Thermal Grease Kit Instructions

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 alcohol wipes for cleaning off the old grease are included with certain replacement parts and in a separate thermal grease kit. Instructions for applying the grease are provided in this procedure.

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

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

Kit Contents

The following are included in the thermal grease kit:

- 2 syringes of pre-measured thermal grease
- 2 alcohol wipes for cleaning previous thermal grease off processors and heat sinks

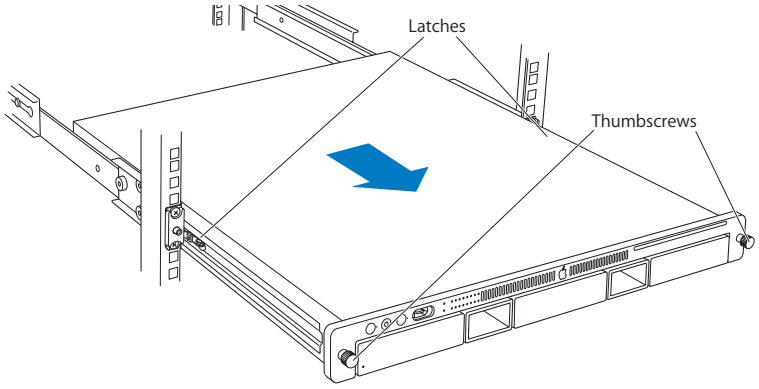
Working Safely Inside the Xserve

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.

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).



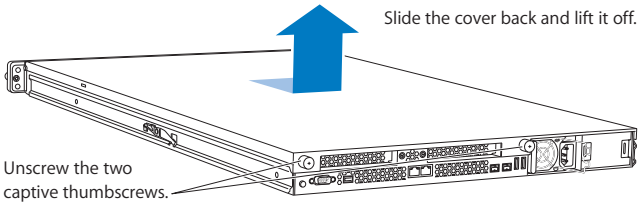
8. When the safety latches engage, grip the Xserve where it emerges from the rack, press down on the latch tabs with your thumbs, and slide the Xserve the rest of the way out of the rack.
9. Set the Xserve on a flat surface and unlock it.

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.

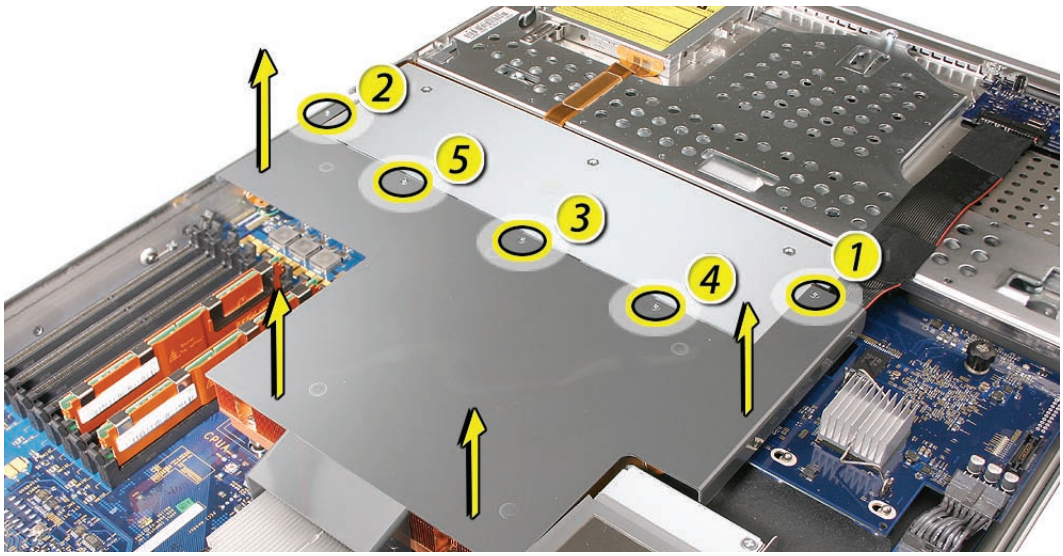


Removing the Processor Heat Sinks

Note: Before removing the processor heat sinks, you must remove the airflow duct.

