Kernel and bootloader consolidation and upstreaming
Reference Platform Kernel

- RPK used in Reference Platform Build
- Unified support for 96boards and other “boards of interest”
- Merges code from Landing Teams and segment groups
- linux-linaro rebranded?
RPK: The Good

- 4.4
- Single config*
- Mix of UEFI/ACPI and DT platforms
- Enablement of several platforms of interest:
  - CE (Hikey, DragonBoard 410c)
  - EE (D02, Overdrive, APM X-Gene, HP Proliant m400)
RPK: The Bad

- 4.4 + 828 out-of-tree patches
- Many drivers not modular
- Several kernelci.org warnings and failures
RPK: The Ugly

- Terrible maintainer
- Many* patches never posted to the list
- Several hacks to
  - Get around assumptions made about boot architecture (DT vs. ACPI) - 2
  - Get older HW revs to work - 6
  - Workarounds for GIC issues - 2
  - Workaround buggy firmware - 10
Patch-inclusion policy

- Documented on the [wiki](#)
- Demonstrate upstream effort
- Drivers depending on binary blobs to be outside RPK
  - DKMS?
Path into RPK is through LKML

Patchset merged upstream triggers a refresh of the pending patches

Won’t carry patches not going upstream w/o adequate justification (see Policy)
RPK: Statistics (1 / 3)

- Total patches on top of 4.4: 828 (--no-merges)
- CE:
  - 427 (DB410c + 4 other platforms) + 64 (Hikey)
- Enterprise:
  - 256 (D02) + 10 (Seattle + X-Gene) + 6 Hacks
- Remainder: configs, reverts, more hacks
- Roughly 50% under active review*
RPK: Statistics (2 / 3)

$ git diff --stat v4.4..

682 files changed, 131006 insertions(+), 3912 deletions(-)
$ git diff --dirstat=cumulative v4.

4.6% arch/arm64/boot/dts/
11.5% arch/arm64/
  3.2% drivers/gpu/drm/
  6.6% drivers/iommu/
14.6% drivers/media/platform/msm/vidc/
14.6% drivers/media/platform/
  4.6% drivers/scsi/
13.5% drivers/soc/qcom/
  6.6% include/
7.7% sound/soc/qcom/qdsp6/
14.2% sound/soc/

5.1% arch/arm64/configs/
14.0% arch/
  5.9% drivers/iommu/qcom/
  6.6% drivers/media/platform/msm/vidc/hfi/
14.6% drivers/media/platform/msm/
  4.5% drivers/scsi/hisi_sas/
11.1% drivers/soc/qcom/msm_bus/
62.8% drivers/
  3.9% sound/soc/codecs/
10.3% sound/soc/qcom/
14.2% sound/
What the RPK isn’t

- Not a replacement for Linus Torvalds’ tree
- Not the mother of all BSP kernels
- Not a LTS* kernel
What the RPK is

- A pre-integration tree similar to linux-next that:
  - Keeps platforms of interest to Linaro members working on as close to tip as feasible
  - Allows engineers to focus on feature development instead of HW enablement
  - Shows the delta with mainline to get a platform functional
RPB: Kernel version roadmap

- **16.06**
  - Stay on 4.4
    - Bugfixes
    - Stabilisation
    - linaro-android?
  - Devel branch on 4.5
- **16.09**
  - Switch to 4.5 (4.6?)
Bootloaders...

- Unified Bootloader trees
  - UEFI/EDK2
    - Get a reference implementation into OpenPlatformPkg
    - D02, Hikey, Overdrive
  - U-Boot
    - Allows testing of Big-Endian kernels
16.06 targets

- Fix bugs (please file bugs!)
  - Make drivers modular
  - Pass kernelci.org
- Config fragments
- Unified Bootloader trees
- Improving developer experience
  - speed up edit-compile-deploy (ideas?)
What else?

- git-notes for tagging patches (statistics)
- Make the integration scriptable similar to linux-next
- Compare against vanilla mainline builds?
Discussion and Questions