



VUDU BX100 Teardown

This guide will detail the disassembly and components of a VUDU BX100 set-top box.

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INTRODUCTION

The VUDU BX100 is similar to products like Apple TV and Roku, in that it plays media content delivered over an internet connection. The box is specifically designed for VUDU's online video rental/purchase system, but also includes some functionality for other internet services like YouTube and Pandora.

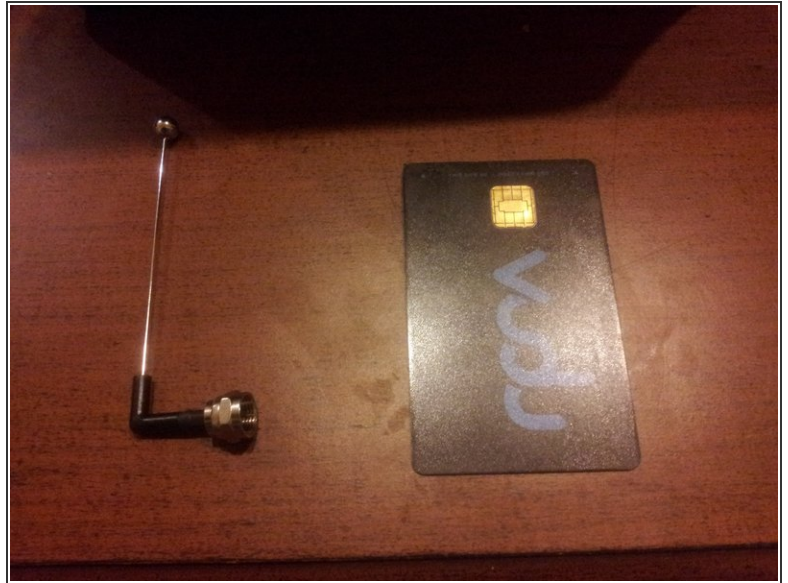
In this guide, we'll be dissecting this rather heavy machine. By the end of this guide, you'll know how to disassemble the machine (basically), as well as exactly what makes the system tick.



TOOLS:

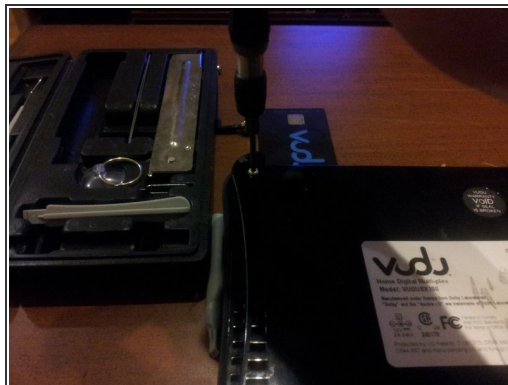
- [T10 Torx Screwdriver](#) (1)
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Step 1 — VUDU BX100 Teardown



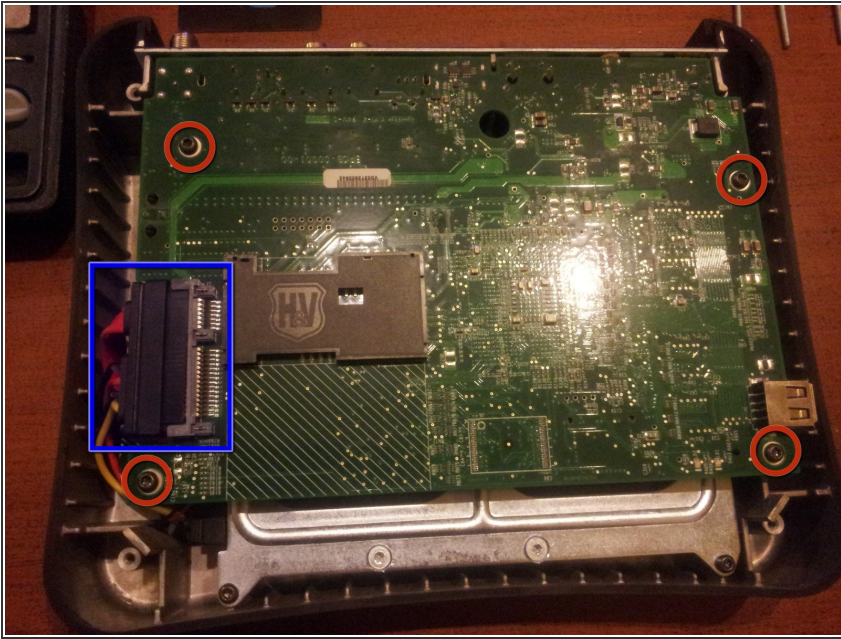
- Here we have the VUDU BX100 (and beside it my handy dandy toolkit with all my Torx bits).
- First things first: take out the encryption smart card from the front and the RF remote antenna from the back.

