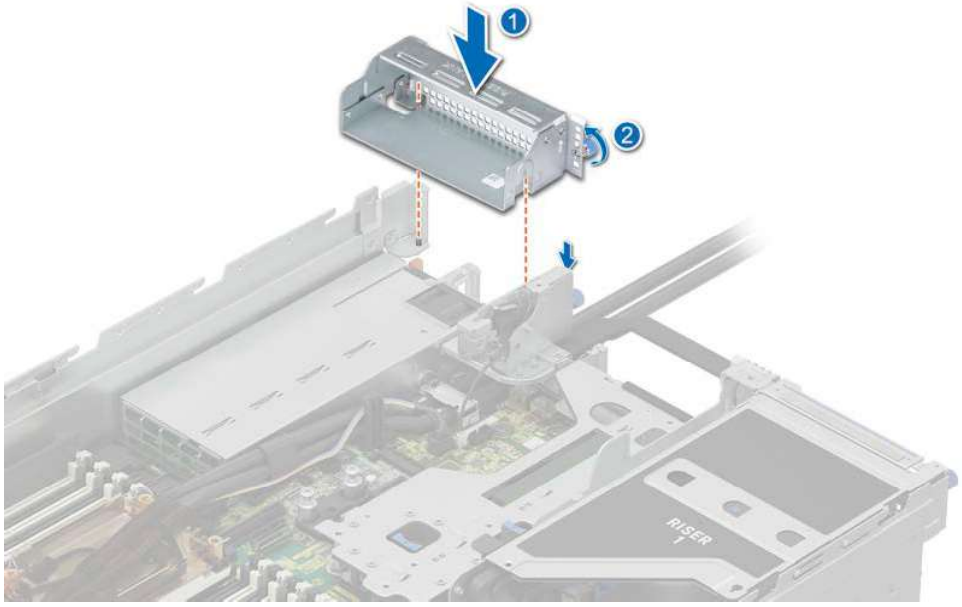


Figure 99. Installing the Riser 4 blank

Installing the full length expansion card risers

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If installing full length expansion card riser for the first time, remove air shroud and replace it with GPU air shroud.
4. Remove the GPU air shroud top cover.
5. If installed, remove the GPU air shroud filler.
6. If removed, install the GPU into the expansion card risers.

NOTE: Full length risers are supported only in Riser 1 and Riser 4 slot and first install Riser4 and then Riser1.

Steps

1. If installed, remove the riser blanks by loosening the captive screws.

   NOTE: Store the Riser blanks for future use. Filler brackets must be installed in empty expansion card slots to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

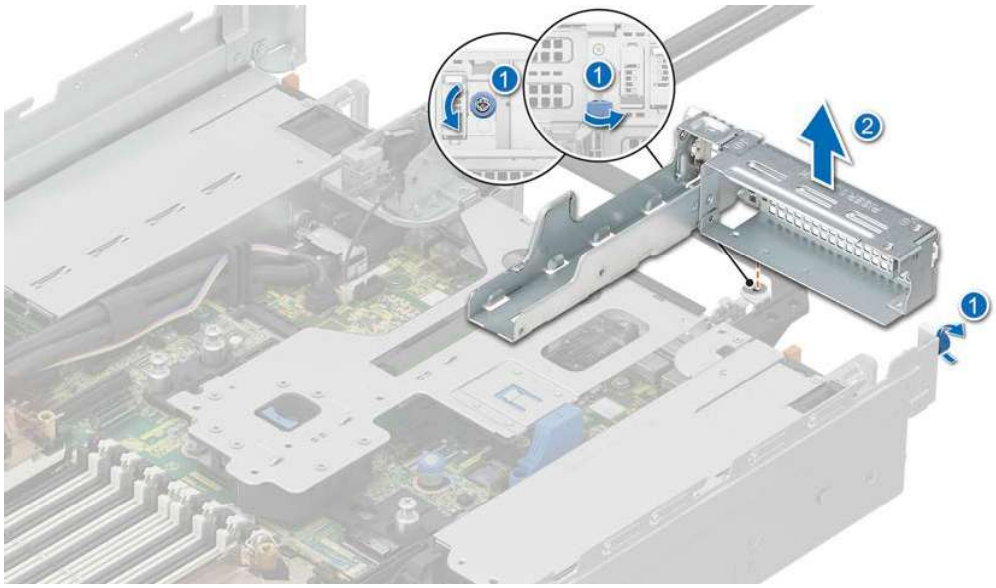


Figure 100. Removing the Riser 1 blank

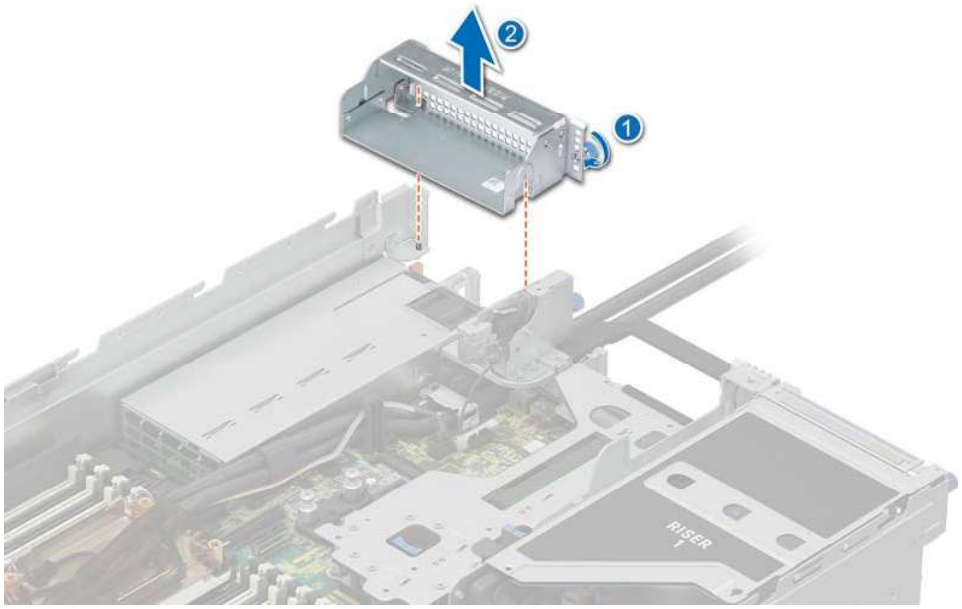


Figure 101. Removing the Riser 4 blank

2. To install the full length expansion card risers:
   a. Connect the GPU power cable and signal cable to the connectors on the system board.

NOTE: Temporarily unplug and plug the VGA cable for making space to connect Riser 1 GPU power cable to system board.

b. Holding the edges or the touch points, align the holes on the expansion card riser with the guides on the system board and GPU air shroud.
c. Lower the expansion card riser into place and press the touch points until the expansion card riser connector is fully seated on the system board connector.
d. Tighten the captive screws on the risers and system if any.

NOTE: Route the cables properly through the riser clip.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

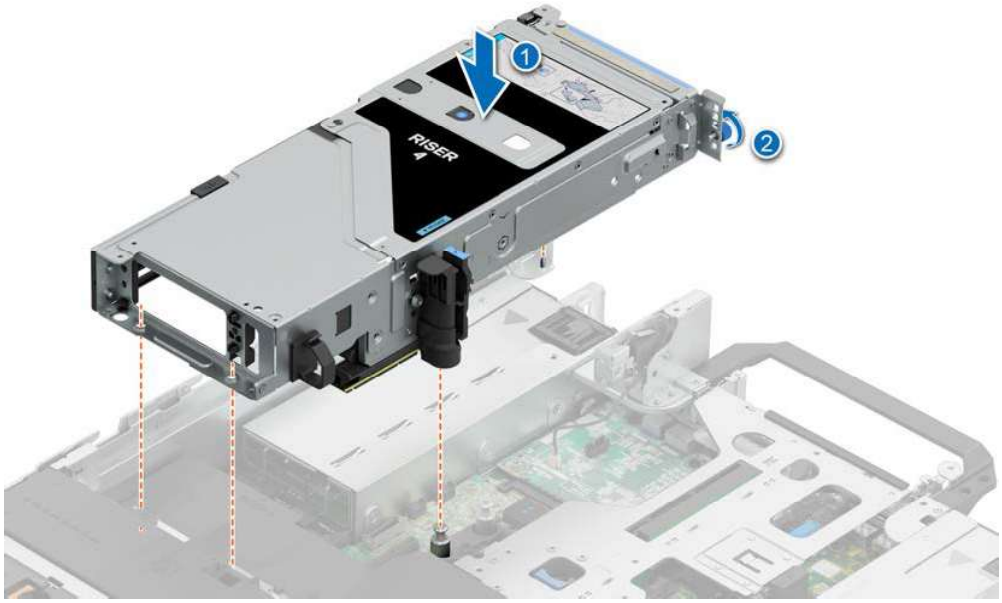


Figure 102. Installing the expansion card riser (Riser 4)

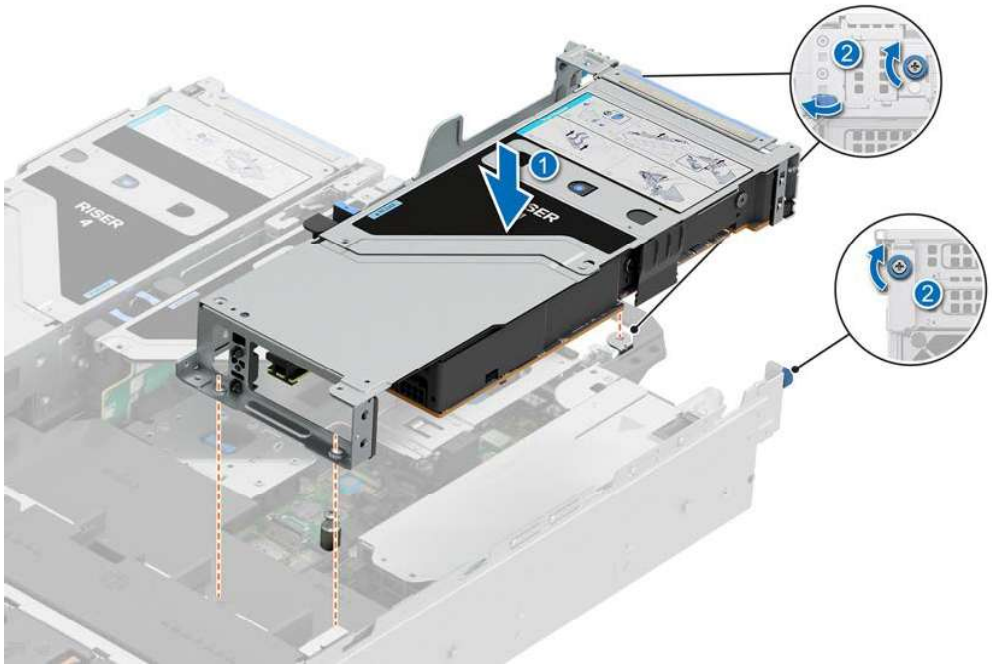


Figure 103. Installing the expansion card riser (Riser 1)

Removing a GPU

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If applicable, disconnect the cables from the expansion card.
4. Remove the GPU air shroud top cover.
5. Remove the full length expansion card riser.

Steps

1. To remove the GPU from Riser 1:
   a. Tilt the expansion card holder latch on the riser.
   b. Press the tab, and pull the card holder from the riser.
   c. Hold the GPU card by the edges and pull the card from the riser.
   d. Disconnect the GPU power cable from the GPU card.

   NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

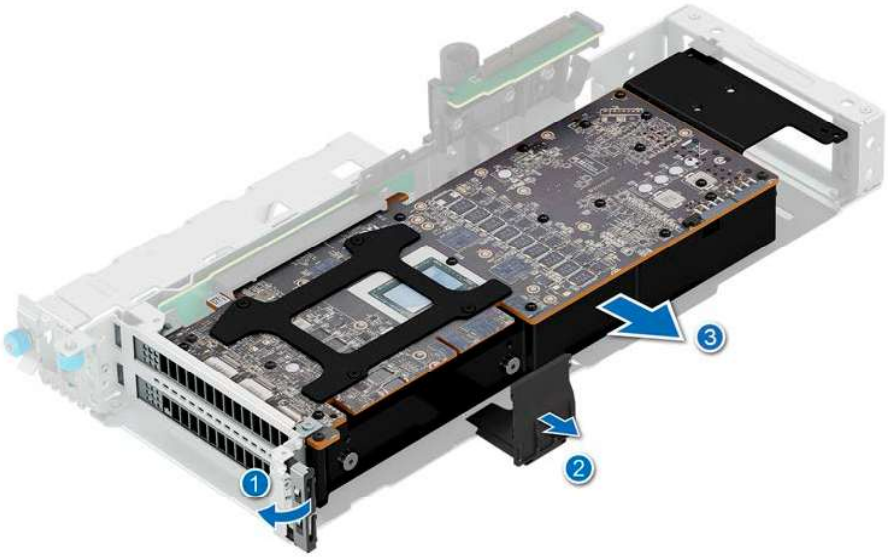


Figure 104. Removing GPU from Riser 1

2. To remove the GPU from Riser 4:
   a. Slide the expansion card latch on the riser.
   b. Press the tab, and pull the card holder from the riser.
   c. Tilt the expansion card holder latch on the riser.
   d. Hold the GPU card by the edges and pull the card from the riser.
   e. Disconnect the GPU power cable from the GPU card.

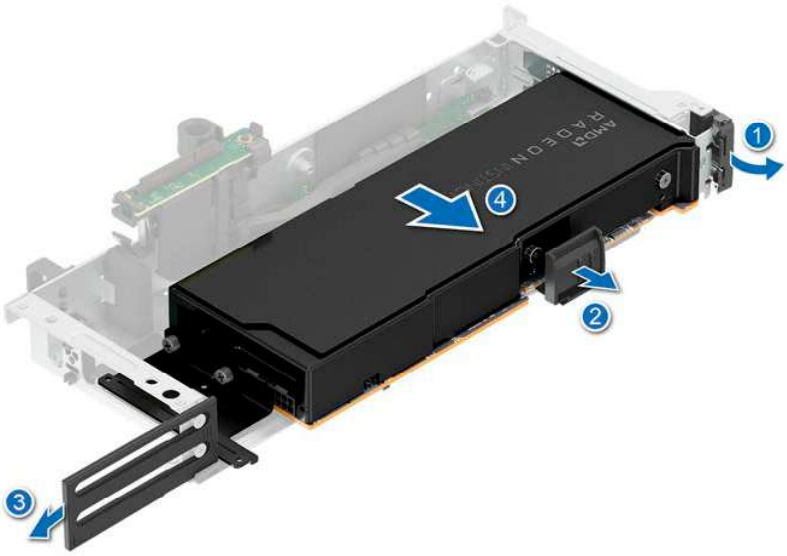


Figure 105. Removing GPU from Riser 4

3. If removing the GPU permanently, install a filler bracket.

   NOTE: You must install a filler bracket over an empty expansion card slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system. The filler bracket is necessary to maintain proper thermal conditions.

4. Install a metal filler bracket over the empty expansion slot opening and close the expansion card latch.

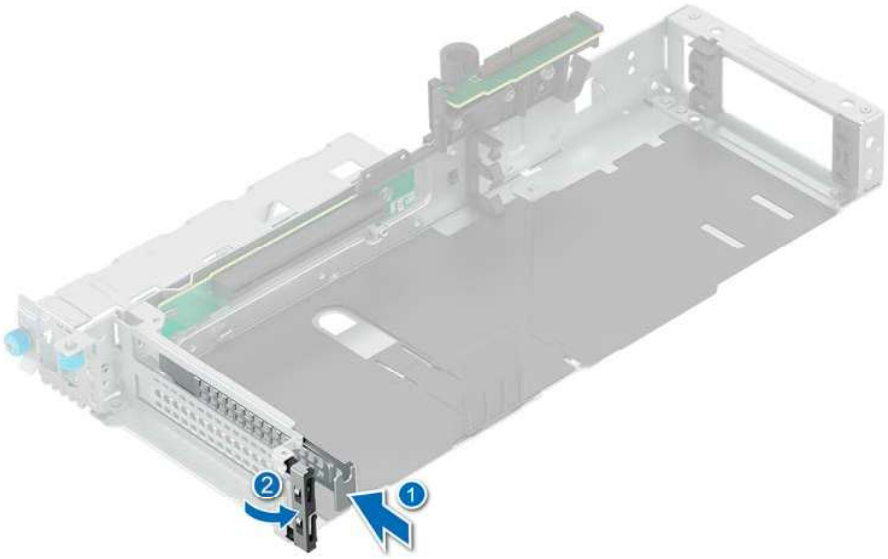


Figure 106. Installing the metal filler bracket (Riser 1)

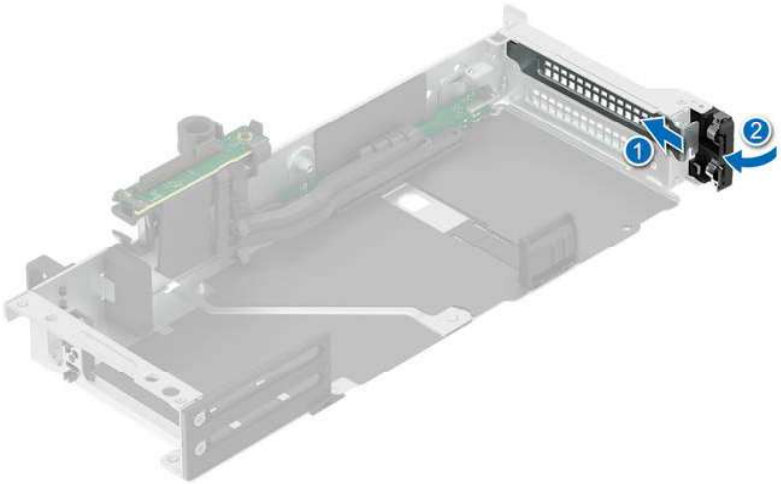


Figure 107. Installing the metal filler bracket (Riser 4)

Installing a GPU

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If installing a new expansion card, unpack it and prepare the card for installation.

