

# What lies beyond the kernel's email workflow?

DevConf.cz 2024

Nikolai Kondrashov, Tales da Aparecida





### Nikolai Kondrashov



Principal Software Engineer, Red Hat KCIDB developer, TSC chair, KernelCI Electronics and embedded enthusiast

Born in Russia, living in Finland





Senior Software Engineer, Red Hat CKI user experience and reliability

Working from Brazil



# 2023 Maintainers Summit











# The email workflow



# KernelCI The email workflow is great

### **Contributors Submit**

### Community Review

### Maintainers Merge

Contributors submit a versioned patch series to mailing lists

Members of the community review each commit, and either ask for changes or give their "Reviewed by"

Maintainers or commiters push the changes to the tree, usually running a list of health checks



# KernelCI The email workflow is good enough

### **Contributors Submit**

### **Community Review**

### Maintainers Merge

Steep learning curve. The discussions are left behind when a new version of the patch series is submitted.

Reviewers are toiled with issues that could be automated away, like formatting problems; conflicts with the head of the tree; code that does not compile cleanly.

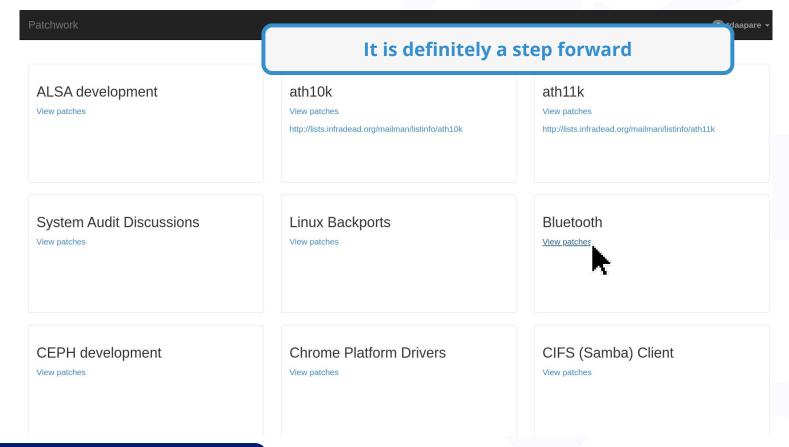
Some of the health checks could also be automated, and made available earlier in the process, reducing maintainer's workload



# The email workflow

with Patchwork



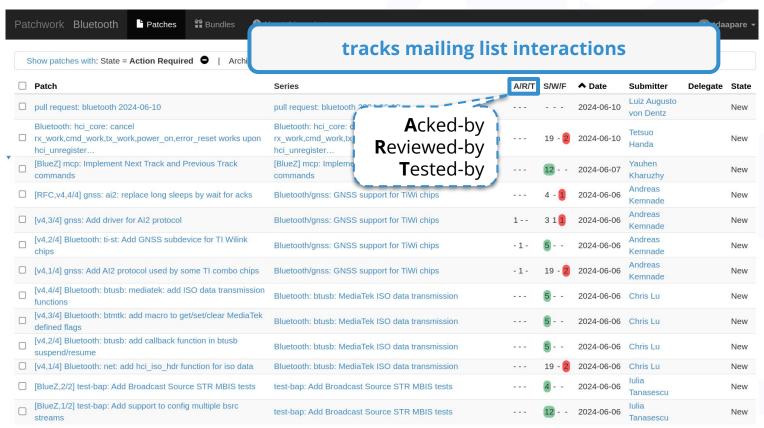




Patchwork Bluetooth Patches Bundles tracks mailing list interactions  Show patches with: State = Action Required  Archi								
	Patch	Series	A/R/T	S/W/F	<b>∧</b> Date	Submitter	Delegate	State
	pull request: bluetooth 2024-06-10	pull request: bluetooth 2024-06-10			2024-06-10	Luiz Augusto von Dentz		New
	Bluetooth: hci_core: cancel rx_work,cmd_work,tx_work,power_on,error_reset works upon hci_unregister	Bluetooth: hci_core: cancel rx_work,cmd_work,tx_work,power_on,error_reset works upon hci_unregister		19 - 2	2024-06-10	Tetsuo Handa		New
	[BlueZ] mcp: Implement Next Track and Previous Track commands	[BlueZ] mcp: Implement Next Track and Previous Track commands		12	2024-06-07	Yauhen Kharuzhy		New
	[RFC,v4,4/4] gnss: ai2: replace long sleeps by wait for acks	Bluetooth/gnss: GNSS support for TiWi chips		4 - 1	2024-06-06	Andreas Kemnade		New
	[v4,3/4] gnss: Add driver for Al2 protocol	Bluetooth/gnss: GNSS support for TiWi chips	1	3 1 1	2024-06-06	Andreas Kemnade		New
	[v4,2/4] Bluetooth: ti-st: Add GNSS subdevice for TI Wilink chips	Bluetooth/gnss: GNSS support for TiWi chips	- 1 -	5	2024-06-06	Andreas Kemnade		New
	[v4,1/4] gnss: Add Al2 protocol used by some TI combo chips	Bluetooth/gnss: GNSS support for TiWi chips	-1-	19 - 2	2024-06-06	Andreas Kemnade		New
	[v4,4/4] Bluetooth: btusb: mediatek: add ISO data transmission functions	Bluetooth: btusb: MediaTek ISO data transmission		5	2024-06-06	Chris Lu		New
	[v4,3/4] Bluetooth: btmtk: add macro to get/set/clear MediaTek defined flags	Bluetooth: btusb: MediaTek ISO data transmission		5	2024-06-06	Chris Lu		New
	[v4,2/4] Bluetooth: btusb: add callback function in btusb suspend/resume	Bluetooth: btusb: MediaTek ISO data transmission		5	2024-06-06	Chris Lu		New
	[v4,1/4] Bluetooth: net: add hci_iso_hdr function for iso data	Bluetooth: btusb: MediaTek ISO data transmission		19 - 2	2024-06-06	Chris Lu		New
	[BlueZ,2/2] test-bap: Add Broadcast Source STR MBIS tests	test-bap: Add Broadcast Source STR MBIS tests		4	2024-06-06	Iulia Tanasescu		New
	[BlueZ,1/2] test-bap: Add support to config multiple bsrc streams	test-bap: Add Broadcast Source STR MBIS tests		12	2024-06-06	Iulia Tanasescu		New

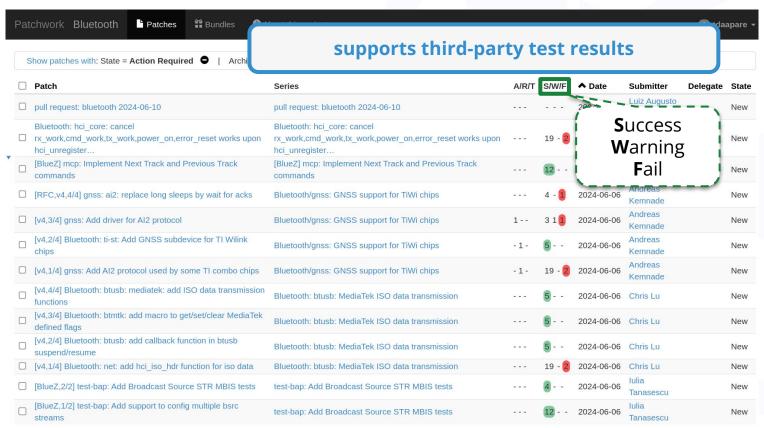


### **KernelCI** Patchwork





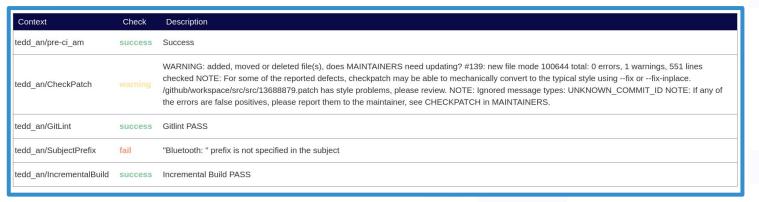
### **KernelCI** Patchwork







#### Checks





# What is the next best thing?



### KernelCI There's more than one way to skin pet a cat

### https://lwn.net/Articles/952675/

kernel developers and maintainers, don't claim that mail clients are good for \*tracking\* the status of patches. That's why we have **patchwork** and other similar tools, and **git forges** do a reasonable job there too compared to mail clients. When it comes to \*reviewing\* code, however, web-based UIs are just terrible.

#### https://lwn.net/Articles/952666/

"One of the things that doesn't seem to have been mentioned in this discussion is how off-putting the email format is for the non-initiated... the kernel developer community might want to take a look at **Gerrit**"

#### https://lwn.net/Articles/952699/

The kernel community needs to agree and adapt single point of entry and use for it's community and development and move it's development to the place where people reside these days (like **Github**) to attract new contributors.

### https://lwn.net/Articles/952688/

**SourceHut** has an interesting patch UI layered on top of email, coupled with the "hut" command line tool that allows patches to be merged directly from the message list id.

The **ForgeJo** (fork of Gitea used at

Codeberg) folks are trying to create a forge-neutral format for messages like Pull Requests...

#### https://lwn.net/Articles/952702/

Github as a solution feels like a non-starter...recall that git itself was a response to closed/commercial vcs. Github also introduces governance issues for user accounts etc all in the hands if a commercial entity, which also seems unacceptable. I would recommend something like a **Gitea** or **Forgejo**.

#### https://lwn.net/Articles/952943/

I'd love to see a good distributed code review tool... The only example I know of is github.com/google/git-appraise. Perhaps it's the only one cause it's good enough, and we all should get behind it?



### **KernelCI** There's more than one way to skin pet a cat

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### https://lwn.net/Articles/952798/

As far as I can tell, the kernel community doesn't feel a need to attract more contributors. And that seems right to me!

Linux is dominant, so lots of people

Linux is dominant, so lots of people have to contribute to the kernel to get their job done, so there's no need to attract more.

### https://lwn.net/Articles/952937/

Western Civilization is collapsing, the majority of young people are useless for mankind, but there are still enough bright people who may still do many great things.

### https://lwn.net/Articles/953136/

Half of the population has an IQ less than 100. Has always been like that. You are just getting old and grumpy.



# What is the next best thing?

We like Git forges.





# KernelCI What is the next best thing?

### Which Git forge to use?

- Gitea
- Forgejo
- Gerrit
- SourceHut

- GitHub
- GitLab
- Other:
- All of the above





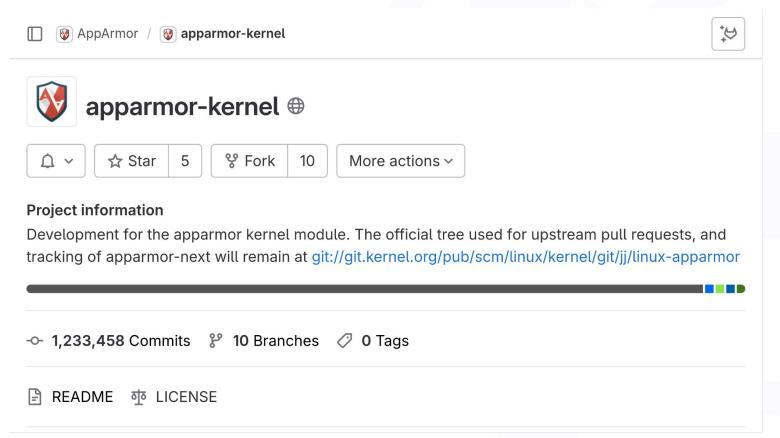
# What is the next best thing?

We like Git forges. We like GitLab.



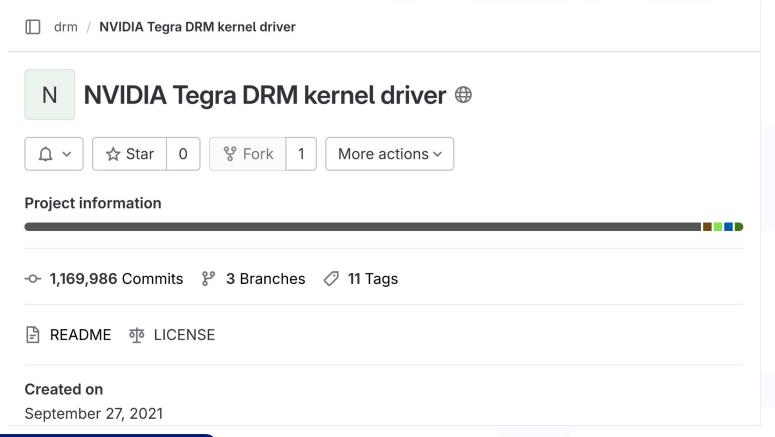


# **KernelCI** Some just keep a mirror there



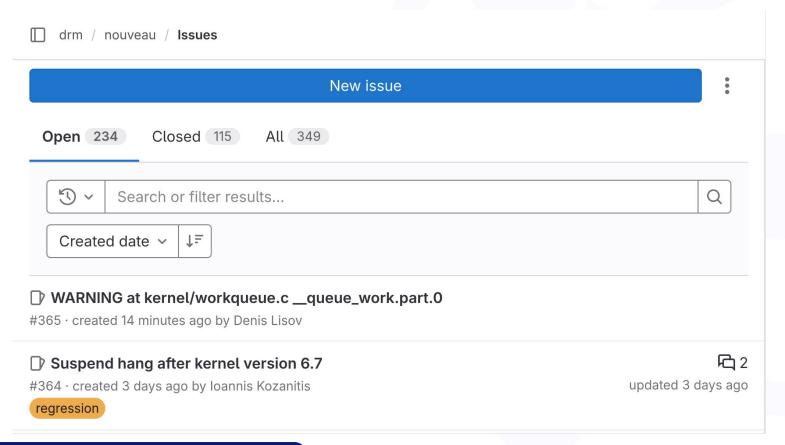


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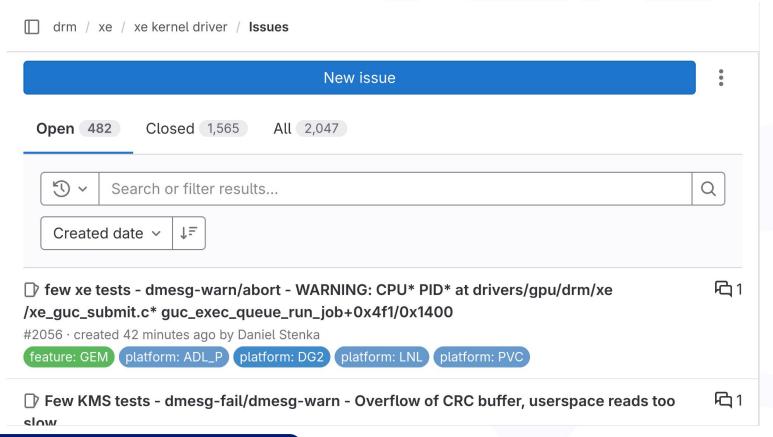


# **KernelCI** Some also track issues



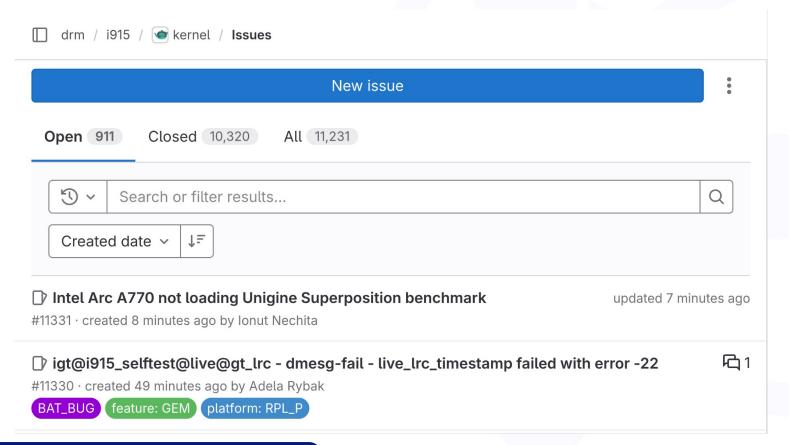


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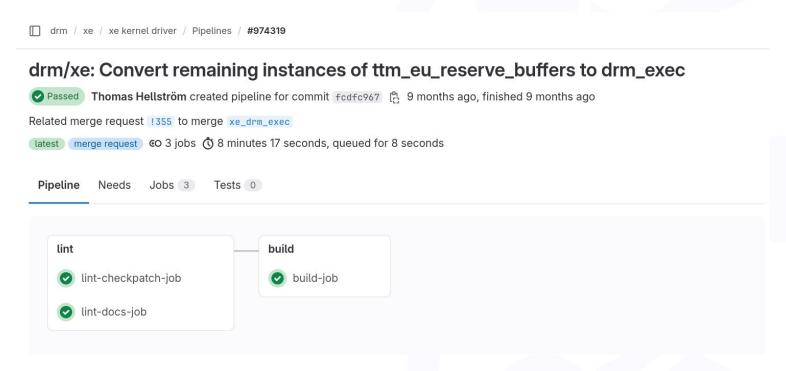


