Linaro connect
Bangkok 2016

Dissecting Qualcomm's 1.7M LoC Kernel Fork

Presented by

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Date

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Event

Linaro Connect BKK16

$ whoami

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All code discussed here can be found @
https://www.codeaurora.org/cgit/quic/la/kernel/msm-3.18/
git://codeaurora.org/quic/la/kernel/msm-3.18 msm-3.18

$ git diff lsk..msm-3.18 –stat | tail -1

4094 files changed, 1764959 insertions(+), 30379 deletions(-)

$ git log lsk..msm-3.18 --author=codeaurora.org --oneline --no-merges | wc -l

12399

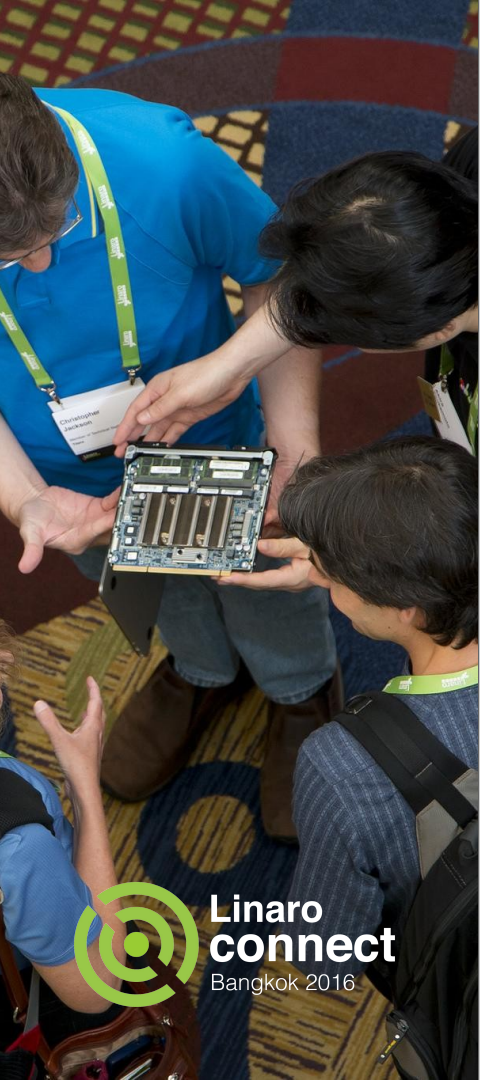
lsk is lsk-v3.18-15.08-android @ commit 400d686550f2584

$ git diff v3.18..lsk –stat | tail -1

2403 files changed, 70061 insertions(+), 13382 deletions(-)

$ git log v3.18..lsk --no-merges --oneline | wc -l

2818



$ git diff lsk..msm-3.18 --dirstat=cumulative

3.3% Documentation/

7.3% arch/arm/boot/dts/

8.3% arch/arm/

9.0% arch/

3.1% drivers/clk/

3.1% drivers/gpu/

3.9% drivers/media/platform/msm/camera_v2/

6.5% drivers/media/platform/msm/

6.5% drivers/media/platform/

7.6% drivers/media/

5.3% drivers/platform/msm/ipa/

9.1% drivers/platform/

3.3% drivers/power/

4.9% drivers/soc/qcom/

4.9% drivers/soc/

3.5% drivers/usb/

9.0% drivers/video/msm/mdss/

9.3% drivers/video/msm/

9.3% drivers/video/

67.1% drivers/

6.0% include/

4.3% sound/soc/codecs/

4.4% sound/soc/msm/qdsp6v2/

6.2% sound/soc/msm/

10.5% sound/soc/

10.6% sound

9.0% arch/

7.3% arch/arm/boot/dts

2.7% Non dts changes

arch/arm64/mm/dma-mapping.c 1219 ++++++-

arch/arm64/kernel/perf_event.c 660 +++-

arch/arm64/mm/mmu.c 598 ++-

3.1% drivers/clk/

1.8% drivers/regulator/

1.2% drivers/iommu/

9.1% drivers/platform/

3.5% drivers/usb/

3.3% drivers/power/

4.9% drivers/soc/qcom/

Short Term Projects

- FunctionFS fixes
- NO_KERNEL_MAPPING on arm64
- Executable DMA mapping attribute
- SKIP_ZEROING DMA attribute
- IOMMU page table update “batching”
- OPP on/off support for fully featured DVFS
- Event timer

Long Term Projects

- Bus Scaling
- Voltage “Corners”
- IPA (not the intelligent power allocator)
- Coordinated clk rate changes and one lock per clock
- Battery data library/framework
- Remoteproc enhancements

Q&A