LINUX PLUMBERS CONFERENCE September 20-24, 2021

Improving AOSP Devboard Collaboration

John Stultz <john.stultz@linaro.org>

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AOSP Devboards

The smallish set of devices “in AOSP”

- ~~HiKey~~, HiKey960, DB845c, RB5
  - Linaro Consumer Group maintained
- BeagleBoard x15
  - Linaro Consumer Group/TI maintained
- ~~Poplar~~ (Android TV)
  - Linaro HiSiLT submitted
- VIM3/VIM3L (Yukawa) (Android TV)
  - Baylibre & Android TV team maintained

Community AOSP Devboards/Devices

There's a number of "out of AOSP" efforts on devboards or devices against AOSP

- GloDroid - https://github.com/glodroid/glodroid_manifest
  - SUNXI(Orange PI/PinePhone) and Broadcom(RasPI 4) devices
- Upstream PocoF1 - https://github.com/pundiramit/device-xiaomi-beryllium/blob/master/README.md
- Upstream OnePlus6 - https://github.com/calebccff/android_device_generic_sdm845
- 96boards - https://android-git.linaro.org/platform/manifest.git/log/?h=dragonboard
  - db410c, db820c, etc
- Android-rpi - https://github.com/android-rpi
- SoMainline - https://somainline.org/
- Others?

(Minor) Issues with being “in AOSP”

- All submissions require Google developer’s review and help with merging
  - Requires lots of interactions with Google developers
  - Presubmit testing (Treehugger) is fickle, so regularly see false failures
  - No external visibility for presubmit debug logs
  - Presubmit approval expires in 2 days (have to grab Google dev attention again)
  - This whole process makes AOSP devboards a bit of a burden to Google developers
- Theoretical benefit from being “upstream in AOSP” doesn’t quite play out like the Linux kernel
  - Devboards not used for presubmit testing, so regressions normally caught after changes land
  - Google developers are often very kind and helpful in resolving any regressions their changes caused, but sometimes things break and we’re on our own.

Keeping up with AOSP is Hard

- See my recent talk on this here:
  - https://connect.linaro.org/resources/lvc21f/lvc21f-306
- Dmitry Shmidt did some stats on HiKey project awhile back and found we hit ~2.5 AOSP regressions/bugs per week
  - The boards are good tools for finding AOSP regressions!
  - But take a vacation and find the board doesn't boot anymore
  - Bit-rot is a serious concern
- Linaro leverages experience from HiKey960 for DB845c/RB5 work (& vice-versa)
  - Hit a problem on one, it will often show up on the other
  - Similar knowledge sharing for PocoF1/OnePlus6 enablement
  - Also shared experience with Yukawa effort (Android TV - BayLibre)
    - We borrowed Yukawa audio HAL for DB845c!
- Cross pollination and sharing between efforts is very helpful!

So maybe we should work together?

- Build a bit of a community to share experiences and help in trouble shooting

- Maybe find ways to share effort and create generic solutions

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Idea (#1): An external, AOSP tracking community

- Similar to LineageOS, but AOSP focused instead of Android releases
  - Easy to add boards of different quality levels without tight interlock with Google
  - Need some rules/standards for inclusion and removal

- Similar to GloDroid, in that its at or ahead of AOSP, utilizing upstream branches of AOSP/external/ projects
  - Sort of a proving ground for both upstream software and new devboards

- Benefits:
  - Reduces burden on Google developers for AOSP devboard support
  - Provides a wider array of hardware to folks doing prototype work against AOSP
  - Allows more shared effort cross devices (easier to have single generic HAL projects shared across devices)

Problems...

- Completely Unfunded!
  - Who is willing to pay for hosting/infrastructure?
  - How do we enforce building/booting rules without CI/testing runs?
- Governance
  - Are all the different projects really aligned on goals?
- “In AOSP” devboards not going away
  - Useful to Google for testing/development against internal branches

Idea(#2): Lighter weight collaboration

- Wiki to collect various similar efforts?
- IRC channel or mailing list for collaboration on issues/discussion?
- Shared buglist?
  - Special tag in issuetracker?

Discussion Time!

Thanks so much for Listening!
Comments/Feedback?
John Stultz <john.stultz@linaro.org>