Power Systems

Removing and replacing parts in the 9080-M9S system

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Cables

Line cord conduit

Preparing the system to remove and replace a line cord conduit from the 9080-M9S system node

To prepare the system to remove and replace a line cord conduit, complete the steps in this procedure.

Procedure

1. Optional: If the customer requires the system to be powered off before beginning the procedure, have the customer perform the following steps. Otherwise, continue to step “2” on page 1.
   a) All the active logical partitions must be shut down before powering off the system. To shut down logical partitions for a specific system, complete the following steps:
      1) In the navigation area, click the **Resources** icon , and then click **All Systems**.
      2) Click the system name for which you want to shut down logical partitions.
      3) Select the logical partitions that you want to shut down.
      4) In the content pane, click **Actions** > **Shut Down**.
      5) Click **OK**.
   b) To power off the system, complete the following steps:
      1) In the navigation area, click the **Resources** icon , and then click **All Systems**.
      2) Select the system that you want to power off.
      3) In the content pane, click **System Actions** > **Operations** > **Power Off**.
      4) Click **OK**.
2. 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.

Removing a line cord conduit from the 9080-M9S system node

To remove a line cord conduit, complete the steps in this procedure.

Procedure

1. Complete the following steps at the rear of the system.
   a) 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.
   b) Disconnect the power cables that are plugged into the rear of the line cord conduit that you are removing.

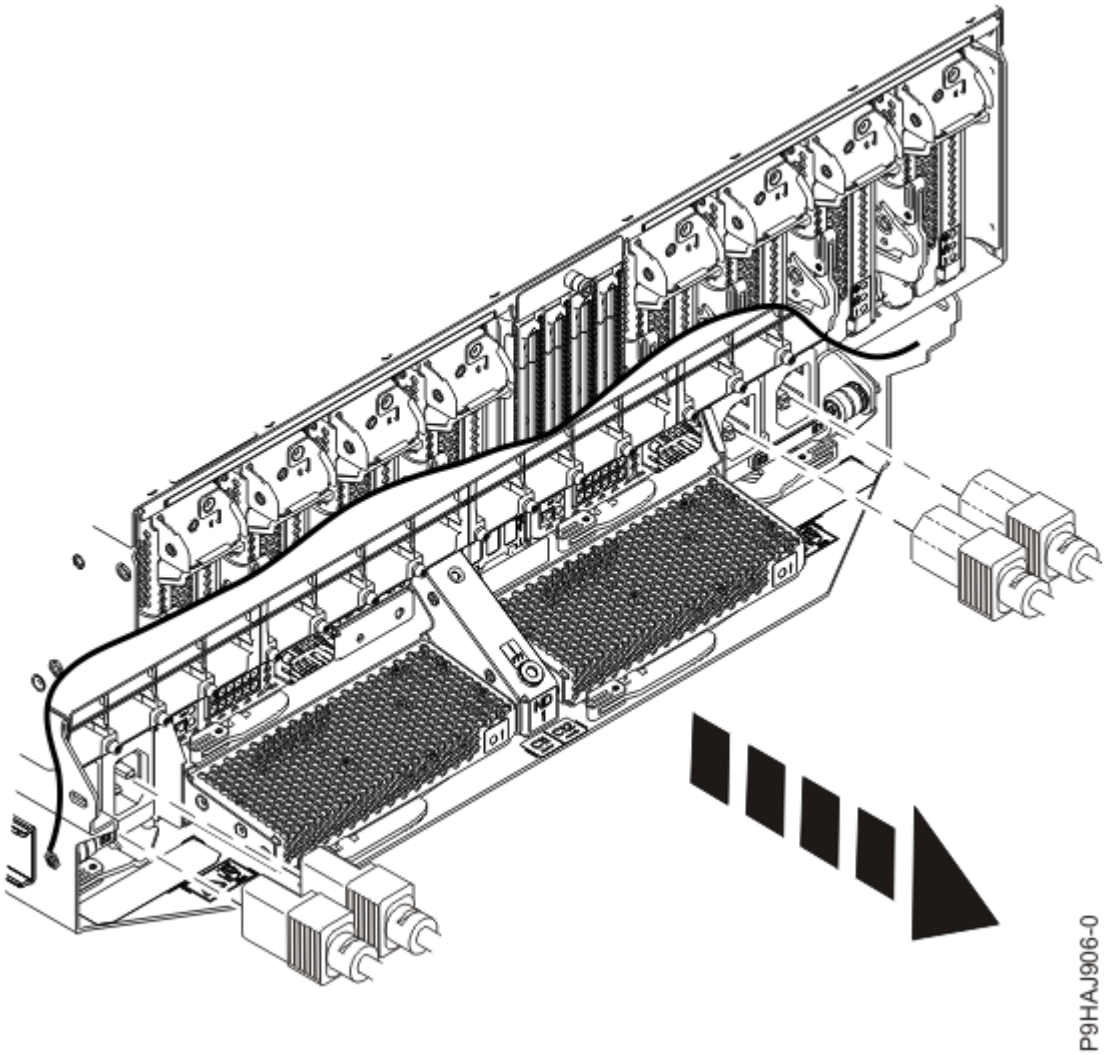


Figure 1. Removing the rear power cords

   c) Loosen the retaining screw **(A)** and pull out the latch **(B)**. Refer to the following figure.

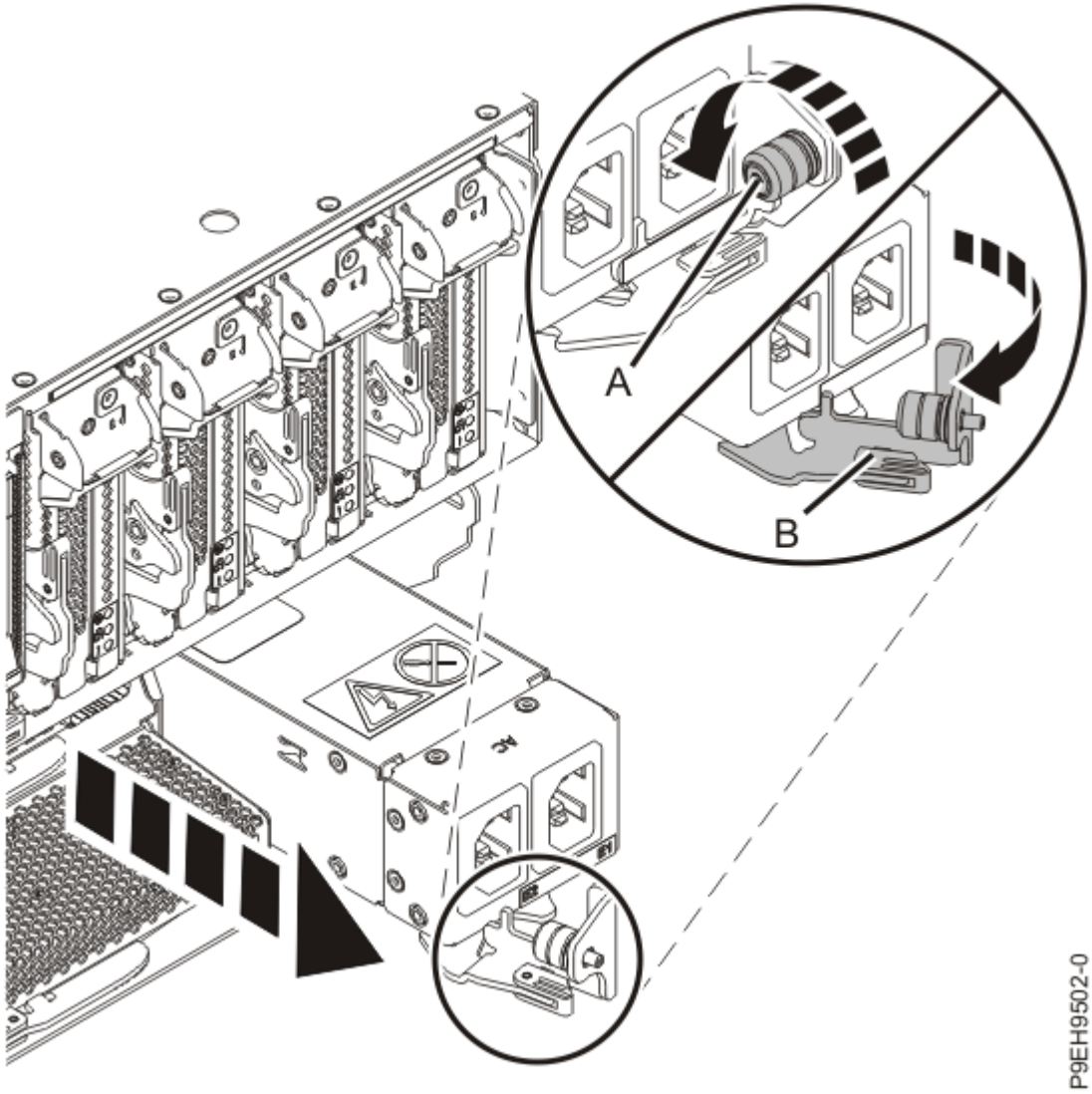


Figure 2. Removing the line cord conduit from the rear of the system

d) Slide the line cord conduit out from the rear of the system.

2. Complete the following steps at the front of the system.

a) 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.

b) Place your fingers on the indentations located on both sides of the cover **(A)** and pull the cover away from the system as shown in the following figure.

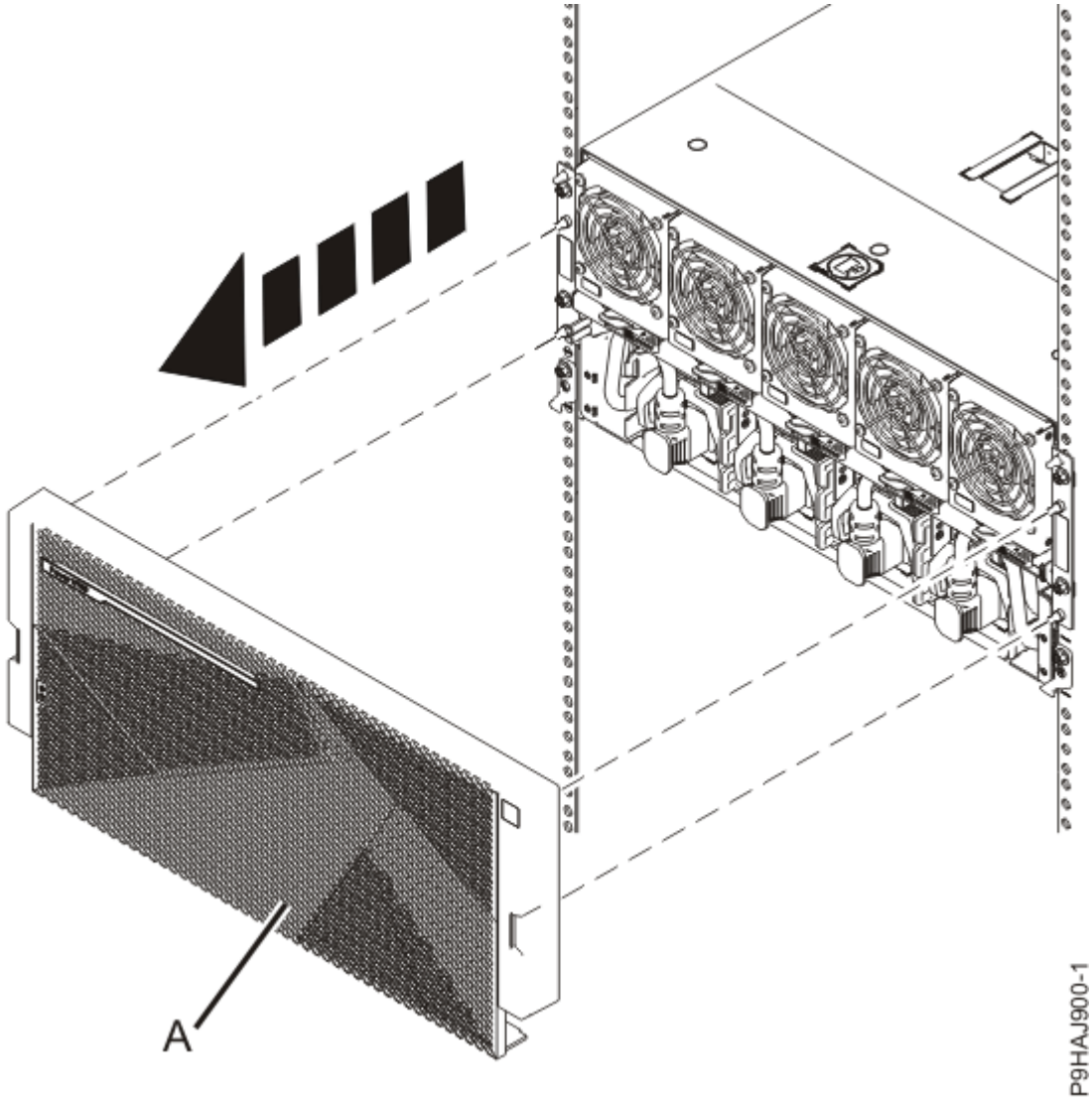


Figure 3. Removing the front cover

c) Identify the power supplies and cords that connect to the line cord conduit you are replacing.

d) Label and disconnect the cords that are connected to the power supplies for the line cord conduit you are replacing. Refer to the following figure.

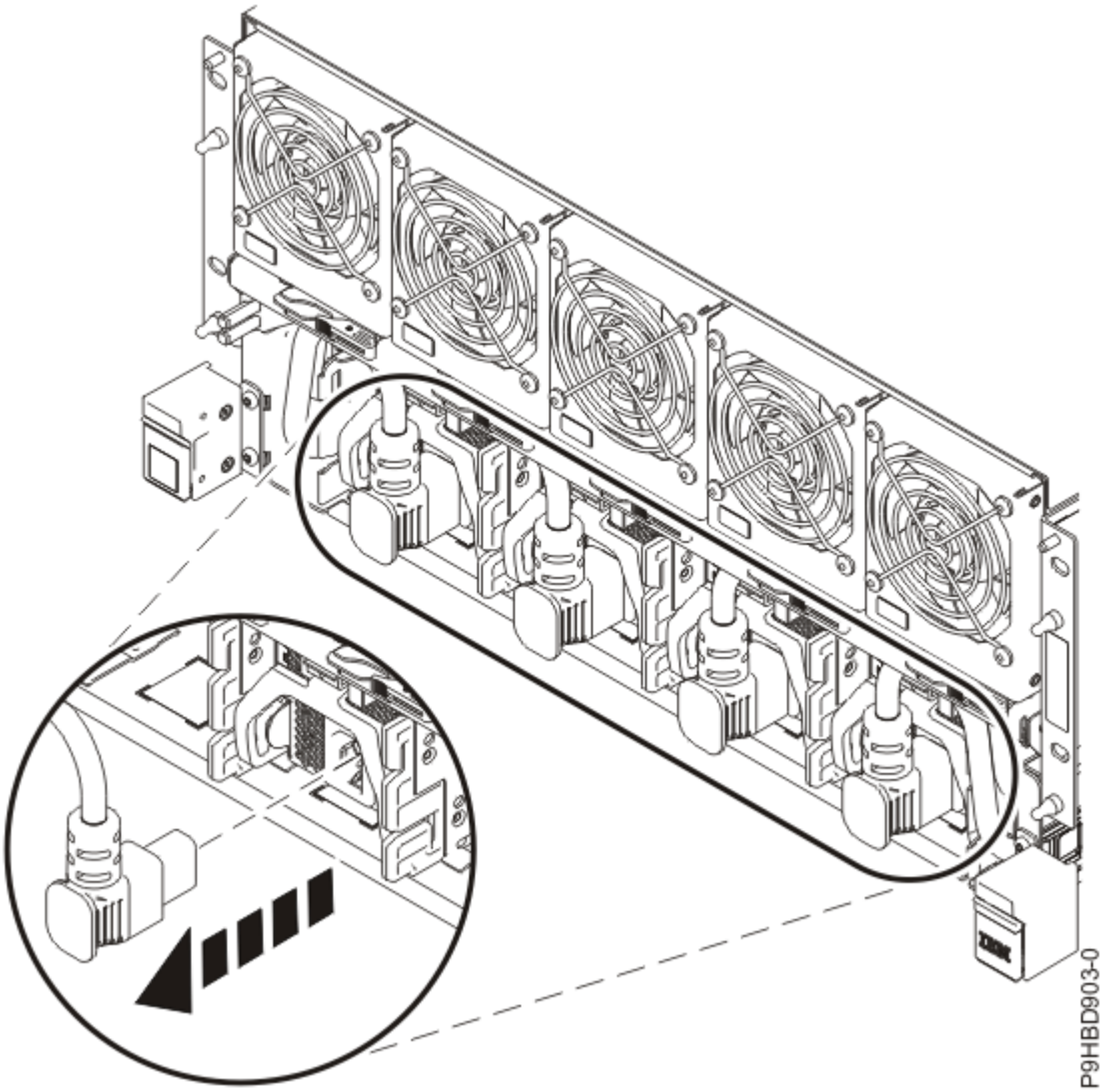


Figure 4. Disconnecting a cord from a power supply

e) Loosen the retaining screw **(A)** of the line cord conduit you are replacing and pull the line cord conduit out from the front of the system. Refer to the following figure.

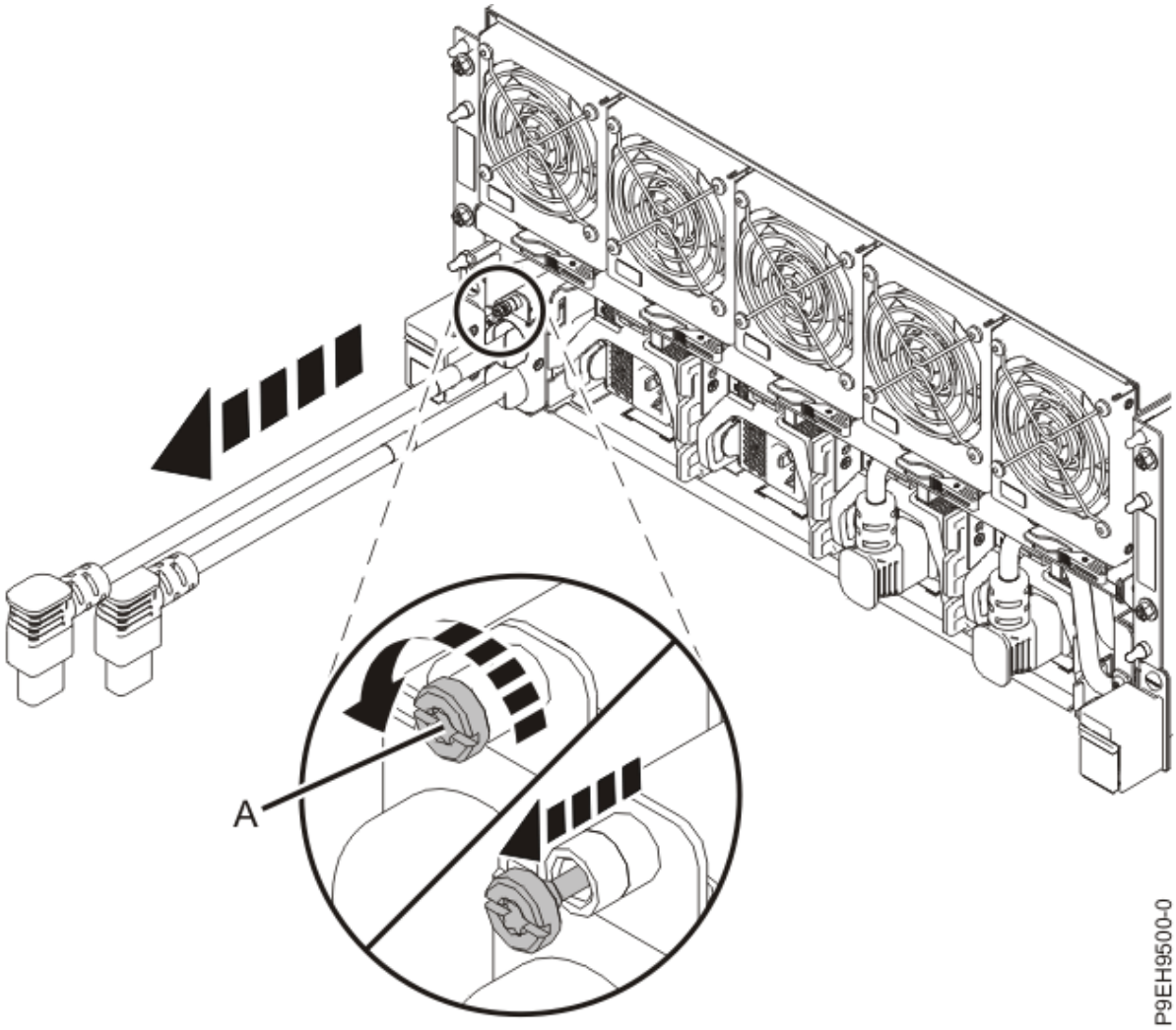


Figure 5. Removing the line cord conduit from the front of the system

Replacing a line cord conduit in the 9080-M9S system node

To replace a line cord conduit, complete the steps in this procedure.

Procedure

1. Complete the following steps at the front of the system.
   a) 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.
   b) Slide the line cord conduit into the front of the system. Tighten the screw **(A)** to secure the line cord conduit. Refer to the following figure.

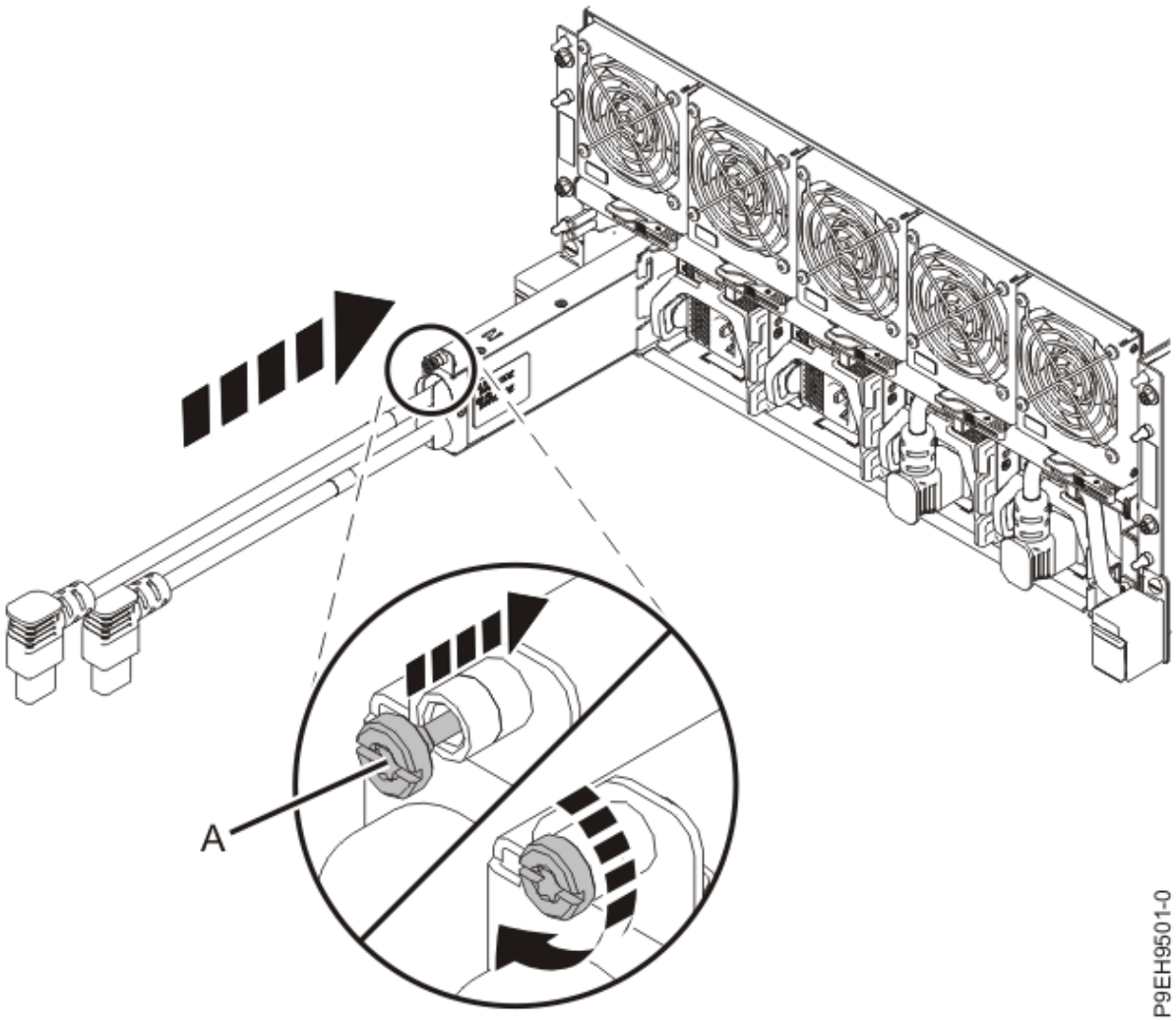


Figure 6. Replacing the line cord conduit in the front of the system

c) Using your labels, reconnect the cords to the power supplies as shown in the following figure. Tuck the cords into the chassis.

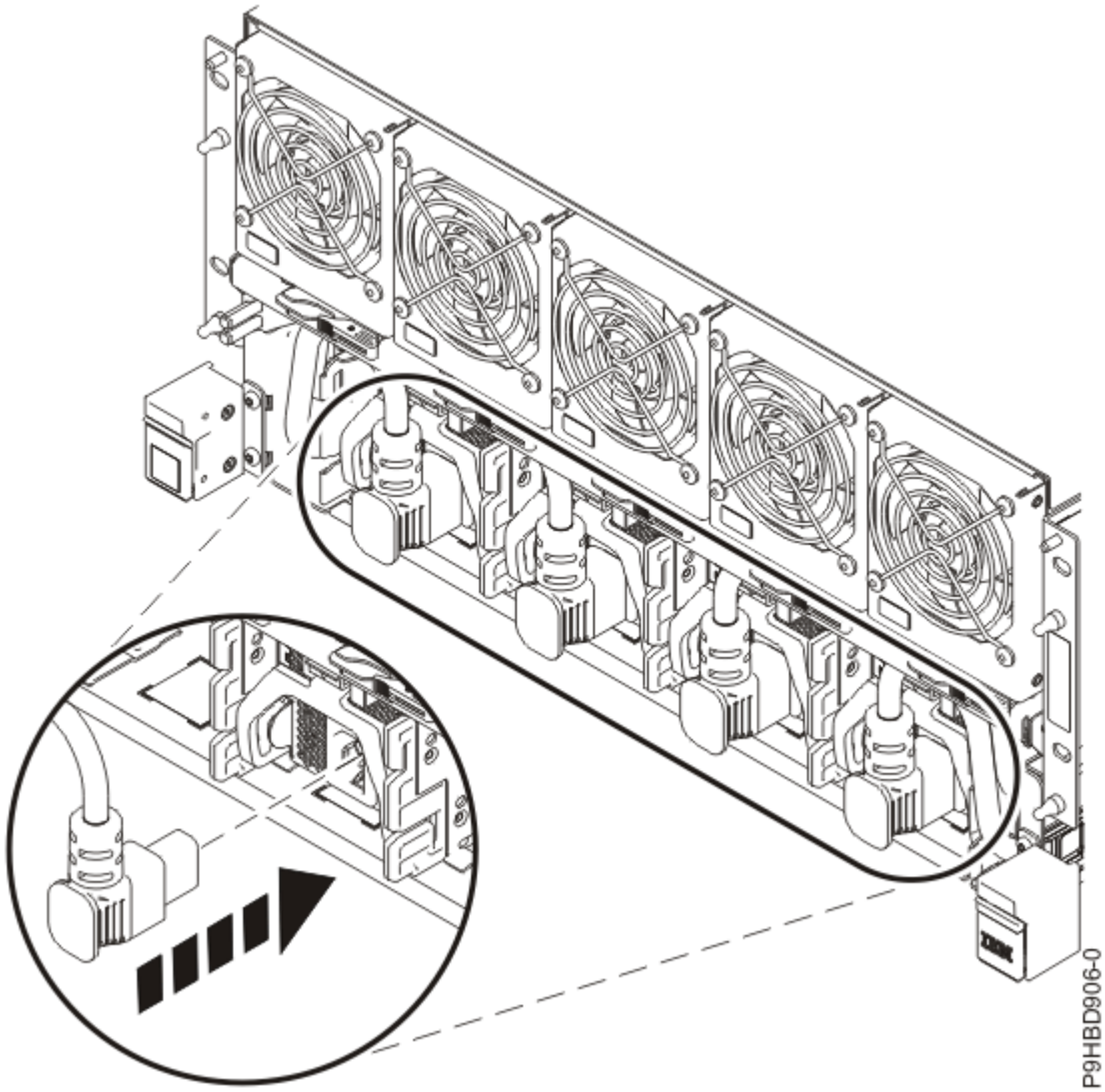


Figure 7. Reconnecting a cord to the power supply

d) Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

Press the front cover into position.

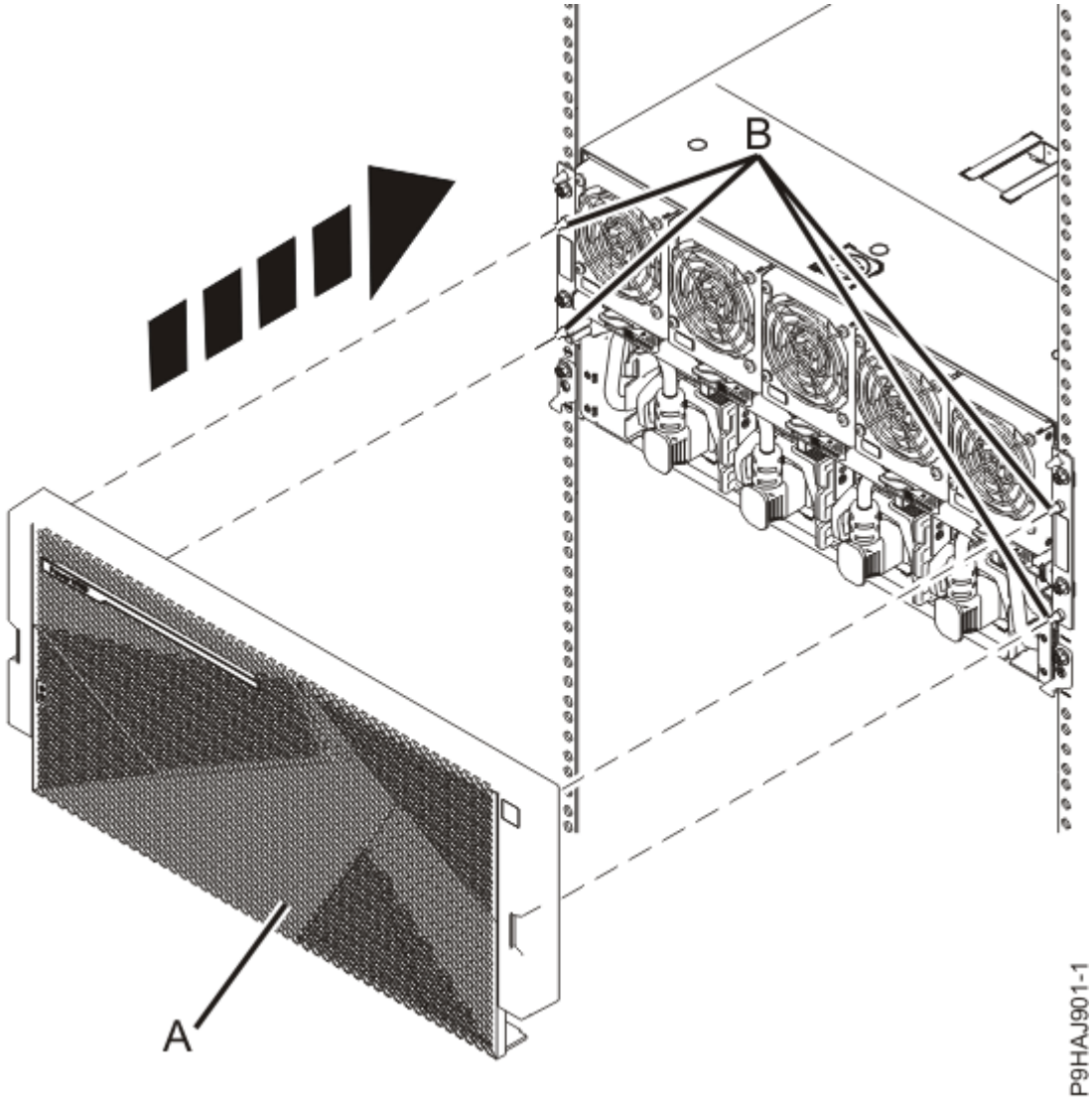


Figure 8. Installing the front cover

2. Complete the following steps at the rear of the system.
   a) 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.
   b) Push the line cord conduit into the rear of the system. Push the locking latch **(A)** in and tighten the securing screw **(B)**. Refer to the following image.

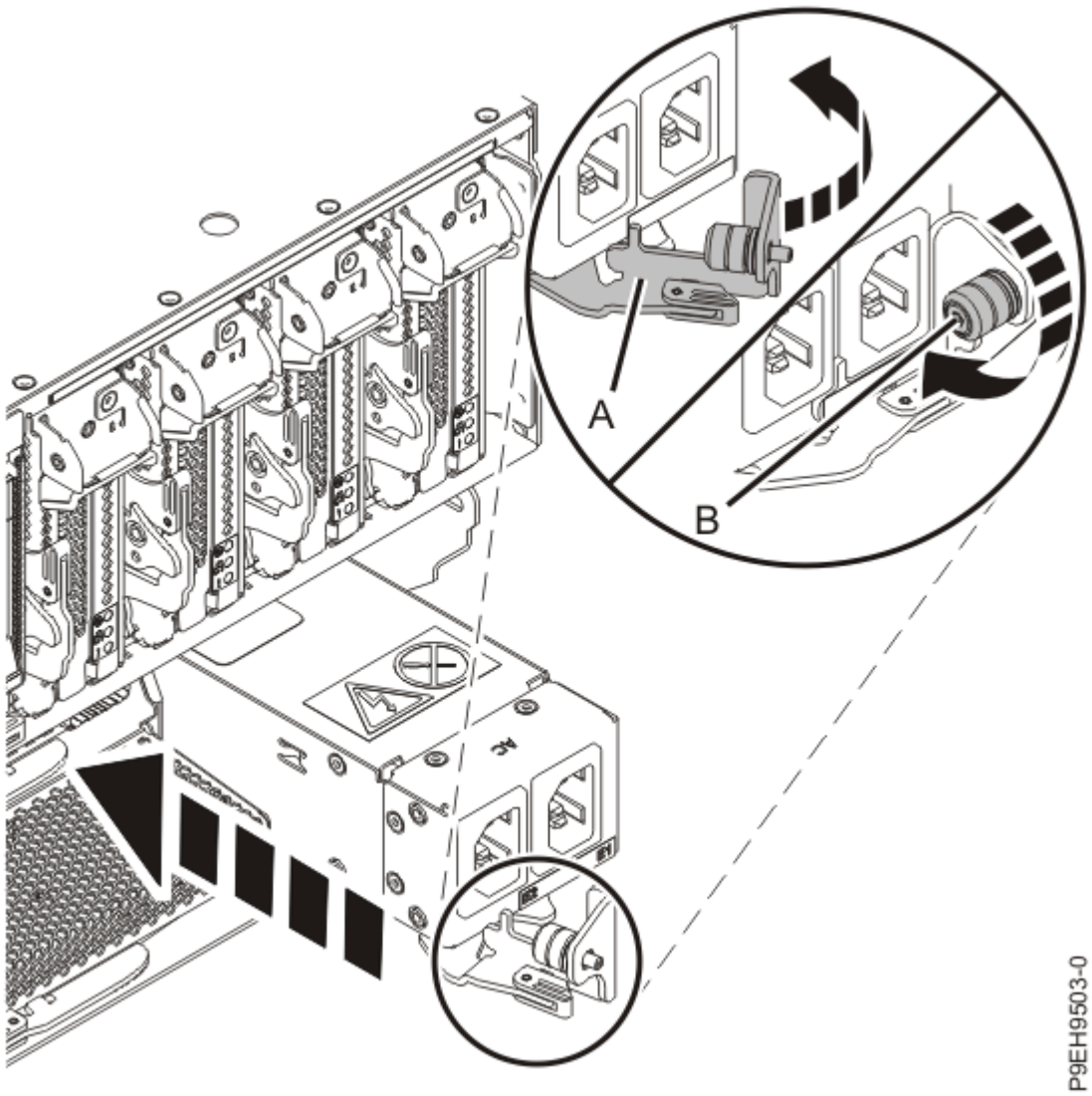


Figure 9. Replacing the line cord conduit in the rear of the system

c) Reconnect the power cables that are plugged into the rear of the line cord conduit that you are replacing.

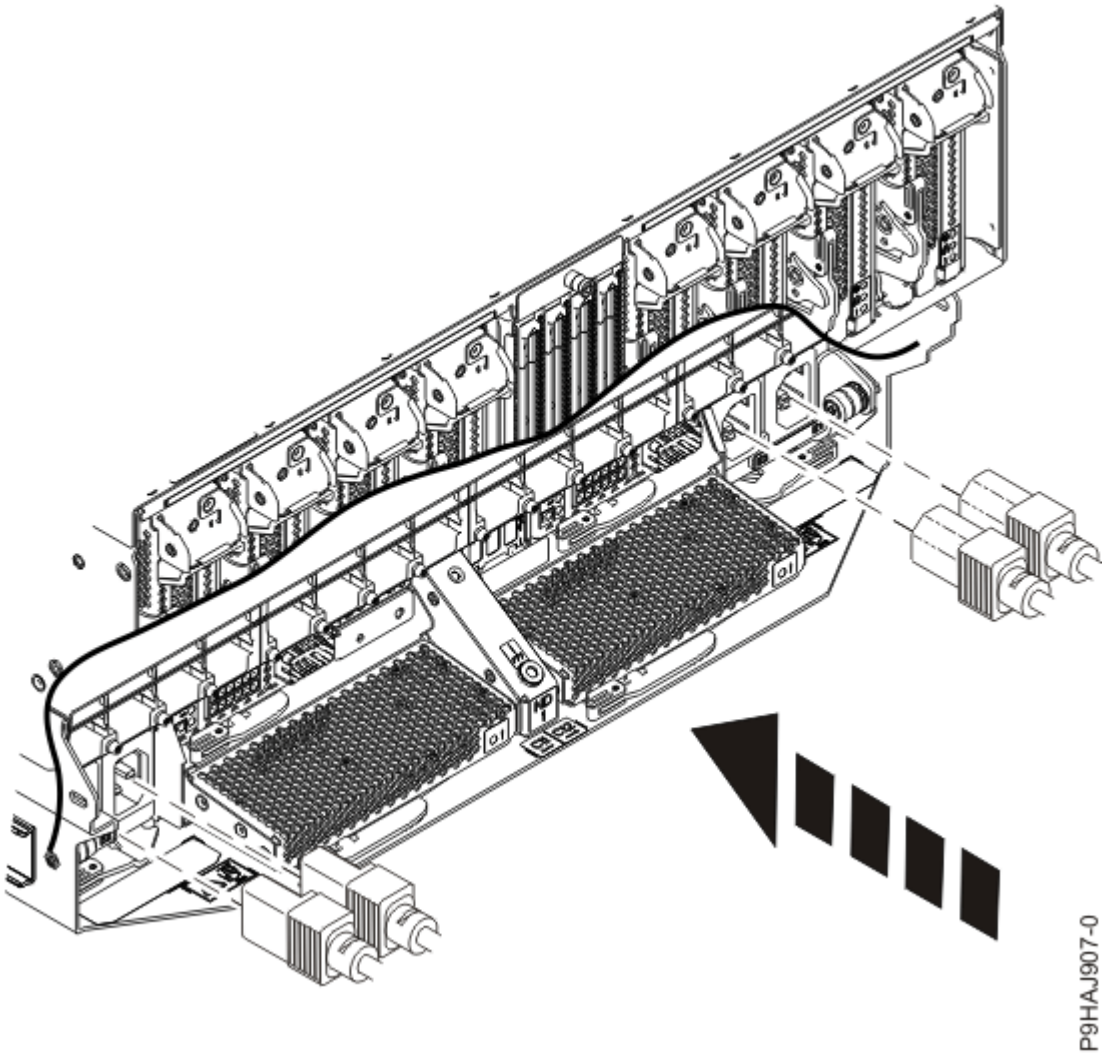


Figure 10. Connecting the rear power cords

Preparing the system for operation after removing and replacing a line cord conduit from the 9080-M9S system node

To prepare the system for operation after removing and replacing a line cord conduit, complete the steps in this procedure.

Procedure

If the customer required the system to be powered off to complete the repair, have the customer perform the following steps. If the customer did not require the system to be powered off, no additional steps are necessary.

a) To power on the system, from the **Operation** list, select **System Level Activate**. Then, click **OK** to confirm the operation.

b) To restart the logical partitions, complete the following steps:

1) In the navigation area, click the **Resources** icon , and then click **All Systems**.

2) Click the system name in which you want to activate the logical partition.

3) Select the logical partition name that you want to activate.

4) In the navigation area, click **Actions** > **Activate**.

5) Click **Finish**.

Service processor (FSP) cable

Preparing the 9080-M9S system to remove and replace a service processor (FSP) cable

To prepare the system to remove and replace a service processor (FSP) cable, complete the steps in this procedure.

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.

   This action causes the identify LED for the faulty part to turn on, and causes the blue system ID LED to turn on.
2. Use the blue LED to identify the server.

   Ensure that the serial number of the system matches the serial number to be serviced.
3. From the **Operation** list, select **FRU Level Deactivate**. Then, click **OK** to confirm the operation.
4. Check that an amber identify LED **(A)** is flashing for one of the service processor cables as shown in the following figures.

   Note the LEDs that are flashing, indicating the cables to remove.

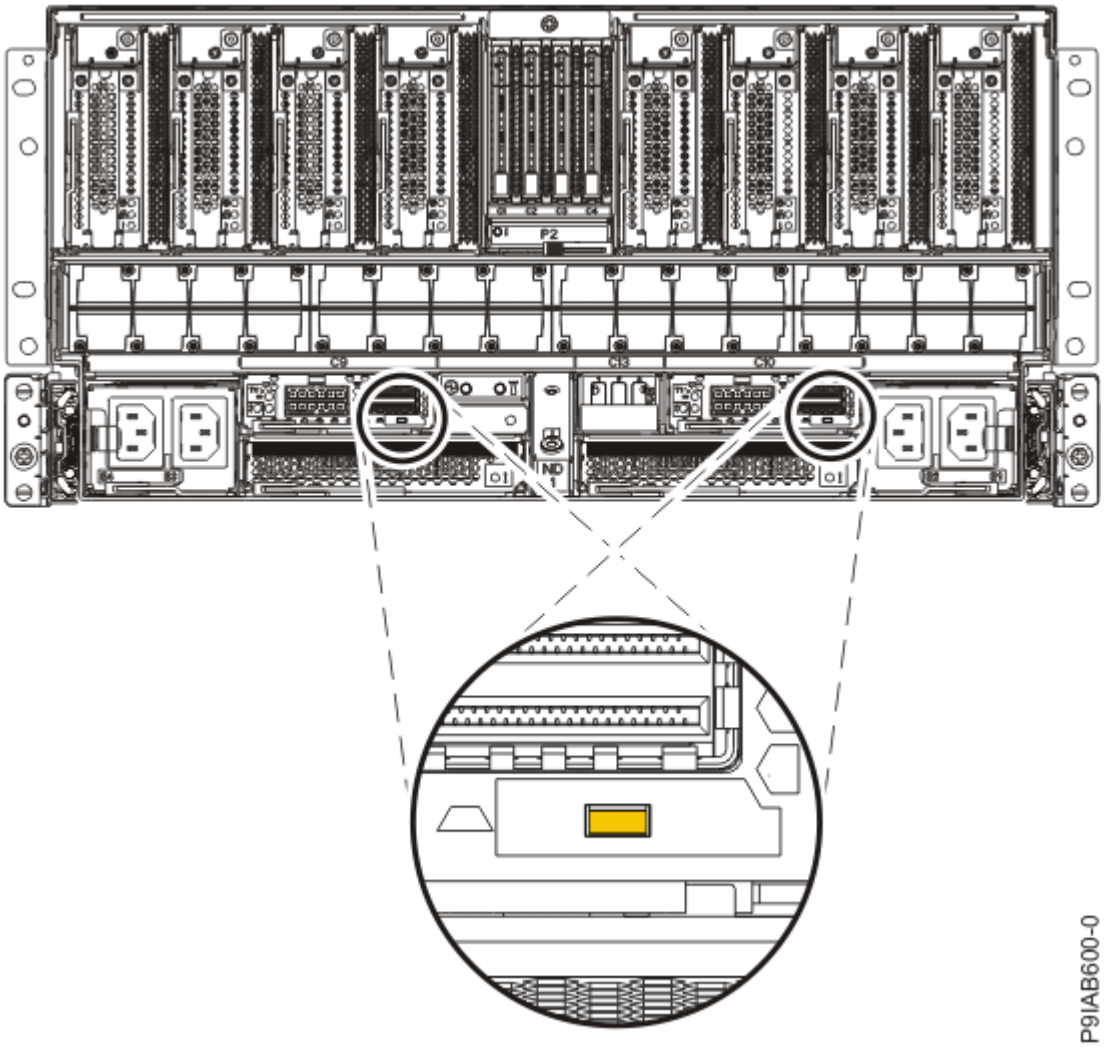


Figure 11. Identify LEDs for the service processor cables on the system node

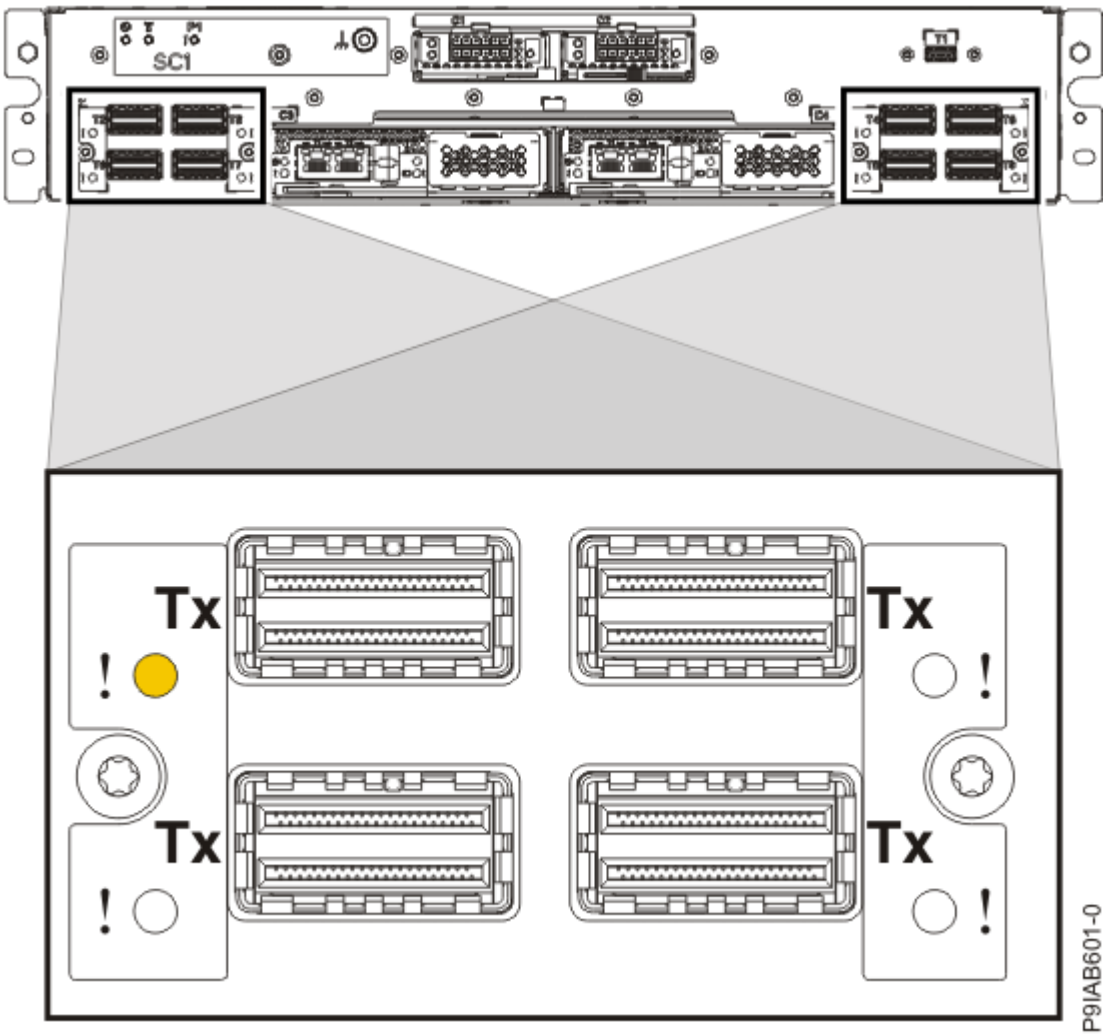


Figure 12. Identify LEDs for the service processor cables on the system control unit

5. 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.

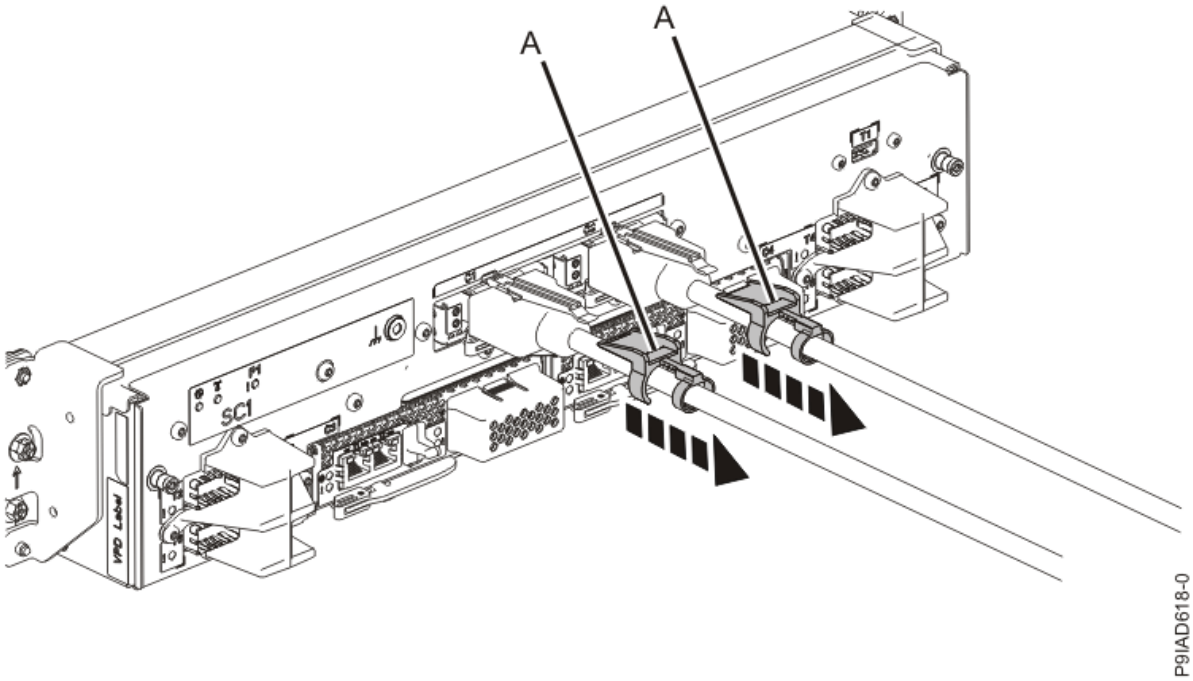


Figure 13. Removing the UPIC cable lock

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

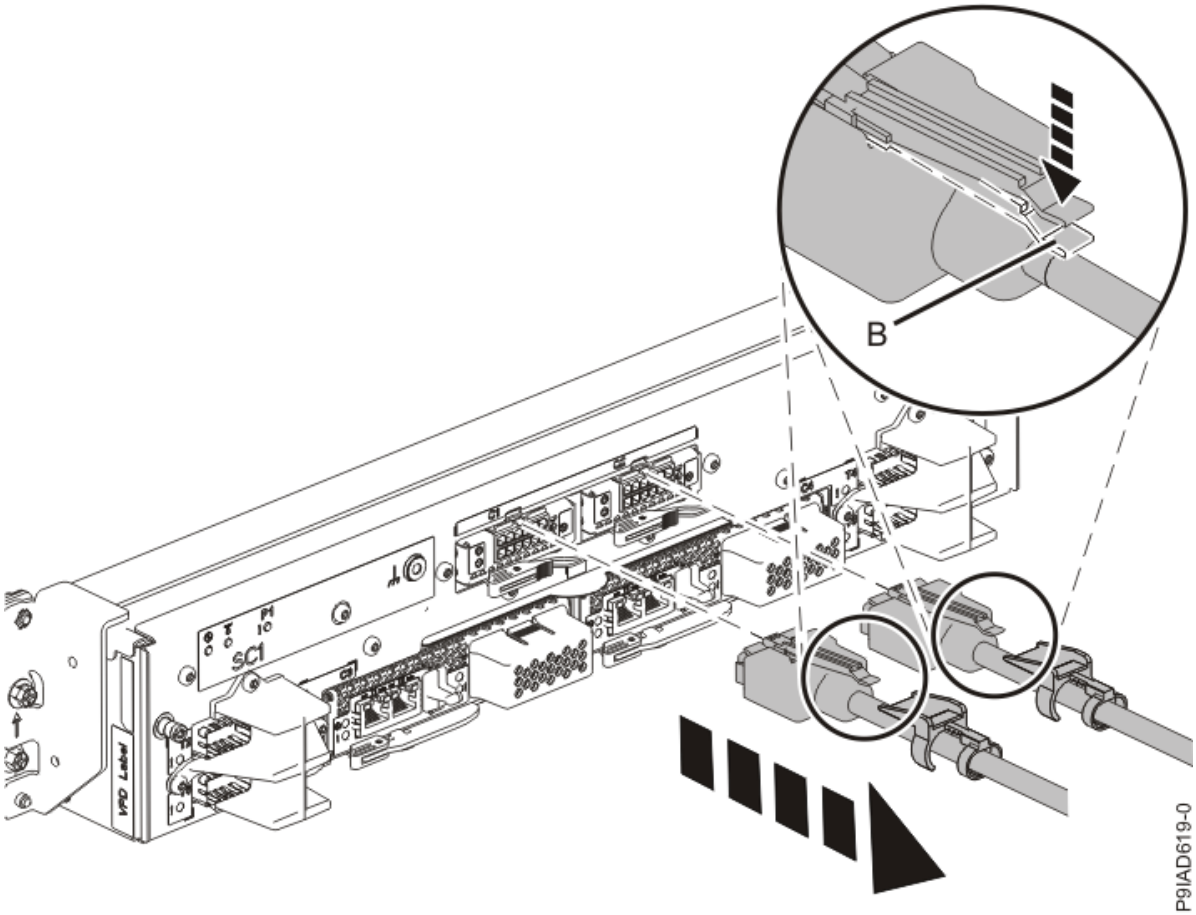


Figure 14. Removing the UPIC cable from the system control unit

6. 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.

Removing a service processor (FSP) cable from the 9080-M9S system

To remove a service processor (FSP) cable from 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. Unplug the service processor cable **(B)** being serviced from the system control unit using the pull tab **(A)** attached to the connector.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

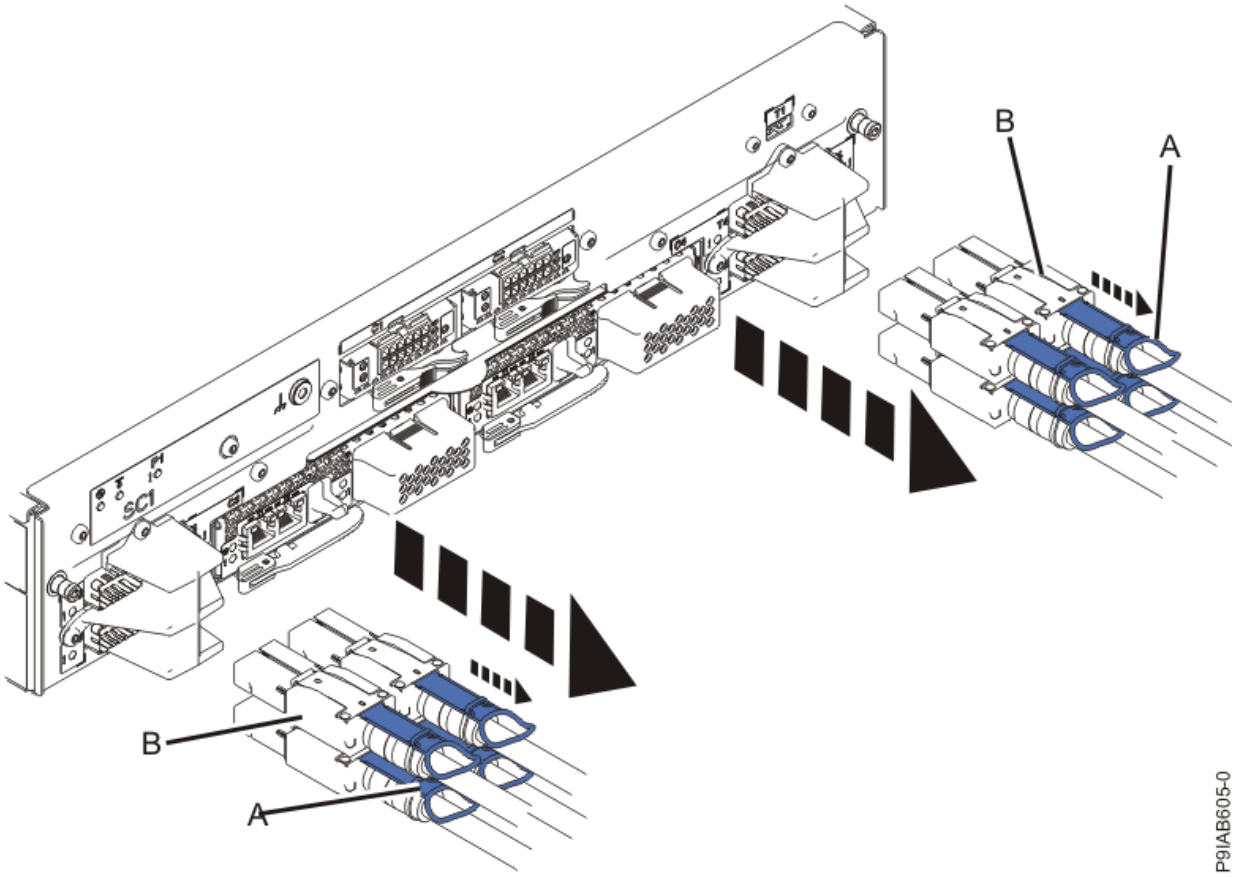


Figure 15. Removing the service processor cable from the system control unit

3. Unplug the service processor (FSP) cable **(B)** being serviced from the system node using the pull tab **(A)** attached to the connector.

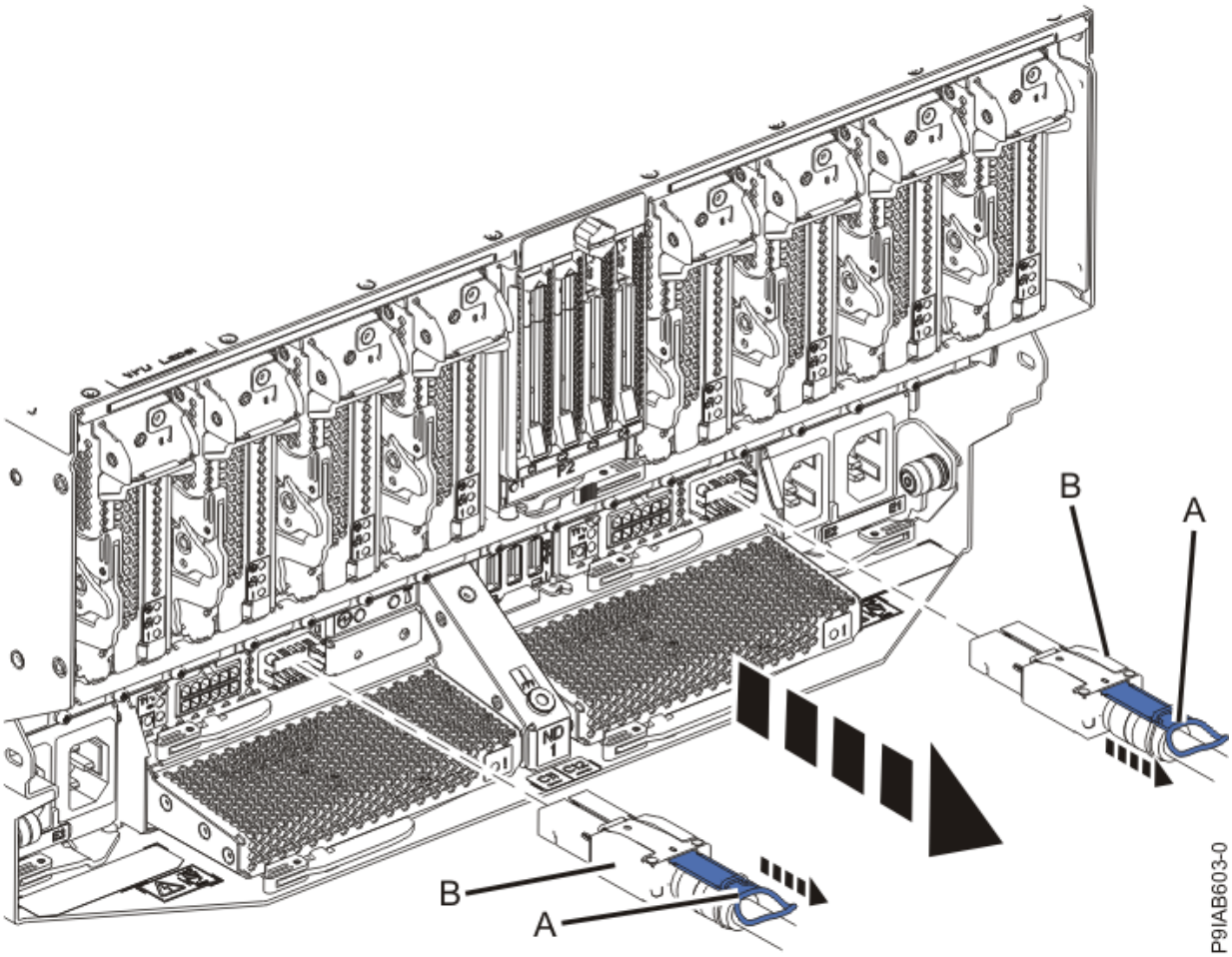


Figure 16. Removing the service processor cable from the system node

4. Loosen the hook-and-loop fastener securing the cable to the rack.

Replacing a service processor (FSP) cable in the 9080-M9S system

To replace a service processor (FSP) cable in 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. Reconnect the service processor (FSP) cables.

   Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

   Use the Figure 17 on page 19 and Table 1 on page 20 as needed to determine the point-to-point cabling for service processor cables.

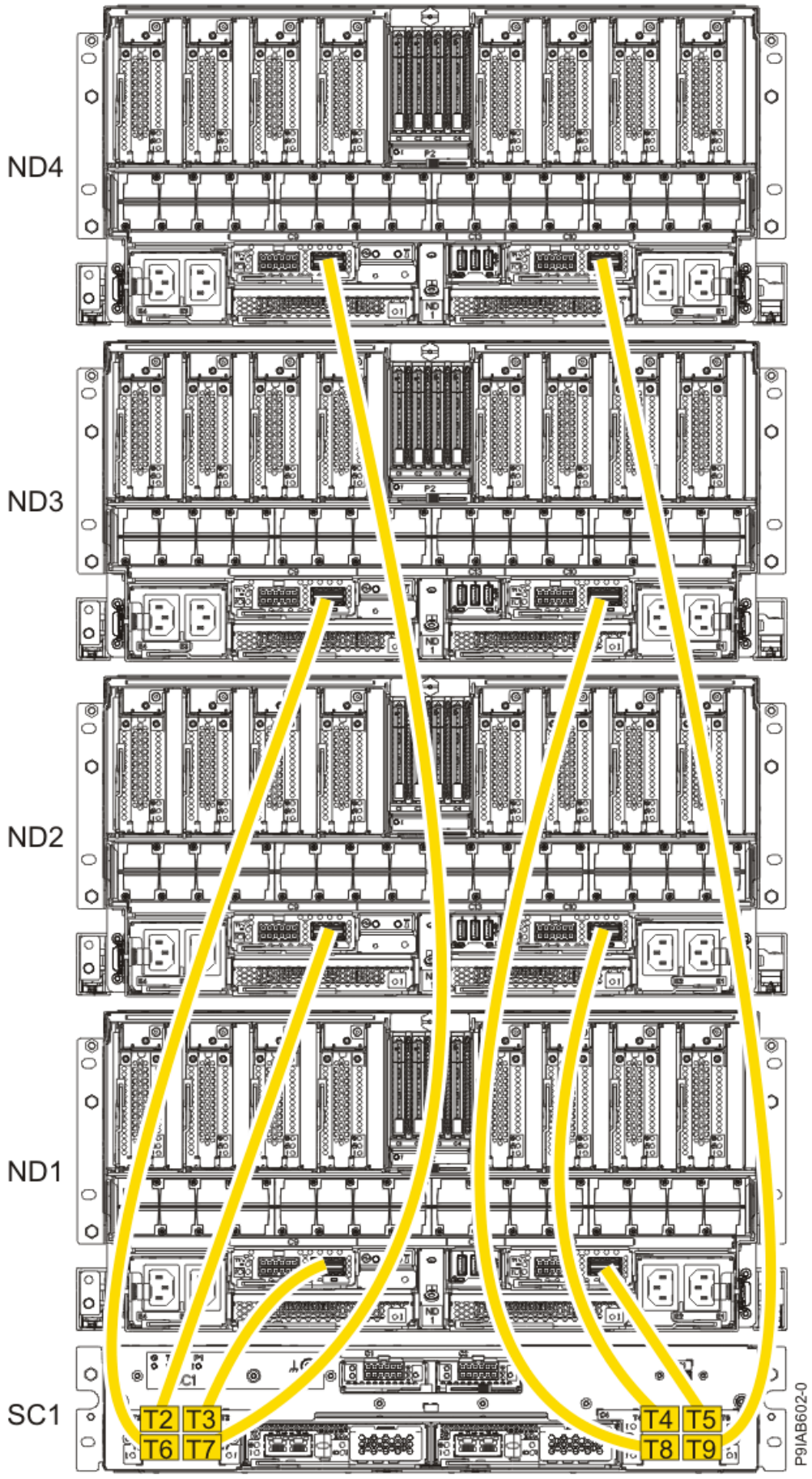


Figure 17. Service processor (FSP) cabling

Table 1. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

3. Plug the service processor cable being serviced into the system control unit by inserting the cable into the connector until it locks into place.

   Service processor cable locations are SC1-P1-T2, T3, T4, T5, T6, T7, T8, and T9.

   Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

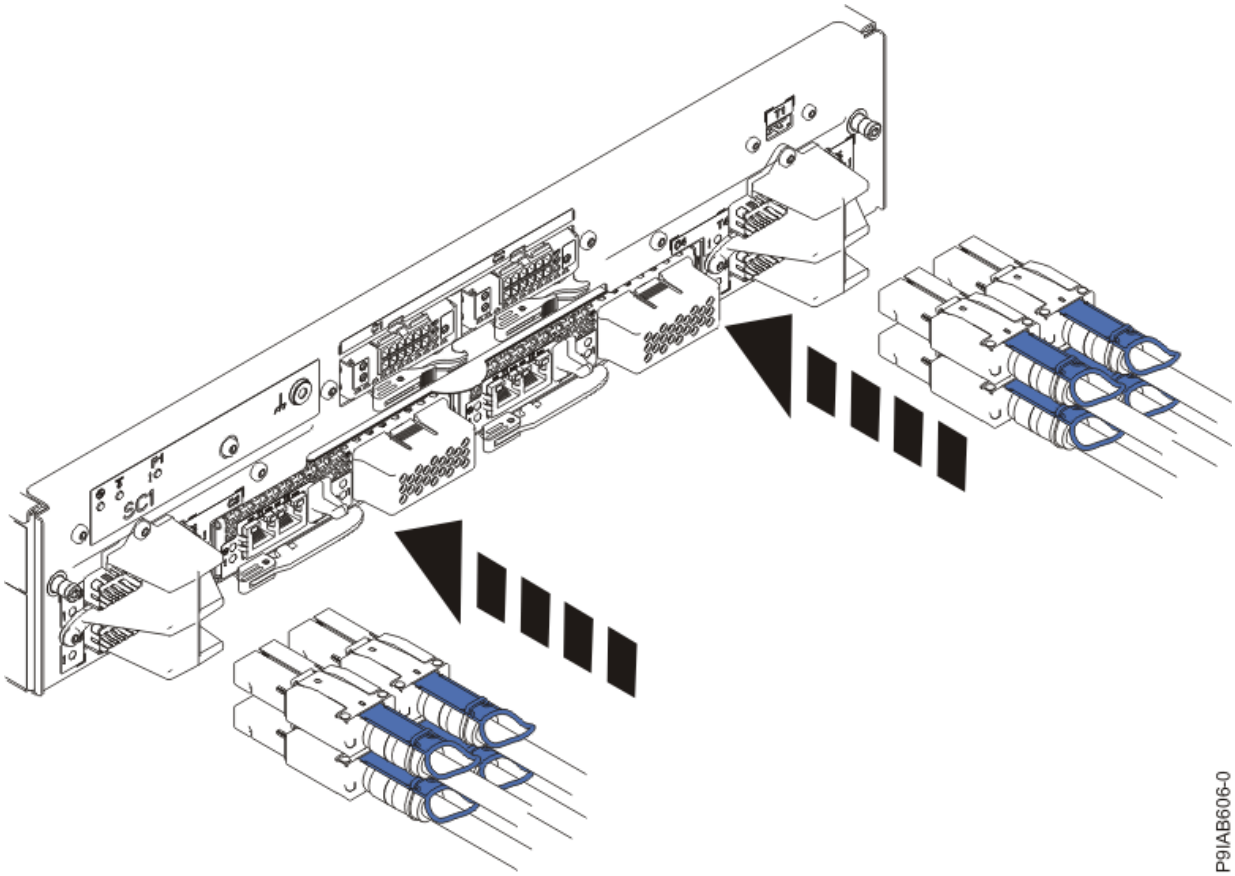


Figure 18. Replacing the service processor cable into the system control unit

4. Plug the service processor cable being serviced into the system node by inserting the cable into the connector until it locks into place.

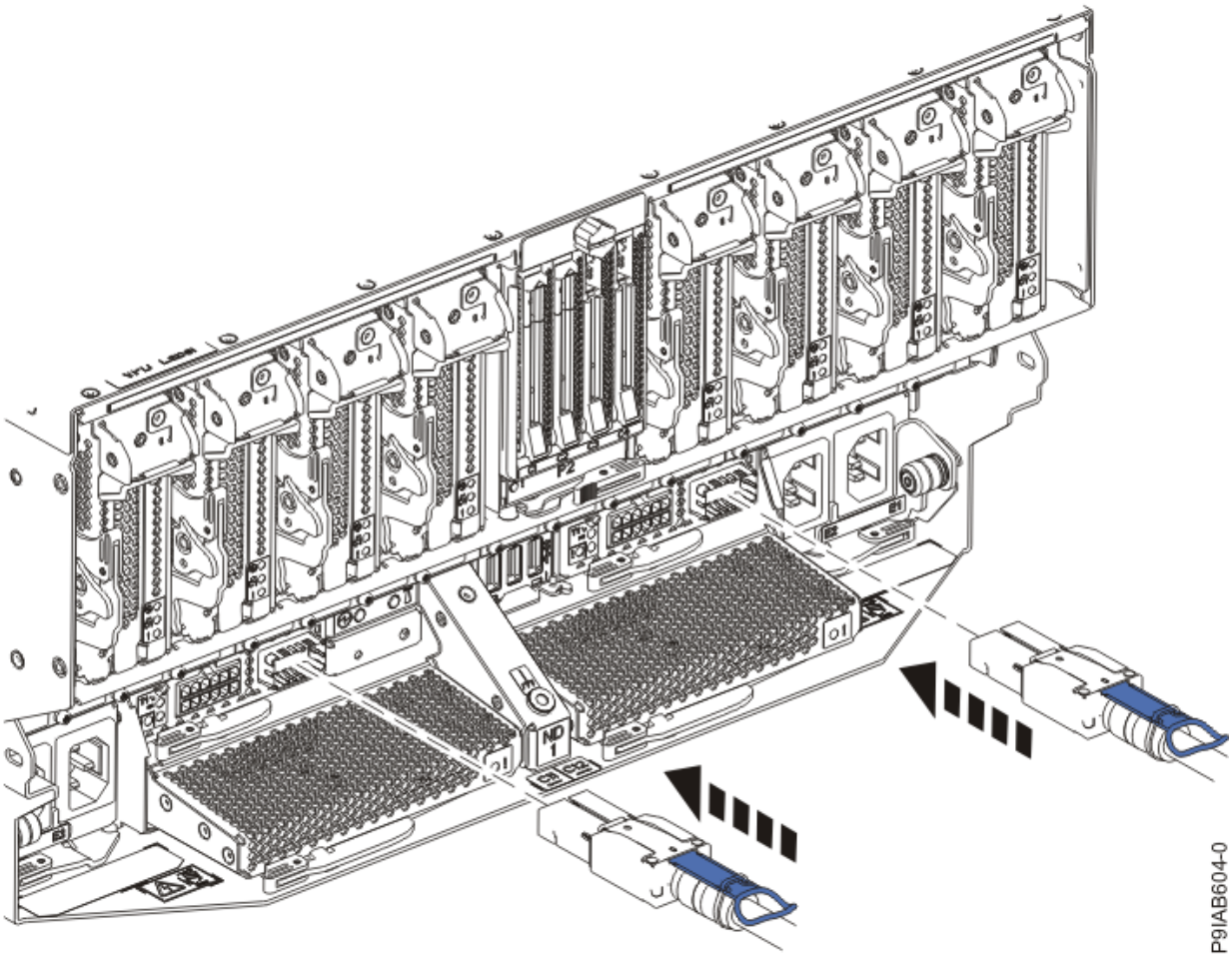


Figure 19. Replacing the service processor cable into the system node

5. Lightly pull on the service processor 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. Secure the cable to the side of the rack with the hook-and-loop fastener.

Preparing the 9080-M9S system for operation after removing and replacing a service processor (FSP) cable

To prepare the system for operation after removing or replacing a service processor (FSP) cable, 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. If you chose to complete 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.

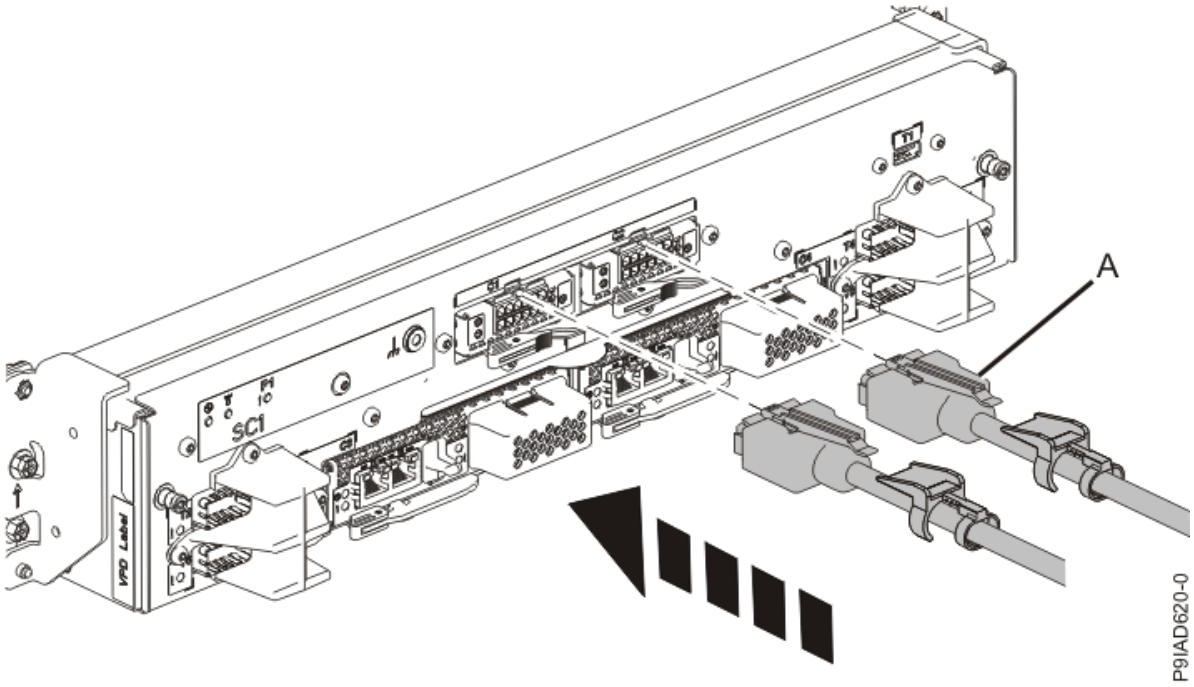


Figure 20. Replacing the UPIC cable into the system control unit

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

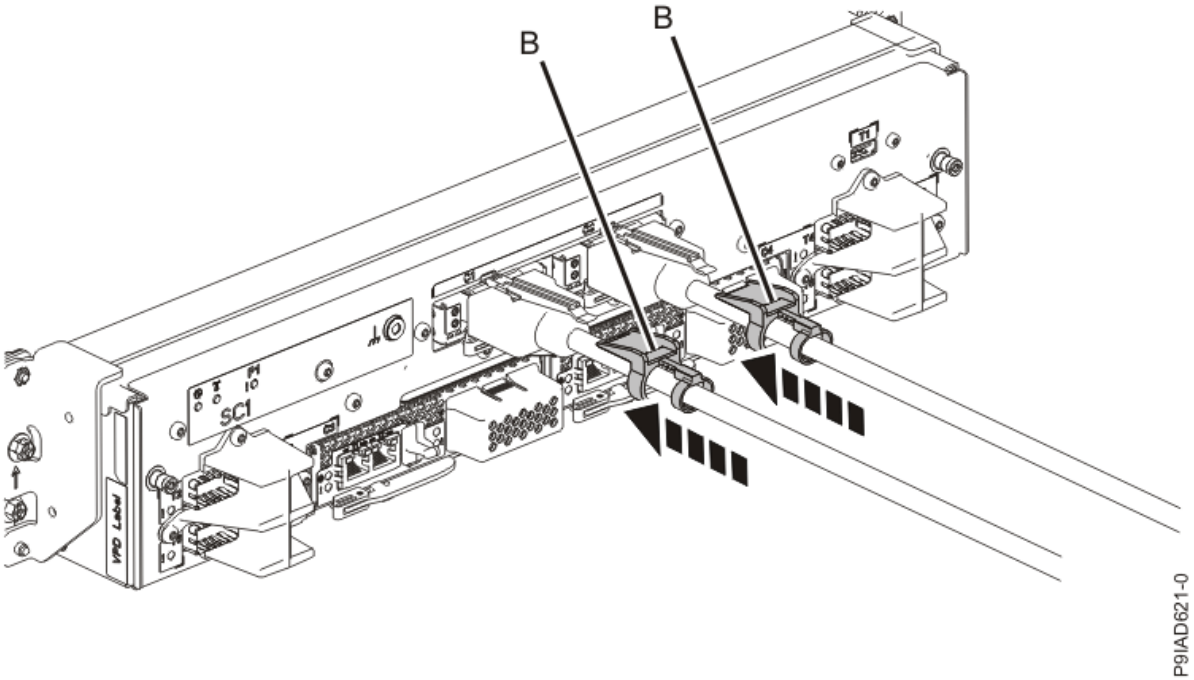


Figure 21. Replacing the UPIC cable into the system control unit

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.

3. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

5. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

6. From the **Operation** list, select **FRU Level Activate**. Then, click **OK** to confirm the operation.
7. From the **Operation** list, select **Reset Identify LED**. Then, click **OK** to confirm the operation.

SMP cables

Preparing the 9080-M9S system to remove and replace an SMP cable

To prepare the system to remove and replace an SMP cable, complete the steps in this procedure.

About this task

The SMP cables are given names and are colored based on cable length. The following list shows the cable colors and lengths:

880 mm (2.9 ft)

1005 mm (3.3 ft)

1225 mm (4.01 ft)

1425 mm (4.7 ft)

1625 mm (5.3 ft)

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.

   This action causes the identify LED for the faulty part to turn on, and causes the blue system ID LED to turn on.
2. Use the blue LED to identify the server.

   Ensure that the serial number of the system matches the serial number to be serviced.
3. If you powered off the system, from the **Operation** list, select **FRU Level Deactivate**. Then, click **OK** to confirm the operation.
4. Check that an amber identify LED is flashing for one of the SMP cables as shown in the following figures.

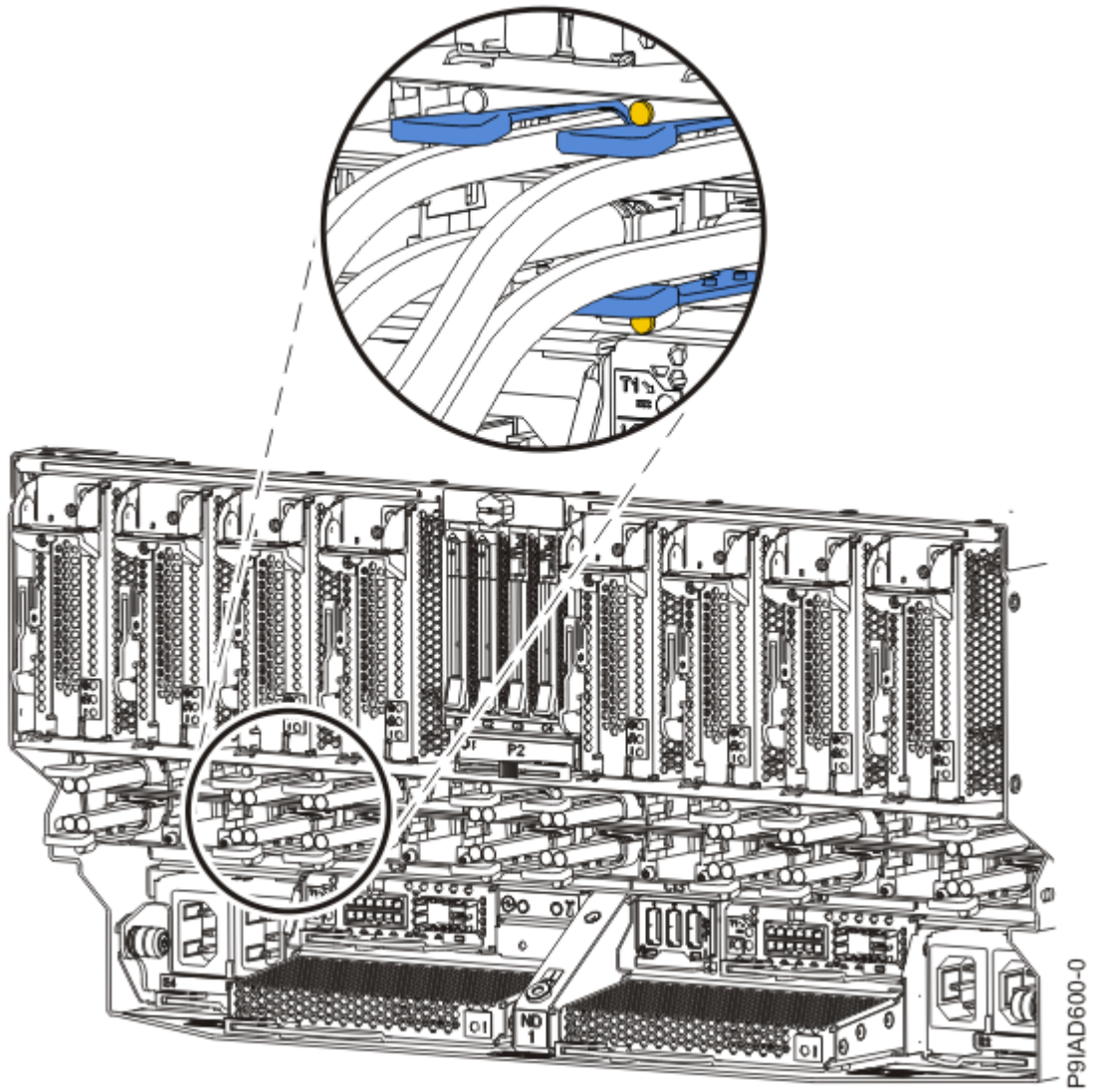


Figure 22. Identify LEDs for the SMP cables on the system node

5. 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.

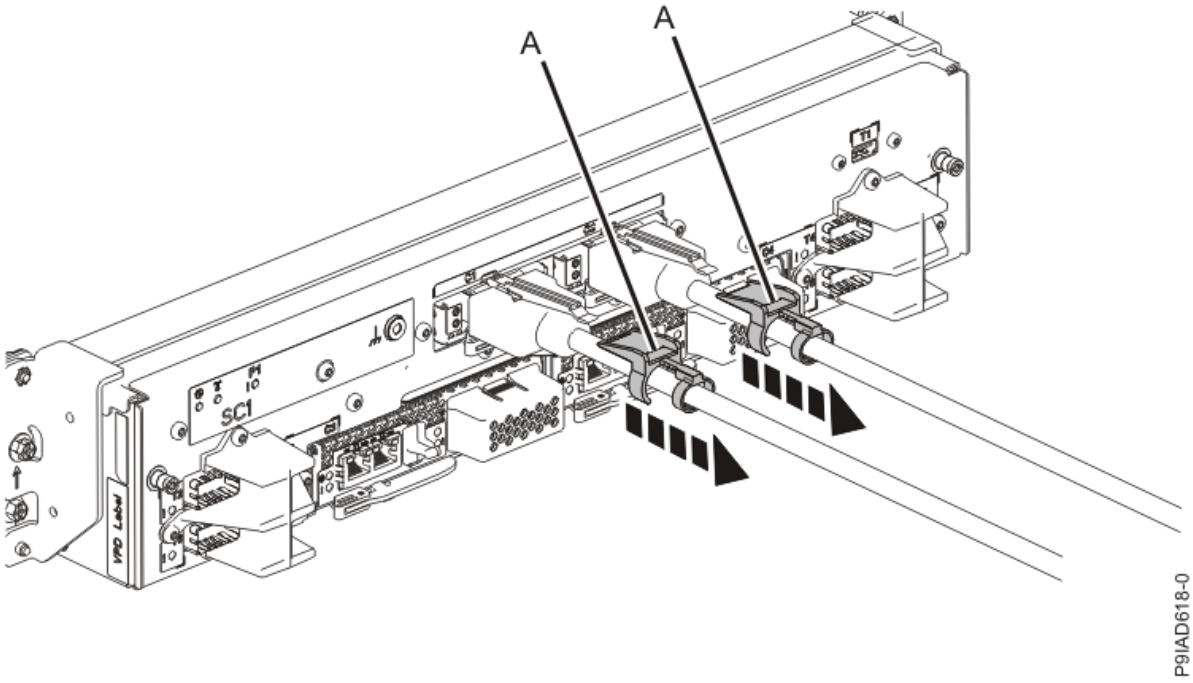


Figure 23. Removing the UPIC cable lock

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

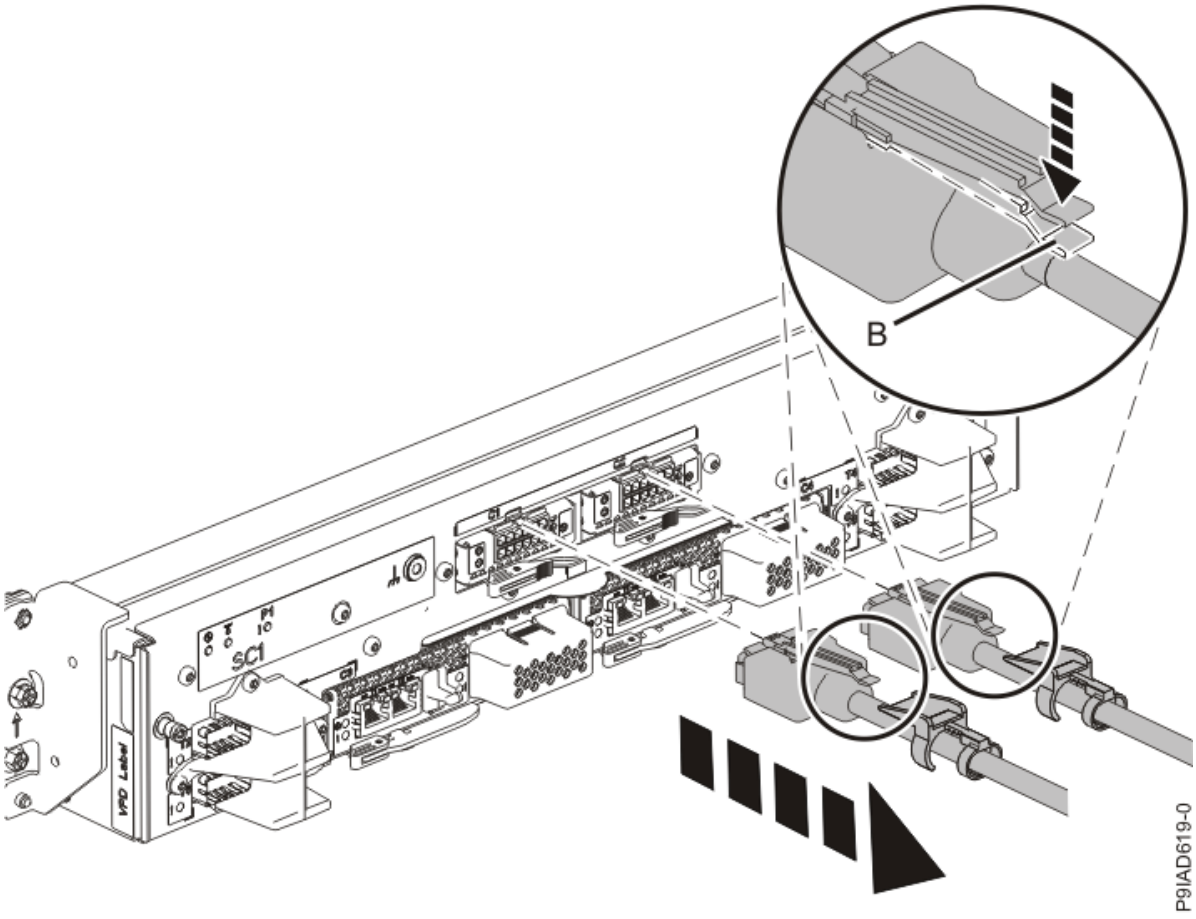


Figure 24. Removing the UPIC cable from the system control unit

6. 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.

Removing an SMP cable from the 9080-M9S system

To remove an SMP cable from 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. Is the system power off?
   - **Yes**: Continue with step “7” on page 26.
   - **No**: Continue with the next step.
3. Access the Advanced System Management Interface (ASMI).
   a) In the navigation pane, click **Resources** > **All Systems** to view all the systems that are associated with your Hardware Management Console (HMC).
   b) Select the server that you want to work with.
   c) Click **Actions** > **View all options** > **Launch Advanced Systems Management (ASM)**. The **Launch ASM Interface** window is displayed.
   d) Verify the information that appears and click OK.
   The ASMI window is displayed.
   e) Log into the ASM
4. In the navigation area, select **Concurrent Maintenance** > **SMP Cables**.
   Note: If the **SMP Cables** operation is not present, power off the system and continue with step “7” on page 26.
5. In the SMP Cables window, is the SMP cable listed in the table?
   - **Yes**: Continue with the next step.
   - **No**: The cable cannot be replaced with the power on. Power off the system and continue with step “7” on page 26.
6. In the SMP Cables window, select the SMP cable in the table and click **Continue**. Then, continue with step “7” on page 26.
7. Identify and label where each end of an SMP cable is connected to the system nodes.
8. If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

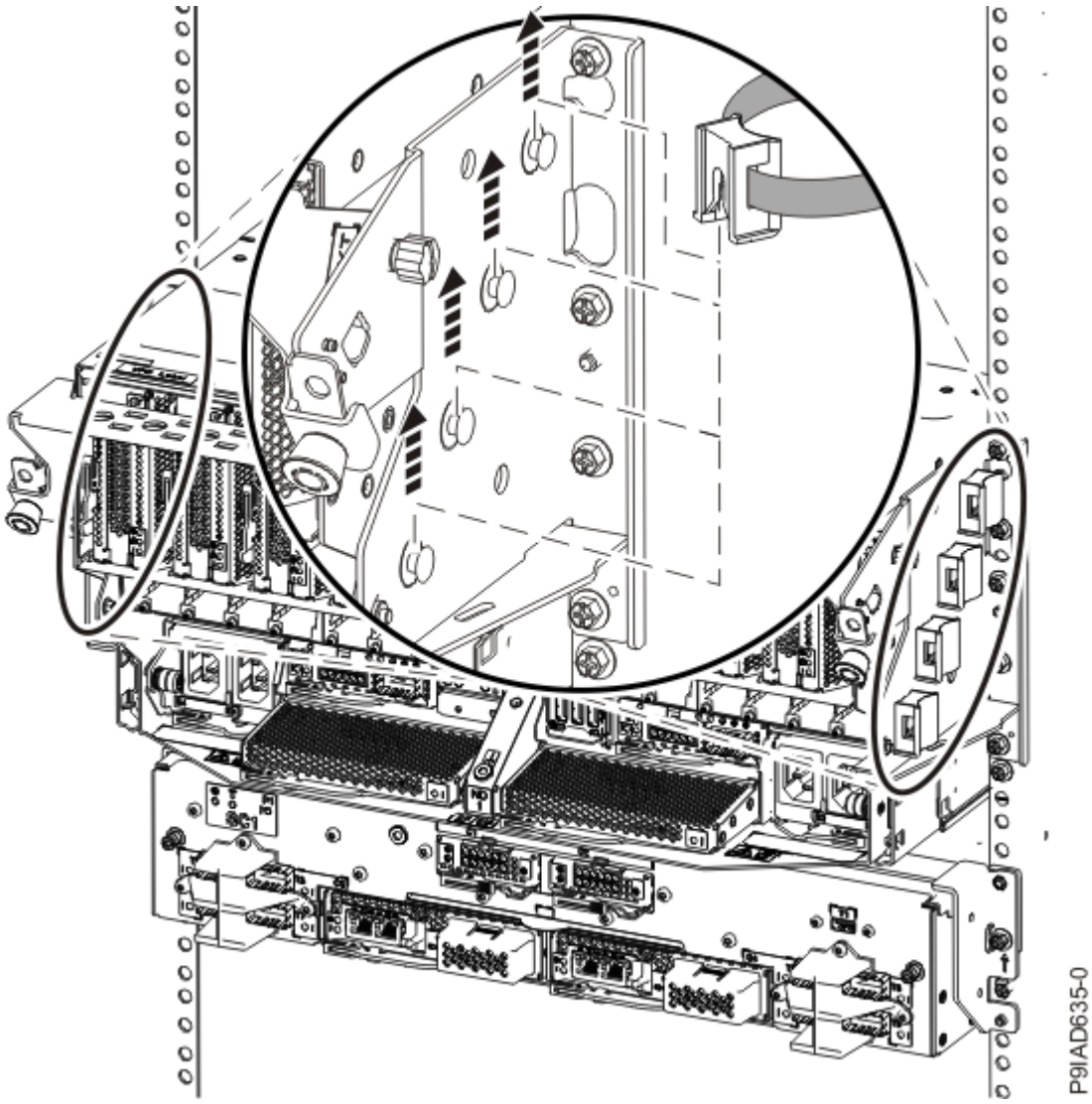


Figure 25. Removing a cable clip

9. To remove the SMP cable, complete the following steps:

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

a. Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.

b. Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch

c. Remove the SMP cable **(C)** from the system node.

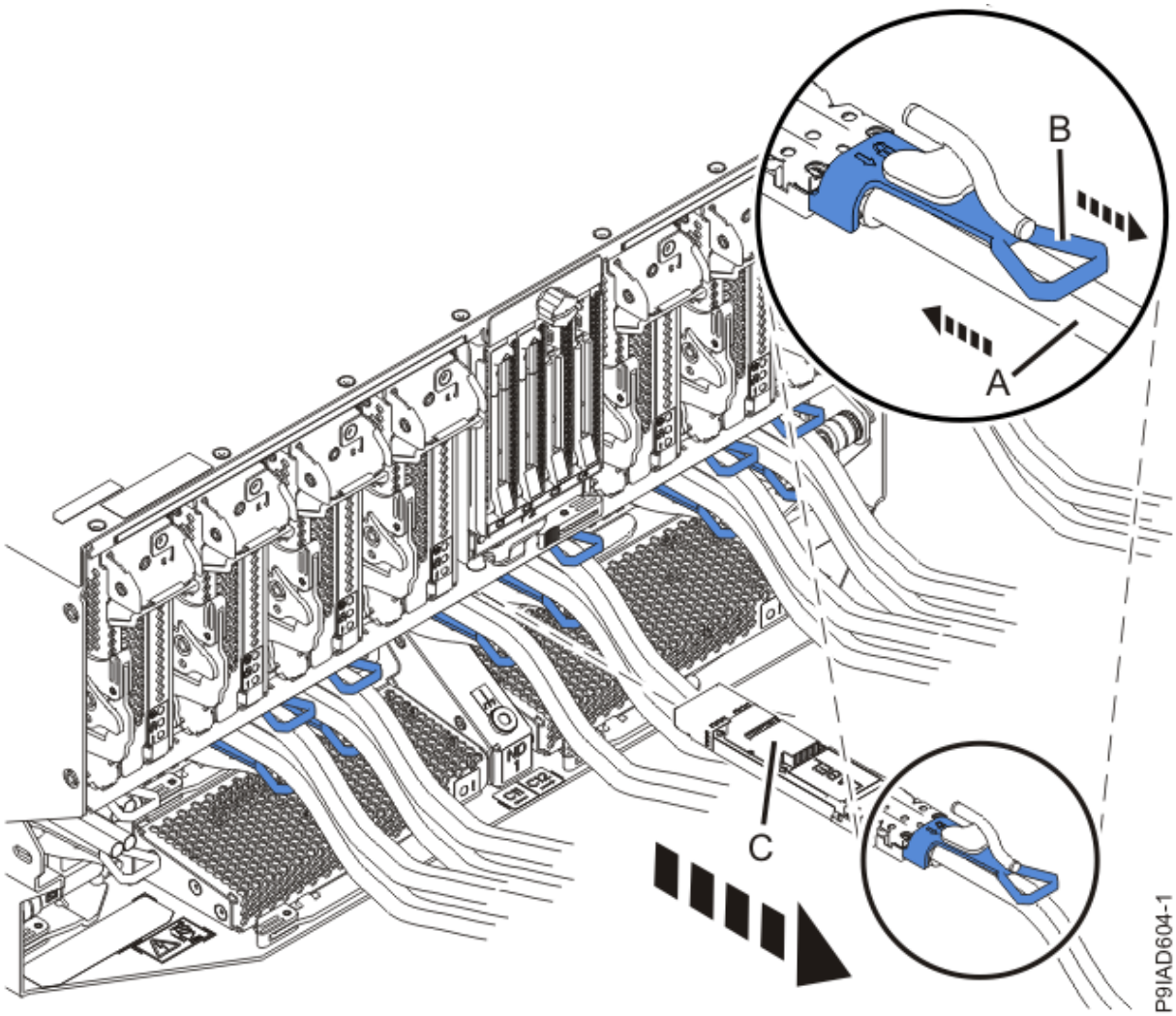


Figure 26. Removing the SMP cable from the system node

10. If the system power is off and you are removing more than one SMP cable, repeat step "9" on page 27 until all of the SMP cables that you previously identified are unplugged.
11. If applicable, loosen the hook-and-loop fastener that secures the cable to the rack.

    If you need to completely remove the cable, make note of how the cable was routed between the system nodes.

Replacing an SMP cable in the 9080-M9S system

To replace an SMP cable in 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. If you are replacing a faulty cable, complete the following steps:
   a) Remove the faulty cable from the side of the rack, unclipping and removing the hook-and-loop fasteners that bundle the cables together.
   b) Transfer the labels from the faulty cable to the new cable.
   c) Replace the new cable in the bundle and secure the hook-and-loop fasteners that bundle the cables together.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

3. Refer to the following information to determine the point-to-point cabling for SMP cables.
   - If you have a two node system configuration, use Figure 27 on page 29 and Table 2 on page 29 to determine the point-to-point cabling for SMP cables.

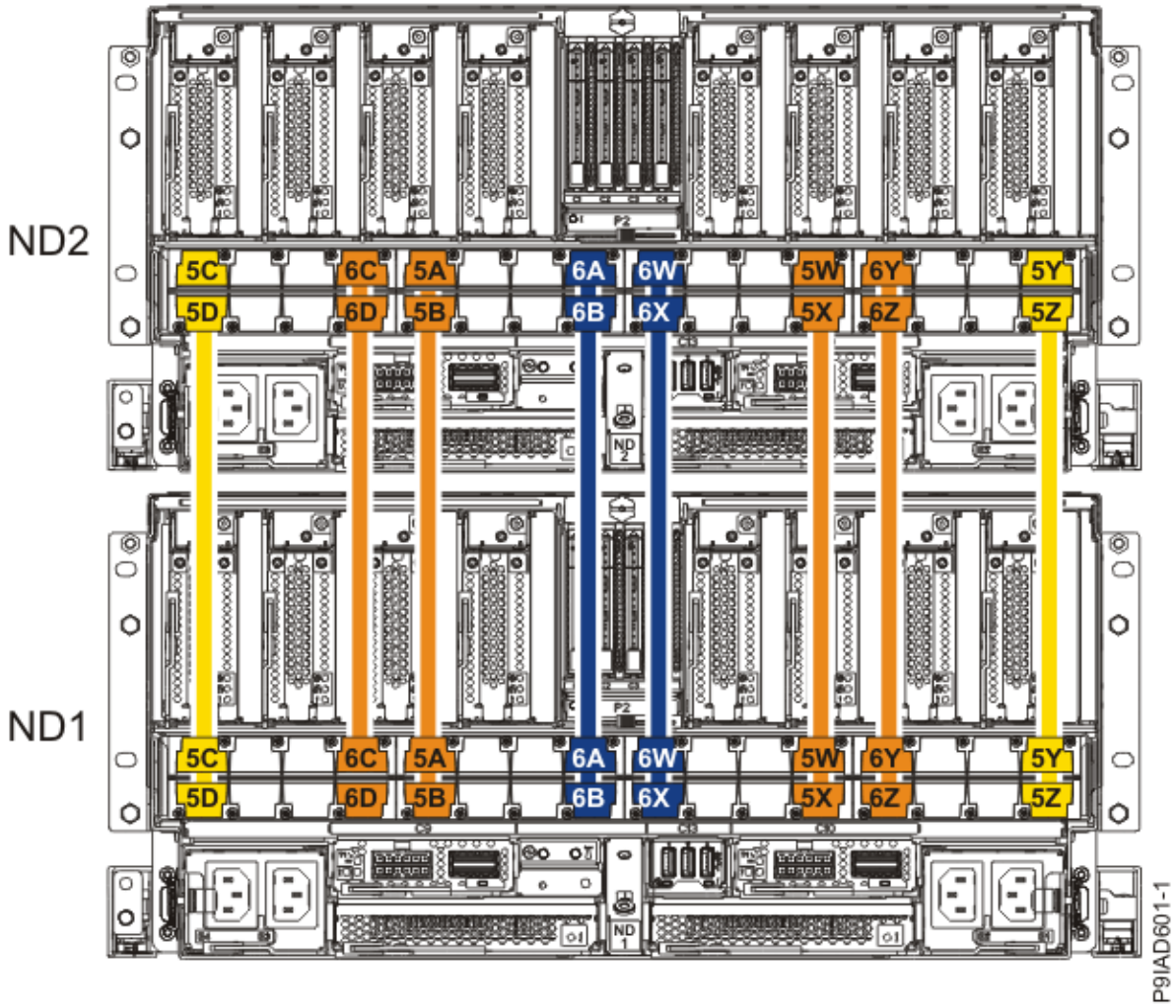


Figure 27. Cabling a Two Node Configuration

Table 2. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7

Table 2. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 28 on page 31 and Table 3 on page 31 to determine the point-to-point cabling for SMP cables.

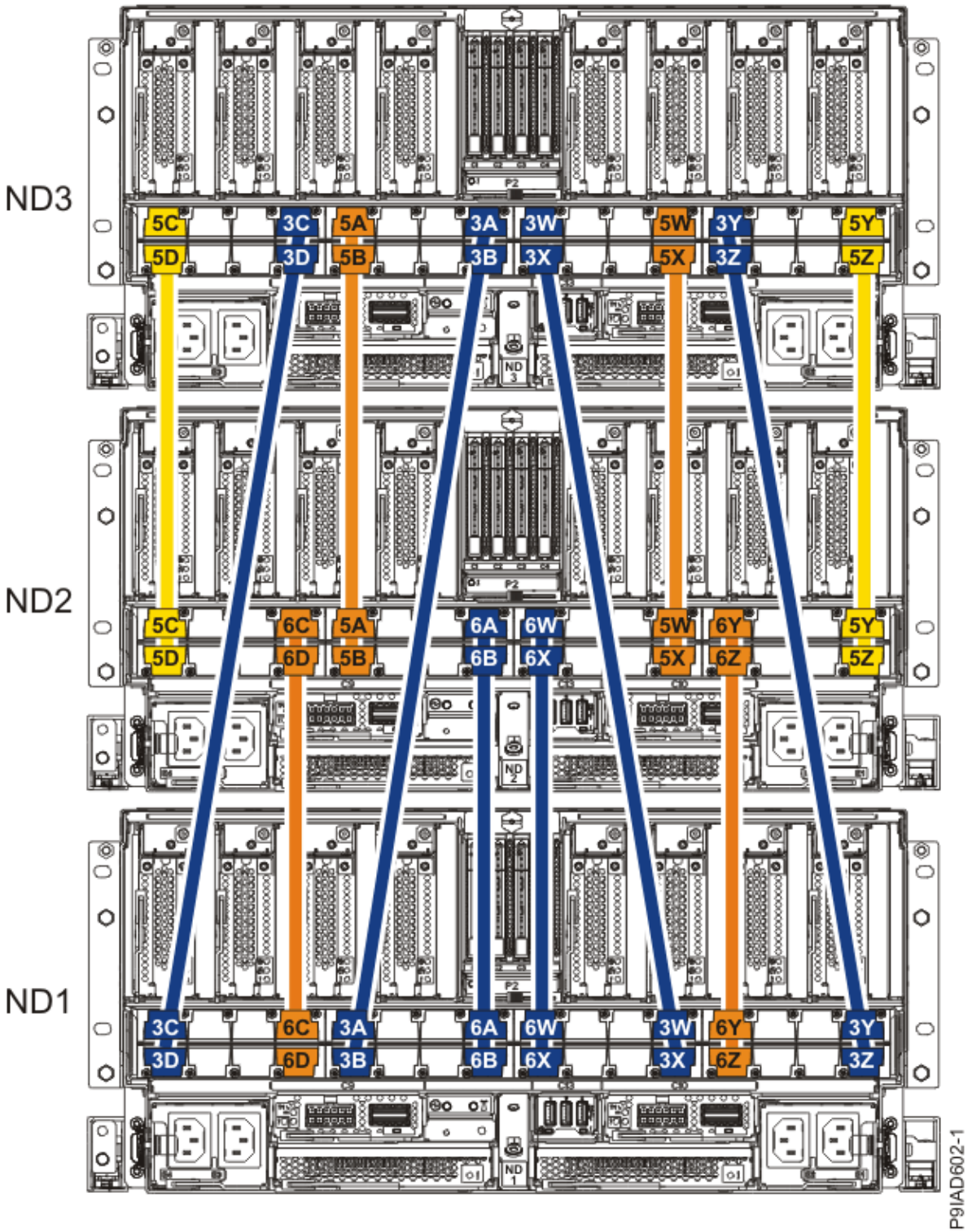


Figure 28. Cabling a Three Node Configuration

Table 3. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 3. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 3. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 29 on page 34 and Table 4 on page 35 to determine the point-to-point cabling for SMP cables.

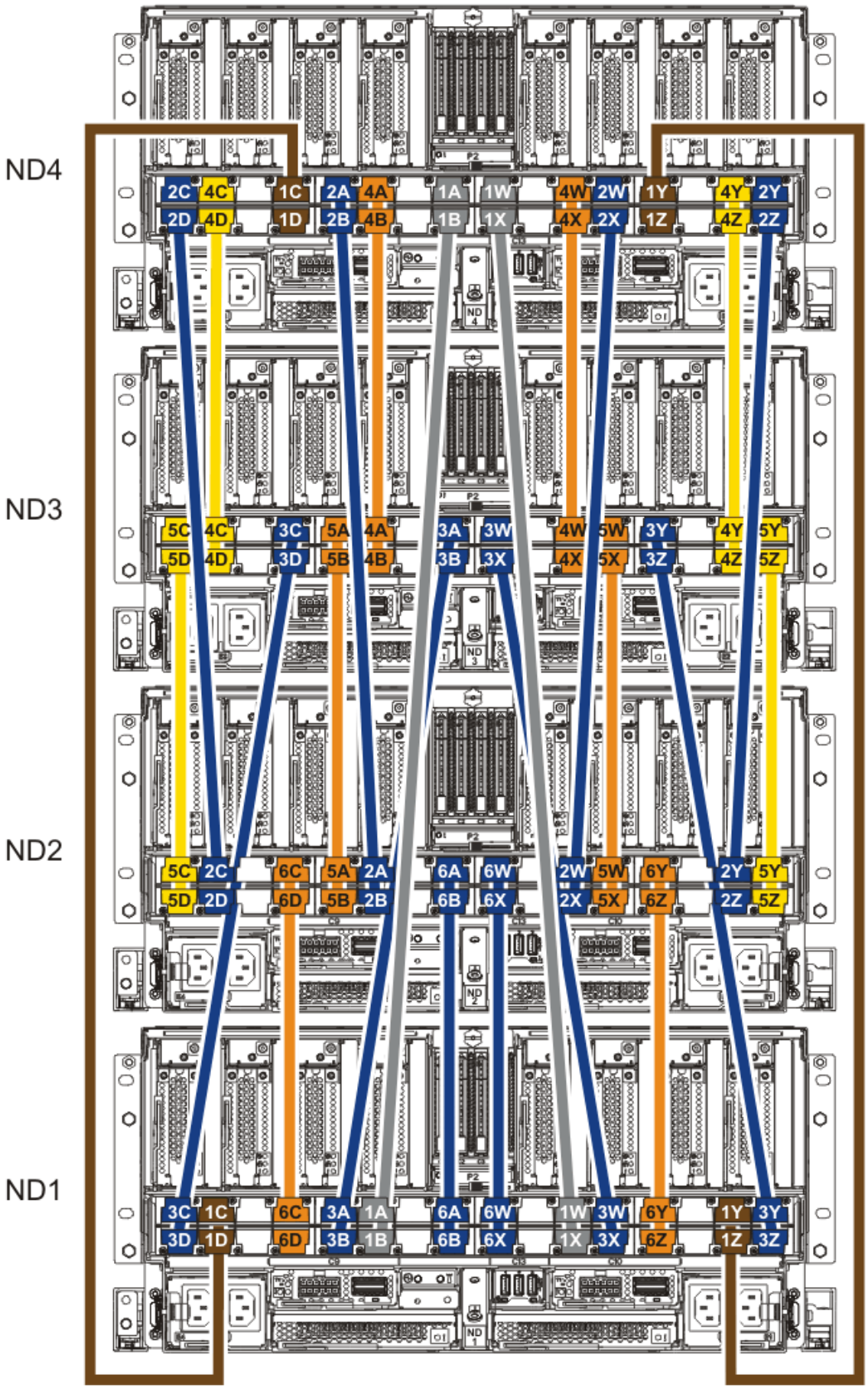


Figure 29. Cabling a Four Node Configuration

Table 4. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 4. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 4. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

4. Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

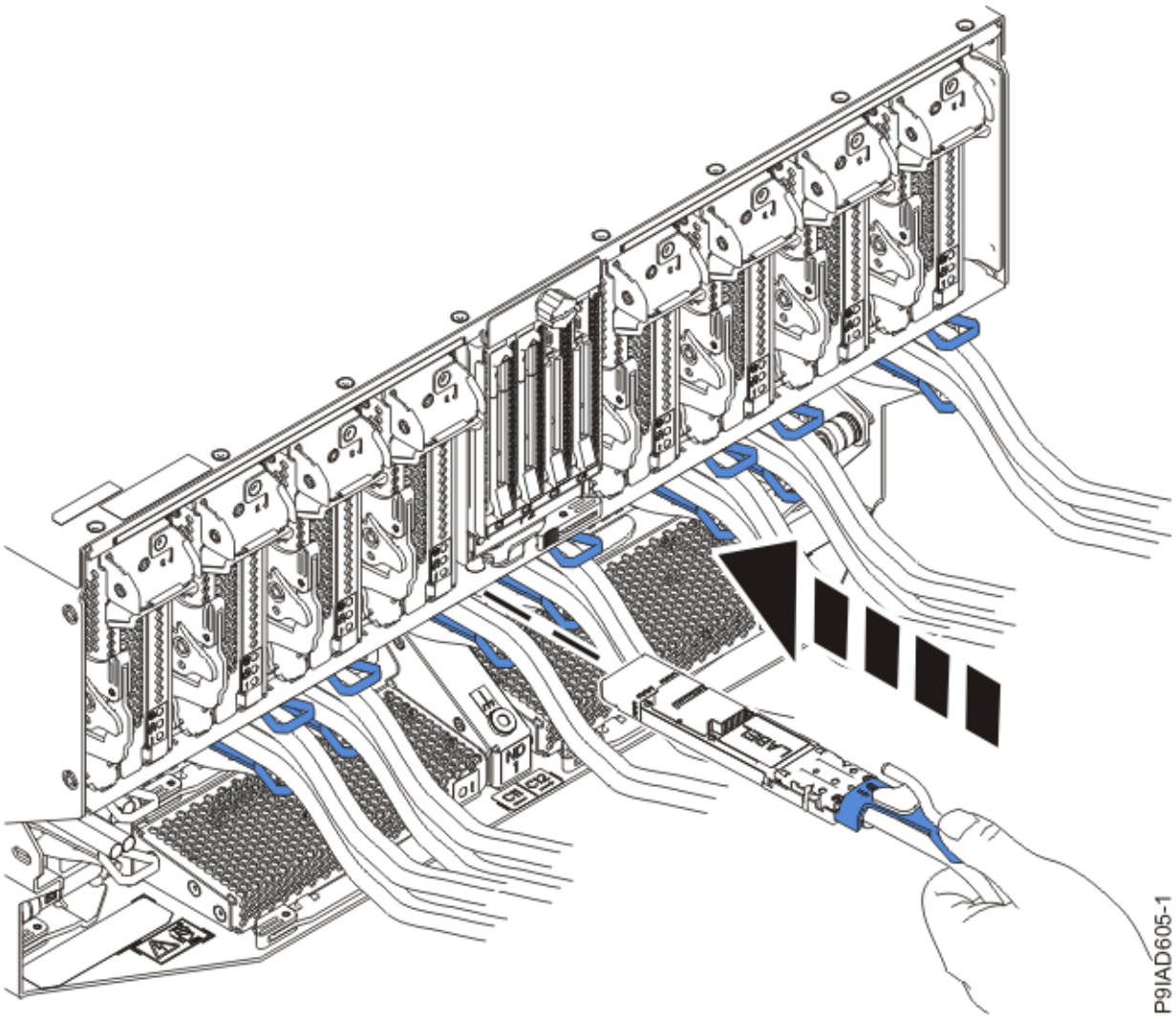


Figure 30. Replacing the SMP cable into the system node

5. If the system power is off and you are replacing more than one SMP cable, repeat step “4” on page 37 until all of the SMP cables that you previously identified are reconnected.
6. Route the cable to the cable management bracket and to the sides of the system nodes.
7. If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

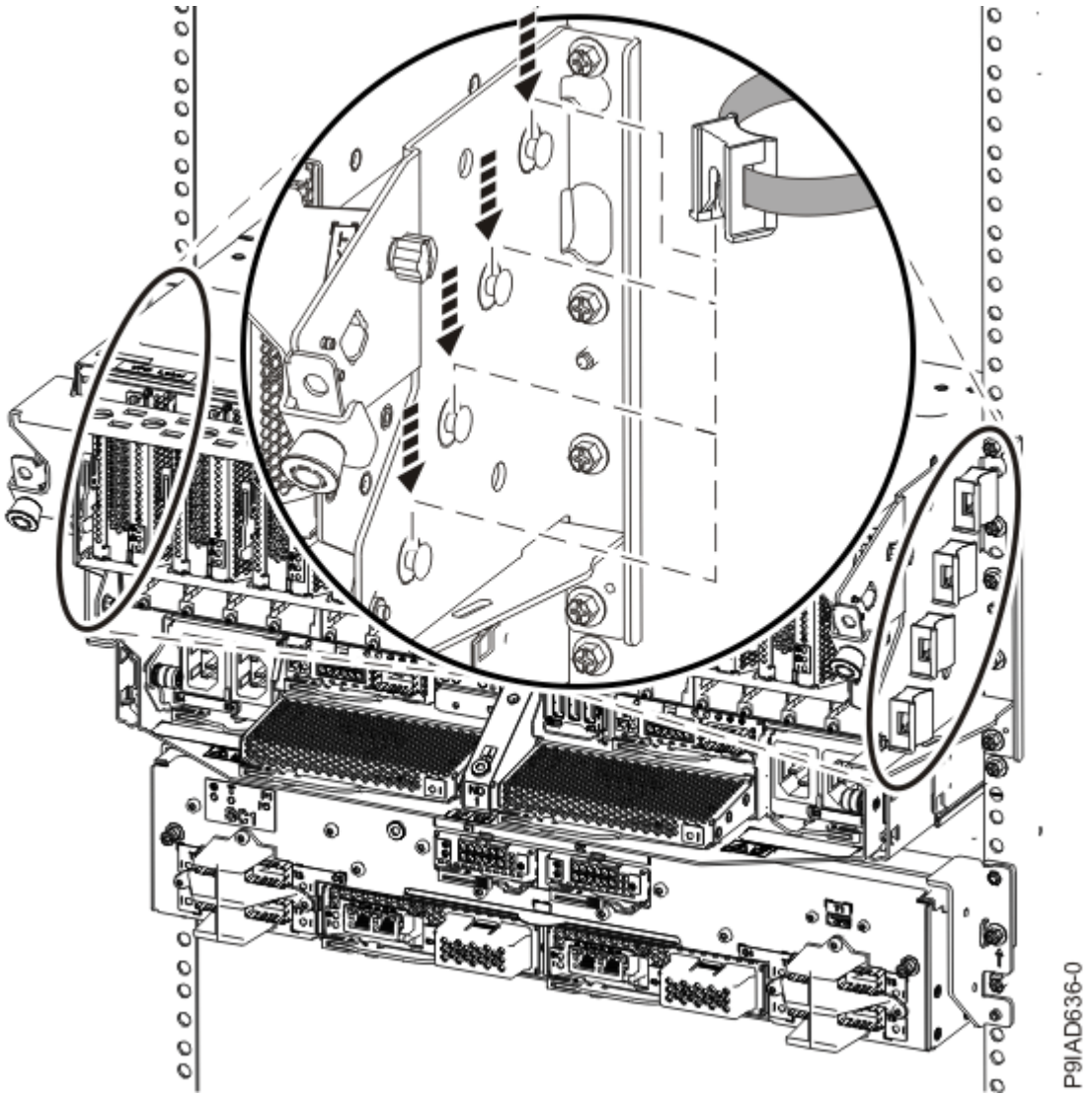


Figure 31. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

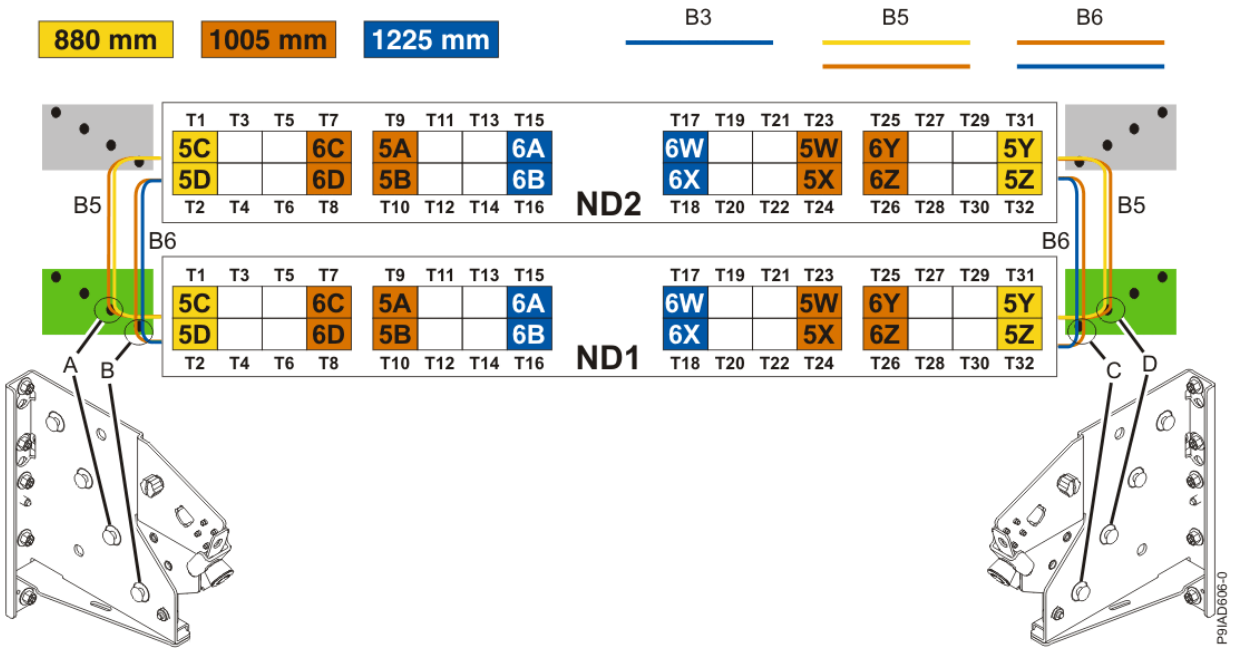


Figure 32. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

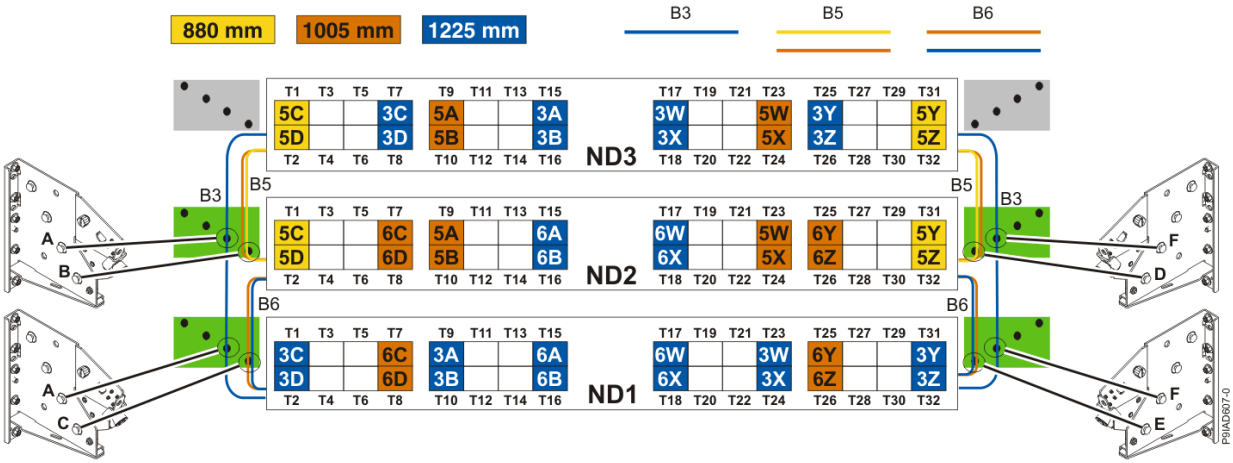


Figure 33. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.

- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

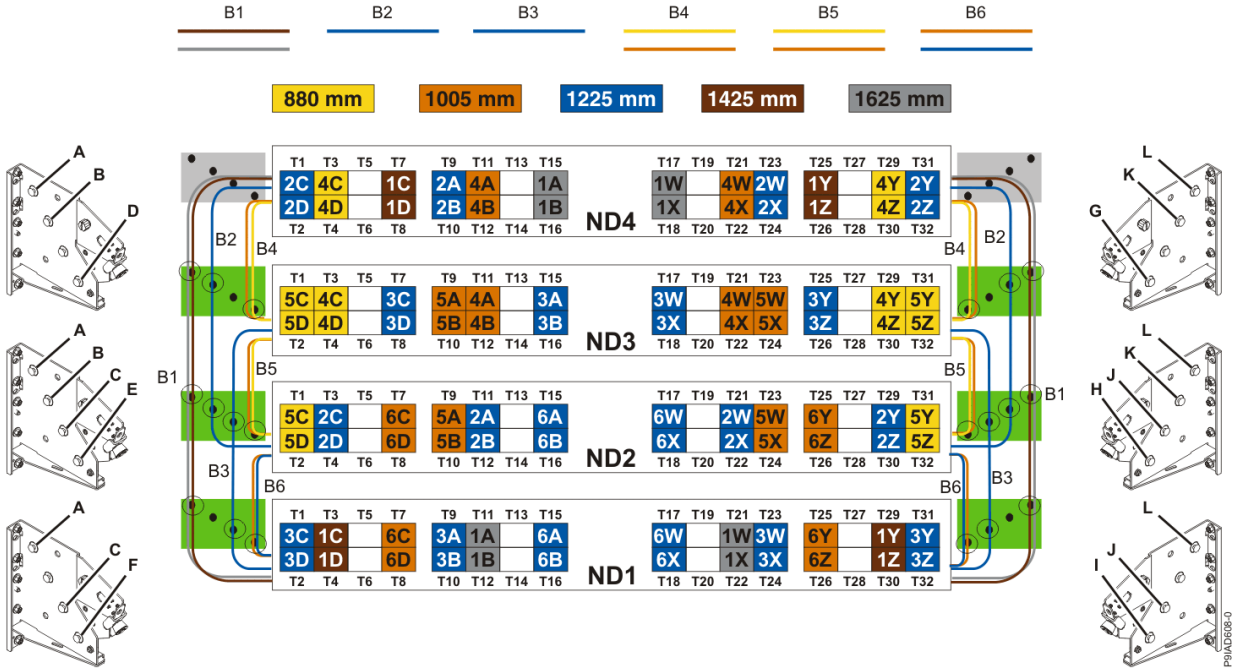


Figure 34. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  - The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  - The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  - The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  - The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  - The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  - The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

8. If the system power is on and you are using the Advanced System Management Interface (ASMI) to concurrently replace the SMP cable, click **Continue** in the SMP Cables window.

Preparing the 9080-M9S system for operation after removing and replacing an SMP cable

To prepare the system for operation after removing or replacing an SMP cable, 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. If you chose to complete 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.

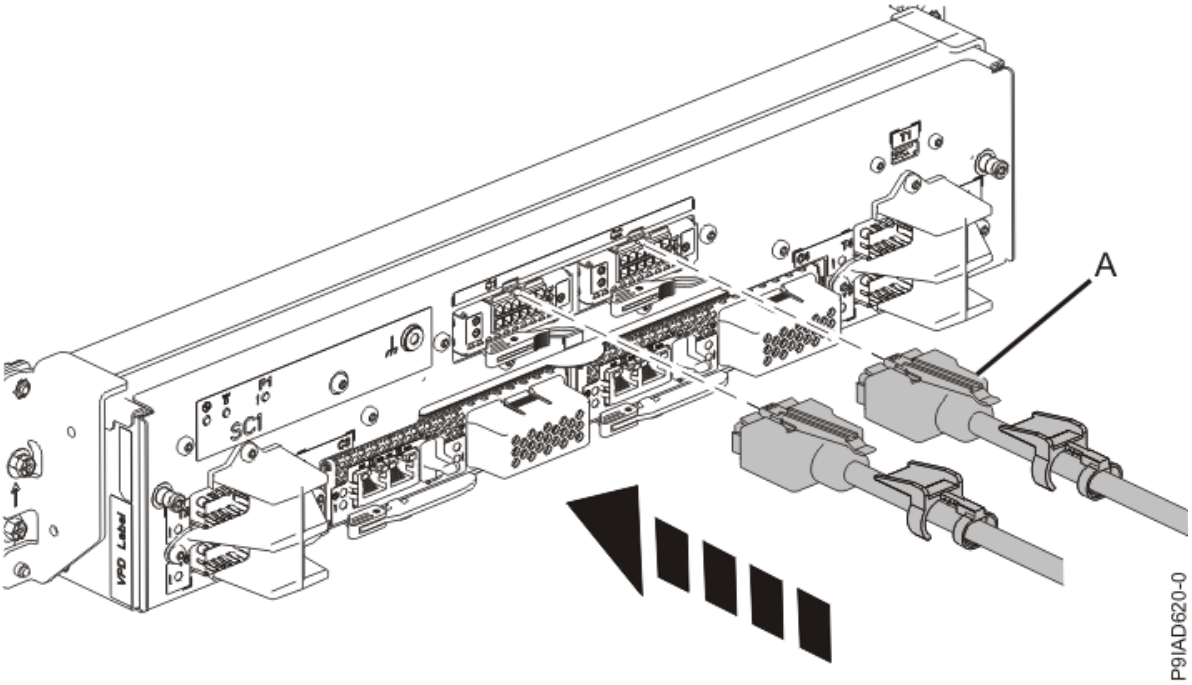


Figure 35. Replacing the UPIC cable into the system control unit

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

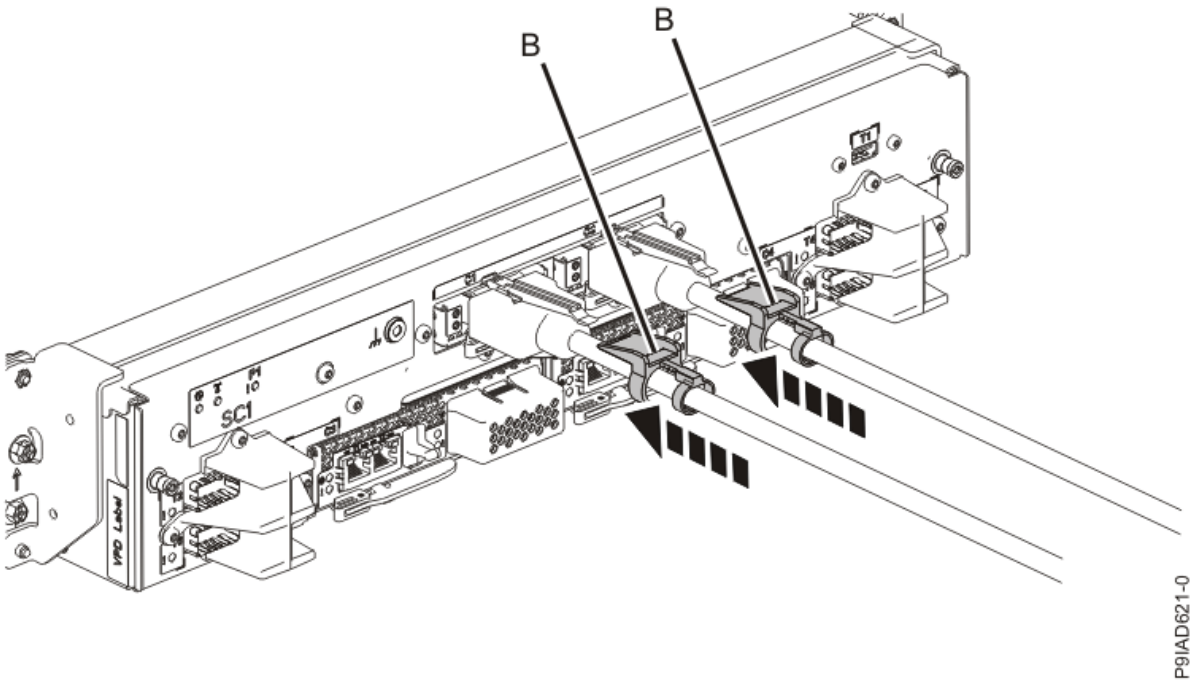


Figure 36. Replacing the UPIC cable into the system control unit

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.

3. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.
5. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

   Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

6. If you powered off the system, from the **Operation** list, select **FRU Level Activate**. Then, click **OK** to confirm the operation.
7. From the **Operation** list, select **Reset Identify LED**. Then, click **OK** to confirm the operation.

UPIC cables

Preparing the 9080-M9S system to remove and replace a UPIC cable

To prepare the system to remove and replace a UPIC cable, complete the steps in this procedure.

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.

   This action causes the identify LED for the faulty part to turn on, and causes the blue system ID LED to turn on.
2. Use the blue LED to identify the server.

   Ensure that the serial number of the system matches the serial number to be serviced.
3. If you powered off the system, from the **Operation** list, select **FRU Level Deactivate**. Then, click **OK** to confirm the operation.
4. Check that an amber identify LED **(A)** is flashing for one of the UPIC cables as shown in the following figures.

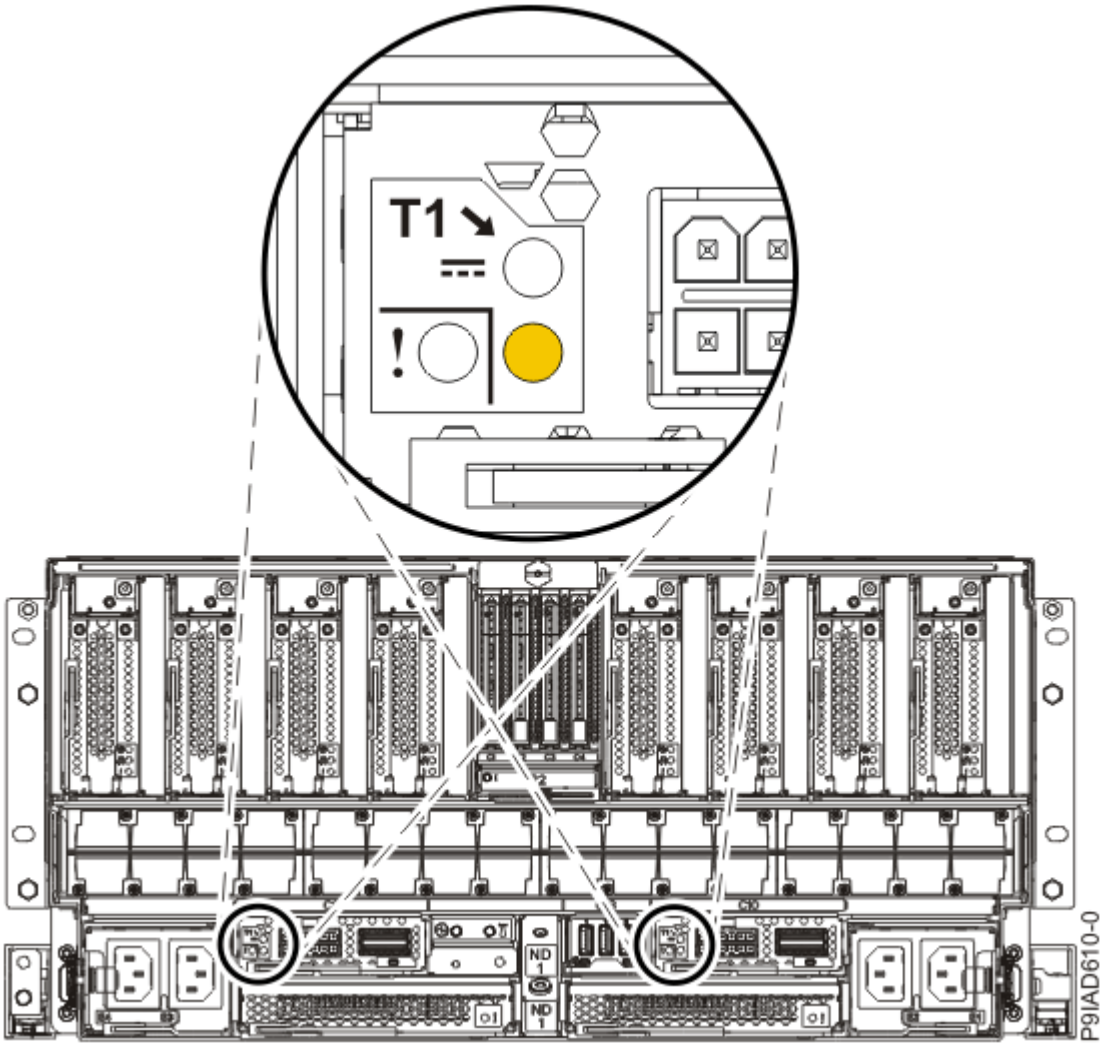


Figure 37. Identify LEDs for the UPIC cables on the system node

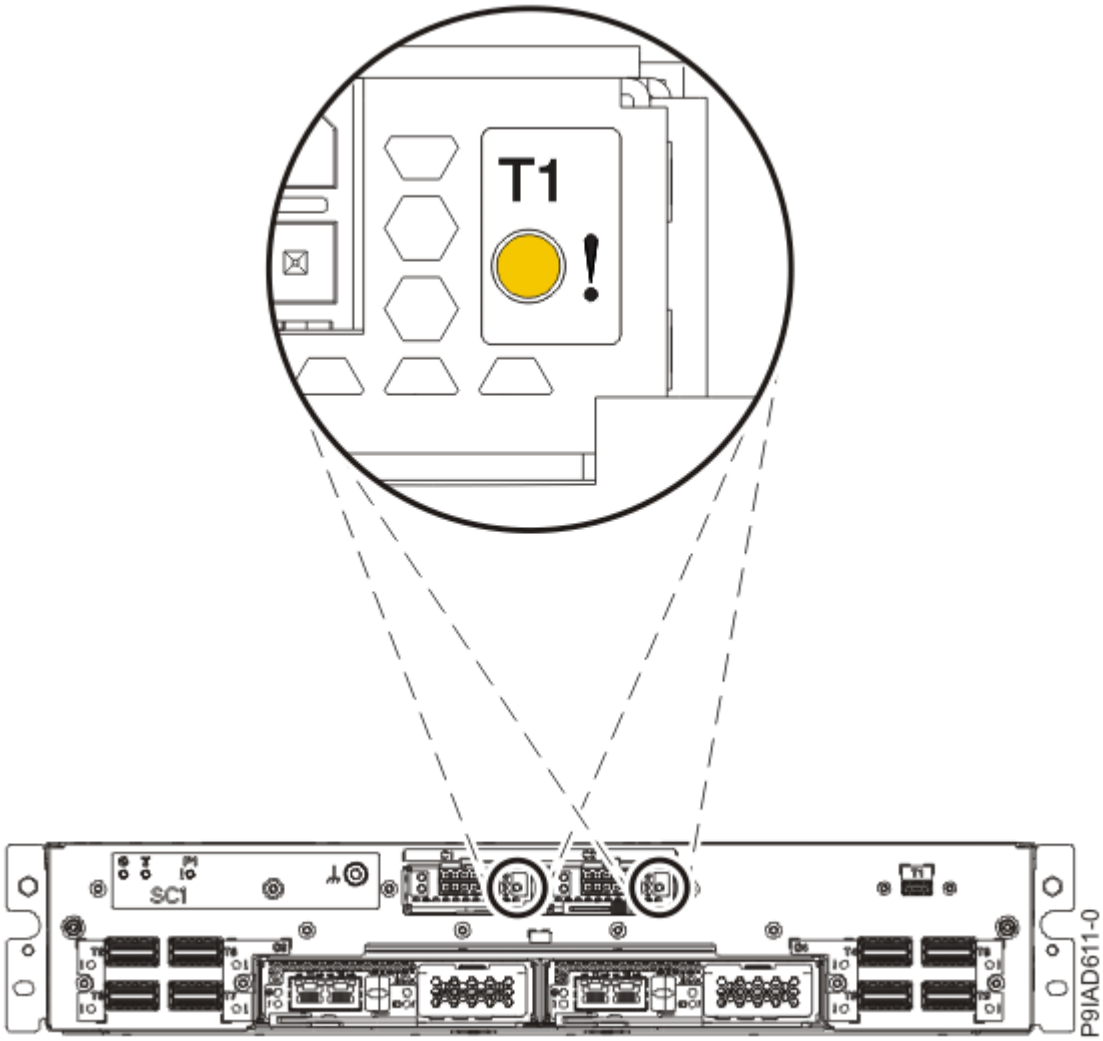


Figure 38. Identify LEDs for the UPIC cables on the system control unit

5. 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.

Removing a UPIC cable in the 9080-M9S system

To remove a UPIC cable from 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. Identify and label where each end of a UPIC cable is connected to the system node and system control unit.
3. To remove the UPIC cable from the system node, complete the following steps:
   a. Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

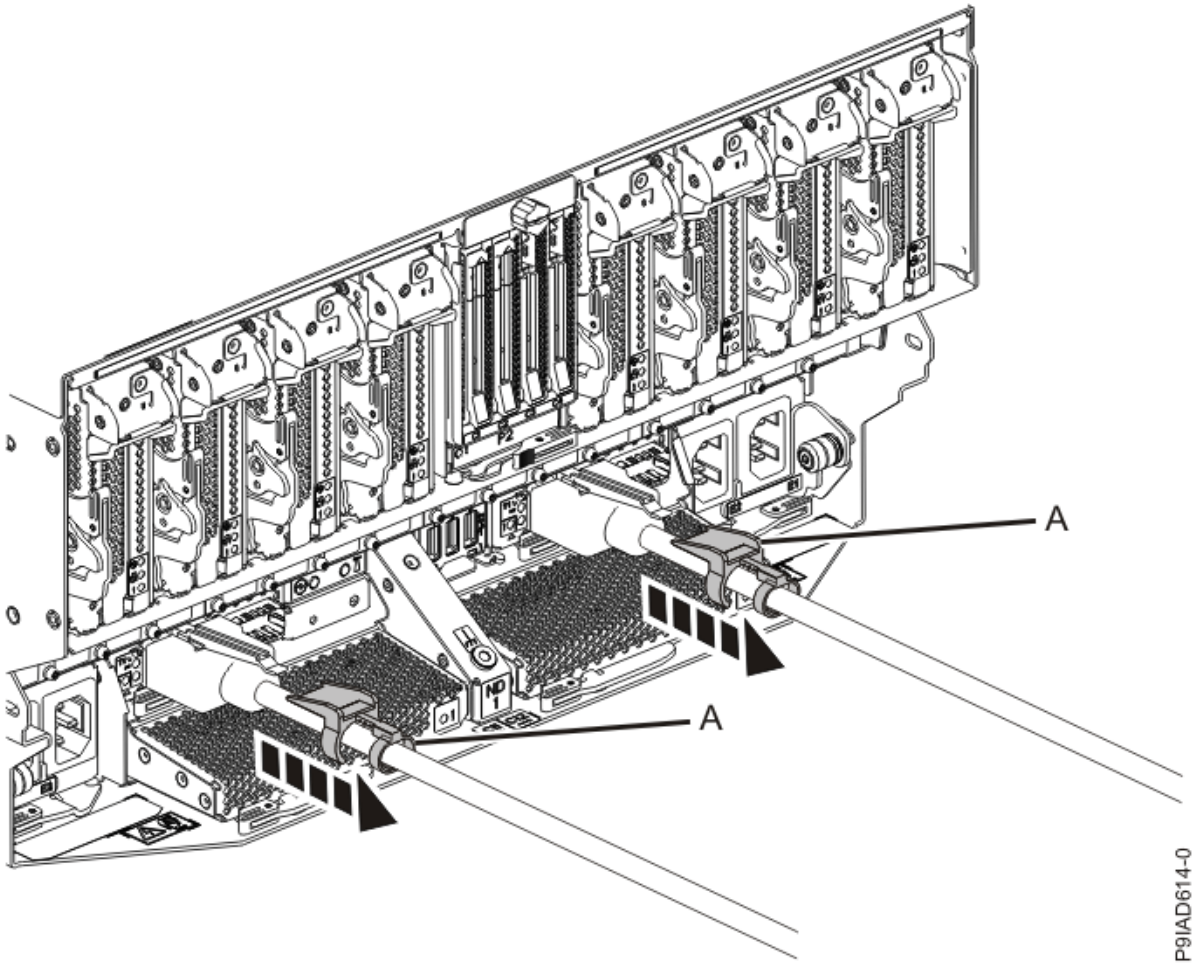


Figure 39. Removing the UPIC cable lock

   b. Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

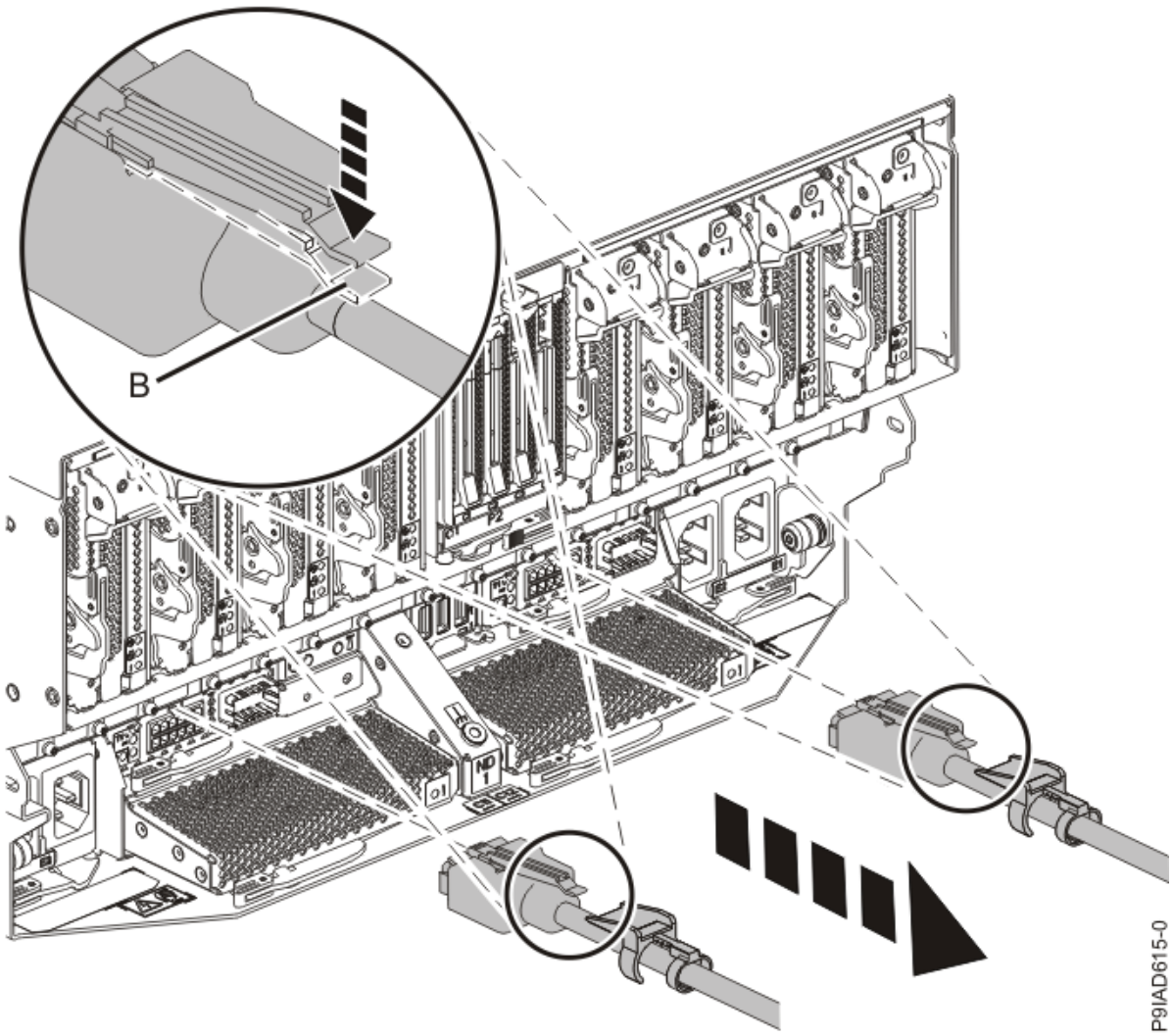


Figure 40. Removing the UPIC cable from the system node

4. To remove the UPIC cable from the system control unit, complete the following steps: UPIC cable locations are P1-C1-T1 and P1-C2-T1.
   a. Remove the white plastic lock **(A)** from the plug housing.

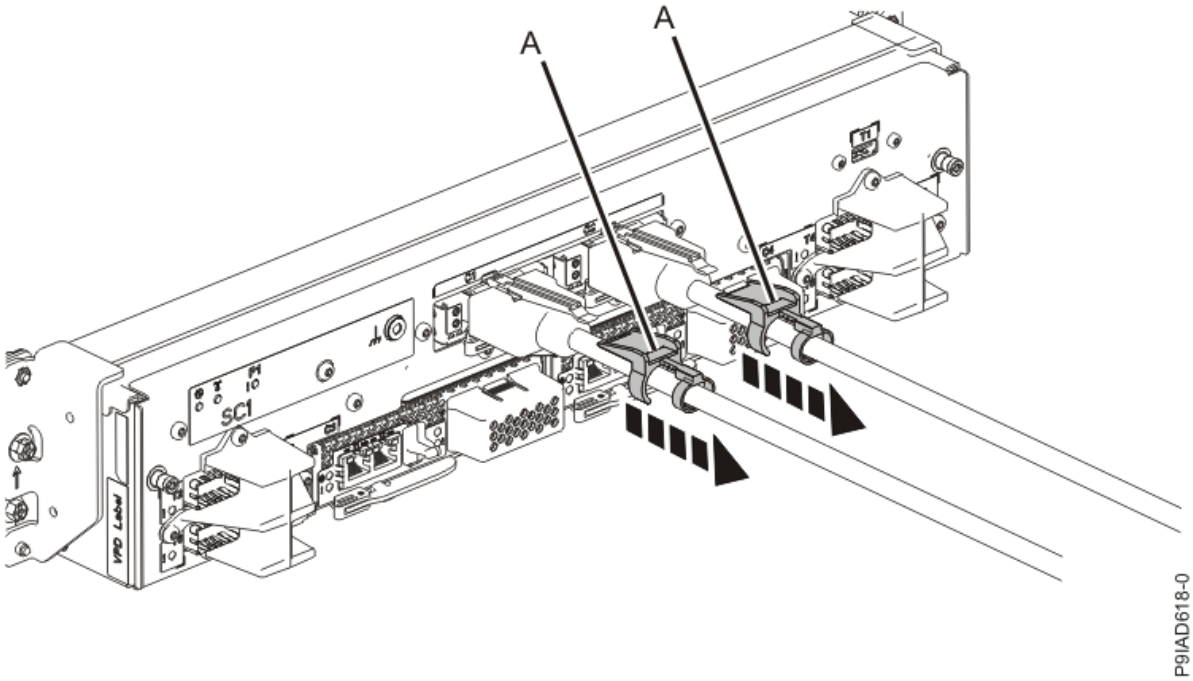


Figure 41. Removing the UPIC cable lock

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

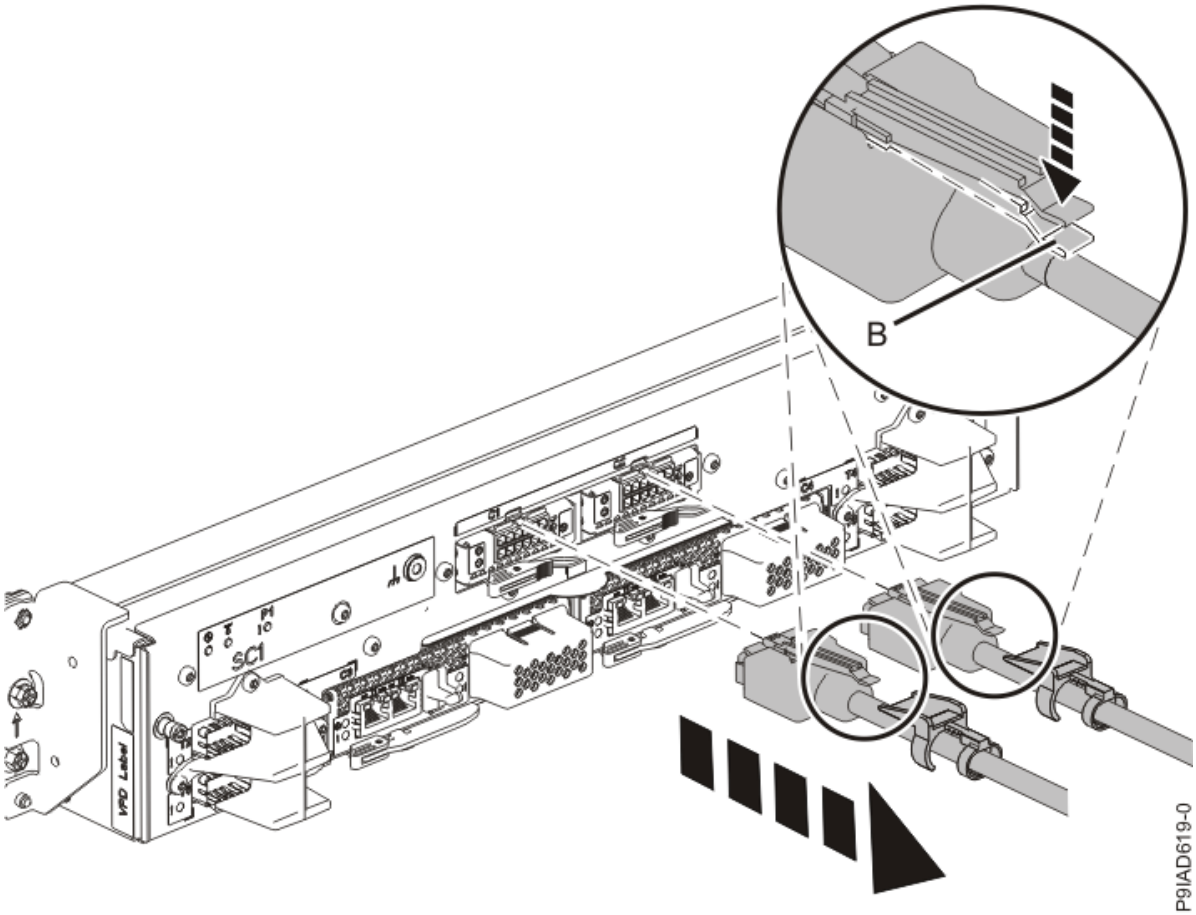


Figure 42. Removing the UPIC cable from the system control unit

5. If the system is powered off, repeat steps “3” on page 47 - “4” on page 48 until all the UPIC cables previously identified are unplugged.

6. If applicable, loosen the hook-and-loop fastener securing the cable to the rack.

Replacing a UPIC cable in the 9080-M9S system

To replace a UPIC cable in 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. Refer to the following information to determine the point-to-point cabling for UPIC cables.
   - If you have a single node system configuration, use Figure 43 on page 50 and Table 5 on page 50 to determine the point-to-point cabling for UPIC cables.

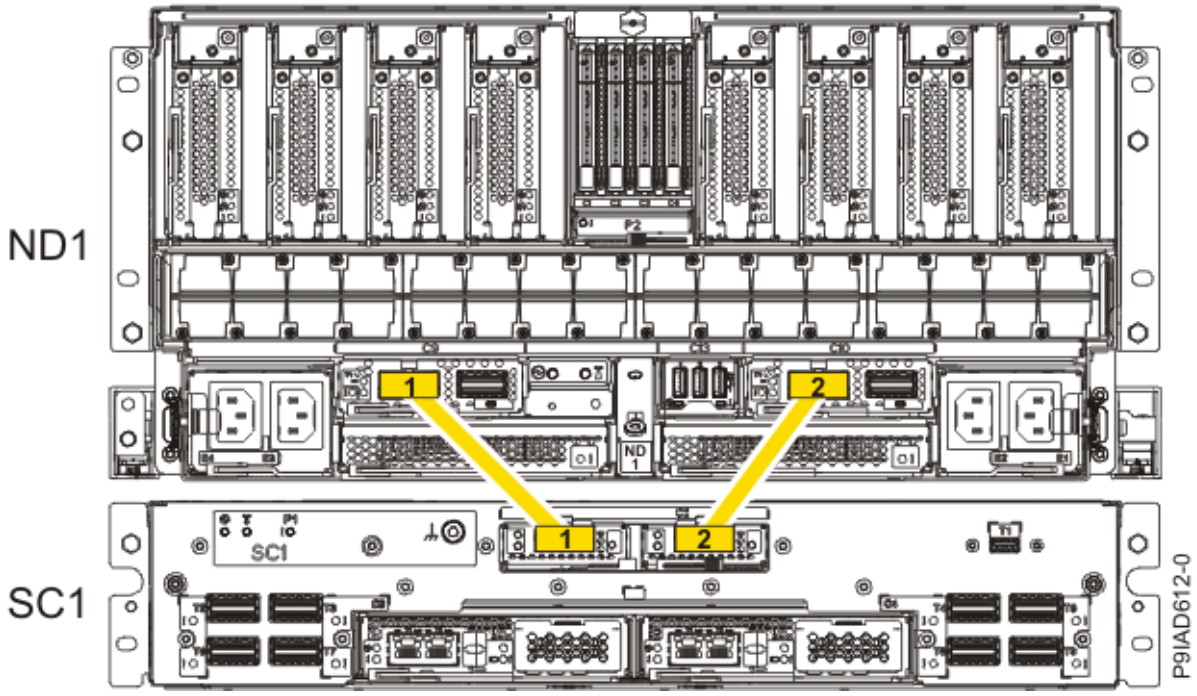


Figure 43. Single Node Configuration UPIC Cabling

Table 5. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

   - If you have a two, three, or four node system configuration, use Figure 44 on page 51 and Table 6 on page 51 to determine the point-to-point cabling for UPIC cables.

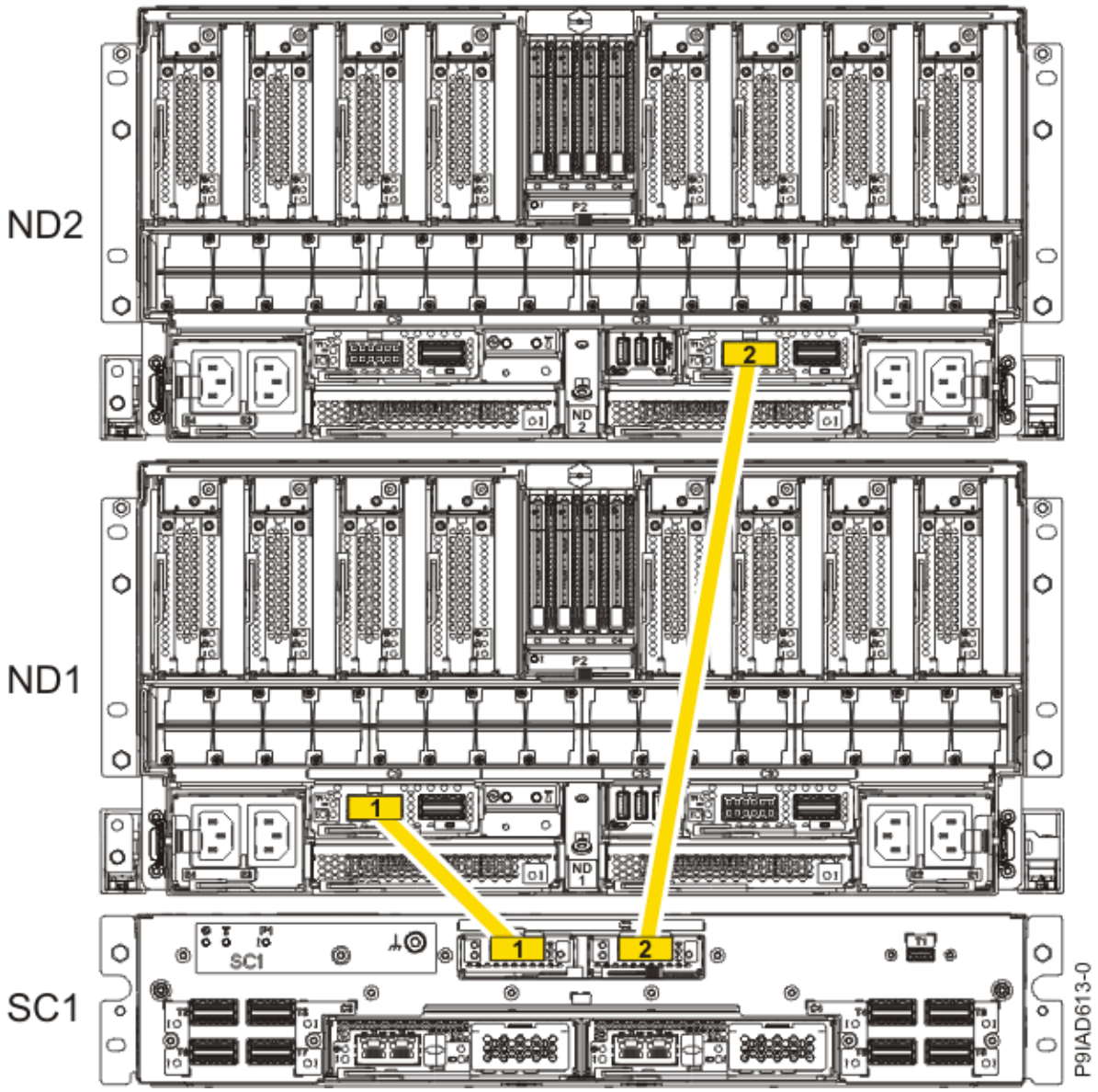


Figure 44. Two, Three, or Four Node Configuration UPIC Cabling

Table 6. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

3. To replace the UPIC cable in the system node, complete the following steps:
   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 node by inserting the cable into the connector until it locks into place, as shown in the following figure.

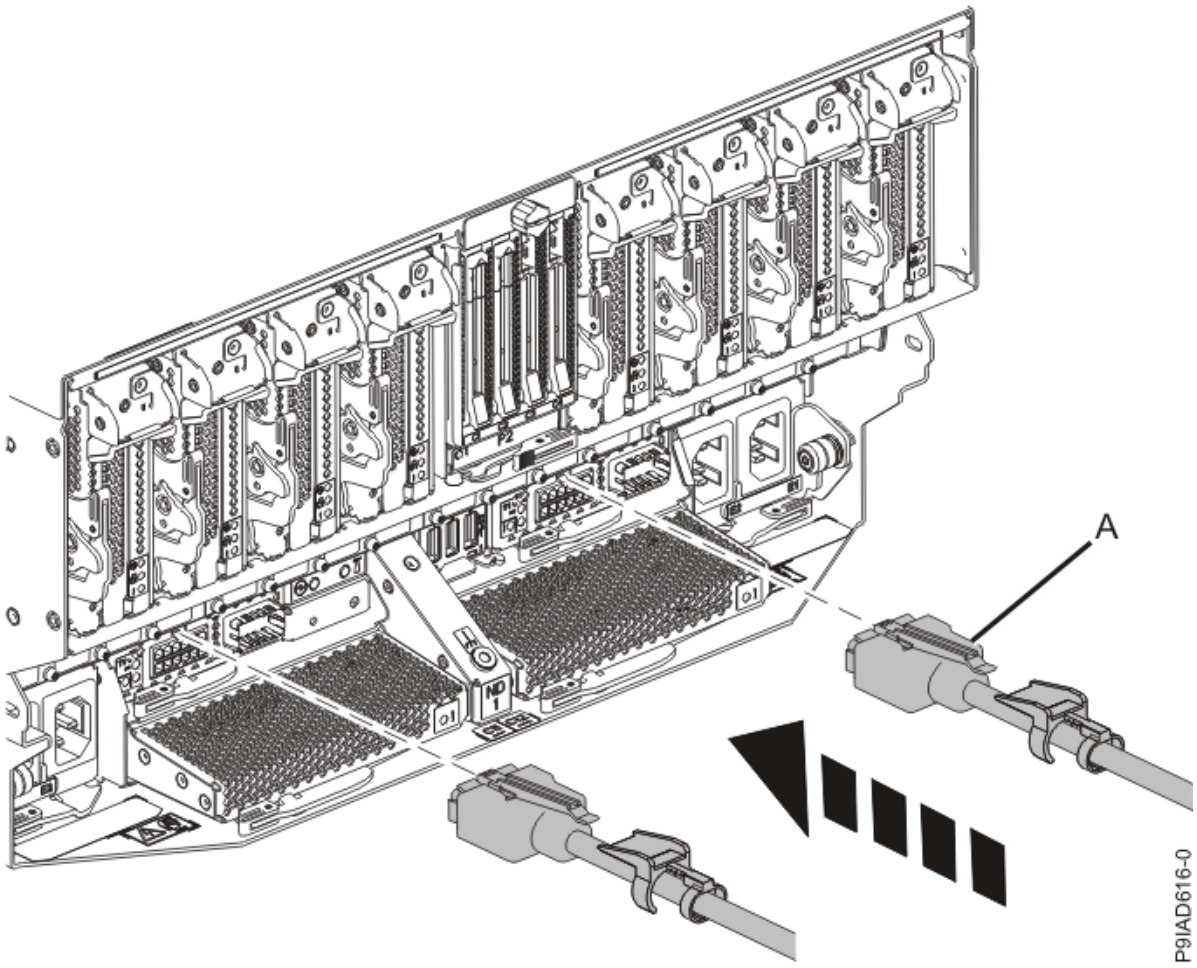


Figure 45. Replacing the UPIC cable into the system node

c. Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

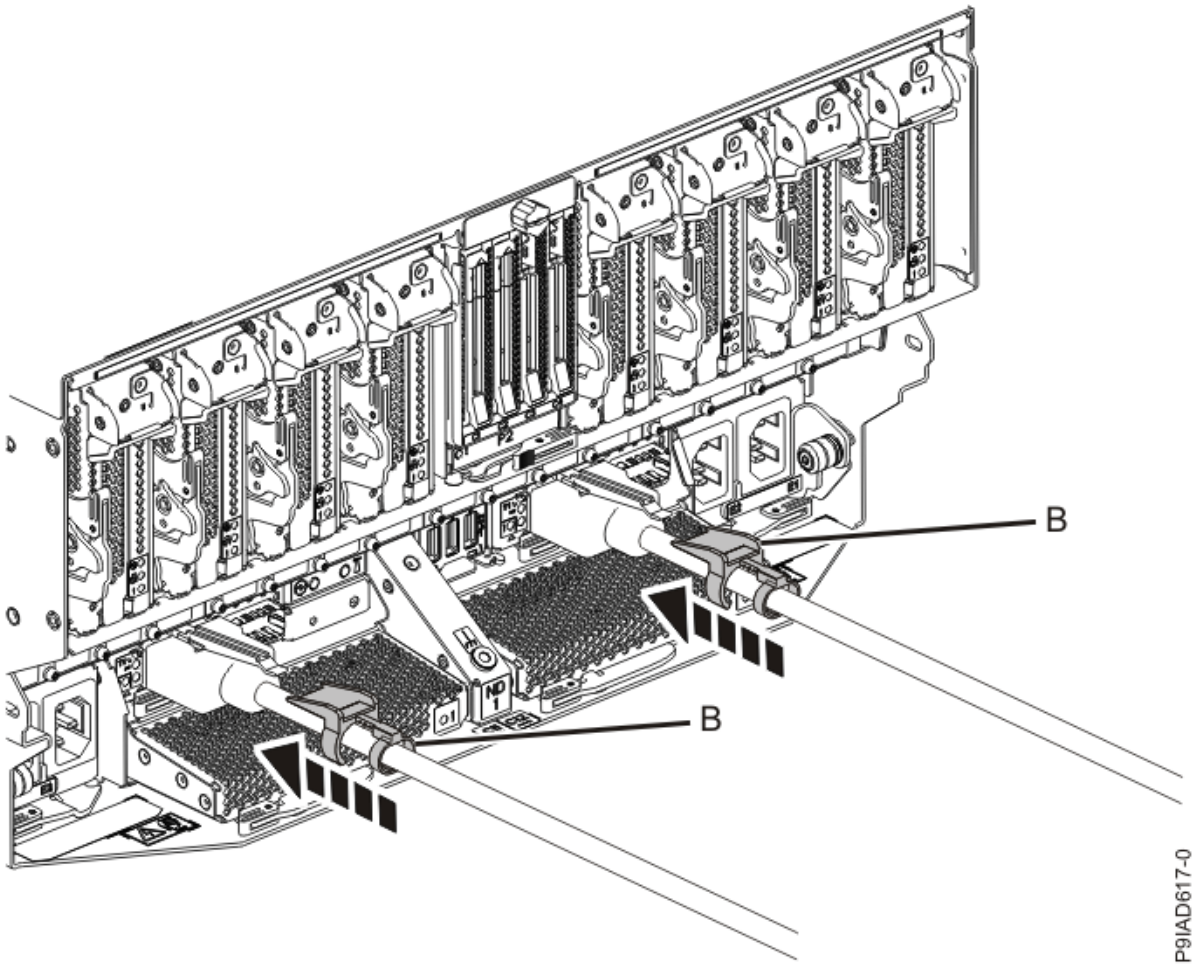


Figure 46. Replacing the UPIC cable into the system node

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.

4. To replace the UPIC cable in the system control unit, complete the following steps:

   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.

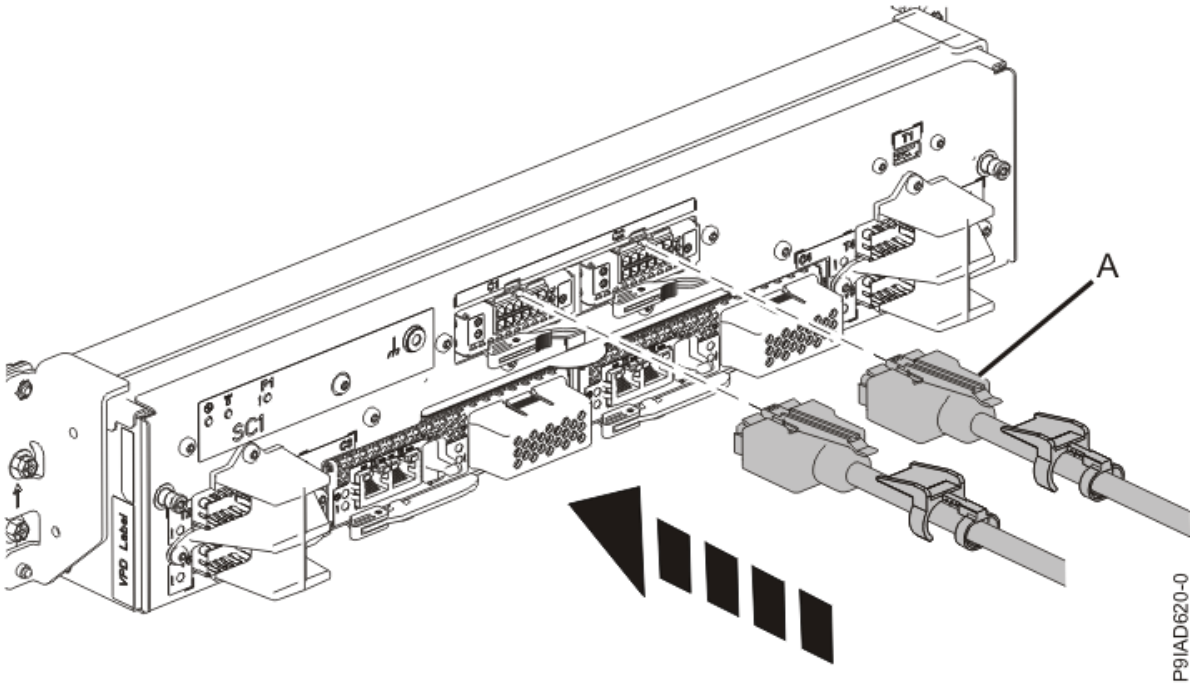


Figure 47. Replacing the UPIC cable into the system control unit

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

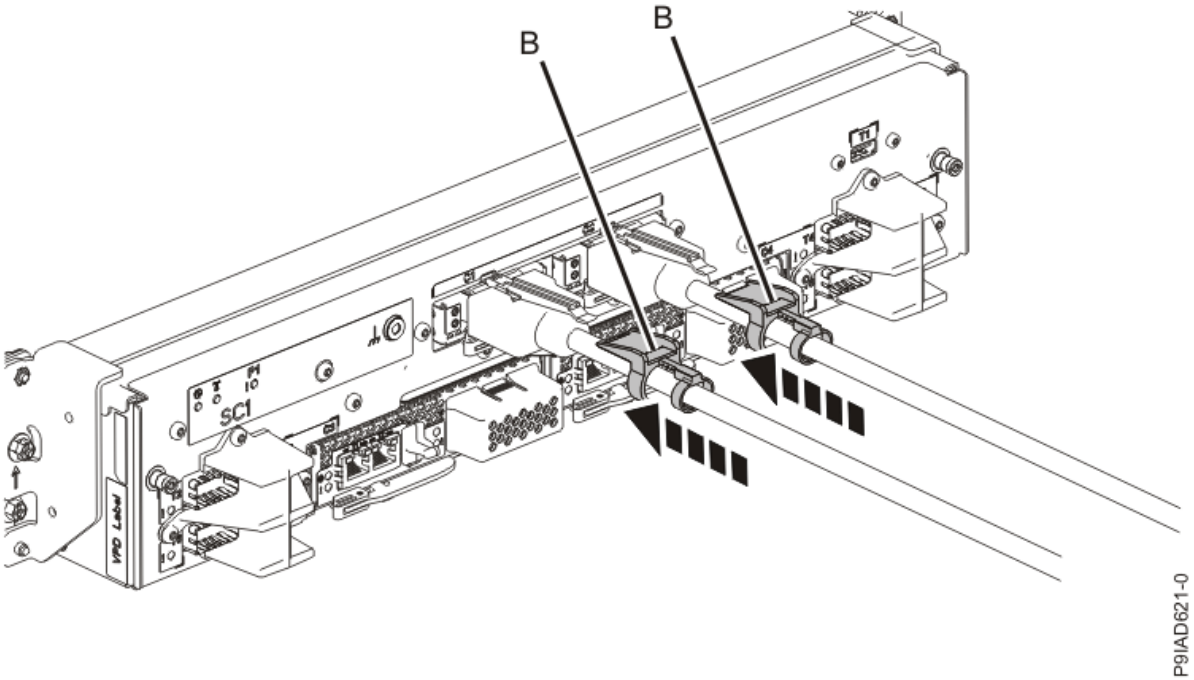


Figure 48. Replacing the UPIC cable into the system control unit

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.

5. If the system is powered off, repeat steps “3” on page 51 - “4” on page 53 until all the UPIC cables previously identified are reconnected.
6. If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

Preparing the 9080-M9S system for operation after removing and replacing a UPIC cable

To prepare the system for operation after removing or replacing a UPIC cable, 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. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
3. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.
4. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

   Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

   a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.
5. If you powered off the system, from the **Operation** list, select **FRU Level Activate**. Then, click **OK** to confirm the operation.
6. From the **Operation** list, select **Reset Identify LED**. Then, click **OK** to confirm the operation.

USB cable

Preparing the 9080-M9S system to remove and replace a USB cable

To prepare the system to remove and replace a USB cable, complete the steps in this procedure.

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.
   This action causes the blue server identify LED to turn on.
2. Use the blue LED to identify the server.
   Ensure that the serial number of the system matches the serial number to be serviced.
3. If you powered off the system, from the **Operation** list, select **FRU Level Deactivate**. Then, click **OK** to confirm the operation.
4. If you chose to complete this repair with the power off, label and disconnect both UPIC cables from the system control unit as shown in the following figure.
   UPIC cable locations are P1-C1-T1 and P1-C2-T1.
   a. Remove the white plastic lock **(A)** from the plug housing.

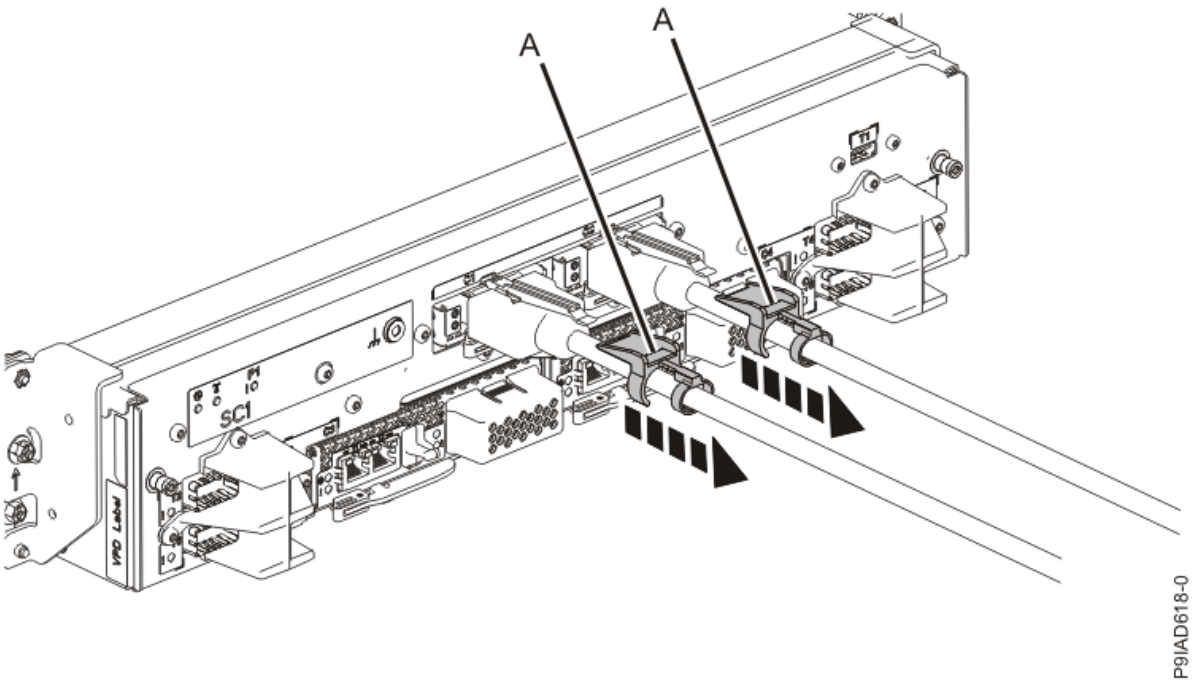


Figure 49. Removing the UPIC cable lock

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

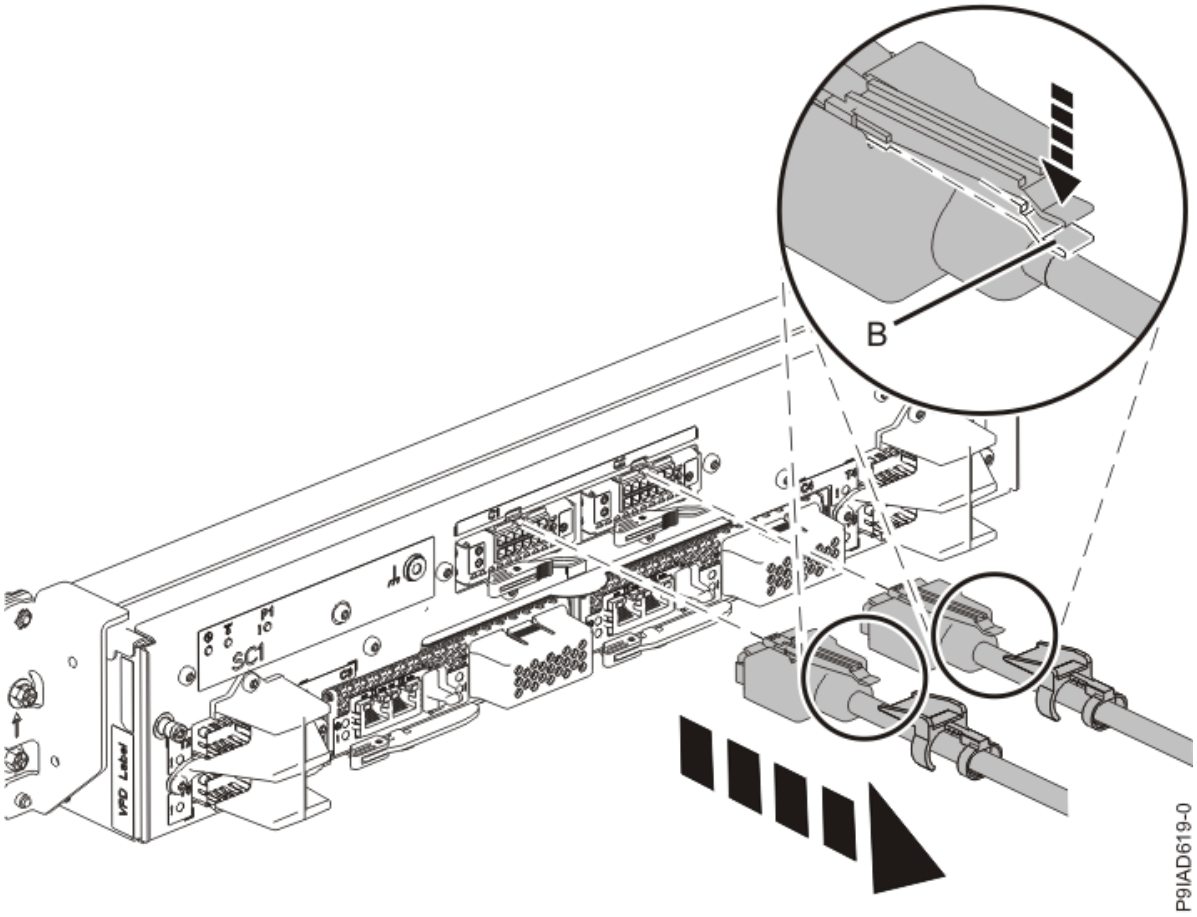


Figure 50. Removing the UPIC cable from the system control unit

5. 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.

Removing a USB cable in the 9080-M9S system

To remove a USB cable from 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. Identify and label where each end of a USB cable is connected to the system node and system control unit.
3. Remove the USB cable from the system node as shown in the following figure.

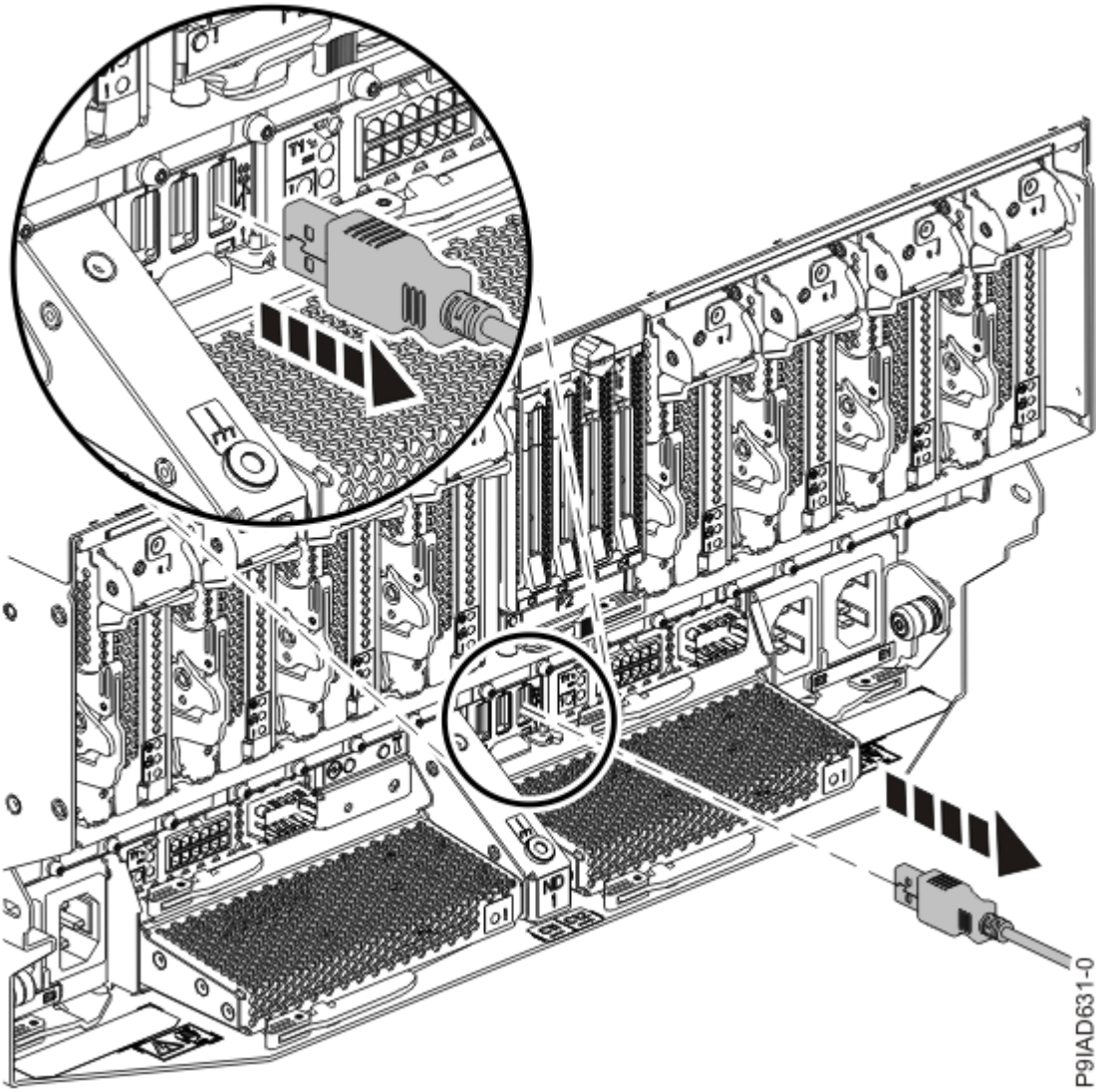


Figure 51. Removing the USB cable from the system node

4. Remove the USB cable from the system control unit, as shown in the following figure.

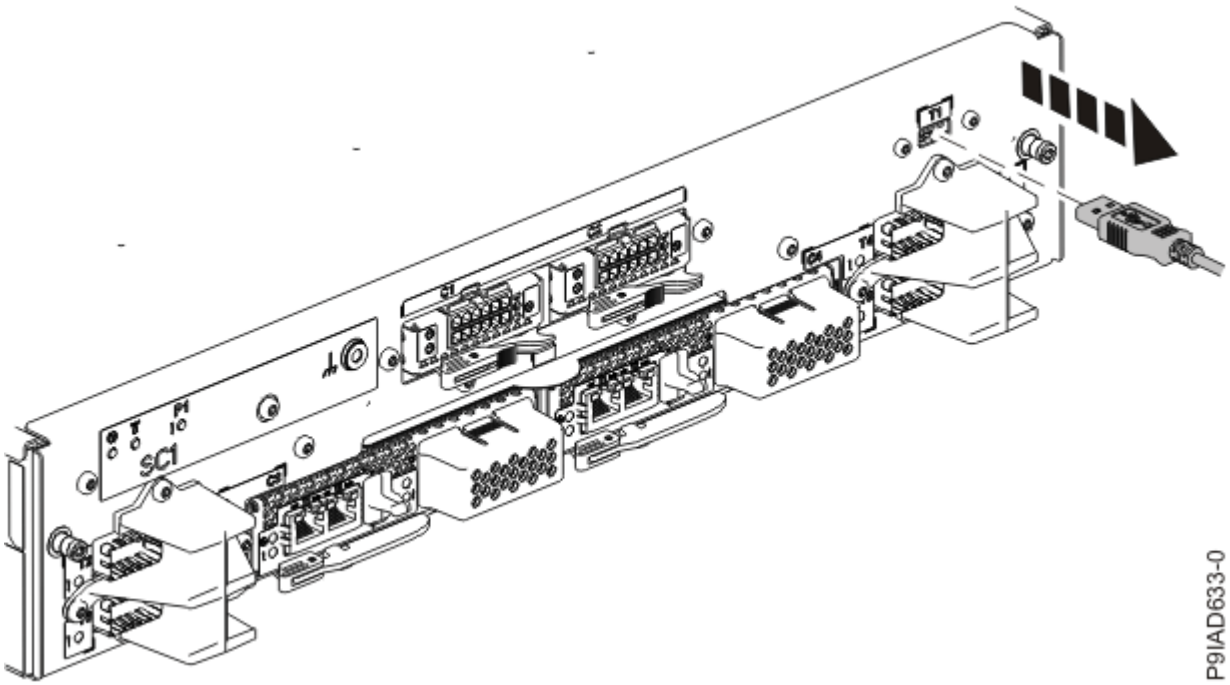


Figure 52. Removing the UPIC cable from the system control unit

Replacing a USB cable in the 9080-M9S system

To replace a USB cable in 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. Refer to the following figure and table to determine the point-to-point cabling for the USB cable.

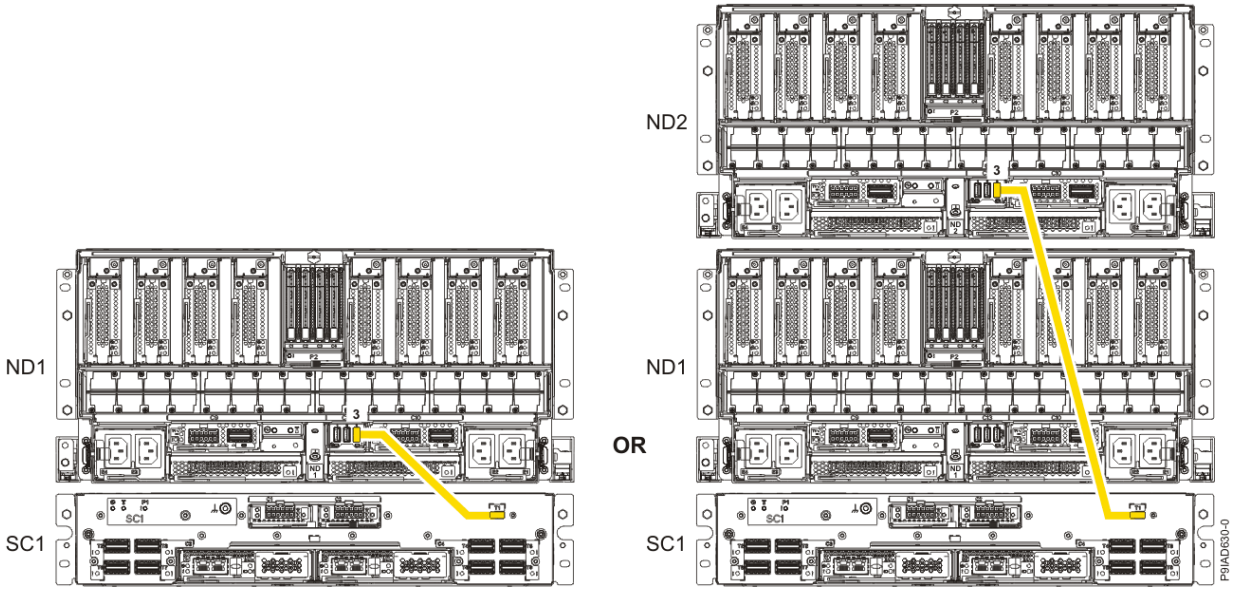


Figure 53. USB Cabling

Table 7. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

3. Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

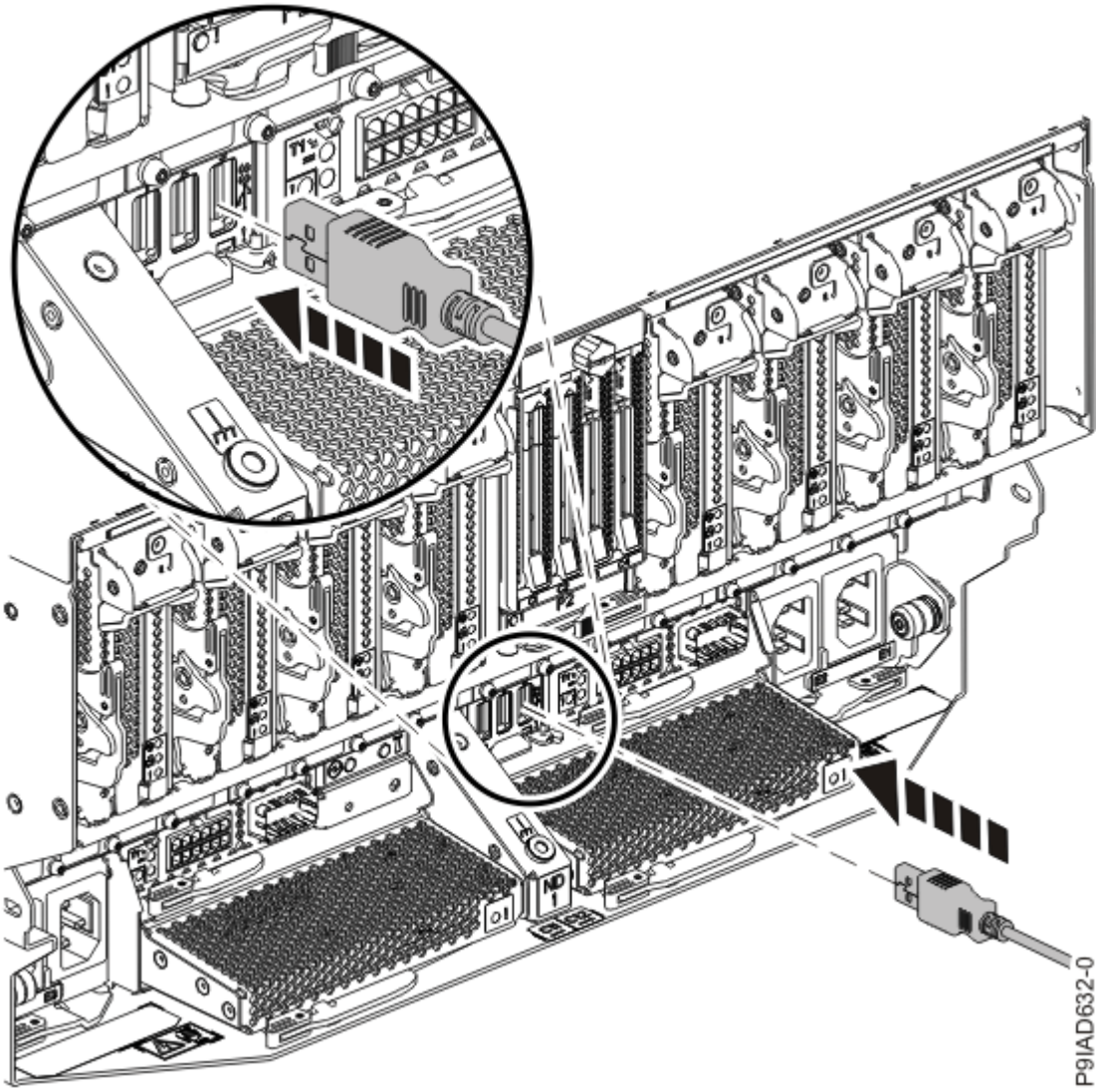


Figure 54. Replacing the USB cable into the system node

4. Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

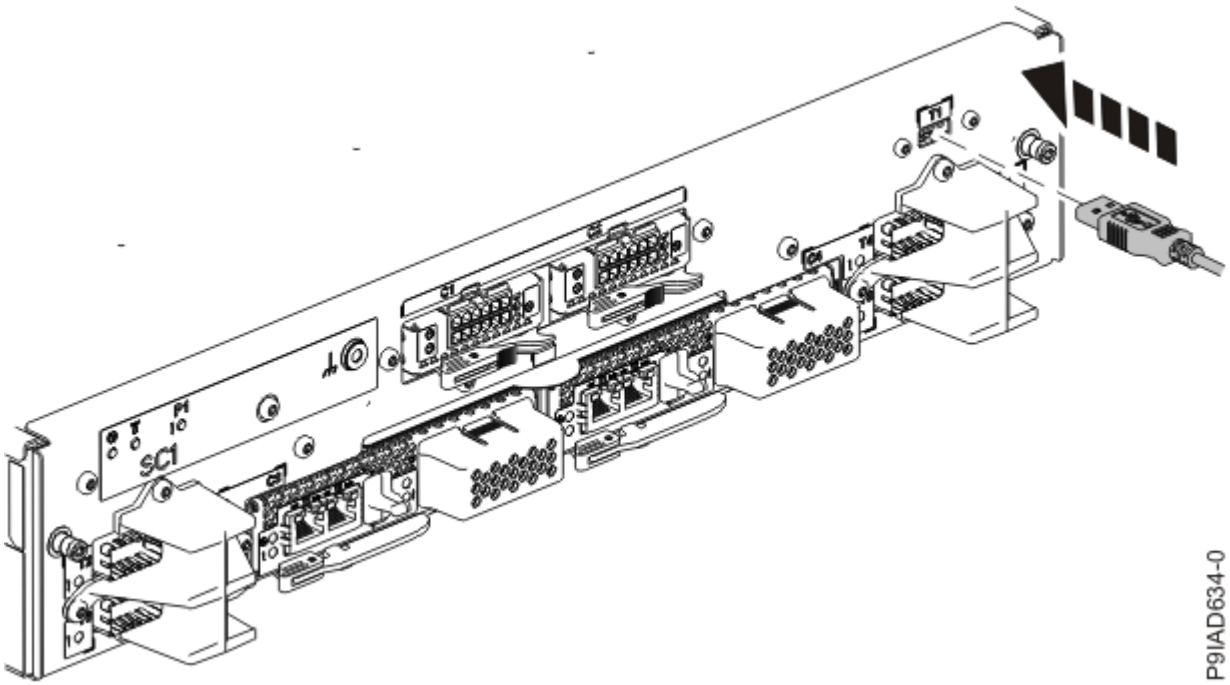


Figure 55. Replacing the USB cable into the system control unit

Preparing the 9080-M9S system for operation after removing and replacing a USB cable

To prepare the system for operation after removing or replacing a USB cable, 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. If you chose to complete 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.

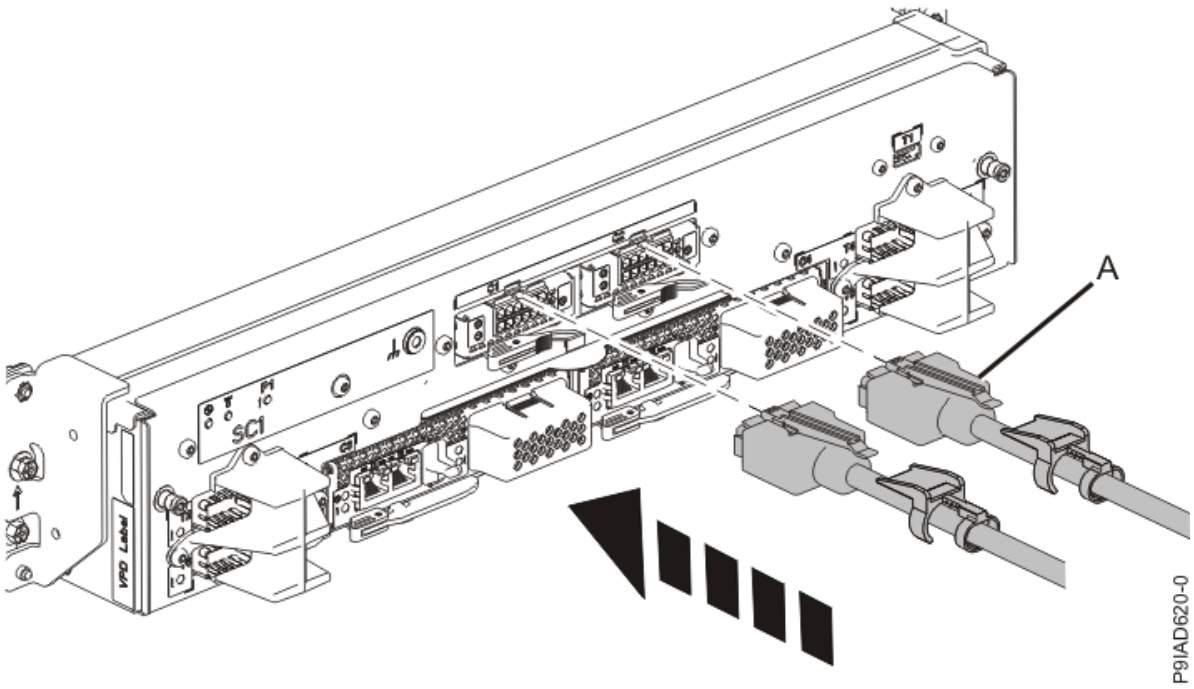


Figure 56. Replacing the UPIC cable into the system control unit

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

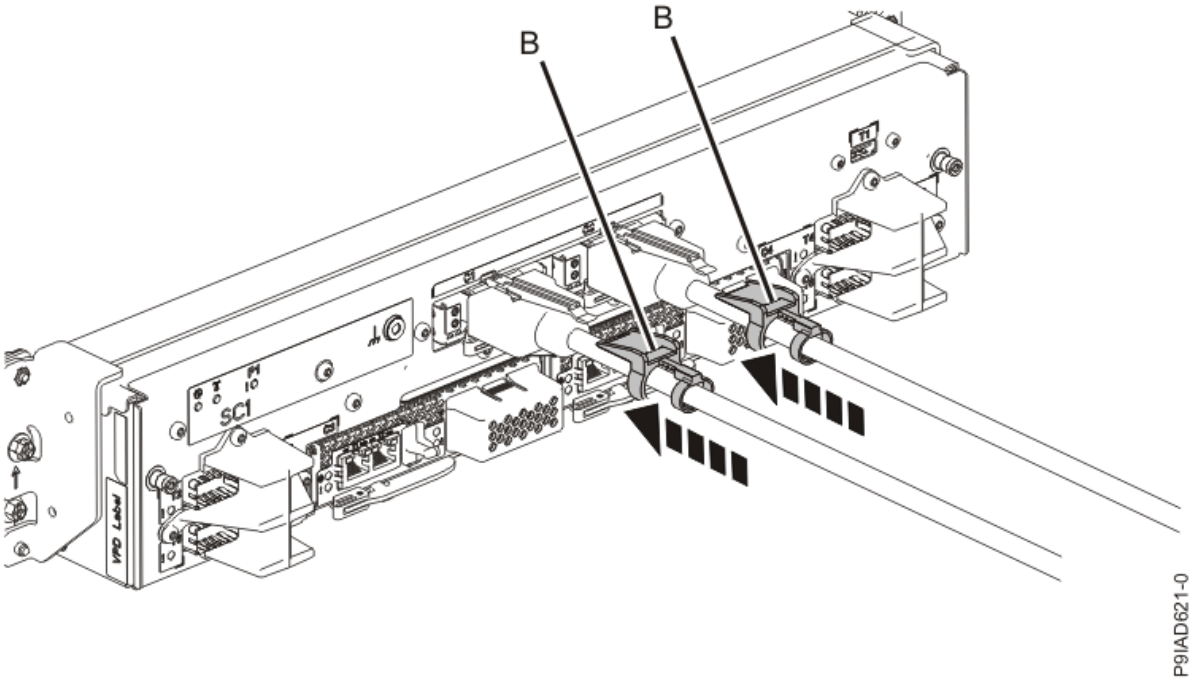


Figure 57. Replacing the UPIC cable into the system control unit

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.

3. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

5. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

6. If you powered off the system, from the **Operation** list, select **FRU Level Activate**. Then, click **OK** to confirm the operation.
7. From the **Operation** list, select **Reset Identify LED**. Then, click **OK** to confirm the operation.

Clock and control card

Preparing the 9080-M9S system to remove and replace the clock and control card

To prepare the system to remove and replace a clock and control card, complete the steps in this procedure.

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.

   This action causes the identify LED for the faulty part to turn on, and causes the blue system ID LED to turn on.
2. Open the rear rack door, if necessary.
3. Use the blue LED to identify the server.

   Ensure that the serial number of the system matches the serial number to be serviced.
4. Check that an amber identify LED is flashing for one of the clock and control cards as shown in the following figure.

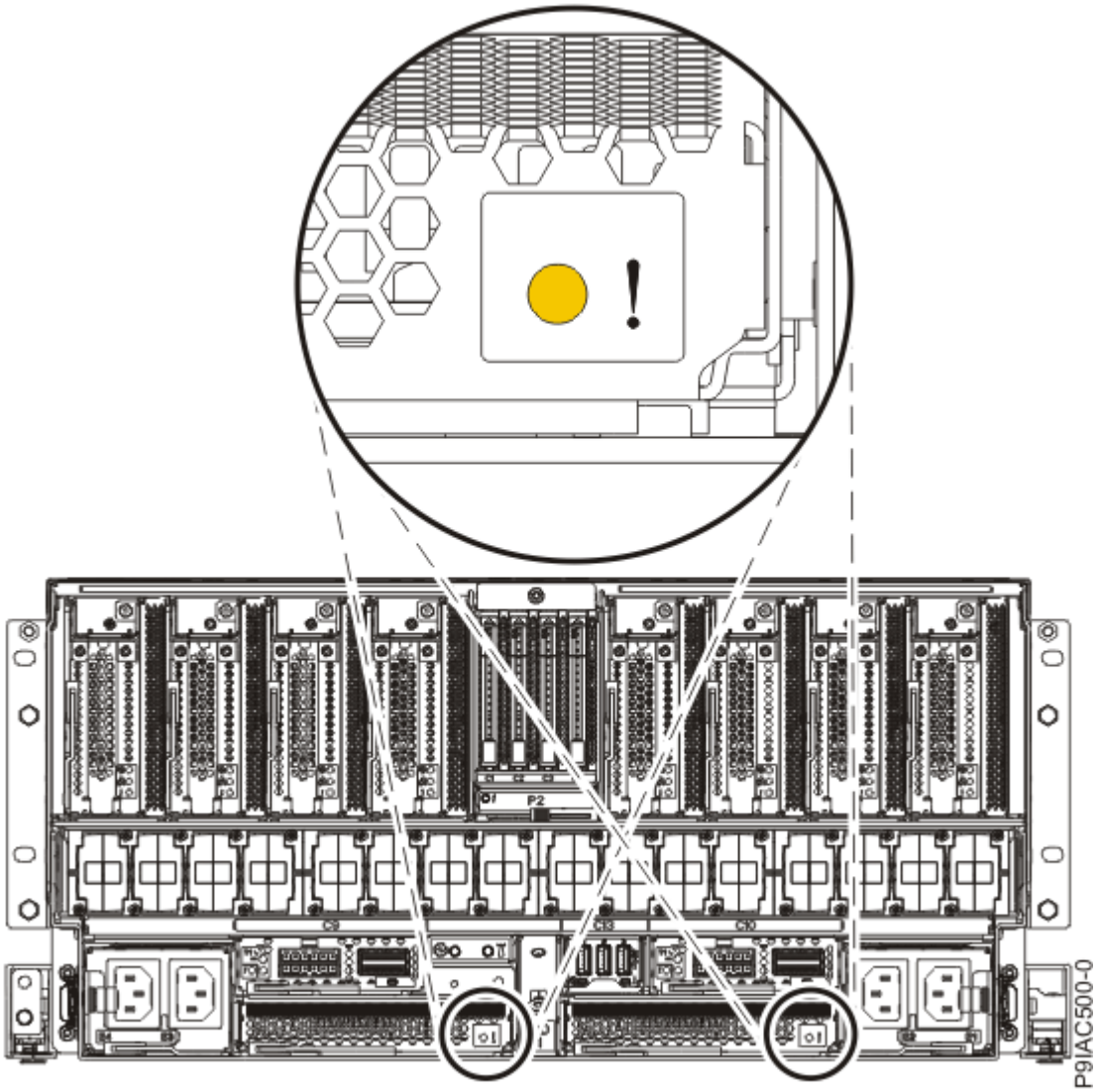


Figure 58. Identify LEDs for the clock and control cards

5. 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.

6. 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.

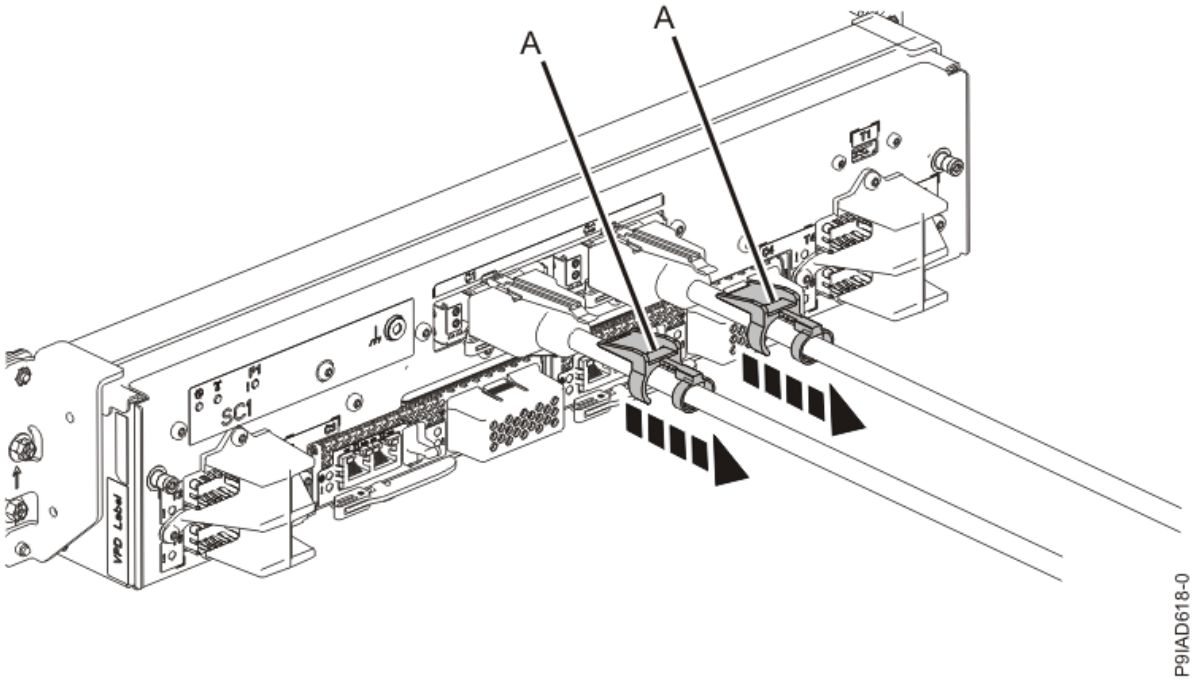


Figure 59. Removing the UPIC cable lock

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

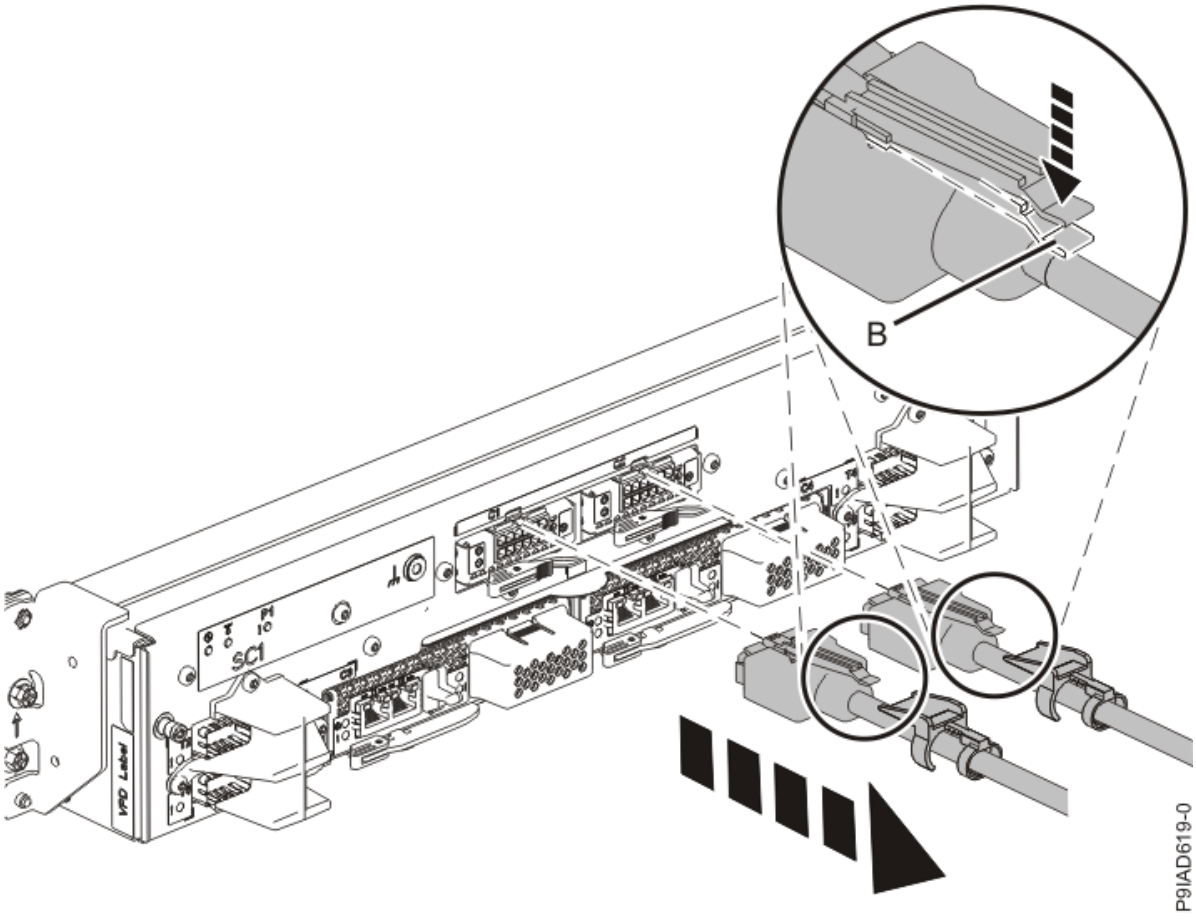


Figure 60. Removing the UPIC cable from the system control unit

7. Place your fingers on the indentations located on both sides of the cover **(A)** and pull the cover away from the system as shown in the following figure.

CAUTION: The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

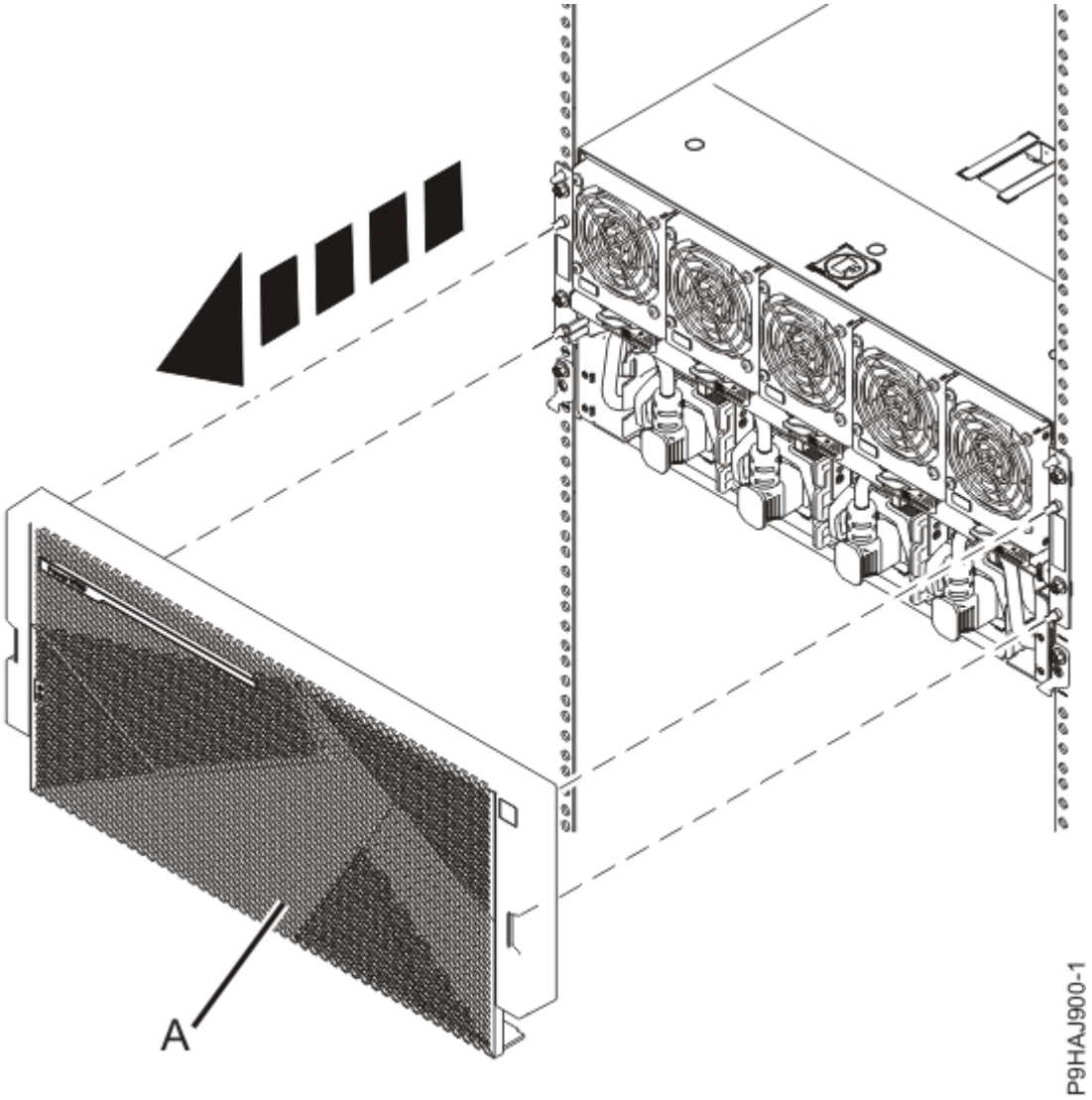


Figure 61. Removing the front cover

8. Disconnect all of the front power cords that plug into the power supplies of the system node that is being serviced.

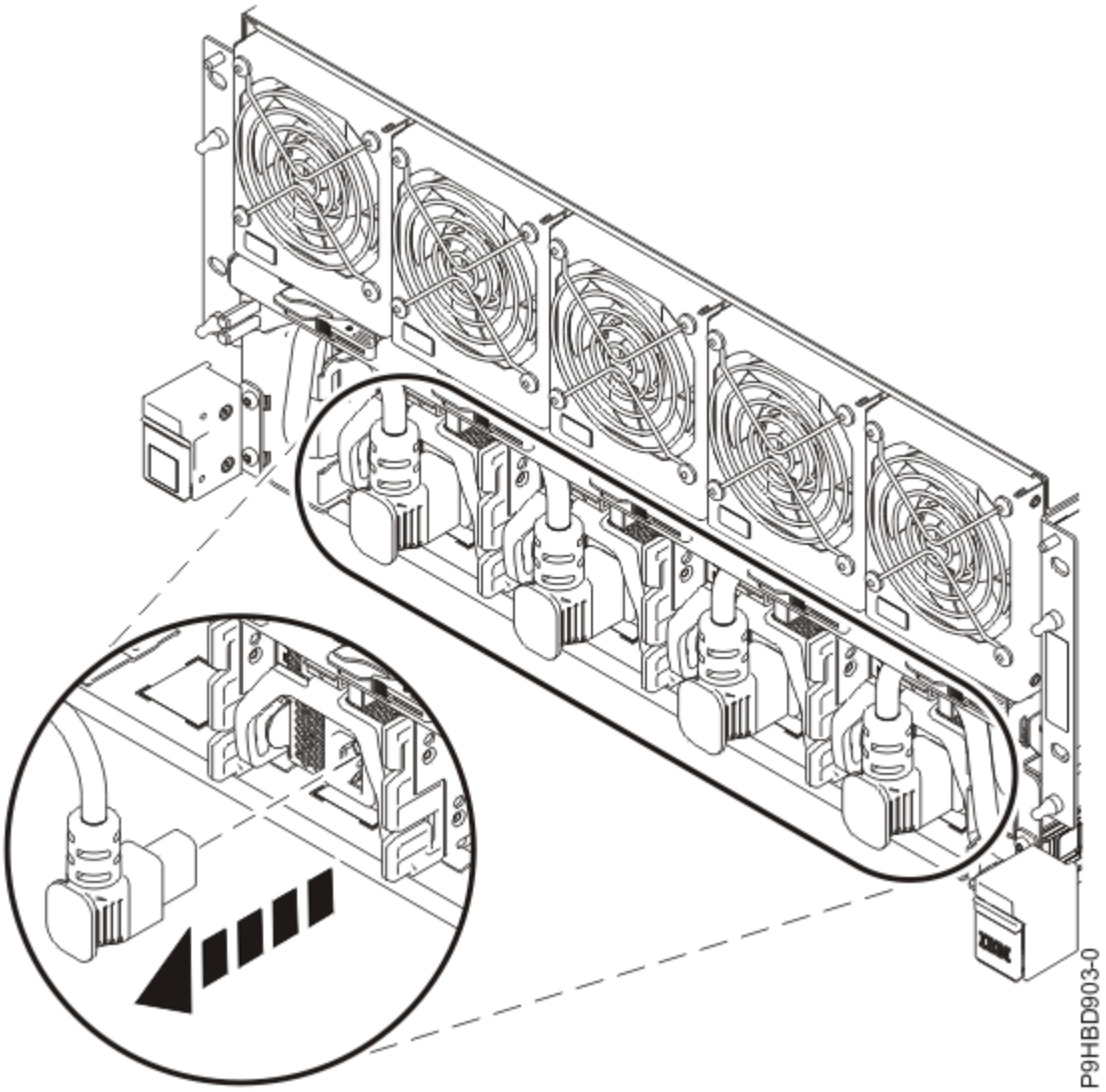


Figure 62. Removing the front power cords

Removing the clock and control card from the 9080-M9S system

To remove the clock and control card from 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. To remove a clock and control card, complete the following steps:
   a) For the clock and control card that has the amber LED on, pull the blue clock and control card handle latch **(A)** to the right as shown in the following figure.
   b) Hold on to the clock and control card handle and by using your hand to support the bottom of the clock and control card, pull out the clock and control card from its slot as shown in the following figure.

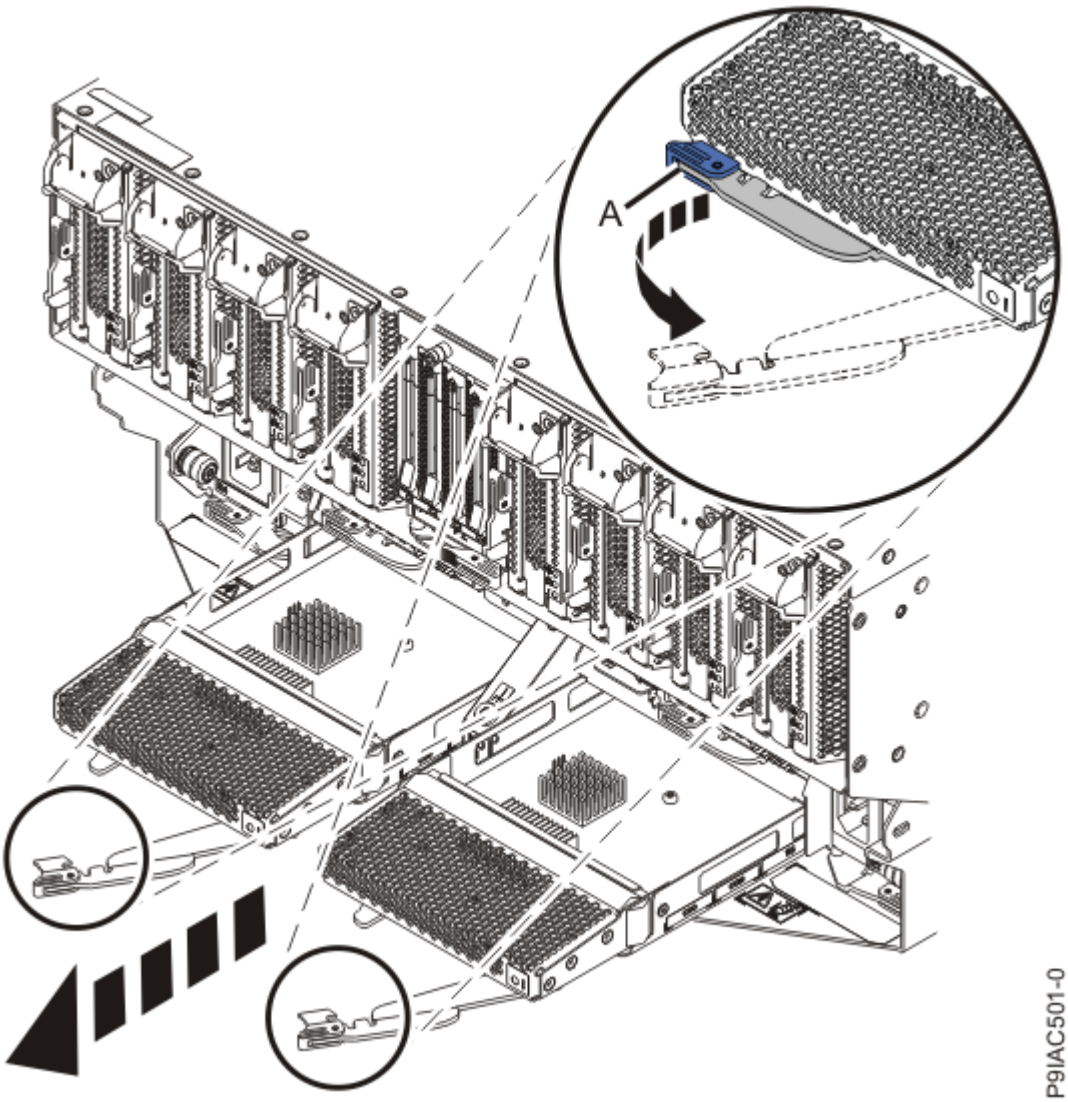


Figure 63. Removing a clock and control card from the system

Replacing the clock and control card in the 9080-M9S system

To replace the clock and control card in 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. To replace a clock and control card, complete the following steps:
   a) Ensure that the clock and control card handle **(A)** is open as shown in the following figure.
   b) Hold on to the clock and control card handle and by using your hand to support the bottom of the clock and control card, push the clock and control card into its slot as shown in the following figure.
   c) Rotate the handle to the left in the direction shown in the following figure to lock the clock and control card into the system.

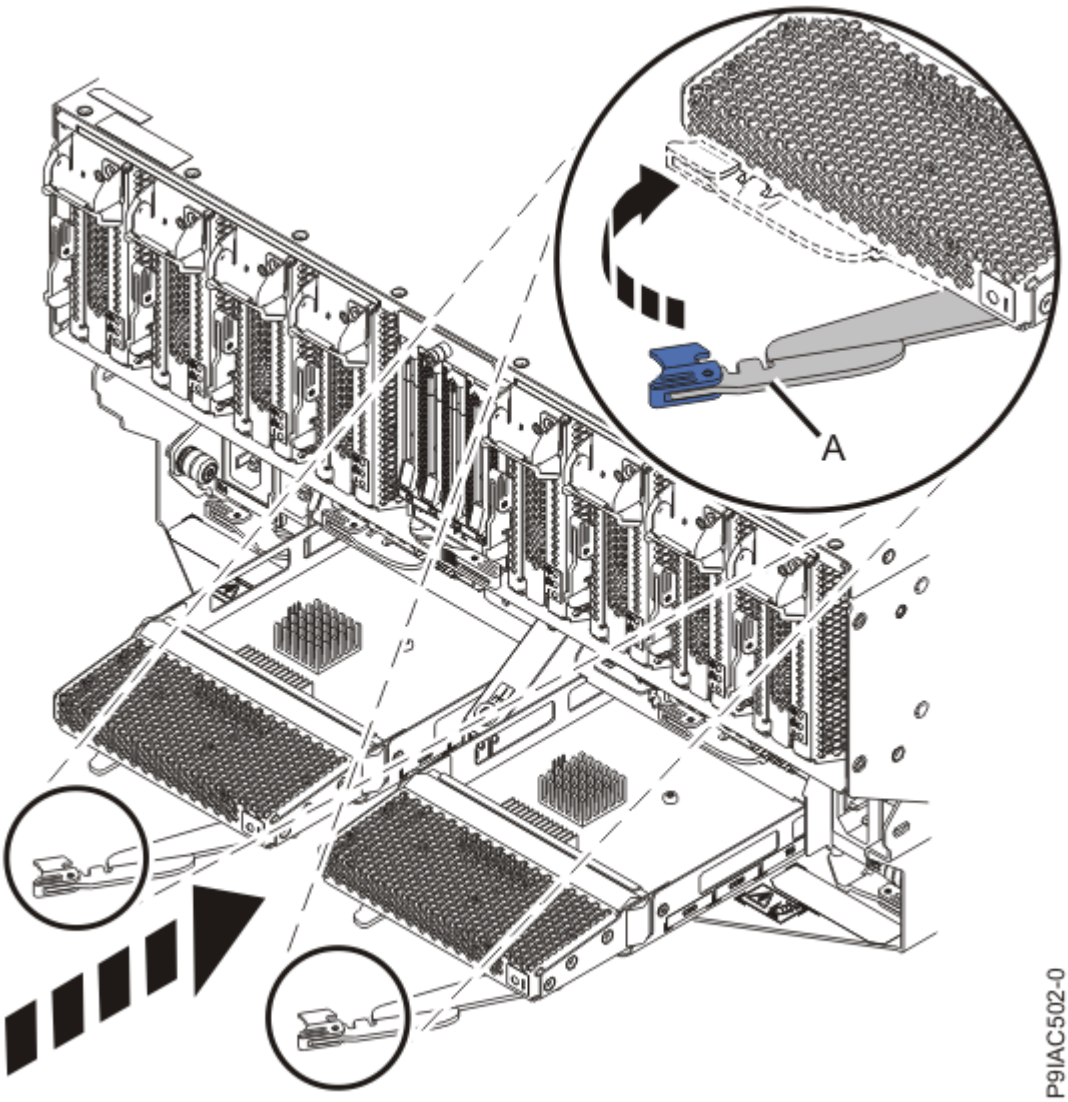


Figure 64. Replacing a clock and control card in the system

Preparing the 9080-M9S system for operation after removing and replacing the clock and control card

To prepare the system for operation after removing or replacing the clock and control card, 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. Connect all of the front power cords that plug into the power supplies of the system node.

   Tuck the cords into the chassis.

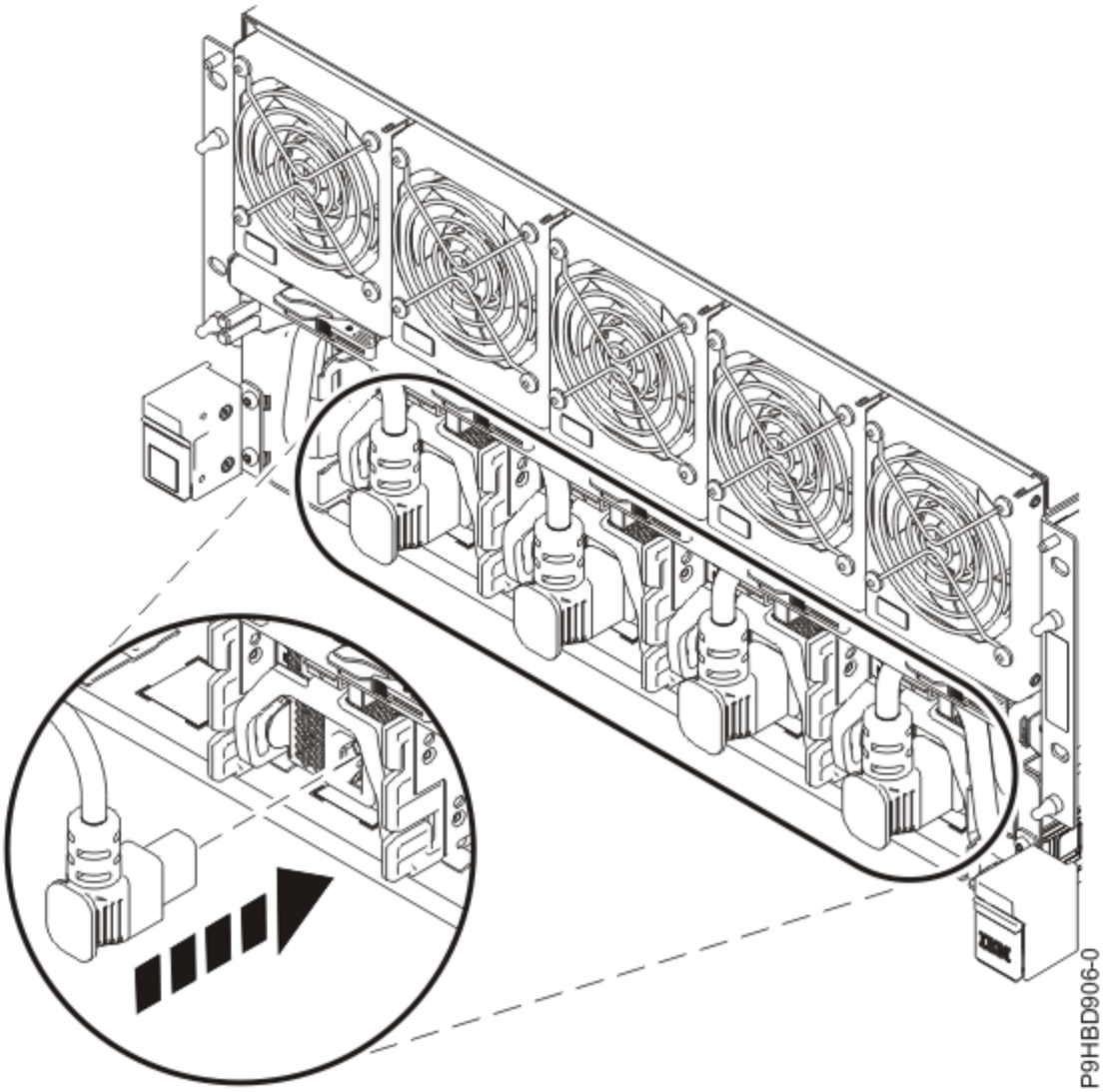


Figure 65. Connecting the front power cords

3. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

   Press the front cover into position.

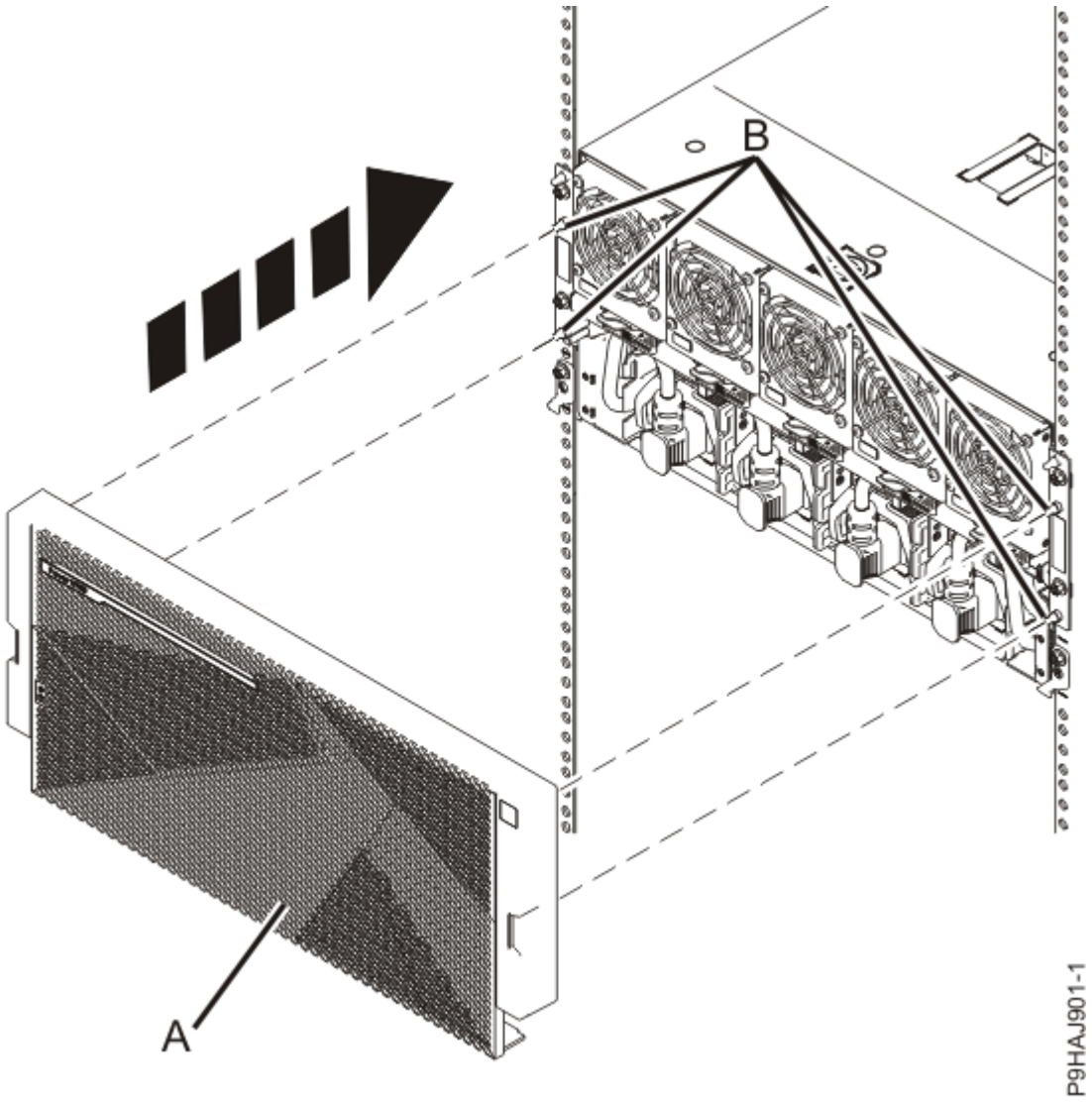


Figure 66. Installing the front cover

4. If you chose to complete 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.

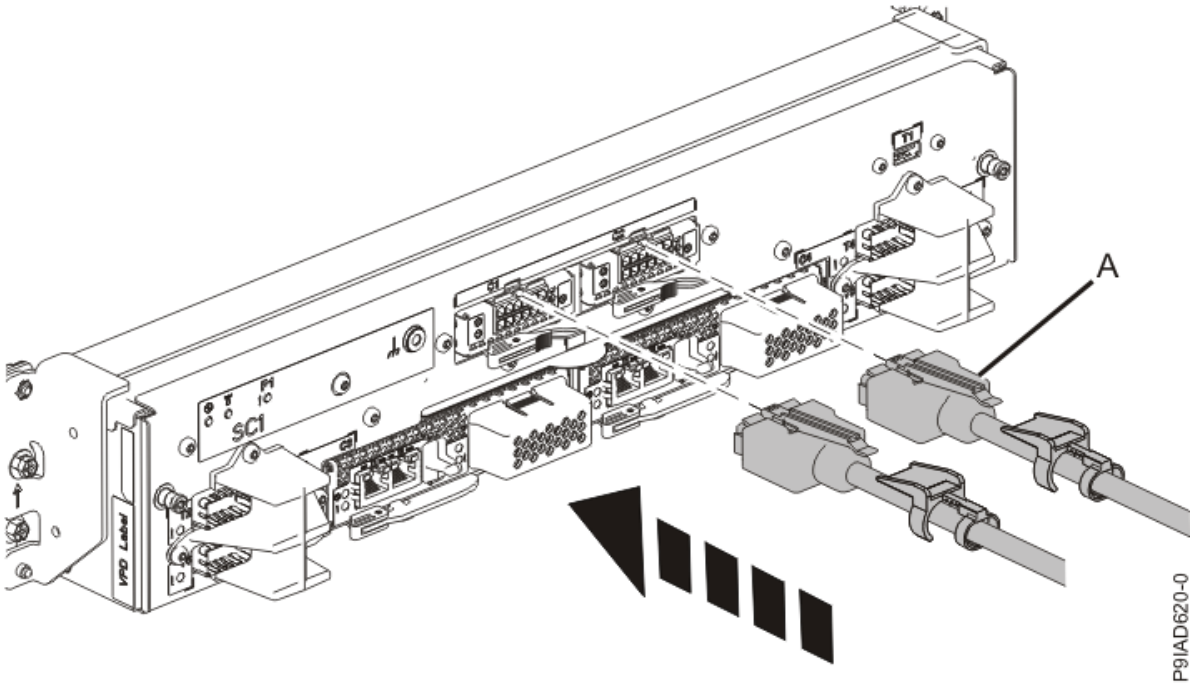


Figure 67. Replacing the UPIC cable into the system control unit

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

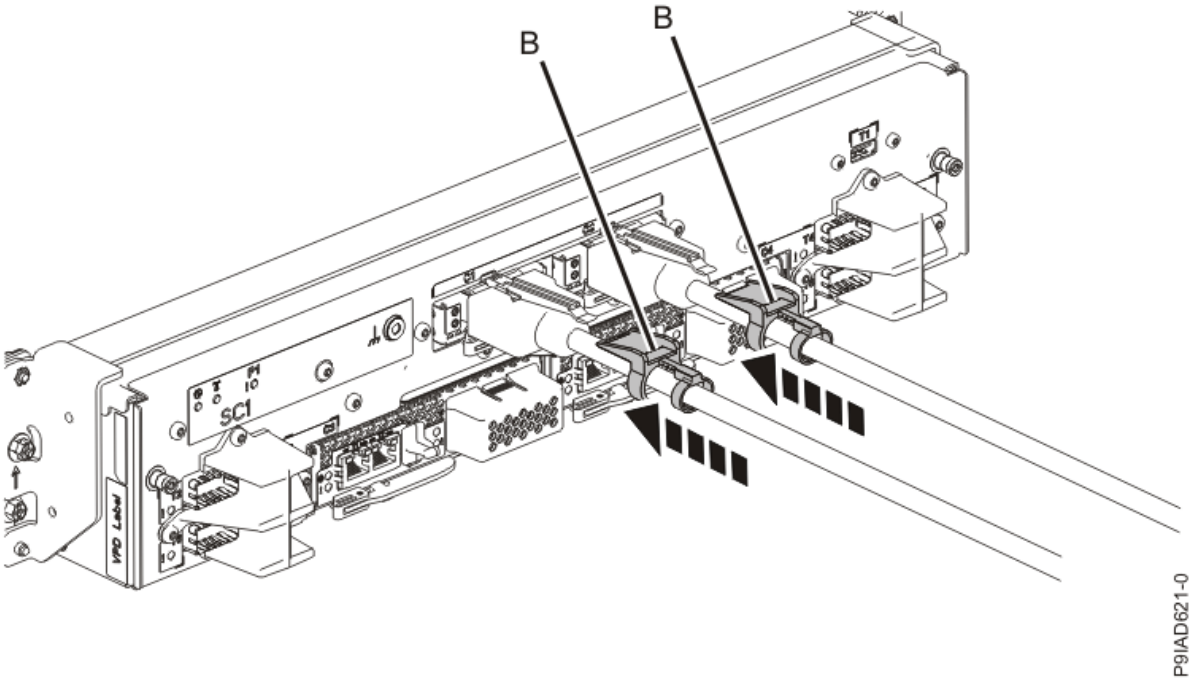


Figure 68. Replacing the UPIC cable into the system control unit

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.

5. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
6. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

7. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

8. From the **Operation** list, select **Reset Identify LED**. Then, click **OK** to confirm the operation.

Concurrent maintenance circuit card

Removing the concurrent maintenance circuit card from the 9080-M9S system node

To remove the concurrent maintenance circuit card, 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 concurrent maintenance circuit card.
   a) Unlock the levers **(A)** to release the concurrent maintenance circuit card from its connector. Refer to the following image.
   b) Rotate the levers in the direction shown.
   c) While holding the concurrent maintenance circuit card by its levers, pull upward to remove the card from its slot.

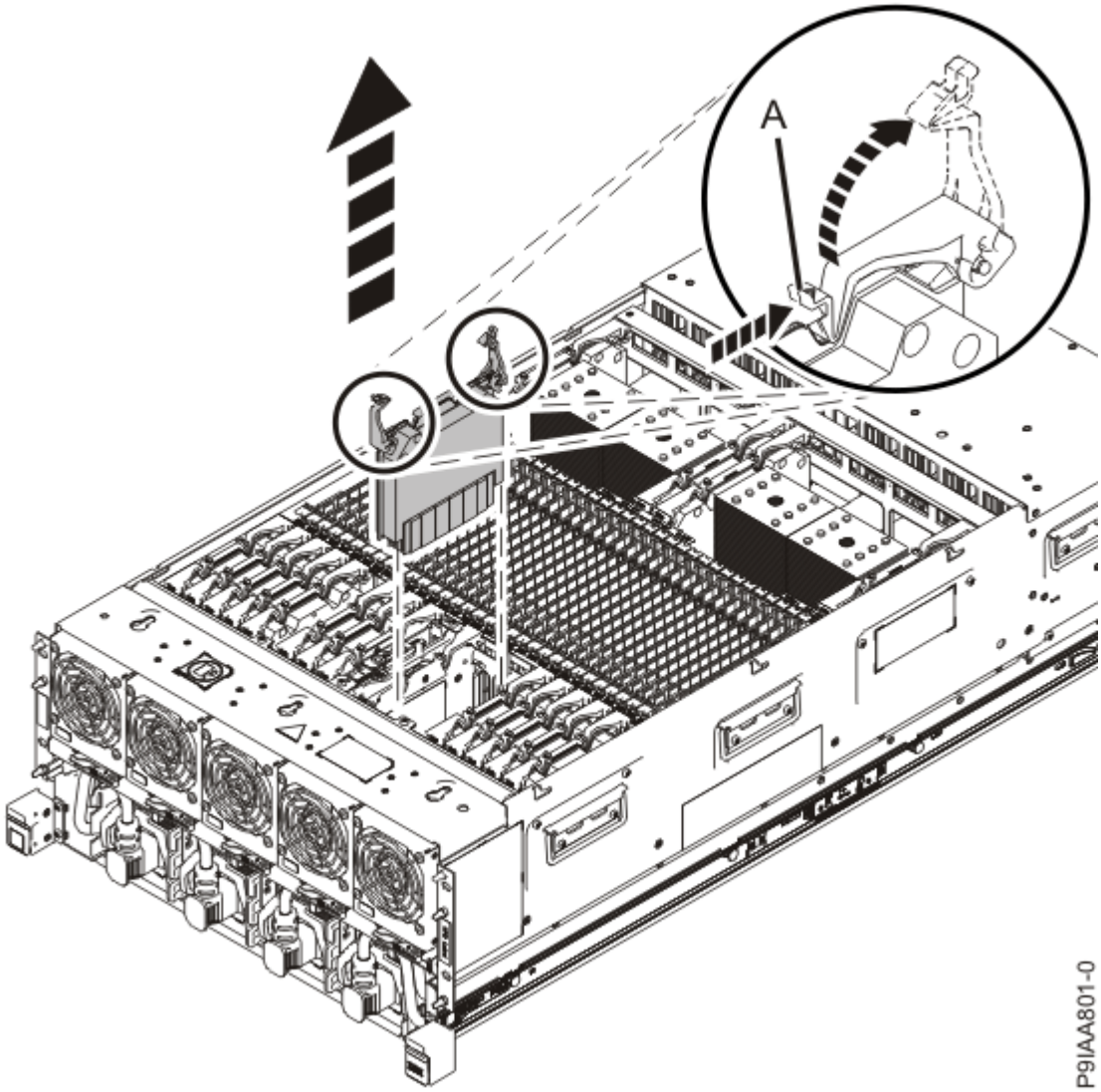


Figure 69. Removing the concurrent maintenance circuit card

Replacing the concurrent maintenance circuit card in the 9080-M9S system node

To replace the concurrent maintenance circuit card, 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. Replace the concurrent maintenance circuit card.
   a) With the levers **(A)** in the open position, hold the concurrent maintenance circuit card by the levers and lower the card into its slot in the system. Refer to the following image.
   b) Gently push the concurrent maintenance circuit card into its connector.
   c) Rotate the levers in the direction shown and press down on the latches to secure the card in its slot.

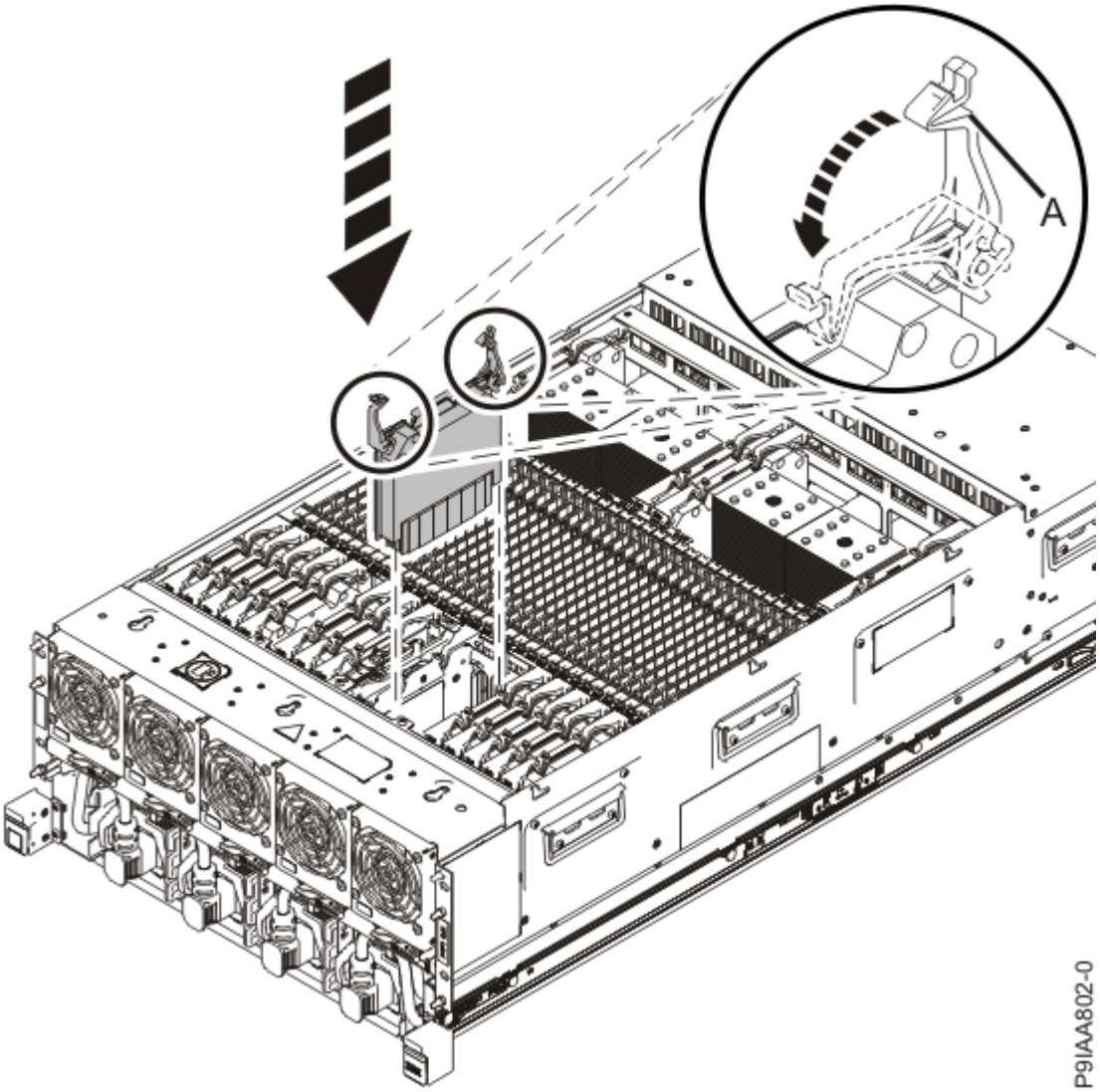


Figure 70. Replacing the concurrent maintenance circuit card

Control panel

Preparing the 9080-M9S system to remove and replace the control panel

To prepare the system to remove and replace a control panel, complete the steps in this procedure.

Procedure

1. If a USB device is connected to the USB port on the front of the system control unit, ensure that the USB device is not being used. Label and remove the USB cable.
2. 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.

Removing the control panel from the 9080-M9S system

To remove a control panel, 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. Access the Advanced System Management Interface (ASMI).

   Attention: During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.
3. In the navigation area, select **Concurrent maintenance** > **Control Panel**.
4. In the Control Panel window, select the **Remove** action and press **Continue**.
5. Verify that the location code C5 for the control panel is selected and then click **Save Settings**.
6. If the operation was successful, the window displays **Operation completed successfully**. You can then remove the control panel.
7. To remove the control panel, complete the following steps:
   a) Put your thumb against the front of the latch **(A)** as shown in the following figure, and put your index finger against the rear of the latch **(B)**.
   b) Push against the latch with your thumb and then pull the latch out with your index finger. This action releases the latch.

c) Rotate the control panel handle in the direction shown in the following figure to unlock the control panel from its slot.

d) Hold onto the control panel handle and by using your hand to support the bottom of the control panel, pull out the control panel from its slot as shown in the following figure.

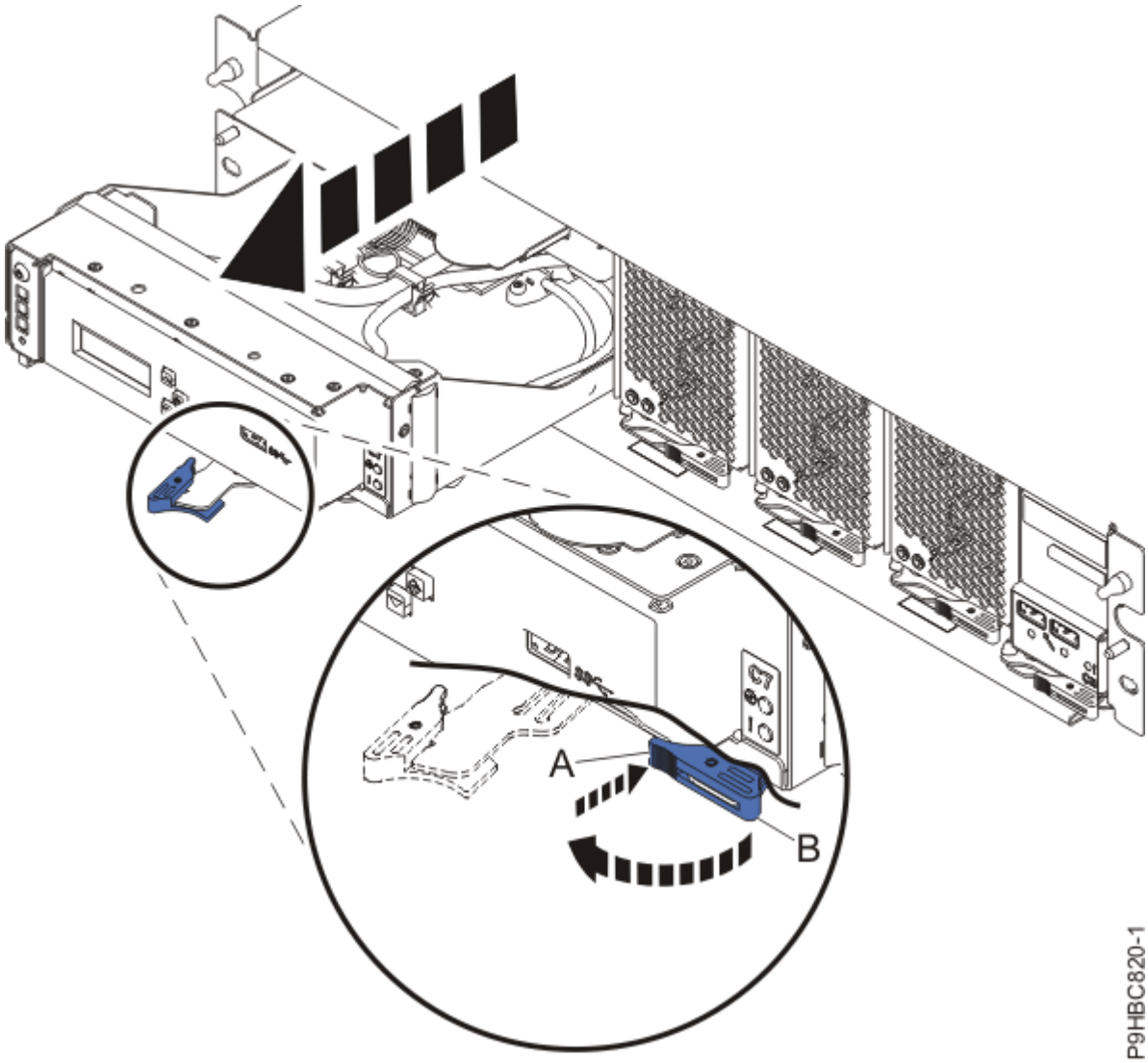


Figure 71. Removing the control panel

Replacing the control panel in the 9080-M9S system

To replace a control panel, 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. Access the Advanced System Management Interface (ASMI).

   Attention: During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.
3. To replace the control panel, complete the following steps:

   a) Ensure that the control panel handle **(A)** is open as shown in the following figure.

b) Hold onto the control panel handle. Using your other hand to support the bottom of the control panel, push the control panel into its slot as shown in the following figure.

c) Push the control panel handle in the direction that is shown in the following figure.

d) Push against the front of the latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.

e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

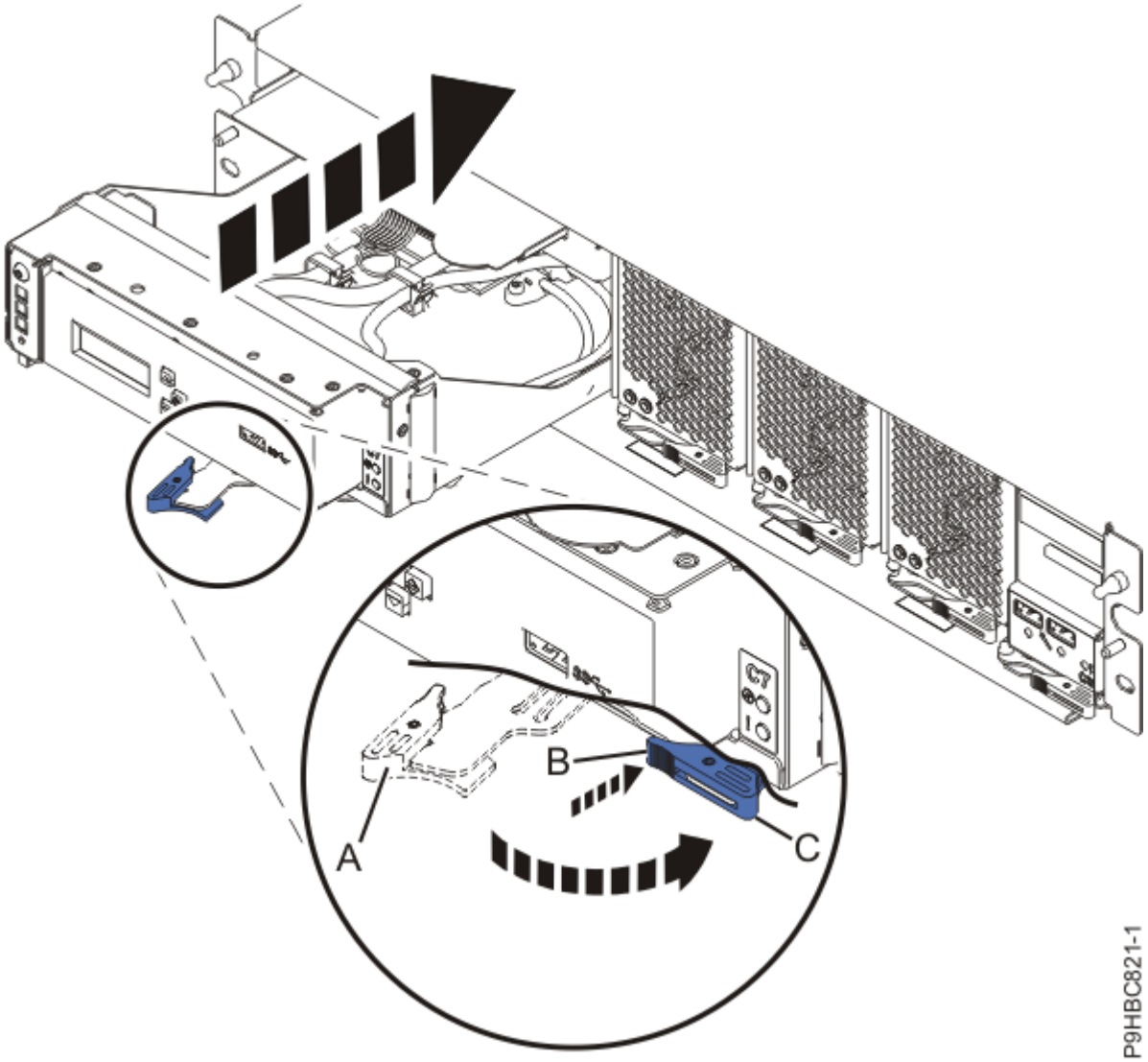


Figure 72. Replacing the control panel

4. In the navigation area, select **Concurrent maintenance** > **Control Panel**.
5. In the ASMI Control Panel window, select the **Install** action and press **Continue**.
6. Verify that the location code C5 for the control panel is selected and then click **Save Settings**.
7. In the ASMI Control Panel window, press **Continue**.

Preparing the 9080-M9S system for operation after removing and replacing the control panel

To prepare the system for operation after removing and replacing a control panel, 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. Position the cover **(A)** on the front of the system control unit as shown in the following figure and press the cover into position.

   Note: Use care to not touch the power button when replacing the cover.

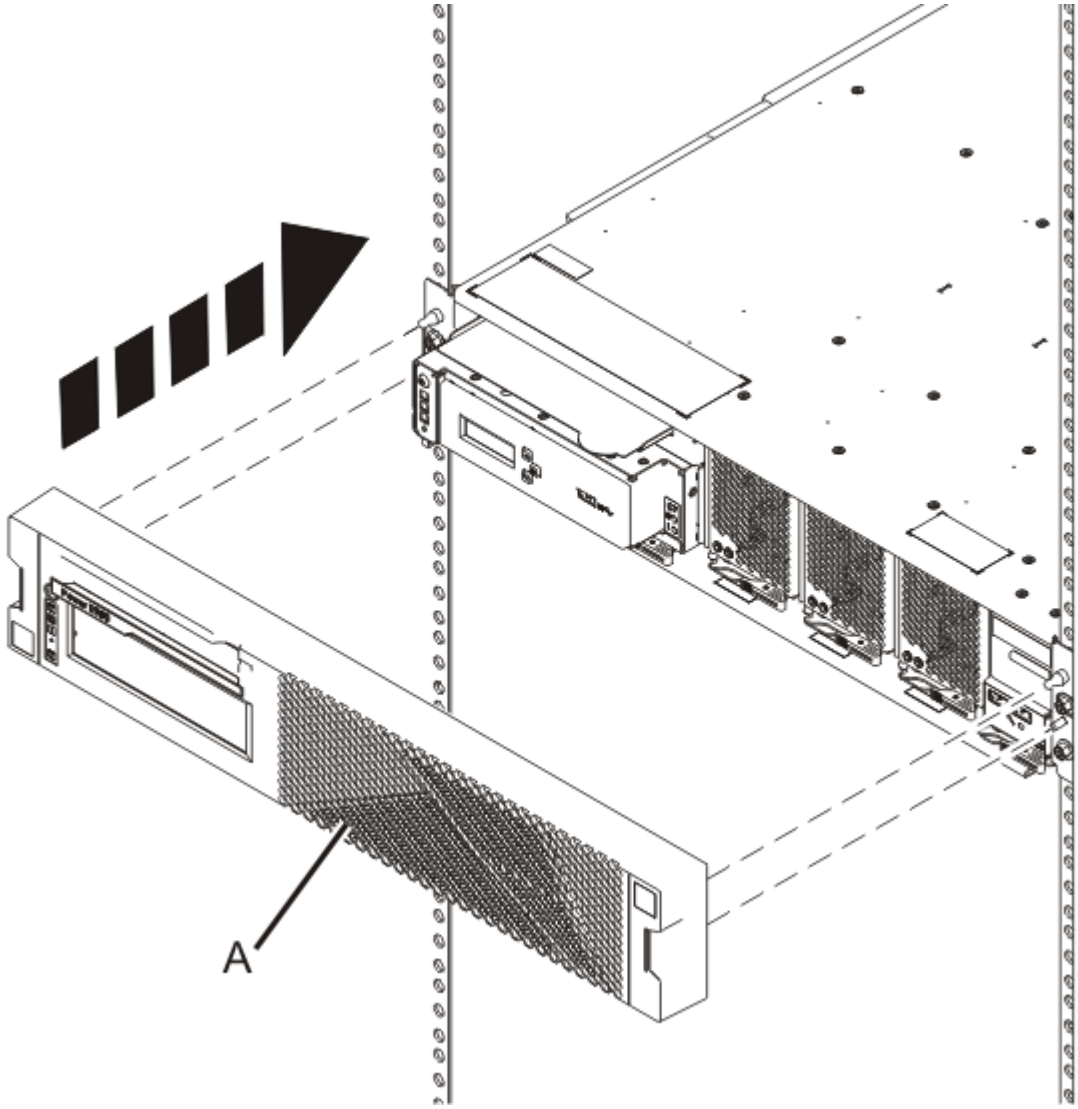


Figure 73. Installing the front cover

3. If you unplugged a USB cable from the control panel, using your label, replace the USB cable in the control panel.
4. Check that the power indicator is on.
5. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing

slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.

6. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.
7. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

   Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

   a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

Fans

System control unit

Preparing the 9080-M9S system control unit to remove and replace a fan

To prepare the system to remove and replace a fan, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   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.
2. If applicable, open the rack front door.
3. Pull the cover **(A)** away from the system control unit as shown in the following figure.

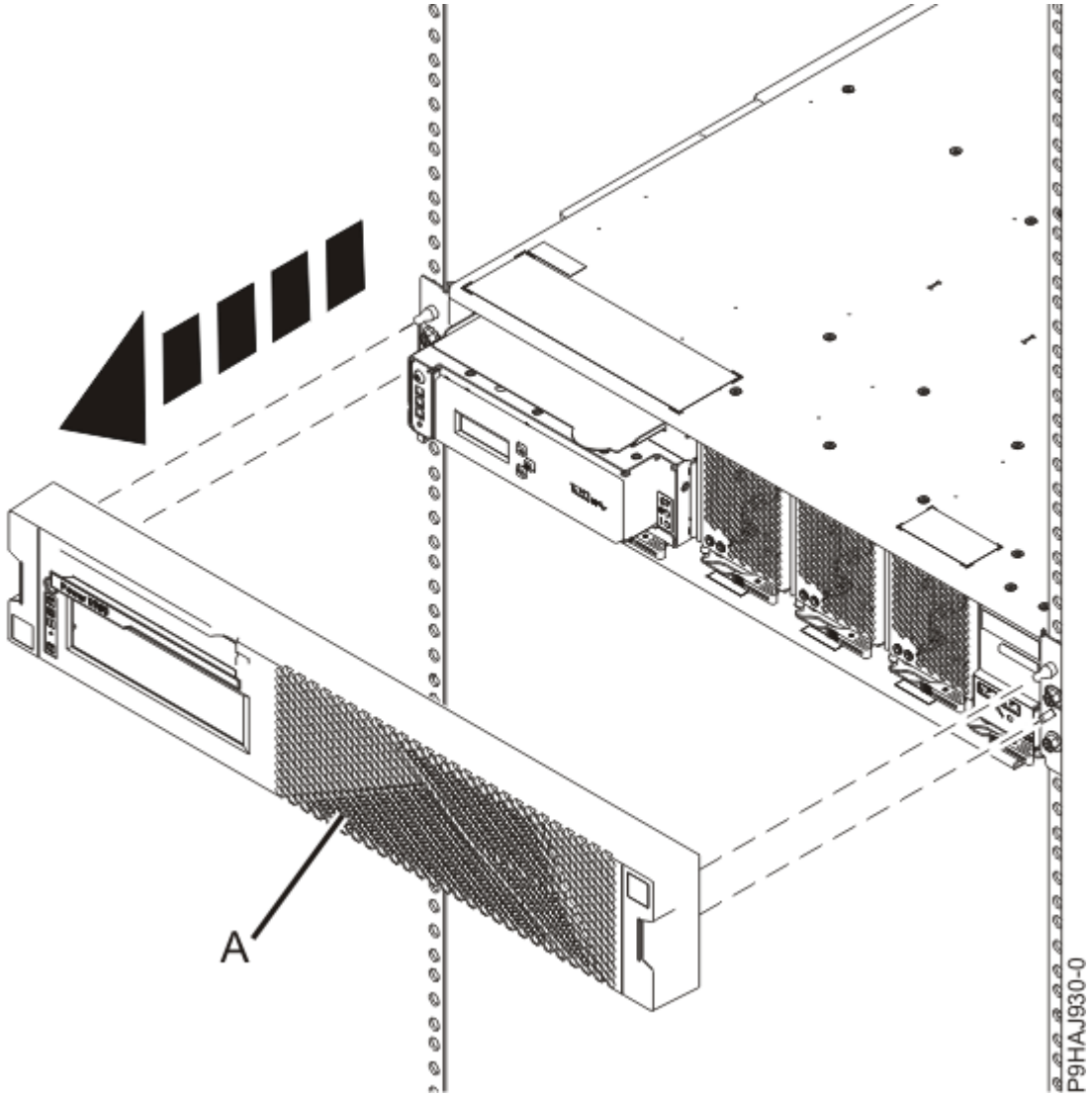


Figure 74. Removing the front cover

4. Determine whether the repair operation can continue when the system power is turned on.

   To continue the repair operation when the system power is turned on, the following conditions must be true:

   - Fans must be installed in all three slots.

     Each of the three fans has a green LED and an amber LED, as shown in Figure 75 on page 88. The green LED is lit solid for all fans, but the fan with the failure has a flashing amber fault LED.
   - If only one amber fault LED is **On**, the repair operation can be completed when the system power is turned on.

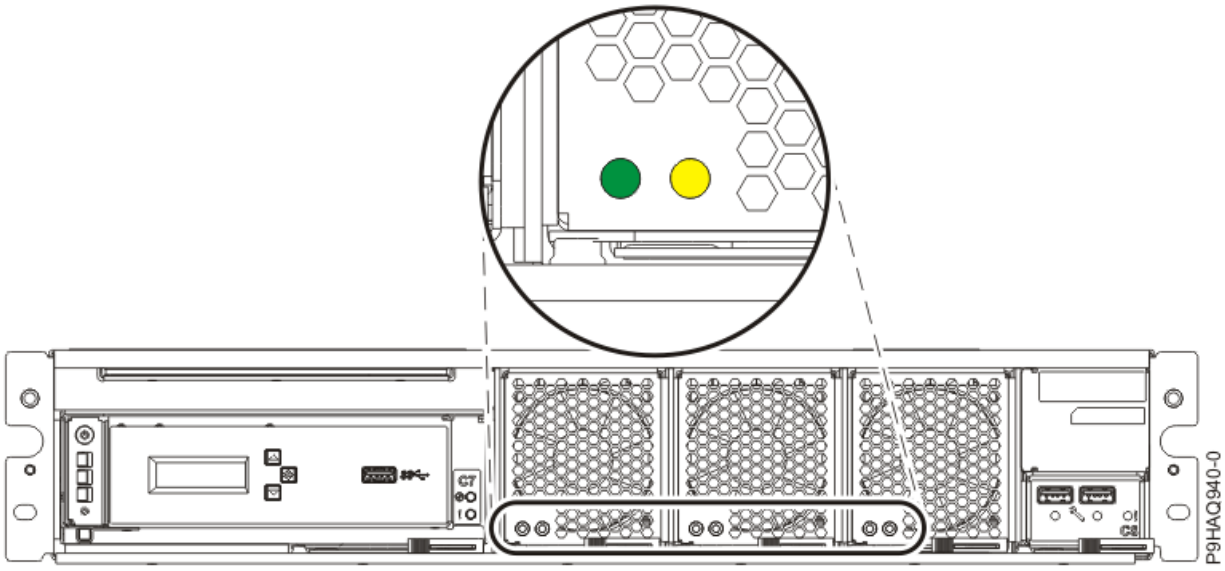


Figure 75. Fan LEDs in the system control unit

5. Ensure that the amber LED corresponds to the location of the fan with the lit fault LED.
6. If you can complete the procedure with the system power turned on, continue with step "8" on page 88.
7. If you powered off the system earlier in this procedure or you want to power off the system to complete the repair operation, complete the following steps:

   a) If the system is powered off, continue with step "7.b" on page 88. Otherwise, prepare to power off the system.

   Attention: Ensure that you shut down the running logical partitions on the managed system before you power off the managed system. Powering off the managed system without shutting down the logical partitions first causes the logical partitions to shut down abnormally and can cause data loss. If you use a Virtual I/O Server (VIOS) logical partition, ensure that all clients are shut down or that the clients have access to their devices by using an alternative method.

   When you are ready to power off the system, from the **Operation** list, select **System Level Deactivate**. Then, click **OK** to confirm the operation.

   b) From the **Operation** list, select **FRU Level Deactivate**. Then, click **OK** to confirm the operation.

   c) Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
8. 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.

Removing a fan from the 9080-M9S system control unit

To remove a fan from the system control unit, 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. To remove the fan, complete the following steps:
   a) Put your thumb on the front side of the latch **(A)** as shown in the following figure, and put your index finger against the rear of the latch **(B)**.
   b) Push against the latch with your thumb and then pull the latch out with your index finger. This action releases the latch.
   c) Rotate the fan handle in the direction shown in the following figure to unlock the fan from its slot.
   d) Hold on to the fan handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in the following figure.

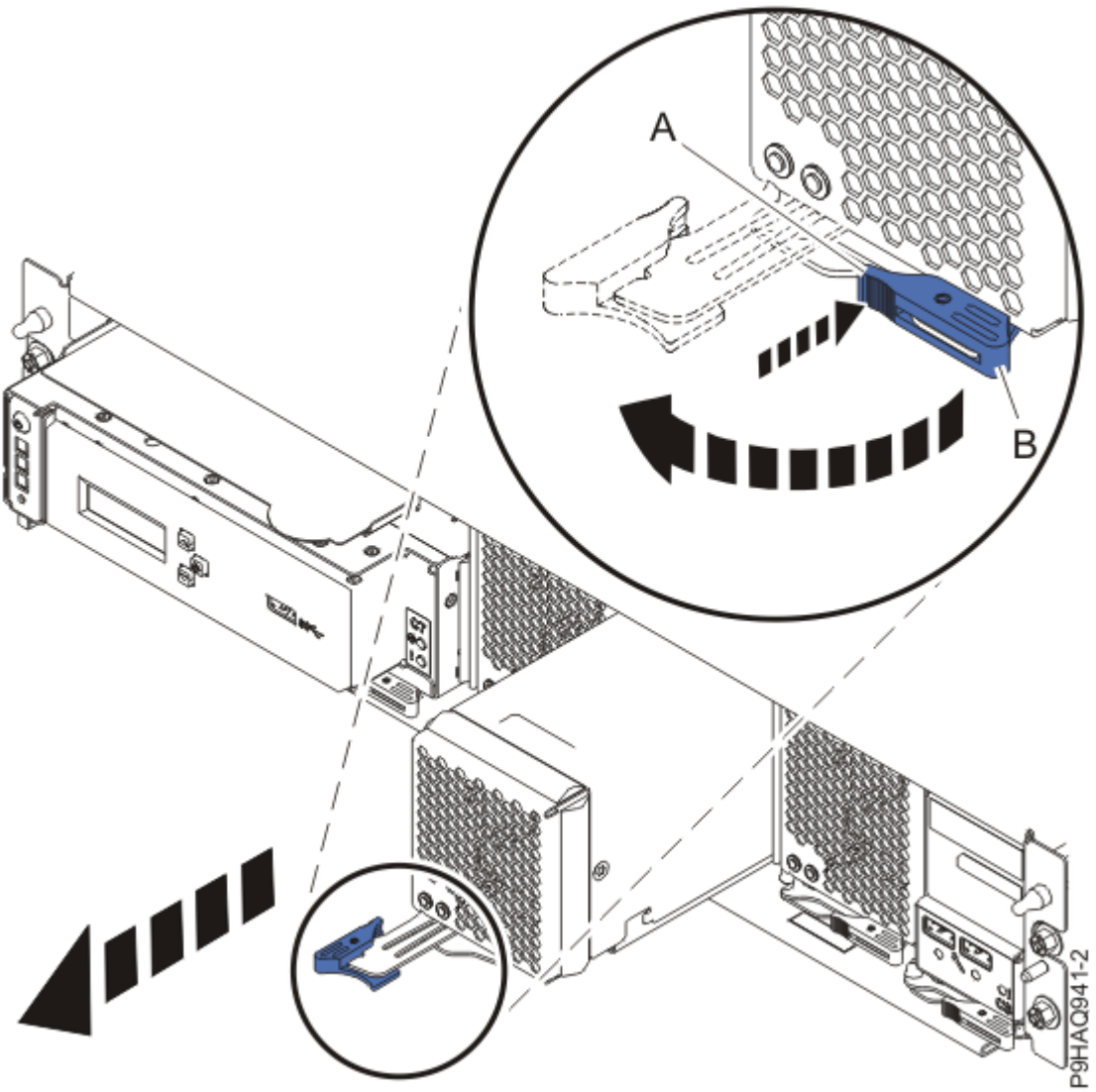


Figure 76. Removing a fan

Replacing a fan in the 9080-M9S system control unit

To replace a fan in the system control unit, 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. To replace the fan, complete the following steps:
   a) Ensure that the fan handle **(A)** is open as shown in the following figure.
   b) Hold on to the fan handle and by using your hand to support the bottom of the fan, push the fan into its slot as shown in the following figure.

      Ensure that the fan is kept level with the enclosure, and that you push the fan straight in to the enclosure.
   c) Push the fan handle in the direction shown in the following figure.
   d) Push against the front of the latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.
   e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

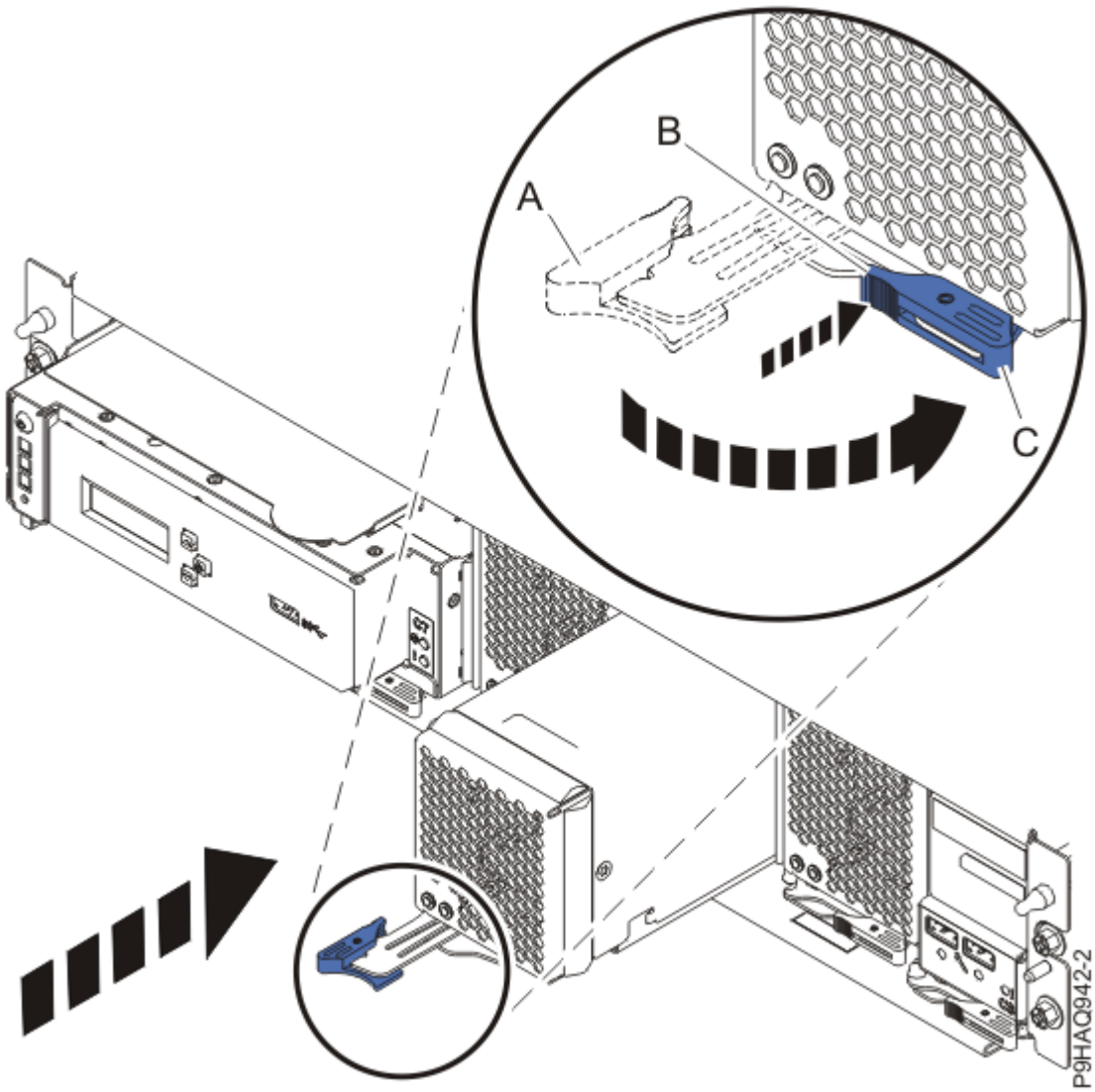


Figure 77. Replacing a fan in the system

Preparing the 9080-M9S system control unit for operation after removing and replacing a fan

To prepare the system for operation after removing and replacing a fan, 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. If you removed the power cords, connect all power cords to the system that you are servicing.
3. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

5. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

6. If you needed to power off the server to complete the repair operation, start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
7. Verify that the amber fault LED on the replaced fan is not lit.
8. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).
9. Position the cover **(A)** on the front of the system control unit as shown in the following figure and press the cover into position.

Note: Use care to not touch the power button when replacing the cover.

