



KernelCI: Upgrading Linux development and integration workflows

Paweł Wieczorek

FOSDEM^{'25}

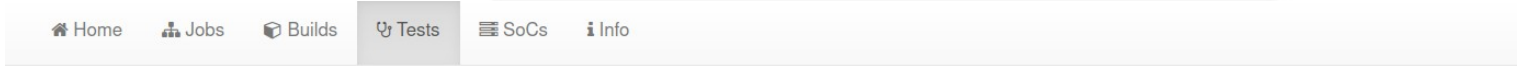
COLLABORA

Agenda

- What is KernelCI?
- Current status
- Next steps
- Trying it out
- Final thoughts

What is KernelCI?

Classic (legacy) dashboard



Test Results: «v6.9-rc3-208-g586b5dfb51b9» (mainline / master)

Tree mainline —
Git branch master —
Git describe v6.9-rc3-208-g586b5dfb51b9 —
Git URL <https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git>
Git commit 586b5dfb51b962c1b6c06495715e4c4f76a7fc5a
Date 2024-04-12



Available Test Plans

Q Filter the results

Test Plan	↓	Test Results	Status
baseline		1388 64 9	
baseline-nfs		316 4 7	
baseline_fvp		8 0 0	

Growing requirements

 Home

 Jobs

 Builds

 Tests

 SoCs

 Info

Error while loading data from the server (error code: 0). Please contact the website administrator

Ecosystem

- Tests quality efforts: “Towards common mainline device testing”

<https://lpc.events/event/18/contributions/1794/>

- GitLab pipeline definitions for kernel development

<https://lore.kernel.org/lkml/20250123135342.1468787-1-vignesh.raman@collabora.com/>

- Database of CI reports from testing kernel

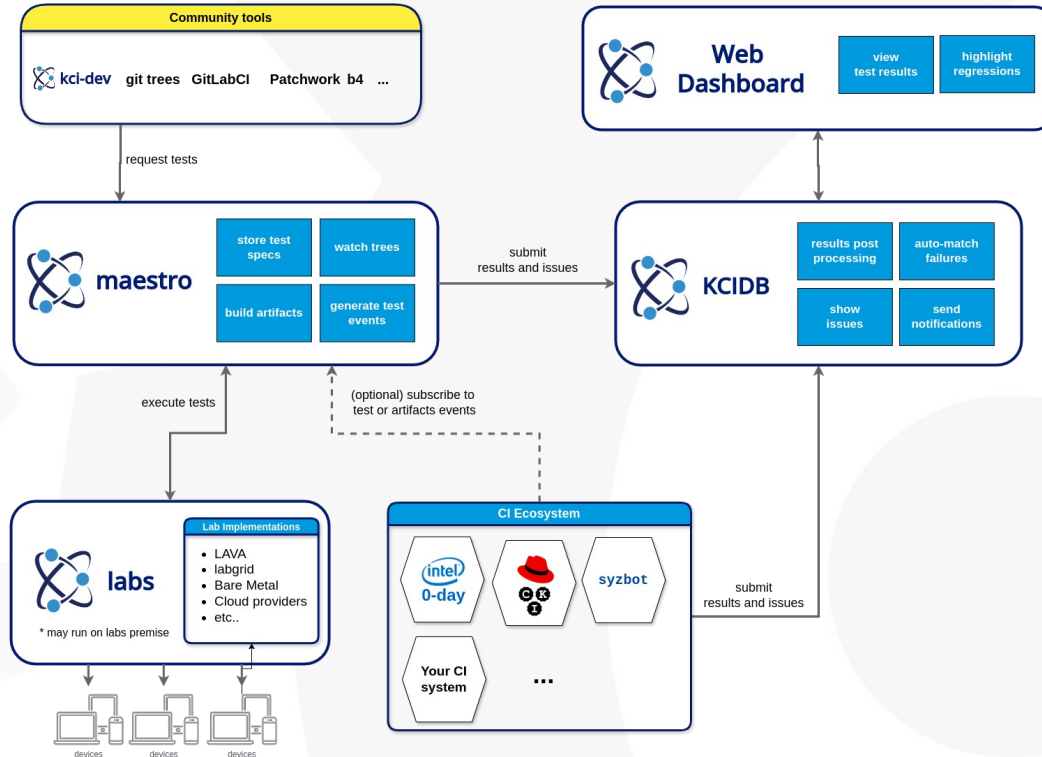
<https://kcidb.kernelci.org>

Takeaways

- KernelCI (project) expanded and evolved into an umbrella for various efforts
- Service and system are components of the whole project
- Service scaling/maintenance issues led to redesigning the system

Current status

Testing landscape



Web Dashboard

KernelCI

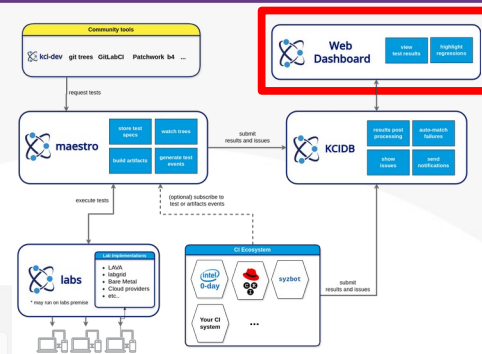
- Trees
- Hardware
- Documentation
- Send us Feedback

Trees Origin maestro stable

This is an ongoing project.
Please report bugs and suggestions to kernelci-webdashboard@groups.io.

