



Microsoft Surface Pro 2 Teardown

Microsoft Surface Pro 2 tablet teardown, October 22, 2013.

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INTRODUCTION

Today, Microsoft adds a new surface to their tablet line. No, not a third dimension—leave those 3D glasses at the theater. Instead, let your friends at iFixit break out the X-ray specs and show you what's inside the new Surface Pro 2.

Want to take a look-see into more iFixit fun? Peer into our [Facebook](#), look through our rose-tinted [Instagram](#) lens, or peek at our [Twitter](#).

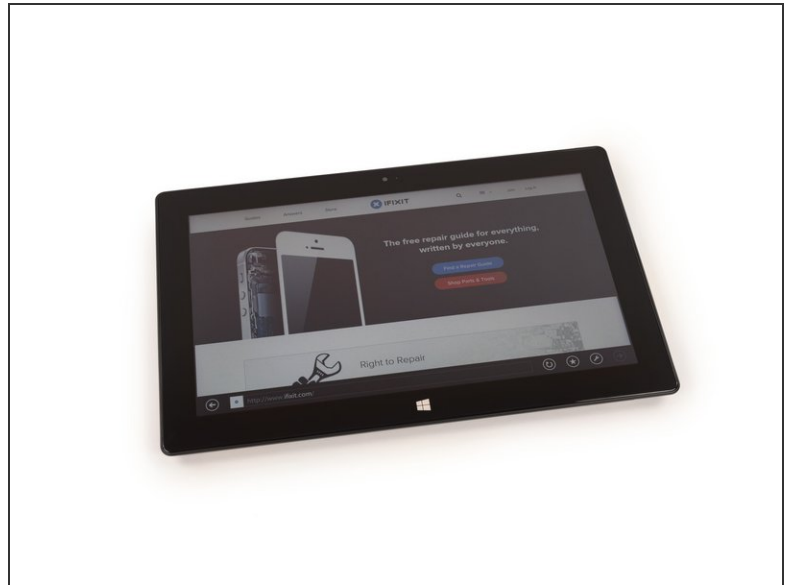
[video: <https://www.youtube.com/watch?v=ST2LyvYLvp8>]



TOOLS:

- [Heat Gun](#) (1)
 - [iFixit Opening Picks set of 6](#) (3)
 - [Spudger](#) (1)
 - [T3 Torx Screwdriver](#) (1)
 - [T4 Torx Screwdriver](#) (1)
 - [T5 Torx Screwdriver](#) (1)
 - [Tweezers](#) (1)
 - [Magnetic Project Mat](#) (1)
 - [Plastic Cards](#) (1)
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Step 1 — Microsoft Surface Pro 2 Teardown



- What's beneath the surface of Microsoft's latest tablet? A fair number of puns, but also some familiar, and improved, hardware:
 - 10.6 inch ClearType Full HD Display with a resolution of 1920 x 1080
 - 4th generation Intel® Core™ i5 Processor
 - Wi-Fi (802.11a/b/g/n) + Bluetooth 4.0 Low Energy technology
 - 64/128 GB or 256/512 GB storage capacity
 - 4 GB RAM (models with 64/128 GB storage) or 8 GB RAM (models with 256/512 GB storage)
 - Two 720p HD cameras, front and rear-facing
 - Full-size USB 3.0, Mini DisplayPort, and microSDXC card reader

Step 2



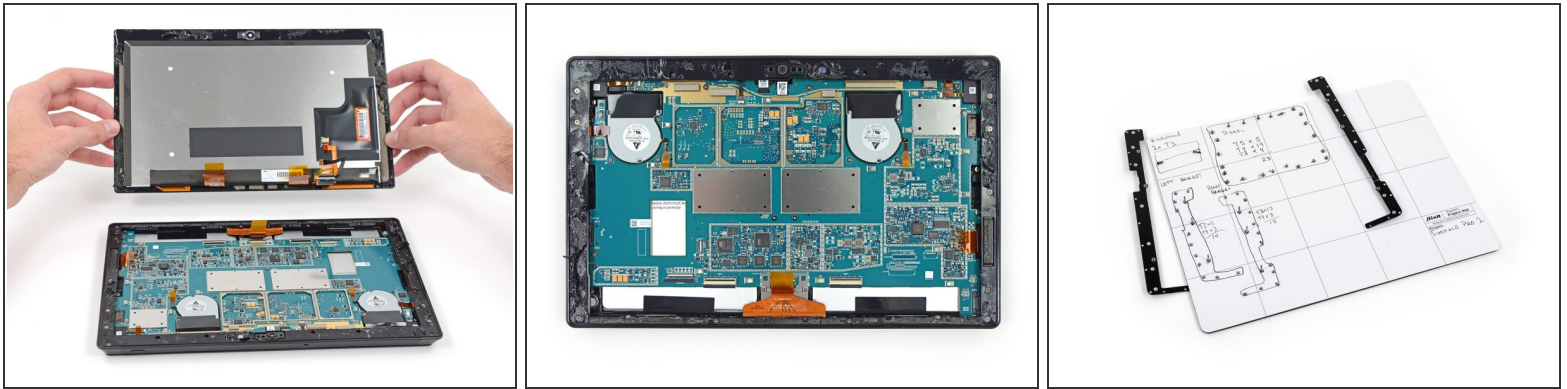
- The Surface Pro 2 sports a 2-stage kickstand, with options for a 24 or 40-degree viewing angle.
 - Oh, how kickstands have progressed [since we were kids](#) ...
- The kickstand is secured with two screws. Happily, our new Pro Tech Screwdriver Set includes the perfect T5 Torx driver to reach in and get this teardown started.
- The kickstand comes off with little fuss, but if the [previous model](#) is any indication, repairability issues will soon begin to ... show themselves.

