

MrChromebox.tech

An unplanned open-source adventure

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Hello!

My name is Matt DeVillier

- 46 years old
- Live in Austin, TX USA
- Wife, 3 cats, 1 dog
- Firmware developer for Starlabs, LTD
- Home theater aficionado
- Likes to tinker with cars



How it all began

- Side hustle building custom HTPCs
- Early user/contributor to XBMC/Kodi
- Tried to turn a Chromebox into a HTPC (~April 2014)

TLDR: I bricked it =/

Early frustrations

- Not a firmware developer
- Not much experience with Linux
- No experience with git
- Stock RW_LEGACY firmware broken
 - USB3 ports non-functional under SeaBIOS
(and the box only had USB3 ports)

Early Successes

- coreboot source reasonably easy to understand
- Developers on IRC very helpful
 - Martin, Aaron, Duncan, other Googlers
- Was able to unbrick (slowly) using a Bus Pirate
- Was able to fix USB issues
- Wrote up instructions for others to replicate my work

Time to learn bash

- People are terrible at following directions
 - Especially copying commands to be run
- Needed to automate the process for flashing firmware and other related functions under ChromeOS

The Firmware Utility Script is Born

```
ChromeOS Firmware Utility Script [2018-07-04]
(c) Mr Chromebox <mrchromebox@gmail.com>
*****
**   Device: Acer Chromebook Spin 11 (R751T) (REEF)
**   CPU Type: Intel ApolloLake
**   Fw Type: Stock ChromeOS
**   Fw WP: Enabled
*****
**   1) Install/Update RW_LEGACY Firmware
**   2) Install/Update BOOT_STUB Firmware
**   3) Install/Update Full_ROM Firmware
** [WP] 4) Set Boot Options (GBB flags)
** [WP] 5) Set Hardware ID (HWID)
**   6) Remove ChromeOS Bitmaps
**   7) Restore ChromeOS Bitmaps
**   8) Restore Stock BOOT_STUB
**   9) Restore Stock Firmware (full)
*****
Select a menu option or
R to reboot P to poweroff Q to quit
```

It started small

- Supported (4) Haswell Chromebox models
- coreboot + SeaBIOS
- Automated install of OpenELEC (Linux + Kodi)

Then grew big!

- Supports 300+ devices
 - All x86_64 ChromeOS devices (except first 2)
- RW_LEGACY support
 - Dual boot ChromeOS + Linux
- Full coreboot + edk2 image
 - Upstream coreboot + tweaks
 - Custom fork of edk2 (now coreboot default)

Project Goals

- 2nd life for EOL devices
- Provide full owner control of device
- Ensure broad OS support for devices running coreboot

Q&A