

v3d/v3dv: status update from last XDC

Juan A. Suarez

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Some numbers

- 141 MRs with around 276 commits
- 8 new contributors, 2 very active
- 13 new Vulkan extensions
- 11 new OpenGL and OpenGL/ES extensions
- Main focus on shader compilation

v3dv

- More WebGPU/Dawn friendly (see [Chema talk](#))
- VK_KHR_robustness2, with nullDescriptor
- Subgroup operations and 16-bit shaders (V3D 7.1+)
- Presentation and display timing extensions
- VK_EXT_device_memory_report (not released yet)
- Perfetto and u_trace GPU tracepoints (not released yet)

v3d

- GL_KHR_shader_subgroup and GL_ARB_clip_control (V3D 7.1+)
- GL_ARB_sample_shading and 16-bit normalised formats
- Fewer and larger BO allocations (helps WebGL Aquarium)
- Avoid GPU resets on draw-heavy jobs (not released yet)
- More TFU blit/copy paths, more code shared with v3dv

Compiler improvements

- Major improvements in shader compilation
 - Reduced the number of compilation strategies from 13 to 6
 - Select next strategy based on register pressure
 - Result (running Vulkan CTS with deqp-runner on rpi5):
 - Mesa 25.2.3: 3h10min (with 90 test timeouts)
 - Mesa 26.2.2: 1h35min (with 5 test timeouts)
- Better liveness/spill handling (not released yet)
- New 4x8-bit dot-product instructions (V3D 7.1+)
- Native packed F16 arithmetic operations (V3D 7.1+)

CI and testing updates

- Broadcom nightly jobs fully migrated to CI-Tron
 - DUTs moved from baremetal pool
 - Try to use the latest kernel released in Raspberry Pi OS
- New coverage: rusticl/OpenCL CTS, ASan on RPi 5
- Broadcom pre-merge stage kept under 15 minutes
- Fewer expected failures: 676 → 550 (RPi 4), 539 → 410 (RPi 5)
- Half the skips: 115 → 45 (RPi 4), 114 → 42 (RPi 5)
 - OOM-prone tests now run serially instead of being dropped

Thanks!

- Thanks to our new contributors, especially Sid Pranjale and JaeHoon Lee

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