Run upstream coreboot on an ARM Chromebook

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Who am I?

- ▶ (Economic) Mathematician by studies at TU Berlin
- ▶ Free Software enthusiast
- ▶ Active in coreboot since 2005 (still LinuxBIOS back then)
- ▶ System architect at Max Planck Institute for Molecular Genetics

Google Chromebooks

x86

ARM

Samsung Chromebook Plus (RK3399)

See thread *Current, BLOB free laptop available Europe?* on coreboot mailing list

- ▶ Device with Rockchip RK3399, but only available in the USA
- ▶ No BLOBs in firmware

Linux support

BLOBs required for

- ▶ hardware video decoding
- ▶ Wi-Fi and Bluetooth
- ▶ GPU support

Acer Chromebook R 13

- ▶ On October 24th, 2017, 384 € at notebooksbilliger.de

Specifications

Processor	Mediatek MT8173C 4x 2.10 GHz
Cache	1 MB
RAM	4 GB LPDDR3, PC3L-12800 (1600MHz)
Format	2in1 Convertible
Display size	33 cm (13,3")
Display	Acer CineCrystal™ Multi-Touch Full-HD IPS Display with
Resolution	1920 x 1080 Pixel (Full HD)
IGD:	PowerVR GX6250
eMMC	32 GB
Dimensions	326 x 228 x 15,5 mm (B x T x H)
Weight	1,49 kg
Battery time	up to 12 hours
Capacity	4.670 mAh

BLOB status

- PCM firmware in ARM Trusted Firmware
- Maybe USB C device

Linux support

- hardware video decoding
- Wi-Fi and Bluetooth
- GPU support

Mediatek device and coreboot

- Google Oak reference design
- Acer Chromebook R 13 is variant Google Elm

TLDR

```
$ make crossgcc-arm crossgcc-aarch64 CPUS=160
$ make menuconfig
```

Select Google Elm, Chrome OS, and Depthcharge

```
$ make
```

Copy to Chromebook, deactivate write protection.

```
$ flashrom -p internal -w coreboot.rom
```