Nexus 9 Teardown

Nexus 9 Teardown on November 3, 2014.

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INTRODUCTION

It's a good time for tablet fans. Apple gave it both barrels last month, with a pair of new iPads—and today, Google fires back with the Nexus 9 and its newly revised OS, Android 5.0 Lollipop. It sounds tasty, but how does it tear down? We're about to find out. Join us as we dismantle the shiny new Nexus 9.

Tune in for more tech teardowns: follow us on [Facebook](#), [Instagram](#), or [Twitter](#)!

[video: https://www.youtube.com/watch?v=ovpkbXBKjlE]

🔧 TOOLS:

- Spudger (1)
- iFixit Opening Picks set of 6 (1)
- Jimmy (1)
- iOpener (1)
- Tweezers (1)
- Phillips #00 Screwdriver (1)
- T5 Torx Screwdriver (1)

Step 1 — Nexus 9 Teardown

- What's at the nucleus of the Nexus 9? Let's find out:
  - 8.9" IPS LCD with a resolution of 2048 x 1536
  - 64-bit NVIDIA Tegra K1 dual-core processor running at 2.3 GHz, paired with a 192-core Kepler GPU
  - 2 GB RAM
  - 8 megapixel f/2.4 rear-facing camera + 1.6 megapixel front-facing camera
  - 802.11ac 2x2 (MIMO) Wi-Fi + Bluetooth 4.1 + NFC
  - 16 or 32 GB on-board storage
  - Android 5.0 Lollipop

Step 2

- Even though the Nexus 9 is being marketed by Google, in reality it's an HTC-manufactured tablet (no doubt with plenty of design input from the former).

- You can easily identify the Nexus 9 by its model number, OP82100.

- ⓘ For those of you who habla español: *no te olvides de usar solo cargadores listados en* **el** *guia de seguridad*.

  - Hey, HTC! Just a heads-up: when using the word "guia" to describe a guidebook or directory, it is a feminine noun. That makes it **la guía**.

- ⚑ Shameless plug: iFixit has an Android app for all your repair and teardown needs.

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Step 3
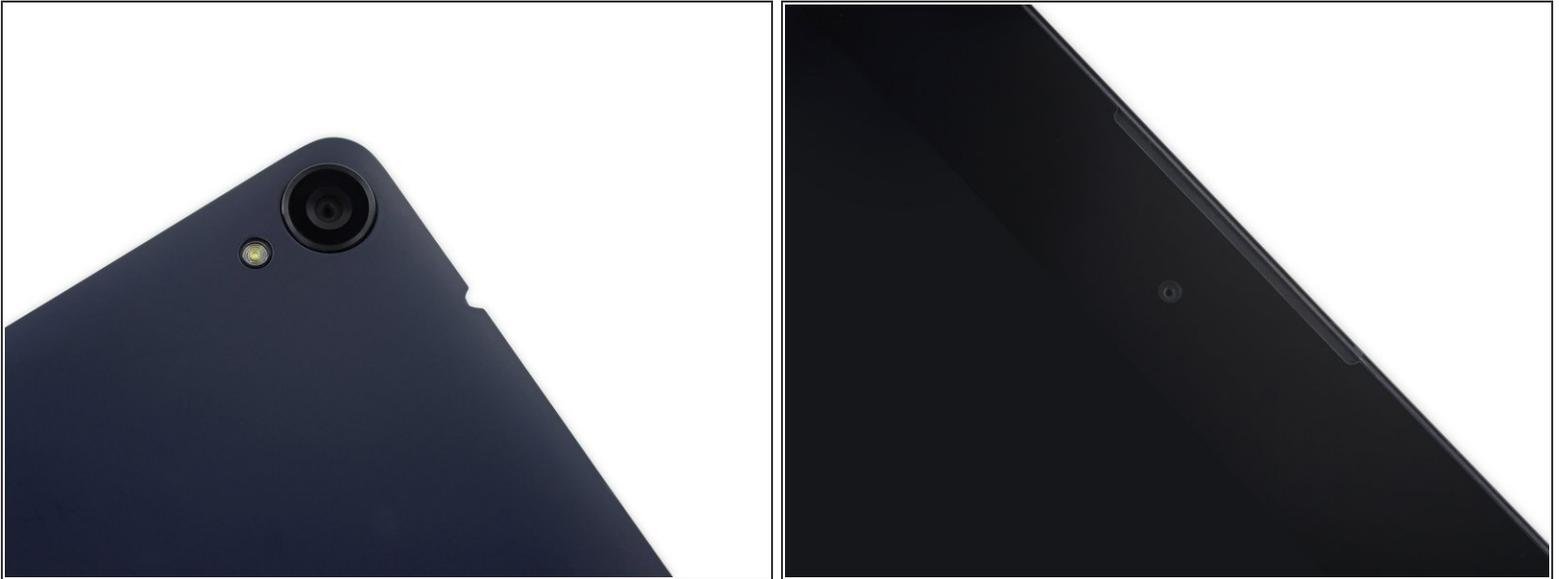
- Familiar components abound on the exterior of the Nexus 9.

