One year into the new KernelCI

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Agenda

- About
- User Perspective
- Architecture
- Roadmap

KernelCI

Project Mission

To ensure the **quality, stability and long-term maintenance** of the Linux kernel by maintaining an **open ecosystem** around test automation practices and principles.

KernelCI

New Premier Members

KernelCI

New Premier Members

KernelCI

Member Companies

THE LINUX FOUNDATION

Premier Members

arm

Microsoft

CIVIL INFRASTRUCTURE PLATFORM
INDUSTRIAL GRADE LINUX

Qualcomm

COLLABORA

Red Hat

Google

Texas Instruments

linaro

General Members

Baylibre

Associate Members

ELISA
Enabling Linux in Safety Applications

KernelCI

What is **KernelCI**?

- Set of services/tools to build on top of
- It is also a CI system for the kernel
- Test results aggregator with common Dashboard/API
- Building specs and standards kernel testing
- Umbrella org for kernel testing & validation projects

KernelCI

regzbot

Regression tracking bot created by **Thorsten Leemhuis**, helping the community track the lifetime of a regression automatically.

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New Umbrella Projects

TuxMake, **by Linaro**, is a Open Source command line tool and Python library that provides portable and repeatable Linux kernel builds across a variety of architectures, toolchains, kernel configurations, and make targets. https://tuxmake.org/

TuxRun, **by Linaro**, is a Open Source a command line tool for testing Linux virtual devices (AVH, FVP, QEMU), using curated test suites. https://tuxrun.org/

TuxLAVA, **by Linaro**, is a Open Source a command-line tool and Python library that simplifies creating LAVA job definitions for various device types. https://tuxlava.org/

KernelCI

- Add tree to watcher
- **#kcibot** email cmds
- b4 test command
- Patchwork
- GitLabCI

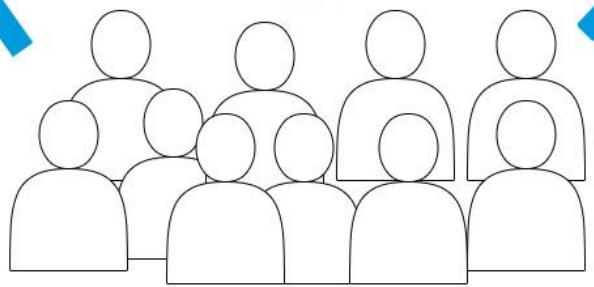
Request testing

- Improve test quality
- Engage with test dev
- Track expected pass/fail
- Add testing gates to process

Add and improve tests

- Receive email notifications
- Use Web Dashboard/patchwork
- Pull results from API
- Integration with tools like b4

Evaluate test results



Maintainers | Upstream Developers | HW vendors | Product makers

Our audience

KernelCI

- Not a system to force a process on you
- Growing organically out of key maintainer use cases
- Not *yet another bot* to flood your mailing list
- Enabling multiple test systems (yours!) to interact with KernelCI
- Aggregating results from the ecosystem in our Dashboard

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User perspective

- Web Dashboard with backend API for viewing results
- Configurable email notifications for regressions and summaries
- kci-dev cli for interacting with KernelCI - great for scripts!

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Dashboard

https://dashboard.kernelci.org/

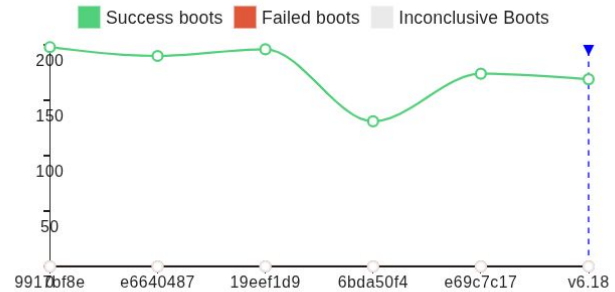
Tree	Branch	Origin	Commit/Tag	URL
mainline	master	maestro	v6.18	git.kernel.o...t/torvalds/linux.git

Builds 52 0 | Boots 169 0 | Tests 19436 2380

Filters

Boot Status

Boots History



Configs

12 0 0 cros://chromeos-6.12/arm64/chromiumos-mediatek.flavour.config+lab-...

4 0 0 cros://chromeos-6.12/arm64/chromiumos-qualcomm.flavour.config+lab-...

18 0 0 cros://chromeos-6.12/x86_64/chromeos-amd-stoneyridge.flavour.config...

30 0 0 cros://chromeos-6.12/x86_64/chromeos-intel-pineview.flavour.config+l...