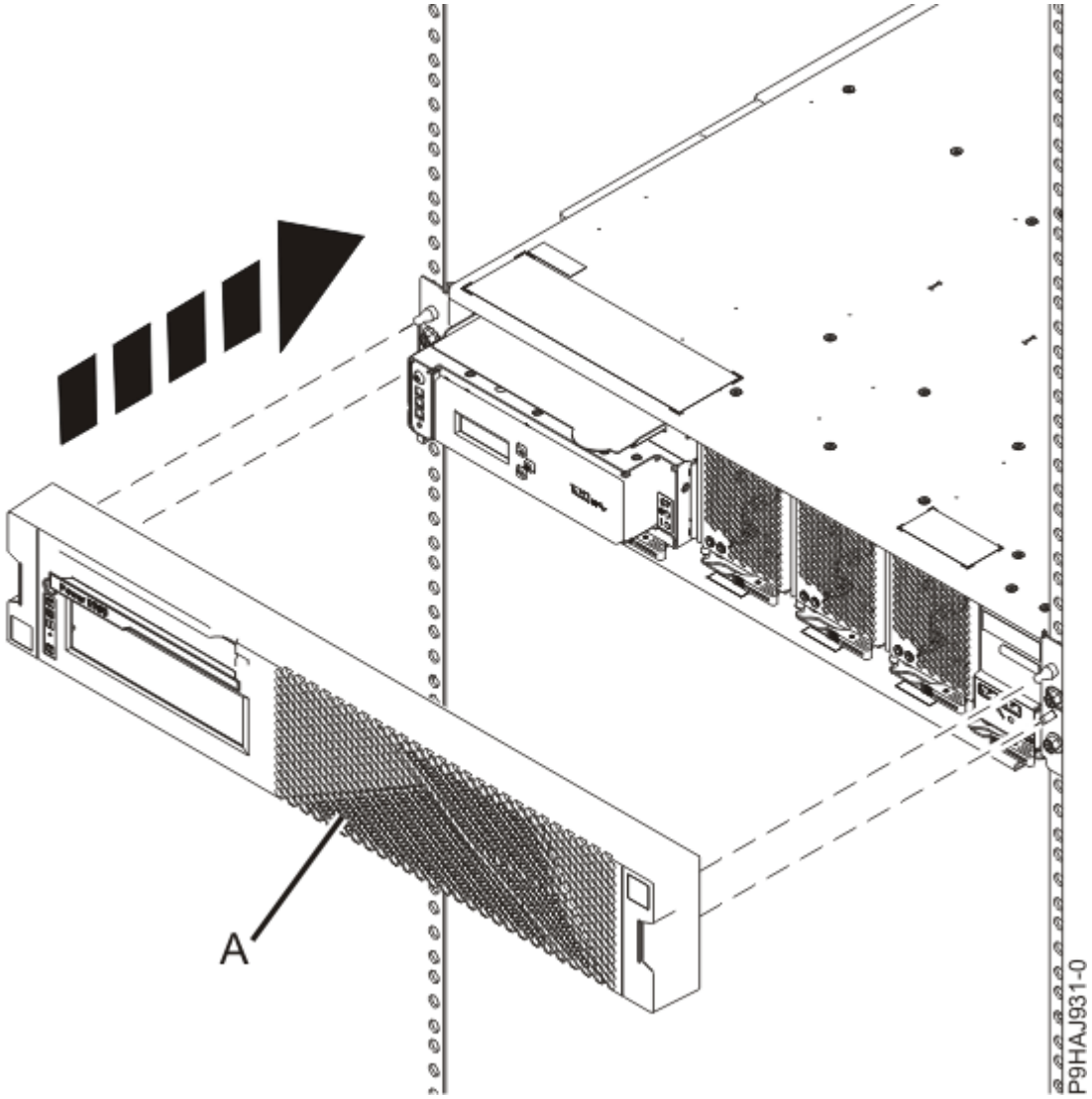


Figure 78. Installing the front cover

10. If applicable, close the rack front door.

System node

Preparing the 9080-M9S system node to remove and replace a fan

To prepare the system to remove and replace a fan, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   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.
2. If applicable, open the rack front door.
3. Place your fingers on the indentations located on both sides of the cover **(A)** and pull the cover away from the system as shown in the following figure.

   CAUTION: The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover

must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

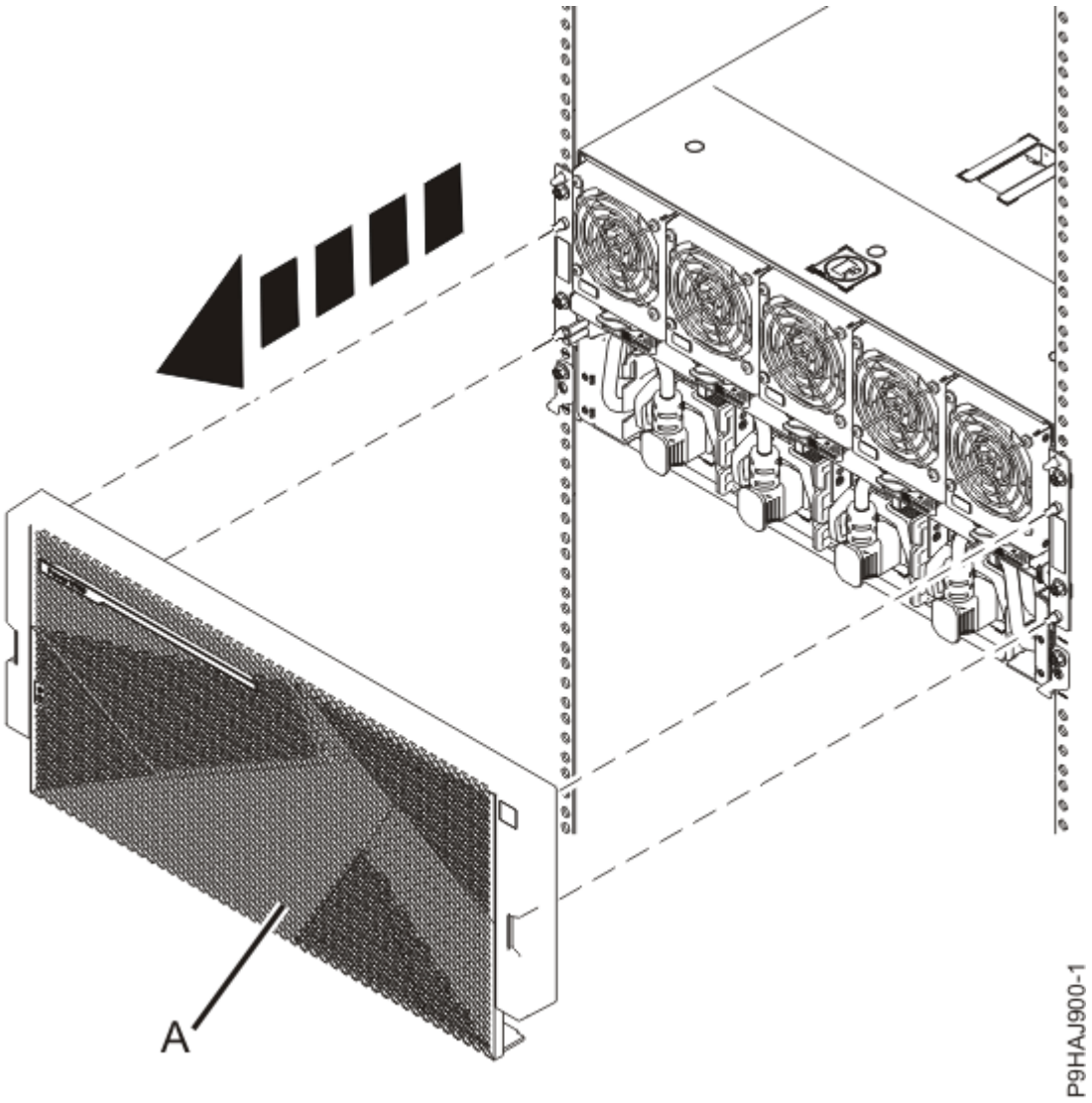


Figure 79. Removing the front cover

4. Determine whether the repair operation can continue when the system power is turned on.

   To continue the repair operation when the system power is turned on, the following conditions must be true:

   - Fans must be installed in all five slots.

     Each of the five fans has a green LED and an amber LED, as shown in Figure 80 on page 95. The green LED is lit solid for all five fans, but the fan with the failure has the flashing amber fault LED.
   - If only one amber fault LED is **On**, the repair operation can be completed when the system power is turned on.

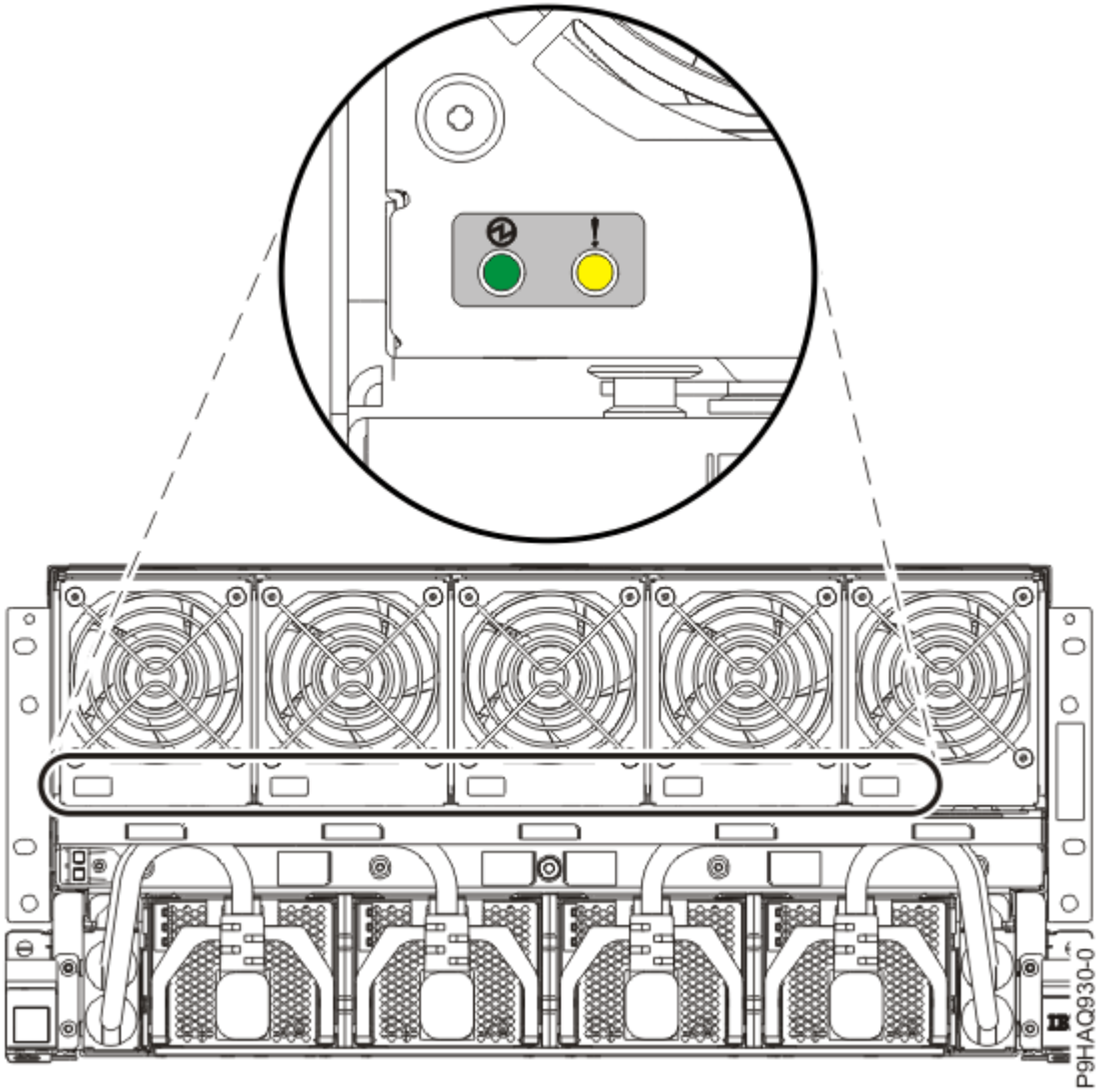


Figure 80. Fan LEDs in the system

5. Ensure that the amber LED corresponds to the location of the fan with the lit fault LED.
6. If you can complete the procedure with the system power turned on, continue with step “9” on page 96.
7. If you need to power off the server to complete the repair operation, complete the following steps:
8. 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.

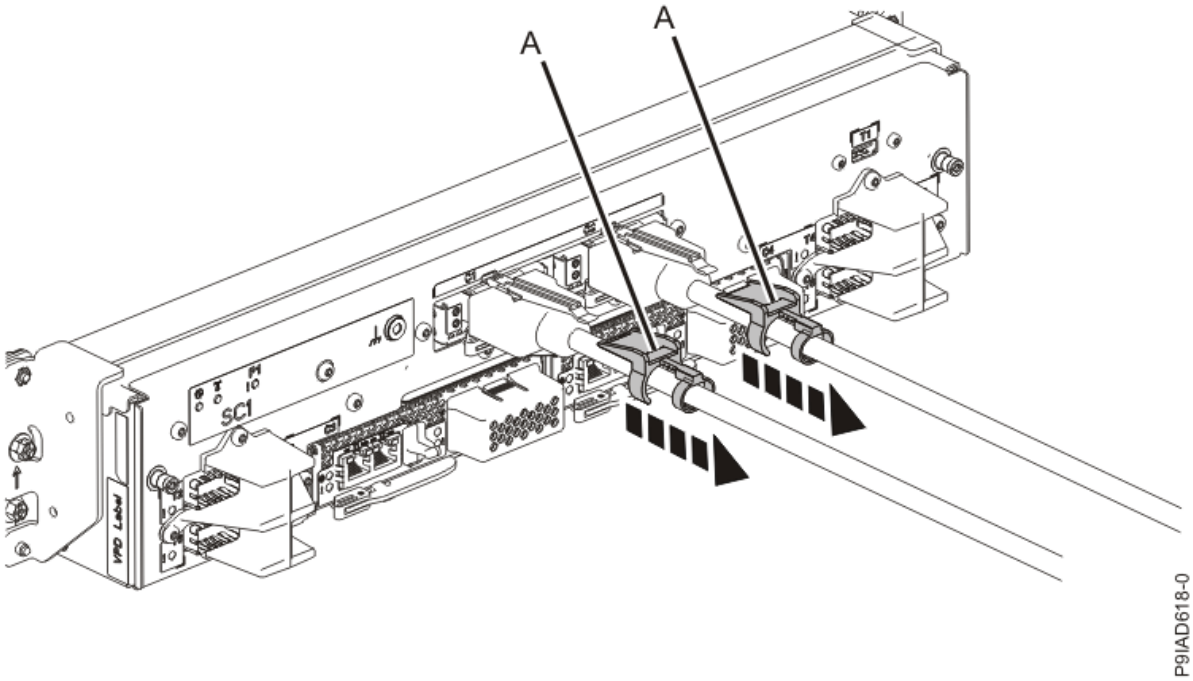


Figure 81. Removing the UPIC cable lock

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

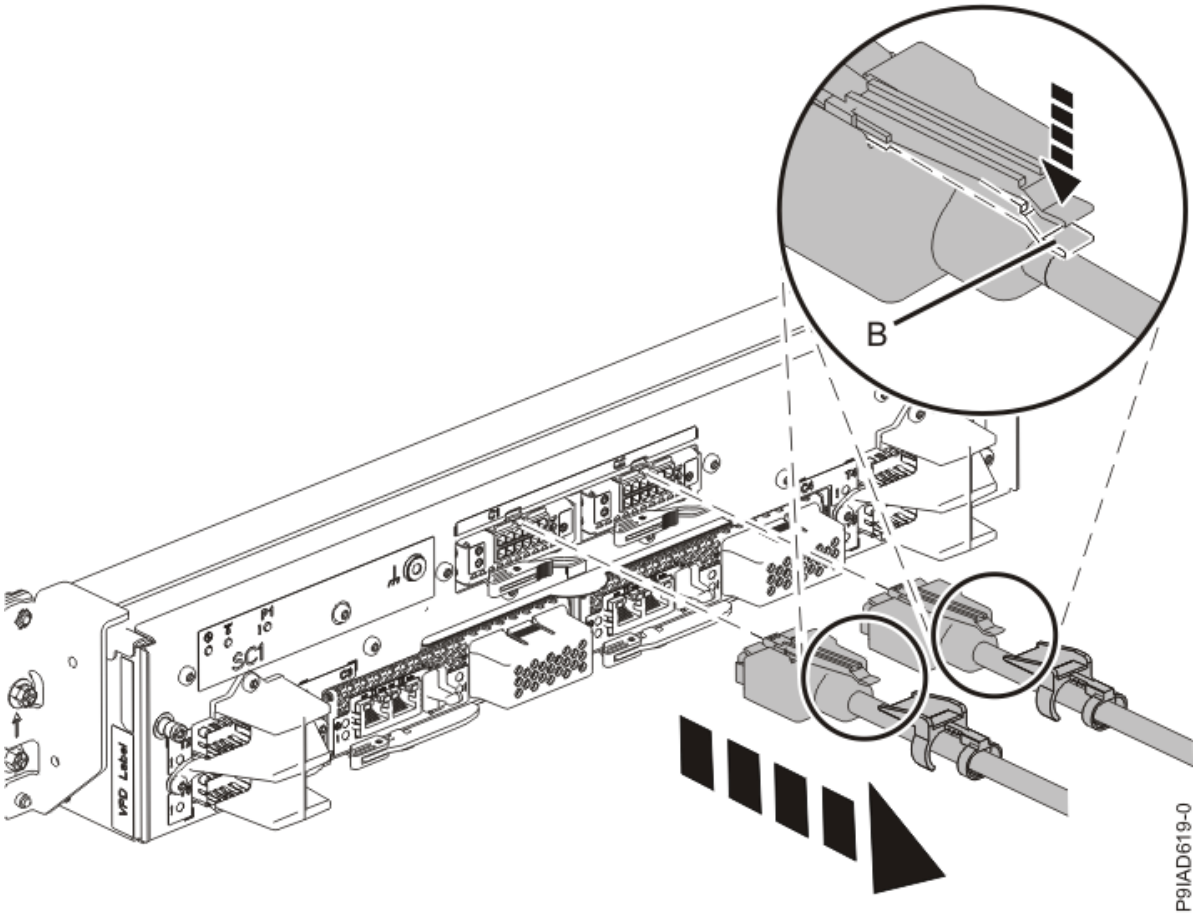


Figure 82. Removing the UPIC cable from the system control unit

9. 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.

Removing a fan from the 9080-M9S system node

To remove a fan from 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. To remove the fan, complete the following steps:
   a) Put your thumb on the front side of the latch **(A)** as shown in the following figure, and put your index finger against the rear of the latch **(B)**.
   b) Push against the latch with your thumb and then pull the latch out with your index finger. This action releases the latch.
   c) Rotate the fan handle in the direction shown in the following figure to unlock the fan from its slot.
   d) Hold on to the fan handle and by using your hand to support the bottom of the fan, pull out the fan from its slot as shown in the following figure.

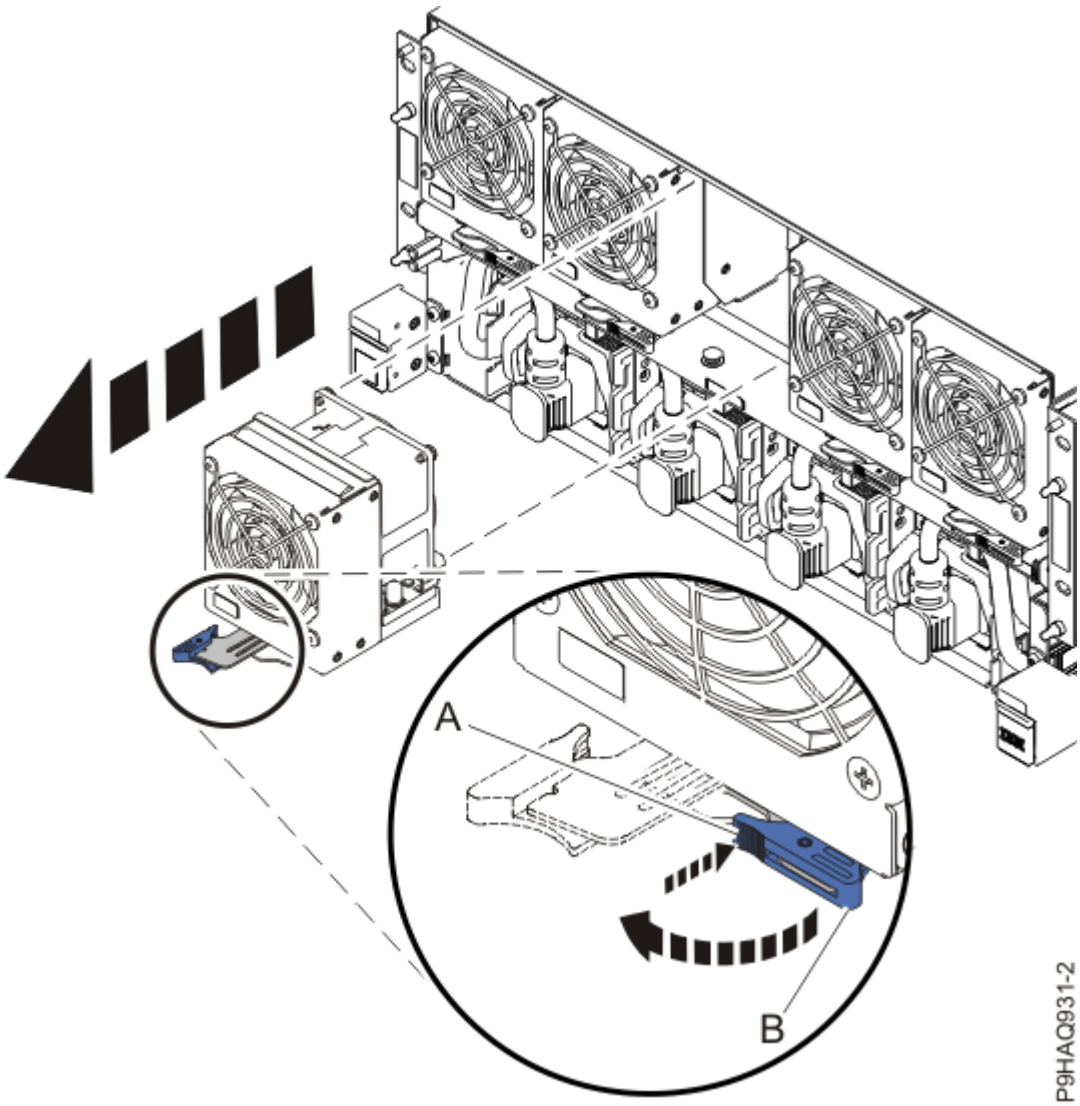


Figure 83. Removing a fan from the system

Replacing a fan in the 9080-M9S system node

To replace a fan in 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. To replace the fan, complete the following steps:
   a) Ensure that the fan handle **(A)** is open as shown in the following figure.
   b) Hold on to the fan handle and by using your hand to support the bottom of the fan, push the fan into its slot as shown in the following figure.

      Ensure that the fan is kept level with the enclosure, and that you push the fan straight in to the enclosure.
   c) Push the fan handle in the direction shown in the following figure.
   d) Push against the front of the latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.
   e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

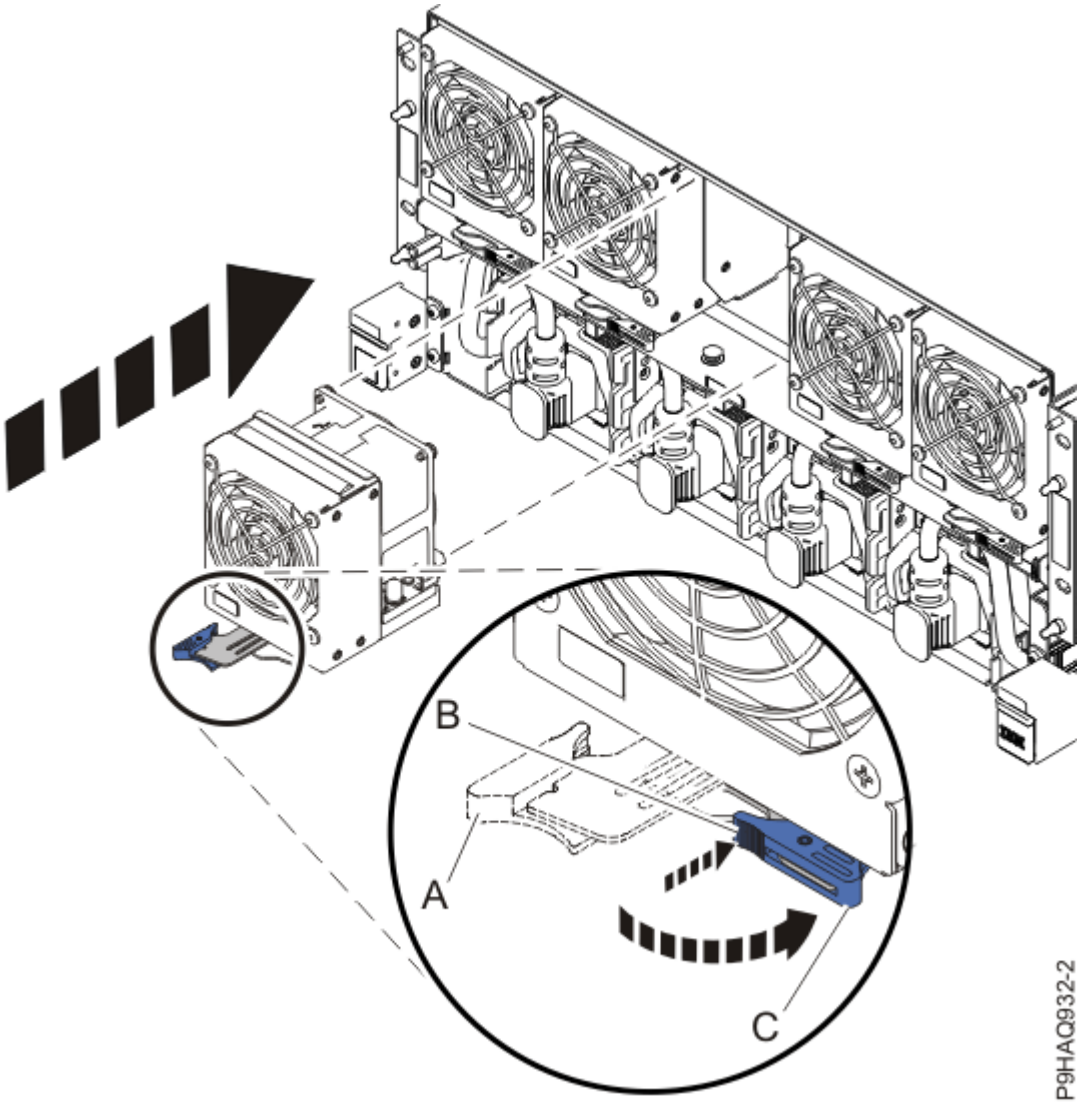


Figure 84. Replacing a fan in the system

Preparing the 9080-M9S system node for operation after removing and replacing a fan

To prepare the system for operation after removing and replacing a fan, 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. If you chose to complete 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.

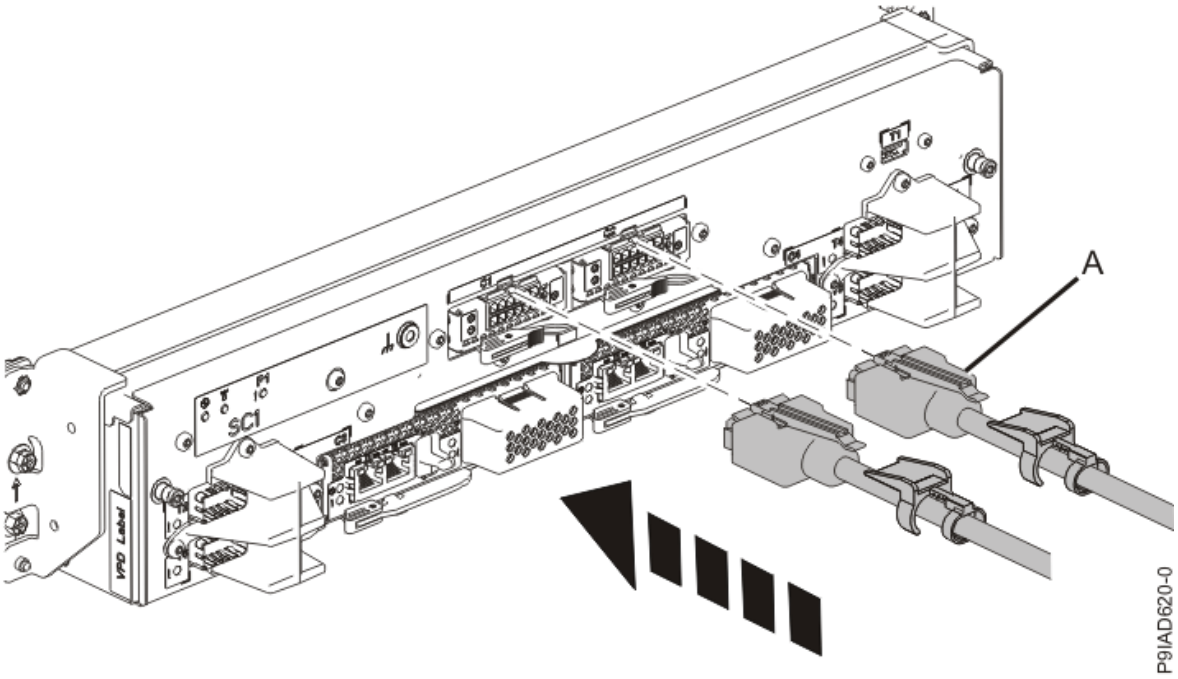


Figure 85. Replacing the UPIC cable into the system control unit

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

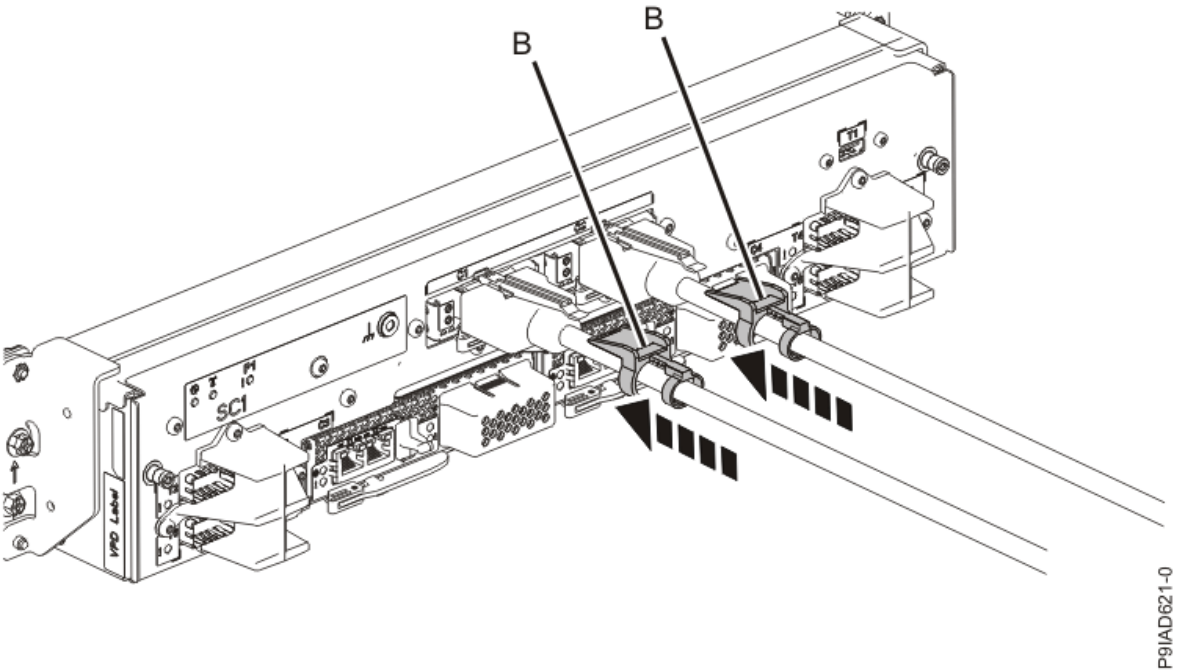


Figure 86. Replacing the UPIC cable into the system control unit

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.

3. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

5. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

6. If you needed to power off the server to complete the repair operation, start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
7. Verify that the amber fault LED on the replaced fan is not lit.
8. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).
9. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

Press the front cover into position.

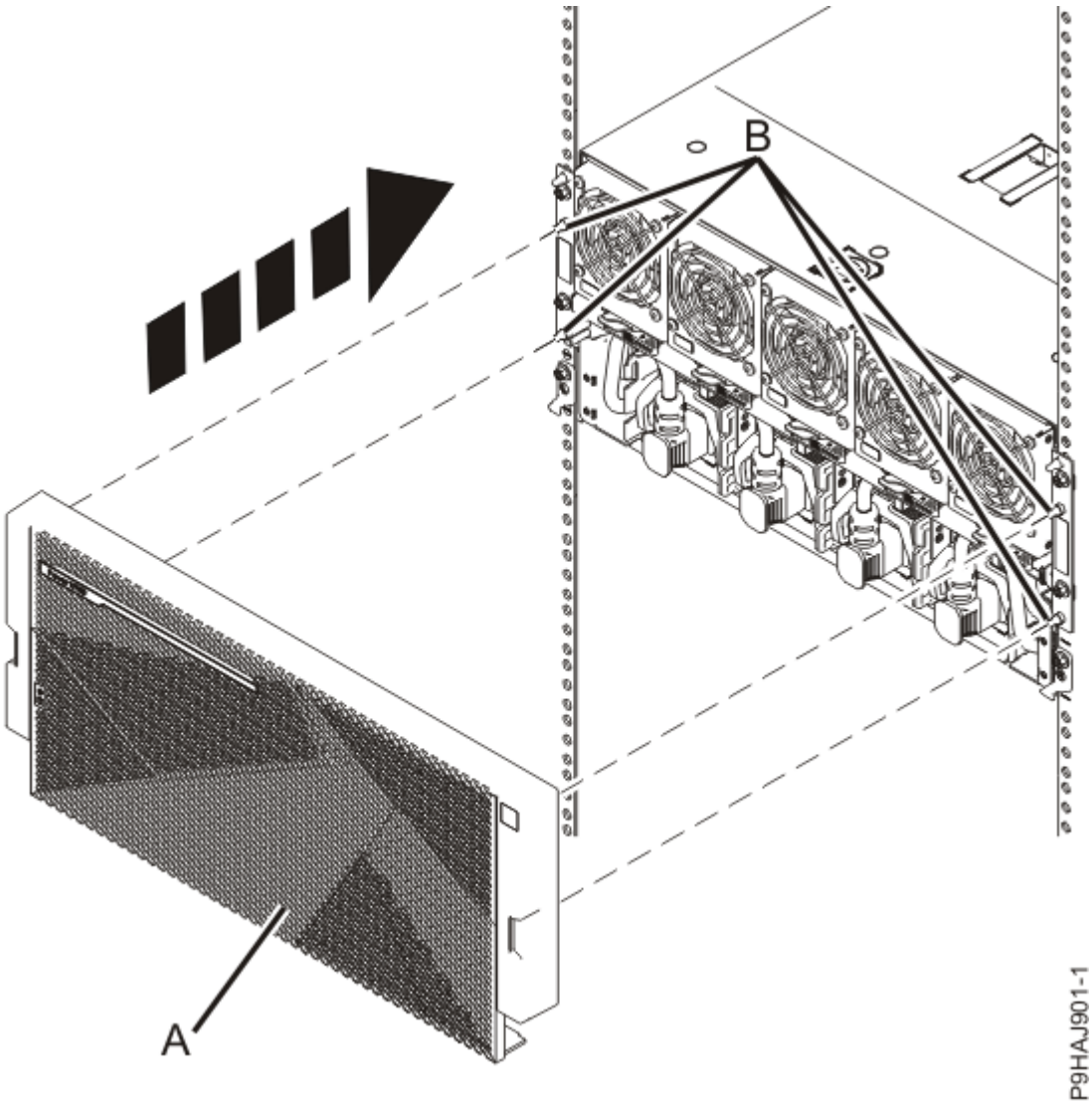


Figure 87. Installing the front cover

10. If applicable, close the rack front door.

Memory modules

Installing memory modules

Preparing the 9080-M9S system to install memory modules

About this task

The following memory configurations are available for the systems.

- The system nodes use DDR4 memory modules.
- DDR3 memory modules are also supported. Mixing of DDR3 and DDR4 memory modules are not supported in the same system node.
- For each processor socket, a minimum of 4 of the 8 memory modules must be populated. The only valid number of memory modules plugged into sites for a given processor module is 4 or 8.
- The memory modules must be plugged in quads (a group of 4). Odd numbers or having 6 memory modules for a processor is not supported.
- Each memory module within a quad must be the same size and type. The memory module quads can be different from each other.
- To ensure proper cooling, a memory module or a memory module filler is required in all locations.
- Table 8 on page 103 shows the base memory plugging rules.
- Table 9 on page 103 shows the plugging rules for adding memory. Quads must be added next to a processor. The quads can be added in any order.

Table 8. Base memory plugging rules

Memory module location	**CPU socket**
P1-C22, P1-C23, P1-C28, P1-C29	P1
P1-C30, P1-C31, P1-C36, P1-C37	P3
P1-C38, P1-C39, P1-C44, P1-C45	P2
P1-C46, P1-C47, P1-C52, P1-C53	P0

Table 9. Upgrading memory plugging rules. Plug the additional quad of memory modules in any of the remaining open quad slots

Memory module location	**CPU socket**
P1-C24, P1-C25, P1-C26, P1-C27	P1
P1-C32, P1-C33, P1-C34, P1-C35	P3
P1-C40, P1-C41, P1-C42, P1-C43	P2
P1-C48, P1-C49, P1-C50, P1-C51	P0

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.

   This action causes causes the blue system ID LED to turn on. You can also identify the locations for the memory to be installed.

2. Open the rear rack door, if necessary.
3. 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.

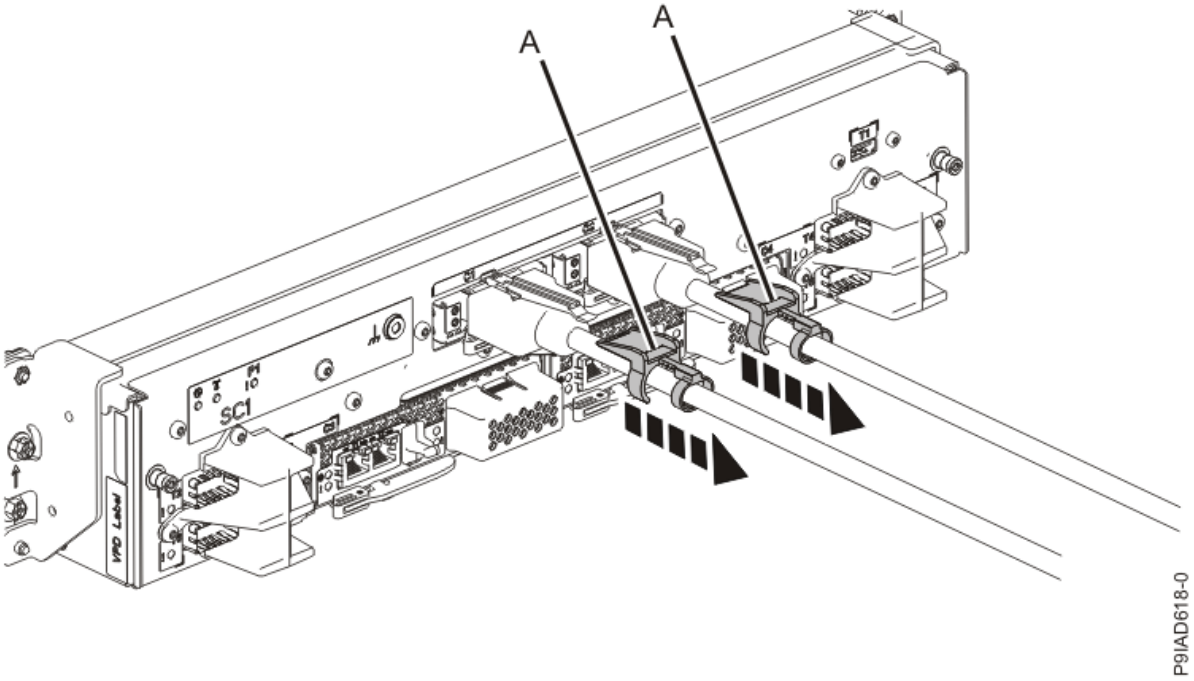


Figure 88. Removing the UPIC cable lock

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

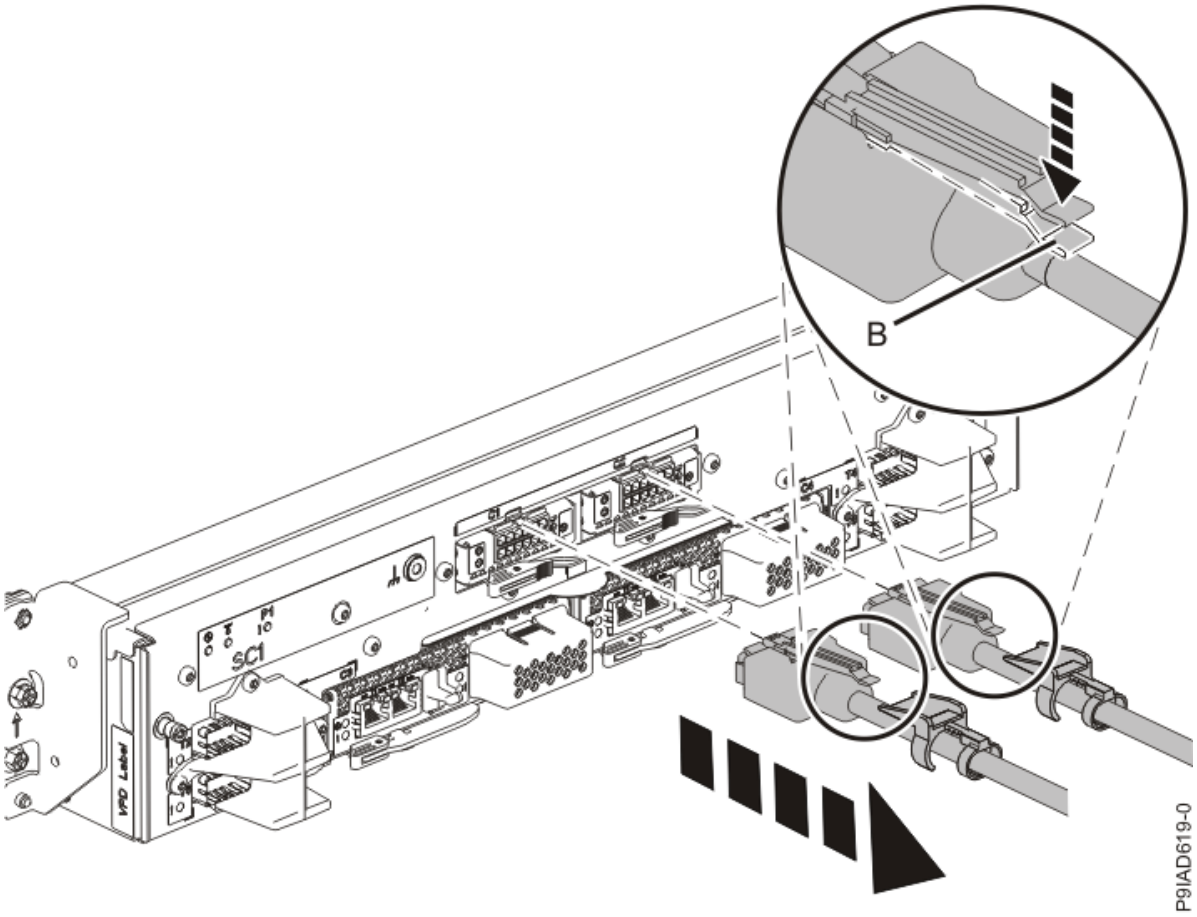


Figure 89. Removing the UPIC cable from the system control unit

4. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

   a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

      Notes:

      - This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

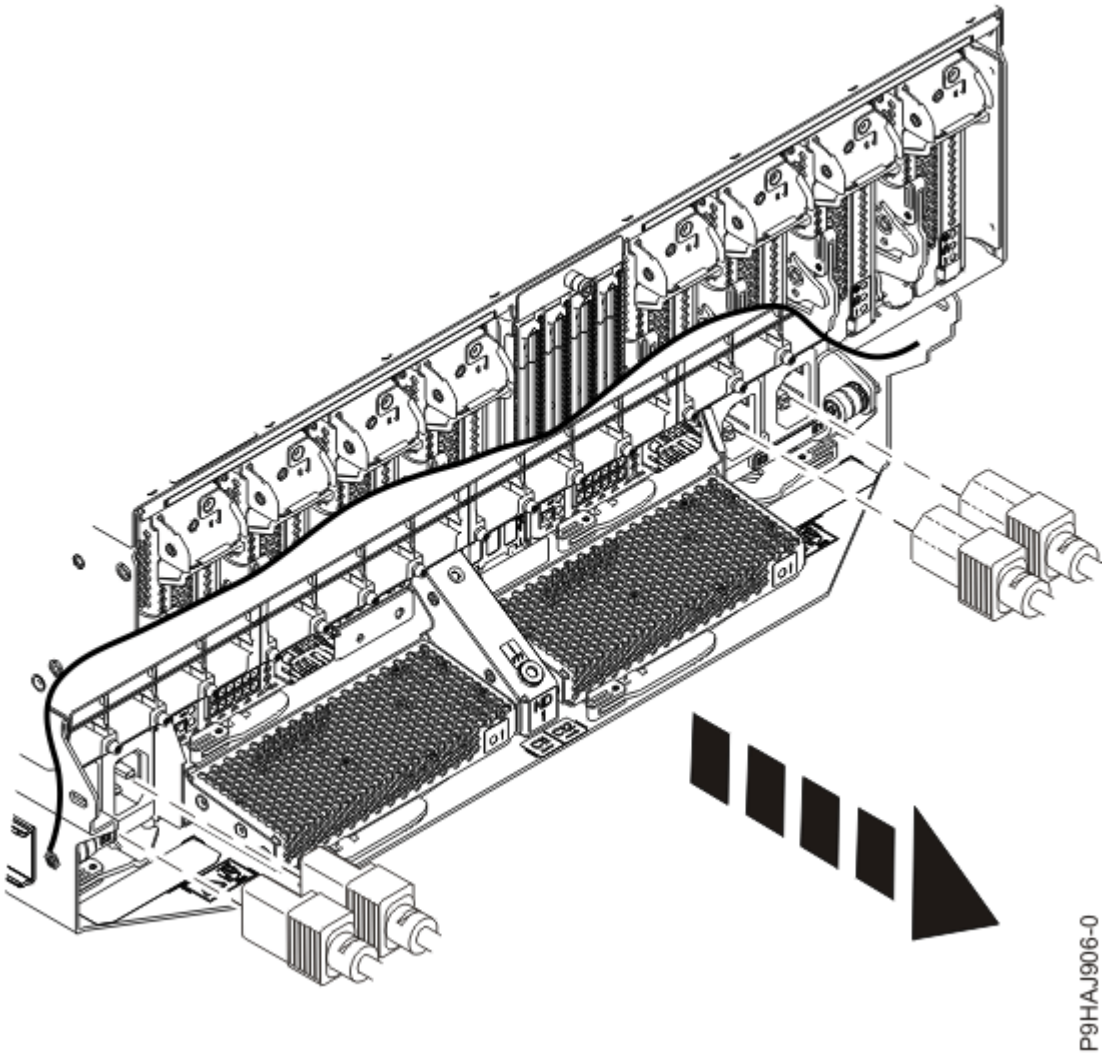
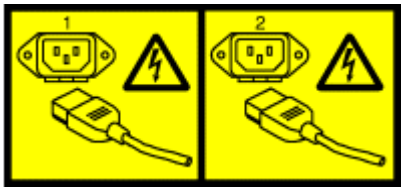


Figure 90. Removing the rear power cords

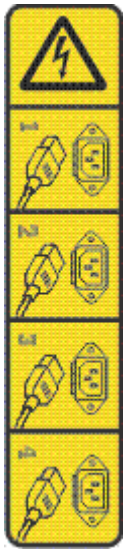
(L003)



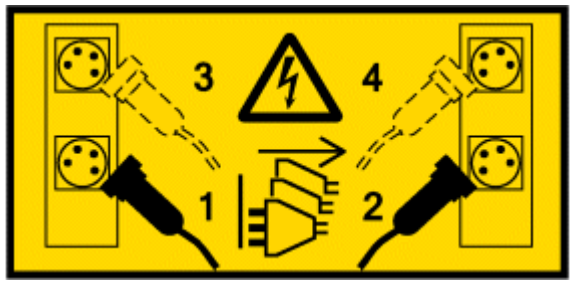
or

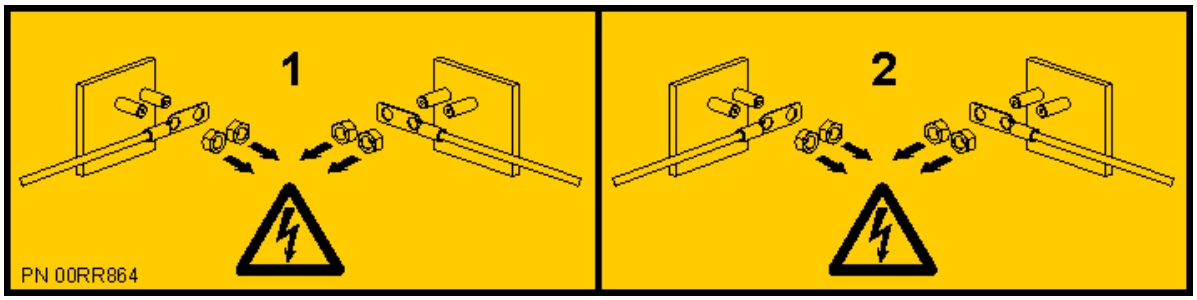
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

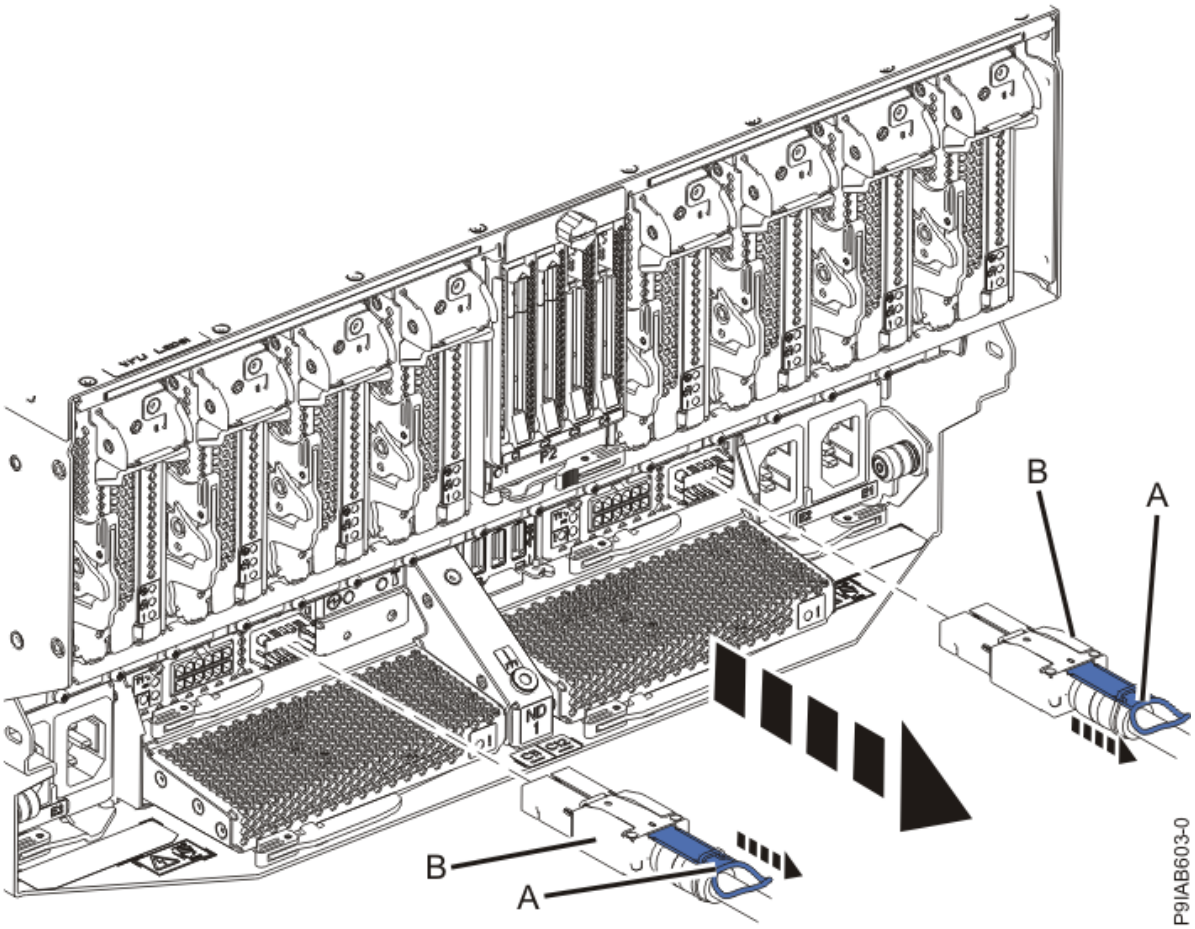


Figure 91. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

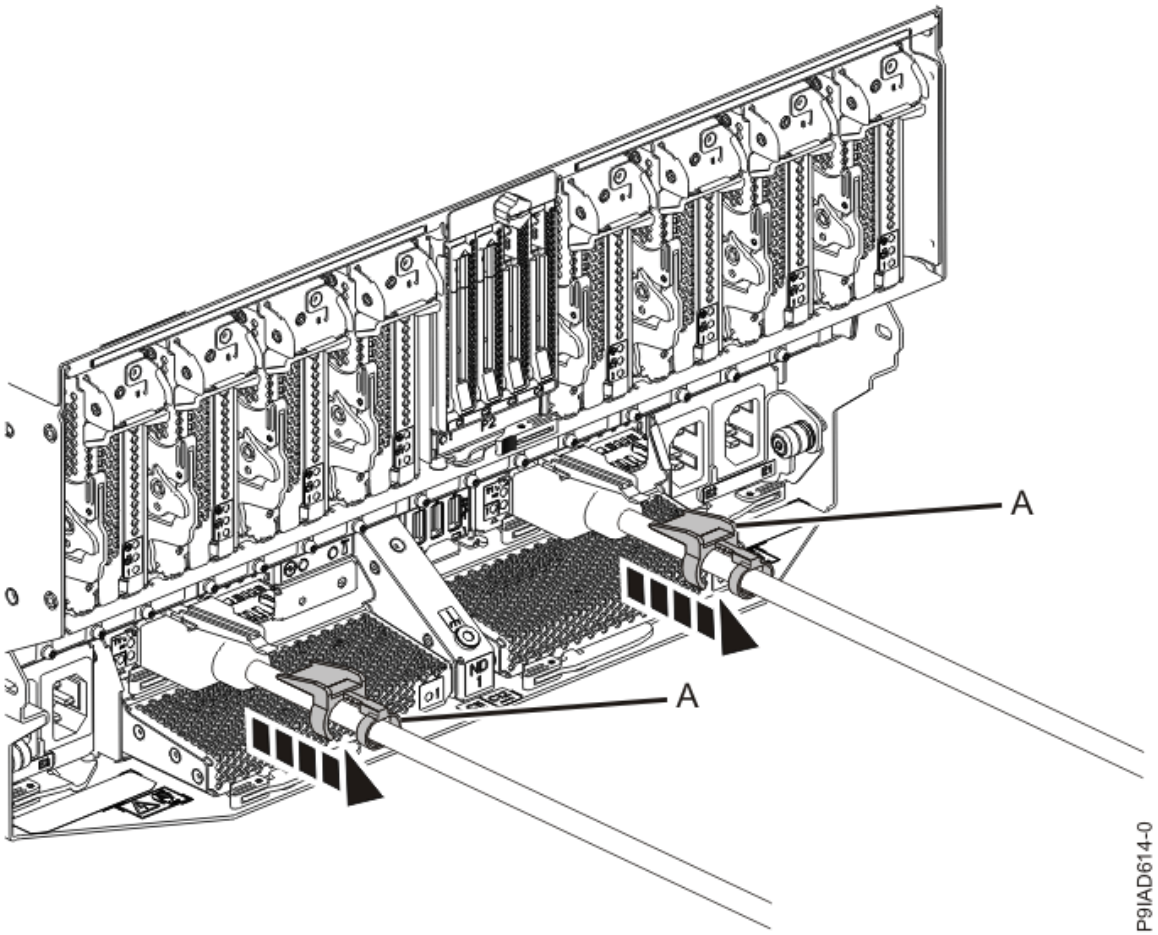


Figure 92. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

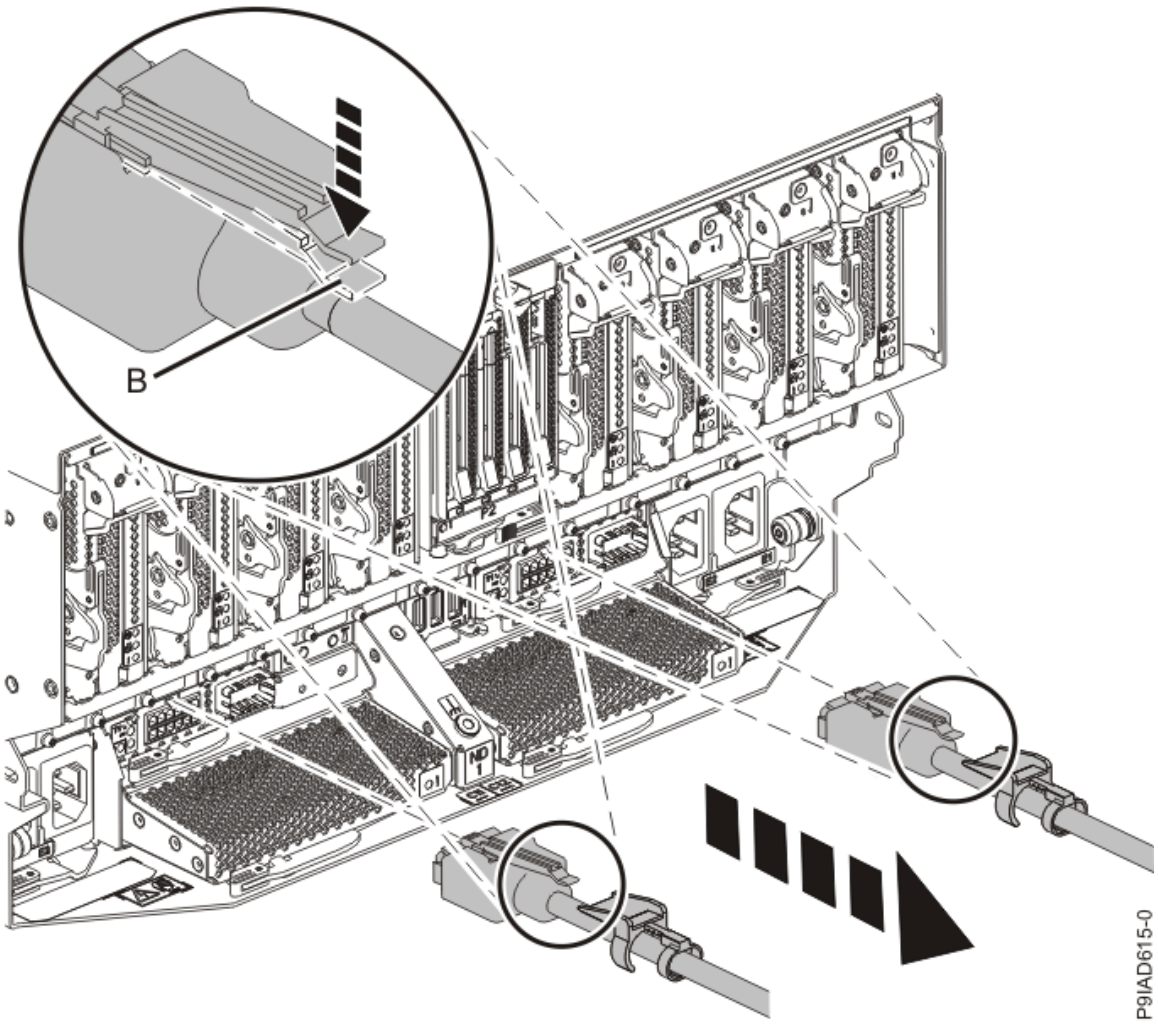


Figure 93. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

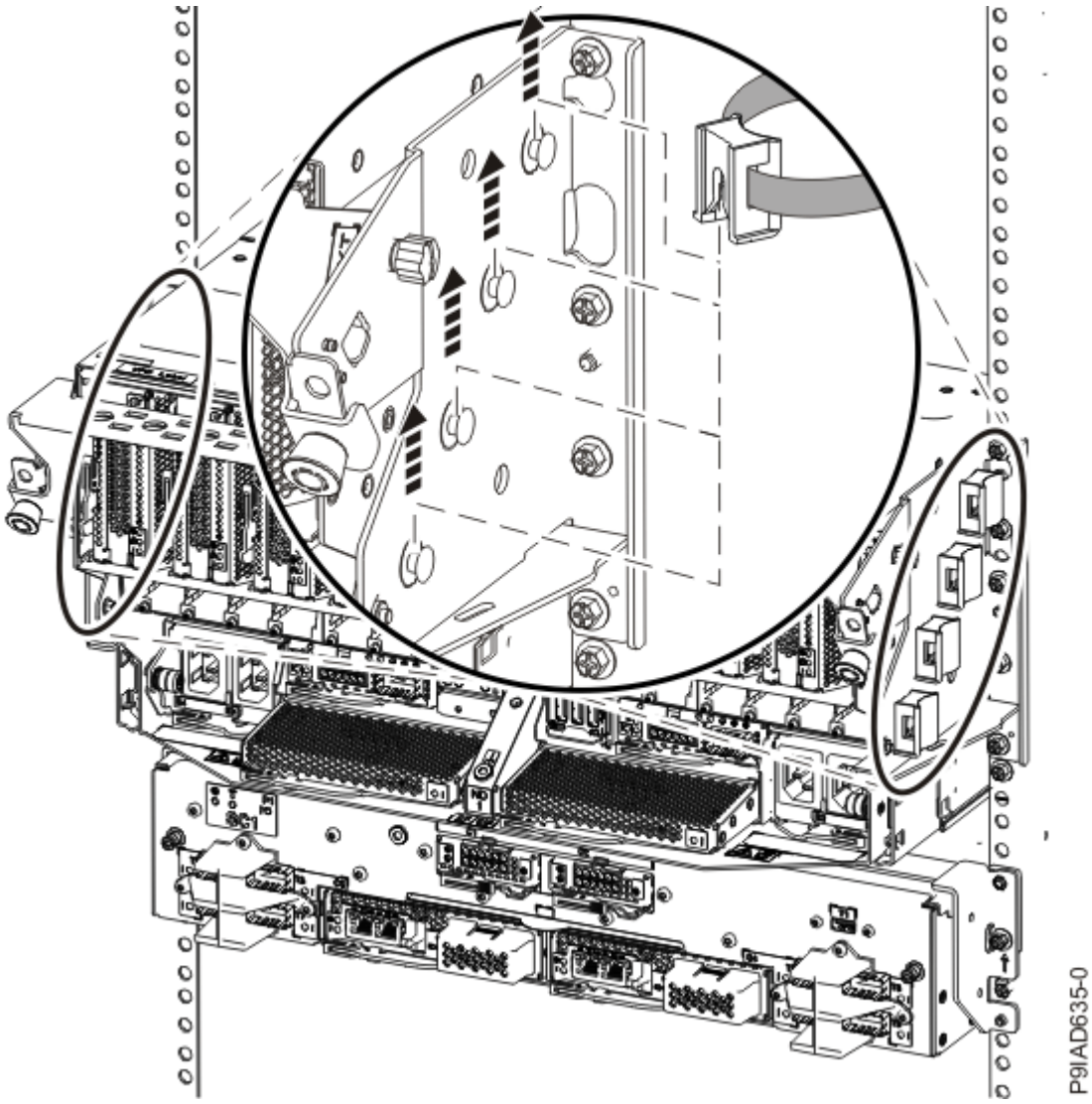


Figure 94. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

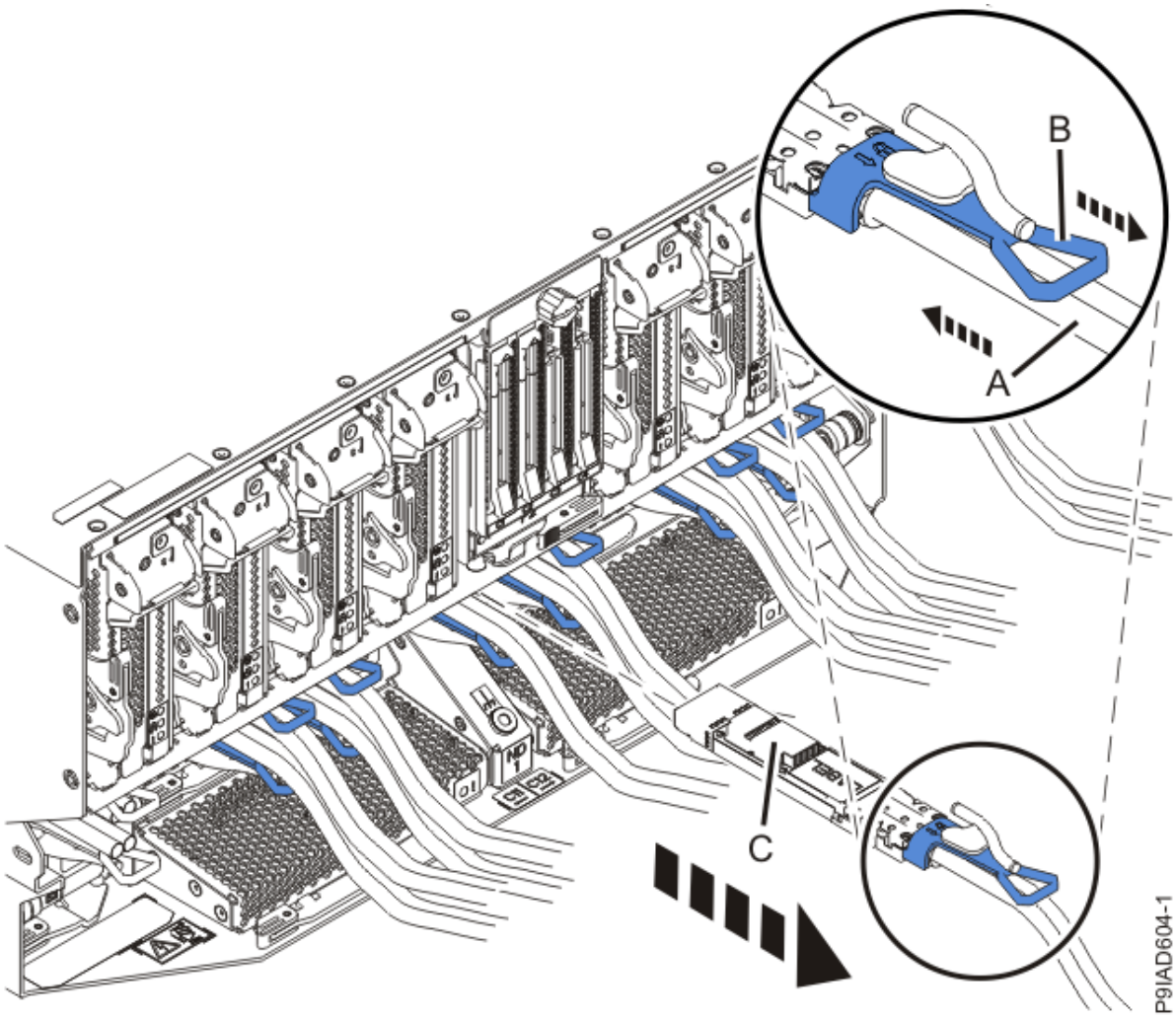


Figure 95. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

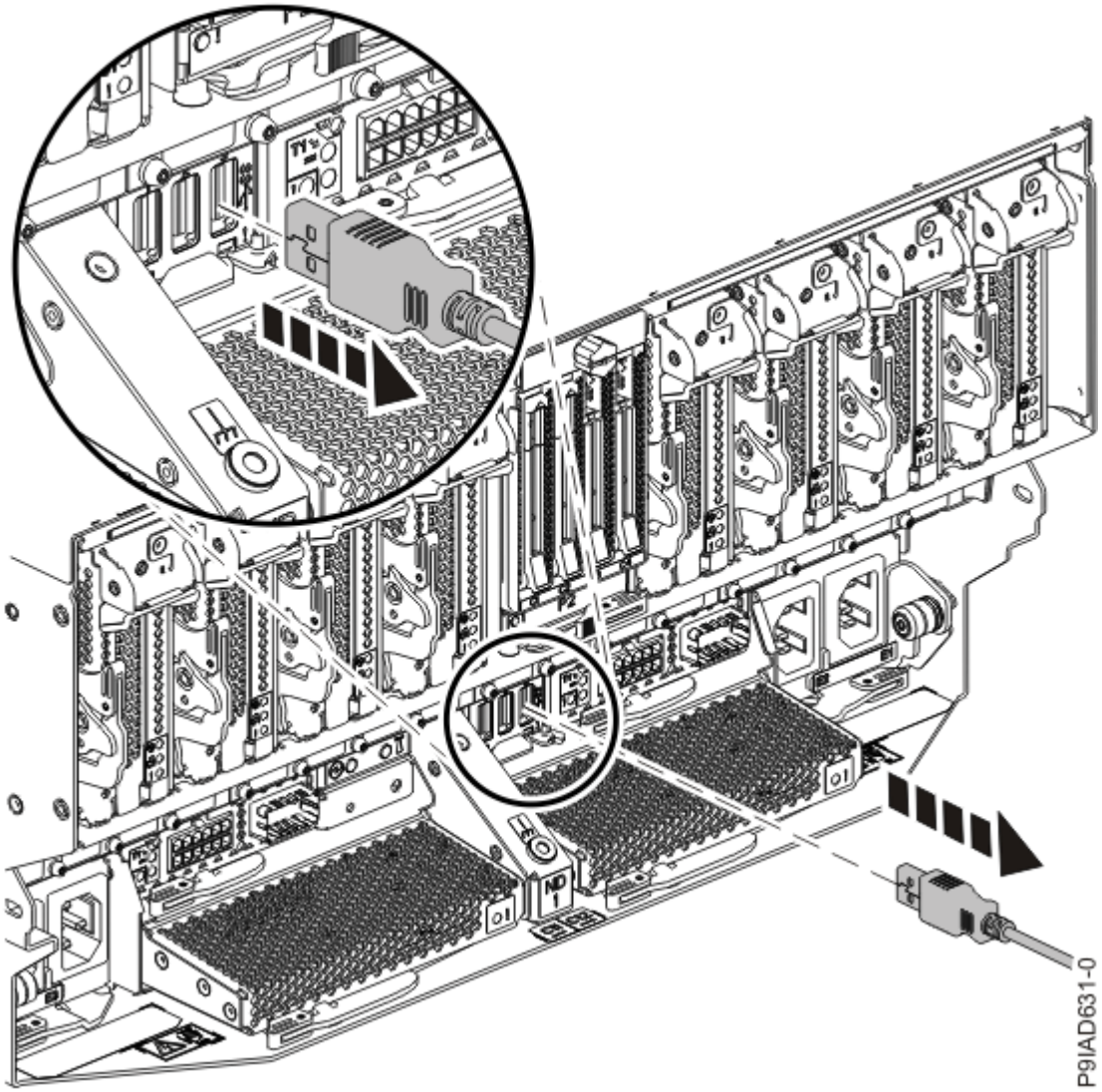


Figure 96. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

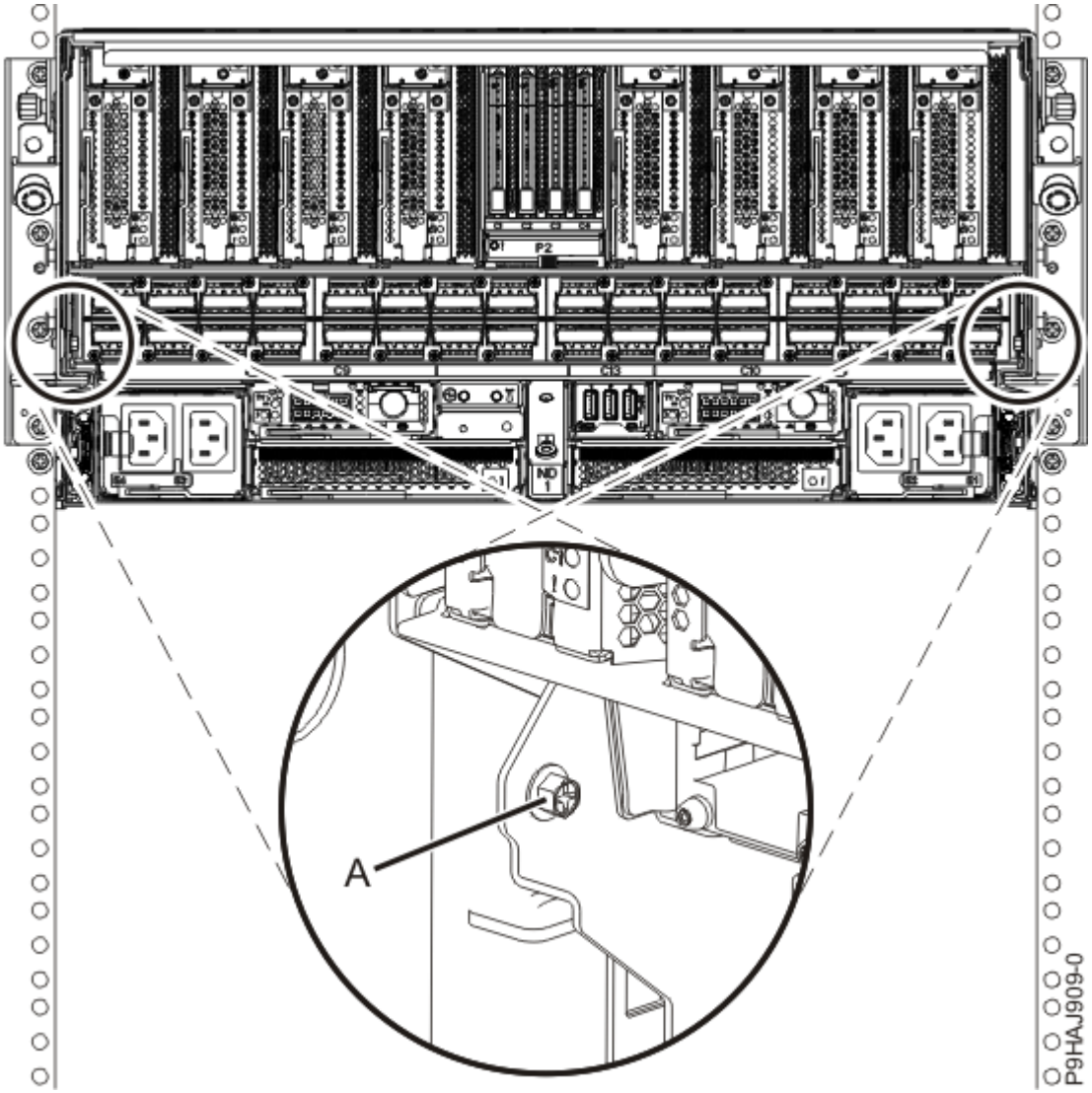


Figure 97. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

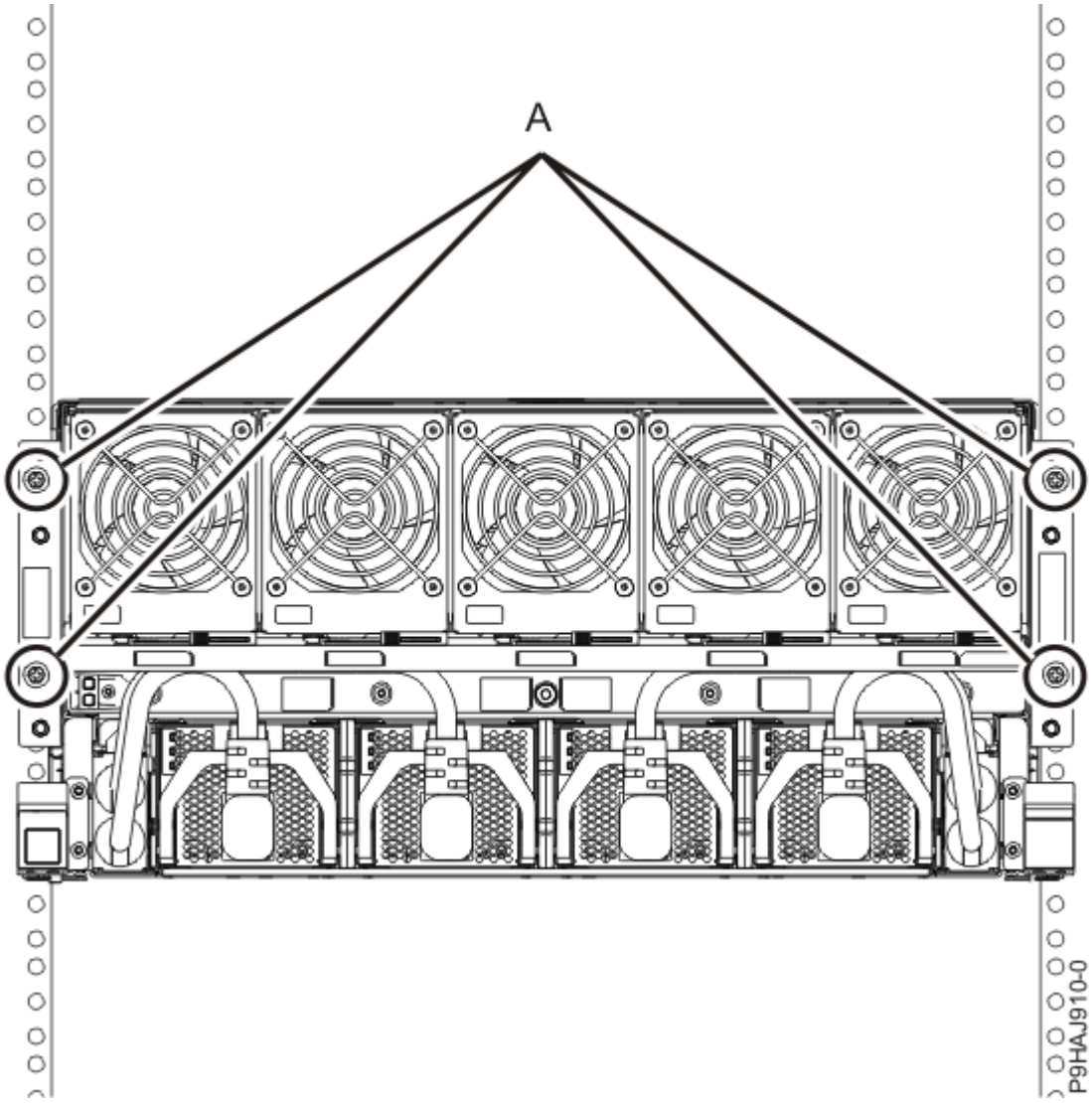


Figure 98. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

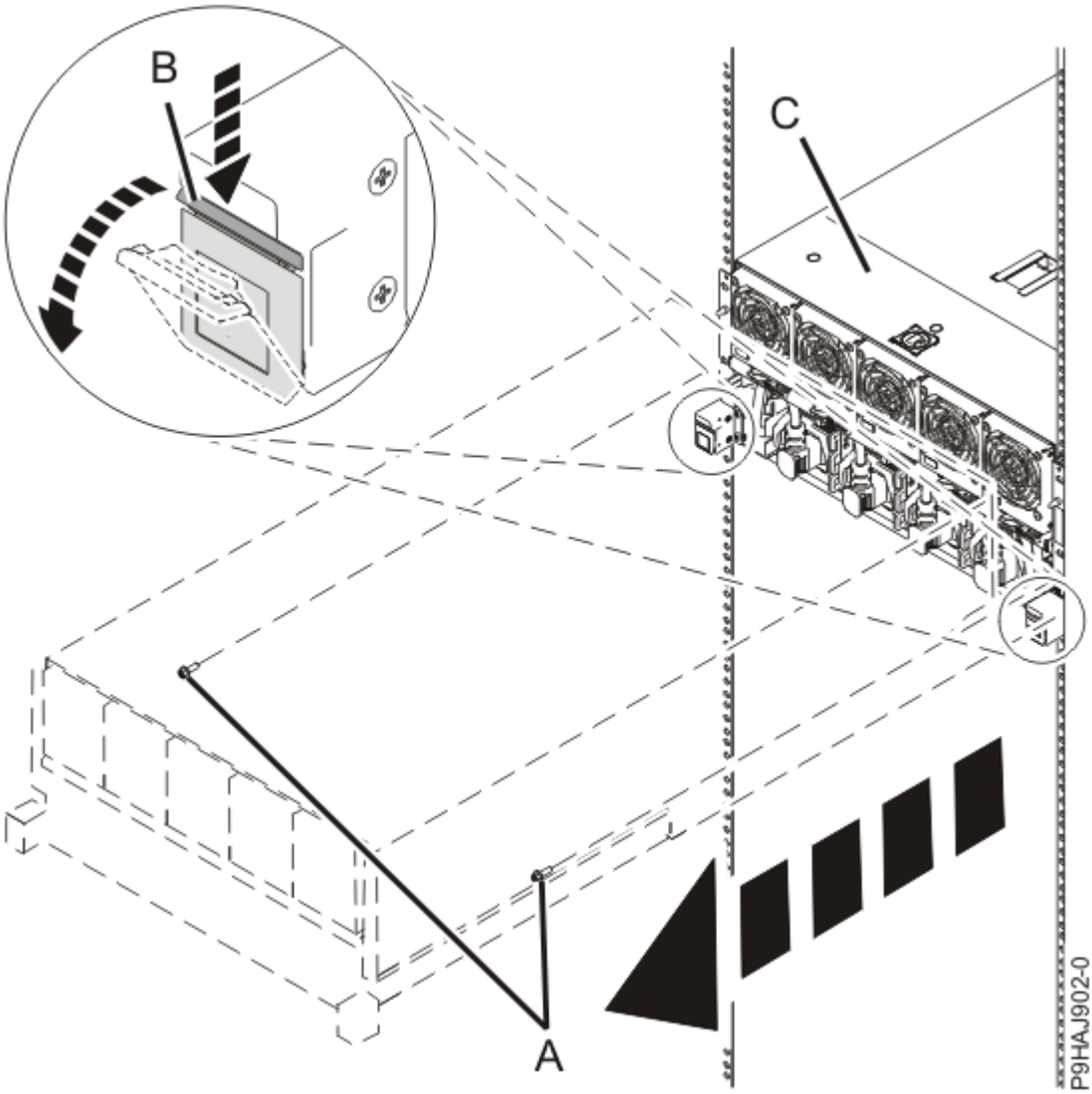


Figure 99. Placing the system node in service position

5. 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.

6. Complete the following steps to remove the cover.

   Attention: Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Push the release latch **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

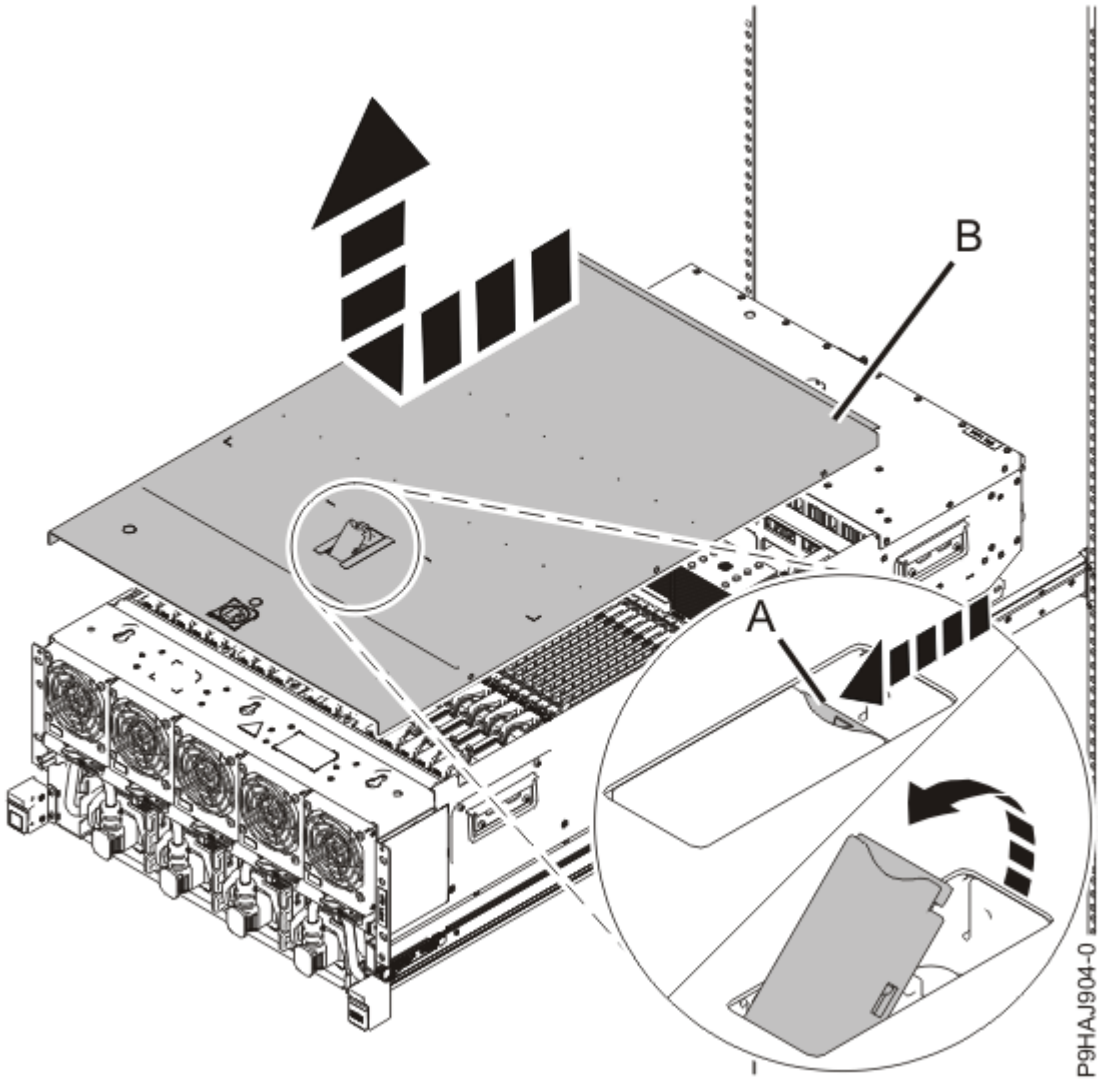


Figure 100. Removing the service access cover

7. To activate the identify LED for the locations for installing the memory modules, press and hold either push-button on the trusted platform module card as shown in the following figure.

   Verify that the LED **(A)** is lit, which indicates that sufficient power exists for the identify LED. If the LED is not lit, use the location code to find the physical location by using the service label.

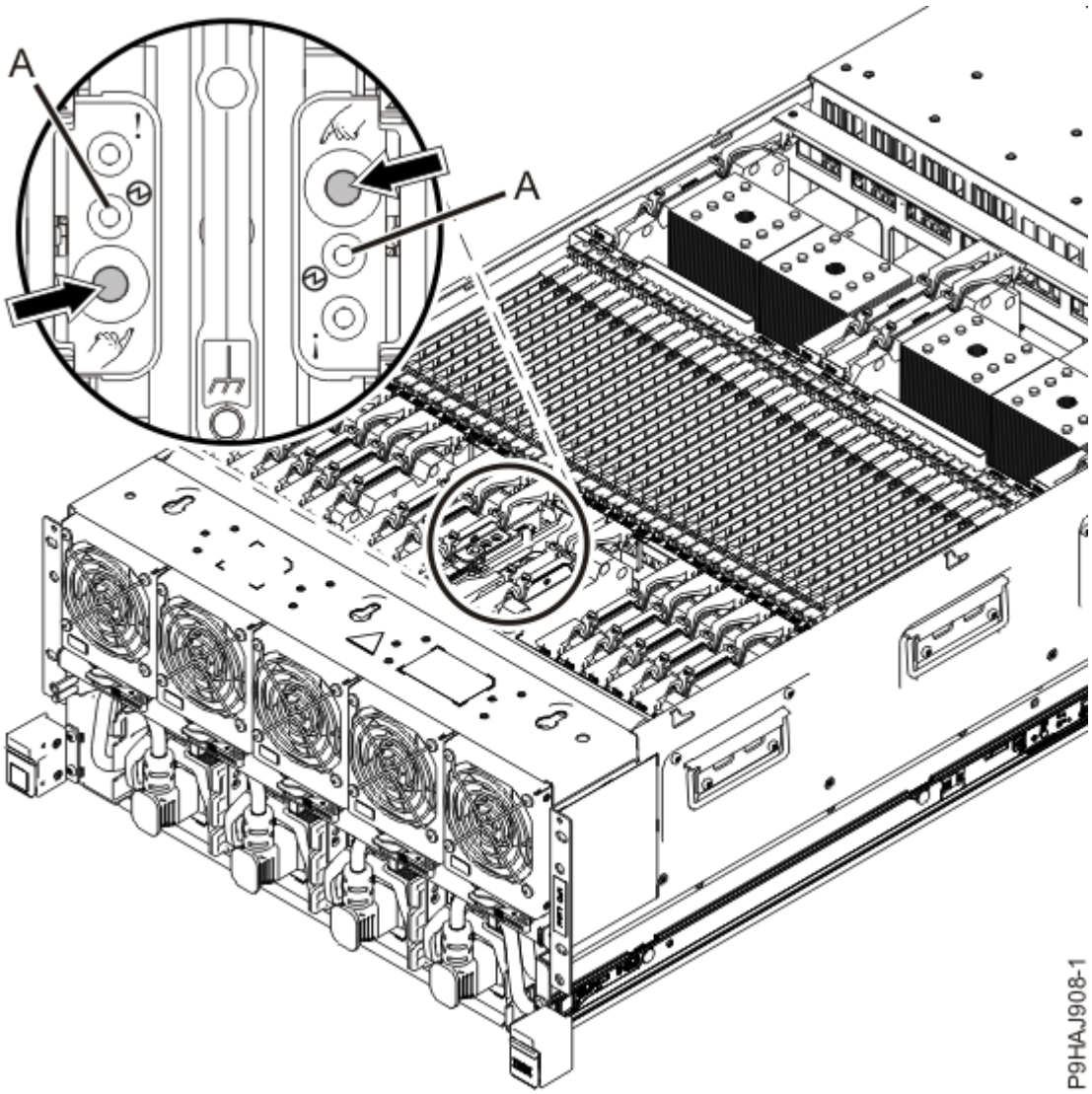


Figure 101. Activating the identify LED

8. Locate the amber LED for the installation locations. Make a note of which locations are flashing; they indicate the memory modules to install.

   Figure 102 on page 119 shows the locations of the memory module. The LEDs are next to the memory module.

   Record the location of the identifying LED.

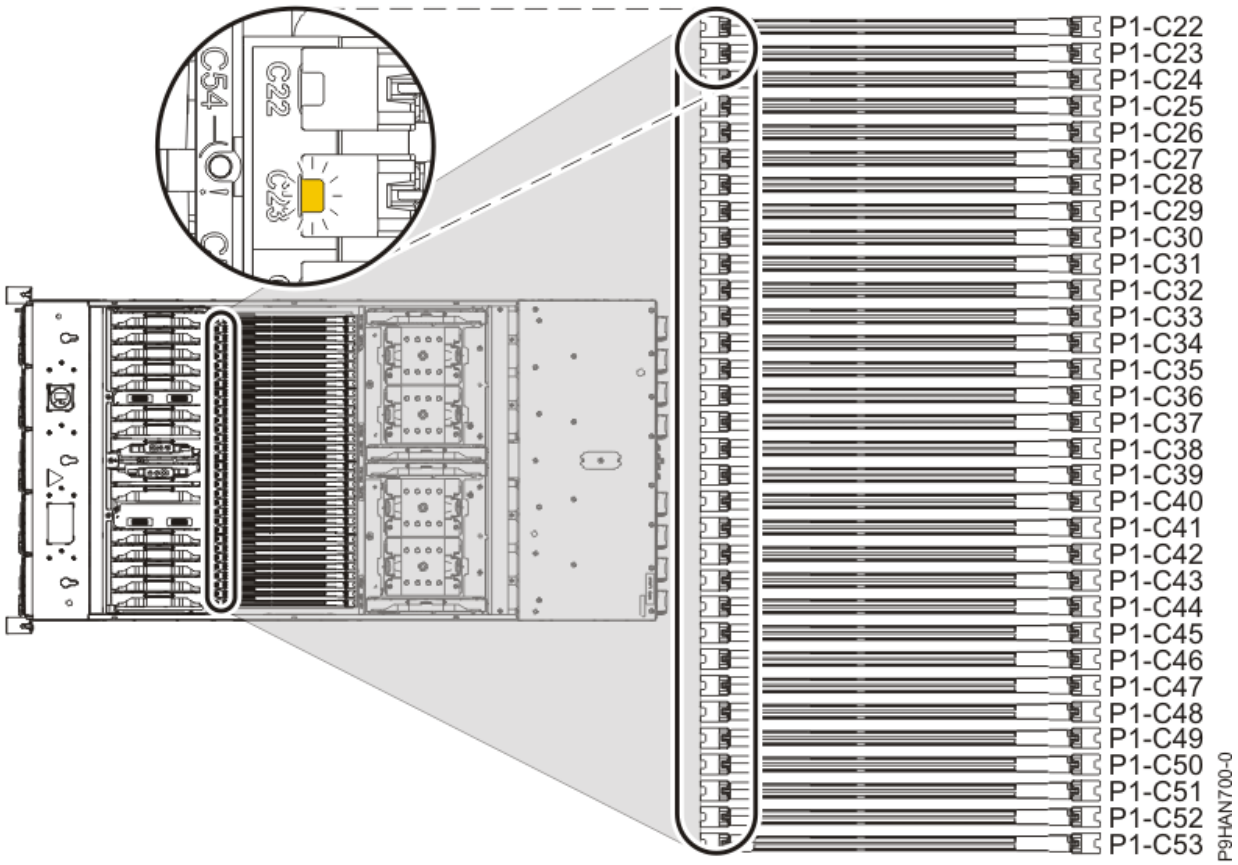


Figure 102. Memory module LEDs and locations

Installing memory modules in the 9080-M9S system

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. Use the slot information that you recorded to determine the slot location to place the memory module.
3. If a memory module filler is present, remove the memory module filler.
   a) Push the tab **(A)** down and outward as shown in the following figure. The lever action of the tabs forces the memory module filler out of the connector.
   b) Grasp the top plastic portion and remove the memory module filler from the slot.

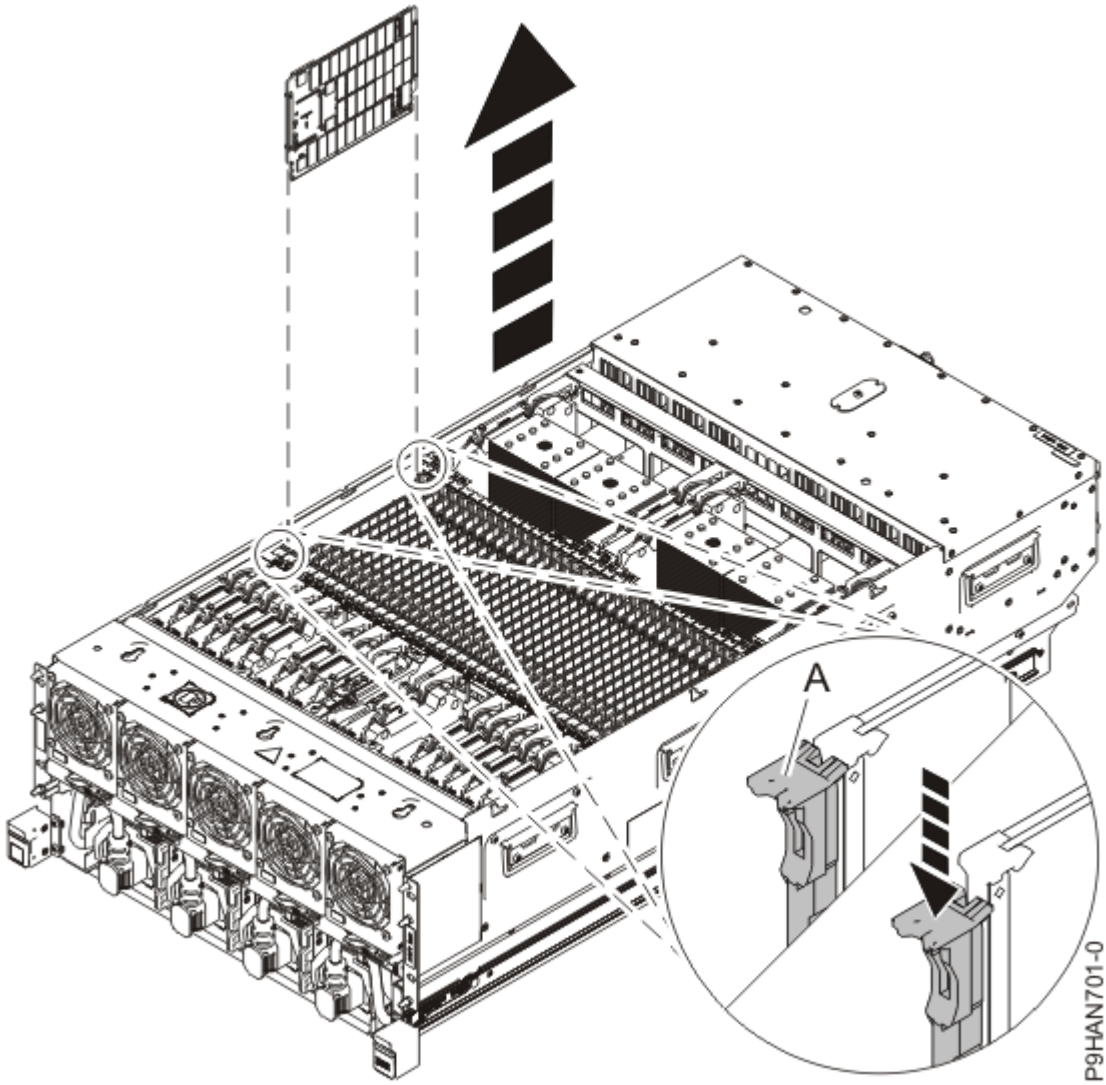


Figure 103. Removing a memory module filler

4. Grasp the new memory module along its edges and align it with the slot.

   Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the location of the key tab within the memory module connector before you attempt to install the memory module.

5. Install the memory module by pushing it into slot until the tabs **(A)** lock into place as shown in the following figure.

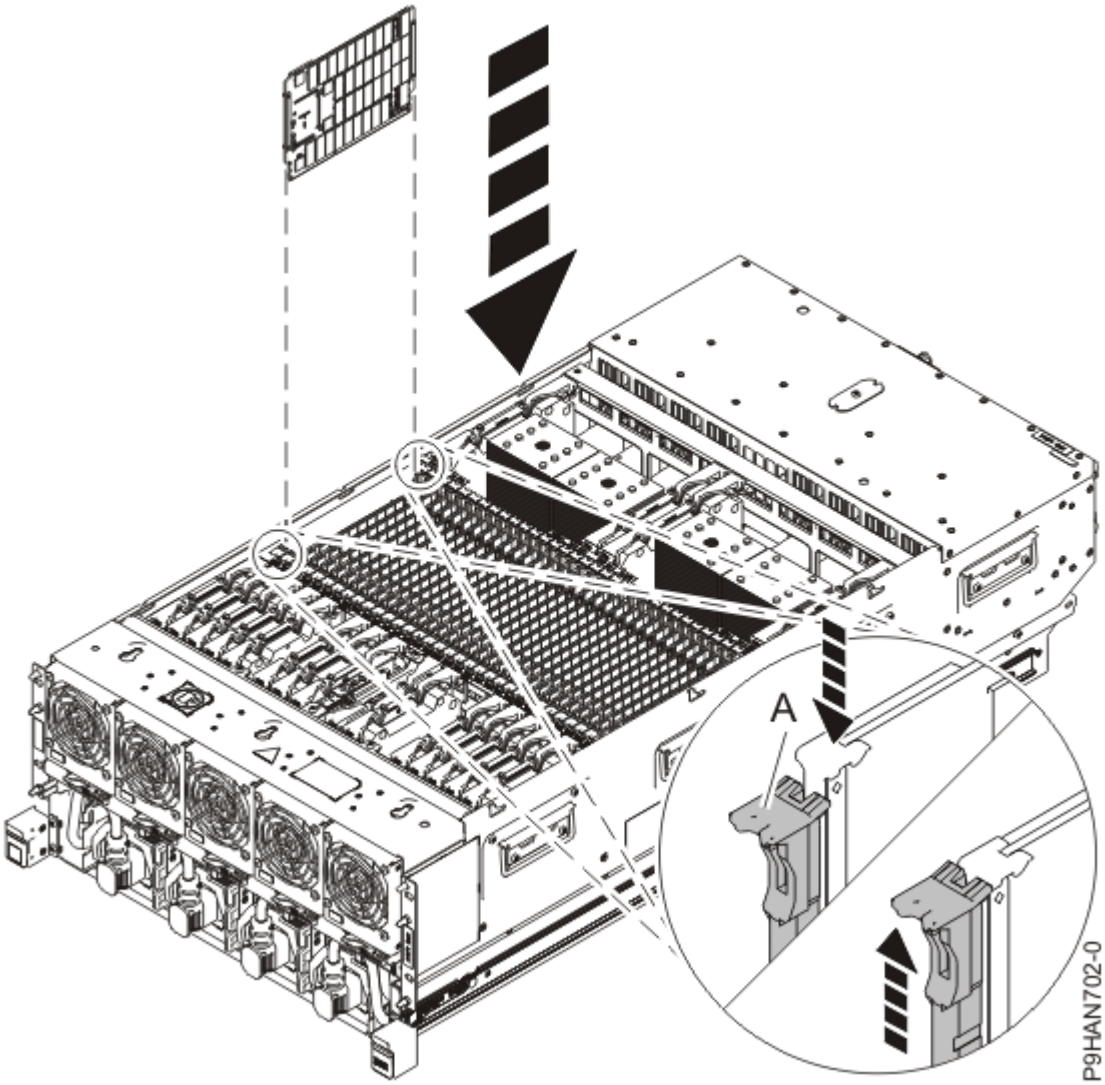


Figure 104. Installing memory modules

Preparing the 9080-M9S system for operation after installing a memory module

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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

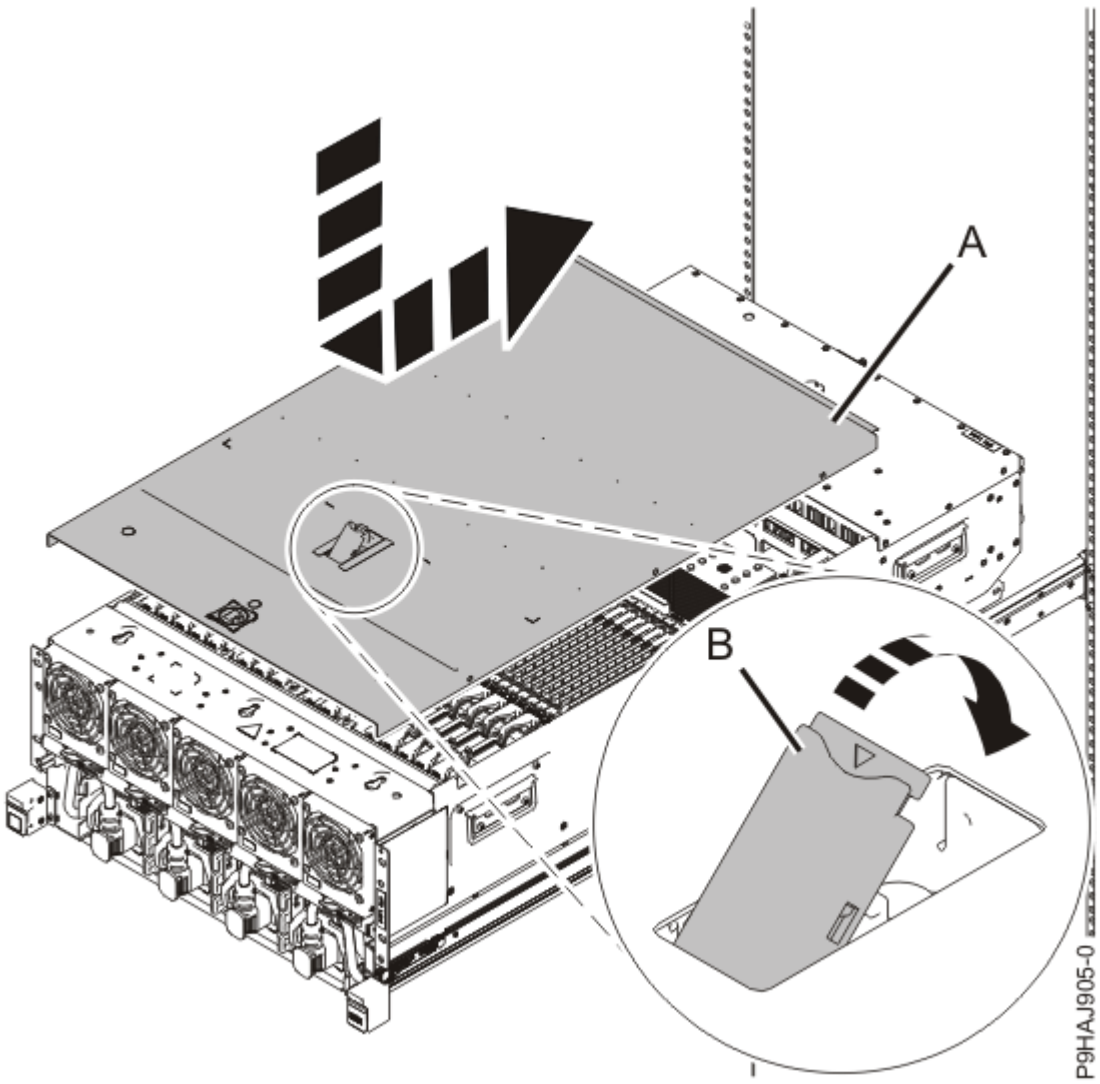


Figure 105. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

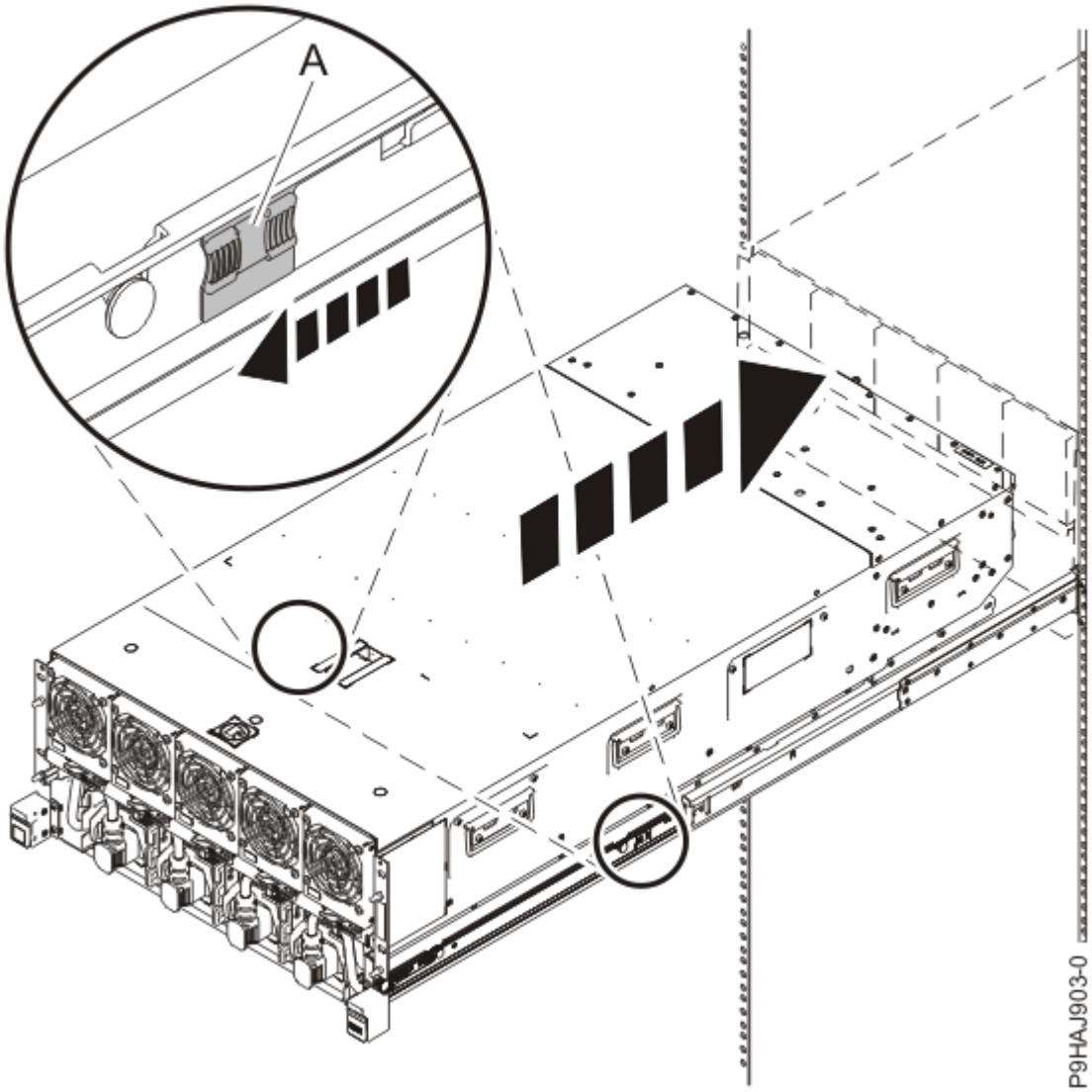


Figure 106. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

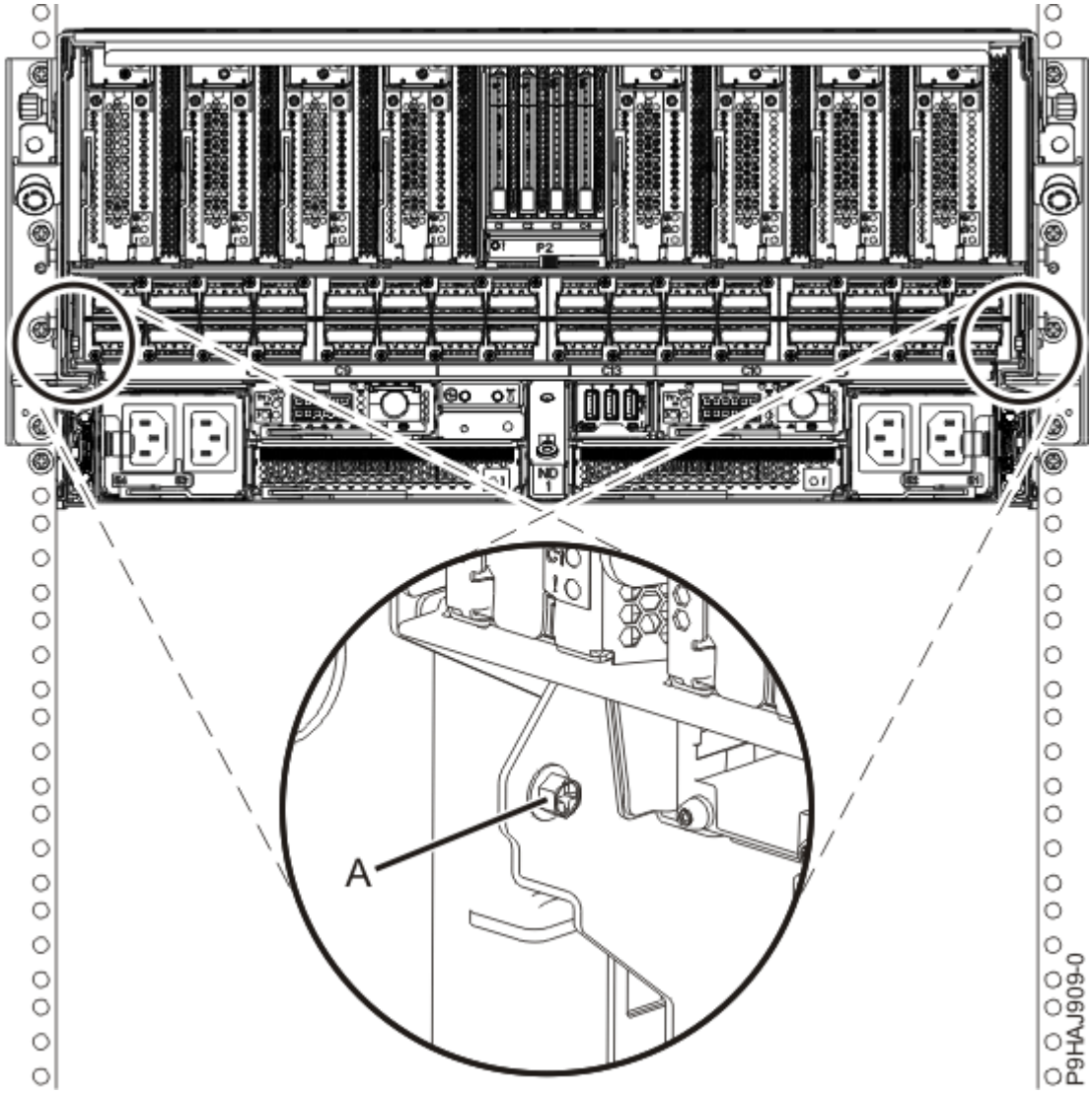


Figure 107. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

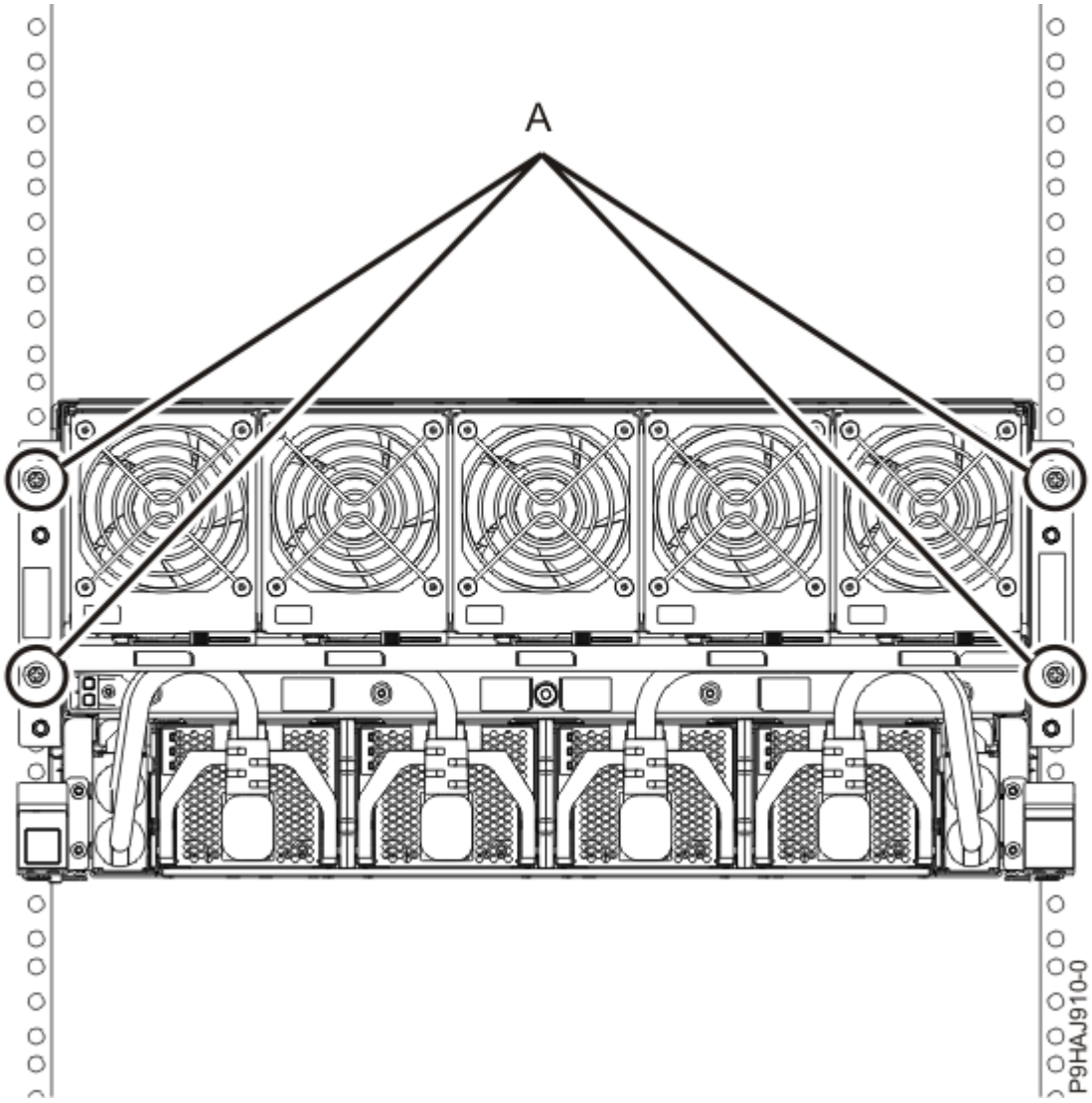


Figure 108. Replacing the front screws

4. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 109 on page 126 and Table 10 on page 126 to determine the point-to-point cabling for SMP cables.

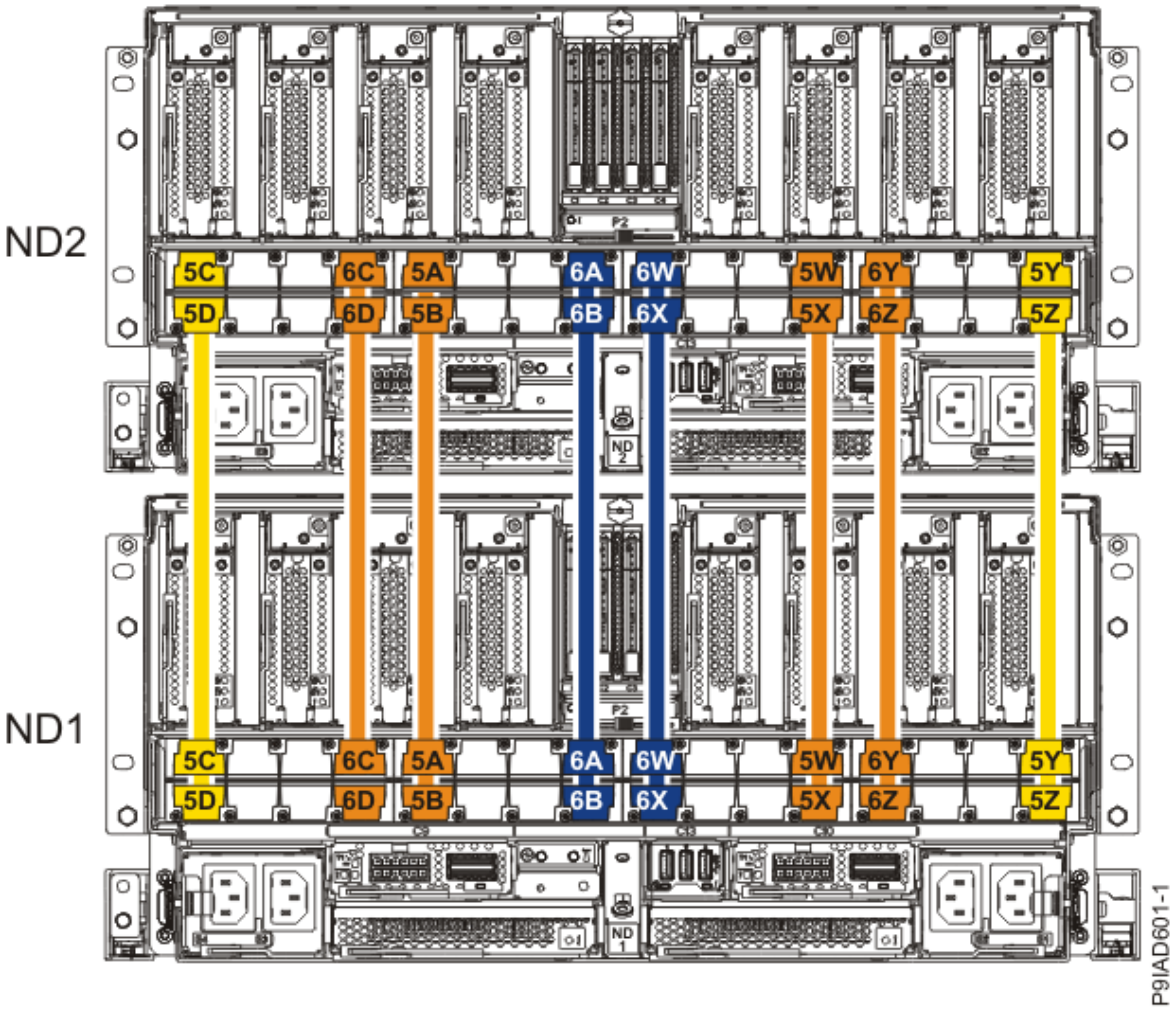


Figure 109. Cabling a Two Node Configuration

Table 10. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 10. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 110 on page 128 and Table 11 on page 128 to determine the point-to-point cabling for SMP cables.

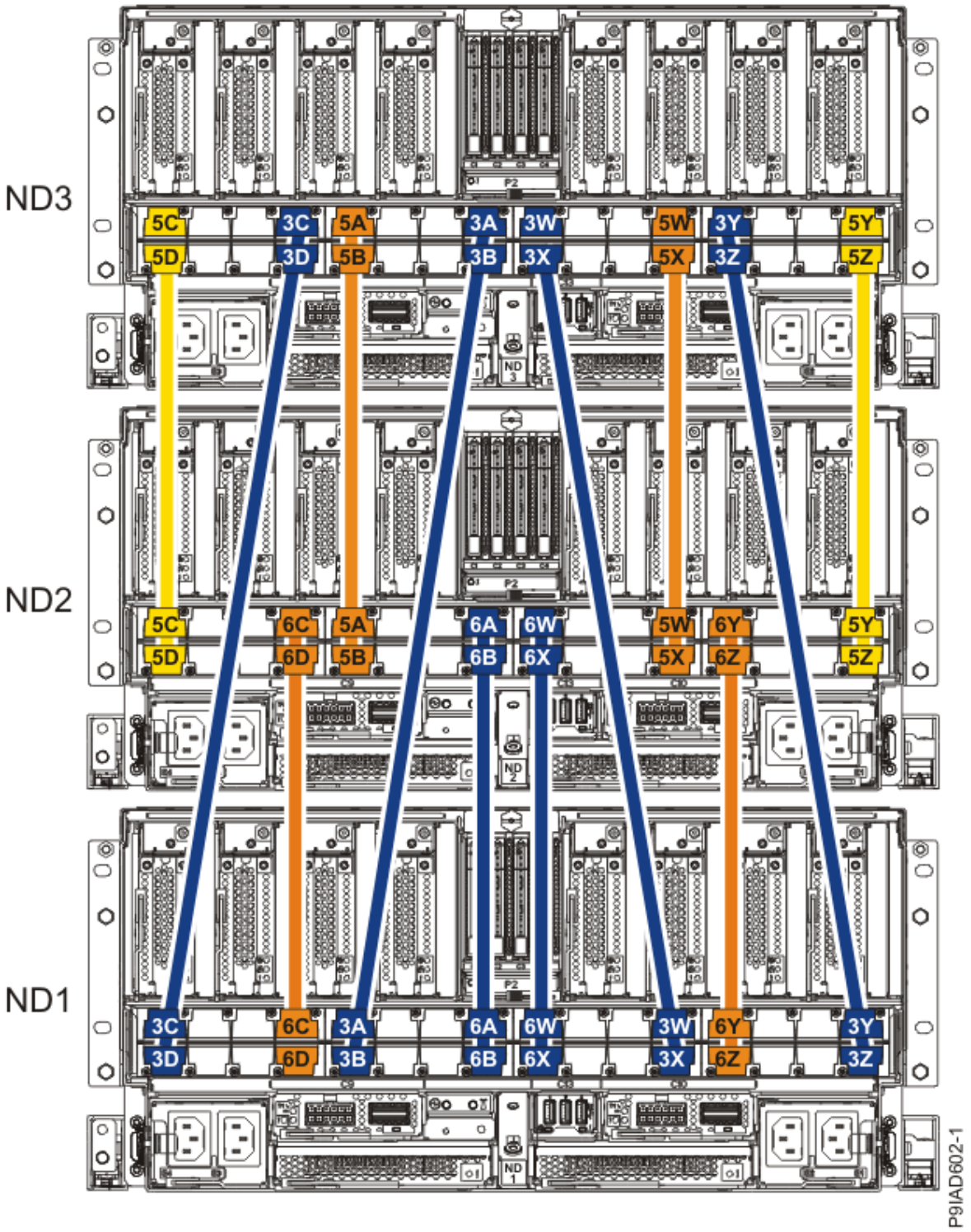


Figure 110. Cabling a Three Node Configuration

Table 11. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 11. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 11. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 111 on page 131 and Table 12 on page 132 to determine the point-to-point cabling for SMP cables.

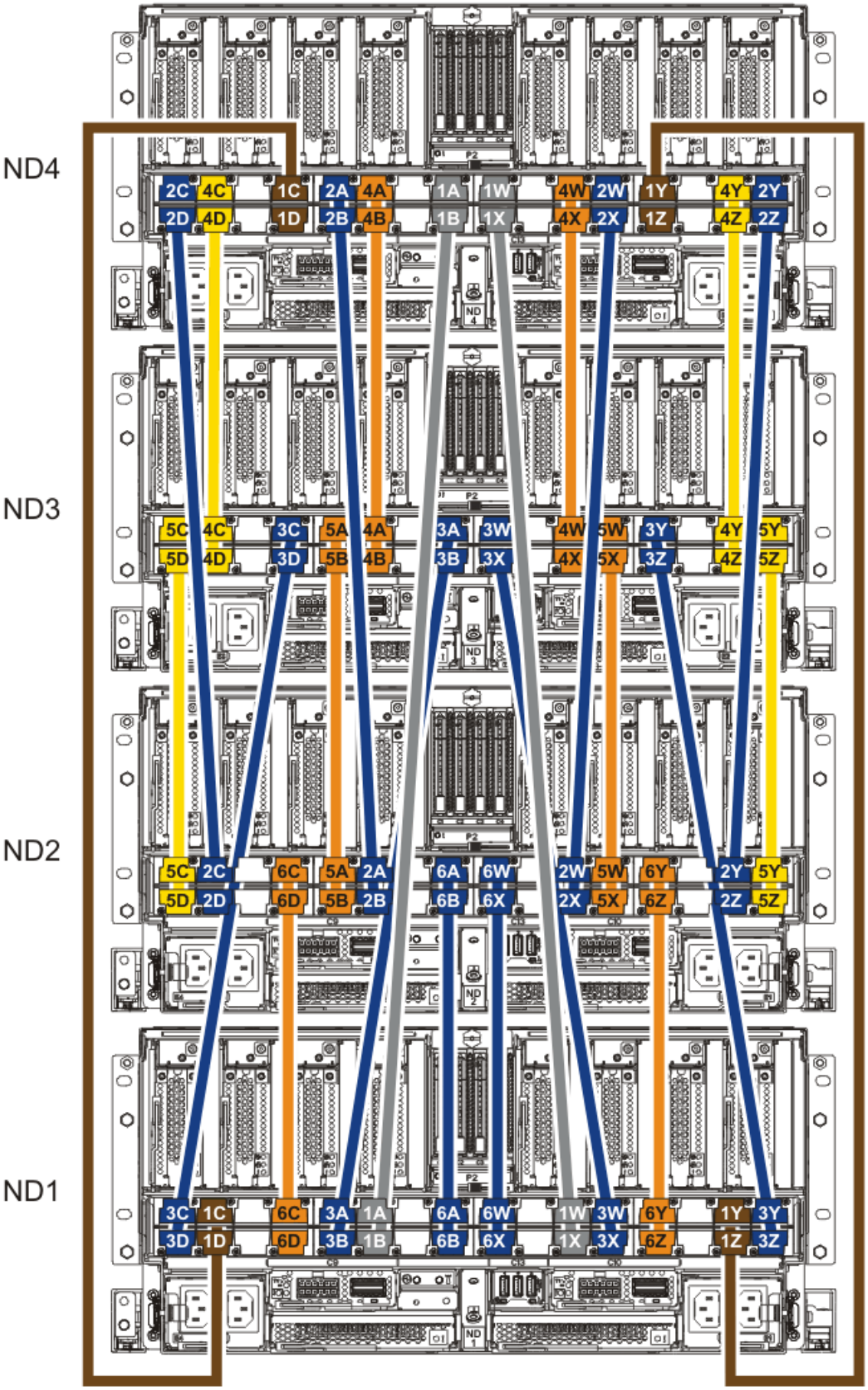


Figure 111. Cabling a Four Node Configuration

Table 12. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 12. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 12. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

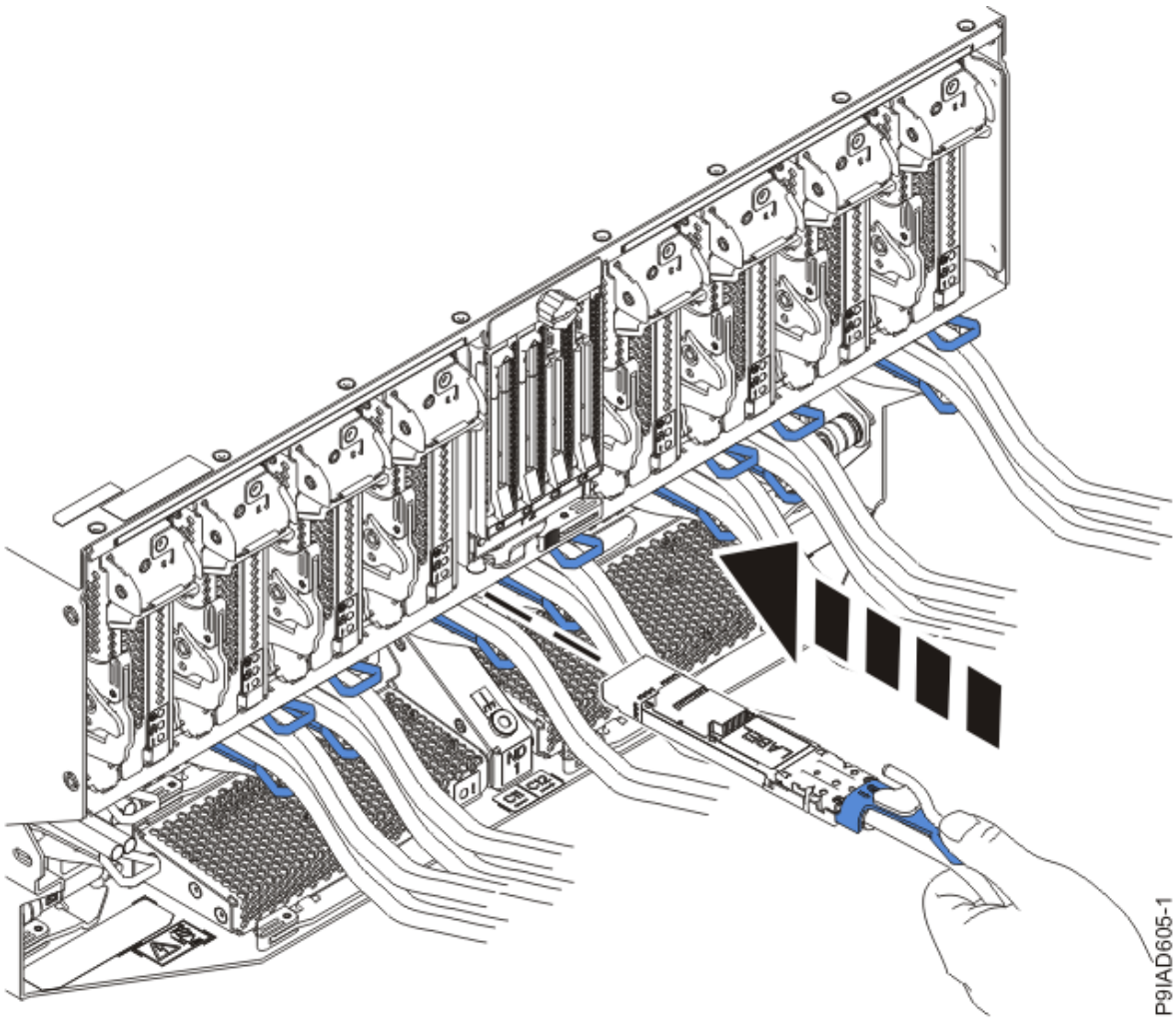


Figure 112. Replacing the SMP cable into the system node

b) Repeat step “4.a” on page 134 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

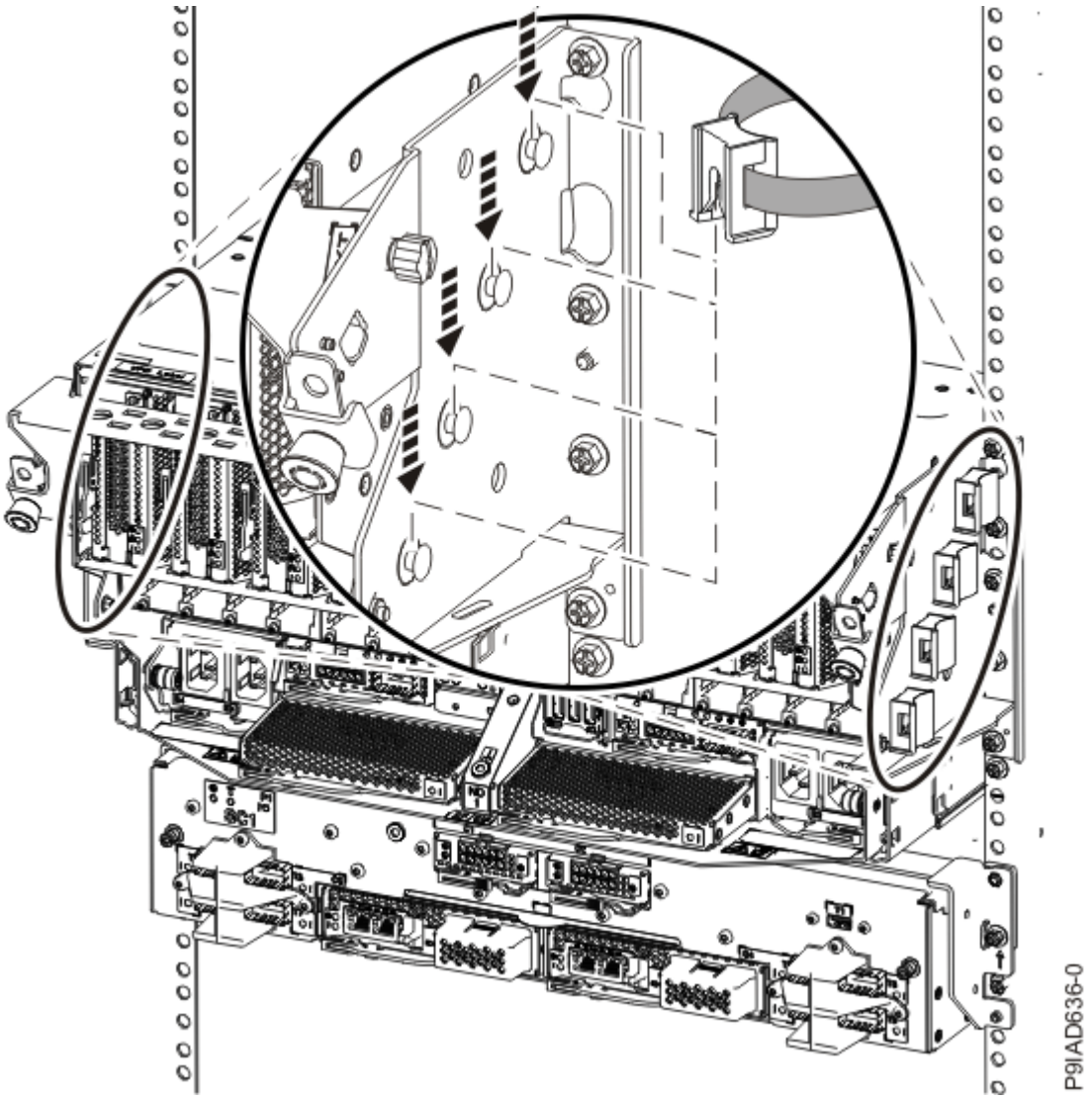


Figure 113. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

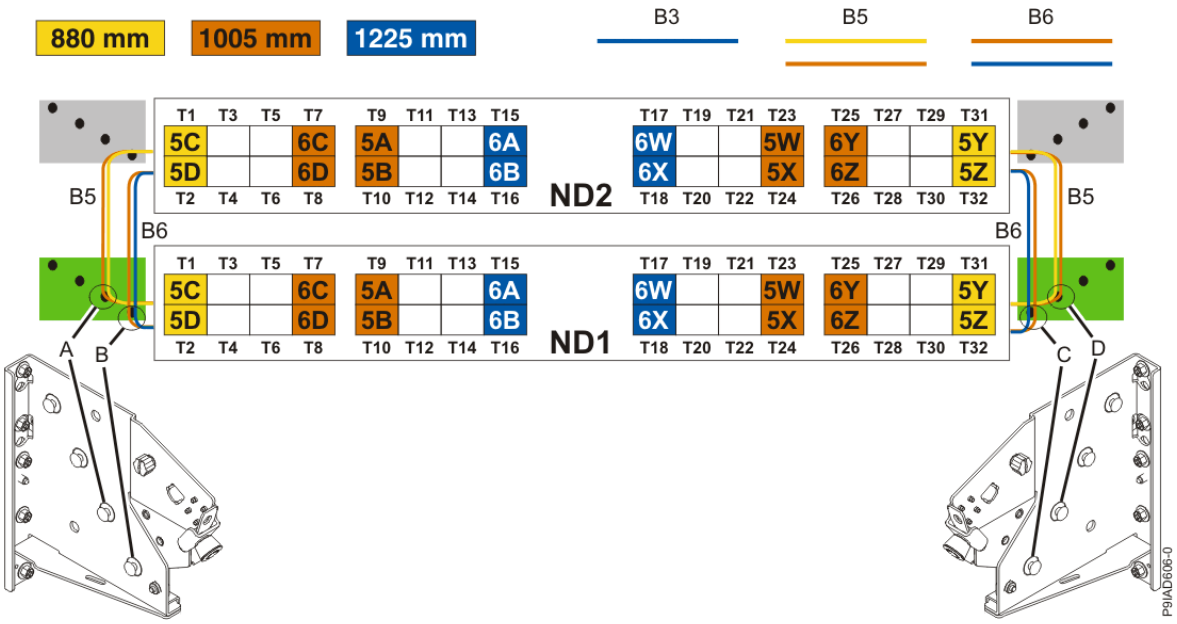


Figure 114. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

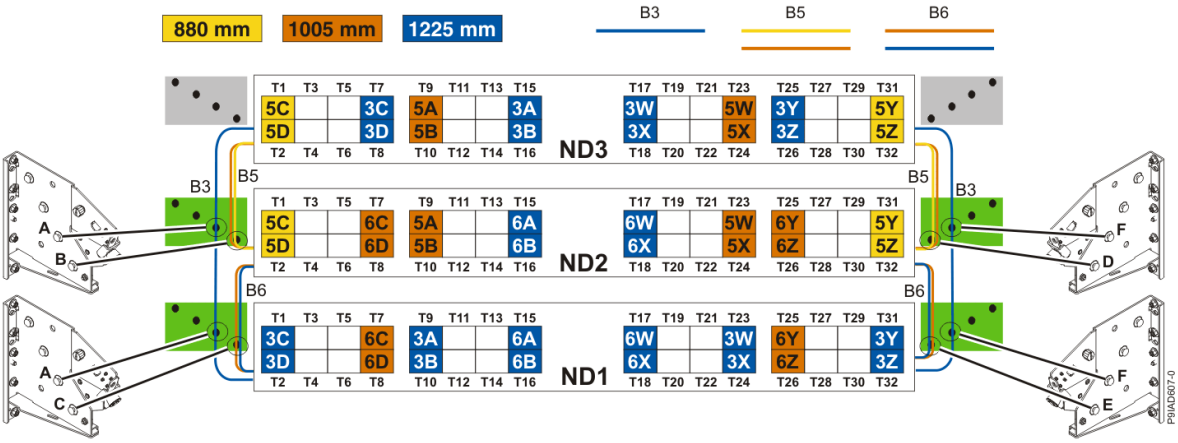


Figure 115. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

– The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
– The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

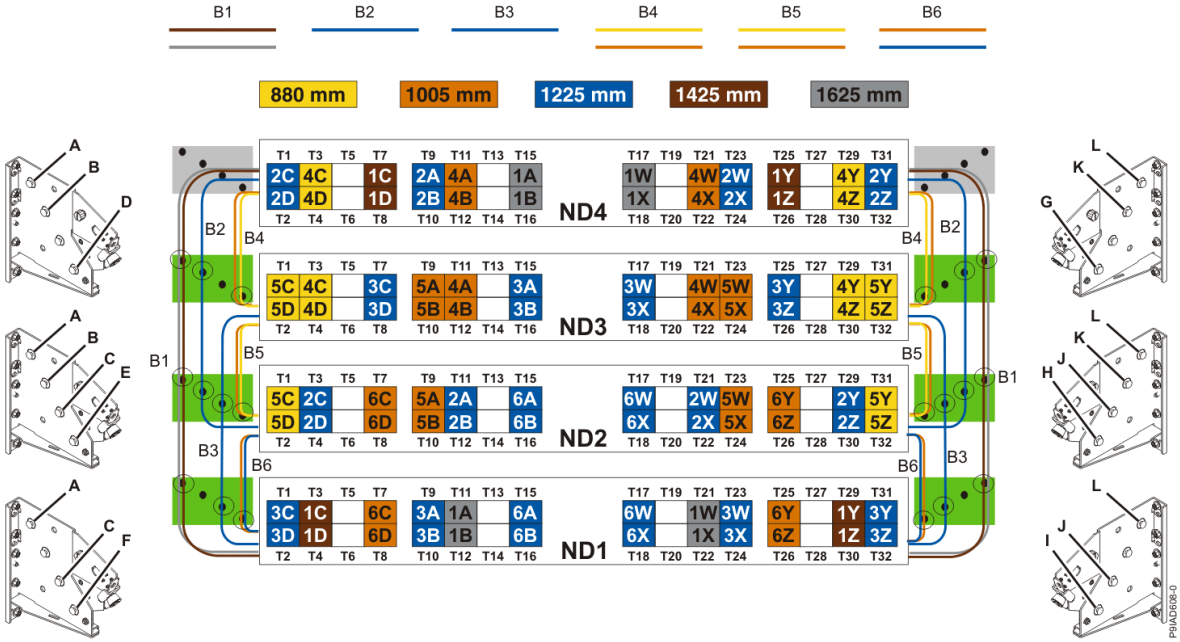


Figure 116. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  – The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  – The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  – The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  – The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  – The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  – The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  – The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  – The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  – The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  – The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  – The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  – The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

5. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 117 on page 139 and Table 13 on page 139 to determine the point-to-point cabling for UPIC cables.

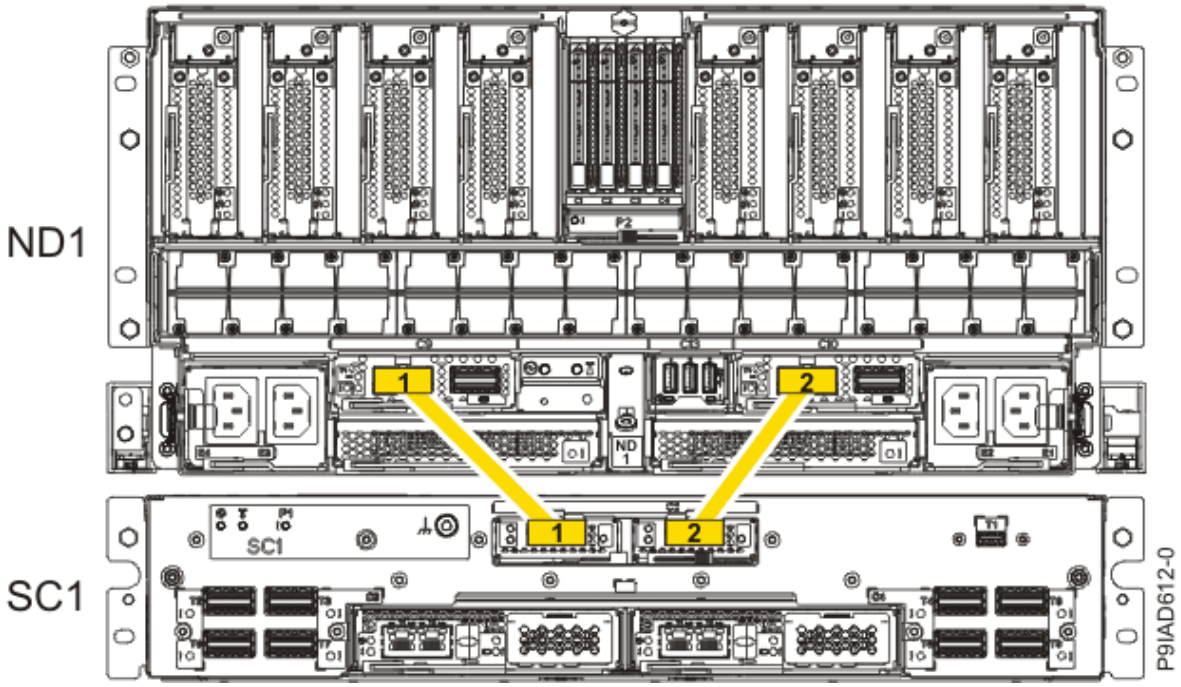


Figure 117. Single Node Configuration UPIC Cabling

Table 13. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 118 on page 140 and Table 14 on page 140 to determine the point-to-point cabling for UPIC cables.

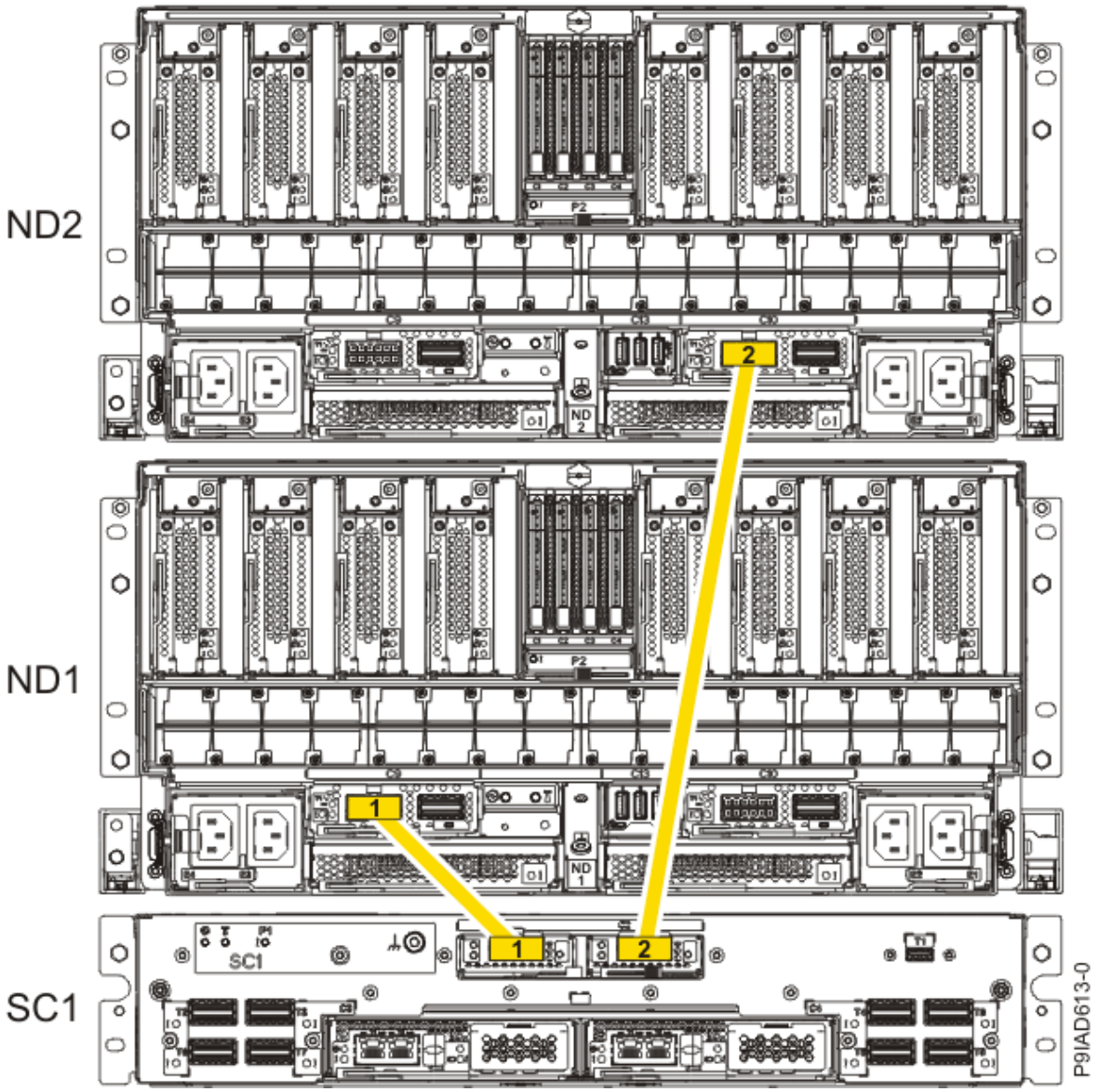


Figure 118. Two, Three, or Four Node Configuration UPIC Cabling

Table 14. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

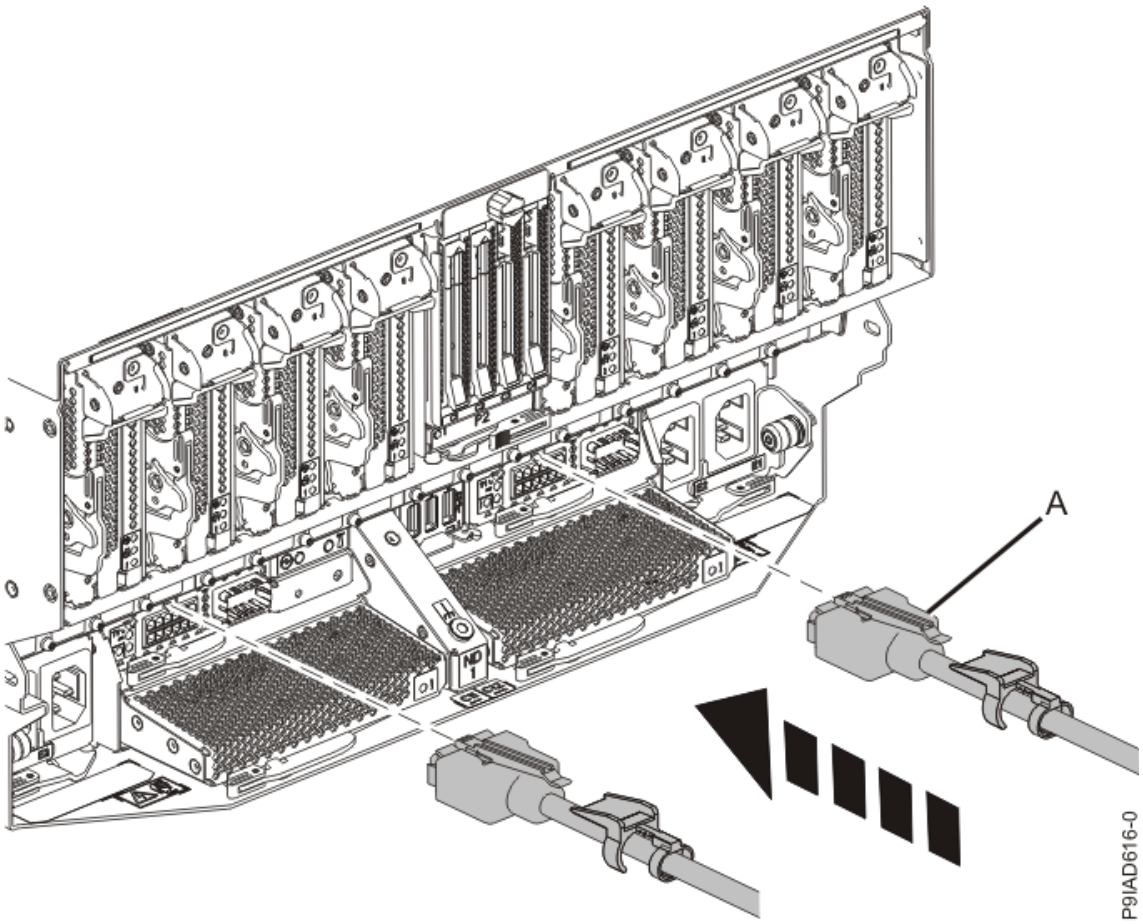


Figure 119. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

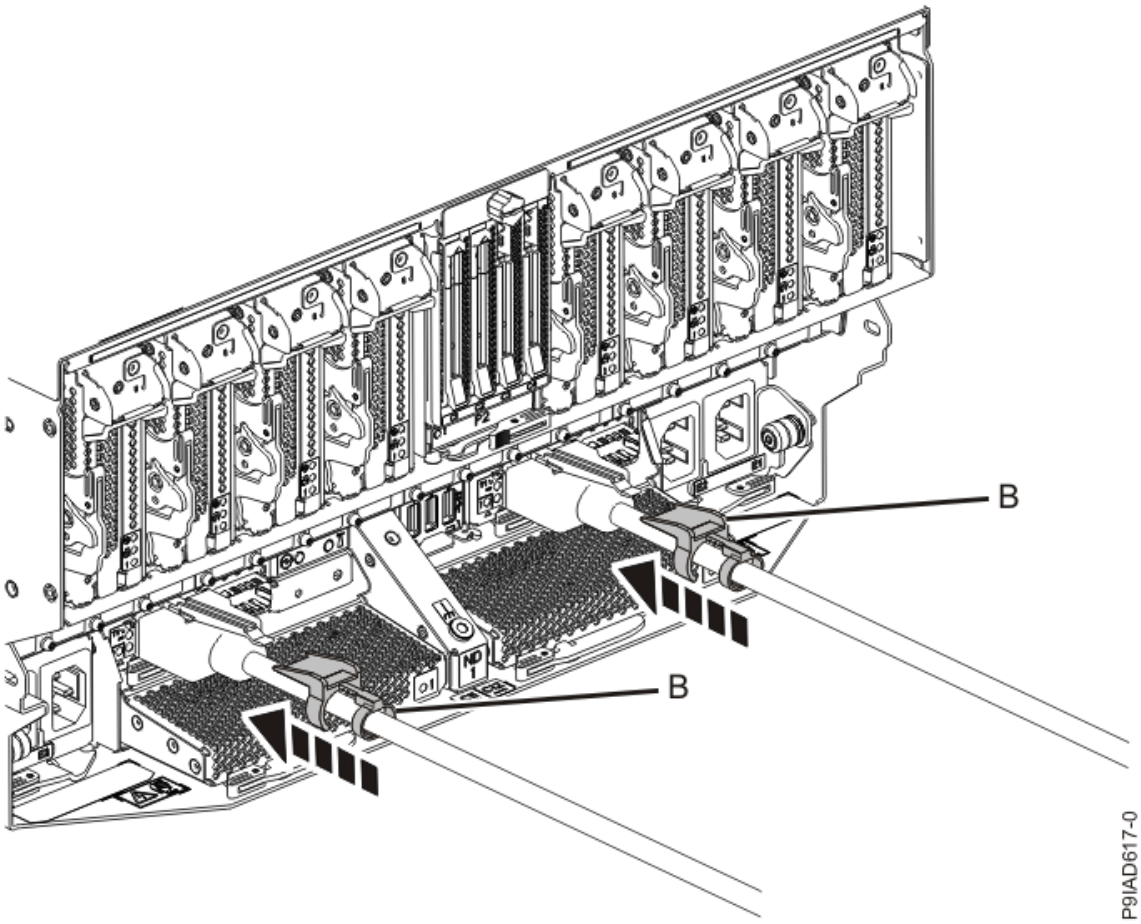


Figure 120. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “5.a” on page 140 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

6. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

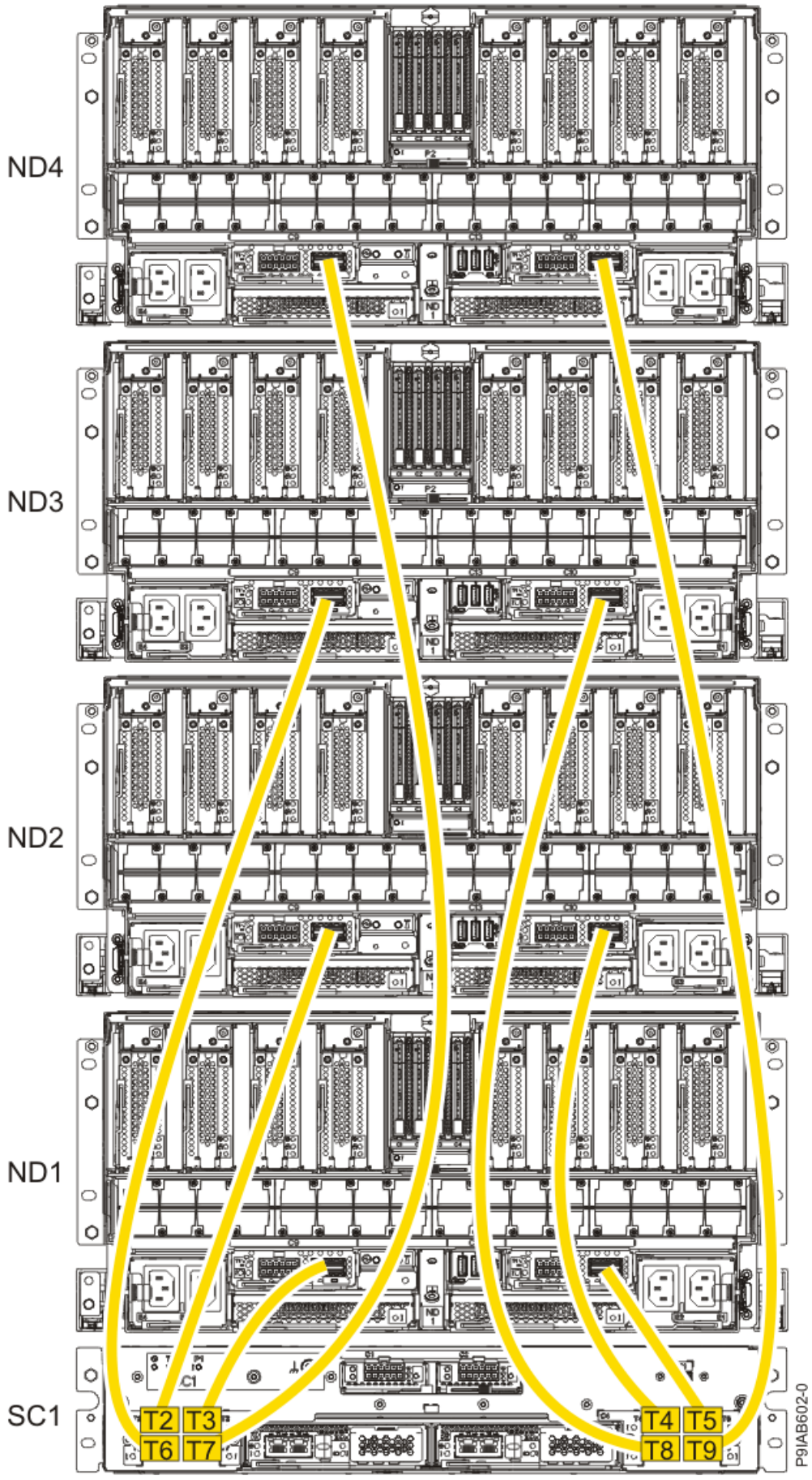


Figure 121. Service processor (FSP) cabling

Table 15. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

7. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

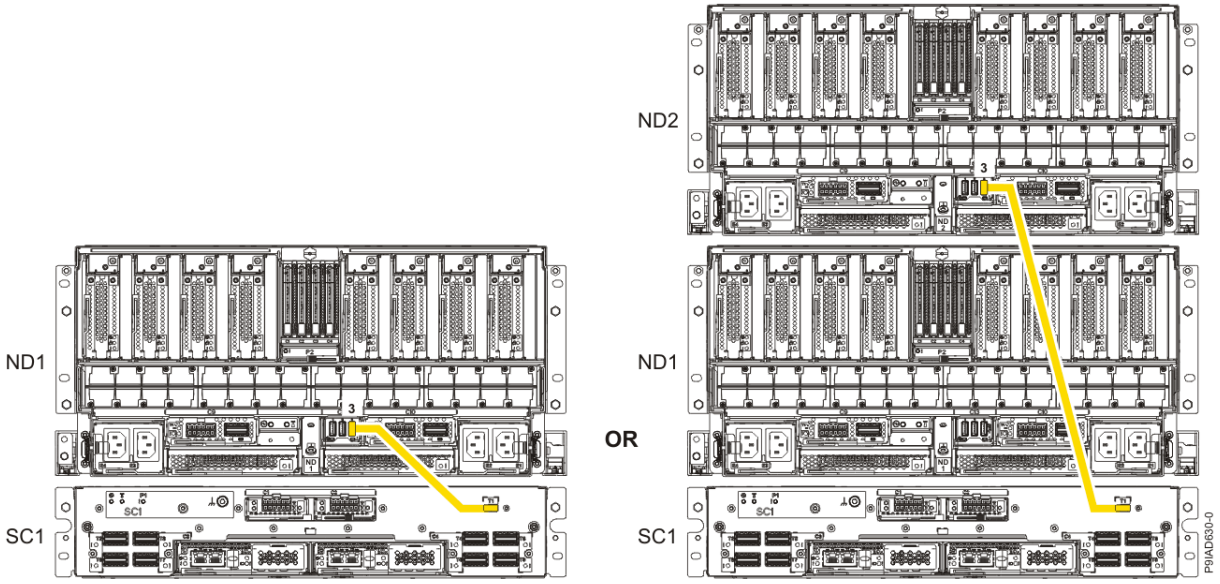


Figure 122. USB Cabling

Table 16. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

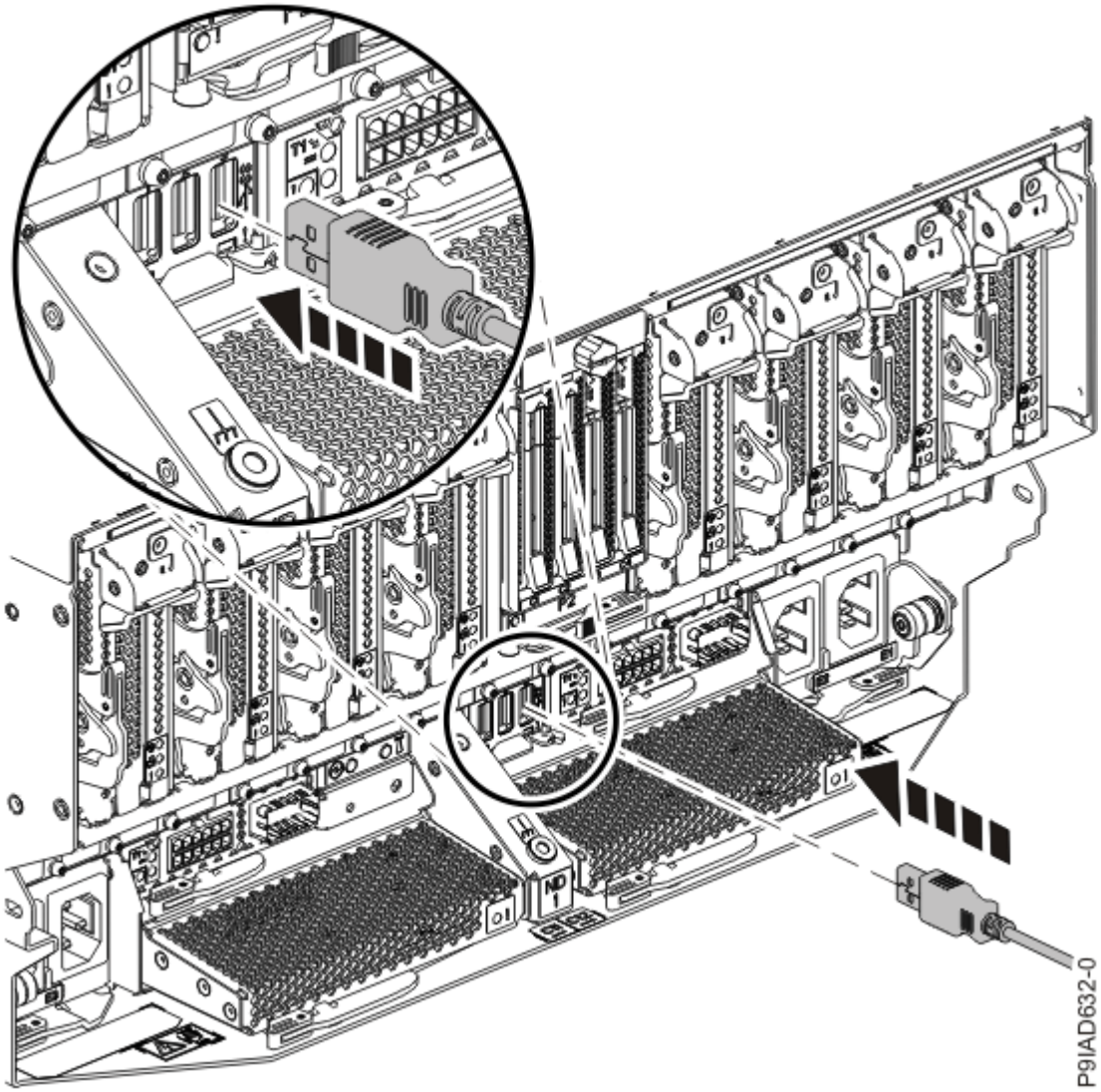


Figure 123. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

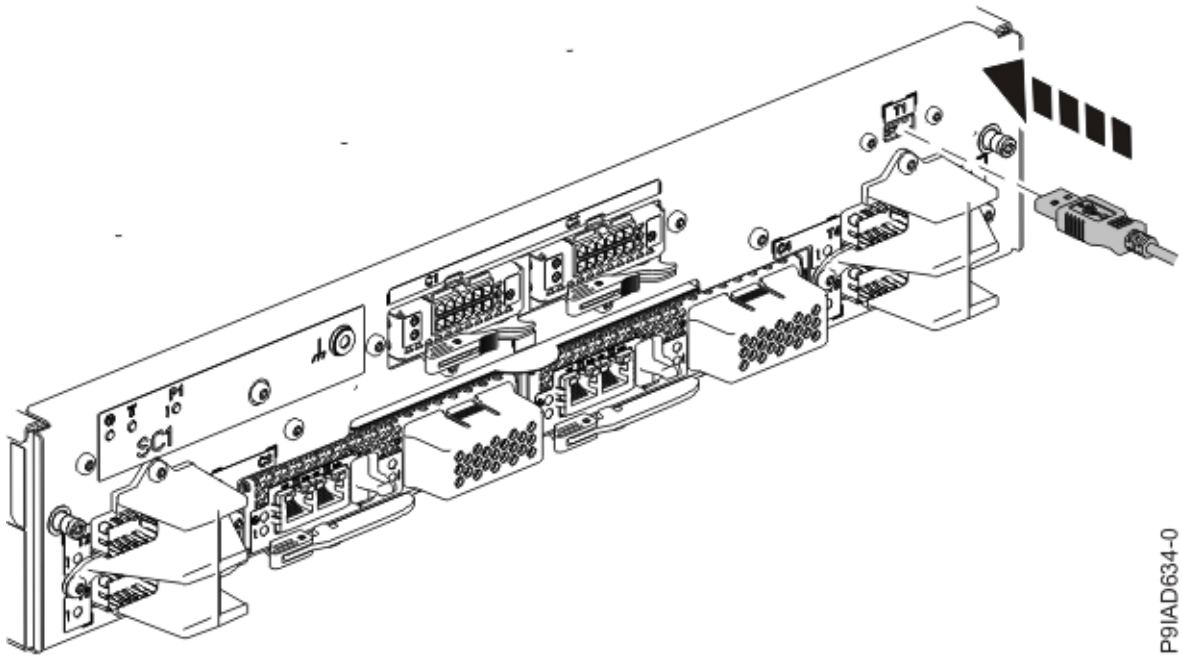


Figure 124. Replacing the USB cable into the system control unit

8. Using your labels, reconnect all of the PCIe cables or transceivers that you removed from the PCIe adapters for the system node you are servicing.
9. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

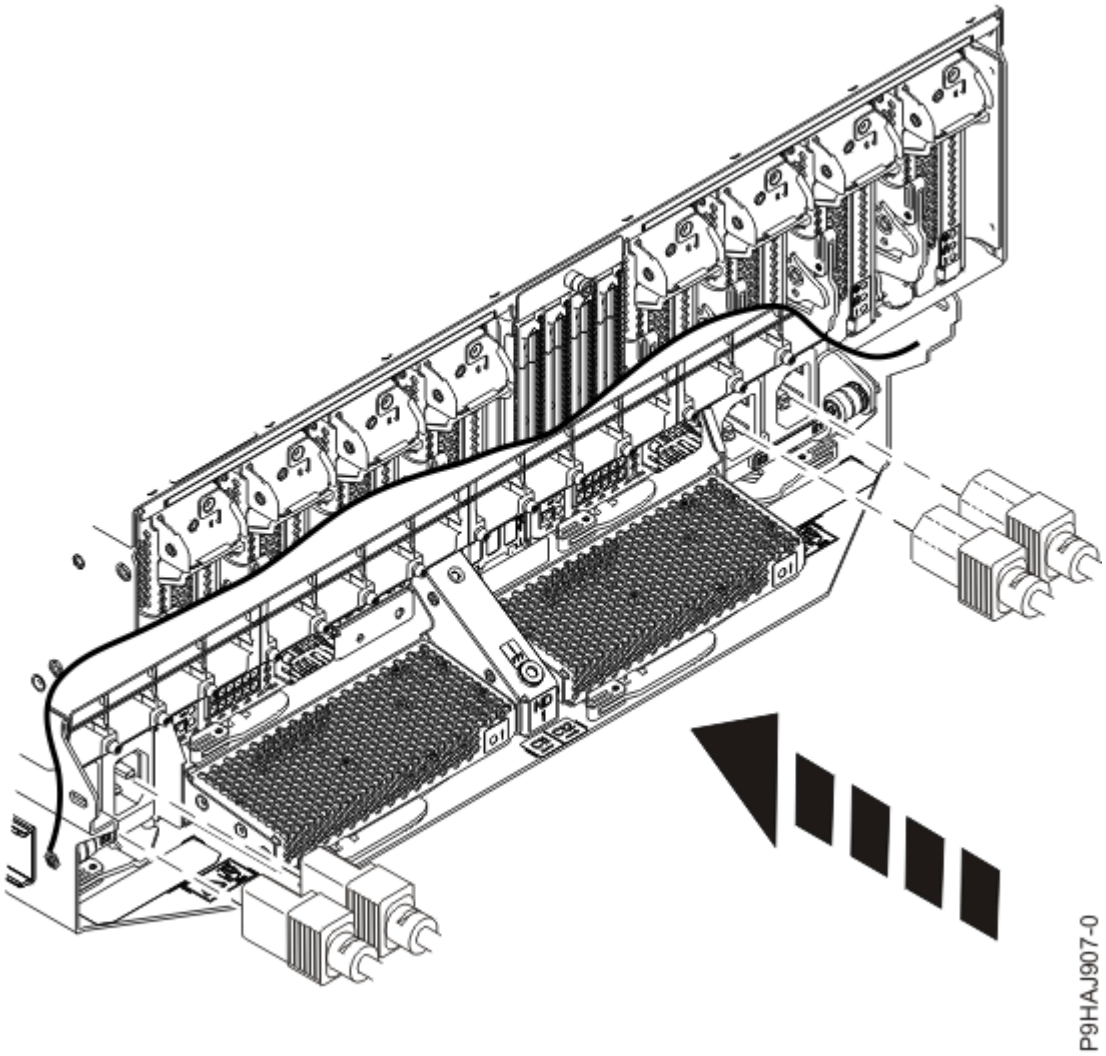


Figure 125. Connecting the rear power cords

10. 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.

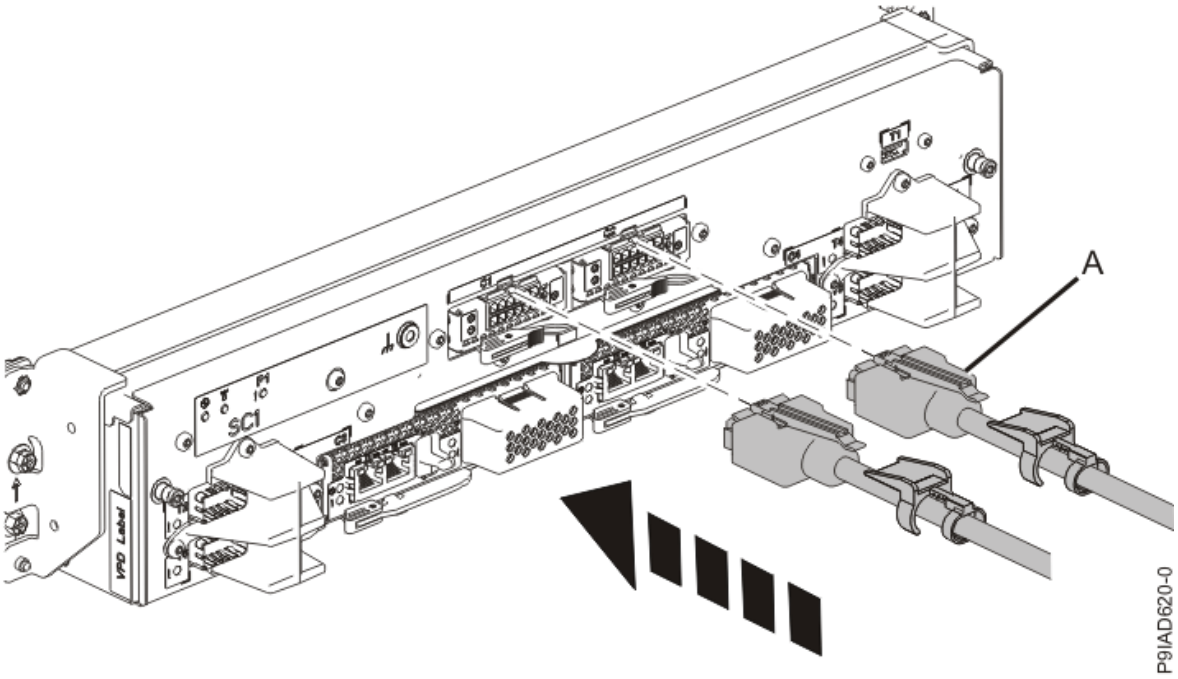


Figure 126. Replacing the UPIC cable into the system control unit

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

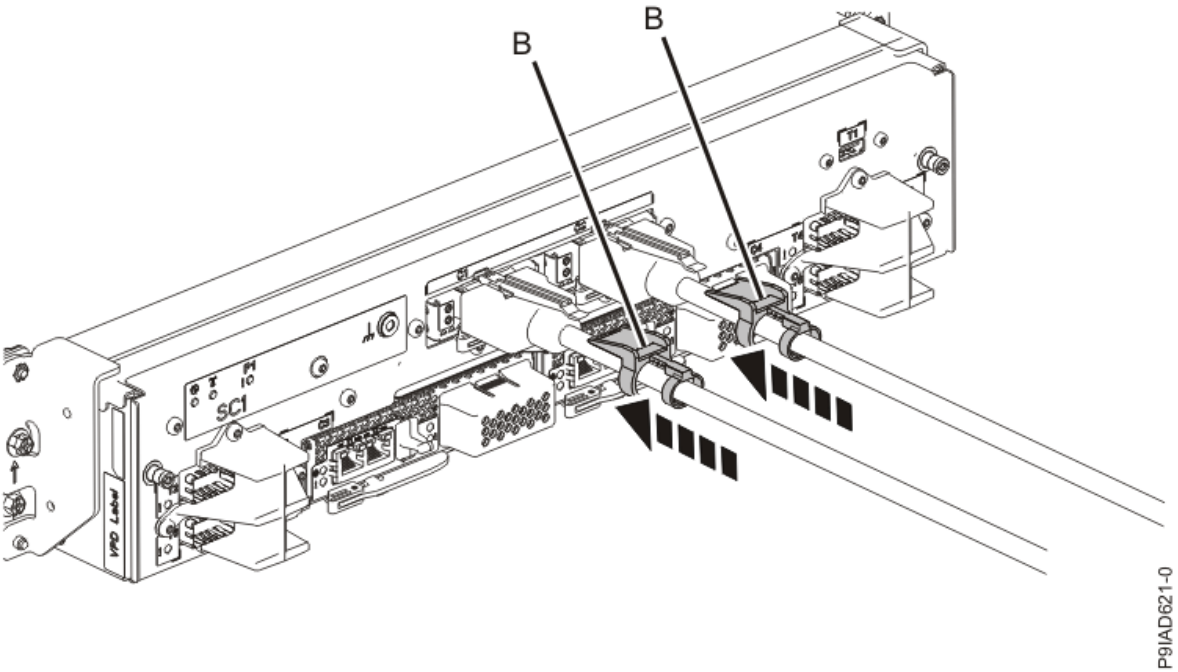


Figure 127. Replacing the UPIC cable into the system control unit

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.

11. 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.
12. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Removing and replacing memory modules

Preparing the 9080-M9S system to remove and replace a memory module

Procedure

1. Open the rear rack door, if necessary.
2. 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.

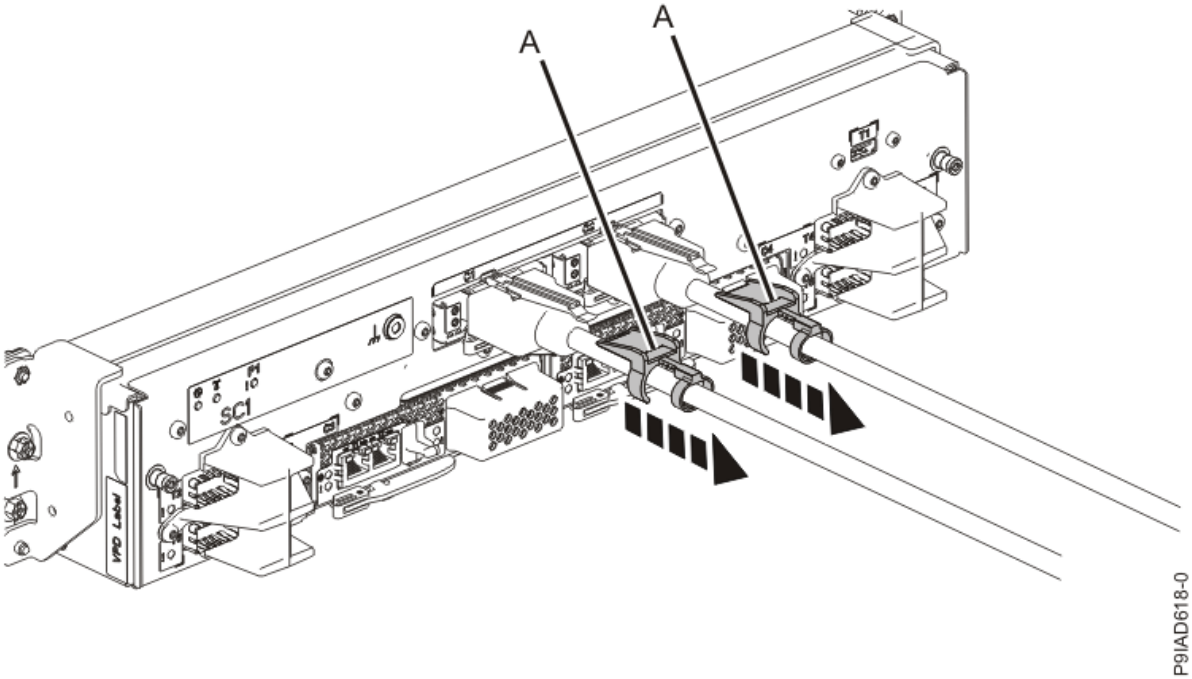


Figure 128. Removing the UPIC cable lock

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

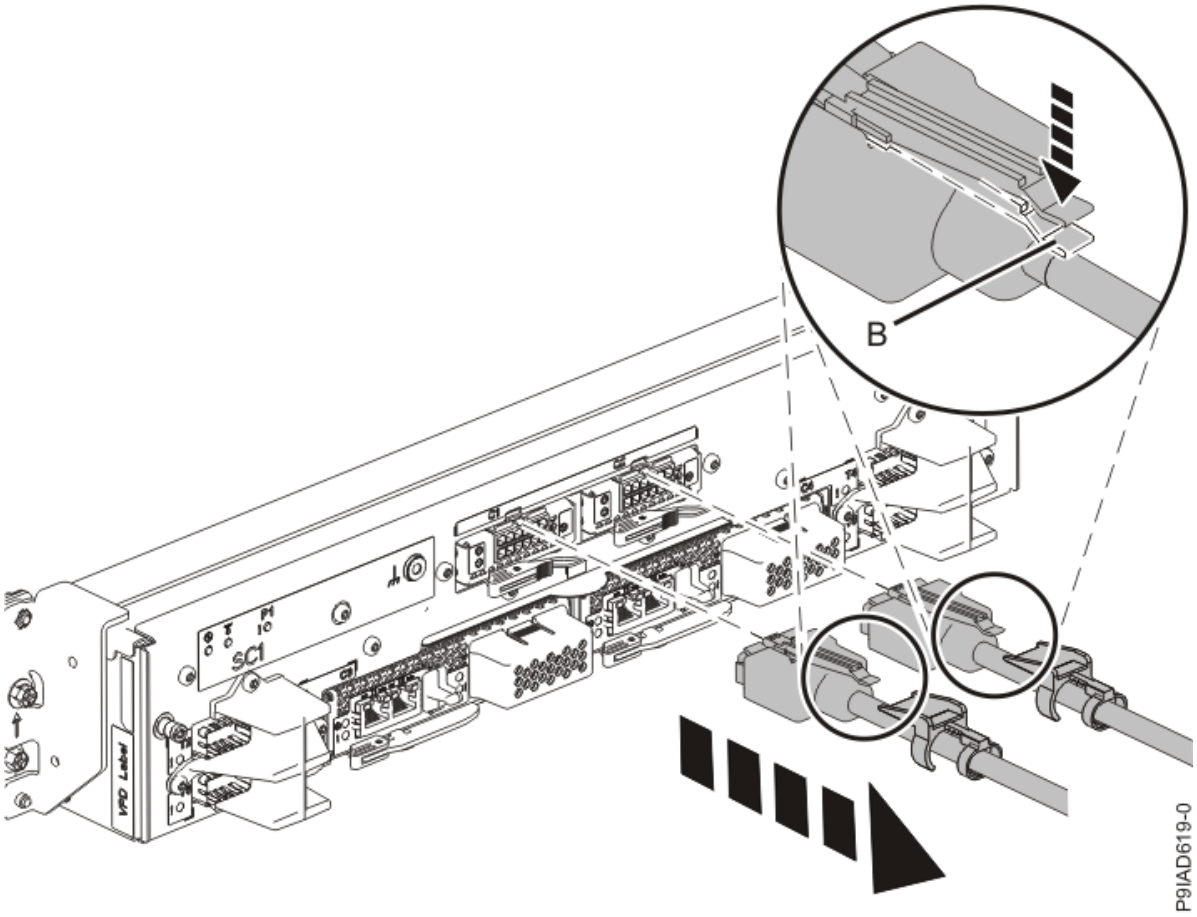


Figure 129. Removing the UPIC cable from the system control unit

3. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

   a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

      Notes:

      - This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

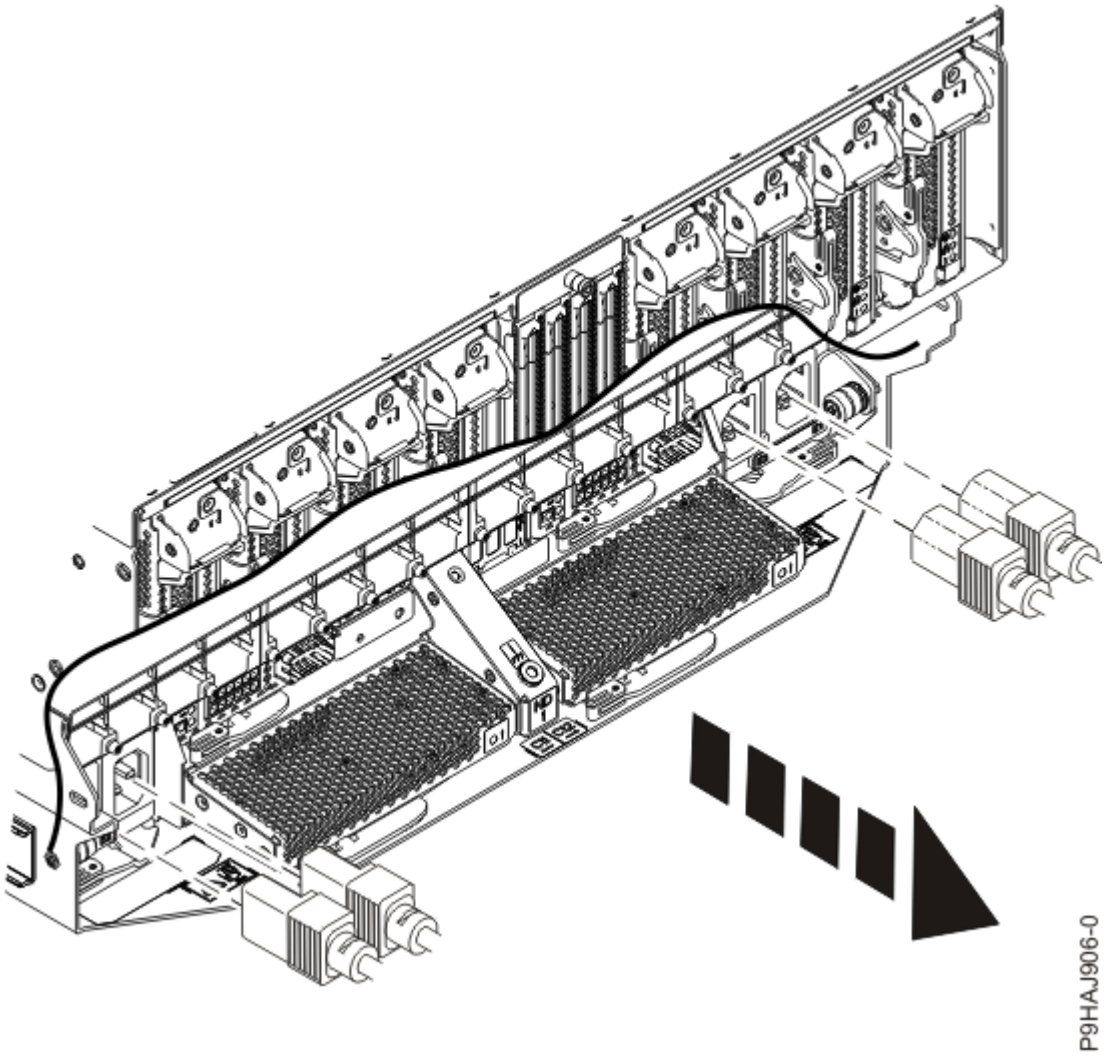
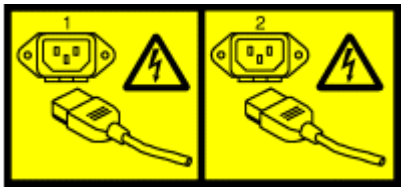


Figure 130. Removing the rear power cords

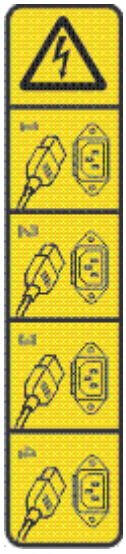
(L003)



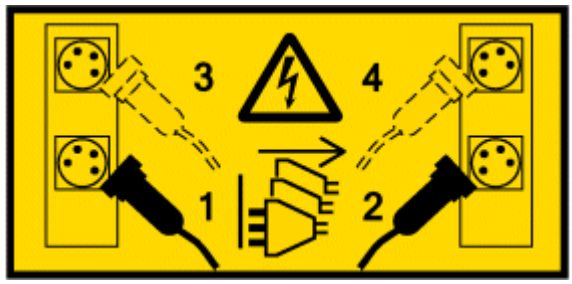
or

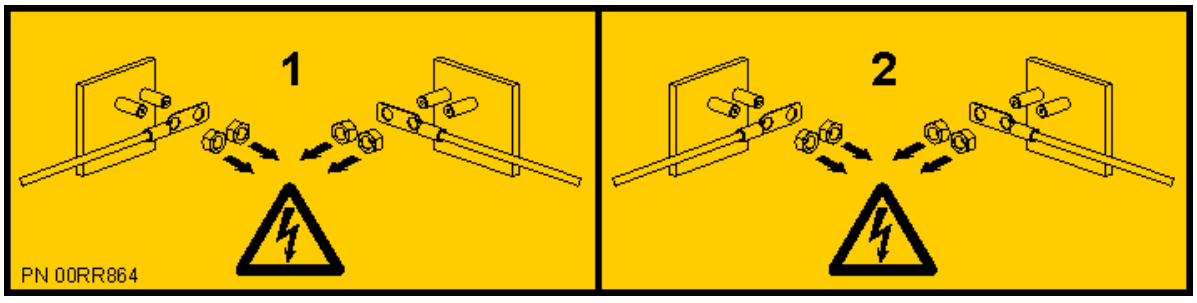
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

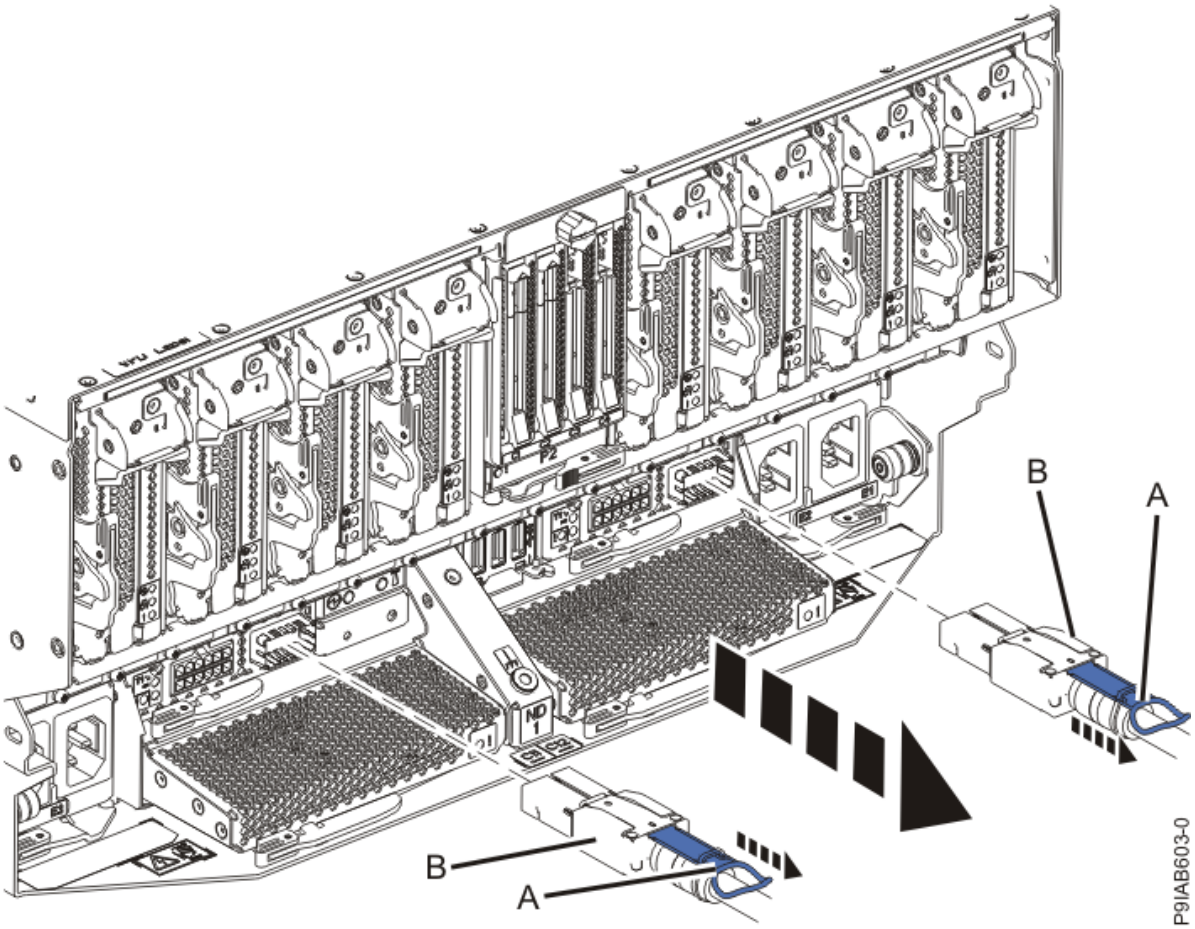


Figure 131. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

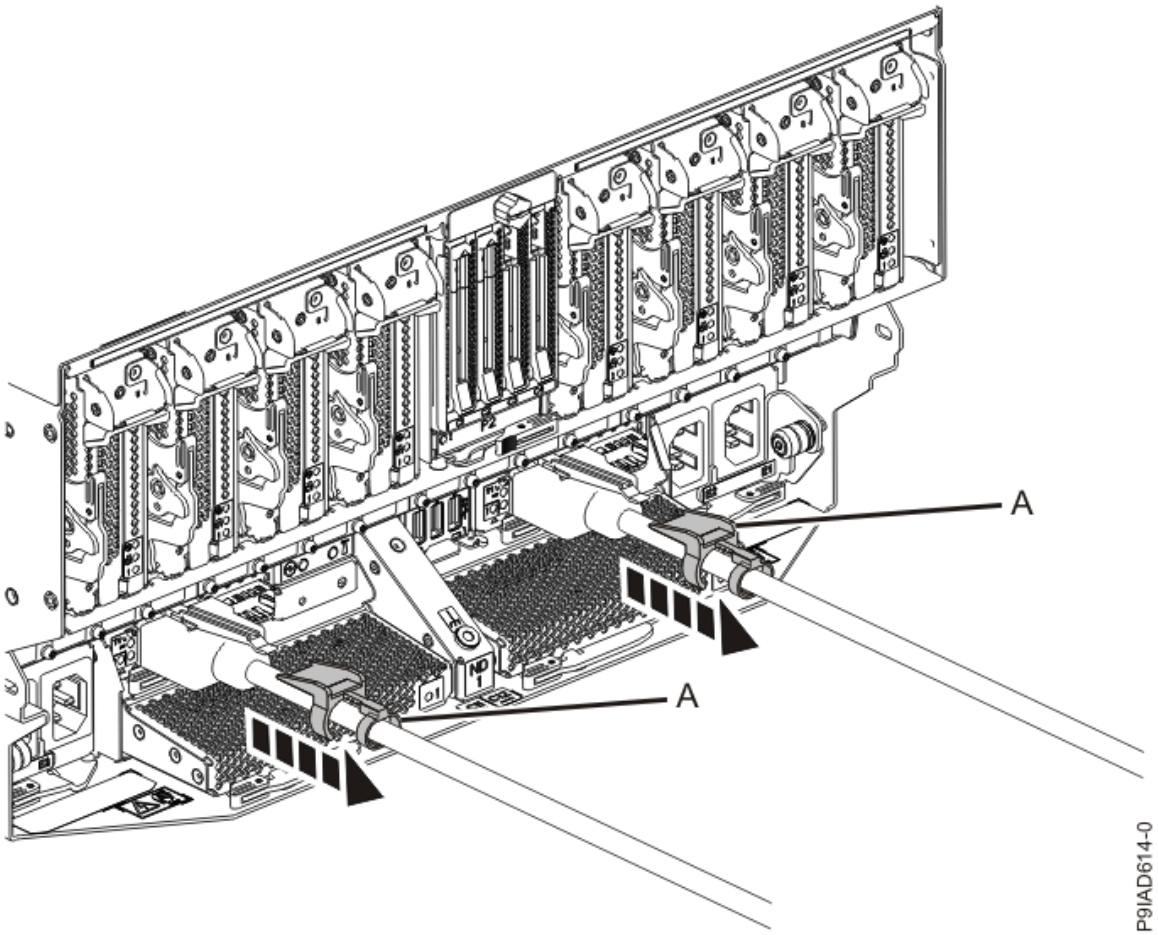


Figure 132. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

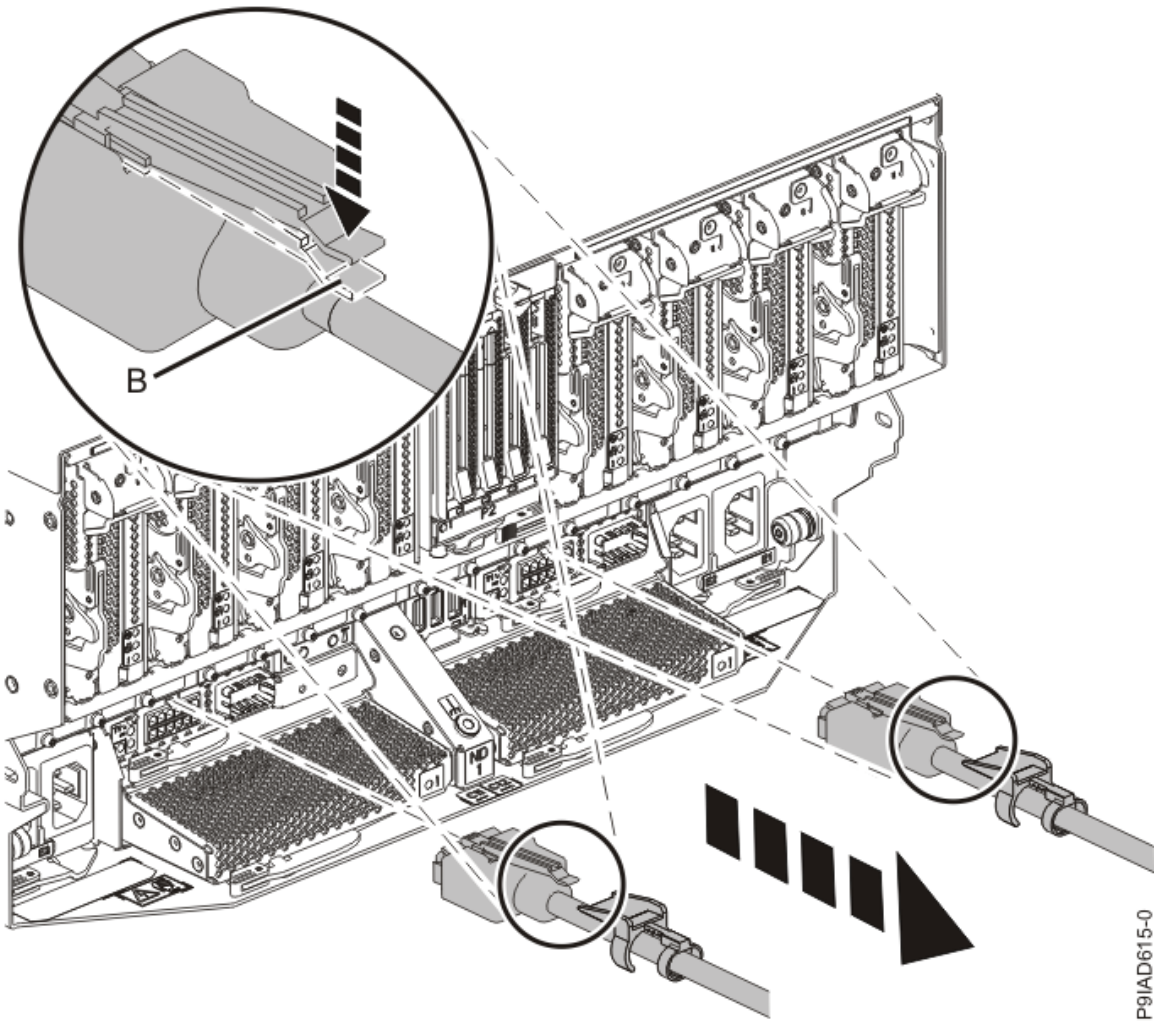


Figure 133. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

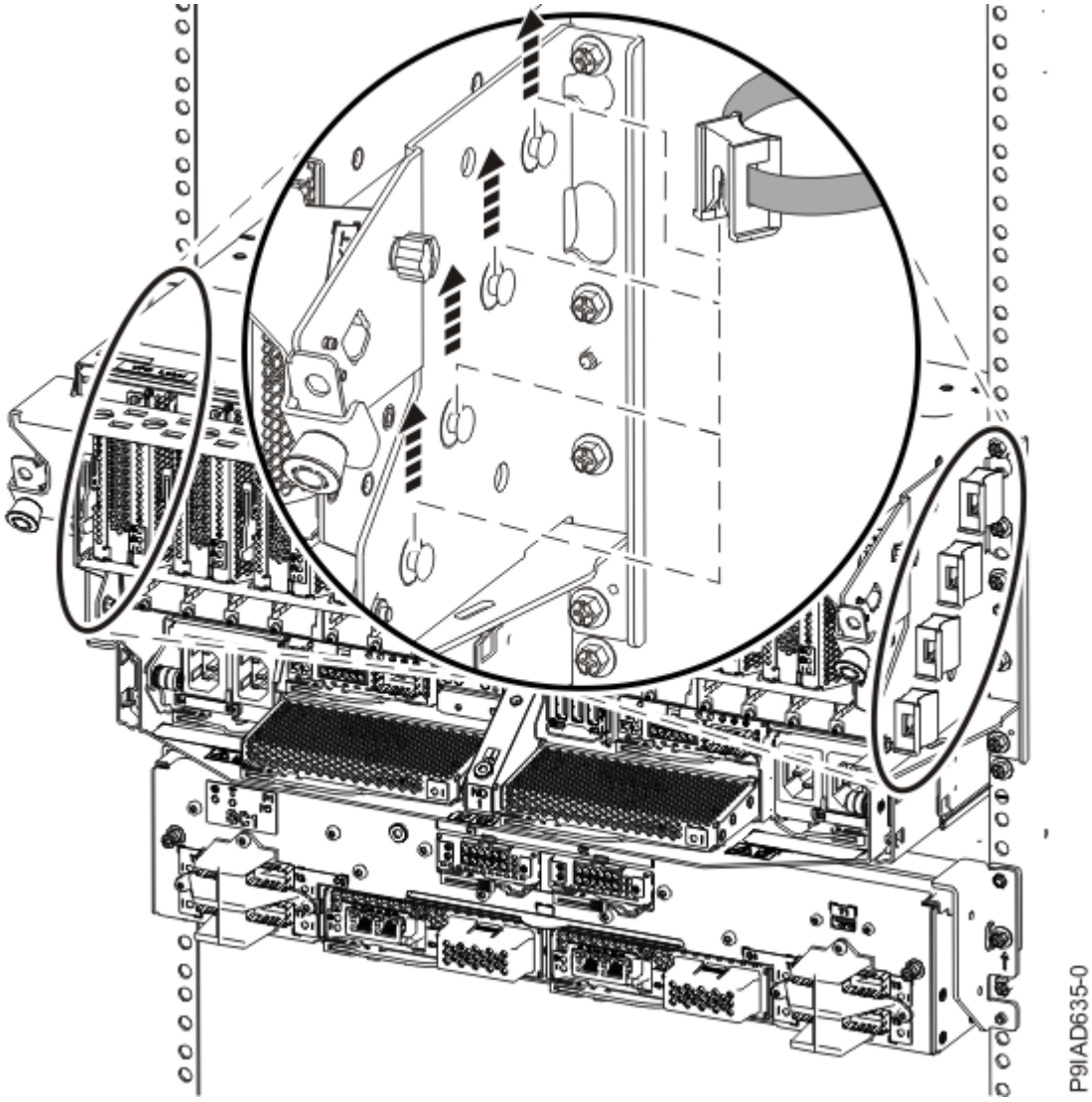


Figure 134. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

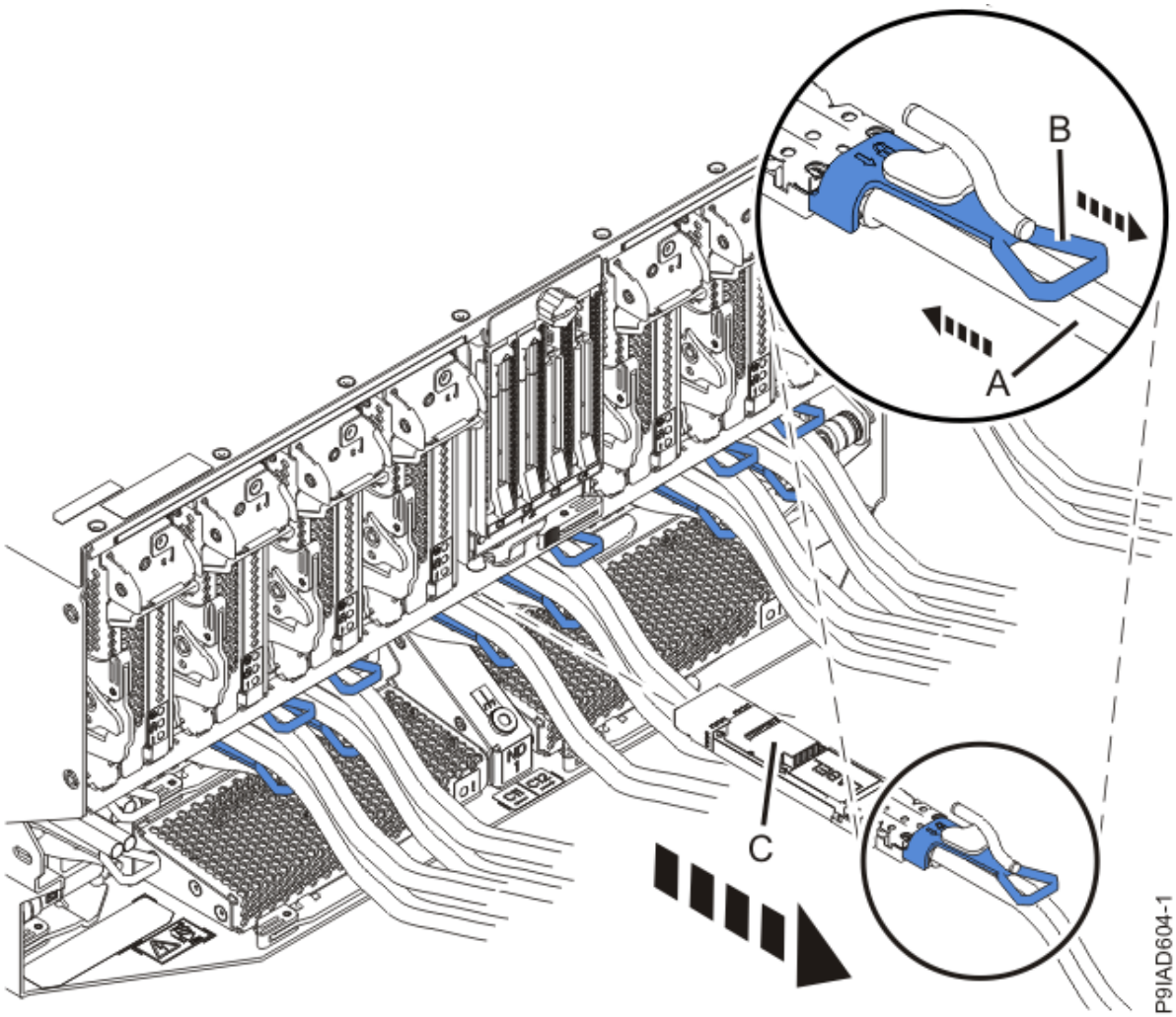


Figure 135. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

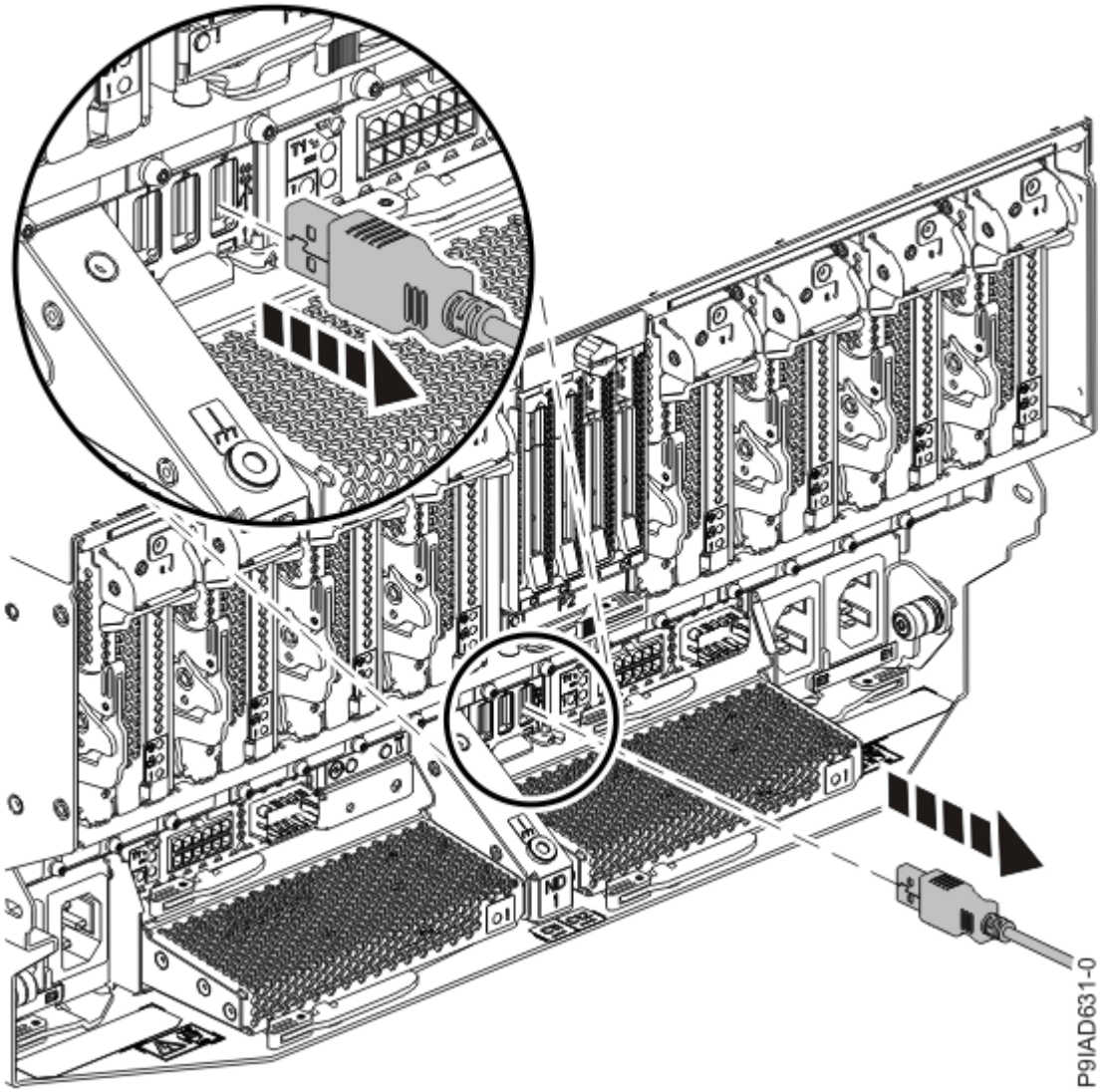


Figure 136. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

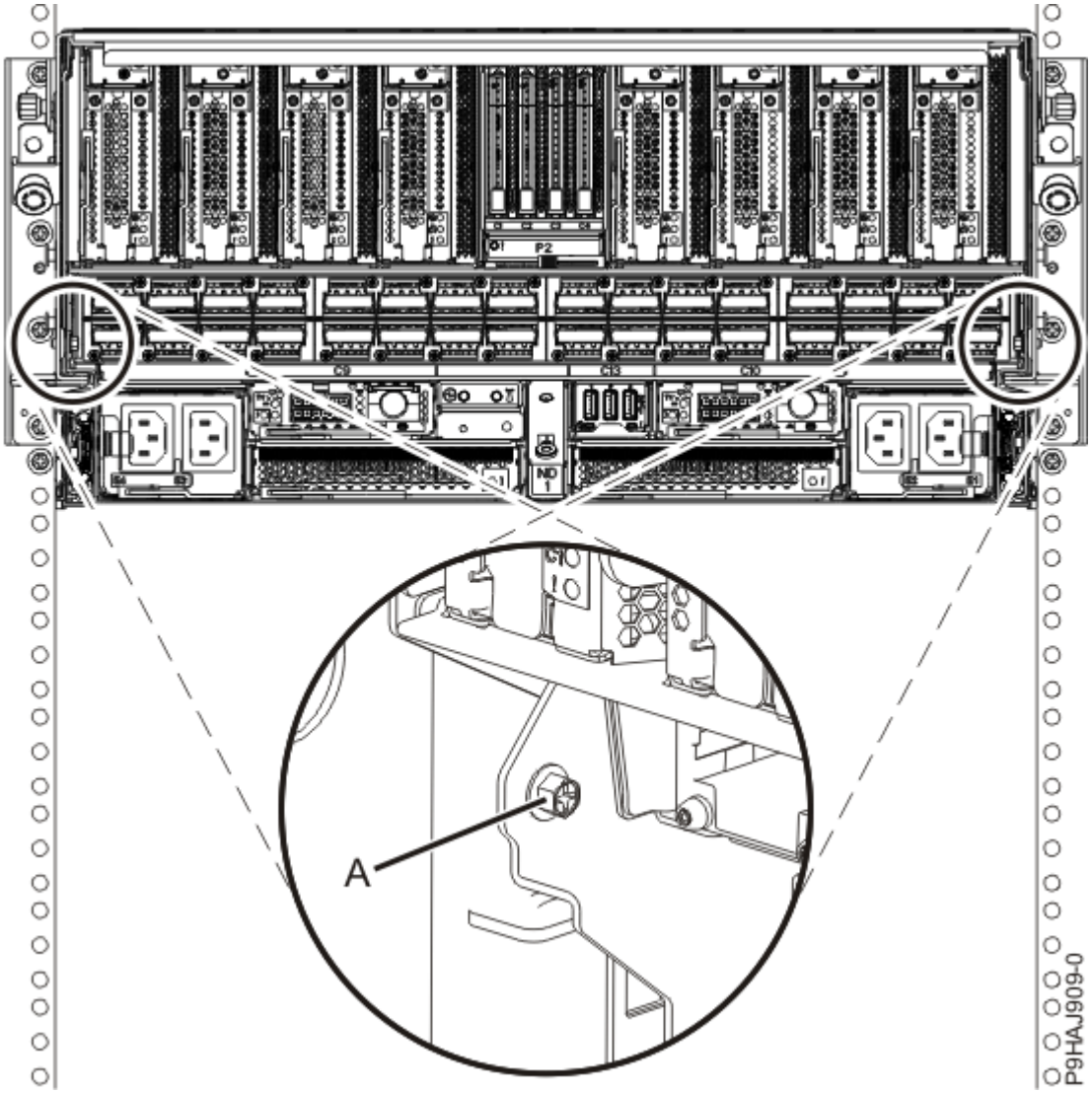


Figure 137. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

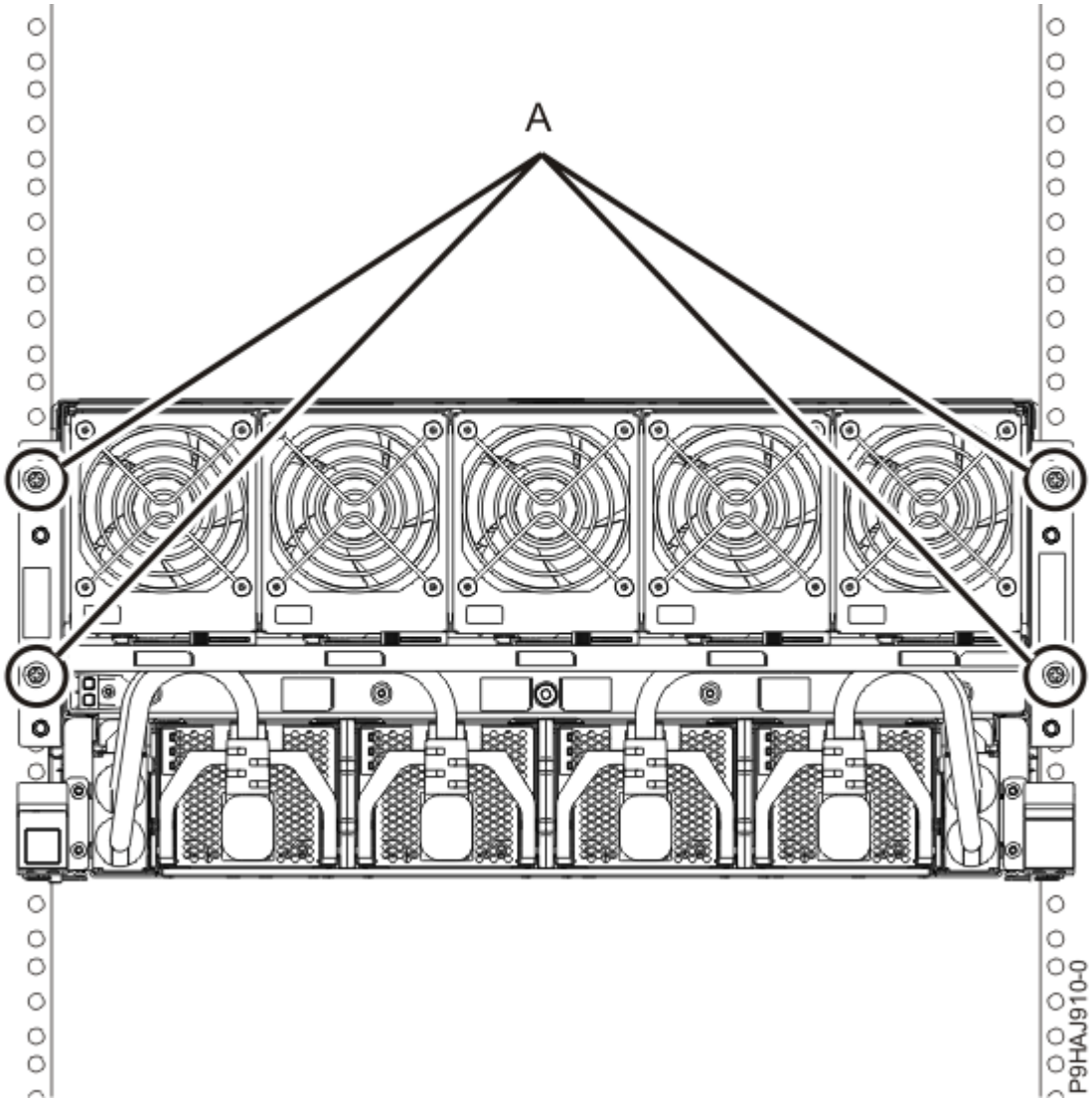


Figure 138. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

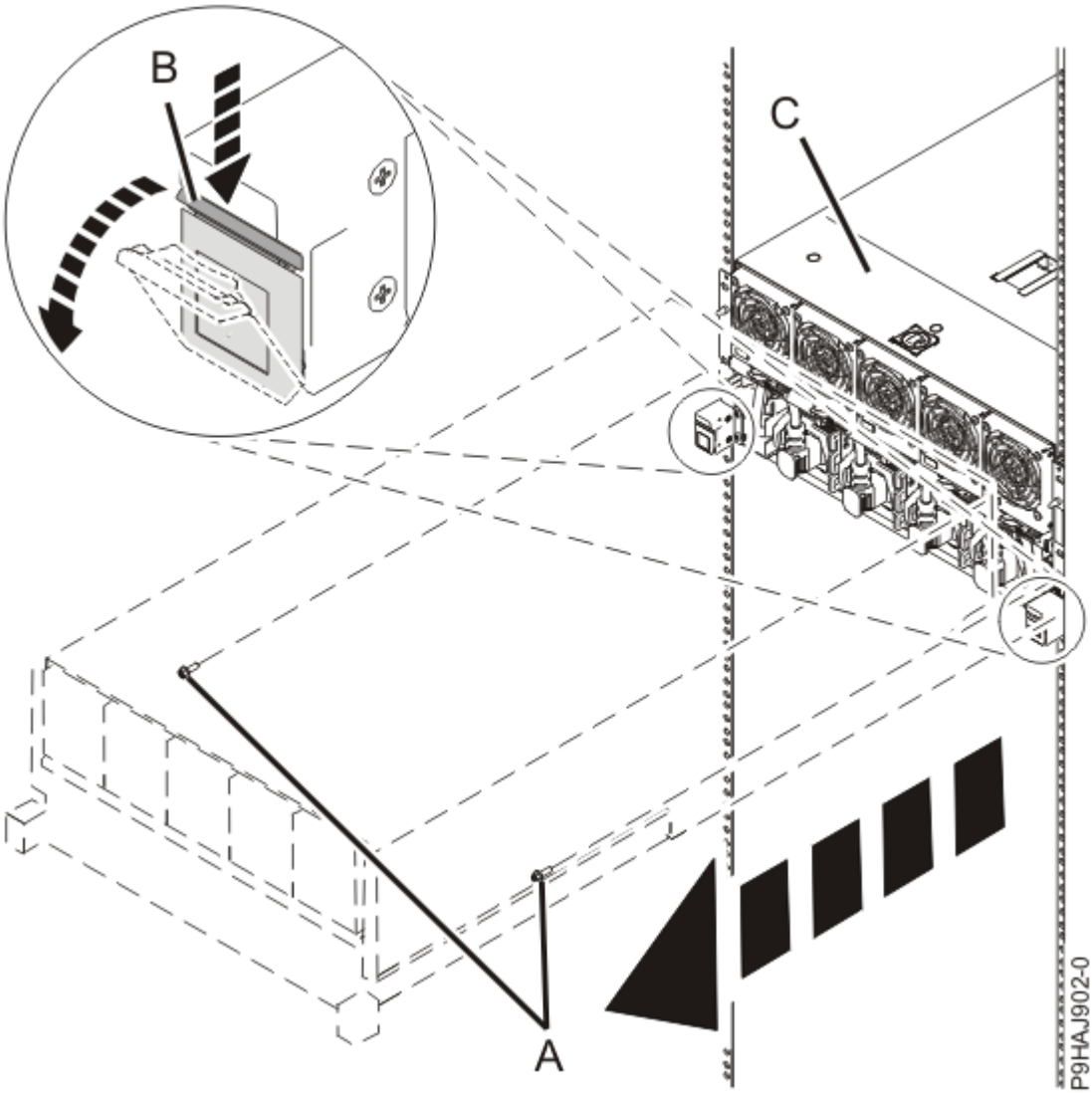


Figure 139. Placing the system node in service position

4. 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.

5. Complete the following steps to remove the cover.

   Attention: Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Push the release latch **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

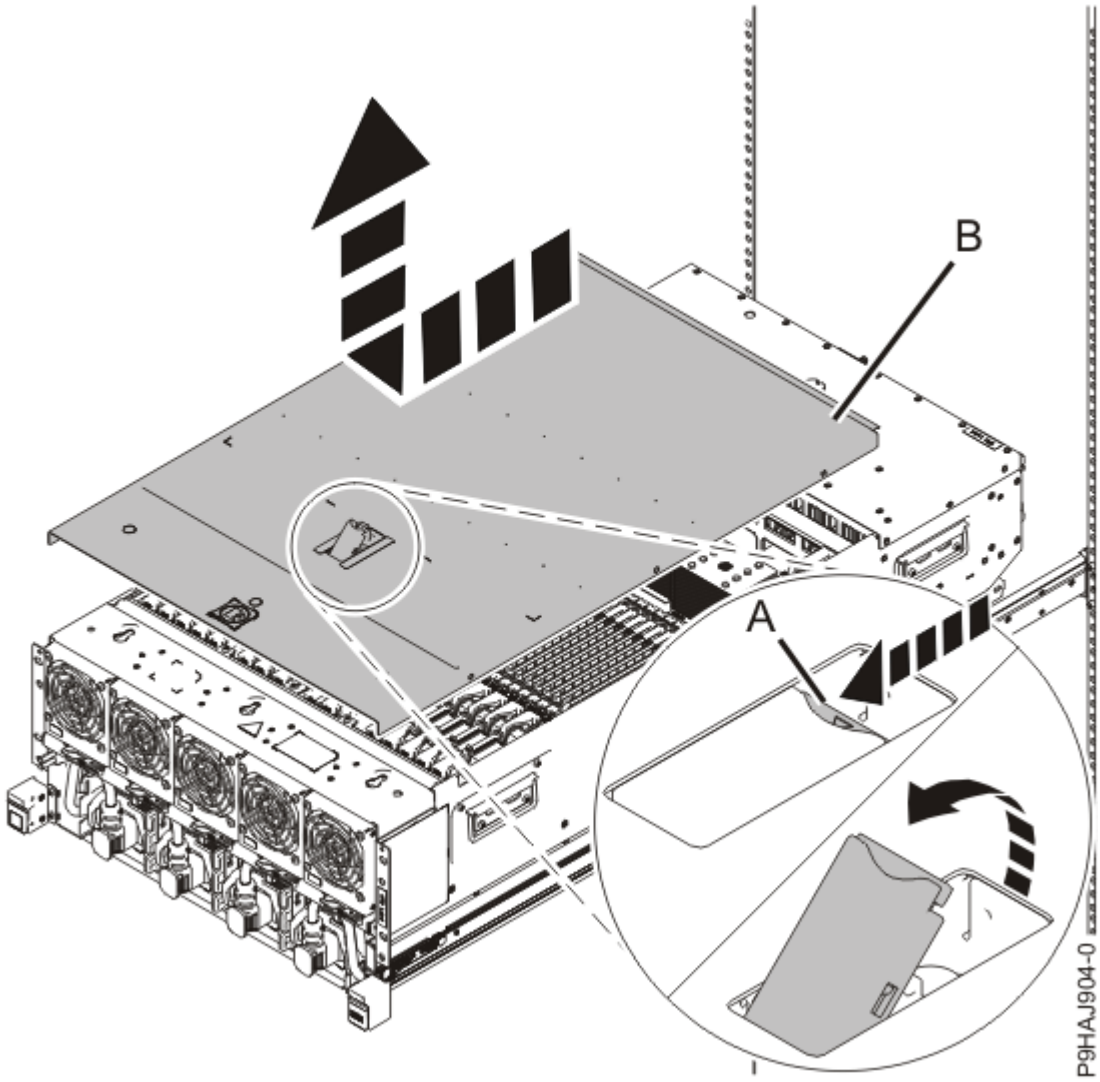


Figure 140. Removing the service access cover

6. To activate the identify LED for the faulty part, press and hold either blue push-button on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(A)** is lit, which indicates that sufficient power exists to light the identify LED on the faulty part. If the green LED **(A)** does not light, use the location code on the service label to find the physical location of the faulty part.

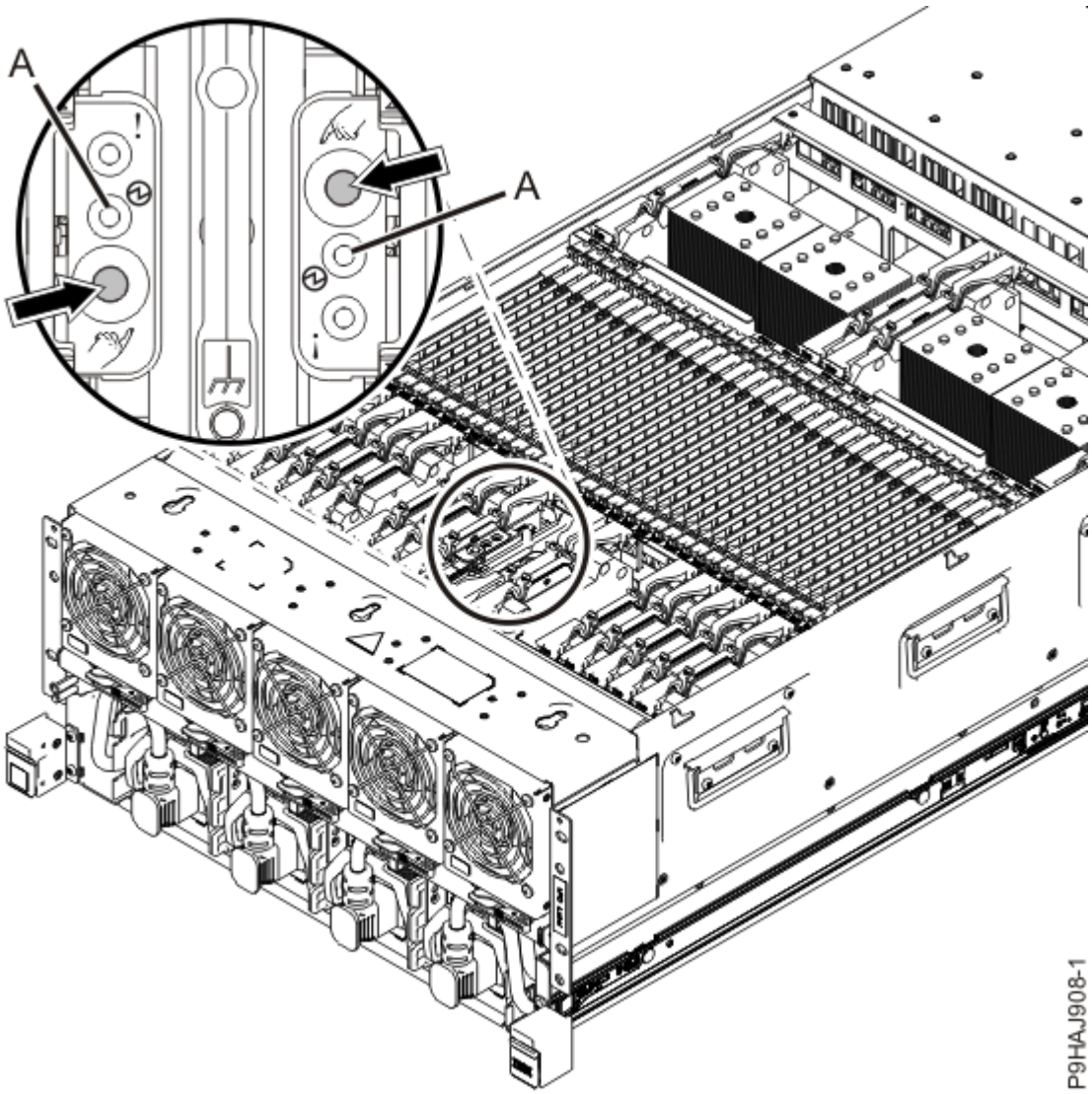


Figure 141. Activating the identify LED for a faulty part

7. Locate the amber LED for the failed memory module. Make a note of which location is flashing; that indicates the memory module to replace.

   Figure 142 on page 164 shows the locations of the memory module. The LEDs are next to the memory module.

   Record the location of the identifying LED.

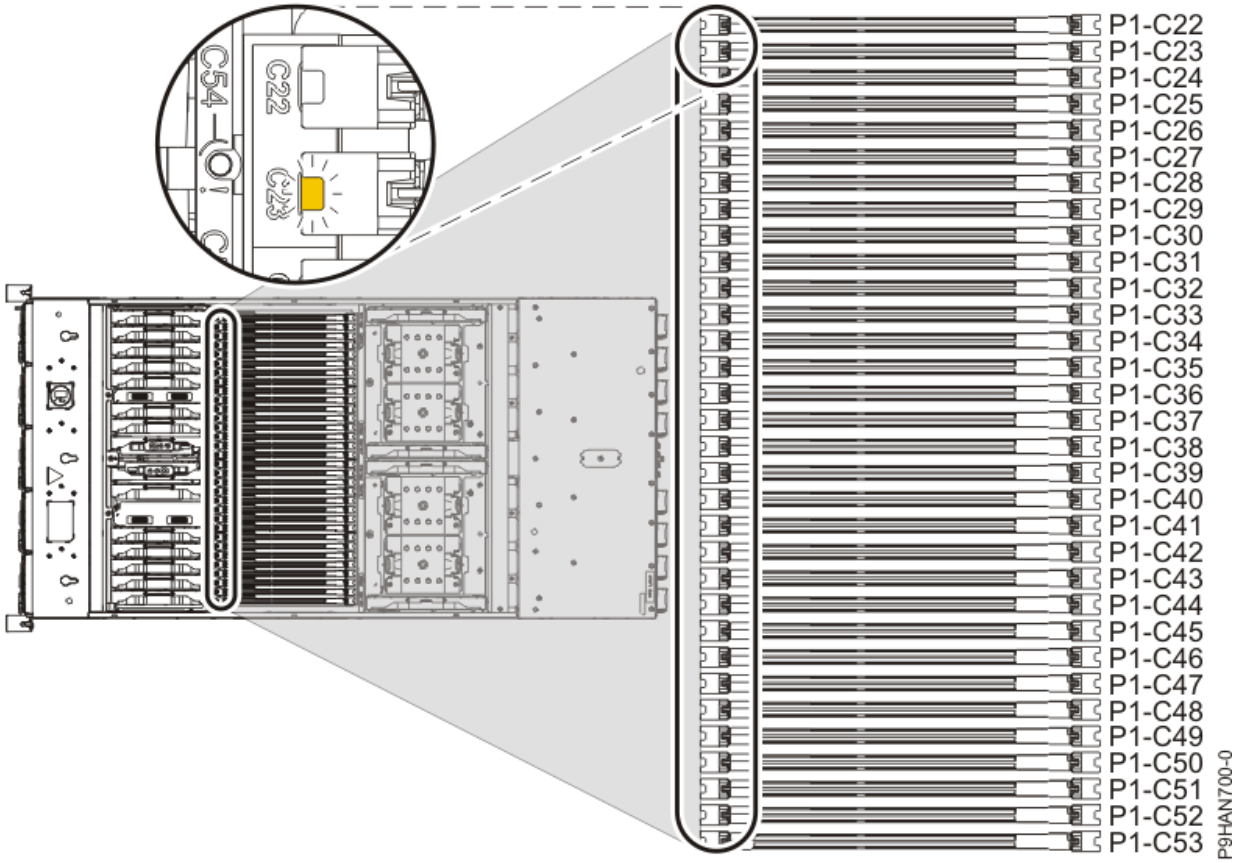


Figure 142. Memory module LEDs and locations

Removing a memory module from the 9080-M9S system

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. Note the location of the memory module that you are replacing.
3. Remove the memory module by pushing the tabs **(A)** down and outward as shown in the following figure.

   The lever action of the tabs forces the memory module out of the connector.

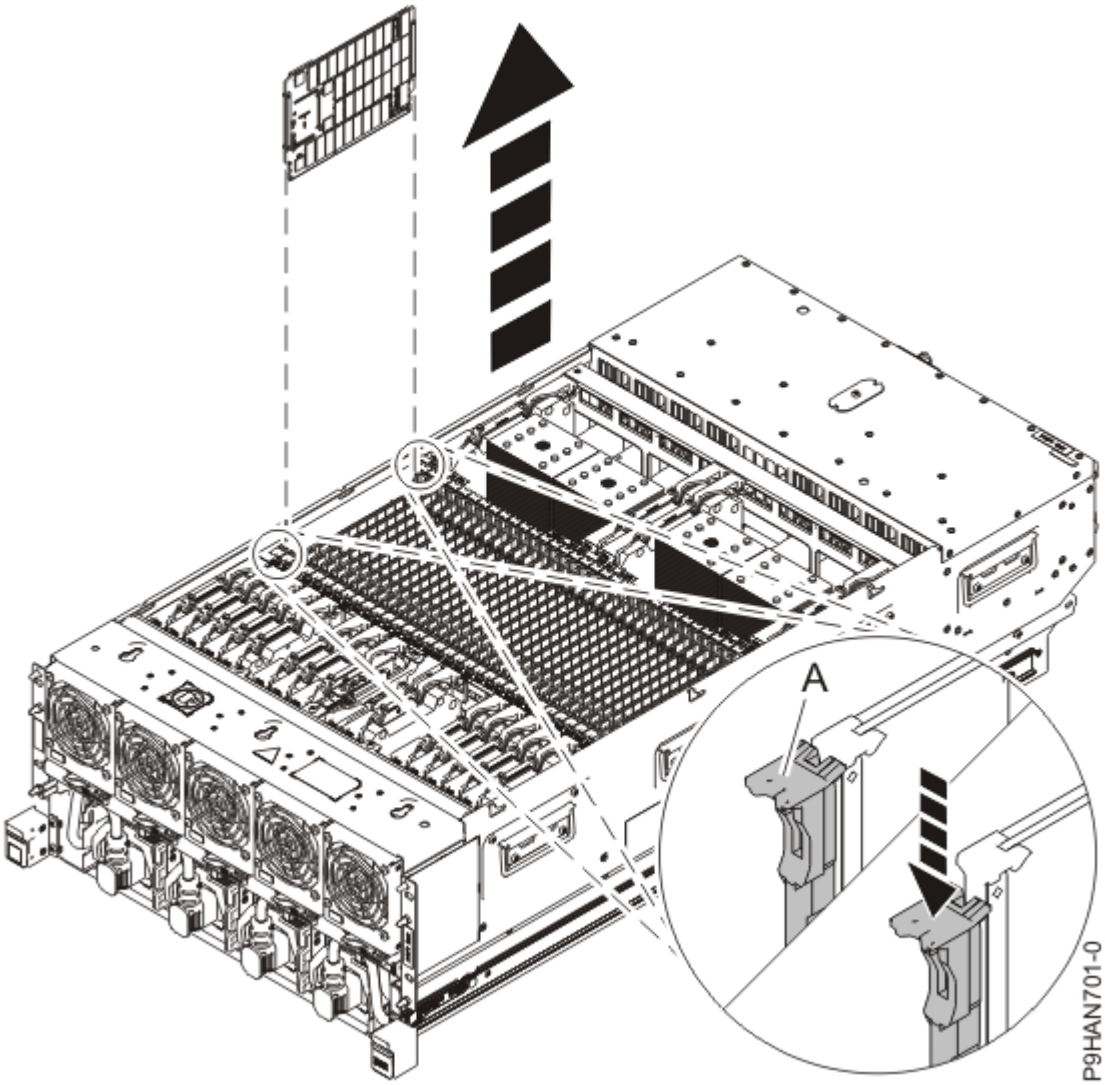


Figure 143. Removing memory modules

4. Hold the memory module by the edges and pull it out of the system.
5. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.

Replacing a memory module in the 9080-M9S system

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. Use the slot information that you recorded to determine the slot location to place the memory module.
3. Grasp the new memory module along its edges and align it with the slot.

   Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the location of the key tab within the memory module connector before you attempt to install the memory module.
4. Replace the memory module by pushing it into slot until the tabs **(A)** lock into place as shown in the following figure.

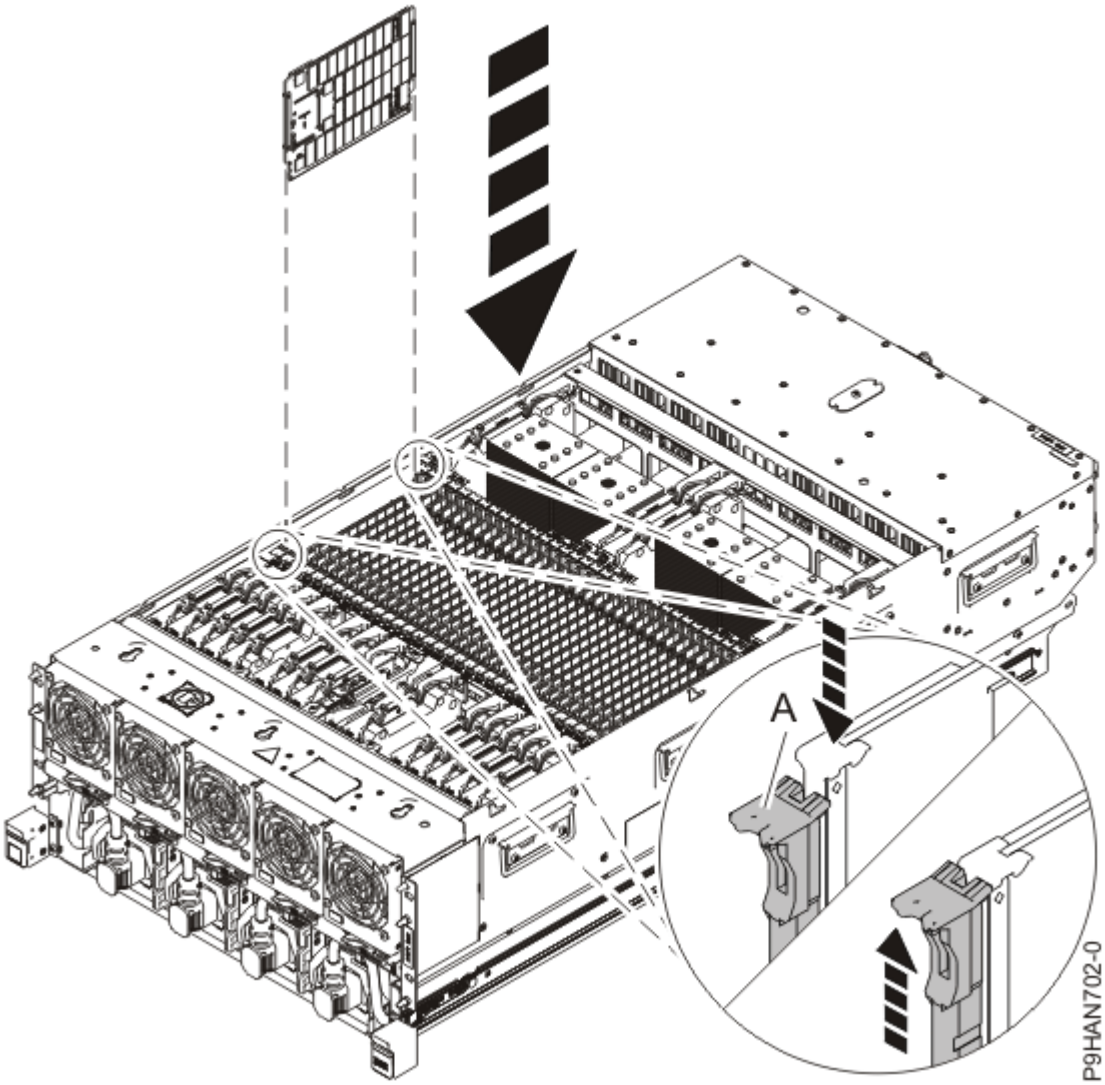


Figure 144. Replacing memory modules

Preparing the 9080-M9S system for operation after removing and replacing a memory module

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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

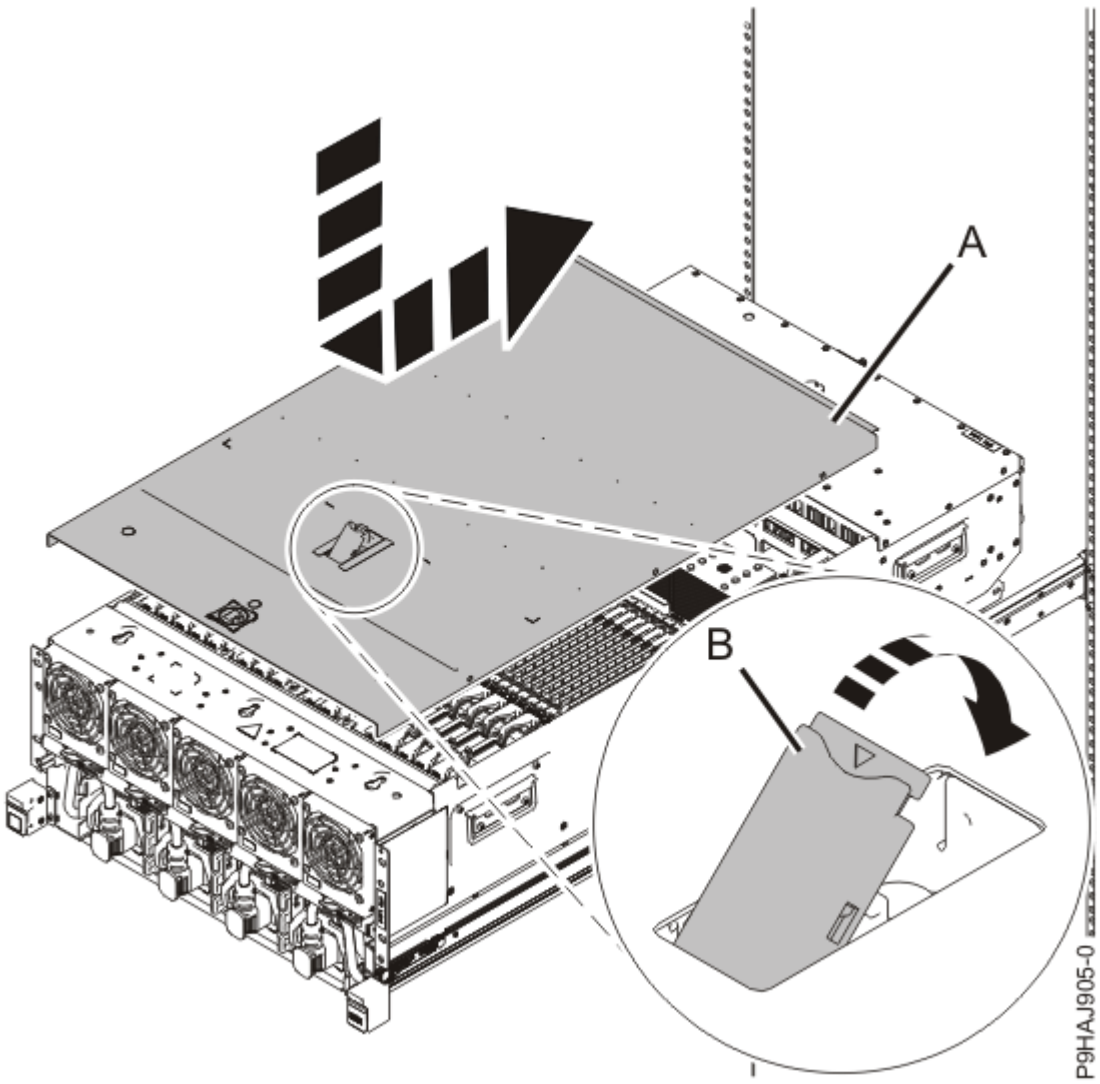


Figure 145. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

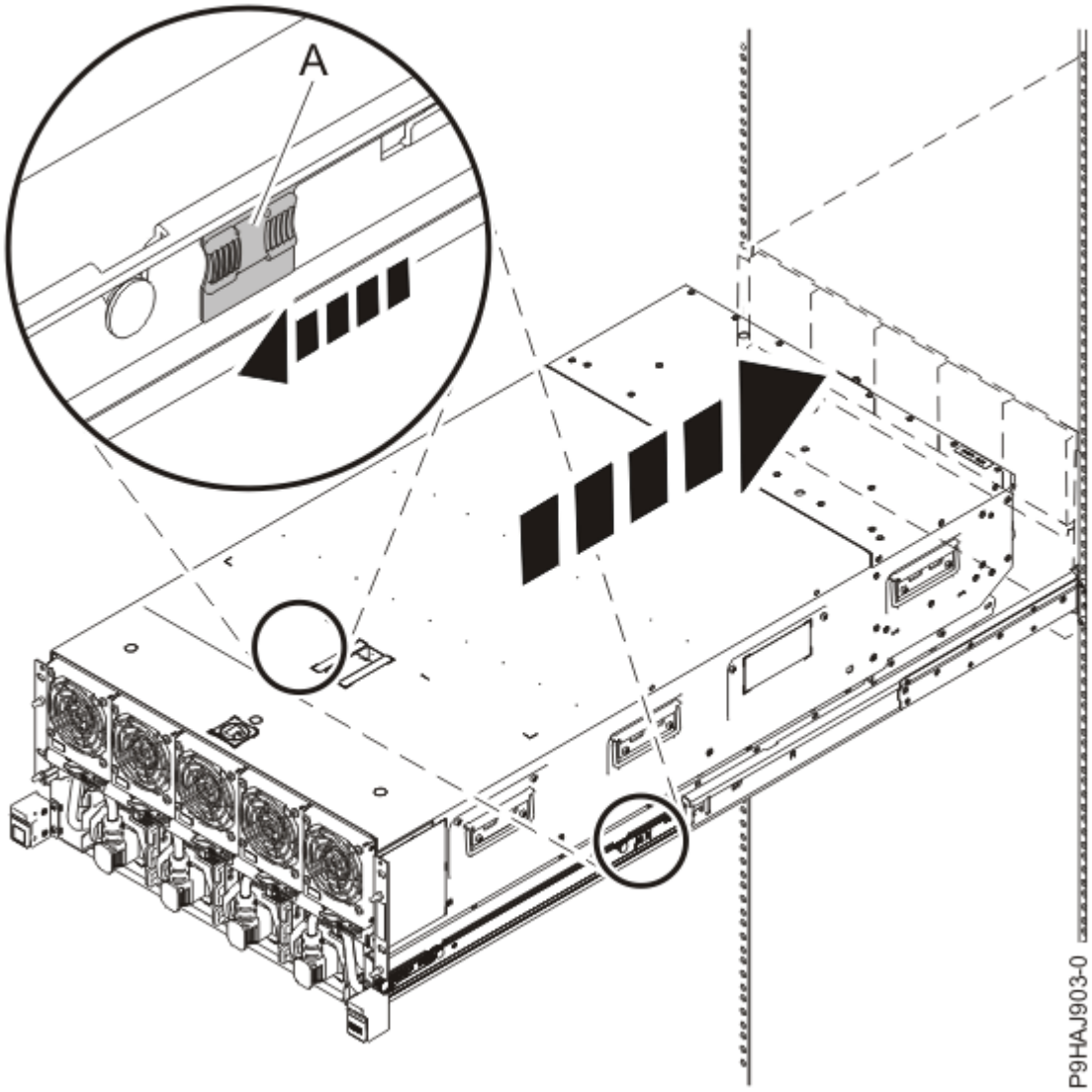


Figure 146. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

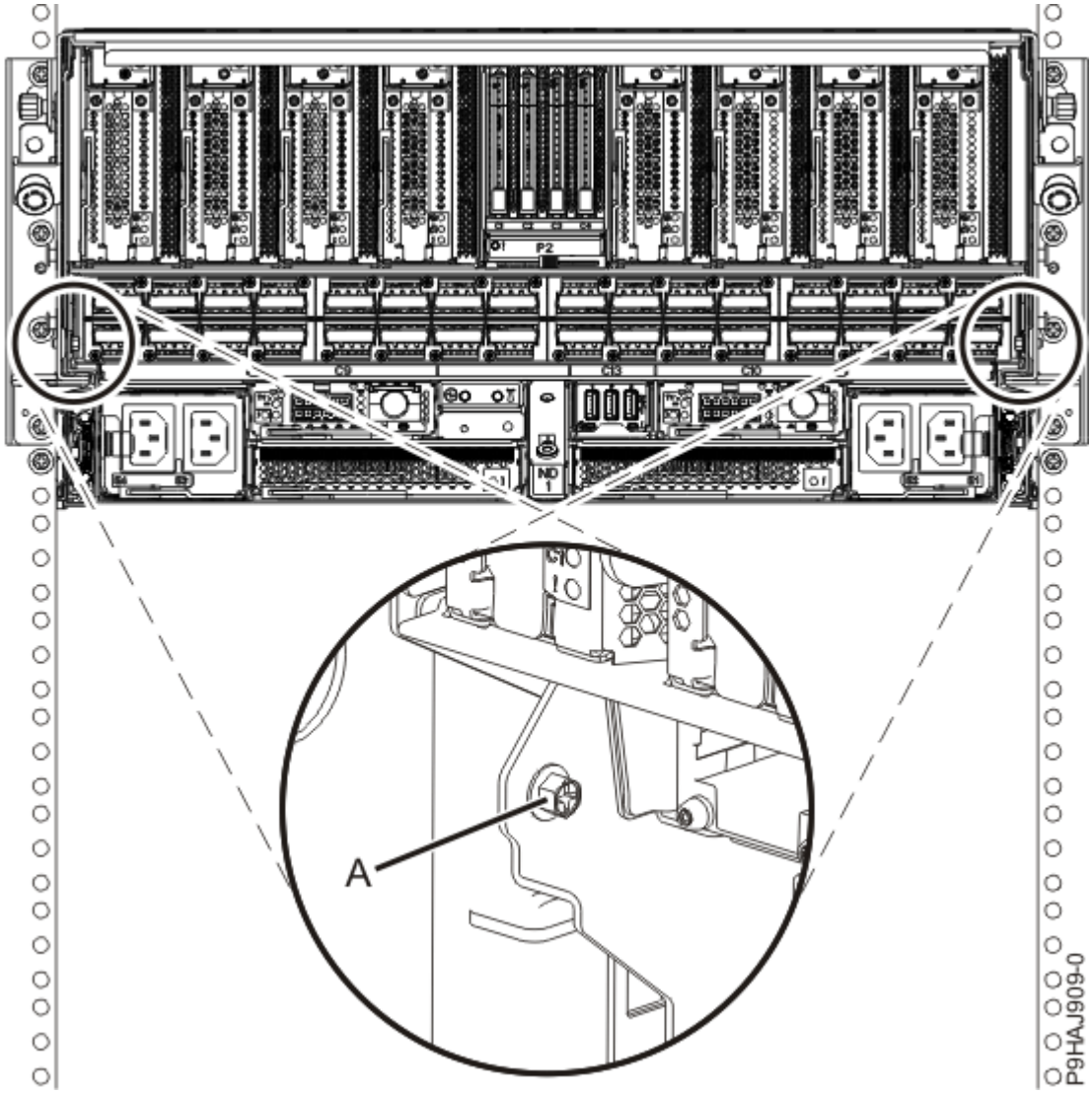


Figure 147. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

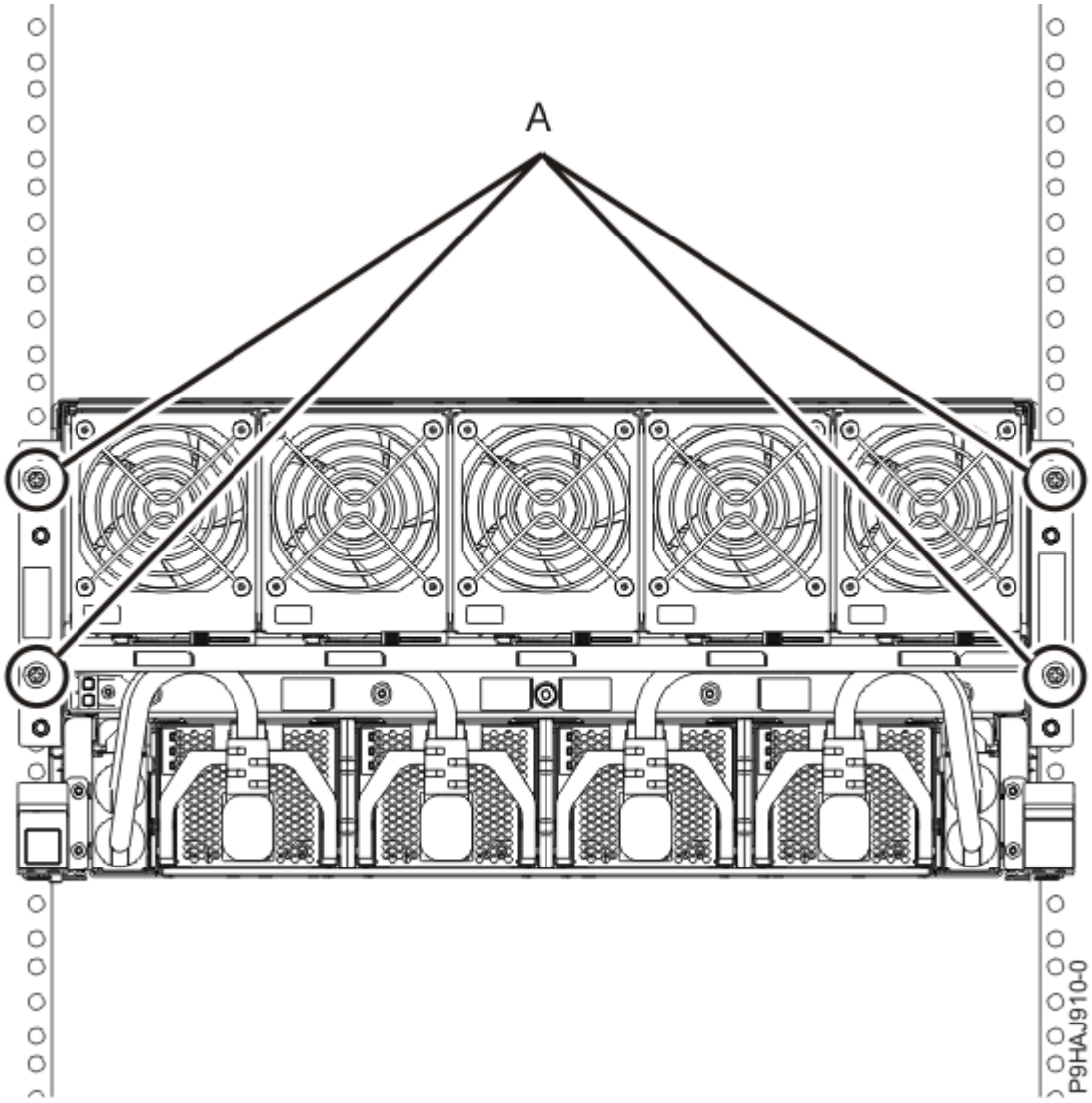


Figure 148. Replacing the front screws

4. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 149 on page 171 and Table 17 on page 171 to determine the point-to-point cabling for SMP cables.

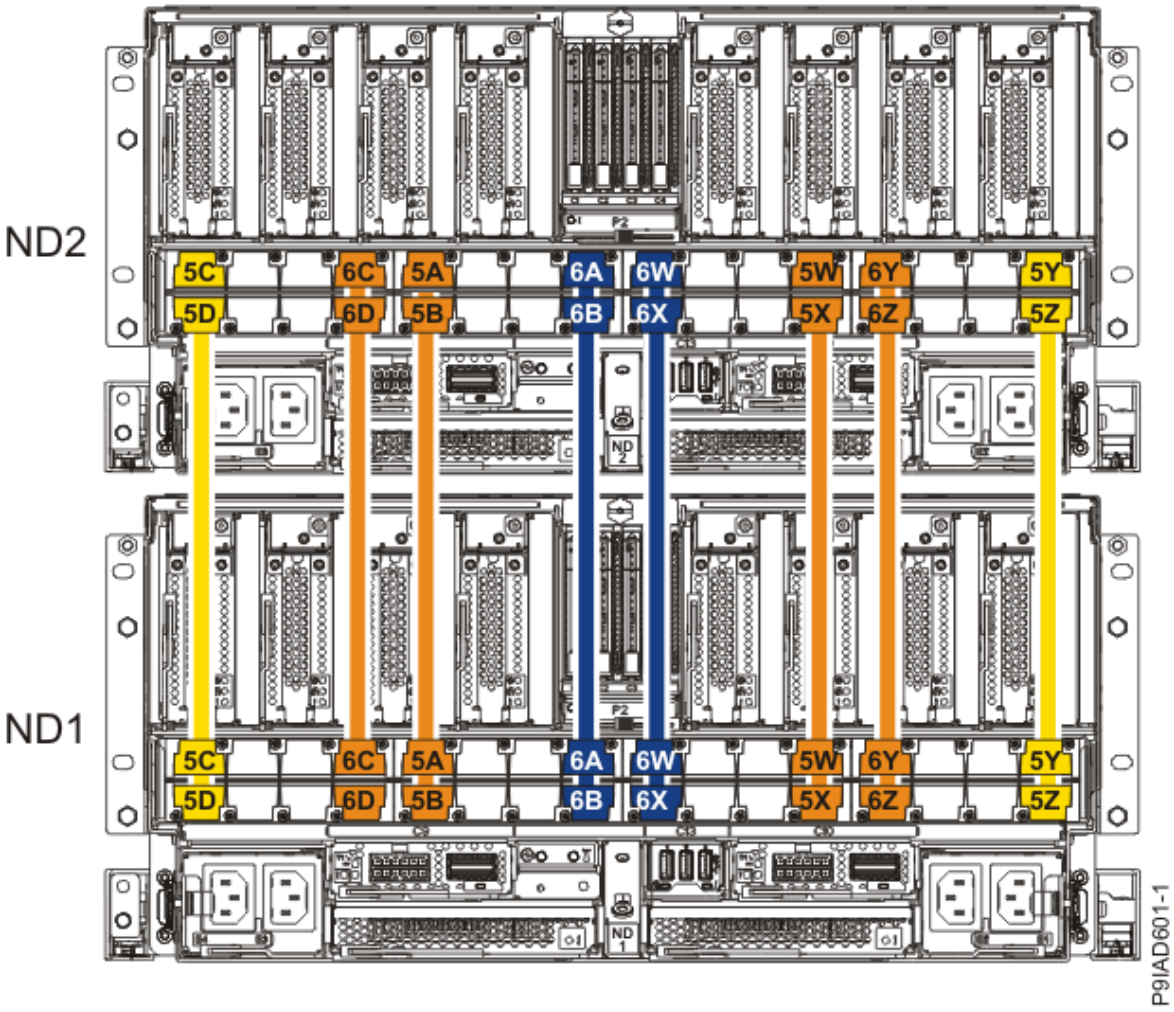


Figure 149. Cabling a Two Node Configuration

Table 17. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 17. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 150 on page 173 and Table 18 on page 173 to determine the point-to-point cabling for SMP cables.

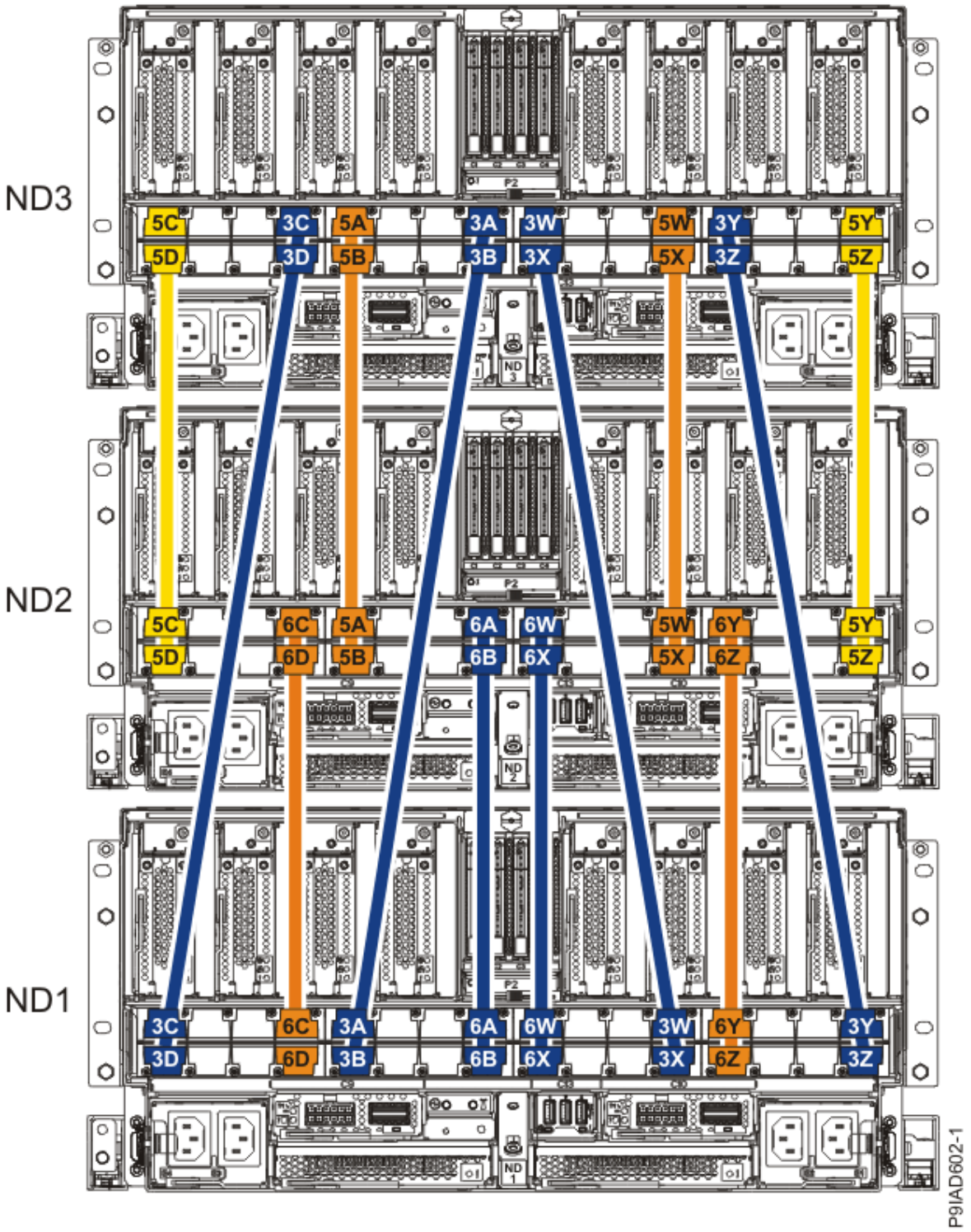


Figure 150. Cabling a Three Node Configuration

Table 18. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 18. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 18. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 151 on page 176 and Table 19 on page 177 to determine the point-to-point cabling for SMP cables.

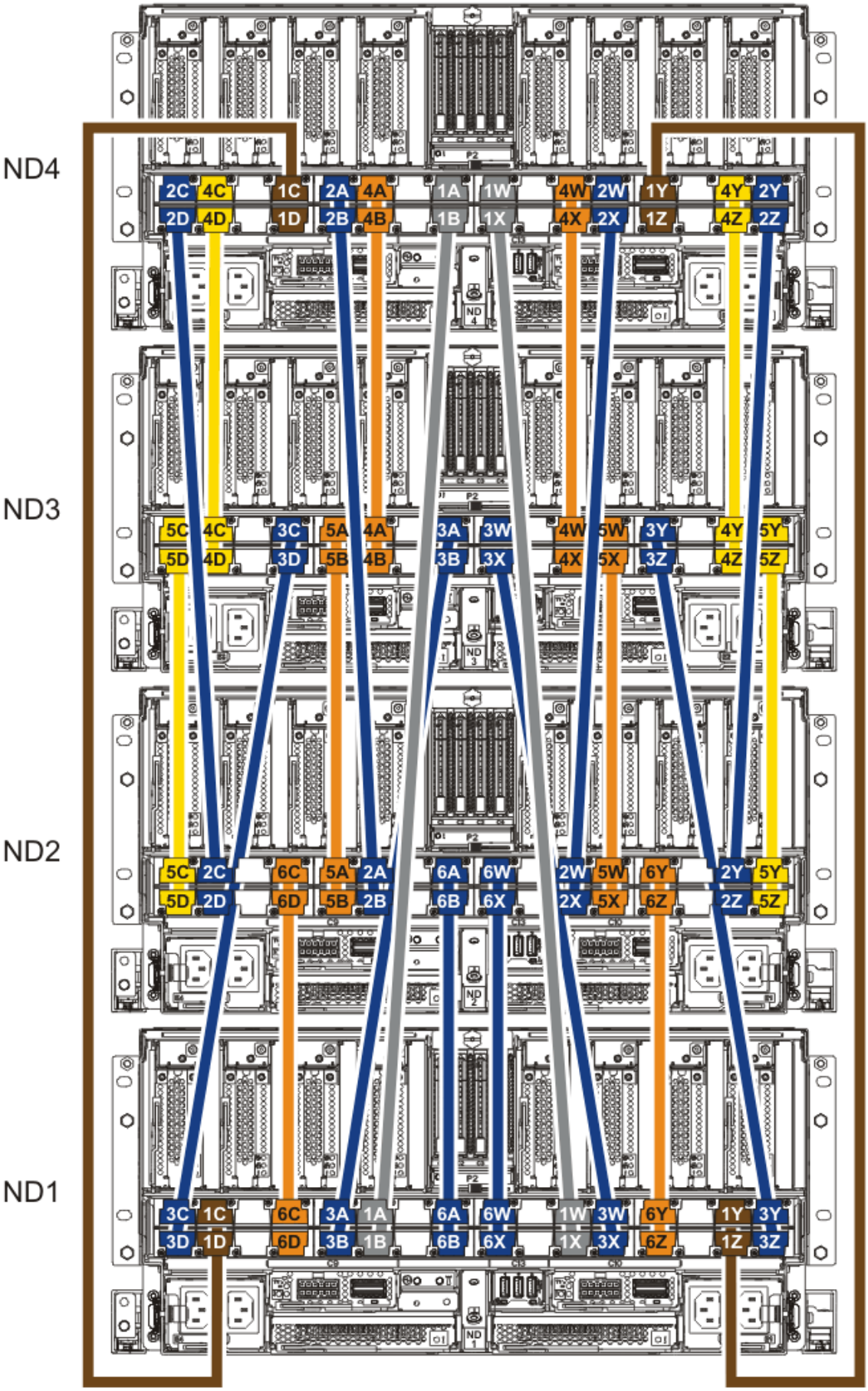


Figure 151. Cabling a Four Node Configuration

Table 19. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 19. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 19. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

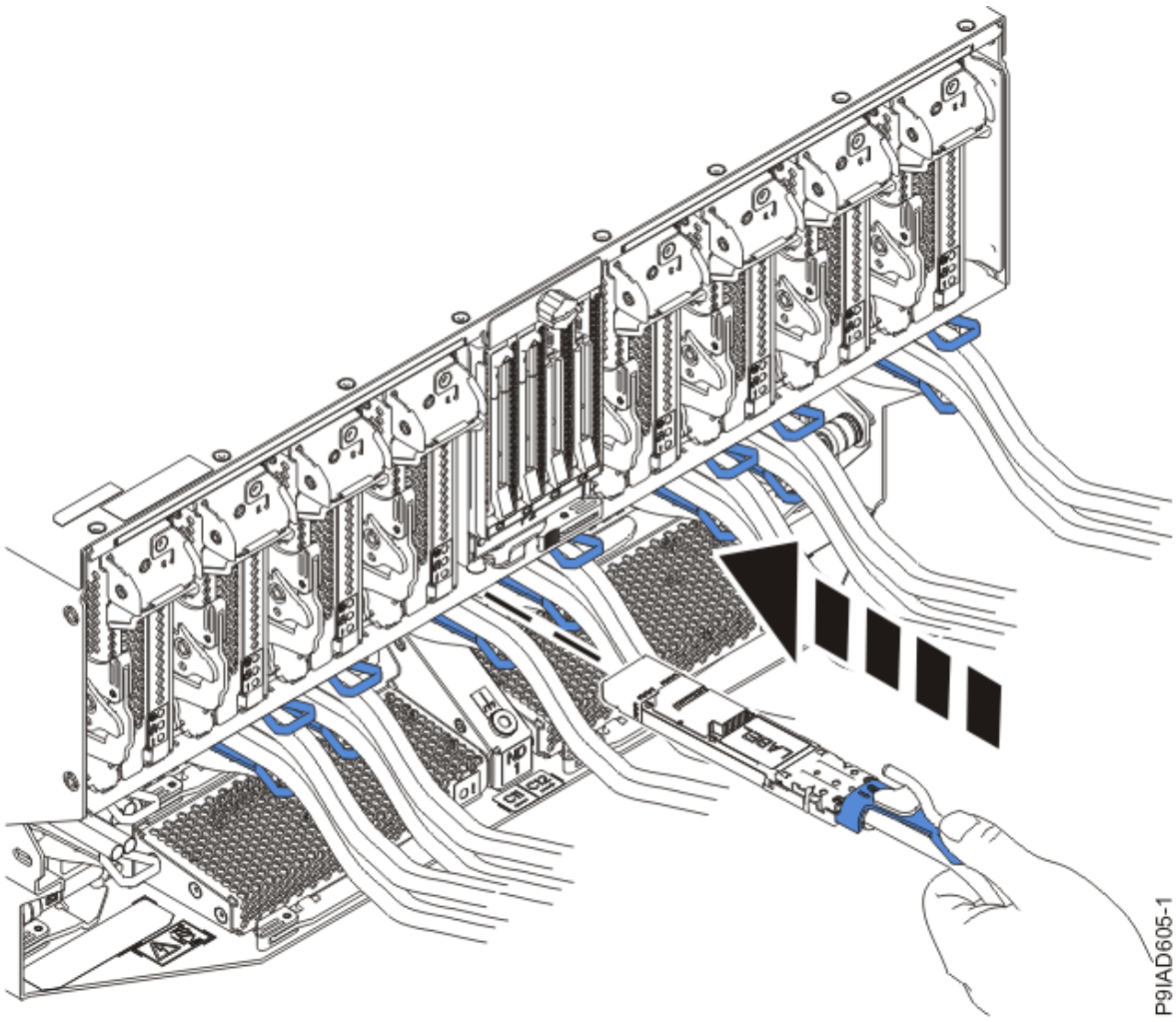


Figure 152. Replacing the SMP cable into the system node

b) Repeat step “4.a” on page 179 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

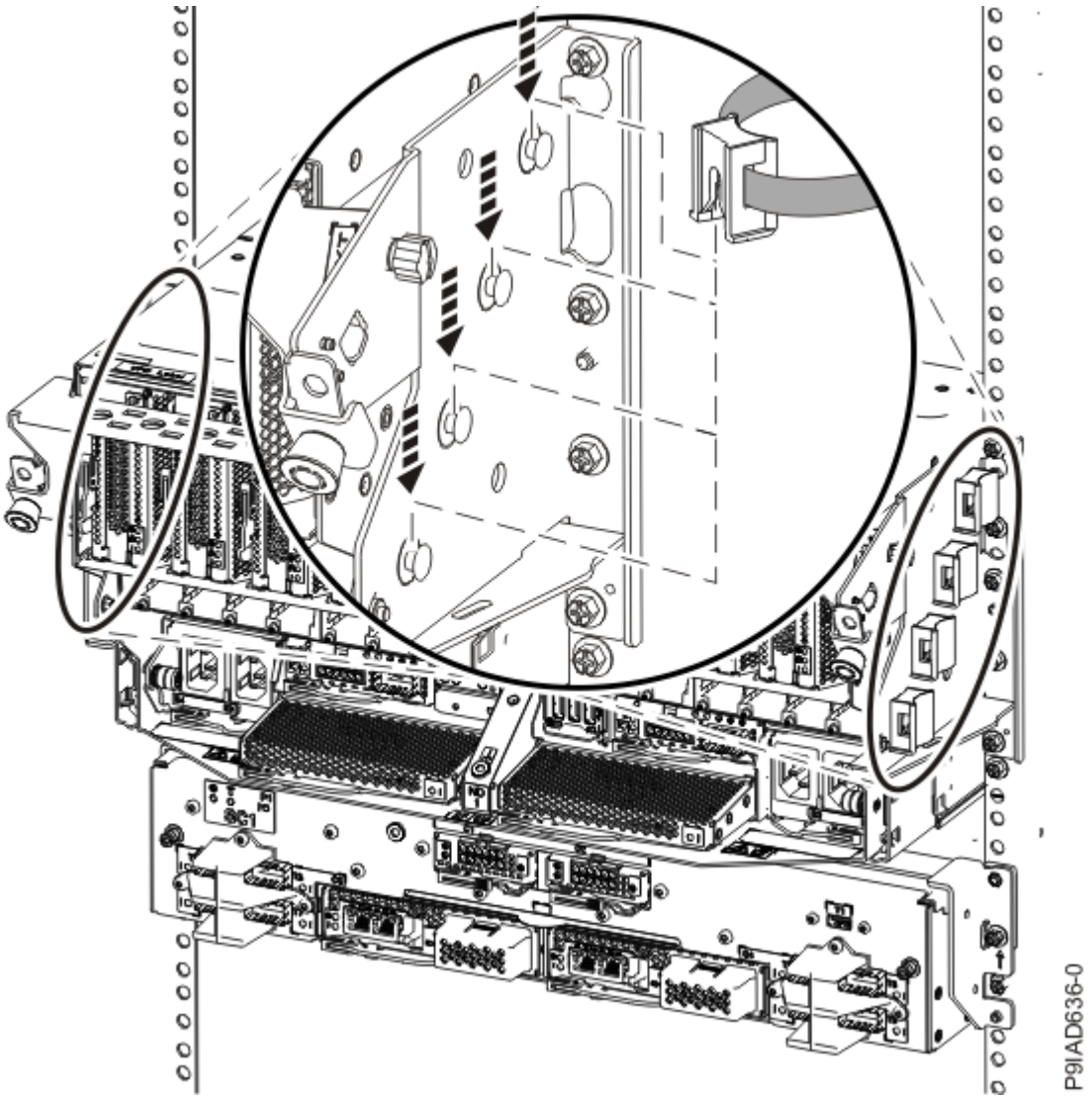


Figure 153. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

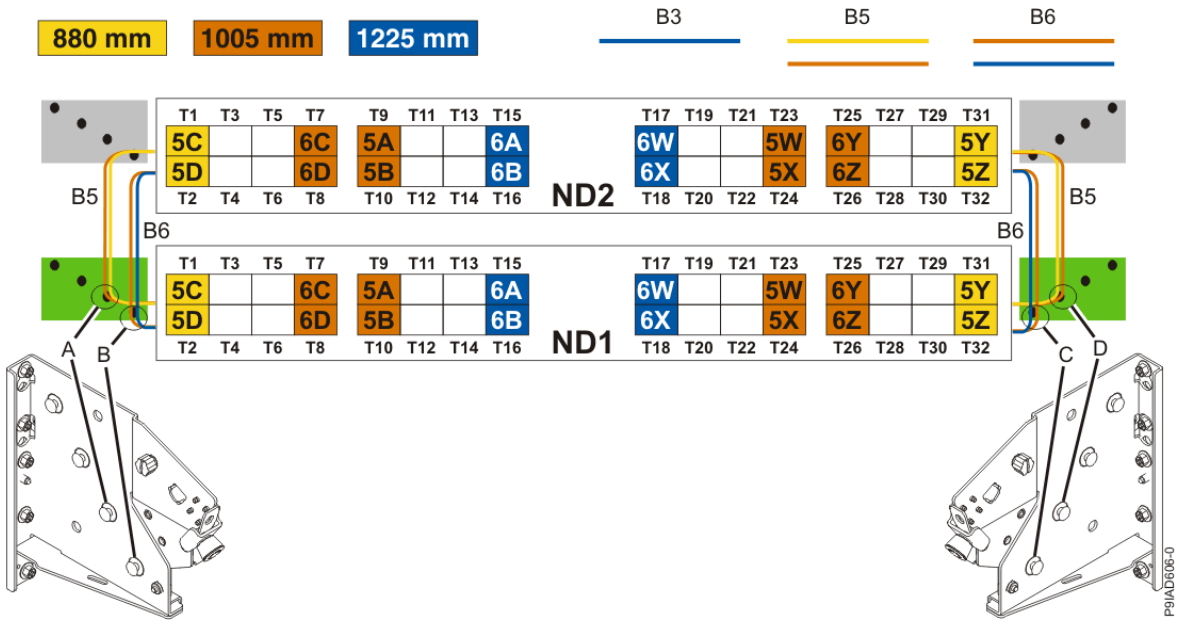


Figure 154. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

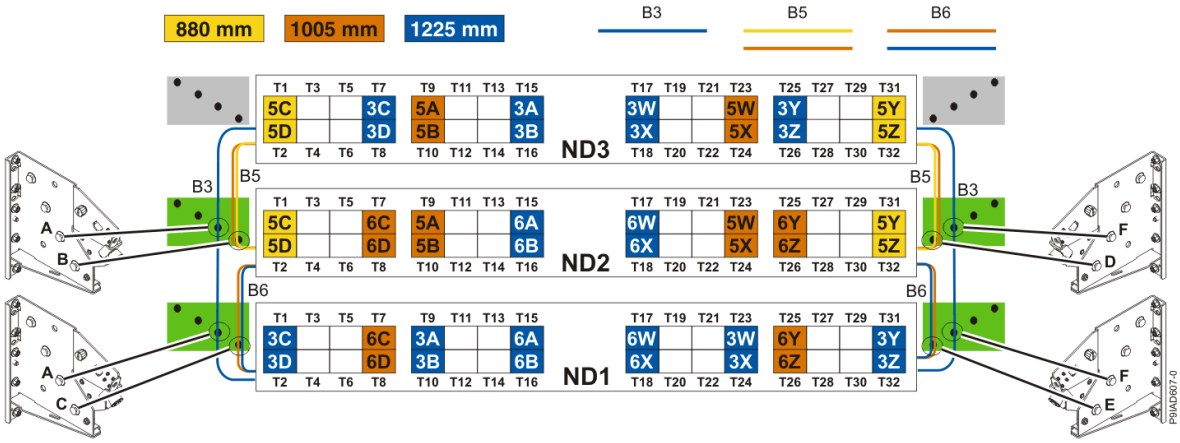


Figure 155. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

- The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
- The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

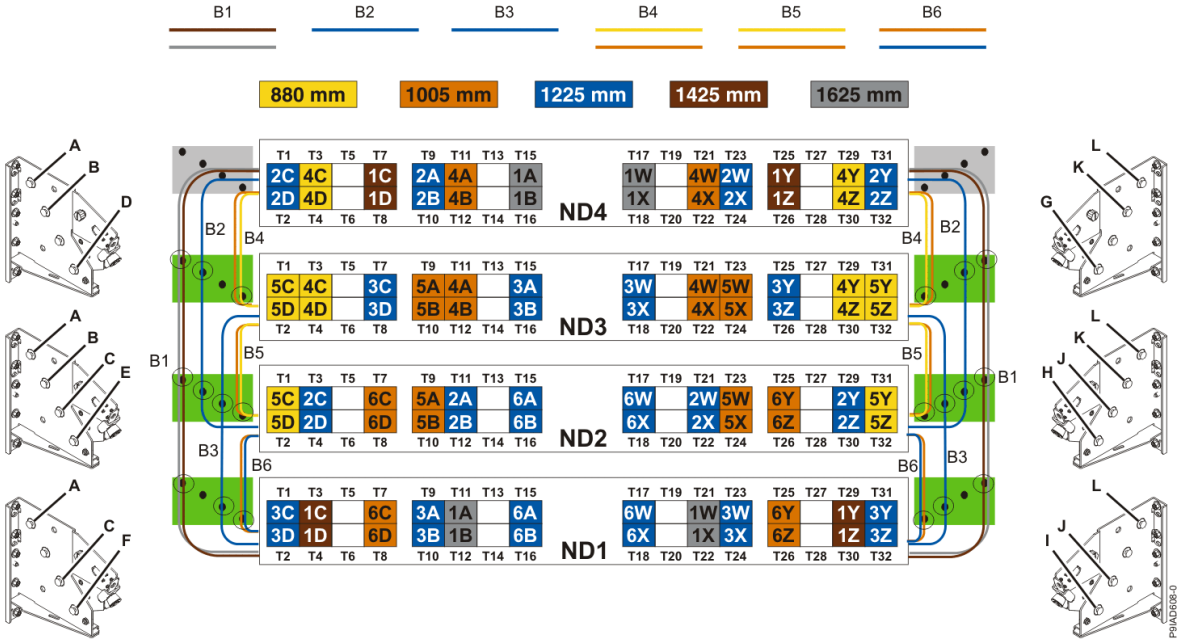


Figure 156. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  - The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  - The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  - The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  - The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  - The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  - The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

5. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 157 on page 184 and Table 20 on page 184 to determine the point-to-point cabling for UPIC cables.