- The rear-facing camera is situated near the top right corner of the rear case, while the front-facing camera sits dead center at the top, near one of two front-facing speaker grilles.

www.iFixit.com

Step 4

- Huzzah! The rear cover is held in place with various welcoming clips, instead of fierce adhesive.

- No tools are required to pop this cover off—just some sturdy fingernails. All seems to be going well, until we notice the rear-facing camera is still lodged in the rear case...

  - The camera seems to fit a little too snugly in its cubicle in the rear case; it got pulled right out of its ZIF connector on the motherboard.

- To make matters worse, the camera connector is on the underside of the motherboard, which means we'll have to remove the board to reconnect the camera.

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Step 5
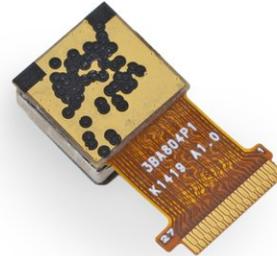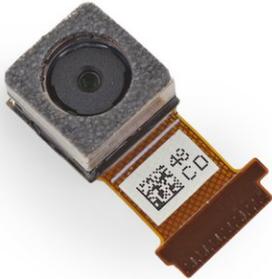
- Let's take a quick look at the rear-facing camera, since it clearly wants attention.

- The 8 MP rear-facing camera features auto-focus and an LED flash, but lacks any optical image stabilization.

  - With an f/2.4, 29.2 mm focal length (35 mm equivalent), we would recommend you use it for the occasional picture of your cat, and not for taking a picture of the Mona Lisa.

- The rear-facing camera is labeled as 3BA804P1 K1419 A 1.0.

  - ⓘ A bit of Googling reveals that this is the same camera module used by the HTC Desire 610 smartphone.

Step 6

- With the back panel relieved of duty, we scan for additional things to shake our spudger at. Those metal contacts look promising...

- A bit of gumshoeing turns up what appears to be the NFC antenna. Our grabby teardown fingers promptly peel it apart from the rear case.

Step 7

- Alas, the battery is within our reach, but not our grasp: some fairly heavy-duty adhesive holds it fast in place.

  - (i) Fortunately, we're equipped for some heavy-duty spudgering.

- Google's official specs put the battery at 6700 mAh. A quick visual inspection verifies this, with a rating of 3.8 V, 6700 mAh, and 25.46 Wh.

  - For those keeping score, that puts it squarely between the slightly larger iPad Air 2 (with a battery rated at 7340 mAh) and the smaller iPad Mini Retina Display (rated at 6471 mAh).

Step 8

- The front-facing camera does the sensible thing by staying connected to the motherboard until we're ready to tweeze it away. Which we are.

- This otherwise unremarkable 1.6 MP (720p), f/2.4 shooter bears the markings 3BF105P1 Y1428A1.0.

