Power Systems

# *Planar*

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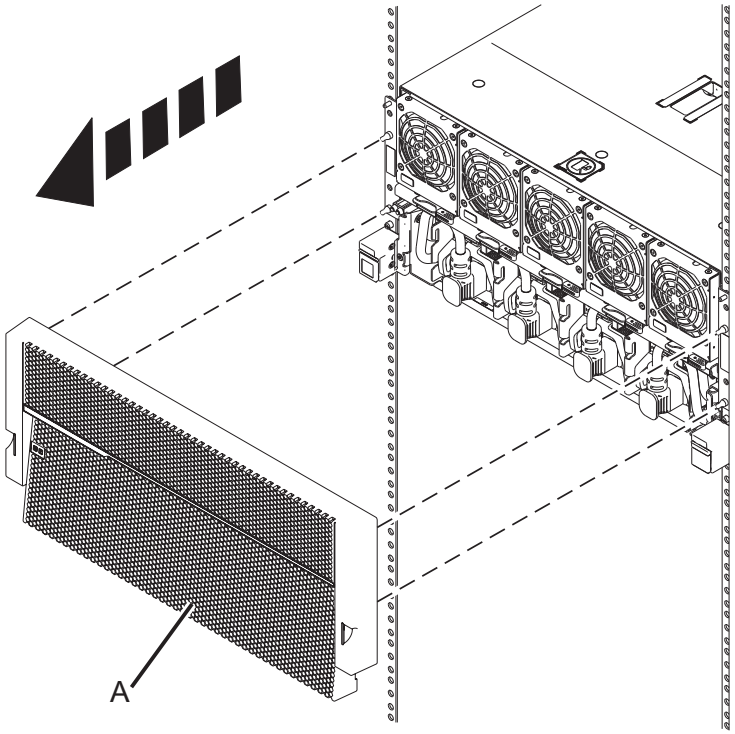
IBM

# Remove Planar

To remove a planar, complete the following steps:

1. **When the node being serviced is above EIA location 29U, the ladders must be used while installing or removing cables.**
2. **Perform the following procedure on ONLY THE FRU(s) BEING SERVICED. The following images are generic and do not represent the literal location being serviced.**
3. **Modifying FRU locations which are not called out for service can have adverse effects on the system, INCLUDING SYSTEM OUTAGE AND LOSS OF DATA.**
4. If there are only two people servicing this FRU, without a lift tool, there must be a **MINIMUM of 48 inches (122 cm)** of clearance in the front of the system. If there is not at least 48 inches (122 cm) of clearance, **DO NOT PERFORM THE PROCEDURE.**
5. The torque tool **(P/N 41V1059)** is required for this procedure. The torque tool was initially shipped with the system.
6. **CAUTION: If the system slide rails are installed above EIA location 29U, two Support Services Representatives (SSRs) must perform the procedure together and the following equipment must be used as a safety precaution for servicing: ServerLIFT tool (P/N 74Y4399), two hard hats (P/N 5442867) and two service-qualified ladders (P/N 46G5947 and P/N 00E4866)**

1. Remove front bezel
   a. Remove the front bezel **(A)** from the system node being serviced and all system nodes which share the same system control unit with the system node being serviced.




   b. If present, remove the retention screws **(A)** from the front of the system node being serviced.

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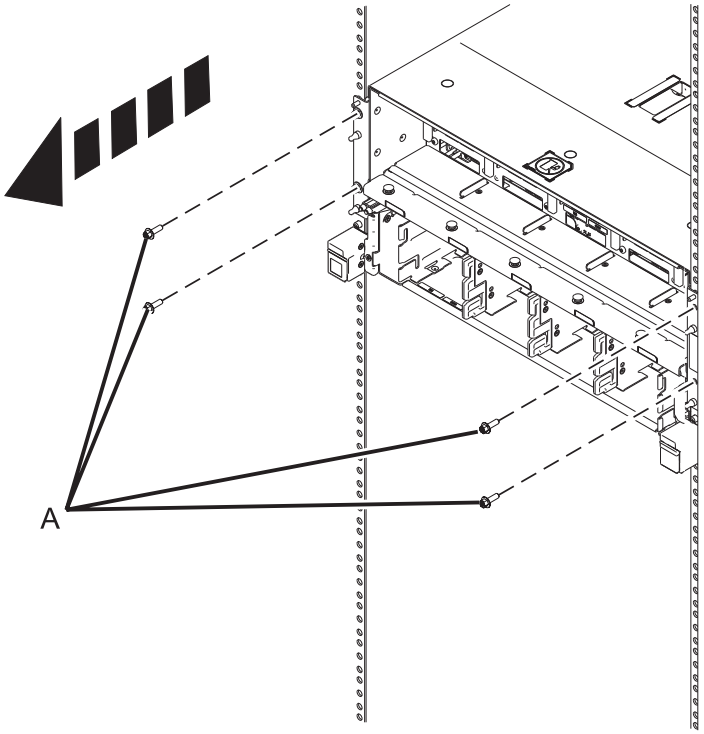
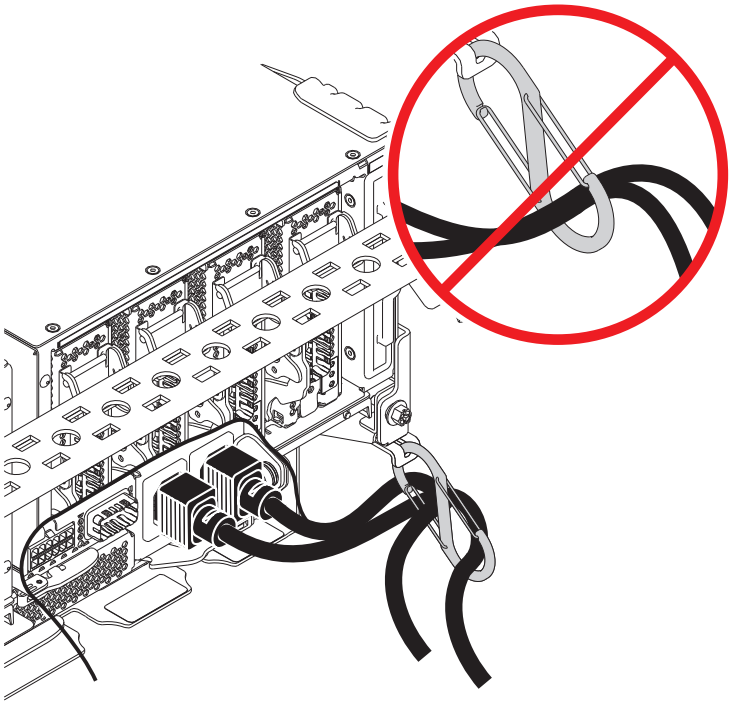



2. Unplug all power supply cables

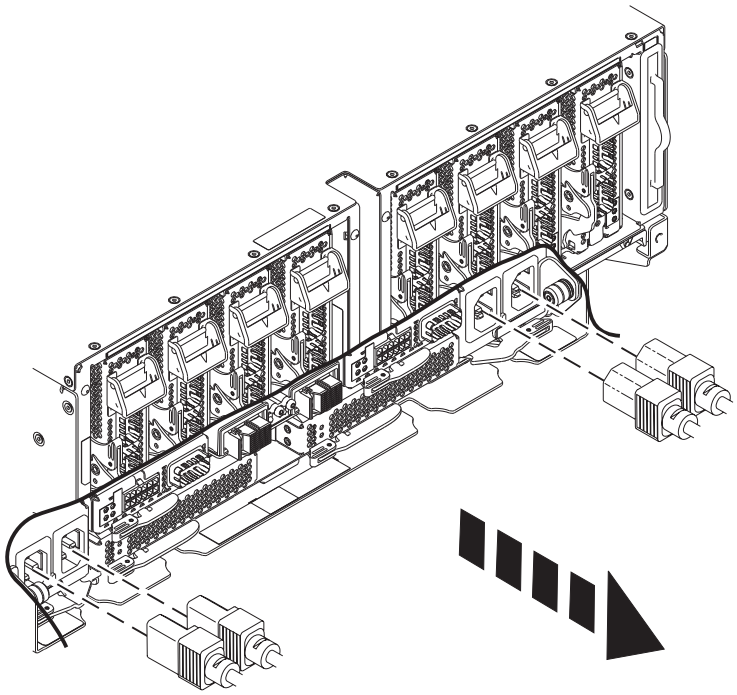
   **Note:** The following step applies to the system node being serviced and all system nodes which share the same system control unit with the system node being serviced.

   a. Locate the system control unit for the system being serviced.
   b. Validate which system nodes are connected to the system control unit by visually tracing / checking the clock cables.
   c. Make note of the location from which power supply cable is removed. They must be plugged into the same location when reinstalled.
   d. Disconnect the power supply cables from each power supply of each affected system node.

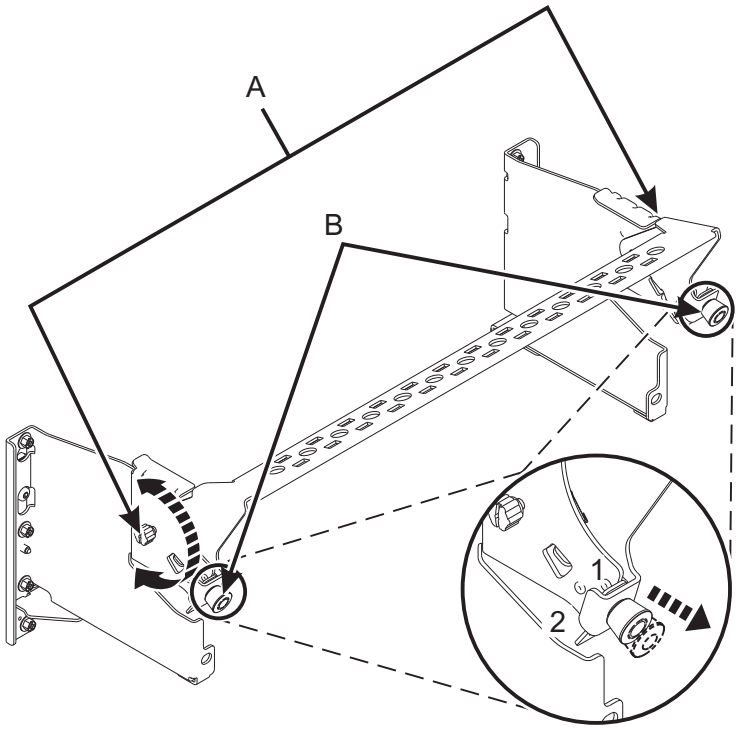
3. **If an S-Biner power cable routing clip is present:** While keeping the power cable correctly routed through the S-Biner, unclip all S-Biners from the node being serviced.



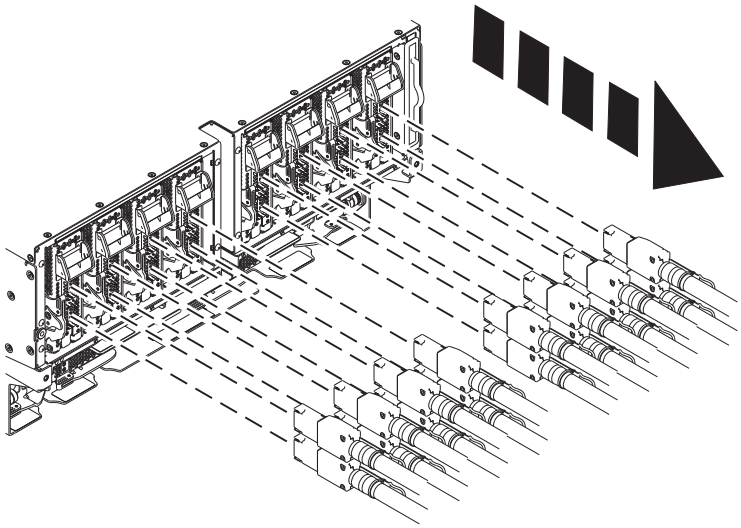
4. Unplug line cords
   a. Unplug the line cords from **only the system node being serviced**.



5. Move cable management arm up
   a. Pull out the retention pins **(B)** and rotate the cable management arm up on the pivot point **(A)** from position **(2)** to position **(1)**.. The pins will automatically retract into the locking position when the arm is properly located in the up position.

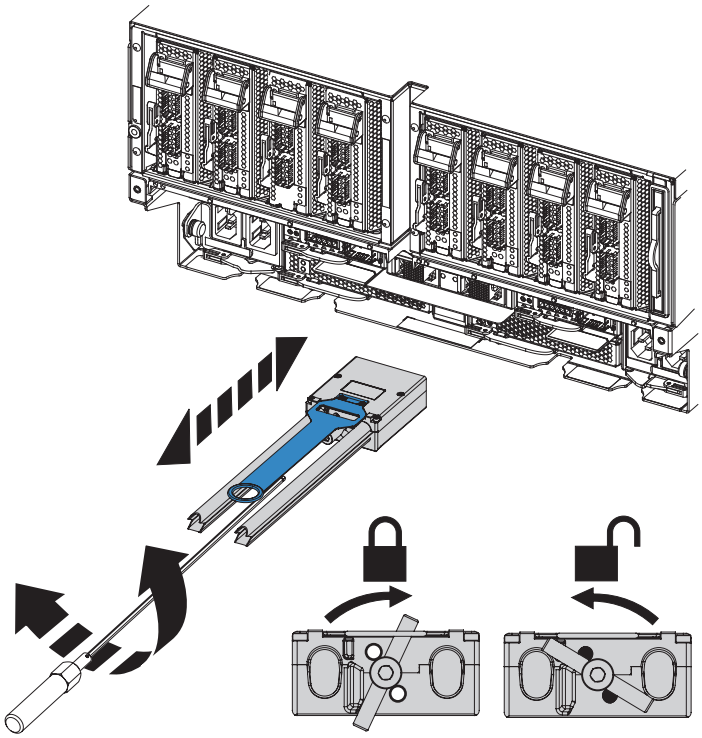



6. Remove all PCI cables
   a. Make note of the location from which each PCI cable is removed. They must be plugged into the same location when reinstalled.
   b. Label and unplug the PCI cables from the system node **being serviced**.

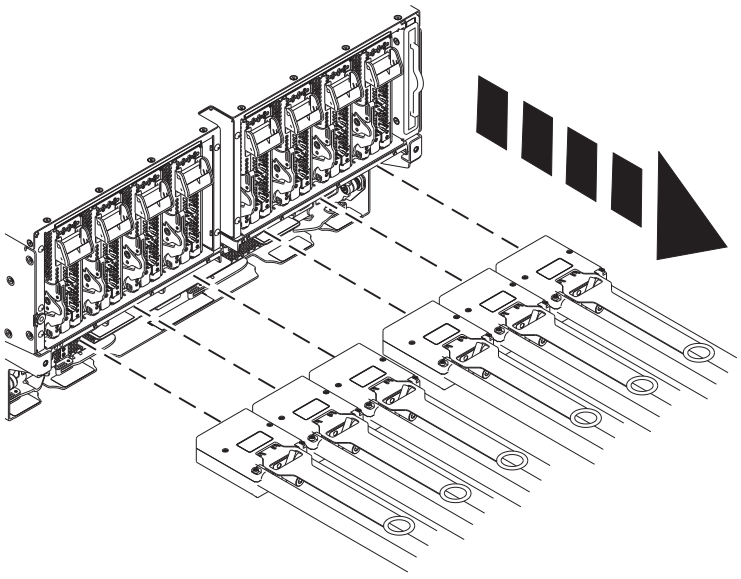


7. Remove all SMP cables

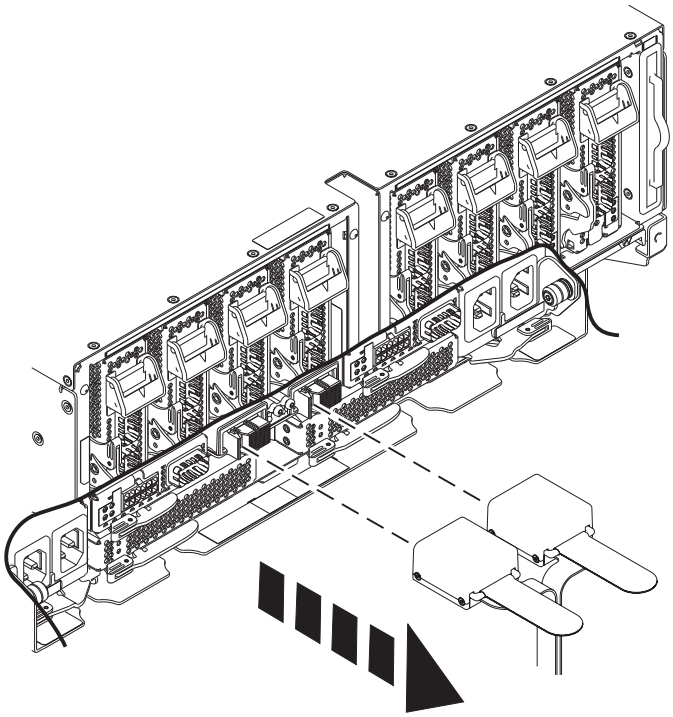
a. Make note of the location from which SMP cable is removed. They must be plugged into the same location when reinstalled.
b. Use the torque tool (41V1059) and turn in the direction indicated to unlock. There is a stop to prevent over rotation. Visually confirm that the SMP cable camming mechanism is in the unlocked position and that the black dots are showing through the two holes at the 5 and 11 o'clock positions before pulling on the cable.



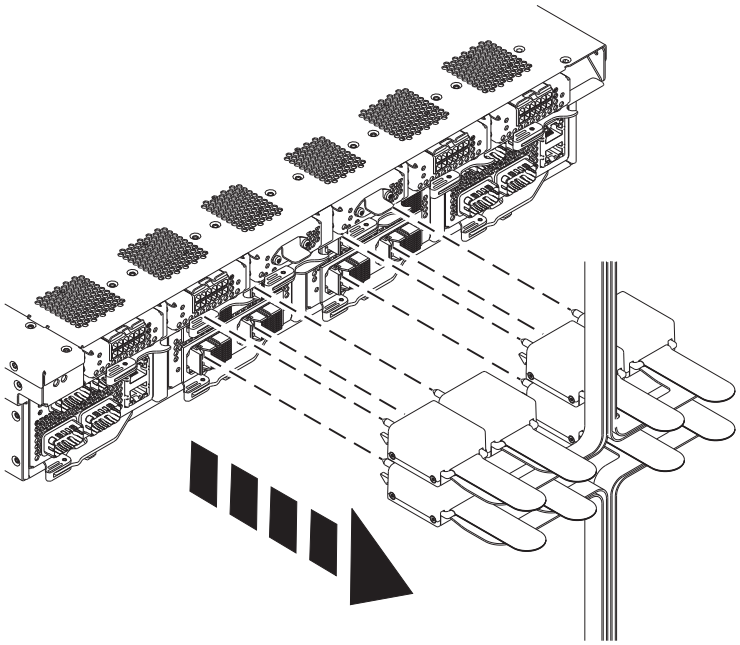
c. Grip the pull tab and pull in the direction indicated to remove the SMP cables.



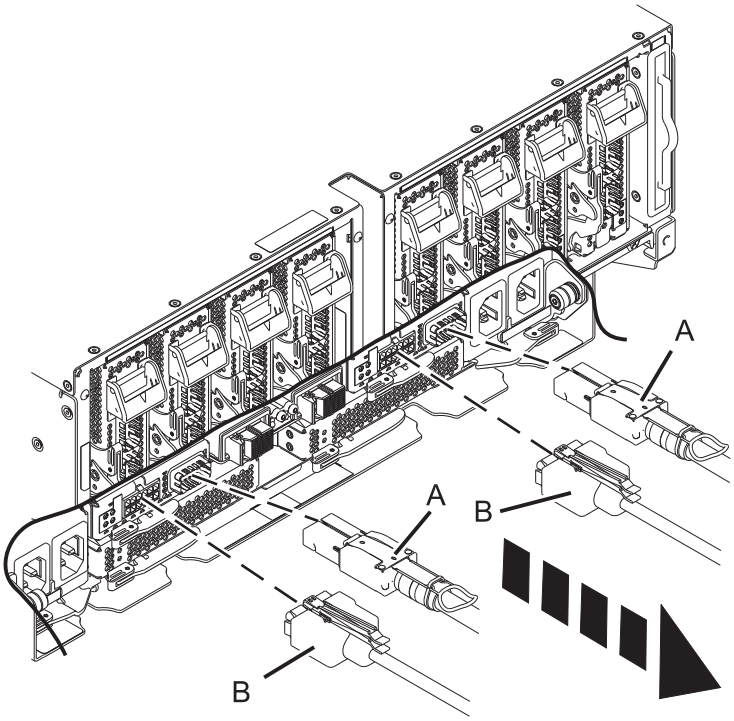
8. Remove all clock card cables
   a. Make note of the location from which each clock card cable is removed. They must be plugged into the same location when reinstalled.
   b. Remove the clock card cables from the system node by pushing the clock cable in slightly, then pull the locking tab to release the latch and pull cable out.



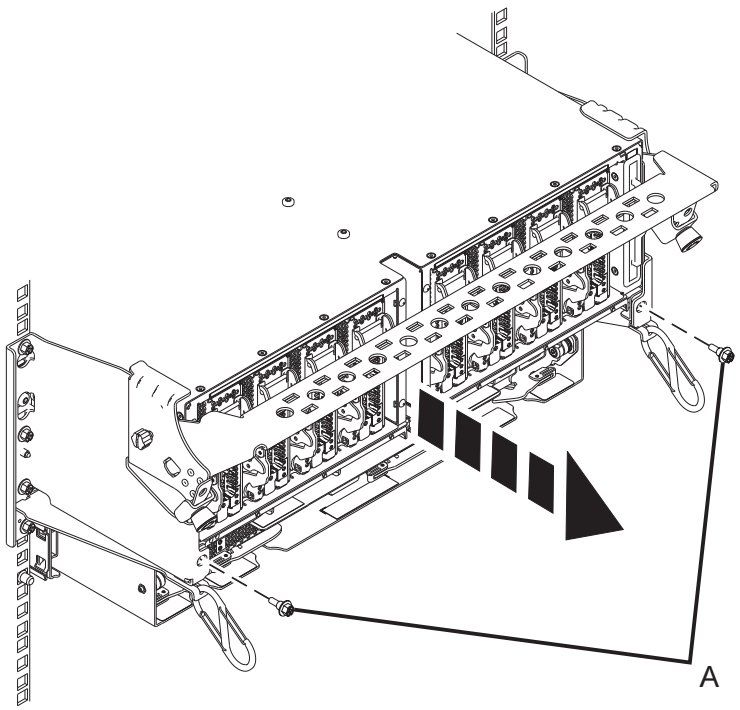
   c. Remove the clock card cables from the system control unit by pushing the clock cable in slightly, then pull the locking tab to release the latch and pull cable out.



9. Remove Global FSP and UPIC cables
   a. Make note of the location from which each UPIC and FSP cable is removed. They must be plugged into the same location when reinstalled.
   b. Disconnect the global FSP cables from the system node using the pull tab **(A)** attached to the connector.
   c. Push down on the latch **(B)** and pull out the UPIC cables from the system node.




10. If present, remove the retention screws **(A)** from the rear of the system node.




11. Position lift tool

**Note:** If the system slide rails are installed at or below EIA location 29U, skip to the next step.

a. With both SSRs wearing hard hats, position the ladders and the lift tool as shown in the graphic. The lift tool should be about one foot away from the rack with its platform slightly below the bottom of the system drawer to account for the slight downward flex when the drawer is extended out fully on its slides.

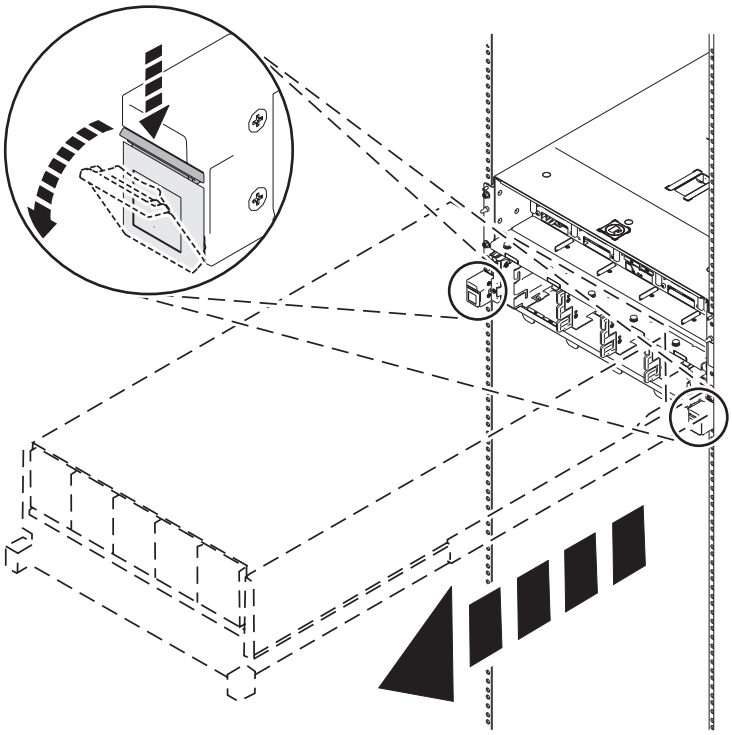
12. Set system into service position

    **Note: When placing the system into the service position, it is essential that all stability plates are firmly in position to prevent the rack from toppling.**

    **Note: Ensure that only one system node is in the service position at a time.**

    a. While holding down the system node release latches on both the left and right sides, pull the system node out from the rack until the rails are fully extended and locked.