Airflow Duct

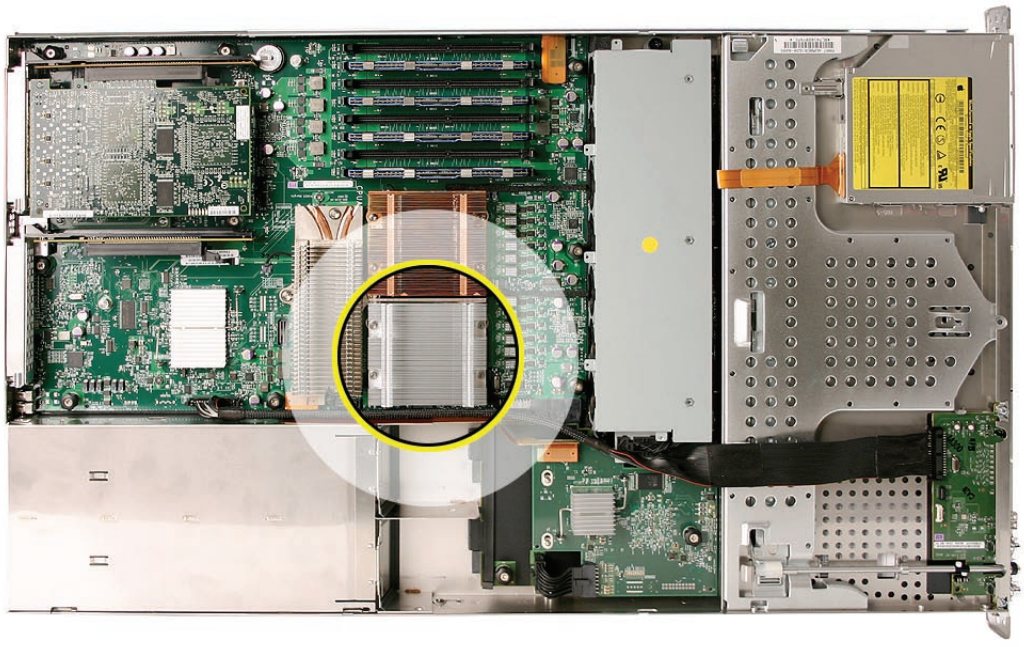
1. Loosen the five Phillips screws that fasten the airflow duct to the fan array.
2. Pull up on either side of the airflow duct, and lift it straight up and out of the Xserve.



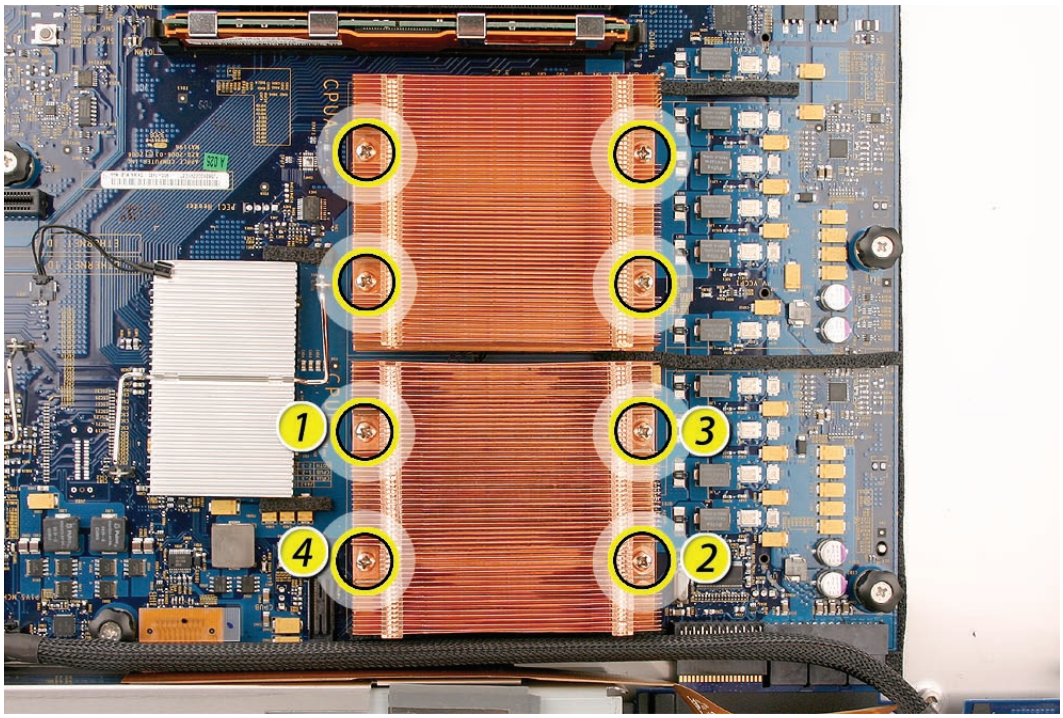
Caution: Try not to completely remove the screws from the airflow duct. Tiny black rubber washers hold these screws captive on the underside of the airflow duct. If the screws are completely removed, these washers can easily fall into the enclosure and become lost.