Hardware tested

4 0 0 acer-cb317-1h-c3z6-dedede

4 0 0 acer-chy514-1h-34uz-brya

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Dashboard

https://dashboard.kernelci.org/

ltp.timerfd04

December 8, 2025 at 12:46:53 PM GMT+9 (about 23 hours ago)

View Log Excerpt

Test Info

Status	FAIL
Hardware	beaglebone-black
Architecture	arm
Compiler	gcc-14
Config	multi_v7_defconfig
Test Origin	maestro
Build Info	maestro:693636371ca5bf9d0fd93a41
Compatibles	ti,am335x-bone-black ti,am335x-bone ti,am33xx
Logs	files.kernelci.org...d0fd96b12/log.txt.gz
Test Id	maestro:69364a2d1ca5bf9d0fd9b390

Git Info

Tree	next
Branch	master
Commit Hash	82bcd04d124a4d84580ea4a8ba6b120db5f512e7
Repository	https://git.kernel.org/pub/scm/linux/kernel/git/next/linux-next.git
Commit Tags	next-20251208

Status History

Fail

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Email notifications

giturl: https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git
branch: master
commit hash: 87a132e73910e8689902aed7f2fc229d6908383b
origin: maestro
test start time: 2025-02-20 03:55:01.813458+00:00

POSSIBLE REGRESSIONS

Hardware: mt8195-cherry-tomato-r2
- fluster.debian.v4l2.gstreamer_av1.validate-fluster-results (defconfig)
last run: https://d.kernelci.org/test/maestro:67b6b072f7707533c000ba45
history: ✅ ✅ ✅ ✅ ✅ ✅ ✅ ❌ ❌

FIXED REGRESSIONS

Hardware: kubernetes
- kbuild-gcc-12-x86-kcidebug-kselftest (defconfig)
last run: https://d.kernelci.org/test/maestro:67b6a579f7707533c00071f0
history: ❌ ❌ ❌ ❌ ❌ ❌ ❌ ✅ ✅

- kbuild-gcc-12-arm-mainline-BIG_ENDIAN-kselftest (multi_v7_defconfig)
last run: https://d.kernelci.org/test/maestro:67b6a272f7707533c00063fe
history: ❌ ❌ ❌ ❌ ❌ ❌ ❌ ✅ ✅

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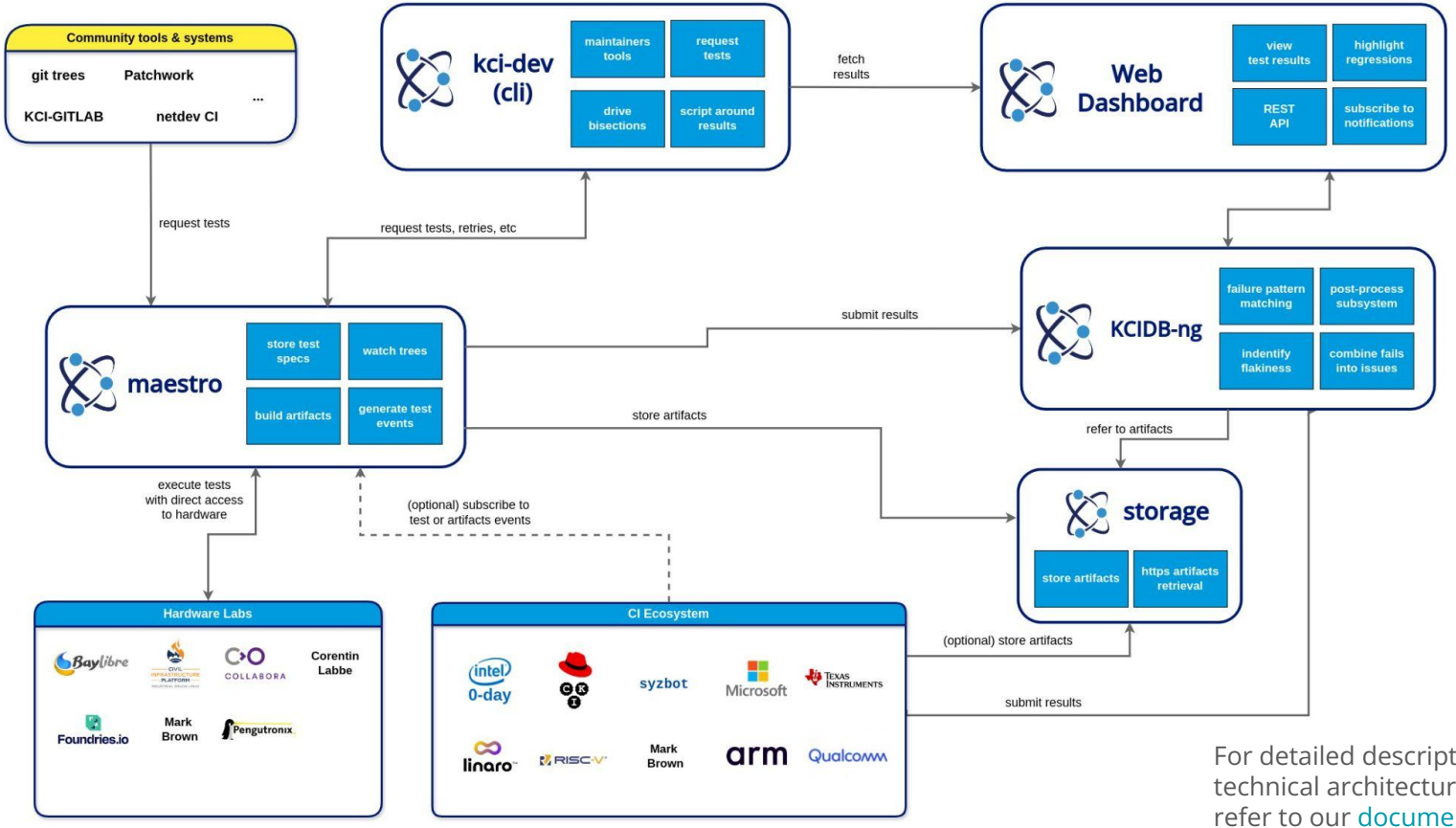
kci-dev

```
(.venv) poutine kci-dev > kci-dev results summary --latest --branch master
  --giturl 'https://git.kernel.org/pub/scm/linux/kernel/git/next/linux-next.git'

pass/fail/inconclusive
builds: 59/0/0
boots:  39/4/19
tests:  16203/7678/2080
```