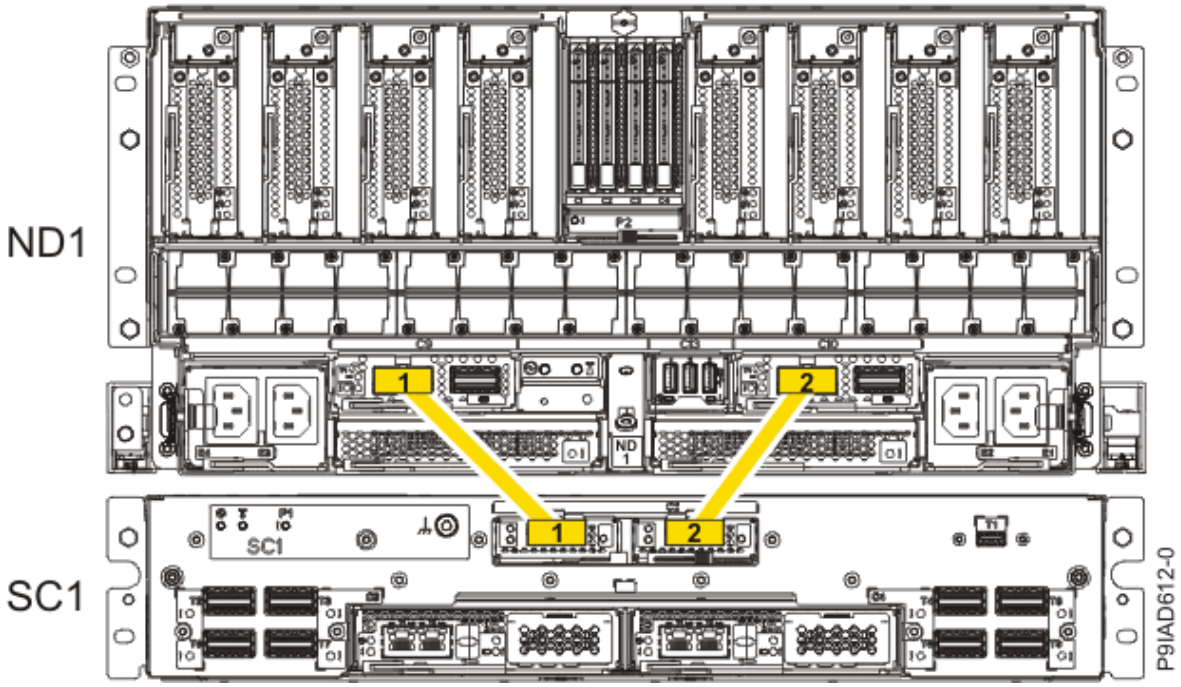


Figure 157. Single Node Configuration UPIC Cabling

Table 20. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 158 on page 185 and Table 21 on page 185 to determine the point-to-point cabling for UPIC cables.

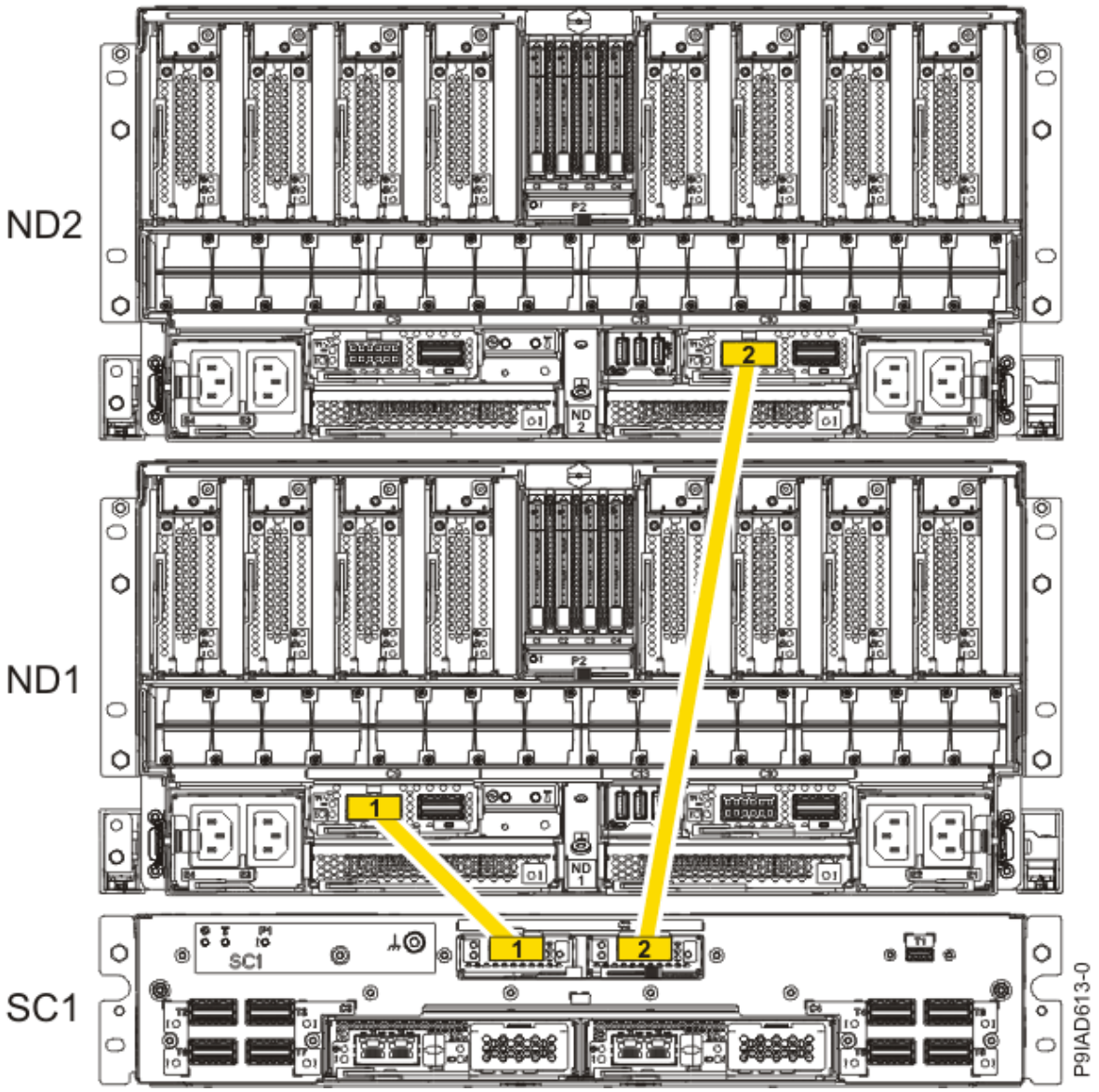


Figure 158. Two, Three, or Four Node Configuration UPIC Cabling

Table 21. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

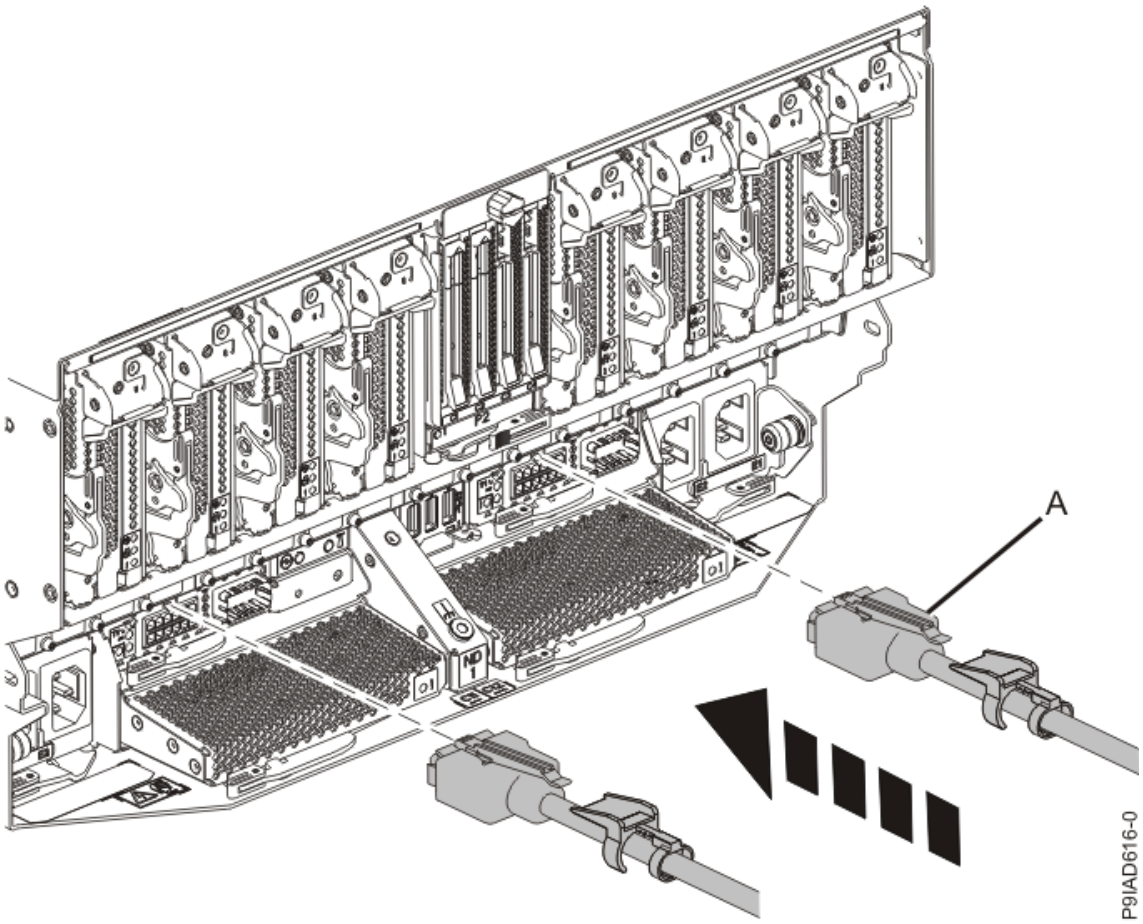


Figure 159. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

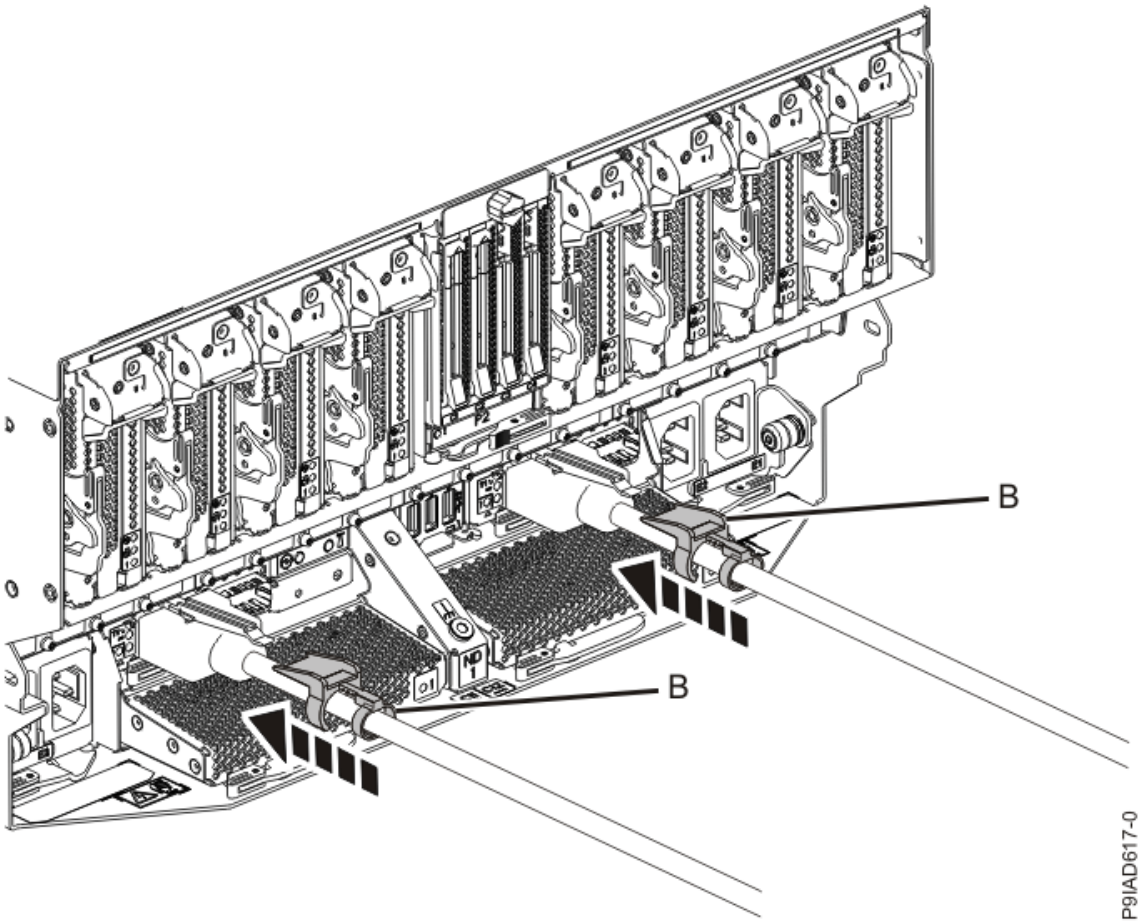


Figure 160. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “5.a” on page 185 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

6. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

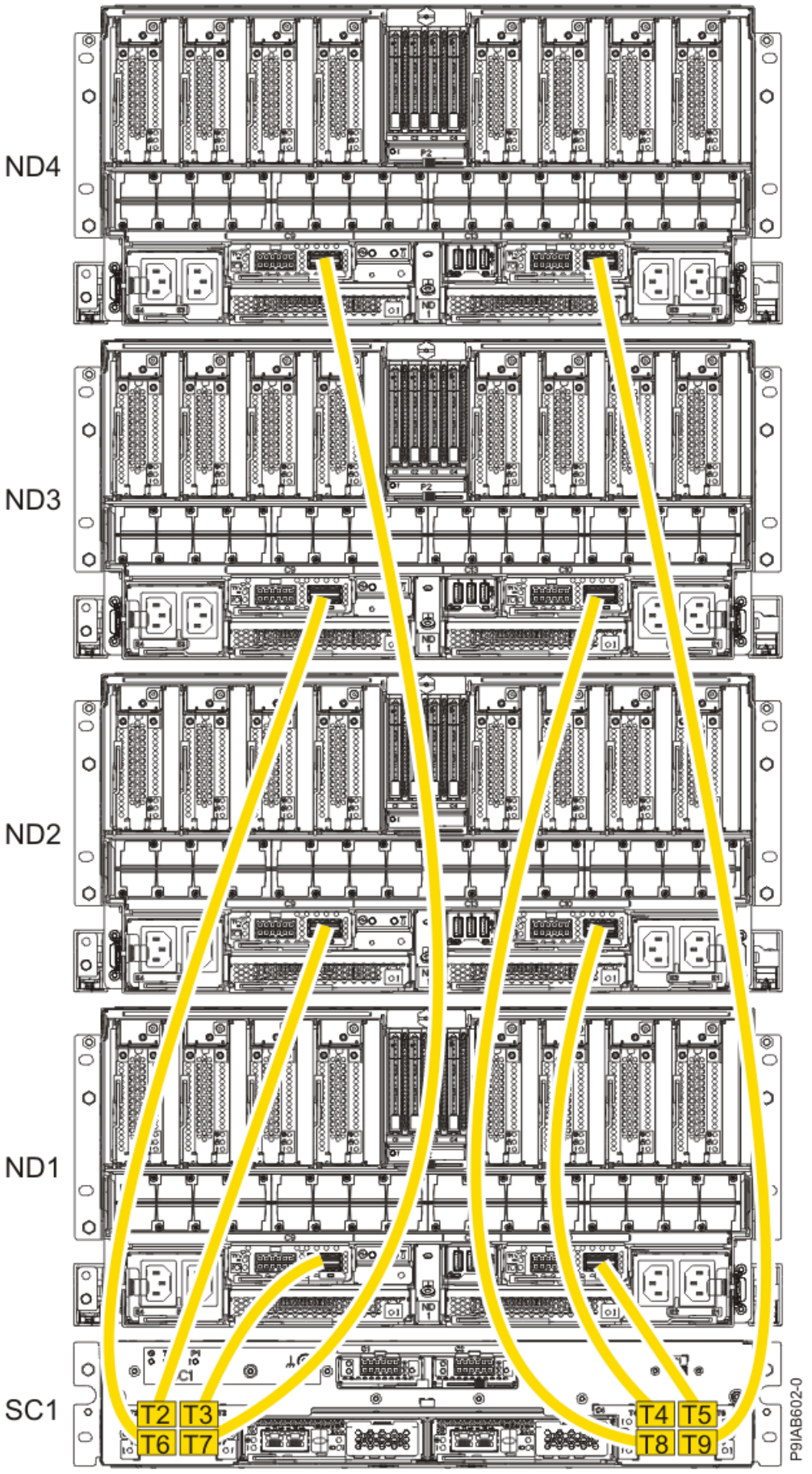


Figure 161. Service processor (FSP) cabling

Table 22. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

7. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

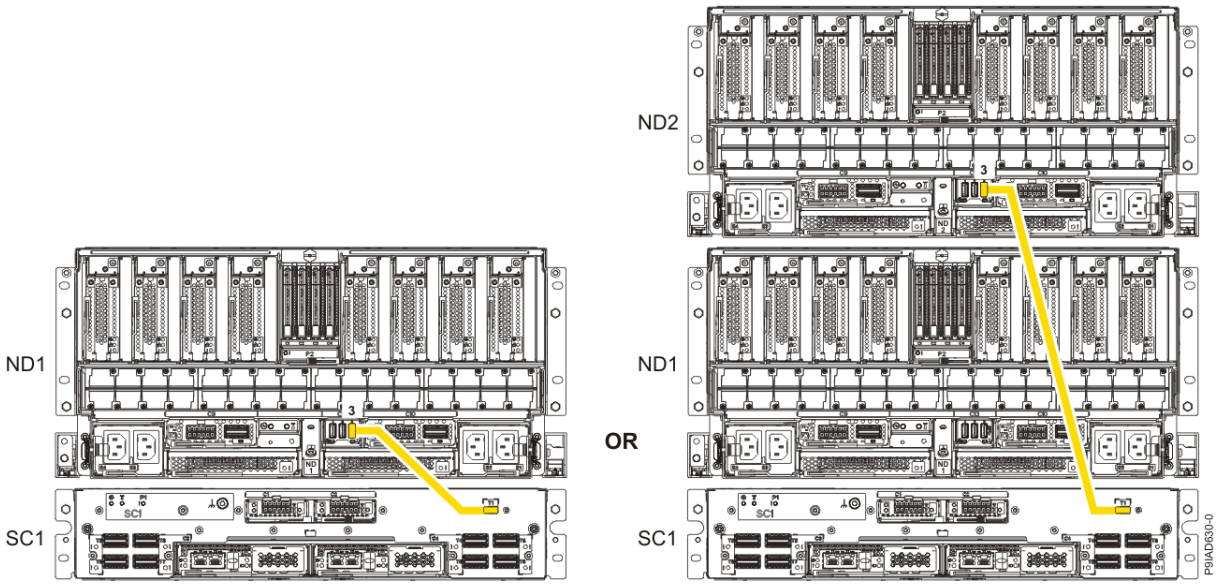


Figure 162. USB Cabling

Table 23. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

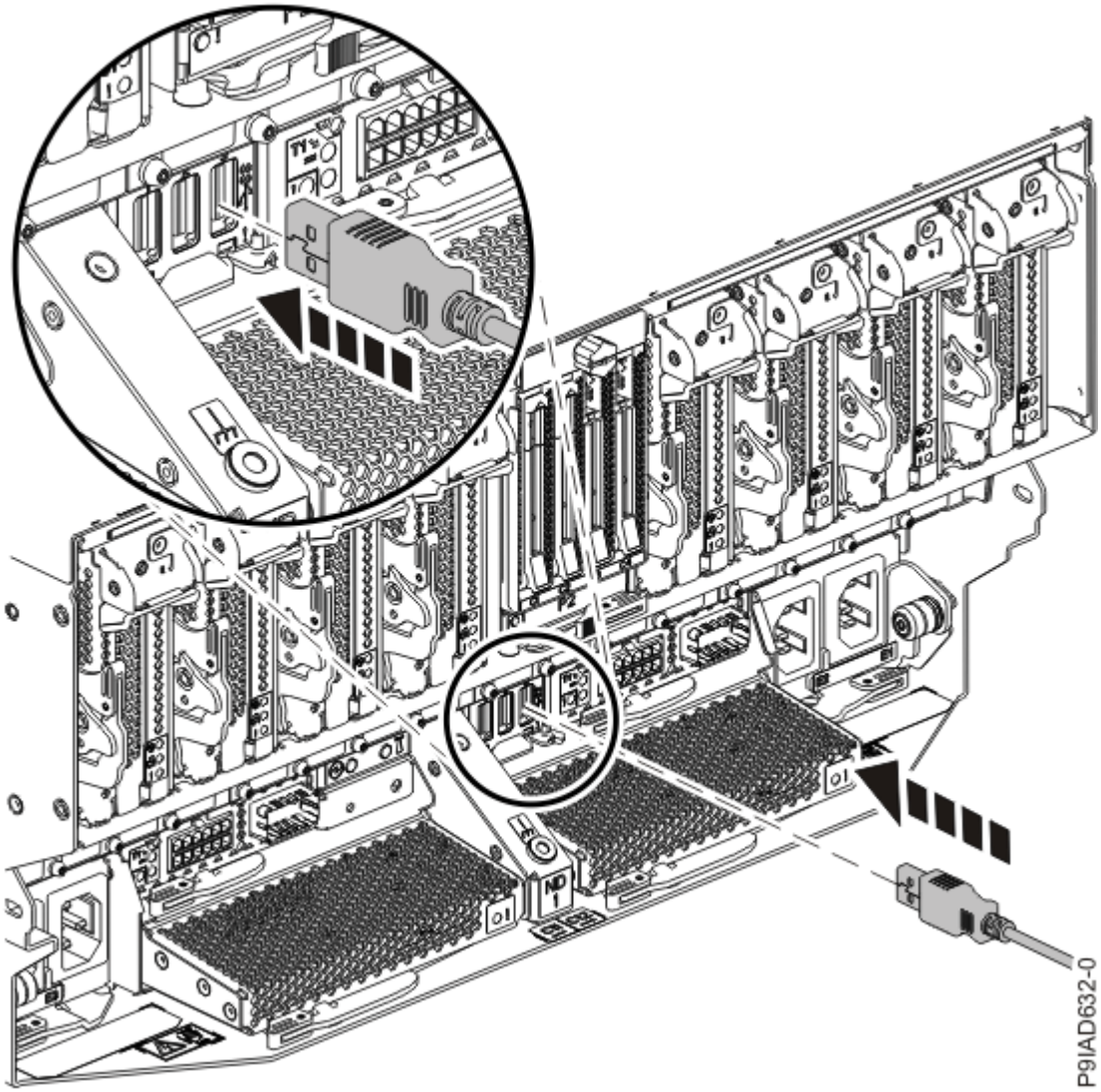


Figure 163. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

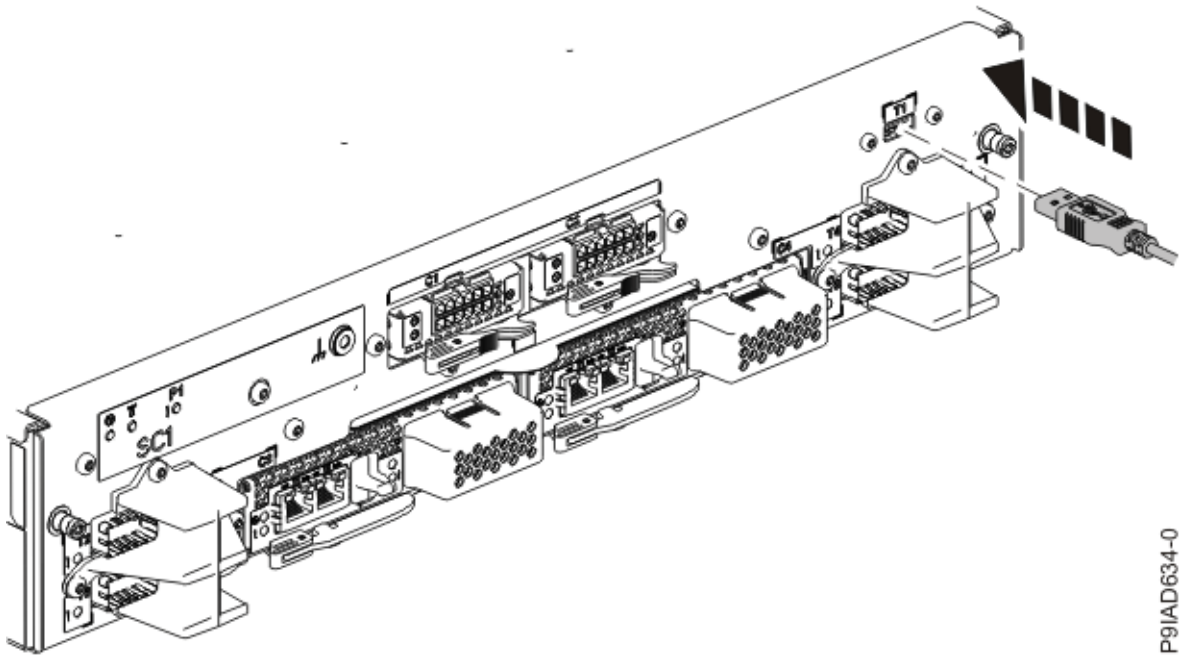


Figure 164. Replacing the USB cable into the system control unit

8. Using your labels, reconnect all of the PCIe cables or transceivers that you removed from the PCIe adapters for the system node you are servicing.
9. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

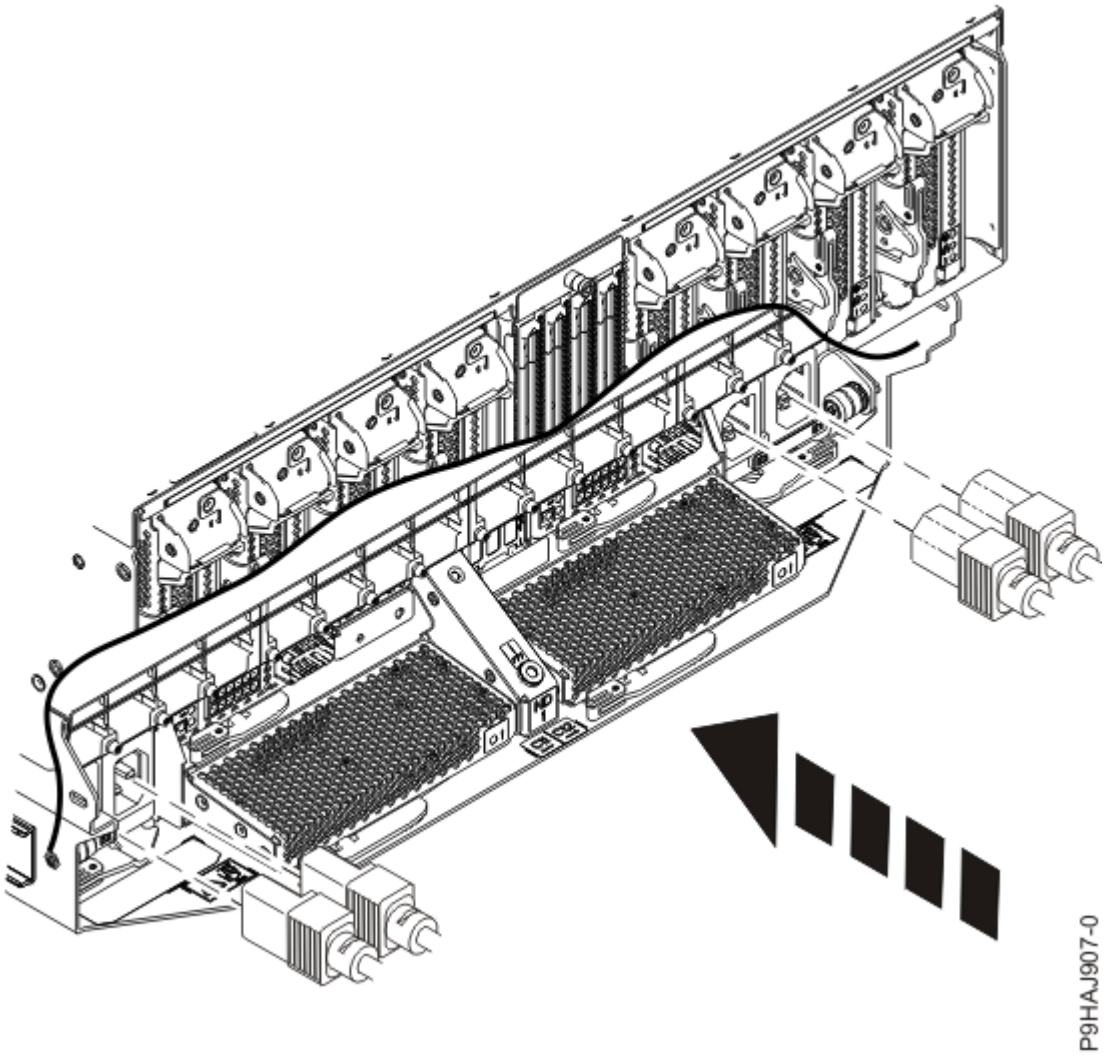


Figure 165. Connecting the rear power cords

10. 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.

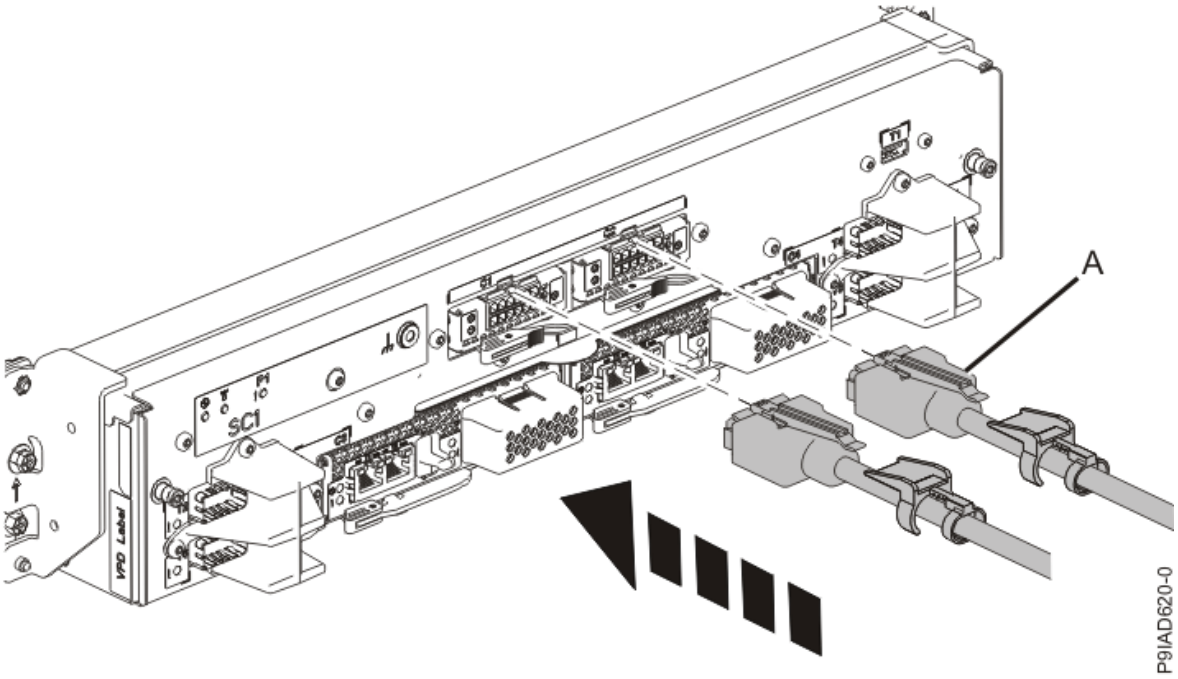


Figure 166. Replacing the UPIC cable into the system control unit

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

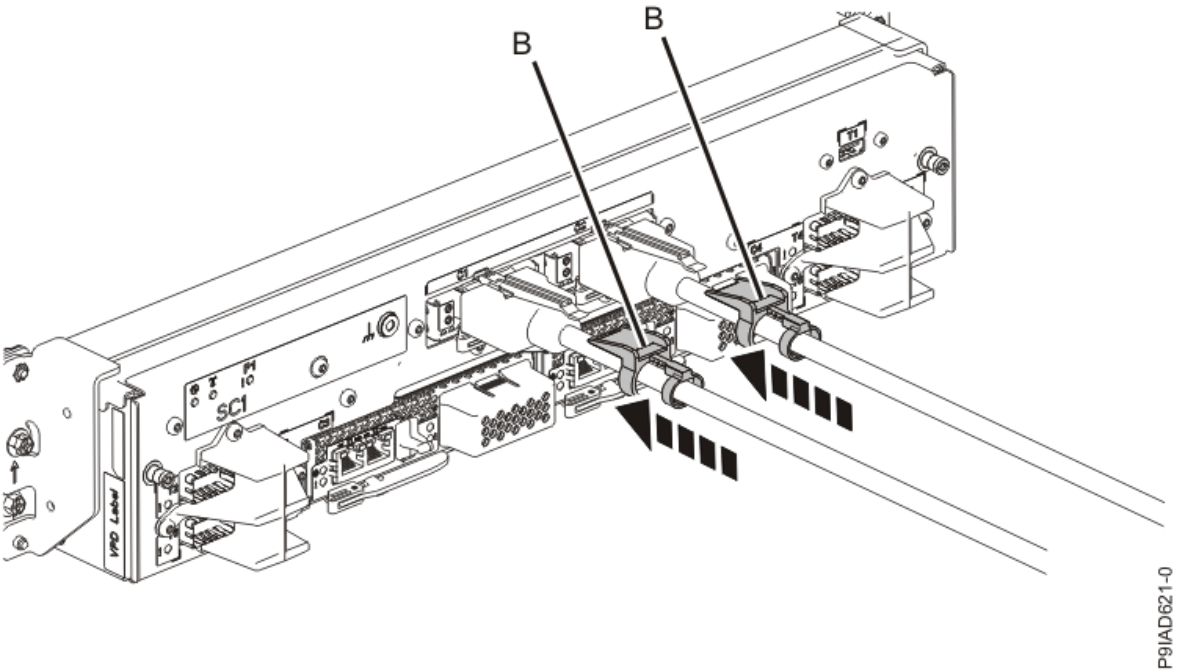


Figure 167. Replacing the UPIC cable into the system control unit

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.

11. 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.
12. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Permanently removing memory modules

Preparing the 9080-M9S system to permanently remove memory modules

About this task

The following memory configurations are available for the systems.

- The system nodes use DDR4 memory modules.
- DDR3 memory modules are also supported. Mixing of DDR3 and DDR4 memory modules are not supported in the same system node.
- For each processor socket, a minimum of 4 of the 8 memory modules must be populated. The only valid number of memory modules plugged into sites for a given processor module is 4 or 8.
- The memory modules must be plugged in quads (a group of 4). Odd numbers or having 6 memory modules for a processor is not supported.
- Each memory module within a quad must be the same size and type. The memory module quads can be different from each other.
- To ensure proper cooling, a memory module or a memory module filler is required in all locations.
- Table 24 on page 194 shows the base memory plugging rules.
- Table 25 on page 195 shows the plugging rules for adding memory. Quads must be added next to a processor. The quads can be added in any order.

Table 24. Base memory plugging rules

Memory module location	CPU socket
P1-C22, P1-C23, P1-C28, P1-C29	P1
P1-C30, P1-C31, P1-C36, P1-C37	P3
P1-C38, P1-C39, P1-C44, P1-C45	P2
P1-C46, P1-C47, P1-C52, P1-C53	P0

Table 25. Upgrading memory plugging rules. Plug the additional quad of memory modules in any of the remaining open quad slots	
Memory module location	**CPU socket**
P1-C24, P1-C25, P1-C26, P1-C27	P1
P1-C32, P1-C33, P1-C34, P1-C35	P3
P1-C40, P1-C41, P1-C42, P1-C43	P2
P1-C48, P1-C49, P1-C50, P1-C51	P0

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.
   This action causes causes the blue system ID LED to turn on. You can also identify the locations for the memory to be installed.
2. Open the rear rack door, if necessary.
3. 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.

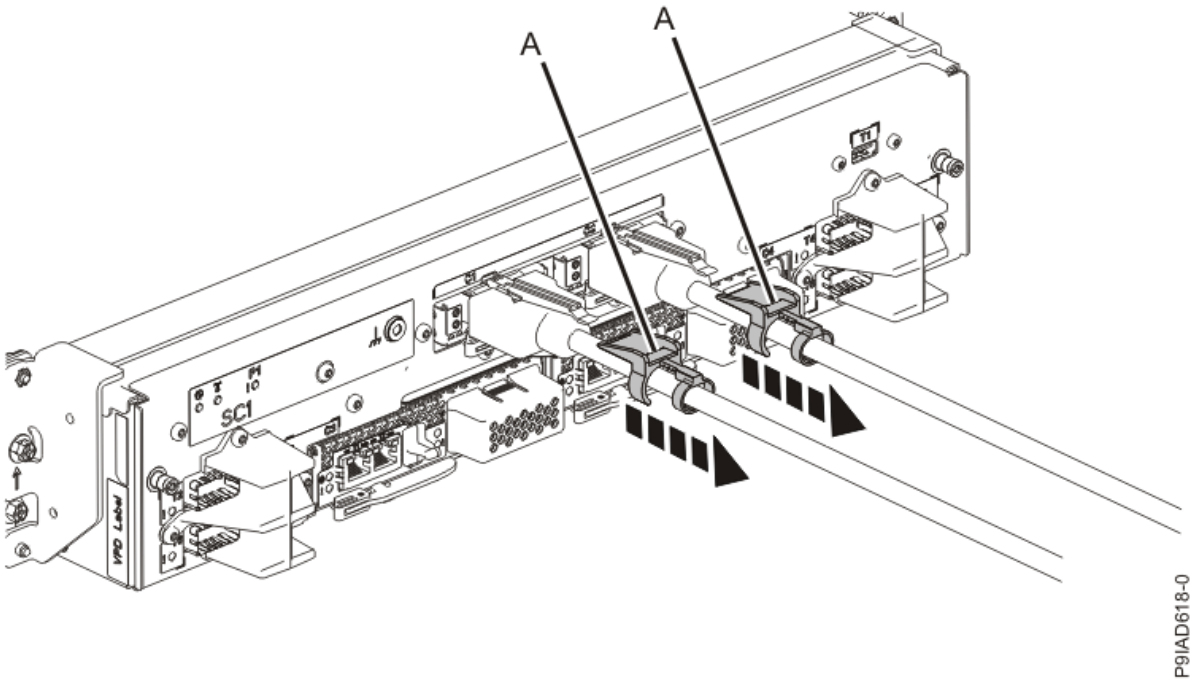


Figure 168. Removing the UPIC cable lock

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

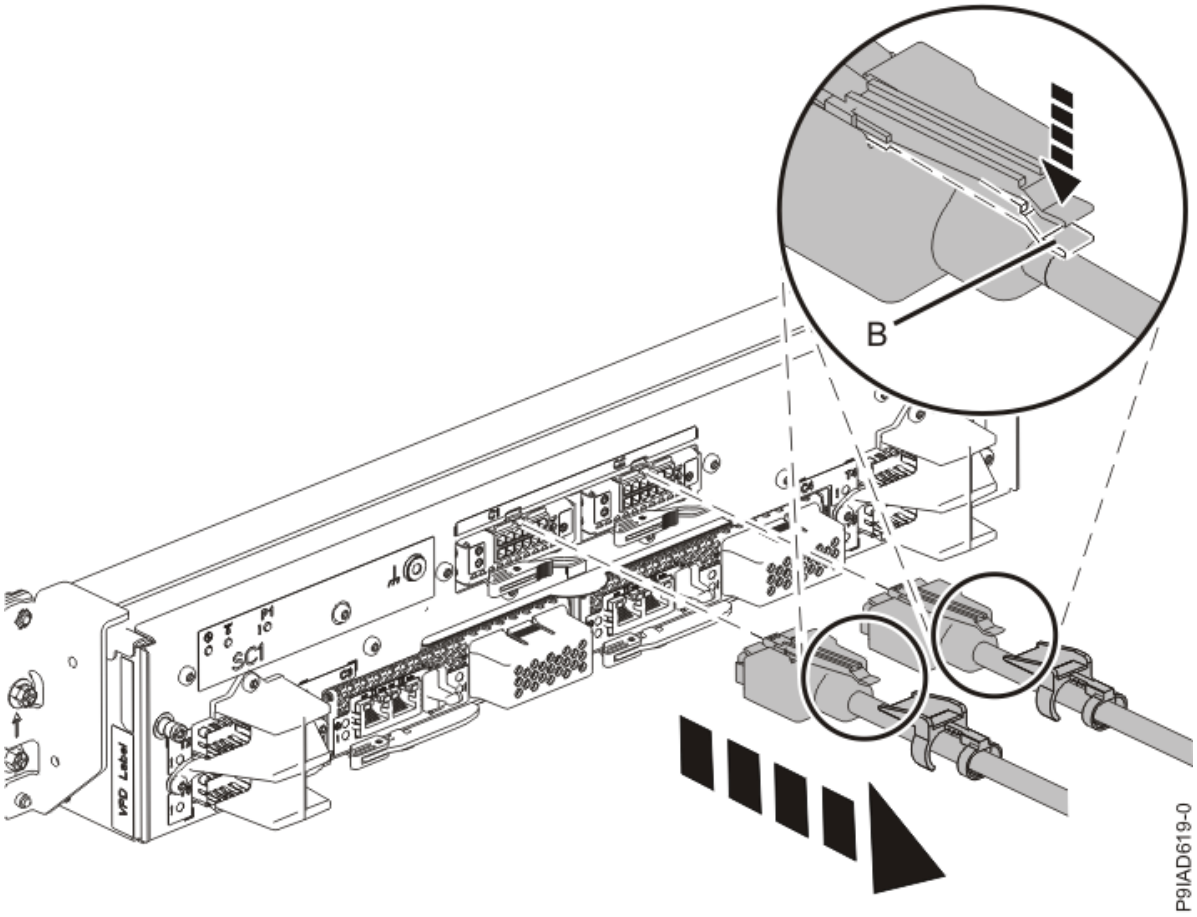


Figure 169. Removing the UPIC cable from the system control unit

4. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

   a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

      Notes:

      - This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

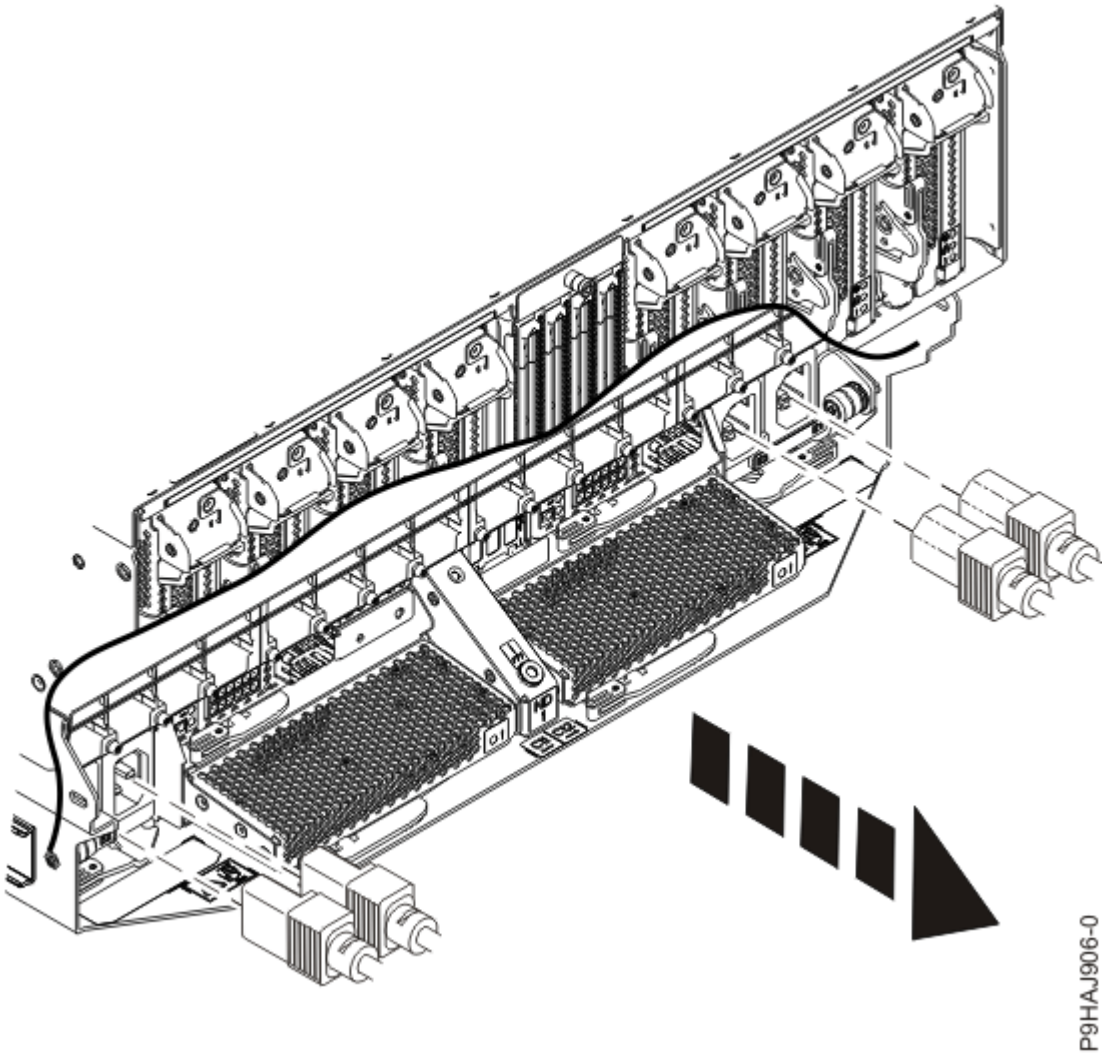
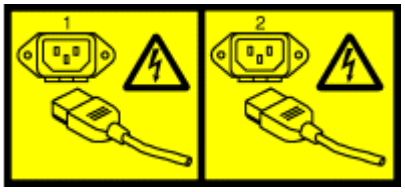


Figure 170. Removing the rear power cords

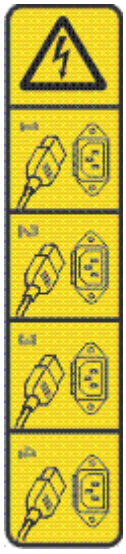
(L003)



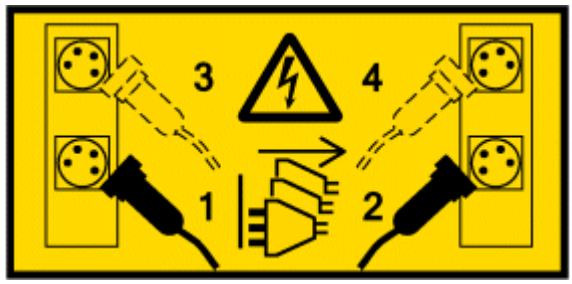
or

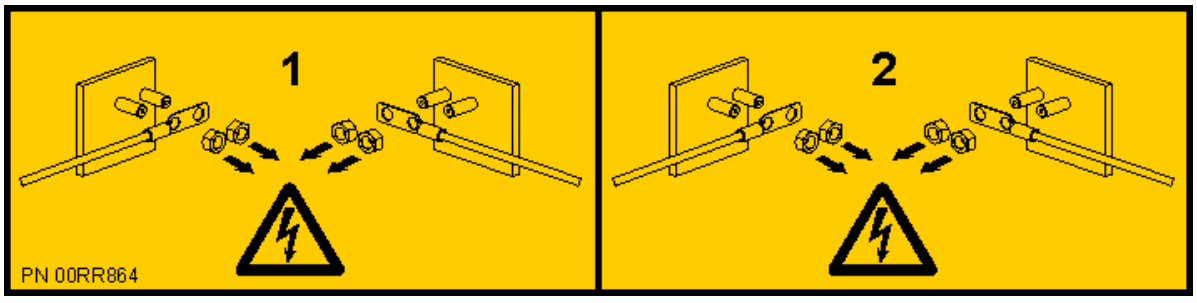
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

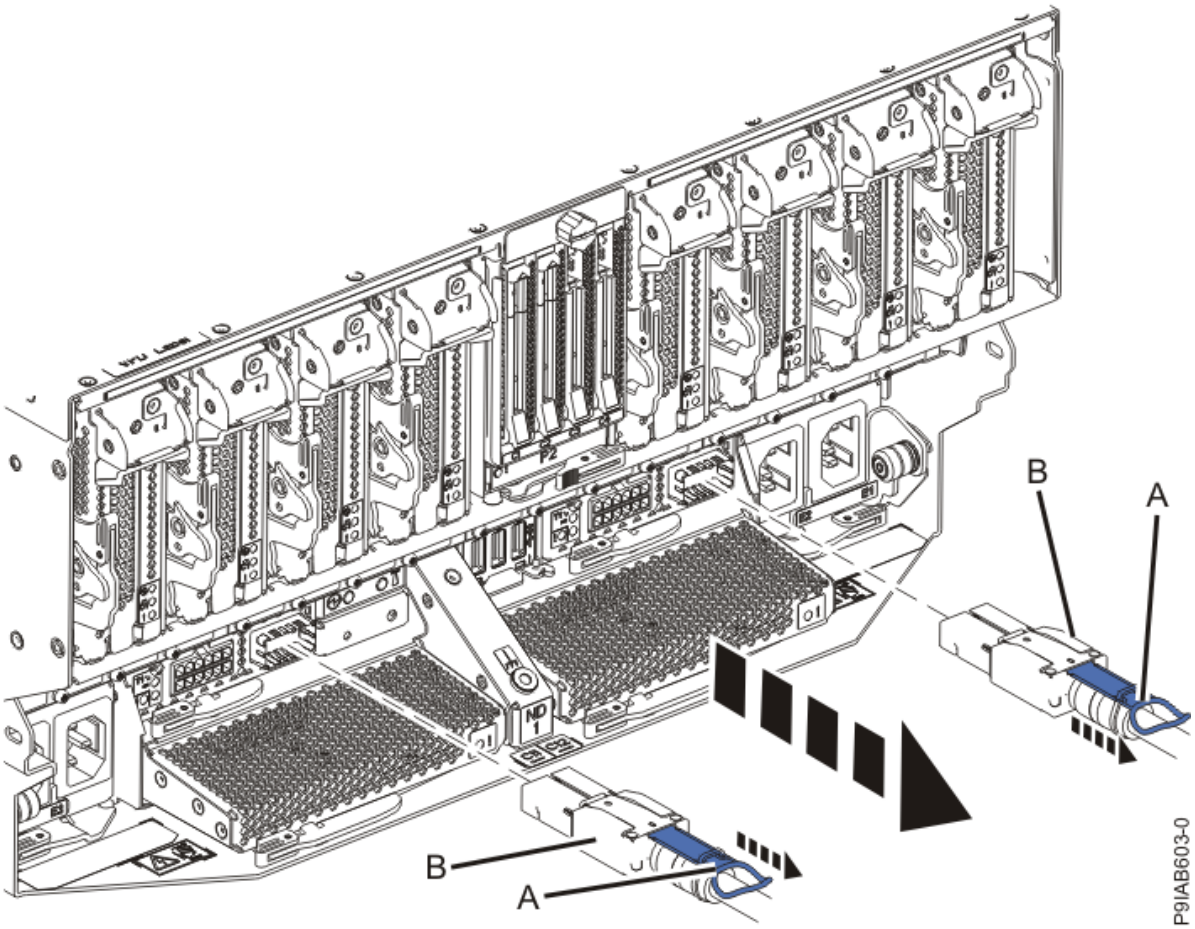


Figure 171. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

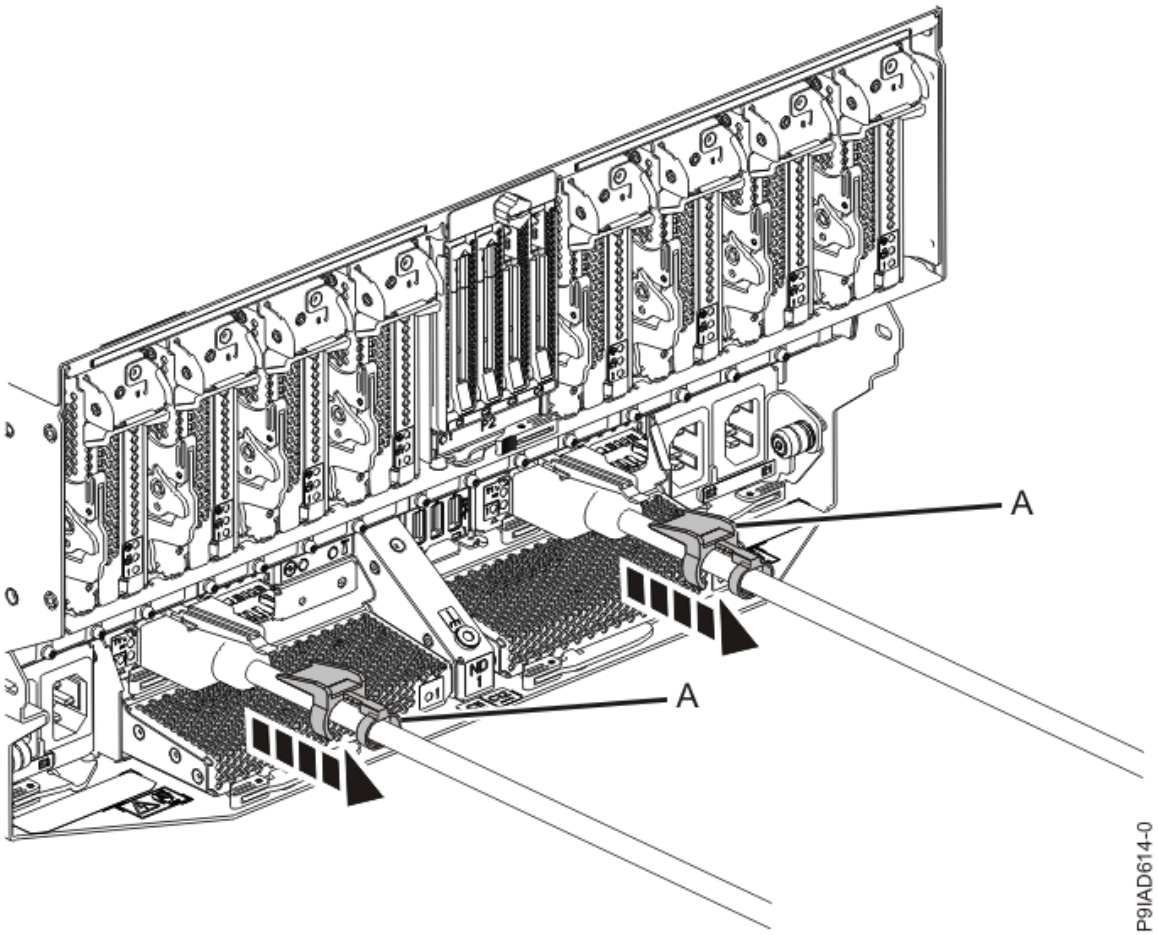


Figure 172. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

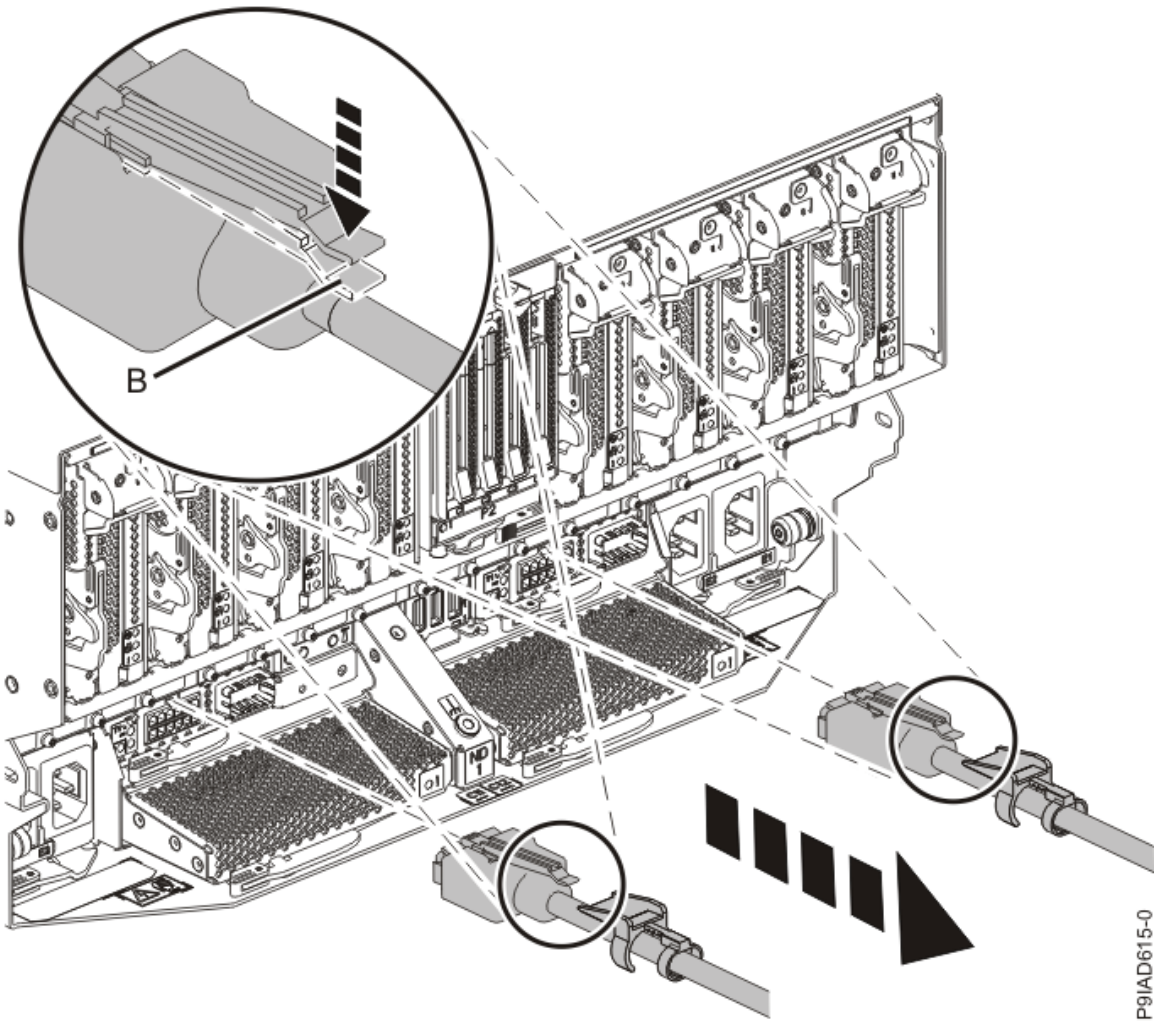


Figure 173. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

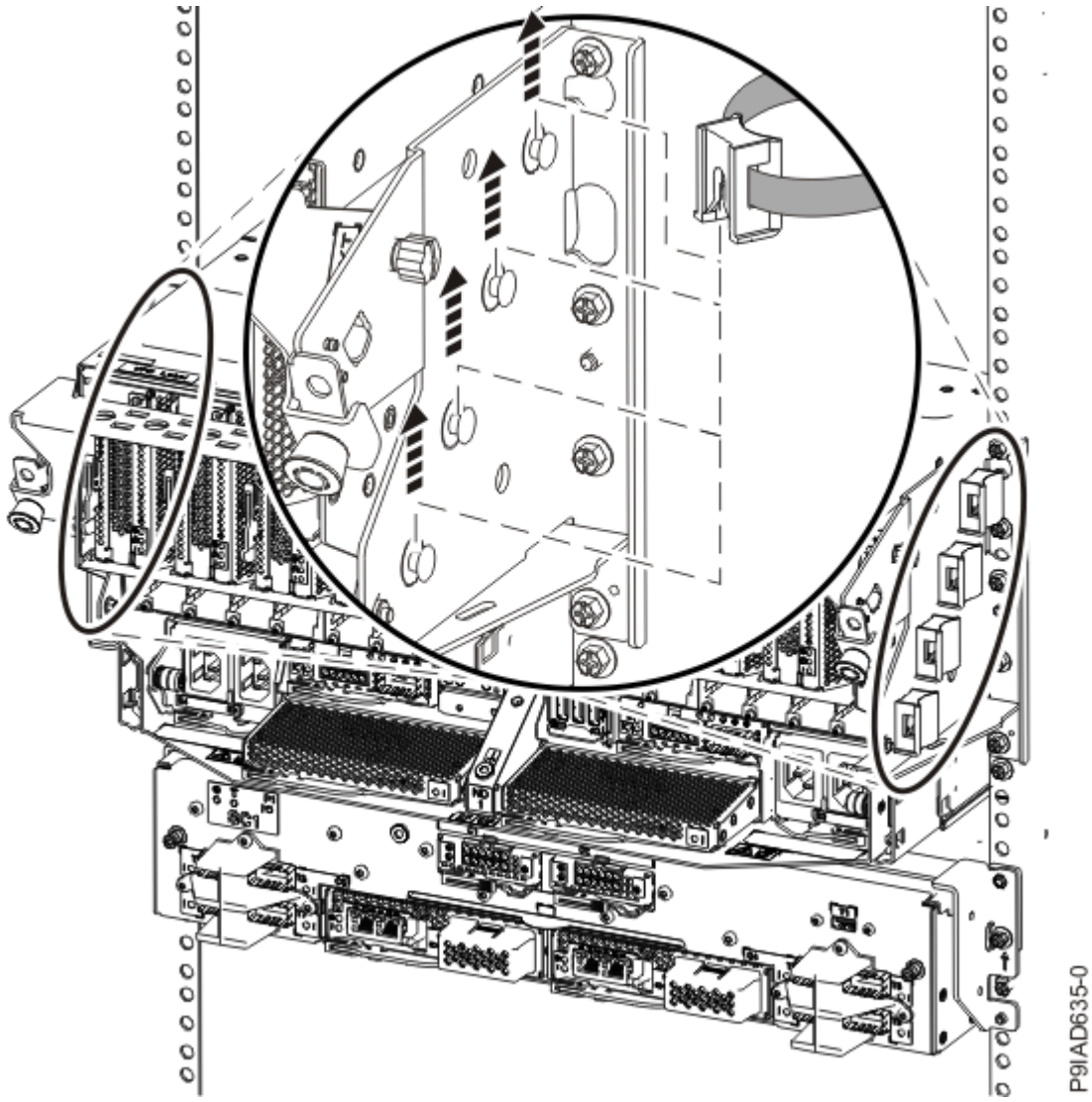


Figure 174. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

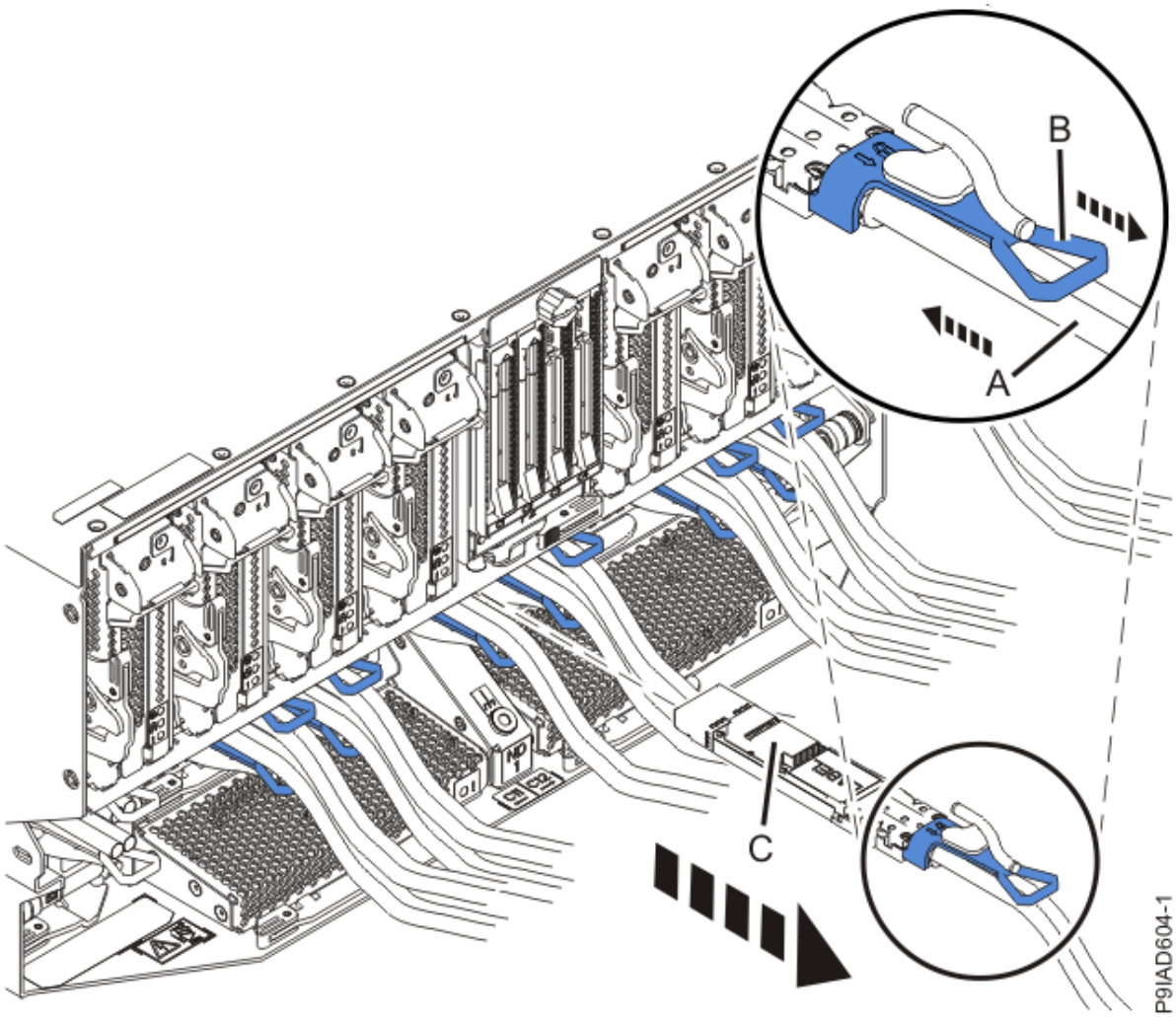


Figure 175. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

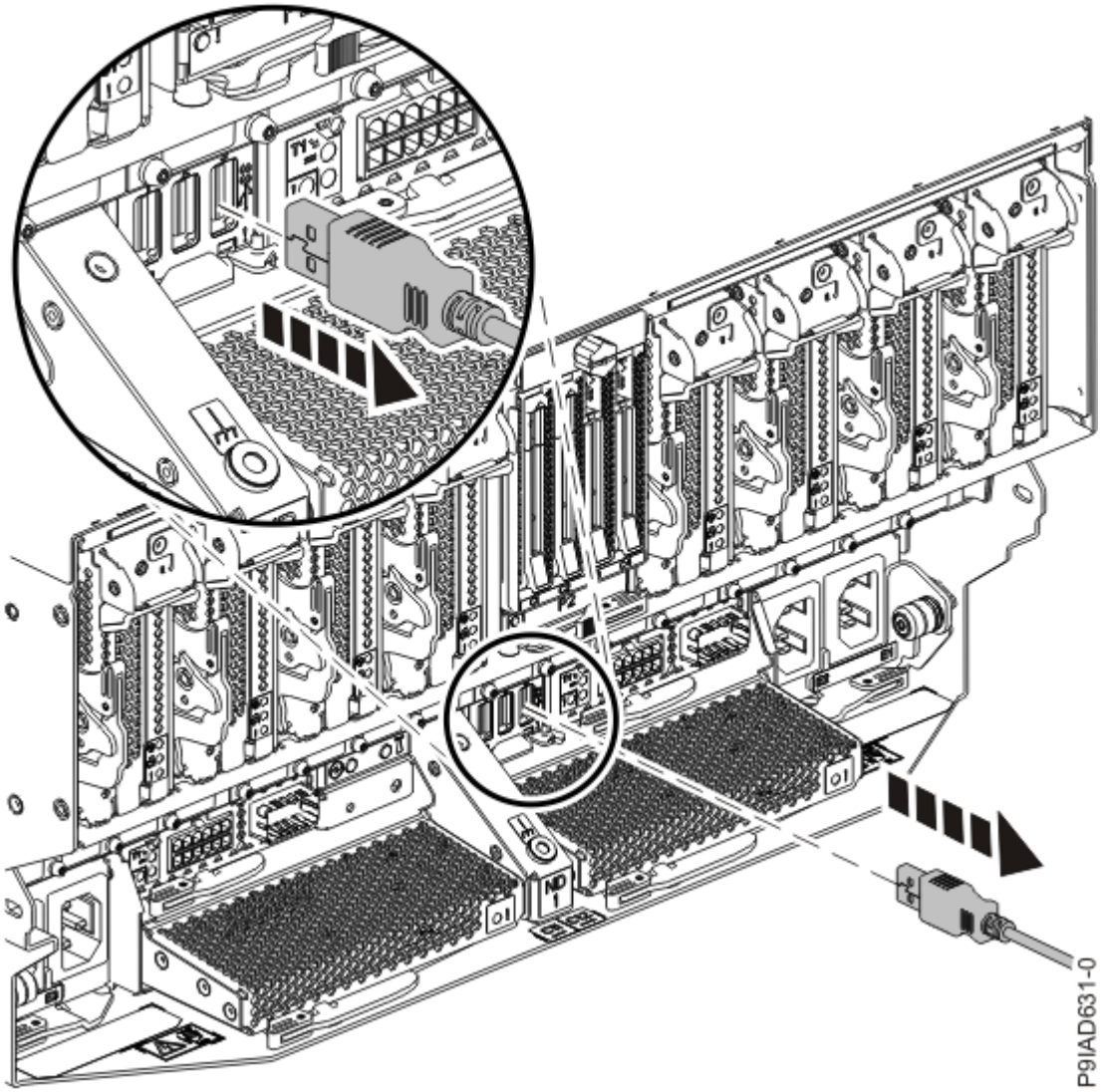


Figure 176. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

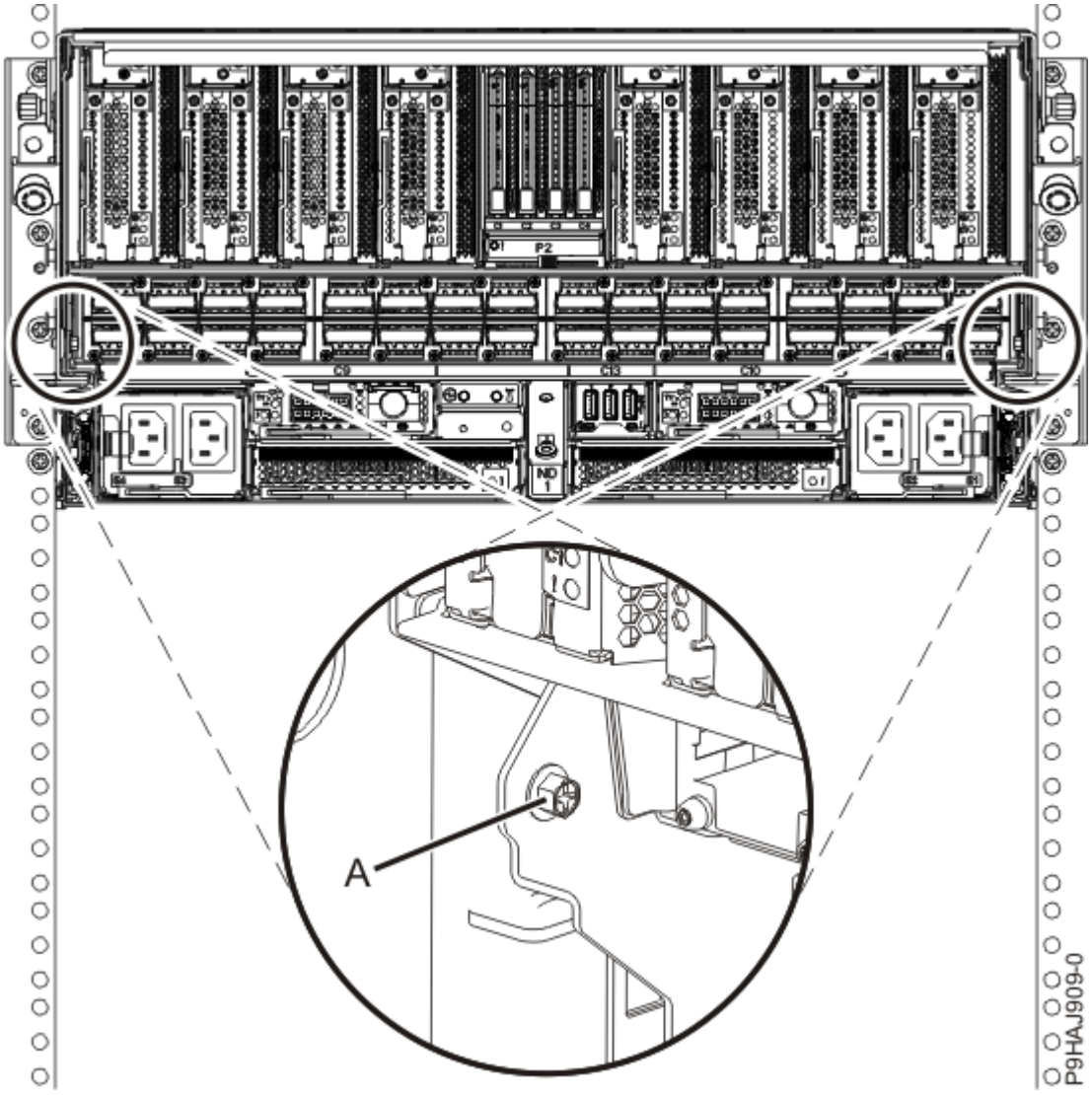


Figure 177. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

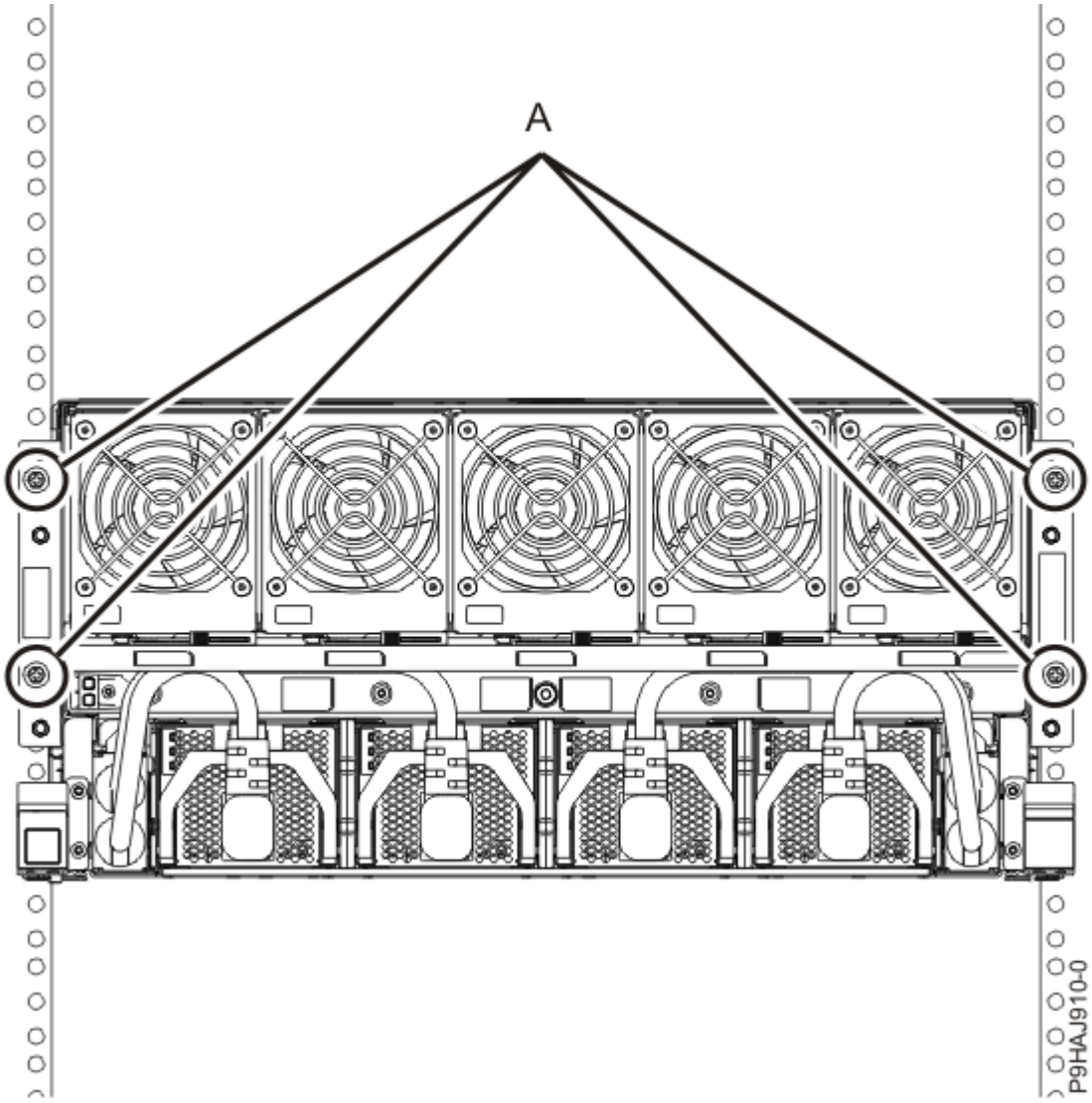


Figure 178. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

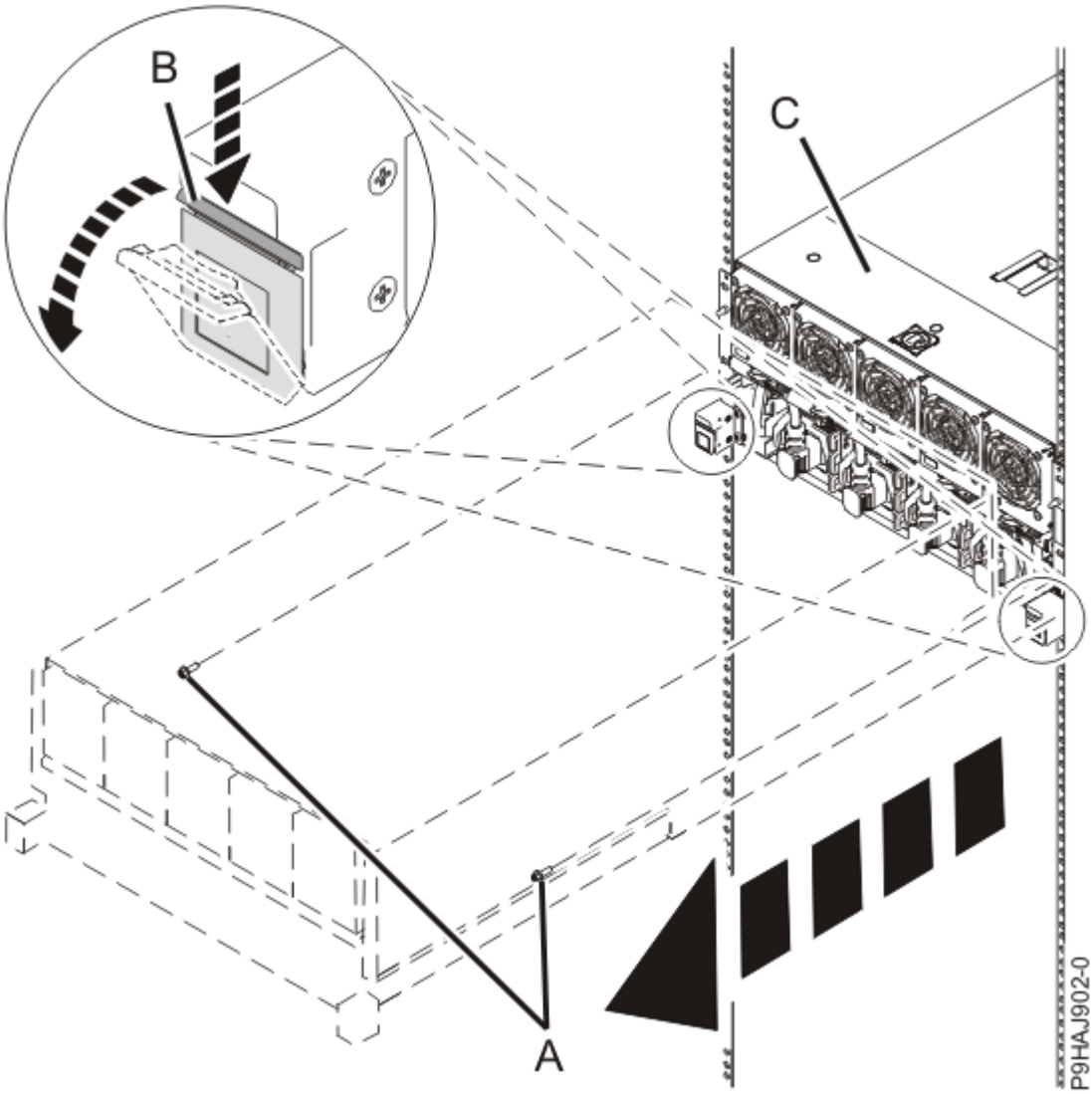


Figure 179. Placing the system node in service position

5. 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.

6. Complete the following steps to remove the cover.

   Attention: Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Push the release latch **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

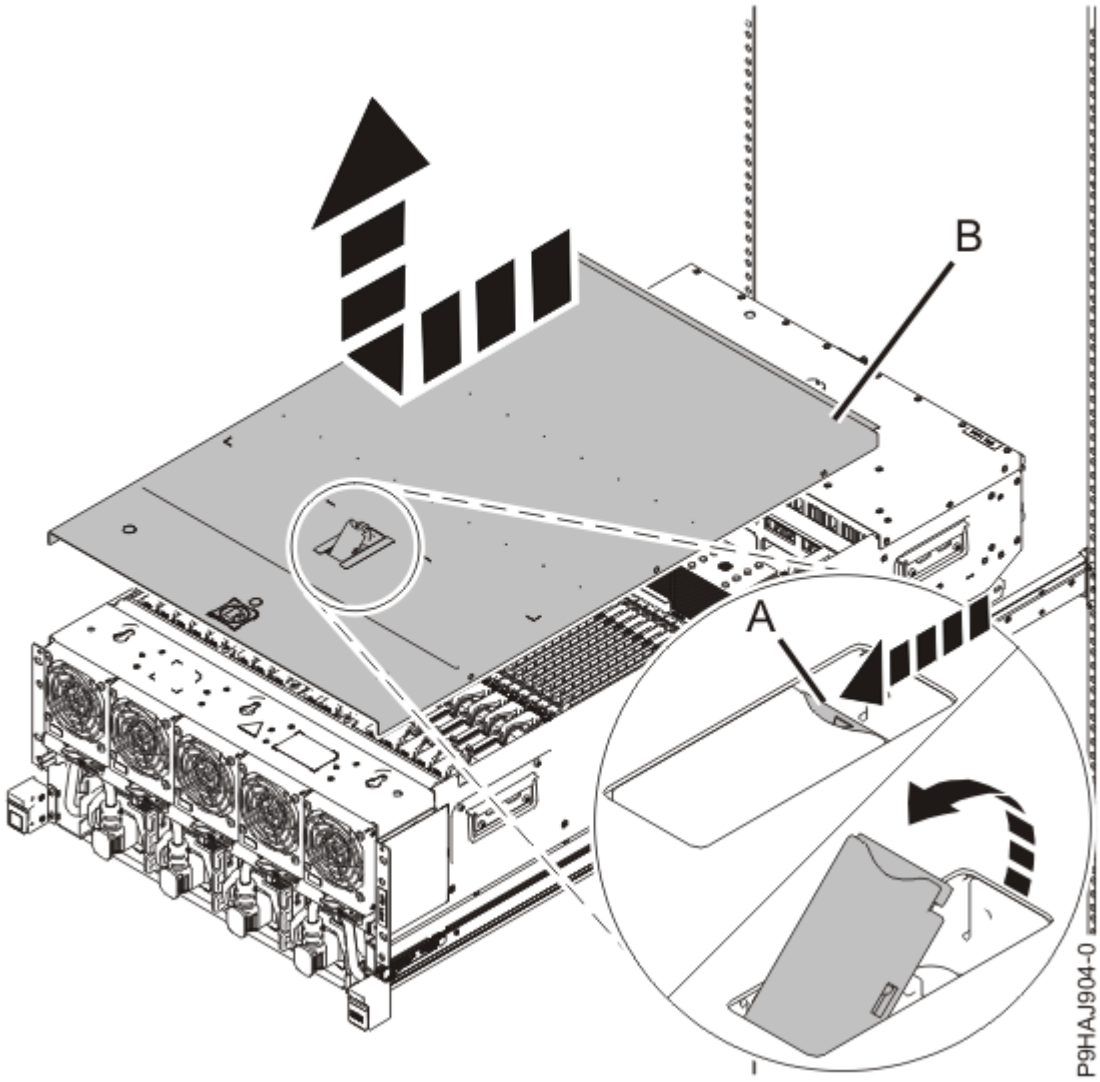


Figure 180. Removing the service access cover

7. To activate the identify LED for the locations for installing the memory modules, press and hold either push-button on the trusted platform module card as shown in the following figure.

   Verify that the LED **(A)** is lit, which indicates that sufficient power exists for the identify LED. If the LED is not lit, use the location code to find the physical location by using the service label.

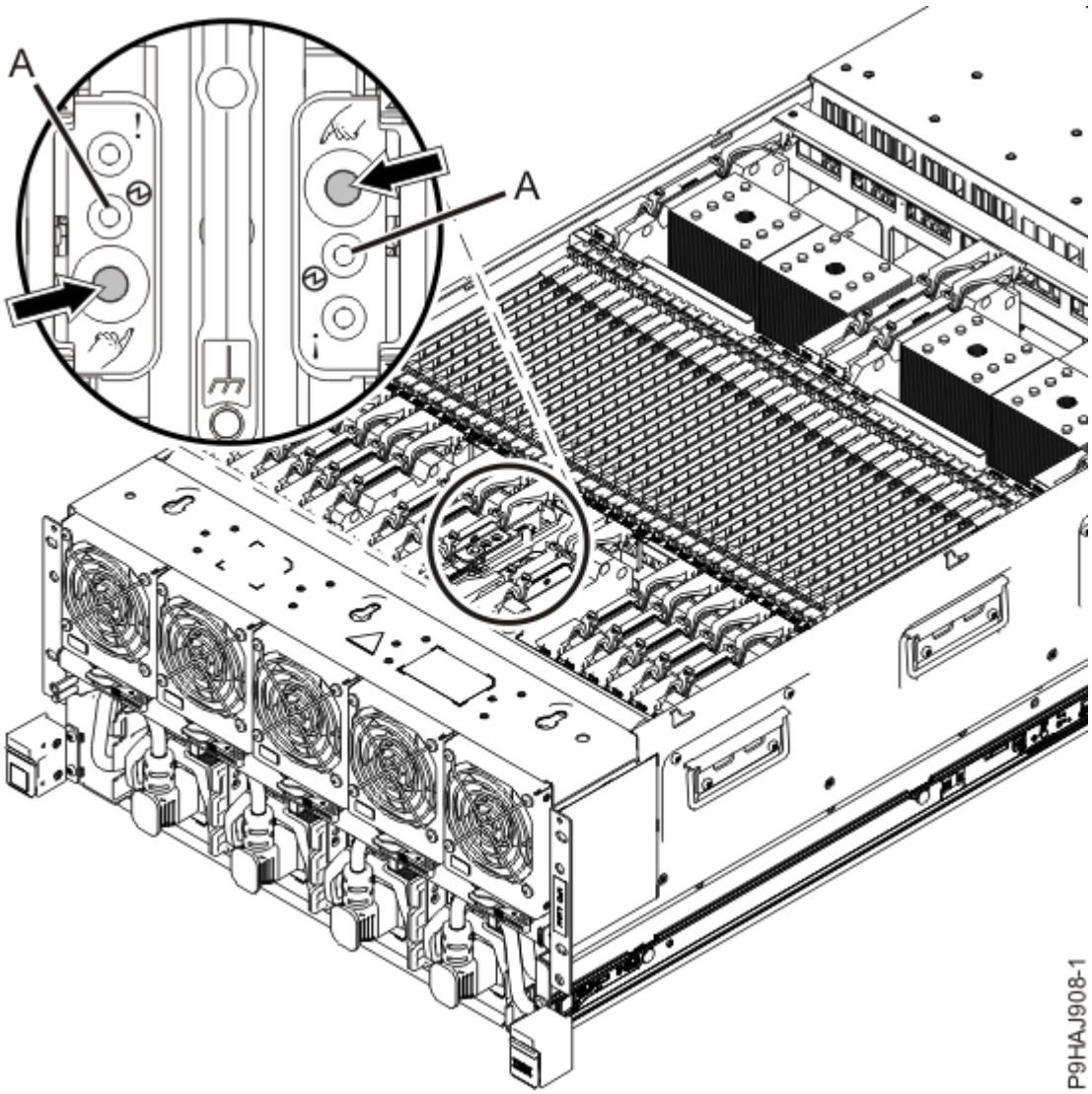


Figure 181. Activating the identify LED

8. Locate the amber LED for the installation locations. Make a note of which locations are flashing; they indicate the memory modules to install.

   Figure 182 on page 210 shows the locations of the memory module. The LEDs are next to the memory module.

   Record the location of the identifying LED.

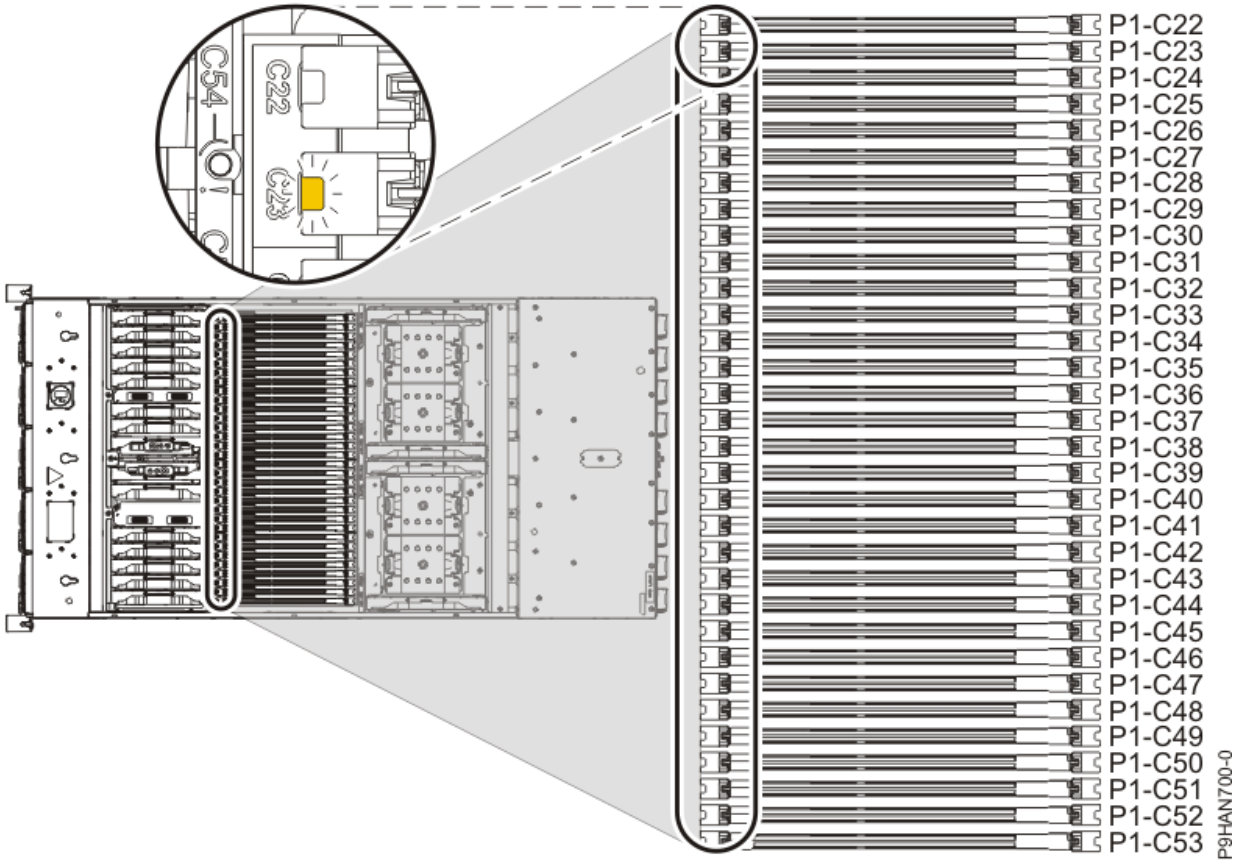


Figure 182. Memory module LEDs and locations

Permanently removing memory modules from the 9080-M9S system

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. Use the slot information that you recorded to determine the slot location to remove the memory module.
3. Remove the memory module by pushing the tabs **(A)** down and outward as shown in the following figure.

   The lever action of the tabs forces the memory module out of the connector.

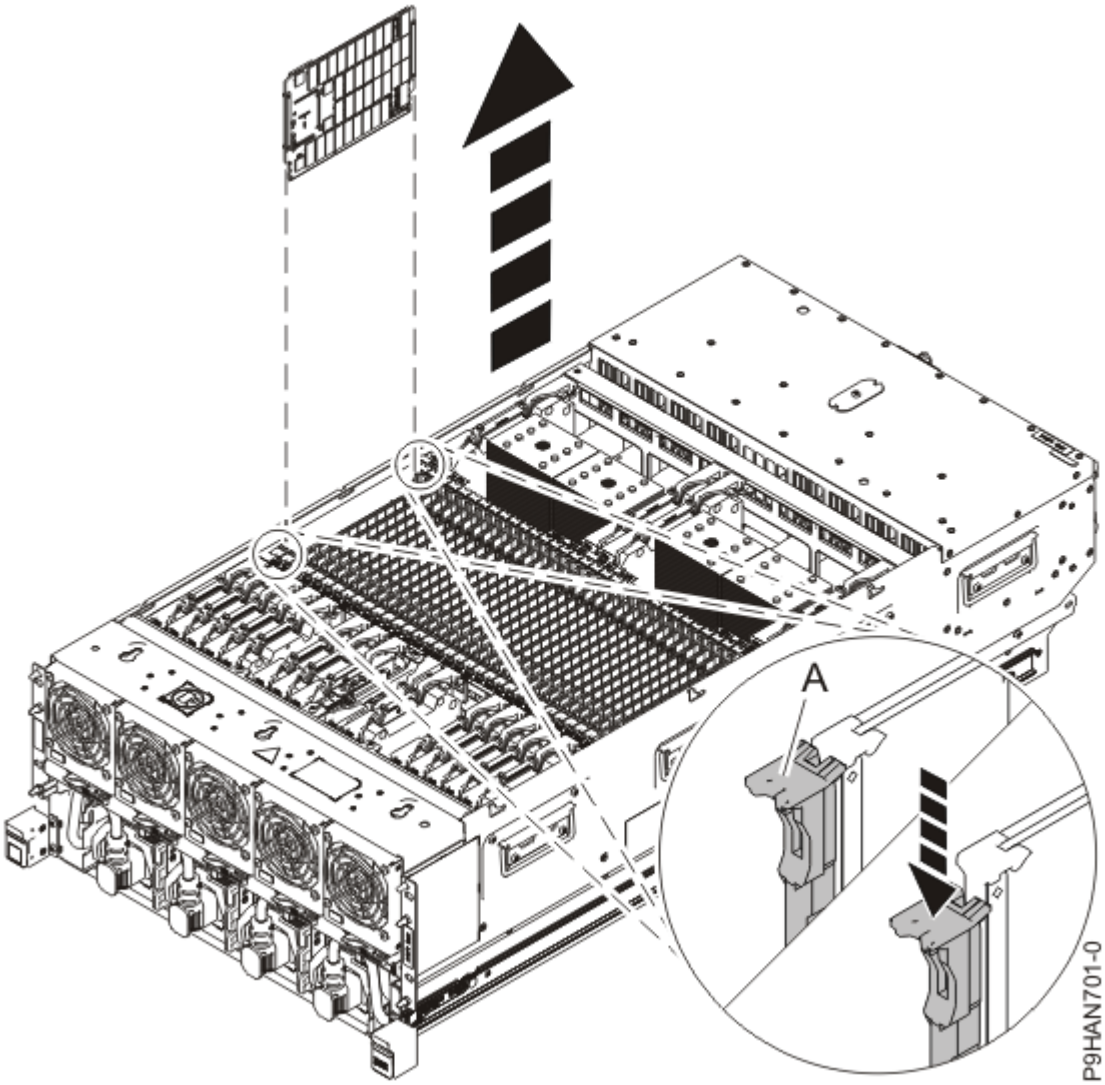


Figure 183. Removing memory modules

4. Hold the memory module by the edges and pull it out of the system.
5. If the removed part is used again, place the part on an electrostatic discharge (ESD) mat.
6. Install a memory module filler into the empty slot by pushing it into slot until the tabs **(A)** lock into place as shown in the following figure.

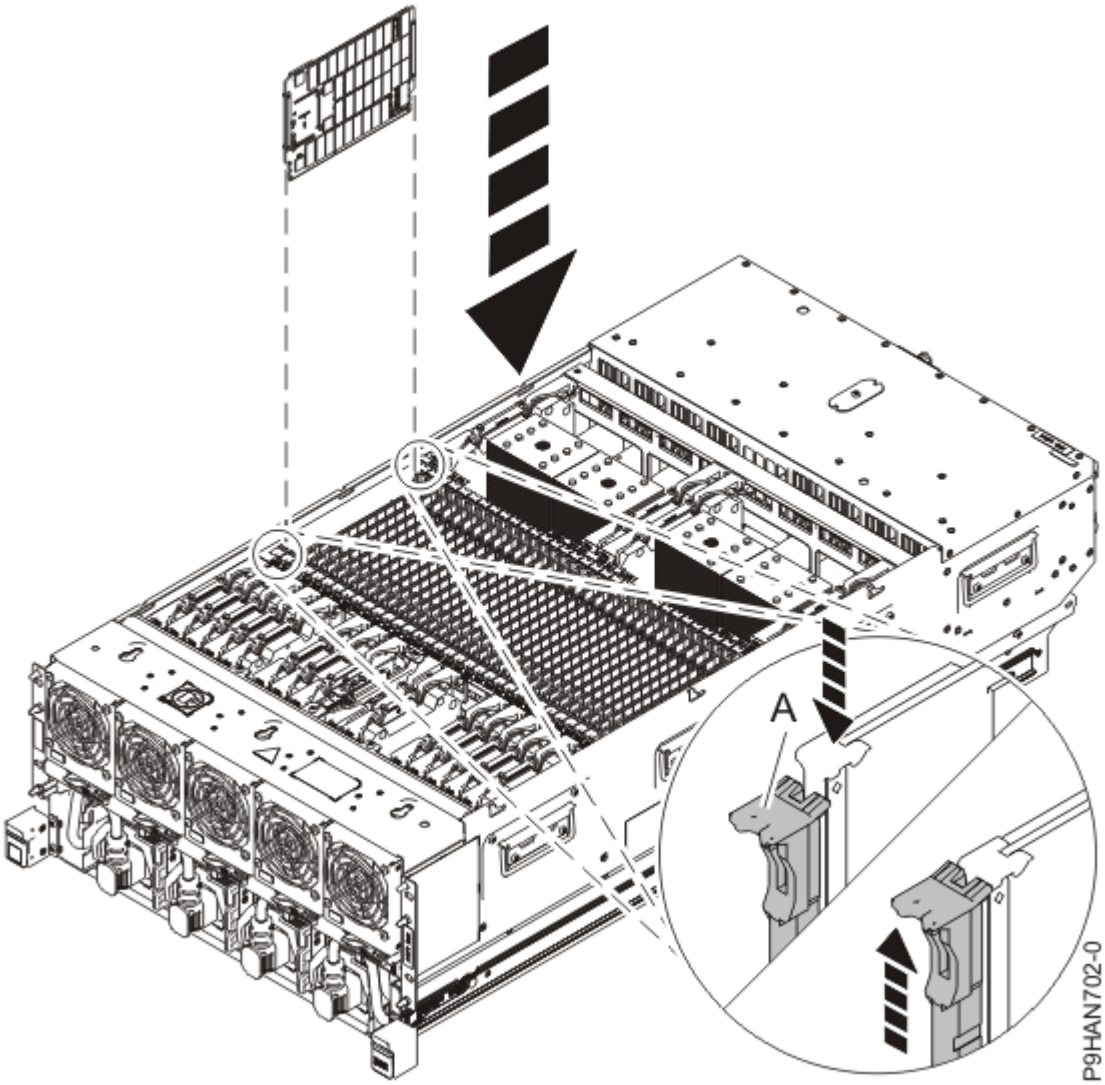


Figure 184. Installing a memory module filler

Preparing the 9080-M9S system for operation after permanently removing a memory module

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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

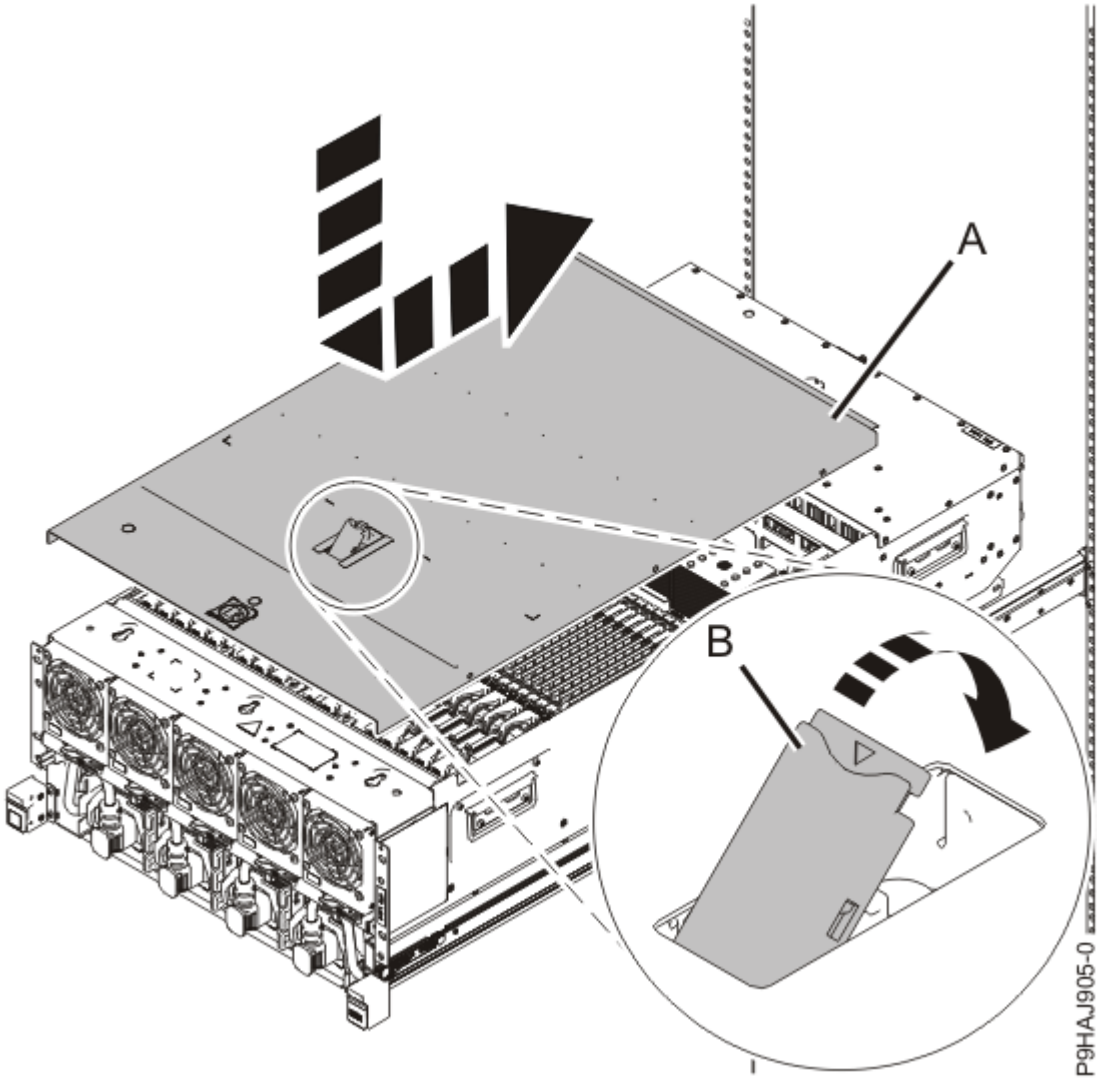


Figure 185. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

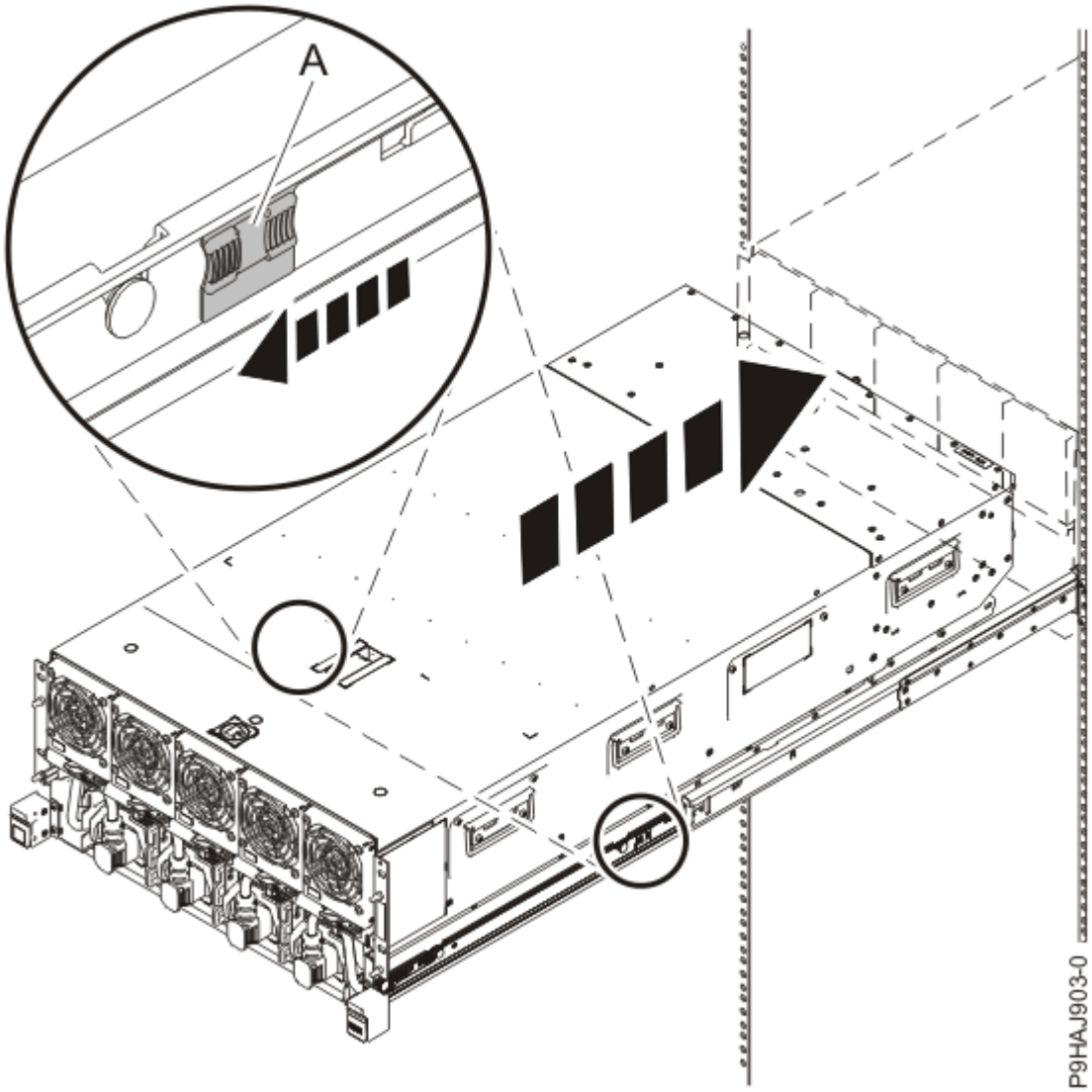


Figure 186. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

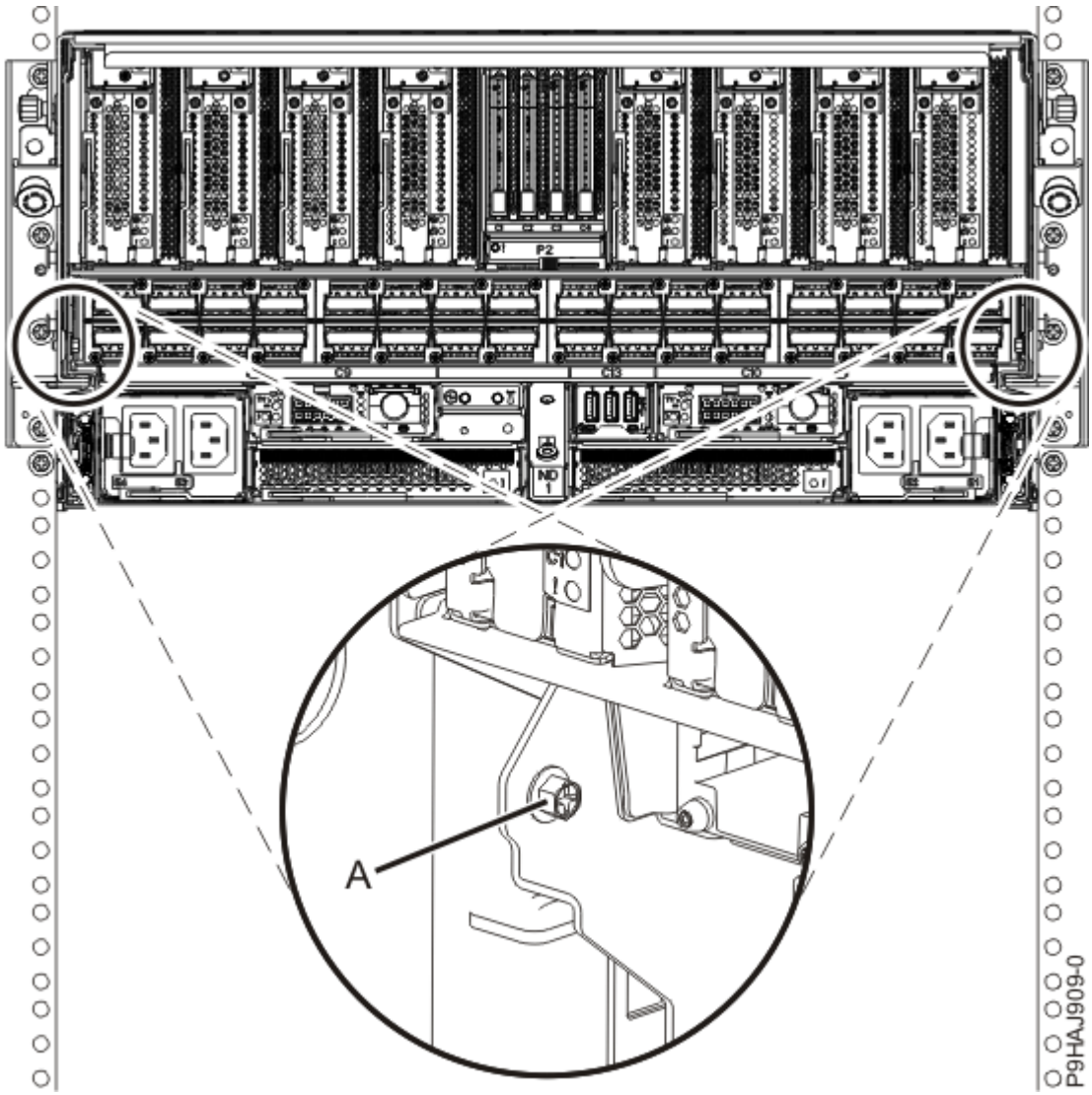


Figure 187. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

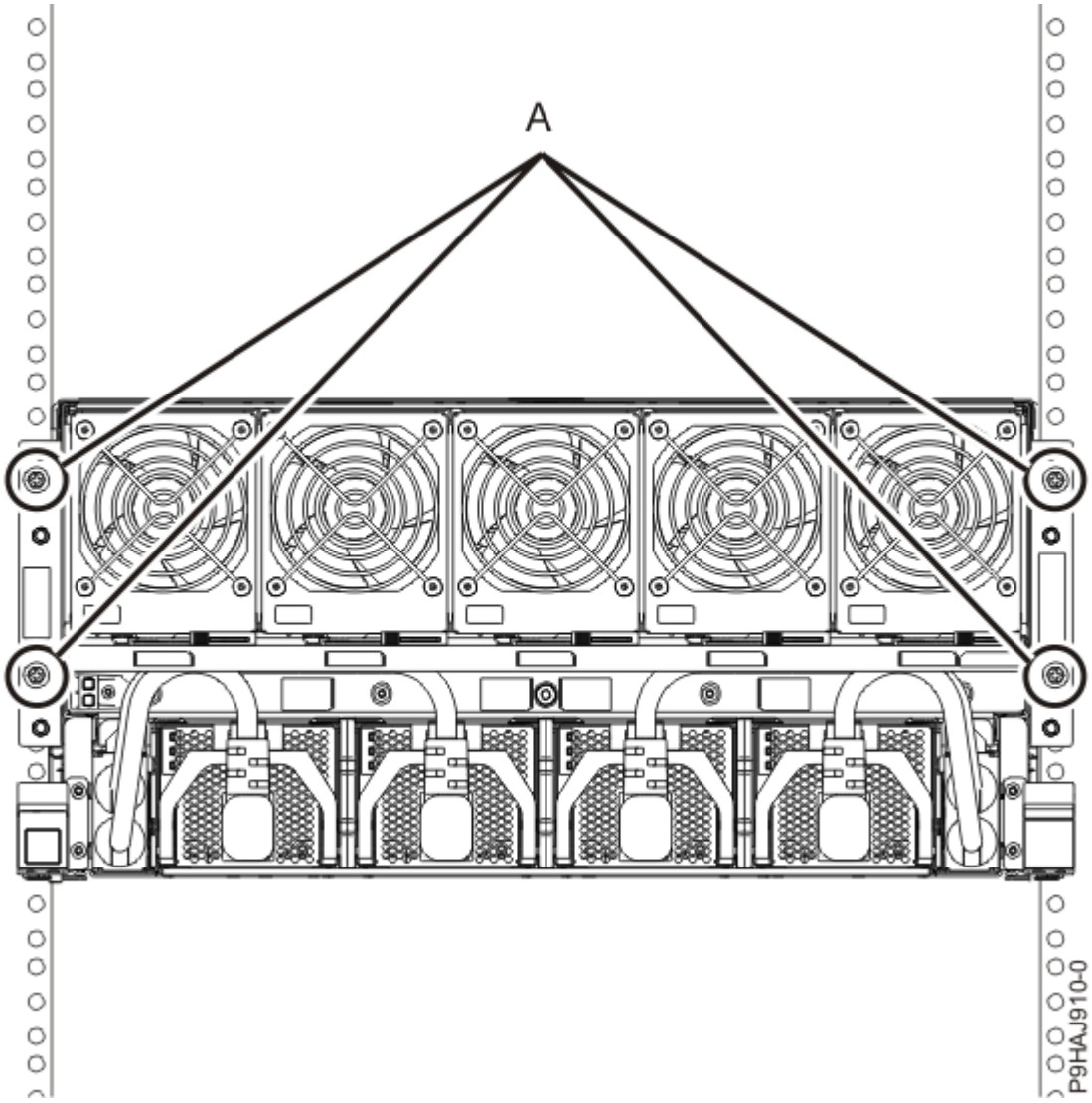


Figure 188. Replacing the front screws

4. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 189 on page 217 and Table 26 on page 217 to determine the point-to-point cabling for SMP cables.

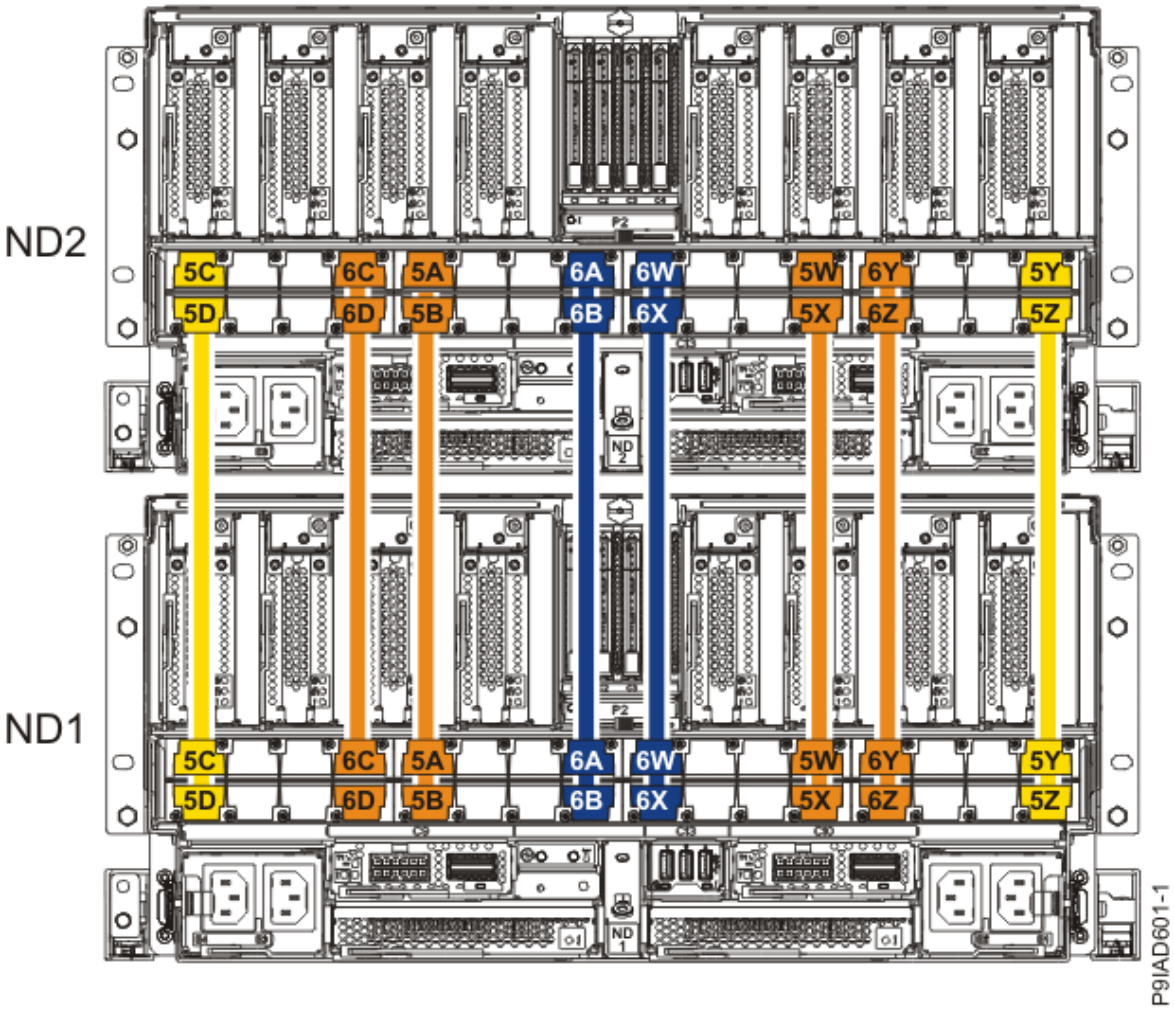


Figure 189. Cabling a Two Node Configuration

Table 26. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 26. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 190 on page 219 and Table 27 on page 219 to determine the point-to-point cabling for SMP cables.

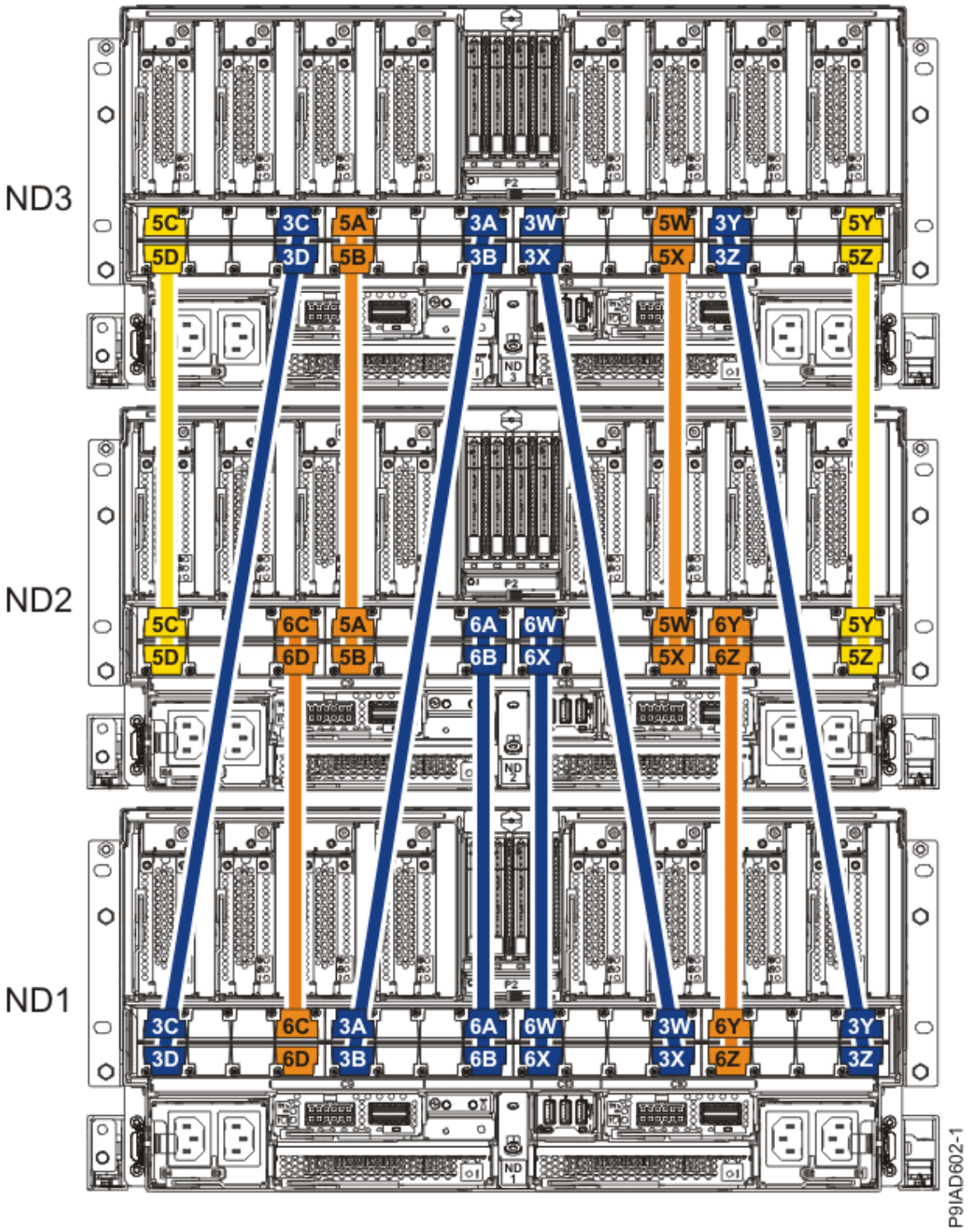


Figure 190. Cabling a Three Node Configuration

Table 27. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 27. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 27. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 191 on page 222 and Table 28 on page 223 to determine the point-to-point cabling for SMP cables.

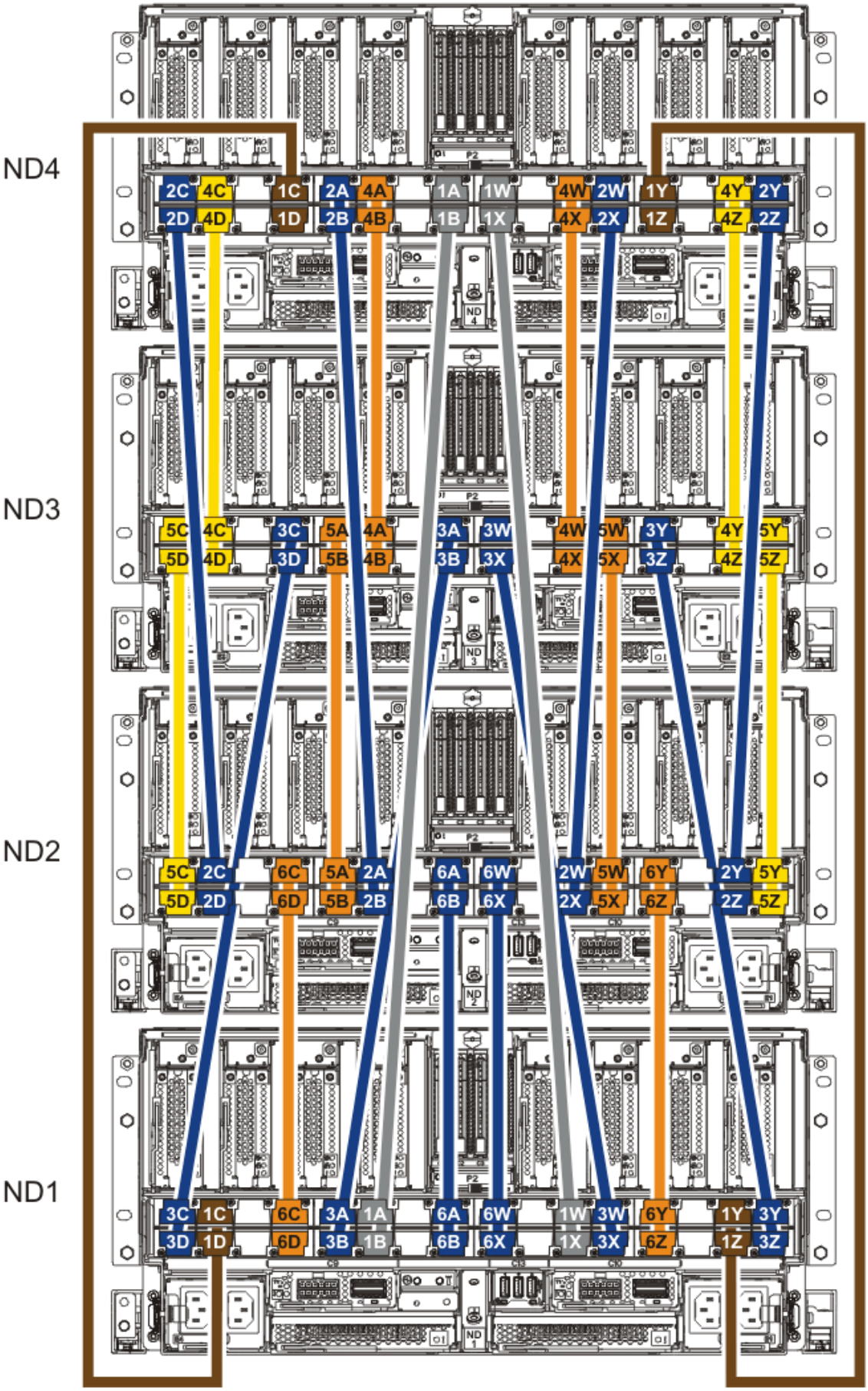


Figure 191. Cabling a Four Node Configuration

Table 28. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 28. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 28. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

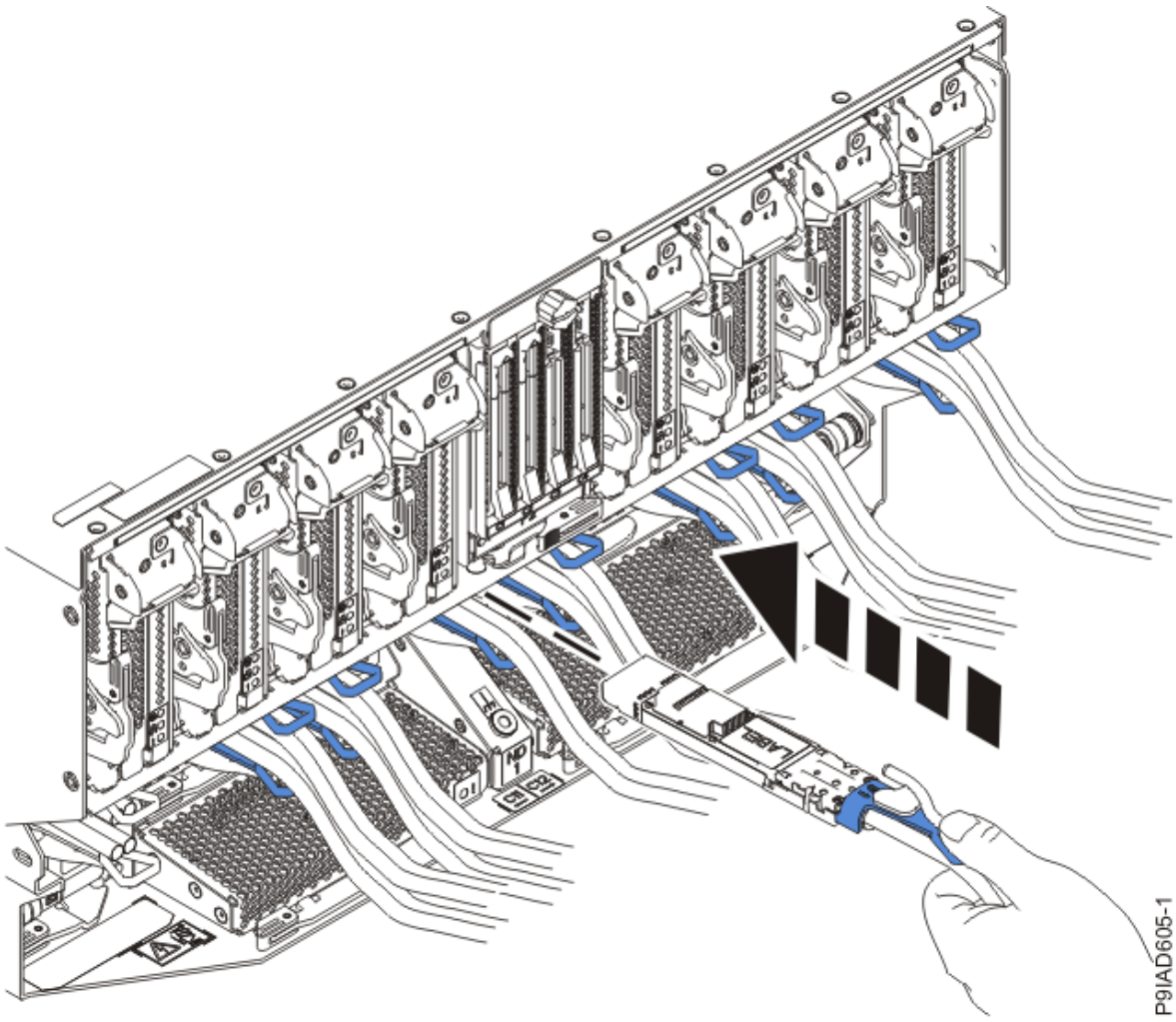


Figure 192. Replacing the SMP cable into the system node

b) Repeat step “4.a” on page 225 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

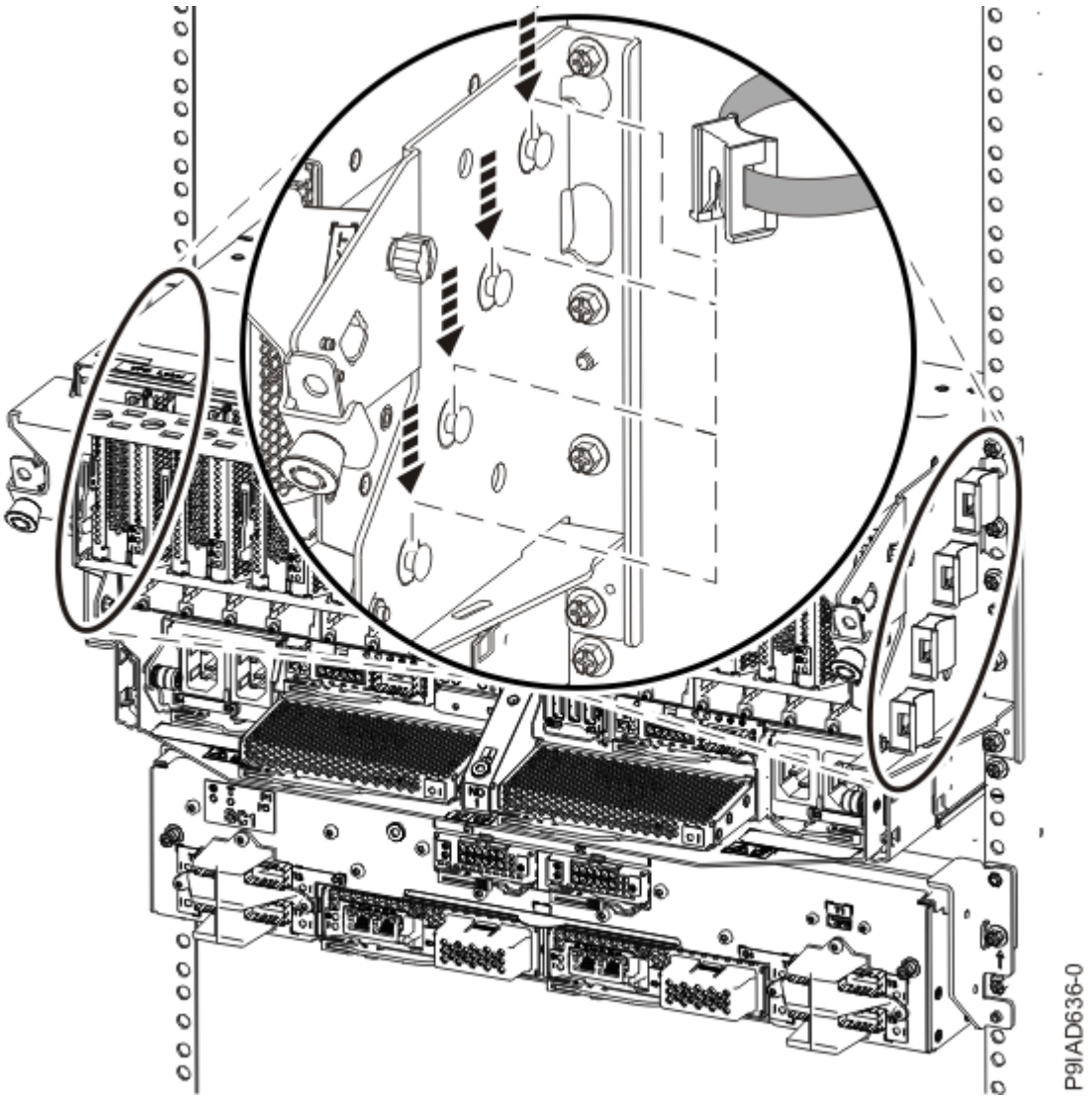


Figure 193. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

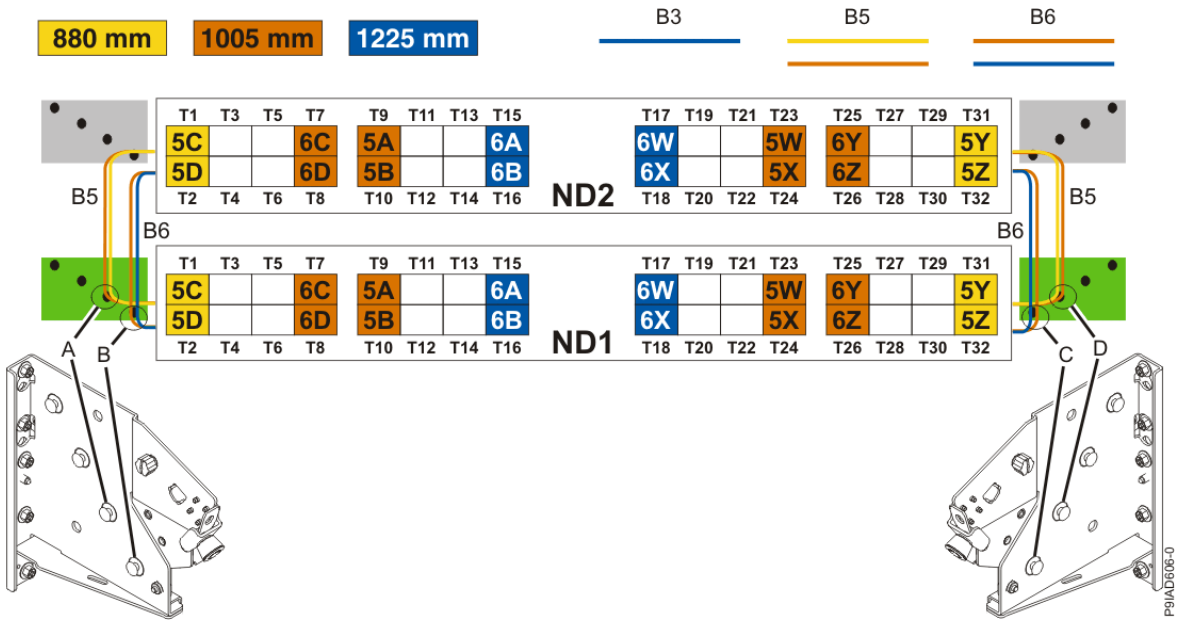


Figure 194. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

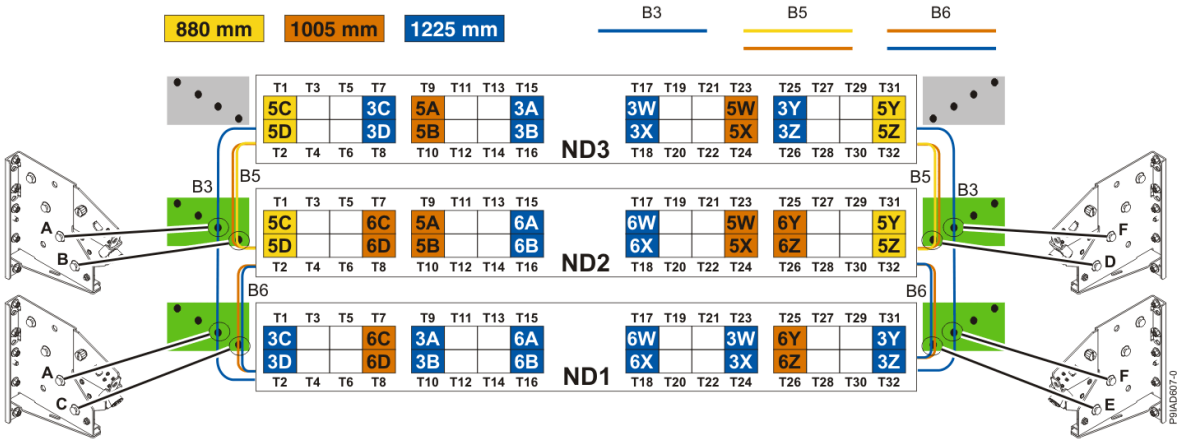


Figure 195. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

- The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
- The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

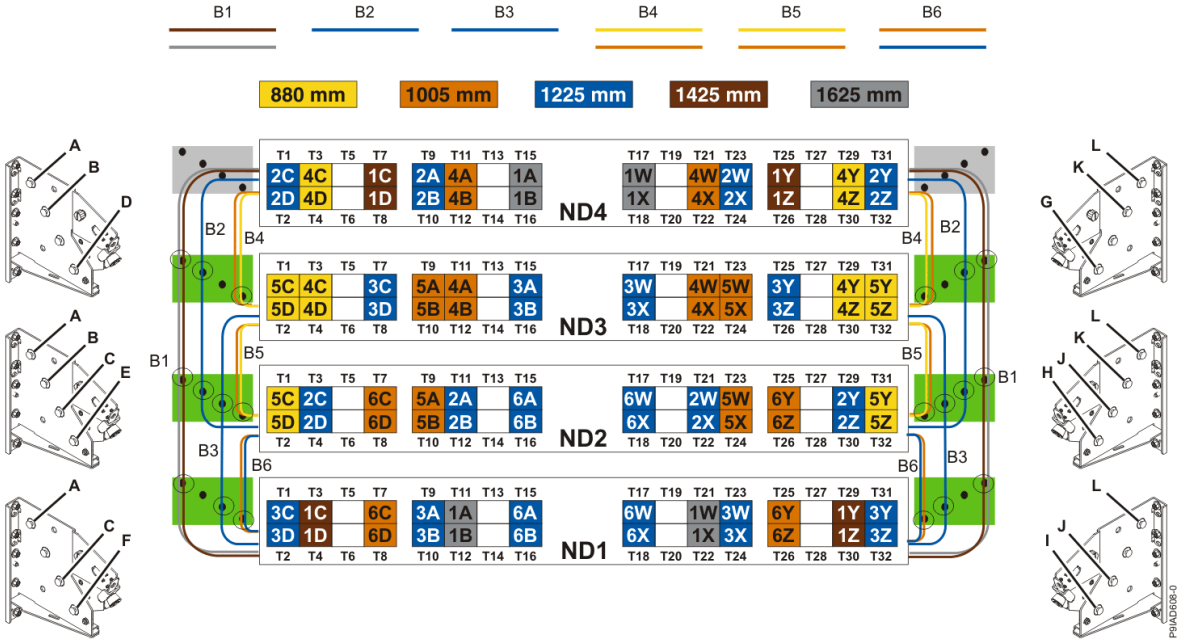


Figure 196. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  - The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  - The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  - The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  - The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  - The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  - The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

5. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 197 on page 230 and Table 29 on page 230 to determine the point-to-point cabling for UPIC cables.

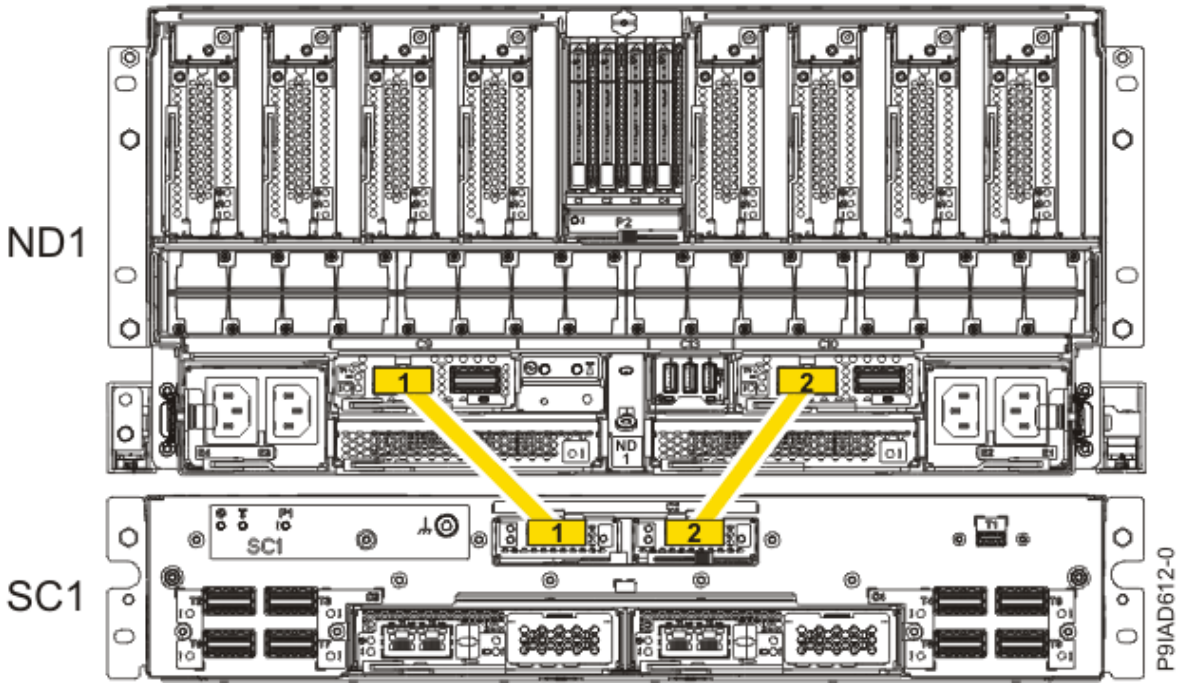


Figure 197. Single Node Configuration UPIC Cabling

Table 29. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 198 on page 231 and Table 30 on page 231 to determine the point-to-point cabling for UPIC cables.

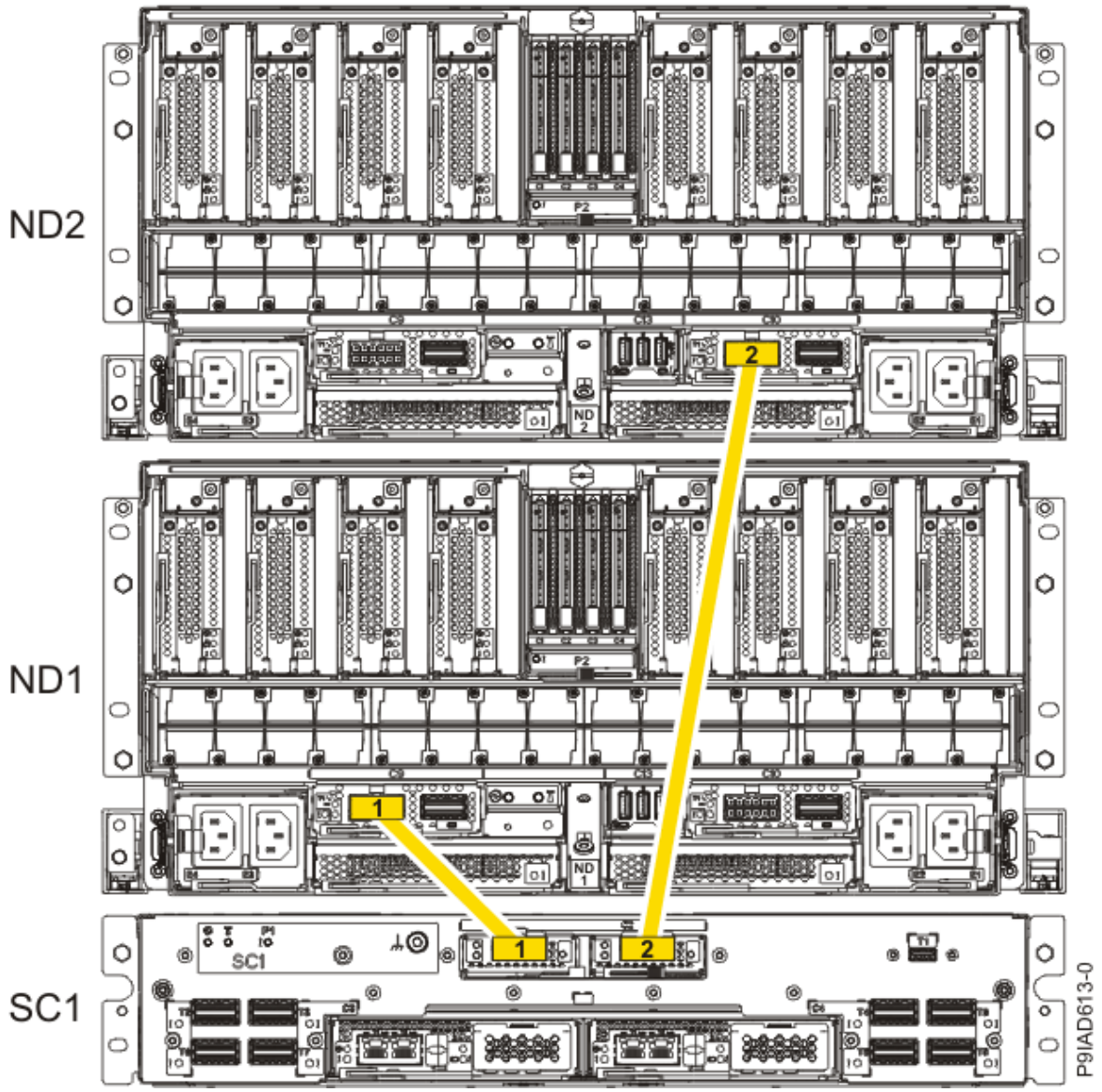


Figure 198. Two, Three, or Four Node Configuration UPIC Cabling

Table 30. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

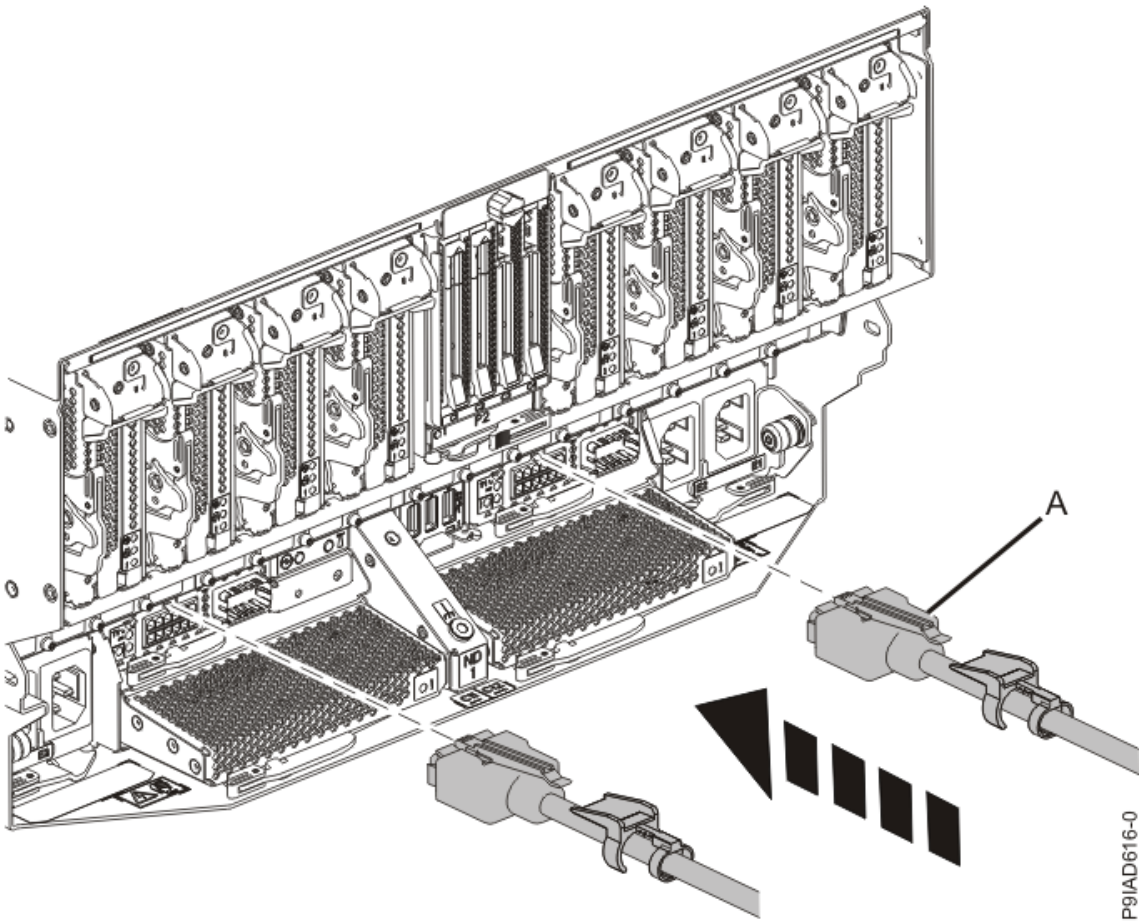


Figure 199. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

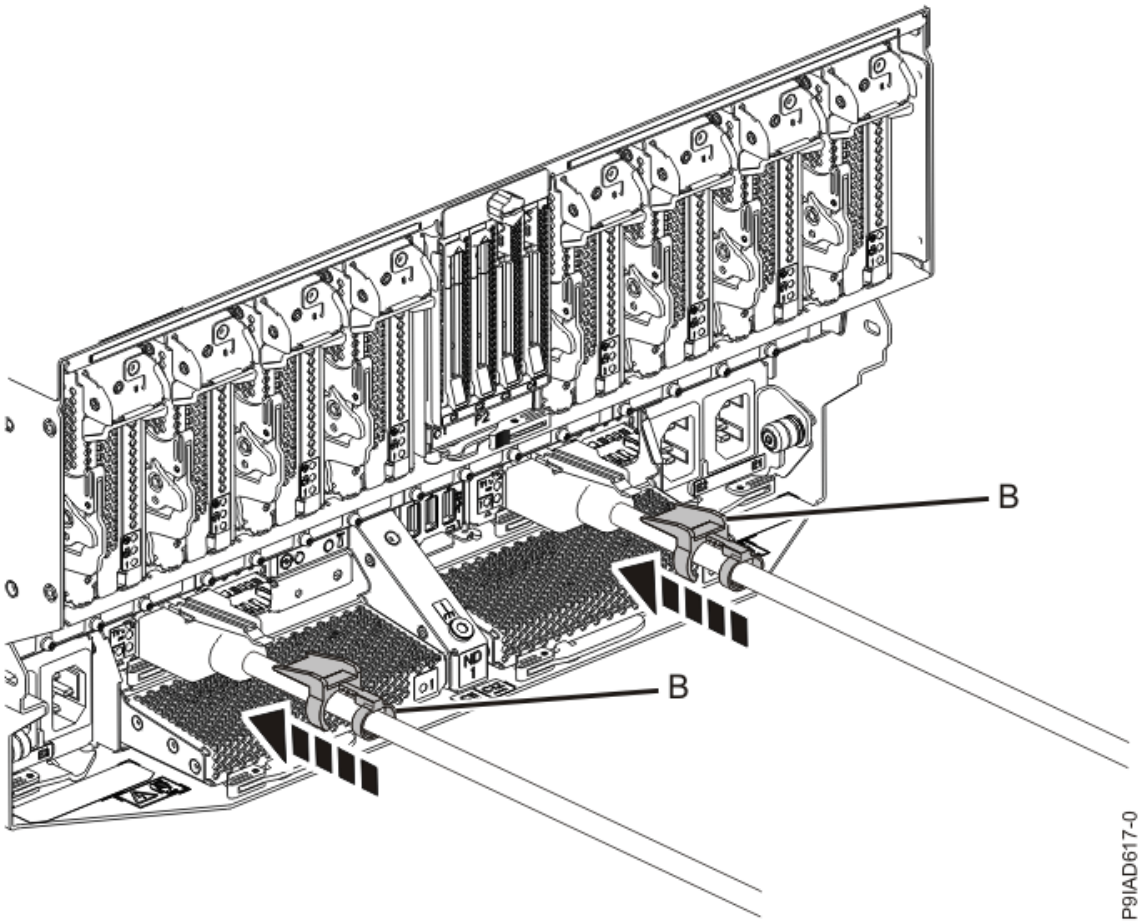


Figure 200. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “5.a” on page 231 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

6. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

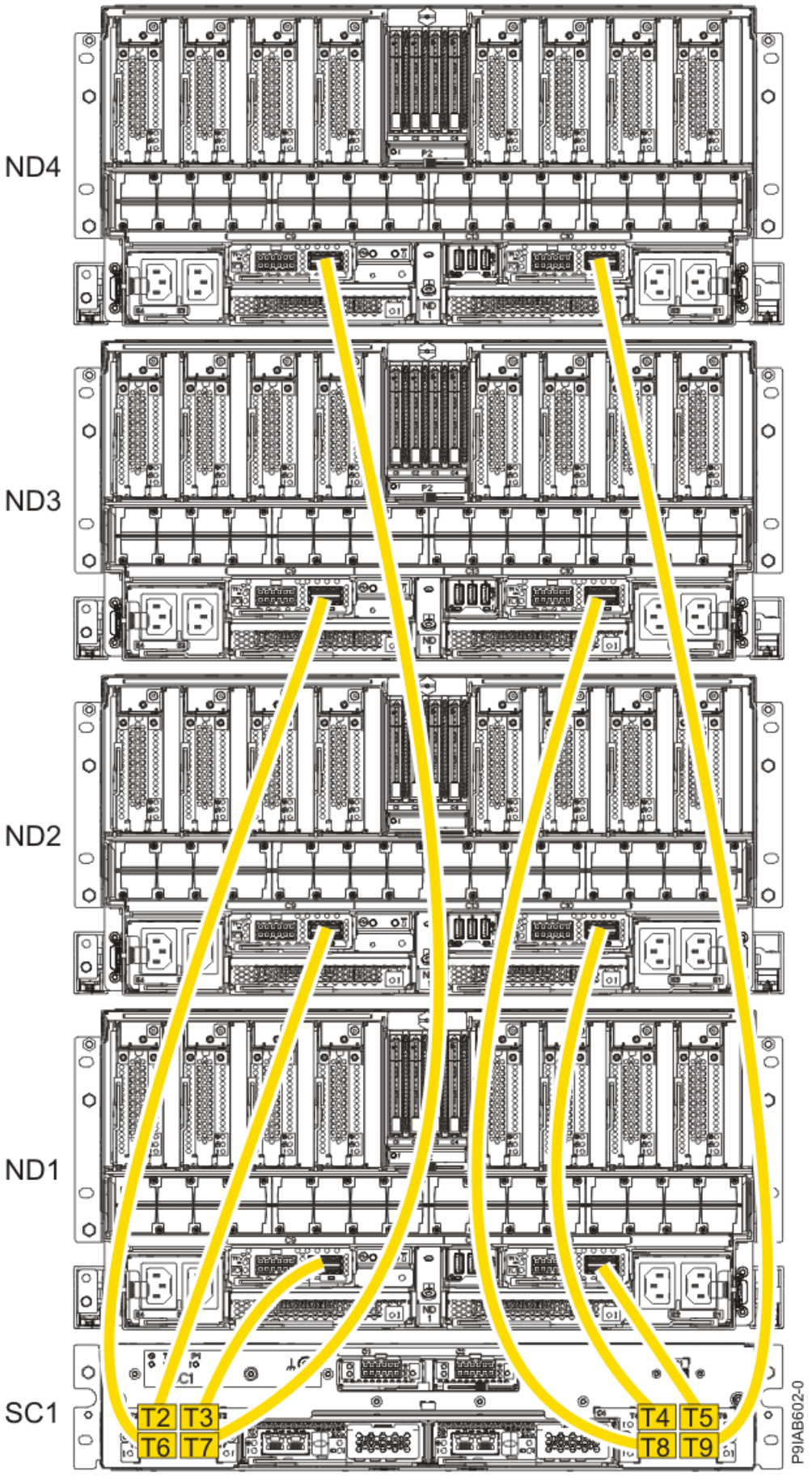


Figure 201. Service processor (FSP) cabling

Table 31. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

7. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

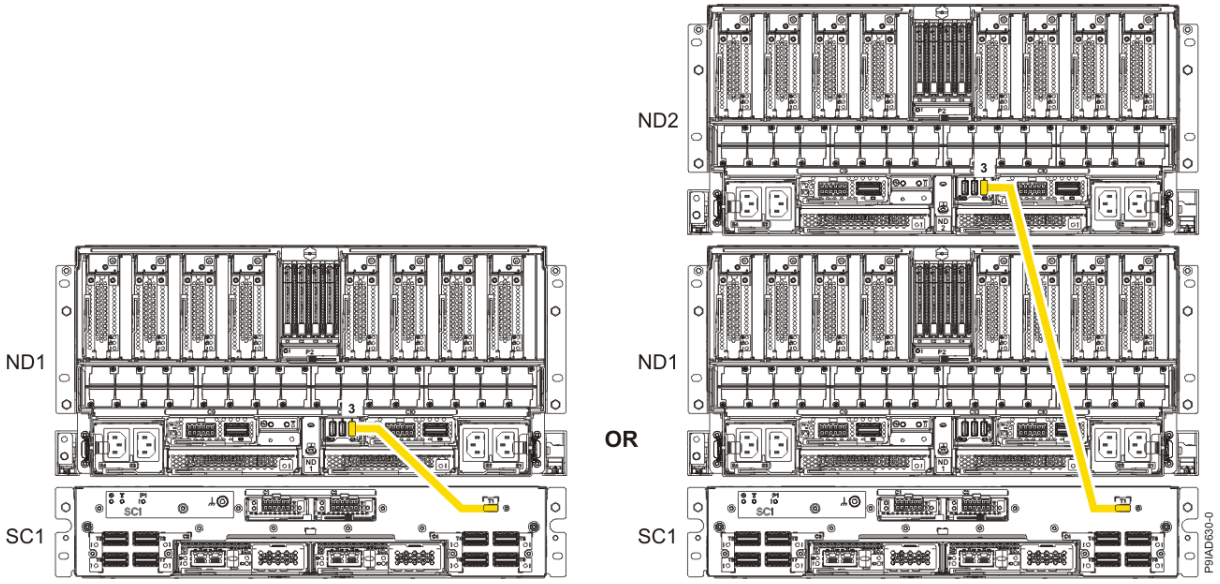


Figure 202. USB Cabling

Table 32. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

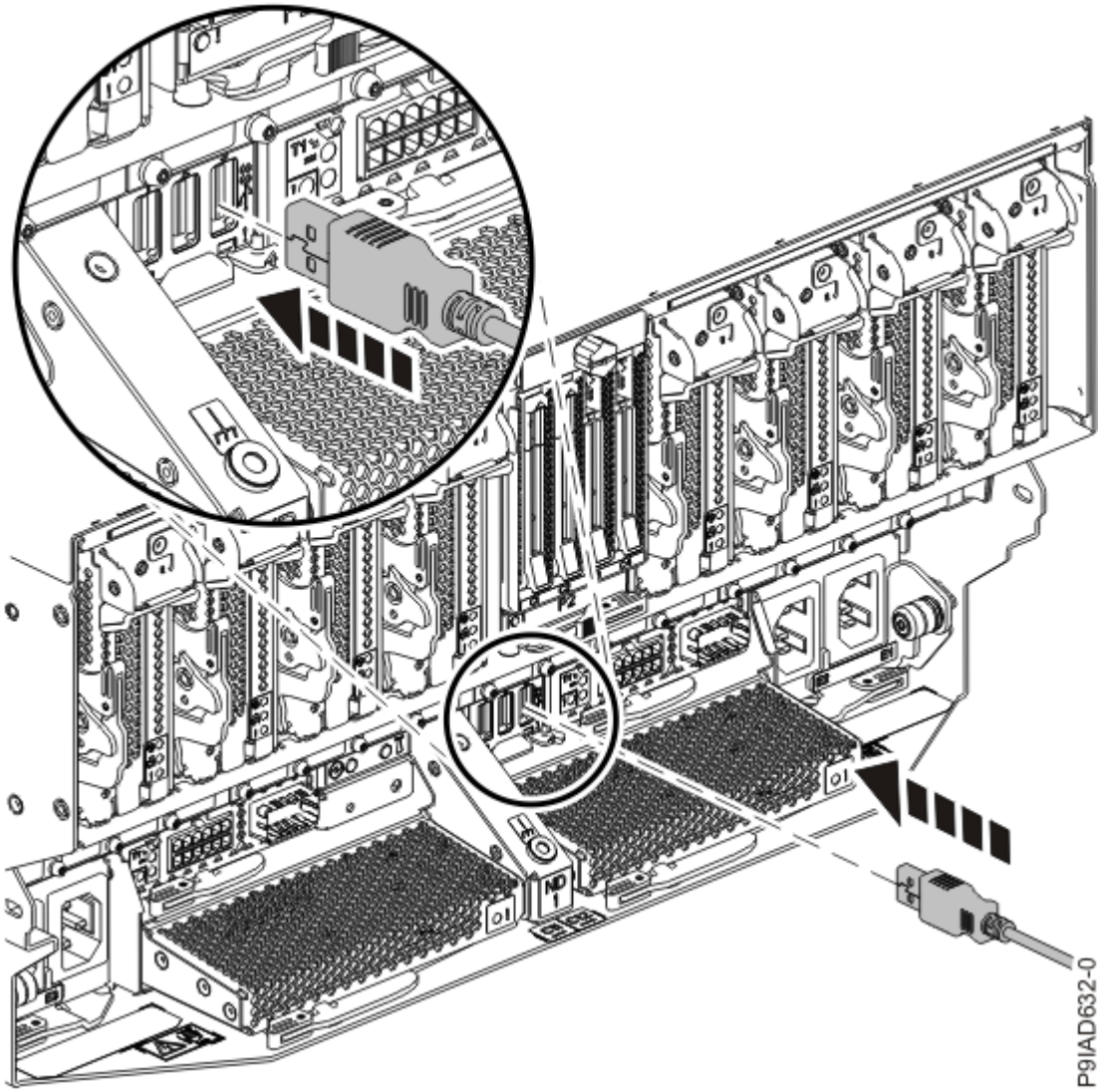


Figure 203. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

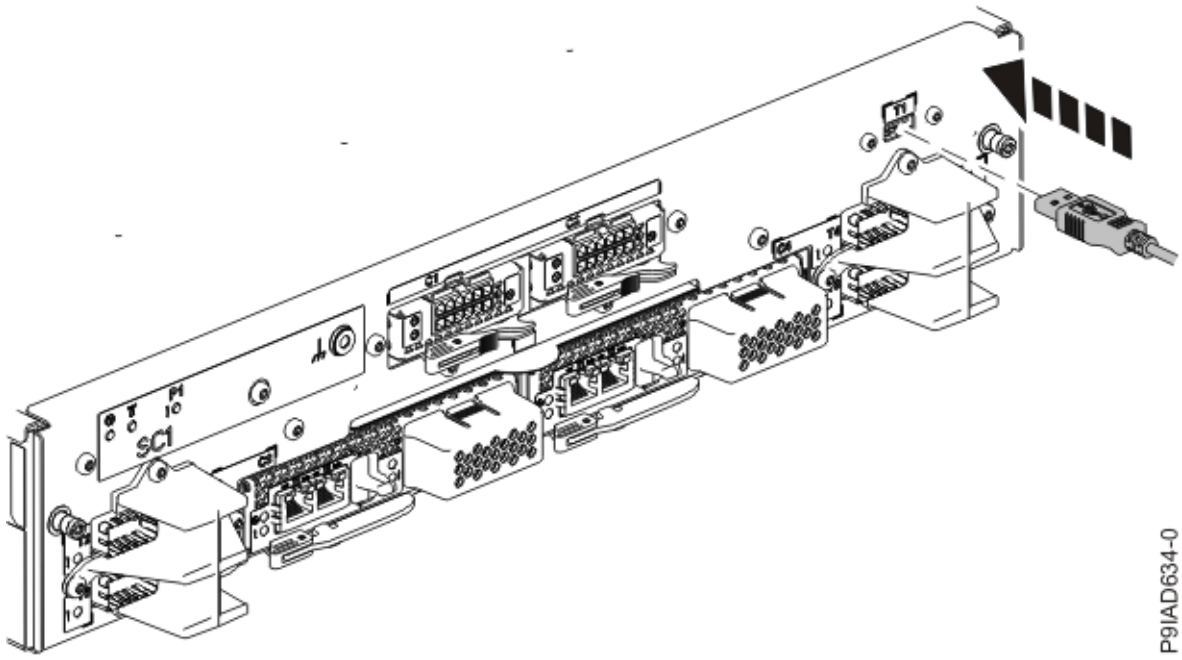


Figure 204. Replacing the USB cable into the system control unit

8. Using your labels, reconnect all of the PCIe cables or transceivers that you removed from the PCIe adapters for the system node you are servicing.
9. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

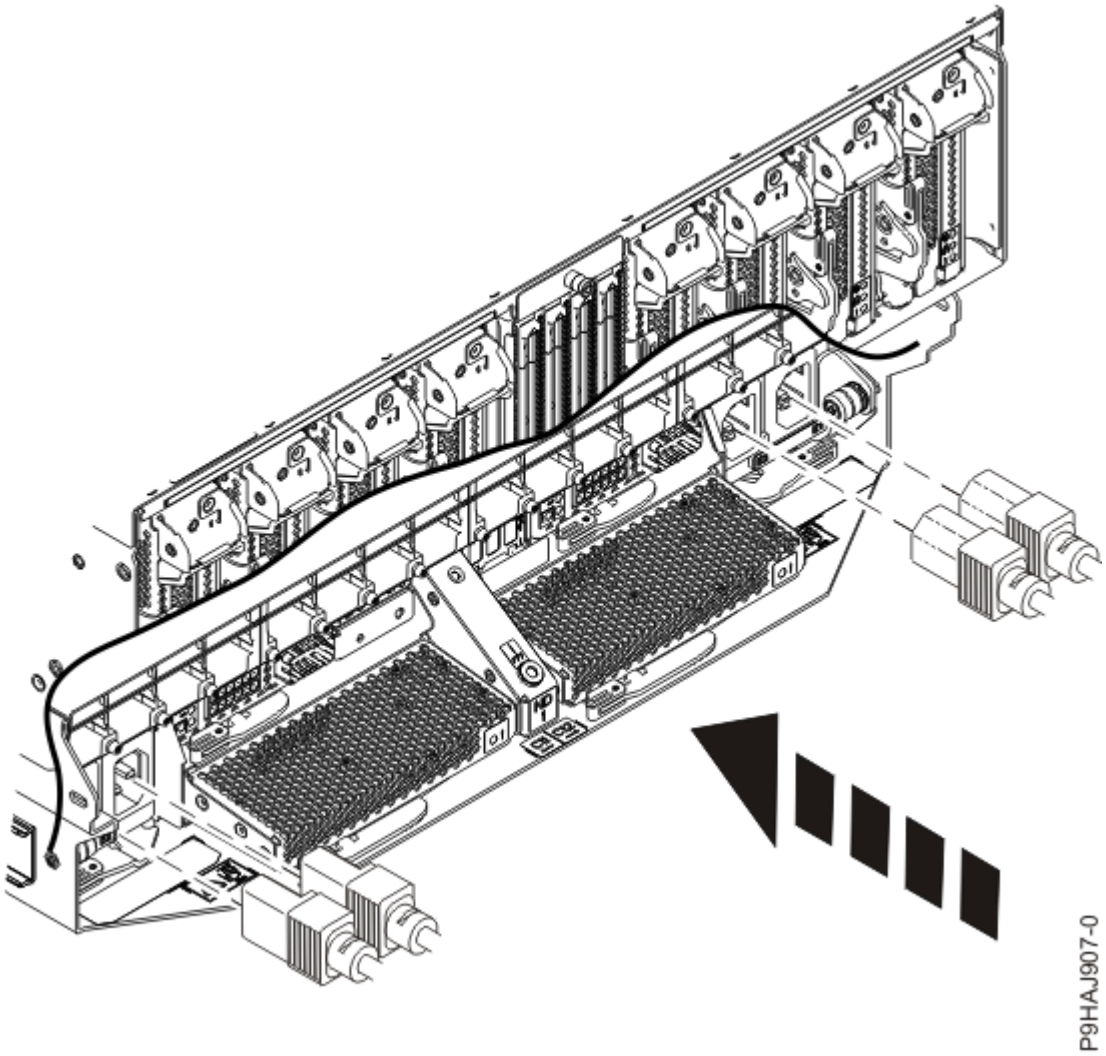


Figure 205. Connecting the rear power cords

10. 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.

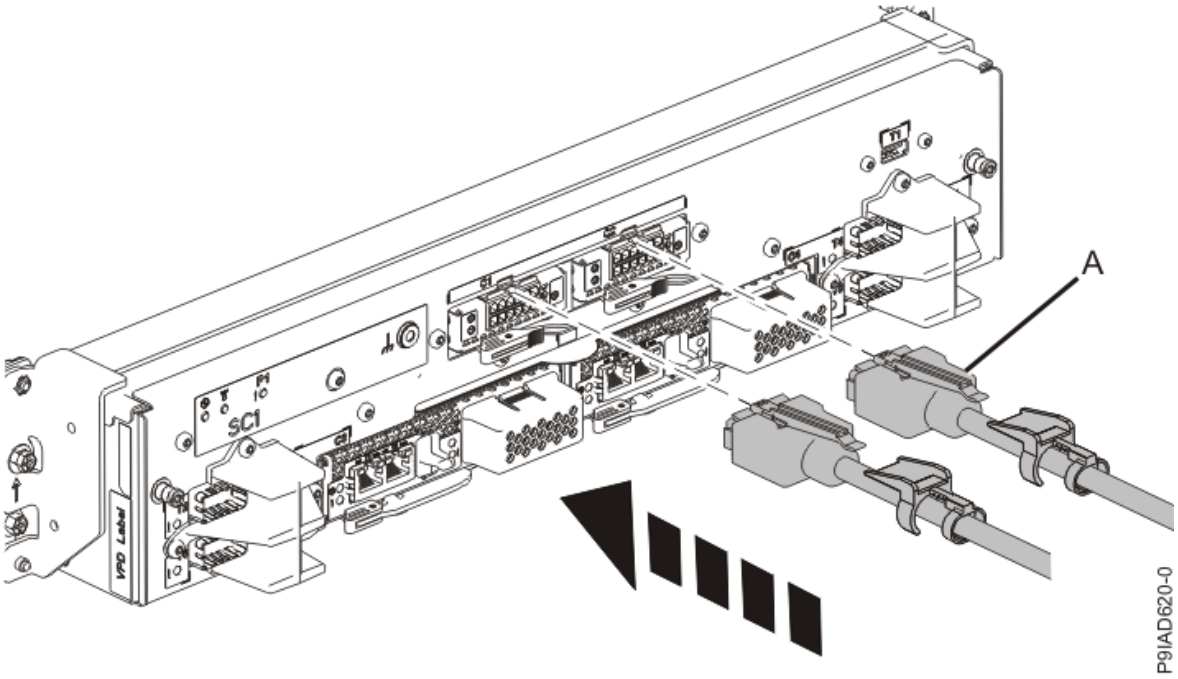


Figure 206. Replacing the UPIC cable into the system control unit

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

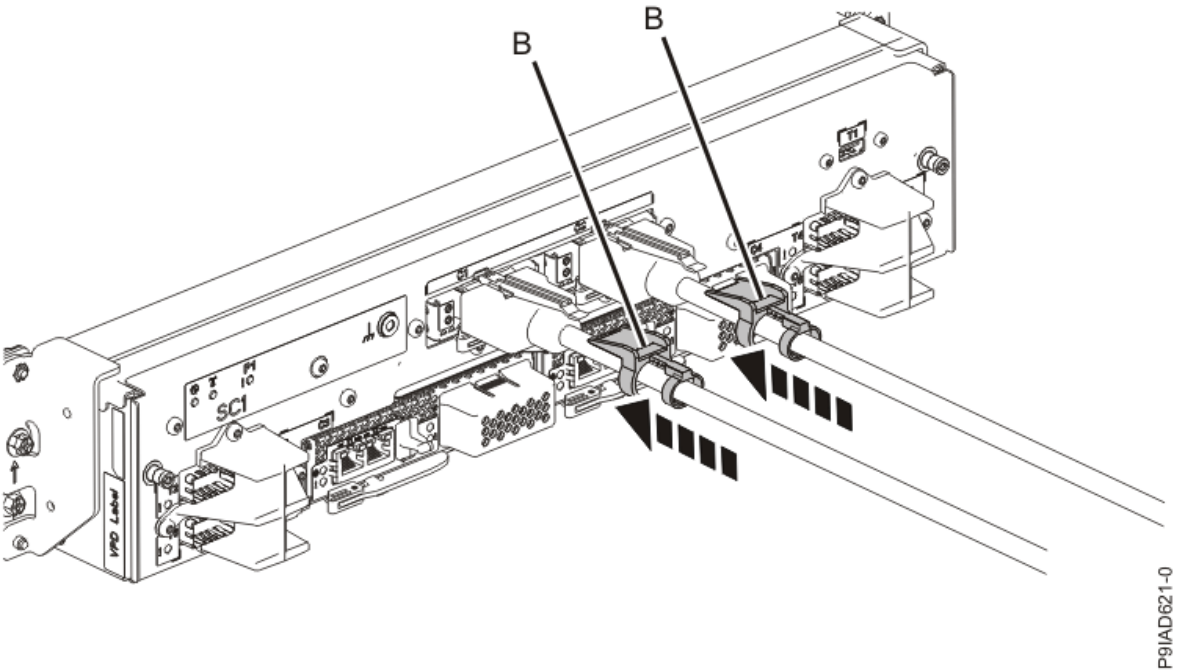


Figure 207. Replacing the UPIC cable into the system control unit

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.

11. 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.
12. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Memory VRMs

Preparing the system to remove and replace a memory voltage regulator module

To prepare the system to remove and replace a memory voltage regulator module, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   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.
2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
3. Open the rear rack door, if necessary.
4. 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.

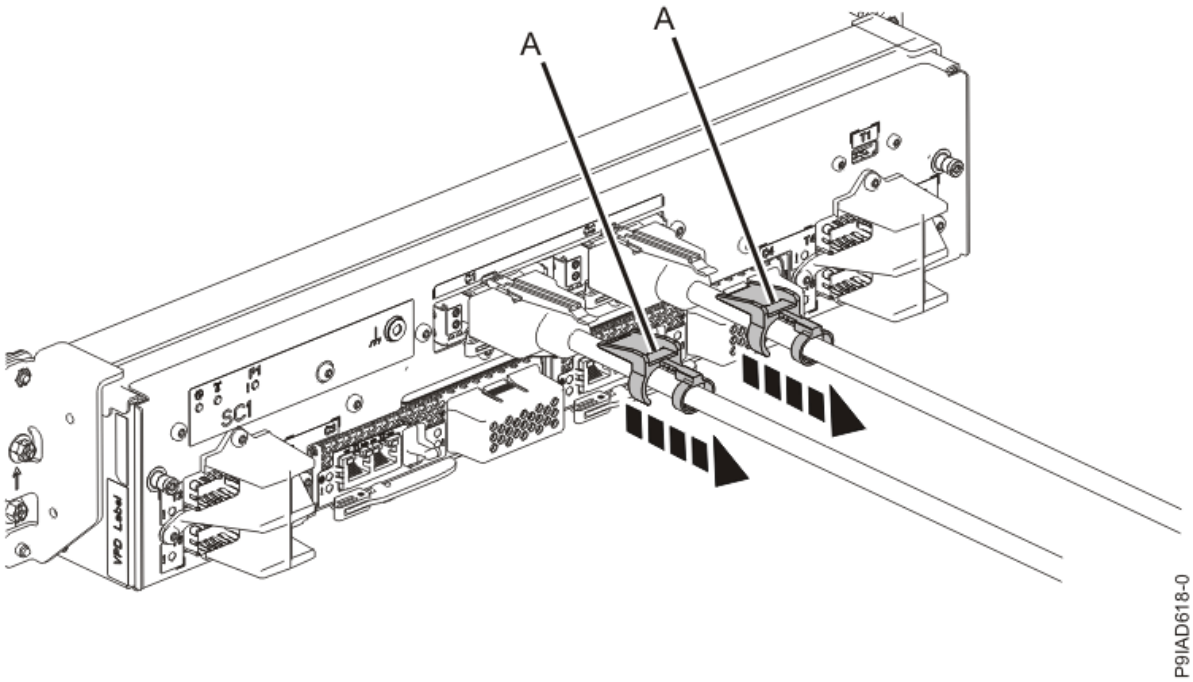


Figure 208. Removing the UPIC cable lock

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

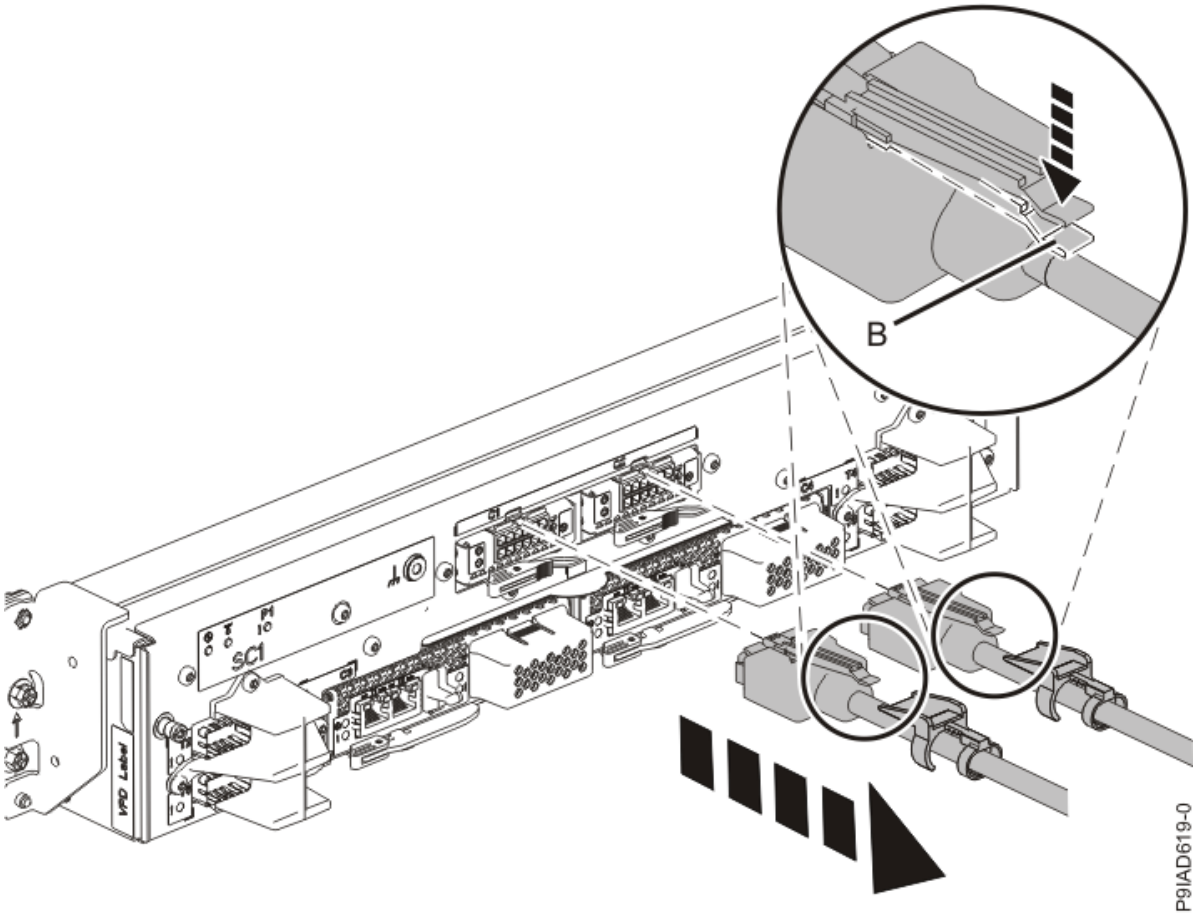


Figure 209. Removing the UPIC cable from the system control unit

5. 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.

6. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

Notes:

- This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

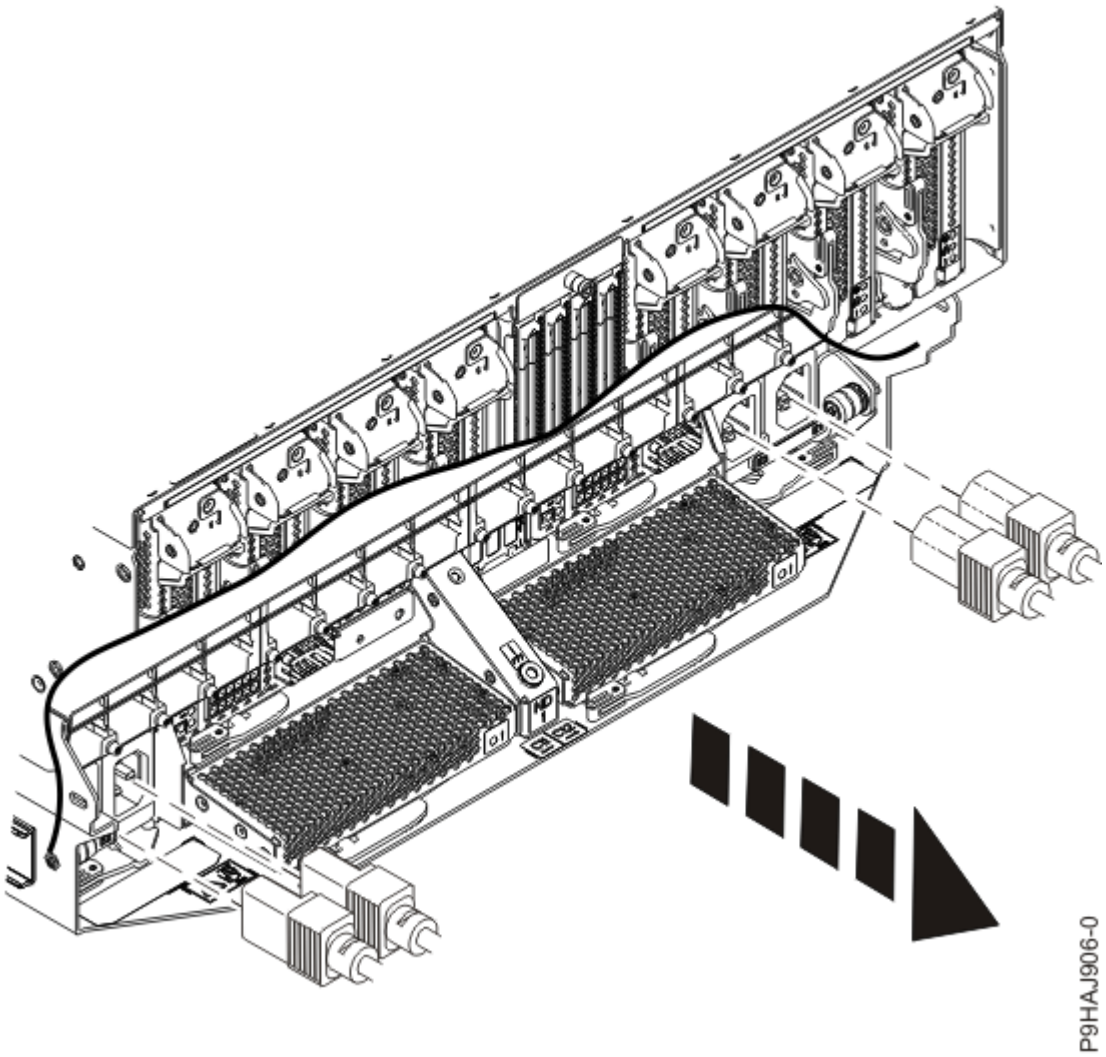
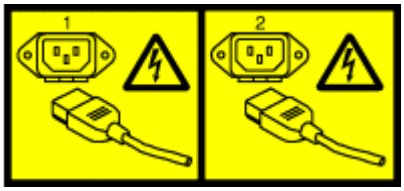


Figure 210. Removing the rear power cords

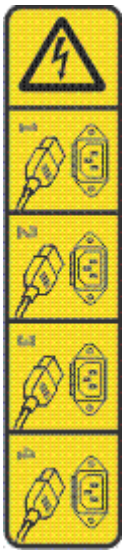
(L003)



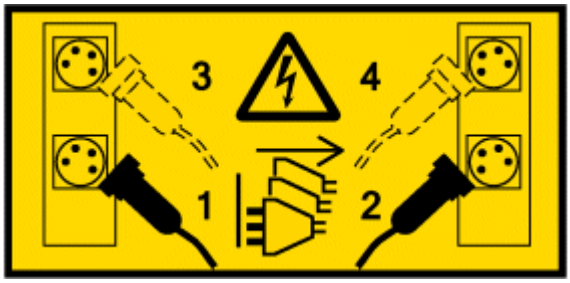
or

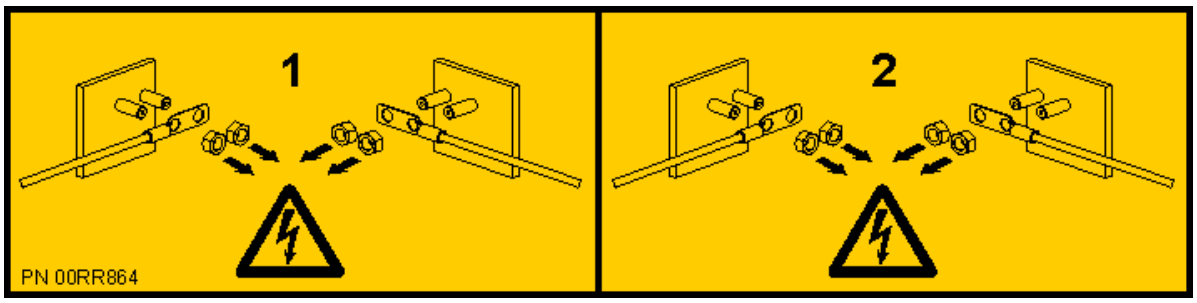
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

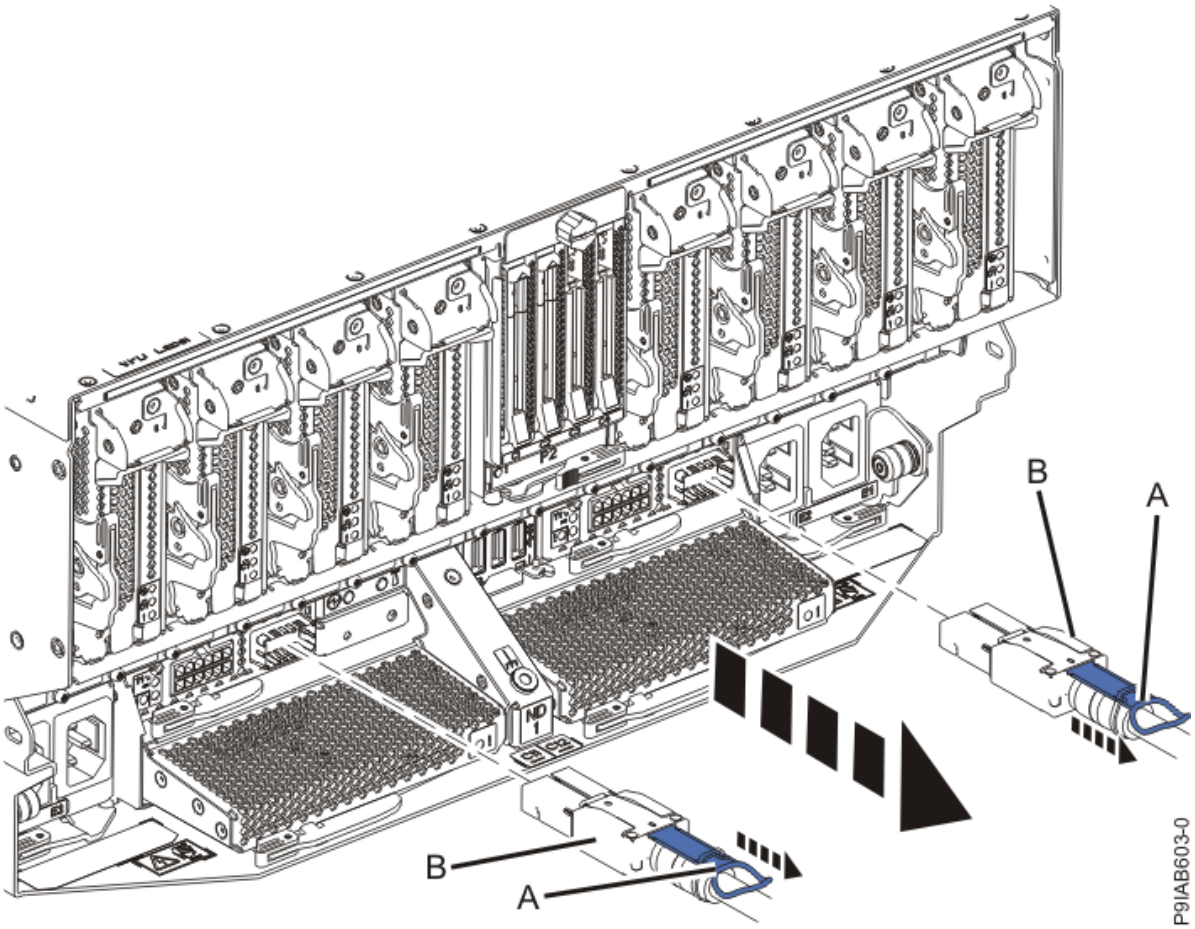


Figure 211. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

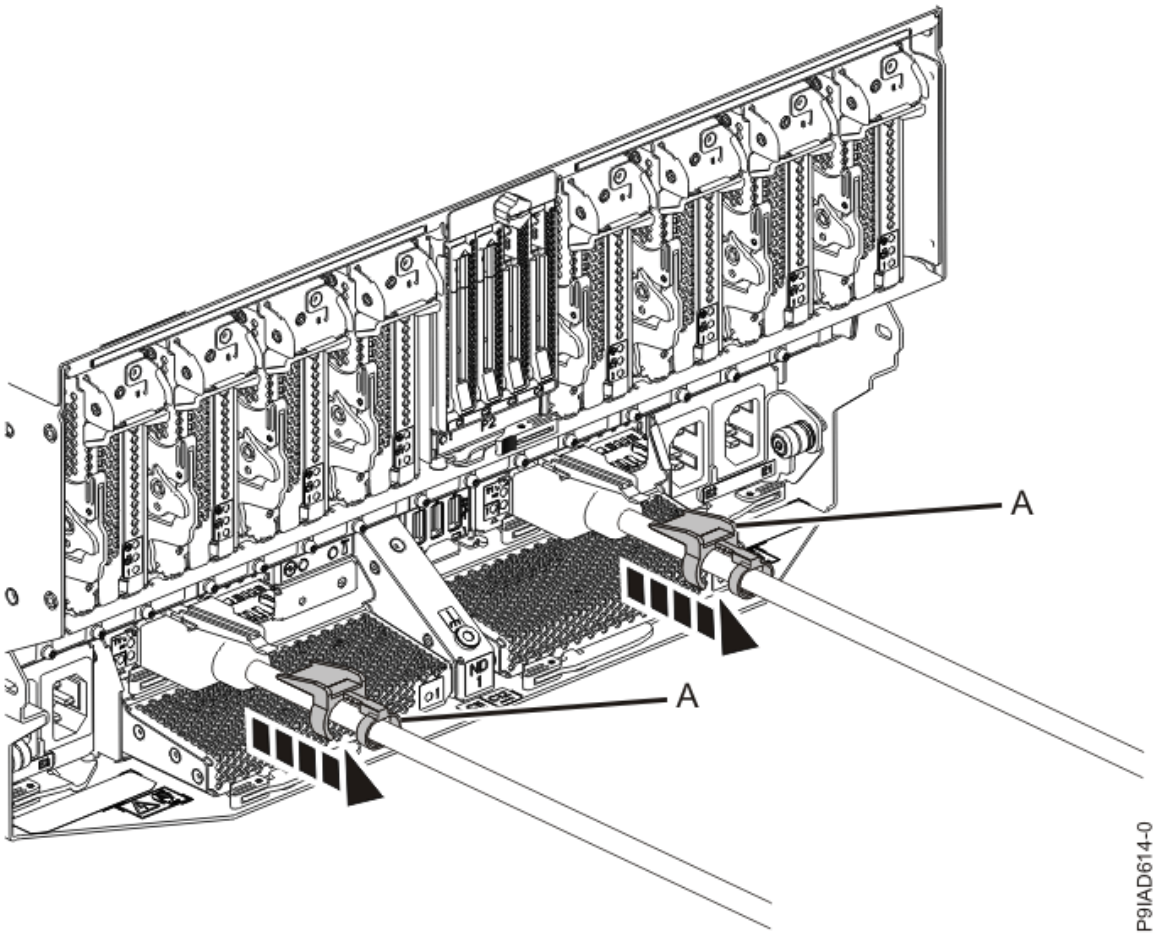


Figure 212. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

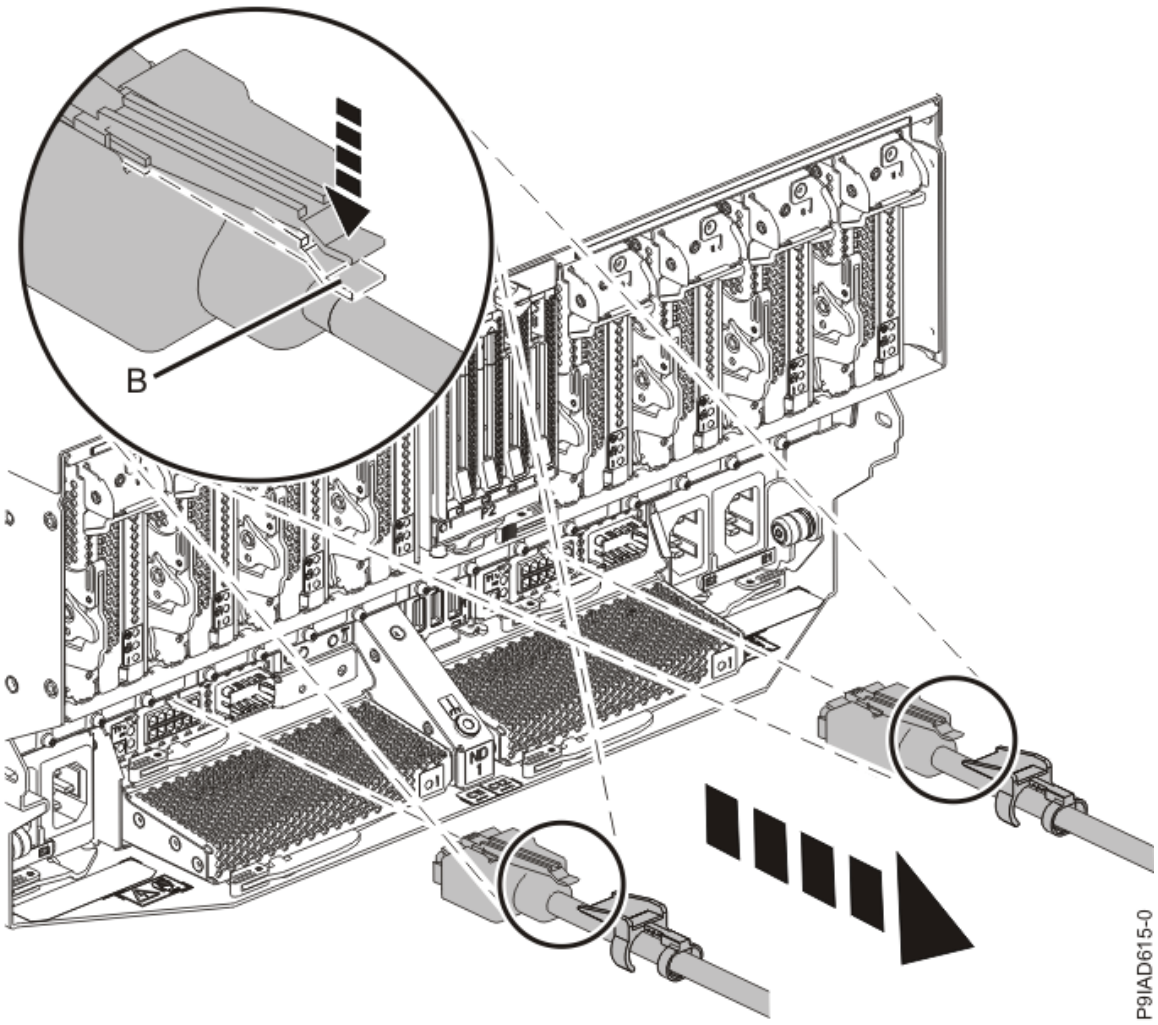


Figure 213. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

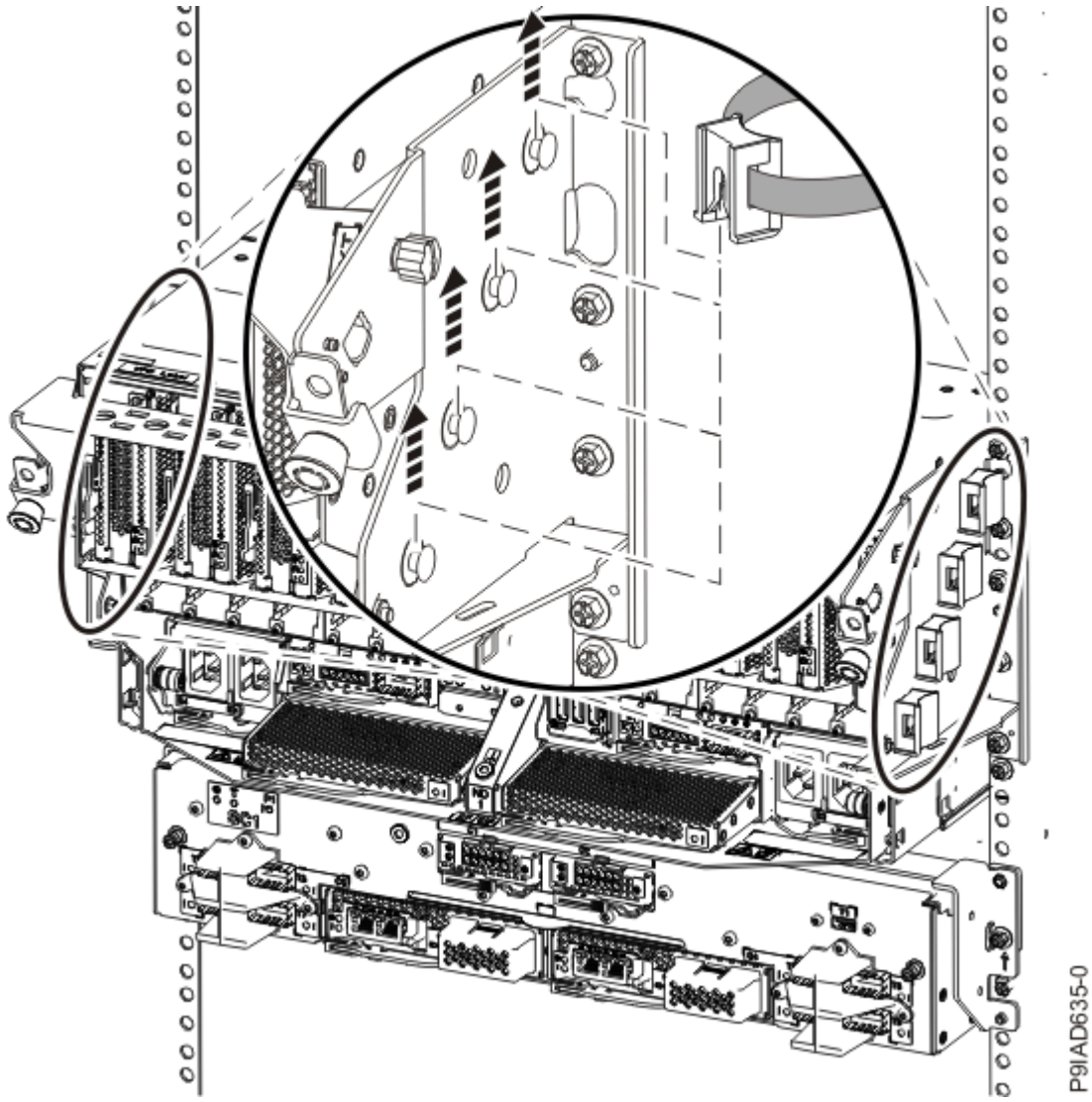


Figure 214. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

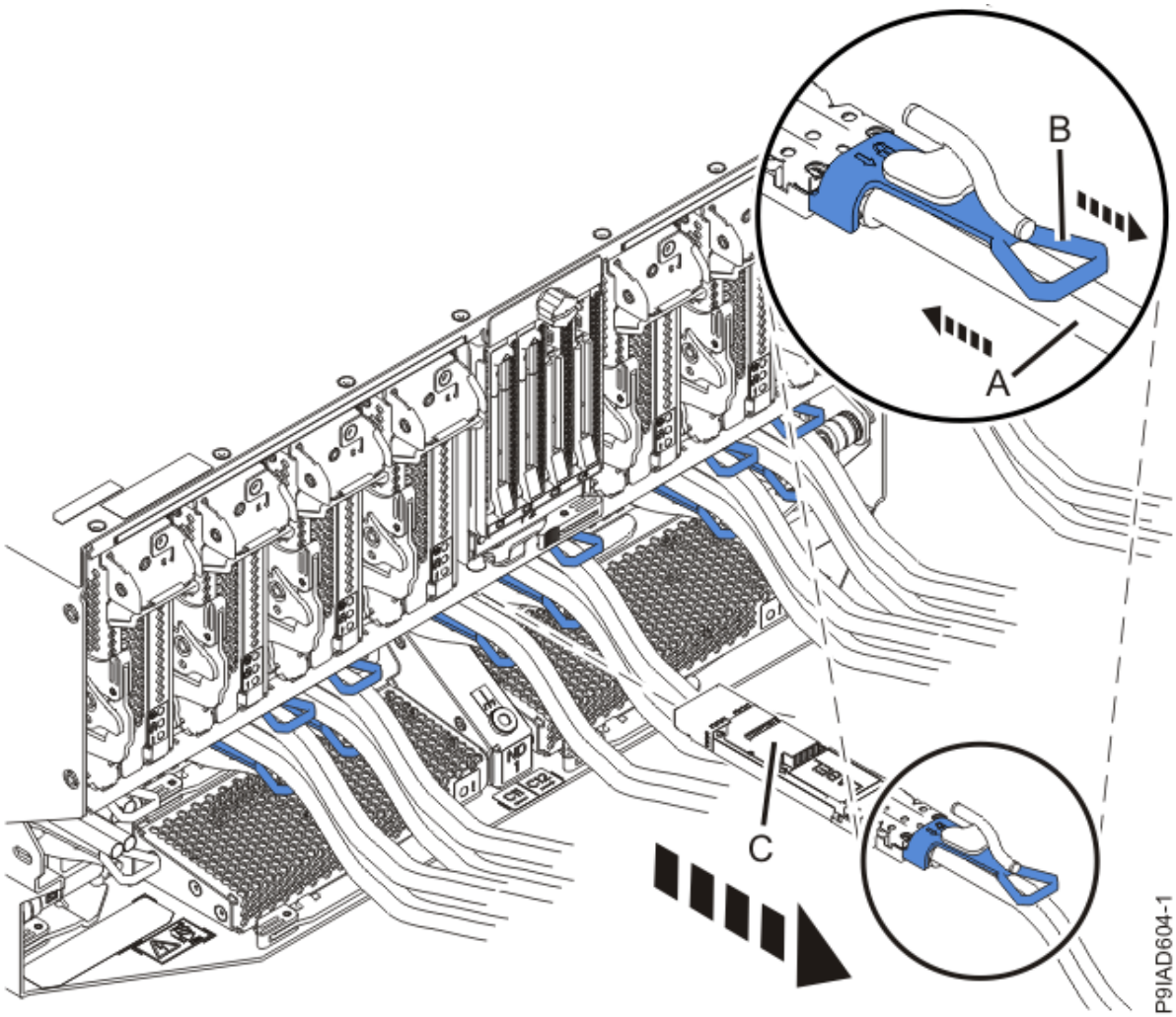


Figure 215. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

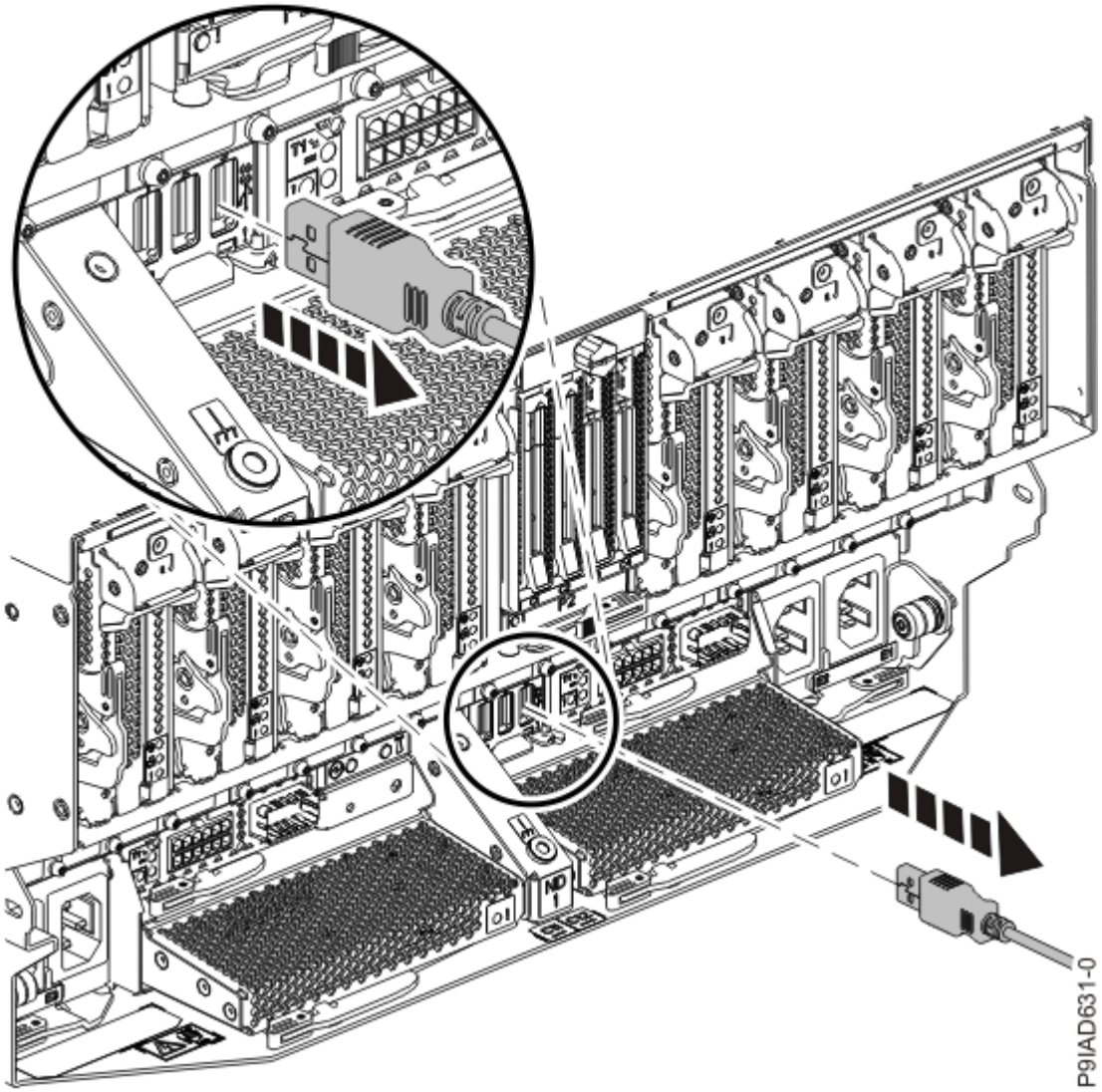


Figure 216. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

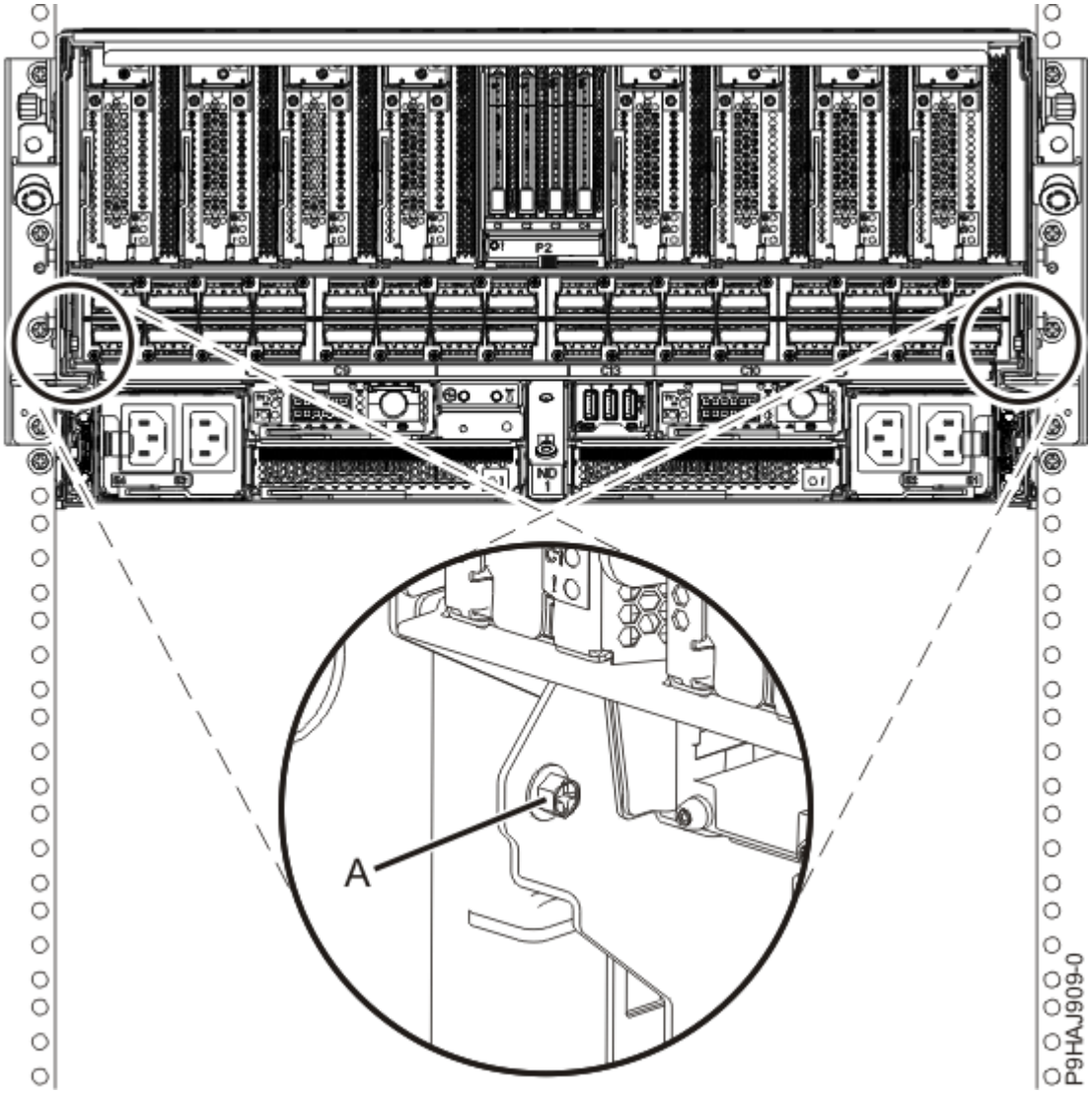


Figure 217. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

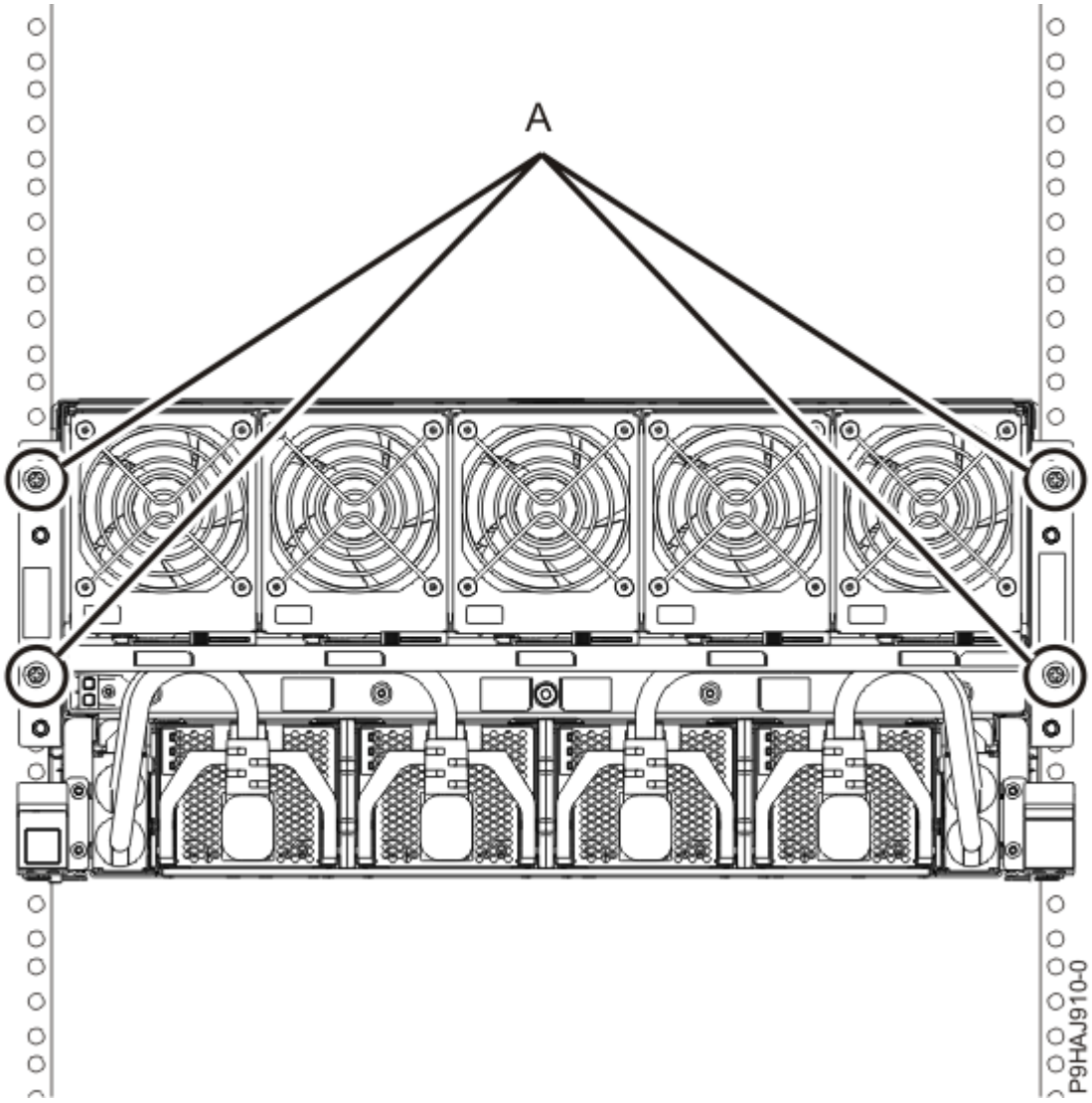


Figure 218. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

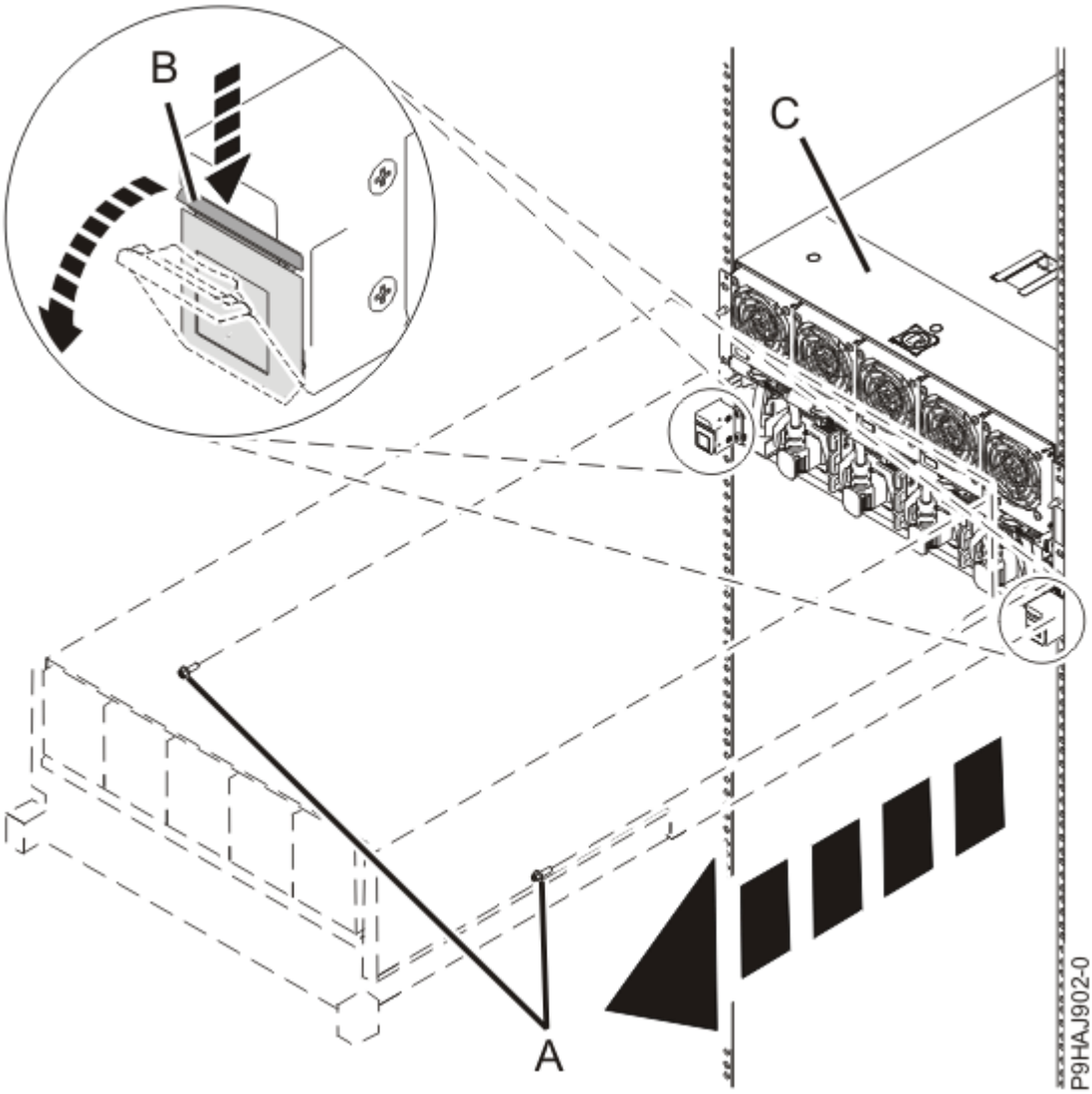


Figure 219. Placing the system node in service position

7. Remove the service access cover.

   Attention: Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latch **(A)** in the direction shown in the following figure.

   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

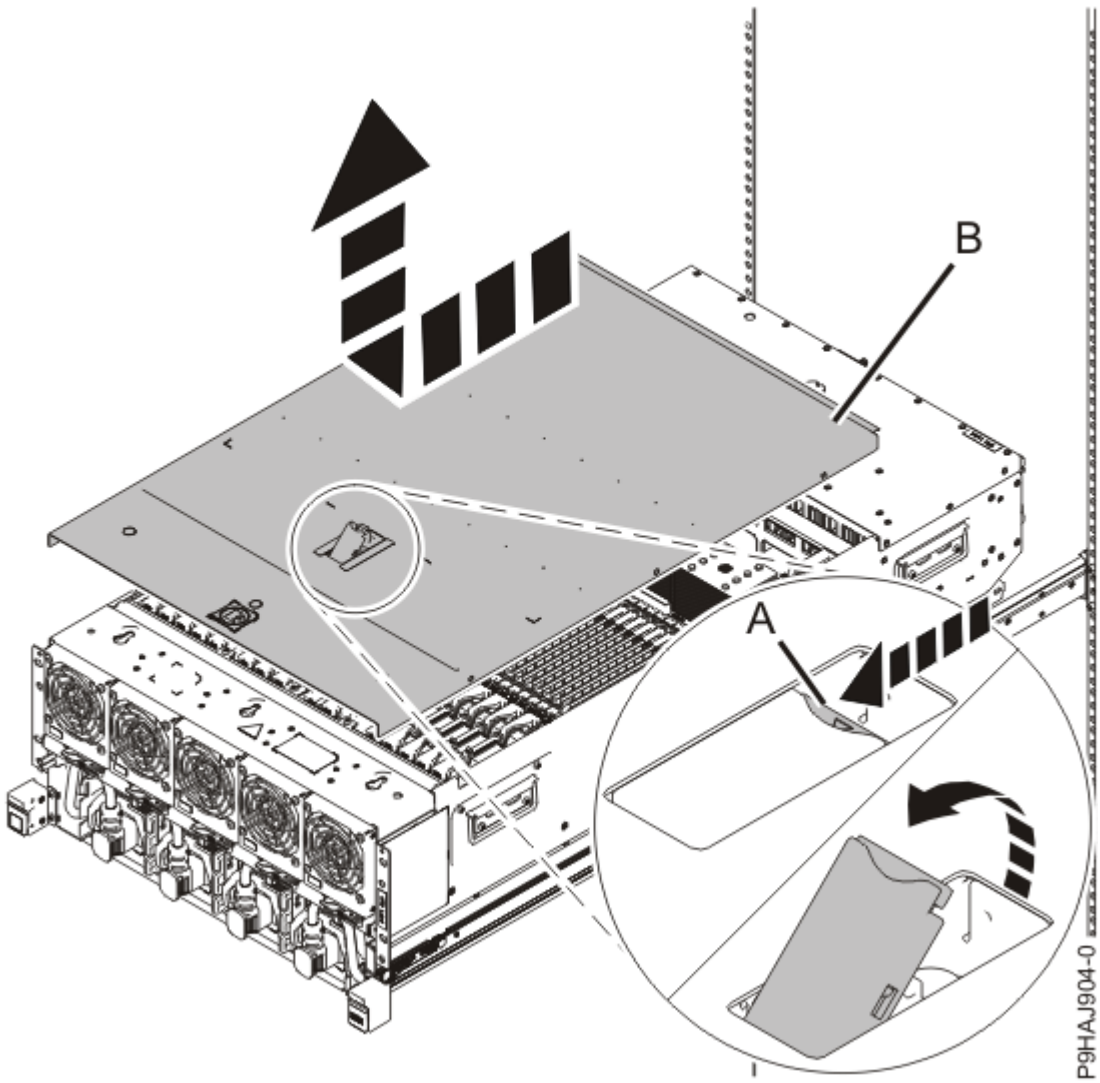


Figure 220. Removing the service access cover

8. To activate the identify LED for the faulty part, press and hold either blue push-button on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(A)** is lit, which indicates that sufficient power exists to light the identify LED on the faulty part. If the green LED **(A)** does not light, use the location code on the service label to find the physical location of the faulty part.

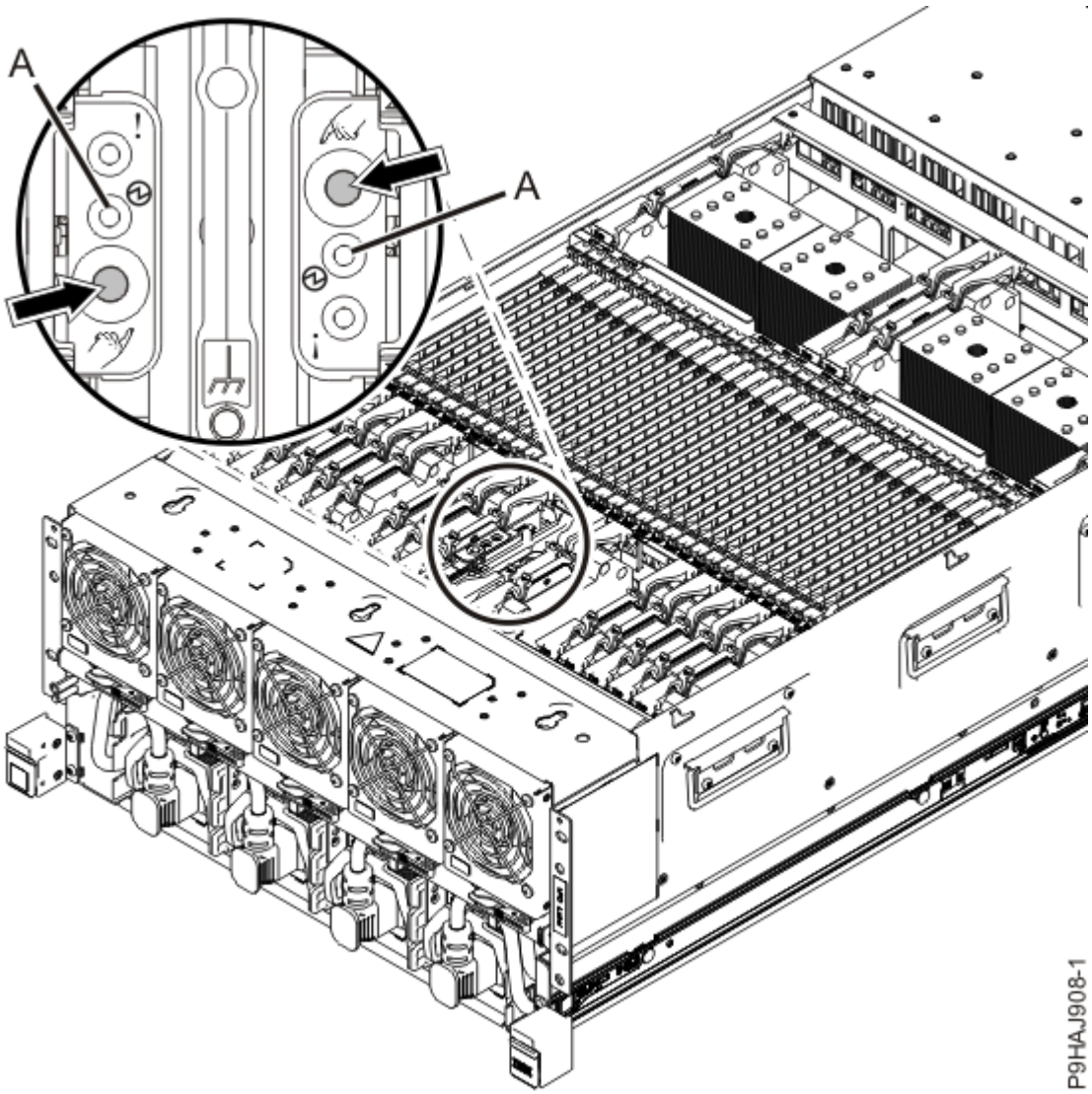


Figure 221. Activating the identify LED for a faulty part

9. Look for the flashing amber LED of the faulty or failed memory voltage regulator module. Memory voltage regulator module are in locations P1–C54, P1–C55, P1–C57, P1–C58, P1–C64, P1–C67, and P1–C68. Refer to the following image.

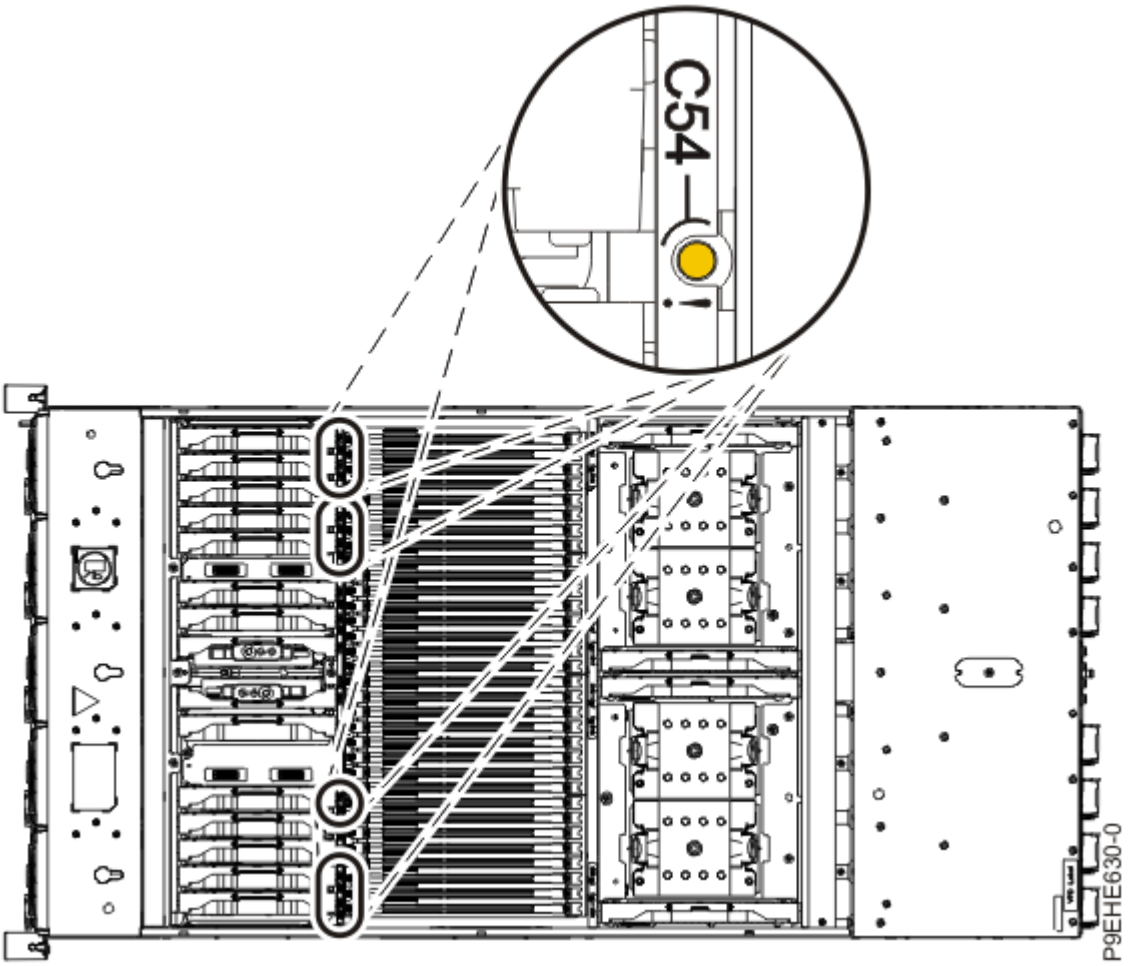


Figure 222. Locations of the memory voltage regulator module LEDs

Removing a memory voltage regulator module from the 9080-M9S system node

To remove a memory voltage regulator module from the 9080-M9S system node 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 a memory voltage regulator module by completing the following steps:
   a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.
   b) Rotate the levers in the direction shown.
   c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

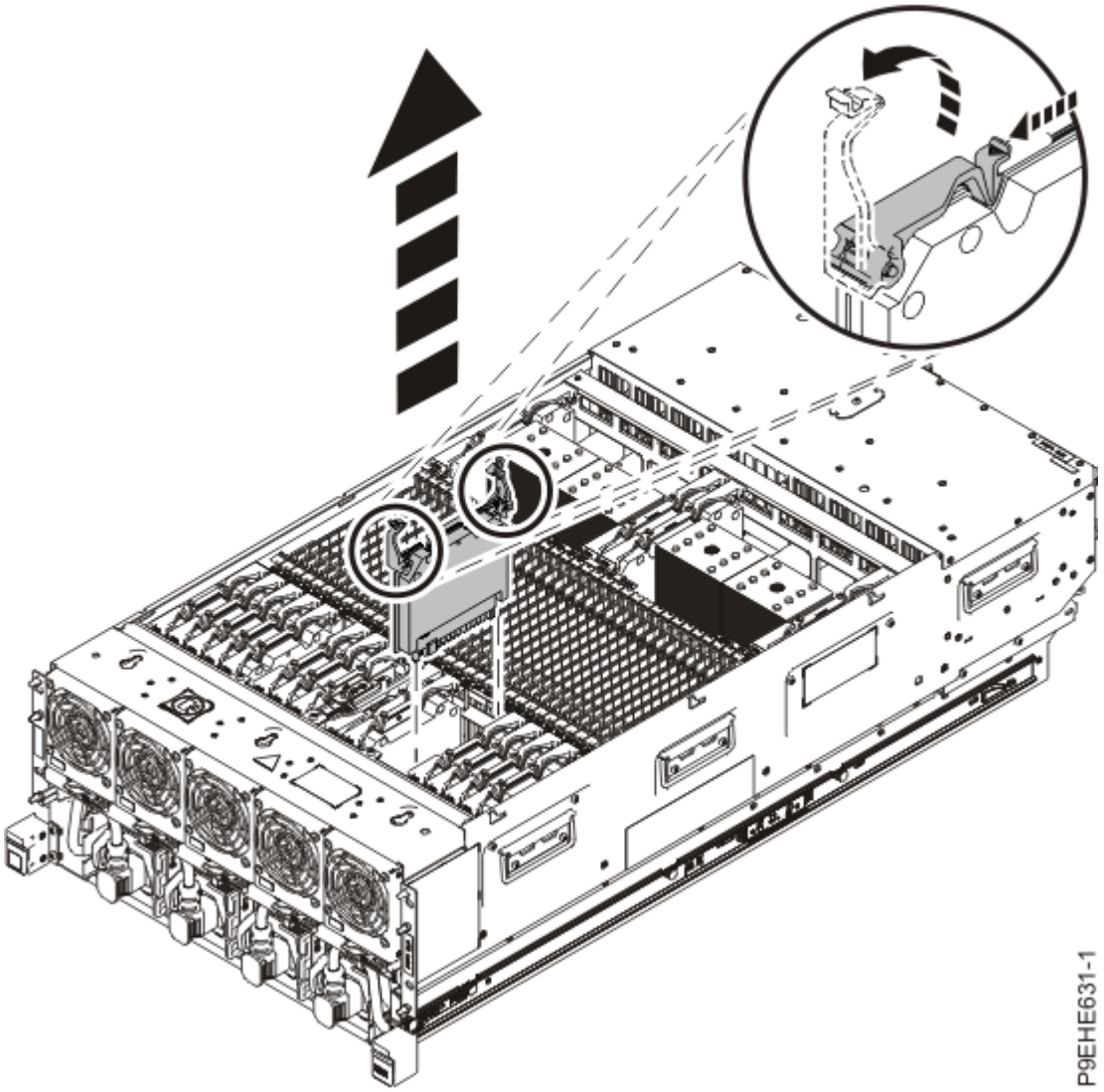


Figure 223. Removing a memory voltage regulator module

Replacing a memory voltage regulator module in the 9080-M9S system node

To replace a memory voltage regulator module, 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. To replace a memory voltage regulator module, complete the following steps:
   a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.
   b) Gently push the voltage regulator module into its connector.
   c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.

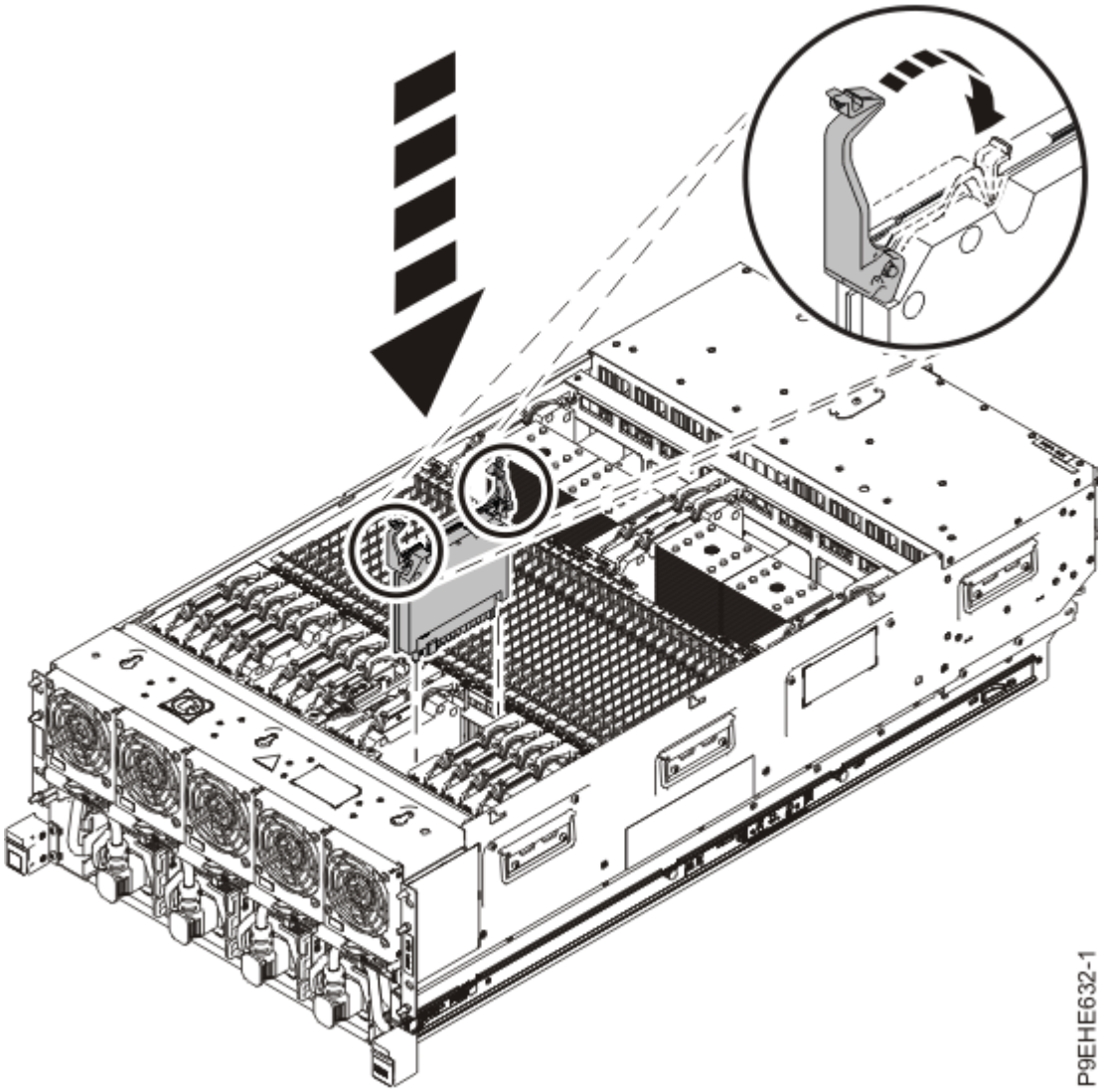


Figure 224. Replacing a memory voltage regulator module

Preparing the system for operation after removing and replacing a memory voltage regulator module

To prepare the system for operation after removing and replacing a memory voltage regulator module, 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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

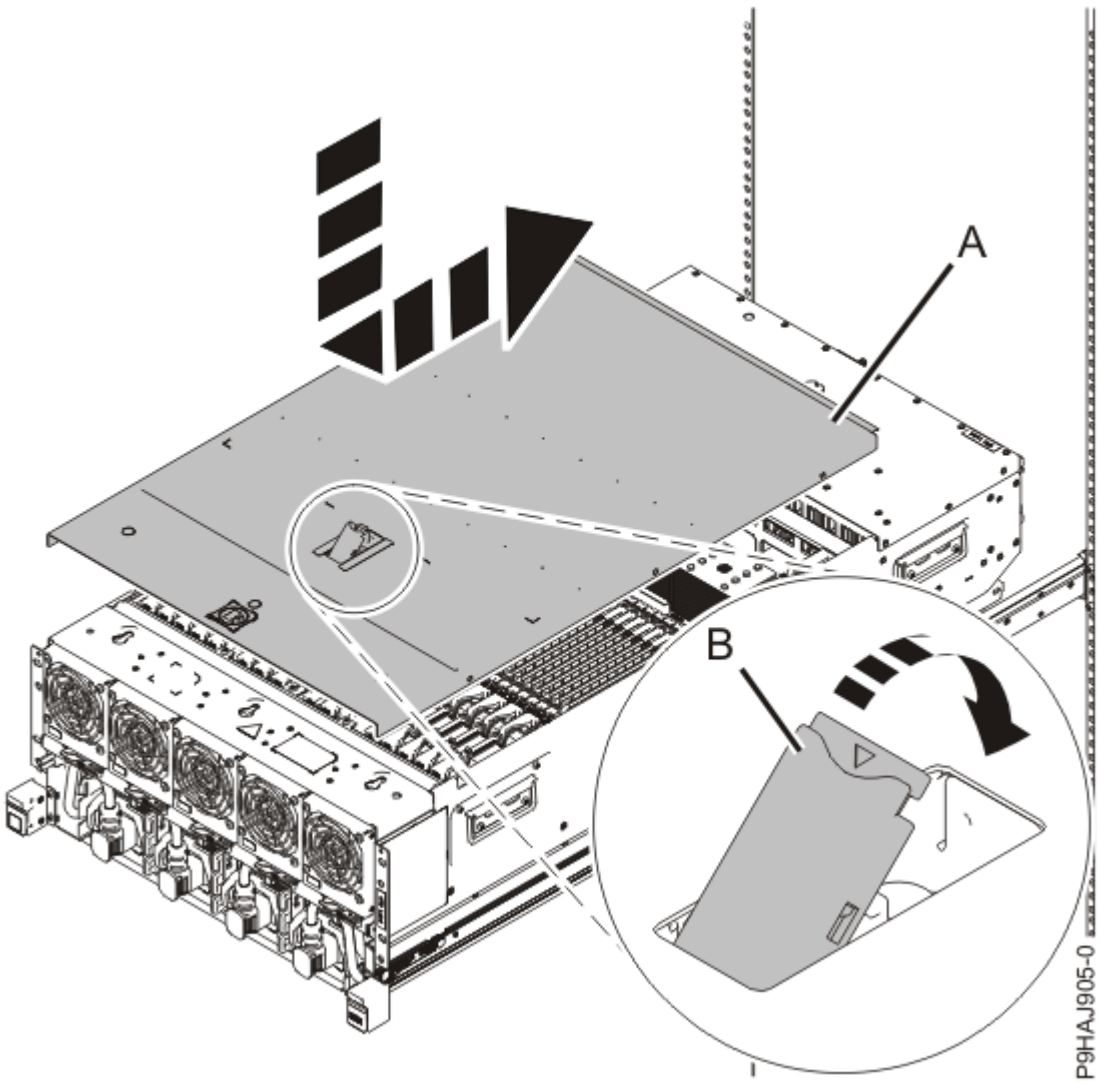


Figure 225. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

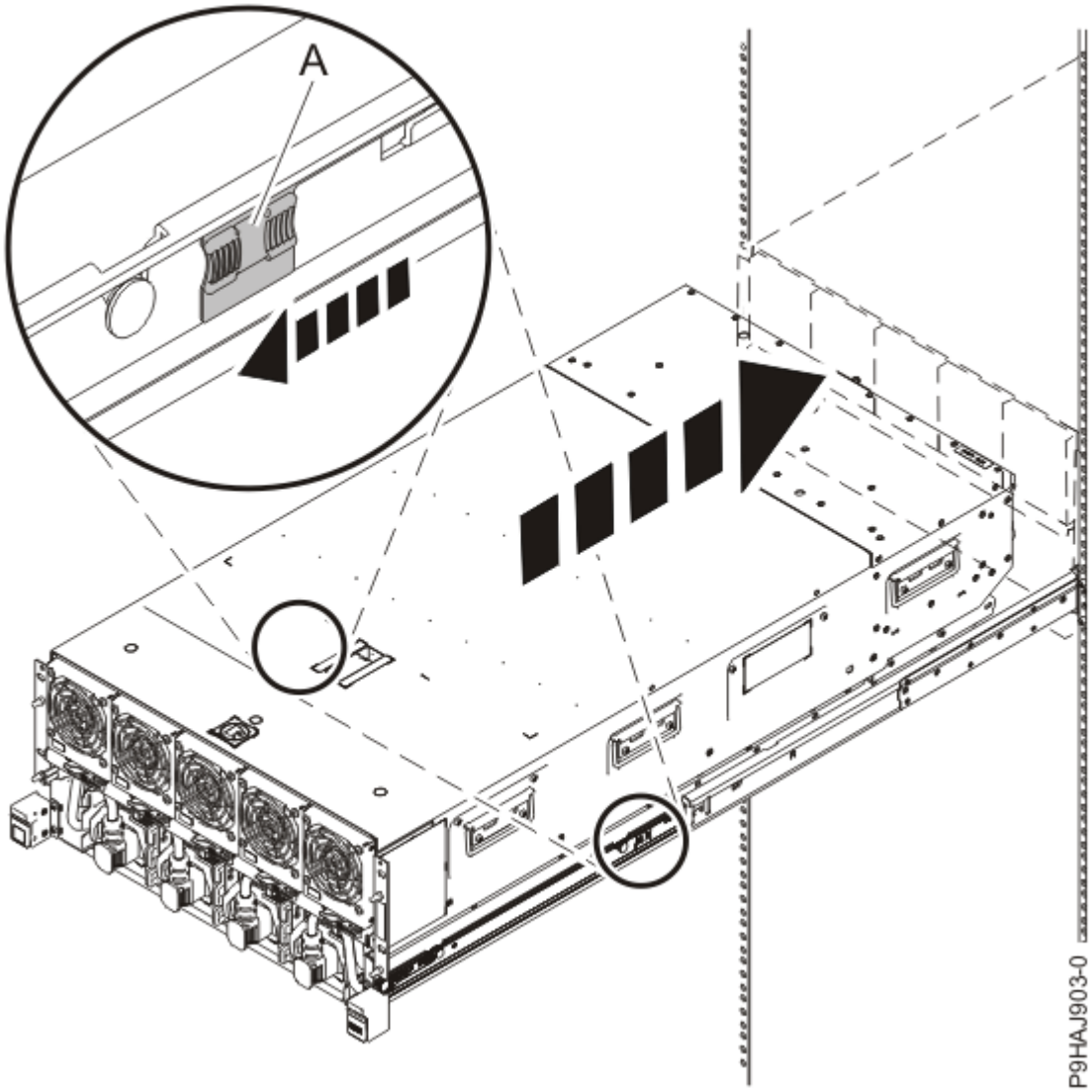


Figure 226. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

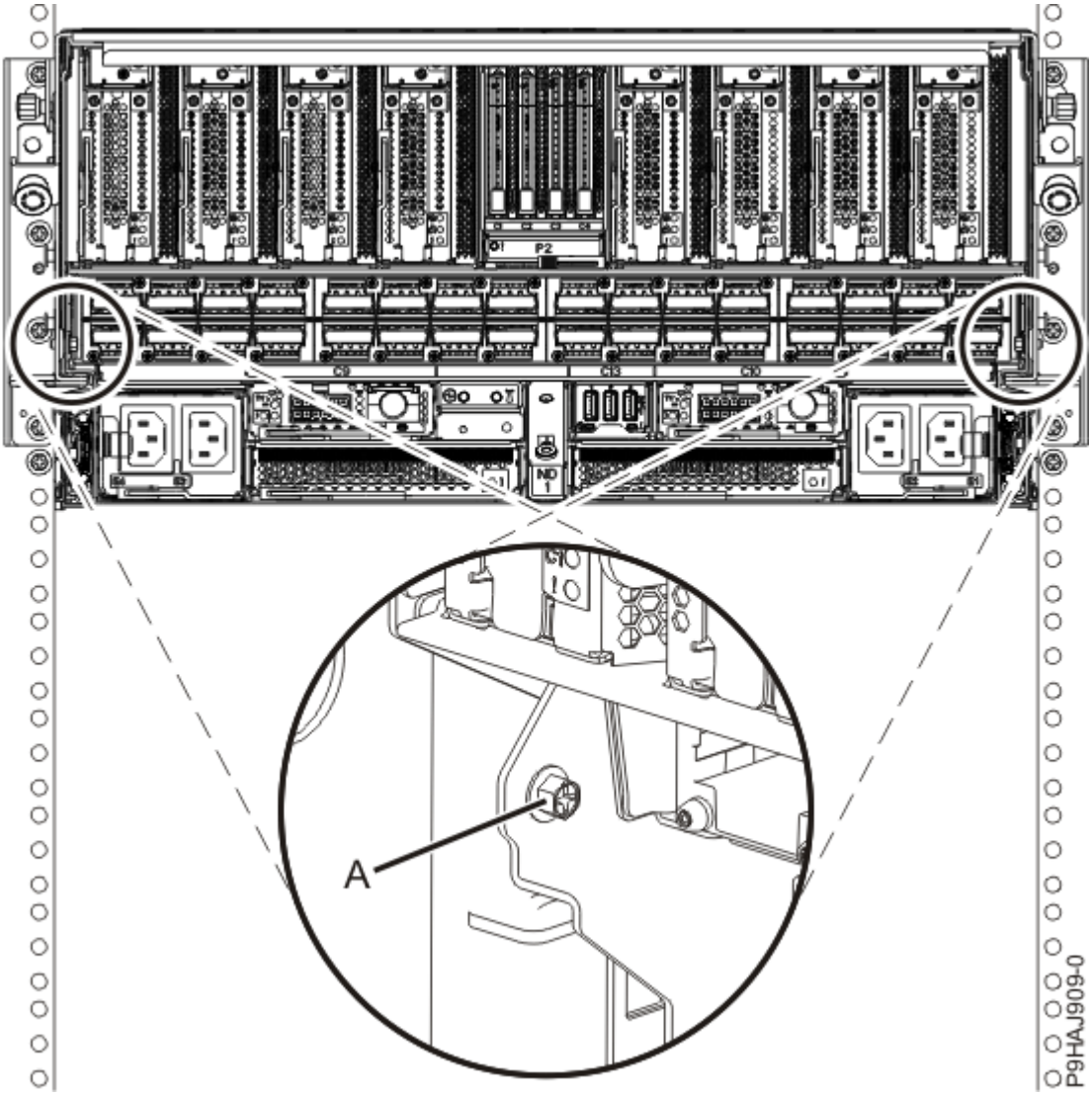


Figure 227. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

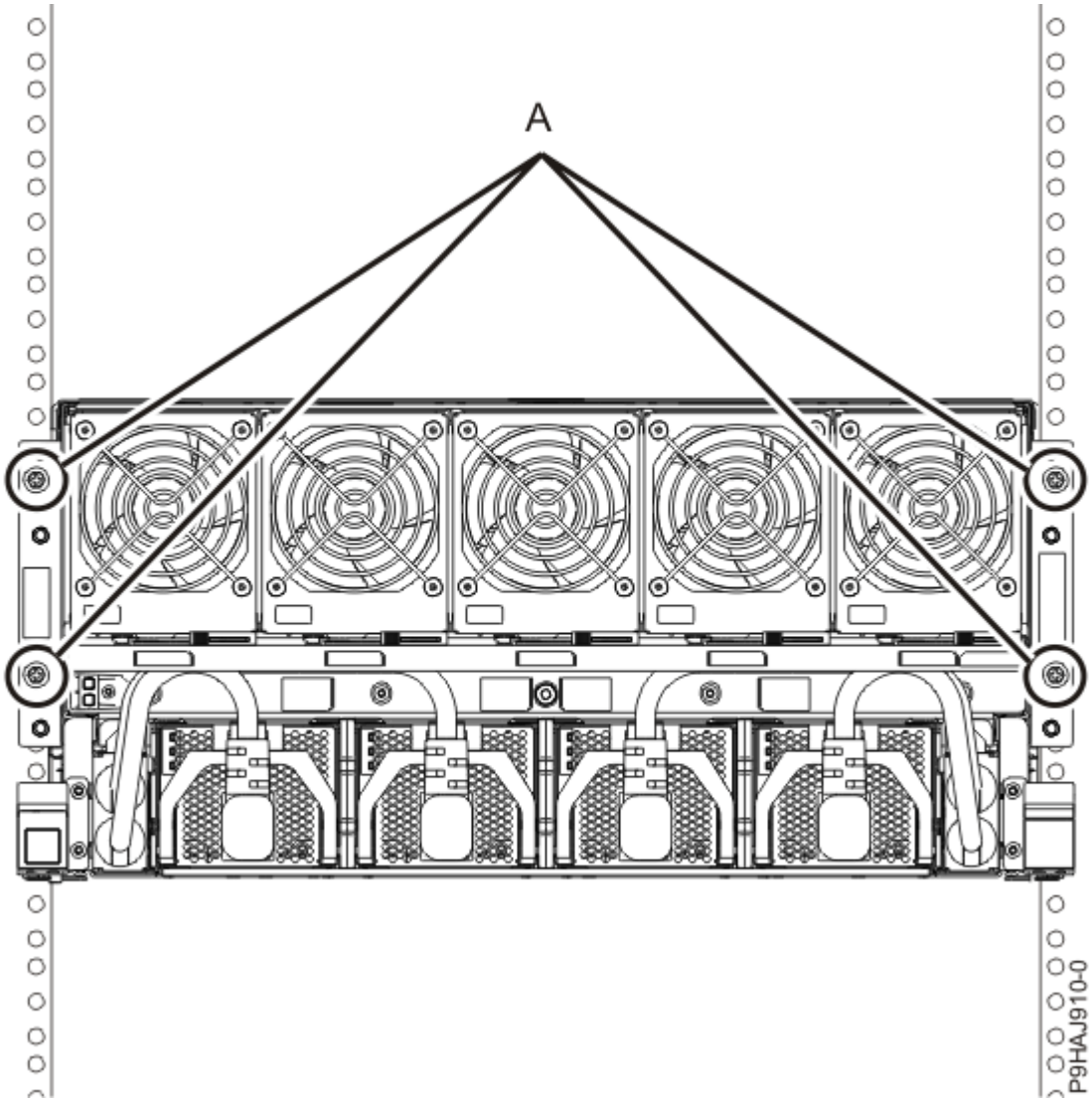


Figure 228. Replacing the front screws

4. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 229 on page 264 and Table 33 on page 264 to determine the point-to-point cabling for SMP cables.

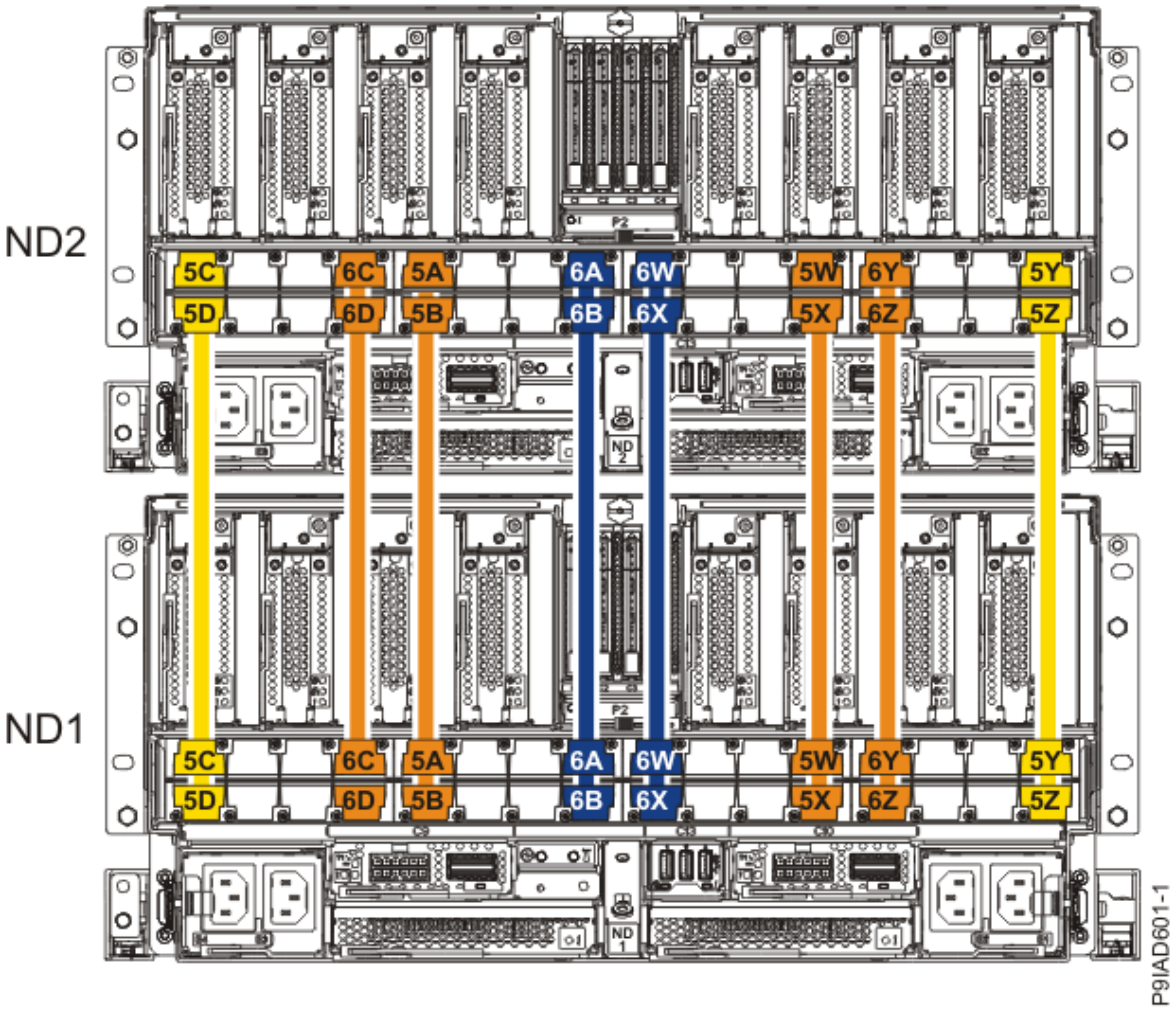


Figure 229. Cabling a Two Node Configuration

Table 33. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 33. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 230 on page 266 and Table 34 on page 266 to determine the point-to-point cabling for SMP cables.

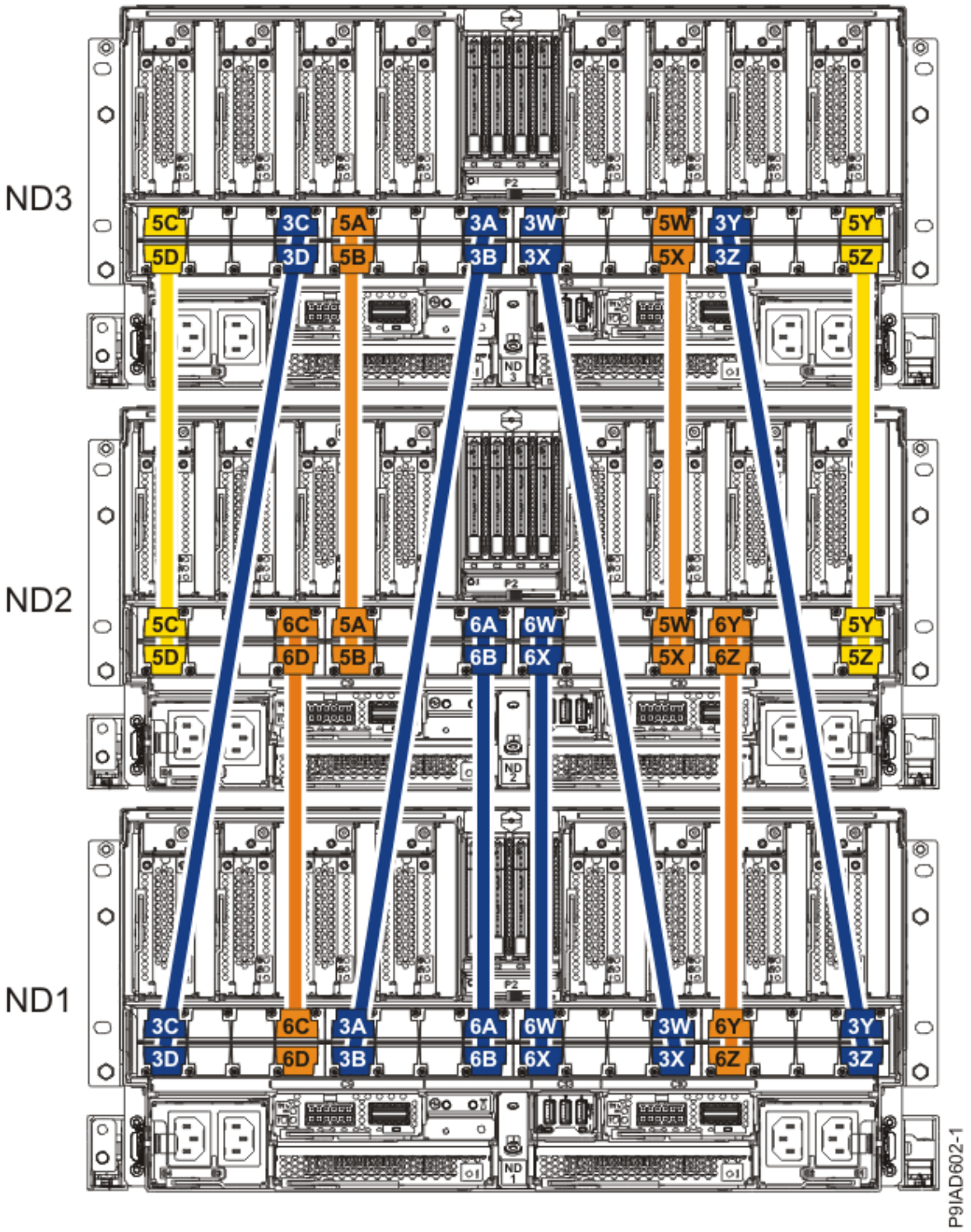


Figure 230. Cabling a Three Node Configuration

Table 34. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 34. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 34. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 231 on page 269 and Table 35 on page 270 to determine the point-to-point cabling for SMP cables.

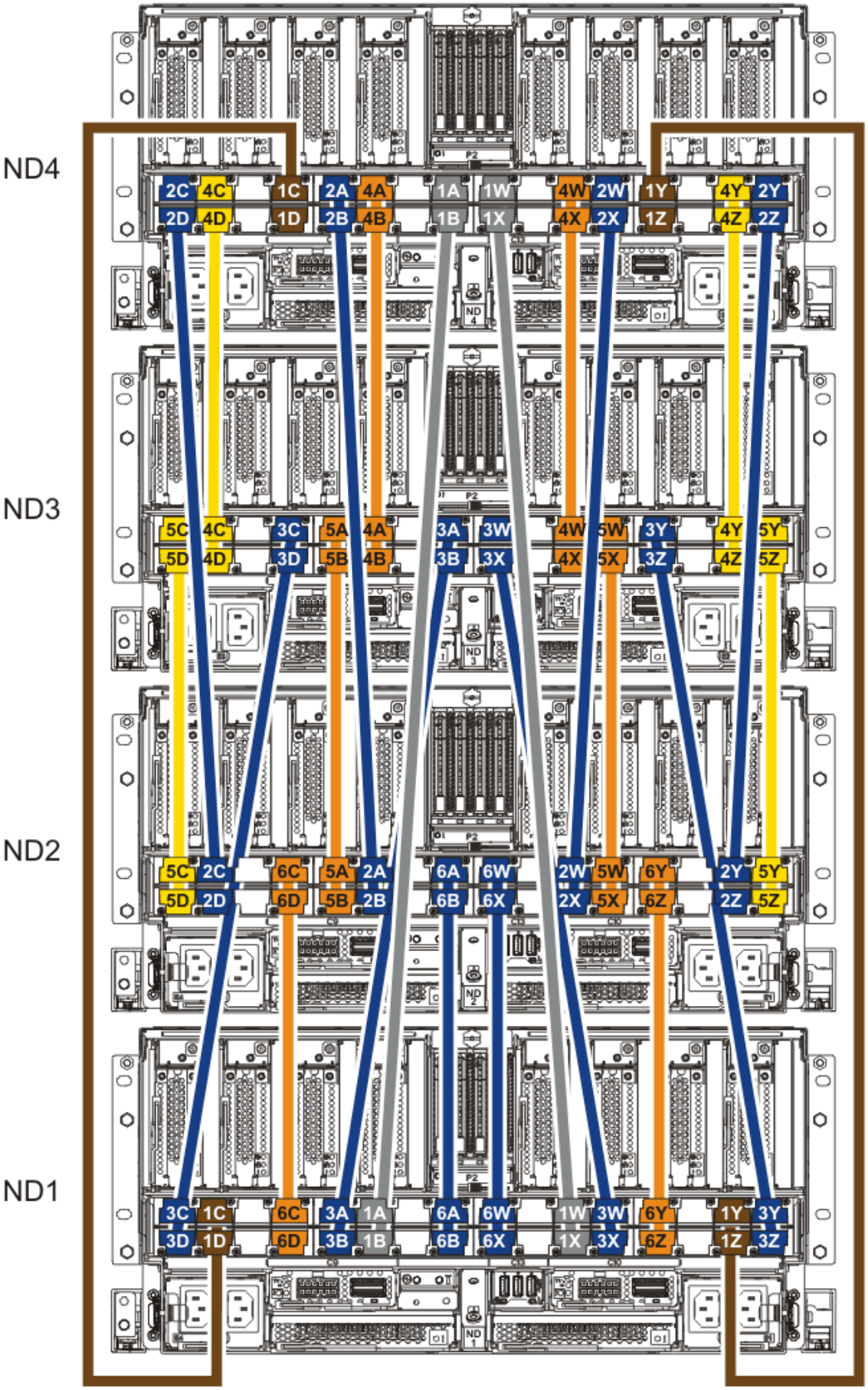


Figure 231. Cabling a Four Node Configuration

Table 35. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 35. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 35. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

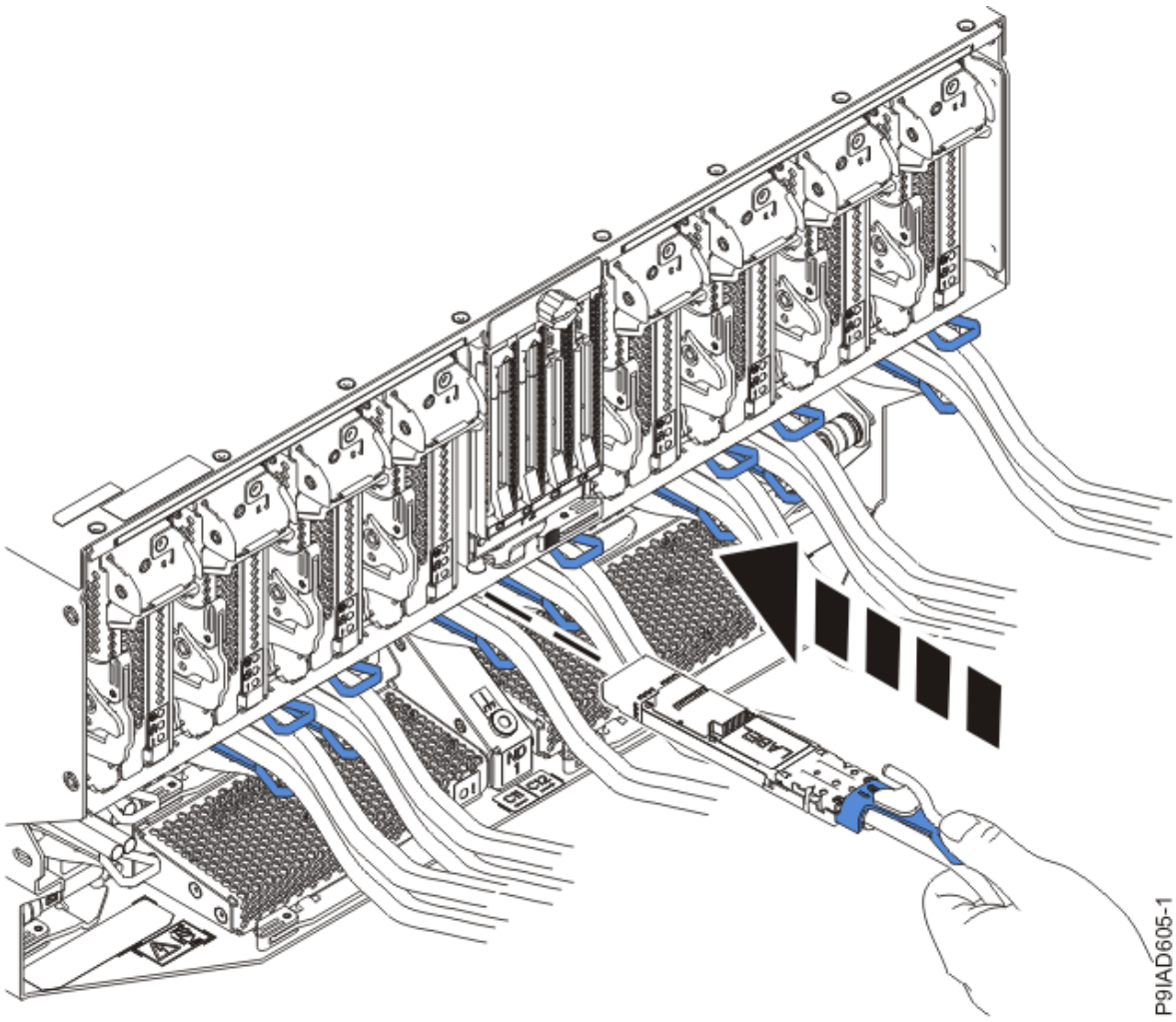


Figure 232. Replacing the SMP cable into the system node

b) Repeat step “4.a” on page 272 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

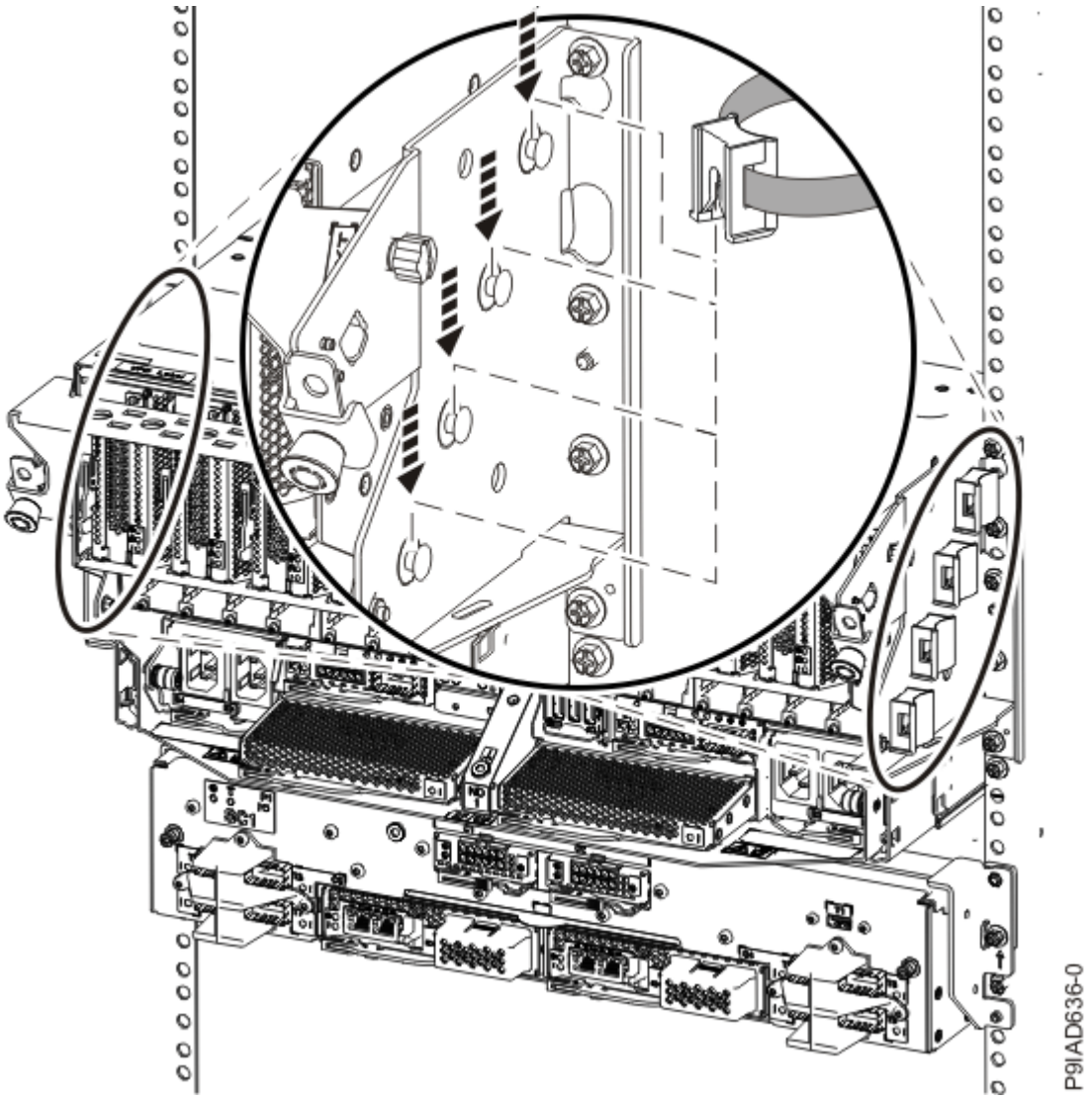


Figure 233. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

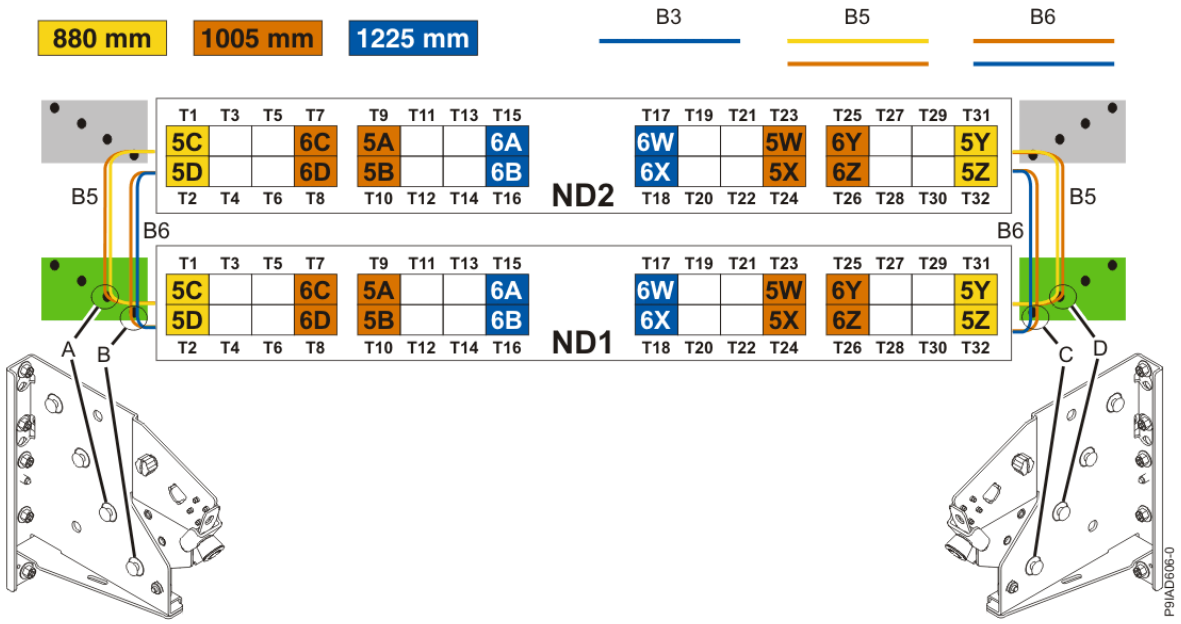


Figure 234. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

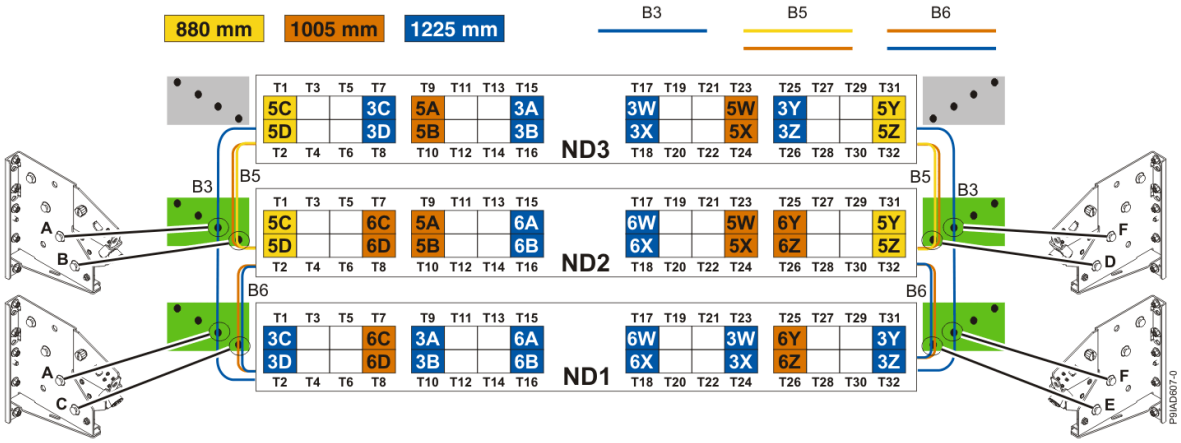


Figure 235. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

- The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
- The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

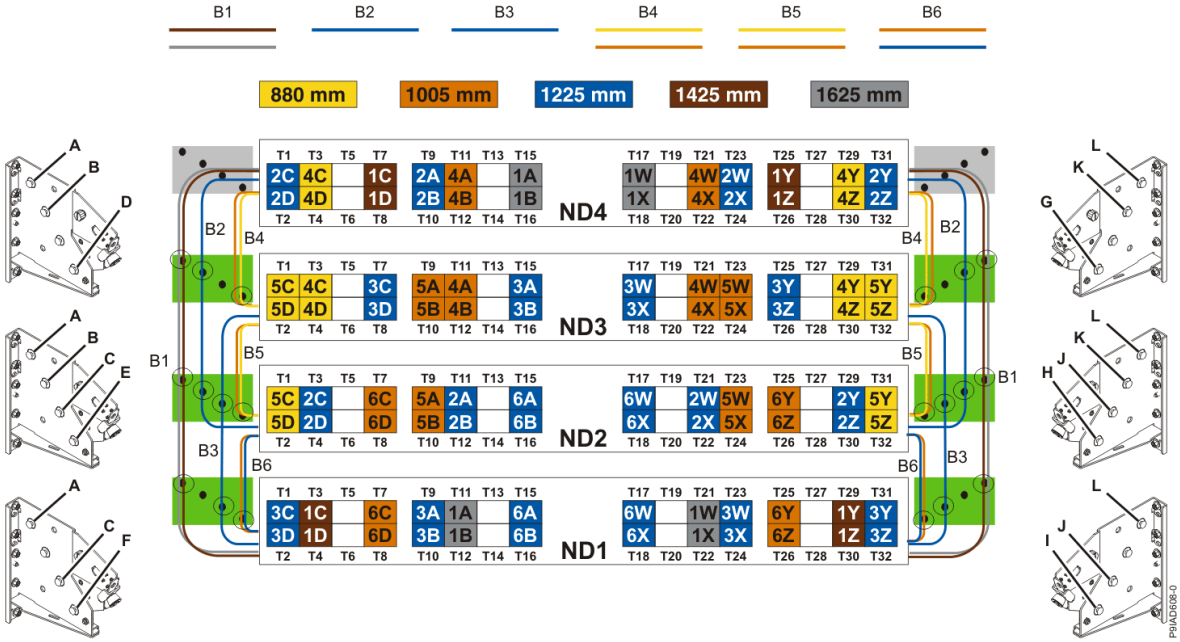


Figure 236. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  - The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  - The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  - The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  - The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  - The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  - The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

5. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 237 on page 277 and Table 36 on page 277 to determine the point-to-point cabling for UPIC cables.

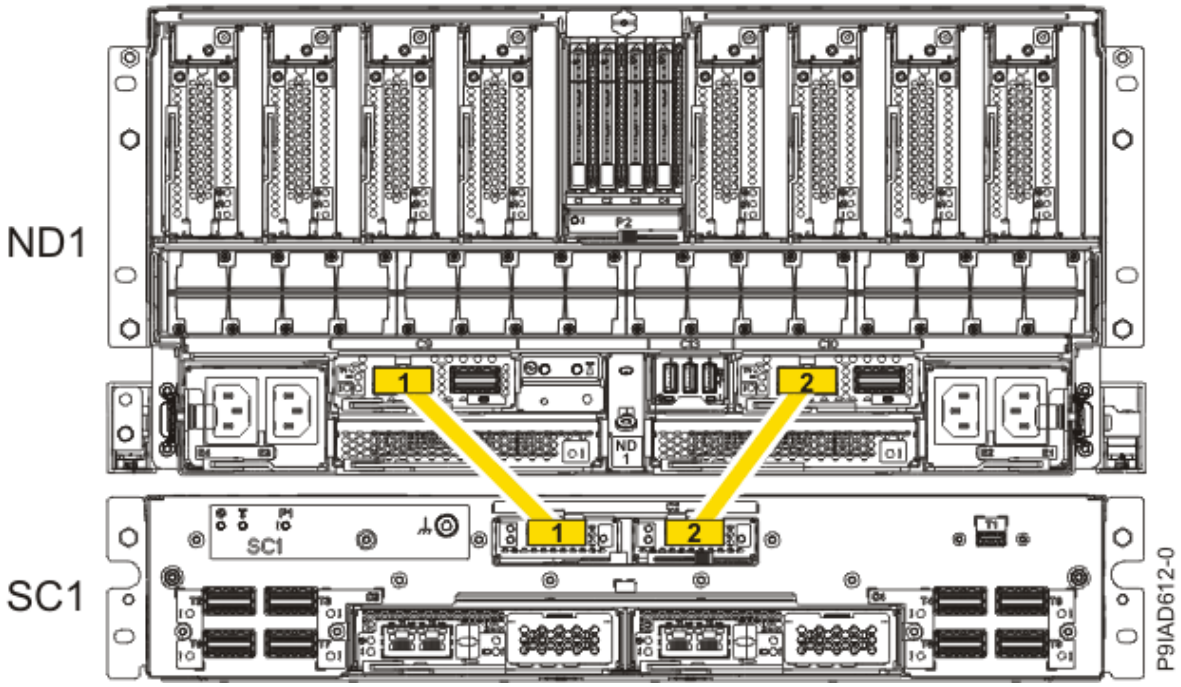


Figure 237. Single Node Configuration UPIC Cabling

Table 36. Single Node Configuration UPIC Cabling

Cable number	From	To
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 238 on page 278 and Table 37 on page 278 to determine the point-to-point cabling for UPIC cables.