   NOTE: For instructions, see the documentation accompanying the card.
4. Remove the GPU air shroud top cover.
5. Remove the GPU air shroud filler.
6. Remove the full length expansion card riser.

CAUTION: Do not install GPUs, network cards, or other PCIe devices on your system that are not validated and tested by Dell. Damage caused by unauthorized and invalidated hardware installation will null and void the system warranty.

WARNING: Consumer-Grade GPU should not be installed or used in the Enterprise Server products.

Steps

1. If installed, remove the filler bracket.

   NOTE: Store the filler bracket for future use. Filler brackets must be installed in empty expansion card slots to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

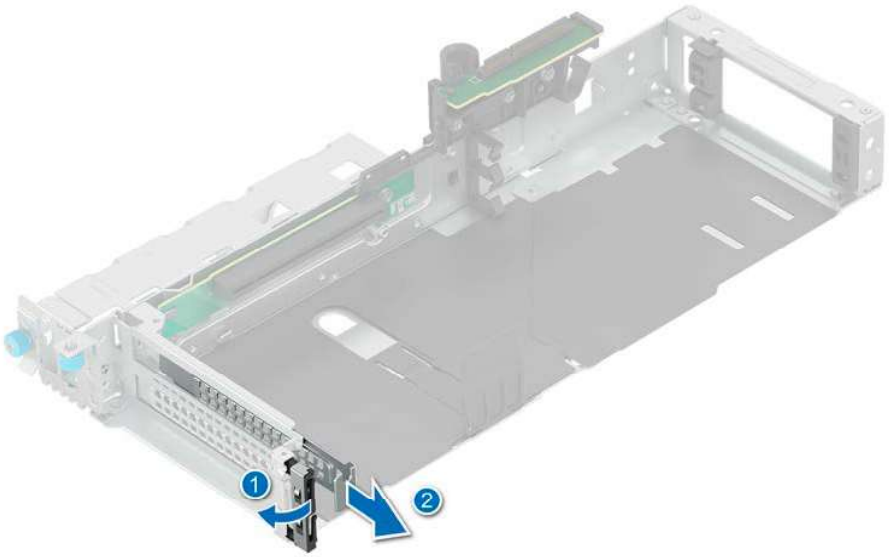


Figure 108. Removing the filler bracket(Riser 1)

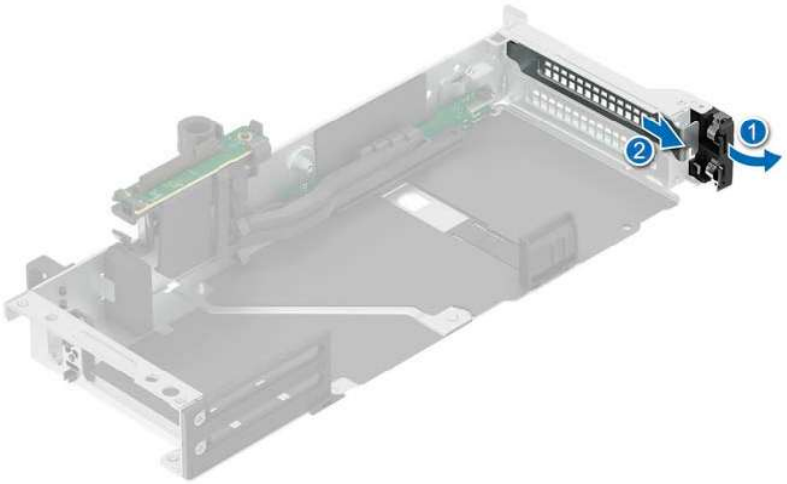


Figure 109. Removing the filler bracket(Riser 4)

2. To install the GPU on Riser 1:
   a. Connect the GPU power cable to the GPU card.
   b. Align the connector on the GPU with the connector on the riser.
   c. Insert the GPU into the riser until firmly seated.
   d. Tilt the expansion card holder latch.
   e. Press the card holder latch to secure the GPU card to the riser.

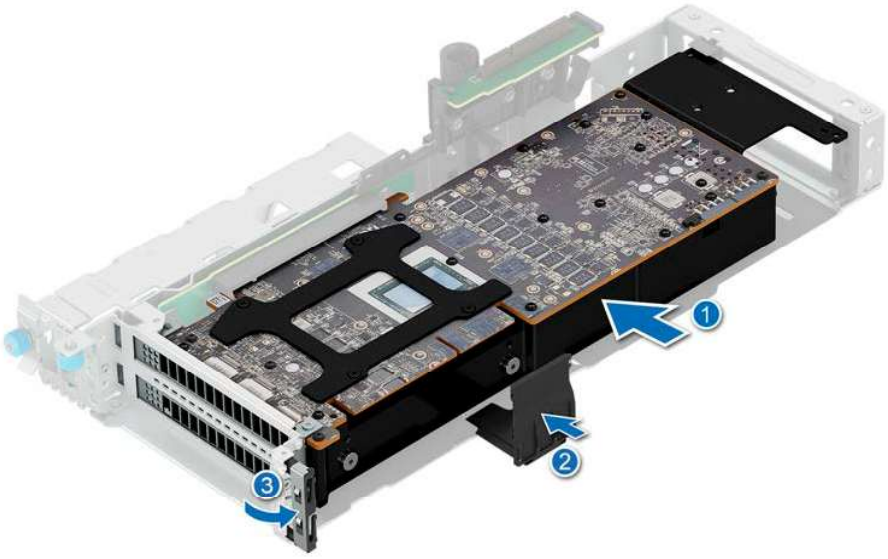


Figure 110. Installing GPU on Riser 1

3. To install the GPU on Riser 4:
   a. Connect the GPU power cable to the GPU card.
   b. Align the connector on the GPU with the connector on the riser.
   c. Insert the GPU into the riser until firmly seated.
   d. Tilt the expansion card holder latch.
   e. Press the card holder latch to secure the GPU card to the riser.
   f. Slide the expansion card latch on the riser.

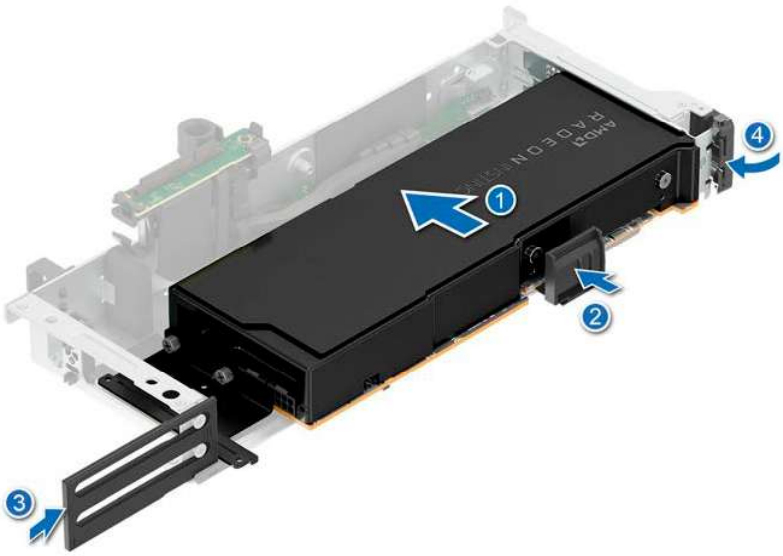


Figure 111. Installing GPU on Riser 4

Optional serial COM port

Removing the serial COM port

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the air shroud or remove the GPU air shroud.
4. Remove expansion card riser
5.

NOTE: The serial COM port is supported only in slot 4 or slot 8 of the expansion card riser.

Steps

1. Loosen the captive screws on the system.
2. Press the blue release tab or blue button on the riser and holding the edges lift the expansion card riser from the riser connector on the system board.
3. Disconnect the serial COM port cable from the serial port.

WARNING: Ensure not to pull the riser far away before unlatch cable to prevent damaging the cable latch.

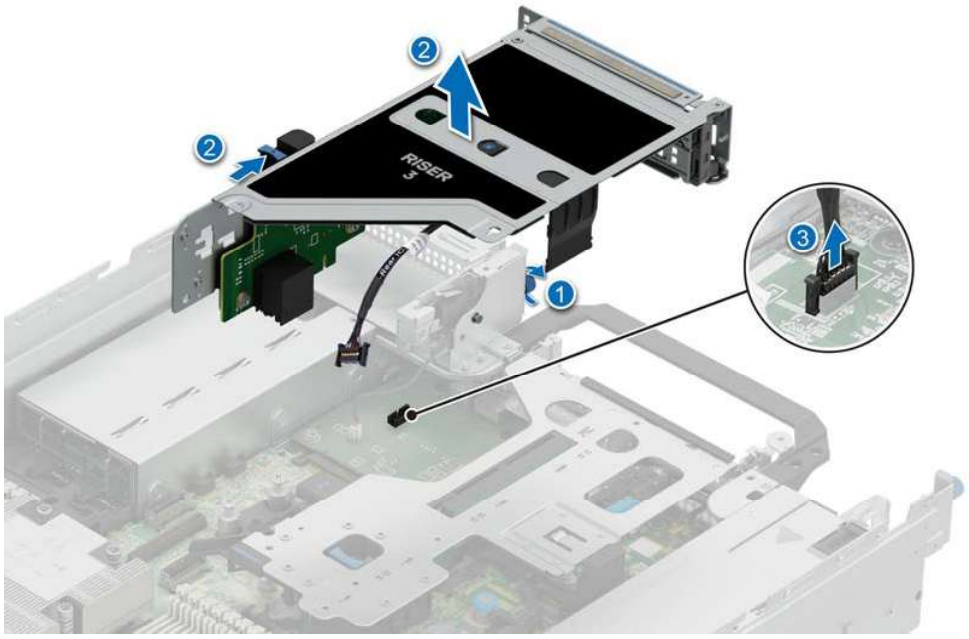


Figure 112. Disconnecting the Serial COM port

4. Open the latch on the expansion card riser and slide the serial COM port out of the expansion card riser.

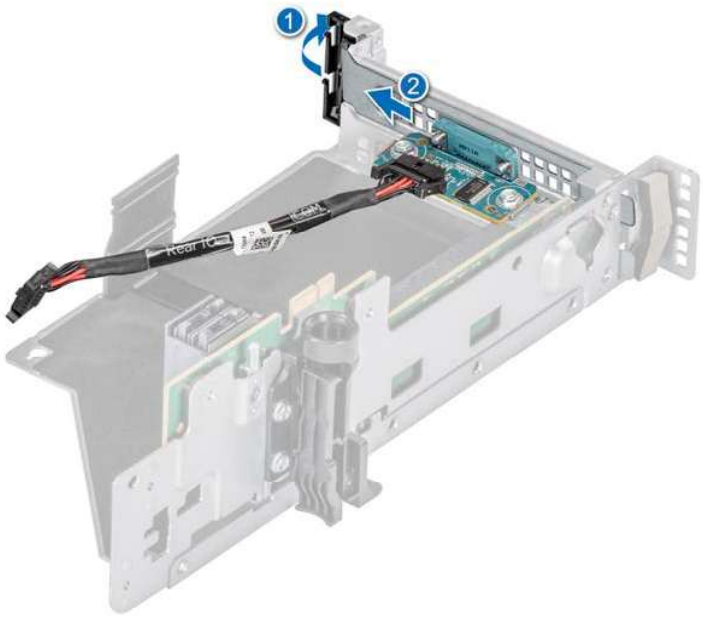


Figure 113. Removing the Serial COM port

5. Install the filler bracket if not replacing the serial COM port.

Installing the serial COM port

The procedure to install serial COM port to Riser 3 or 4 is same.

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Remove the air shroud or remove the GPU air shroud.

   NOTE: The serial COM port is supported only in slot 4 or slot 8 of the expansion card riser.
4. Remove expansion card riser.
5. Disconnect the serial COM port cable from the connector on the rear I/O board.

Steps

1. Open the latch on the expansion card riser and remove the filler bracket from the expansion card riser.

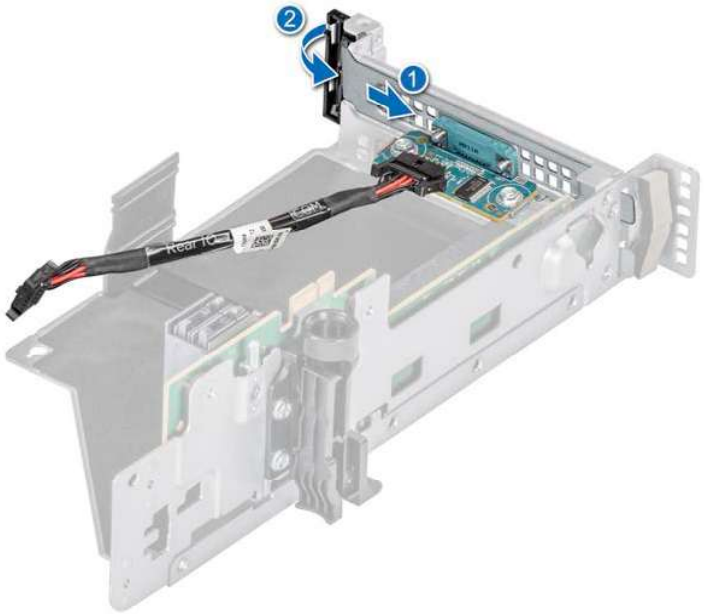


Figure 114. Installing the Serial COM port

2. Slide the serial COM port into the expansion card riser.
3. Connect the serial COM port cable to the serial port.

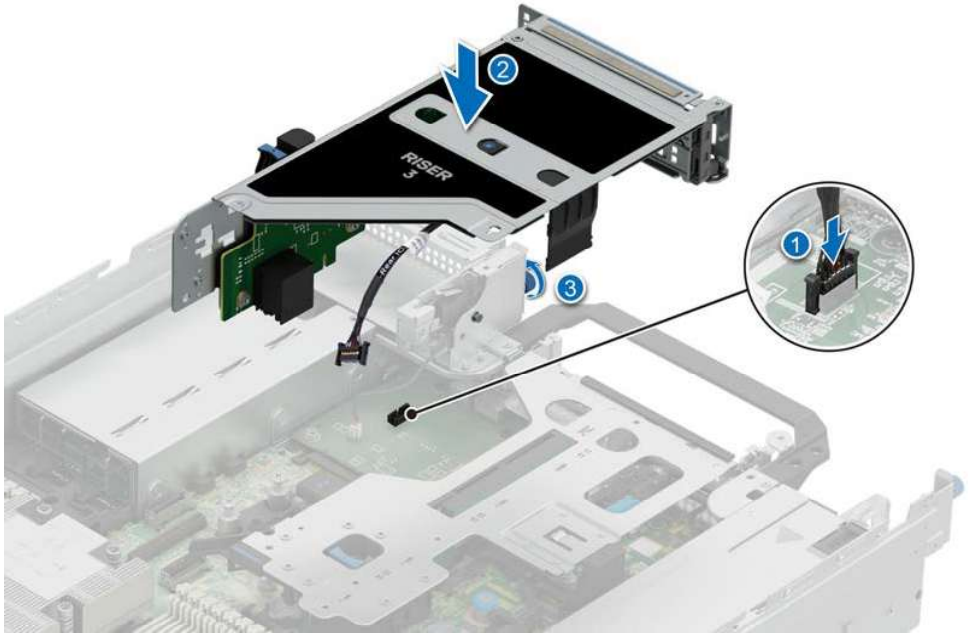


Figure 115. Installing the Serial COM port

BOSS-N1 module

Removing the BOSS-N1 module blank

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Use a screwdriver to push out the blank from the BOSS-N1 module bay.