Processor Heat Sink

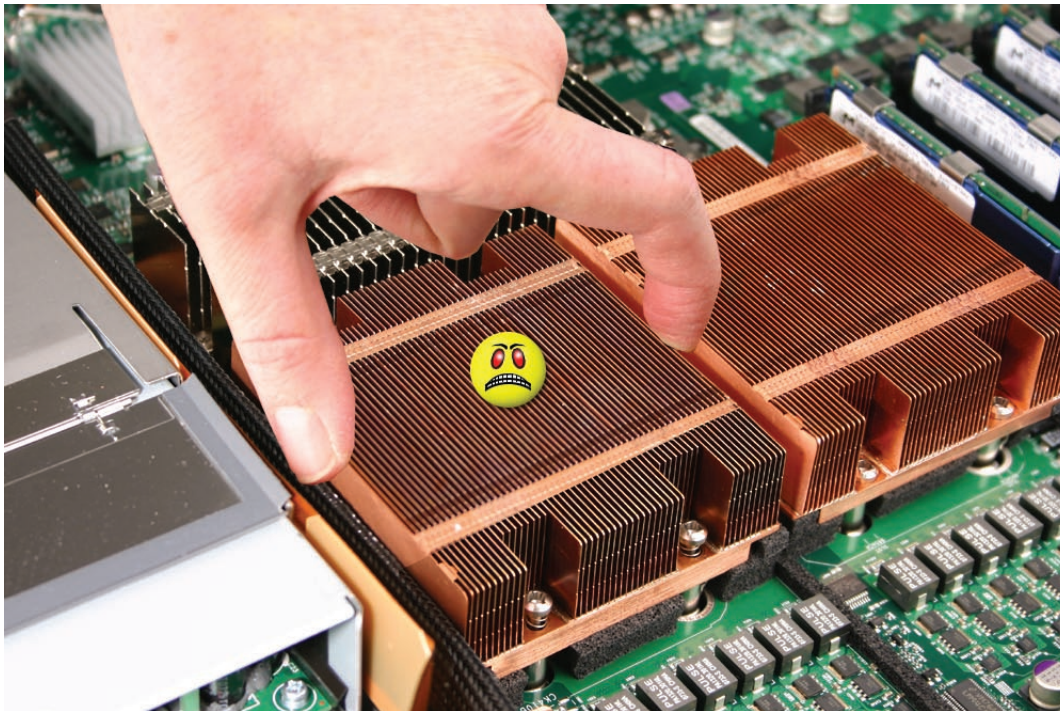
Note: Server configurations with a single processor have a regular heat sink and a blank heat sink installed. The blank heat sink is silver colored (as shown below) and should not be removed except when replacing a logic board.

