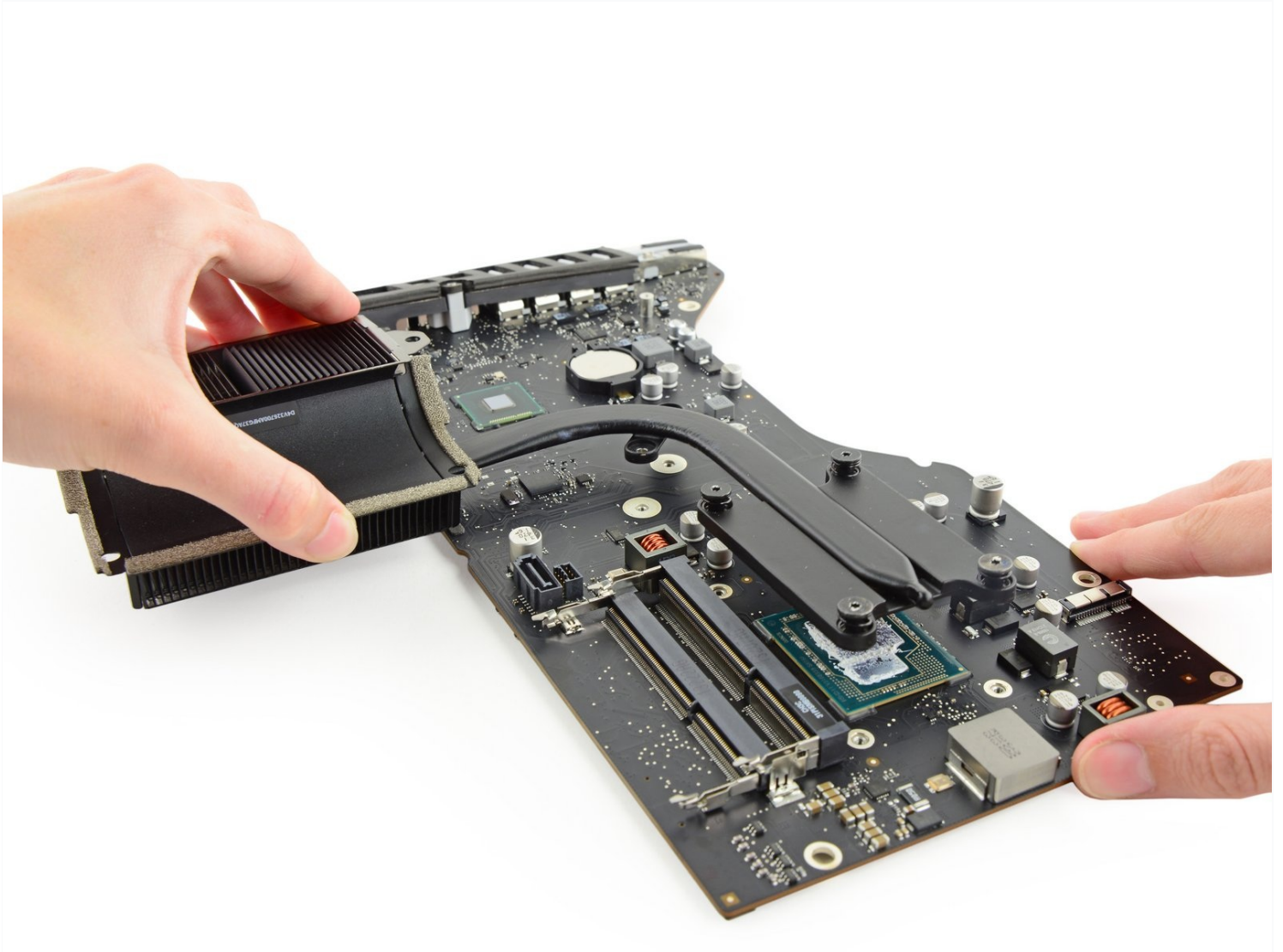




# iMac Intel 21.5" EMC 2638 Logic Board Replacement

Use this guide to replace a faulty logic board....

Written By: Sam Goldheart



# INTRODUCTION

Use this guide to replace a faulty logic board.

When reassembling your iMac, follow our [thermal paste application guide](#) to reapply the thermal paste.



## TOOLS:

[iMac Opening Wheel](#) (1)  
[Phillips #0 Screwdriver](#) (1)  
[Plastic Cards](#) (1)  
[Spudger](#) (1)  
[TR10 Torx Security Screwdriver](#) (1)  
[Tweezers](#) (1)  
[T5 Torx Screwdriver](#) (1)  
[TR8 Torx Security Screwdriver](#) (1)  
[Arctic Silver Thermal Paste](#) (1)  
[Arctic Silver ArctiClean](#) (1)



## PARTS:

[iMac Intel 21.5" EMC 2638 2.7GHz i5-4570R Logic Board](#) (1)  
[iMac Intel 21.5" \(2012-2019\) Adhesive Strips](#) (1)

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## Step 1 — Display Assembly



- ① With the hinge free to move, the iMac will be unbalanced and hard to work on. Repairs are fast and easy with an iMac service wedge, but can be completed without one.
- ① If you are using the [iFixit cardboard service wedge](#), follow [these assembly directions](#) to put it together.
- **Before beginning any work on your iMac:** Unplug the computer and press and hold the power button for ten seconds to discharge the power supply's capacitors.
- ⚠ **Be very careful** not to touch the capacitor leads or any exposed solder joints on the back of the power supply. Only handle the board by the edges.

## Step 2



- Starting on the left of the display, near the power button, insert the iMac Opening Tool into the gap between the glass panel and the rear enclosure.

**⚠** The hub on the iMac Opening Tool will keep you from pushing the wheel in too far. If using a different tool, insert no more than 3/8" into the display. Otherwise, you risk severing antenna cables and causing serious damage.

## Step 3



- Use the tool like a pizza cutter—roll it along through the gap, and it will cut the foam adhesive through the center.
- ⓘ Be sure to always push with the handle behind the cutting wheel. If you pull, the wheel might get pulled out of the handle.
- Run the tool up along the left side of the display.



## Step 4



- Continue running the tool up around the top left corner.

## Step 5



- Cut the adhesive along the top left of the display.

## Step 6



- Continue along the top of the display.
- ① You may want to run the tool back and forth through what you've already cut a few times, to ensure you get as much of the adhesive separated as possible.

## Step 7



- Push the tool around the top right corner of the display.

## Step 8



- Wheel the tool down along the right side of the display.

## Step 9



- Finish pushing the opening tool to the bottom of the right side of the display.
- ① At this point, you'll want to run the tool back around the entire display, to ensure you cut as much adhesive as possible.

## Step 10



ⓘ While the opening tool cut most of the adhesive, the display will still be slightly adhered to the case. A plastic card will be necessary to free up the last of this adhesive.

✦ Set the iMac face-up on a table.

- Starting from the top right corner of the iMac, wedge a [plastic card](#) between the display and frame.

⚠ Be careful **not** to insert the plastic card more than 3/8", or you may damage internal components.

## Step 11



- Gently twist the plastic card sideways to create a gap between the display and frame.
- Move slowly and be careful not to stress the display glass too much—you only need to make a gap of about 1/4".

## Step 12



- Slide the card toward the center of the display to cut any of the remaining adhesive along the top right corner of the iMac.

⚠ Be sure to **stop** before the iSight camera, or you may damage it.



## Step 13



- Wedge the plastic card into the top right corner once again, and leave it there to prevent the adhesive from resticking.

## Step 14



- Insert a second plastic card into the gap between the display and frame near the top left corner of the iMac.

## Step 15



- Gently twist the card upward, slightly increasing the space between the display and frame.
- ① As with the other side, twist slowly to allow the adhesive time to separate, and be careful not to over-stress the display glass.

## Step 16



- Slide the plastic card toward the center, again stopping just before the iSight camera.

## Step 17



- Wedge the plastic card back into the top left corner.

## Step 18

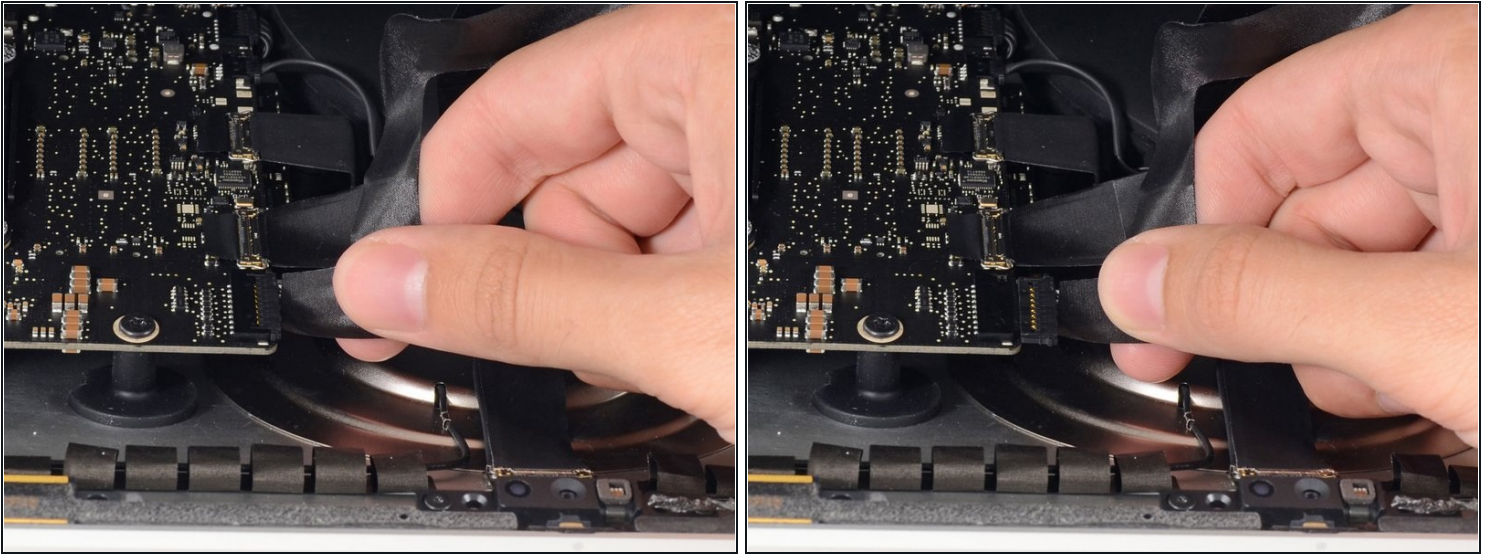


- With both plastic cards inserted as shown near the corners, gently twist the cards sideways to increase the gap between display and case.
- ⓘ If there are any sections that seem to stick and won't separate, stop twisting and use one of the cards to cut the remaining adhesive.
- Begin to lift the top of the display up from the frame.

**⚠ Only lift the display a few inches—the display data and power cables are still connected to the logic board.**



## Step 19 — Display



- While holding the display up with one hand, use the other hand to unplug the display power cable.
- ⓘ Lift the display up enough to have easy access to the connector, but not so much that you stretch the cables and stress their connections (about 8").

## Step 20



- Use the tip of a spudger to flip up the metal retaining bracket on the display data cable.
- Carefully pull the display data cable from its socket on the logic board.

⚠ Be sure to pull the display data cable connector straight out of its socket.