Step 2



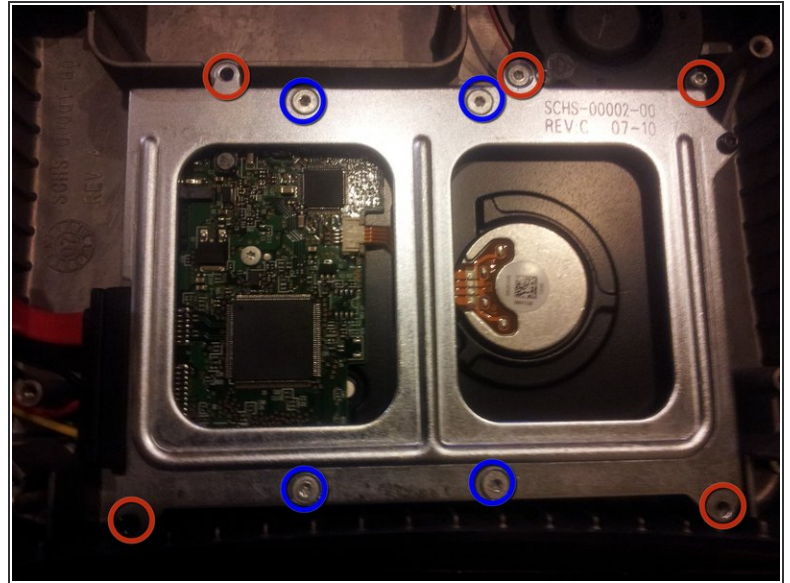
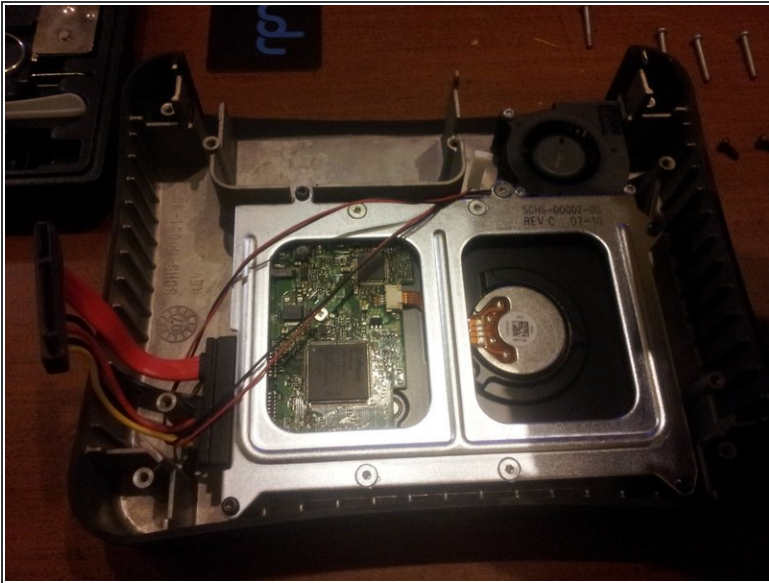
- There are five Torx T10 screws holding the bottom to the top: one on each corner and a fifth underneath that "Warranty void if broken" seal. Unscrew all of them.

