Qualcomm upstream update

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Agenda

● Who are we?
● What have we done?
● Where are we going?
● Want to join us?
Who are we?
linux-arm-msm

Biggest contributors, same as before:

- Linaro
- Qualcomm
- Google

Lots of recent activity from individuals and hobbyists:

- PostmarketOS
- SoMainline
- Jonathan Marek
What have we done?
MSM8974 (Snapdragon 800)

Progress since SAN19:
- Interconnect provider
- OCMEM
- Krait CPUfreq
- Lots of DT updates

Boards:
- Fairphone 2
- LGE Nexus 5 (Hammerhead)
- Samsung Galaxy S5
- Sony Xperia Z1
- Sony Xperia Z1 Compact
- Sony Xperia Z2 Tablet
MSM8916 (Snapdragon 410)

Progress since SAN19:
- Cluster idle
- Interconnect provider
- RPM power-domains (corners)
  - Remoteproc drivers cleaned up
- FastRPC enabled
- CCI
- DT cleanup

Boards:
- db410c
- Alcatel OneTouch Idol 3
- Asus Zenphone 2 Laser
- Longcheer L8150
- BQ Aquaris X5
- Samsung Galaxy A3U
- Samsung Galaxy A5U
MSM8996 (Snapdragon 820)

Progress since SAN19:
- CPU errata
- GPU power supply
- CCI
- Deprecated UFS phy
- DT cleanup

Boards:
- db820c
- ifc6640
MSM8998 (Snapdragon 835)

Progress since SAN19:
- SMMU fixes
- GPUcc
- I2C dma
- remoteprocs
- WiFi
- Bluetooth

Boards:
- MTP
- HP Envy x2
- Lenovo Miix 630

CPR/CPufreq on LKML
QCS404

Progress since SAN19:

- Interconnect provider
- CPR
- CPUfreq
- USB
- Watchdog
- wcnsn remoteproc
- remoteproc debug (qcom)
SDM660

- CPUs, timers
- GCC, Regulators, Corners, TLMM
- UART, I2C
- SDHCI (including ICE)
- Interconnect providers
- USB
- SMMU*
- Display
- GPU
- Tsens and thermal profiles
- Remoteprocs
- Camera

Boards:
- Xiaomi Redmi Note 7
- Sony Xperia X10
- Sony Xperia X10 Plus
- Sony Xperia XA2
- Sony Xperia XA2 Plus
- Sony Xperia XA2 Ultra
SDM845 (Snapdragon 845)

Progress since SAN19:

- SMMU
  - TLB invalidate errata
  - Stream mapping handoff
  - Per-process page tables
- Wakeup-capable GPIOs
- PCIe
- Soundwire
- Audio codecs
- IPA
- Crypto
- Camera
  - CCI adapter
  - Capture
- WLED

- LT9611 HDMI bridge
- Renesas XHCI
- DDR clock scaling
- GPI
- PDR

Boards:

- MTP
- DB845c
- OnePlus 6/6T
- Xiaomi Pocophone F1
- Lenovo Yoga C630
SC7180 (Snapdragon 7c)

- CPUs, timers, CPUfreq, Suspend
- Clocks, Regulators, Corners, TLMM
- Interconnect (incl clients and path tag)
- USB
- SDHCI
- GENI, QSPI
- DPU, GPU, DSI
- Audio
- Modem & IPA
- Thermal, Coresight, Watchdog
- Video encode/decode
SM8150 (Snapdragon 855)

Progress since SAN19:
- Interconnect provider
- SMMU
- UFS
- USB
- remoteproc
- WiFi
- GPU
- thermal profiles
- coresight
- Cluster idle
- Display*

Boards:
- MTP
- HDK
SC8180x (Snapdragon 8cx)

- CPUs, timers, UART
- GCC, Regulators, Corners, TLMM
- CPUfreq, Cluster idling
- UFS
- USB*
- remoteprocs
- WiFi