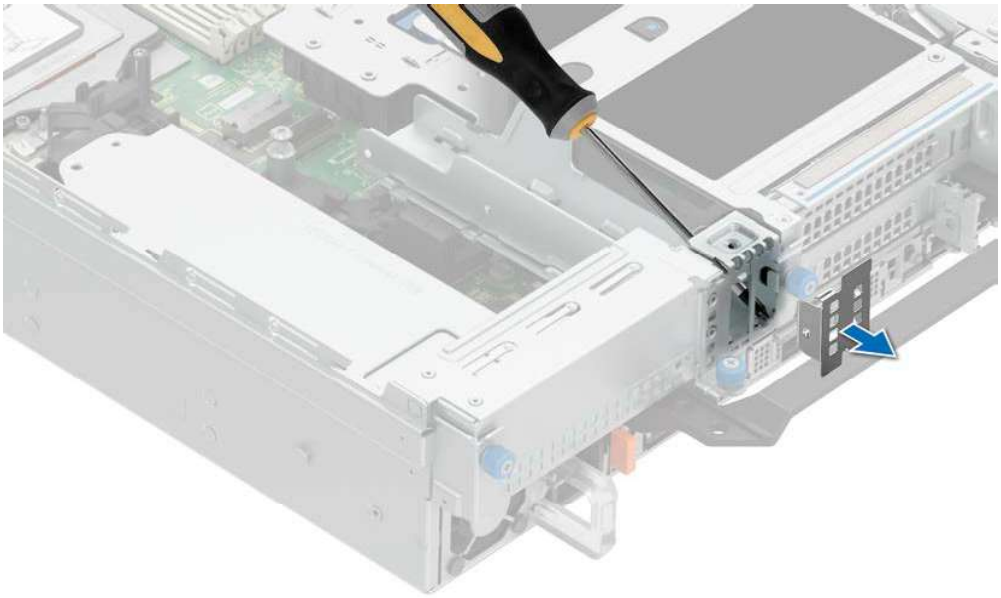


Figure 116. Removing the BOSS-N1 module blank

Installing the BOSS-N1 module blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

Steps

Align the blank with the BOSS-N1 module bay and push it into the bay until it clicks into place.

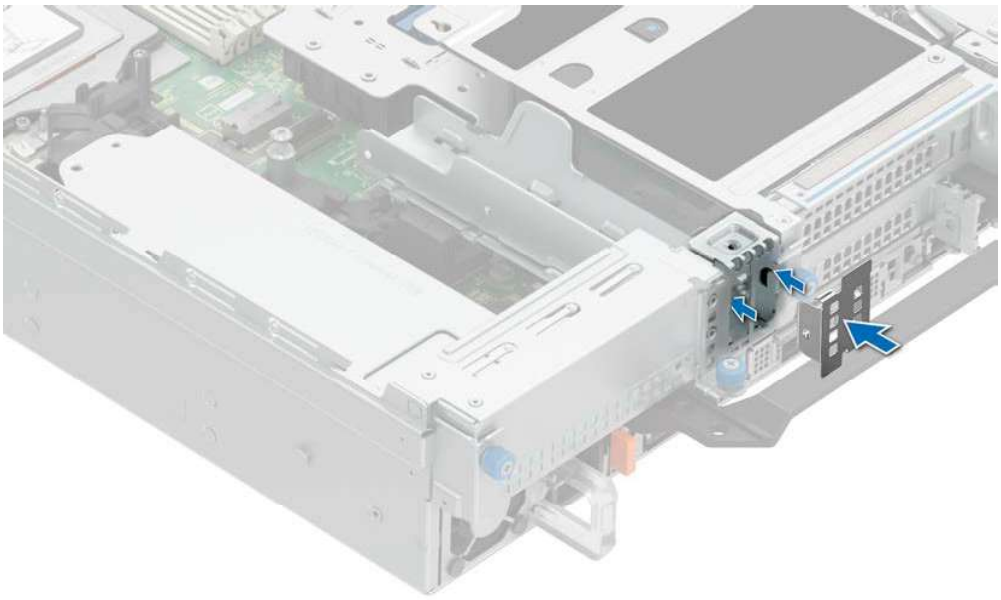


Figure 117. Installing the BOSS-N1 module blank

Removing the BOSS card filler

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

Press and pull the BOSS card filler out from the BOSS-N1 controller card module bay.

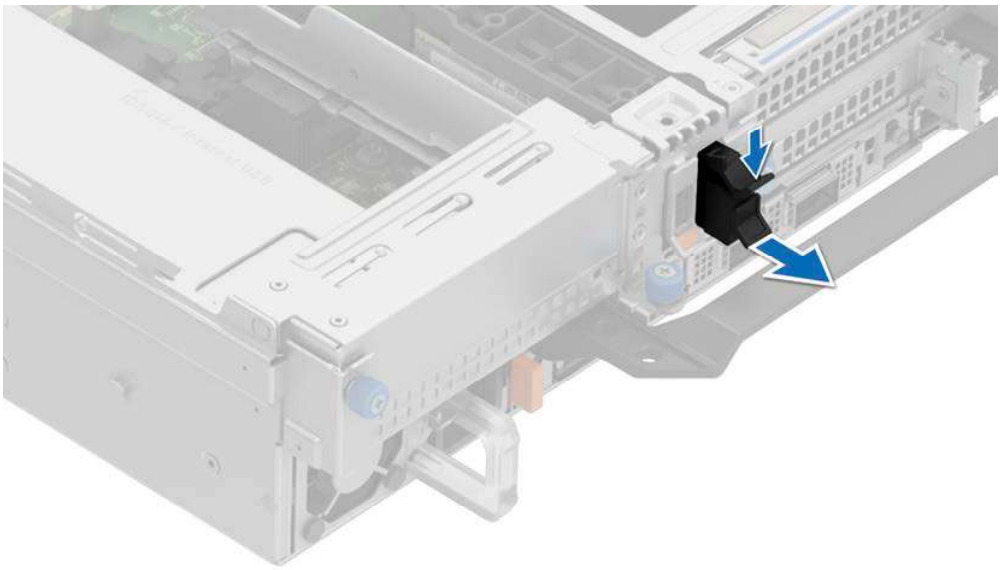


Figure 118. Removing the BOSS card filler

Installing the BOSS card filler

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

Steps

Align the BOSS card filler with the BOSS-N1 controller card module bay and push it into the bay until it clicks into place.

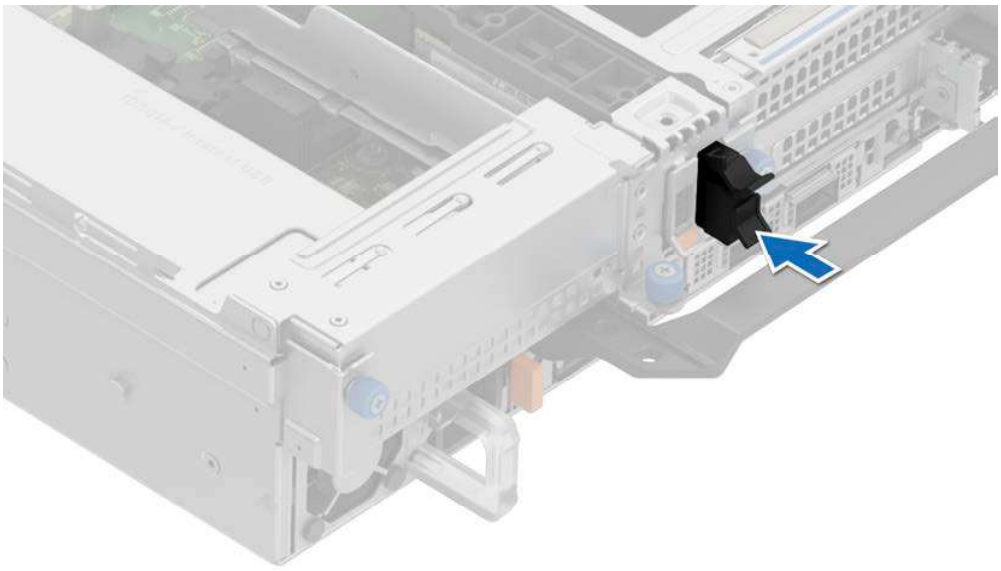


Figure 119. Installing the BOSS card filler

Removing the BOSS-N1 controller card module

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Pull and lift the BOSS-N1 card carrier retention latch lock to open.
2. Slide the BOSS-N1 card carrier out.

Figure 120. Removing the BOSS-N1 card carrier

3. Using the Phillips #1 screwdriver remove the M3 x 0.5 x 4.5 mm screw that secures the M.2 SSD to the BOSS-N1 card carrier.
4. Slide the M.2 SSD out and up from the BOSS-N1 card carrier.

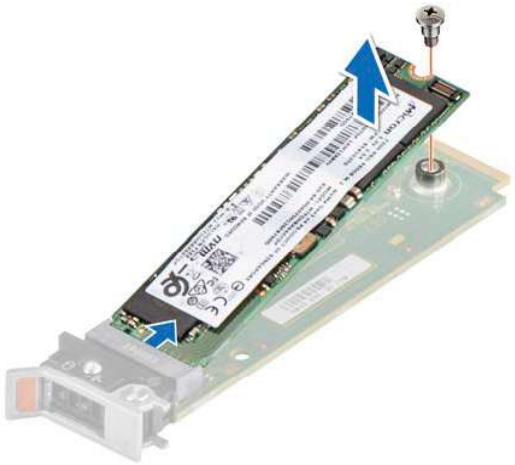


Figure 121. Removing the M.2 SSD

5. Disconnect the BOSS-N1 power cable and signal cable from the system board.

   NOTE: If BOSS-N1 module is installed, ensure to disconnect the BOSS-N1 power cable and signal cable before removing the Riser 1 cage.

6. Using the Phillips #1 screwdriver remove the M3 x 0.5 x 4.5 mm screw that secures the BOSS-N1 module on Riser 1.

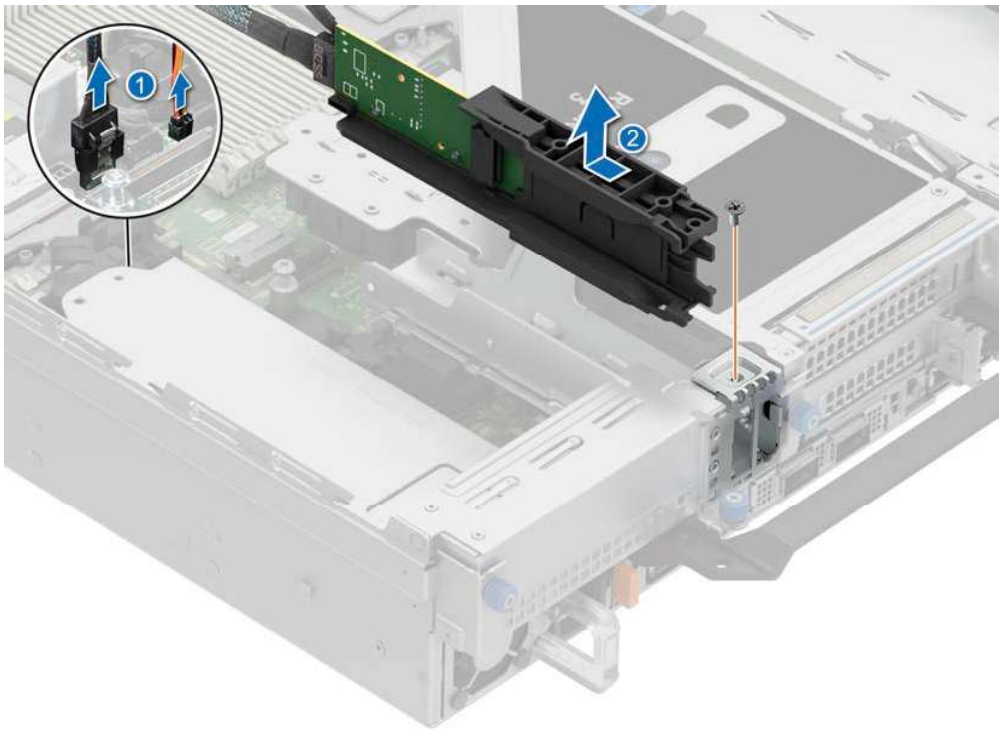


Figure 122. Removing the BOSS-N1 controller card module

7. Slide the BOSS-N1 module towards the front of the chassis and lift the module.

Installing the BOSS-N1 controller card module

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If installed, remove the BOSS module blank.

Steps

1. Align the BOSS-N1 module at an angle with the controller card module slot.
2. Insert the BOSS-N1 controller card module and push the module towards the rear of the system until it is secured.
3. Using the Phillips #1 screwdriver, secure the BOSS-N1 controller card module with the M3 x 0.5 x 4.5 mm screw.
4. Connect the BOSS power and signal cable to the connectors on the system board.

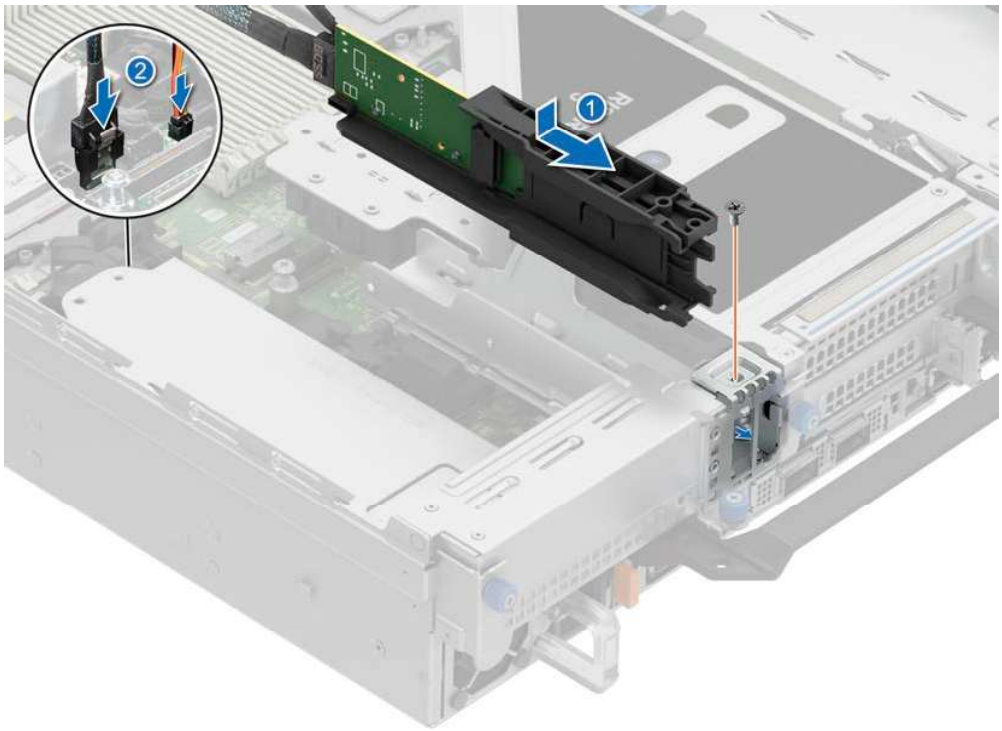


Figure 123. Installing the BOSS-N1 controller card module

5. Align the M.2 SSD at an angle with the BOSS-N1 card carrier.
6. Insert the M.2 SSD until it is firmly seated in the BOSS-N1 card carrier.
7. Using the Phillips #1 screwdriver, secure the M.2 SSD on the BOSS-N1 card carrier with the M3 x 0.5 x 4.5 mm screw.

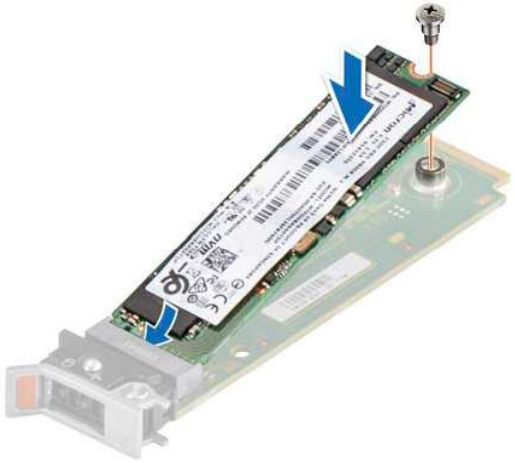


Figure 124. Installing the M.2 SSD

8. Slide the BOSS-N1 card carrier into the BOSS-N1 module slot.
9. Close the BOSS-N1 card carrier release latch to lock the carrier in place.

Figure 125. Installing the BOSS-N1 card carrier

System battery

This is a service technician replaceable part only.

Replacing the system battery

Prerequisites

WARNING: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type That is recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. See the Safety instructions. that came with your system for more information.

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. If applicable, disconnect the power or data cables from the expansion cards.
4. Remove the expansion card risers.

Steps

1. To remove the battery:
   a. Use a plastic scribe to pry out the system battery.

   CAUTION: To avoid damage to the battery connector, you must firmly support the connector while installing or removing a battery.