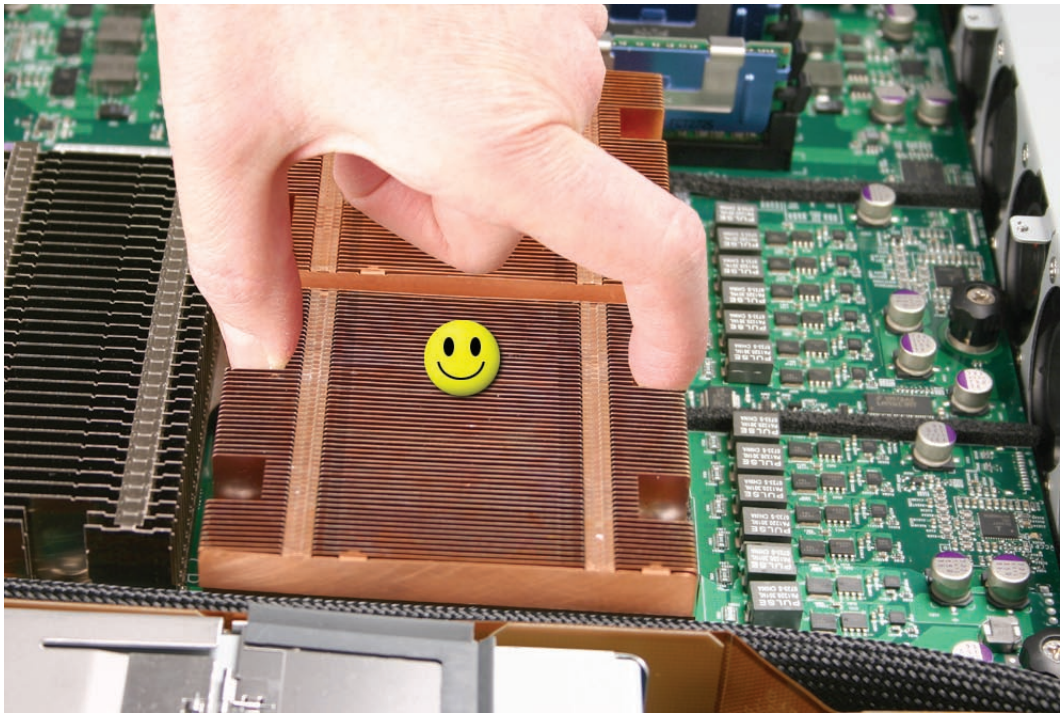


1. Loosen the four screws securing the heat sink in the order indicated below.



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.

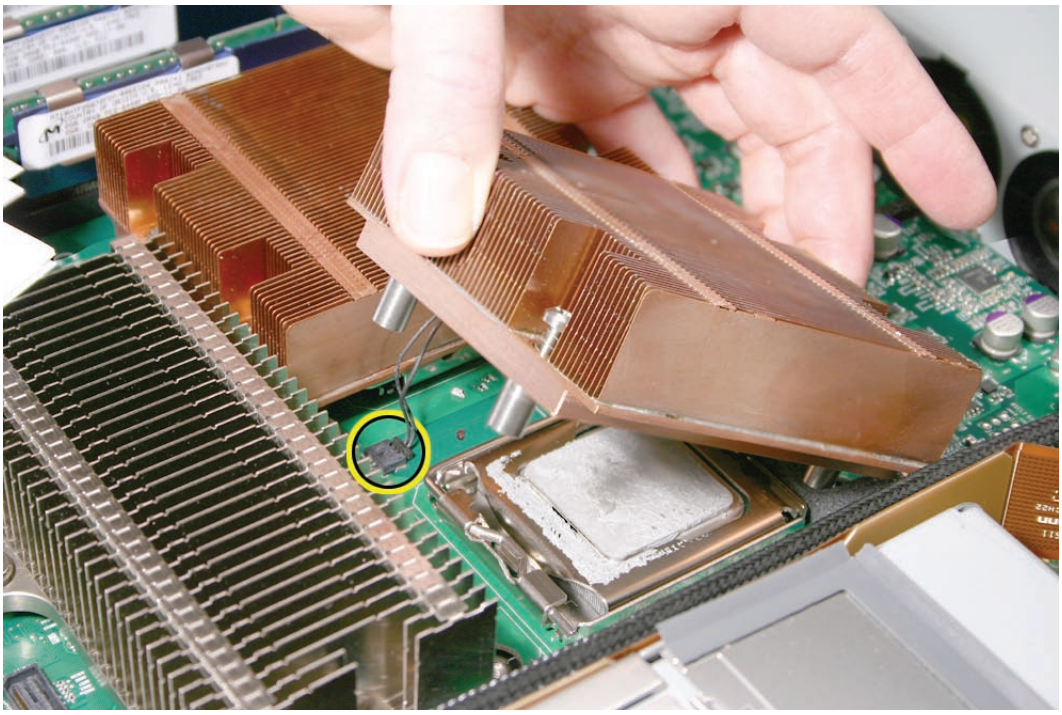




2. **Caution: Each heat sink is connected to the logic board by a small 2-pin thermal sensor cable. Lifting the heat sink too quickly can damage the cable or connector. Because of the tight thermal bond between the processor and heat sink, be especially cautious to initially lift the heat sink no more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

