The PinePhone: Hardware, Software and Next Steps

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Disclaimers

- Not speaking for Red Hat
- Not speaking for pine64 or purism
- Helping to run the admin parts of the Fedora mobility special interest group
Fedora Mobility SIG

- Bring Fedora to mobile devices
- Things between IoT and laptops
- Some popular form factors:
  - Mobile Phones
  - Tablets
  - Wearables (watches, etc)
Hardware

- Android is already using the Linux kernel right?
- Old source, large patches, closed drivers
- Locked bootloaders
- Mobile phones: 72% android, 26% iOS
- Regulatory hurdles
- Interoperating with wireless providers
Hardware

- Mobile phone refresh cycle slowing
- Innovations slowing and stabilizing
- 1/3rd of the world population owns a smartphone
- Consumers are wanting longer support cycles for their existing hardware
- In 2018 smartphone sales stopped growing
Hardware

- Nokia N800 - 2007
- Neo FreeRunner (I had one!) - 2008
- Nokia N900 – 2008
- FirefoxOS Flame (this one too!) – 2014
- Ubuntu Touch phones - 2015-2016
- Purism Librem 5 – 2017 to present
- Pine64 pinephone – 2019 to present
Hardware

- The pinephone:
- 5 years of production
- Allwinner A64 processor (quad core), Mali-400 MP2 GPU
- 5mp camera (back), 2mp camera (front)
- Usb-c port
- 3000mAh battery, supporting 15W fast charge (same battery as galaxy J7, replaceable)
- 720×1440 5.95" IPS LCD
Hardware

- Pinephone (cont):
  - Can boot from microSD card
  - 2 or 3 GB memory, 16 or 32GB eMMC
  - 150$ (2/16) or 200$ (3/32) with usb-c dock
  - 6 hardware switches: modem / wifi&bt / microphone / rear cam / front cam / headphone
- Pogo pins
Hardware
Hardware

- Serial console: set switch 6 and use serial headphone cable
- Modem is a Quectel EG25-G: 256 MiB DRAM, 256 MiB NAND, and a single Cortex-A7 CPU clocked up to 1.3GHz
- You can ‘talk’ to the modem using adb once the modem is unlocked.
- Completely open firmware possible
Hardware

- Some upcoming add-ons:
- Keyboard / back cover / battery replacement:
- Firmware via i2c bus.
- ~6000mAh battery (plus internal one)
- Connects to pogo pins
Hardware
Hardware
Hardware

- Upcoming hardware:
  - Wireless charging back cover
  - Connects to pogo pins
  - Replaces existing plain cover
Software

- Distributions:
- Too many to list, with varying amount of support
- PostmarketOS, manjaro, mobian, Arch, Ubuntu, Fedora, SailFishOS, etc etc
- Many repackaging megi’s kernel
Fedora Status:
Remix with megi kernel + Fedora userspace.
Vanilla Fedora boots fine, but no connectivity (no wireless/bt/usb/modem)
Userspace is somewhat slow, and has gaps, but is improving steadily.
Software

- Kernels:
- Megi kernel
Software

- Userspace / Desktops
- Mainstream: Gnome, Xfce, k5-plasma
- Mobile oriented: Phosh, plasma-mobile
- Aarch64 flatpaks from flathub.org or fedora work fine.
Software

- Applications for mobile (all already in main Fedora repos):
  - Megapixels – camera
  - Calls – phone application
  - Chatty – sms/matrix
  - Feedbackd – led and vibration
  - Squeekboard – virtual keyboard
Software

- The Daily Driver Dream (things we have or almost have):
- sms/MMS/Voice calls – chatty / calls / MM
- Ebook readers – calibre works ok
- OTP applications
- mastodon/twitter clients
- Podcast apps – gpodder
- RSS readers – newsflash works fine
- Maps – gnome maps works (but no location)
Software

- Things we need for userspace:
  - clocks/alarms application
  - Weather application
  - Email?
  - Encrypted disk / installs
  - Good music player / mpd client
Software

- Hotspot
- Android emulation for narrow use case applications (drone control, bank apps, discord, etc)
- Better pictures
The Future

- We really need to get something upstreamed in the kernel for connectivity!!!!
- More mainline usable devices once that happens.
- Improvements to userspace after that
- Vanilla Fedora images once we can in both phosh (gnome) and plasma-mobile (kde)
- Move to ostree based image for easy rollbacks
Q&A

Questions? Discussion?