KernelCI

A little GitLab won't hurt you

Linux Plumbers Conference 2024

Helen Koike, Nikolai Kondrashov, Tales da Aparecida

KernelCI

Helen Koike

helen.fornazier

Senior Software Engineer, Collabora
Former Mesa3D/CI contributor, DRM/CI maintainer, KernelCI contributor.

Working from Brazil

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Nikolai Kondrashov

spbnick

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

Born in Russia, living in Finland

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Tales da Aparecida

tales-aparecida

Senior Software Engineer, Red Hat
CKI user experience and reliability, tagging along with them in KernelCI

Working from Brazil

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2023 Maintainers Summit

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The need for reviewer help in particular came up; Linus Torvalds jumped in to say that reviewing is boring, so it is unsurprising that people don't want to do it. He keeps seeing huge patch sets being sent out once each week with little seeming to happen with them. A few tweaks, perhaps, before the next version is sent, but no real resolution. What is really needed, he said, is to find ways to get away from the email patch model, which is not really working anymore. He feels that way now, even though he is "an old-school email person".

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The email workflow

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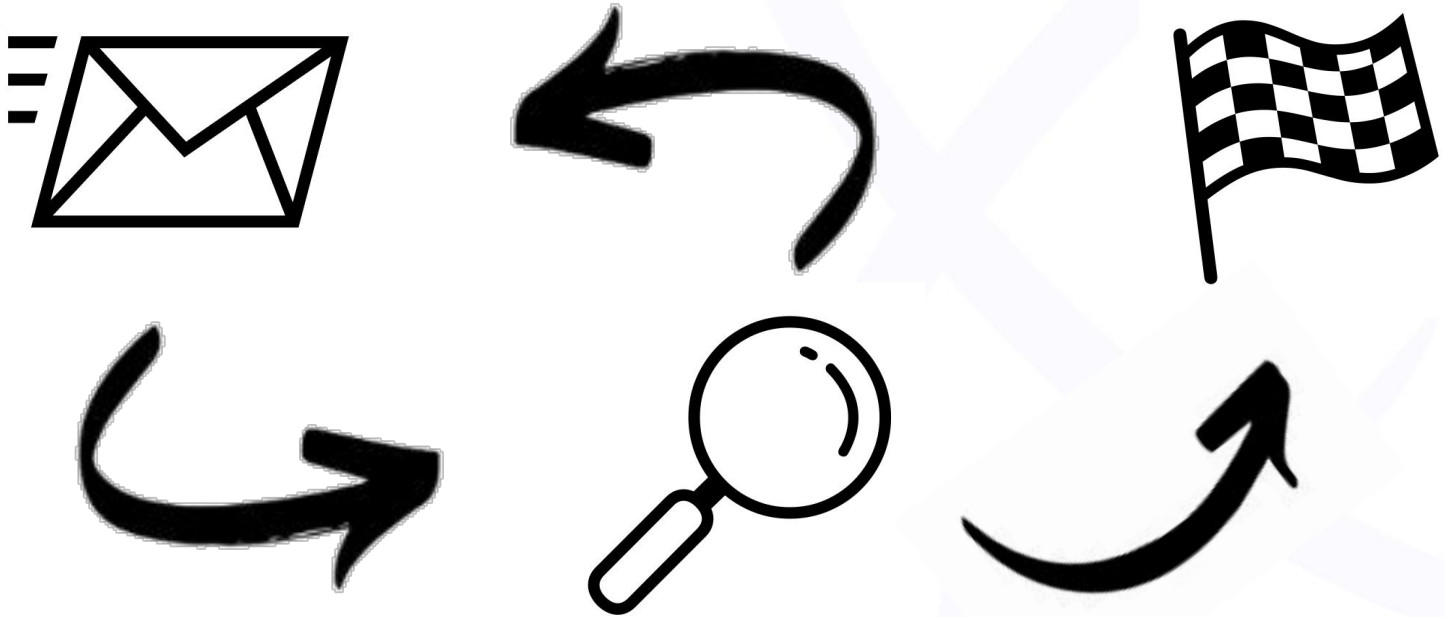
The email workflow is great

Contributors



Maintainers

Community

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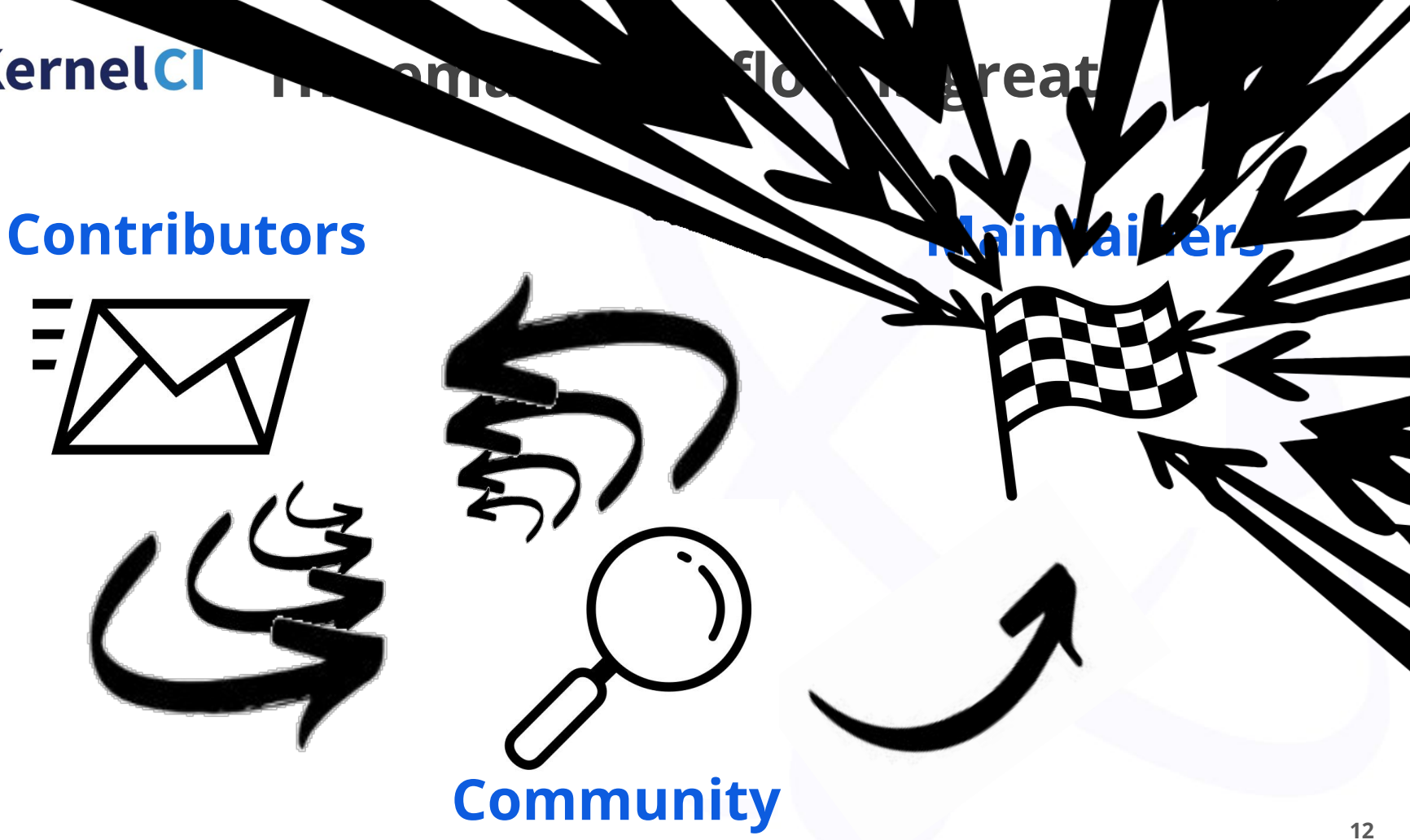
Thermal flow in great