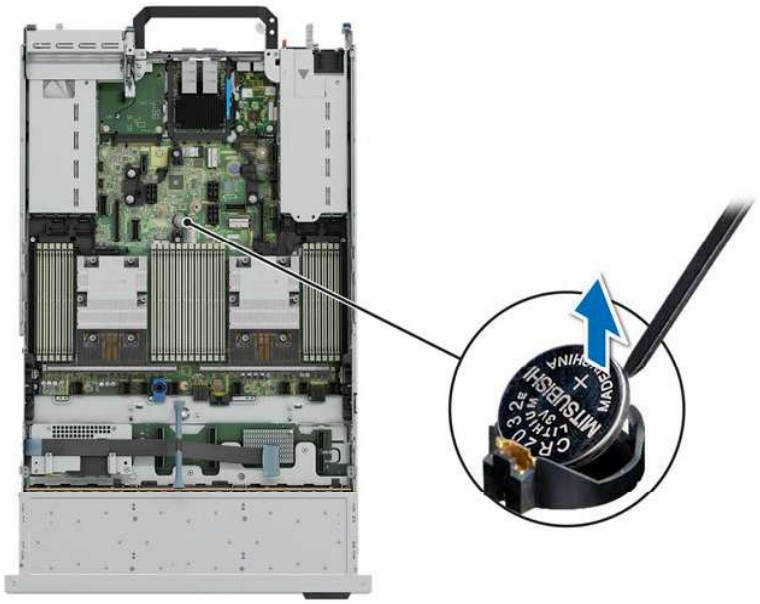


Figure 126. Removing the system battery

2. To install a new system battery:
   a. Hold the battery with the positive side facing up and slide it under the securing tabs.
   b. Press the battery into the connector until it snaps into place.

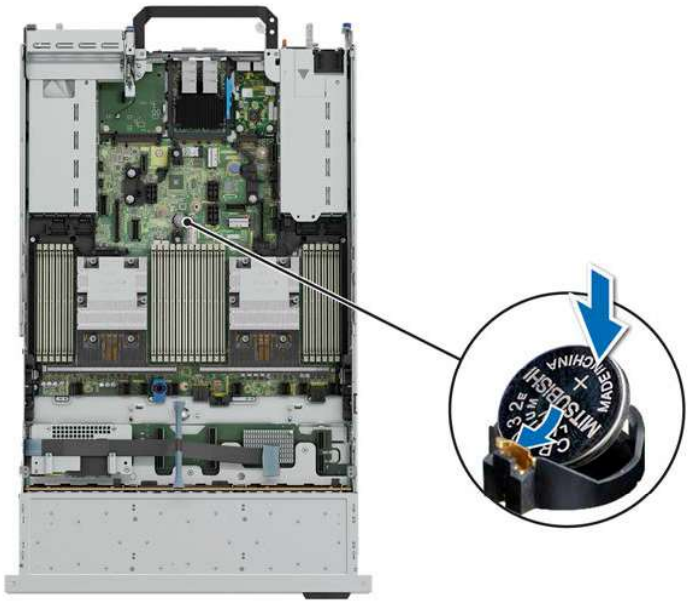


Figure 127. Installing the system battery

Optional internal USB card

NOTE: To locate the internal USB port on the system board, see the System board jumpers and connectors section.

Removing the internal USB card

Prerequisites

CAUTION: To avoid interference with other components in the server, the maximum permissible dimensions of the USB memory key are 15.9 mm wide x 57.15 mm long x 7.9 mm high.

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the expansion card risers.

Steps

1. Holding the blue tag, lift the internal USB card to disconnect from the connector on the system board.
2. Remove the USB memory key from the internal USB card.

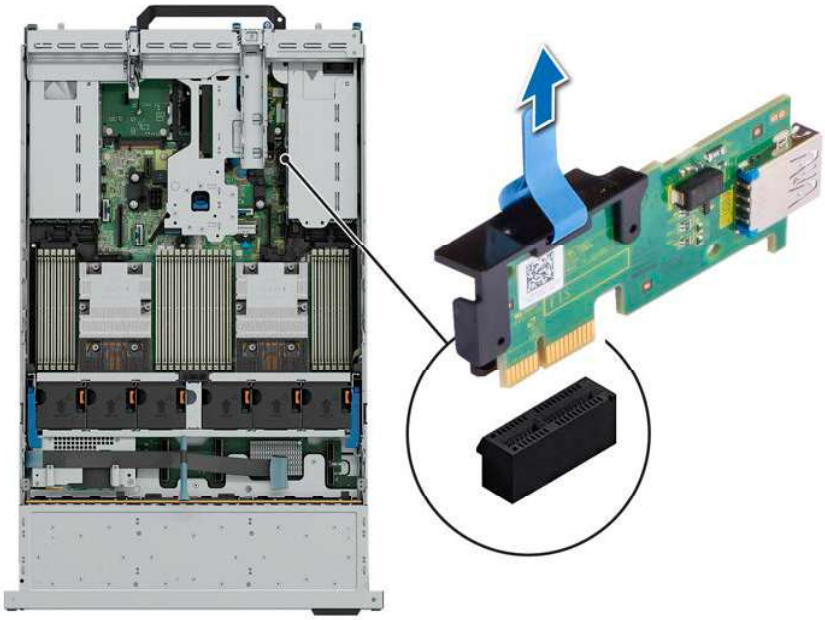


Figure 128. Removing the internal USB card

Installing the internal USB card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. Remove the expansion card risers.

Steps

1. Connect the USB key to the internal USB card.

   NOTE: Ensure to install the internal USB card in the USB card slot and not in the J_R3_PCIE_PWR connector slot.

2. Align the internal USB card with the connector on the system board and press firmly until the internal USB card is seated.

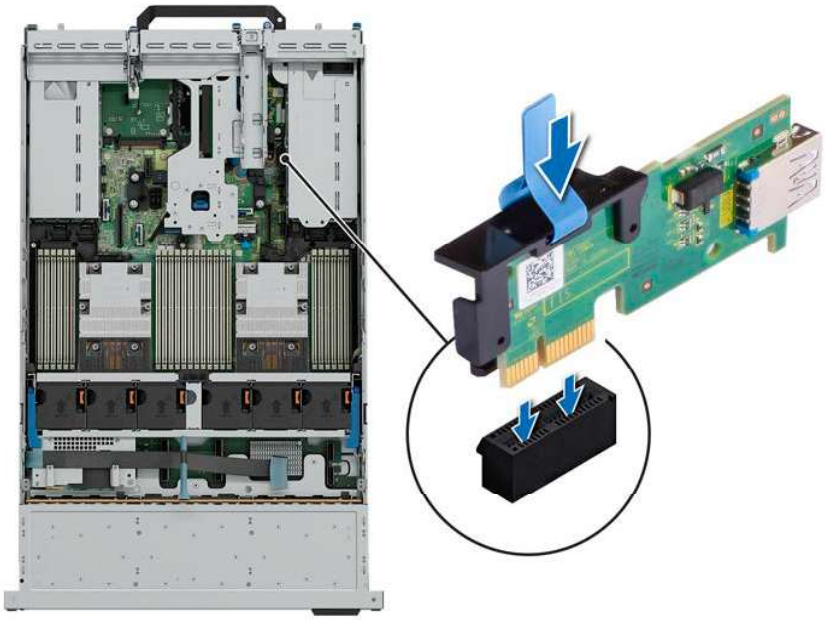


Figure 129. Installing the internal USB card

Intrusion switch module

Removing the intrusion switch

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the air shroud.
4. Keep the plastic scribe ready.

Steps

1. Disconnect and remove the intrusion switch cable connector from connector on the system board.

   NOTE: Observe the routing of the cable as you remove it from the system.

2. Using a Phillips #2 screwdriver, remove the screw that secures the intrusion switch on the intrusion switch slot.
3. Lift to remove the intrusion switch out of the intrusion switch slot.

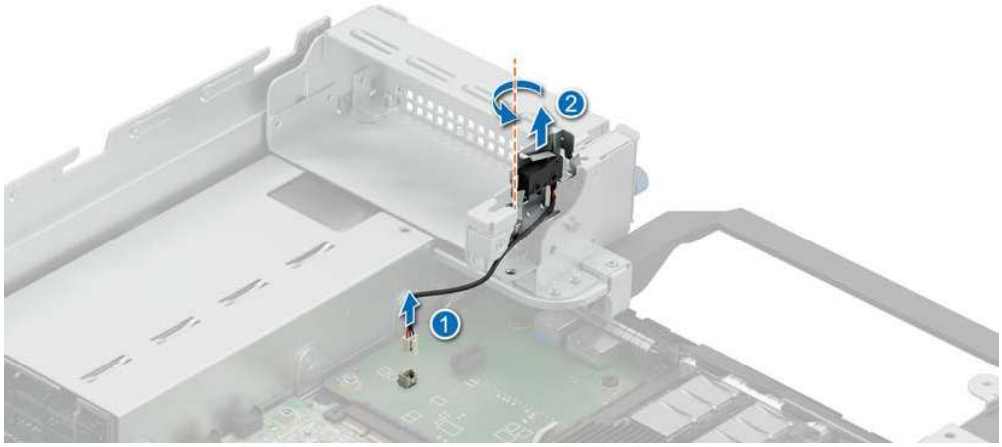


Figure 130. Removing the intrusion switch

Installing the intrusion switch

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the air shroud.

Steps

1. Align and insert the intrusion switch in the slot until it is firmly seated in the slot on the system.

   NOTE: Route the cable properly when you replace it to prevent the cable from being pinched or crimped.

2. Using a Phillips #2 screwdriver, tighten the screw that secures the intrusion switch on the intrusion switch slot.
3. Connect the intrusion switch cable to the connector on the system board.

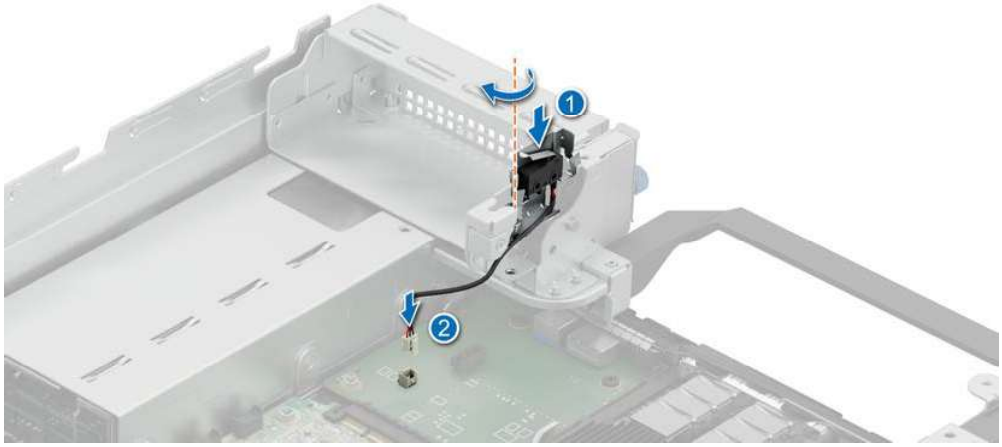


Figure 131. Installing the intrusion switch

Optional OCP card

Removing the OCP card shroud

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the expansion card riser.

Steps

Hold the edges of the OCP shroud and lift the shroud out of the system.

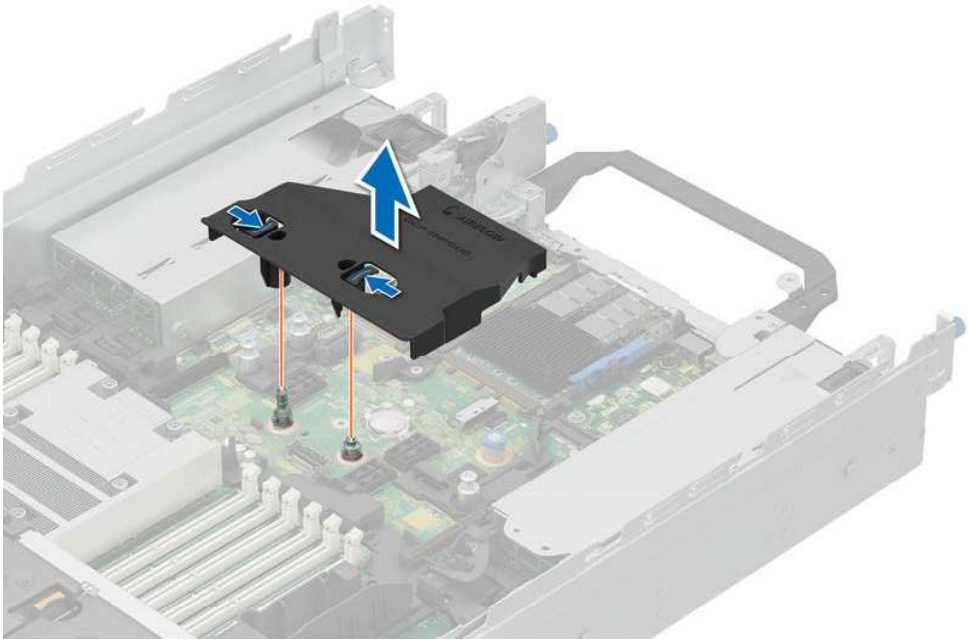


Figure 132. Removing the OCP shroud

Installing the OCP card shroud

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the expansion card riser.

Steps

1. Align OCP card shroud with the slot on the system.
2. Lower and press the OCP shroud until it clicks into place.

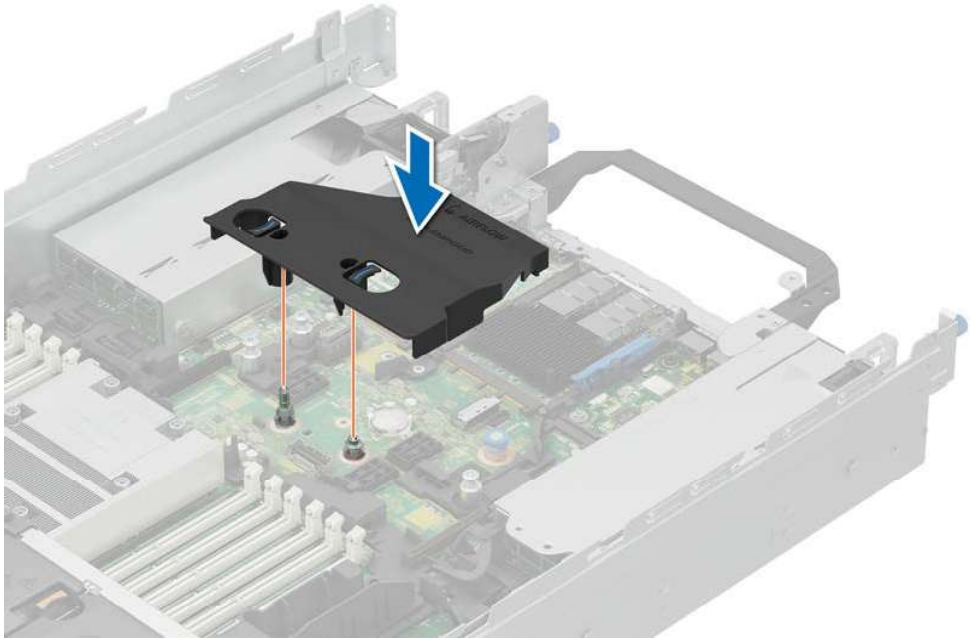


Figure 133. Installing the OCP card shroud

Removing the OCP card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the expansion card riser.

Steps

1. Open the blue latch to disengage the OCP card.
2. Push the OCP card towards the rear end of the system to disconnect from the connector on the system board.
3. Slide the OCP card out of the slot on the system.