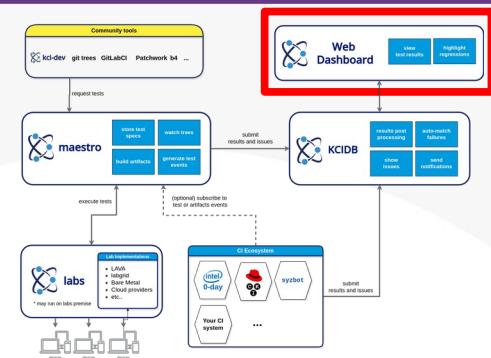
Last Days Showing: 1 - 10 of 10 Trees Items per page:

Tree	Branch	Commit/Tag	Date	Build Status	Boot Status	Test Status
stable	linux-6.6.y	v6.6.74	1/23/2025	22 0 0	171 18 19	385 207 182
stable-rc	linux-5.10.y	1659f4d4b85352fb8da1f9ea86034bed1ef885f1	1/21/2025	29 1 0	521 26 38	2456 485 240
stable-rc	linux-5.15.y	a38aec37d68a477d59deca3dad2b2108c482c033	1/22/2025	28 1 0	469 71 34	3869 754 225
stable-rc	linux-5.4.y	78d73ae31c4fcb1657d86088848a83e4cd996709	1/21/2025	25 4 0	452 4 50	173 303 200
stable-rc	linux-6.1.y	c5148ca733b386401ef46ed4ec93a2f4a078e187	1/22/2025	28 0 0	197 17 38	3501 430 161
stable-rc	linux-6.12.y	0bde21f273434bad90411f296c22f02c62c07b2e	1/22/2025	30 0 0	713 49 17	7476 6209 708
stable-rc	linux-6.6.y	429148729681ff93db022c19a17ce00dff9c04f9	1/21/2025	31 0 0	610 39 27	6976 4581 423
stable-rt	v5.10-rt	v5.10.233-rt125	1/23/2025	17 1 0	91 24 27	1349 6 250
stable-rt	v5.15-rt	v5.15.177-rt83	1/24/2025	19 0 0	101 30 24	1666 7 261
stable-rt	v6.6-rt	v6.6.74-rt48	1/27/2025	19 0 0	161 24 19	2589 74 438



Regression tracker

- kernelci / staging-stable / staging-stable-20240412.2
 - ✓ kbuild-clang-17-x86
 - ✓ (shell) kver
 - ✓ (docker) kunit
 - ✓ kbuild-gcc-10-arm64
 - ✓ kbuild-gcc-10-armel
 - ✗ (bcm2836-rpi-2-b) baseline-armel
 - ✗ (bcm2836-rpi-2-b) login
 - ✗ (bcm2836-rpi-2-b) kernelmsg
 - ✓ (imx6q-sabrelite) baseline-armel
 - ✓ (odroid-xu3) baseline-armel
 - ✓ (rk3288-rock2-square) baseline-armel
 - ✓ (rk3288-veyron-jaq) baseline-armel
 - kernelci / staging-stable / staging-stable-20240412.2



KCIDB

Home -

Database production Origin All Build architecture All Build configuration All

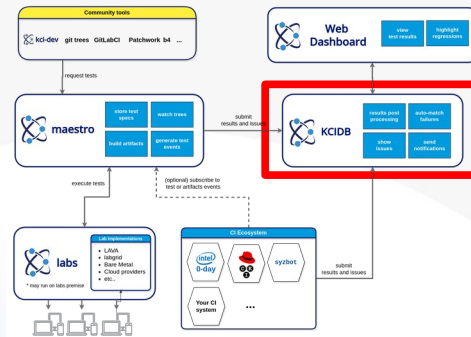
Welcome -

Welcome to Linux Kernel CI report database (KCIDB) dashboard. Here you can find testing reports aggregated from multiple CI systems ("origins"), sent in the past six months. This is a work in progress, and we welcome contributions and participation. See the source code for [the collection system](#), and for [this dashboard](#). Write to kernelci@lists.linux.dev if you want to start submitting results from your CI system, or if you want to receive customized notifications of arriving results.