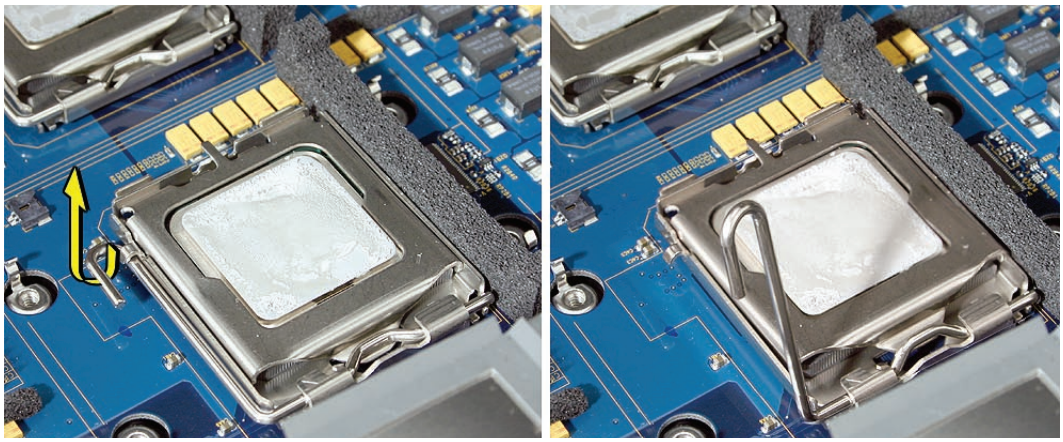


4. Lift the heat sink straight up and out of the enclosure.

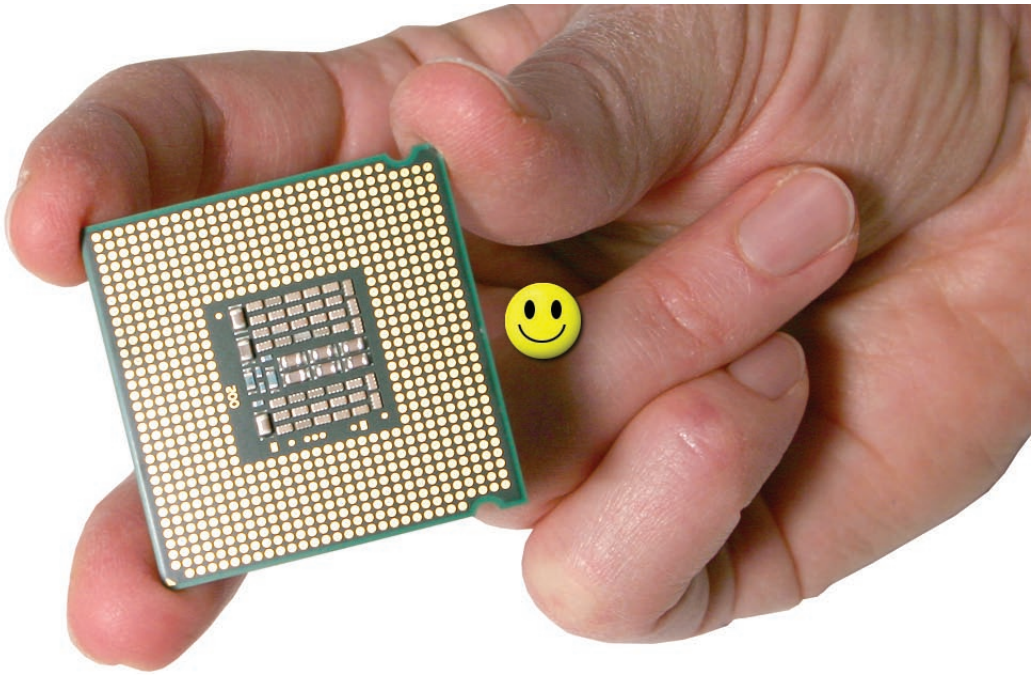
Using the Thermal Grease Kit

Important: Before re-installing each processor heat sink, you must clean off any existing thermal grease from the bottom of the heat sink, using an alcohol wipe from the kit. You must then clean the top of the processor that sits below the heat sink and apply new thermal grease. The following steps explain how to clean the processor and apply the grease.