       **Note:** When the system node rails are fully extended, the rail safety latches lock into place. This action prevents the system node from being pulled out too far.

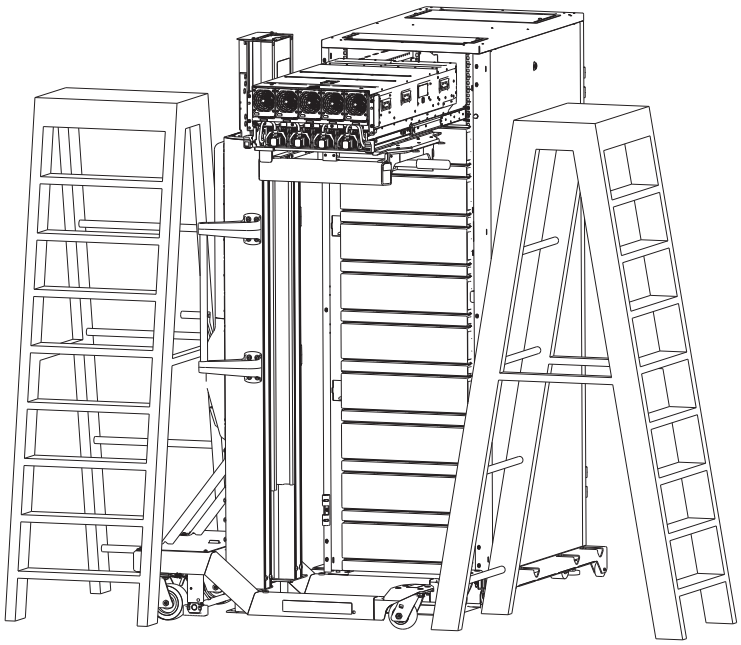


13. Secure node with lift tool and position ladder

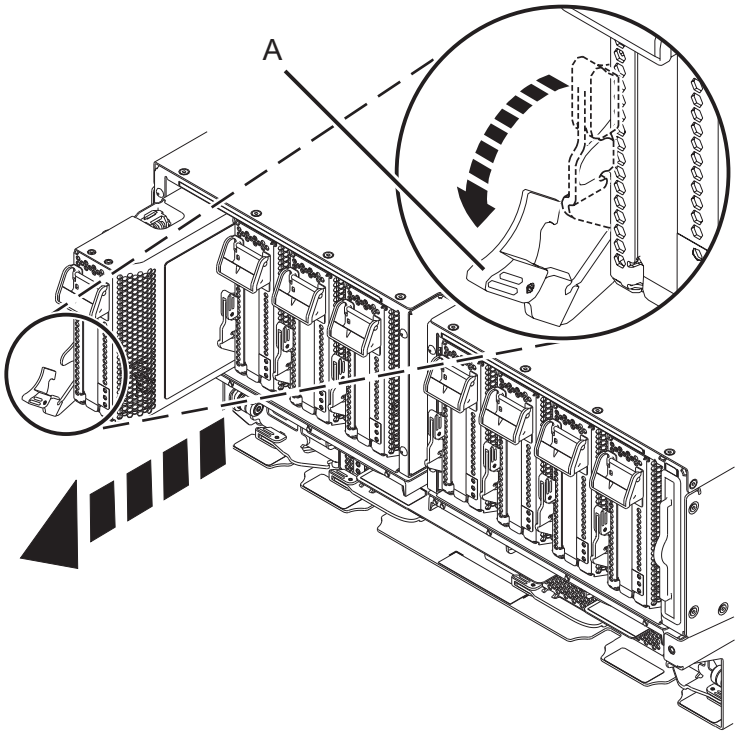
    **Note:** Perform the following step with the help of another SSR only if the slide rails of the node being serviced are above EIA location 29U.

    a. Gently raise the lift tool platform to stably contact the bottom of the drawer, minding not to over force it as it could put upward stress on the slide rails.
    b. While using the ladder, do not lean on or against the system drawer or lift tool during service, and follow safe practices.
    c. Disengage the front two pins by elevating the front of the tilt table using the tilt table handle.
    d. Manually push the system forward slightly away from the rack.
    e. Raise the lift tool to disengage the rear pins.
    f. Push the sliderails in and then level the tilt table.
    g. Lower the lift tool to perform the service action at a lower height and move it to a place with clearance for removing front and rear FRUs.

       **Note:** All the pictures in the procedure from this step onward show the node on slide rails. This should be ignored because the system has been removed from the rails and is positioned on the lift tool.

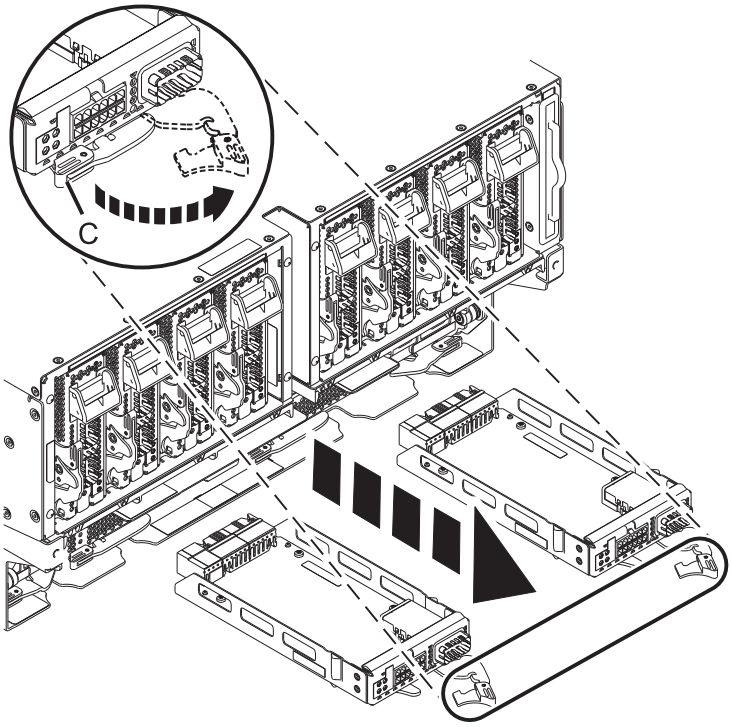


14. Remove all PCI card cassettes
    a. Make note of the location from which each PCI card cassette is removed. They must be plugged into the same location when reinstalled.
    b. Pull down on latch **(A)** to disengage, then slide the cassettes out from the system node **being serviced**.

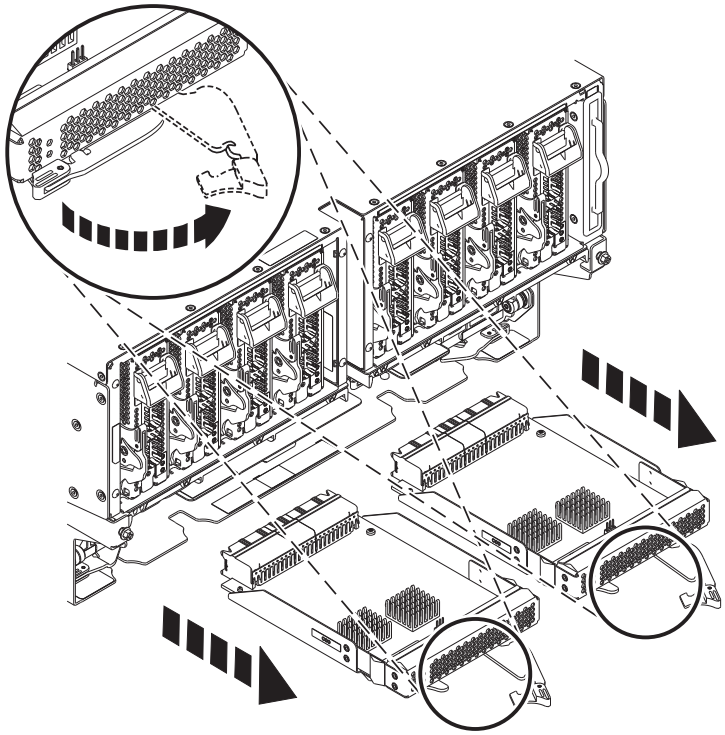



    c. Place the FRUs on an Electrostatic Discharge (ESD) surface.

15. Remove GFSP interface cards
    a. Unlock the GFSP interface cards by moving the locking lever **(C)** from left to right.
    b. Remove the GFSP interface cards by sliding them out of the system enclosure.



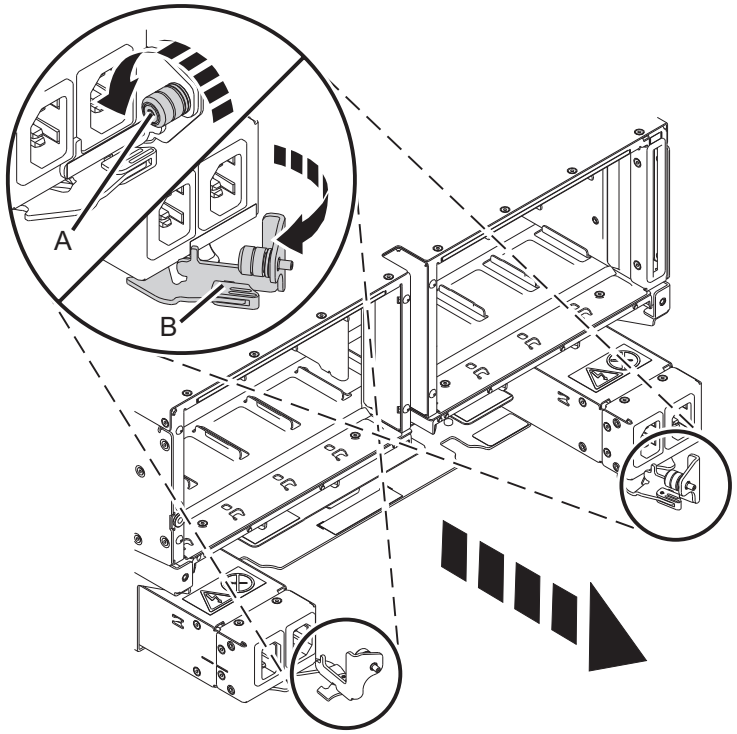

    c. Place the FRUs on an Electrostatic Discharge (ESD) surface.
16. Remove clock cards
    a. Make note of the location from which each clock card is removed. They must be plugged into the same location when reinstalled.
    b. Pull on the securing latch, and slide the lever to the right.
    c. Pull the clock cards out of the slot.



d. Place the FRUs on an Electrostatic Discharge (ESD) surface.

17. Remove line cord conduits

a. Unscrew the thumb screws **(A)** for each line cord conduit in the rear of the system, then pull on the latch **(B)** and rotate the latch to the open position.

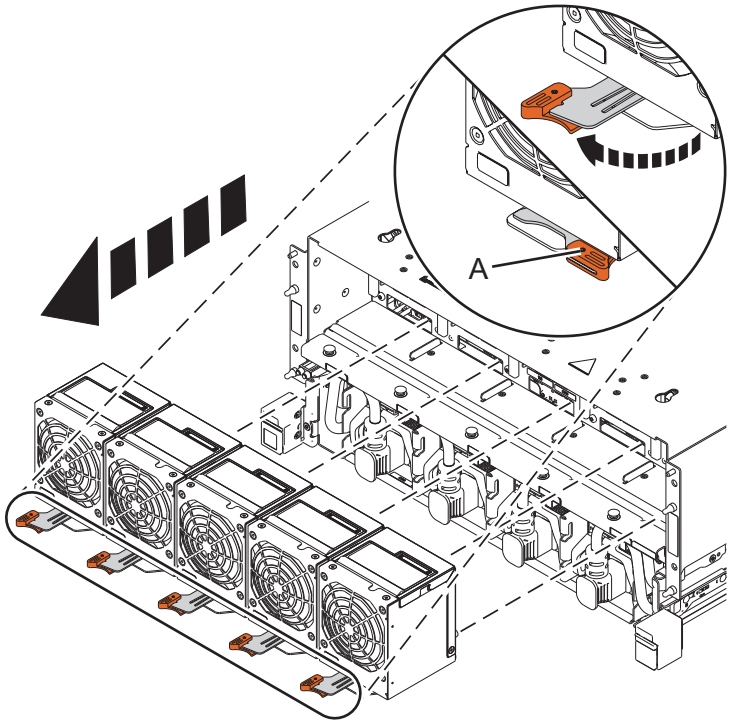



b. Pull each line cord conduit out of the rear of the system node.

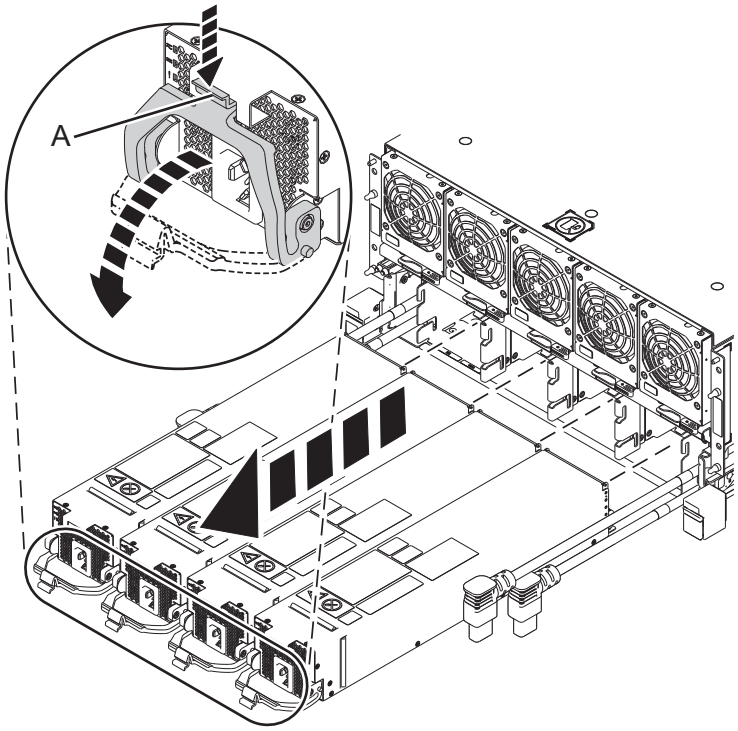
c. Place the conduits on an Electrostatic Discharge (ESD) surface.

18. Remove all fans
    a. Pull the latch **(A)** and move it from right to left to unlock the fans from their slots.

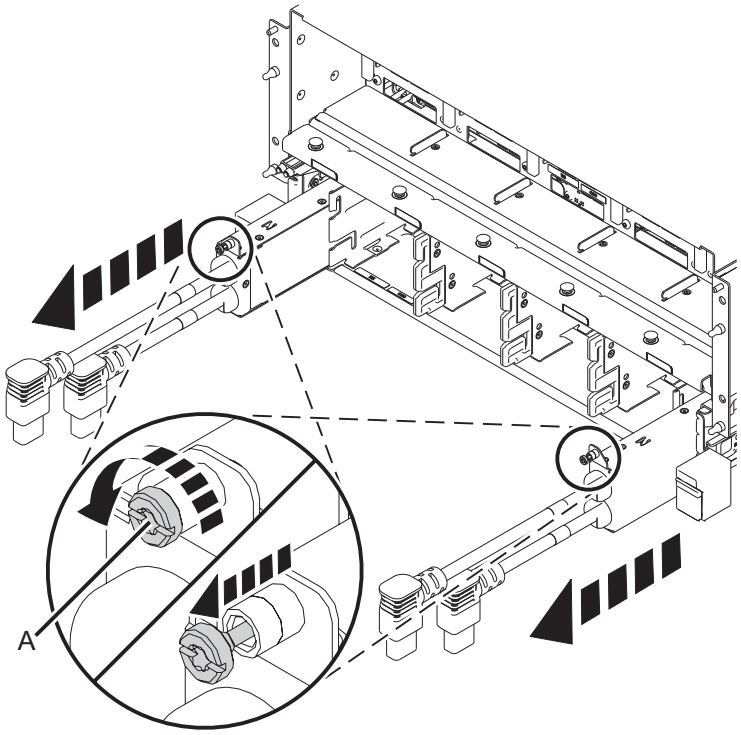
       **Note:** The latch **(A)** is held in place by tension on the catch point. You may have to press in on the lever to the left of the latch to release tension in order to unlock it.
    b. Slide the fans out of the slots.



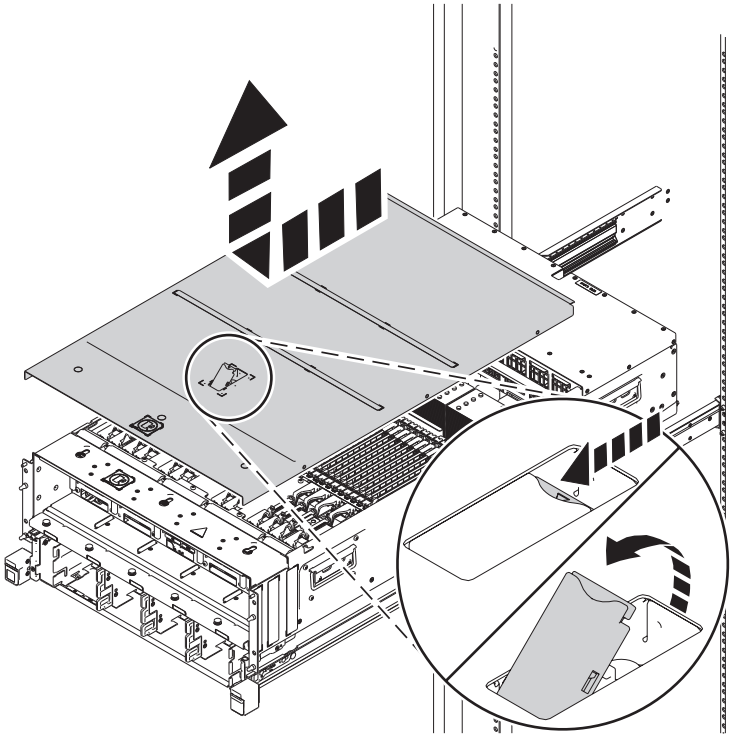

    c. The fans are not ESD-sensitive.
19. Remove all power supply units
    a. Push tab (A) down of the power supply being serviced and pull it towards the direction of the arrow shown. Keep pulling until the power supply unit slides out from the slot.



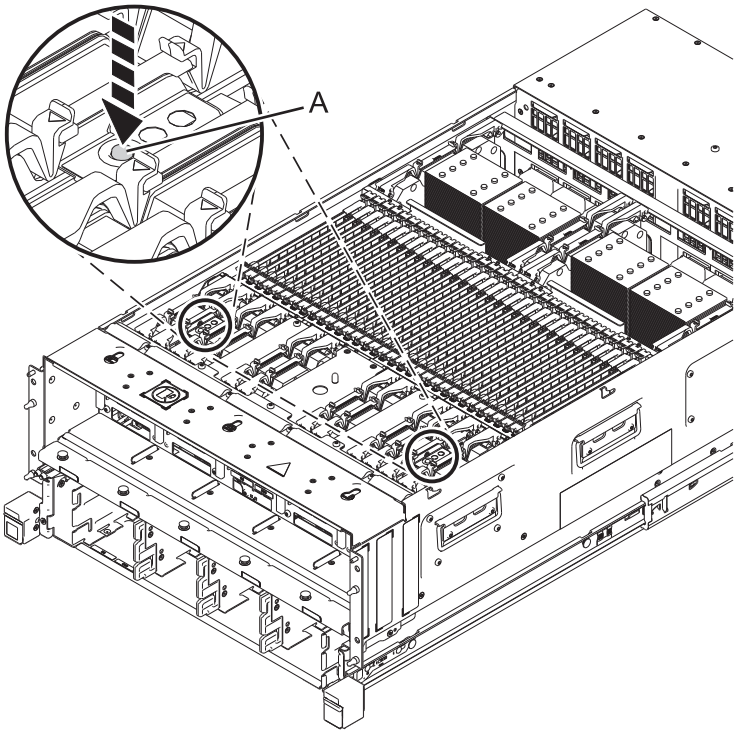

20. Remove line cord conduits
    a. Remove the screws **(A)** securing each line cord conduit to the front of the system node and pull each line cord conduit out of the system node.




    b. Place the conduits on an Electrostatic Discharge (ESD) surface.
21. Remove Access Cover
    a. Lift up on the cover latch and lift the cover off of the system control unit.



22. Push the location identification button **(A)** on either Power APSS card to identify the planar.

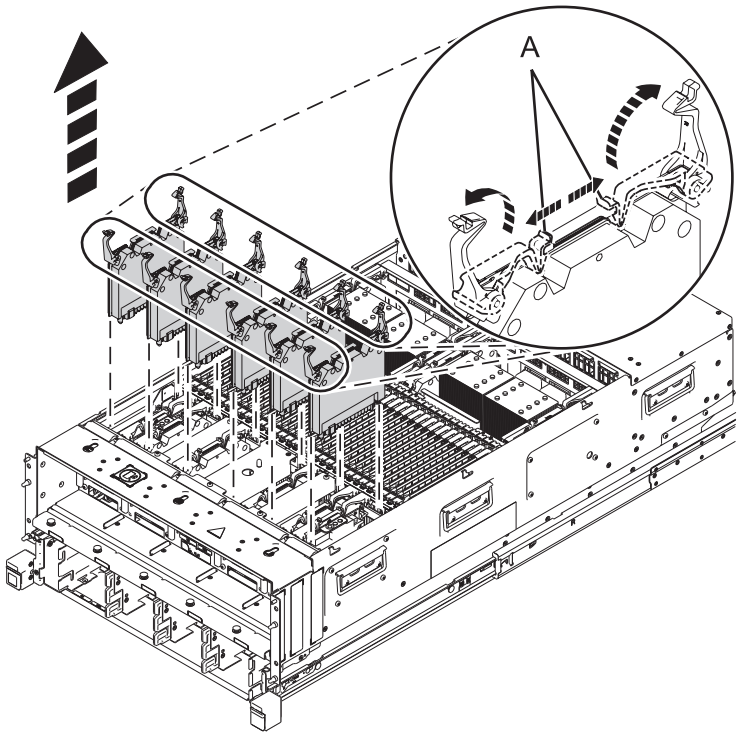



23. Remove memory, memory buffer, VPP, and miscellaneous VRMs
    a.

**Note: For image clarity, only the main memory VRMs are shown in the image. All VRMs must be removed.**
Make note of the location from which each card is removed. A specific card will only fit in a specific slot.

b. Unlock the latches **(A)** and rotate the levers in the direction shown to unlock the memory, memory buffer, VPP, and miscellaneous VRMs.

c. Holding each memory, memory buffer, VPP, and miscellaneous VRM card by the handles, pull upward, removing it from the system slot.



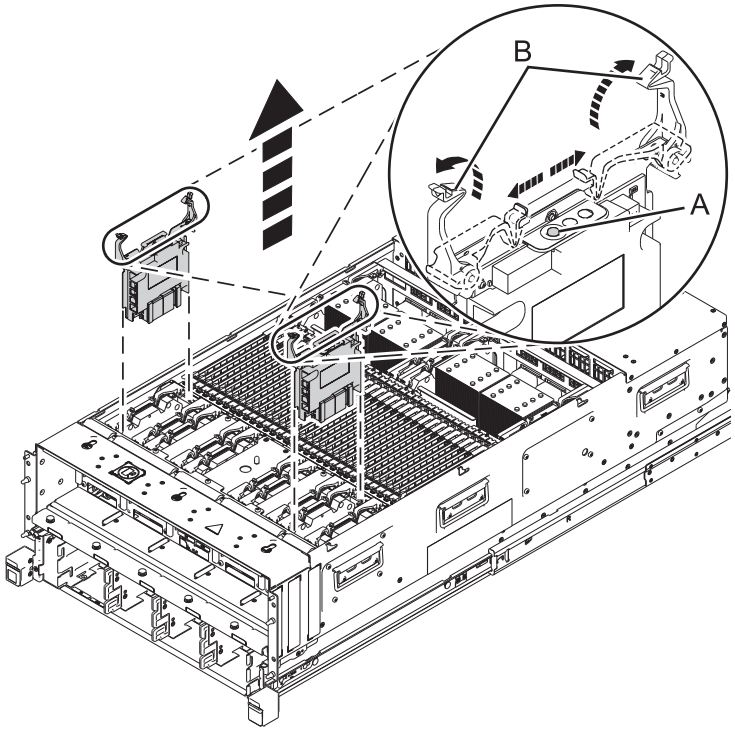

d. Place the FRUs on an Electrostatic Discharge (ESD) surface or in the service tray (P/N 00RR393) if one was shipped with the system planar.

24. Remove all Power APSS cards

a. Be careful not to damage the identification LED activation button **(A)** during the next step.

b. Unlock the latches **(B)** and rotate the levers in the direction shown to unlock the Power APSS cards.

c. Holding the Power APSS cards by the handles, pull upward, removing them from the system slot.