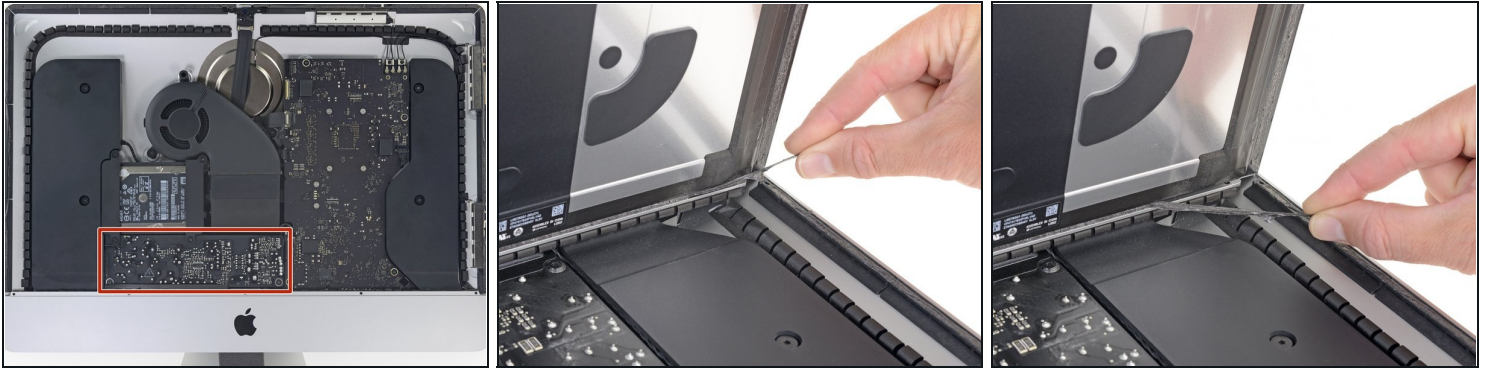
## Step 21



- Lift the display up to a near-vertical position.
- ① At this point there is still a strip of adhesive along the bottom of the display, that will hold the display to the frame like a hinge. You can loosen this adhesive by working the display up and down a few times.



## Step 22



⚠ Be very careful not to touch the capacitor leads or any exposed solder joints on the back of the power supply (boxed in red).

- Grasp the small tab at the end of one of the bottom edge display adhesive strips and pull the adhesive toward the top of the iMac to remove it.
  - Repeat this step with the other adhesive strip and remove it.
- ⓘ If either adhesive strip breaks before it's removed, use a [plastic card](#) to slice through the remaining adhesive.

## Step 23

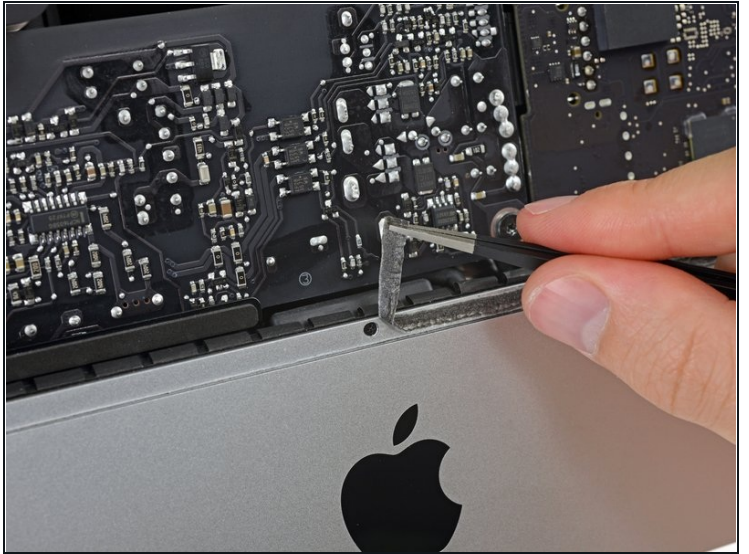
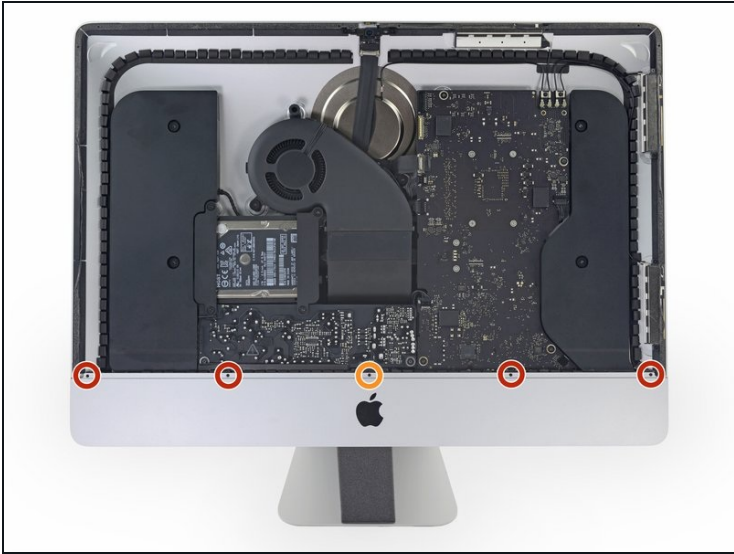


- Lift the display up from the frame and remove it from the iMac.
- It may be necessary to slowly lift from one side, to peel against the remaining adhesive.

⚠ Be very careful handling the display—it's big, heavy, and made of glass.

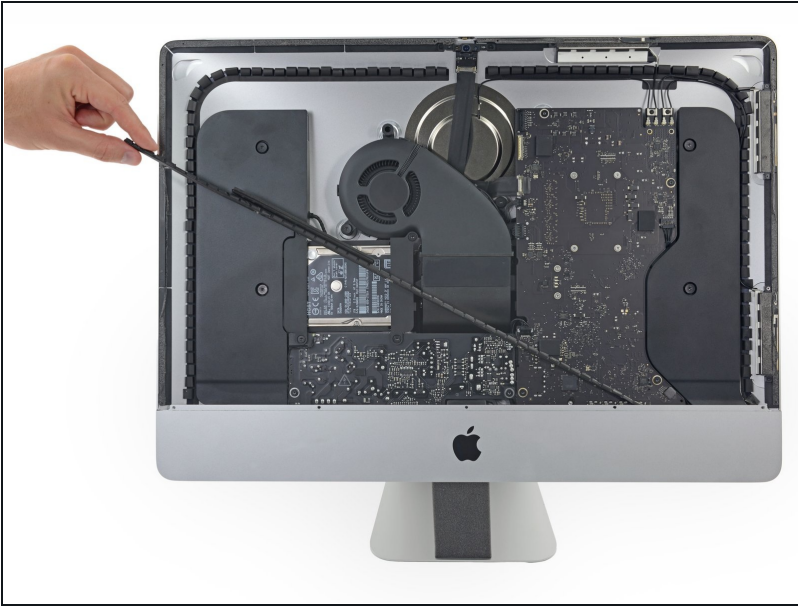
☑ During reassembly, head over to our [display adhesive guide](#) to install the new adhesive.

## Step 24 — Lower Support Bracket



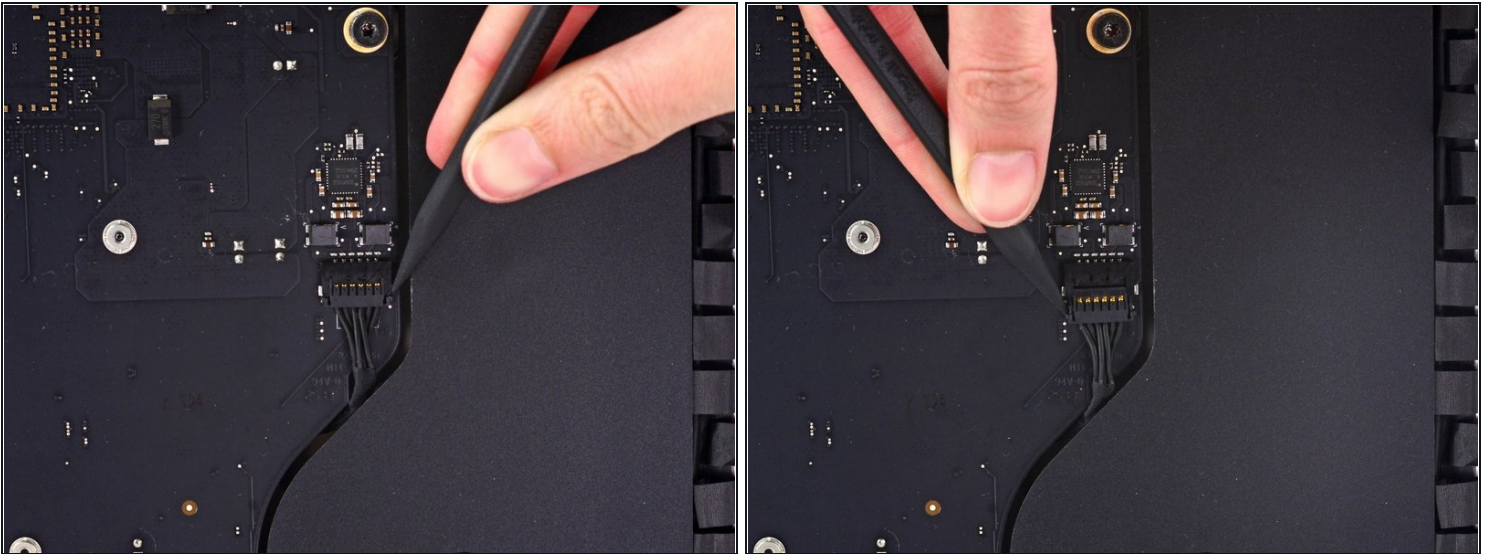
- Remove the following five Phillips screws holding the lower support bracket in place:
  - Four 3.2 mm screws
  - One 1.7 mm screw
- ⓘ On at least some EMC 2544 machines, all five screws are the same size.
- ⓘ You may need to peel up the display adhesive lining the bottom edge of the iMac enclosure to access the screws.

## Step 25



- Remove the lower support bracket from the iMac enclosure.

## Step 26 — Right Speaker



- Use a spudger to loosen the right speaker cable's connector from its socket on the logic board.
- ⓘ It is useful to push downward on both short sides of the connector to *walk* it out of its socket. Be careful with the corners of the connectors, as they can be easily broken off.
- Pull the connector downwards to remove it from its socket.

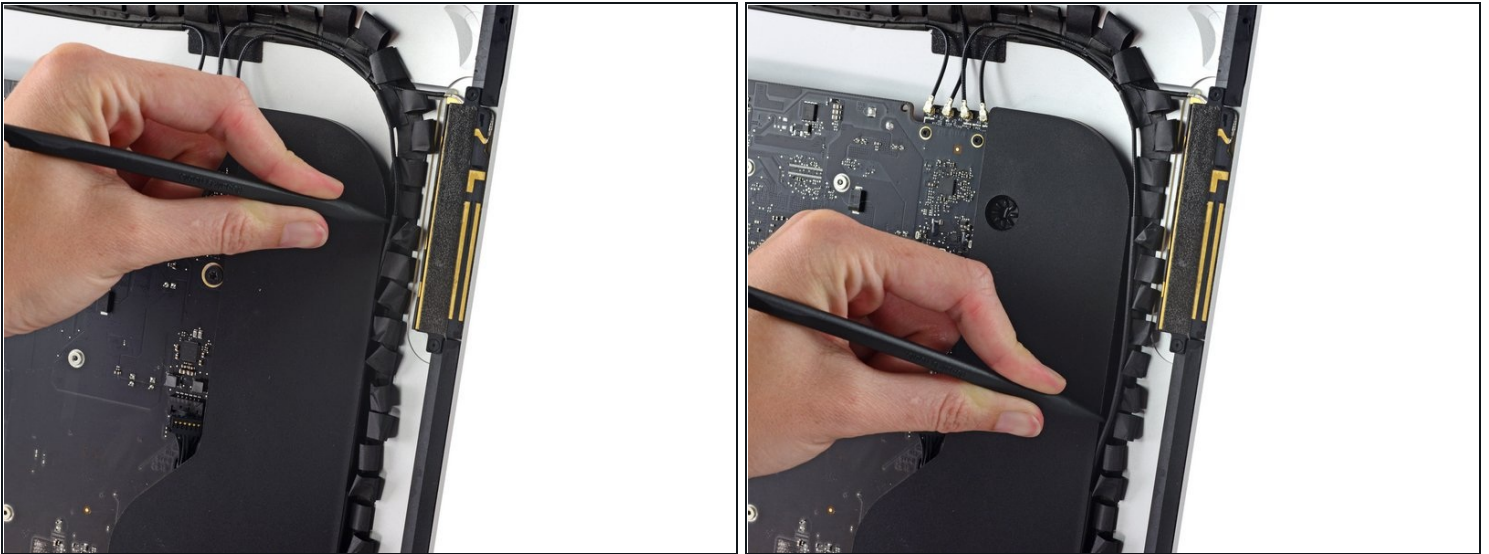


## Step 27



- Remove the two 10.0 mm T10 screws securing the right speaker to the rear enclosure.