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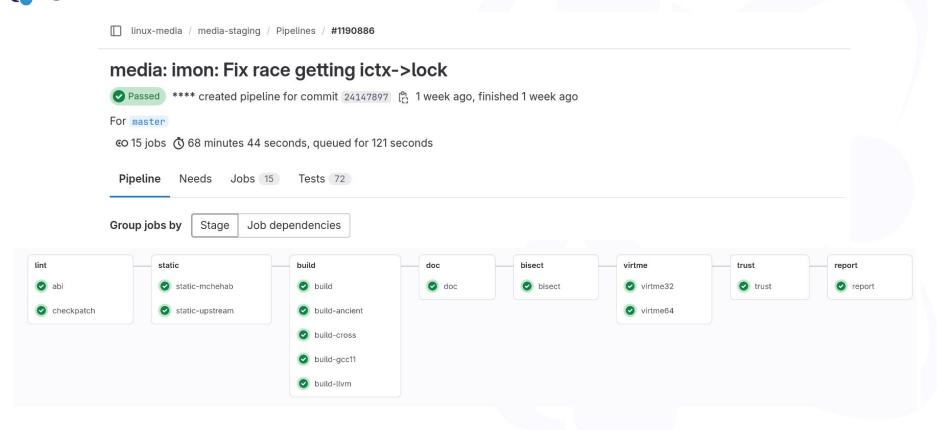


# KernelCI Others use the CI



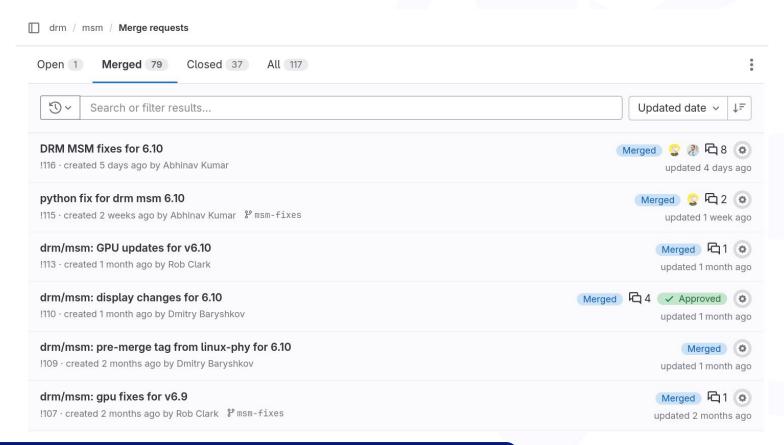


# KernelCI Others use the CI



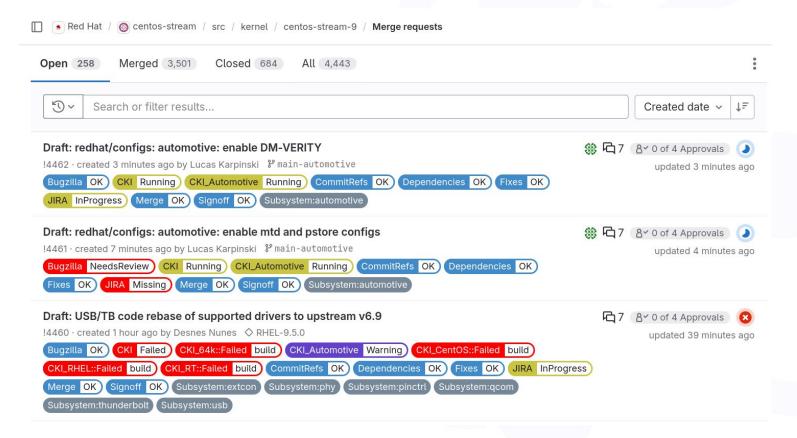


### KernelCI And some use MRs





# KernelCI And some use MRs... a lot!





### Let's focus on CI



### Let's focus on CI







## Intel Xe DRM driver



## **≡** Intel Xe

文A 8 languages Y

Article Talk Read Edit View history Tools >

From Wikipedia, the free encyclopedia

Not to be confused with Intel Parallel Studio XE or Intel Xeon.

**Intel Xe** (stylized as **Xe** and pronounced as two separate letters,<sup>[1]</sup> abbreviation for "e**X**ascale for **e**veryone"<sup>[2]</sup>), earlier known unofficially as **Gen12**,<sup>[3][4]</sup> is a GPU architecture developed by Intel.<sup>[5]</sup>

Intel Xe includes a new instruction set architecture. The Xe GPU family consists of a series of microarchitectures, ranging from integrated/low power (Xe-LP),<sup>[6]</sup> to enthusiast/high performance gaming (Xe-HPG), datacenter/high performance (Xe-HP) and high performance computing (Xe-HPC).<sup>[7][8]</sup>

History [edit]

# intel Xe intel。 iRIS GRAPHICS Release date September 2, 2020; 3 years ago

## June 2024 Archives by thread

**Developed on a maillist** 

- Messages sorted by: [subject][author][date]
- More info on this list...

**Starting:** *Sat Jun 1 18:19:38 UTC 2024* **Ending:** *Tue Jun 11 14:52:54 UTC 2024* 

Messages: 1116

- [drm-xe:drm-xe-next] BUILD SUCCESS 877517f2dcba58867b64e3e0c616f26c62d4a8db\_kernel test robot
- [PATCH v2] MAINTAINERS: Update Xe driver maintainers Thomas Hellström
  - ∘ ✓ CI.Patch applied: success for MAINTAINERS: Update Xe driver maintainers (rev2) Patchwork
  - ∘ ✓ CI.checkpatch: success for MAINTAINERS: Update Xe driver maintainers (rev2) Patchwork
  - ∘ ✓ CI.KUnit: success for MAINTAINERS: Update Xe driver maintainers (rev2) Patchwork
  - ∘ ✓ CI.Build: success for MAINTAINERS: Update Xe driver maintainers (rev2) Patchwork
  - X CI.Hooks: failure for MAINTAINERS: Update Xe driver maintainers (rev2) Patchwork
  - ∘ ✓ CI.checksparse: success for MAINTAINERS: Update Xe driver maintainers (rev2) Patchwork
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  - X CI.FULL: failure for MAINTAINERS: Update Xe driver maintainers (rev2) Patchwork
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- [PATCH 2/2] drm/xe: Fix xe force wake assert held for enum XE FORCEWAKE ALL Ghimiray, Himal Prasad
- [PATCH 1/2] drm/xe: Add member supported\_domains to xe\_force\_wake\_Ghimiray, Himal Prasad



Normally uses Intel GFX CI



tree ▼

Hardware List

## **Intel GFX CI**

#### What Is It About?

We are continuously testing i915 and Intel Xe (a Linux kernel device drivers for Intel Graphics) in an automated fashion, with a goal of having production ready upstream.

#### **Hardware List**

Our CI system is composed of multiple Intel machines spanning many generations and display types. You can find our full hardware list here.

## **Pre-Merge Testing**

This is the crux of this CI system. We test each patch that goes in our driver (i915), Intel Xe or in the DRM drivers test suite we use (IGT GPU Tools) before it lands in the repository and compare the results with the post-merge baseline (we filter out known bugs). This shifts the cost of integration on the people making the change and helps us avoid time-consuming bisection and reverts.

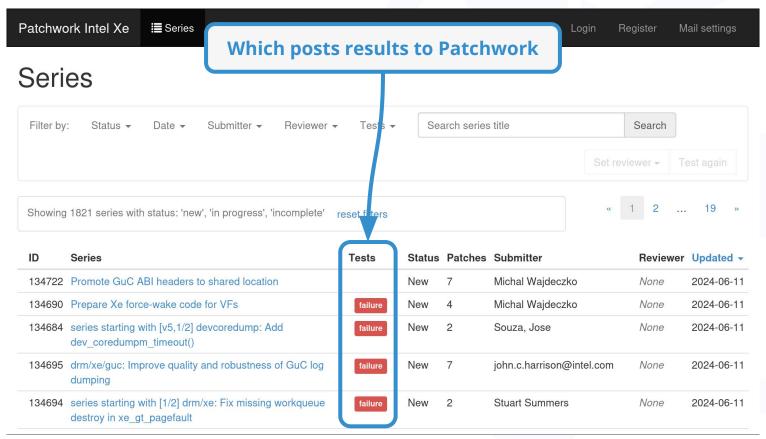
Since we accept patches through mailing lists, this is where you can find the results - they are sent out as a replies to the original mail. We run BAT and FULL IGT (if BAT is successful). On a usual day you can expect result emails for a BAT within 1 hour and for FULL IGT within 6 hours. You will receive the emails even if the run is successful.

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- > Queues
- > Forcing Tests In BAT And Changing
- Configuration > Testing Combined IGT And Kernel
- Changes available only for i915 > Git Trees Tested Post-Merge
- > Repositories With CI Tags
- > Results Filtering And Bug Tracking
- > The Kinds Of Runs
- > Basic Acceptance Tests (aka BAT)
- > Full IGT (aka sharded runs)
- > Idle Runs
- > Other Runs
- > Contacts





## June 2024 Archives by thread

Which then reports to the maillist

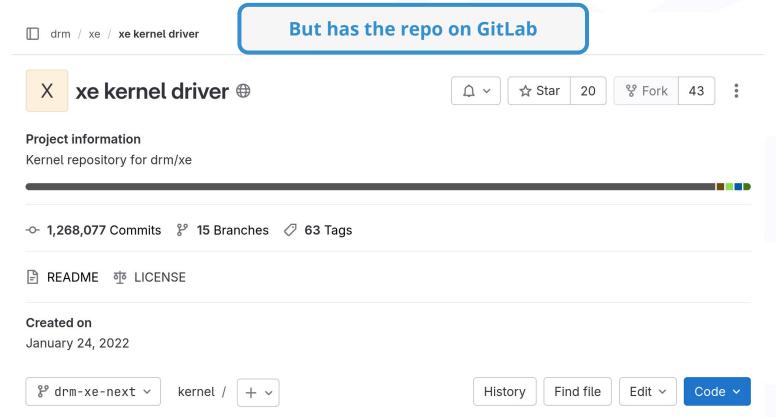
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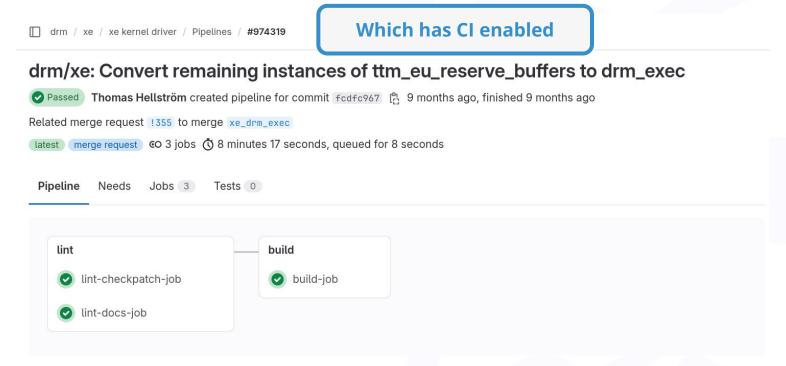
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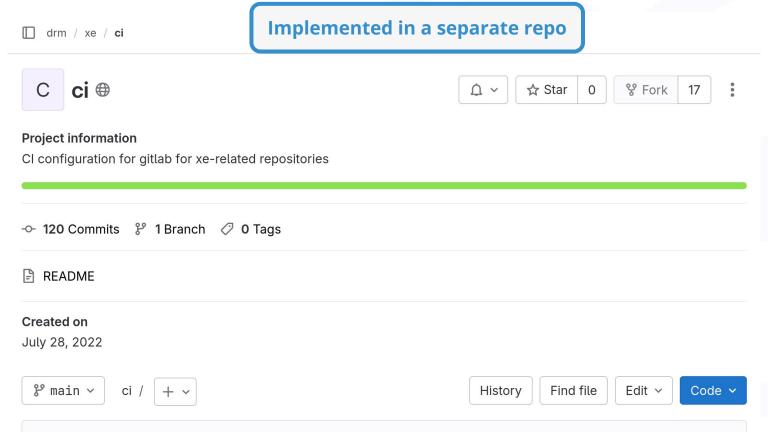














drm / xe / ci

## Implemented in a separate repo

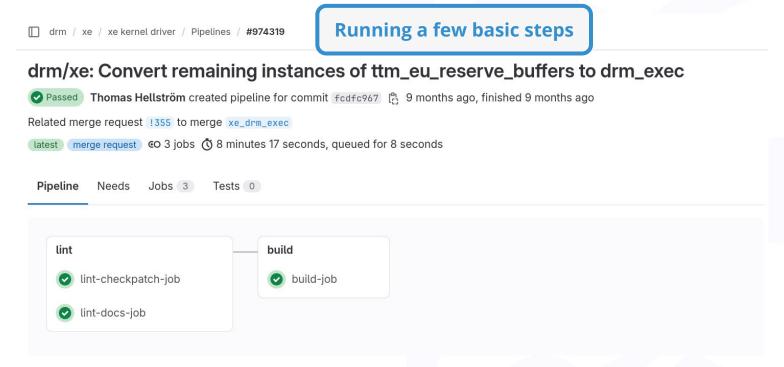
Name	Last commit	Last update
hooks	hooks: Fix build after 6.10	5 days ago
hernel hernel	Merge branch 'pr_fault-injection-r	3 weeks ago
M♣ README.md	config: Use minimized distro confi	4 months ago
□ re-config.sh	re-config: Allow to use different b	3 weeks ago
□ run-hooks.sh	run-hooks: Print message at the e	1 year ago

	README.md
--	-----------

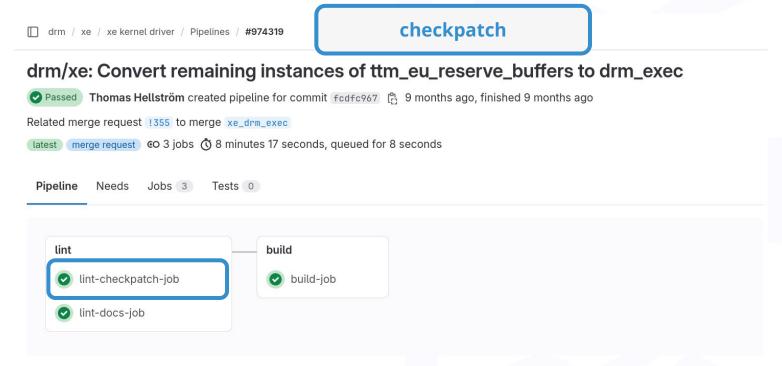
## Xe CI

CI configuration for Xe-related repositories.







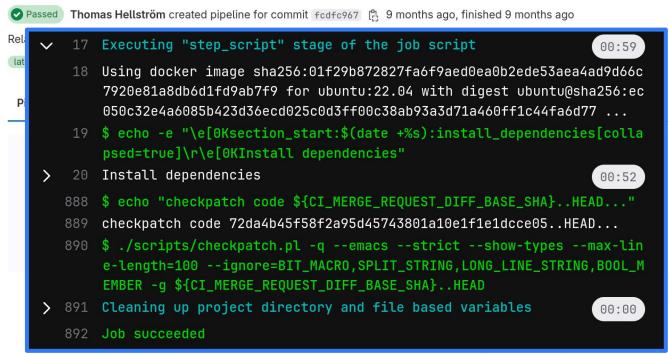




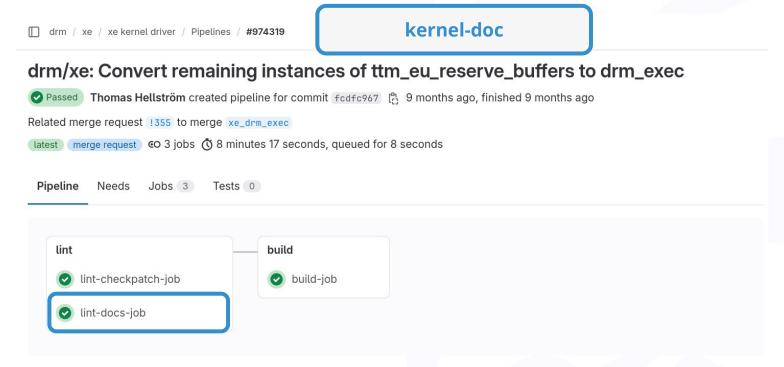
drm / xe / xe kernel driver / Pipelines / #974319

checkpatch

## drm/xe: Convert remaining instances of ttm\_eu\_reserve\_buffers to drm\_exec

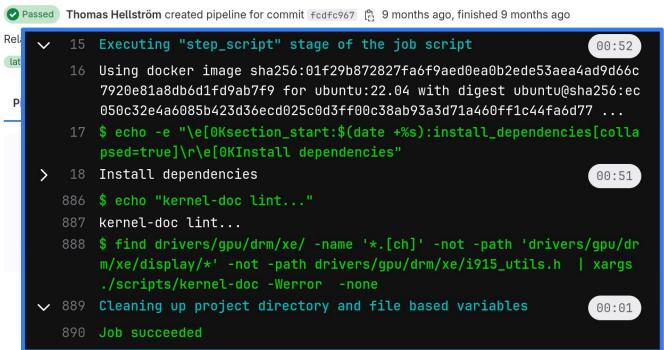




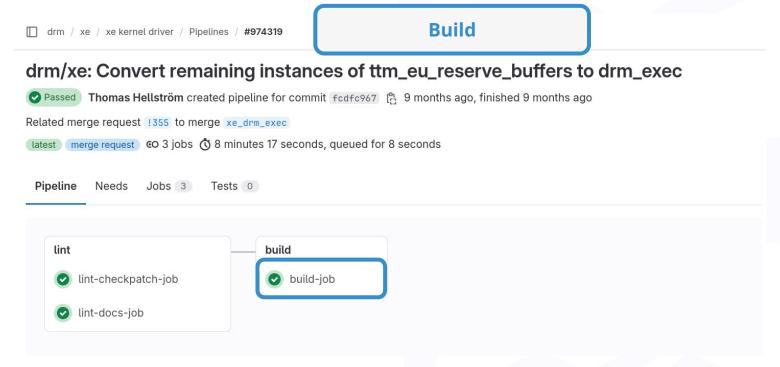




## drm/xe: Convert remaining instances of ttm\_eu\_reserve\_buffers to drm\_exec









**Build** drm / xe / xe kernel driver / Pipelines / #974319 drm/xe: Convert remaining instances of ttm\_eu\_reserve\_buffers to drm\_exec Passed Thomas Hellström created pipeline for commit fcdfc967 [ 9 months ago, finished 9 months ago Rela Build x86-64 03:52 8875 \$ echo -e "\e[OKsection\_start:\$(date +%s):build\_x86\_64\_warnings[col lapsed=true]\r\e[0KBuild x86-64 - xe with W=1" Build x86-64 - xe with W=1 05:25 √ 9137 Running after\_script 00:00 9138 Running after script... 9139 \$ echo -e "\e[0Ksection\_start:\$(date +%s):ccache\_after[collapsed=tr ue]\r\e[0Kccache stats after build" > 9140 ccache stats after build 00:00 √ 9156 Cleaning up project directory and file based variables 00:01 9157 Job succeeded