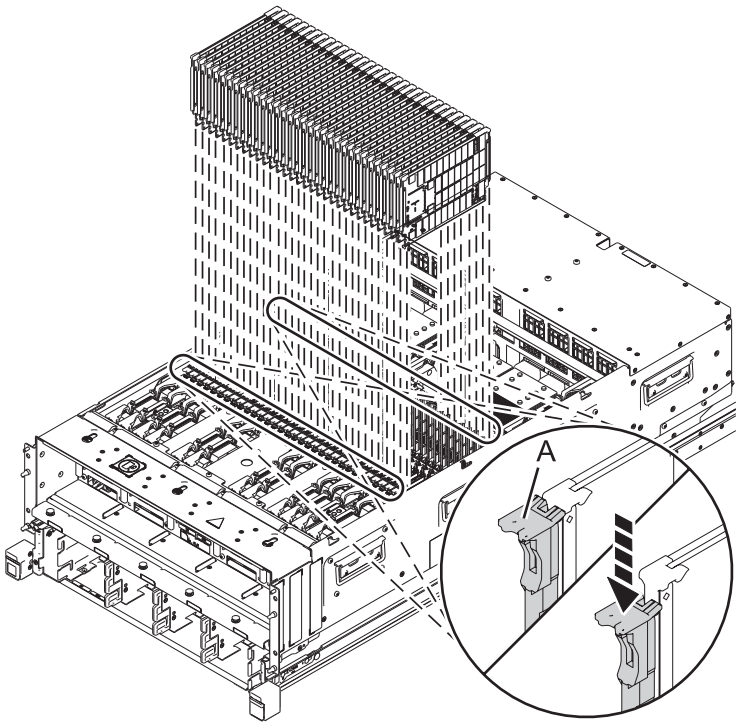

d. Place the FRUs on an Electrostatic Discharge (ESD) surface or in the service tray if one was shipped with the system planar.

25. Remove all memory DIMMs

a. **NOTE: It is important to use the same slot plug order when installing the CDIMMs into the new planar. Make note of which slots currently hold CDIMMs and which slots currently hold filler cards.**

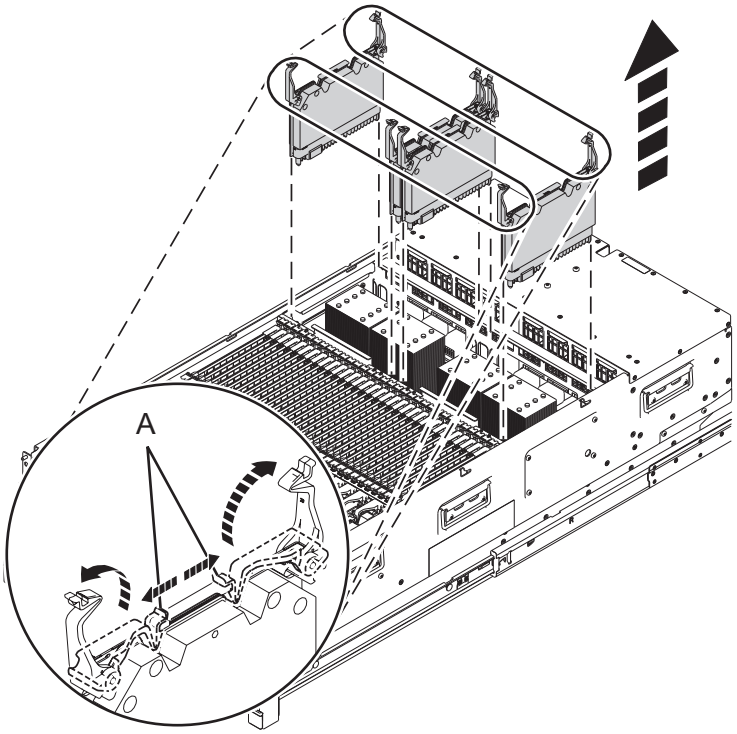
b. Remove each CDIMM by pushing the tabs **(A)** down. The lever action of the tabs forces the CDIMM out of the connector.

c. Grasp the top plastic portion and remove each CDIMM from the slot.




d. Place the FRUs on an Electrostatic Discharge (ESD) surface or in the service tray if one was shipped with the system planar.

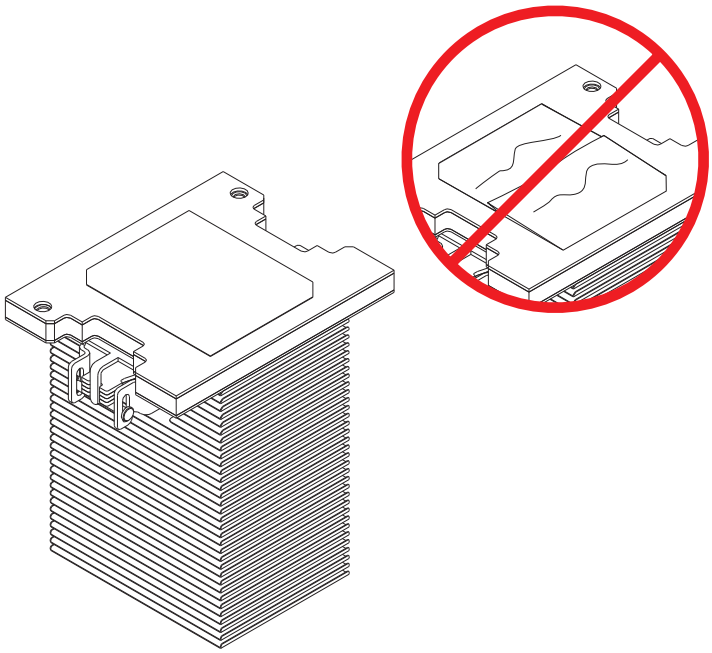
26. Remove all CPU VRMs
    a. Make note of the location from which each card is removed. Each card should be installed into the same slot in the new planar.
    b. Unlock the latches **(A)** and rotate the levers in the direction shown to unlock the CPU VRM.
    c. Holding the CPU VRM by the handles, pull upward, removing it from the system slot.




d. Place the FRUs on an Electrostatic Discharge (ESD) surface or in the service tray if one was shipped with the system planar.

27. Remove all SCMs
    a. Perform these steps in sequence for each SCM.
    b. **DO NOT LEAVE ANY SOCKET EXPOSED AFTER REMOVING AN SCM.**
    c. Inspect the Thermal Interface Material (TIM)
        1) Inspect the TIM on the heat sink for visible signs of damage. It must be flat and centered on the heat sink **WITH NO FOLDS**. Small wrinkles are acceptable.
        2) If the TIM is not flat, is not centered, or has folds in it, it is considered damaged.

        **Note:** If the TIM is Indium or Hitachi, it is fixed to the heat sink. In this case, if the TIM is damaged, the entire heat sink module of the system processor module must be replaced. If the TIM is Dexerials, it is not fixed to the heat sink. In this case, the heat sink can be used regardless of the state of the TIM. In case of a Dexerials TIM, discard it if it's damaged, otherwise, move it with tweezers to the Electrostatic Discharge (ESD) surface. Make sure that the surface is clean.

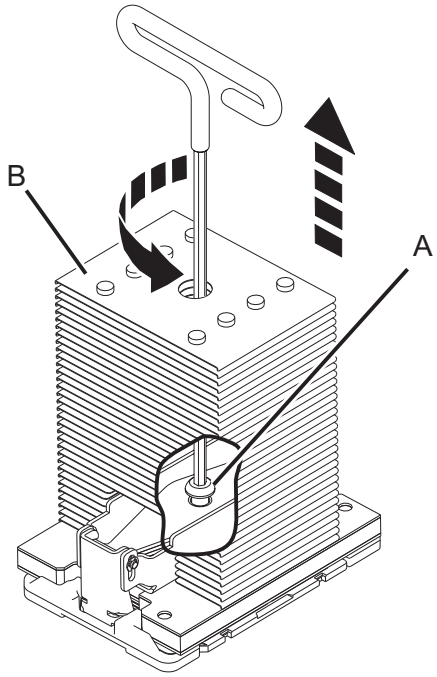


d. Remove the Heat Sink from each SCM

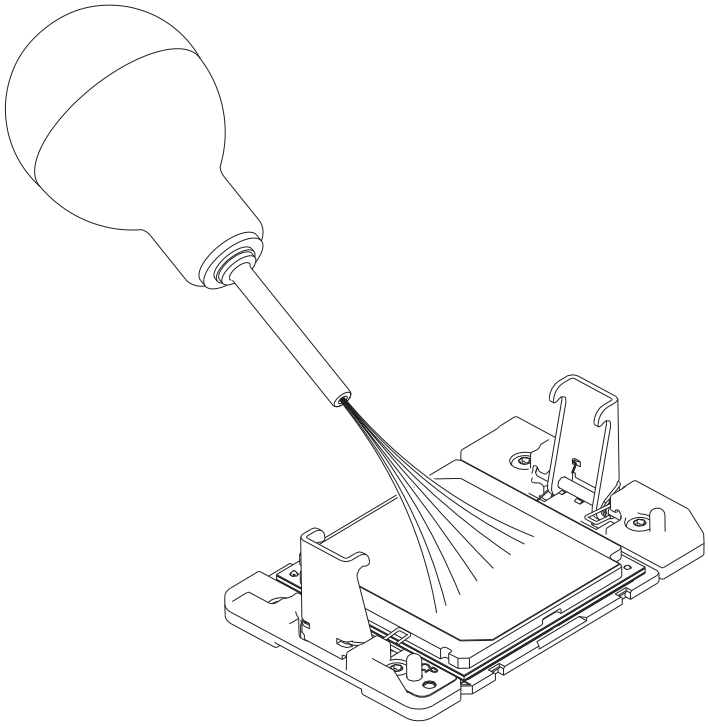
**Note:** The heat sink **MAY BE HOT**.

1) Loosen the heat sink actuation screw by turning the supplied nut driver counterclockwise **(A)** until the screw becomes loose and moves freely.
2) Grip the heat sink **(B)** by the grooves on opposing sides and remove it by lifting straight up.
3) Place the heat sink **upside down** on an ESD mat or another surface.

**Note:** If any dust/debris is to be removed from heat sink, it must be done in another room or greater than 25 feet (7.62 meters) away from work area.

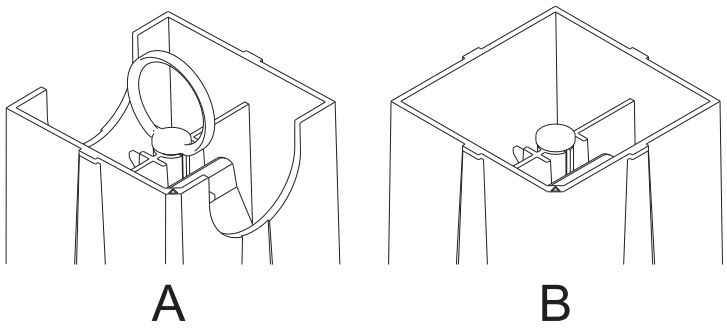



e. If dust or debris is present, use an air bulb to clean by blowing small bursts of air from the center toward the sides of the SCM.



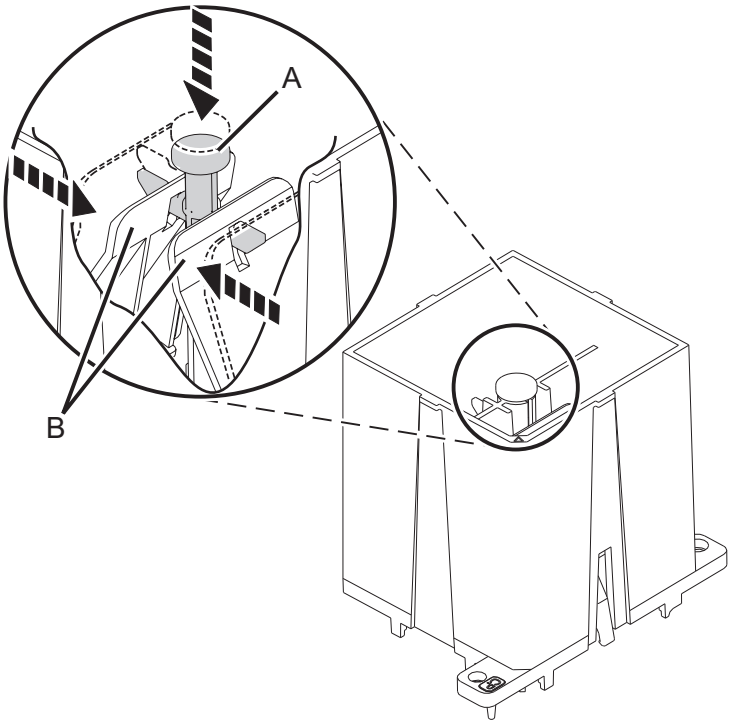
f. Prepare SCM tool

**Note:** SCM tool **(A)** (P/N 01AF095) or **(B)** (P/N 00E8472) may be used to handle the SCM.

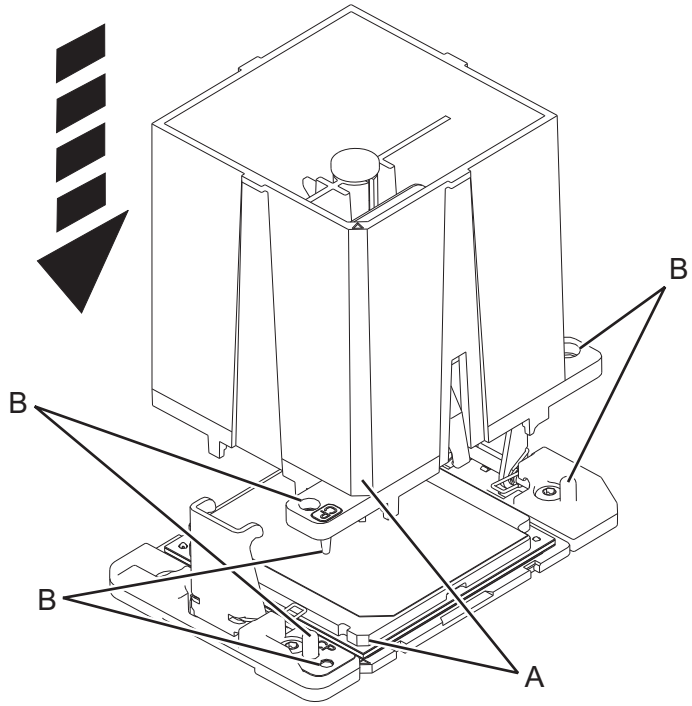



1) Press down on the center button of the SCM tool. **(A)**.
2) While pressing the button **(A)**, squeeze the tabs **(B)** together.
3) Release the center button **(A)** while still holding the tabs **(B)** so that the tabs **(B)** are held in the locked position.

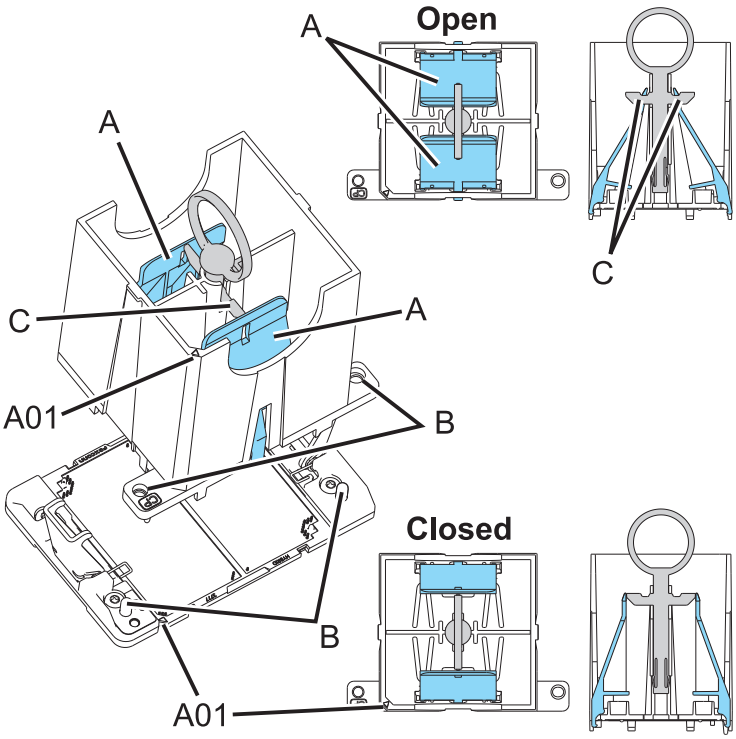
   **Note:** This will place the jaws at the bottom of the tool in the open position.



28. Remove the SCM
    a. Using the removal tool, align the beveled corner **(A)** of the tool over the beveled corner of the module.




    b. Ensure that the CP SCM tool latches **(A)** are open.




    c. Place the CP SCM tool over the module while ensuring that the CP SCM tool dowel holes align with the dowel pins on the LGA load frame **(B)**. Also, make sure the **(A01)** corner of the CP SCM tool lines up with the **(A01)** label on the load frame.

d. While holding the CP SCM tool down, carefully close the latch by pressing the center pushbutton down. After the center pushbutton has been pressed, ensure that the two wings **(C)** are released from the latches **(A)** and that the wings are at about the same level as latches.

e. Lightly push down on the CP SCM tool and CP SCM module.

f. Slowly lift the CP SCM tool and CP SCM module straight up and out of the drawer by holding on to the ring if the SCM tool has a ring, otherwise grasp the sides of the tool.

g. Place the CP SCM module on the processor packaging tray (P/N 00E8478) and release the module by pushing the pushbutton down with one hand.

h. Squeeze the two latches **(A)** with the other hand and ensure the wings **(C)** on the pushbutton get into the slots of the latches securely.

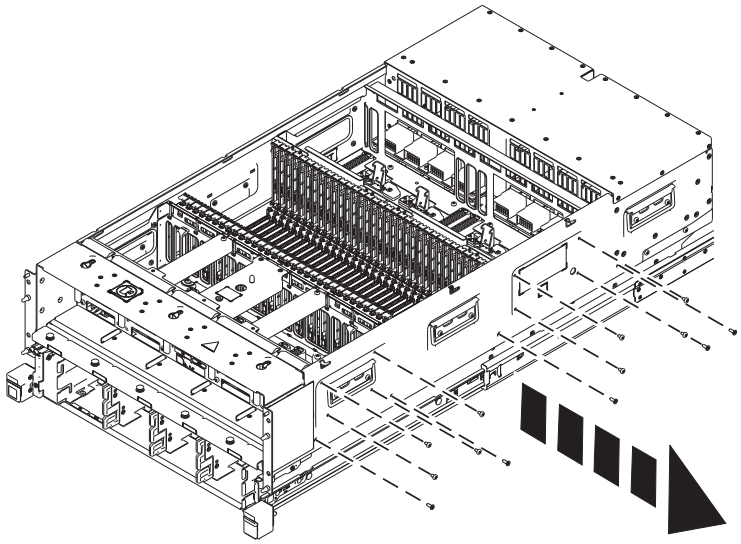
i. Lift the CP SCM tool straight up.

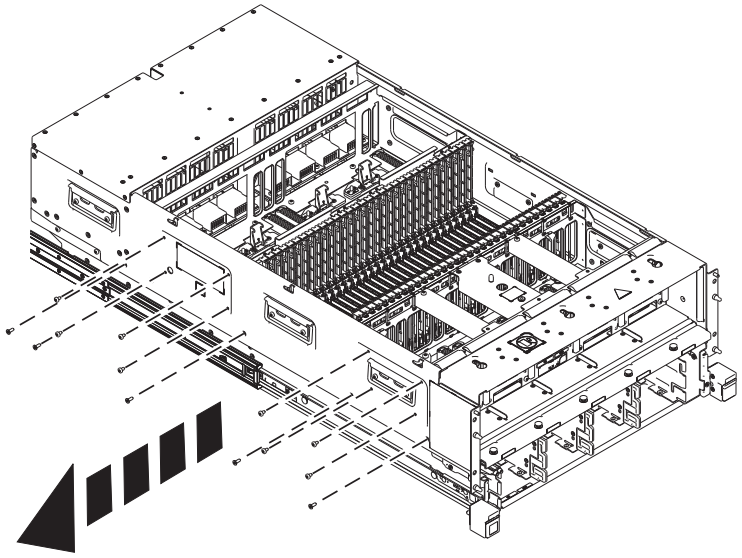
j. Place the processor packaging tray holding the SCM into the appropriate spot on the service tray, if one is available. If the service tray is not available, place the processor packaging tray holding the SCM on the ESD mat.

29. Remove planar

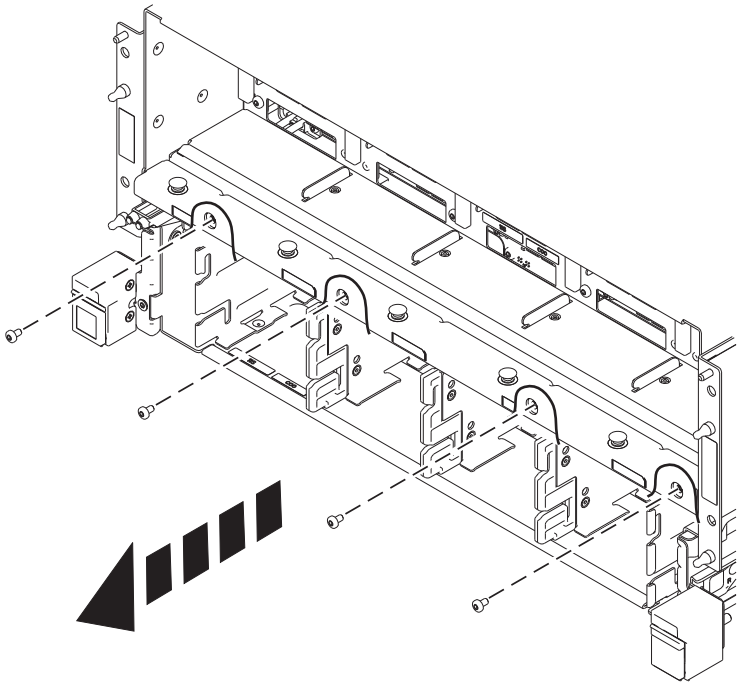
a. An IBM approved lift tool may be used when removing the planar from the rails.

b. Remove 13 screws from each side of the chassis using a T10 torx driver.

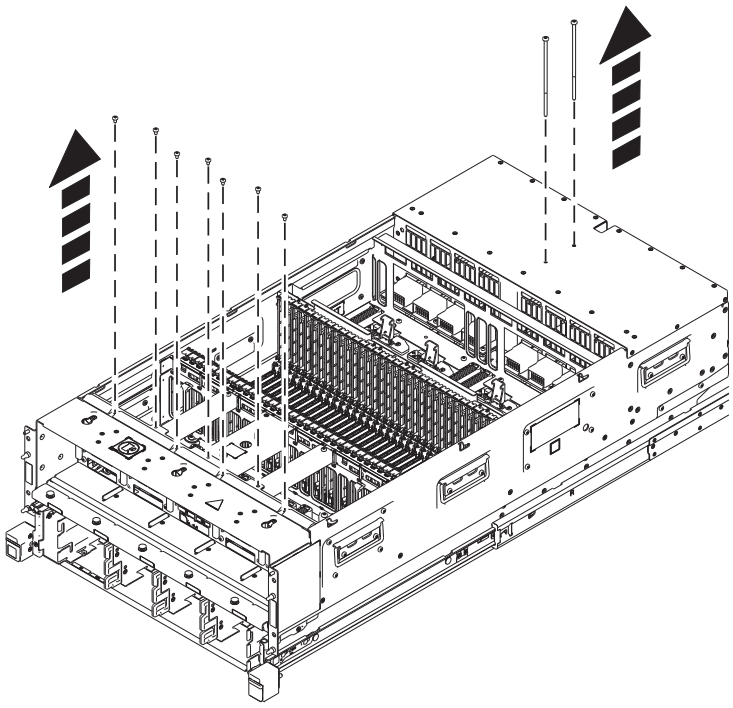




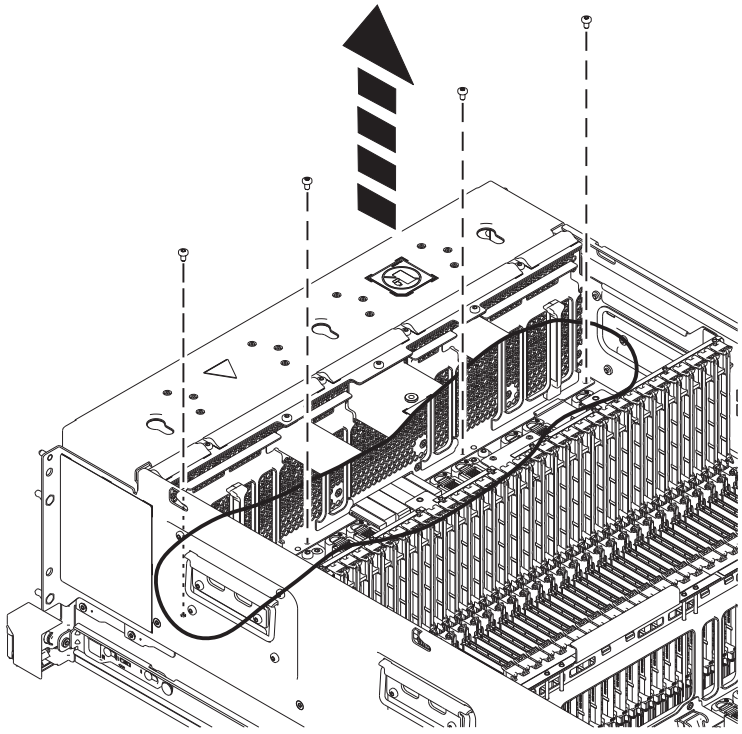
c. Remove the 4 front screws by the fan slots using a T10 torx driver.



