KernelCI: A Growing Ecosystem

LPC 2020 - Testing & Fuzzing MC

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“It’s a social project.”

- Linus Torvalds (2017)
Test-Driven Workflow

contributors

web, email

kernel tree

build
test

infrastructure

LTP
kselftest
KUnit
Project Mission

- One Linux kernel, one KernelCI
- No particular product
- Open Testing Philosophy
  - Shared hardware
  - Grouped results
  - Community-driven
● Need to test patches
  ○ Reports sent to authors
  ○ Early results in the loop

● Extend long-running coverage
  ○ Integration branches
  ○ Deeper, more thorough testing

● Improve web dashboard
  ○ User-defined queries
  ○ Further fine-tuning

Ecosystem Expansion in 2020

- KCIDB
- KUnit
- kselftest
- Intel 0-Day
- Google syzbot
- LPC 2020
- Real-Time
- devicetree validation
- LTP

- LAVA labs
- test bisection
- Kubernetes
- kernelci in PyPI

work in progress
in production
Over to you...

Pick one more thing you wish KernelCI would do:

A. Make it easy to add the tests I need
B. Send an email when my patch breaks something
C. Provide tools to debug issues and test fixes
Thank You!

Mailing list
kernelci@groups.io
https://groups.io/g/kernelci

GitHub
https://github.com/kernelci/
Project Board

IRC
#kernelci
on Freenode
Appendix
Core Infrastructure

- **Microsoft Azure and Google Cloud static VMs**
  - All static servers (kernelci.org, staging.kernelci.org, Jenkins runners)
  - May be used to host alternative instances as *.kernelci.org

- **Kubernetes**
  - Preemptible cloud builders donated via MS Azure and GCE
  - Initially for kernel builds, capacity greatly extended
  - Now preparing to run static analysis and virtualized tests
Native Test Infrastructure

- **LAVA labs**
  - BayLibre, Collabora, Pengutronix, Linaro, Theobrama, NXP, CIP
  - Individuals: broonie (ARM), clabbe (BayLibre)

- **Custom hardware labs**
  - Kevin Hilman (BayLibre Seattle), Bjorn Andersson (Qualcomm)

- **Static checks in Kubernetes (WIP)**
  - KUnit: Heidi Fahim (Google intern) / Brendan Higgins
  - Devicetree validation: Isaiah Duncan (Microsoft intern) / Sasha Levin
External Test Infrastructure

- **Facilitated by KCIDB**
  - Schema designed to combine results from many different sources
  - Includes all native KernelCI results
- **CKI (Red Hat)**
  - Already connected
- **0-Day (Intel)**
  - Initial talks
- **Syzbot (Google)**
  - Initial talks