Enclosure
Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Tools Required

The following tools are required for this procedure:

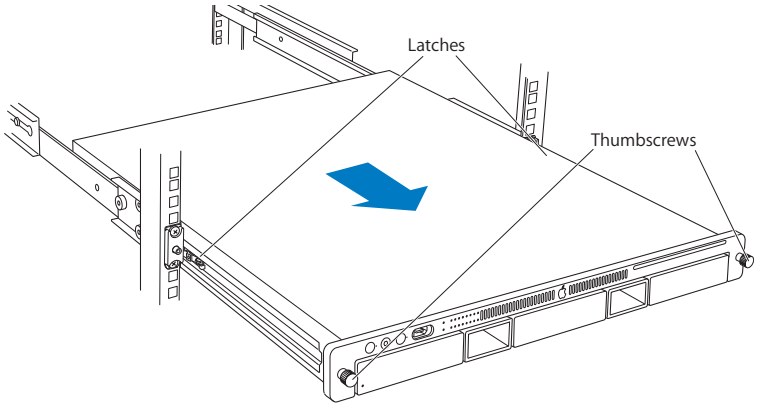
- Phillips #2 scewdriver
- Phillips #1 screwdriver
- Small flat-blade screwdriver
- Nylon probe tool or similar plastic pry tool
- Needlenose pliers

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.

Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



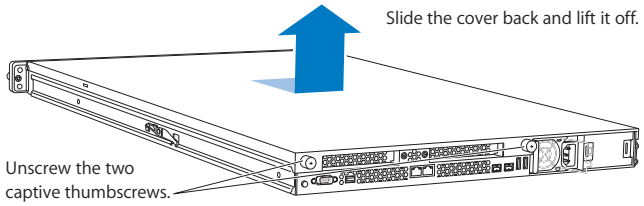
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



Replacing the Enclosure

Note: Because you must remove both processor heat sinks during this procedure, you must replace the thermal grease on both processors when reassembling the Xserve. New grease and alcohol wipes for cleaning off the previous grease are supplied with the replacement enclosure.

Replacing the enclosure involves transferring the following parts from the original enclosure to the replacement enclosure:

- Both power supplies
- All Apple drive modules
- Optical drive
- PCI riser cards and any expansion cards in both slots
- Airflow duct
- Fan array
- Front panel board cable
- Backplane-to-logic board I/O cable
- Optical drive cable
- Locking mechanism rod
- Front panel board
- Drive interconnect backplane
- Power distribution board cable
- Power distribution board
- Both processor heat sinks
- Logic board
- ID tab

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Power Supply/Power Supply Blank Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

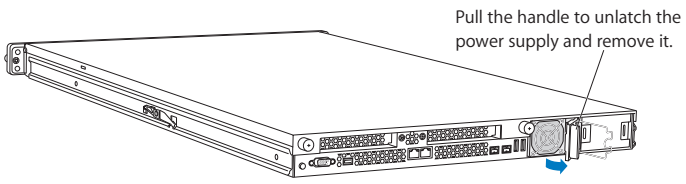
Note: You can replace or install a power supply from the back panel without removing the Xserve from the rack. If the Xserve has two power supplies, they are hot-swappable; the Xserve will continue to operate using only one supply while the second is removed.

Tools Required

No tools are required for this procedure.

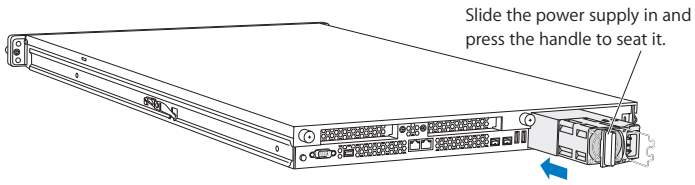
Removing the Installed Power Supply/Power Supply Blank

1. Unplug the power cord from the power supply you are removing.
2. Pull the handle to release the power supply or power supply blank and slide it out of the bay.



Installing the Replacement Power Supply/Power Supply Blank

1. Press and release to open the handle on the replacement power supply or power supply blank.
2. Slide the power supply or power supply blank all the way into the bay, and then press the handle to seat it and lock it in place.



3. Connect the power cord to the power supply.
   Note: If the Xserve is already running on a second power supply, the status light on the new supply turns green to indicate normal operation as it starts sharing the load. If the Xserve is not turned on, the supply status light blinks green when the power cord is plugged in to an outlet with power.

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Hard Drive
Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Note: These instructions apply to the hard drive of various Xserve models. Your server may look slightly different than the one shown in the images.

Note: Blank drive carriers, which may fill some of the hard drive bays, follow the same replacement procedure as hard drives. If you are replacing a blank carrier with a drive module, be sure to keep the blank for possible future use. Blank drive carriers must be installed in all empty drive bays to maintain proper airflow through the server. Be careful not to apply excessive pressure when installing the blank carriers.

Backing Up Your Data

Warning: Before replacing your hard drive, make sure you back up all data on the drive.

Tools Required

No tools are required for this procedure.

Preliminary Steps

The server includes three drive bays for the Apple Drive Modules. The modules consist of hard drives attached to carriers; they are removed from or installed in the server as a unit. You can replace hard drives while the system is running; you do not need to shut down or open the server first.

Note: There are two LED indicators on the front of each drive.

- The upper LED shows drive status—a green light indicates the drive is good; a yellow or red light indicates the drive should be replaced or removed and reinserted.
- The lower LED shows drive activity—when the light is blinking, the server is reading from

or writing to the drive. To avoid losing data, never remove a drive when the lower LED is blinking.

1. If the hard drives are in the locked position (the yellow security LED on the front panel is on), use the Allen key that came with the server to unlock them.

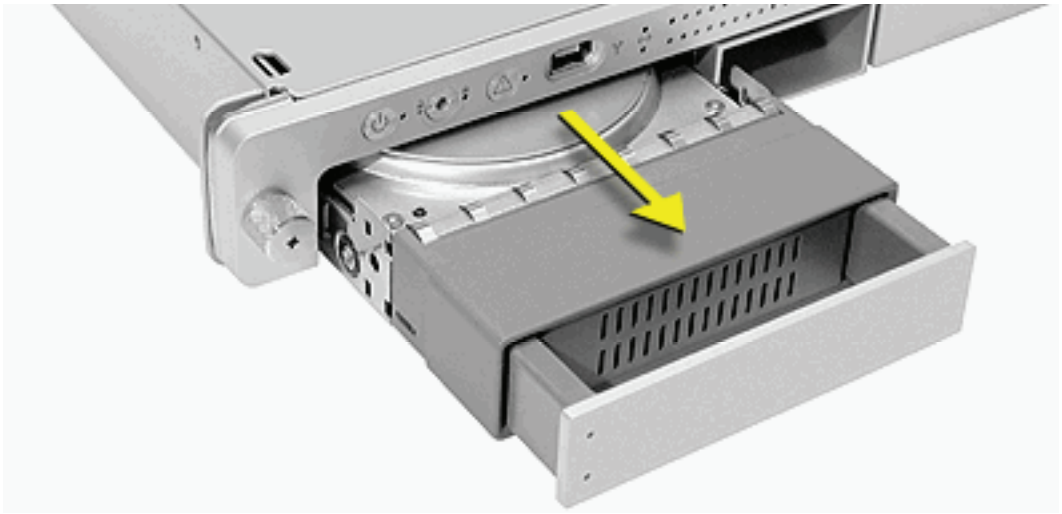
   Warning: Drives must be in the unlocked position before you attempt to remove a drive. If a drive is locked, pulling on the drive to remove it could damage the drive handle.

2. Wait for the lower LED on the front of the drive to stop blinking.

Removing the Installed Hard Drive

1. Make sure the drive being replaced is not in use by any application and that removing it will not disrupt the RAID scheme in use.
2. Press the handle on the front of the drive module so the handle pops out.

3. Wait for the upper LED on the drive to go out. Then grasp the drive handle, and pull the drive module out of the server.



Installing the Replacement Hard Drive

1. Press the handle on the front of the replacement drive module so that the handle pops out.
2. Place your fingers on the center of the drive faceplate directly below the handle. Push the drive into the empty bay until its connector clicks into place.
3. Press in the handle on the drive module so that it is flush with the front panel.
4. Wait for the upper LED to turn green, indicating normal operation.

Formatting the Hard Drive

1. Start up from the Install Disc that came with your server, and choose the language.
2. From the menu bar, choose Utilities > Disc Utility.
3. To format the primary drive, use the Disc Utility on the Install disc.
4. Click the Partition tab.
5. Click on Options, and verify GUID is selected if this is the startup drive.
6. Name the volume "Macintosh HD."
7. Apply the change by clicking the Partition tab.
8. Leave the Disc Utility application open, and restore the backed up files from the image you created before removing the hard drive.

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Optical Drive
Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Note: These instructions apply to the optical drive of different Xserve models. Your server may look slightly different than the one shown in the images.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

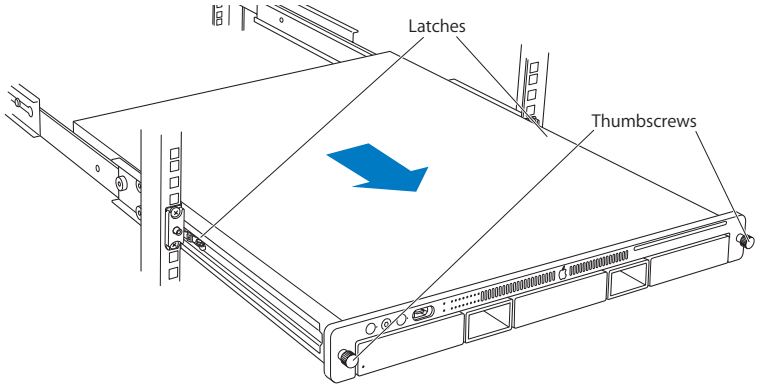
Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Tools Required

The only tool required for this procedure is a jeweler's Phillips (#0) screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.
3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



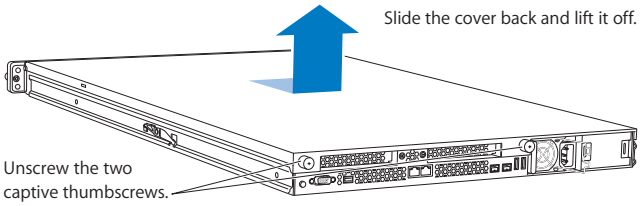
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

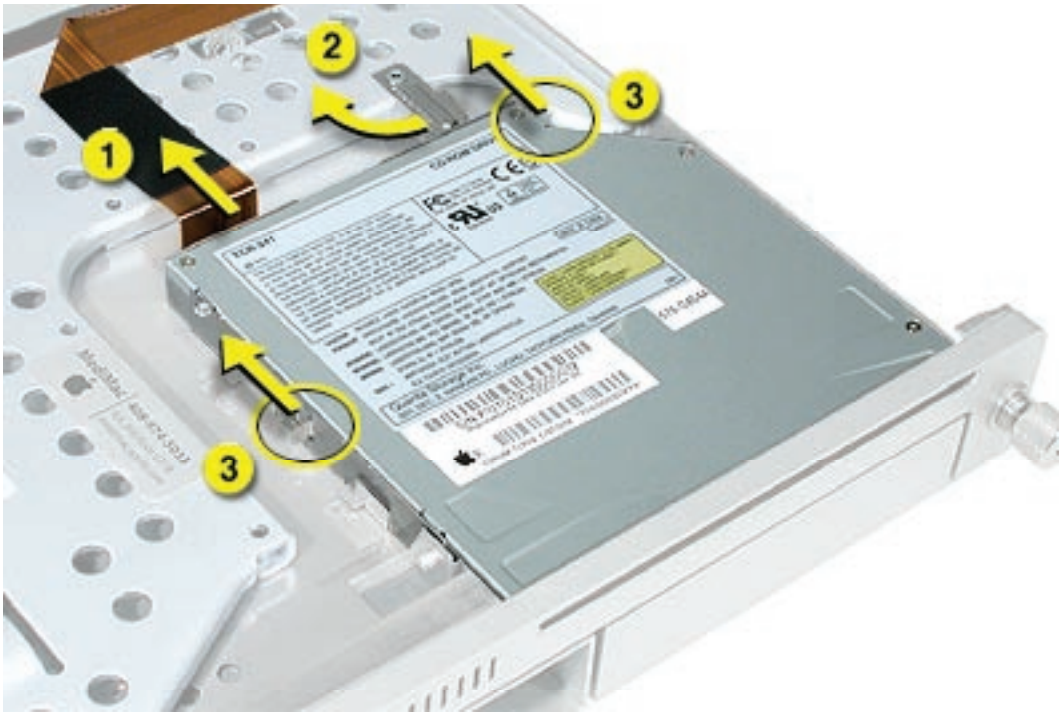
Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



Removing the Installed Optical Drive

1. Disconnect the optical drive cable from the optical drive.
2. Rotate the optical drive clip clockwise to release it.
3. Placing your thumbs on the tab on either side of the drive, carefully slide the drive back from the front bezel.

   Important: When removing or replacing the optical drive, be careful not to put pressure on top of the drive or front bezel that covers the optical drive slot.

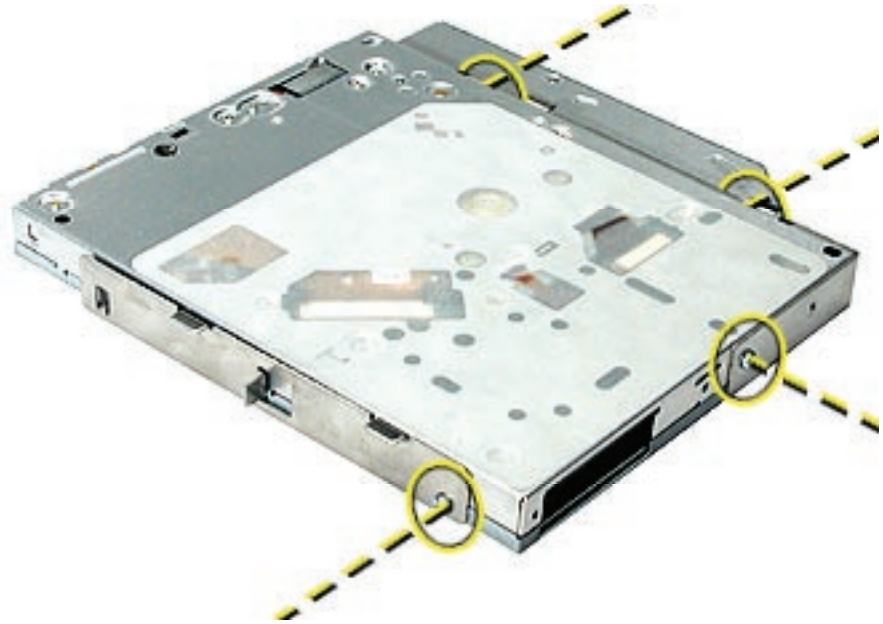


4. Lift the drive out of the server.

Installing the Replacement Optical Drive

Note: Before installing the replacement optical drive, you must transfer the side brackets and the screws from the original drive to the replacement drive.

1. Remove the mounting screw for the left bracket and transfer the bracket to the replacement drive, using the same screw to secure it.
2. Remove the three mounting screws for the right bracket and transfer the bracket to the replacement drive, again using the same screws to secure it.



3. Slide the replacement drive into the server, making sure the tabs on the bottom edges of the drive brackets engage with the slots in the drive bay.
4. Rotate the optical drive clip counterclockwise until it snaps into place against the end of the drive.
5. Reconnect the optical drive cable to the drive.

Closing the Server

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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PCI Expansion Card Riser
Replacement Instructions

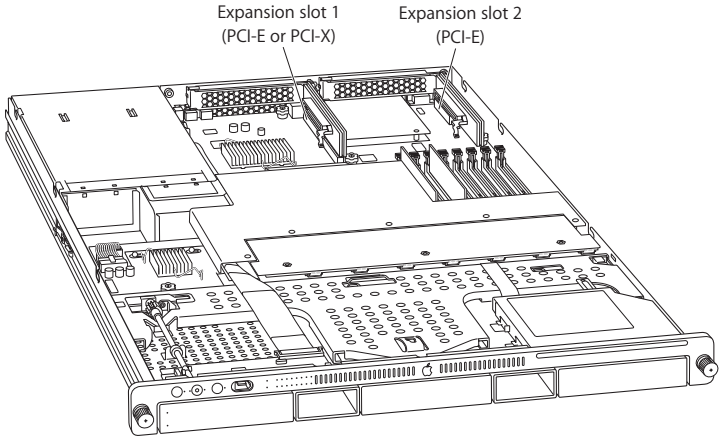
Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Expansion Card Riser Overview

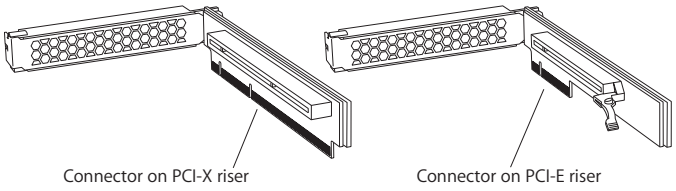
The server has two expansion slots:

- Slot 1, which accepts full-length (9 inch) PCI-E or PCI-X cards
- Slot 2, which accepts half-length (6.6 inch) PCI-E cards



To accommodate expansion card installation, the server uses two types of PCI riser:

- A PCI-E riser card, which can go in either slot, and accepts only PCI-E cards
- A PCI-X riser can go in slot 1, and accepts only PCI-X cards



When replacing a riser card, you must transfer the installed PCI card to the replacement riser card.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

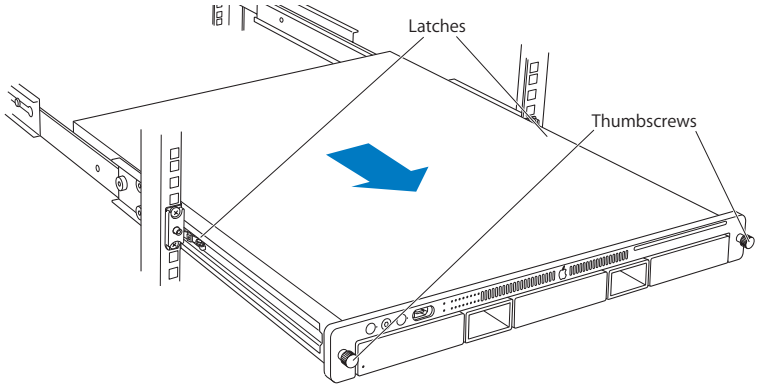
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.
3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.

6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



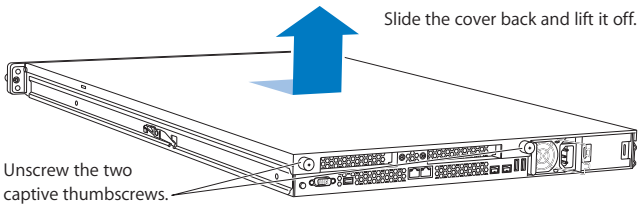
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

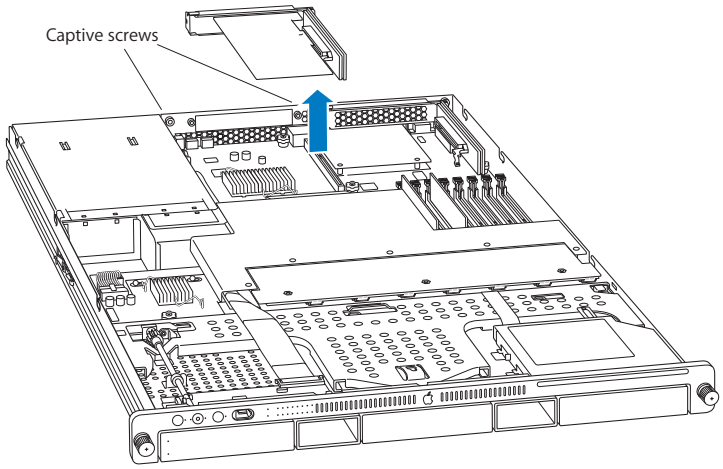
Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

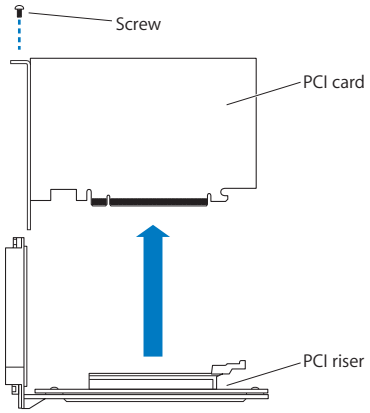


Removing the Installed Expansion Card Riser

1. Loosen the two captive screws that secure the riser bracket to the back panel.
2. Carefully pull up on the bracket and riser, with the expansion card still attached, to disconnect the riser from the logic board.



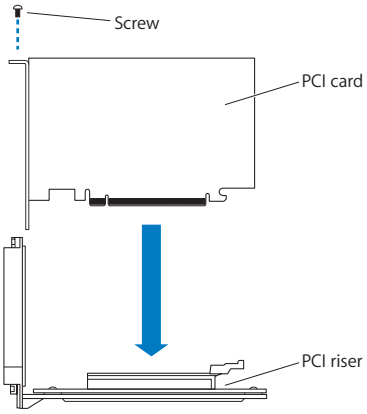
3. Tilt the expansion card up so that its port clears the enclosure, and remove the riser and card from the Xserve.
4. Remove the screw that secures the expansion card to the riser, and separate the card and riser by gently pulling them apart.



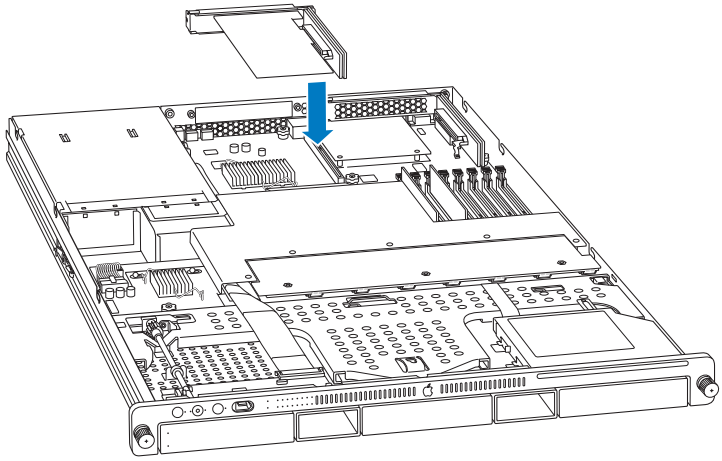
Warning: When removing or installing an expansion card, handle it only by the edges. Do not touch its connectors or any of the components on the card. Lift the card straight out from the connector to remove it, and insert it straight into the connector to install it. Do not rock the card from side to side and don't force the card into the slot. Once the replacement card is installed, pull on it gently to check that it is properly connected.

Installing the Replacement Expansion Card Riser

1. Transfer the expansion card to the replacement riser by seating the PCI card in the riser slot. Then replace the screw to secure the card in the riser.



2. Align the riser with the slot on the logic board and press to seat the card.



3. Tighten the captive screws that secure the riser bracket to the back panel.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Airflow Duct
Replacement Instructions

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Working Safely Inside the Xserve

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Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

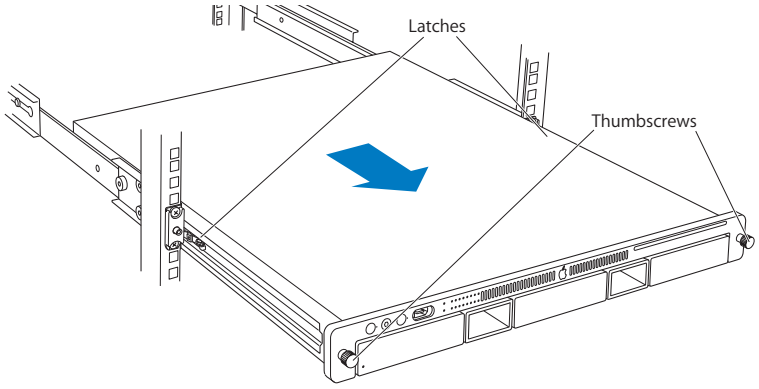
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



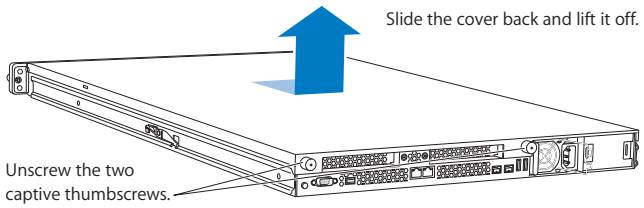
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

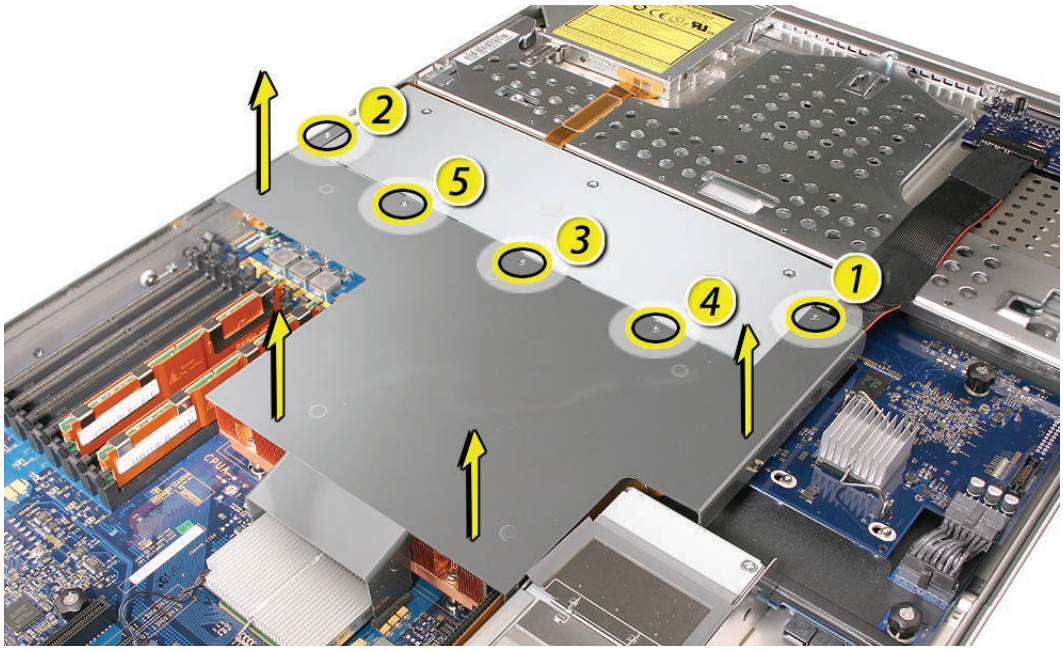
Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



Removing the Installed Airflow Duct

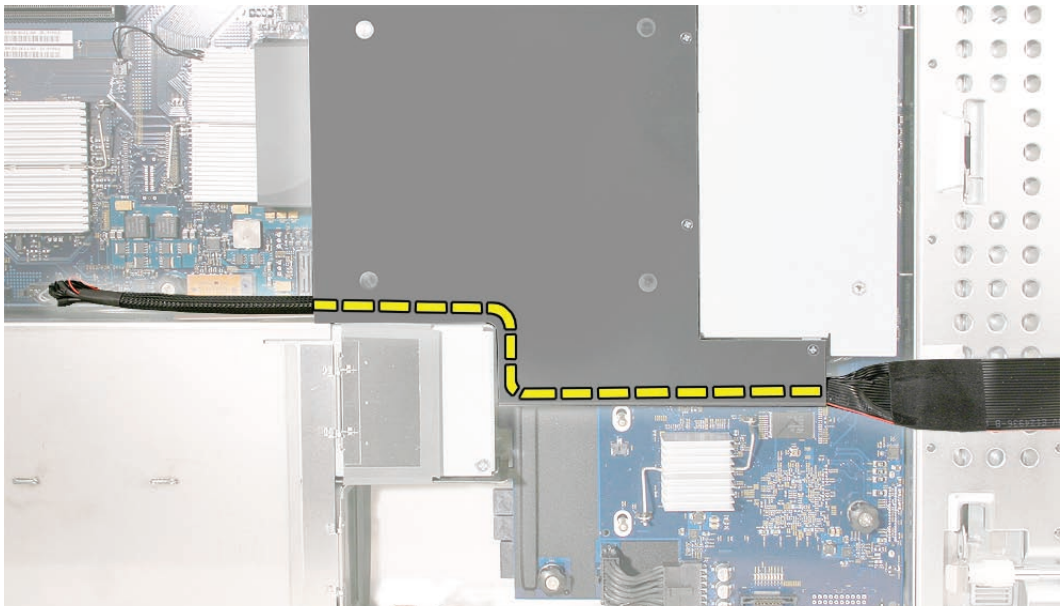
1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.



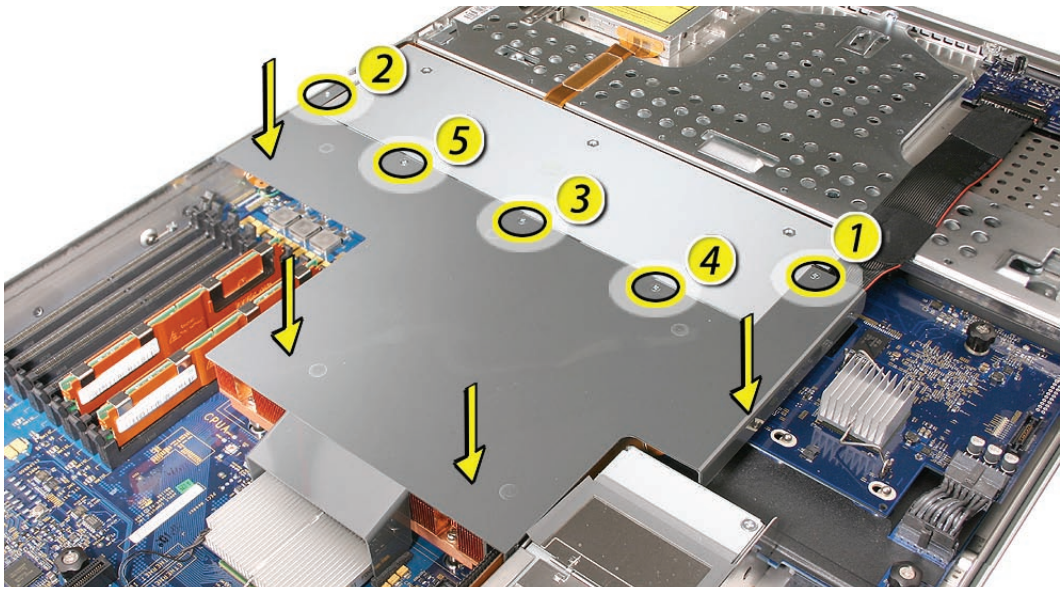
Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.

Installing the Replacement Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.
3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Fan Array
Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

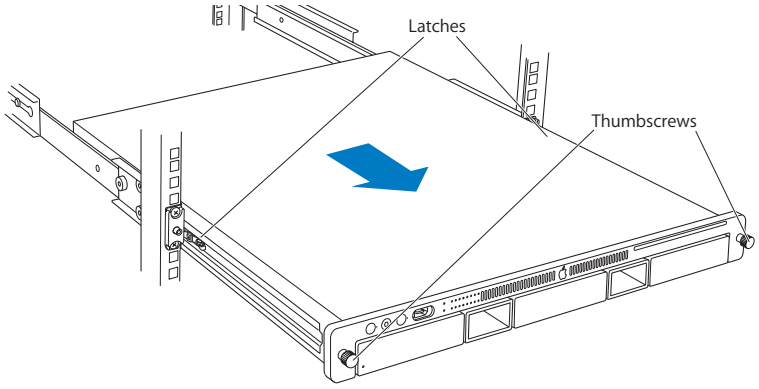
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



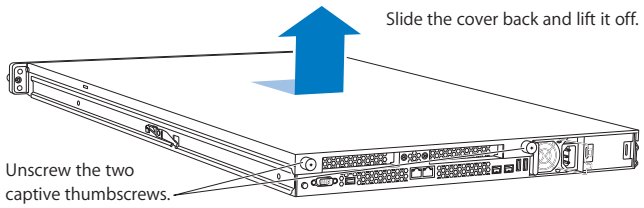
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

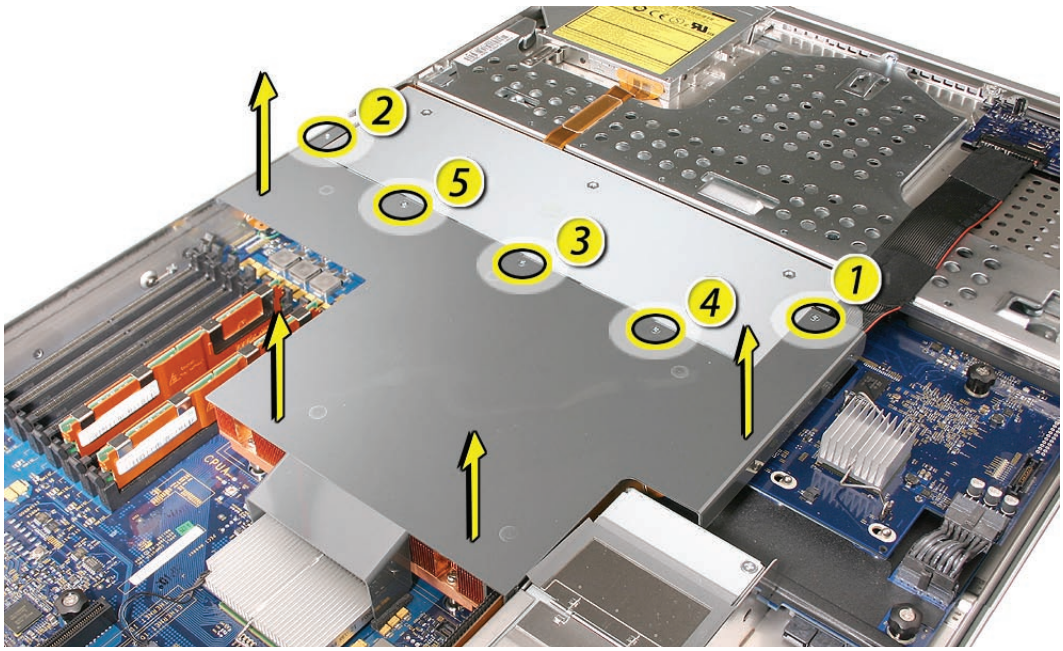


Removing the Installed Fan Array

Note: Before you can remove the fan array, you must remove the airflow duct.

Airflow Duct

1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.

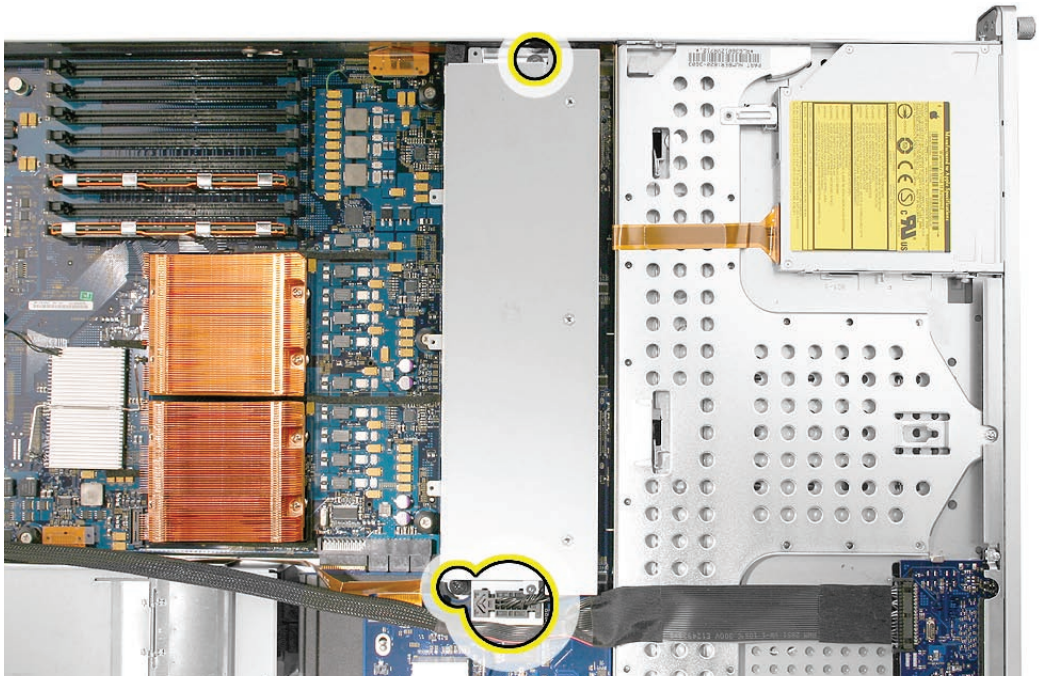


Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.

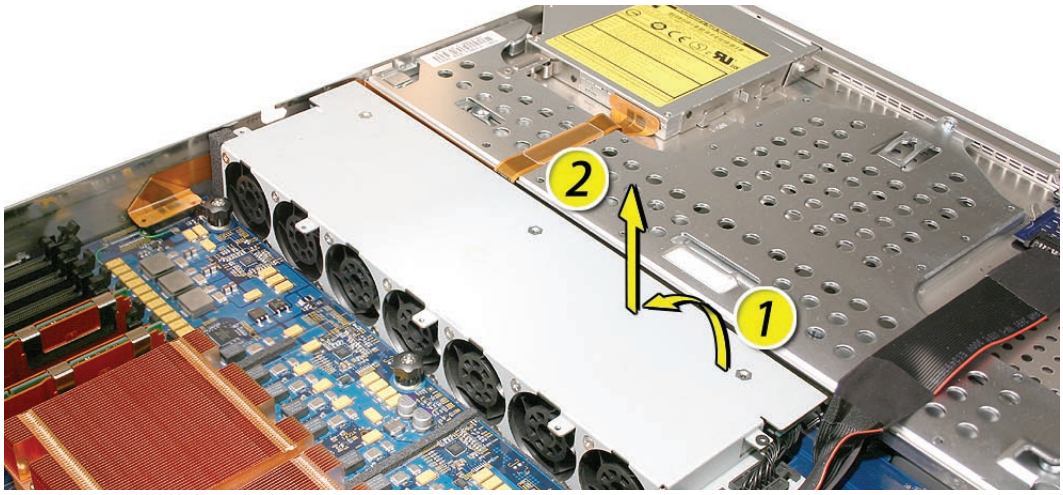
Fan Array

1. Loosen the two thumbscrews that secure the fan array to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.

2. Lift the fan array to remove it from the Xserve.
   Note: You may need to move the front panel cable slightly out of the way of the fan array power connector during removal or replacement. Be careful not to pinch the front panel board cable between the fan array and any other surface inside.

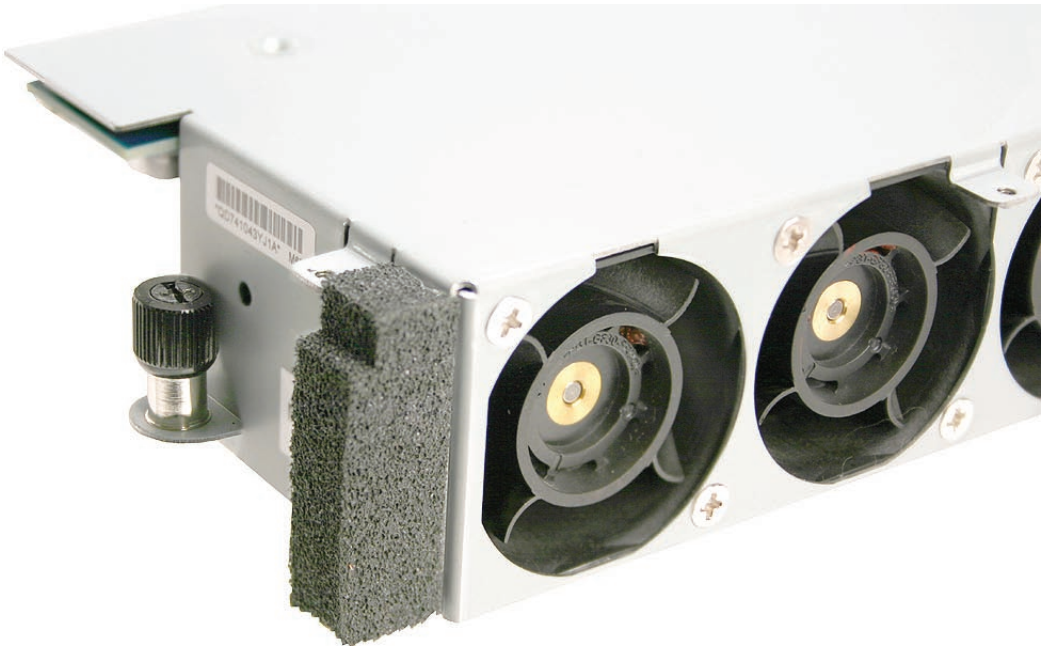


Note: You may encounter some resistance around the fan array power connector during removal. If so, carefully rotate the fan array as shown to disconnect it from the power distribution board below, and then lift the fan array out of the computer.



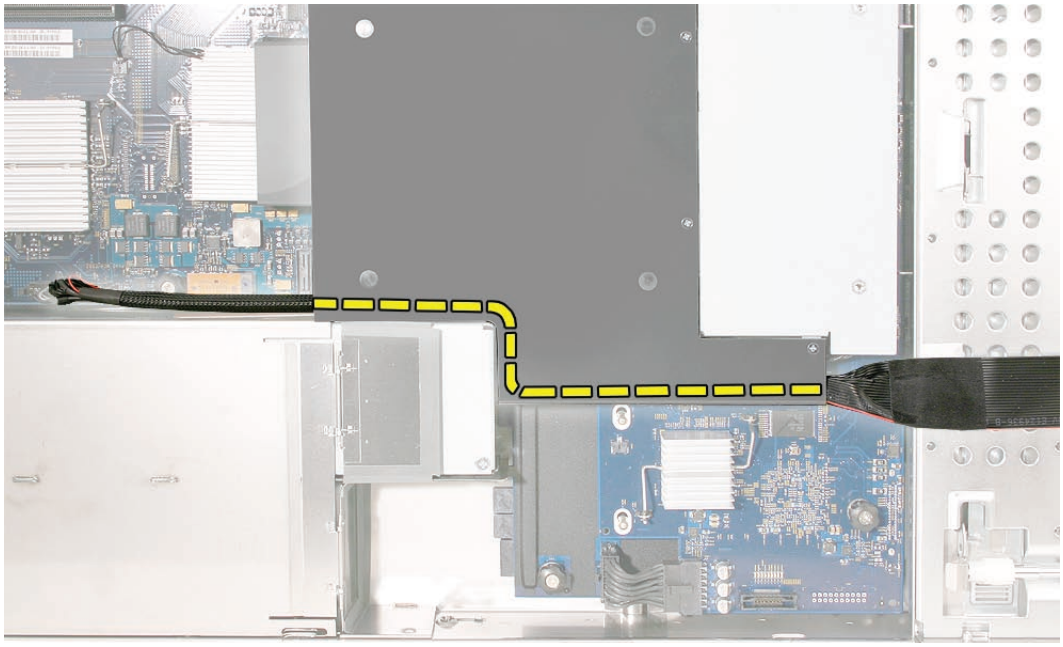
Installing the Replacement Fan Array

1. Install the foam included in the replacement parts box on the replacement fan array, as shown below.



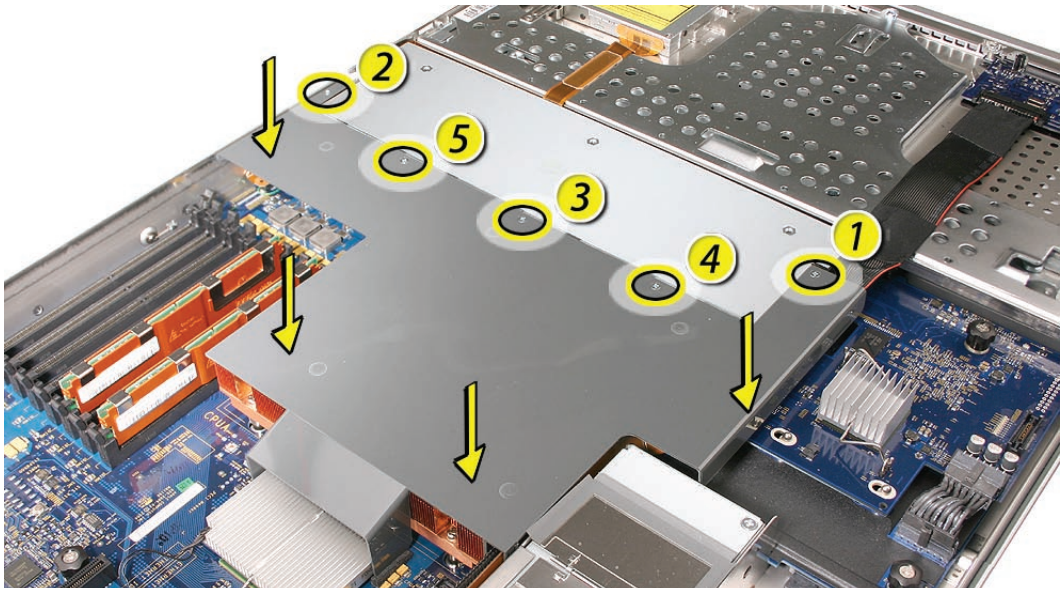
2. Align the power connector on the fan array with its connector on the power distribution board and lower the array into the enclosure. Push down on the fan array power connector to make sure it is fully seated.
3. Tighten the screws at the ends of the array. Make sure the large front panel board cable runs above the power connector but below the tab on the top of the power supply.

4. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



5. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.

6. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Front Panel Board Cable Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

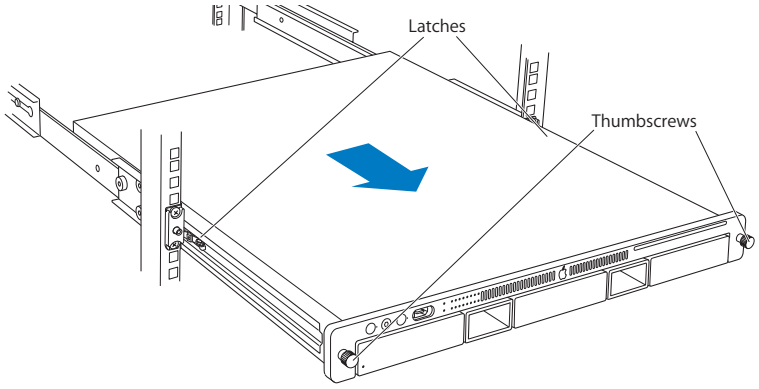
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



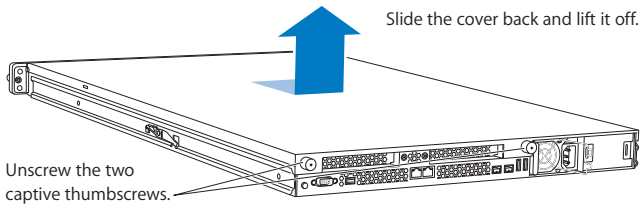
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

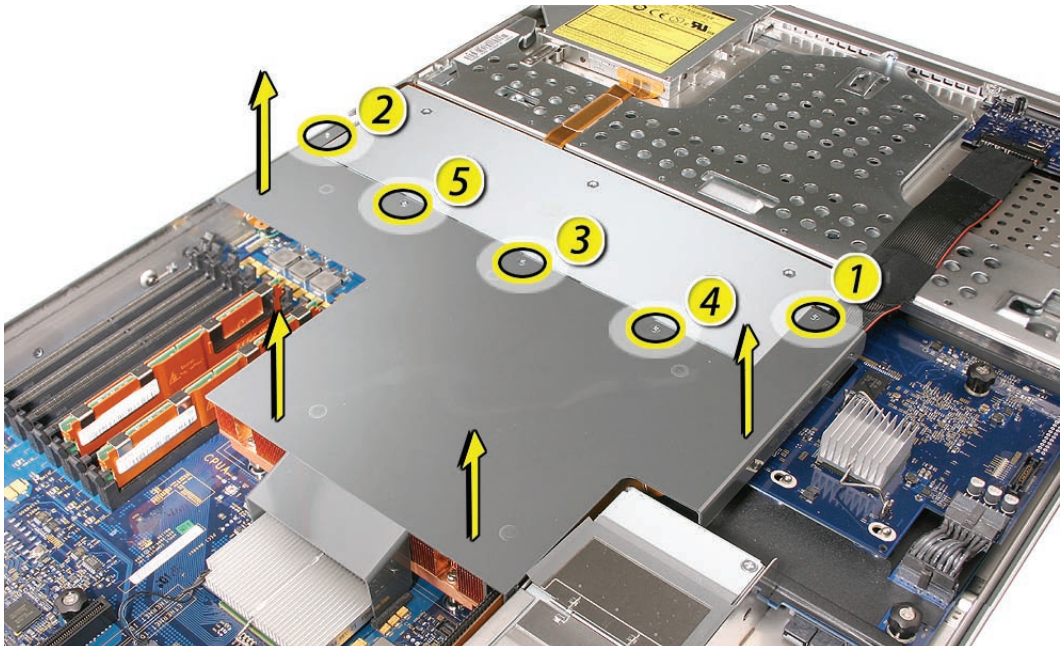


Removing the Installed Front Panel Board Cable

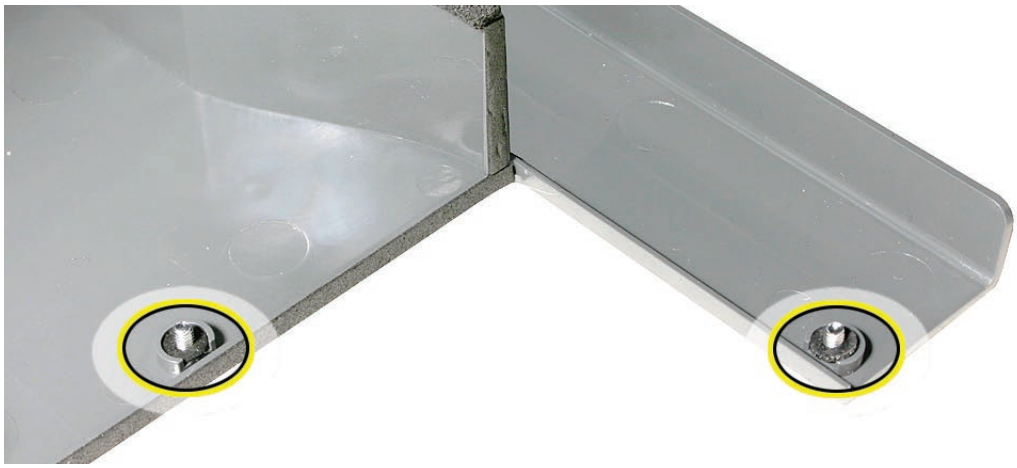
Note: Before you can remove the front panel board cable, you must remove the airflow duct and left PCI riser.

