Debian on the Raspberriescape

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What is a Raspberry

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In case you have been living under a rock since 2012... No shame in admitting it! Some of my best friends live under a rock...

- Small form-factor SBC
- Originally targetted at the educative sector
- Sparked a revolution in amateur electronics projects
- Defined a form factor and price range for hackable ARM devices for everyone
Currently existing models

1A / 1B / Zero / Zero-W  256/512 MB RAM, ARMv6, 700MHz–1GHz, BCM2835. Zero-W includes WiFi, Bluetooth.

2  1GB RAM, ARMv7, 900MHz–1.2GHz, BCM2836 / BCM2837

3A / 3B / 3B+  1GB RAM, ARMv8 (64 bit), 1.4G, BCM2837B. 3B+ includes WiFi, Bluetooth.

4B  ARMv8 (64 bit), 1.5GHz, 1/2/4GB RAM, BCM2711
How is it used

Most Raspberry users get to know it using Raspbian

Debian-derived distribution (+ clearly acknowledges Debian. Good!)

UI: PIXEL (Pi Improved X-Window Environment, Lightweight — LXDE derivative)

Includes some non-free software (i.e. Mathematica, Minecraft, ..?)

Single architecture: Patched, fully recompiled armhf (to support ARMv6)
  - Models 3 and 4 could run 64 bits, but Raspbian does not provide it
Why not Debian?

- Back in 2012, there was no mainline kernel support for the BCM2835 used in the first generation RPi
  - BCM2835 is *almost* armhf-compatible, but not entirely
  - ARMv6, not ARMv7 (needed by Debian’s armhf), so we use armel (much slower)
  - Not an issue in RPi 2 onwards

- Broadcom CPUs start up / transfer execution *weirdly* and require a non-free binary blob to boot
  - At power-up, GPU has to transfer execution to the CPU
  - … Not supported by us
Michael Stapelberg packaged and maintained the booting binary blob as raspi3-firmware (2016-12-06)
Not part of Debian proper (non-free) :-(
~20 uploads in 2.5 years
Should be soon (next upload already due!) renamed to raspi-firmware
Packaged binary blob

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Good news: Raspberry Pi 4 seems not to require this blob!
(to be confirmed)
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Preamble

What are we doing about it?

That’s it

raspi3-image-spec (→ salsa://raspi-team/image-specs)

- Project also started by Michael Stapelberg
  - First commit in October 2017
- Recipe for vmdb2 to create a working, minimal image allowing for easily starting use of the Raspberry Pi
  - Easy to follow + understand
  - Originally targetting only the RPi3, as it was believed to be the only model supported by the kernel (ARM64)
Current status

- We now support the full RPi3 lineup!
  - Darn, they just announced the RPi4 :-(
- Hardware support seems to be complete
  - Modulo wireless networking in RPi0W
  - But then again, not tested enough
- Images available at my people.debian.org page
  - Linked from https://wiki.debian.org/RaspberryPiImages
Since I inherited the project from Michael, it has always been called *unofficial preview* images.

- I suggest dropping the *preview* part
- And am interested in working to drop the *unofficial* as well (but not yet ready)

- Hardware support
- Automated building (CI?)
- RPi4 support?
  - I heard rumors of it reaching the mainline kernel...
Thanks!

I am the only one at DebConf, but I am for sure not the one who knows best about this project. I want to explicitly thank:

**Michael Stapelberg**  Starting the effort to support the RPi family with a (mostly) clean Debian, and coming up with a good way to build the images

**Romain Perier**  Providing lots of support for the firmware and kernel

**Lars Wirzenius**  For designing *vmdb2*, and being open to our requests on it
That’s it

Thanks!