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Step 9
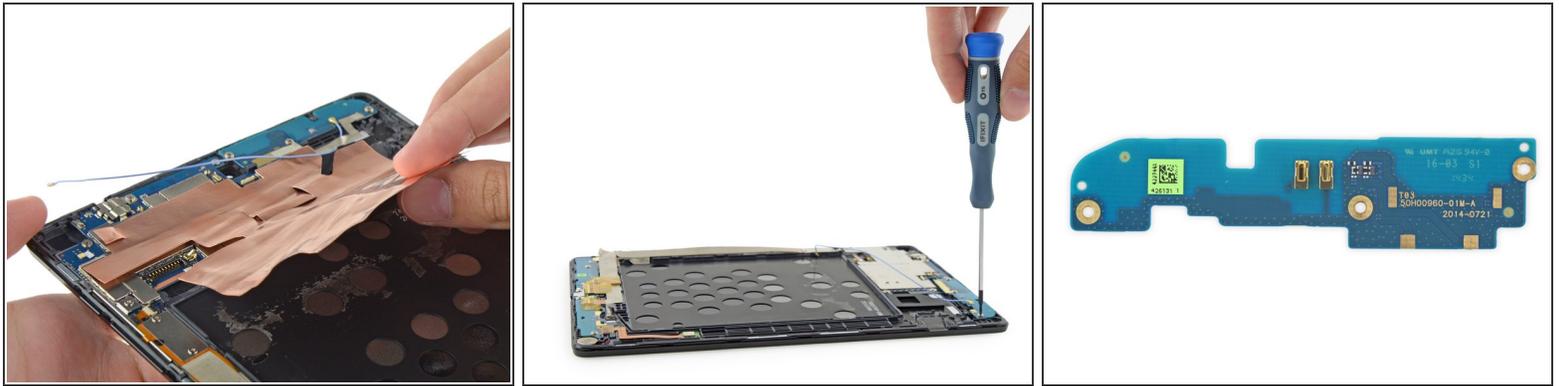
- Would you like some copper shielding with your copper shielding?

- With the copper shielding out of the way, we can proceed to remove the antenna board near the top of the Nexus 9.

  - (i) Once again, our Pro Tech Screwdriver Set has us equipped with the right tool for the job.

Step 10
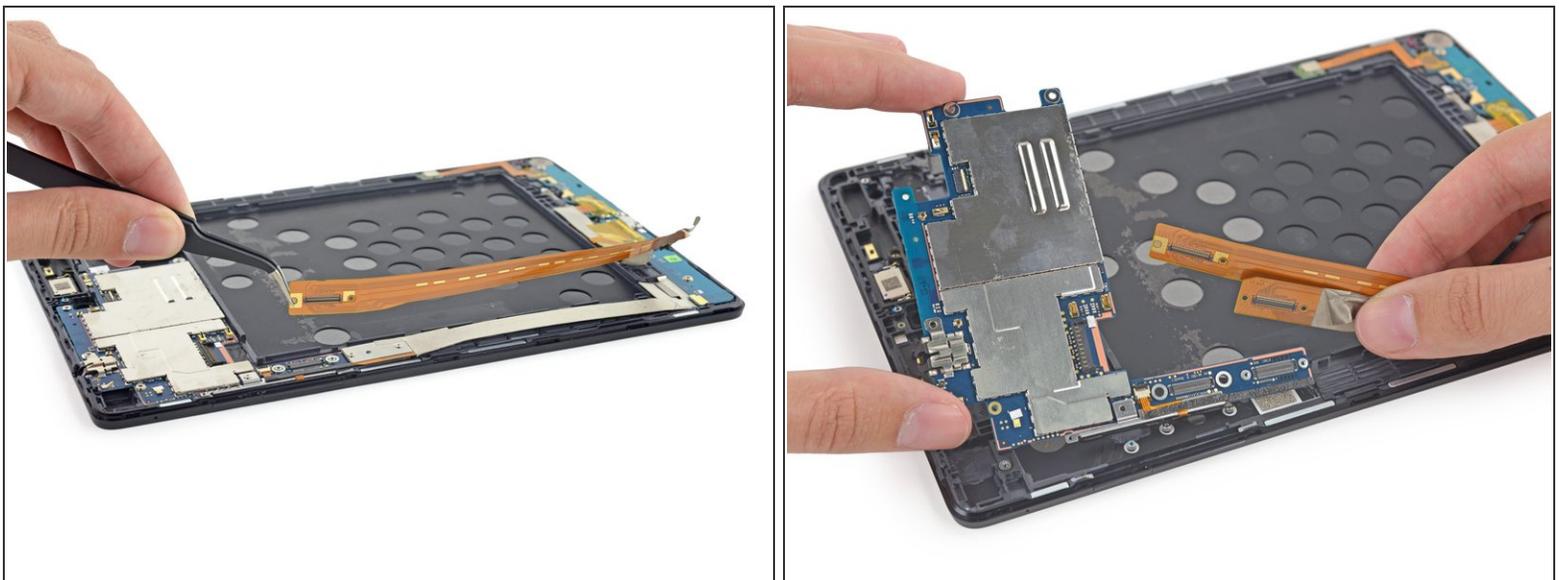
- We're starting to notice that a lot of this teardown is peeling tape and unplugging cables. With so many cables to choose from, it's time to just pick one and start unplugging.