Airflow Duct

1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.

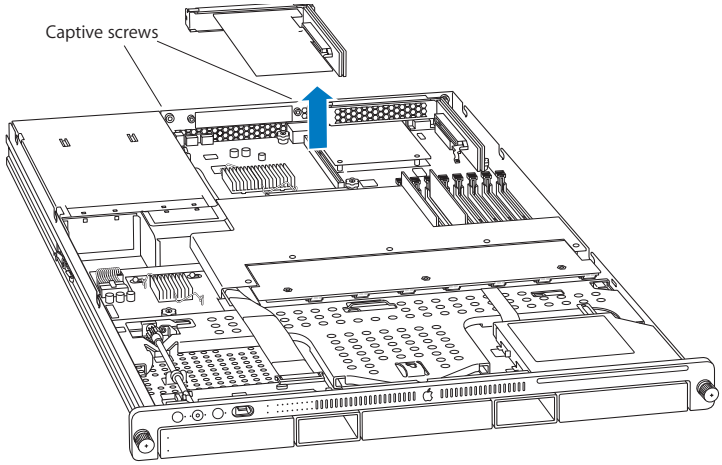


Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.



Left PCI Riser Card

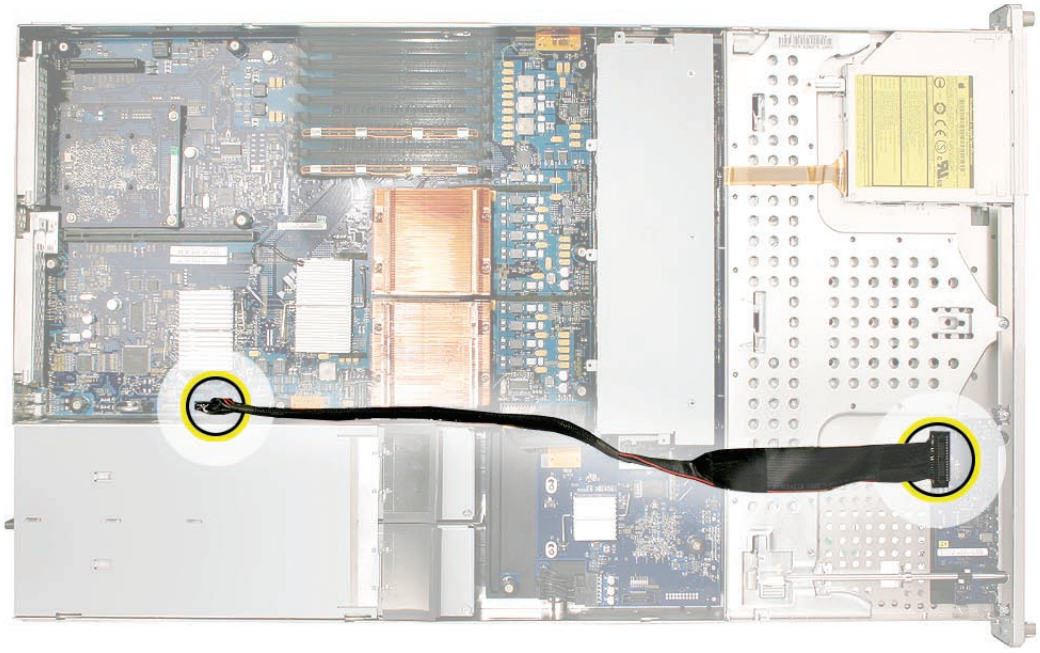
1. Loosen the two captive screws that secure the left riser bracket to the back panel.
2. Carefully pull up on the left bracket and riser to disconnect the riser from the logic board. If an expansion card is installed in the riser, leave it attached.



3. Tilt the expansion card up so that its port clears the enclosure, and remove the riser and card from the Xserve.

Front Panel Board Cable

1. Release the locking levers on the cable connectors and disconnect the front panel board cable from the front panel board and the logic board.
2. Remove the cable from the Xserve.



Installing the Replacement Front Panel Board Cable

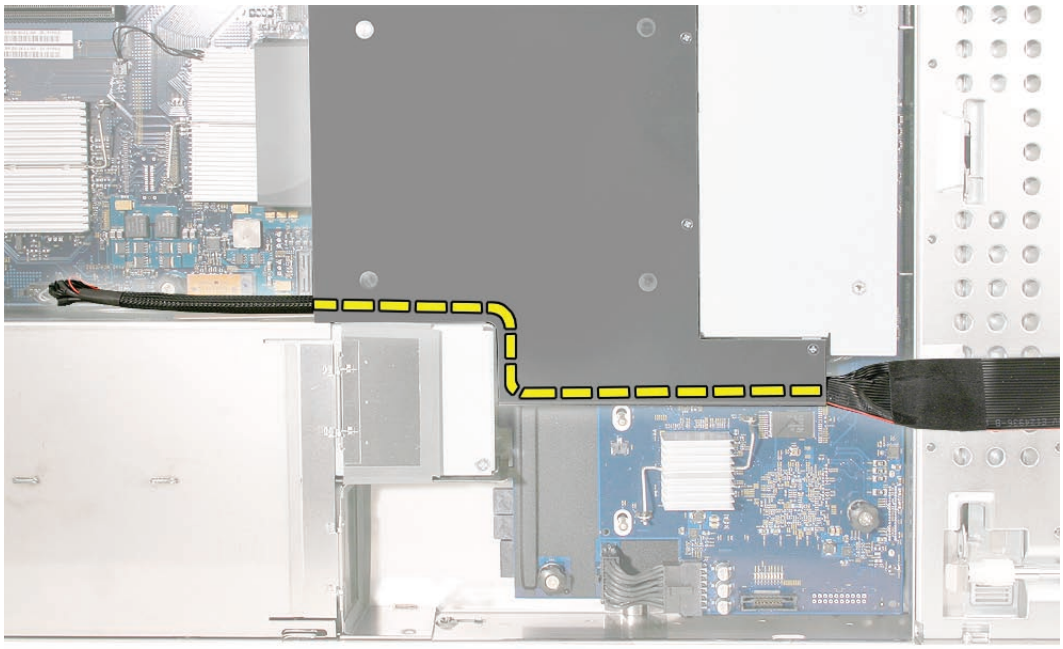
Connect the replacement front panel board cable to the front panel board and the logic board.

Replacing the Left PCI Riser Card

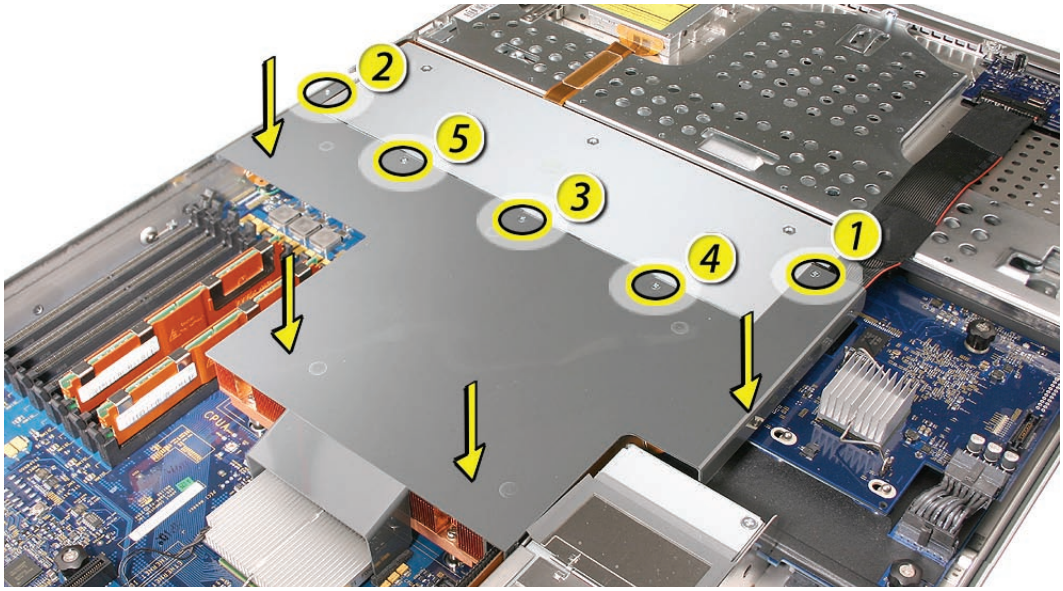
1. Align the left riser card with its slot on the logic board and press to seat the riser.
2. Tighten the captive screws that secure the riser bracket to the back panel.

Replacing the Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.
3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Every effort has been made to ensure that the information in this document is accurate. Apple is not responsible for printing or clerical errors.

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Backplane-to-Logic Board Cable Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

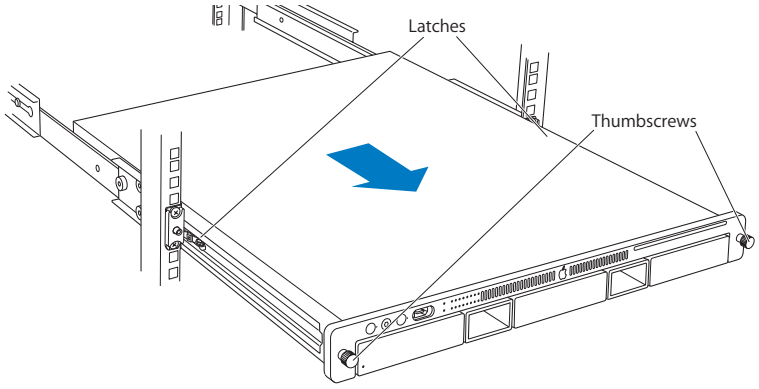
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



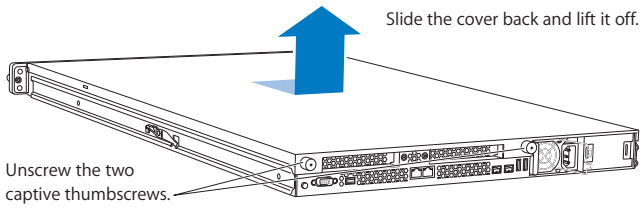
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

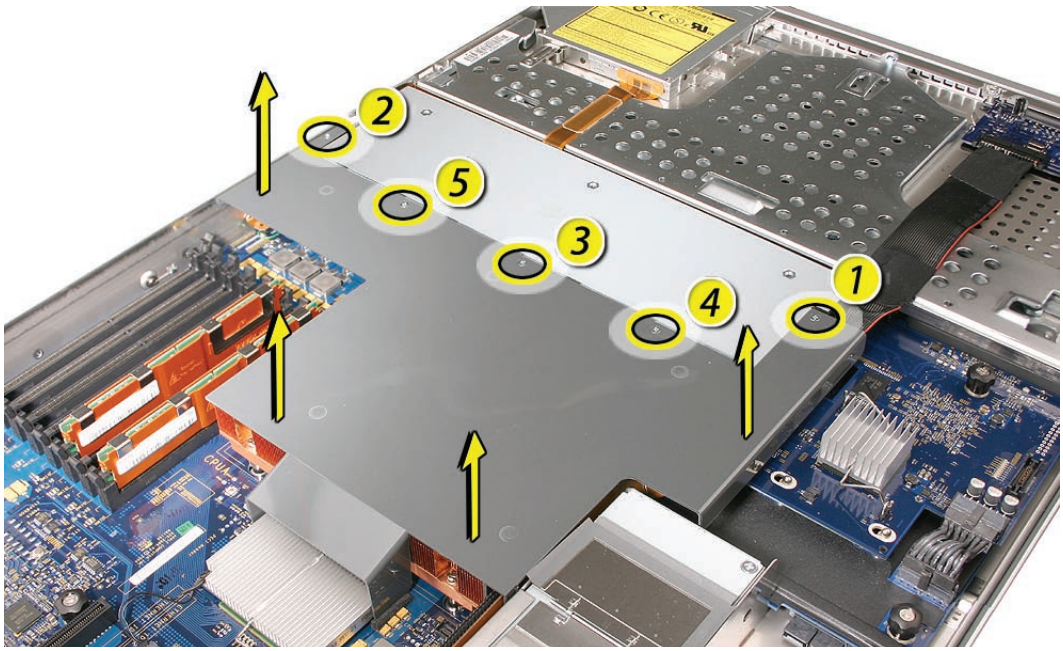


Removing the Installed Backplane-to-Logic Board Cable

Note: Before removing the backplane-to-logic board cable, you must remove the airflow duct.

Airflow Duct

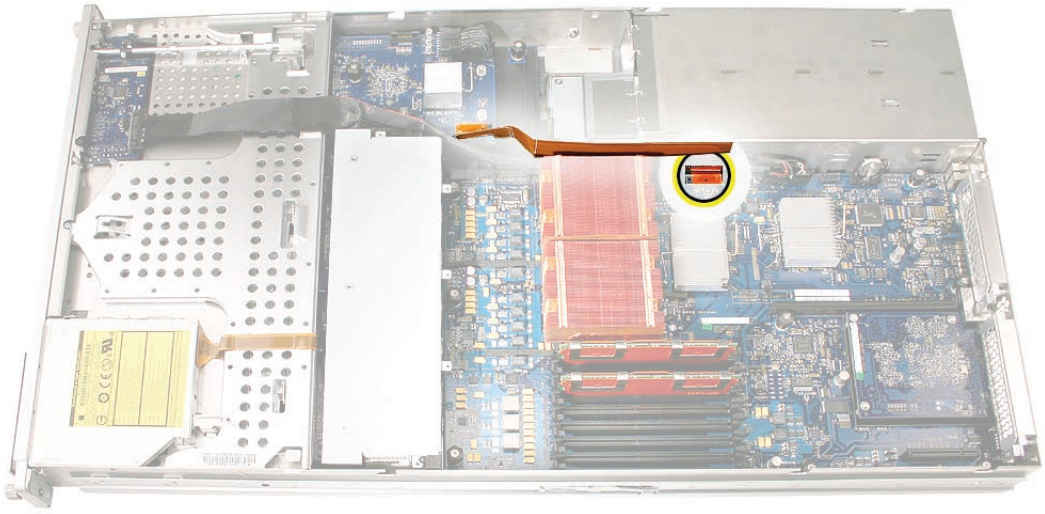
1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.



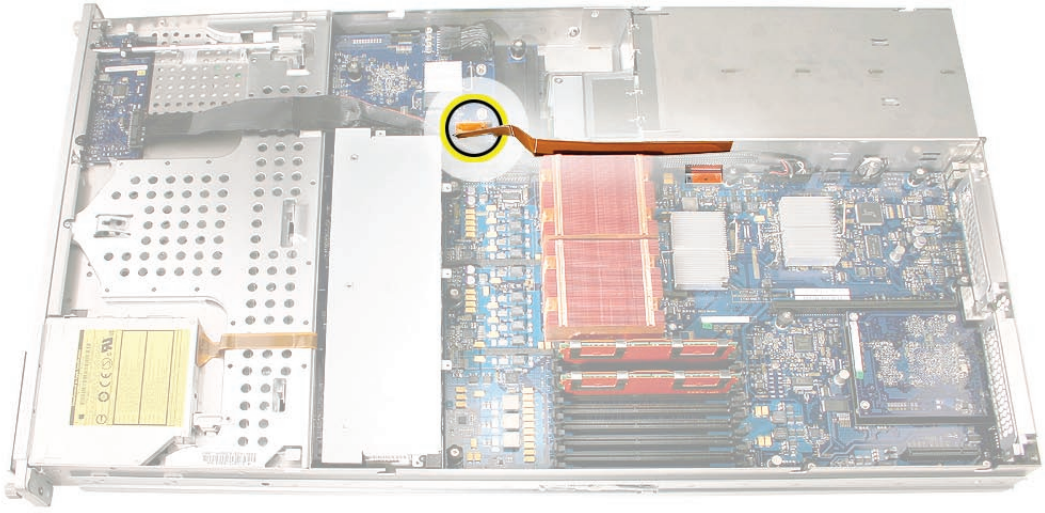
Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.

Backplane-to-Logic Board Cable

1. Disconnect the backplane-to-logic board cable from the logic board first.

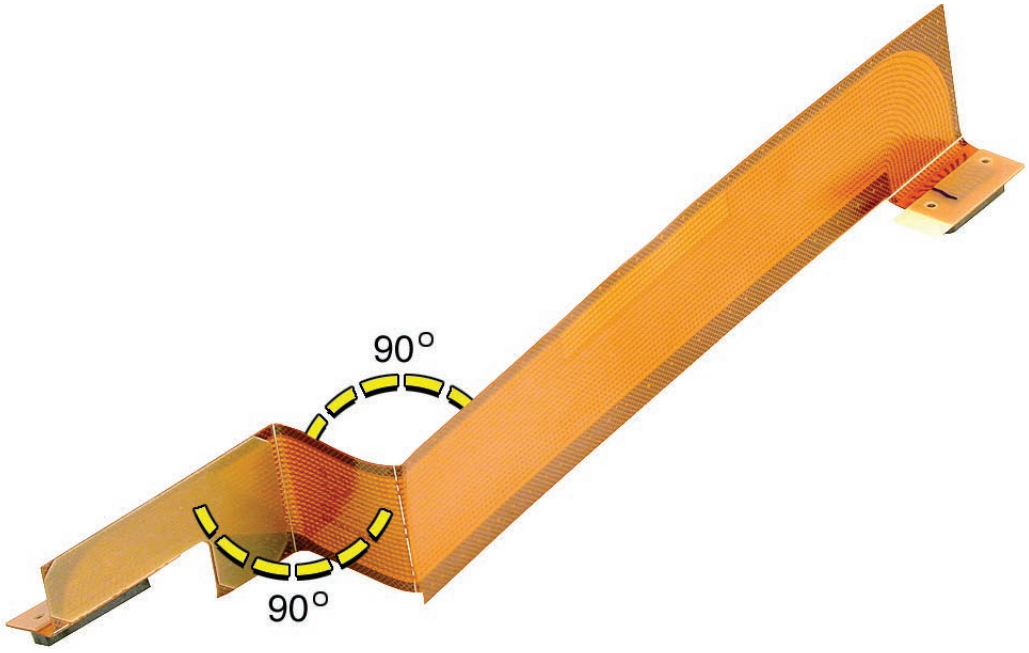


2. Disconnect the backplane-to-logic board cable from the drive interconnect backplane and remove the cable from the Xserve.



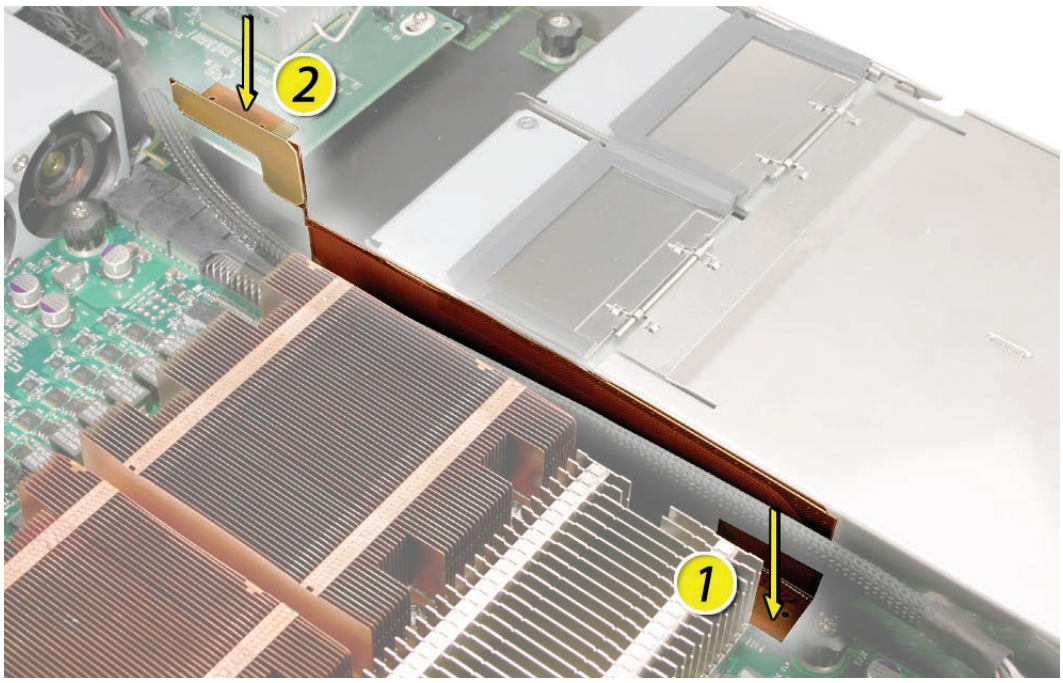
Installing the Replacement Backplane-to-Logic Board Cable

1. Fold the replacement cable to a 90-degree angle along its creases.



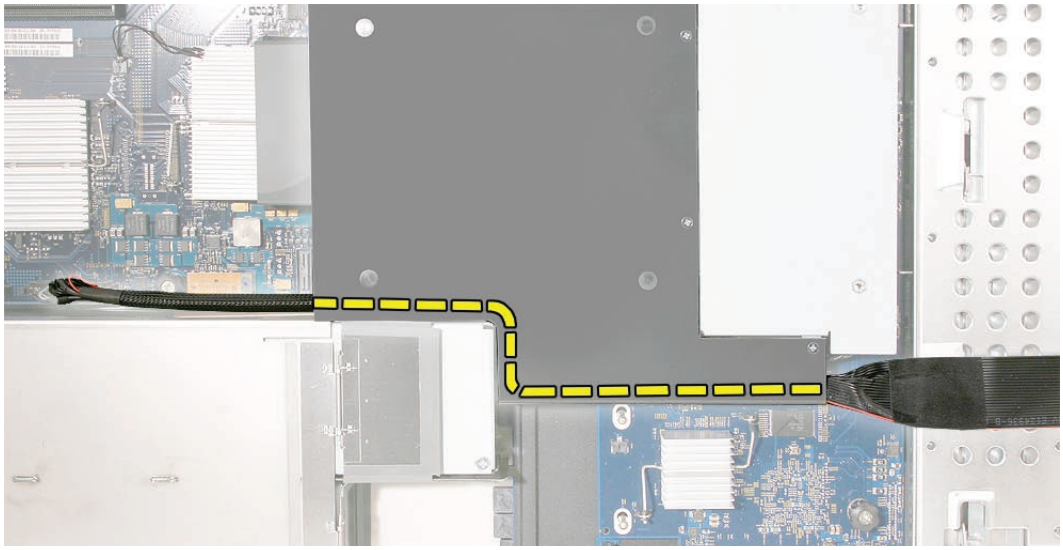
2. Connect the cable to the logic board first. Then press the adhesive section of the cable onto the enclosure before connecting the other end of the cable to the backplane.

   Caution: Make sure the cable is fully seated.

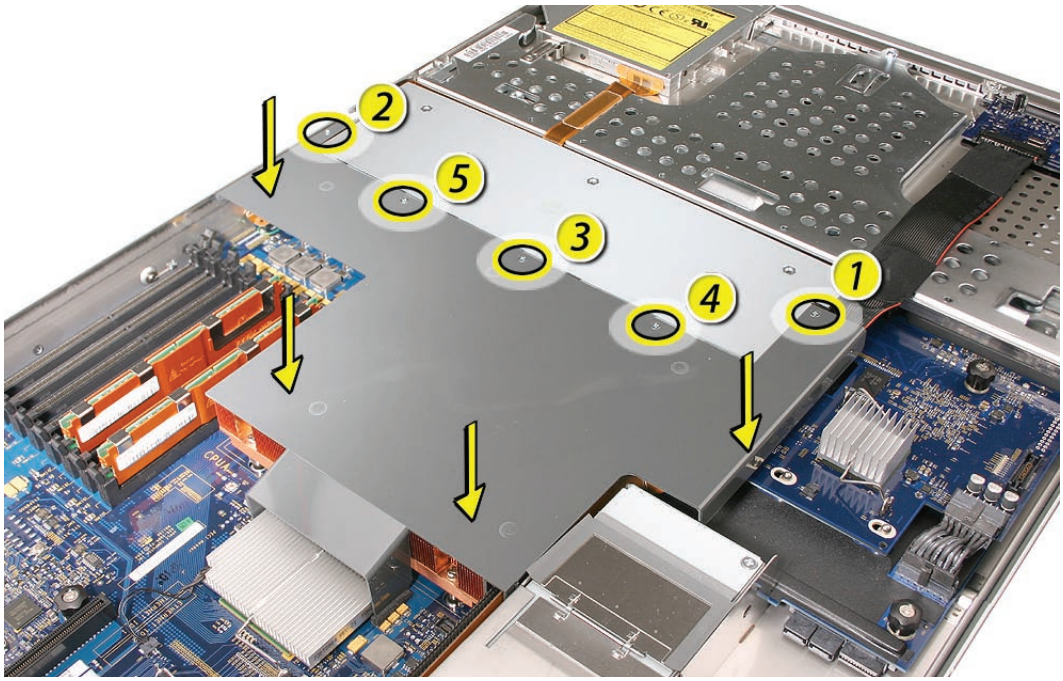


Replacing the Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.
3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Optical Drive Cable Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

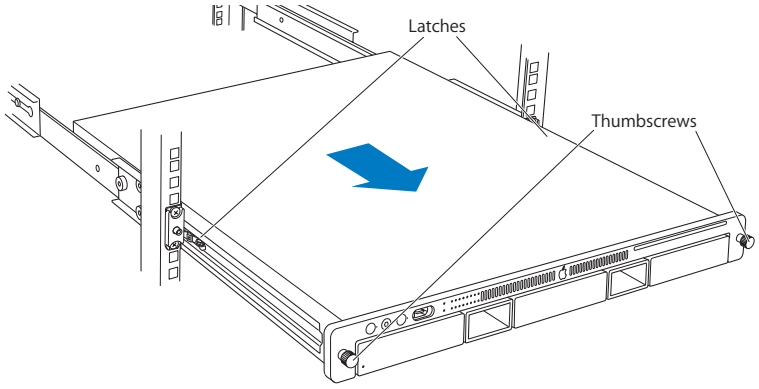
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



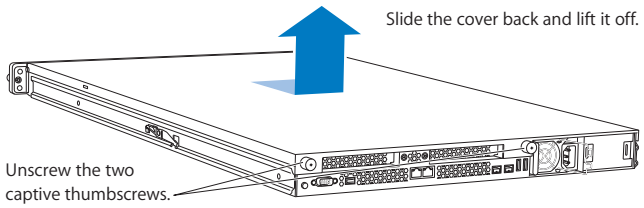
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

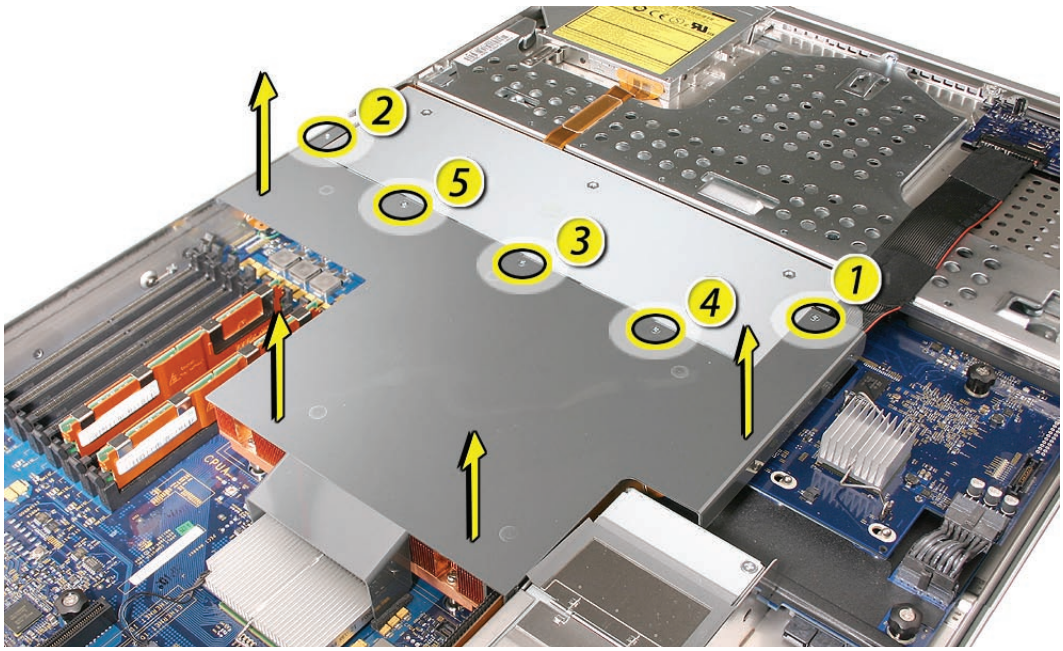


Removing the Optical Drive Cable

Note: Before removing the optical drive cable, you must remove the airflow duct and fan array.

Airflow Duct

1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.

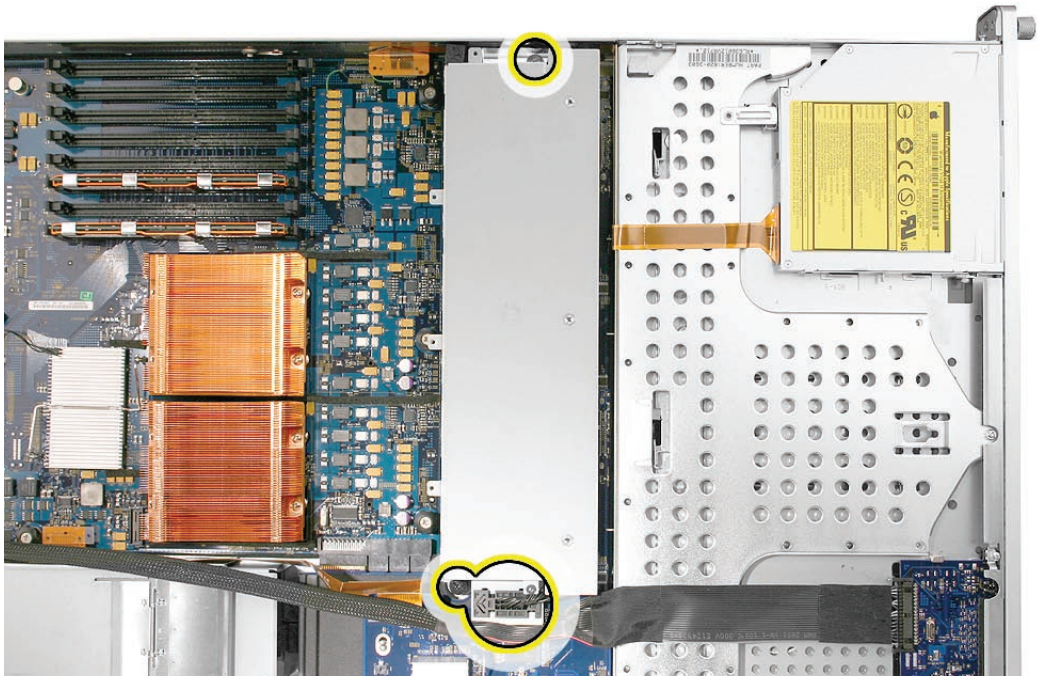


Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.

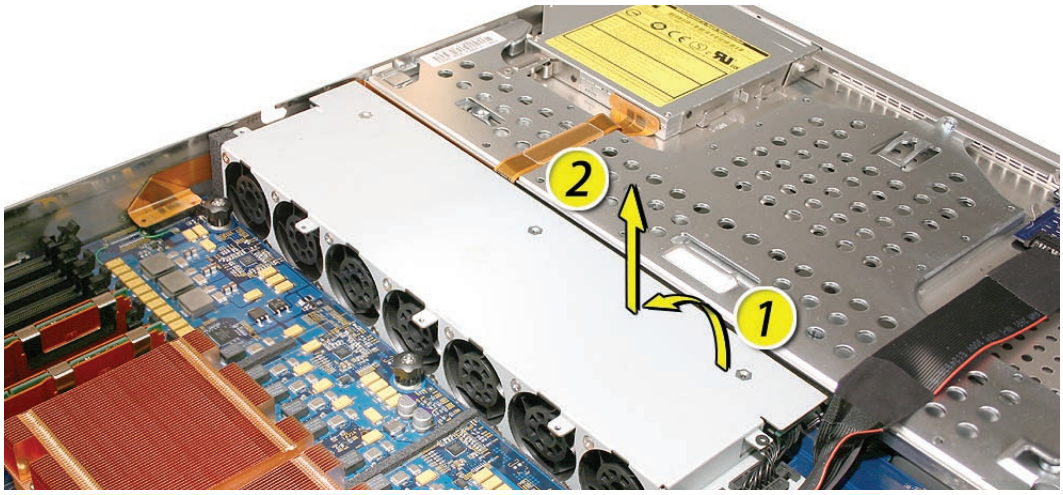
Fan Array

1. Loosen the two thumbscrews that secure the fan array to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.

2. Lift the fan array to remove it from the Xserve.
   Note: You may need to move the front panel cable slightly out of the way of the fan array power connector during removal or replacement. Be careful not to pinch the front panel board cable between the fan array and any other surface inside.



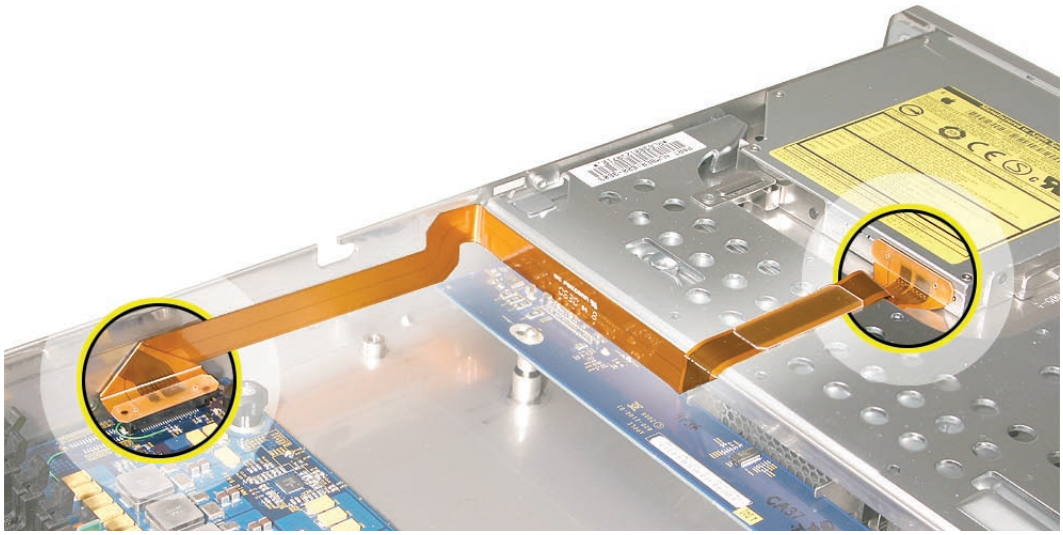
Note: You may encounter some resistance around the fan array power connector during removal. If so, carefully rotate the fan array as shown to disconnect it from the power distribution board below, and then lift the fan array out of the computer.



Optical Drive Cable

Note: The optical drive cable is attached to the enclosure with adhesive on the underside of the cable.

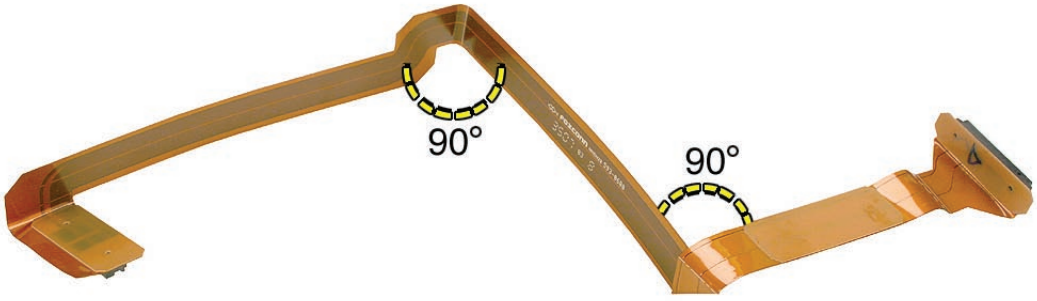
1. Disconnect the optical drive cable from the optical drive.
2. Disconnect the optical drive cable from the logic board.



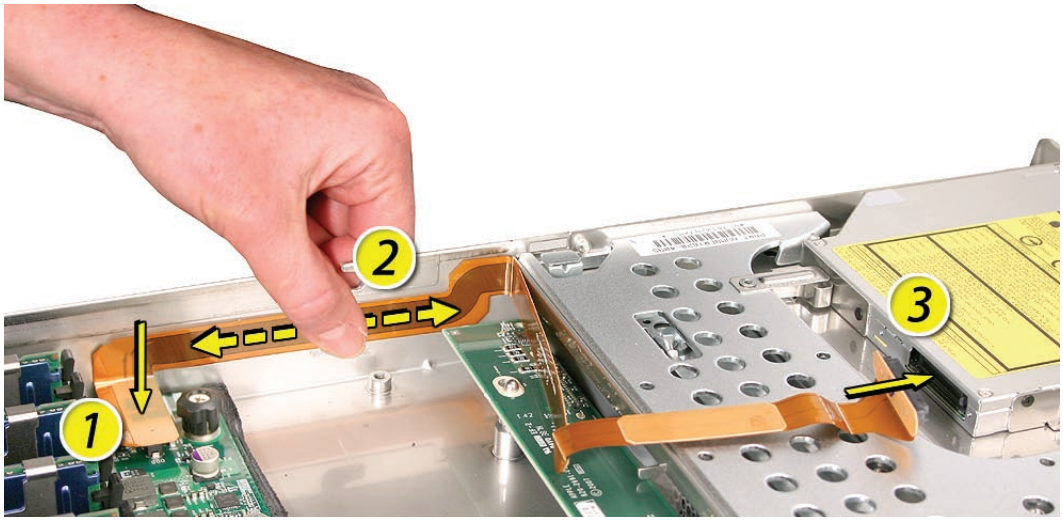
3. Carefully pry the cable's adhesive from the enclosure and remove the cable from the Xserve.

Installing the Replacement Optical Drive Cable

1. Fold the replacement optical drive cable to 90-degree angles along its creases.



2. Connect the replacement optical drive cable to the logic board first. Then press the adhesive section of the cable onto the enclosure before connecting the other end of the cable to the optical drive.

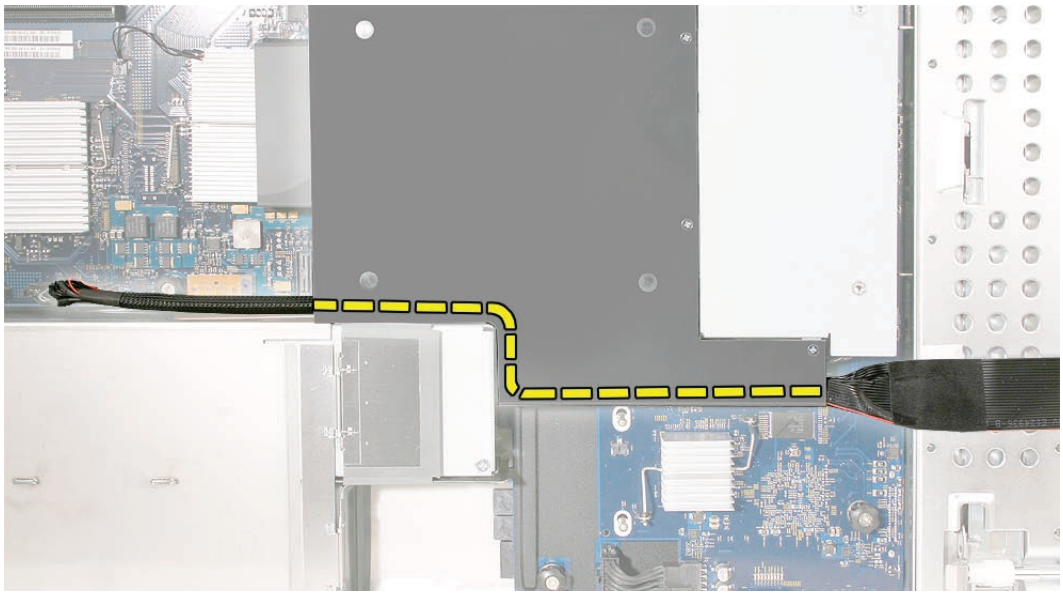


Replacing the Fan Array

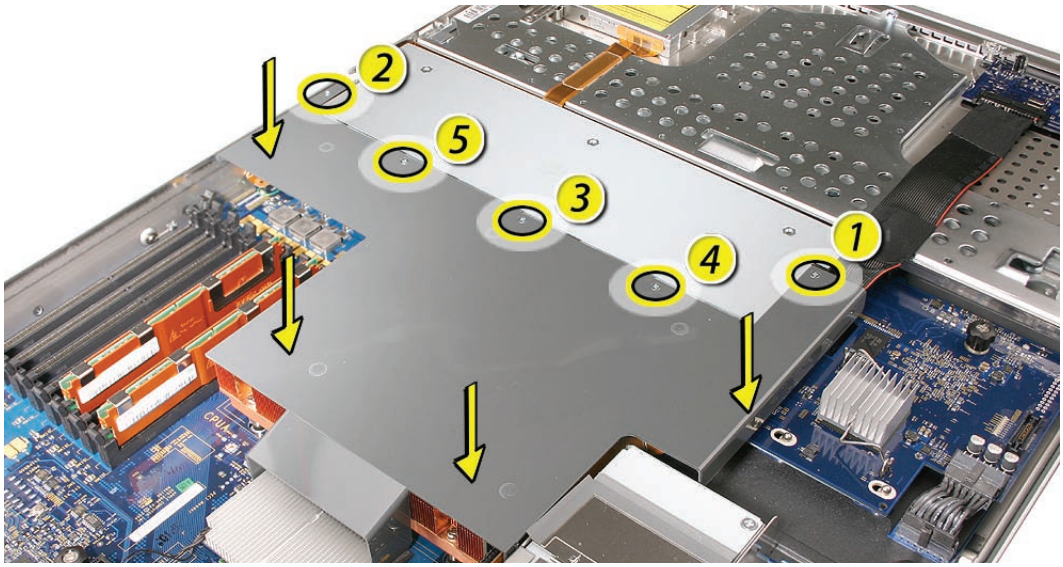
1. Align the power connector on the fan array with its connector on the power distribution board and lower the array into the enclosure. Push down on the fan array power connector to make sure it is fully seated.
2. Tighten the screws at the ends of the array. Make sure the large front panel board cable runs above the power connector but below the tab on the top of the power supply.

Replacing the Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.
3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Locking Mechanism Rod and Gear Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

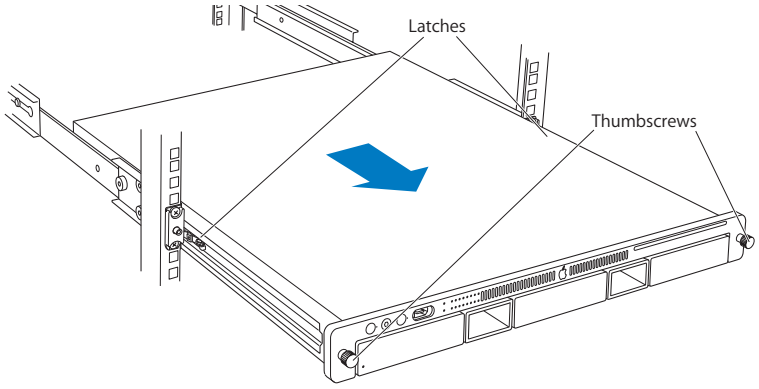
Tools Required

No tools are required for this procedure. You may, however, find a small flatblade screwdriver useful in releasing the cable connector.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



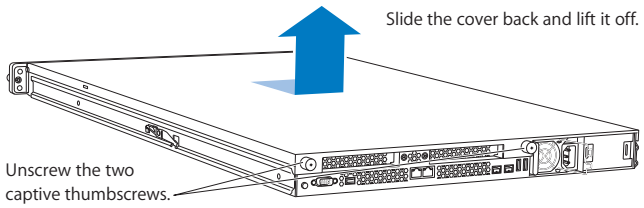
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

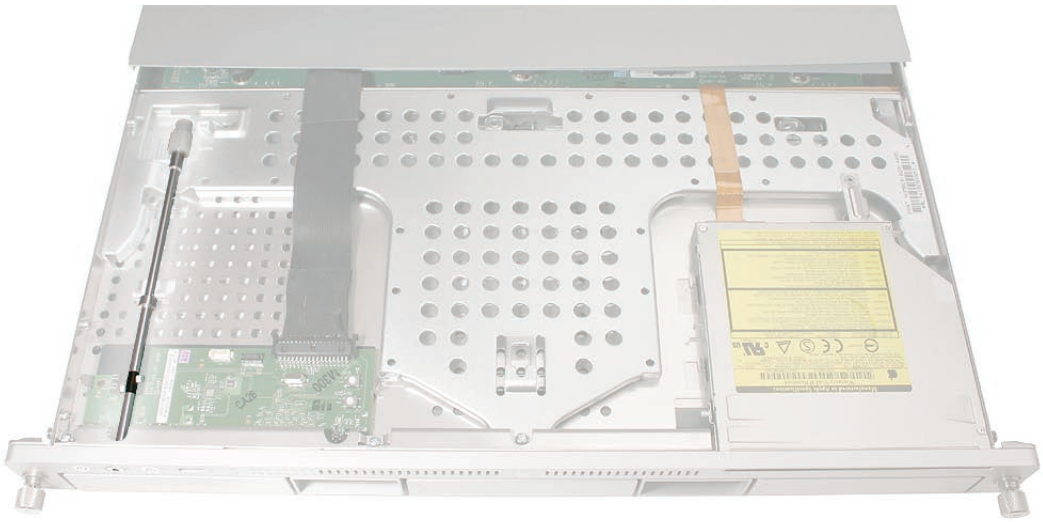
Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

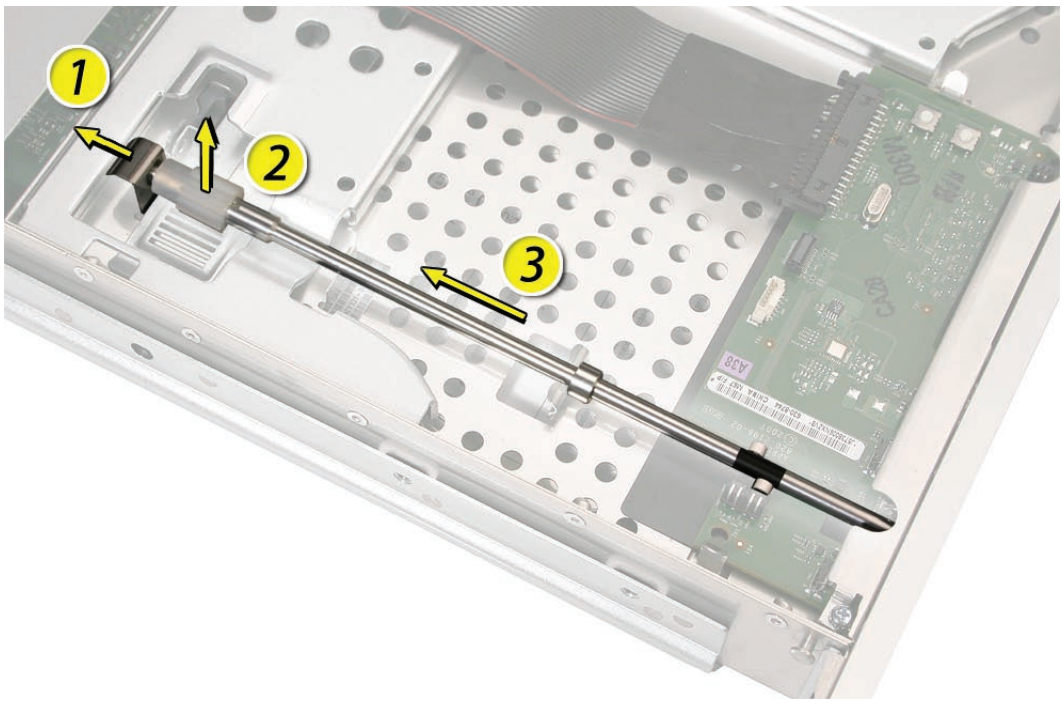


Removing the Installed Locking Mechanism Rod and Gear

1. Locate the locking mechanism rod and gear.



2. Gently press back on the latch, tilt up the gear end of the rod, and remove the rod from the server.

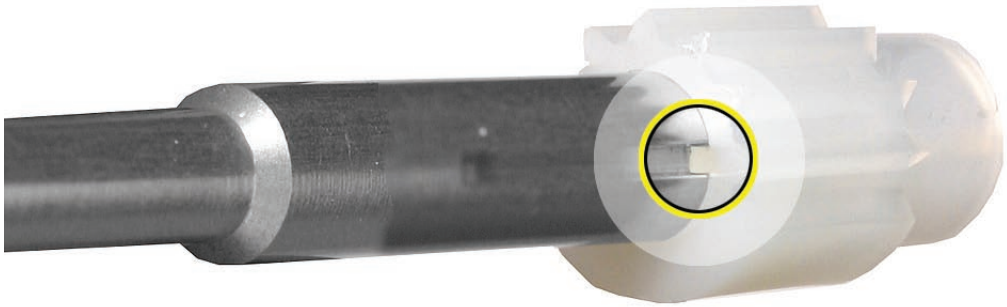


3. If you are replacing the plastic gear on the end of the rod, slide the gear off the rod.

Installing the Replacement Locking Mechanism Rod and Gear

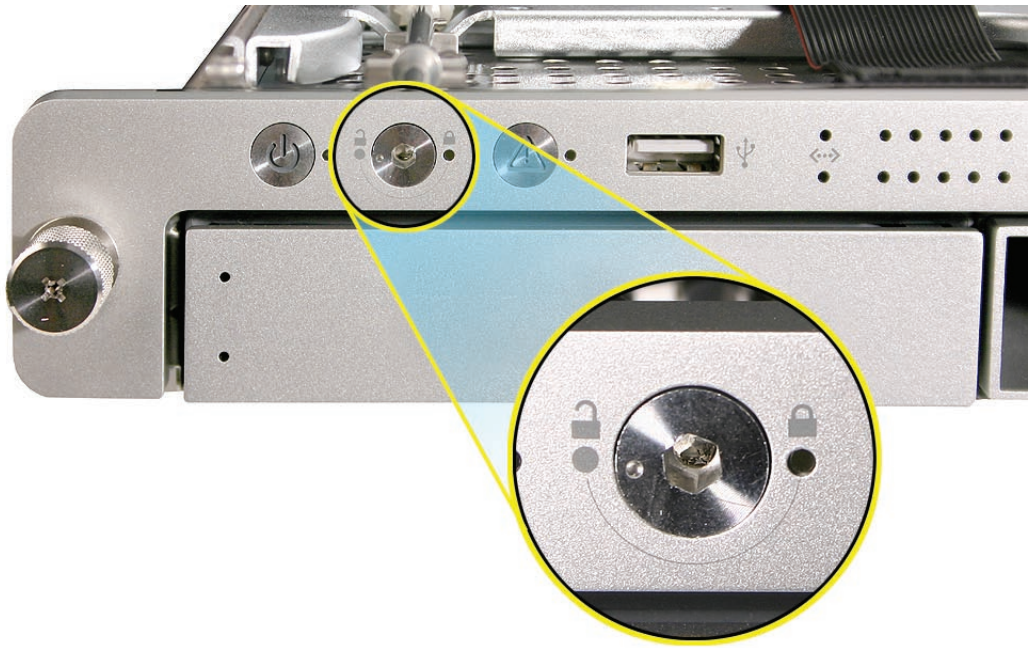
1. To install a replacement locking mechanism gear, slide it onto the notched end of the locking rod by aligning the narrow end of the gear with the end of the rod.

