DRM MSM Display and Graphics Update
MSM Display upstream driver timeline

Originally authored by Rob and Archit Taneja and maintained by Rob Clark since then.

- sc7180, sc7280
  - Chrome with DP/eDP/writeback support

- Massive driver supporting multiple chipsets with a rich feature set, bug tracking and IGT-based CI merge process (thank you Rob, Collabora, Linaro and upstream community).

- sdm845 Chrome
  - (DPU driver landed upstream. Thank you Sean Paul!)

- Qualcomm Snapdragon 805
- Qualcomm Snapdragon 820
- Qualcomm Snapdragon APQ8016E processor
- Qualcomm Snapdragon 8cx processor
- Qualcomm Snapdragon 8cx 7c processor
Delayed push and inflection point

- Android market domination with major SOC vendors having own kernels
- Business reasons - no major android programs with pure upstream kernel
- Time to market / product cycles of mobile SOCs
- Chrome program major inflection point to land new DPU driver
Why Upstream push now?

- Continued support for Compute programs
- Support for Open platforms
- Android GKI
- Carry on the good work!
QC’s upstream driver strategy

- Enhance DPU feature set
- Fix bugs reported on MSM bug tracker
- Add and support more boards on drm CI
- Keep IGT CI failures in-check
- Enhance IGT for MSM needs
GPU status

- ~30 models of adreno supported, back to a2xx
  - a730 and a740 landing in v6.7
- devcoredump for gpu hang and fault debugging
  - Crash telemetry useful for long-tail issues
- drm_gpu_scheduler for job scheduling
- Full GEM eviction support
  - CrOS leans heavily on zram for low RAM devices
- Recent work:
  - Userspace iova allocation
  - Lockdep vs runpm/icc/pmqos vs fence signalling annotation
  - Submit ioctl overhead opts (v6.6)
- Future work:
  - Userptr (discontiguous)
  - vm_bind?
## DRM CI

### Pipelines

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### Options

- msm:apq8096
- msm:sdm845 1/6
- msm:sdm845 2/6
- msm:sdm845 3/6
- msm:sdm845 5/6
- msm:sdm845 6/6
- msm:sm8250
Platform support

mdp4: legacy

- 3.12 only MSM8x60 / APQ8064 are supported

mdp5: maintenance mostly

- 3.14 3 (msm8974, two kinds, apq8084)
- 4.1 4 (msm8916)
- 4.2 5 (msm8994)
- 4.4 6 (msm8996)
- 5.0 7 (msm8917)
- 5.4 8 (msm8998)
- 5.5 9 (msm8976)
- 5.8 10 (msm8936)
- 5.9 12 (sdm660, sdm630)
- 5.16 13 (msm8953)
- 6.5 14 (msm8226)
Platform support

DPU, newer driver for new platforms

- 4.19 1 (sdm845)
- 5.6 2 (sc7180)
- 5.13 5 (sc7280, sm8150, sm8250)
- 5.18 8 (msm8998*, qcm2290, sc8180x)
- 6.2 9 (sm6115)
- 6.3 13 (sc8280xp, sm8350, sm8450, sm8550)
- 6.5 15 (sm6350, sm6375)
- 6.6-rc 16 (sm6125)
- pending:
  - sm7150, sdm670, sdm660* / sdm630*
  - msm8996* / msm8937 / msm8917* / msm8953* (experimental support, WIP)
  - patches for new platform at the announcement day

(*) - migration from the MDP5 driver
Current features

- **DSI**
  - normal and bonded, command and video
- **DP/eDP**
  - 0 failures in CTS (PHY, Link and Test Pattern using IGT)
- **HDMI**
- **Full drm_bridge / drm_bridge_connector chains**
  - except apq8064 LVDS
- **CTM support (no gamma/degamma yet)**
- **Writeback support (depending on the platform)**
- **eDP PSR support (disabled by default)**
- **DSC 1.1 / 1.2 support (depends on platform, DSI-only, DP is pending)**
  - Driving force behind DSC panels support
- **Devcoredump for DPU**
Upcoming display features from QC

- Color pipeline for HDR displays
- Concurrent writeback support
- DP MST
- Command mode - Video mode switch for MIPI DSI panels
- Simulation panel framework for MIPI DSI panels
- YUV output over DP
- DSC over DP
Upcoming features continued

- Virtualized DRM planes
- DSI: proper handling of link power up
- DP: USB-C uABI design and implementation
- Blending improvements (more planes, less bandwidth)
Development stats (next-20231013)

- 3352 non-merge commits
- 288 contributors
- Largest contributing parties (> 20 commits)
  - Qualcomm, 900 commits
  - Linaro, 756 commits
  - Google / Chromium, 543 commits
  - Intel, 114 commits
  - SoMainline (*), 111 commits
  - Jonathan Marek, 60 commits
  - SuSE, 43 commits
  - Huawei, 42 commits
  - Collabora, 24 commits

(*) community project
Questions?