## The whole of CI YAML

```
workflow:
      rules:
        - if: $CI PIPELINE SOURCE == 'merge request event'
    default:
      tags:
        - xe
      before script:
        - echo -e "\e[0Ksection_start:$(date +%s):install_dependencies[collapsed=true]\r\e[0KInstall dependencies"
        - apt install --ves
12
            git perl-doc
13
            build-essential ccache
14
            bc gawk flex bison libelf-dev libpci-dev libiberty-dev autoconf xz-utils
        - echo -e "\e[0Ksection_end:$(date +%s):install_dependencies\r\e[0K"
16
   stages:
     - lint
      - build
20
21 lint-checkpatch-job:
      stage: lint
      allow failure: true
      # TODO: move to using dim from maintainer-tools
25
26
        - echo "checkpatch code ${CI MERGE REQUEST DIFF BASE SHA}...HEAD..."
        - ./scripts/checkpatch.pl
28
            -q --emacs --strict --show-types
29
            --max-line-length=100
30
            --ignore=BIT_MACRO,SPLIT_STRING,LONG_LINE_STRING,BOOL_MEMBER
31
            -g ${CI_MERGE_REQUEST_DIFF_BASE_SHA}..HEAD
32
    lint-docs-job:
      stage: lint
      script:
36
        - echo "kernel-doc lint..."
37
        - find drivers/qpu/drm/xe/ -name '*.[ch]'
38
            -not -path 'drivers/qpu/drm/xe/display/*'
39
            -not -path drivers/qpu/drm/xe/i915_utils.h
            xargs ./scripts/kernel-doc -Werror -none
```

```
42 .ccache-setup:
      variables:
        CCACHE COMPILERCHECK: "content"
        CCACHE COMPRESS: "true"
        CCACHE_DIR: /cache/xe-kernel/ccache
      # Use ccache transparently, and print stats before/after
      before script:
        - !reference [default, before_script]
        - export PATH="/usr/lib/ccache:$PATH"
        - export CCACHE_BASEDIR="$PWD"
        - echo -e "\e[0Ksection_start:$(date +%s):ccache_before[collapsed=true]\r\e[0Kccache stats before build"
        - ccache --show-stats
        - echo -e "\e[OKsection end:$(date +%s):ccache before\r\e[OK"
55
56
        - echo -e "\e[0Ksection start:$(date +%s):ccache after[collapsed=true]\r\e[0Kccache stats after build"
        - ccache --show-stats
        - echo -e "\e[0Ksection_end:$(date +%s):ccache_after\r\e[0K"
59
60 build-job:
      extends: .ccache-setup
      stage: build
      script:
        - git clone https://gitlab-ci-token:${CI_JOB_TOKEN}@gitlab.freedesktop.org/drm/xe/ci.git .ci
        - echo -e "\e[0Ksection_start:$(date +%s):build_x86_64[collapsed=true]\r\e[0KBuild x86-64"
        - mkdir -p build64
68
        - cat .ci/kernel/kconfig > build64/.config
        - make O=build64 olddefconfig
70
        - make 0=build64 -j$(nproc)
        - echo -e "\e[0Ksection_end:$(date +%s):build_x86_64\r\e[0K"
72
73
        - echo -e "\e[0Ksection start:$(date +%s):build x86 64 warnings[collapsed=true]\r\e[0KBuild x86-64 - xe with W=1"
         # CONFIG DRM XE DISPLAY currently breaks build with W=1. Just disable it for now
        - ./scripts/config --file build64/.config --disable CONFIG_DRM_XE_DISPLAY
        - make O=build64 modules_prepare

    make 0=build64 M=drivers/gpu/drm/xe W=1 -j$(nproc)

78
        - echo -e "\e[0Ksection end:$(date +%s):build x86 64\r\e[0K"
79
```



# **Multimedia and Television Support**





# LNUXT

### **h** Home News **Documentation Projects Mailing Lists** Repositories **Downloads**

#### Wiki pages

- V4L-DVB
- VDR

#### Links

- GIT trees
- **Patchwork**

## **Multimedia and Television Support on** Linux

The LinuxTV community develops and maintains the Linux Kernel Media Subsystems and several userspace libraries and applications.

The Linux Kernel Media Subsystems provide support for devices like webcams, streaming capture and output, analog TV, digital TV, AM/FM radio, Sofware Digital Radio (SDR), remote controllers and encoders/decoders for compressed video formats. It offers native support for a large number of drivers for commonly available PCI cards and USB devices, but the subsystems are also targeted



## Linux Media

**Developed on a maillist** 

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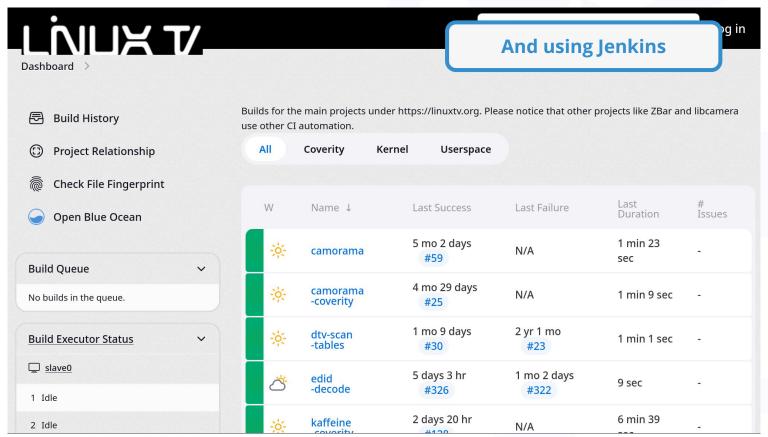
[Prev Page][Next Page]

- [PATCH] media: dvb-frontends: add missing MODULE\_DESCRIPTION() macros, Jeff Johnson
- [PATCH v9 0/3] media: i2c: Add support for GC08A3 sensor, Zhi Mao
  - o [PATCH v9 1/3] media: dt-bindings: i2c: add GalaxyCore GC08A3 image sensor, Zhi Mao
  - [PATCH v9 2/3] media: i2c: Add GC08A3 image sensor driver, Zhi Mao
  - [PATCH v9 3/3] MAINTAINERS: Add entry for GC08A3 image sensor, Zhi Mao
- [PATCH v3 0/3] media: i2c: Add support for GT97xx VCM, Zhi Mao
  - [PATCH v3 1/3] media: dt-bindings: i2c: add Giantec GT97xx VCM, Zhi Mao
    - Re: [PATCH v3 1/3] media: dt-bindings: i2c: add Giantec GT97xx VCM, AngeloGioacchino Del Regno
  - [PATCH v3 2/3] media: i2c: Add GT97xx VCM driver, Zhi Mao
    - Re: [PATCH v3 2/3] media: i2c: Add GT97xx VCM driver, AngeloGioacchino Del Regno
  - [PATCH v3 3/3] MAINTAINERS: Add entry for GT97xx VCM driver, Zhi Mao
- [GIT PULL FOR v6.11] Convert mtk-cir binding, Sean Young



LinuxTV Patchwork Linux Media k	ernel patches	racked	on Pa	ntchwor Register	Mail settings
Show patches with: State = Action Required	Archived = <b>No</b>   1269 pa	tches			
			«	1 2 3 4	<b>6 7</b> »
Patch	Series	A/C/F/R/T	S/W/F	<b>∧</b> Date	Submitter
media: dvb-frontends: add missing MODULE_DESCRIPTION() macros	media: dvb-frontends: add missin MODULE_DESCRIPTION() macros	g		2024-06-12	Jeff Johnson
[v9,3/3] MAINTAINERS: Add entry for GC08A3 image sensor	media: i2c: Add support for GC08A3 sensor			2024-06-12	Zhi Mao
[v9,2/3] media: i2c: Add GC08A3 image sensor driver	media: i2c: Add support for GC08A3 sensor	1-		2024-06-12	Zhi Mao
[v9,1/3] media: dt-bindings: i2c: add GalaxyCore GC08A3 image sensor	media: i2c: Add support for GC08A3 sensor	3 -		2024-06-12	Zhi Mao
[v3,3/3] MAINTAINERS: Add entry for GT97xx VCM driver	media: i2c: Add support for GT97xx VCM			2024-06-12	Zhi Mao
[v3,2/3] media: i2c: Add GT97xx VCM driver	media: i2c: Add support for GT97xx VCM			2024-06-12	Zhi Mao
[v3,1/3] media: dt-bindings: i2c: add Giantec	media: i2c: Add support for	1-		2024-06-12	Zhi Mao

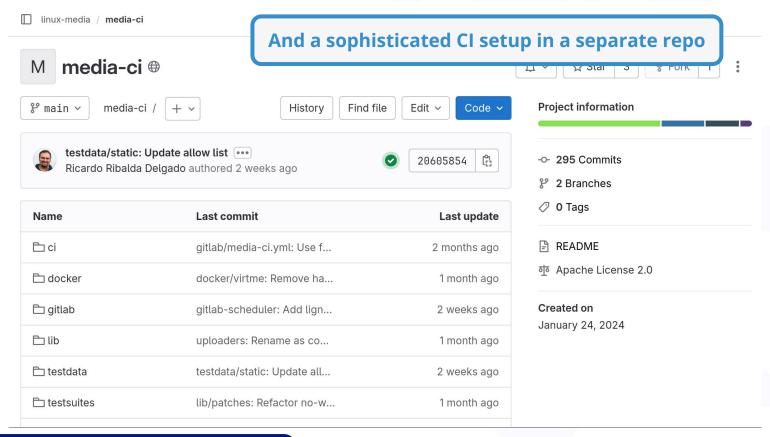






□ linux-media	Yet has a presence on GitLab			
∨ %• U users ⊕				
	<b>★</b> 0	6 days ago		
P patchwork	<b>★</b> 0	1 month ago		
P playground	pload t 🖈 0	1 day ago		
	<b>★</b> 0	2 weeks ago		
S sebastianfricke      ⊕	<b>★</b> 0	20 hours ago		
	★ 3	1 week ago		
	<b>★</b> 1	1 day ago		







∏ linux-media / media-ci

#### Linux-media CI

## Seriously, check out the README.md there!

This is a set of scripts to test and validate the media subsystem of the Linux Kernel. It is meant to help contributors, committers and maintainers of our beloved subsystem.

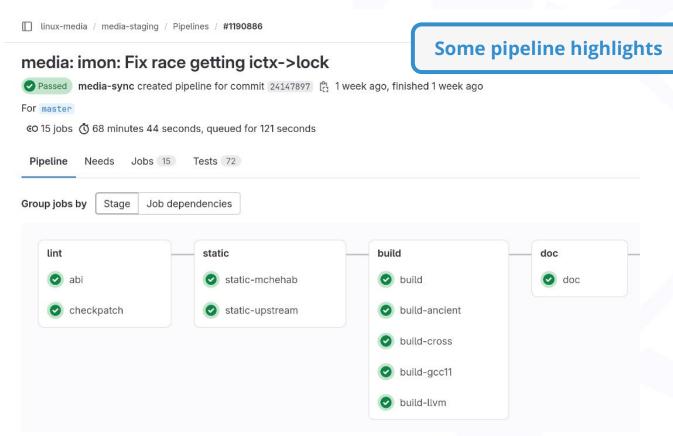
- Linux-media Cl
  - Preparation
    - Gitlab
    - Public container
    - Self generated container
    - Locally
  - Tests
    - ABI testsuite
    - Build testsuite
    - LLVM testsuite
    - Build ancient testsuite
    - Bisect testsuite
    - 01 1 1 1 1 1
    - Checkpatch testsuite
    - Doc testsuite
    - Static testsuite
    - Virtme testsuite
    - Trust testsuite