   Note: Make sure the rib inside the gear engages with the notch in the rod.



2. To install a replacement locking mechanism rod, insert the end of the rod with the key hole into the port on the front bezel.

   Note: Make sure the small circle on the front of the rod aligns with the "unlocked" symbol on the front of the bezel.



3. Pull back the latch that secures the rod, and gently press the rod down until it clicks into place.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Front Panel Board
Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

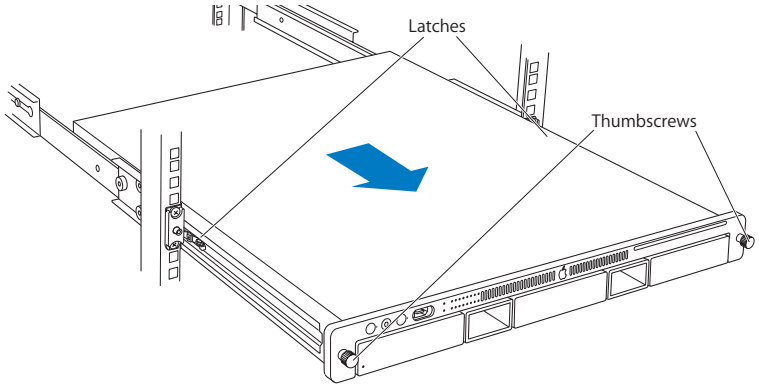
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



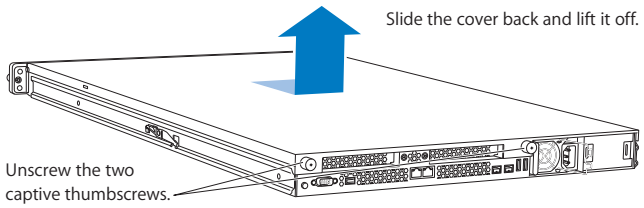
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

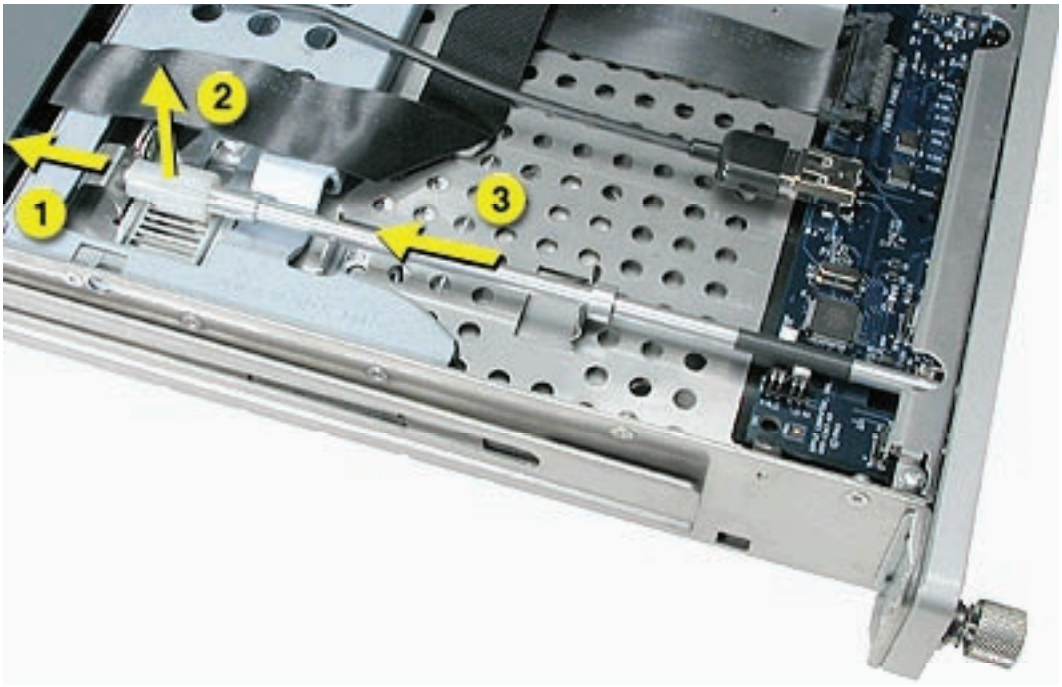


Removing the Installed Front Panel Board

Note: Before removing the front panel board, you must remove the locking mechanism rod.

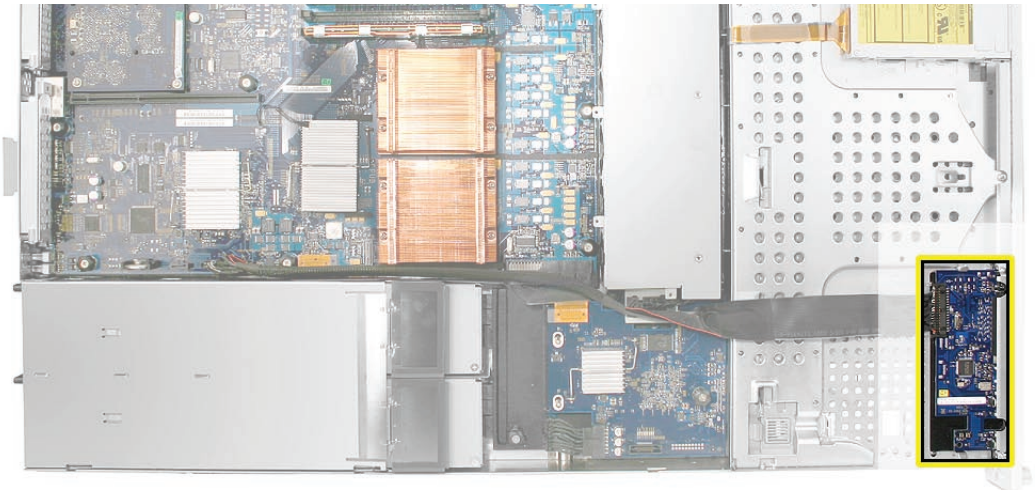
Locking Mechanism Rod

1. Pull back the latch to release the gear end of the locking mechanism rod.
2. Tilt up the gear end of the rod and remove the rod from the server.

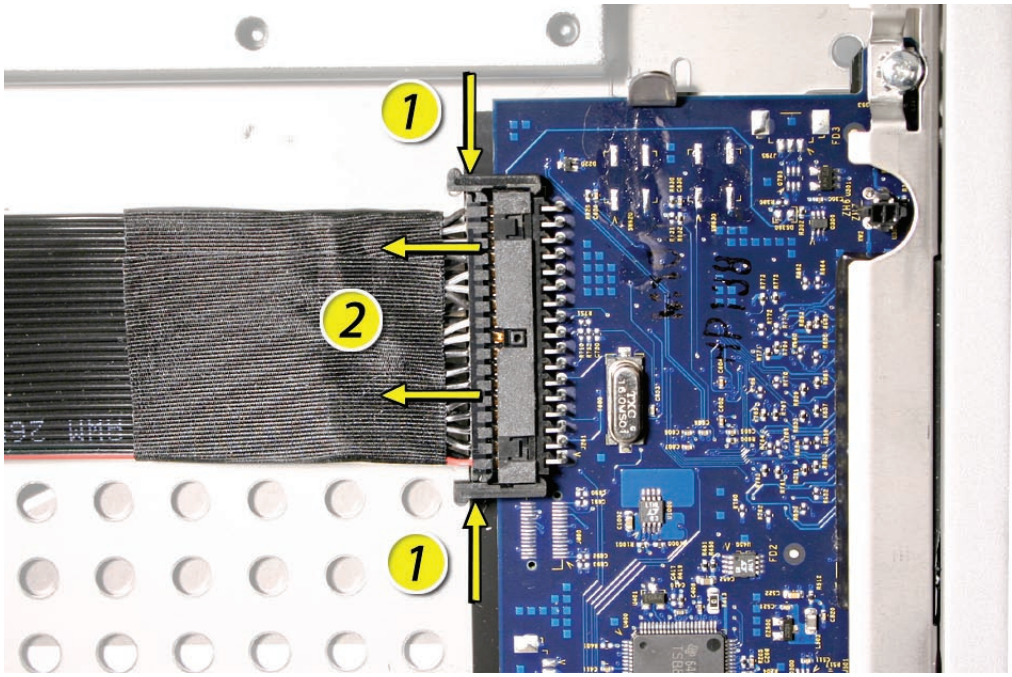


Front Panel Board

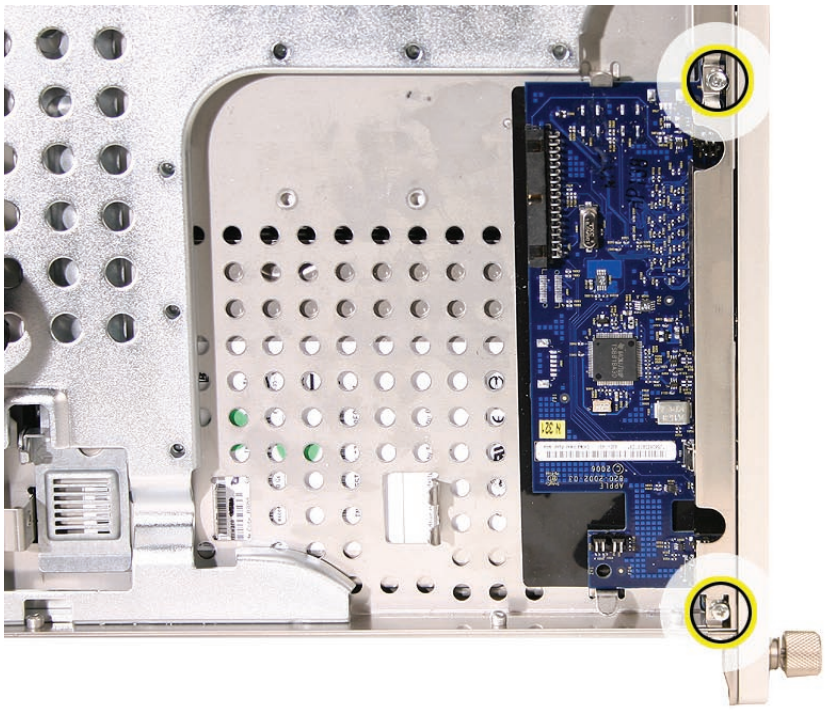
1. Locate the front panel board.



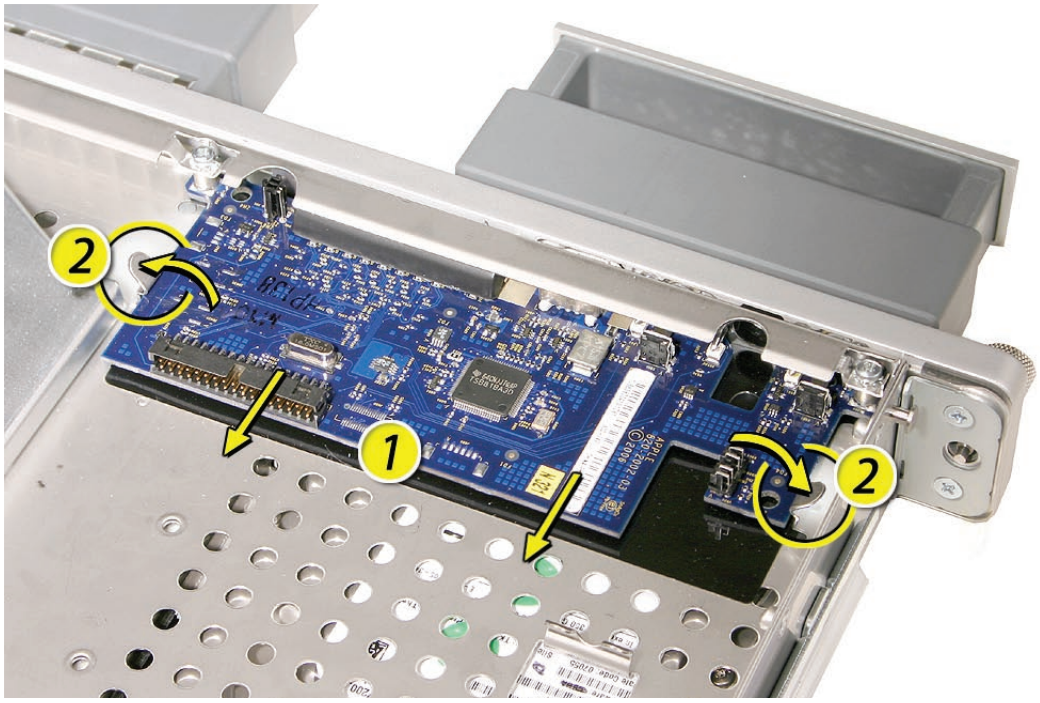
2. Release the two locking levers on the front panel board cable connector and disconnect the cable from the front panel board.



3. Remove the two Phillips screws that mount the front panel board to the chassis.



4. Slide the board back slightly and release the two clips on either side of it.



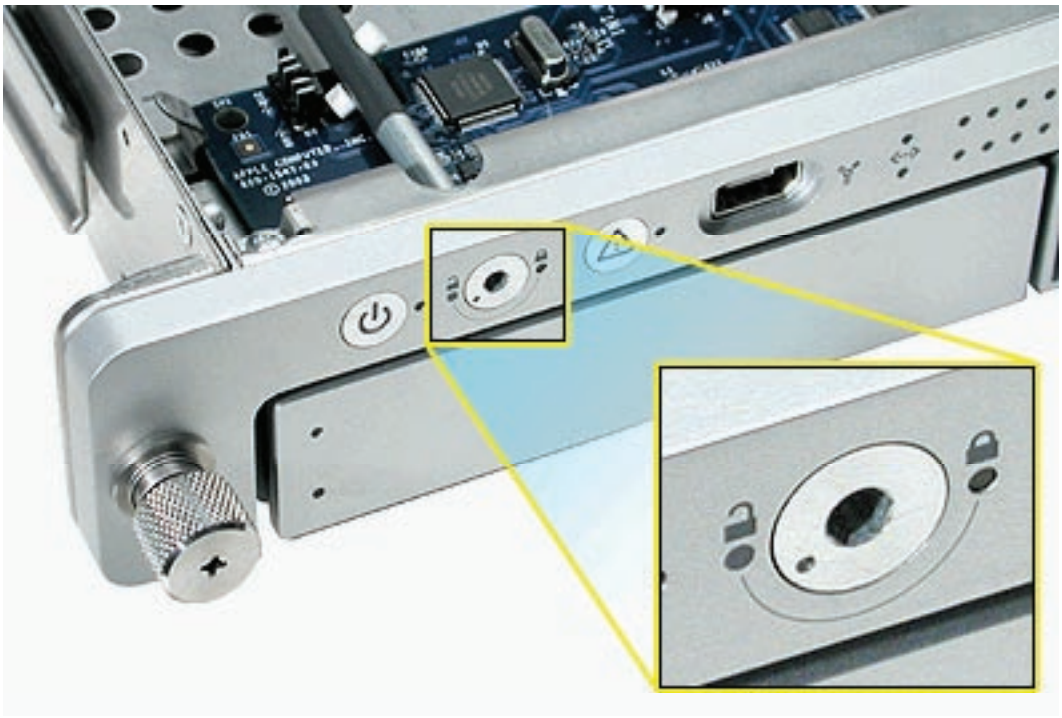
5. Tilt the board up and remove it from the Xserve.

Installing the Replacement Front Panel Board

1. Slide the replacement front panel board into place at the front of the enclosure.
   Important: When replacing the front panel board, make sure the board slides under the black plastic cover of the light pipe.
2. Press the board down so that it is secured by the two side clips.
3. Replace the board's two mounting screws.
4. Connect the front panel board cable to the board.

Replacing the Locking Mechanism Rod

1. Insert the key-hole end of the rod into the port on the front bezel.
   Note: Make sure the small circle on the front of the rod points to the left. It should align with the "unlocked" symbol on the bezel.



2. Pull back the latch that secures the rod, and gently press the rod down until it clicks into place.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Drive Interconnect Backplane Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

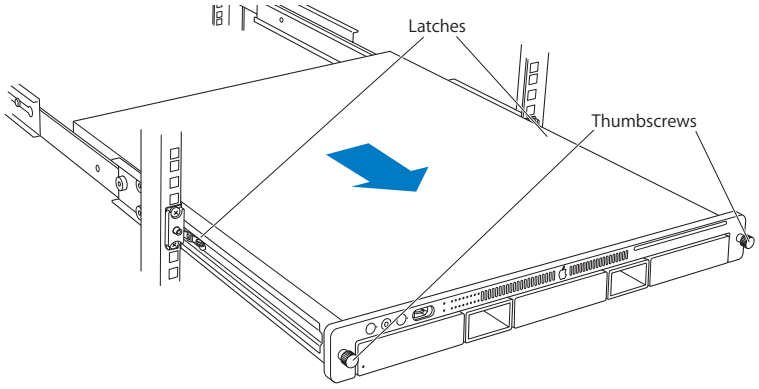
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver. You may also find a small flatblade screwdriver useful in releasing the connectors on the power distribution board cable.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



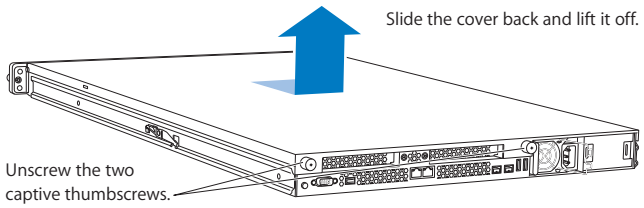
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



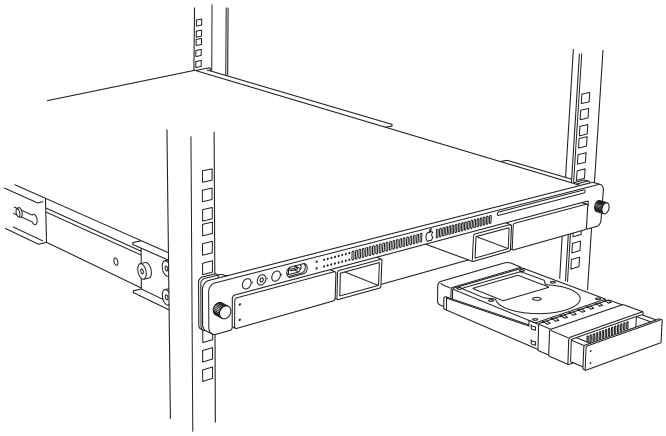
Removing the Installed Drive Interconnect Backplane

Note: Before removing the power distribution board, you must remove the following:

- All Apple drive modules
- Airflow duct
- Fan array

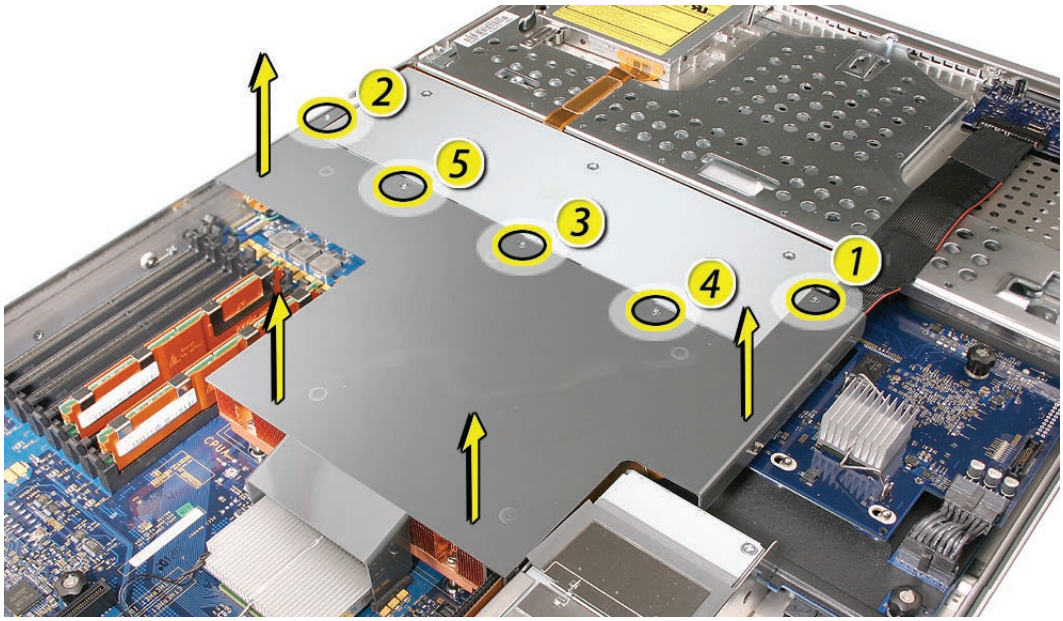
Apple Drive Modules

1. Press the handle on the front of the drive module so that the handle pops out. Then grasp the drive handle, and pull the drive module out of the Xserve.
2. Repeat for all other installed drive modules.



Airflow Duct

1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.

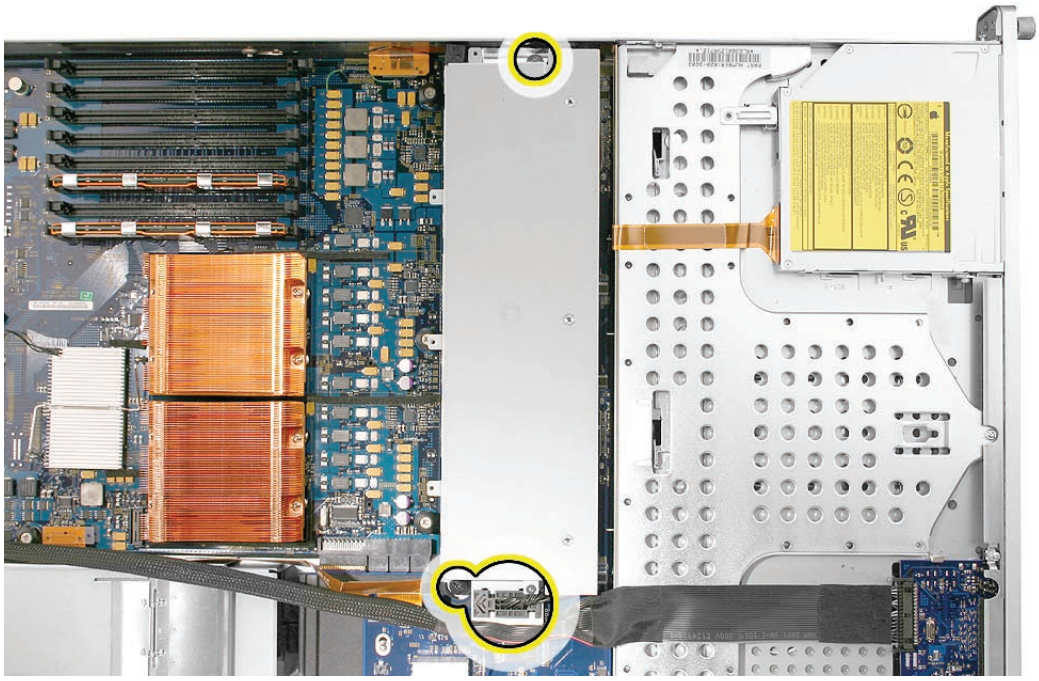


Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.

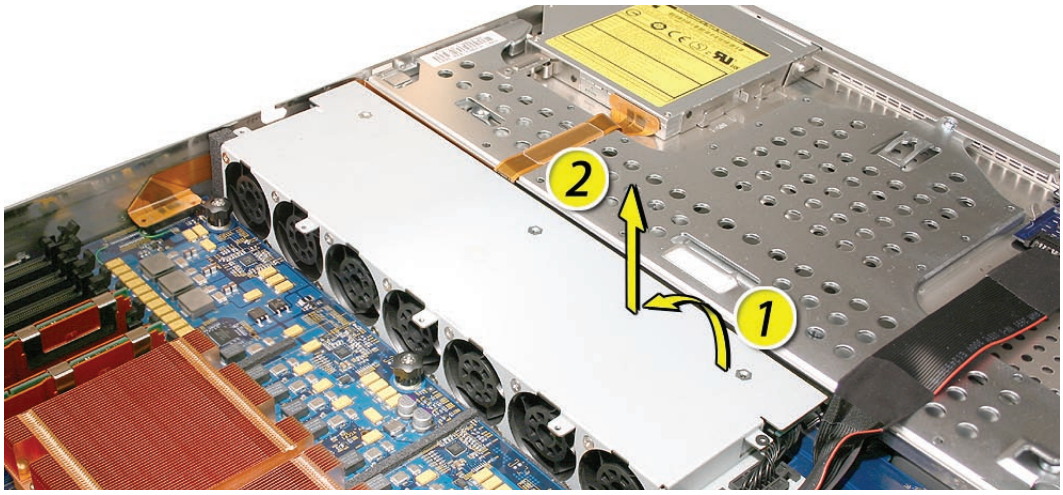
Fan Array

1. Loosen the two thumbscrews that secure the fan array to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.

2. Lift the fan array to remove it from the Xserve.
   Note: You may need to move the front panel cable slightly out of the way of the fan array power connector during removal or replacement. Be careful not to pinch the front panel board cable between the fan array and any other surface inside.

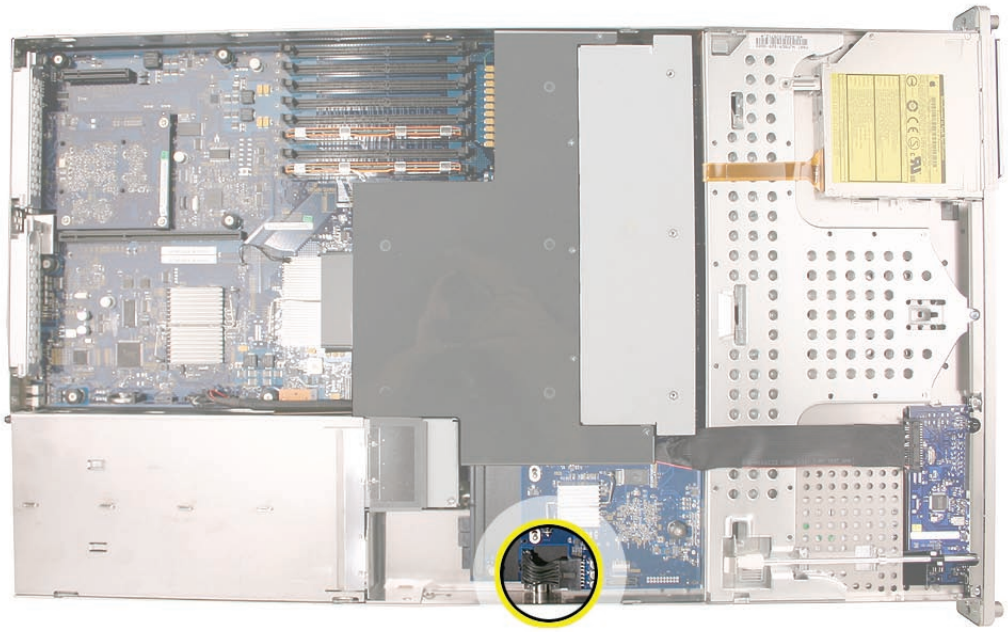


Note: You may encounter some resistance around the fan array power connector during removal. If so, carefully rotate the fan array as shown to disconnect it from the power distribution board below, and then lift the fan array out of the computer.

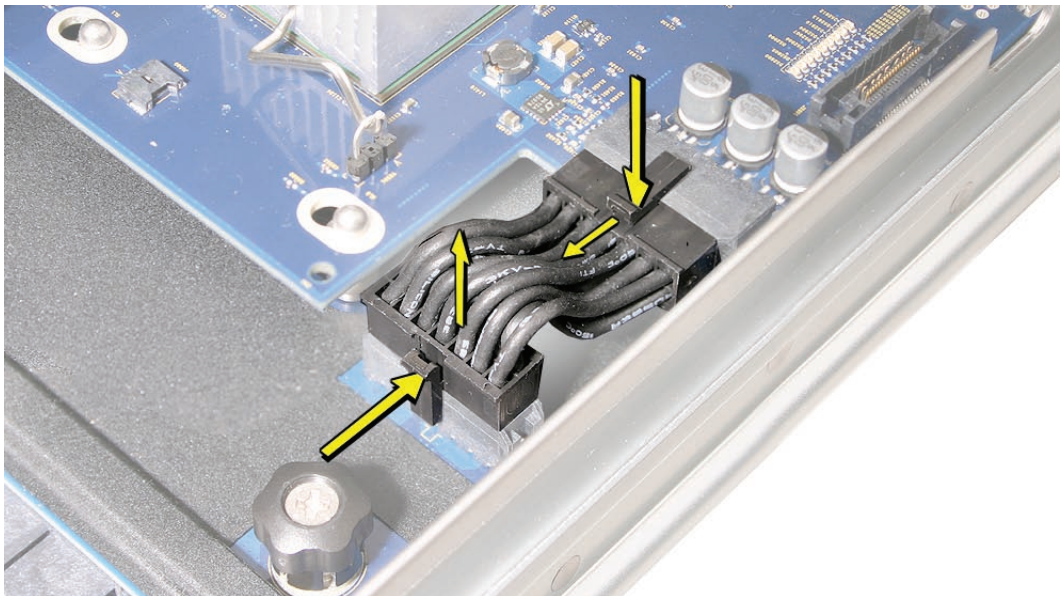


Drive Interconnect Backplane

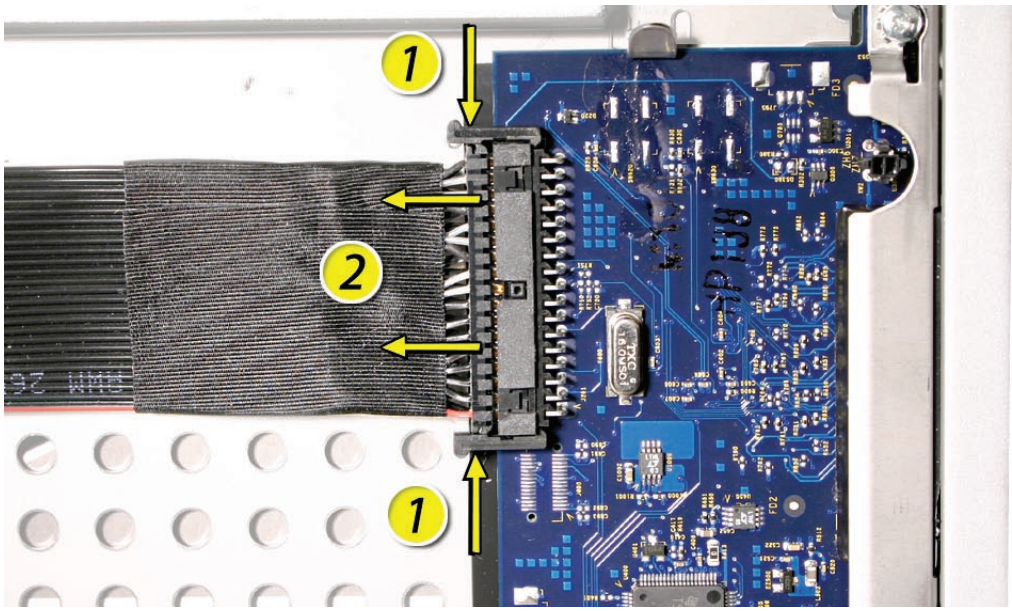
1. Locate the power distribution board cable.



2. Disconnect the power distribution board cable from the drive interconnect backplane and the power distribution board. Remove the cable from the enclosure.
   Caution: The power distribution board cable connectors are very tight and can be difficult to disconnect. You may want to use a small flatblade screwdriver to gently yet firmly pry outwards on the cable connector while depressing the cable connector latch with your thumb and forefinger to separate the connectors.

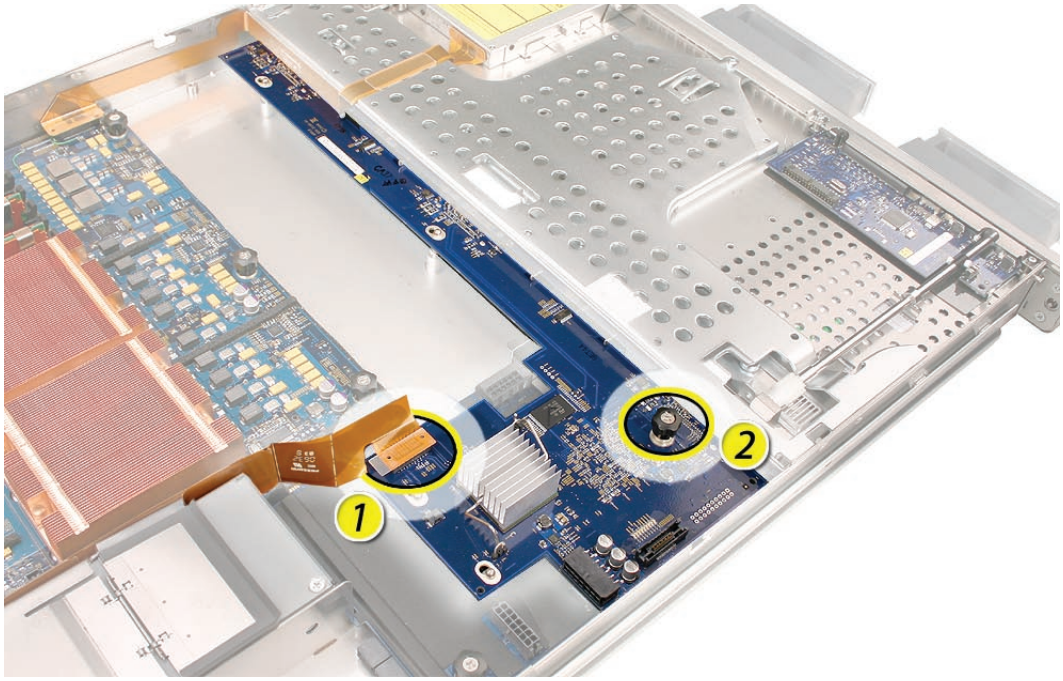


3. Release the two locking levers on the front panel board cable connector and disconnect the cable from the front panel board. Move the front panel board cable out of the way.



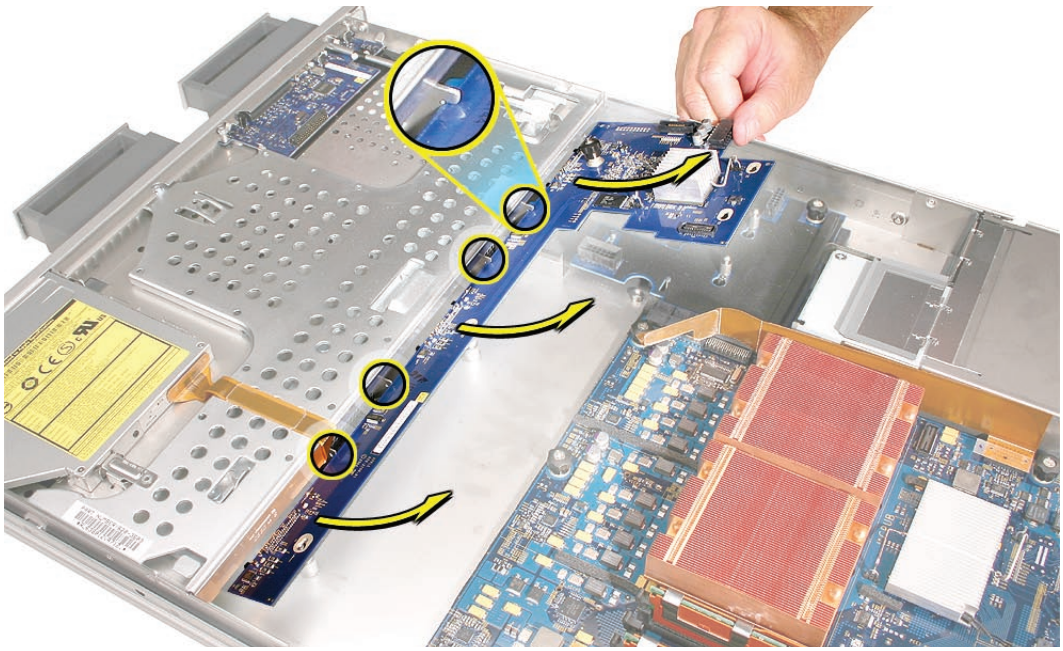
4. Disconnect the backplane-to-logic board I/O cable from the backplane.

5. Loosen the thumbscrew that secures the backplane to the enclosure.
Note: The thumbscrew is captive; you cannot remove it.



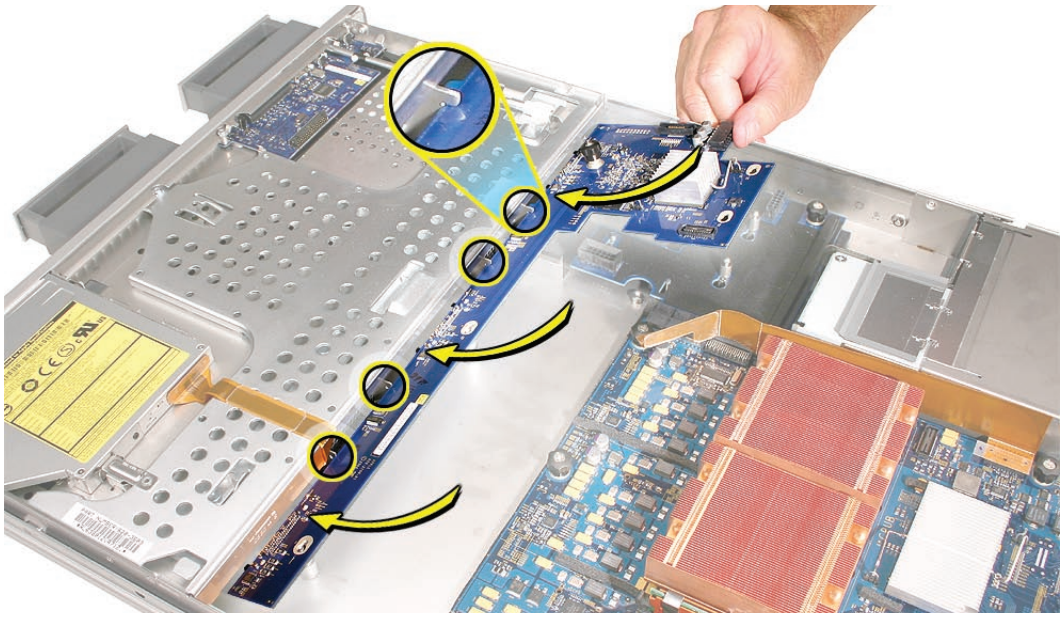
6. Shift the backplane to the left (towards the enclosure side), in the direction of the arrow shown, until it clears the four mushroom-shaped standoffs that hold the backplane in place.

7. Rotate the backplane up slightly from the logic board side (as shown), and carefully pull the backplane up and toward the logic board to free it from the standoffs and four backplane alignment slots in the enclosure. Be careful not to let any backplane components come into contact with the standoffs or the enclosure as you remove the backplane.

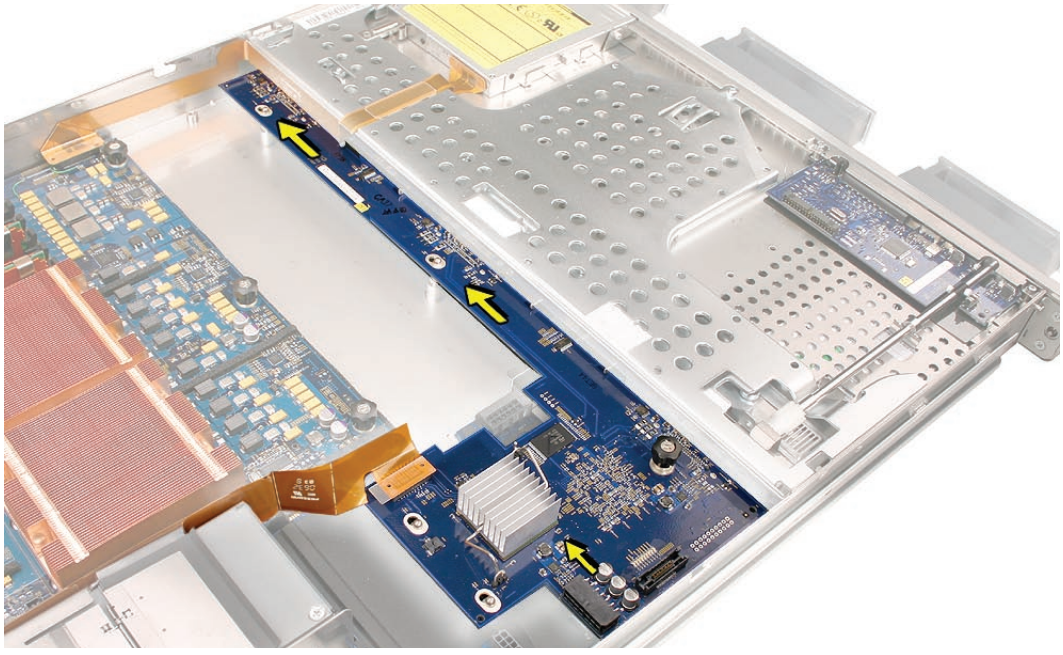


Installing the Replacement Drive Interconnect Backplane

1. Lower the replacement backplane into the enclosure at a slight angle (as shown), and carefully align the front edge of the backplane with the four backplane alignment slots in the enclosure. Be careful not to let any backplane components come into contact with the standoffs or the enclosure as you install the backplane.



2. Rotate the backplane downward and over the four mushroom-shaped standoffs.
3. Slide the backplane in the direction of the arrow shown to fully seat the backplane in the enclosure.



4. Tighten the thumbscrew that secures the backplane to the enclosure.
5. Reconnect the backplane-to-logic board I/O cable to the backplane.

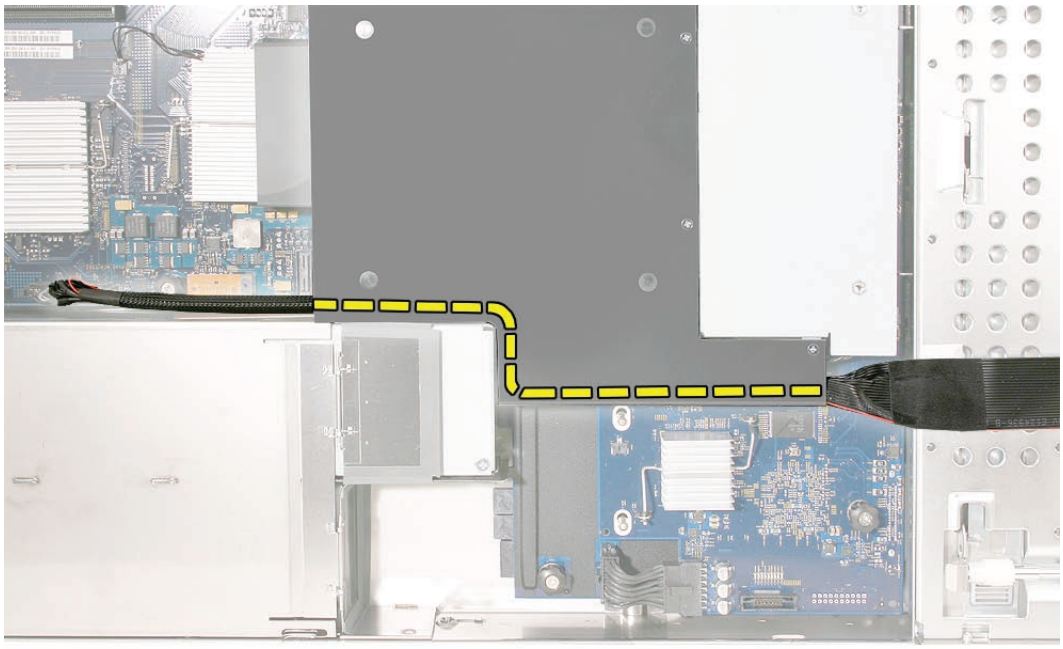
   Caution: Make sure the cable is completely seated.
6. Reconnect the front panel board cable to the front panel board.
7. Reconnect the power distribution board cable to the backplane and power distribution board.

Replacing the Fan Array

1. Align the power connector on the fan array with its connector on the power distribution board and lower the array into the enclosure. Push down on the fan array power connector to make sure it is fully seated.
2. Tighten the screws at the ends of the array. Make sure the large front panel board cable runs above the power connector but below the tab on the top of the power supply.

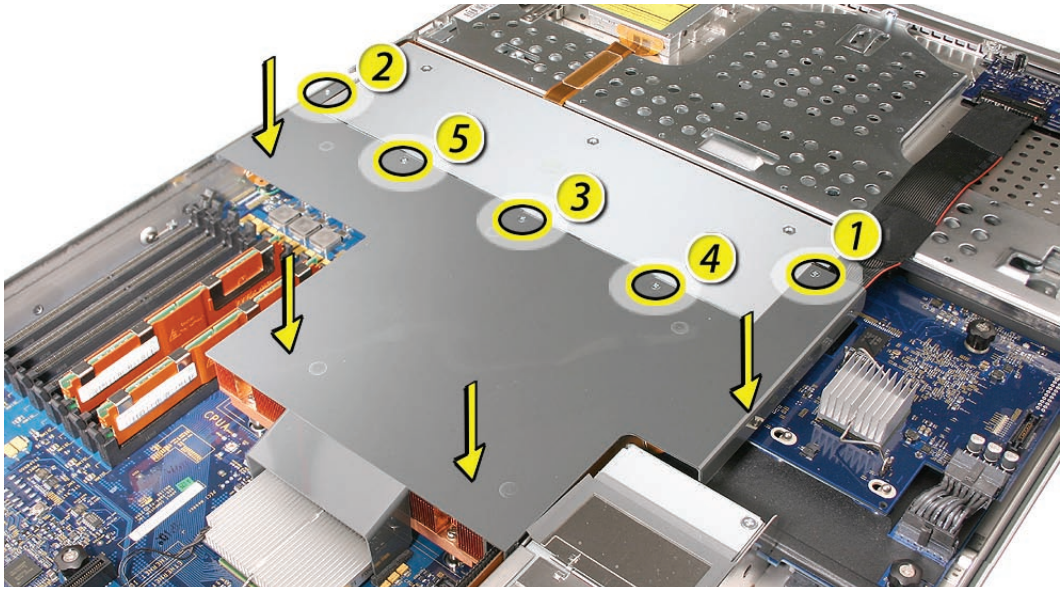
Replacing the Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.

3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Replacing the Apple Drive Modules

1. Slide the first Apple drive module into its bay until it is firmly seated. Then press the handle in flush with the front panel.
2. Repeat for all other installed drive modules.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Power Distribution Board Cable Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

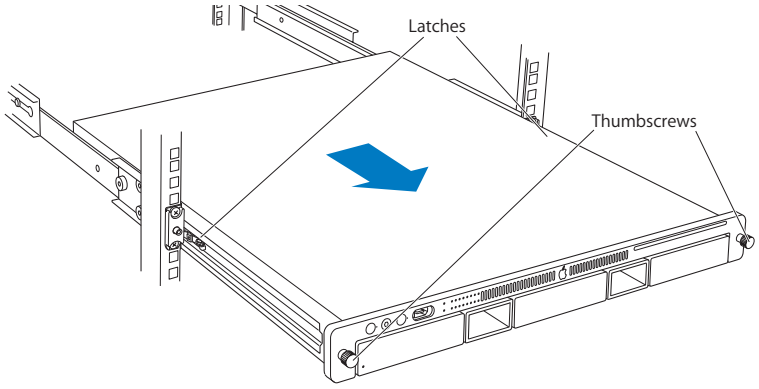
Tools Required

No tools are required for this procedure. You may, however, find a small flatblade screwdriver useful in releasing the cable connector.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



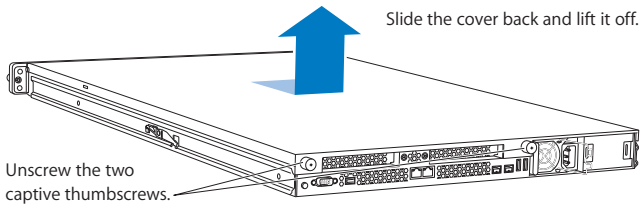
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

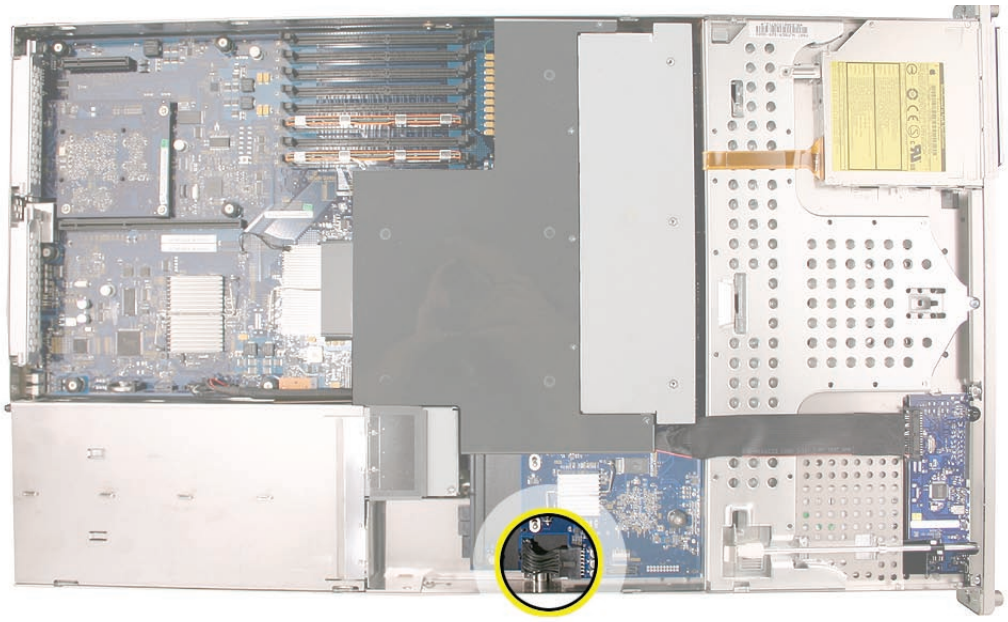
Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



Removing the Installed Power Distribution Board Cable

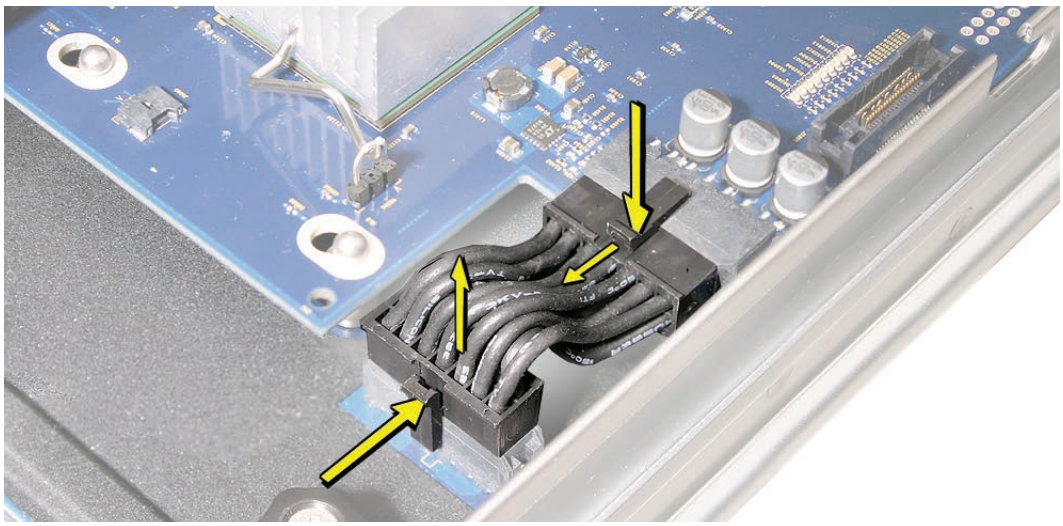
1. Locate the power distribution board cable.