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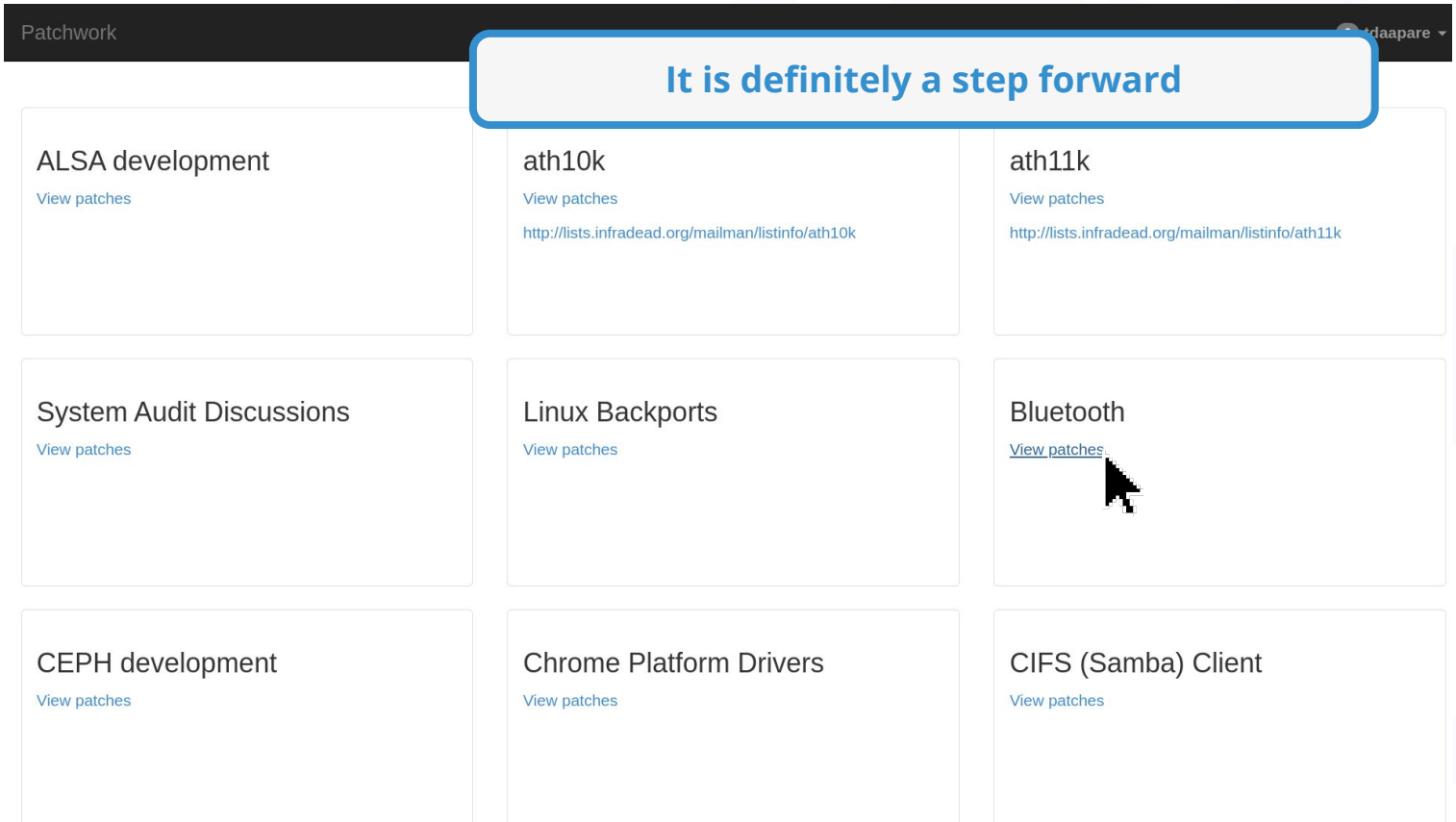
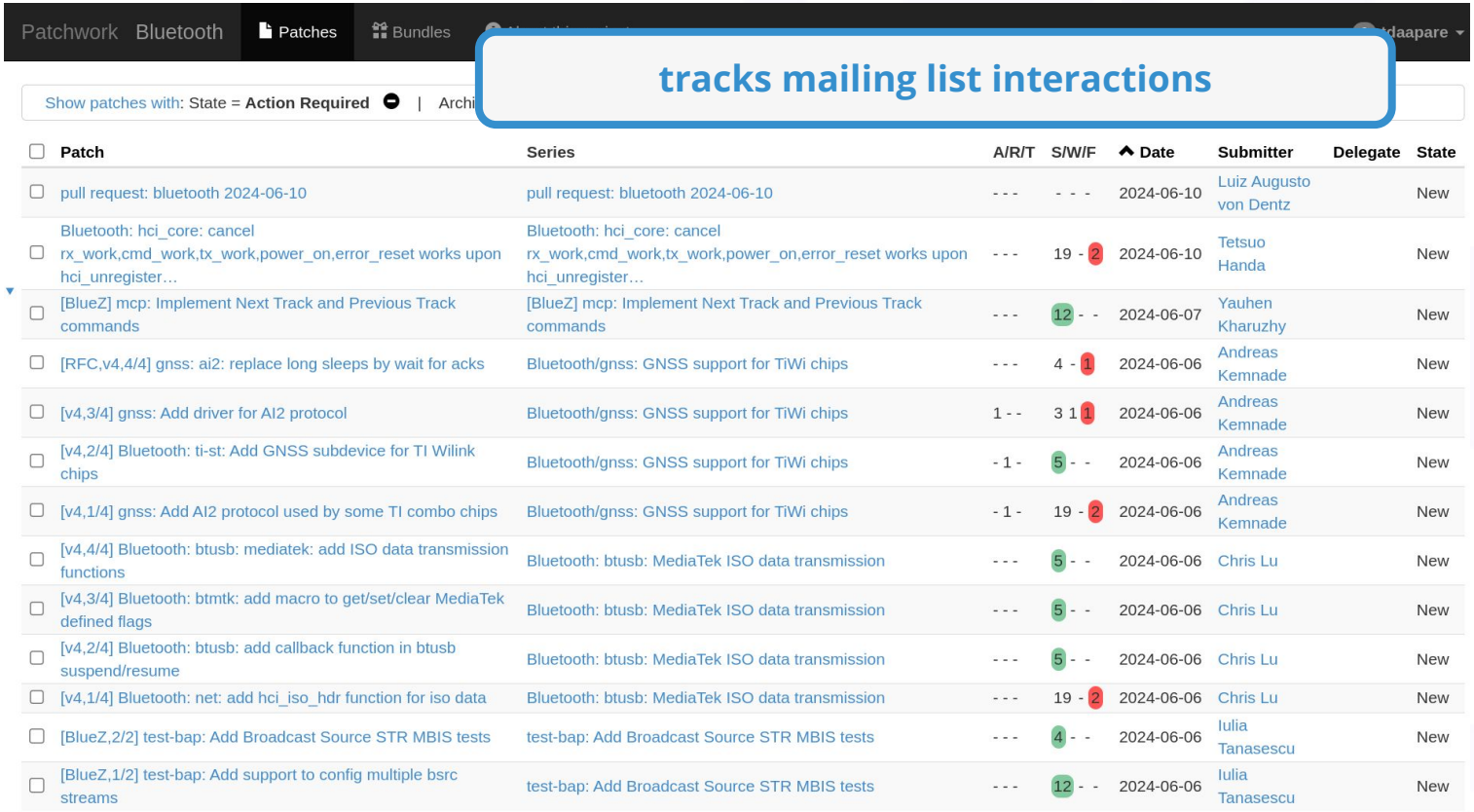
The email workflow

with Patchwork

KernelCI Patchwork



KernelCI Patchwork



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pull request: bluetooth 2024-06-10	pull request: bluetooth 2024-06-10	- - -	- - -	2024-06-10	Luiz Augusto von Dentz		New
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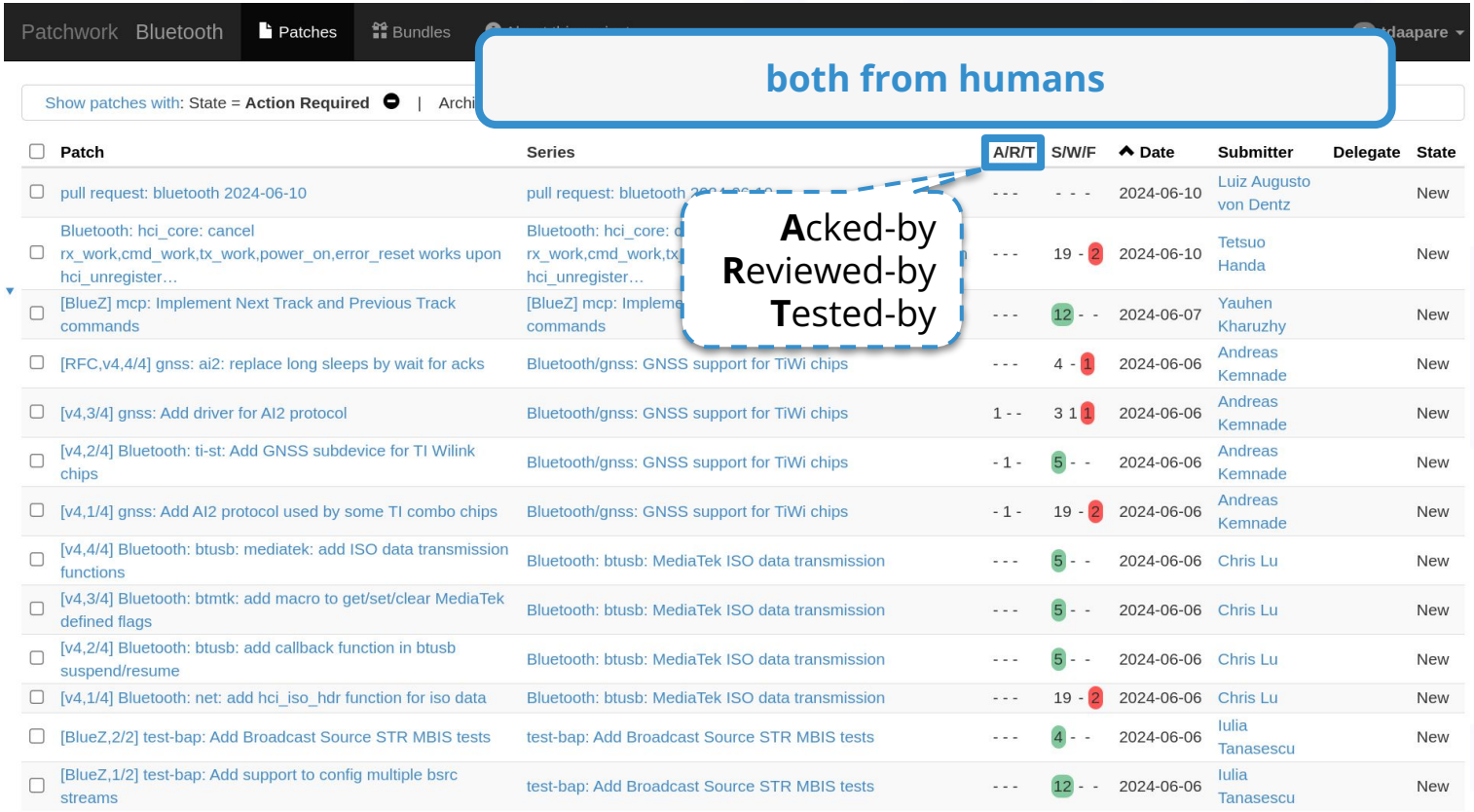

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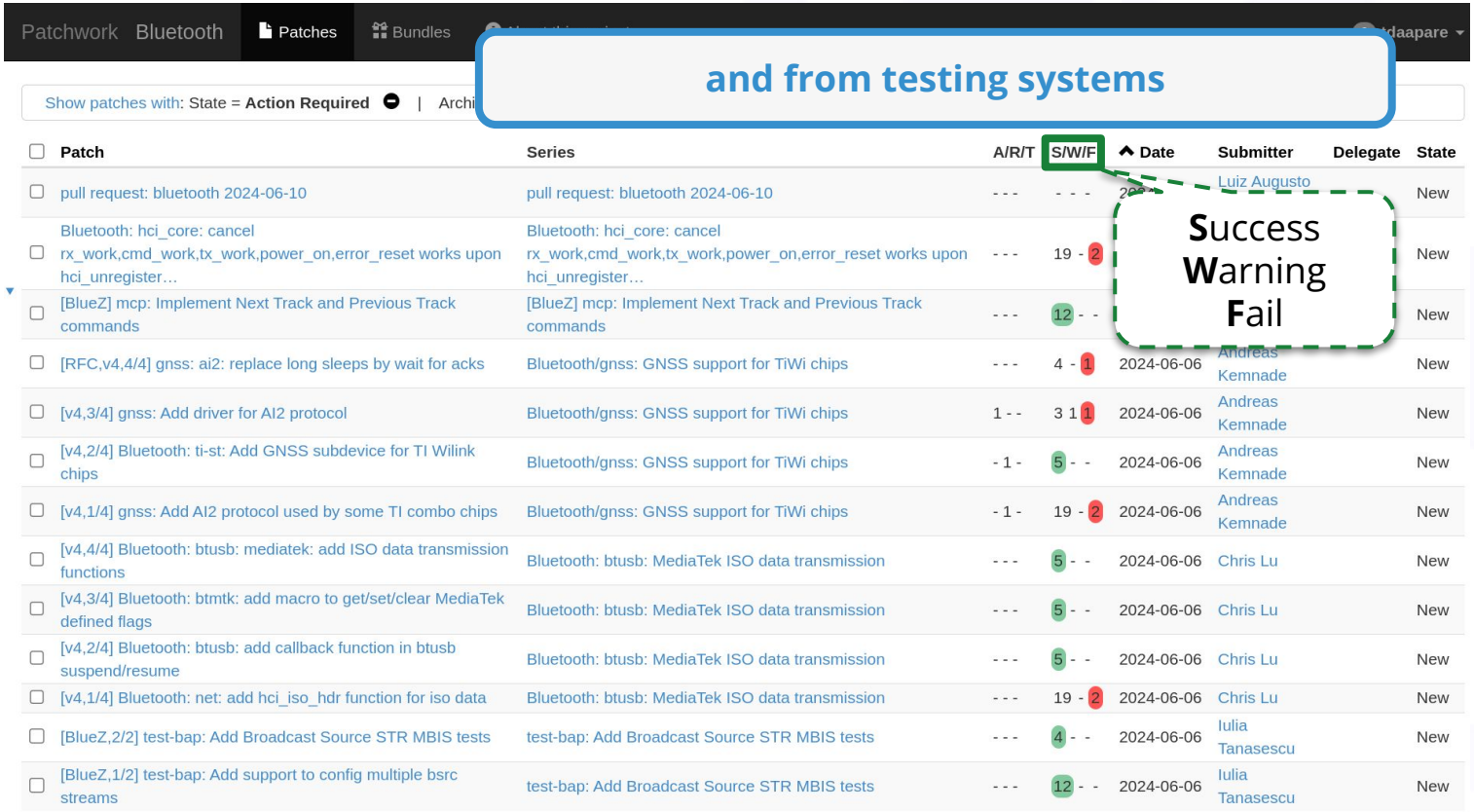