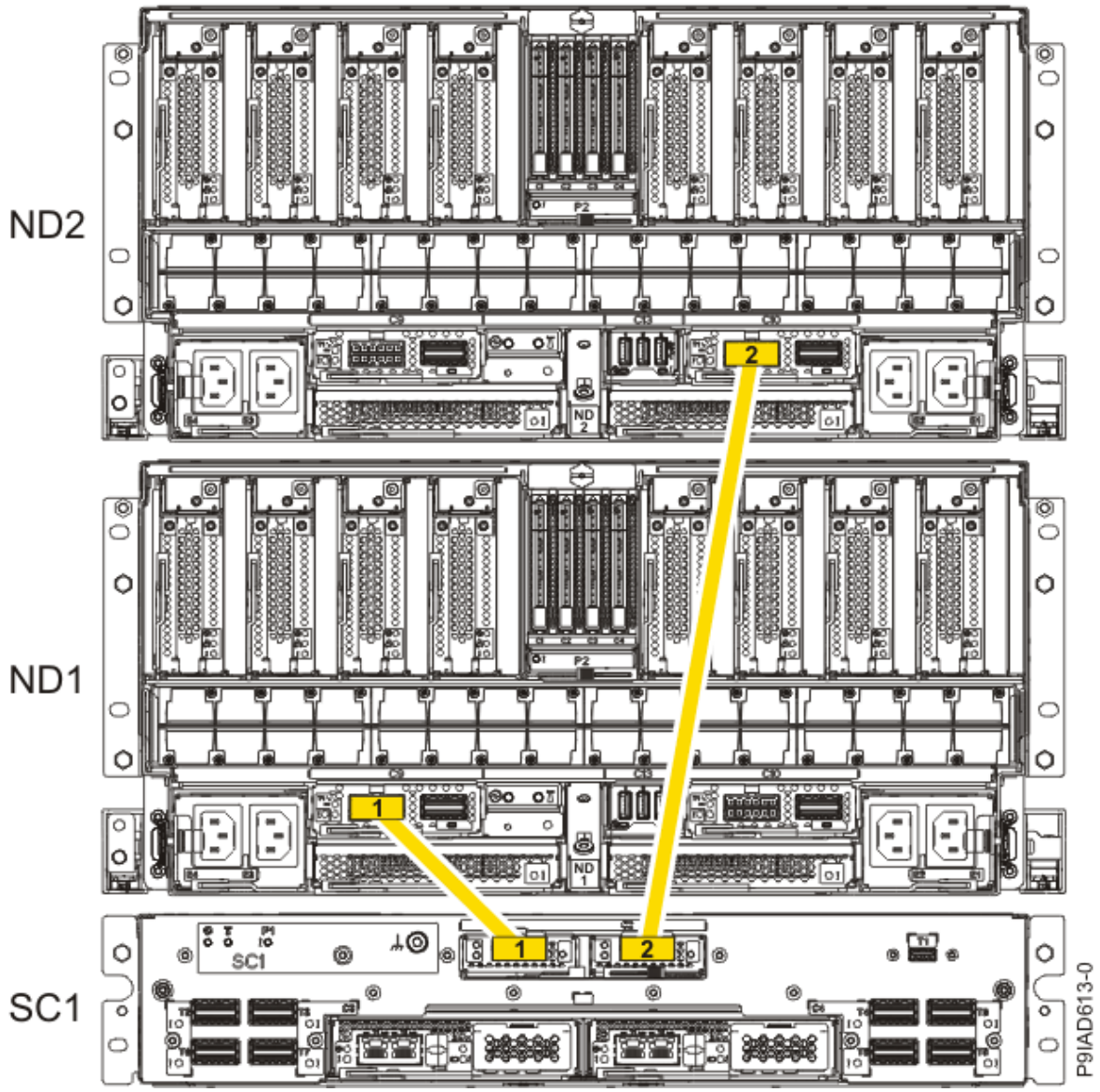


Figure 238. Two, Three, or Four Node Configuration UPIC Cabling

Table 37. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

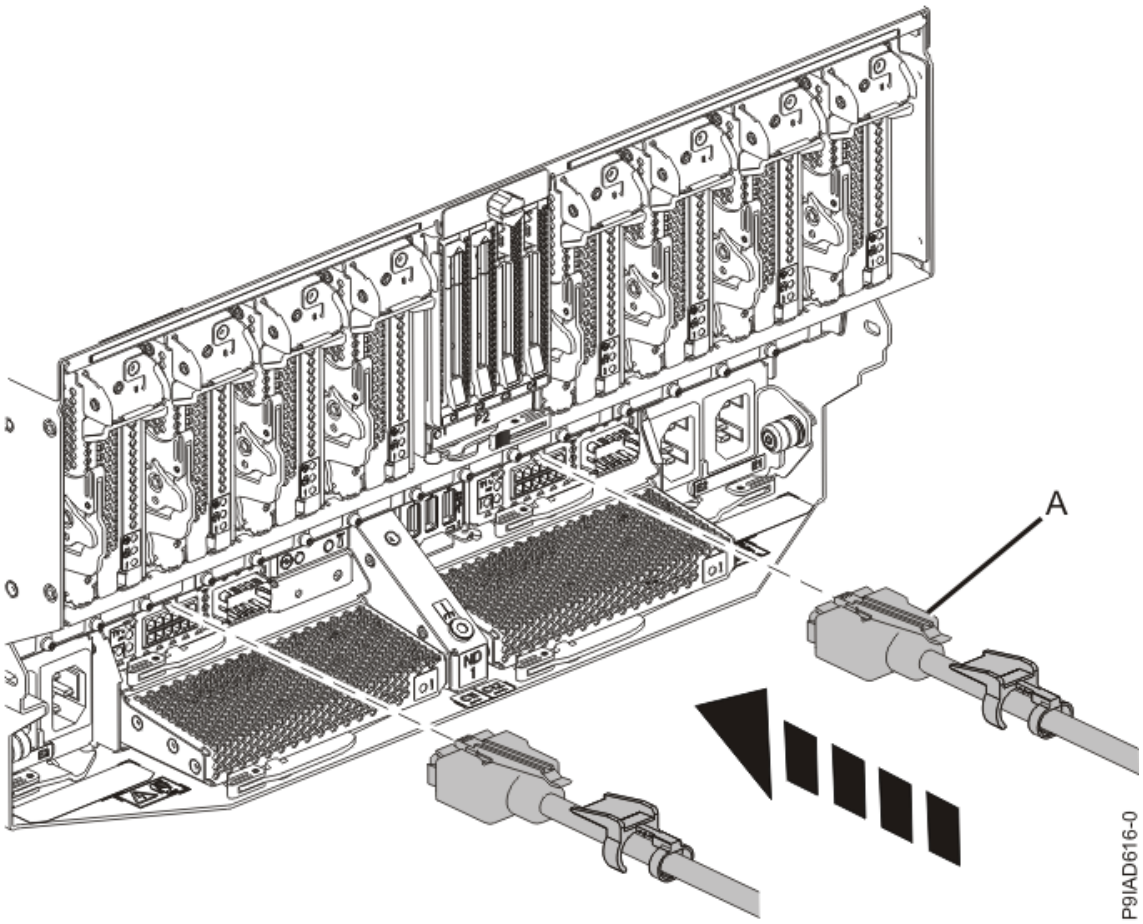


Figure 239. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

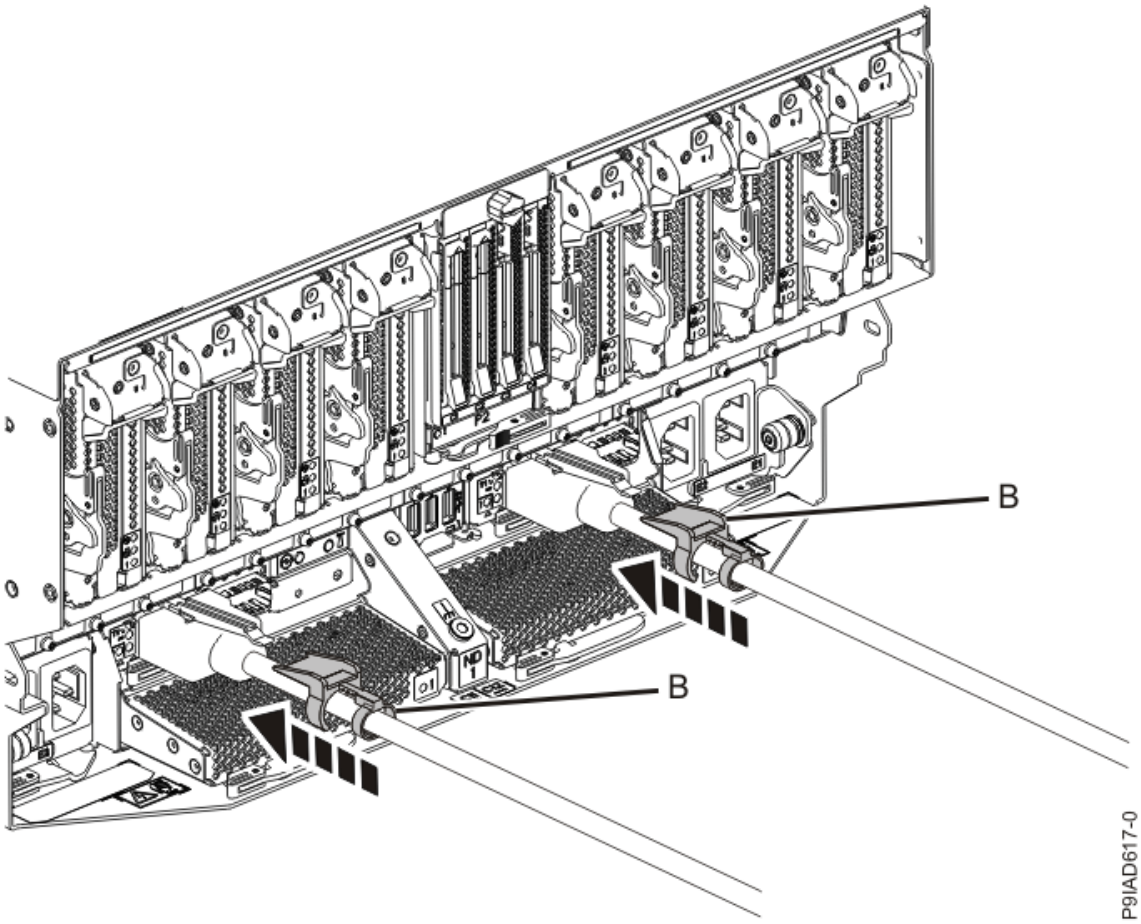


Figure 240. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “5.a” on page 278 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

6. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

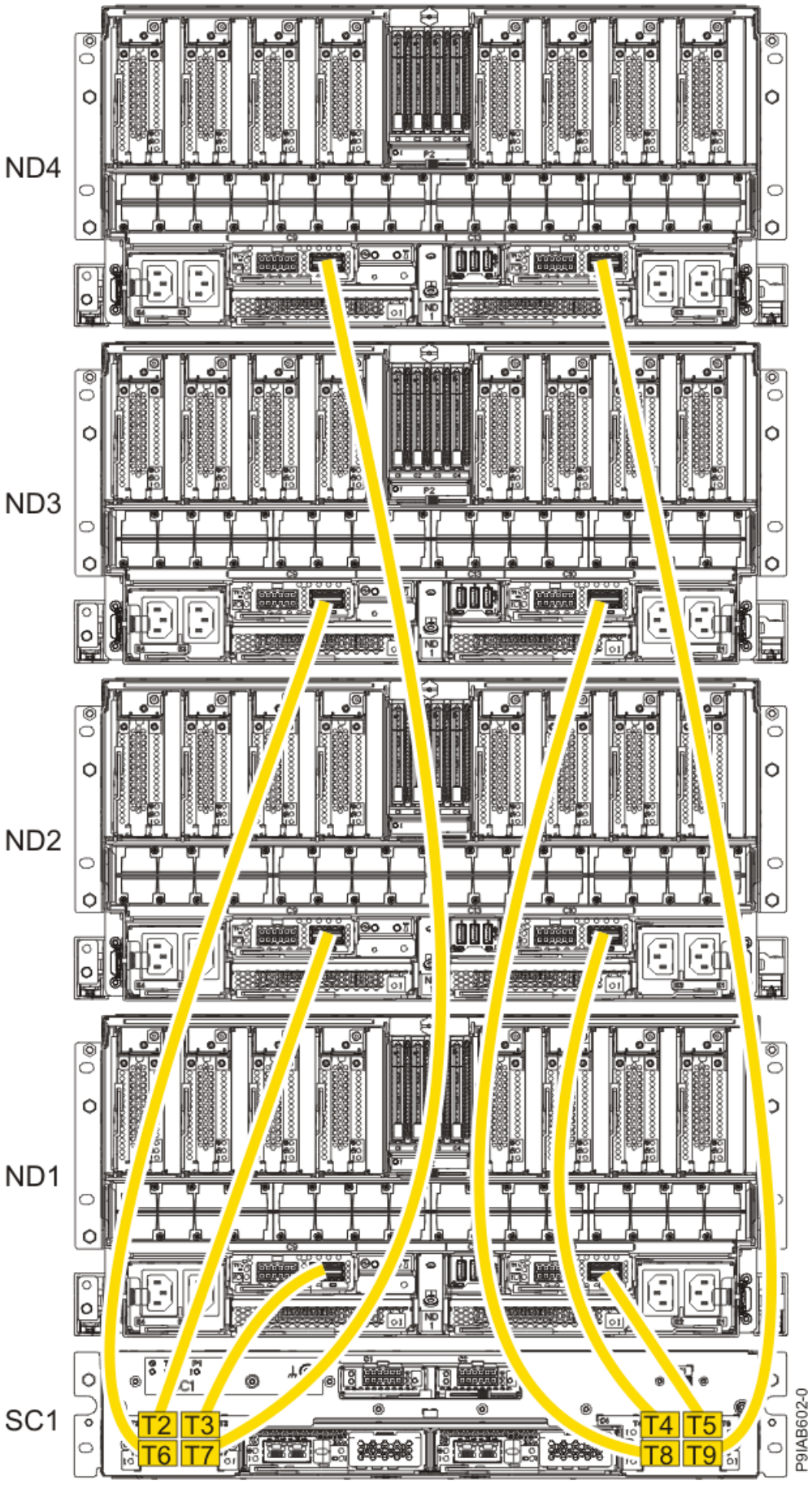


Figure 241. Service processor (FSP) cabling

Table 38. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

7. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

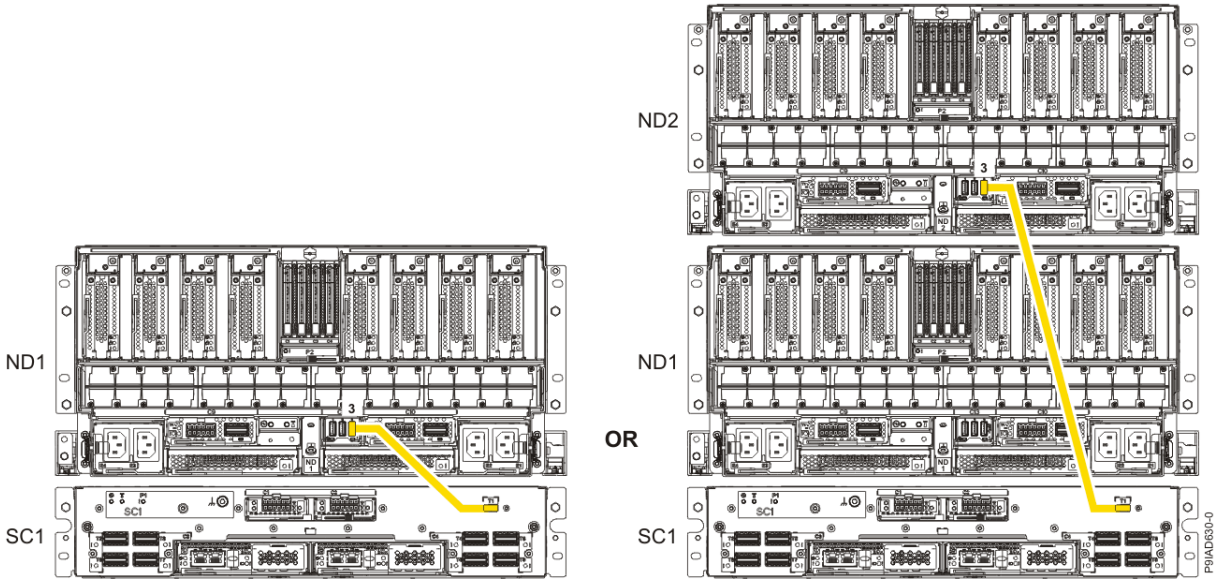


Figure 242. USB Cabling

Table 39. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

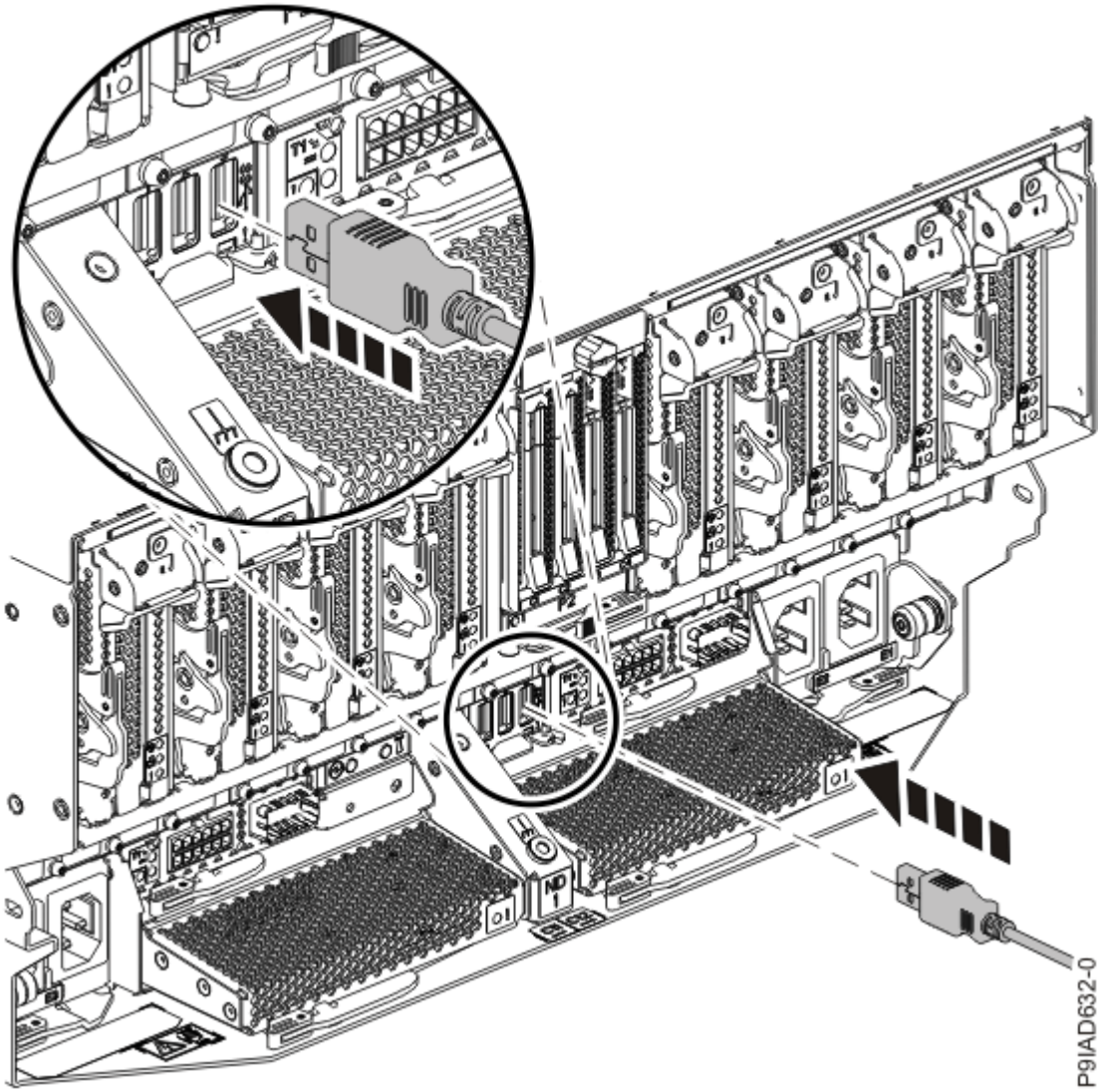


Figure 243. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

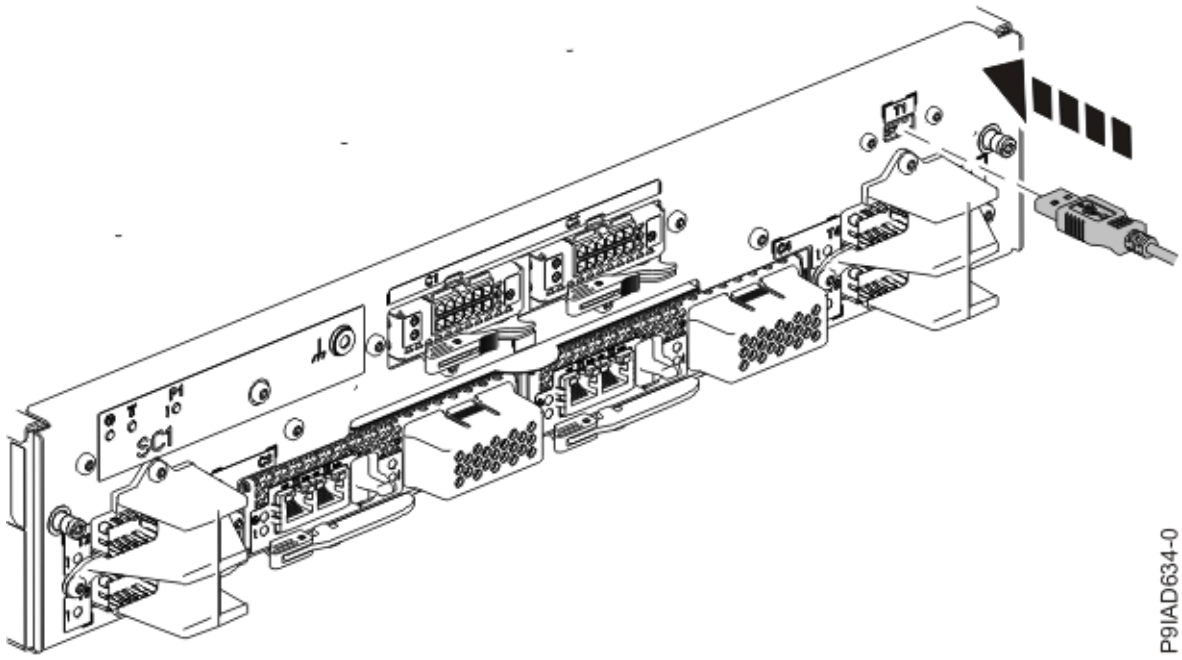


Figure 244. Replacing the USB cable into the system control unit

8. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

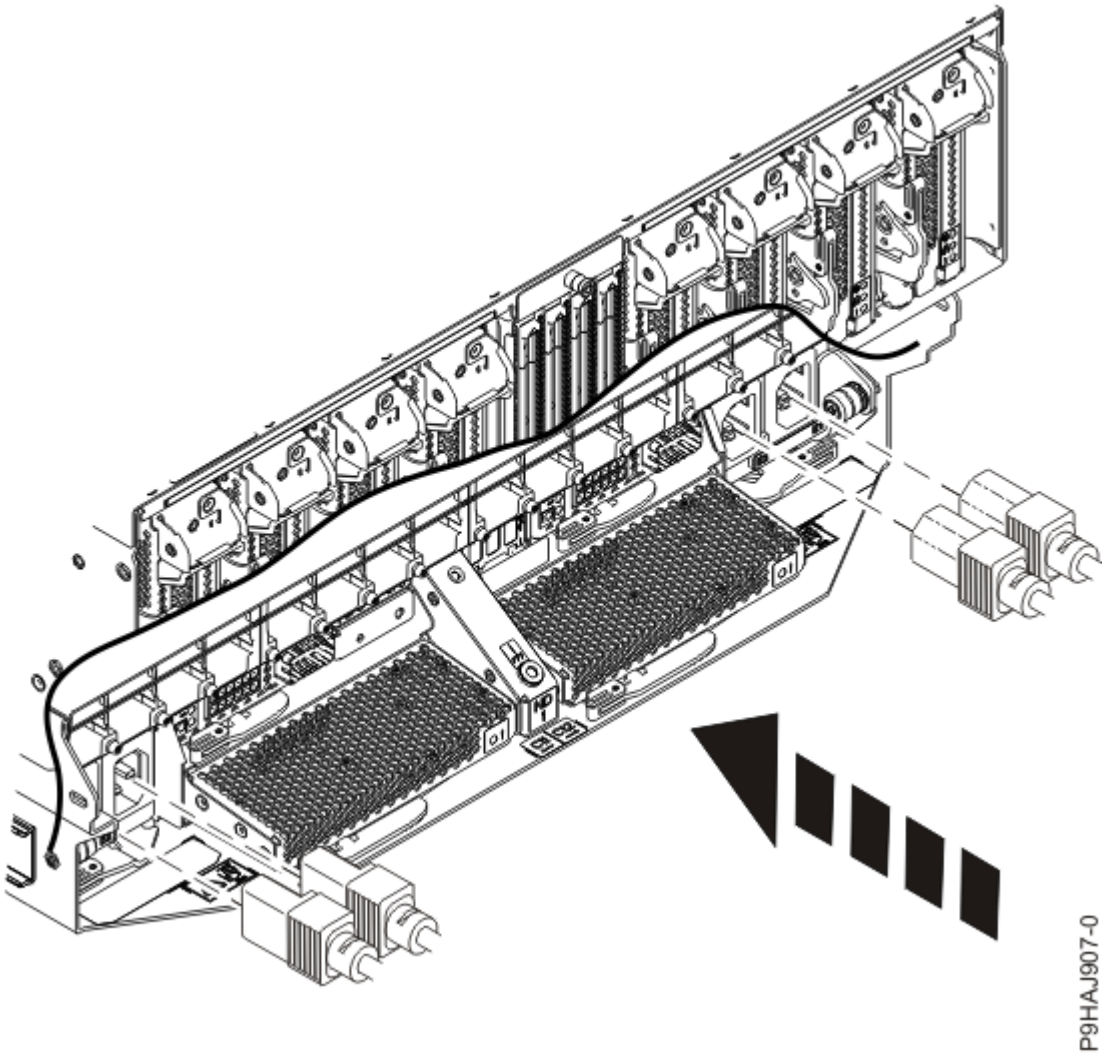


Figure 245. Connecting the rear power cords

9. 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.

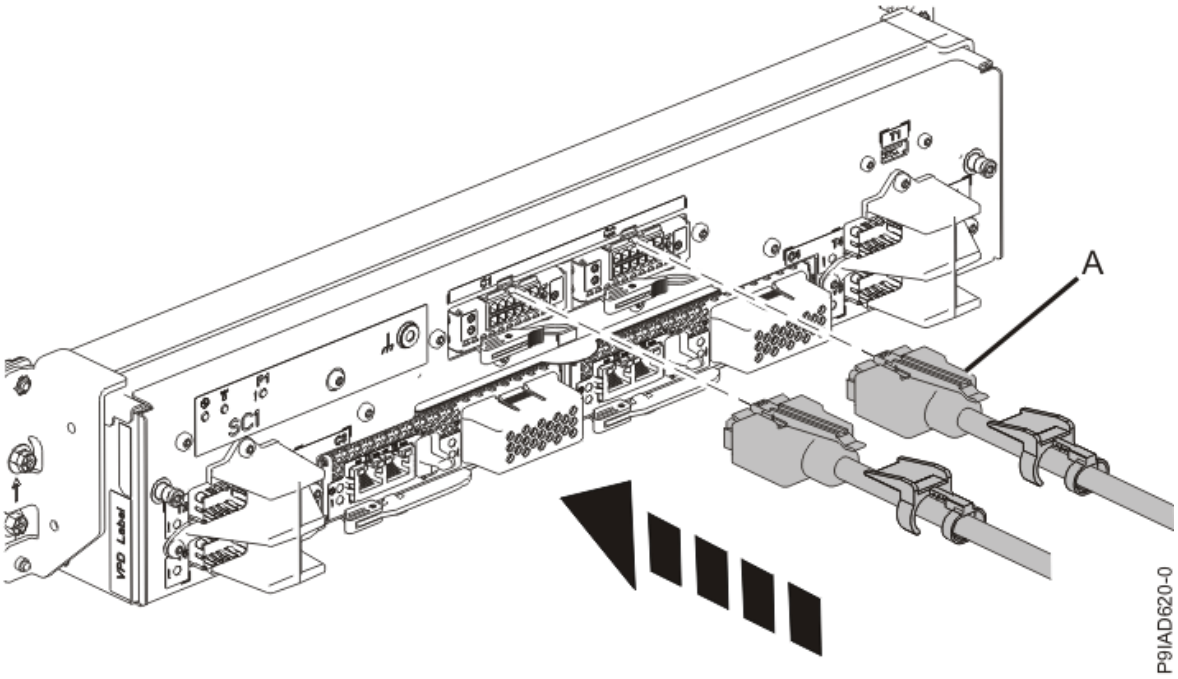


Figure 246. Replacing the UPIC cable into the system control unit

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

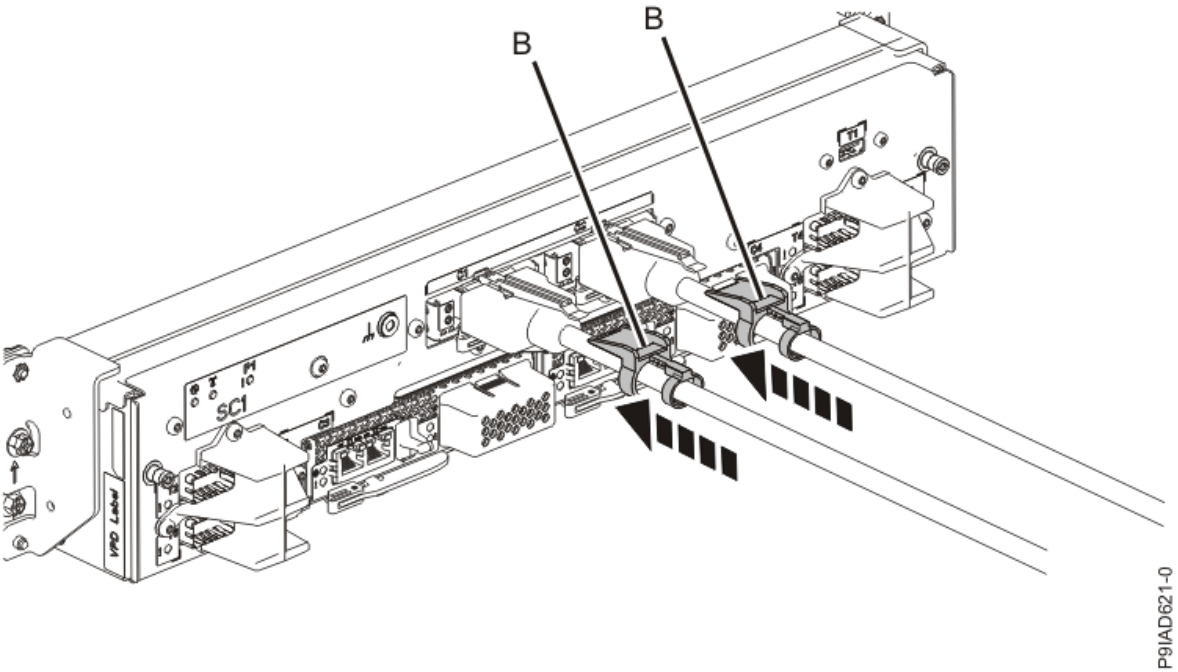


Figure 247. Replacing the UPIC cable into the system control unit

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.

10. 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.
11. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

12. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).
13. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

Miscellaneous VRMs

Preparing the system to remove and replace a miscellaneous A voltage regulator module

To prepare the system to remove and replace a miscellaneous A voltage regulator module, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   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.
2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
3. Open the rear rack door, if necessary.
4. 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.

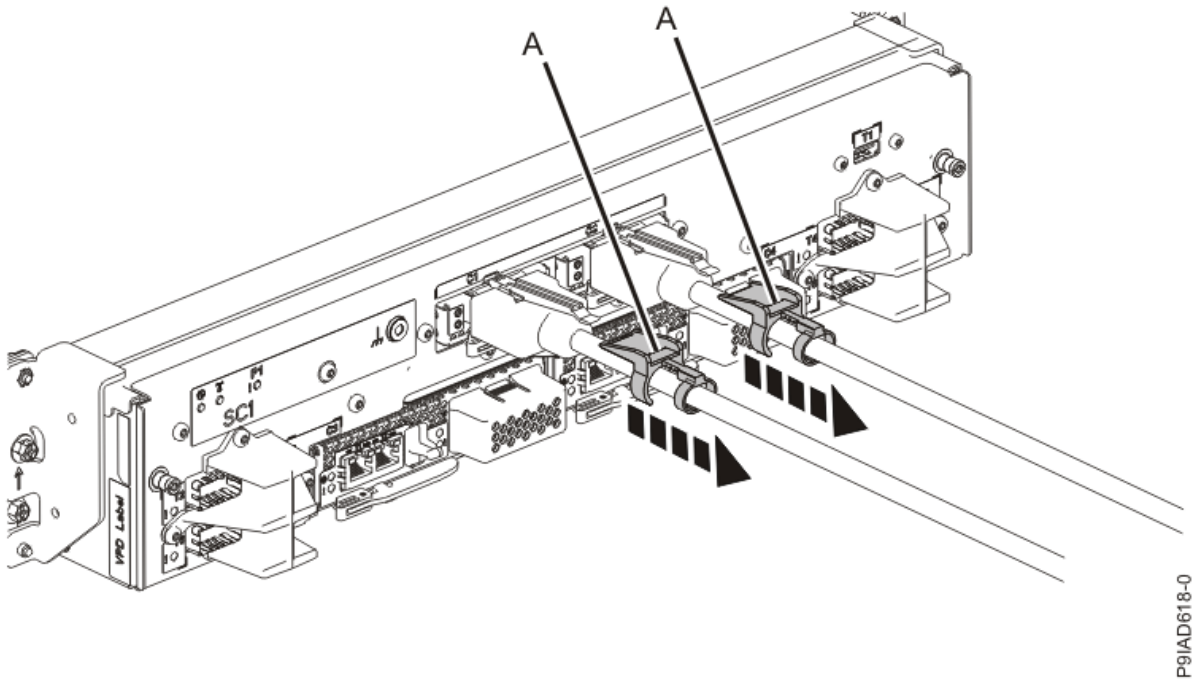


Figure 248. Removing the UPIC cable lock

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

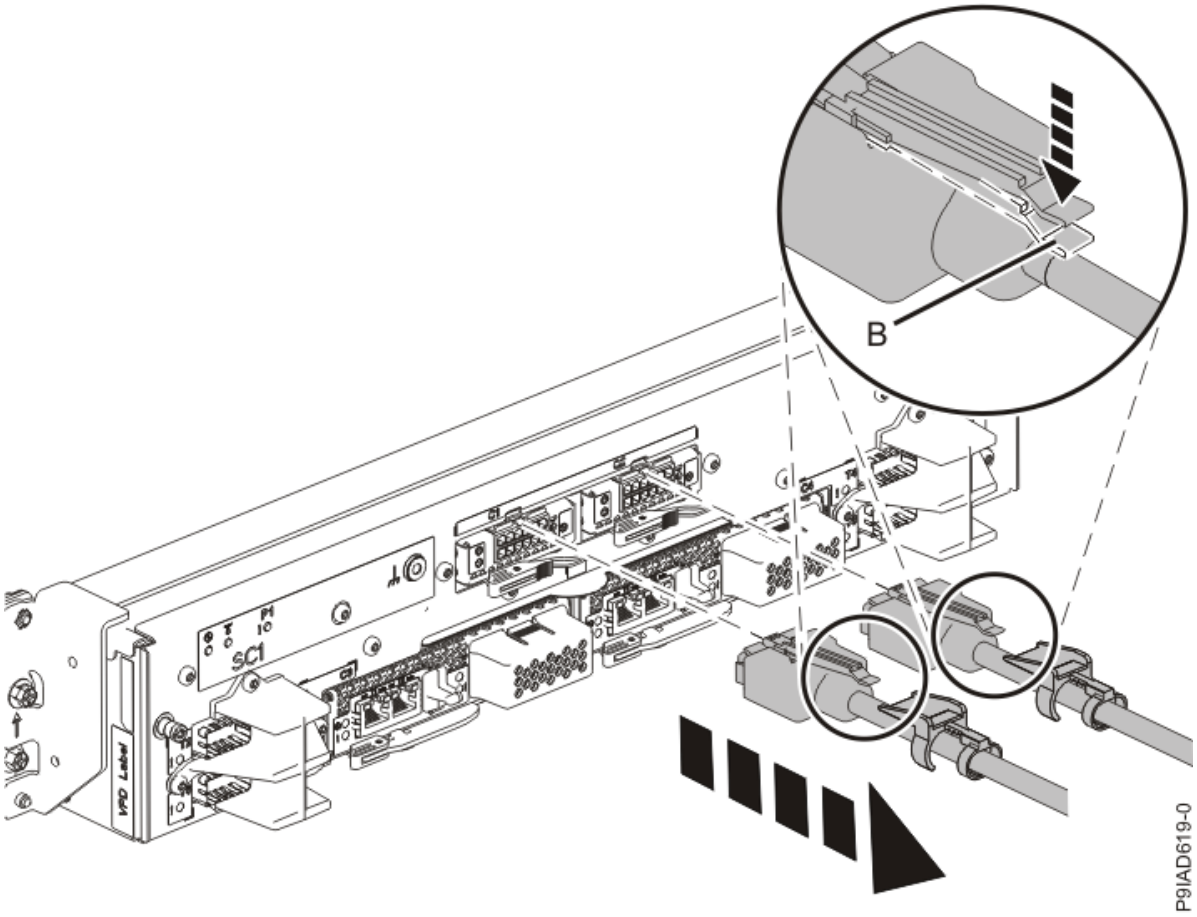


Figure 249. Removing the UPIC cable from the system control unit

5. 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.

6. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

Notes:

- This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

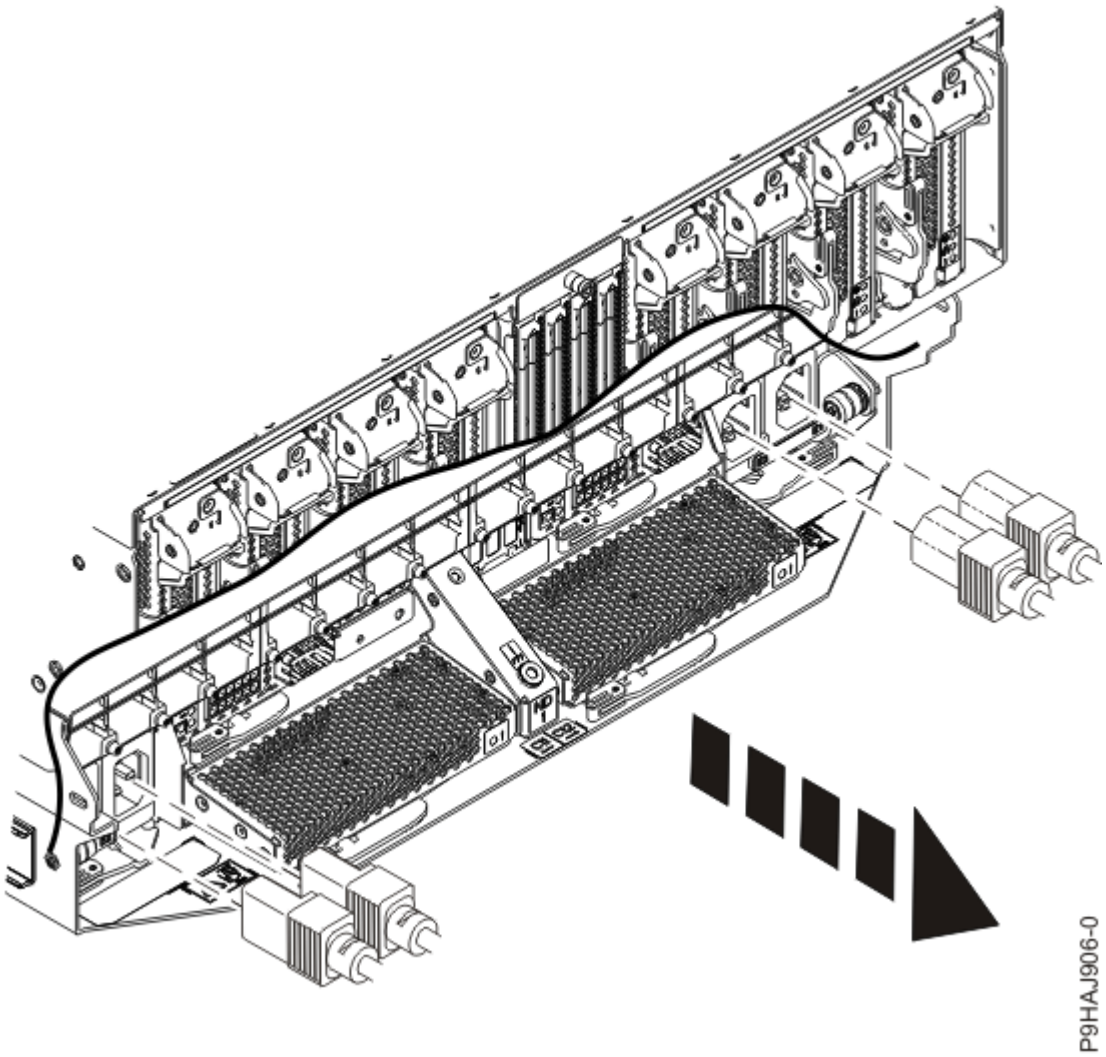
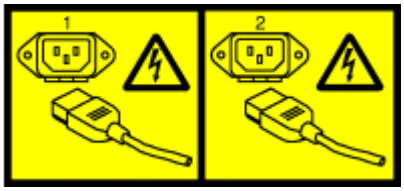


Figure 250. Removing the rear power cords

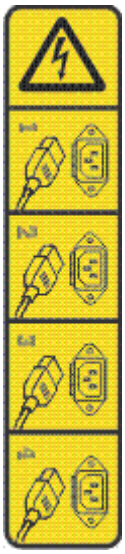
(L003)



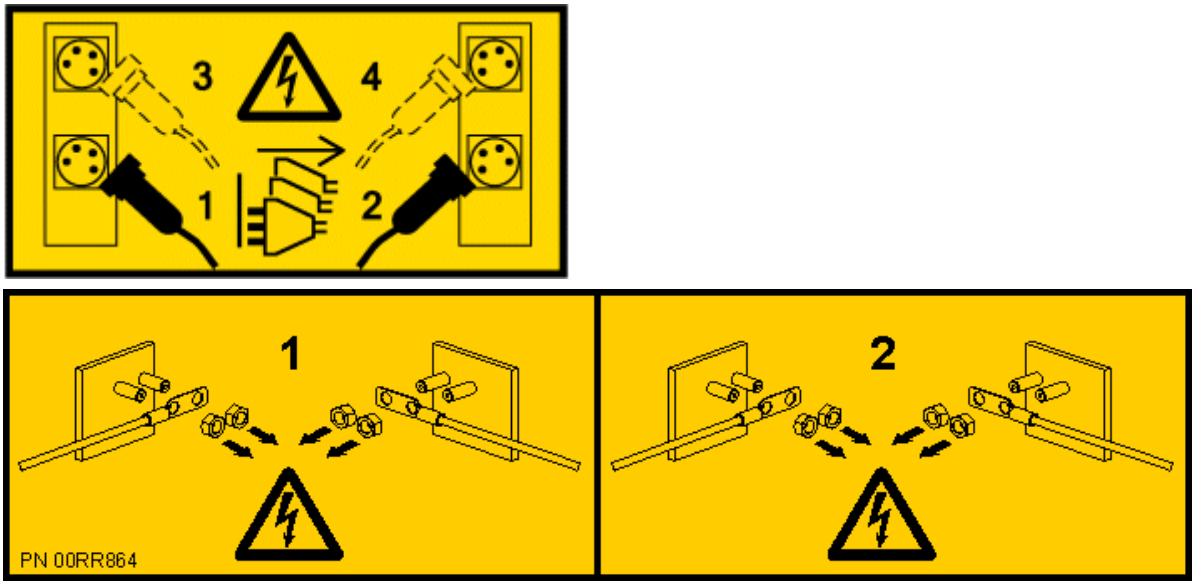
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

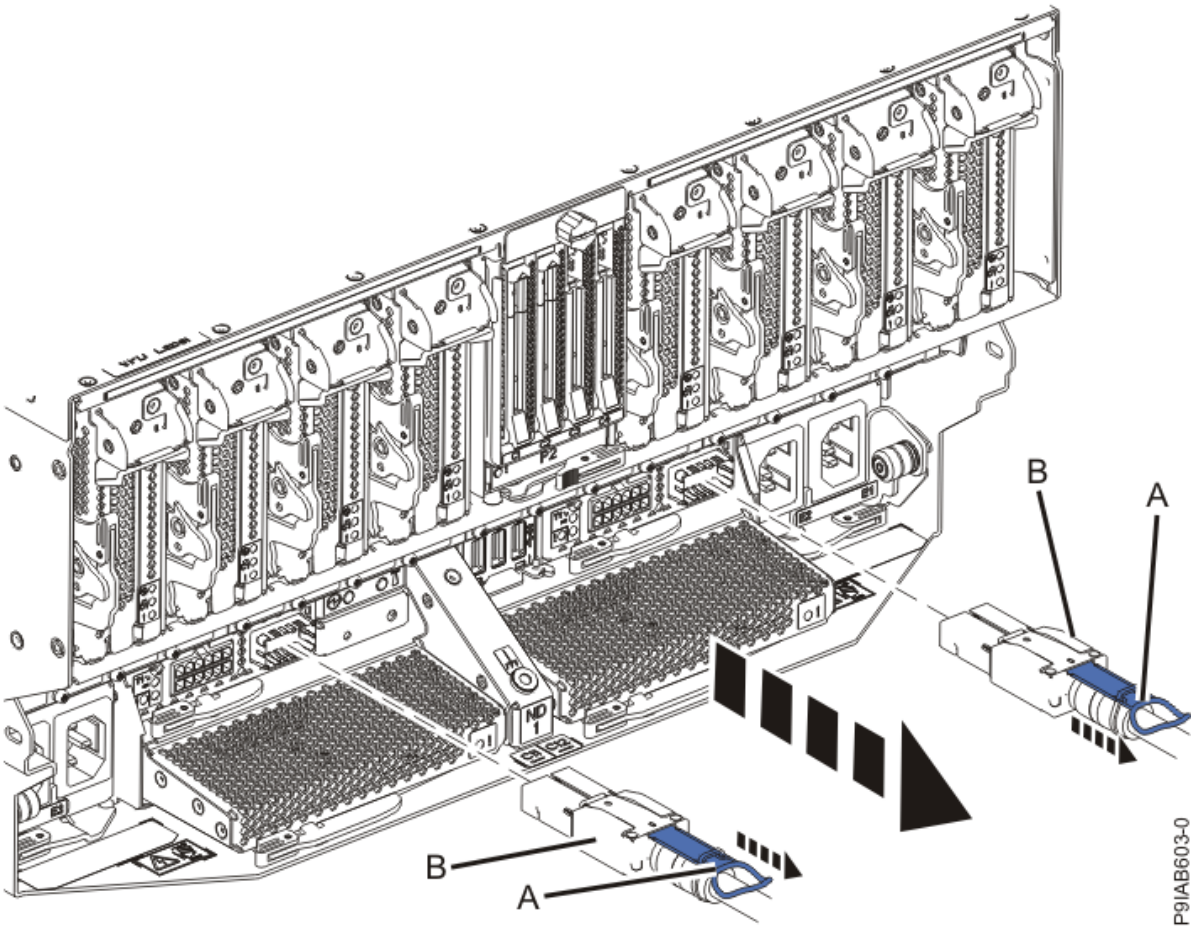


Figure 251. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

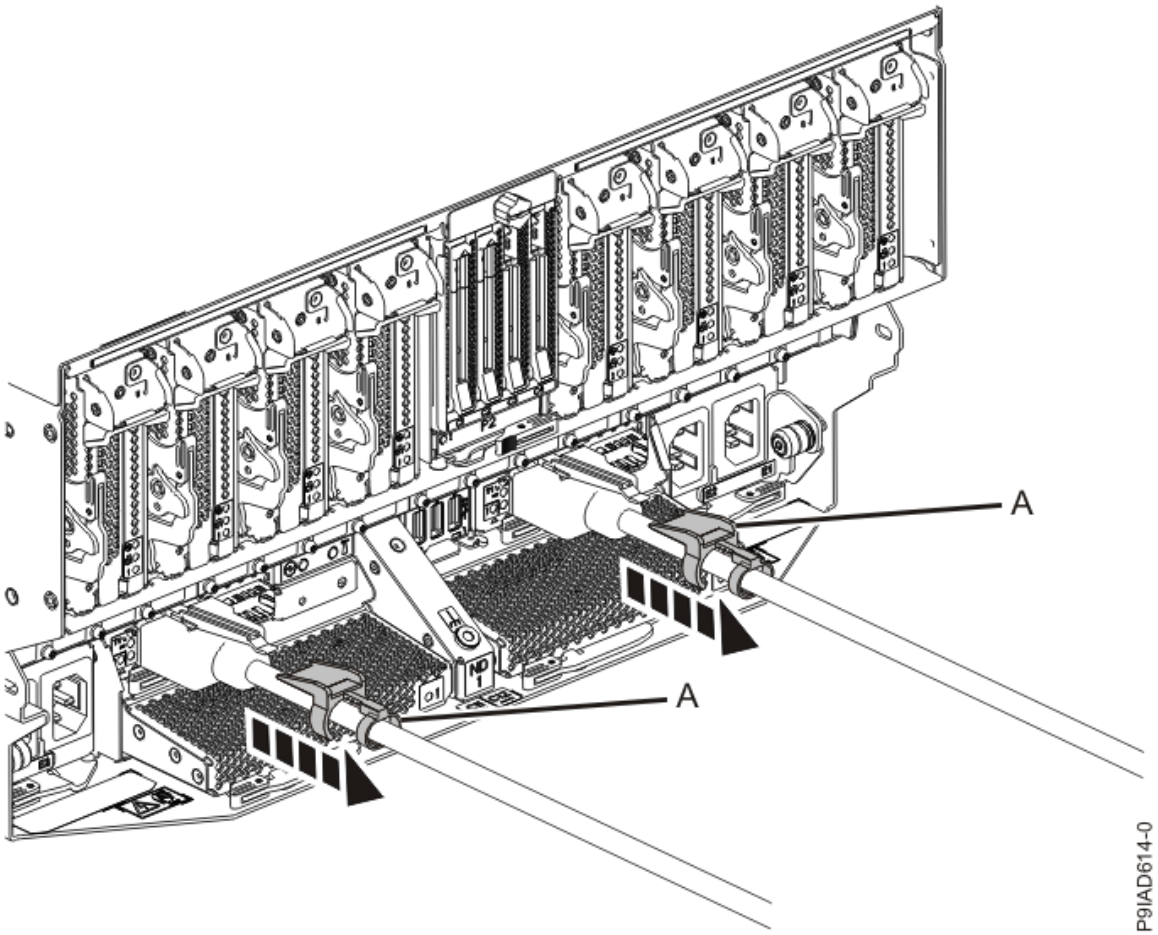


Figure 252. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

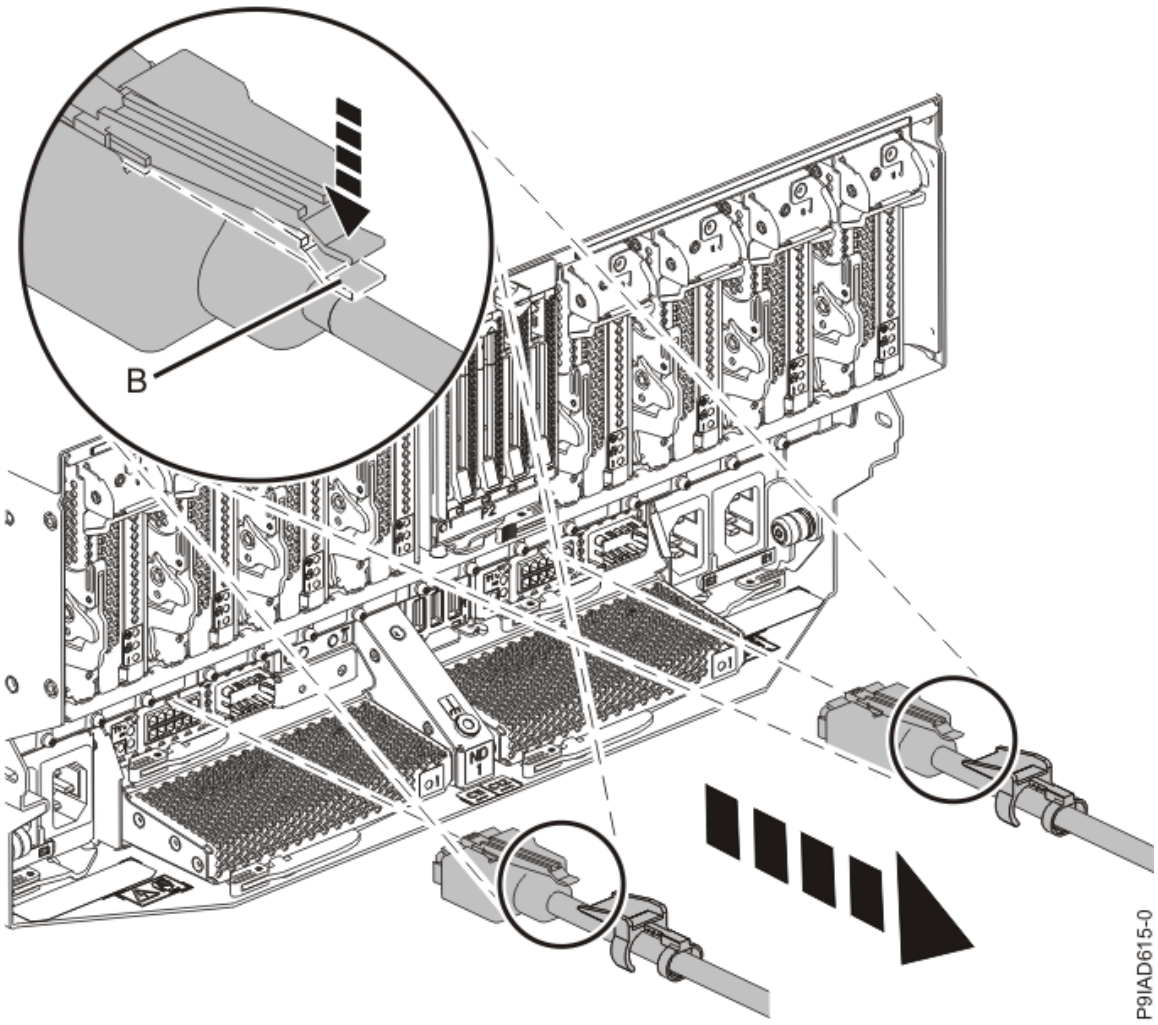


Figure 253. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

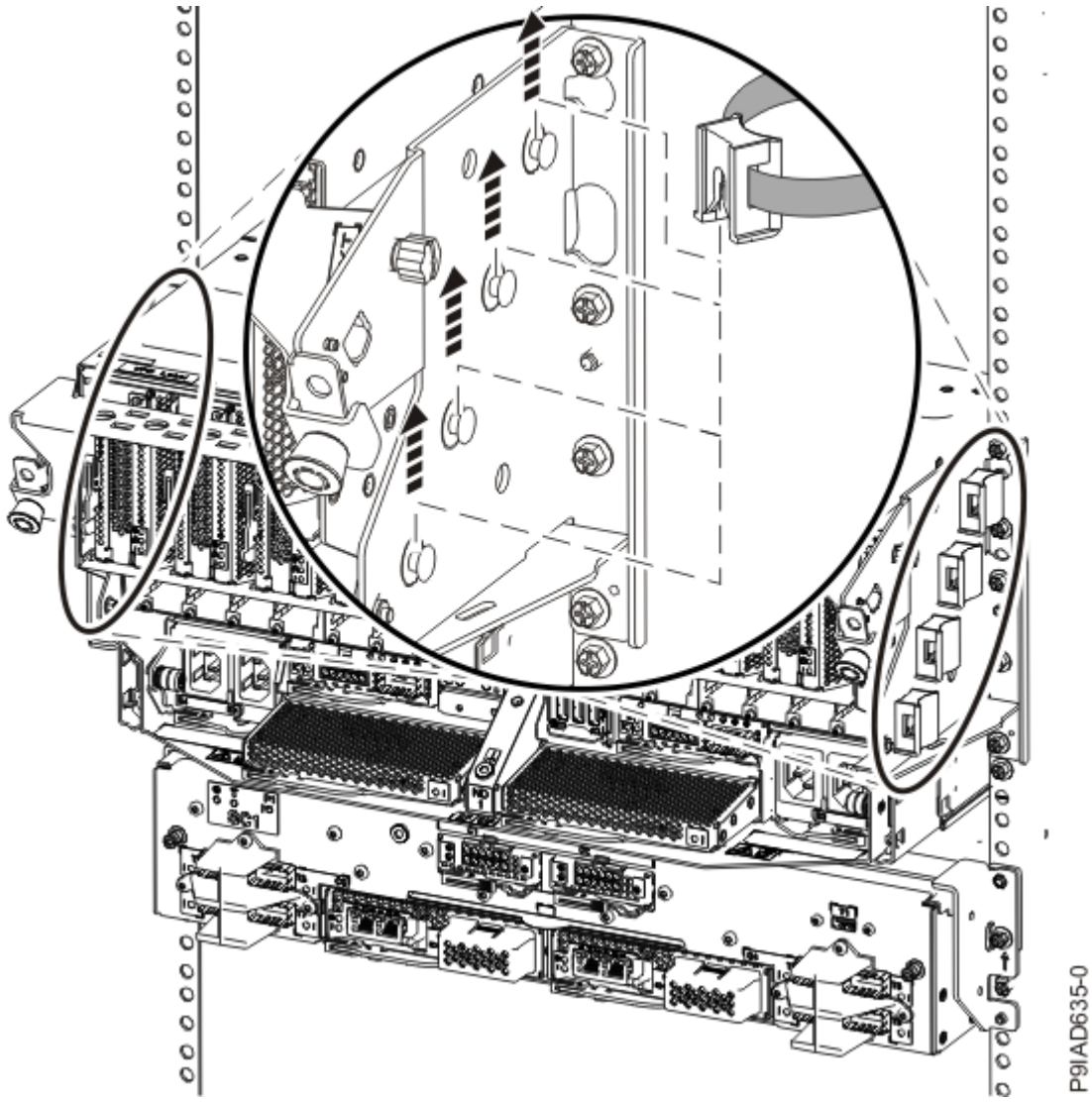


Figure 254. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

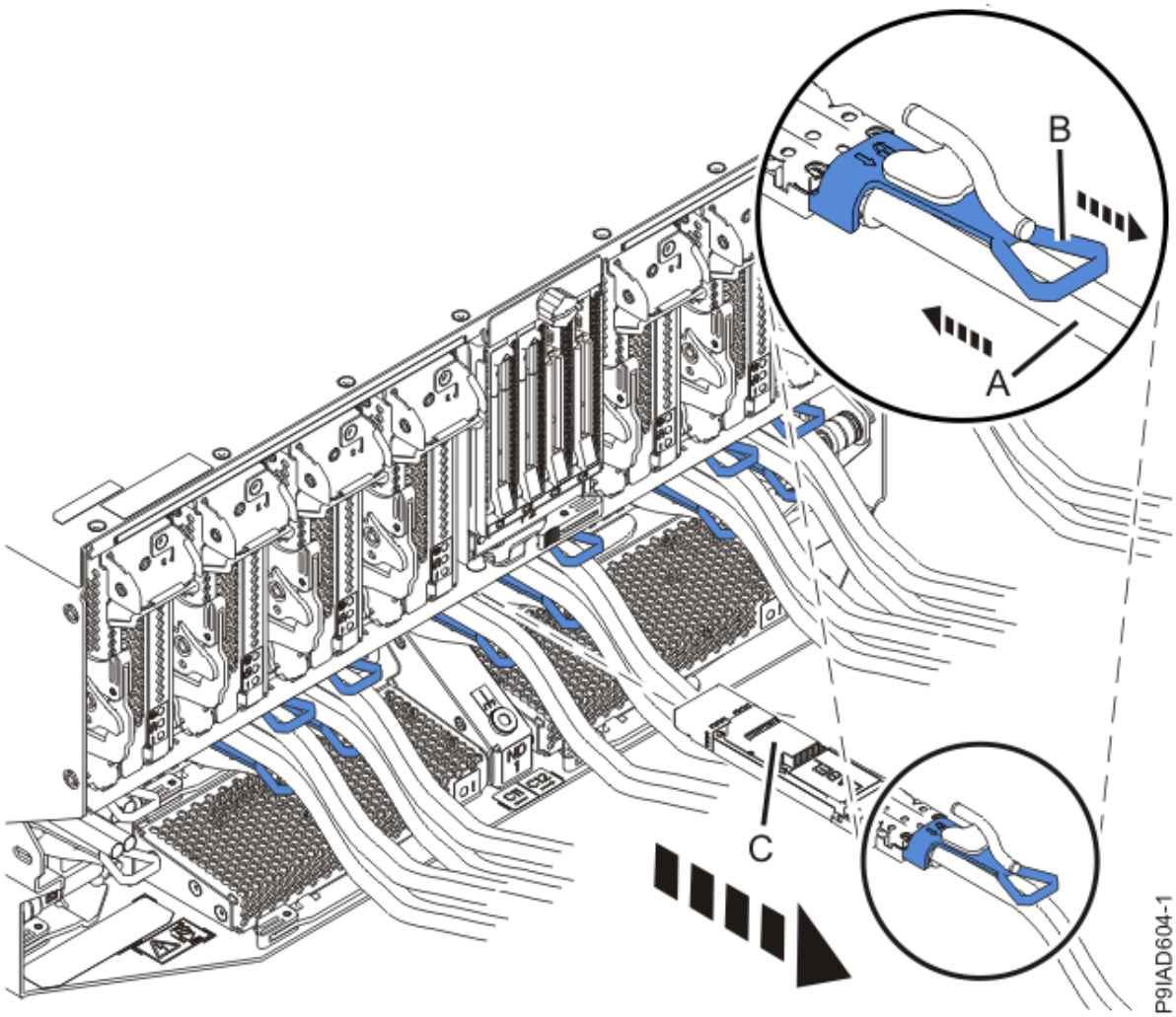


Figure 255. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

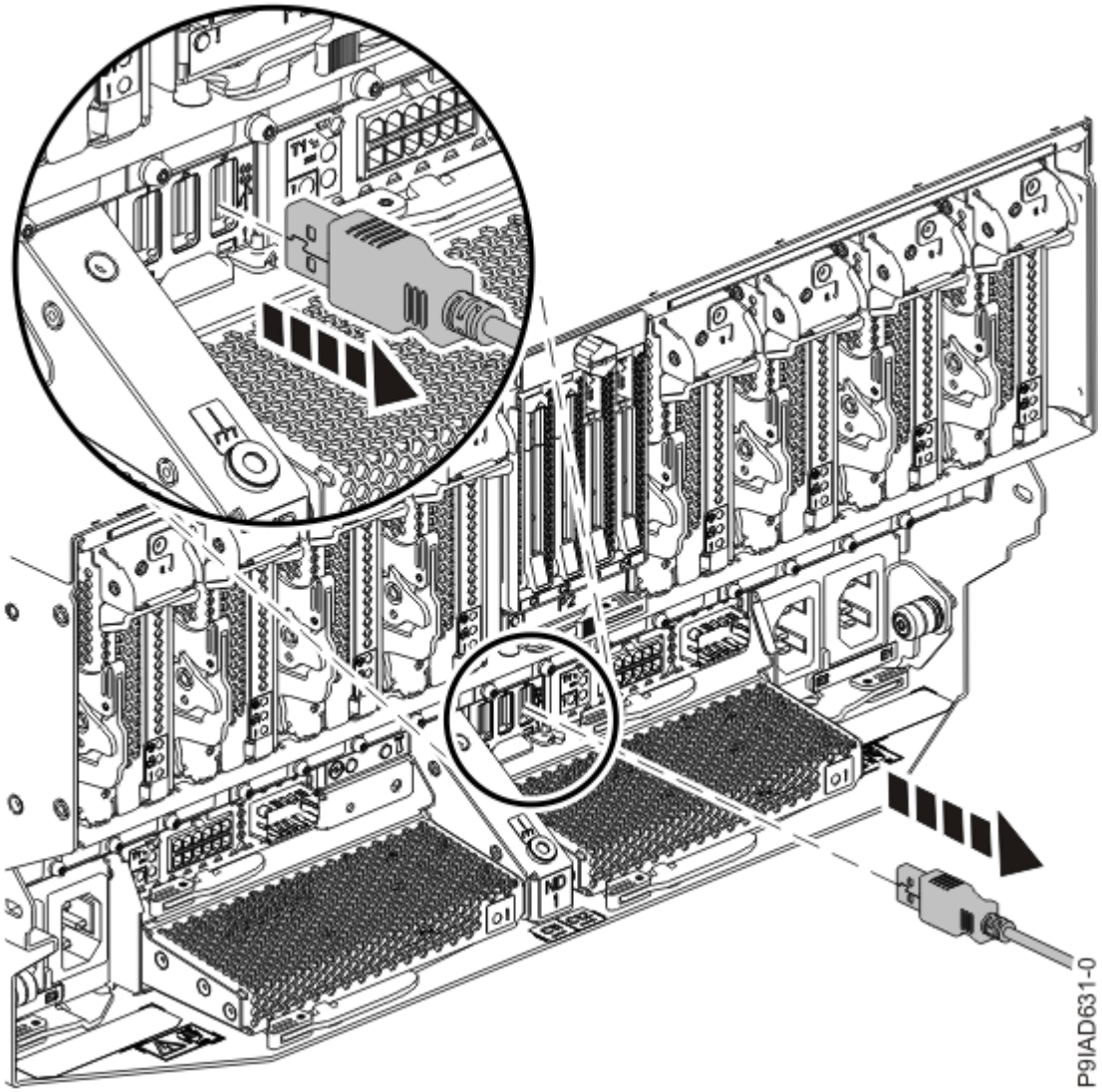


Figure 256. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

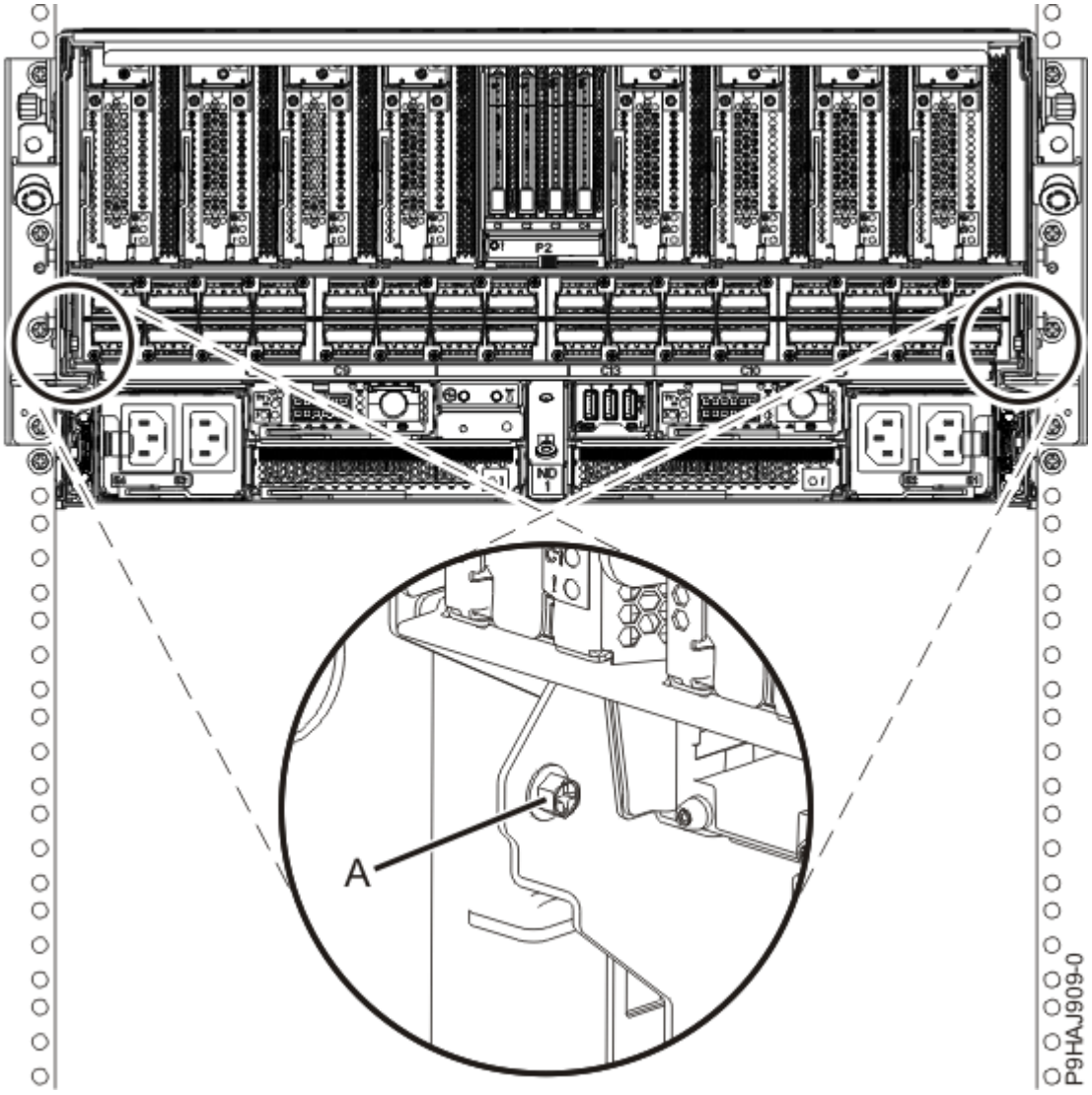


Figure 257. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

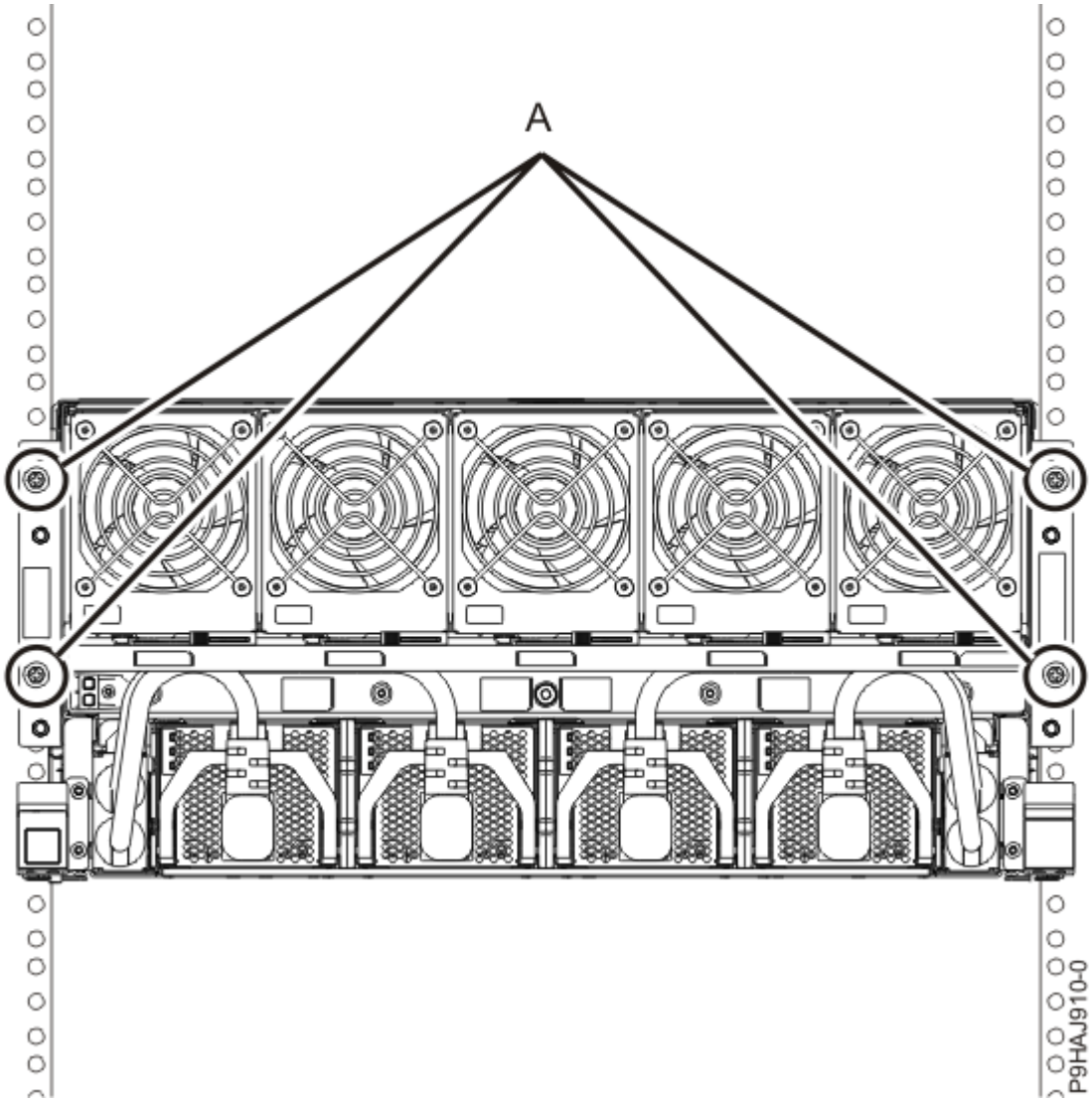


Figure 258. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

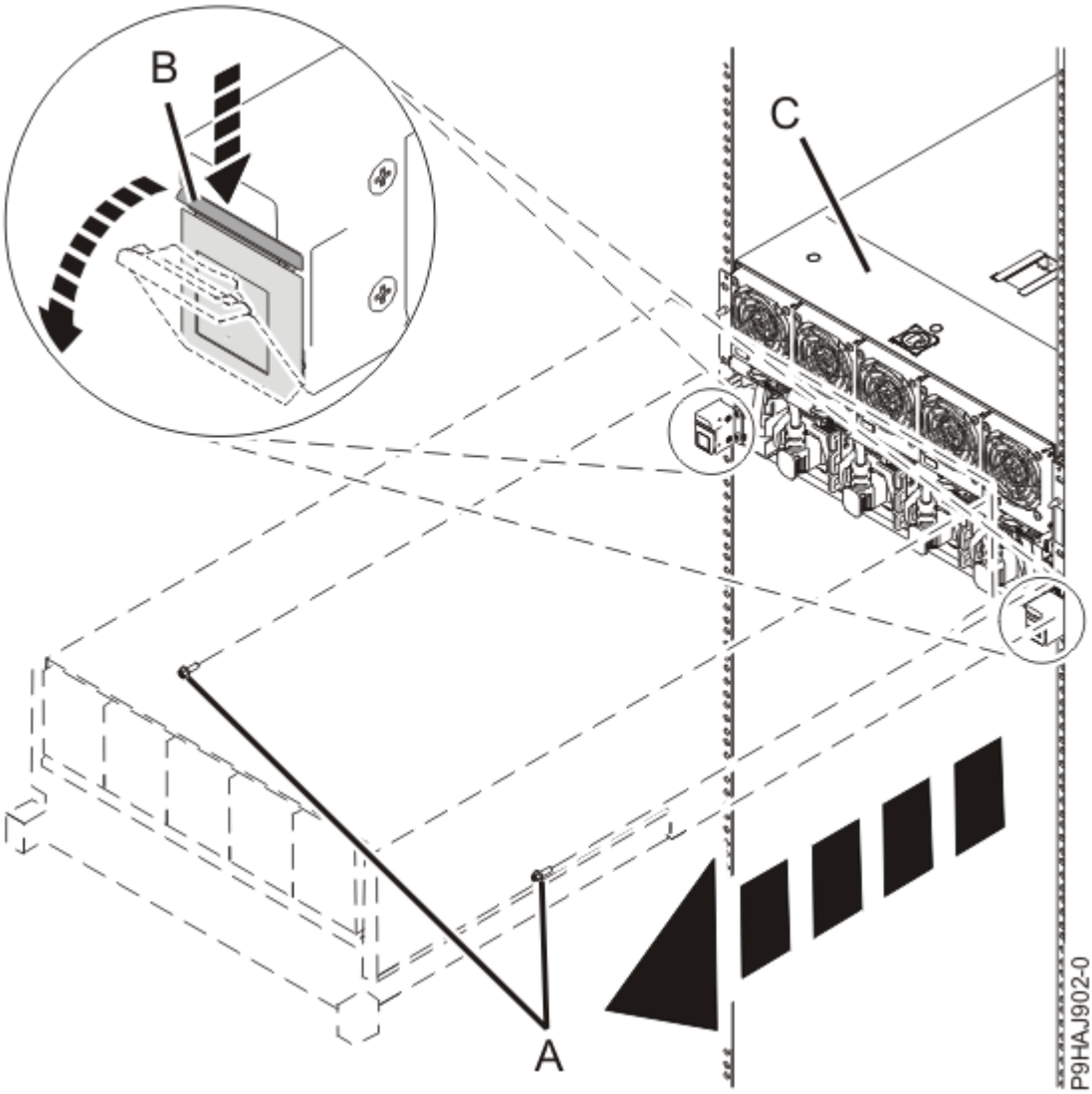


Figure 259. Placing the system node in service position

7. Remove the service access cover.

   Attention: Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latch **(A)** in the direction shown in the following figure.

   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

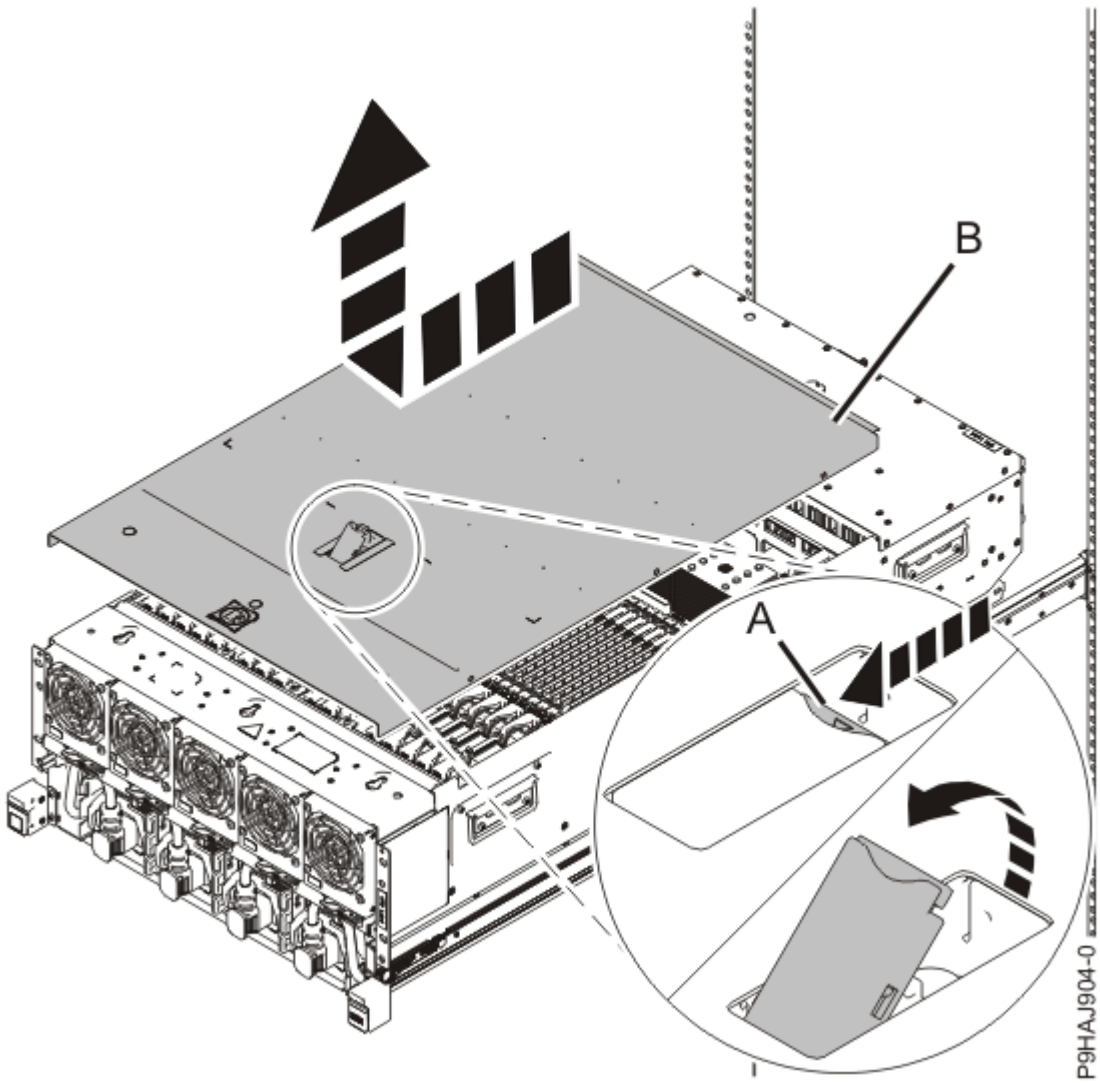


Figure 260. Removing the service access cover

8. To activate the identify LED for the faulty part, press and hold either blue push-button on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(A)** is lit, which indicates that sufficient power exists to light the identify LED on the faulty part. If the green LED **(A)** does not light, use the location code on the service label to find the physical location of the faulty part.

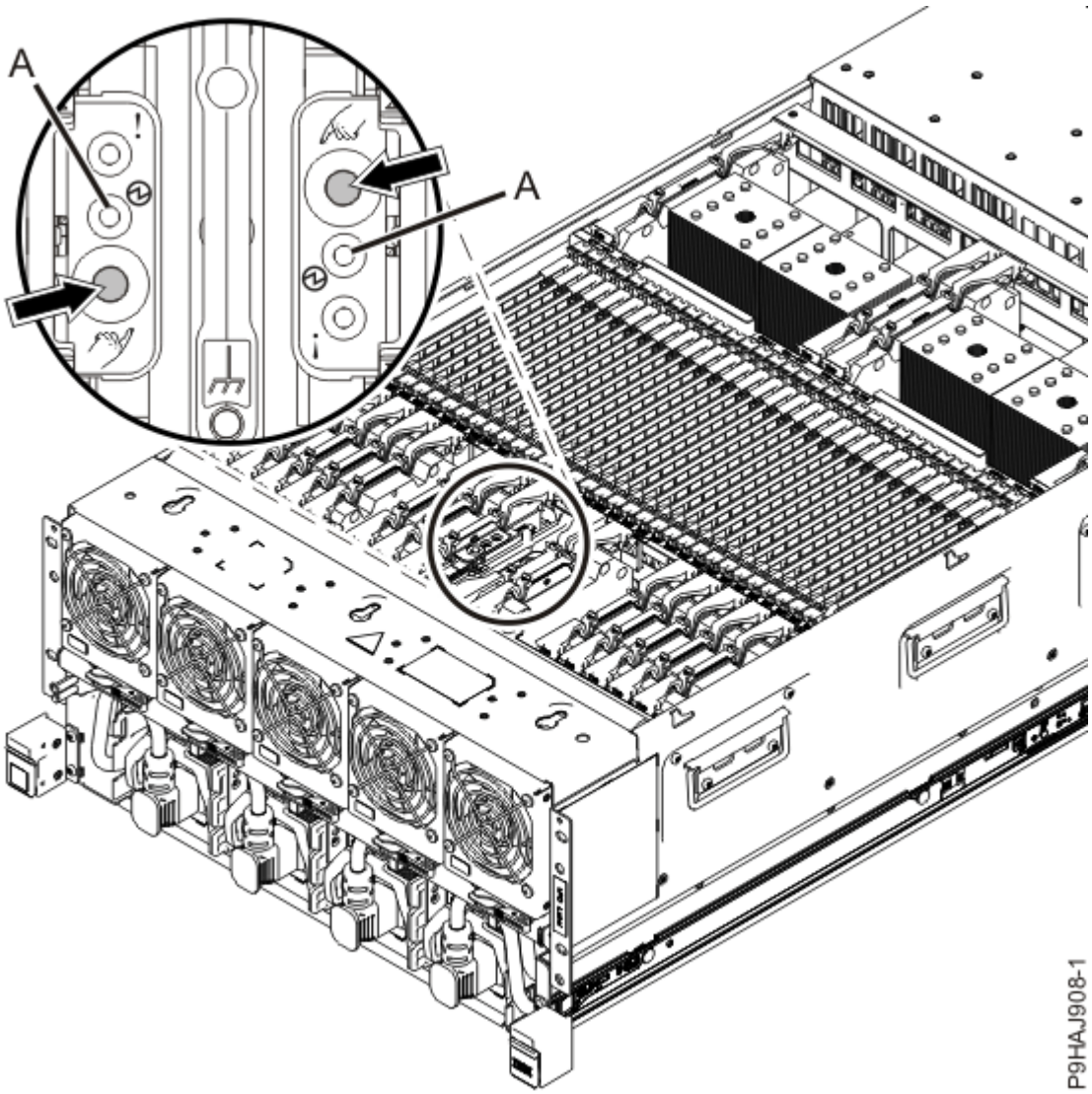


Figure 261. Activating the identify LED for a faulty part

9. Look for the flashing amber LED of the faulty or failed miscellaneous A voltage regulator module. Miscellaneous A voltage regulator modules are in locations P1–C56, P1–C60, P1–C65, and P1–C66. Refer to the following image.

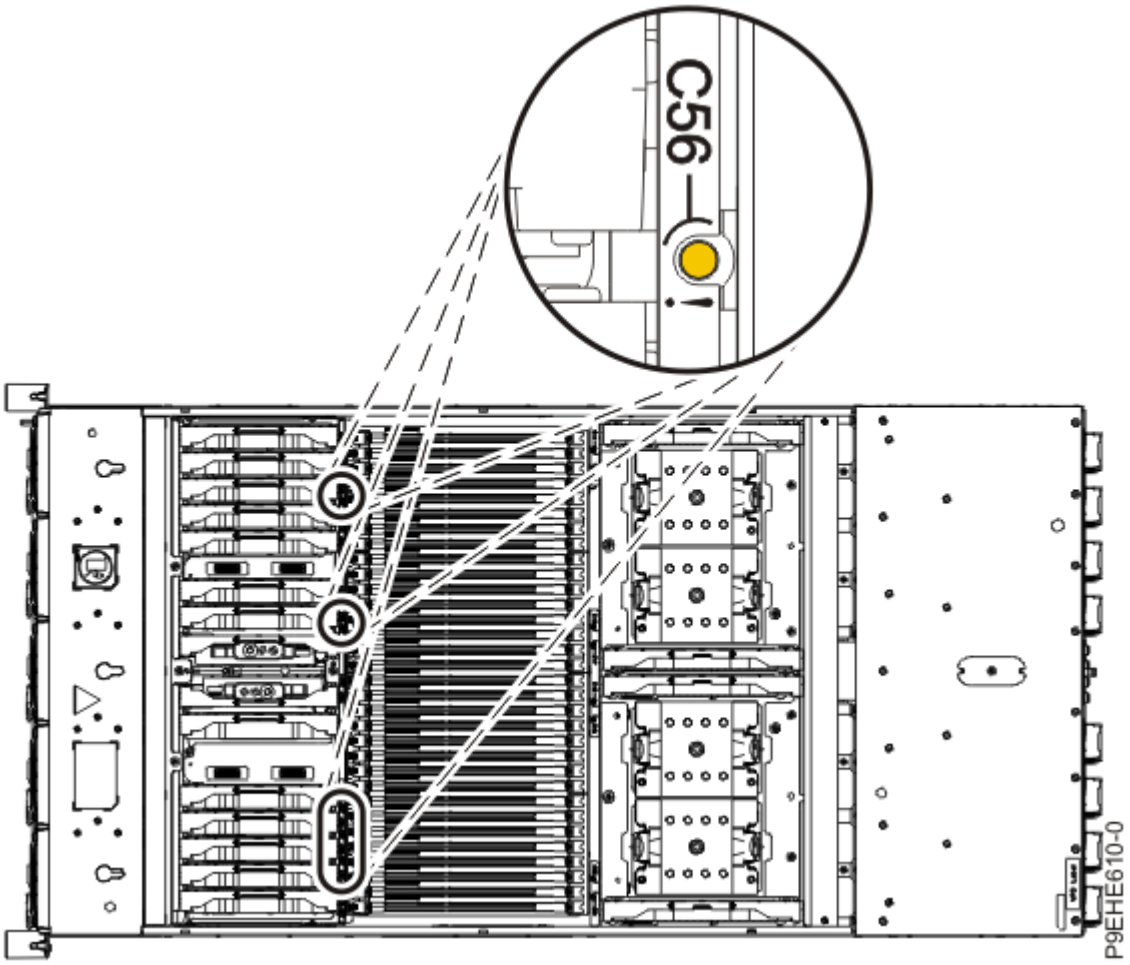


Figure 262. Locations of the miscellaneous A voltage regulator module LEDs

Removing a miscellaneous A voltage regulator module from the 9080-M9S system node

To remove a miscellaneous A voltage regulator module from the 9080-M9S system node 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 a miscellaneous A voltage regulator module by completing the following steps:
   a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.
   b) Rotate the levers in the direction shown.
   c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

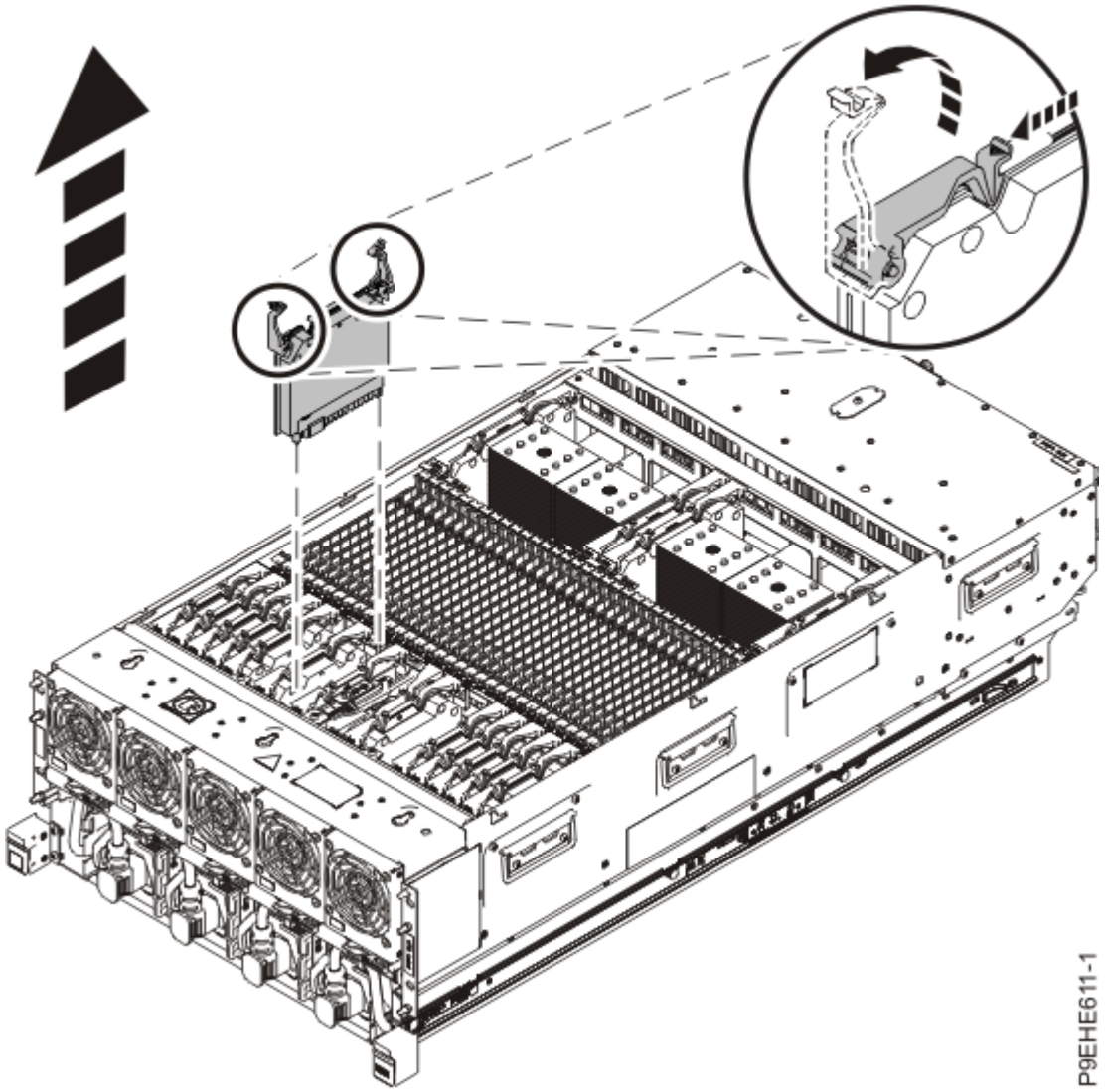


Figure 263. Removing a miscellaneous A voltage regulator module

Replacing a miscellaneous A voltage regulator module in the 9080-M9S system node

To replace a miscellaneous A voltage regulator module, 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. To replace a miscellaneous A voltage regulator module, complete the following steps:
   a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.
   b) Gently push the voltage regulator module into its connector.
   c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.

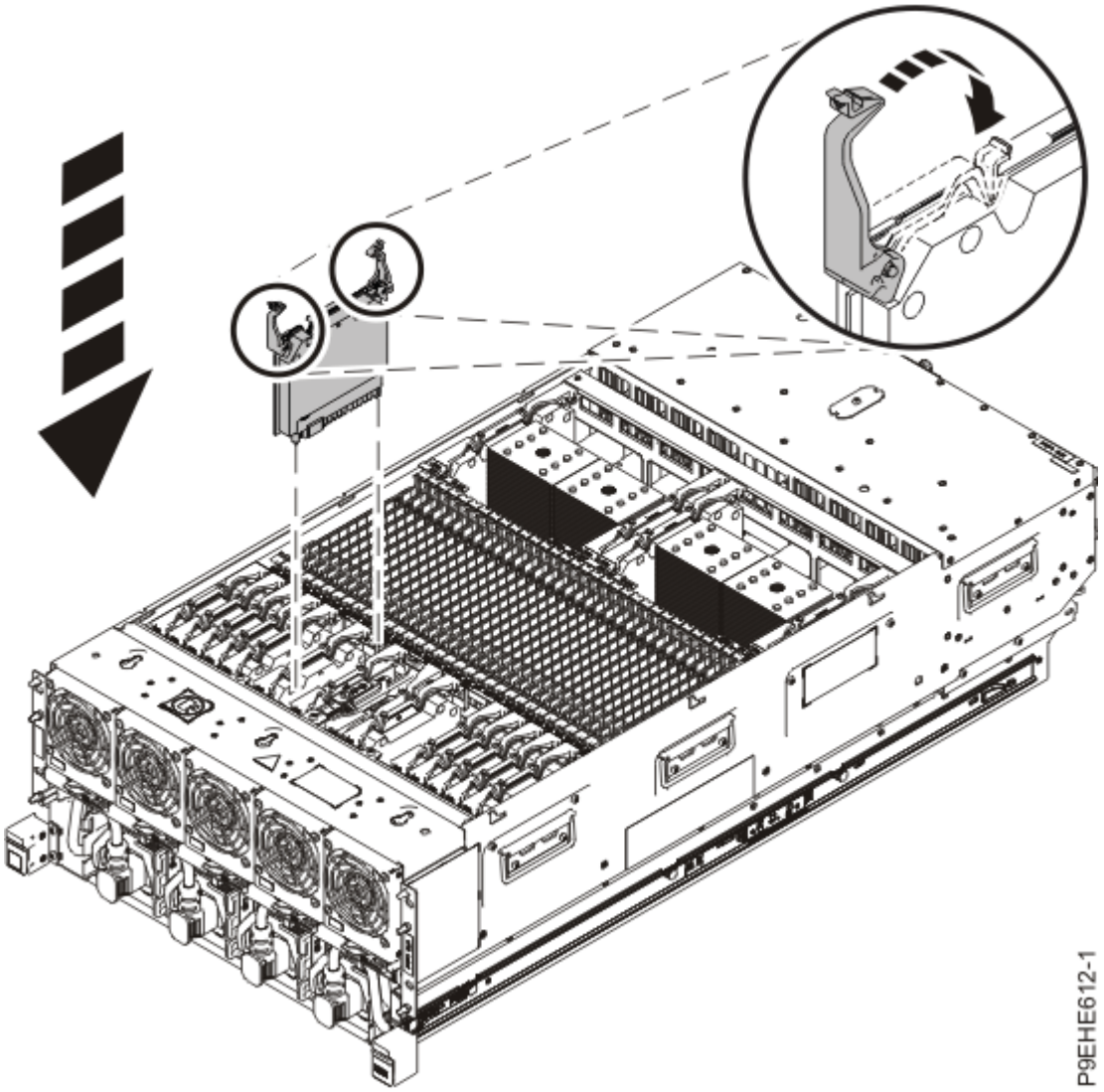


Figure 264. Replacing a miscellaneous A voltage regulator module

Preparing the system for operation after removing and replacing a miscellaneous A voltage regulator module

To prepare the system for operation after removing and replacing a miscellaneous A voltage regulator module, 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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

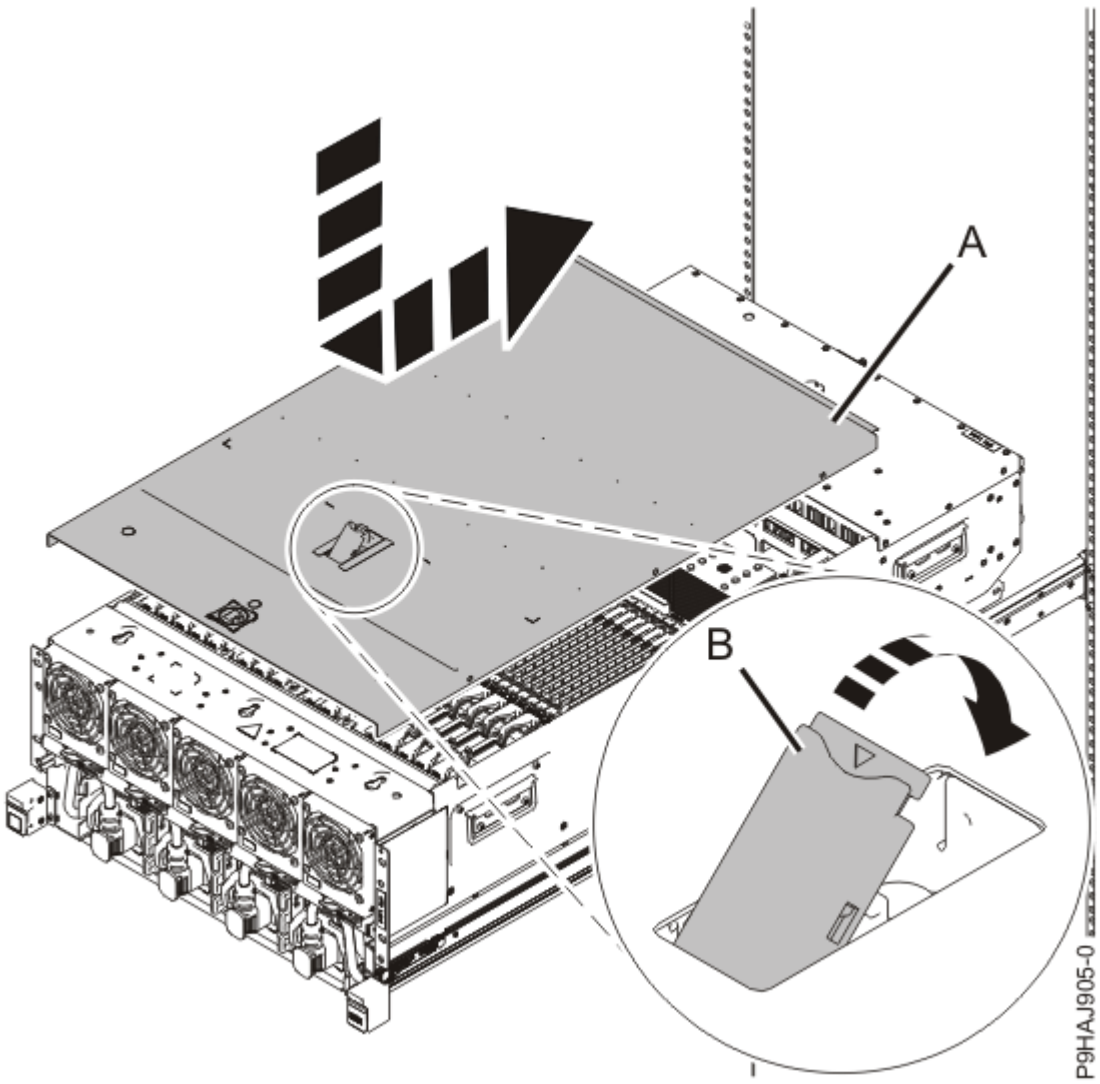


Figure 265. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

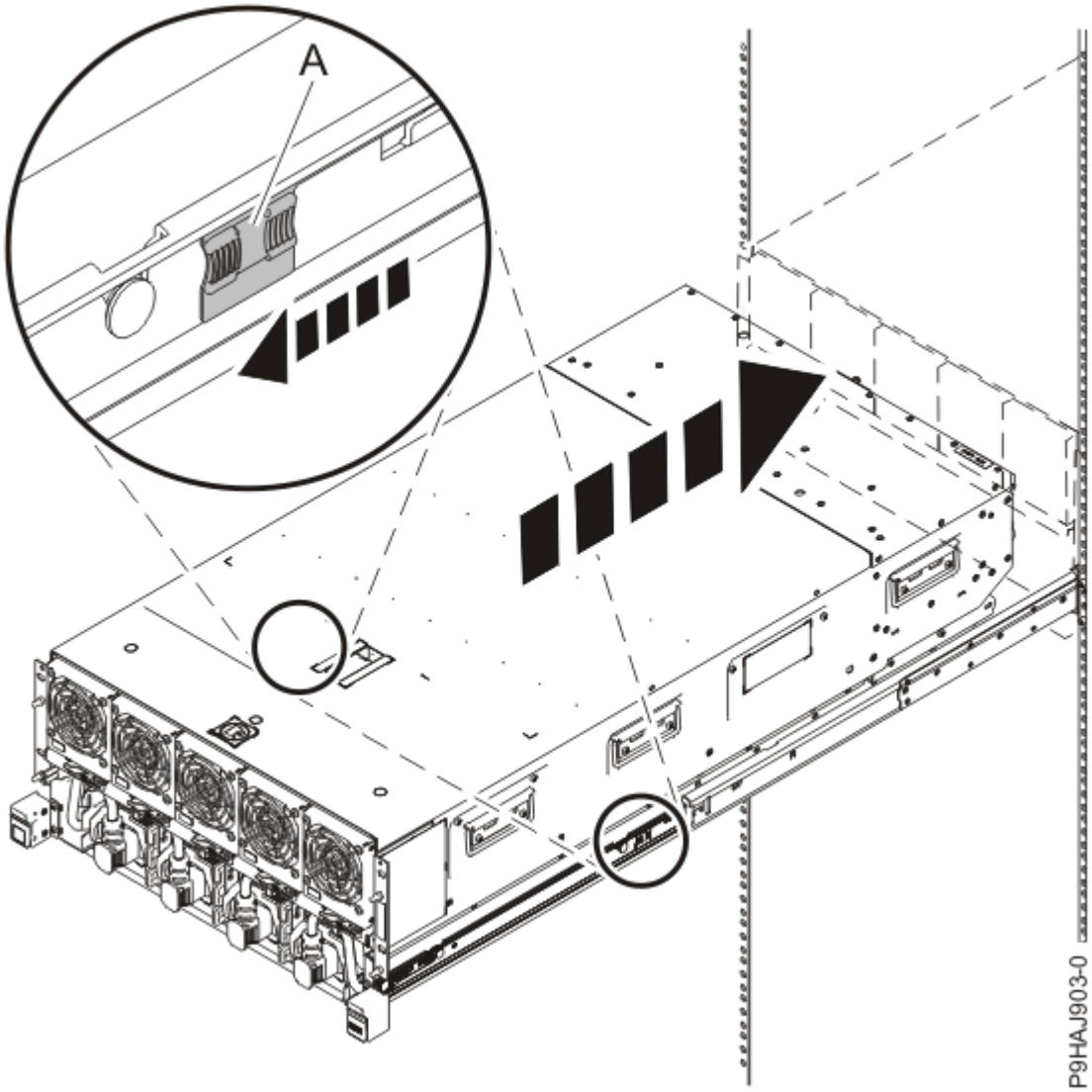


Figure 266. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

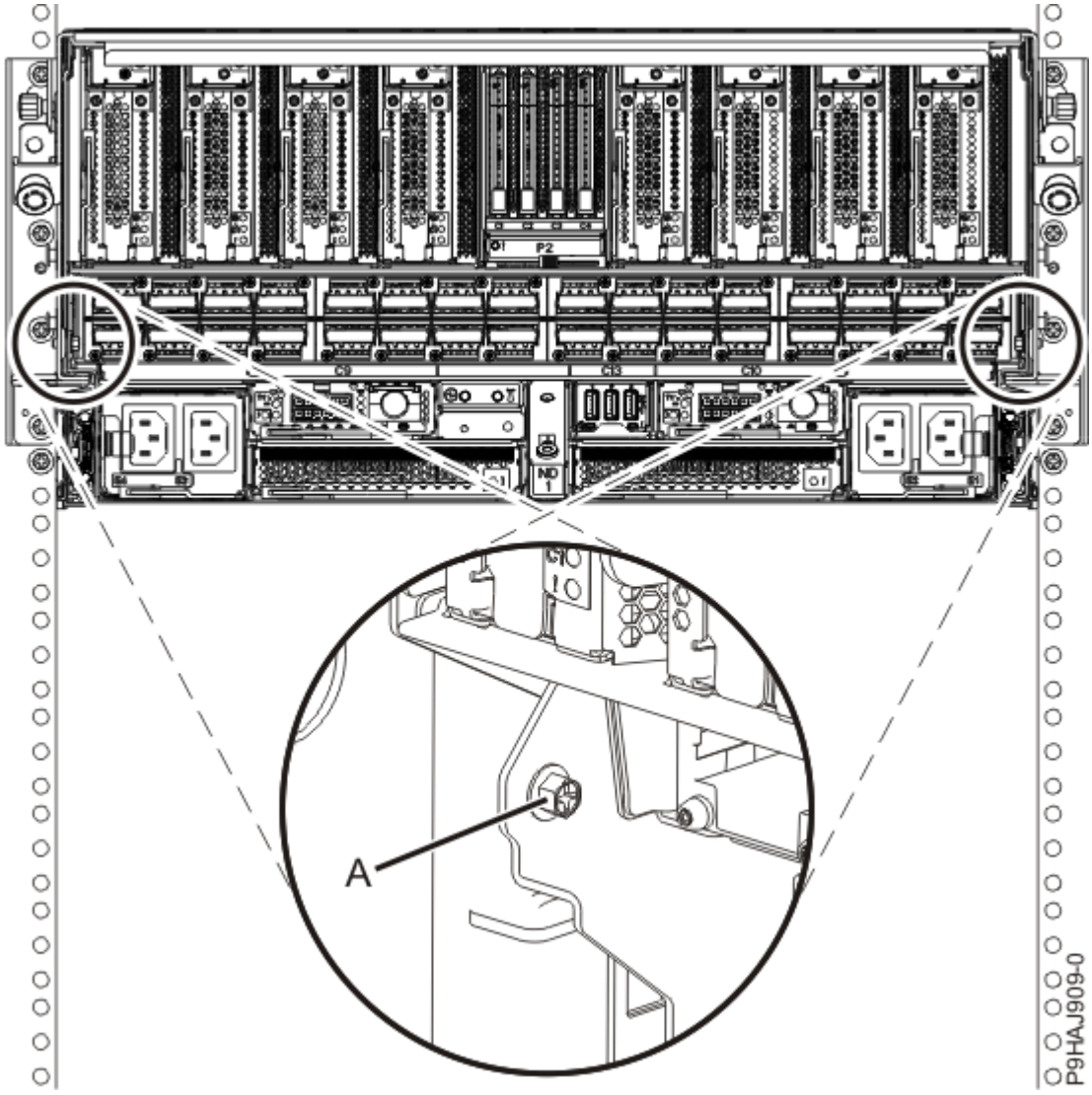


Figure 267. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

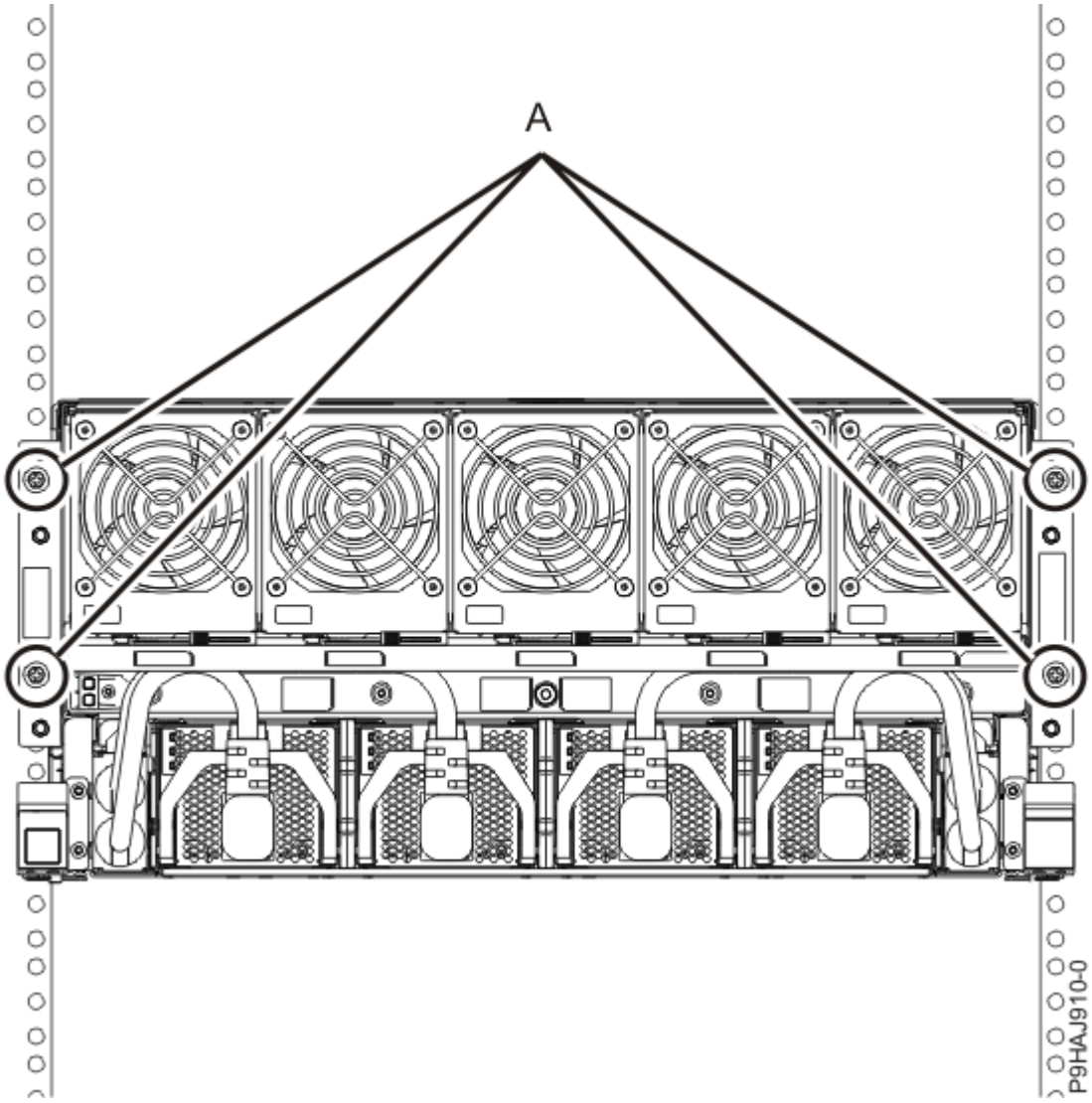


Figure 268. Replacing the front screws

4. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 269 on page 312 and Table 40 on page 312 to determine the point-to-point cabling for SMP cables.

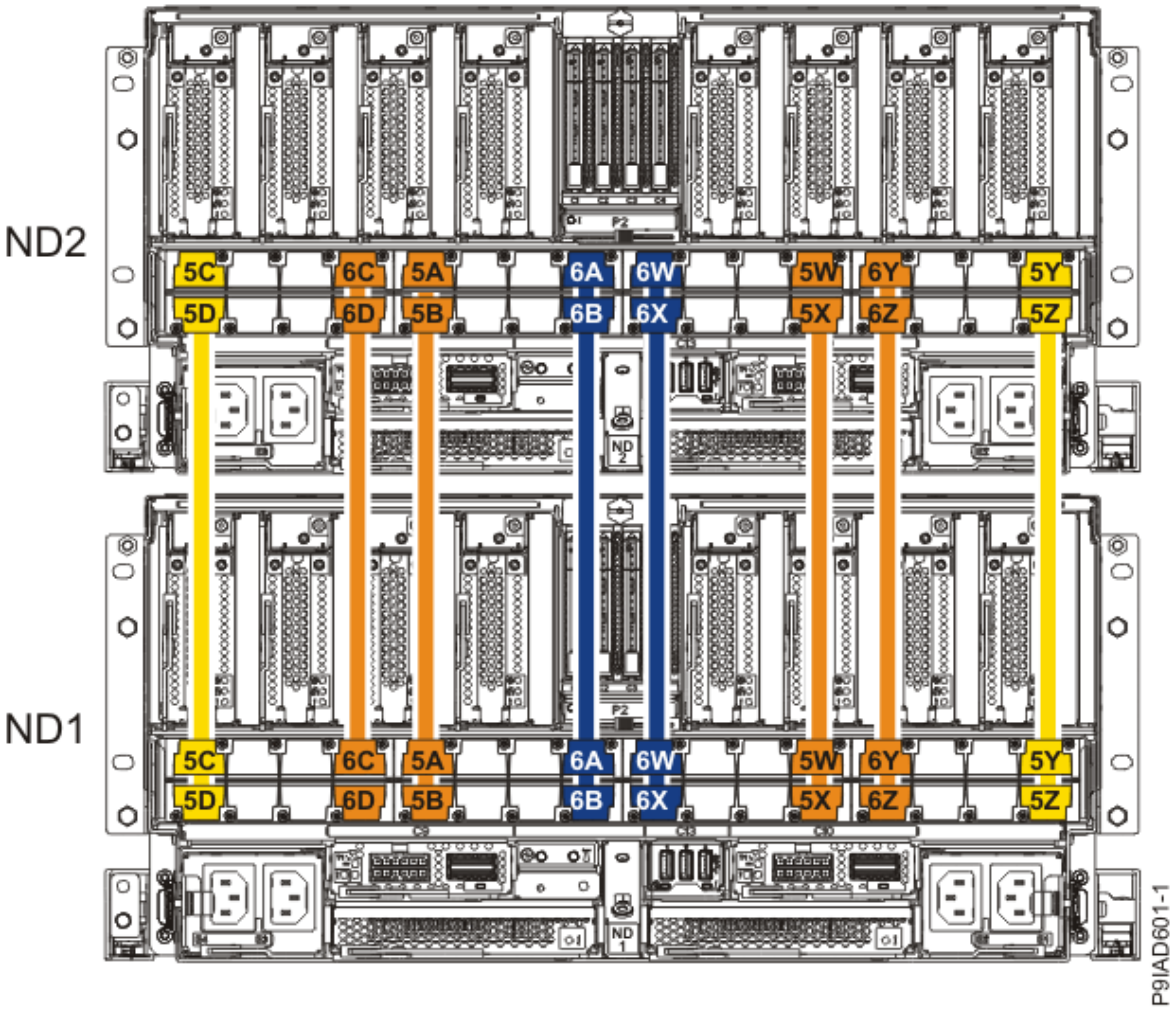


Figure 269. Cabling a Two Node Configuration

Table 40. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 40. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 270 on page 314 and Table 41 on page 314 to determine the point-to-point cabling for SMP cables.

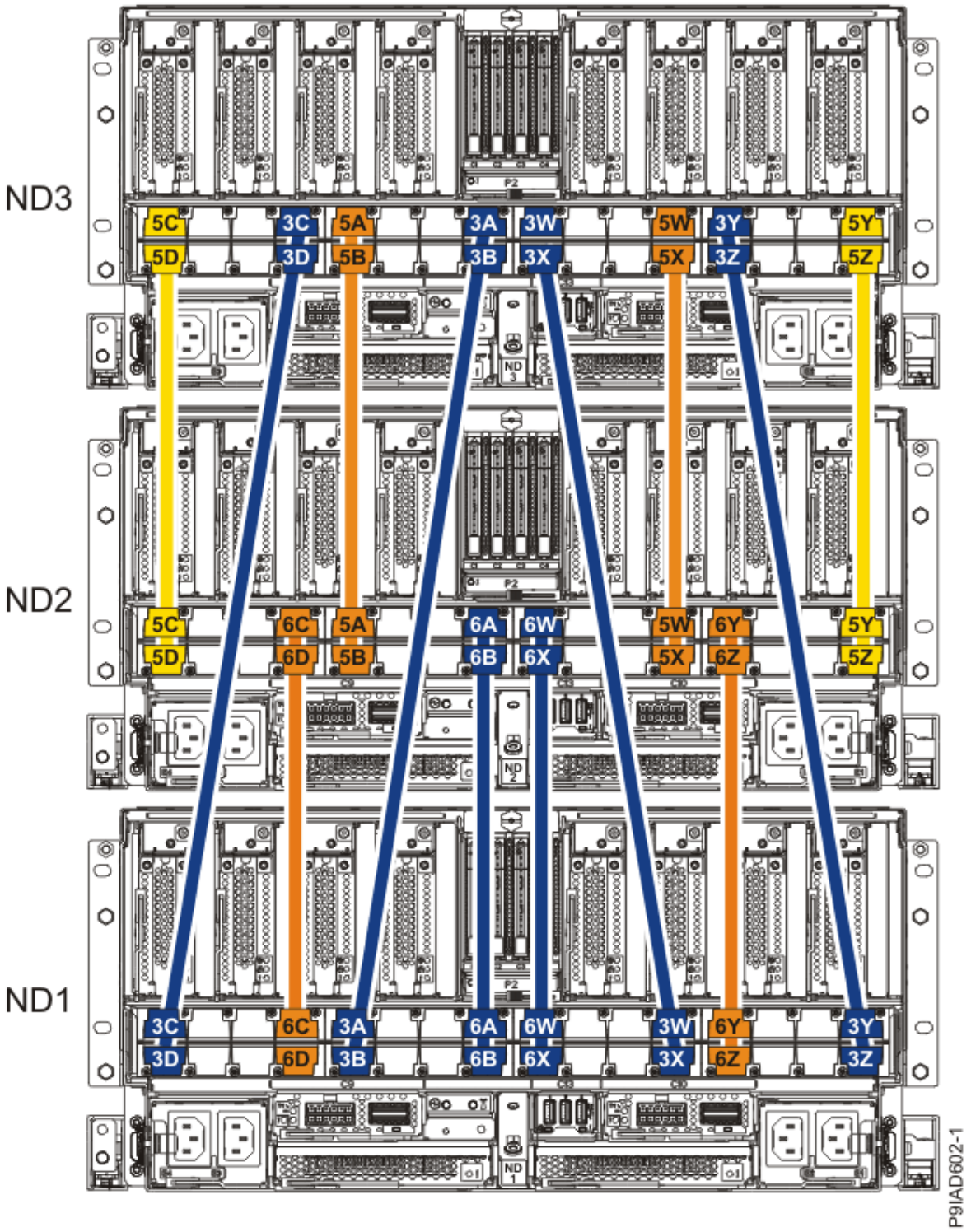


Figure 270. Cabling a Three Node Configuration

Table 41. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 41. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 41. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 271 on page 317 and Table 42 on page 318 to determine the point-to-point cabling for SMP cables.

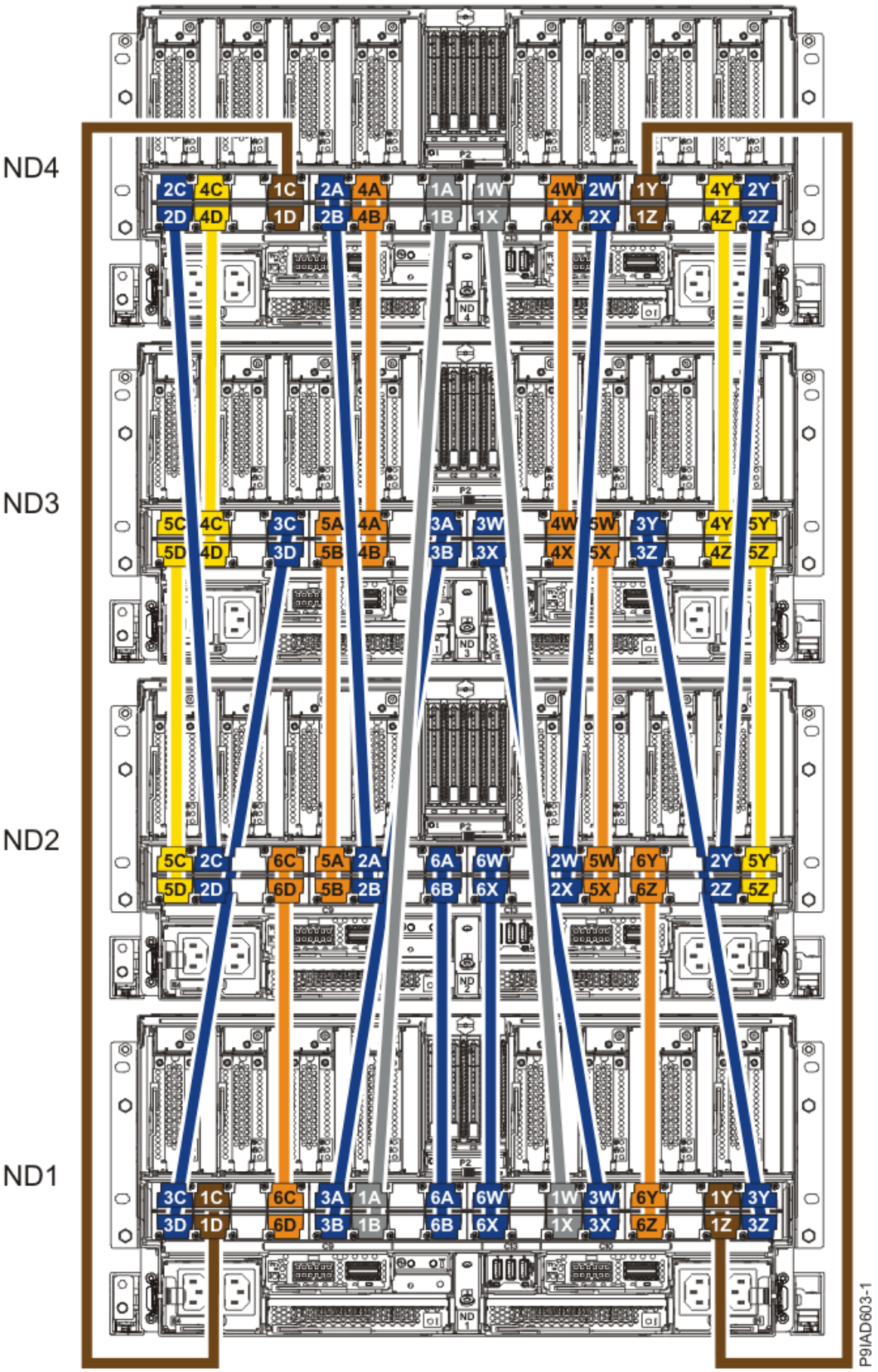


Figure 271. Cabling a Four Node Configuration

Table 42. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 42. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 42. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

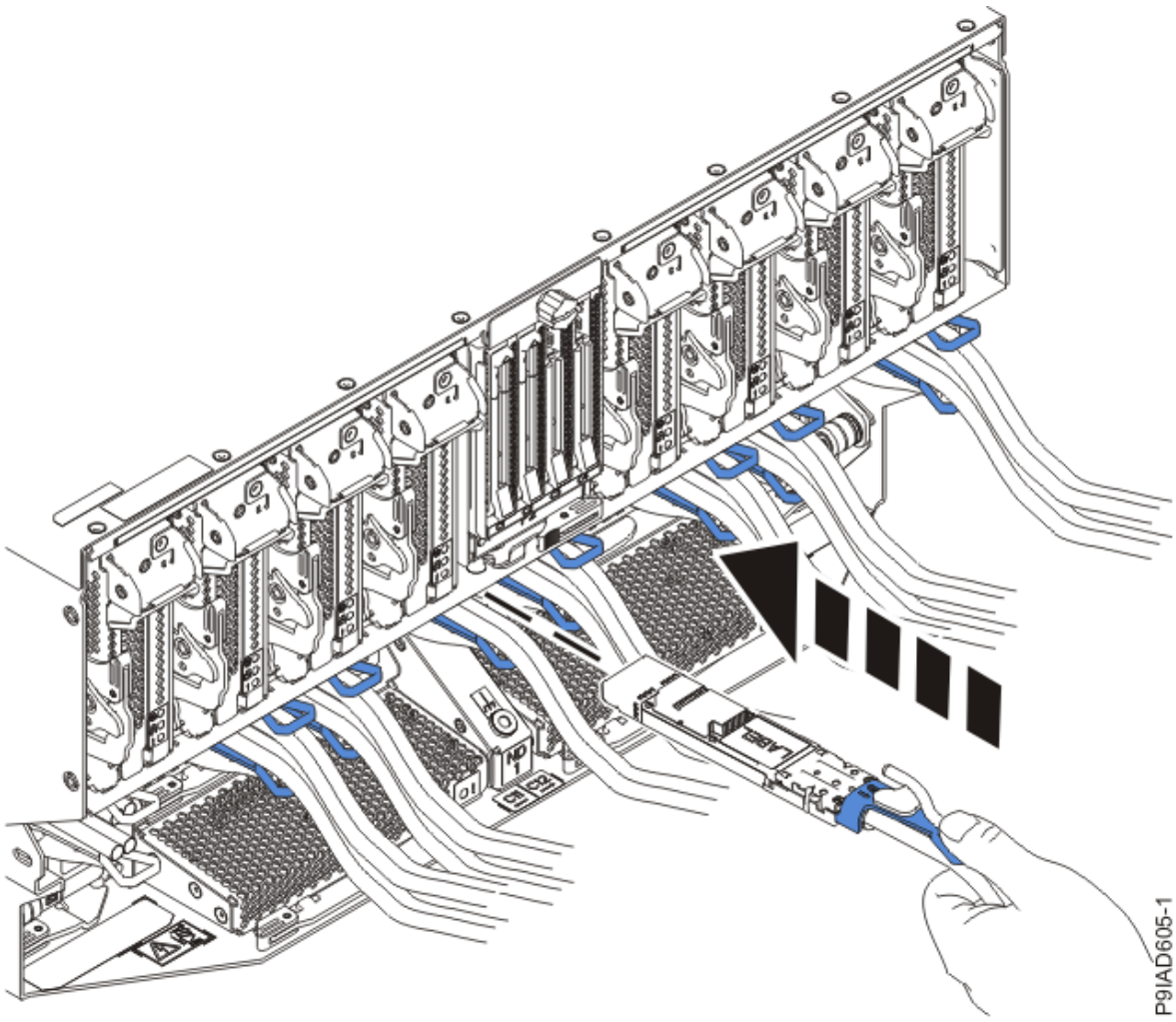


Figure 272. Replacing the SMP cable into the system node

b) Repeat step "4.a" on page 320 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

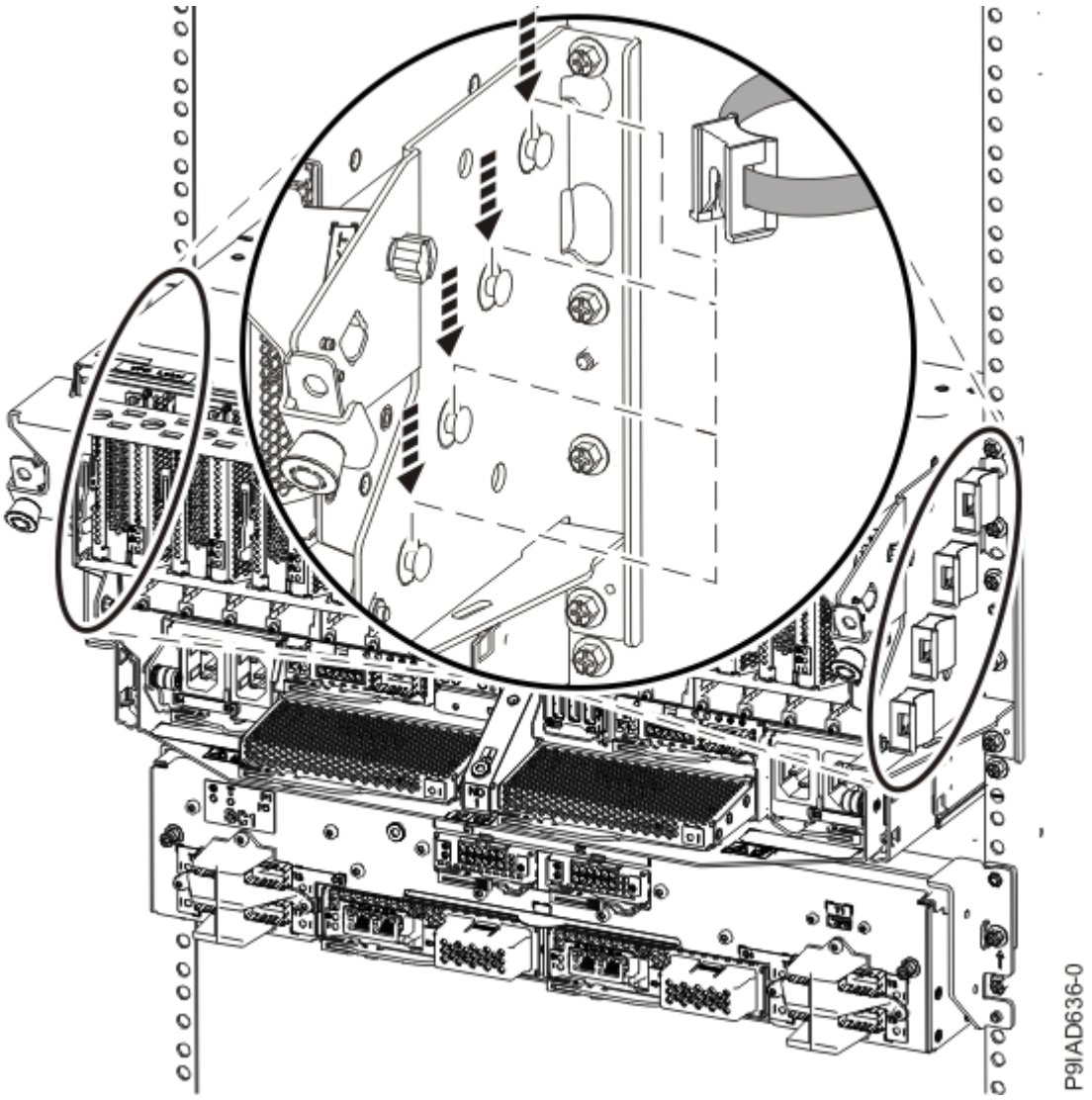


Figure 273. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

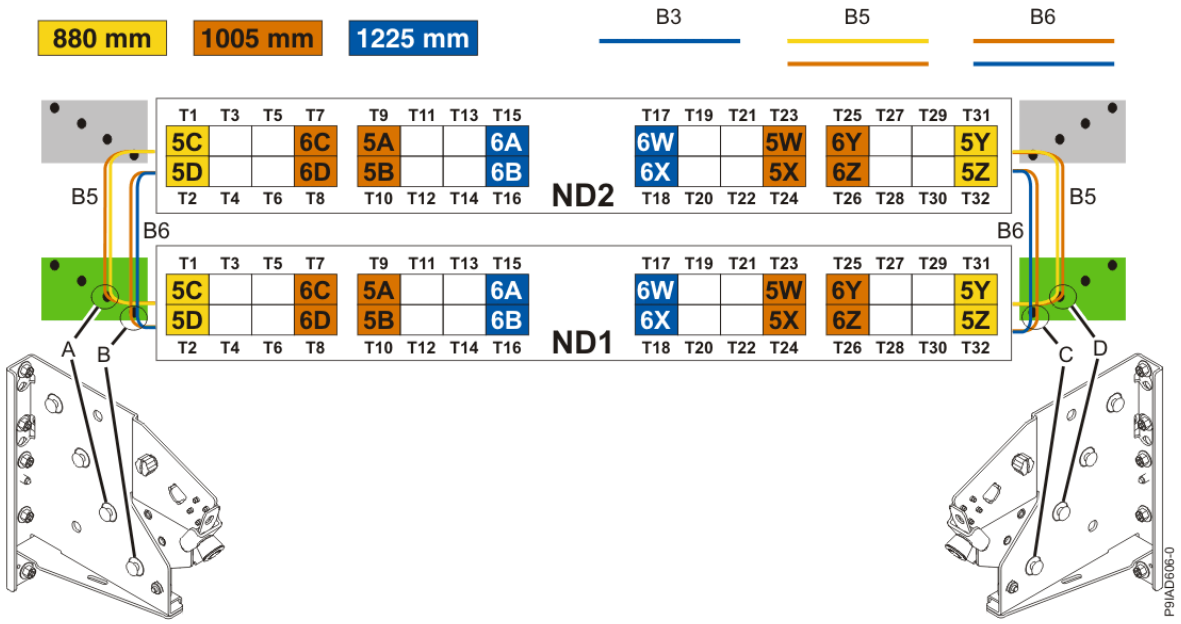


Figure 274. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

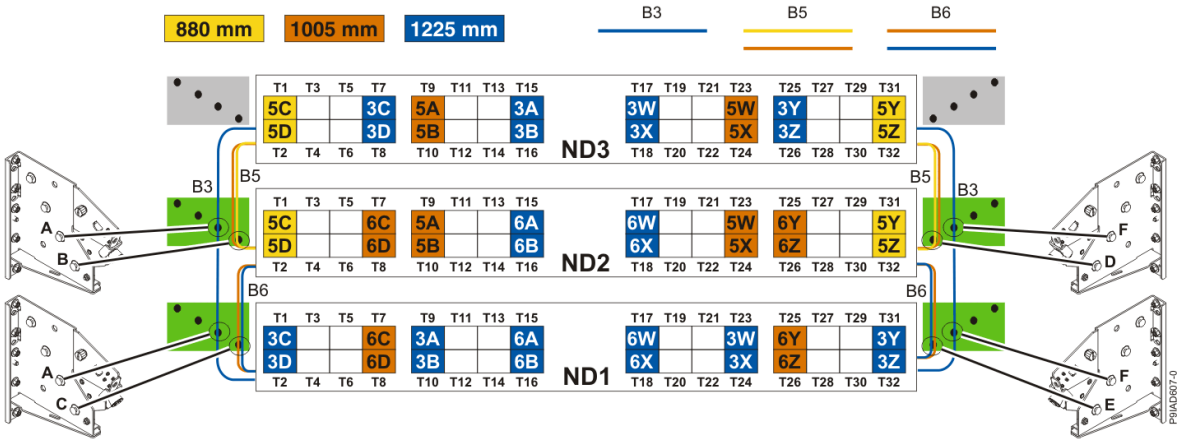


Figure 275. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

- The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
- The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

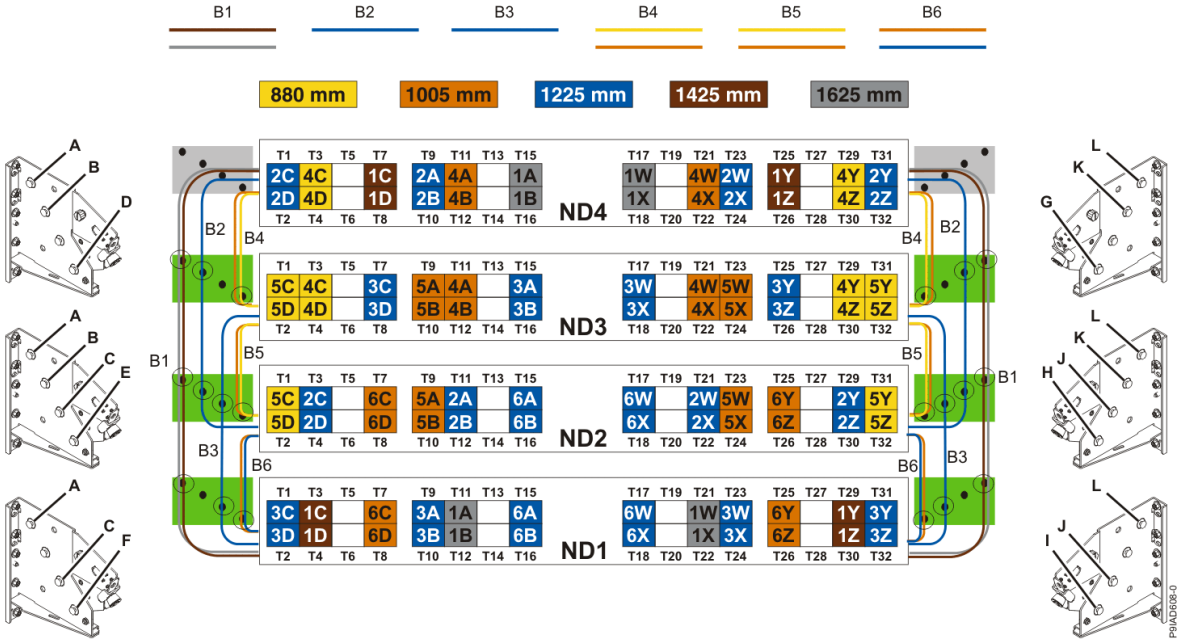


Figure 276. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  - The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  - The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  - The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  - The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  - The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  - The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

5. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 277 on page 325 and Table 43 on page 325 to determine the point-to-point cabling for UPIC cables.

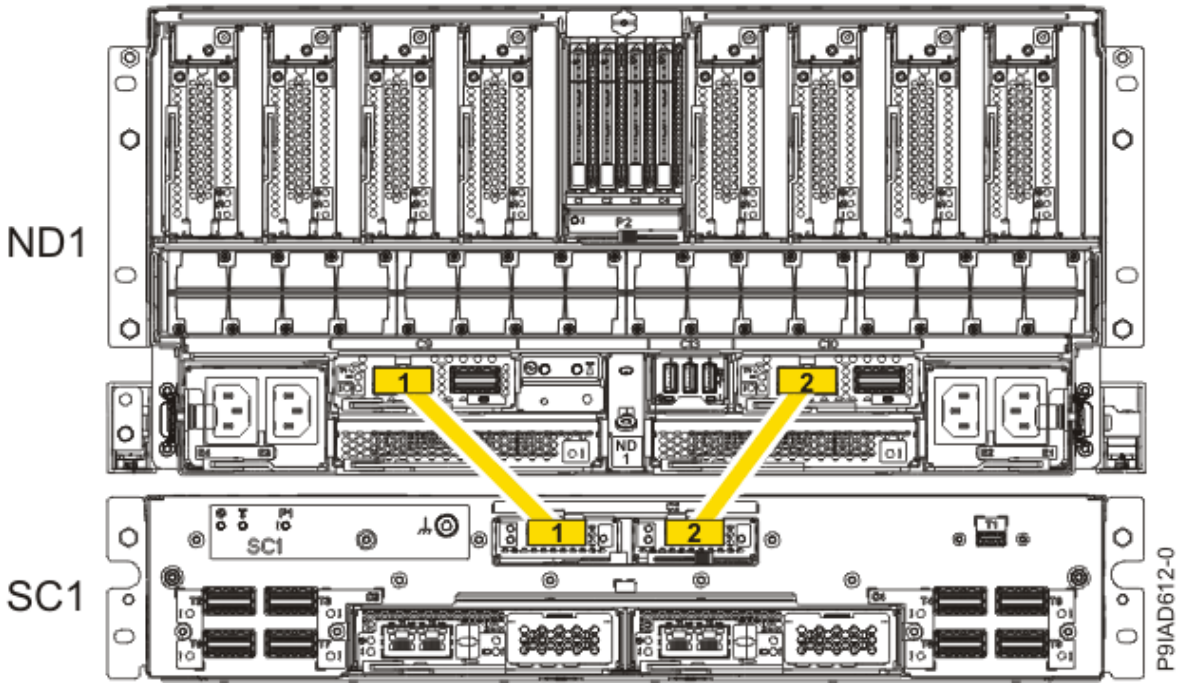


Figure 277. Single Node Configuration UPIC Cabling

Table 43. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 278 on page 326 and Table 44 on page 326 to determine the point-to-point cabling for UPIC cables.

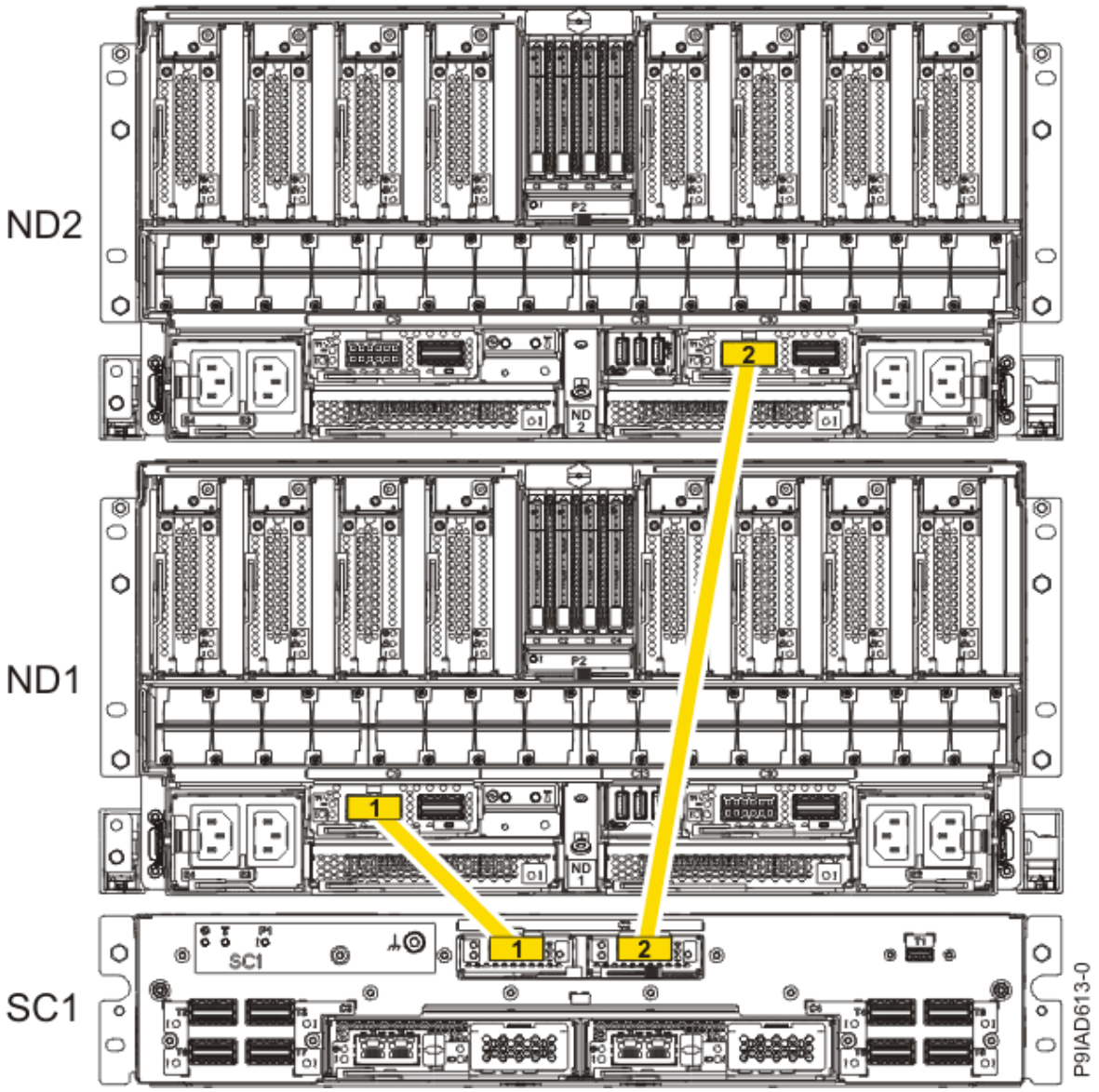


Figure 278. Two, Three, or Four Node Configuration UPIC Cabling

Table 44. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

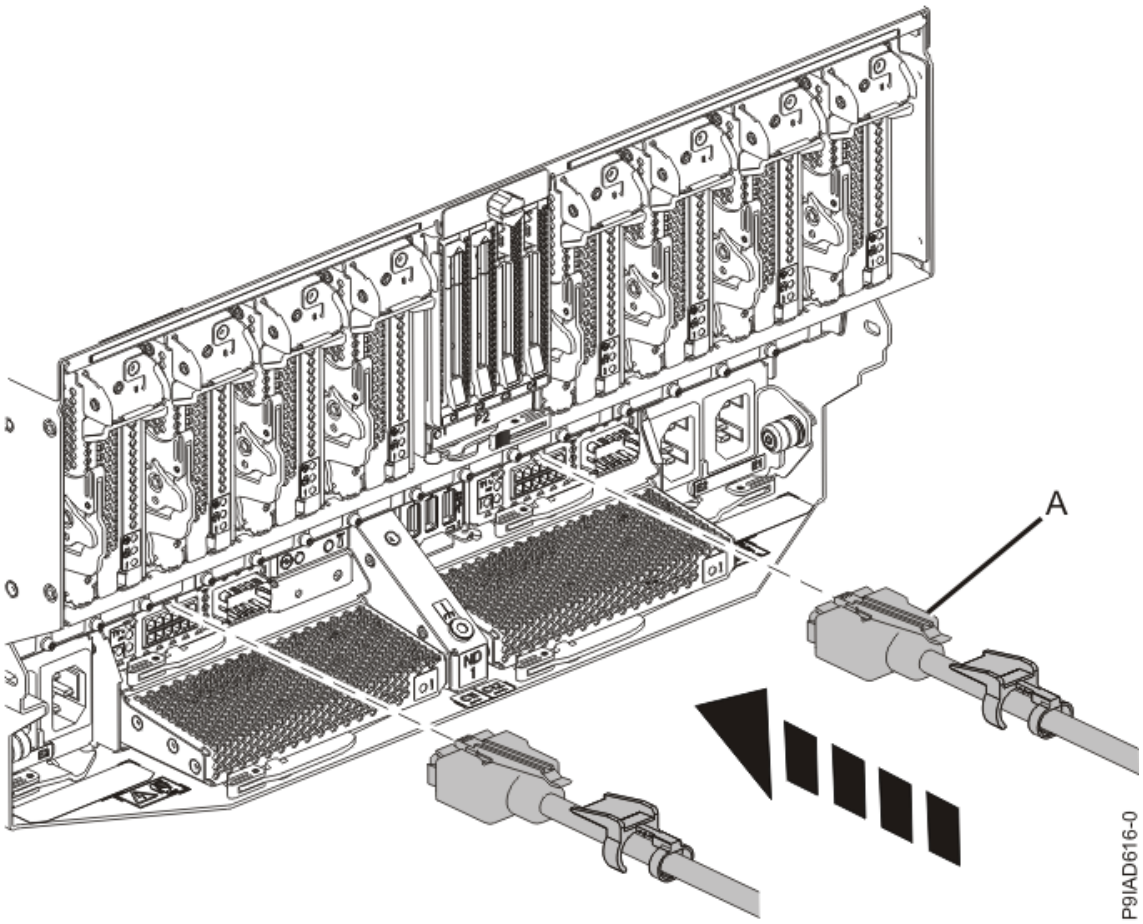


Figure 279. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

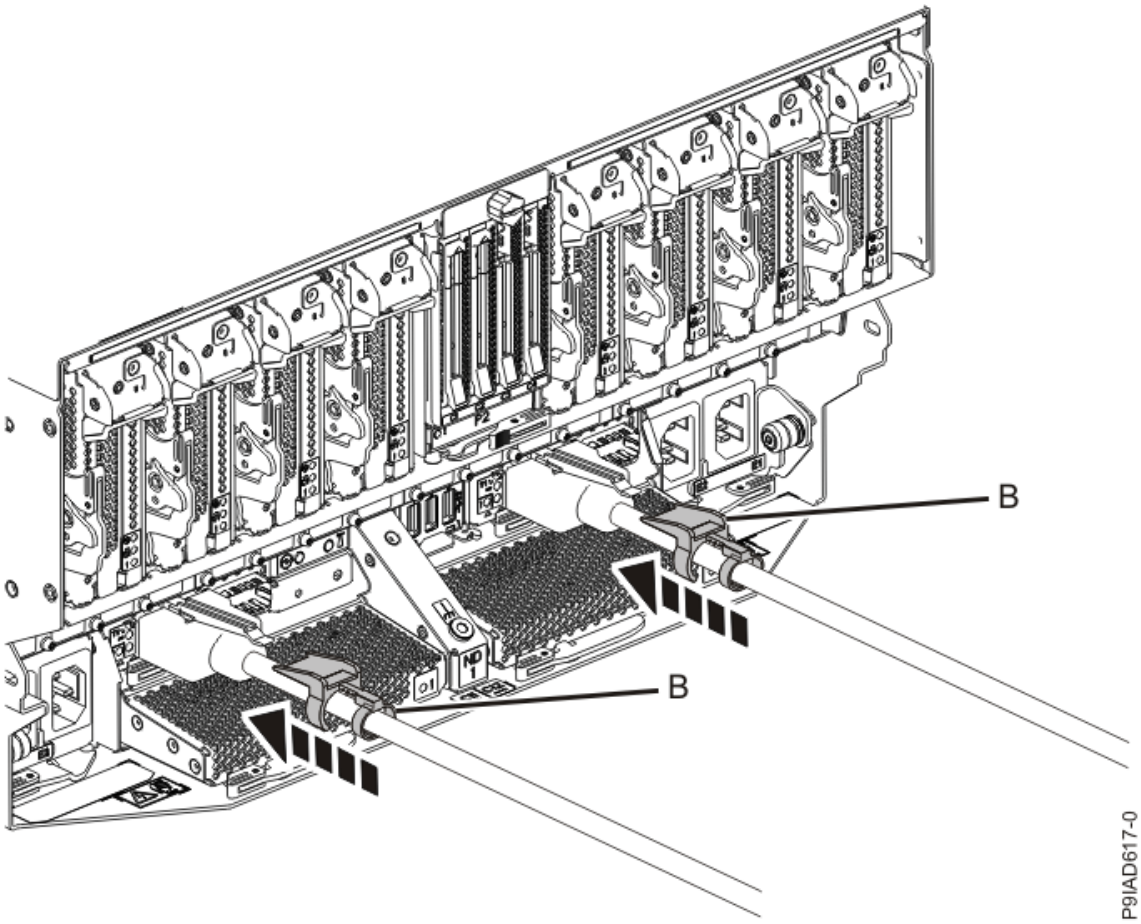


Figure 280. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “5.a” on page 326 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

6. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

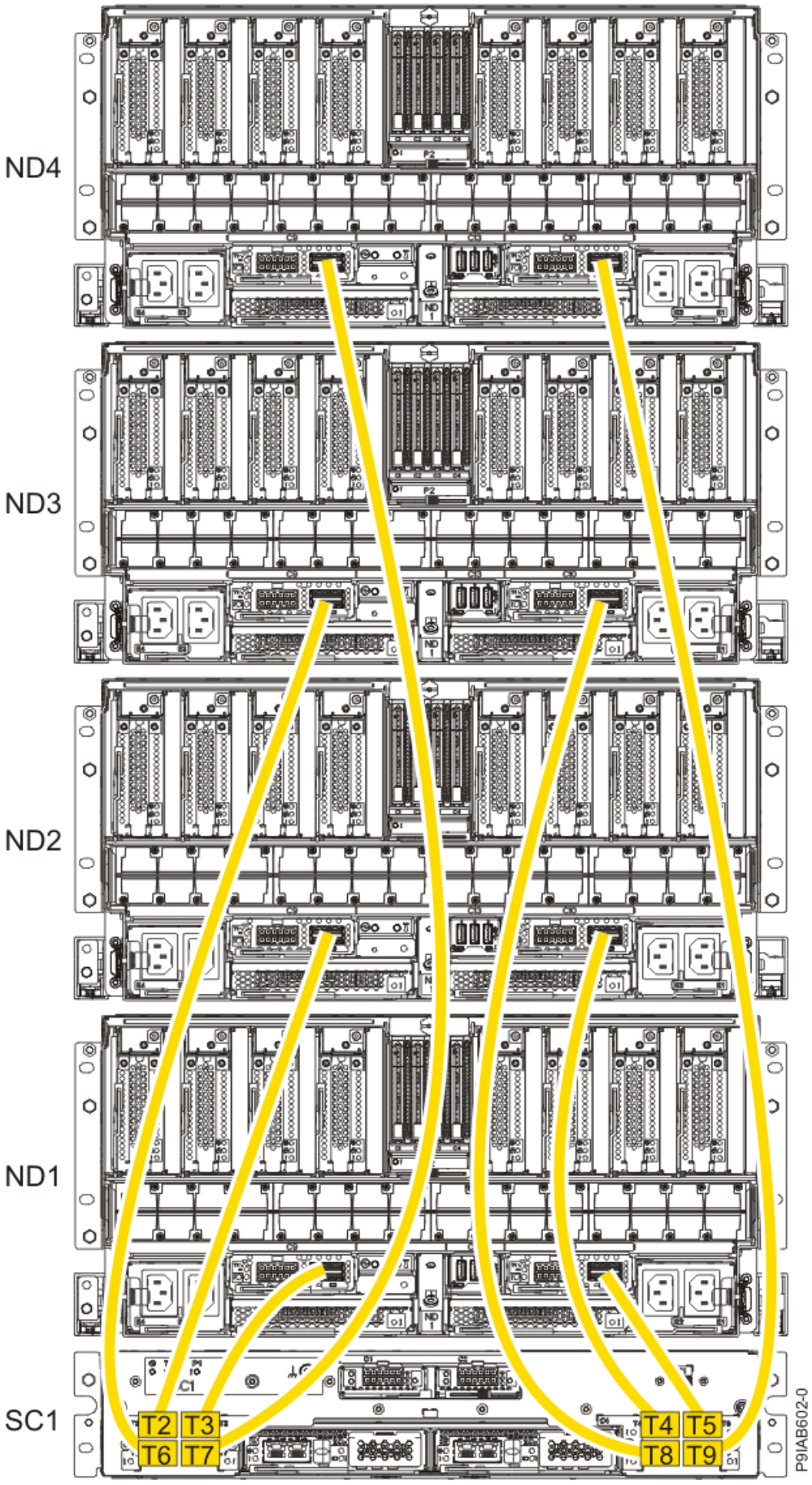


Figure 281. Service processor (FSP) cabling

Table 45. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

7. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

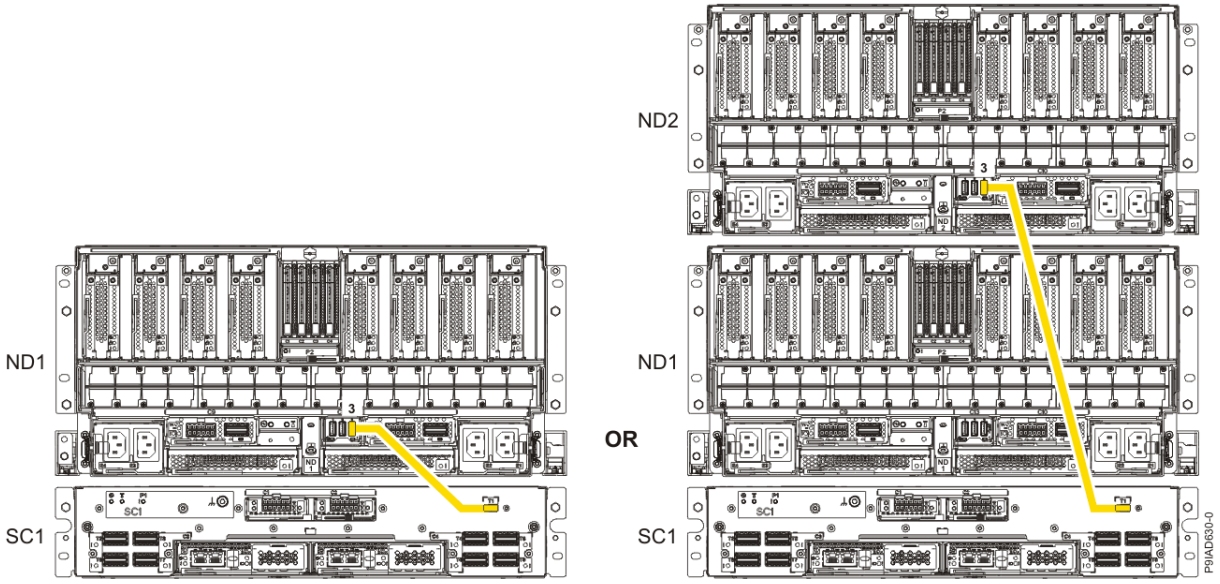


Figure 282. USB Cabling

Table 46. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

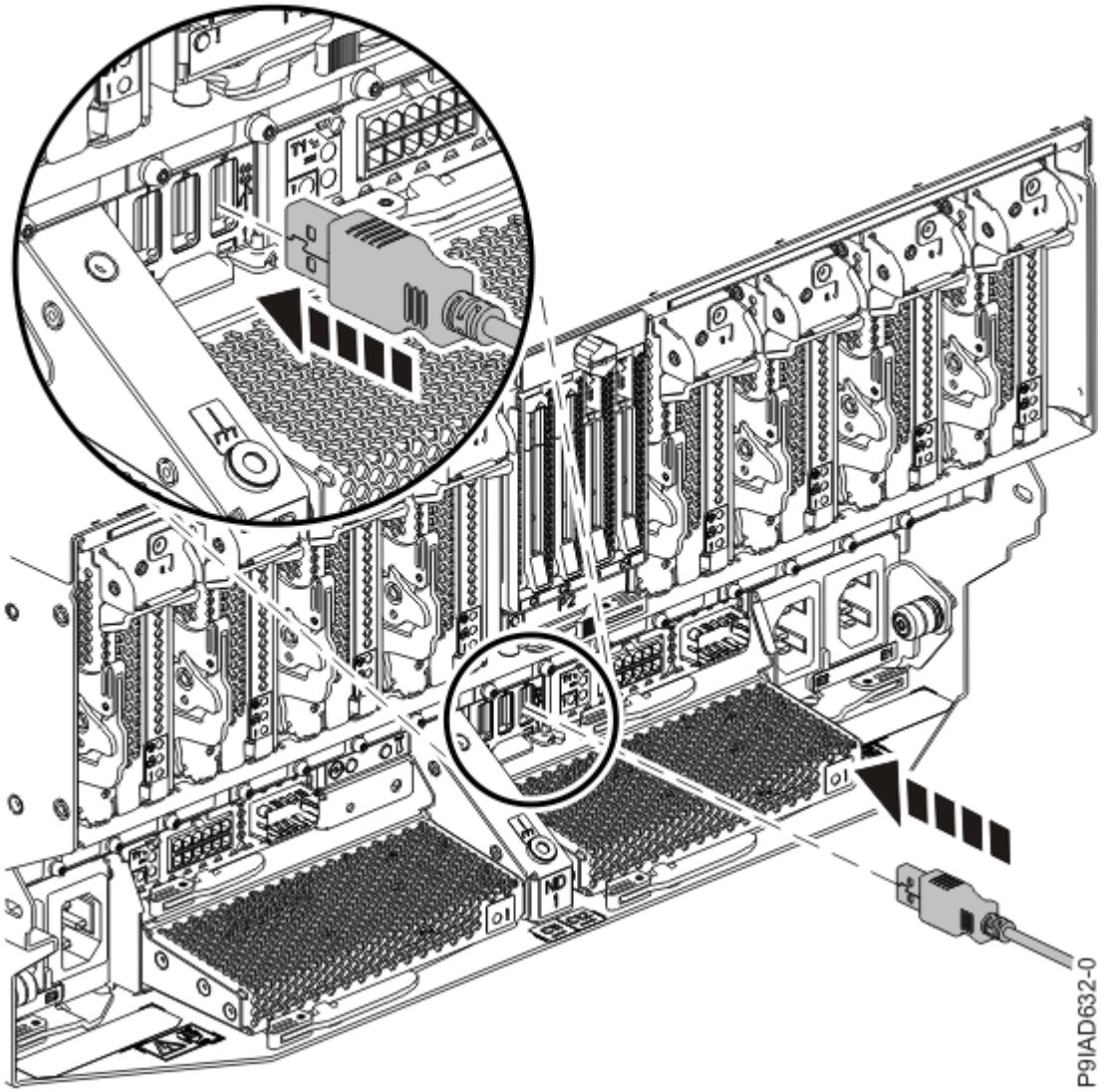


Figure 283. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

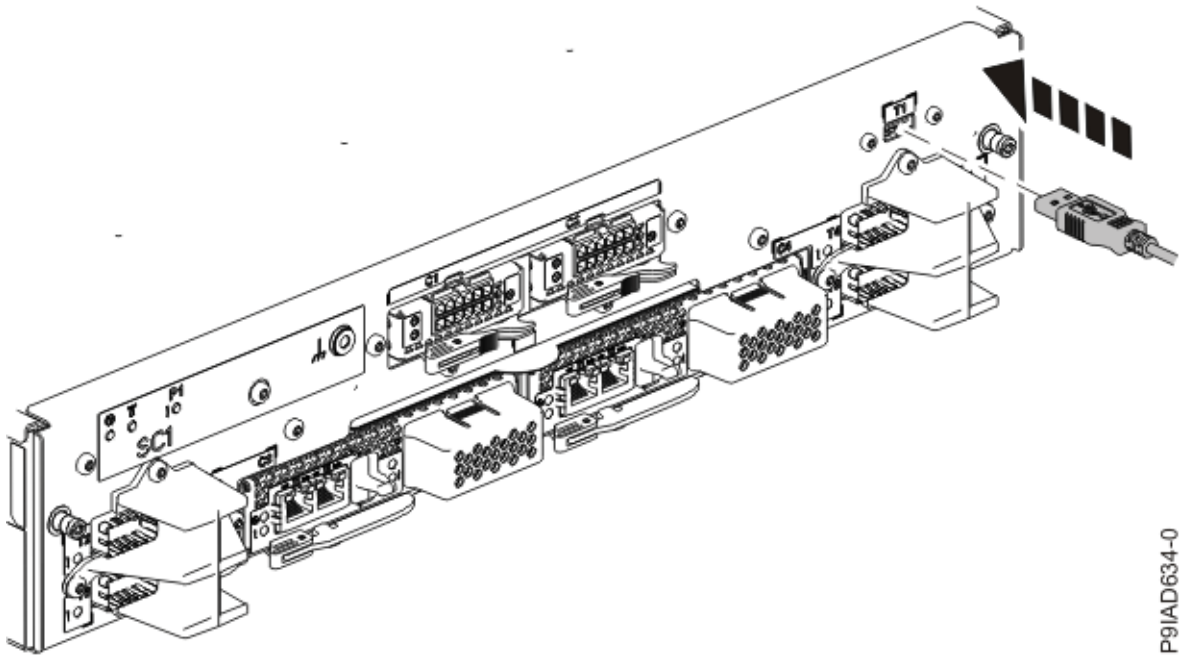


Figure 284. Replacing the USB cable into the system control unit

8. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

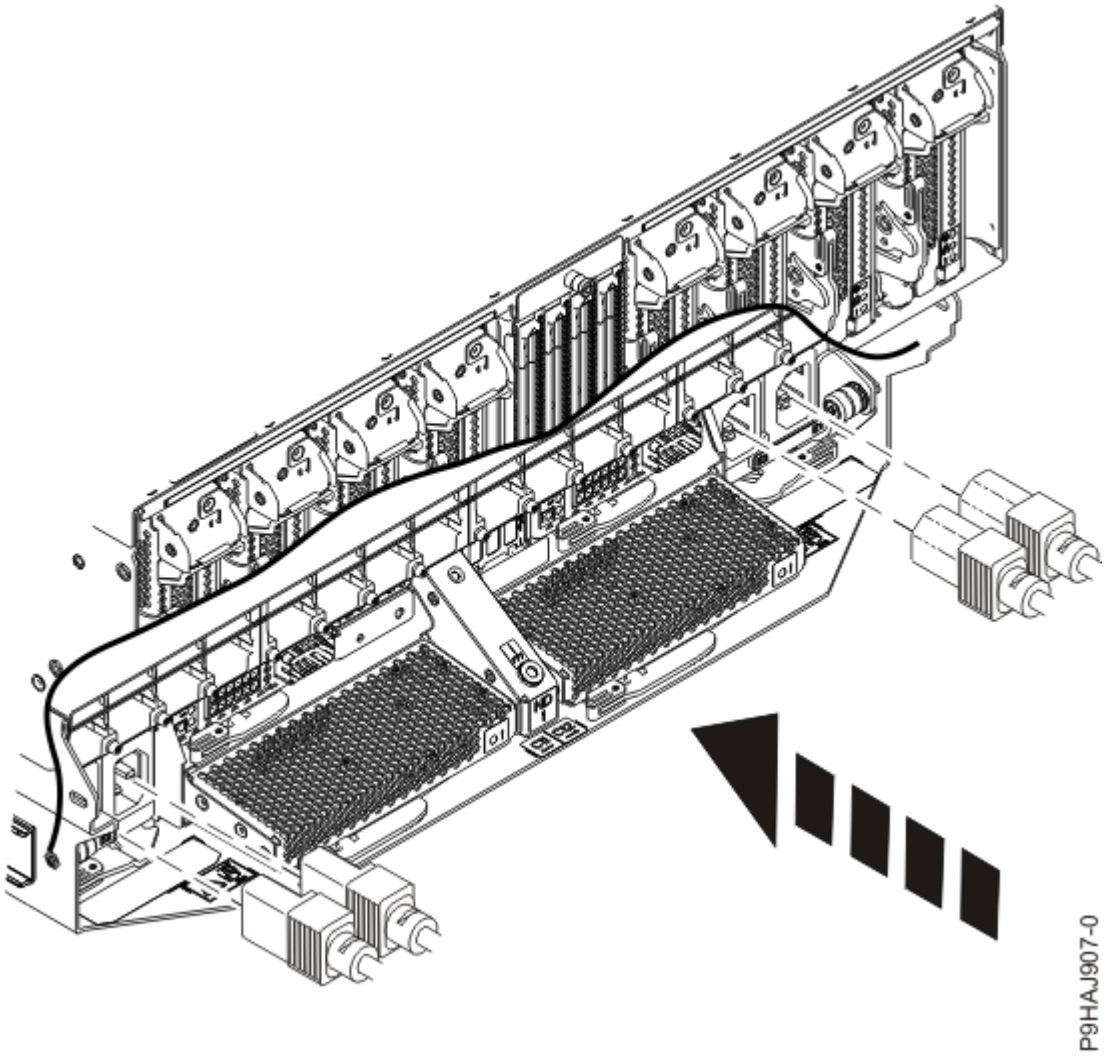


Figure 285. Connecting the rear power cords

9. 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.

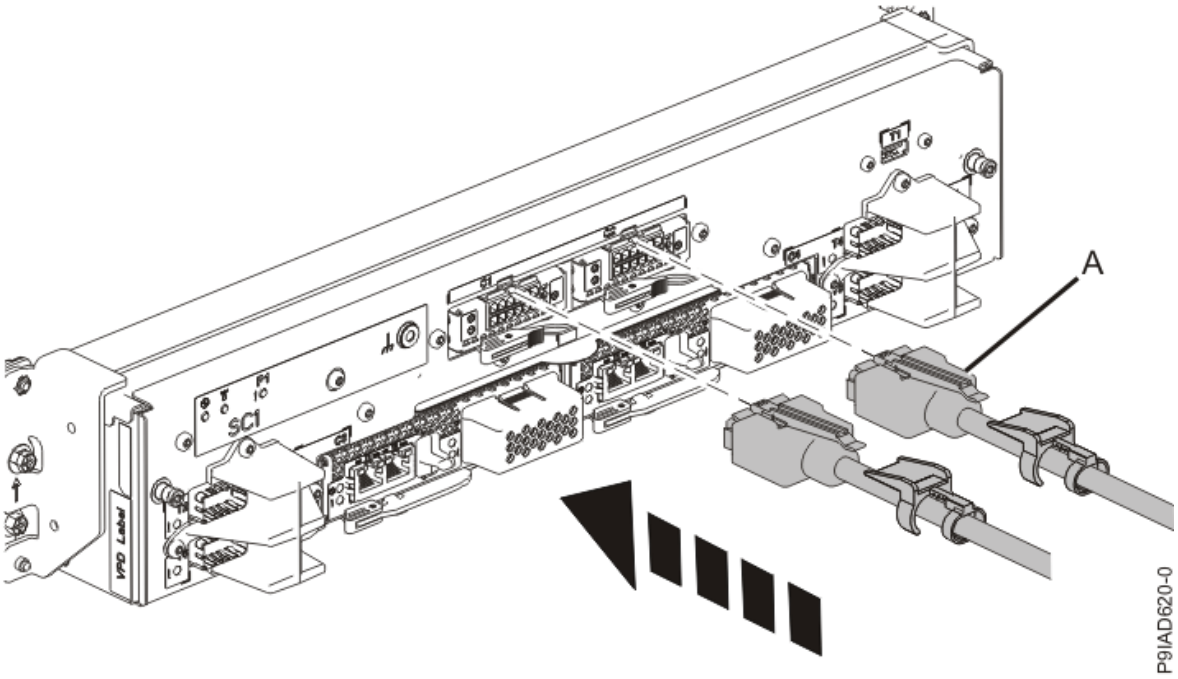


Figure 286. Replacing the UPIC cable into the system control unit

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

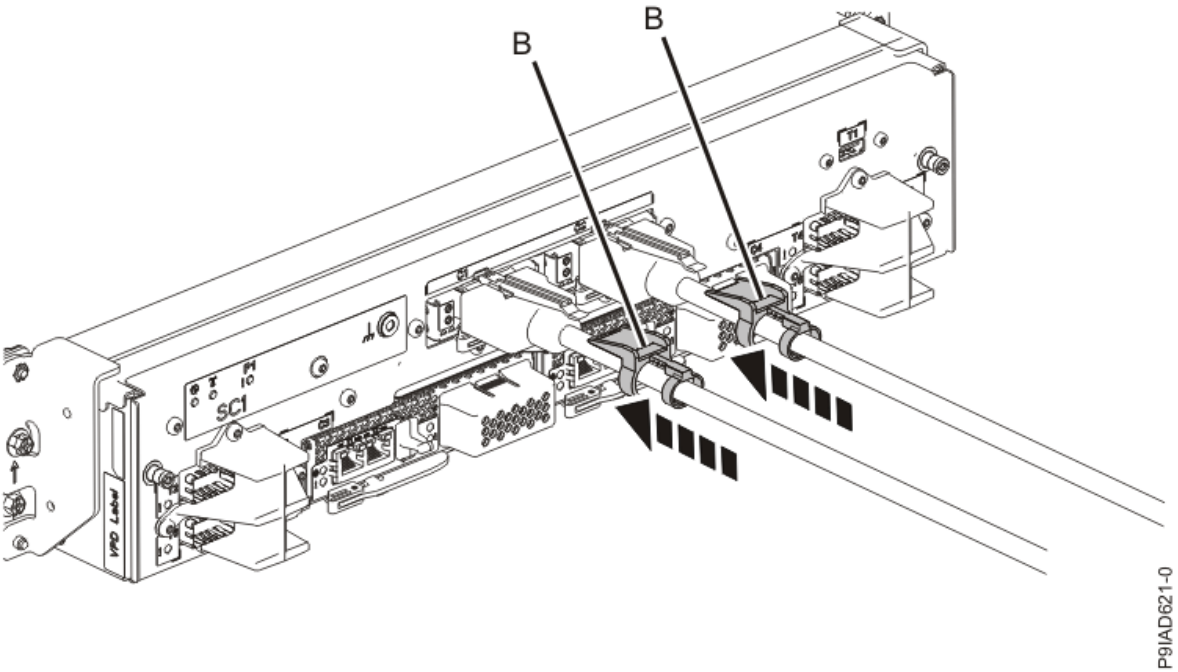


Figure 287. Replacing the UPIC cable into the system control unit

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.

10. 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.
11. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

12. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).
13. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

Preparing the system to remove and replace a miscellaneous B voltage regulator module

To prepare the system to remove and replace a miscellaneous B voltage regulator module, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   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.
2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
3. Open the rear rack door, if necessary.
4. 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.

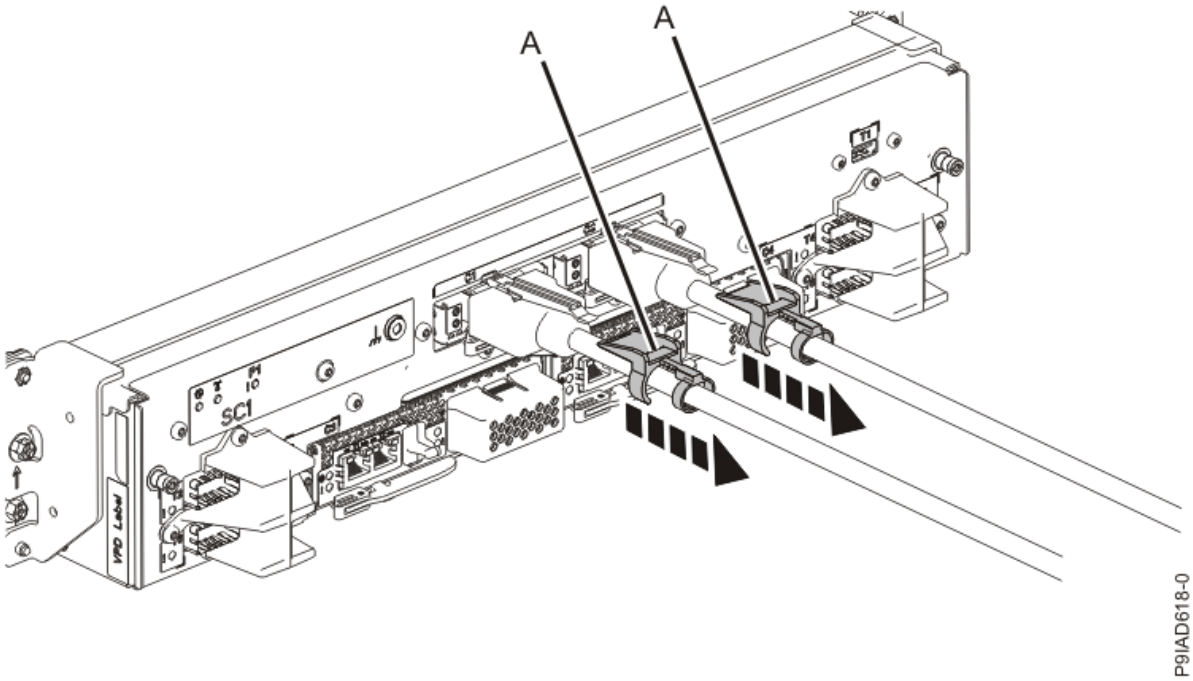


Figure 288. Removing the UPIC cable lock

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

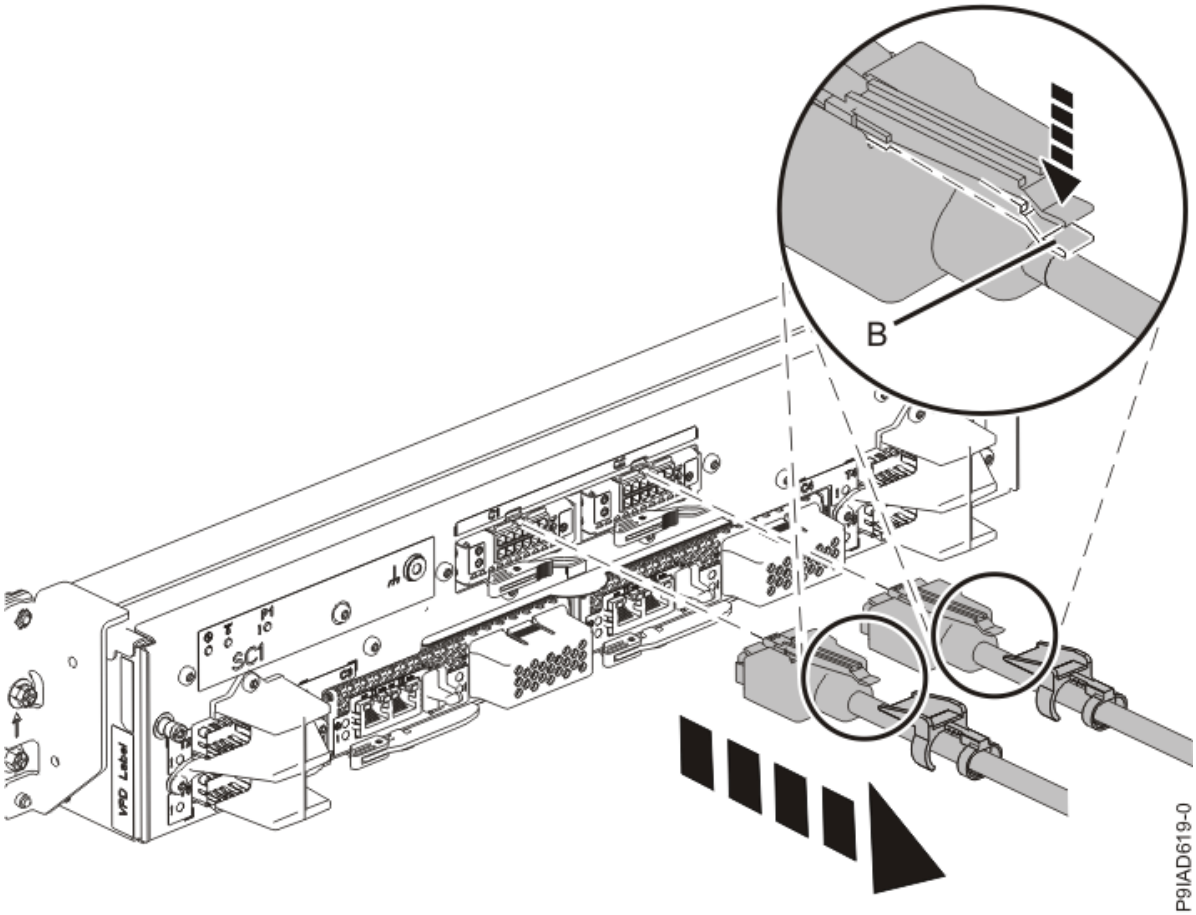


Figure 289. Removing the UPIC cable from the system control unit

5. 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.

6. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

   a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

      Notes:

      - This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

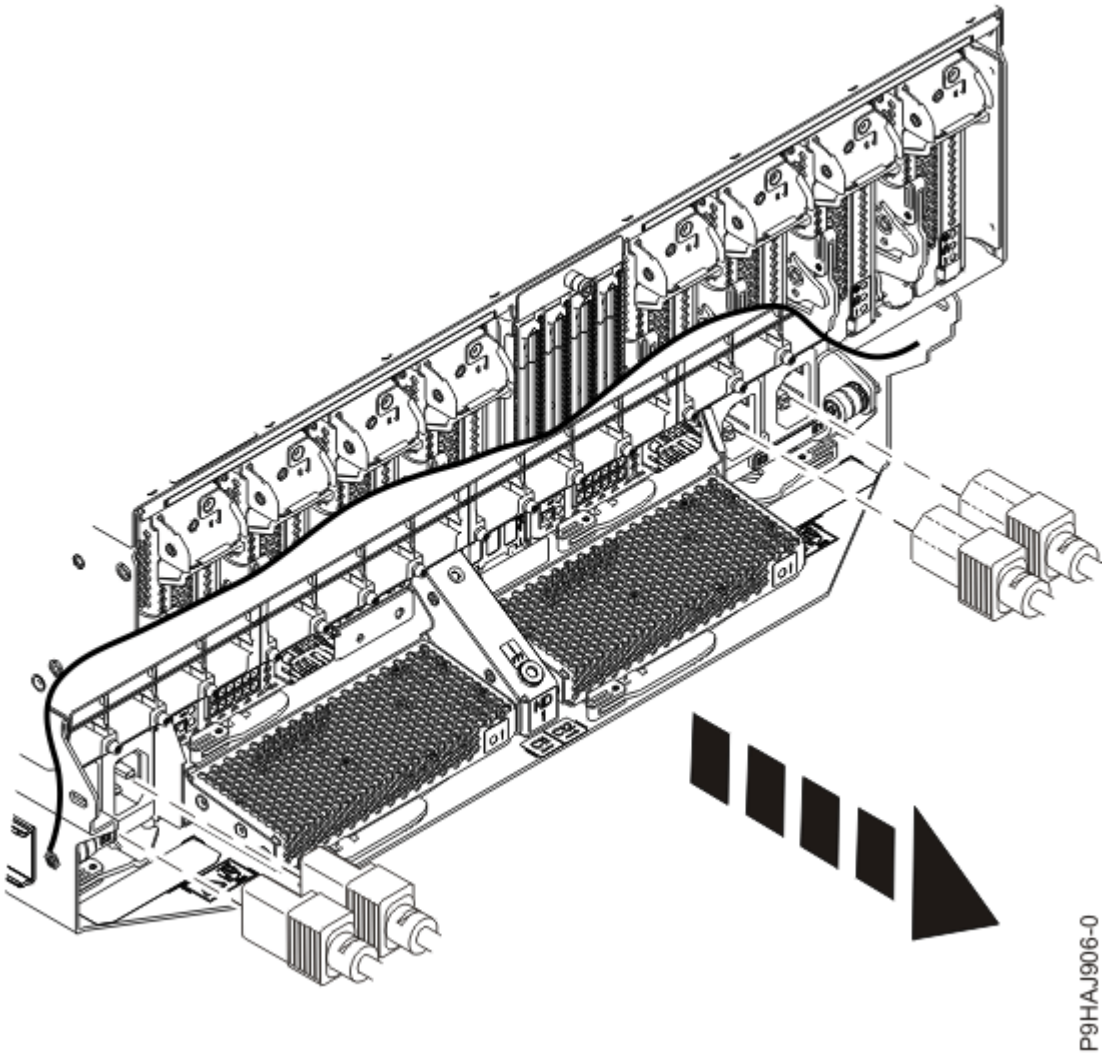
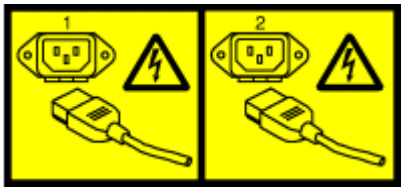


Figure 290. Removing the rear power cords

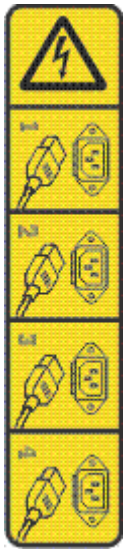
(L003)



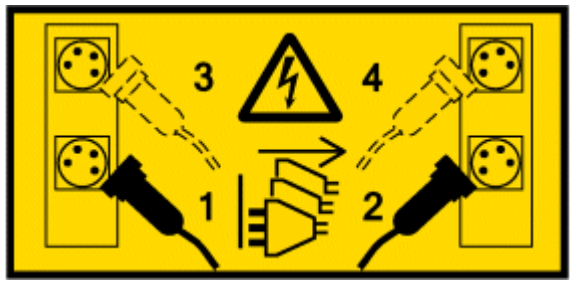
or

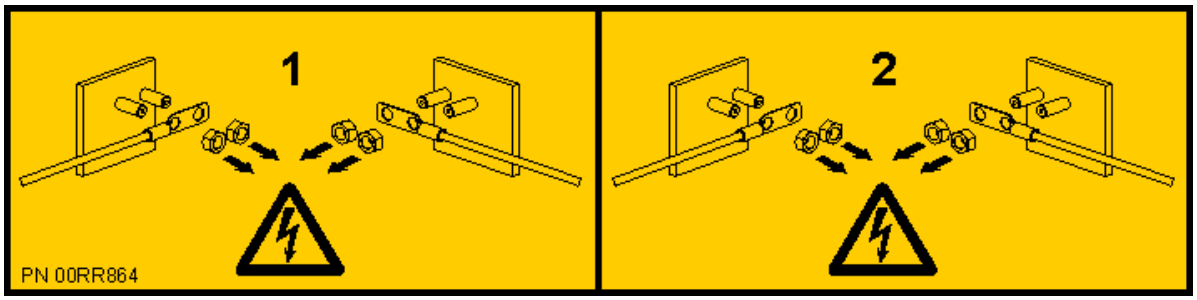
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

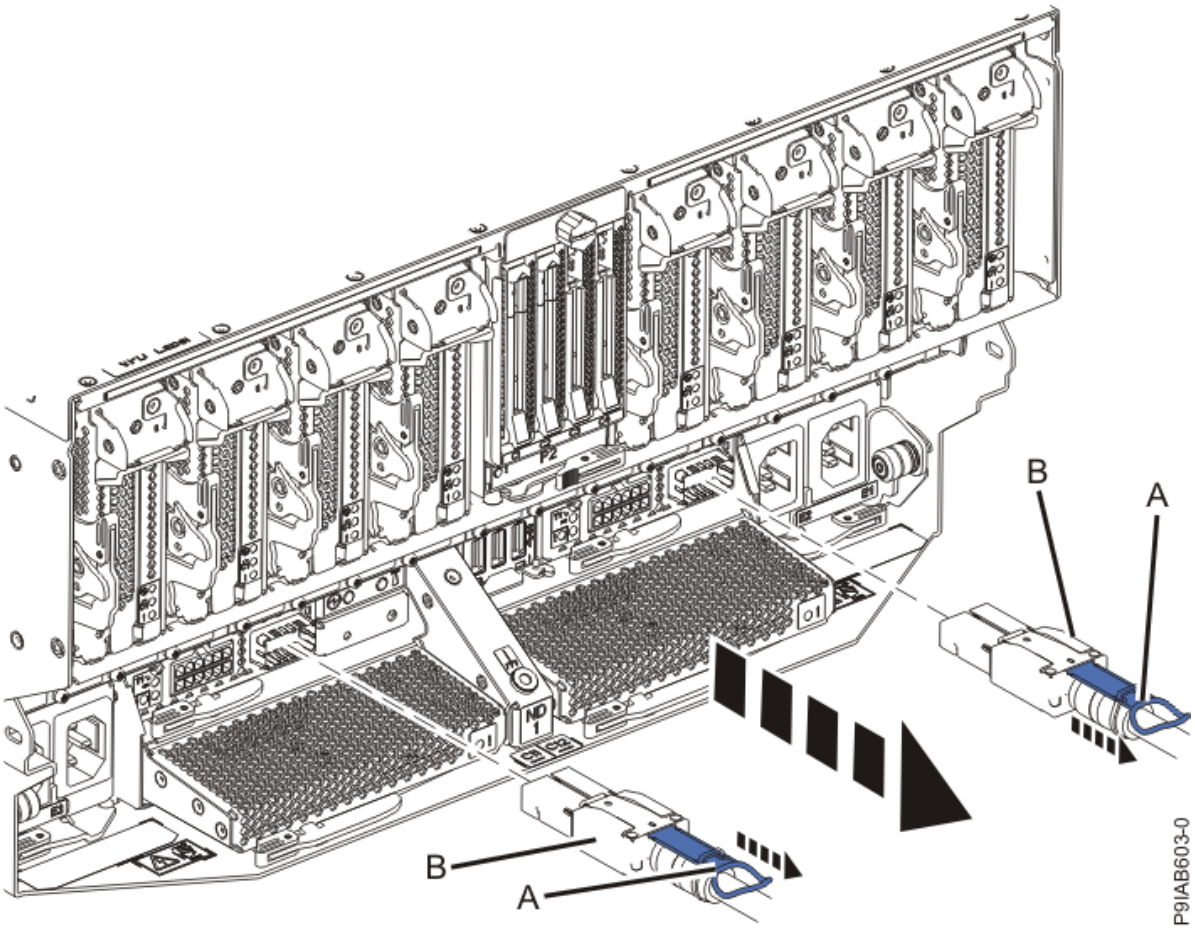


Figure 291. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

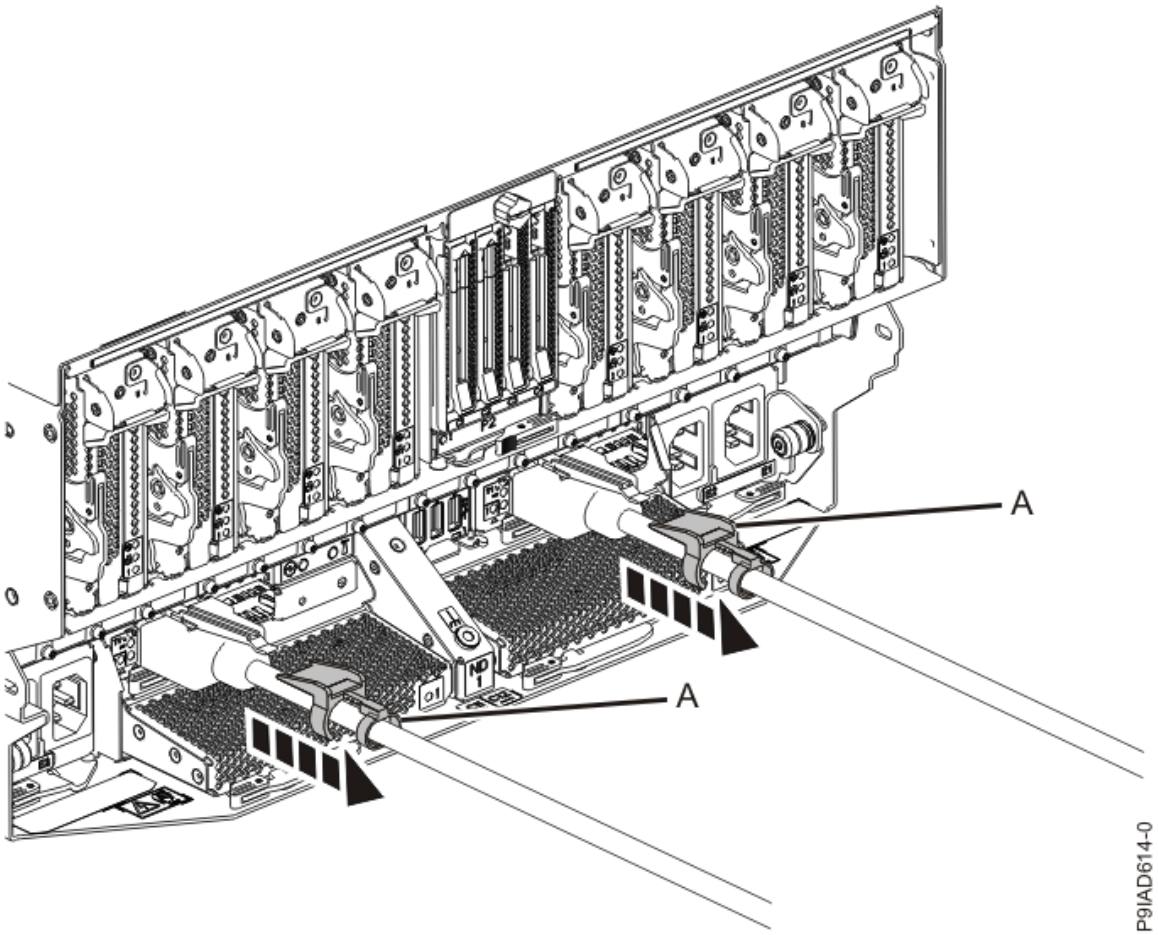


Figure 292. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

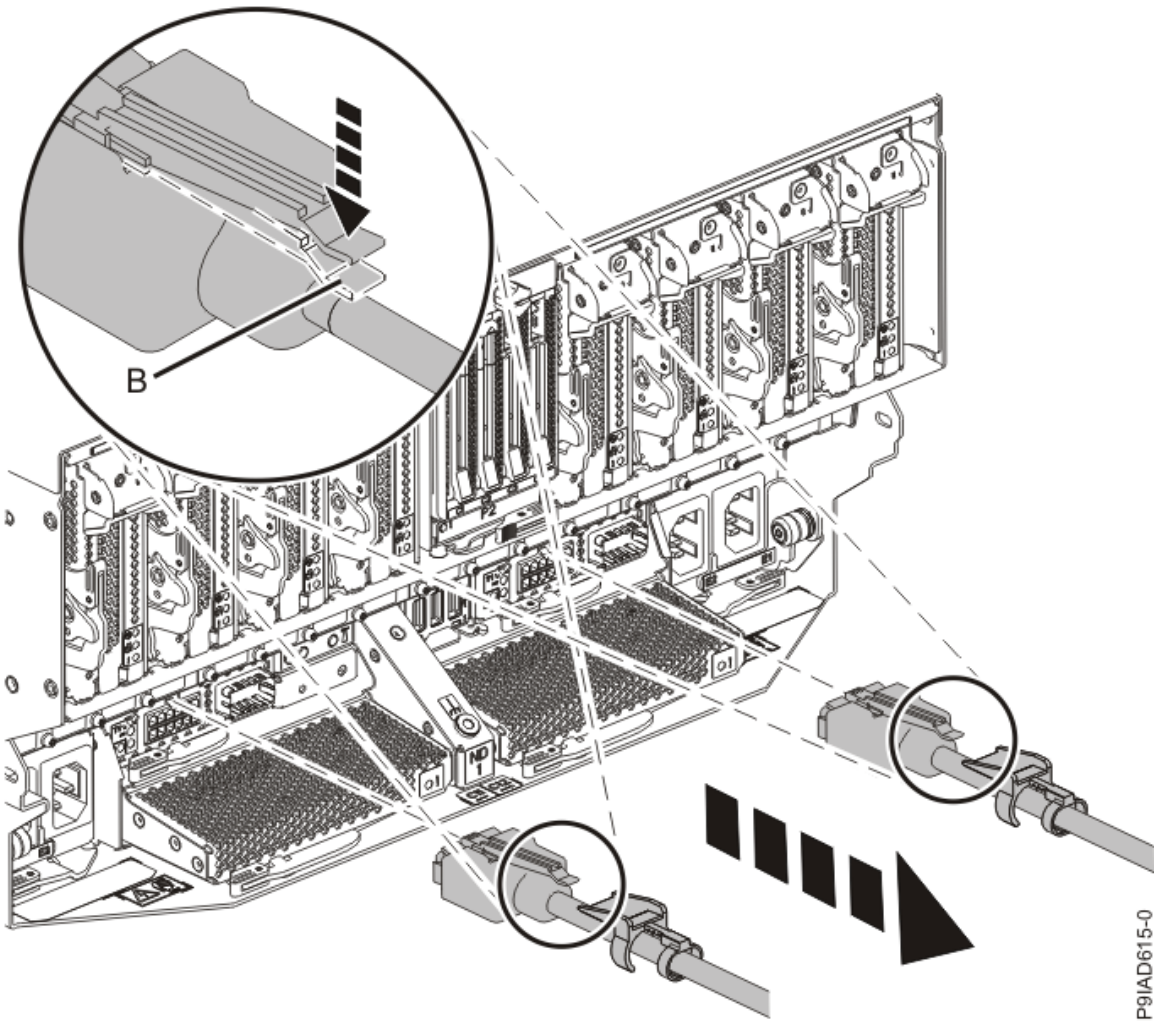


Figure 293. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

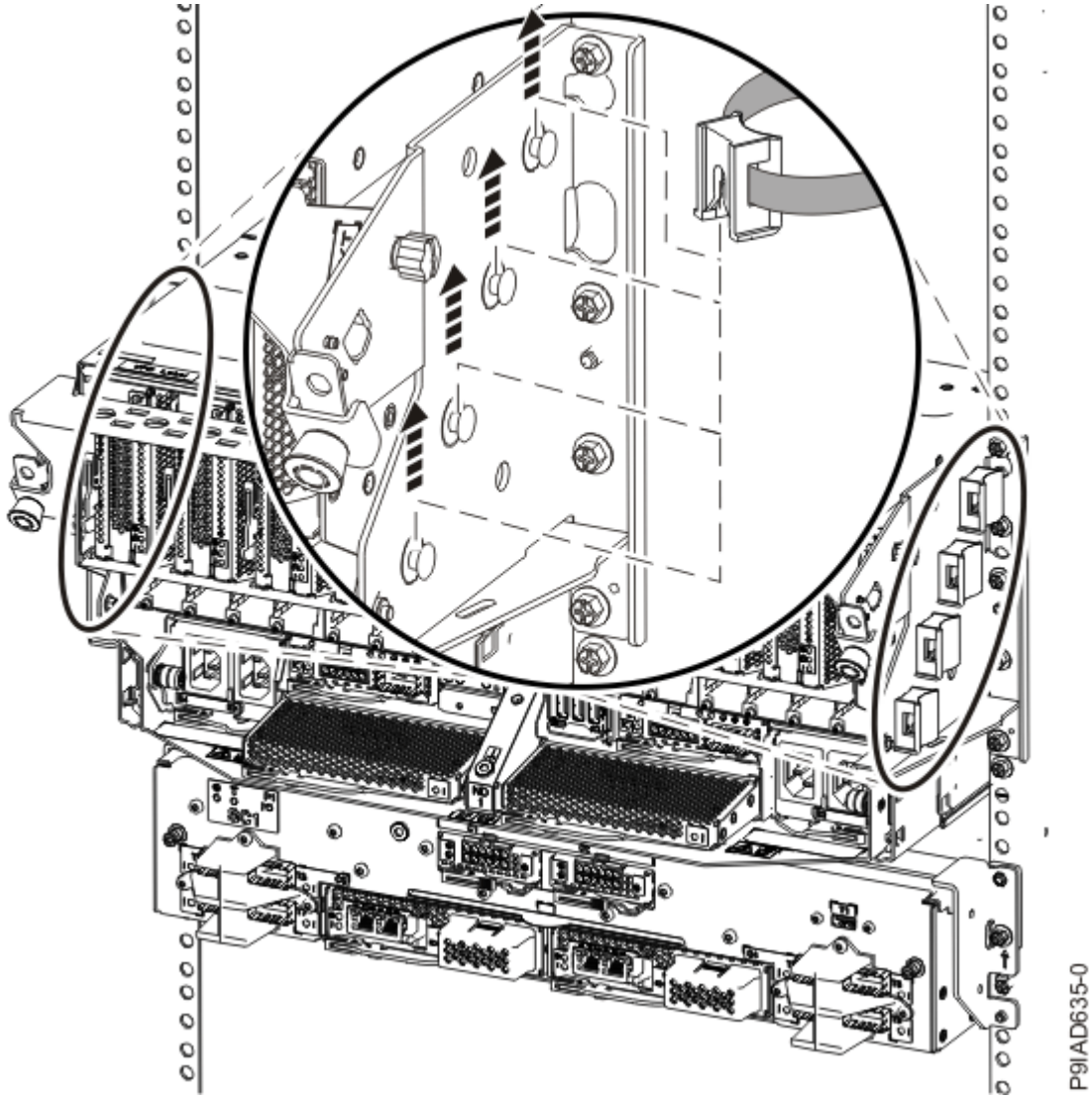


Figure 294. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

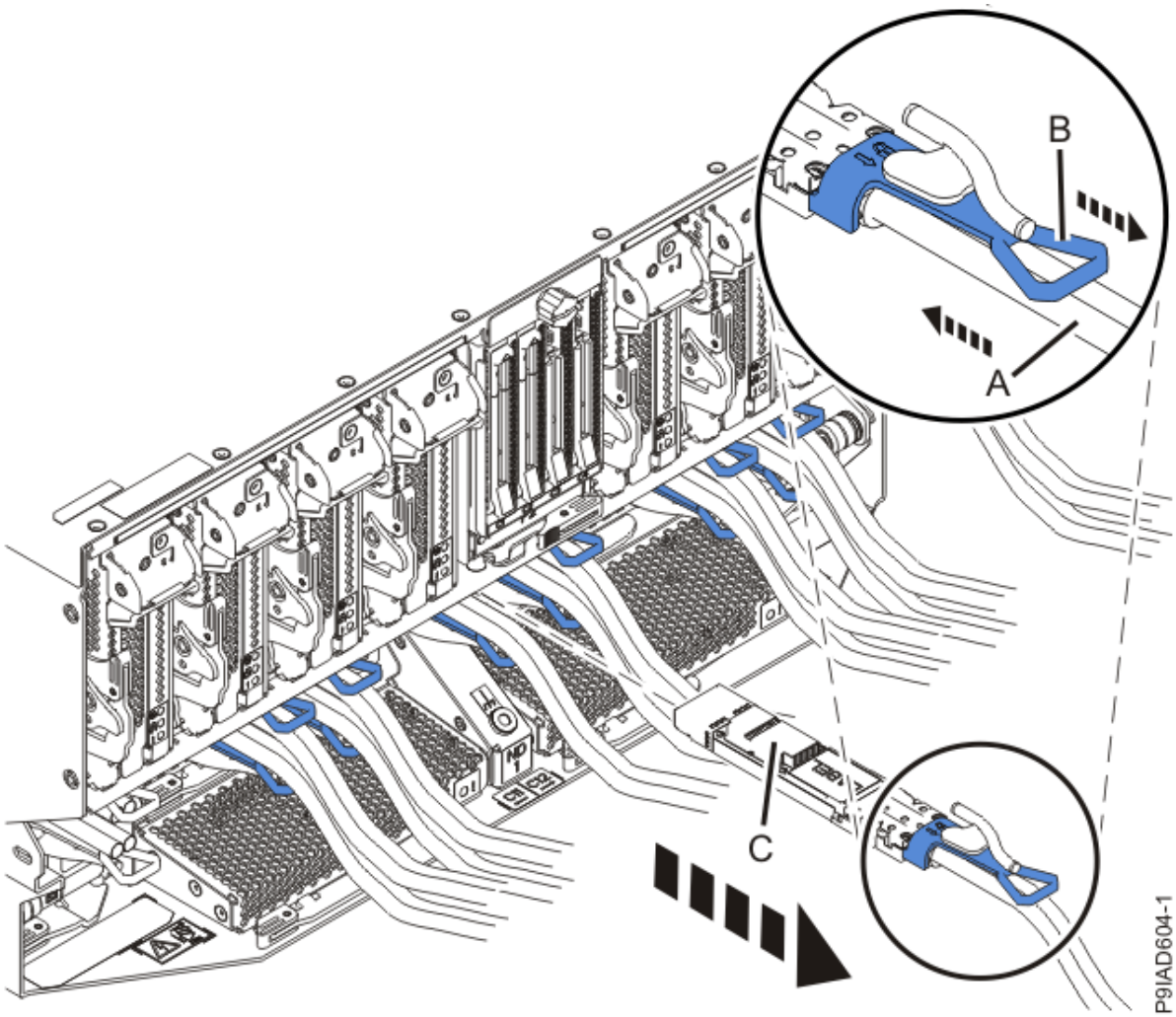


Figure 295. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

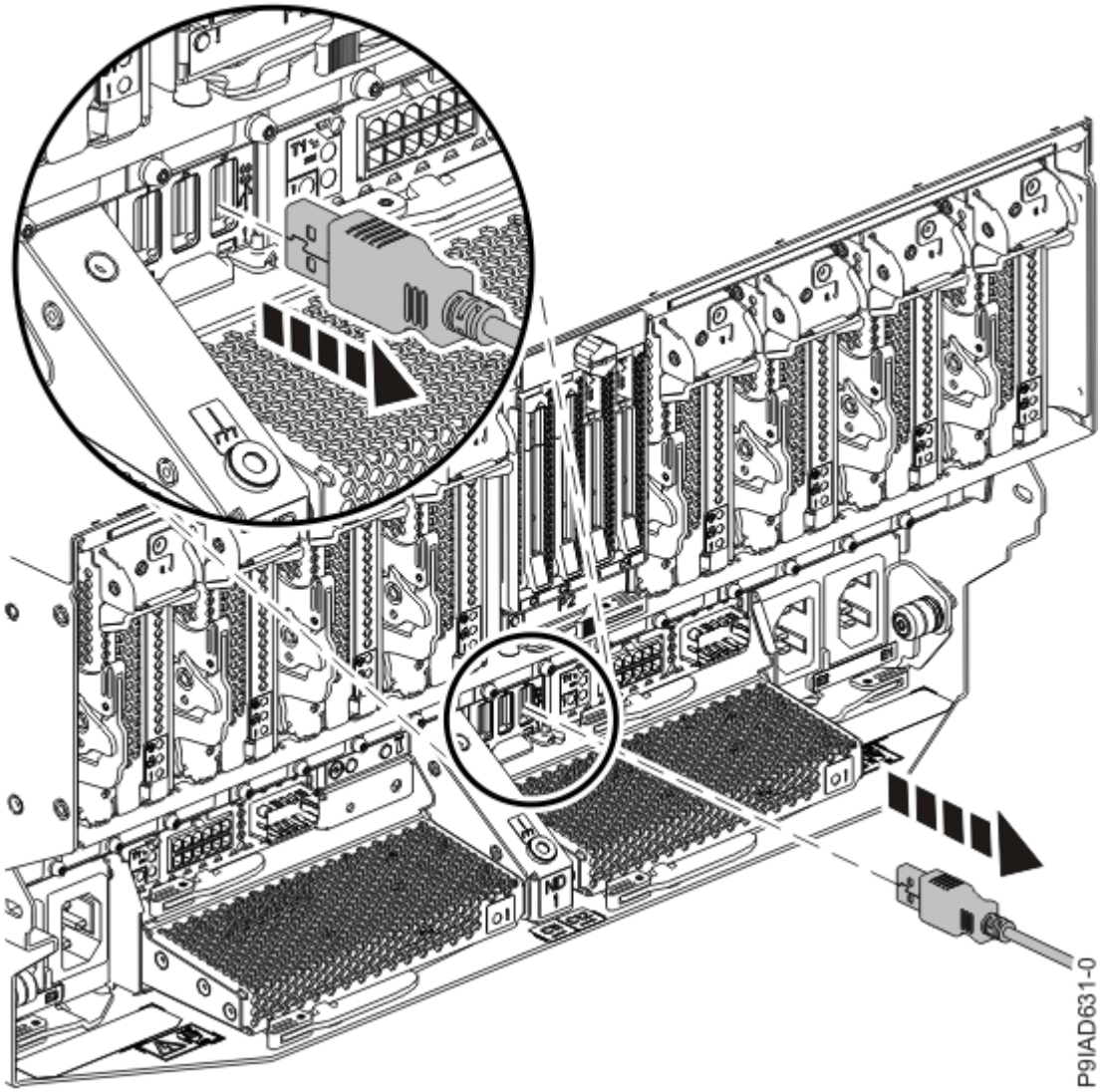


Figure 296. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

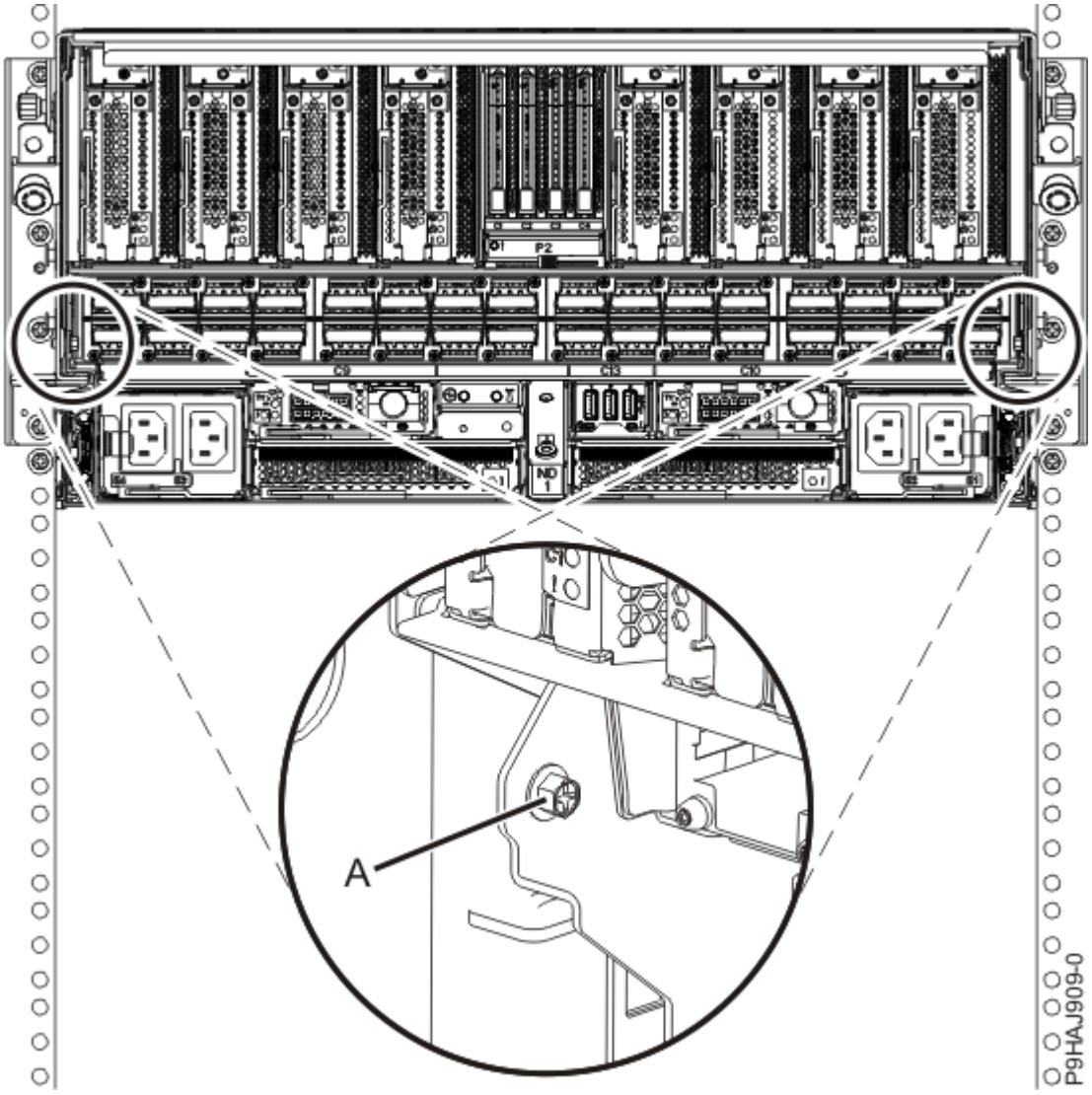


Figure 297. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

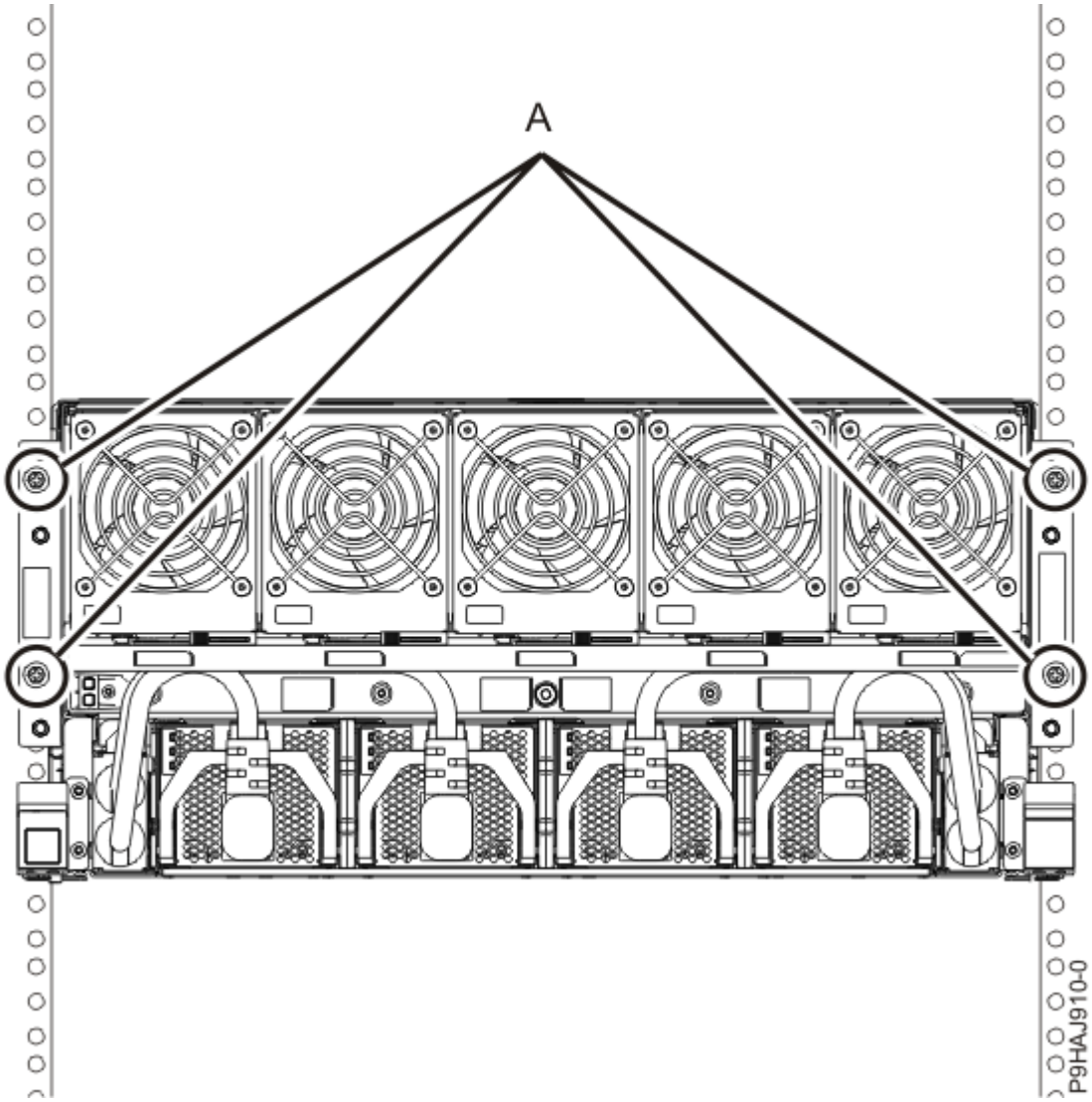


Figure 298. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

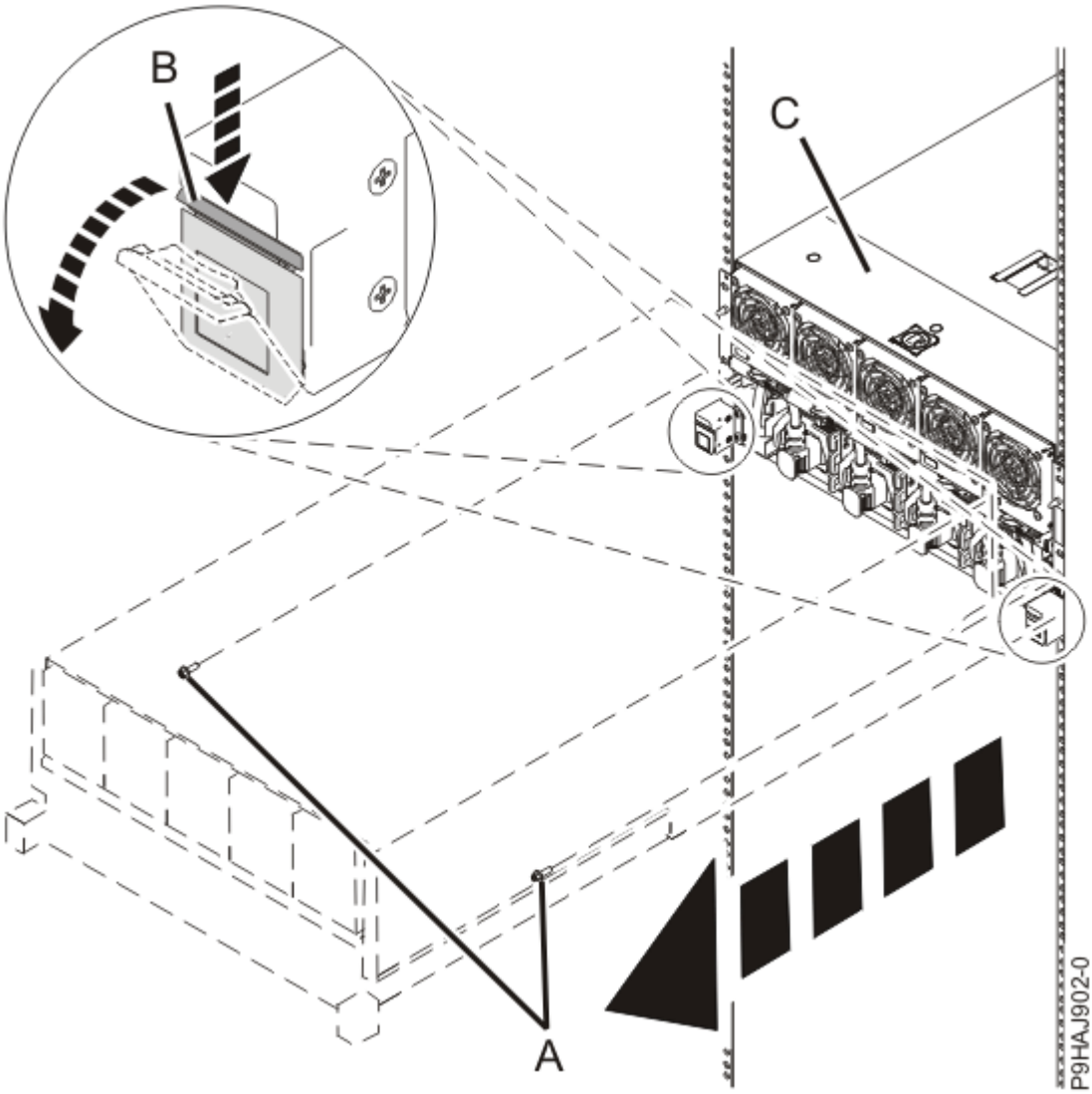


Figure 299. Placing the system node in service position

7. Complete the following steps to remove the cover.

Attention: Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Push the release latch **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

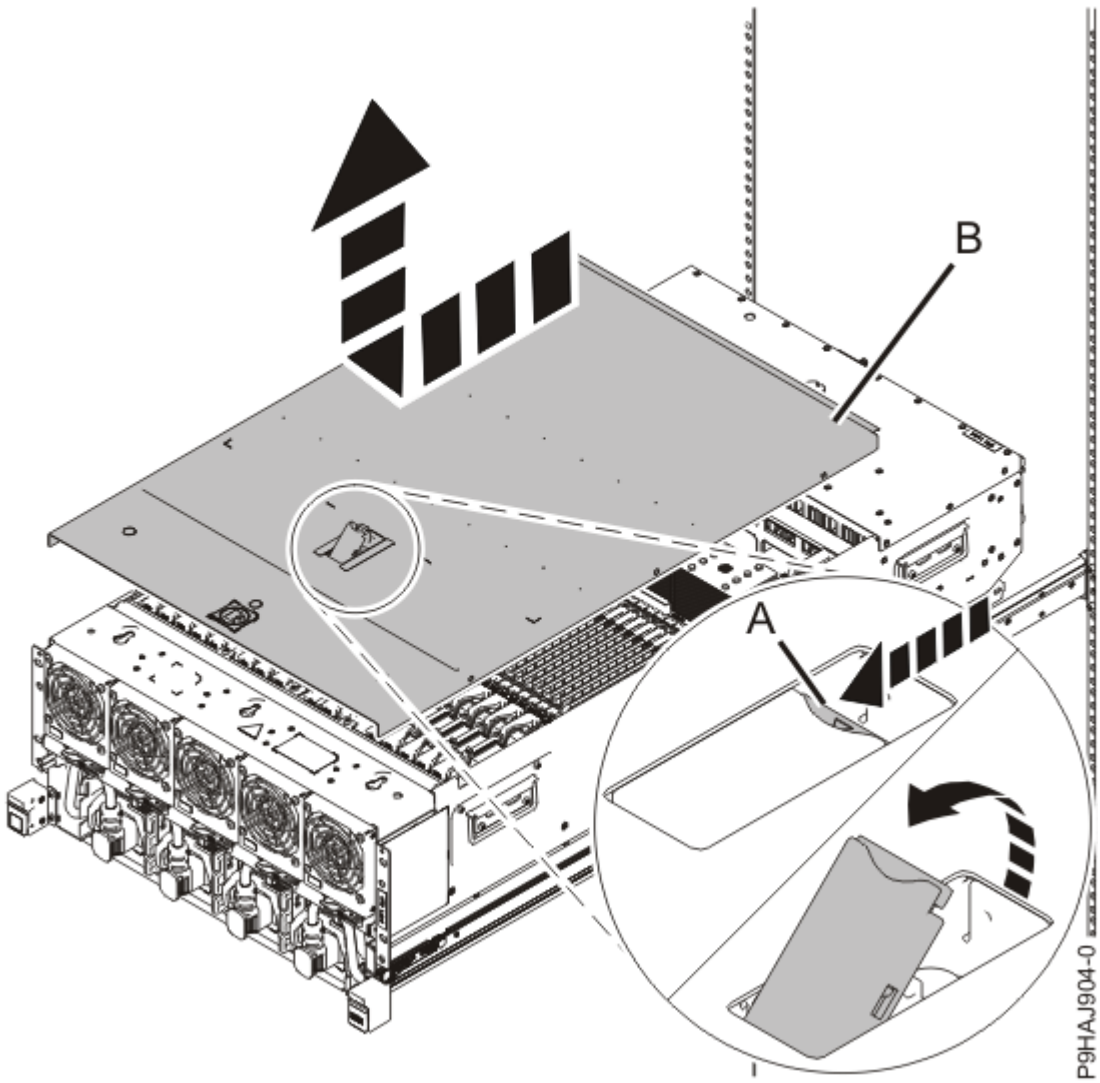


Figure 300. Removing the service access cover

8. To activate the identify LED for the faulty part, press and hold either blue push-button on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(A)** is lit, which indicates that sufficient power exists to light the identify LED on the faulty part. If the green LED **(A)** does not light, use the location code on the service label to find the physical location of the faulty part.

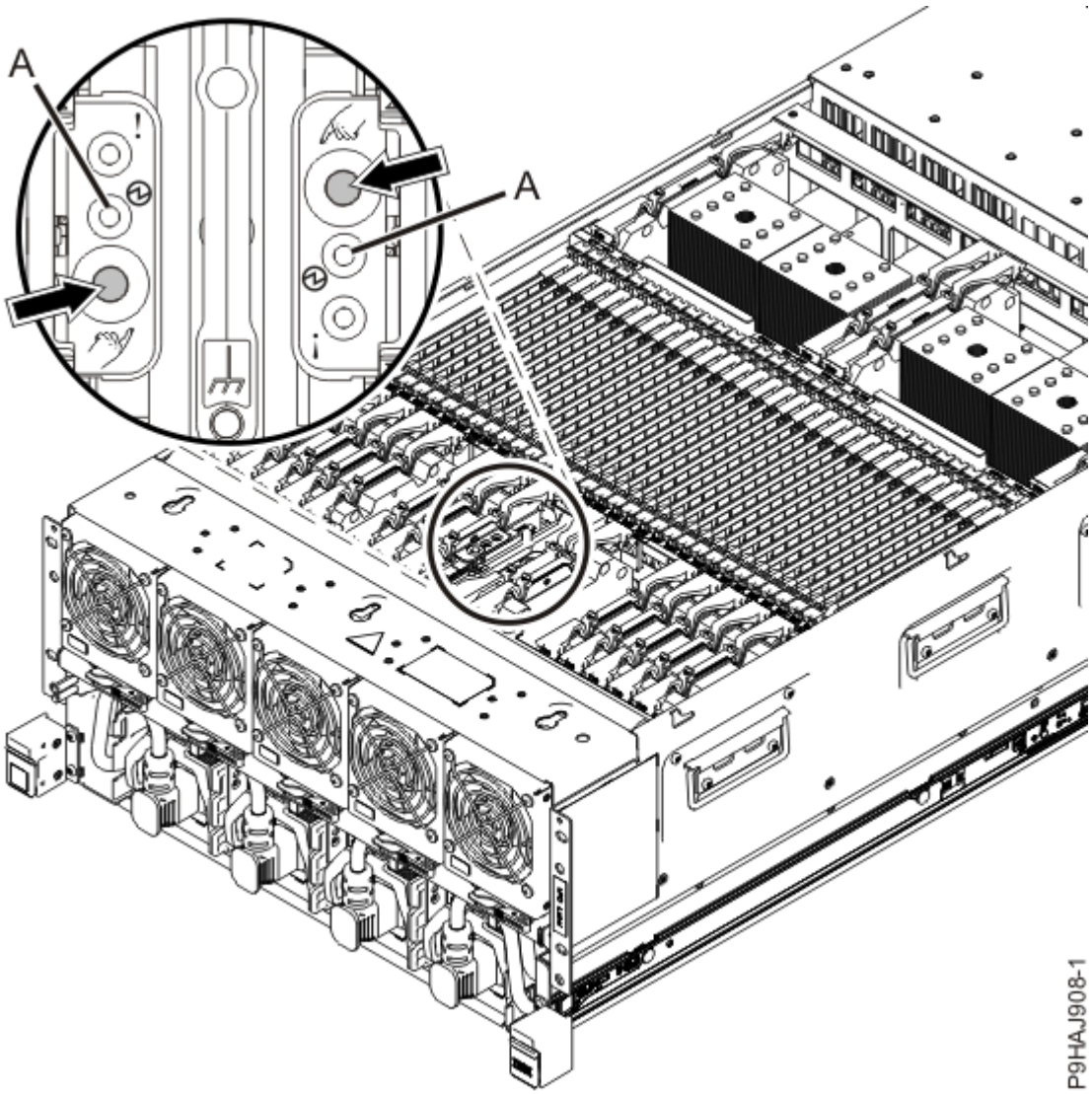


Figure 301. Activating the identify LED for a faulty part

9. Look for the flashing amber LED of the faulty or failed miscellaneous B voltage regulator module. The miscellaneous B voltage regulator module is in location P1–C59. Refer to the following image.

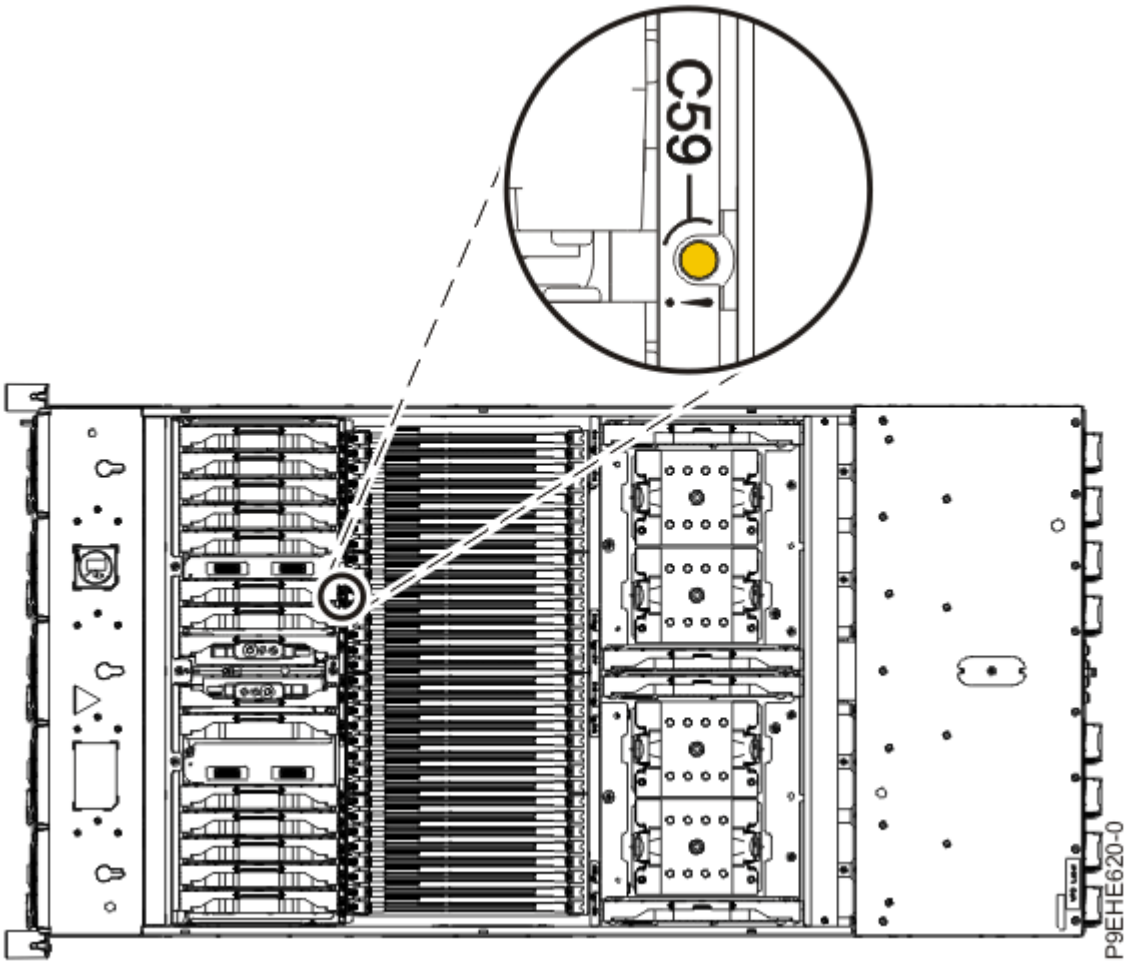


Figure 302. Location of the miscellaneous B voltage regulator module LED

Removing a miscellaneous B voltage regulator module from the 9080-M9S system node

To remove a miscellaneous B voltage regulator module from the 9080-M9S system node 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 a miscellaneous B voltage regulator module by completing the following steps:
   a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.
   b) Rotate the levers in the direction shown.
   c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

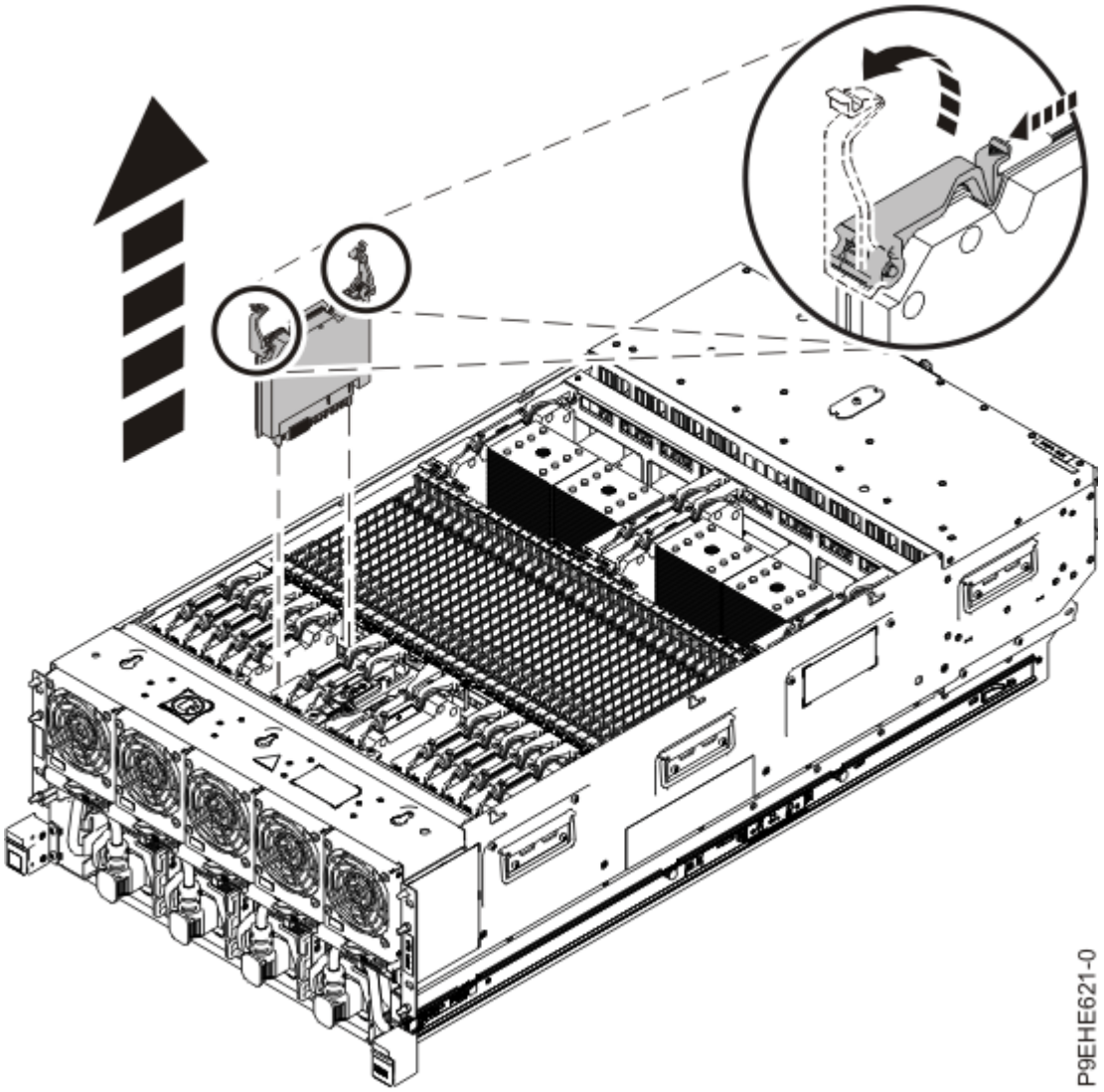


Figure 303. Removing a miscellaneous B voltage regulator module

Replacing a miscellaneous B voltage regulator module in the 9080-M9S system node

To replace a miscellaneous B voltage regulator module, 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. To replace a miscellaneous B voltage regulator module, complete the following steps:
   a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.
   b) Gently push the voltage regulator module into its connector.
   c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.

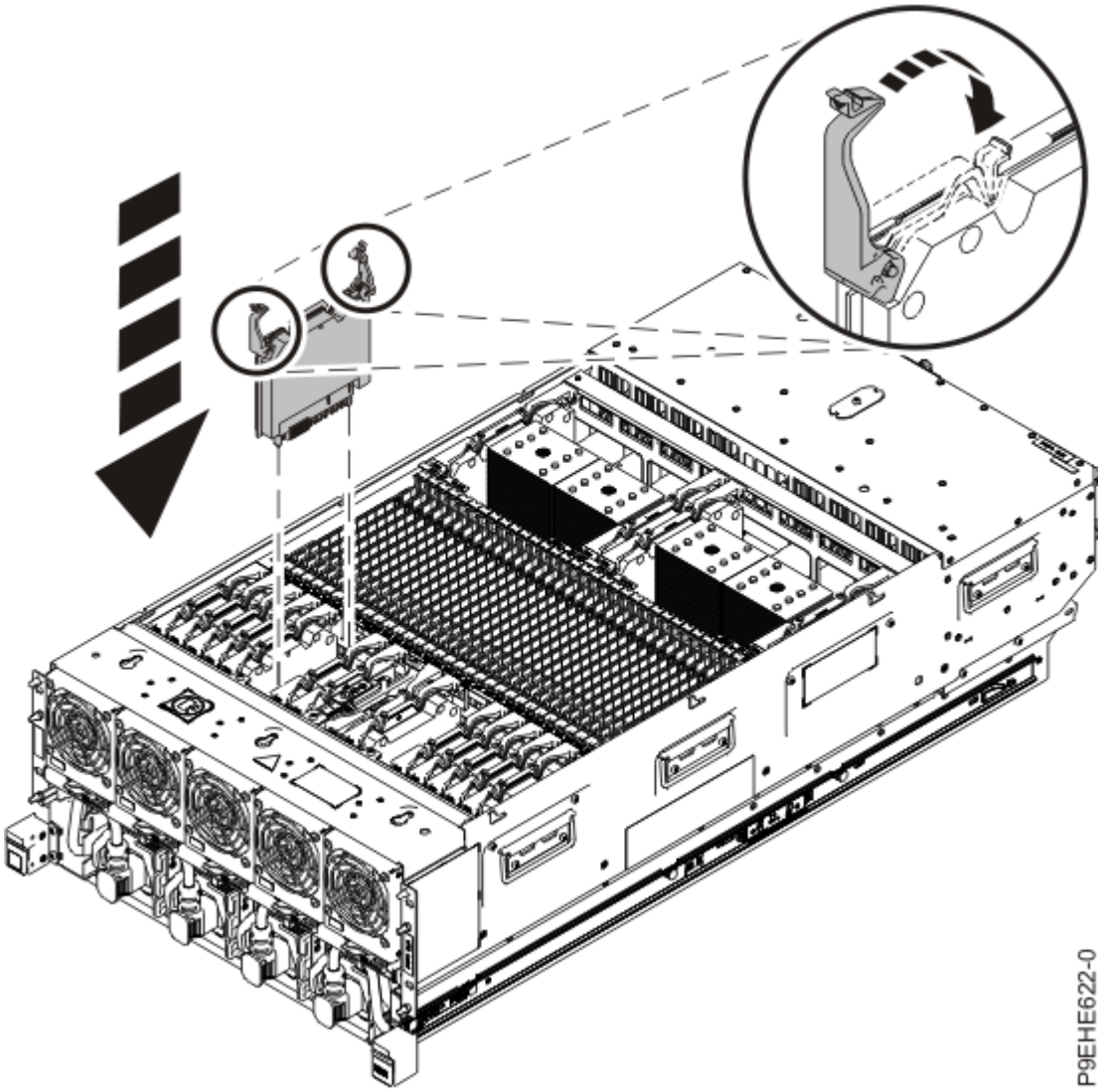


Figure 304. Replacing a miscellaneous B voltage regulator module

Preparing the system for operation after removing and replacing a miscellaneous B voltage regulator module

To prepare the system for operation after removing and replacing a miscellaneous B voltage regulator module, 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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

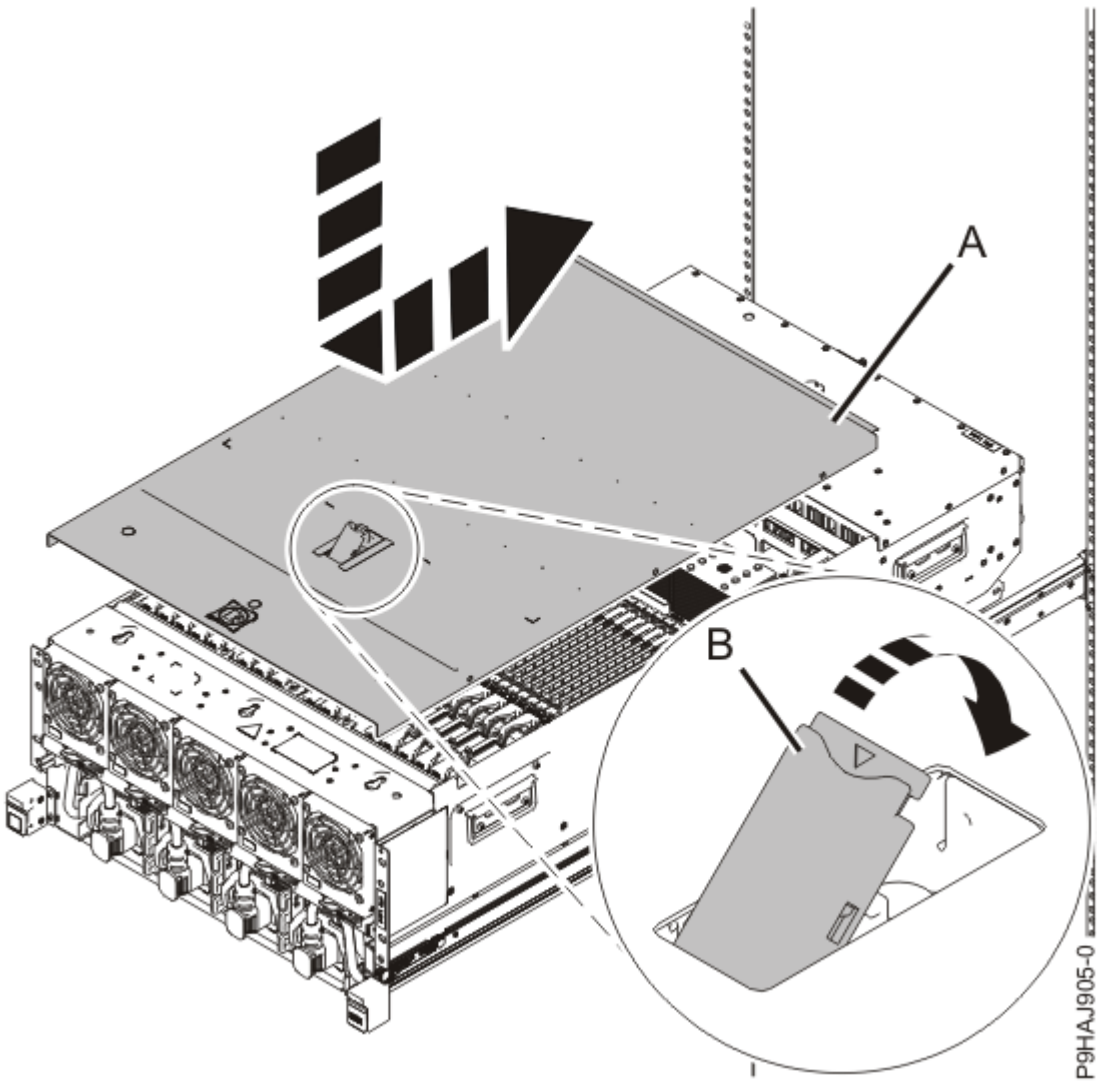


Figure 305. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

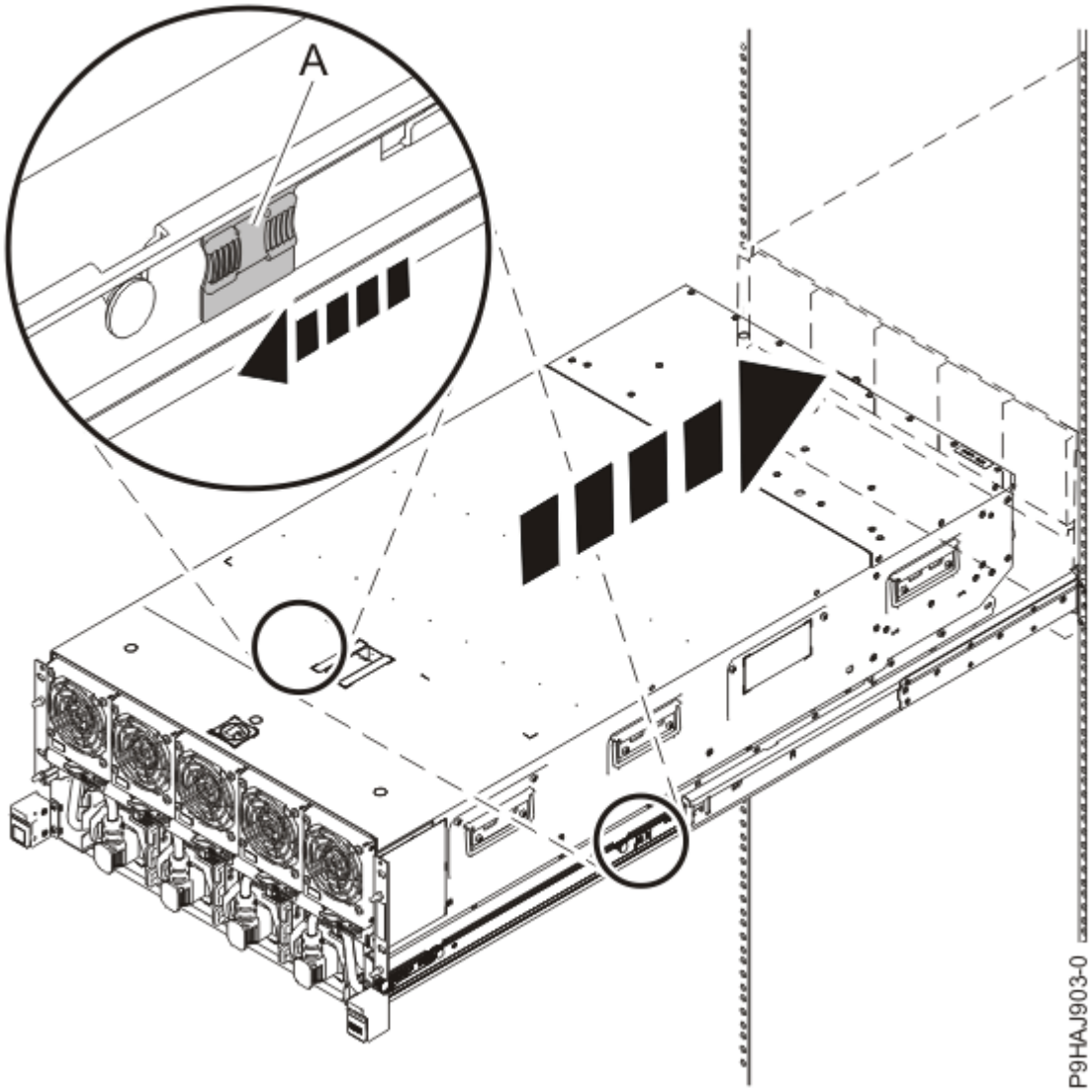


Figure 306. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

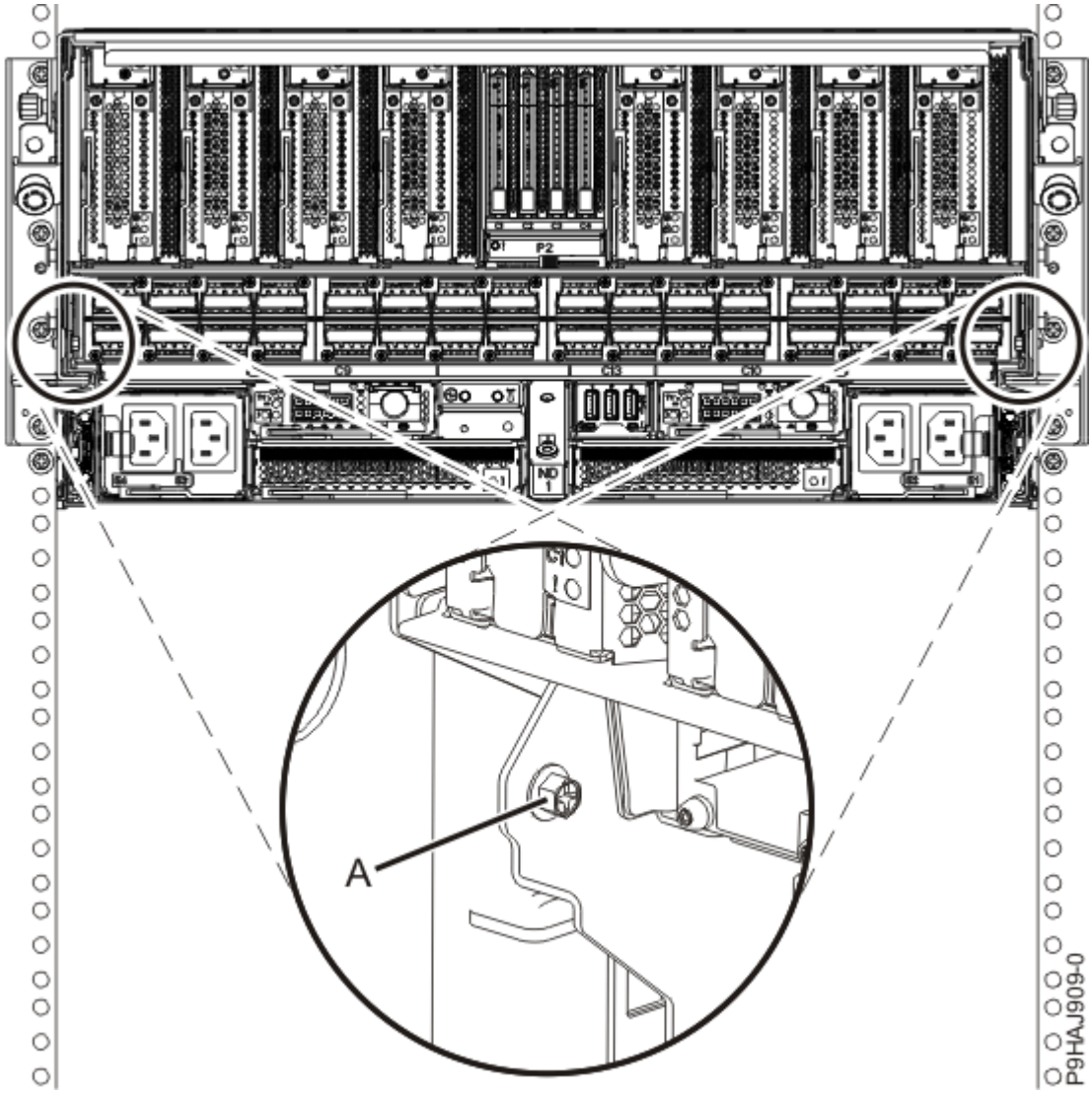


Figure 307. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

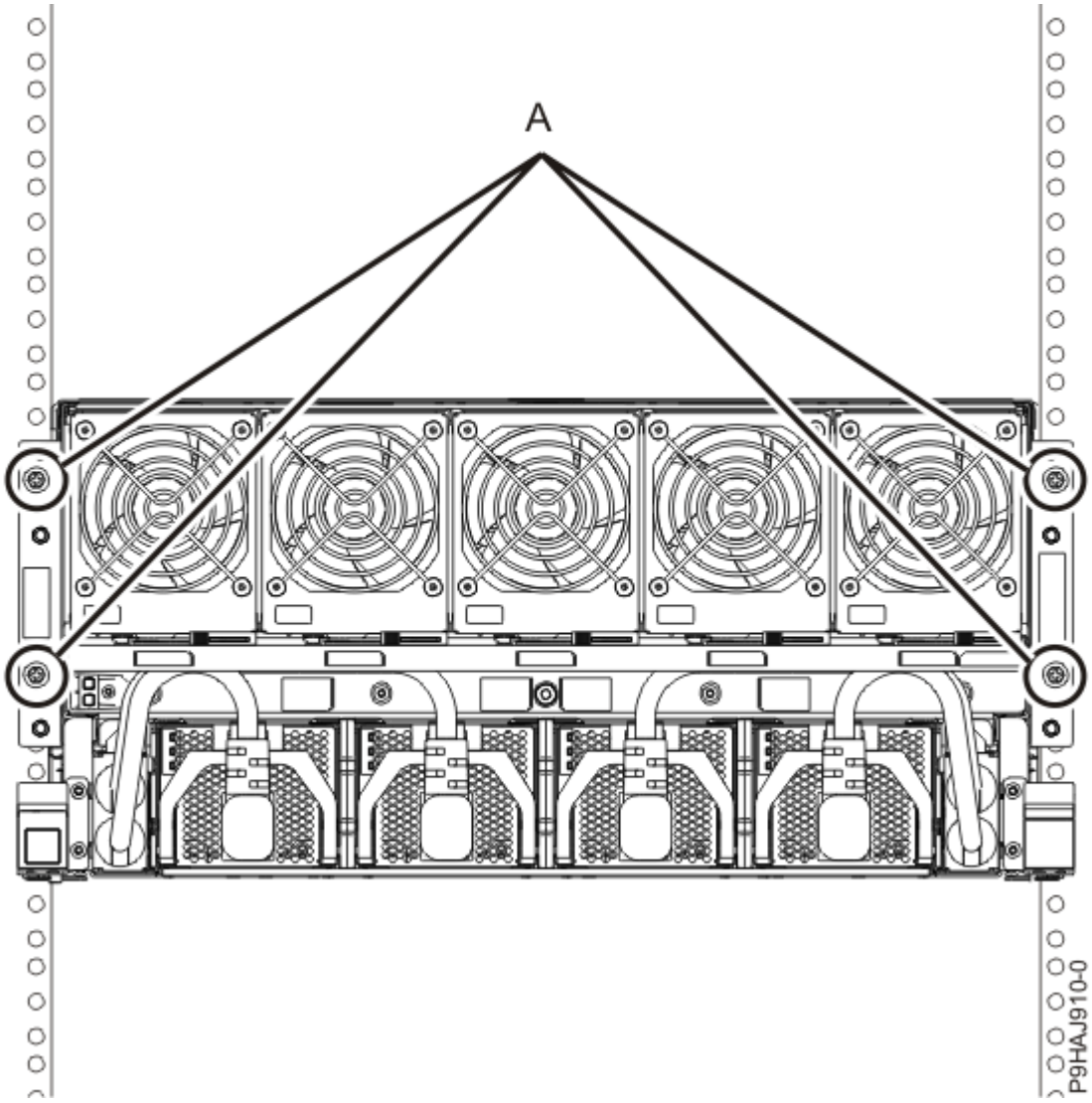


Figure 308. Replacing the front screws

4. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 309 on page 358 and Table 47 on page 358 to determine the point-to-point cabling for SMP cables.

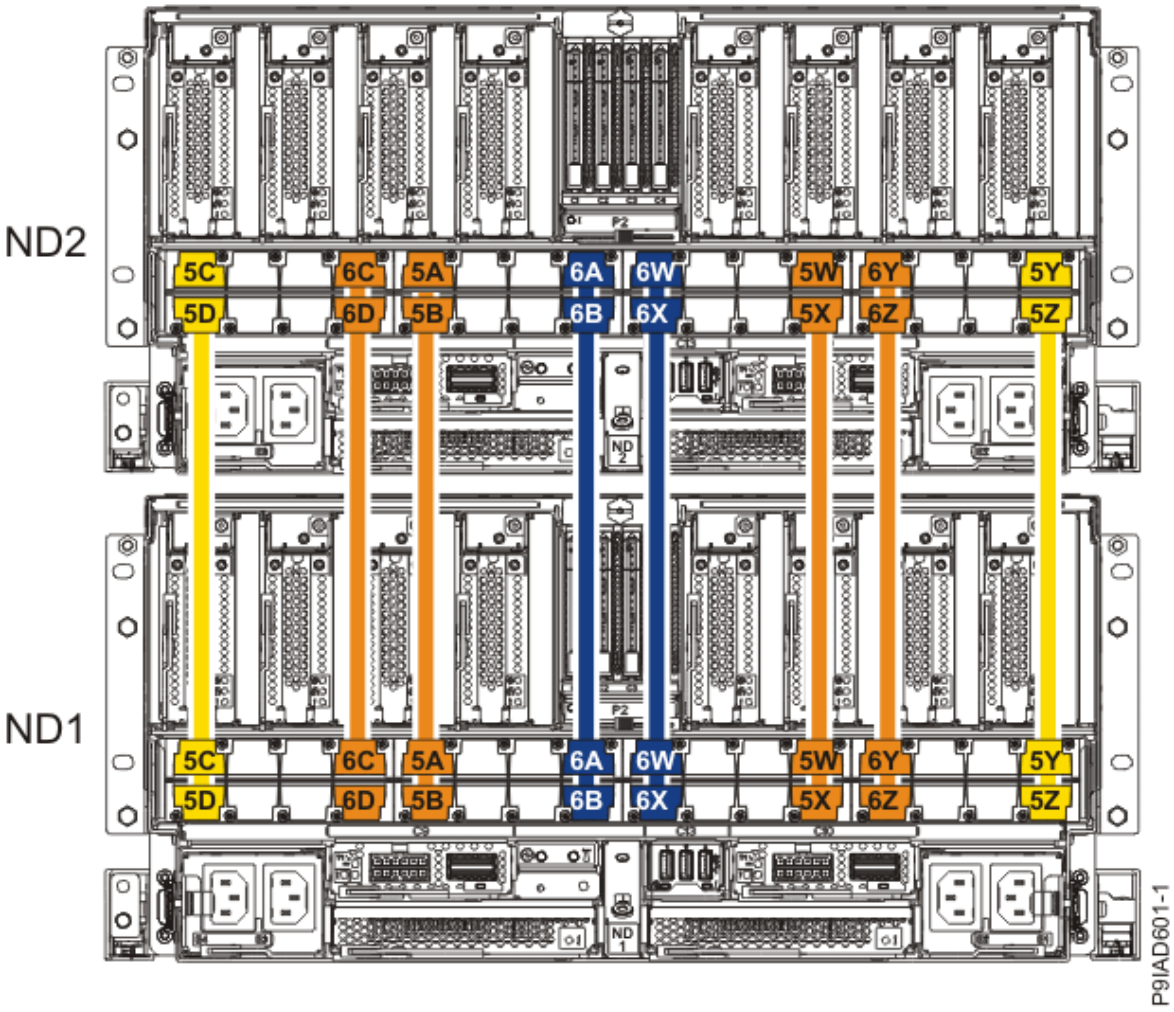


Figure 309. Cabling a Two Node Configuration

Table 47. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 47. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*

Cable	Cable type and length	From	To
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 310 on page 360 and Table 48 on page 360 to determine the point-to-point cabling for SMP cables.

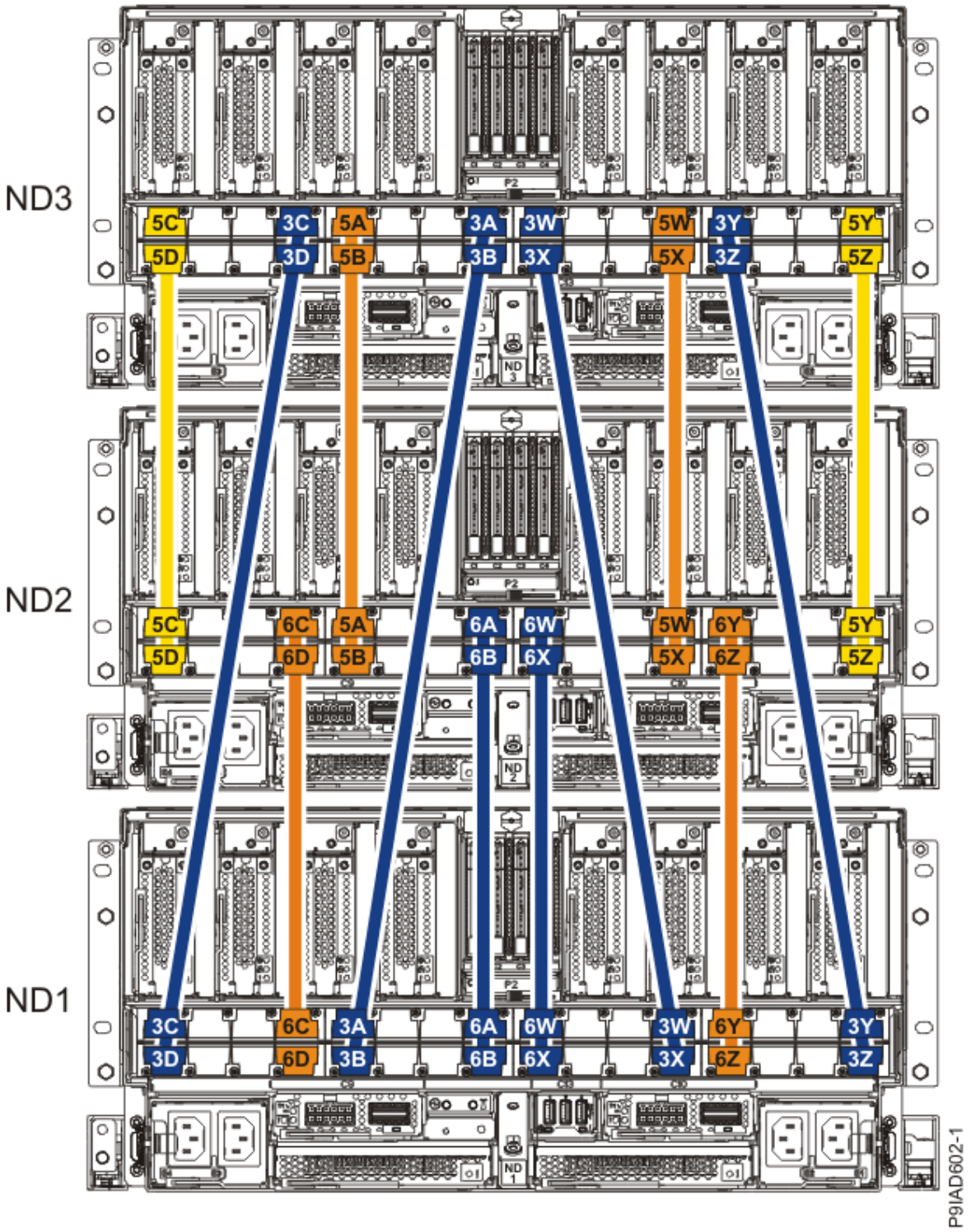


Figure 310. Cabling a Three Node Configuration

Table 48. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 48. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 48. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 311 on page 363 and Table 49 on page 364 to determine the point-to-point cabling for SMP cables.

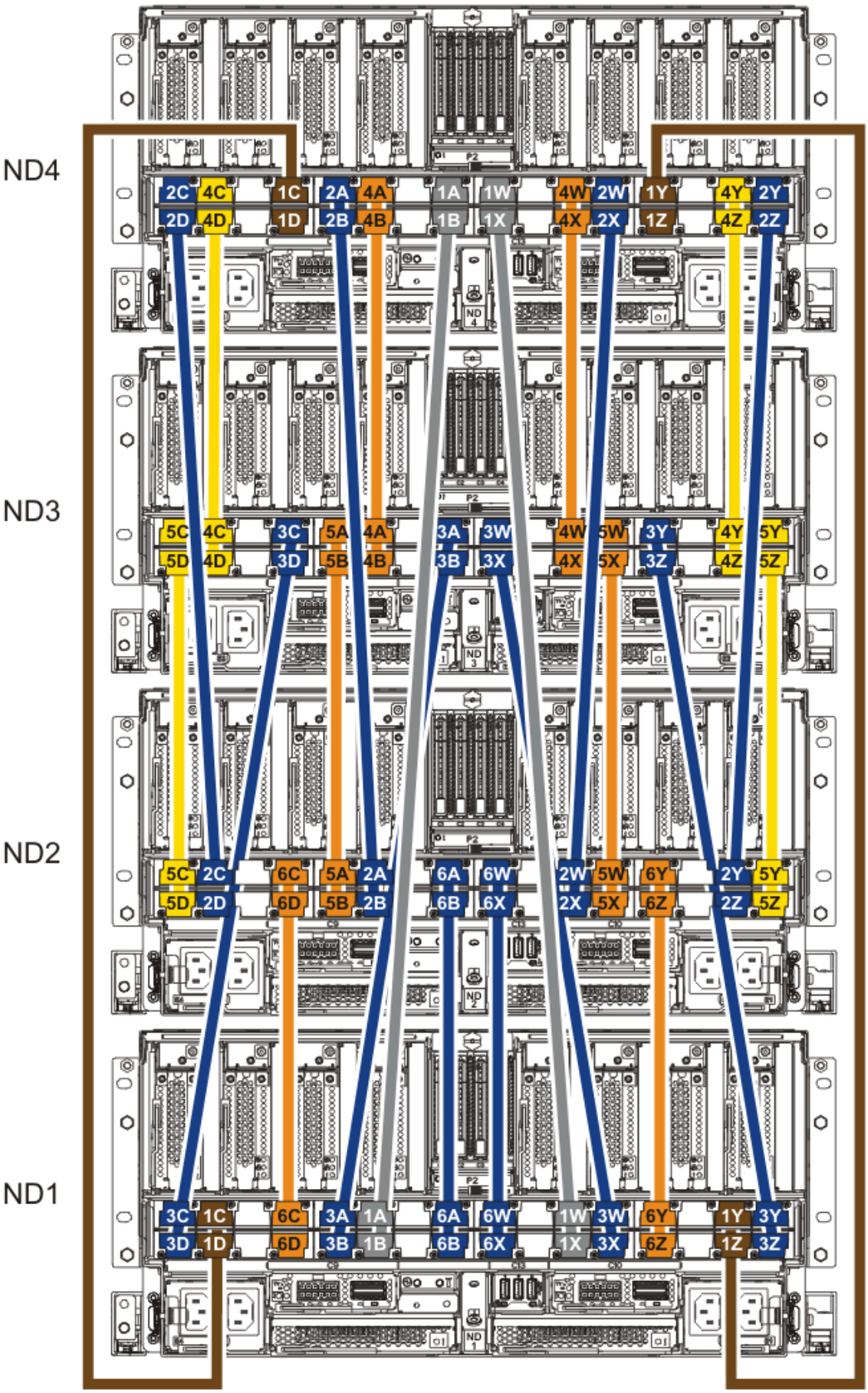


Figure 311. Cabling a Four Node Configuration

Table 49. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 49. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 49. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

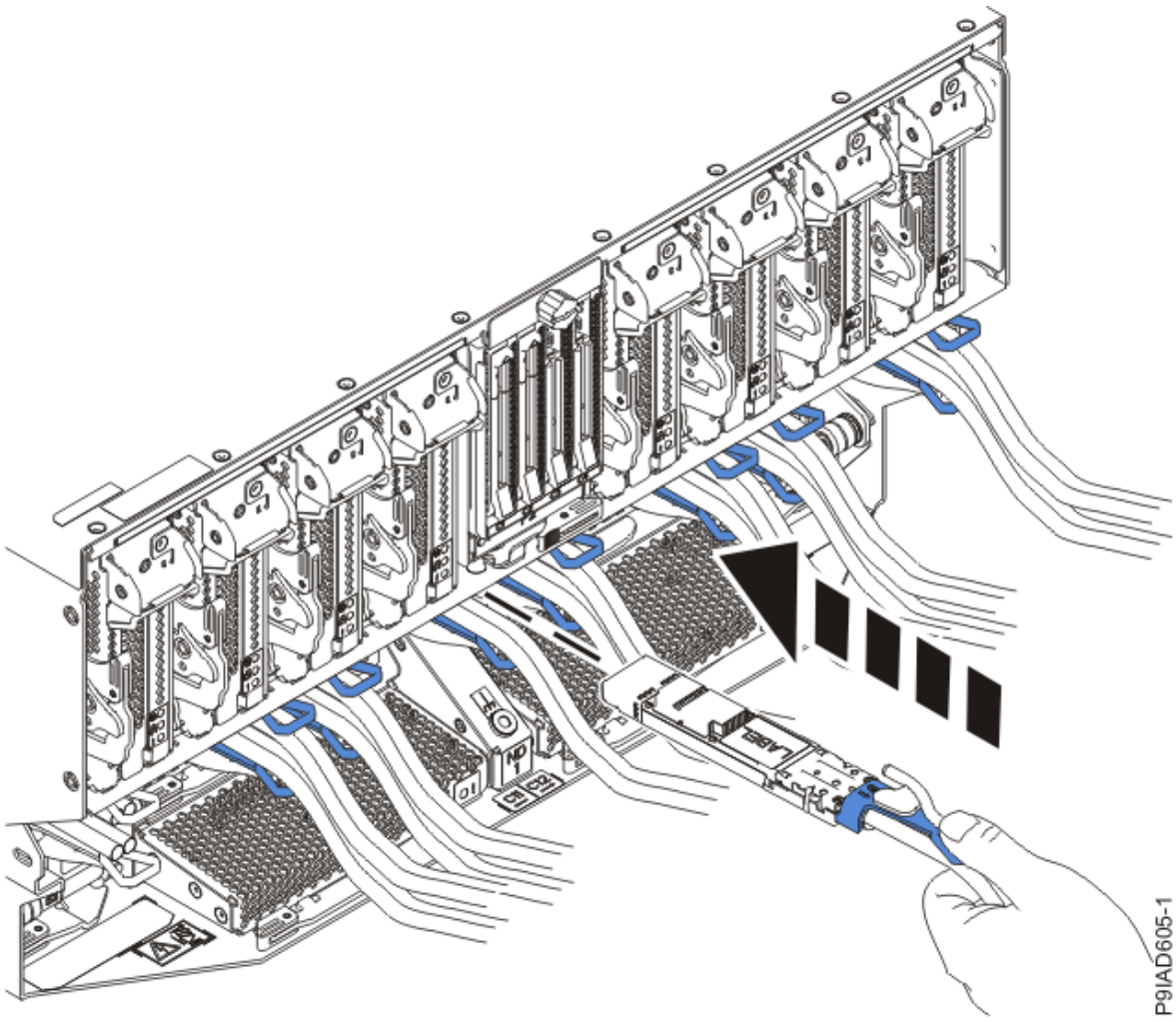


Figure 312. Replacing the SMP cable into the system node

b) Repeat step “4.a” on page 366 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

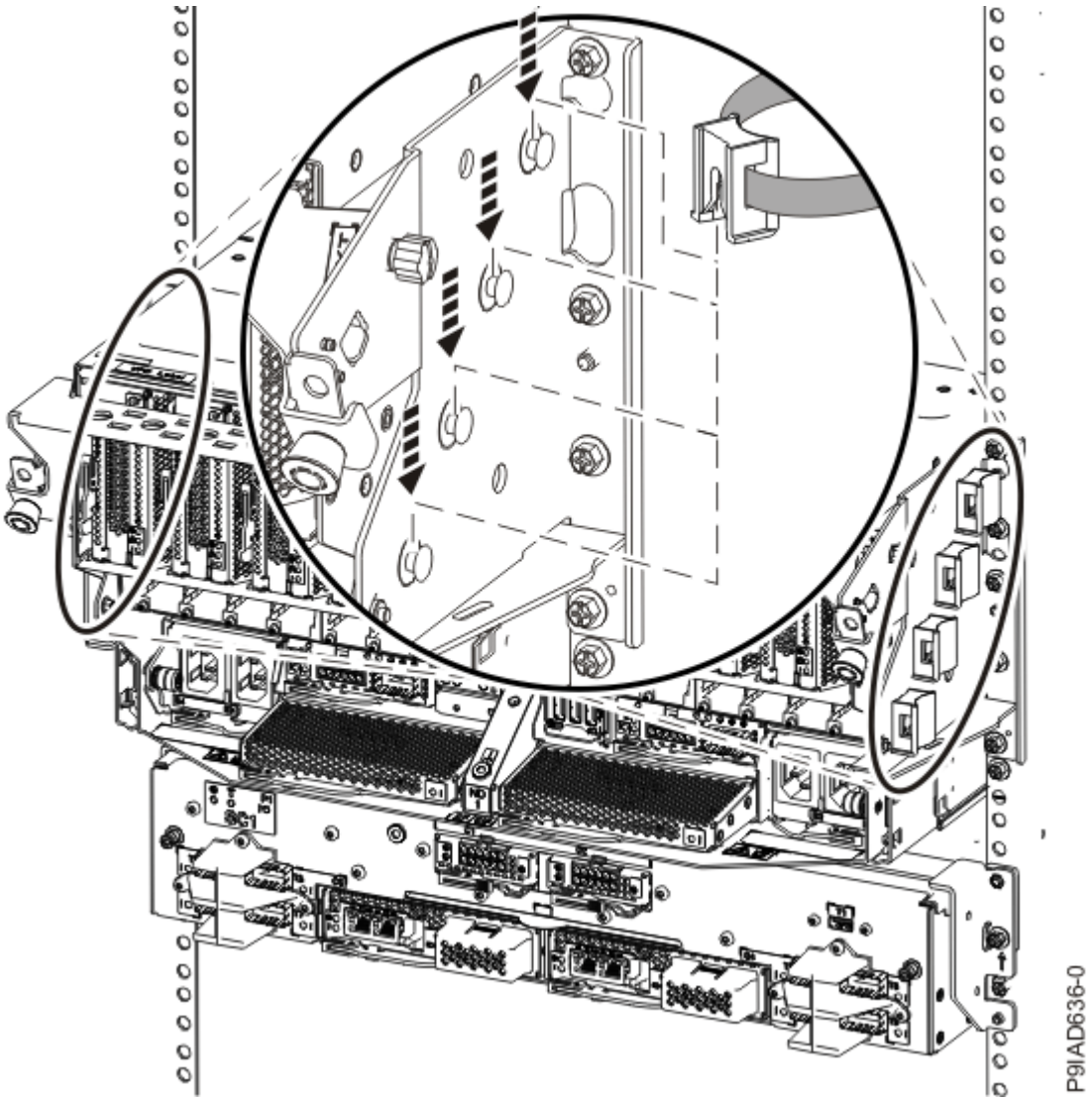


Figure 313. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

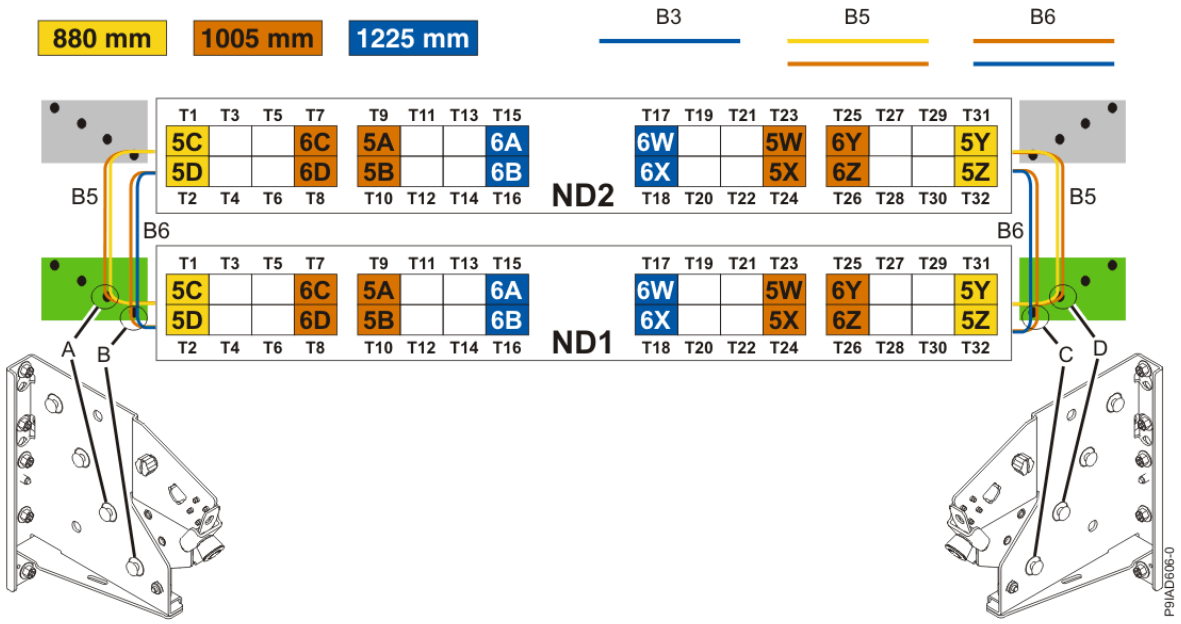


Figure 314. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

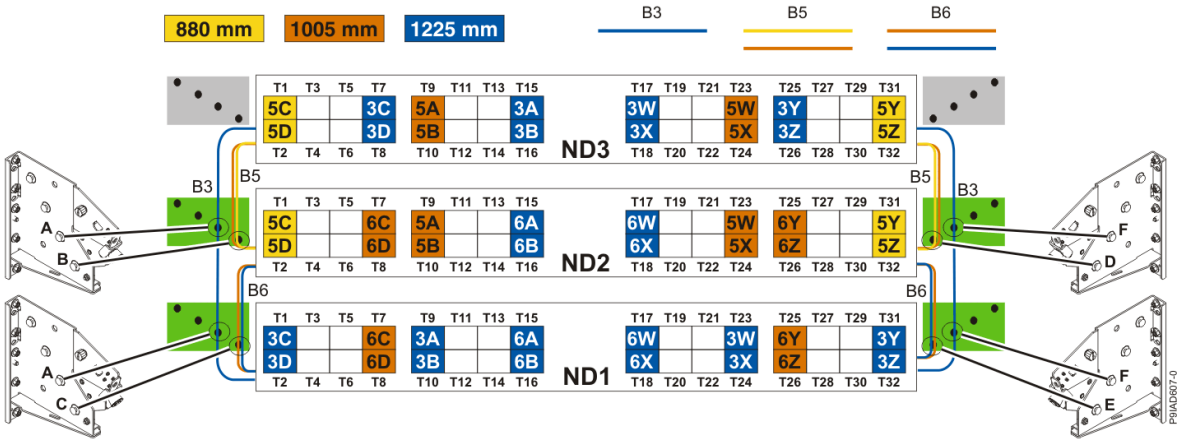


Figure 315. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

– The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
– The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

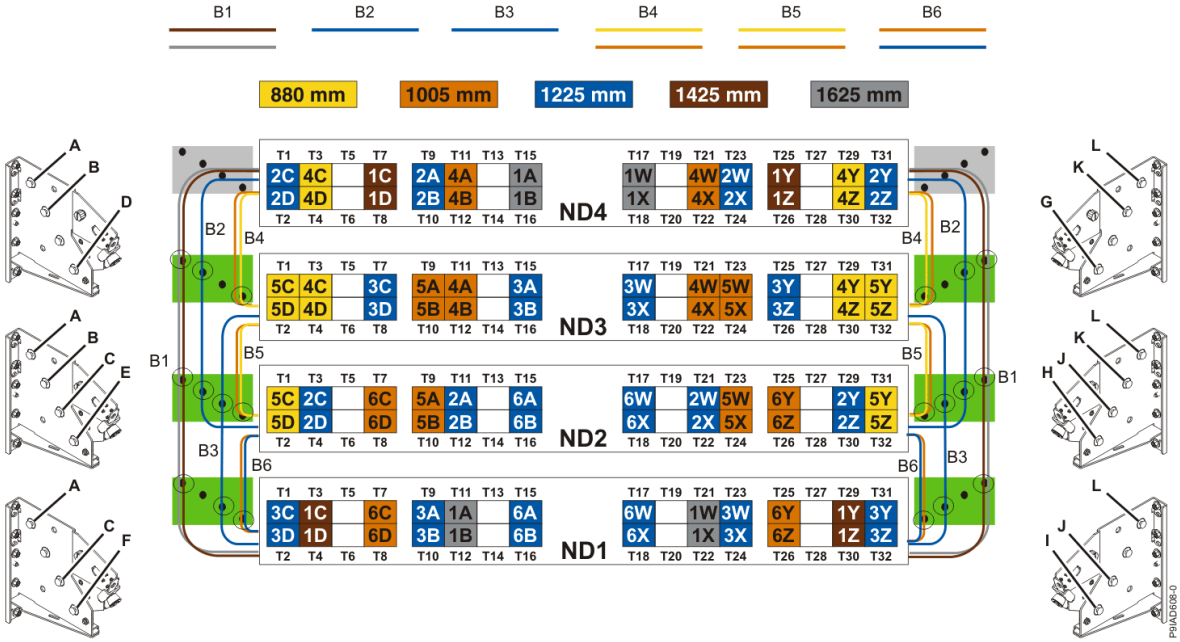


Figure 316. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  – The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  – The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  – The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  – The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  – The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  – The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  – The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  – The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  – The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  – The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  – The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  – The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

5. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 317 on page 371 and Table 50 on page 371 to determine the point-to-point cabling for UPIC cables.

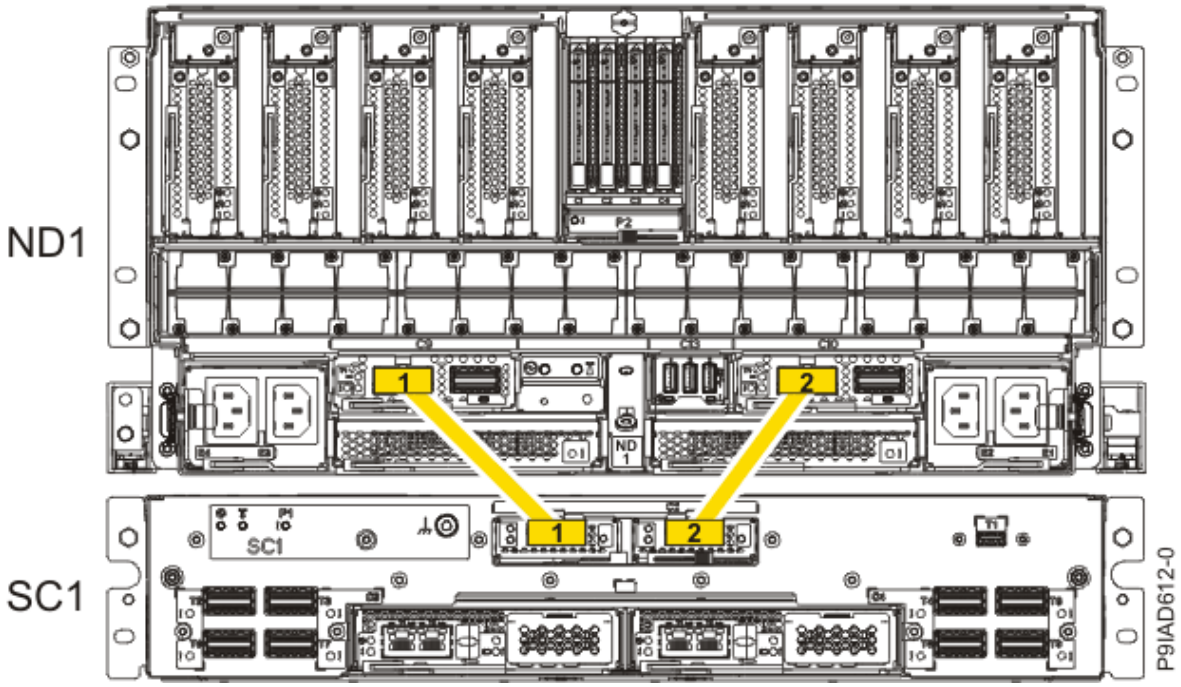


Figure 317. Single Node Configuration UPIC Cabling

Table 50. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 318 on page 372 and Table 51 on page 372 to determine the point-to-point cabling for UPIC cables.