2. **Caution:** The power distribution board cable connectors are tight and can be difficult to disconnect. You may want to use small flatblade screwdriver to gently yet firmly pry outwards on the cable connector while depressing the cable connector latch with your thumb and forefinger to separate the connectors.

   Disconnect the cable from its connector on the drive interconnect backplane.

3. Disconnect the other end of the cable from the power distribution board and remove the cable from the Xserve.



Installing the Replacement Power Distribution Board Cable

Connect the replacement power distribution board cable to its connectors on the drive interconnect backplane and the power distribution board.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Power Distribution Board Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

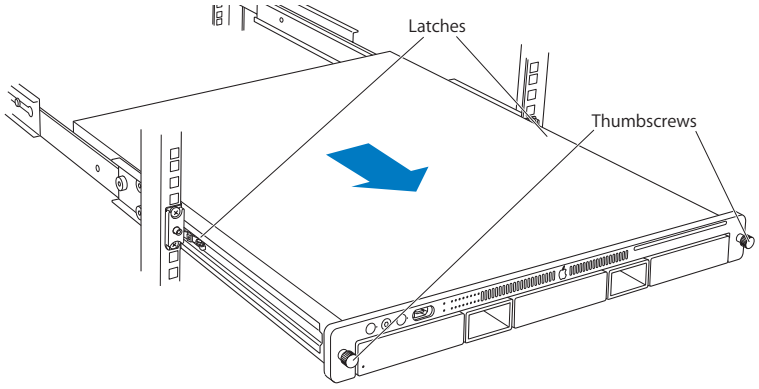
Tools Required

The only tool required for this procedure is a Phillips #1 screwdriver. You may also find a small flatblade screwdriver useful in releasing the connectors on the power distribution board cable.

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



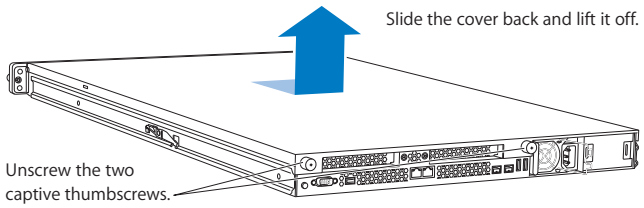
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



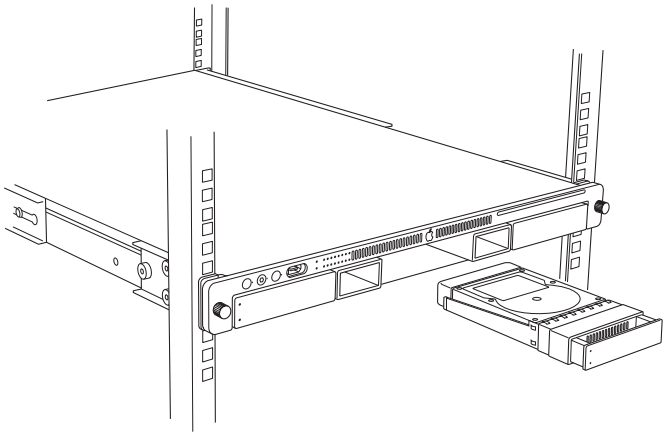
Removing the Installed Power Distribution Board

Note: Before removing the power distribution board, you must remove the following:

- All Apple drive modules
- Both power supplies
- Power distribution board cable
- Airflow duct
- Fan array
- Drive interconnect backplane

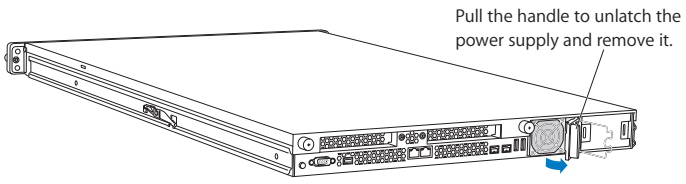
Apple Drive Modules

1. Press the handle on the front of the drive module so that the handle pops out. Then grasp the drive handle, and pull the drive module out of the Xserve.
2. Repeat for all other installed drive modules.



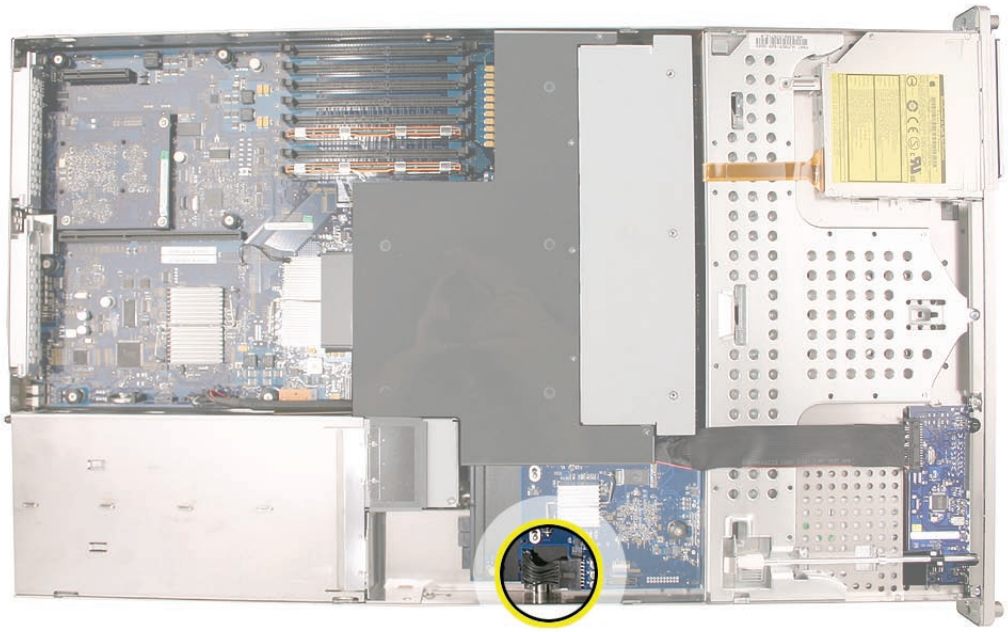
Power Supplies

1. Pull the handle to release the first power supply and slide it out of the bay.
2. Repeat for the second power supply, if installed.

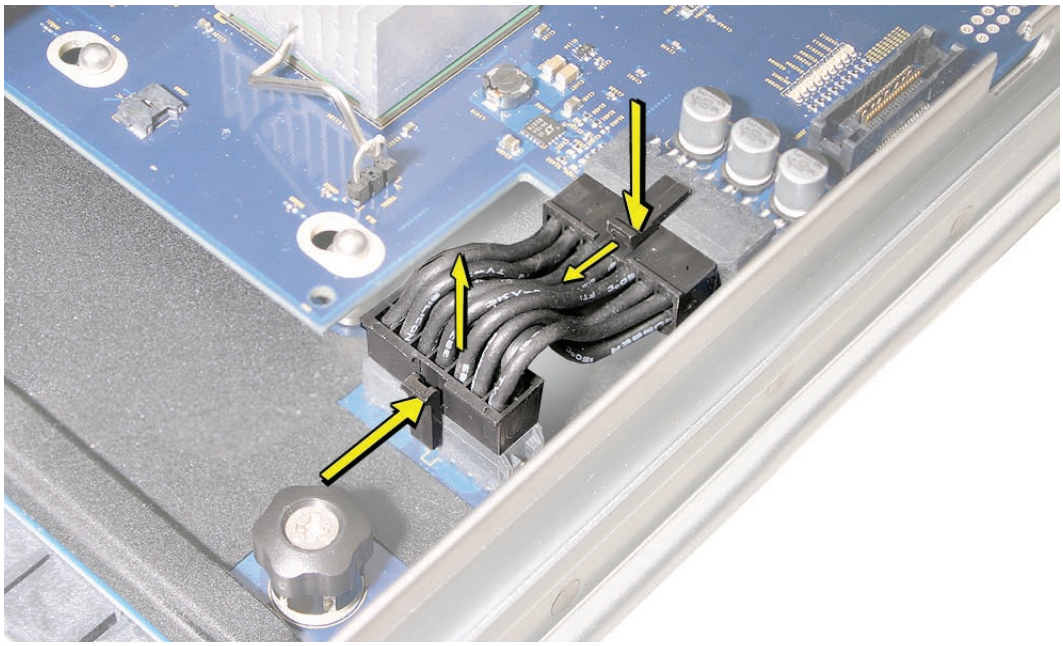


Power Distribution Board Cable

1. Locate the power distribution board cable.



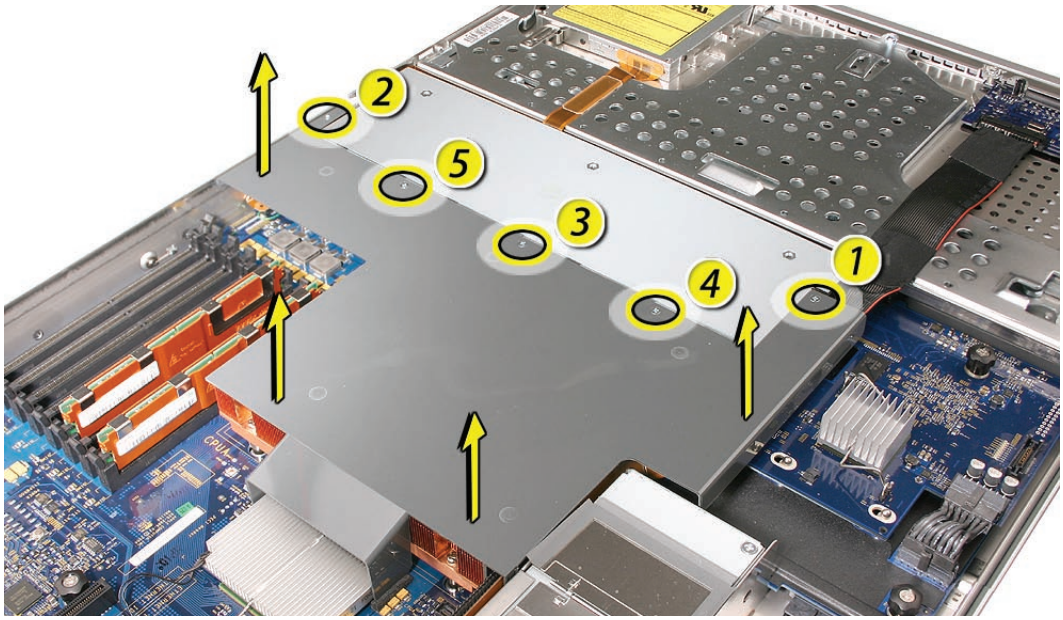
2. Disconnect the power distribution board cable from its connector on the drive interconnect backplane.
3. Disconnect the power distribution board cable from the power distribution board and remove the cable from the Xserve.



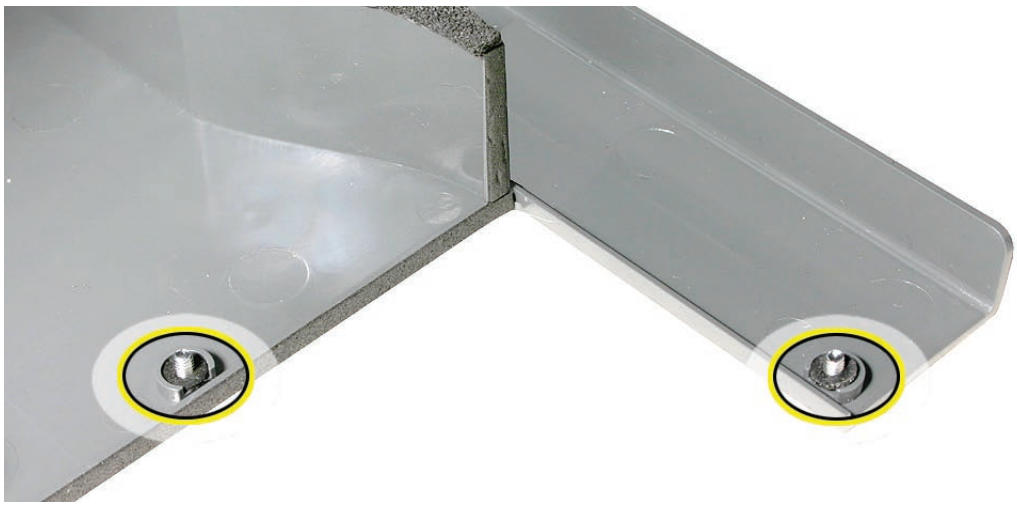
Caution: The power distribution board cable connectors are tight and can be difficult to disconnect. You may want to use a small flatblade screwdriver to gently yet firmly pry outwards on the cable connector while depressing the cable connector latch with your thumb and forefinger to separate the connectors.

Airflow Duct

1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.



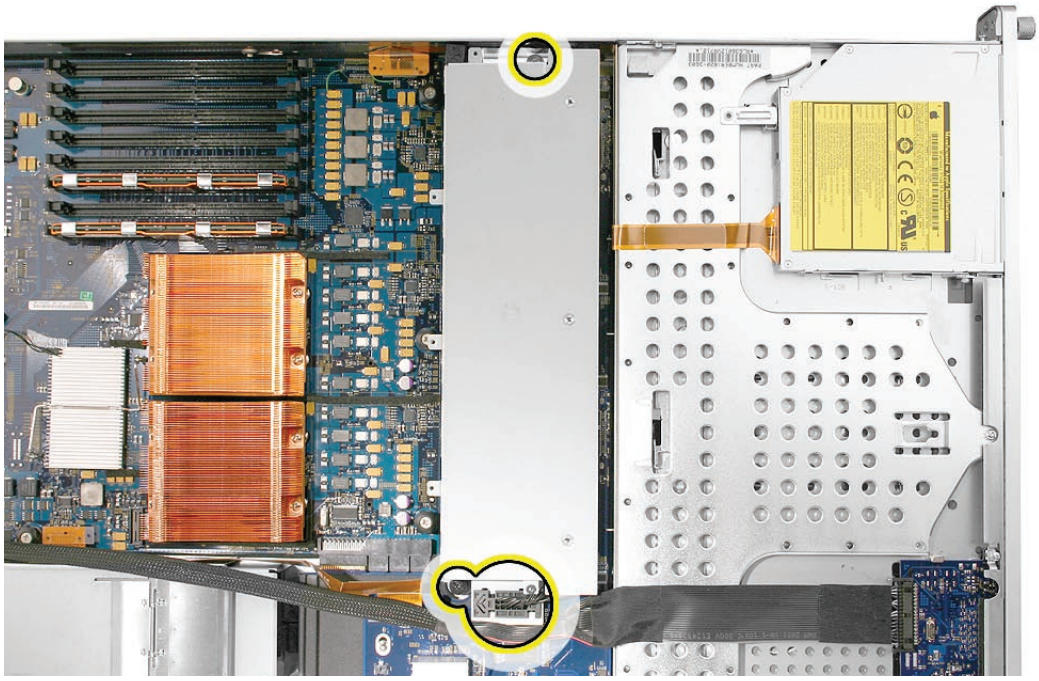
Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.



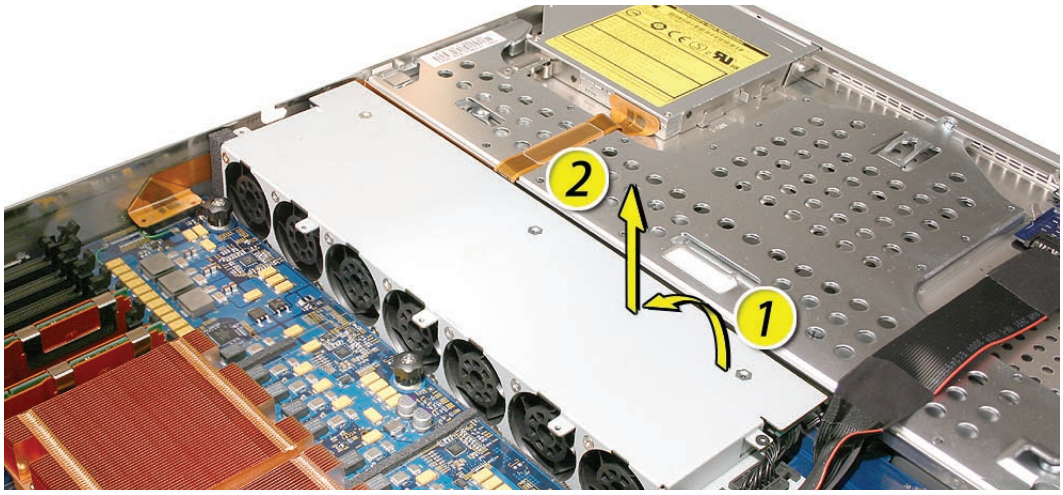
Fan Array

1. Loosen the two thumbscrews that secure the fan array to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.

2. Lift the fan array to remove it from the Xserve.
   Note: You may need to move the front panel cable slightly out of the way of the fan array power connector during removal or replacement. Be careful not to pinch the front panel board cable between the fan array and any other surface inside.

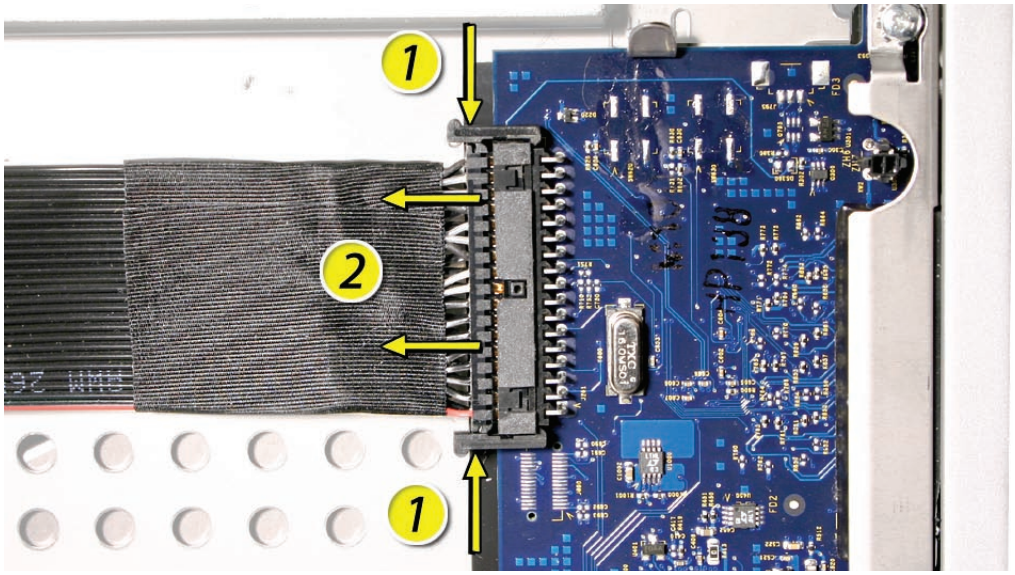


Note: You may encounter some resistance around the fan array power connector during removal. If so, carefully rotate the fan array as shown to disconnect it from the power distribution board below, and then lift the fan array out of the computer.

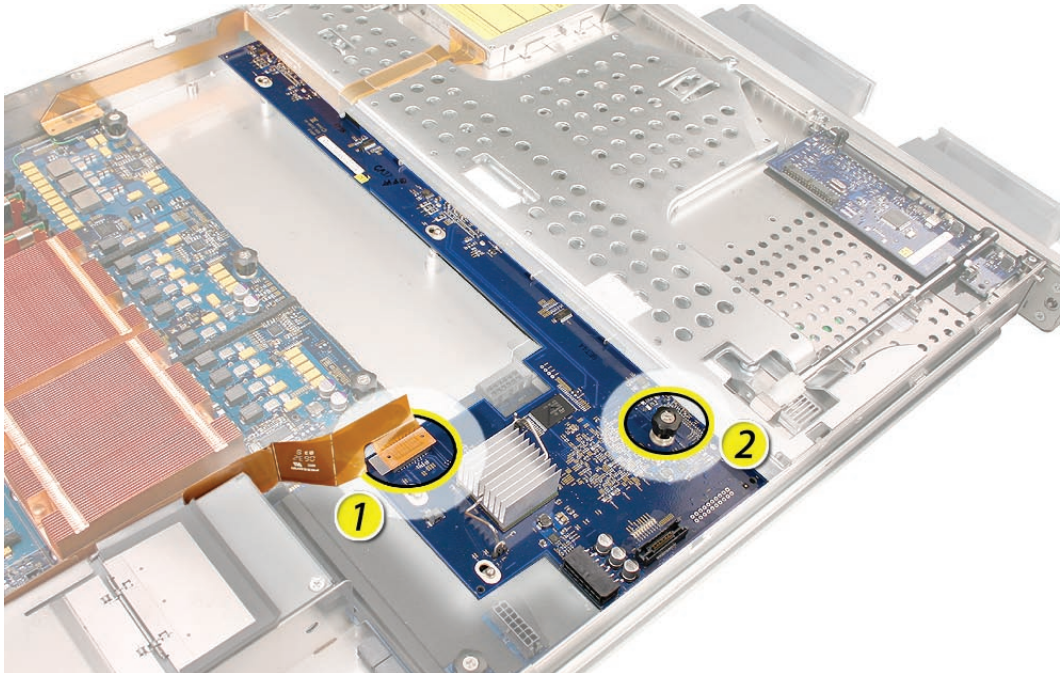


Drive Interconnect Backplane

1. Release the two locking levers on the front panel board cable connector and disconnect the cable from the front panel board. Move the front panel board cable out of the way.

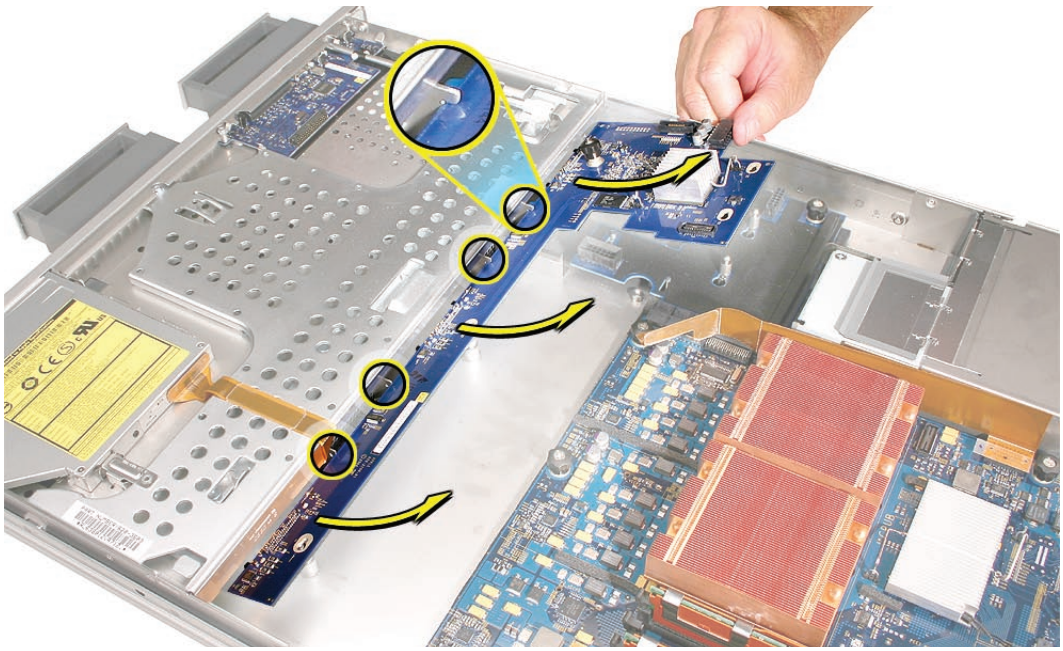


2. Disconnect the backplane-to-logic board I/O cable from the backplane.
3. Release the thumbscrew that secures the backplane to the enclosure.
   Note: The thumbscrew is captive; you cannot remove it.



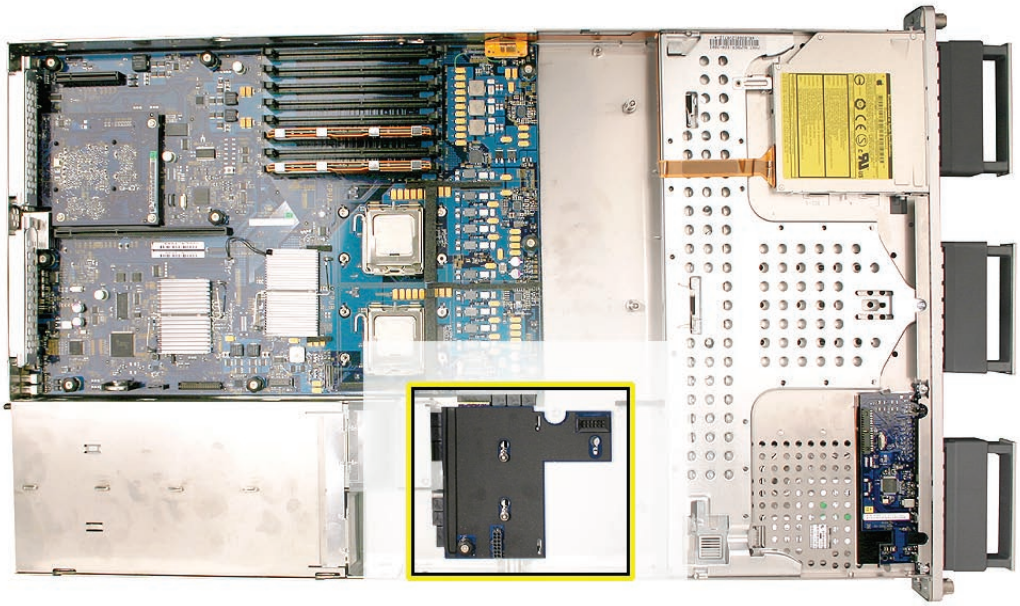
4. Shift the backplane to the left (towards the enclosure side), in the direction of the arrow shown, until it clears the four mushroom-shaped standoffs that hold the backplane in place.

5. Rotate the backplane up slightly from the logic board side (as shown), and carefully pull the backplane up and toward the logic board to free it from the standoffs and four backplane alignment slots in the enclosure. Be careful not to let any backplane components come into contact with the standoffs or the enclosure as you remove the backplane.

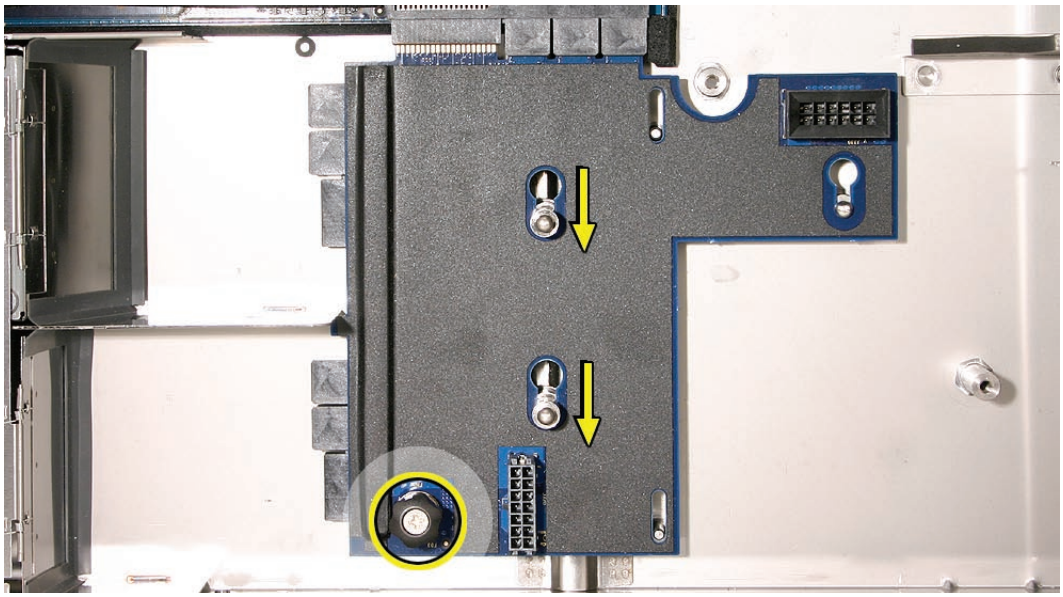


Power Distribution Board

1. Locate the power distribution board.



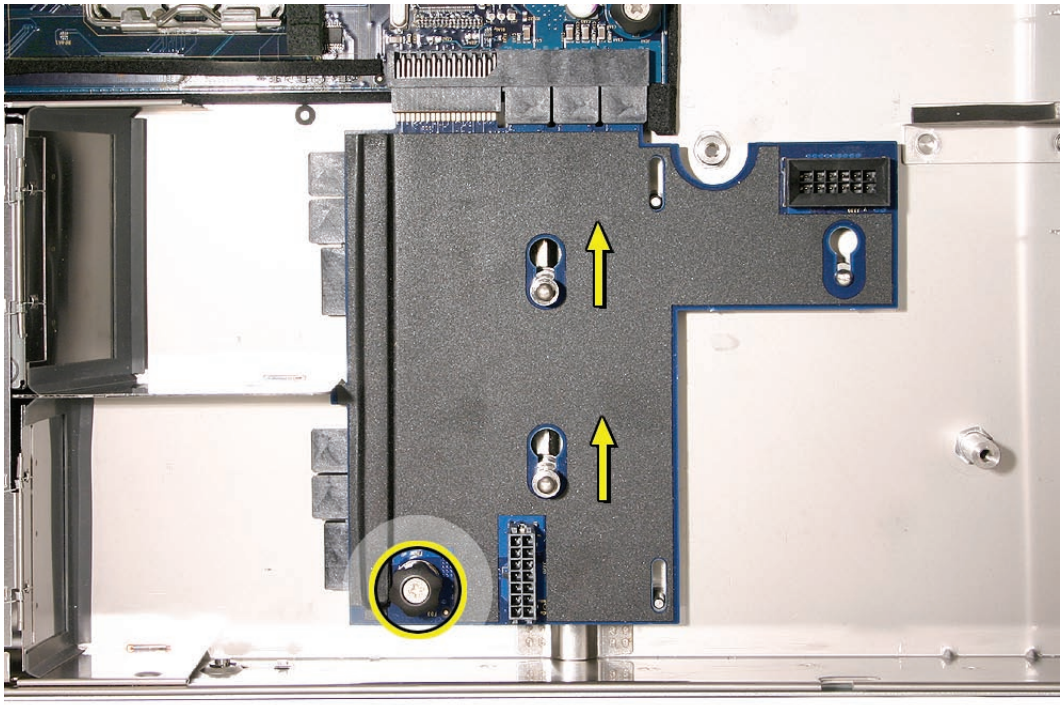
2. Release the thumbscrew that secures the power distribution board to the enclosure.
   Note: The thumbscrew is captive; you cannot remove it.
3. Pull the board toward the side of the enclosure in the direction shown, to disconnect it from its connector on the logic board.



4. Lift up the board and remove it from the enclosure.

Installing the Replacement Power Distribution Board

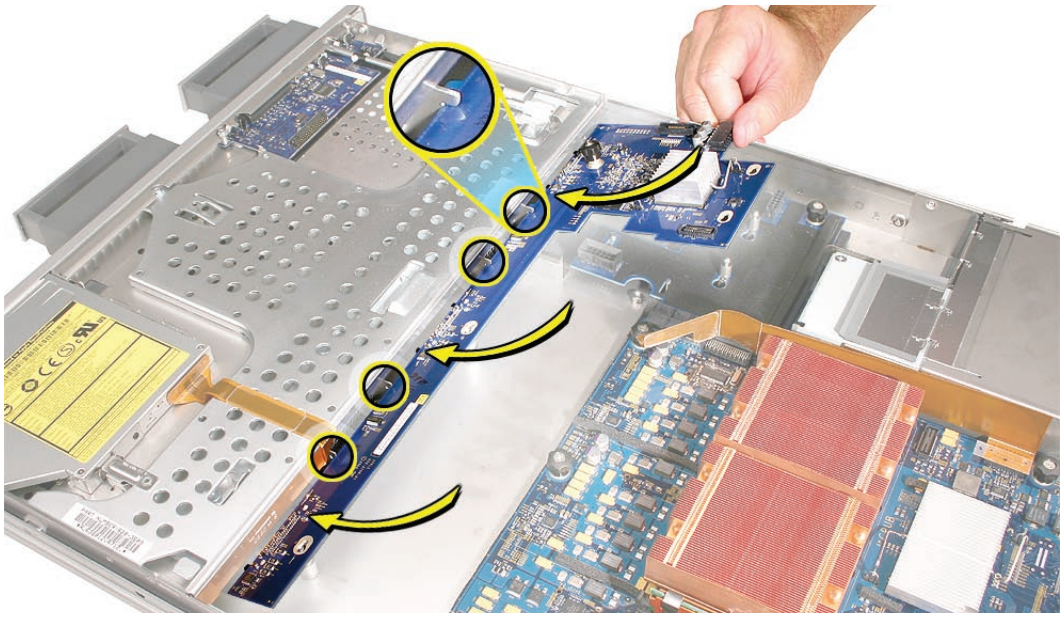
1. Lower the replacement power distribution board onto its mushroom standoffs in the enclosure.
2. Slide the board in the direction shown, to connect it to its connector on the logic board.



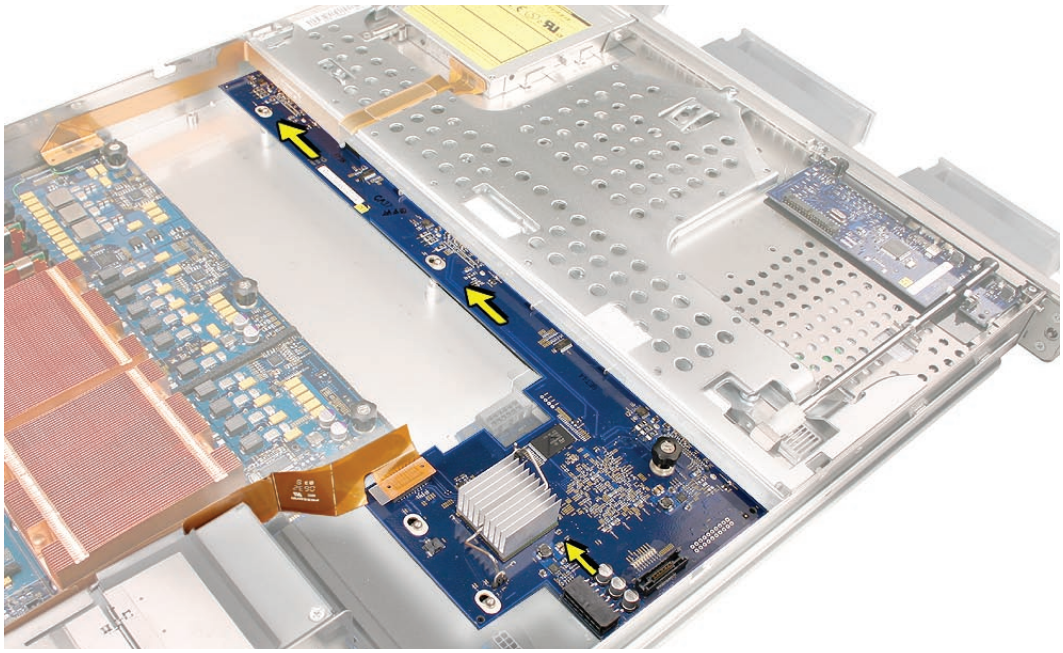
3. Tighten the thumbscrew that secures the power distribution board to the enclosure.

Replacing the Drive Interconnect Backplane

1. Lower the backplane into the enclosure at a slight angle (as shown), and carefully align the front edge of the backplane with the four backplane alignment slots in the enclosure. Be careful not to let any backplane components come into contact with the standoffs or the enclosure as you install the backplane.



2. Rotate the backplane downward and over the four mushroom-shaped standoffs.
3. Slide the backplane in the direction of the arrow shown to fully seat the backplane in the enclosure.



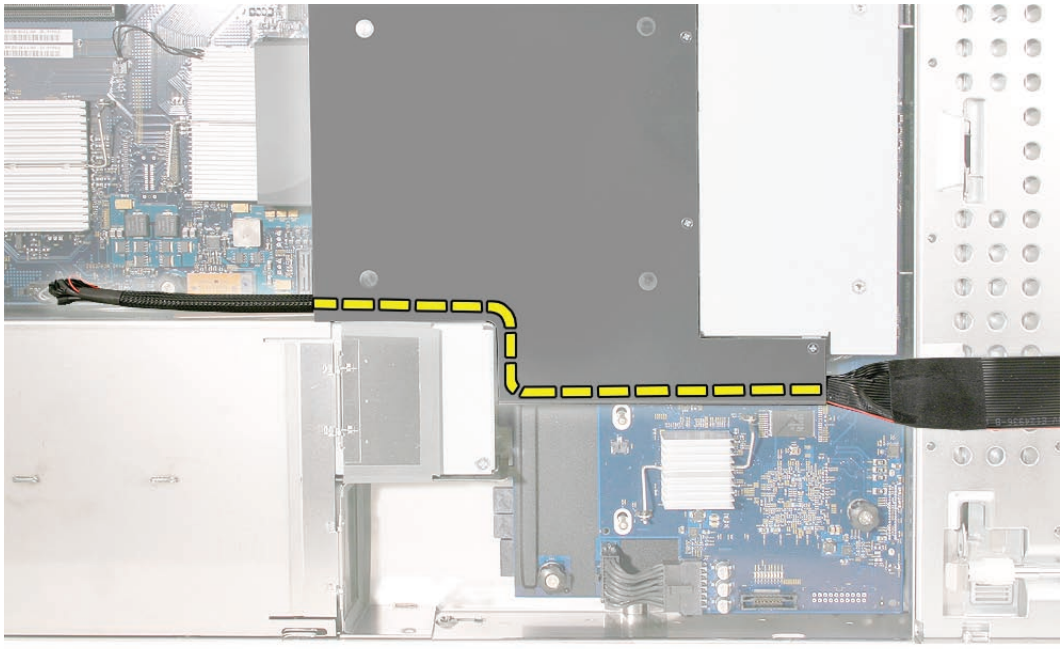
4. Tighten the thumbscrew that secures the backplane to the enclosure.
5. Reconnect the backplane-to-logic board I/O cable to the backplane.
6. Reconnect the front panel board cable to the front panel board.

Replacing the Fan Array

1. Align the power connector on the fan array with its connector on the power distribution board and lower the array into the enclosure. Push down on the fan array power connector to make sure it is fully seated.
2. Tighten the screws at the ends of the array. Make sure the large front panel board cable runs above the power connector but below the tab on the top of the power supply.

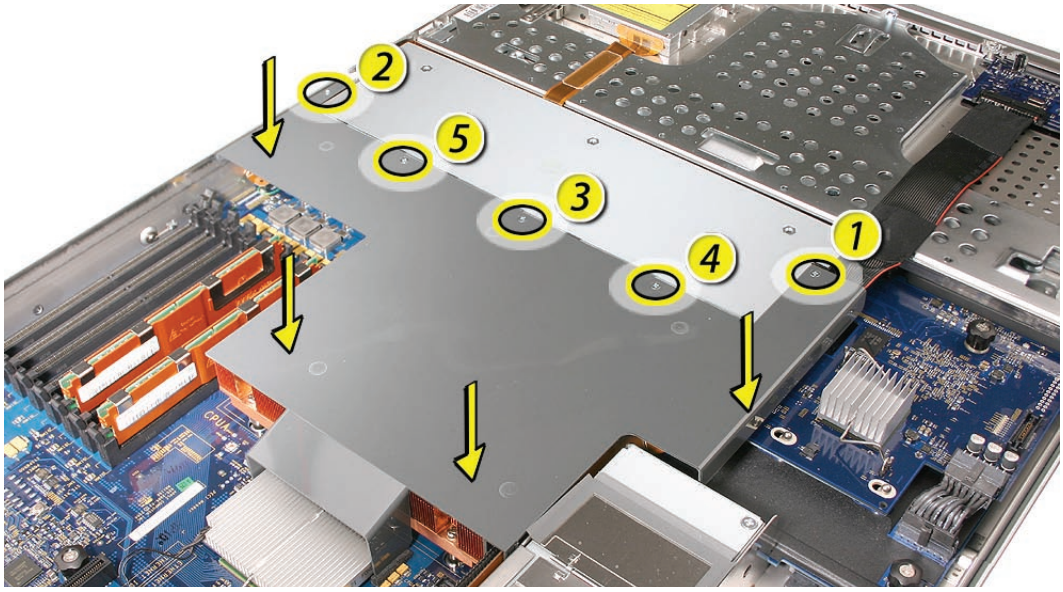
Replacing the Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.

3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.

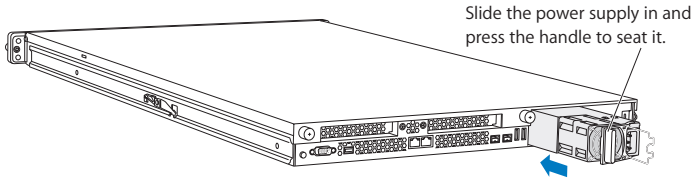


Replacing the Power Distribution Board Cable

Connect the power distribution board cable to its connectors on the drive interconnect backplane and the power distribution board.

Replacing the Power Supplies

1. Slide the first power supply all the way into the bay, and then press the handle to seat it and lock it in place.
2. Repeat for the second power supply, if installed.



Replacing the Apple Drive Modules

1. Slide the first Apple drive module into its bay until it is firmly seated. Then press the handle in flush with the front panel.
2. Repeat for all other installed drive modules.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Processor Heat Sink Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Tools Required

The following tools are required for this procedure:

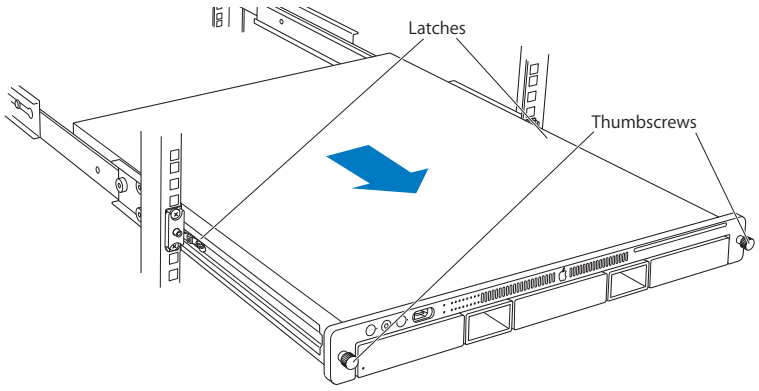
- Phillips #1 screwdriver
- Antistatic wrist strap (if available)
- Alcohol wipe for cleaning processor (supplied with the part)
- Thermal grease syringe for replacing thermal grease on processor (supplied with the part)

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.

Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.

3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



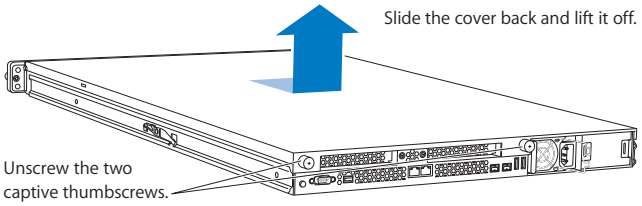
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.

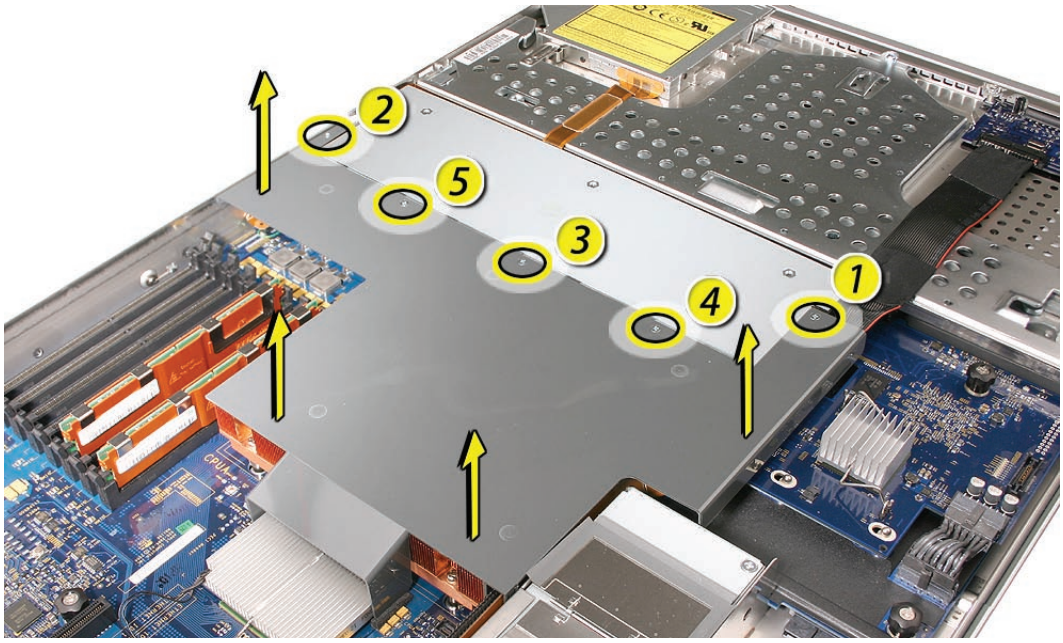


Removing the Installed Processor Heat Sink

Note: Before you can remove a processor heat sink, you must remove the airflow duct.

Airflow Duct

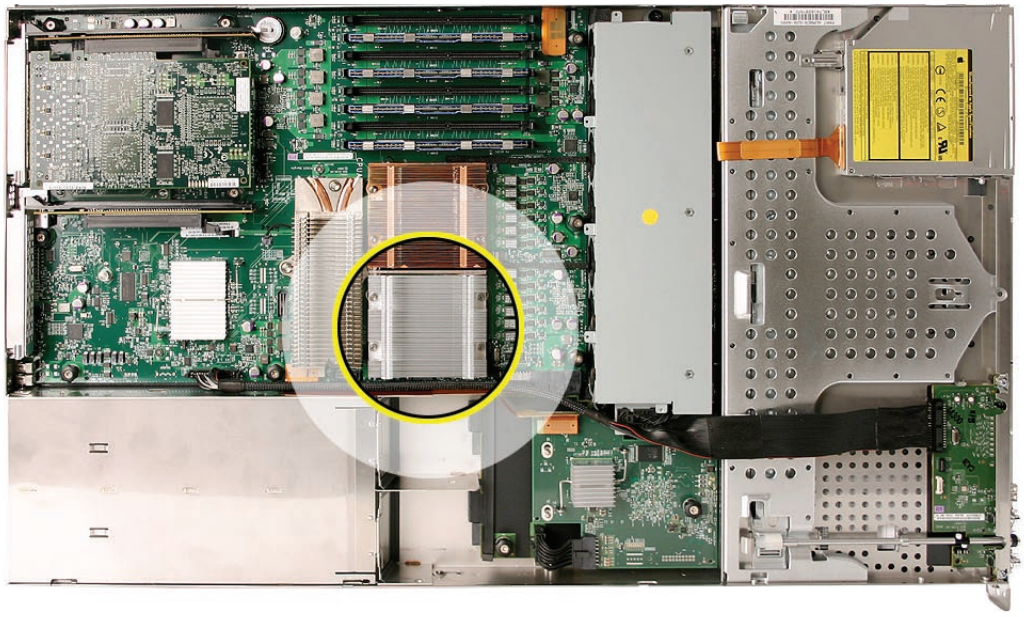
1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.



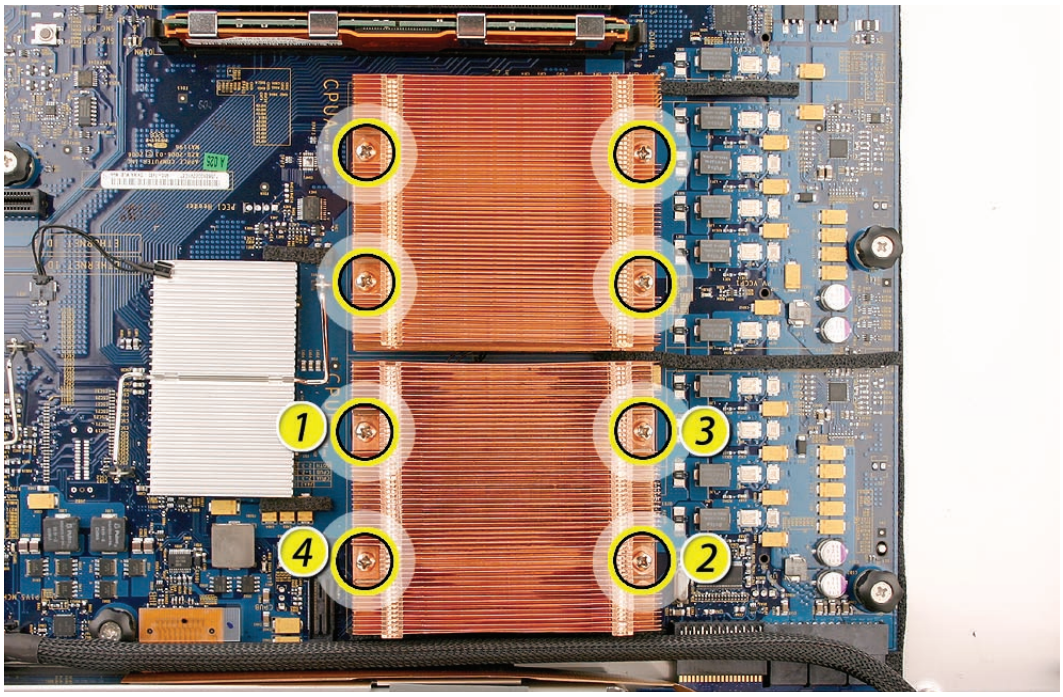
Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.