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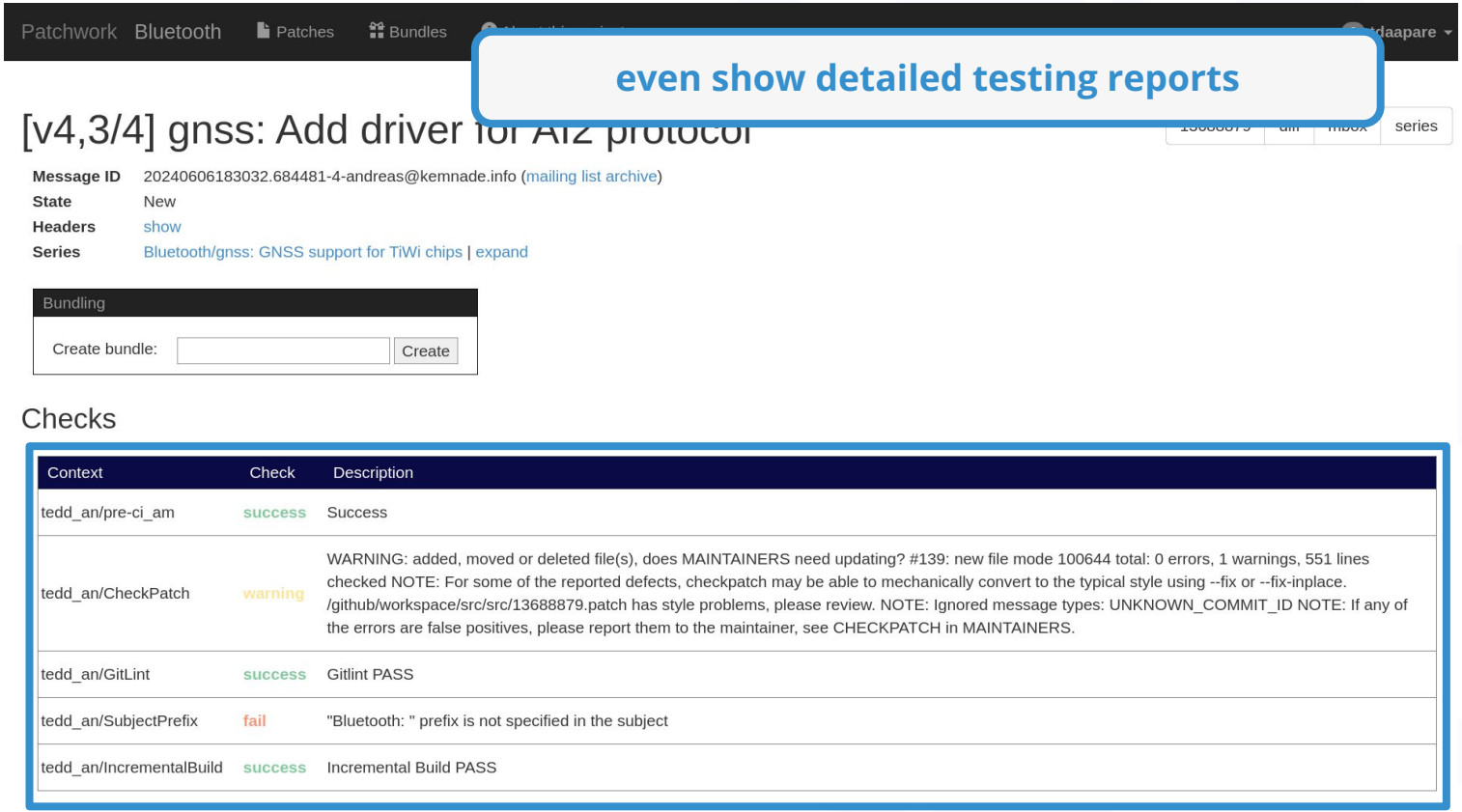

https://patchwork.kernel.org/project/bluetooth/patch/20240606183032.684481-4-andreas@kemnade.info/

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What is the next best thing?

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.

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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.

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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**.

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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 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.

KernelCI

What is the next best thing?

We like Git forges.

Which Git forge to use?

- ❑ Gitea
- ❑ Forgejo
- ❑ Gerrit
- ❑ SourceHut
- ❑ GitHub
- ❑ GitLab
- ❑ Other: _____
- ❑ All of the above

Which Git forge to use?

All performance results

0–49 50–89 90–100

	Bitbucket	Codeberg	GitHub	GitLab	Pagure	SourceHut
Browsing Git repositories						
Summary page	33	88	67	58	76	100
Tree (best case)	28	89	67	58	92	100
Tree (worst case)	19	9	49	33	55	86
Log (best case)	36	96	47	59	83	100
Log (worst case)	36	94	47	57	0	90
Commit	32	97	74	61	69	100
Source file (best case)	0	75	43	55	77	100
Source file (worst case)	0	8	49	54	42	97
Blame (best case)	61	47	64	64	54	100
Blame (worst case)	0	0	n/a	51	0	0
Browsing tickets/issues						
Browsing	55	93	90	50	91	100
Search	55	93	87	52	88	100
Details and comments	56	49	71	50	71	100
Code review						
Browsing patches	0	90	84	55	82	100
Patch discussion	25	95	70	51	62	100
Patch diff	25	85	59	50	60	100

Disclaimer: This website is maintained by SourceHut.

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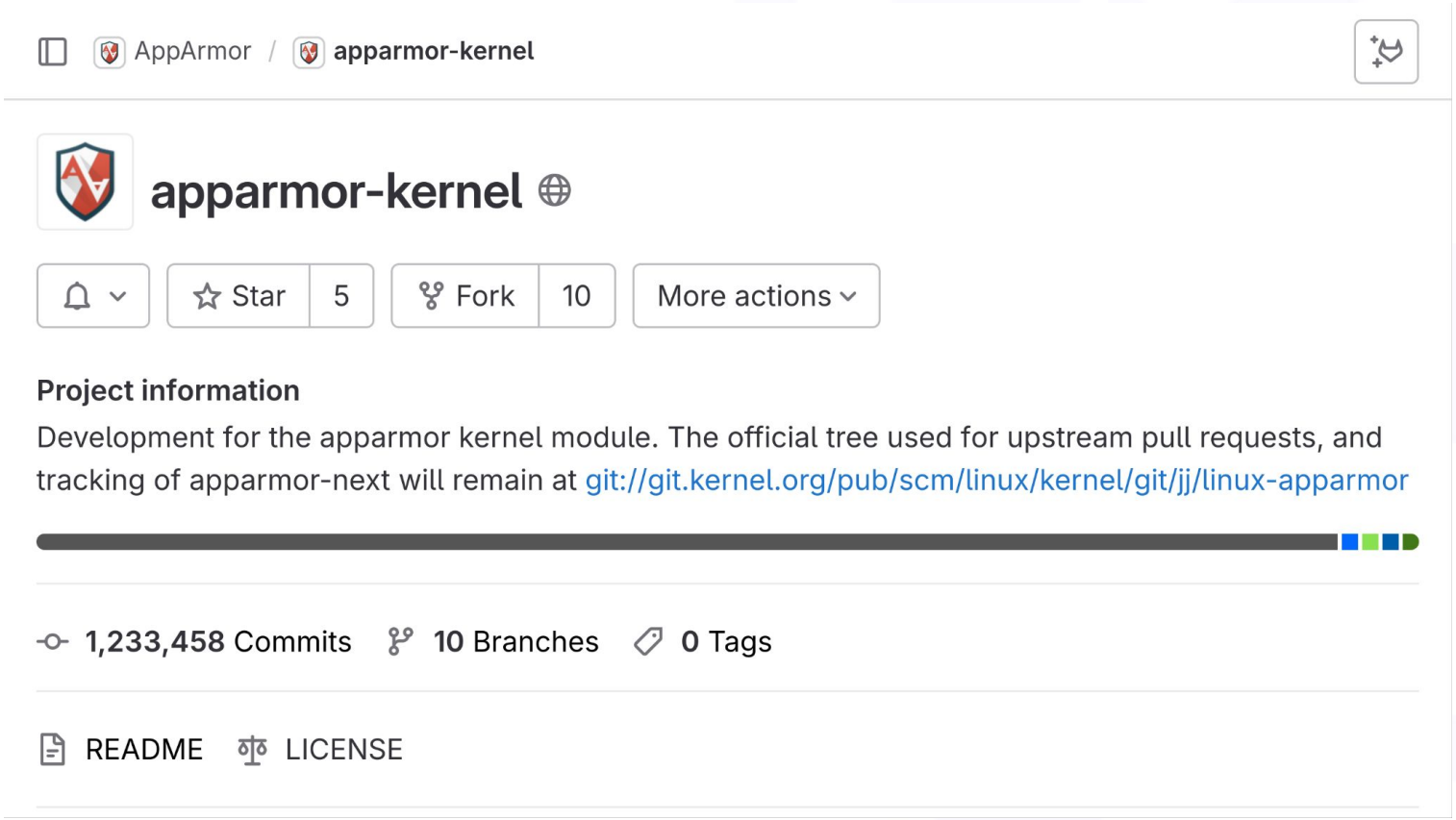
What is the next best thing?

We like Git forges.
We like GitLab.

