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