In flight:
- DispCC, GPUCC
- DPU
- Adreno
- Interconnect providers

Boards:
- Primus
- Lenovo Flex 5G
  - EFIFB, keyboard, touchpad
  - Debian installer
SM8250 (Snapdragon 865)

- CPUs, timers, CPUfreq
- Clocks, Regulators, Corners, TLMM
- uart, i2c, spi
- UFS, SDHCI
- USB
- IPCC & remoteprocs
- DPU, GPU, DSI
- PCIe
- Audio & codecs
- ADC TM5, tsens and thermal zones
- FastRPC
- Watchdog, RNG, Crypto*

Boards:
- MTP
- HDK
- RB5
  - LT9611uxc HDMI bridge
  - Ethernet
  - CAN
SM8350 (Snapdragon 888)

Announced December 2020

- CPUs, timers, UART
- GCC, Regulators, Corners, TLMM
- CPUfreq
- PMICs*
- USB
- remoteprocs

Boards:
- MTP
- HDK
  - Storage
  - USB
  - Ethernet

In flight:
- interconnect provider
SDX55 (Snapdragon X55)

- CPUs, timers, UART
- GCC, Regulators, Corners, TLMM
- Interconnect provider
- USB
- SDHCI
- NAND

In flight:
- remoteprocs
- IPA
MHI

MHI is a mechanism for dealing with multi-function PCI devices.

- ath11k
- QRTR integration
- MHI net
  - MBIM support
- libqmi integration*
- qrtr-ns migrated to kernel space
Where are we going?
Connectivity

**libqmi/modemmanager:**
Patches on review for both integrated and external modems.

**IPA:**
SDX55, MSM8998, SC7280 support pm_runtime and performance states
Checksum offload

**ESOC:**
Power sequence et al mechanism for PCIe attached modems
Power/performance

**Cluster idle:**
Integrate cluster idling on newer SoCs

**Suspend/resume:**
Get upstream to power down during suspend

**Interconnect consumers:**
Expand interconnect integration to more drivers and boards

**bwmon:**
Finish up patches for profiling based bandwidth scaling

**DTPM:**
Migration of downstream solution

**qmi cooling:**
Introduce support for cooling devices on remote processors
SM8250

Displayport:
Type-C and displayport support

LPG:
LED driver needs a respin

PCI power sequence:
WiFi/Bluetooth chip sits on PCIe and UART, needs power on sequence

RB5 mezzanines:
Navigation and Communication mezzanines
Laptops

SC8180x DTS:
Send and land the pending SC8180x DT patches

SC8180x ACPI support

SC8180x (e)DP support:
Clock drivers, DPU, Adreno, Type-C handling and (e)DP PHY

sn65dssi86 backlight:
Pending pwm_chip patches need to be reworked to handle cyclic loop with panel

Lenovo Yoga C630 battery driver:
Cleanup and attempt to upstream?

SDM845 suspend/resume:
Laptop does suspend, but doesn’t seem to reduce power consumption

SC8180x PCIe:
SDX55 5G modem
Moar ongoing things

**SDX55 modem support:**
Remoteproc, IPA support in the works

**SC7280 support:**
Recently started upstreaming

**SM8350 base support:**
Interconnect, tsens, crypto, rng in the works.

**SDX55 PCIe RC and EP:**
SDX55 supports RC and EP

**SM8250 venus:**
Patches on LKML for a6xx

**SDM660 upstreaming:**
CPR/CPUfreq needs review, SMMU regression

**SM8350 charging/Type-C:**
USB handling implemented in firmware

**DT (schema) cleanup:**
qcom #1 in “make dtbs_check” warnings
Want to join us?
Contribute

- Try out the upstream kernel on your board
- Subscribe to linux-arm-msm@vger.kernel.org
- Help improve upstream drivers
- Upstream new drivers
- Review patches
- ##linux-msm at freenode
Thank you

Accelerating deployment in the Arm Ecosystem