Some just keep a mirror there



https://gitlab.com/apparmor/apparmor-kernel

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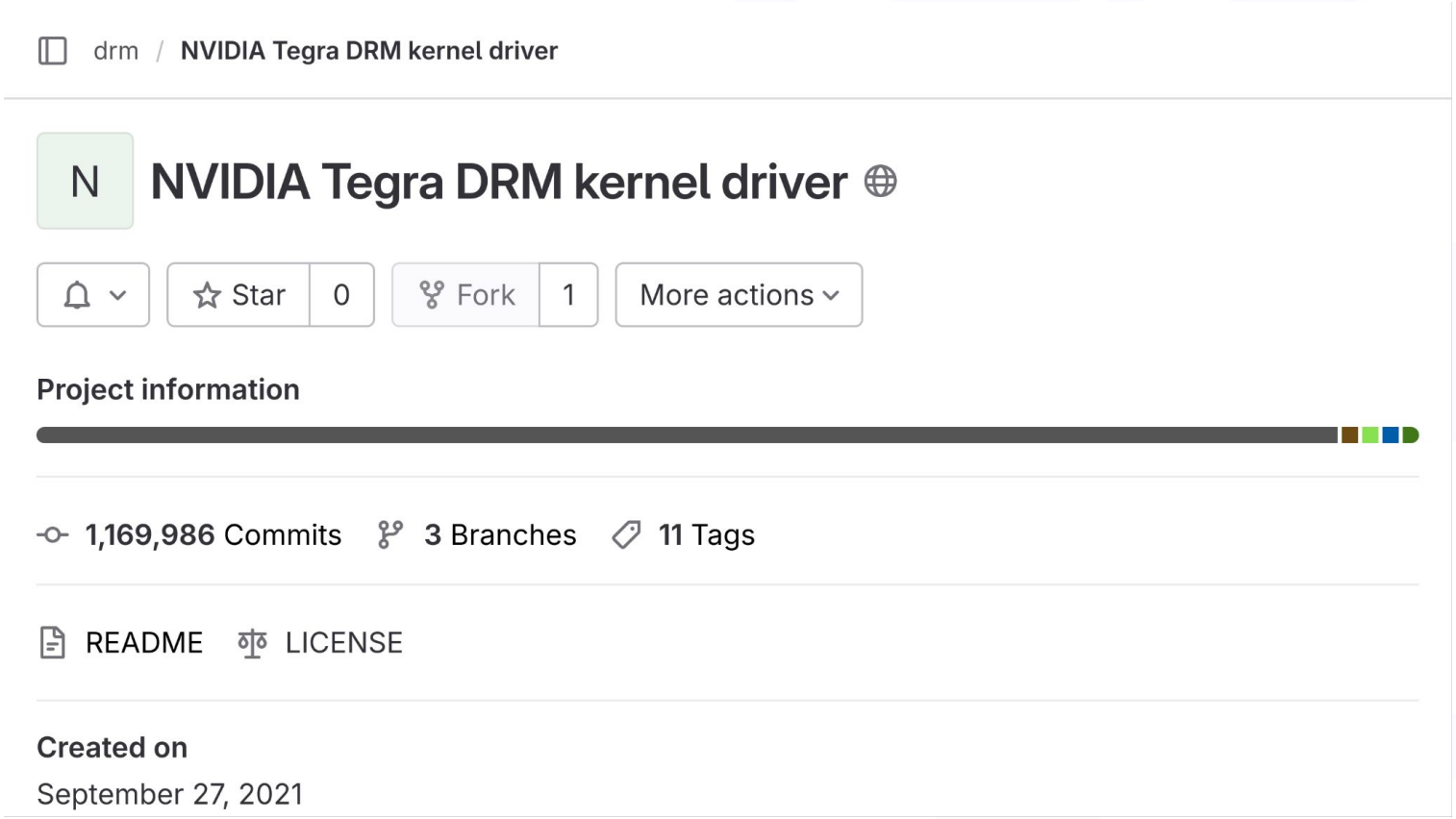
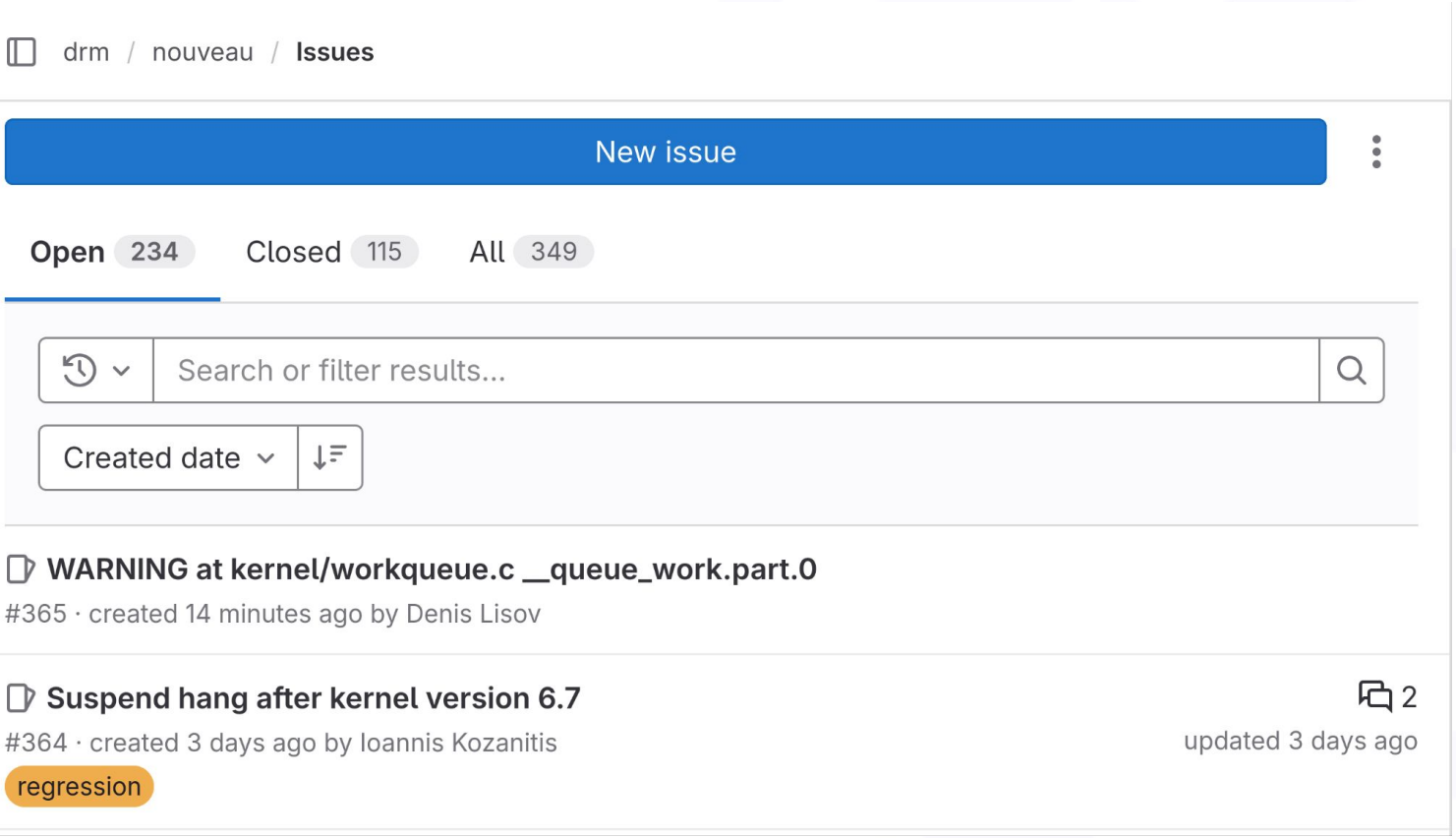


https://gitlab.freedesktop.org/drm/tegra

Some also track issues



https://gitlab.freedesktop.org/drm/nouveau/-/issues/

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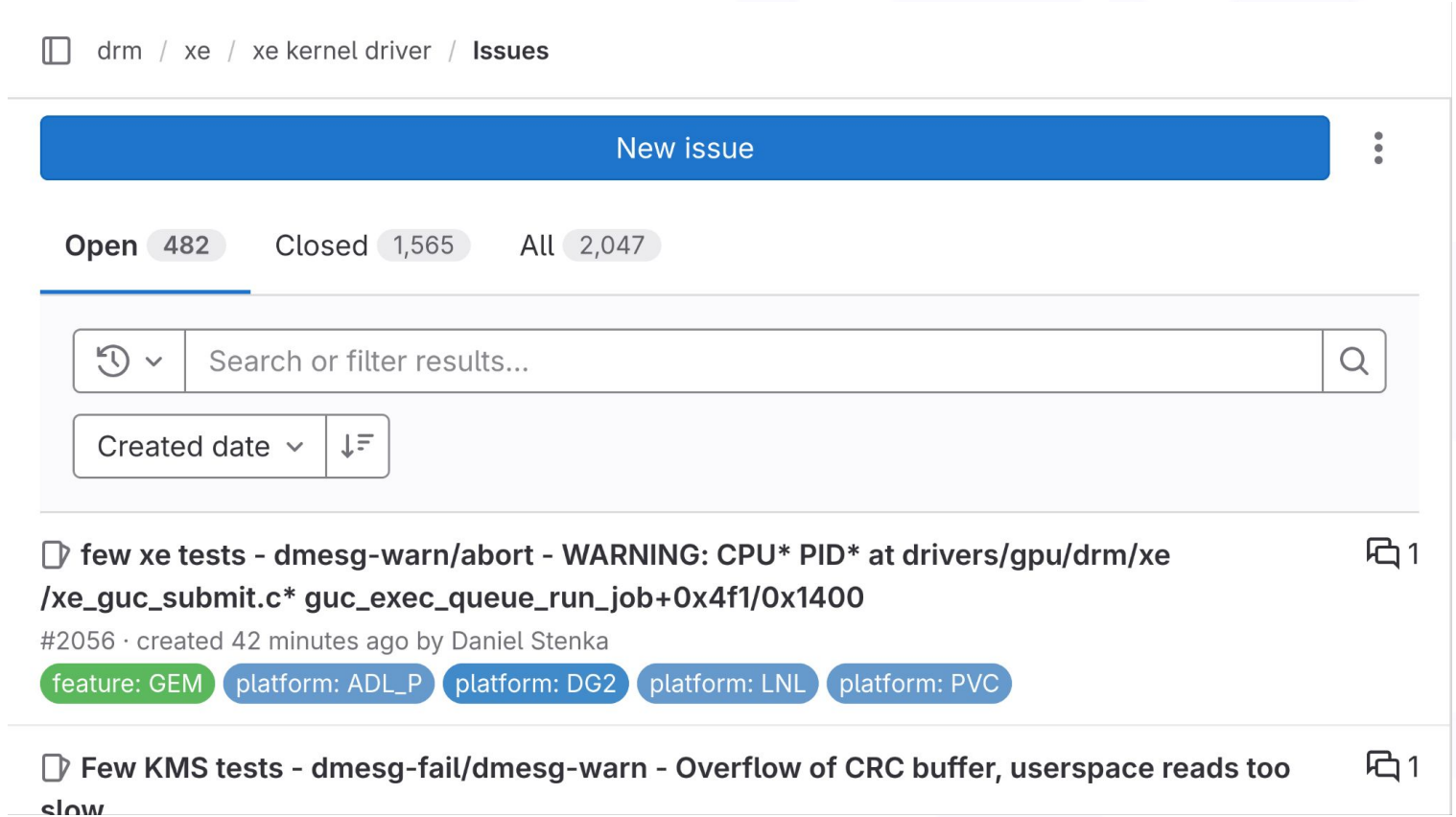

