

Unifying GitLab CI approaches for the Linux Kernel

Helen Koike
Sebastian Fricke

LPC 2024



What is DRM-CI?

DRM-CI: what is it?

- GitLab-CI pipeline to test DRM
- In kernel tree
- Uses freedesktop infrastructure
- Annotated expectation files
- How to use:
 - Add your repository to gitlab.freedesktop.org
 - Request access to drm-ok group
 - Trigger pipelines



DRM-CI: current pipeline

container	build	amdgpu	i915	mediatek	meson	msm	rockchip	panfrost	software-driver
✓ alpine/x86_64_lava_ssh_client	✓ build-nodebugs:arm64	✓ amdgpu:stoney 2	✓ i915:amly 2	✓ mediatek:mt8173 4	✓ meson:g12b 3	✗ msm:apq8016	🕒 rockchip:rk3288	✓ panfrost:g12b 3	✗ virtio_gpu:none
✓ debian/arm32_test	✓ build:arm32		✗ i915:apl 3	✓ mediatek:mt8183 3		✗ msm:apq8096	✓ rockchip:rk3399 2	✓ panfrost:mt8183 3	✓ vkms:none
✓ debian/arm64_build	✓ build:x86_64		✓ i915:cml 2			✗ msm:sc7180-trogdor-kingoftown 6		🕒 panfrost:rk3288	
✓ debian/arm64_test	✓ igt:arm32		✓ i915:glk 2			✗ msm:sc7180-trogdor-lazor-limozeen 4		✓ panfrost:rk3399 2	
✓ debian/ppc64e_build	✓ igt:arm64		✓ i915:kbl 3			✗ msm:sdm845 6			
✓ debian/s390x_build	✓ igt:x86_64		✓ i915:tgl 5						
✓ debian/x86_32_build	✓ testing:arm32		✓ i915:whl 2						
✓ debian/x86_64_build	✓ testing:arm64								
✓ debian/x86_64_build-base	✓ testing:x86_64								
✓ debian/x86_64_test-base									



COLLABORA

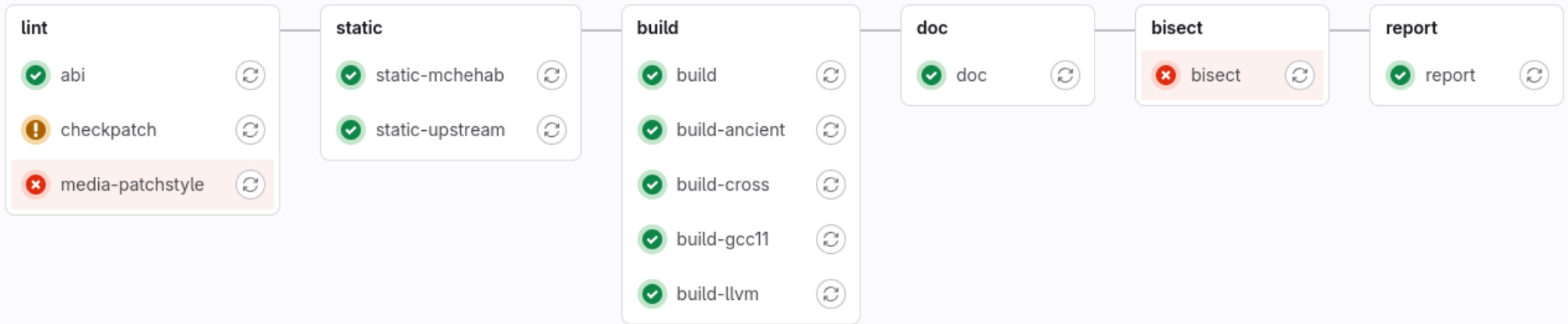
Open First



How others are doing it?

Media-CI

- Recent out-of-tree pipeline on Freedesktop





COLLABORA

KCI-GITLAB: common base

KCI-GITLAB: details

- Patch v1 submitted on 28th Feb 2024
- Meant to be common base
- Test-scenarios feature
 - Allow override jobs (in-tree)
 - Easily share test-scenarios

The image shows a GitLab CI/CD pipeline configuration with four job groups: **container**, **static-checks**, **build**, and **cache**. Each group contains one or more jobs. The **build** group is highlighted, and a dropdown menu is open for the **build-kernel** job, showing three configurations: `build-kernel: [arm64, defconfig, PROVE_LOCKIN]`, `build-kernel: [arm, multi_v7_defconfig, PROVE_L]`, and `build-kernel: [x86_64, x86_64_defconfig, PROVE]`. A mouse cursor is pointing at the first configuration in the dropdown.