- -0- 295 Commits
- ₽ 2 Branches
- O Tags
- README
- কা Apache License 2.0

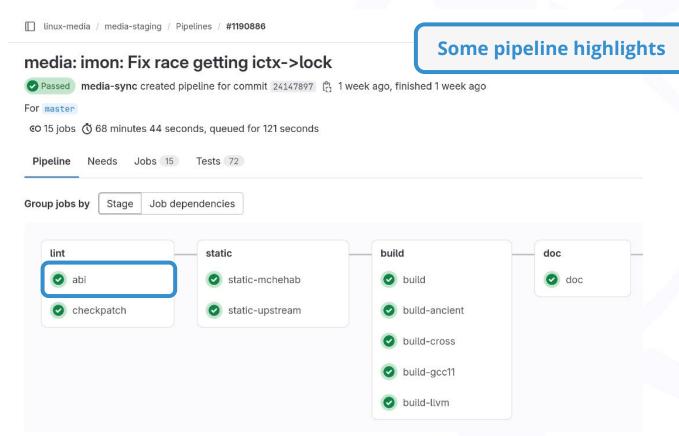
#### Created on

January 24, 2024

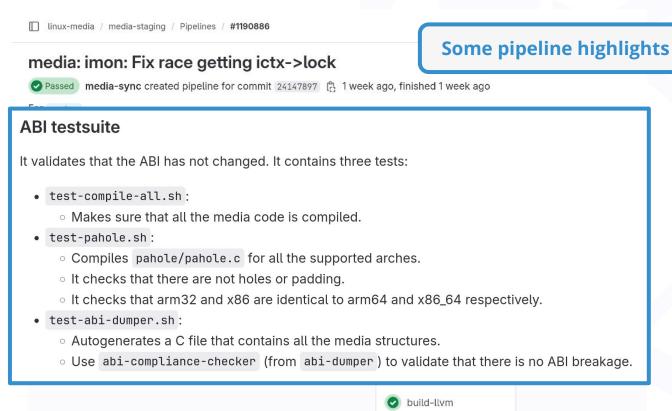




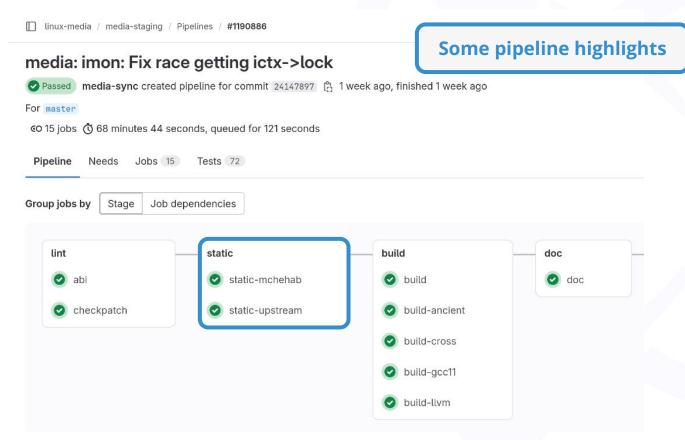




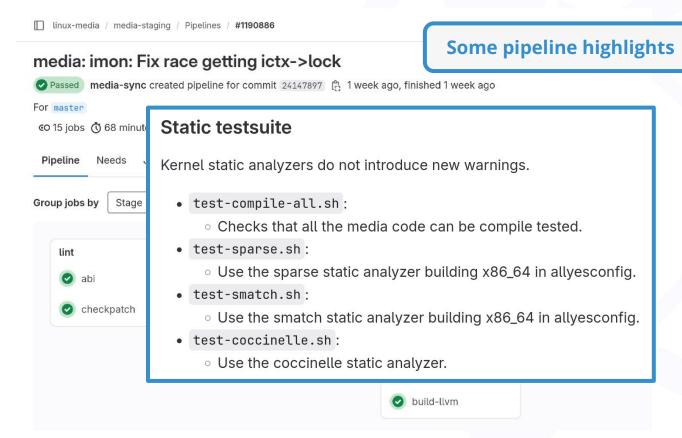




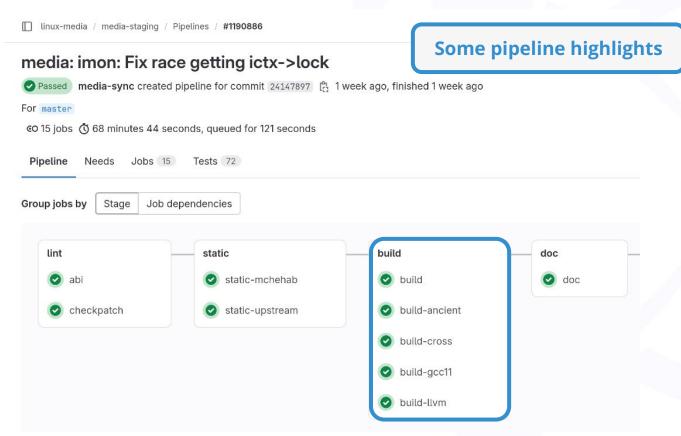




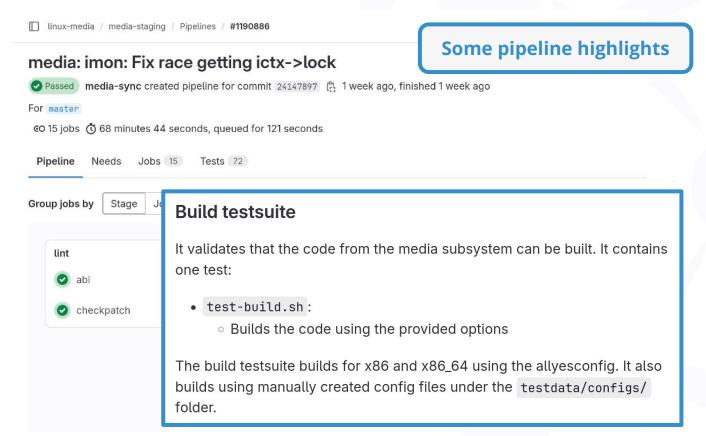




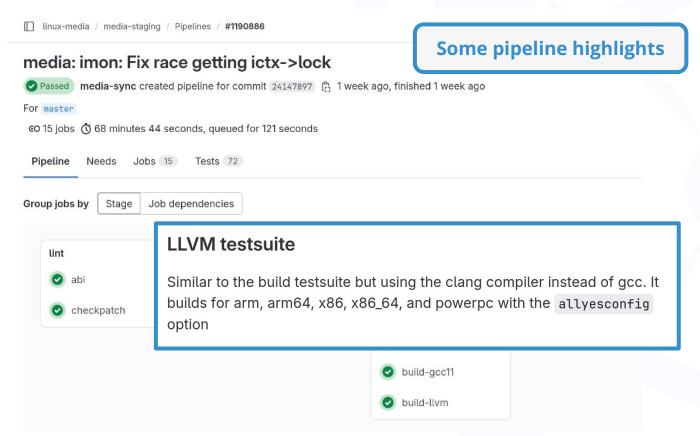




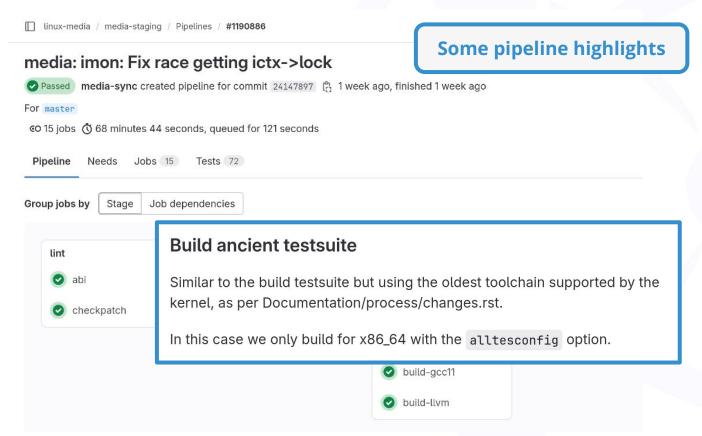




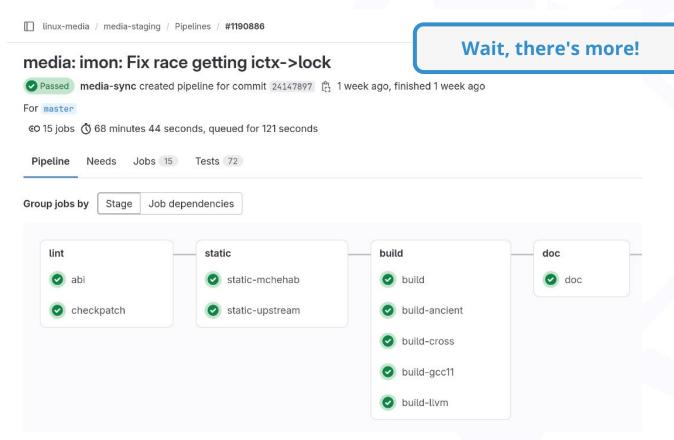




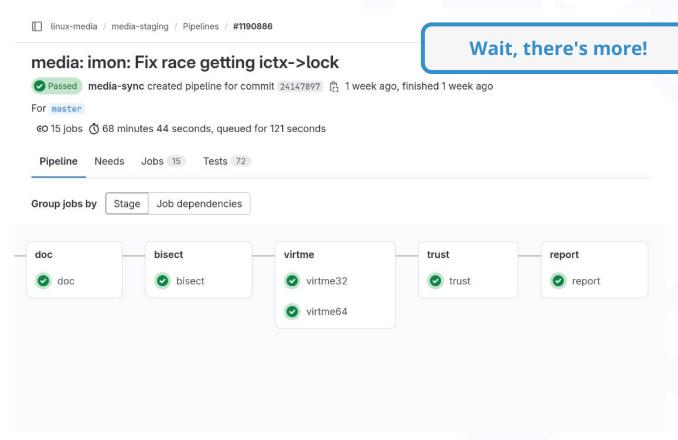




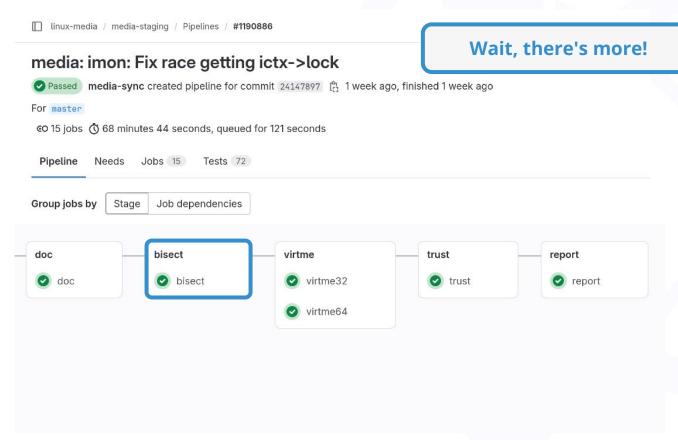




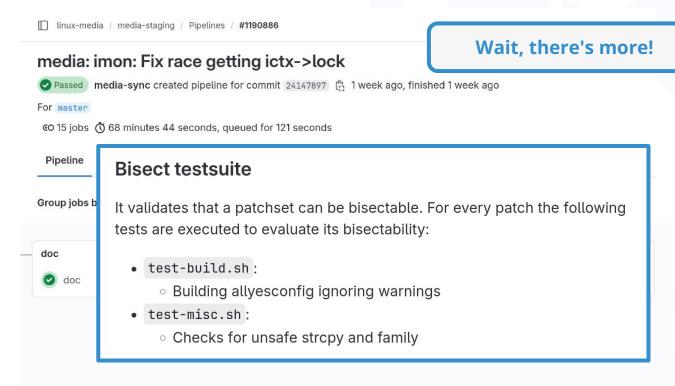




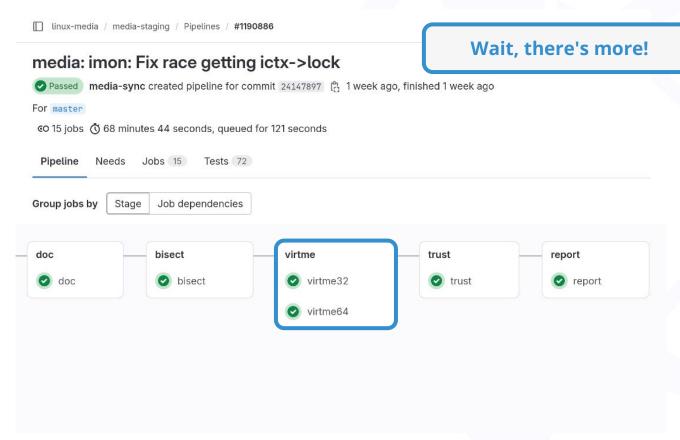




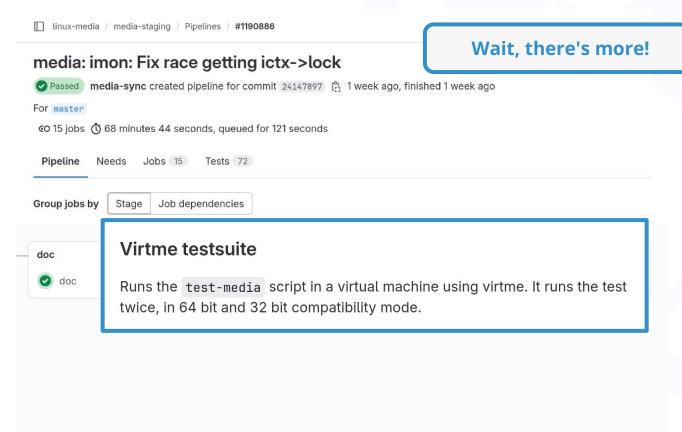




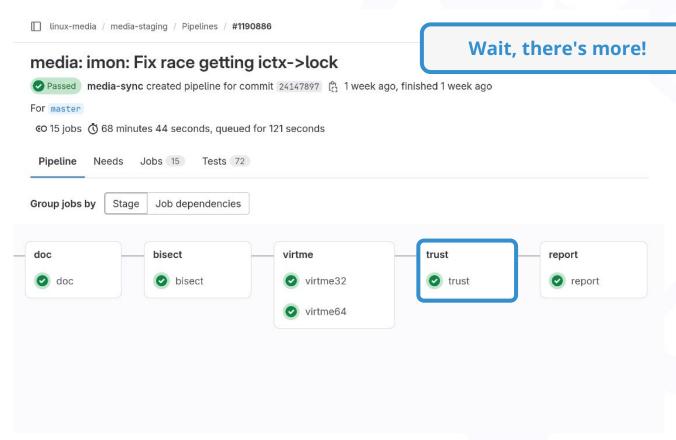




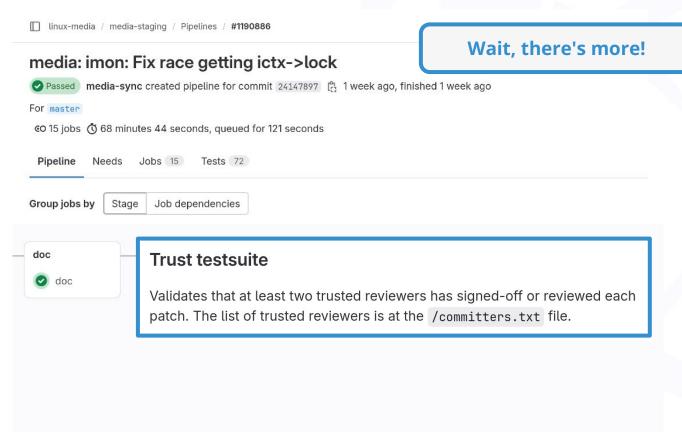




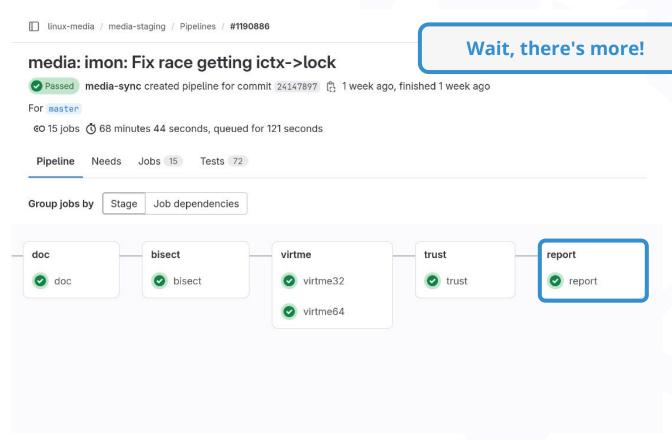














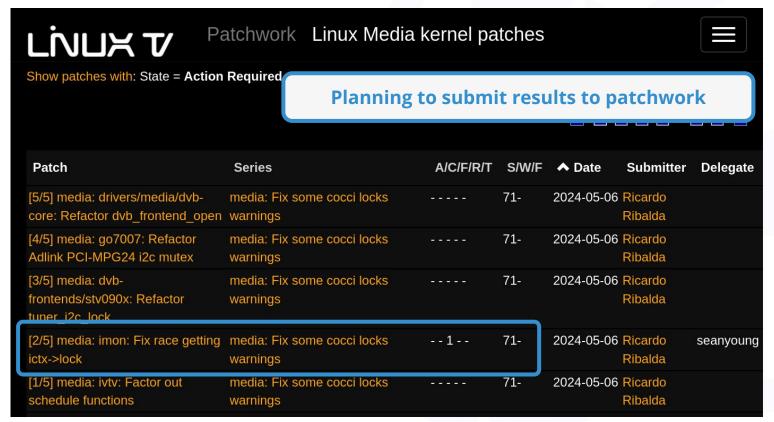




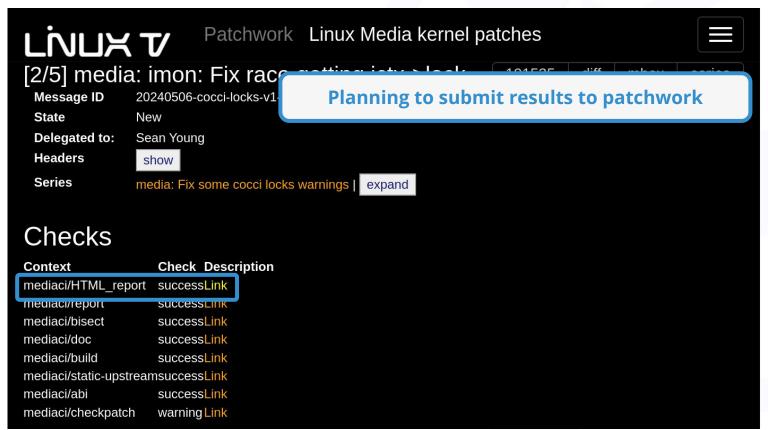
linux-media / media-ci / Repository

```
stages:
  - prep
                       But used via pushes only, not merge requests
 - lint
 - docker
 - integration
  - deploy
workflow:
 rules:
 - if: $CI_COMMIT_BRANCH == $CI_DEFAULT_BRANCH
   when: always
  - if: $CI_COMMIT_BRANCH
   changes:
     paths:
     - 1*1
      - '**/*'
      compare_to: refs/heads/main
   when: always
```









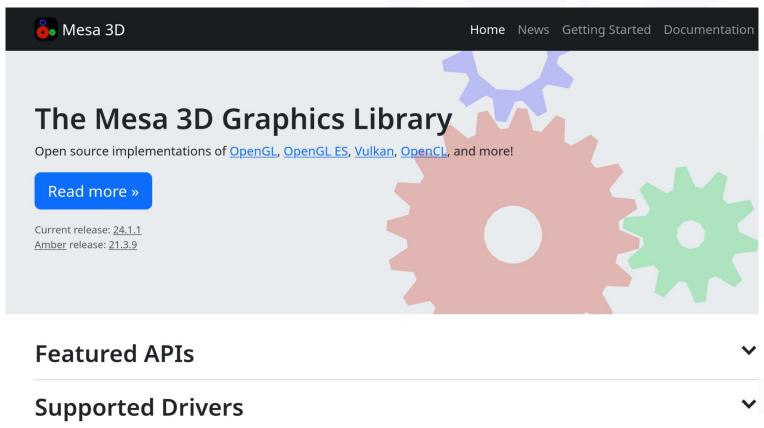






### Mesa3D





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LPC 2018 - Overview

Call for Proposals

Overview Schedule

Detailed Schedule

Etherpads

Attend

Lunch Map

LPC blog

Anti-harassment policy

FAQs

Contact

#### Migrating to Gitlab

15 Nov 2018, 14:00

( 45m

Pavillion/Ballroom-AB (Sheraton Vancouver Wall Center)

#### Speaker

Daniel Vetter (Intel)

#### Description

Over the past few years the graphics subsystem has been spearheading experiments in running things differently; Pre-merge CI wrapped around mailing lists using patchwork, committer model as a form of group maintainership on steroids, and other things. As a result the graphics people have run into some interesting new corner cases of the kernel's "patches carved on stone tablets" process.

On the other hand the freedesktop.org project, which provides all the server infrastracture for the graphics subsystem, is undergoing a big reorganization of how they provide their services. The biggest change is migrating all source hosting over to a gitlab instance.

This talk will go into the why of these changes and detail what is definitely going to change, and what is being looked into more as experiments with open outcomes.