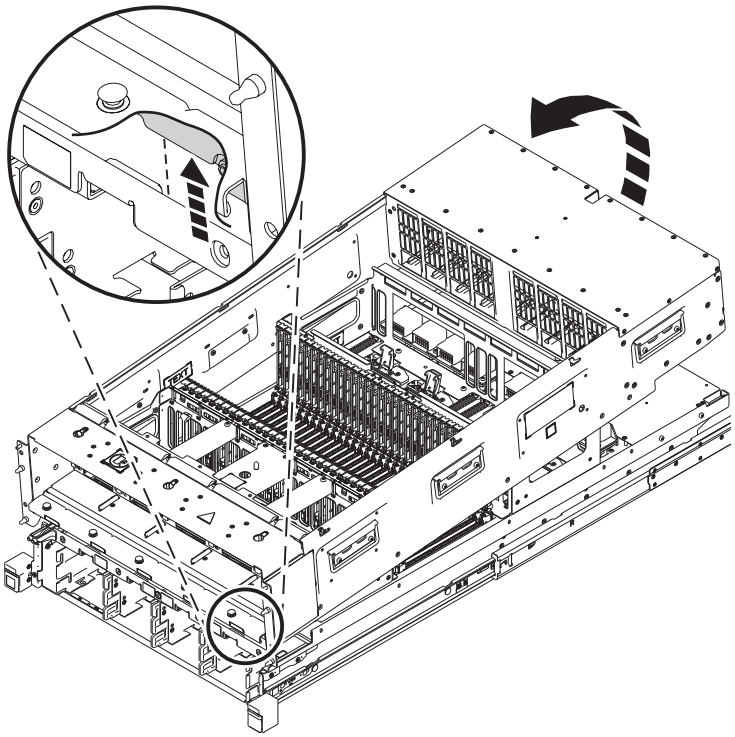
d. Remove 9 screws from the top chassis. The front 7 are T10 torx. The back two are T15 torx.



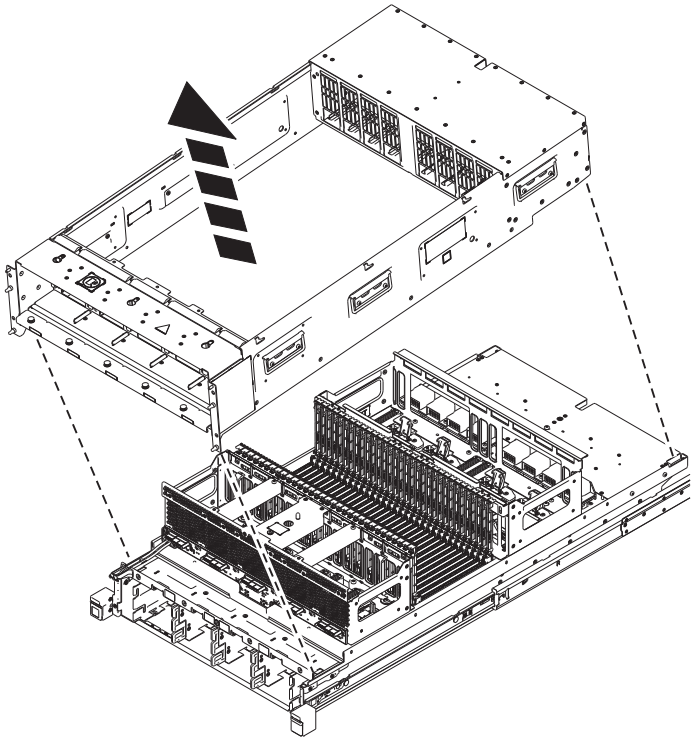
e. Remove the 4 inner chassis screws using a T10 torx driver.



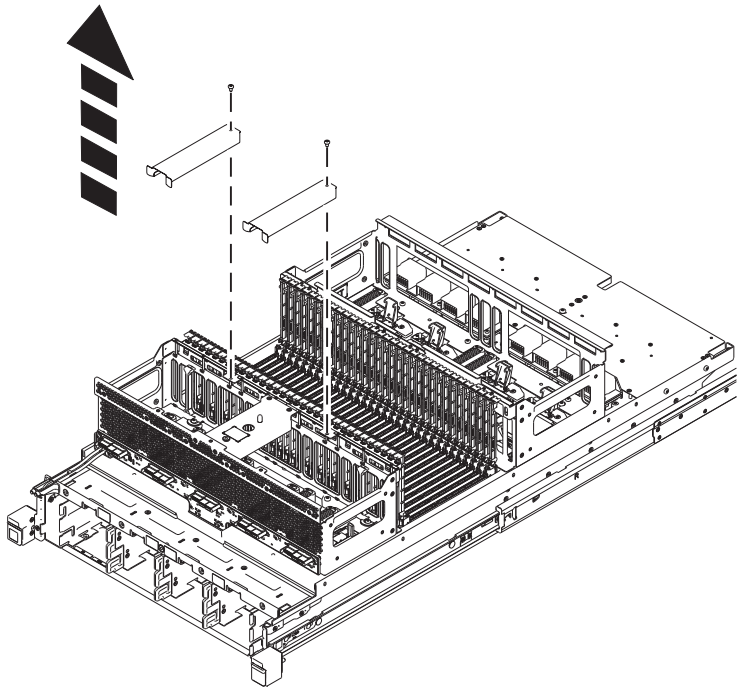
f. Lift the back of the cage until the angle is sufficient to enable sliding the lip at the front of the cage off the ridge on the planar.



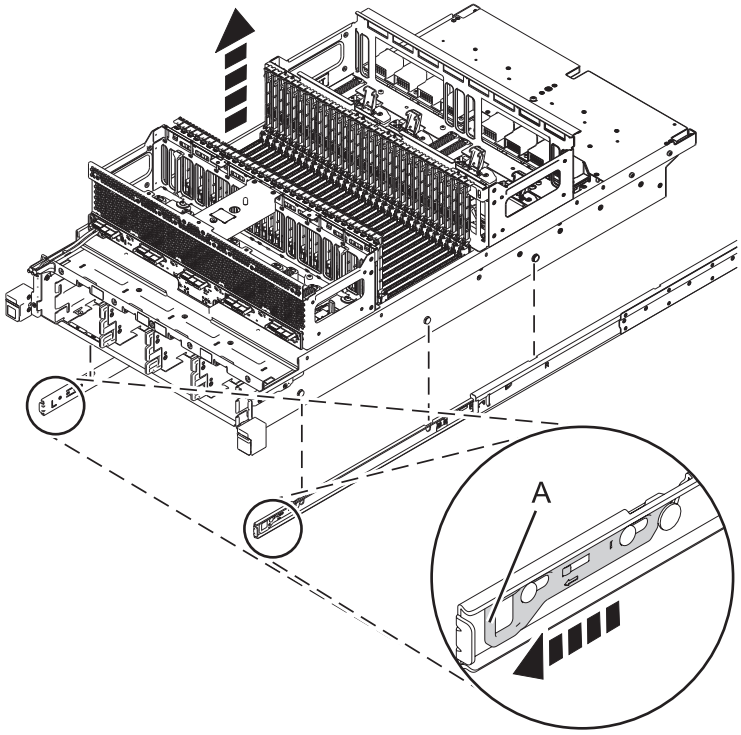
g. Carefully remove the cage from the node, and set it aside.



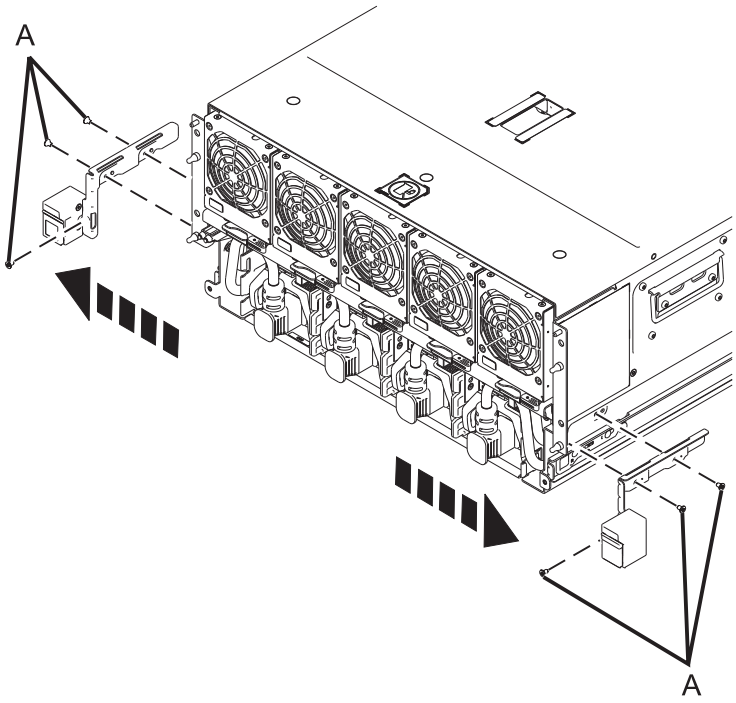
h. Remove the cross bars.



i. **If the planar has not already been removed from the rails,** pull the release latch **(A)** on each rail and carefully lift the planar off of the rails.




30. Remove slam latch bracket assemblies
    a. Remove both slam latch bracket assemblies by removing the flat head screws **(A)**, (T15 Torx Drive) from each assembly as shown.




If performing this procedure from a management console, close this web page to continue with the procedure.

# Install Planar

To install a planar, complete the following steps:

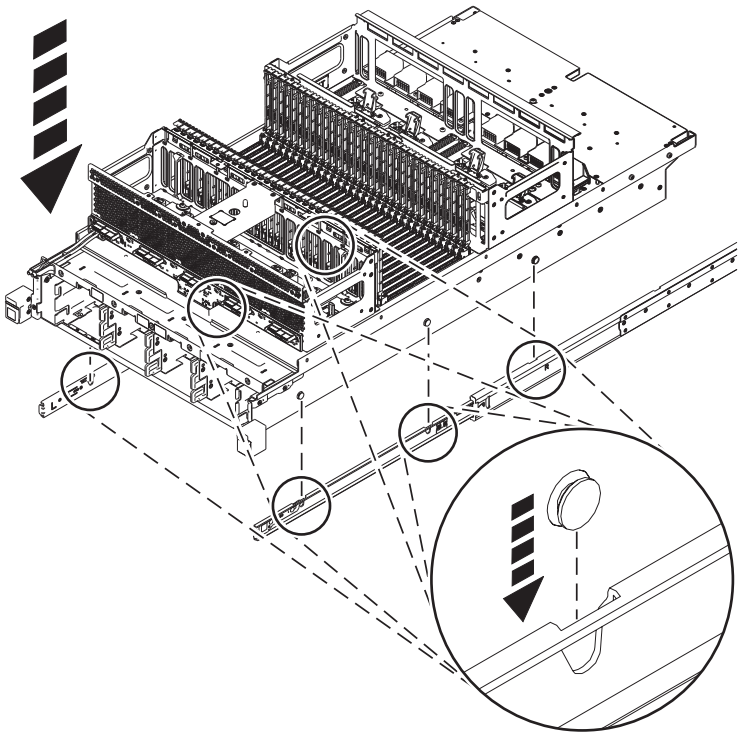
1. **When the node being serviced is above EIA location 29U, the ladders must be used while installing or removing the rear and front cables.**
2. **Perform the following procedure on ONLY THE FRU(s) BEING SERVICED. The following images are generic and do not represent the literal location being serviced.**
3. **Modifying FRU locations which are not called out for service can have adverse effects on the system, INCLUDING SYSTEM OUTAGE AND LOSS OF DATA.**
4. The torque tool **(P/N 41V1059)** is required for this procedure. The torque tool was initially shipped with the system.
5. **CAUTION: If the system slide rails are installed above EIA location 29U, two Support Services Representatives (SSRs) must perform the procedure together and the following equipment must be used as a safety precaution for servicing: ServerLIFT tool (P/N 74Y4399), two hard hats (P/N 5442867) and two service-qualified ladders (P/N 46G5947 and P/N 00E4866)**

1. Install planar.

   **Note:** All the pictures in the procedure from this step onward show the node on slide rails. This should be ignored if system has been removed from the rails and is positioned on the lift tool.

   a. An IBM approved lift tool may be used when installing the planar on the rails.

   b. **If the system side rails are installed at or below EIA 29U and a lift tool is not being used for the service**, align the 3 pins on each side of the planar with the slots on the rails. Lower the planar onto the rails and ensure the retention pins drop flush into the receivers on the rail. It may be necessary to hold the rail tight against the planar as it slides in, so that the pins seat flush with the rail slots.



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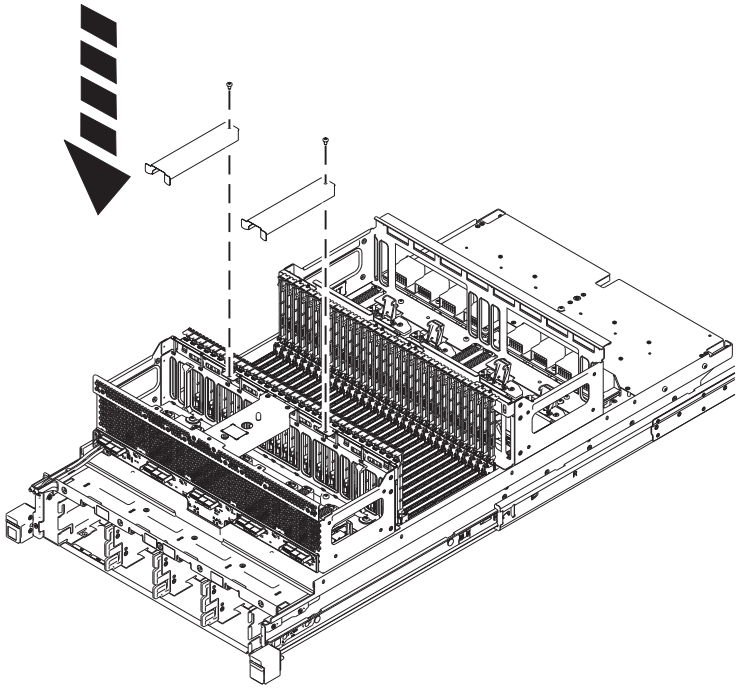
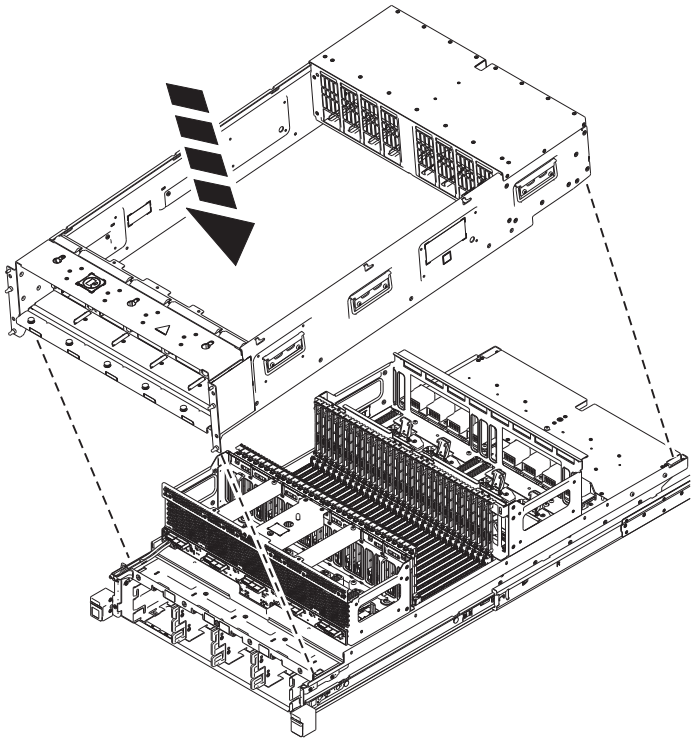
**Note:** If the system slide rails are installed above EIA 29U, the following steps will all be performed on the lift tool.

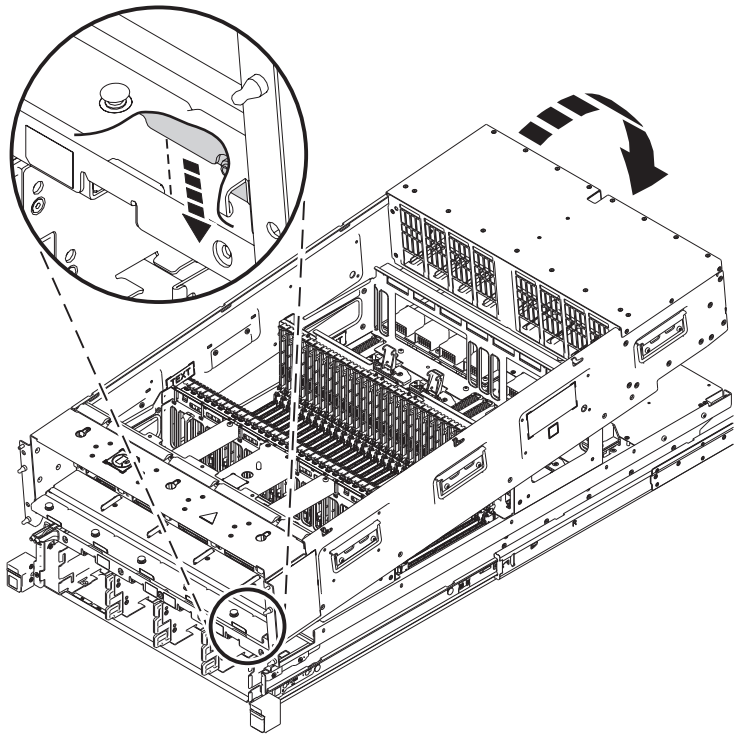
c. Install the cross braces.



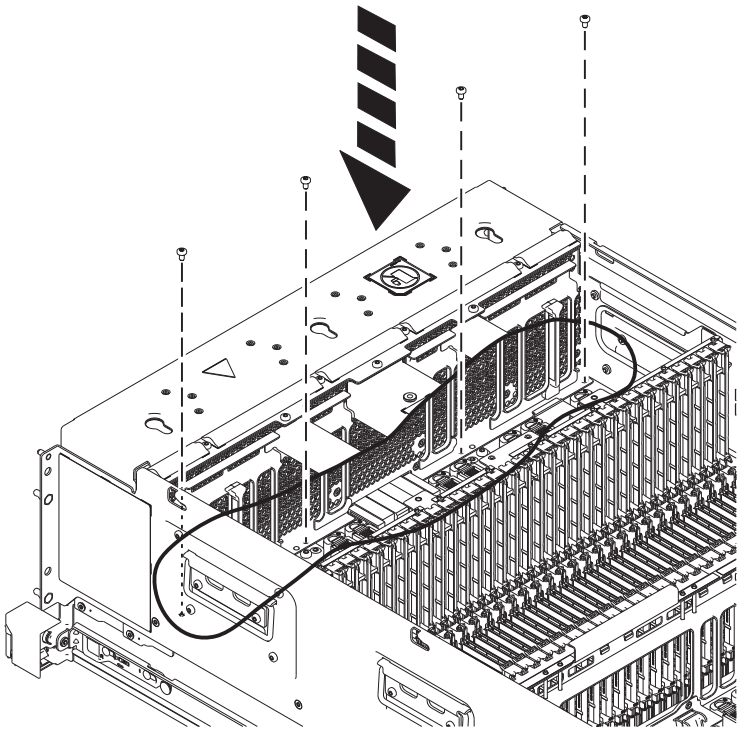
d. While holding the cage at an angle such that the front of the chassis is lower than the back, hook the lip on the front of the chassis over the ridge on the planar.



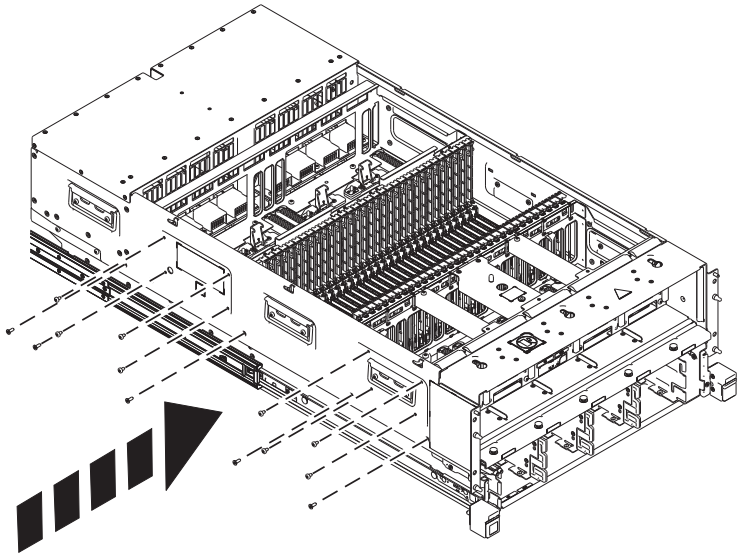
e. Lower the back of the cage onto the planar, and align the screw holes.

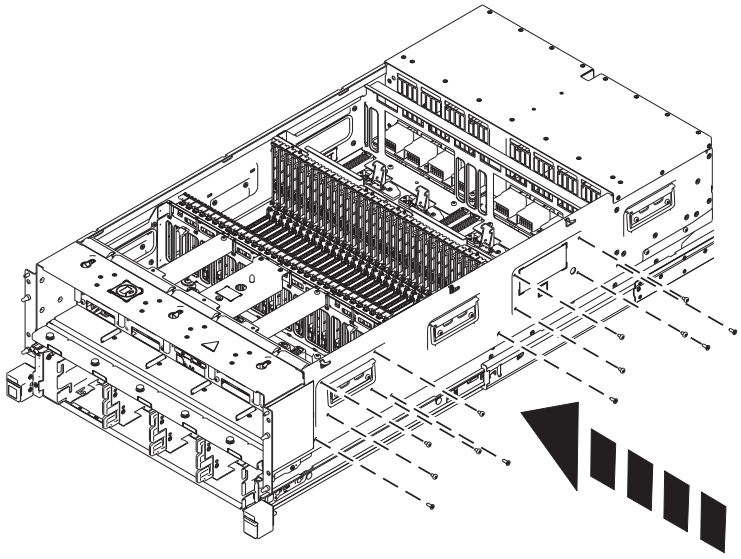


f. Install the 4 inner chassis screws using a T10 torx driver.

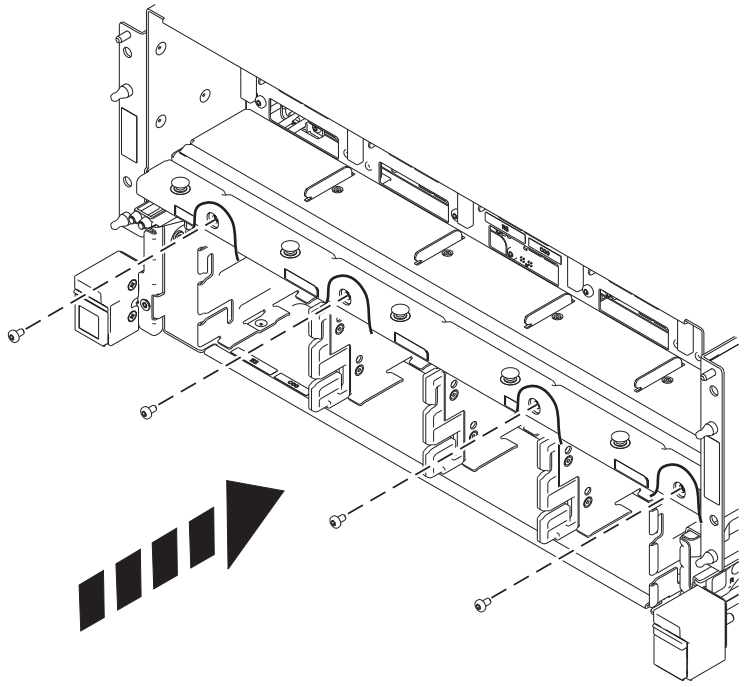


g. Install the 13 screws into each side of the chassis using a T10 torx driver.

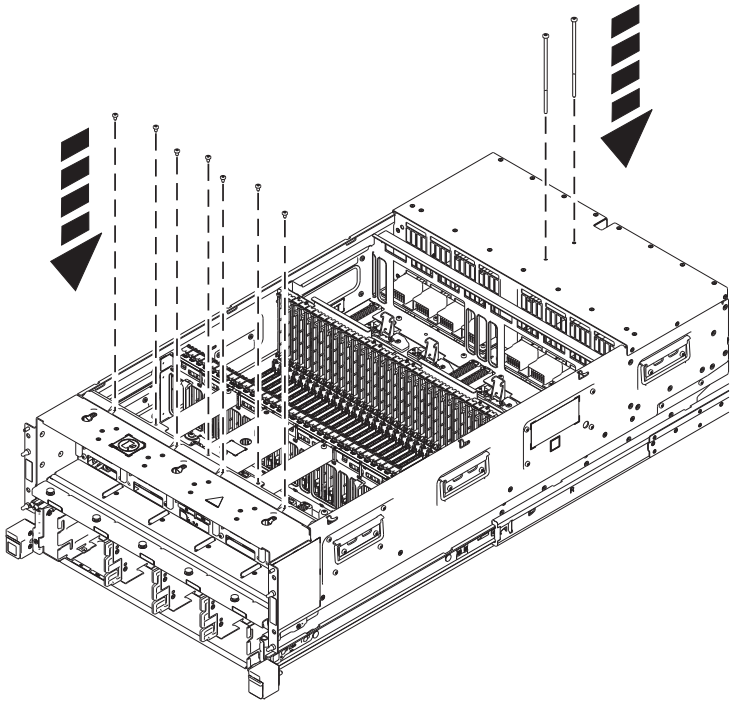




h. Install the 4 front screws by the fan slots using a T10 torx driver.