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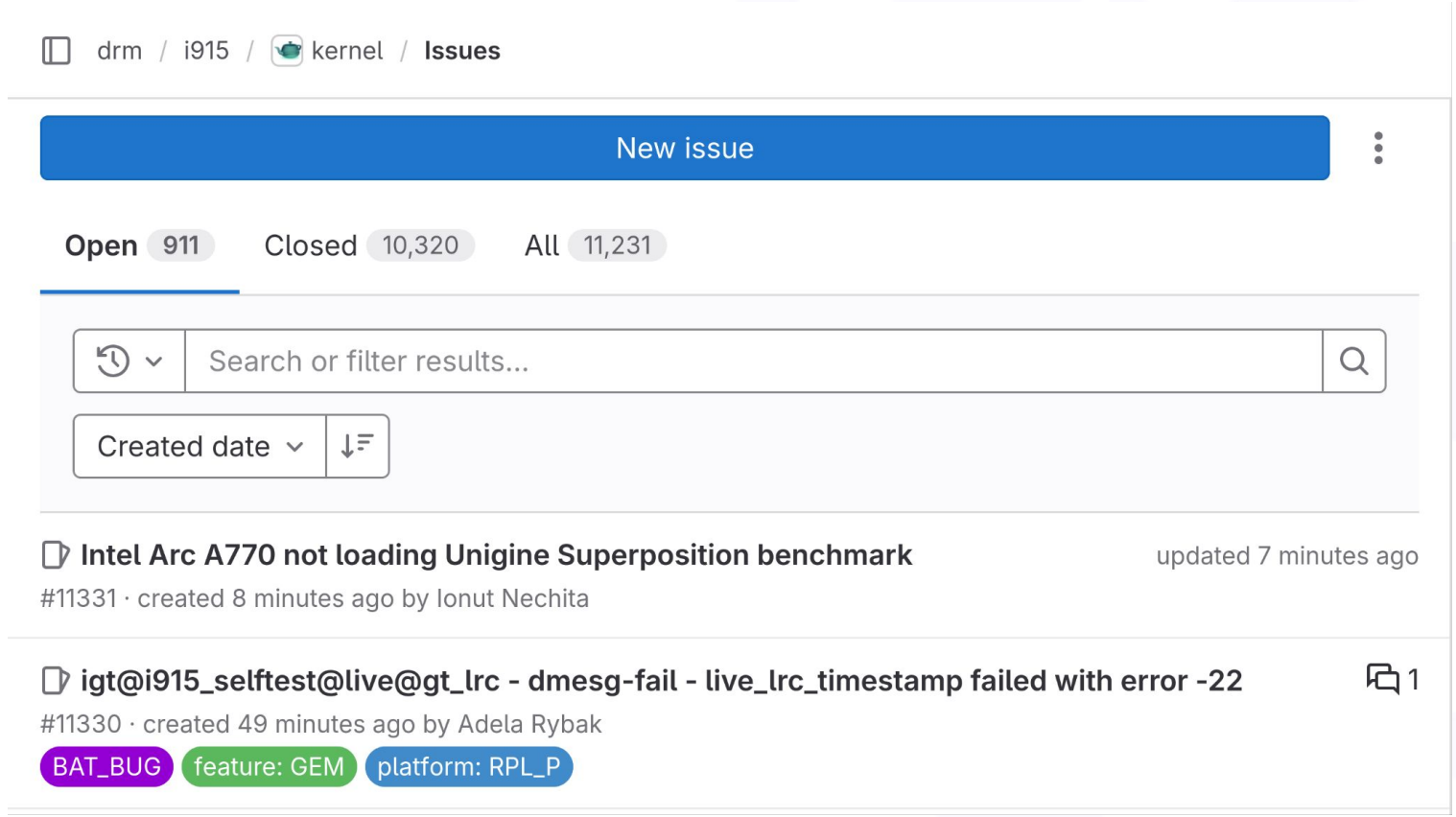

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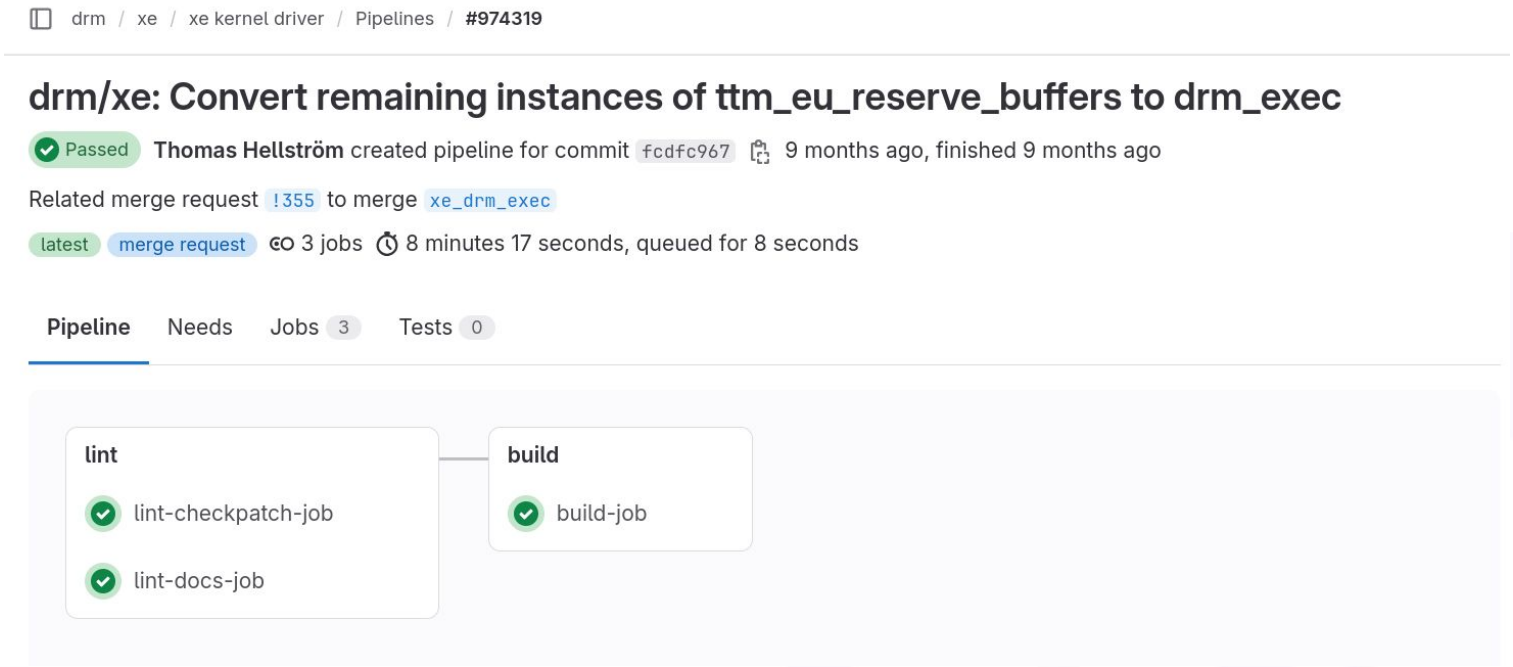
Others use the CI



https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

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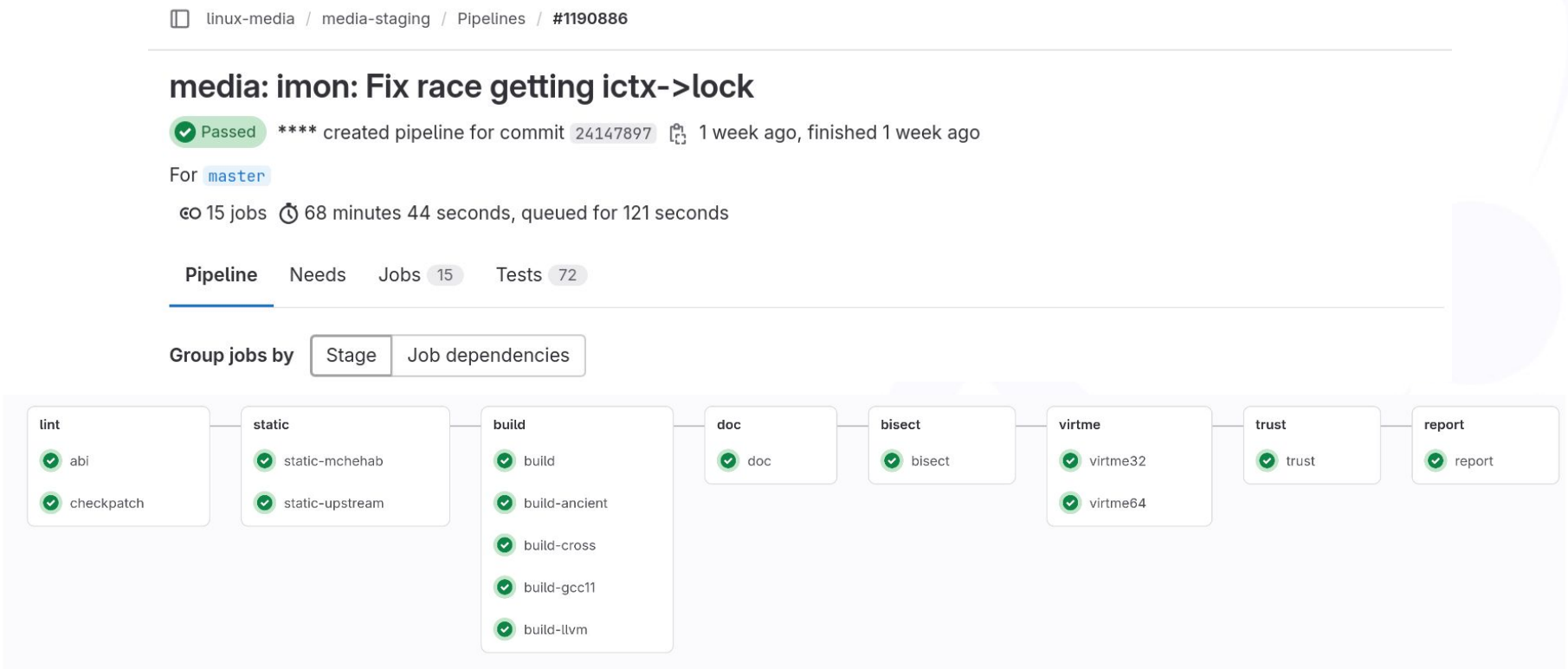
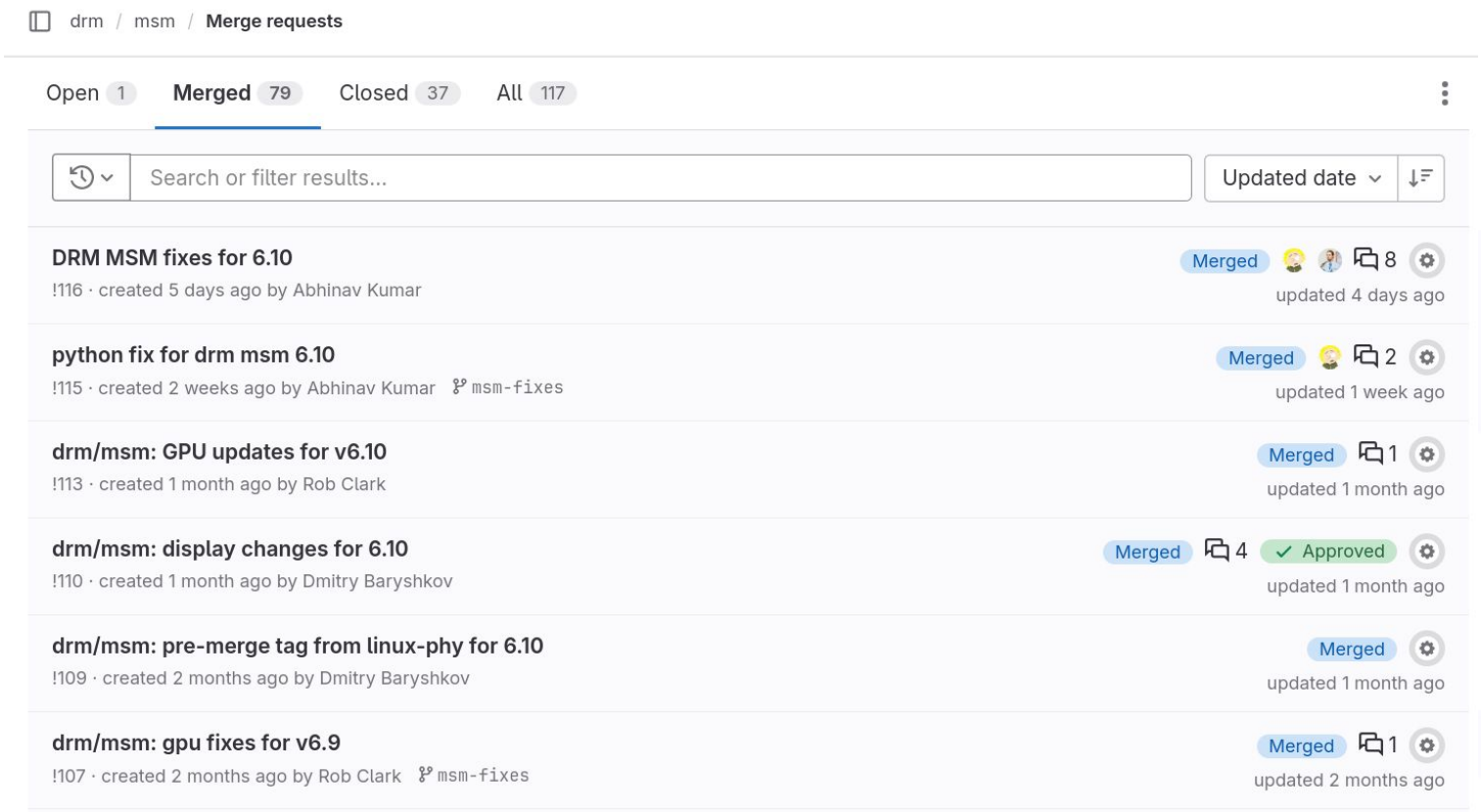