## Step 28



- Insert the tip of a spudger between the right speaker and the antenna cable that is routed into the speaker's right side.
- Run the spudger down along the right side of the speaker to pry the antenna cable from its channel in the right speaker.

## Step 29



- Lift the right speaker straight up and remove it from the iMac.
- ① The speaker is tightly wedged into the rear enclosure, therefore it may be helpful to tilt the speaker side to side while pulling upward.

## Step 30 — Hard Drive Brackets



- Remove the following screws securing the hard drive bracket to the rear enclosure:
  - Two 21 mm T10 Torx screws from the left-hand hard drive bracket.
  - One 9 mm T10 Torx screw.
  - One 27 mm T10 Torx screw.

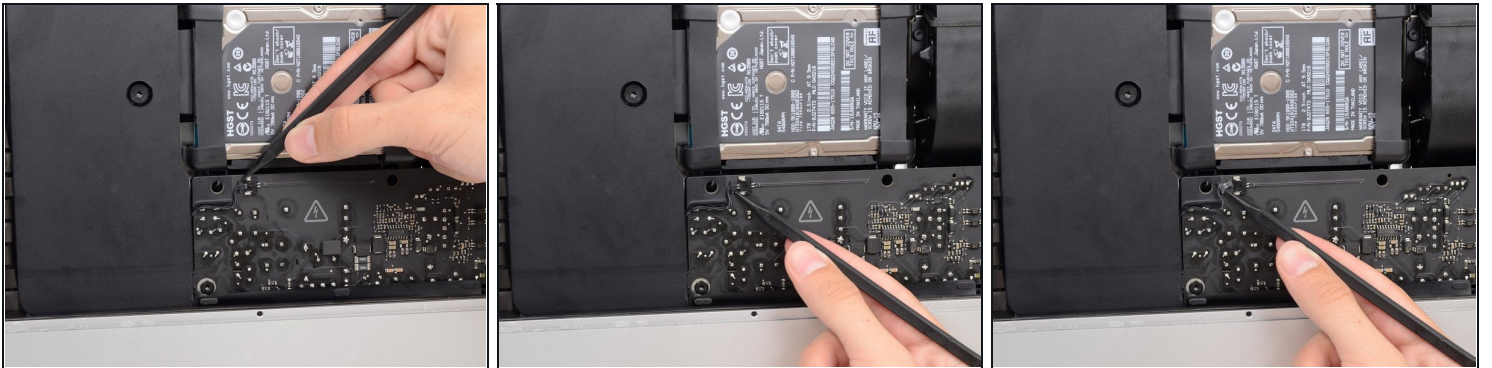


## Step 31



- Remove the left and right hard drive brackets from the iMac.

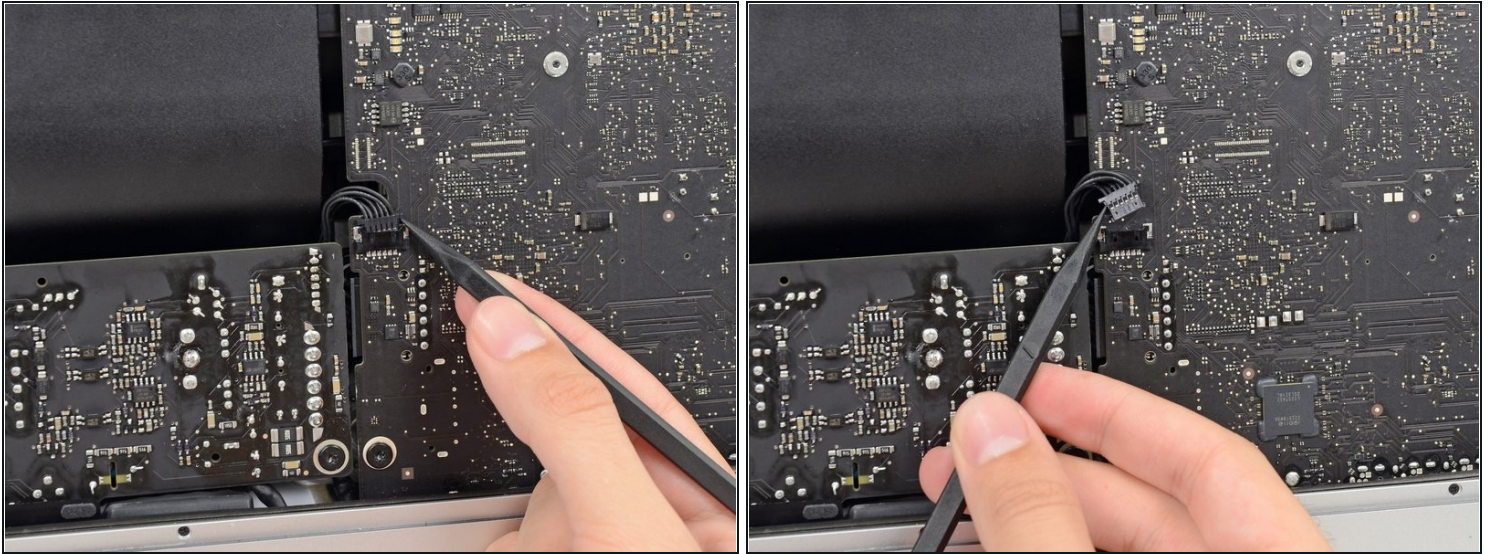
## Step 32 — Power Supply



⚠ The next few steps bring your hands close to the exposed face of the power supply. **Do not** touch the face of the power supply or any of the exposed solder. Touching it risks a high voltage shock from the many large capacitors attached to the board.

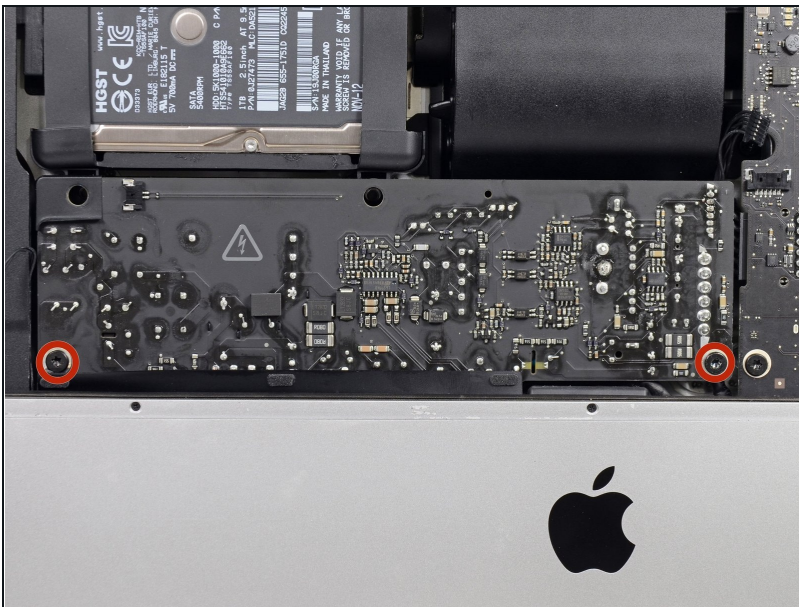
- Use the tip of a spudger to push each side of the power button cable connector and gently *walk* it out of its socket.

## Step 33



- Use the tip of a spudger to push each side of the power supply control cable connector and gently *walk* it out of its socket.

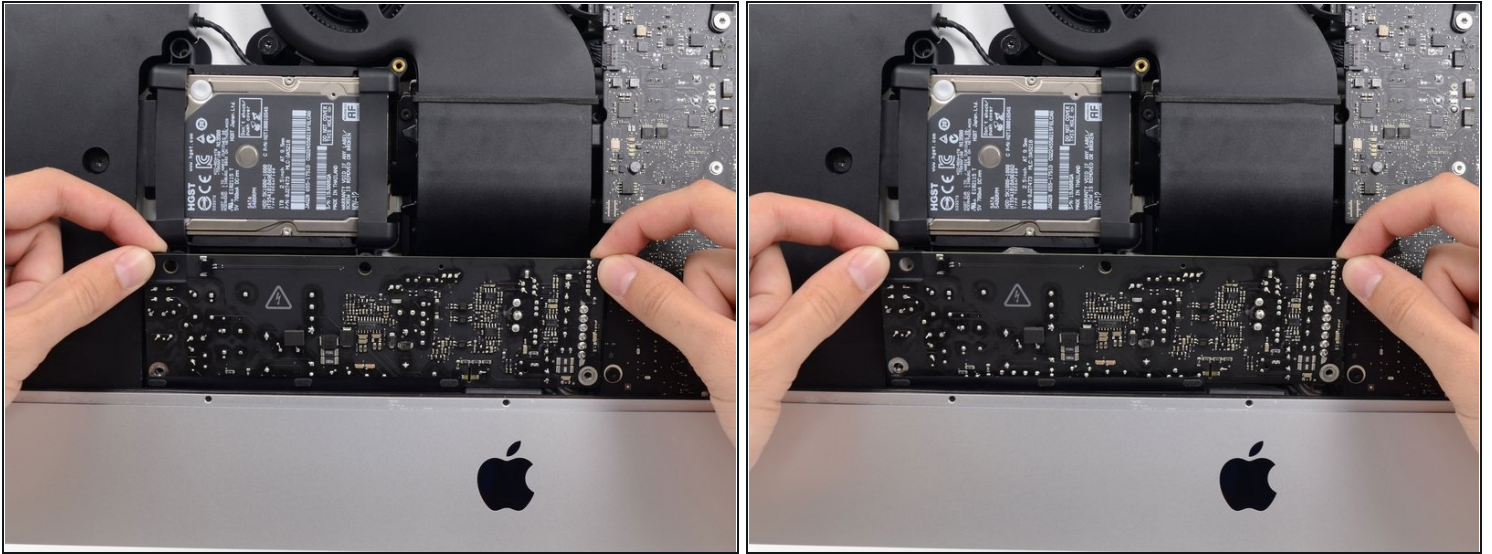
## Step 34



- Remove the two 7.2 mm T10 Torx screws securing the power supply to the rear enclosure.
- ⓘ In newer model iMacs these are 7.2 mm T8 Torx screws.
- ★ During reassembly, be careful not to trap the power button wire behind the board.