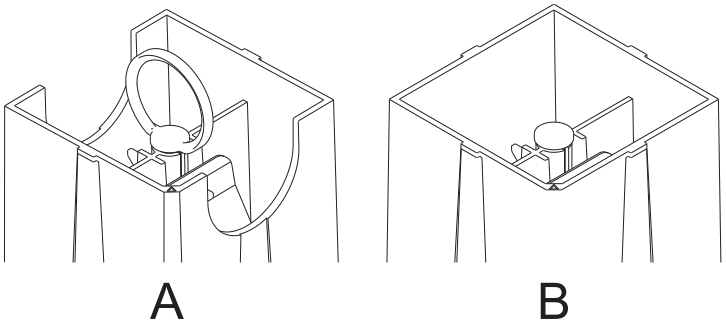


i. Install the 9 top screws into the chassis. The front 7 are T10 torx. The back two are T15 torx.



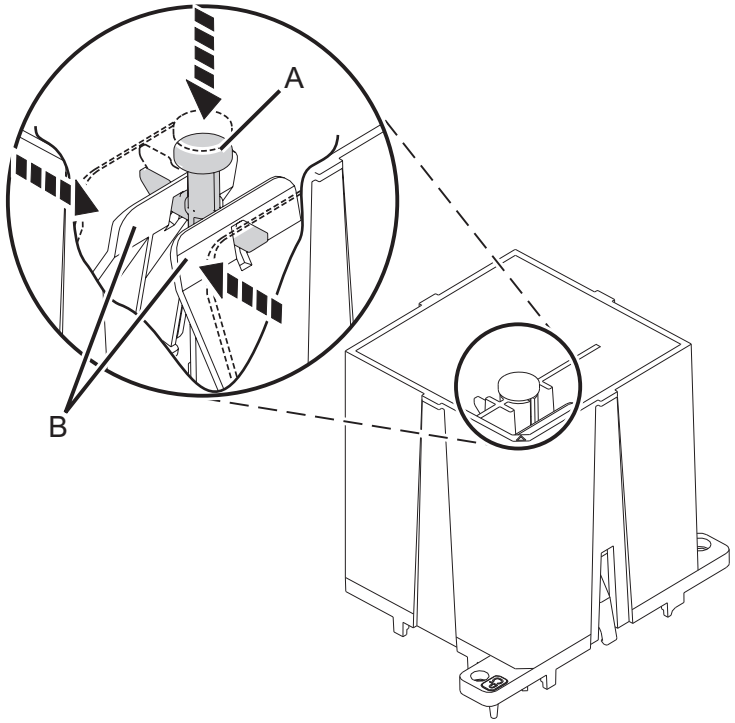
2. Install SCMs
   a. Prepare SCM tool

      **Note:** SCM tool **(A)** (P/N 01AF095) or **(B)** (P/N 00E8472) may be used to handle the SCM.




1) Press down on the center button **(A)**.
2) While pressing the button **(A)**, squeeze the tabs **(B)** together.
3) Release the center button **(A)** while still holding the tabs **(B)** so that the tabs **(B)** are held in the locked position.

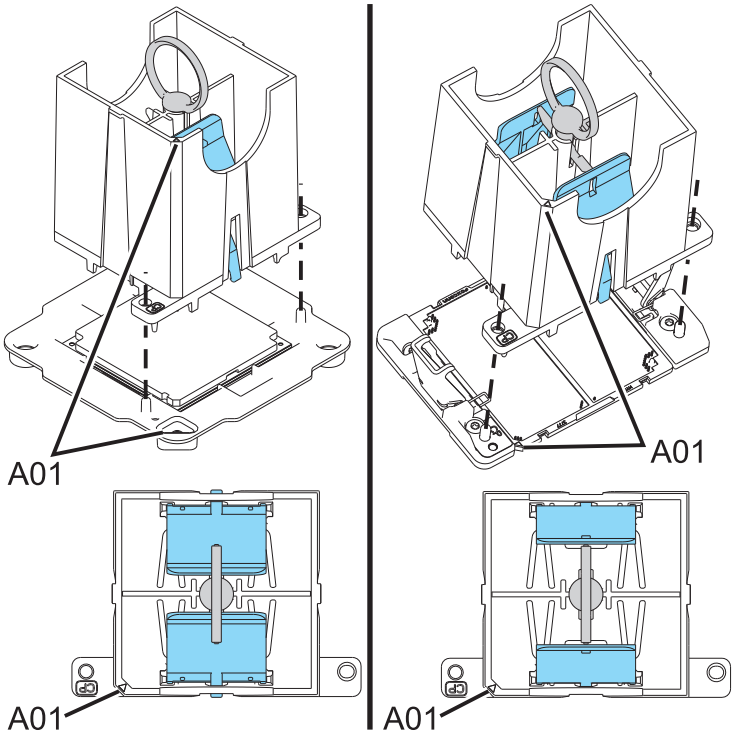
**Note:** This will place the jaws at the bottom of the tool in the open position.



3. Install the SCM

**Note:** Use the following procedure for SCM tool **(A)** or **(B)** to remove the SCM from the processor packaging tray (P/N 00E8478).

a. **Caution:** Do not tilt the module install tool while searching for the locating pins. Sockets damage may happen if the module is forced down on socket at an angle.




b. Inspect the LGA socket for bent or broken pins or debris, using the magnifying glass (P/N 11P4747) as needed.

c. Remove any debris from the LGA socket using the air pump (P/N 45D2645). Do not blow on the LGA site with your mouth.

d. Ensure the **(A01)** corner of the CP SCM module lines up with the triangle of the processor packaging tray.

e. Ensure that the CP SCM module insertion tool latches are open.

f. Place the CP SCM insertion tool over the module while ensuring that the **(A01)** corner is aligned with the **(A01)** label on the load frame, carefully close the latch by pressing the center pushbutton down and release the two latches. Make sure the two "wings" on the pushbutton are at about the same level as the latches.

g. Lightly push down on the CP SCM insertion tool to allow the latches to close.

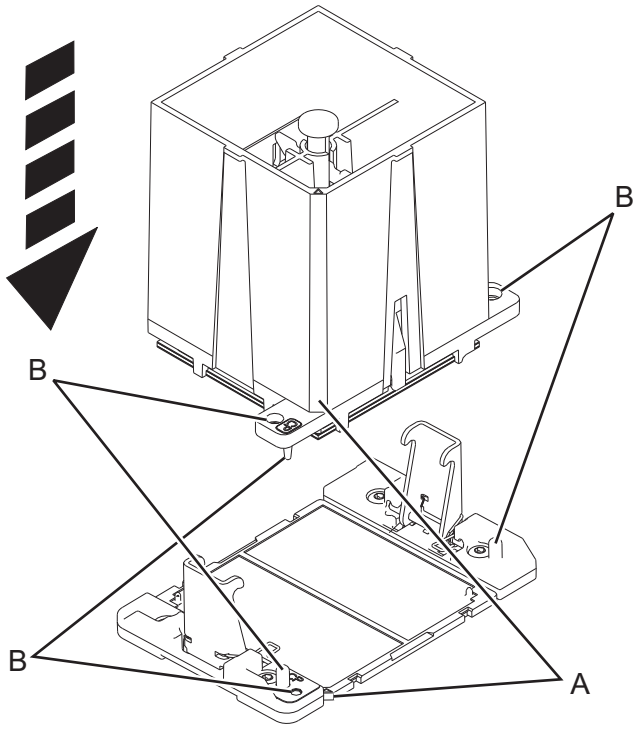
h. Slowly lift the CP SCM insertion tool and CP SCM module straight up and out of the processor packaging tray by holding on to the ring if the SCM tool has a ring, otherwise grasp the sides of the tool.

i. Turn the SCM tool over to ensure that the jaws are firmly grasping the SCM.

**Note:** If one of the jaws is not firmly grasping the SCM, press down on the corner of the SCM closest to the jaw until it locks into place. Do not touch any part of the SCM other than the corners.

j. Lower the tool and SCM onto the socket, ensuring the guide pins **(B)** are inserted into the alignment holes.

**Note: DO NOT attempt to slide the tool and the SCM in any direction while the SCM is touching the socket.** If the tool/SCM is not aligned with the guide pins **(B)**, lift the tool/SCM and reposition them.




k. Release the SCM

**Note:** To prevent the SCM from falling, do not squeeze the two tabs **(B)** before you place the tool on the socket.

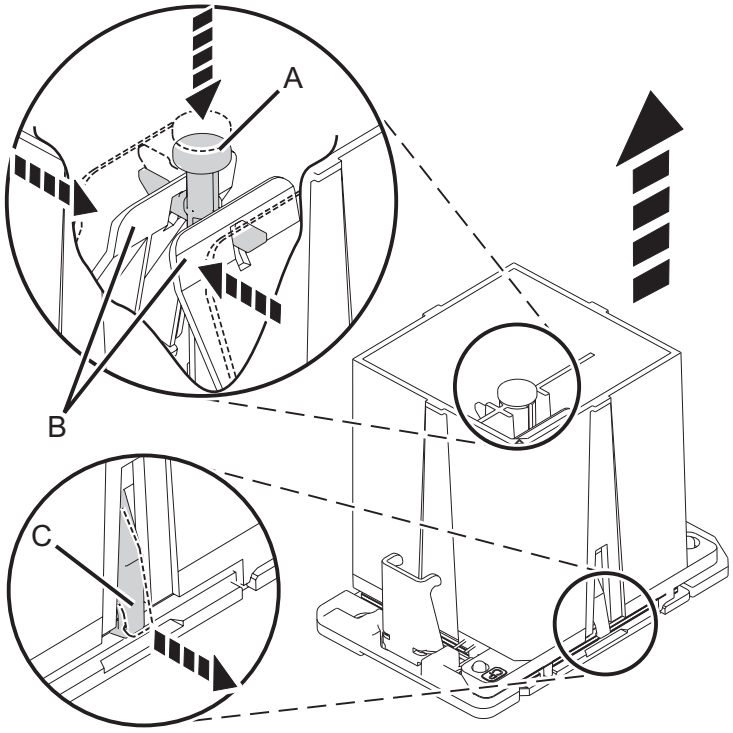
l. With the SCM and tool on the SCM socket, press down on the center button **(A)**.

m. While pressing the button **(A)**, squeeze the tabs **(B)** together.

n. Release the center button **(A)** while still holding the tabs **(B)** so that the tabs **(B)** are held in the locked position.

**Note:** This will place the jaws **(C)** at the bottom of the tool in the open position, disengaging the SCM from the tool.

o. Lift the SCM tool out of the system.

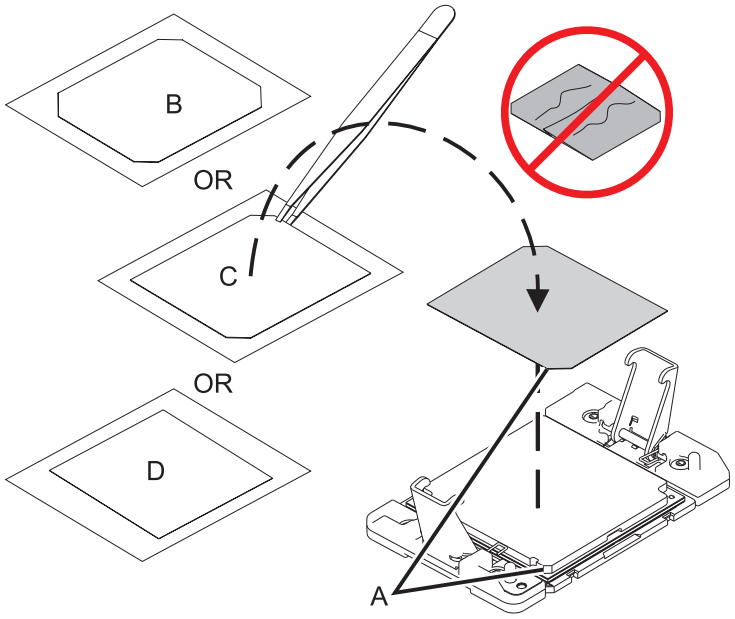



4. If reusing original Dexerials TIM, perform the following step
   a. Using tweezers, move the TIM from the ESD surface to the new system processor module.
5. If installing new Indium, Hitachi or Dexerials TIM, perform the following steps

   **Note:** There could be three types of TIM pads in the FRU replacement kit - Indium TIM pad (part no. 00FW781) **(B)** , Hitachi TIM pad (part no. 00E7418) **(C)**, Dexerials TIM pad (part no. 01AF742) **(D)**.

   a. **ONLY IF NEEDED**, install the new TIM
      1) If the TIM or heat sink replacement is necessary, use P/N 01AF159 Heat sink and TIM.
      2) Open the TIM packaging and carefully remove the TIM, holding by the edges of the carrier strip and holding it away from the shipping container.
      3) 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.
      4) Using the tweezers, remove the TIM from the carrier strip. In the case of a Hitachi TIM pad **(C)**, center it onto the SCM with the black side up. In the case of an Indium TIM pad **(B)**, center it on the SCM with the red stripe facing up. The gray colored Dexerials TIM **(D)** can be placed with any side facing up. Align the beveled corners and the SCM **(A)**.

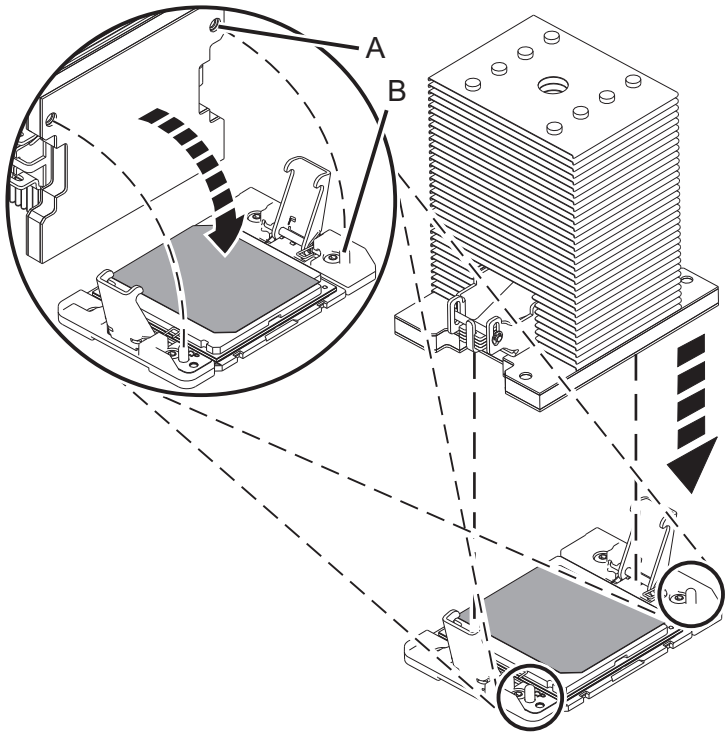



b. Install the Heat Sink

1) Carefully lower the heat sink over the SCM, ensuring that the two guide pins **(B)** are inserted into the alignment holes **(A)** on each side of the heat sink.

2) Ensure that the heat sink load arms are engaged.

**Note:** If the load arm is not engaged, you must manually engage the load arm onto the heat sink while the load screw is being tightened.



c. Secure the Heat Sink

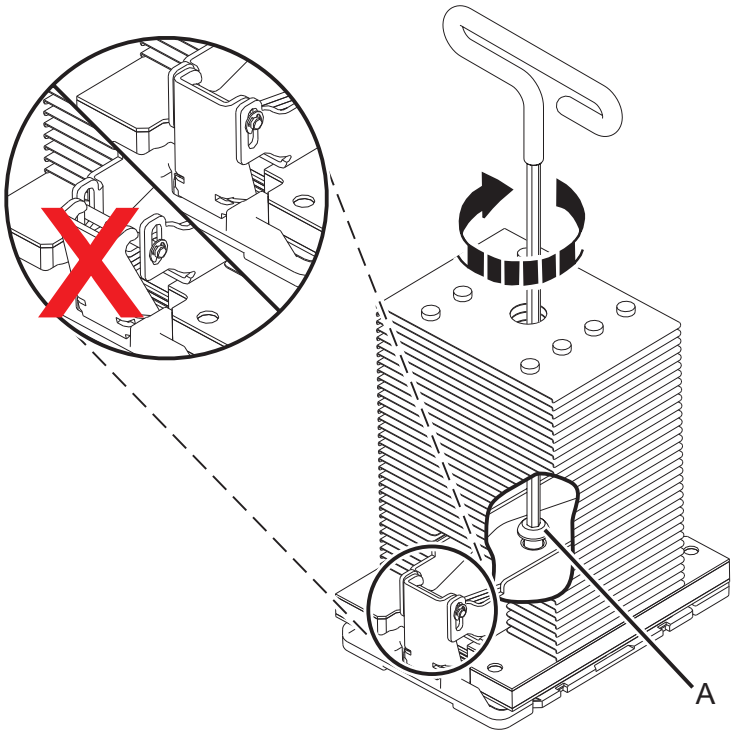
1) Upon placing the heat sink on the SCM, ensure that the heat sink load arms on both sides of the heat sink become engaged.

2) While holding the heat sink in place, use the supplied nut driver to tighten the heat sink actuation screw **(A)**. Turn the screw clockwise to tighten and secure the heat sink.

**Note:** If during this step, the heat sink moves noticeably to one side, it is likely that a load arm is not engaged. If this happens:

a) Loosen the actuation screw.

b) Hold the load arm onto the heat sink while tightening the screw until a firm stop is reached.



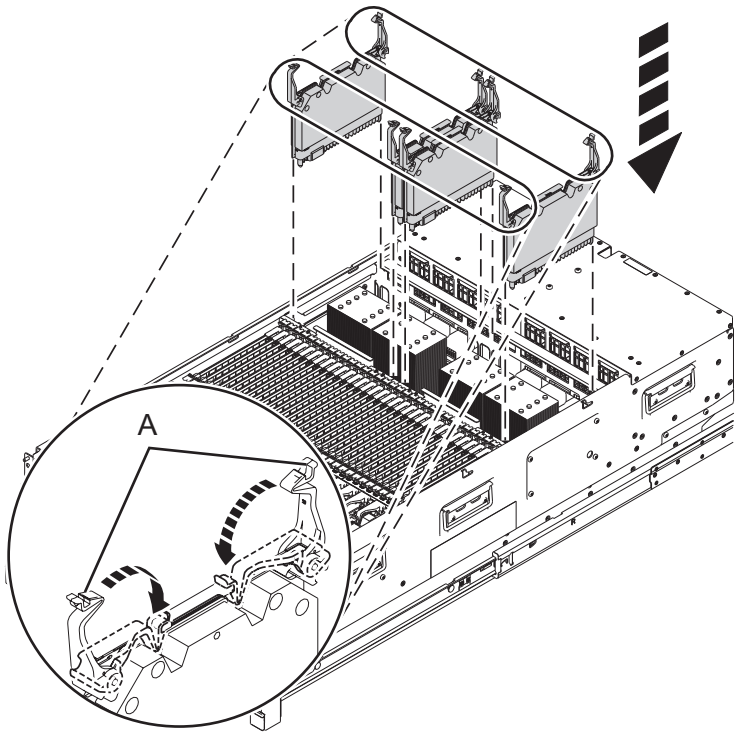

6. Install CPU VRMs

a. Install the CPU VRM cards into the same location from which they were removed.

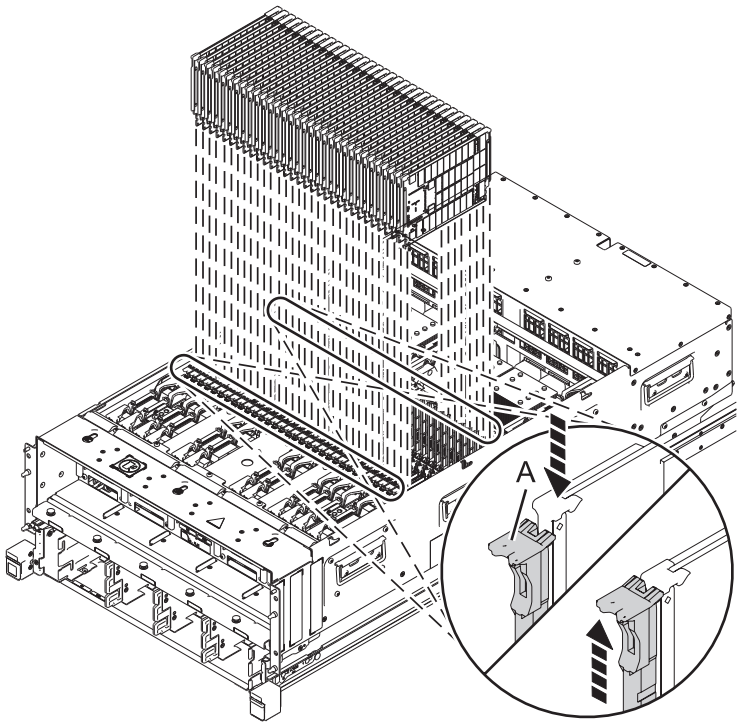
b. With the levers **(A)** in the open position, hold the CPU VRMs by the handles and lower them into the system slot toward the connector.

c. Rotate the levers in the direction shown to push the CPU VRMs into its connector.

d. Press down on the levers to lock the levers and the CPU VRMs in place.

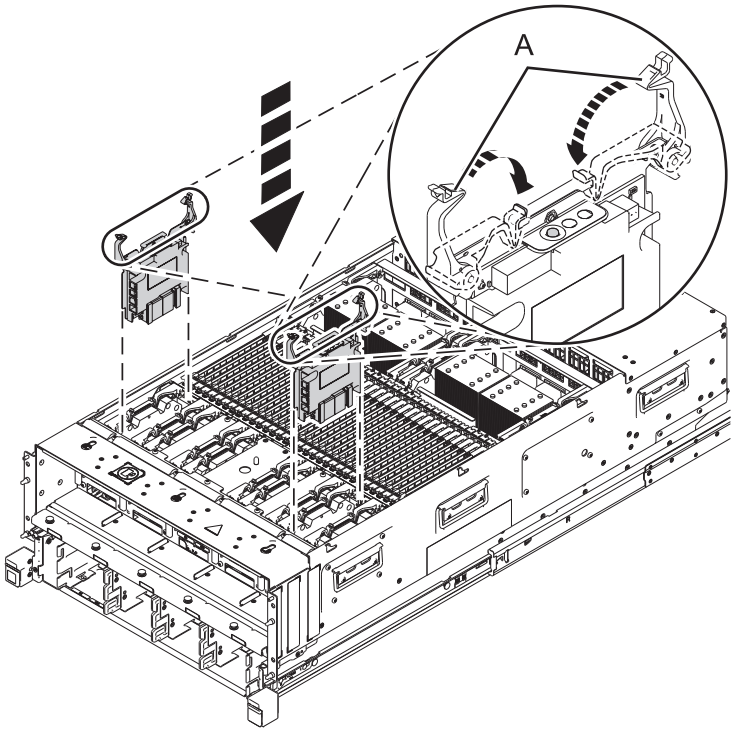



7. Install memory CDIMMs
   a. Install the CDIMMs and fillers into the same location from which they were removed.
   b. Grasp the CDIMMs along the edge and align them with the slots.



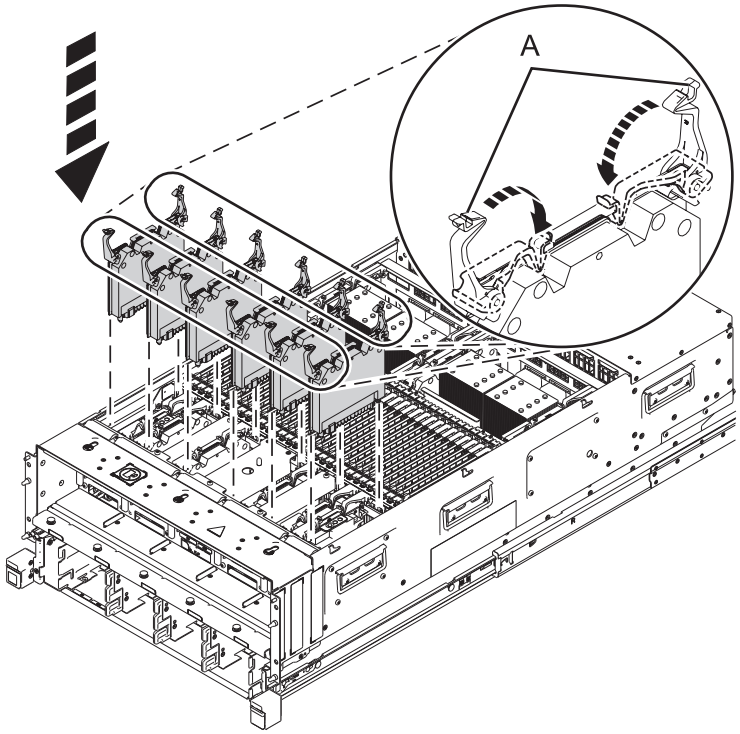

   c. Push the CDIMMs firmly into the slots until the tabs **(A)** pop up, indicating each card is locked.
8. Install Power APSS cards

a. With the levers **(A)** in the open position, hold the Power APSS cards by the handles and lower them into the system slots toward the connector.
b. Rotate the levers in the direction shown to push the Power APSS cards into their connector. Press down on the levers to lock the levers and the Power APSS cards into place.