- Revealing...another cable!

- But at least the motherboard is free now.

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Step 11
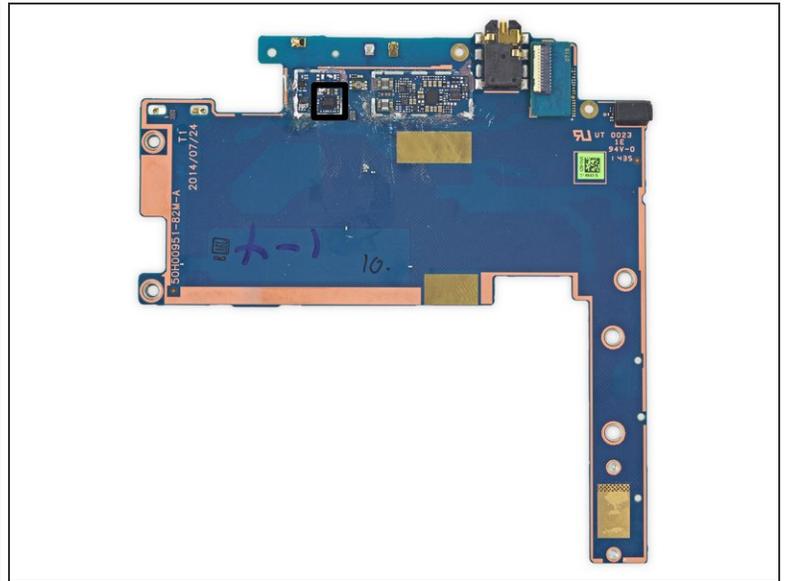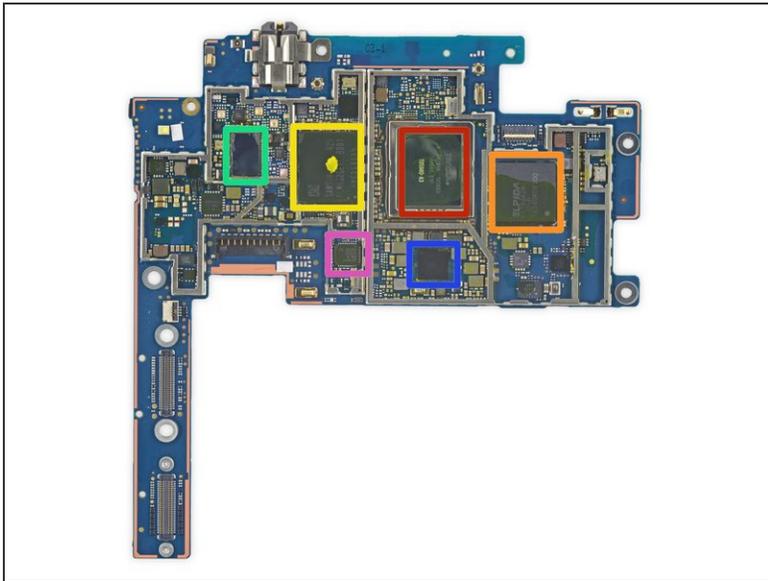
- Prominent ICs on the motherboard:

  - NVIDIA Tegra K1 Dual Denver 64-bit Processor (labeled as T4K885 01P TD590D-A3)

  - Elpida/Micron Technology FA164A2MA 16 Gb (2 GB) RAM

  - Samsung KLMAG2GEAC 16 Gb eMMC NAND Flash

  - Broadcom BCM4354XKUBG MIMO 5G Wi-Fi 802.11ac/Bluetooth 4.0/FM Module

  - Texas Instruments TI47CFP91 T65913B3D9

  - 20795P1 KML1G TD1431 402391 1W

  - Broadcom BCM4752 Integrated Multi-Constellation GNSS Receiver

Step 12

- We continue our quest to remove components from the Nexus 9.

- Up next is the micro-USB port board. Removing a few screws and disconnecting a ribbon cable allows us access to the board.

Step 13
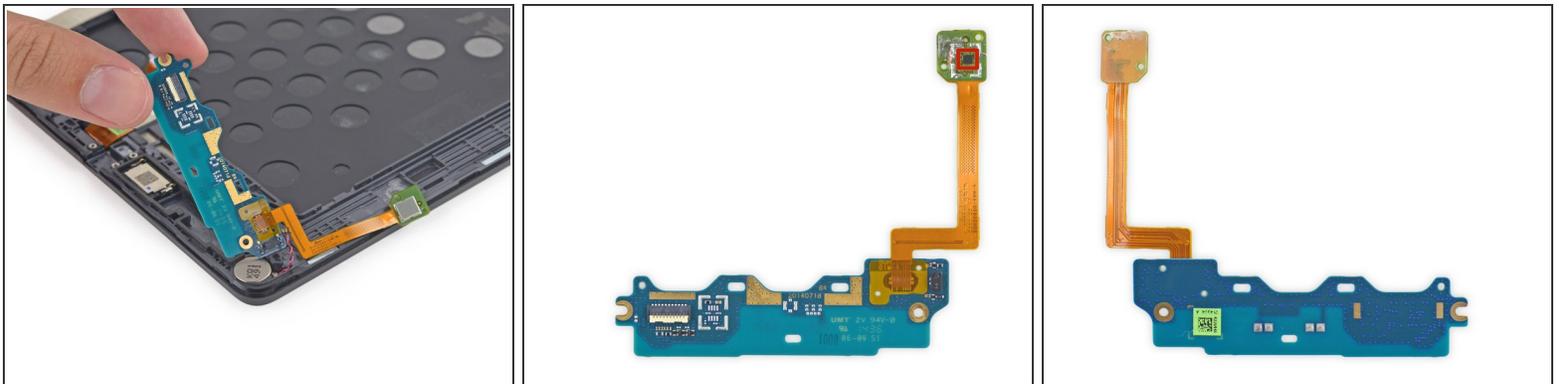
- Yet another board! This guy connects the motherboard to the lower speaker, vibrator, and a mysterious loner component, well off the board on its own cable...

- Mystery solved: it's an Asahi Kasei AK8963 3-axis electronic compass, like we saw in the Nexus 5 — probably off in lonertown to avoid electromagnetic interference from the rest of the device.

Step 14

- It appears that the multitude of tiny boards we just removed had more of a purpose than just being annoying—two of them seem to form the backs of speaker boxes, for the front-facing stereo speakers.

- We're no audio experts, but these speakers look a lot more like low-volume earpiece speakers than the far-heftier speakers found in the latest iteration of the iPad Air.

Step 15

- Ladies and gentlemen, please give a warm welcome to our friend Jimmy! Jimmy is here to do what he does best: help "escort" components out safely.

- With Jimmy's help, we extract the vibrator from its cavity on the display assembly.

  - Nothing new here—it looks like HTC isn't trying to compete with Apple's hip new tech.