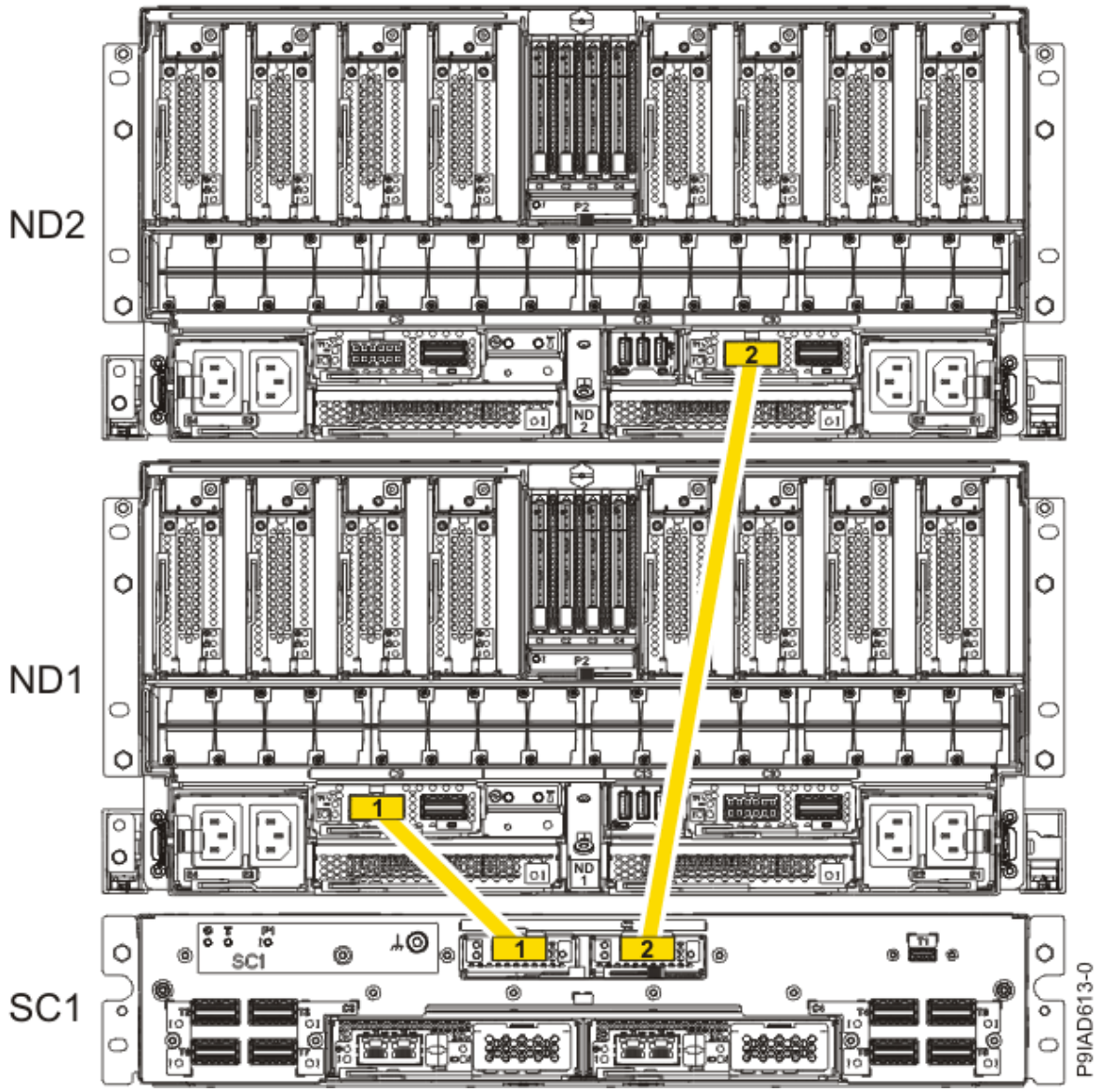


Figure 318. Two, Three, or Four Node Configuration UPIC Cabling

Table 51. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

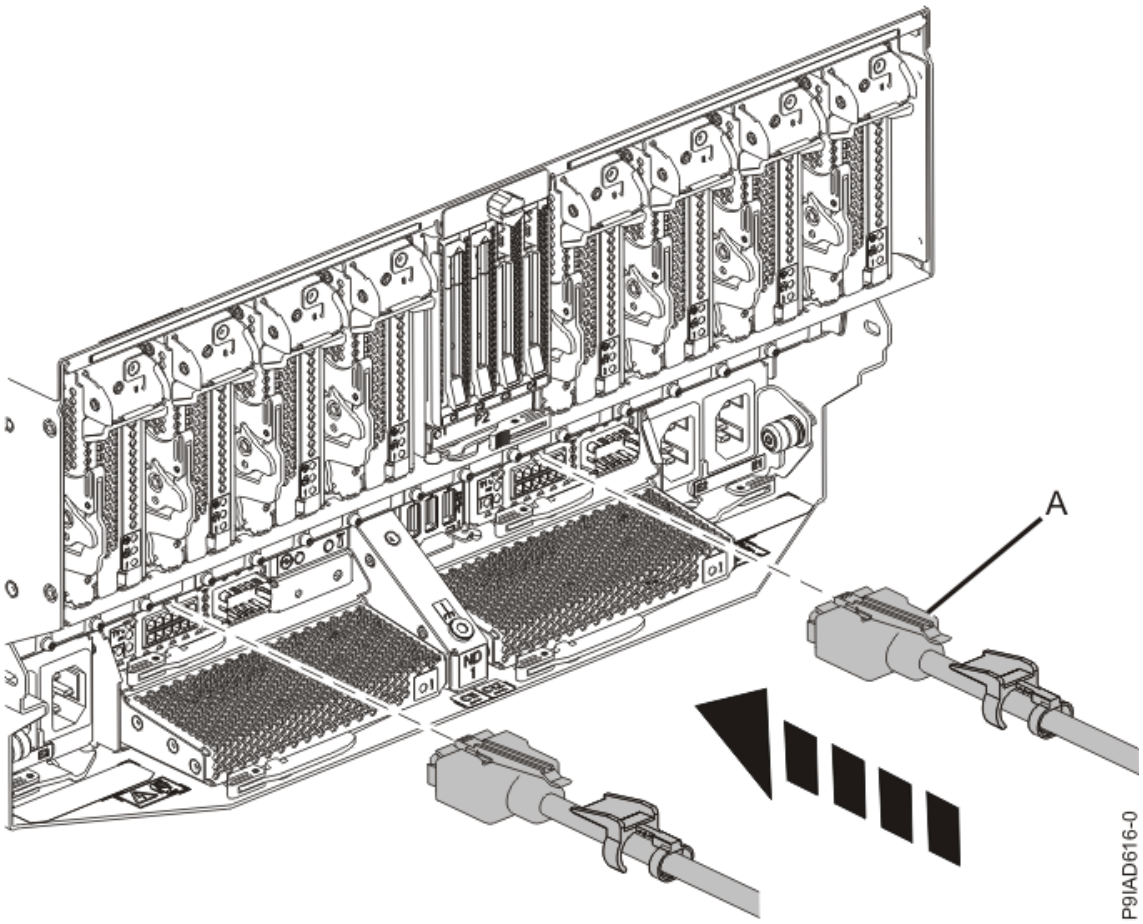


Figure 319. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

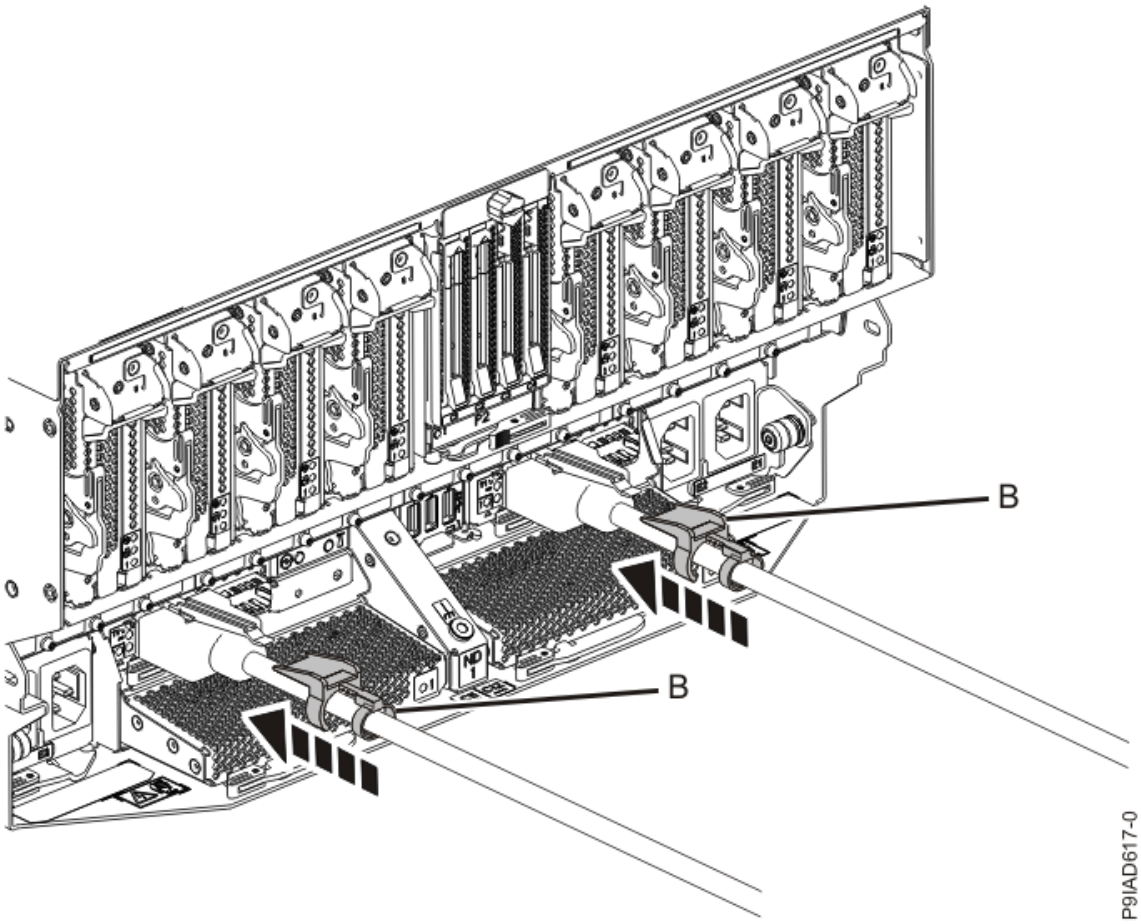


Figure 320. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “5.a” on page 372 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

6. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

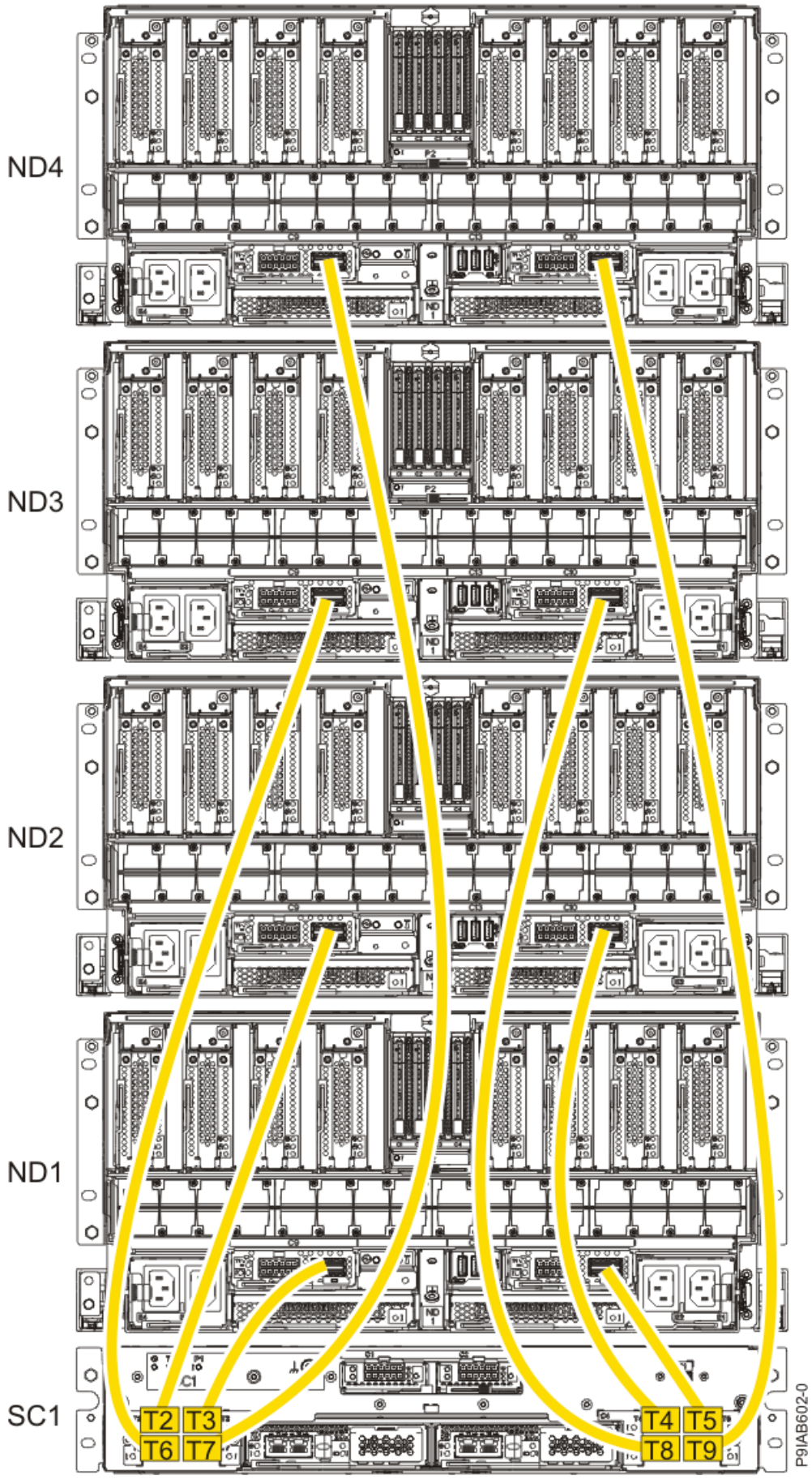


Figure 321. Service processor (FSP) cabling

Table 52. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

7. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

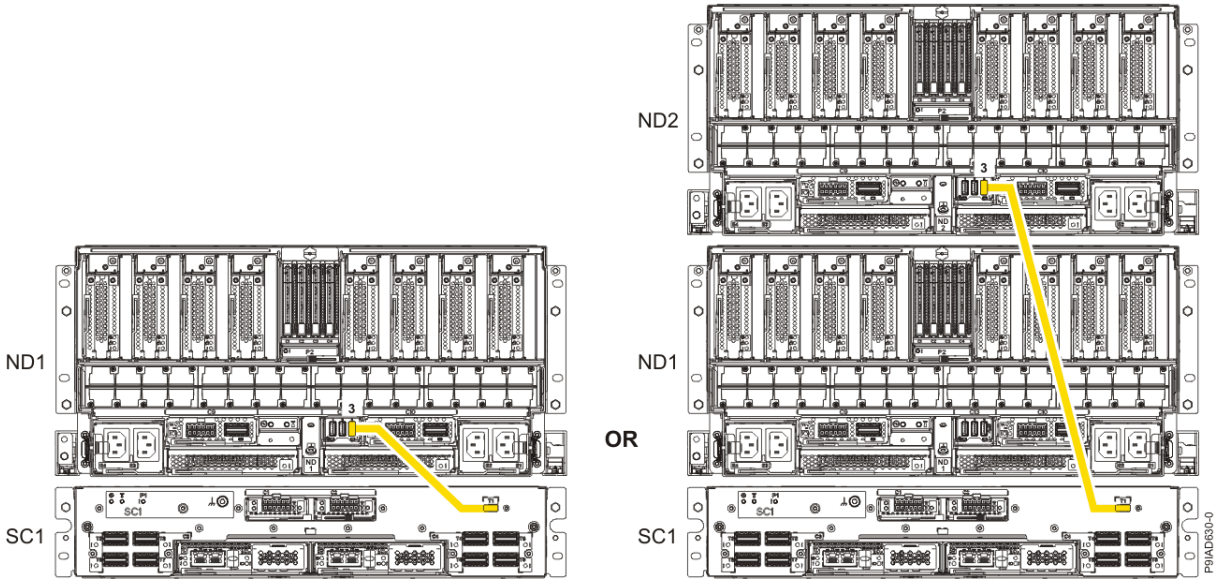


Figure 322. USB Cabling

Table 53. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

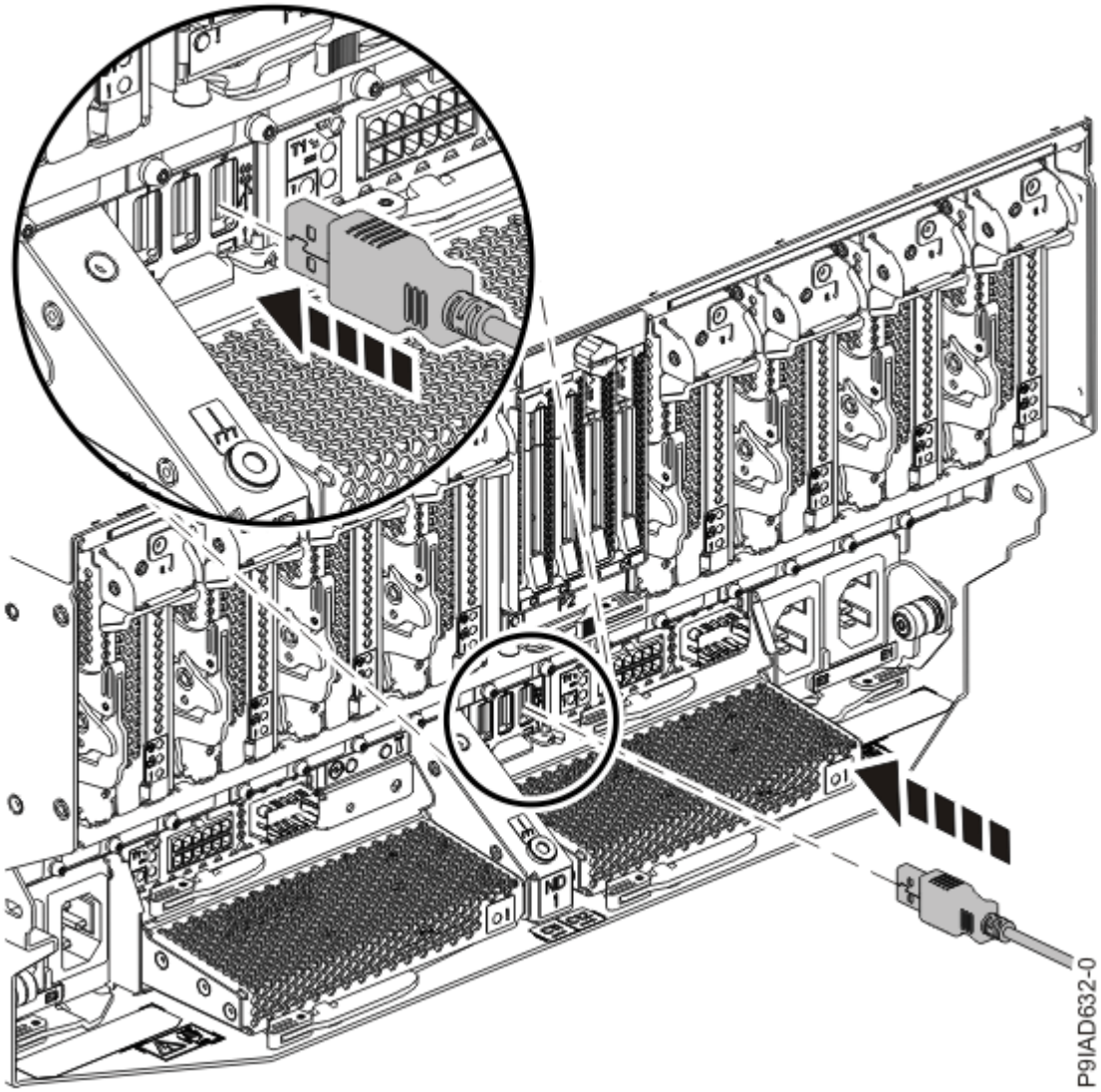


Figure 323. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

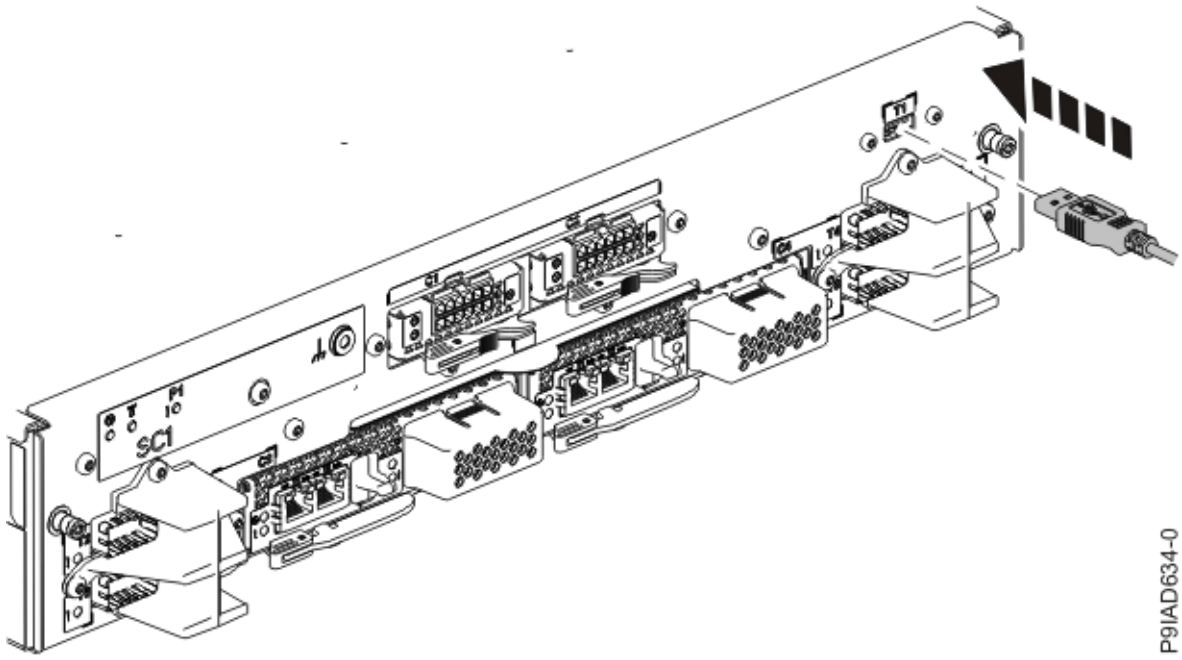


Figure 324. Replacing the USB cable into the system control unit

8. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

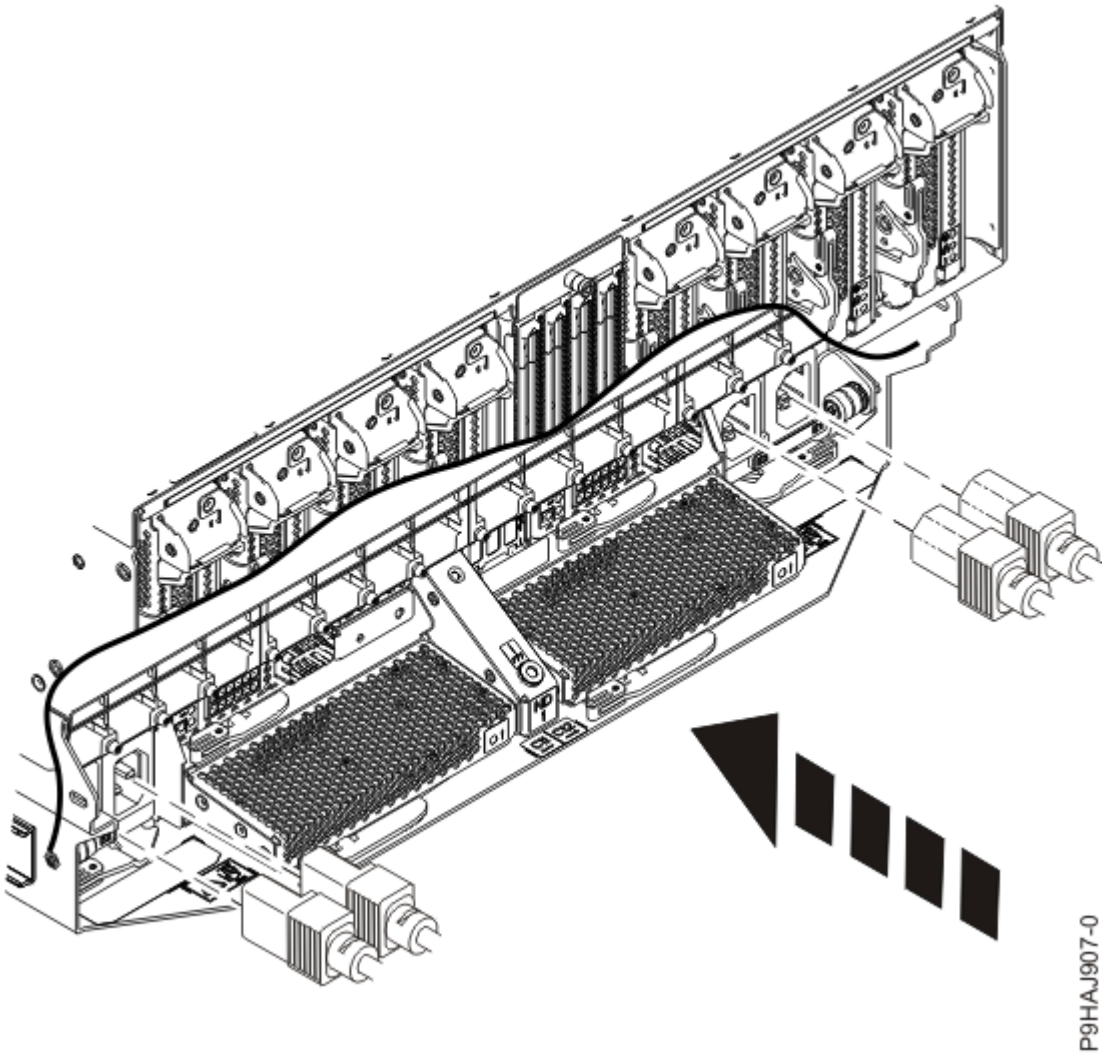


Figure 325. Connecting the rear power cords

9. 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.

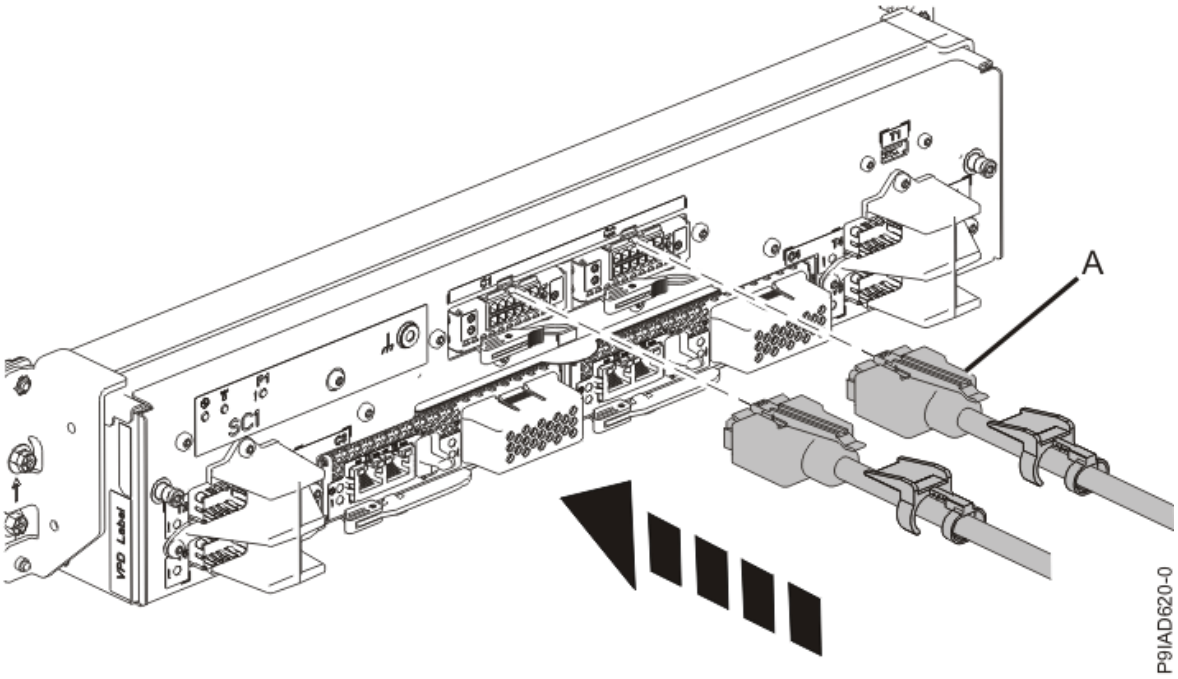


Figure 326. Replacing the UPIC cable into the system control unit

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

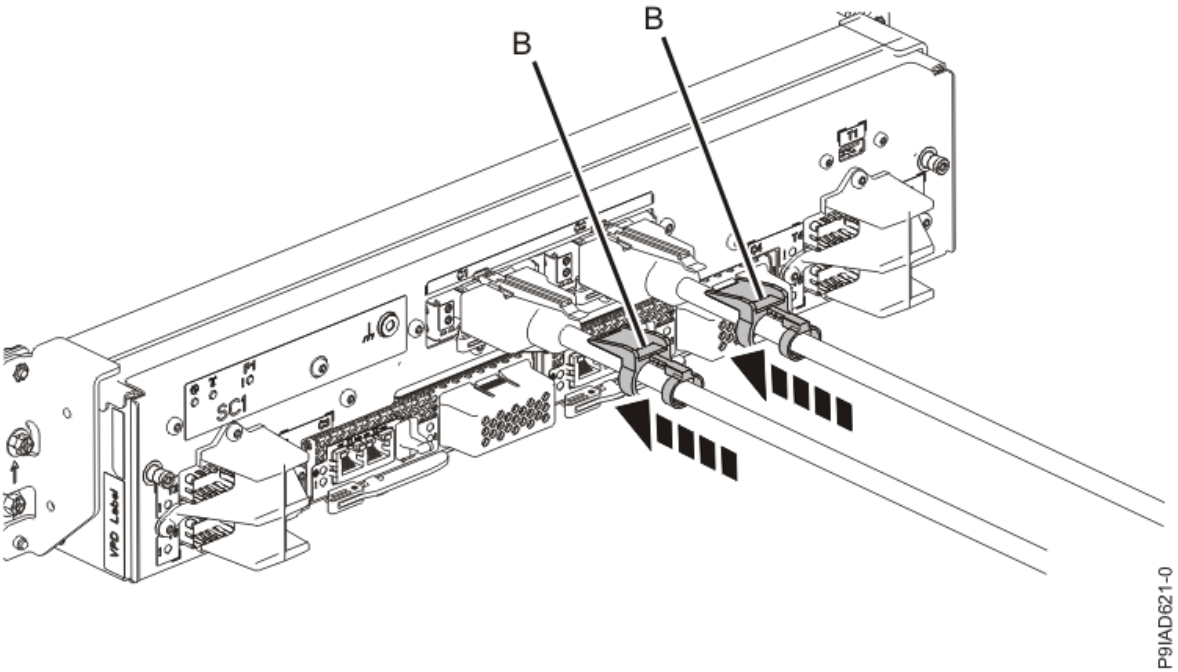


Figure 327. Replacing the UPIC cable into the system control unit

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.

10. 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.
11. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

12. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).
13. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

NVMe backplane

Preparing the 9080-M9S system to remove and replace an NVMe drive backplane

Procedure

1. Open the rear rack door, if necessary.
2. 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.

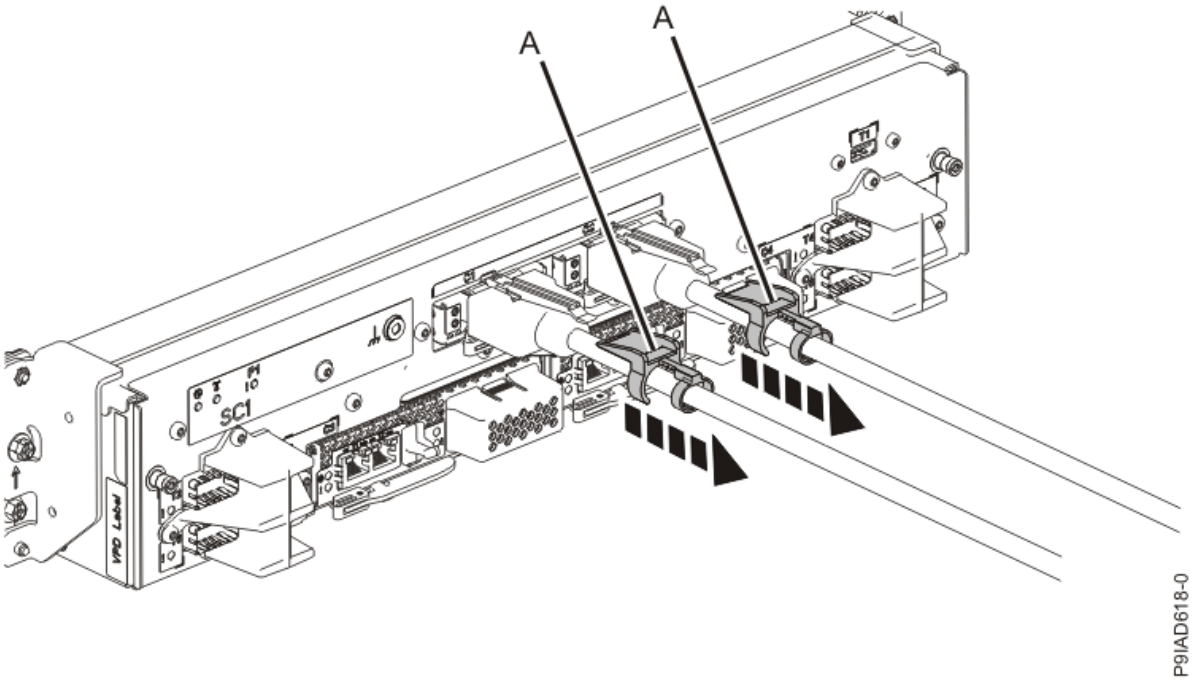


Figure 328. Removing the UPIC cable lock

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

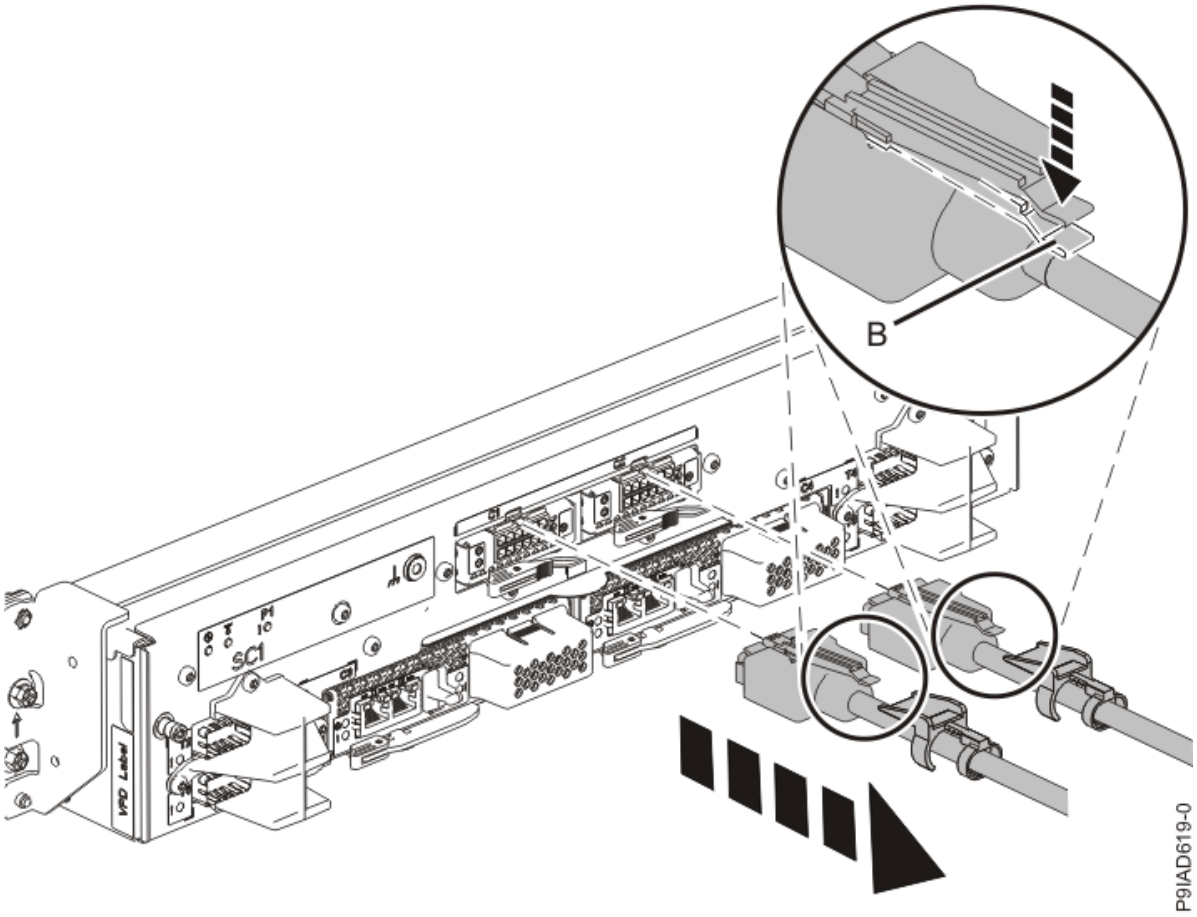


Figure 329. Removing the UPIC cable from the system control unit

3. Remove the front cover from the node that is being serviced.

   Place your fingers on the indentations located on both sides of the cover **(A)** and pull the cover away from the system as shown in the following figure.

   CAUTION: The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

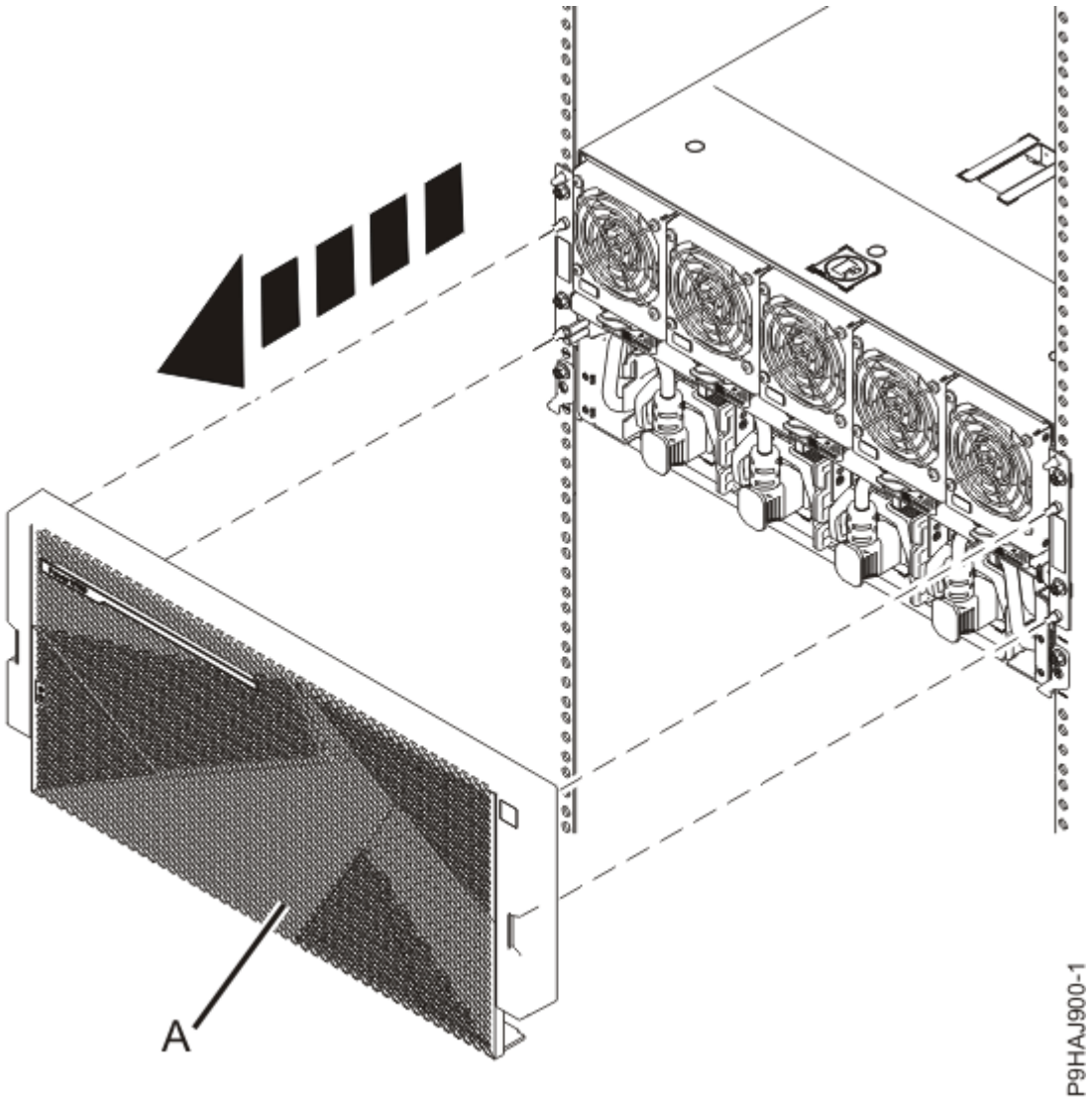


Figure 330. Removing the front cover

4. Disconnect all of the front power cords that plug into the power supplies of the system node that is being serviced.

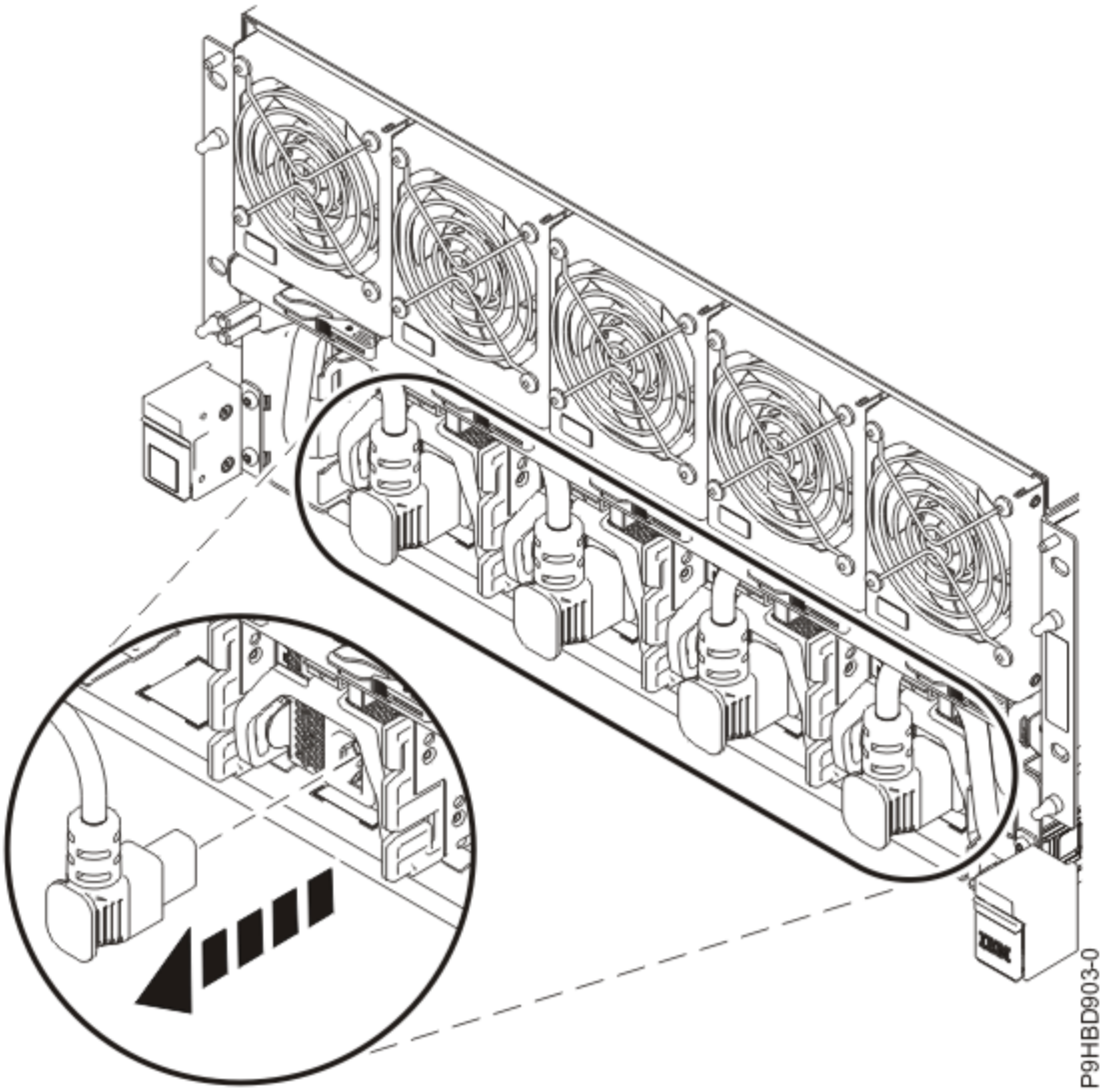


Figure 331. Removing the front power cords

5. If applicable, open the rack door at the rear of the system.
6. 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.

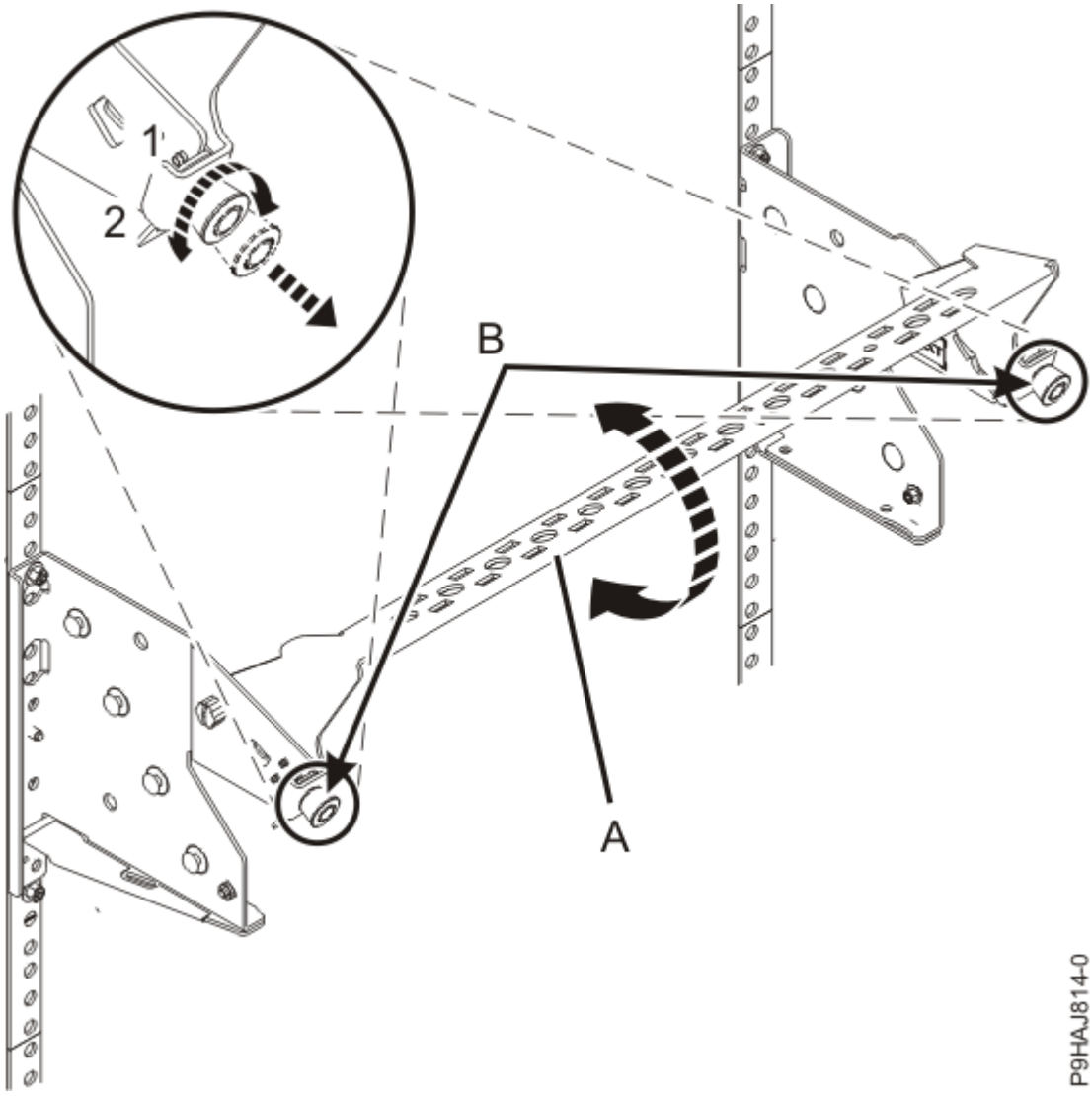


Figure 332. Placing the cable management bracket in the raised service position

7. 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.

Removing an NVMe drive backplane from the 9080-M9S system

To remove an NVMe drive backplane from 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. To remove any NVMe U.2 drives from the failed backplane, complete the following steps:
   a) Press the release latch **(A)** in the direction that is shown to release the drive handle **(B)**.

   (L007)

   CAUTION: A hot surface nearby. (L007)

   b) Support the bottom of the NVMe U.2 drive as you slide the drive out of the system, holding the drive by its sides.

   Note: Do not pull the drive out by using the handle.

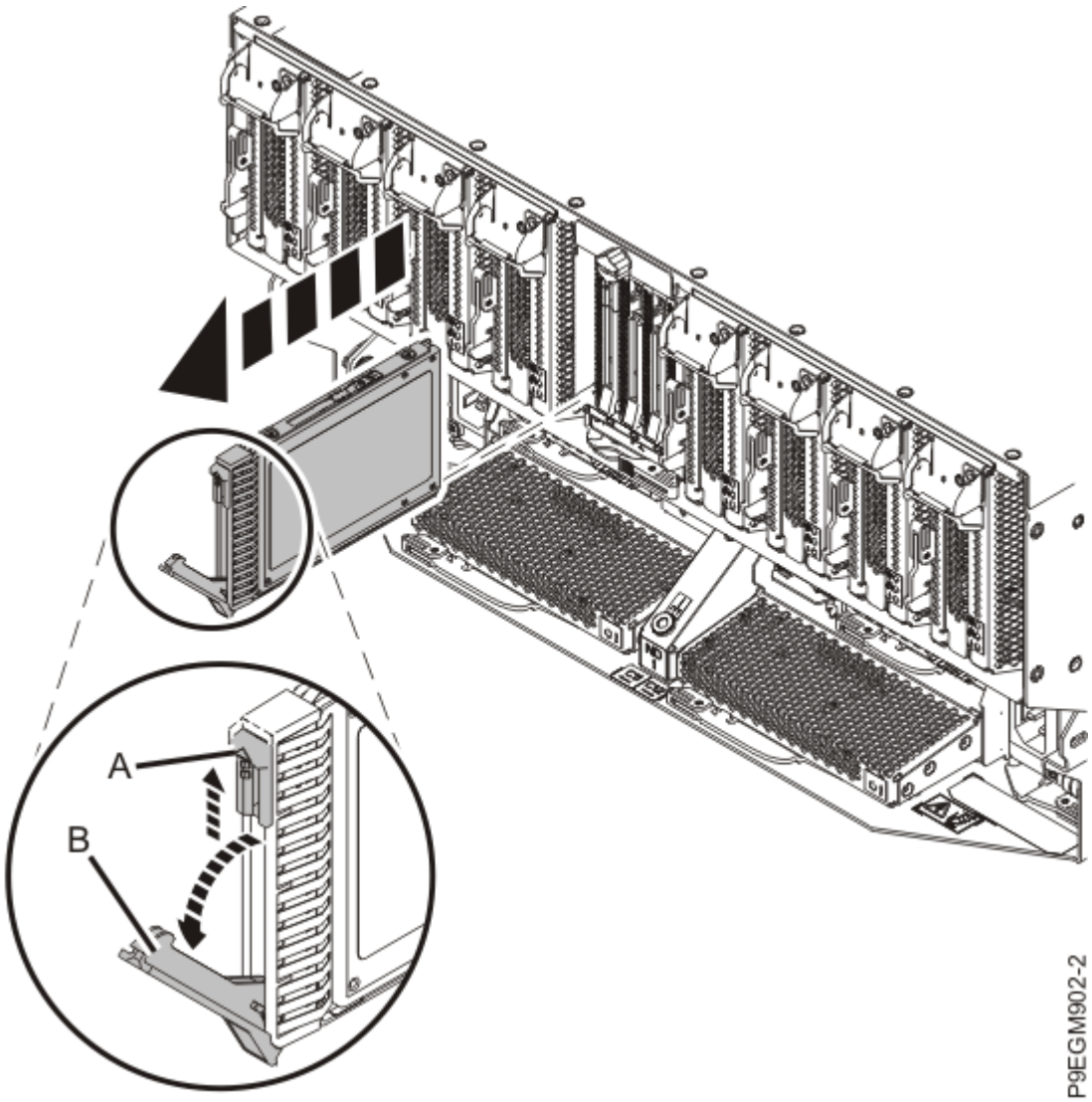


Figure 333. Removing an NVMe U.2 drive from the 9080-M9S system

c) Place the NVMe U.2 drive on an appropriate ESD surface.

d) Repeat this step for any other NVMe U.2 drives that need to be removed from the failed NVMe backplane.

3. To remove the empty NVMe drive backplane, complete the following steps:

a) Remove the thumbscrew **(A)** on the NVMe drive backplane.

b) Put your thumb on the front side of the latch **(B)** and put your index finger against the rear of the latch **(C)** as shown in the following figure.

c) Push against the latch with your thumb and then pull the latch out with your index finger. This action releases the latch.

d) Rotate the backplane handle in the direction that is shown in the following figure to unlock the backplane from its slot.

e) Hold on to the NVMe drive backplane handle and by using your hand to support the bottom of the backplane **(D)**, pull out the backplane from its slot.

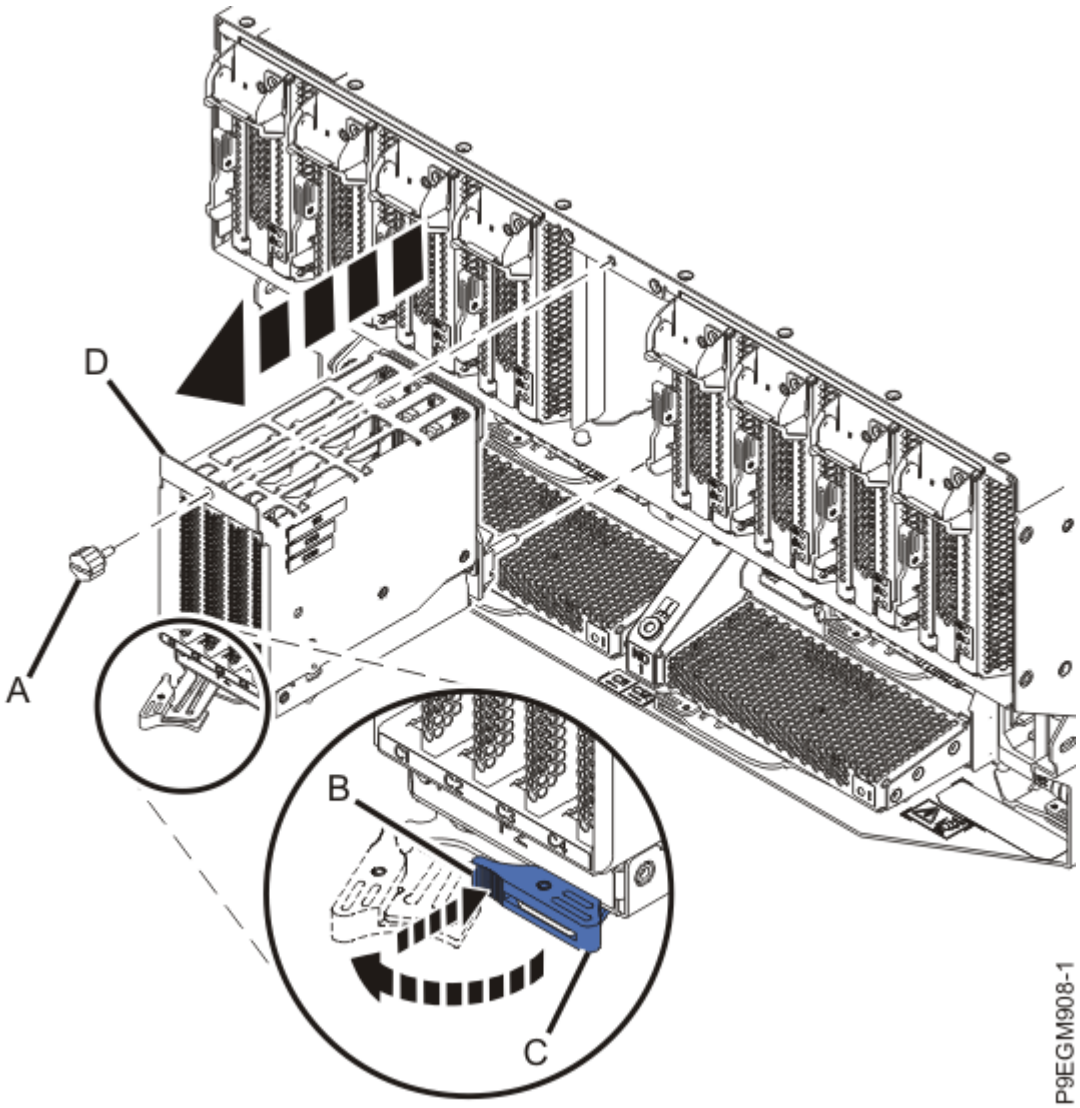


Figure 334. Removing an NVMe drive backplane from the 9080-M9S system

4. Place the NVMe drive backplane on an appropriate ESD surface.

Replacing an NVMe drive backplane in the 9080-M9S system

To replace an NVMe drive backplane in 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. If necessary, remove the NVMe drive backplane from the antistatic package.
3. Place the NVMe drive backplane on an appropriate ESD surface.
4. To install the NVMe drive backplane, complete the following steps:
   a) Slide the NVMe drive backplane **(A)** into the system until it is seated.
   b) Press the NVMe backplane latch **(B)** in the direction that is shown in the following figure until it locks in place.
   c) Insert and tighten the thumbscrew **(E)**.

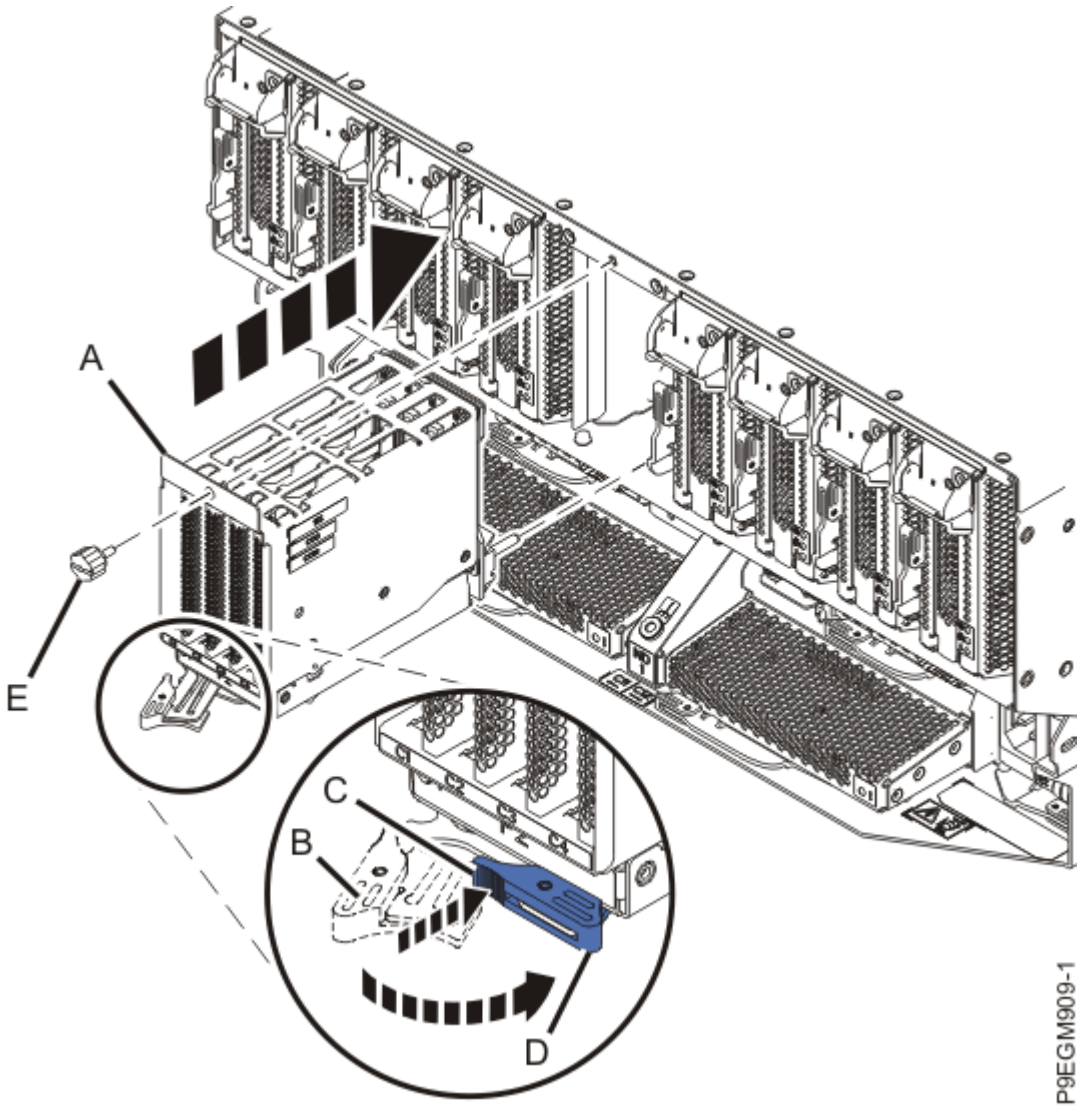


Figure 335. Replacing the NVMe drive backplane in the 9080-M9S system

5. To install any removed NVMe U.2 drives into the new drive backplane, complete the following steps:

   Note: Using your labels, ensure that you put the NVMe U.2 drives into the same slot in the replacement backplane.

   a) Press the release latch **(A)** in the direction that is shown to release the drive handle **(B)**.

   b) Slide the NVMe U.2 drive into the slot until it’s fully seated.

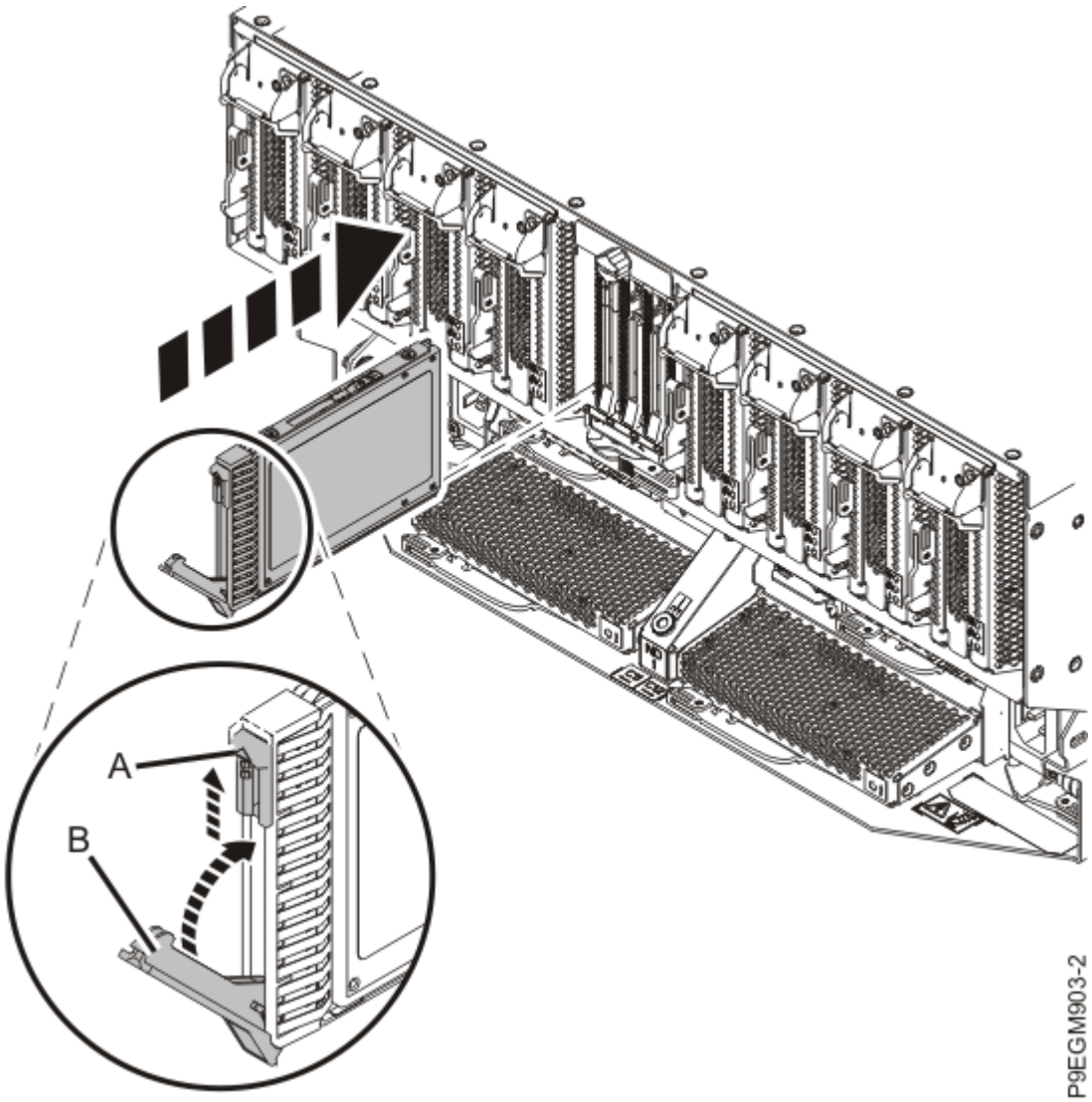


Figure 336. Installing or replacing an NVMe U.2 drive in the 9080-M9S system

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

d) Repeat this step for any other NVMe U.2 drives that need to be installed.

Preparing the 9080-M9S system for operation after removing and replacing an NVMe drive backplane

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.

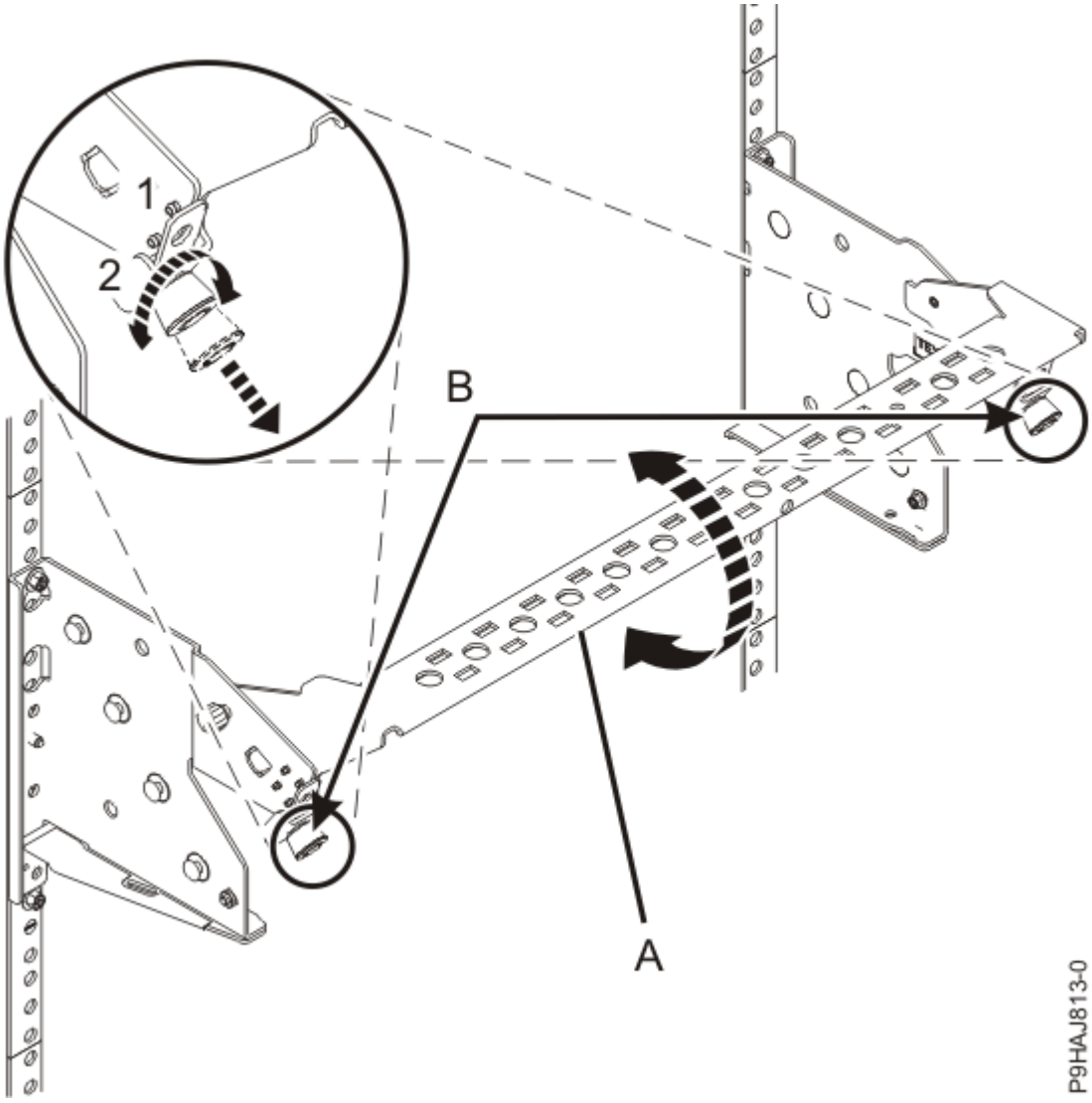


Figure 337. Placing the cable management bracket in the lowered operating position

3. Connect all of the front power cords that plug into the power supplies of the system node. Tuck the cords into the chassis.

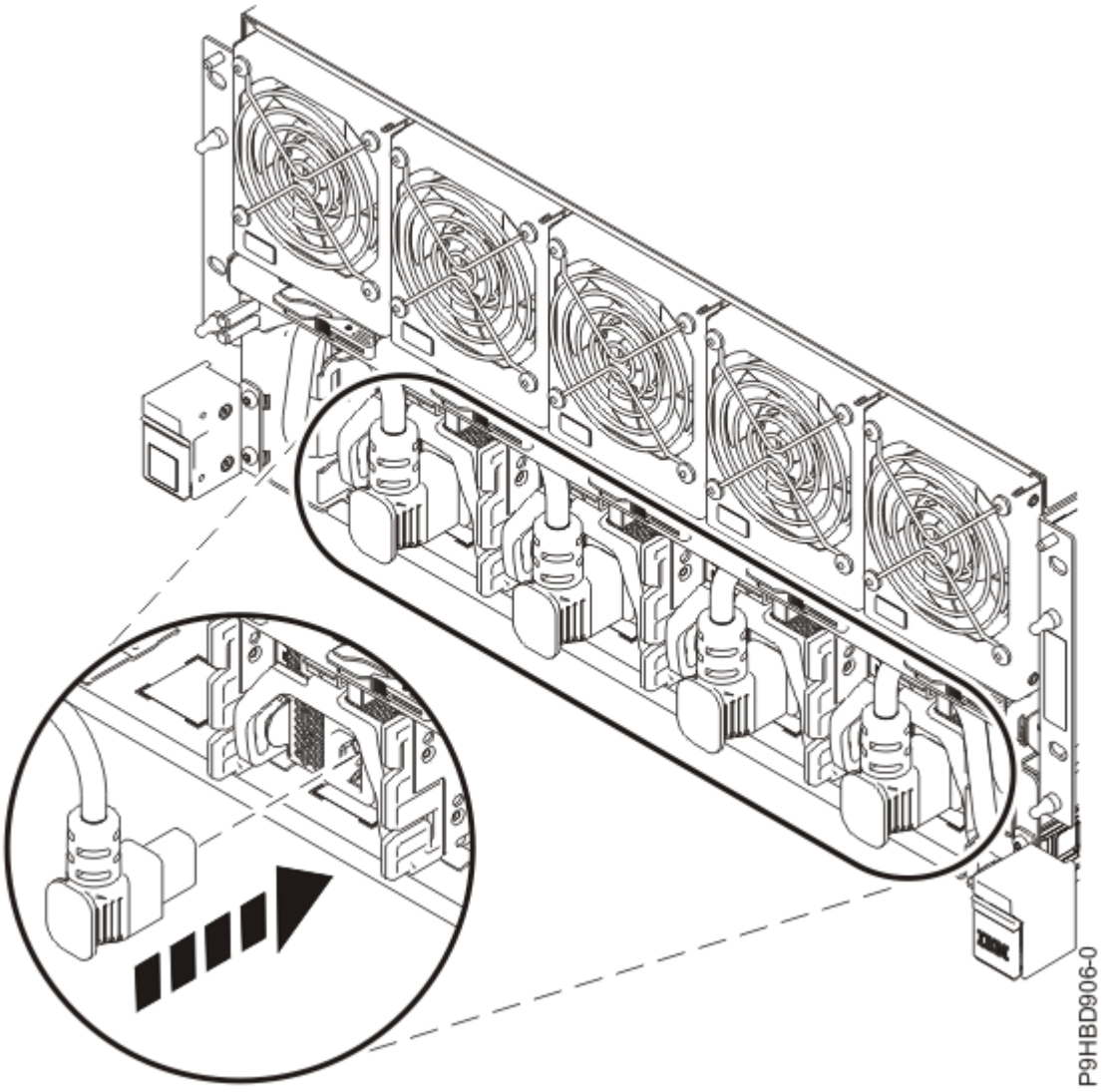


Figure 338. Connecting the front power cords

4. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

   Press the front cover into position.

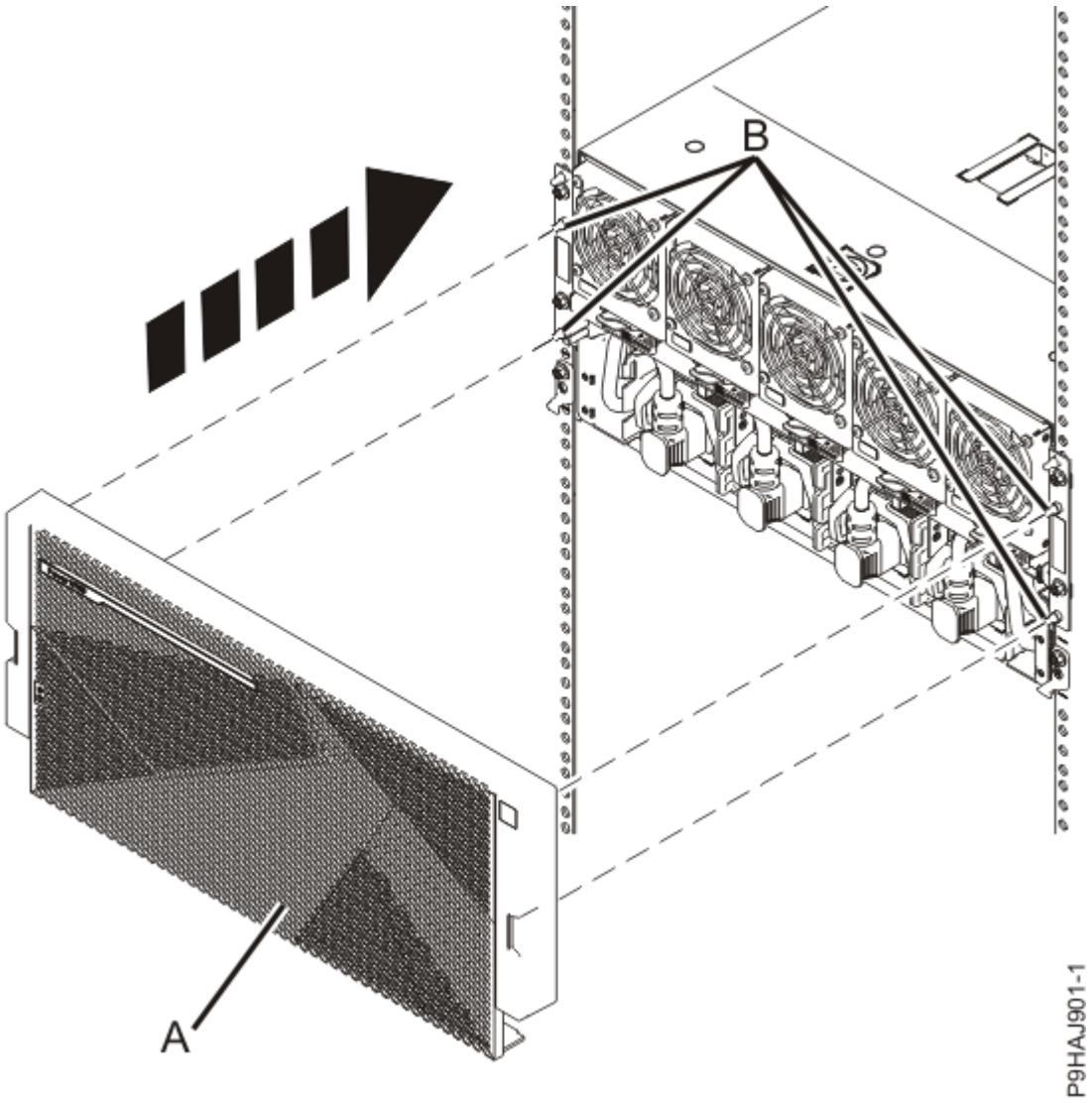


Figure 339. Installing the front cover

5. 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.

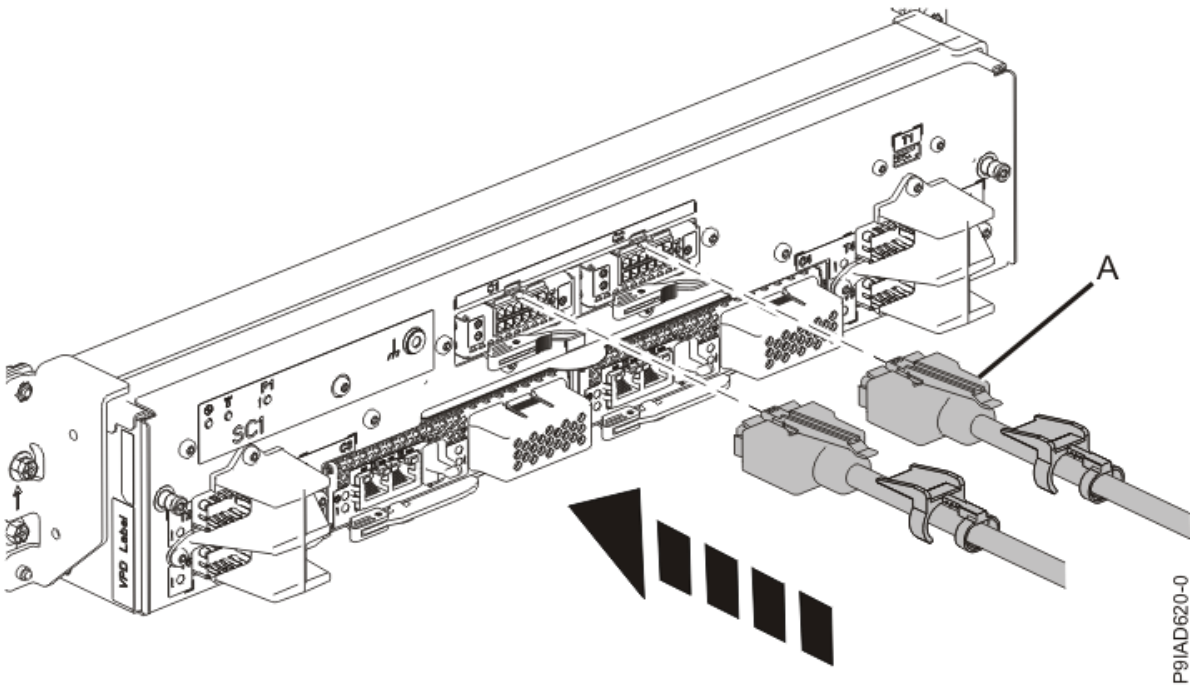


Figure 340. Replacing the UPIC cable into the system control unit

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

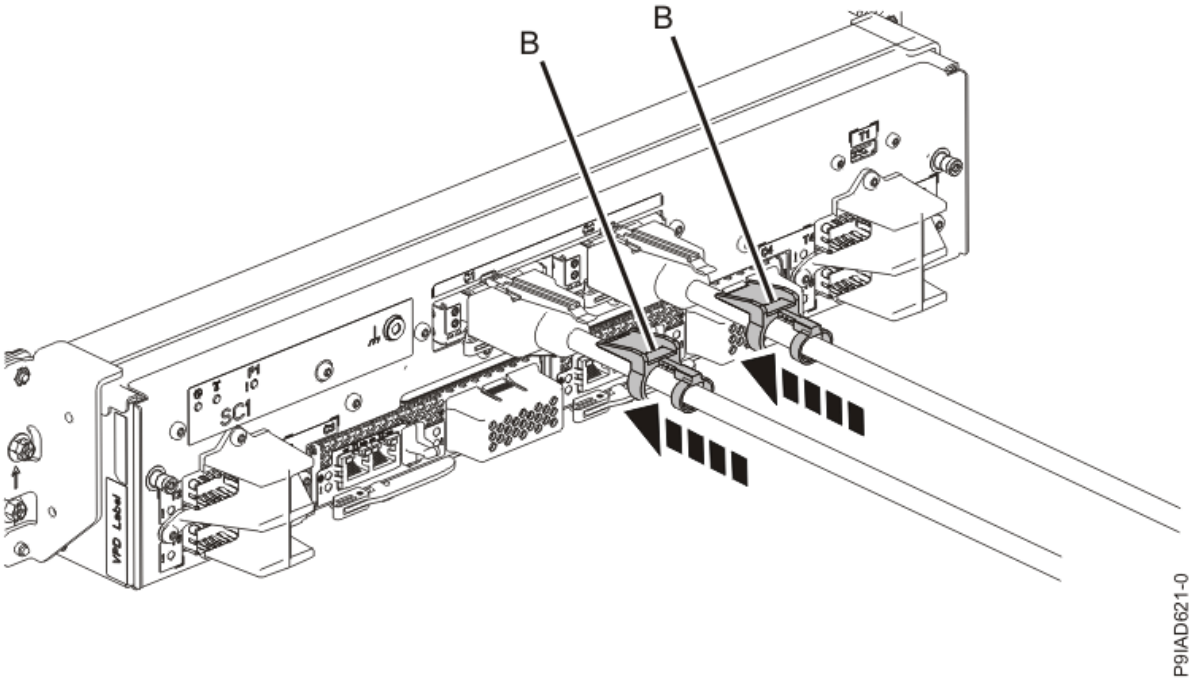


Figure 341. Replacing the UPIC cable into the system control unit

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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

NVMe drives

Installing

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.

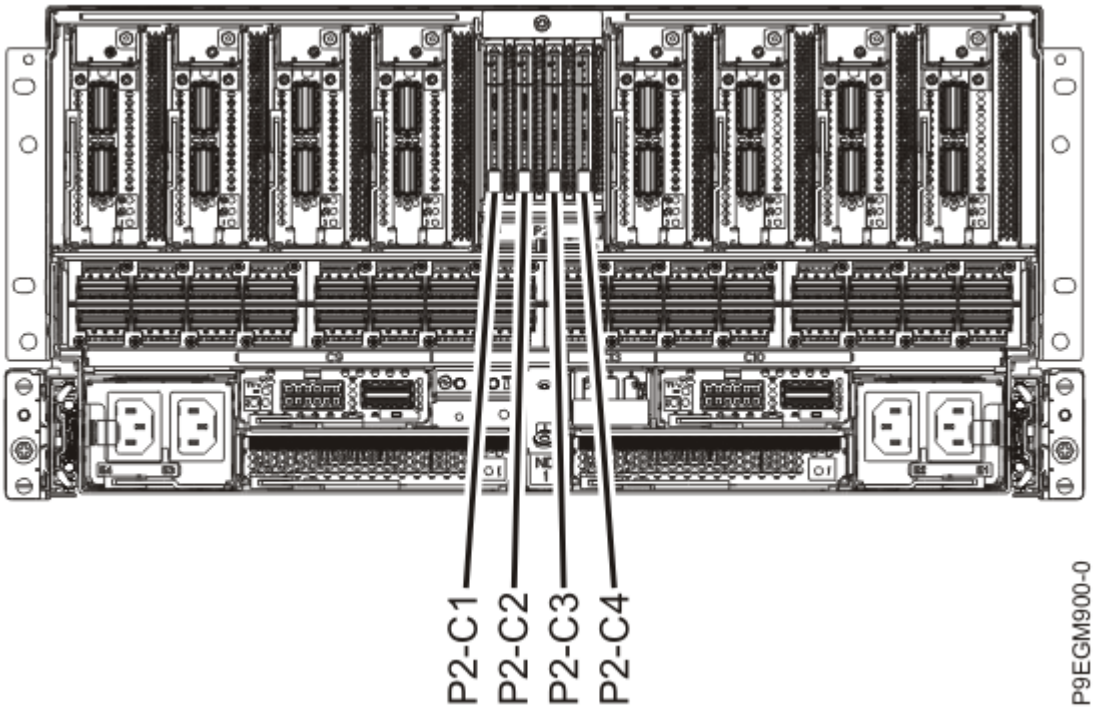


Figure 342. Location of the NVMe U.2 drives in the 9080-M9S system

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).

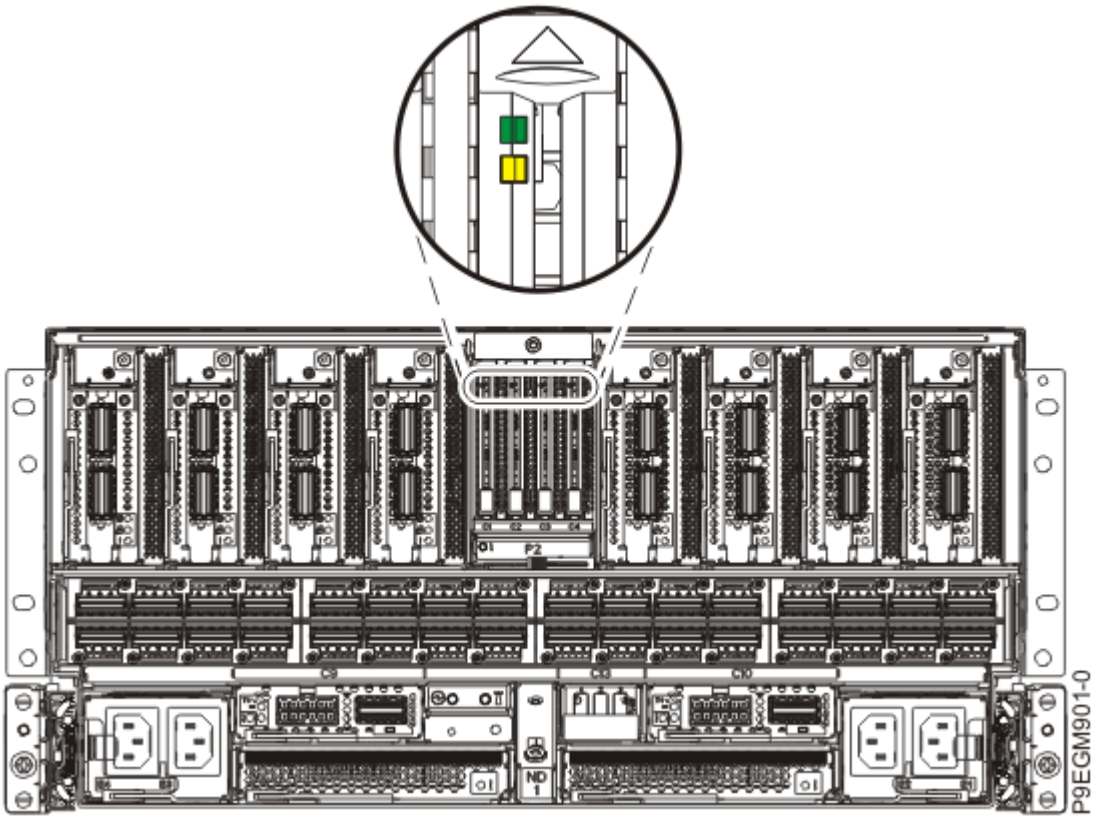


Figure 343. Locations of the NVMe U.2 LEDs in the 9080-M9S system

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 400.
   - If the system power is turned on and if the AIX® operating system controls the slot, continue with step "9" on page 401.
   - If the system power is turned on and if the Linux® operating system controls the slot, continue with step "11" on page 402.
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 (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 (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.

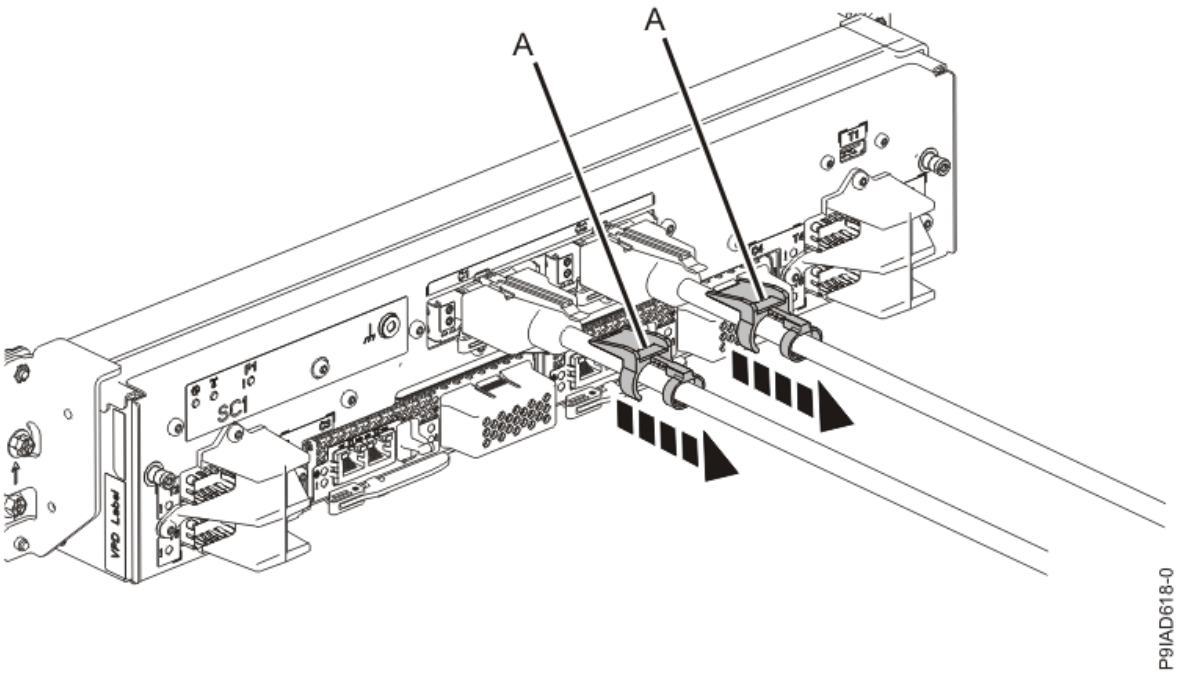


Figure 344. Removing the UPIC cable lock

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

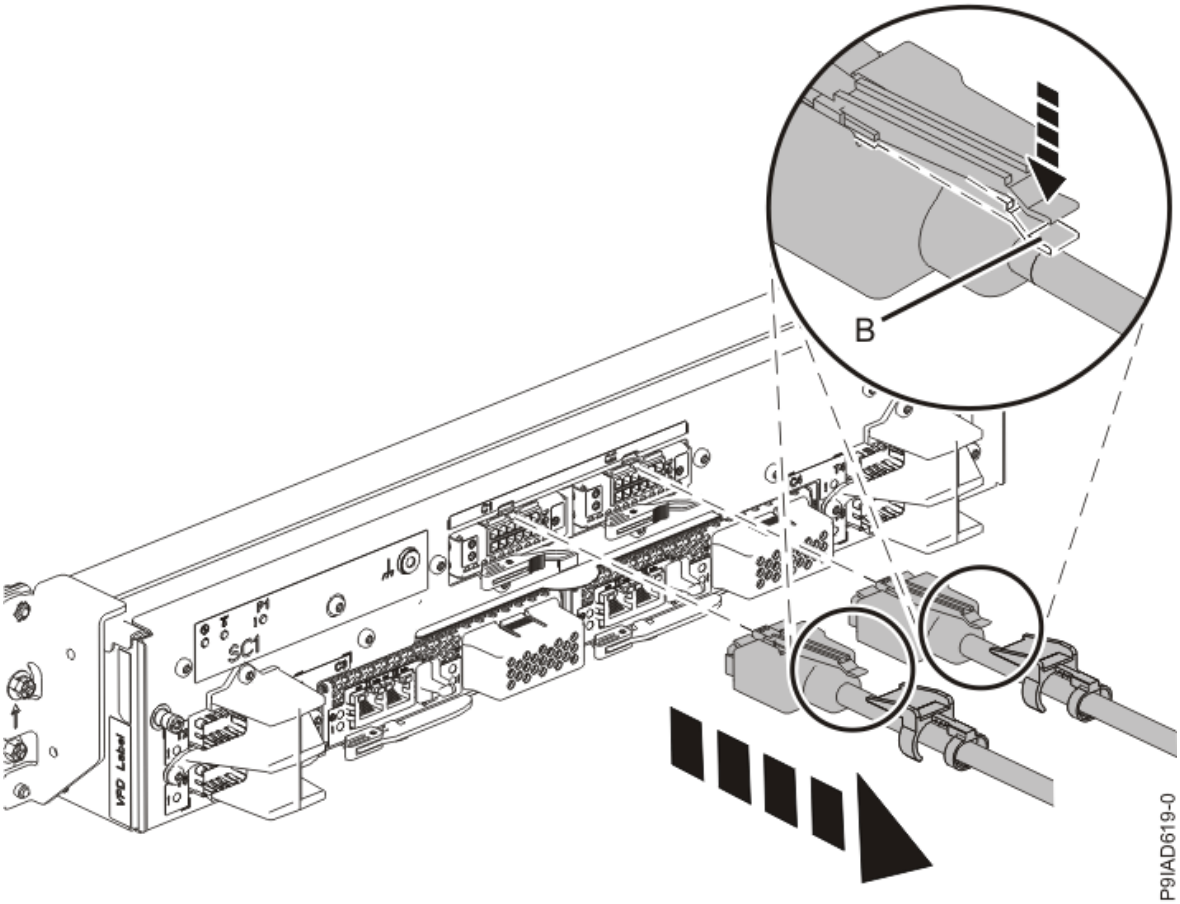


Figure 345. Removing the UPIC cable from the system control unit

8. Continue with step “12” on page 403.
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 403.
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.AAAXXXX-P2-C1 PCI-X capable, 64 bit, 133MHz slot Empty
U78D4.001.AAAXXXX-P2-C2 PCI-X capable, 64 bit, 133MHz slot Empty
U78D4.001.AAAXXXX-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:

1) Type the following command:

```
drmgr -c pci -r -s locationcode
```

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

2) 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.

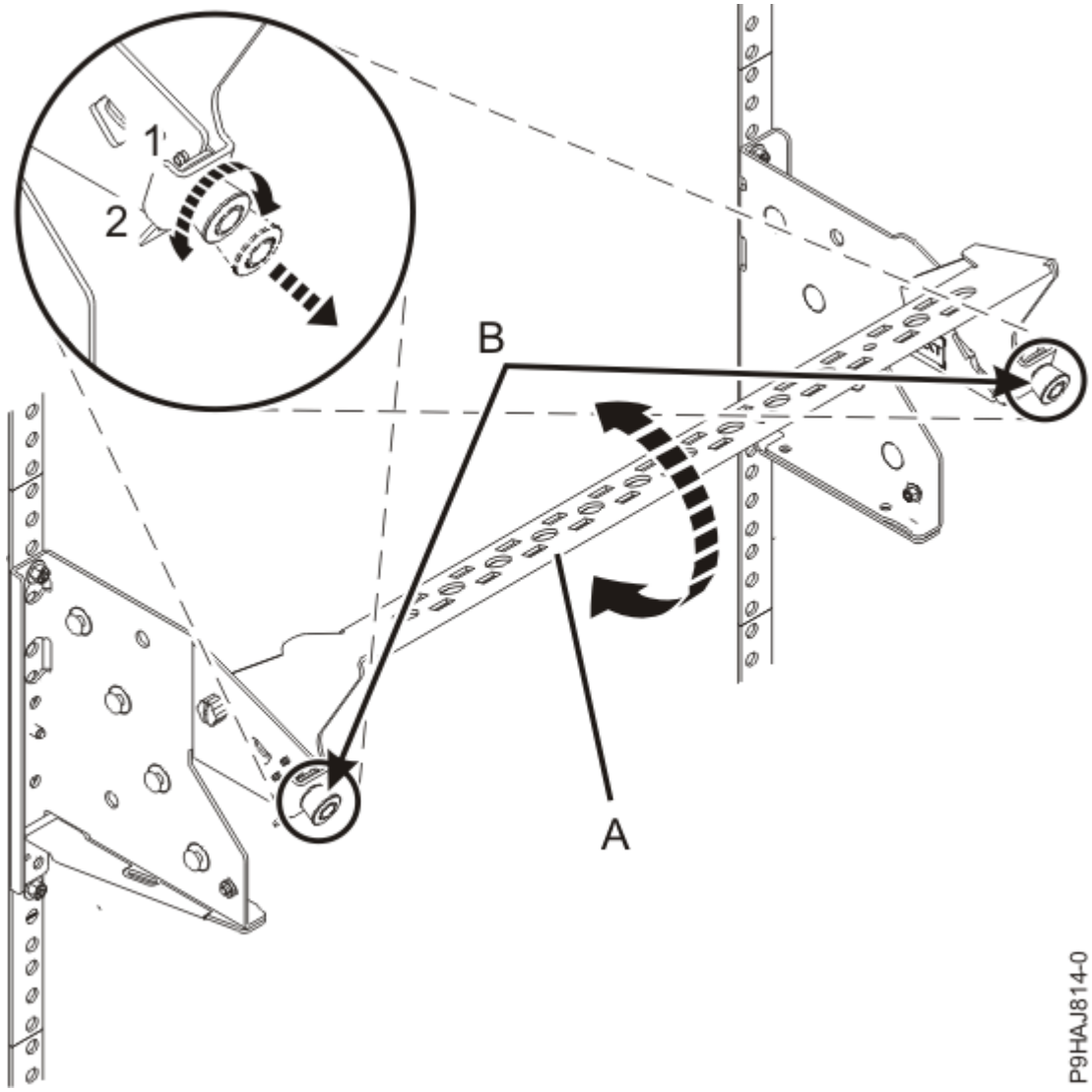


Figure 346. Placing the cable management bracket in the raised service position

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

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.

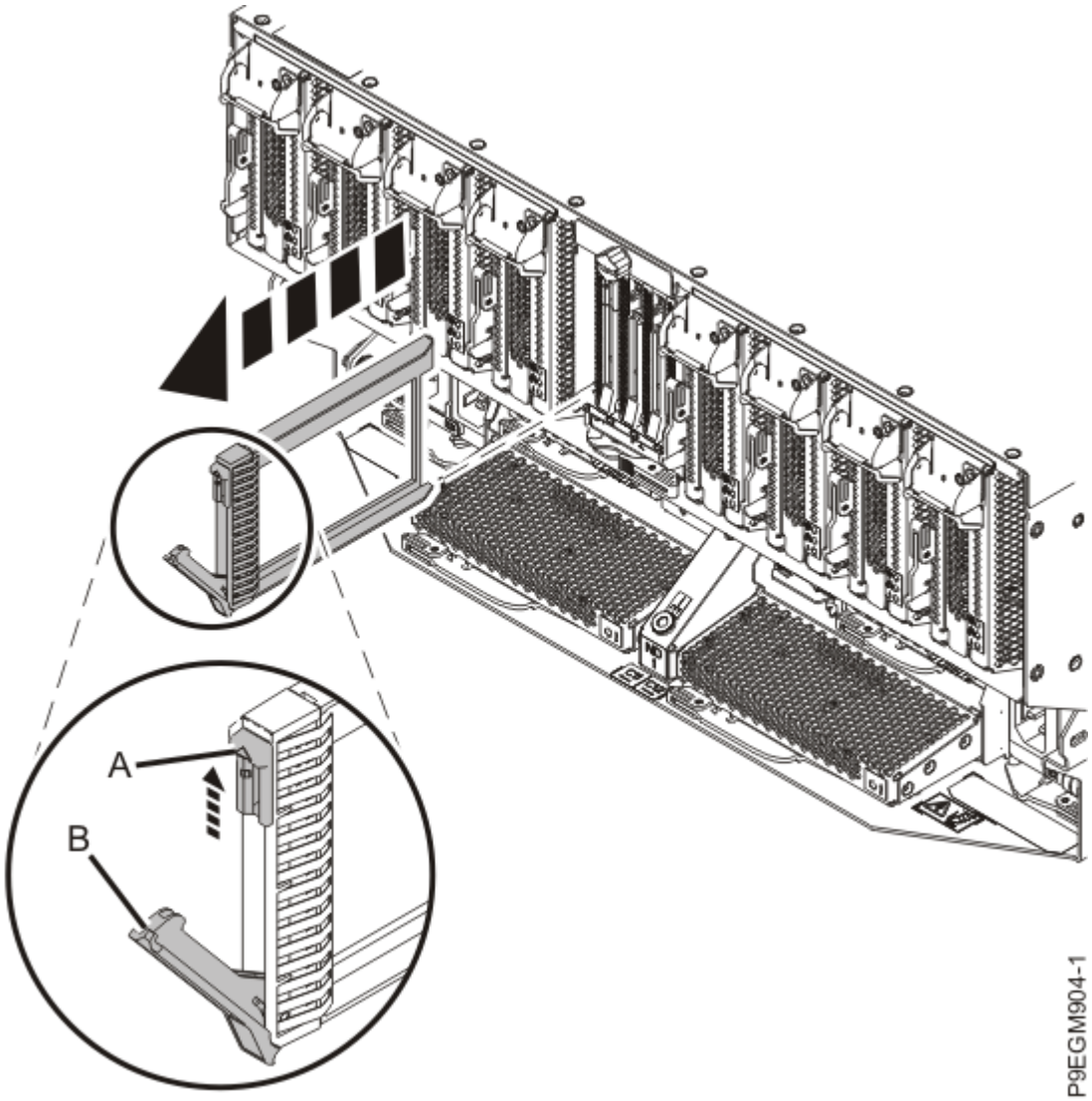


Figure 347. Removing a NVMe drive filler from the 9080-M9S system

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.

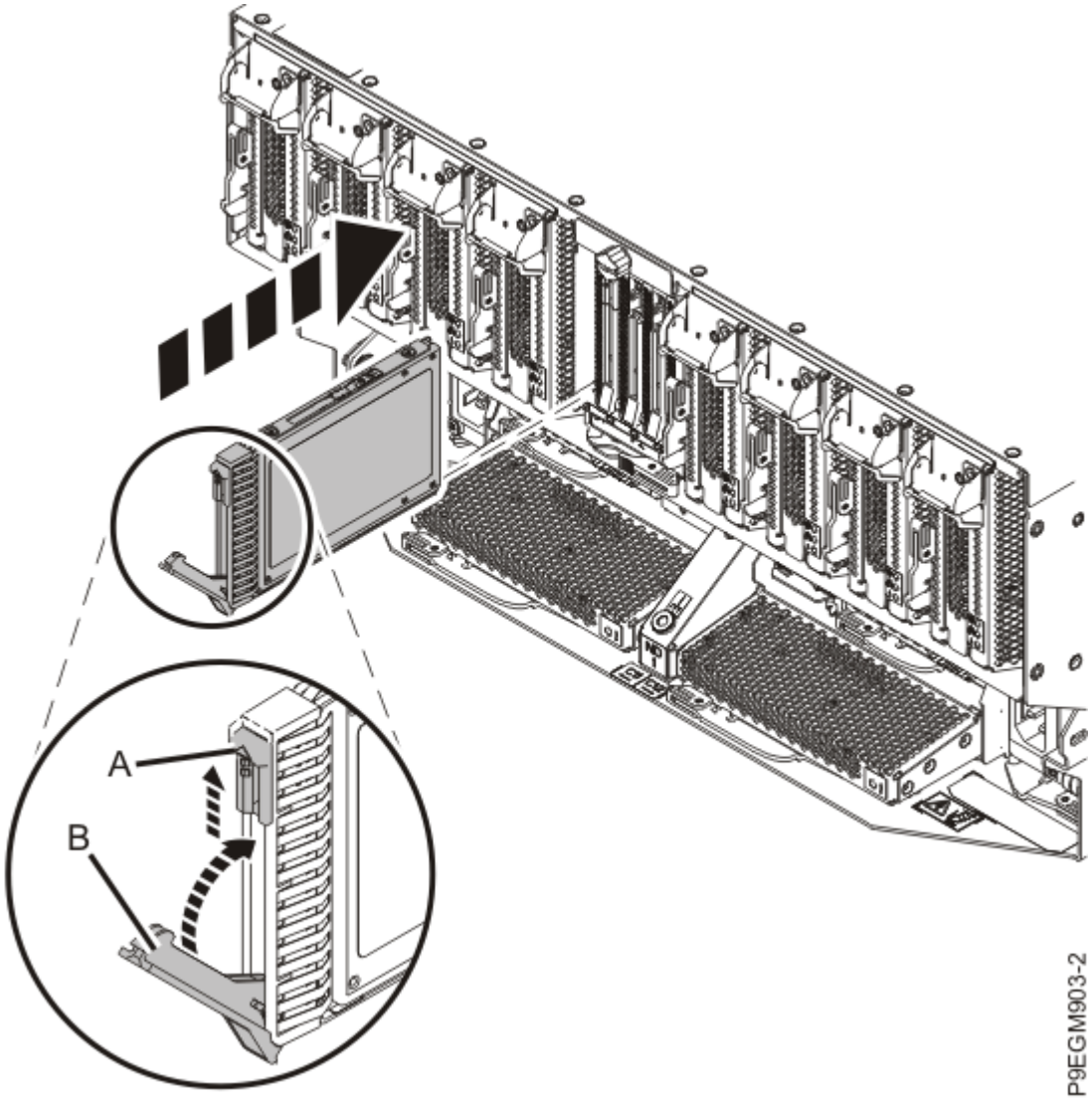


Figure 348. Installing or replacing an NVMe U.2 drive in the 9080-M9S system

   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.

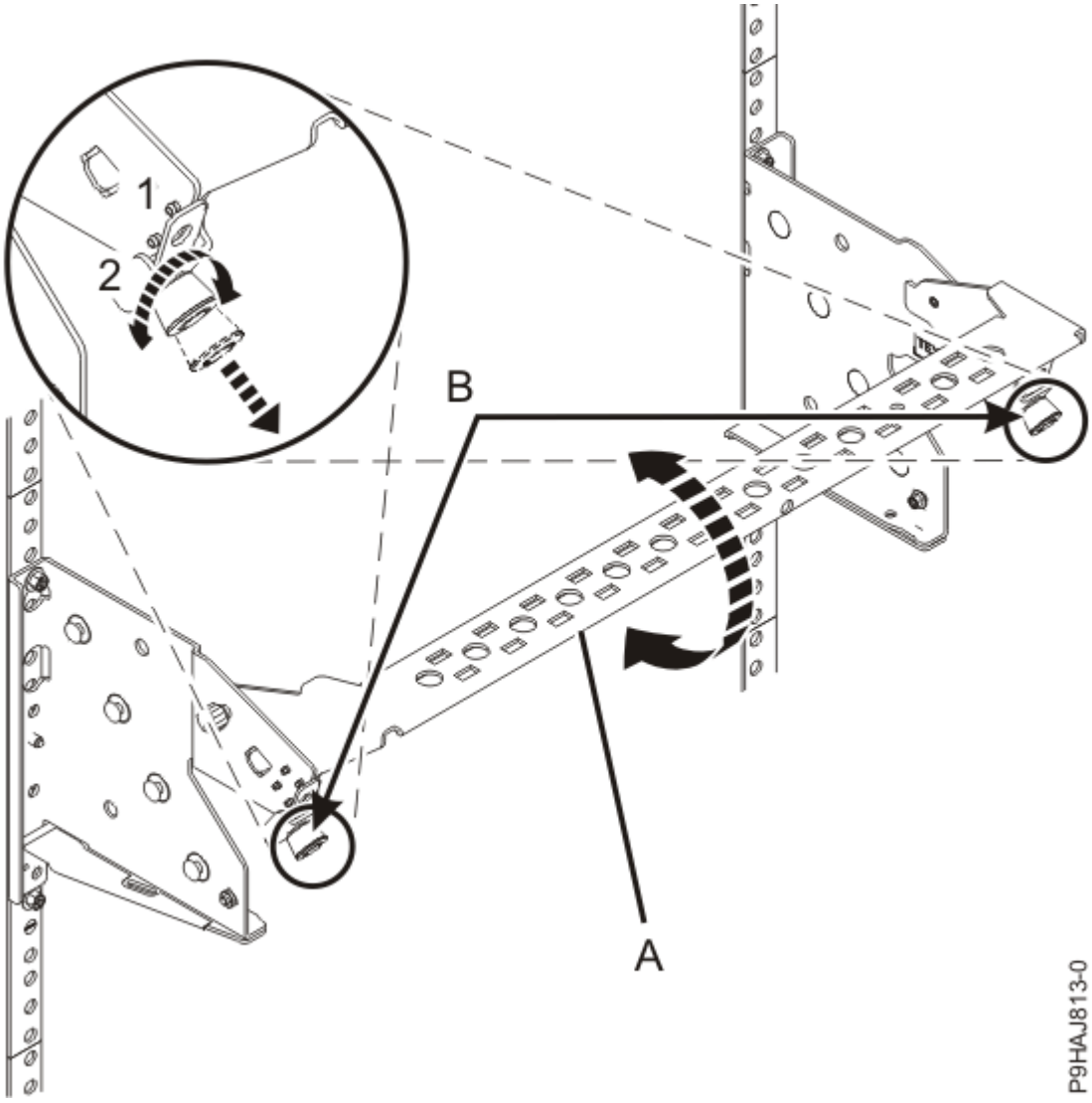


Figure 349. Placing the cable management bracket in the lowered operating position

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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 407.
- If you are using the AIX operating system, continue with step “10” on page 408.
- If you are using the Linux operating system, continue with step “12” on page 408.

5. If you chose to complete 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.

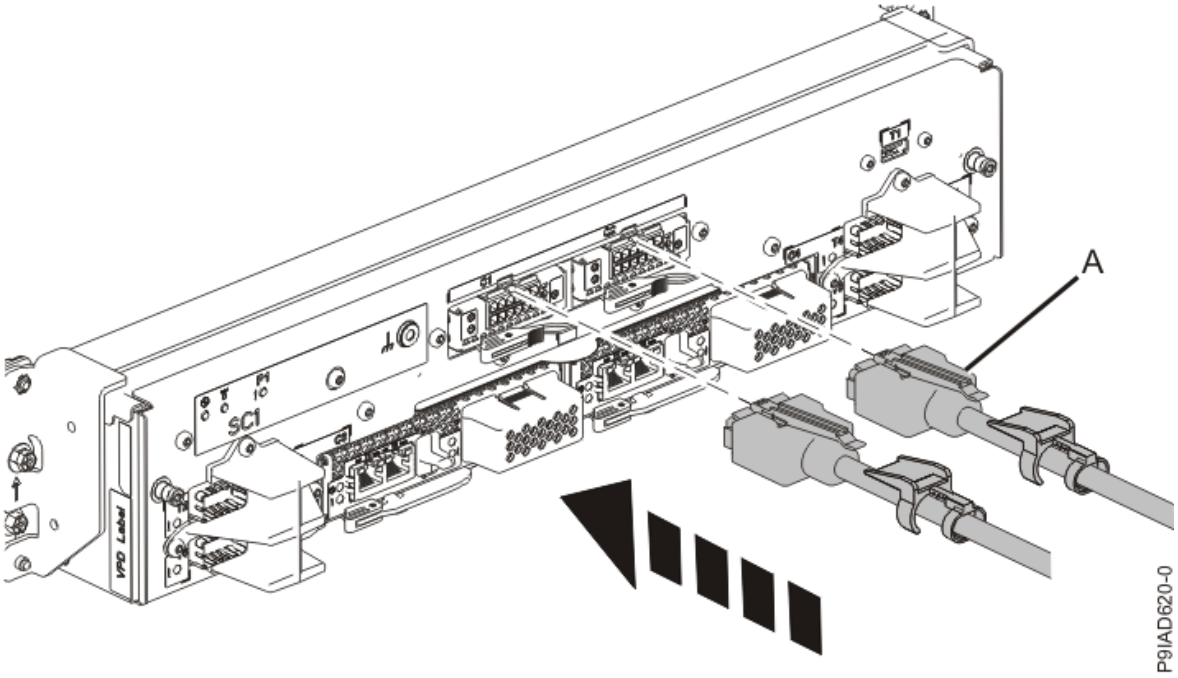


Figure 350. Replacing the UPIC cable into the system control unit

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

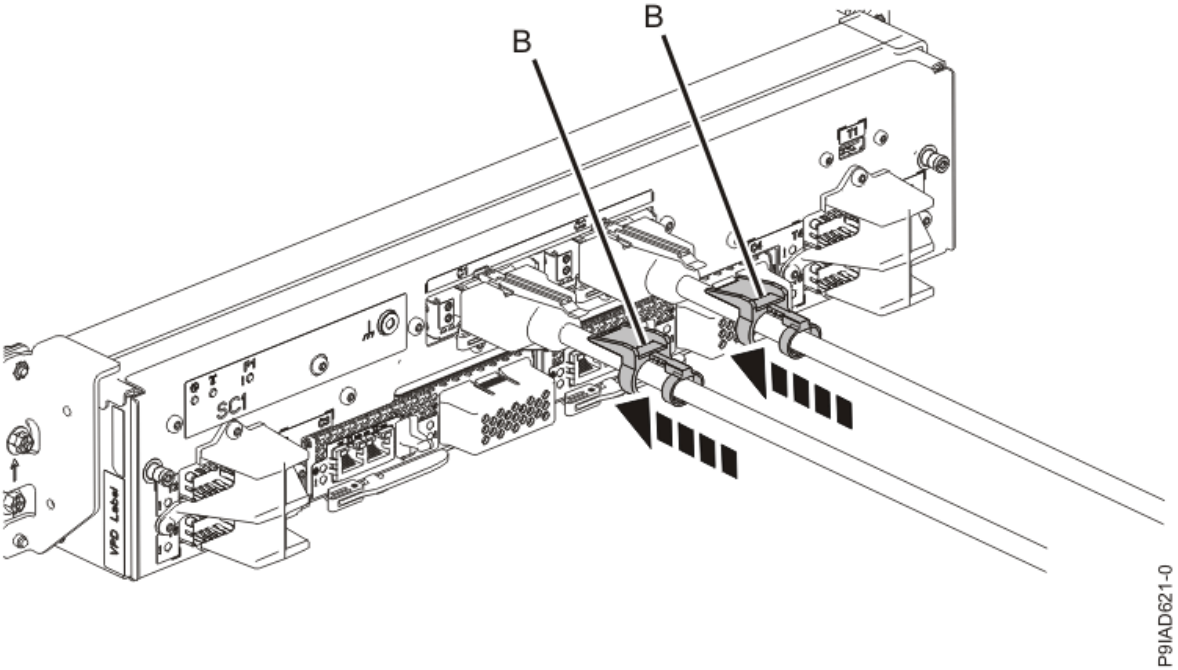


Figure 351. Replacing the UPIC cable into the system control unit

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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).
9. Continue with step “13” on page 408.
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 `cfgmgr` to configure the NVMe U.2 drive.
11. Continue with step “13” on page 408.
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 (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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

14. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).

Removing and replacing

Preparing the 9080-M9S system to remove and replace an NVMe U.2 drive

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

Procedure

1. 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.

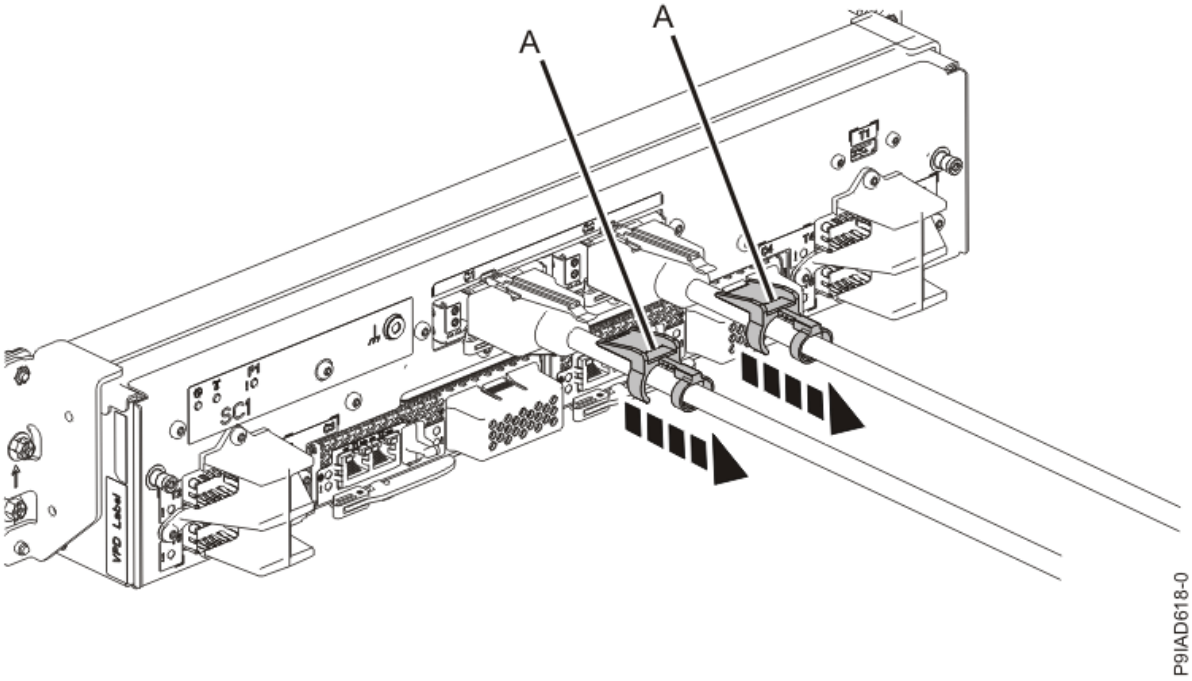


Figure 352. Removing the UPIC cable lock

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

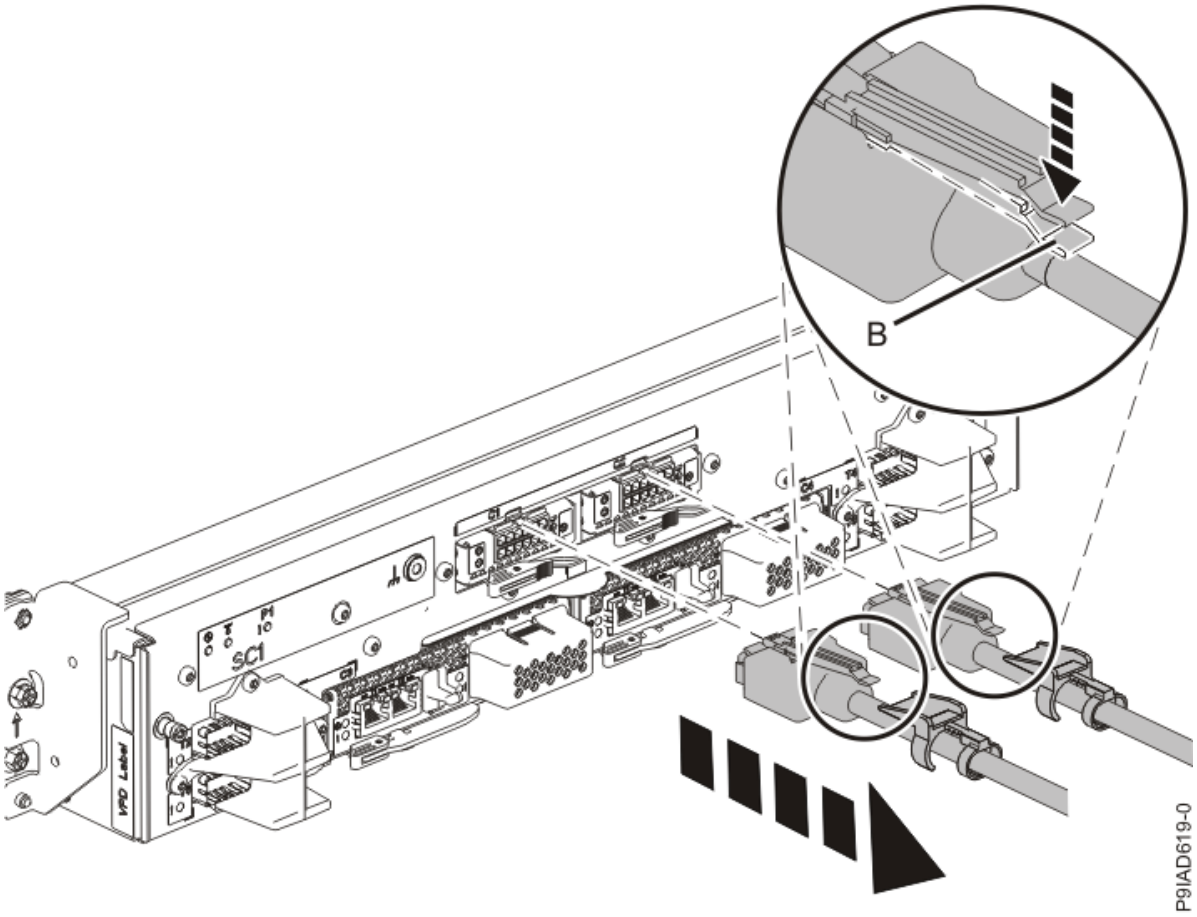


Figure 353. Removing the UPIC cable from the system control unit

2. 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.

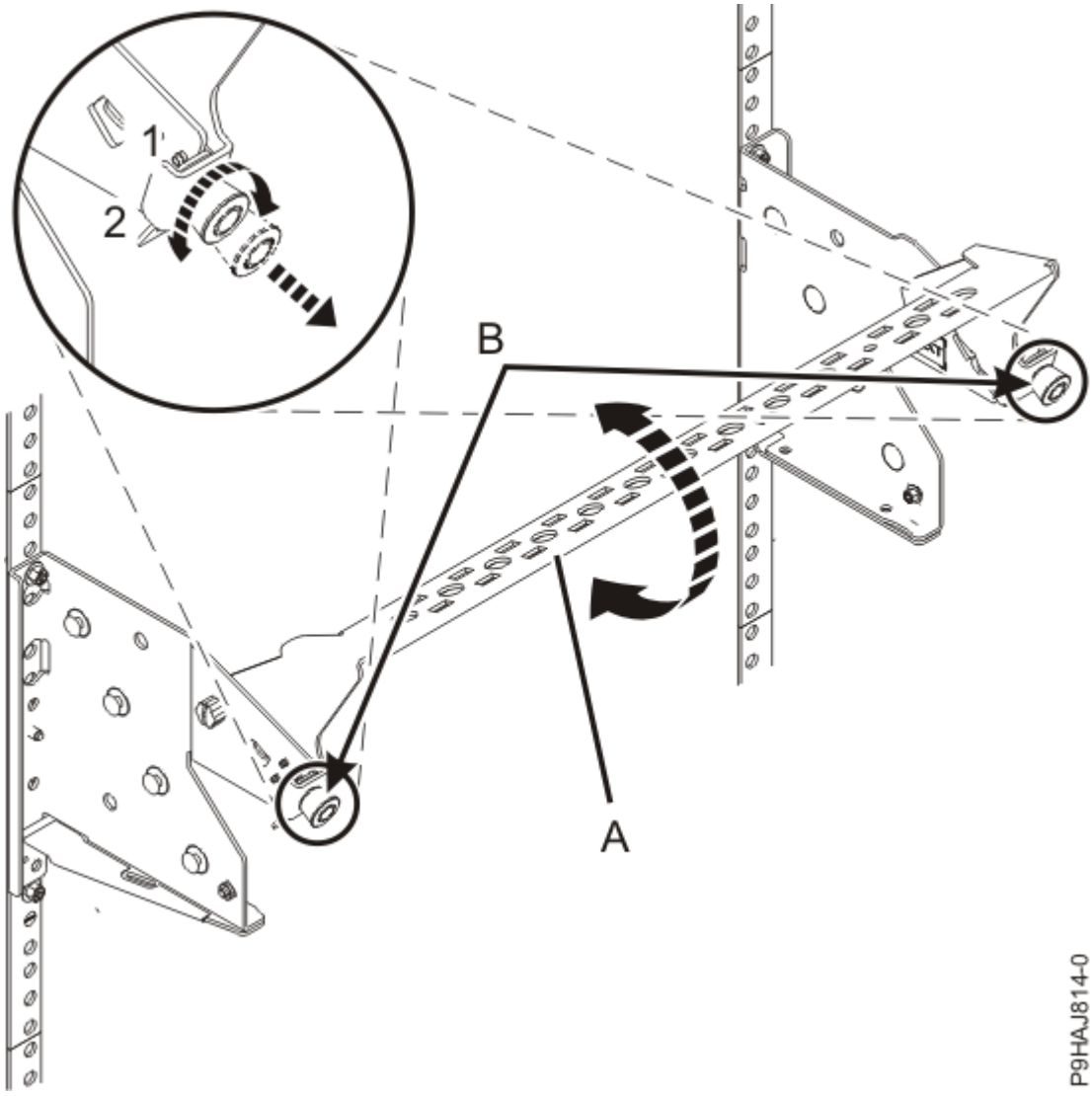


Figure 354. Placing the cable management bracket in the raised service position

3. 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.

Removing an NVMe U.2 drive from the 9080-M9S system

To remove an NVMe U.2 drive from 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. To remove an NVMe U.2 drive, complete the following steps:
   a) Press the release latch **(A)** in the direction that is shown to release the drive handle **(B)**.

   (L007)

   CAUTION: A hot surface nearby. (L007)

   b) Support the bottom of the NVMe U.2 drive as you slide the drive out of the system, holding the drive by its sides.

   Note: Do not pull the drive out by using the handle.

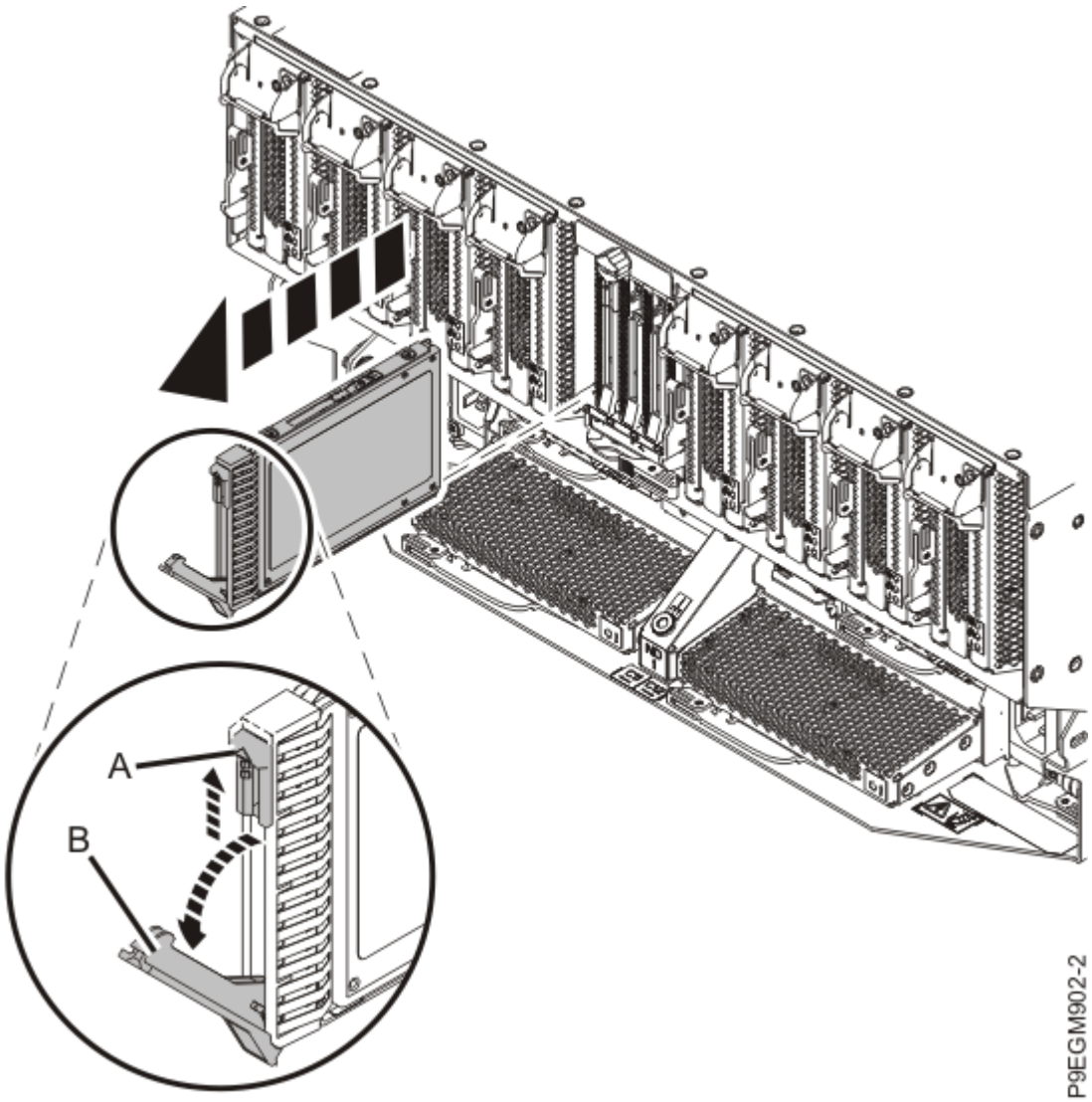


Figure 355. Removing an NVMe U.2 drive from the 9080-M9S system

3. Place the NVMe U.2 drive on an appropriate ESD surface.

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

To replace an NVMe U.2 drive in 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. If necessary, remove the NVMe U.2 drive from the antistatic package.
3. 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.

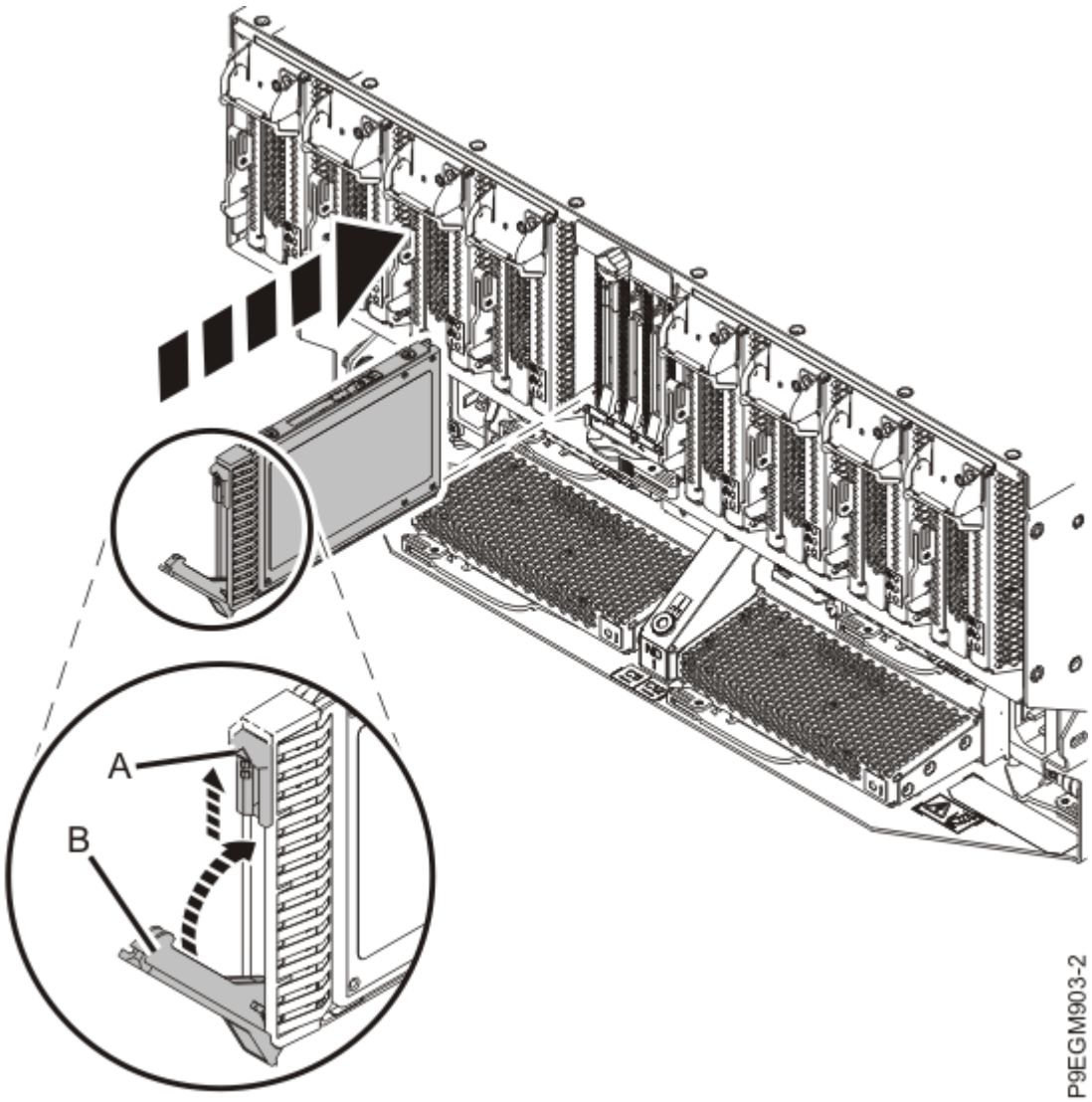


Figure 356. Installing or replacing an NVMe U.2 drive in the 9080-M9S system

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

Preparing the 9080-M9S system for operation after removing and replacing an NVMe U.2 drive

To prepare the system for operation after removing and replacing 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.

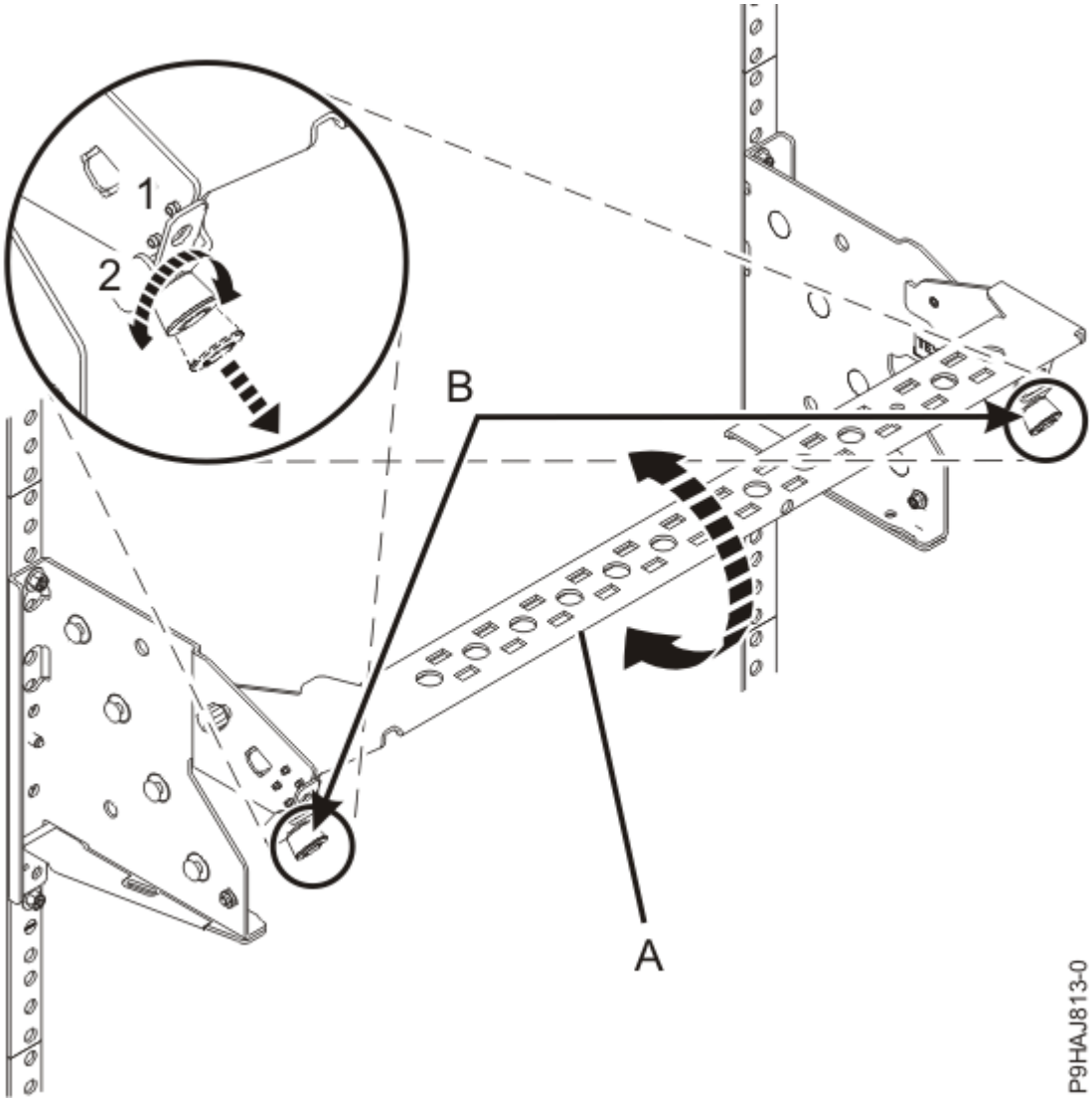


Figure 357. Placing the cable management bracket in the lowered operating position

3. Choose from the following options:
   - If you completed the repair with the system power turned on, continue with step #unique_72/unique_72_Connect_42_step_pon.
   - If you completed the repair with the system power turned off, continue with step “5” on page 416.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

5. If you chose to complete 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.

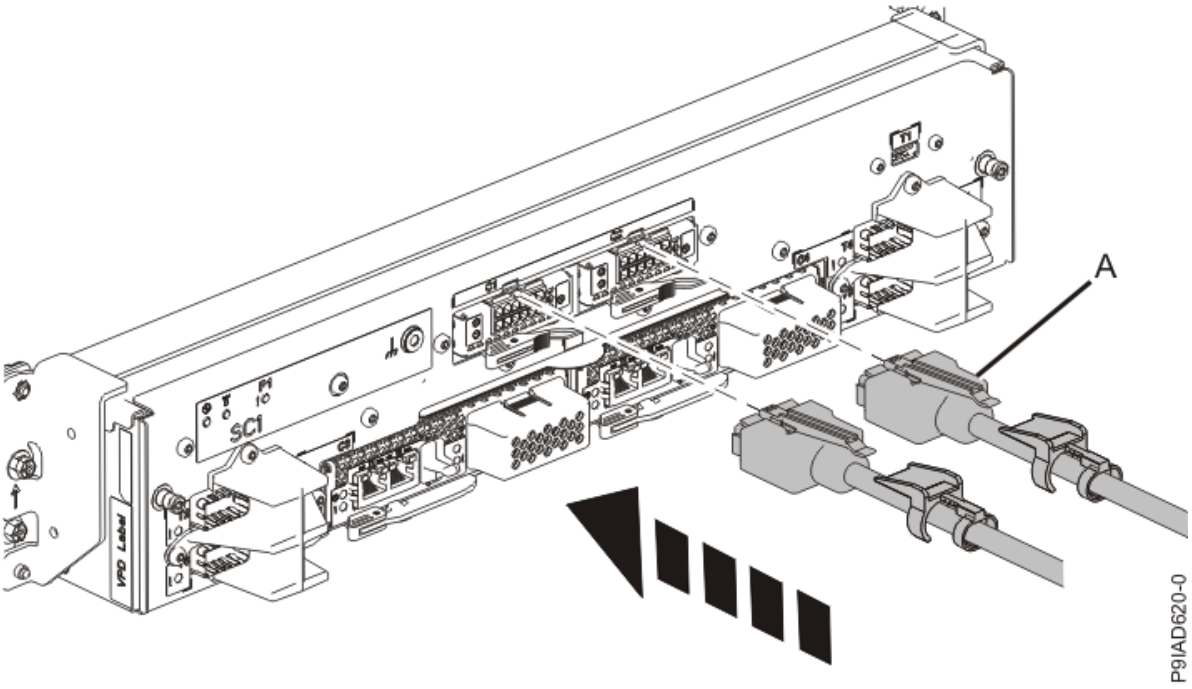


Figure 358. Replacing the UPIC cable into the system control unit

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

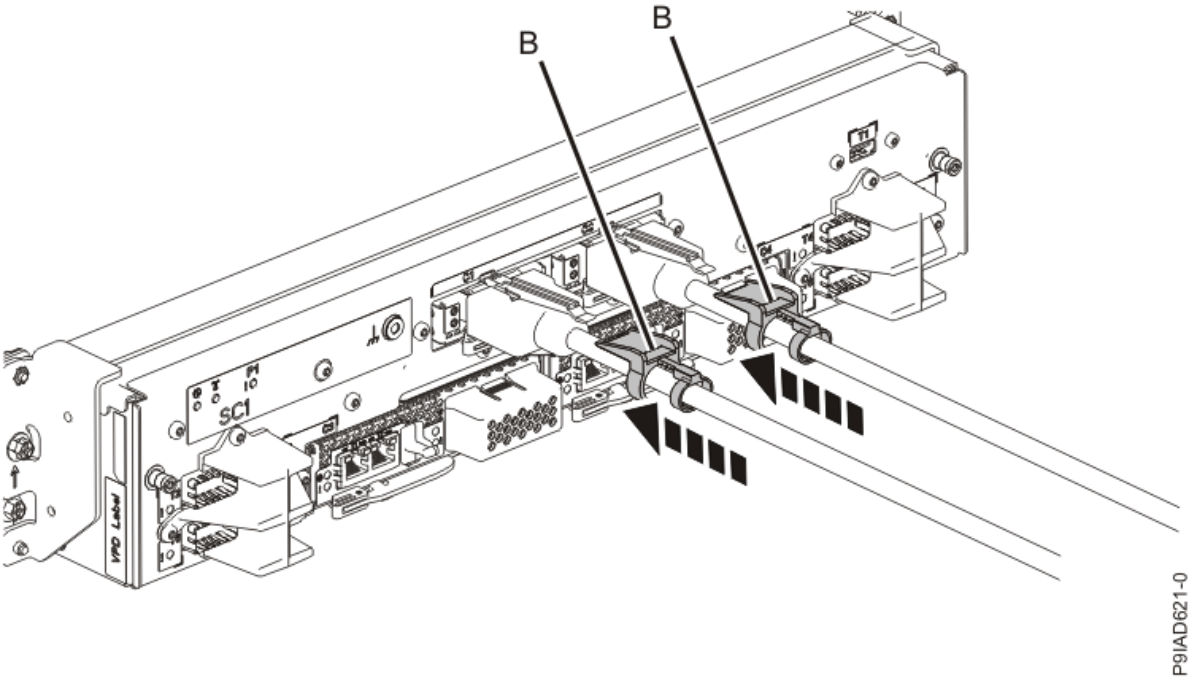


Figure 359. Replacing the UPIC cable into the system control unit

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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Permanently removing

Preparing the 9080-M9S system to permanently remove an NVMe U.2 drive

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

Procedure

1. If applicable, open the rack door at the rear of the system.
2. Review the NVMe U.2 drive slot locations. The NVMe U.2 drive slots are located in the rear of the system.

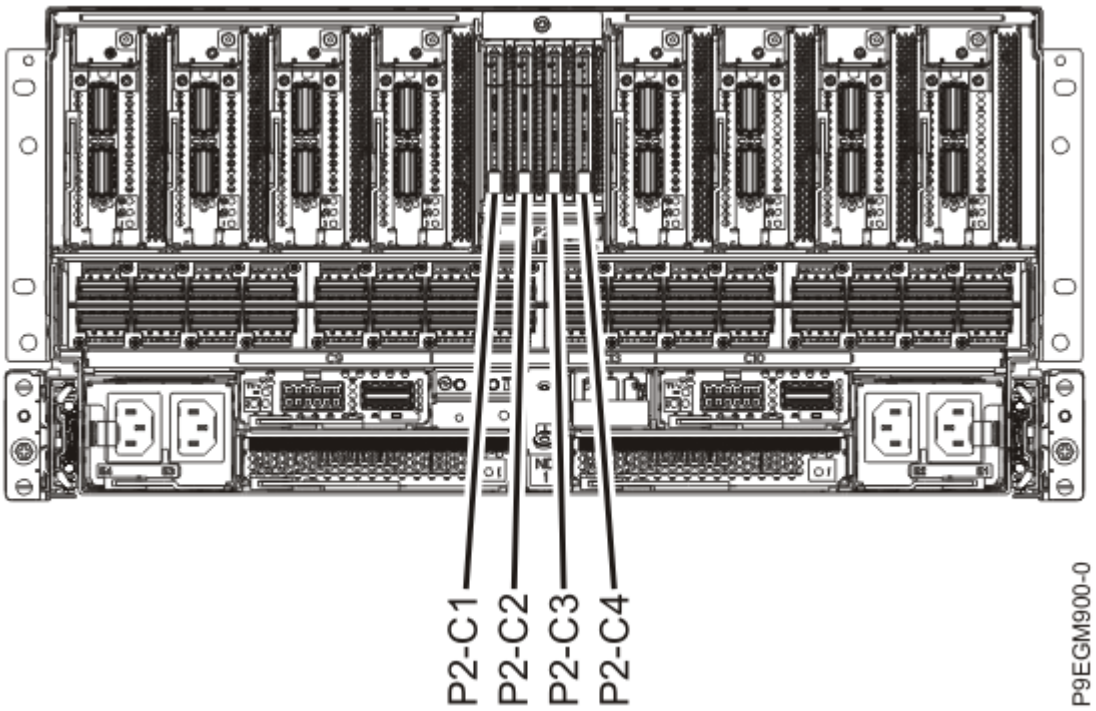


Figure 360. Location of the NVMe U.2 drives in the 9080-M9S system

3. 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).

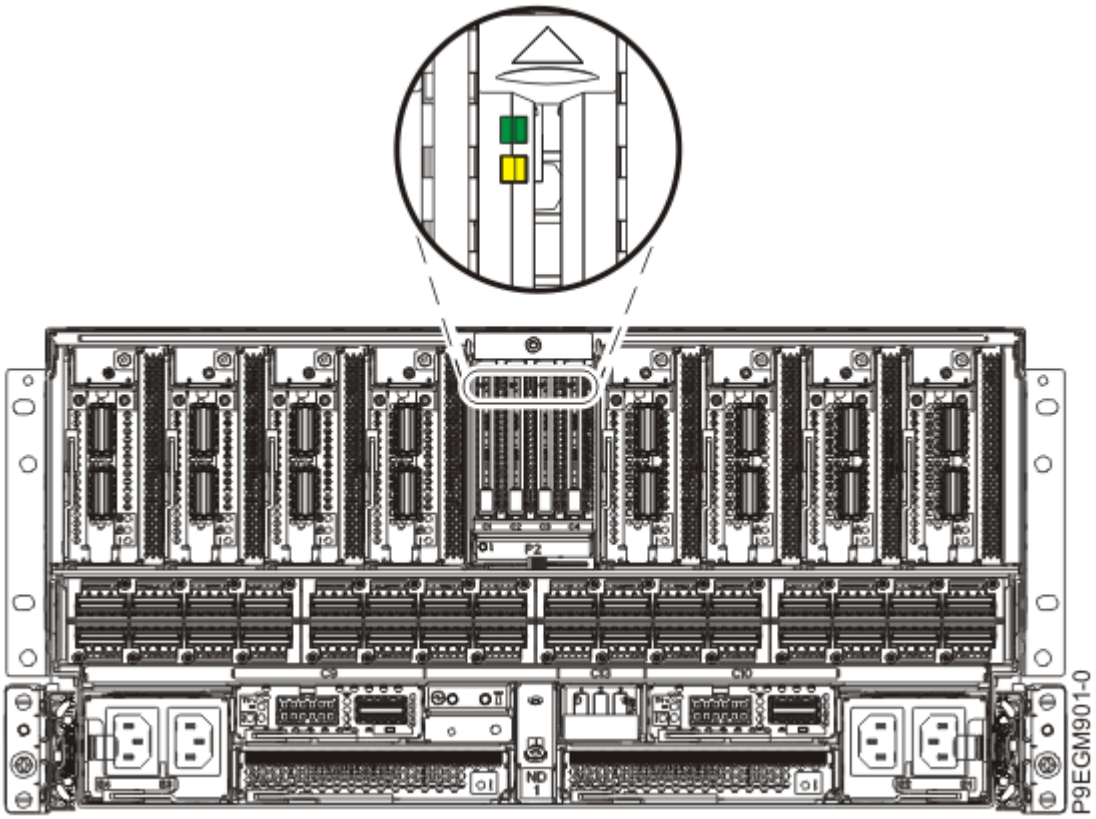


Figure 361. Locations of the NVMe U.2 LEDs in the 9080-M9S system

4. To prepare the system to permanently remove an NVMe drive when the system is powered off, complete the following steps:
   a) Activate the identify function. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).
   b) Physically verify that the slot you identified is where you want to permanently remove 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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
5. 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.

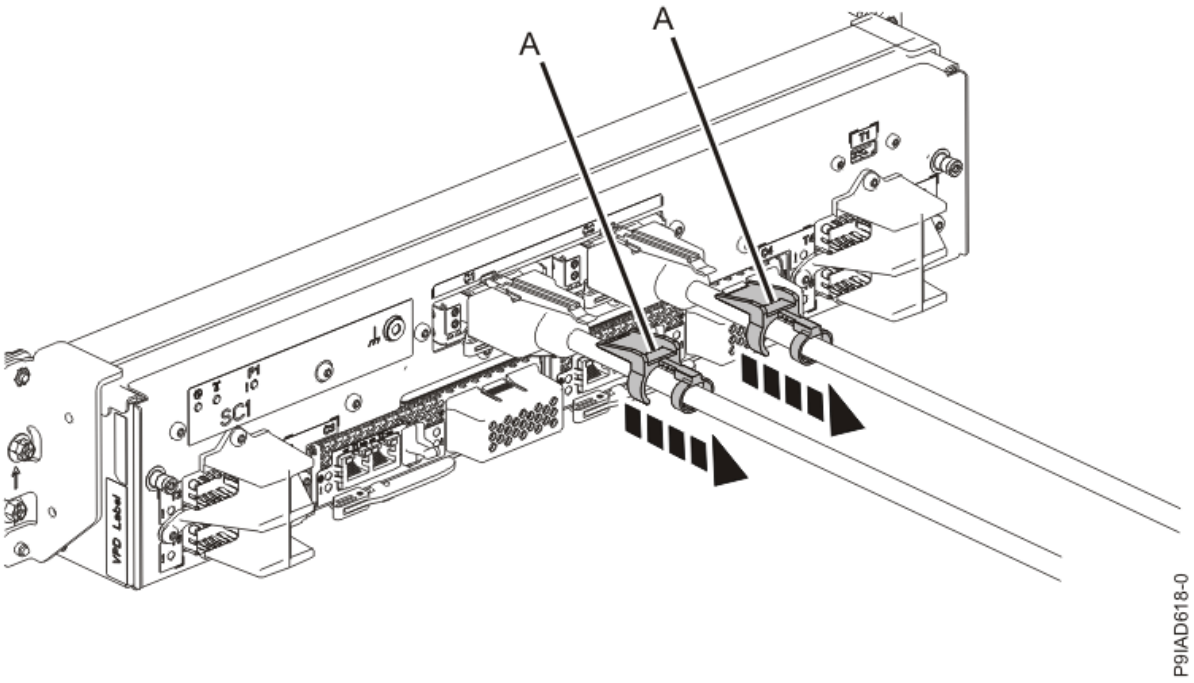


Figure 362. Removing the UPIC cable lock

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

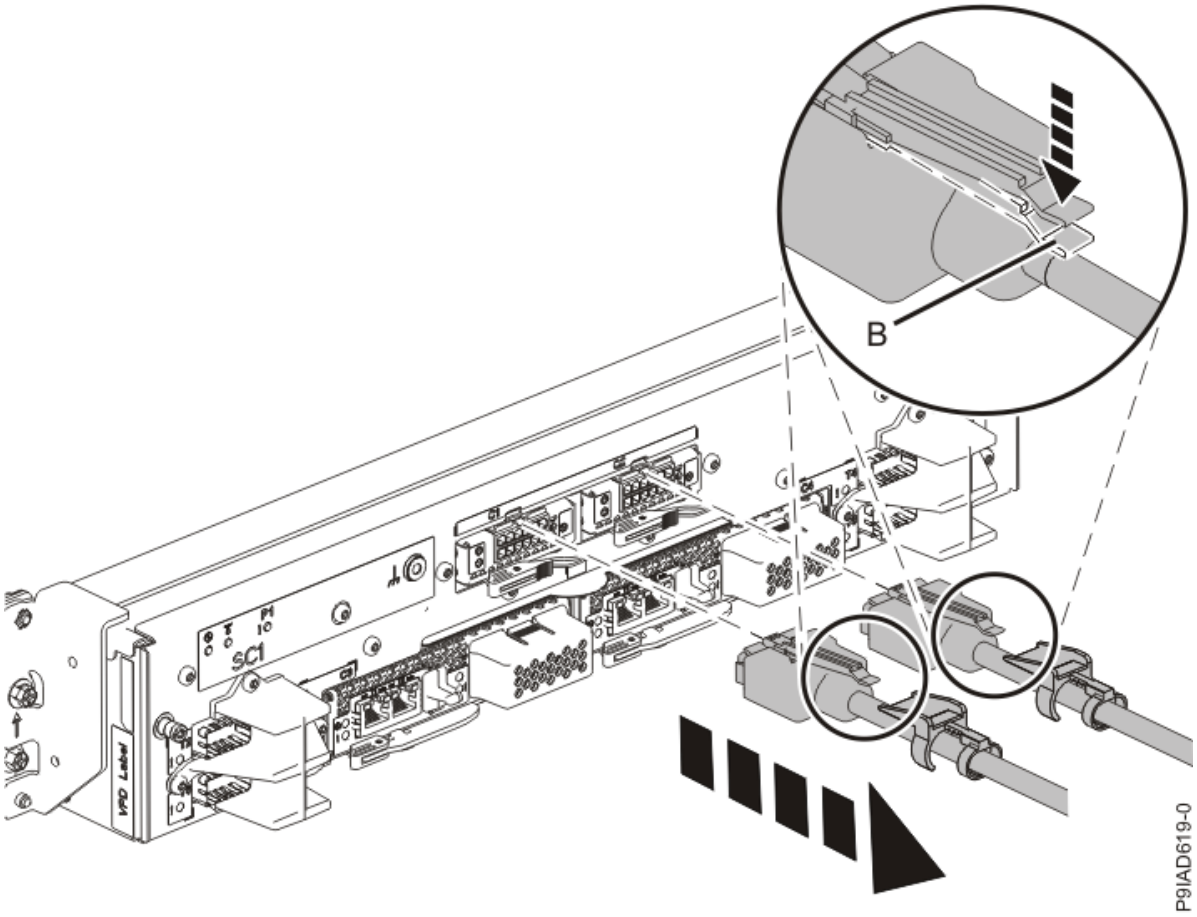


Figure 363. Removing the UPIC cable from the system control unit

6. 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.

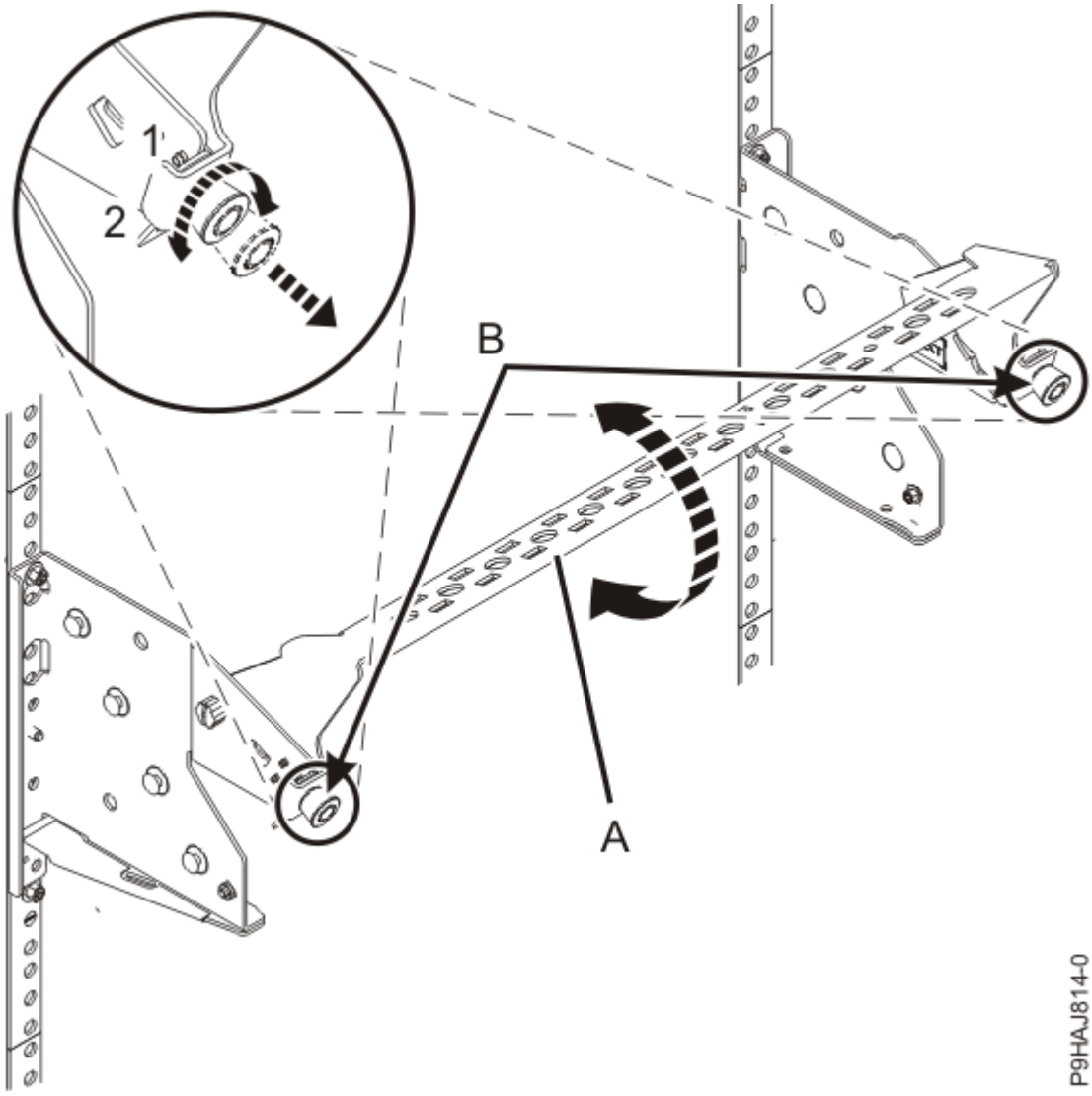


Figure 364. Placing the cable management bracket in the raised service position

7. 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.

Permanently removing an NVMe U.2 drive from the 9080-M9S system

To permanently remove an NVMe U.2 drive from 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. To remove an NVMe U.2 drive, complete the following steps:
   a) Press the release latch **(A)** in the direction that is shown to release the drive handle **(B)**.

   (L007)

   CAUTION: A hot surface nearby. (L007)

   b) Support the bottom of the NVMe U.2 drive as you slide the drive out of the system, holding the drive by its sides.

   Note: Do not pull the drive out by using the handle.

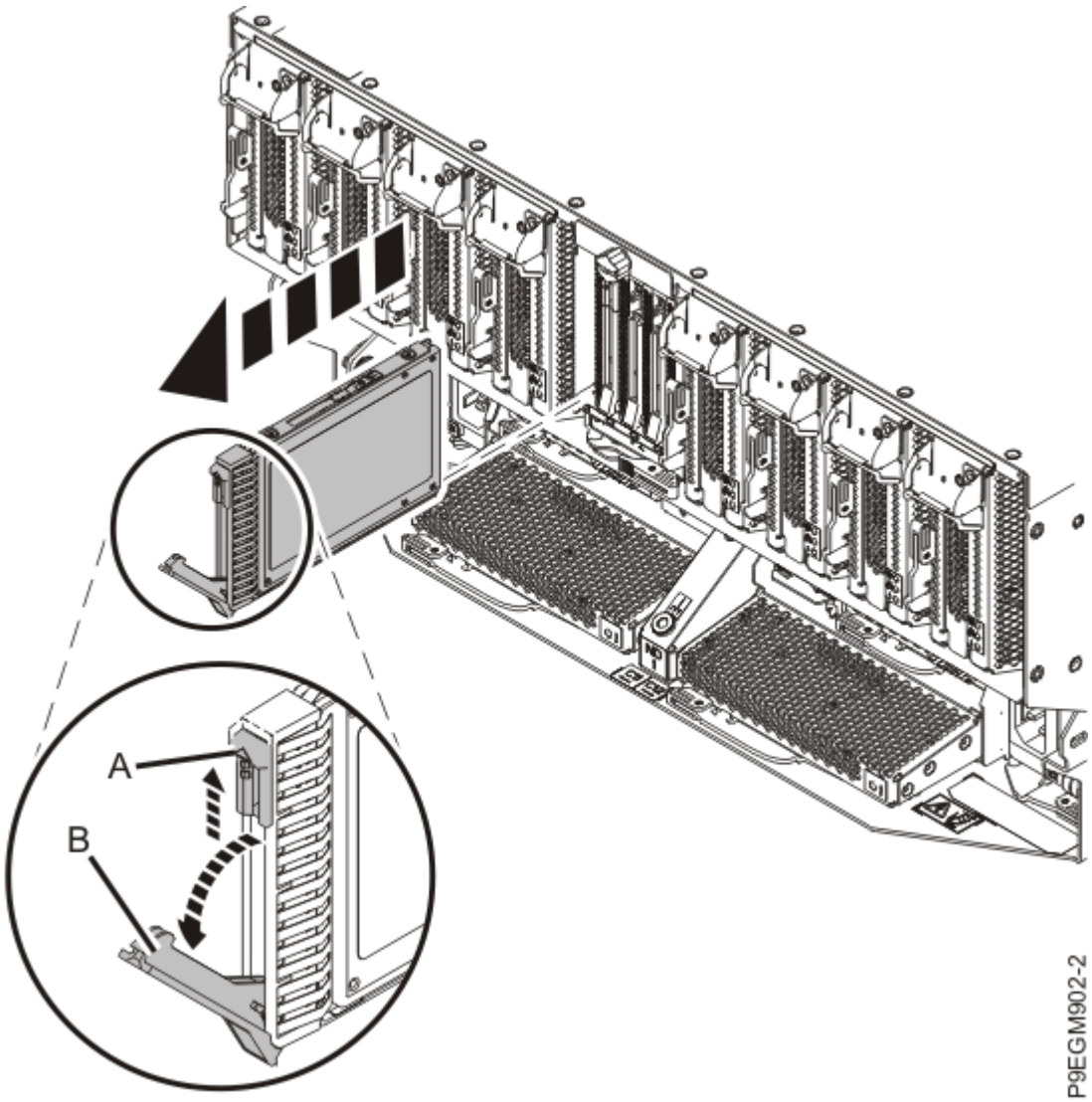


Figure 365. Removing an NVMe U.2 drive from the 9080-M9S system

3. Place the NVMe U.2 drive on an appropriate ESD surface.
4. Install an NVMe drive filler.
   a) With the drive filler handle **(A)** in the open position, slide the filler into the slot where you permanently removed the NVMe U.2 drive.
   b) Close the drive filler handle **(A)** in the direction that is shown until it locks in place.

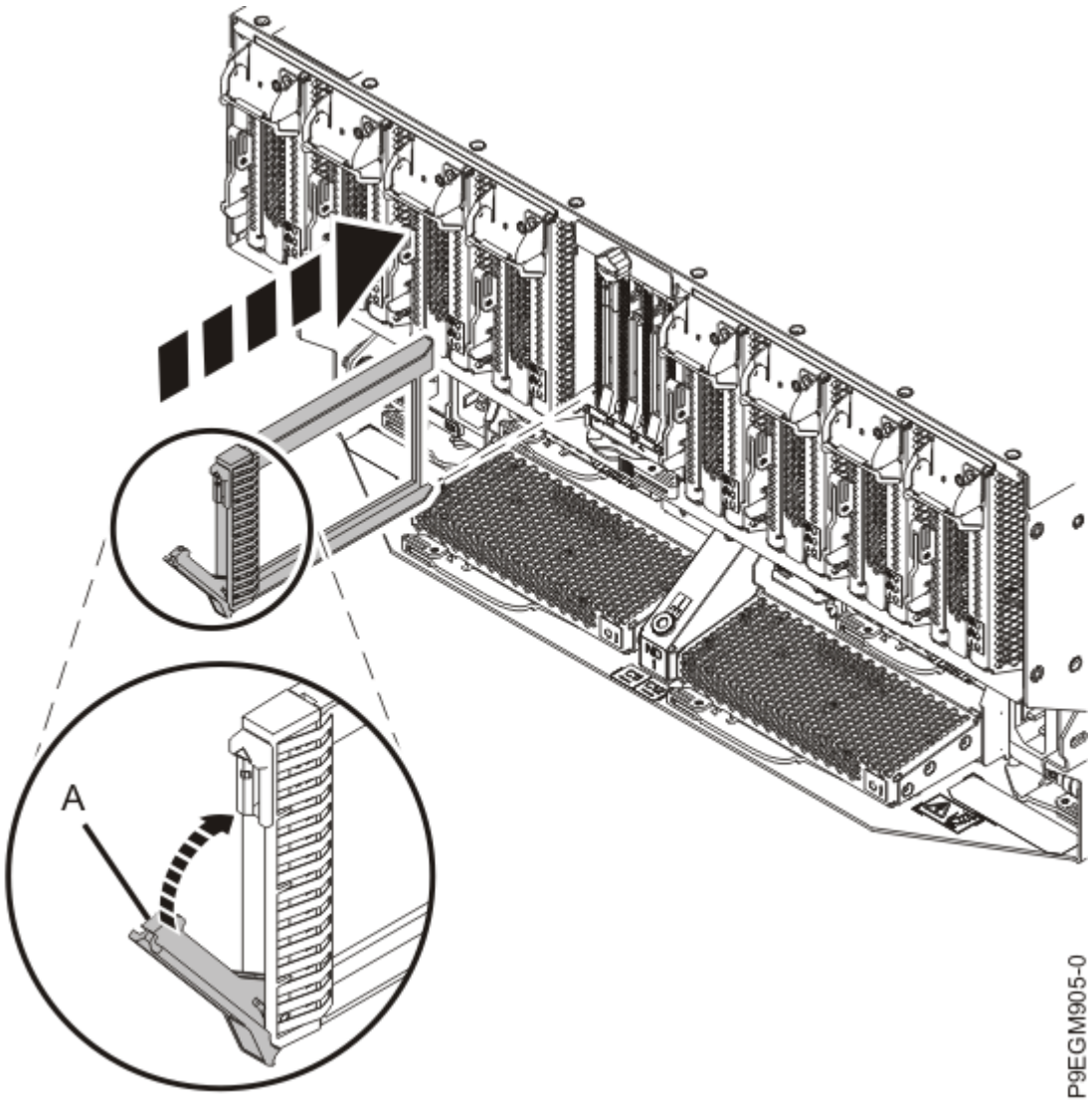


Figure 366. Installing an NVMe drive filler in the 9080-M9S system

Preparing the 9080-M9S system for operation after permanently removing an NVMe U.2 drive

To prepare the system for operation after permanently removing 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.

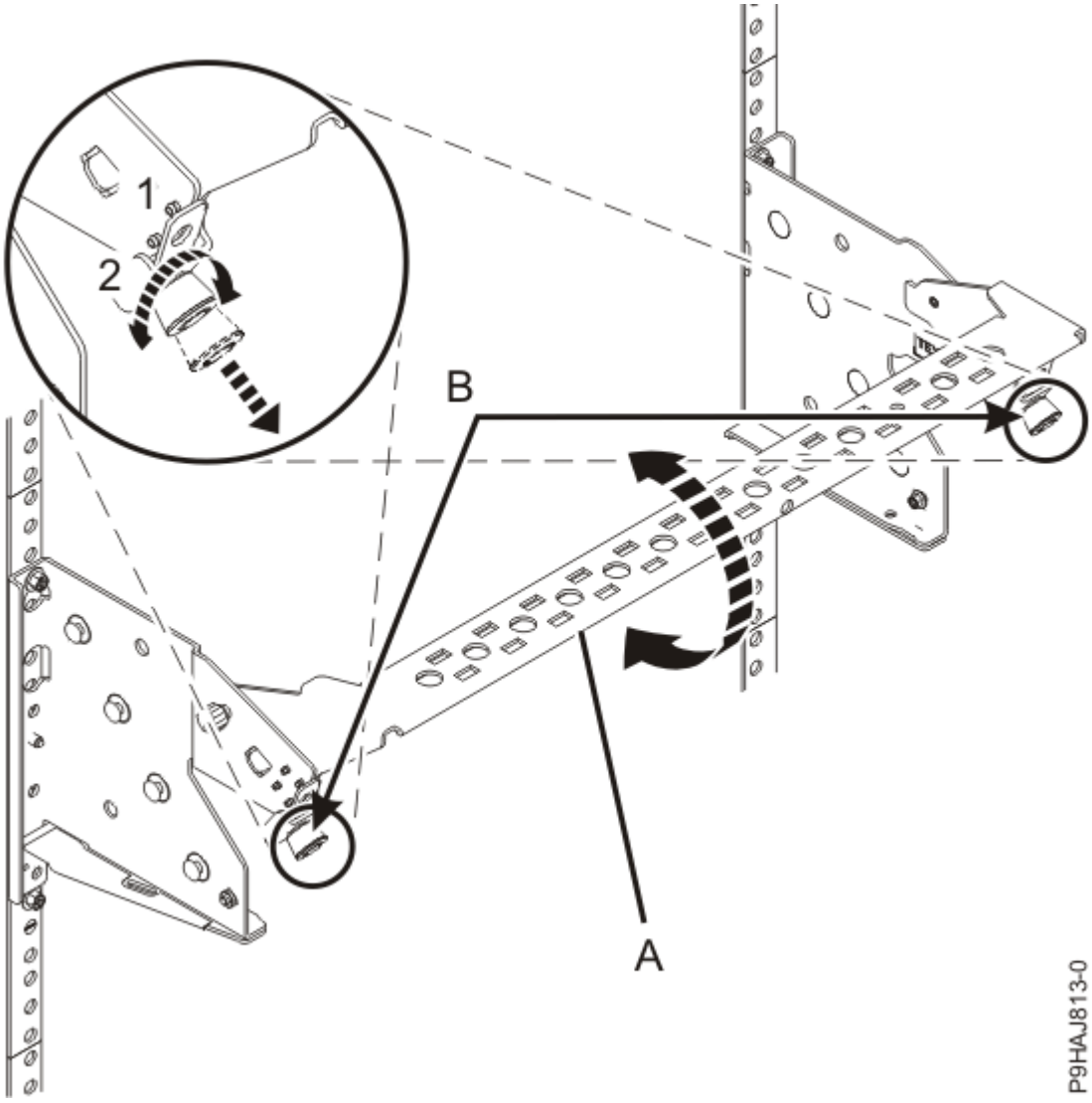


Figure 367. Placing the cable management bracket in the lowered operating position

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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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. If you chose to complete 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.

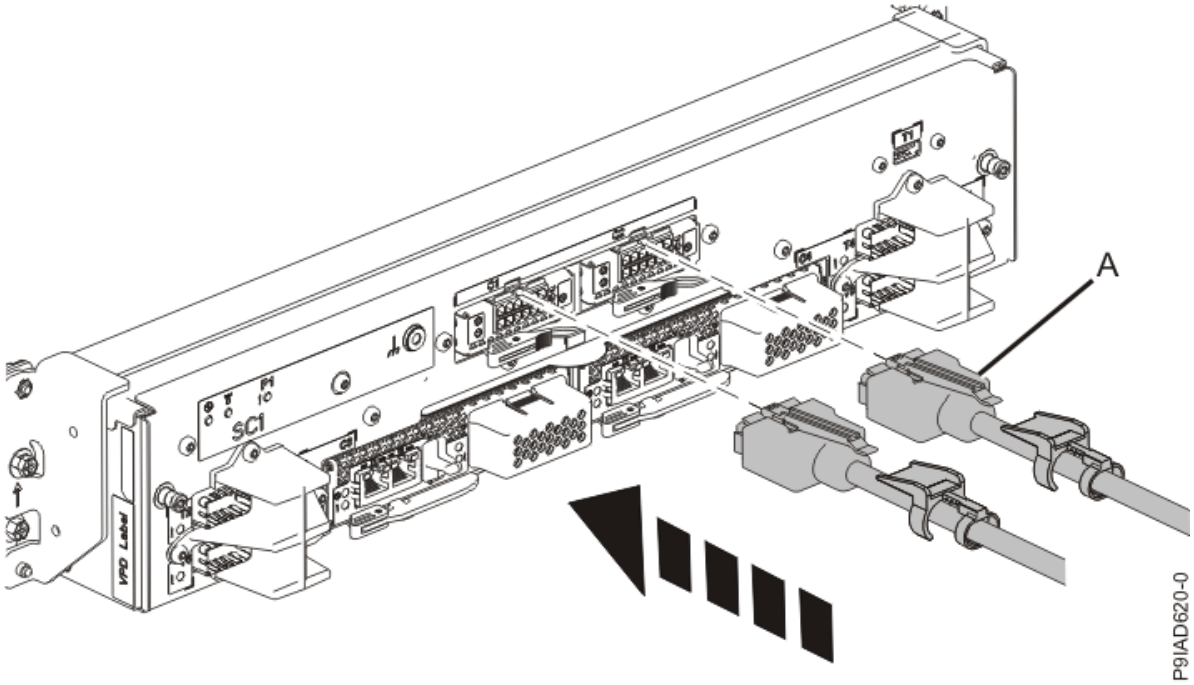


Figure 368. Replacing the UPIC cable into the system control unit

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

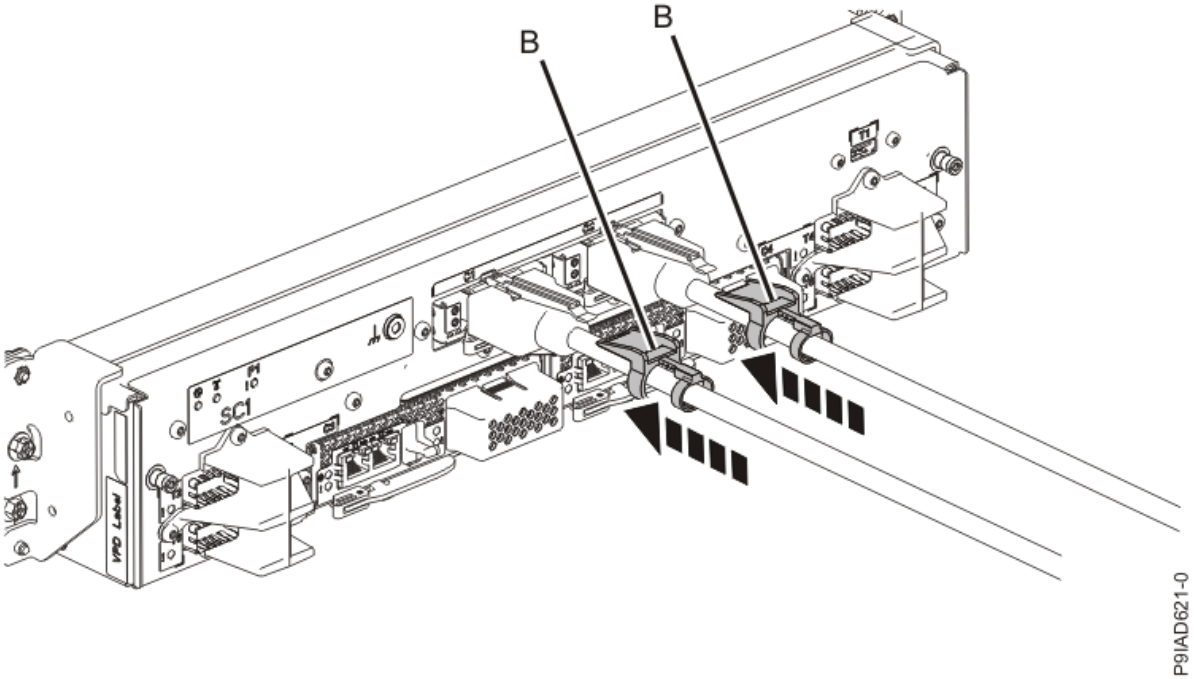


Figure 369. Replacing the UPIC cable into the system control unit

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.

5. 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.
6. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

PCIe adapters

Installing

Preparing the 9080-M9S system to install an adapter

To prepare the system to install an adapter, complete the steps in this procedure.

Before you begin

Note: If you are installing a PCIe3 cable adapter to attach your server to an EMX0 PCIe3 expansion drawer, you must ensure that you have the correct PCIe3 cable adapter and expansion drawer cable that works with the PCIe3 6-slot fanout module that you have in your EMX0 PCIe3 expansion drawer.

- If you have a CCIN **50CB** PCIe3 6-slot fanout module:
  - You must use one of the following PCIe3 cable adapters:
    - FC EJ08 (CCIN 2CE2)
    - FC EJ07 (CCIN 6B52)
    - FC EJ05 (CCIN 2B1C)
  - You must use one of the following expansion drawer cables: FC ECC6, FC ECC7, FC ECC8, FC ECC9, FC ECCR, FC ECCS, FC ECCX, FC ECCY, or FC ECCZ.
- If you have a CCIN **50CD** PCIe3 6-slot fanout module:
  - You must install one of the following PCIe3 cable adapters:
    - FC EJ19 (CCIN 6B53)
    - FC EJ1R (CCIN 58FF)
    - FC EJ20 (CCIN 2CF5)
  - You must use one of the following expansion drawer cables: FC ECCR, FC ECCX, FC ECCY, or FC ECCZ.

Procedure

1. Ensure that the required software is installed to support the new feature. See the Power Systems Prerequisites website.

   Important: If you are installing a PCIe3 cable adapter and want to connect a EMX0 PCIe3 expansion drawer via the HMC, you must have the HMC driver 9.1.921.0 or later installed.
2. Take appropriate precautions for avoiding electric shock and for handling static-sensitive devices. For more information, see Avoiding electric shock and Handling static-sensitive devices.
3. If you are installing a PCIe3 cable adapter, ensure that the target slot is `Unassigned` in the I/O properties field for the managed server you are working on.
4. If applicable, open the rack door at the rear of the system.
5. Review the following figures that show the locations of the adapter and cassette slots and the locations of the LEDs for the adapters. The adapter cassettes that contain the adapters are installed in the rear of the system.

   The number of the adapter slots that are available in the system depends on the number of system processors in the system. For the adapter placement information for the available slots in this system, see Adapter placement rules and slot priorities for the 9080-M9S.

   The adapter locations have six digits. The cassette locations have four digits.

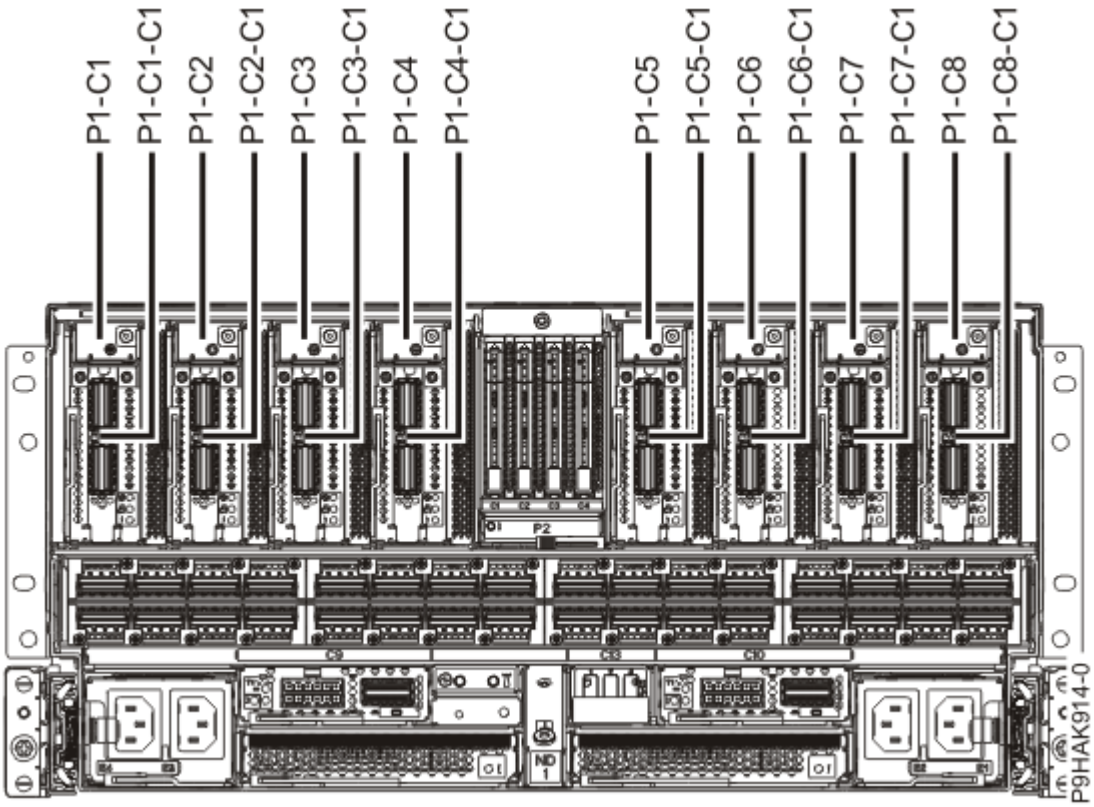


Figure 370. Locations for the adapters and cassettes in the 9080-M9S system

The adapter has three LEDs that indicate the following status:

- A power/activity LED (green)
- An identify function LED (amber) for the adapter (labeled C1)
- An identify function LED (amber) for the cassette (labeled with an exclamation mark)

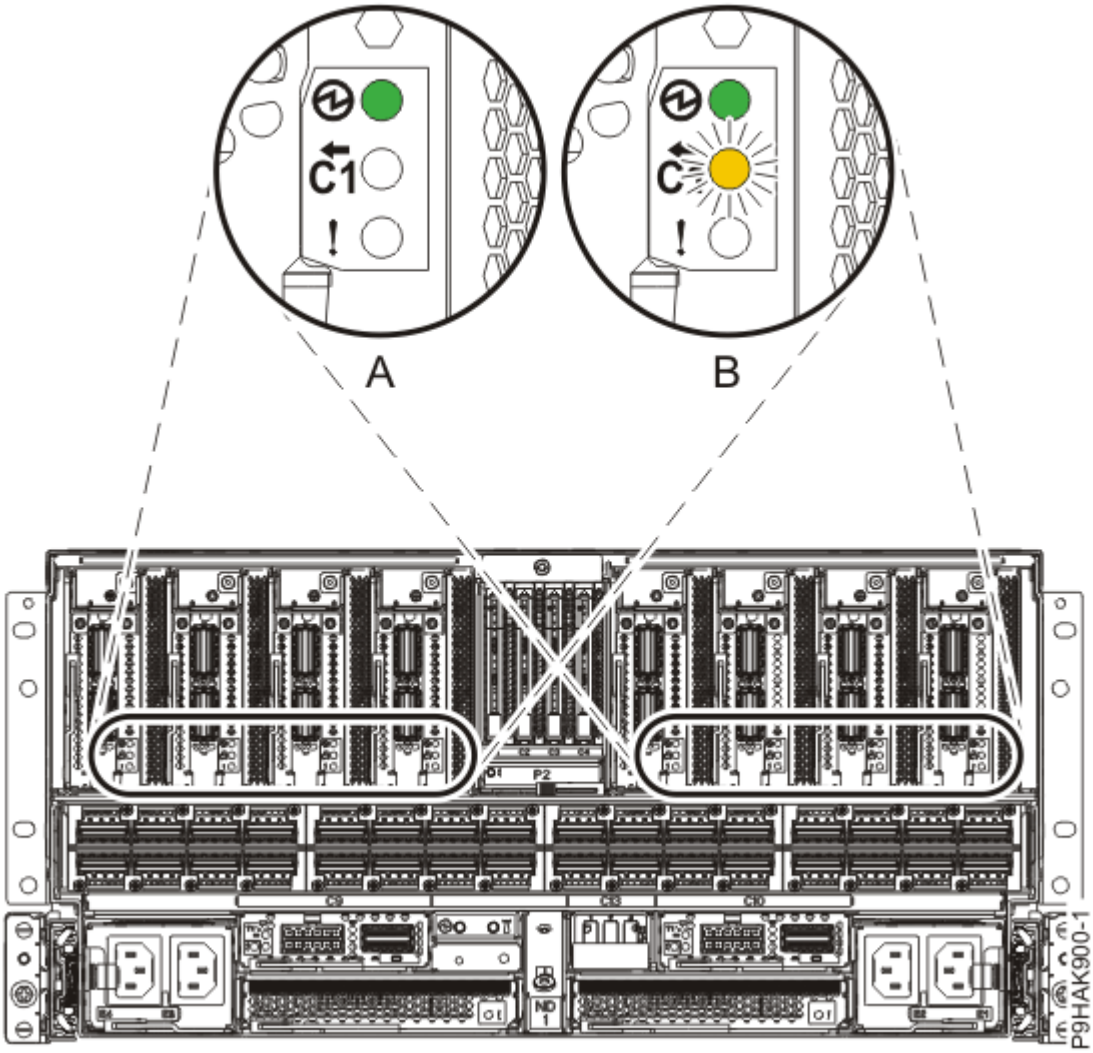


Figure 371. Adapter LED locations in a 9080-M9S system

6. Choose from the following options:
   - If you want to install an adapter when the system power is turned off, continue with step “7” on page 431.
   - If the system power is turned on and if the AIX operating system controls the slot, continue with step “10” on page 433.
   - If the system power is turned on and if the IBM® i operating system controls the slot, continue with step “11” on page 433.
   - If the system power is turned on and if the Linux operating system controls the slot, continue with step “12” on page 434.
7. To prepare the system to install an adapter when the system is powered off, complete the following steps:
   a) Activate the identify function. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).
   b) Physically verify that the slot you identified is where you want to install the adapter.
      - 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 unoccupied slot that was selected by using the identify function.

c) Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).

8. 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.

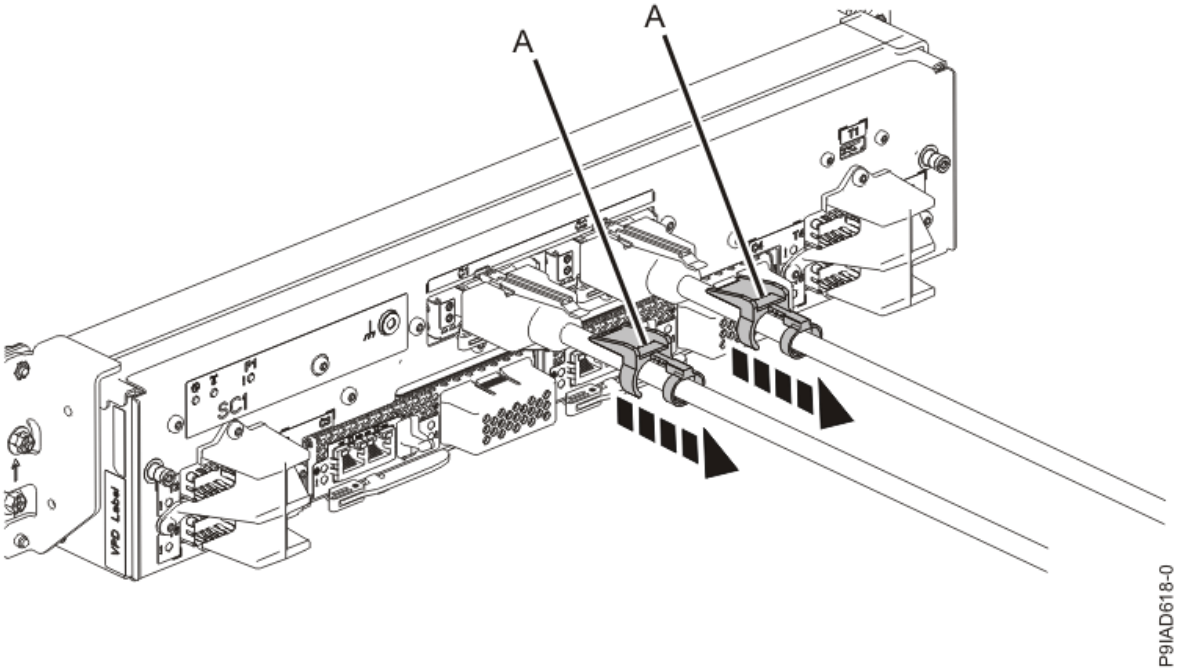


Figure 372. Removing the UPIC cable lock

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

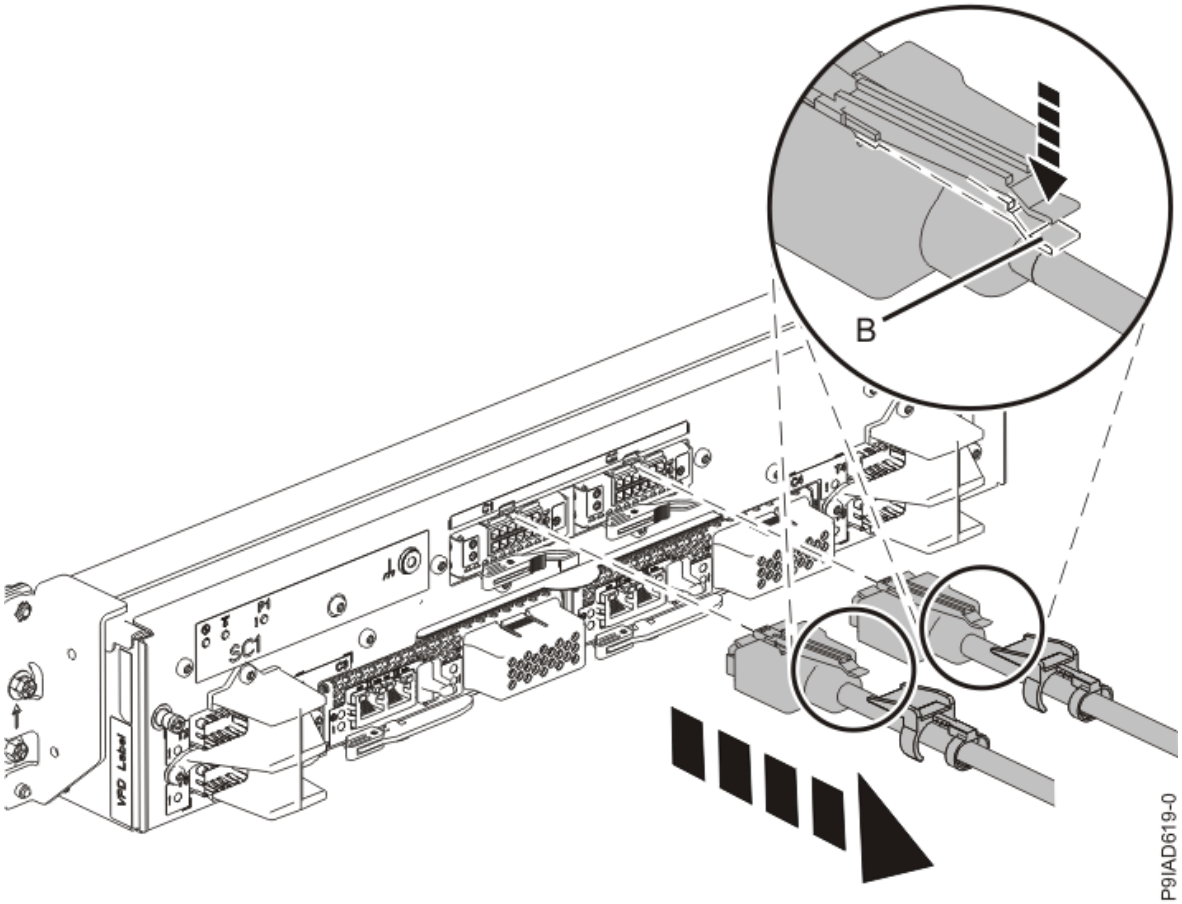


Figure 373. Removing the UPIC cable from the system control unit

9. Continue with step “13” on page 435.
10. To prepare the system to install an adapter by using the AIX operating system, complete the following steps:
    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** and press Enter.
    The **PCI Hot-Plug Manager** menu displays.
    For more information about the menu options in the **PCI Hot-Plug Manager** screen, see Hot-plug manager menu (www.ibm.com/support/knowledgecenter/POWER9/p9hak/p9hak_hotplug_menu.htm).
    d) From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter**, and then press Enter.
    e) Select the appropriate slot from the list that is displayed on the screen, and then press Enter.
    f) Physically verify that the slot you identified is where you want to install the adapter.
    - 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 unoccupied slot that was selected by using the identify function.

    g) Continue with step “13” on page 435.
11. To prepare the system to install an adapter by using the IBM i operating system, complete the following steps:
    a) If necessary, start a System Service Tools (SST) session by typing `strsst` on the command line of the Main Menu and then press Enter.

b) Type your service tools user ID and service tools password on the **System Service Tools Sign On** display, and then press Enter.

c) Select **Start a service tool** > **Hardware service manager** > **Packaging hardware resources (system, frames, cards)**.

d) Type 9 (Hardware contained within package) in the **System Unit** field or **Expansion Unit** field of the unit where you are installing the adapter. Press Enter.

e) Select the **Include empty positions** option.

f) Select **Concurrent Maintenance** for the slot in which you want to install the adapter, and then press Enter.

g) Select the **Toggle LED blink off/on** option. A light-emitting diode (LED) flashes identifying the slot that you selected.

h) Physically verify that the slot you identified is where you want to install the adapter.

- 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 unoccupied slot that was selected by using the identify function.

i) Select the **Toggle LED blink off/on** option to stop the LED from flashing.

j) Continue with step “13” on page 435.

12. To prepare the system to install an adapter by using the Linux operating system, complete the following steps:

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)
U7879.001.DQD014E-P1-C1 PCI-X capable, 64 bit, 133MHz slot Empty
U7879.001.DQD014E-P1-C4 PCI-X capable, 64 bit, 133MHz slot Empty
U7879.001.DQD014E-P1-C5 PCI-X capable, 64 bit, 133MHz slot Empty
```

c) Record the empty adapter slot where you want to install the adapter.

d) Complete the following steps to prepare the slot to accept an adapter:

1) Type the following command:

```
drmgr -c pci -r -s locationcode
```

Where *locationcode* is the location of the adapter slot. For example, the location might be U7879.001.DQD014E-P1-C3.

2) Press Enter. A fast-flashing amber LED at the rear of the system near the adapter indicates that the slot is identified.

3) Physically verify that the slot you identified is where you want to install the adapter.

Notes:

- 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 the flashing amber LED, which identifies the slot that was selected by using the identify function.

e) Physically verify that the slot you identified is where you want to install the adapter.

- 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 unoccupied slot that was selected by using the identify function.

13. 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.

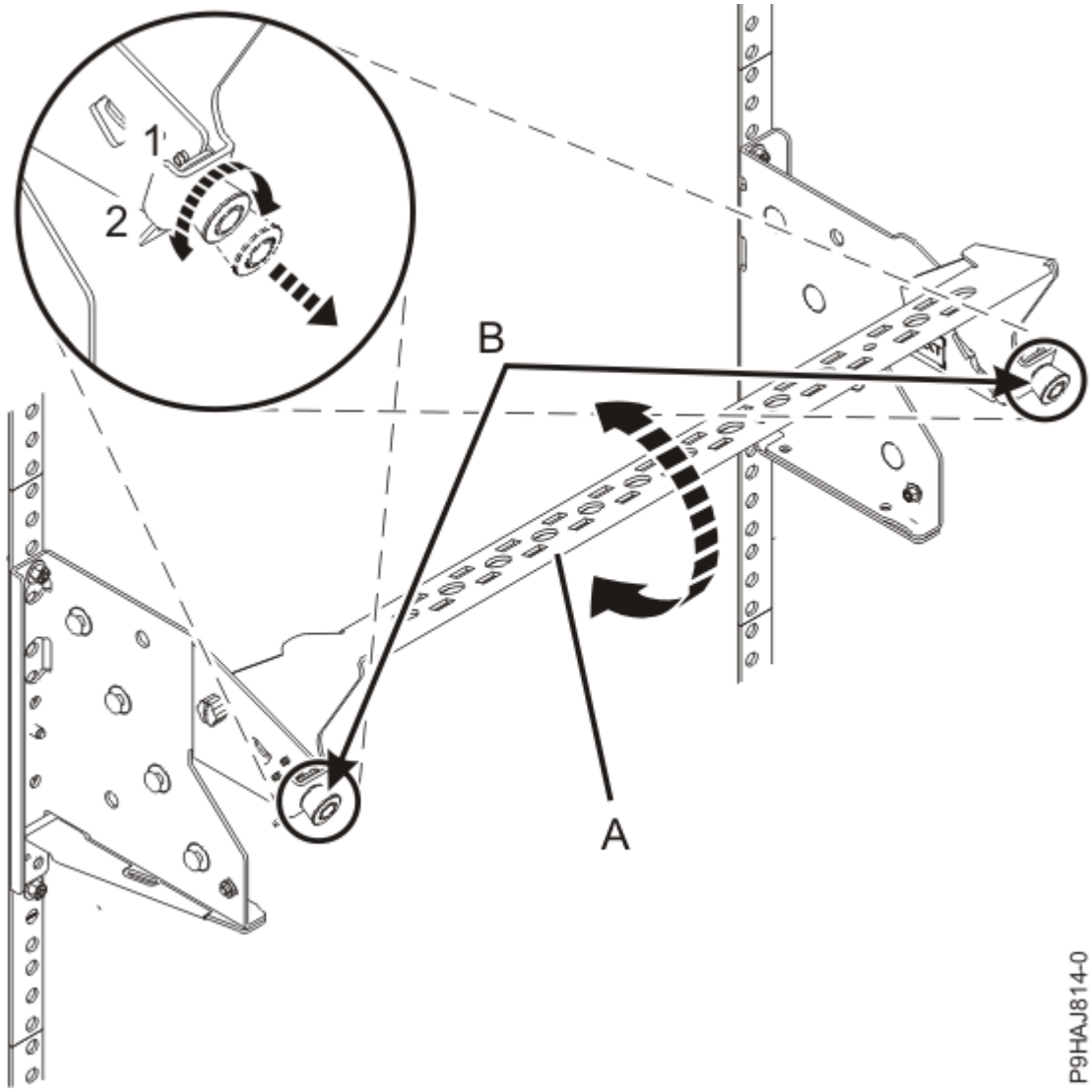


Figure 374. Placing the cable management bracket in the raised service position

14. 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 adapter in the 9080-M9S system

To install an adapter in 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. If necessary, remove the adapter from the antistatic package.

   Attention: Avoid touching the components and gold connectors on the adapter.
3. Place the adapter, component-side up, on a flat, antistatic surface.

   Attention: A pin on the tailstock of the adapter resembles a removable screw. Do not remove this pin. It is required for correct alignment and seating.
4. Remove the adapter cassette from the slot:
   a) Press in on the latch release **(A)** as shown in the following figure.
      The latch is released.
   b) Rotate the latch in the direction shown.
      The cassette is released from the slot.
   c) Pull the cassette straight out from the slot.

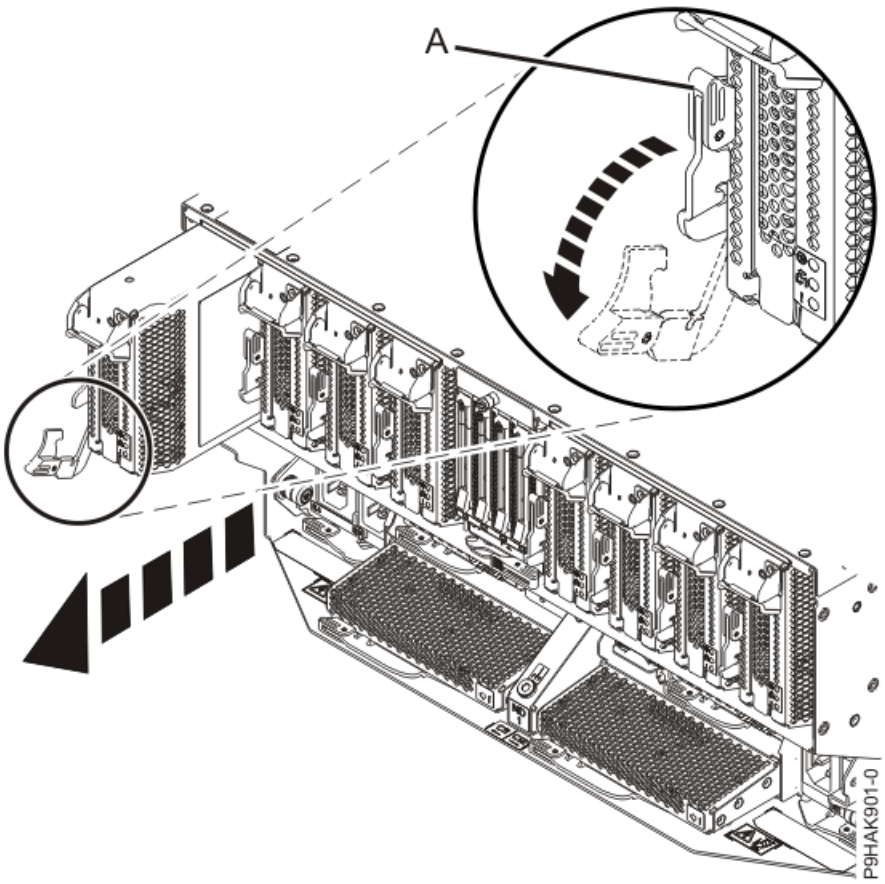


Figure 375. Removing the adapter cassette from the 9080-M9S system

5. Remove the side cover from the cassette.
   a) Press the release button on the side cover and slide the cover in the direction that is shown.
   b) Lift the side cover off the cassette.

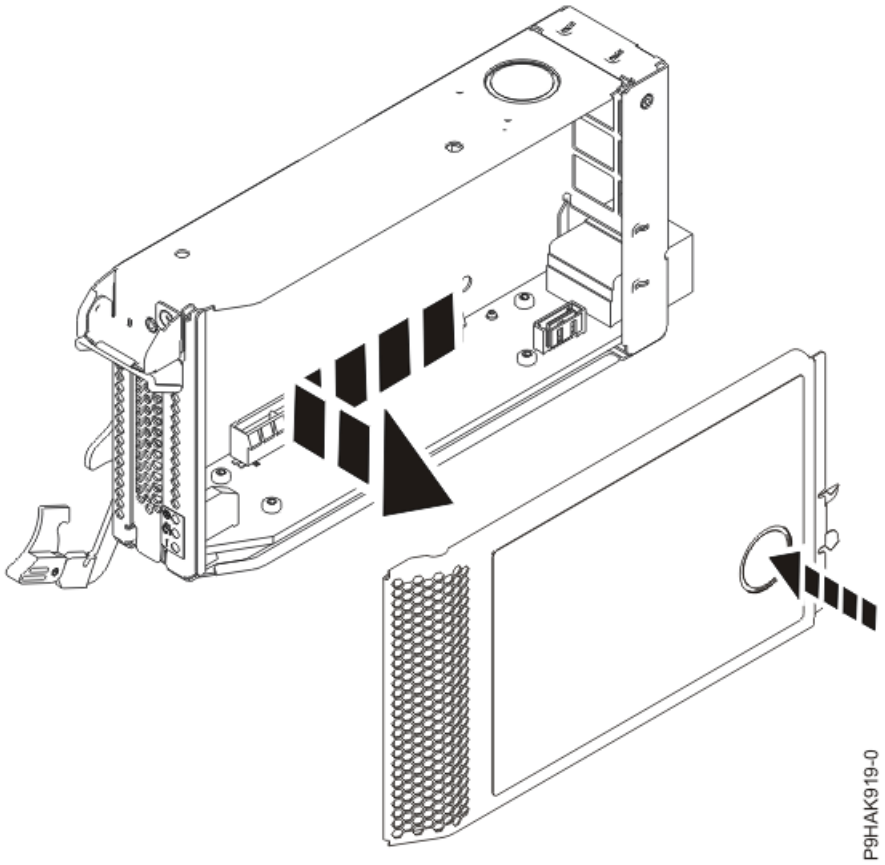


Figure 376. Removing the side cover from the adapter cassette for the 9080-M9S system

6. Remove the top cover from the cassette.
   a) Press the release button on the top cover and slide the cover in the direction that is shown.
   b) Lift the top cover off the cassette.

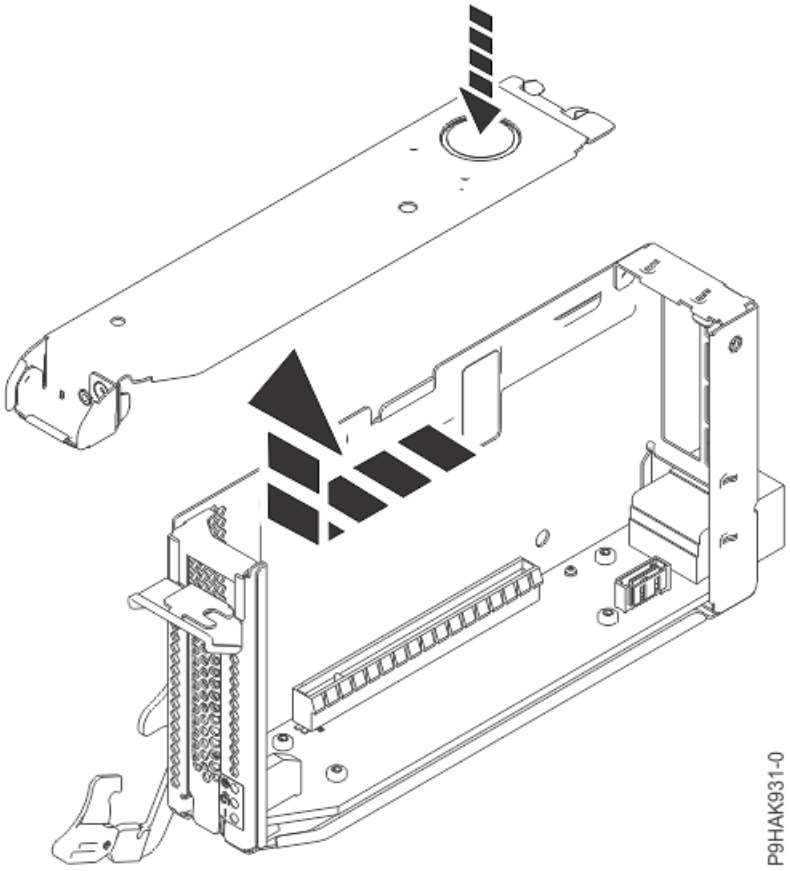


Figure 377. Removing the top cover from the adapter cassette for the 9080-M9S system

7. Remove the tailstock filler from the cassette.
   a) Pull the tailstock filler away from the cassette in the direction that is shown.
   b) Save the tailstock filler for a future use.
      You must have a tailstock filler in an empty cassette in a system to ensure proper airflow.

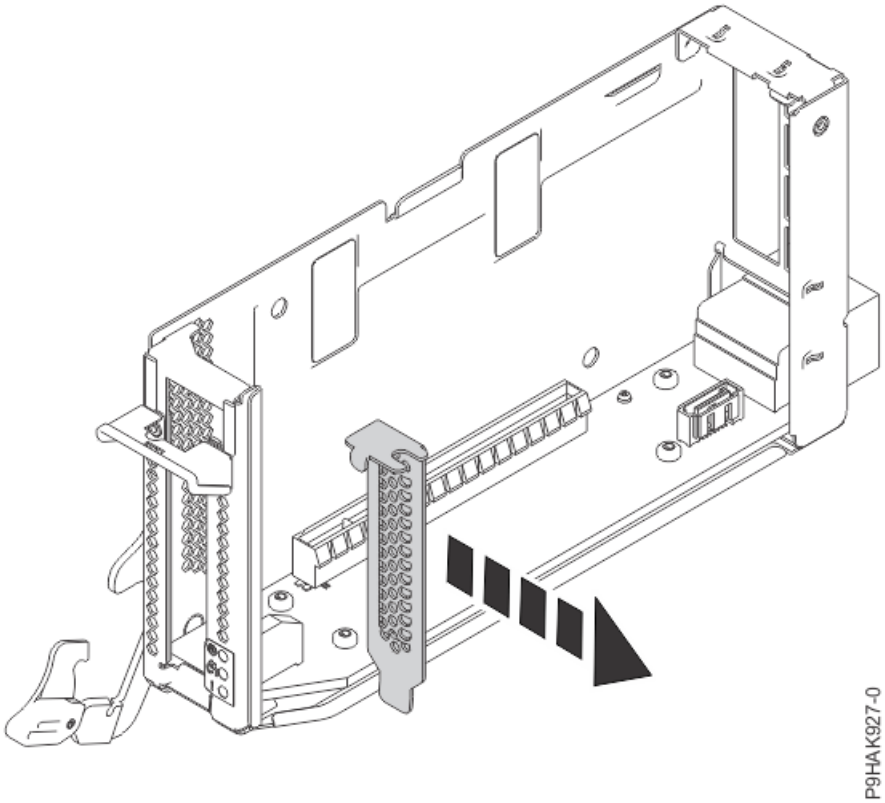


Figure 378. Removing a tailstock filler from the cassette for the 9080-M9S system

8. Insert the adapter into the cassette.
   a) Choose from the following options:
      - If you do not have adapter retainers, continue with the next step.
      - If you have adapter retainers, complete the following steps:
        1) Ensure that the retainer latches **(A)** are in the open position by pushing up on the latch in the direction that is shown in the following figure.
        2) Slide up the retainers and remove them from the cassette and then discard them.

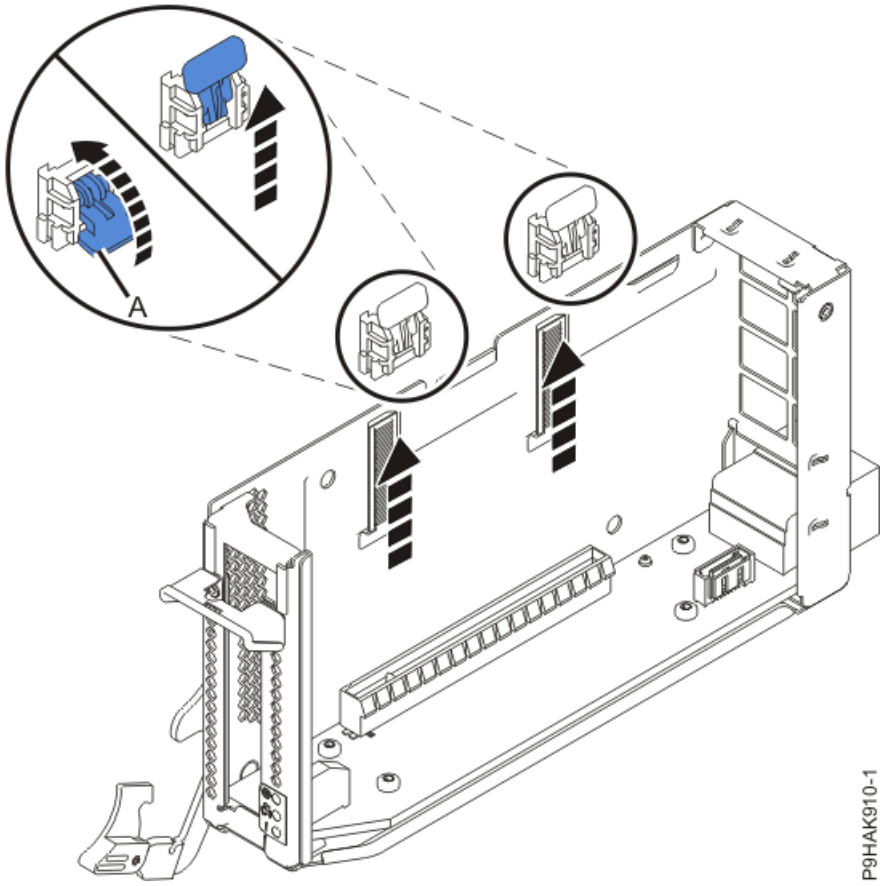


Figure 379. Opening the adapter retainers for the 9080-M9S system so you can slide them off and discard them.

Note: The adapter retainers are not needed.

b) Press the adapter firmly into its connector as shown in the following figure, ensuring that it is seated.

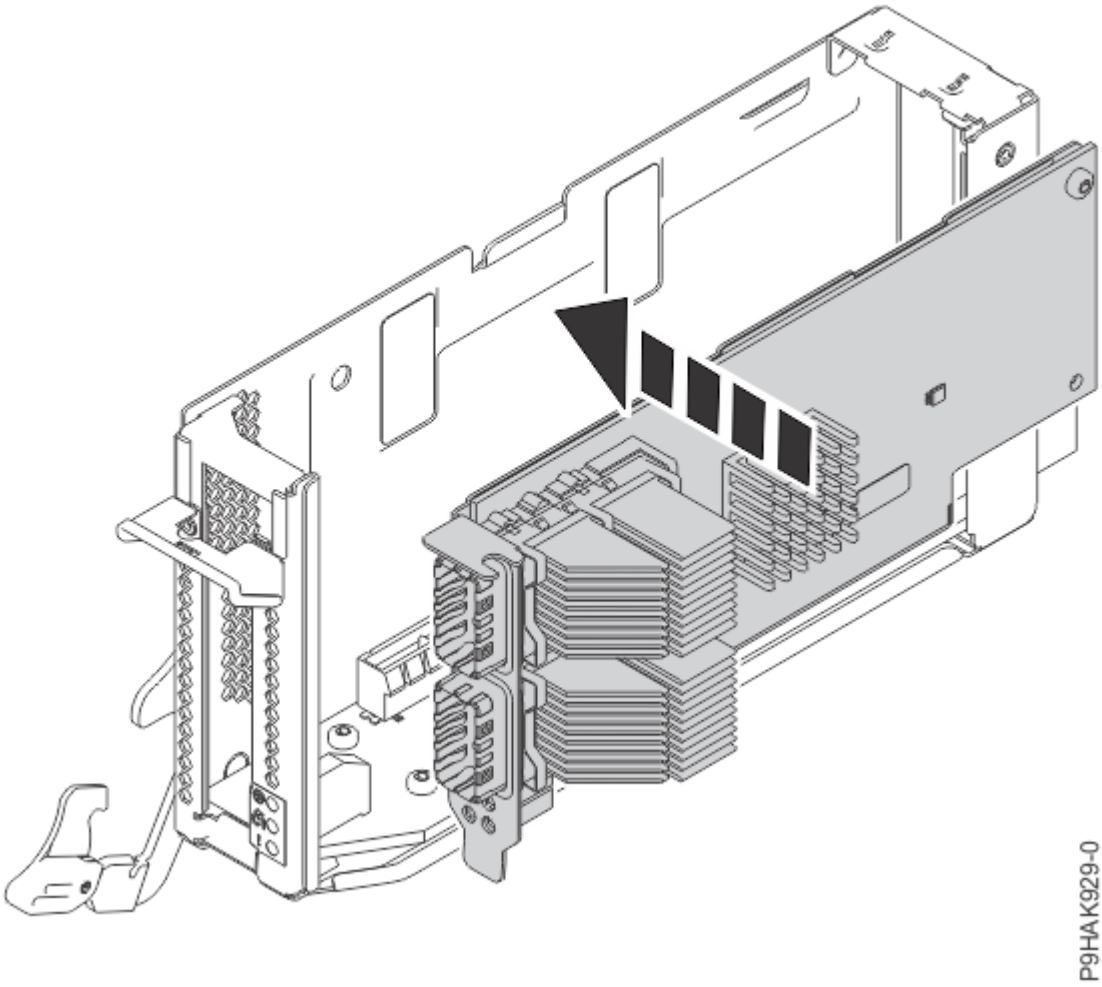


Figure 380. Installing an adapter in a cassette for the 9080-M9S system

Note: Ensure that the adapter is secured in the adapter retainer channel.

9. Replace the top cover on the cassette.
   a) Lower the top cover on the top of the cassette.
   b) Slide the top cover in the direction that is shown in the following figure until it latches securely.

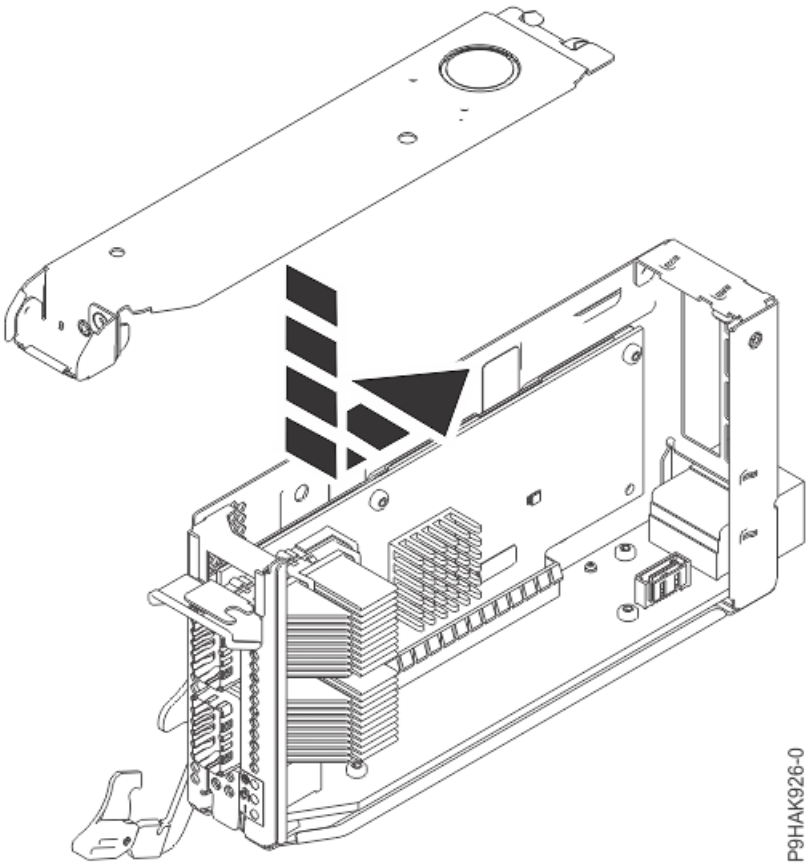


Figure 381. Replacing the top cover on the adapter cassette for the 9080-M9S system

10. Replace the side cover on the cassette.
    a) Place the side cover on the side of the cassette.
    b) Slide the side cover in the direction that is shown in the following figure until it latches securely.

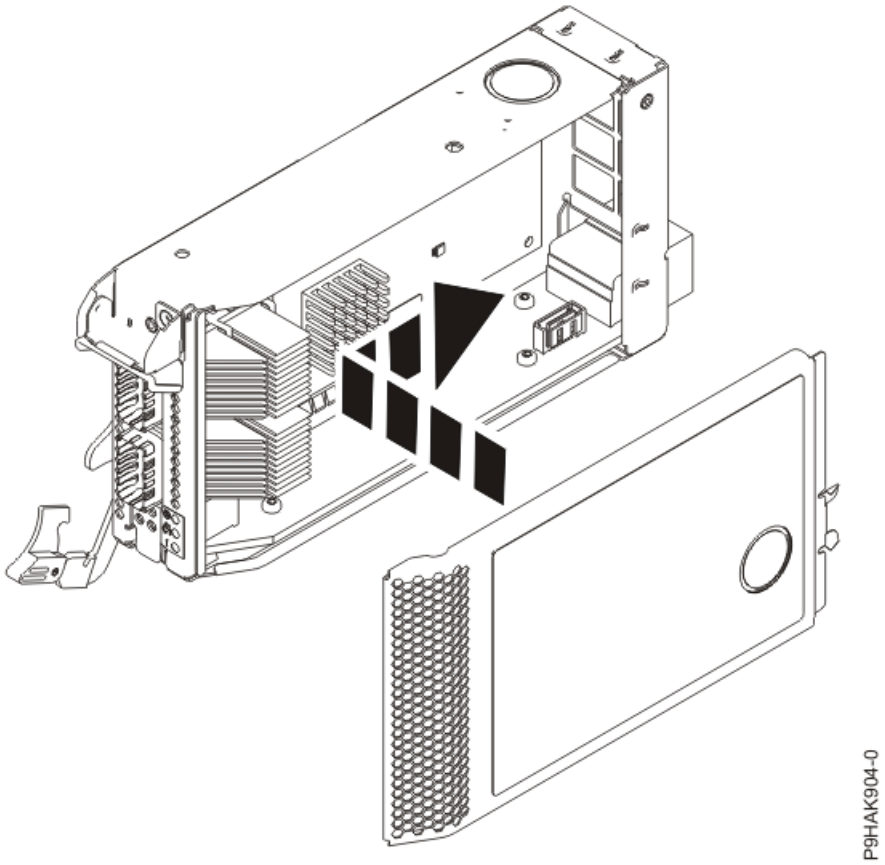


Figure 382. Replacing the side cover on the adapter cassette for the 9080-M9S system

11. Slide the cassette into the slot by completing the following steps:

Attention:

Ensure proper alignment when you insert a adapter cassette into the system.

a) Align the cassette on the cassette rail in the cassette slot.

b) Slide the cassette forward until the cassette is fully seated.

c) To lock the adapter in its slot, rotate the adapter latch **(A)** in the direction that is shown in the following figure.

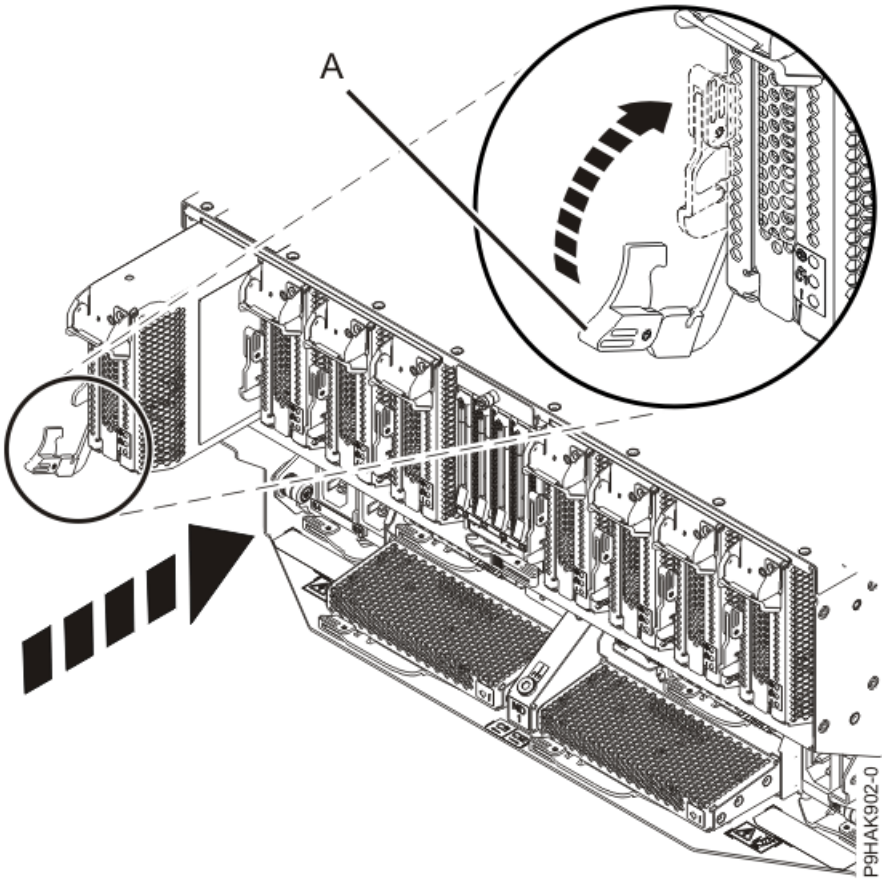


Figure 383. Installing a cassette in the 9080-M9S system

Preparing the 9080-M9S system for operation after installing an adapter

To prepare the system for operation after installing an adapter, 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. If you installed a PCIe3 cable adapter, and want to connect an EMX0 PCIe3 expansion drawer to your system, continue with Connecting an EMX0 PCIe Gen3 I/O expansion drawer to your system (http://www.ibm.com/support/knowledgecenter/POWER9/p9egp/p9egp_connect_kickoff.htm).

   If you have an HMC-managed 9040-MR9 or 9080-M9S system, you can connect and activate the expansion drawer cable when the system power is turned on. Otherwise, you must connect the cable with the system power turned off. The cable is activated when you start the system.
3. Connect any cables or transceivers to the adapter.
4. Route the cables through the cable management bracket.
5. 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.

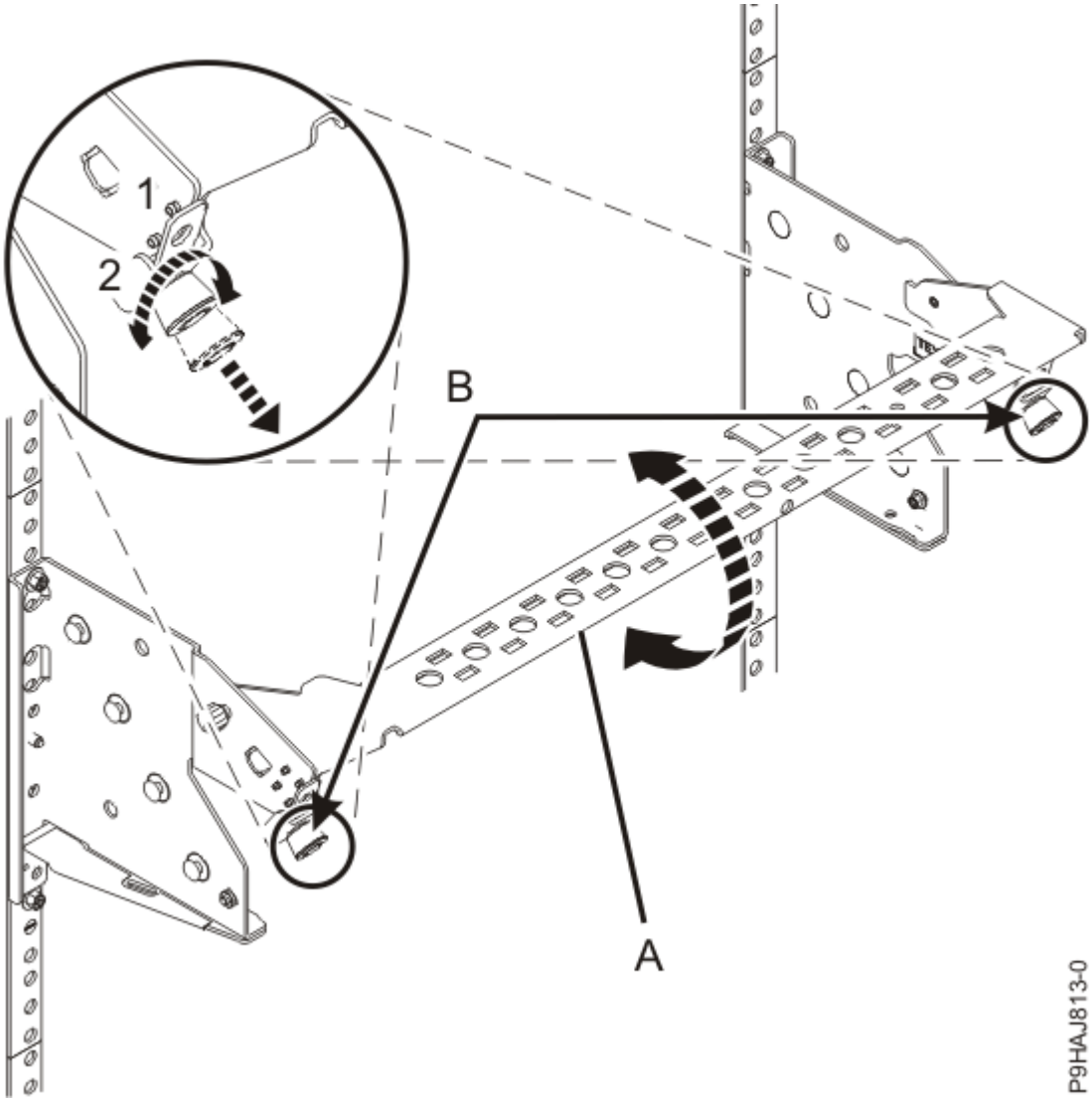


Figure 384. Placing the cable management bracket in the lowered operating position

6. Close the rack door at the rear of the system.
7. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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) Continue with step “10” on page 447.

8. 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.
9. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.
10. Choose from the following options:
    - If you completed this procedure with the system power turned off, continue with step “11” on page 447.
    - If you completed the procedure with the system power turned on and used the AIX operating system, continue with step “12” on page 448.
    - If you completed the procedure with the system power turned on and used the IBM i operating system, continue with step “13” on page 449.
    - If you completed the procedure with the system power turned on and used the Linux operating system, continue with step “17” on page 449.
11. If the system power is turned off, complete the following steps:
    a) If you chose to complete 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.

       1) Ensure that the white plastic lock is pulled back from the plug housing.
       2) 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.

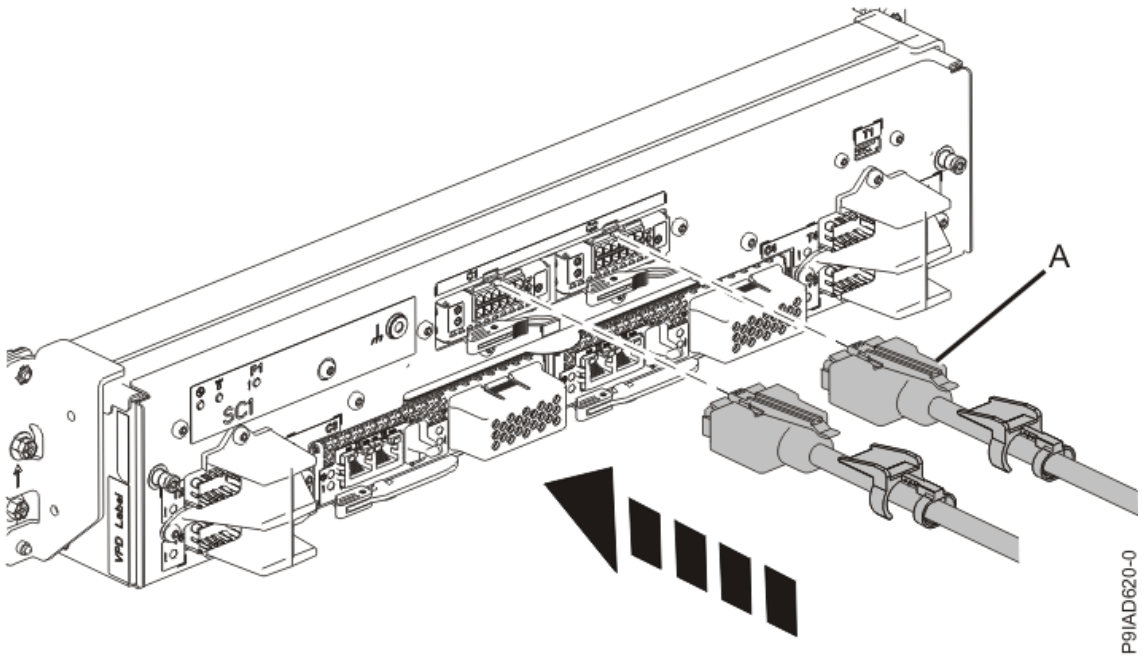


Figure 385. Replacing the UPIC cable into the system control unit

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

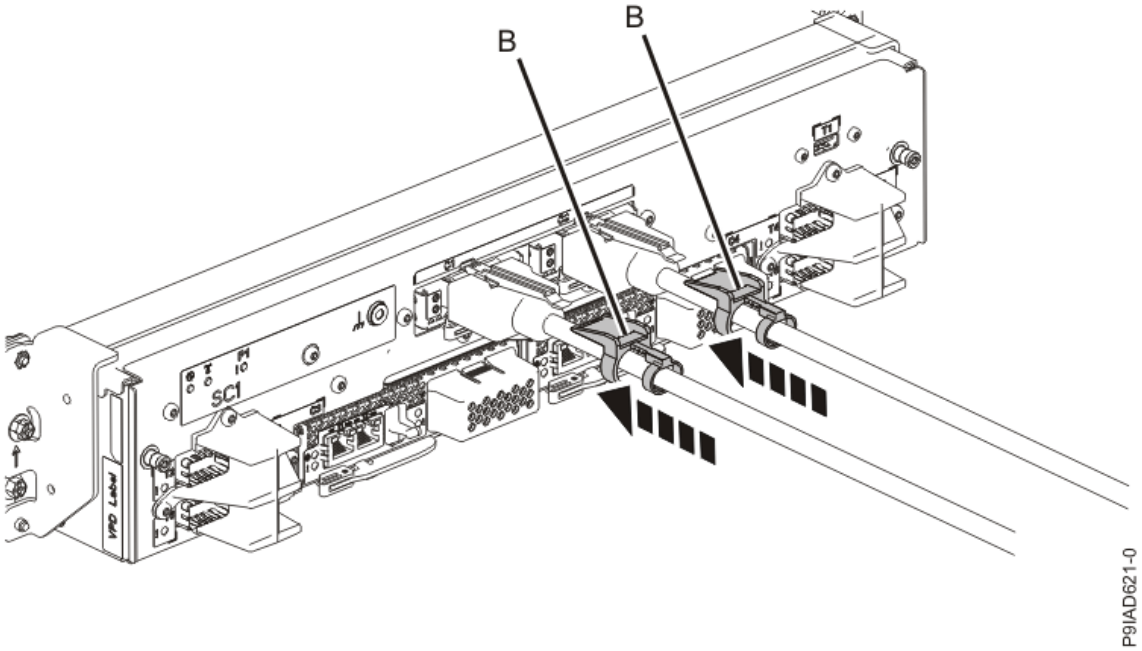


Figure 386. Replacing the UPIC cable into the system control unit

4) 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.

b) Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

c) Continue with step “18” on page 449.

12. If you are using the AIX operating system, you must configure the adapter by completing the following steps:

a) Install the AIX device drivers for the installed adapter.

For instructions, see Installing the AIX device driver software.

b) On the console, enter `cfgmgr` to configure the adapter.

c) Continue with step “18” on page 449.

13. If you are using the IBM i operating system, return to the **Hardware Resource Concurrent Maintenance** display and select **Power on domain**.

    The message `Power on complete` is shown.

14. Did you replace a PCIe3 x8 non-volatile memory SSD NVMe adapter?

    - **Yes**: Continue with step “15” on page 449.
    - **No**: Continue with step “18” on page 449.

15. If you installed a PCIe3 x8 non-volatile memory SSD NVMe adapter and the logical partition that controls the adapter is running the IBM i operating system, complete the following steps to prepare the NVMe adapter for operation:

    a) Start the IBM i System Service Tools (STRSST), and specify the user name and password.

    b) On the System Service Tools (SST) display, select **Work with disk units** > **Work with disk configuration** > **Work with NVM Devices** > **Delete existing NVM Namespaces**.

    c) Select the NVMe device that you installed.

    d) Choose from the following options:

    - If no namespaces are listed, press F12 to return to the SST main menu and continue with the next step.
    - If there are namespaces listed, complete the following steps:

      1) Select **4=Delete Namespace** for each of the listed namespaces.

      2) Press F10 to confirm the deletion of the namespaces.

      3) Press F12 to return to the SST main menu.

    e) On the System Service Tools (SST) display, select **Work with disk units** > **Work with disk configuration** > **Work with NVM Devices** > **Create NVM Namespaces.**

    f) Select the NVMe device that you installed.

    g) On the **Create NVM Namespaces** display, select the quantity and capacity of the namespaces (disk units) that you want to create on the newly installed NVMe device.

    h) Press F10 to confirm the creation of the namespaces.

    i) Press F12 to return to the SST main menu.

16. Continue with step “18” on page 449.

17. 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 or replace the adapter 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 adapter was U7879.001.DQD014E-P1-C3.

    Enter **`lsslot`** `-c pci -s U7879.001.DQD014E-P1-C3`

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