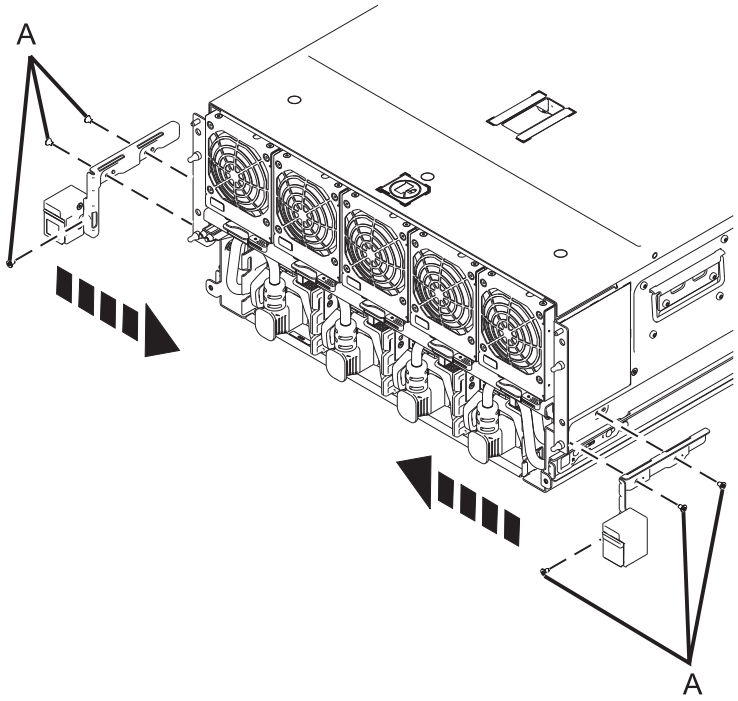



9. Install memory, memory buffer, VPP, and miscellaneous VRMs
   a.

   **Note: For image clarity, only the main memory VRMs are shown in the image. All VRMs must be installed.**
   Install the memory, memory buffer, VPP, and miscellaneous VRM cards into the same location from which they were removed.
   b. With the levers **(A)** in the open position, hold the memory, memory buffer, VPP, and miscellaneous VRM cards by the handles and lower them into the system slots toward the connector.
   c. Rotate the levers in the direction shown to push the memory, memory buffer, VPP, and miscellaneous VRM cards into its connector. Press down on the levers to lock the levers and the memory, memory buffer, VPP, and miscellaneous VRM cards into place.

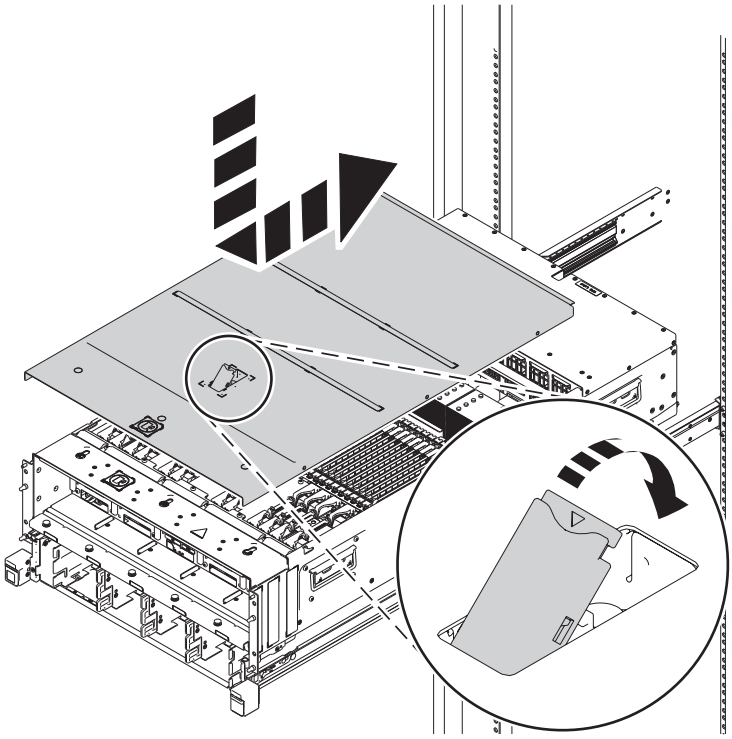



10. Install slam latch bracket assemblies
    a. If not installed, install both slam latch bracket assemblies (one on each side) by installing the flat head screws **(A)**, (T15 Torx Drive) to each assembly as shown.

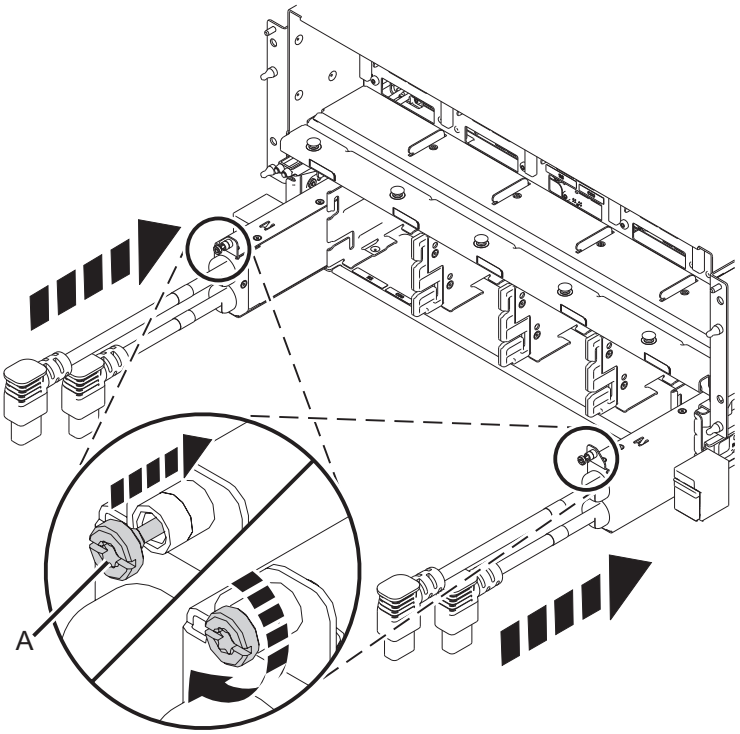



11. Install Access Cover
    a. Slide the front lip of the cover under the chassis edge

b. Align and place the cover onto the system node and press the tab in the direction shown until it snaps into place.

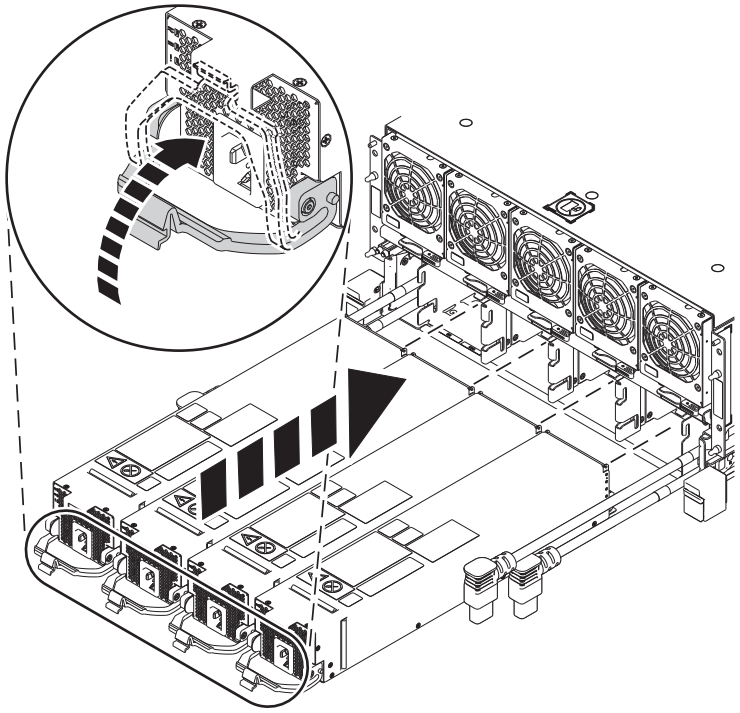


12. Install line cord conduit
    a. Push each line cord conduit into the front of the system node, and tighten each screw **(A)**.

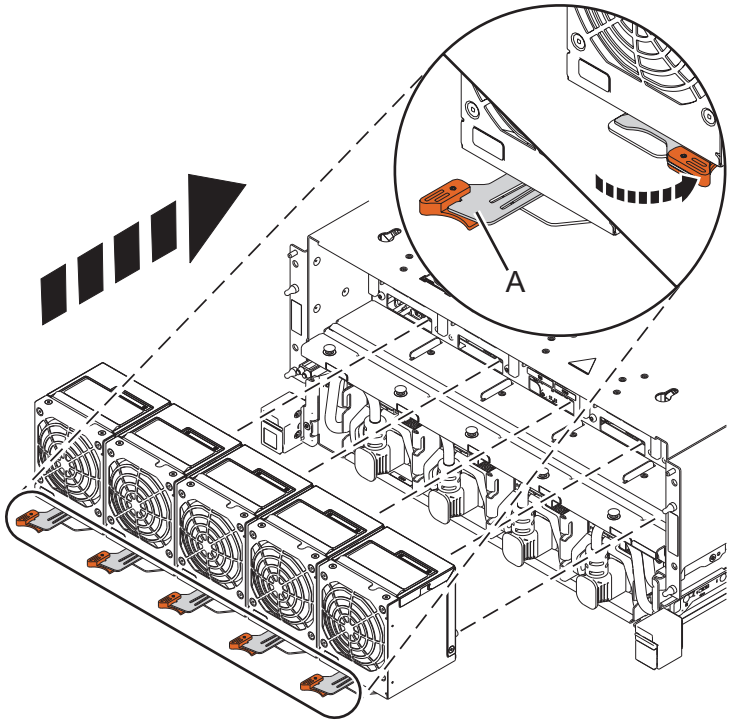



13. Install power supply units
    a. Align the power supply units with the slots and push them all the way in.

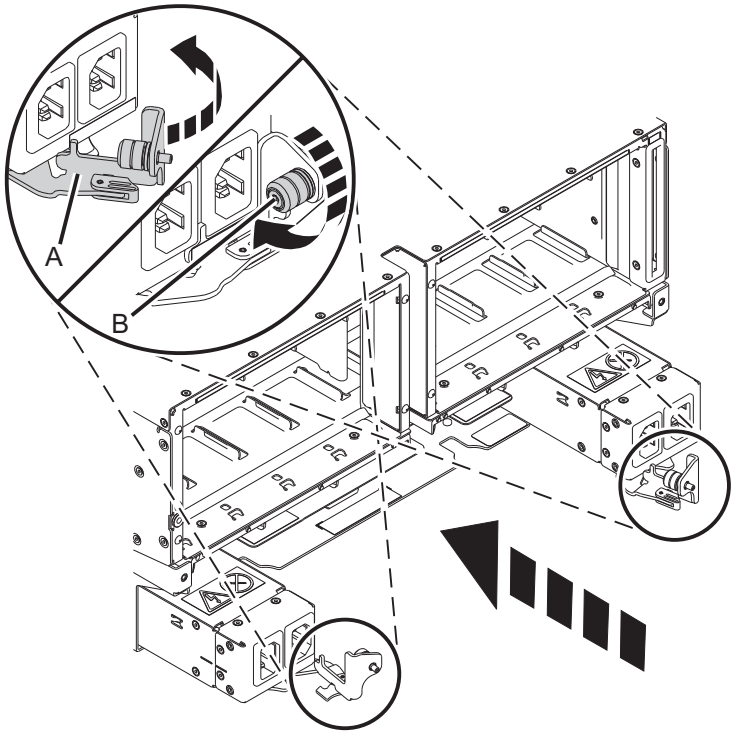
b. Pull the latches down on each power supply and ensure the pins on the latch go into the grooves in the chassis.
c. Push the latches up to lock in place.



14. Install fans
    a. Insert the fans into each slot. When inserting, connector has to clear the sheet metal opening in the rear.
    b. Move the latches **(A)** from left to right to lock the unit.

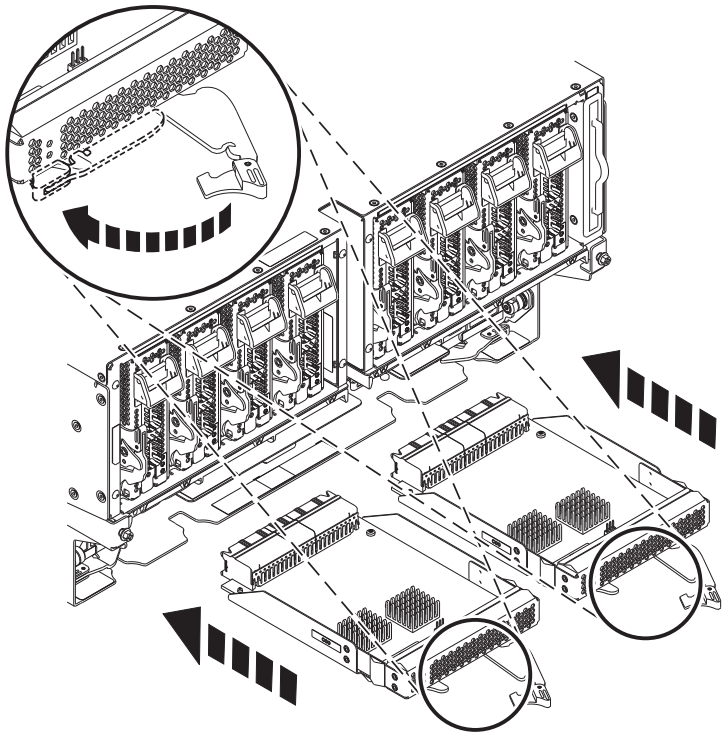



15. Install line cord conduit
    a. Push each line cord conduit into the rear of the system node, close the latches **(A)**, and secure the thumb screws **(B)**.

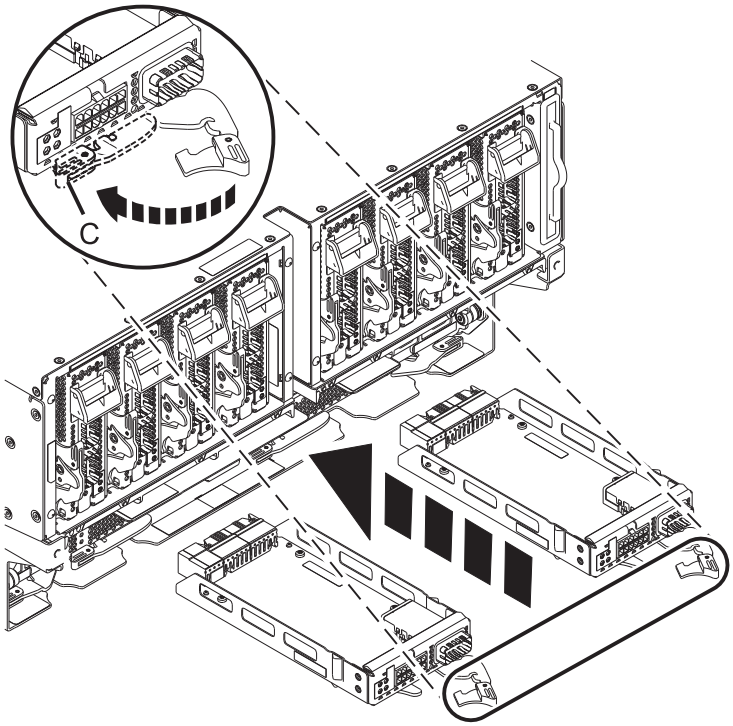



16. Install clock cards
    a. Install the clock cards into the same location from which they were removed.
    b. Push in the clock cards.

c. Push the securing latch to the left and make sure it secures into place.

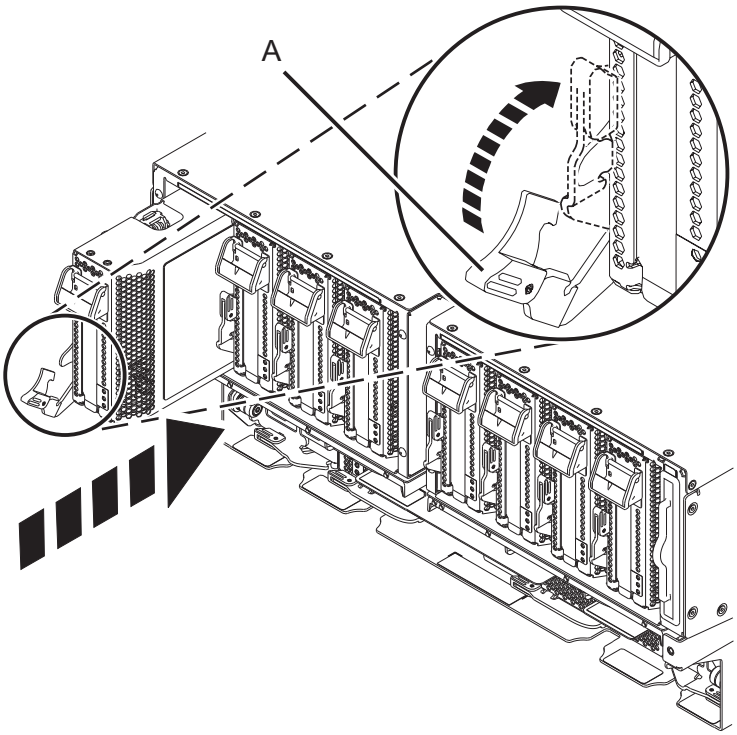


17. Install GFSP interface cards
    a. With the locking lever in the unlocked position, install the GFSP interface cards by inserting them into the system enclosure and sliding them into place
    b. Lock the GFSP interface cards by moving the locking lever **(C)** from right to left.




18. Install PCI card cassettes

a. Install the PCI card cassettes into the same location from which they were removed.
b. Push the cassettes into location and push on the latch **(A)** to secure.




19. Transfer the system node onto the extended slide rails

**Note:** With the help of another SSR, follow the procedure below if lift tool and ladders were used to remove the system planar from a height above 29U, otherwise skip to the next step.

**Note:** Ensure both SSRs are wearing hard hats.

a. Raise the lift tool so that the lift tool table is slightly below the bottom of the system drawer to account for the slight downward flex when the drawer is extended out fully on its slides.
b. Remove any obstacles (cables, packing material, tools, parts, etc.) that may interfere with the transfer.
c. Position the rear of the system node in front of the rack.
d. Position the system node on the tilt table, so that the tilt table handle is at the front of the system node.
e. When standing in front of the rack, the left side of system node should align with the left side of the tilt table.

   **Note:** Ensure the rack slide rails are pushed in completely and out of the way when you are moving the ServerLIFT.

f. Release the stabilizer brake, then move the ServerLIFT to the front of the rack.
g. Rotate the ServerLIFT winch handle clockwise to raise the platform until the three (3) guide pins are just above the height of the slide rails.
h. Adjust the lift to ensure the system node is centered between the two rails when they are extended.
i. Position the system node to have the left side edge (A) aligned with the left edge of the tilt table.
j. Extend the handle on the tilt table (B) then rotate handle clockwise to tilt the front up.

**Note:** Ensure that the rear pair of guide pins will completely engage the rear slide rail slots when the platform is slightly lowered, but before the middle pair starts to engage.

k. Release the slide latches and carefully pull the slides outward until the rails are fully extended.

**Note:** Watch the slide rails when moving the ServerLIFT or raising the platform to prevent damage to the extended rails.

l. Identify the three (3) guide pins on each side of the system node and the corresponding slots on the slide rails.

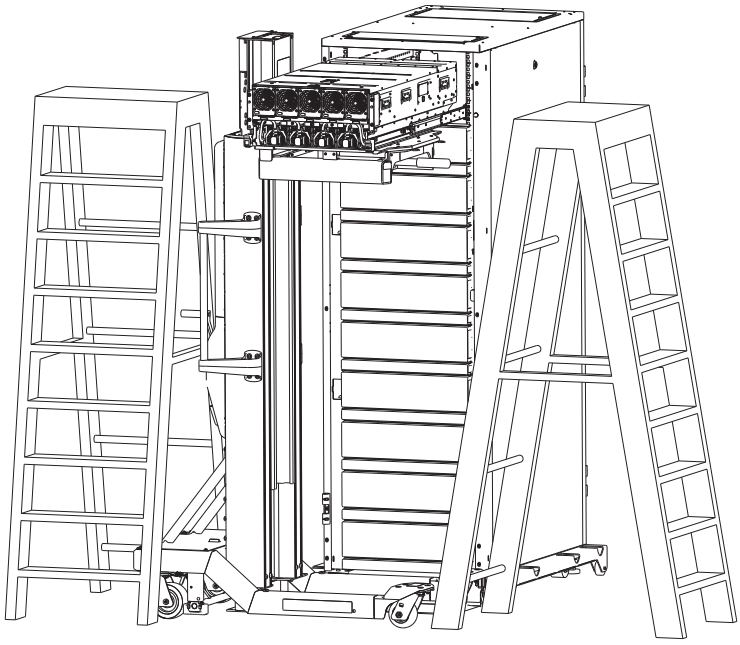
m. Work with the ServerLIFT winch (up/down) handle and the tilt table angle to lower the chassis to first engage the rear guide pins with the slide rails.

n. Check slot-pin engagement on both sides, and reseat if necessary.

o. Verify the rear pins are properly seated, then continue lowering the platform until the middle guide pins drop into the middle slide rail slots.

p. Continue lowering the platform until the front guide pins are engaged with the front slide rail slots.

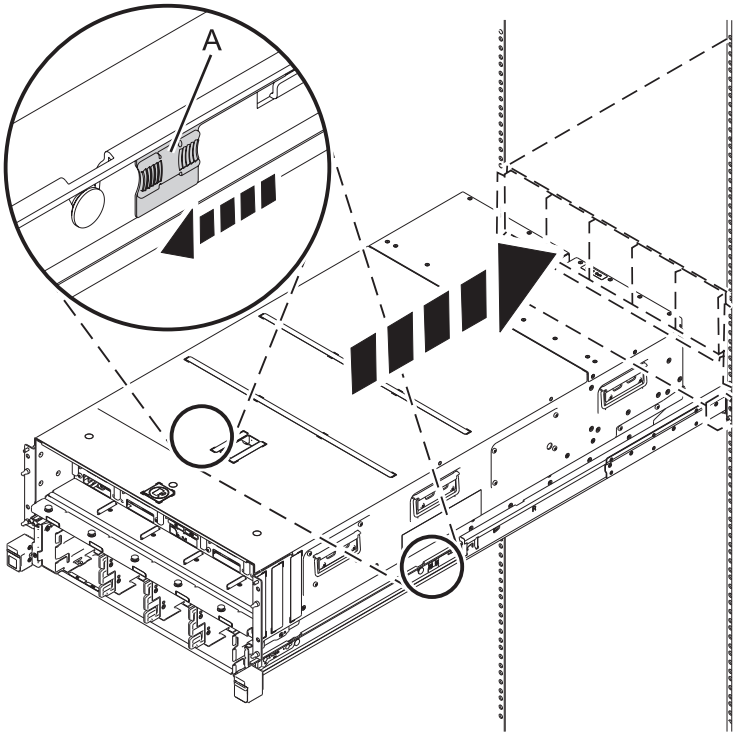
q. Verify all six guide pins are seated properly in their mounting slots.



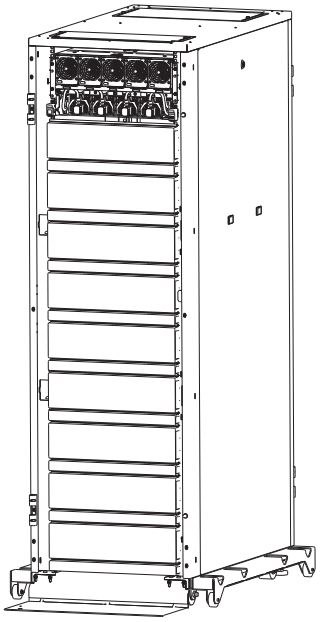
20. Set system in operating position

a. Lower the lift tool slightly so that the tilt table is not contacting the system node.

