

gamescope update

Pierre-Loup A. Griffais, Valve

steamcompmgr 2.0

- Embedded gaming session with automatic fullscreen scaling
- GLX -> Wayland
- DRM output for zero-copy in most cases
- Vulkan async compute if it needs to composite
- Aligns the game to output vblank and presents newest content available at the tightest possible deadline before vblank, no getting ahead

7047

sekiro.exe-7047

exe

sekiro.exe

Time: 2006602.214465

Row: comp_1.0.0 hw

Prev vblank: -12.99 ms

Next vblank: 3.68 ms

gamescope-6174

238785 SW queue duration: 0.0245 ms

238787 HW queue duration: 0.0000 ms

238824 Execution duration: 0.5325 ms

wlroots

- Pretty quick to get started
- Level of abstraction seemed low enough to match our domain-specific needs
- Just a couple of impedance mismatches at first
- Started from rootston, grafted steamcompmgr's output pipeline on it, then removed rootston bit by bit.

Desktop applications

- “X namespaces” have been a goal of ours for a long time
- Had all sorts of plans to be able to apply the same sort of input/output transformations robustly in a general way on a desktop
- Nested desktop scenario was initially just a useful development tool, but starting to have some potential uses for real desktop gaming now

Some desktop demos

- Output size abstraction
- Display abstraction: ultrawide / multi-monitor
- Refresh rate abstraction
- Unified Vulkan-based output pipeline

TODO

- More polish around the nested experience, more mimicry of the game window, etc
- Get DRM planes working more consistently

High-level stack takeaways

- Modifiers badly need plumbing across the stack
- Implicit sync is not ideal - would like a fence to be paired with incoming DMA-BUFs instead, that we could wait on the GPU for late-latch
- Display drivers in the kernel remain buggy, and any non-trivial paths are not currently well exercised
- Need tighter control over the application's cadence to further reduce latency. The compositor needs to be optionally able to dictate when `glXSwapBuffers()` and `vkAcquireNextImageKHR()` returns. This can be hacked by locking buffers now but not ideal.

Thank you!

- <https://github.com/Plagman/gamescope/>