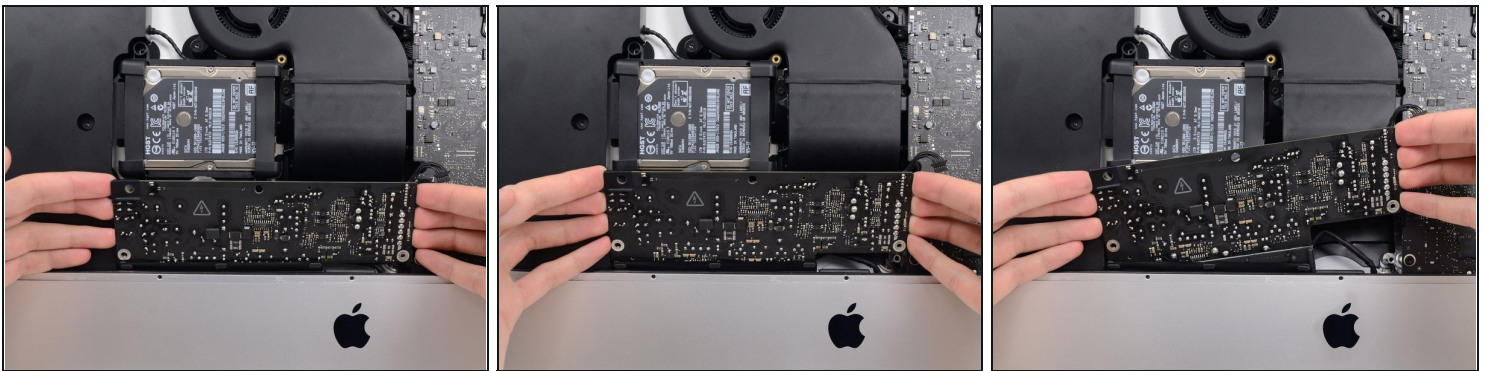
## Step 35



⚠ When working on the power supply, **be very careful** not to touch the capacitor leads or any exposed solder joints on the back of the power supply. Only handle the board by the edges.

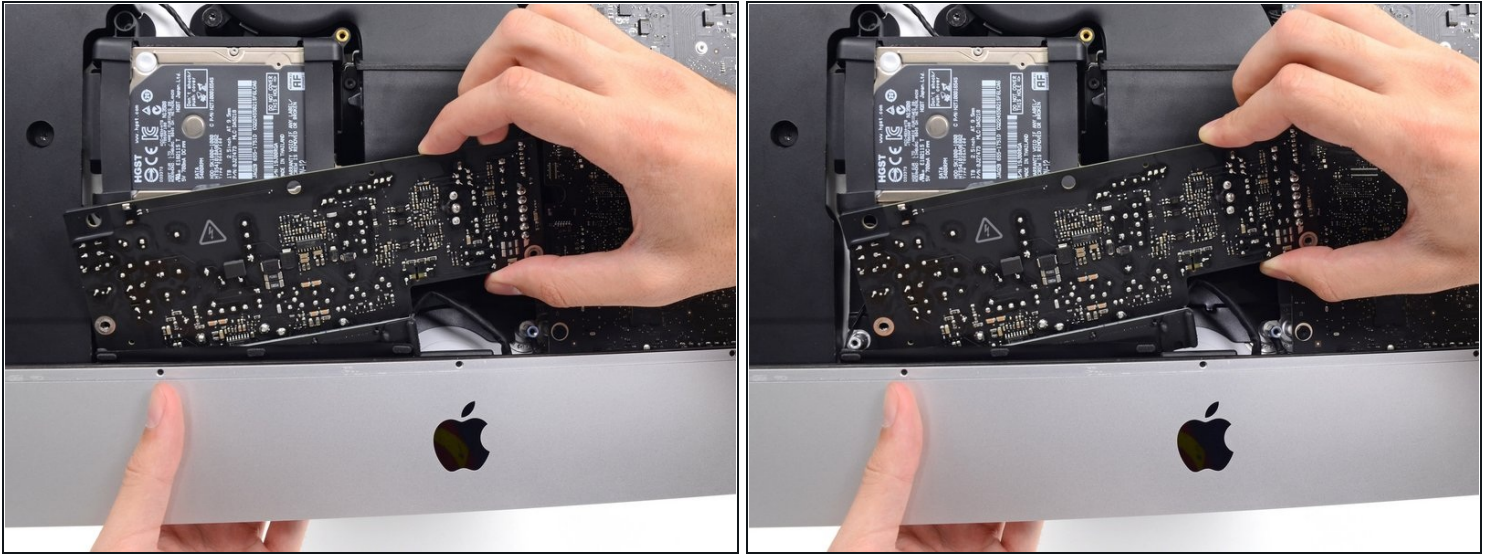
- Tilt the power supply forward.

## Step 36



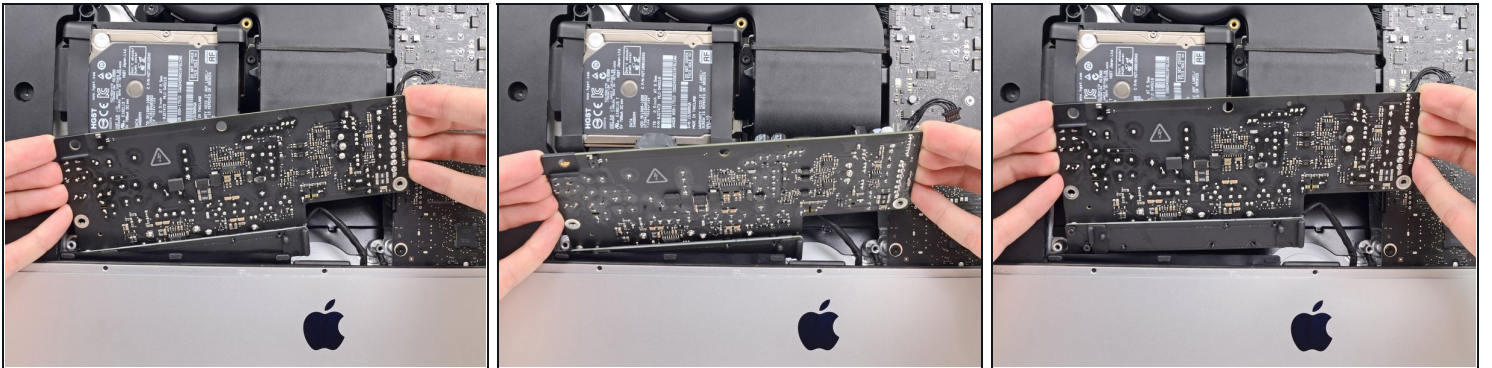
- Pull the power supply slightly up and out from the rear enclosure.
- Rotate the power supply counterclockwise, lifting the right side up about an inch higher than the left.

## Step 37



- Slide the power supply to the right to clear the screw posts on the rear enclosure.

## Step 38

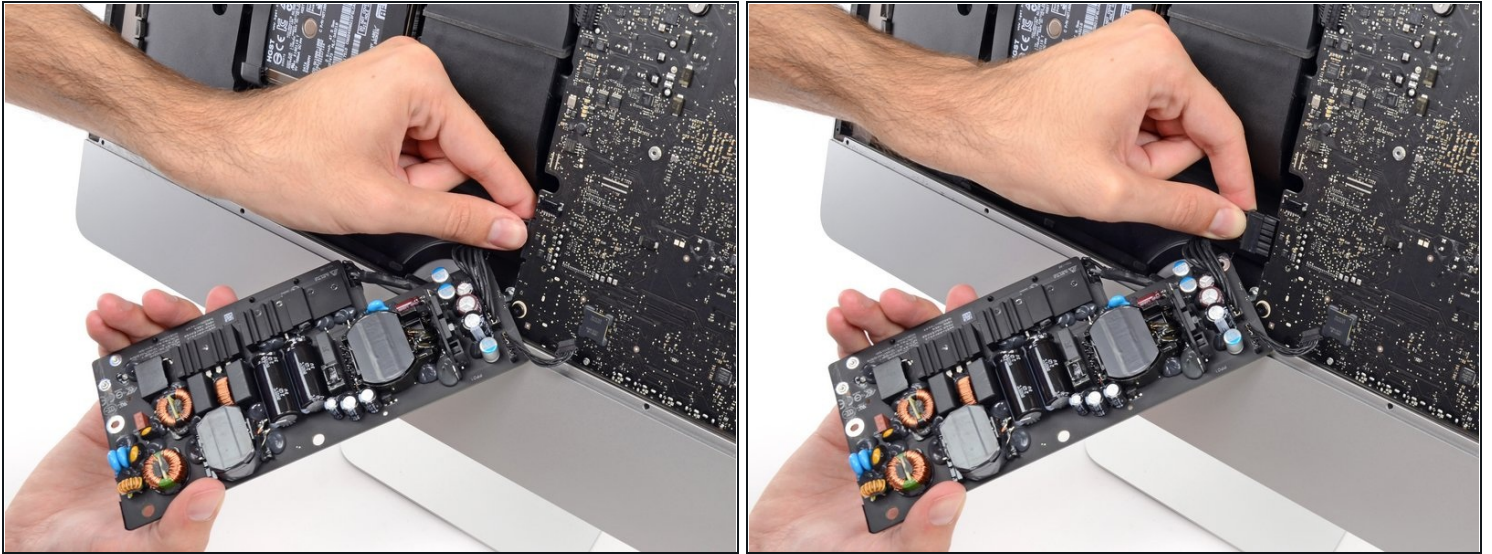


- Rock the power supply forward and remove it from its recess in the rear enclosure.

⚠ **Do not** try to completely remove the power supply from the iMac yet—it is still connected to the logic board.



## Step 39

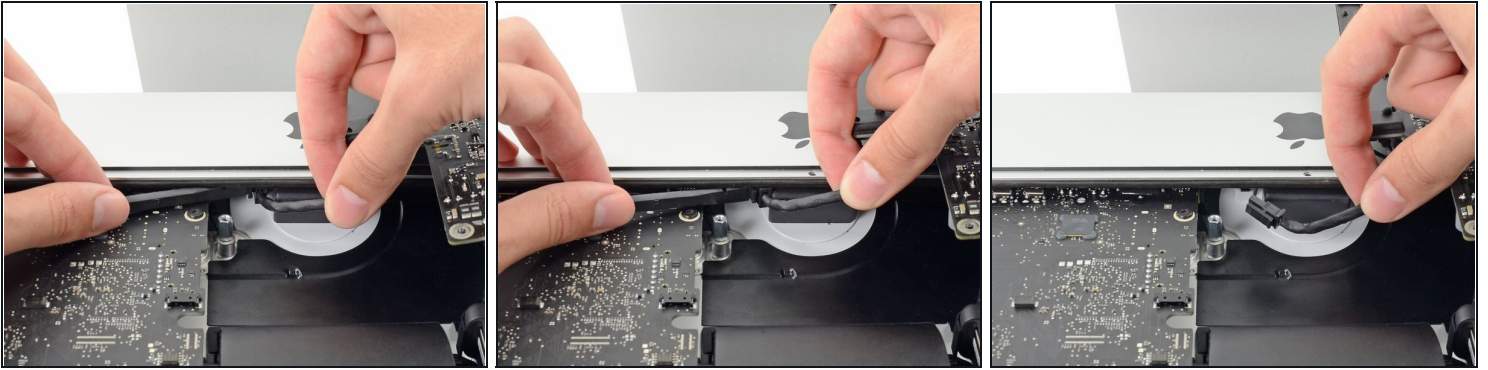


**⚠ Be very careful** not to touch the capacitor leads or any exposed solder joints on the back of the power supply. Only handle the board by the edges.

- ① Flip the power supply over to access the DC power cable connection behind the logic board.
- Squeeze the tab on the back side of the DC power cable connector and pull it straight out of its socket on the back of the logic board.

