Dissecting Qualcomm’s 1.7M LoC Kernel Fork

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$ whoami
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 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 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/

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/
<table>
<thead>
<tr>
<th>Percentage</th>
<th>Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0%</td>
<td>arch/</td>
</tr>
<tr>
<td>7.3%</td>
<td>arch/arm/boot/dts</td>
</tr>
<tr>
<td>2.7%</td>
<td>Non dts changes</td>
</tr>
</tbody>
</table>

- 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