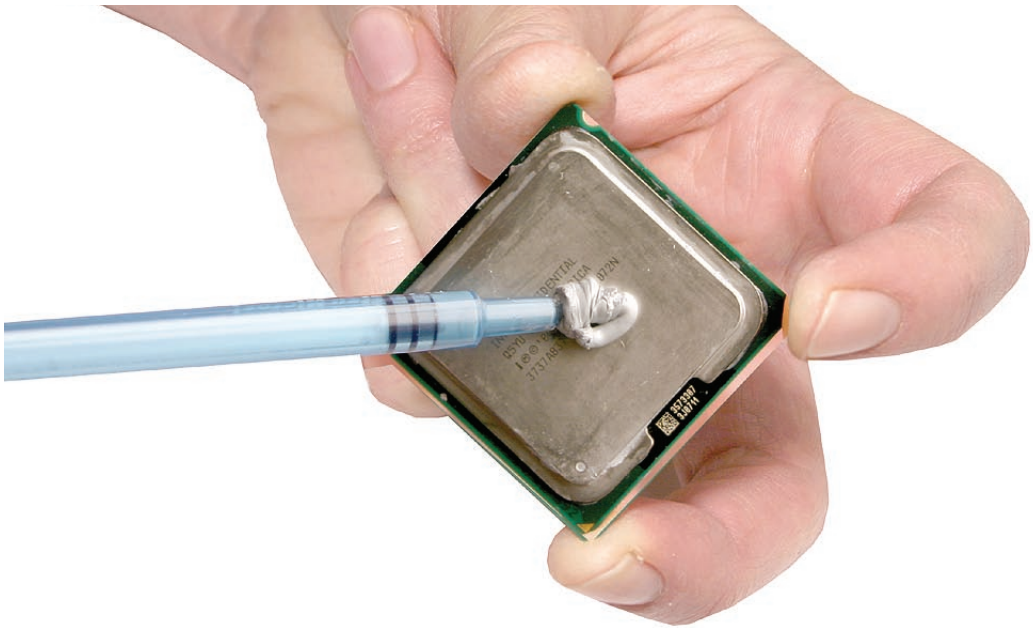
1. Release the latch on the metal processor holder.
2. Rotate the top of the holder to the open position.



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.

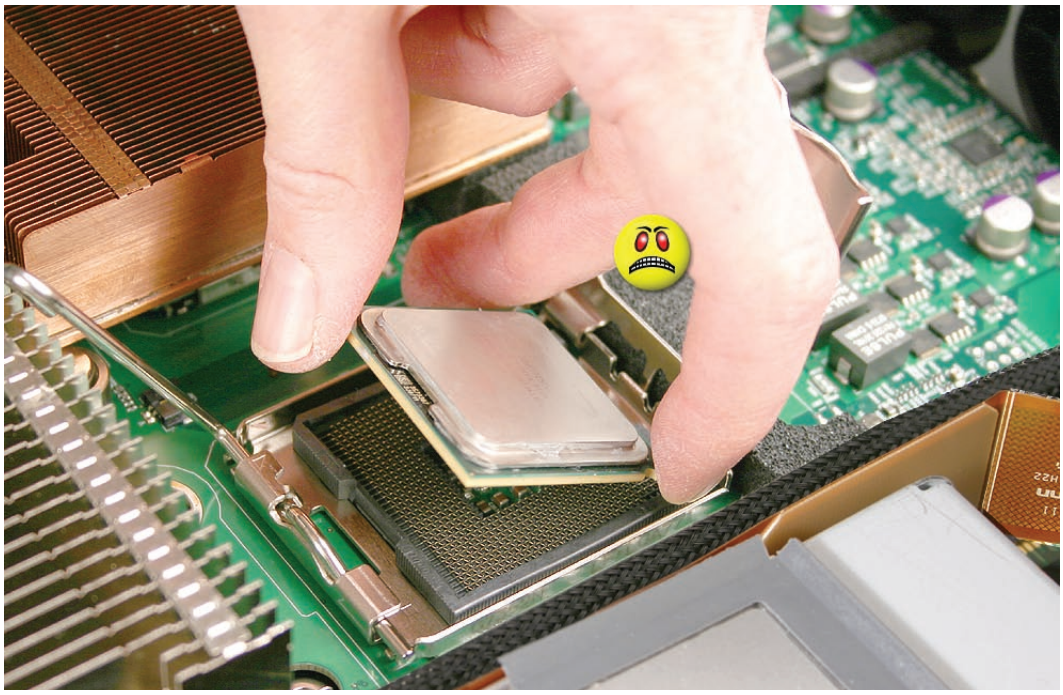


4. Using the syringe of thermal grease that came with the replacement processor, apply the entire contents of the syringe (approximately 4.5 cc) to the top surface of the processor. **Important:** Be sure not to get grease anywhere on the processor other than the very top, flat surface that directly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