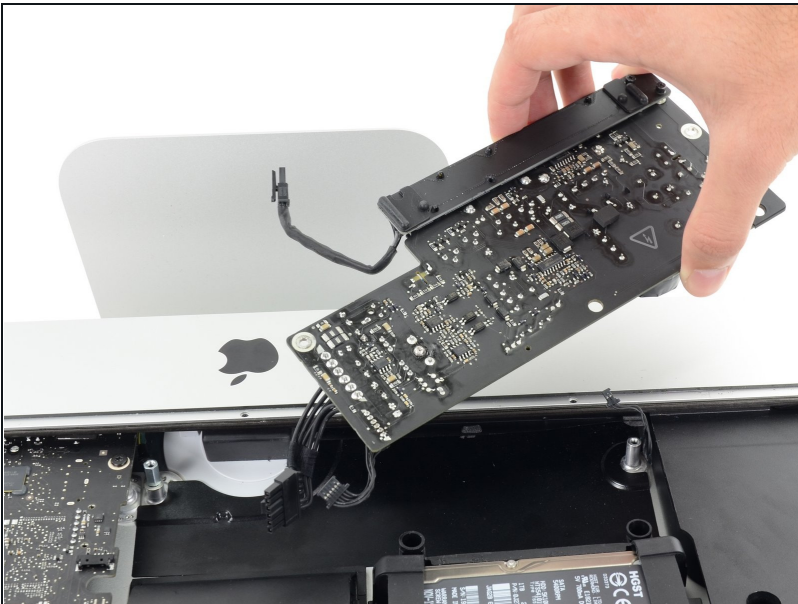


## Step 40



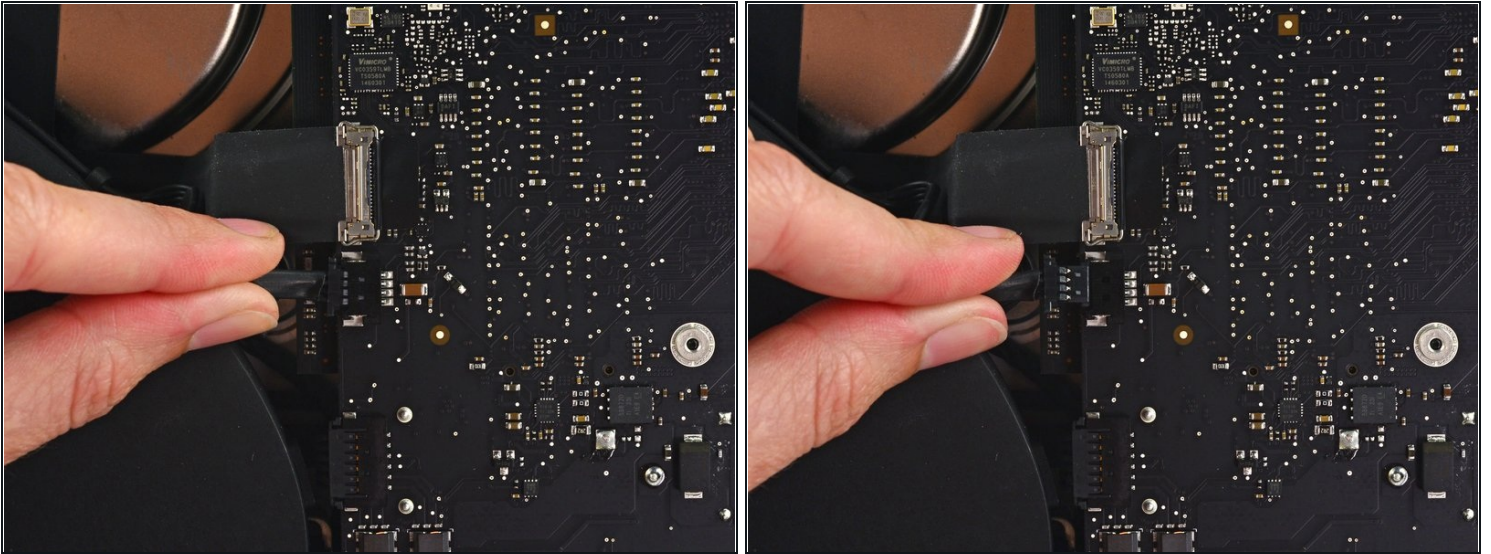
- ⓘ You may find it helpful to set the iMac down on its back for the next couple of steps.
- Use the flat end of a spudger to press the clip on the side of the AC inlet cable connector inward.
  - While pressing on the release clip with the spudger, grasp the AC inlet cable, and pull the connector straight out of its socket.

## Step 41



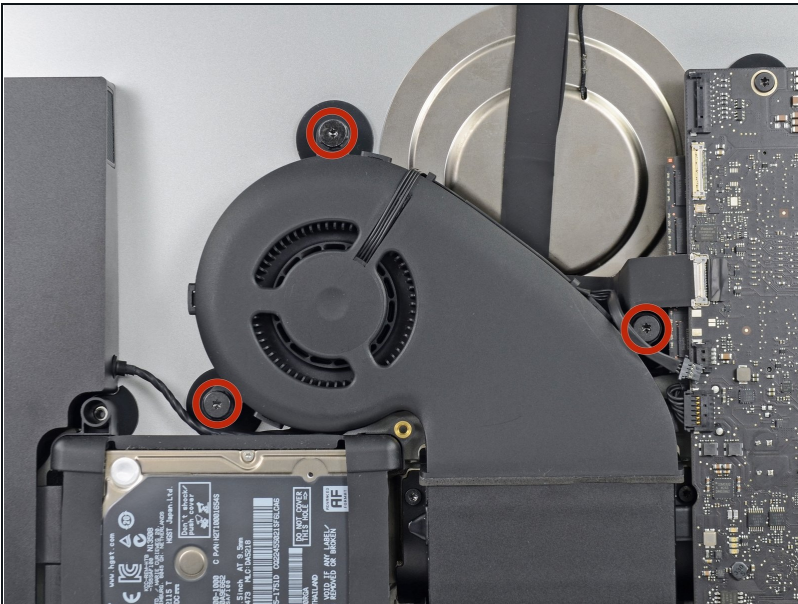
- Remove the power supply from the iMac.

## Step 42 — Fan



- Gently pull the fan cable connector straight away from its socket on the logic board.

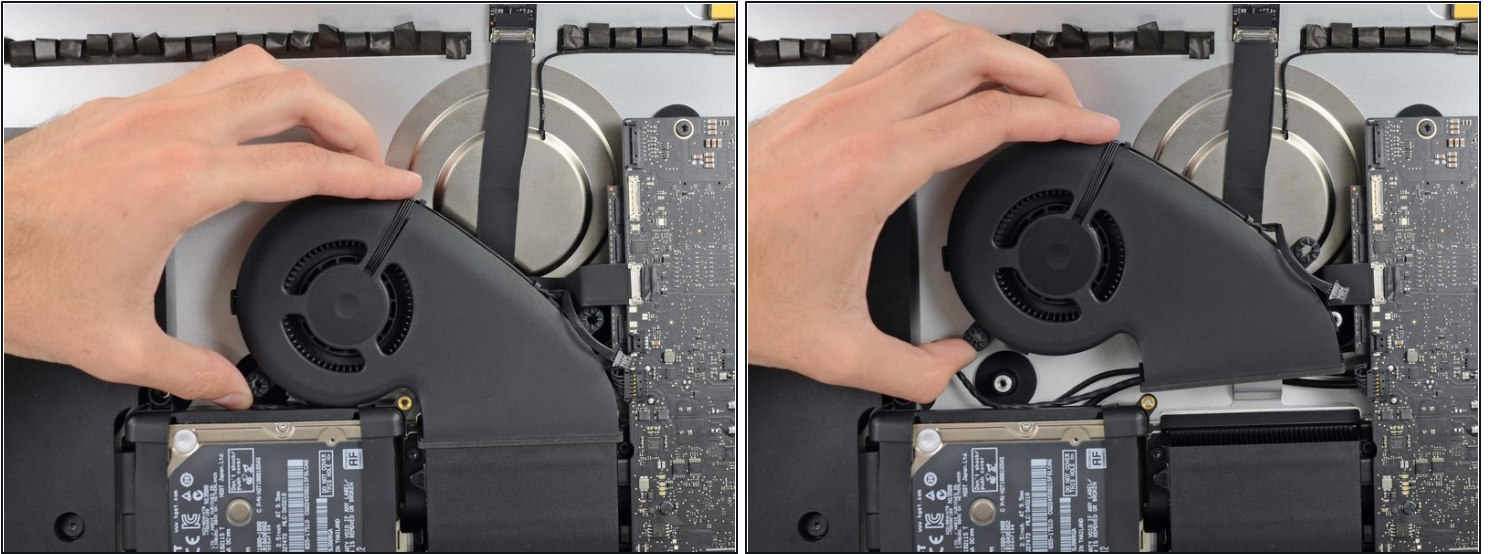
## Step 43



- Remove the three 12.3 mm T10 shoulder screws securing the fan to the rear enclosure.

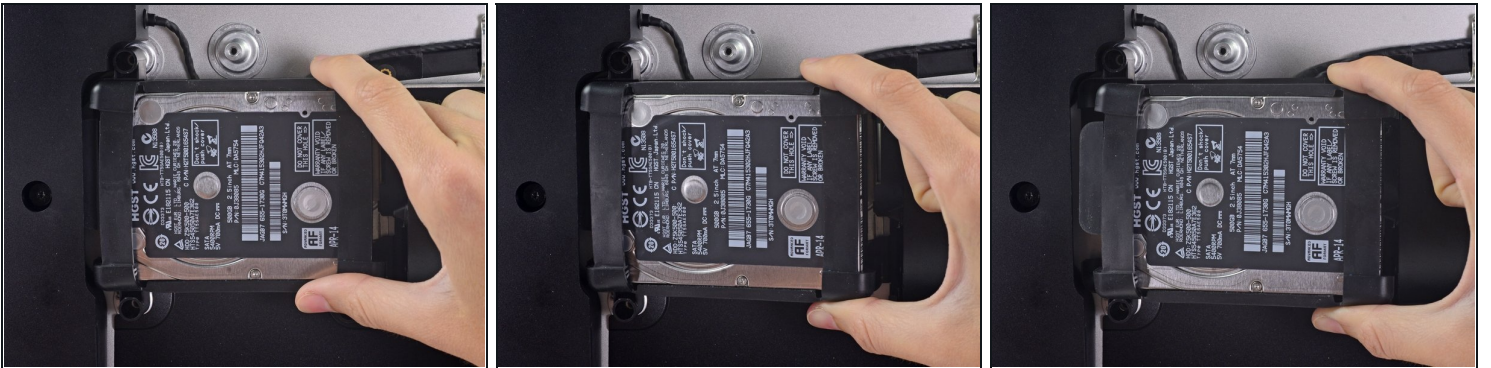


## Step 44



- Remove the fan from the iMac.