Processor Heat Sink

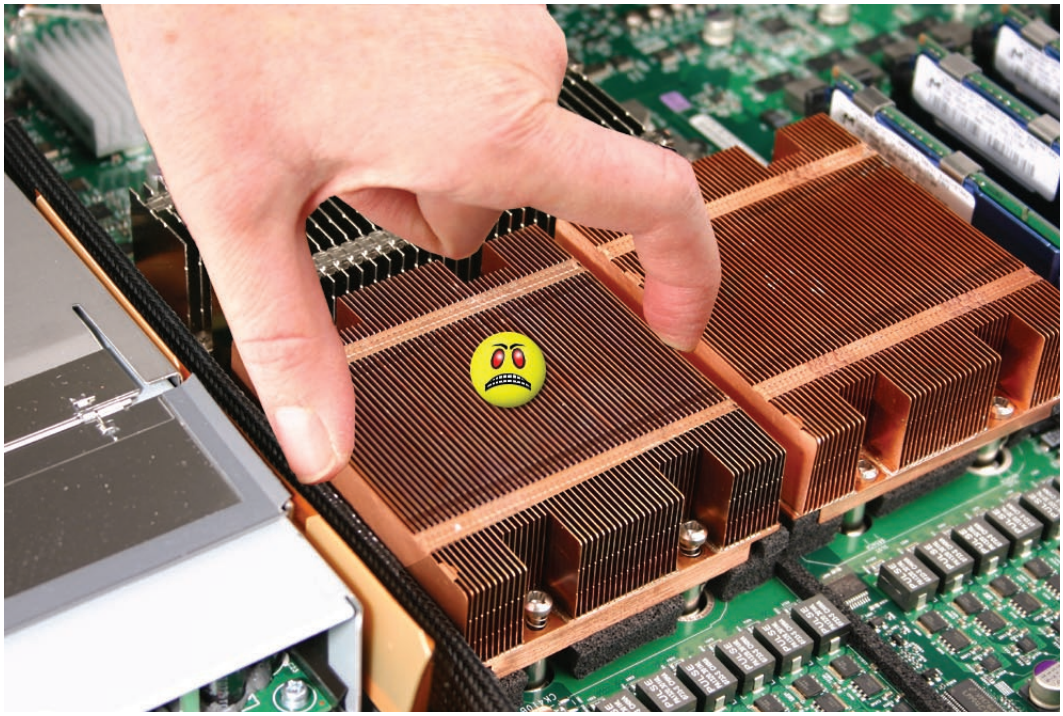
Note: Server configurations with a single processor have a regular heat sink and a blank heat sink installed. The blank heat sink is silver colored (as shown below) and should not be removed except when replacing a logic board.

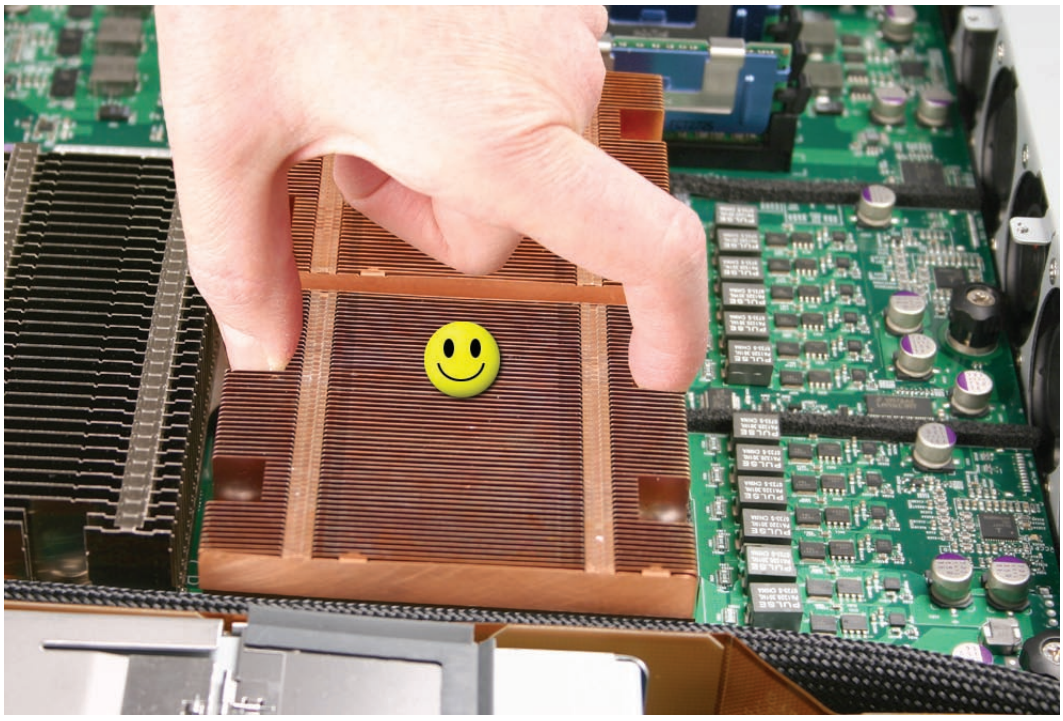


1. Loosen the four screws securing the heat sink in the order indicated below.



Caution: Whenever you handle the heat sink, handle it from the slotted sides, not the smooth sides. Grasping the smooth sides of the heat sink can compress its ribs causing permanent damage.

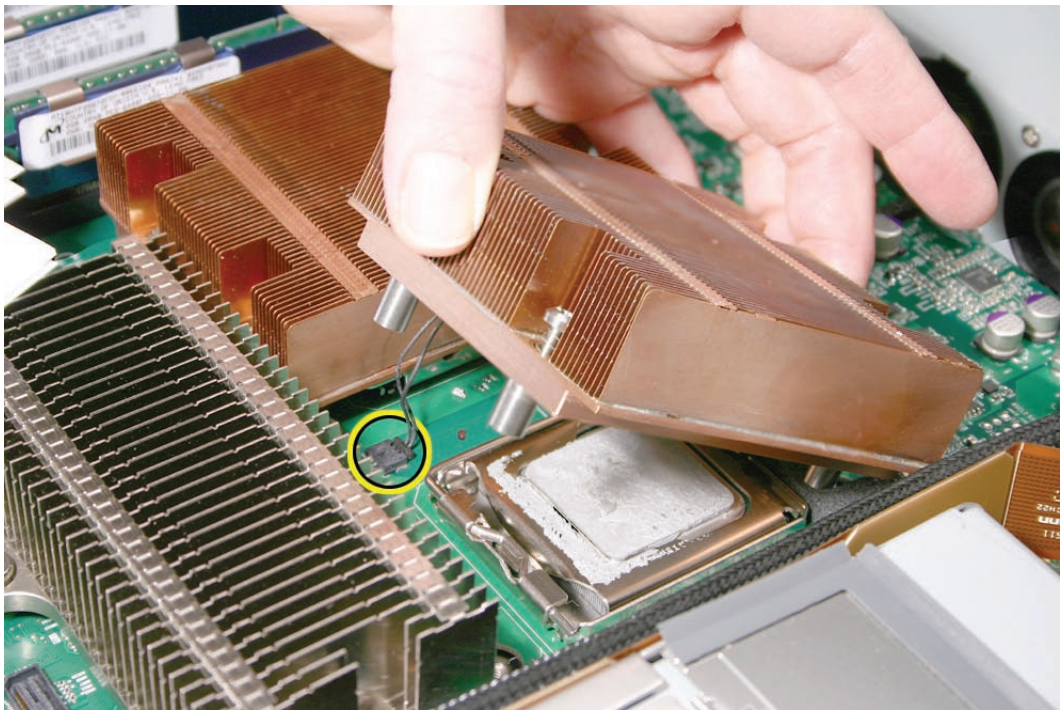




2. **Caution: Each heat sink is connected to the logic board by a small 2-pin thermal sensor cable. Lifting the heat sink too quickly can damage the cable or connector. Because of the tight thermal bond between the processor and heat sink, be especially cautious to initially lift the heat sink no more than one centimeter (1 cm) off the processor. Do not pull on the cable as you lift the heat sink enough to disconnect the cable from the logic board.**

   Slowly raise the heat sink off the processor just far enough that you can reach the sensor cable connector.

3. Pull on the connector, not the cable, to disconnect the sensor cable from the logic board.



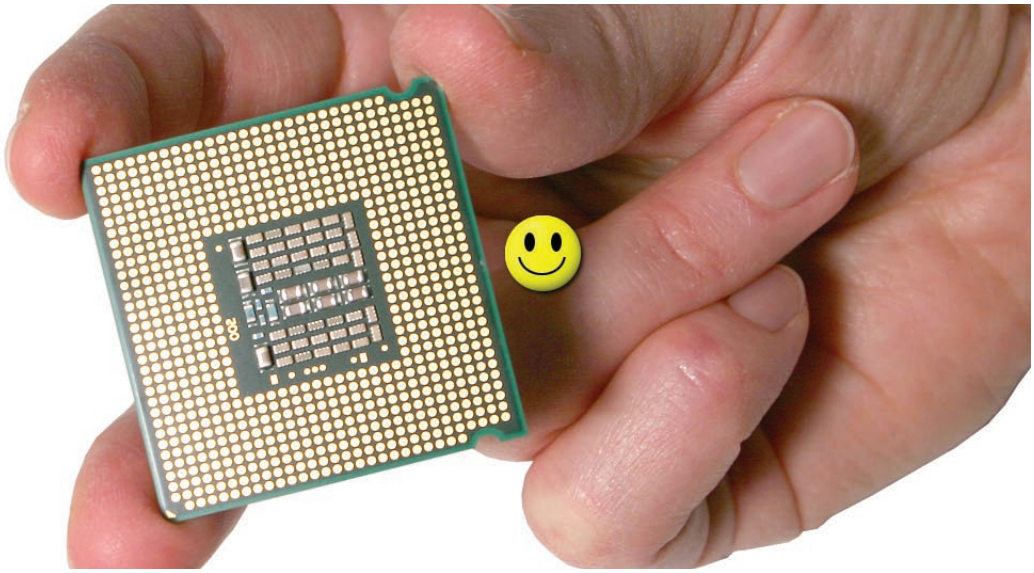
4. Lift the heat sink straight up and out of the enclosure.

Installing the Replacement Processor Heat Sink

Note: The thermal bond between the processor heat sink and the processor requires thermal grease for proper operation. Every time you remove or replace the processor heat sink, you must replace the thermal grease on the processor below the heat sink. New grease and an alcohol wipe for cleaning off the old grease are included with the replacement heat sink. Clean the processor and apply new grease as follows

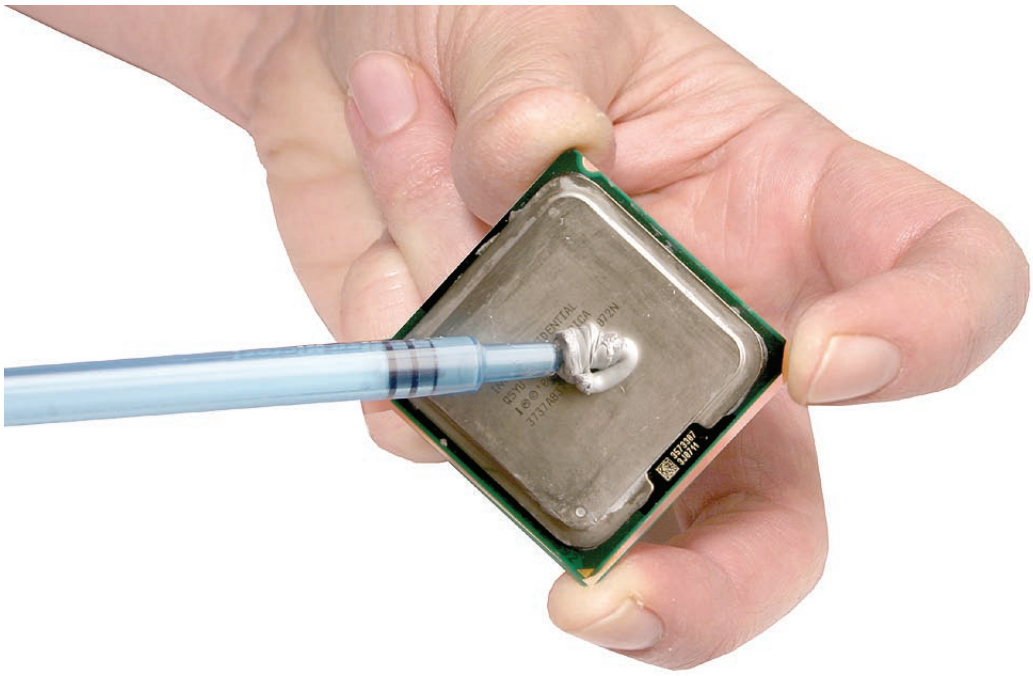
1. Release the latch on the metal processor holder for the processor.
2. Rotate the top of the holder to the open position.

3. Carefully lift the processor out of the holder.
   Important: When removing or installing a processor, always hold the processor by three corners. Be extremely careful not to touch the gold pins on the bottom of the processor, as this type of connector is very sensitive to contamination. Also be careful not to touch the gold pins in the processor socket on the logic board.



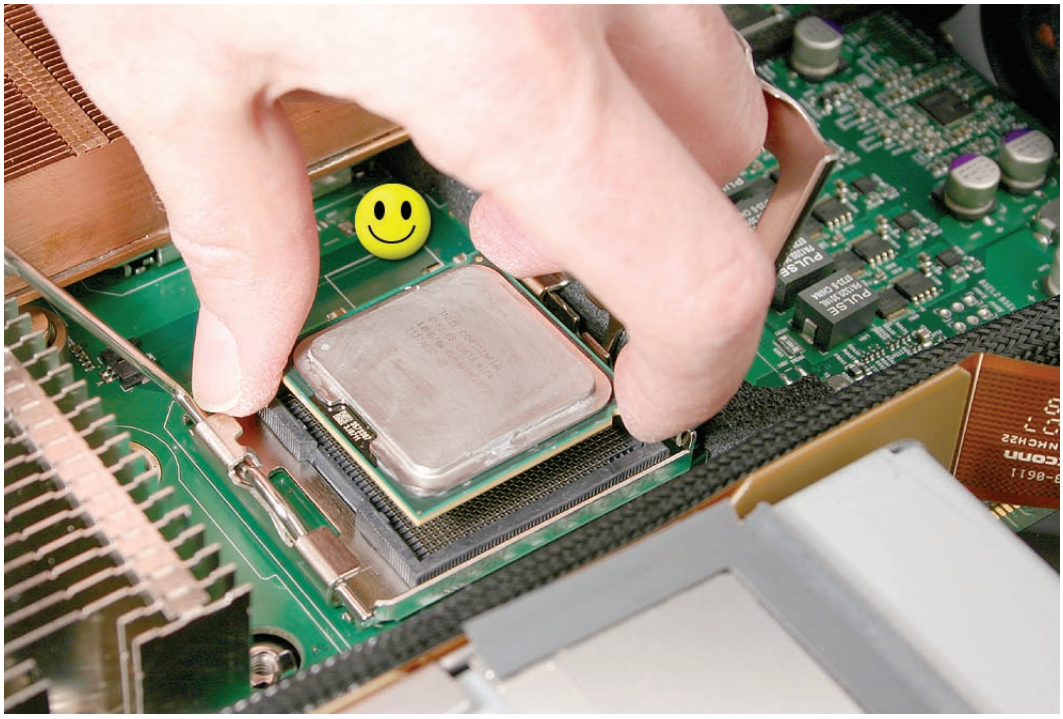
4. Clean off any existing thermal grease on the top face of the processor using the alcohol wipe provided with the replacement part, being careful not to get any thermal grease on the processor contacts.

5. Apply the entire contents on a single syringe of thermal grease (approximately 4.5 cc) to the top surface of the processor.
   Important: Be sure not to get any grease anywhere on the processor other than the very top, flat surface that directly contacts the heat sink.

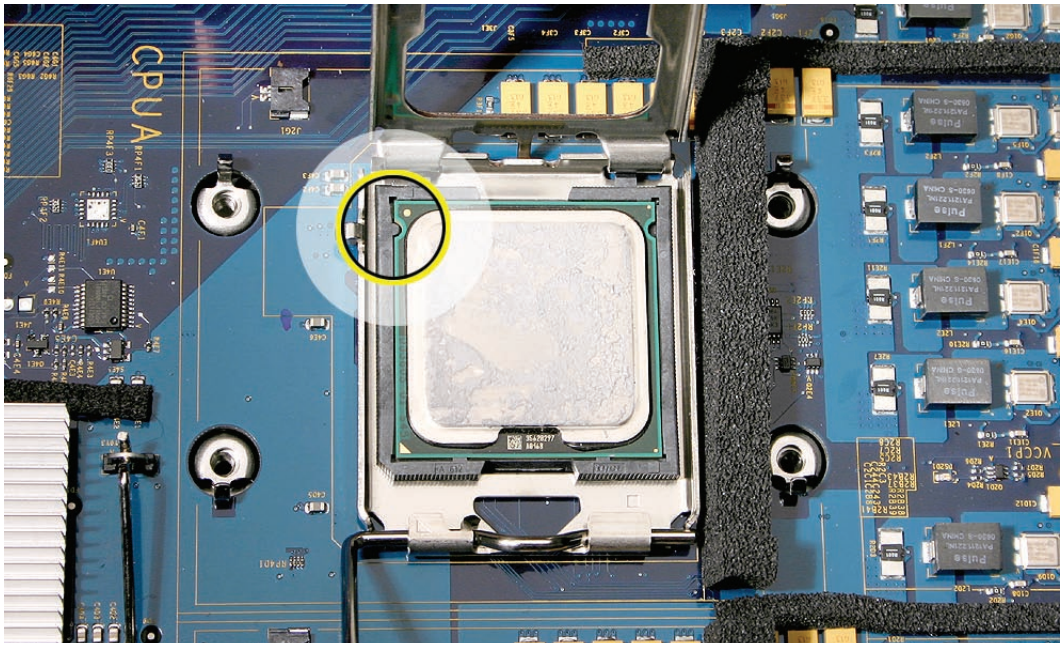


6. Use the edge of the package that the alcohol wipe came in as a spatula to spread the thermal grease evenly over the entire top surface of the processor. Scrape off any excess grease with the package edge, then discard the package.

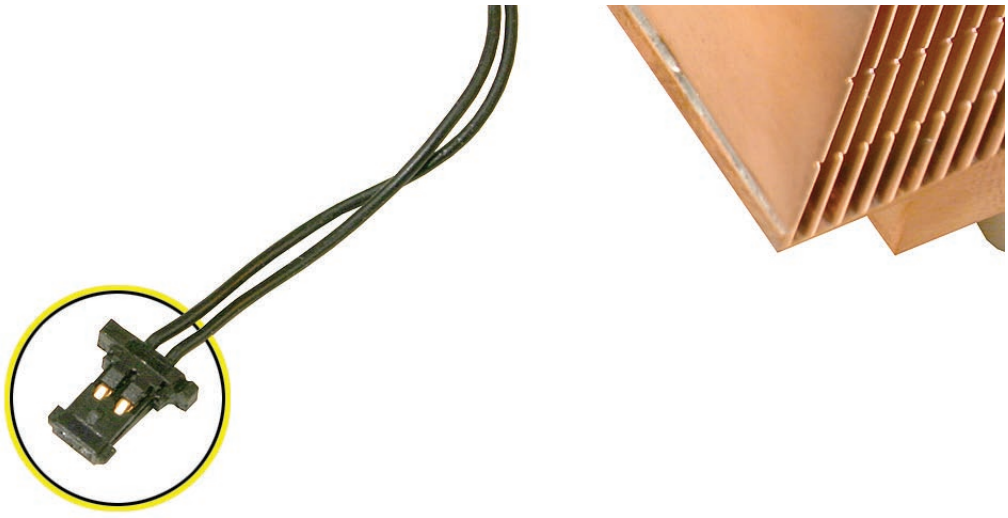
7. Holding the processor by three corners only, keep the processor level as you place it into its holder on the logic board, being careful not to get any thermal grease on the contacts of either the processor or its socket holder.



Note: When installing the processor on the logic board, align the processor notch with the tab on the processor holder, as shown. Then lower the processor straight down onto the socket.

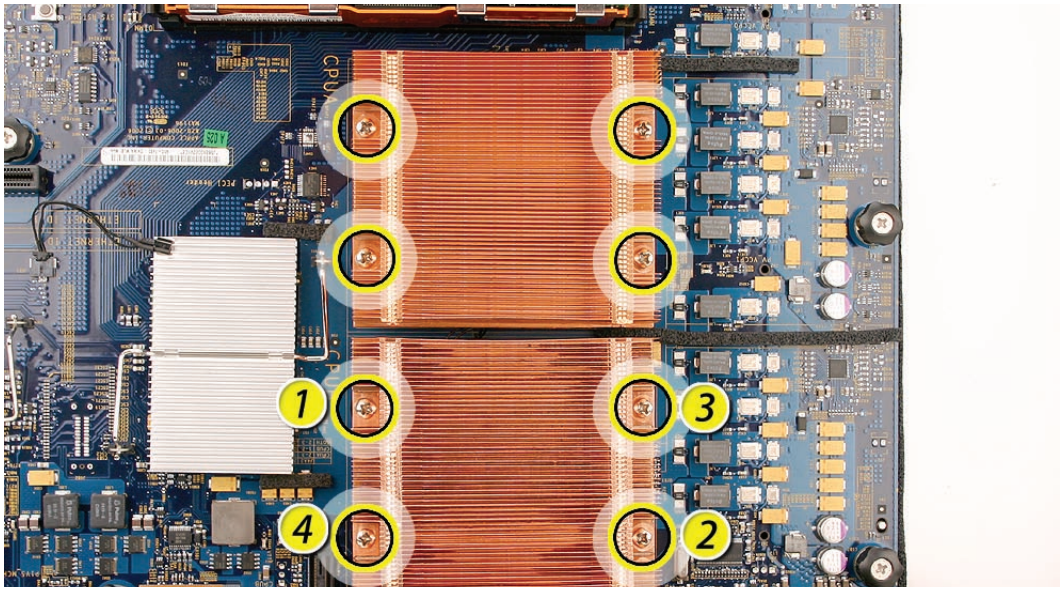


8. Rotate the top of the holder to the closed position.
9. Engage the latch on the metal processor holder.
10. Holding the heat sink in one hand, reconnect the 2-pin thermal sensor cable for the heat sink to the logic board.
    Note: Make sure the connector on the sensor cable is oriented as shown, with the gold fingers facing up.



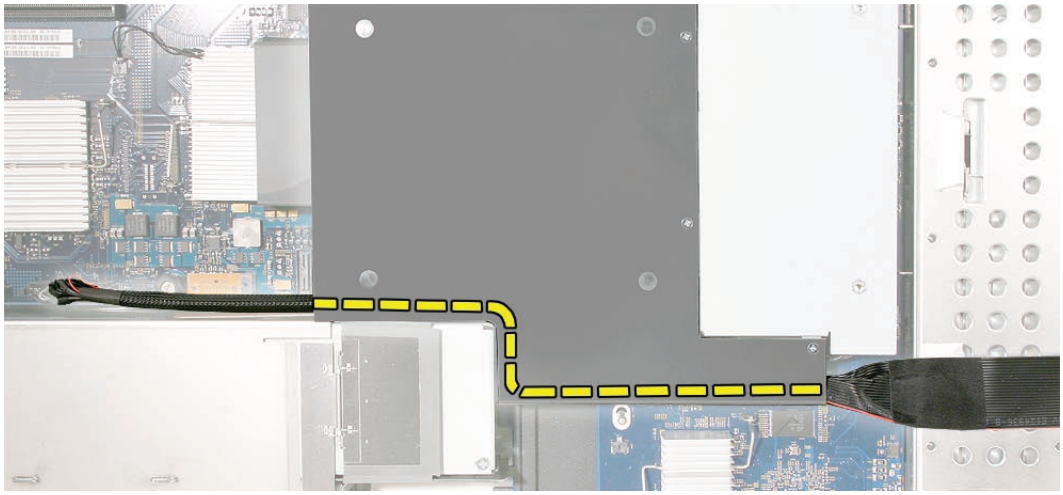
11. Carefully seat the heat sink over the processor, aligning the four screws with the holes in the logic board.

12. Tighten the four captive Phillips mounting screws for the heat sink in the order indicated below. Do not over-tighten the screws. If you have a torque driver, tighten the screws to 8 inch-pounds; otherwise, try to tighten the screws with equal pressure.



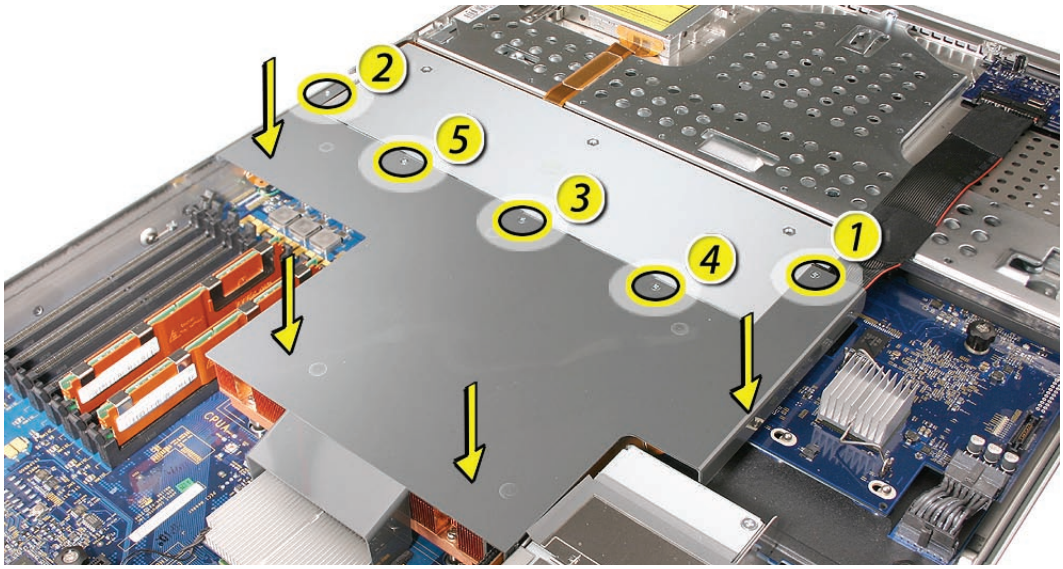
Replacing the Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush all over, and does not protrude above the enclosure.
Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.

3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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Logic Board
Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Important: Hold PCI cards, FB-DIMMs, logic boards, processors, and other printed circuit boards by their edges. Never touch the gold contacts or other exposed metallic components on the boards. Handle the boards gently and don't bend or flex them.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

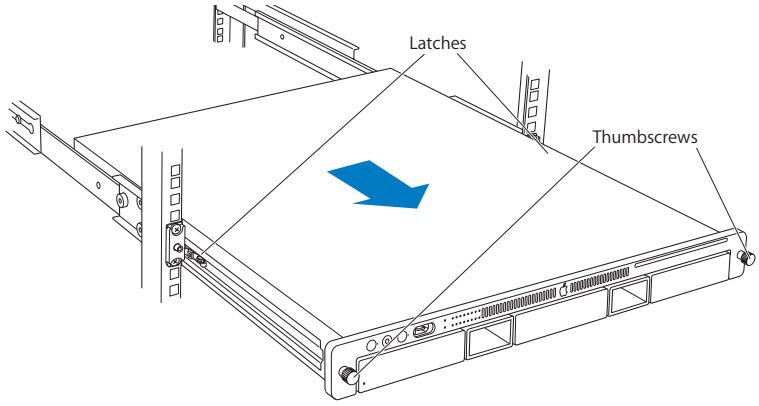
Tools Required

The following tools are required for this procedure:

- Phillips #1 screwdriver
- Antistatic wrist strap (if available)
- 2 thermal grease syringes for replacing processor heat sinks (supplied with the part)
- 2 alcohol wipes for cleaning processors and heat sinks (supplied with the part)

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.
3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



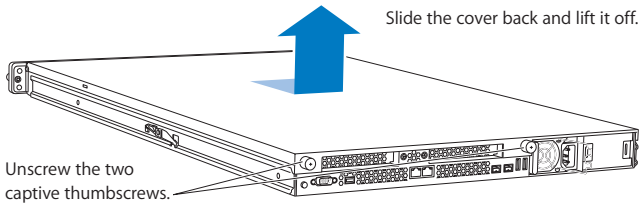
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack rails.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



Removing the Installed Logic Board

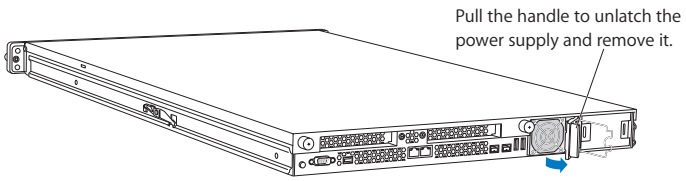
Before removing the installed logic board, remove the following parts:

- Both power supplies
- PCI riser cards and any expansion cards in both slots (if installed)
- FB-DIMM memory
- Airflow duct
- Fan array
- Backplane-to-logic board I/O cable
- Both processor heat sinks
- Both processors
- Video mezzanine card (if installed)

Note: The replacement logic board does not include the processors, heat sinks, video mezzanine board, memory FB-DIMMs, PCI riser cards, or expansion cards. You must transfer these modules from the original board to the new one.

Power Supplies

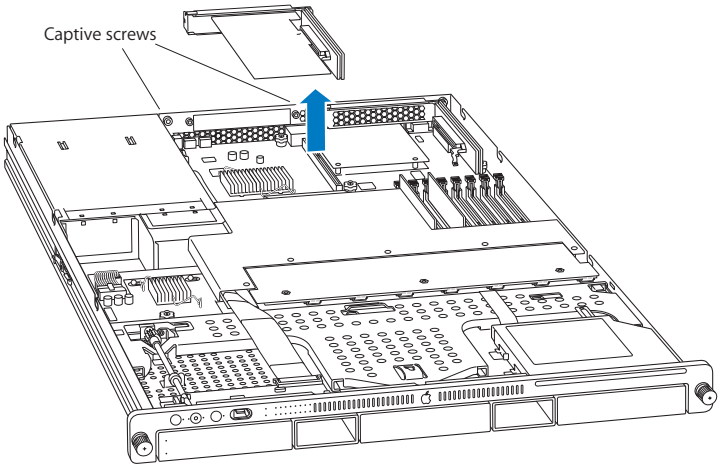
1. Pull the handle to release the first power supply and slide it out of the bay.



2. Repeat for the second power supply, if installed.

PCI Riser Cards and Expansion Cards

1. Loosen the two captive screws that secure the riser bracket in slot 1 to the back panel.
2. Carefully pull up on the bracket and riser, with the expansion card still attached, to disconnect the riser from the logic board.

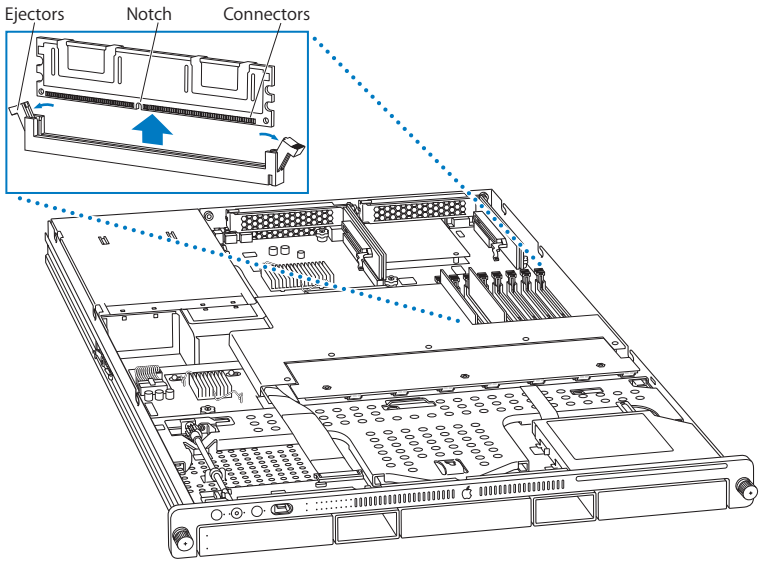


3. Tilt the expansion card up so that its port clears the enclosure, and remove the card from the Xserve.
4. Repeat for the riser card in slot 2.

Note: If no risers are installed, remove the blanks held in place by the same screws.

FB-DIMMs

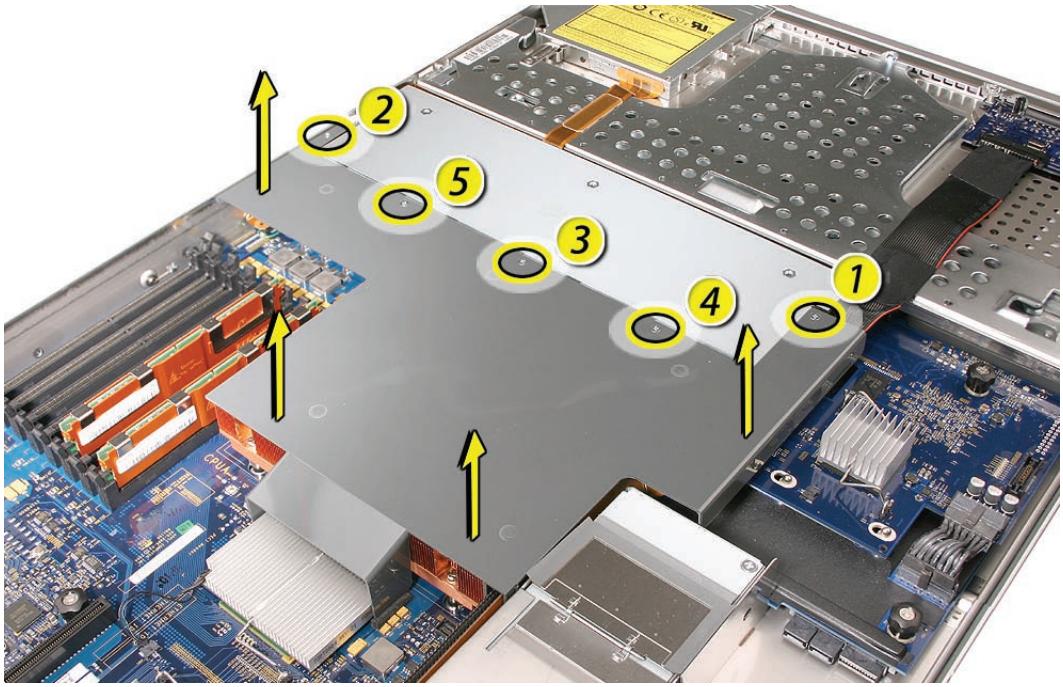
1. Push down the ejectors on the FB-DIMM slot.
2. Holding the FB-DIMM by both top corners, lift it straight up out of the Xserve.
3. Repeat for the other installed FB-DIMMs.
   Important: The order of the FB-DIMMs in the slots can affect performance. Unless you are sure that all the FB-DIMMs are identical, keep track of which slot you remove each FB-DIMM from so you can return it to the same slot on the replacement logic board.



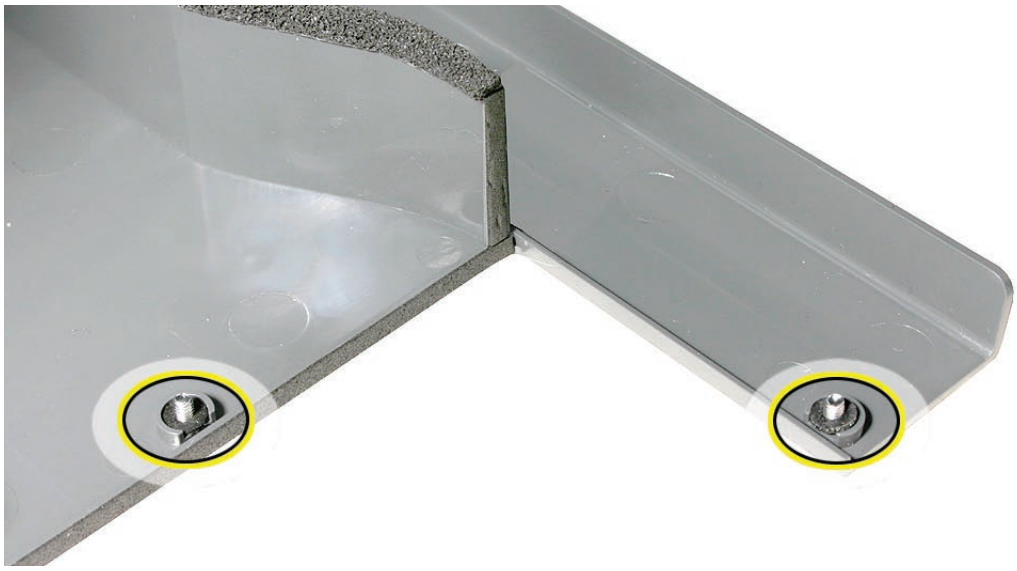
Warning: When removing or installing the FB-DIMM, handle it only by the edges. Do not touch its connectors. Lift the FB-DIMM straight up from the connector to remove it, and insert it straight down into the connector to install it. Do not rock the FB-DIMM from side to side.

Airflow Duct

1. Loosen the five captive Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.

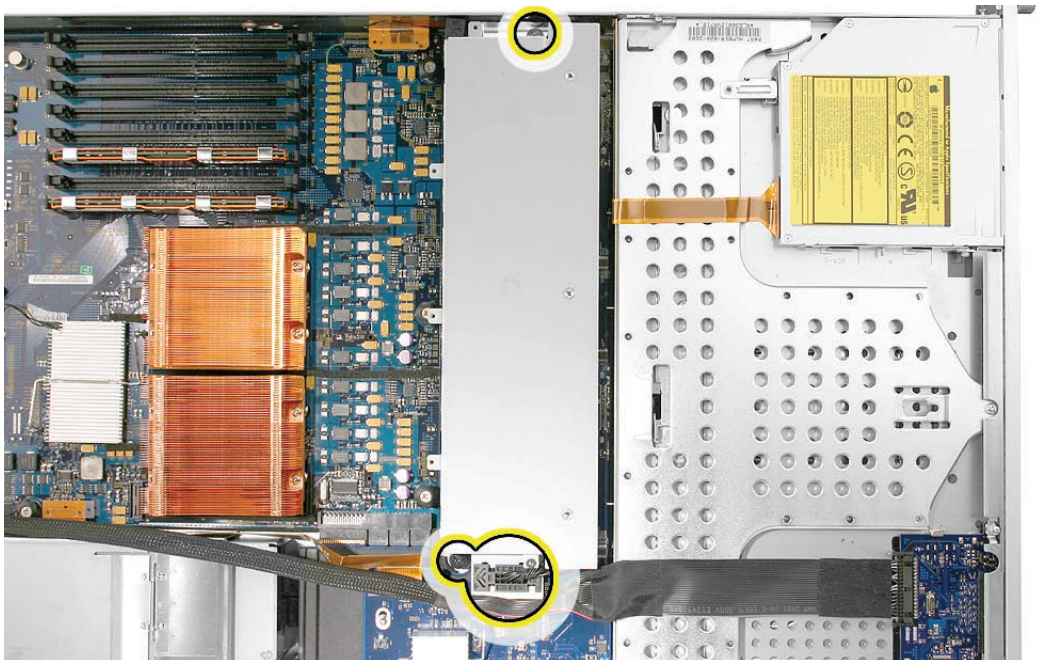


Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these rubber washers can easily fall into the enclosure and become lost.

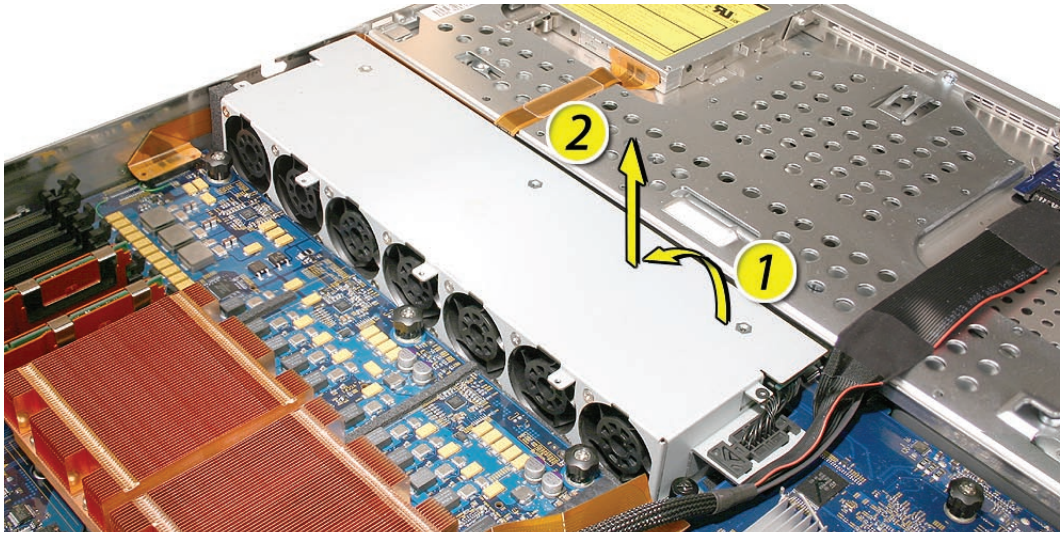


Fan Array

1. Loosen the two captive thumbscrews that secure the fan array to the enclosure.
2. Lift the fan array to remove it from the Xserve.
   Note: You may need to move the front panel cable slightly out of the way of the fan array power connector during removal or replacement. Be careful not to pinch the front panel board cable between the fan array and any other surface inside.

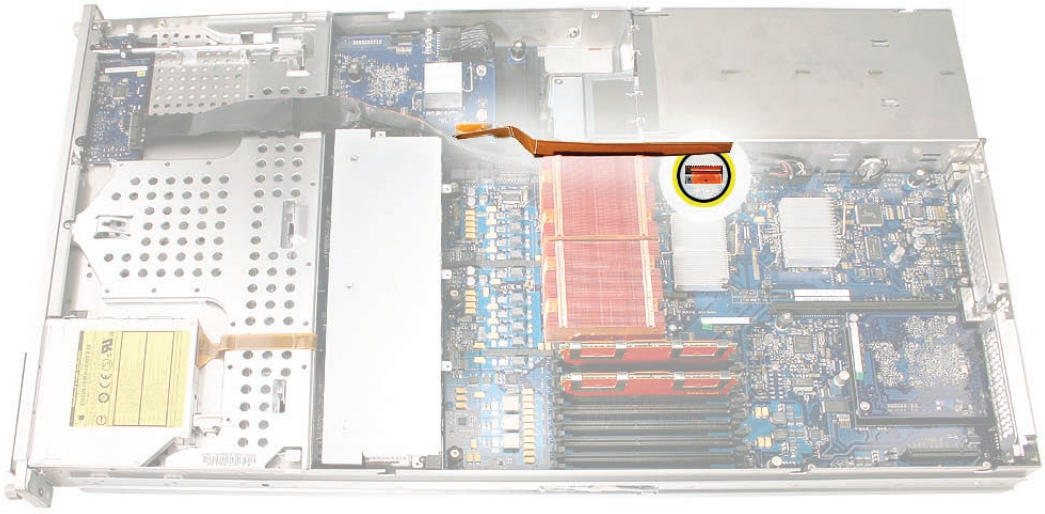


Note: You may encounter some resistance around the fan array power connector during removal. If so, carefully rotate the fan array as shown to disconnect it from the power distribution board below, and then lift the fan array out of the computer.

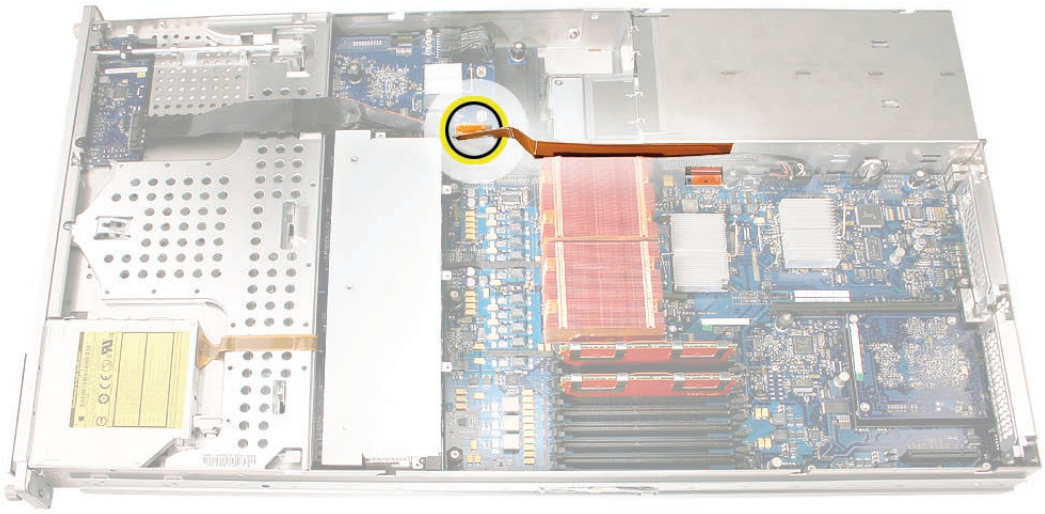


Backplane-to-Logic Board I/O Cable

1. Disconnect the backplane-to-logic board cable from the logic board.

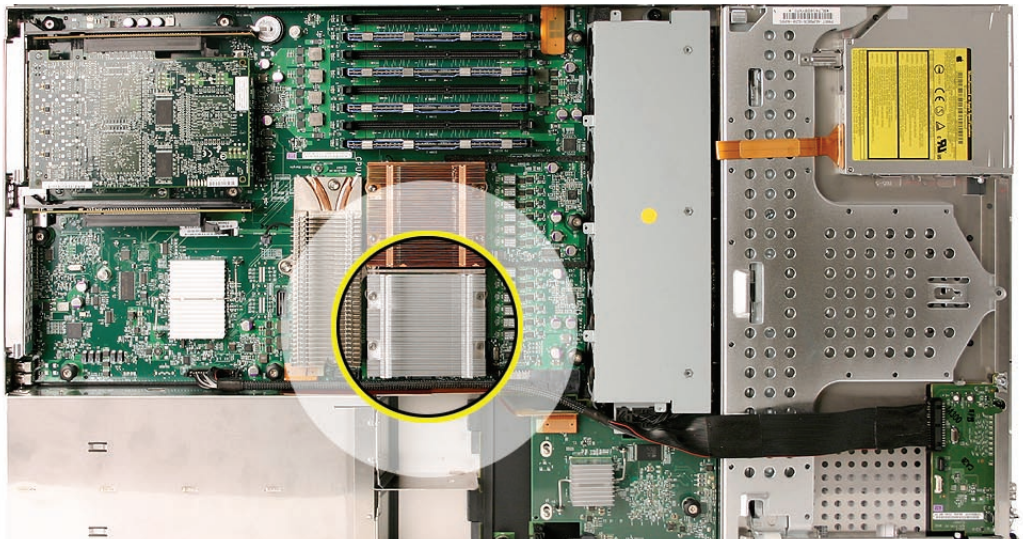


2. Disconnect the backplane-to-logic board cable from the drive interconnect backplane and remove the cable from the Xserve.

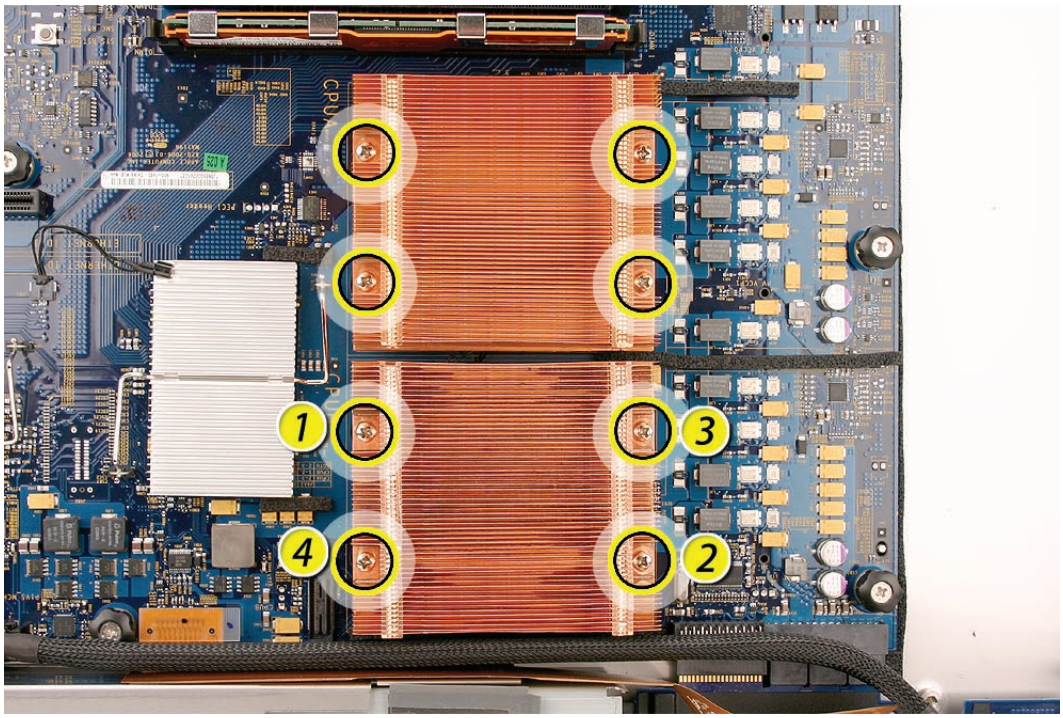


Processor Heat Sinks

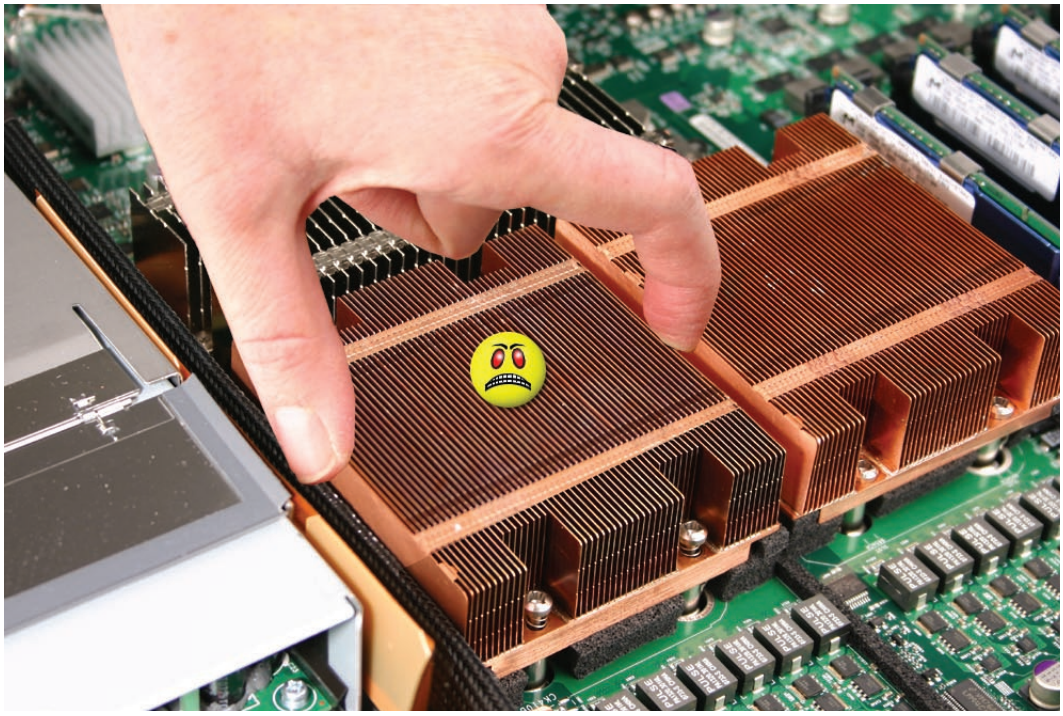
Note: Server configurations with a single processor have a regular heat sink and a blank heat sink installed. The blank heat sink is silver colored (as shown below) and should not be removed except when replacing a logic board.