Step 16
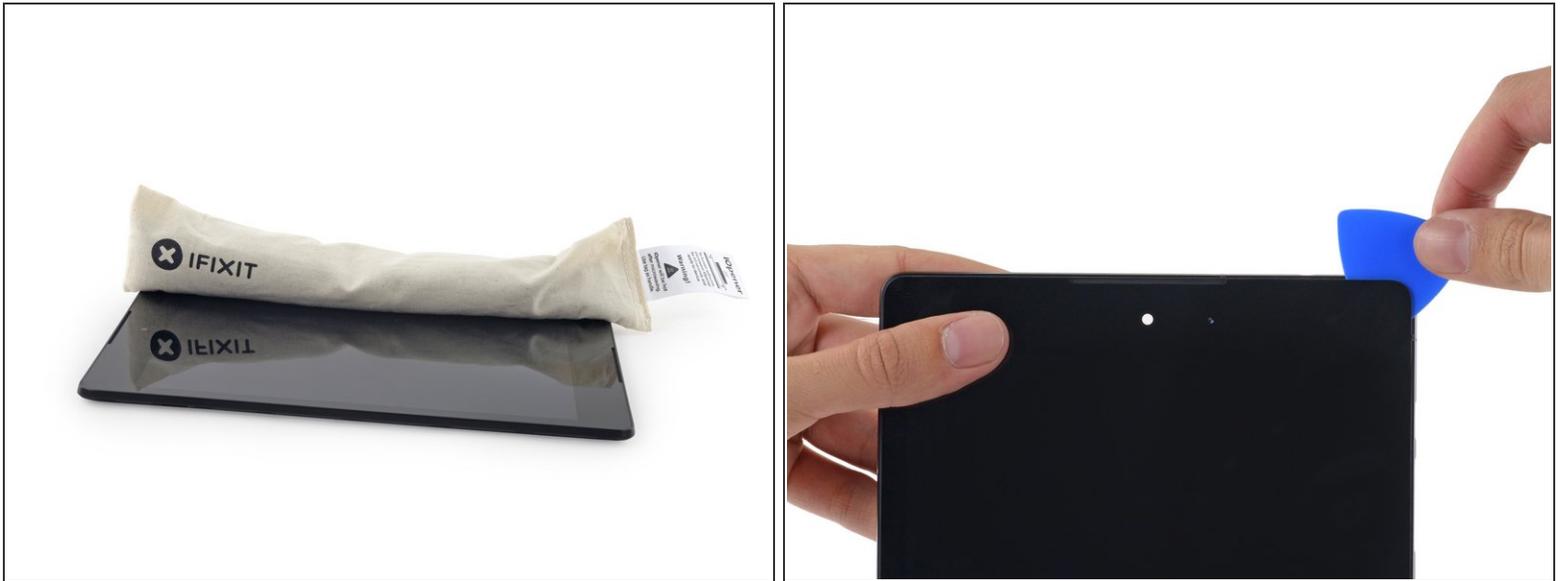
- The moment of truth is upon us: will we be able to separate the LCD from the display assembly? The answer is *yes, however*—it requires an insane amount of heat, patience and prying.

- This is some of the toughest adhesive we've ever encountered in a tablet—on par with, though in lesser quantity than, the infamous Surface Pro.

Step 17

- With the aid of the iOpener, we are indeed able to separate the LCD from the display assembly.

- Hidden behind the LCD are a few ICs:

    - Synaptics S7504B 43210570 Touchscreen Controller

    - C54B M46956 422

Step 18

- Nexus 9 Repairability: **3 out of 10** (10 is easiest to repair)
  - The rear case is secured with clips, so it can be easily removed without heat or tools (just don't lose your rear-facing camera).
  - The battery is easy to get to, but glued in place. Thankfully, the adhesive is not so strong as to require heat to separate.
  - The interior is a maze of tape and thin, delicate cables, making disassembly and reassembly difficult and perilous.
  - The LCD is fused to the front glass, so you'll need to replace both components in the event of a cracked screen.
  - On top of that, the display glass is ~~insanely~~ very solidly glued to the midframe, making the replacement difficult unless you can source the whole assembly.

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