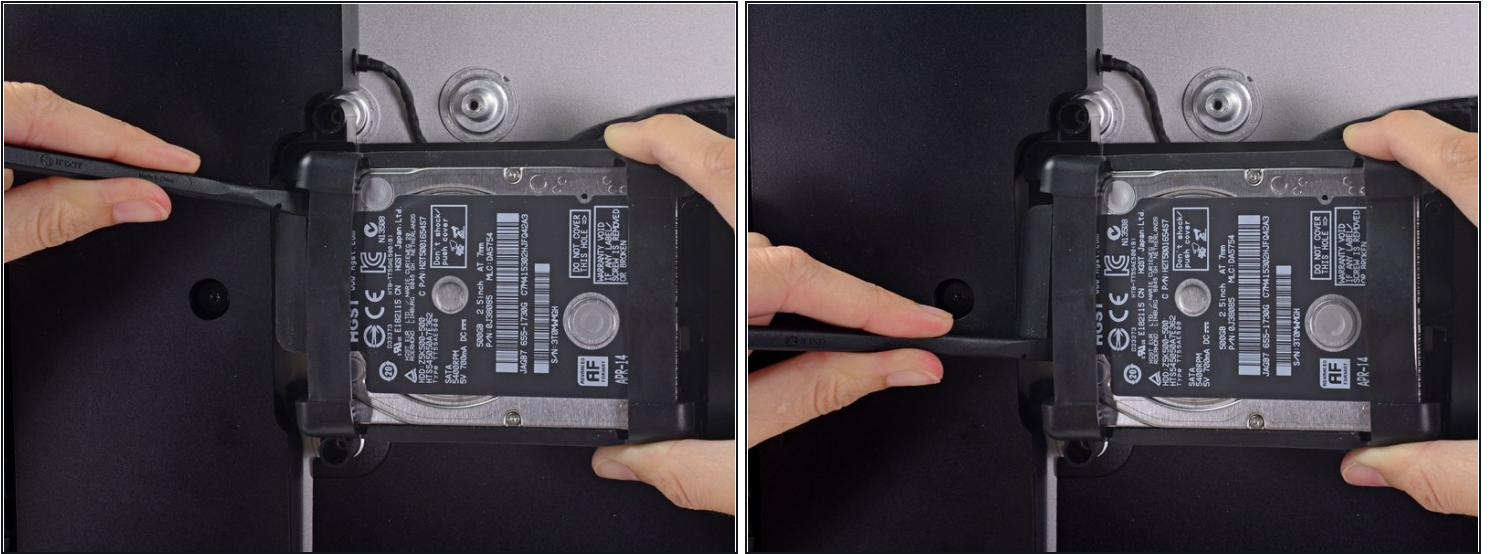
## Step 45 — Hard Drive Assembly



- Lift the hard drive from the edge nearest the logic board and pull it slightly out of its recess.

⚠ The hard drive is attached by a single SATA power/data cable—do **not** attempt to fully remove it from the iMac yet.

## Step 46



- Use a spudger to disconnect the single SATA power and data combo cable by gently prying its large plastic connector away from the hard drive.

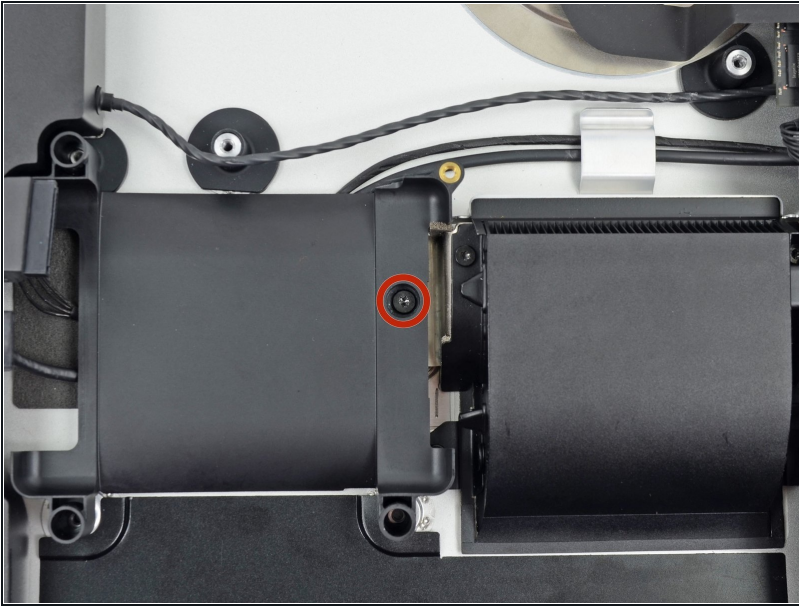
## Step 47



- Remove the hard drive assembly from the iMac.



## Step 48 — Hard Drive Tray



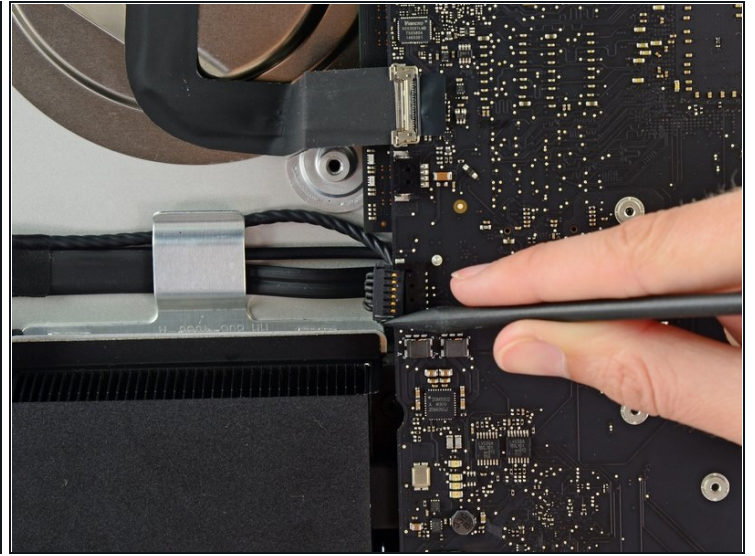
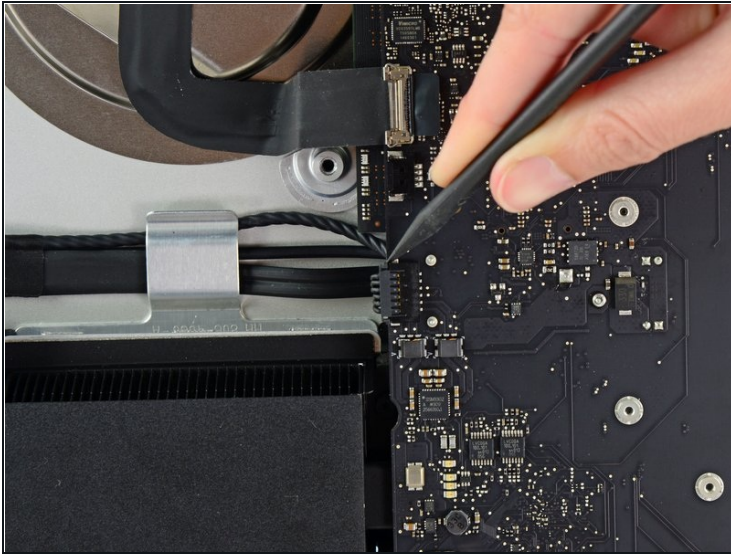
- Remove the single 7.2 mm T10 screw securing the hard drive tray to the rear enclosure.

## Step 49



- Remove the hard drive tray from the rear enclosure.

## Step 50 — Logic Board Assembly



- Push on each side of the left speaker cable connector with the tip of a spudger and gently *walk* it out of its socket.

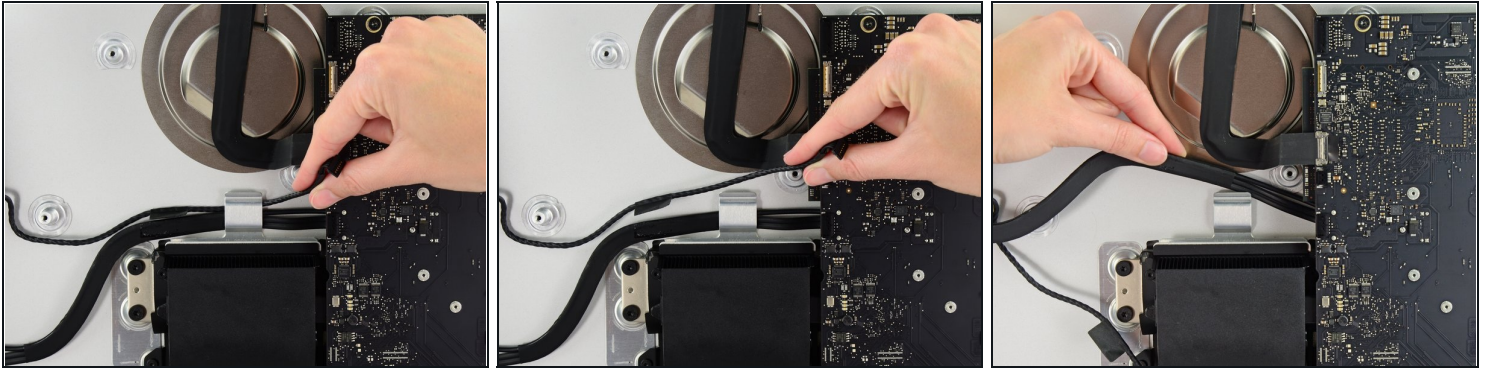
## Step 51



- If necessary, use a pair of tweezers to gently peel the tape securing the left speaker cable to the SATA data/power cable.
  - ① This tape only needs to be removed if you are removing the left speaker.

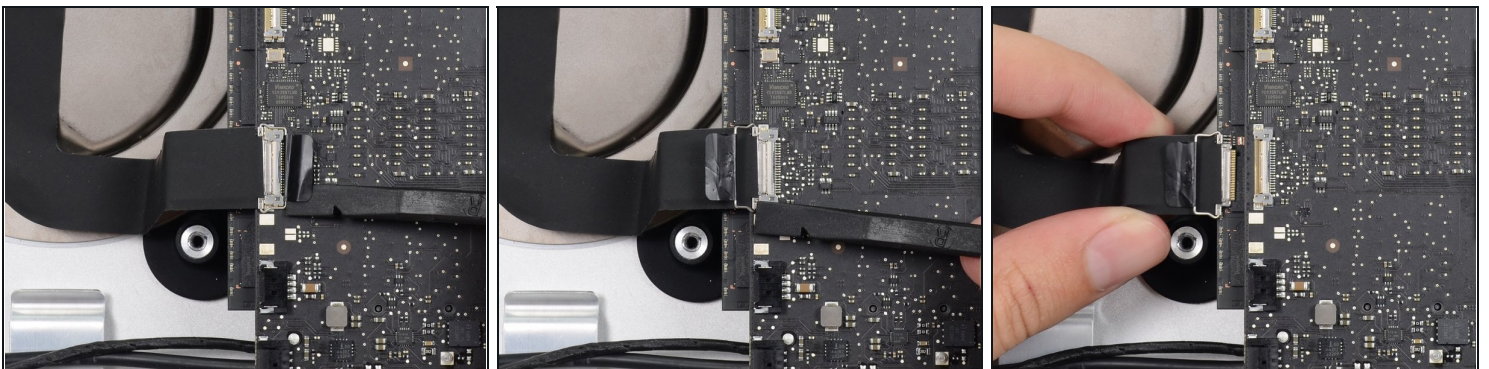


## Step 52



- De-route the left speaker cable by pulling it straight up out of the retaining clip in the back of the rear enclosure.
- ① In a similar fashion, lift the combo SATA data/power cable up out of the retaining clip.