```
# Slot                  Description                       Device(s)
U7879.001.DQD014E-P1-C3 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0
```

18. Verify the installed part.

    - If you replaced the part because of a service action, verify the installed part. For instructions, see Verifying a repair (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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).

19. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).

Removing and replacing a cassette

Preparing the 9080-M9S system to remove and replace an adapter cassette

Procedure

1. 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.

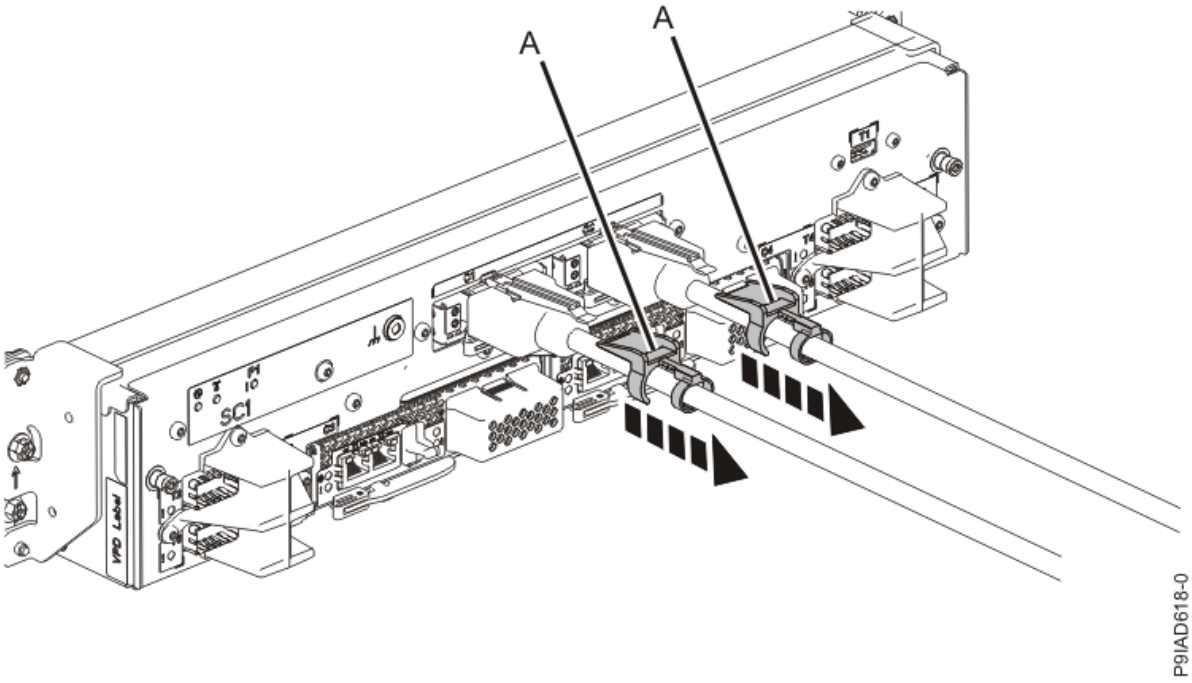


Figure 387. Removing the UPIC cable lock

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

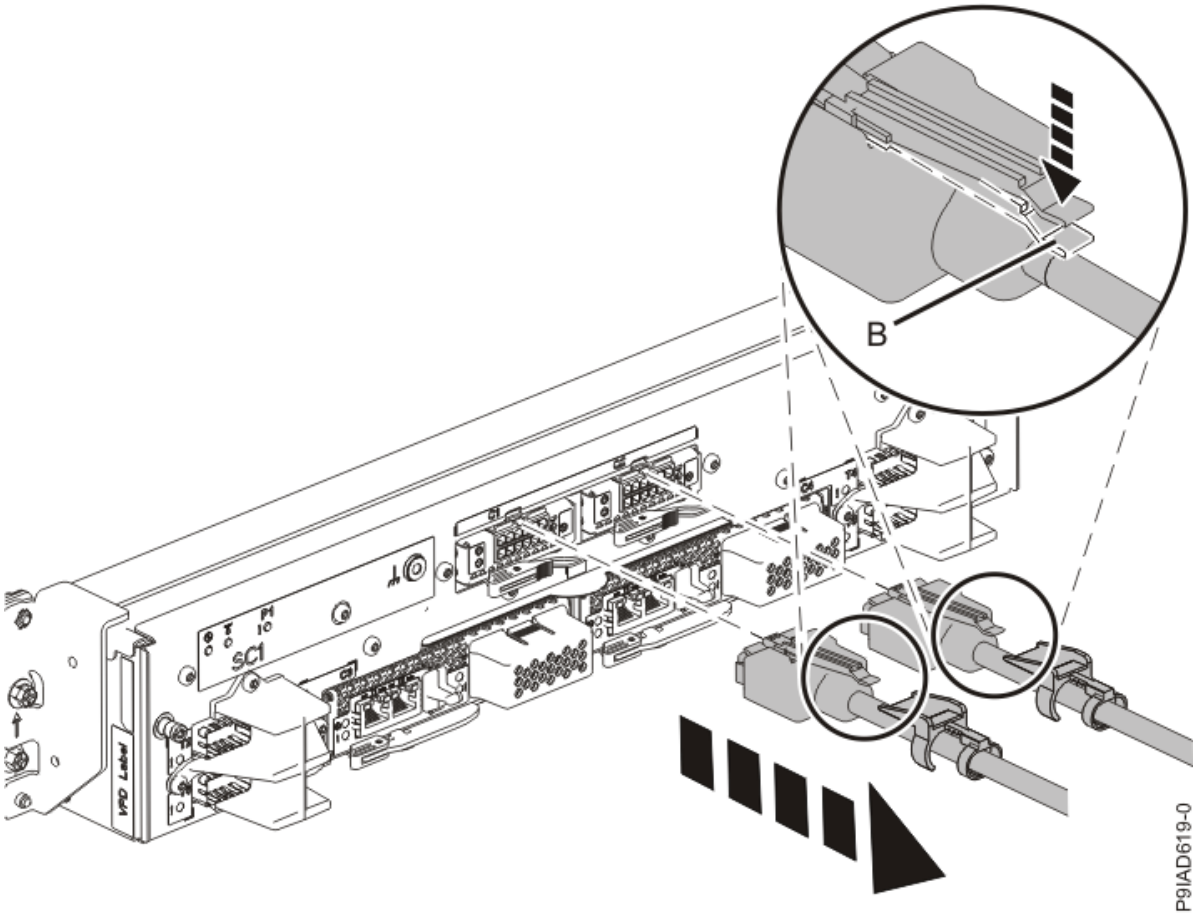


Figure 388. Removing the UPIC cable from the system control unit

2. If applicable, open the rack door at the rear of the system.
3. 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.

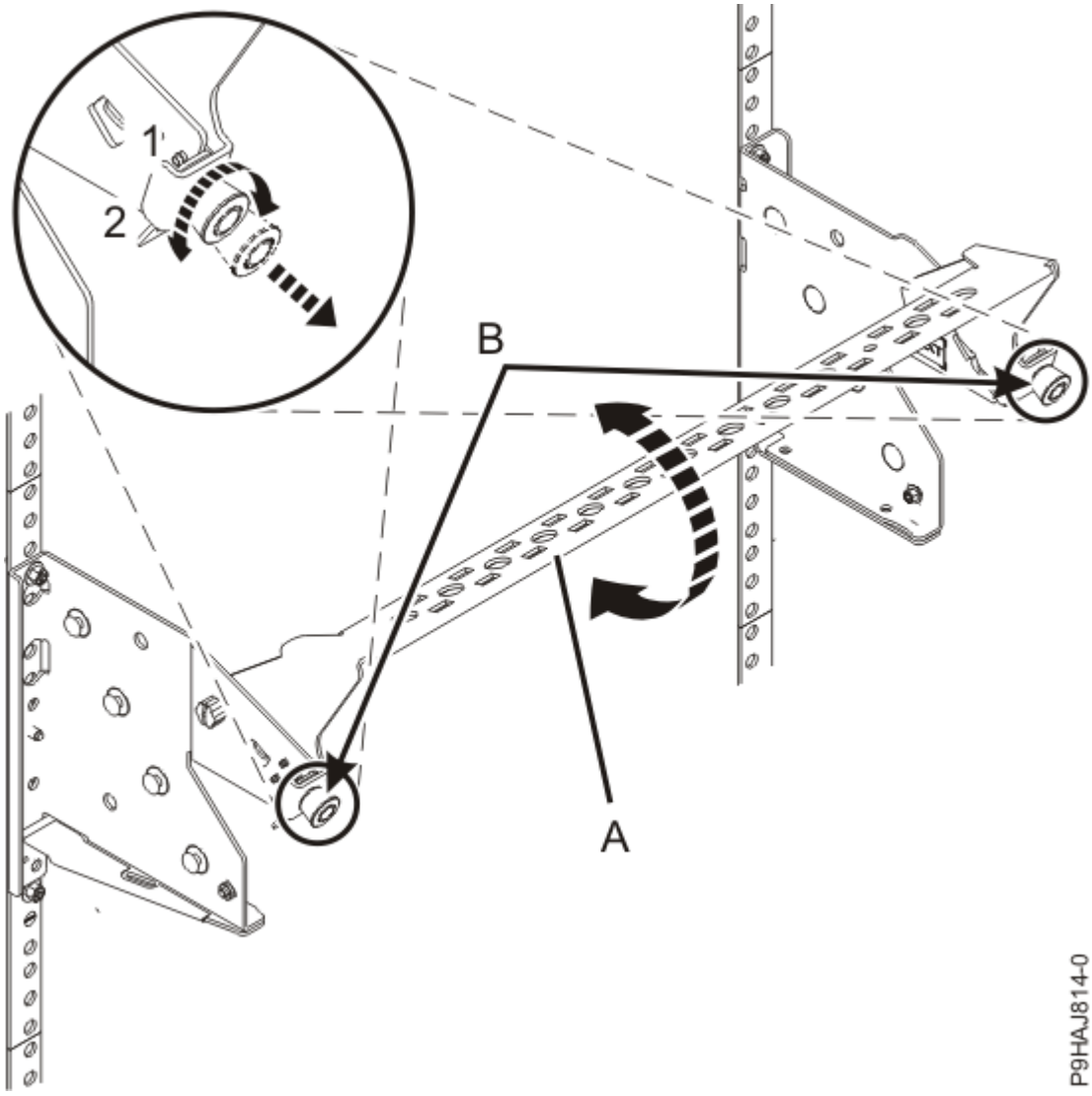


Figure 389. Placing the cable management bracket in the raised service position

4. Label and disconnect all of the cables or transceivers that are attached to the adapter you plan to remove.

   Use a hook-and-loop fastener to hold the cables in place.

5. 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.

Removing a PCIe adapter cassette from the 9080-M9S system

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 adapter cassette from the slot:
   a) Press in on the latch release **(A)** as shown in the following figure.
      The latch is released.
   b) Rotate the latch in the direction shown.
      The cassette is released from the slot.
   c) Pull the cassette straight out from the slot.

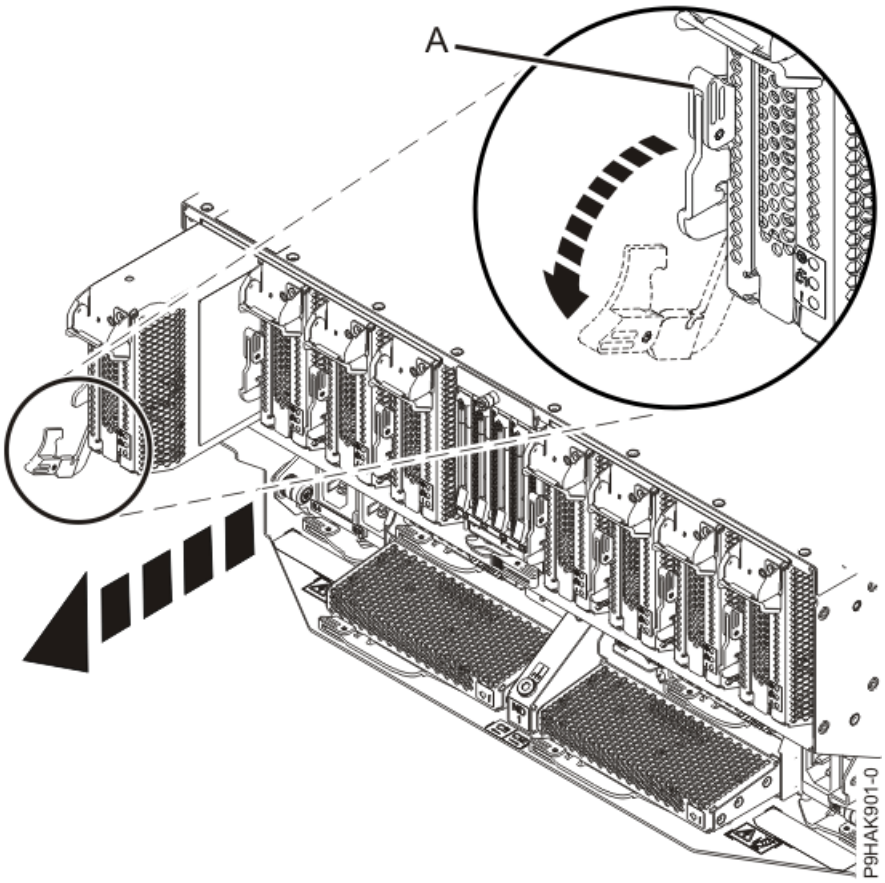


Figure 390. Removing the adapter cassette from the 9080-M9S system

3. Remove the side cover from the cassette.
   a) Press the release button on the side cover and slide the cover in the direction that is shown.
   b) Lift the side cover off the cassette.

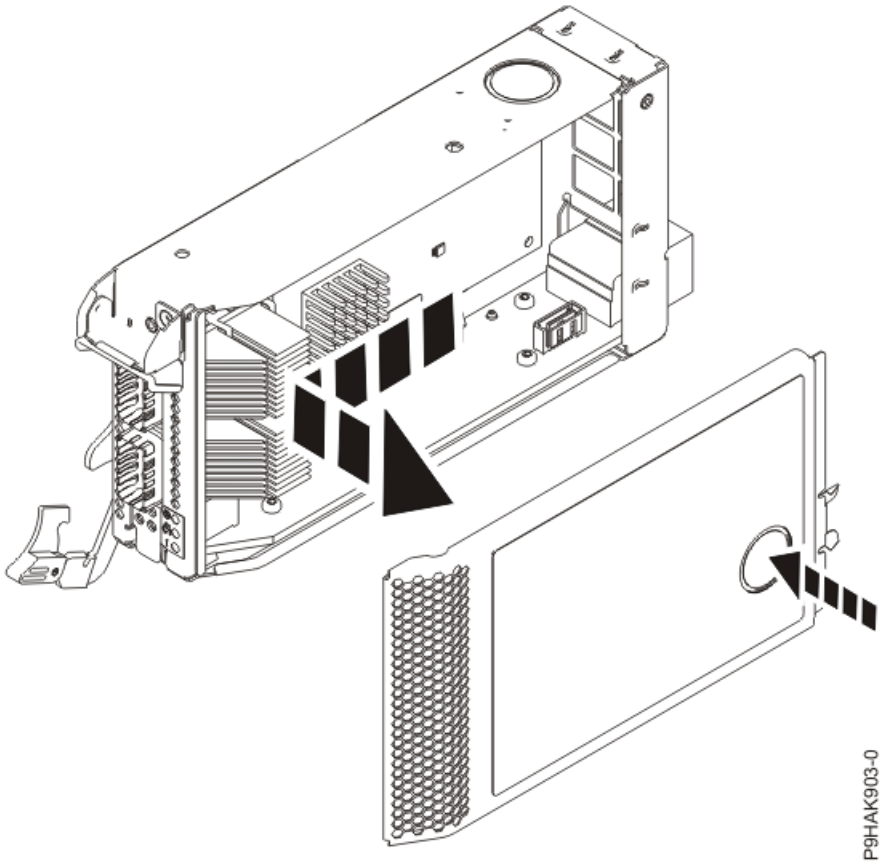


Figure 391. Removing the side cover from the adapter cassette for the 9080-M9S system

4. Remove the top cover from the cassette.
   a) Press the release button on the top cover and slide the cover in the direction that is shown.
   b) Lift the top cover off the cassette.

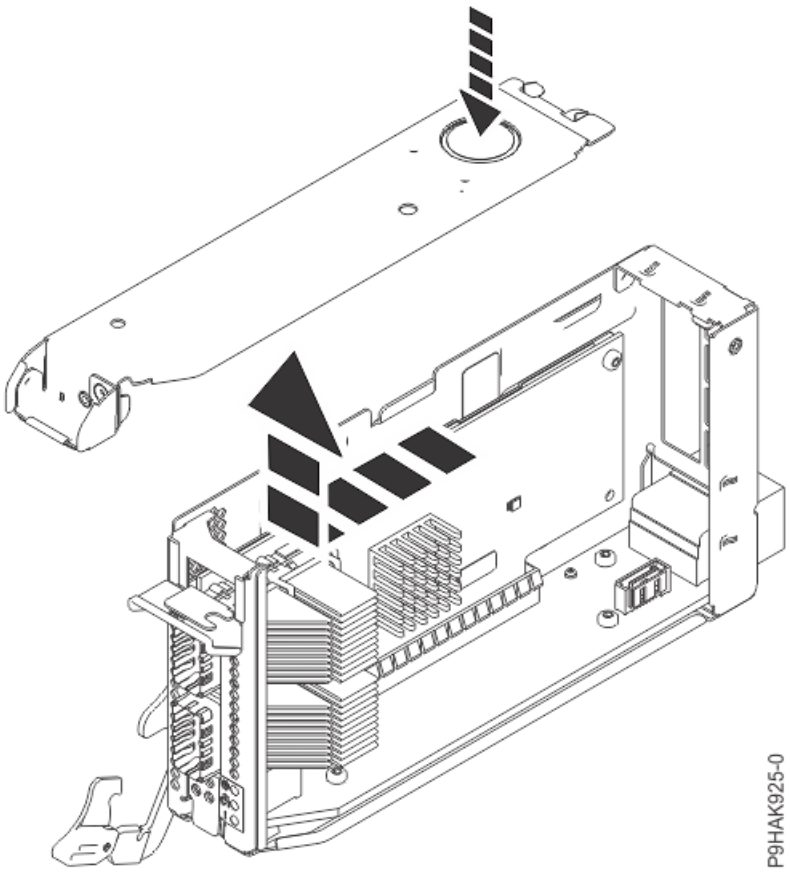


Figure 392. Removing the top cover from the adapter cassette for the 9080-M9S system

5. Remove the adapter from the cassette.
   a) Choose from the following options:
      - If you do not have adapter retainers, continue with the next step.
      - If you have adapter retainers, complete the following steps:
        1) Ensure that the retainer latches are in the open position by pushing up on the latch in the direction that is shown in the following figure.
        2) Slide the adapter retainers up and remove them from the cassette and then discard the retainers.

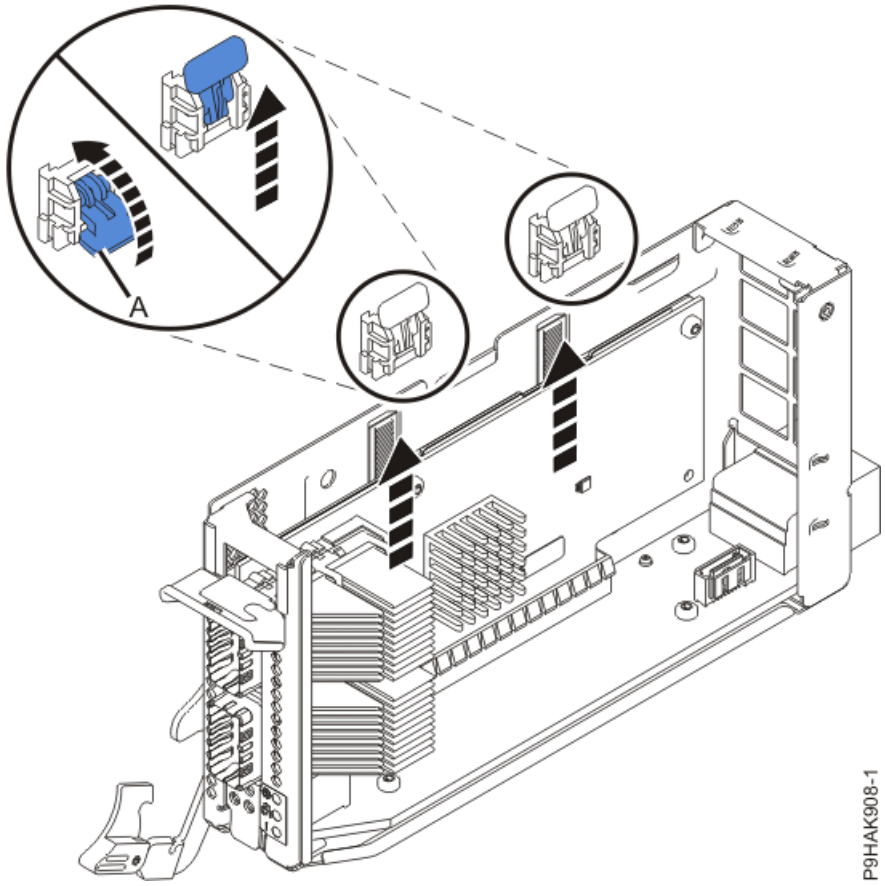


Figure 393. Opening the adapter retainers for the 9040-MR9 system.

Note: The adapter retainers are not needed.

b) Pull the adapter away from the connectors.

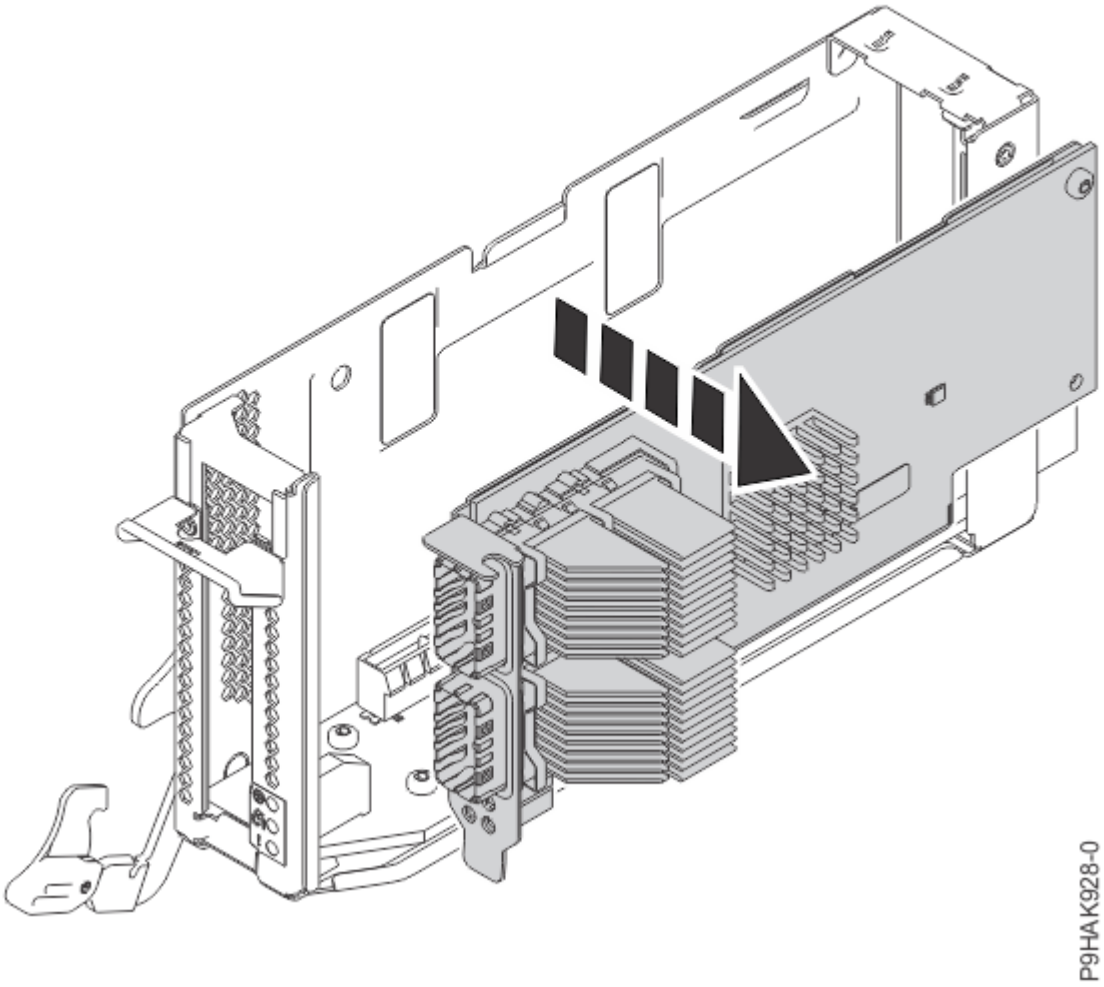


Figure 394. Removing an adapter from a cassette for the 9080-M9S system

c) Place the adapter, component-side up, on a flat, antistatic surface.

6. Save the PCIe adapter so that you can install it into the replacement PCIe adapter cassette.
7. Remove the PCIe adapter cassette from the antistatic packaging.
8. Remove the side cover from the cassette.
   a) Press the release button on the side cover and slide the cover in the direction that is shown.
   b) Lift the side cover off the cassette.

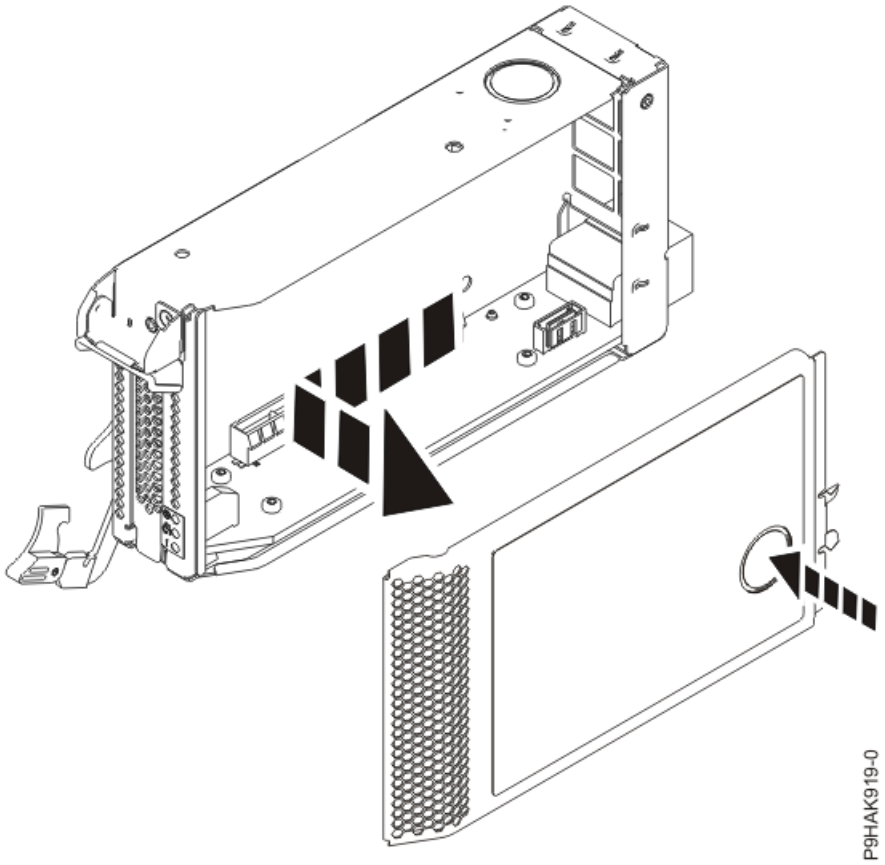


Figure 395. Removing the side cover from the adapter cassette for the 9080-M9S system

9. Remove the top cover from the cassette.
   a) Press the release button on the top cover and slide the cover in the direction that is shown.
   b) Lift the top cover off the cassette.

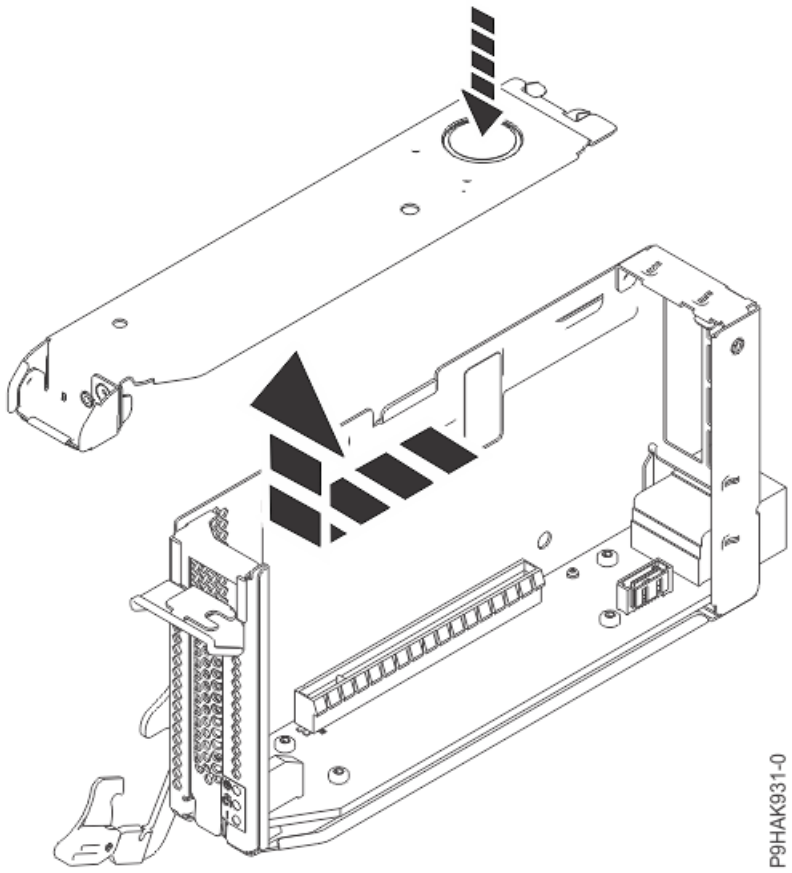


Figure 396. Removing the top cover from the adapter cassette for the 9080-M9S system

10. Press the adapter firmly into its connector as shown in the following figure, ensuring that it is seated.

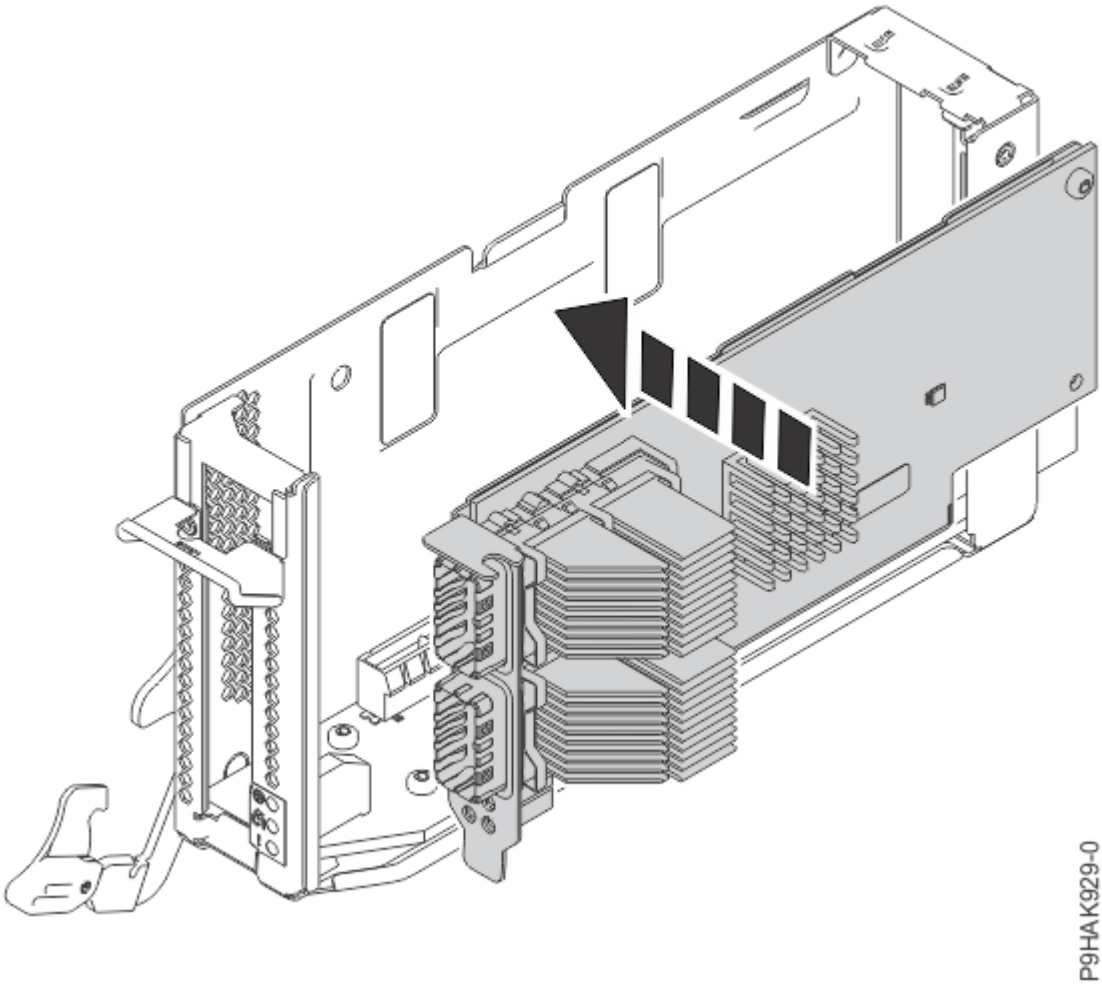


Figure 397. Installing an adapter in a cassette for the 9080-M9S system

11. Replace the top cover on the cassette.
    a) Lower the top cover on the top of the cassette.
    b) Slide the top cover in the direction that is shown in the following figure until it latches securely.

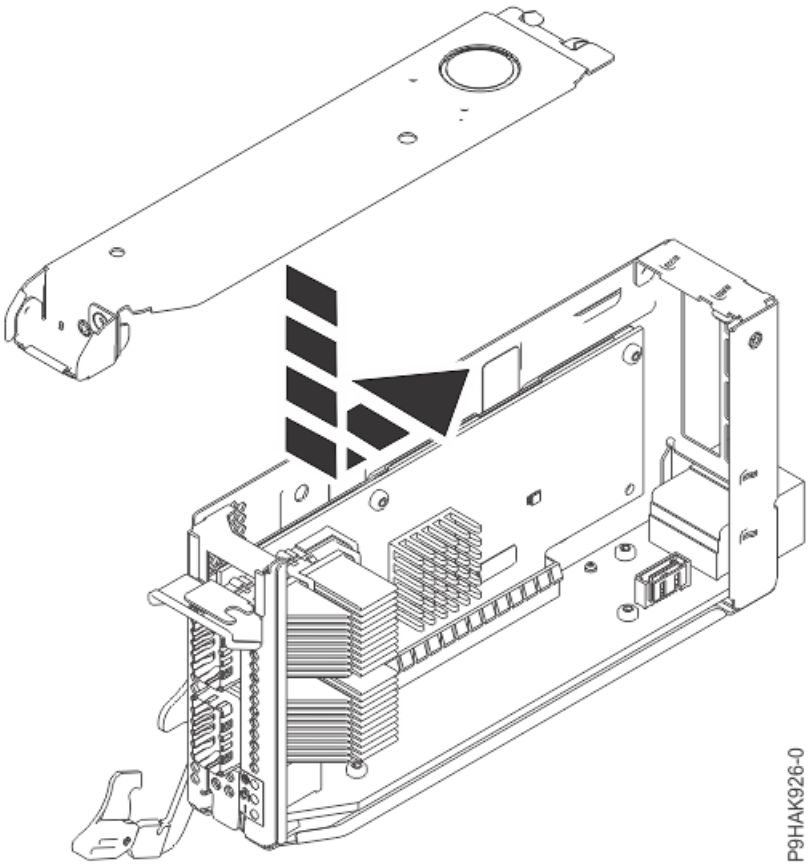


Figure 398. Replacing the top cover on the adapter cassette for the 9080-M9S system

12. Replace the side cover on the cassette.
    a) Place the side cover on the side of the cassette.
    b) Slide the side cover in the direction that is shown in the following figure until it latches securely.

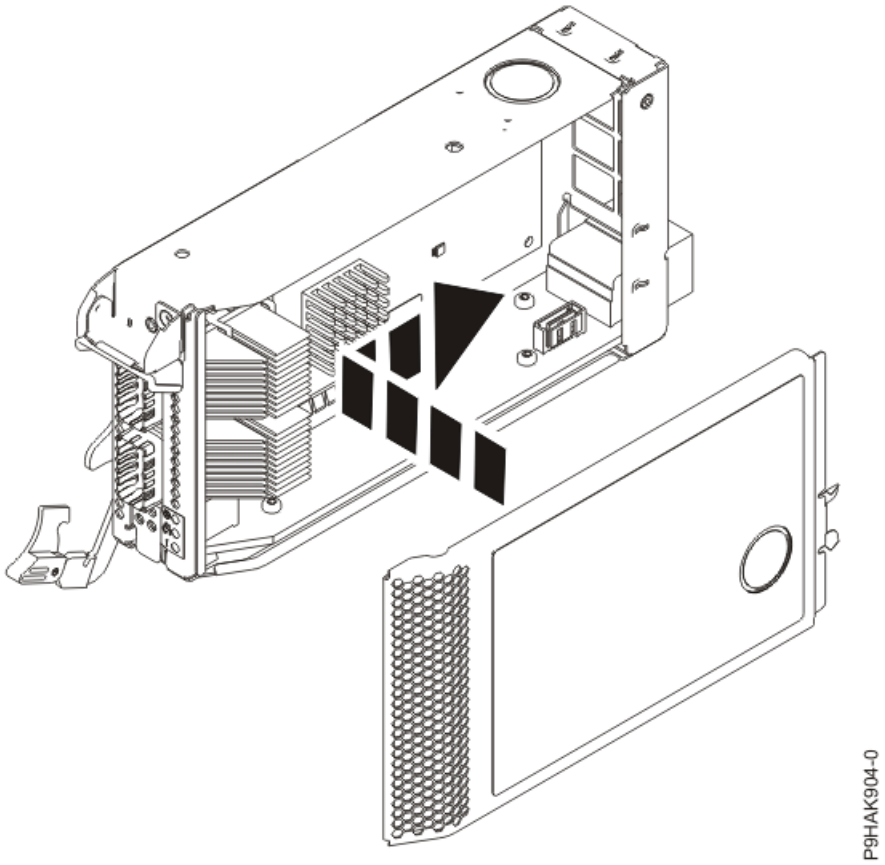


Figure 399. Replacing the side cover on the adapter cassette for the 9080-M9S system

Replacing a PCIe adapter cassette in the 9080-M9S system

To replace a PCIe adapter cassette in 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. Ensure that the target slot is empty.
3. Slide the cassette into the slot by completing the following steps:

   Attention:

   Ensure proper alignment when you insert a adapter cassette into the system.

   a) Align the cassette on the cassette rail in the cassette slot.

   b) Slide the cassette forward until the cassette is fully seated.

   c) To lock the adapter in its slot, rotate the adapter latch **(A)** in the direction that is shown in the following figure.

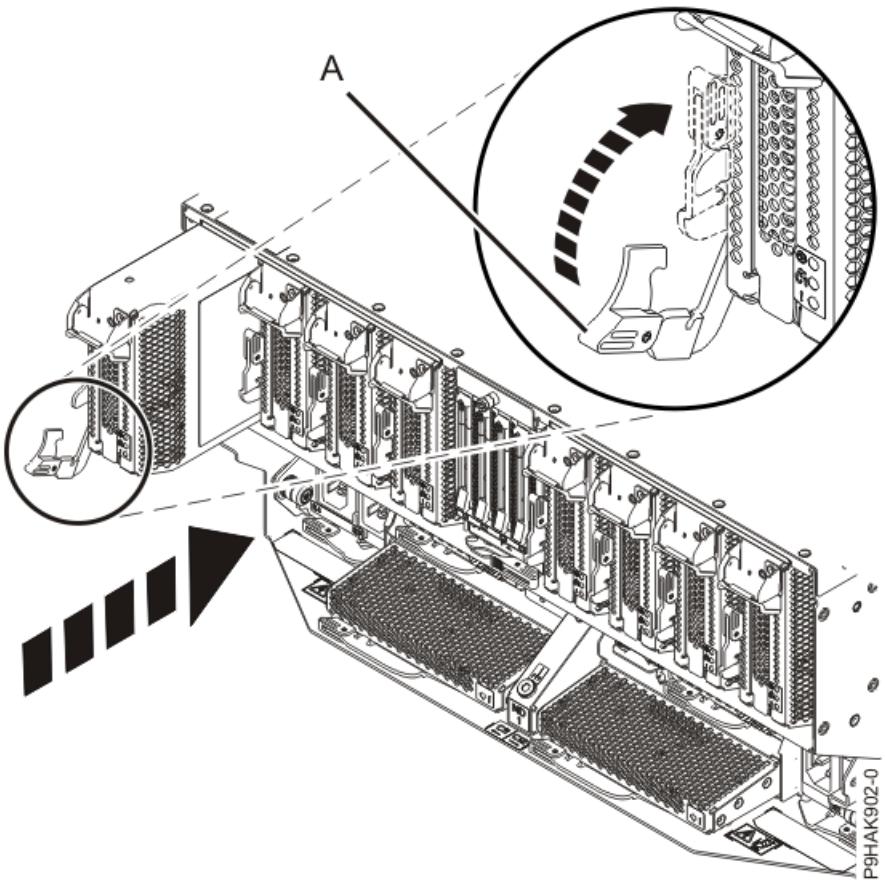


Figure 400. Installing a cassette in the 9080-M9S system

Preparing the 9080-M9S system for operation after removing and replacing an adapter cassette

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. If removed, connect the cables or transceivers to the adapter.
3. Route the cables through the cable management bracket.
4. 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.

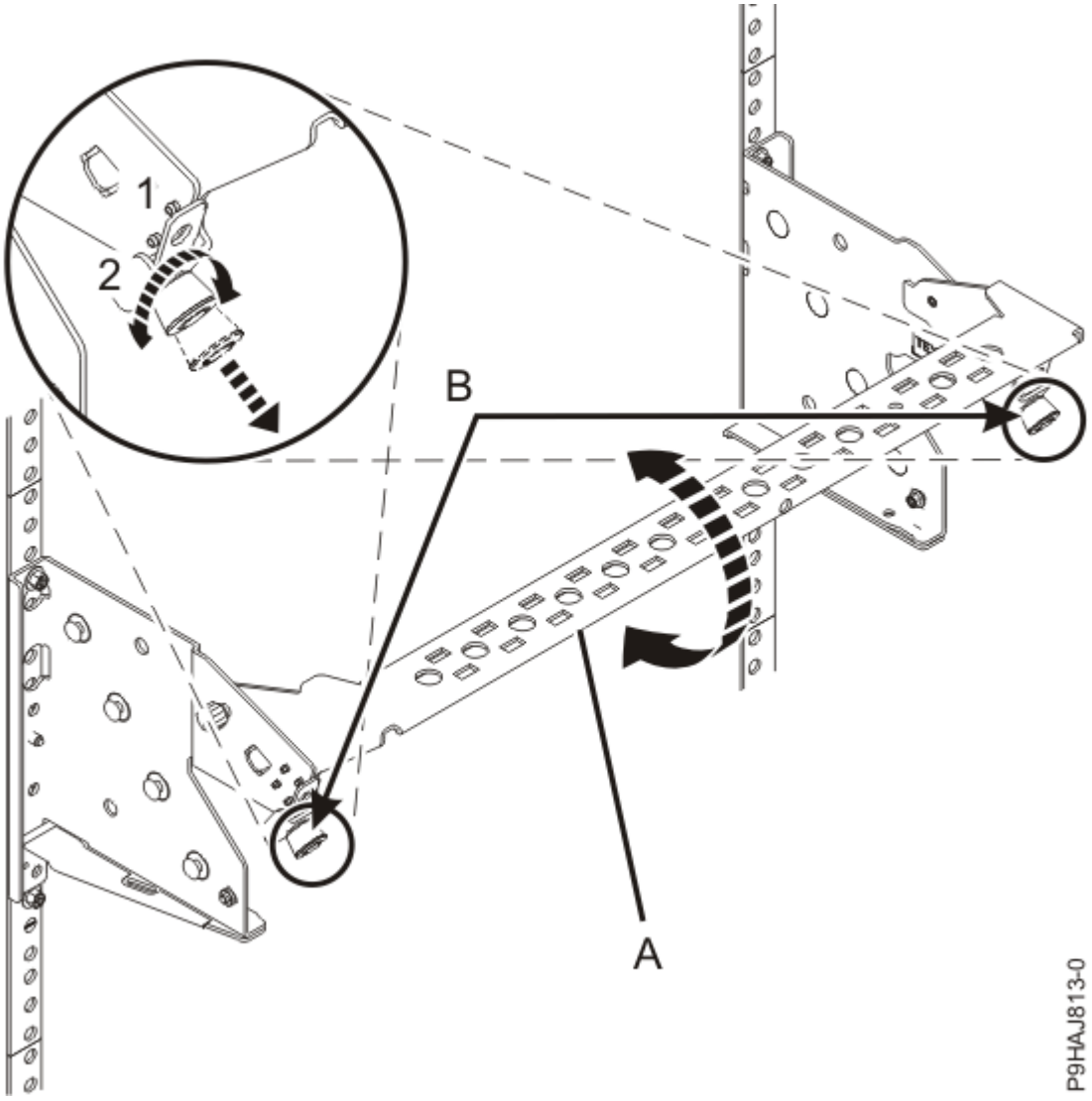


Figure 401. Placing the cable management bracket in the lowered operating position

5. Close the rack door at the rear of the system.
6. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

7. If you chose to complete 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.

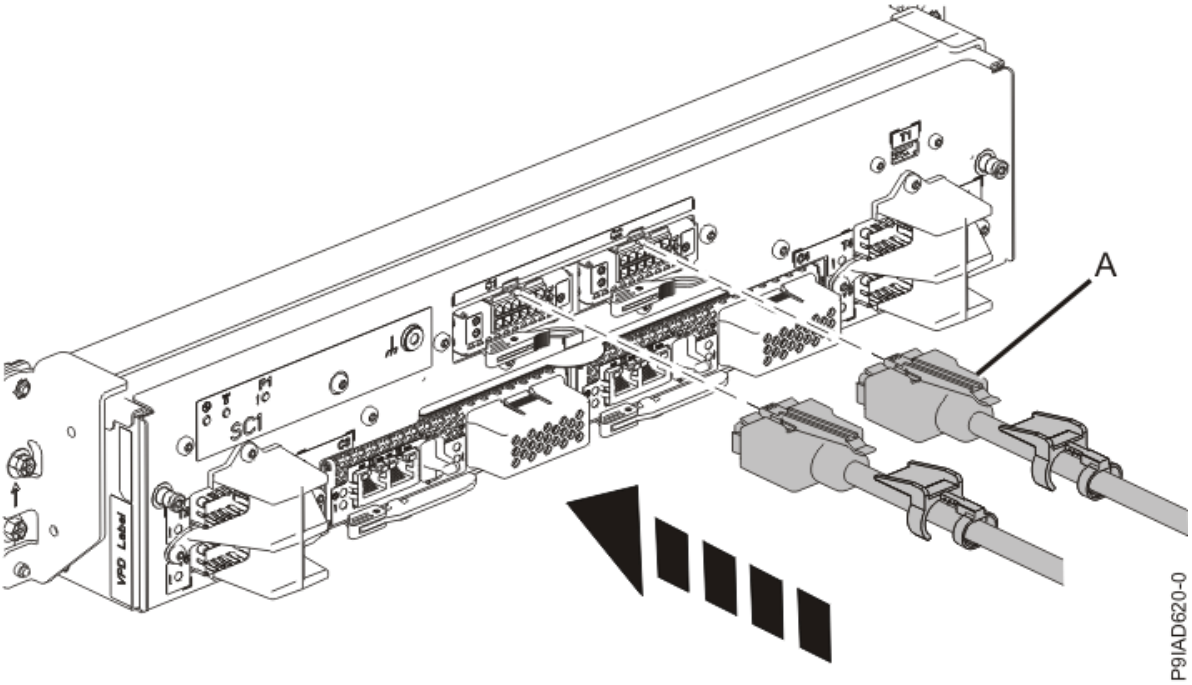


Figure 402. Replacing the UPIC cable into the system control unit

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

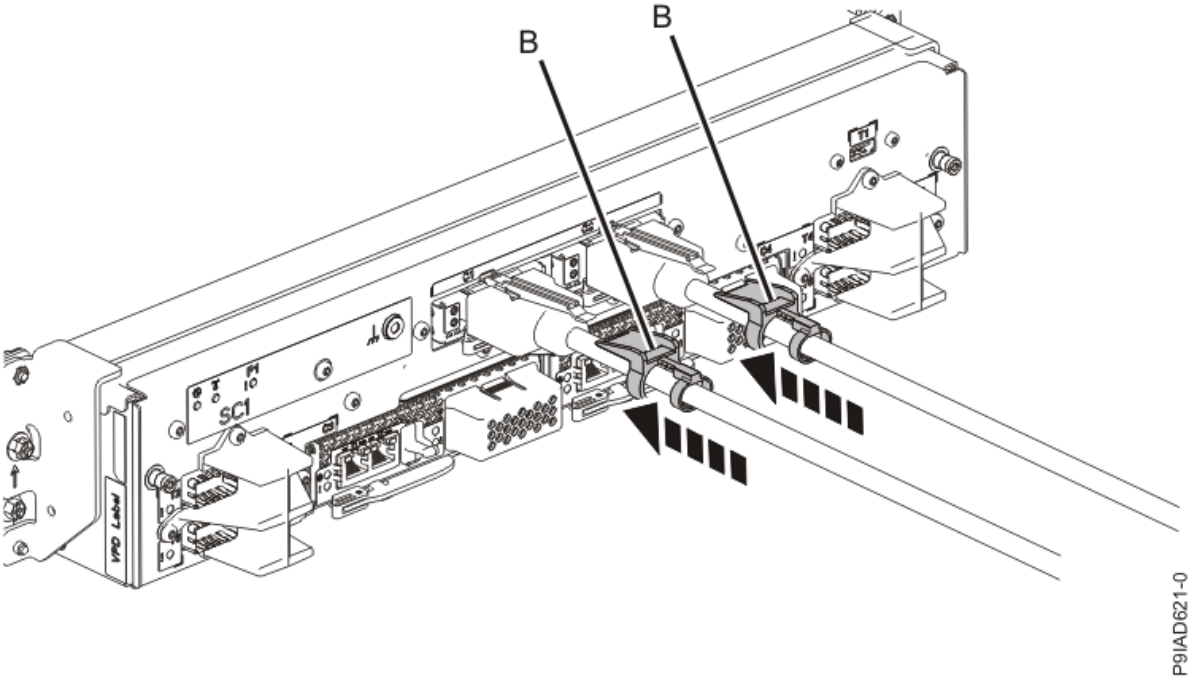


Figure 403. Replacing the UPIC cable into the system control unit

   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.

8. 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.
9. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Rempving and replacing an adapter

Preparing the 9080-M9S system to remove and replace an adapter

Before you begin

Note: If you are replacing a PCIe3 cable adapter that you use to attach your server to an EMX0 PCIe3 expansion drawer, you must ensure that you have the correct PCIe3 cable adapter and expansion drawer cable to work with the PCIe3 6-slot fanout module that you have in your EMX0 PCIe3 expansion drawer.

- If you have a CCIN **50CB** PCIe3 6-slot fanout module:
  - You must use one of the following PCIe3 cable adapters:
    - FC EJ08 (CCIN 2CE2)
    - FC EJ07 (CCIN 6B52)
    - FC EJ05 (CCIN 2B1C)
  - You must use one of the following expansion drawer cables: FC ECC6, FC ECC7, FC ECC8, FC ECC9, FC ECCR, FC ECCS, FC ECCX, FC ECCY, or FC ECCZ.
- If you have a CCIN **50CD** PCIe3 6-slot fanout module:
  - You must install one of the following PCIe3 cable adapters:
    - FC EJ19 (CCIN 6B53)
    - FC EJ1R (CCIN 58FF)
    - FC EJ20 (CCIN 2CF5)
  - You must use one of the following expansion drawer cables: FC ECCR, FC ECCX, FC ECCY, or FC ECCZ.

Procedure

1. 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.

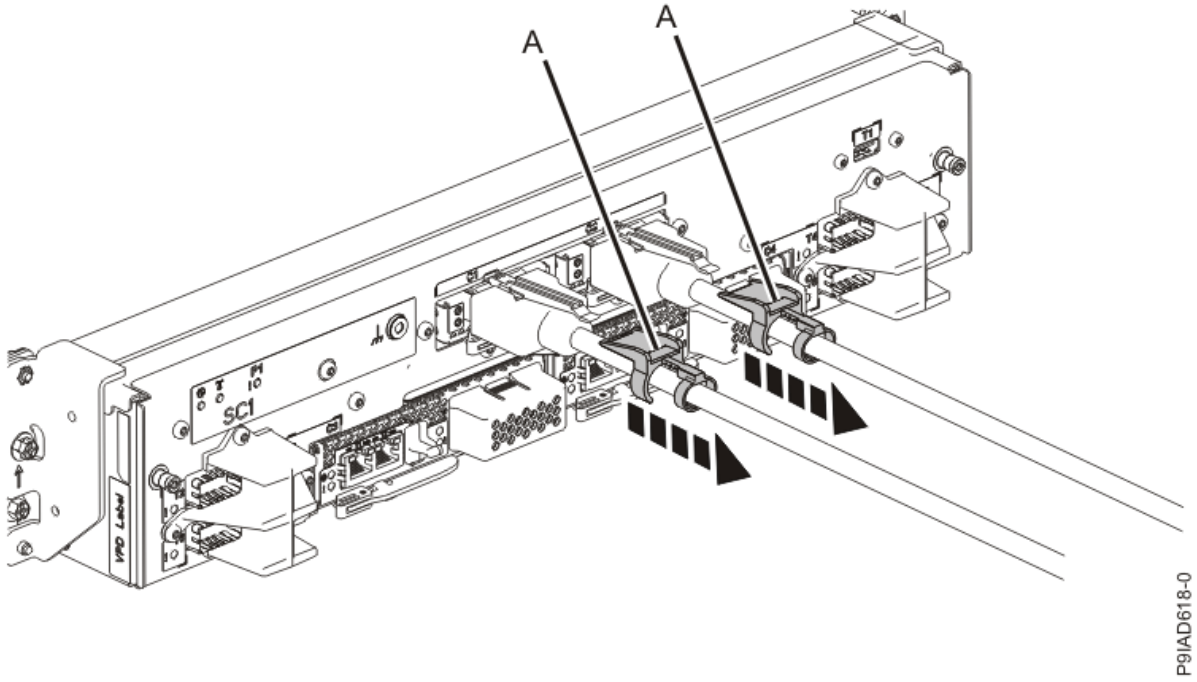


Figure 404. Removing the UPIC cable lock

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

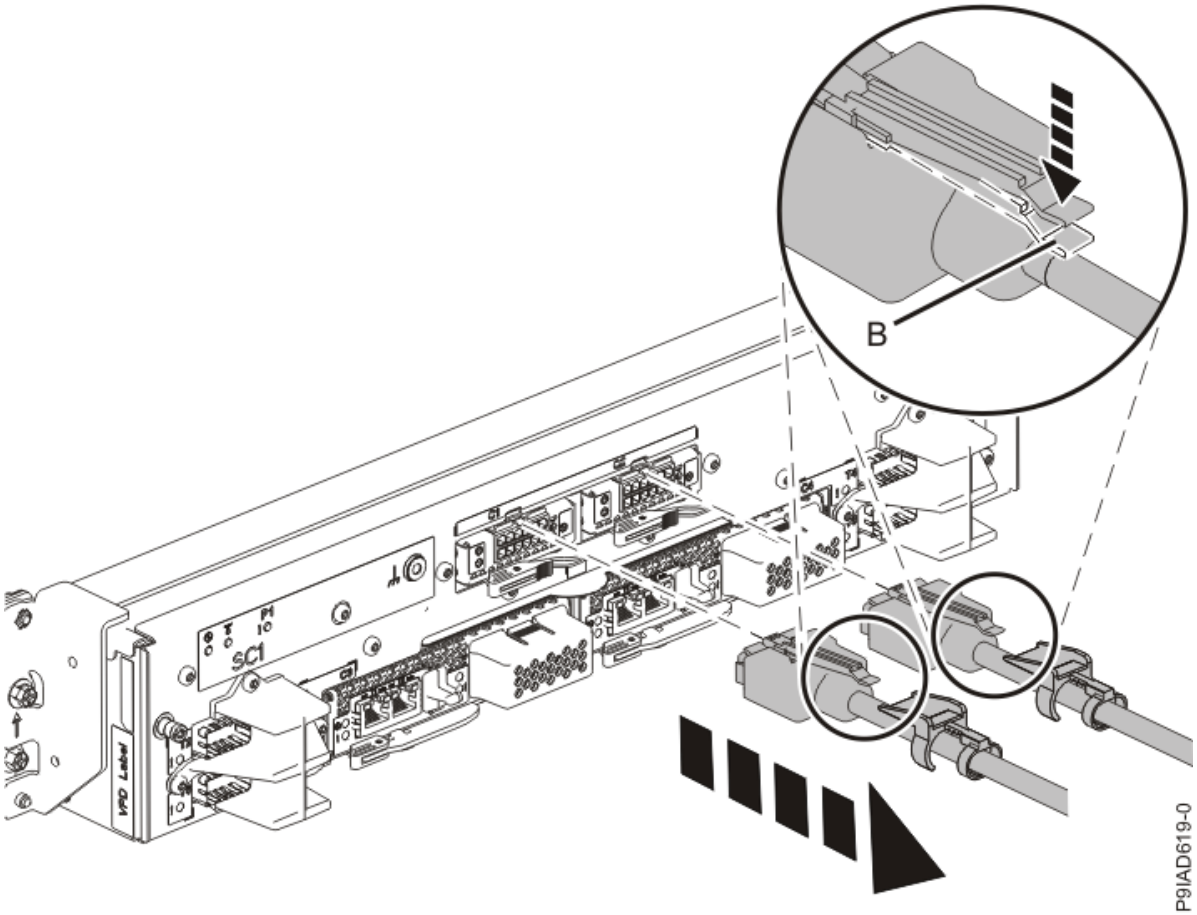


Figure 405. Removing the UPIC cable from the system control unit

2. If applicable, open the rack door at the rear of the system.
3. 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.

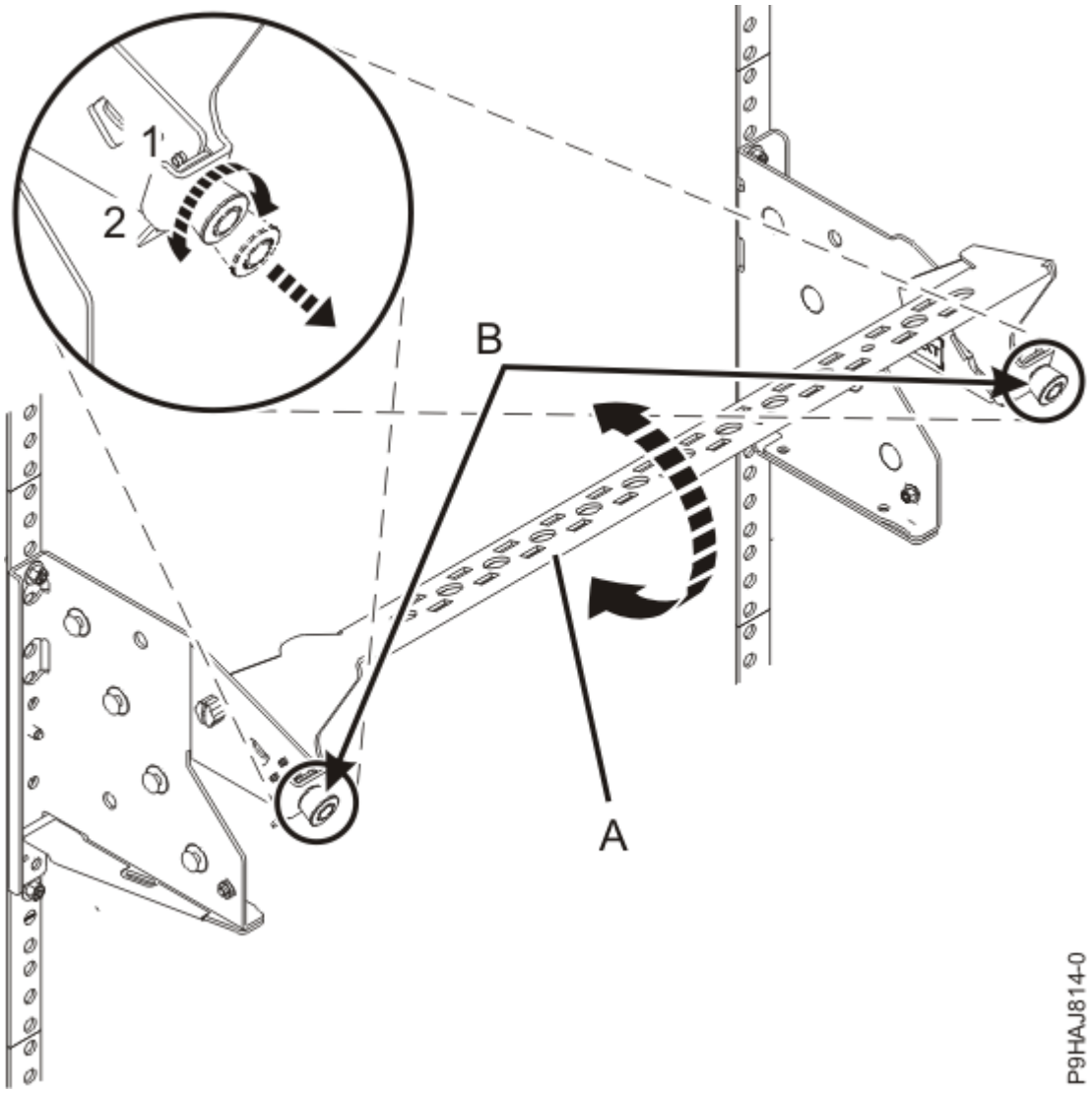


Figure 406. Placing the cable management bracket in the raised service position

4. Label and disconnect all of the cables or transceivers that are attached to the adapter you plan to remove.

   Use a hook-and-loop fastener to hold the cables in place.
5. 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.

Removing a PCIe adapter from the 9080-M9S system

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 adapter cassette from the slot:
   a) Press in on the latch release **(A)** as shown in the following figure.
      The latch is released.
   b) Rotate the latch in the direction shown.
      The cassette is released from the slot.
   c) Pull the cassette straight out from the slot.

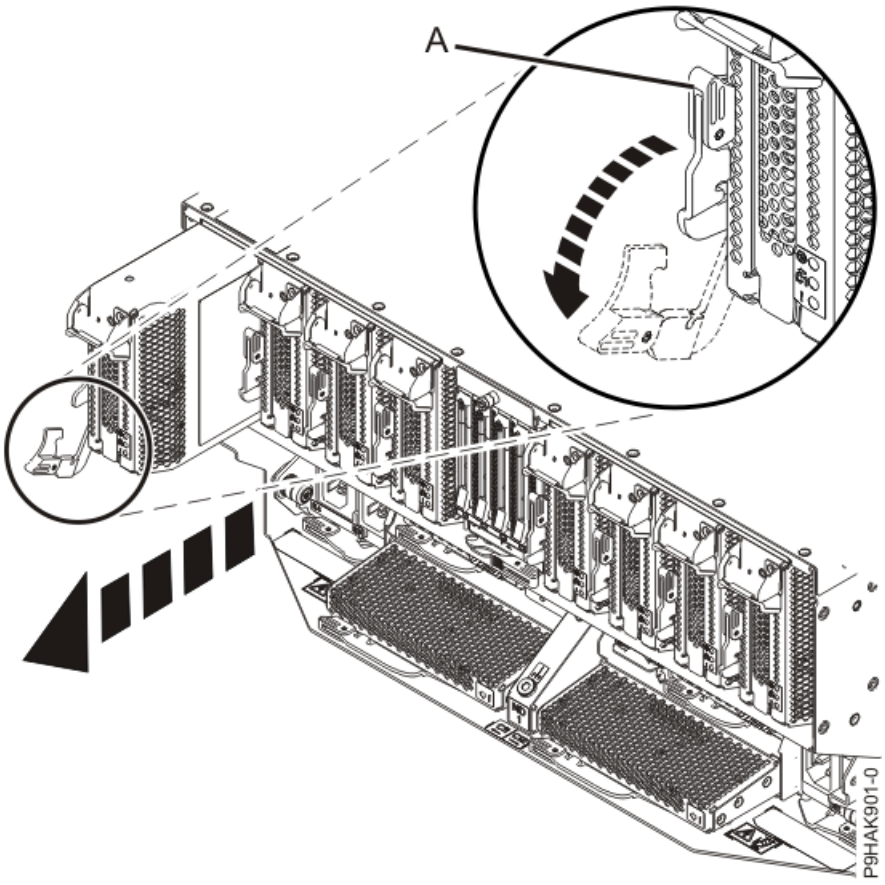


Figure 407. Removing the adapter cassette from the 9080-M9S system

3. Remove the side cover from the cassette.
   a) Press the release button on the side cover and slide the cover in the direction that is shown.
   b) Lift the side cover off the cassette.

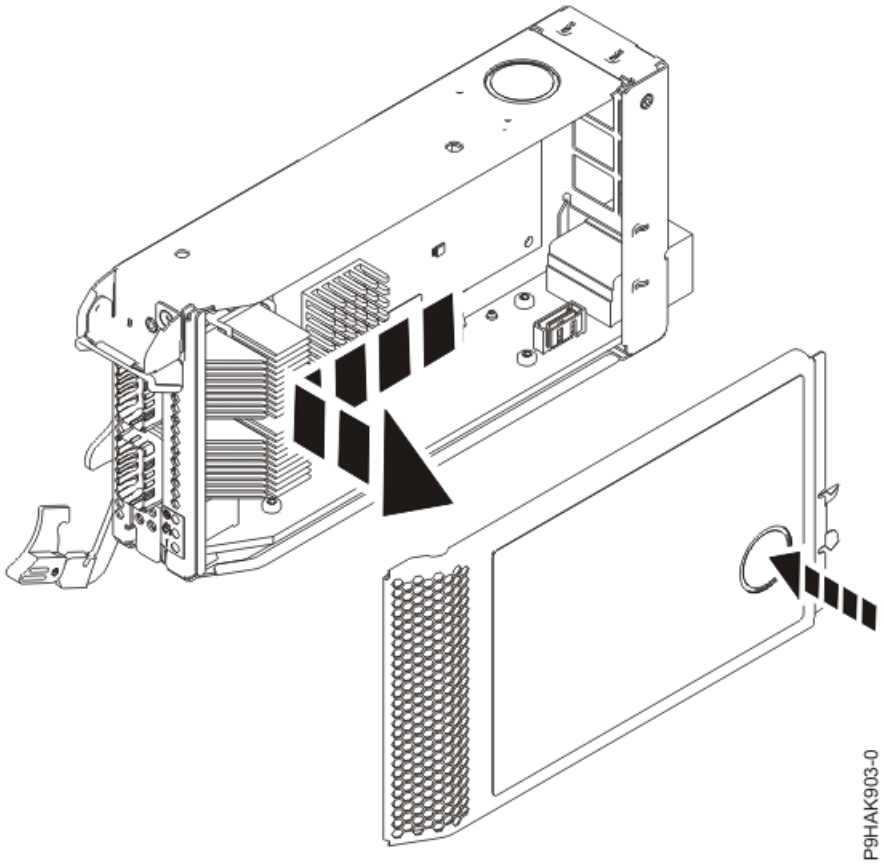


Figure 408. Removing the side cover from the adapter cassette for the 9080-M9S system

4. Remove the top cover from the cassette.
   a) Press the release button on the top cover and slide the cover in the direction that is shown.
   b) Lift the top cover off the cassette.

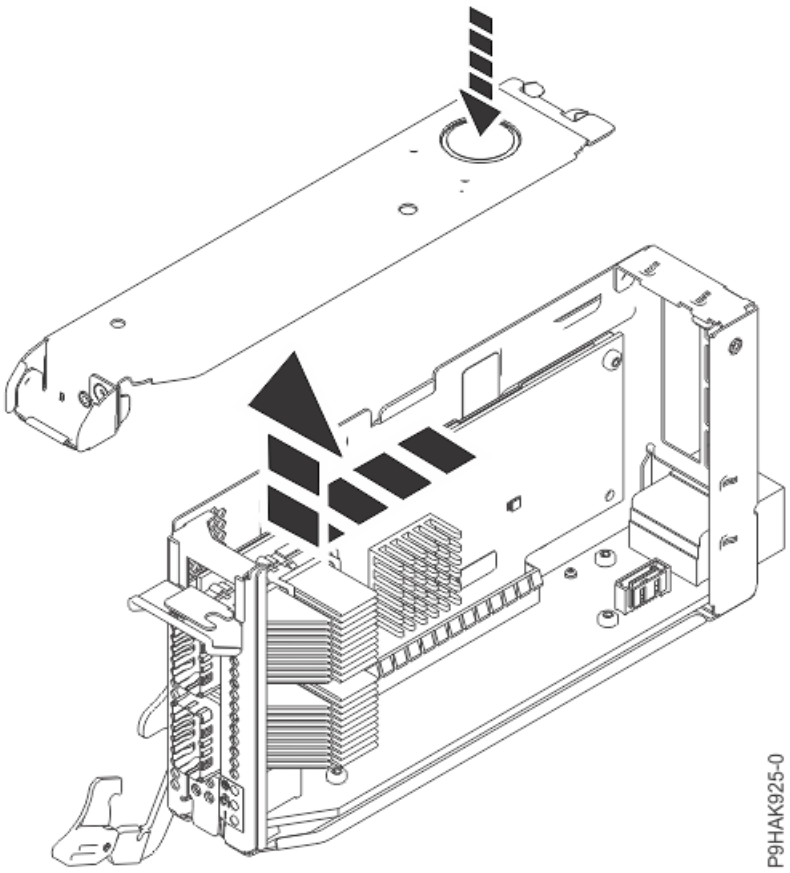


Figure 409. Removing the top cover from the adapter cassette for the 9080-M9S system

5. Remove the adapter from the cassette.
   a) Choose from the following options:
      - If you do not have adapter retainers, continue with the next step.
      - If you have adapter retainers, complete the following steps:
        1) Ensure that the retainer latches are in the open position by pushing up on the latch in the direction that is shown in the following figure.
        2) Slide the adapter retainers up and remove them from the cassette and then discard the retainers.

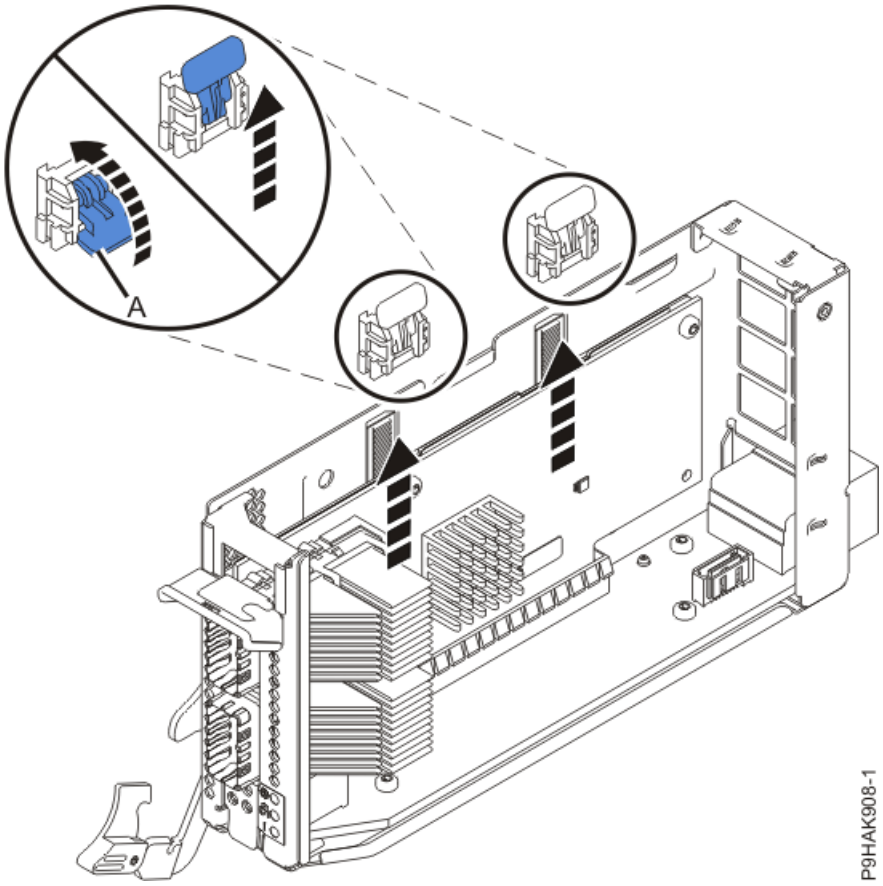


Figure 410. Opening the adapter retainers for the 9040-MR9 system.

Note: The adapter retainers are not needed.

b) Pull the adapter away from the connectors.

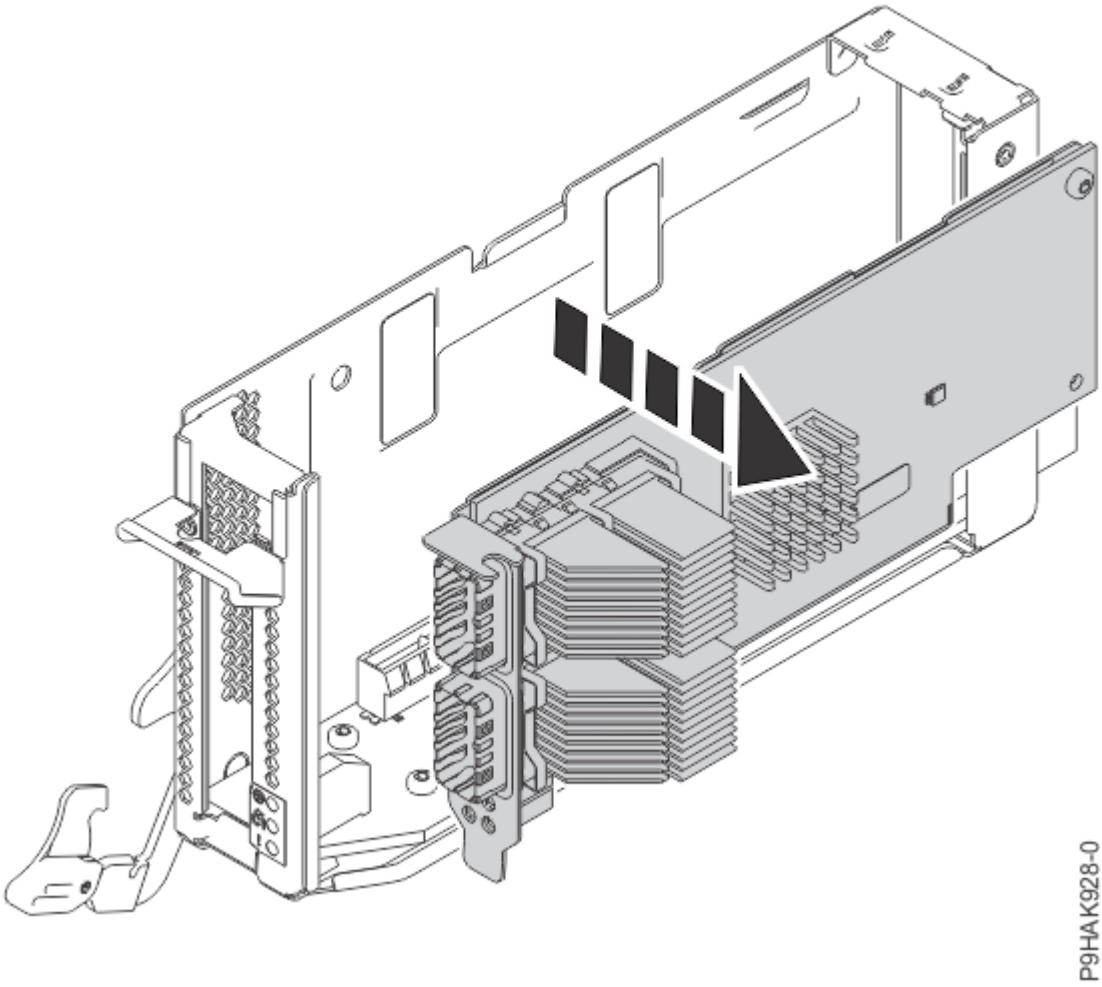


Figure 411. Removing an adapter from a cassette for the 9080-M9S system

c) Place the adapter, component-side up, on a flat, antistatic surface.

Replacing a PCIe adapter in the 9080-M9S system

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. Ensure that the target slot is empty.
3. If necessary, remove the adapter from the antistatic package.

   Attention: Avoid touching the components and gold connectors on the adapter.
4. Place the adapter, component-side up, on a flat, antistatic surface.

   Attention: A pin on the tailstock of the adapter resembles a removable screw. Do not remove this pin. It is required for correct alignment and seating.
5. If you want, place the adapter you removed earlier in the antistatic package.
6. Press the adapter firmly into its connector as shown in the following figure, ensuring that it is seated.

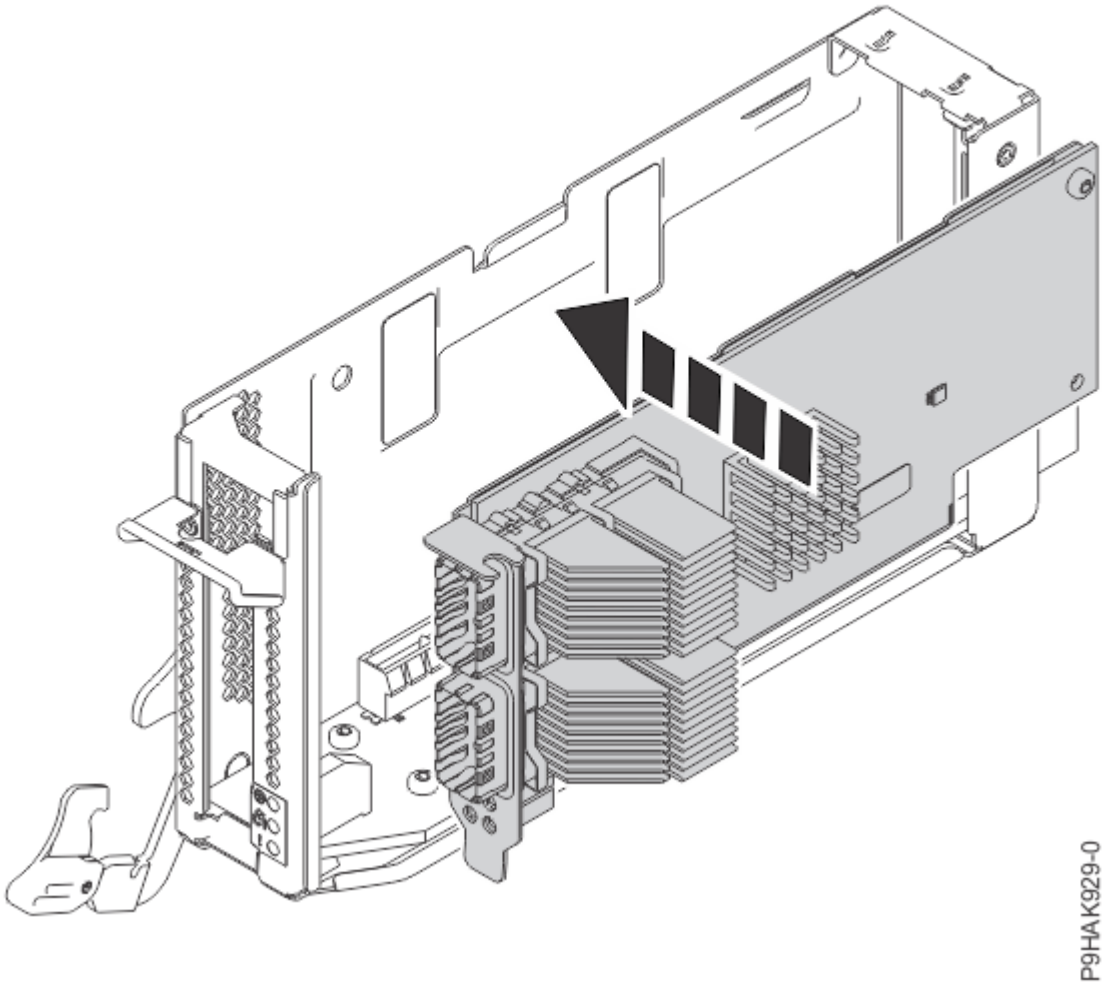


Figure 412. Installing an adapter in a cassette for the 9080-M9S system

7. Replace the top cover on the cassette.
   a) Lower the top cover on the top of the cassette.
   b) Slide the top cover in the direction that is shown in the following figure until it latches securely.

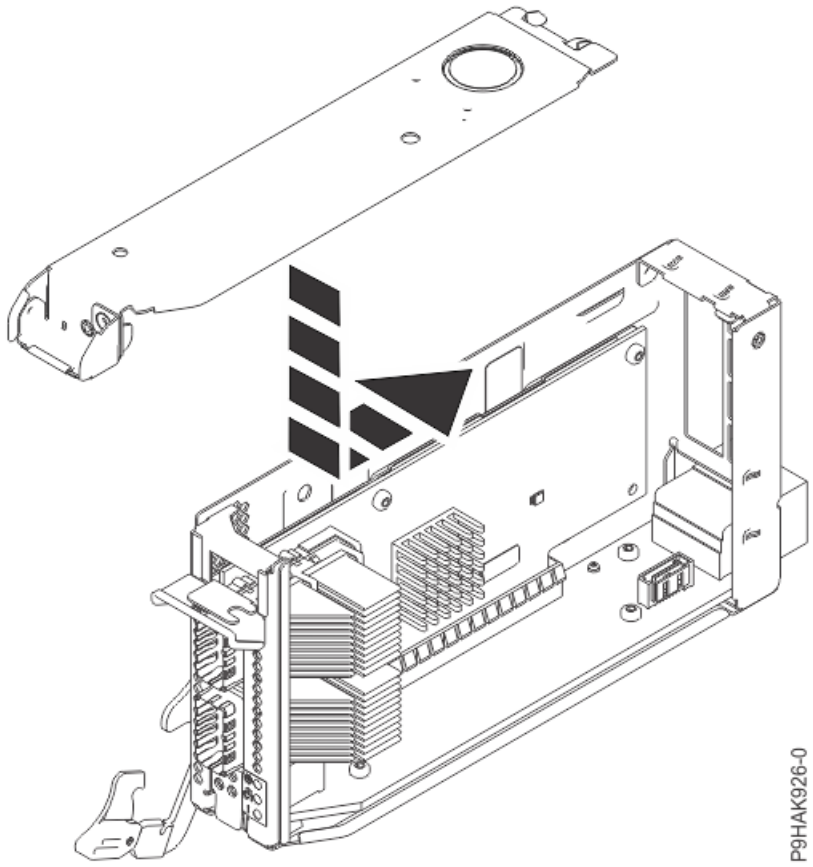


Figure 413. Replacing the top cover on the adapter cassette for the 9080-M9S system

8. Replace the side cover on the cassette.
   a) Place the side cover on the side of the cassette.
   b) Slide the side cover in the direction that is shown in the following figure until it latches securely.

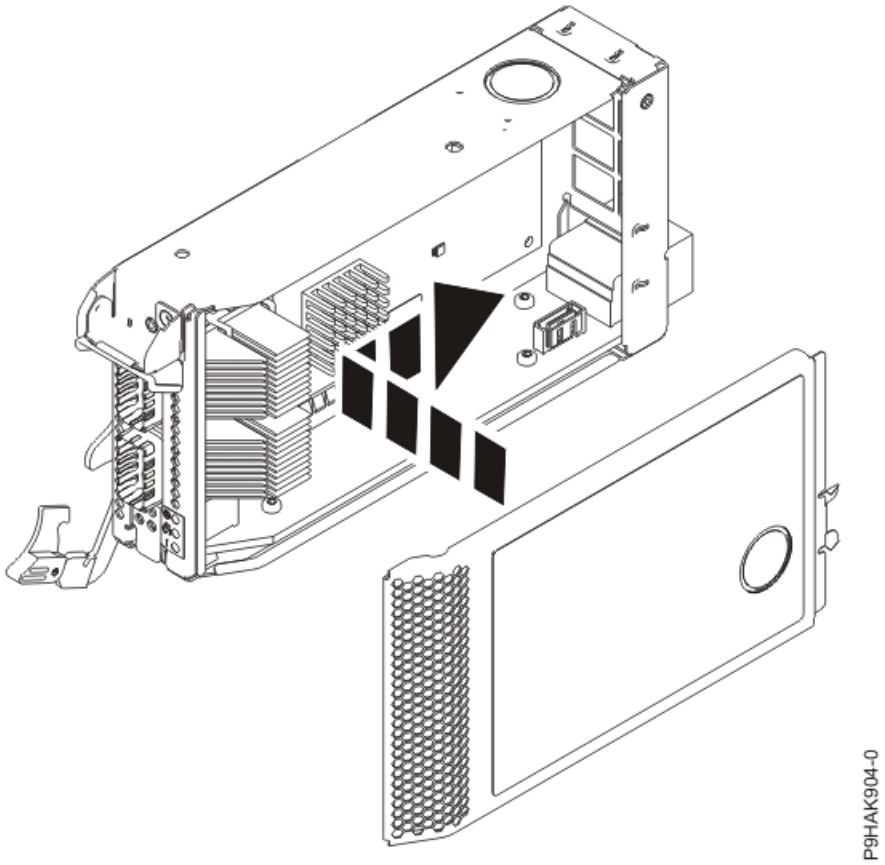


Figure 414. Replacing the side cover on the adapter cassette for the 9080-M9S system

9. Slide the cassette into the slot by completing the following steps:

Attention:

Ensure proper alignment when you insert a adapter cassette into the system.

a) Align the cassette on the cassette rail in the cassette slot.

b) Slide the cassette forward until the cassette is fully seated.

c) To lock the adapter in its slot, rotate the adapter latch **(A)** in the direction that is shown in the following figure.

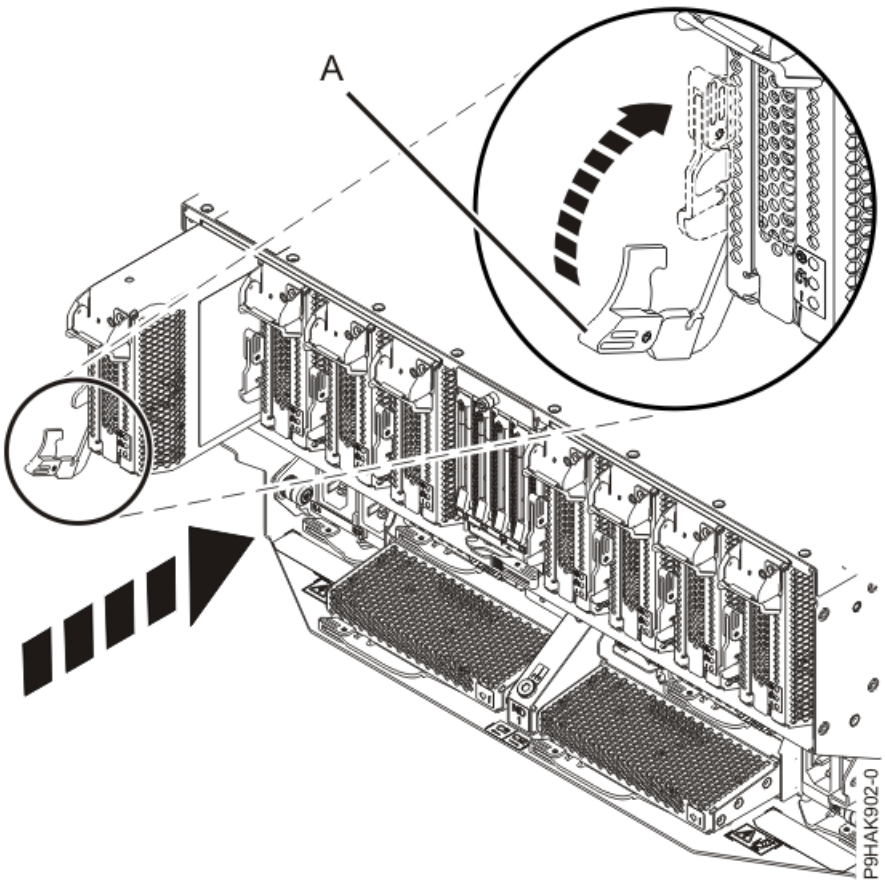


Figure 415. Installing a cassette in the 9080-M9S system

Preparing the 9080-M9S system for operation after removing and replacing an adapter

To prepare the system for operation after removing and replacing an adapter, 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. If removed, connect the cables or transceivers to the adapter.
3. Route the cables through the cable management bracket.
4. 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.

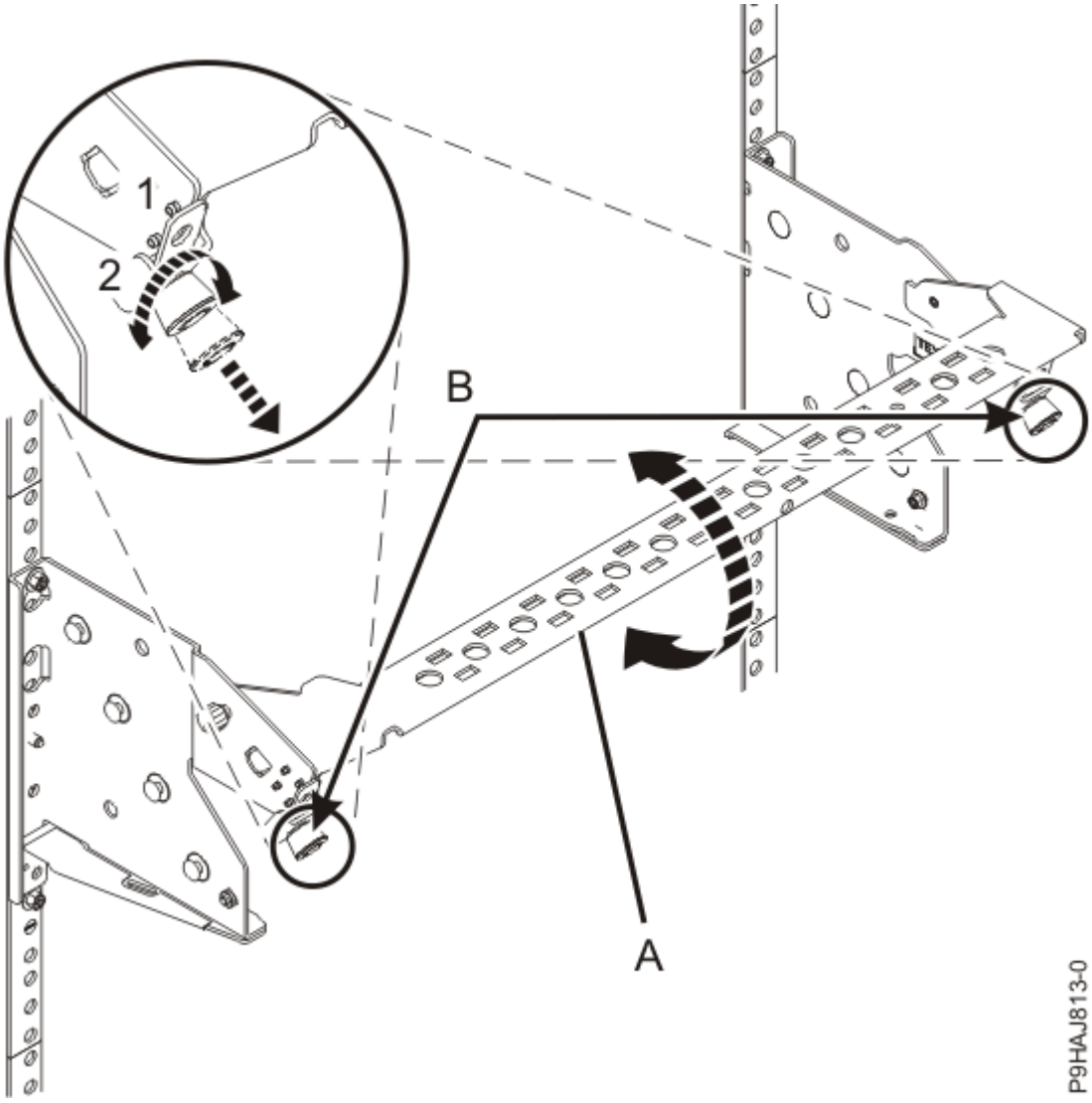


Figure 416. Placing the cable management bracket in the lowered operating position

5. Close the rack door at the rear of the system.
6. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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) Continue with step “9” on page 479.

7. 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.
8. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.
9. If you replaced a PCIe3 x8 non-volatile memory SSD NVMe adapter and the logical partition that controls the adapter is running the IBM i operating system, complete the following steps to prepare the NVMe adapter for operation:
   a) Start the IBM i System Service Tools (STRSST), and specify the user name and password.
   b) On the System Service Tools (SST) display, select **Work with disk units** > **Work with disk configuration** > **Work with NVM Devices** > **Delete existing NVM Namespaces**.
   c) Select the device that you replaced.
   d) Choose from the following options:
      - If no namespaces are listed, press F12 to return to the SST main menu and continue with the next step.
      - If there are namespaces listed, complete the following steps:
        1) Select **4=Delete Namespace** for each of the listed namespaces.
        2) Press F10 to confirm the deletion of the namespaces.
        3) Press F12 to return to the SST main menu.
   e) On the System Service Tools (SST) display, select **Work with disk units** > **Work with disk configuration** > **Work with NVM Devices** > **Create NVM Namespaces to pair with Active mirror protected NVM units.**
   f) Select the NVMe device that you replaced.
   g) On the **Create NVM Namespaces - Show the Units Suspended from Mirror Protection** display, press F7 to select all of the suspended disk units.
   h) Press F10 to confirm the creation of the listed namespaces that will be paired with the suspended disk units.

      Note: The operation will create new namespaces on the selected NVMe device, pair the new namespaces with the suspended NVMe disk units, and start to resume mirror protection on the newly created disk units.
   i) Press F12 to return to the SST main menu.

10. If you replaced a Fibre Channel adapter, the customer might need to update the Fibre Channel SAS path to the external storage subsystems with the new WWPN number or numbers.

Permanently removing an adapter

Preparing the 9080-M9S system to permanently remove an adapter

Procedure

1. 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.

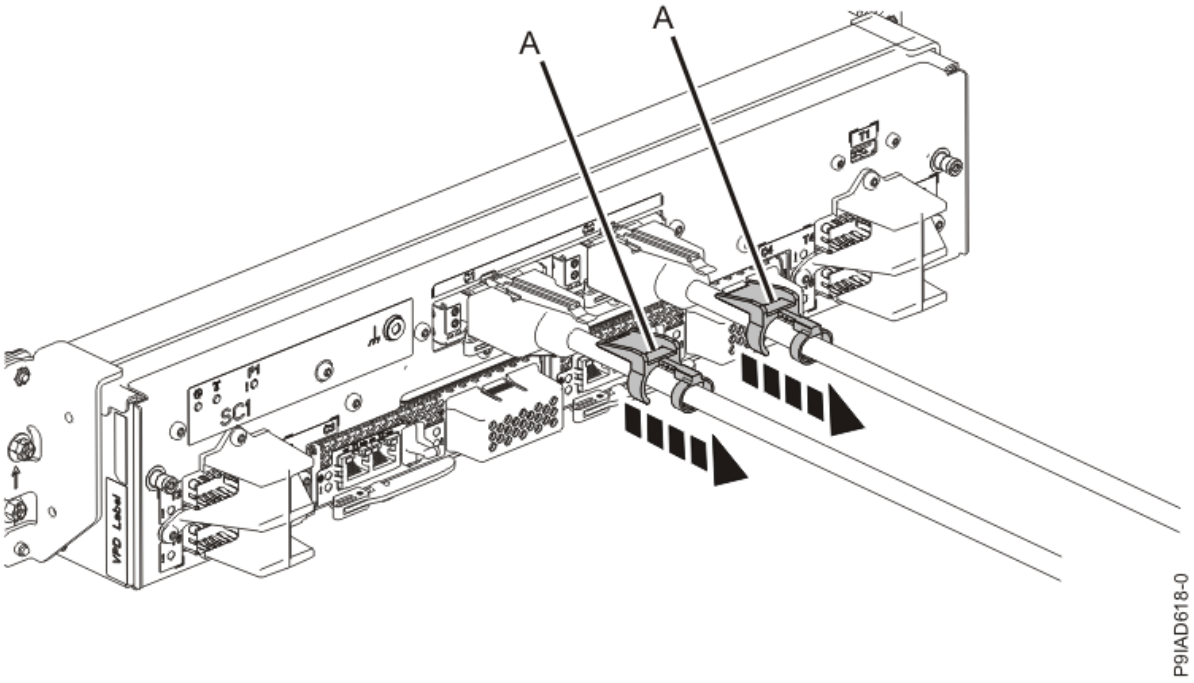


Figure 417. Removing the UPIC cable lock

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

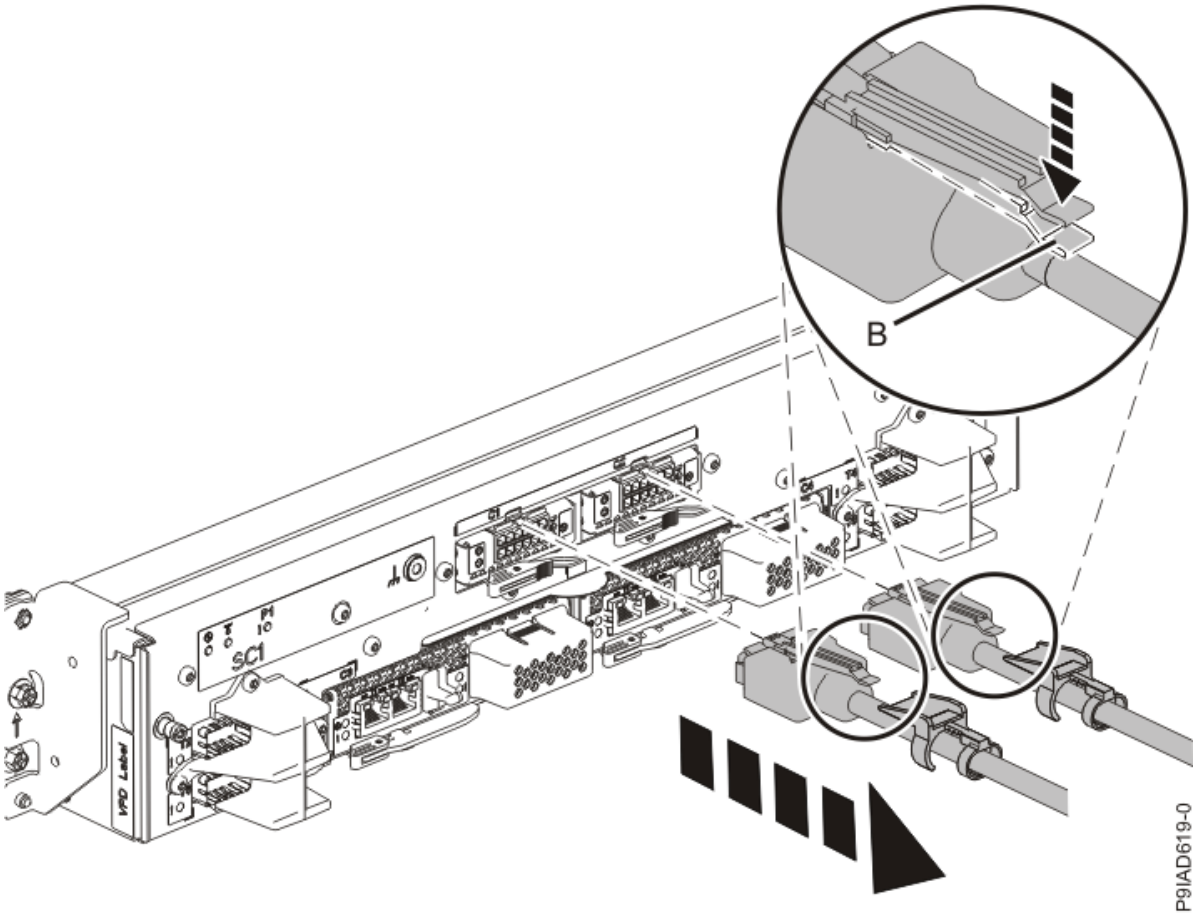


Figure 418. Removing the UPIC cable from the system control unit

2. 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.

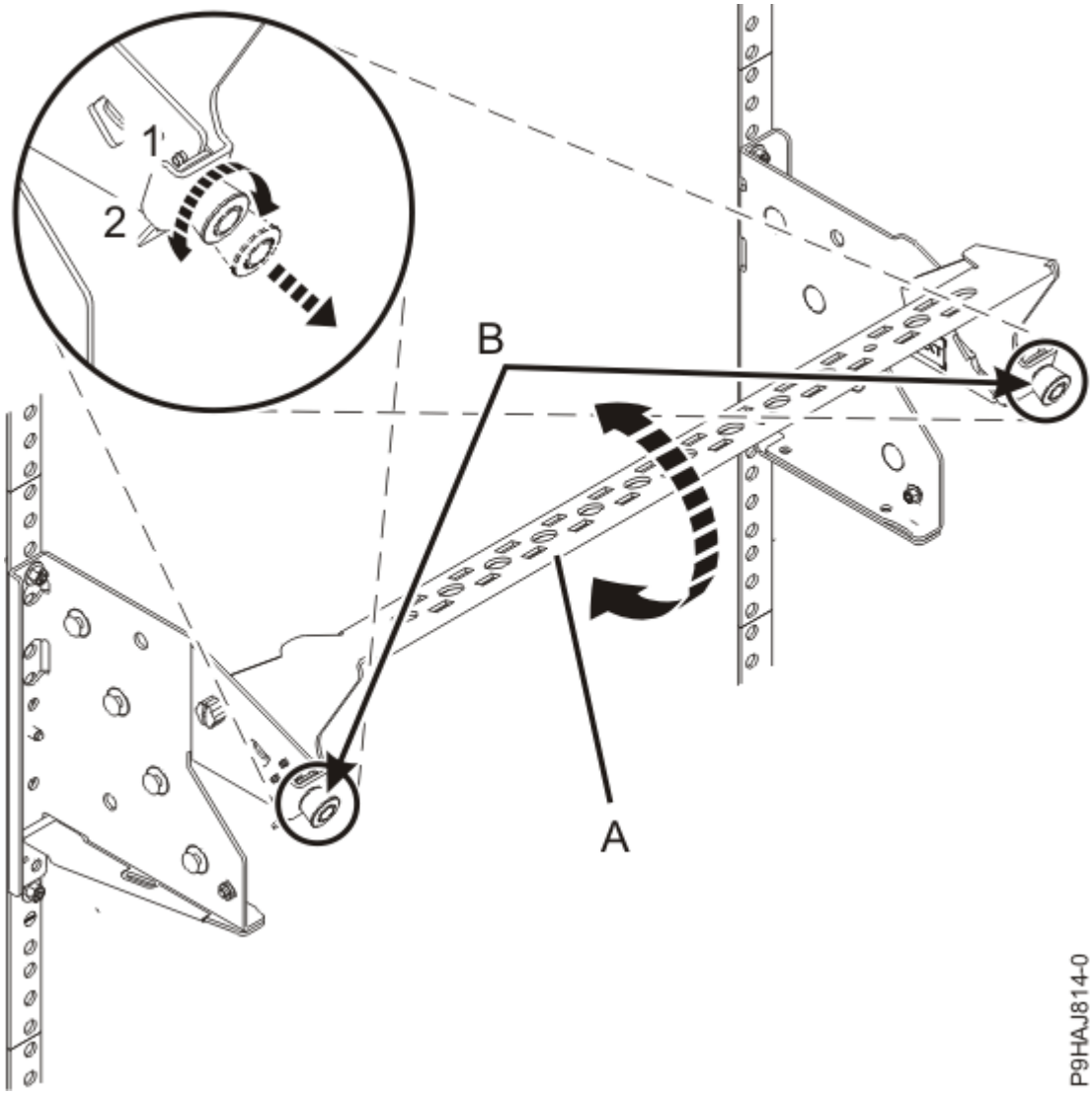


Figure 419. Placing the cable management bracket in the raised service position

3. Label and disconnect all of the cables or transceivers that are attached to the adapter you plan to remove.

   Use a hook-and-loop fastener to hold the cables in place.

4. 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.

Permanently removing a PCIe adapter from the 9080-M9S system

To permanently remove an adapter from 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 adapter cassette from the slot:
   a) Press in on the latch release **(A)** as shown in the following figure.
      The latch is released.
   b) Rotate the latch in the direction shown.
      The cassette is released from the slot.
   c) Pull the cassette straight out from the slot.

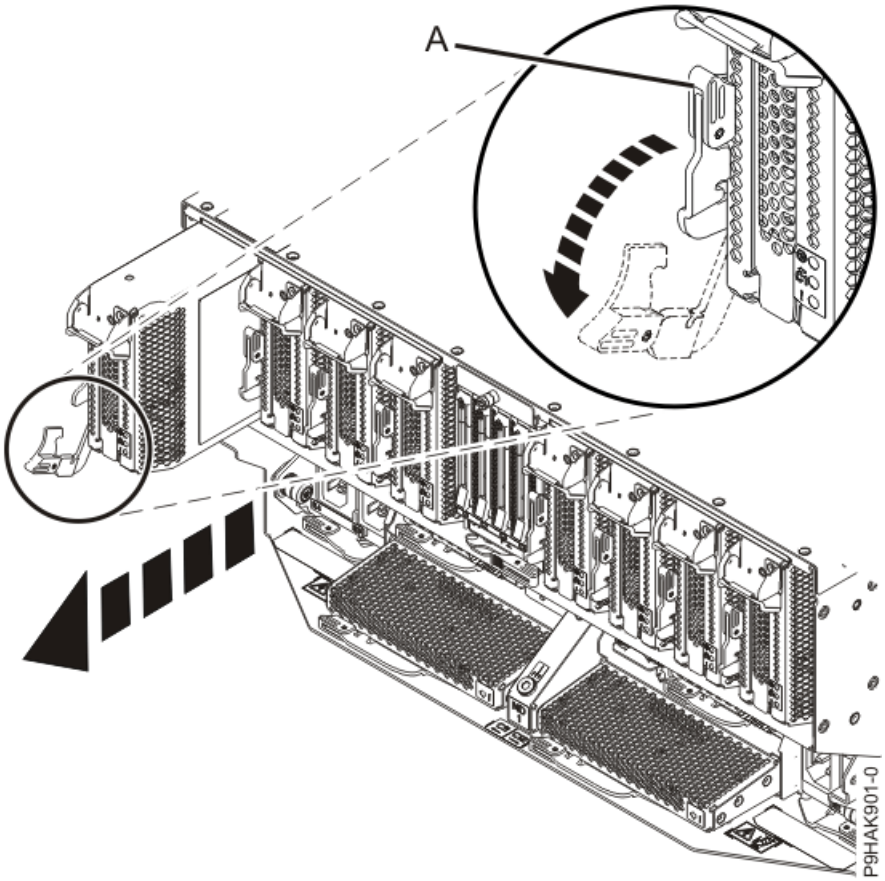


Figure 420. Removing the adapter cassette from the 9080-M9S system

3. Remove the side cover from the cassette.
   a) Press the release button on the side cover and slide the cover in the direction that is shown.
   b) Lift the side cover off the cassette.

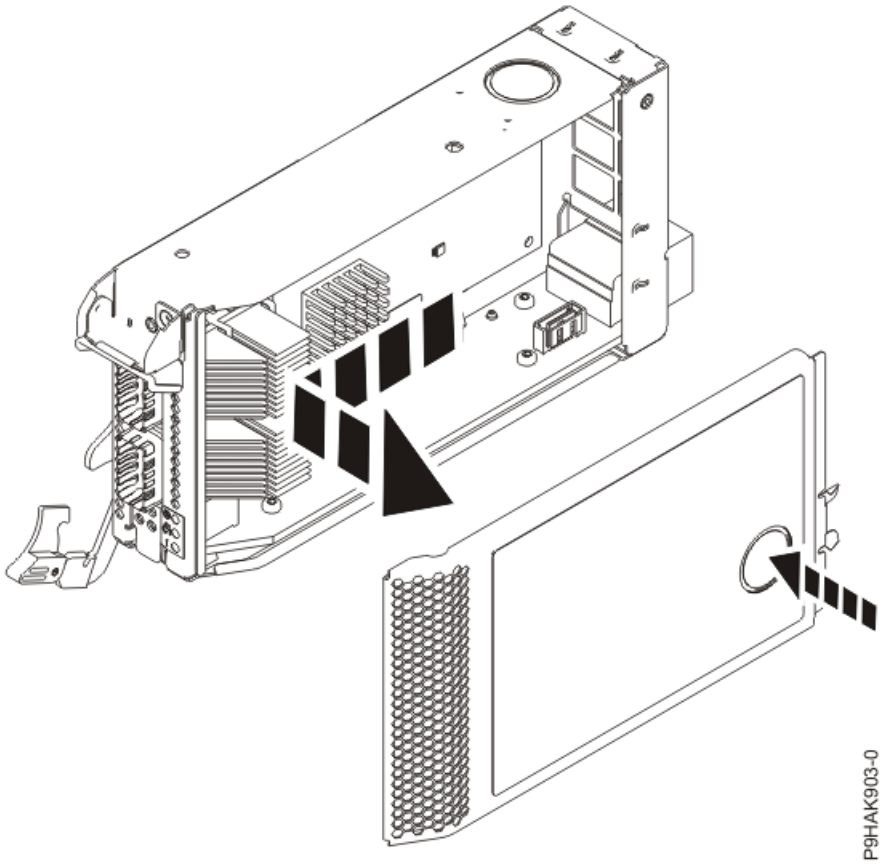


Figure 421. Removing the side cover from the adapter cassette for the 9080-M9S system

4. Remove the top cover from the cassette.
   a) Press the release button on the top cover and slide the cover in the direction that is shown.
   b) Lift the top cover off the cassette.

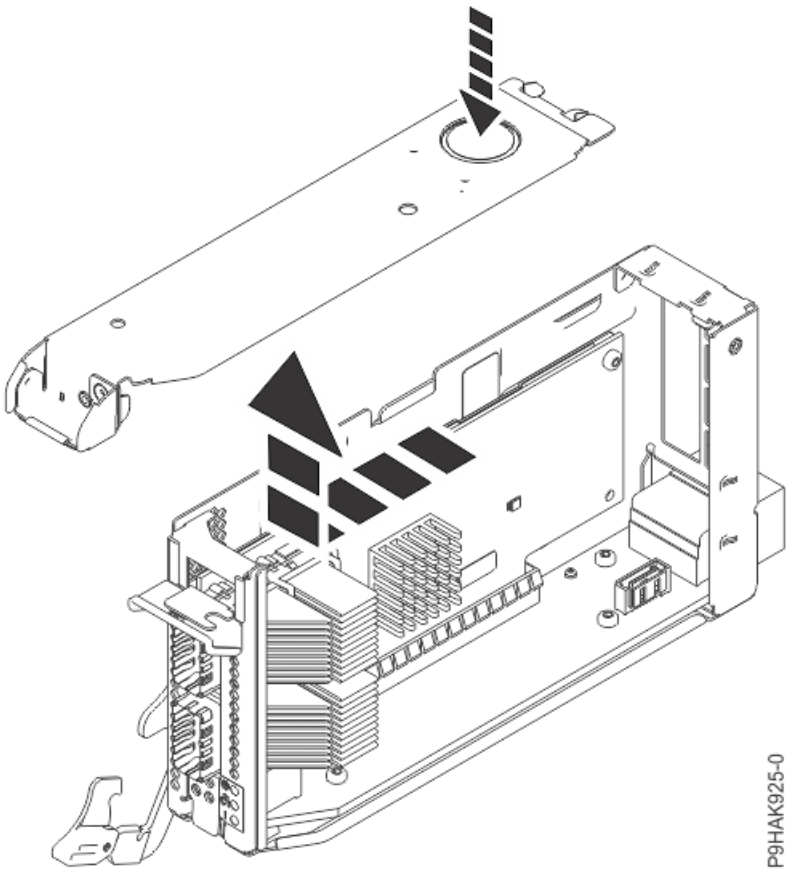


Figure 422. Removing the top cover from the adapter cassette for the 9080-M9S system

5. Remove the adapter from the cassette.
   a) Choose from the following options:
      - If you do not have adapter retainers, continue with the next step.
      - If you have adapter retainers, complete the following steps:
        1) Ensure that the retainer latches are in the open position by pushing up on the latch in the direction that is shown in the following figure.
        2) Slide the adapter retainers up and remove them from the cassette and then discard the retainers.

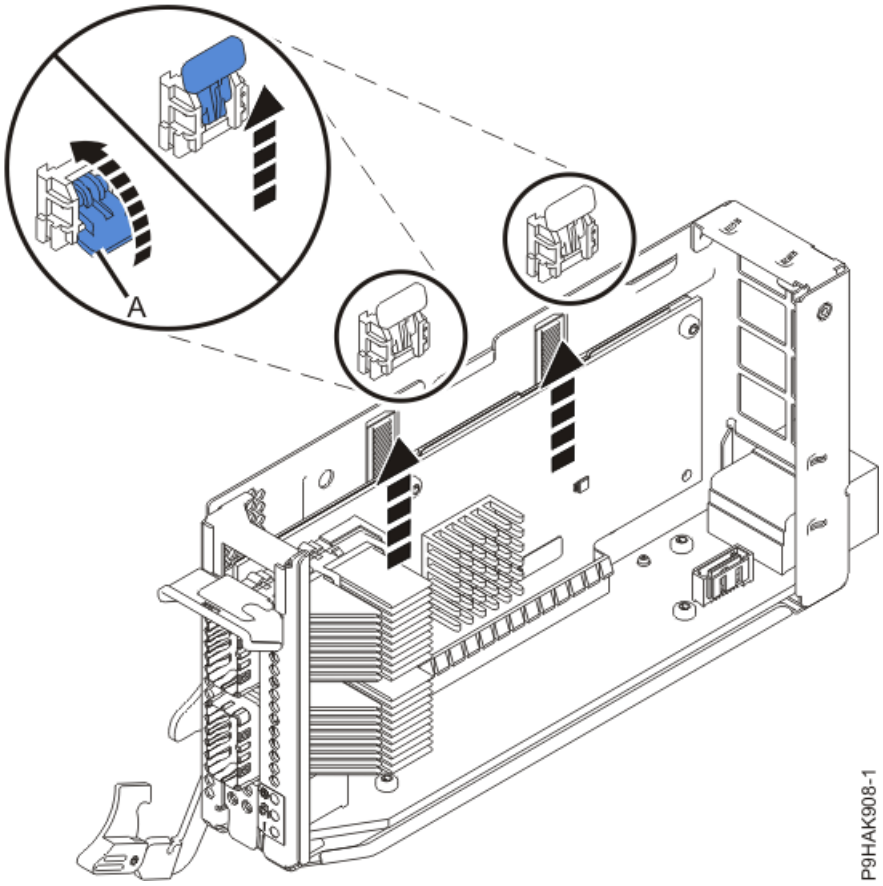


Figure 423. Opening the adapter retainers for the 9040-MR9 system.

Note: The adapter retainers are not needed.

b) Pull the adapter away from the connectors.

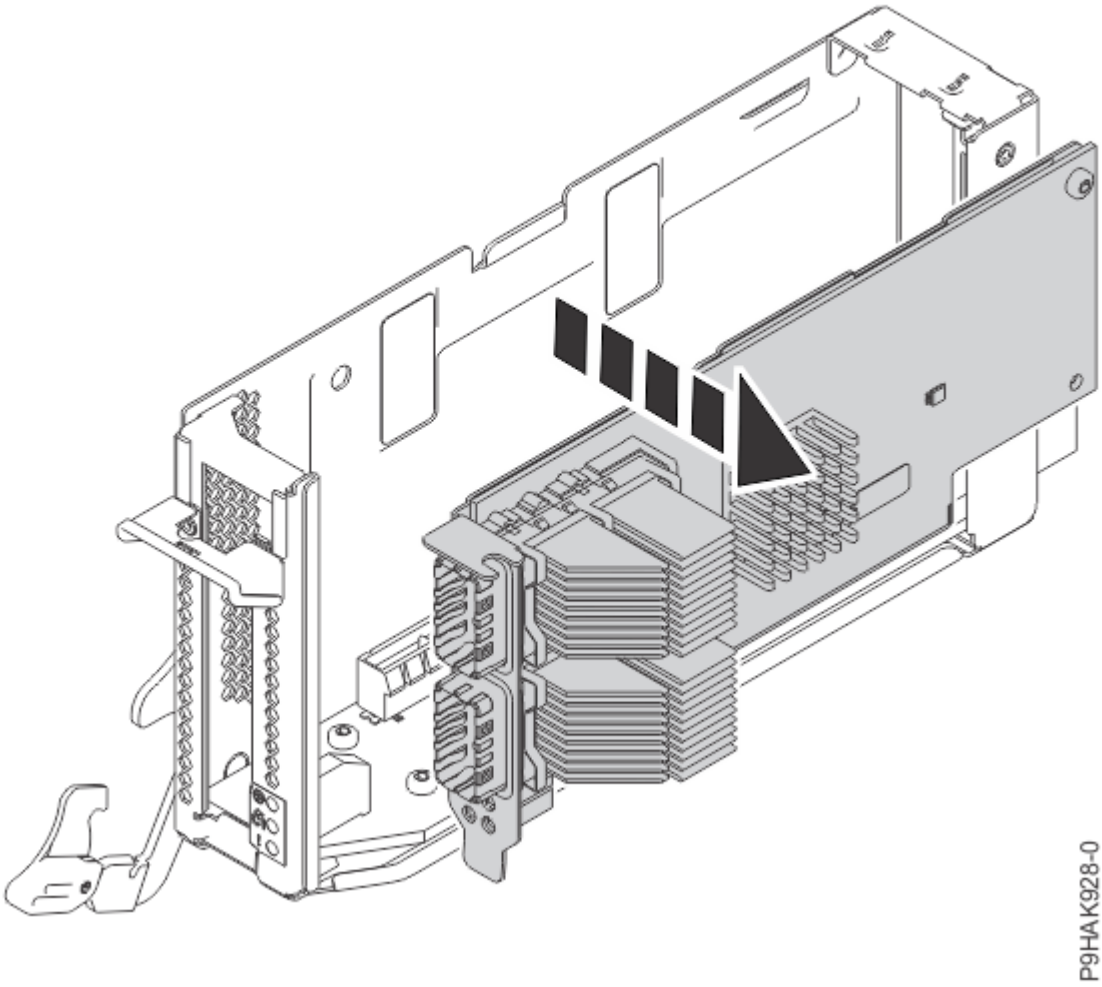


Figure 424. Removing an adapter from a cassette for the 9080-M9S system

c) Place the adapter, component-side up, on a flat, antistatic surface.

6. After permanently removing a PCIe adapter, you must install a PCIe filler in the cassette.
   a) Carefully grasp the filler and align the filler with the slot and its connector in the cassette.
   b) Press the filler firmly into the connectors.

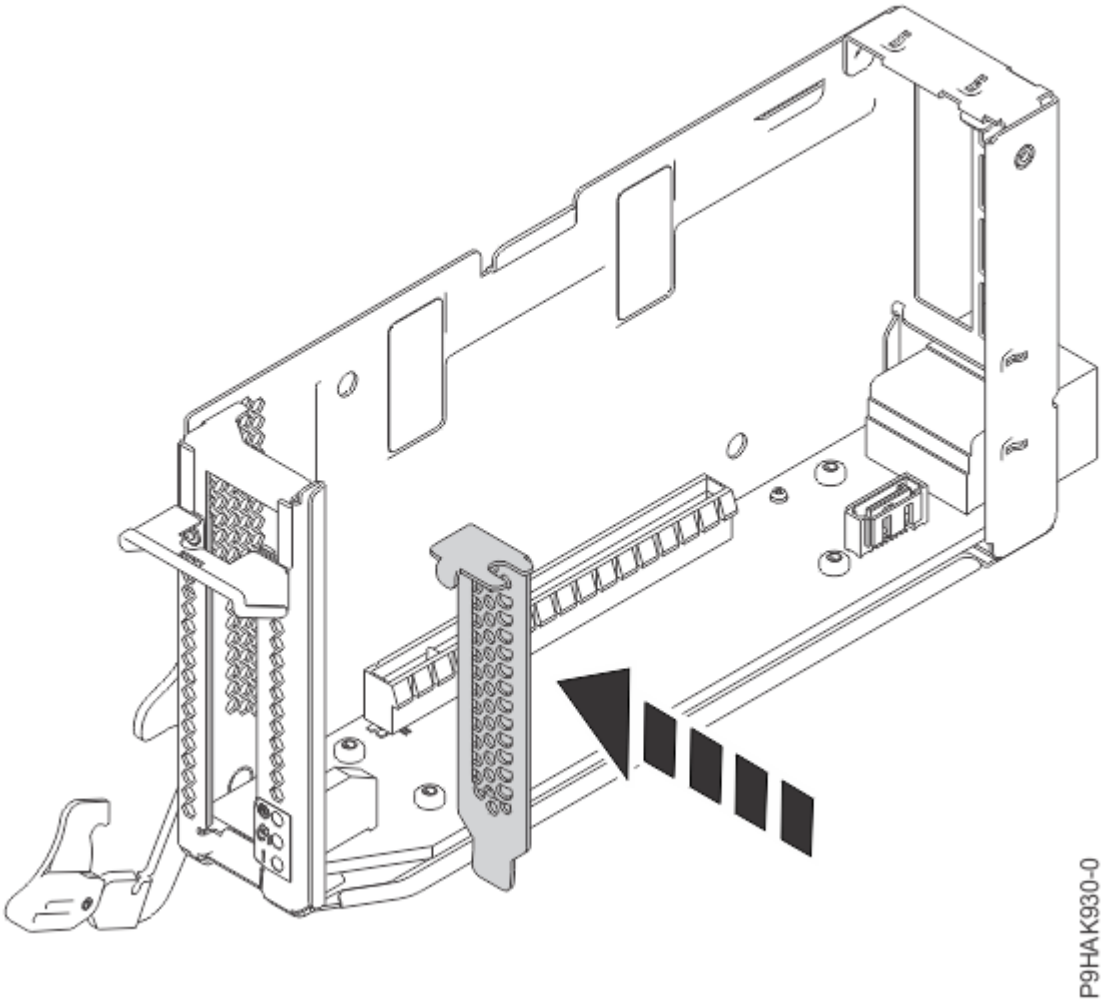


Figure 425. Installing a filler in the cassette for the 9080-M9S system

7. Replace the top cover on the cassette.
   a) Lower the top cover on the top of the cassette.
   b) Slide the top cover in the direction that is shown in the following figure until it latches securely.

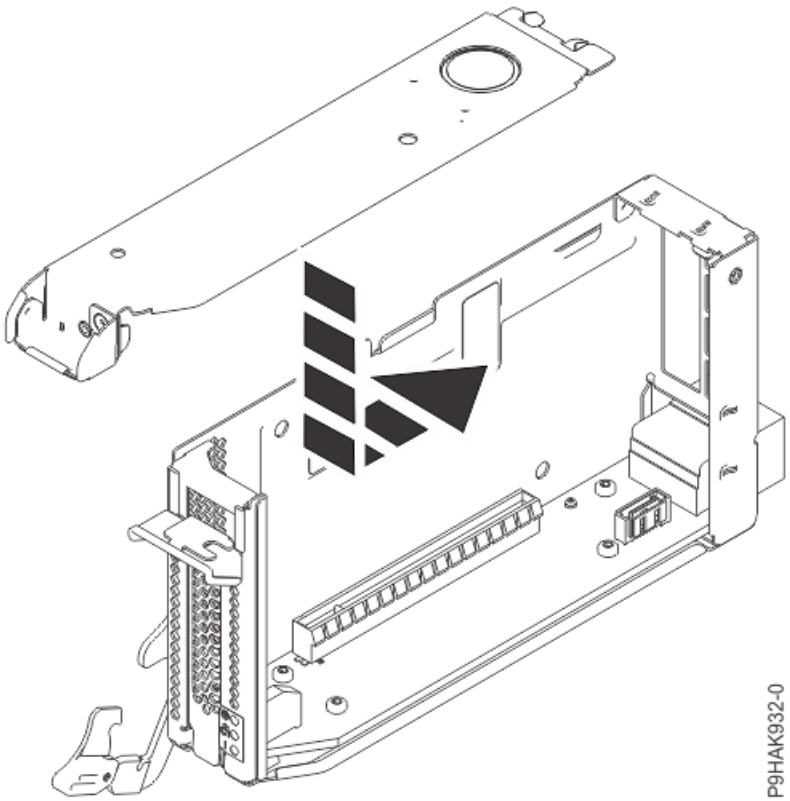


Figure 426. Replacing the top cover on the PCIe adapter cassette for the 9080-M9S system

8. Replace the side cover on the cassette.
   a) Place the side cover on the side of the cassette.
   b) Slide the side cover in the direction that is shown in the following figure until it latches securely.

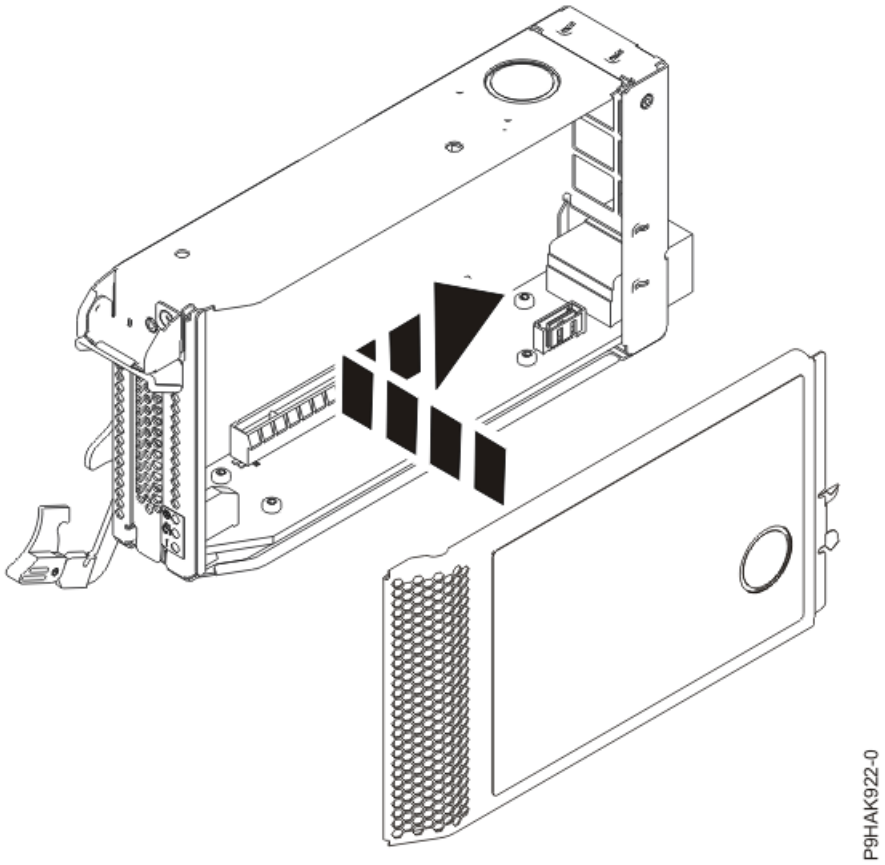


Figure 427. Replacing the side cover on the PCIe adapter cassette for the 9080-M9S system

9. Slide the cassette into the slot by completing the following steps:

Attention:

Ensure proper alignment when you insert a adapter cassette into the system.

a) Align the cassette on the cassette rail in the cassette slot.

b) Slide the cassette forward until the cassette is fully seated.

c) To lock the adapter in its slot, rotate the adapter latch **(A)** in the direction that is shown in the following figure.

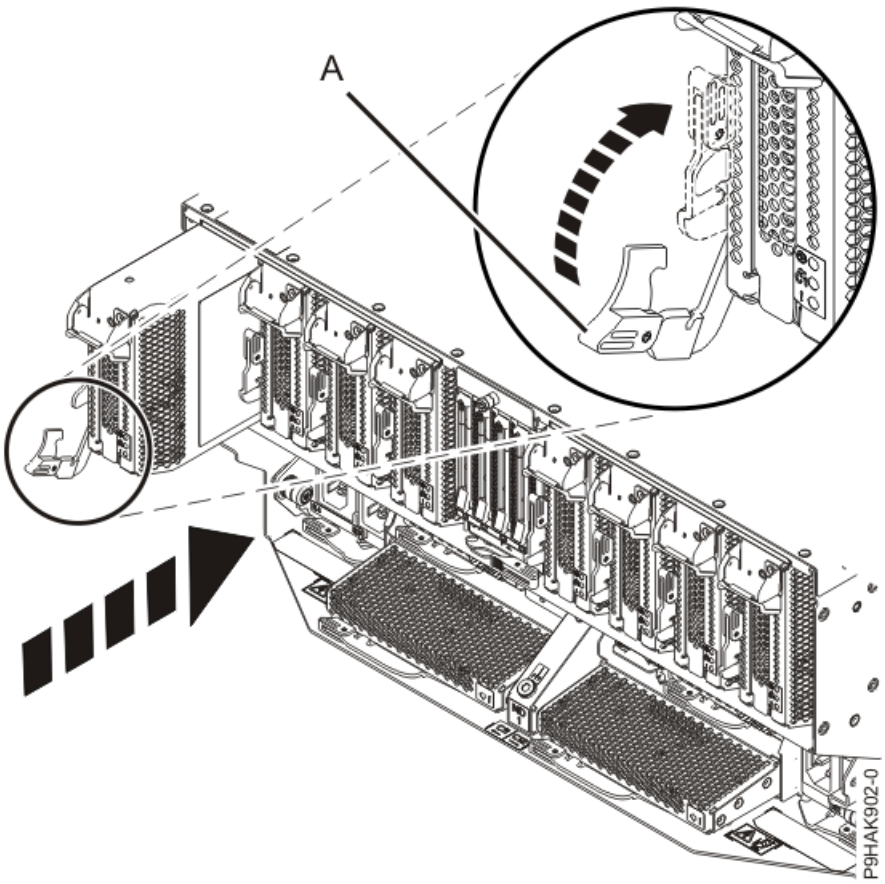


Figure 428. Installing a cassette in the 9080-M9S system

Preparing the 9080-M9S system for operation after permanently removing an adapter

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.

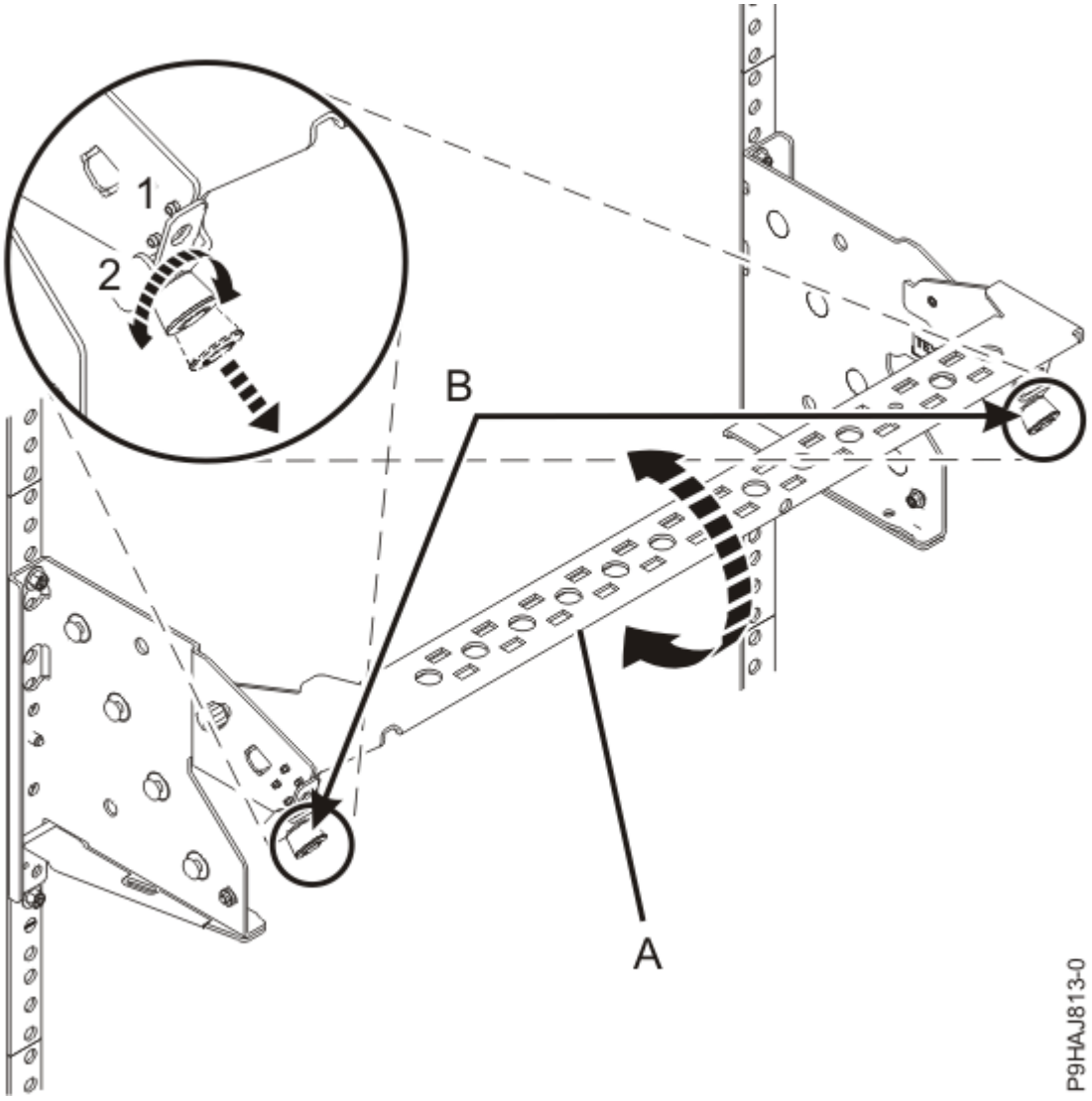


Figure 429. Placing the cable management bracket in the lowered operating position

3. Close the rack door at the rear of the system.
4. Place the removed adapter in a safe place.
5. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

6. If you chose to complete 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.

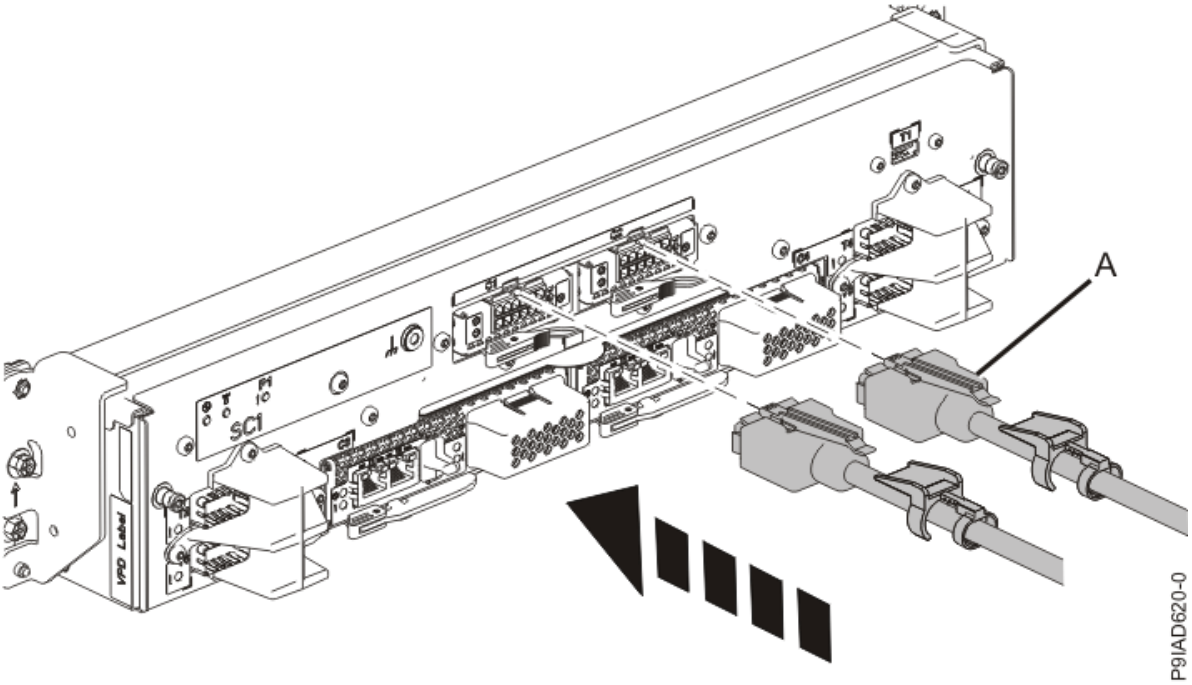


Figure 430. Replacing the UPIC cable into the system control unit

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

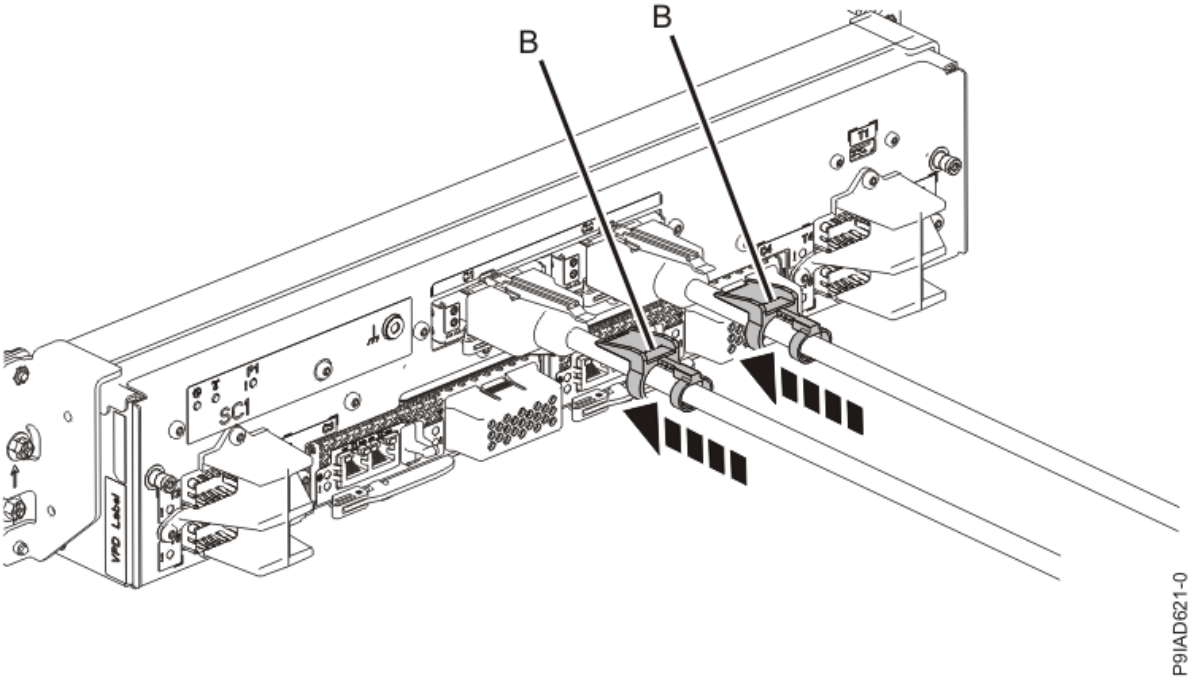


Figure 431. Replacing the UPIC cable into the system control unit

   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.

7. 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.
8. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Power APSS and trusted platform module card

Removing the Power APSS and TPM card from the 9080-M9S system node

To remove the Power APSS and trusted platform module (TPM) card, 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 Power APSS and TPM card.

   Note: Be careful not to damage the identification LED activation button as you complete these steps.

   a) Unlock the levers **(A)** to release the Power APSS and TPM card from its connector. Refer to the following image.

   b) Rotate the levers in the direction shown.

   c) While holding the Power APSS and TPM card by its levers, pull upward to remove the card from its slot.

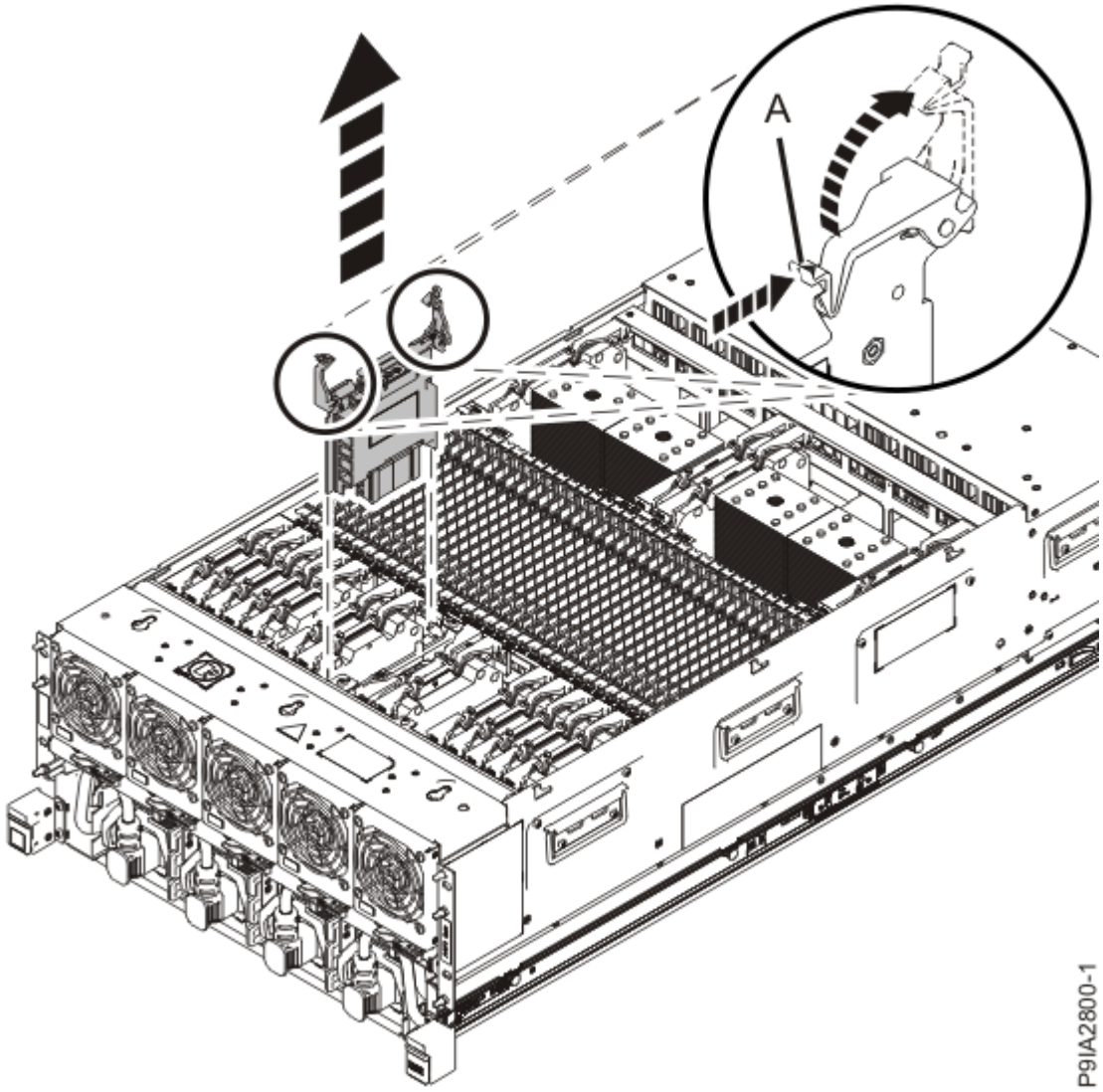


Figure 432. Removing the Power APSS and TPM card

Replacing the Power APSS and TPM card in the 9080-M9S system node

To replace the Power APSS and trusted platform module (TPM) card, 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. Replace the Power APSS and TPM card.
   a) With the levers **(A)** in the open position, hold the Power APSS and TPM card by the levers and lower the card into its slot in the system. Refer to the following image.
   b) Gently push the Power APSS and TPM card card into its connector.
   c) Rotate the levers in the direction shown and press down on the latches to secure the card in its slot.

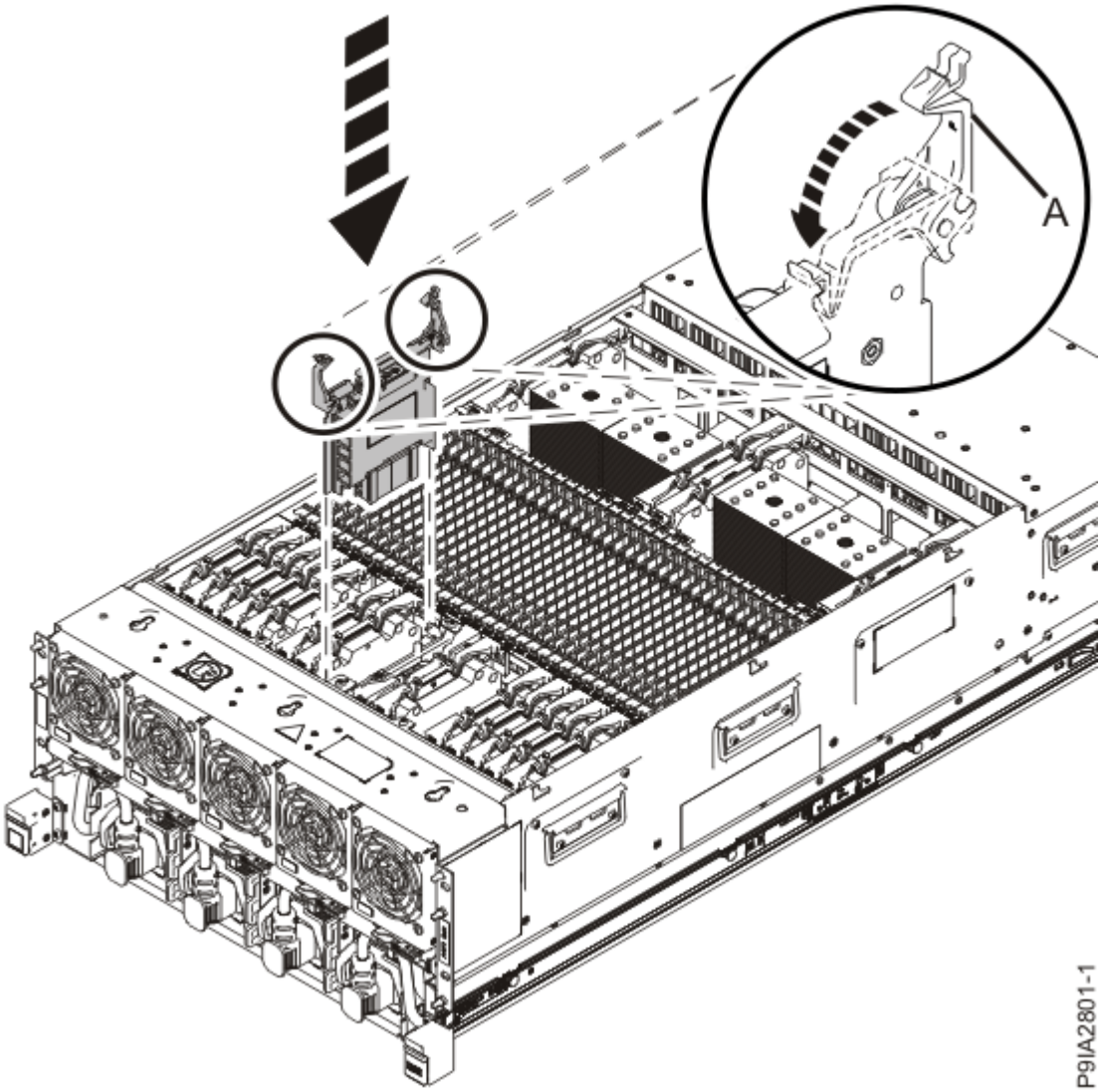


Figure 433. Replacing the Power APSS and TPM card

Power interface card

Removing the power interface card from the 9080-M9S system control unit

To remove the power interface card, 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. Unplug the UPIC cable from the power interface card that you are servicing, or skip to step “3” on page 500 if you chose to complete this repair with the power off.

   Note: If you chose to disconnect power for this procedure, you already removed both UPIC cables. The following images show both UPIC cables being unplugged so that you are aware of the location for each cable. However, if you chose to complete this repair with the power on, you will only need to unplug the cable from the power interface card that you are servicing.

   a) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

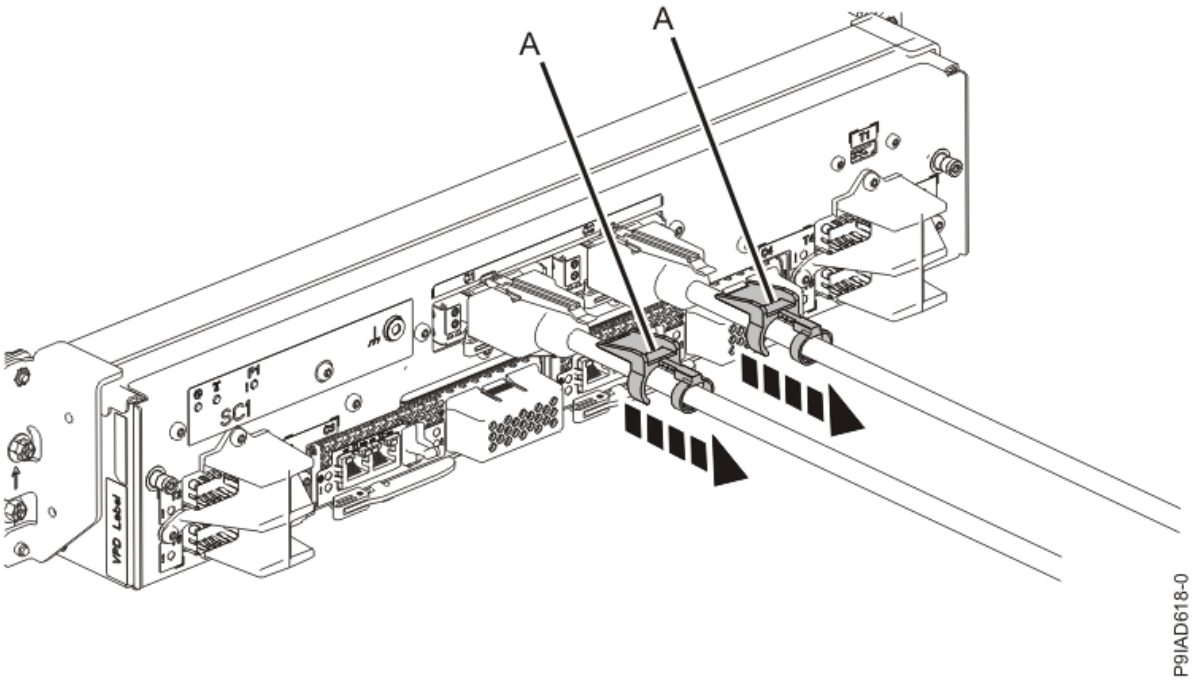


Figure 434. Removing the UPIC cable lock

   b) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system control unit, as shown in the following figure.

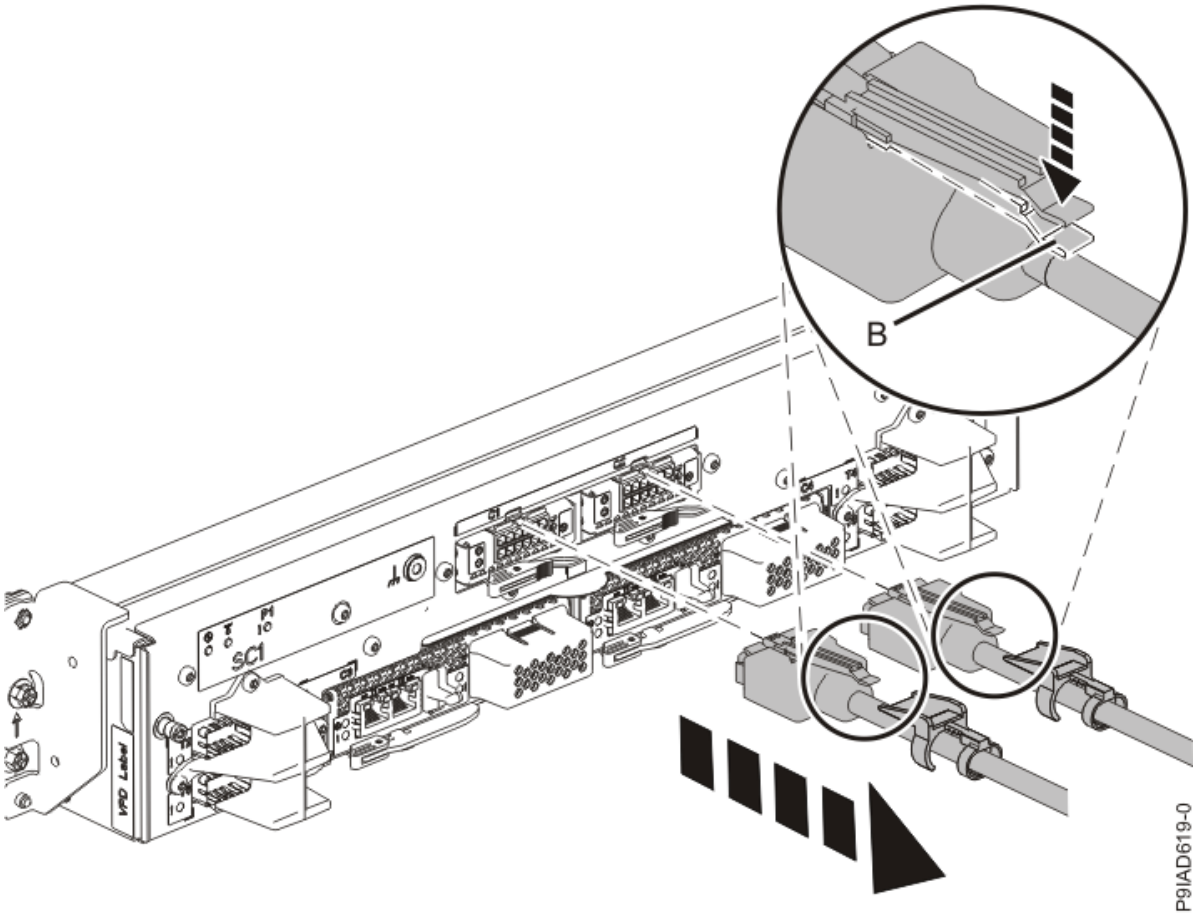


Figure 435. Removing the UPIC cable from the system control unit

3. Remove the power interface card.
   a) Place one finger against the right front of the blue touch point latch **(A)** as shown in the following figure, and place another finger against the rear of the latch **(B)**.
   b) Push against the front of the latch **(A)** and then pull the latch out from the rear **(B)**. This action releases the latch.
   c) Rotate the power interface card handle in the direction shown in the following figure to unlock the card from its slot.
   d) Hold on to the power interface card handle and use your hand to support the bottom of the card as you pull the card out from its slot as shown in the following figure.

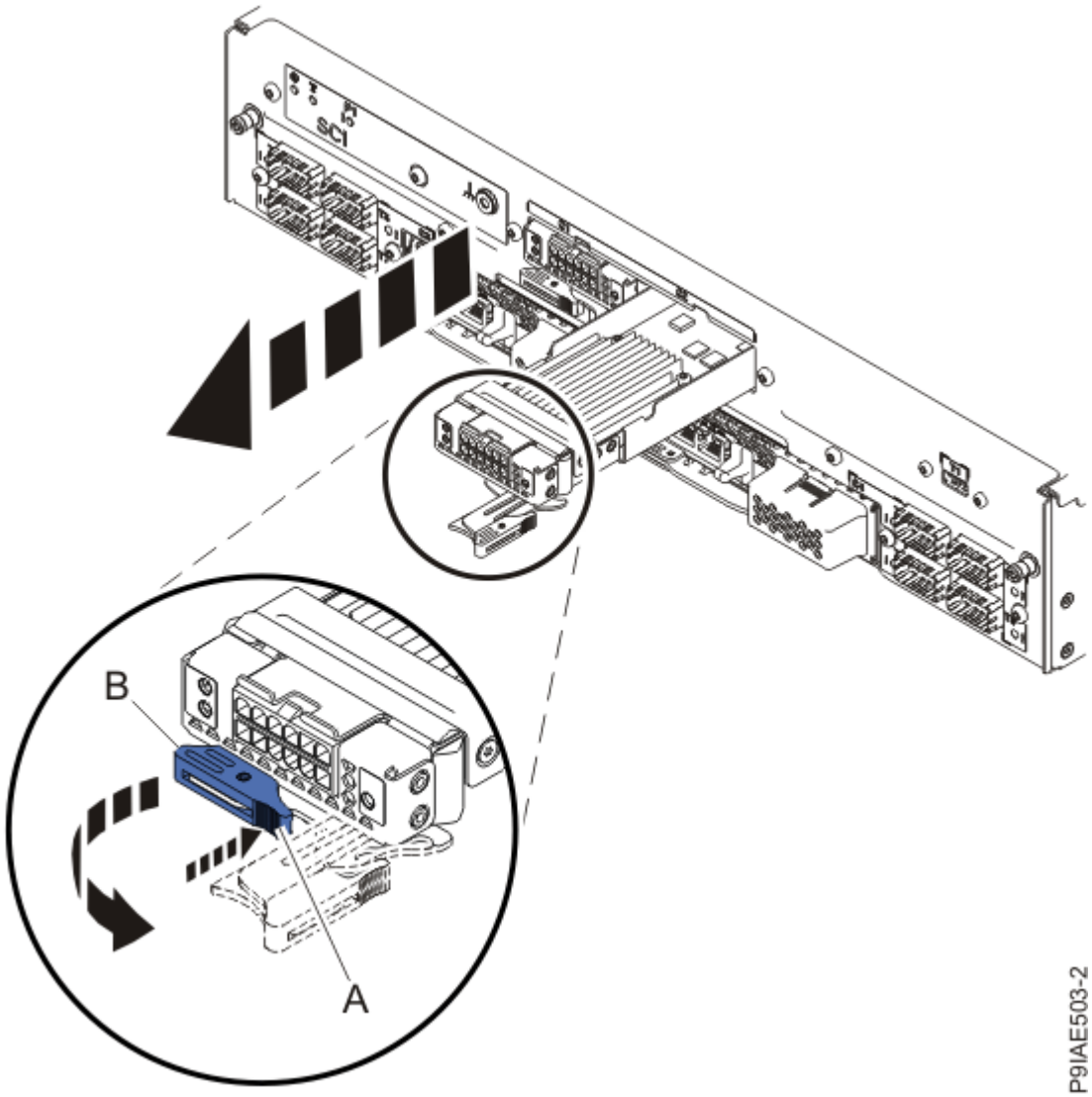


Figure 436. Removing the power interface card

Replacing the power interface card in the 9080-M9S system control unit

To replace the power interface card, 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. Replace the power interface card.
   a) Ensure that the power interface card handle **(A)** is open as shown in the following figure.
   b) Hold on to the power interface card handle and use your hand to support the bottom of the card as you slide the card into its slot as shown in the following figure.
   c) Push the power interface card handle in the direction shown in the following figure.
   d) Push against the front of the latch **(B)** with your thumb and then slightly pull the latch at **(C)** with your index finger. This action opens the latch.
   e) Continue to push in the lever with your thumb until the latch is fully seated at **(C)**.

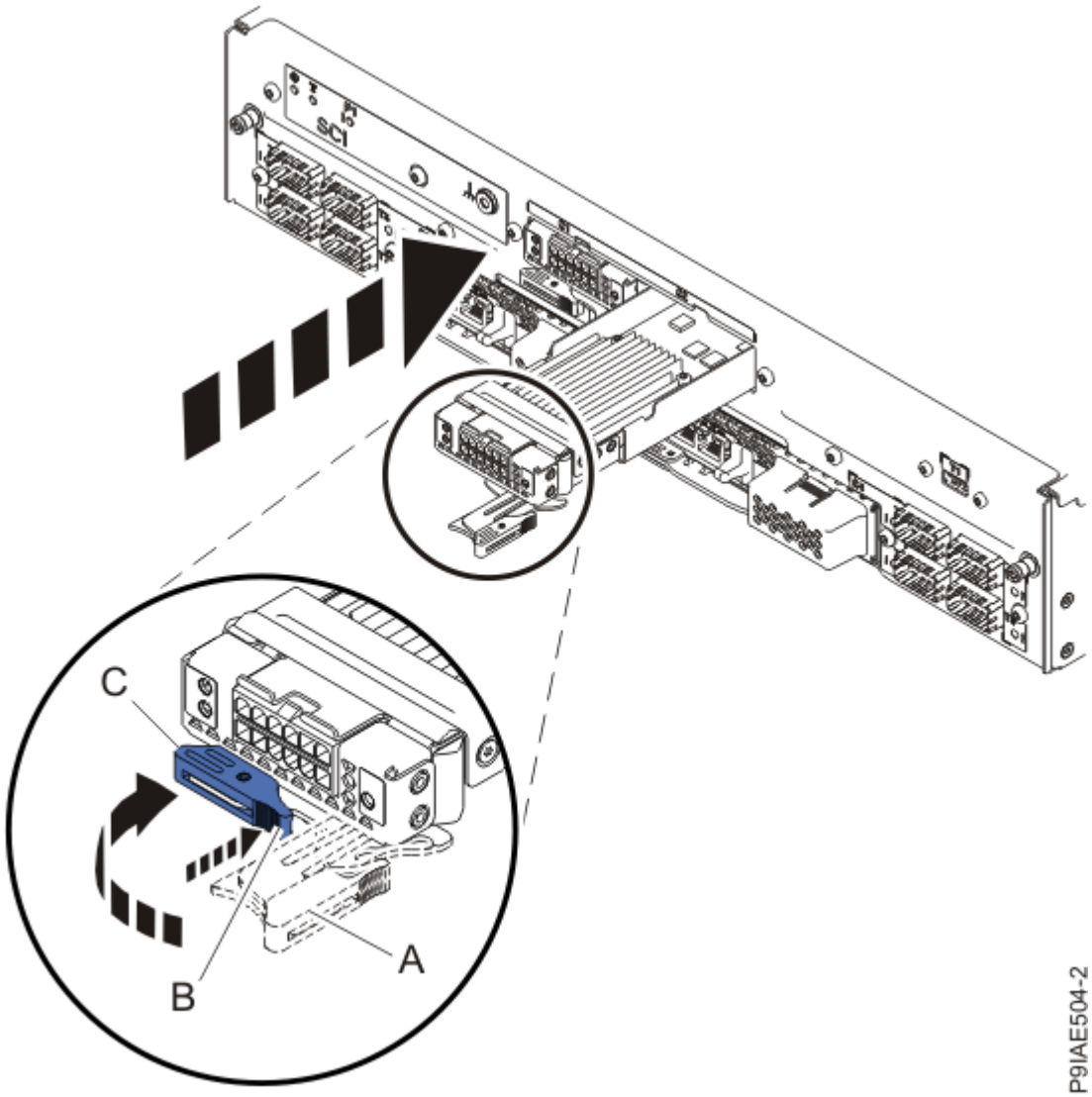


Figure 437. Replacing the power interface card

3. Reconnect the UPIC cable to the power interface card that you are servicing, or reconnect both UPIC cables if you chose to complete this repair with the power off.

   Note: The following images show both UPIC cables being unplugged so that you are aware of the location for each cable. If you chose to complete this procedure with the power on, you only need to reconnect the cable to the power interface card that you are servicing.

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

   b) Inserting the cable into the connector until it locks into place as shown in the following figure.

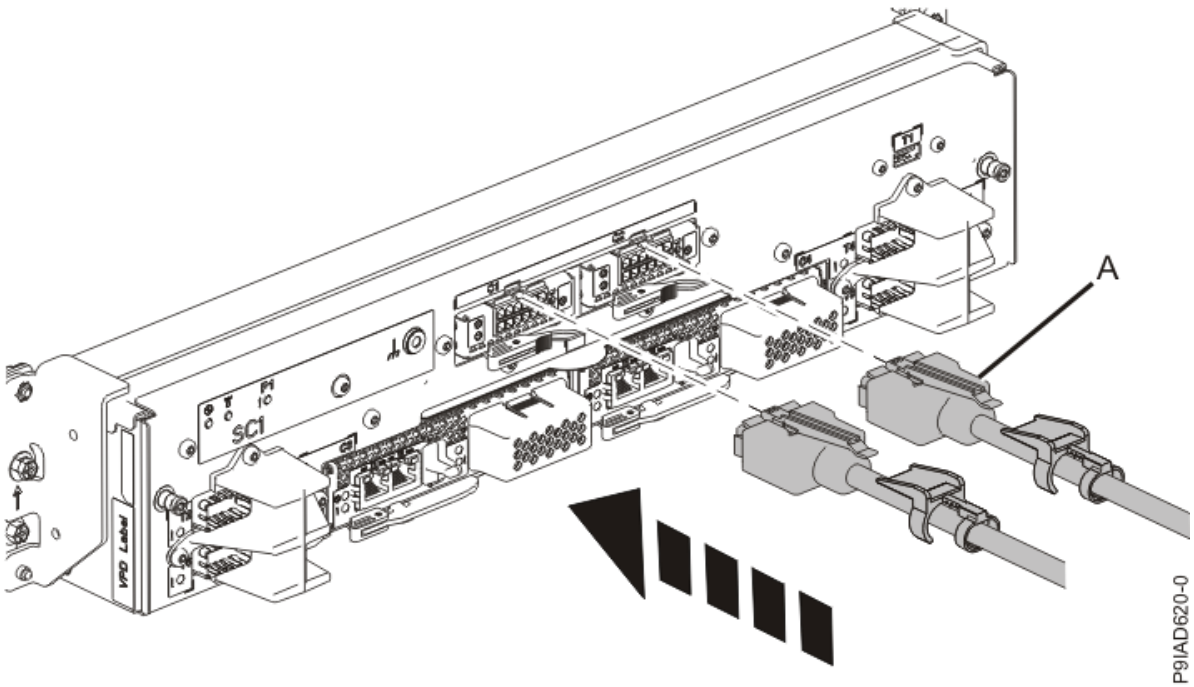


Figure 438. Replacing the UPIC cable into the system control unit

c) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

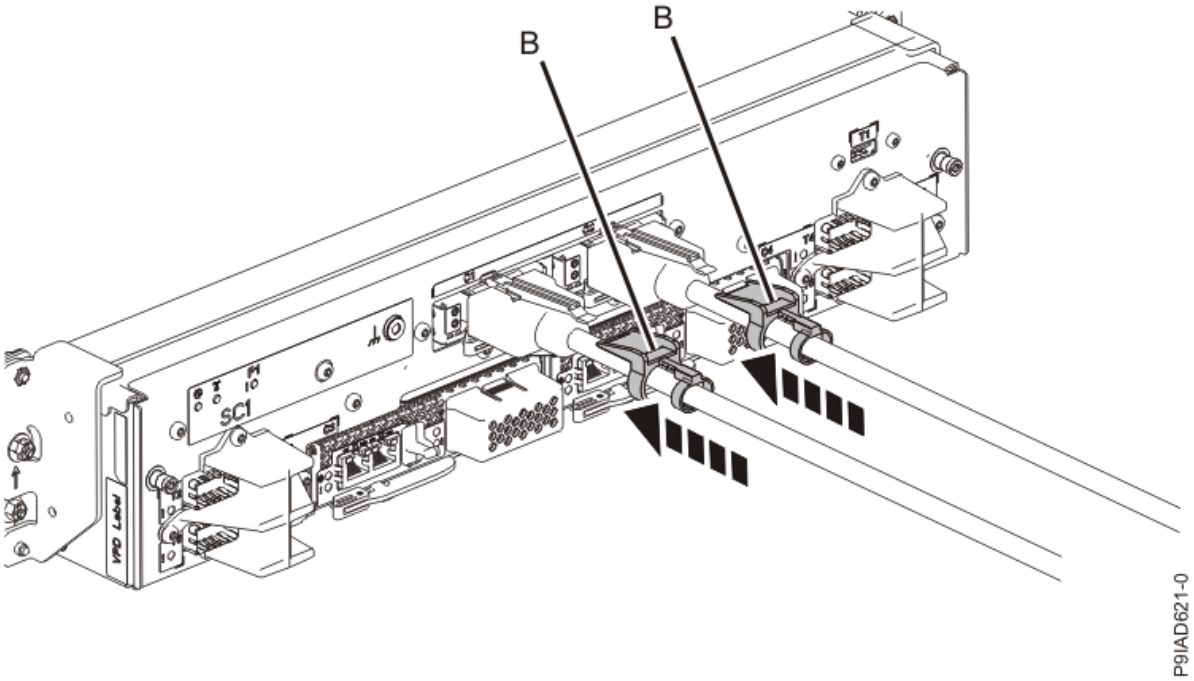


Figure 439. Replacing the UPIC cable into the system control unit

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.

Power supplies

Preparing the 9080-M9S system to remove and replace a power supply

To prepare the system to remove and replace a power supply, complete the steps in this procedure.

About this task

Attention:

- Removing and replacing the failed power supply is a time sensitive task when the system is serviced with the power on.
- You must replace the failed power supply within 5 minutes after you remove the power supply from the system to avoid a system shutdown.
- Ensure that you read the complete procedure to remove and replace a system power supply and that you can remove and replace the power supply within this time.

Procedure

1. If applicable, open the rack front door.
2. Place your fingers on the indentations located on both sides of the cover **(A)** and pull the cover away from the system as shown in the following figure.

CAUTION: The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

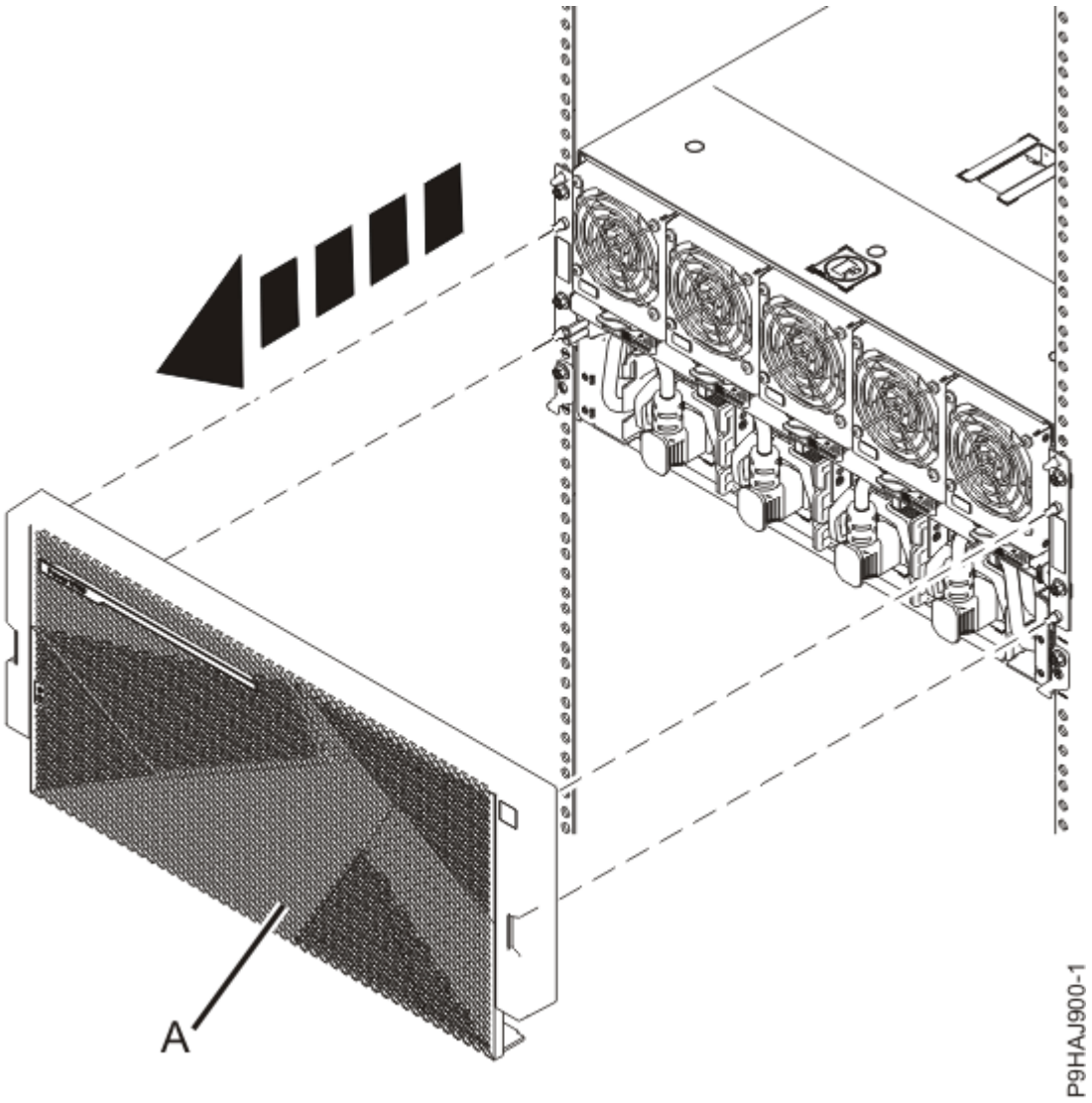


Figure 440. Removing the front cover

3. The power supplies are installed in the front of the system.

   The following figure shows the location of the power supplies in a system and the position of the light-emitting diodes (LEDs) on the power supply.

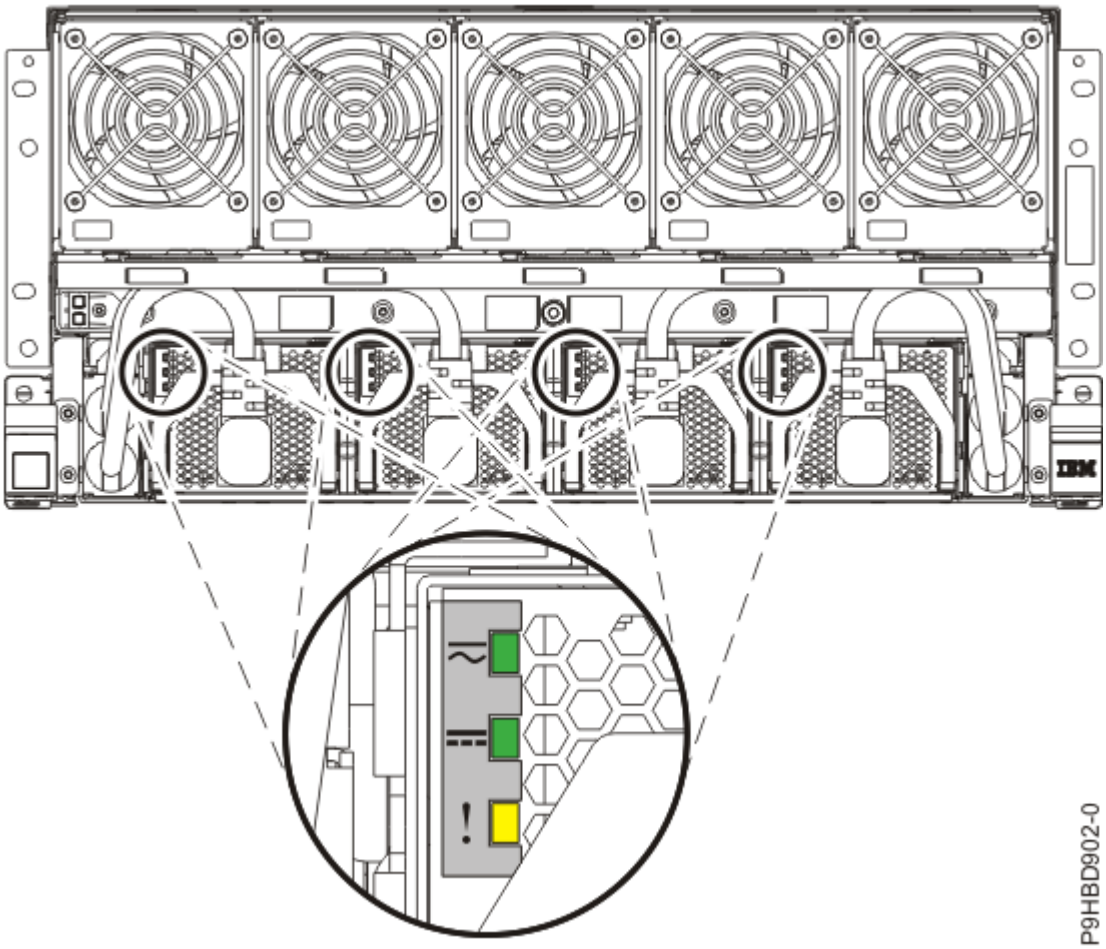


Figure 441. Location of the power supplies and LEDs

The power supply has the following LEDs that indicate the status of the power supply:

- An AC power-on LED (green)
- A DC power-on LED (green)
- An error and identify function LED (amber)

Table 54 on page 507 describes the states of the power supply LEDs.

Table 54. Description of the power supply LED states

AC Power LED (Green)	**DC Power LED (Green)**	**Identify LED (Amber)**	**Power Supply Status**
On (Solid)	On (Solid)	Off	The power supply is operating correctly. See **(B)** in the following figure.
On (Solid)	Flashing	Off	The system is turned off, but the power supply is still connected to the power source. See **(C)** in the following figure.
On (Solid)	On (Solid)	Flashing	The power supply has been selected by using the identify function. See **(D)** in the following figure.

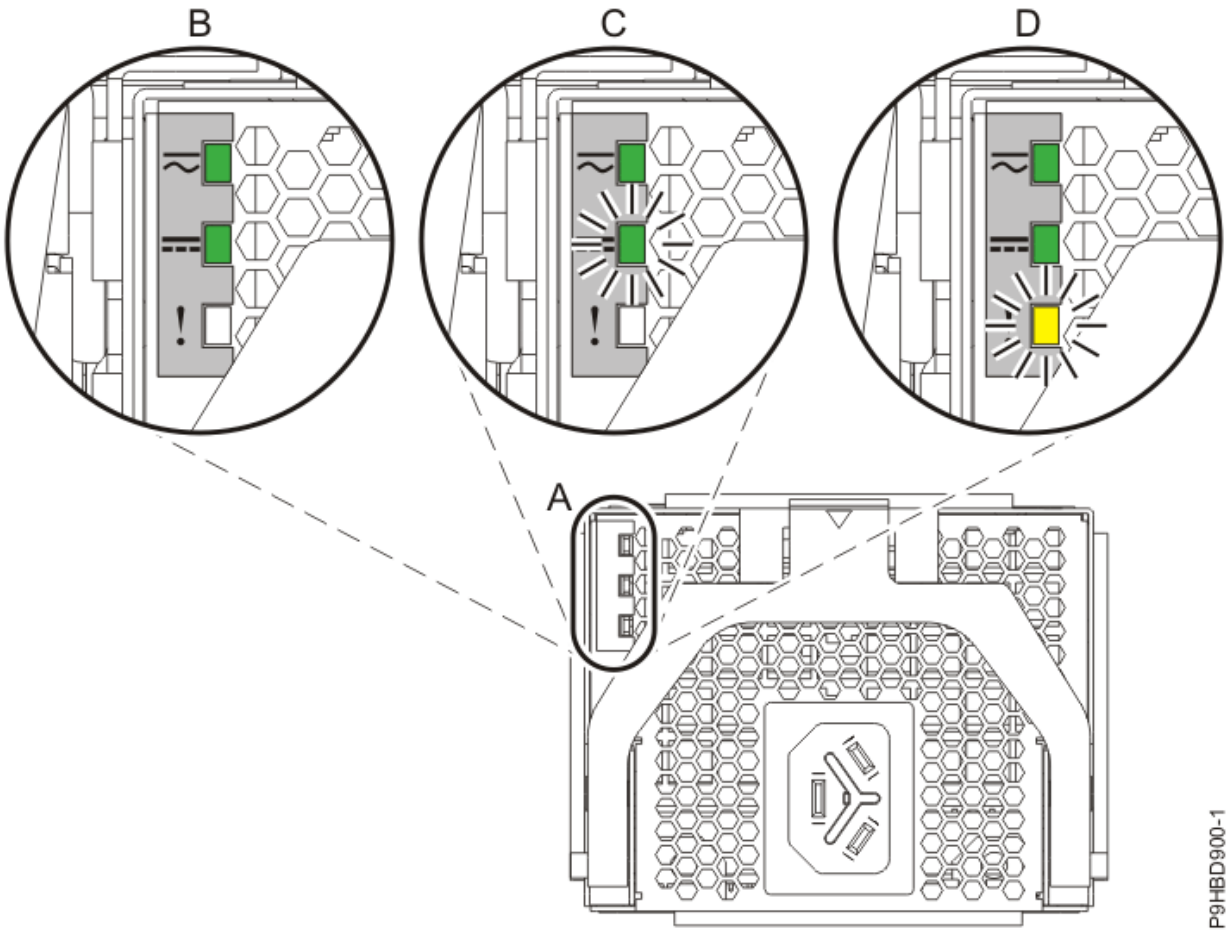


Figure 442. LEDs for a power supply

4. Determine whether you can continue with the system repair operation when the system is powered on.

   To continue the system repair operation when the system is powered on, the following conditions must be true:

   - All 4 power supplies must be installed.
   - If only one amber fault LED is turned on, the replace operation can be completed when the system is powered on.

5. Ensure that the amber LED corresponds to the location of the power supply and the lit fault LED.
6. If you can complete the procedure with the system power turned on, continue with step “8” on page 509.
7. If you need to power off the server to complete the repair operation, complete the following steps:

   a) Label and disconnect both UPIC cables from the system control unit as shown in the following figure.

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

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

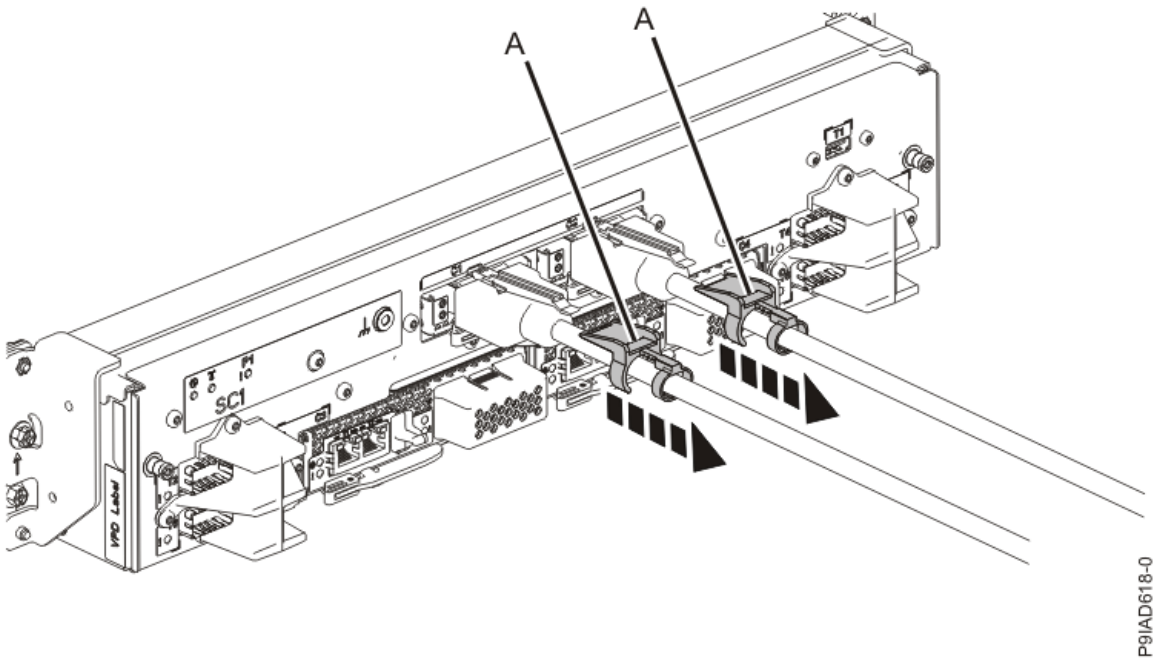


Figure 443. Removing the UPIC cable lock

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

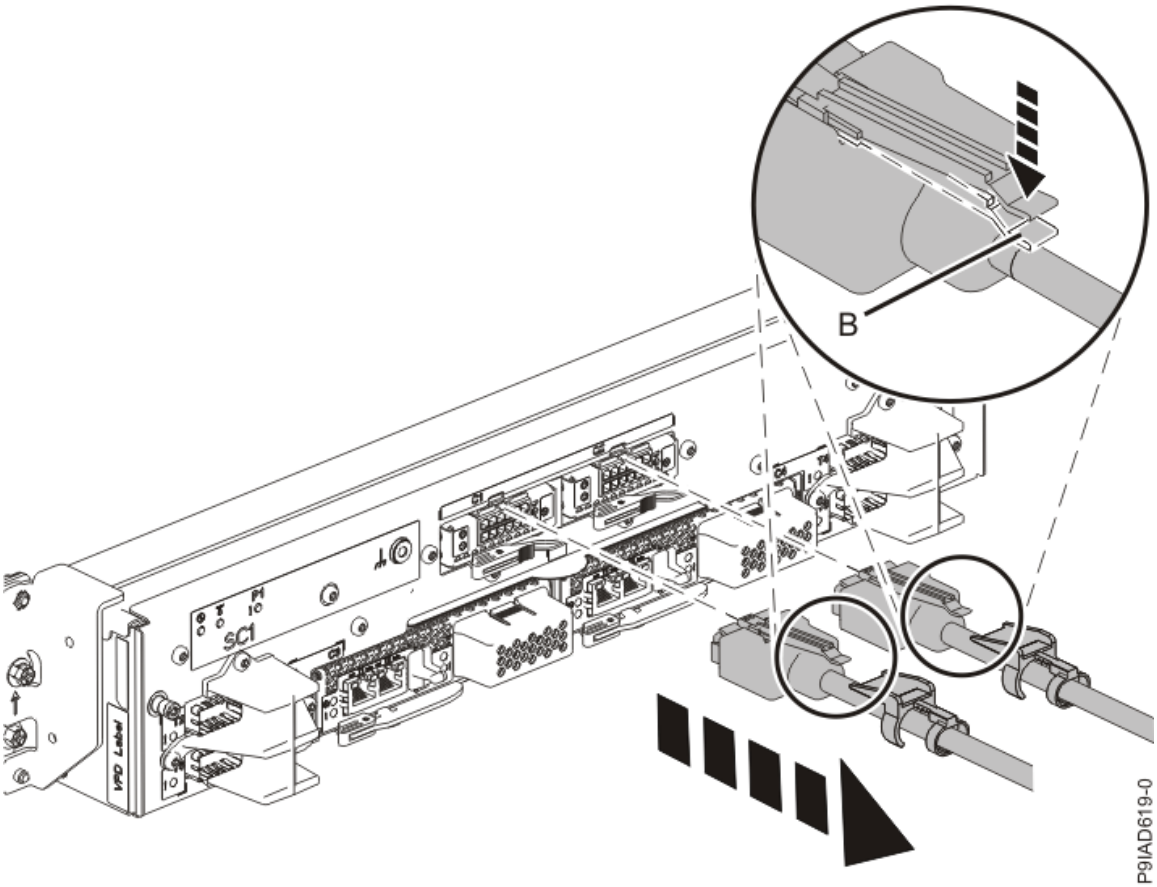


Figure 444. Removing the UPIC cable from the system control unit

8. 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.

Removing a power supply from the 9080-M9S system

To remove a power supply, 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. To remove the power supply; complete the following steps.
   a) If the cord that connects to the power supply is not already disconnected, label the cord and disconnect the cord from the power supply as shown in the following figure.

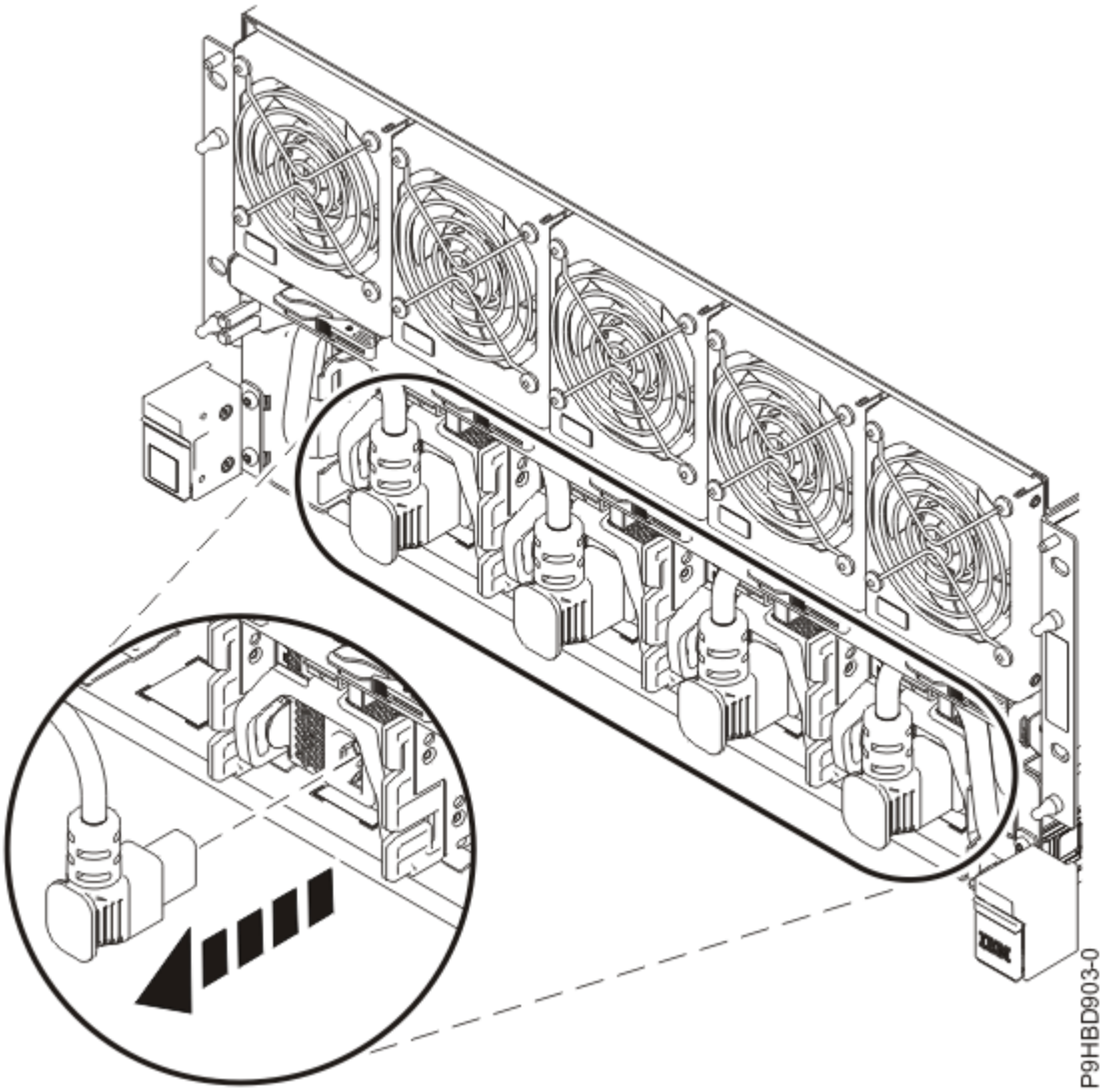


Figure 445. Disconnecting a cord from a power supply

b) Push tab **(A)** down of the power supply being serviced and pull it towards the direction of the arrow shown. Keep pulling until the power supply slides out from the slot.

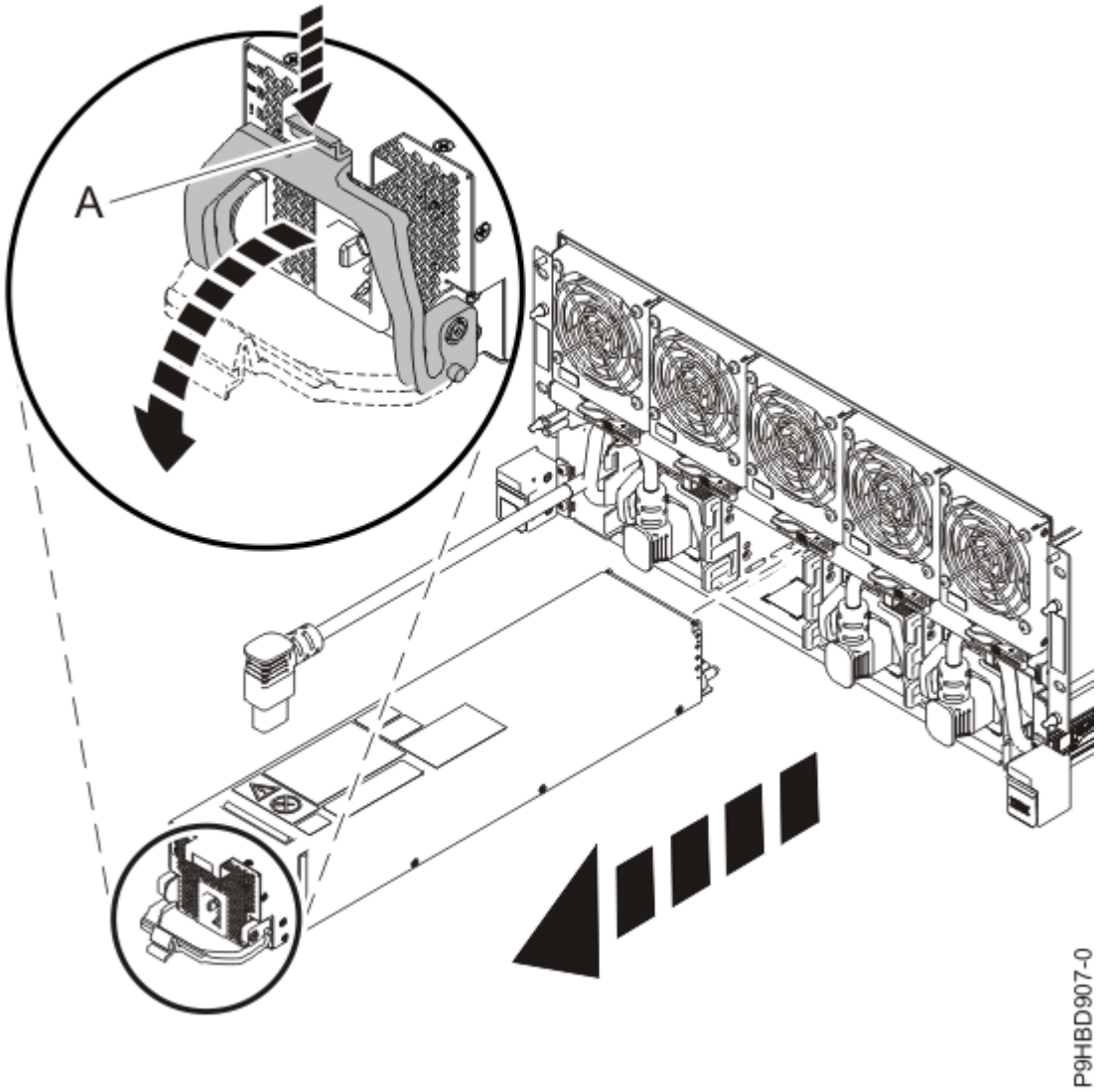


Figure 446. Removing a power supply

Replacing a power supply in the 9080-M9S system

To replace a power supply, 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. To replace the power supply; complete the following steps.
   a) Pull the latch down on the power supply as shown in the following figure.
   b) Align the power supply with the bay and slide the power supply into the system as shown in the following figure. Ensure that the pins on the latch go into the grooves in the chassis.
   c) Push the latch up to lock the power supply in place as shown in the following figure.

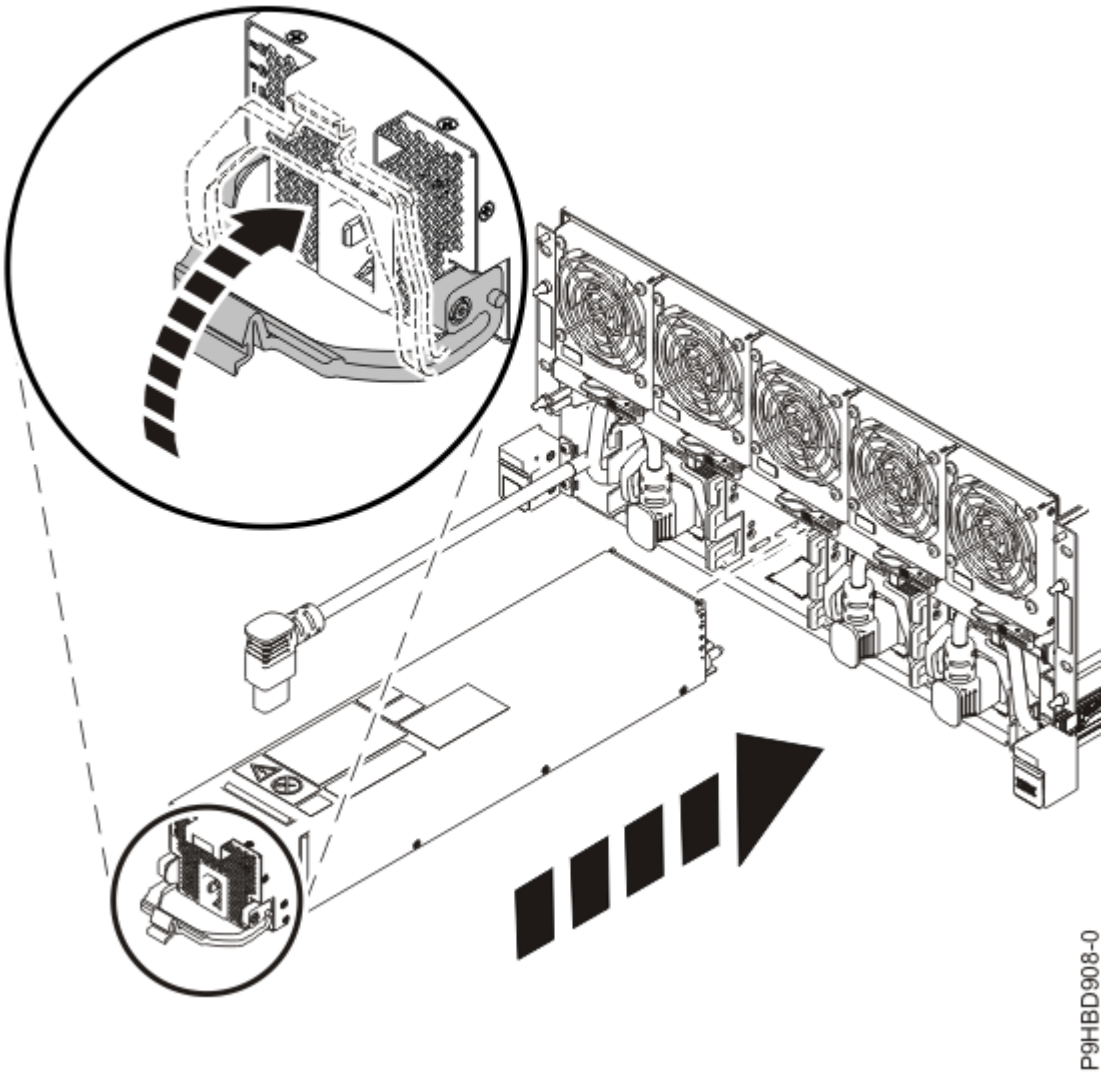


Figure 447. Replacing a power supply

d) Connect the power cord to the power supply as shown in the following figure.

e) Tuck the power cord into the chassis.

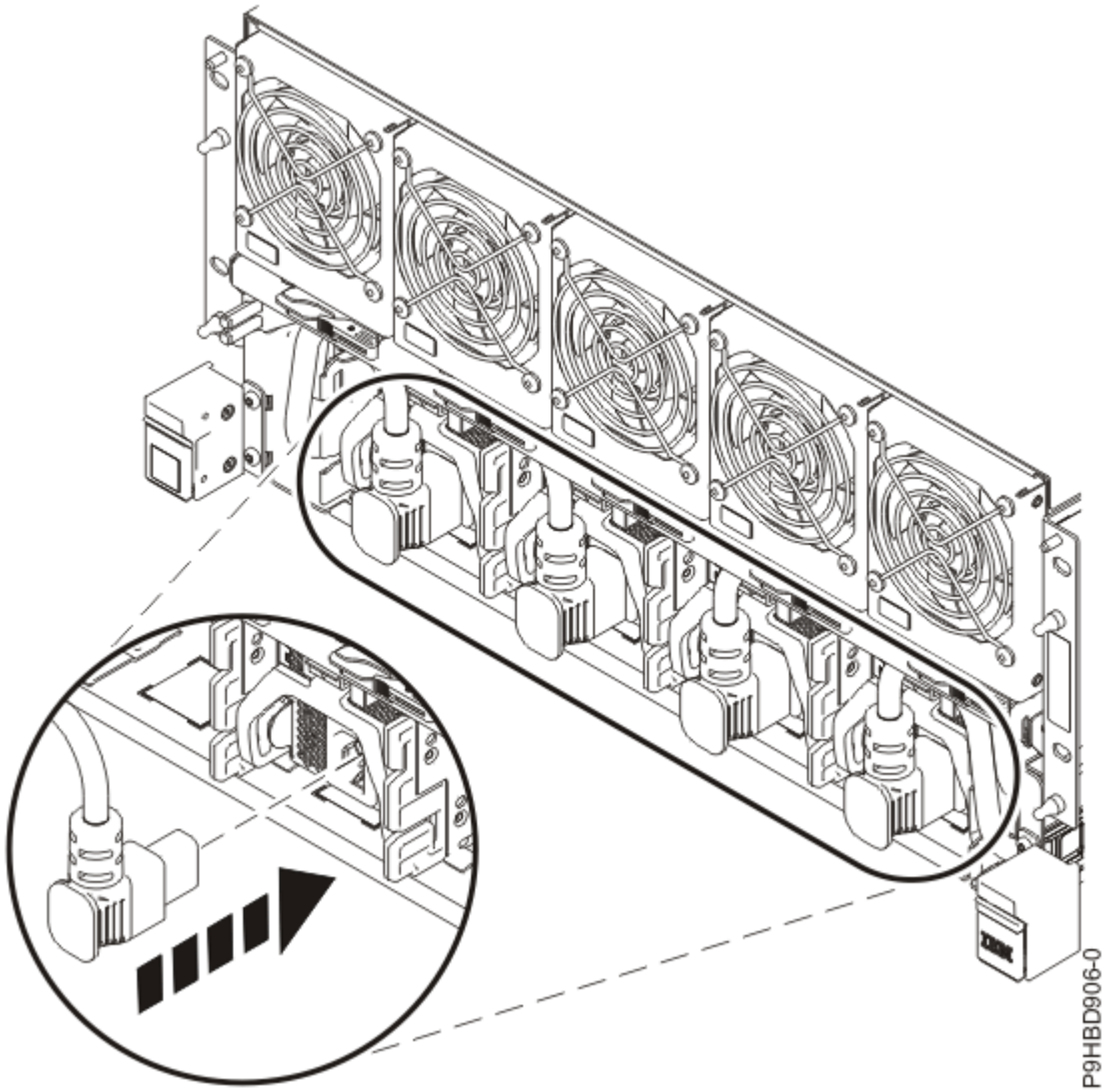


Figure 448. Reconnecting a cord to the power supply

Preparing the 9080-M9S system for operation after removing and replacing a power supply

To prepare the system for operation after removing and replacing a power supply, 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. If you chose to complete 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.

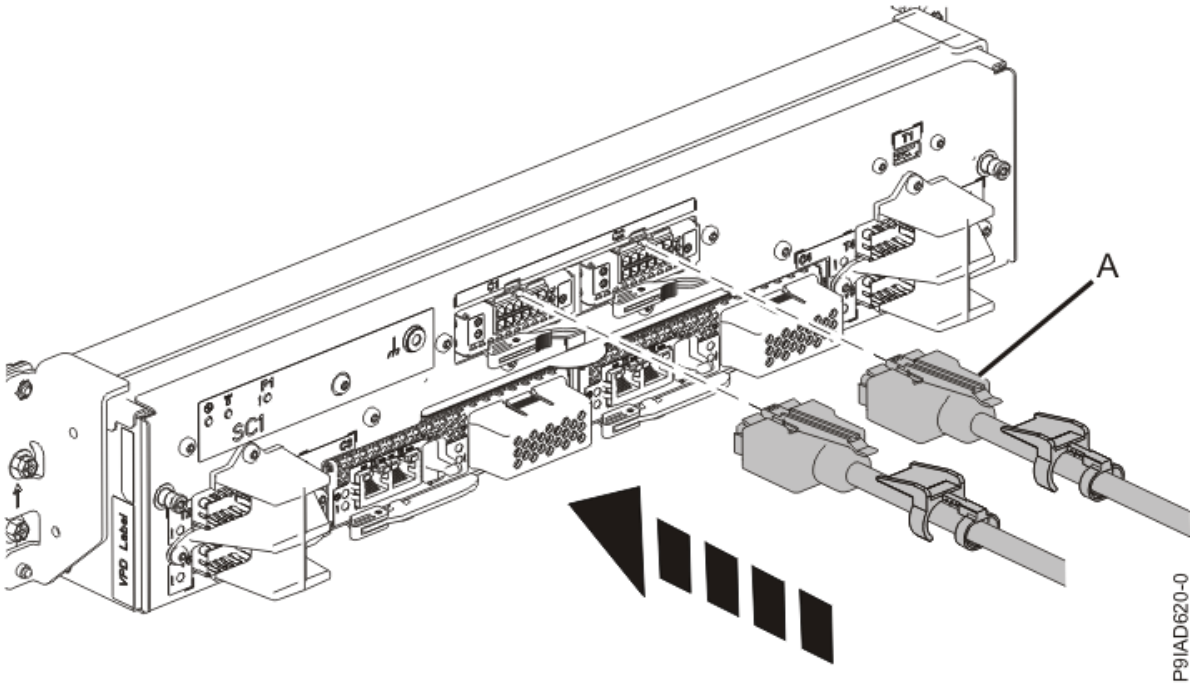


Figure 449. Replacing the UPIC cable into the system control unit

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

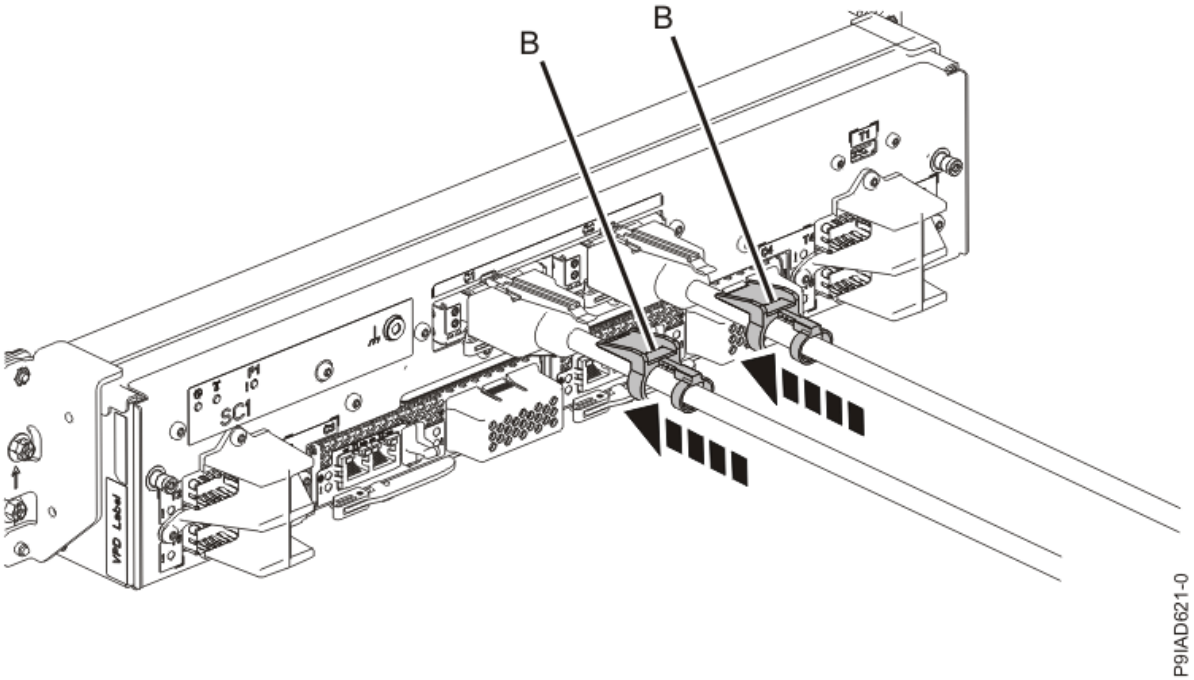


Figure 450. Replacing the UPIC cable into the system control unit

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.

3. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

5. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

6. If you needed to power off the server to complete the repair operation, complete the following steps:

a) Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

7. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).

8. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

Press the front cover into position.

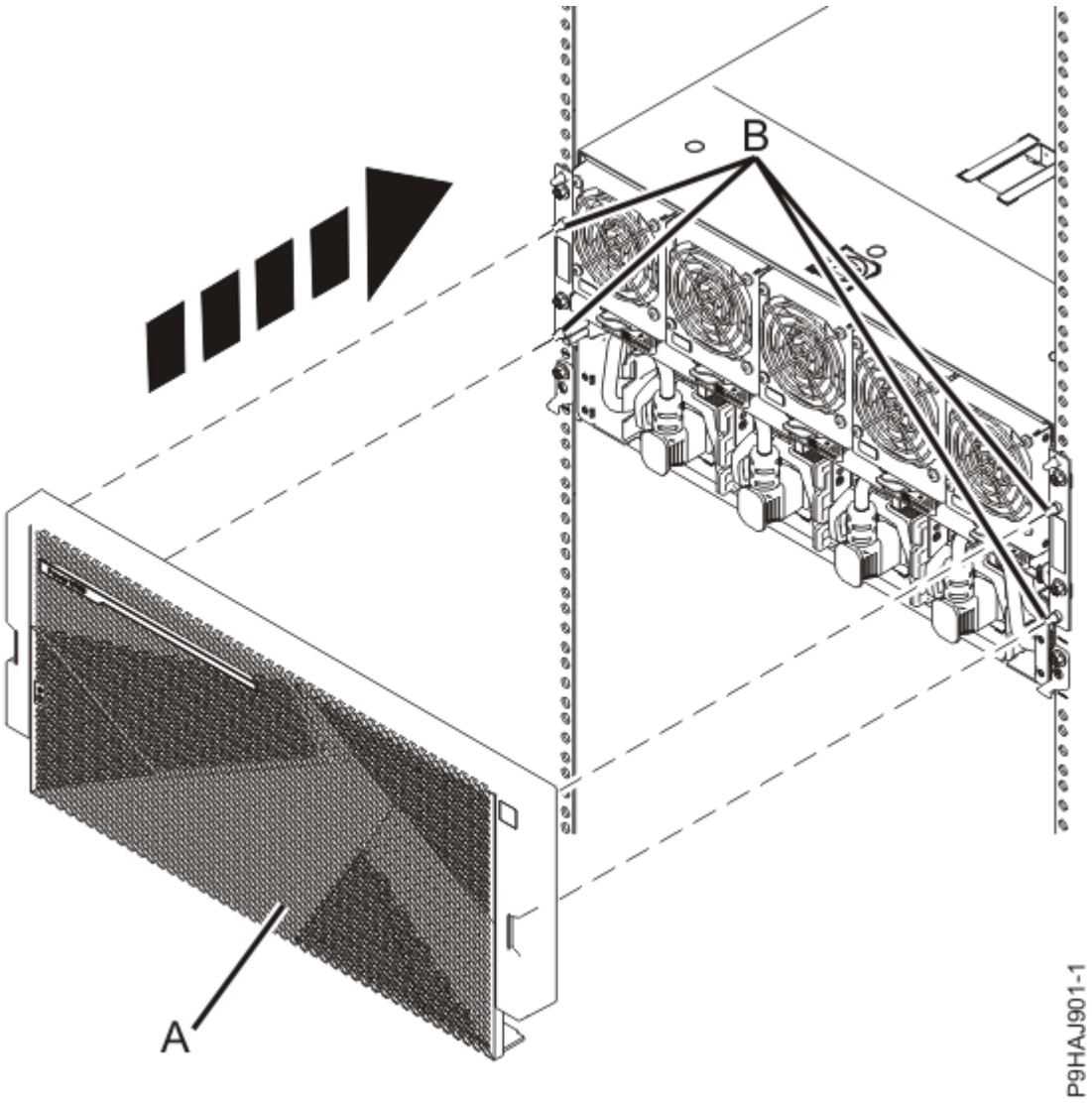


Figure 451. Installing the front cover

9. If applicable, close the rack front door.

Processor VRM

Preparing the system to remove and replace a processor voltage regulator module

To prepare the system to remove and replace a processor voltage regulator module, complete the steps in this procedure.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   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.
2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
3. Open the rear rack door, if necessary.
4. 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.

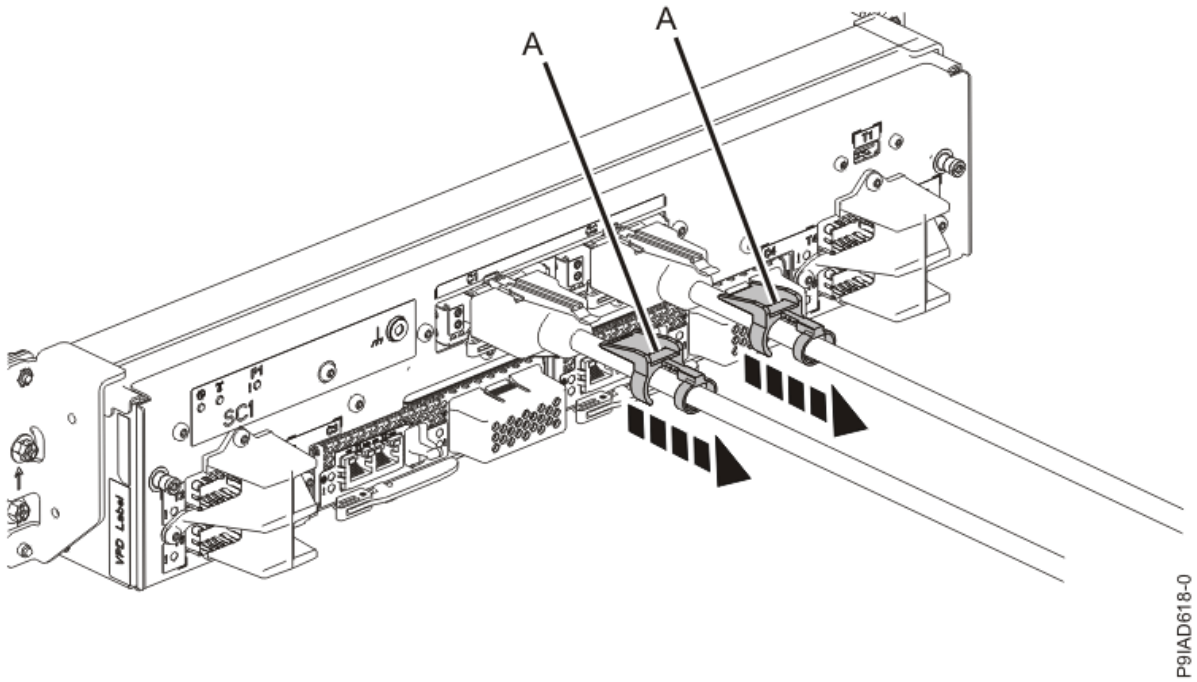


Figure 452. Removing the UPIC cable lock

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

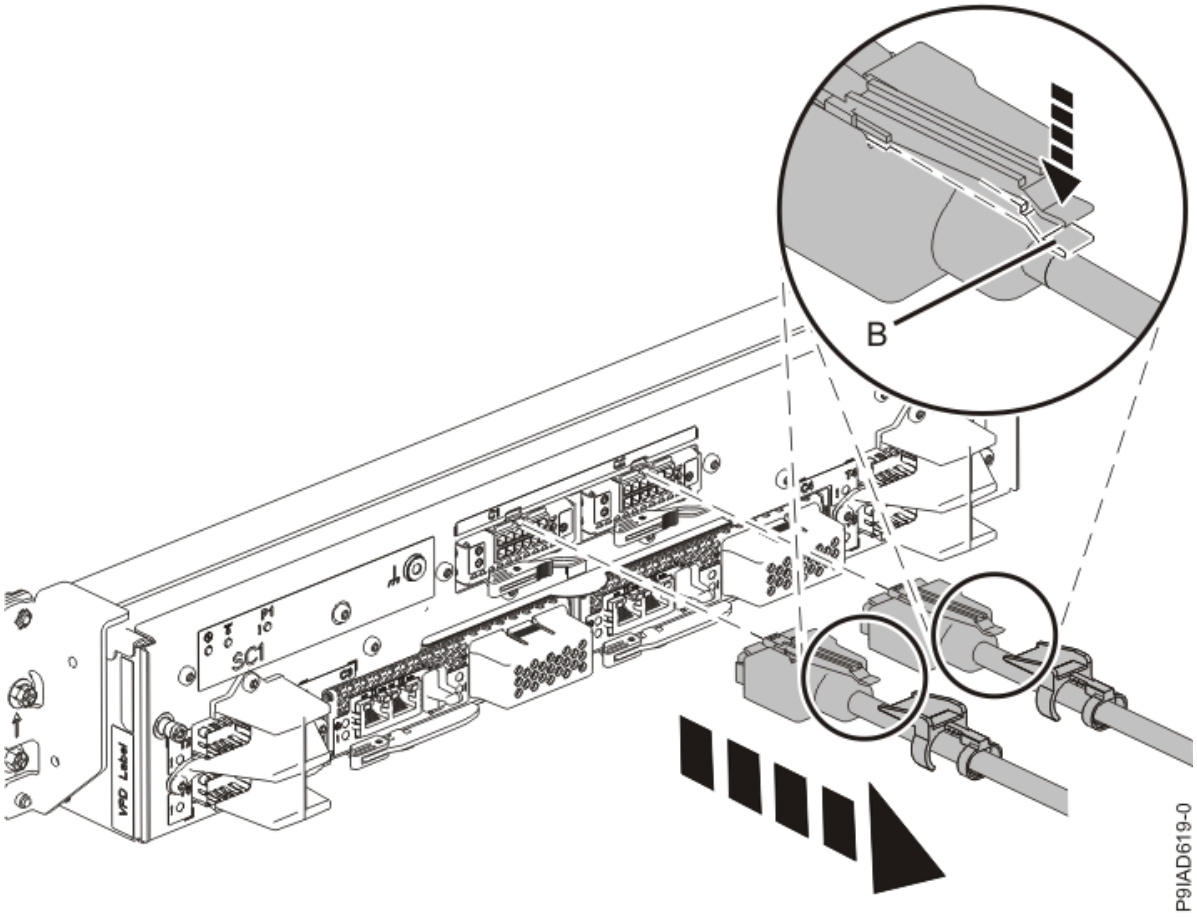


Figure 453. Removing the UPIC cable from the system control unit

5. 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.

6. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

Notes:

- This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

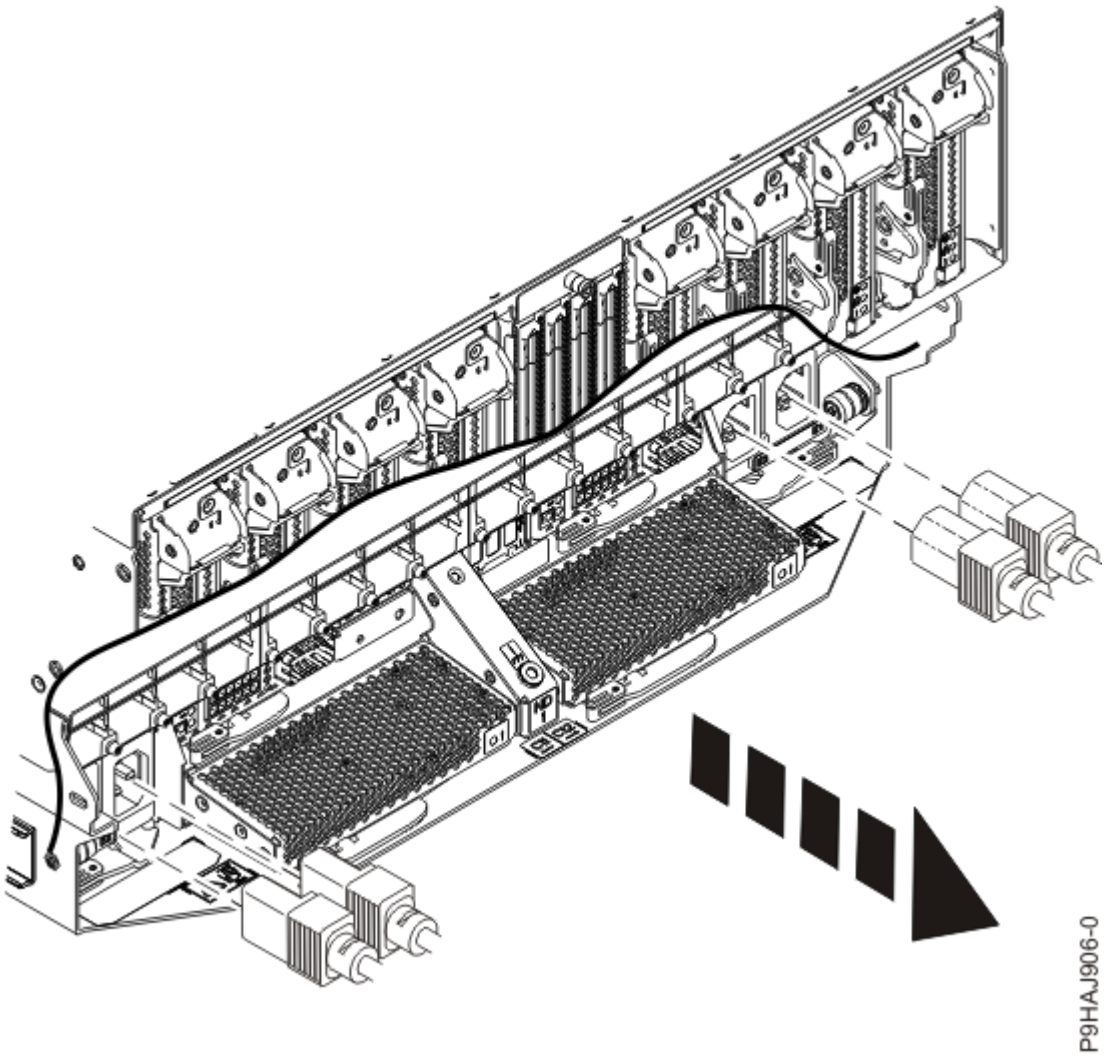
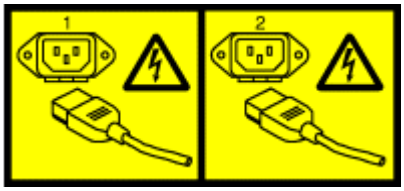


Figure 454. Removing the rear power cords

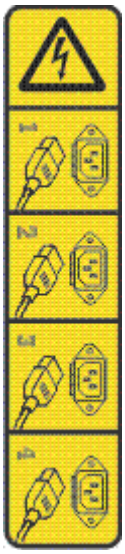
(L003)



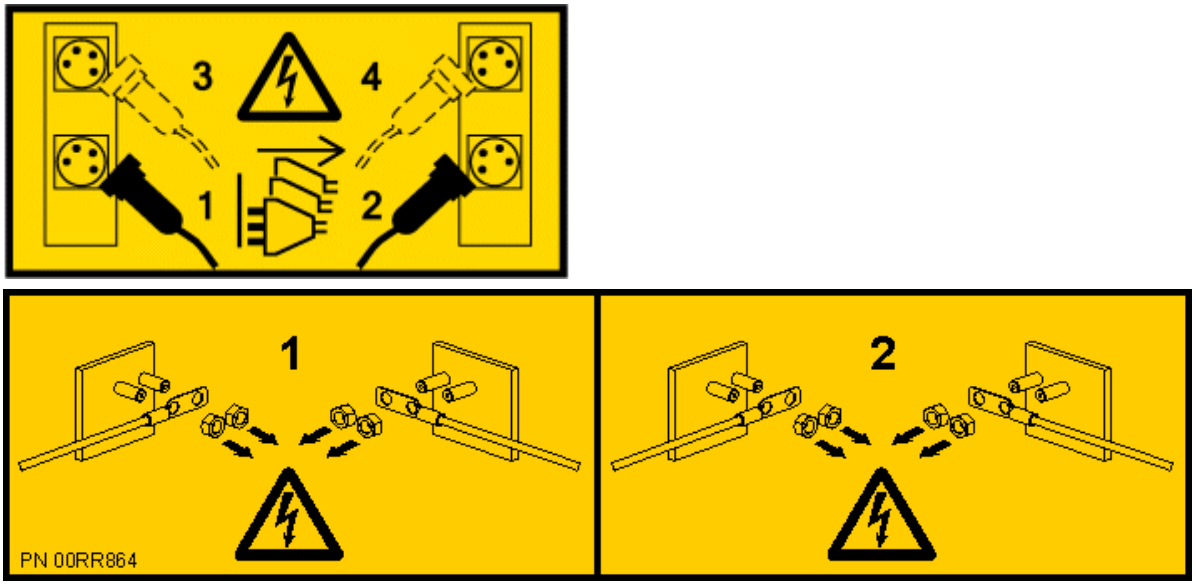
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

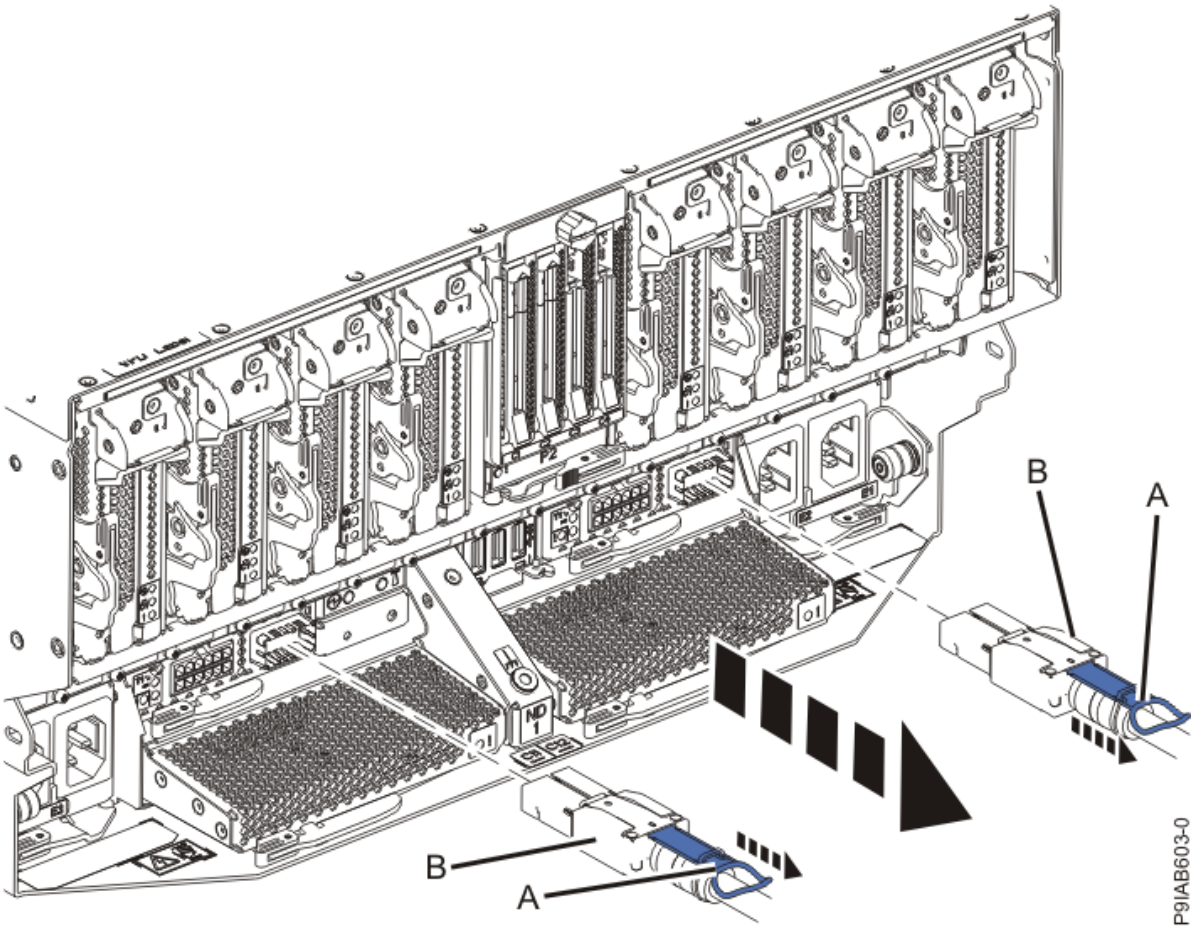


Figure 455. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

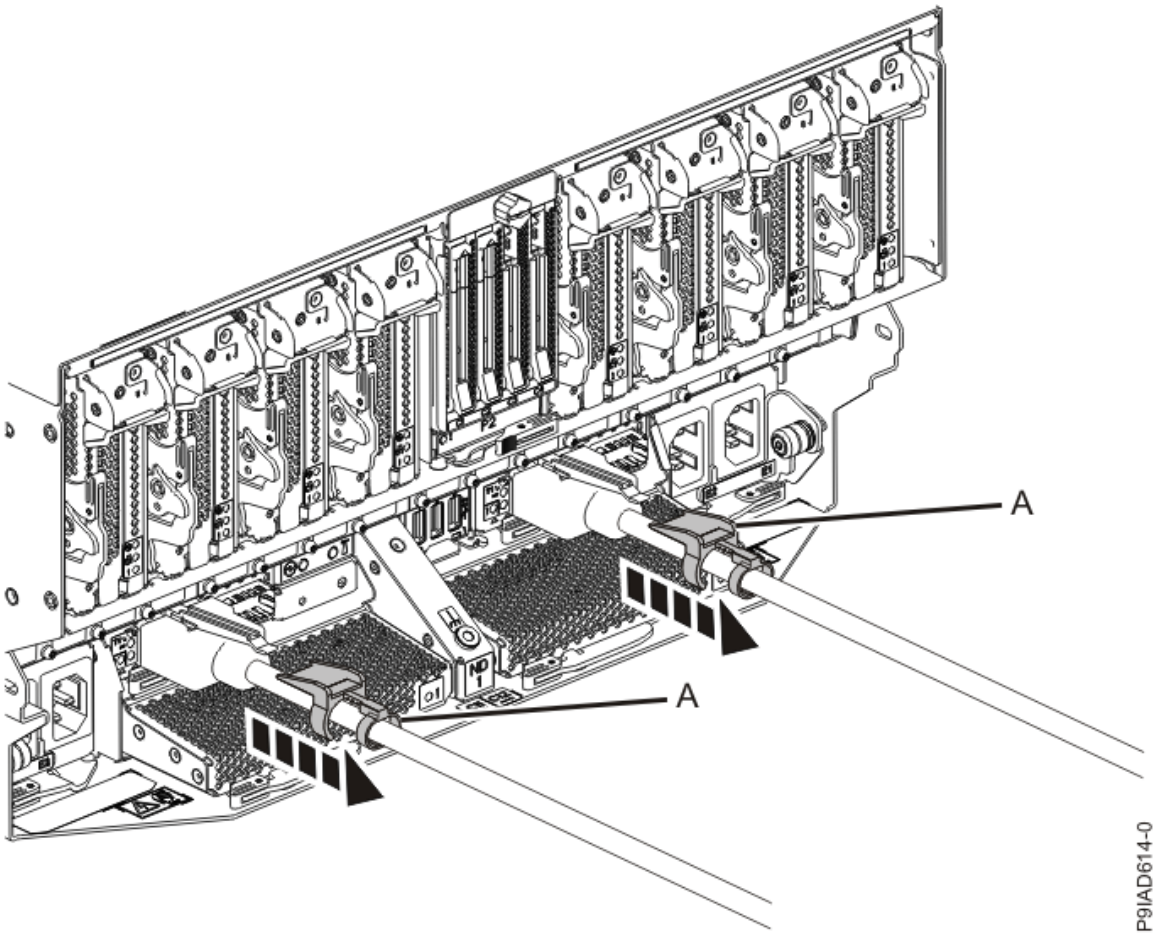


Figure 456. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

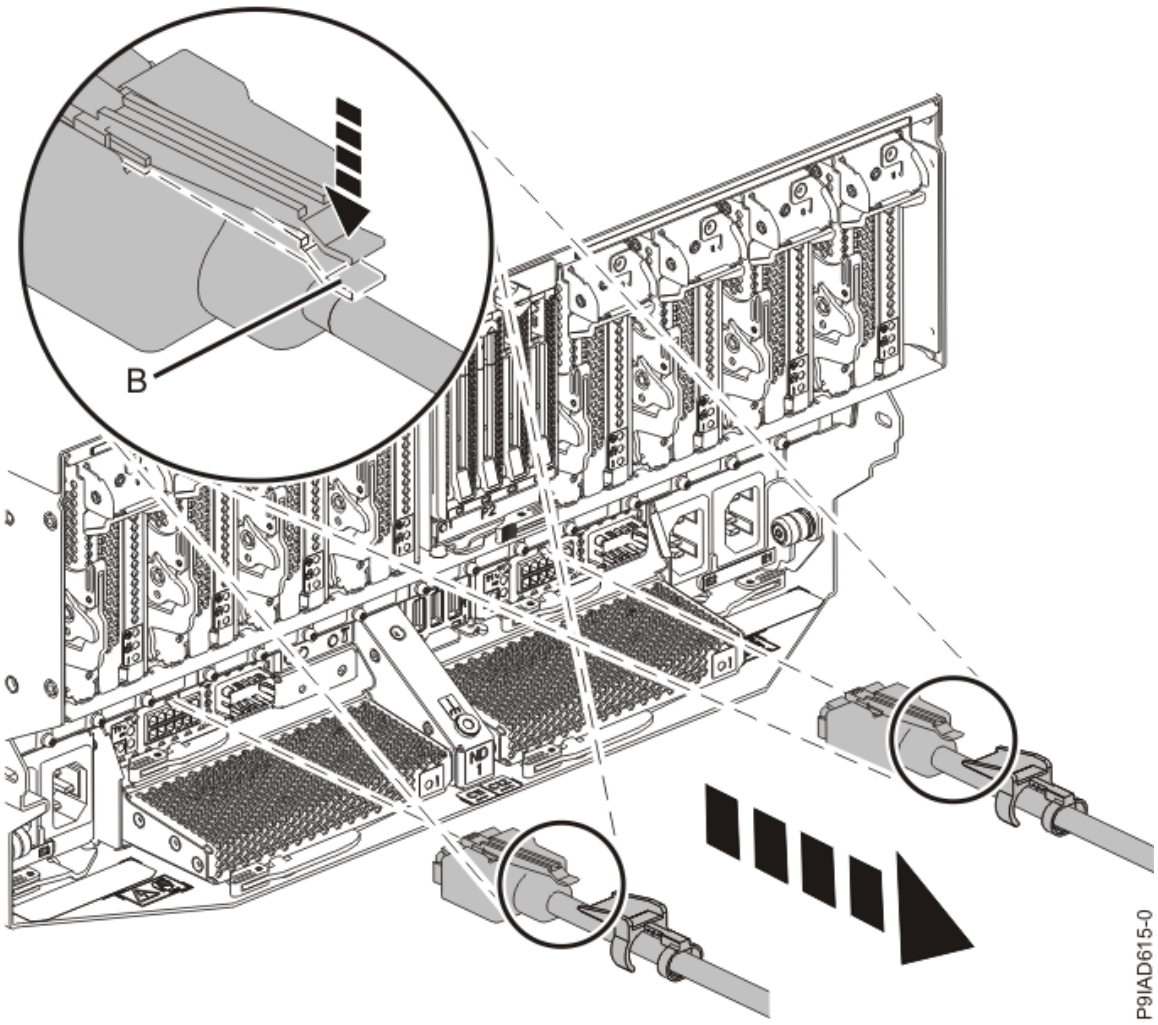


Figure 457. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

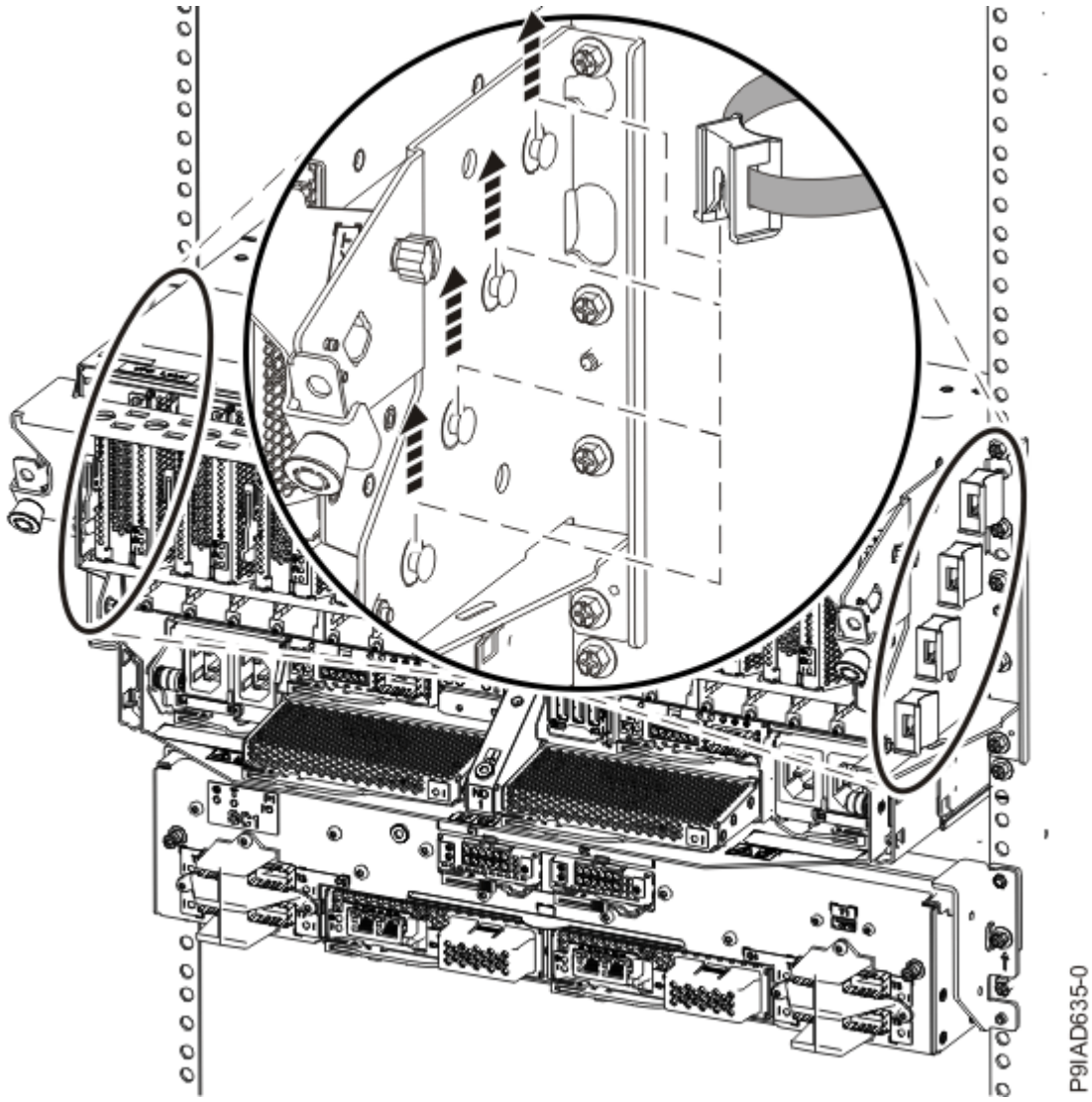


Figure 458. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

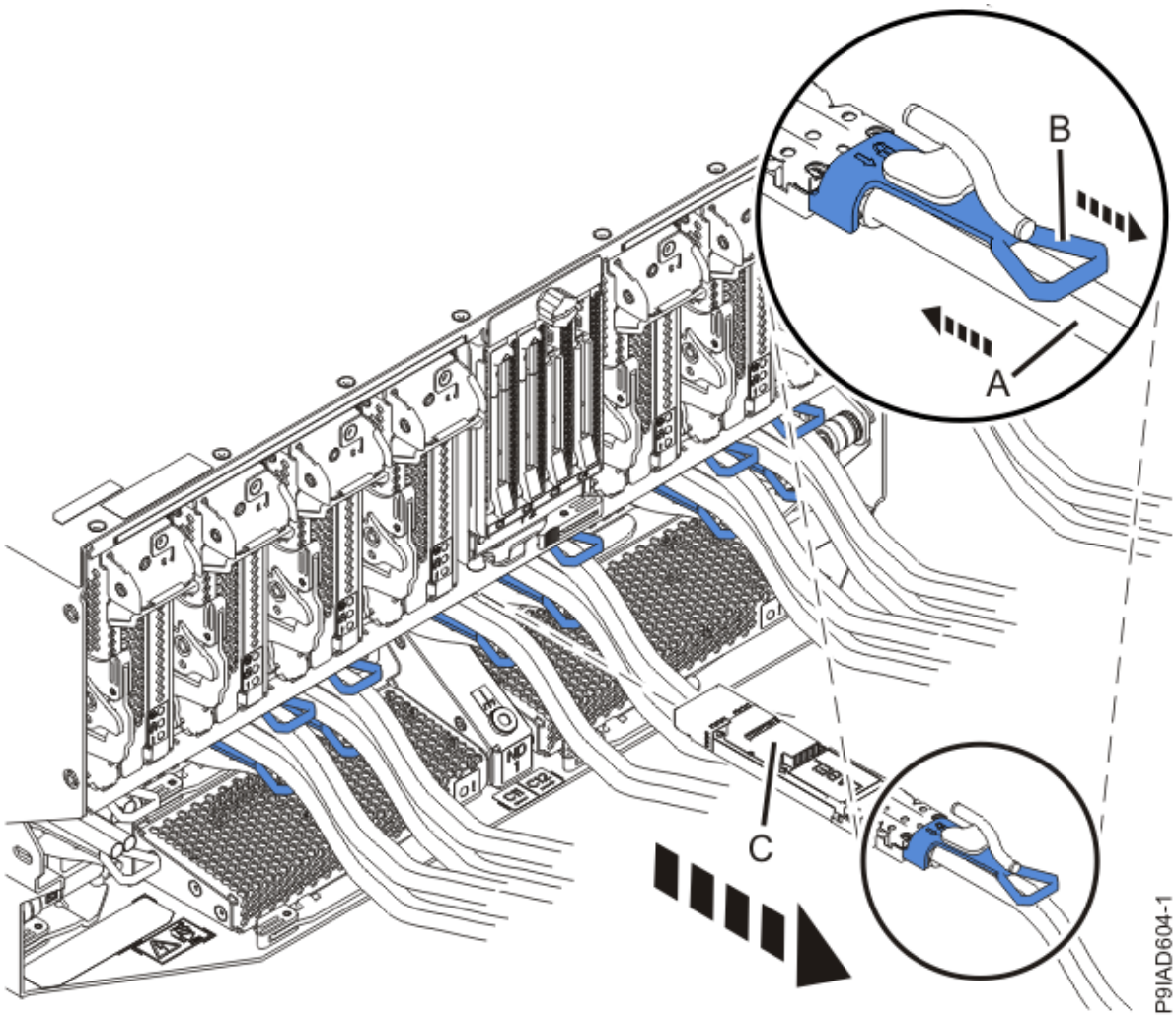


Figure 459. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

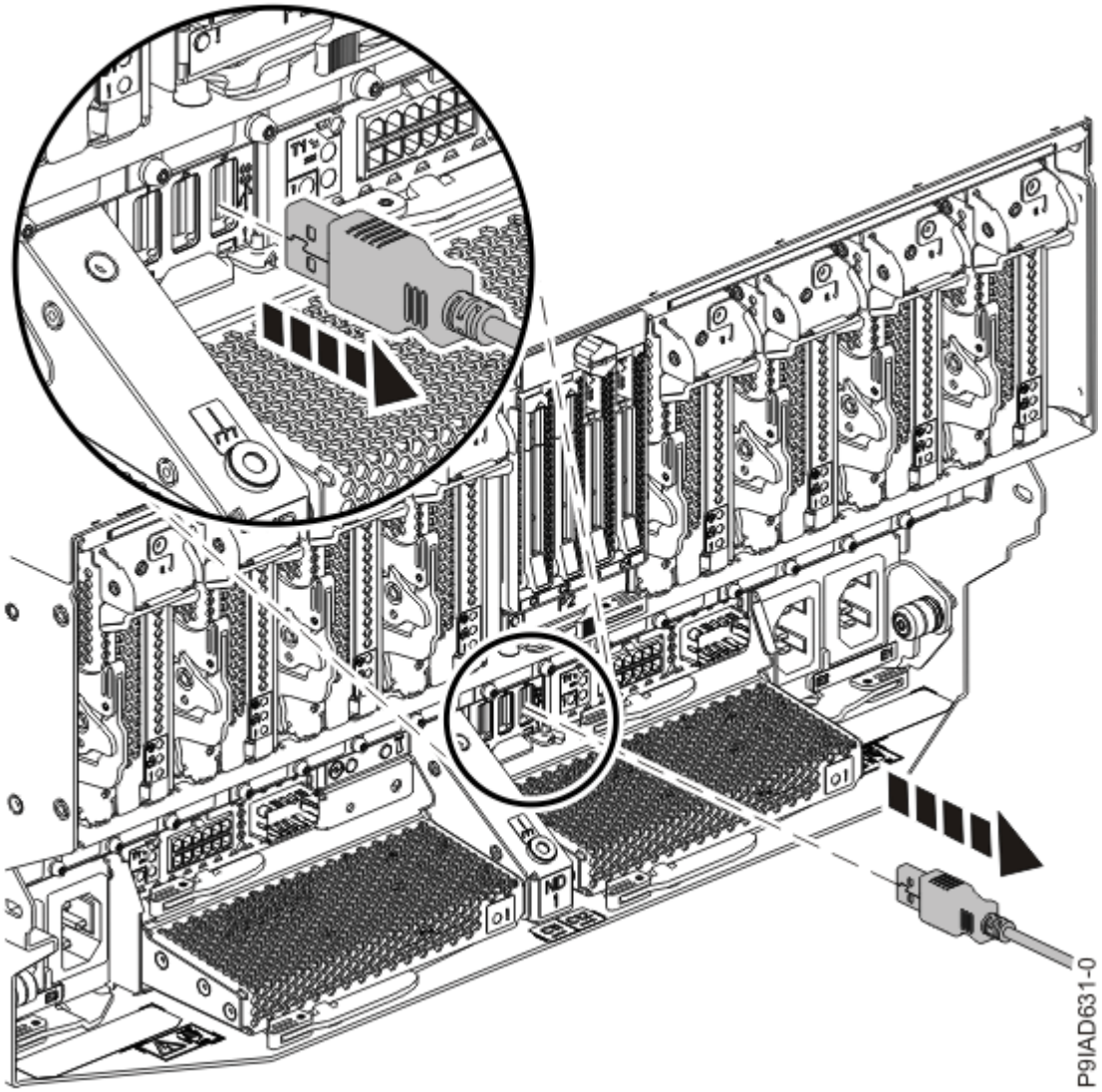


Figure 460. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

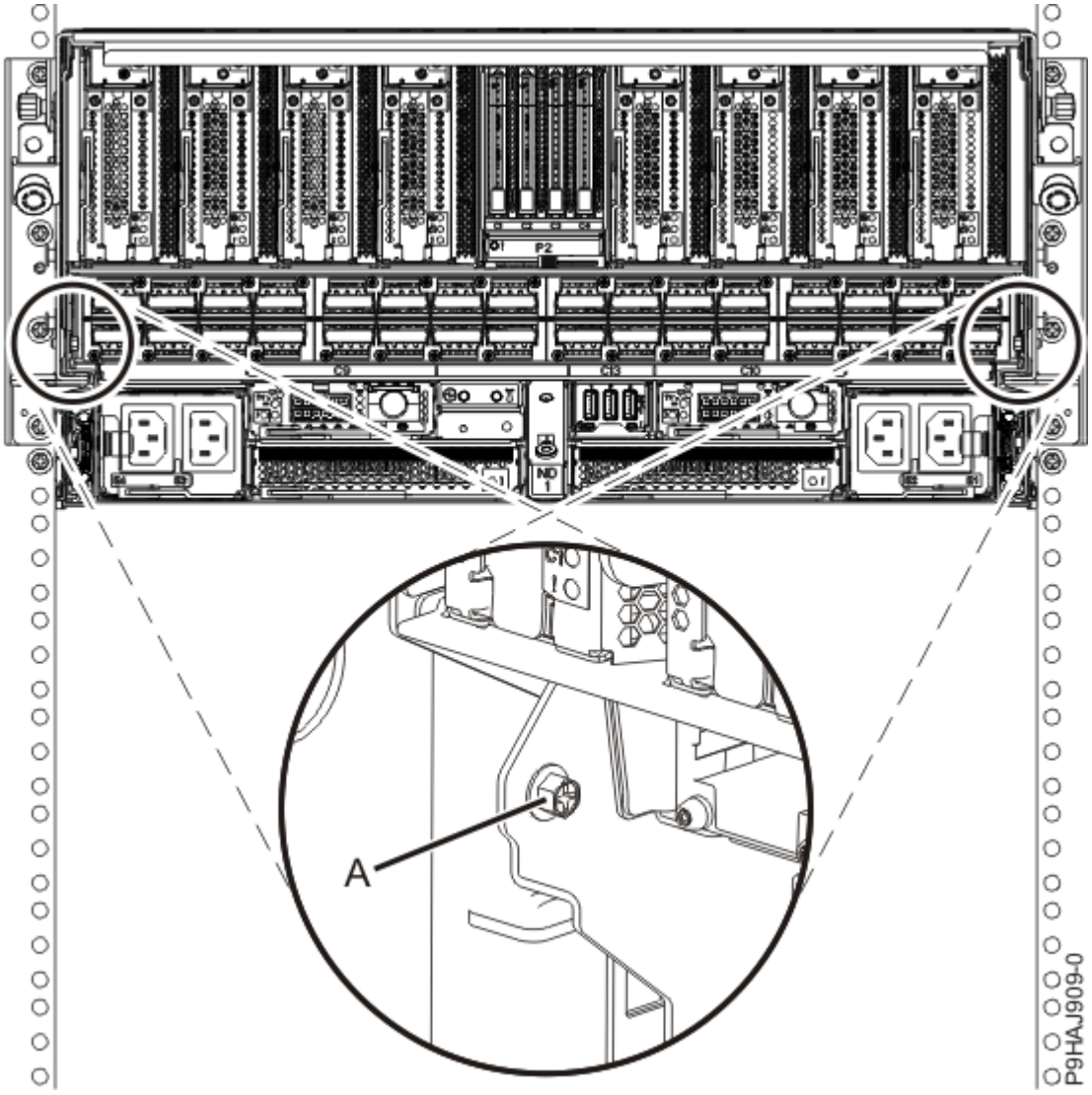


Figure 461. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

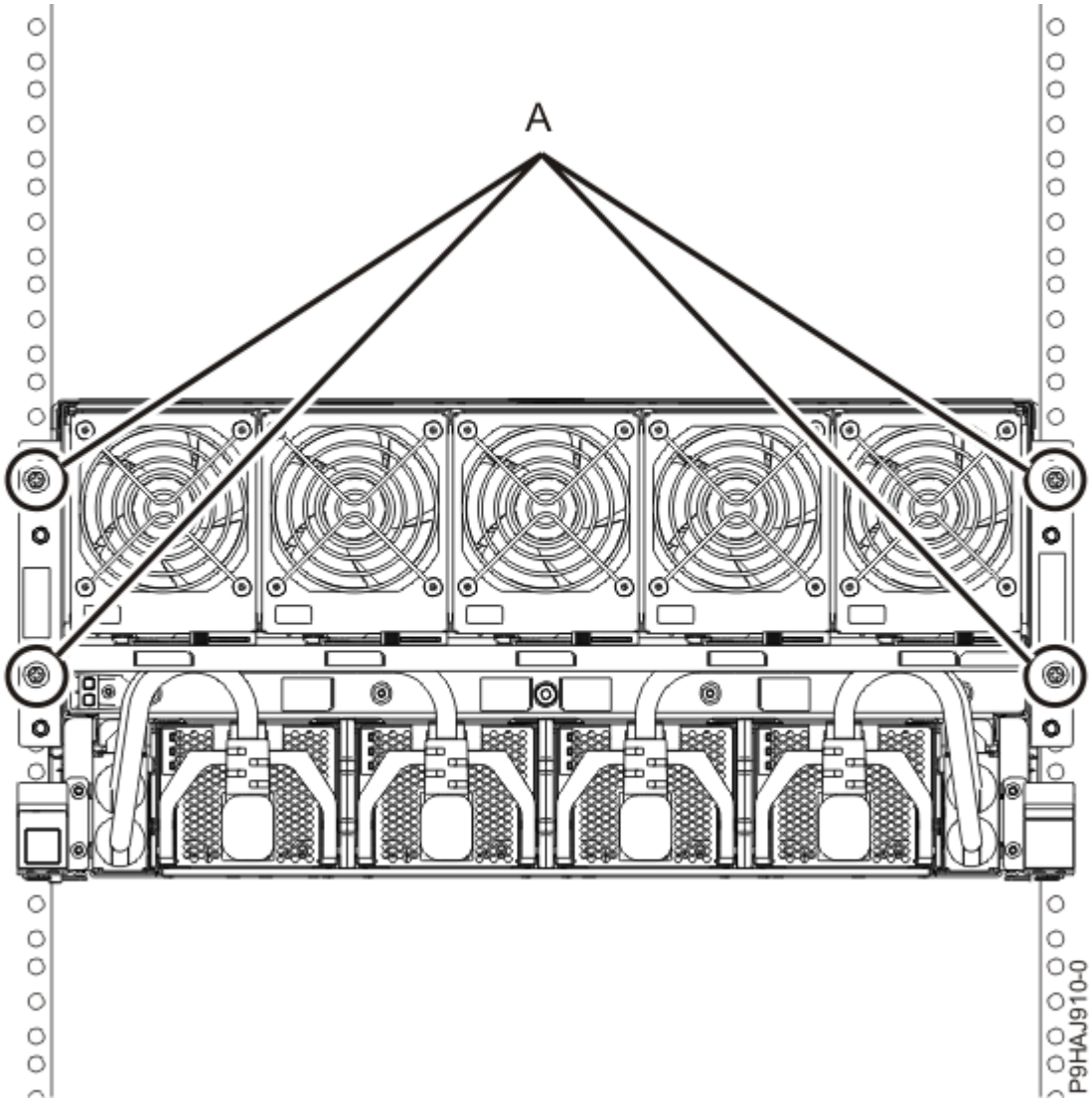


Figure 462. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

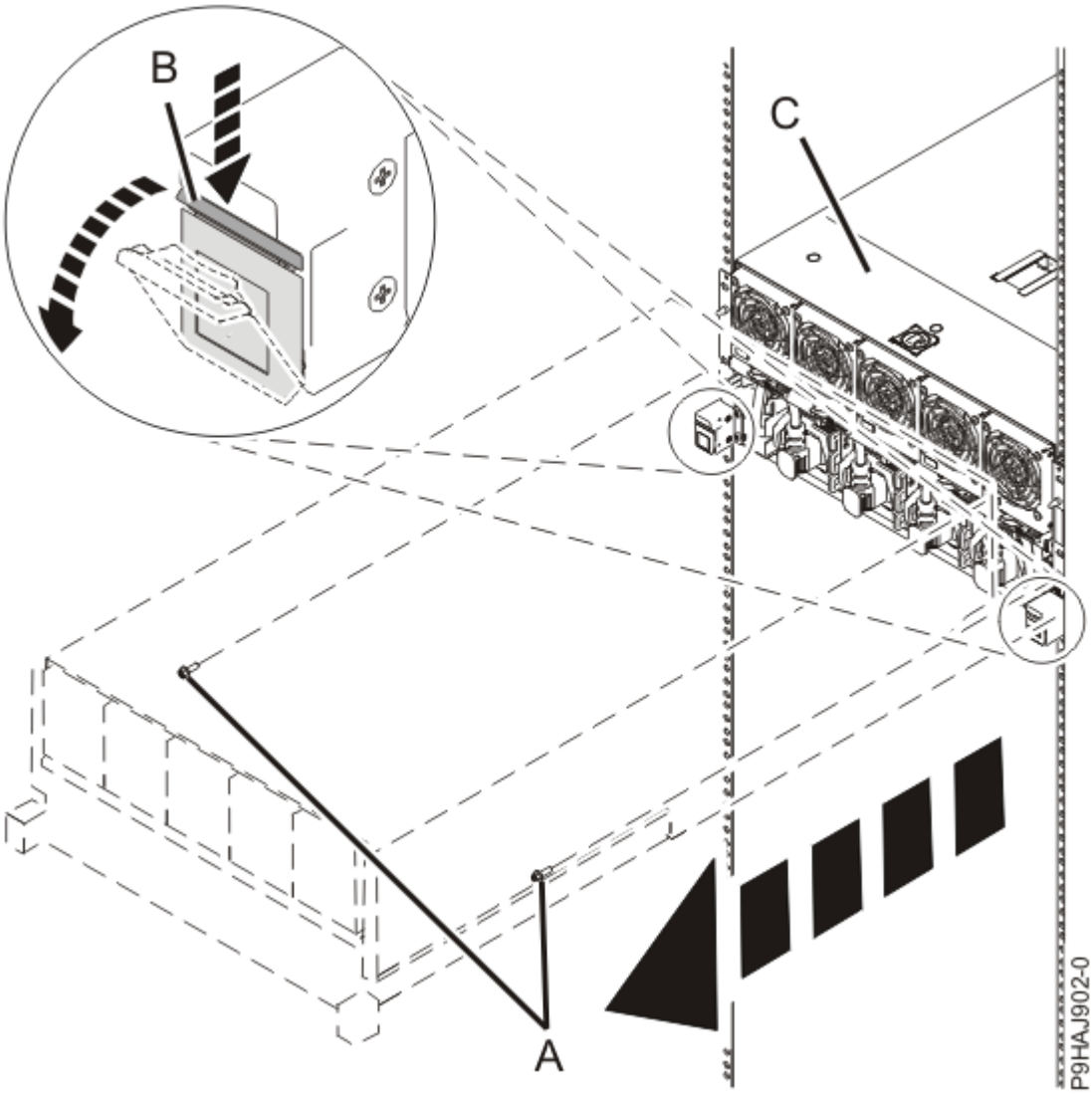


Figure 463. Placing the system node in service position

7. Remove the service access cover.

   Attention: Operating the system without the cover for more than 10 minutes might damage the system components. For proper cooling and airflow, replace the cover before turning on the system.

   a. Push the release latch **(A)** in the direction shown in the following figure.

   b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

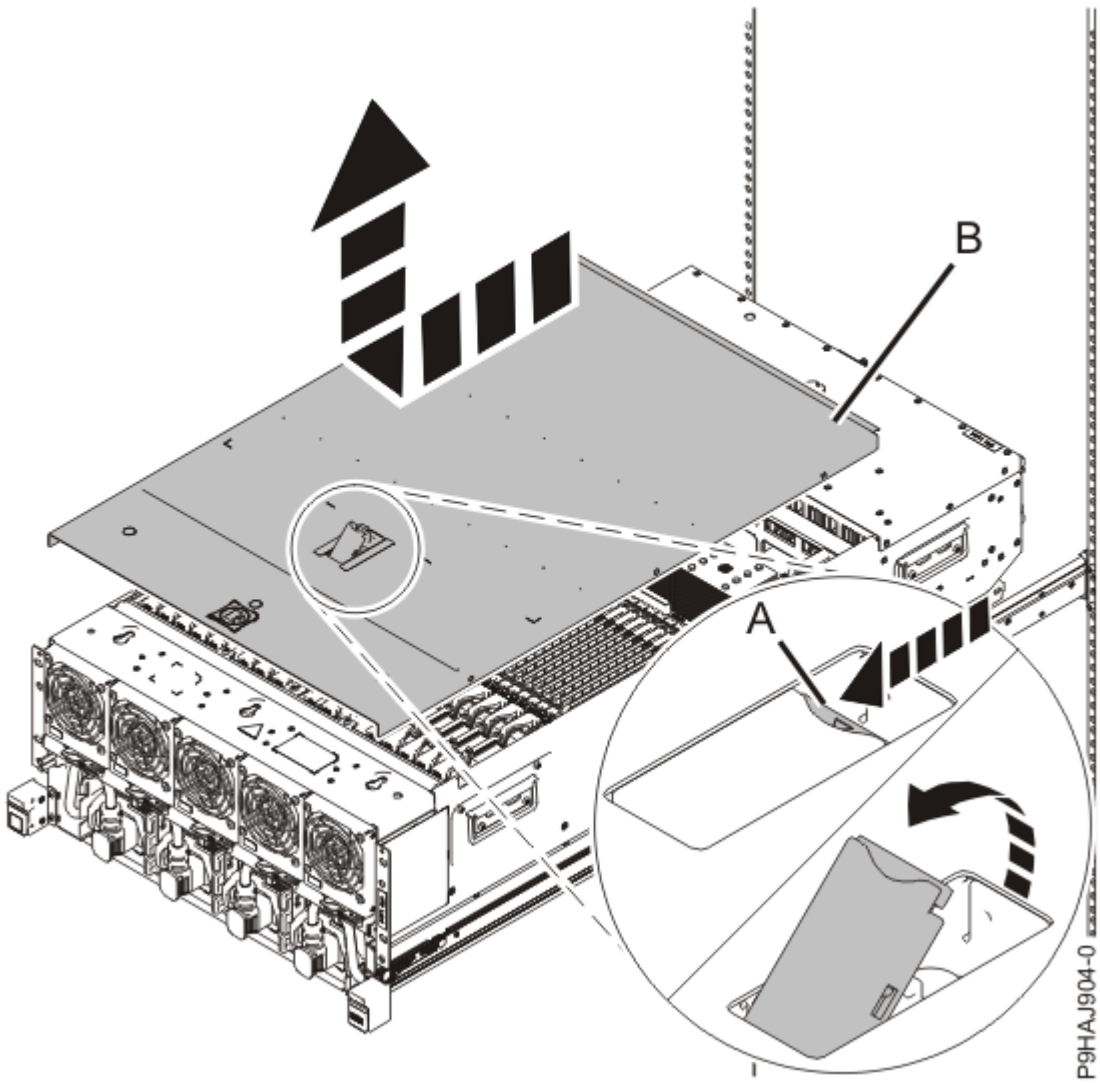


Figure 464. Removing the service access cover

8. To activate the identify LED for the faulty part, press and hold either blue push-button on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(A)** is lit, which indicates that sufficient power exists to light the identify LED on the faulty part. If the green LED **(A)** does not light, use the location code on the service label to find the physical location of the faulty part.

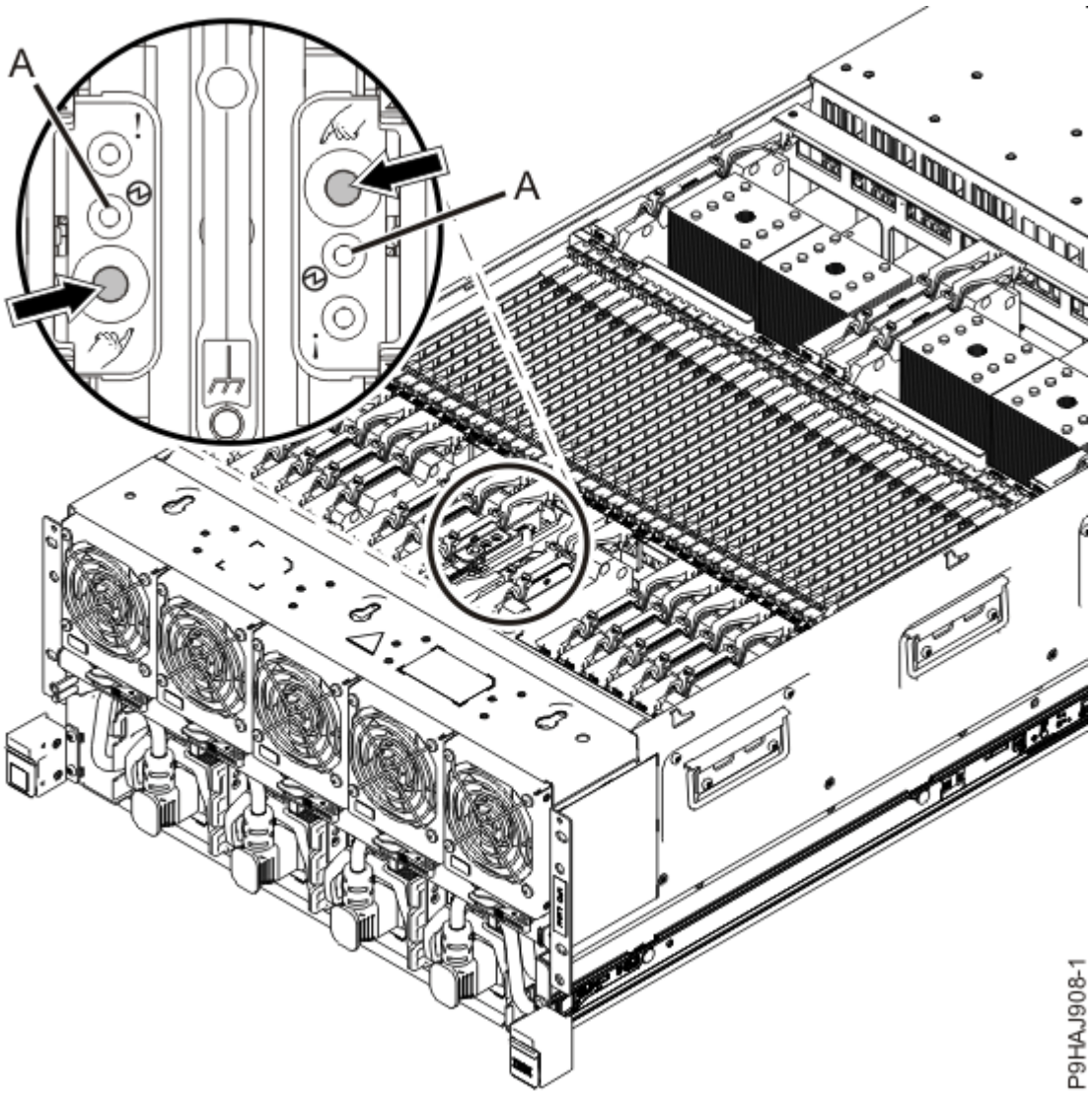


Figure 465. Activating the identify LED for a faulty part

9. Look for the flashing amber LED of the faulty or failed processor voltage regulator module. Processor voltage regulator modules are in locations P1–C14, P1–C17, P1–C18, and P1–C21. Refer to the following image.

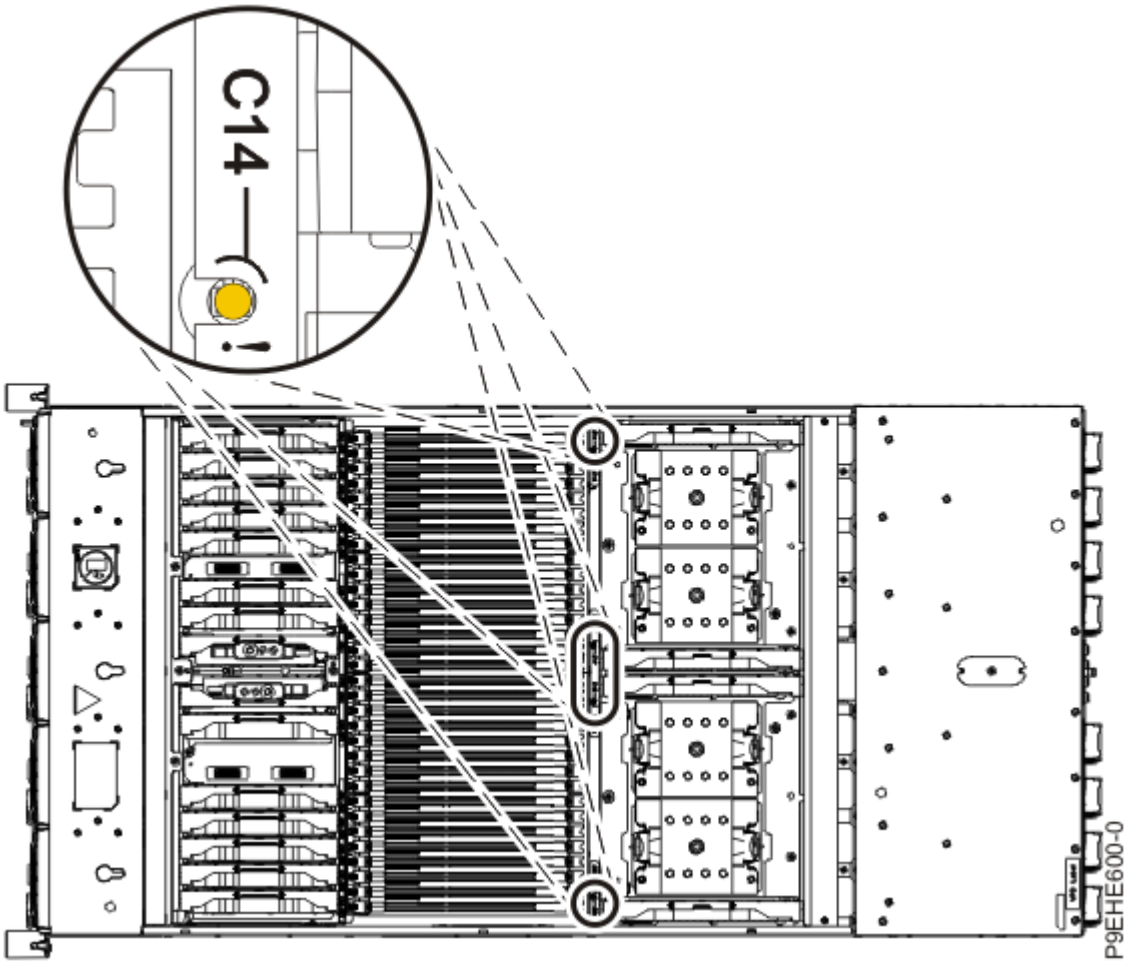


Figure 466. Locations of the processor voltage regulator module LEDs

Removing a processor voltage regulator module from the 9080-M9S system node

To remove a processor voltage regulator module from the 9080-M9S system node 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 a processor voltage regulator module by completing the following steps:
   a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.
   b) Rotate the levers in the direction shown.
   c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

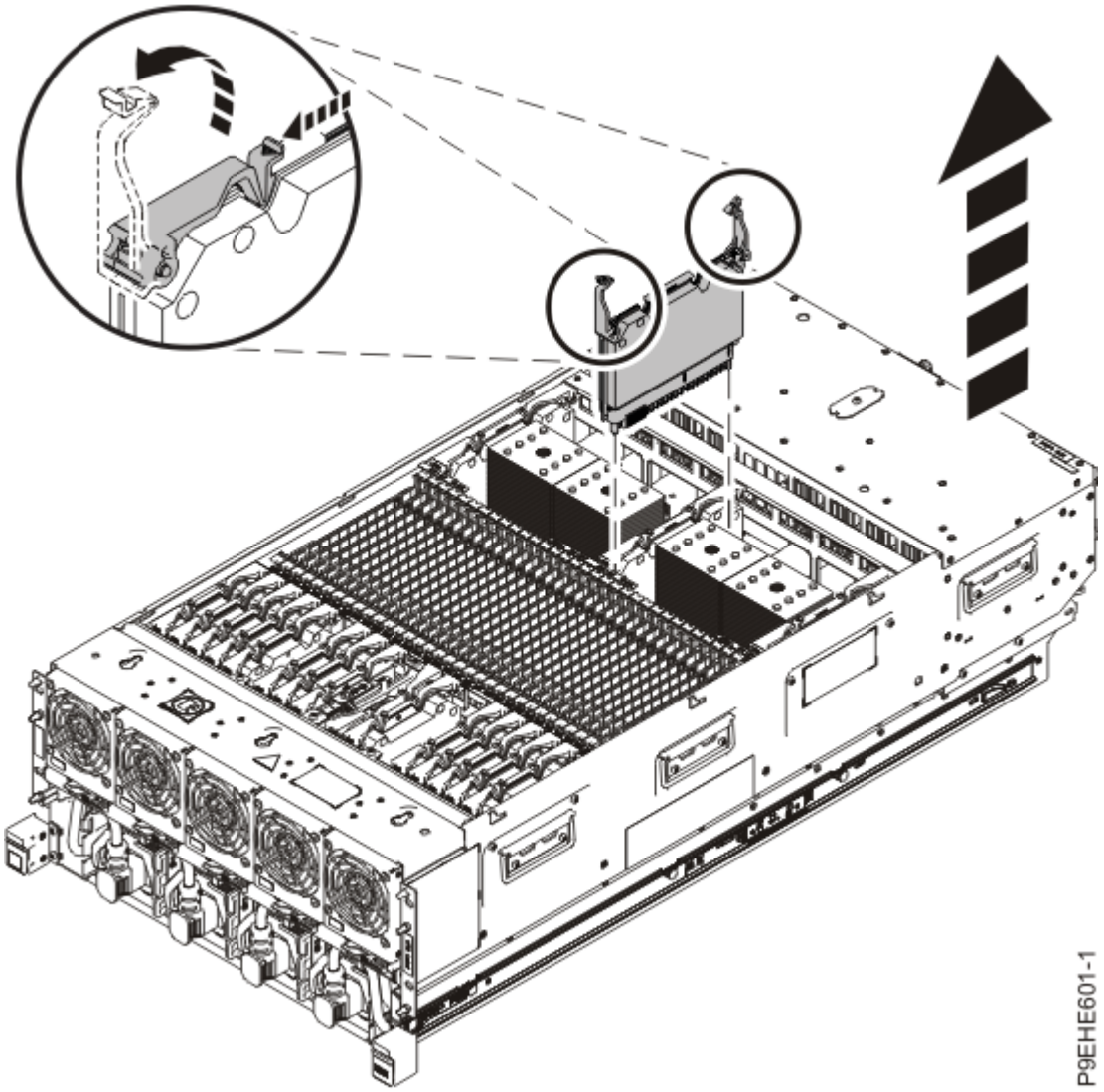


Figure 467. Removing a processor voltage regulator module

Replacing a processor voltage regulator module in the 9080-M9S system node

To replace a processor voltage regulator module, 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. To replace a processor voltage regulator module, complete the following steps:
   a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.
   b) Gently push the voltage regulator module into its connector.
   c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.

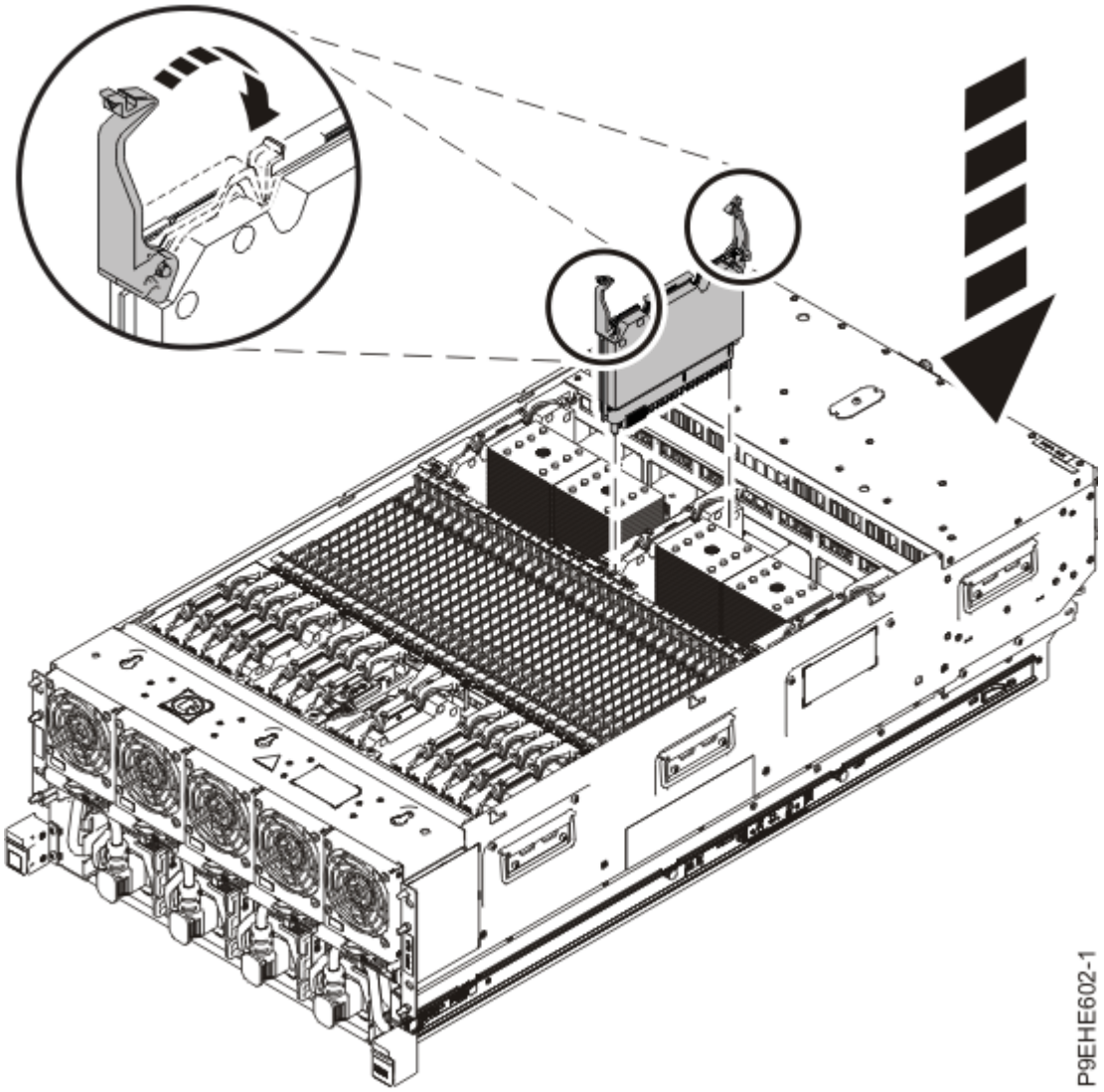


Figure 468. Replacing a processor voltage regulator module

Preparing the system for operation after removing and replacing a processor voltage regulator module

To prepare the system for operation after removing and replacing a processor voltage regulator module, 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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

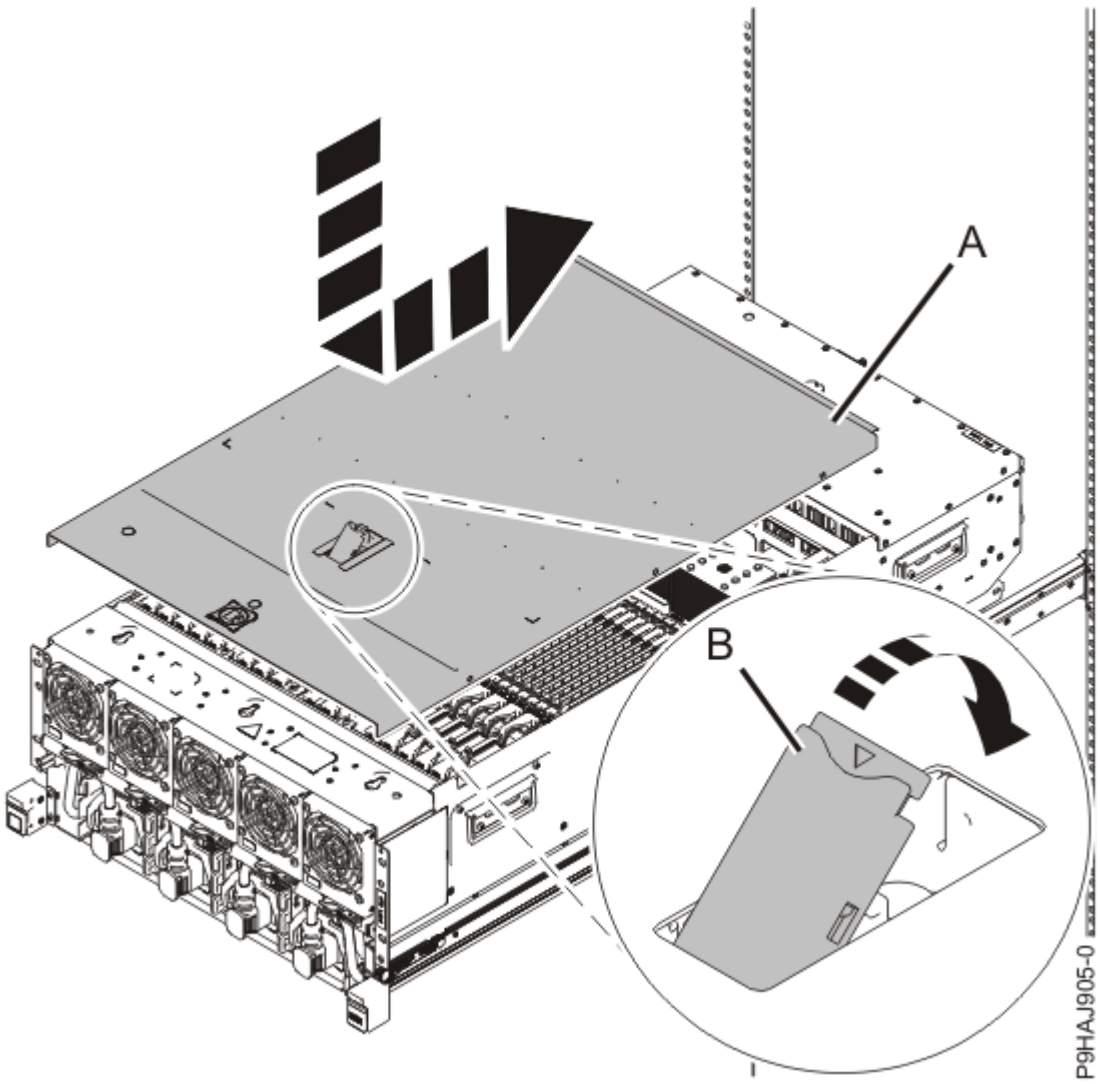


Figure 469. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

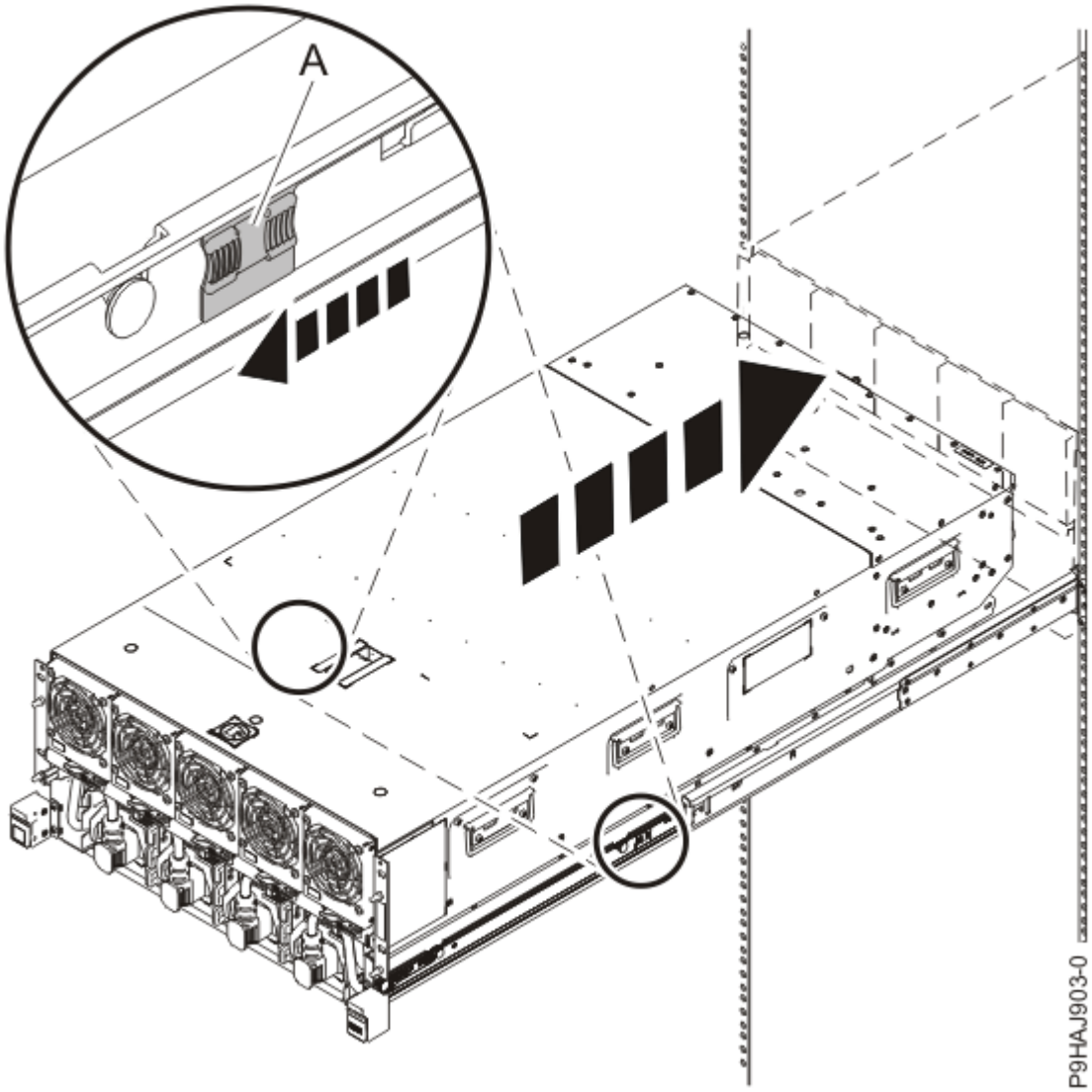


Figure 470. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

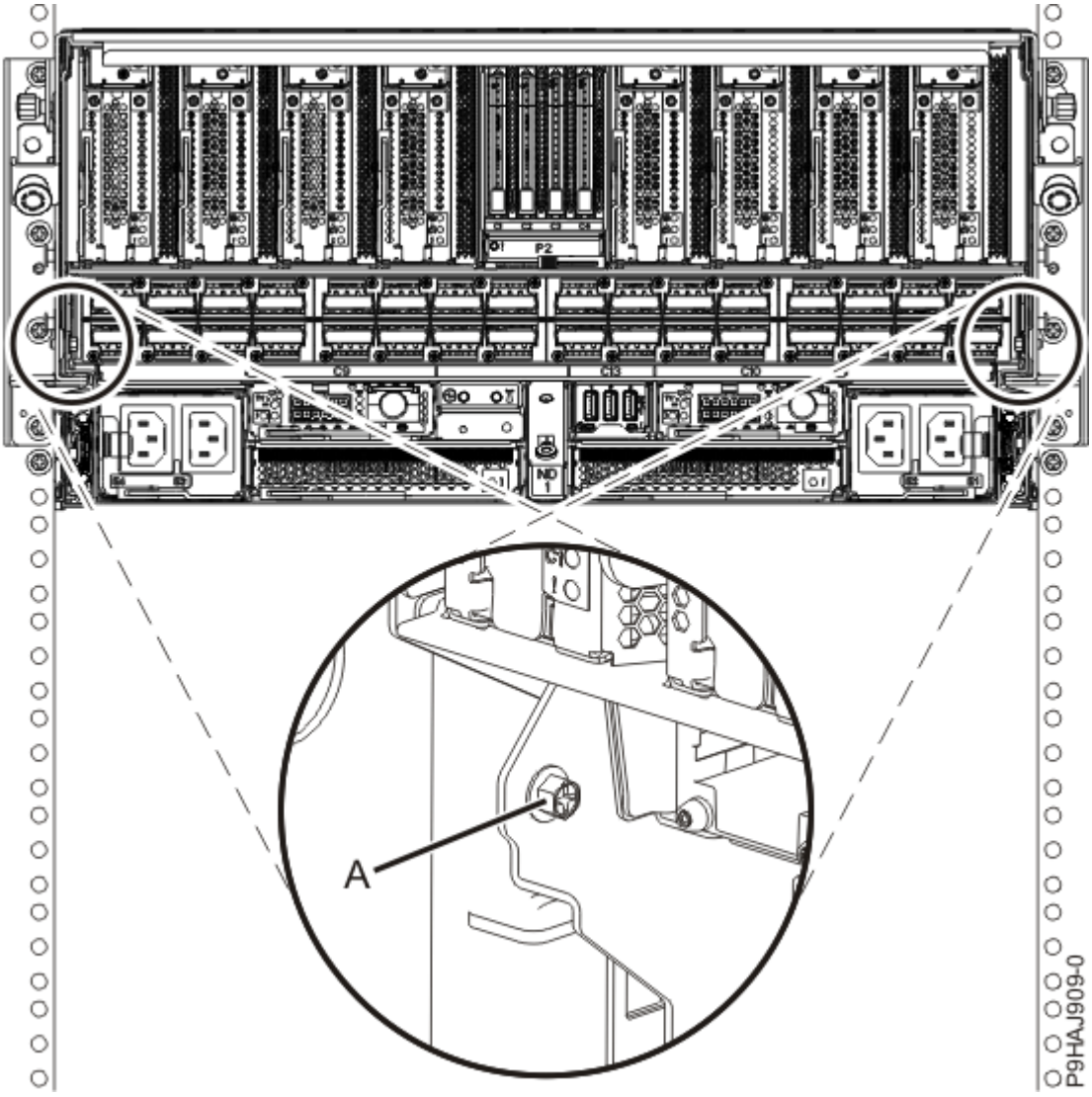


Figure 471. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

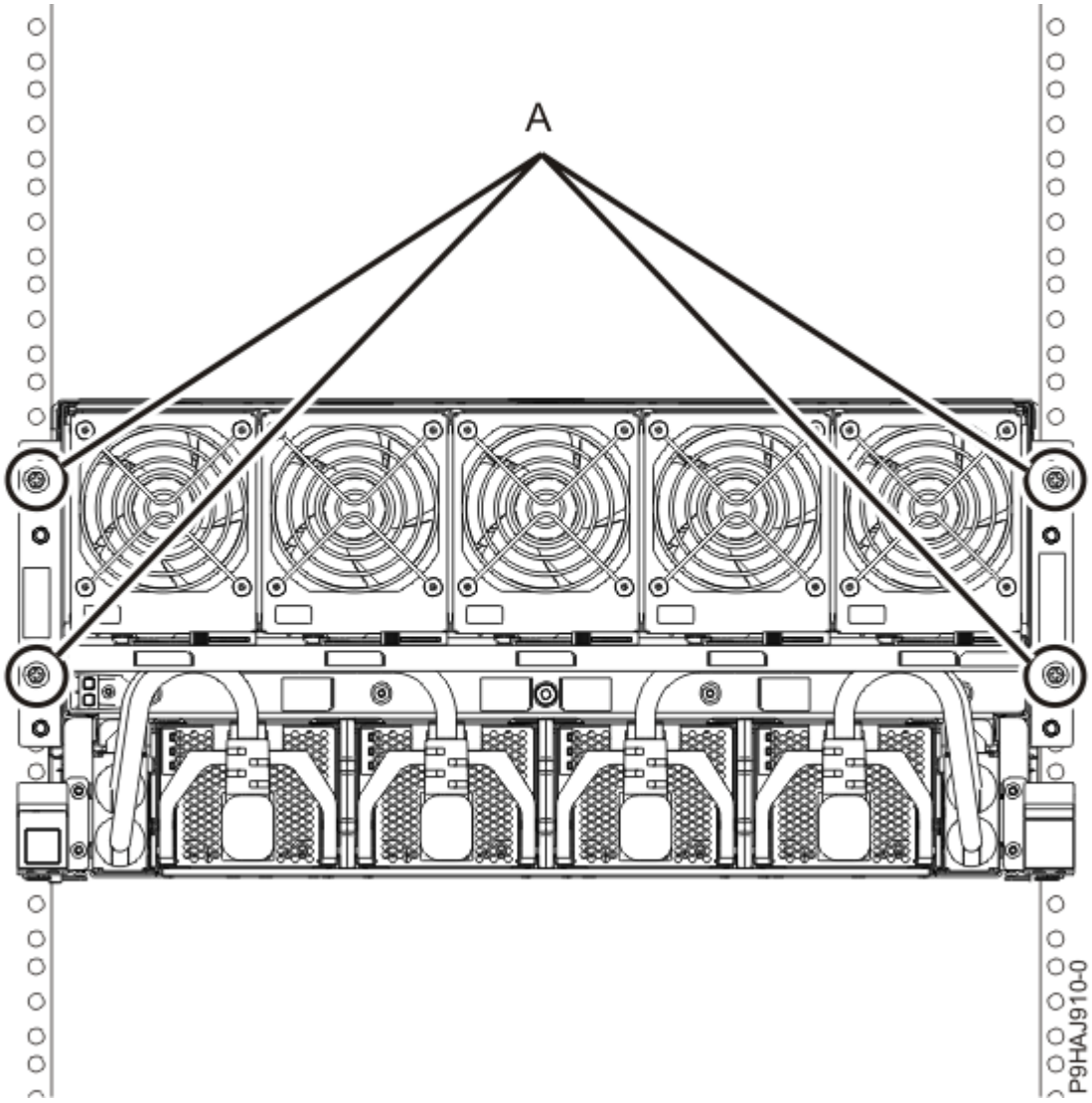


Figure 472. Replacing the front screws

4. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 473 on page 542 and Table 55 on page 542 to determine the point-to-point cabling for SMP cables.

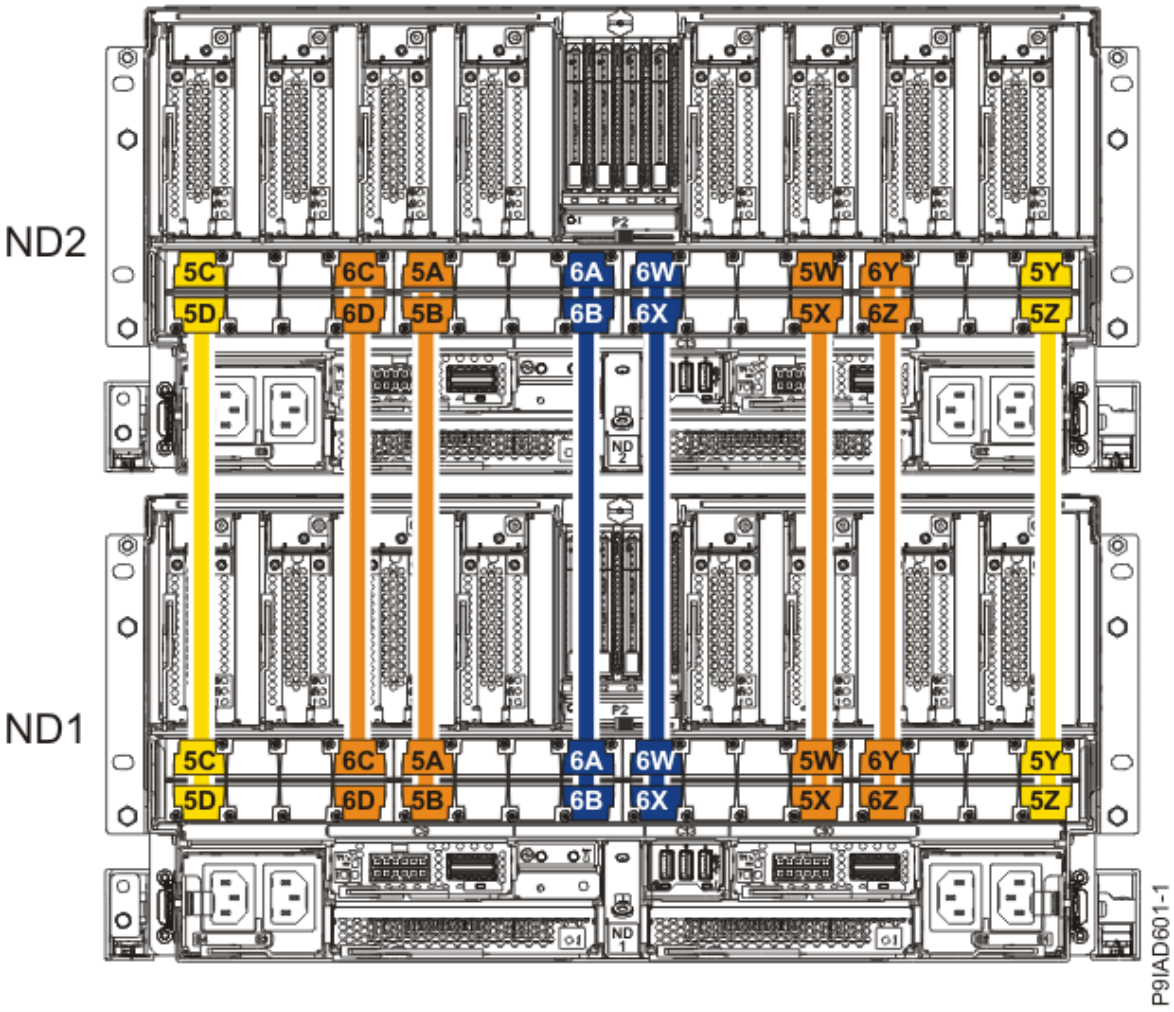


Figure 473. Cabling a Two Node Configuration

Table 55. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 55. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 474 on page 544 and Table 56 on page 544 to determine the point-to-point cabling for SMP cables.

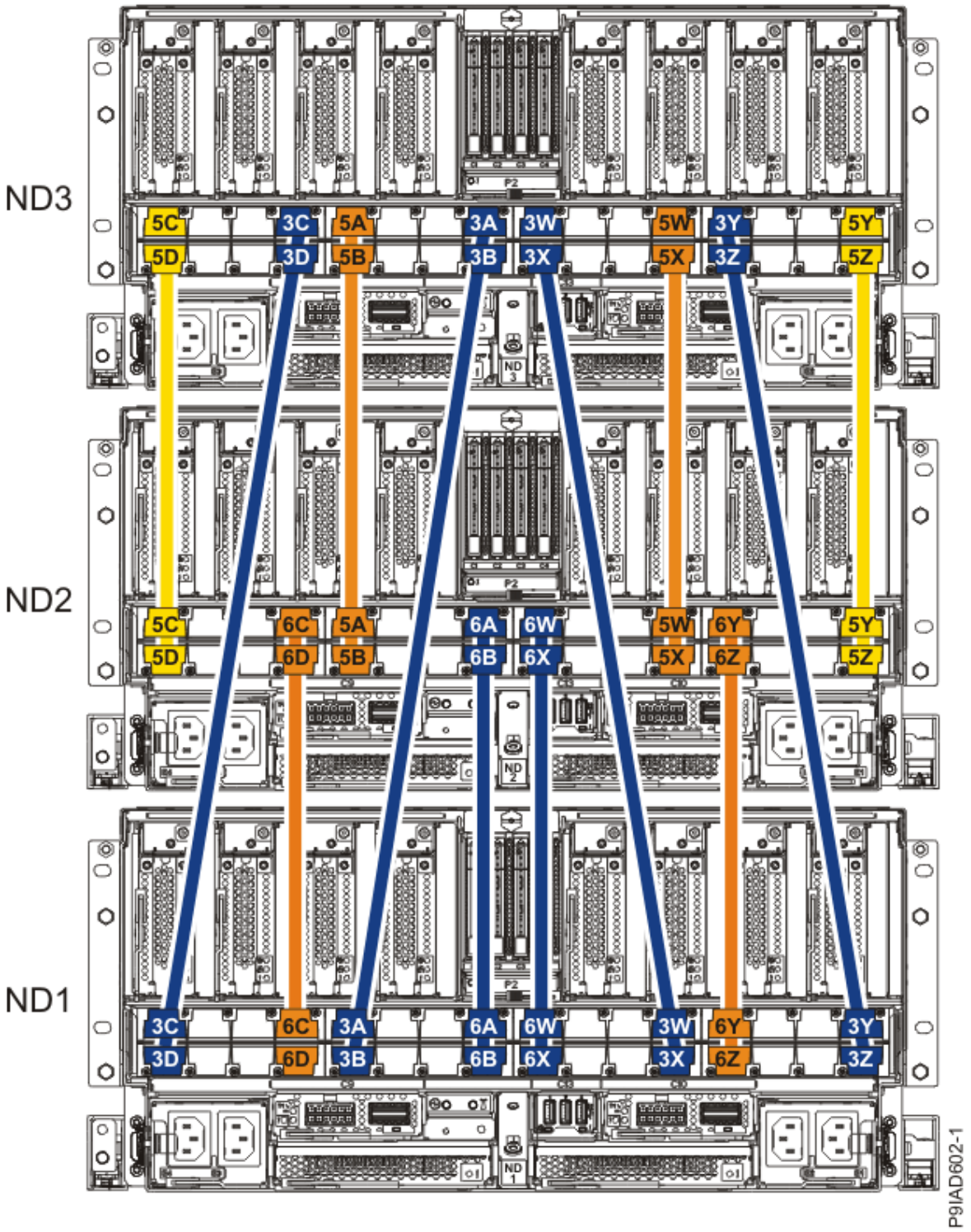


Figure 474. Cabling a Three Node Configuration

Table 56. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 56. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 56. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 475 on page 547 and Table 57 on page 548 to determine the point-to-point cabling for SMP cables.

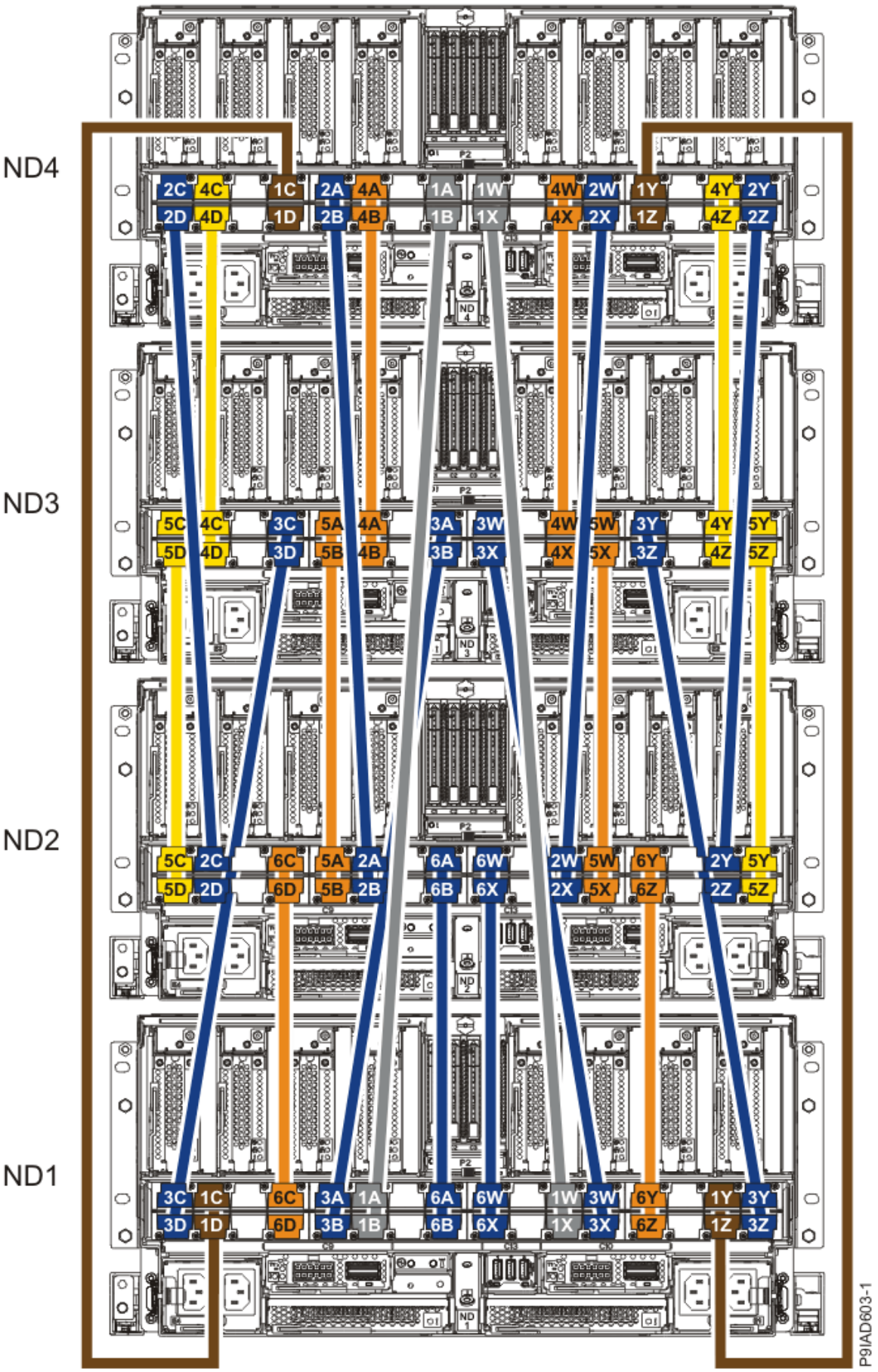


Figure 475. Cabling a Four Node Configuration

Table 57. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 57. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 57. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

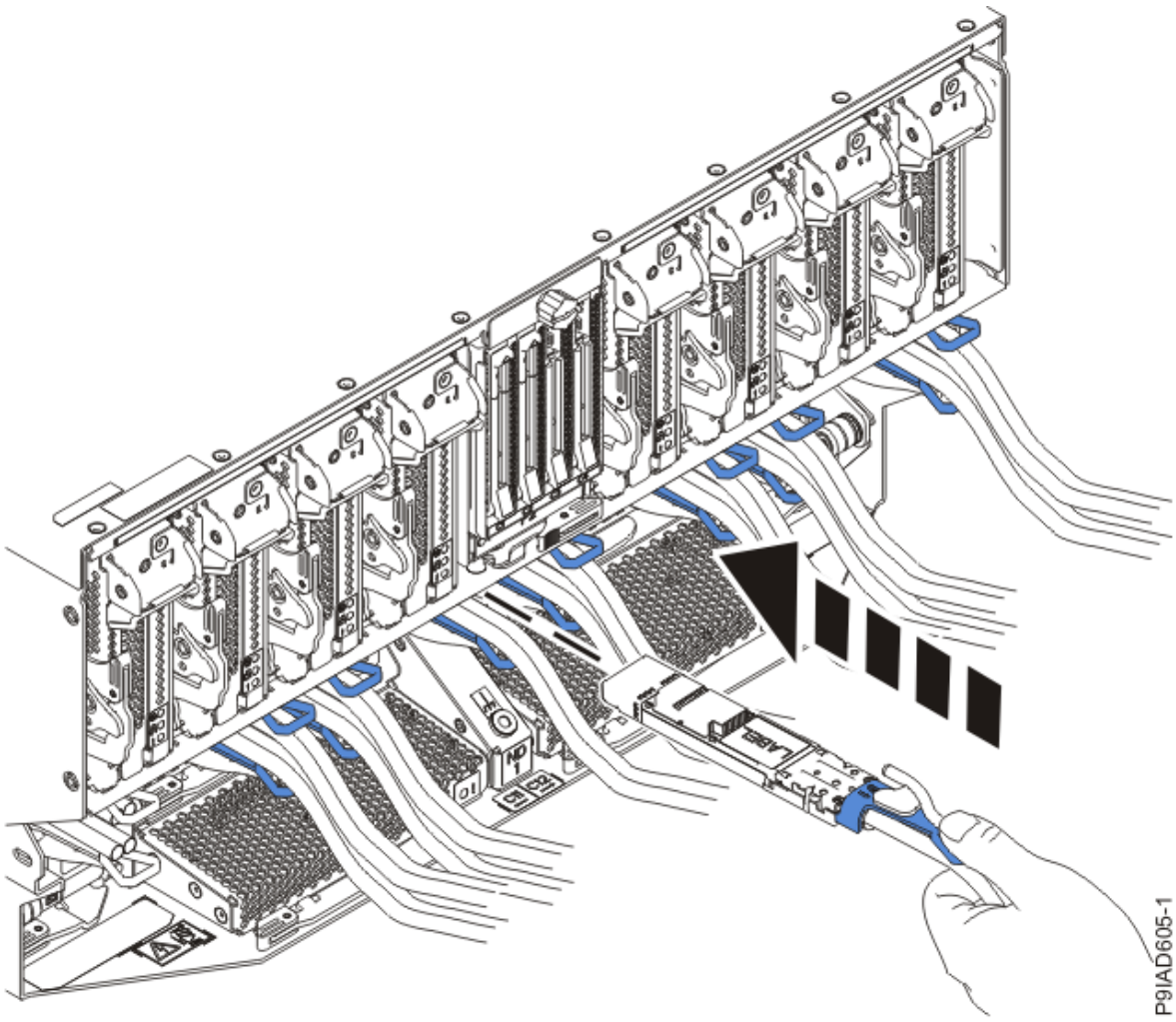


Figure 476. Replacing the SMP cable into the system node

b) Repeat step “4.a” on page 550 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

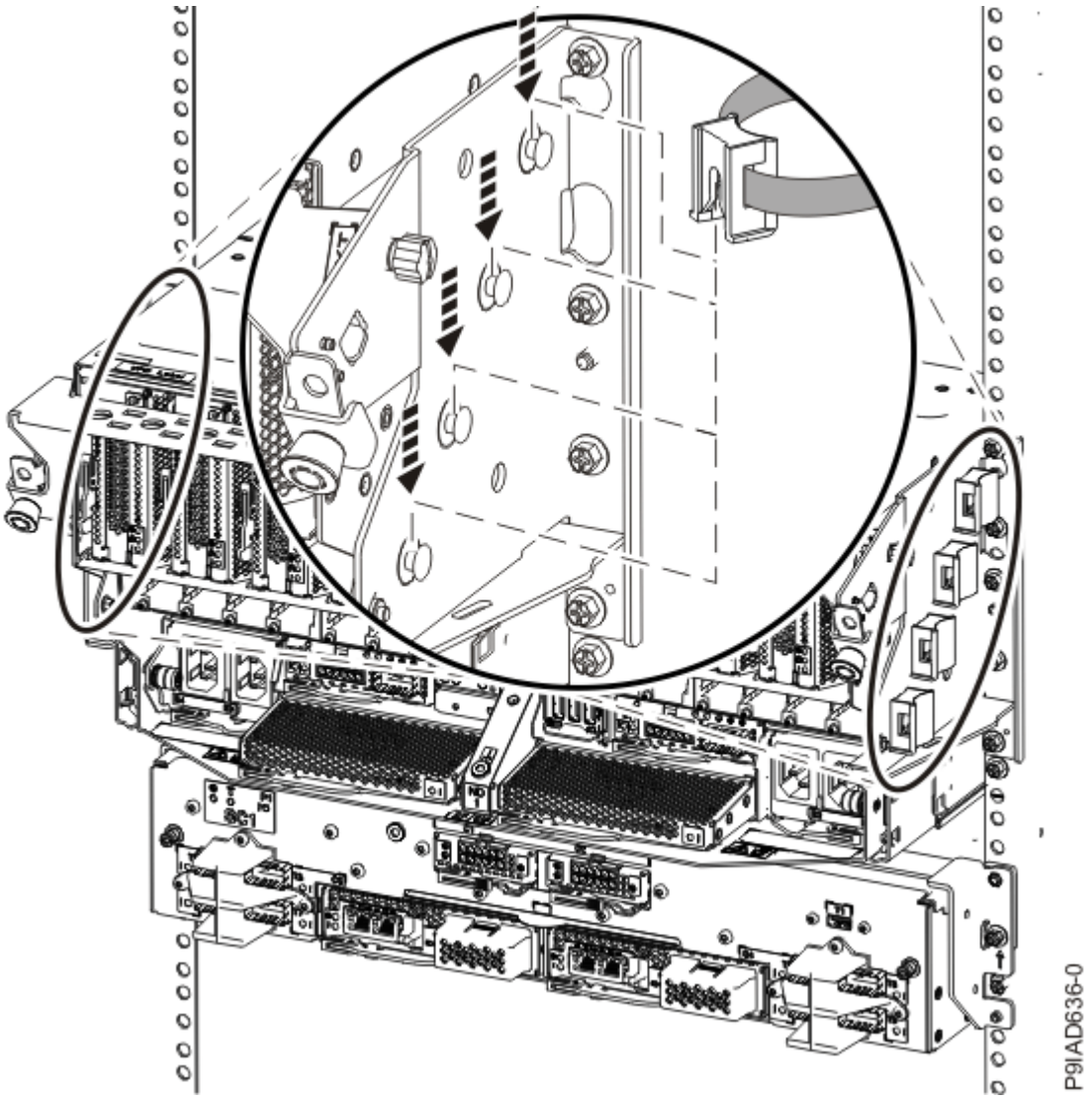


Figure 477. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

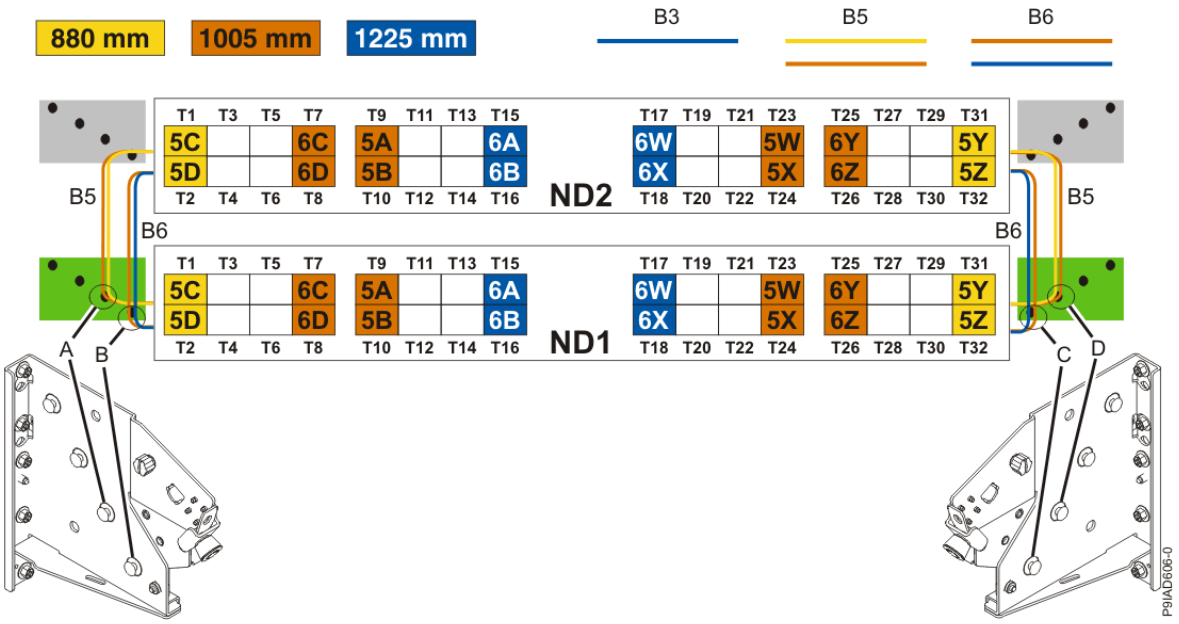


Figure 478. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

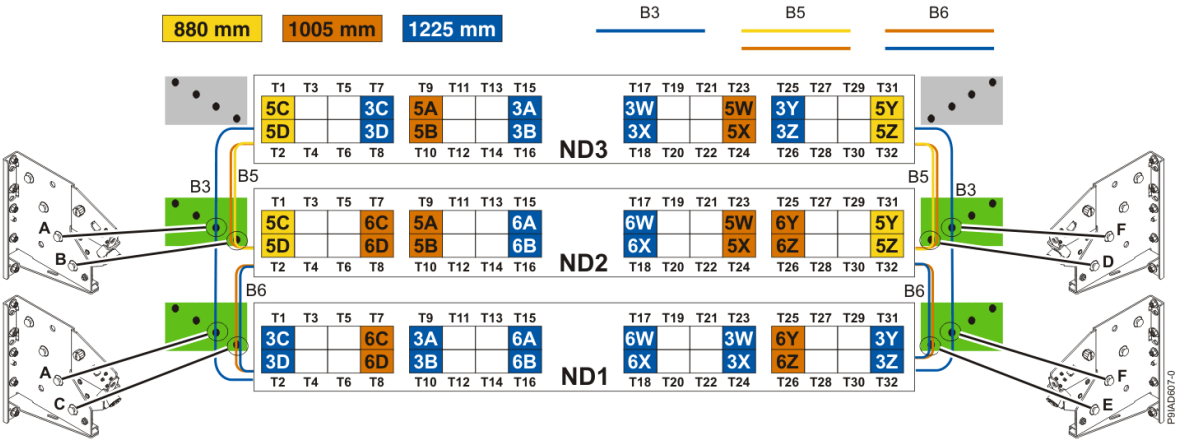


Figure 479. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

- The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
- The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

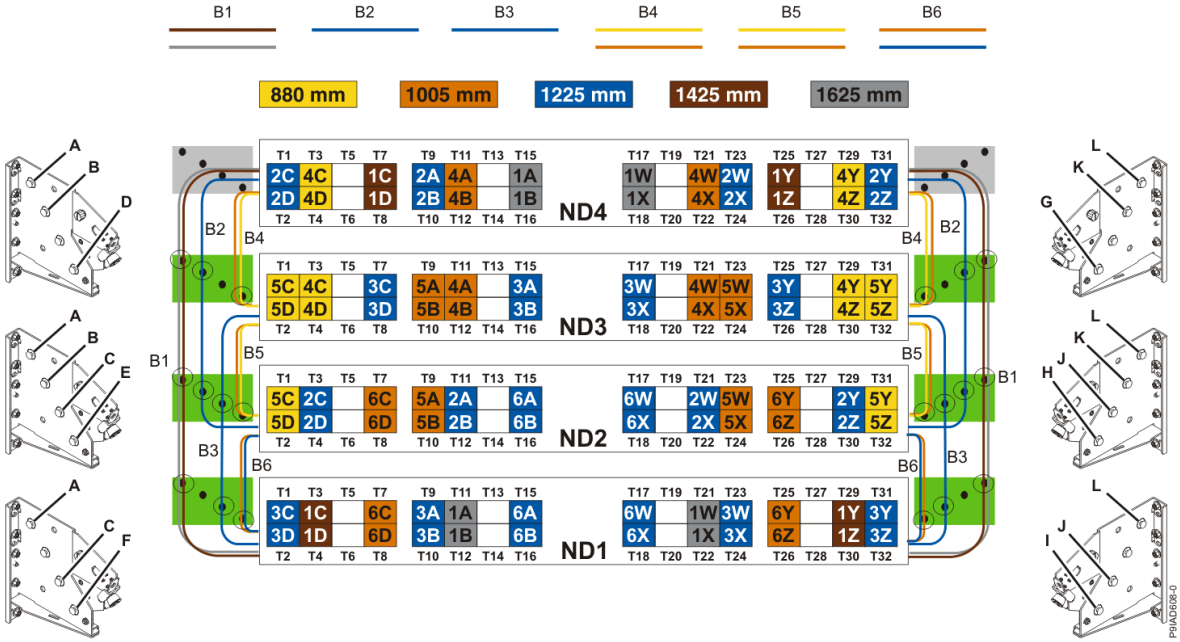


Figure 480. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  - The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  - The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  - The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  - The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  - The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  - The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

5. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 481 on page 555 and Table 58 on page 555 to determine the point-to-point cabling for UPIC cables.

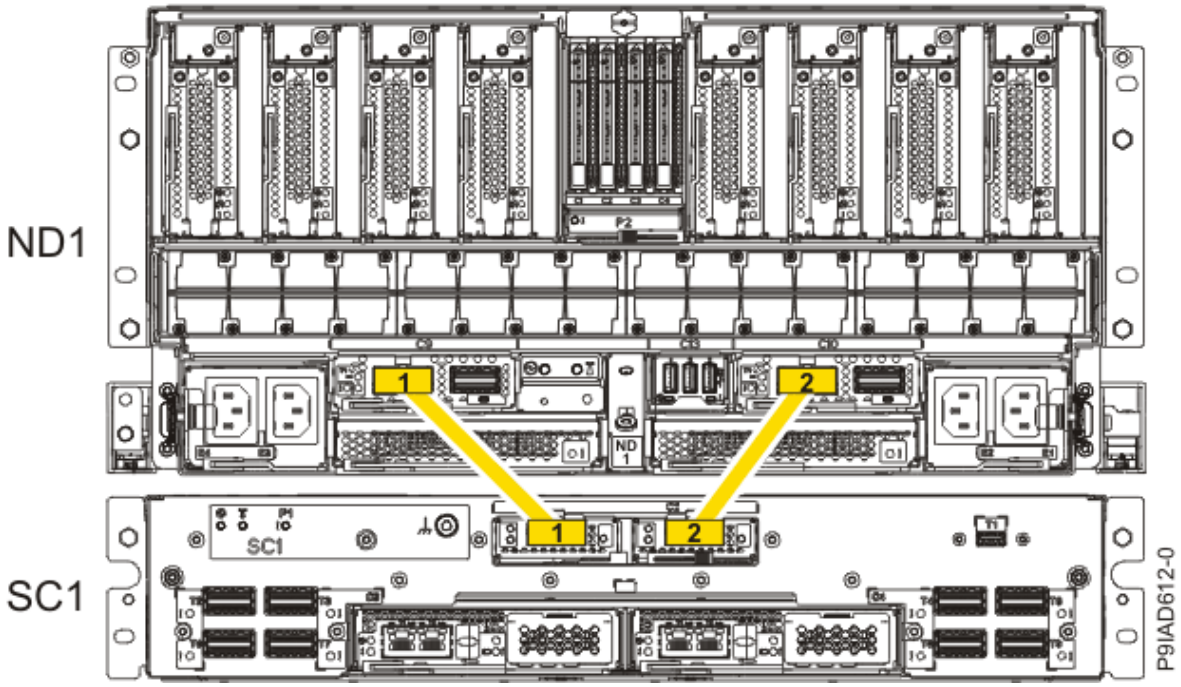


Figure 481. Single Node Configuration UPIC Cabling

Table 58. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 482 on page 556 and Table 59 on page 556 to determine the point-to-point cabling for UPIC cables.

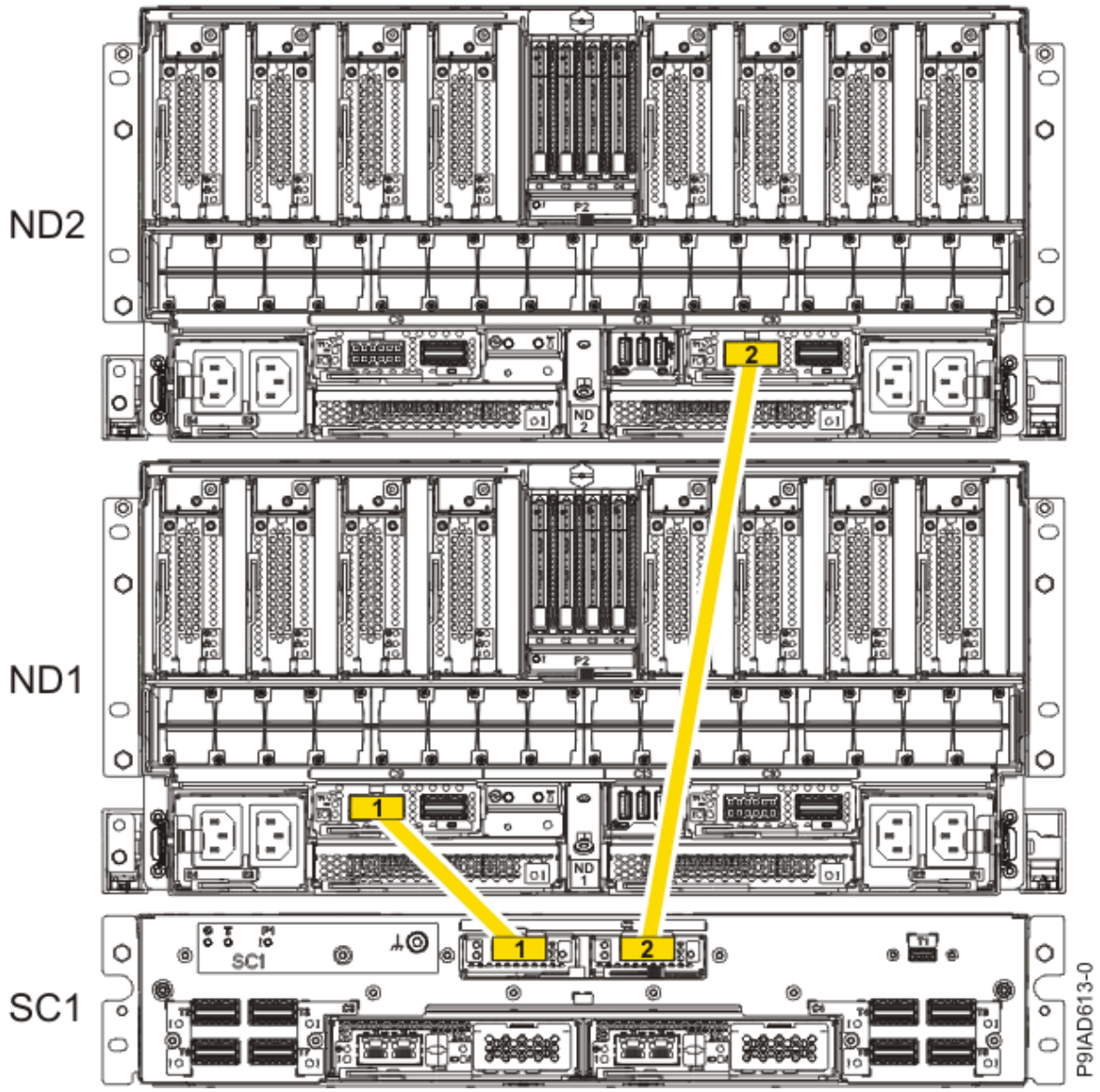


Figure 482. Two, Three, or Four Node Configuration UPIC Cabling

Table 59. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

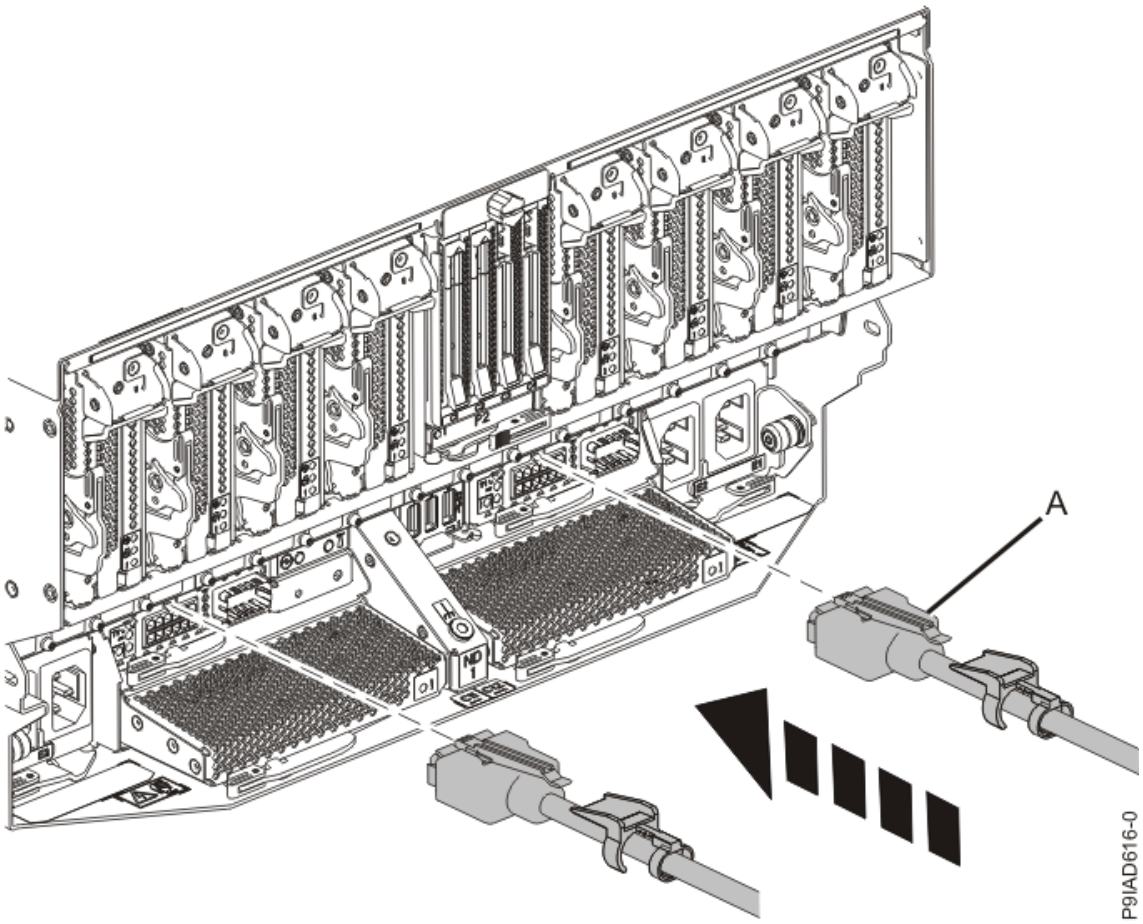


Figure 483. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

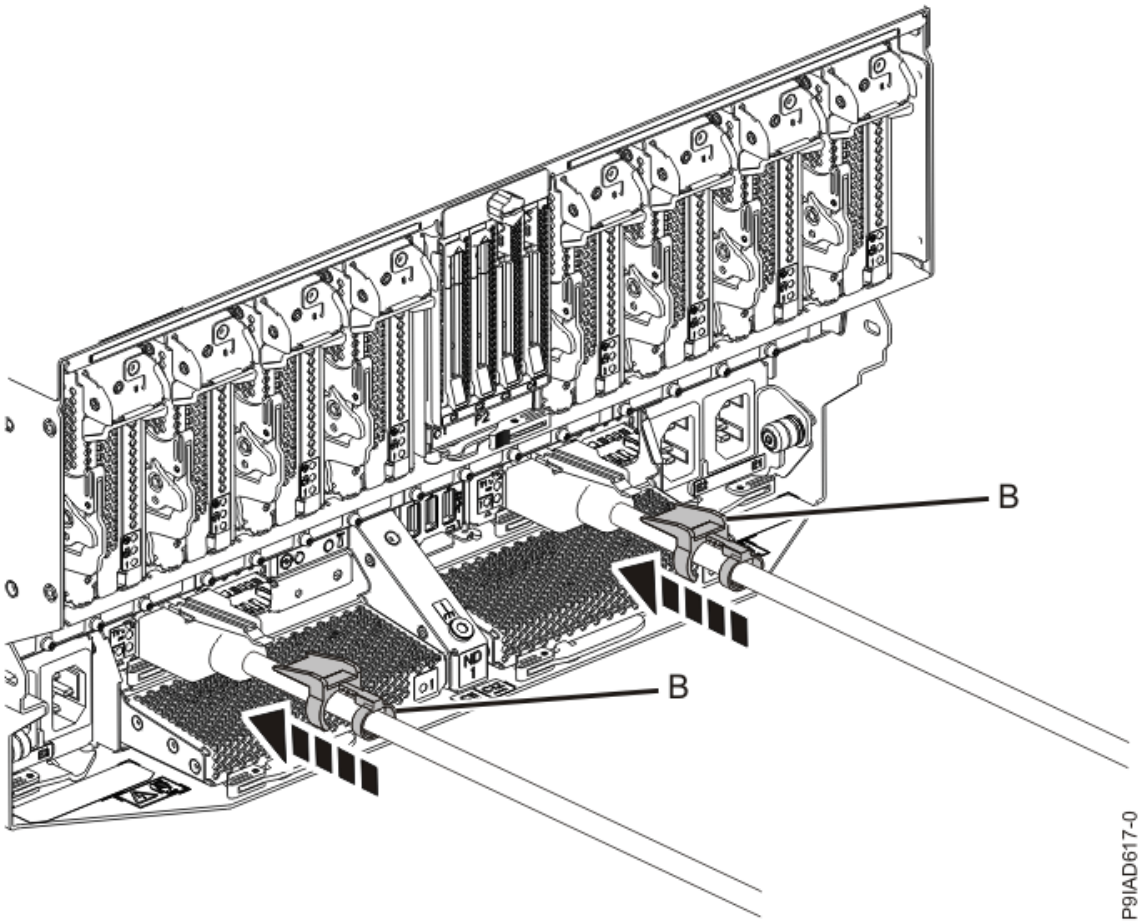


Figure 484. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “5.a” on page 556 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

6. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

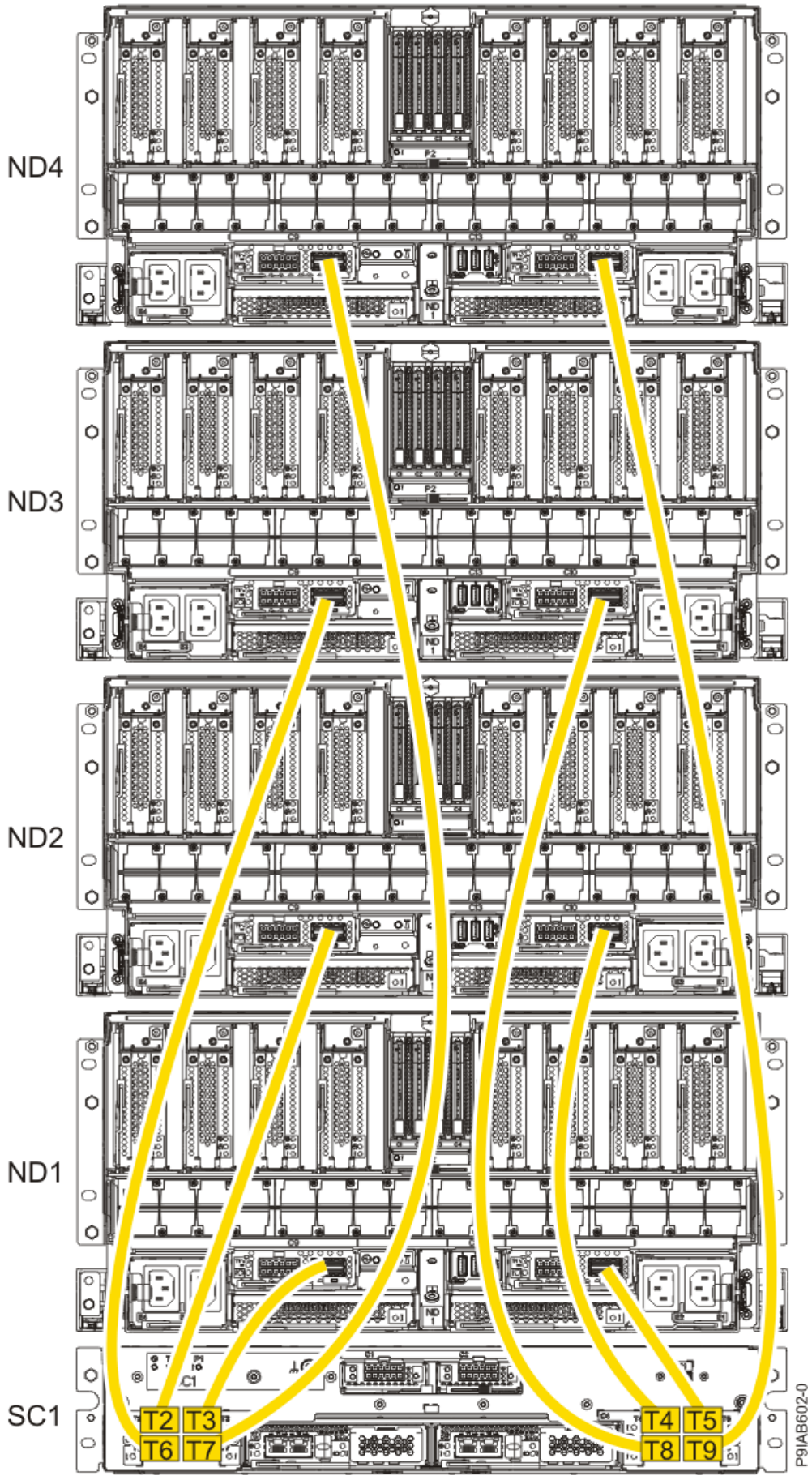


Figure 485. Service processor (FSP) cabling

Table 60. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

7. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

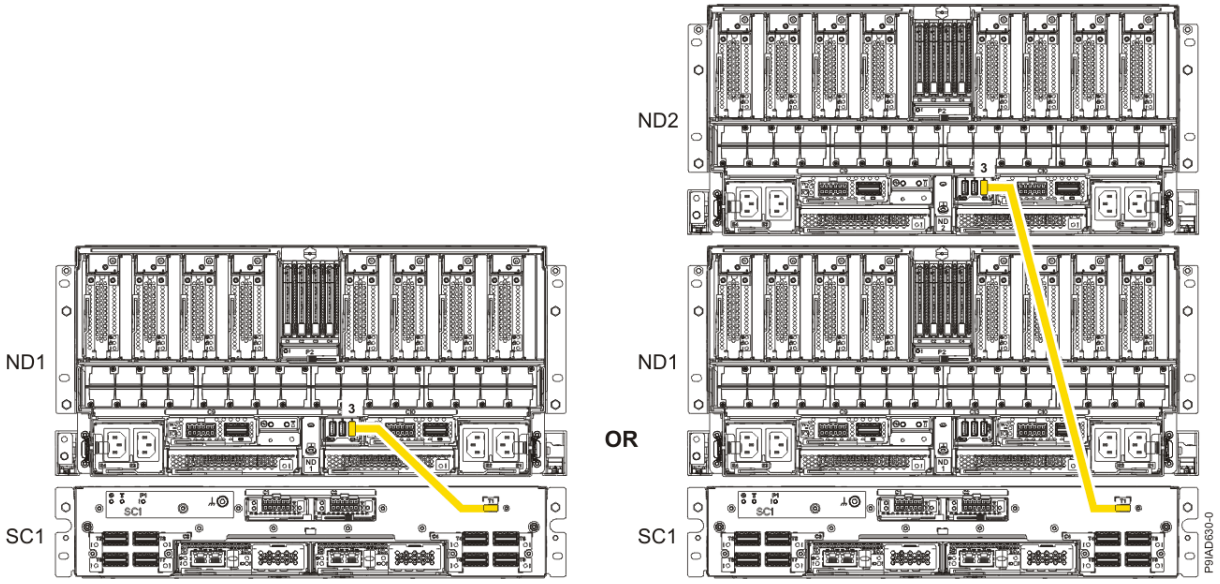


Figure 486. USB Cabling

Table 61. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

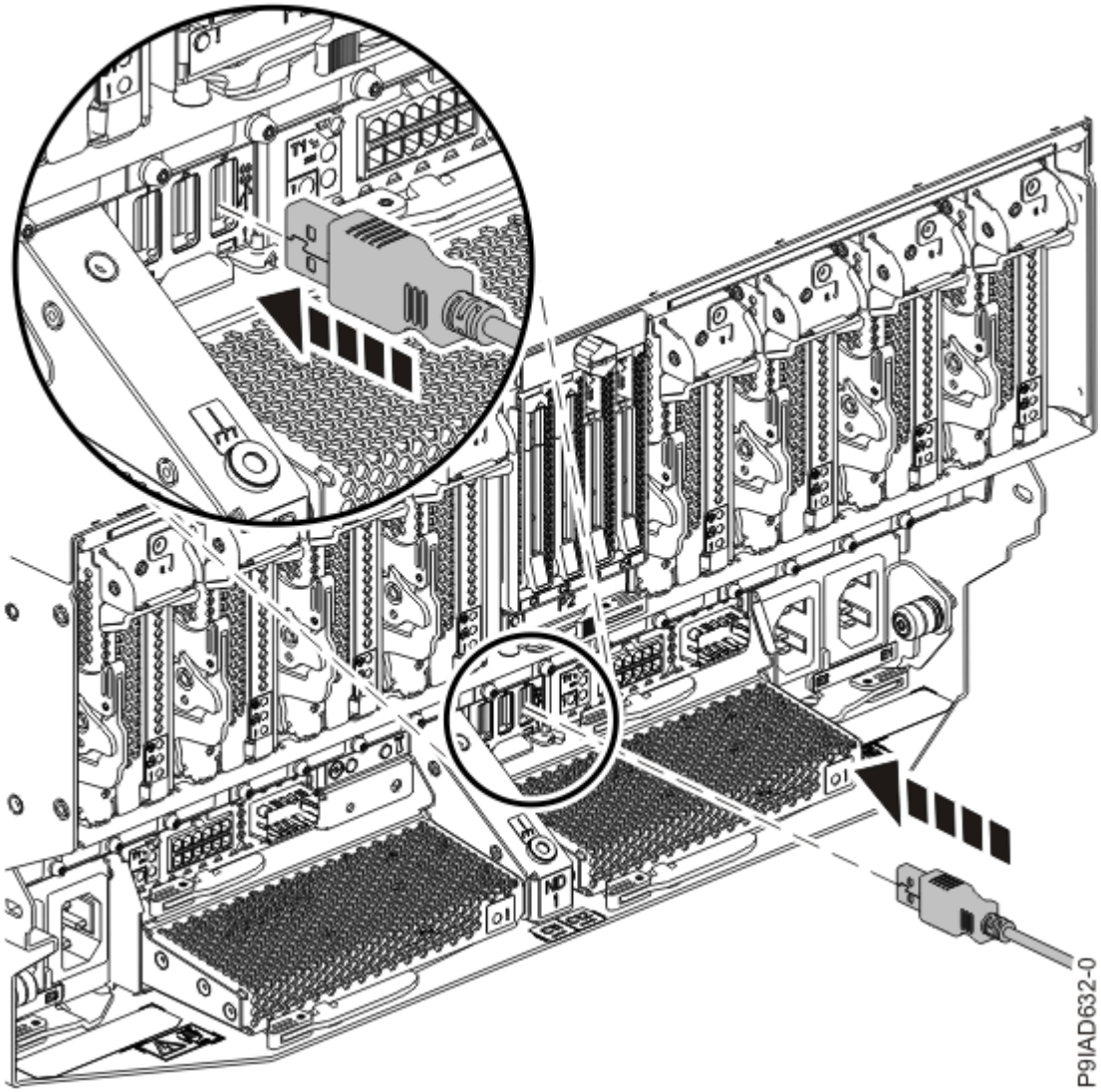


Figure 487. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

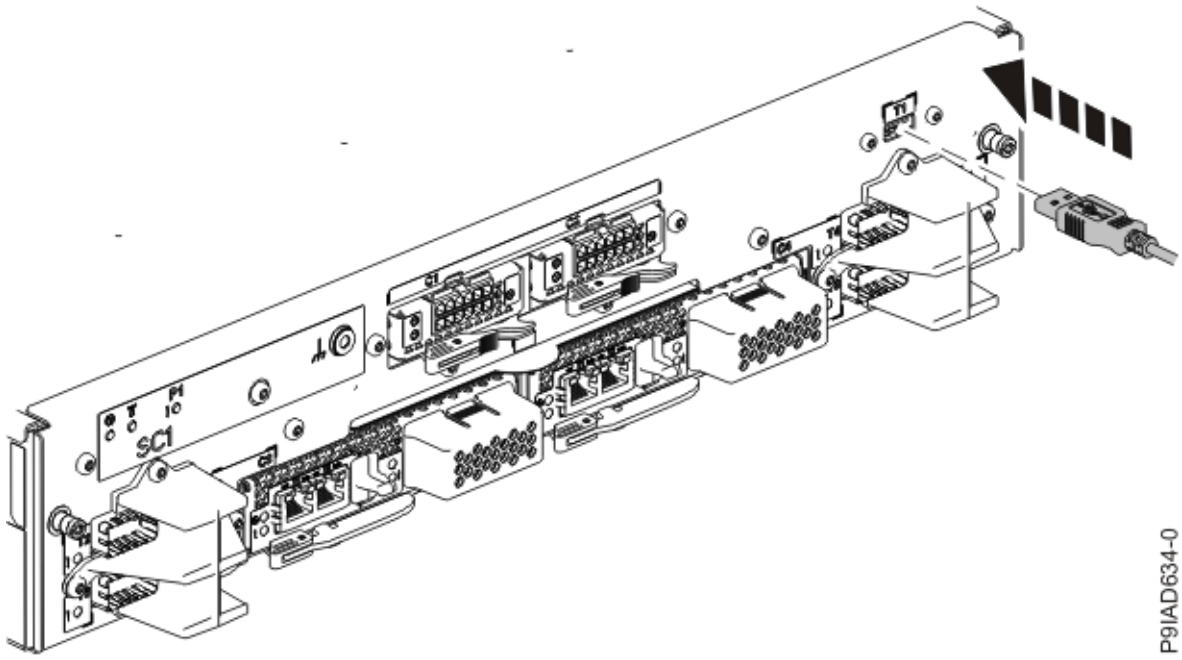


Figure 488. Replacing the USB cable into the system control unit

8. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

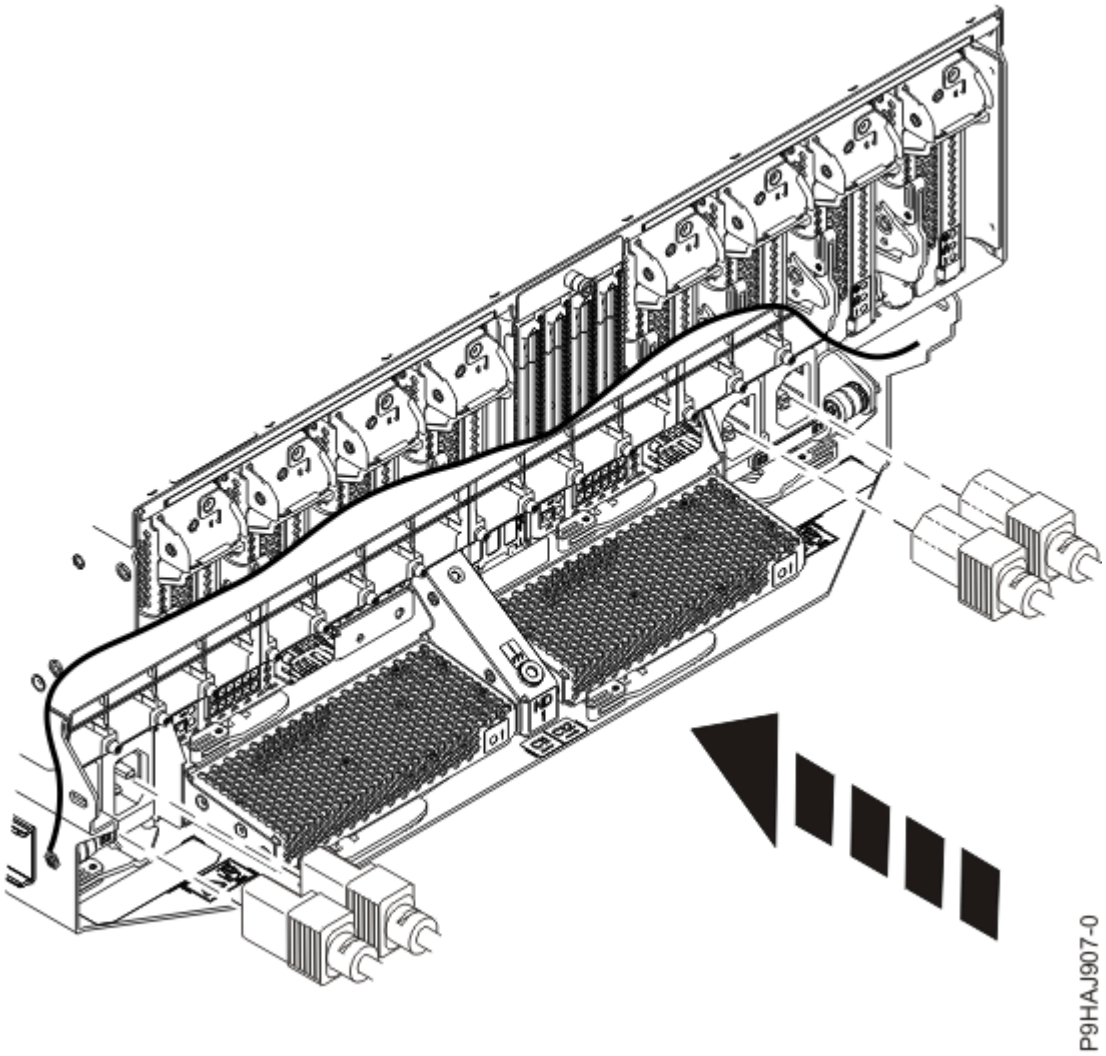


Figure 489. Connecting the rear power cords

9. 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.

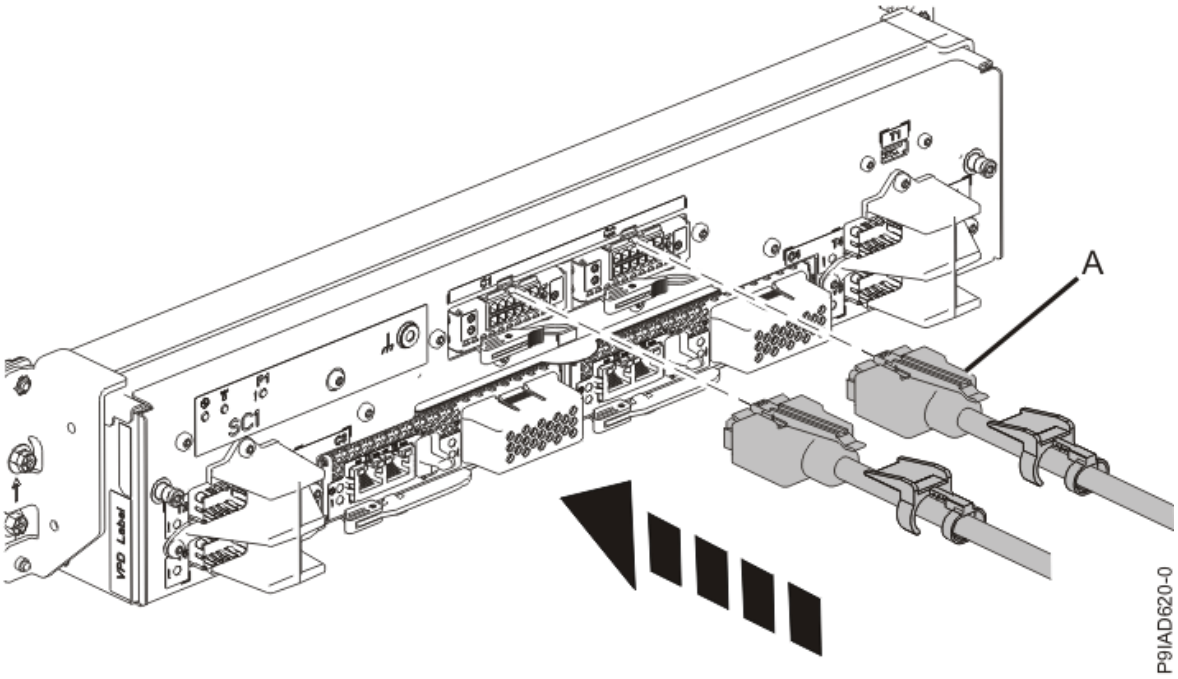


Figure 490. Replacing the UPIC cable into the system control unit

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

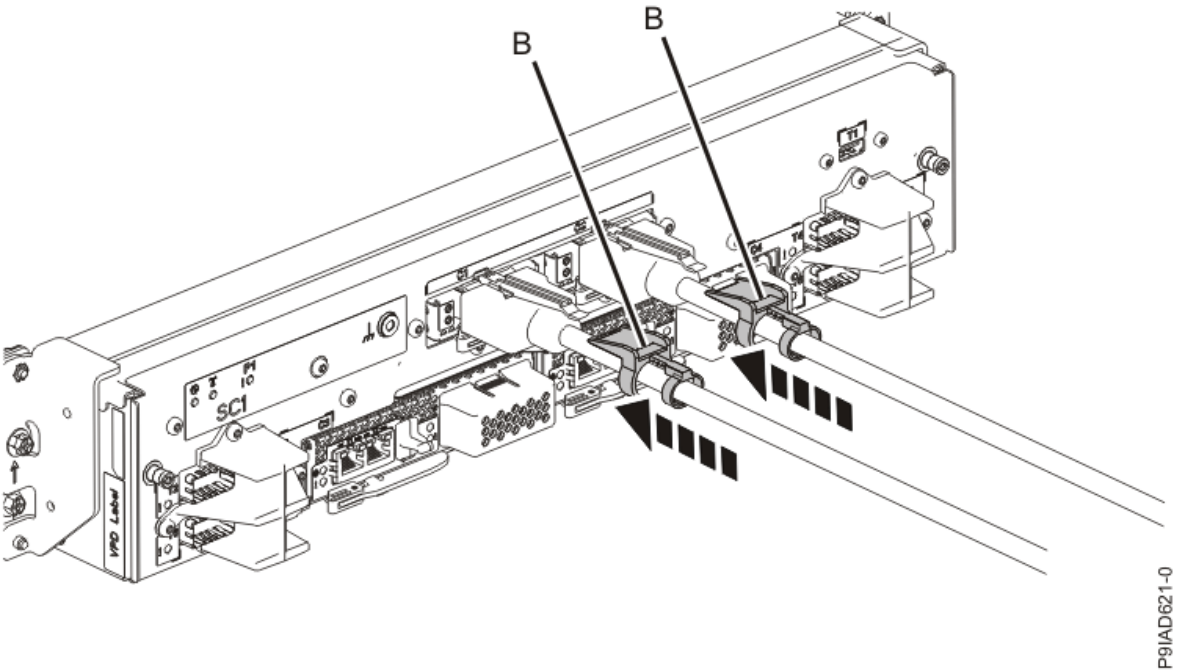


Figure 491. Replacing the UPIC cable into the system control unit

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.

10. 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.
11. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

12. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).
13. Start the system. For instructions, see Starting a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustartsys.htm).

Service processor cards

System control unit

Preparing the 9080-M9S system to remove and replace a service processor card in the system control unit

Procedure

1. Check and record the current firmware level.