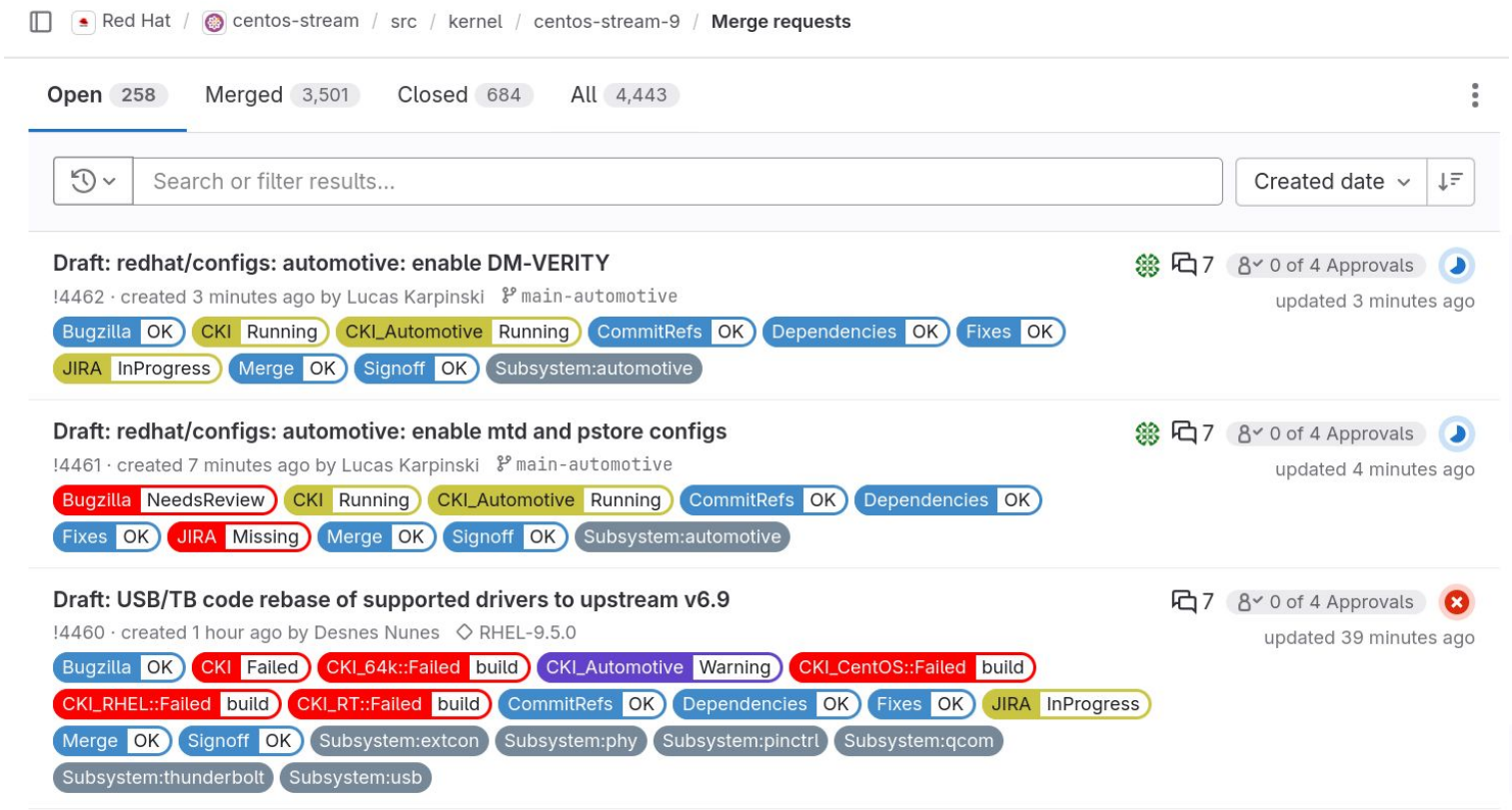
https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

And some use MRs



https://gitlab.freedesktop.org/drm/msm/-/merge_requests?scope=all&state=merged

And some use MRs... a lot!



https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests

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Let's focus on CI

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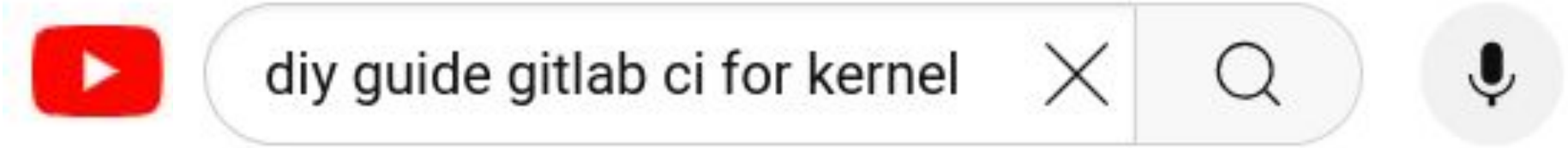
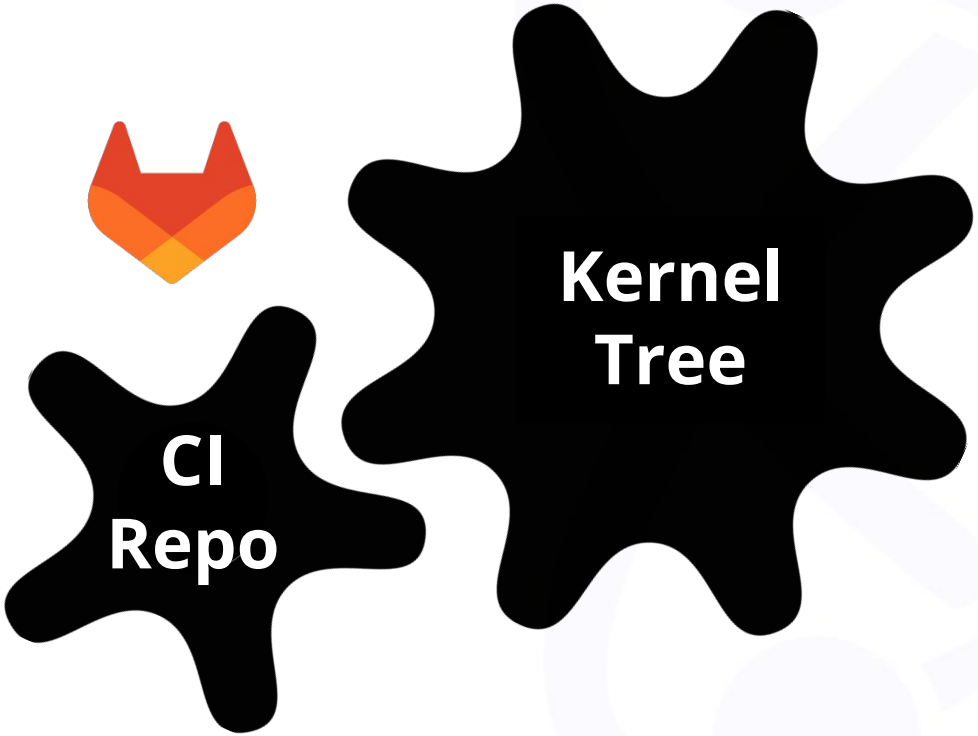
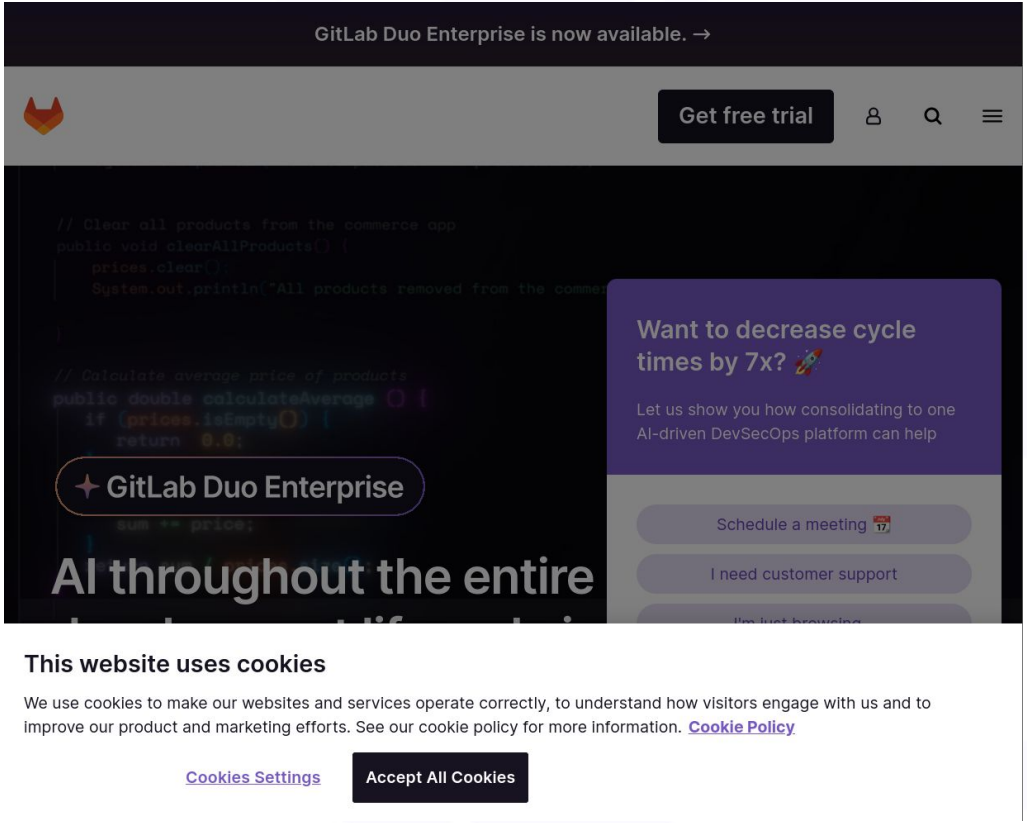