Step 3



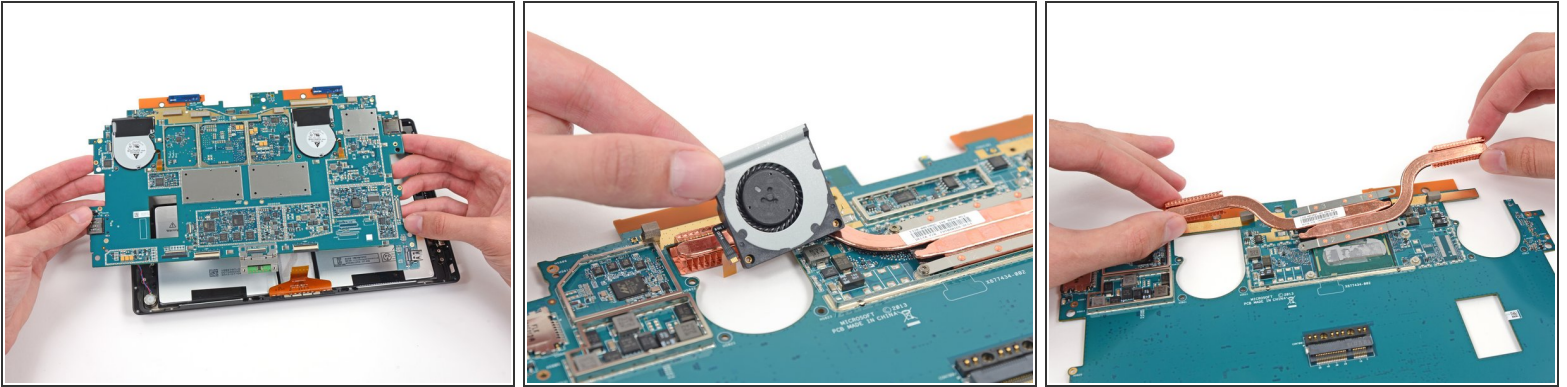
- As pacifists, we prefer our trusty [iOpener](#). But when pushed, we're not afraid to push back with [the big \(heat\) guns](#).
- Time to poke a [plethora](#) of picks under the now-molten adhesive. The use of oodles of dainty picks over brute force ensures our ribbon cables' protection.
- ① Let the record show that you can fit at least 21 [iFixit Opening Picks](#) under the display of the Surface Pro 2.
- We slowly but surely free the Surface Pro 2's display, trapped like [a baby diplodocus in a treacherous tar pit](#) of black adhesive.

Step 4



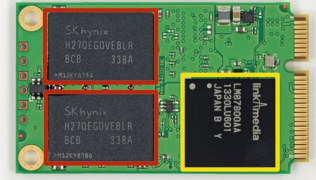
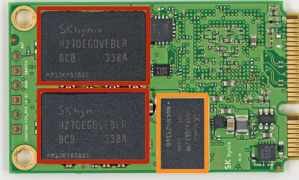
- We flick aside four ribbon cables, and with that, this tablet's internals are revealed to the world.
- At first glance things look eerily similar to last time, although the motherboard is a pretty new shade of ...[blue? Green?](#)
- Before we can poke or prod any components, we'll first have to extract the dozens of screws holding this sucker together.
 - And whaddya know—it's the same [52 screws](#) (of 3 different sizes) seen in the previous generation, holding in a plastic bezel and two metal brackets.
- ⓘ As much as we love screws, 52 seems like overkill, and we've only just scratched the...exterior of this device.

