Linux Plumbers Conference 2022

Contribution ID: **7** Type: **not specified**

Kernel Testing & Dependability MC

The Linux Plumbers 2022 Kernel Testing & Dependability track focuses on advancing the current state of testing of the Linux Kernel and its related infrastructure. The main purpose is to improve software quality and dependability for applications that require predictability and trust. We aim to create connections between folks working on similar projects, and help individual projects make progress.

This track is a merge of the Linux Plumbers 2021 Testing and Fuzzing and the Kernel Dependability and Assurance MC tracks into a single session. These two tracks have a lot of overlap in topics and attendees. A dependable kernel is the goal of testing it and combining the two tracks will promote collaboration between all the interested communities and people.
We ask that any topic discussions focus on issues/problems they are facing and possible alternatives to resolving them. The Microconference is open to all topics related to testing on Linux, not necessarily in the kernel space.

Potential testing and dependability topics:

- KernelCI: Improving user experience and new web dashboard (https://github.com/kernelci/kernelci-project/discussions/28)
- Growing KCIDB, integrating more sources (https://kernelci.org/docs/kcidb/)
- Better sanitizers: KFENCE, improving KCSAN. (https://lwn.net/Articles/835367/)
- Using Clang for better testing coverage: Now that the kernel fully supports building with clang, how can all that work be leveraged into using clang's features?
- How to spread KUnit throughout the kernel?
- Building and testing in-kernel Rust code.
- Identify missing features that will provide assurance in safety critical systems.
- Which test coverage infrastructures are most effective to provide evidence for kernel quality assurance? How should it be measured?
- Explore ways to improve testing framework and tests in the kernel with a specific goal to increase traceability and code coverage.
- Regression Testing for safety: Prioritize configurations and tests critical and important for quality and dependability.
- Transitioning to test-driven kernel release cycles for mainline and stable: How to start relying on passing tests before releasing a new version?
- Explore how do SBOMs figure into dependability?

Things accomplished from last year:

- KCIDB is continuing to gather results from many test systems: KernelCI, Red Hat's CKI, syzbot, ARM, Gentoo, Linaro's TuxSuite etc. The current focus is on generating common email reports based on this data and dealing with known issues.
- KFENCE was successfully merged. (https://lwn.net/Articles/835367/)
- Clang: CFI, weeding out issues upstream, etc.
- KUnit started acting as the standard for some drivers. (https://www.youtube.com/watch?v=78gioY7VYxc)

- The Runtime Verification (RV) interface patch series (https://lore.kernel.org/linux-doc/cover.1621414942.git.bristot@redhat.com/) from Daniel Bristot de Oliveira is in review
- ELISA Tools WG (hhttps://lists.elisa.tech/g/tool-investigation) as incorporated syzkaller in their testing workflow (https://elisa-builder-00.iol.unh.edu/syzkaller/reportid=34e8ccdc0c7fb916735e544ea99234de75455d32)

MC Leads:

- Sasha Levin
- Guillaume Tucker
- Shuah Khan

Proposed Participants:

- Sasha Levin
- Kevin Hilman
- Guillaume Tucker
- Alice Ferrazzi
- Veronika Kabatova
- Nikolai Kondrashov
- Antonio Terceiro
- Mark Brown
- Don Zickus
- Enric Balletbo
- Tim Orling
- Gustavo Padovan
- Bjorn Andersson
- Milosz Wasilewski
- Shuah Khan
- Martin Peres
- Arnd Bergmann
- Remi Duraffort
- Peter Zijlstra
- Daniel Stone
- Jan Lübbe
- Dmitry Vyukov
- Brendan Higgins
- Greg KH
- Anders Roxell
- Guenter Roeck
- Jesse Barnes
- Kees Cook
- Kate Stewart
- Sudip Mukherjee
- Daniel Bristot de Oliveira
- Gabriele Paoloni
- Paul Albertella
- Elana Copperman
- Lukas Bulwahn

Primary authors: LEVIN, Sasha; TUCKER, Guillaume; KHAN, Shuah (The Linux Foundation)

Presenters: LEVIN, Sasha; TUCKER, Guillaume; KHAN, Shuah (The Linux Foundation); STEWART, Kate (Linux Foundation)

Track Classification: LPC Microconference Track (CLOSED)