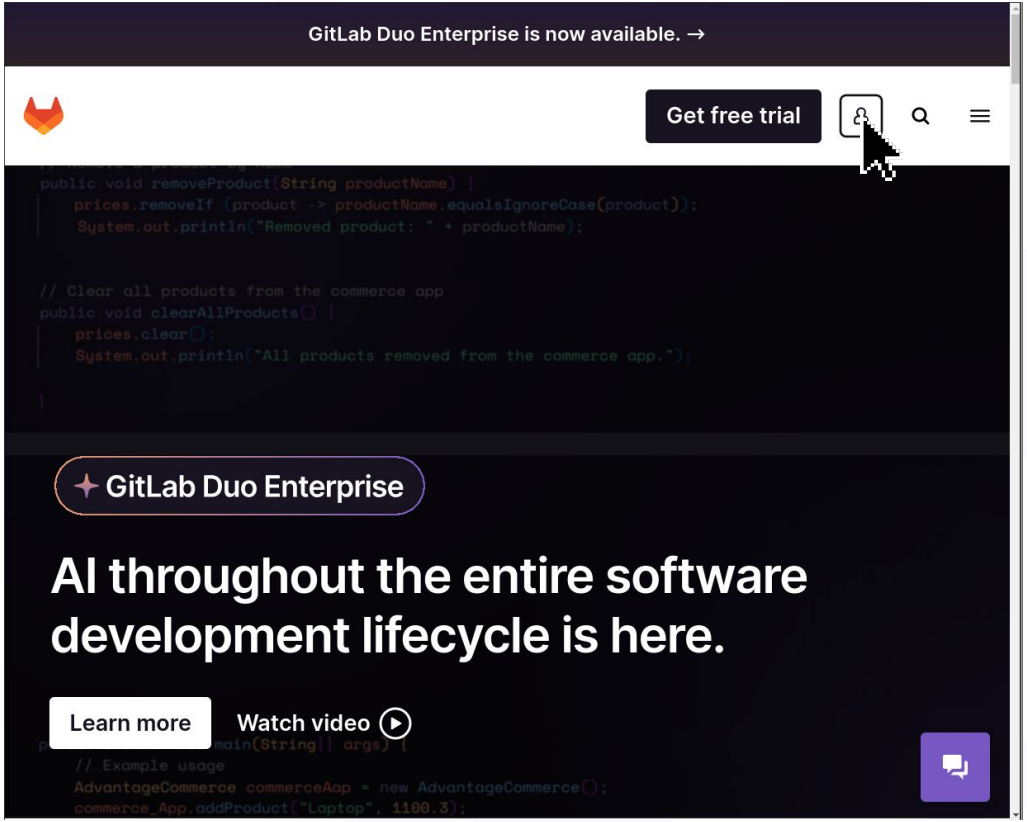
GitLab CI pipelines for the kernel



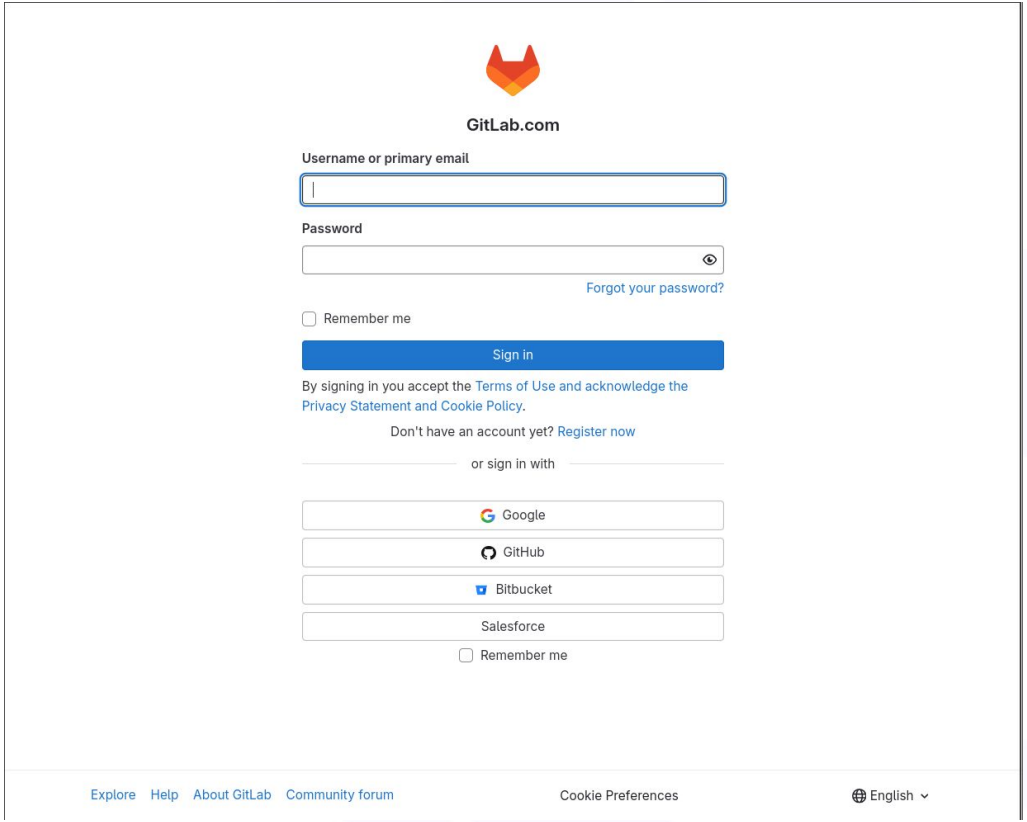
Create a GitLab account



Create a GitLab account

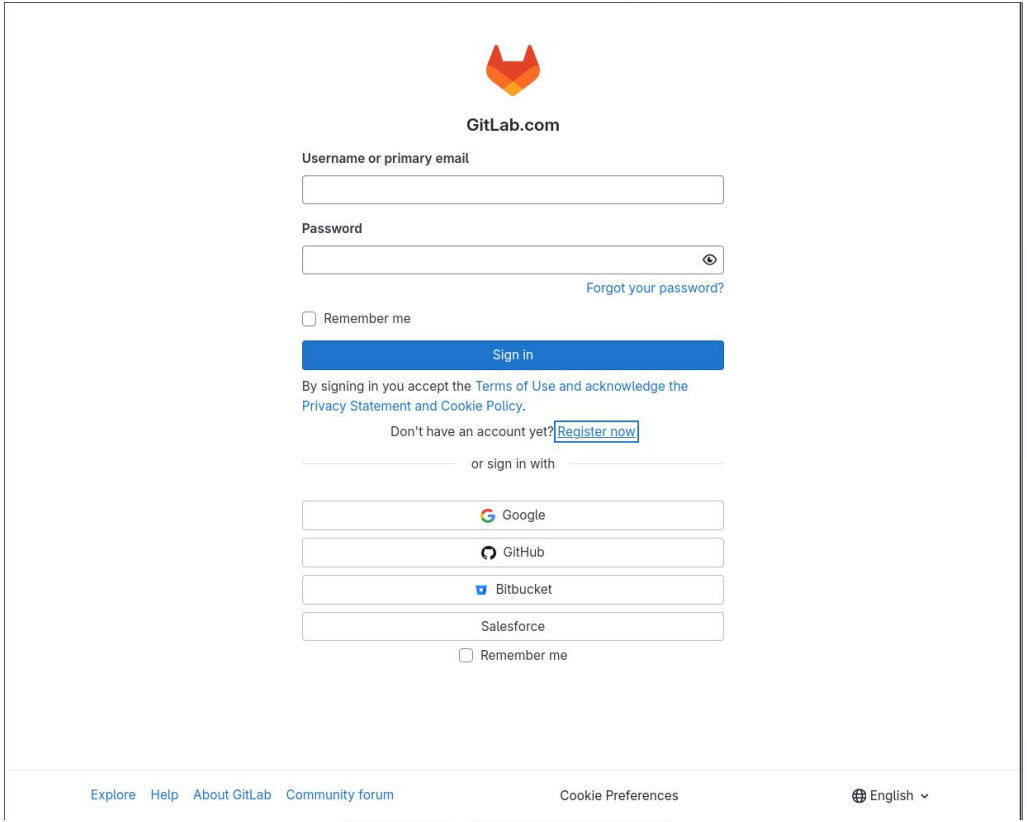


Create a GitLab account



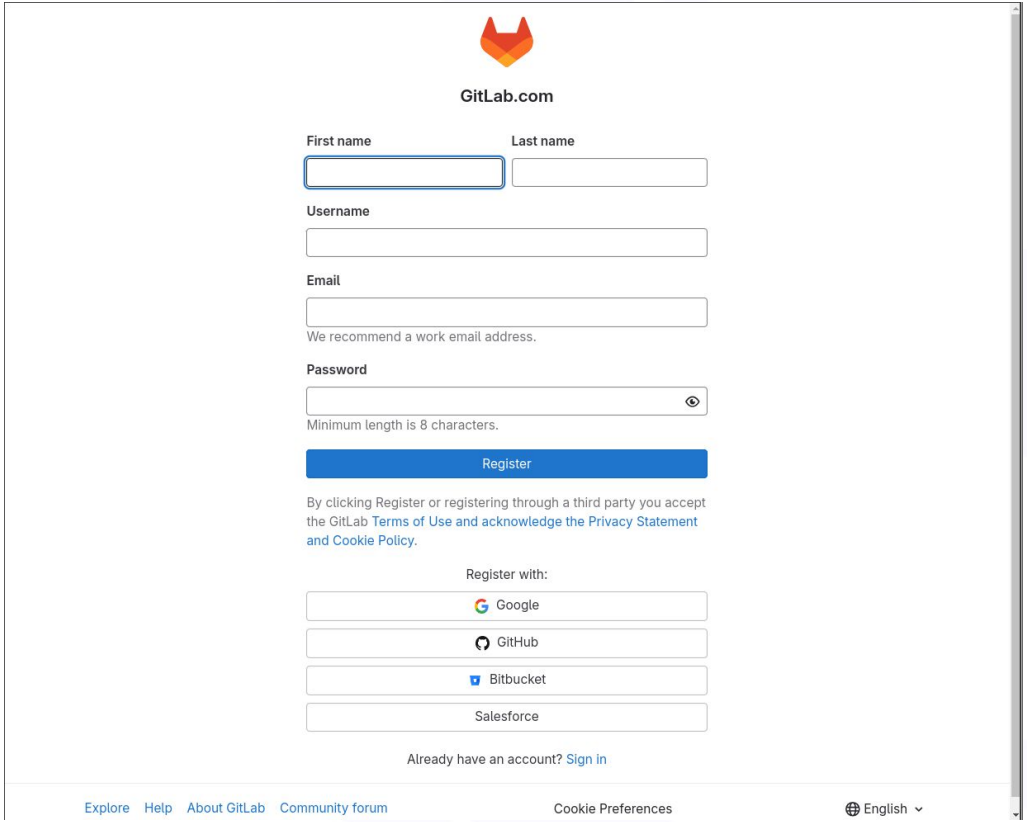
https://gitlab.com/users/sign_in

Create a GitLab account



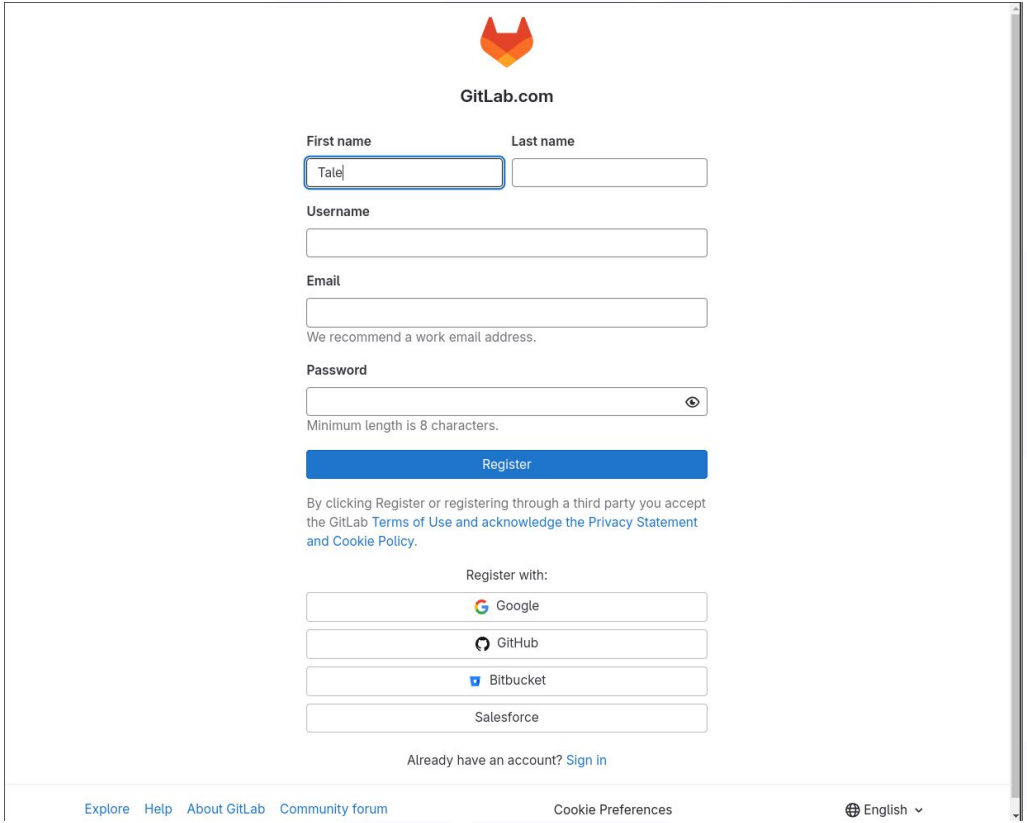
https://gitlab.com/users/sign_in

Create a GitLab account



https://gitlab.com/users/sign_up

Create a GitLab account



https://gitlab.com/users/sign_up

Create a GitLab account

Recommended:

- **Two-factor authentication:** gitlab.com/-/profile/two_factor_auth
- **Add SSH key:** gitlab.com/-/user_settings/ssh_keys

Create a CI repository

Create a folder

Create a CI repository

```
~ $ mkdir tree-ci
~ $ cd $_
~/tree-ci $ git init
Initialized empty Git repository in /home/tdaapare/tree-ci/.git/
```

Init the repo

Create a CI repository

```
~ $ mkdir tree-ci
~ $ cd $_
~/tree-ci $ git init
Initialized empty Git repository in /home/tdaapare/tree-ci/.git/
~/tree-ci $ git commit --allow-empty -m "Init repo"
[main (root-commit) dc6981ee6f7f] Init repo
```

Add at least one commit

Create a CI repository

```
~ $ mkdir tree-ci
~ $ cd $_
~/tree-ci $ git init
Initialized empty Git repository in /home/tdaapare/tree-ci/.git/
~/tree-ci $ git commit --allow-empty -m "Init repo"
[main (root-commit) dc6981ee6f7f] Init repo
~/tree-ci[main] $ git remote add origin git@gitlab.com:LPC24-demo/tree-ci
```

Set the desired name for your repo under your namespace

Create a CI repository

```
~ $ mkdir tree-ci
~ $ cd $_
~/tree-ci $ git init
Initialized empty Git repository in /home/tdaapare/tree-ci/.git/