   On the ASMI Welcome pane, view the existing level of server firmware in the upper-right corner under the copyright statement, for example, 01EM310 or FW760.00 (AM760_019).
2. Check and record the following service processor card settings:
   - System Name
   - System Power Control
   - System Service Aids
   - System Configuration
   - Network Services
   - Performance Option
   - Login Profile
3. Locate the amber LED for the failed service processor card as shown in the following figure.

   Record the location of the identifying LED.

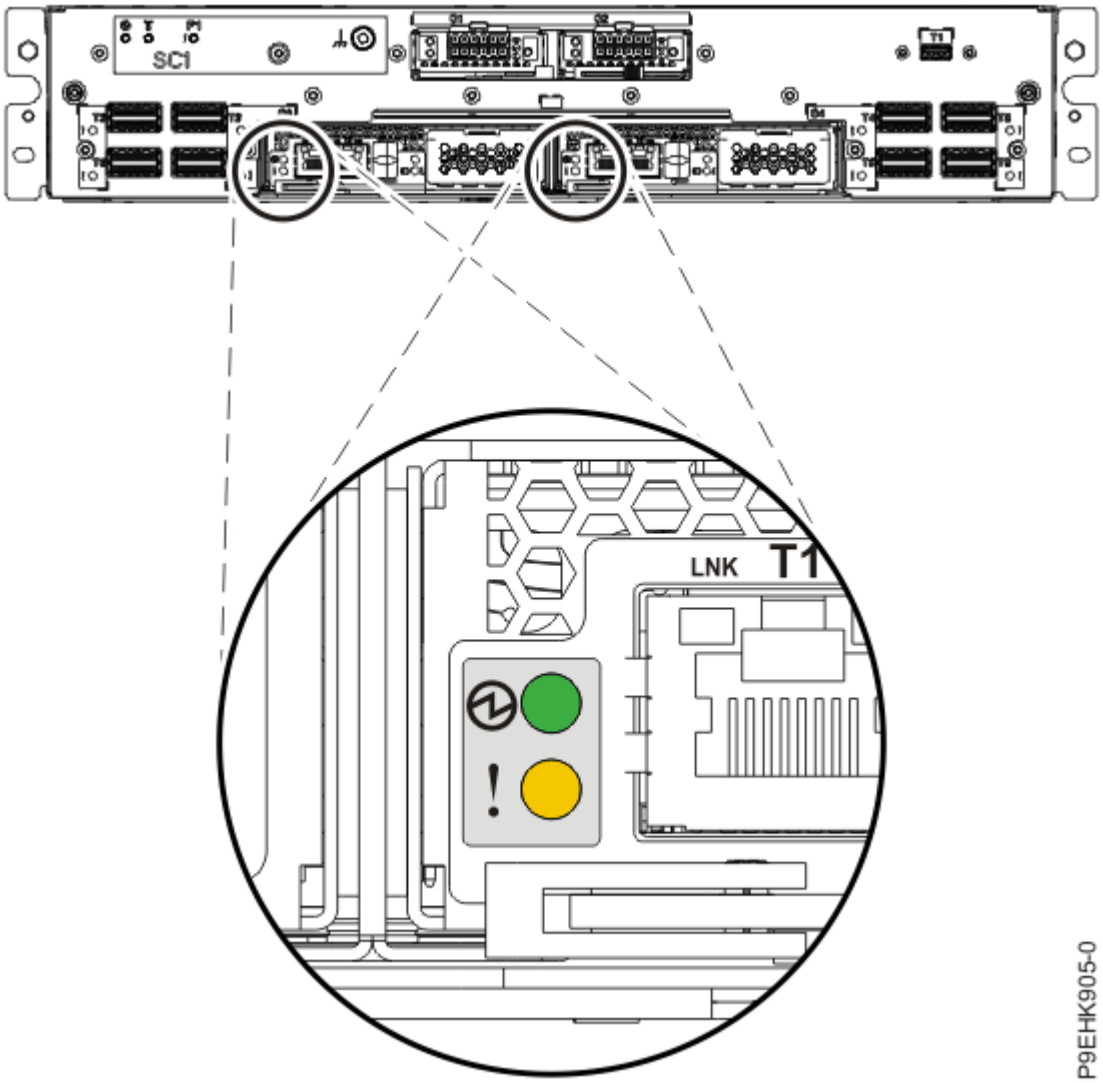


Figure 492. Service processor LEDs

4. 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.

5. Label and disconnect the cables from the failed service processor card.

Removing the service processor card from the 9080-M9S system control unit

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. To remove the service processor card, complete the following steps:
   a) For the service processor card that had the amber LED identified previously, pull the blue handle latch **(A)** to the right as shown in the following figure.
   b) Hold on to the handle and by using your hand to support the bottom of the service processor card, pull out the service processor card from its slot as shown in the following figure.

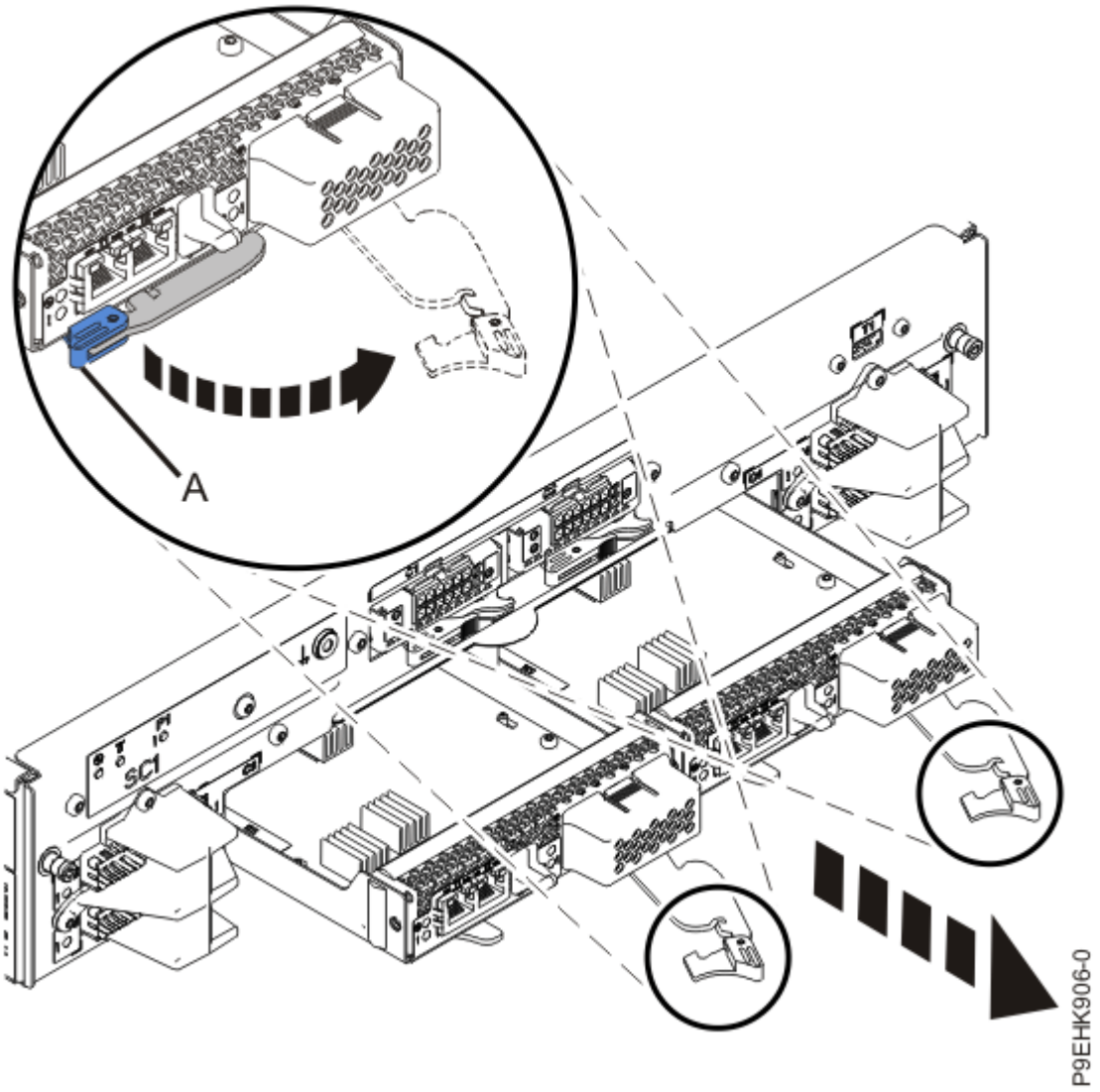


Figure 493. Removing the service processor card

Replacing the service processor card in the 9080-M9S system control unit

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. To replace the service processor card, complete the following steps:

a) The new service processor card contains reset toggle switches that will delete any existing data on the card. There may be a plastic material covering the switches. If so, pull back this cover. Move both of the service processor reset toggle switches from their current position to the opposite position as shown in the following figure.

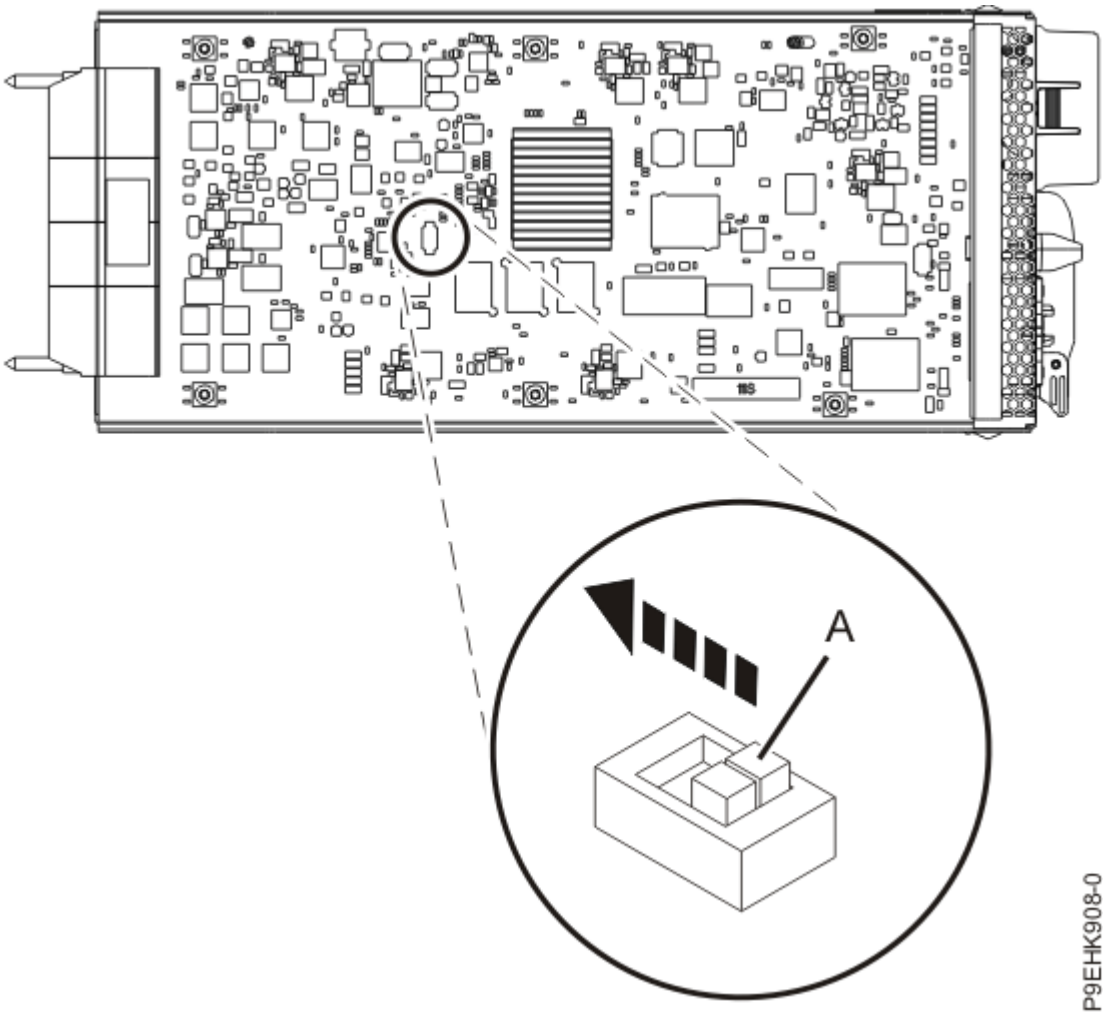


Figure 494. Resetting the service processor card

b) Ensure that the handle **(A)** for the service processor card is open as shown in the following figure.

c) Hold on to the handle and by using your hand to support the bottom of the service processor card, push the service processor card into its slot as shown in the following figure.

d) Push the handle **(A)** in the direction shown in the following figure.

e) Continue to push in the lever with your thumb until the latch is fully seated.

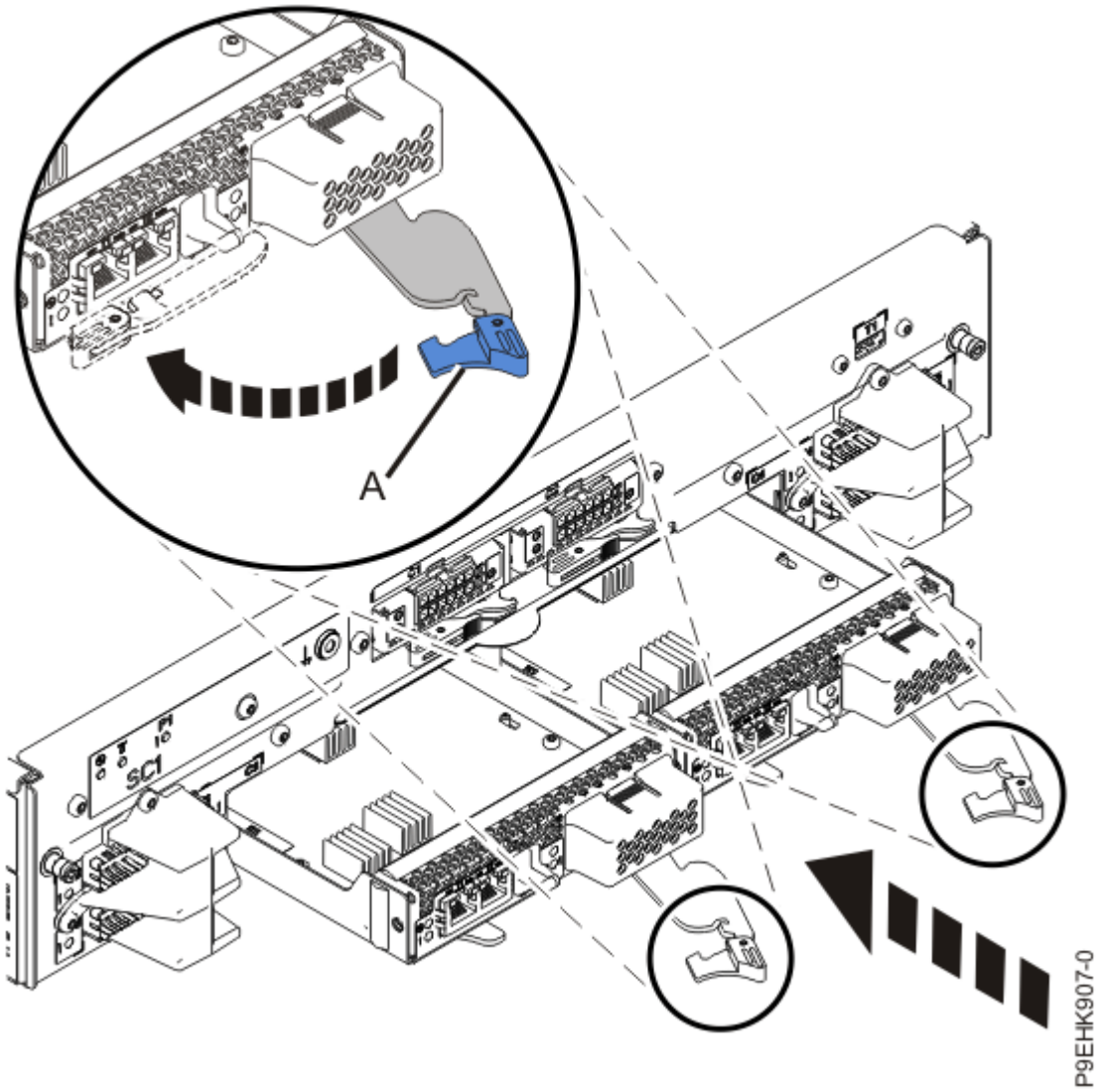


Figure 495. Replacing the service processor card

3. Remove the cover for the time-of day battery as shown in the following figure, by pinching in on the blue plastic cover at **(A)**, then by pulling the cover away from the service processor card.

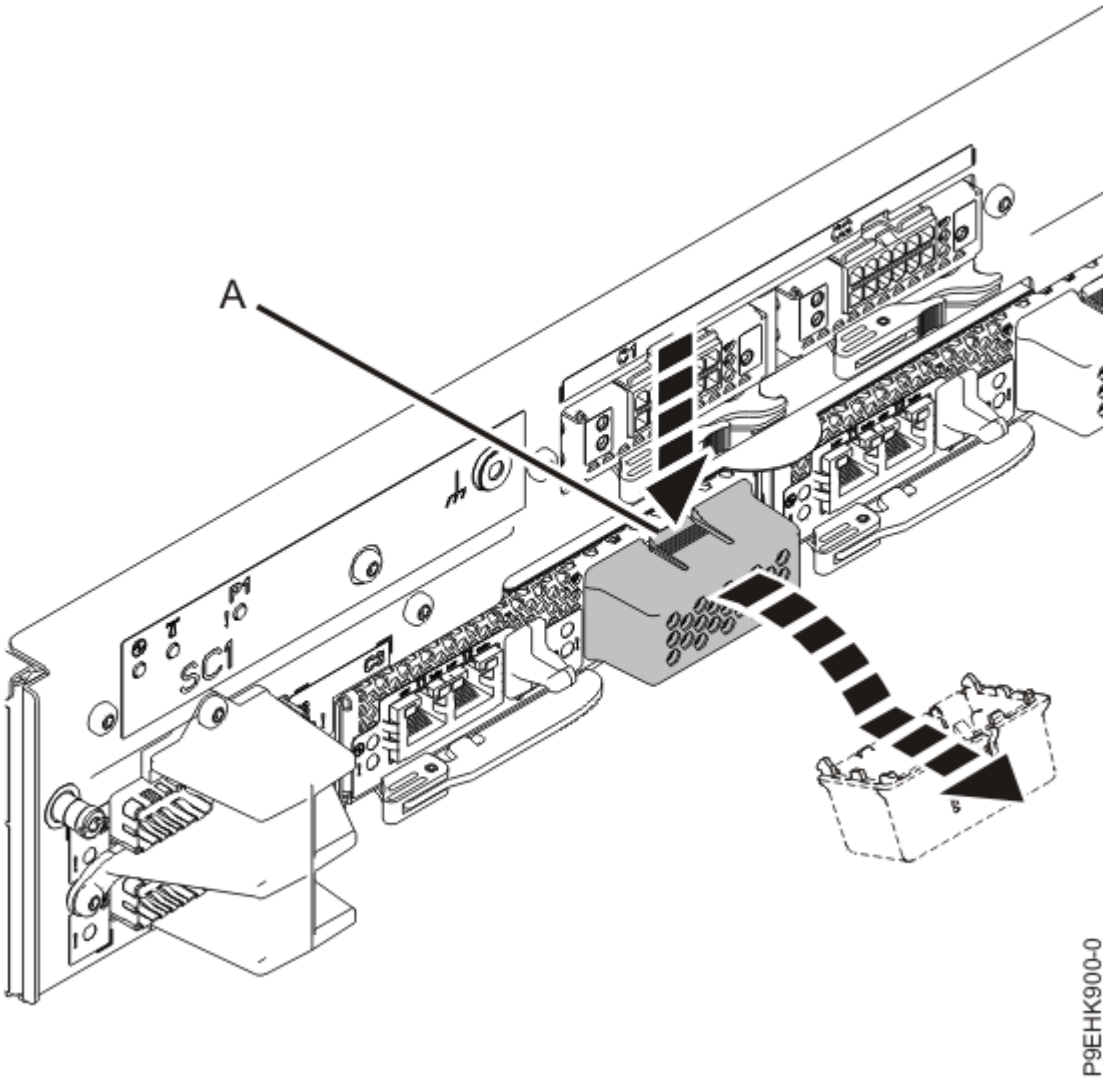


Figure 496. Removing the time-of day battery cover

4. Remove the protective plastic insulator **(B)** from the time-of day battery, to allow the time-of-day battery to make contact with the service processor card as shown in the following figure.

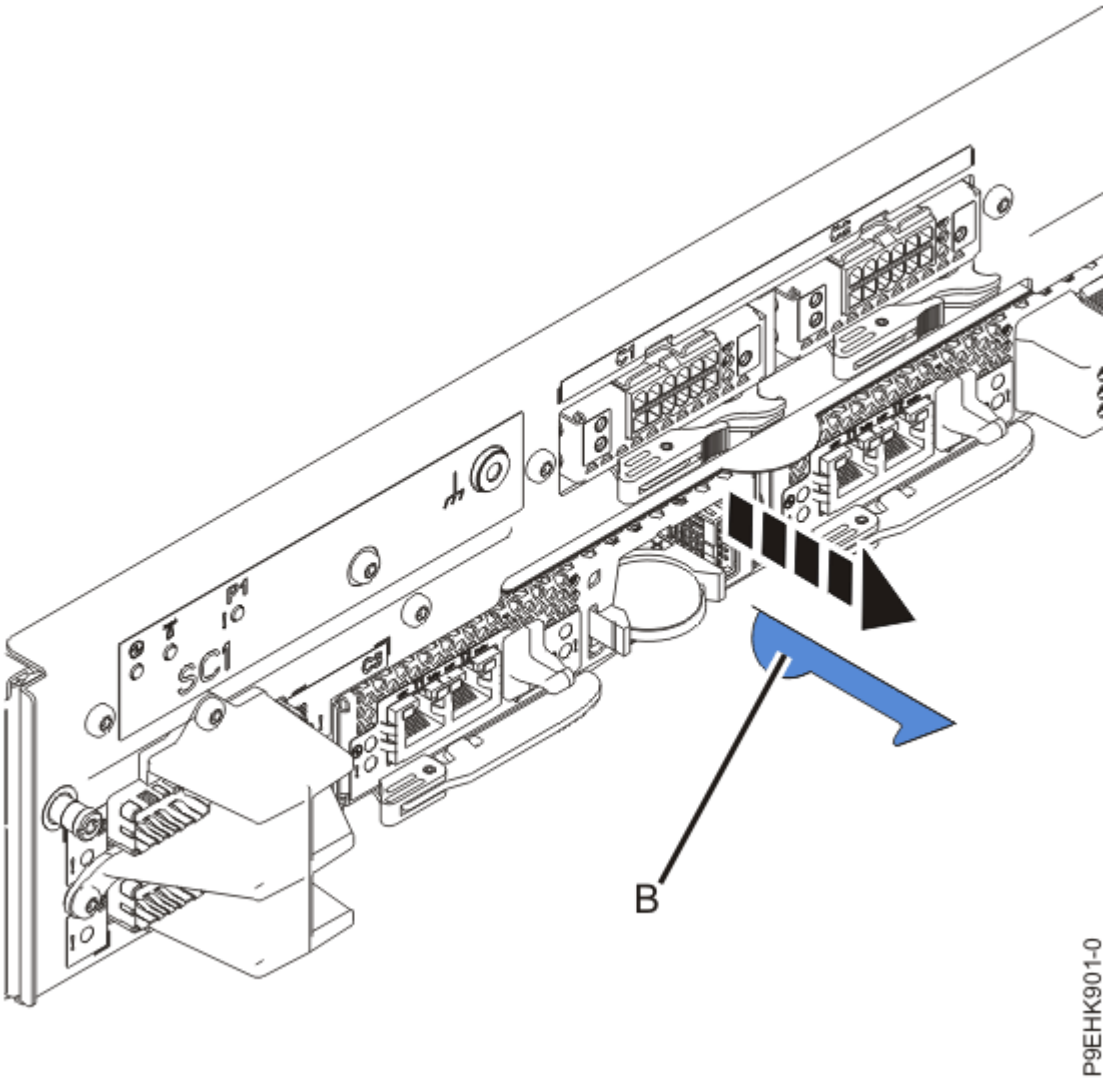


Figure 497. Removing the protective plastic insulator

5. Align the bottom tabs of the time-of day battery cover in the two slots under the battery as shown in the following figure. Roll the battery cover up and secure the cover to the service processor card.

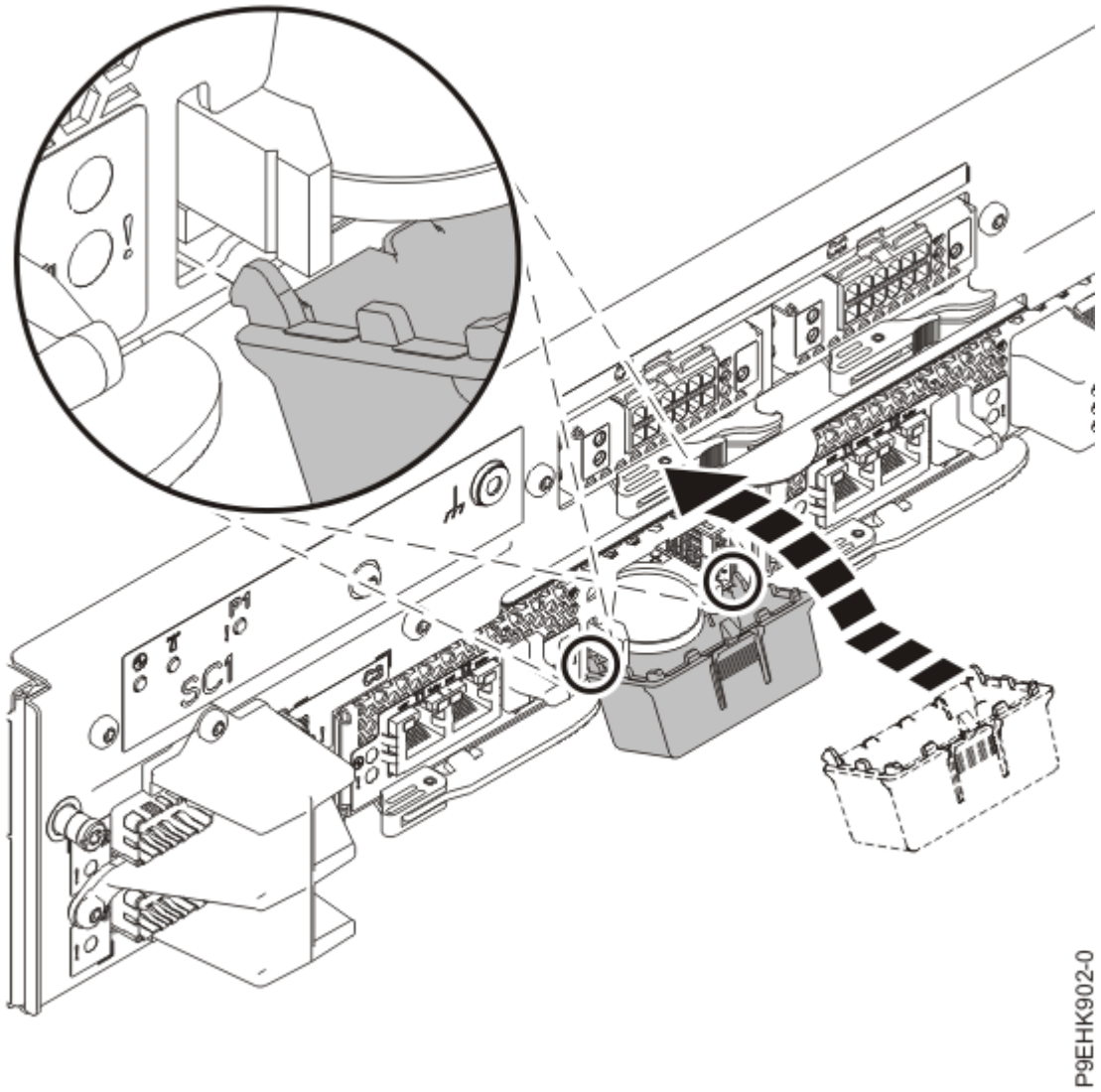


Figure 498. Replacing the time-of day battery cover

Preparing the 9080-M9S system control unit for operation after removing and replacing a service processor card

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. Using your labels, reconnect the cables that you removed from the service processor card.
3. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
4. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

5. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

6. The **FRU Level Activate** might cause a delay from 3 minutes to 45 minutes, depending on how long a firmware code synchronization takes to complete. After the **FRU Level Activate** completes, confirm that both service processor cards are at the same firmware level.

System node

Preparing the 9080-M9S system to remove and replace the service processor interface card

To prepare the system to remove and replace a service processor interface card, complete the steps in this procedure.

Procedure

1. From the **Operation** list, select **Set Identify LED**. Then, click **OK** to confirm the operation.

   This action causes the identify LED for the faulty part to turn on, and causes the blue system ID LED to turn on.

2. Use the blue LED to identify the server.

   Ensure that the serial number of the system matches the serial number to be serviced.

3. Check whether an amber identify (with the !) LED is on for one of the service processor interface cards as shown in the following figure.

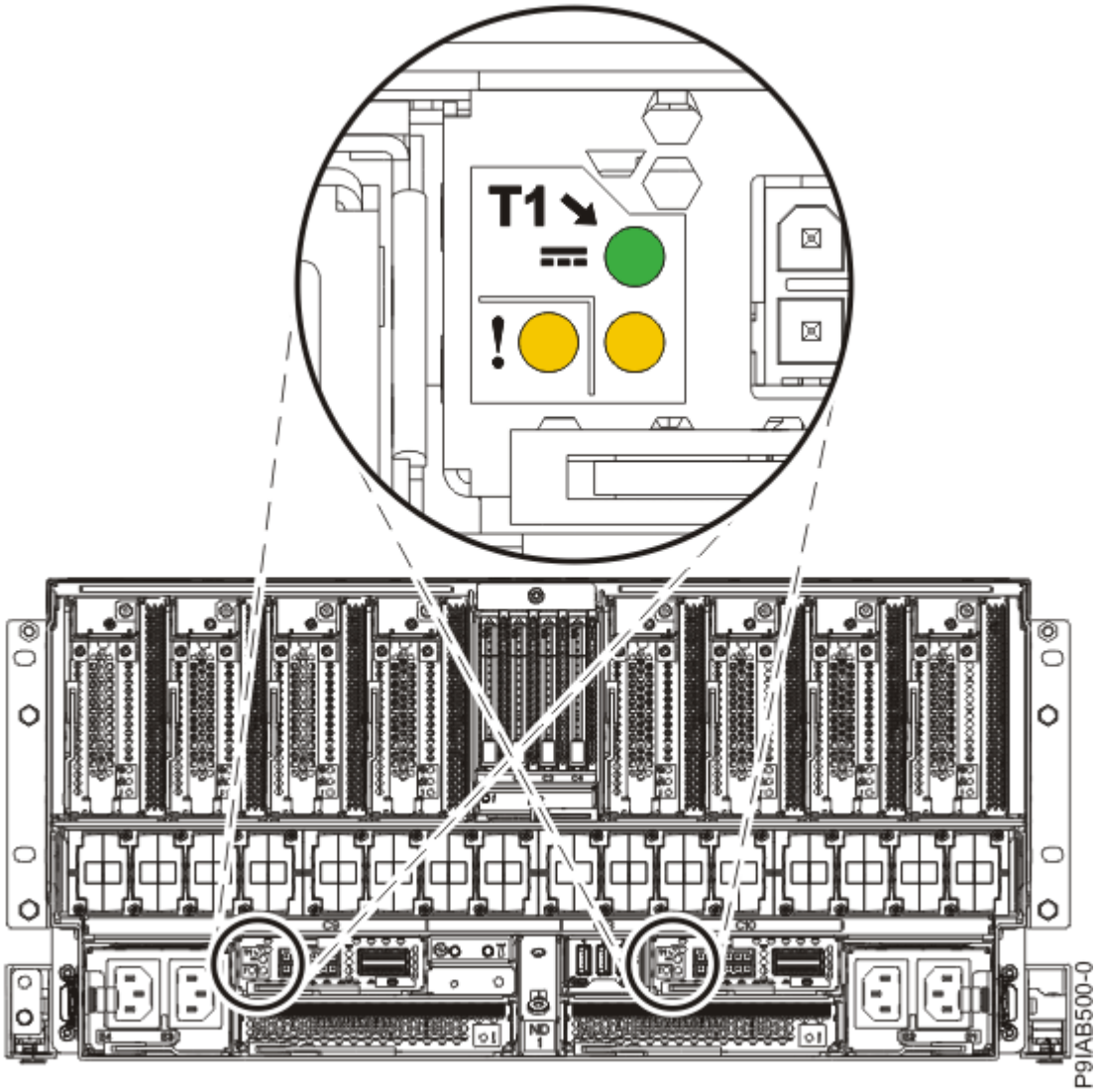


Figure 499. Identify LEDs for the service processor interface cards

4. 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.

5. 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.

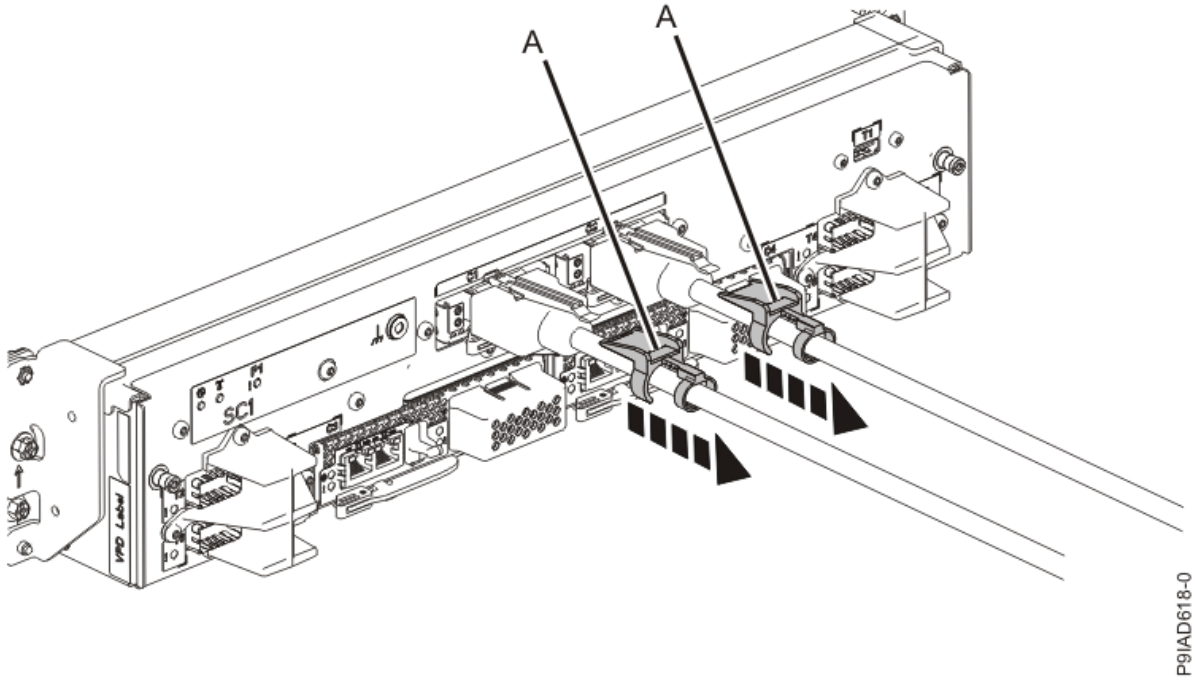


Figure 500. Removing the UPIC cable lock

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

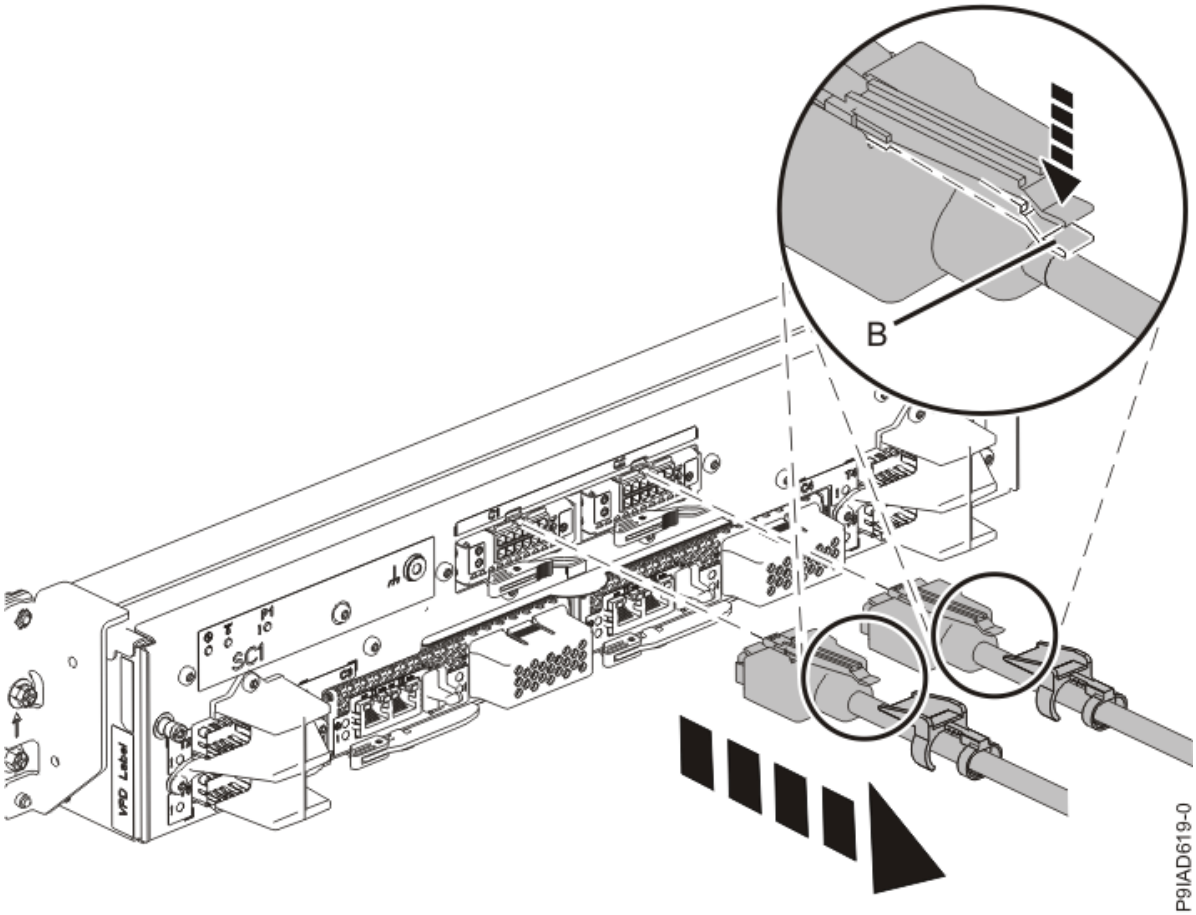


Figure 501. Removing the UPIC cable from the system control unit

6. Place your fingers on the indentations located on both sides of the cover **(A)** and pull the cover away from the system as shown in the following figure.

CAUTION: The fans can pull in hair, jewelry, loose clothing, and so forth, and cause injury or damage. Operate the system with the bezel installed. For service operations, if the front cover must be removed with the system operating, ensure that all such loose material is secured away from the fan area, to prevent any loose material from being pulled into the fan.

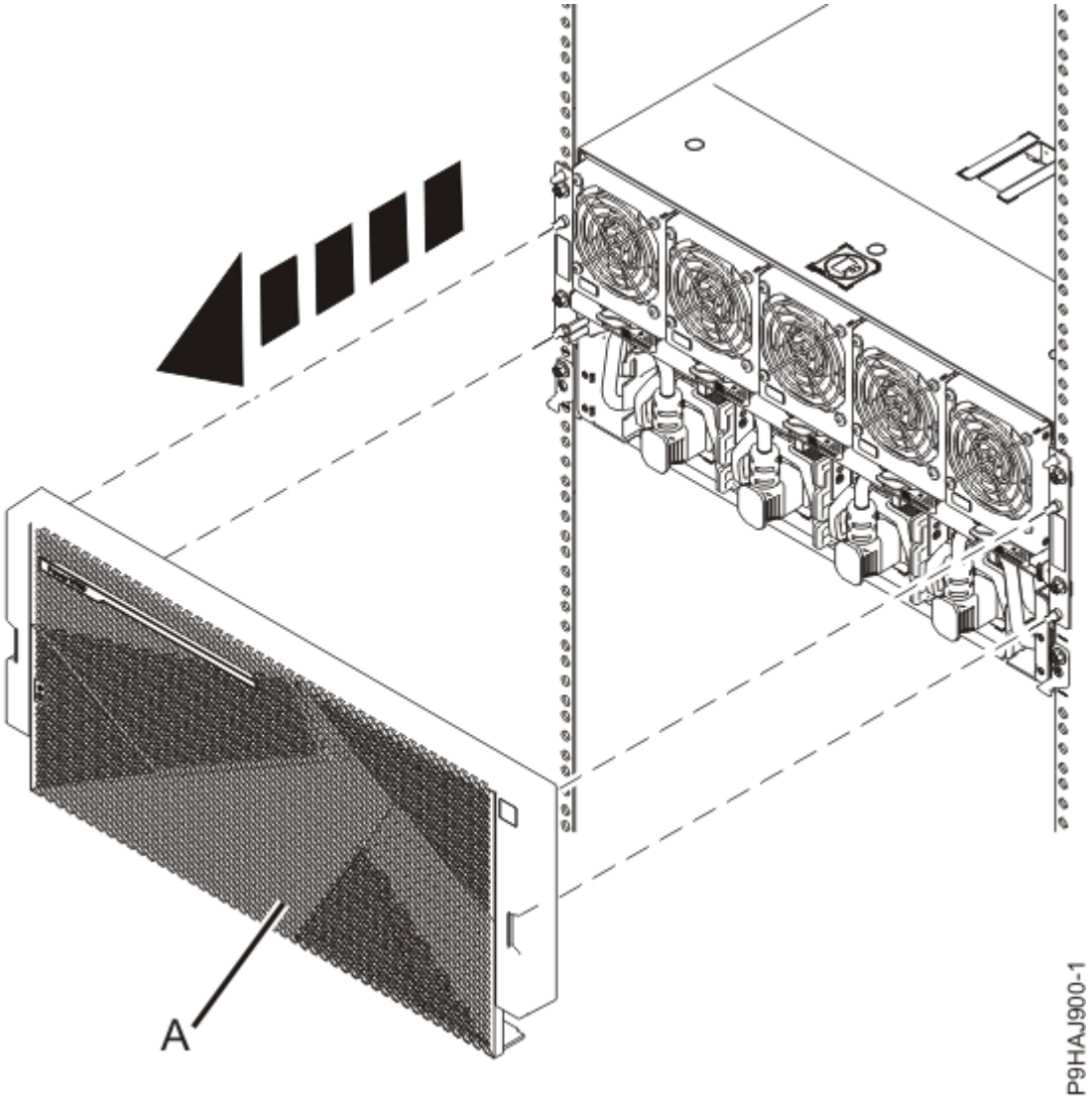


Figure 502. Removing the front cover

7. Disconnect all of the front power cords that plug into the power supplies of the system node that is being serviced.

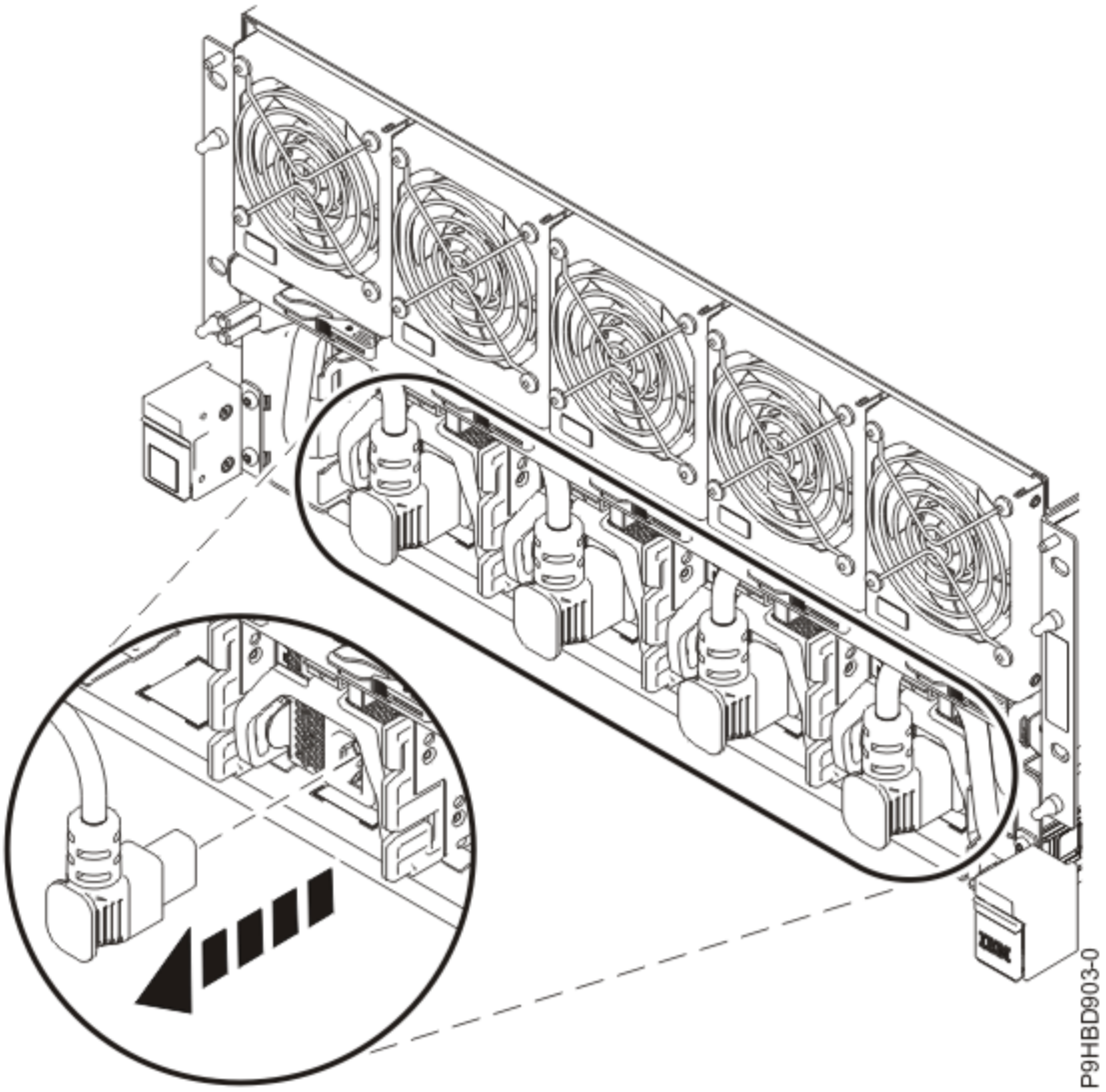


Figure 503. Removing the front power cords

8. Label and remove the cables from the service processor interface card that you identified in “3” on page 575.

Removing the service processor interface card from the 9080-M9S system

To remove the service processor interface card from 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. To remove a service processor interface card, complete the following steps:
   a) For the service processor interface card that has the amber LED on, pull the blue service processor interface card handle latch **(A)** to the right as shown in the following figure.
   b) Hold on to the service processor interface card handle and by using your hand to support the bottom of the service processor interface card, pull out the service processor interface card from its slot as shown in the following figure.

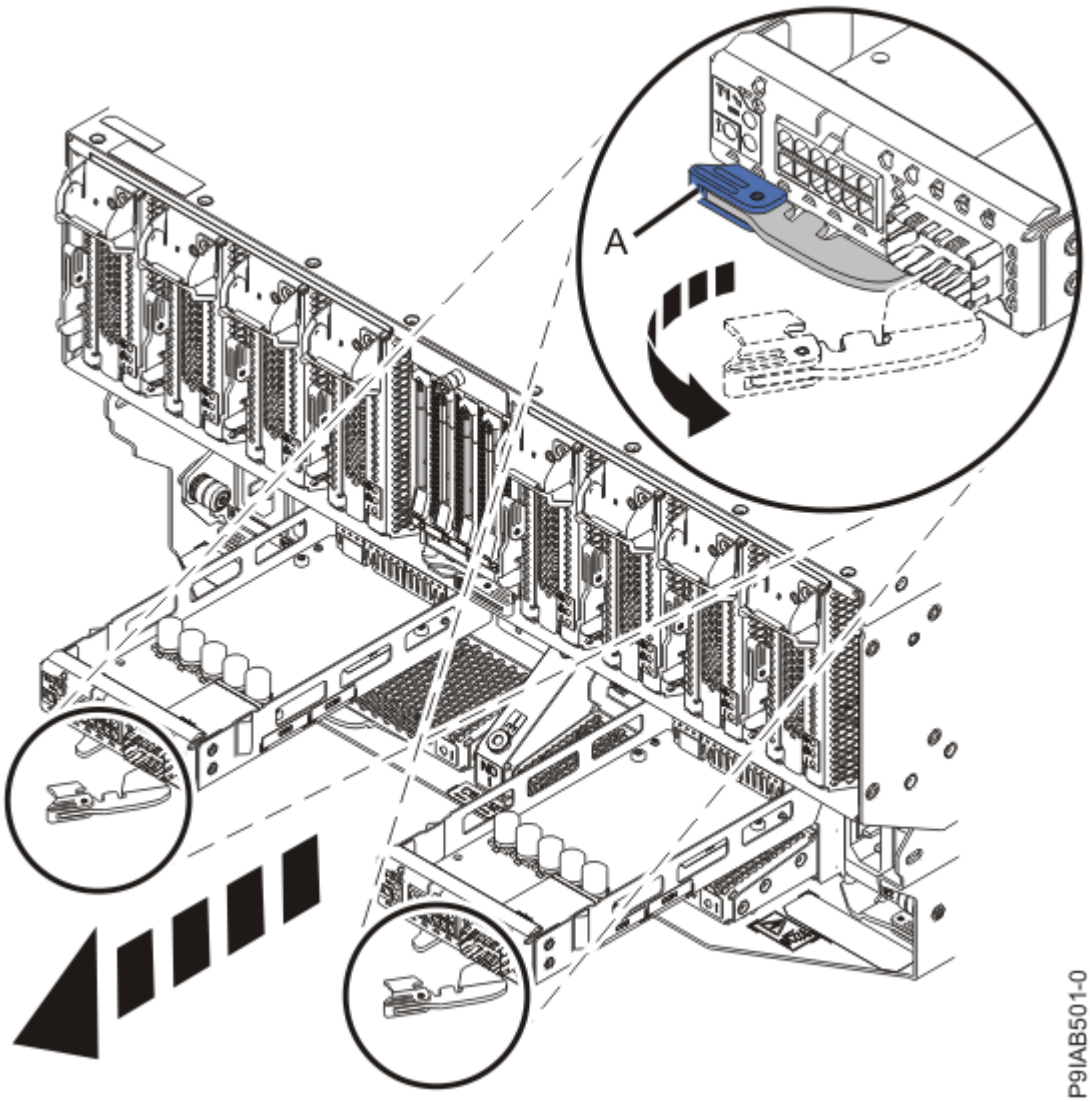


Figure 504. Removing a service processor interface card from the system

Replacing the service processor interface card in the 9080-M9S system

To replace the service processor interface card in 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. To replace a service processor interface card, complete the following steps:
   a) Ensure that the service processor interface card handle **(A)** is open as shown in the following figure.
   b) Hold on to the service processor interface card handle and by using your hand to support the bottom of the service processor interface card, push the service processor interface card into its slot as shown in the following figure.
   c) Rotate the handle to the left in the direction shown in the following figure to lock the service processor interface card into the system.

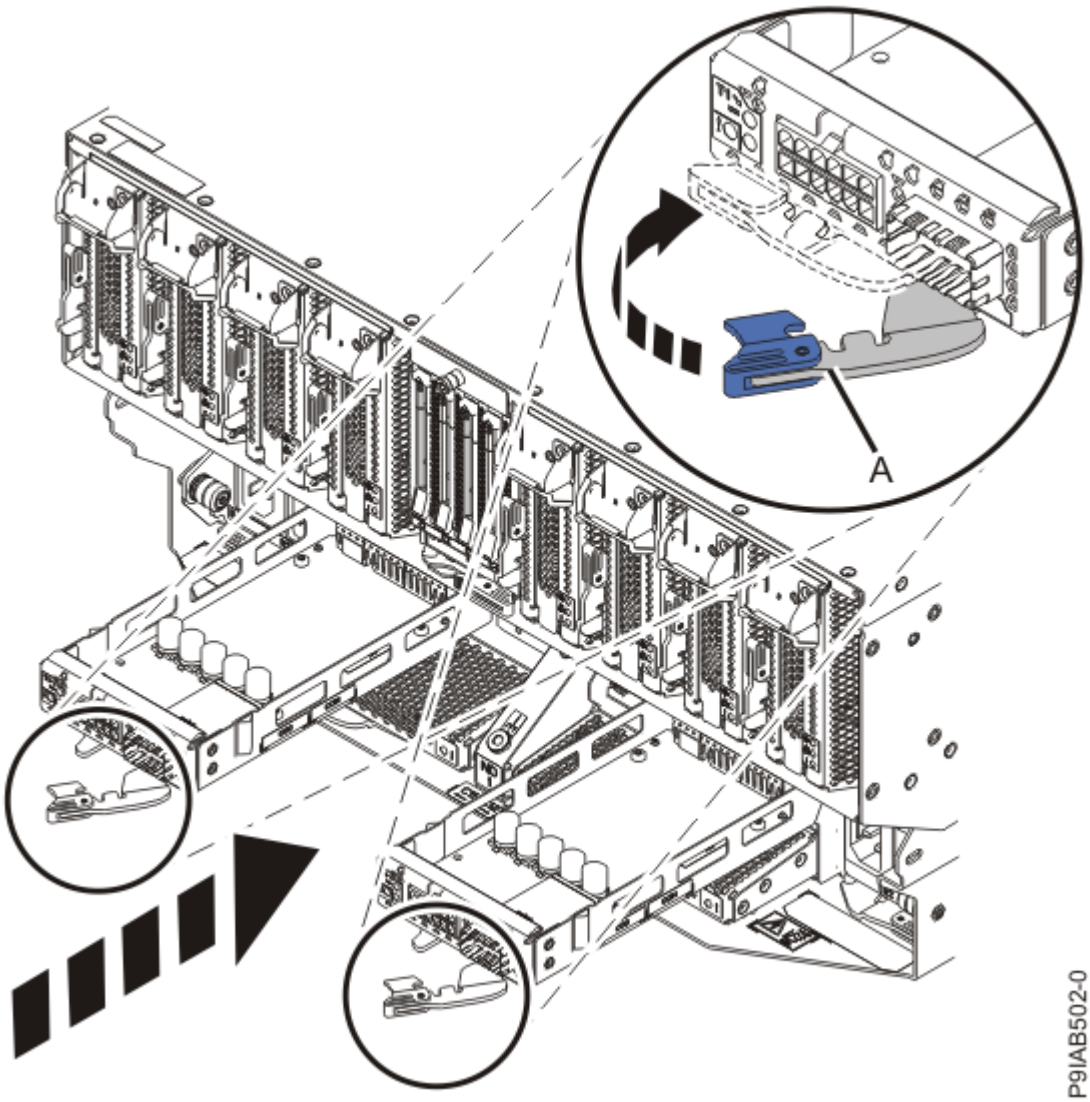


Figure 505. Replacing a service processor interface card in the system

Preparing the 9080-M9S system for operation after removing and replacing the service processor interface card

To prepare the system for operation after removing or replacing the service processor interface card, 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. Using your labels, reconnect the cables for the service processor interface card that you replaced.
3. Connect all of the front power cords that plug into the power supplies of the system node.

   Tuck the cords into the chassis.

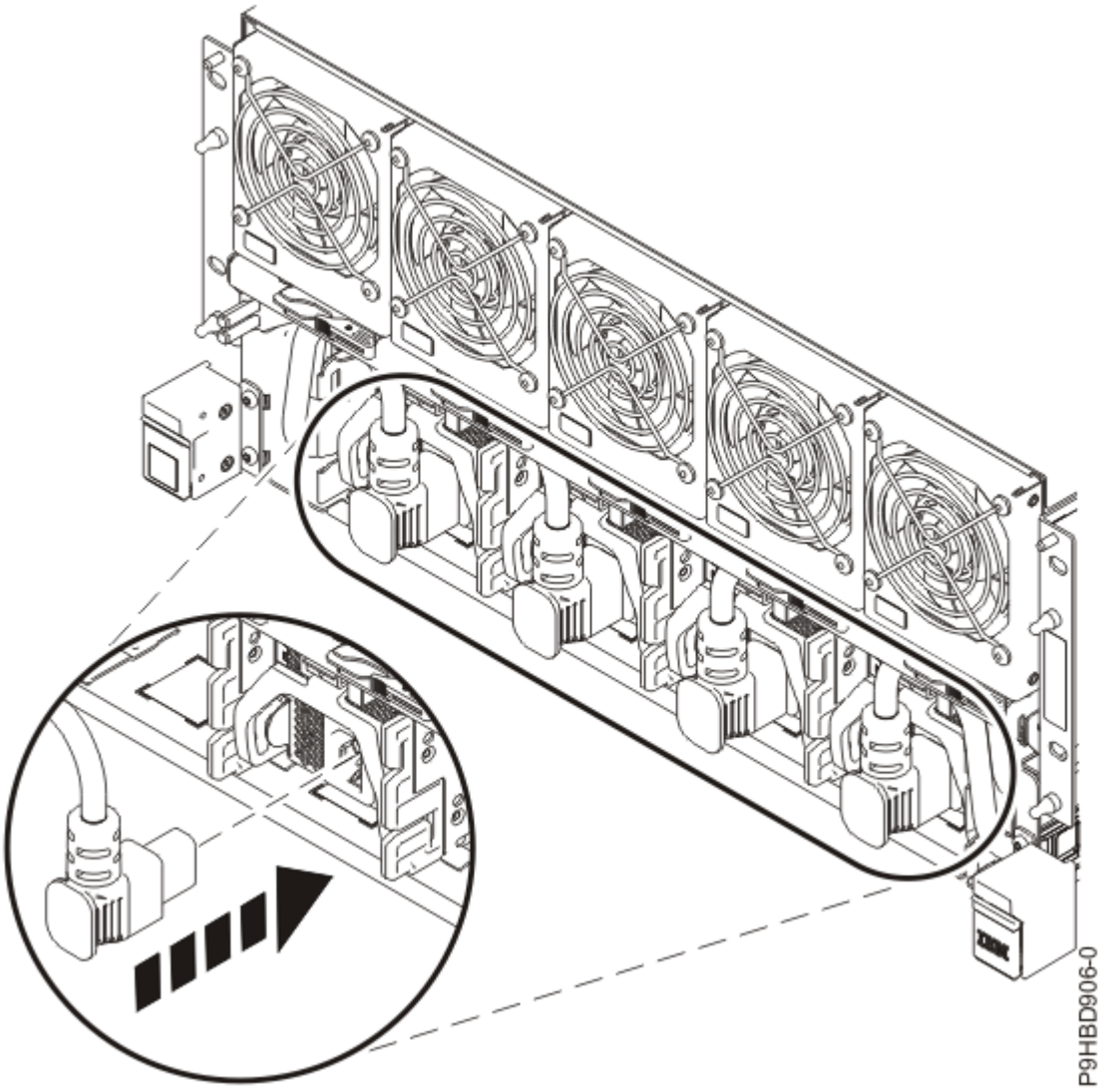


Figure 506. Connecting the front power cords

4. Position the cover **(A)** on the front of the system unit as shown in the following figure, so that the four pins **(B)** on the system match the four holes at the rear of the cover.

   Press the front cover into position.

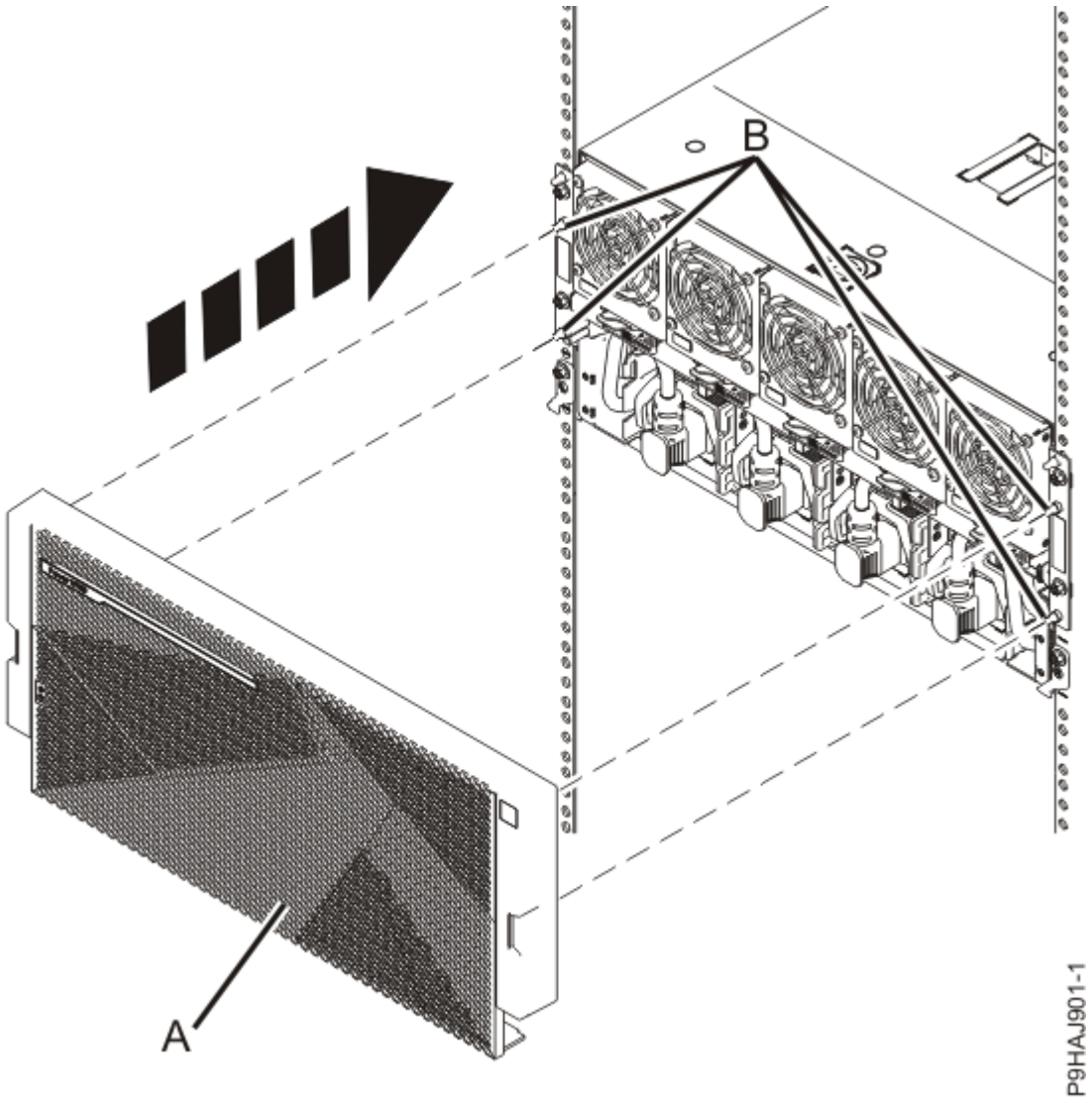


Figure 507. Installing the front cover

5. If you chose to complete 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.

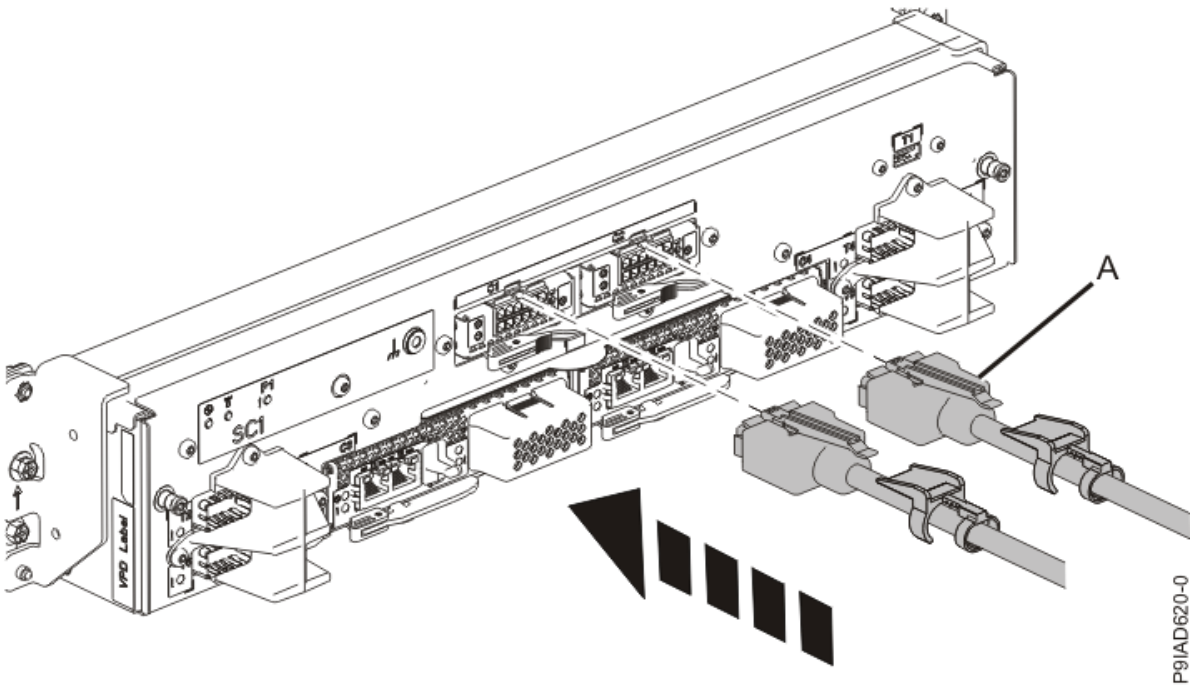


Figure 508. Replacing the UPIC cable into the system control unit

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

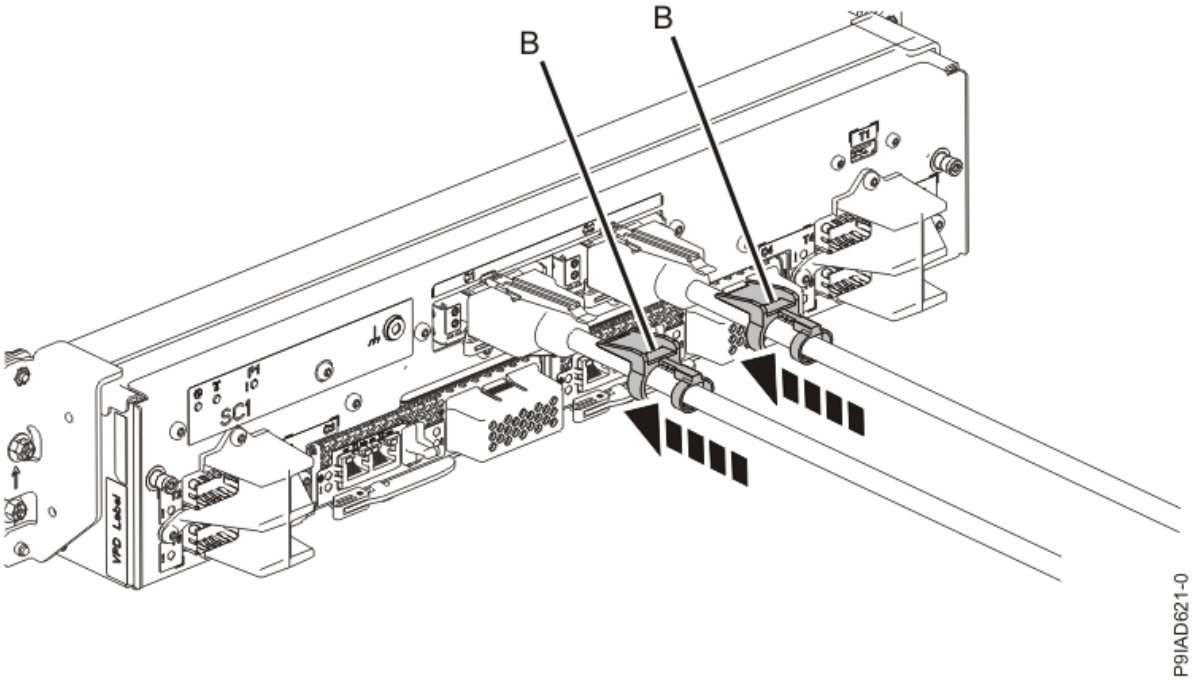


Figure 509. Replacing the UPIC cable into the system control unit

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. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

8. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

9. From the **Operation** list, select **Reset Identify LED**. Then, click **OK** to confirm the operation.

System backplanes

System control unit

Removing the system backplane from the 9080-M9S system control unit

To remove the system backplane, 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. At the rear of the system control unit, use a T15 Torx screwdriver to loosen the two captive screws **(A)** as shown in the following figure.

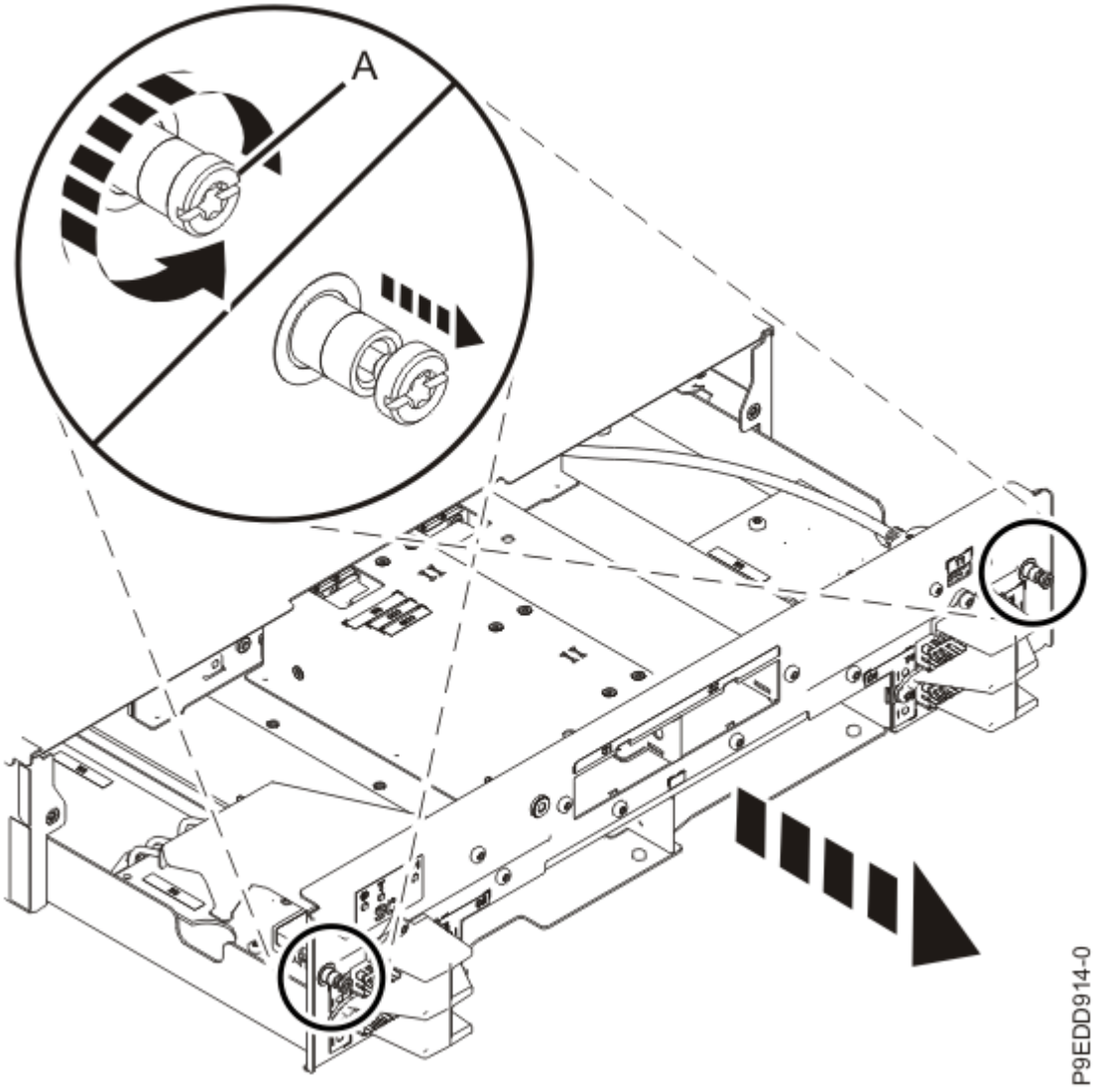


Figure 510. Loosening the screws and removing the system backplane

3. Hold on to one side of the bulkhead and use your other hand to support the bottom of the system backplane as you pull the backplane out of the rear of the chassis as shown in the previous figure.

4. Place the system backplane on an appropriate ESD surface.

Replacing the system backplane in the 9080-M9S system control unit

To replace the system backplane, 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 new system backplane from its packaging.
3. Support the bottom of the system backplane as you slide the backplane into the rear of the chassis as shown in the following figure.

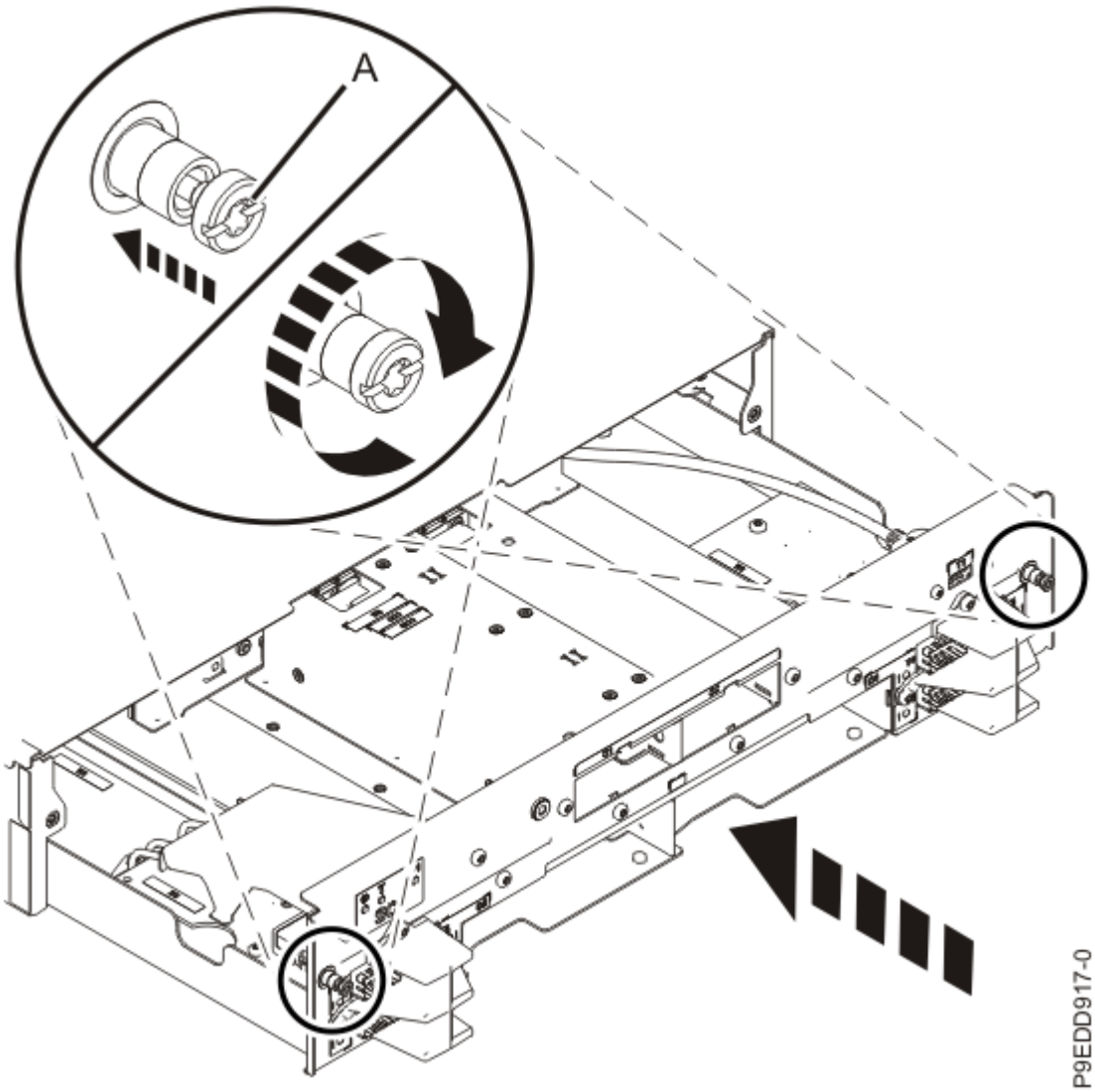


Figure 511. Replacing the system backplane and tightening the screws

4. At the rear of the system control unit, use a T15 Torx screwdriver to tighten the two captive screws **(A)** as shown in the previous figure.

System node

Removing the system backplane from the 9080-M9S system node

To remove the system backplane, complete the steps in this procedure.

Before you begin

Before you begin the removal and replacement procedure, ensure that you have the following items:

- Two service representatives or one service representative and a lift tool

  Note: These instructions assume two people are performing the removal. If you're using a lift tool, refer to the lift tool documentation for instructions to use the lift tool.
- System backplane kit (which includes a tray in which you can place the parts as you remove them)

  Note: If your system backplane kit does not include a tray, you can also place the parts on a large electrostatic discharge (ESD) mat.
- Service representative tool kit (which includes tweezers, 4 mm T handle Allen wrench, T10 Torx bit, T15 Torx bit, ¼ in hex driver to ¼ in square socket adapter driver, ¼ in driver with 6 in extension, ¼ in ratchet driver, and ¼ in driver handle).

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 all of the cards (one at a time) from the row inside the system that is nearest to the fans.

   This row includes seven memory voltage regulator modules, four miscellaneous A voltage regulator modules, one miscellaneous B voltage regulator module, two power APSS and TPM cards, and the concurrent maintenance circuit card in locations P1-C54 through P1-C68.

   a) Unlock the levers **(A)** to release the card from its connector. Refer to the following image.

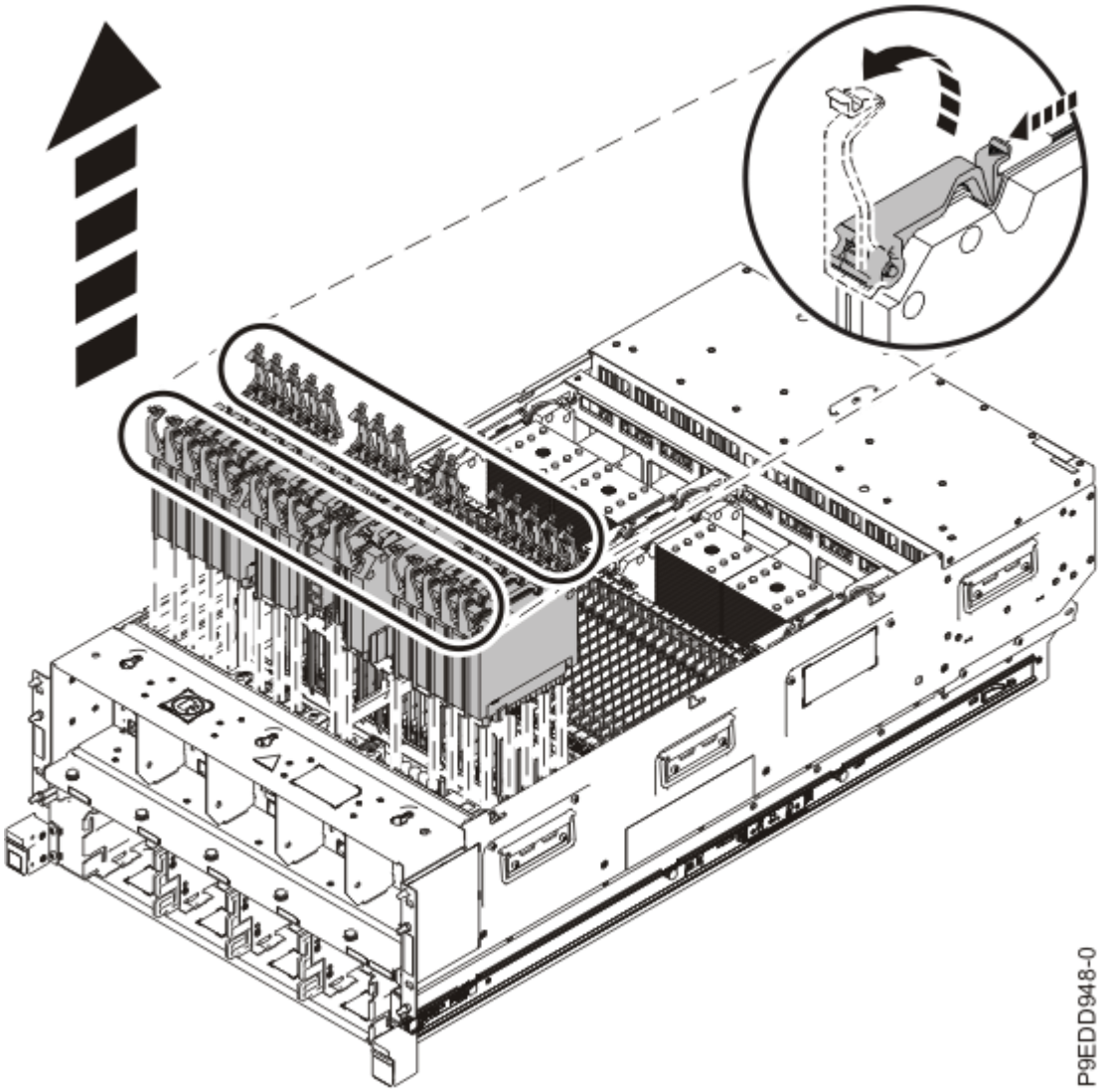


Figure 512. Removing the cards from the row nearest the fans

b) Rotate the levers in the direction shown.

c) While holding the card by its levers, pull upward to remove the card from its slot.

d) As you remove each card from the system, place it in a slot in the ESD tray in the order in which you remove each card.

Tip: Place all of the cards from the row nearest the fan in the first row of the ESD tray.

The rows in the ESD tray correspond with the rows in the system. If you place the cards in the tray one row at a time in the order in which you remove the cards, you do not need to label each card. When you replace the cards, install them row by row in the order that you placed them in the tray.

e) Repeat steps "2.a" on page 589 through "2.d" on page 590 to remove all of the cards in the row inside the system that is nearest the fans.

3. Remove the memory modules from locations P1-C22 through P1-C53.

a) Remove the memory module or filler by pushing the tabs **(A)** down and outward as shown in the following figure.

The lever action of the tabs forces the memory module or filler out of the connector.

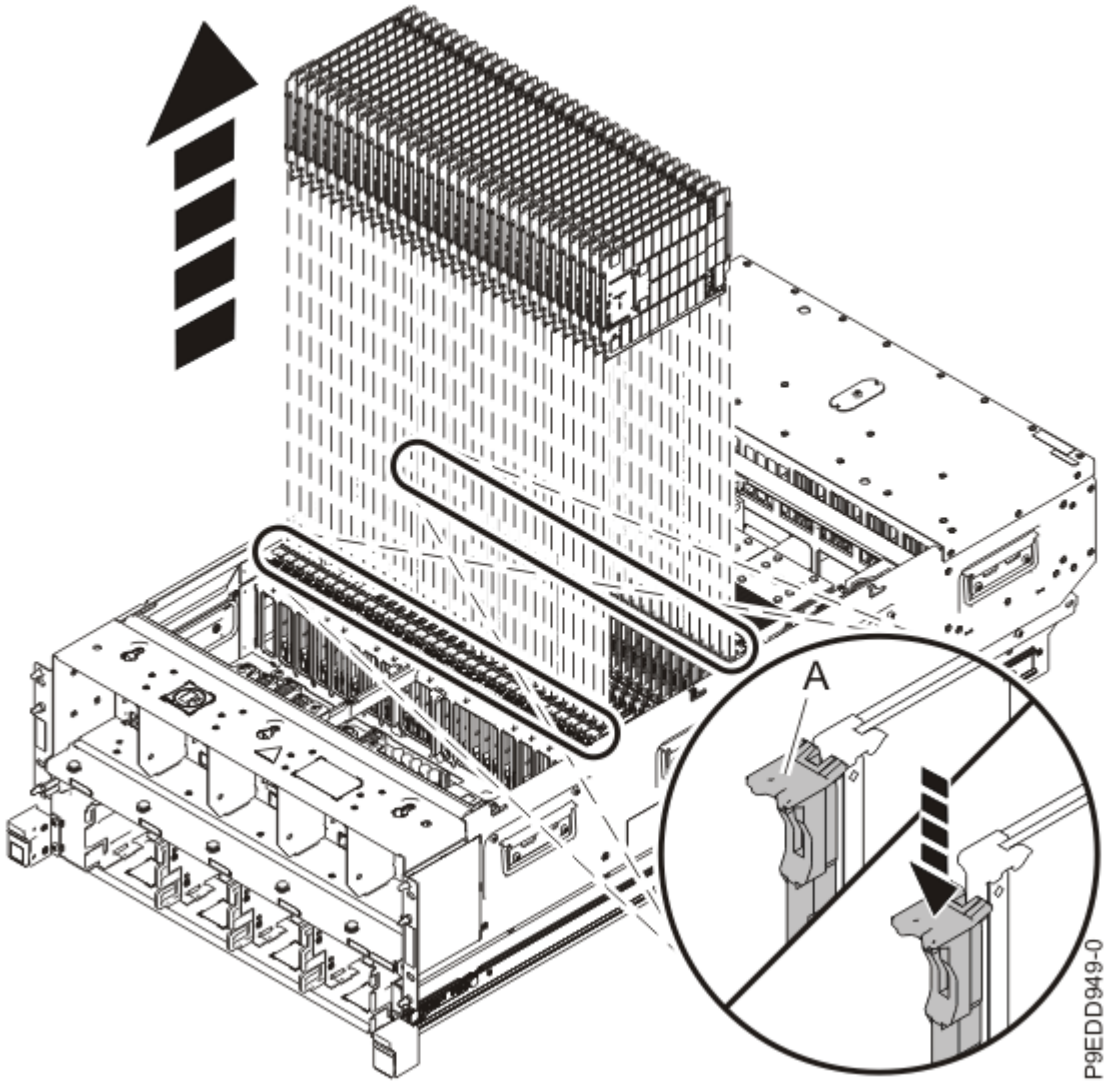


Figure 513. Removing memory modules

b) Hold the memory module by the edges and pull it out of the system.

c) Place the memory module or filler in a slot in the second row in the ESD tray, which was included with your replacement system backplane.

Tip: Place the memory modules or fillers in the ESD tray in the order in which you remove them so that you do not need to label each one.

d) Repeat steps “3.a” on page 590 through “3.c” on page 591 for the remaining memory modules or fillers.

4. Remove the processor voltage regulator modules from locations P1-C14, P1-C17, P1-C18, and P1-C21.

a) Unlock the levers **(A)** to release the voltage regulator module from its connector. Refer to the following image.

b) Rotate the levers in the direction shown.

c) While holding the voltage regulator module by its levers, pull upward to remove the card from its slot.

d) Place the voltage regulator module in a slot in the third row of the ESD tray.

Tip: Place the processor voltage regulator modules in the ESD tray in the order in which you remove them so that you do not need to label each one.

e) Repeat steps “4.a” on page 591 through “4.d” on page 591 to remove the remaining processor voltage regulator modules.

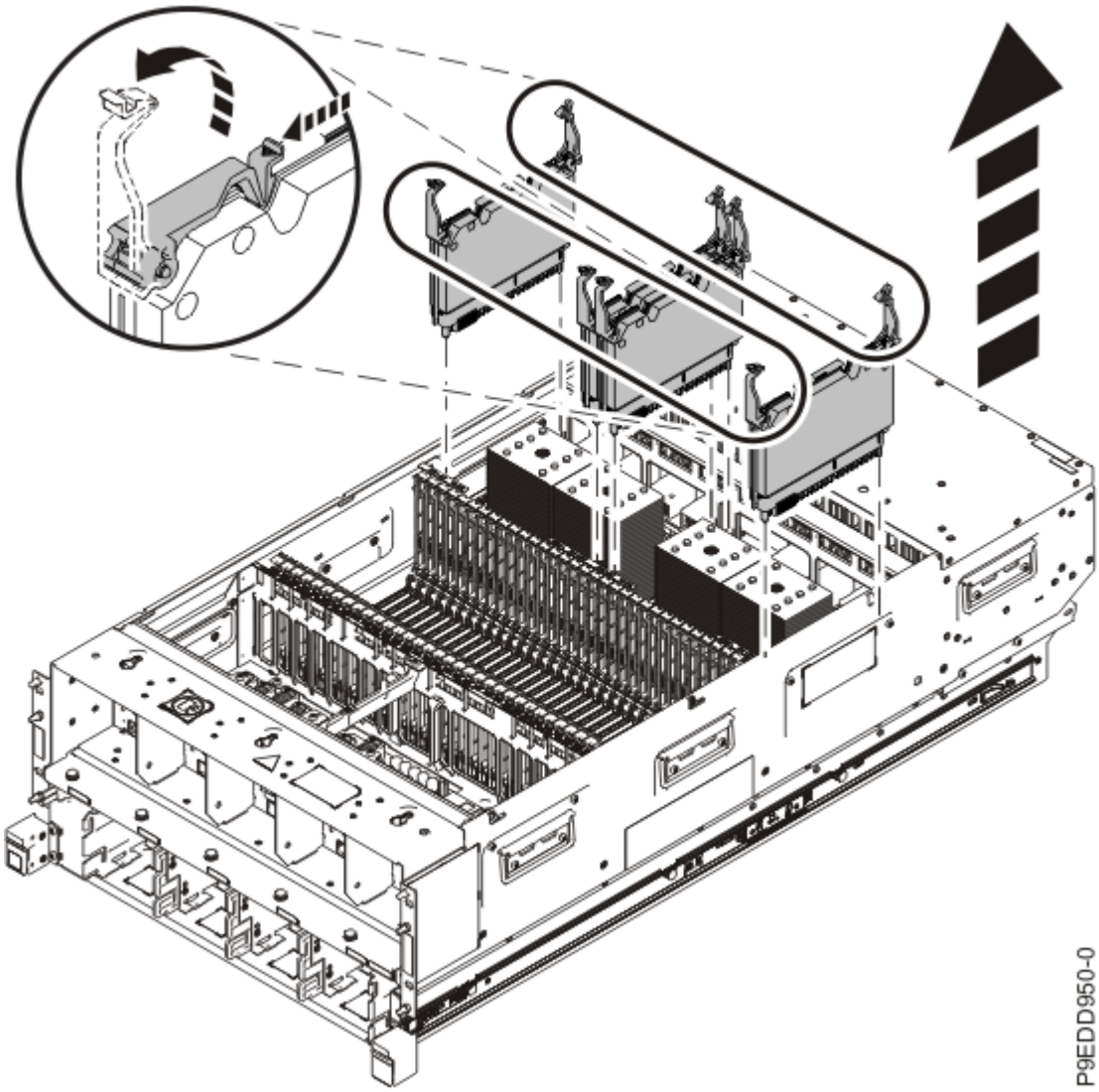


Figure 514. Removing processor voltage regulator modules

5. Remove the heat sinks and system processor modules one at a time.

(L007)

CAUTION: A hot surface nearby. (L007)

a) Loosen the heat sink actuation screw by turning the supplied hex key counterclockwise **(A)**. Loosen the screw until it moves freely. Refer to the following figure.

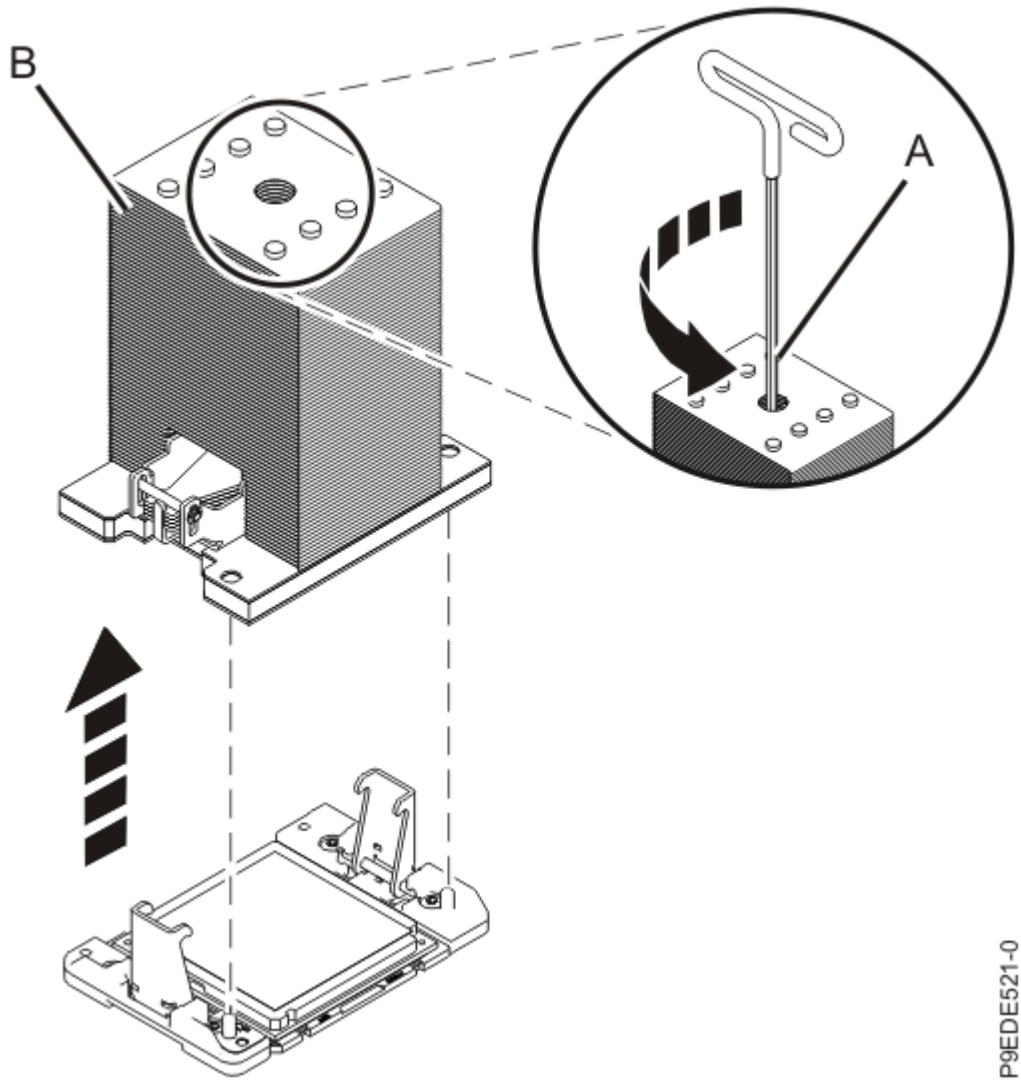


Figure 515. Removing the heat sink

b) Grip the heat sink **(B)** on opposing sides and remove the heat sink by lifting it upward as shown in the previous figure. Set the heat sink aside with the module side facing upward.

Note: If you plan to remove dust or debris from the heat sink, this operation must be performed in another room that is greater than 7.6 m (24.9 ft) away from the work area.

c) Using the supplied tweezers, remove the TIM from the top of the processor and place it in a clean, dry area as shown in the following figure.

Be careful not to damage the TIM as it is very light and fragile.

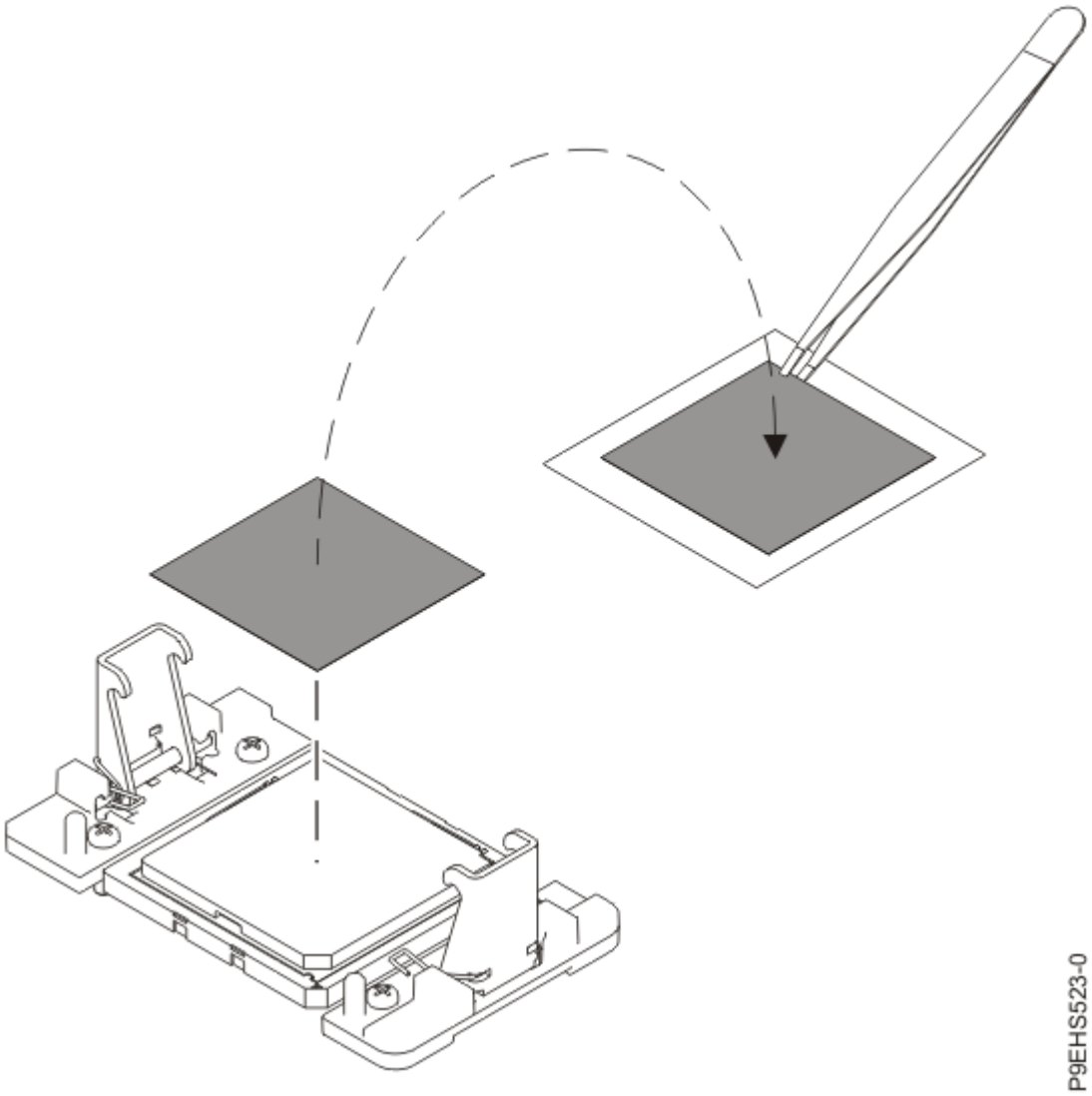


Figure 516. Removing the TIM from the system processor module

d) Open the system processor module packaging, which was included with the replacement system backplane kit.

e) Place the system processor module package cover upside down next to the tray.

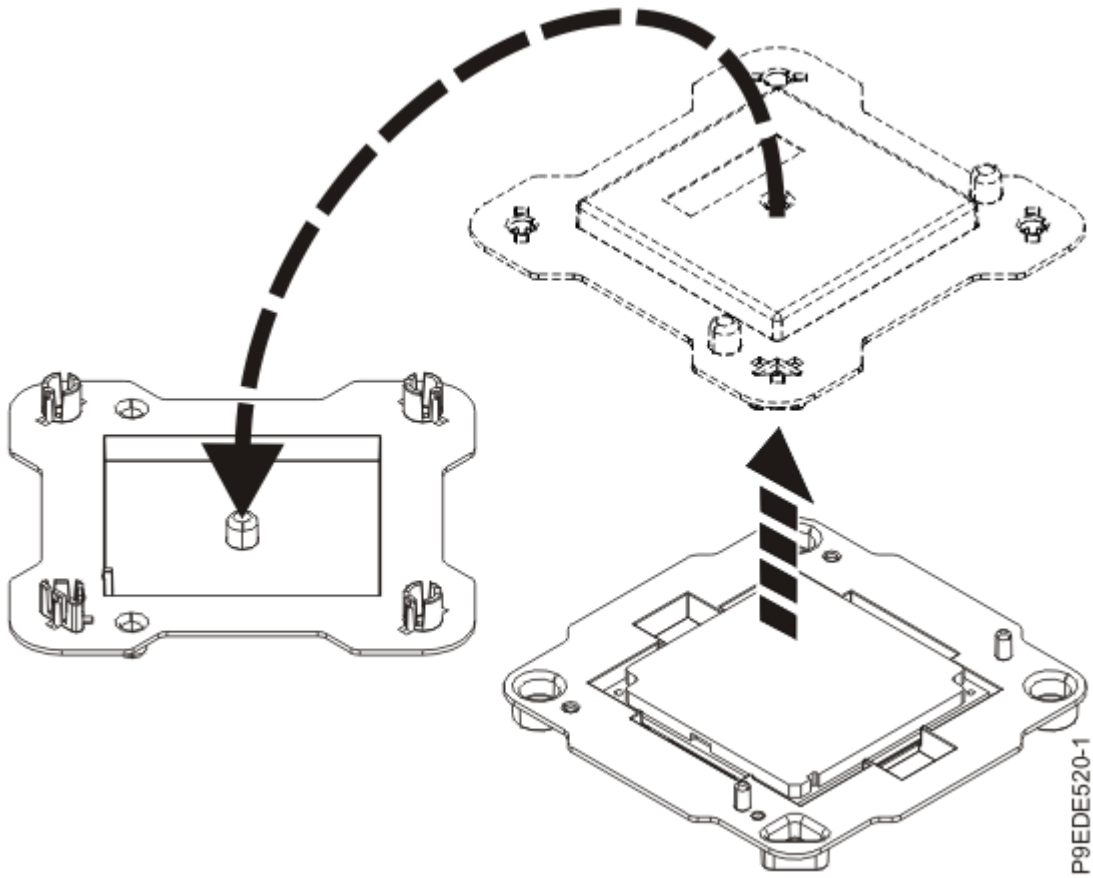


Figure 517. Placing the system processor module package cover upside down

f) Ensure that the removal tool **(A)** is in the open position as shown in the following figure. The middle ring **(B)** must be pushed down and blue tabs **(C)** must be turned inward.

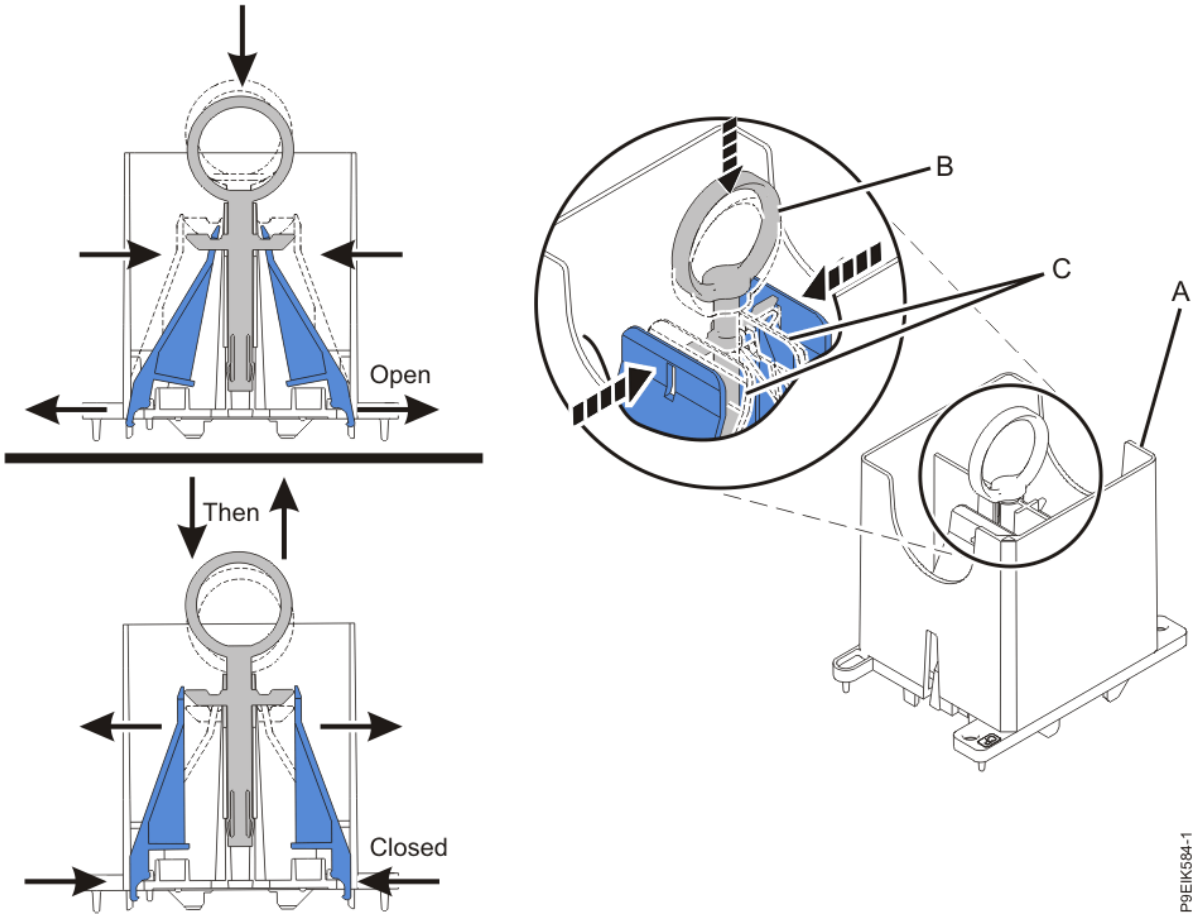


Figure 518. Ensuring that the removal tool is in the open position

g) Align the tool over the system processor module.

Ensure that the beveled edge on the tool aligns with the beveled edge of the processor **(C)** as shown in the following figure.

h) Lower the tool over the system processor module.

Ensure that the two guide pins **(A)** insert into the alignment holes **(B)** on each side of the tool as shown in the following figure.

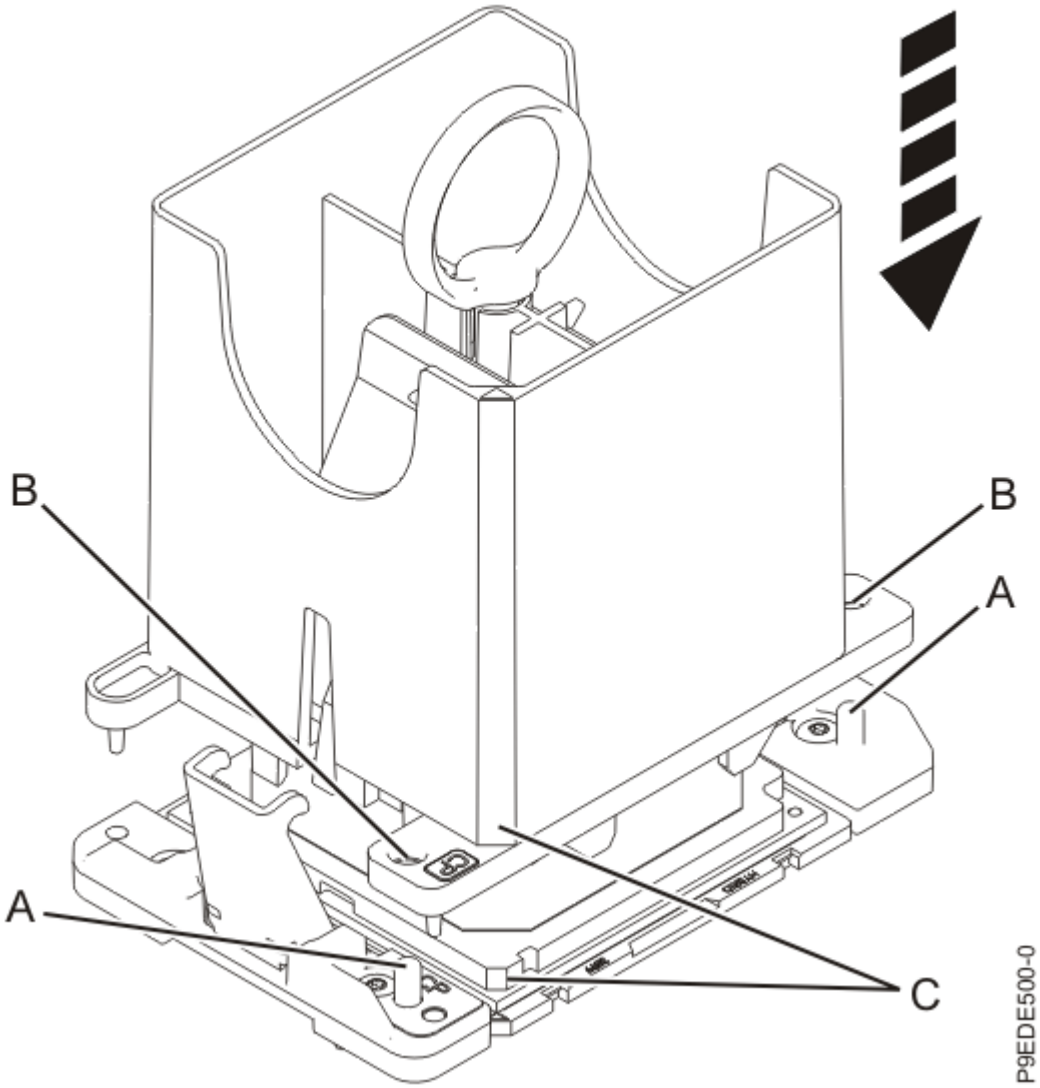


Figure 519. Lowering the removal tool onto the system processor module

i) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** slightly so that the blue tabs **(B)** snap outward and the jaws engage with the system processor module as shown in the following figure.

Make sure that both of the tool jaws are locked onto the system processor module by pushing down on the tool.

Important: Do not press the blue release ring until directed to do so later.

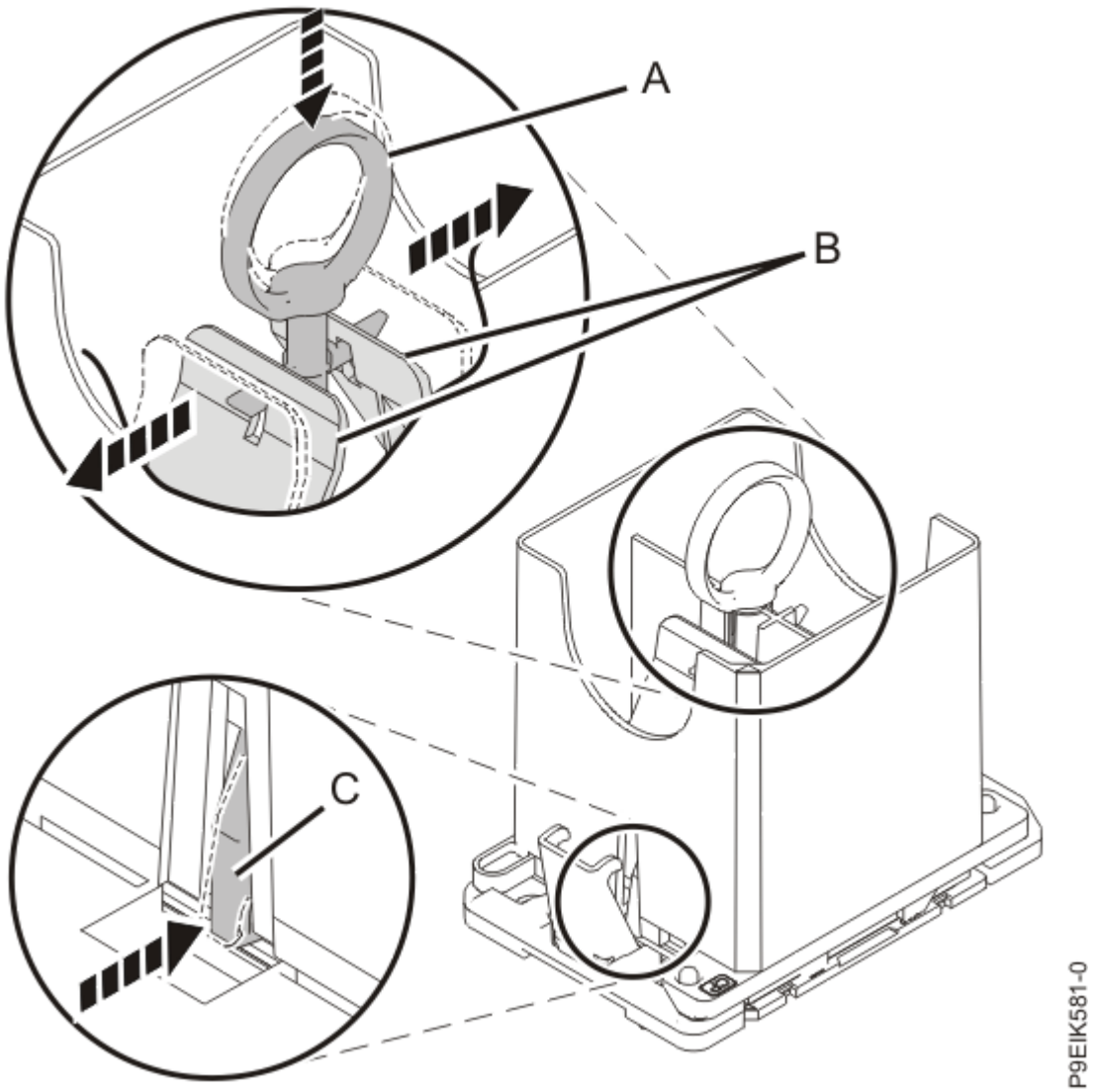


Figure 520. Locking the system processor module into the tool

j) Hold the outside of the tool and lift the tool and system processor module from the socket.

Lift the tool upward slowly to ensure that the jaws are fully engaged with the system processor module. Ensure that the system processor module does not disengage and fall back into the socket of the system processor module. If the system processor module falls back into the socket of system processor module, the pins may be damaged.

Place the system processor module at an angle on the top cover of the packaging as shown in the following figure. Setting the tool and system processor module at an angle on the top cover of the system processor module packaging makes it easier to place the system processor module in the packaging.

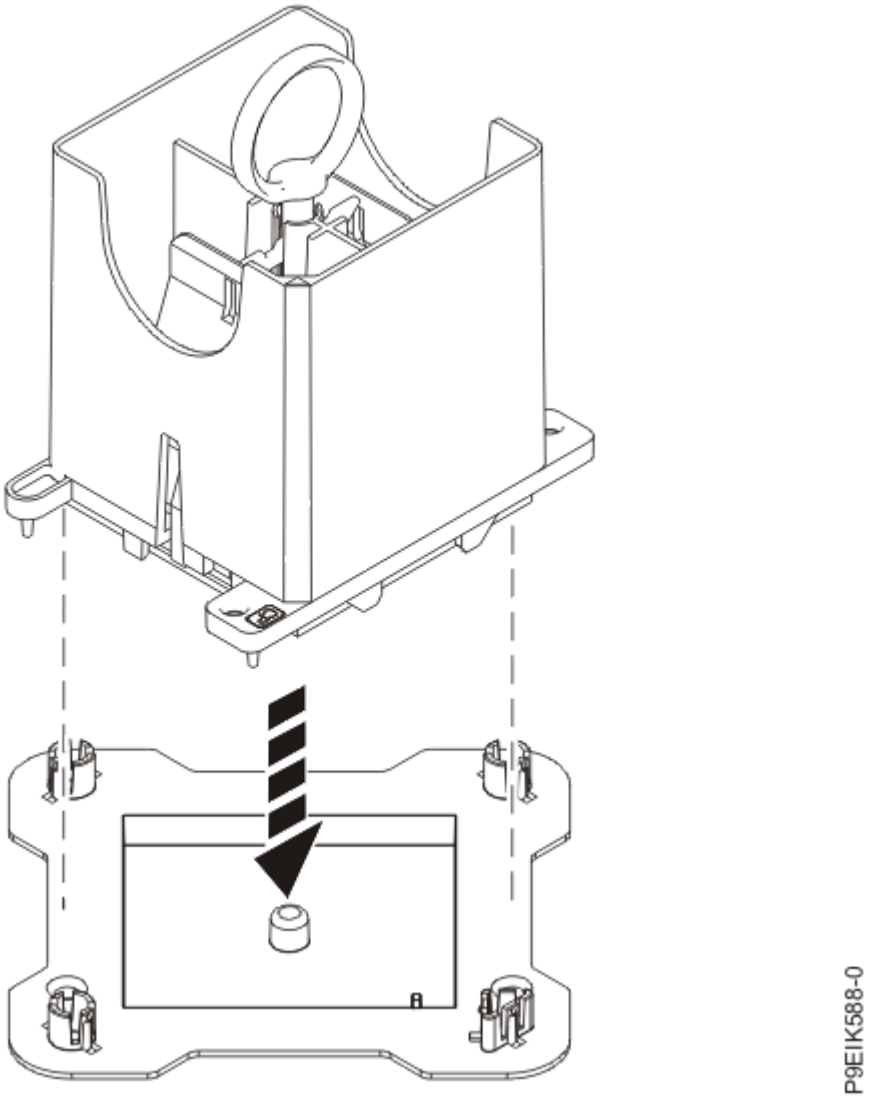


Figure 521. Placing the tool at an angle on the top cover of the packaging

k) Release the system processor module by pushing the ring **(B)** downwards. Hold the ring **(B)** down while pushing the blue tabs **(C)** inwards as shown in the following figure. Ensure that the ring catches the openings on the blue tabs, and that the blue tabs are locked in a fixed position.

   To prevent the system processor module from falling, pull up on the round lever before you place the tool on the top cover of the system processor module packaging.

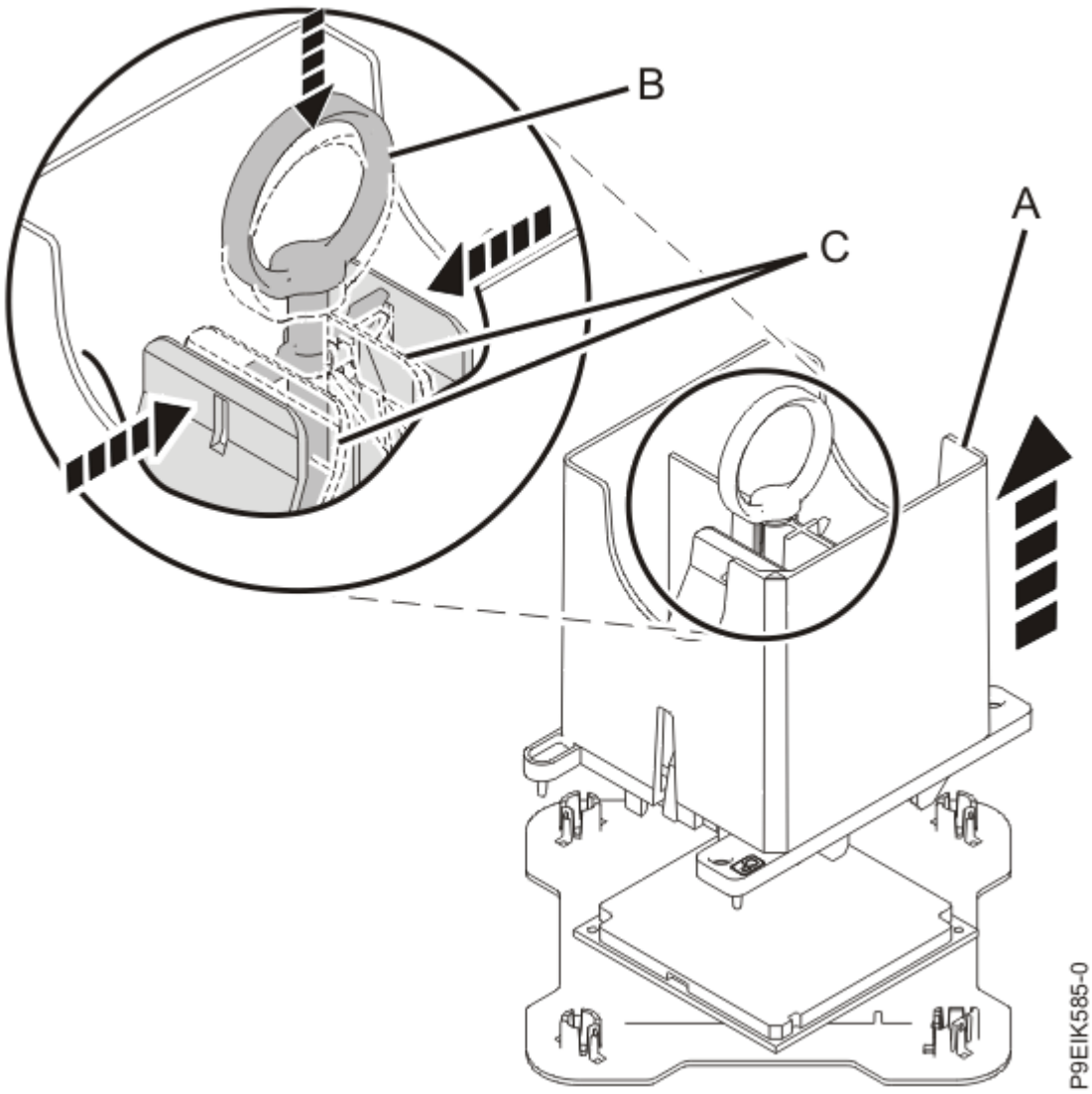


Figure 522. Releasing the system processor module from the tool

l) Repeat steps “5.a” on page 592 through “5.k” on page 599 to remove each heat sink and system processor module one at a time.

6. Remove the chassis.

a) Use a T15 Torx driver to remove eight screws from each side of the chassis as shown in the following figures.

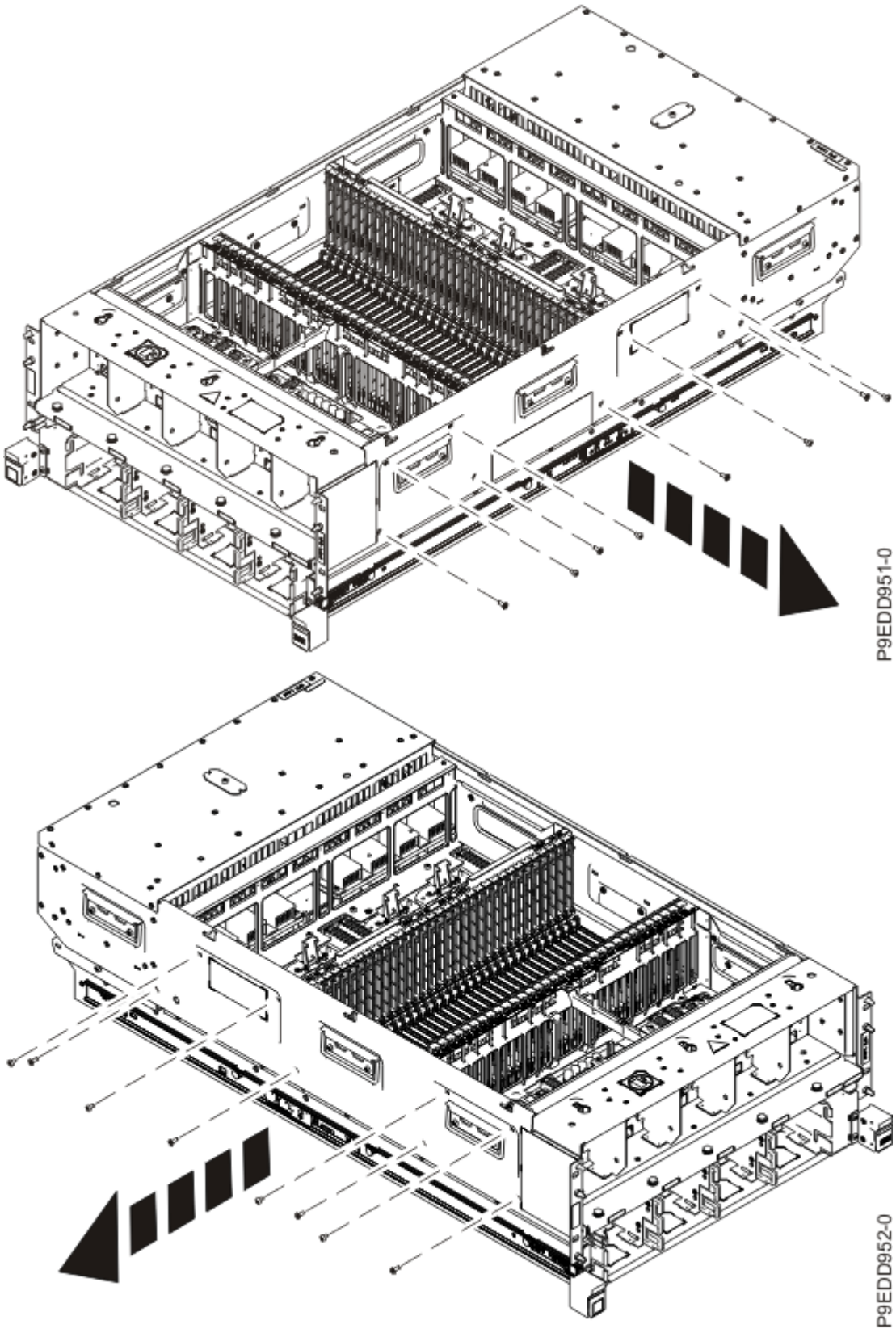


Figure 523. Removing the screws from the side of the chassis

b) Use a T15 Torx driver to remove the four front screws near the fan slots as shown in the following figure.

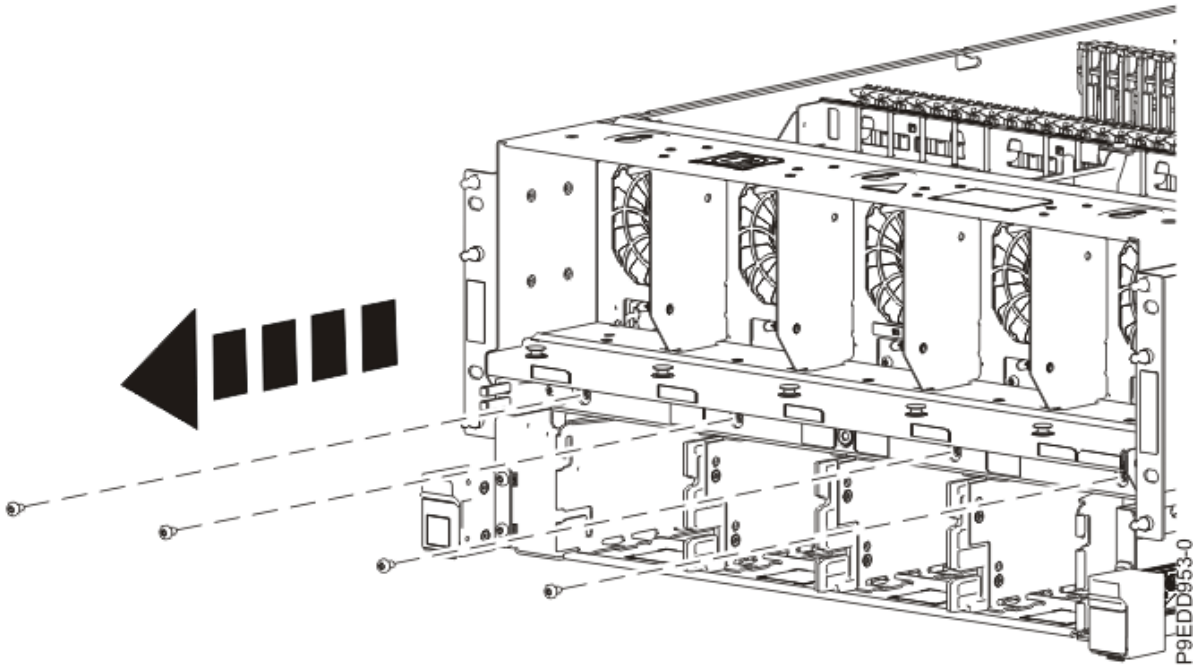


Figure 524. Removing the screws from the front of the chassis

c) Use a T15 Torx driver to remove two screws from the front of the top of the chassis.

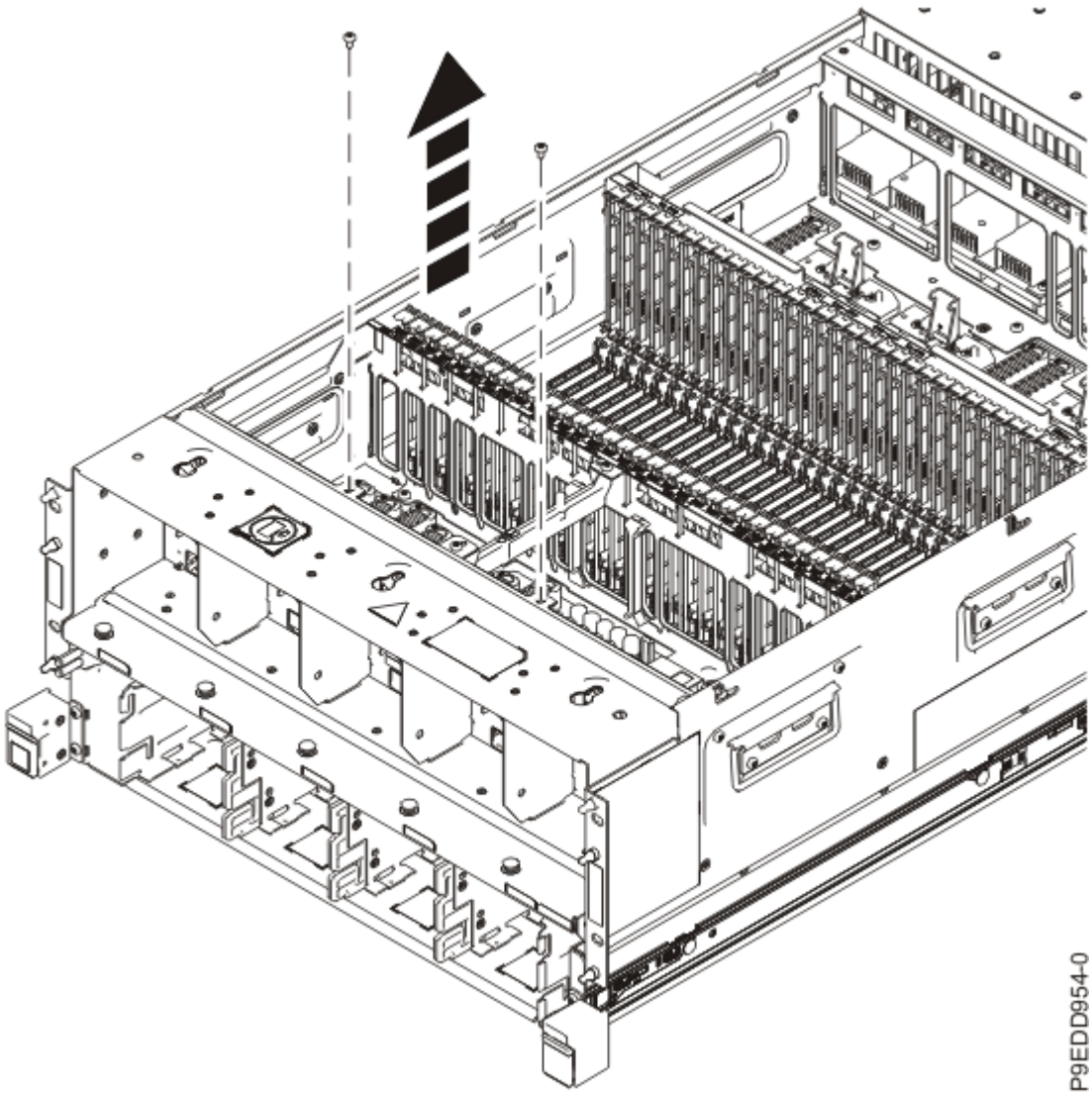


Figure 525. Removing the screws from the top of the chassis

d) Lift the chassis straight up away from the system backplane and set the chassis aside until you are ready to replace it.

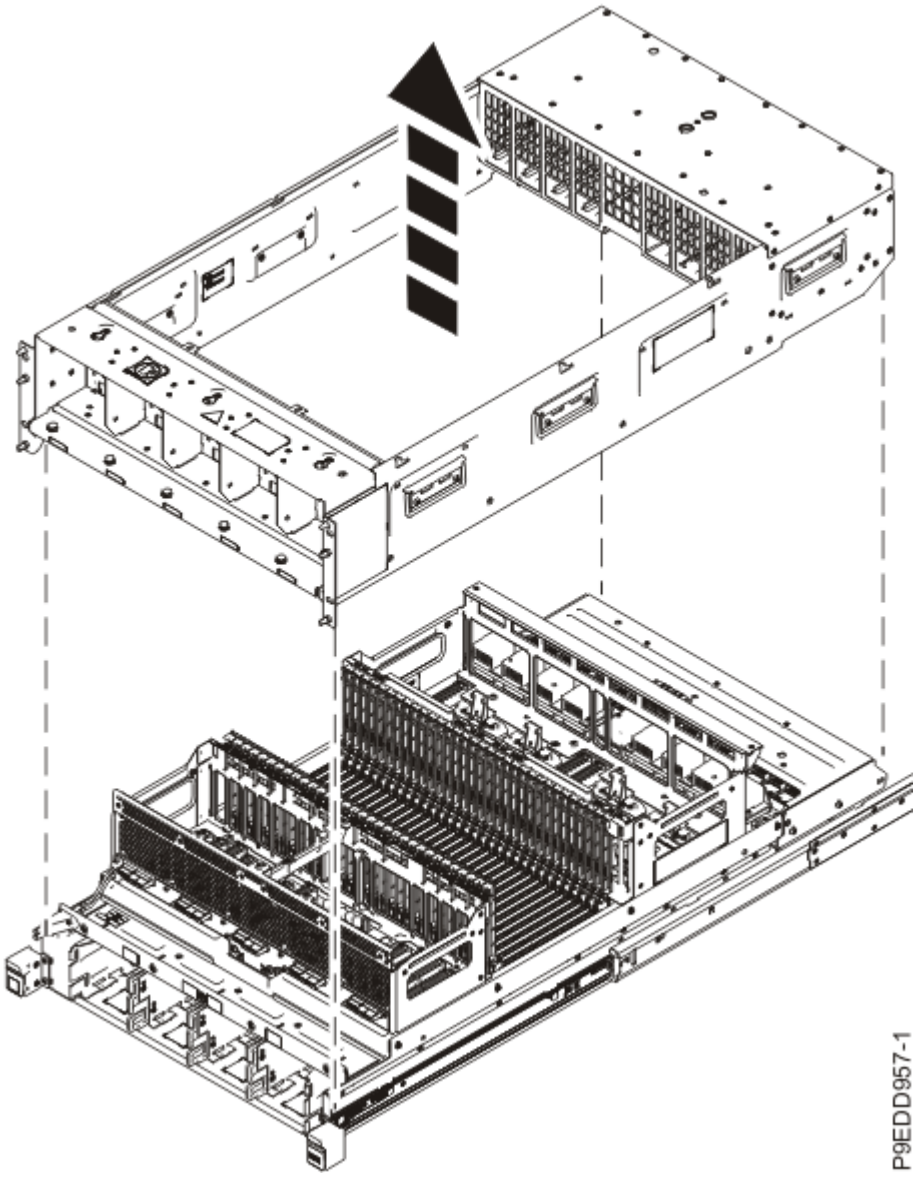


Figure 526. Lifting the chassis away from the system backplane

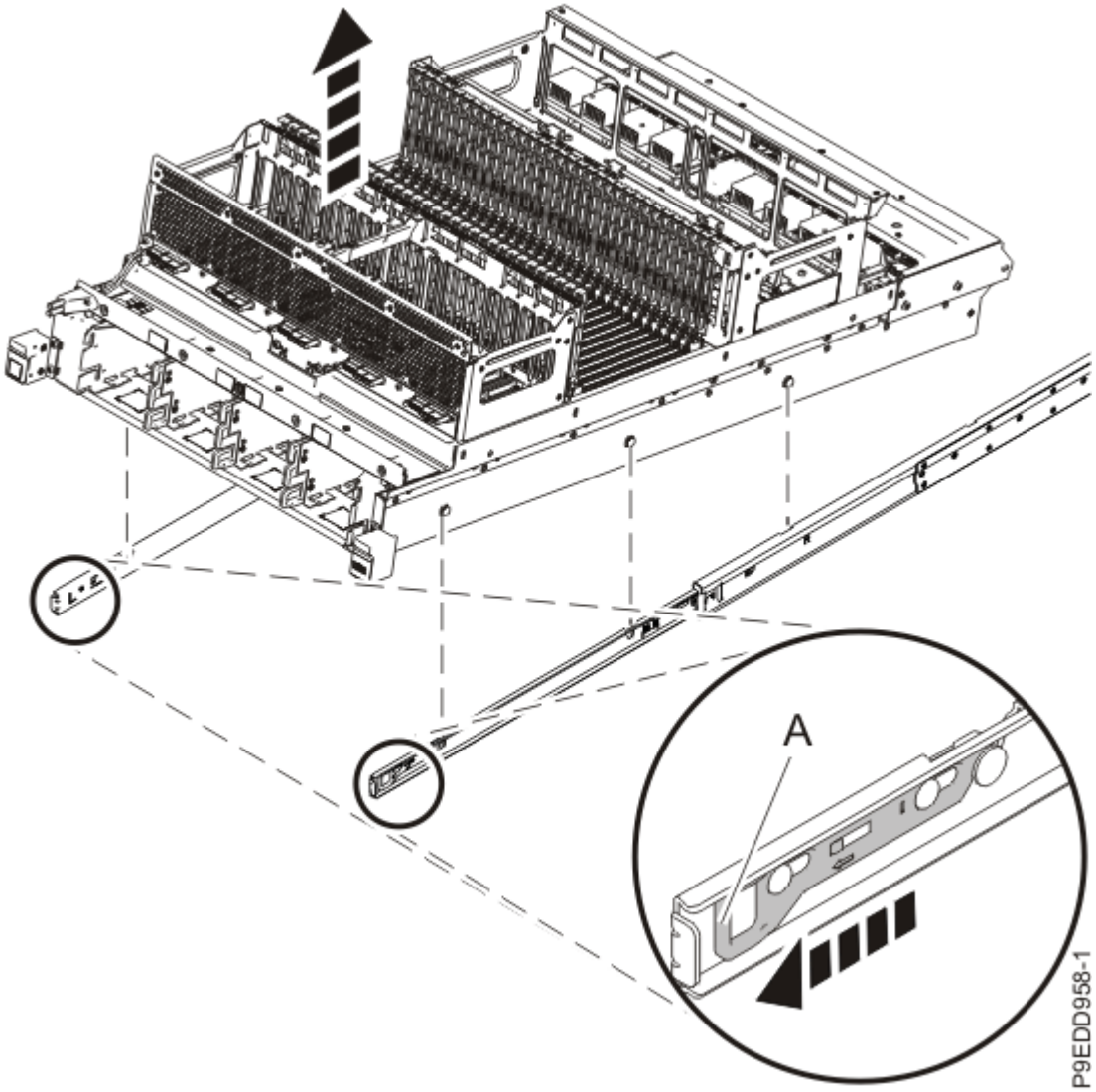
7. Remove the system backplane.

   Remember: After the chassis and all of the parts are removed, the system backplane requires two people or a lift tool to remove it. These instructions assume two people are performing the removal. If you're using a lift tool, refer to the lift tool documentation for instructions to use the lift tool.

   a) Pull the release latch **(A)** on each rail.

   b) As you carefully lift the system backplane off the rails., keep the back end low and the front end high.

   Figure 527. Lifting the system backplane off the rails



c) Place the system backplane on an appropriate ESD surface.

8. Remove both slam latch bracket assemblies from the system backplane by loosening the flat head screws **(A)** with a T15 Torx screwdriver as shown in the following figure.

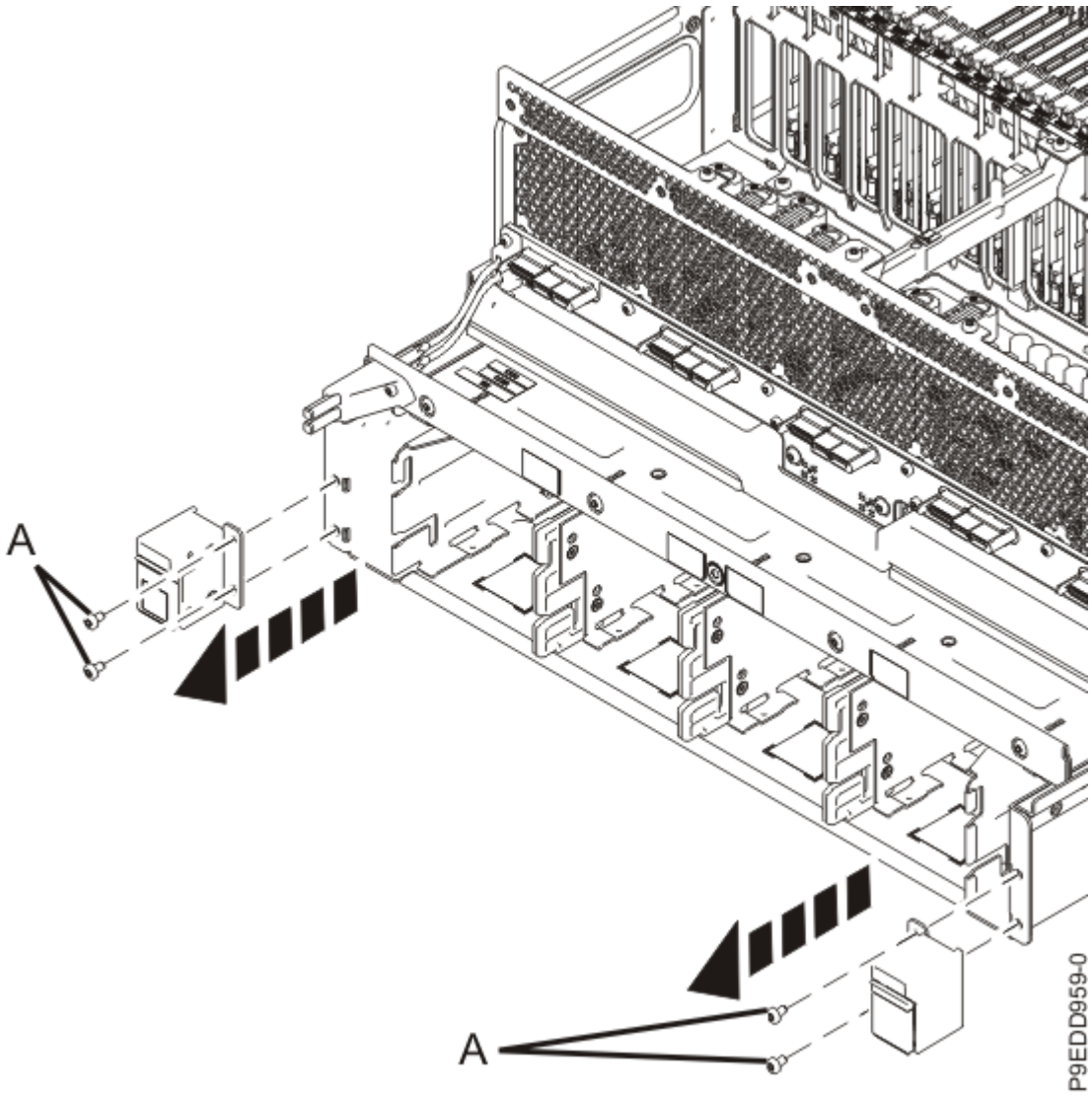


Figure 528. Removing the slam latches

Replacing the system backplane in the 9080-M9S system node

To replace the system backplane, complete the steps in this procedure.

Before you begin

Before you begin the removal and replacement procedure, ensure that you have the following items:

- Two service representatives or one service representative and a lift tool

  Note: These instructions assume two people are performing the removal. If you're using a lift tool, refer to the lift tool documentation for instructions to use the lift tool.
- System backplane kit (which includes a tray in which you can place the parts as you remove them)

  Note: If your system backplane kit does not include a tray, you can also place the parts on a large electrostatic discharge (ESD) mat.
- Service representative tool kit (which includes tweezers, 4 mm T handle Allen wrench, T10 Torx bit, T15 Torx bit, ¼ in hex driver to ¼ in square socket adapter driver, ¼ in driver with 6 in extension, ¼ in ratchet driver, and ¼ in driver handle).

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 new system backplane from its packaging.
3. Replace the slam latch assemblies on the new system backplane by tightening the flat head screws **(A)** with a T15 Torx screwdriver as shown in the following figure.

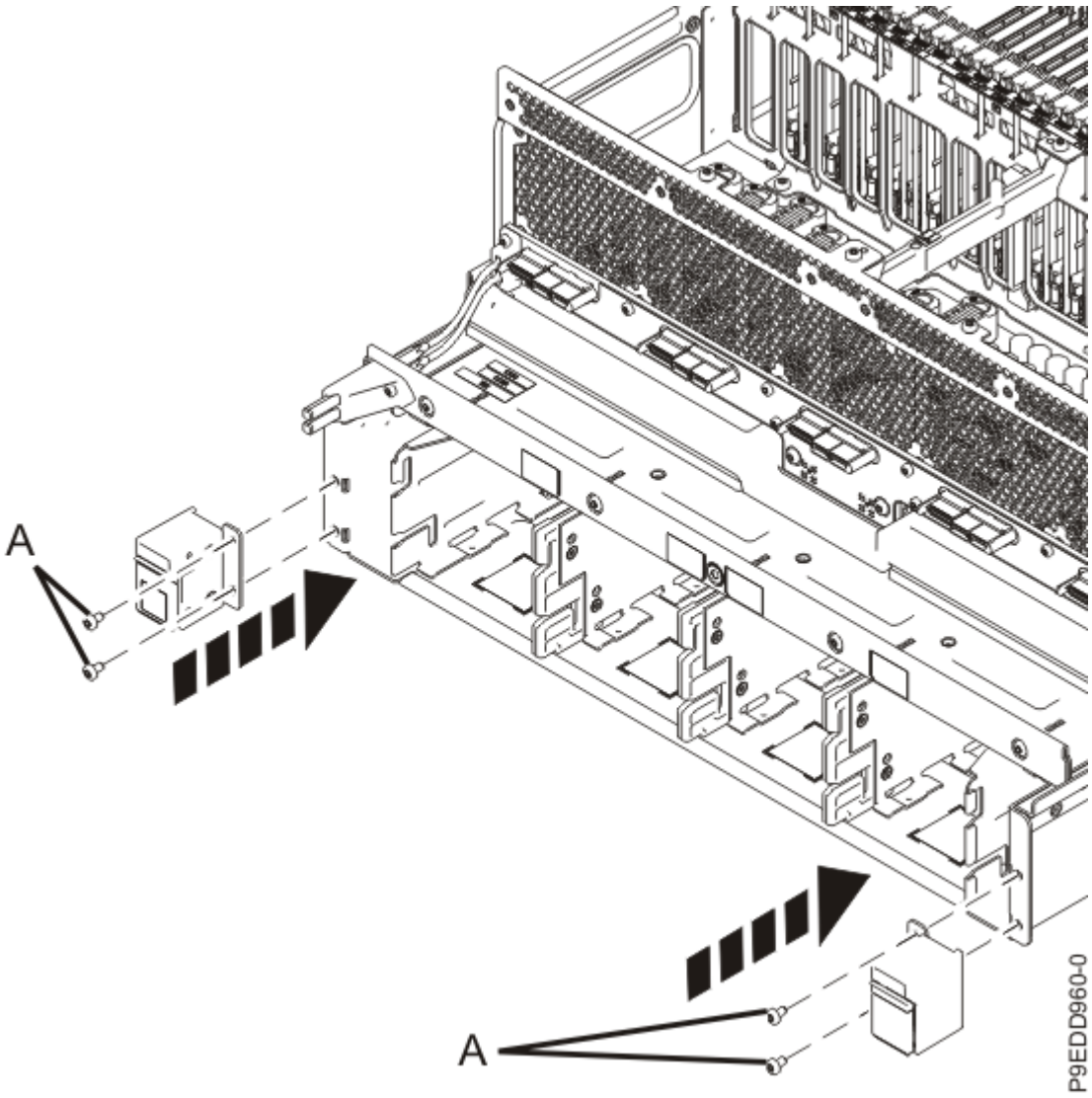


Figure 529. Replacing the slam latch assemblies

4. Install the new system backplane.

   Remember: The system backplane requires two people or a lift tool to install it. These instructions assume two people are performing the installation. If you're using a lift tool, refer to the lift tool documentation for instructions to use the lift tool.

   a) Extend the slide rails from the rack, if needed.

   b) As you carefully lower the new system backplane into the slide rails, keep the front end high and the rear end low. The rear guide pins on the system backplane must make initial contact with the slide rail mounting slots.

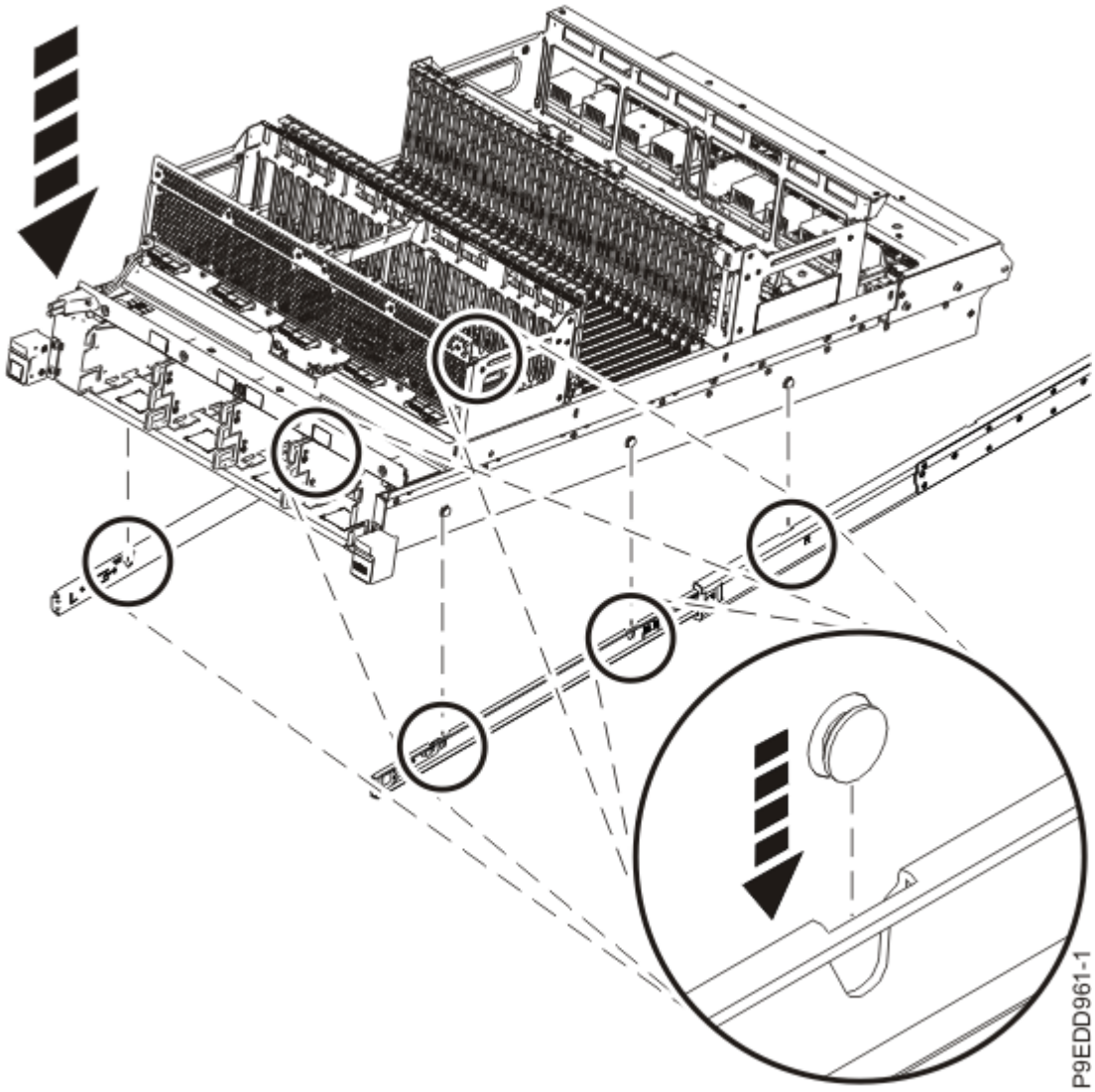


Figure 530. Lowering the new system backplane into the rails

c) When the rear guide pins make contact with the slide rail mounting slots, slide the system backplane towards the rear approximately 6 mm (.25 in) to align the middle and front guide pins.

d) As you continue lowering the front of the system backplane into the rails, the middle and front guide pins drop into the slide rail slots.

You might find it helpful to hold the slide rails tightly against the system backplane so that the pins will be seated flush with the rail slots.

5. Replace the chassis.

a) Lower the chassis straight down over the system backplane.

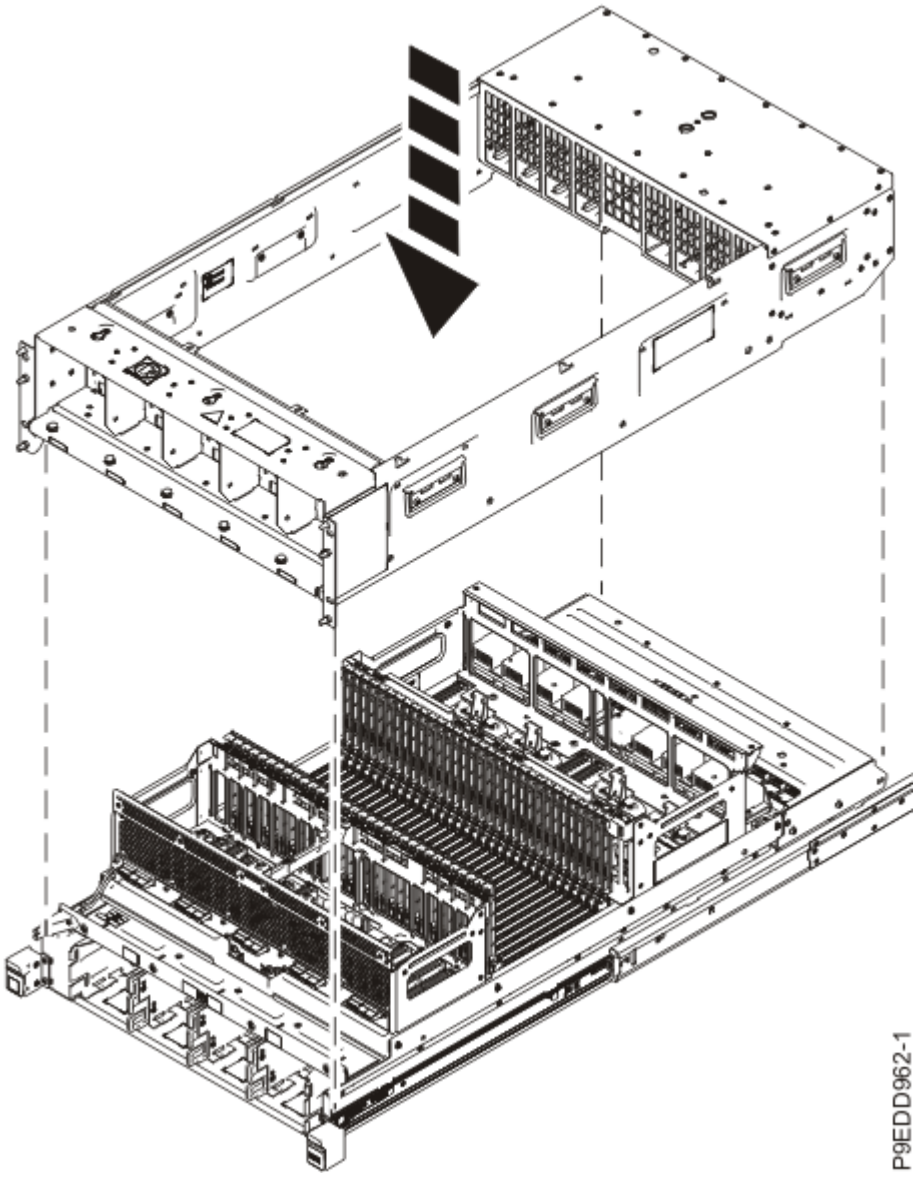
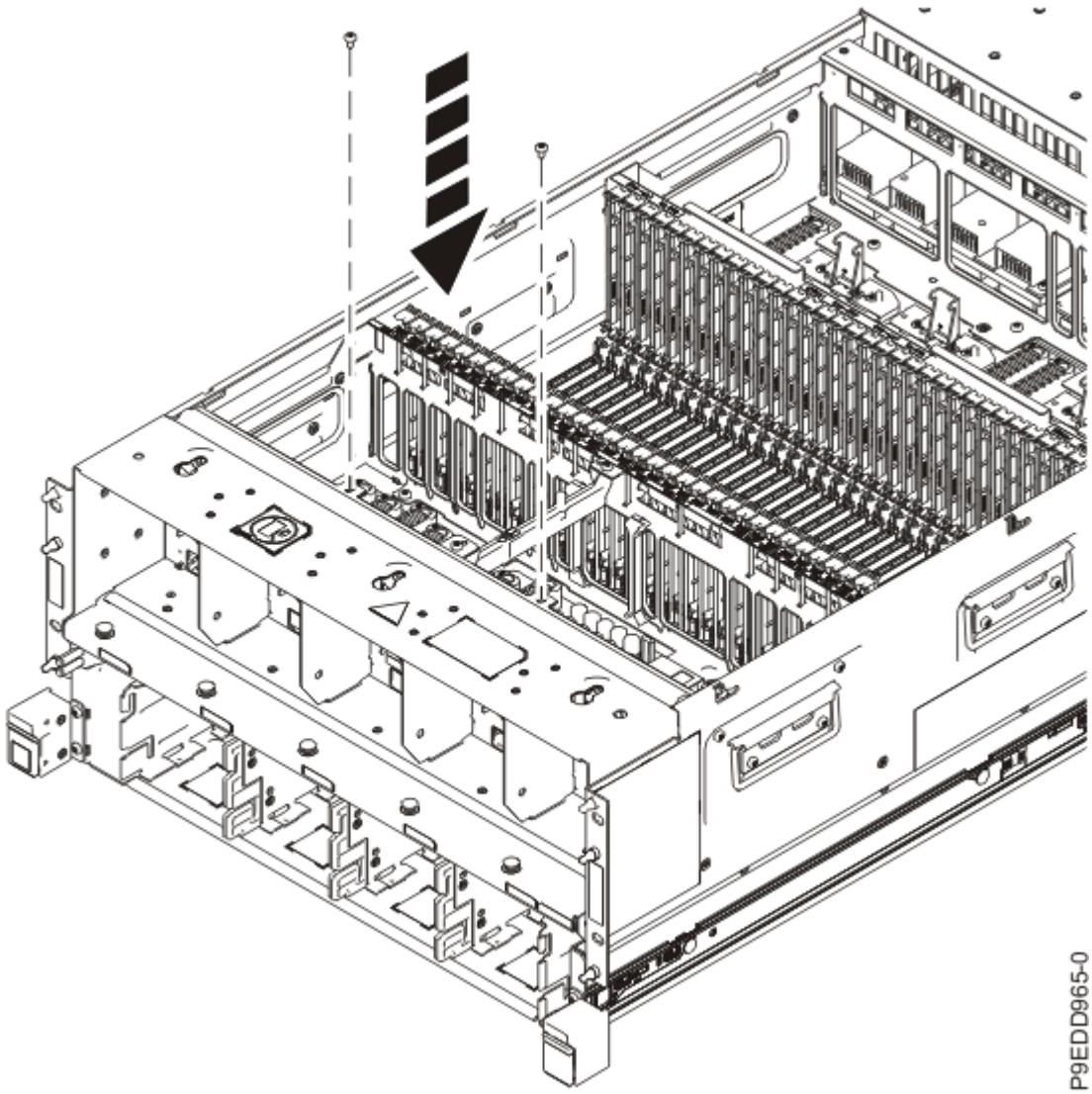


Figure 531. Lowering the chassis over the system backplane

b) Use a T15 Torx driver to replace two screws in the top of the chassis.

Figure 532. Replacing the screws in the top of the chassis



c) Use a T15 Torx driver to replace four front screws near the fan slots as shown in the following figure.

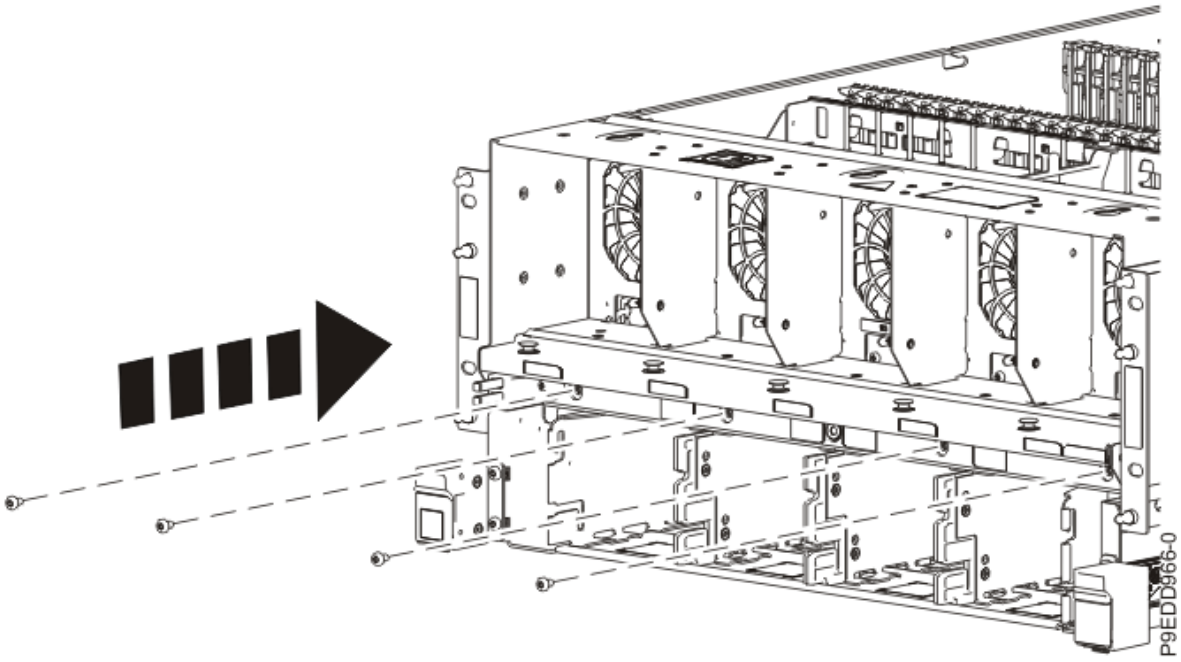
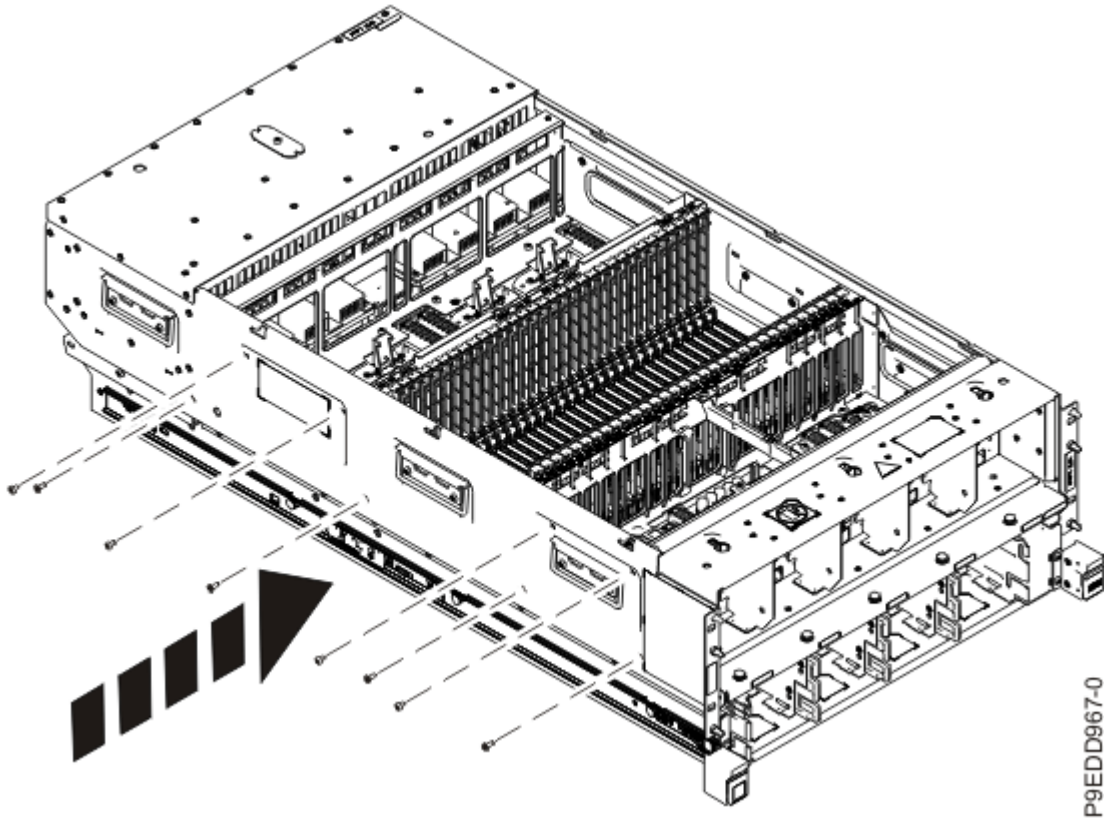
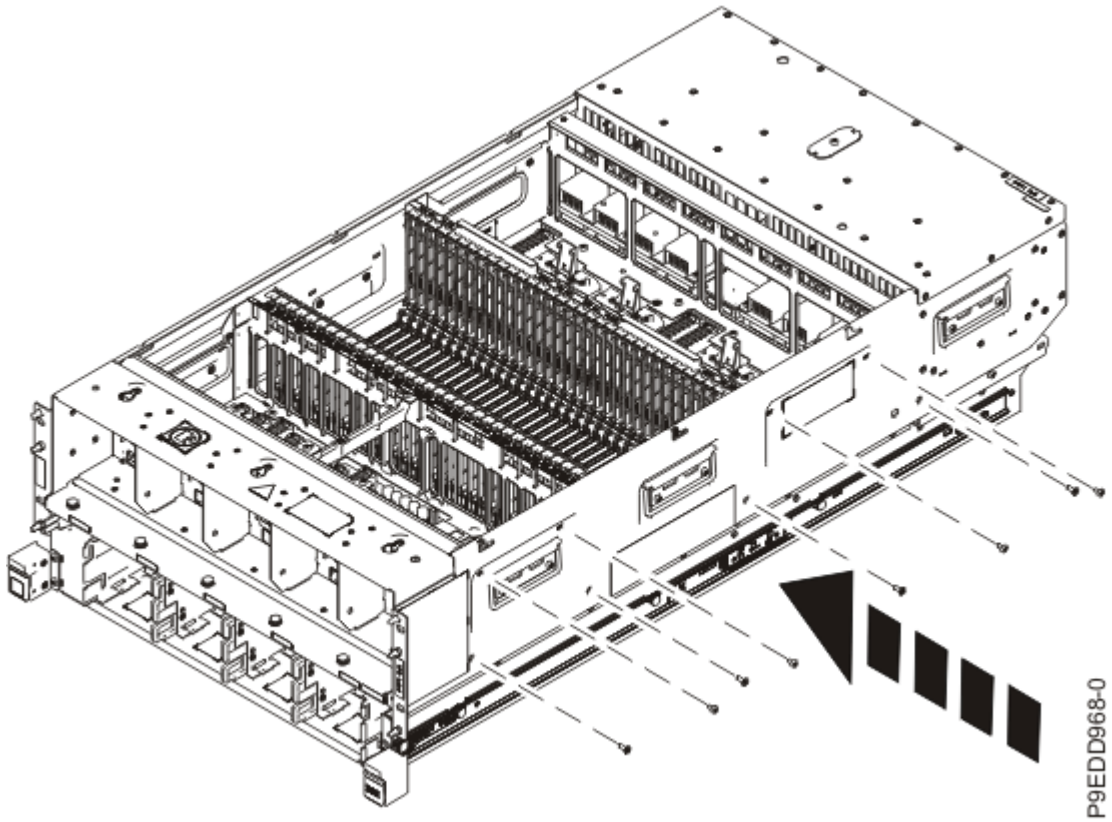


Figure 533. Replacing the screws in the front of the chassis

d) Use a T15 Torx driver to replace eight screws from each side of the chassis as shown in the following figures.

Figure 534. Replacing the screws in the side of the chassis





6. Remove the socket dust cover from one of the system processor module sockets on the new system backplane.

   Important: It is recommended that you remove the socket dust covers one at a time and immediately install a system processor module in each socket.

   a) Grasp the latches on both sides of the socket dust cover and squeeze them inwards until the latches release from the pins on the system backplane. See the following figure.

   b) Lift the socket dust cover straight up as shown in the following figure. Set the dust cover aside.

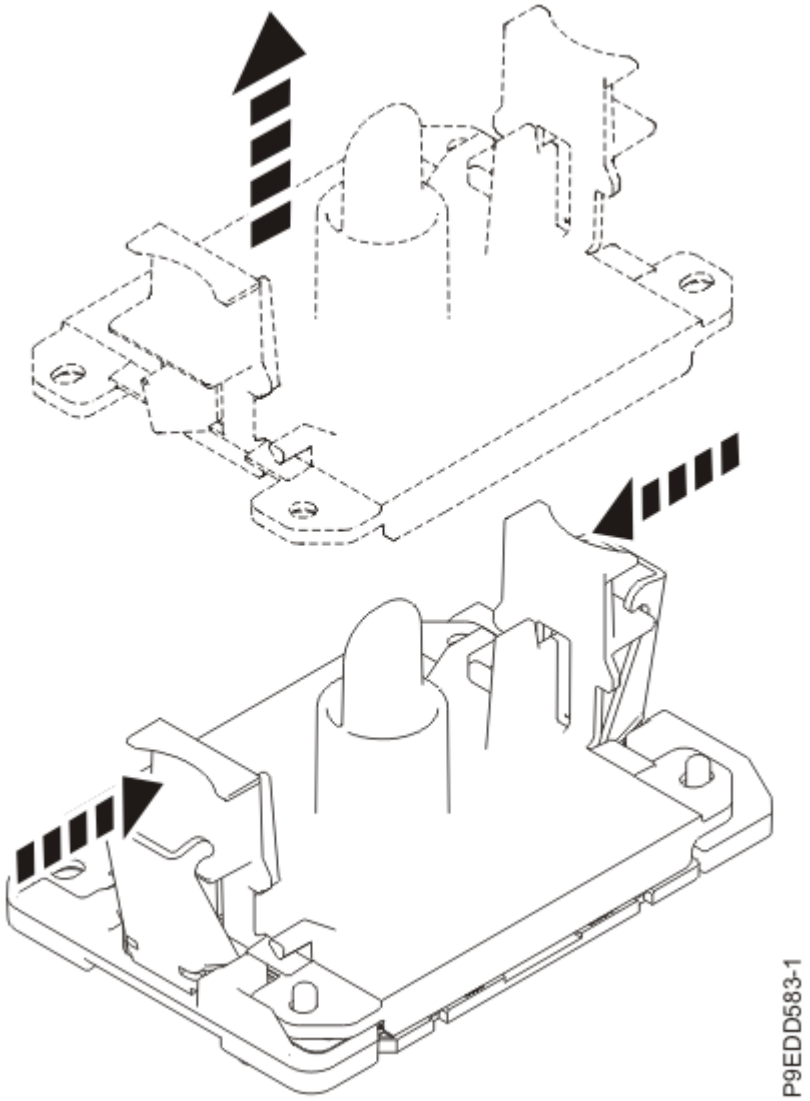


Figure 535. Removing the socket dust covers

c) Continue to step “7” on page 613 to install a system processor module in the socket from which you just removed the dust cover.

7. Install a system processor module from the original system backplane in the exposed socket on the new system backplane.
   a) Lower the tool over the system processor module on the top cover of the packaging as shown in the following figure. Ensure that the beveled edge on the tool aligns with the beveled edge of the processor. Ensure that the two guide pins **(A)** are inserted into the alignment holes **(B)** on each side of the tool.

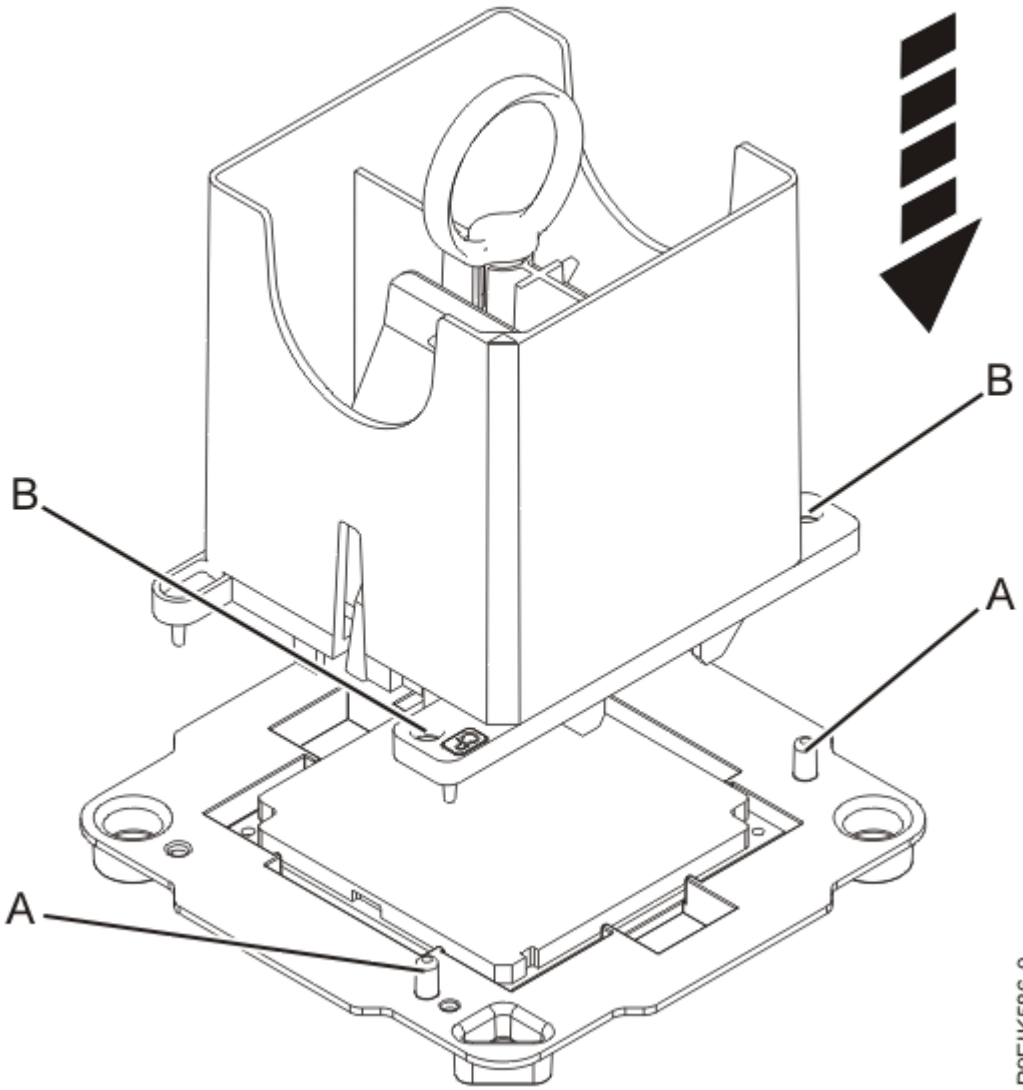


Figure 536. Lowering the removal tool onto the system processor module

b) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** slightly so that the blue tabs **(B)** snap outward and the jaws engage with the system processor module **(C)** as shown in the following figure.

   Make sure that both of the tool jaws are locked onto the system processor module by pushing down on the tool.

   Important: Do not press the blue release tabs until directed to do so later.

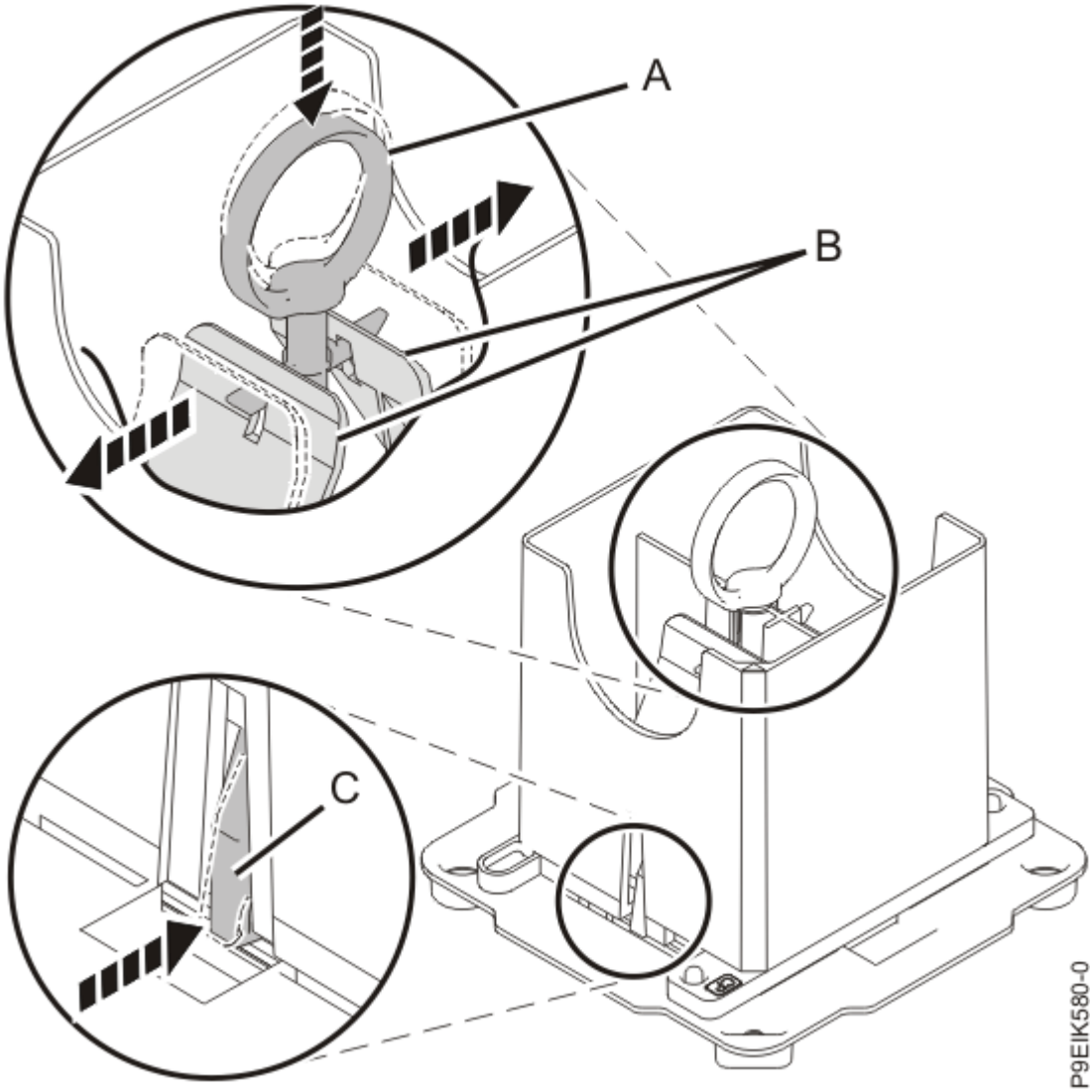


Figure 537. Locking the system processor module into the tool

c) Hold the sides of the tool with system processor module and carefully lift the tool out of the system processor module tray.

d) Lower the tool and system processor module onto the socket from which you just removed a dust cover. Align the beveled corner of the tool with the beveled corner on the socket. Align the guide pins **(A)** with the alignment holes **(B)** on each side of the tool. Use care to lower the tool evenly without tilting the tool. Refer to the following figure.

Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the socket. If the tool and the system processor module are not aligned with the guide pins, lift the tool and the system processor module and reposition them.

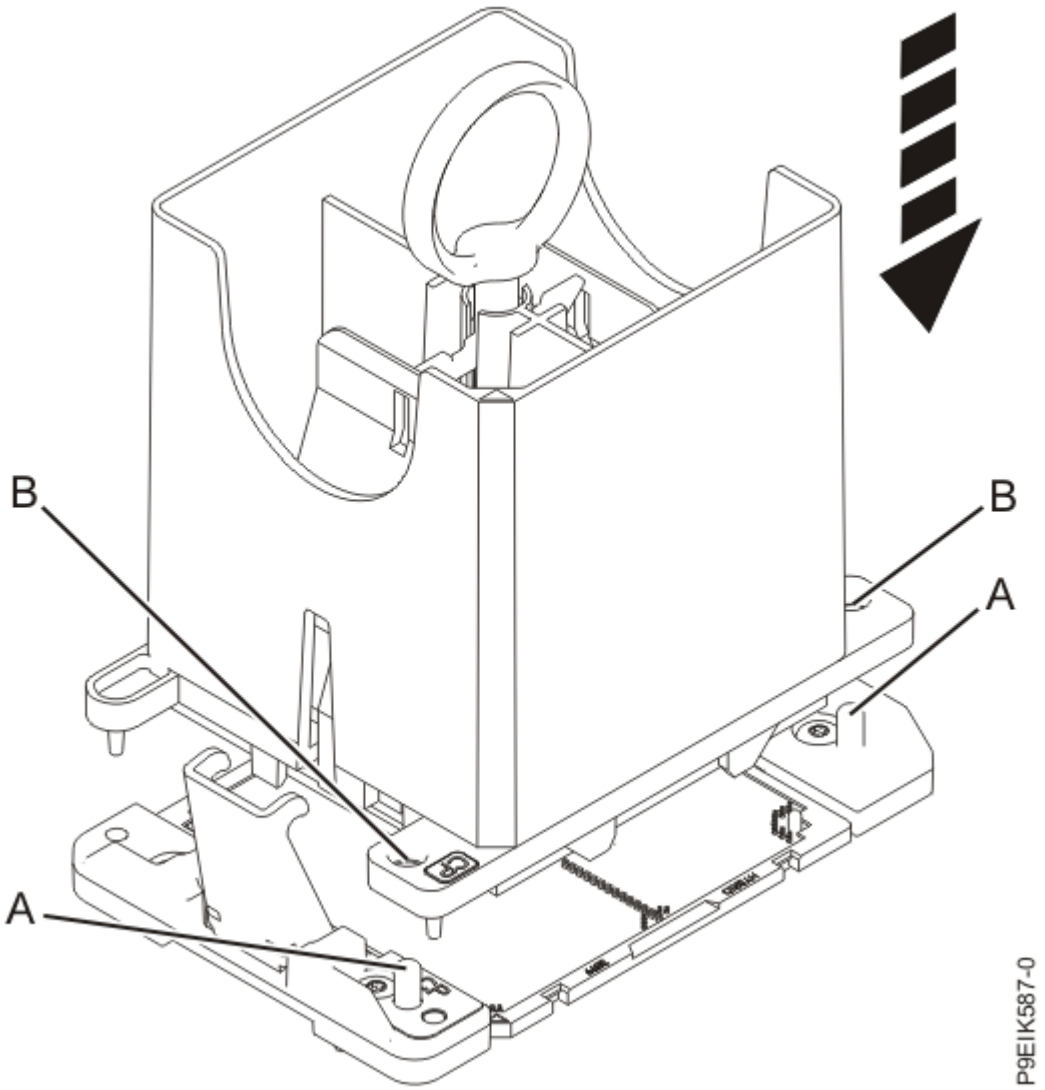


Figure 538. Installing the system processor module

e) Open the latches that hold the system processor module in the supplied removal tool **(A)** as shown in the following figure. Push down on the ring **(B)** while pressing in on the tabs **(C)**.

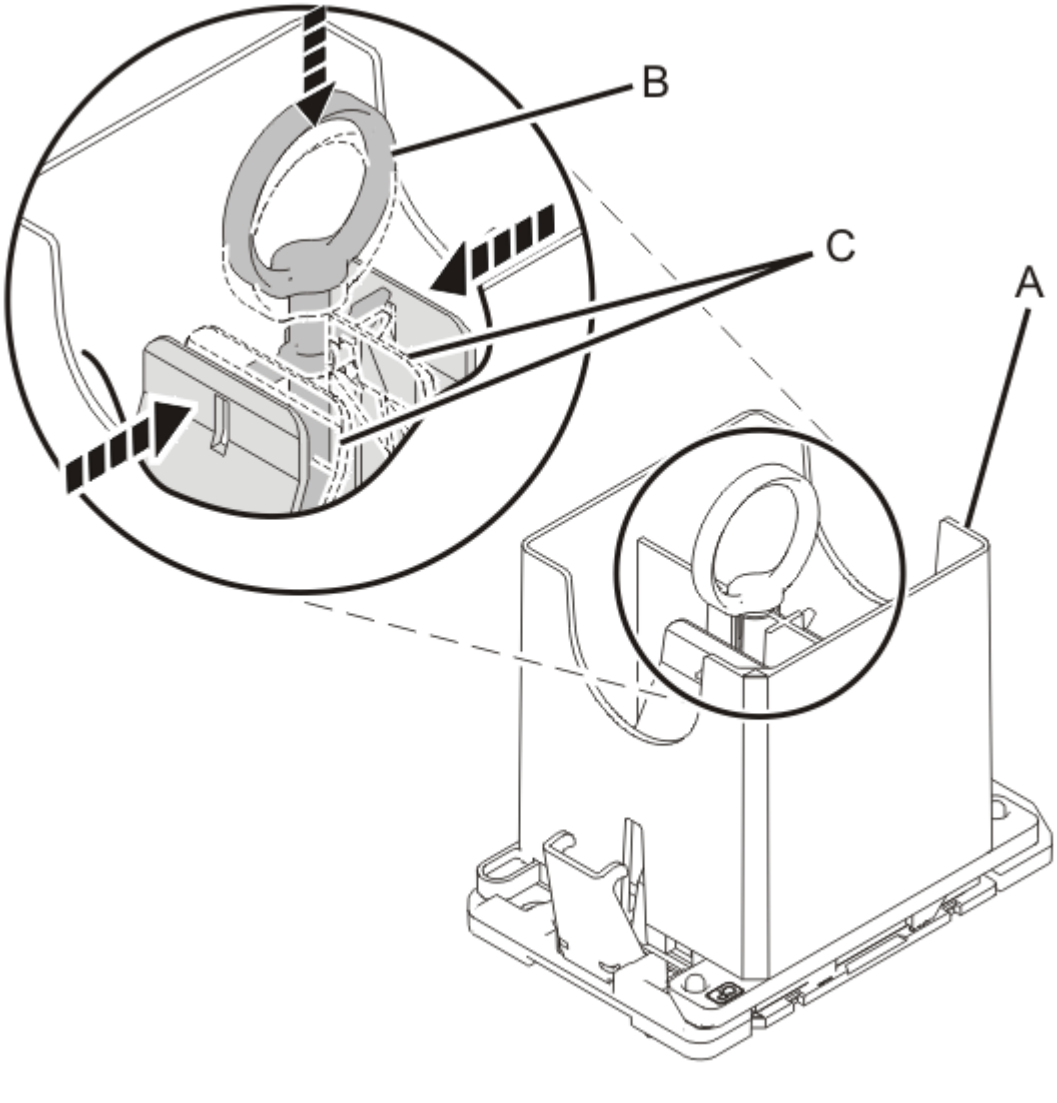


Figure 539. Removing the system processor module tool

f) Lift the tool off the system processor module.

g) Inspect the thermal interface material (TIM) for visible signs of damage, as shown in the following figure.

- The thermal interface material (TIM) is typically adhered to the heat sink.
- Unless damaged, the TIM that is adhered to the heat sink can be reused.
- The previous TIM needs to be perfectly flat to be reused.
- If the TIM is damaged, torn, wrinkled, or if you are unsure, do not reuse the removed heat sink.
- Ensure that you have a spare TIM and heat sink on hand.

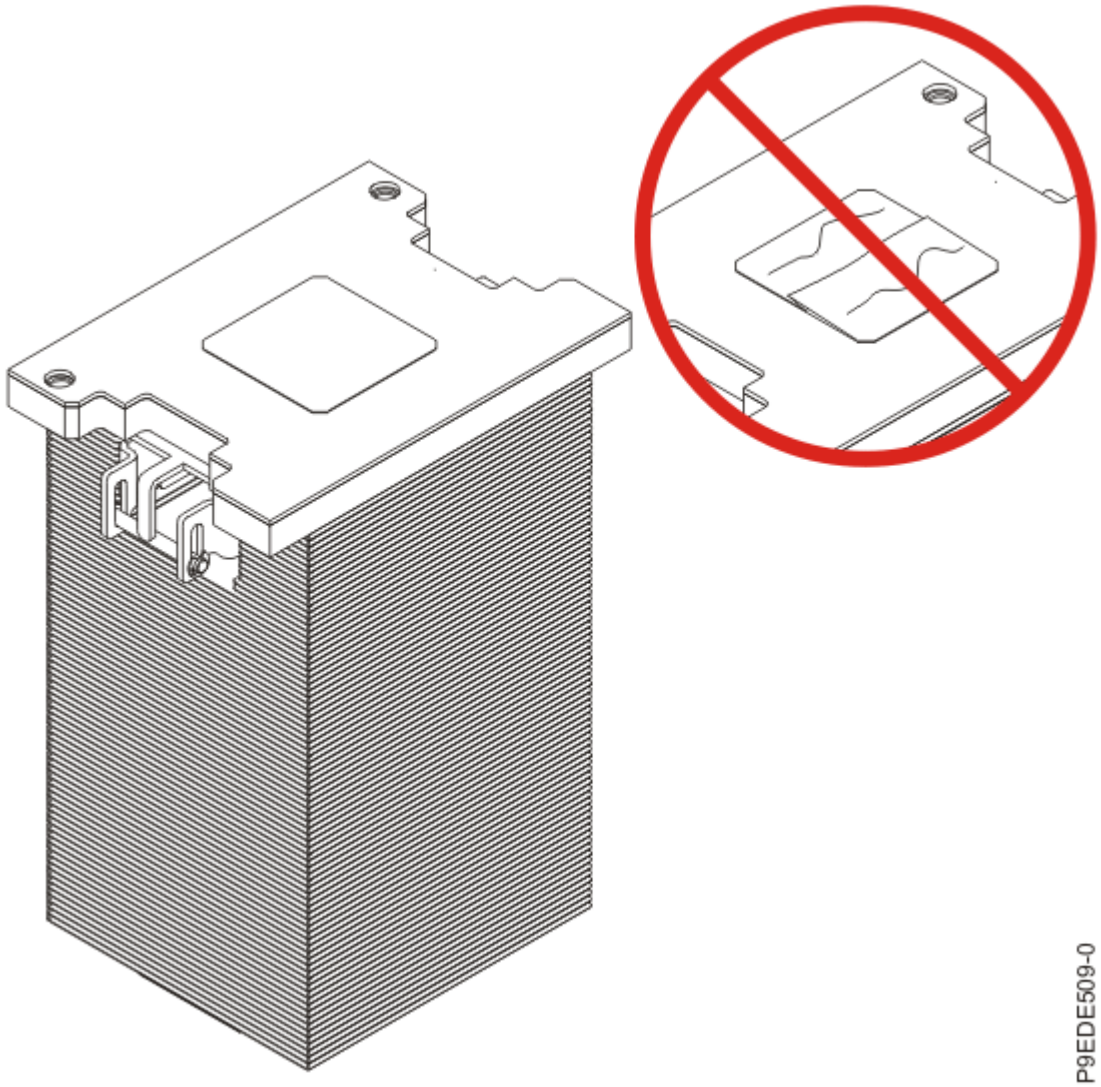


Figure 540. Inspecting the thermal interface material

h) Choose one of the following repair options:

Option	Repair procedure
Is the TIM damaged?	It is damaged. Continue to step "7.i" on page 618 to replace the TIM and install the existing heat sink.
Is the TIM not damaged?	It is not damaged and can be reused. Continue to step "7.l" on page 619 to move the TIM and install the existing heat sink.

i) To install new TIM, open the TIM packaging. Carefully remove the TIM, holding it by the edges of the carrier strip and holding it away from the shipping container.

j) Remove the protective film from the clear carrier strip by using the supplied tweezers.

Note: The TIM must remain flat. Small wrinkles are acceptable, but folds are not acceptable.

k) Using the tweezers, remove the TIM from the carrier strip and center it onto the system processor module. Then, continue to step "7.m" on page 620.

The TIM has no preferred up side. The TIM can be placed on the processor and centered as shown in the following figure.

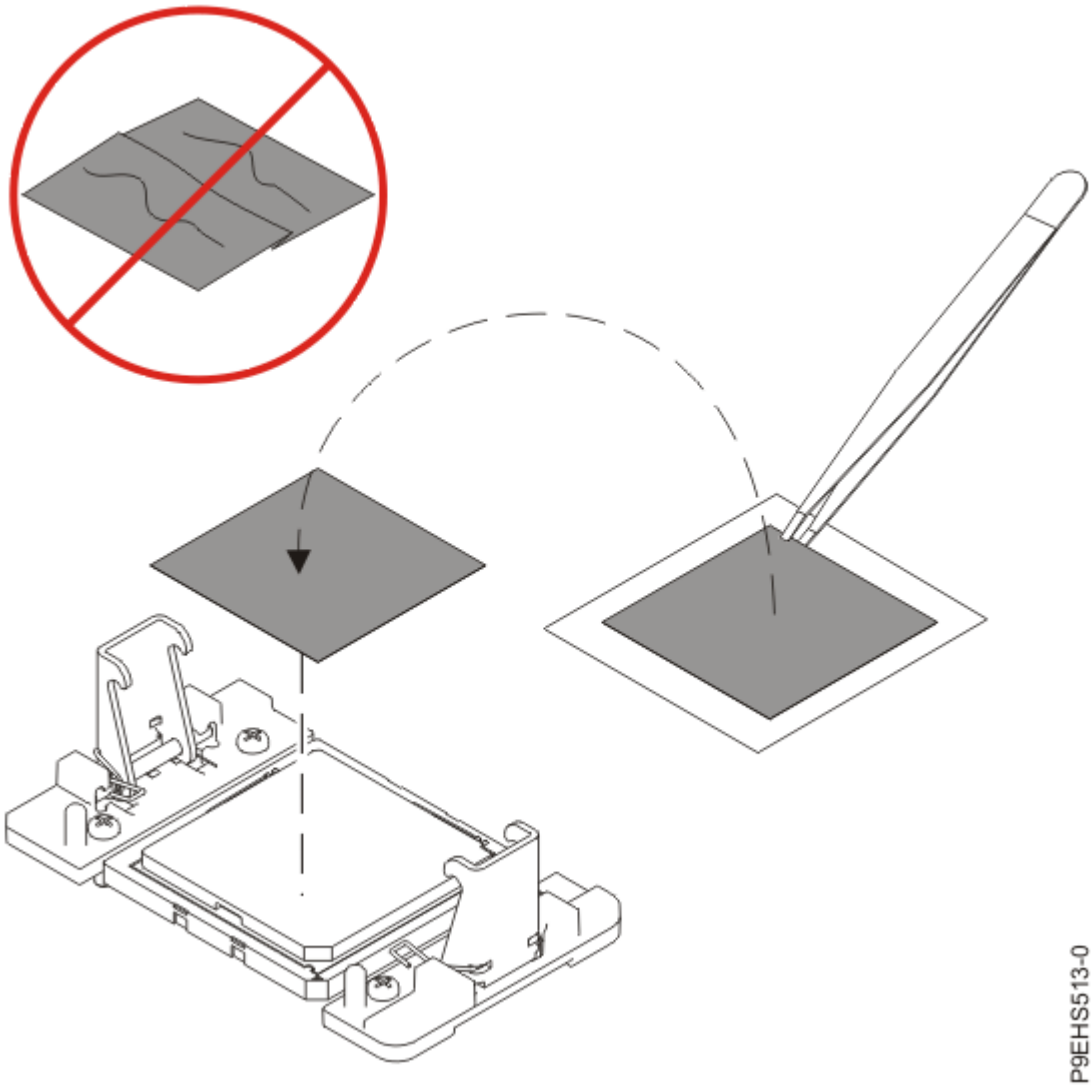


Figure 541. Installing a new TIM onto the system processor module

l) Using the tweezers, move the old processor's TIM from the clean, dry surface and center it onto the new system processor module. Then, continue to step “7.m” on page 620.

The TIM has no preferred up side. The TIM can be placed on the processor and centered as shown in the following figure.

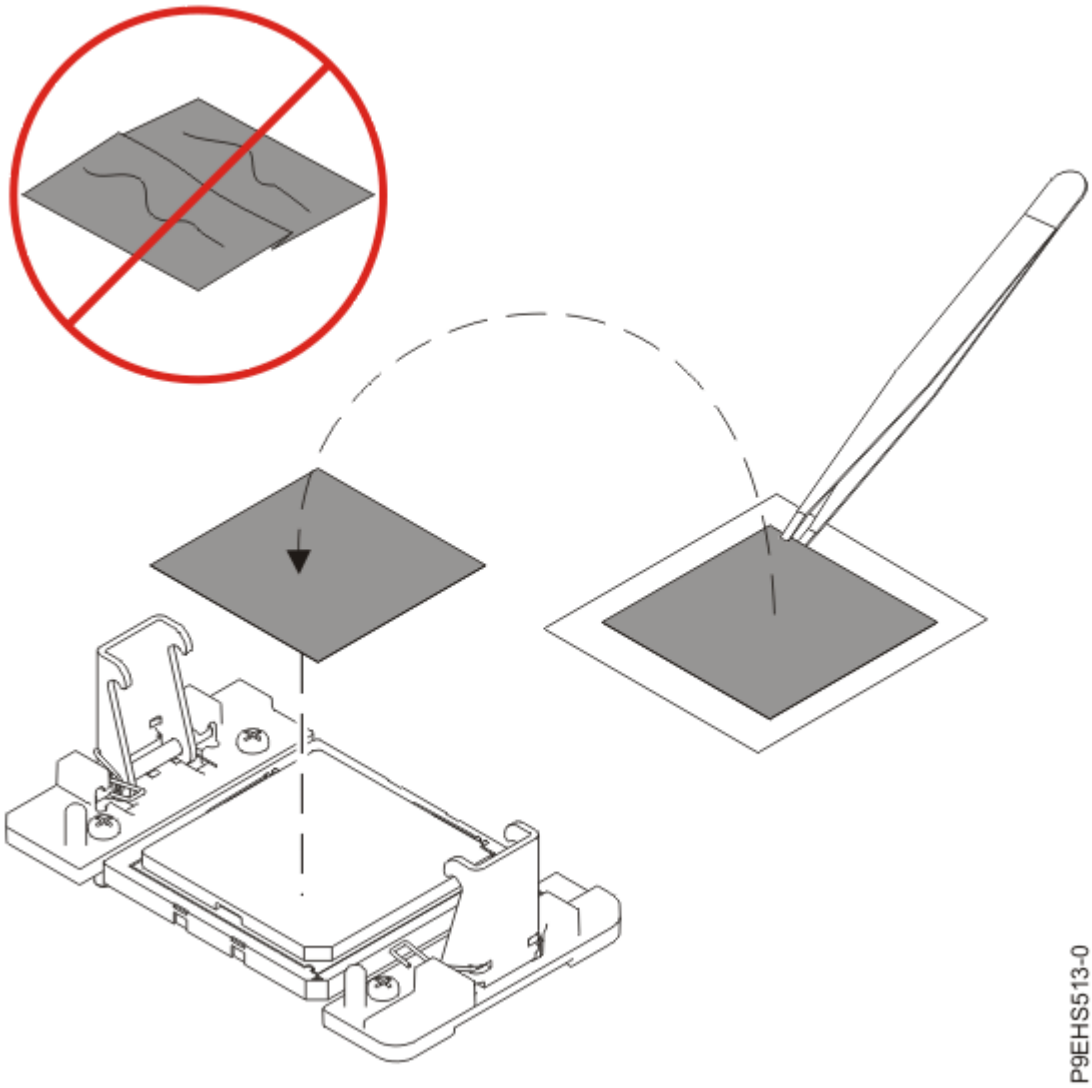


Figure 542. Moving the TIM onto the processor

m) Place the heat sink on the TIM as shown in the following figure.

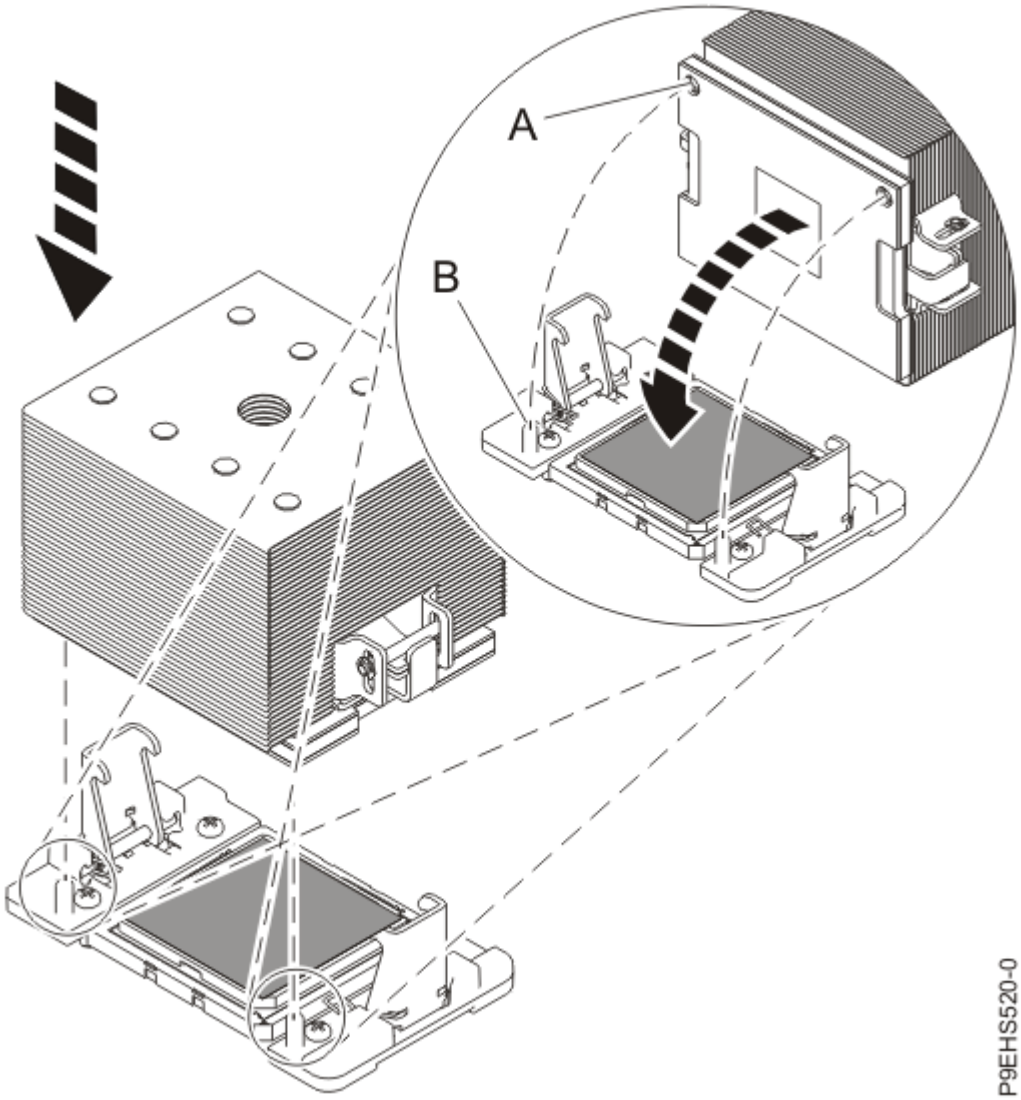


Figure 543. Installing the heat sink on the TIM

n) Tighten the center load screw clockwise by using the supplied hex key as shown by **(B)** in the following figure until a firm stop is reached. If the heat sink moves noticeably, the load arms are not engaged. Unscrew the center load screw and repeat this step again.

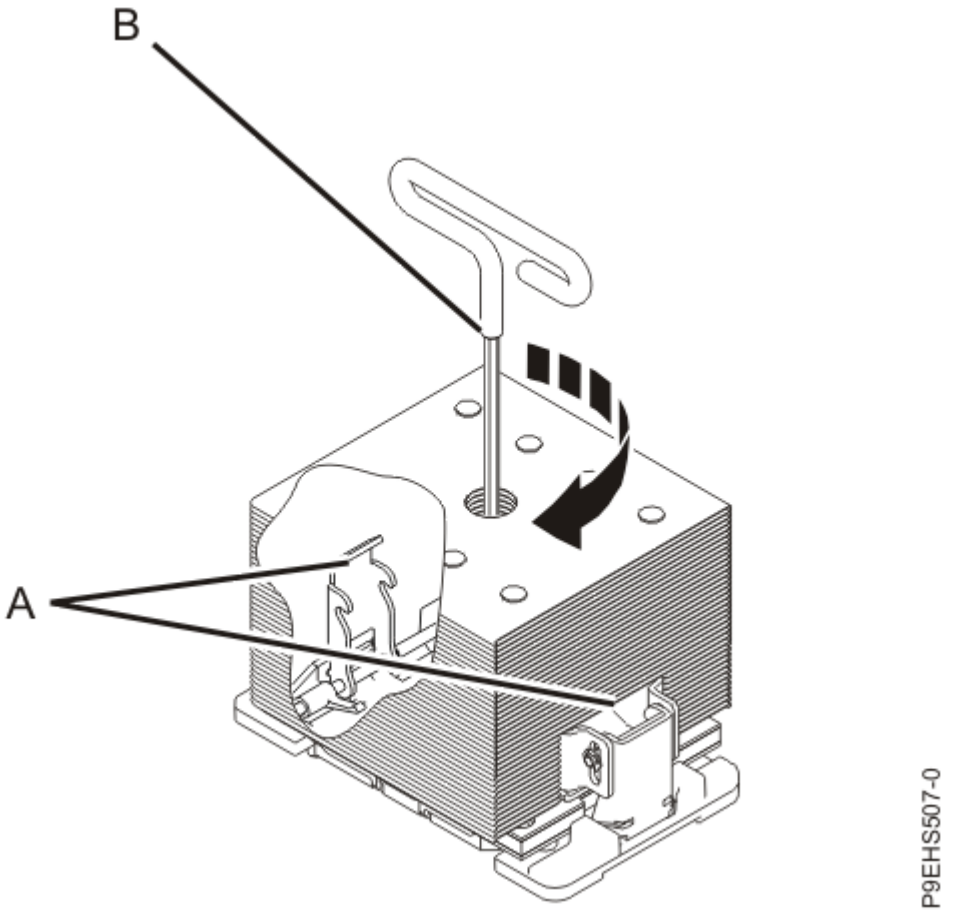


Figure 544. Tightening the center load screw on the heat sink

8. Repeat steps “6” on page 612 through “7” on page 613 until you have removed all of the socket dust covers from the new system backplane and replaced all of the system processor modules and heat sinks one at a time in the new system backplane.
9. Install the socket dust covers on the original system backplane.

   The socket dust covers protect the sockets during shipping.

   a) Lower the socket dust cover over one of the sockets on the system backplane and ensure that the holes **(B)** on the socket dust cover align with the two guide pins **(A)** on the system backplane. Push straight down until the latches **(D)** on the socket dust cover engage with the latches **(C)** on the backplane. Refer to the following figure.

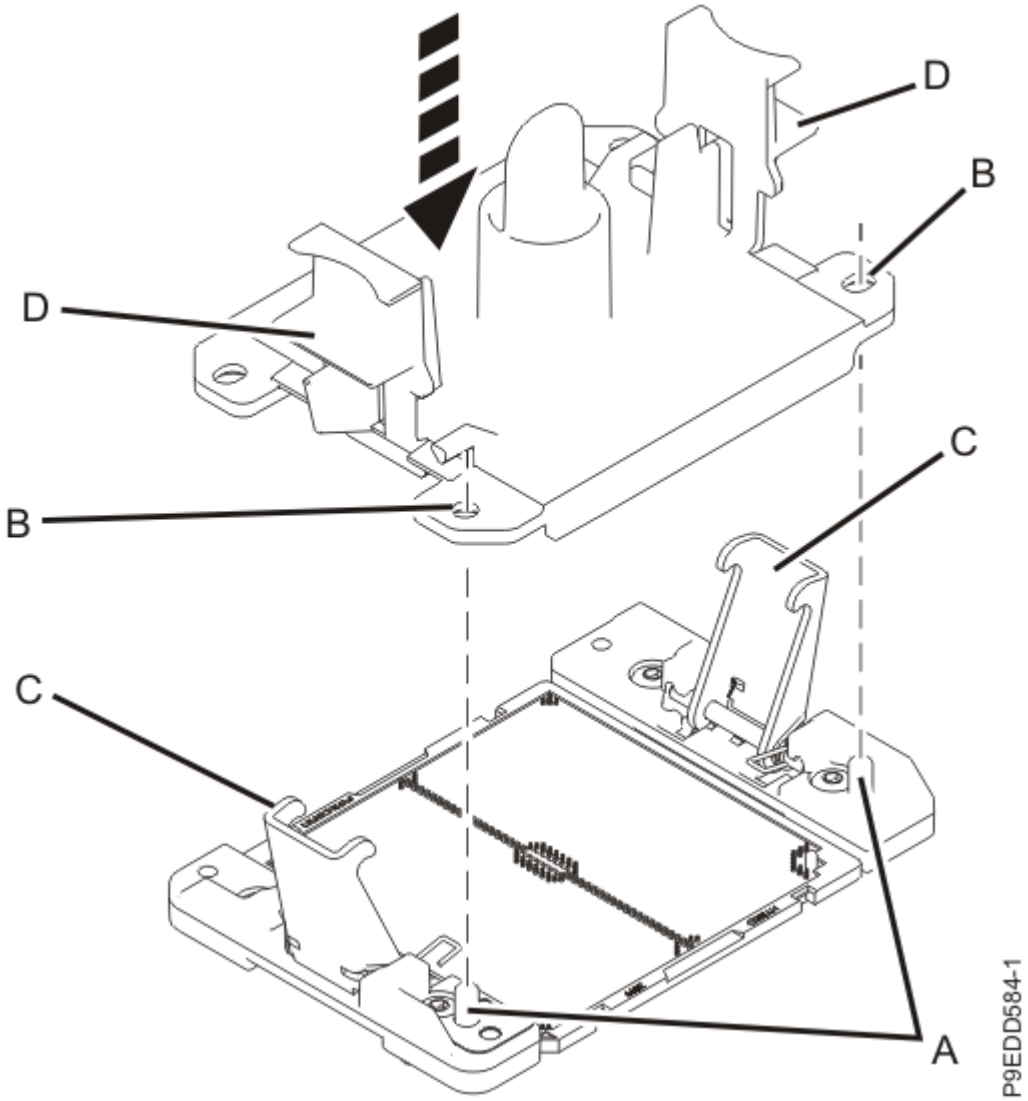


Figure 545. Placing the dust covers on the system processor module sockets on the system backplane

b) Repeat step “9.a” on page 622 to install socket dust covers on the remaining system processor module sockets.

10. Replace the processor voltage regulator modules in locations P1-C14, P1-C17, P1-C18, and P1-C21..

Tip: Replace the processor voltage regulator modules in the system in the same order in which you placed them in the tray.

a) With the levers **(A)** in the open position, hold the voltage regulator module by its levers and lower the voltage regulator module into its slot in the system. Refer to the following image.

b) Gently push the voltage regulator module into its connector.

c) Rotate the levers in the direction shown and press down on the latches to secure the voltage regulator module in its slot.

d) Repeat steps “10.a” on page 623 through “10.c” on page 623 to replace the remaining processor voltage regulator modules.

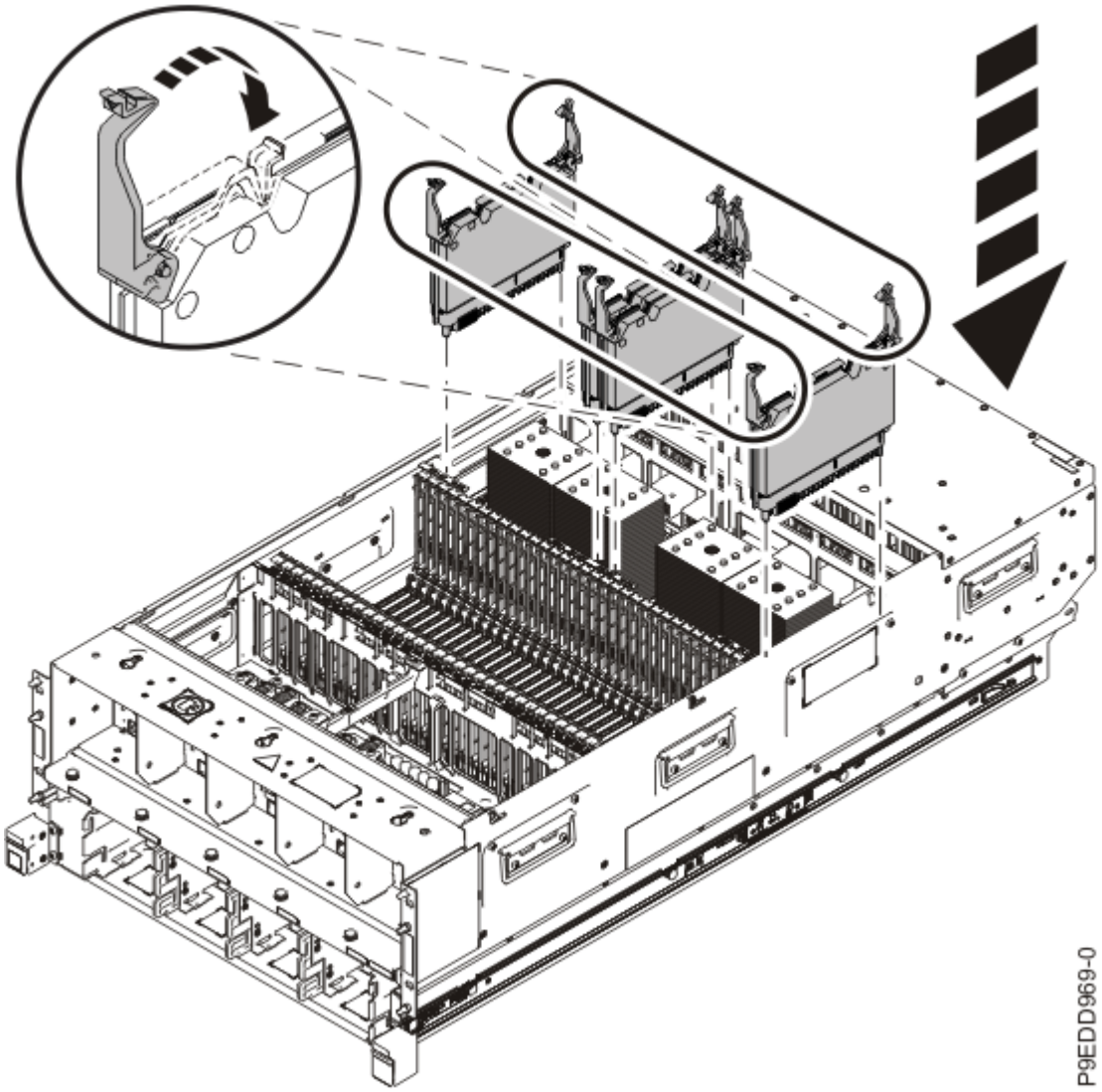


Figure 546. Replacing the processor voltage regulator modules

11. Replace the memory modules in locations P1-C22 through P1-C53

    Tip: Replace the memory modules in the system in the same order in which you placed them in the tray.

    a) Grasp the memory module along its edges and align it with the slot.

    Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the location of the key tab within the memory module connector before you attempt to install the memory module.

    b) Replace the memory module by pushing it into slot until the tabs **(A)** lock into place as shown in the following figure.

    c) Repeat steps “11.a” on page 624 through “11.b” on page 624 to replace the remaining memory modules.

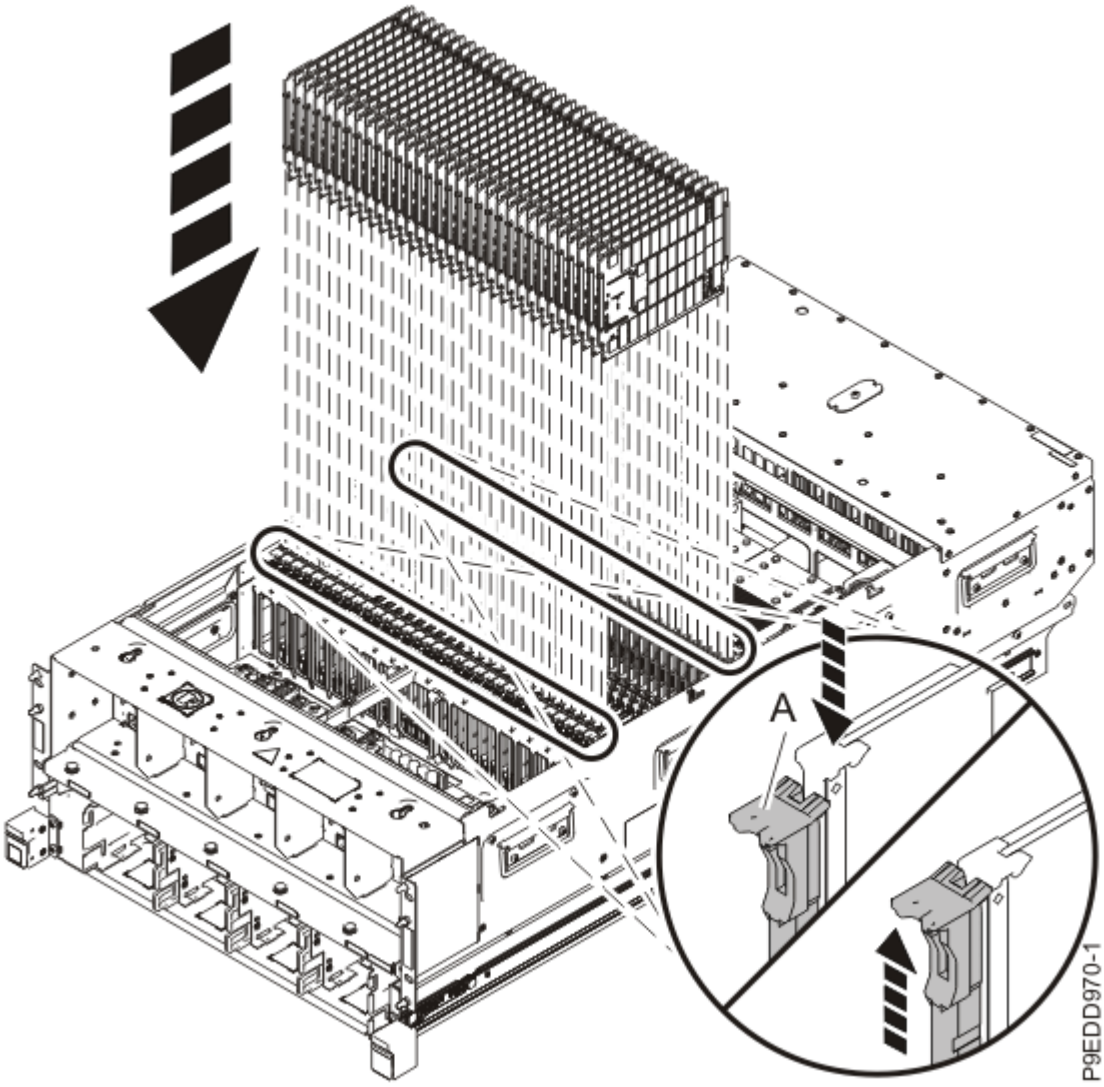


Figure 547. Replacing memory modules

12. Replace all of the cards (one at a time) in the row inside the system that is nearest to the fans.

    Tip: Replace the cards in the system in the same order in which you placed them in the tray.

    This row includes seven memory voltage regulator modules, four miscellaneous A voltage regulator modules, one miscellaneous B voltage regulator module, two power APSS and TPM cards, and the concurrent maintenance circuit card in locations P1-C54 through P1-C68

    a) With the levers **(A)** in the open position, hold the card by the levers and lift it from the ESD tray.

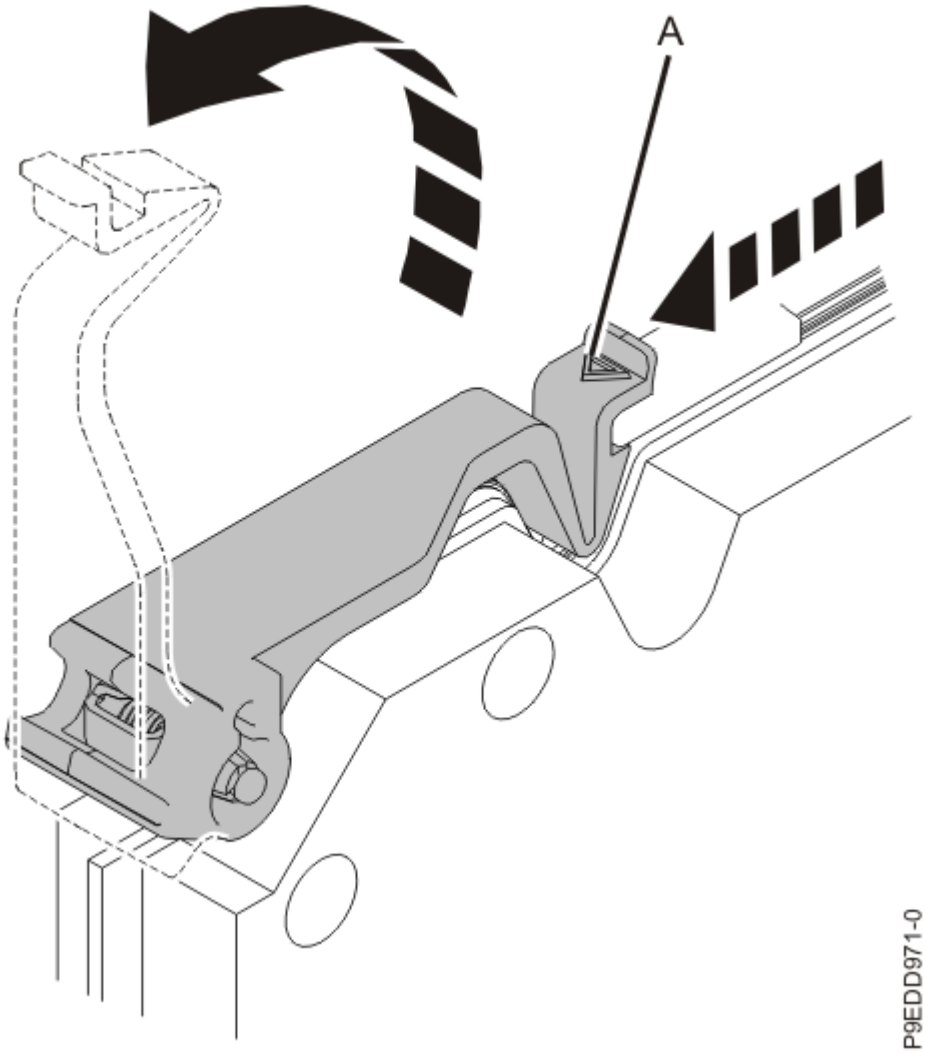


Figure 548. Holding a card with levers in the open position

b) Continue holding the card by the levers and lower the card into its slot in the system. Refer to the following image.

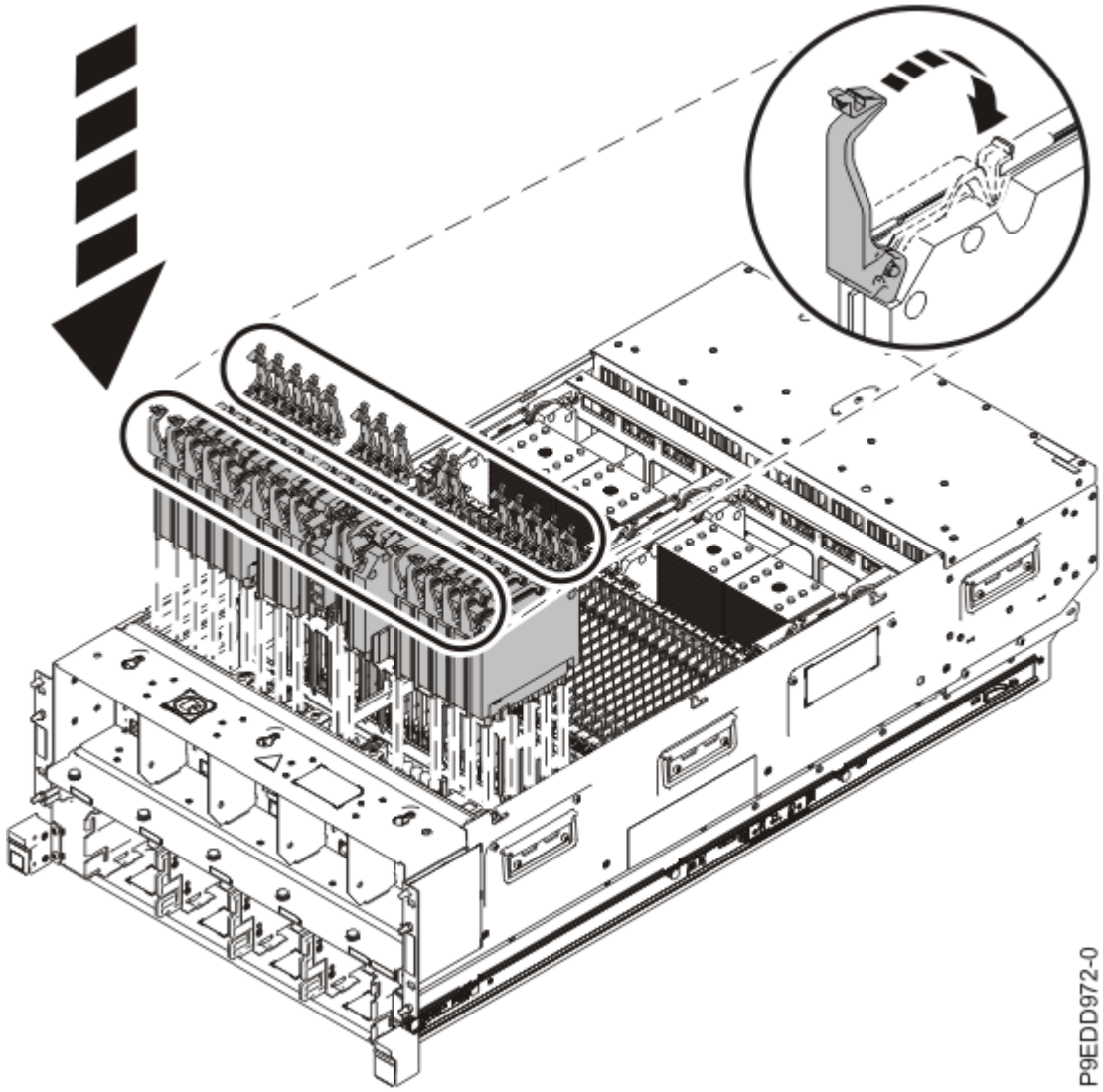


Figure 549. Replacing the cards in the row nearest the fans

c) Gently push the card into its connector.

d) Rotate the levers in the direction that is shown and press down on the latches to secure the card in its slot.

e) Repeat these steps to replace all of the cards.

System processor module

Preparing the 9080-M9S system to remove and replace a system processor module

Before you begin

Before beginning this procedure, ensure that you have these items on hand:

- System processor module
- Thermal interface material (TIM)
- Tweezers
- Putty knife
- Heat sink
- 4MM T-handle Allen wrench

Procedure

1. 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.

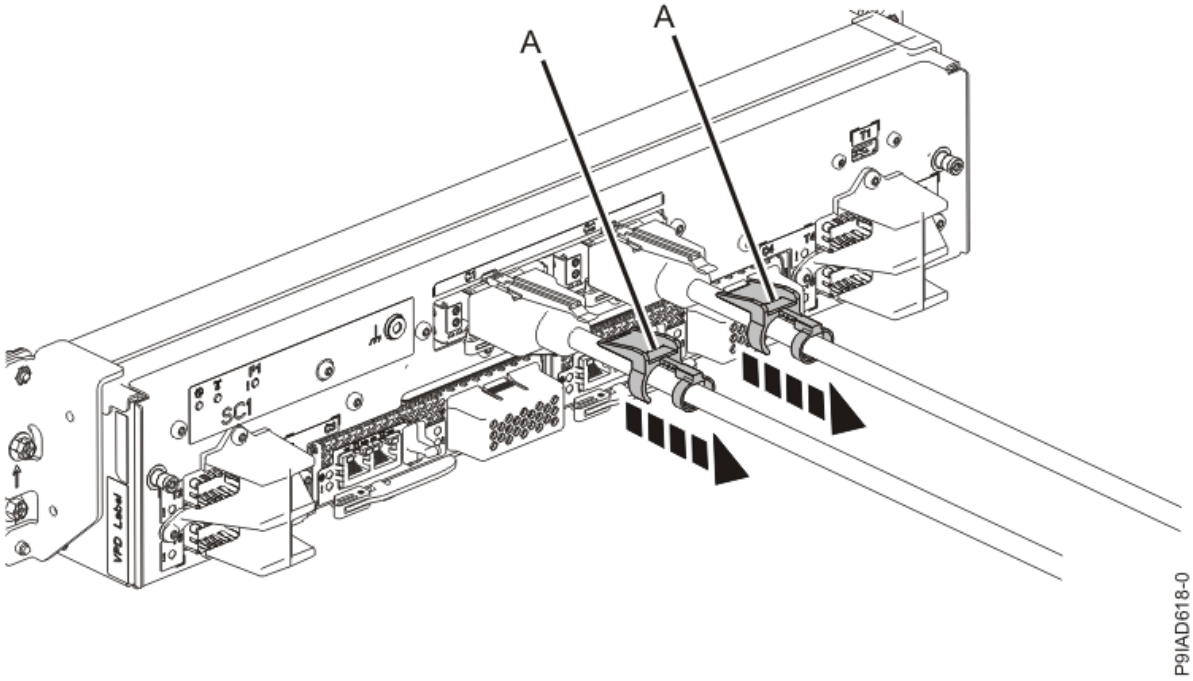


Figure 550. Removing the UPIC cable lock

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

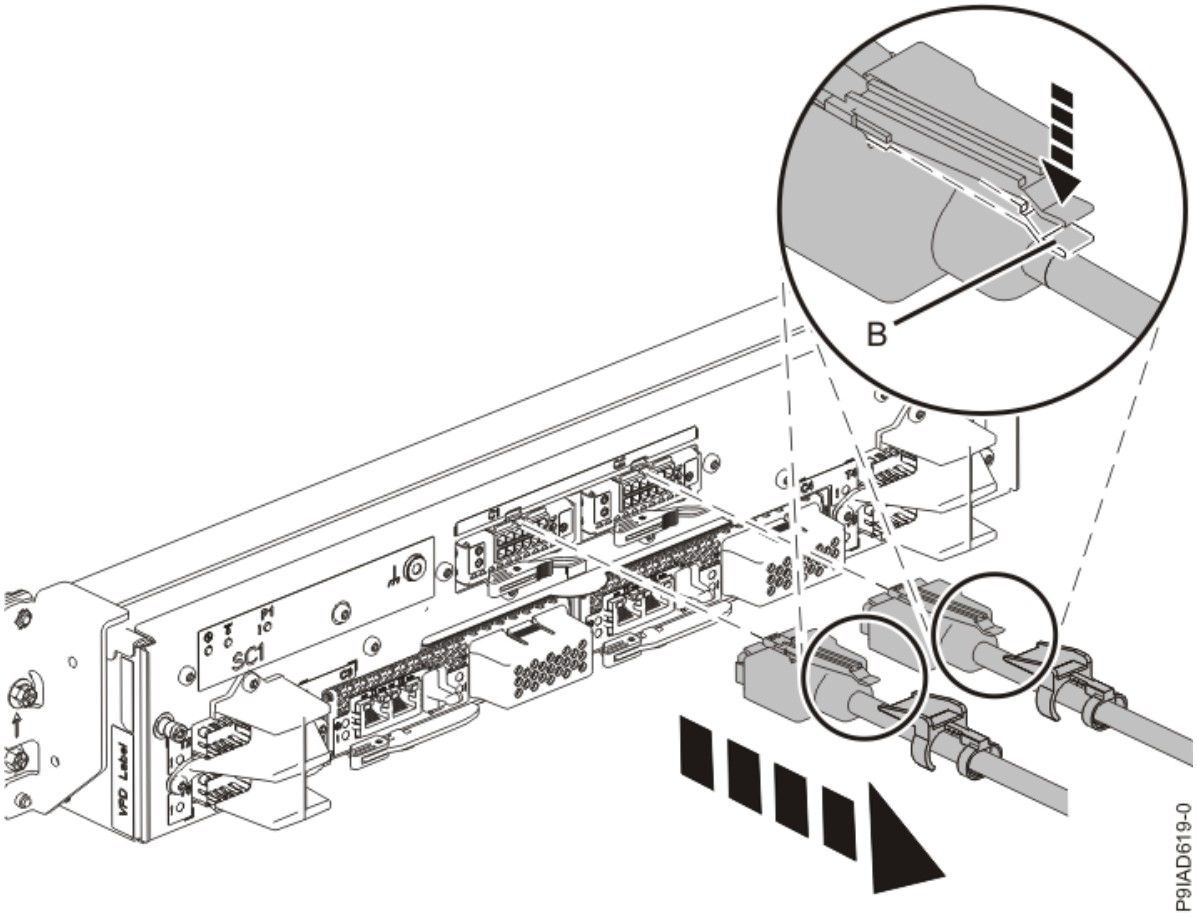


Figure 551. Removing the UPIC cable from the system control unit

2. Complete the following steps to place the system node in the service position.

   Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.

   a) Label and disconnect the rear power cords from the system node being serviced as shown in the following figure.

      Notes:

      - This system node might be equipped with two or more power supplies. If the removing and replacing procedures require the system power to be turned off, ensure that all power sources to the system node are disconnected.

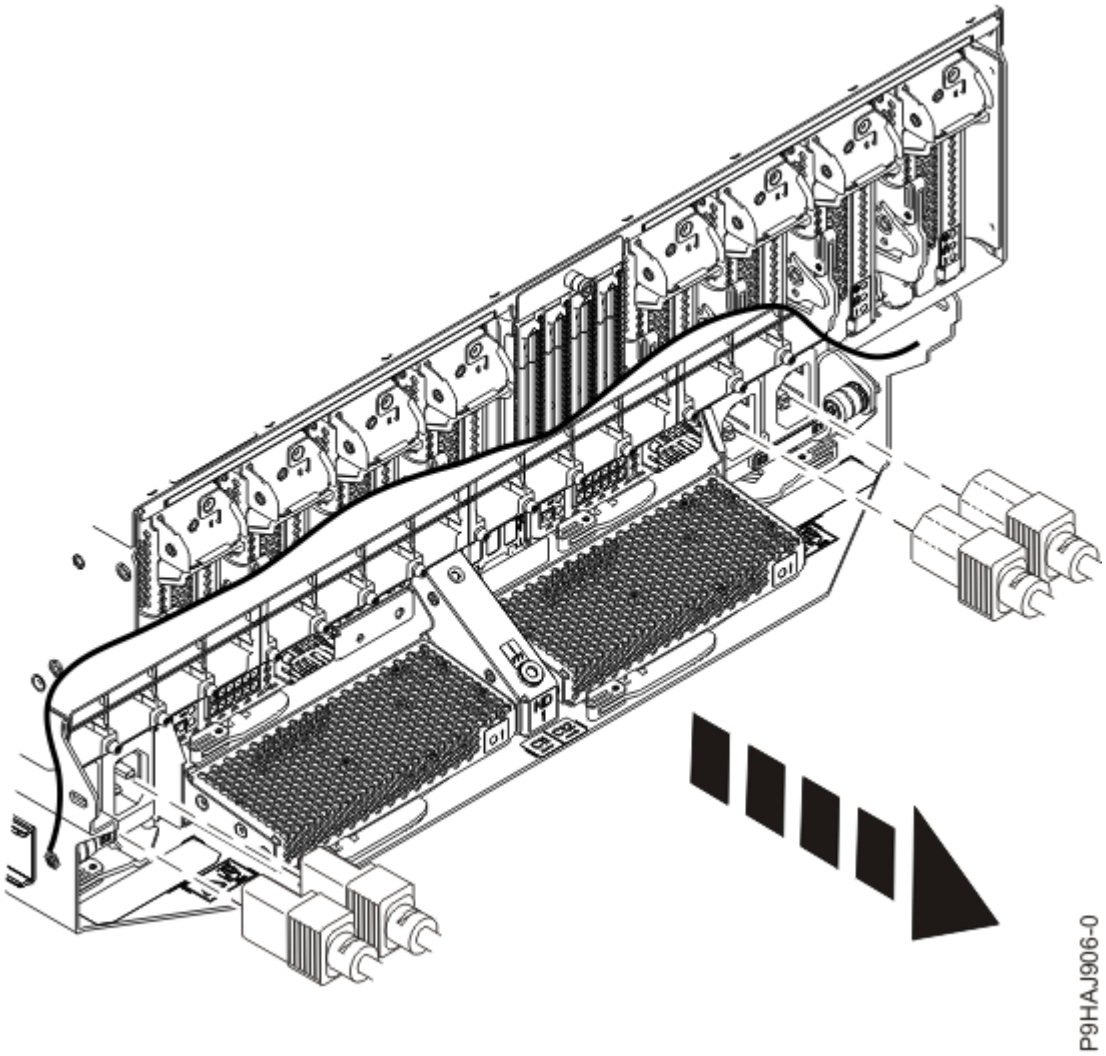
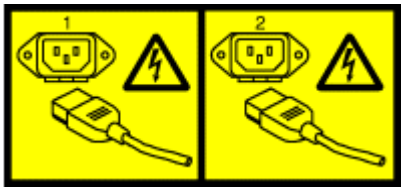


Figure 552. Removing the rear power cords

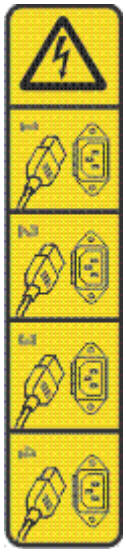
(L003)



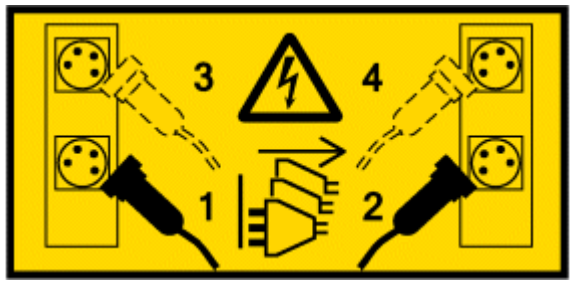
or

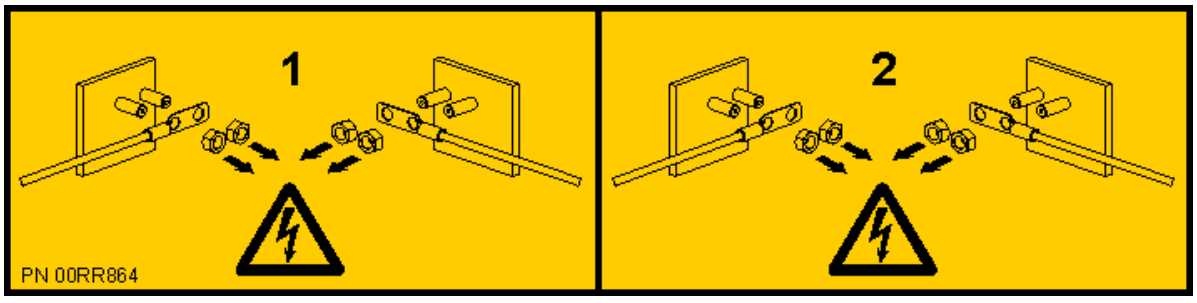
or

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)

b) Label and disconnect all of the PCIe cables or transceivers that are attached to the PCIe adapters for the system node you are servicing. Use hook-and-loop fasteners to hold the PCIe cables in place.

c) Label and unplug both service processor (FSP) cables **(B)** from the system node being serviced using the pull tab **(A)** attached to the connector.

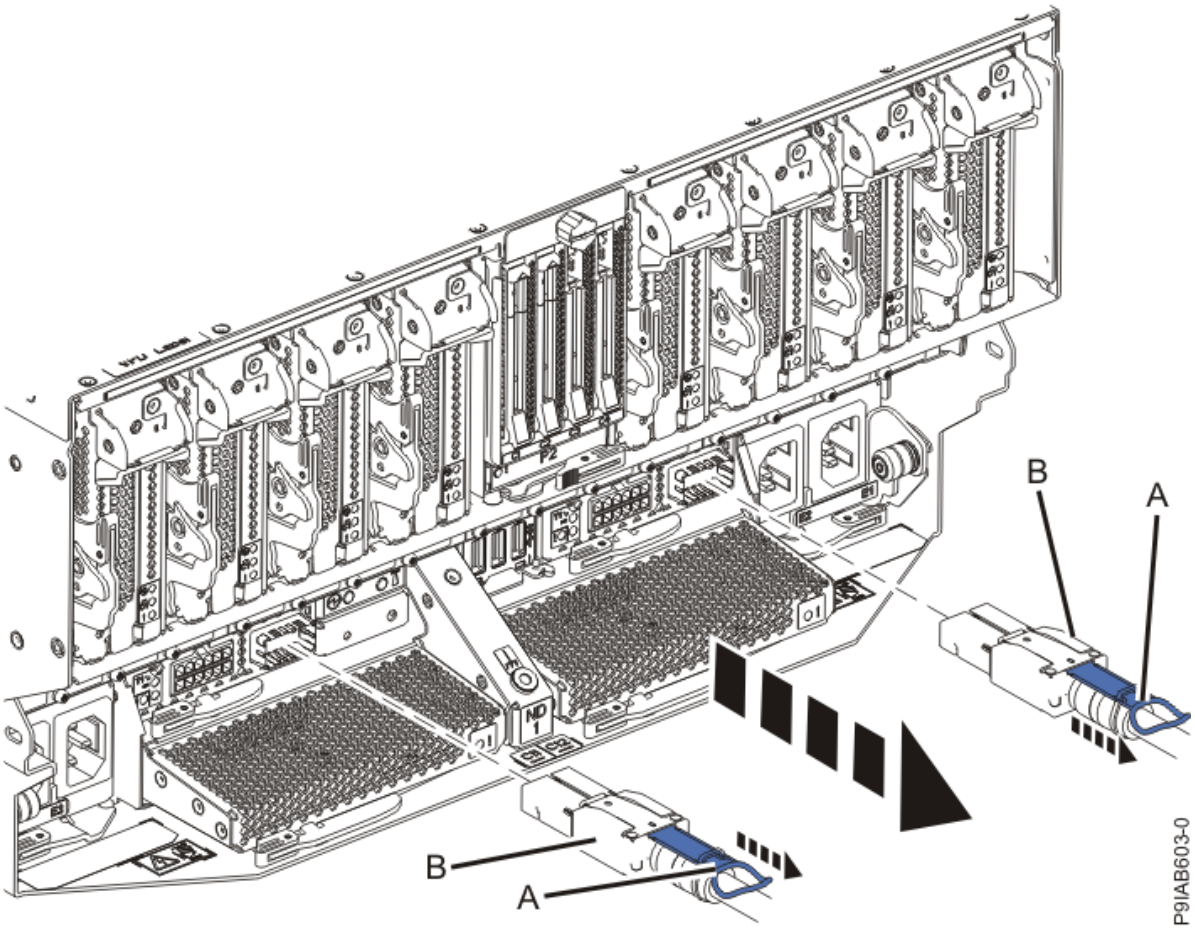


Figure 553. Removing the service processor cable from the system node

d) Label and unplug the UPIC cables for the system node that you are servicing, if applicable.

1) Remove the white plastic lock **(A)** from the plug housing as shown in the following figure.

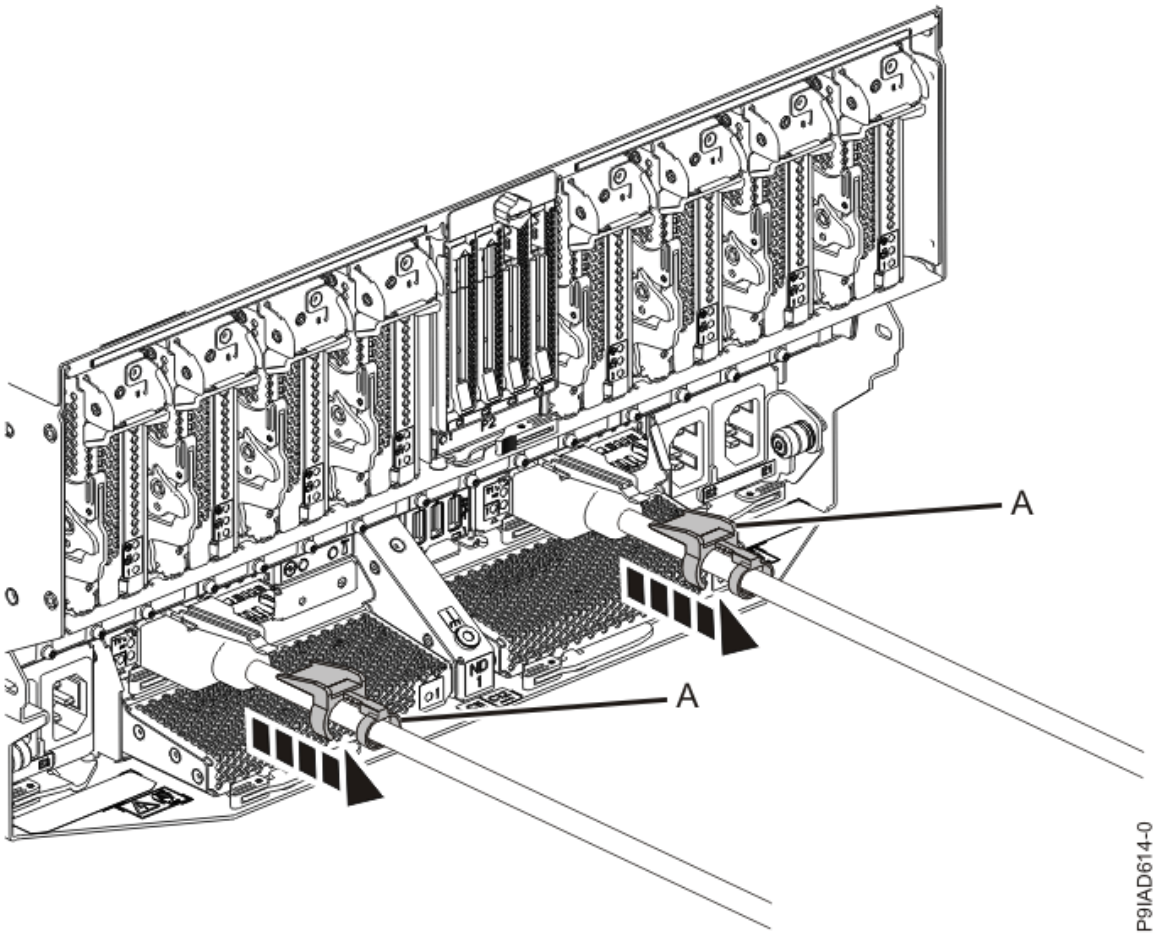


Figure 554. Removing the UPIC cable lock

2) Push down on the blue cable latch **(B)** and pull out the UPIC cable from the system node as shown in the following figure.

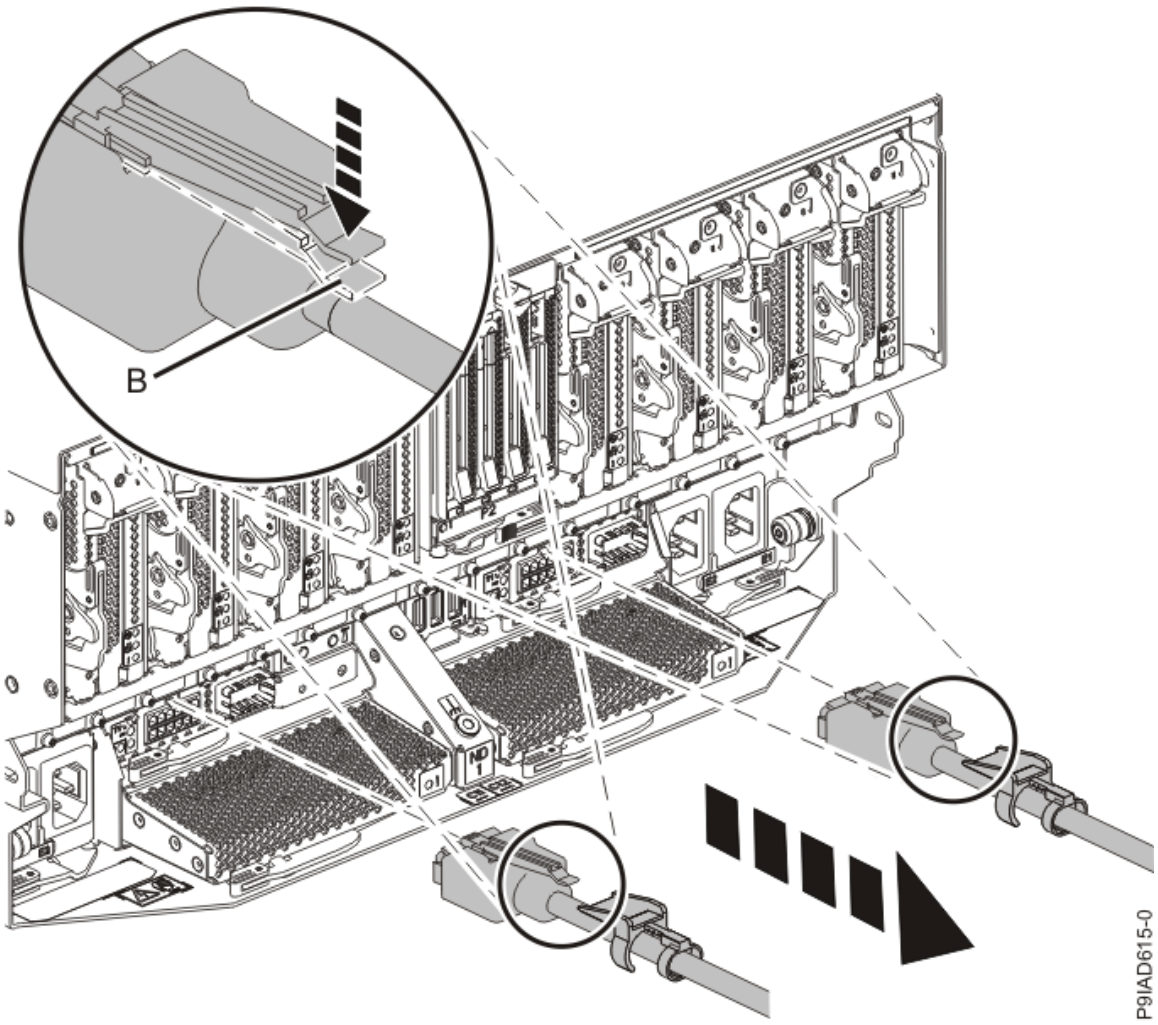


Figure 555. Removing the UPIC cable from the system node

e) If needed to allow for more slack in the SMP cables, label and unclip the SMP cable bundle from the side of the cable management bracket as shown in the following figure, and move the SMP cables to near the center of the system node.

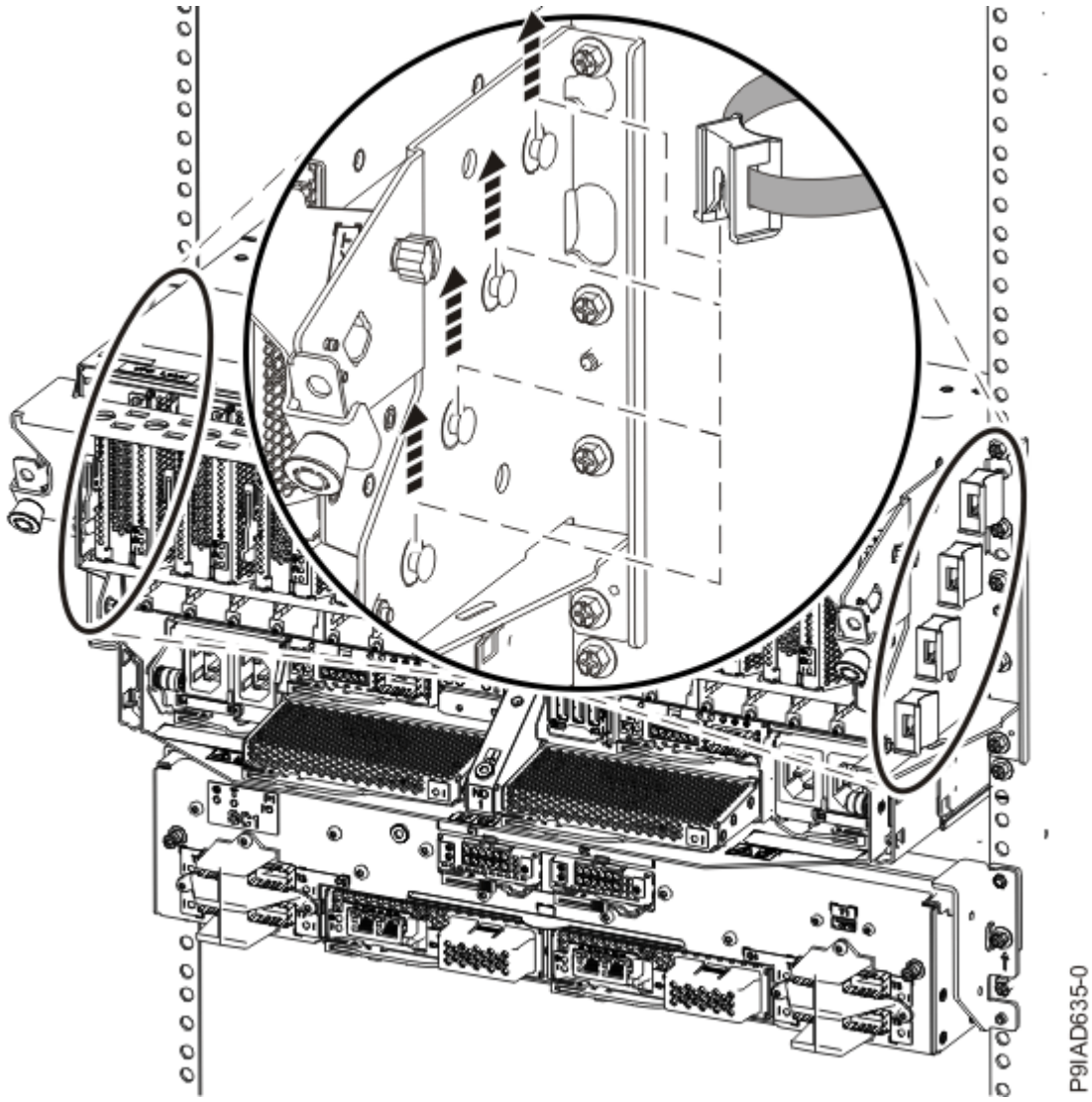


Figure 556. Removing a cable clip

f) Label and unplug the SMP cables for the system node that you are servicing.

Attention: Do not drop or damage the metal connectors on the cable. If the metal connectors are bent or damaged, they need to be replaced.

1) Slightly push in the cable bundle **(A)** as shown in the following figure, to relieve the spring pressure of the cable connector.
2) Pull the blue latch **(B)** as shown in the following figure to release the inner cable latch
3) Remove the SMP cable **(C)** from the system node.

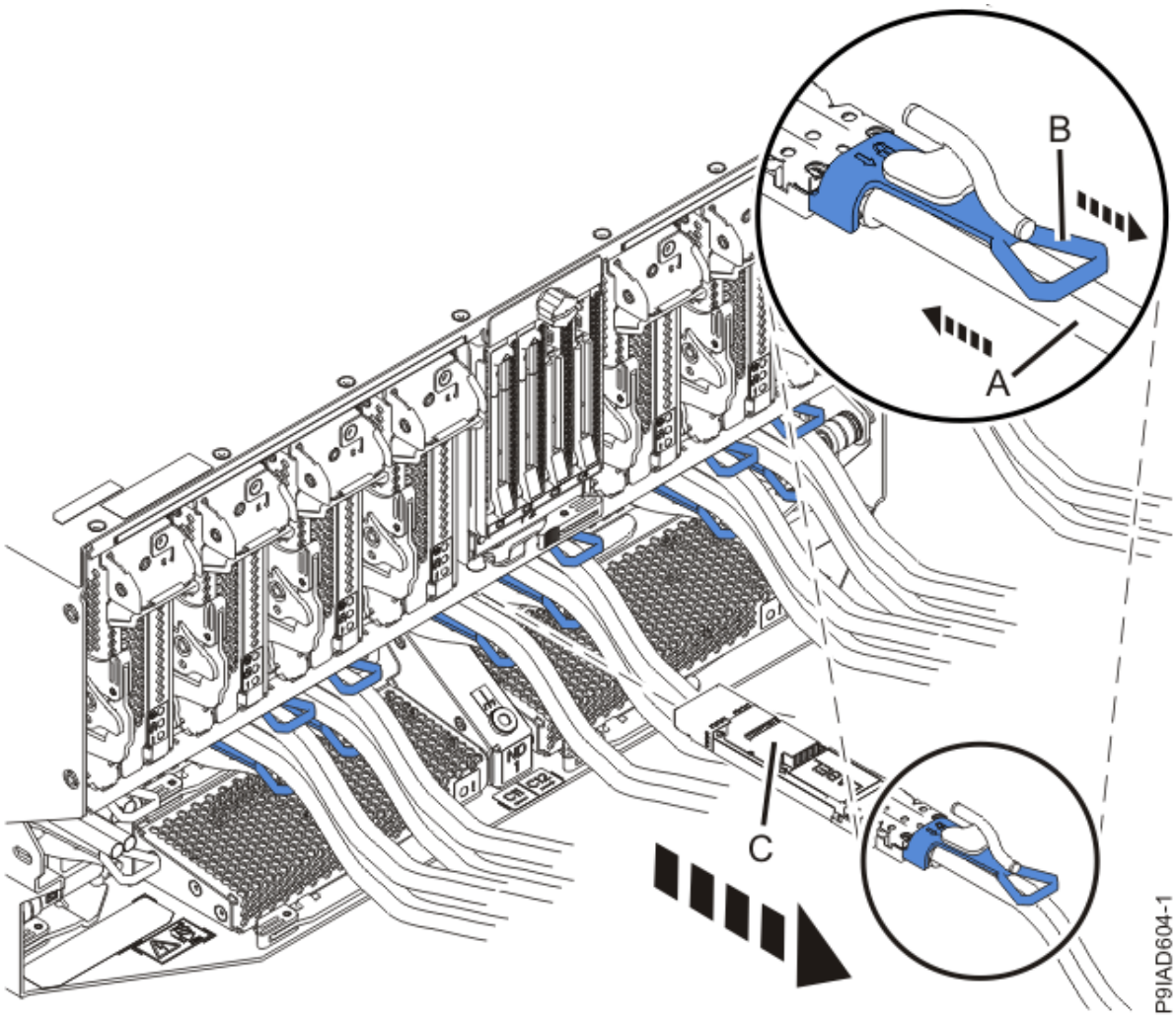


Figure 557. Removing the SMP cable from the system node

g) After you remove all the SMP cables for a system node, use hook-and-loop fasteners to connect the cables to the cable management bracket, so the cables do not hang loosely.

h) If you are servicing system node ND1 or ND2, label and unplug the USB cable as shown in the following figure.

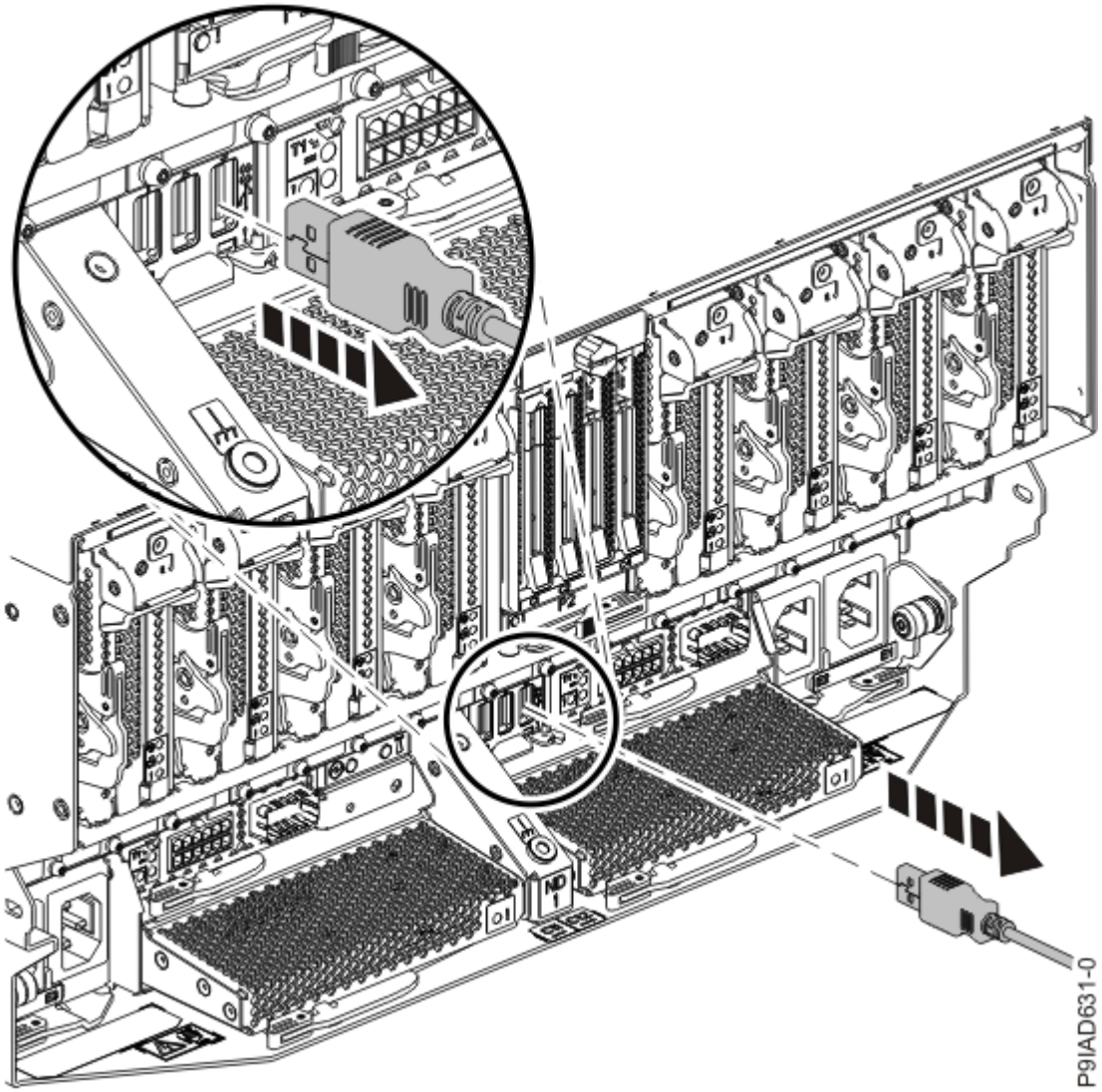


Figure 558. Removing the USB cable from the system node

i) If present, remove the two screws **(A)** at the rear of the system as shown in the following figure.

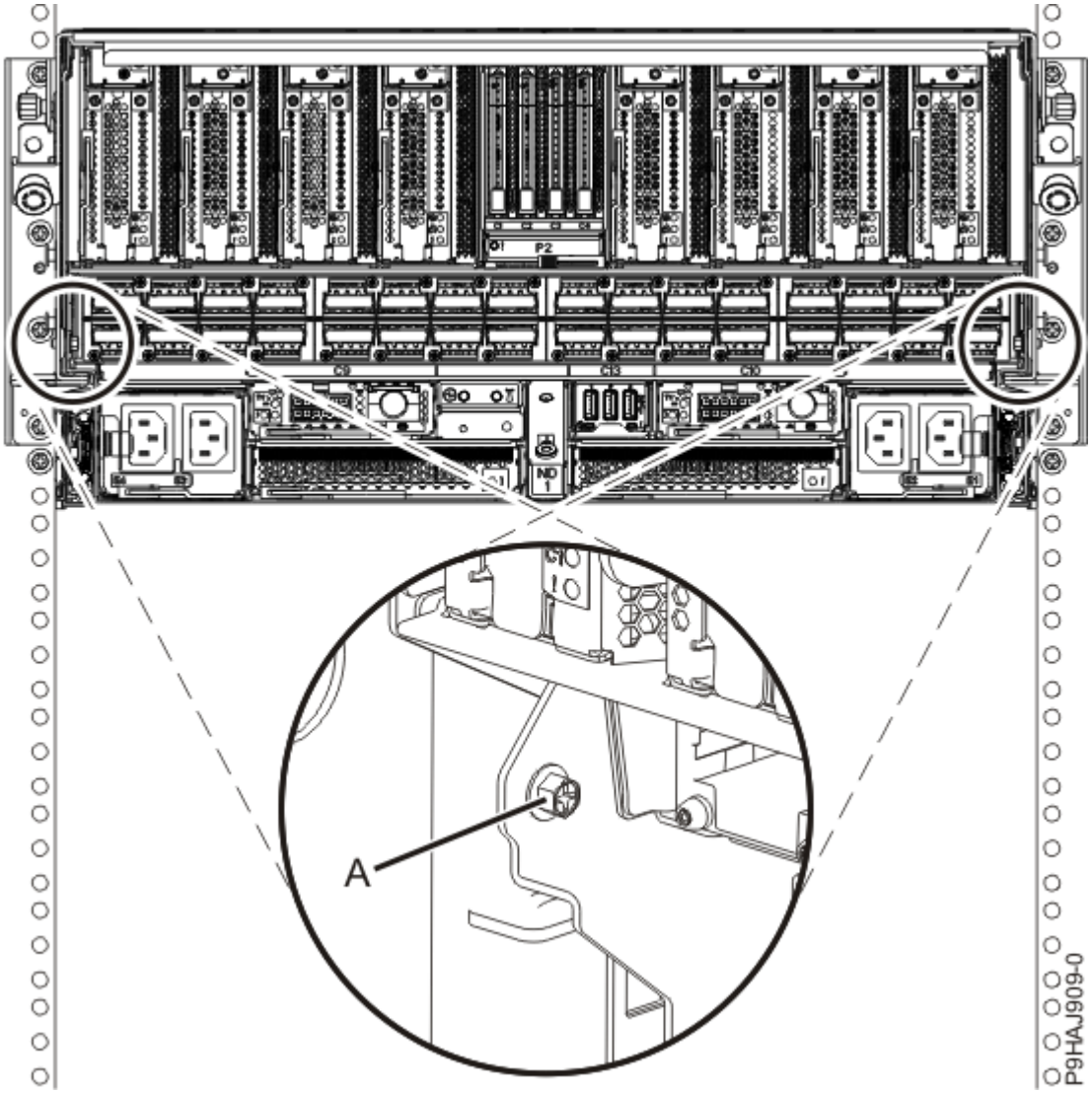


Figure 559. Removing the rear screws

j) If present, remove the four screws **(A)** at the front of the system as shown in the following figure.

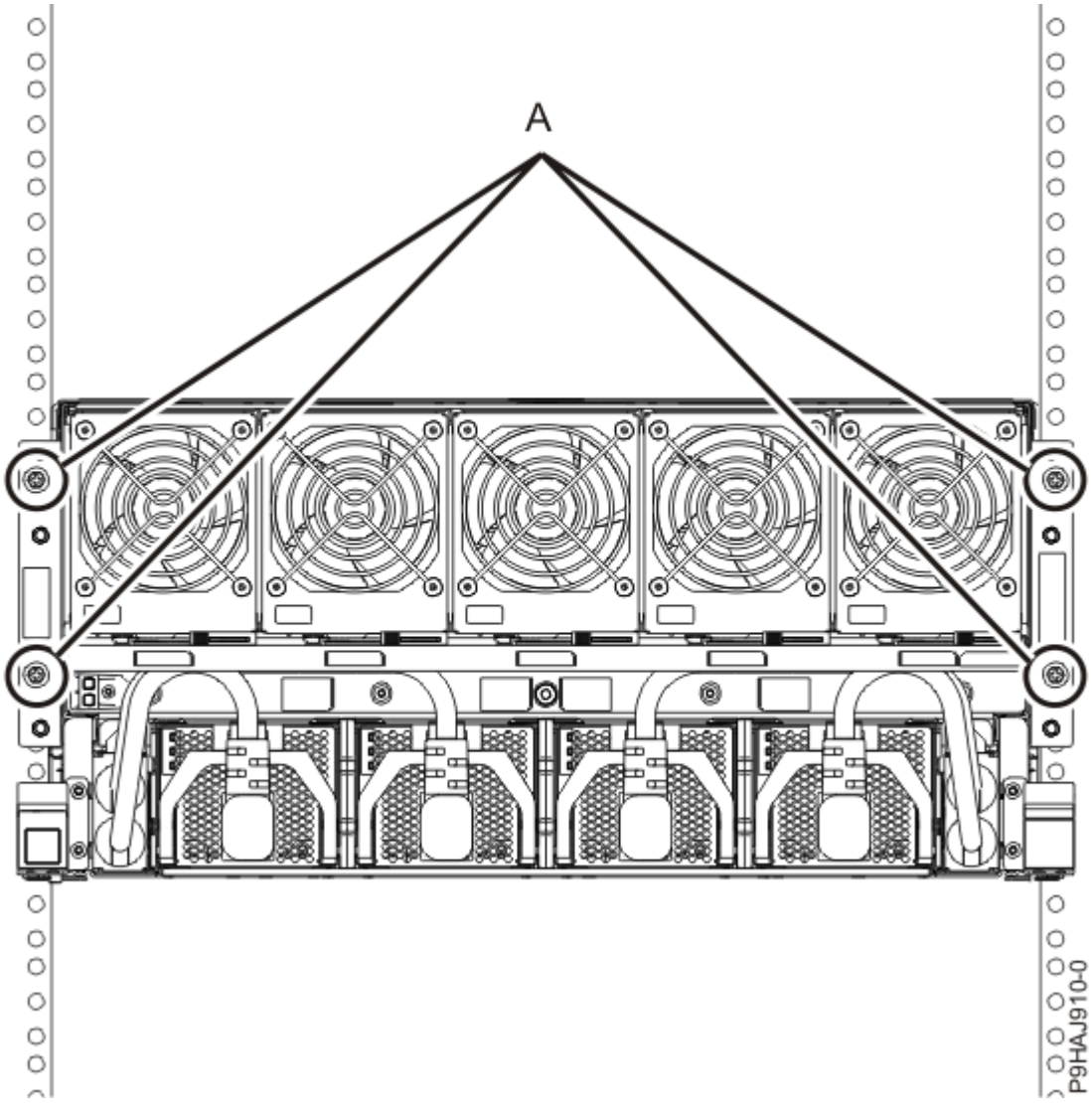


Figure 560. Removing the front screws

k) Release the side latches **(B)** for the system node by pressing them downward and then pulling outward as shown in the following figure.

l) Pull out the system node **(C)** as shown in the following figure.

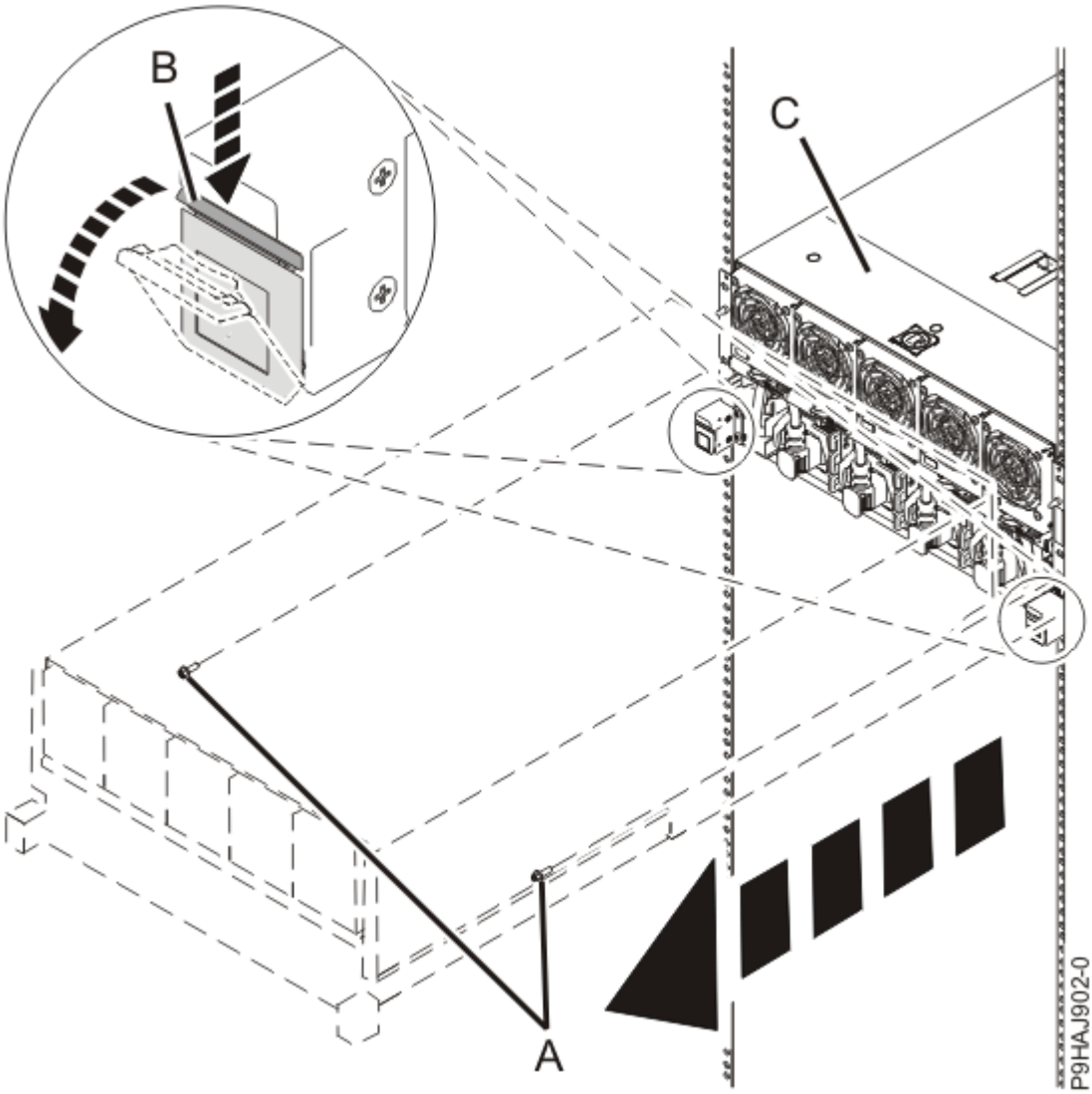


Figure 561. Placing the system node in service position

3. 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.

4. Complete the following steps to remove the cover.

   Attention: Operating the system without the service access cover on for more than 10 minutes when the system power is turned on might damage the system components.

a. Push the release latch **(A)** in the direction shown in the following figure.

b. Slide the cover **(B)** off the system unit as shown in the following figure. When the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

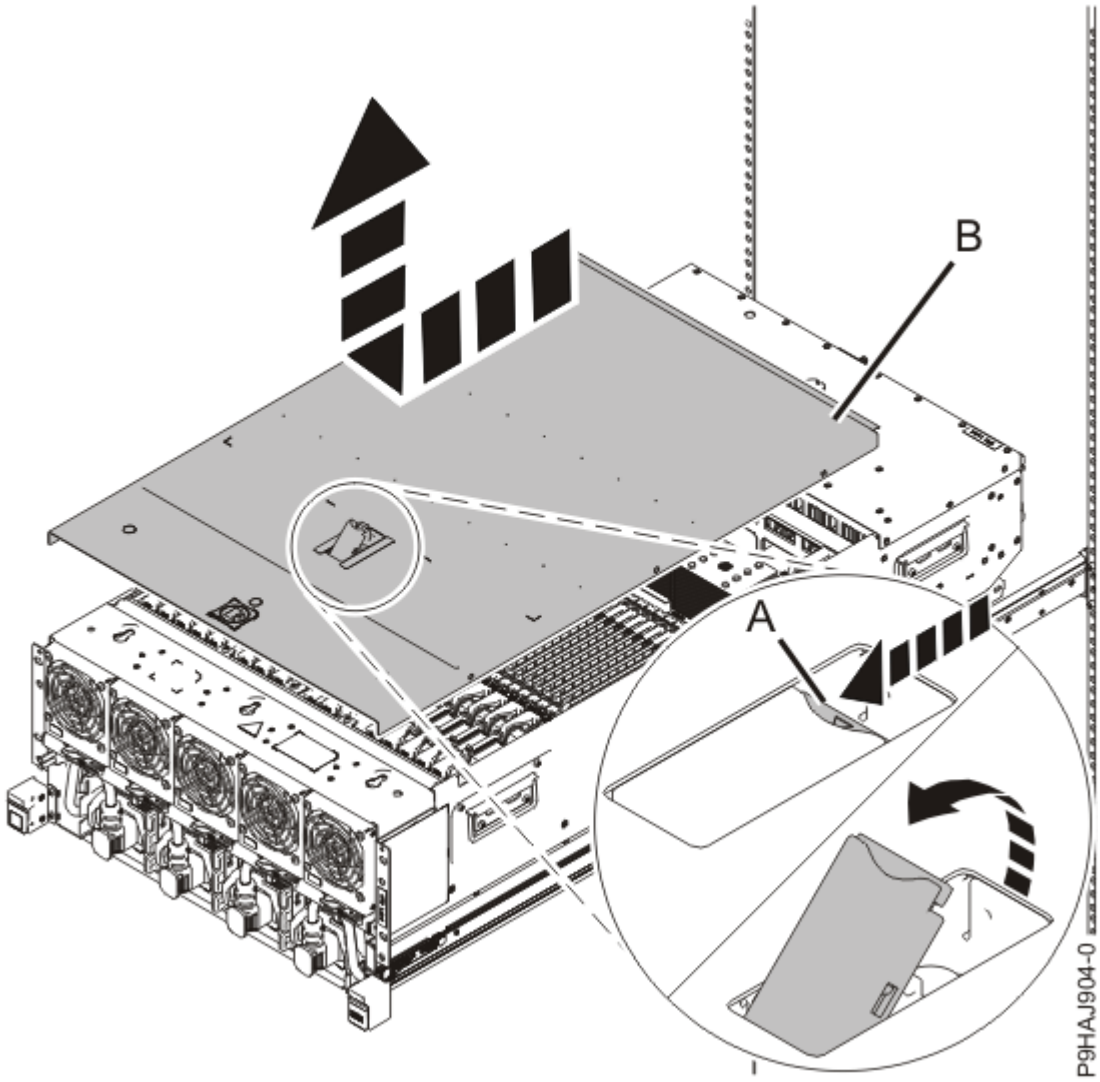


Figure 562. Removing the service access cover

5. To activate the identify LED for the faulty part, press and hold either blue push-button on the trusted platform module card as shown in the following figure.

   Verify that the green LED **(A)** is lit, which indicates that sufficient power exists to light the identify LED on the faulty part. If the green LED **(A)** does not light, use the location code on the service label to find the physical location of the faulty part.

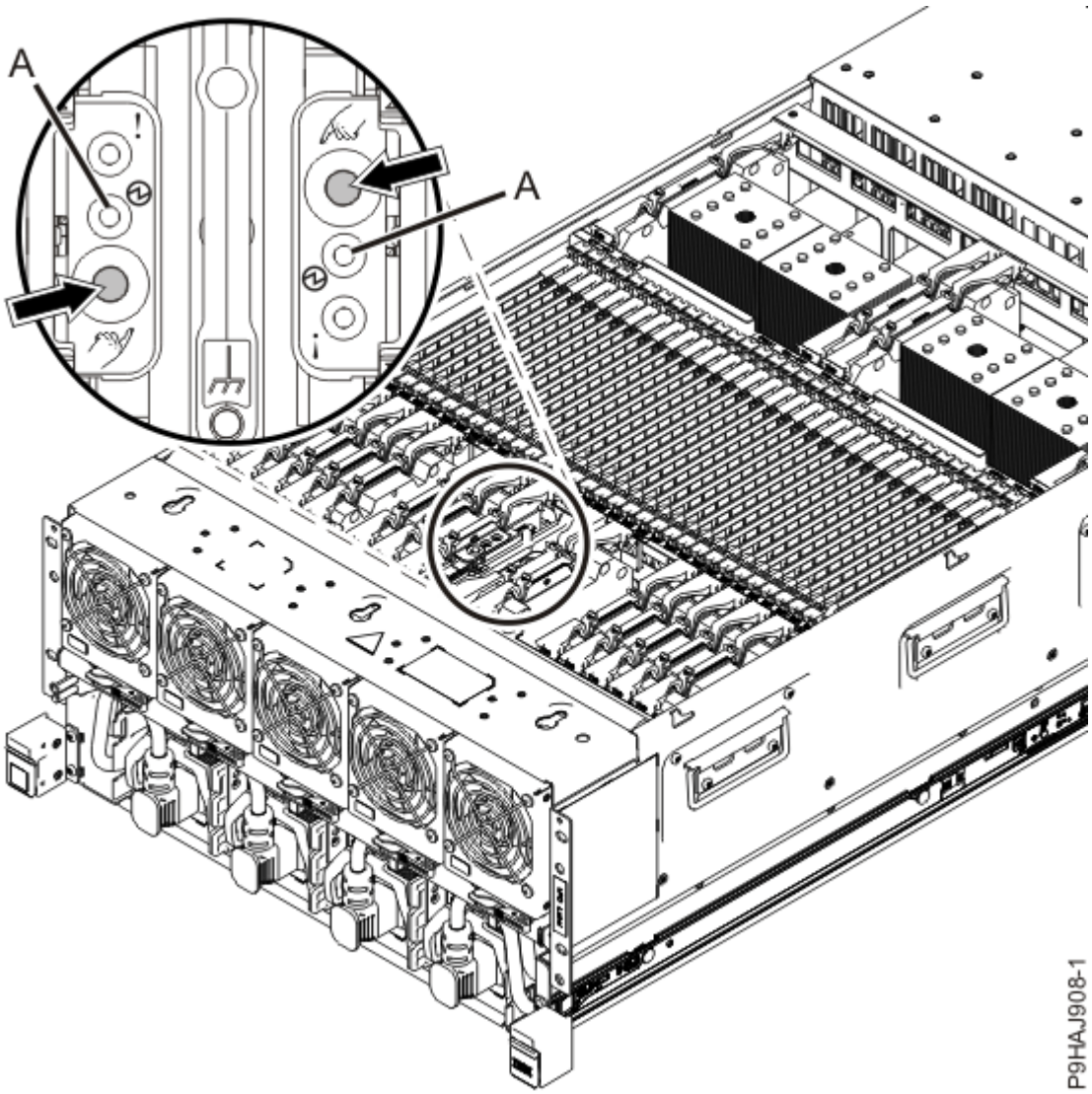


Figure 563. Activating the identify LED for a faulty part

6. Locate the amber LED for the failed system processor module. Make a note of which location is flashing; that indicates the system processor module to replace.

   The following figure shows the locations of the system processor module LEDs.

   Record the location of the identifying LED.

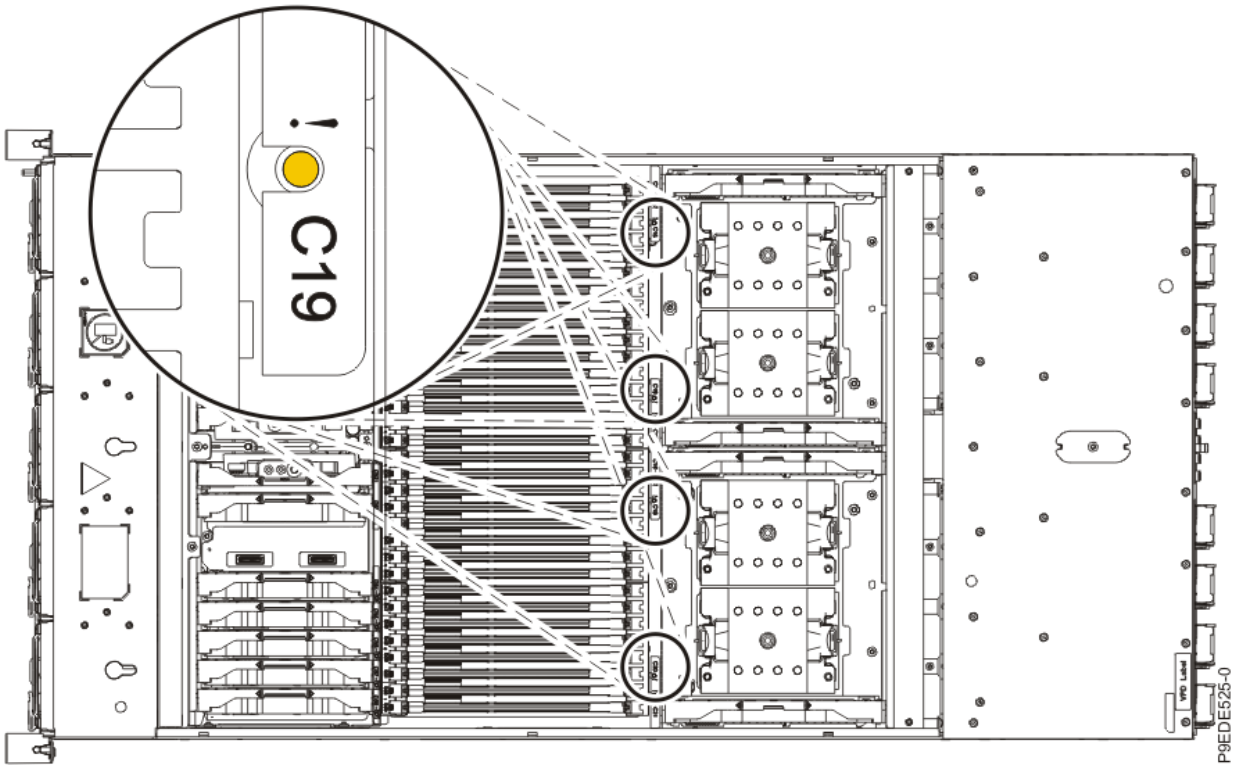


Figure 564. System processor module LEDs and locations

Removing a system processor module from the 9080-M9S system

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. Open the packaging of the new system processor module, and place the cover upside down next to the tray, as shown in Figure 565 on page 645. The cover is used for the system processor module that you are replacing.

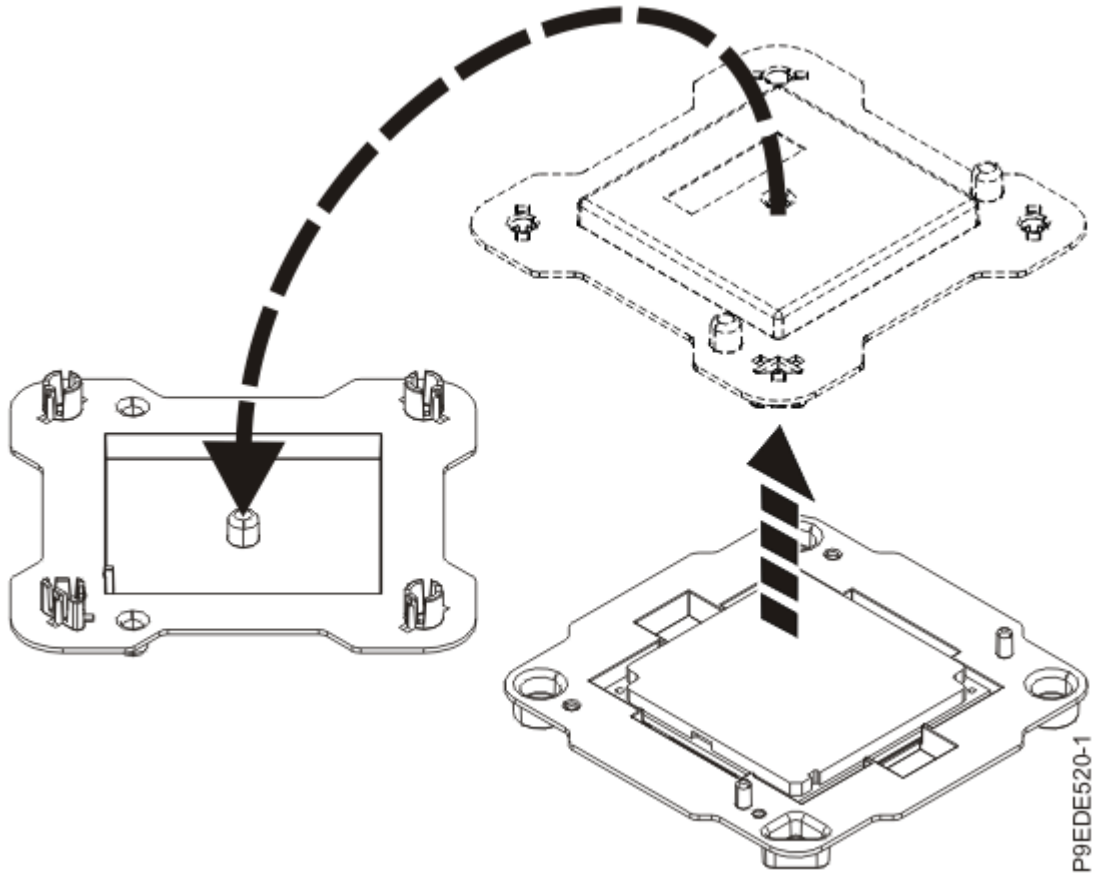


Figure 565. Opening the system processor module packaging

3. Remove the heat sink from the system processor module.

(L007)

CAUTION: A hot surface nearby. (L007)

a. Loosen the heat sink actuation screw by turning the supplied 4MM T-handle Allen wrench counterclockwise **(A)**. Loosen the screw until it moves freely. See Figure 566 on page 646.

b. Grip the heat sink **(B)** on opposing sides and remove the heat sink by lifting it upward. Set the heat sink aside with the module side facing upward.

Note: If you plan to remove dust or debris from the heat sink, this operation must be performed in another room that is greater than 7.6 m (24.9 ft) away from the work area.

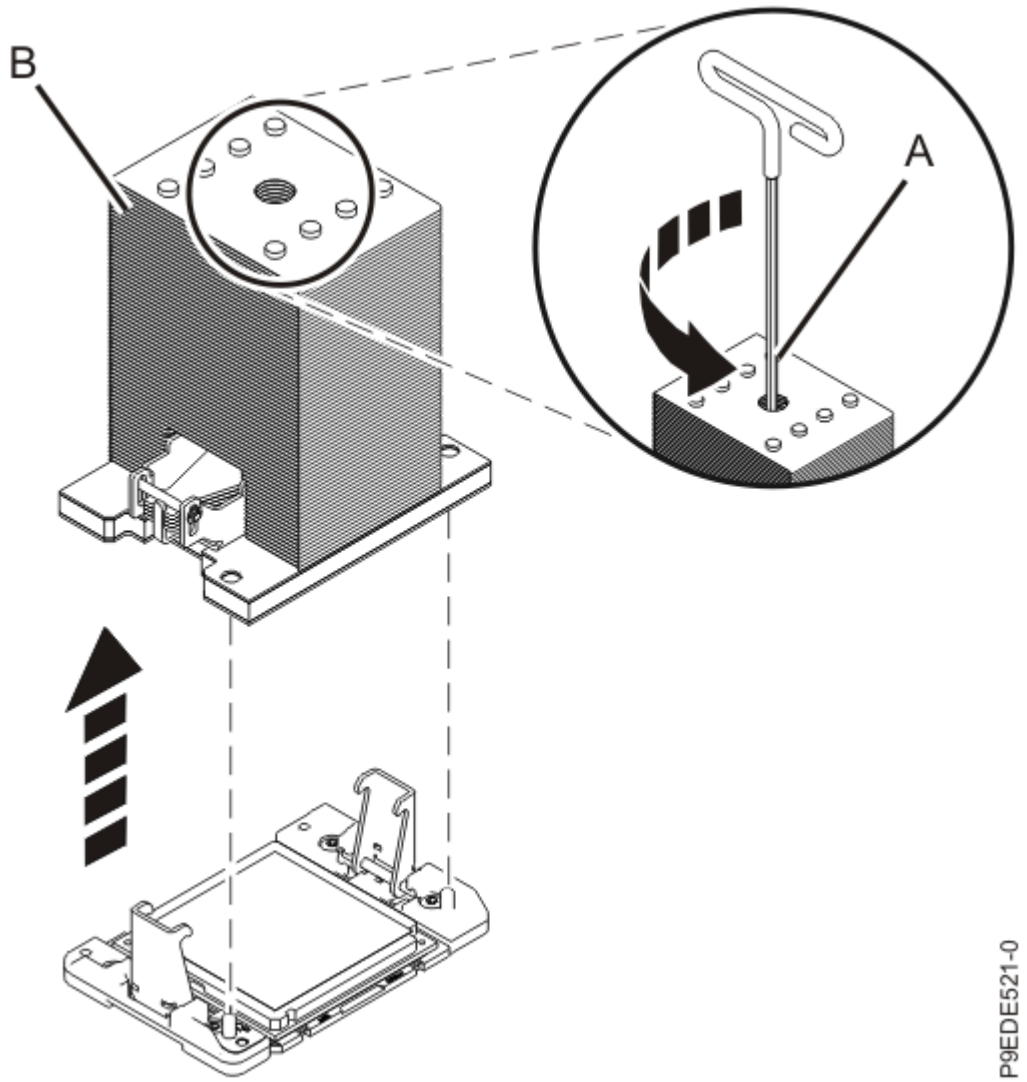


Figure 566. Removing the heat sink

4. Prepare the system processor module for removal by completing the following steps.
   a) Ensure that the removal tool **(A)** is in the open position as shown in Figure 567 on page 647. The middle ring **(B)** must be pushed down and blue tabs **(C)** must be turned inward.

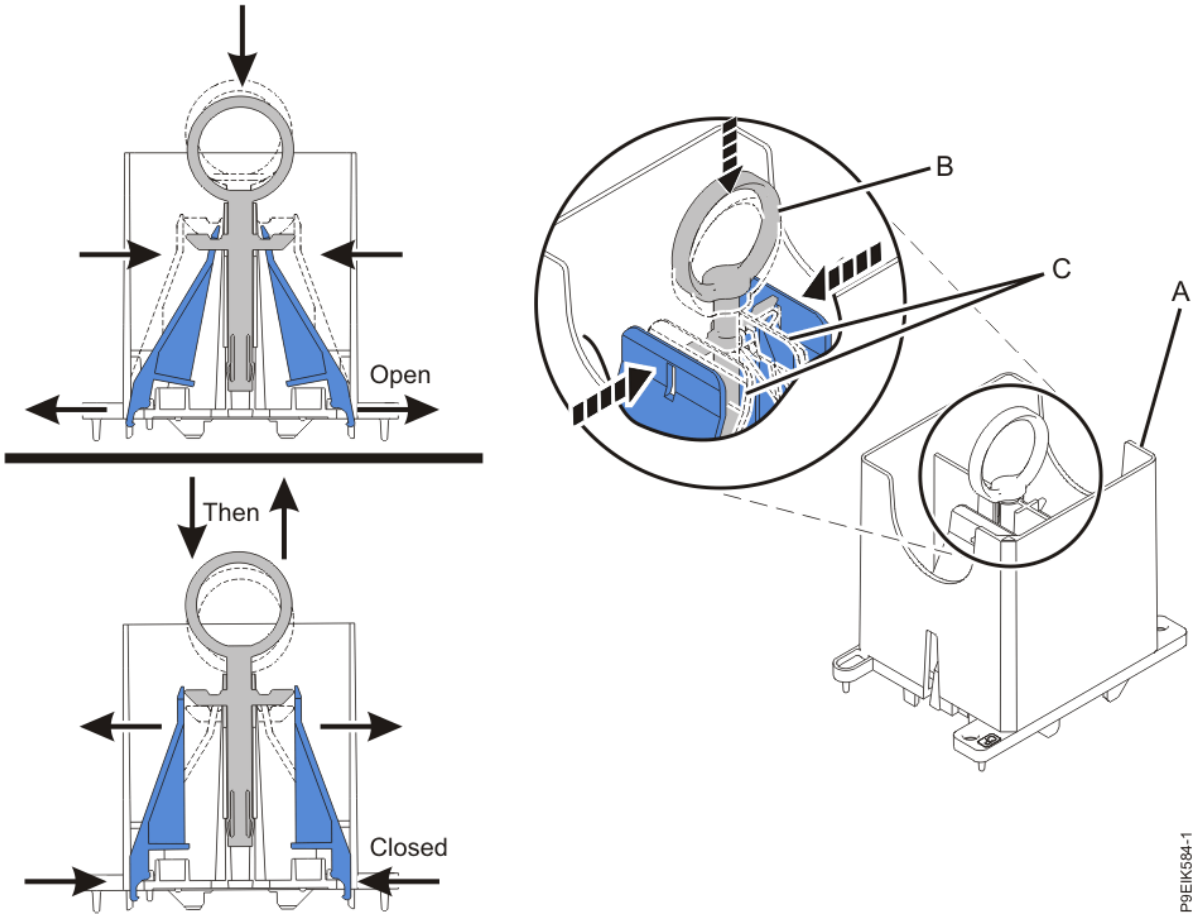


Figure 567. Ensuring that the removal tool is in the open position

b) Align the tool over the system processor module.

   Ensure that the beveled edge on the tool aligns with the beveled edge of the system processor module **(C)** as shown in Figure 568 on page 648.

c) Lower the tool over the system processor module.

   Ensure that the two guide pins **(A)** insert into the alignment holes **(B)** on each side of the tool as shown in Figure 568 on page 648.

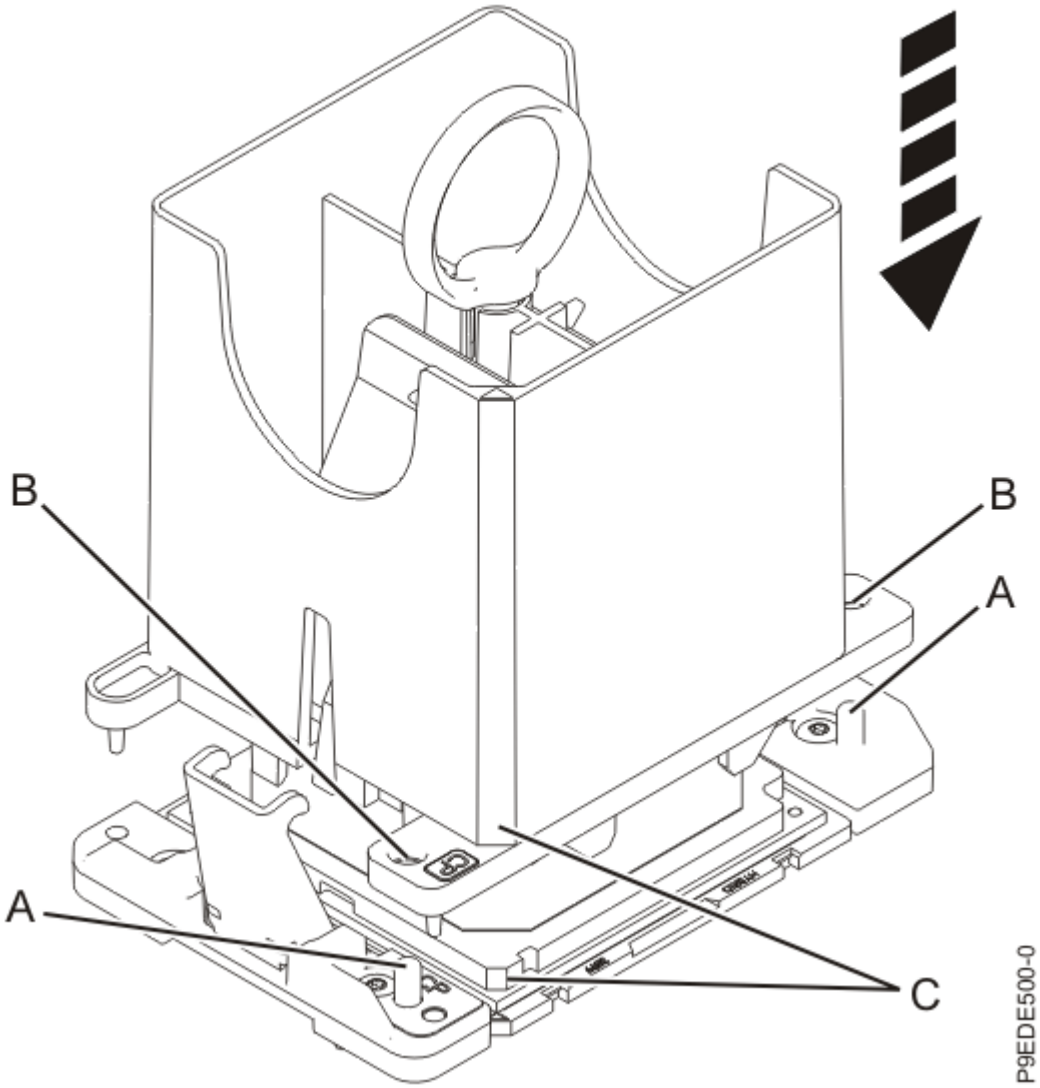


Figure 568. Lowering the removal tool onto the system processor module

d) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** slightly so that the blue tabs **(B)** snap outward and the jaws engage with the system processor module as shown in Figure 569 on page 649.

Make sure that both of the tool jaws are locked onto the system processor module by pushing down on the tool.

Important: Do not press the blue release ring until directed to do so later.

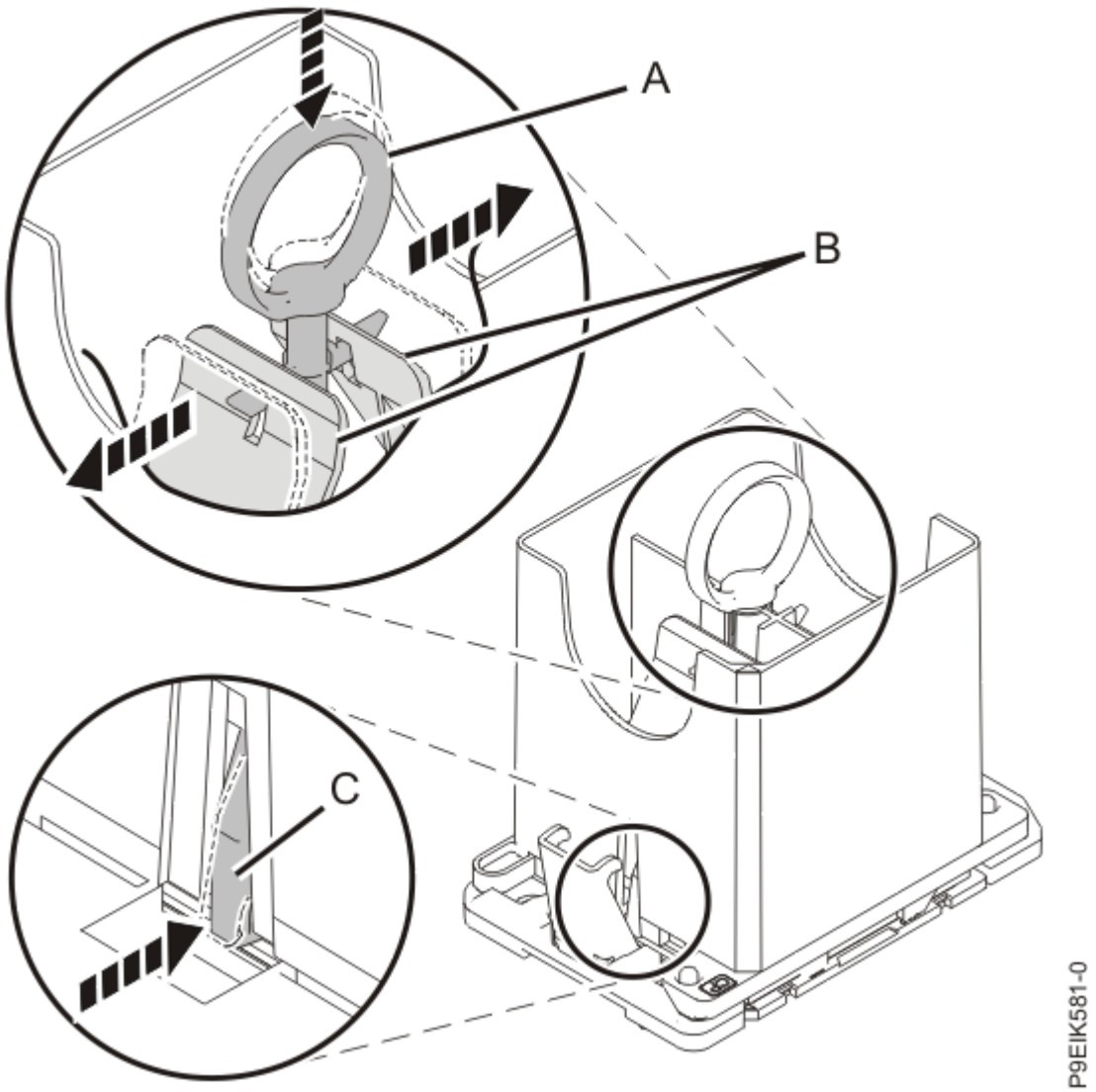


Figure 569. Locking the system processor module into the tool

5. Hold the outside of the tool and lift the tool and system processor module from the socket.

   Lift the tool upward slowly to ensure that the jaws are fully engaged with the system processor module. Ensure that the system processor module does not disengage and fall back into the socket of the system processor module. If the system processor module falls back into the socket of system processor module, the pins may be damaged.