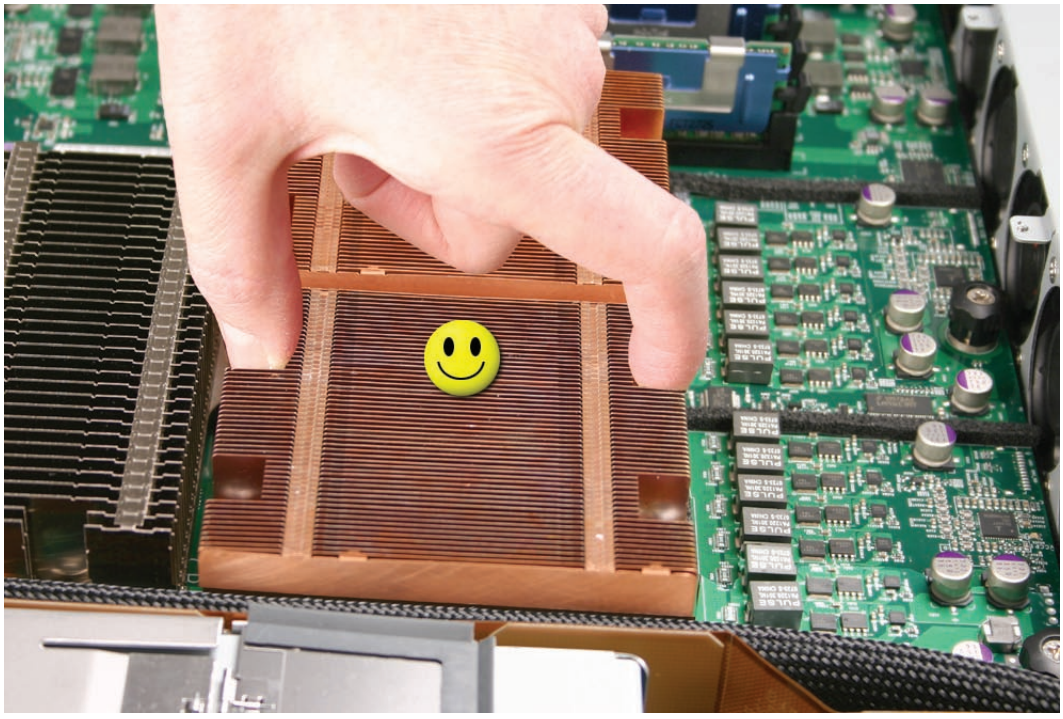


1. Loosen the four screws securing the heat sink in the order indicated below. If two copper-colored heat sinks are installed, you must remove both heat sinks.



Caution: Whenever you handle a heat sink, handle it from the slotted sides, not the smooth sides. Grasping the smooth sides of the heat sink can compress its ribs causing permanent damage.

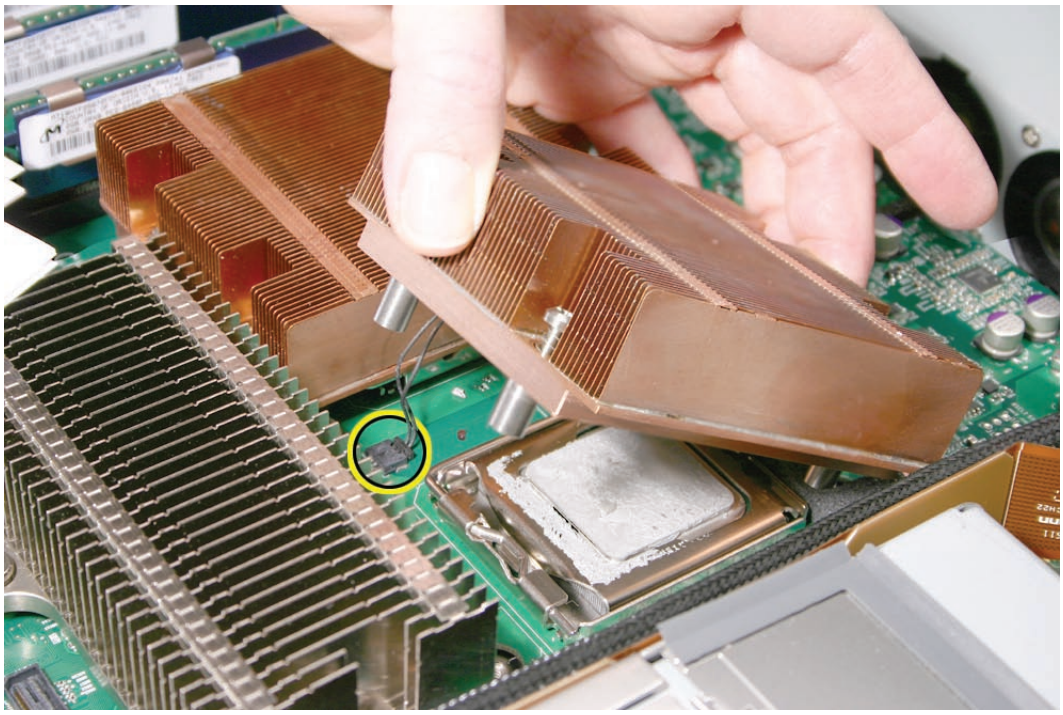




2. **Caution: Each heat sink is connected to the logic board by a small 2-pin thermal sensor cable. Lifting the heat sink too quickly can damage the cable or connector. Because of the tight thermal bond between the processor and heat sink, be especially cautious to initially lift the heat sink no more than one centimeter (1 cm) off the processor. Do not pull on the cable as you lift each heat sink enough to disconnect the cable from the logic board.**

   Slowly raise the heat sink off the processor just far enough that you can reach the sensor cable connector.

3. Pull on the connector, not the cable, to disconnect the sensor cable from the logic board.



4. Lift the heat sink straight up and out of the enclosure.

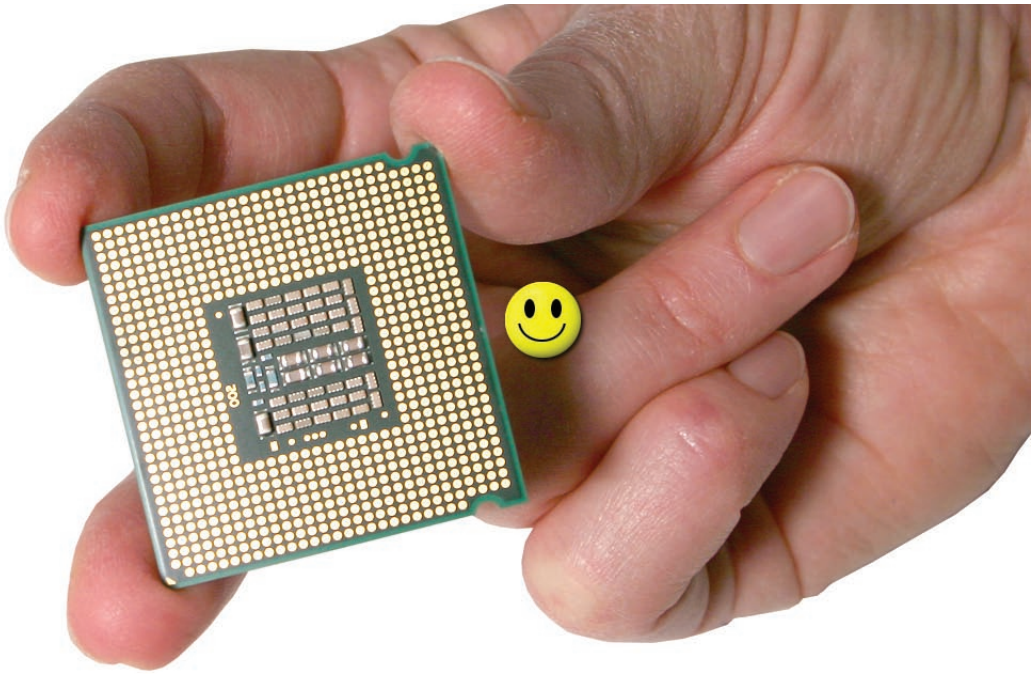
5. Using the alcohol wipe that came with the replacement processor, clean off any thermal grease from the underside of the heat sink. Save the alcohol wipe package for later.

   Note: You will need to clean off the old thermal grease from the bottom of each heat sink and the top of each processor and apply new thermal grease to the processors when you are reassembling the Xserve. For more information, see "Replacing the Processor Heat Sinks.""

Processor

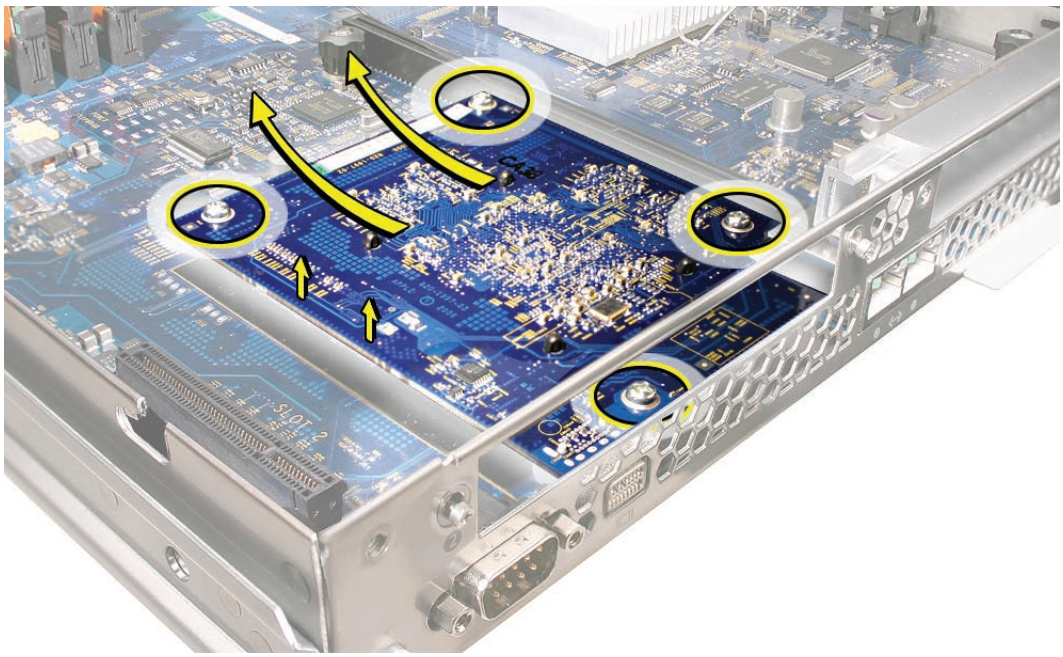
1. Release the latch on the metal processor holder.
2. Rotate the top of the holder to the open position.

3. Carefully lift the processor out of the holder.
   Important: When removing or installing a processor, always hold the processor by three corners. Be extremely careful not to touch the gold pins on the bottom of the processor, as this type of connector is very sensitive to contamination. Also be careful not to touch the gold pins in the processor socket on the logic board.



Video Mezzanine Card (if installed)

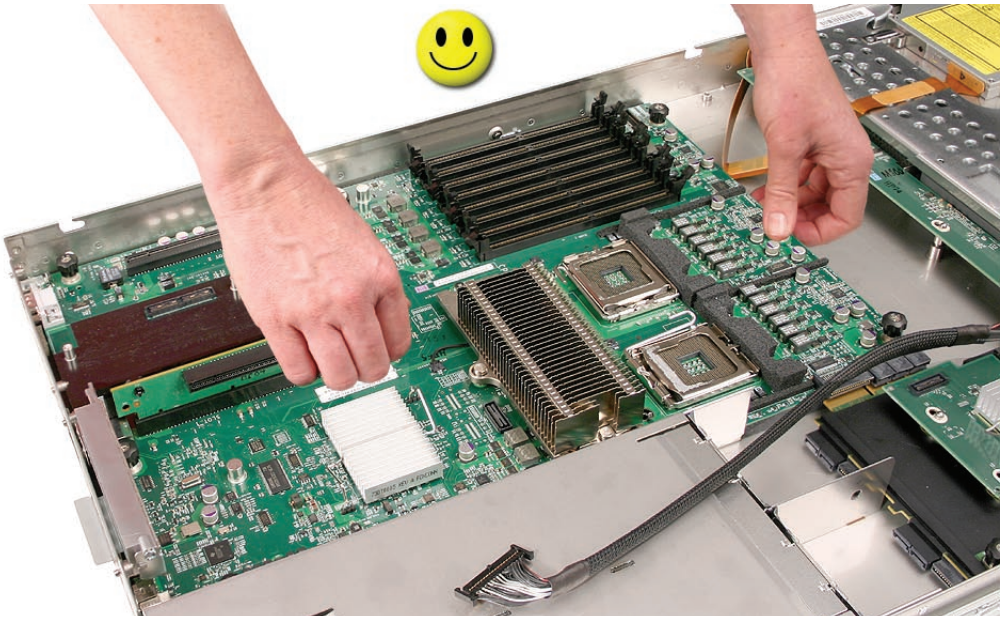
1. Remove the four 8-5-mm long Phillips screws that secure the mezzanine card to the logic board.
2. Pull up evenly on all sides of the card to disconnect it from its logic board connector under the card, and remove the card from the Xserve.

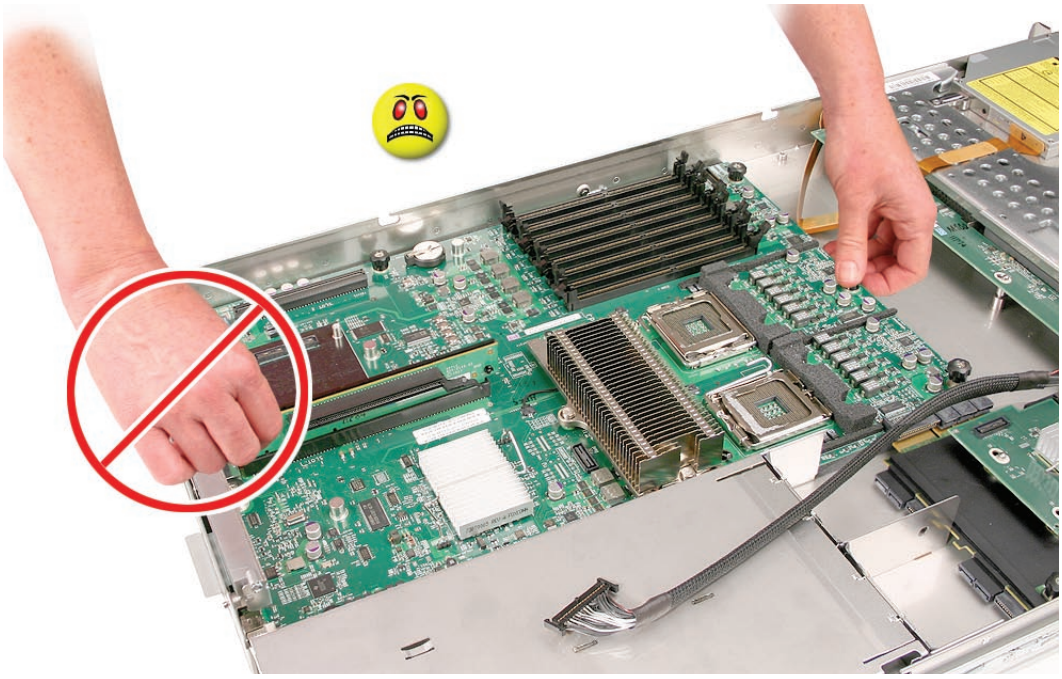


Logic Board

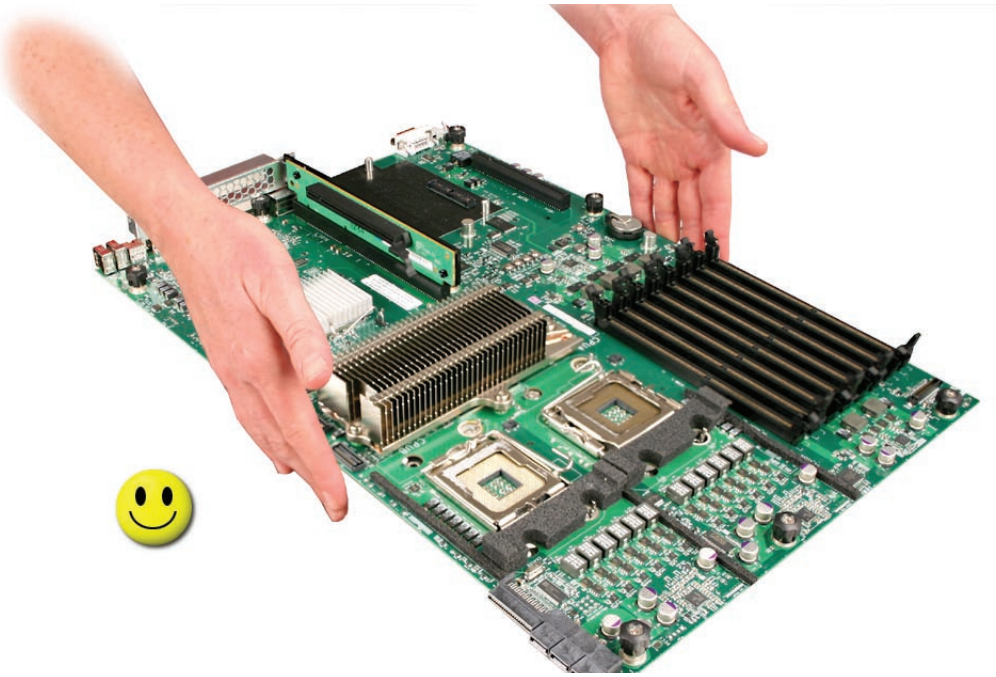
1. Study the next four images for properly moving the logic board before continuing with the steps.

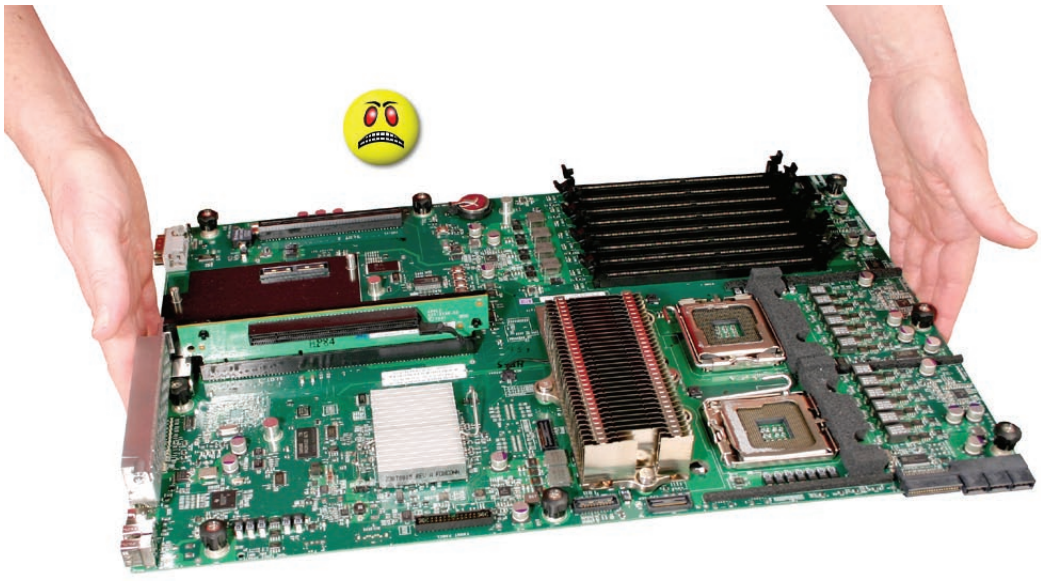
Caution: When removing and installing the logic board, be careful not to flex the logic board, which could damage the board or its components. To best distribute the weight of the logic board and minimize flexing, grasp the logic board only at the side and the end of the expansion card riser, as shown.



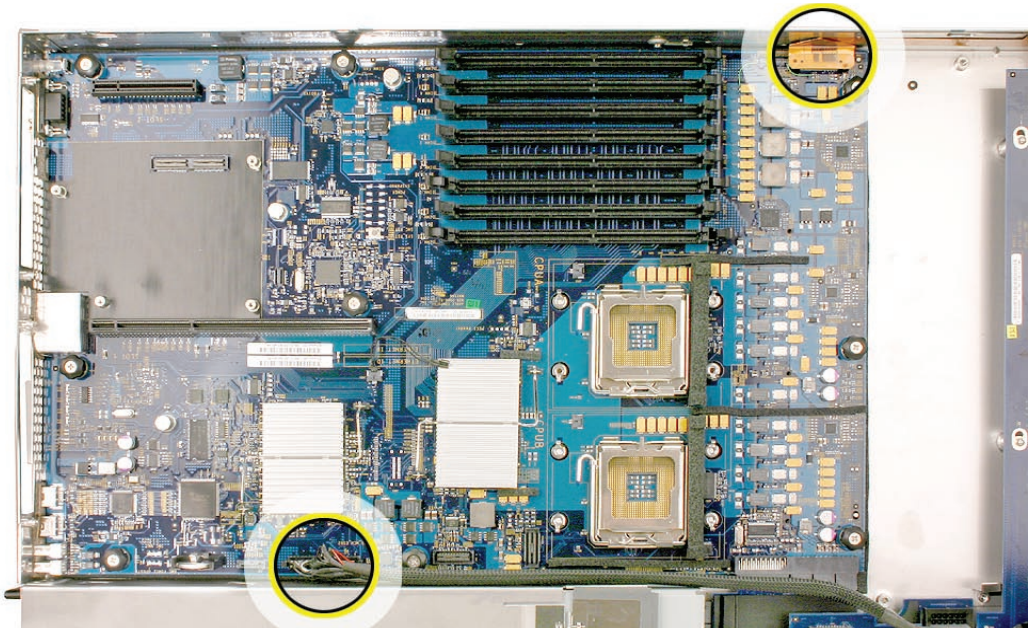


Caution: When transferring the logic board, be careful not to flex the logic board, which could damage the board or its components. To best distribute the weight of the logic board and minimize flexing, hold the logic board at the long sides near the center, as shown.

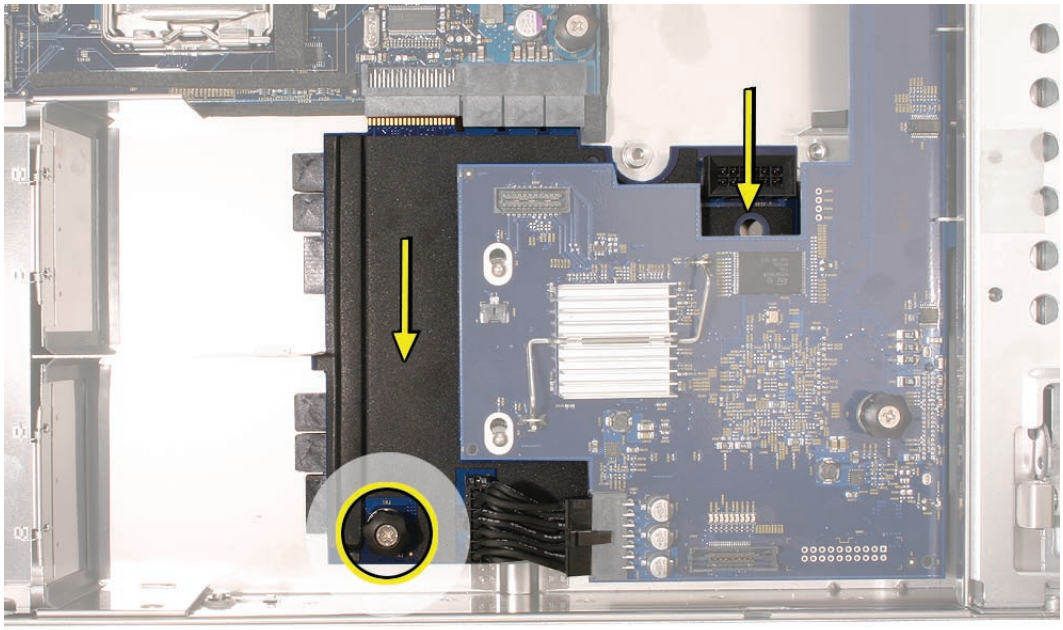




2. Disconnect the optical drive cable from the logic board.
3. Release the two locking levers on the front panel board cable connector and disconnect the cable from the logic board. Move the cable aside so you have access to the logic board.

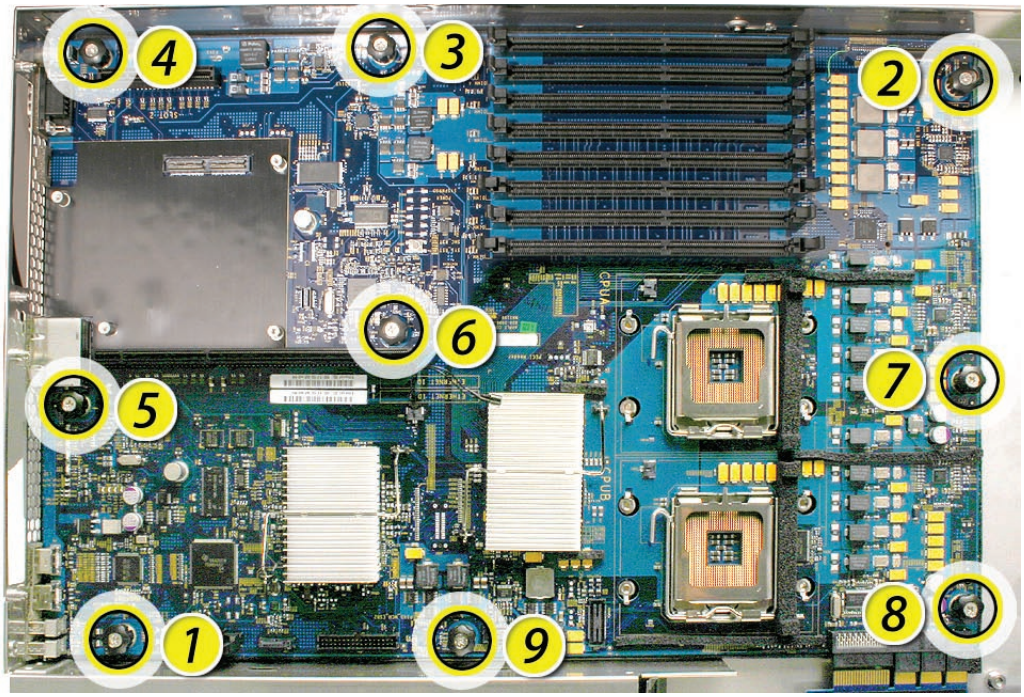


4. Loosen the single thumbscrew on the power distribution board and slide the board away from and out of the connector on the logic board.



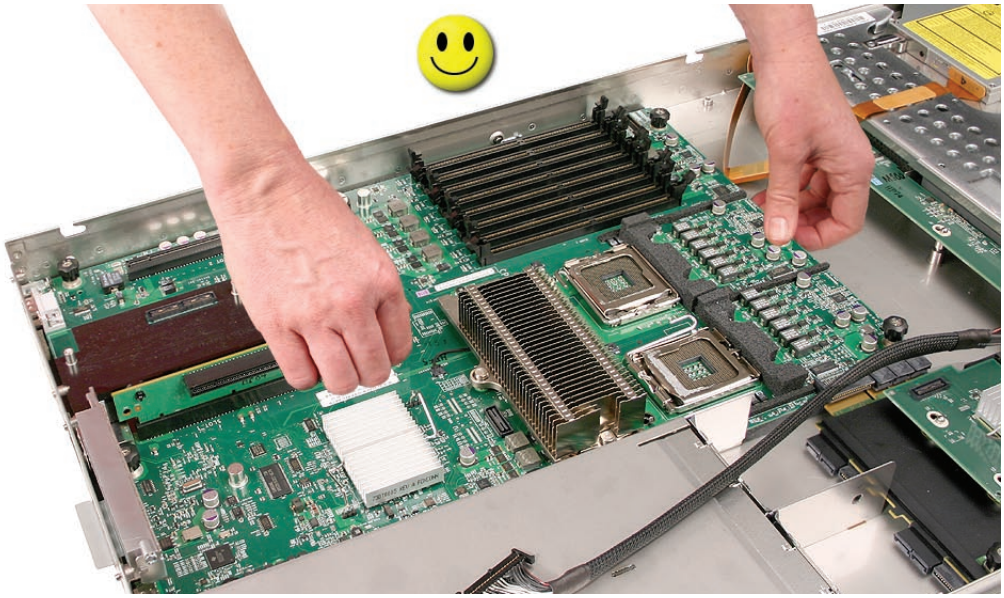
Note: Don't remove the power distribution board but make sure its edge connector is all the way out of the connector on the logic board.

5. Following the order shown, loosen the nine thumbscrews that secure the logic board to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.



6. Grasping the logic board only by its expansion card riser and edge as shown, move it forward and up slightly to release it from the rear port openings in the enclosure.

7. Remove it from the Xserve.



Xserve (Early 2008): Packing the Used Logic Board

Important: This packing procedure applies only to Xserve (Early 2008) logic boards. When packing the logic board, place the board in an antistatic bag and set it component-side up in the return box so that the raised areas on the board fit correctly between the foam supports on the box. Don't bend or flex the logic board.

1. Holding the board at the long sides, place it in the antistatic bag.

2. Note that foam supports are glued to the top of the box, as shown.

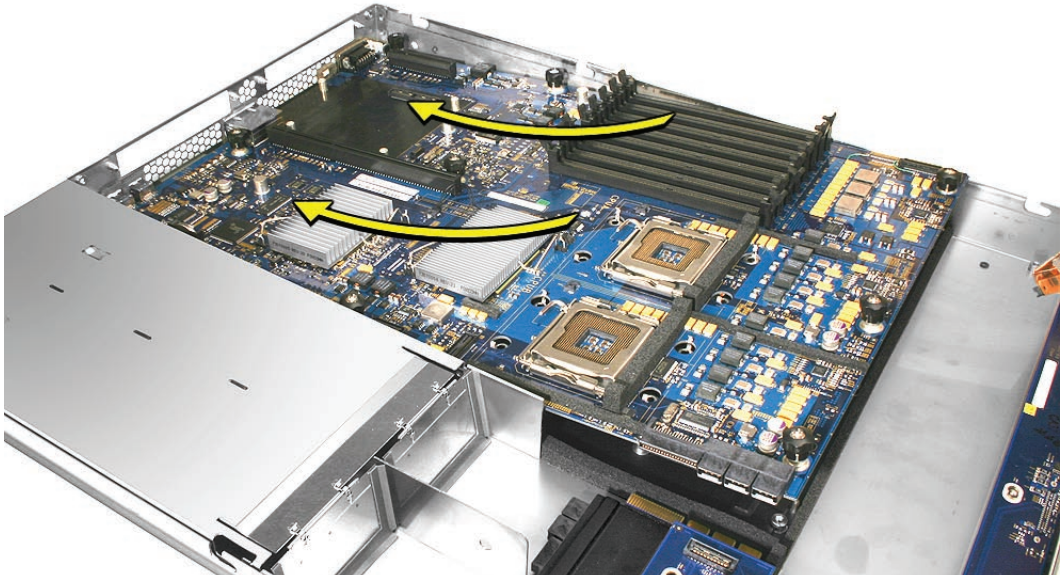
3. Place the logic board in the box, making sure it is component-side up and positioned with the Northbridge heat sink at the back of the box.
4. Follow any additional return instructions for your region, and close the box.

   Important: Make sure the foam supports align correctly with the raised areas on the board. When aligned correctly, the box closes easily.

Installing the Replacement Logic Board

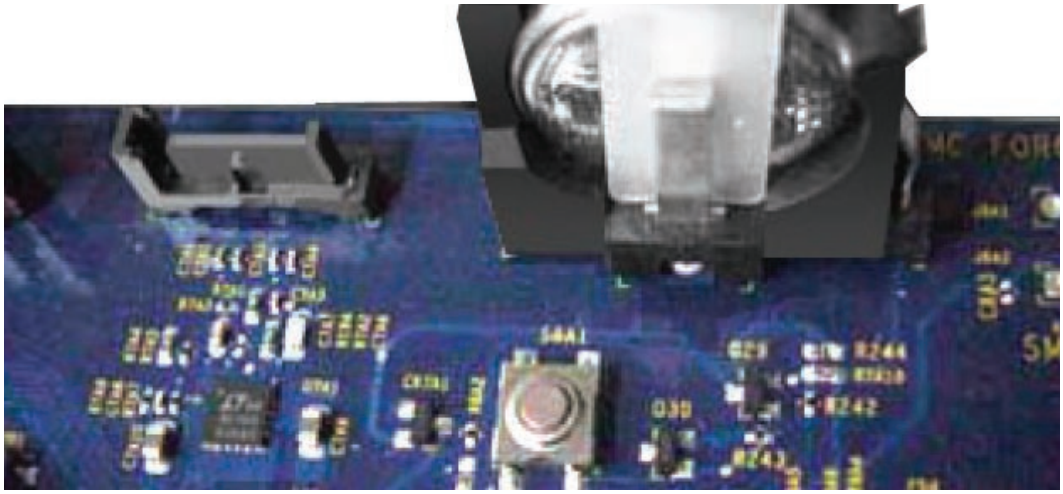
Important: When replacing the logic board, make sure the board's rear port connectors fit through the appropriate openings in the Xserve's back panel. Take special care to fit the clear plastic system identifier button through its opening. Don't bend or flex the logic board.

1. With the front edge of the board raised 1–2 inches (3–5 cm), guide the connectors on the back edge of the board into the openings in the back panel of the enclosure, and then lower the front edge of the board into place.

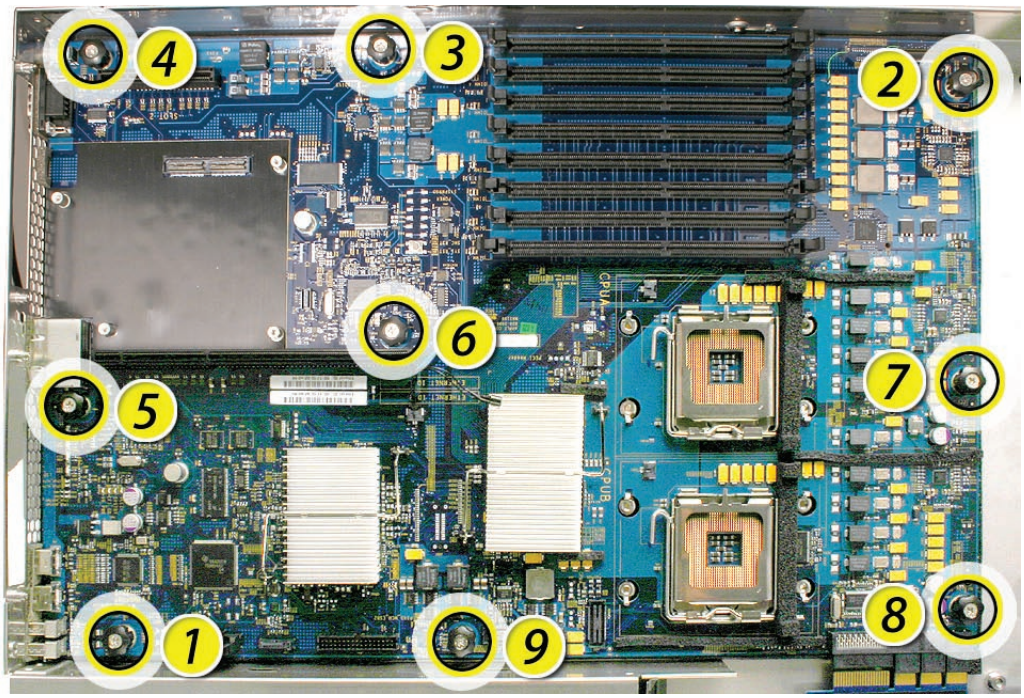


2. Remove the battery insulator tab from the battery holder on the replacement logic board.

   Note: Depending on the Xserve model, the battery position may differ from what is shown.



3. Following the order shown, use a screwdriver to tighten, but not overtighten, the nine thumbscrews that secure the logic board to the enclosure.



4. Slide the power distribution board back into place and tighten the thumbscrew.
Note: Make sure the edge connector on the power distribution board goes completely into the connector on the logic board. If the power distribution board doesn't slide easily, make sure the thumbscrew is popped up so it doesn't catch on the mounting post beneath the board.

5. Reconnect the front panel board cable and the optical drive cable to the logic board.

Replacing the Video Mezzanine Card

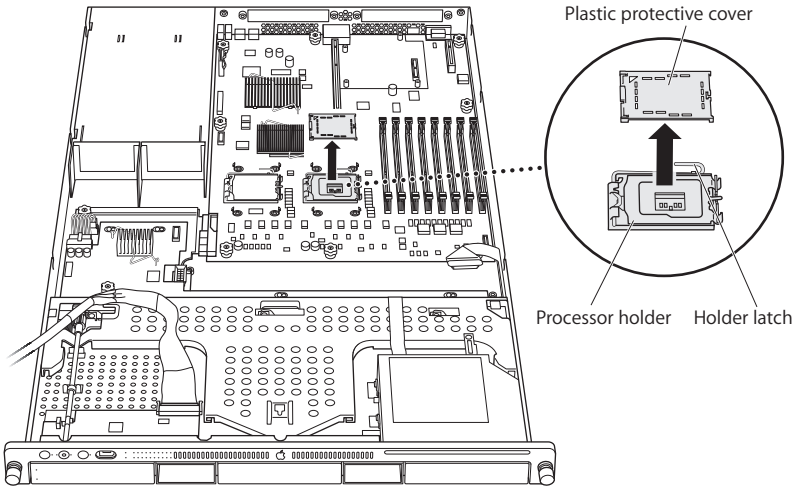
1. Guide the connector on the back edge of the video mezzanine card through the opening in the back panel of the server.

2. Position the mounting holes in the card directly over the posts on the replacement logic bard and lower the card onto the logic board.
Note: Be sure to press down gently and evenly on the card to seat the connector on its underside to the connector on the logic board.

3. Replace the four screws.

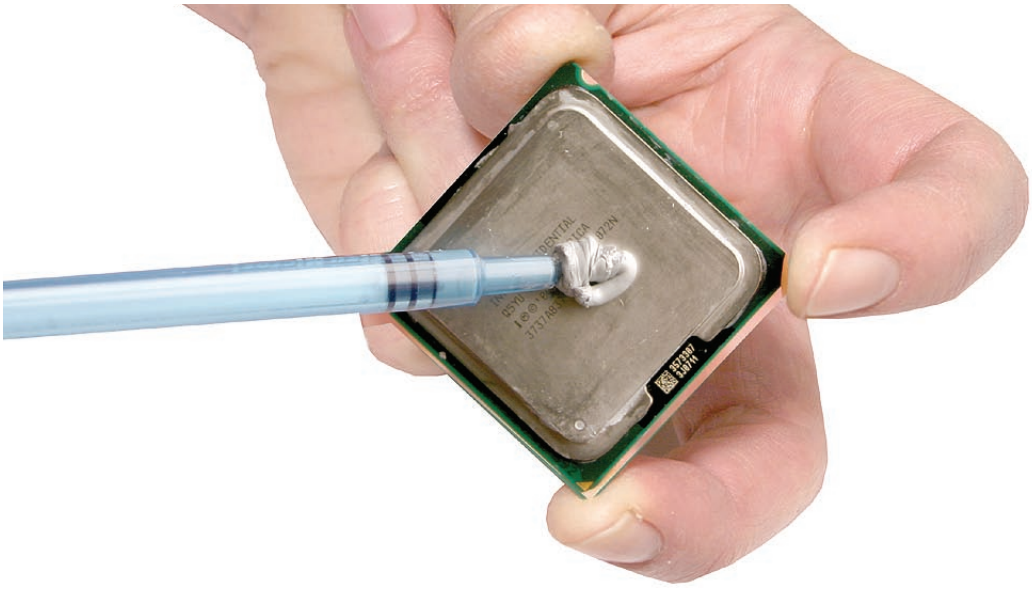
Replacing the Processors

1. Unsnap the protective plastic cover from the first processor holder on the replacement logic board, unclip the holder latch, and open the holder.



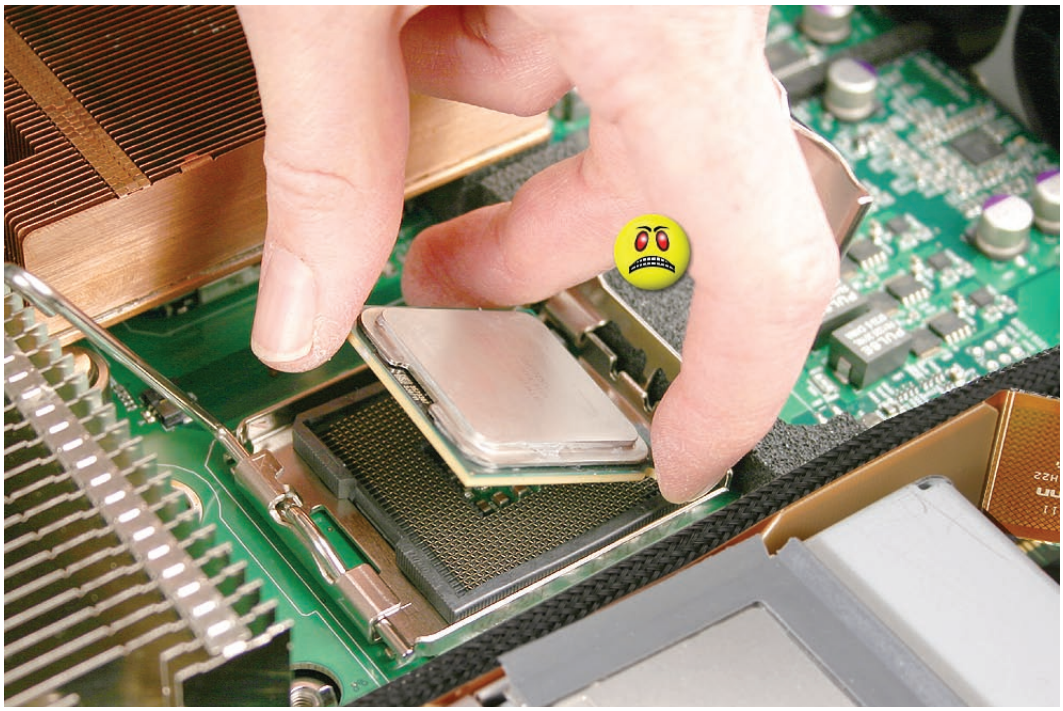
2. Using a syringe of thermal grease, apply the entire contents of the syringe (approximately 4.5 cc) to the top surface of the processor.

   Important: Be sure not to get grease anywhere on the processor other than the very top, flat surface that directly contacts the heat sink.

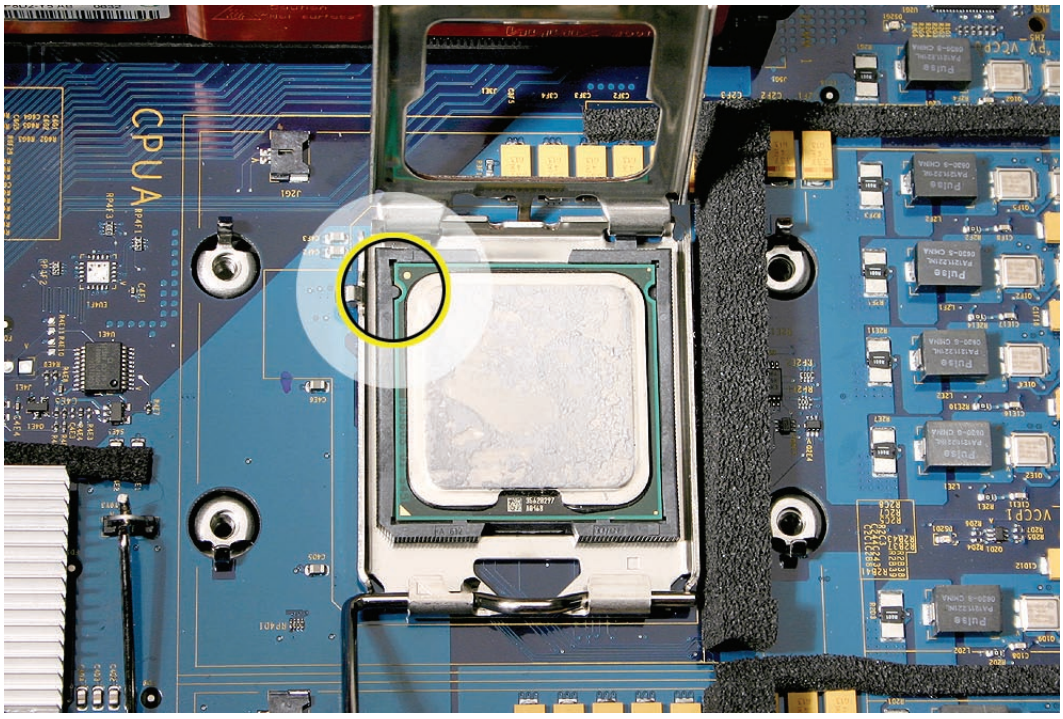


3. Use the edge of the package that the alcohol wipe came in as a spatula to spread the thermal grease evenly over the entire top surface of the processor. Scrape off any excess grease with the package edge, then discard the package.

4. Holding the processor by three corners only, keep the processor level as you place it into its holder on the logic board, being careful not to get any thermal grease on the contacts of either the processor or its socket holder.



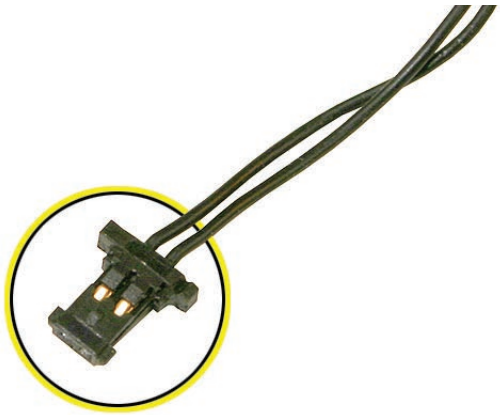
Note: When installing the processor on the logic board, align the processor notch with the tab on the processor holder, as shown. Then lower the processor straight down onto the socket.



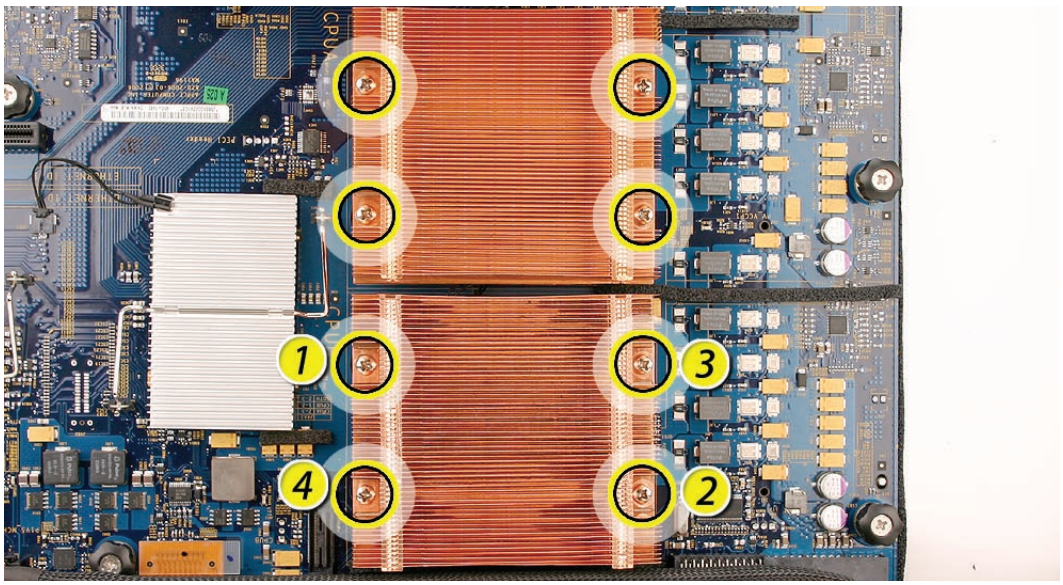
5. Rotate the top of the holder to the closed position.
6. Engage the latch on the processor holder. Repeat the steps above for the second processor.

Replacing the Processor Heat Sinks

1. Holding the heat sink by the slotted sides in one hand, reconnect the 2-pin thermal sensor cable for the heat sink to the logic board.
   Note: Make sure the connector on the sensor cable is oriented as shown, with the gold fingers facing up.