Step 5



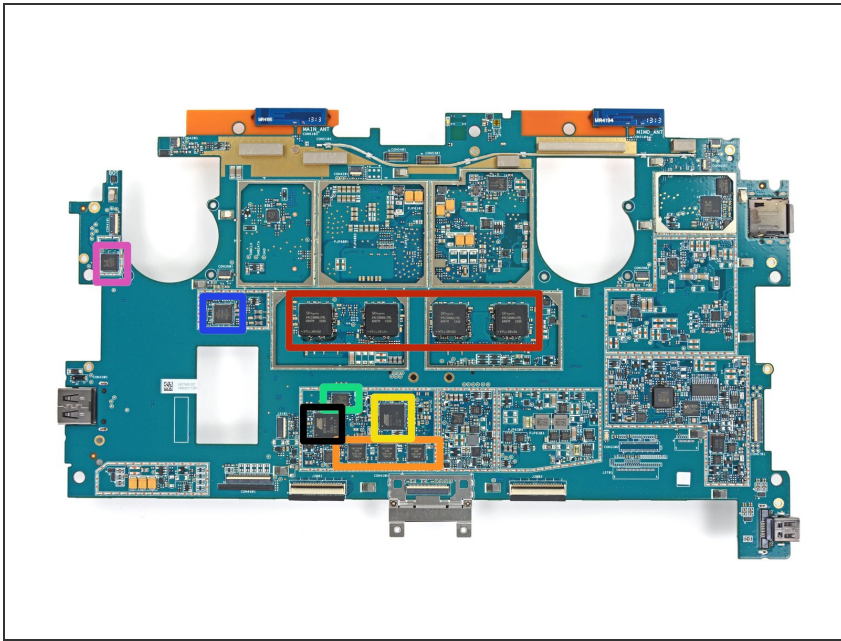
- [Finally](#), the motherboard is free and we can get at the fun stuff.
- Changes to the cooling methods from the original Surface Pro are strictly software-based: the fans [remain the same](#), but [run less frequently](#) to minimize power usage.
- If you fancy a little copper with your tablet, the Surface Pro 2 has it: a notebook-worthy heat sink rounds out the cooling.

Step 6



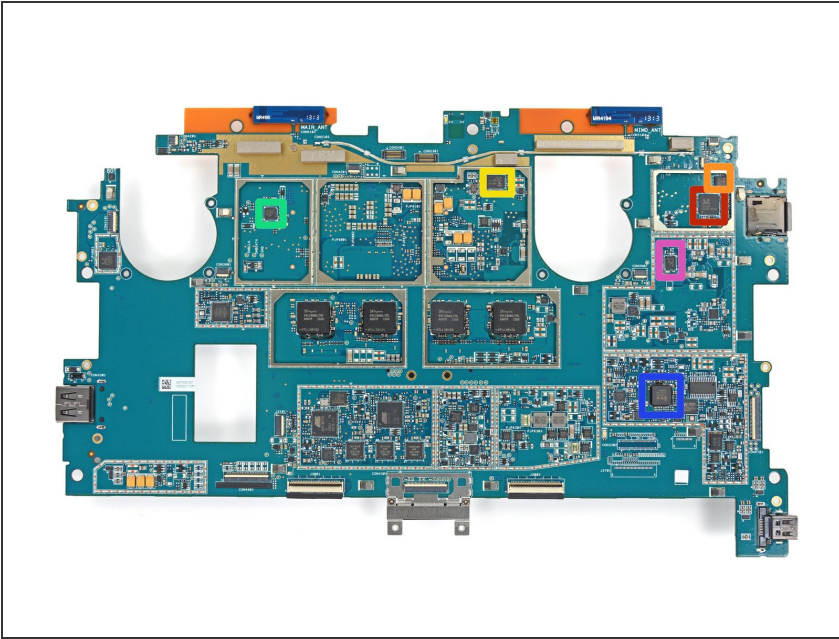
- We've got storage! This time around, Microsoft shifts from a Micron/Marvell combination to one single IC manufacturer, SK Hynix.
- [SK Hynix HFS128G3AMNB](#) 128 GB mSATA 6.0 Gbps SSD, using:
 - SK Hynix [H27QEGDVEBLR](#) 32 GB NAND Flash (four ICs for 128 GB total)
 - SK Hynix [H5PS2G63JMR](#) 32 MB DDR2 SDRAM
 - Link A Media LM87800AA SSD Controller