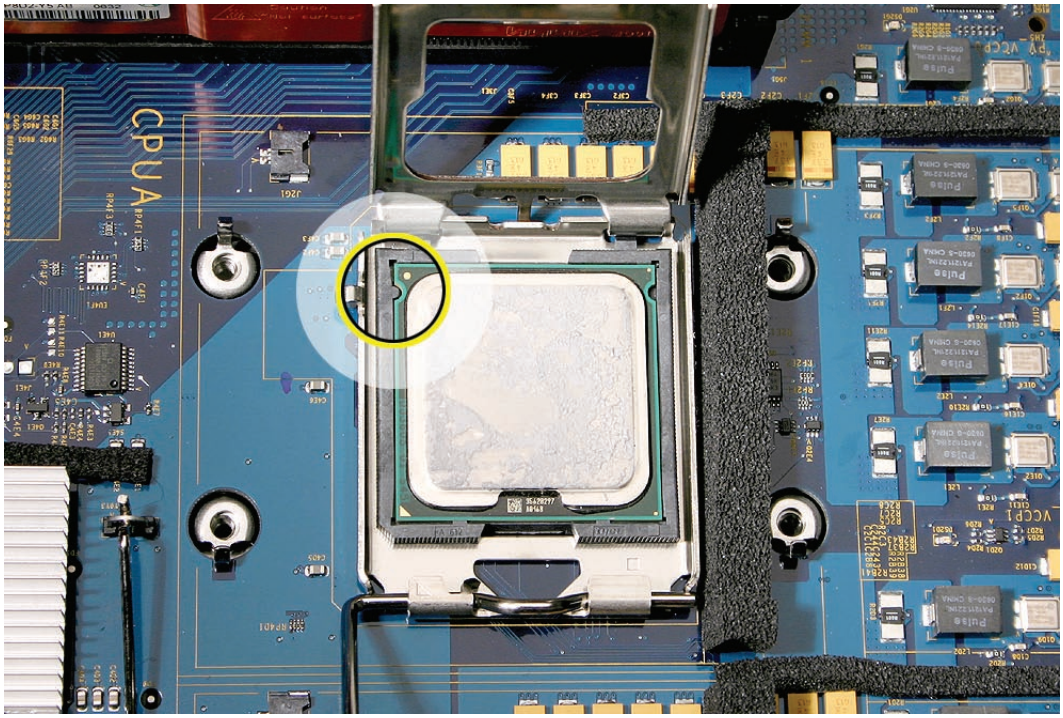


5. Use the edge of the package that the alcohol wipe came in as a spatula to spread the thermal grease evenly over the entire top surface of the processor. Scrape off any excess grease with the package edge, then discard the package.

6. 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.



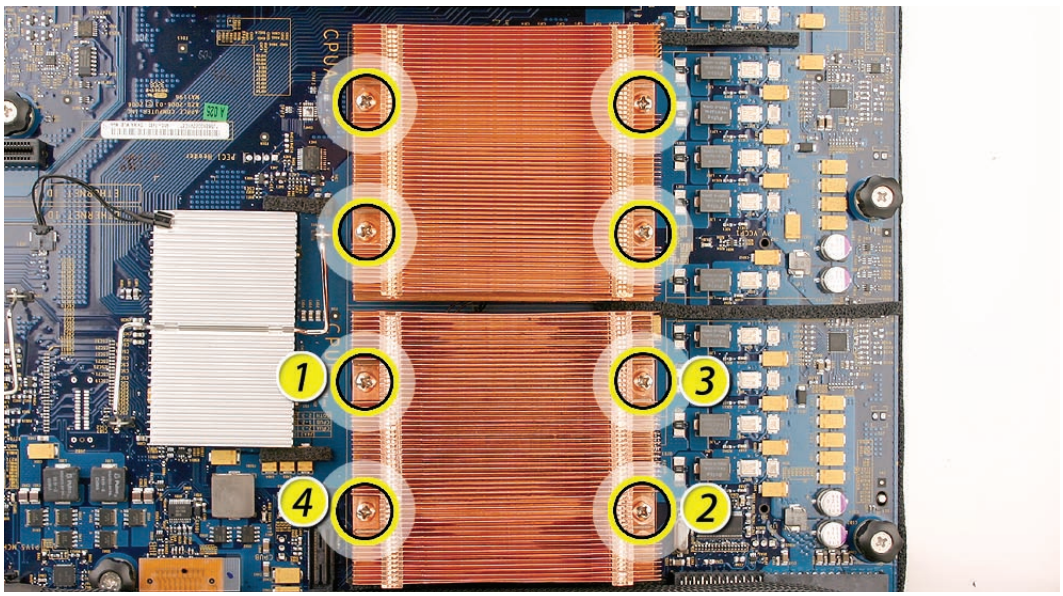
7. Rotate the top of the holder to the closed position.
8. Engage the latch on the processor holder.
9. Repeat the steps above for the second processor.

