Contribution ID: **286**   Type: **not specified**

Towards common mainline device testing

Friday 20 September 2024 12:30 (30 minutes)

A large percentage of the functionality provided by the kernel to userspace comes from the different devices in the system. For that reason, having a proper common approach in mainline to test devices and detect regressions is of the utmost importance for the kernel's reliability.

Devices are exposed through a diverse set of interfaces (uAPIs) and fully testing them requires just as many, diverse, and complex testing frameworks. Alternatively, by targeting the shared device framework, it becomes possible to write generic tests that cover a lot of ground and require little maintenance.

One example is the device probe layer, which has been discussed during last year's Plumbers [1] and has had a few tests merged [2] [3]. Another is the device error logs, which are the universal mechanism for reporting errors in the kernel, and for which a test is currently in review [4].

This session's goal is to provide a status update on the current generic device tests, open the floor to gather feedback from the audience, and explore more strategies to test device functionality at a generic level.

[1] https://lpc.events/event/17/contributions/1530/
[2] https://lore.kernel.org/all/20230828211424.2964562-1-nfraprado@collabora.com/
[3] https://lore.kernel.org/all/20240122-discoverable-devs-ksft-v4-0-d602e1df4aa2@collabora.com/
[4] https://lore.kernel.org/all/20240705-dev-err-log-selftest-v2-0-163b9cd7b3c1@collabora.com/

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Session Classification: Kernel Testing & Dependability MC

Track Classification: Kernel Testing & Dependability MC