Step 7



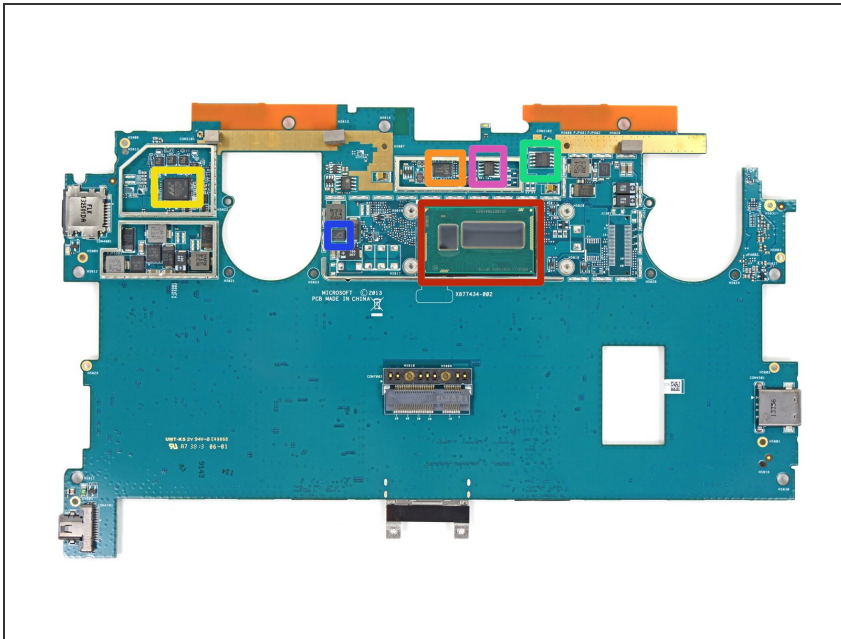
- The ICs on the front side of the motherboard may look like little black squares on the (ahem) outside, but underneath they house some high-tech brainpower:
 - SK Hynix H9CCNNN8JTML 8 Gb (1 GB) LPDDR3 RAM (total of 4 * 1 GB = 4 GB)
 - Atmel MXT154E Touchscreen Controllers
 - Atmel [UC256L3U](#) 256KB Flash, 32-bit AVR Microcontroller
 - Winbond [25X40CL1G](#) 4M-bit Serial Flash
 - Parade PS6625
 - Realtek ALC3230 Audio Codec
 - Atmel U1320J

Step 8



- Yet more ICs adorn this side of the motherboard:
 - Realtek RTS5304
 - MXIC MX25L4006EZNI 4Mbit SPI (Serial Peripheral Interface) Flash
 - Novatek NT96132QG
 - Texas Instruments [TPS5162](#) (ACTIVE) 2-Phase DCAP+ Step-Down Controller
 - ITE IT8528VG
 - Texas Instruments [TPS51367](#) Integrated FET Converter with Ultra-Low Quiescent

Step 9



- The [ICy party](#) continues on the back side of the motherboard:
 - Intel Core [i5-4200U](#) Processor
 - Novatek NT96132QG
 - Marvell Avastar [88W8797](#) Integrated 2x2 WLAN/Bluetooth/FM Single-Chip SoC
 - Winbond 25Q128FVSQ Serial Flash presumably the next generation of the previous [25Q64FV](#)
 - Texas Instruments [TPS51367](#) Integrated FET Converter with Ultra-Low Quiescent
 - Winbond [25X05CL](#) Serial Flash

Step 10



- Microsoft *still* adheres the battery to the rear case and *still* warns users not to remove it.
 - ⓘ Pretty ironic, considering they clearly know their way around a user-friendly means of securing a battery—[screws](#).
- If you're looking for the secret of the Surface Pro 2's juiced-up battery life, look elsewhere: this is the exact same "Escalade" 42 Wh battery we saw earlier this year.
 - ⓘ Instead, look to better power management and the [Haswell i5 chip](#), which ensures that the tablet drinks in moderation.
- The two battery cells are wrangled by a Texas Instruments [BQ30Z55](#) ~~cowpoke~~ battery pack manager.

Step 11



- Microsoft Surface Pro 2 Repairability Score: **1 out of 10** (10 is easiest to repair)
- The battery is not soldered to the motherboard—so it can be replaced without soldering, if not without great difficulty.
- The SSD *can* be replaced, but not without first risking damage to the tablet simply by opening it.
- There are *over 90 screws* inside this device. Mechanical fasteners are great, but frankly, we draw the line at 89.
- The display assembly consists of a fused glass panel and LCD, and is extremely difficult to remove and replace.
- Tons of adhesive hold everything in place, including the display and battery.
- The delicate and arduous opening procedure leaves no room for mistakes: one slip-up, and you'll likely shear one of the four ribbon cables in the edge of the display.

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