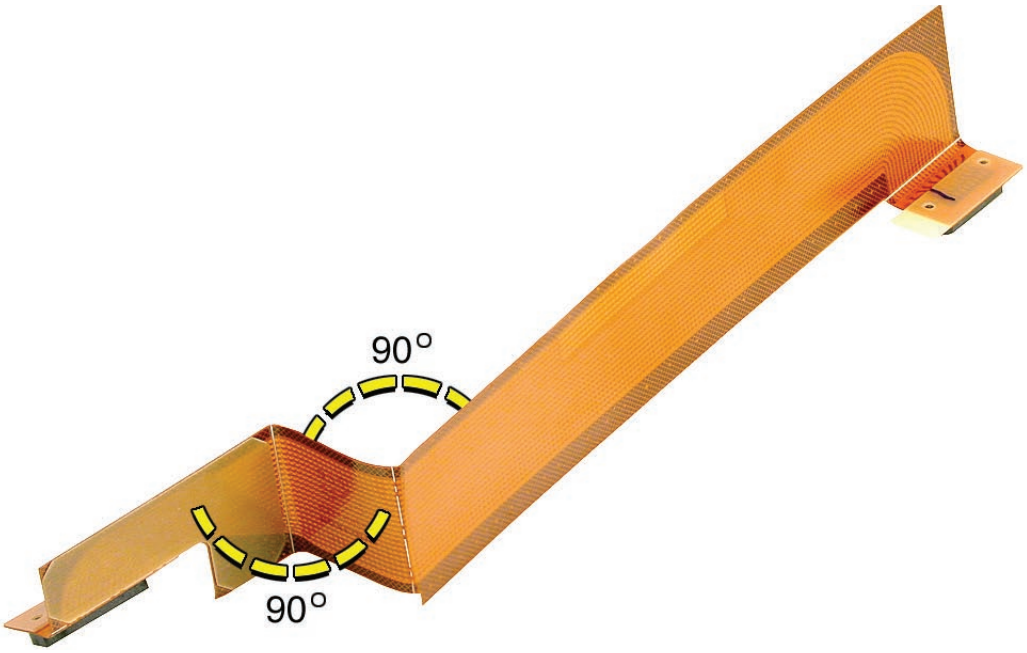


2. Carefully seat the heat sink over the processor, aligning the four screws with the holes in the logic board.
3. Tighten the four captive Phillips mounting screws for the heat sink in the order indicated below. Do not over-tighten the screws. If you have a torque driver, tighten the screws to 8 inch-pounds; otherwise, try to tighten the screws with equal pressure.



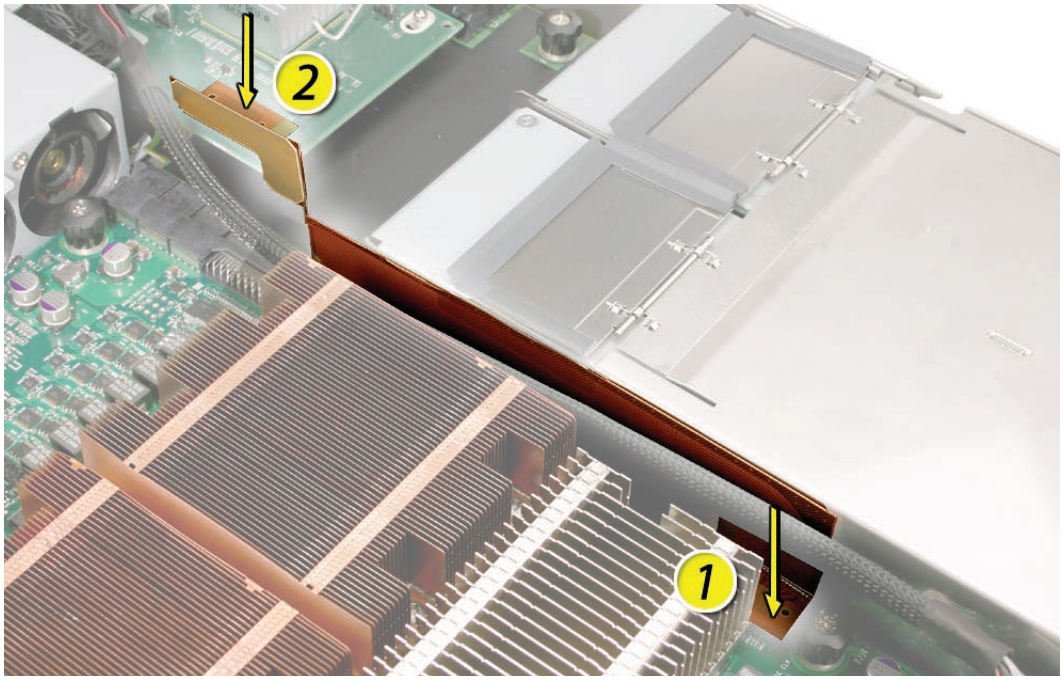
Replacing the Backplane-to-Logic Board I/O Cable

1. Fold the cable to a 90-degree angle along its creases.



2. Connect the cable to the logic board first. Then press the adhesive section of the cable onto the enclosure before connecting the other end of the cable to the backplane.

   Caution: Make sure the cable is fully seated.

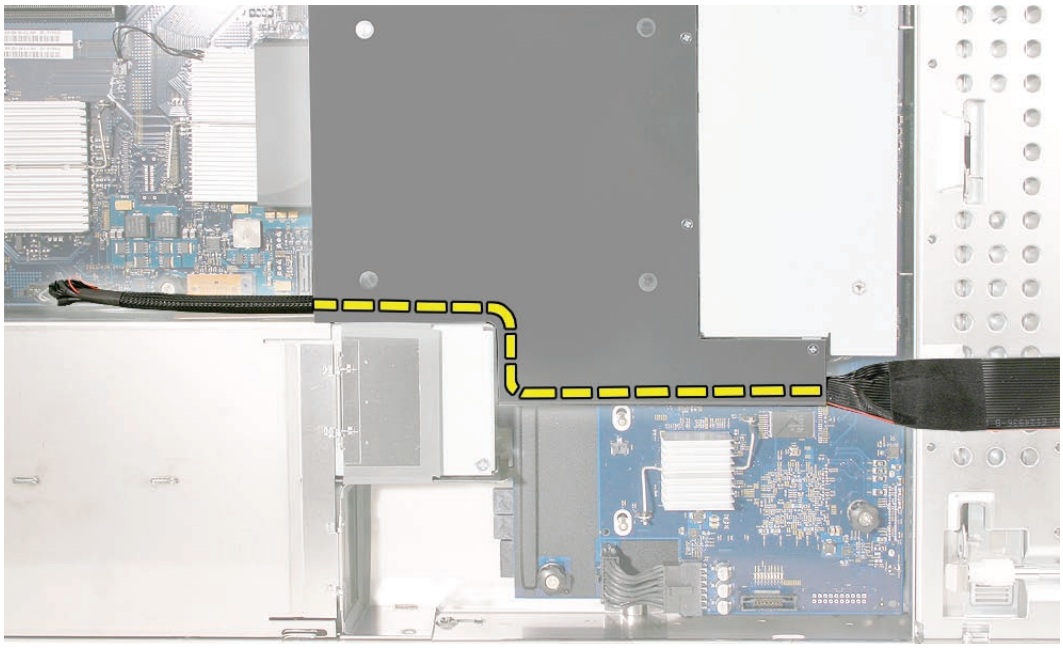


Replacing the Fan Array

1. Align the power connector on the fan array with its connector on the power distribution board and lower the array into the enclosure. Push down on the fan array power connector to make sure it is fully seated.
2. Tighten the screws at the ends of the array. Make sure the large front panel board cable runs above the power connector but below the tab on the top of the power supply.

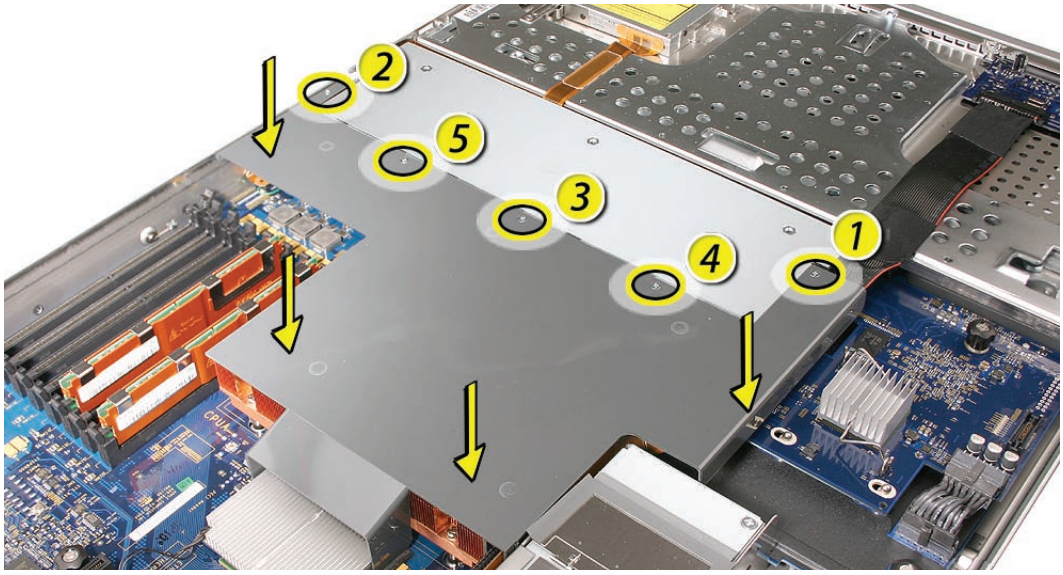
Replacing the Airflow Duct

1. Lower the airflow duct into position on the replacement logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.



2. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.

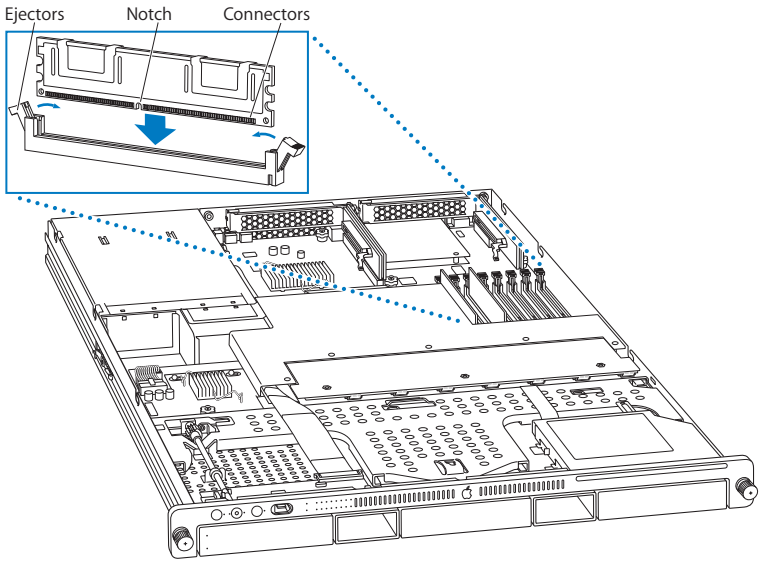
3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Replacing the FB-DIMMs

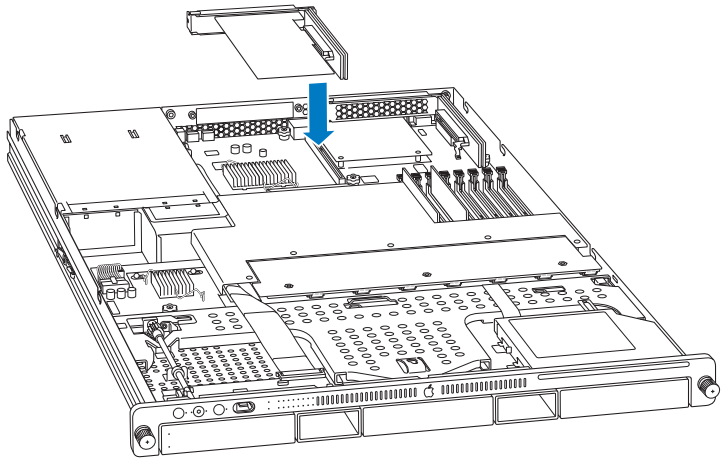
Important: Be sure to install each FB-DIMM in the slot on the replacement board that is equivalent to the slot you removed it from on the original logic board.

1. Align the first FB-DIMM with its slot and press down until the latches snap back up into place.
   Note: The FB-DIMM is designed to fit into the slot only one way. Be sure to align the notch in the FB-DIMM with the small rib inside the slot.
2. Repeat for the remaining FB-DIMMs.



Replacing the PCI Riser Cards and Expansion Cards

1. Align the riser with slot 2 on the logic board and press to seat the card.

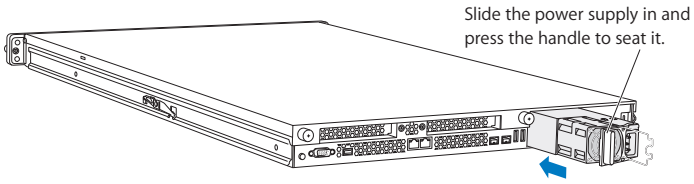


2. Tighten the captive screws that secure the riser bracket to the back panel.
3. Repeat for the riser in slot 1.

Note: If no risers are installed, install the blanks held in place by the same screws.

Replacing the Power Supplies

1. Slide the first power supply all the way into the bay, and then press the handle to seat the power supply and lock it in place.



2. Repeat for the second power supply, if installed.

Changing the Ethernet ID Label

Replacing the logic board in the Xserve changes its Ethernet ID numbers (MAC addresses) for both Ethernet ports. The new numbers are printed on Ethernet labels packaged with the replacement logic board. After installing the new logic board, place the new Ethernet labels over the original Ethernet numbers on the Xserve's ID tab. Be careful to apply the new stickers completely onto the ID tab, smoothing out the labels so that they are completely flush with the tab. Do not leave any part of the labels (such as the corners) sticking up or these might catch and tear in the ID tab's opening in the rear panel when the tab is reinserted into the enclosure.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

Using the Updated Server Serial Number

When you use Server Assistant to install Mac OS X Server on an Xserve remotely, you need to enter a password consisting of the first eight digits of the Xserve hardware serial number. After you replace the logic board, the original serial number is no longer valid. Instead, use the serial number 12345678.

For more information about the serial number and installing Mac OS X Server remotely, see "Mac OS X Server Getting Started" on the Admin Tools disc that comes with the Xserve, and also available at www.apple.com/server/documentation.

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Rear ID Tab
Replacement Instructions

Follow the instructions in this document carefully. Failure to follow these instructions could damage your equipment and void its warranty.

Online instructions are available at http://www.apple.com/support/diy/.

Working Safely Inside the Xserve

Always touch the Xserve enclosure to discharge static electricity before you touch any components inside the Xserve. To avoid generating static electricity, do not walk around the room until you have finished working inside the server and have replaced the cover. To minimize the possibility of damage due to static discharge, wear an antistatic wrist strap while you work inside the Xserve.

Warning: Always shut down the Xserve and disconnect the power cords before opening it to avoid damaging its internal components or the components you are installing. Don't open the server while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

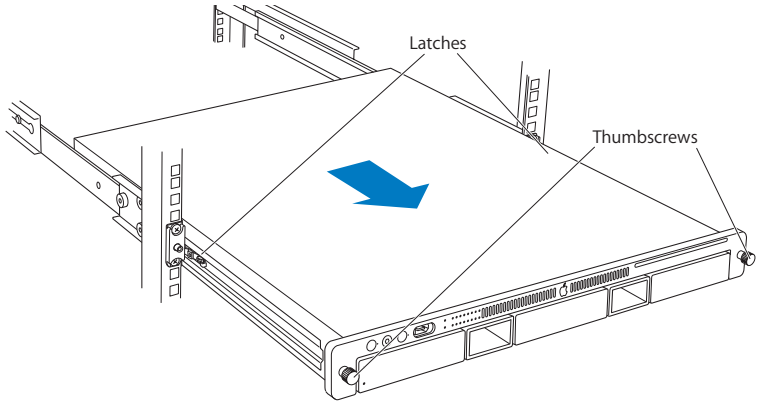
Tools Required

The following tools are required for this procedure:

- Phillips #1 screwdriver
- Antistatic wrist strap (if available)
- 2 thermal grease syringes for replacing processor heat sinks (supplied with the replacement part)
- 2 alcohol wipes for cleaning processors and heat sinks (supplied with the replacement part)

Removing the Xserve from a Rack

1. Alert users that the server will be unavailable for a period of time.
2. Shut down the Xserve (see the Xserve User's Guide for help) and then wait to let the Xserve internal components cool.
   Warning: Always shut down the Xserve before opening it to avoid damaging its internal components or the components you want to install or remove. Don't open the Xserve or try to install or remove items inside while it is turned on. Even after you shut down the Xserve, its internal components can be very hot. Let it cool down for 5 to 10 minutes before you open it.
3. Unplug all cables from the Xserve.
   Note: If you have trouble releasing a cable from the back panel, try using a small screwdriver or other flat tool to depress the tab on the cable connector.
4. To avoid inadvertently unlatching a drive module during handling, use the enclosure key to lock the enclosure lock on the front panel.
5. Touch the server's metal case to discharge any static electricity.
6. Loosen the thumbscrews at both ends of the front panel.
7. Grasp the thumbscrews and pull the Xserve forward until the safety latches engage (about halfway out of the rack).



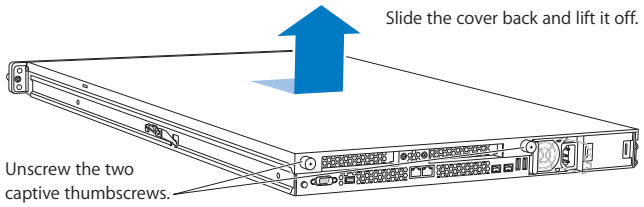
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack rails.
9. Set the Xserve on a flat surface and unlock it.

Opening the Xserve

Loosen the thumbscrews at the back of the top cover and slide the cover back and up to remove it. If you have difficulty removing the cover, check the enclosure lock on the front panel.

Warning: Even after you shut down the Xserve, its internal components can be very hot. Let it cool before you open it.

Important: To minimize the possibility of damage to Xserve components due to static discharge, wear an antistatic wrist strap, if possible, while you work inside the Xserve.



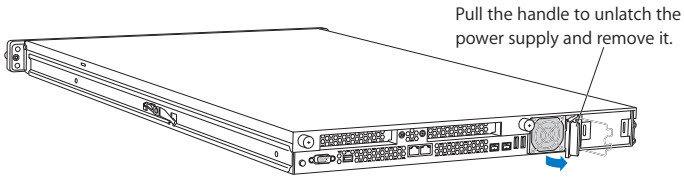
Removing the Installed Rear ID Tab

Before removing the installed rear ID tab, remove the following parts:

- Both power supplies
- PCI riser cards and any expansion cards in both slots (if installed)
- Airflow duct
- Fan array
- Backplane-to-logic board I/O cable
- Both processor heat sinks
- Logic board

Power Supplies

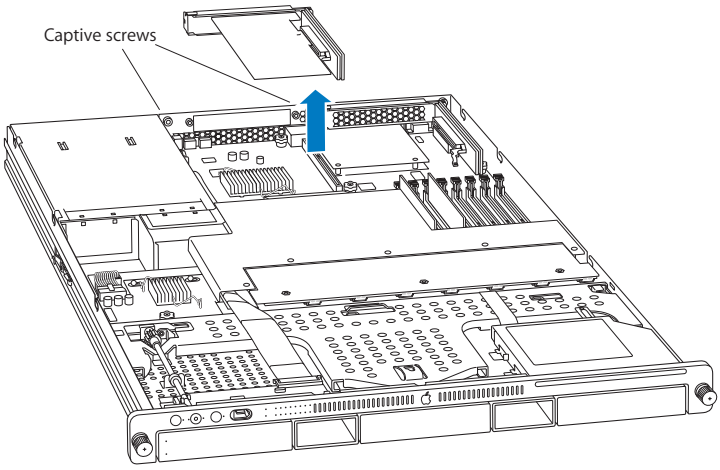
1. Pull the handle to release the first power supply and slide it out of the bay.



2. Repeat for the second power supply, if installed.

PCI Riser Cards and Expansion Cards

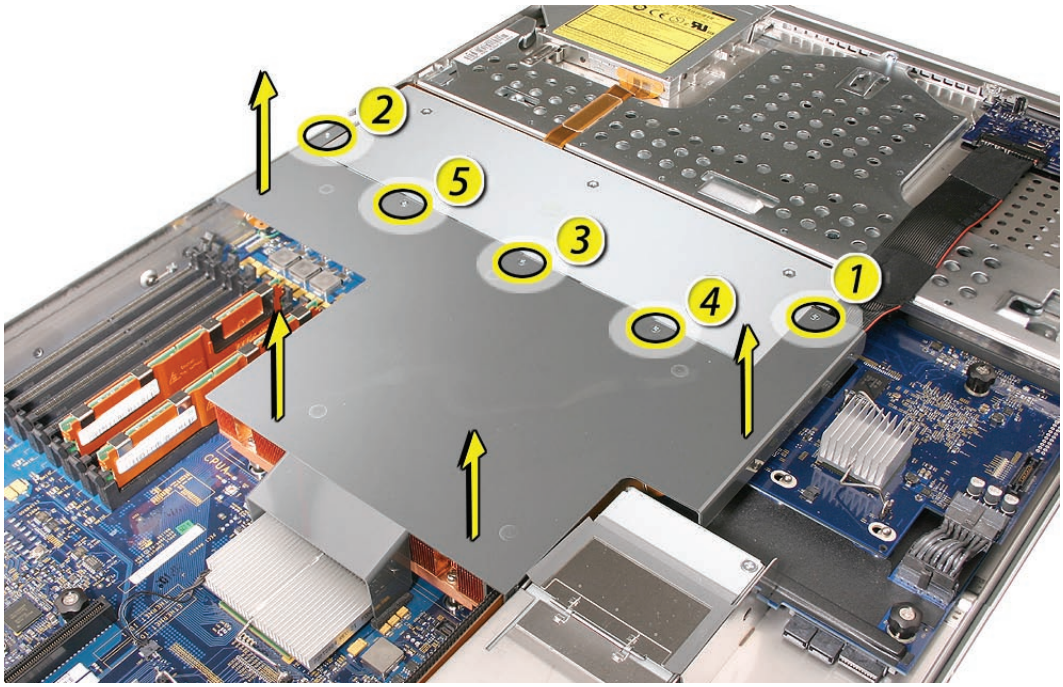
1. Loosen the two captive screws that secure the riser bracket in slot 1 to the back panel.
2. Carefully pull up on the bracket and riser, with the expansion card still attached, to disconnect the riser from the logic board.



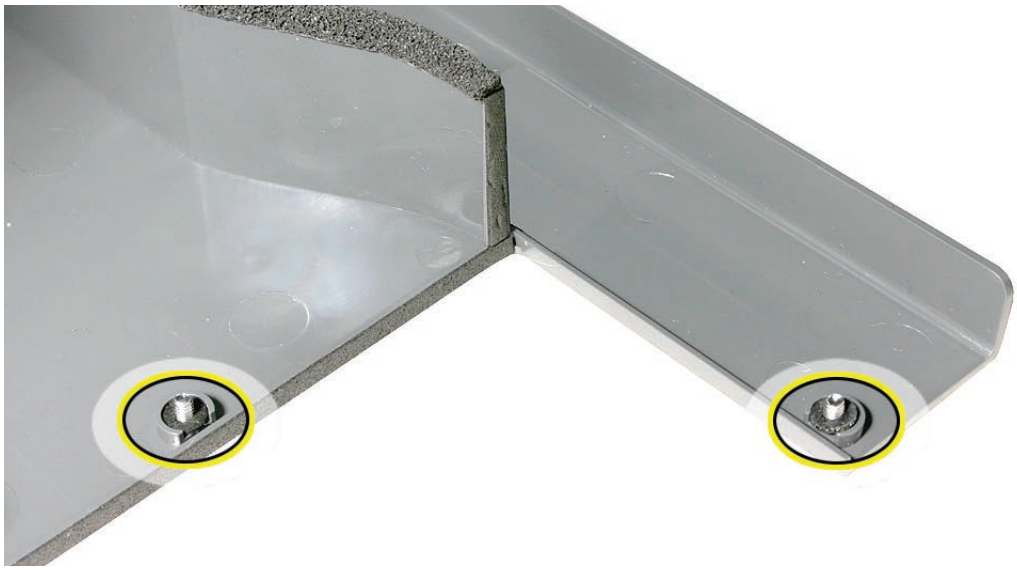
3. Tilt the expansion card up so that its port clears the enclosure, and remove the card from the Xserve.
4. Repeat for the riser card in slot 2.

Airflow Duct

1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.



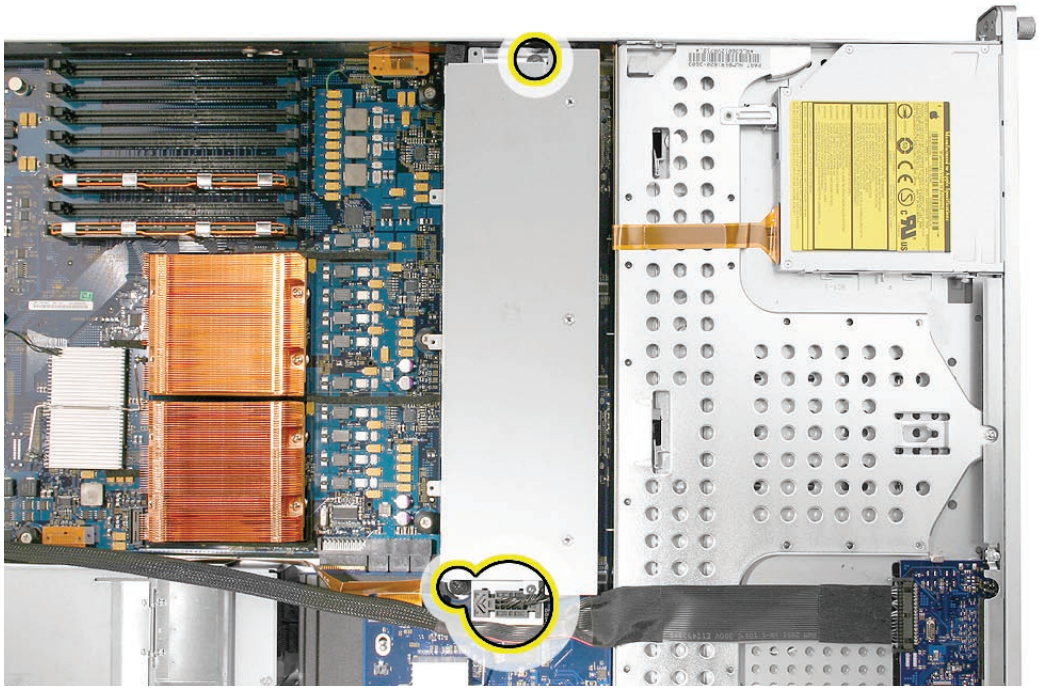
Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these rubber washers can easily fall into the enclosure and become lost.



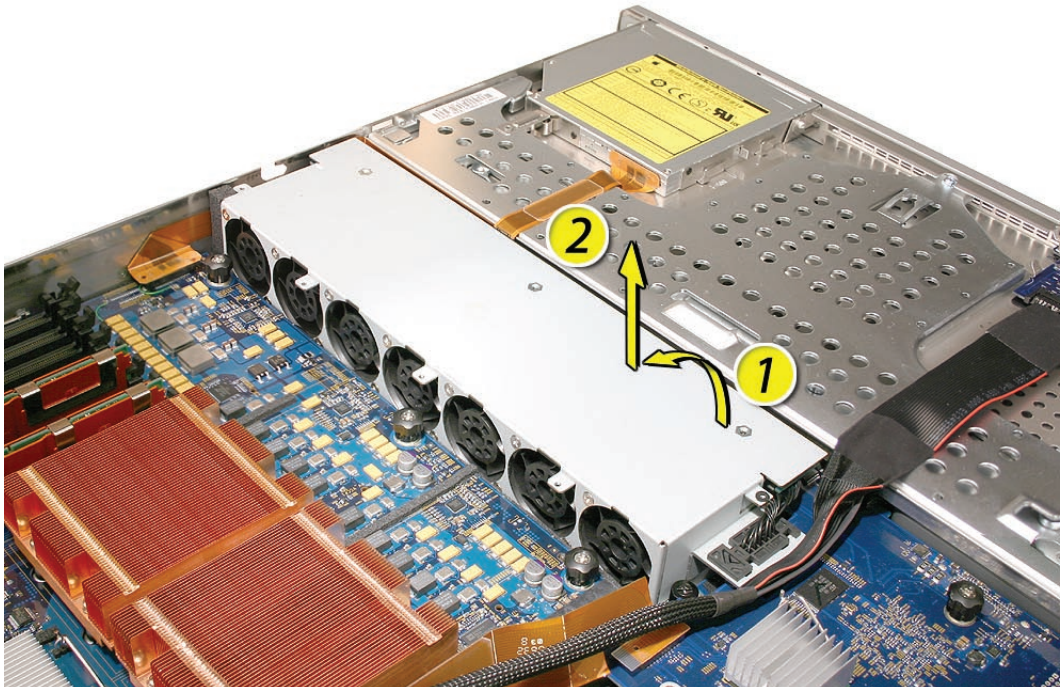
Fan Array

1. Loosen the two thumbscrews that secure the fan array to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.

2. Lift the fan array to remove it from the Xserve.
   Note: You may need to move the front panel cable slightly out of the way of the fan array power connector during removal or replacement. Be careful not to pinch the front panel board cable between the fan array and any other surface inside.

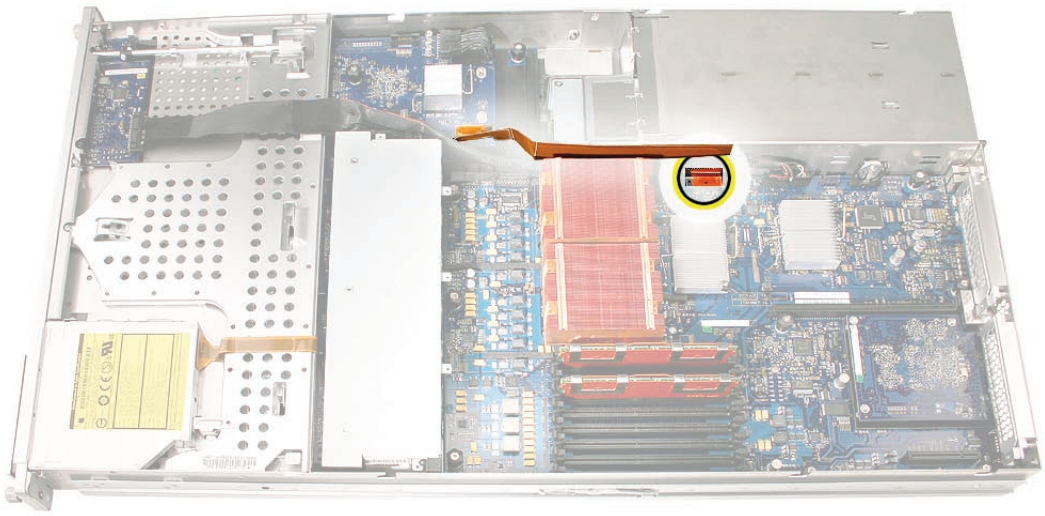


Note: You may encounter some resistance around the fan array power connector during removal. If so, carefully rotate the fan array as shown to disconnect it from the power distribution board below, and then lift the fan array out of the computer.

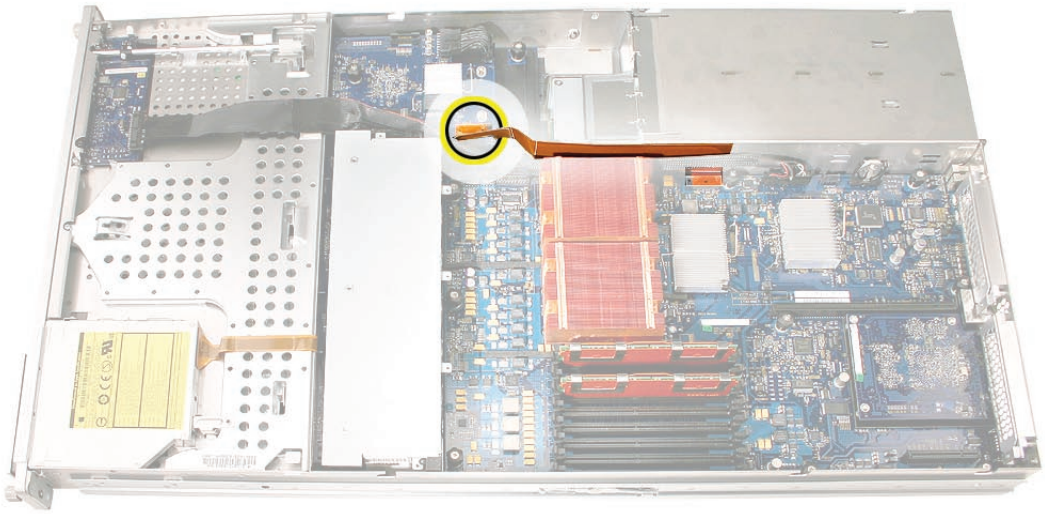


Backplane-to-Logic Board I/O Cable

1. Disconnect the backplane-to-logic board cable from the logic board.

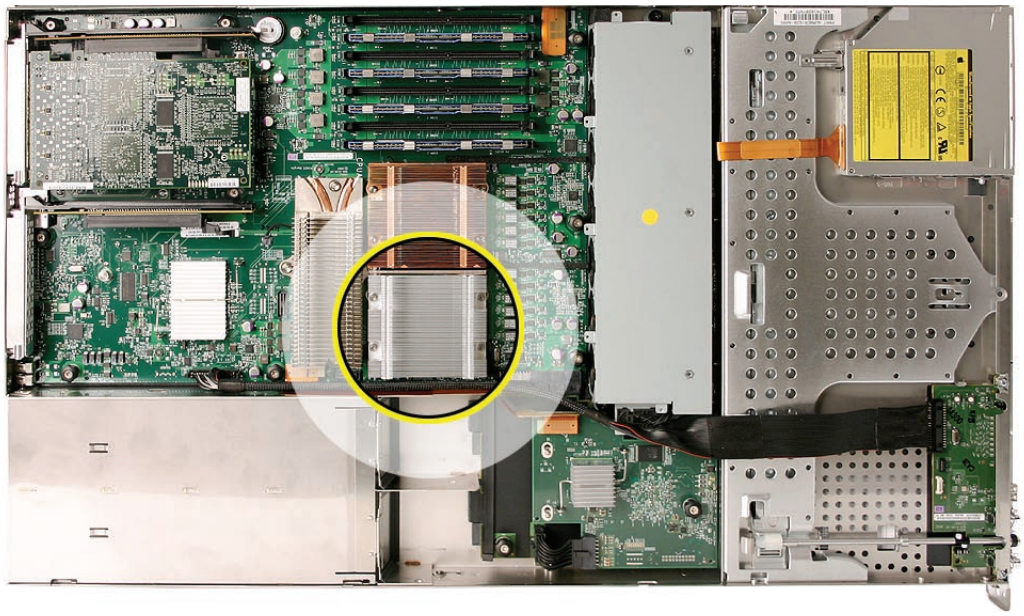


2. Disconnect the backplane-to-logic board cable from the drive interconnect backplane and remove the cable from the Xserve.

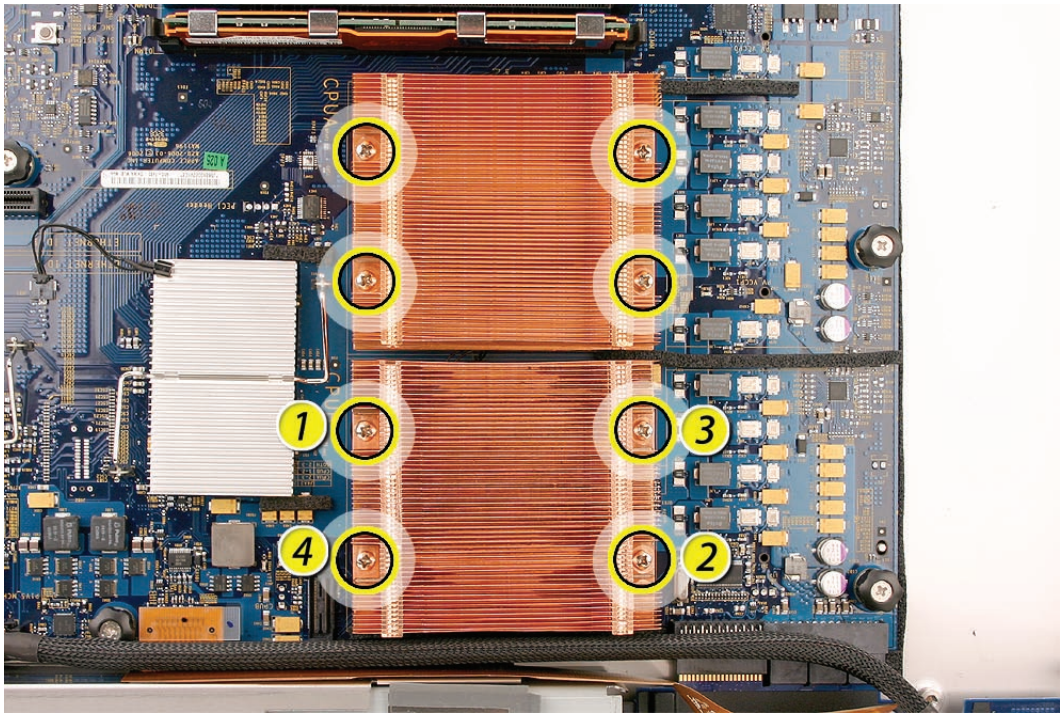


Processor Heat Sinks

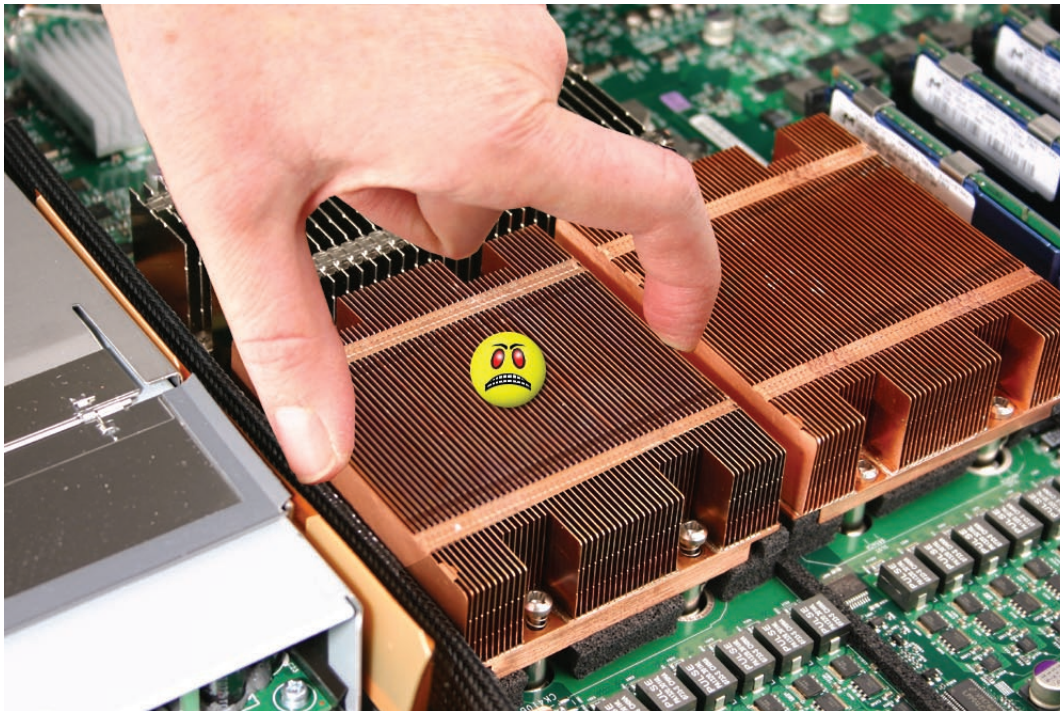
Note: Server configurations with a single processor have a regular heat sink and a blank heat sink installed. The blank heat sink is silver colored (as shown below) and should not be removed except when replacing a logic board.

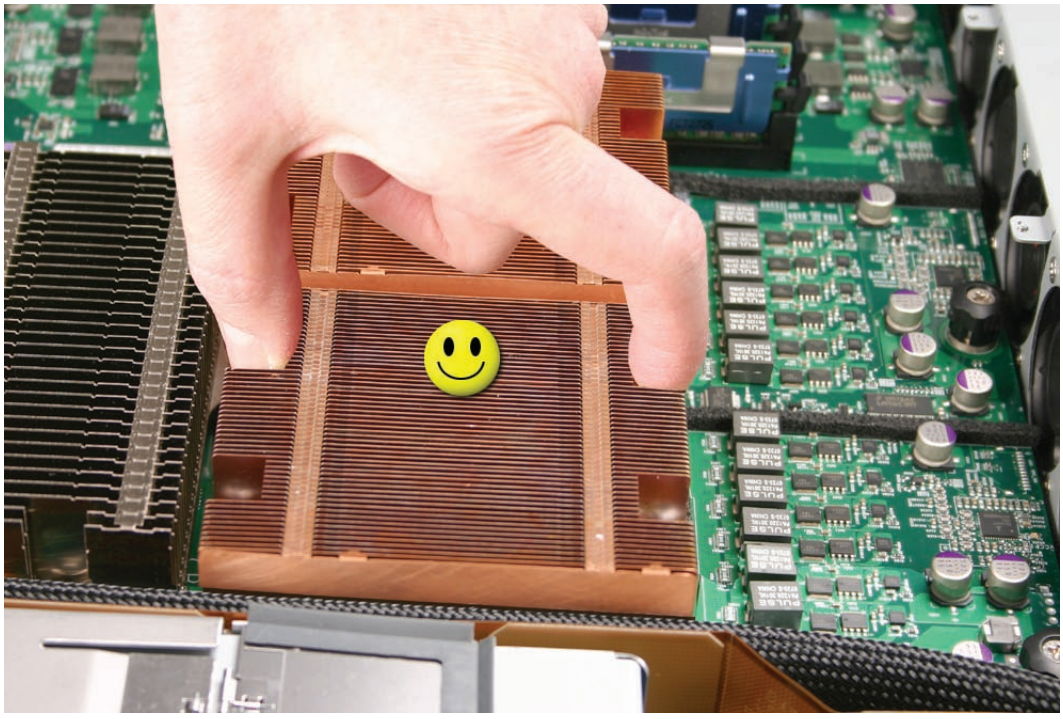


1. Loosen the four screws securing the heat sink in the order indicated below. If two copper-colored heat sinks are installed, you must remove both heat sinks.



Caution: Whenever you handle a heat sink, handle it from the slotted sides, not the smooth sides. Grasping the smooth sides of the heat sink can compress its ribs causing permanent damage.

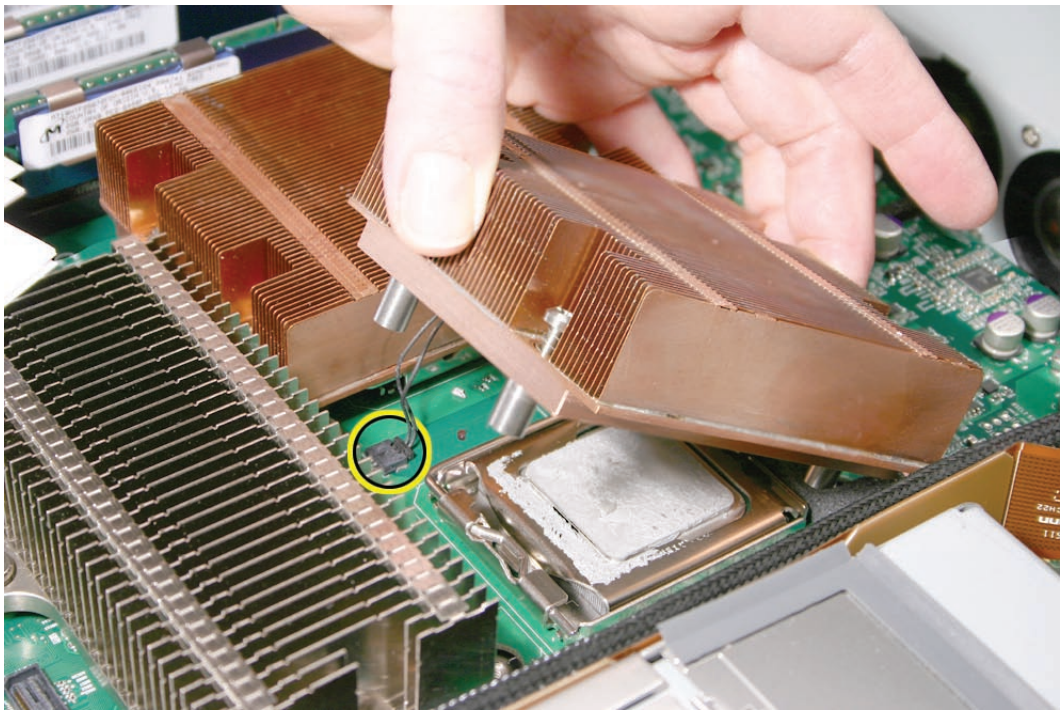




2. **Caution: Each heat sink is connected to the logic board by a small 2-pin thermal sensor cable. Lifting the heat sink too quickly can damage the cable or connector. Because of the tight thermal bond between the processor and heat sink, be especially cautious to initially lift the heat sink no more than one centimeter (1 cm) off the processor. Do not pull on the cable as you lift each heat sink enough to disconnect the cable from the logic board.**

   Slowly raise the heat sink off the processor just far enough that you can reach the sensor cable connector.

3. Pull on the connector, not the cable, to disconnect the sensor cable from the logic board.



4. Lift the heat sink straight up and out of the enclosure.

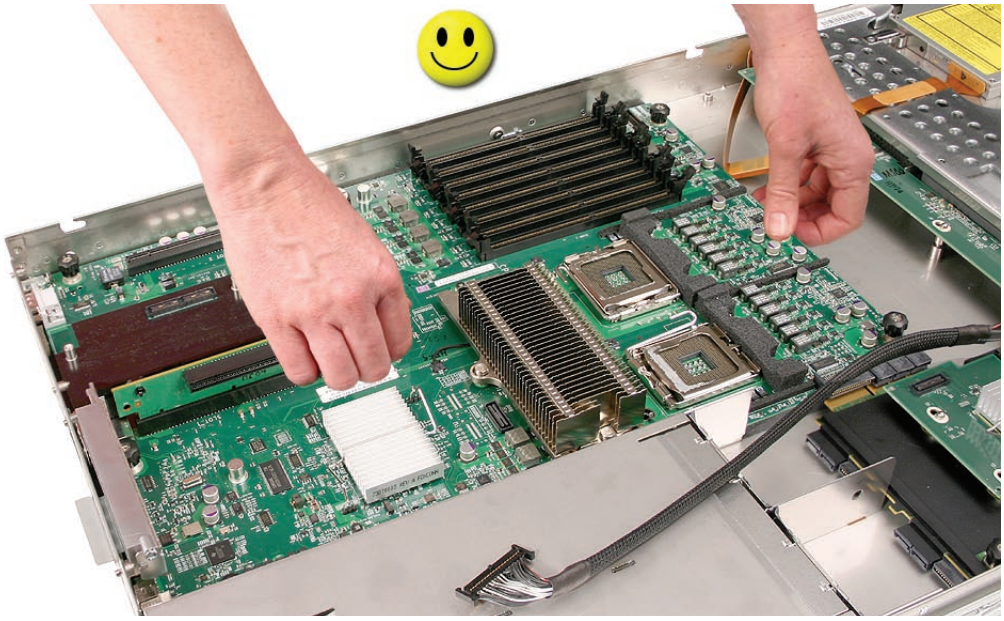
5. Using an alcohol wipe, clean off any thermal grease from the underside of the heat sink. Save the alcohol wipe package for later.

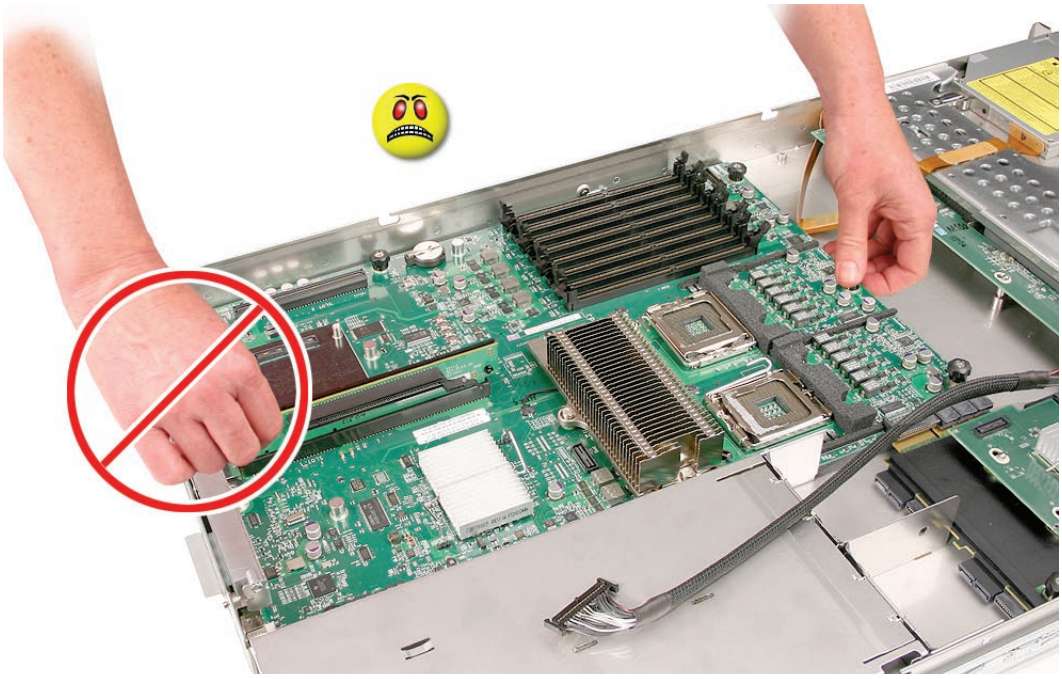
   Note: You will need to clean off the old thermal grease from the bottom of each heat sink and the top of each processor and apply new thermal grease to the processors when you are reassembling the Xserve. For more information, see "Replacing the Processor Heat Sinks.""