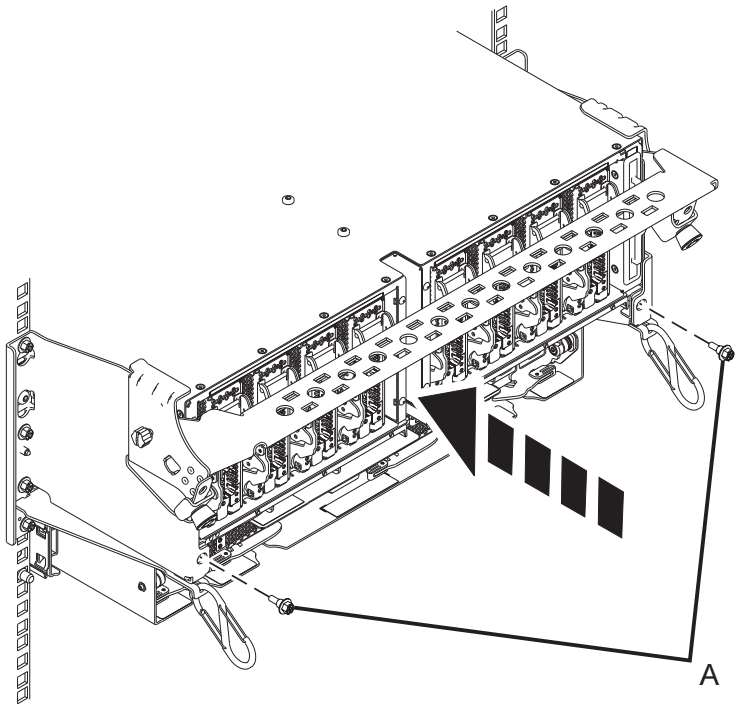
b. Unlock the rail safety latches **(A)** by pulling them backwards and push the system node back into the rack until both system node release latches have locked into position.




21. Remove ladders and lift tool if used earlier in the procedure
    a. If the slide rails of the node being serviced are above EIA location 29U, keep the ladders available as they are required to install remaining items.
    b. Move the ladders away.
    c. Remove ServerLIFT tool.



22. If removed earlier, install the 2 retention screws **(A)** at the back of the system.




23. Install clock card cables
    a. **Note: The clock flex cables are point to point cables designed for their fixed locations and should not be stretched when installing. Stretching the cable during installation may lead to misplugging and bent pins.**
    b. If you have a single node system configuration, use the diagram and the *Single System Node to System Control Unit* Table below to determine point to point cabling for the clock flex cables.

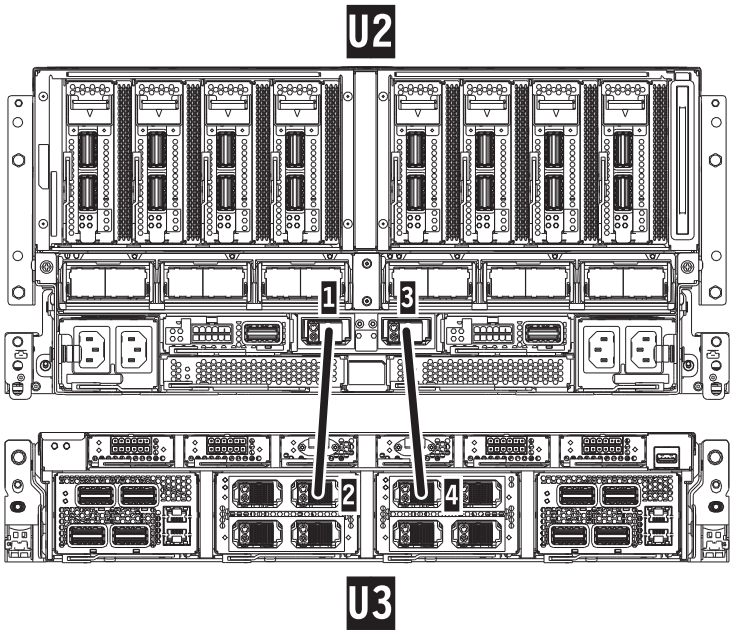


*Table 1. Single System Node to System Control Unit Clock Card Cabling*

| Index Number | From: (U-Loc) | Cable Type | Index Number | To: (U-Loc) |
|---|---|---|---|---|
| 1 | U2: P1-T7 | Short Clock Flex Cable (Left) | 2 | U3: P1-C8-T2 |
| 3 | U2: P1-T8 | Short Clock Flex Cable (Right) | 4 | U3: P1-C9-T1 |

c. If you have a two node system configuration, use the diagram and the *Two System Nodes to System Control Unit* Table below to determine point to point cabling for the clock flex cables.

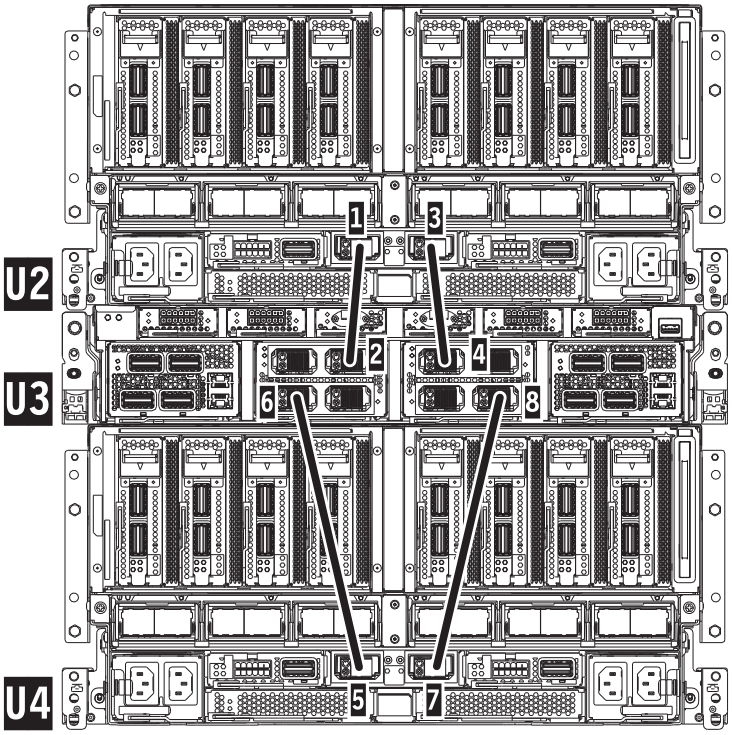



*Table 2. Two System Nodes to System Control Unit Clock Card Cabling*

| Index Number | From: (U-Loc) | Cable Type | Index Number | To: (U-Loc) |
|---|---|---|---|---|
| 1 | U2: P1-T7 | Short Clock Flex Cable (Left) | 2 | U3: P1-C8-T2 |
| 3 | U2: P1-T8 | Short Clock Flex Cable (Right) | 4 | U3: P1-C9-T1 |
| 5 | U4: P1-T7 | Long Clock Flex Cable (Left) | 6 | U3: P1-C8-T3 |
| 7 | U4: P1-T8 | Long Clock Flex Cable (Right) | 8 | U3: P1-C9-T4 |

d. If you have a three node system configuration, use the diagram and the *Three System Node to System Control Unit* Table below to determine point to point cabling for the clock flex cables.

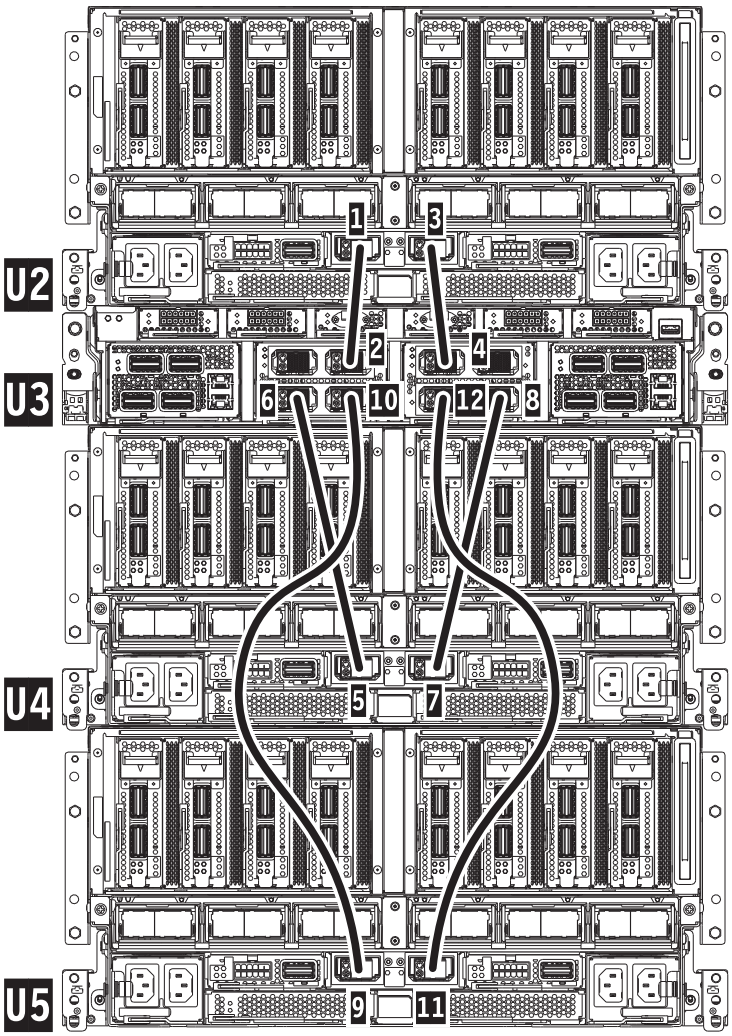



*Table 3. Three System Node to System Control Unit Clock Card Cabling*

| Index Number | From: (U-Loc) | Cable Type | Index Number | To: (U-Loc) |
|---|---|---|---|---|
| 1 | U2: P1-T7 | Short Clock Flex Cable (Left) | 2 | U3: P1-C8-T2 |
| 3 | U2: P1-T8 | Short Clock Flex Cable (Right) | 4 | U3: P1-C9-T1 |
| 5 | U4: P1-T7 | Long Clock Flex Cable (Left) | 6 | U3: P1-C8-T3 |
| 7 | U4: P1-T8 | Long Clock Flex Cable (Right) | 8 | U3: P1-C9-T4 |
| 9 | U5: P1-T7 | Long Clock Flex Cable (Left) | 10 | U3: P1-C8-T4 |
| 11 | U5: P1-T8 | Long Clock Flex Cable (Right) | 12 | U3: P1-C9-T3 |

e. If you have a four node system configuration, use the diagram and the *Four System Node to System Control Unit* Table below to determine point to point cabling for the clock flex cables.

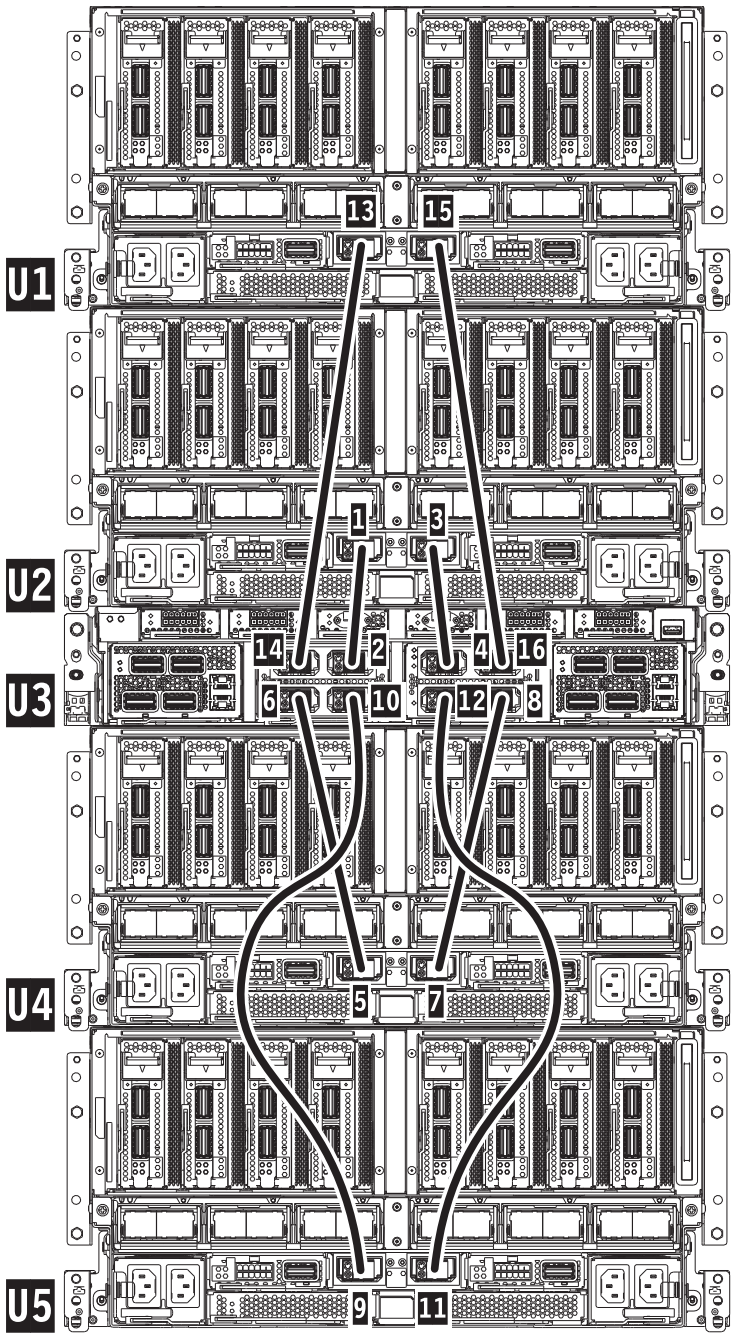


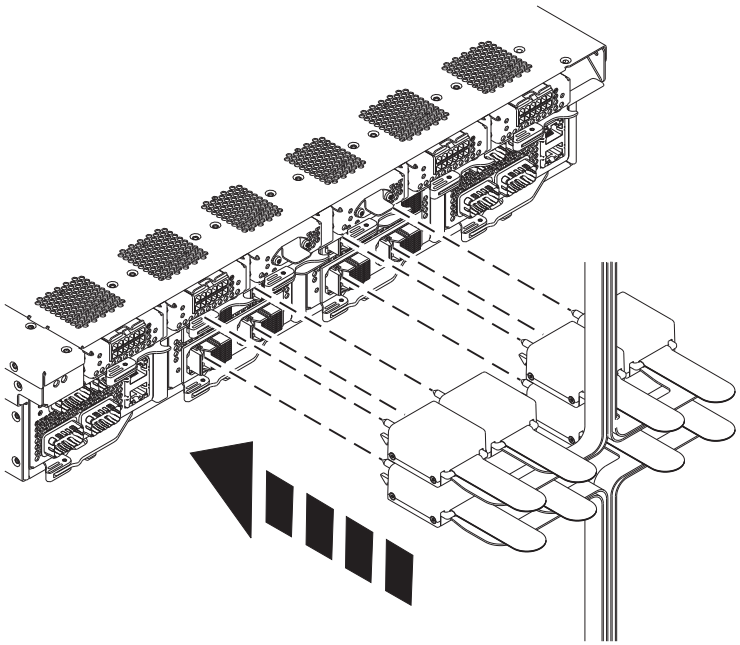

*Table 4. Four System Node to System Control Unit Clock Card Cabling*

| Index Number | From: (U-Loc) | Cable Type | Index Number | To: (U-Loc) |
|---|---|---|---|---|
| 1 | U2: P1-T7 | Short Clock Flex Cable (Left) | 2 | U3: P1-C8-T2 |
| 3 | U2: P1-T8 | Short Clock Flex Cable (Right) | 4 | U3: P1-C9-T1 |
| 5 | U4: P1-T7 | Long Clock Flex Cable (Left) | 6 | U3: P1-C8-T3 |
| 7 | U4: P1-T8 | Long Clock Flex Cable (Right) | 8 | U3: P1-C9-T4 |

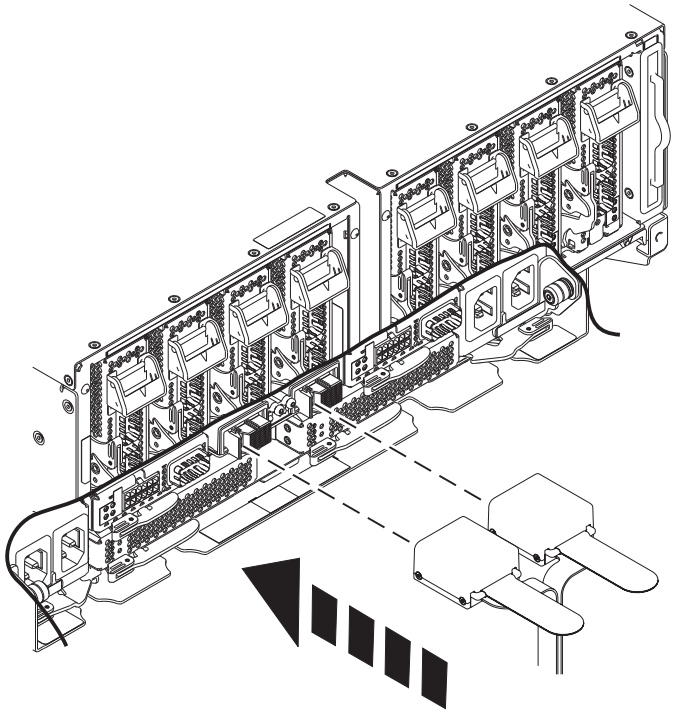
*Table 4. Four System Node to System Control Unit Clock Card Cabling (continued)*

| Index Number | From: (U-Loc) | Cable Type | Index Number | To: (U-Loc) |
|---|---|---|---|---|
| 9 | U5: P1-T7 | Long Clock Flex Cable (Left) | 10 | U3: P1-C8-T4 |
| 11 | U5: P1-T8 | Long Clock Flex Cable (Right) | 12 | U3: P1-C9-T3 |
| 13 | U1: P1-T7 | Long Clock Flex Cable (Left) | 14 | U3: P1-C8-T1 |
| 15 | U1: P1-T8 | Long Clock Flex Cable (Right) | 16 | U3: P1-C9-T2 |

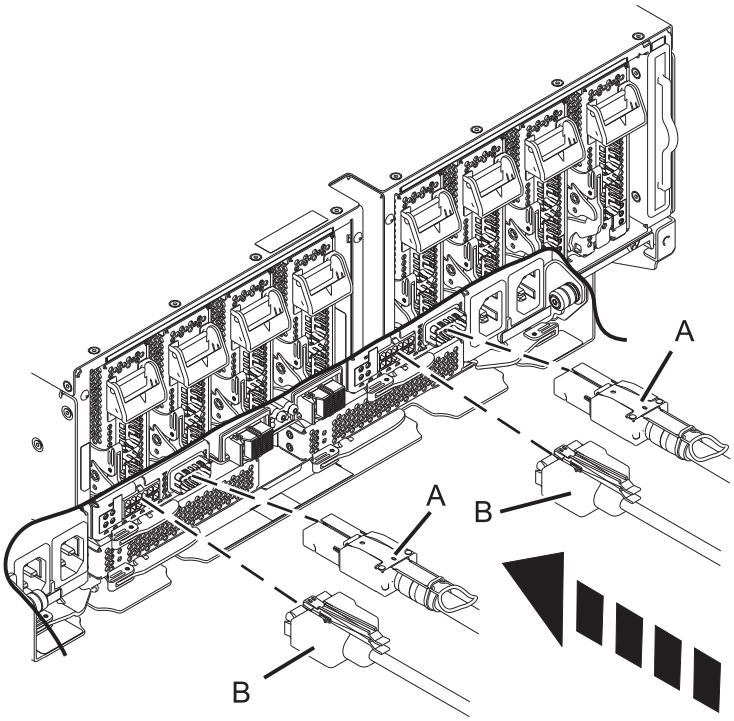
f. Push the cables into the slots on the system control unit. The connectors are keyed and can only be seated in one way.



g. Push the cables into the slots on the system node. The connectors are keyed and can only be seated in one way.



24. Install GFSP and UPIC cables
    a. Install the UPIC and FSP cables into the same location from which they were removed.
    b. Reconnect all global FSP cables **(A)**, pushing them in until they lock in place.
    c. Reconnect all UPIC cables **(B)**, pushing them in until they lock in place.




25. Install SMP cables
    a. Install the SMP cables into the same location from which they were removed.

b. If you have a two node system configuration, use the diagram and the *Two Node Configuration SMP cabling* table below to determine point-to-point cabling for SMP cables.

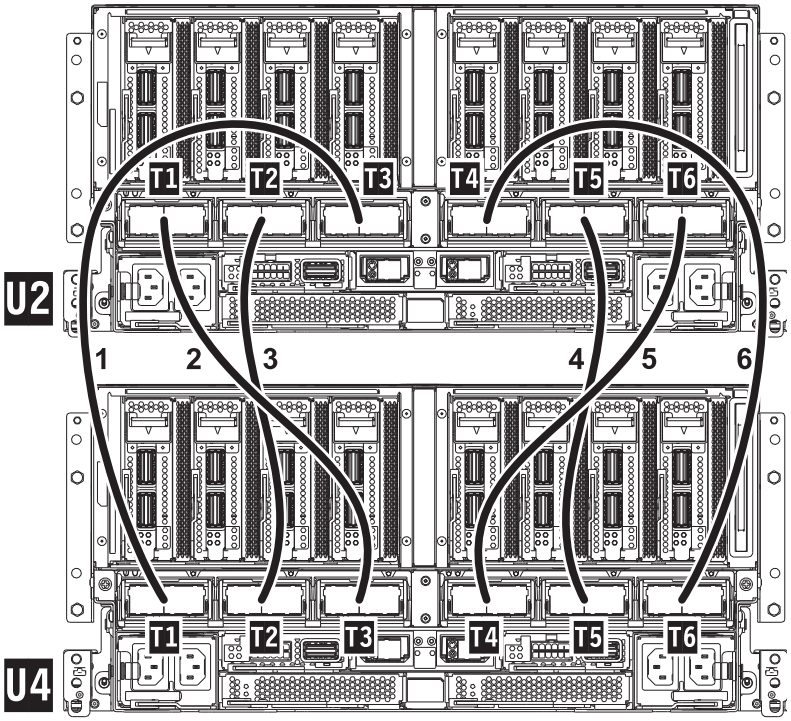



*Table 5. Two Node Configuration SMP Cabling*

| Cable Number | Cable Type | From: (U-Loc) | To: (U-Loc) |
|---|---|---|---|
| 1 | 1.5 m (4.9 ft) SMP Cable | U2: P1-T3 | U4: P1-T1 |
| 2 | 1.25 m (4.1 ft) SMP Cable | U2: P1-T1 | U4: P1-T3 |
| 3 | 1.25 m (4.9 ft) SMP Cable | U2: P1-T2 | U4: P1-T2 |
| 4 | 1.25 m (4.9 ft) SMP Cable | U2: P1-T5 | U4: P1-T5 |
| 5 | 1.25 m (4.9 ft) SMP Cable | U2: P1-T6 | U4: P1-T4 |
| 6 | 1.5 m (4.9 ft) SMP Cable | U2: P1-T4 | U4: P1-T6 |

***Note: U2 is System Node 1 and U4 is System Node 2.***

c. If you have a three node system configuration, use the diagram and the *Three Node Configuration SMP cabling* table below to determine point-to-point cabling for SMP cables.

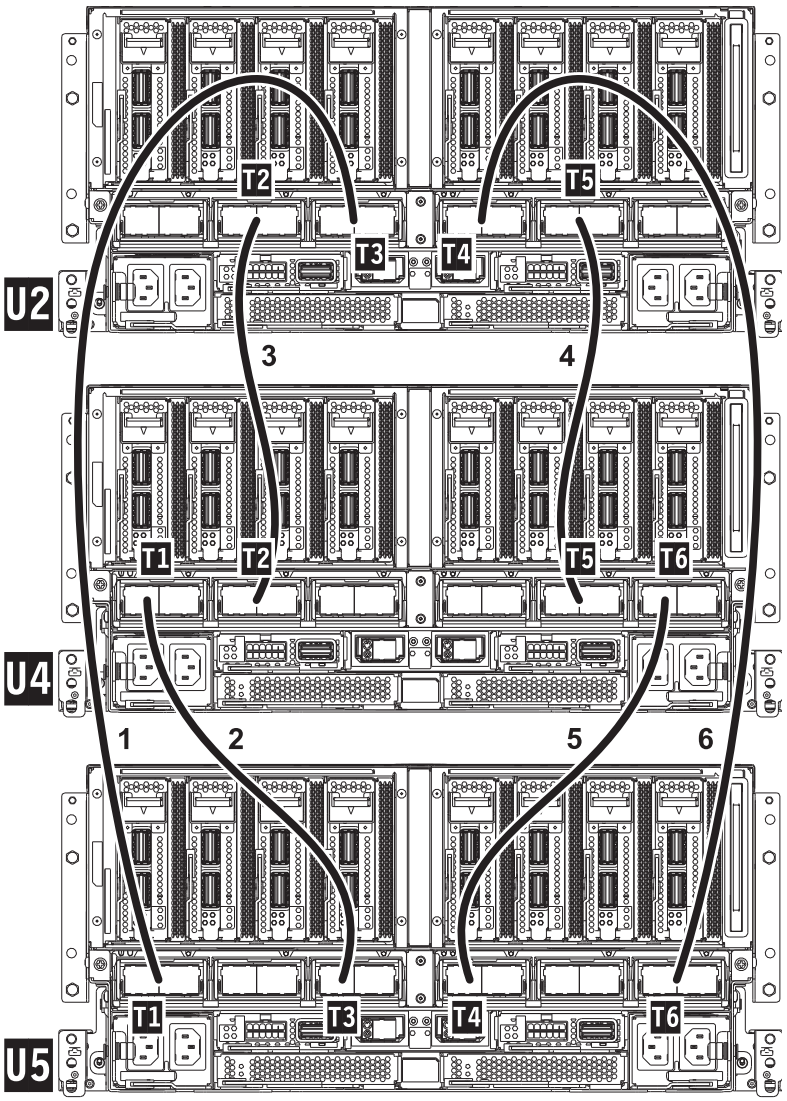



*Table 6. Three Node Configuration SMP Cabling*

| Cable Number | Cable Type | From: (U-Loc) | To: (U-Loc) |
|---|---|---|---|
| 1 | 1.5 m (4.9 ft) SMP Cable | U2: P1-T3 | U5: P1-T1 |
| 2 | 1.25 m (4.1 ft) SMP Cable | U4: P1-T1 | U5: P1-T3 |
| 3 | 1.25 m (4.1 ft) SMP Cable | U2: P1-T2 | U4: P1-T2 |
| 4 | 1.25 m (4.1 ft) SMP Cable | U2: P1-T5 | U4: P1-T5 |
| 5 | 1.25 m (4.1 ft) SMP Cable | U4: P1-T6 | U5: P1-T4 |
| 6 | 1.5 m (4.9 ft) SMP Cable | U2: P1-T4 | U5: P1-T6 |

***Note: U2 is System Node 1, U4 is System Node 2, and U5 is System Node 3.***

d. If you have a four node system configuration, you must use both diagrams with the *Four Node Configuration SMP short cabling* and the *Four Node Configuration SMP long cabling* tables below to determine point-to-point cabling for SMP cables.