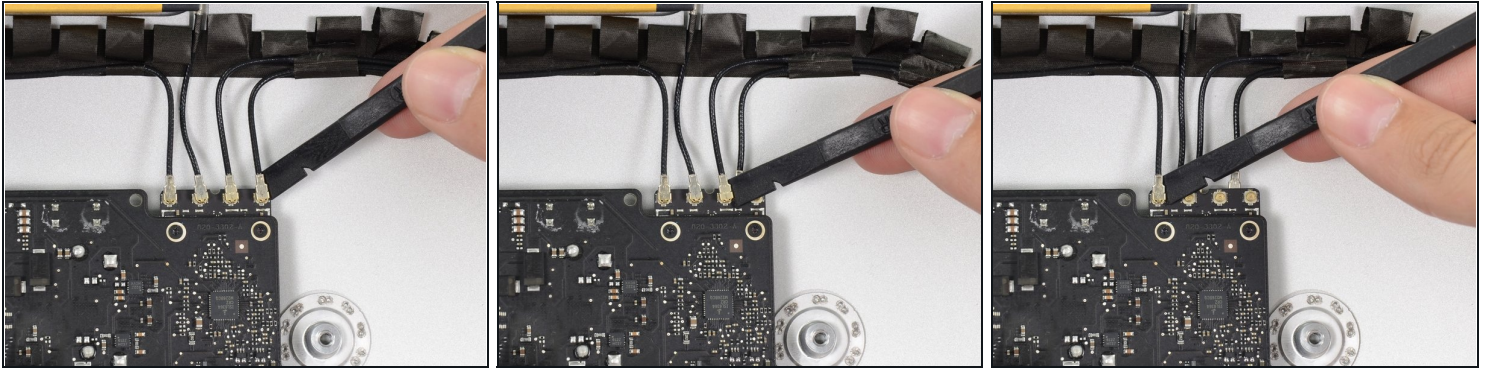
## Step 53



- Use the flat edge of a spudger to flip up the metal retaining bracket on the iSight camera cable connector.
- Pull the iSight camera cable straight out of its socket on the logic board.

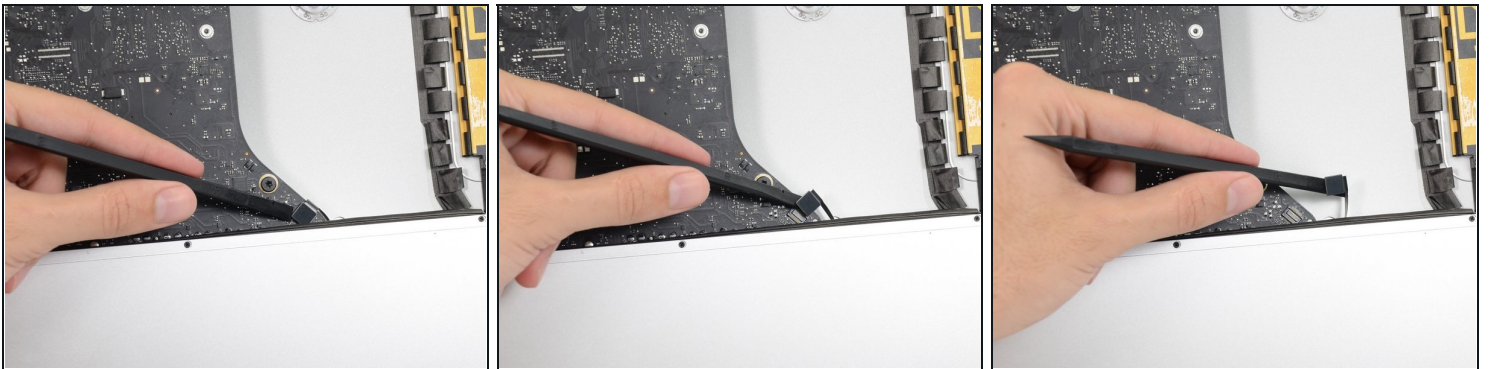
⚠ Do **not** use excessive force. This is a delicate connector that can be easily damaged.

## Step 54



- Use the flat edge of a spudger to disconnect each of the four antenna connectors from the AirPort/Bluetooth card.
- ☑ Note the original positions for each connector when reconnecting the cables.

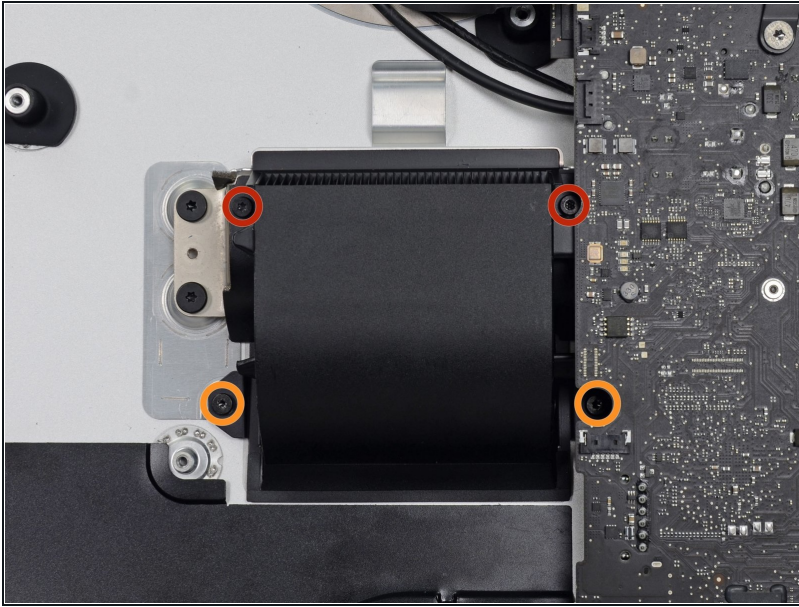
## Step 55



- Use the flat edge of a spudger to pry the headphone jack cable connector from its socket on the logic board.
- ☑ Push the cable slightly to the right to clear it for the removal of the logic board.



## Step 56



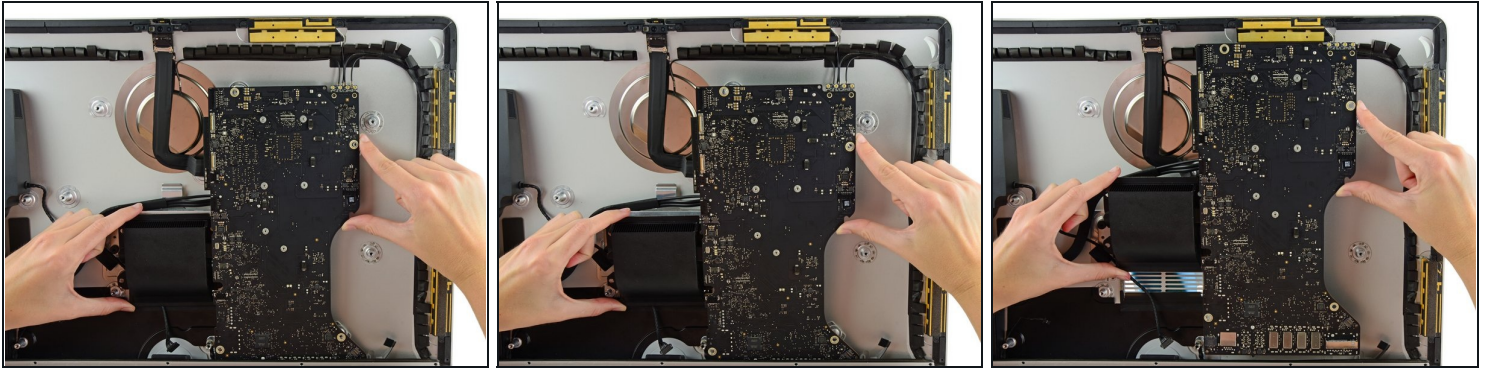
- Remove the following screws securing the exhaust duct to the rear enclosure:
  - Two 6.3 mm T8 screws
  - Two 4.7 mm T8 screws

## Step 57



- Remove the four 7.2 mm T10 screws securing the logic board to the rear enclosure.

## Step 58



- Tilt the top of the logic board away from the rear enclosure.
- Lift the logic board straight up and out of the iMac.

⚠ Be careful **not** to snag the board on any of the rear case's screw posts.

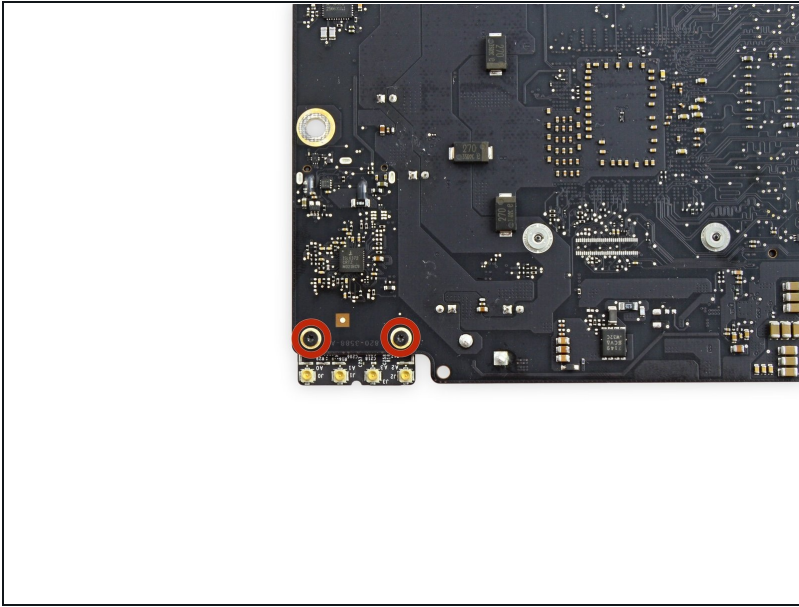
- ⓘ The I/O boards at the bottom of the logic board will be the greatest challenge. It is recommended to pull gently to avoid any damage.

## Step 59



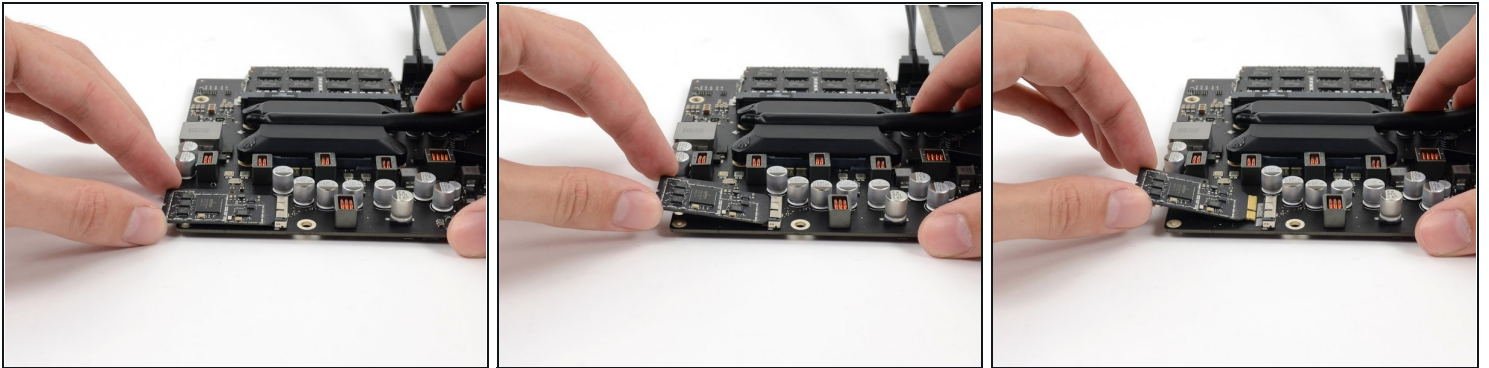
- ☑ When installing the logic board, take care to align the exterior I/O ports correctly. The logic board can sit crooked even when secured with all its screws.
- Use a USB flash drive and/or ethernet cable to ensure the logic board is seated correctly while you screw it in.

## Step 60 — AirPort/Bluetooth Card



- Remove the two 3.2 mm T5 screws securing the AirPort/Bluetooth card to the logic board.