Step 3



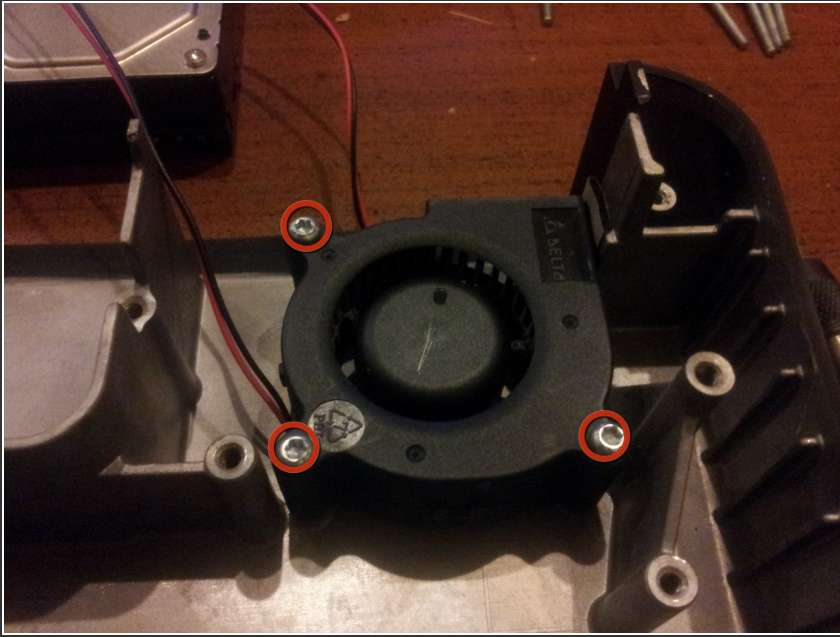
- Next piece to remove is the mainboard.
 - Unscrew the four T10 screws.
 - Detach the combined SATA data/power connector.
- Lift the board out. There's a small connector still attached that connects to the fan; disconnect it as you see it.

Step 4



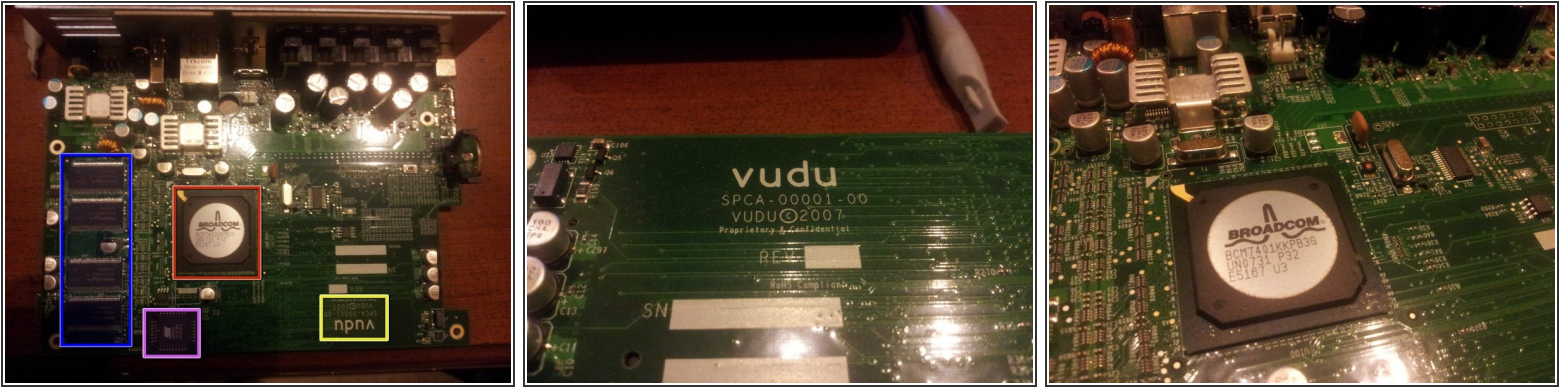
- Next is the hard drive. By now, it should be apparent that the only screw you'll ever deal with in this box is a Torx T10.
- Start with the four corner screws and the one random outermost screw.
- You should be able to lift the hard drive assembly right out of the chassis. Unscrew the remaining four screws to detach the structural plate from the drive itself.