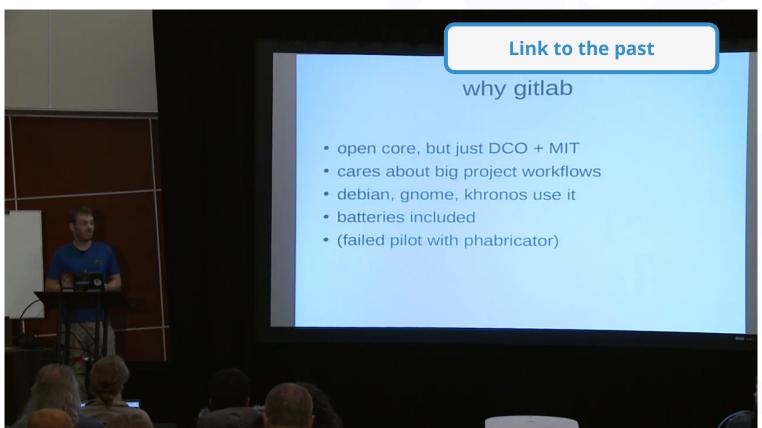




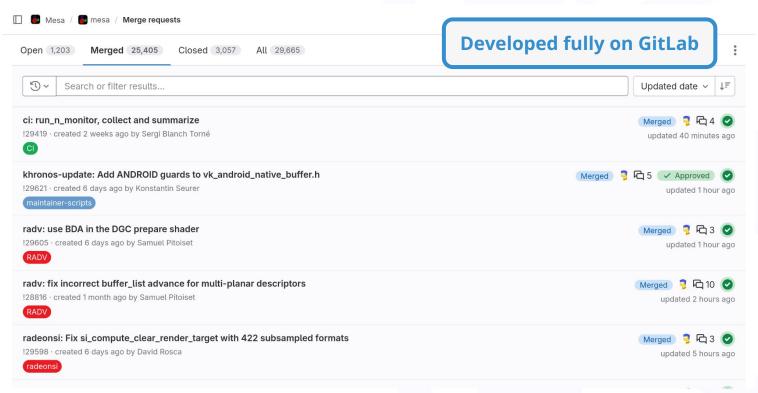
LPC Main Track



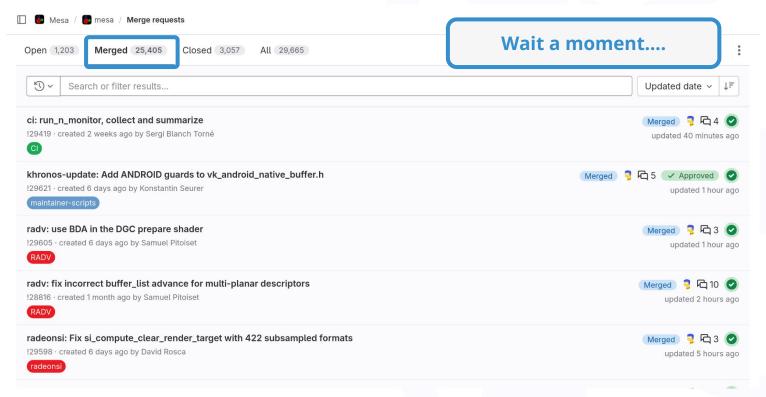




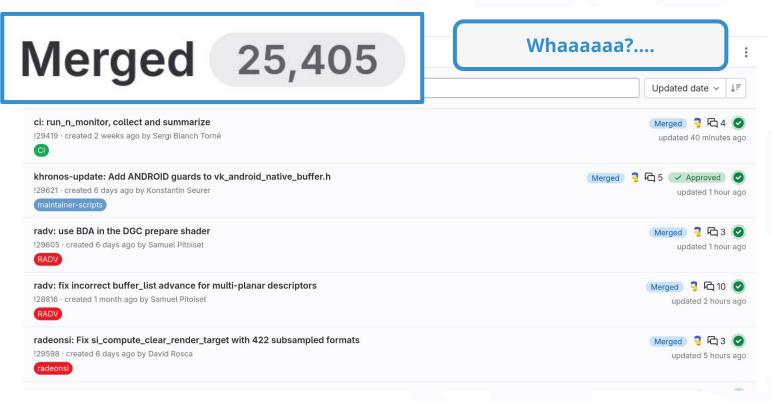




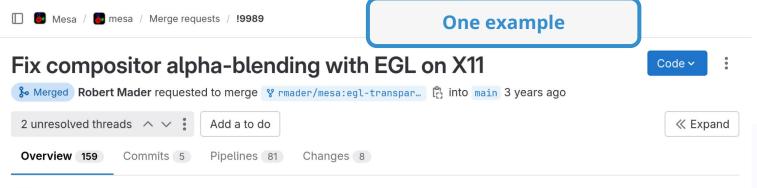










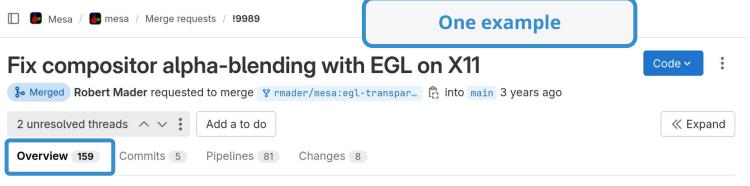


#### Why?

Because an application using EGL on the X11 platform currently cannot request alpha-blended config/visuals.

- · staying on GLX instead of leveraging EGL
- giving up on alpha-blended behavior under X11
- querying through old GLX, which is a valid thing to do, but introduces dependency on technology which gets disabled and may be removed at some point



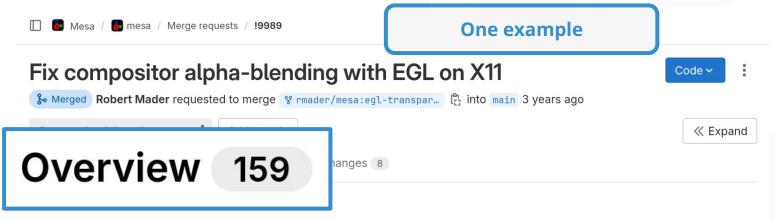


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David Heidelberg added 51 commits 1

**Tended to by Marge Bot** 

second config selection group

- 3fb88e40...9f42a346 46 commits from branch mesa:main
- 5888db2b egl: Implement FGL FXT config select\_group
- 608cbbed egl/x11
- Toggle commit list



#### Marge Bot @marge-bot

Follow

- David Heidelberg chan
- 3:49 PM

ago

- David Heidelberg assigned to <u>@marge-bot</u> and unassigned <u>@rmader</u> 1 month ago
- David Heidelberg mentioned in commit rmader/mesa@3736c999 1 month ago



### **Tended to by Marge Bot**

- Marge Bot added 6 commits 1 month ago
  - 8b6b327d 1 commit from branch mesa:main
  - 0d904156 egl: Implement EGL\_EXT\_config\_select\_group
  - 3736c999 egl/x11: Move RGBA visuals in the second config selection group
  - Toggle commit list
- Marge Bot merged 1 month ago



**Tended to by Marge Bot** 

Merged by 🧕 Marge Bot 1 month ago

#### Merge details

- Changes merged into main with 74ea0d00.
- · Deleted the source branch.
- Closed #149 (closed) and #5494 (closed)



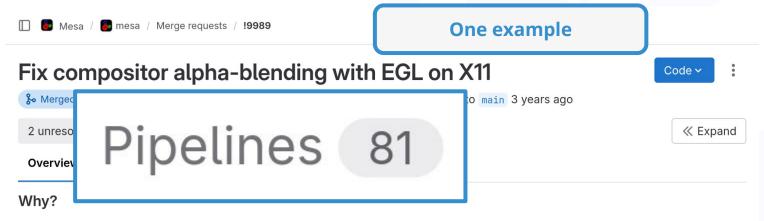


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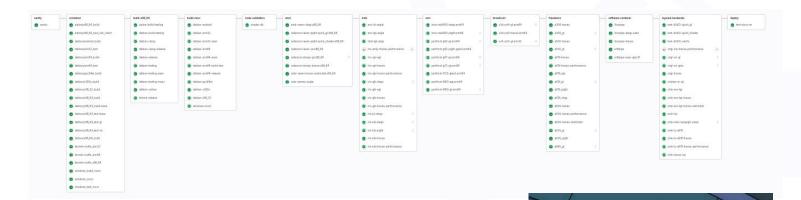


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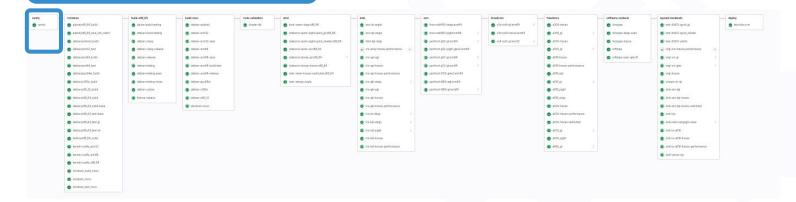


### The last, successful pipeline





### **Check if pipeline can run**



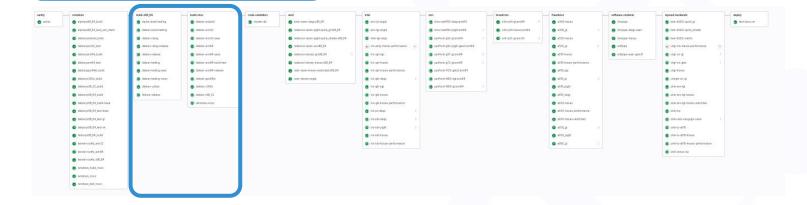


### **Prepare builders**



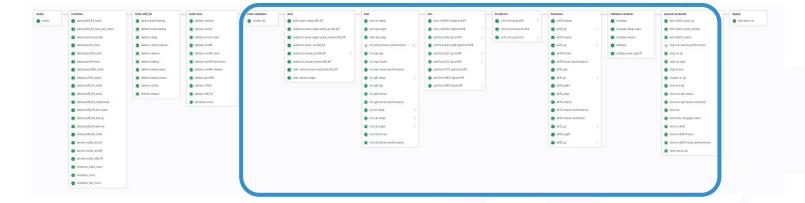


#### **Build test suites**



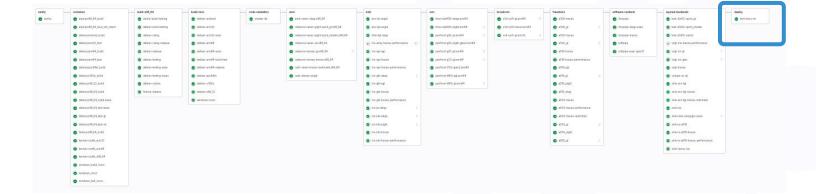


#### Run tests in devices





#### **Publish results**





#### Managing CI Across Multiple Farms for GPU Testing

Managing continuous integration (CI) for a large project can be challenging, but it becomes even more complicated when dealing with multiple diverse farms and various devices running on different configurations.

In this talk, we will discuss the challenges encountered while working on Mesa3D CI infrastructure, and highlight the tasks that may appear simple but require significant effort when working with mixed farms and devices.

We will cover topics such as ensuring best CI performance over time with an increasing number of jobs and devices, maintaining the reliability and stability of the devices, and the importance of collaboration when working on large projects. We will also emphasize the benefits that an efficient CI system can bring to the developers.

#### **Speakers**

### David Heidelberg



I help projects integrate, optimize performance, and embrace the best OSS practices., Independent

I fell in love with Linux at young age and since then I've been diving in it and enjoying various fields from developing a Linux kernel up to managing front-end application development.

Check out the talk for details



Erico Nunes Red Hat





# Managing CI Across Multiple Farms for GPU Testing

David Heidelberg Contractor @ Collabora

Erico Nunes Red Hat

Check out the talk for details



June 16-18, 2023
Brno, Czech Republic



# **DRM**





### **Direct Rendering Manager (DRM)**

The DRM is a kernel module that gives direct hardware access to DRI clients.

This module deals with DMA, AGP memory management, resource locking, and secure hardware access. In order to support multiple, simultaneous 3D applications the 3D graphics hardware must be treated as a shared resource. Locking is required to provide mutual exclusion. DMA transfers and the AGP interface are used to send buffers of graphics commands to the hardware. Finally, there must be security to prevent clients from escalating privilege using the graphics hardware.

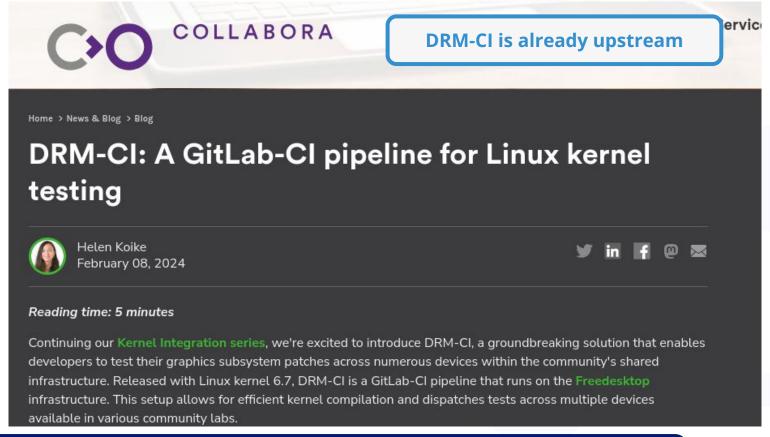
#### Where does the DRM reside?

Since internal Linux kernel interfaces and data structures may be changed at any time, DRI kernel modules must be specially compiled for a particular kernel version. The DRI kernel modules reside in the /lib/modules/.../kernel/drivers/gpu/drm directory. (The kernel modules were in the /lib/modules/.../kernel/drivers/char/drm directory before version 2.6.26.) Normally, the X server automatically loads whatever DRI kernel modules are needed.

For each 3D hardware driver there is a kernel module, each of which requires the generic DRM support code.

The source code is at git://anongit.freedesktop.org/git/mesa/drm





Open Source Summit North America 2024 has ended

Creat

Quickly Test Your Kernel with GitLab CI - Helen Koike, Collabora



#### Video Stream

Gitlab is being used by several big projects as a development platform, and now has even more value with it's CI/CD feature, that allows not only pre-merge tests on MRs, but also allows developers to easily test their code before even submitting the patch on a MR. The question now is: can the kernel also benefit from this feature? In this talk we'll cover the experience we are having in the DRM subsystem where a Gitlab-CI test pipelines is configured and available for any developer to test their code on several different devices across several labs, but we'll also discuss how this can be made generic enough for other subsystems, without depending too much on a given infrastructure, the challenges involved, share ideas and collect feedback from the community.

#### Speakers



#### Helen Koike

Senior Software Engineer, Collabora

Helen Koike is a Senior Software Engineer at Collabora who has made significant contributions to various open-source projects. She began her journey into continuous integration (CI) while working on Mesa3D and has since expanded her expertise to upstream DRM/CI on the graphics subsystem which she currently maintains. Before CI, she also worked contributing specially with Debian and v4I2 kernel subsystem.

Helen Koike Ossna 24 Presentation Submit PDF

Check out the talk for details



## Check out the talk for details

## What is DRM-CI

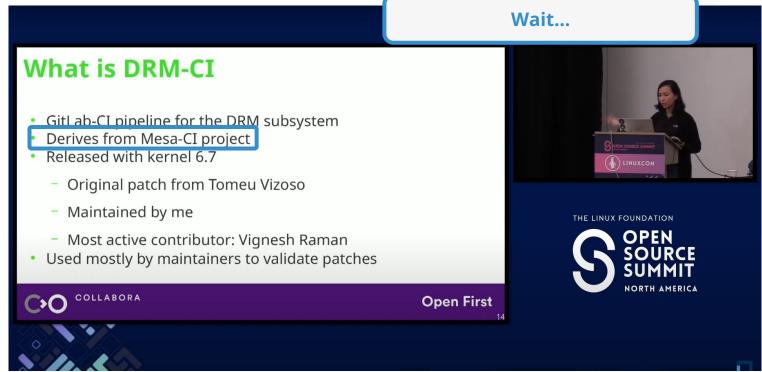
- GitLab-CI pipeline for the DRM subsystem
- Derives from Mesa-CI project
- Released with kernel 6.7
  - Original patch from Tomeu Vizoso
  - Maintained by me
  - Most active contributor: Vignesh Raman
- Used mostly by maintainers to validate patches