Replacing the Processor Heat Sinks

Important: Before re-installing each heat sink, be sure to clean off any existing thermal grease from the underside of the heat sink.

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.

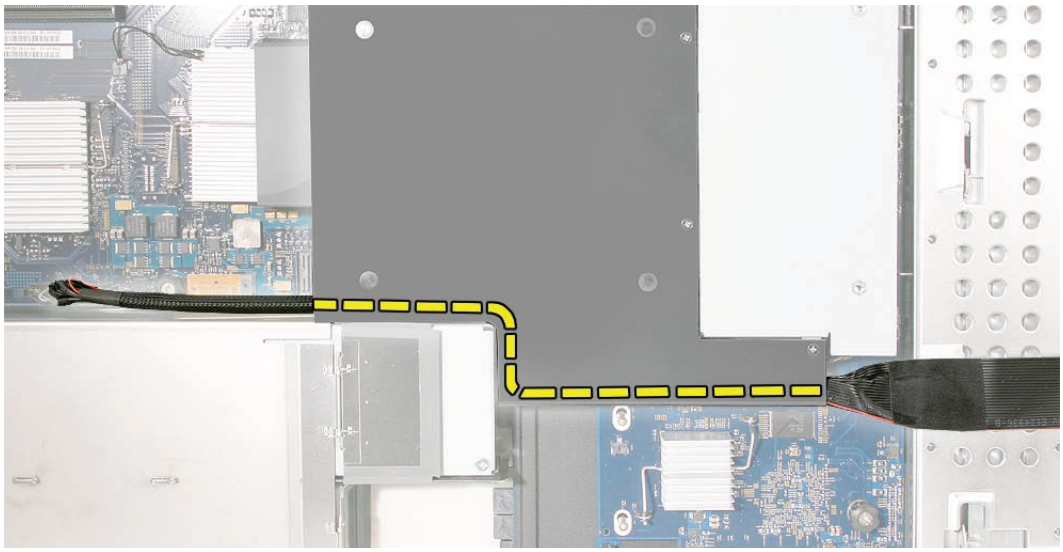
2. Carefully seat the heat sink over the processor, aligning the four screws with the holes in the logic board.
3. Tighten the four captive Phillips mounting screws for the heat sink in the order indicated below. Do not over-tighten the screws. If you have a torque driver, tighten the screws to 8 inch-pounds;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



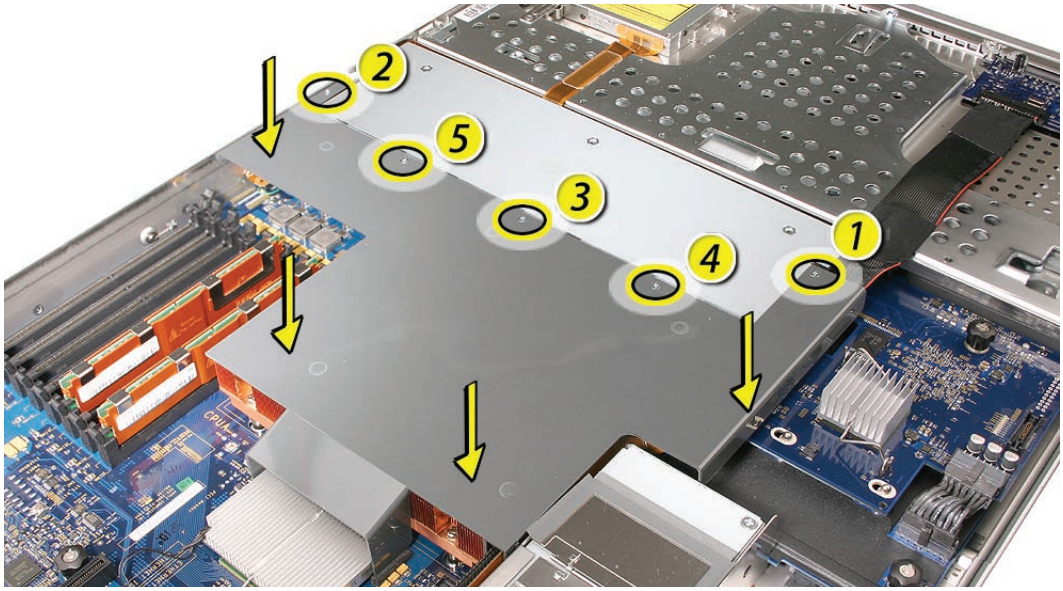
4. Repeat the steps above for the second heat sink.

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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