   Place the system processor module at an angle on the top cover of the packaging as shown in Figure 570 on page 650. Setting the tool and system processor module at an angle on the top cover of the system processor module packaging makes it easier to place the system processor module in the packaging.

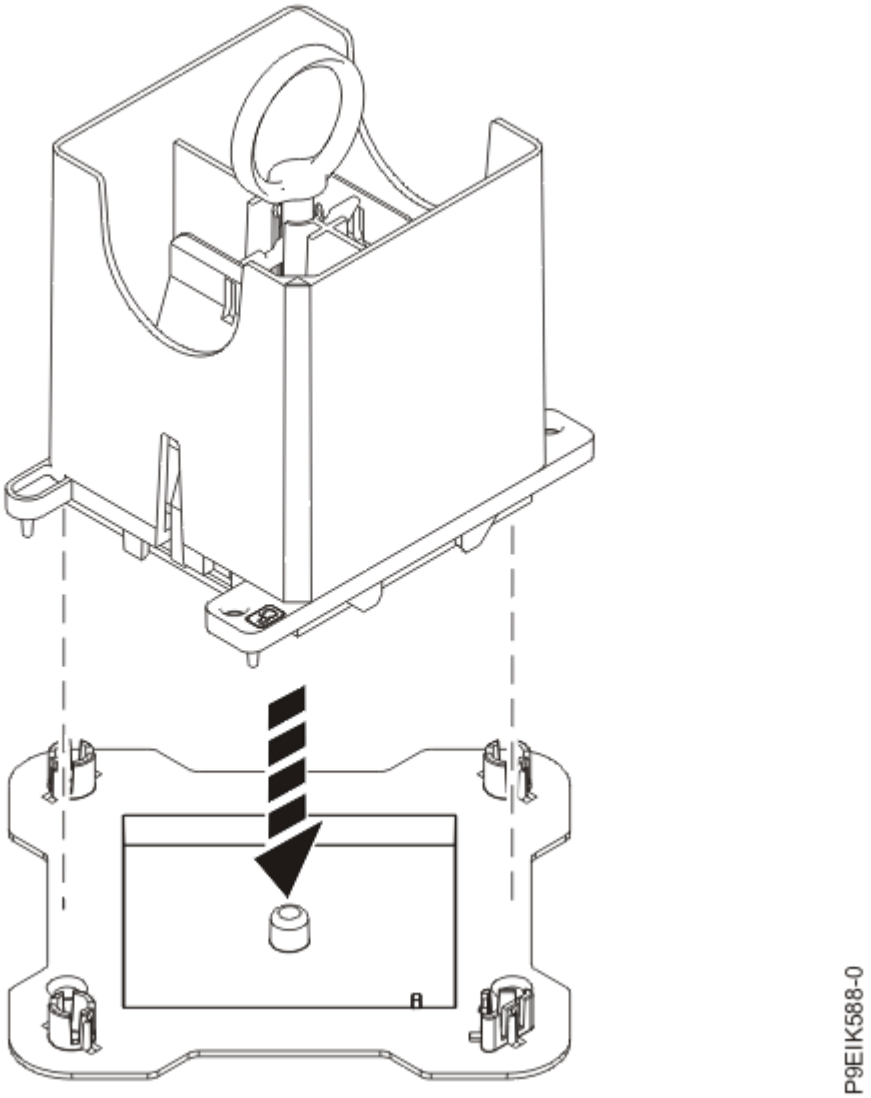


Figure 570. Placing the tool at an angle on the top cover of the packaging

6. Release the system processor module by pushing the ring **(B)** downwards. Hold the ring **(B)** down while pushing the blue tabs **(C)** inwards as shown in Figure 571 on page 651. Ensure that the ring catches the openings on the blue tabs, and that the blue tabs are locked in a fixed position.

   To prevent the system processor module from falling, pull up on the round lever before you place the tool on the top cover of the system processor module packaging.

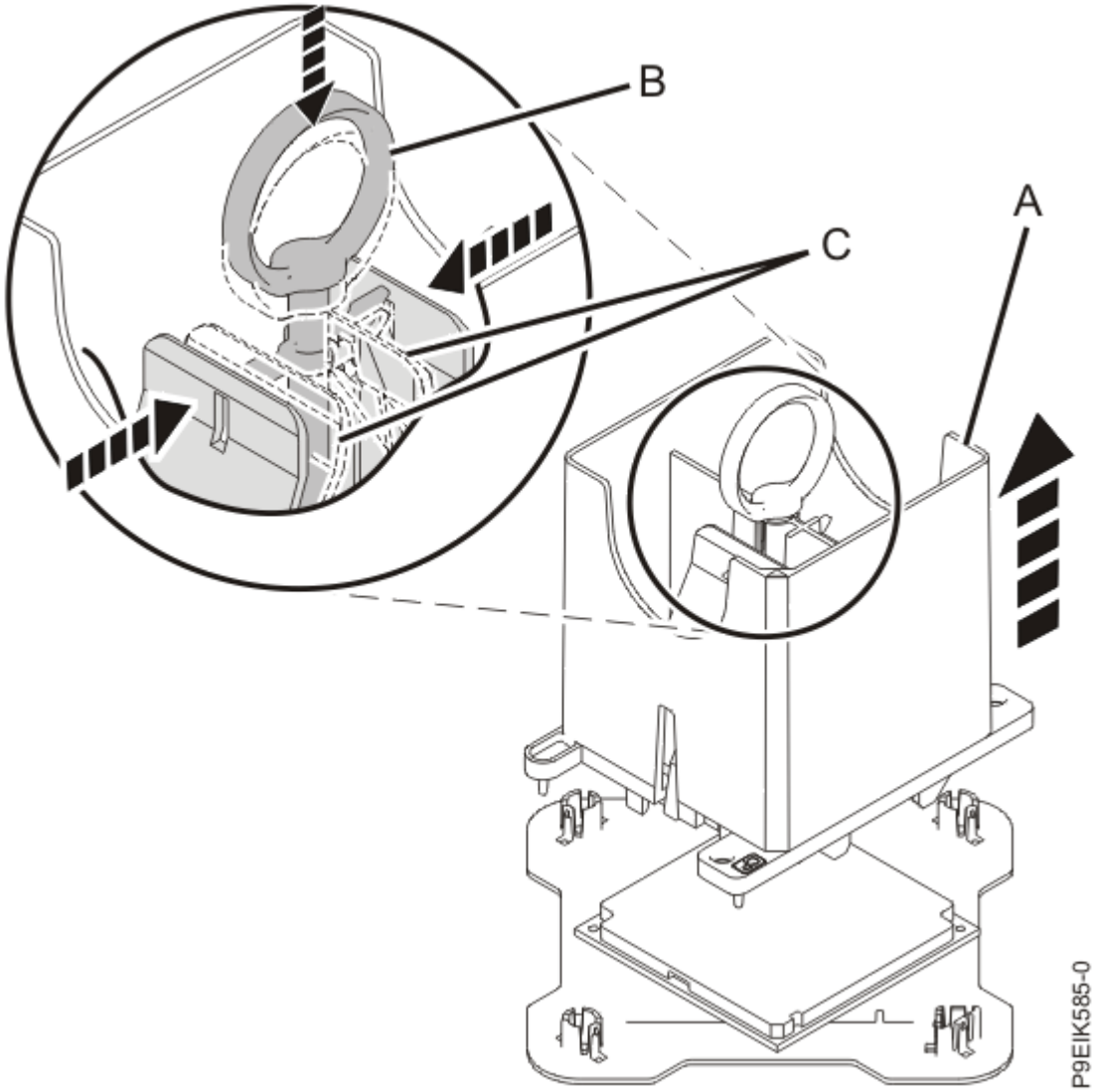


Figure 571. Releasing the system processor module from the tool

Replacing a system processor module in the 9080-M9S system

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. Prepare the system processor module for installation:
   a) Ensure that the removal tool is in the open position as shown in Figure 572 on page 652. The middle ring must be pushed down and blue tabs must be turned inward.

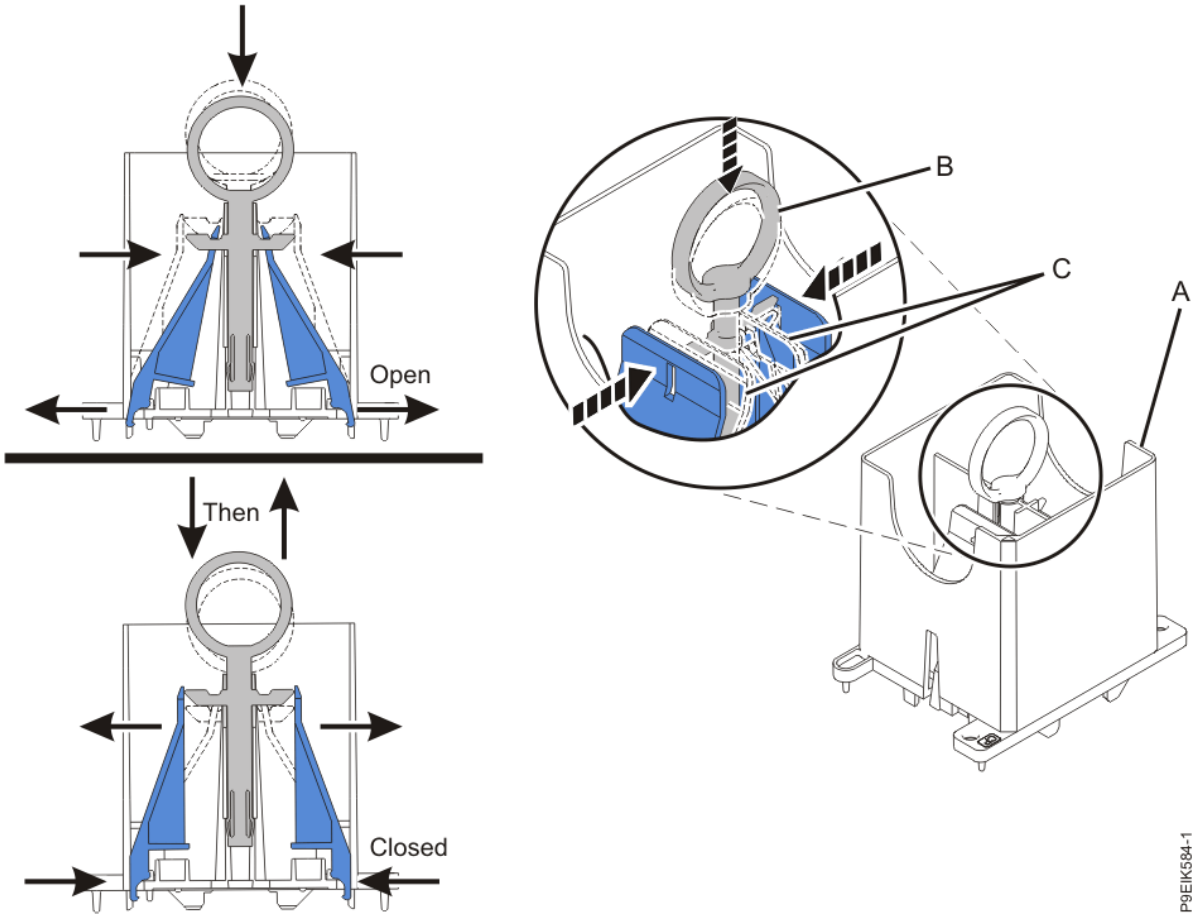


Figure 572. Ensuring that the removal tool is in the open position

b) Lower the tool over the system processor module as shown in Figure 573 on page 653. Ensure that the beveled edge on the tool aligns with the beveled edge of the system processor module. Ensure that the two guide pins **(A)** are inserted into the alignment holes **(B)** on each side of the tool.

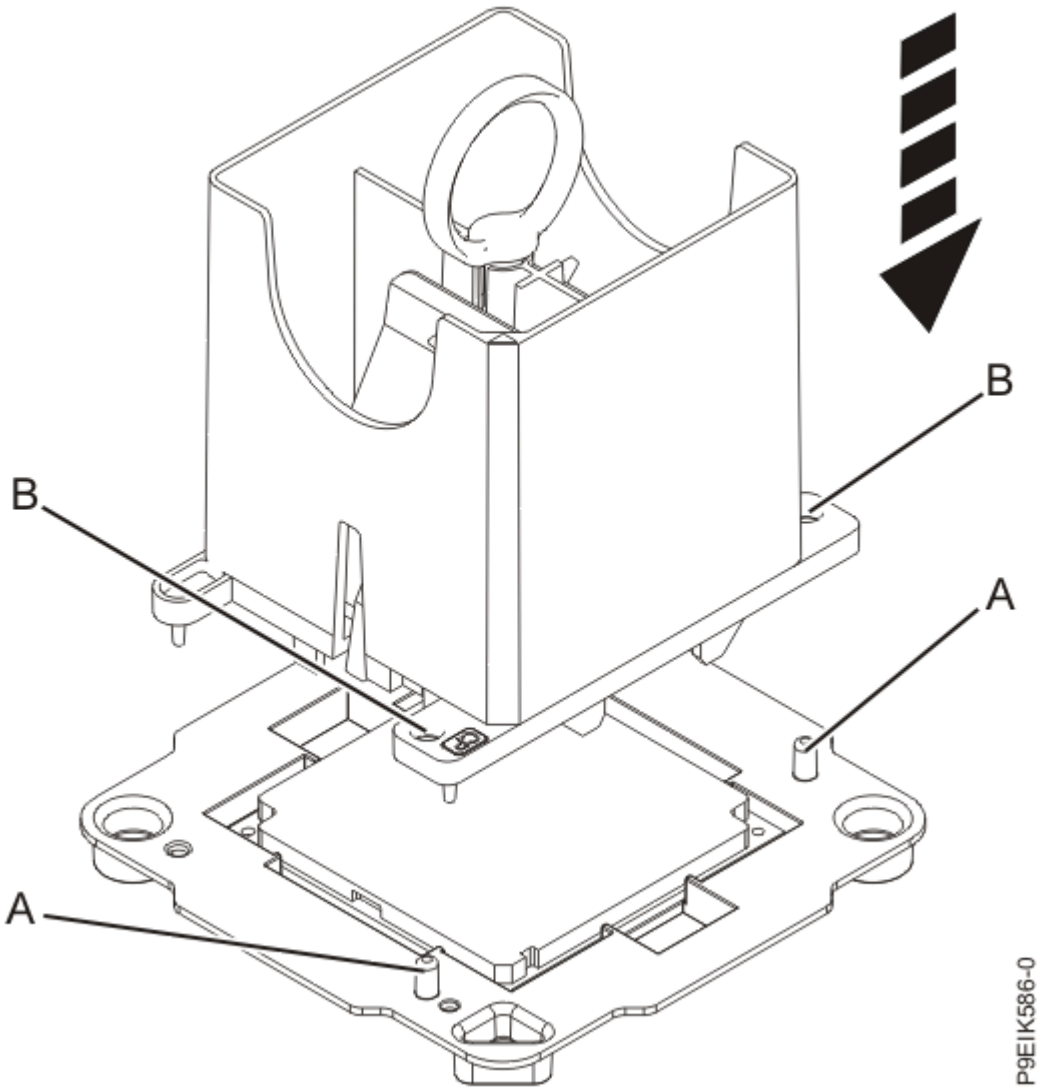


Figure 573. Lowering the removal tool onto the system processor module

c) With the removal tool sitting on top of the system processor module, push down on the ring **(A)** slightly so that the blue tabs **(B)** snap outward and the jaws engage with the system processor module **(C)** as shown in Figure 574 on page 654.

Make sure that both of the tool jaws are locked onto the system processor module by pushing down on the tool.

Important: Do not press the blue release tabs until directed to do so later.

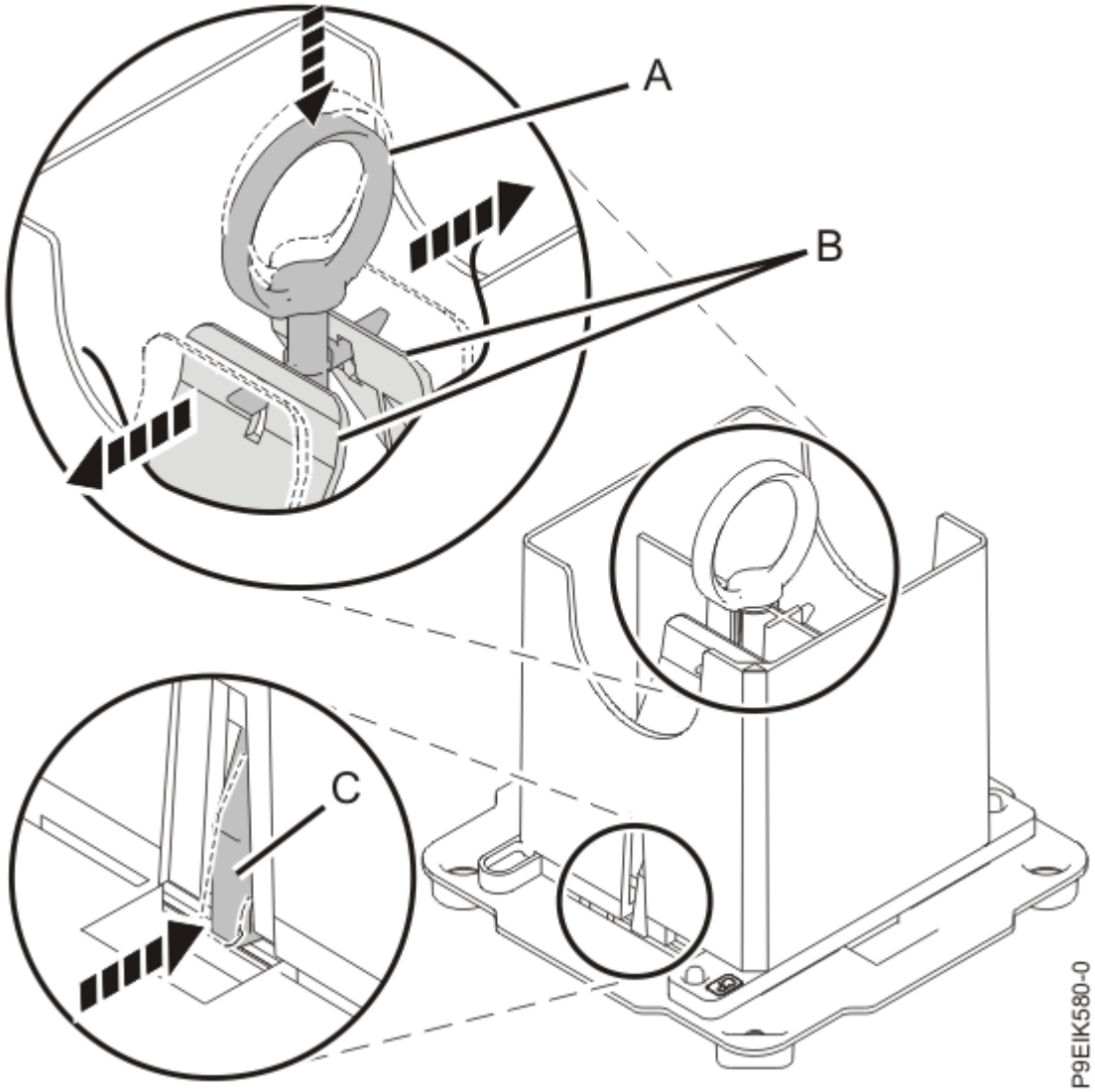


Figure 574. Locking the system processor module into the tool

3. Install the system processor module:
   a) If dust or debris is present on the system processor socket, use the supplied air pump to clean the socket. Blow small bursts of air from the center toward the sides of the socket, as shown in Figure 575 on page 655.

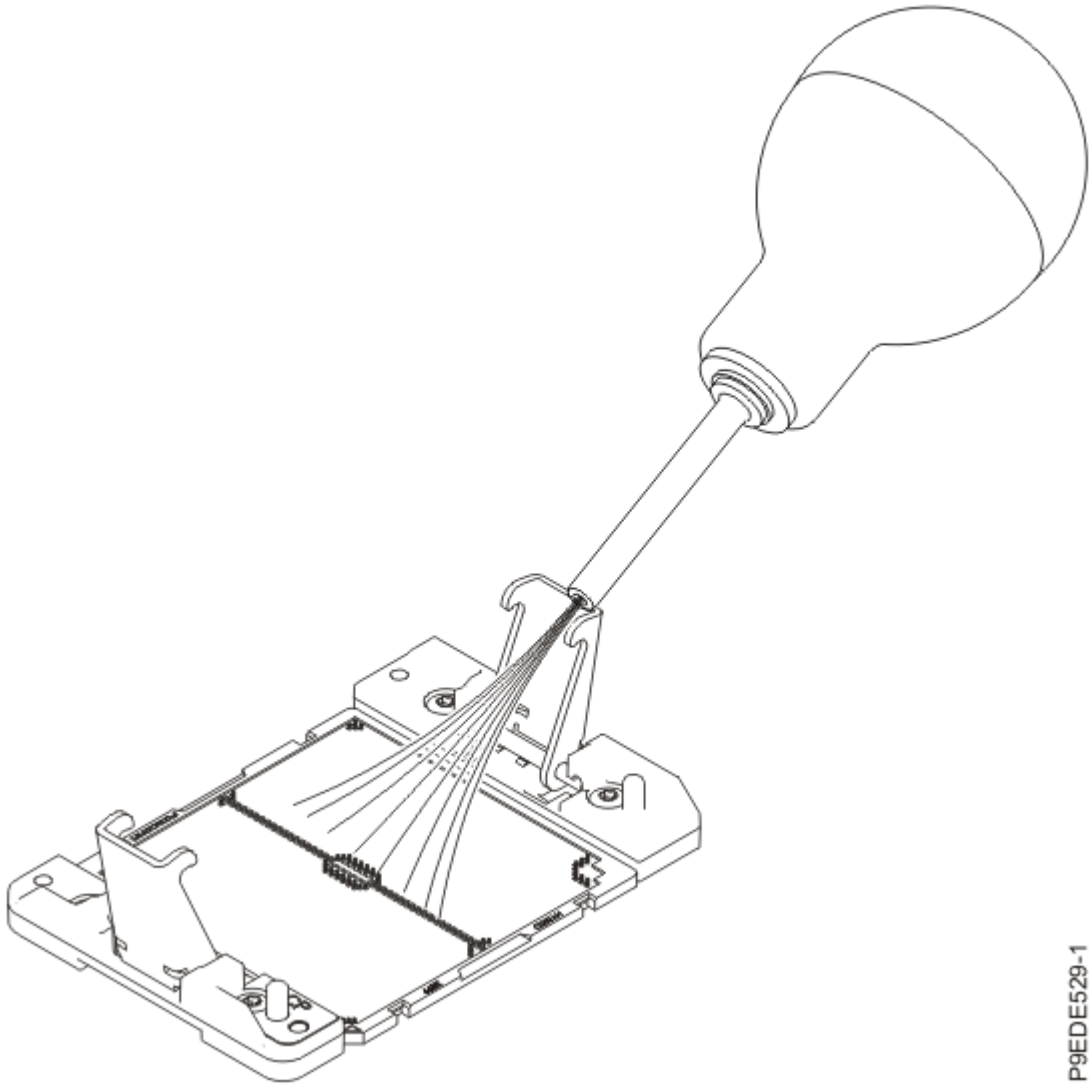


Figure 575. Removing dust and debris from the system processor socket

b) Hold the sides of the tool with system processor module and carefully lift the tool out of the system processor module tray.

c) Lower the tool and system processor module onto the socket. Align the beveled corner of the tool with the beveled corner on the socket. Align the guide pins **(A)** with the alignment holes **(B)** on each side of the tool. Use care to lower the tool evenly without tilting the tool.

See Figure 576 on page 656.

Note: Do not attempt to slide the tool and the system processor module in any direction while the system processor module is touching the socket. If the tool and the system processor module are not aligned with the guide pins, lift the tool and the system processor module and reposition them.

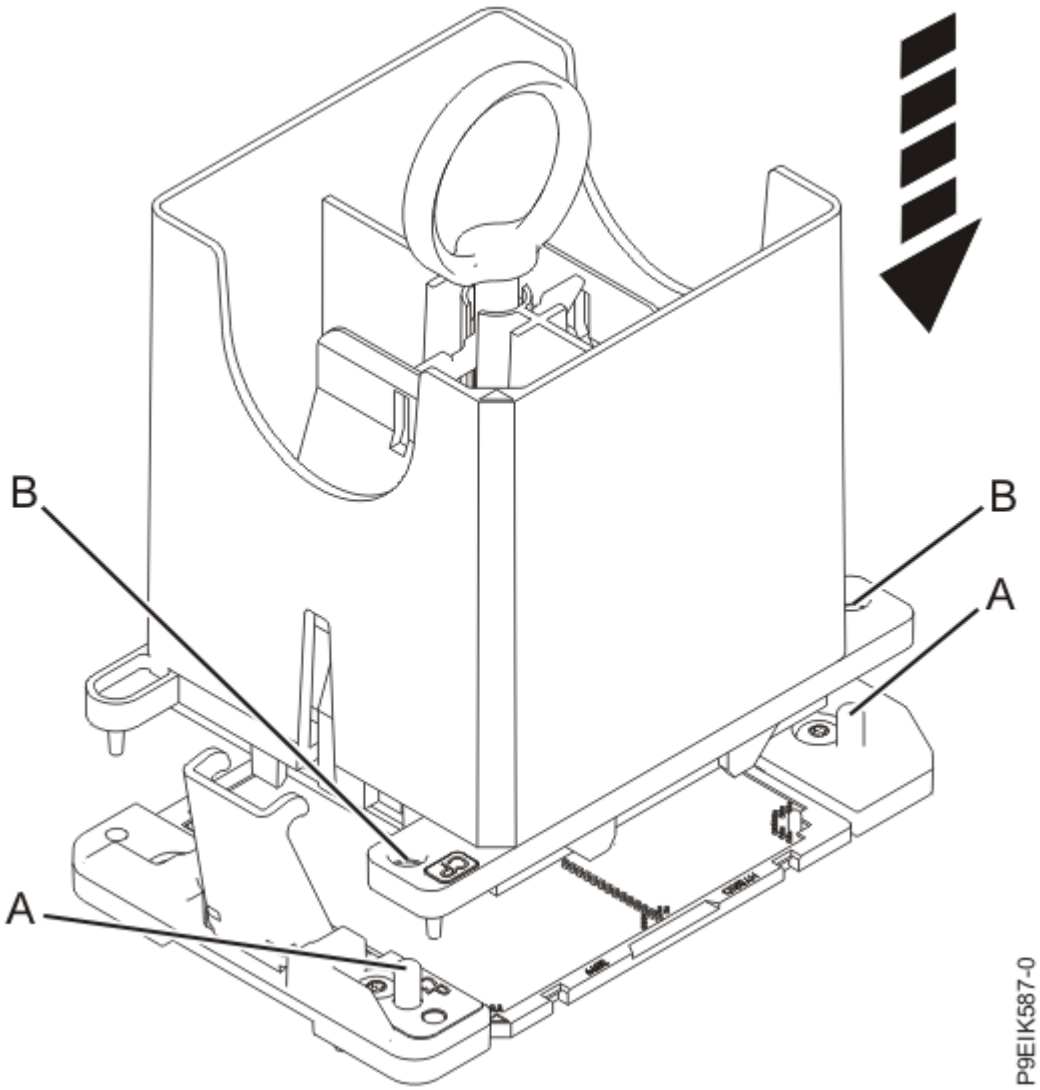


Figure 576. Installing the system processor module

d) Open the latches that hold the system processor module in the supplied removal tool **(A)** as shown in Figure 577 on page 657. Push down on the ring **(B)** while pressing in on the tabs **(C)**.

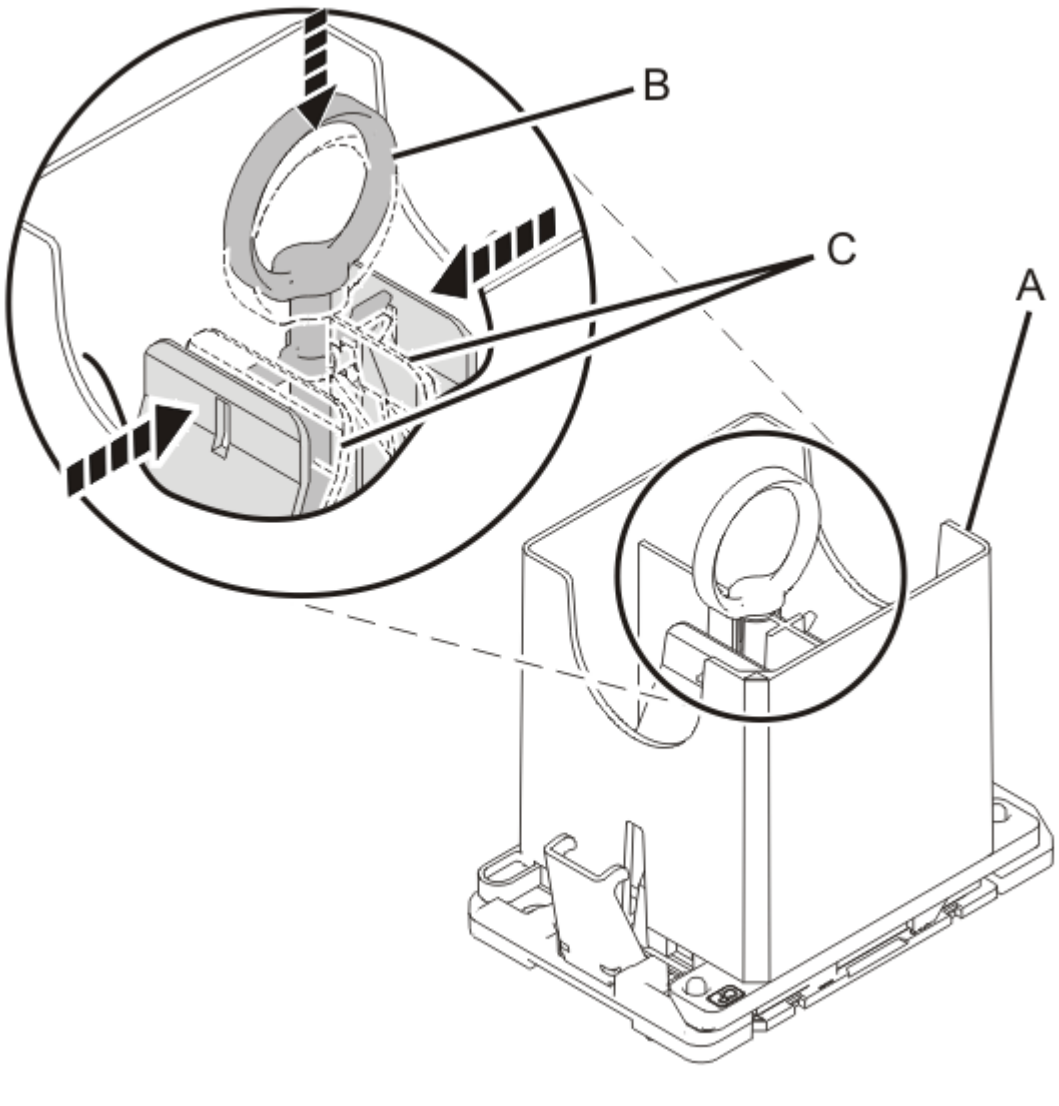


Figure 577. Removing the system processor module tool

e) Lift the tool off the system processor module.

4. Inspect the thermal interface material (TIM) for visible signs of damage, as shown in Figure 578 on page 658.

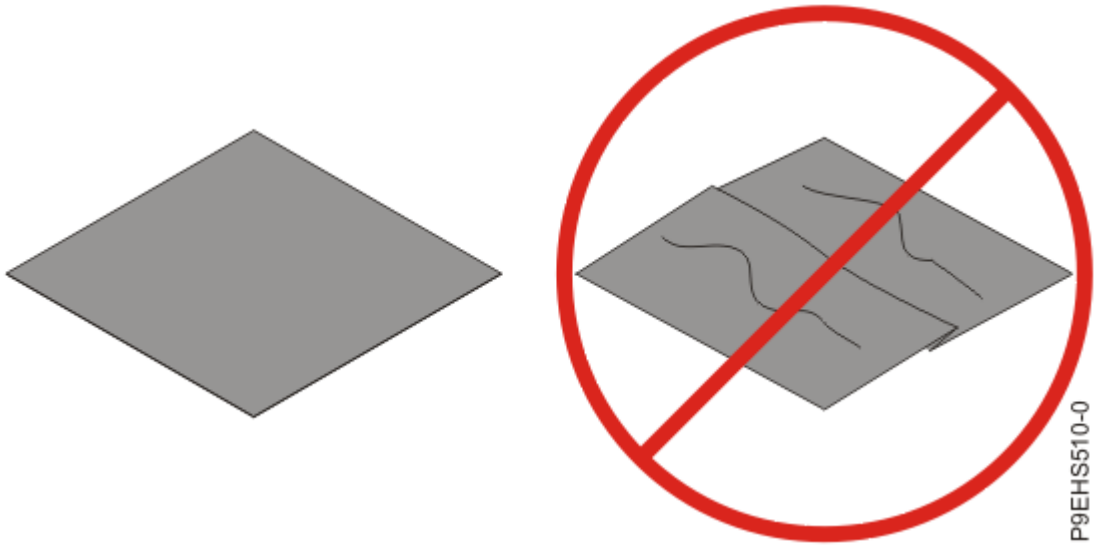


Figure 578. Inspecting the thermal interface material

5. Choose one of the following repair options:

Option	Description
Is the TIM damaged?	It is damaged. continue to step “6” on page 658 to replace the TIM and install the existing heat sink.
Is the TIM not damaged?	It is not damaged and can be reused. continue to step “7” on page 660 to move the TIM and install the existing heat sink.

6. Use this step to install a new TIM and reuse the existing heat sink.
   a) Open the TIM packaging and carefully remove the TIM, holding it by the edges of the carrier strip and holding it away from the shipping container.
   b) Remove the protective film from the clear carrier strip by using the supplied tweezers.

      Note: The TIM must remain flat. Small wrinkles are acceptable, but folds are not acceptable.
   c) Using the tweezers, remove the TIM from the carrier strip and center it onto the system processor module.

      The TIM has no preferred up side. The TIM can be placed on the processor and centered as shown in Figure 579 on page 659.

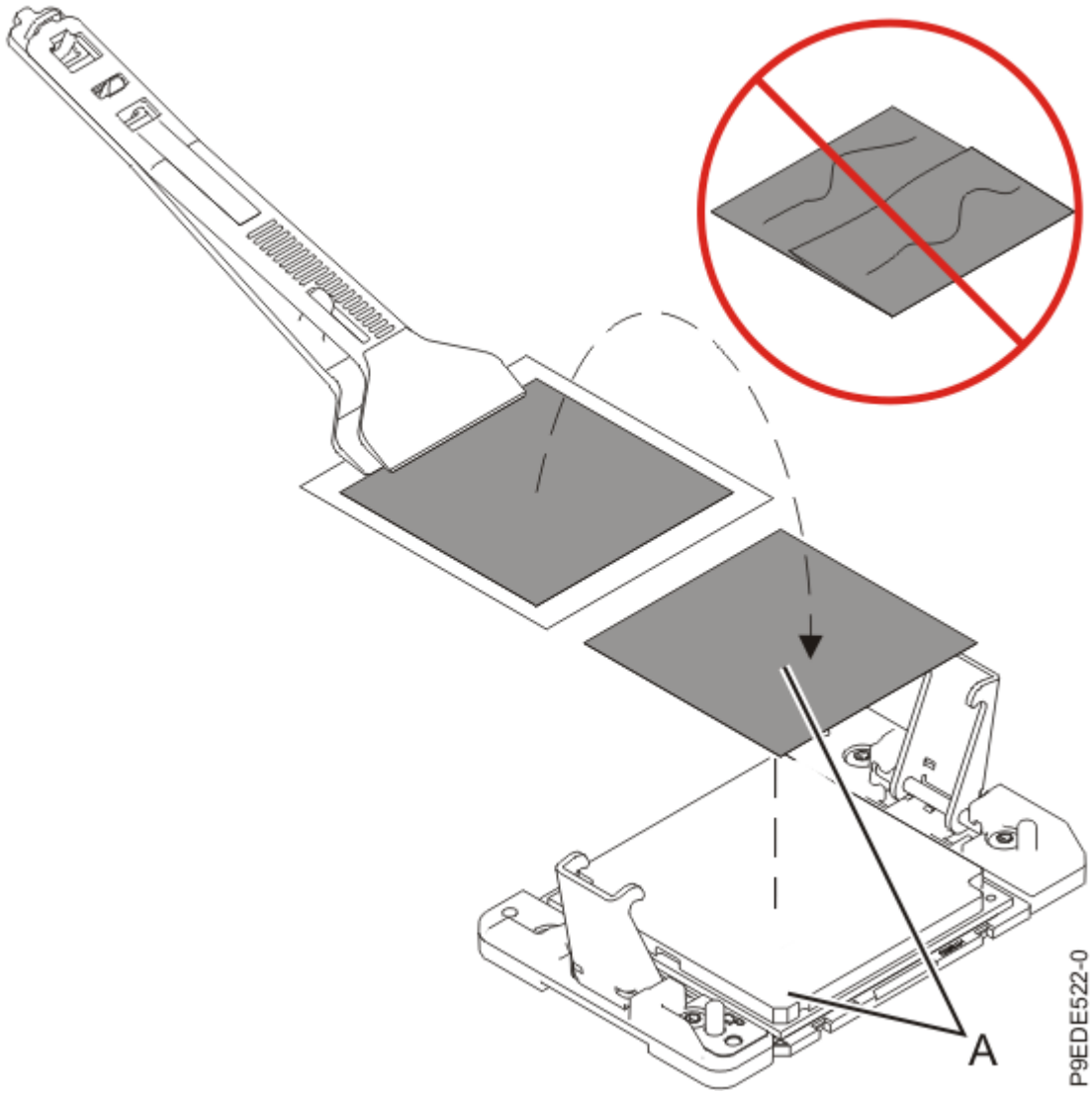


Figure 579. Installing a new TIM onto the system processor module

d) Place the heat sink on the TIM as shown in Figure 580 on page 660.

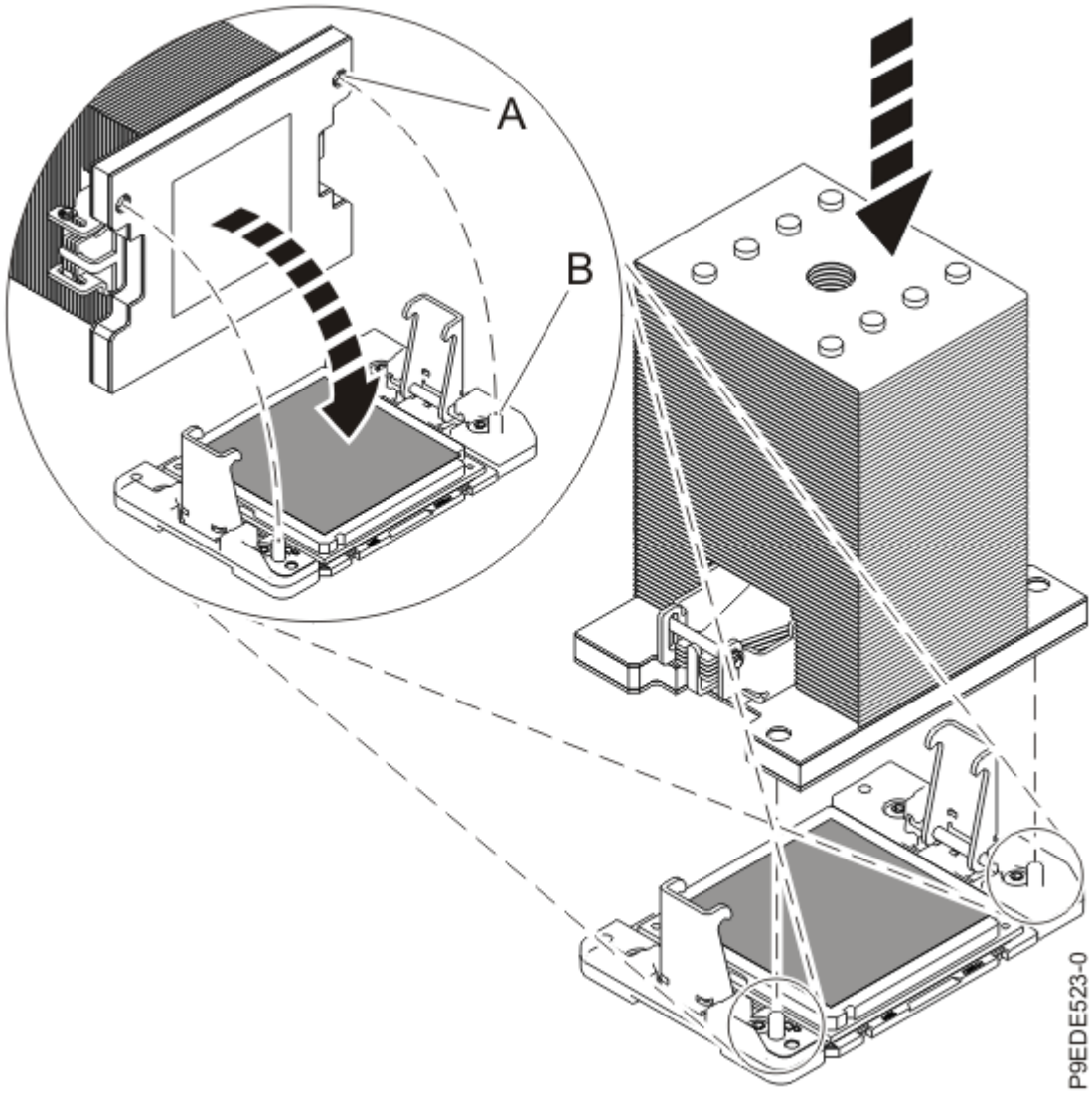


Figure 580. Installing the heat sink on the TIM

7. Use this step to reuse the existing undamaged TIM and heat sink.
   a) Using the tweezers, move the old processor's TIM from the clean, dry surface and center it onto the new system processor module.

      The TIM has no preferred up side. The TIM can be placed on the processor and centered as shown in Figure 581 on page 661.

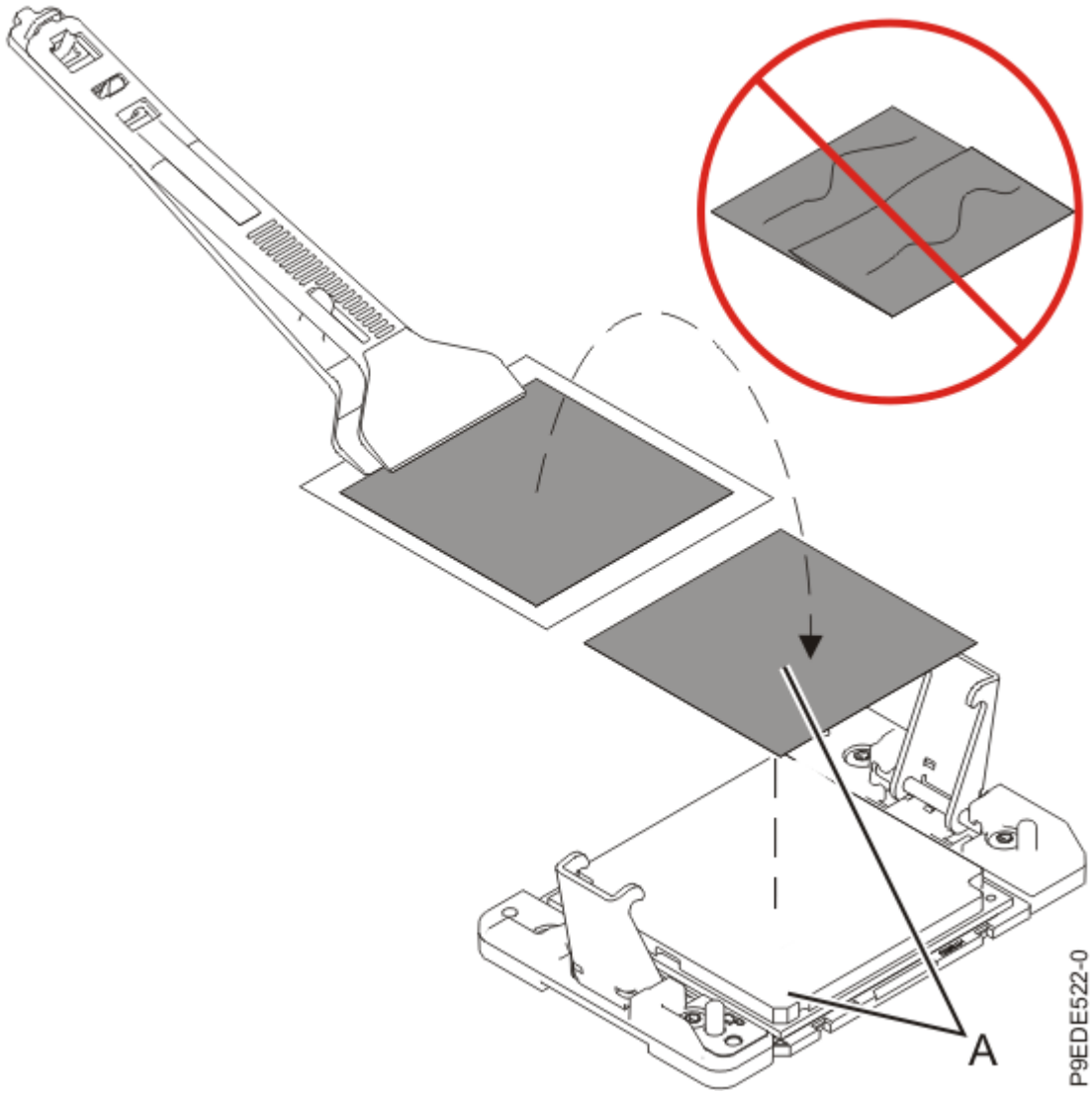


Figure 581. Moving the TIM onto the processor

b) Place the heat sink on the TIM as shown in Figure 582 on page 662.

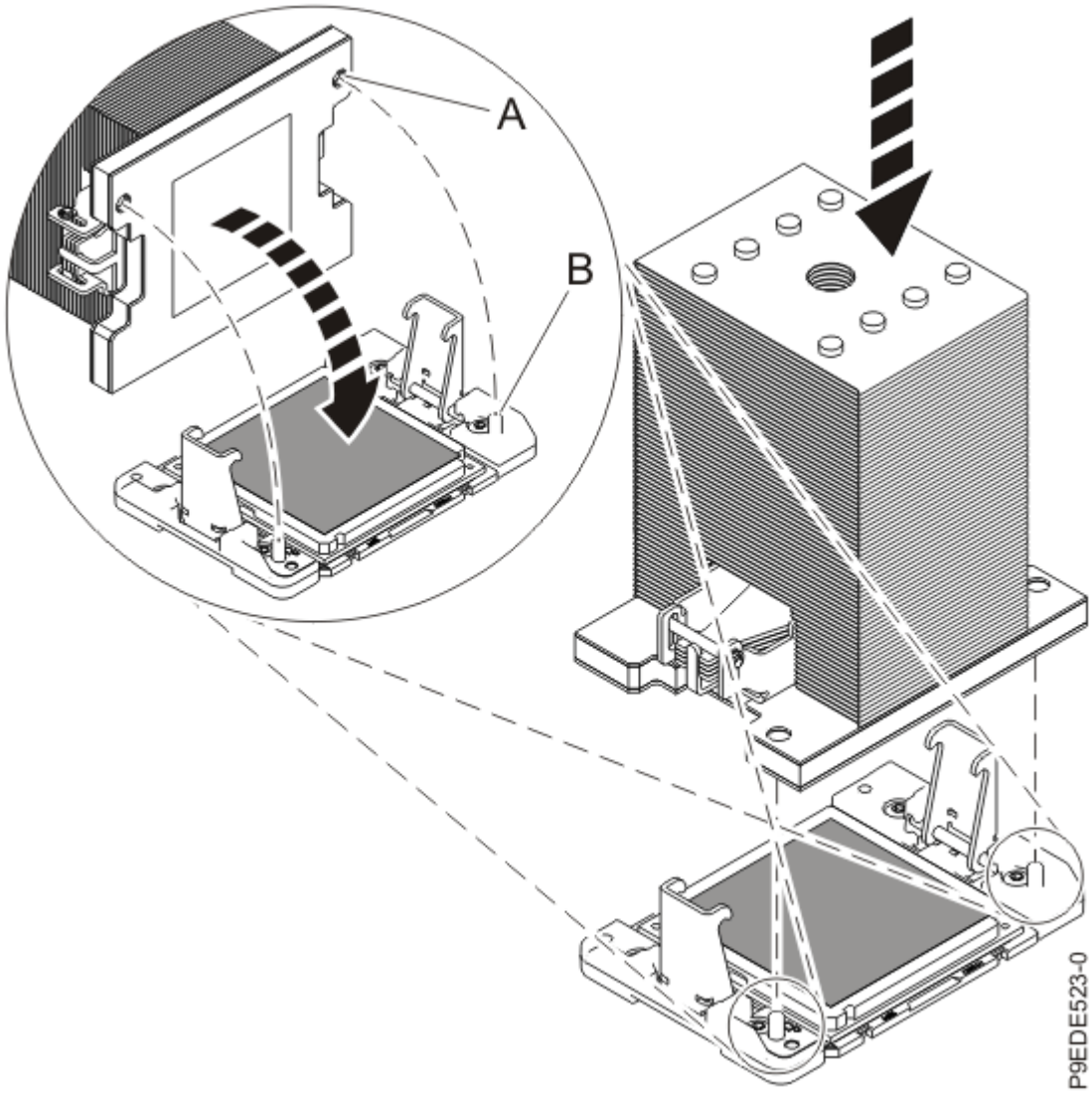


Figure 582. Installing the heat sink on the TIM

8. Secure the TIM and heat sink to the socket of the system processor module.
   a) Ensure that the heat sink load arms are engaged as shown by **(A)** in Figure 583 on page 663.
   b) Tighten the center load screw clockwise by using the supplied 4MM T-handle Allen wrench as shown by **(B)** in Figure 583 on page 663 until a firm stop is reached. If the heat sink moves noticeably, the load arms are not engaged. Unscrew the center load screw and repeat this step again.

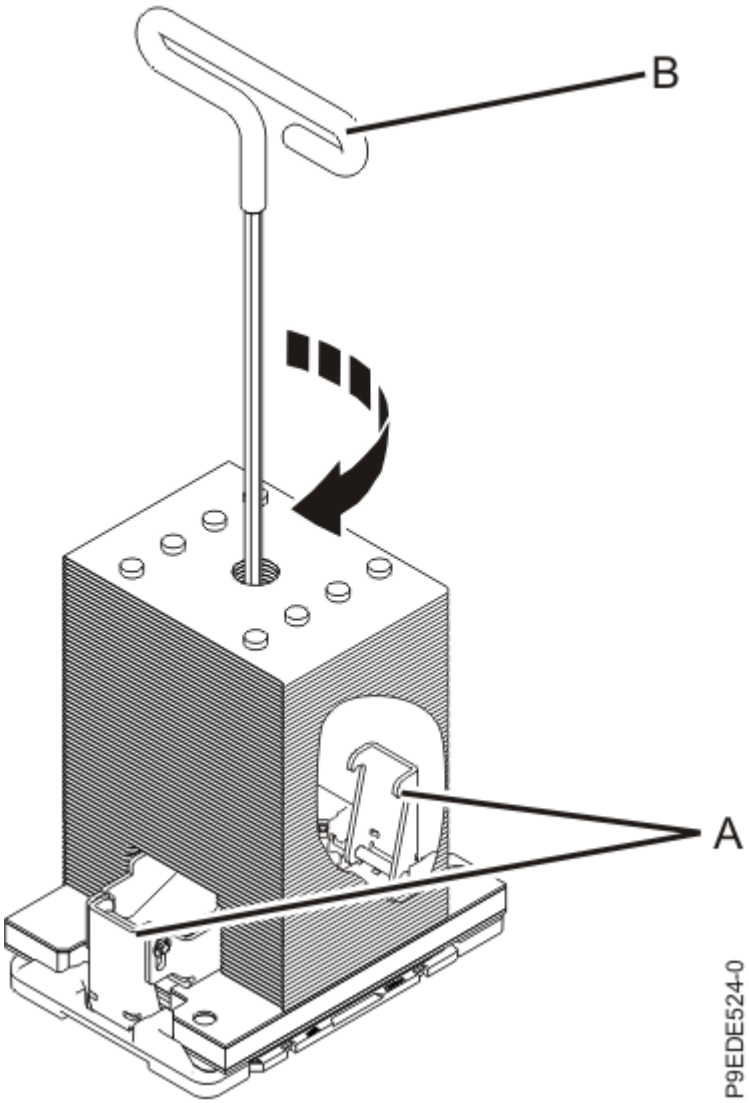


Figure 583. Tightening the center load screw on the heat sink

9. Lightly grip the system processor module that you replaced by the edges and lift it off of the packaging cover. Align the beveled corner of the module **(A)** to the corner of the packaging with triangle **(B)** and place it in the packaging, as shown in Figure 584 on page 664. Close the packaging cover.

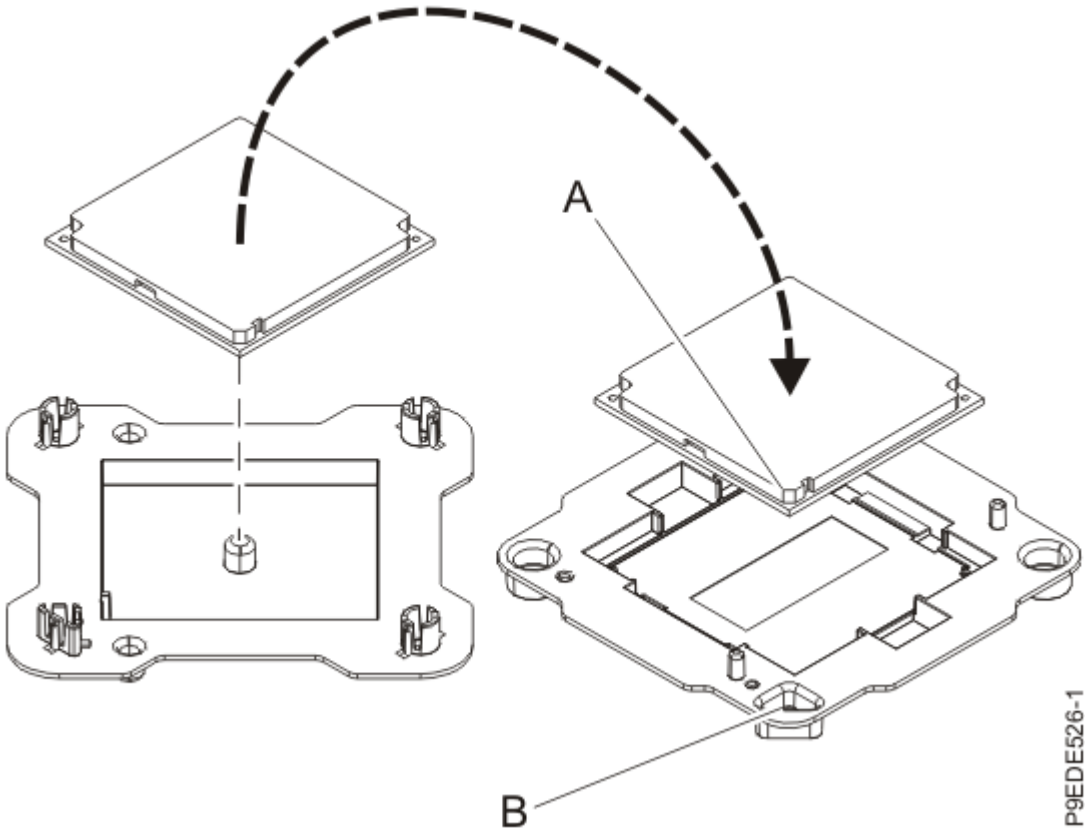


Figure 584. Placing the system processor module into the packaging

Preparing the 9080-M9S system for operation after removing and replacing a system processor module

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. Replace the service access cover by completing the following steps.
   a) Slide the cover **(A)** onto the system unit as shown in the following figure.
   b) Close the release latch **(B)** by pushing it in the direction shown in the following figure.

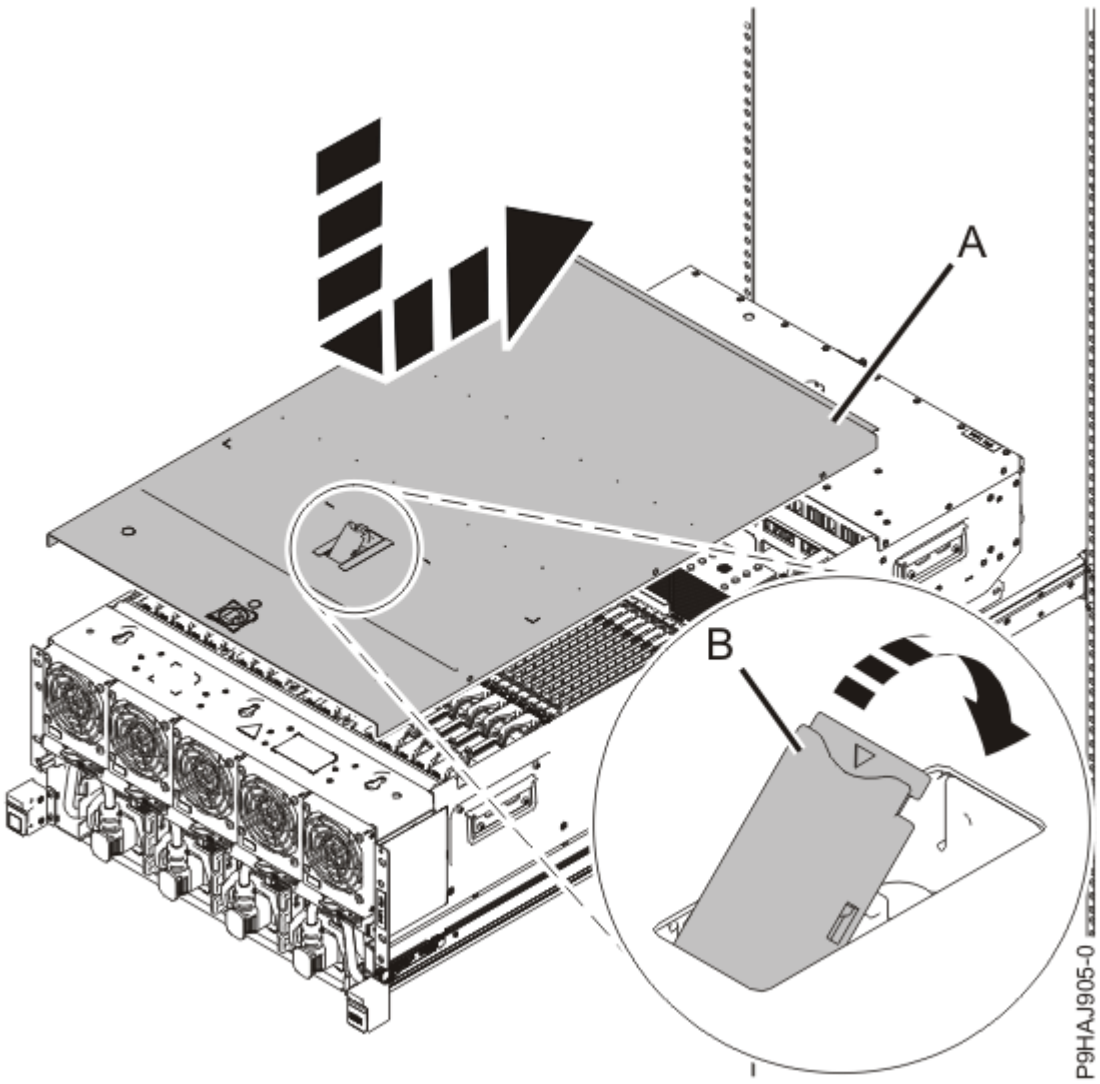


Figure 585. Installing the service access cover

3. Complete the following steps to place the system node in the operating position.

   Note: Slide the system node slowly into the rack to ensure that your fingers do not get caught in the side rails.

   a) Unlock the blue rail safety latches **(A)** by pushing them towards the front as shown in the following figure.

   b) Push the system node back into the rack as shown in the following figure until both system node release latches lock into position.

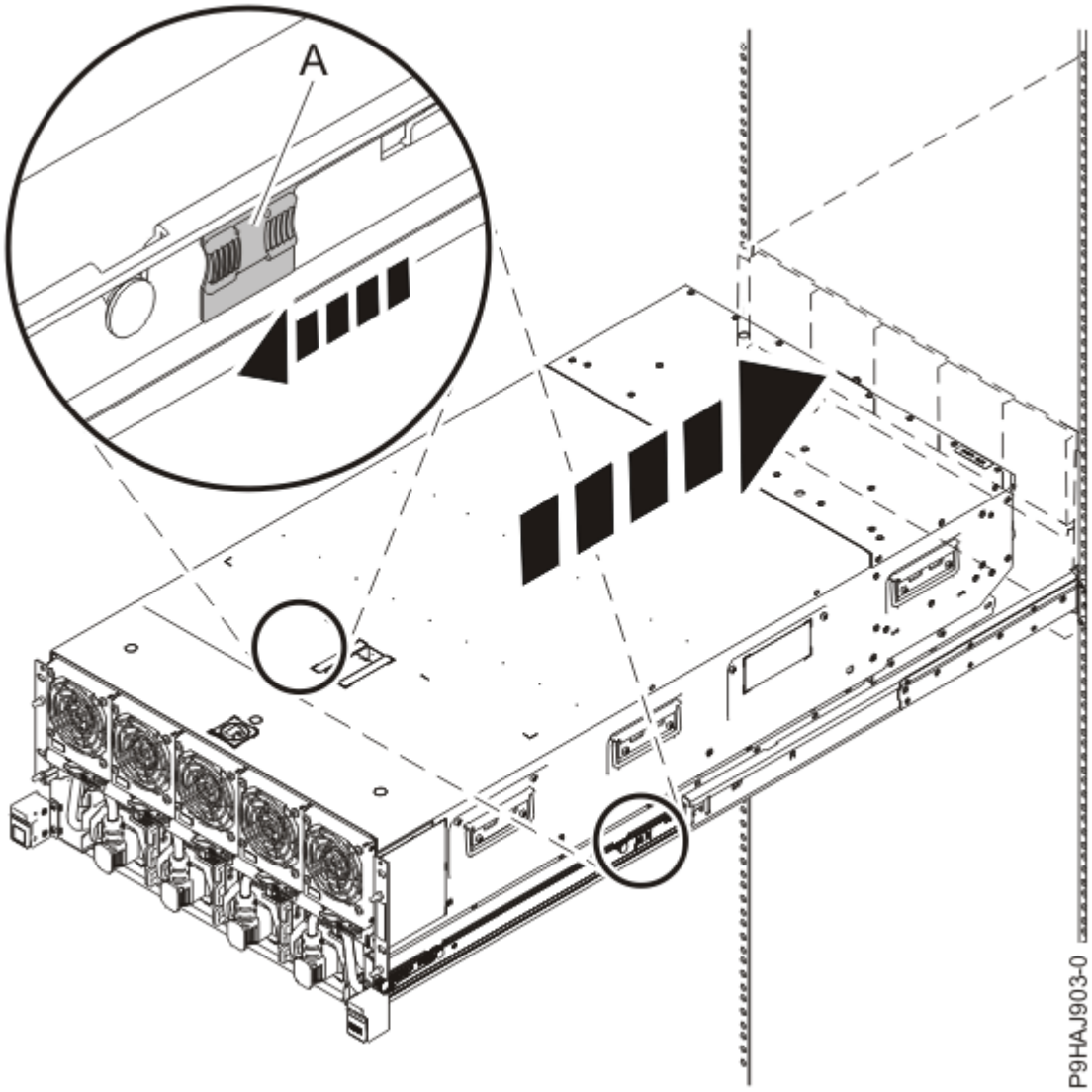


Figure 586. Placing the system node into the operating position

c) Replace the two screws **(A)** at the rear of the system if you removed them earlier, as shown in the following figure.

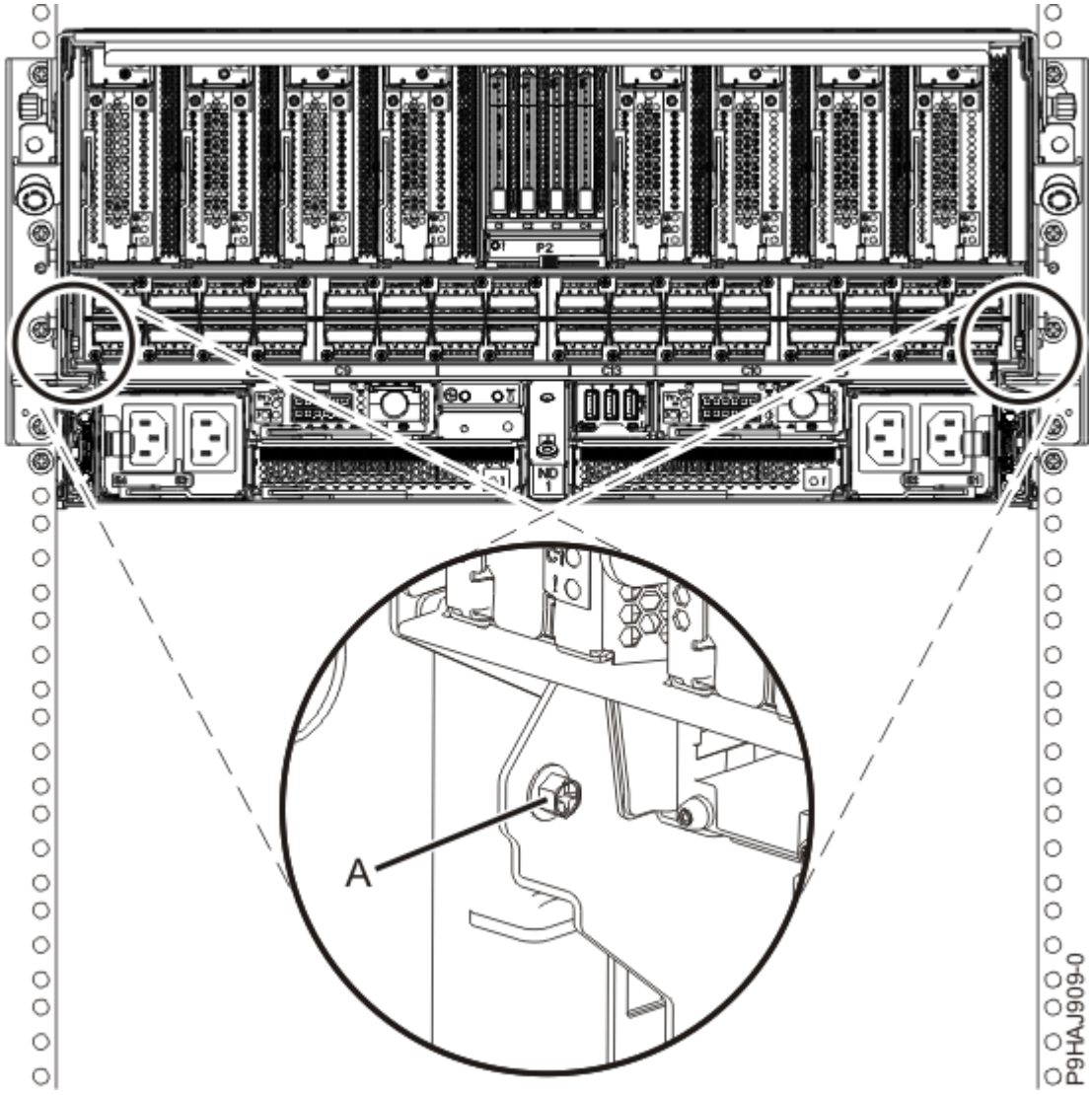


Figure 587. Replacing the rear screws

d) Replace the four screws **(A)** at the front of the system node as shown in the following figure.

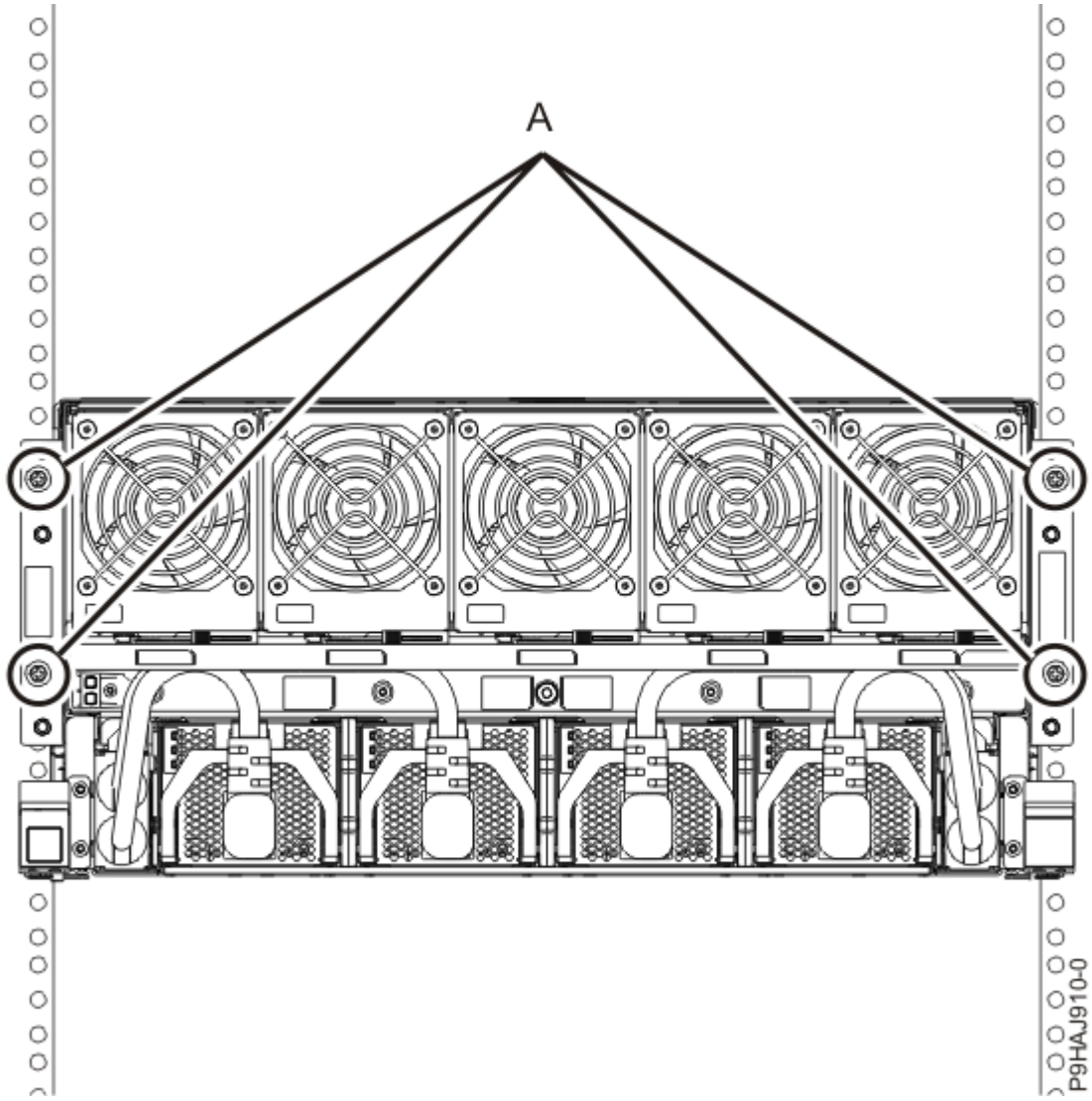


Figure 588. Replacing the front screws

4. Using your labels, reconnect the rear power cords to the system node being serviced as shown in the following figure.

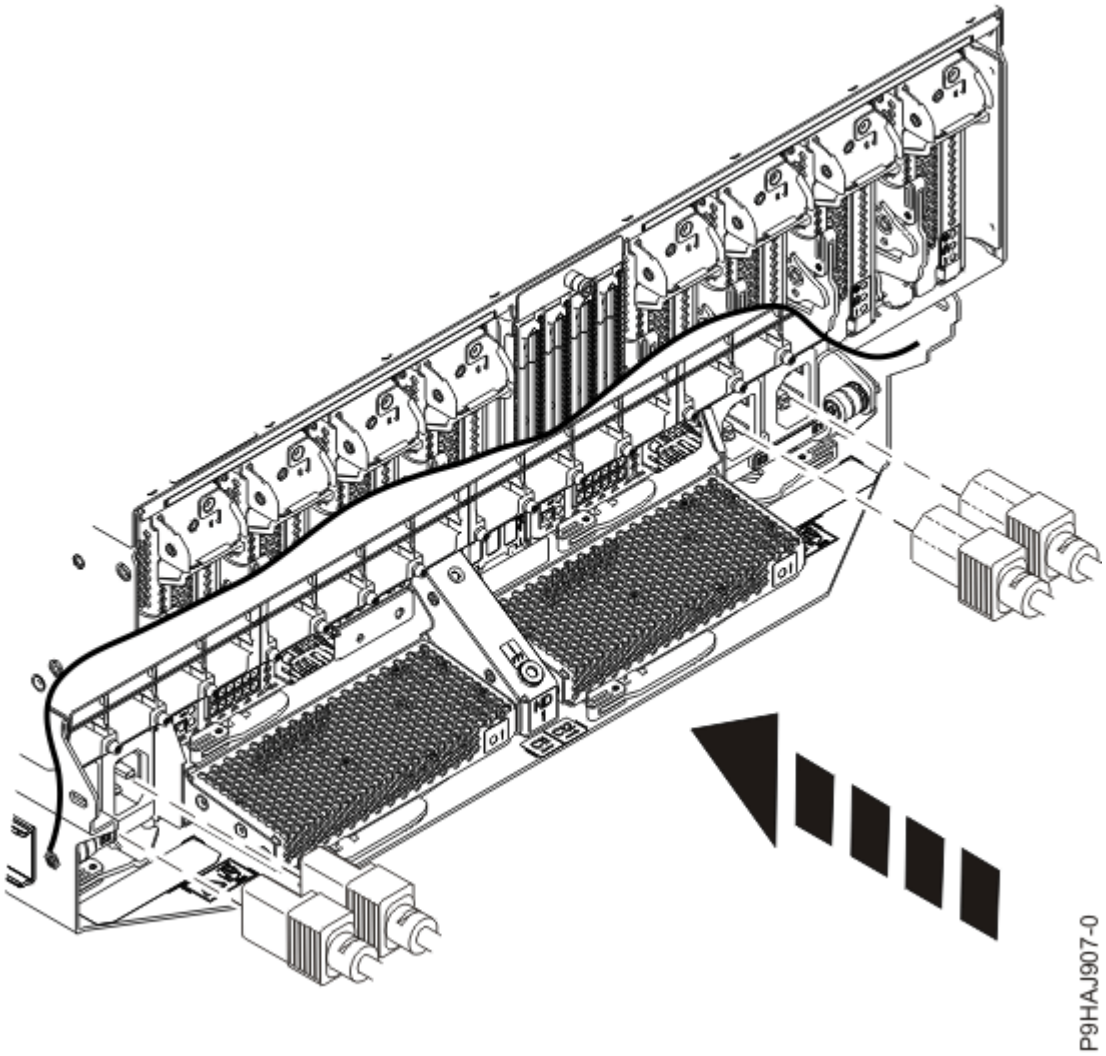


Figure 589. Connecting the rear power cords

5. Review the following information to identify the locations where each SMP cable connects to the system node that you are servicing. Then, refer to your labels and the following steps to reconnect the SMP cables that you removed from the system node you are servicing.
   - If you have a two node system configuration, use Figure 590 on page 670 and Table 62 on page 670 to determine the point-to-point cabling for SMP cables.

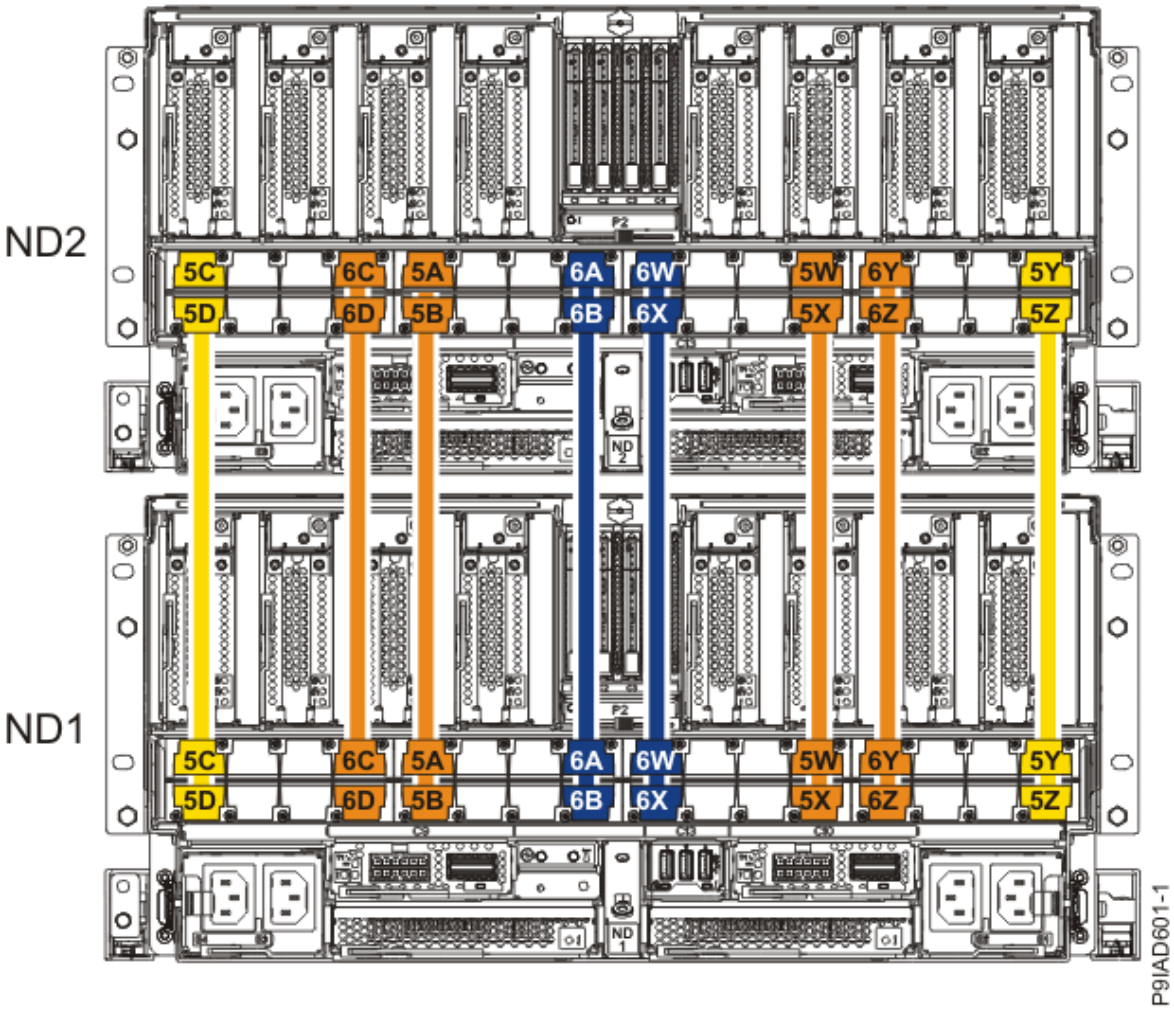


Figure 590. Cabling a Two Node Configuration

Table 62. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables.

Cable	Cable type and length	From	To
5C	880 mm (2.9 ft)	ND1-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND1-P1-T2	ND2-P1-T2
6C	1005 mm (3.3 ft)	ND1-P1-T7	ND2-P1-T7
6D	1005 mm (3.3 ft)	ND1-P1-T8	ND2-P1-T8
5A	1005 mm (3.3 ft)	ND1-P1-T9	ND2-P1-T9

Table 62. Cabling a Two Node Configuration. Each connection that is shown in the diagram represents a pair of SMP cables. *(continued)*			
Cable	**Cable type and length**	**From**	**To**
5B	1005 mm (3.3 ft)	ND1-P1-T10	ND2-P1-T10
6A	1225 mm (4.01 ft)	ND1-P1-T15	ND2-P1-T15
6B	1225 mm (4.01 ft)	ND1-P1-T16	ND2-P1-T16
6W	1225 mm (4.01 ft)	ND1-P1-T17	ND2-P1-T17
6X	1225 mm (4.01 ft)	ND1-P1-T18	ND2-P1-T18
5W	1005 mm (3.3 ft)	ND1-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND1-P1-T24	ND2-P1-T24
6Y	1005 mm (3.3 ft)	ND1-P1-T25	ND2-P1-T25
6Z	1005 mm (3.3 ft)	ND1-P1-T26	ND2-P1-T26
5Y	880 mm (2.9 ft)	ND1-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND1-P1-T32	ND2-P1-T32

- If you have a three node system configuration, use Figure 591 on page 672 and Table 63 on page 672 to determine the point-to-point cabling for SMP cables.

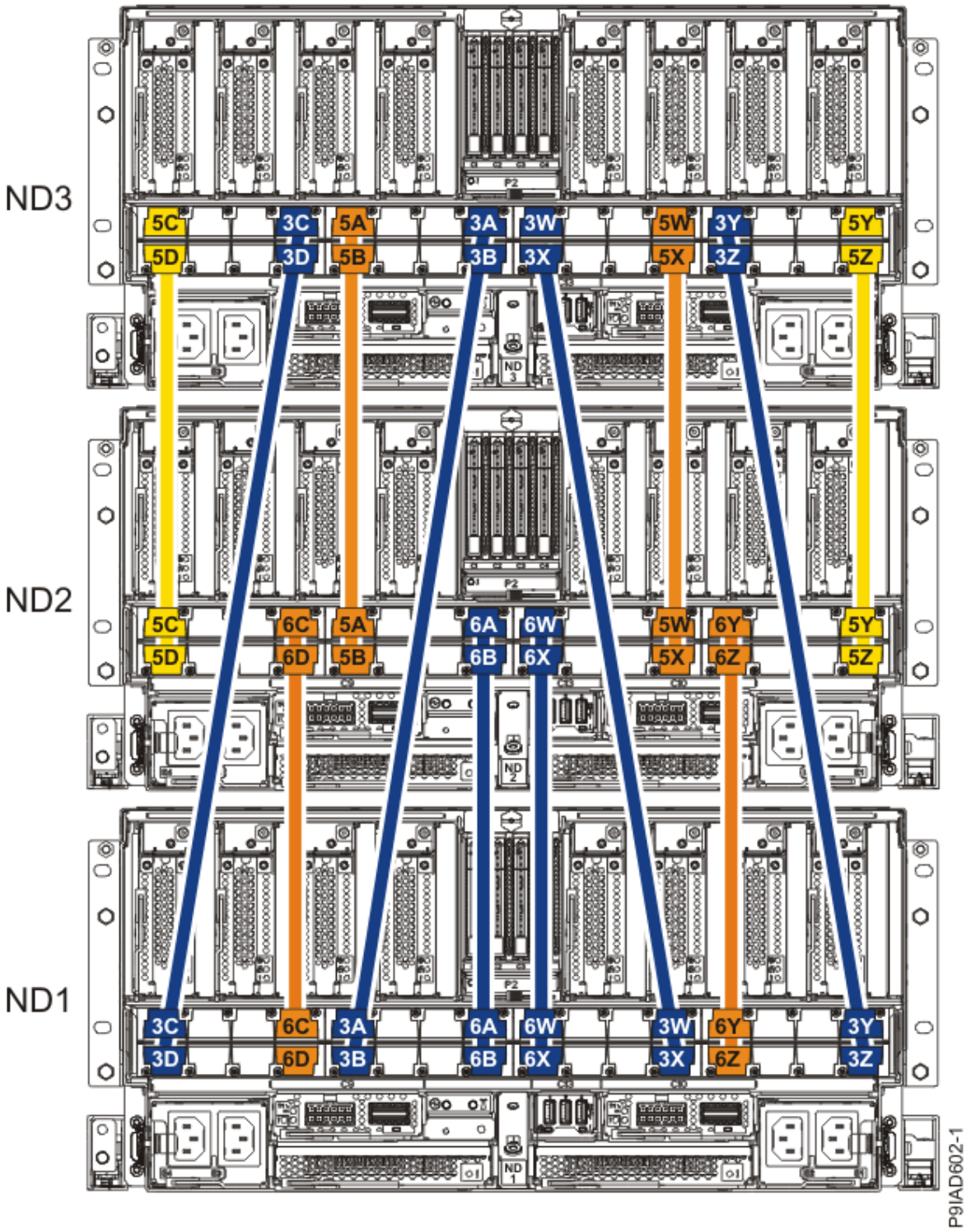


Figure 591. Cabling a Three Node Configuration

Table 63. Cabling a Three Node Configuration			
Cable	**Cable type and length**	**From**	**To**
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1

Table 63. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8

Table 63. Cabling a Three Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

- If you have a four node system configuration, use Figure 592 on page 675 and Table 64 on page 676 to determine the point-to-point cabling for SMP cables.

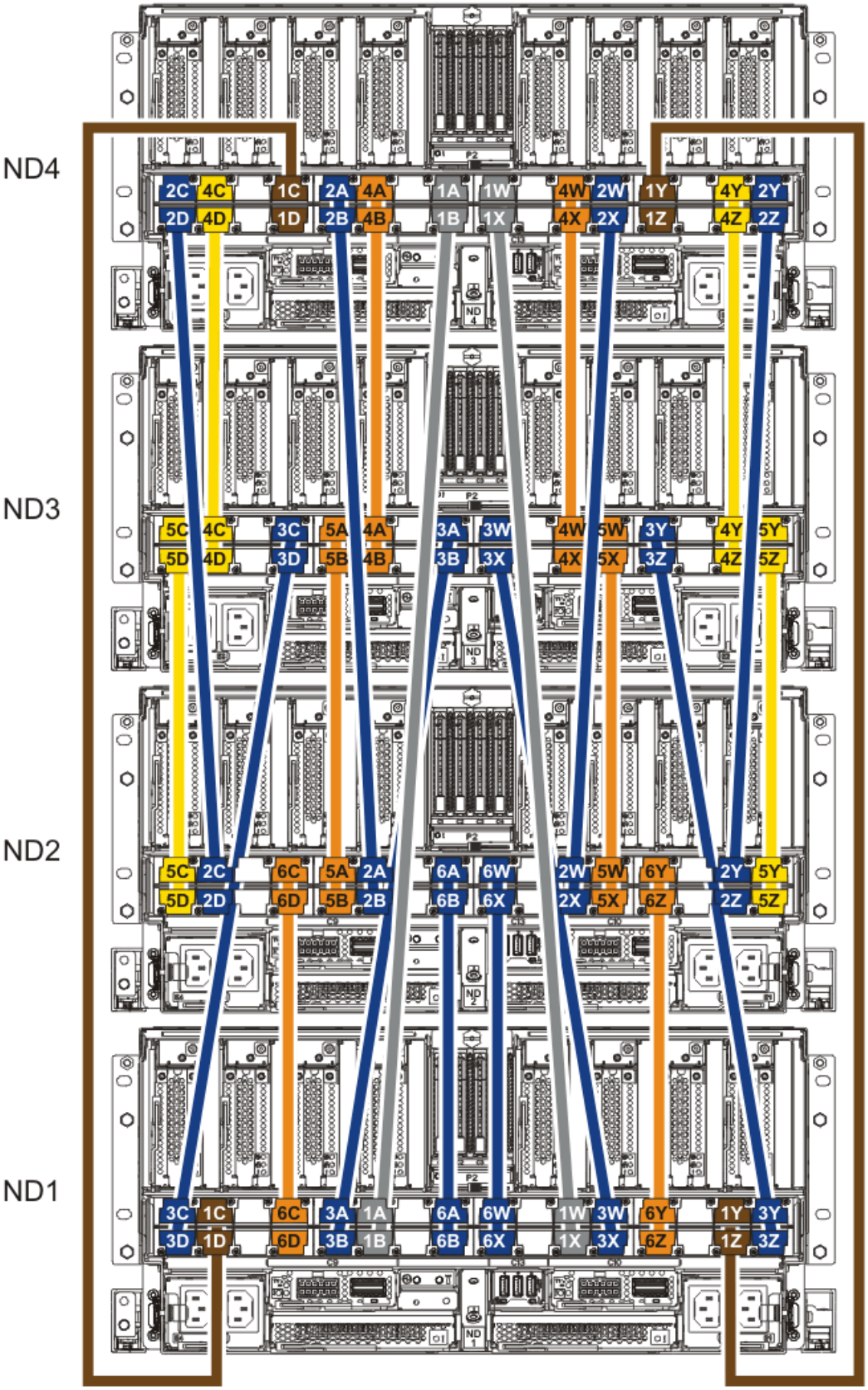


Figure 592. Cabling a Four Node Configuration

Table 64. Cabling a Four Node Configuration			
Cable	**Cable type and length**	**From**	**To**
Cables originating on ND4			
2C	1225 mm (4.01 ft)	ND4-P1-T1	ND2-P1-T3
2D	1225 mm (4.01 ft)	ND4-P1-T2	ND2-P1-T4
4C	880 mm (2.9 ft)	ND4-P1-T3	ND3-P1-T3
4D	880 mm (2.9 ft)	ND4-P1-T4	ND3-P1-T4
1C	1425 mm (4.7 ft)	ND4-P1-T7	ND1-P1-T3
1D	1425 mm (4.7 ft)	ND4-P1-T8	ND1-P1-T4
2A	1225 mm (4.01 ft)	ND4-P1-T9	ND2-P1-T11
2B	1225 mm (4.01 ft)	ND4-P1-T10	ND2-P1-T12
4A	1005 mm (3.3 ft)	ND4-P1-T11	ND3-P1-T11
4B	1005 mm (3.3 ft)	ND4-P1-T12	ND3-P1-T12
1A	1625 mm (5.3 ft)	ND4-P1-T15	ND1-P1-T11
1B	1625 mm (5.3 ft)	ND4-P1-T16	ND1-P1-T12
1W	1625 mm (5.3 ft)	ND4-P1-T17	ND1-P1-T21
1X	1625 mm (5.3 ft)	ND4-P1-T18	ND1-P1-T22
4W	1005 mm (3.3 ft)	ND4-P1-T21	ND3-P1-T21
4X	1005 mm (3.3 ft)	ND4-P1-T22	ND3-P1-T22
2W	1225 mm (4.01 ft)	ND4-P1-T23	ND2-P1-T21

Table 64. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
2X	1225 mm (4.01 ft)	ND4-P1-T24	ND2-P1-T22
1Y	1425 mm (4.7 ft)	ND4-P1-T25	ND1-P1-T29
1Z	1425 mm (4.7 ft)	ND4-P1-T26	ND1-P1-T30
4Y	880 mm (2.9 ft)	ND4-P1-T29	ND3-P1-T29
4Z	880 mm (2.9 ft)	ND4-P1-T30	ND3-P1-T30
2Y	1225 mm (4.01 ft)	ND4-P1-T31	ND2-P1-T29
2Z	1225 mm (4.01 ft)	ND4-P1-T32	ND2-P1-T30
Cables originating on ND3			
5C	880 mm (2.9 ft)	ND3-P1-T1	ND2-P1-T1
5D	880 mm (2.9 ft)	ND3-P1-T2	ND2-P1-T2
3C	1225 mm (4.01 ft)	ND3-P1-T7	ND1-P1-T1
3D	1225 mm (4.01 ft)	ND3-P1-T8	ND1-P1-T2
5A	1005 mm (3.3 ft)	ND3-P1-T9	ND2-P1-T9
5B	1005 mm (3.3 ft)	ND3-P1-T10	ND2-P1-T10
3A	1225 mm (4.01 ft)	ND3-P1-T15	ND1-P1-T9
3B	1225 mm (4.01 ft)	ND3-P1-T16	ND1-P1-T10
3W	1225 mm (4.01 ft)	ND3-P1-T17	ND1-P1-T23

Table 64. Cabling a Four Node Configuration (continued)			
Cable	**Cable type and length**	**From**	**To**
3X	1225 mm (4.01 ft)	ND3-P1-T18	ND1-P1-T24
5W	1005 mm (3.3 ft)	ND3-P1-T23	ND2-P1-T23
5X	1005 mm (3.3 ft)	ND3-P1-T24	ND2-P1-T24
3Y	1225 mm (4.01 ft)	ND3-P1-T25	ND1-P1-T31
3Z	1225 mm (4.01 ft)	ND3-P1-T26	ND1-P1-T32
5Y	880 mm (2.9 ft)	ND3-P1-T31	ND2-P1-T31
5Z	880 mm (2.9 ft)	ND3-P1-T32	ND2-P1-T32
Cables originating on ND2			
6C	1005 mm (3.3 ft)	ND2-P1-T7	ND1-P1-T7
6D	1005 mm (3.3 ft)	ND2-P1-T8	ND1-P1-T8
6A	1225 mm (4.01 ft)	ND2-P1-T15	ND1-P1-T15
6B	1225 mm (4.01 ft)	ND2-P1-T16	ND1-P1-T16
6W	1225 mm (4.01 ft)	ND2-P1-T17	ND1-P1-T17
6X	1225 mm (4.01 ft)	ND2-P1-T18	ND1-P1-T18
6Y	1005 mm (3.3 ft)	ND2-P1-T25	ND1-P1-T25
6Z	1005 mm (3.3 ft)	ND2-P1-T26	ND1-P1-T26

a) Press the SMP cable and the blue tab together with your fingers and thumb to hold the SMP cable. Plug the SMP cable into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

   Lightly pull on the SMP cable to ensure it is locked into place. The cable must be firmly attached to the system.

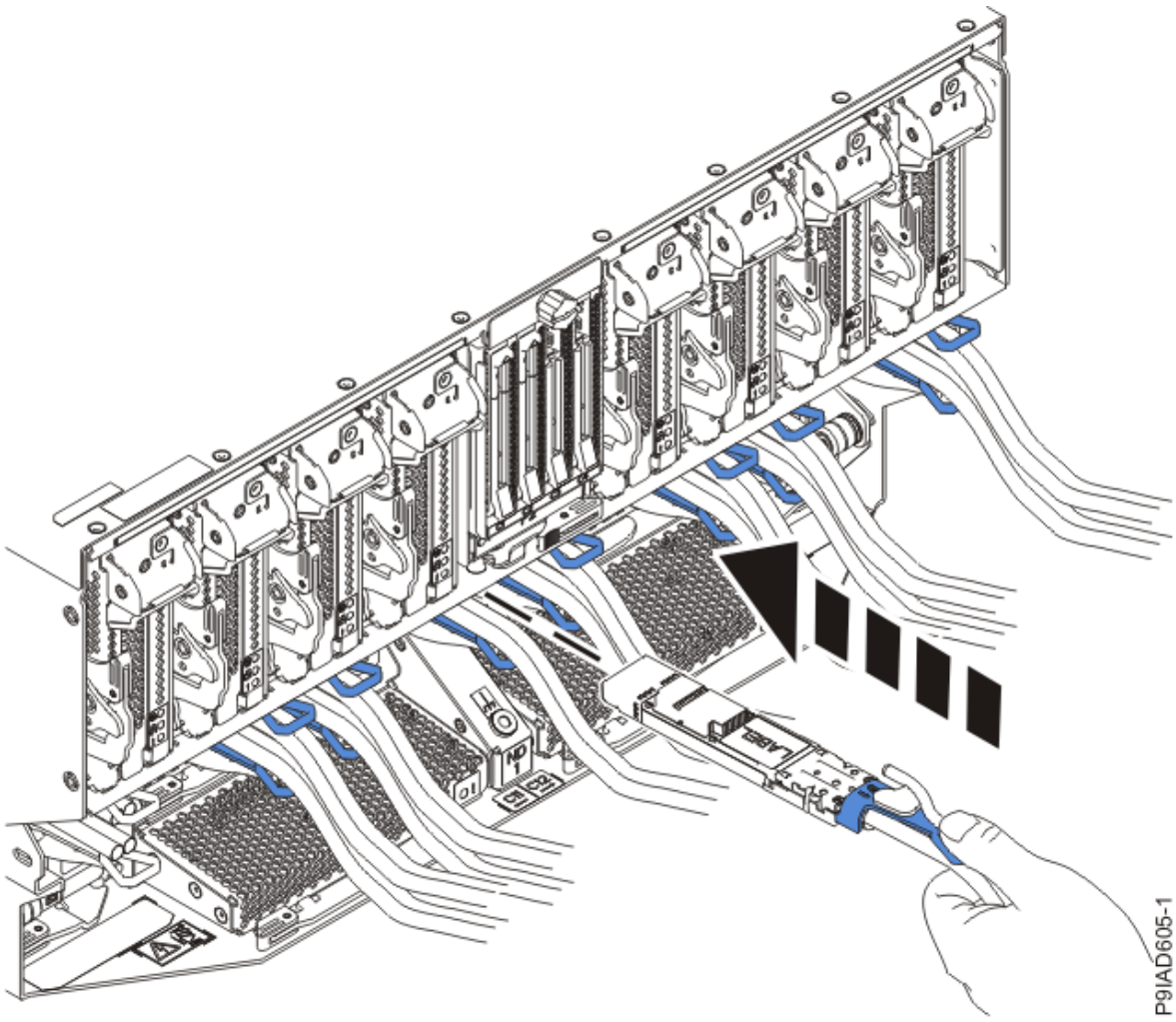


Figure 593. Replacing the SMP cable into the system node

b) Repeat step “5.a” on page 678 until all the SMP cables previously identified are reconnected to the system node you are servicing.

c) If you removed any SMP cable clips from the side of the rack, using your labels, reattach the cable bundle to the side of the cable management bracket as shown in the following figure.

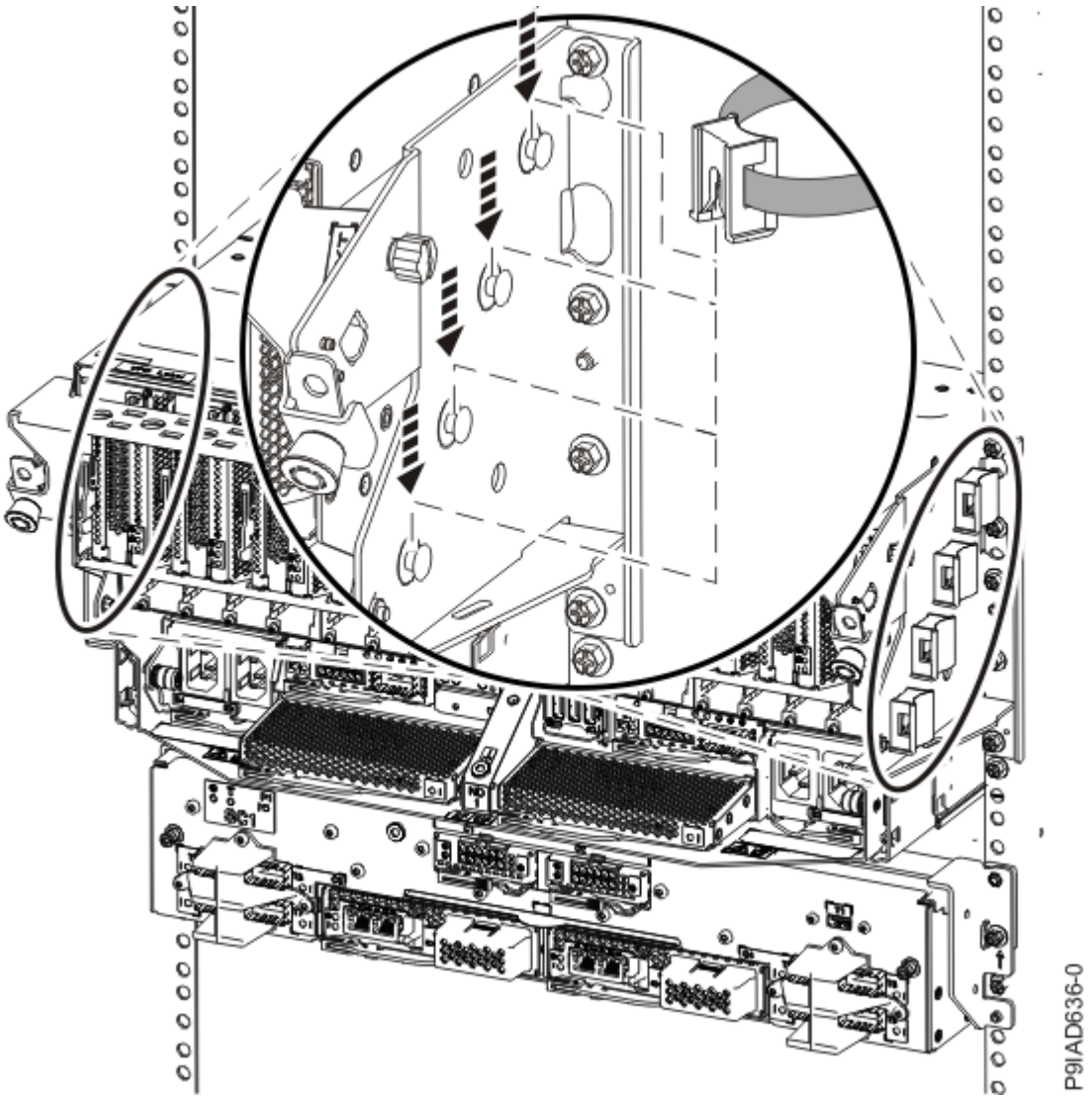


Figure 594. Attaching a cable clip

To determine how to bundle the cables and where to attach the cable bundles, refer to the information card inserted into the rear of the system control unit. You can also refer to the following figures. The number in the cable label indicates the bundle for that cable.

Two system node configuration: The two system node configuration has four cable bundles.

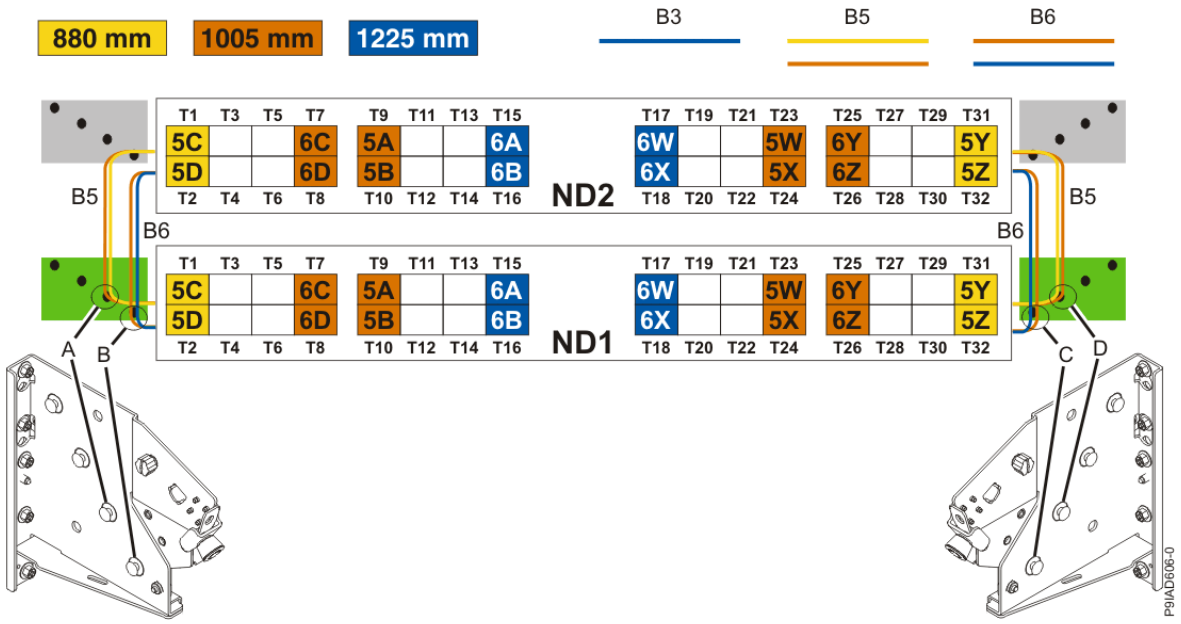


Figure 595. Bundling and connecting SMP cables for two system nodes

- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(A)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.
  - The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(B)**.
  - The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(C)**.

Three system node configuration: The three system node configuration has four cable bundles.

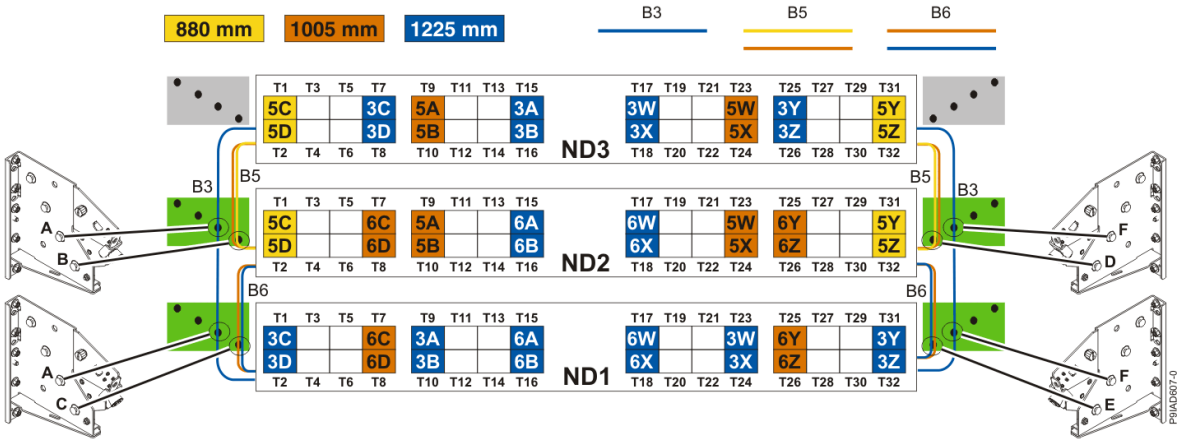


Figure 596. Bundling and connecting SMP cables for three system nodes

- Two bundles named B3 with the "3" cables.
  - The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clip **(A)**.
  - The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clip **(F)**.
- Two bundles named B5 with the "5" cables.
  - The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clips **(B)**.
  - The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(D)**.
- Two bundles named B6 with the "6"cables.

– The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(C)**.
– The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(E)**.

Four system node configuration: The four system node configuration has twelve cable bundles.

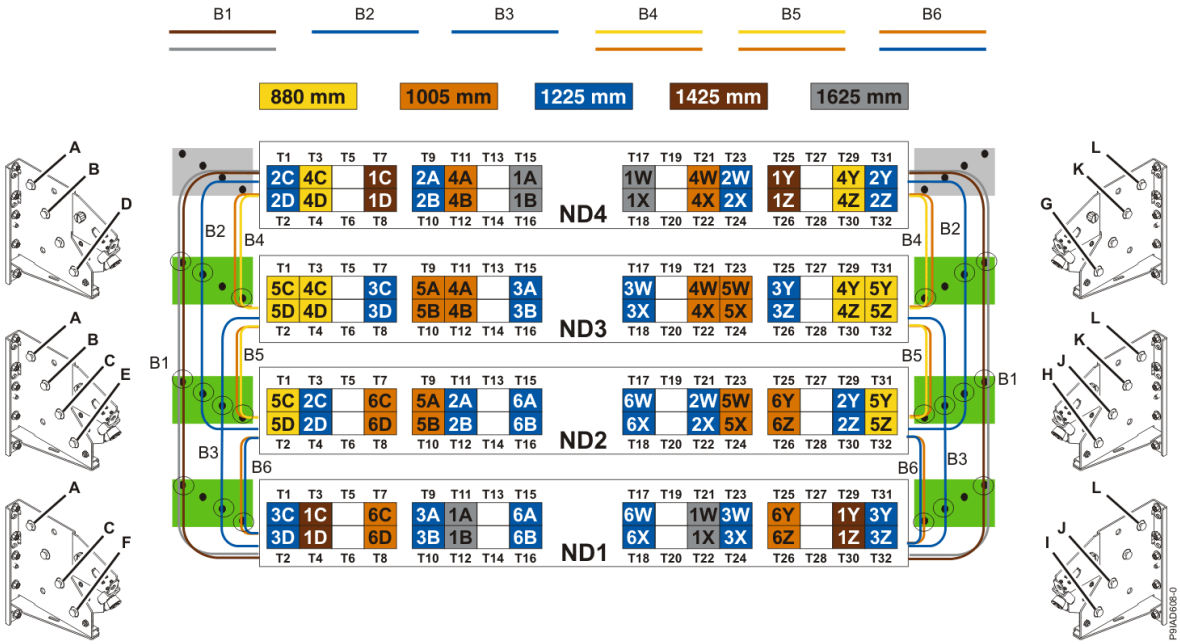


Figure 597. Bundling and connecting SMP cables for four system nodes

- Two bundles named B1 with the "1" cables.
  – The left B1 bundle contains 1A, 1B, 1C, and 1D. This bundle attaches to the clips **(A)**.
  – The right B1 bundle contains 1W, 1X, 1Y, and 1Z. This bundle attaches to the clips **(L)**.
- Two bundles named B2 with the "2" cables.
  – The left B2 bundle contains 2A, 2B, 2C, and 2D. This bundle attaches to the clips **(B)**.
  – The right B2 bundle contains 2W, 2X, 2Y, and 2Z. This bundle attaches to the clips **(K)**.
- Two bundles named B3 with the "3" cables.
  – The left B3 bundle contains 3A, 3B, 3C, and 3D. This bundle attaches to the clips **(C)**.
  – The right B3 bundle contains 3W, 3X, 3Y, and 3Z. This bundle attaches to the clips **(J)**.
- Two bundles named B4 with the "4" cables.
  – The left B4 bundle contains 4A, 4B, 4C, and 4D. This bundle attaches to the clip **(D)**.
  – The right B4 bundle contains 4W, 4X, 4Y, and 4Z. This bundle attaches to the clip **(G)**.
- Two bundles named B5 with the "5" cables.
  – The left B5 bundle contains 5A, 5B, 5C, and 5D. This bundle attaches to the clip **(E)**.
  – The right B5 bundle contains 5W, 5X, 5Y, and 5Z. This bundle attaches to the clip **(H)**.
- Two bundles named B6 with the "6"cables.
  – The left B6 bundle contains 6A, 6B, 6C, and 6D. This bundle attaches to the clip **(F)**.
  – The right B6 bundle contains 6W, 6X, 6Y, and 6Z. This bundle attaches to the clip **(I)**.

6. Review the following information to identify the locations where each UPIC cable connects to the system node that you are servicing and to the system control unit. Then, refer to your labels and the following steps to reconnect the UPIC cables that you removed from the system node you are servicing.

   Note: You will reconnect the UPIC cables to the system control unit in a later step.

- If you have a single node system configuration, use Figure 598 on page 683 and Table 65 on page 683 to determine the point-to-point cabling for UPIC cables.

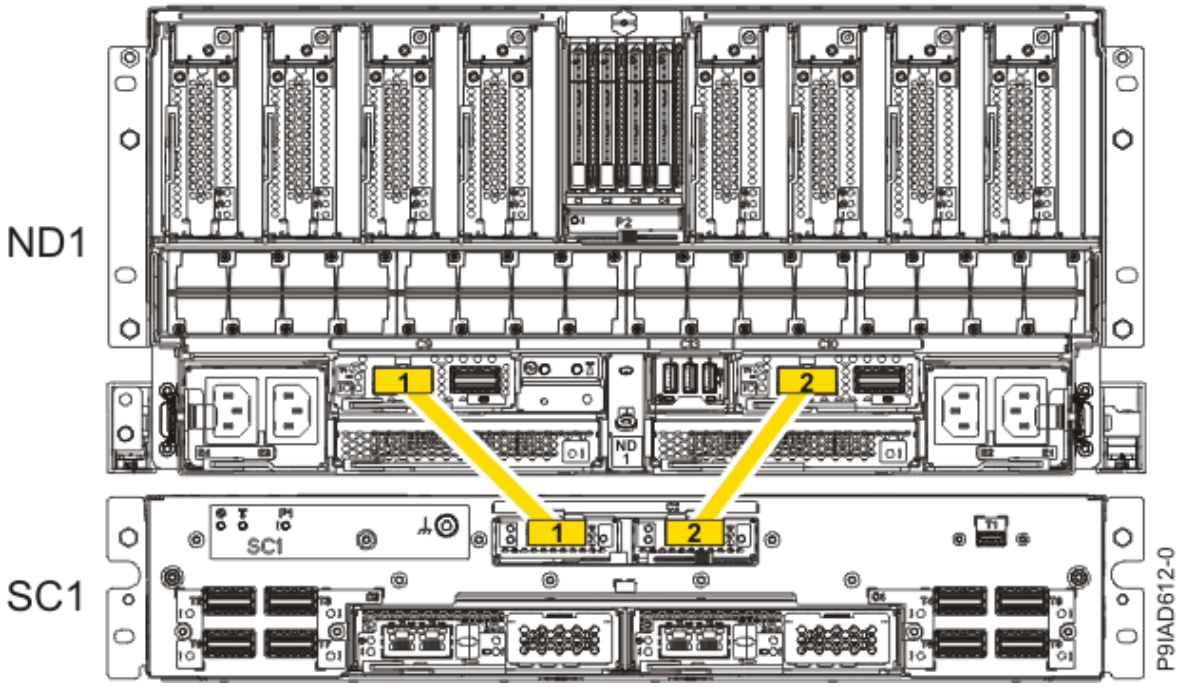


Figure 598. Single Node Configuration UPIC Cabling

Table 65. Single Node Configuration UPIC Cabling		
Cable number	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND1: P1-C10-T1

- If you have a two, three, or four node system configuration, use Figure 599 on page 684 and Table 66 on page 684 to determine the point-to-point cabling for UPIC cables.

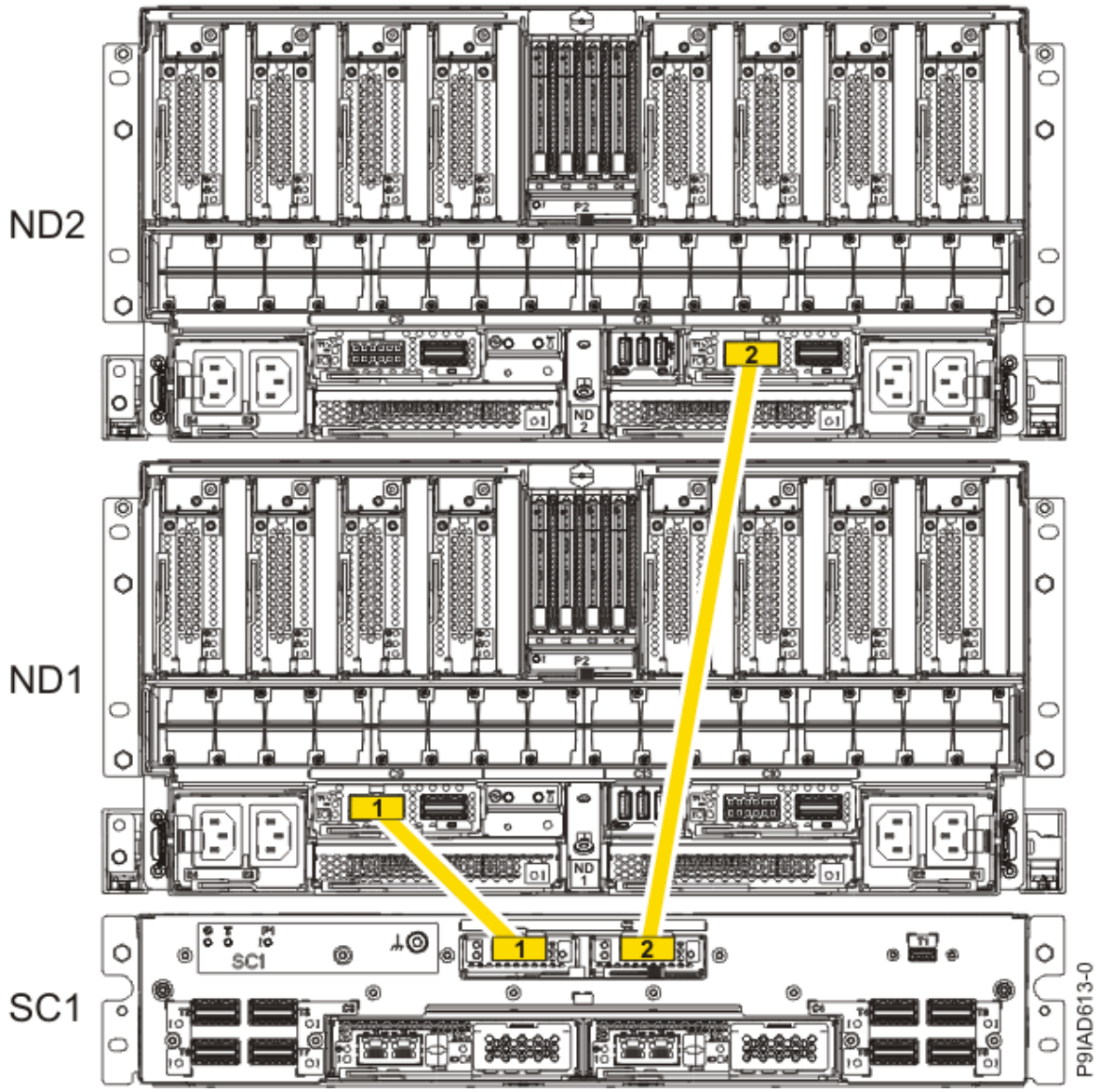


Figure 599. Two, Three, or Four Node Configuration UPIC Cabling

Table 66. Two, Three, or Four Node Configuration UPIC Cabling		
Cable	**From**	**To**
1	SC1: P1-C1-T1	ND1: P1-C9-T1
2	SC1: P1-C2-T1	ND2: P1-C10-T1

a) To replace the UPIC cable in the system node, complete the following steps:

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

2) Plug the UPIC cable **(A)** into the previously identified location in the system node by inserting the cable into the connector until it locks into place, as shown in the following figure.

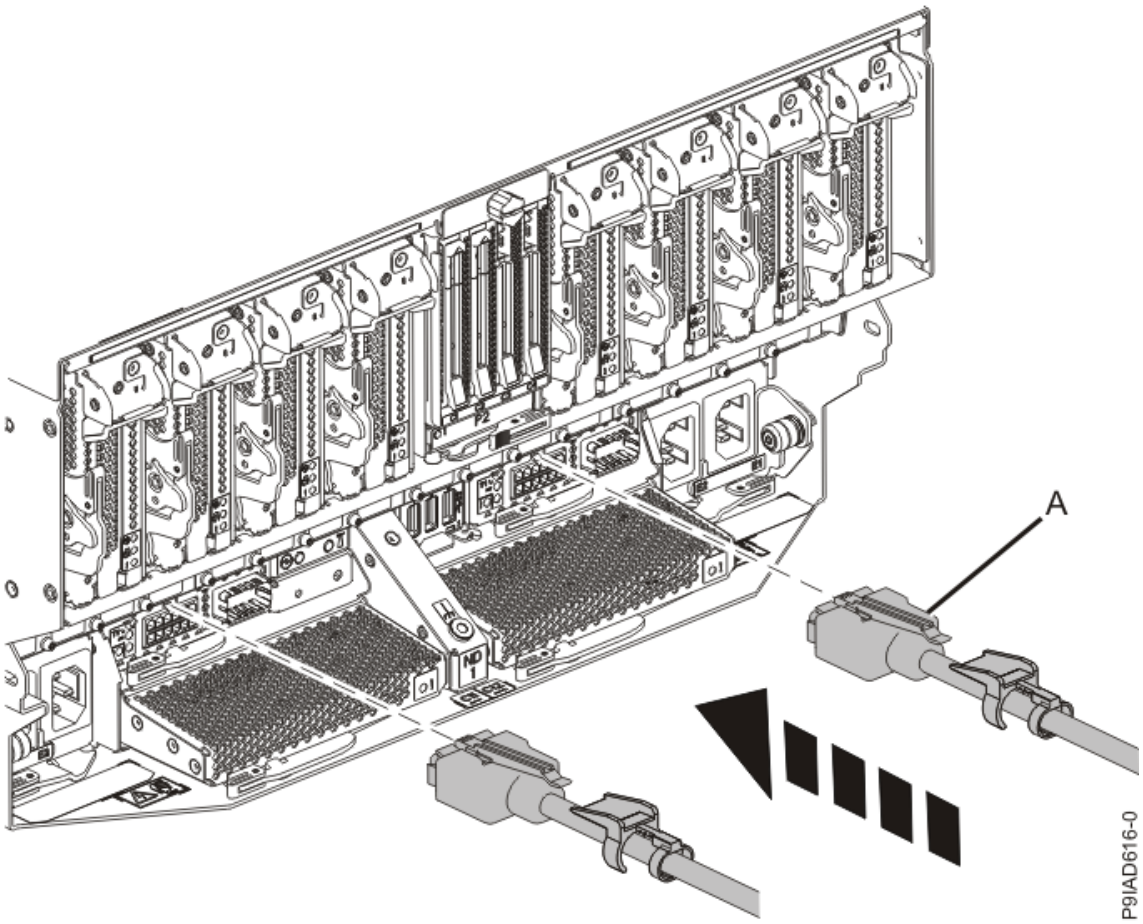


Figure 600. Replacing the UPIC cable into the system node

3) Push the white plastic lock **(B)** onto the plug housing as shown in the following figure.

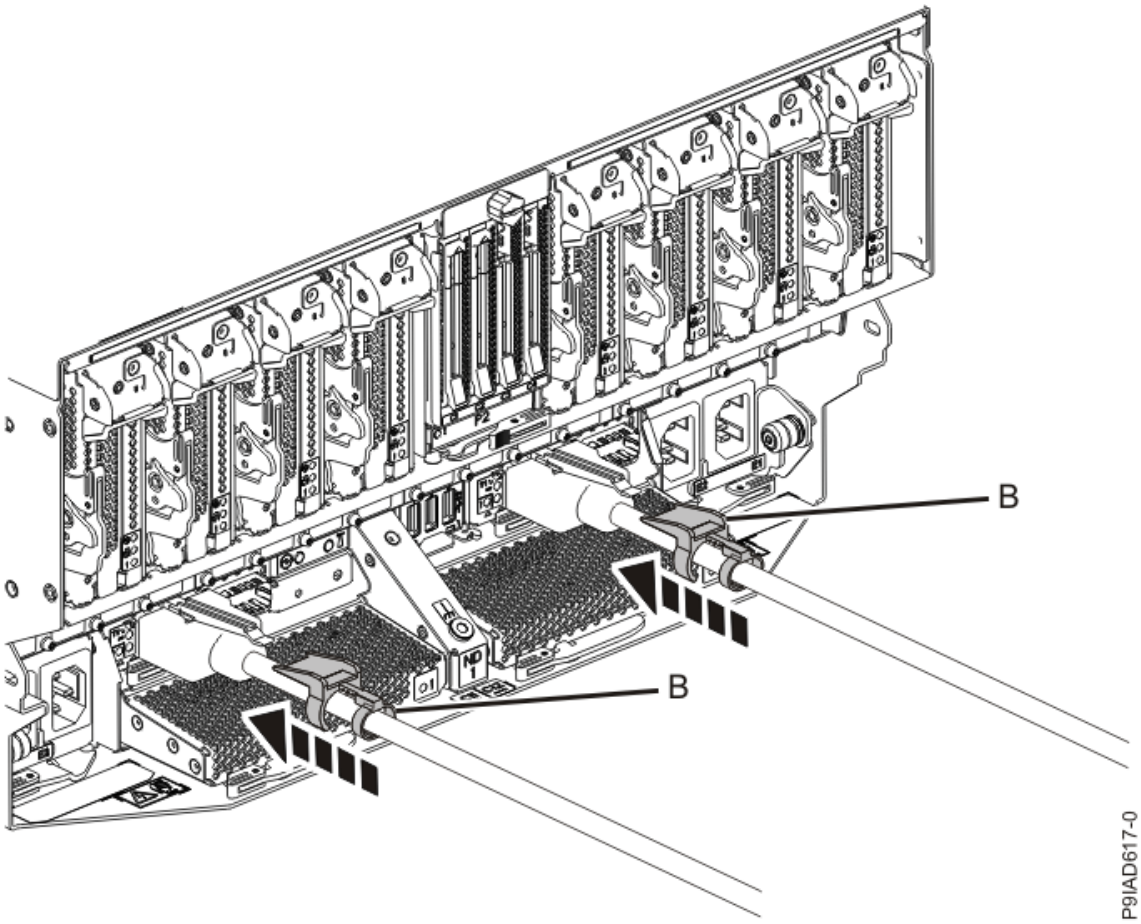


Figure 601. Replacing the UPIC cable into the system node

4) 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.

b) Repeat step “6.a” on page 684 until all the UPIC cables previously identified are reconnected to the system node you are servicing.

c) If applicable, secure the cable to the side of the rack with the hook-and-loop fastener.

7. Using your labels, reconnect the service processor (FSP) cables that you removed from the system node you are servicing.

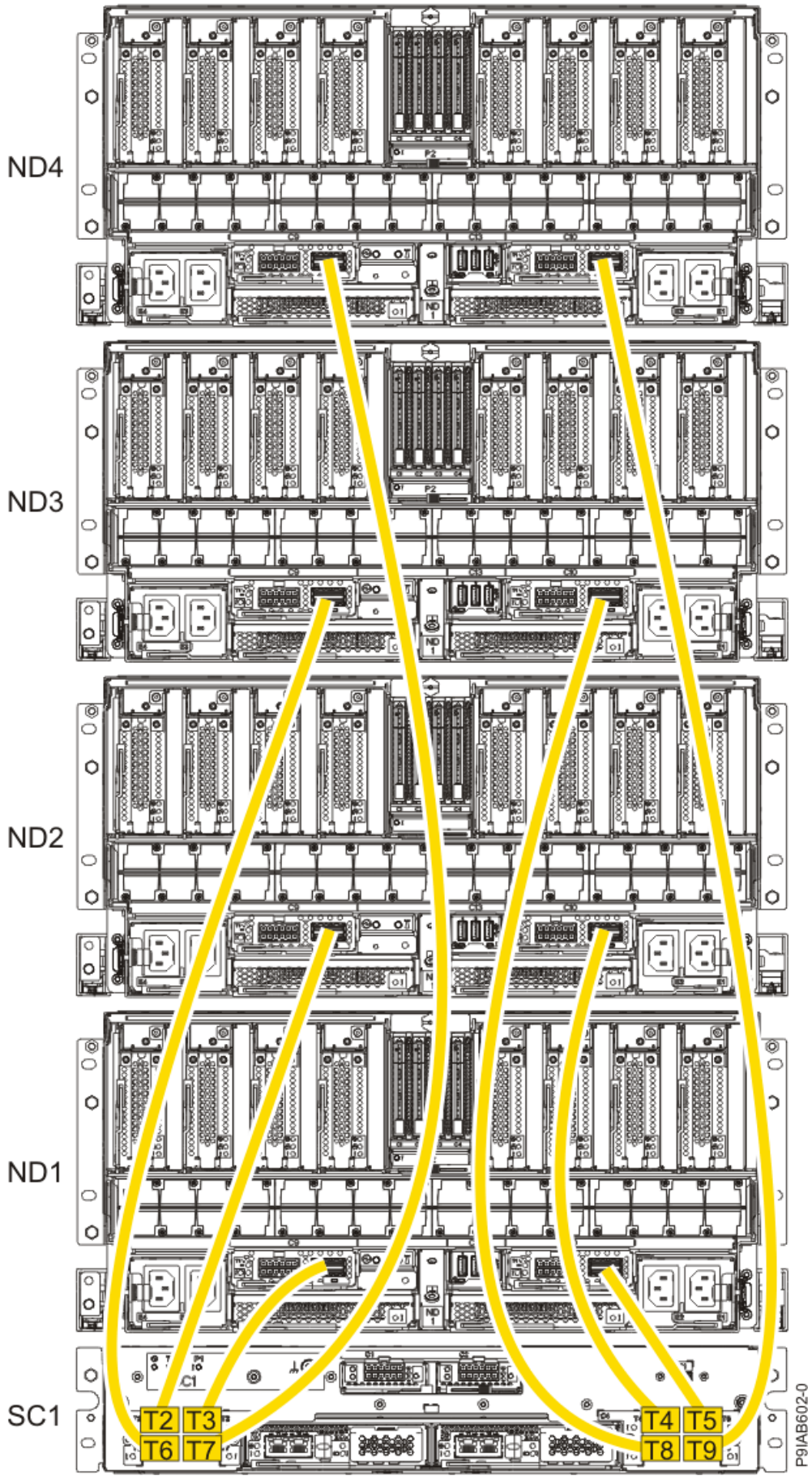


Figure 602. Service processor (FSP) cabling

Table 67. Service processor (FSP) cable locations				
Drawer	**Cable**	**Cable Length**	**From**	**To**
ND4 (top)	A	1330 mm (4.36 ft)	SC1-P1-T7	ND4-P1-C9-T2
	B	1330 mm (4.36 ft)	SC1-P1-T9	ND4-P1-C10-T2
ND3	A	1110 mm (3.64 ft)	SC1-P1-T6	ND3-P1-C9-T2
	B	1110 mm (3.64 ft)	SC1-P1-T8	ND3-P1-C10-T2
ND2	A	855 mm (2.81 ft)	SC1-P1-T2	ND2-P1-C9-T2
	B	855 mm (2.81 ft)	SC1-P1-T4	ND2-P1-C10-T2
ND1 (bottom)	A	355 mm (1.16 ft)	SC1-P1-T3	ND1-P1-C9-T2
	B	355 mm (1.16 ft)	SC1-P1-T5	ND1-P1-C10-T2

8. Review the following information to identify the locations where the USB cable connects to the system node that you are servicing and to the system control unit. Then, reconnect the USB cable that you removed.

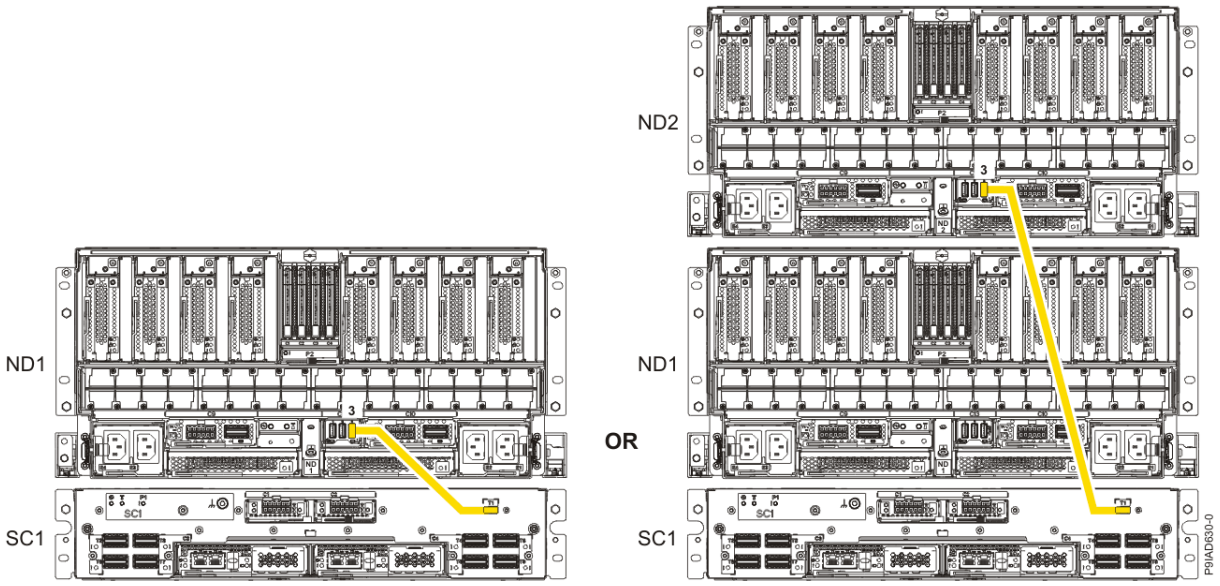


Figure 603. USB Cabling

Table 68. USB Cabling	
From	**To**
ND1 or ND2: P1-C13-T3	SC1: P1-T1

a) Plug the USB cable into the previously identified location in the system node by inserting the cable into the connector, as shown in the following figure.

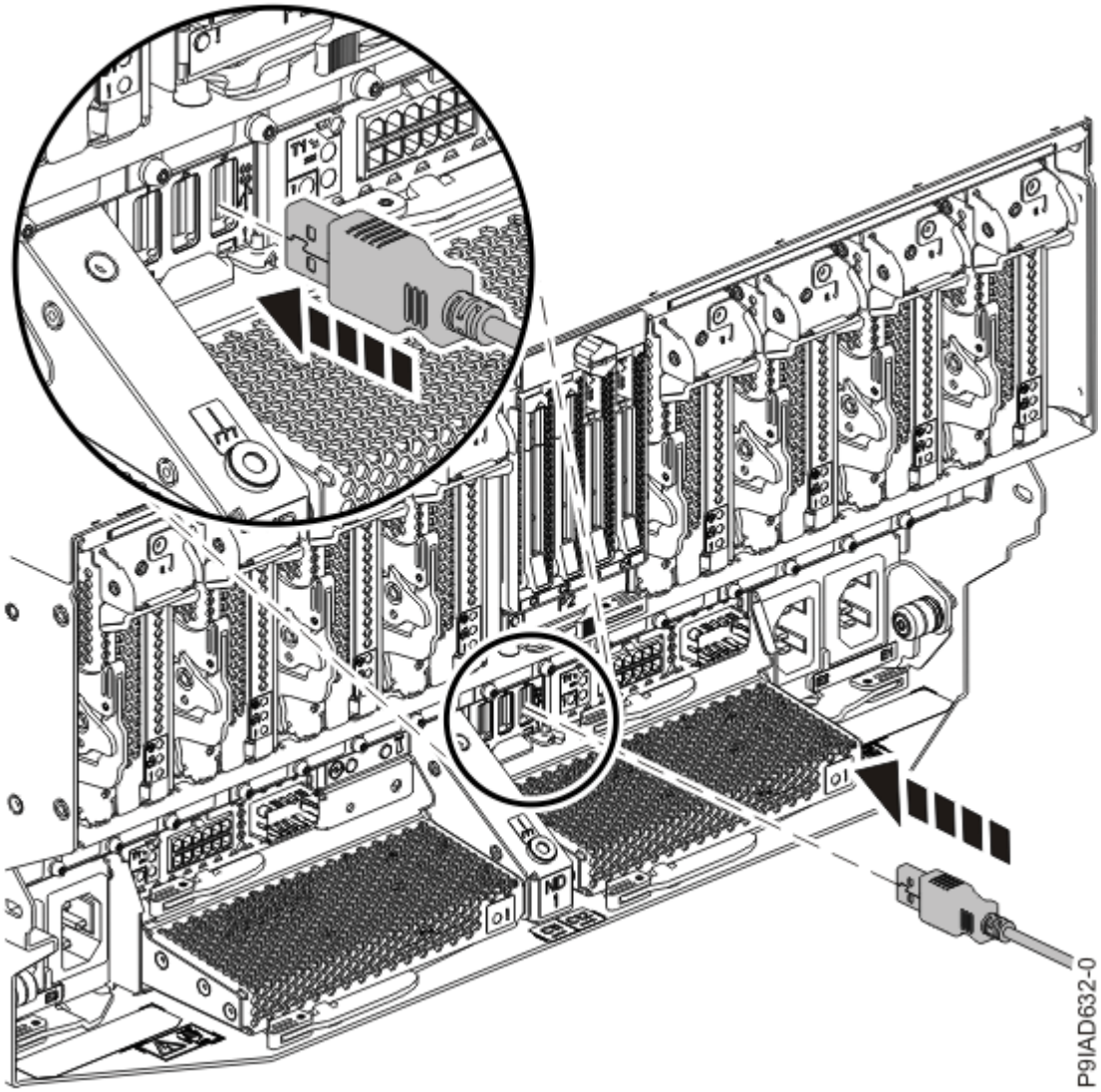


Figure 604. Replacing the USB cable into the system node

b) Plug the USB cable into the previously identified location in the system control unit by inserting the cable into the connector, as shown in the following figure.

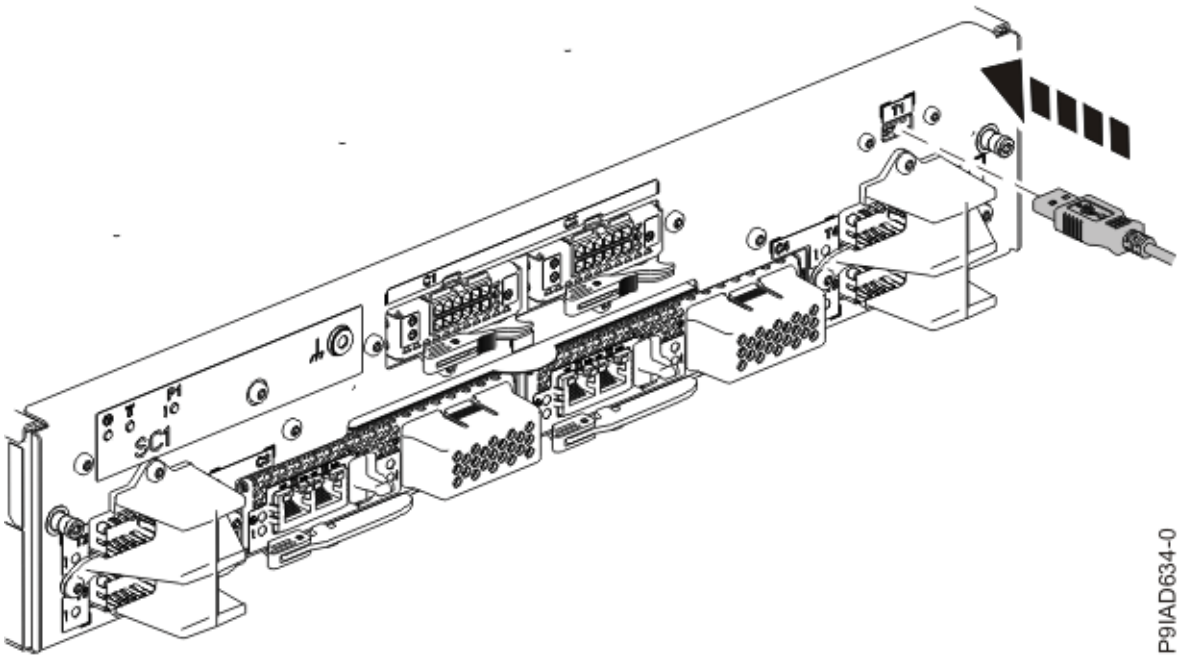


Figure 605. Replacing the USB cable into the system control unit

9. 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.
10. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Time-of-day battery

Preparing the 9080-M9S system to remove and replace a time-of-day battery

Procedure

1. Optional: If the system is powered off, from the **Operation** list, select **FRU Level Deactivate**. Then, click **OK** to confirm the operation.
2. Ensure that the amber LED corresponds to the location of the time-of-day battery with the flashing amber LED.

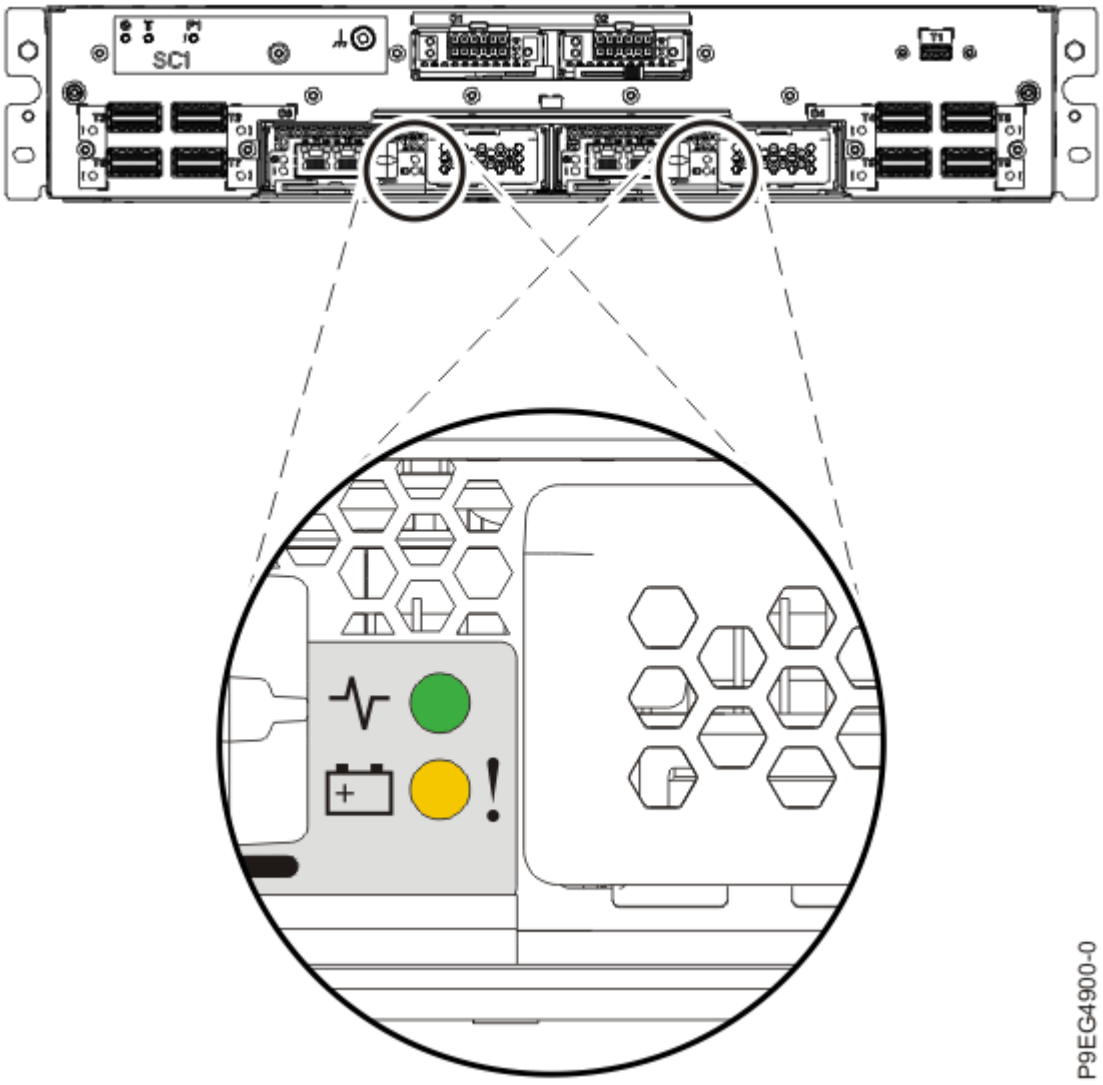


Figure 606. Finding the time-of-day battery indicator

3. 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.

Removing the time-of-day battery from the 9080-M9S system

To remove the time-of-day battery, 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. Access the Advanced System Management Interface (ASMI).

   Attention: During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.
3. In the navigation area, select **Concurrent maintenance** > **TOD Battery**.
4. In the ASMI TOD Battery panel, verify that the location code is selected, then press the **Remove battery** button.
5. If the operation was successful, the window displays **Successfully removed the TOD battery**. You can then remove the battery.
6. Remove the cover for the time-of day battery as shown in the following figure, by pinching in on the blue plastic cover at **(A)**, then by pulling the cover away from the service processor card.

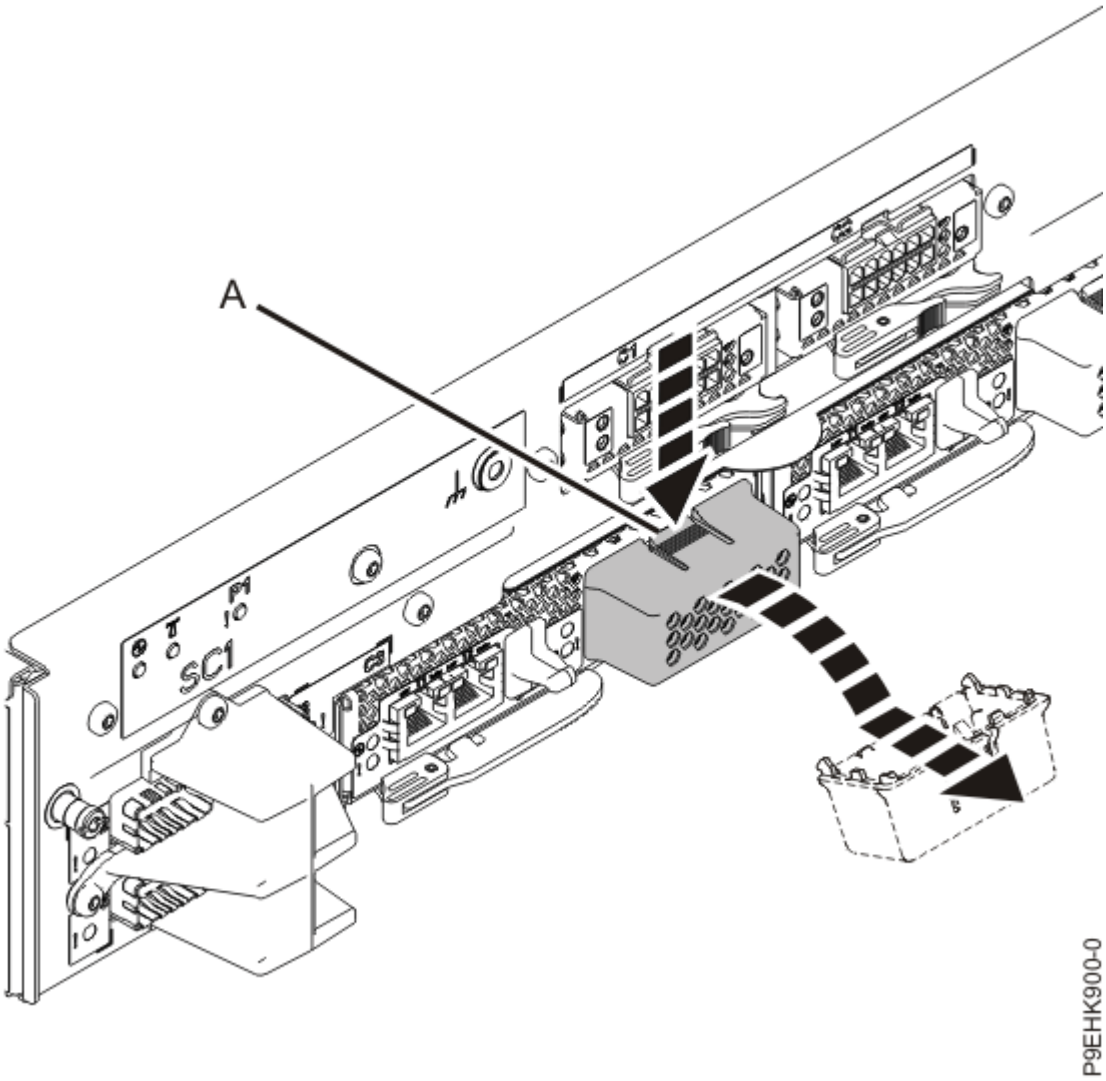


Figure 607. Removing the time-of day battery cover

7. Grasp the time-of-day battery and pull it out of its slot as shown in the following figure.

Attention: While removing the battery, do not use a metallic tool to disengage it from its slot.

CAUTION:

- After removing the failed time-of-day battery, do not:
  - Burn or charge the battery (to avoid possible explosion as the battery contains lithium).
  - Throw or immerse the battery in water.
  - Heat the battery to more than 100 °C (212 °F).
  - Repair or disassemble the battery.
- Exchange the battery 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.

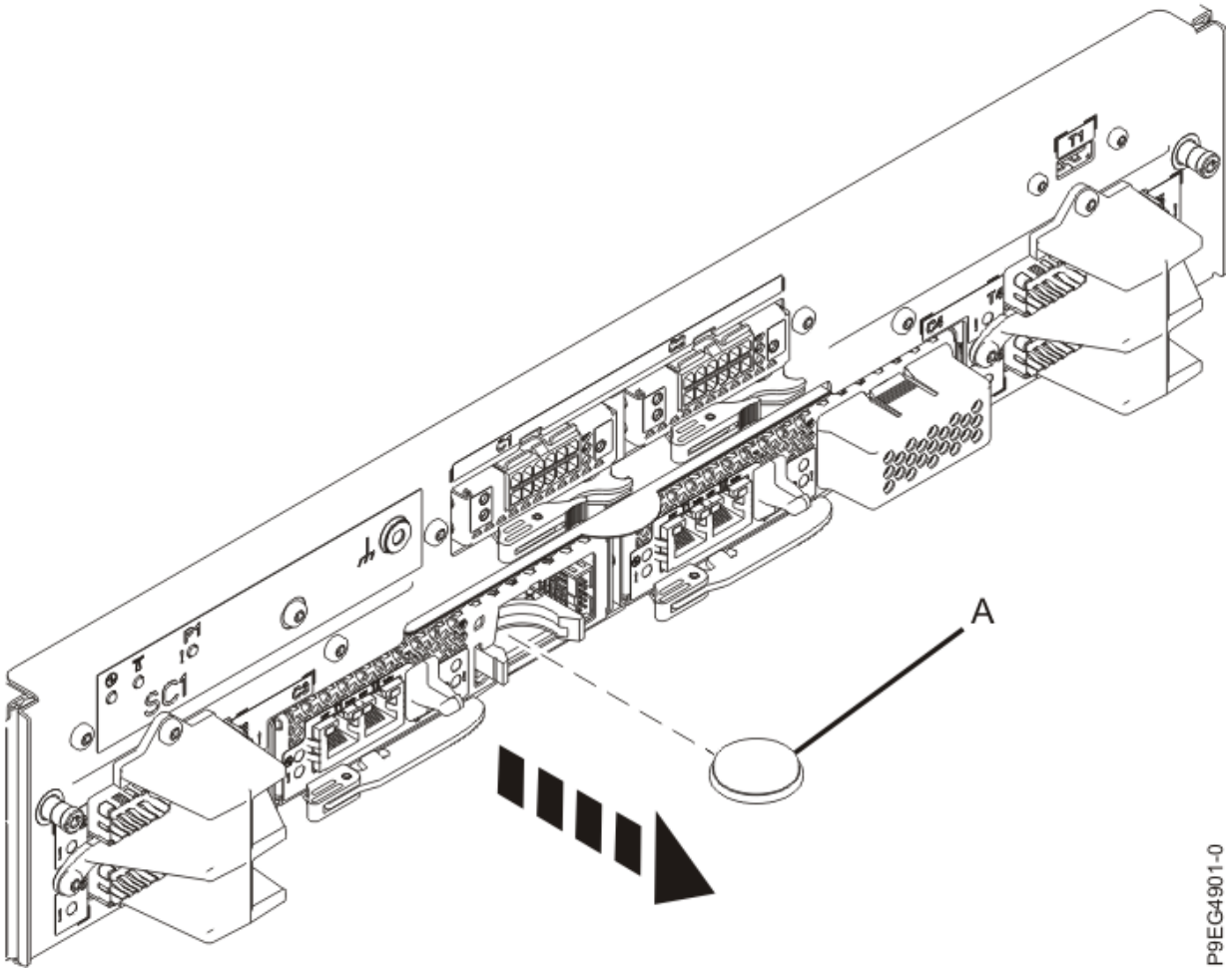


Figure 608. Removing the time-of day battery

Replacing the time-of-day battery in the 9080-M9S system

To replace the time-of-day battery, 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. Insert the time-of-day battery into its slot as shown in the following figure; the + (plus) side of the battery orients towards the bottom of the server.

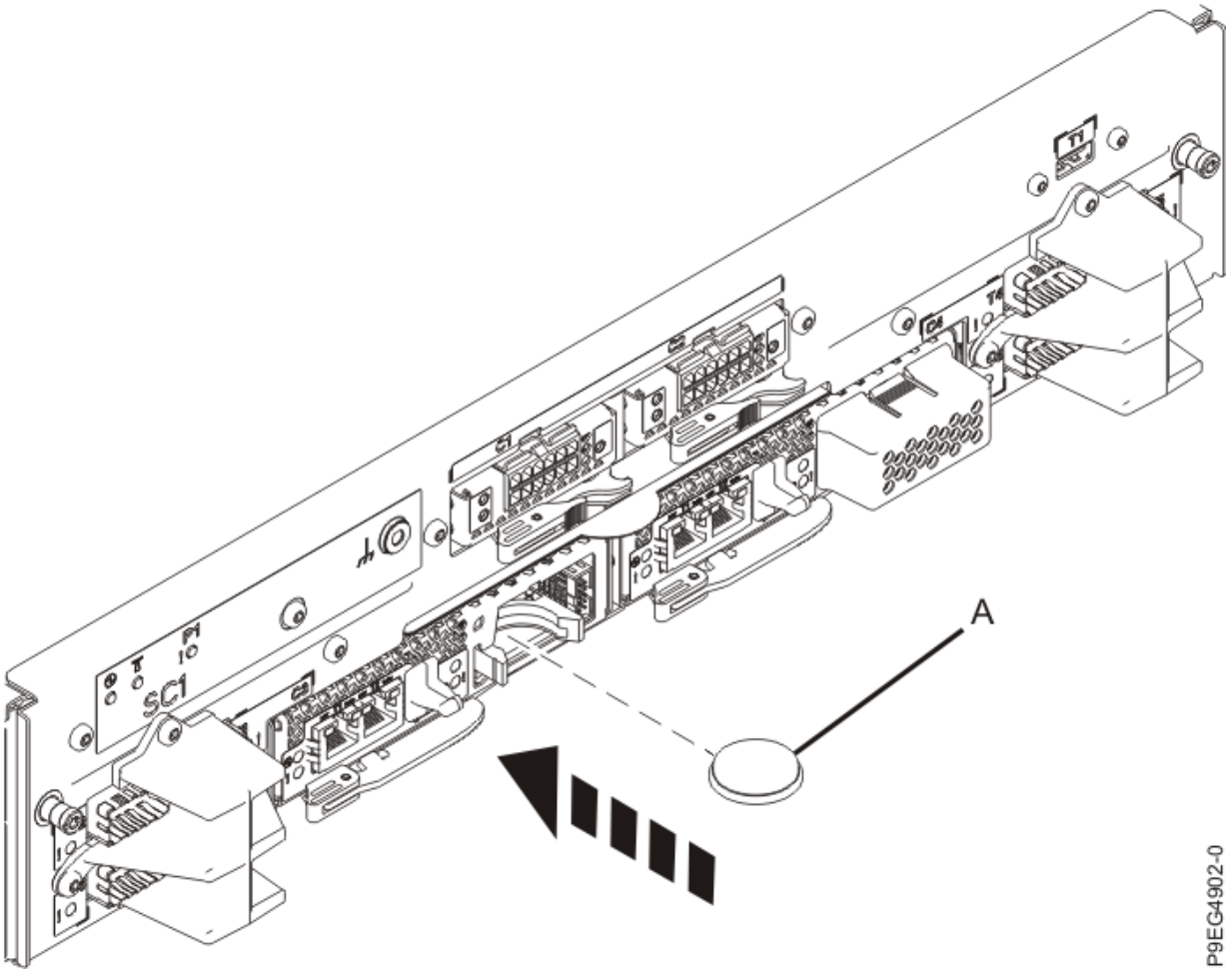


Figure 609. Inserting the time-of-day battery

3. Align the bottom tabs of the time-of day battery cover in the two slots under the battery as shown in the following figure. Roll the battery cover up and secure the cover to the service processor card.

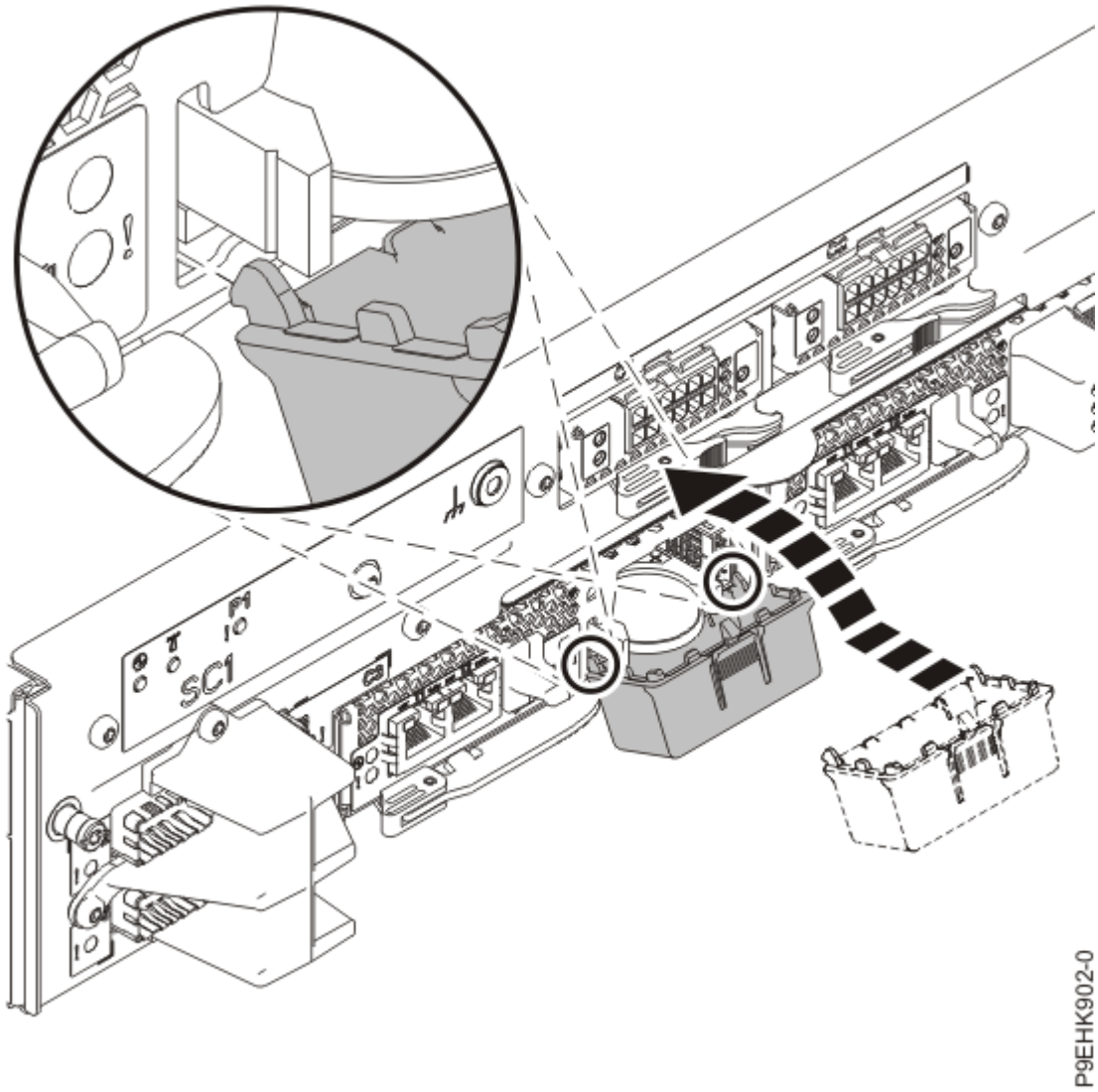


Figure 610. Replacing the time-of day battery cover

4. Access the Advanced System Management Interface (ASMI).

   Attention: During this procedure: Do not reset the service processor, do not remove the service processor card, and do not power off and power on the system.

5. In the navigation area, select **Concurrent maintenance** > **TOD Battery**.
6. In the ASMI TOD Battery panel, verify that the location code is selected, then press the **Install Battery** button.

Preparing the 9080-M9S system for operation after removing and replacing the time-of-day battery

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. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.

3. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.
4. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

   Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.
   a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.
5. Optional: If the system is powered off, from the **Operation** list, select **FRU Level Activate**. Then, click **OK** to confirm the operation.
6. If the system was powered off, continue with step "7" on page 697. If the power was left on, continue with step "9" on page 698.
7. Access the Advanced System Management Interface (ASMI).
   - You can access the ASMI without using the HMC. For instructions, see Accessing the ASMI without an HMC (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).
   - To access the ASMI by using the HMC, complete the following steps:
     a. Select the system on which you are working.
     b. Click **Tasks**.
     c. Click **Operations** > **Launch Advanced System Management (ASM)**.
8. If the system is powered off, reset the time-of-day settings by using the ASMI. To set the time-of-day, complete the following steps:

a) In the navigation area of the ASMI, click **System Configuration** > **Time of Day**.

b) The content pane displays a form that shows the current date (month, day, and year) and time (hours, minutes, and seconds).

c) Change the date, the time, or both, and then click **Save Settings**.

9. If applicable, close the rack front and rear doors.

USB card

Removing and replacing

Preparing the 9080-M9S system to remove and replace the USB card

To prepare the system to remove and replace a USB card, complete the steps in this procedure.

Procedure

1. If USB devices are connected to the USB card, ensure that the USB devices are not being used. Label and remove the USB cables from the USB card.
2. 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.

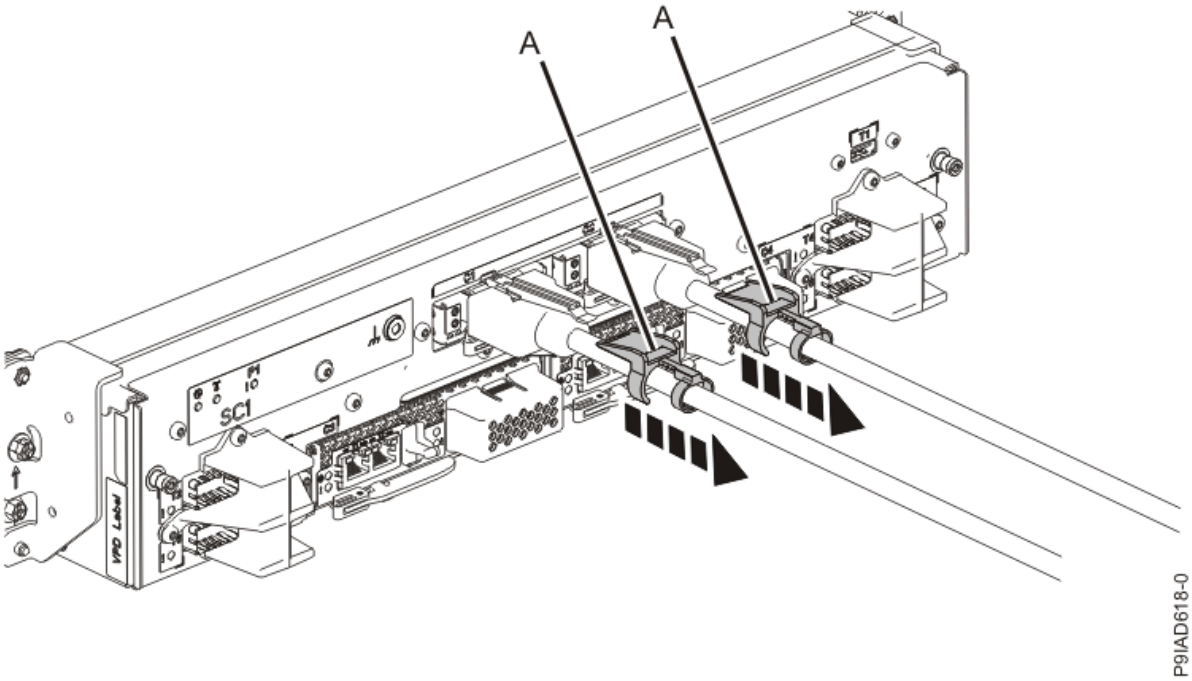


Figure 611. Removing the UPIC cable lock

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

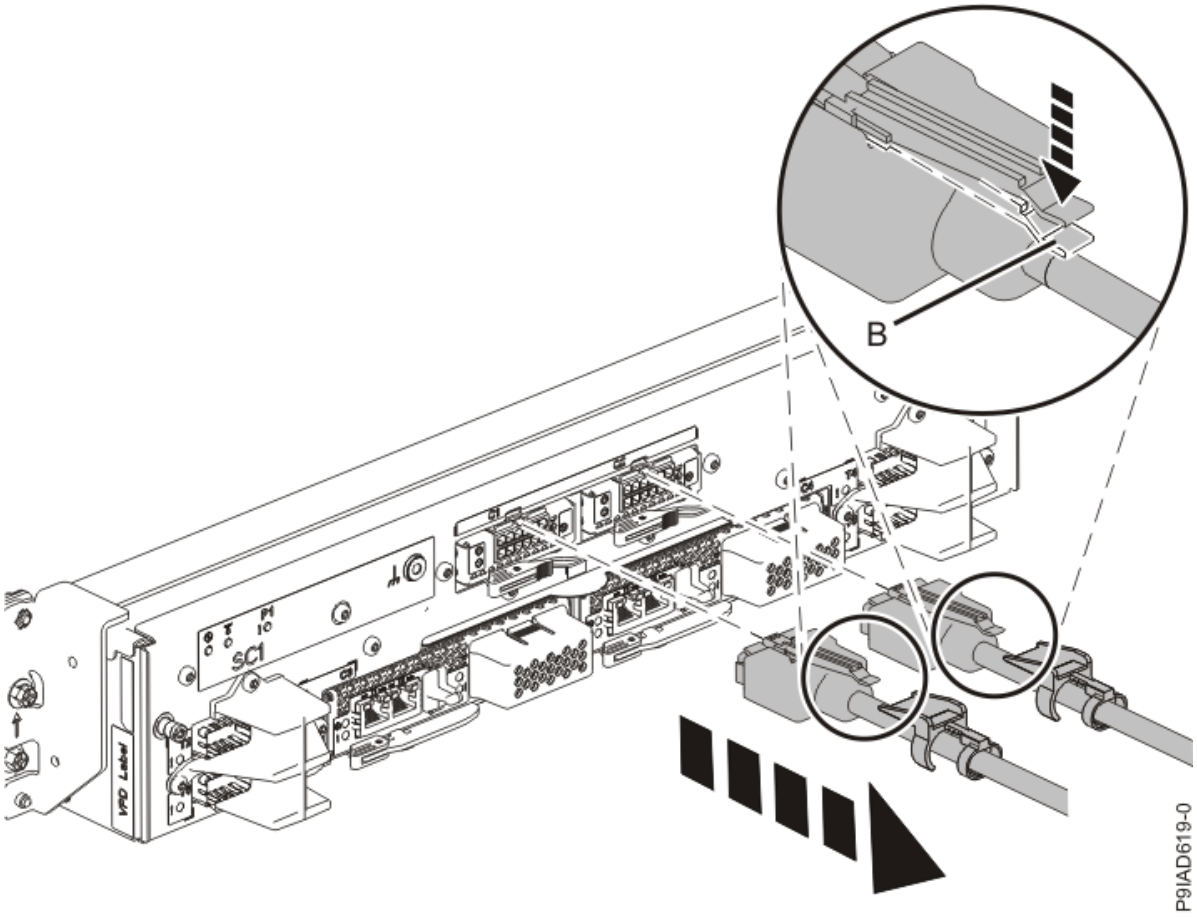


Figure 612. Removing the UPIC cable from the system control unit

3. Check that the amber identify LED is flashing as shown in the following figure.

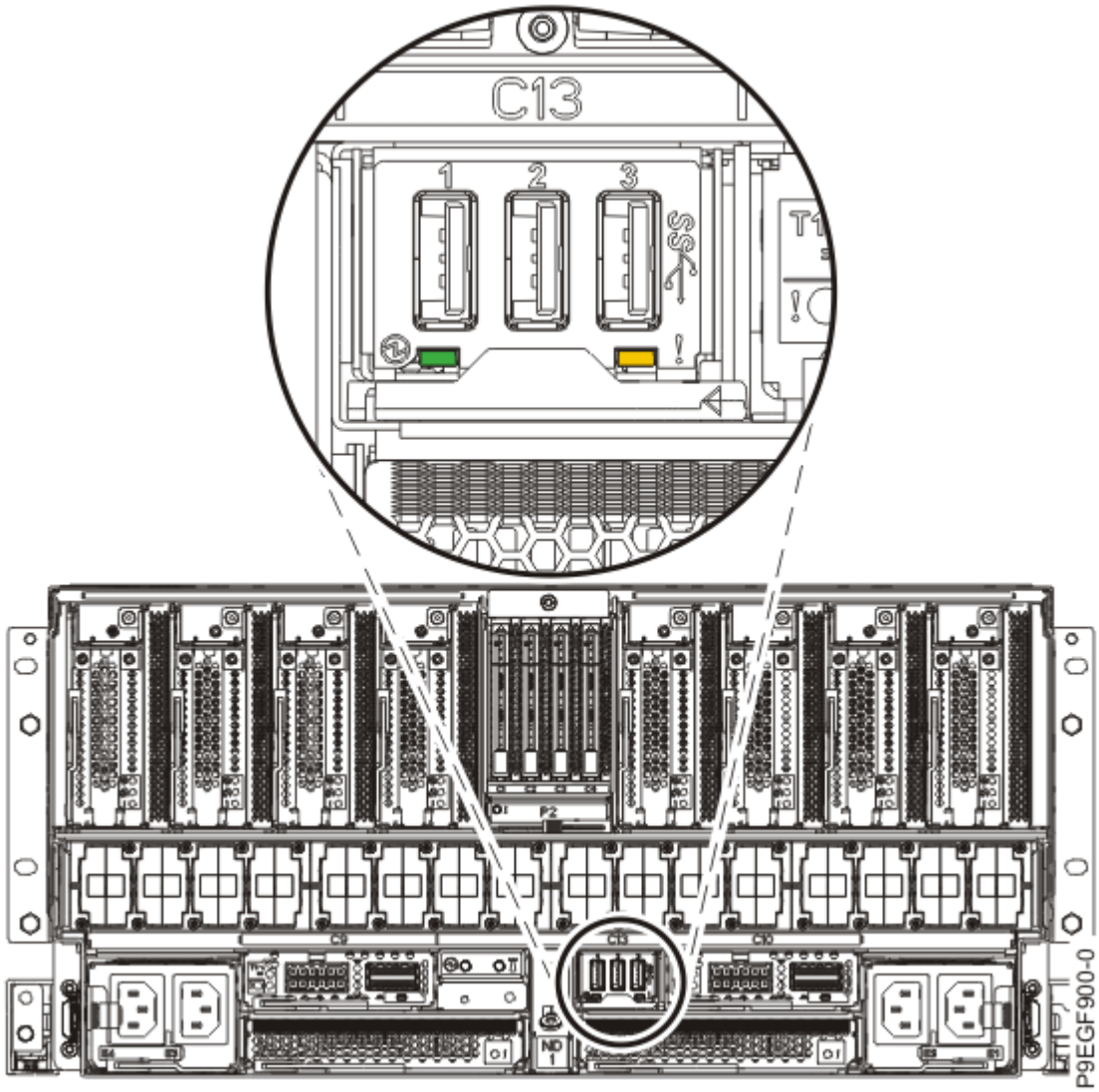


Figure 613. Identify LED for the USB card

4. 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.

Removing the USB card from the 9080-M9S system

To remove the USB card from 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. To remove the USB card, complete the following steps:
   a) Press the blue USB card handle latch **(A)** to the left as shown in the following figure.
   b) Rotate the handle to the left in the direction shown in the following figure to unlock the USB card from its slot.
   c) Hold on to the USB card handle and by using your hand to support the bottom of the USB card, pull out the USB card from its slot as shown in the following figure.

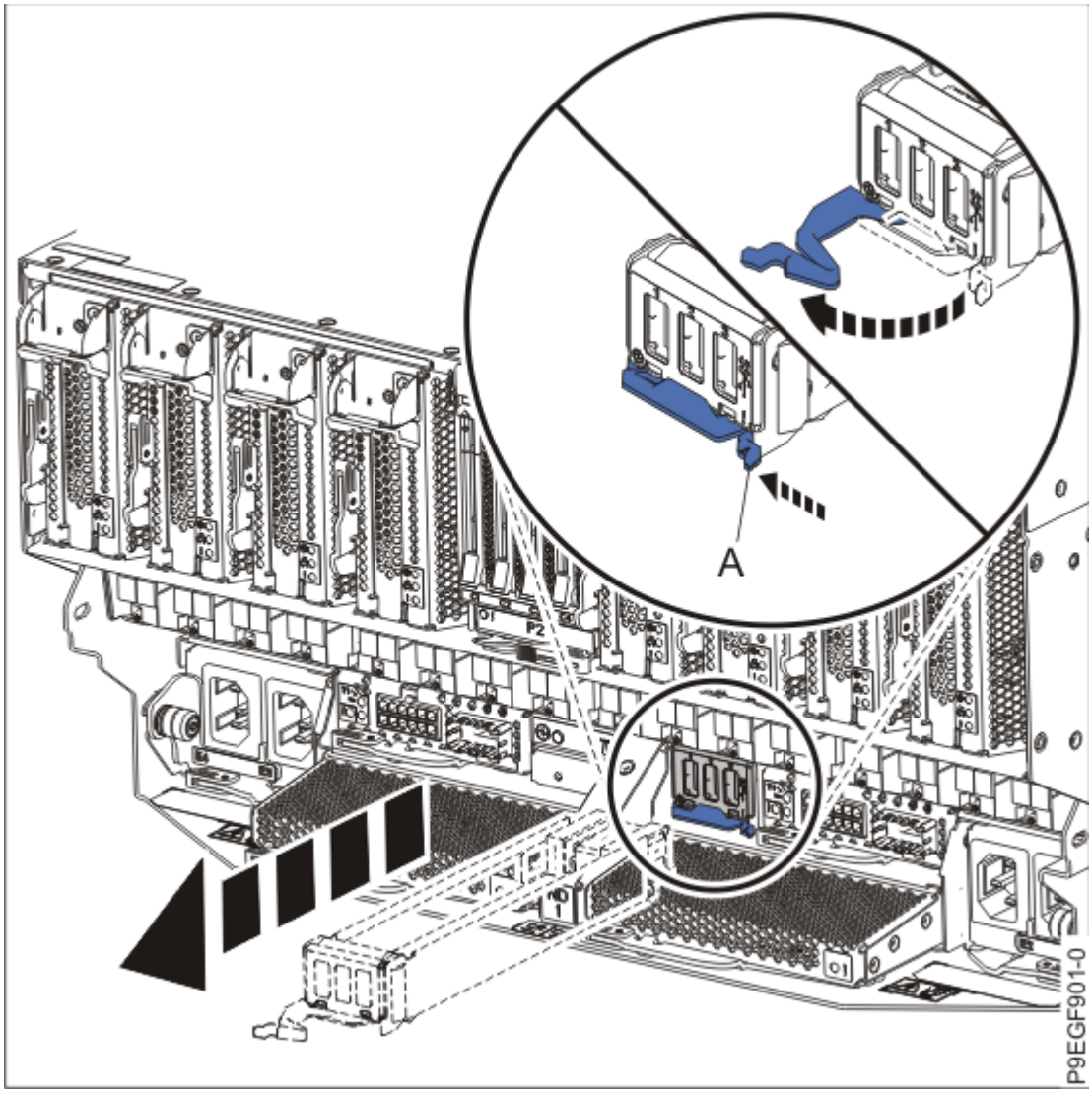


Figure 614. Removing a USB card from the system

Replacing the USB card in the 9080-M9S system

To replace the USB card in 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. To replace the USB card, complete the following steps:
   a) Ensure that the USB card handle **(A)** is open as shown in the following figure.
   b) Hold on to the USB card handle and by using your hand to support the bottom of the USB card, push the USB card into its slot as shown in the following figure.
   c) Rotate the handle to the right in the direction shown in the following figure to lock the USB card into the system.

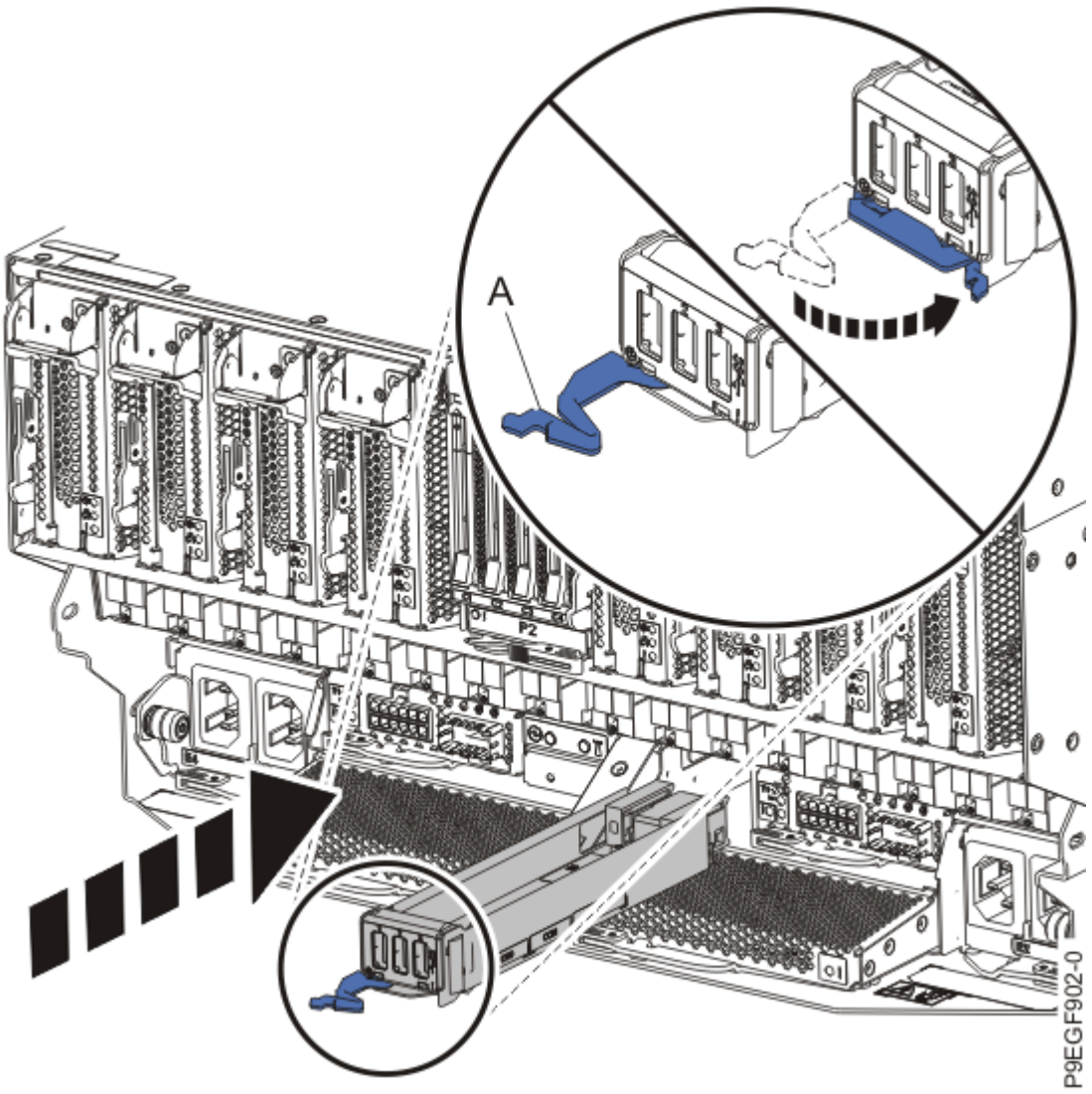


Figure 615. Replacing a USB card in the system

Preparing the 9080-M9S system for operation after removing and replacing the USB card

To prepare the system for operation after removing or replacing the USB card, 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. If you unplugged USB cables from the USB card, using your labels, replace the USB cables into the USB card.
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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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) Continue with step #unique_127/unique_127_Connect_42_step_activate_partitions.
4. If you chose to complete 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.

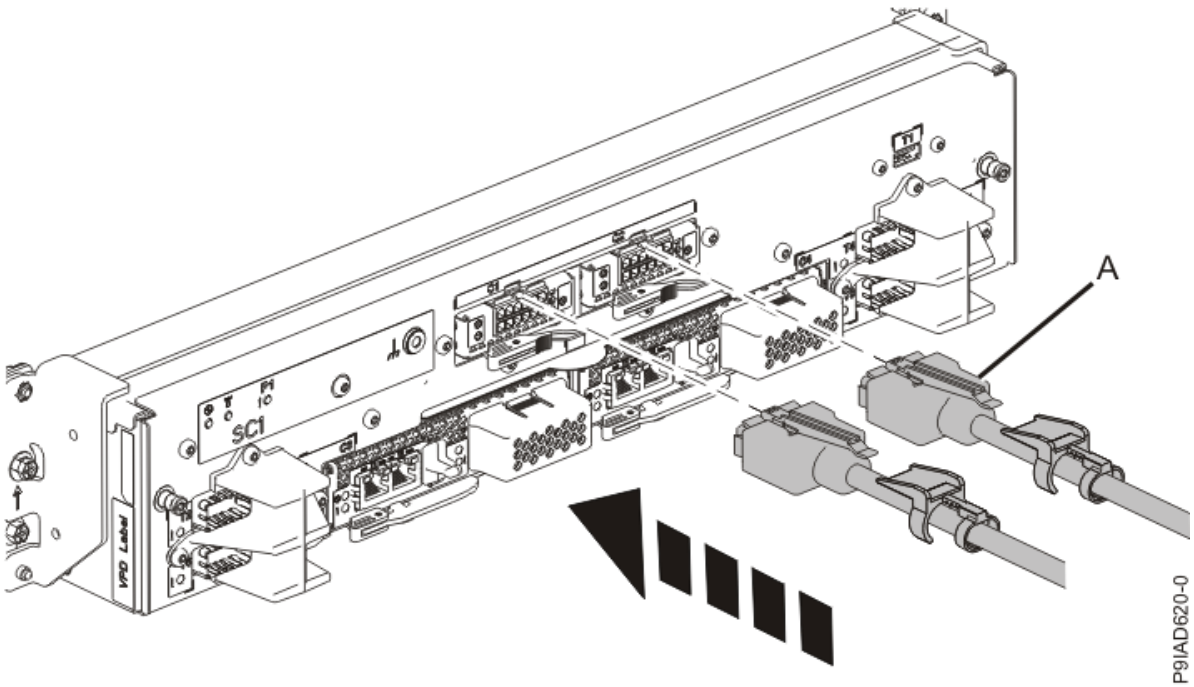


Figure 616. Replacing the UPIC cable into the system control unit

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

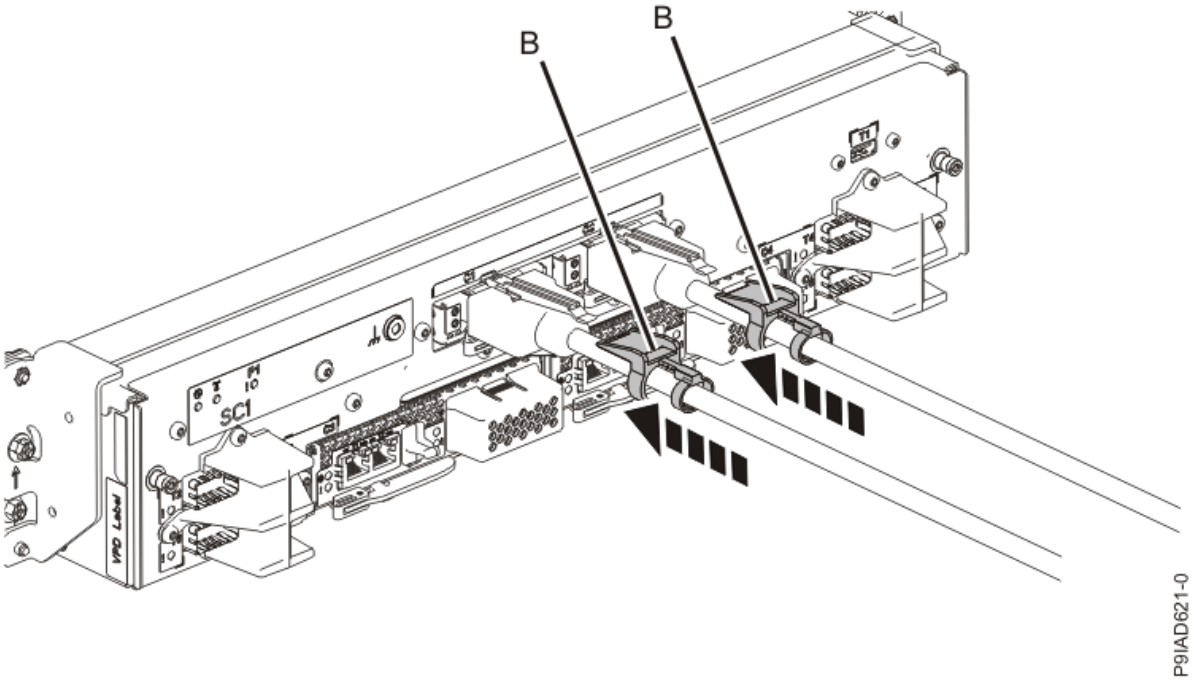


Figure 617. Replacing the UPIC cable into the system control unit

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.

5. 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.
6. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Installing

Preparing the 9080-M9S system to install the USB card

To prepare the system to install a USB card, complete the steps in this procedure.

Procedure

1. 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.

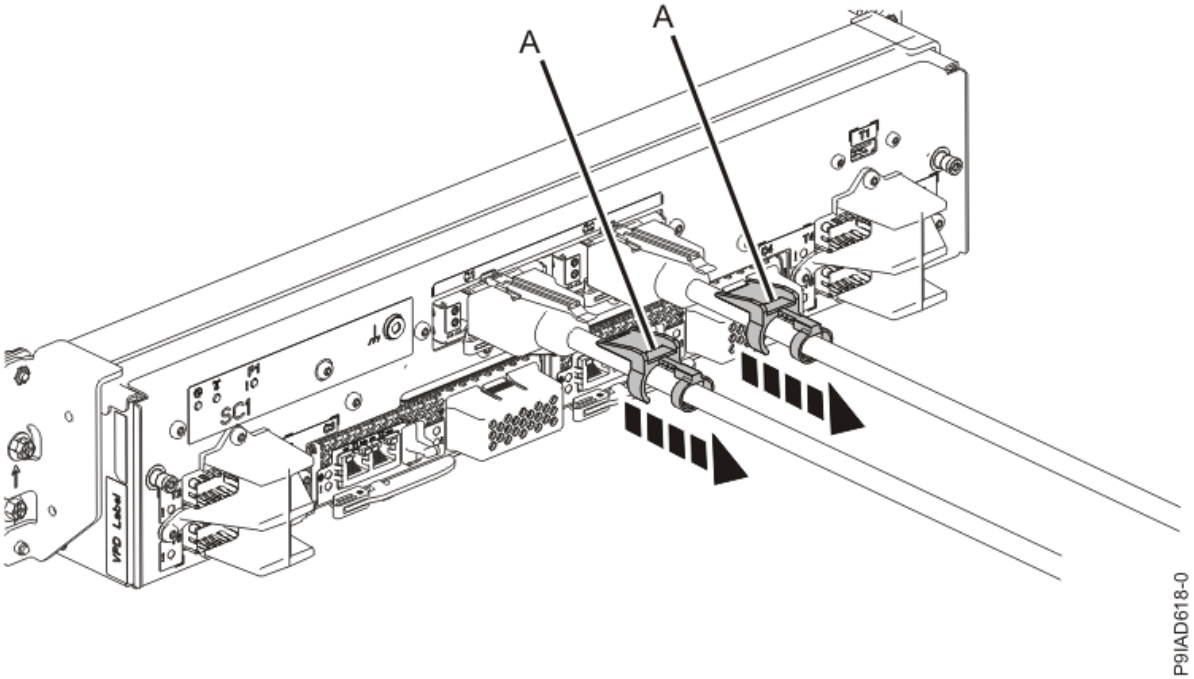


Figure 618. Removing the UPIC cable lock

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

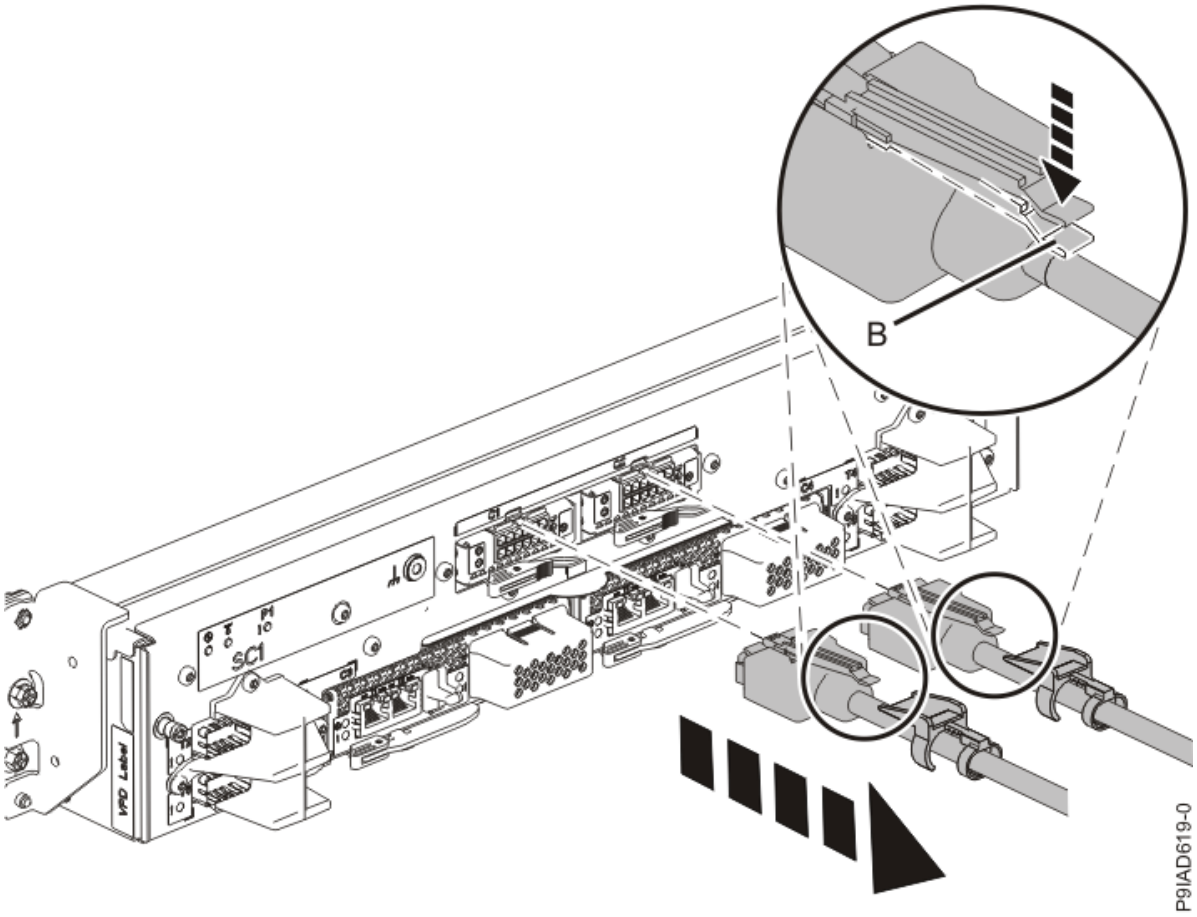


Figure 619. Removing the UPIC cable from the system control unit

2. 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 the USB card in the 9080-M9S system

To install the USB card in 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. If the P1-C13 location for the USB card contains a filler, remove the filler.

3. To install the USB card, complete the following steps:
   a) Ensure that the USB card handle **(A)** is open as shown in the following figure.
   b) Hold on to the USB card handle and by using your hand to support the bottom of the USB card, push the USB card into its slot as shown in the following figure.
   c) Rotate the handle to the right in the direction shown in the following figure to lock the USB card into the system.

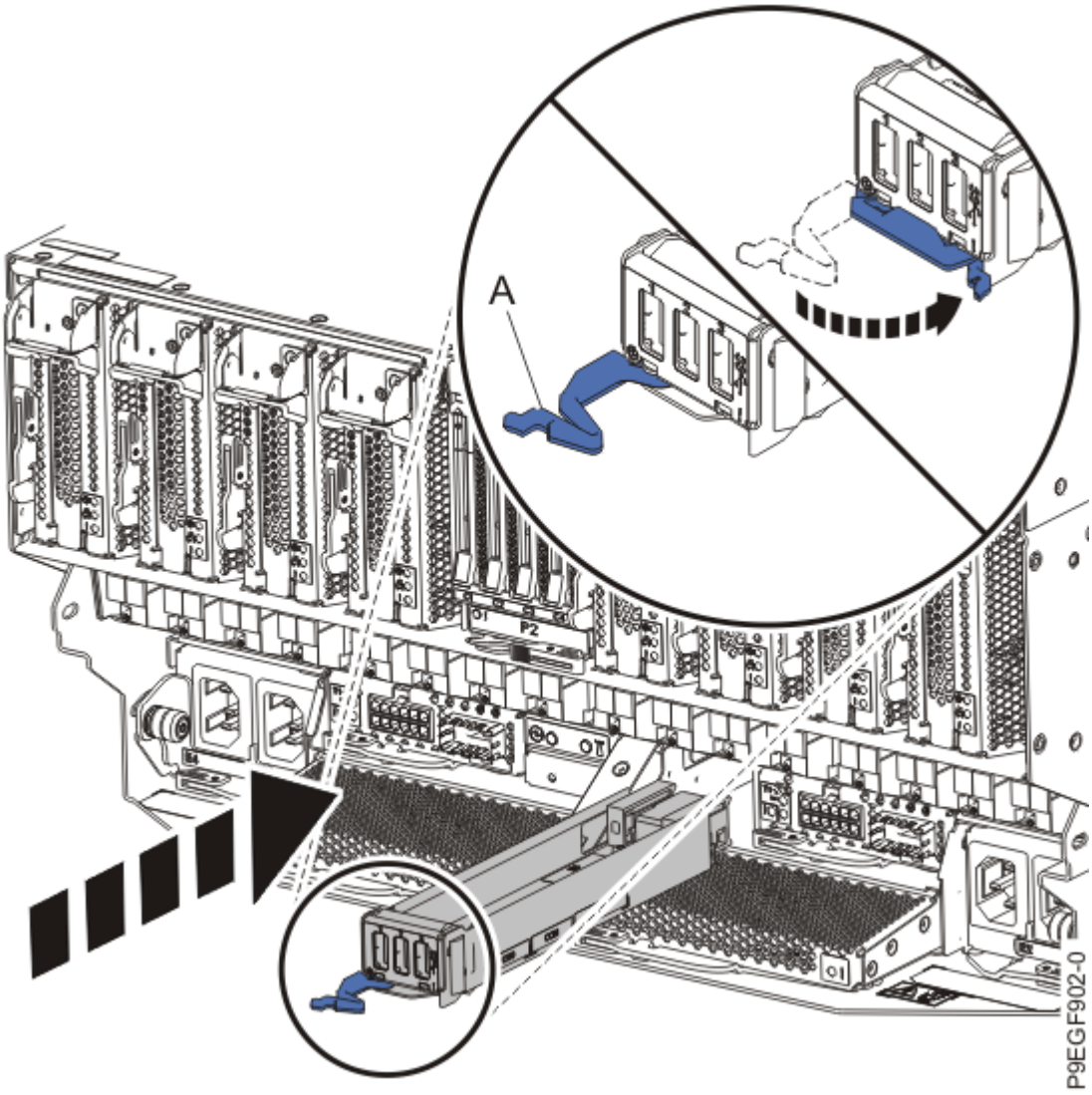


Figure 620. Installing a USB card in the system

Preparing the 9080-M9S system for operation after installing the USB card

To prepare the system for operation after installing the USB card, 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. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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) Continue with step #unique_130/unique_130_Connect_42_step_activate_partitions.

3. If you chose to complete 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.

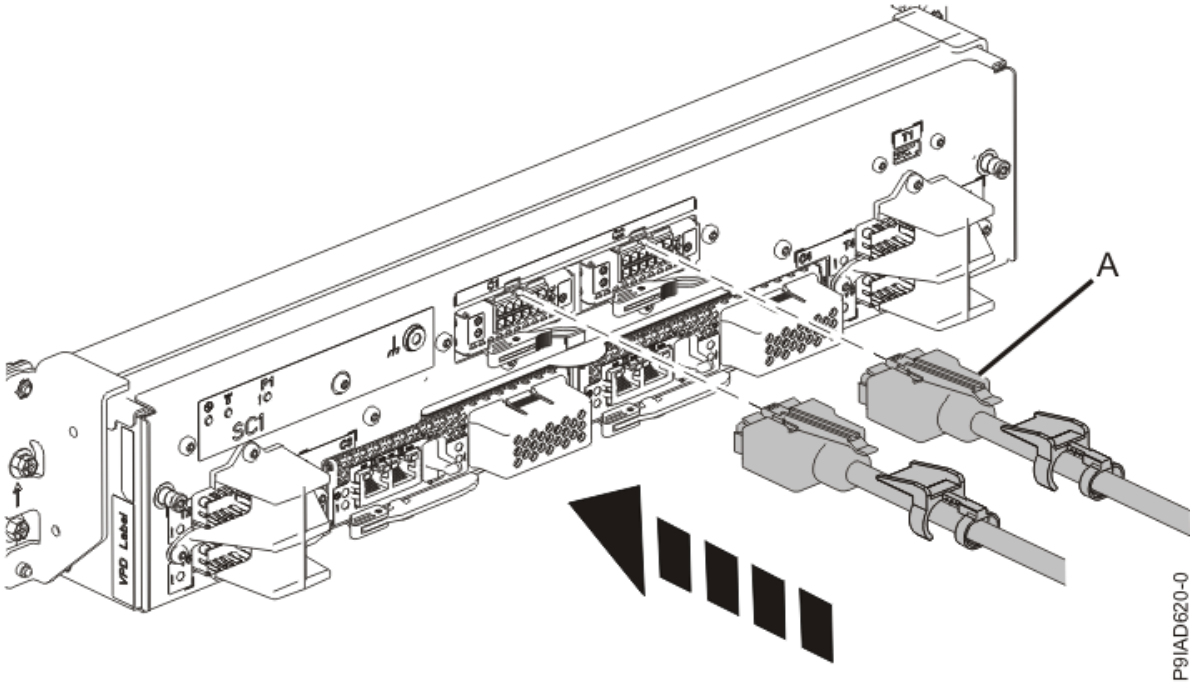


Figure 621. Replacing the UPIC cable into the system control unit

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

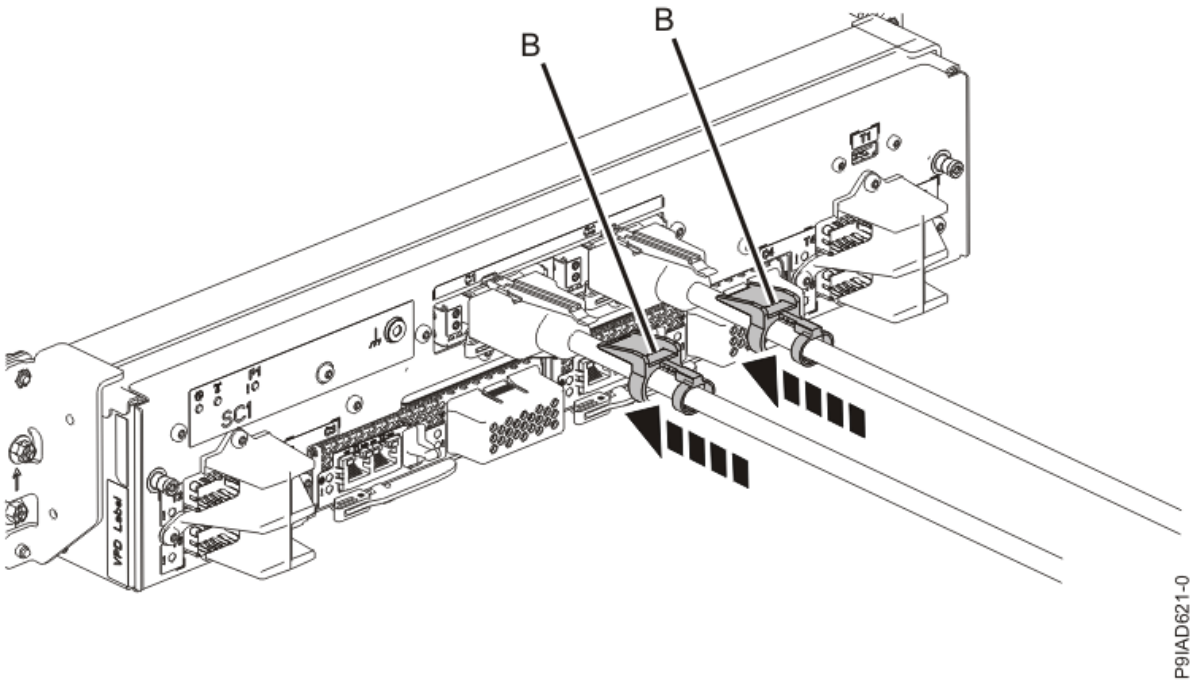


Figure 622. Replacing the UPIC cable into the system control unit

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.

4. 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.
5. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

Permanently removing

Preparing the 9080-M9S system to permanently remove the USB card

To prepare the system to permanently remove a USB card, complete the steps in this procedure.

Procedure

1. If USB devices are connected to the USB card, ensure that the USB devices are not being used. Label and remove the USB cables from the USB card.
2. 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.

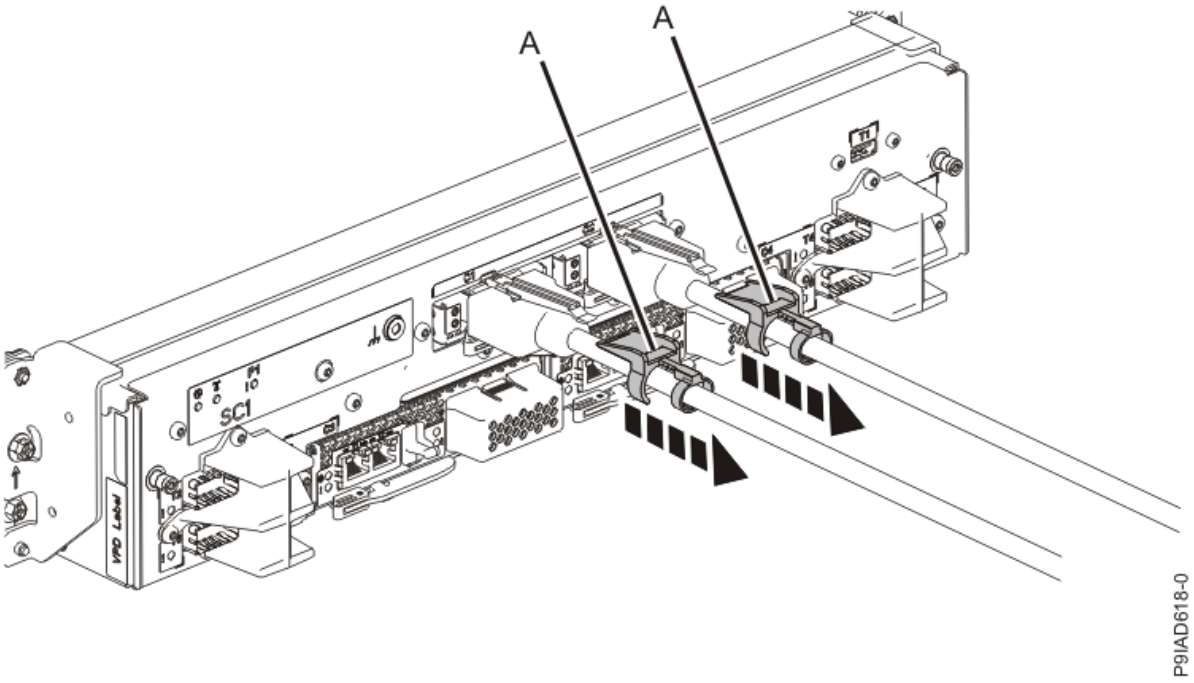


Figure 623. Removing the UPIC cable lock

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

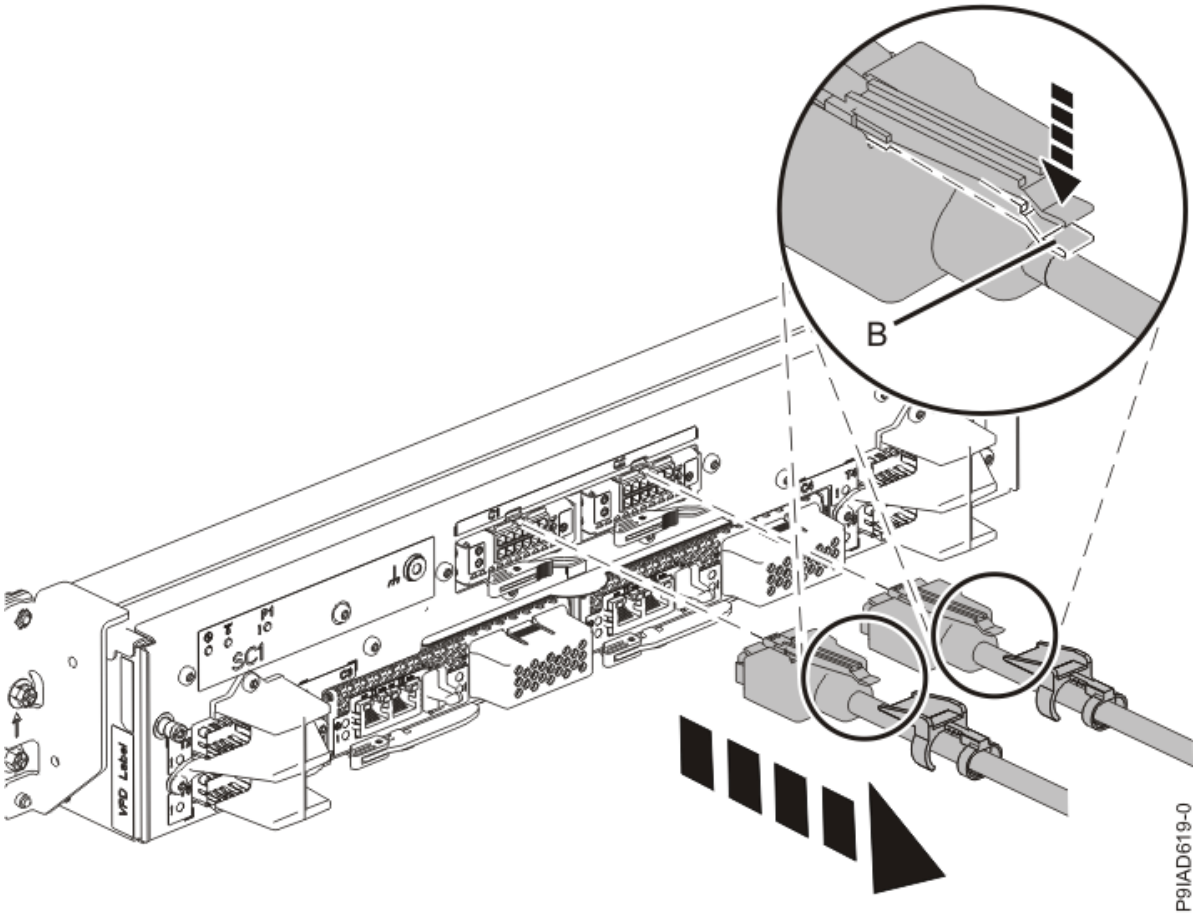


Figure 624. Removing the UPIC cable from the system control unit

3. Check that the amber identify LED is flashing as shown in the following figure.

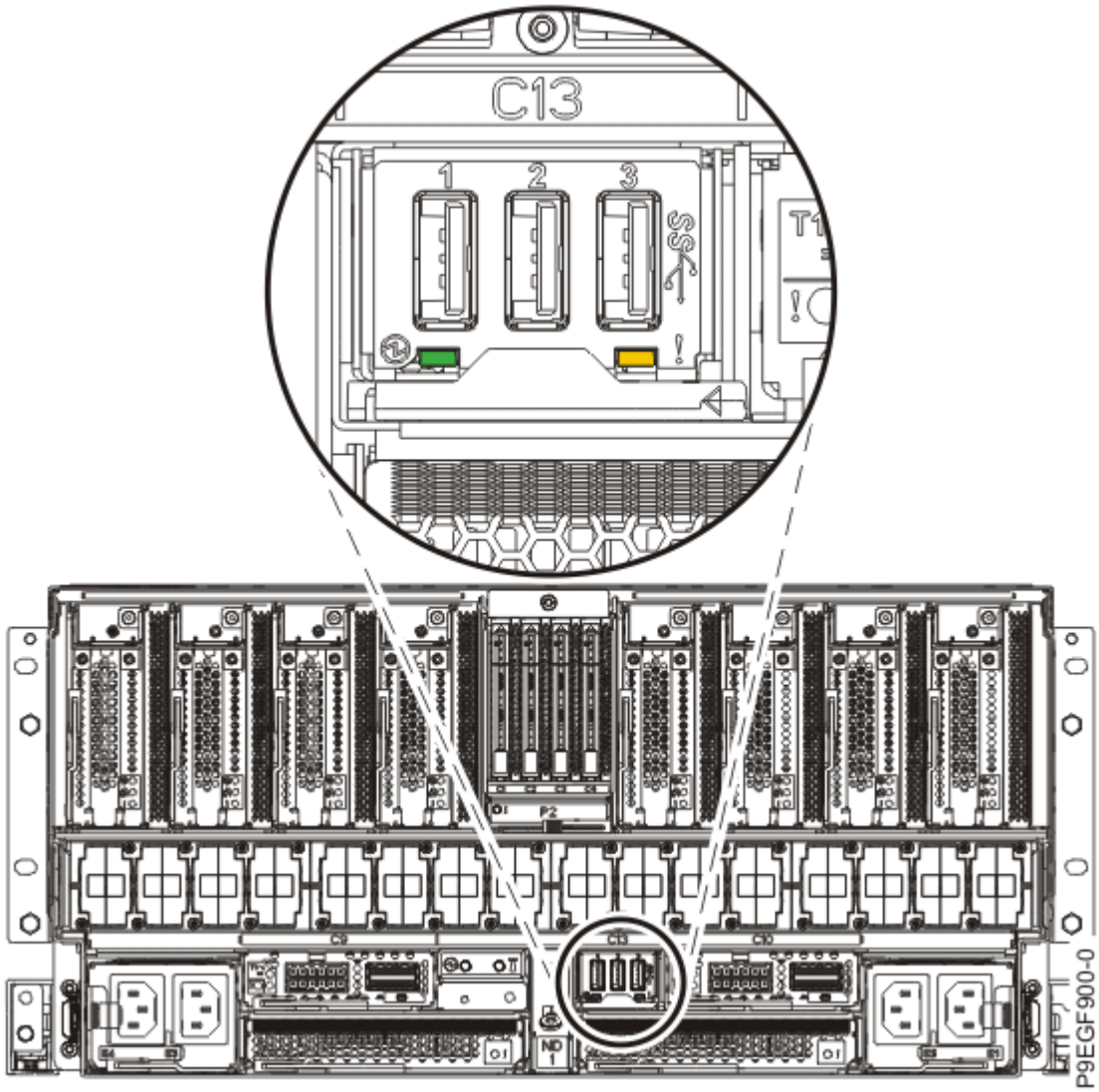


Figure 625. Identify LED for the USB card

4. 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.

Permanently removing the USB card from the 9080-M9S system

To permanently remove the USB card from 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. To remove the USB card, complete the following steps:
   a) Press the blue USB card handle latch **(A)** to the left as shown in the following figure.
   b) Rotate the handle to the left in the direction shown in the following figure to unlock the USB card from its slot.
   c) Hold on to the USB card handle and by using your hand to support the bottom of the USB card, pull out the USB card from its slot as shown in the following figure.

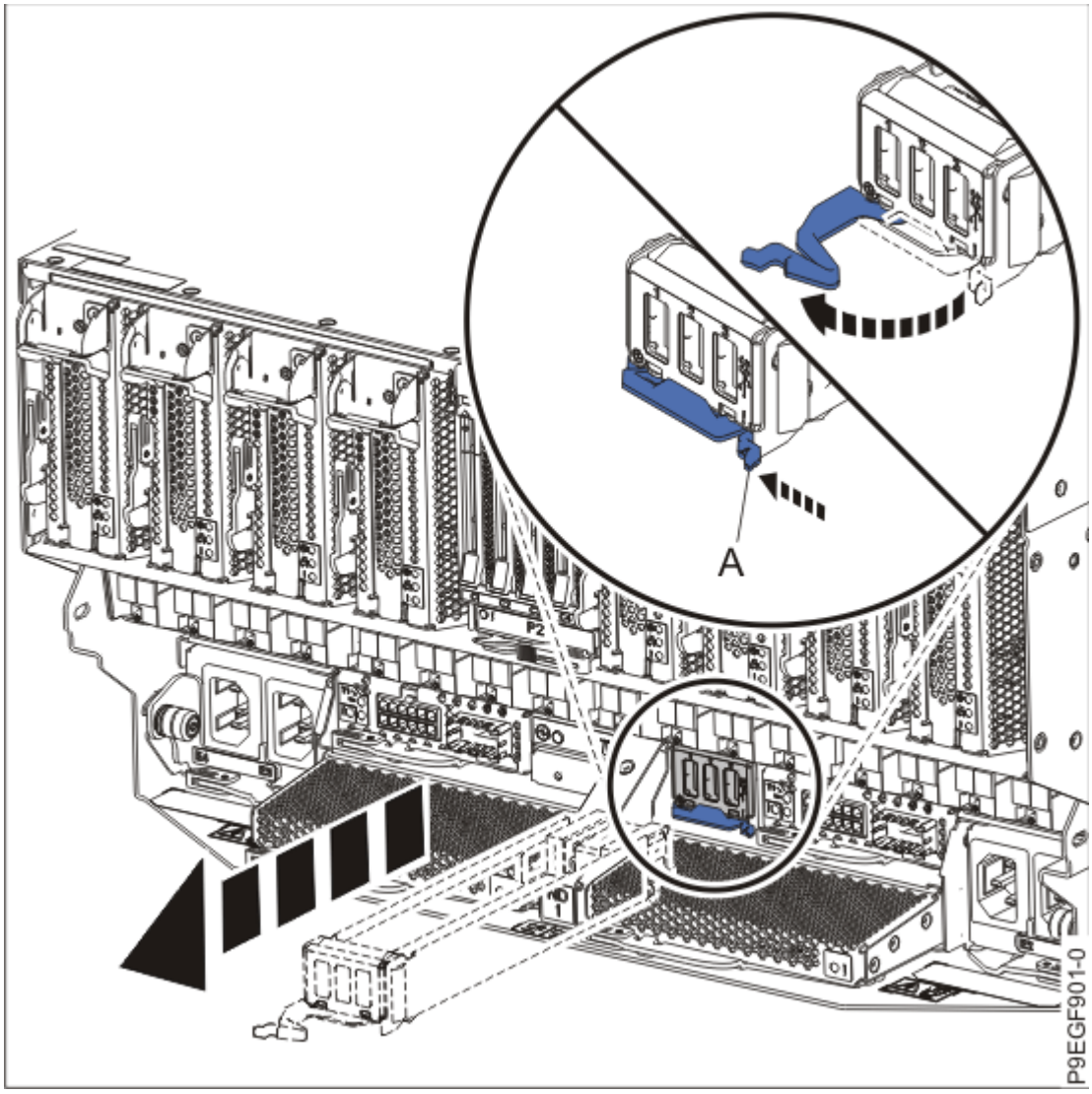


Figure 626. Removing a USB card from the system

3. Insert a USB card filler into the P1-C13 location.

Preparing the 9080-M9S system for operation after permanently removing the USB card

To prepare the system for operation after permanently removing the USB card, 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. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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) Continue with step #unique_133/unique_133_Connect_42_step_activate_partitions.
3. If you chose to complete 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.

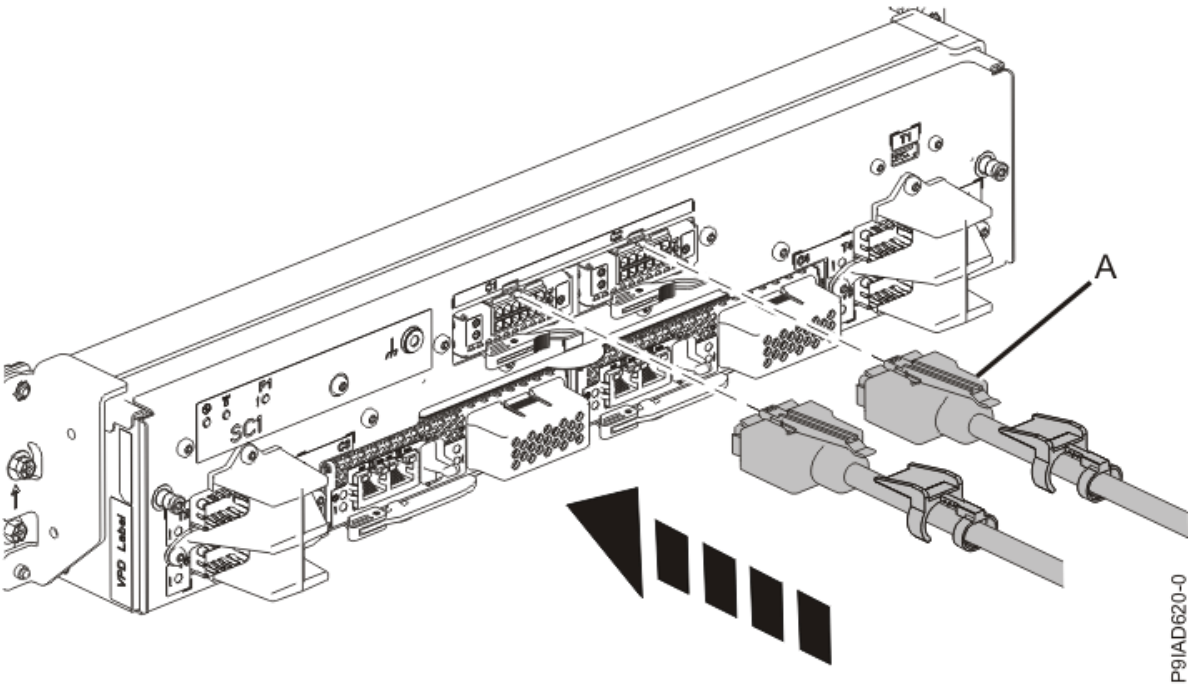


Figure 627. Replacing the UPIC cable into the system control unit

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

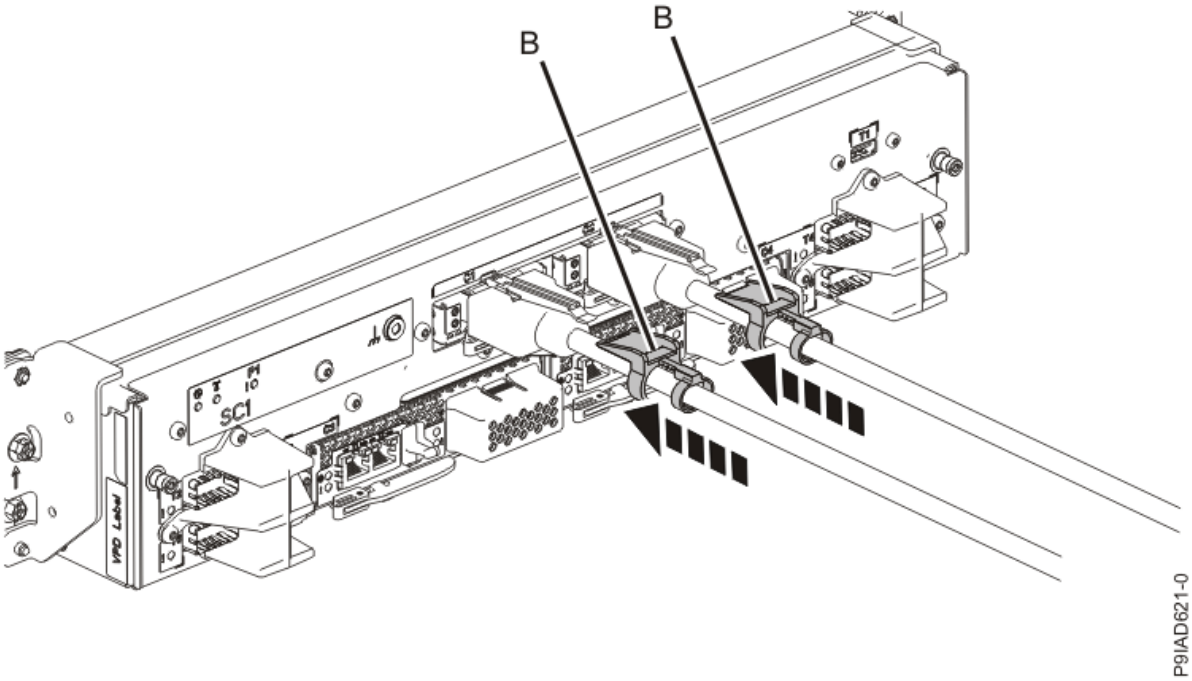


Figure 628. Replacing the UPIC cable into the system control unit

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.

4. 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.
5. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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.

VPD card

Preparing the system to remove and replace the vital product data card in the 9080-M9S system control unit

To prepare the system to remove and replace the vital product data card, complete the steps in this procedure.

About this task

Note: If you plan to replace the VPD card and have the replacement card, you can contact the following email address from 8 AM to 5 PM US Central Time, Monday to Friday, to obtain the replacement activation codes before repair. You must supply the machine type and serial number, and the part number and serial number of the replacement VPD card. If you use the AIX or Linux operating systems, contact pcod@us.ibm.com. If you use the IBM i operating system, contact icod@us.ibm.com.

Procedure

1. Identify the part and the system that you are working on. For instructions, see Identifying a part (www.ibm.com/support/knowledgecenter/POWER9/p9haj/sal.htm).

   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.
2. Stop the system. For instructions, see Stopping a system (www.ibm.com/support/knowledgecenter/POWER9/p9haj/crustopsys.htm).
3. Access the ASMI.

   If you are already connected to the ASMI, go to the next step.

   a) For instructions, see Accessing the ASMI without an HMC (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).

   b) Click **Tasks**.

   c) Click **Operations** > **Launch Advanced System Management (ASM)**.
4. Record the system identifiers.

   Note: To perform this operation, your authority level must be administrator or authorized service provider.

   a) In the ASMI Welcome page, if you have not already logged in, specify your user ID and password, and click **Log in**.

   b) In the navigation area, expand **System Configuration** > **Program Vital Product Data**.

   c) Select **System Brand** under **Program Vital Product Data**.

   d) Manually record the value for the system brand, which appears in the right pane.

   e) In the navigation area, select **System Keywords** under **Program Vital Product Data**.

   f) Manually record all of the values, such as the Machine type-model, System serial number, and System unique ID.

      Notes:

      1) If you do not know the system unique ID, contact your next level of support.

      2) You cannot boot the system until valid values are entered for all fields.

      3) You can change these entries only once.
5. Look for the flashing amber LED (**A**) of the vital product data card. Refer to the following image.

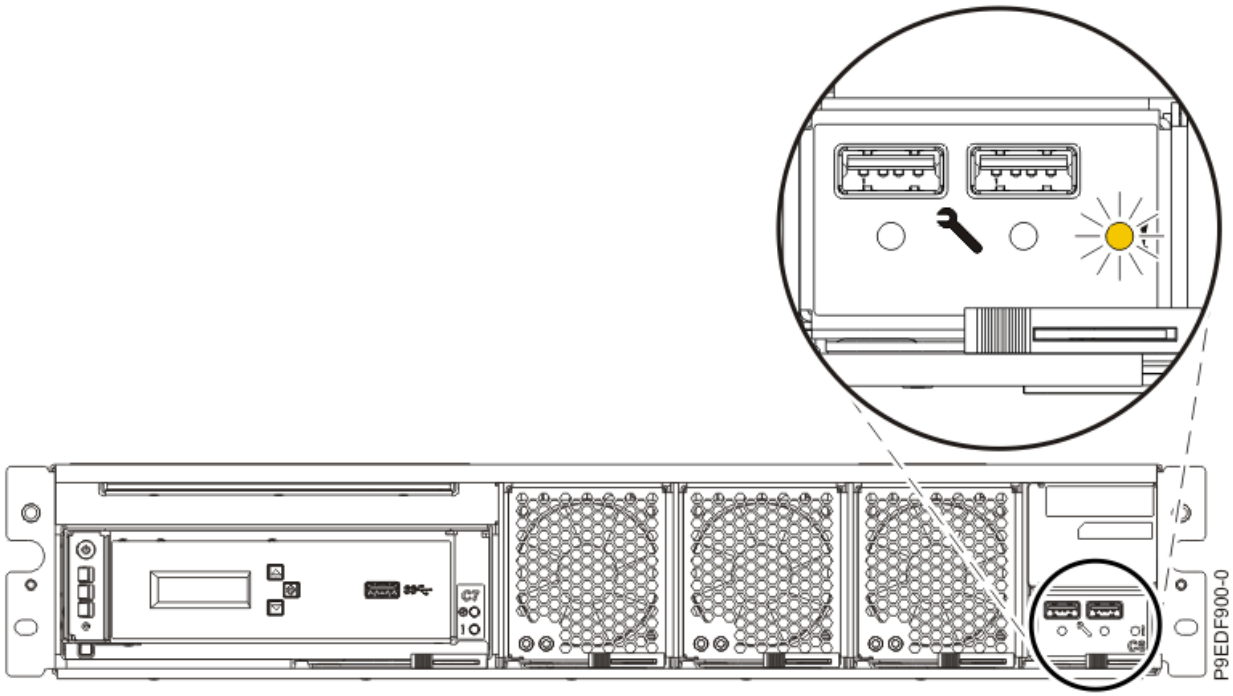


Figure 629. Location of the vital product data card service indicator LED

6. 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.

Removing the vital product data card from the 9080-M9S system control unit

Follow these steps to remove the vital product data card.

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 VPD card.
   a) Place one finger against the front of the blue touch point latch **(A)** as shown in the following figure, and place another finger against the rear of the latch **(B)**.
   b) Push against the front of the latch **(A)** and then pull the latch out from the rear **(B)**. This action releases the latch.

c) Rotate the VPD card handle in the direction shown in the following figure to unlock the card from its slot.

d) Hold on to the VPD card handle and use your hand to support the bottom of the card as you pull the card out from its slot as shown in the following figure.

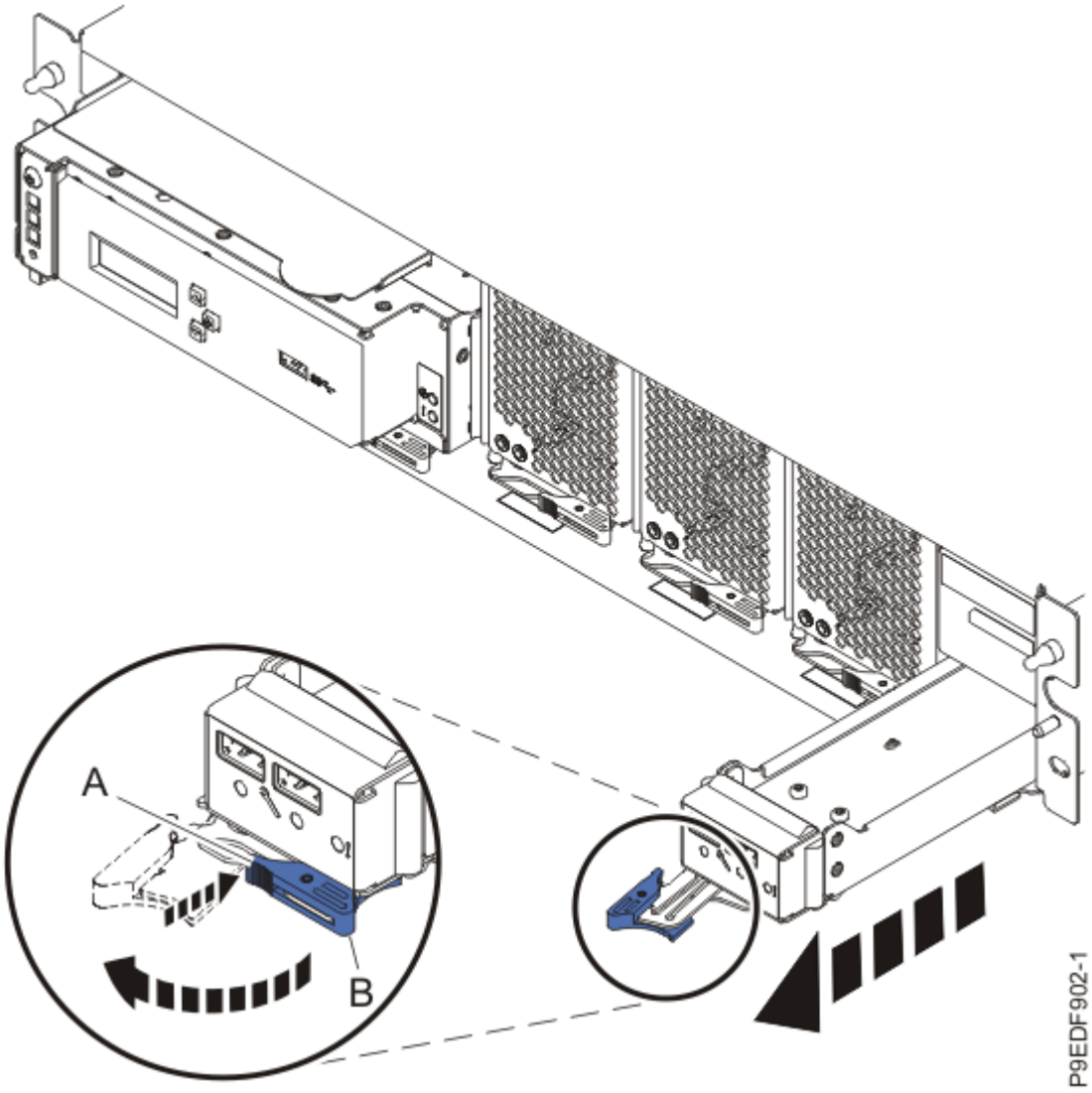


Figure 630. Removing the VPD card

Replacing the vital product data card in the 9080-M9S system control unit

Follow these steps to replace the vital product data card.

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. Replace the VPD card.
   a) Ensure that the VPD card handle is open as shown in the following figure.
   b) Hold on to the VPD card handle and use your hand to support the bottom of the card as you slide the card into its slot as shown in the following figure.
   c) Push against the left front of the blue touch point latch **(A)** to rotate the VPD card handle towards the system **(C)**. This action closes the latch.

d) After the latch is fully closed, push in the lever **(B)** on the right side of the latch to secure the card in its slot.

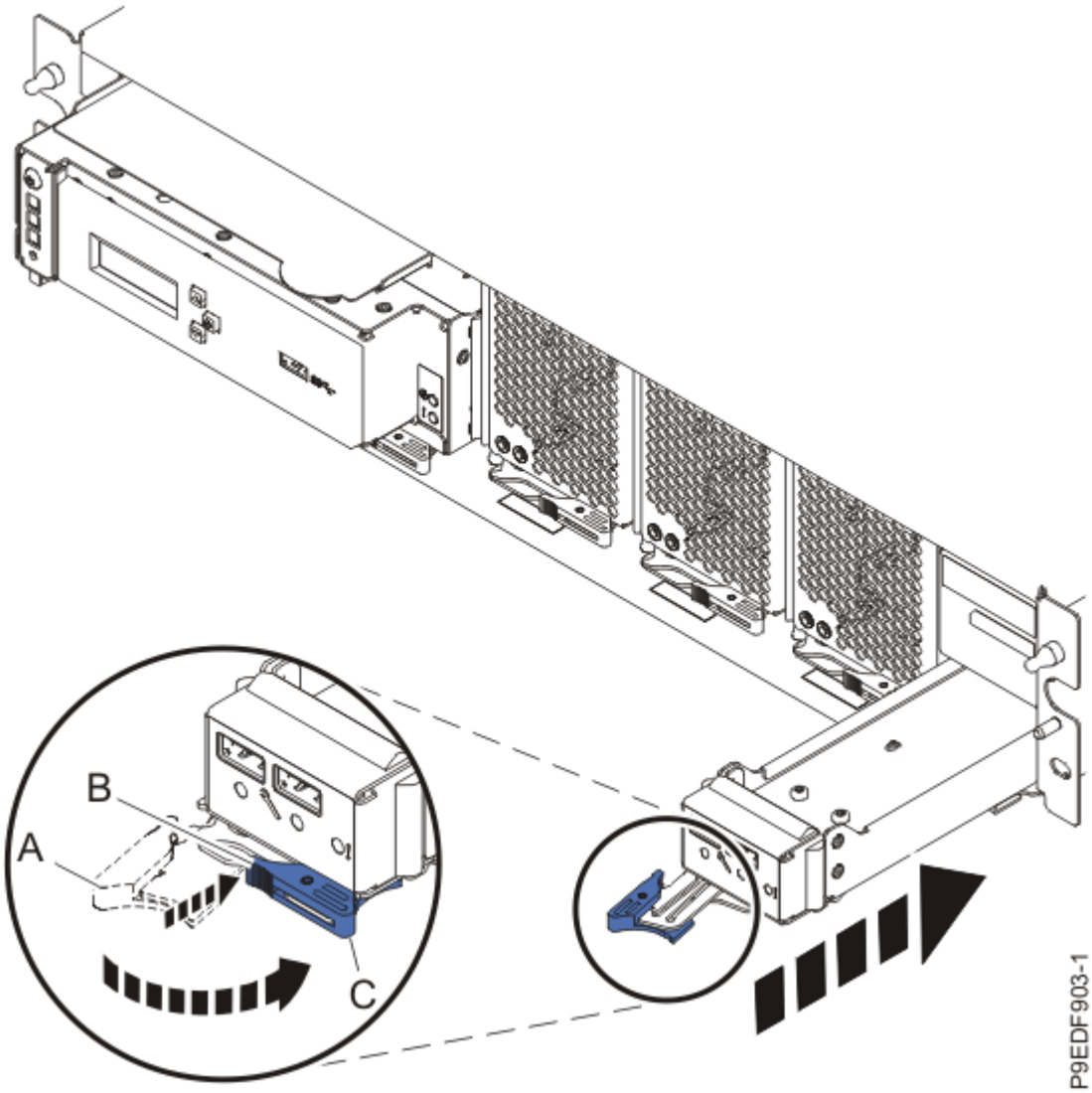


Figure 631. Replacing the VPD card

Preparing the system for operation after removing and replacing the VPD card in the 9080-M9S system control unit

Follow these steps to prepare the system control unit for operation after removing and replacing the vital product data card.

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. If you powered off the system to complete this repair, wait for the service processor comes up to the Flexible Service Processor (FSP) standby state (the power-on LED on the control panel is flashing slowly) then continue to the next step to validate all of the cables. If you did not power off the system, skip the next step and continue to the step to validate only the UPIC cables.
3. 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, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and skip the following step.

4. Access the ASMI and run the Cable Plugging Validation utility to validate only the UPIC cables.

Note: If you powered off the system to complete this repair, you validated the UPIC cables in the previous step. You can skip this step.

a) If you are already connected to the ASMI, go to the next step. Otherwise, click **All Systems** then select system being serviced. Then, click **Actions** > **View All Actions** > **Launch Advanced Systems 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 and continue to the next step.

5. Turn off the identify LED. For instructions, see Deactivating an identify LED (www.ibm.com/support/knowledgecenter/POWER9/p9haj/p9haj_turn_off_identify_led.htm).

6. Access the ASMI.

If you are already connected to the ASMI, go to the next step.

a) For instructions, see Accessing the ASMI without an HMC (www.ibm.com/support/knowledgecenter/POWER9/p9hby/connect_asmi.htm).

b) Click **Tasks**.

c) Click **Operations** > **Launch Advanced System Management (ASM)**.

7. In the ASMI navigation panel, expand **Power/Restart Control** > **Power On/Off System**. Clear **Server firmware start policy** and select **Standby (User-Initiated)**. Then, click **Save settings**.

8. Set the system identifiers and the activation codes for the Capacity on Demand (CoD) and Virtualization Engine technologies (VET):

Note: To perform this operation, your authority level must be administrator or authorized service provider.

a) In the navigation area, expand **System Configuration** > **Program Vital Product Data**.

b) Click **System Brand**.

Note: If you do not know the correct system brand, contact your next level of support.

c) Verify the system brand matches what you recorded previously. If the system brand does not match what you previously recorded, contact your next level of support.

d) Click **System Keywords**.

Note: If you do not know the system unique ID, contact your next level of support. You cannot boot the system until valid values are entered for all fields. You can change these entries only once.

e) If the system keywords match what you recorded previously, click **Save settings**. Otherwise, enter the values for the machine type, model number, system serial number, system unique ID, and RB Keyword, then click **Save settings** to update the system keywords and to save them to the VPD.

f) In the ASMI navigation panel, expand **Power/Restart Control** > **Power On/Off System**. Then, click **Save settings and power on**.

g) In the ASMI navigation panel, expand **On demand Utilities** > **CoD Activation**. Enter the CoD and VET activation codes that you obtained from IBM for this new VPD card. Then, click **Continue** to write the codes to the VPD card for each CoD and VET code that you have.

9. Verify the installed part.

- If you replaced the part because of a service action, verify the installed part. For instructions, see Verifying a repair (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 (www.ibm.com/support/knowledgecenter/POWER9/p9haj/pxhaj_hsmverify.htm).