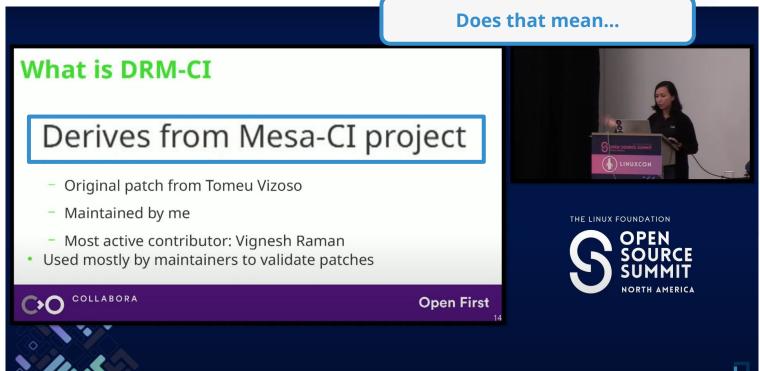
**Open First** 





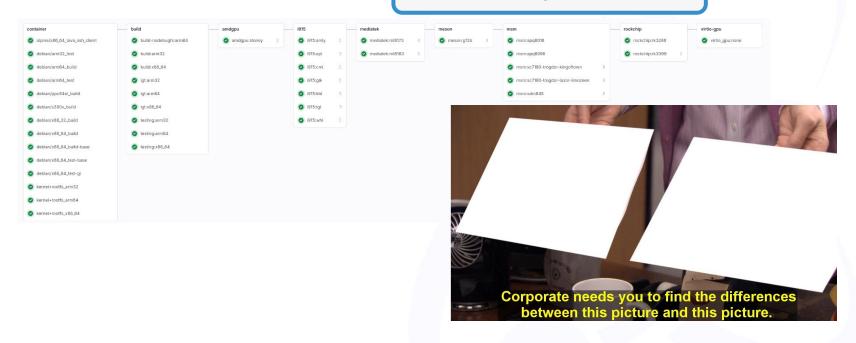






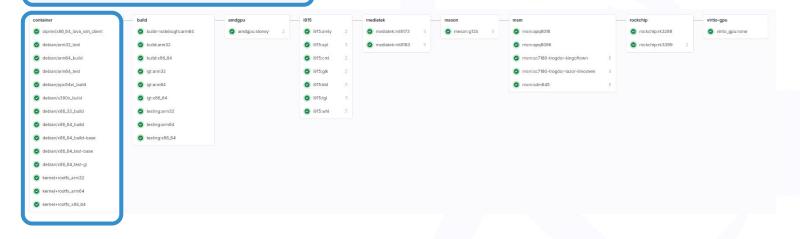


## let's compare them



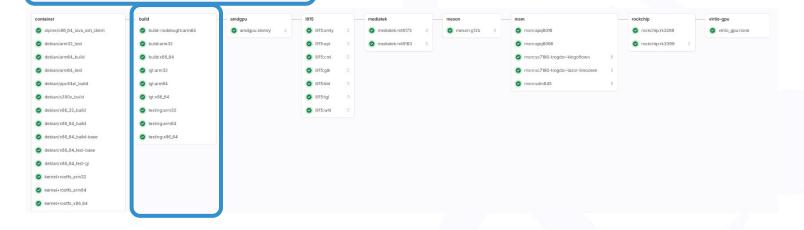


## **Prepare builders**



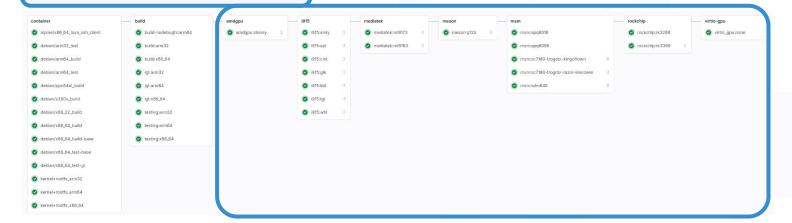


### **Build test suites**



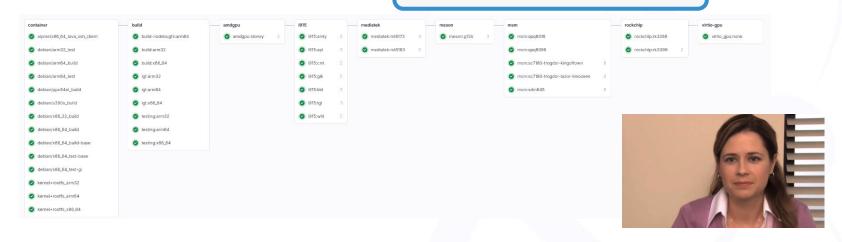


### Run tests in devices

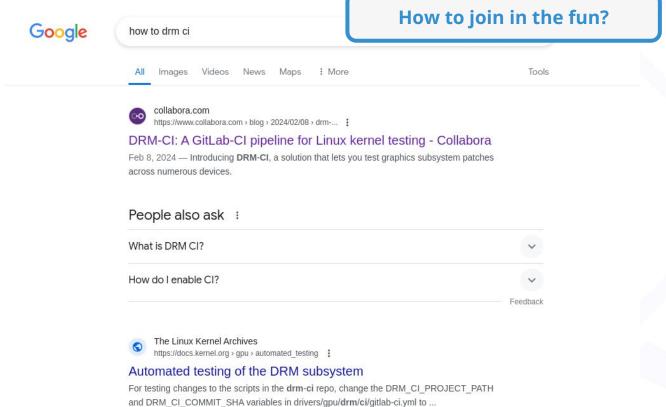




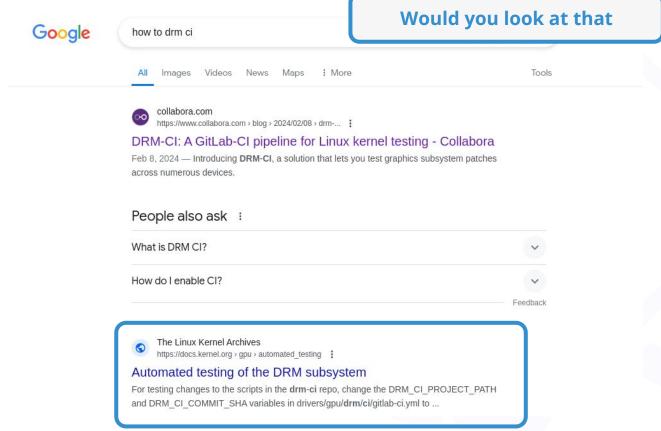
## They *paint* the same picture













next-20240613

#### Quick search

Go

#### Contents

Development process

Submitting patches

Code of conduct

Maintainer handbook

All development-process docs

#### Core API

Driver APIs

#### Subsystems

Core subsystems

#### **Human interfaces**

Input Documentation
Human Interface Devices (HID)
Sound Subsystem Documentation

#### GPU Driver Developer's Guide

Frame Buffer

LEDs

Networking interfaces

Storage interfaces

Other subsystems

Locking

## # Bug Report: \$LORE\_OR\_PATCHWORK\_

# Board Name: broken-board.dtb

# Linux Version: 6.6-rc1

# IGT Version: 1.28-gd2af13d9f

# Failure Rate: 100

flaky-test

#### drivers/gpu/drm/ci/\${DRIVER NAME}-\${HW REVISION}-skips.txt

Lists the tests that won't be run for a given driver on a specific hardware revision. These are usually tests that interfere with the running of the test list due to hanging the machine, causing OOM, taking too long, etc.

#### How to enable automated testing on your tree

- 1. Create a Linux tree in https://gitlab.freedesktop.org/ if you don't have one yet
- 2. In your kernel repo's configuration (eg. <a href="https://gitlab.freedesktop.org/janedoe/linux/-/settings/ci\_cd">https://gitlab.freedesktop.org/janedoe/linux/-/settings/ci\_cd</a>), change the CI/CD configuration file from .gitlab-ci.yml to drivers/gpu/drm/ci/gitlab-ci.yml.
- 3. Request to be added to the drm/ci-ok group so that your user has the necessary privileges to run the CI on https://gitlab.freedesktop.org/drm/ci-ok
- 4. Next time you push to this repository, you will see a CI pipeline being created (eg. https://gitlab.freedesktop.org/janedoe/linux/-/pipelines)
- 5. The various jobs will be run and when the pipeline is finished, all jobs should be green unless a regression has been found.

How to undate test expectations

next-20240613

Quick search

# Bug Report: \$LORE\_OR\_PATCHWORK\_
# Board Name: broken-board.dtb

# Linux Version: 6.6-rc1

It's already documented

### -- 17

## How to enable automated testing on your tree

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- 3. Request to be added to the drm/ci-ok group so that your user has the necessary privileges to run the CI on https://gitlab.freedesktop.org/drm/ci-ok
- 4. Next time you push to this repository, you will see a CI pipeline being created (eg. https://gitlab.freedesktop.org/janedoe/linux/-/pipelines)
- 5. The various jobs will be run and when the pipeline is finished, all jobs should be green unless a regression has been found.

Storage interfaces
Other subsystems

Locking

Other subsystems

Locking

How to update test expectations

next-20240613

# Bug Report: \$LORE\_OR\_PATCHWORK\_

Quick search

# Board Name: broken-board.dtb

# Linux Version: 6.6-rc1

1, 2, 3, Go!

## How to enable automated testing on your tree

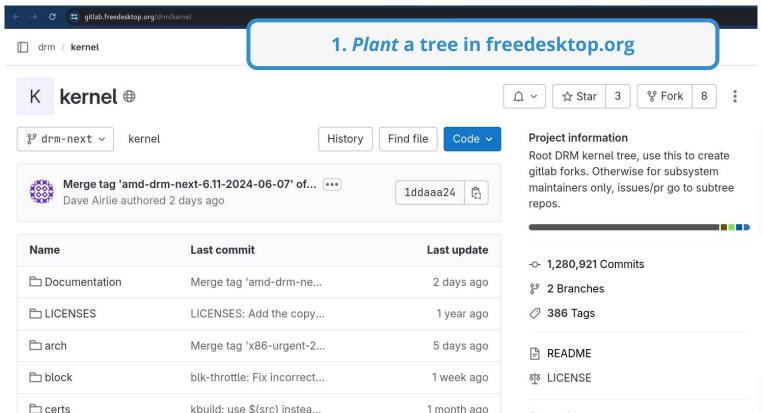
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- 2. In your kernel repo's configuration (eg. <a href="https://gitlab.freedesktop.org/janedoe/linux/-/settings/ci\_cd">https://gitlab.freedesktop.org/janedoe/linux/-/settings/ci\_cd</a>), change the CI/CD configuration file from .gitlab-ci.yml to drivers/gpu/drm/ci/gitlab-ci.yml.
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Storage interfaces
Other subsystems
Locking

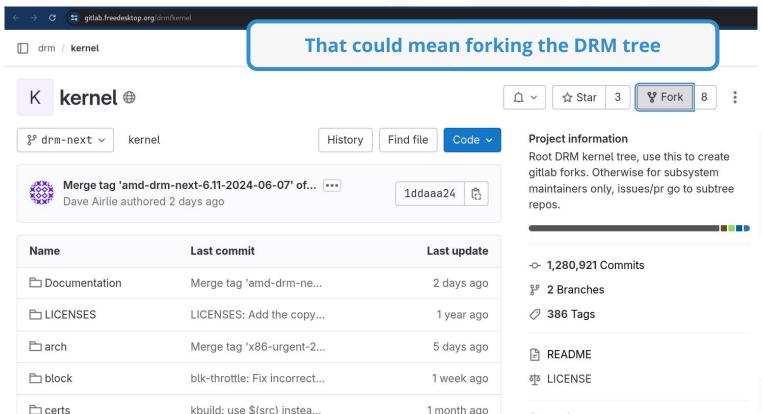
found.

How to undate test expectations

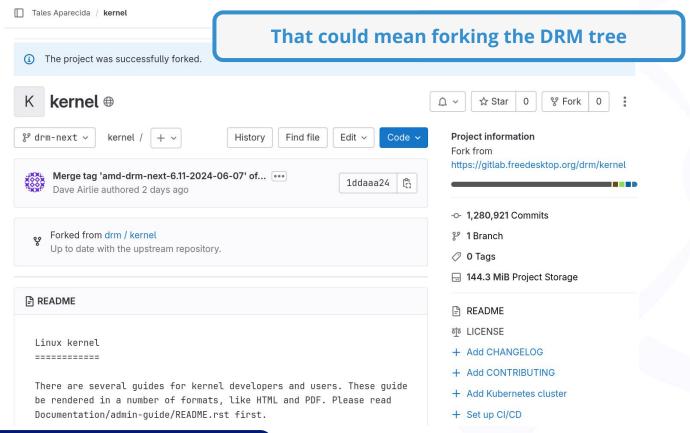




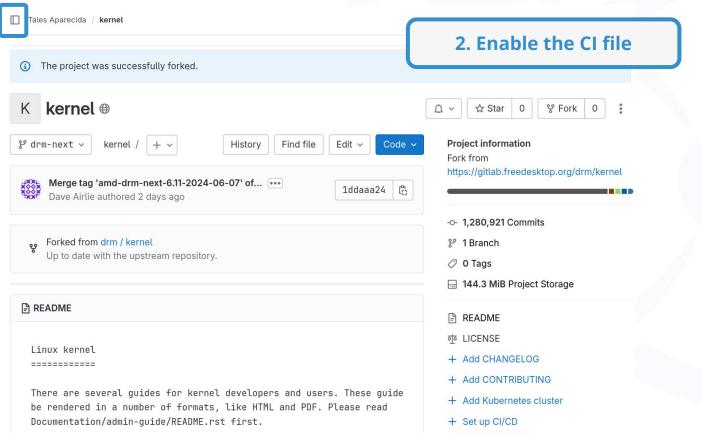




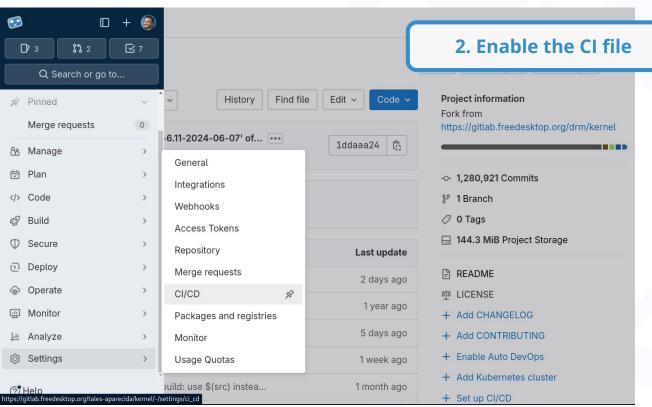












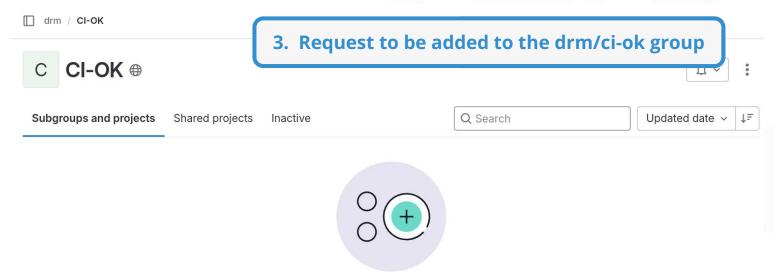


☐ Tales Aparecida / kernel / CI/CD Settings	
Q Search page	2. Enable the CI file
General pipelines	Collapse
Customize your pipeline configuration.  Public pipelines  Allow public access to pipelines and job details, including output logs and artifacts. ?	
Auto-cancel redundant pipelines Pipelines for new changes cause older pending or running pipelines on the same branch t	o be cancelled. ②
<ul> <li>Prevent outdated deployment jobs</li> <li>When a deployment job is successful, prevent older deployment jobs that are still pending</li> <li>Allow job retries for rollback deployments</li> <li>Allow job retries even if the deployment job is outdated. ②</li> </ul>	1. ⑦
✓ Use separate caches for protected branches Unprotected branches will not have access to the cache from protected branches. ②	
CI/CD configuration file	
.gitlab-ci.yml	
The name of the CI/CD configuration file. A path relative to the root directory is optional (for e	xample my/path/.myfile.yml).



Tales Aparecida / kernel / CI/CD Settings		
Q Search page	Setting it to "drivers/gpu/drm/ci/gitla	b-ci.yml'
General pipelines		Collapse
Customize your pipeline configuration.  Public pipelines  Allow public access to pipelines and job det	tails, including output logs and artifacts. ②	
✓ Auto-cancel redundant pipelines Pipelines for new changes cause older pend	ding or running pipelines on the same branch to be cancelled. ②	
<ul> <li>Prevent outdated deployment jobs</li> <li>When a deployment job is successful, preve</li> <li>Allow job retries for rollback deployment</li> <li>Allow job retries even if the deployment</li> </ul>		
Use separate caches for protected branche Unprotected branches will not have access		
CI/CD configuration file		
drivers/gpu/drm/ci/gitlab-ci.yml		
The name of the CI/CD configuration file. A path	th relative to the root directory is optional (for example my/path/.myfile.yml).	

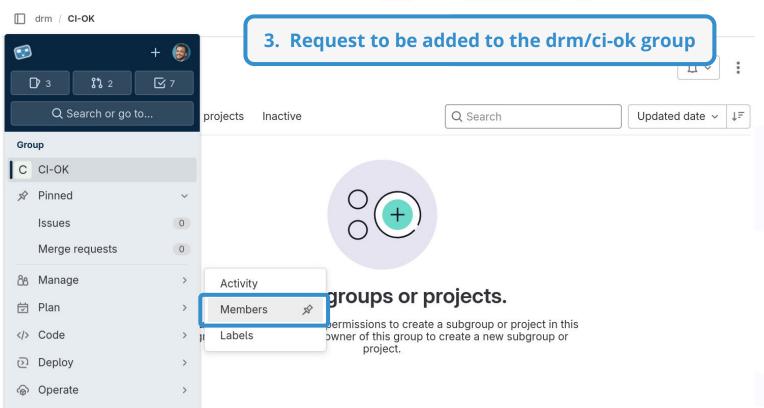




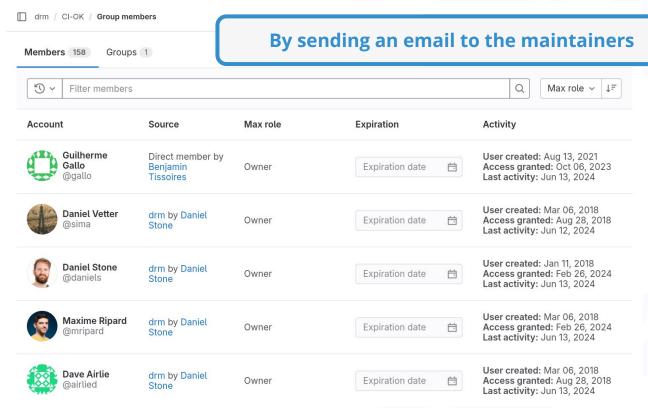
## No subgroups or projects.