Repositories

URL	Branches	Checkouts
https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9.git	backport-RHEL-32497-centos-stream-9-main , main , main-automotive	466
https://gitlab.com/cki-project/kernel-ark.git	ark-latest , cki-gating , os-build	372
https://git.kernel.org/pub/scm/linux/kernel/git/broonie/sound.git	for-next , for-linus , for-6.9 (+1)	265
https://gitlab.com/Linaro/lkft/mirrors/stable/linux-stable-rc-queues		199
https://git.kernel.org/pub/scm/linux/kernel/git/stable/linux-stable-rc.git	queue/6.8 , queue/6.6 , queue/6.1 (+11)	118
https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git	master	64

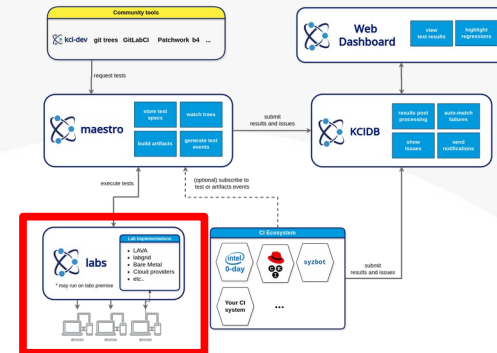
1 2 3 4 5 6 7 8 9



Connecting labs

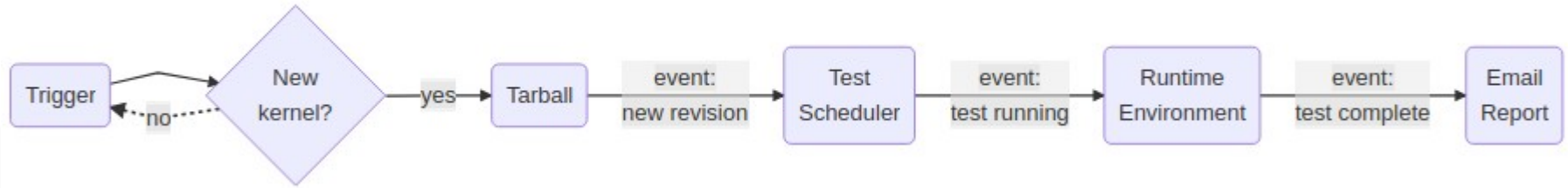
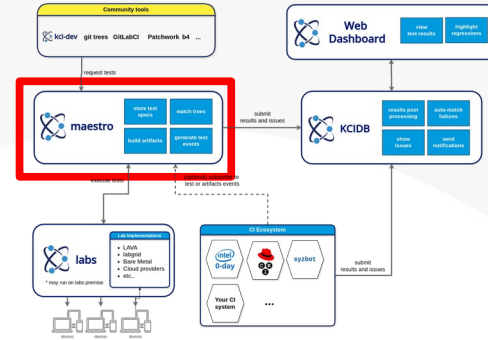


- Physical/virtual
- Build farms (e.g. Kubernetes)
- LAVA:
 - Baylibre
 - Broonie
 - CIP
 - Collabora
 - Qualcomm
- Yours?



Maestro

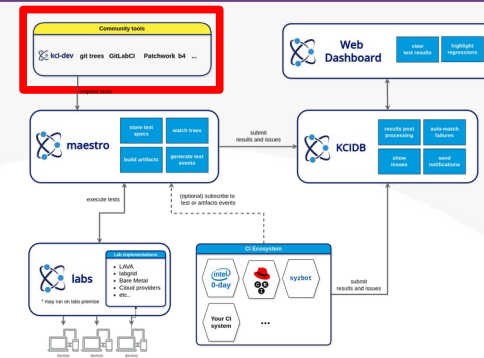
- Tree monitoring
- Event processing
- Task scheduling
- Results submission



<https://docs.kernelci.org/maestro/api/design/>

kci-dev tool

- Stand alone tool to interact with KernelCI
- Custom submissions (test arbitrary commits)
- Results retrieval
- Requesting automated bisection
- <https://kci.dev>



Takeaways

- Extensibility
- Improved system scaling
- Support for new lab types (not only LAVA)

Next steps

Not only managed instances

- Managed
 - <https://kernelci-api.westus3.cloudapp.azure.com>
 - <https://staging.kernelci.org:9000>
- Local – guided
 - <https://docs.kernelci.org/maestro/api/local-instance>
- Local – semiautomatic
 - <https://github.com/kernelci/kernelci-deploy>

Feedback

- What is missing?
- What might have been duplicated?
- What new hardware could be tested?

Getting in touch

- Send an email to kernelci@lists.linux.dev
- IRC: [#kernelci](#) on [libera.chat](#)
- Matrix: [#kci-general:matrix.org](#)
- Discord: <https://discord.gg/3rPE9rNj>

Summary

Final thoughts

- The new system is steadily going through a stabilization phase
- Focus on reliable tests results and relevant reports
- It's all about engaging the community in testing

Thank you!

We are hiring - col.la/careers