Status update on Qualcomm upstream

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Agenda

● Where are we?
● Where are we going?
Where are we?
APQ8064 & MSM8974

Progress since BKK19:
- GPIO hierarchical IRQ helpers
- Nexus 5 gained/enabled support for:
  - WiFi
  - Display
  - Touch
  - USB OTG
  - Backlight

In-flight patches:
- OCMEM support
- Nexus 5 HDMI support
MSM8916

Progress since BKK19:
- Idle state updates
- Thermal updates
- PM8916 watchdog
- socinfo

Current status of db410c:
- Working Display*, GPU, storage, audio, Bluetooth, USB, Video encode/decode, WiFi*, GPS

New boards:
- Longcheer L8150
- Samsung Galaxy A3U/A5U
MSM8996

Progress since BKK19:
- Audio enabled
  - APR
  - Slimbus
  - WCD9335
- Coresight
- Corners
- Display/GPU enabled
  - HDMI
  - Adreno support
- PSCI based CPU idle
- Thermal updates
- Venus enabled

Current status of db820c:
- Working Display*, GPU, storage, audio, Bluetooth, Ethernet, WiFi, USB, Video encode/decode, GPS
- CPR and CPUfreq missing
- kpti=no
MSM8998

Progress since BKK19:
- UFS
- Idle states
- Corners
- RPM clocks
- PCIe
- Coresight
- USB
- Thermal updates
- Multimedia Clock controller
- Adreno A540 support
- DSI support

New boards:
- Asus Novago TP370QL
- HP Envy X2
- Lenovo Miix 630
SDM845

Progress since BKK19:
- UFS enabled
- Display, gpu and video clock controllers enabled
- WiFi enabled
- CPU idle states
- Audio, Compute and Modem DSP
- FastRPC
- System cache enabled
- Coresight enabled
- Video encode/decode
  - Stream codec API compliance
- IOMMUs enabled
- Display and GPU support
- CPUpfreq
- Interconnect
- Corners
- Thermal zones and cooling
- SDHCI enabled
- UFS device reset

New boards:
- Dragonboard 845c
- Lenovo Yoga C630
- Google Cheza
SDM845 (continued)

Current status of db845c:
- Working storage, USB, Bluetooth, FastRPC, micro-SD

Current status of Lenovo Yoga C630:
- Working EFI Framebuffer, storage, keyboard, trackpad, USB, charging, CPUfreq/thermal, Bluetooth

Expected progress in near future:
- PCIe
- Ethernet
- WCD934x slimbus codec
- Soundwire controller and WSA881x codec
- Wakeup capable GPIOs
- SMMU TLB invalidate errata
QCS404

Progress since BKK19:
- Ethernet
- Bluetooth
- PCIe
- PSCI based CPU idle
- Corners
- RPM clocks
- Interconnect
- Compute subsystem
- WiFi enabled
- Thermal zones
- FastRPC

Current status:
- Working storage, Bluetooth, WiFi, PCIe, Ethernet

In-flight patches:
- CPR & CPUfreq
- USB PHYs
- FastRPC in dts
SM8150

Progress since BKK19:
- Global clock controller
- TLMM driver
- RPMH regulators
- RPMH clocks
- Base DTS introduced

Current status:
- Boots to console

In-flight patches:
- UFS
- Remoteproc
Where are we going?
Connectivity

IPA:
Exposes data pipes of (builtin) Qualcomm modems.
- V2 was posted in June
- Modem restart
- RMNET vs WWAN framework

MHI:
Communication layer for PCIe attached modems and WiFi chipsets.
- First patches on LKML 2018
- WWAN framework?

Call management:
- libqmi?
Display/GPU

**SMMU handover and late attach:**
Boot splash (or EFIFB) is scanned out through the IOMMU, need to retain stream mapping until driver is ready.

**Boot constraints:**
Resources needed past late initcall.

**Per-instance page tables:**
Ties multiple page tables to a specific IOMMU context and have Adreno switch the active one as needed.
- V3 posted in May

**LT9611 DSI/HDMI bridge:**
HDMI bridge used in db845c, not yet posted.

**Adreno A6xx preemption support**

**Displayport:**
SDM845 supports DisplayPort
- Initial patches posted 2018
Multimedia

SDM845 camera IP support:
- YUV
- Libcamera
- ISP support
- CCI

Venus:
- Power management
- 10 bit stream support
- UBWC

Protection-domain restart (PDR):
SDM845 audio firmware runs in a domain, PDR is used to signal APR when the domain is available (or restarting).
Performance

Tsens IRQ support

Core Power Reduction (CPR):
Qualcomm’s adaptive voltage scaling block.
- QCS404/MSM8916 progress
- MSM8996

DDR scaling:
DDR frequency is scaled using interconnect votes.
- CPUfreq based patches posted
- Support for bwmon

DVFS:
How do we perform voltage (or genpd performance state) scaling upon frequency scaling, without creating a spaghetti monster?

QMI based cooling device:
Cooling implemented on remoteprocs
Low-power

Interconnect:
- Client driver adaption
- Path tagging

CPU cluster idling

Thermal “heating” devices
Hierarchical thermal zones

Regulator active/sleep sets

Suspend/resume
Thank you

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