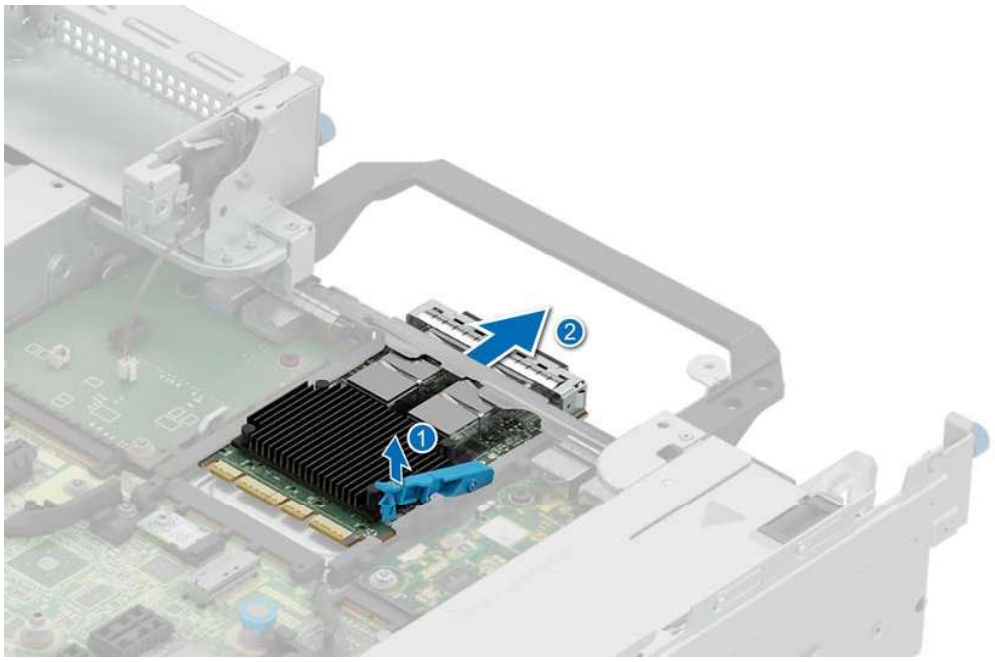


Figure 134. Removing the OCP card

4. If the OCP card is not going to be replaced, install a filler bracket .

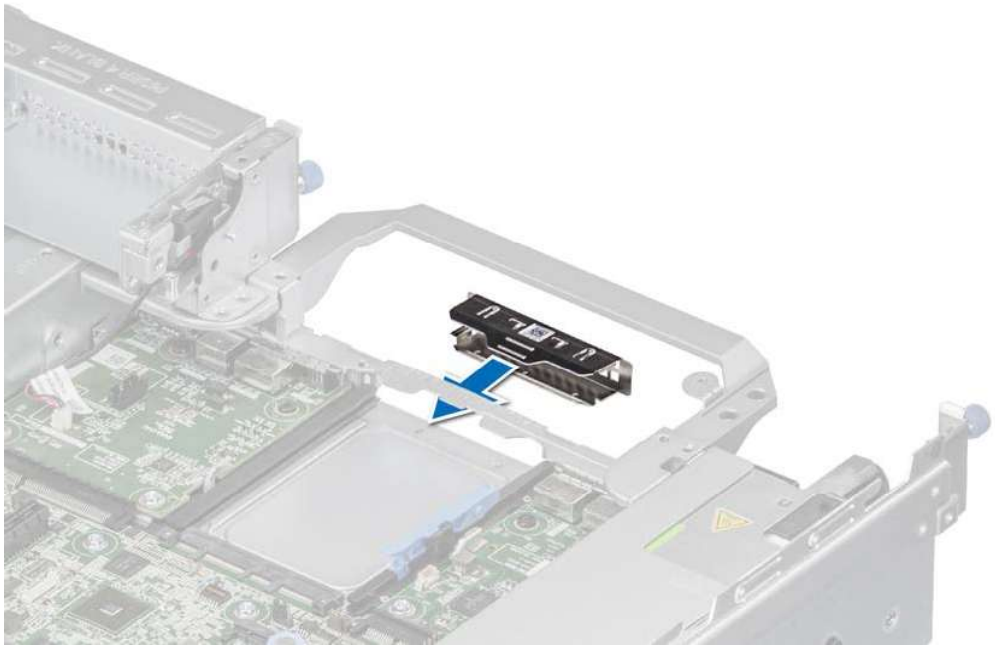


Figure 135. Installation of filler bracket

Installing the OCP card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.

3. Remove the expansion card riser.

Steps

1. If installed, remove the filler bracket.

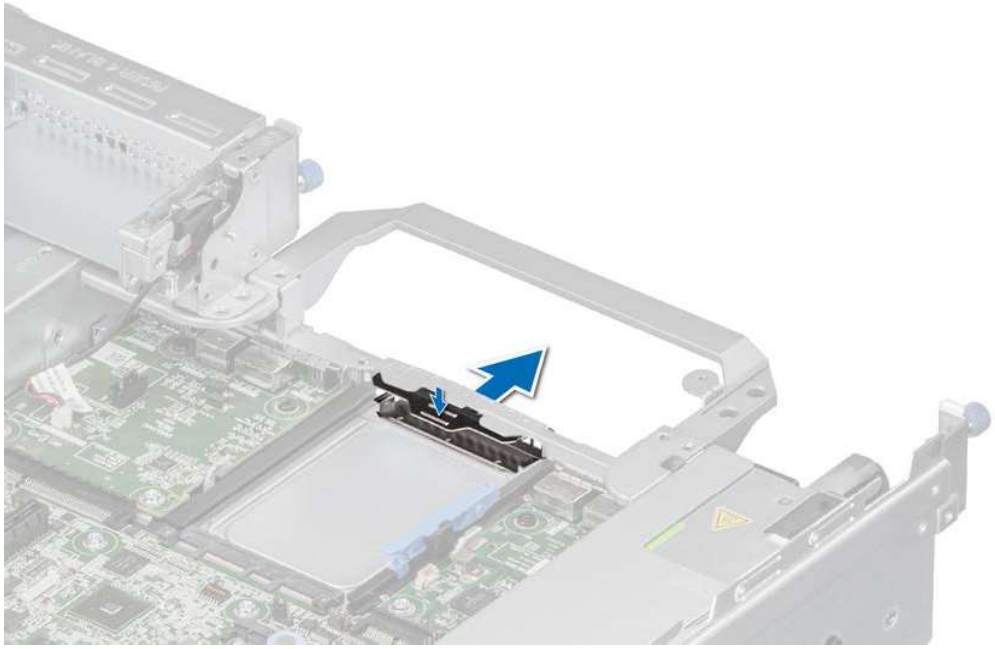


Figure 136. Removal of filler bracket

2. Open the blue latch on the system board.
3. Slide the OCP card into the slot in the system.
4. Push until the OCP card is connected to the connector on the system board.
5. Close the latch to lock the OCP card to the system.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

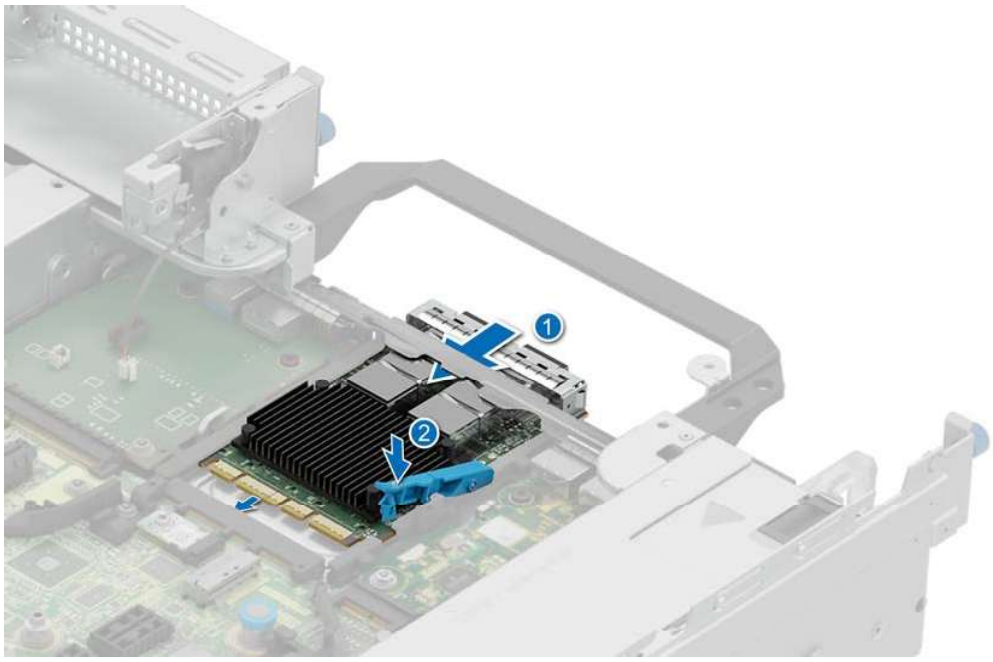


Figure 137. Installing the OCP card

Power supply unit

NOTE: While replacing the hot swappable PSU, after next server boot; the new PSU automatically updates to the same firmware and configuration of the replaced one. For more information about the Part replacement configuration, see the *Lifecycle Controller User's Guide* at https://www.dell.com/idracmanuals

Hot spare feature

Your system supports the hot spare feature that significantly reduces the power overhead associated with power supply unit (PSU) redundancy.

When the hot spare feature is enabled, one of the redundant PSUs is switched to the sleep state. The active PSU supports 100 percent of the system load, thus operating at higher efficiency. The PSU in the sleep state monitors output voltage of the active PSU. If the output voltage of the active PSU drops, the PSU in the sleep state returns to an active output state.

If having both PSUs active is more efficient than having one PSU in the sleep state, the active PSU can also activate the sleeping PSU.

The default PSU settings are as follows:

- If the load on the active PSU is more than 50 percent of PSU rated power wattage, then the redundant PSU is switched to the active state.
- If the load on the active PSU falls below 20 percent of PSU rated power wattage, then the redundant PSU is switched to the sleep state.

You can configure the hot spare feature by using the iDRAC settings. For more information, see the *iDRAC User's Guide* available at www.dell.com/poweredgemanuals.

Removing a power supply unit blank

Prerequisites

Follow the safety guidelines listed in the Safety instructions.

Steps

Pull the blank out of the system.

CAUTION: To ensure proper system cooling, the PSU blank must be installed in the second PSU bay in a non-redundant configuration. Remove the PSU blank only if you are installing a second PSU.

Installing a power supply unit blank

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.

   NOTE: Install the power supply unit (PSU) blank only in the second PSU bay.
2. remove the PSU.

Steps

Align the PSU blank with the PSU bay and push it into the PSU bay until it clicks into place.

Removing a power supply unit

Prerequisites

CAUTION: The system requires one power supply unit (PSU) for normal operation. On power-redundant systems, remove and replace only one PSU at a time in a system that is powered on.

1. Follow the safety guidelines listed in the Safety instructions.
2. Disconnect the power cable from the power outlet and from the PSU you intend to remove.
3. Remove the cable from the strap on the PSU handle.
4. Unlatch and lift or remove the optional cable management accessory if it interferes with the PSU removal. For information about the cable management when the PSU is removed or installed while the system is in a rack, see the system's cable management arm documentation at https://www.dell.com/poweredgemanuals.

Steps

Press the release latch, and holding the PSU handle slide the PSU out of the PSU bay.

Figure 138. Removing a power supply unit

Installing a power supply unit

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. For systems that support redundant PSU, ensure that both the PSUs are of the same type and have the same maximum output power.

   NOTE: The maximum output power (shown in watts) is listed on the PSU label.
3. Remove the PSU blank.

Steps

Slide the PSU into the PSU bay until the release latch snaps into place.

Figure 139. Installing a power supply unit

Trusted Platform Module

This is a service technician replaceable part only.

Upgrading the Trusted Platform Module

Removing the TPM

Prerequisites

NOTE:

- Ensure the operating system is compatible with the TPM version you are installing.
- Ensure that you download and install the latest BIOS firmware on your system.
- Ensure that the BIOS is configured to enable UEFI boot mode.

CAUTION: The TPM plug-in module is cryptographically bound to that particular system board after it is installed. When the system is powered on, any attempt to remove an installed TPM plug-in module breaks the cryptographic binding, and the removed TPM cannot be installed on another system board. Ensure any keys you have stored on the TPM have been securely transferred.

Steps

1. Locate the TPM connector on the system board.
2. Press to hold the module down and remove the screw using the security Torx 8-bit shipped with the TPM module.
3. Slide the TPM module out from its connector.
4. Push the plastic rivet away from the TPM connector and rotate it 90º counterclockwise to release it from the system board.
5. Pull the plastic rivet out of its slot on the system board.

Installing the TPM

Steps

1. To install the TPM, align the edge connectors on the TPM with the slot on the TPM connector.
2. Insert the TPM into the TPM connector such that the plastic rivet aligns with the slot on the system board.
3. Press the plastic rivet until the rivet snaps into place.
4. Replace the screw that secures the TPM to the system board.

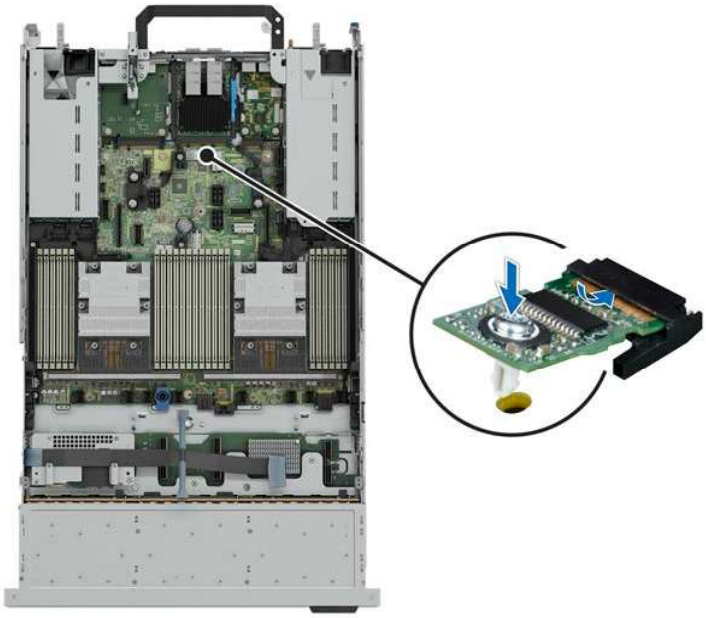


Figure 140. Installing the TPM

Initializing TPM for users

Steps

1. Initialize the TPM.
   For more information, see Initializing the TPM for users.
2. The **TPM Status** changes to **Enabled, Activated**.

Initializing the TPM 2.0 for users

Steps

1. While booting your system, press F2 to enter System Setup.
2. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.

3. From the **TPM Security** option, select **On**.
4. Save the settings.
5. Restart your system.

System board

Removing the system board

Prerequisites

CAUTION: If you are using the Trusted Platform Module (TPM) with an encryption key, you may be prompted to create a recovery key during program or System Setup. Be sure to create and safely store this recovery key. If you replace this system board, you must supply the recovery key when you restart your system or program before you can access the encrypted data on your drives.

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the following components:
   a. Air shroud (if installed).
   b. Cooling fan cage assembly.
   c. Side wall brackets.
   d. Heat sink.
   e. Processor.
   f. Memory modules.
   g. Expansion card risers.
   h. Internal USB card (if installed).
   i. OCP card (if installed).
   j. Power supply units (PSU).
   k. Disconnect all cables from the system board.

      CAUTION: Take care not to damage the system identification button while removing the system board from the system.

Steps

1. Using the system board holder and plunger, slide the system board towards the front of the system.
2. Lift the system board out of the chassis.

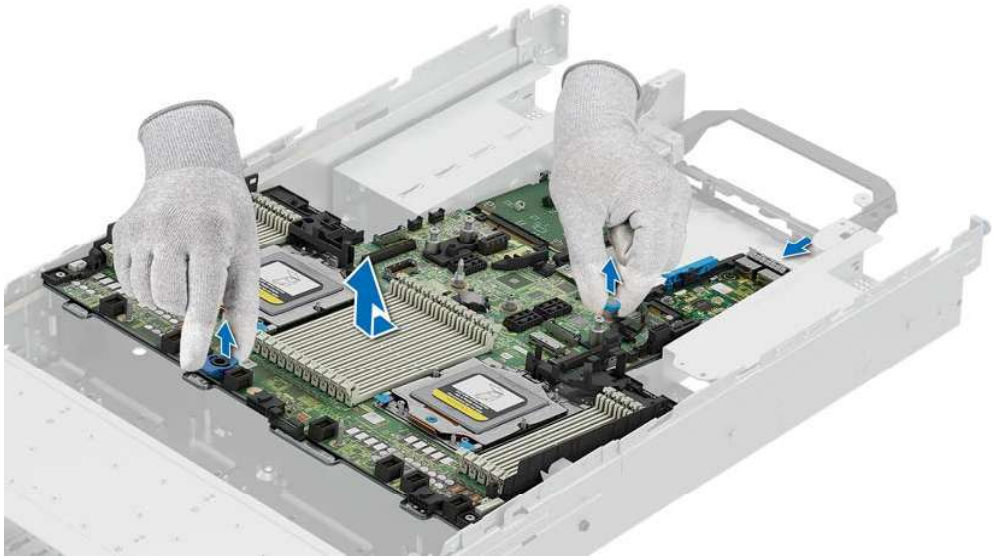


Figure 141. Removing the system board

Installing the system board

Prerequisites

NOTE: Before replacing the system board, replace the old iDRAC MAC address label in the Information tag with the iDRAC MAC address label of the replacement system board

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.
3. If you are replacing the system board, remove all the components that are listed in the removing the system board section.

Steps

1. Unpack the new system board assembly.

   CAUTION: Do not lift the system board by holding a memory module, processor, or other components.

   CAUTION: Take care not to damage the system identification button while placing the system board into the chassis.

2. Install LOM Card on the system board if necessary.
3. Holding the system board holder and plunger, lower the system board into the system.
4. Slide the system board towards the rear of the chassis until the connectors are firmly seated in the slots.