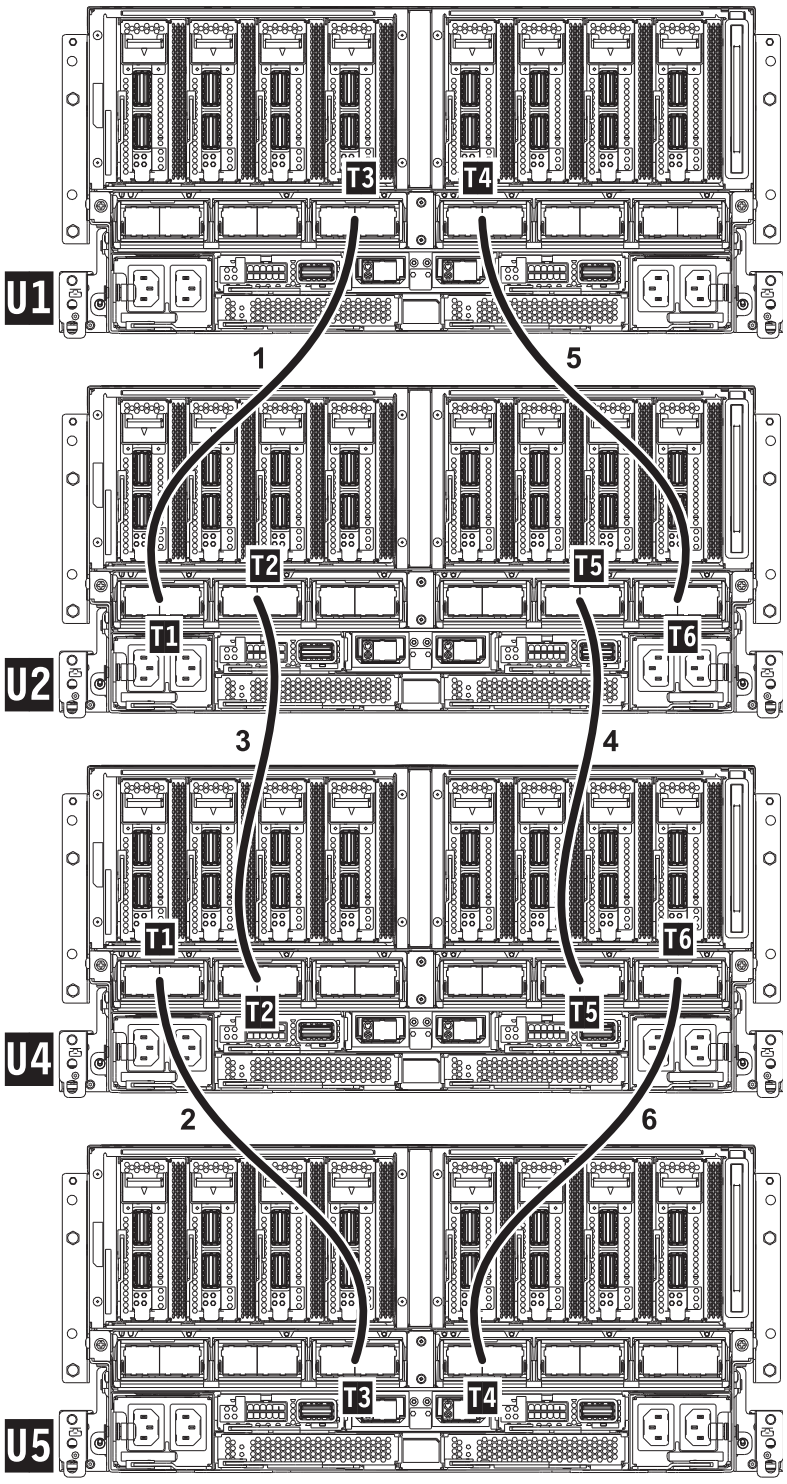



*Table 7. Four Node Configuration SMP Short Cabling (short cables)*

| Cable Number | Cable Type | From: (U-Loc) | To: (U-Loc) |
|---|---|---|---|
| 1 | 1.25 m (4.1 ft) SMP Cable | U1: P1-T3 | U2: P1-T1 |
| 2 | 1.25 m (4.1 ft) SMP Cable | U4: P1-T1 | U5: P1-T3 |
| 3 | 1.25 m (4.1 ft) SMP Cable | U2: P1-T2 | U4: P1-T2 |
| 4 | 1.25 m (4.1 ft) SMP Cable | U2: P1-T5 | U4: P1-T5 |

*Table 7. Four Node Configuration SMP Short Cabling (short cables) (continued)*

| Cable Number | Cable Type | From: (U-Loc) | To: (U-Loc) |
|---|---|---|---|
| 5 | 1.25 m (4.1 ft) SMP Cable | U1: P1-T4 | U2: P1-T6 |
| 6 | 1.25 m (4.1 ft) SMP Cable | U4: P1-T6 | U5: P1-T4 |

***Note: U2 is System Node 1, U4 is System Node 2, U5 is System Node 3, and U1 is System Node 4***

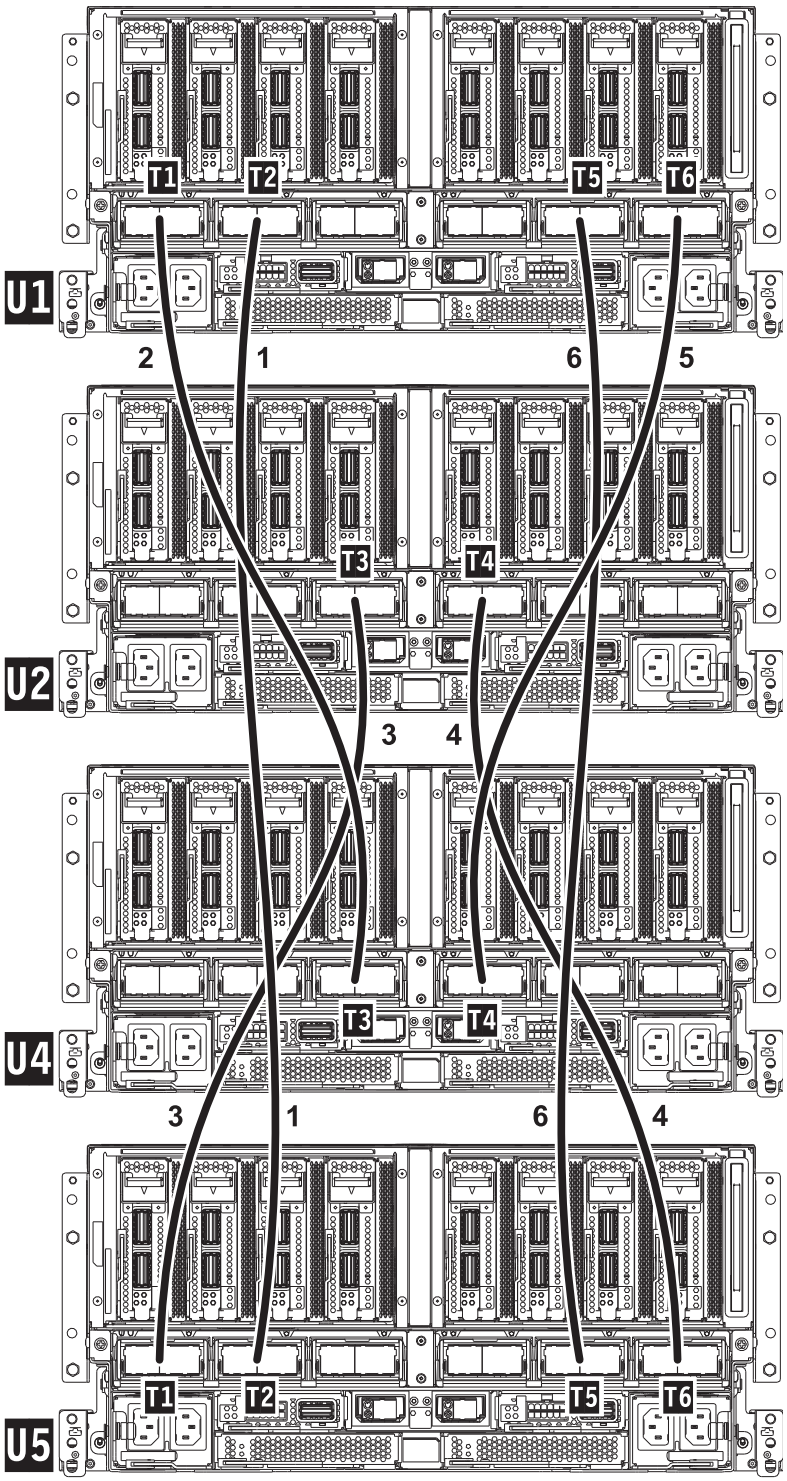
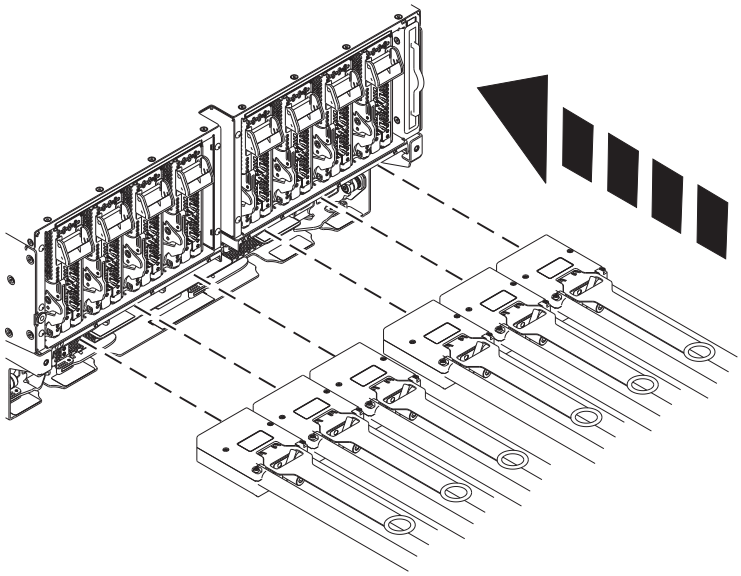


*Table 8. Four Node Configuration SMP Long Cabling (long cables)*

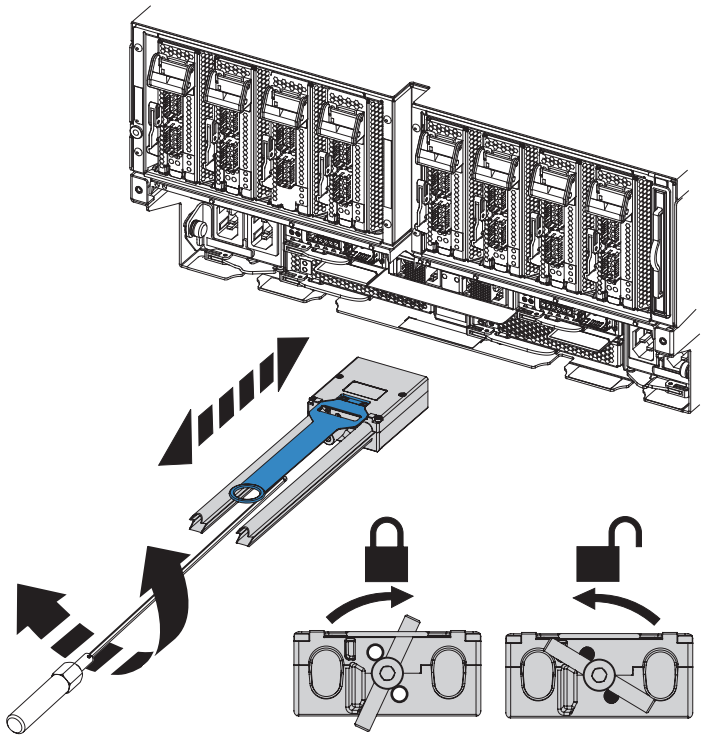
| Cable Number | Cable Type | From: (U-Loc) | To: (U-Loc) |
|---|---|---|---|
| 1 | 1.5 m (4.9 ft) SMP Cable | U2: P1-T3 | U5: P1-T1 |
| 2 | 1.5 m (4.9 ft) SMP Cable | U1: P1-T1 | U4: P1-T3 |
| 3 | 1.5 m (4.9 ft) SMP Cable | U1: P1-T2 | U5: P1-T2 |
| 4 | 1.5 m (4.9 ft) SMP Cable | U2: P1-T4 | U5: P1-T6 |
| 5 | 1.5 m (4.9 ft) SMP Cable | U1: P1-T6 | U4: P1-T4 |
| 6 | 1.5 m (4.9 ft) SMP Cable | U1: P1-T5 | U5: P1-T5 |

***Note: U2 is System Node 1, U4 is System Node 2, U5 is System Node 3, and U1 is System Node 4.***

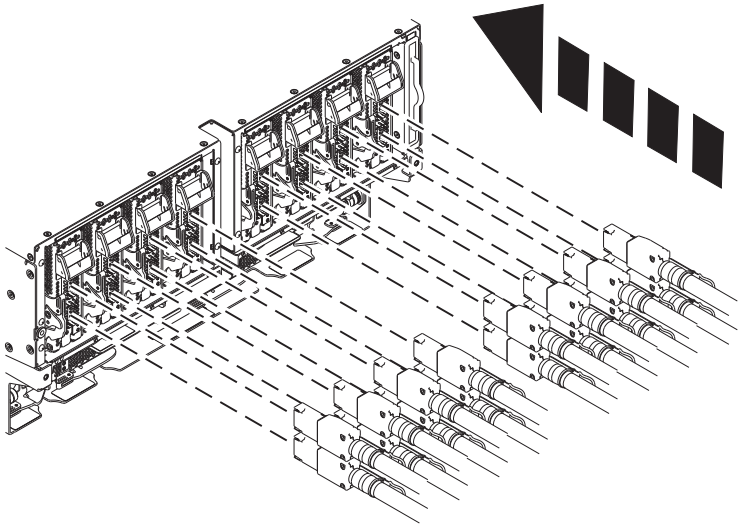
e. Plug the SMP cables into the system node.



f. Use the torque tool (41V1059) and turn in the direction indicated to lock. There is a stop to prevent from over tightening the connector. Visually confirm that the SMP cable camming mechanism is in the locked position and that the white dots are showing through the two holes at the 5 and 11 o'clock positions. If they are still black, it is not latched.

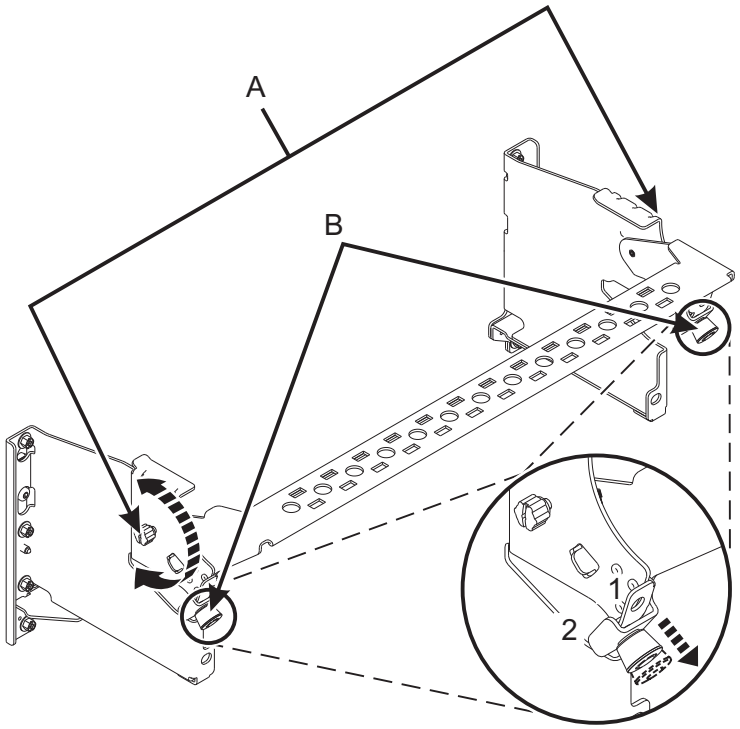


26. Install PCI cables
    a. Install the PCI cables into the same location from which they were removed.
    b. Plug the PCI cables into the cards to which they were originally connected.

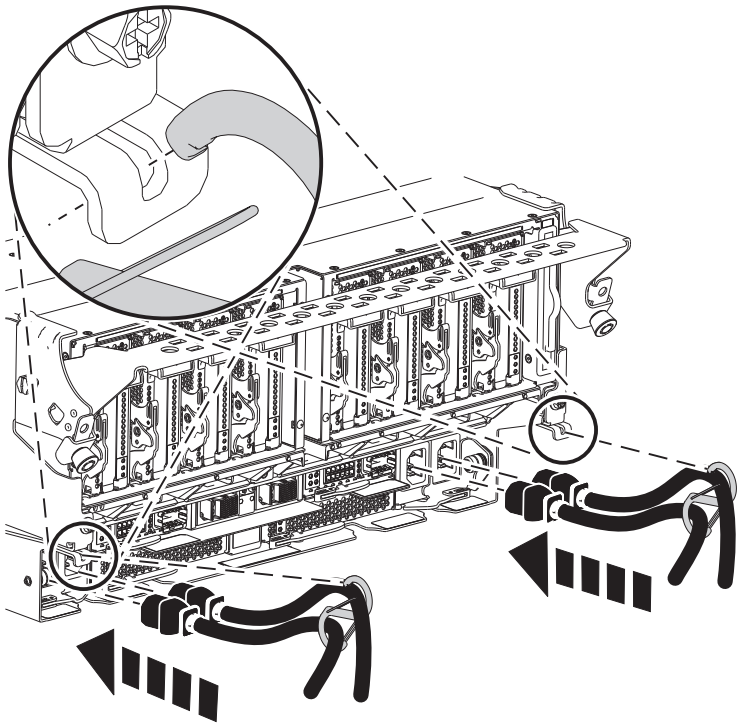


27. Move cable management arm down
    a. Pull out the retention pins **(B)** and rotate the cable management arm down on the pivot point **(A)** from the position **(1)** to **(2)**. The pins will automatically retract into the locking position when the

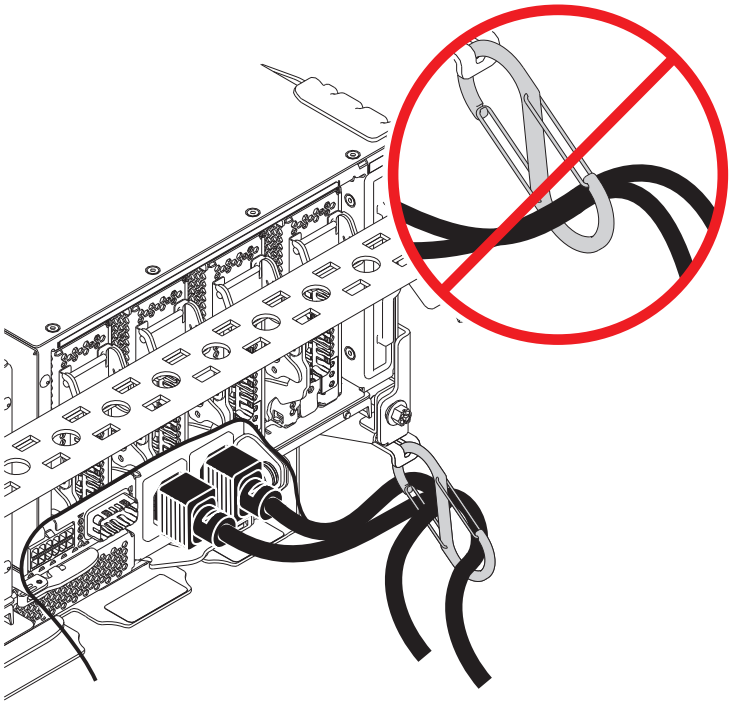
arm is properly located in the down position.




28. Plug in line cords
    a. Plug the line cords into the node being serviced.

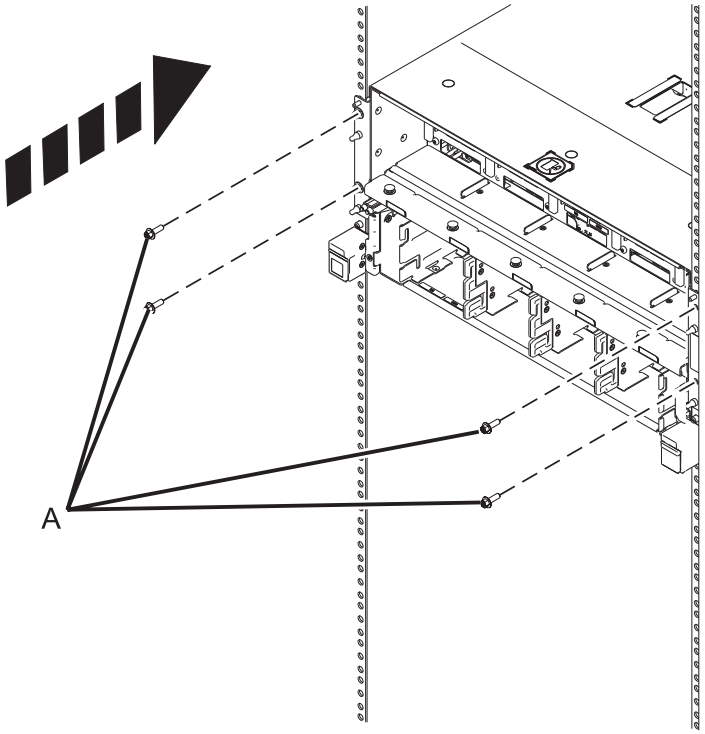


29. **If an S-Biner power cable routing clip was previously removed:** While keeping the power cable correctly routed through the S-Biner, clip all S-Biners to the node being serviced.

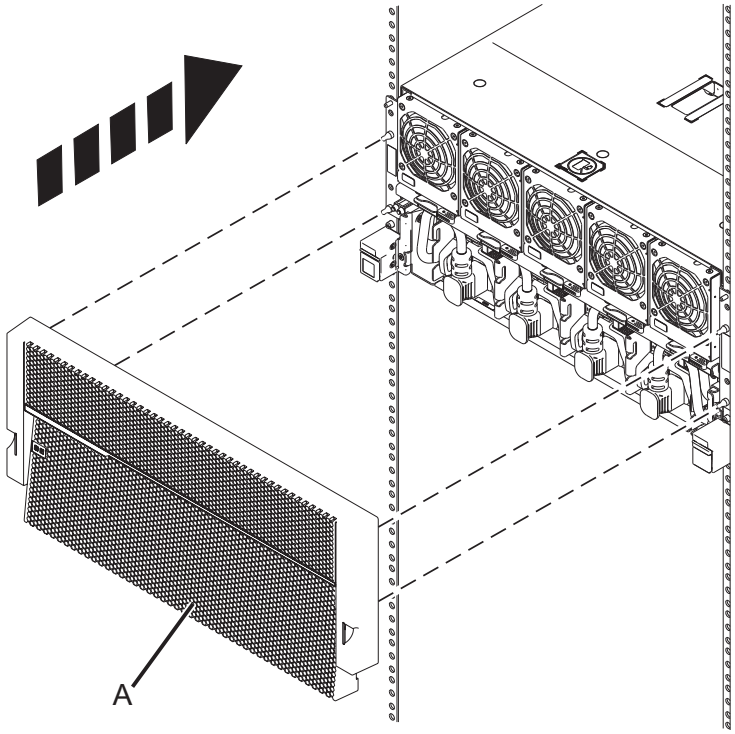


30. Install power supply cables
    a. Locate the system control unit for the system being serviced.
    b. Validate which system nodes are connected to the system control unit by visually tracing / checking the clock cables.
    c. Connect the power supply cables to each power supply of each affected system node from which they were previously removed.

31. Install front bezel
    a. If removed earlier, install the 4 retention screws **(A)** at the front of the system.




b. Install the front bezel on the system node being serviced and all system nodes which share the same system control unit with the system node being serviced.**(A)**.




If performing this procedure from a management console, close this web page to continue with the procedure.

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