You do not have necessary permissions to create a subgroup or project in this group. Please contact an owner of this group to create a new subgroup or project.

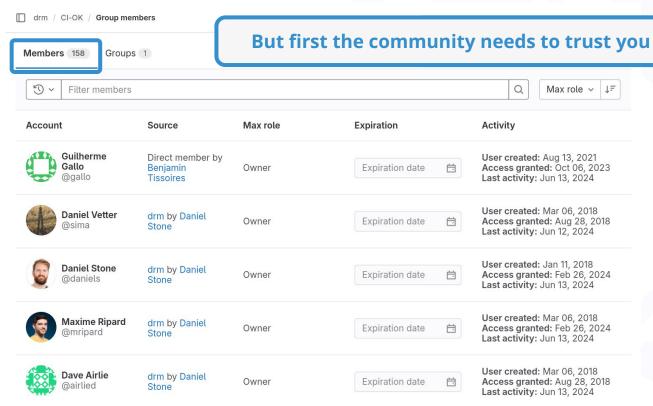




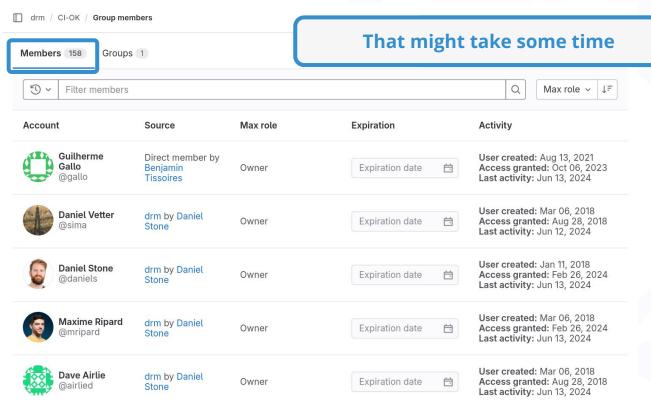








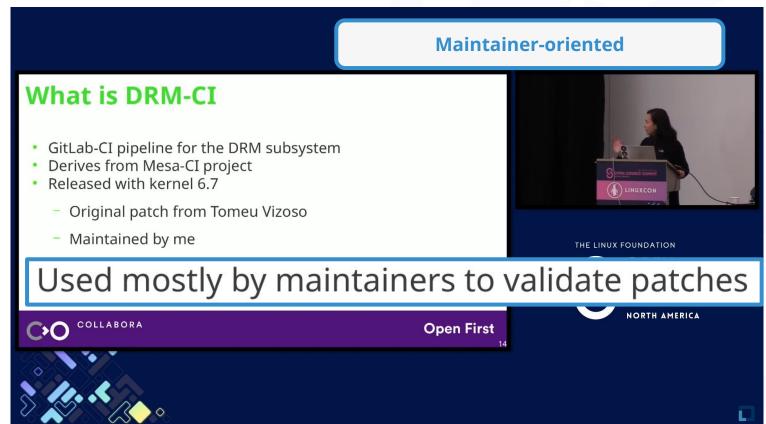






## **Maintainer-oriented** What is DRM-CI GitLab-CI pipeline for the DRM subsystem Derives from Mesa-CI project Released with kernel 6.7 Original patch from Tomeu Vizoso Maintained by me THE LINUX FOUNDATION Most active contributor: Vignesh Raman Used mostly by maintainers to validate patches NORTH AMERICA COLLABORA CO **Open First**





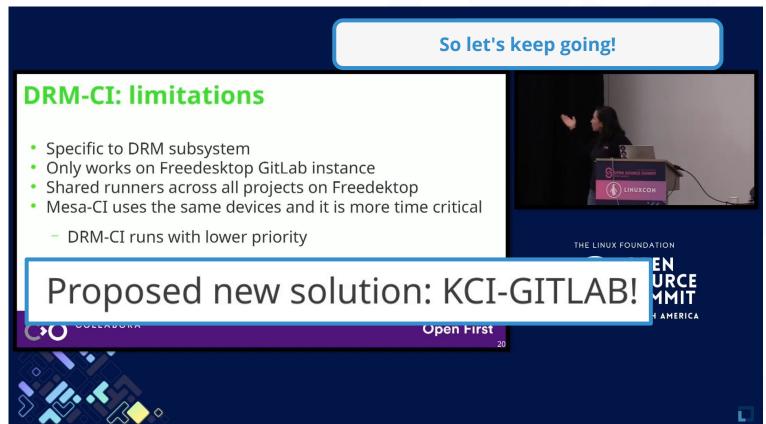


## There are more caveats... **DRM-CI: limitations** Specific to DRM subsystem Only works on Freedesktop GitLab instance Shared runners across all projects on Freedektop Mesa-CI uses the same devices and it is more time critical DRM-CI runs with lower priority THE LINUX FOUNDATION Proposed new solution: KCI-GITLAB! NORTH AMERICA COLLABORA ာဂ **Open First**



## So let's keep going! **DRM-CI: limitations** Specific to DRM subsystem Only works on Freedesktop GitLab instance Shared runners across all projects on Freedektop Mesa-CI uses the same devices and it is more time critical DRM-CI runs with lower priority THE LINUX FOUNDATION Proposed new solution: KCI-GITLAB! NORTH AMERICA COLLABORA >O **Open First**







# Mainline



## **CI** for everyone

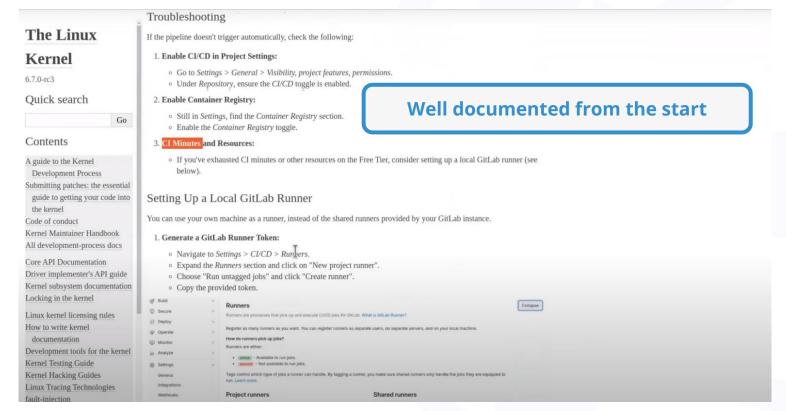
## What is KCI-GITLAB

- Patchset submitted to the community on Feb 28<sup>th</sup> 2024
   Ref: [PATCH 0/3] kci-gitlab: Introducing GitLab-CI Pipeline for Kernel Testing
- Developed together with the KernelCI community
- Allows tests to be executed on any GitLab instance
- More generic solution
- Allows customizations (useful for subsystems)











```
Thread overview: 58+ messages / expand[flat|nested] mbox.qz Atom feed top
2024-02-28 22:55 Helen Koike [this message]
2024-02-28 22:55 ` [PATCH 1/3] kci-gitlab: Introducing GitLab-CI Pipeline for Kernel Testing Helen Koike
                    Bird, Tim
2024-02-29 2:44
                     Nicolas Dufresne
2024-02-29 16:15
2024-02-29 9:02
                    Maxime Ripard
2024-02-29 9:23
                    ` Nikolai Kondrashov
                                                                  Got a lot of feedback
                        Maxime Ripard
2024-02-29 9:56
                         ` Laurent Pinchart
2024-02-29 10:05
2024-02-29 20:21
                       Linus Torvalds
2024-03-01 10:27
                         Nikolai Kondrashov
                            Mark Brown
2024-03-01 14:07
                              Nikolai Kondrashov
2024-03-01 14:21
                          ` Linus Torvalds
2024-03-01 20:10
2024-03-04 21:45
                             Helen Koike
                               ` Leonardo Brás
2024-03-07 22:43
2024-05-23 13:21
                               ` Daniel Vetter
2024-03-02 22:10
                          Guenter Roeck
2024-03-03 0:01
                            Randy Dunlap
                              Geert Uytterhoeven
2024-03-03 9:30
                                Geert Uytterhoeven
2024-03-04 8:12
                                  Maxime Ripard
2024-03-04 9:15
2024-03-04 10:07
                                    Geert Uytterhoeven
2024-03-04 10:19
                                     Maxime Ripard
                                        Geert Uytterhoeven
2024-03-04 11:12
                                          Maxime Ripard
2024-03-04 11:28
                            Maxime Ripard
2024-03-04 9:24
2024-03-04 15:46
                              Guenter Roeck
2024-03-04 16:05
                                Maxime Ripard
```



Ack. I think seeing it as a library for various gitlab CI models would be a lot more palatable. Particularly if you can then show that yes, it is also relevant to our currently existing drm case.

So I'm not objecting to having (for example) some kind of CI helper templates - I think a logical place would be in tools/ci/ which is kind of alongside our tools/testing subdirectory.

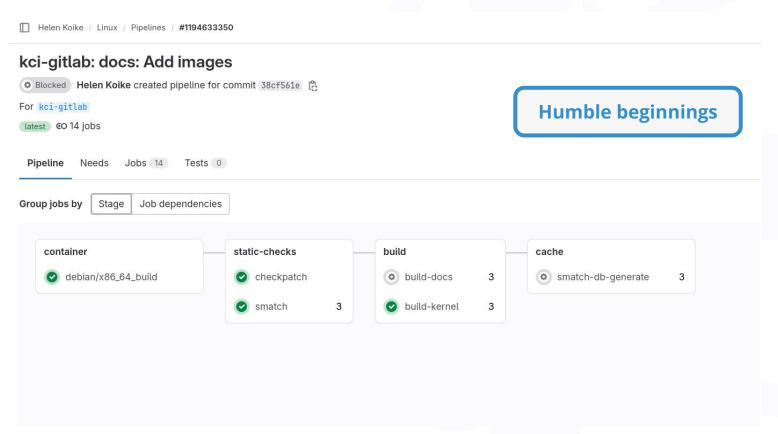
(And then perhaps have a 'gitlab' directory under that. I'm not sure whether - and how much - commonality there might be between the different CI models of different hosts).

Just to clarify: when I say "a logical place", I very much want to emphasize the "a" - maybe there are better places, and I'm not saying that is the only possible place. But it sounds more logical to me than some.

Linus

Linus didn't block it

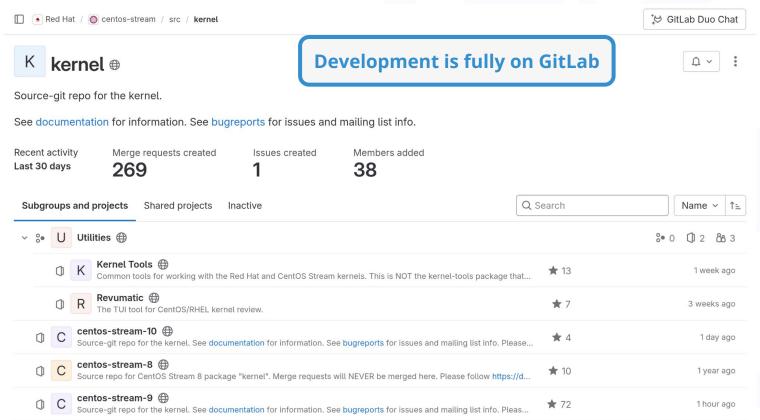




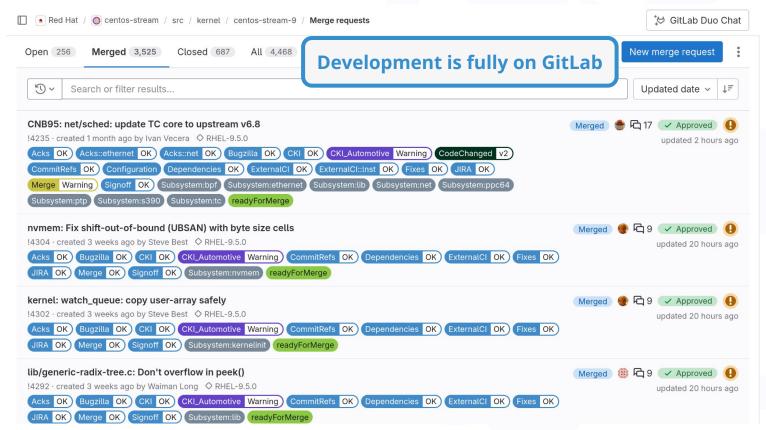


# **Red Hat**

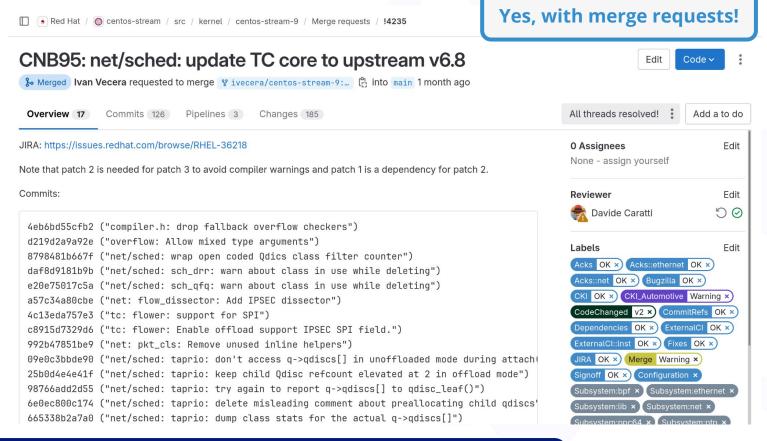




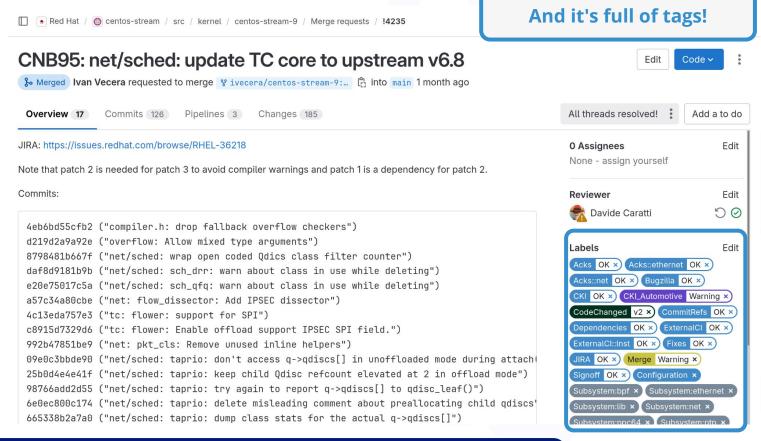




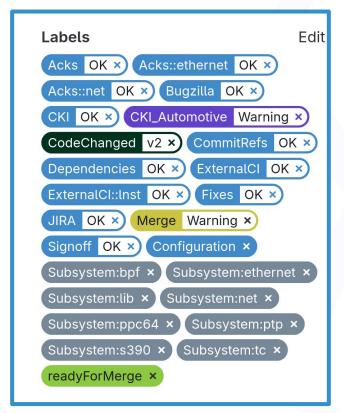












And it's full of tags!





And bots!

**CKI KWF Bot** · 1 month ago

**Bughook Readiness Report** 

Nothing to report, this MR is using jira instead of bugzilla.

Updated 2024-05-14 13:47 UTC by bughook - KWF FAQ - Slack #team-kernel-workflow - Source -

Documentation - Report an issue

Edited 1 month ago by CKI KWF Bot

CKI KWF Bot added Bugzilla OK label 1 month ago

CKI KWF Bot added Signoff OK label 1 month ago





**CKI KWF Bot** · 1 month ago

**JIRA Hook Readiness Report** 

Target Branch: main

This merge request passes jirahook validation: JIRA OK

JIRA Issue tags:

JIRA Issue	CVEs	Commits	Readiness	Policy Check	Notes
RHEL-36218 (IN_PROGRESS)	None	8e5db706 d3122b79 3c695a0e b60bb411 1ea3d224	READY_FOR_MERGE	Passed	-

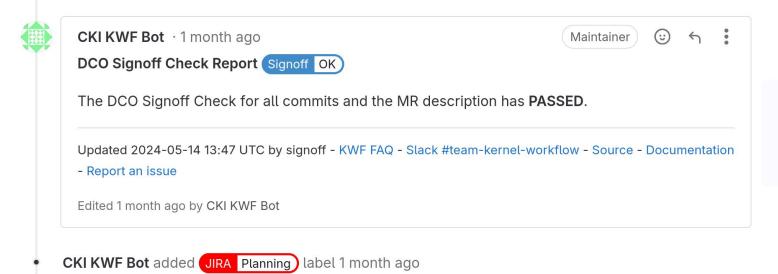
## And bots!

viaiiitaiiiei

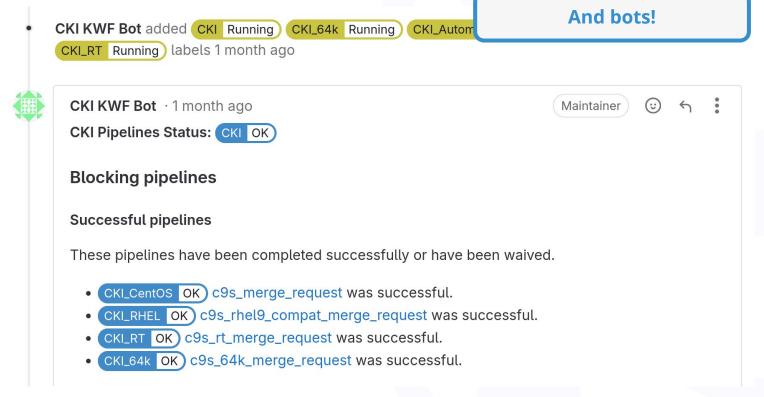


CKI KWF Bot changed milestone to %RHEL-9.5.0 1 month ago

### And bots!









## Non-blocking pipelines

### And bots!

### Failed pipelines

These pipelines have failed or been canceled.