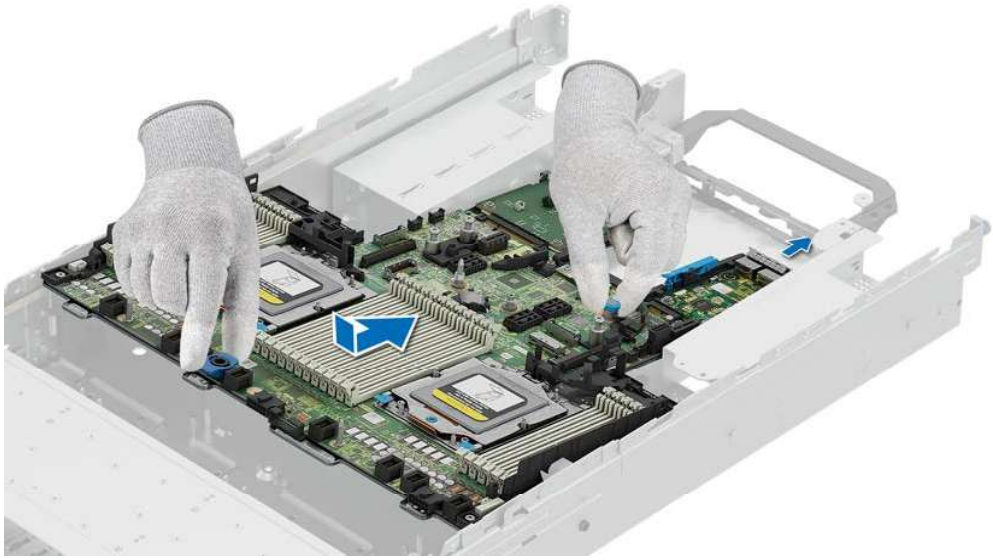


Figure 142. Installing the system board

Next steps

1. Replace the following components:
   a. Trusted Platform Module (TPM).
      NOTE: The TPM Module must be replaced only while installing new system board.
   b. Internal USB card (if installed).
   c. Power supply units (PSU).
   d. OCP card (if installed).
   e. Processor.
   f. Heat sink.
   g. Memory modules.
   h. Side wall bracket.
   i. Cooling fan cage assembly.
   j. Air shroud (if installed).
2. Reconnect all cables to the system board.
   NOTE: Ensure that the cables inside the system are routed along the chassis wall and secured using the cable securing bracket.
3. Ensure that you perform the following steps:
   a. Use the Easy Restore feature to restore the Service Tag. See the Restoring the system by using the Easy Restore feature section.
   b. If the service tag is not backed up in the backup flash device, enter the system service tag manually. See the Manually update the Service Tag by using System Setup section.
   c. Update the BIOS and iDRAC versions. Reenable the Trusted Platform Module (TPM). See the Upgrading the Trusted Platform Module section.

Restoring Service Tag using Easy Restore

The Easy Restore feature allows you to restore your Service Tag, iDRAC license, UEFI configuration, and the system configuration data after replacing the system board. All data is backed up in a backup Flash drive device automatically. If BIOS detects a new system board, and the Service Tag in the backup Flash drive device is different, BIOS prompts the user to restore the backup information.

Below is a list of options available:

1. Restore the service tag, license, and diagnostics information, press **Y**
2. Navigate to the Lifecycle Controller based restore options, press **N**

3. Restore data from a previously created **Hardware Server Profile**, press **F10**

   NOTE: When the restore process is complete, BIOS prompts to restore the system configuration data.
4. Restore data from a previously created **Hardware Server Profile**, press **F10**
5. To restore the system configuration data, press **Y**
6. To use the default configuration settings, press **N**

   NOTE: After the restore process is complete, system reboots.

NOTE: If restoring the Service Tag is successful, you can check the Service Tag information in the **System Information** screen and compare it with the Service Tag on the system.

Manually update the Service Tag

After replacing a system board, if Easy Restore fails, follow this process to manually enter the Service Tag, using **System Setup**.

About this task

If you know the system service tag, use the **System Setup** menu to enter the service tag.

Steps

1. Power on the system.
2. To enter the **System Setup**, press **F2**.
3. Click **Service Tag Settings**.
4. Enter the service tag.

   NOTE: You can enter the service tag only when the **Service Tag** field is empty. Ensure that you enter the correct service tag. Once the service tag is entered, it cannot be updated or changed. Incorrectly entered service tag will lead to system board replacement.
5. Click **OK**.

LOM card and rear I/O board

Removing the LOM card and rear I/O board

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the system board.

Steps

1. Using a Phillips # 2 screwdriver, remove the screws that secure the LAN on Motherboard (LOM) card and rear I/O board to the system board.
2. Holding the edges, pull the LOM card or rear I/O board to disconnect from the connector on the system board.

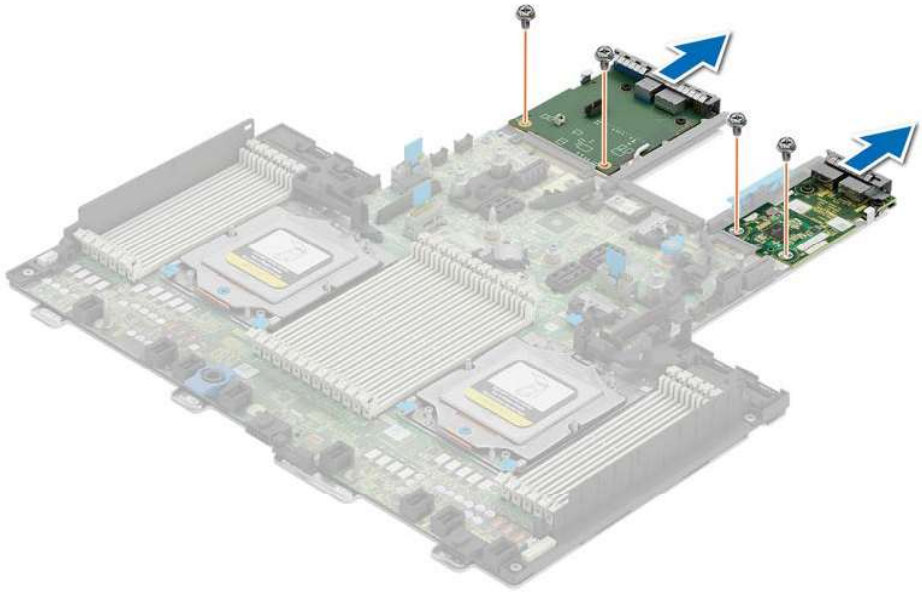


Figure 143. Removing the LOM card and rear I/O board

Installing the LOM card and rear I/O board

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the system board.

Steps

1. Align the connectors and slots on the LOM card or rear I/O board with the connector and standoffs on the system board.
2. Press the LOM card or rear I/O board until firmly seated on the system board connector.
3. Using a Phillips #2 screwdriver, secure the LOM card or rear I/O board to the system board with screws.

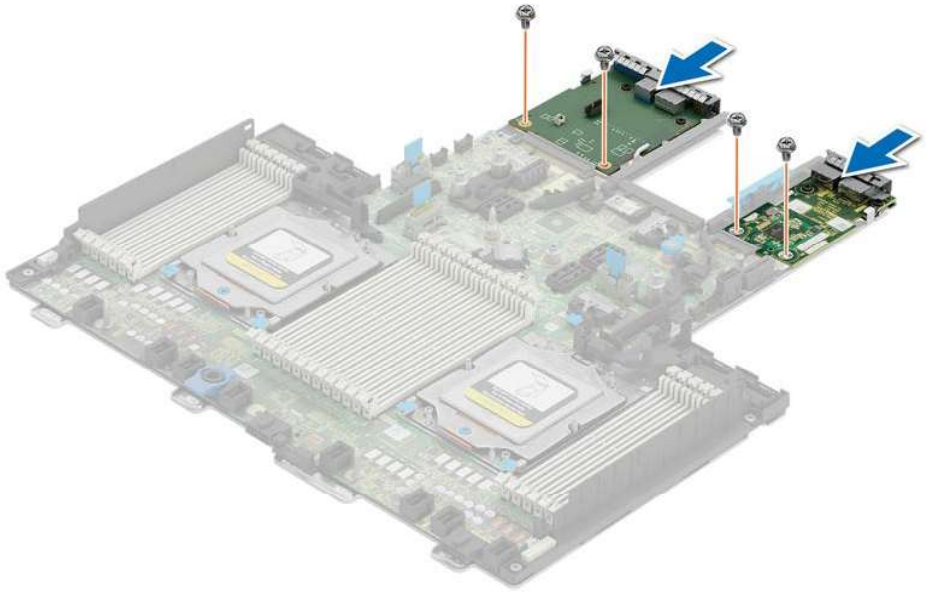


Figure 144. Installing the LOM card and rear I/O board

RIO card

Removing the Rear Input Output (RIO) card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the system board.

Steps

1. Using a Phillips #2 screwdriver, remove the screws that secure the RIO card to the system board.
2. Holding the edges, pull the RIO card to disconnect from the connector on the system board.

Installing the RIO card

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the system board.
4. If required, remove the LOM card.

NOTE: Upgrading the system board with the liquid cooling solution requires the LOM card to be replaced with the RIO card.

Steps

1. Align the connectors and slots on RIO card with the connector and standoffs on the system board.
2. Press the RIO card until firmly seated on the system board connector.
3. Using a Phillips #2 screwdriver, secure the RIO card to the system board with the two screws.

Tube clip

Removing the tube clip

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the air shroud.

Steps

Using a Phillips #2 screwdriver, loosen the screw that is securing the tube clip and remove it from the chassis.

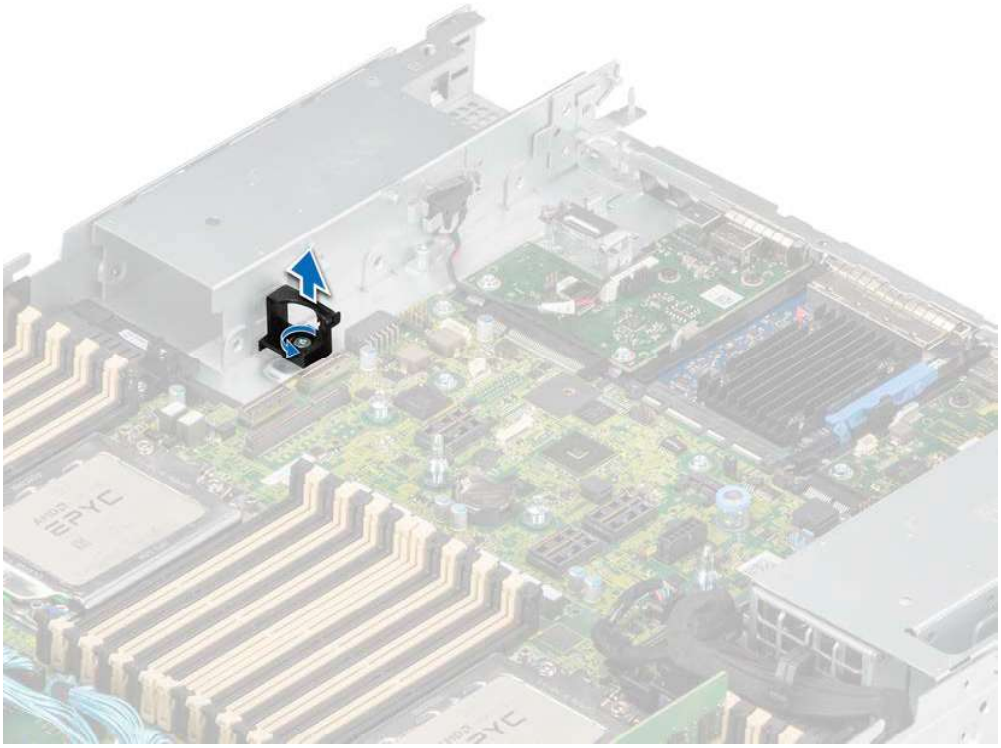


Figure 145. Removing the tube clip

Installing the tube clip

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the air shroud.

Steps

1. Place the tube clip onto the chassis according to the guide pins.
2. Using a Phillips #2 screwdriver, secure the tube clip to the chassis with the screw.

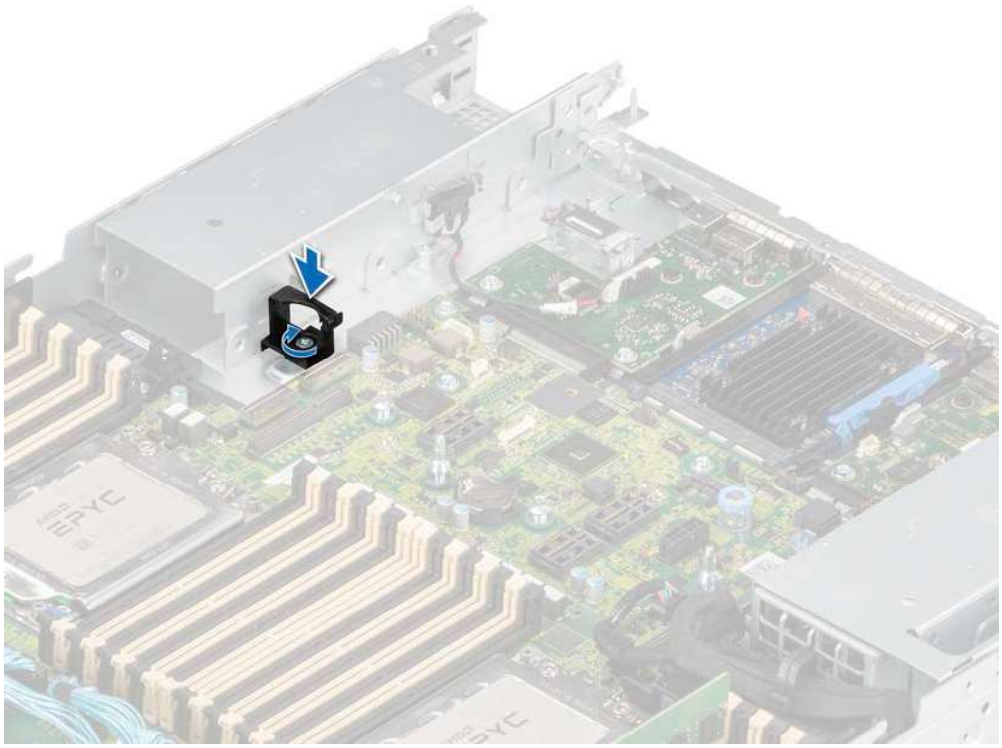


Figure 146. Installing the tube clip

Control panel

Removing the right control panel

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the drive backplane cover.
4. If installed, remove the air shroud.
5. Remove the cooling fan assembly.
6. Remove the side wall bracket.

Steps

1. Using the Phillips #1 screwdriver, remove the screws that secure the right control panel and the right control panels cable cover to the system and remove the cable cover away the system.
2. Disconnect the right control panel cable and the VGA cable from the connectors on the system board.
3. Holding the cable, slide the right control panel out of the system.

NOTE: Observe the routing of the cable as you remove the right control panel from the system.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

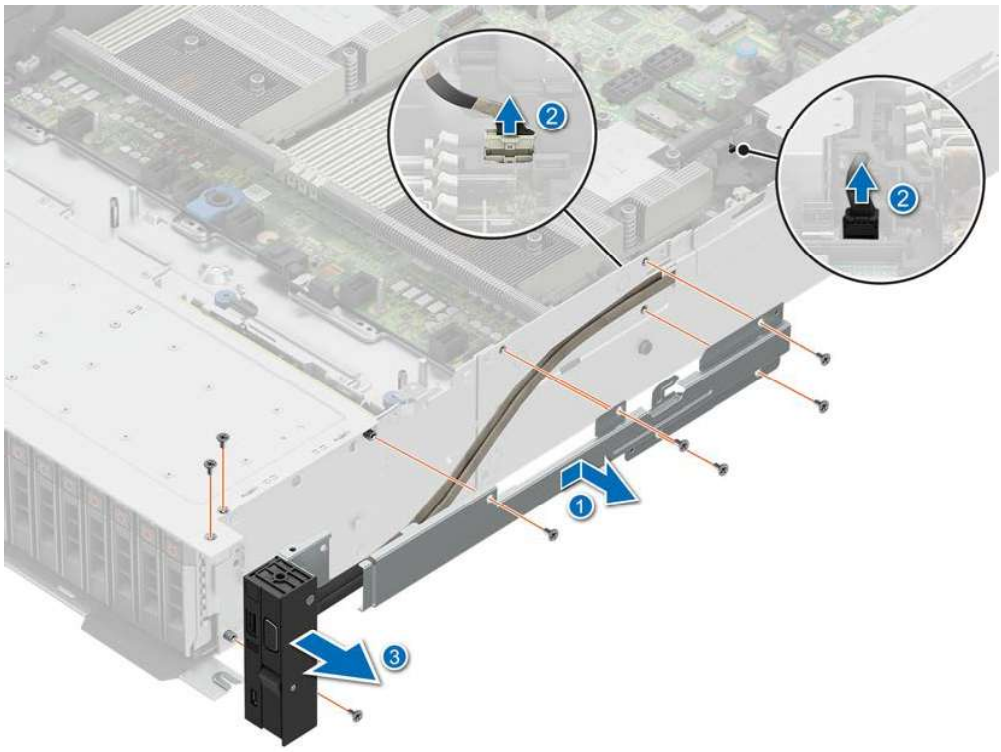


Figure 147. Removing the right control panel

Installing the right control panel

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Align and slide the right control panel in the slot on the system.
2. Connect the right control panel cable and VGA cable to the connectors on the system board.
3. Route the right control panel cable through the side wall of the system. Align and slide the right control panel cable cover in the slot on the system.

   NOTE: Route the cable properly to prevent the cable from being pinched or crimped.

4. Using the Phillips #1 screwdriver, tighten the screws that secure the right control panel and the right control panel cable cover to the system.

   NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

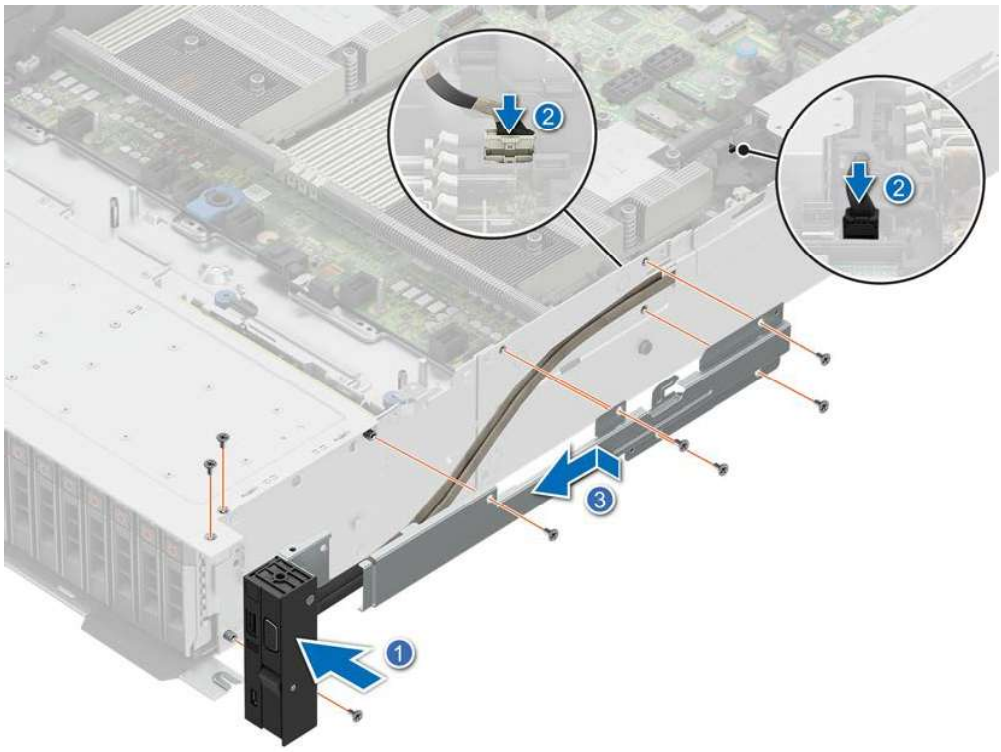


Figure 148. Installing the right control panel

Removing the left control panel

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in the Before working inside your system.
3. Remove the drive backplane cover.
4. If installed, remove the air shroud.
5. Remove the cooling fan assembly.
6. Remove the side wall bracket.

Steps

1. Disconnect the control panel cable from the connector on the system board.
2. Using the Phillips #1 screwdriver, remove the screws that secure the left control panel and the left control panels cable cover to the system.
3. Hold the left control panel cable, and slide the left control panel out of the system.

NOTE: Observe the routing of the cable as you remove the right control panel from the system.

NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

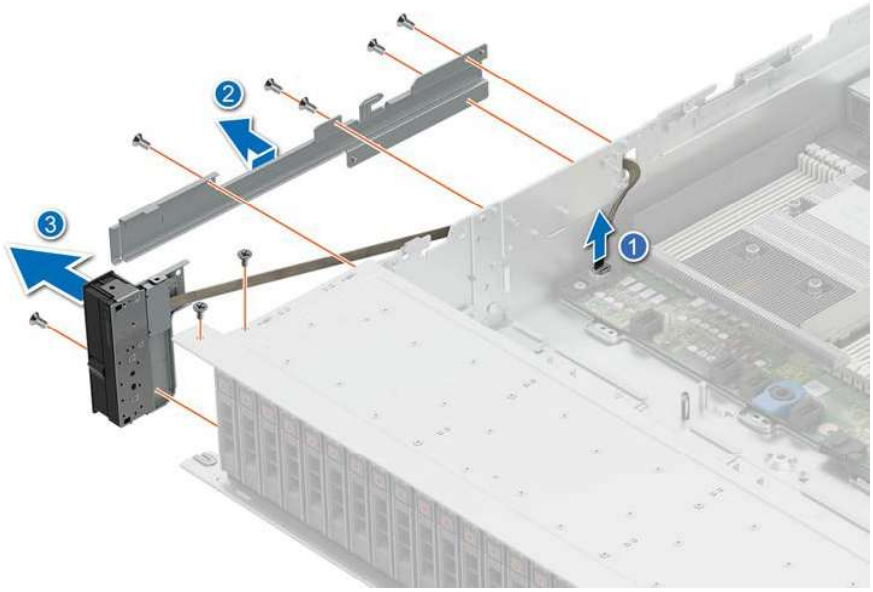


Figure 149. Removing the left control panel

Installing the left control panel

Prerequisites

1. Follow the safety guidelines listed in the Safety instructions.
2. Follow the procedure listed in Before working inside your system.

Steps

1. Align and slide the left control panel in the slot on the system.
2. Connect the left control panel cable to the connector on the system board .
3. Route the left control panel cable through the side wall of the system. Align and slide the left control panel cable cover in the slot on the system.

   NOTE: Route the cable properly to prevent the cable from being pinched or crimped.

4. Using the Phillips #1 screwdriver, tighten the screws to secure the left control panel and the left control panel cable cover to the system.

   NOTE: The numbers on the image do not depict the exact steps. The numbers are for representation of sequence.

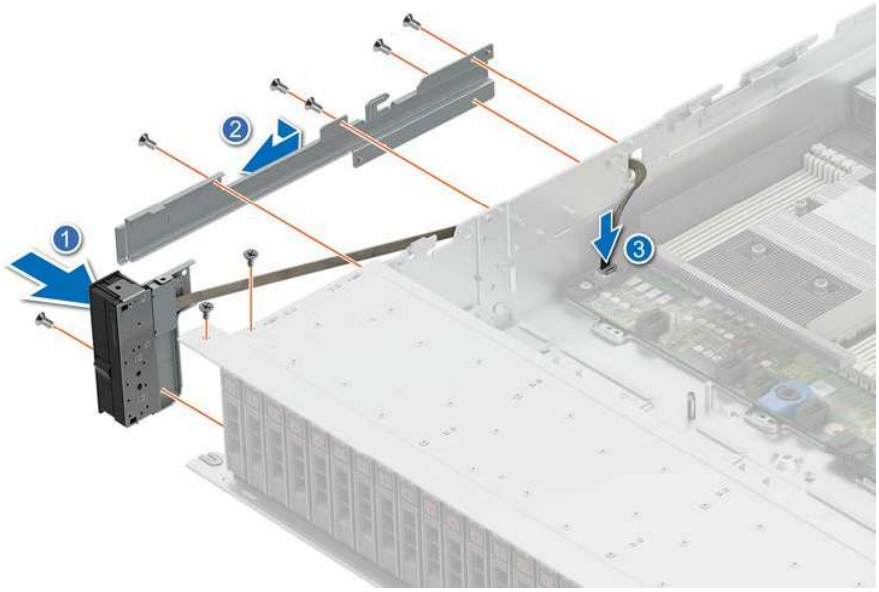


Figure 150. Installing the left control panel

7

Jumpers and connectors

This section provides essential and specific information about jumpers and switches. It also describes the connectors on the various boards in the system. Jumpers on the system board help to disable the system and reset the passwords. To install components and cables correctly, you must be able to identify the connectors on the system board.

Topics:

System board connectors

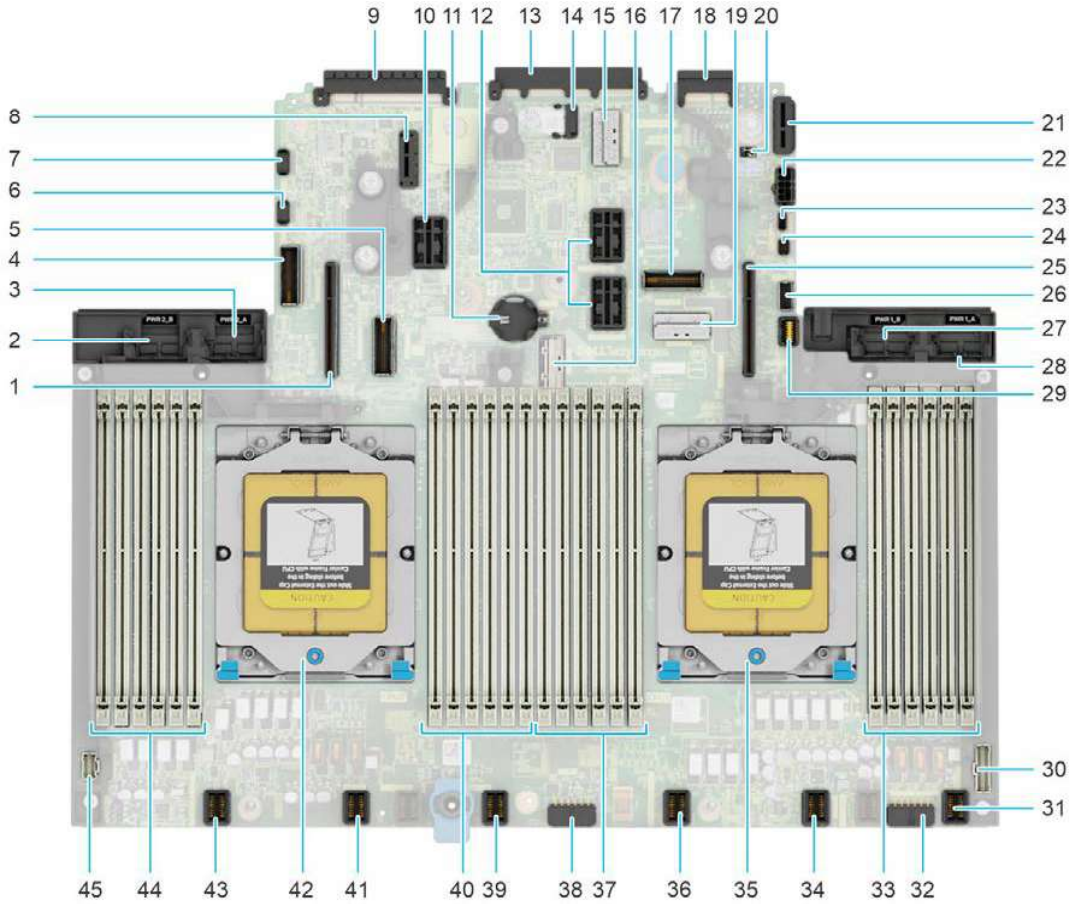


Figure 151. System board jumpers and connectors

Table 59. System board jumpers and connectors

Item	Connector	Description
1.	IO_RISER4 (CPU2)	Riser 4

Table 59. System board jumpers and connectors (continued)

Item	Connector	Description
2.	PWR 2_B	Power Connector for PSU2
3.	PWR 2_A	Power Connector for PSU2
4.	SL1_CPU2_PA4	PCIe Connector 1
5.	SL2_CPU2_PB4	PCIe Connector 2
6.	PSU2 PUCK Sideband Signal	PSU2 PUCK Sideband Signal
7.	Battery SIG Connector	Battery SIG Connector
8.	J_R3_PCIE_PWR	Riser 3 Power Connector
9.	Rear I/O connector	Rear I/O Connector
10.	IO_RISER3 (CPU2)	Riser 3
11.	Coin Cell Battery	Coin Cell Battery
12.	IO_RISER2_A (CPU1) IO_RISER2_B (CPU2)	Riser 2
13.	OCP NIC 3.0 connector	OCP NIC 3.0 Connector
14.	J_TPM	TPM
15.	DSL_CPU1_PB2	PCIe Connector
16.	SL3_CPU1_PA1	PCIe Connector 3
17.	SL5_CPU1_PB2	PCIe Connector 5
18.	LOM connector	LOM Connector
19.	SL4_CPU1_PB1	PCIe Connector 4
20.	Jumpers	Jumpers
21.	Internal USB connector	Internal USB Connector
22.	Power Connector 0 - Use for Rear BP	Power Connector 0 - Use for Rear BP
23.	BOSS_CARD_PWR	BOSS Card Power
24.	PSU1 PUCK Sideband Signal	PSU1 PUCK Sideband Signal
25.	IO_RISER1 (CPU1)	Riser 1
26.	SL6_CPU1_PA3	PCIe Connector 6
27.	PWR 1_B	Power Connector for PSU1
28.	PWR 1_A	Power Connector for PSU1
29.	MB_FRONT_VIDEO	Front VGA Connector
30.	RGT_CP	Right Control Panel Connector
31.	FAN 6	Fan 6
32.	PWR Connector 2 - Use for BP only	Power Connector 2 - Use for BP only
33.	A2, A6, A4, A10, A8, A12	DIMMs for processor 1 channels G,H, I, J, K, L
34.	FAN 5	Fan 5
35.	CPU1	Processor 1
36.	FAN 4	Fan 4

Table 59. System board jumpers and connectors (continued)

Item	Connector	Description
37.	A11, A7, A9, A3, A5, A1	DIMMs for processor 1 channels F, E, D, C, B, A
38.	PWR Connector 1 - Use for BP only	Power Connector 1 - Use for BP only
39.	FAN 3	Fan 3
40.	B2, B6, B4, B10, B8, B12	DIMMs for processor 2 channels G, H, I, J, K, L
41.	FAN 2	Fan 2
42.	CPU2	Processor 2
43.	FAN 1	Fan 1
44.	B11, B7, B9, B3, B5, B1	DIMMs for processor 2 channels F, E, D, C, B, A
45.	LFT_CP	Left Control Panel Connector

System board jumper settings

For information about resetting the password jumper to disable a password, see the Disabling a forgotten password section.

Table 60. System board jumper settings

Jumper	Setting	Description
PWRD_EN		The BIOS password feature is enabled.
		The BIOS password feature is disabled. The BIOS password is now disabled and you are not allowed to set a new password.
NVRAM_CLR		The BIOS configuration settings are retained at system boot.
		The BIOS configuration settings are cleared at system boot.

CAUTION: Be careful when changing the BIOS settings. The BIOS interface is designed for advanced users. Any change in the setting could prevent your system from starting correctly and you might have potential loss of data.

Disabling a forgotten password

The software security features of the system include a system password and a setup password. The password jumper enables or disables password features and clears any password(s) currently in use.

Prerequisites

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that are shipped with your product.

Steps

1. Power off the system, and all the attached peripherals, and disconnect the system from the electrical outlet.

2. Remove the system cover.
3. Move the jumper on the system board from pins 2 and 4 to pins 4 and 6.
4. Replace the system cover.

   NOTE: The existing passwords are not disabled (erased) until the system boots with the jumper on pins 4 and 6. However, before you assign a new system and/or setup password, you must move the jumper back to pins 2 and 4.

   NOTE: If you assign a new system and/or setup password with the jumper on pins 4 and 6, the system disables the new password(s) the next time it boots.

5. Reconnect the system and all the attached peripherals.
6. Power off the system.
7. Remove the system cover.
8. Move the jumper on the system board from pins 4 and 6 to pins 2 and 4.
9. Replace the system cover.
10. Reconnect the system to the electrical outlet and power on the system, and all the attached peripherals.
11. Assign a new system and/or setup password.

8

System diagnostics and indicator codes

This section describes the diagnostic indicators on the system front panel that displays the system status during system startup.

Topics:

Status LED indicators

NOTE: The indicators display solid amber if any error occurs.

Figure 152. Status LED indicators

Table 61. Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error	Ensure that none of the following conditions exist:

Table 61. Status LED indicators and descriptions (continued)

Icon	Description	Condition	Corrective action
		(for example, the ambient temperature is out of range or there is a fan failure).	• A cooling fan has been removed or has failed. • System cover, air shroud, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed. If the problem persists, see the Getting help section.
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU. If the problem persists, see the Getting help section.
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module. If the problem persists, see the Getting help section.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card. If the problem persists, see the Getting help section. **NOTE:** For more information about the supported PCIe cards, see the Expansion card installation guidelines section.

System health and system ID indicator codes

The system health and system ID indicator is located on the left control panel of the system.

Figure 153. System health and system ID indicator

Table 62. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system health and system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system health and system ID button to switch to system health mode.
Solid amber	Indicates that the system is in fail-safe mode.If the problem persists, see the Getting help section.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log for specific error messages. For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > **Look Up** > **Error Code**, type the error code, and then click **Look it up**.

GPU fan LED indicator codes

The GPU fan LED indicators are on the GPU fans in front of the system.

Table 63. GPU fan LED indicators codes

State	GPU fan LED indicator code	Condition
S0	Solid Green	Indicates that the fan is healthy.
-	Amber with 2s on and 1s off	Indicates fan failure.
S5	Off	Indicates there is no fault with the fan.
-	Blinking Amber from fan 7-12	Indicates Hot-swap controller (HSC) failure / 48 V Voltage Regulator Module (VRM) failure / other PDB fault.
-	Blinking Amber from fan 13-18	Indicates GPU power failure related to the GPU board.
-	Blinking Amber on all GPU fans	Indicates GPU over temperature protection (OTP) related to fans or GPU heat sink.

iDRAC Quick Sync 2 indicator codes

iDRAC Quick Sync 2 module (optional) is located on the left control panel of the system.