Logic Board

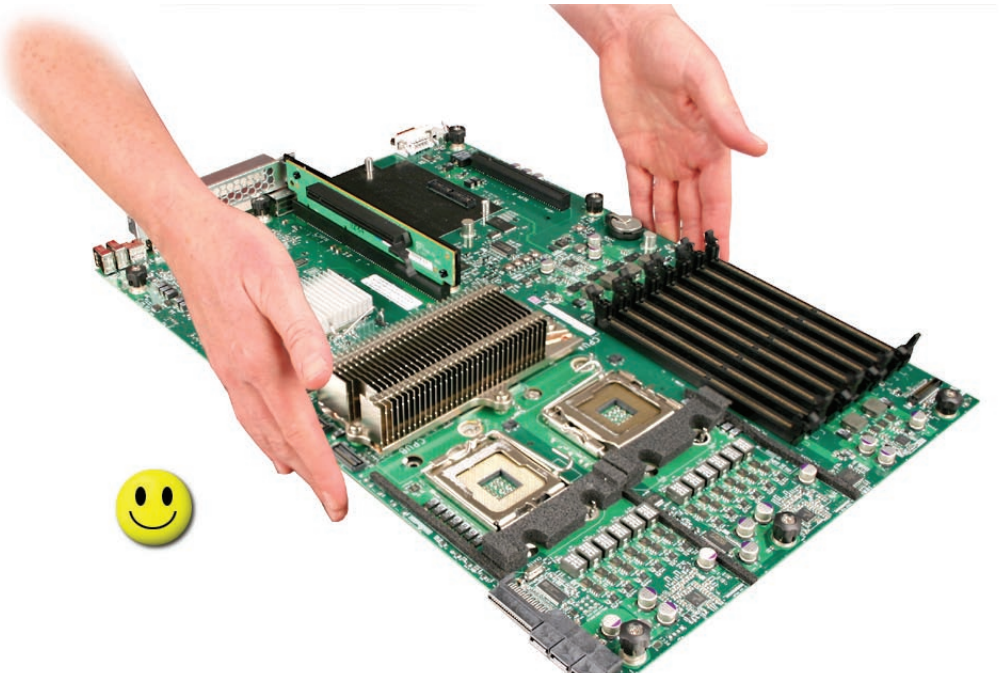
1. Study the next four images for properly moving the logic board before continuing with the steps.

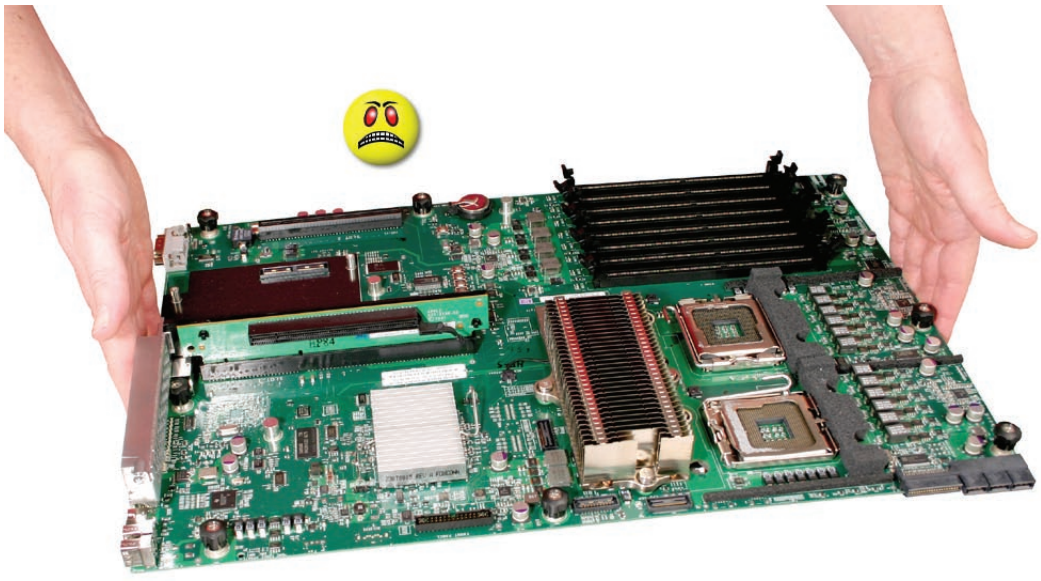
Caution: When removing and installing the logic board, be careful not to flex the logic board, which could damage the board or its components. To best distribute the weight of the logic board and minimize flexing, grasp the logic board only at the side and the end of the expansion card riser, as shown.



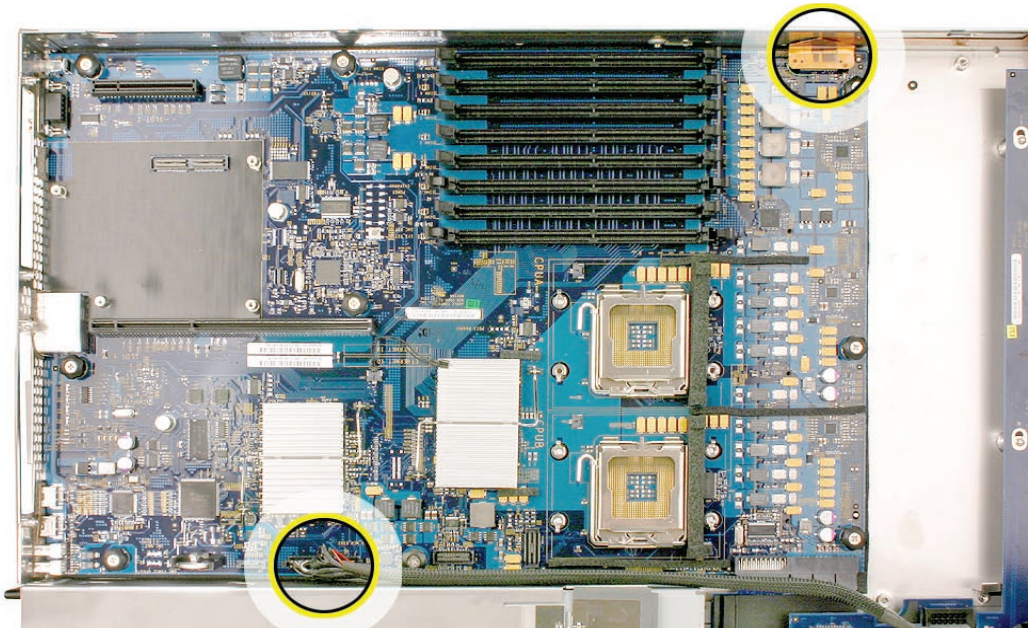


Caution: When transferring the logic board, be careful not to flex the logic board, which could damage the board or its components. To best distribute the weight of the logic board and minimize flexing, hold the logic board at the long sides near the center, as shown.

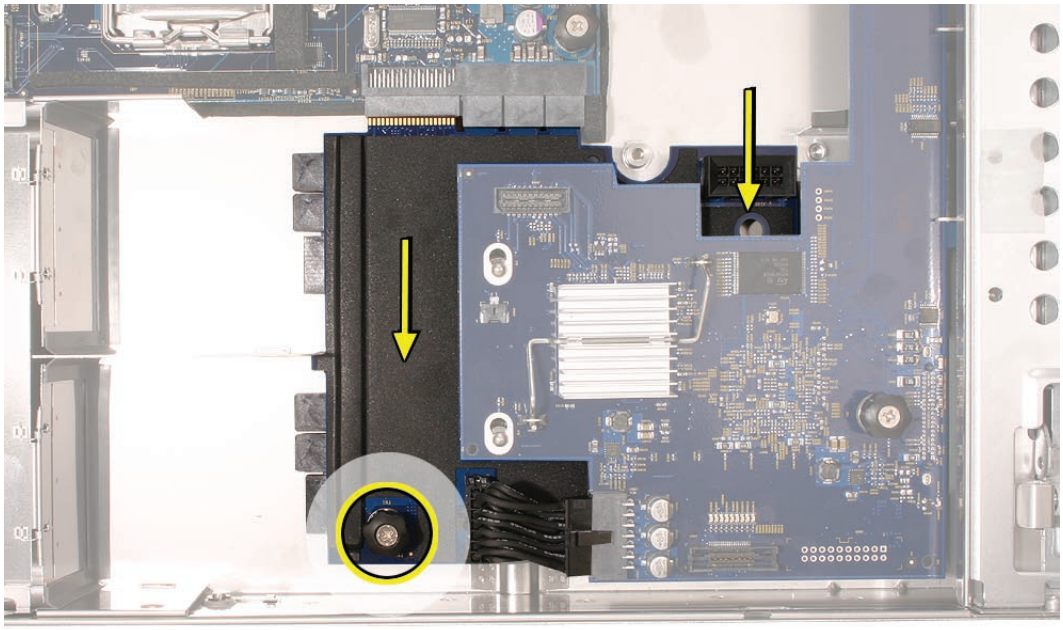




2. Disconnect the optical drive cable from the logic board.
3. Release the two locking levers on the front panel board cable connector and disconnect the cable from the logic board. Move the cable aside so you have access to the logic board.

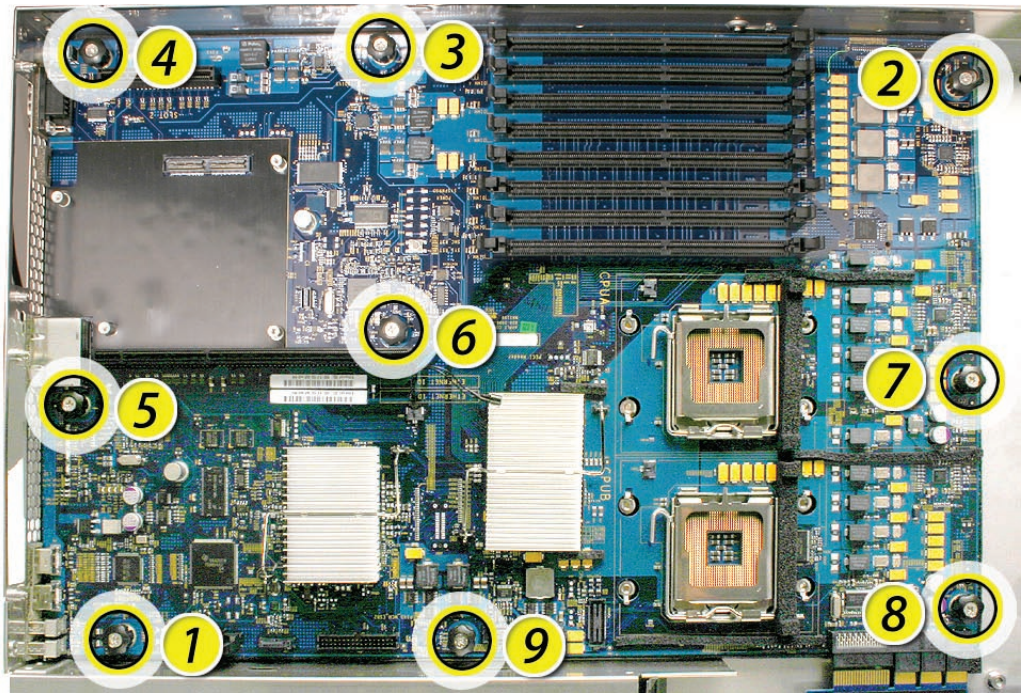


4. Loosen the single thumbscrew on the power distribution board and slide the board away from and out of the connector on the logic board.

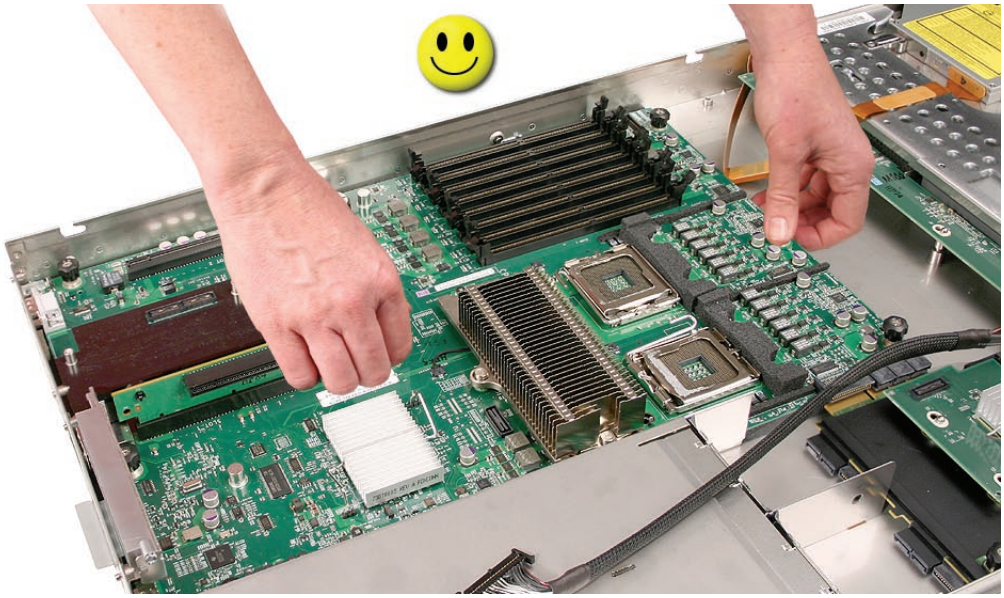


Note: Don't remove the power distribution board but make sure its edge connector is all the way out of the connector on the logic board.

5. Following the order shown, loosen the nine thumbscrews that secure the logic board to the enclosure.
   Note: The thumbscrews are captive; you cannot remove them.



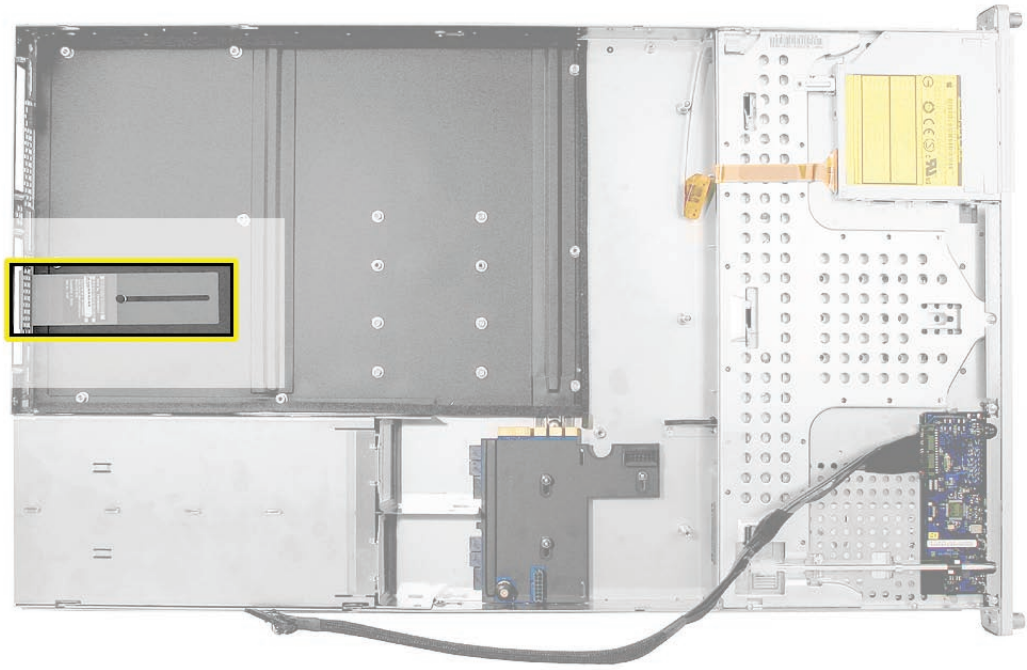
6. Grasping the logic board only by its expansion card riser and edge as shown, move it forward and up slightly to release it from the rear port openings in the enclosure.
7. Remove it from the Xserve.



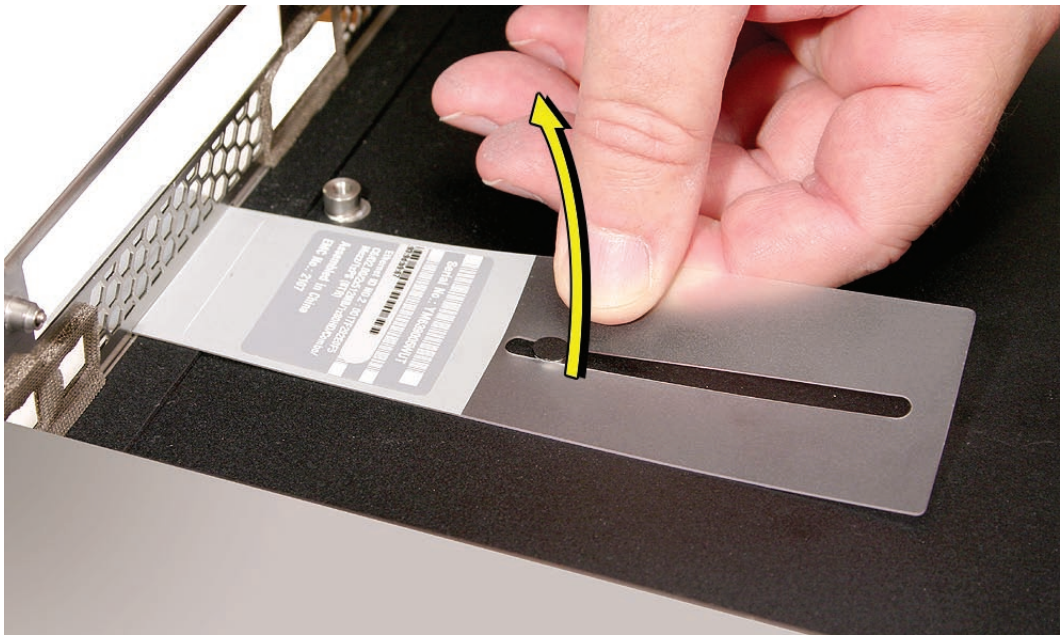
Rear ID Tab

Note: The rear ID tab protrudes from the rear panel through a slot.

1. Locate the rear ID tab. Once the logic board has been removed from the enclosure, the ID tab is visible on the inside bottom of the enclosure.



2. Gently grasp the ID tab and pull up on it to disengage it from the channel that it slides along in the enclosure.



3. Pull the ID tab through the slot in the rear panel to remove it.

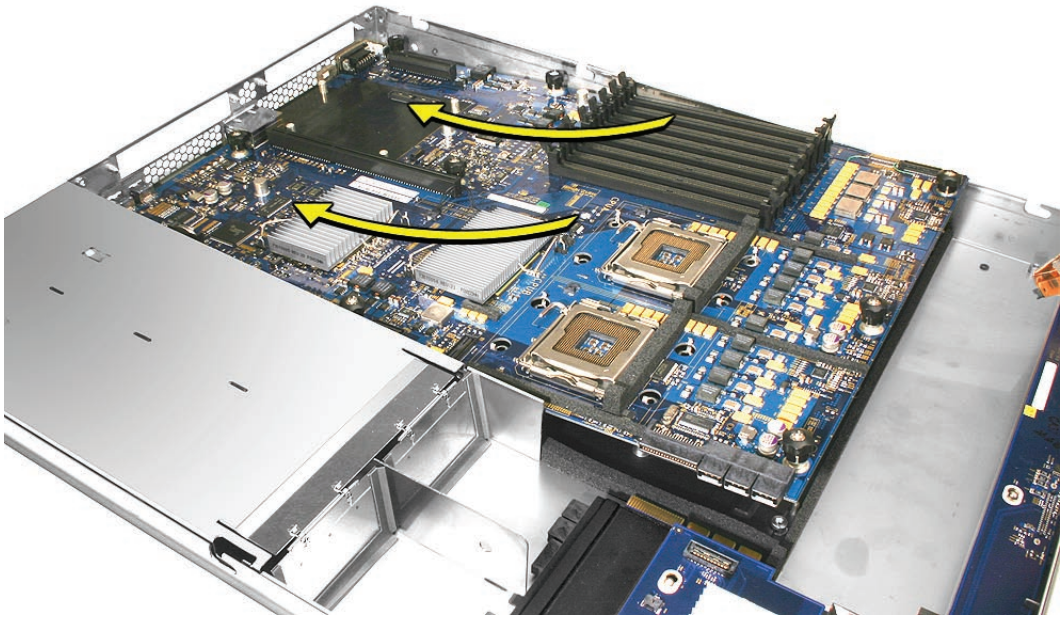
Installing the Replacement Rear ID Tab

Insert the replacement rear ID tab through its slot in the rear panel. Make sure the tab engages with the channel that it slides along in the enclosure.

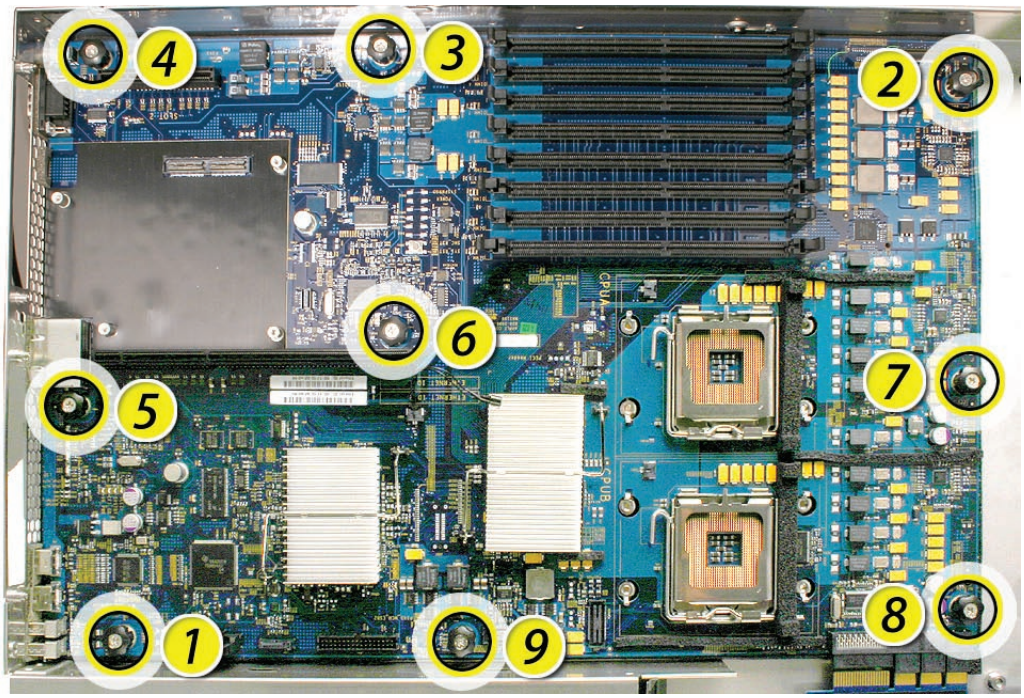
Replacing the Logic Board

Important: When replacing the logic board, make sure the board's rear port connectors fit through the appropriate openings in the Xserve's back panel. Take special care to fit the rear ID button through its opening. Don't bend or flex the logic board.

1. With the front edge of the board raised 1–2 inches (3–5 cm), guide the connectors on the back edge of the board into the openings in the back panel of the enclosure, and then lower the front edge of the board into place.



2. Following the order shown, use a screwdriver to tighten, but not overtighten, the nine thumbscrews that secure the logic board to the enclosure.



3. Slide the power distribution board back into place and tighten the thumbscrew.
Note: Make sure the edge connector on the power distribution board goes completely into the connector on the logic board. If the power distribution board doesn't slide easily, make sure the thumbscrew is popped up so it doesn't catch on the mounting post beneath the board.

4. Reconnect the front panel board cable and the optical drive cable to the logic board.

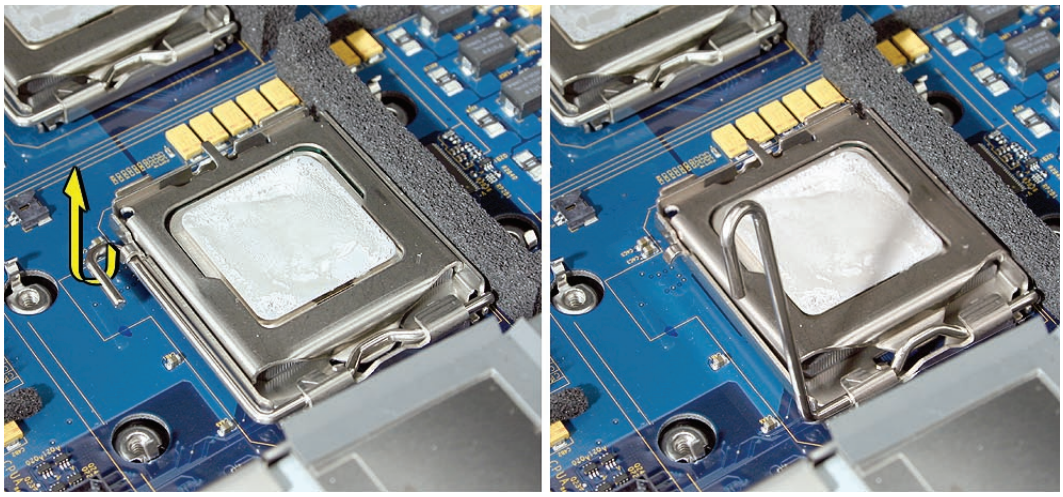
Replacing the Processor Heat Sinks

Note: You will need to clean off the old thermal grease from the bottom of each heat sink and the top of each processor. You will then need to apply new thermal grease to the top of each processor, before re-installing the heat sink onto the processor.

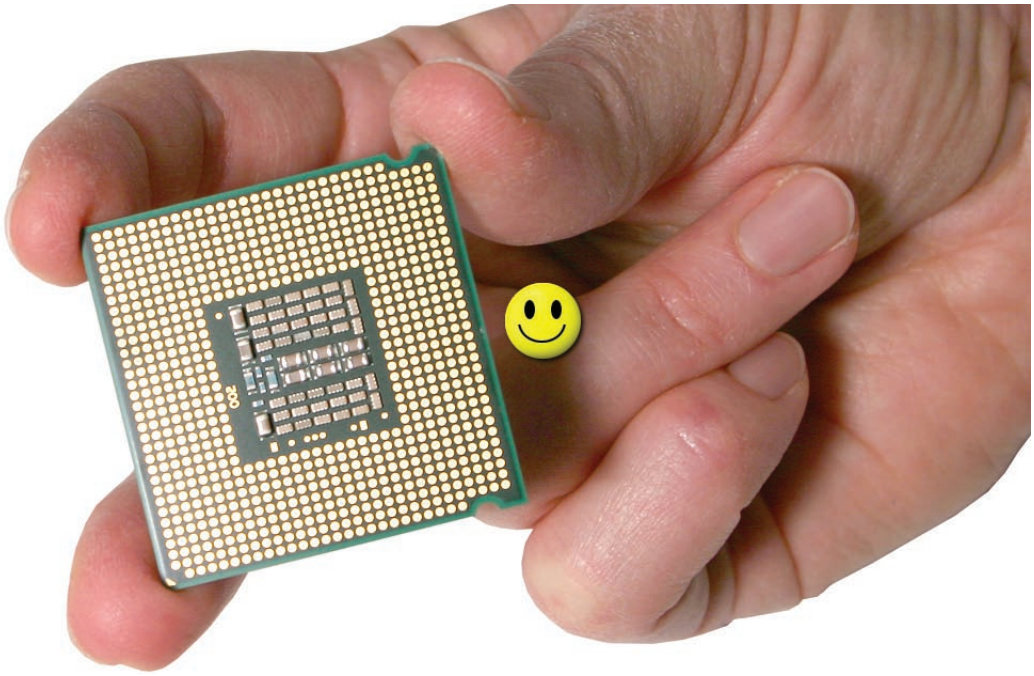
1. Clean off any existing thermal grease on the heat sink using the alcohol wipes provided with the thermal grease. Keep the package that the wipes came in for use later.

2. Release the latch on the metal processor holder for the processor.

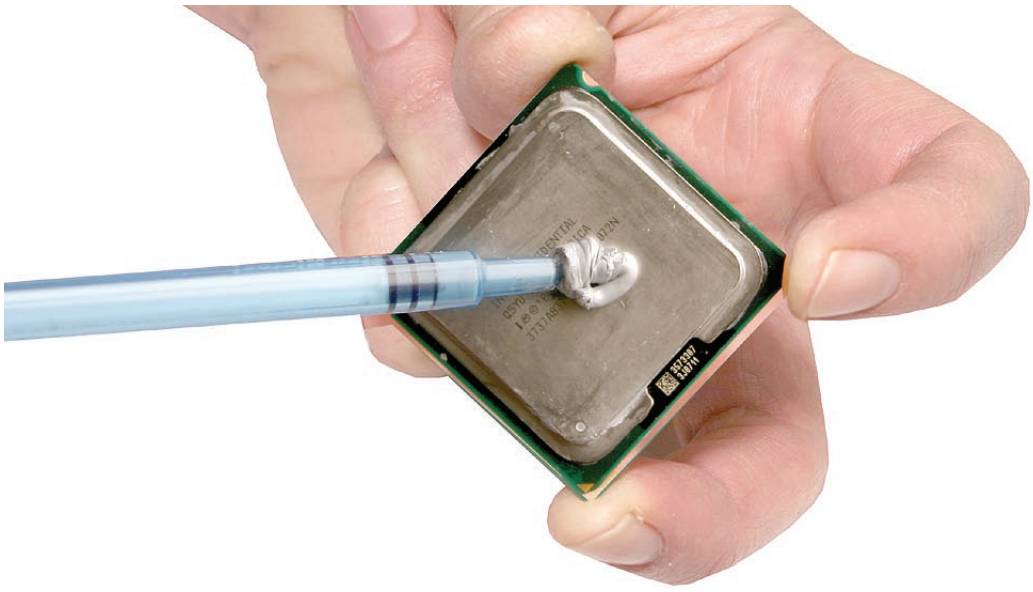
3. Rotate the top of the holder to the open position.



4. Carefully lift the processor out of the holder.
   Important: When removing or installing a processor, always hold the processor by three corners. Be extremely careful not to touch the gold pins on the bottom of the processor, as this type of connector is very sensitive to contamination. Also be careful not to touch the gold pins in the processor socket on the logic board.

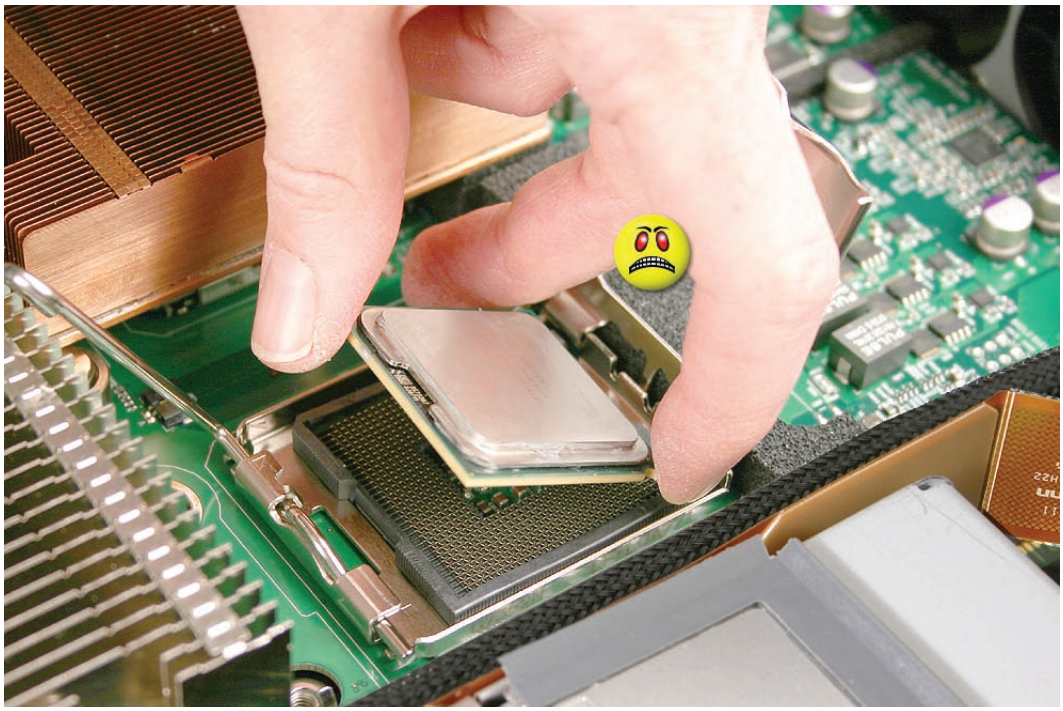


5. Using the syringe of thermal grease, apply the entire contents of the syringe (approximately 4.5 cc) to the top surface of the processor.
   Important: Be sure not to get grease anywhere on the processor other than the very top, flat surface that directly contacts the heat sink.

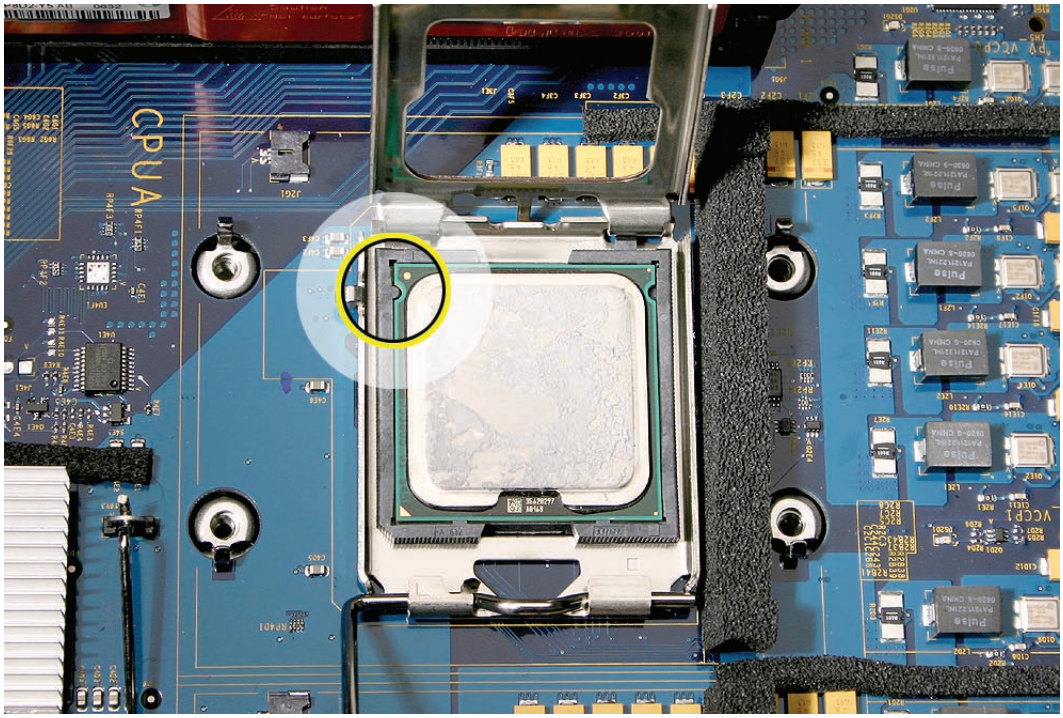


6. Use the edge of the package that the alcohol wipe came in as a spatula to spread the thermal grease evenly over the entire top surface of the processor. Scrape off any excess grease with the package edge, then discard the package.

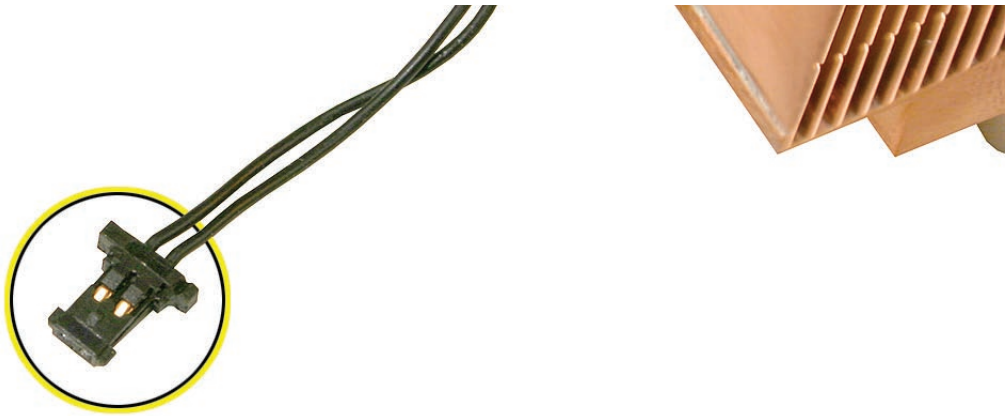
7. Holding the processor by three corners only, keep the processor level as you place it into its holder on the logic board, being careful not to get any thermal grease on the contacts of either the processor or its socket holder.



Note: When installing the processor on the logic board, align the processor notch with the tab on the processor holder, as shown. Then lower the processor straight down onto the socket.

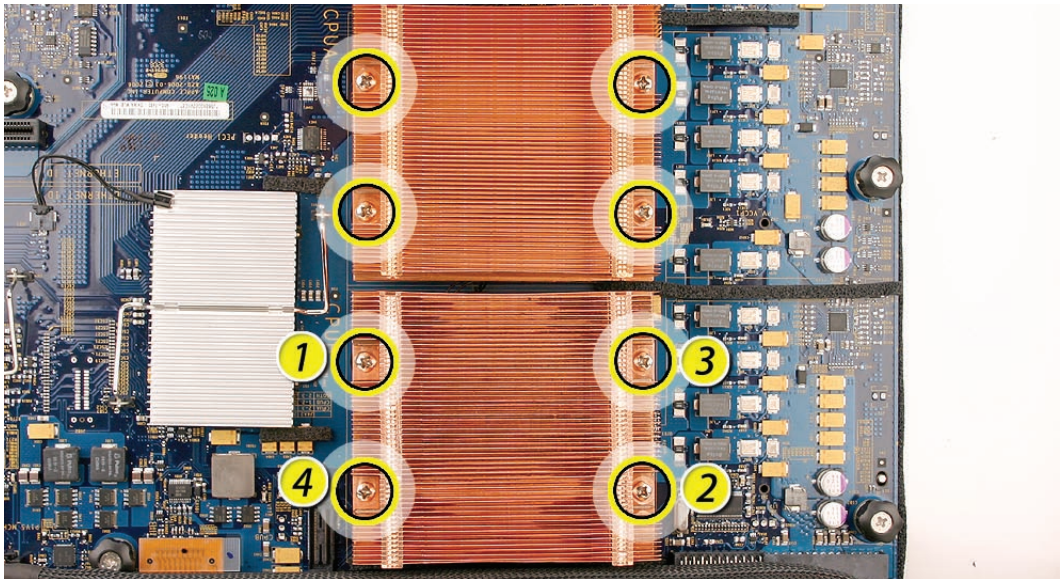


8. Rotate the top of the holder to the closed position.
9. Engage the latch on the metal processor holder. Repeat the steps above for the second processor.
10. Holding the heat sink by the slotted sides in one hand, reconnect the 2-pin thermal sensor cable for the heat sink to the logic board.
    Note: Make sure the connector on the sensor cable is oriented as shown, with the gold fingers facing up.



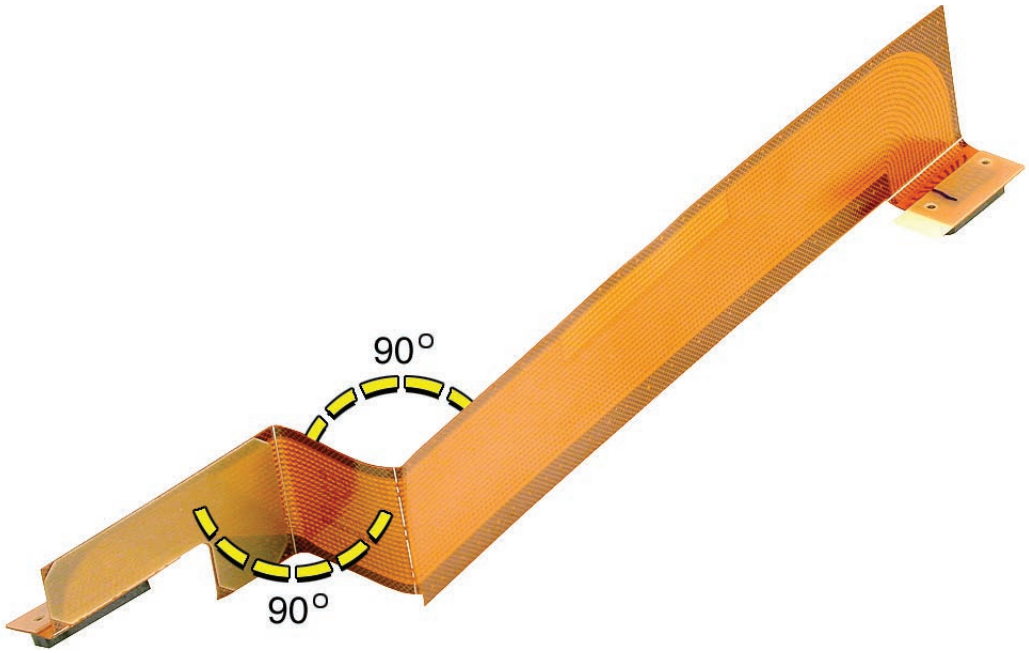
11. Carefully seat the heat sink over the processor, aligning the four screws with the holes in the logic board.

12. Tighten the four captive Phillips mounting screws for the heat sink in the order indicated below. Do not over-tighten the screws. If you have a torque driver, tighten the screws to 8 inch-pounds; otherwise, try to tighten the screws with equal pressure.



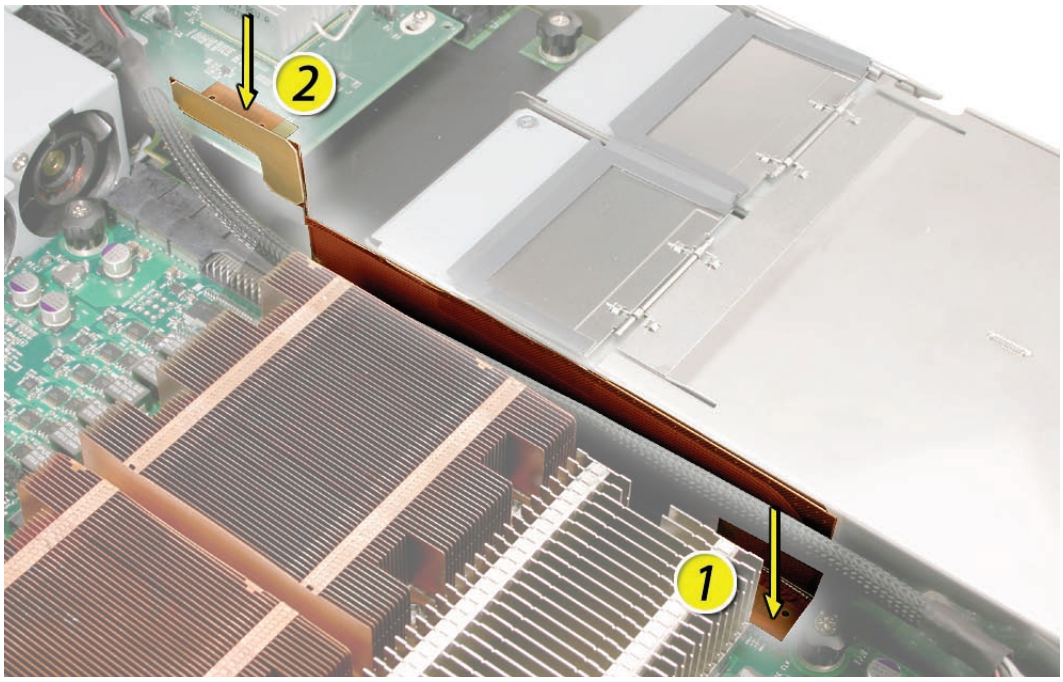
Replacing the Backplane-to-Logic Board I/O Cable

1. Fold the replacement cable to a 90-degree angle along its creases.



2. Connect the cable to the logic board first. Then press the adhesive section of the cable onto the enclosure before connecting the other end of the cable to the backplane.

   Caution: Make sure the cable is fully seated.

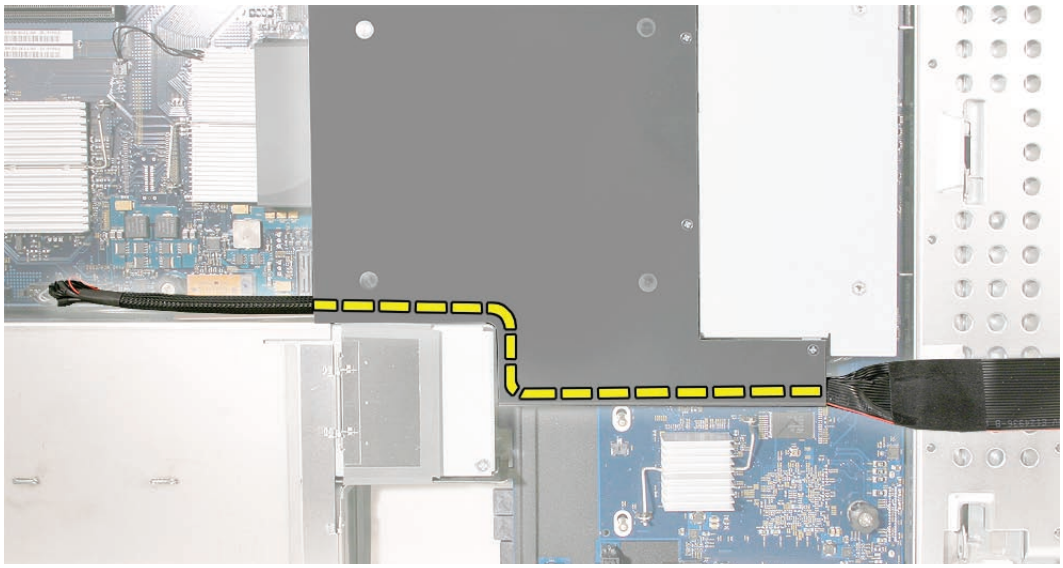


Replacing the Fan Array

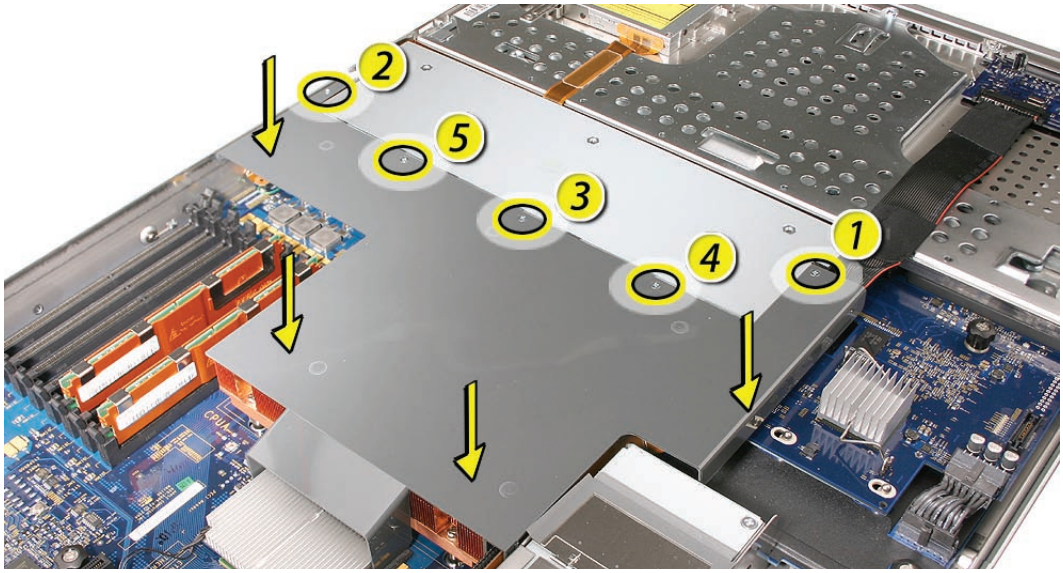
1. Align the power connector on the fan array with its connector on the power distribution board and lower the array into the enclosure. Push down on the fan array power connector to make sure it is fully seated.
2. Tighten the screws at the ends of the array. Make sure the large front panel board cable runs above the power connector but below the tab on the top of the power supply.

Replacing the Airflow Duct

1. Lower the airflow duct into position on the logic board.
   Note: When installing the airflow duct, be sure to route both the front panel board cable and the backplane-to-logic board I/O cable inside the channel under the left side of the duct.

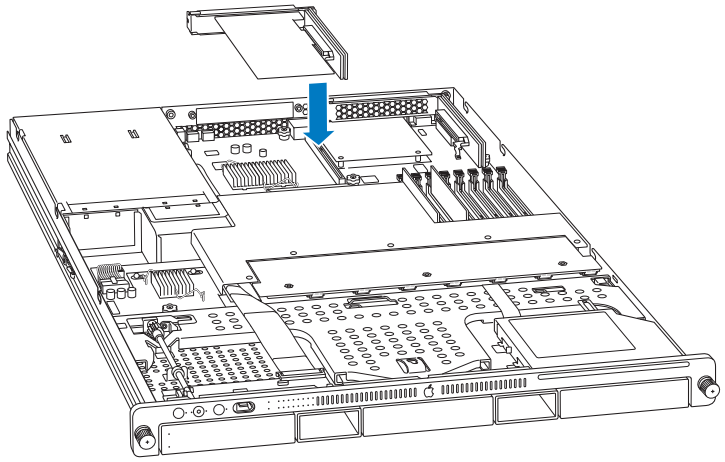


2. Ensure the airflow duct fits flush all over, and does not protrude above the level of the enclosure.
   Note: Be careful when working with any black foam pieces that are part of the airflow duct or the logic board.
3. Tighten the five Phillips screws that fasten the airflow duct to the fan array, in the order shown, to prevent the duct from warping. Do not overtighten the screws.



Replacing the PCI Riser Cards and Expansion Cards

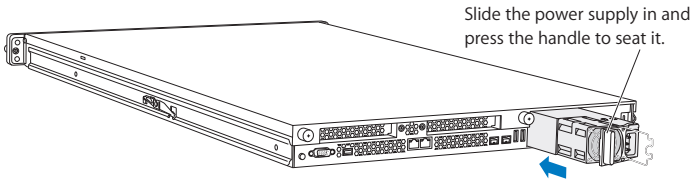
1. Align the riser with slot 1 on the logic board and press to seat the card.



2. Tighten the captive screws that secure the riser bracket to the back panel.
3. Repeat for the riser in slot 2.

Replacing the Power Supplies

1. Slide the first power supply all the way into the bay, and then press the handle to seat the power supply and lock it in place.



2. Repeat for the second power supply, if installed.

Closing the Xserve

1. Replace and secure the cover.
2. Slide the Xserve back into the rack, and tighten the front thumbscrews to secure the Xserve in the rack.
3. If the server case was locked, use the enclosure key to lock the security lock on the front panel.

Warning: Never turn on the server unless all of its internal and external parts are in place and it is closed. Operating the server when it is open or missing parts can damage it or cause injury.

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