## Step 61



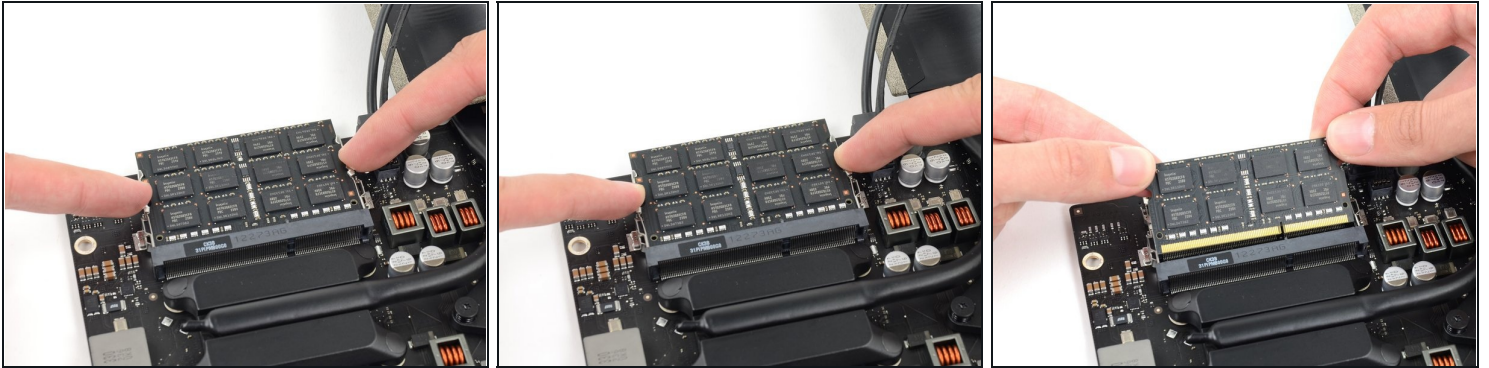
- Slightly lift the AirPort/Bluetooth card and pull it straight out its socket.

**⚠ Do **not** use excessive force to pull the end of the AirPort/Bluetooth Card away from its socket on the logic board. Doing so may damage the socket.**

- ☒ When reinstalling the card, be sure it is properly seated before reinstalling the retaining screws.

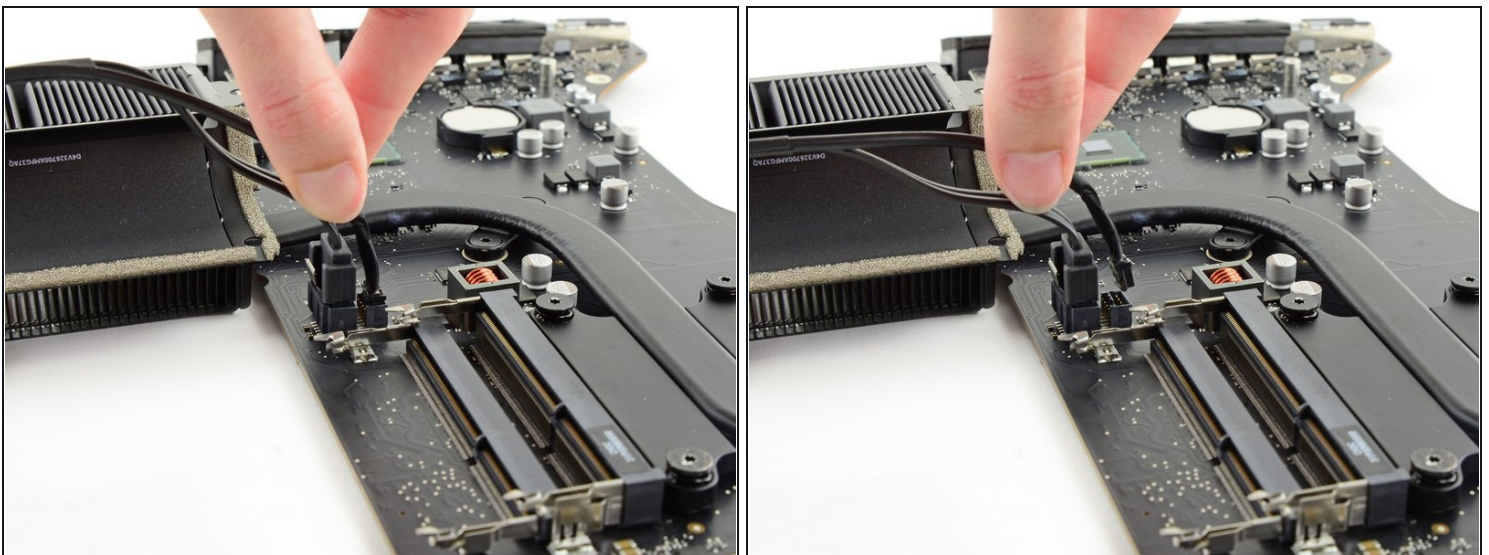


## Step 62 — RAM



- Release the tabs on each side of the RAM module by simultaneously pushing each tab away.
- ① The RAM module should pop up slightly from its socket.
- Grab the top left and right corners of the RAM module and carefully pull it straight out of its socket.
- ☑ Repeat the process to remove additional RAM modules as necessary.

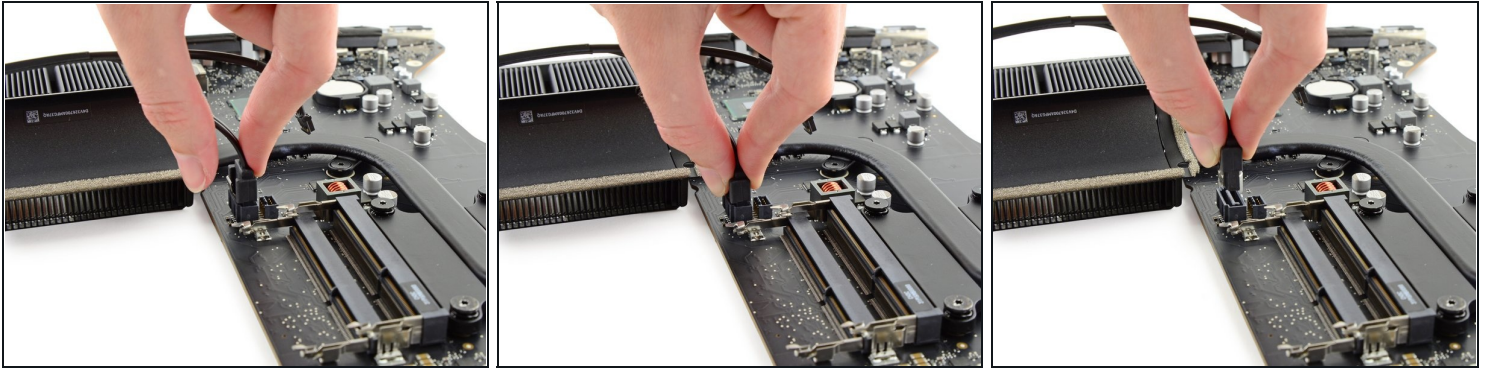
## Step 63 — Logic Board



- Grasp the hard drive power connector and gently pull it out of its socket on the logic board.



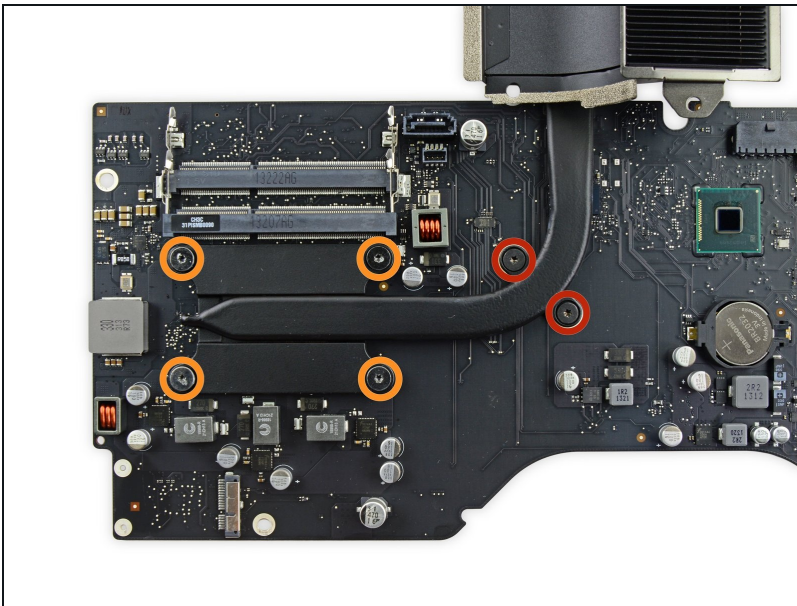
## Step 64



ⓘ The SATA data connector has a clip that must be pressed to allow removal.

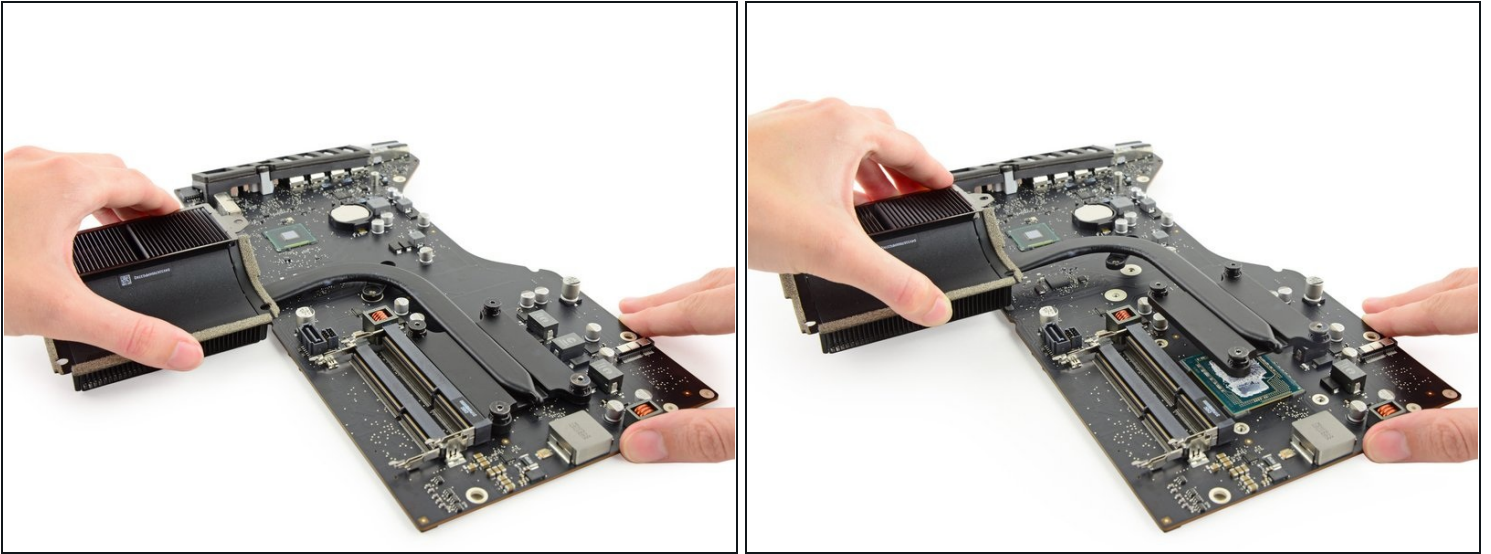
- While pressing on the clip with your thumb, lift and disconnect the SATA data connector from its socket on the logic board.

## Step 65



- The following screws secure the heat sink to the logic board:
  - Remove the two T8 screws from the exhaust port end of the heat sink.
  - Loosen, but do **not** remove, the four captive T8 screws securing the CPU end of the heat sink.

## Step 66



- Slowly lift and remove the heat sink from the logic board.
- ☑ When reassembling your iMac, follow our [thermal paste application guide](#) to reapply the thermal paste.
- ☑ During reassembly of the logic board, pay attention to the position of the I/O connectors. When the board is back in the case, insert a USB or Thunderbolt cable into one of the connectors to align it perfectly.

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To reassemble your device, follow these instructions in reverse order.