Table 64. iDRAC Quick Sync 2 indicators and descriptions

iDRAC Quick Sync 2 indicator code	Condition	Corrective action
Off (default state)	Indicates that the iDRAC Quick Sync 2 feature is powered off. Press the iDRAC Quick Sync 2 button to power on the iDRAC Quick Sync 2 feature.	If the LED fails to power on, reseat the left control panel flex cable and check. If the problem persists, see the Getting help section.
Solid white	Indicates that iDRAC Quick Sync 2 is ready to communicate. Press the iDRAC Quick Sync 2 button to power off.	If the LED fails to power off, restart the system. If the problem persists, see the Getting help section.

Table 64. iDRAC Quick Sync 2 indicators and descriptions (continued)

iDRAC Quick Sync 2 indicator code	Condition	Corrective action
Blinks white rapidly	Indicates data transfer activity.	If the indicator continues to blink indefinitely, see the Getting help section.
Blinks white slowly	Indicates that firmware update is in progress.	If the indicator continues to blink indefinitely, see the Getting help section.
Blinks white five times rapidly and then powers off	Indicates that the iDRAC Quick Sync 2 feature is disabled.	Check if iDRAC Quick Sync 2 feature is configured to be disabled by iDRAC. If the problem persists, see the Getting help section. www.dell.com/poweredgemanuals or *Dell OpenManage Server Administrator User's Guide* at www.dell.com/openmanagemanuals.
Solid amber	Indicates that the system is in fail-safe mode.	Restart the system. If the problem persists, see the Getting help section.
Blinking amber	Indicates that the iDRAC Quick Sync 2 hardware is not responding properly.	Restart the system. If the problem persists, see the Getting help section.

iDRAC Direct LED indicator codes

The iDRAC Direct LED indicator lights up to indicate that the port is connected and is being used as a part of the iDRAC subsystem.

You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 feet (0.91 meters). Performance could be affected by cable quality. The following table describes iDRAC Direct activity when the iDRAC Direct port is active:

Table 65. iDRAC Direct LED indicator codes

iDRAC Direct LED indicator code	Condition
Solid green for two seconds	Indicates that the laptop or tablet is connected.
Blinking green (on for two seconds and off for two seconds)	Indicates that the laptop or tablet connected is recognized.
Powers off	Indicates that the laptop or tablet is unplugged.

LCD panel

The LCD panel provides system information, status, and error messages to indicate if the system is functioning correctly or requires attention. The LCD panel is used to configure or view the iDRAC IP address of the system. For information about the event and error messages generated by the system firmware and agents that monitor system components, go to qrl.dell.com > **Look Up** > **Error Code**, type the error code, and then click **Look it up**..

The LCD panel is available only on the optional front bezel. The optional front bezel is hot pluggable.

The status and conditions of the LCD panel are outlined here:

- The LCD backlight is white during normal operating conditions.
- If there is an issue, the LCD backlight turns amber and displays an error code followed by descriptive text.

  NOTE: If the system is connected to a power source and an error is detected, the LCD turns amber regardless of whether the system is powered on or off.
- When the system powers off and there are no errors, the LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to power it on.
- If the LCD panel stops responding, remove the bezel and reinstall it.

If the problem persists, see Getting help.

- The LCD backlight remains off if LCD messaging is powered off using the iDRAC utility, the LCD panel, or other tools.

Figure 154. LCD panel features

Table 66. LCD panel features

Item	Button or display	Description
1	Left	Moves the cursor back in one-step increments.
2	Select	Selects the menu item highlighted by the cursor.
3	Right	Moves the cursor forward in one-step increments. During message scrolling: • Press and hold the right button to increase scrolling speed. • Release the button to stop. **NOTE:** The display stops scrolling when the button is released. After 45 seconds of inactivity, the display starts scrolling.
4	LCD display	Displays the system information, status, and error messages or iDRAC IP address.

NIC indicator codes

Each NIC on the back of the system has indicators that provide information about the activity and link status. The activity LED indicator indicates if data is flowing through the NIC, and the link LED indicator indicates the speed of the connected network.

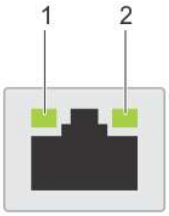


Figure 155. NIC indicator codes

1. Link LED indicator
2. Activity LED indicator

Table 67. NIC indicator codes

NIC indicator codes	Condition
Link and activity indicators are off.	Indicates that the NIC is not connected to the network.
Link indicator is green, and activity indicator is blinking green.	Indicates that the NIC is connected to a valid network at its maximum port speed, and data is being sent or received.
Link indicator is amber, and activity indicator is blinking green.	Indicates that the NIC is connected to a valid network at less than its maximum port speed, and data is being sent or received.
Link indicator is green, and activity indicator is off.	Indicates that the NIC is connected to a valid network at its maximum port speed, and data is not being sent or received.
Link indicator is amber, and activity indicator is off.	Indicates that the NIC is connected to a valid network at less than its maximum port speed, and data is mot being sent or received.

Table 67. NIC indicator codes (continued)

NIC indicator codes	Condition
Link indicator is blinking green, and activity is off.	Indicates that the NIC identify is enabled through the NIC configuration utility.

Power supply unit indicator codes

AC and DC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator. The indicator shows if power is present or if a power fault has occurred.

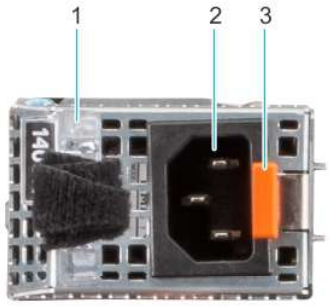


Figure 156. AC PSU status indicator

1. AC PSU handle
2. Socket
3. Release latch

Table 68. AC and DC PSU status indicator codes

Power indicator codes	Condition
Green	Indicates that a valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates an issue with the PSU.
Not powered on	Indicates that the power is not connected to the PSU.
Blinking green	Indicates that the firmware of the PSU is being updated. **CAUTION: Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs will not function.**
Blinking green and powers off	When hot-plugging a PSU, it blinks green five times at a rate of 4 Hz and powers off. This indicates a PSU mismatch due to efficiency, feature set, health status, or supported voltage. **CAUTION: If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to power on the system.** **CAUTION: If two PSUs are used, they must be of the same type and have the same maximum output power.** **CAUTION: When correcting a PSU mismatch, replace the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error**

Table 68. AC and DC PSU status indicator codes (continued)

Power indicator codes	Condition
	condition and an unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must power off the system. **CAUTION: AC PSUs support both 240 V and 120 V input voltages with the exception of Titanium PSUs, which support only 240 V. When two identical PSUs receive different input voltages, they can output different wattages, and trigger a mismatch.**

Drive indicator codes

The LEDs on the drive carrier indicates the state of each drive. Each drive carrier has two LEDs: an activity LED (green) and a status LED (bicolor, green/amber). The activity LED blinks whenever the drive is accessed.

Figure 157. Drive indicators

1. Drive activity LED indicator
2. Drive status LED indicator
3. Drive capacity label

NOTE: If the drive is in the Advanced Host Controller Interface (AHCI) mode, the status LED indicator does not power on.

NOTE: Drive status indicator behavior is managed by Storage Spaces Direct. Not all drive status indicators may be used.

Table 69. Drive indicator codes

Drive status indicator code	Condition
Blinks green twice per second	Indicates that the drive is being identified or preparing for removal.
Not powered on	Indicates that the drive is ready for removal. **NOTE:** The drive status indicator remains off until all drives are initialized after the system is powered on. Drives are not ready for removal during this time.
Blinks green, amber, and then powers off	Indicates that there is an expected drive failure.
Blinks amber four times per second	Indicates that the drive has failed.
Blinks green slowly	Indicates that the drive is rebuilding.
Solid green	Indicates that the drive is online.
Blinks green for three seconds, amber for three seconds, and then powers off after six seconds	Indicates that the rebuild has stopped.

9

Using system diagnostics

If you experience an issue with the system, run the system diagnostics before contacting Dell for technical assistance. The purpose of running system diagnostics is to test the system hardware without using additional equipment or risking data loss. If you are unable to fix the issue yourself, service and support personnel can use the diagnostics results to help you solve the issue.

Topics:

Dell Embedded System Diagnostics

NOTE: The Dell Embedded System Diagnostics is also known as Enhanced Pre-boot System Assessment (ePSA) diagnostics.

The Embedded System Diagnostics provide a set of options for particular device groups or devices allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of issues encountered during testing

Running the Embedded System Diagnostics from Boot Manager

Run the Embedded System Diagnostics (ePSA) if your system does not boot.

Steps

1. When the system is booting, press F11.
2. Use the up arrow and down arrow keys to select **System Utilities** > **Launch Diagnostics**.
3. Alternatively, when the system is booting, press F10, select **Hardware Diagnostics** > **Run Hardware Diagnostics**.
   The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

Running the Embedded System Diagnostics from the Dell Lifecycle Controller

Steps

1. When the system is booting, press F10.
2. Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.
   The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics start executing the tests on all the detected devices.

System diagnostic controls

Table 70. System diagnostic controls

Menu	Description
Configuration	Displays the configuration and status information of all detected devices.
Results	Displays the results of all tests that are run.
System health	Provides the current overview of the system performance.
Event log	Displays a time-stamped log of the results of all tests run on the system. This is displayed if at least one event description is recorded.

10

Enhanced Preboot System Assessment

If you experience an issue with the system, run the system diagnostics before contacting Dell for technical assistance. The purpose of running system diagnostics is to test the system hardware without requiring more equipment or risking data loss. If you are unable to fix the issue yourself, service and support personnel can use the diagnostics results to help you solve the issue.

Dell Embedded system diagnostics

NOTE: The Dell Embedded System Diagnostics is also known as Enhanced Preboot System Assessment (ePSA) diagnostics.

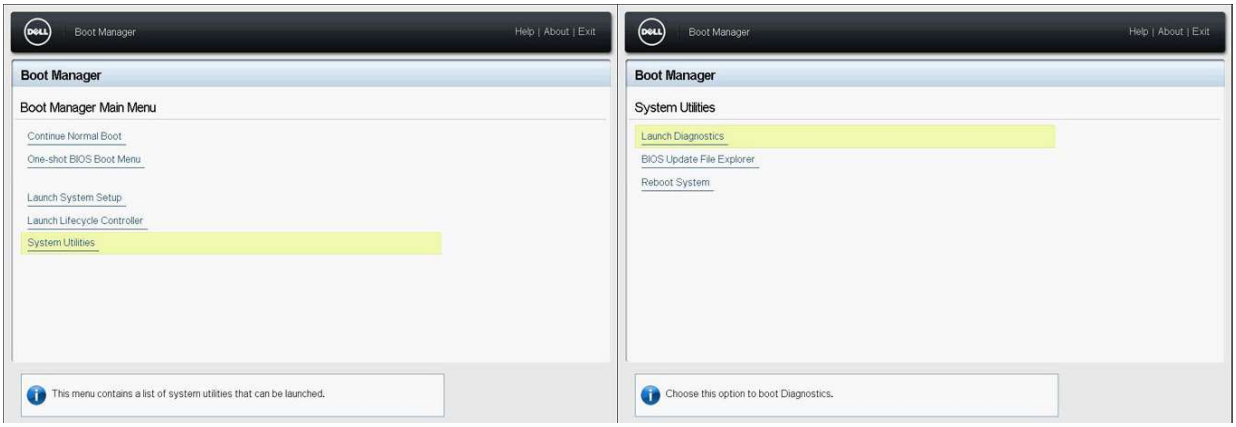
The embedded system diagnostics provides a set of options for particular device groups or devices that allow you to:

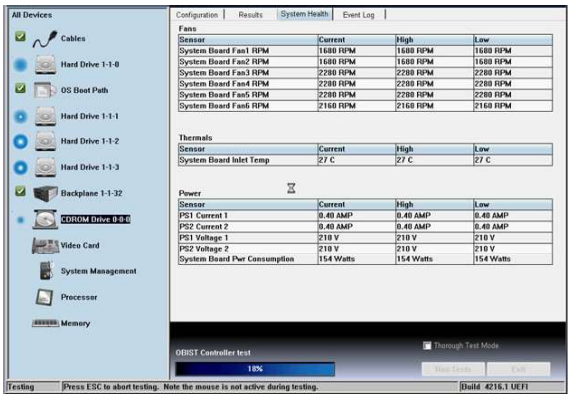
- Run tests automatically or in an interactive mode.
- Repeat tests
- Display or save test results.
- Introduce more test options for extra information about the failed devices, run a thorough test.
- View status messages that inform you if tests are completed successfully.
- View error messages that inform you of issues encountered during testing.

Running the Embedded system diagnostics from Boot Manager

To run the embedded system diagnostics from Boot Manager:

1. As the system boots, press <F11>.
2. Using the arrow keys select **System Utilities** → **Launch Diagnostics**.



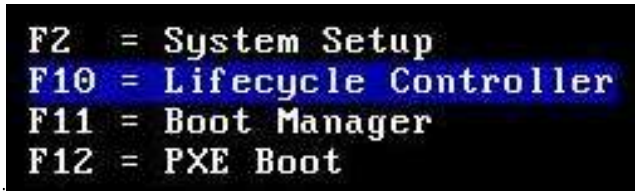


3. Wait while the Quick Tests automatically run.
4. Once the tests have been completed, you can view the results and additional information on the **Results** tab, the **System Health** tab, the **Configuration** tab, and the **Event Log** tab.
5. Close the **Embedded System Diagnostics** utility.
6. To leave the diagnostics, click **Exit.**
7. Click **OK** when prompted, and the system reboots.

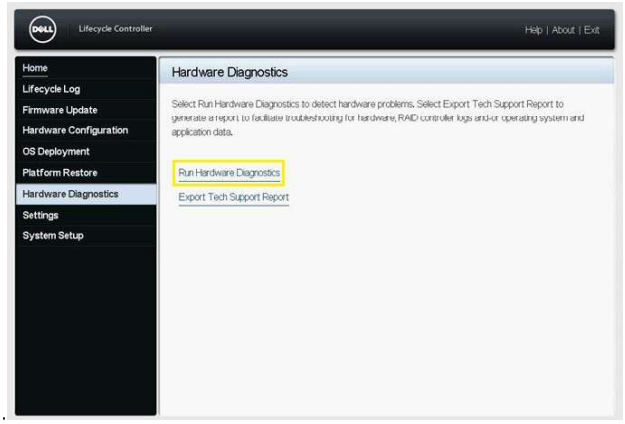
Running the Embedded System Diagnostics from the Dell Lifecycle Controller

To run the embedded system diagnostics from the Dell Lifecycle Controller:

1. As the system boots, press **F10**.



2. Select **Hardware Diagnostics** → **Run Hardware Diagnostics**.



11

Getting help

Topics:

Recycling or End-of-Life service information

Take back and recycling services are offered for this product in certain countries. If you want to dispose of system components, visit www.dell.com/recyclingworldwide and select the relevant country.

Contacting Dell Technologies

Dell provides online and telephone based support and service options. If you do not have an active internet connection, you can find Dell contact information on your purchase invoice, packing slip, bill or Dell product catalog. The availability of services varies depending on the country and product, and some services may not be available in your area. To contact Dell for sales, technical assistance, or customer service issues follow these steps:

Steps

1. Go to www.dell.com/support/home.
2. Select your country from the drop-down menu on the lower right corner of the page.
3. For customized support:
   a. Enter the system Service Tag in the **Enter a Service Tag, Serial Number, Service Request, Model, or Keyword** field.
   b. Click **Search**.
   The support page that lists the various support categories is displayed.
4. For general support:
   a. Select your product category.
   b. Select your product segment.
   c. Select your product.
   The support page that lists the various support categories is displayed.
5. For contact details of Dell Global Technical Support:
   a. Click Contact Technical Support.
   b. The **Contact Technical Support** page is displayed with details to call, chat, or e-mail the Dell Global Technical Support team.

Receiving automated support with Secure Connect Gateway (SCG)

Dell Secure Connect Gateway (SCG) is an optional Dell Services offering that automates technical support for your Dell server, storage, and networking devices. By installing and setting up a Secure Connect Gateway (SCG) application in your IT environment, you can receive the following benefits:

- Automated issue detection — Secure Connect Gateway (SCG) monitors your Dell devices and automatically detects hardware issues, both proactively and predictively.

- Automated case creation — When an issue is detected, Secure Connect Gateway (SCG) automatically opens a support case with Dell Technical Support.
- Automated diagnostic collection — Secure Connect Gateway (SCG) automatically collects system state information from your devices and uploads it securely to Dell. This information is used by Dell Technical Support to troubleshoot the issue.
- Proactive contact — A Dell Technical Support agent contacts you about the support case and helps you resolve the issue.

The available benefits vary depending on theDell Service entitlement purchased for your device. For more information about Secure Connect Gateway (SCG), go to www.dell.com/secureconnectgateway.