

boot/loader

Booting Linux and Nothing More

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Outline

Boot process

Our work

Questions

Boot Stages

- ▶ Firmware
- ▶ Bootloader a.k.a. SPL
- ▶ OS

Well known bootloaders

- ▶ Barebox
- ▶ Redboot
- ▶ U-Boot

Common bootloader parts

- ▶ Platform setup
 - ▶ DRAM
 - ▶ voltages and clocks
 - ▶ basic peripherals (console)
- ▶ General purpose code
 - ▶ shell and other tools
 - ▶ device drivers
 - ▶ file systems
 - ▶ network stack
 - ▶ os loader

Odroid XU4

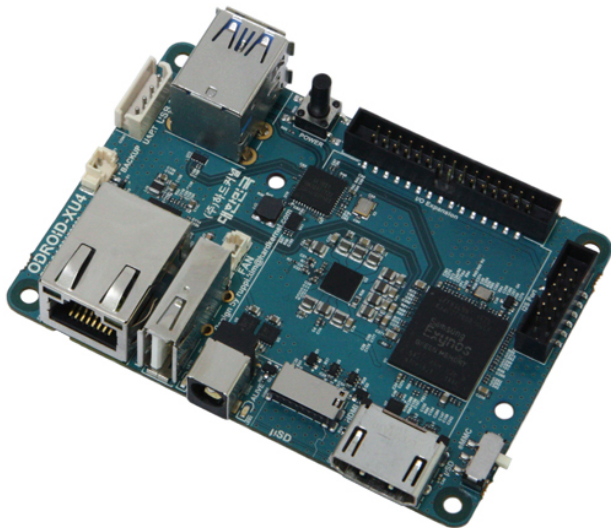


Figure: Odroid XU4 with Exynos 5422 SoC, Source: wiki.odroid.com

Blobs

- ▶ `bl1.bin.hardkernel`
- ▶ `bl2.bin.hardkernel.1mb_uboot`
- ▶ `tzsw.bin.hardkernel`

boot/loader

- ▶ Platform setup
- ▶ Squeeze kernel and initramfs into 1 MiB
- ▶ Make sure `kexec(2)` works
- ▶ Provide userland tools

Two stage userland

- ▶ hsinit
- ▶ u-root

Status

Here

- ▶ `make bootImage`
- ▶ `kexec(2)` using `kexec-tools`

There

- ▶ USB flashing tool
- ▶ `u-root kexec(8)` support on ARM

Profit?

- ▶ Less effort
- ▶ More flexibility
- ▶ Better code quality

Key features of boot/loader

- ▶ Focused on ARM
- ▶ Tool for vendors
- ▶ Part of the Linux kernel

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Questions

¿???

Thank you

Links

- ▶ [Bootstrapping a slightly more secure laptop](#) by Trammel Hudson
- ▶ [Firmware, The Final Frontier](#) by Ronald Minnich
- ▶ [u-root](#)
- ▶ [LinuxBoot](#)
- ▶ [NERF](#)
- ▶ [RFC Patchset](#)