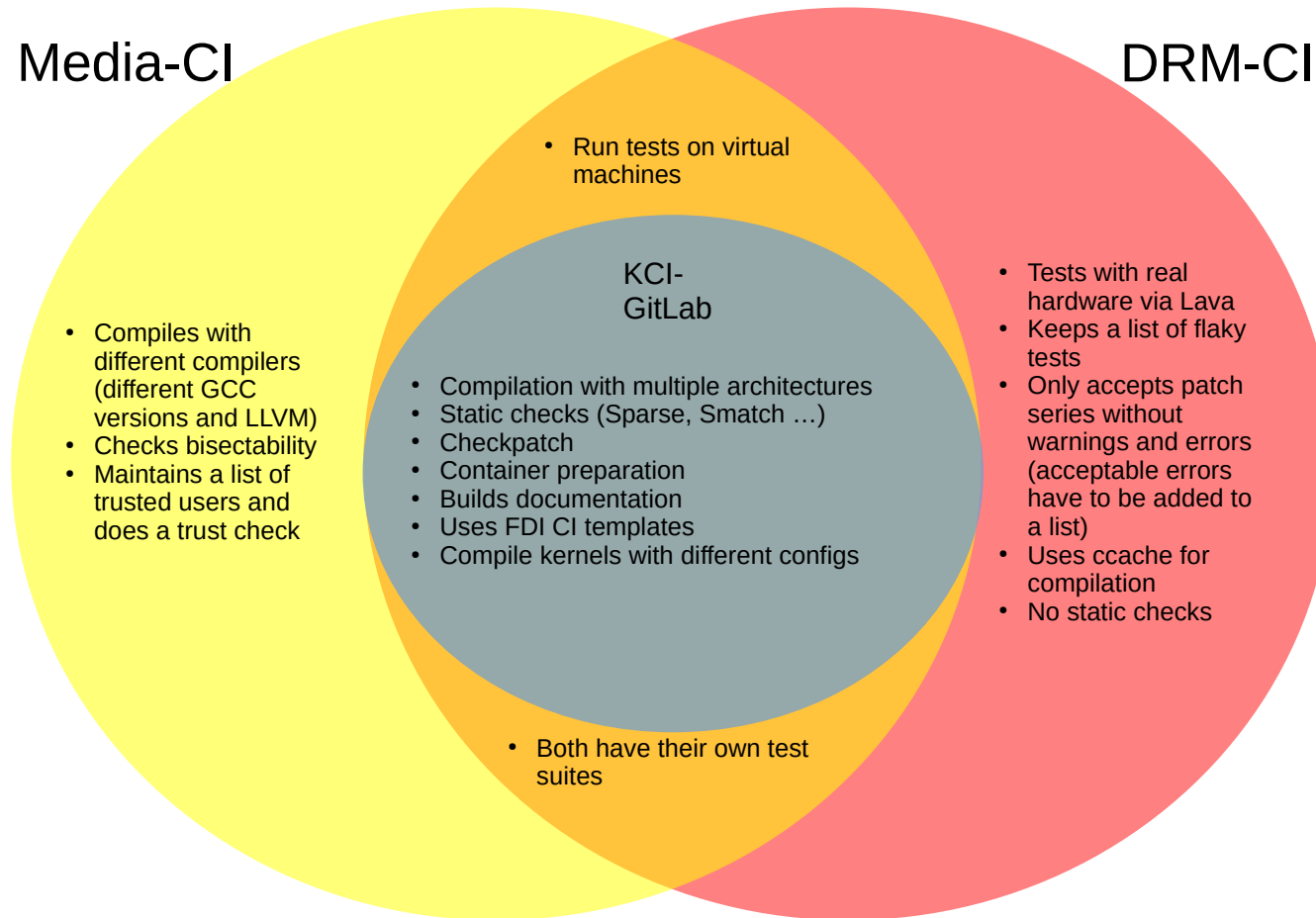
Group	Job Name	Status	Count
container	debian/x86_64_build	Success	1
static-checks	checkpatch	Success	1
static-checks	smatch	Success	3
build	build-docs	Success	3
build	build-kernel	Warning	3
cache	smatch-db-generate	Success	3



Overview of differences and similarities

Media-CI

DRM-CI



How DRM-CI profit from KCI-GITLAB?

- Get static checks
- Easier to specify Test Scenarios (per driver, per maintainer, etc)
- Independent of platform
- Base for other tests (kselftests, kunit, etc...)



What is the problem?

What is the problem?

- Duplicated and inefficient efforts
- Not being up to date with latest best practices
- Not benefiting or contributing to other's work
- Individual infrastructure
- High entrance barrier to subsystems without an existing CI system

Why should you care?

- Reduced maintenance cost
- More reviewers to DRM-CI
- Access to other tests and infrastructure
- Contribute to the Linux testing ecosystem as a whole

Potential down sides

- Slower to make changes:
 - More reviews and tests required
 - Designing changes is more complicated
- Specific to GitLab



Steps to migrate to KCI-GITLAB

- 1) Step 1: Finish **upstreaming** KCI-GITLAB
 - 1) Move KCI-GITLAB to tools/ci/ folder with more generic script (“library” like)
 - 2) Utilize these scripts from tools/ci in DRM-CI**
 - 3) Submit v2 of KCI-GITLAB
 - 4) Work estimation in total: 2 weeks FTE (2 days for 1.2)
- 2) Step 2: Move DRM-CI definition as a **Scenario to KCI-GITLAB**
 - 1) Dependent on KernelCI Labs to dispatch tests to devices
 - 2) Re-implement dependencies from MesaCI in KCI-GITLAB**
 - 3) Write DRM Scenario in KCI-GITLAB
 - 4) Work estimation in total: 2 weeks FTE





Questions for the audience

- What do you think about handling board lab access via the KernelCI? (instead of doing that via Mesa-CI)
- What are you currently missing in the DRM-CI?
- Do you have an idea for funding?
- How should we organize CI development and maintenance workflow?



Thank you!



COLLABORA

Open First