

Qualcomm Kernel upstreaming BoF

YVR18

Agenda

- **Kernel upstreaming roadmap**
 - Baseport
 - Memory Management/SMMU
 - Power/Thermal
 - Peripherals
 - Display
 - GPU
 - Video
 - Networking
 - Audio
 - Camera
- **How things are going**

Baseport

- **What got done/Ongoing**

- SDM845
 - Modem PIL, modem coredump
 - ADSP/Venus in kernel PIL, reset drivers
 - Clock drivers for GCC/DispCC/VideoCC/LPASS
 - Command DB, RPMH/RPMH regulators/clocks
 - Pinctrl updates (protected pins, wakeup gpios)
 - PDC interrupt controller
- DB600c board support
- MSM8998 GCC/Pinctrl, SoC/MTP dts

- **Still to do**

- PDR (Process domain restart)
- IPClogger

Memory Management/SMMU

- **What got done/Ongoing**
 - SMMU runtime PM
 - TLB invalidate errata for SDM845
 - per instance page tables (GPU)
 - LLCC system cache, ERP/EDAC support
- **Still to do**
 - SMMU
 - fastmap/unmap
 - Fault handler enhancements
 - Context bank handoffs

Power

- **What got done/Ongoing**

- CPUfreq for MSM8996 (db820c)
- OSM based CPUfreq driver for SDM845
- On Chip interconnect, support for MSM8996/SDM845
 - Active/sleep sets support with path tagging
 - Integration of consumer drivers
- RPM/RPMh powerdomains for voltage corners
- Cluster idle using genpd (PSCI OS initiated)
- System low power support (suspend) on SDM845
- Devfreq drivers/Governors for Cache/DDR scaling
- Core Power Reduction (CPR)

- **Still to do**

- Sleep sets for OCI

Thermal

- **What got done**
 - TSENS v2 support for SDM845, MSM8998
- **What's Ongoing**
 - Cleanups/Bugfixes needed to support IRQ
 - Low temperature governor
 - LMH
- **Still to do**
 - Hierarchical thermal zones

Peripherals

- **What got done/Ongoing**
 - USB2/3, Phy support for SDM845
 - UFS QMP Phy
 - GENI SE, UART, I2C
 - SDCC5
 - PRNG
 - PON and RESIN
 - EUD (Embedded USB debugger)
- **Still to do**
 - GENI SPI

Display

- **What got done/Ongoing**

- Dual DSI for SDM845
- DPU for SDM845
- DSI 2 eDP bridge chip support

- **Still to do**

- DP for SDM845
- HDCP 1.4
- Scaler
- Brightness control
- Writeback support
- Rotation support

GPU

- **What got done/Ongoing**
 - A6x, GMU for power management
 - A6x DCVS support

- **Still to do**
 - Fault recovery
 - Critical Packets
 - Per process page-tables

Video

- **What got done**
 - Venus 4xx support for SDM845
- **Under upstream review**
 - Venus firmware loader without trustzone
 - Venus stream (statefull) codec API compliance
- **Still to do**
 - UBWC support
 - Core selection for multicore versions
 - Upstream video memory support for MSM8996
 - Add system cache support for SDM845

Networking/Connectivity

- **What got done**

- BT for db820c (QCA6174)
- BT for SDM845 (WCN3990)
- MHI bus

- **Ongoing**

- IP Accelerator (IPA)
 - Preliminary code review this week
 - Dependent on interconnect framework
 - First post upstream “soon” (in part dependent on pre-review comments)

Audio

• What got done

- DSP based Audio in mainline since 4.18
 - APR BUS, Q6ASM, Q6ASM-DAI, Q6ADM, Q6routing, Q6AFE, Q6AFE-DAI, Q6CORE, DSP Versioning support,
 - HDMI Playback, MI2S, SLIMbus, TDM Playback/Capture
- SLIMBus streaming support in mainline since 4.19
- WCD9335 codec is now in list.
- Compressed audio basic support like MP3
- SoCs Tested:
 - SDM845 (MI2S, TDM), MSM8996 (HDMI, SLIMbus), MSM8916 (HDMI, MI2S), MSM8974(SLIMbus) and APQ8064(HDMI)

• Still to do

- Soundwire and WSA smart speaker support.
- FASTRPC for more codec support dynamic module loading!

Camera

- **What got done**

- CAMSS (CAMera SubSystem: CSI receiver + VFE) driver for MSM8996 in v4.19
 - Same features as MSM8916 + second VFE

- **Ongoing**

- CCI (Camera Control Interface) driver for 8916/8996 posted upstream
 - Support for second CCI bus (8996)

- **Still to do**

- CCI driver
 - Figure out GPIO interaction