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Linux Graphics CI: Standardizing the kernel CI workflow and hardware, and improving our testsuites

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There are many Linux kernel-testing projects, most of them are modeled over proven software testing workflows. These workflows however often rely on a stable host platform and stable test results and, as such, don't apply to testing development versions of Linux where the filesystem, network, boot, or suspend might be unreliable.

The Intel GFX CI debuted in 2016 with a different workflow: providing pre-merge curated testing results in a timely manner to all patch series posted on the intel-gfx mailing list. The IGT tests would get executed on Intel platforms spanning from 2004 to upcoming platforms. Known issues are automatically associated to bugs to focus the report on what the developer is trying to change, making it easier to review the change.

After years of experimenting and refining this workflow, the GFX CI team became confident that it was generic-enough and went on to standardize interfaces between the different components in order to enable other drivers to reproduce the testing workflow and collaborate on the development of IGT and related tools.

An example of related tools comes from Google's ChromeOS validation HW (Chamelium) which acts as an open hardware re-programmable screen with DP, HDMI, and VGA inputs. After initial work from Red Hat in IGT to support the Chamelium, Intel took on the project and have achieved a level of testing for Display Port and HDMI comparable to their official conformance test suites. This massively increases the level of testing achievable in an automated testing system, and not just for Intel, but for GPUs support DP and/or HDMI.

Finally, a new test suite for the KMS interface is being designed around VKMS in order to test how Xorg and Wayland compositors behave in the presence of GPU (un)hotplugging, bandwidth limitations for planes, DP link status issues, etc… This should further improve the reliability of the userspace when it comes to hard-to-reproduce events, regardless of the GPU driver being used!

In this talk, I will compare the different linux testing projects, introduce the i915 CI workflow and tools, the open sourcing and standardization effort going on in i915-infra, the recent development in IGT/Chamelium, and the plan to test Wayland compositors. Let's work together on standardizing our testing, and moving to a model where not only the i915 driver, but all the drivers would be validated before every commit!

Code of Conduct

Yes

GSoC, EVoC or Outreachy

No

Presenter: PERES, Martin

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