• CKI\_Automotive Warning c9s\_automotive\_check\_merge\_request failed at the kernel-results stage.

**Issue:** aarch64 - kselftests AUTOSD-RHIVOS - bpf\_test\_progs:

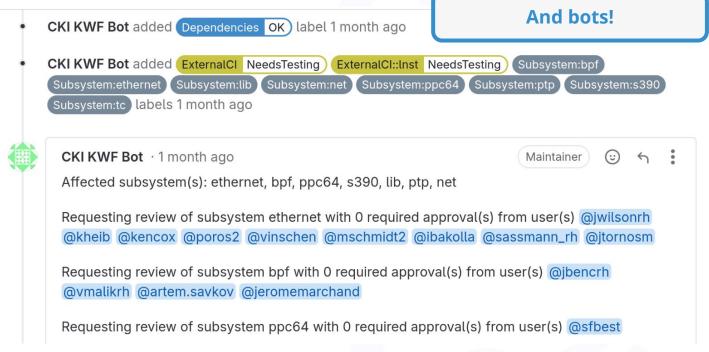
Maintainers: fmaurer-rh, liuhangbin, sbertram

Logs: https://datawarehouse.cki-project.org/kcidb/tests/12468518

Non-passing subtests:

- SKIP kselftests/7..431 selftests: bpf\_test\_progs:attach\_probe [SKIP]
- SKIP kselftests/8..431 selftests: bpf\_test\_progs:autoattach [SKIP]
- FAIL kselftests/11..431 selftests: bpf\_test\_progs:bloom\_filter\_map [FAIL]
- SKIP kselftests/13..431 selftests: bpf\_test\_progs:bpf\_iter [SKIP]
- FAIL kselftests/16..431 selftests: bpf\_test\_progs:bpf\_loop [FAIL]





Requesting review of subsystem bpf with 0 required approva @vmalikrh @artem.savkov @jeromemarchand

## And bots!

Requesting review of subsystem ppc64 with 0 required approval(s) from user(s) @sfbest

Requesting review of subsystem s390 with 0 required approval(s) from user(s) @sfbest

Requesting review of subsystem lib with 0 required approval(s) from user(s) @onestero @raquini @npache @walac @crecklin @prarit @hertonrk-rh @esyr-rh @arozansk

Requesting review of subsystem ptp with 0 required approval(s) from user(s) <a href="mailto:openced-norm">openced-norm</a> <a href="mailto:openced-norm">openced-norm<

Requesting review of subsystem net with 1 required approval(s) from user(s) @jwilsonrh @liuhangbin @LorenzoBianconi @lxin.redhat @psutter1 @fwestpha @egarver @fmaurer-rh @sdubroca @dcaratti @bnemeth @pabeni @marcelo.leitner @jbencrh @aclaudi @fleitner @gnault @atenart @tohojo

Created 2024-05-14 13:47 UTC by ack\_nack - KWF FAQ - Slack #team-kernel-workflow - Source - Documentation - Report an issue



I got tired making bot screenshots



Check the link for much more



The point is no humans were involved in these checks



The testing summary



Merged result pipeline #1296113921 passed with warnings





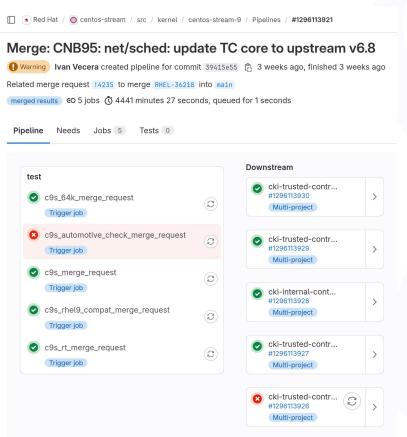






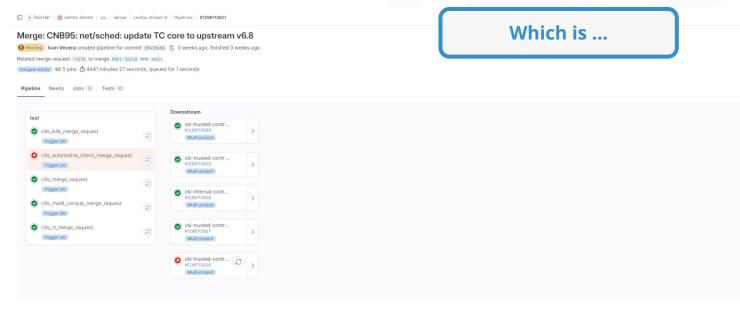
Merged result pipeline passed with warnings for 39415e55 3 weeks ago



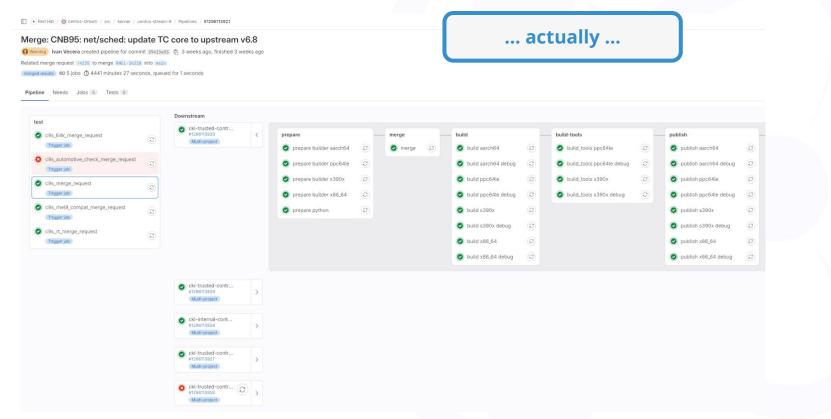


**Hides this** 

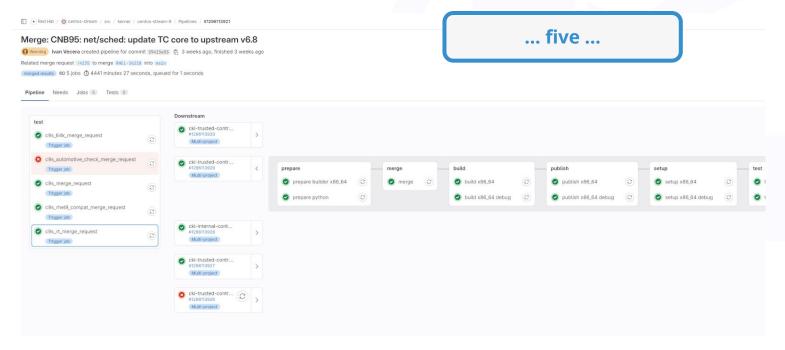




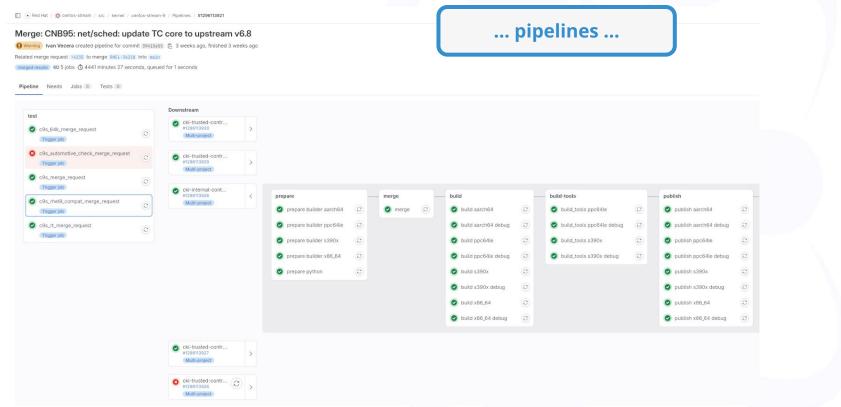




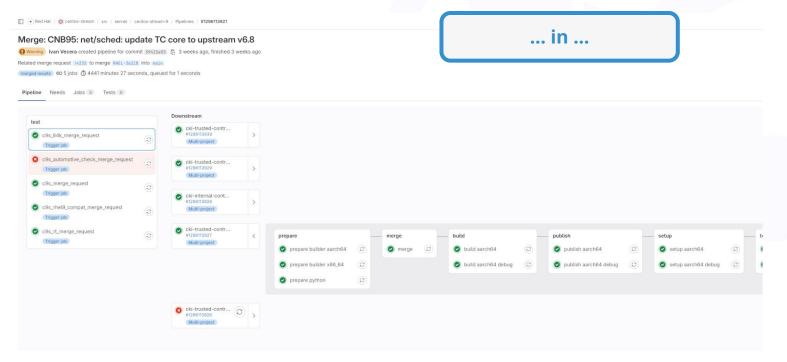




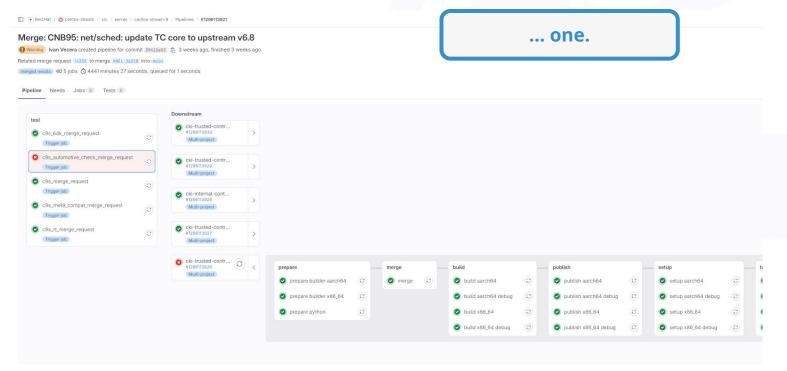














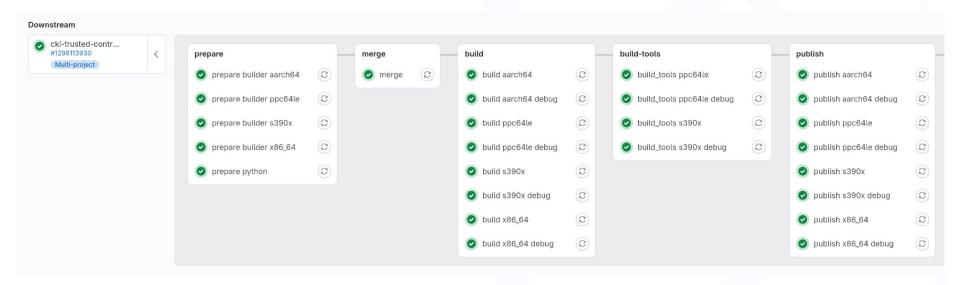
And it's just one pipeline flavor. We're flexible!



Don't ask us to show you our YAML

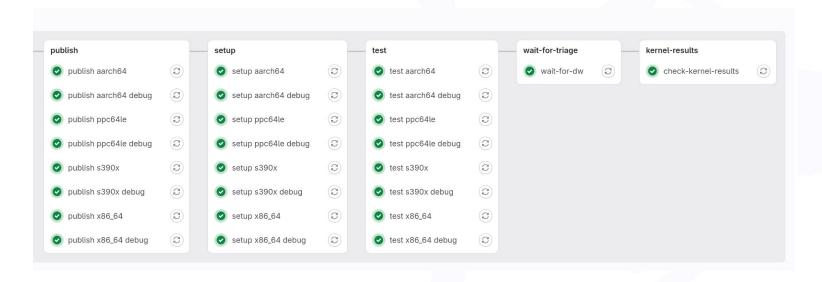


# The main part of a pipeline?



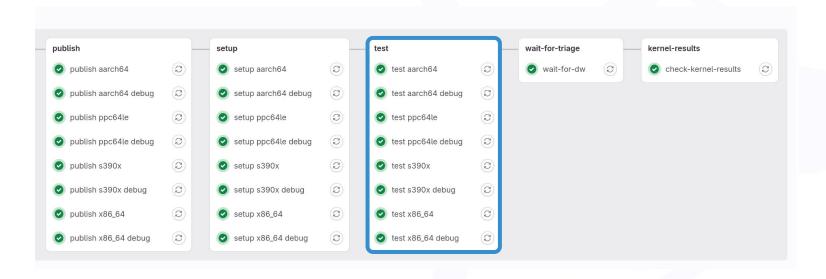


## The main part of a pipeline?

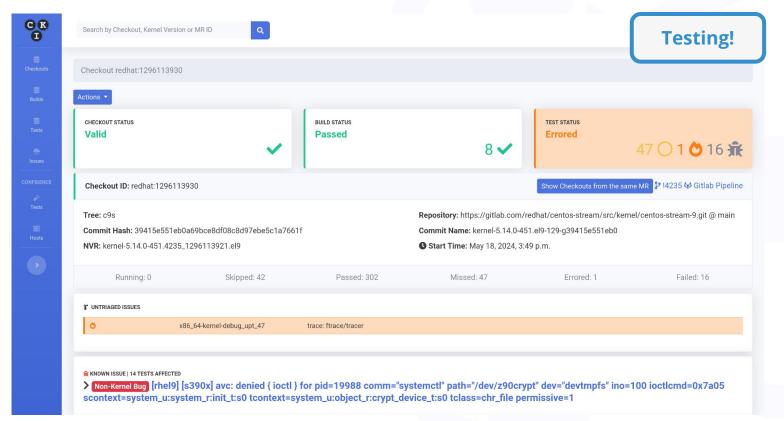




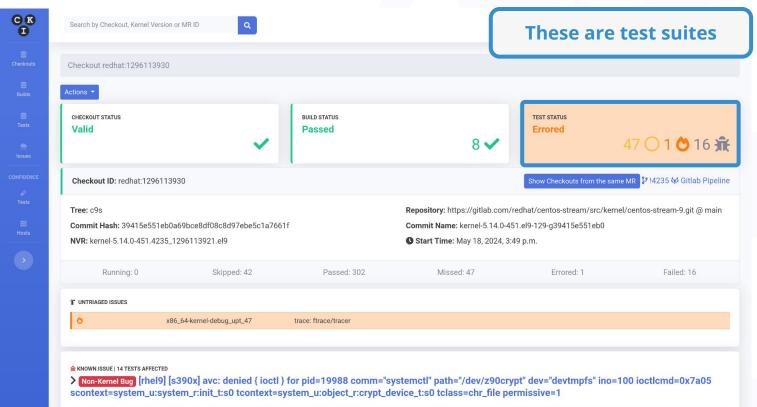
**Testing!** 



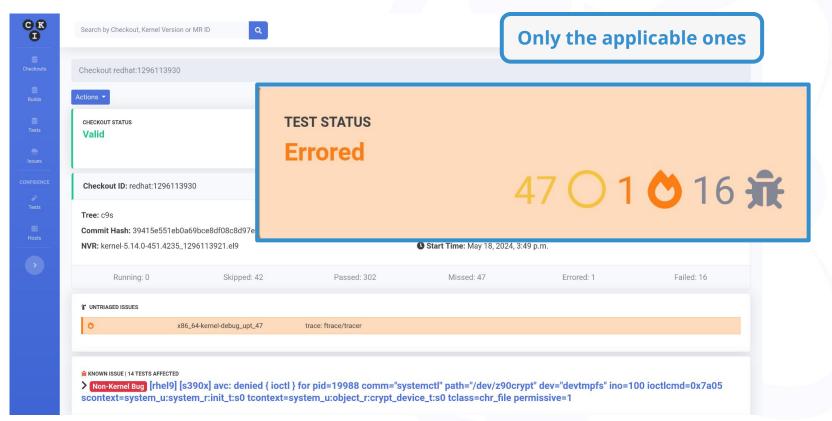














# So what?



# What's so good about GitLab?

- Git, duh
- Code review Web UI
- Automation API
- Best-of-breed CI
  - Gating, pre-merge
  - Post-merge
  - Results referenced by commits
  - Self-managed runners
- Self-managed instances
- Open-Core (MIT), and Open Source friendly



# **Common arguments against GitLab**

- Centralization
  - Single point of failure
  - Controlled by a corporation
  - Not fully open, only "open-core"
  - Some features are "premium"
  - Requires signing in on each separate instance
  - Non-anonymous
- Web UI is slow and hard to navigate
- Need to be online to review code



## Yes:

- Email workflow is flexible and democratic
- But is also fussy
- People will make their choice



GitLab comes at a cost of learning and limitations.

Yet saves you time and effort through automation and integration



# Discussion time!



# Thank you!

















# Join Us!



# #kernelci at libera.chat