Step 5



- Last disassembly step is to unscrew the three T10 screws holding the fan down. Once that's done, the fan should lift straight out.

Step 6



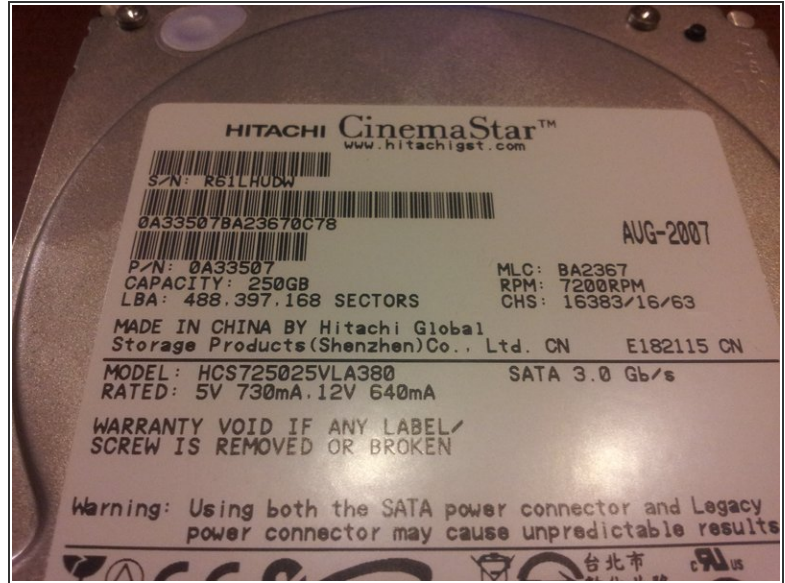
- Now that everything's free, let's take a good hard look at this mainboard.
- Surprisingly, this board is actually branded by VUDU, indicating that VUDU had at least some part in the electronic design stages. Interesting; I was expecting all the internals to be manufactured by other vendors, circuit board included.
- The most prominent chip is the Broadcom BCM7401 system-on-chip, which contains, among other things, a 300 MHz 32-bit MIPS processor, a 64-bit DDR RAM controller, dual USB, ethernet, video encoding/decoding, and (unimplemented on the BX100) IEEE 1394.
- The other highlighted chips (blue and violet) are detailed in the next "step".

Step 7



- Soldered onto the board are four Nanya NT5DS16M16CS DDR RAM chips. The specific variant of these chips is NT5DS16M16CS-5U; I wasn't able to find data specific to this chip, but its cousin - the NT5DS16M16CS-5T - is 16Mb per chip (I think; the datasheet's a bit confusing).
- And then... is that a BIOS chip? And a CMOS battery? Given these, getting a dump of the low-level firmware should be straightforward. Stay tuned for that.

Step 8



- Now we'll take a look at the hard drive. It's specifically a Hitachi CinemaStar 3.5" SATA hard drive. 250GB capacity at 7200 RPM. Interestingly, the drive features both SATA-specific and legacy Molex power connectors - strange for a device that shouldn't need it, but great for me as I test the drive and figure out what's inside.
- According to GParted on a Fedora 17 machine, the drive has 10 partitions - three primary partitions and 7 more within an extended partition. One of these extra 7 is a Linux swap partition, meaning that it's very likely that the BX100's OS is Linux-based (so gimme the sources, dangit!).
- The remainder of the partitions, unfortunately, are "Unknown" file systems, meaning that they're most likely encrypted. The encryption data and keys are probably stored in the firmware, in the smart card included with the BX100, or both. For legal reasons, that information probably won't be posted here.

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