https://kci.dev/

KernelCI



For detailed description of the technical architecture please refer to our documentation.

Testing Architecture

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Architecture

- Core orchestrator (Maestro) that create tests jobs for the ecosystem to rus (labs and other CI systems)
- Common Database (KCIDB) for results storage, receiving data from a various sources
- Storage server for artifacts (logs, configs, etc)
- Results & log analysis tooling
- Web Dashboard and backend API

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MAYBE NOT...

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MAYBE NOT YET!

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Kernel testing is hard problem!

- We may not fulfill your need today, but we hope to in the future
- KernelCI has medium and long term goals
- Key goal is to congregate the Linux kernel test community
- Work together to develop our test ecosystem: specs, standards, tools
- KernelCI as an umbrella for many testing projects
- Bring us your requirements and needs...

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"I like this!"

- First of all, BE PATIENT!
  - Remember that some patchsets takes months or years to get in!
- Be curious: look through our dashboard, docs, cli
- Give us feedback!
- Convince your team, your manager and your employer to support and participate on KernelCI

KernelCI

Talk to us

- TSC members:
  - Greg KH, Mark Brown, Gustavo Padovan, Yogesh Lal and Denys Fedoryshchenko, Ben Copeland, Minas Hambardzumyan
- mailing list: kernelci@lists.linux.dev
- Discord: https://discord.gg/KWbrbWEyqb
- IRC: #kernelci @ libera.chat

Discord

KernelCI

KernelCI Foundation goals

- Consolidating Linux kernel testing and integration stories
- Enable Ecosystem of test systems
- Acting as umbrella for projects, working groups and standards
- Managing resources and core test infrastructure
- Sponsoring key initiatives aligned with KernelCI goals

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What's next?

- New **TSC** just elected: new initiatives and working groups kicking in
- Adding new API to help more Labs to connect their platform
- Bring in bisection functionality to our architecture
- Keep improving the Dashboard and API
- Grow **email notifications** system
- Increase the quality and usefulness of the test results

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Thank you!

kernelci.org
kernelci-members@groups.io

Culture shift

Above all, there is ecosystem behaviour challenge ahead. It's not only a complex technical challenge for kernel testing. **A cultural shift is necessary!**

Testing & Validation tends to be internal and closed source, but Open Source software should have Open Source testing & validation.

The kernel community should keep evolving upstream testing and integration to achieve the product-level quality expectations of industry.

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Become a **member**

By becoming a member company at the KernelCI Foundation, you get a chance to influence the direction of the KernelCI project efforts and contribute financially to fund key project activities.

The more KernelCI grows to solve real product challenges your company and the Linux kernel community are facing, the more benefits you get in return.

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Membership levels

Membership level	Annual fees	Board representative
Premier member	$50,000	1
General member	Scaling fee: $5,000 up to 99 employees $10,000 from 100 to 499 $15,000 from 500 to 1999 $20,000 from 2000 to 4999 $25,000 from 5000 and above	1 every 5 members
Associate member (non-profits, open source projects, and government entities)	$0	0

If have any inquiries reach out to kernelci-members@groups.io to discuss.

Apply now!

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KernelCI Ambassador

"KernelCI is the place where testing needs are consolidating for the entire Linux kernel ecosystem. As a kernel subsystem maintainer, reliable testing is important in catching regressions and bugs in new code sooner before it hits a released kernel. You should consider joining with KernelCI to help collaborate on the unification of the testing efforts to ensure that the kernel community can keep developing and maintaining the codebase which the world relies on to be stable and secure."

- Greg KH

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