~/tree-ci $ git commit --allow-empty -m "Init repo"
[main (root-commit) dc6981ee6f7f] Init repo
~/tree-ci[main] $ git remote add origin git@gitlab.com:LPC24-demo/tree-ci
~/tree-ci[main] $ git push --set-upstream origin main
Enumerating objects: 2, done.
Counting objects: 100% (2/2), done.
Writing objects: 100% (2/2), 171 bytes | 171.00 KiB/s, done.
Total 2 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote:
remote: The private project LPC24-demo/tree-ci was successfully created.
remote:
```

And push to create it in GitLab

KernelCI

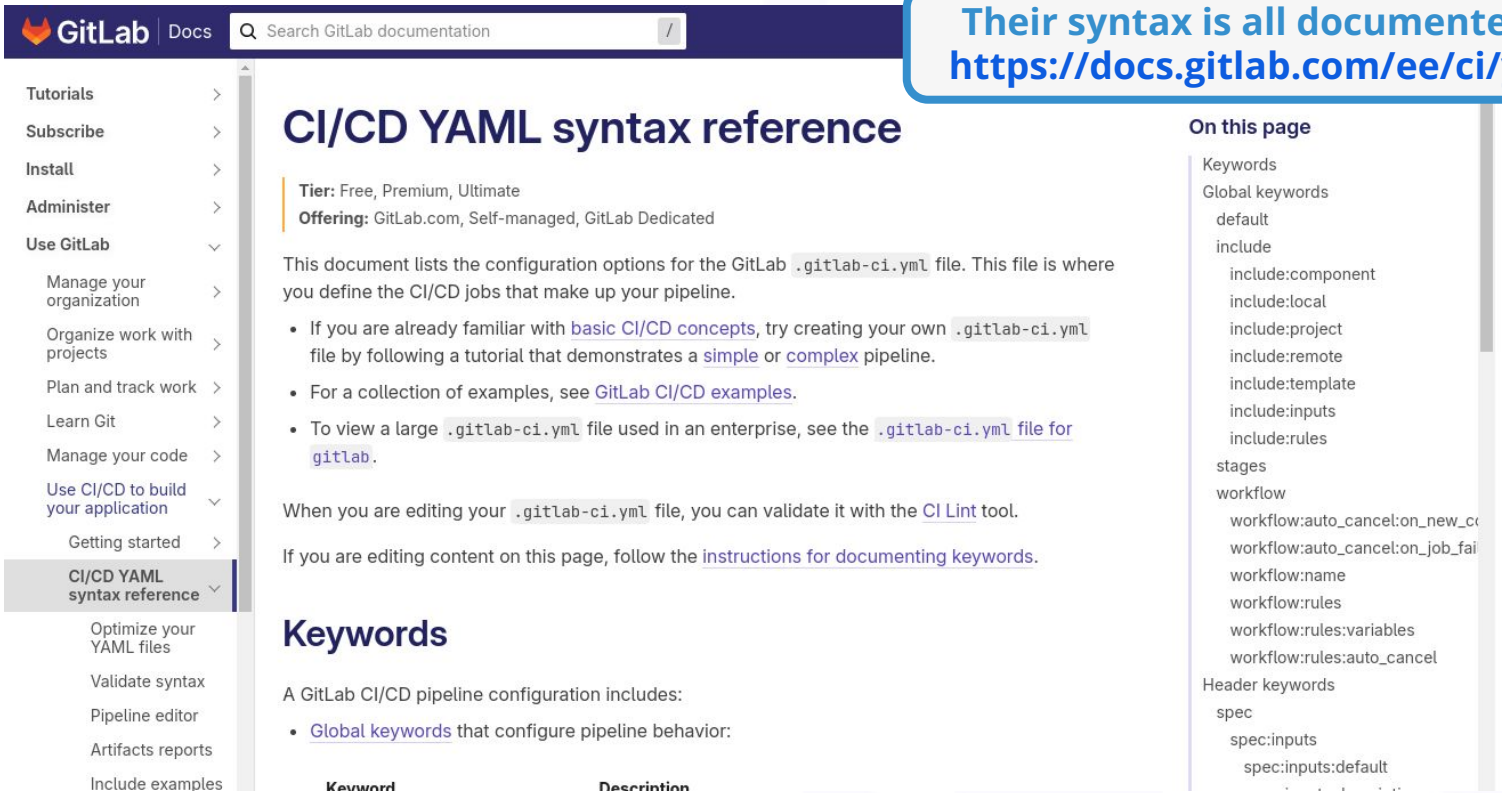
Write the *simplest CI YAML* possible

```
~/tree-ci[main] $ vim simplest-ci.yml
```

Now, to the CI configuration

Write the *simplest CI YAML* possible

Their syntax is all documented at https://docs.gitlab.com/ee/ci/yaml



KernelCI

Write the *simplest CI YAML* possible

```
1 compile:
2   image: quay.io/cki/builder-rawhide:production
3   script:
4     - make tinyconfig
5     - make -j$(nproc)
6
```

Write the *simplest CI YAML* possible

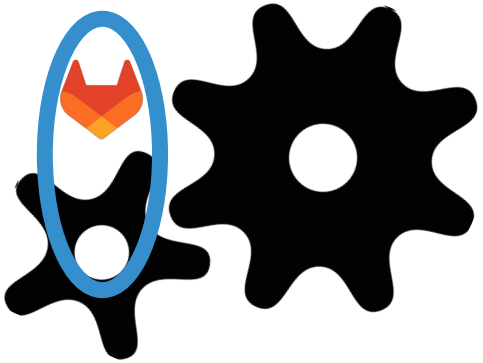
```
~/tree-ci[main !+] $ vim simplest-ci.yml
~/tree-ci[main !+] $ git add .
~/tree-ci[main +] $ git commit -m "Add simplest-ci.yml"
[main 82f44d3e59c9] Add simplest-ci.yml
 1 file changed, 6 insertions(+)
 create mode 100644 simplest-ci.yml
~/tree-ci[main] $ git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 352 bytes | 352.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To gitlab.com:LPC24-demo/tree-ci
   f637ed29ea3c..82f44d3e59c9  main -> main
~/tree-ci[main] $
```

Commit and push... but wait...

KernelCI

How do we connect it to a tree?

KernelCI



How do we connect it to a tree?

Option a: Clone it

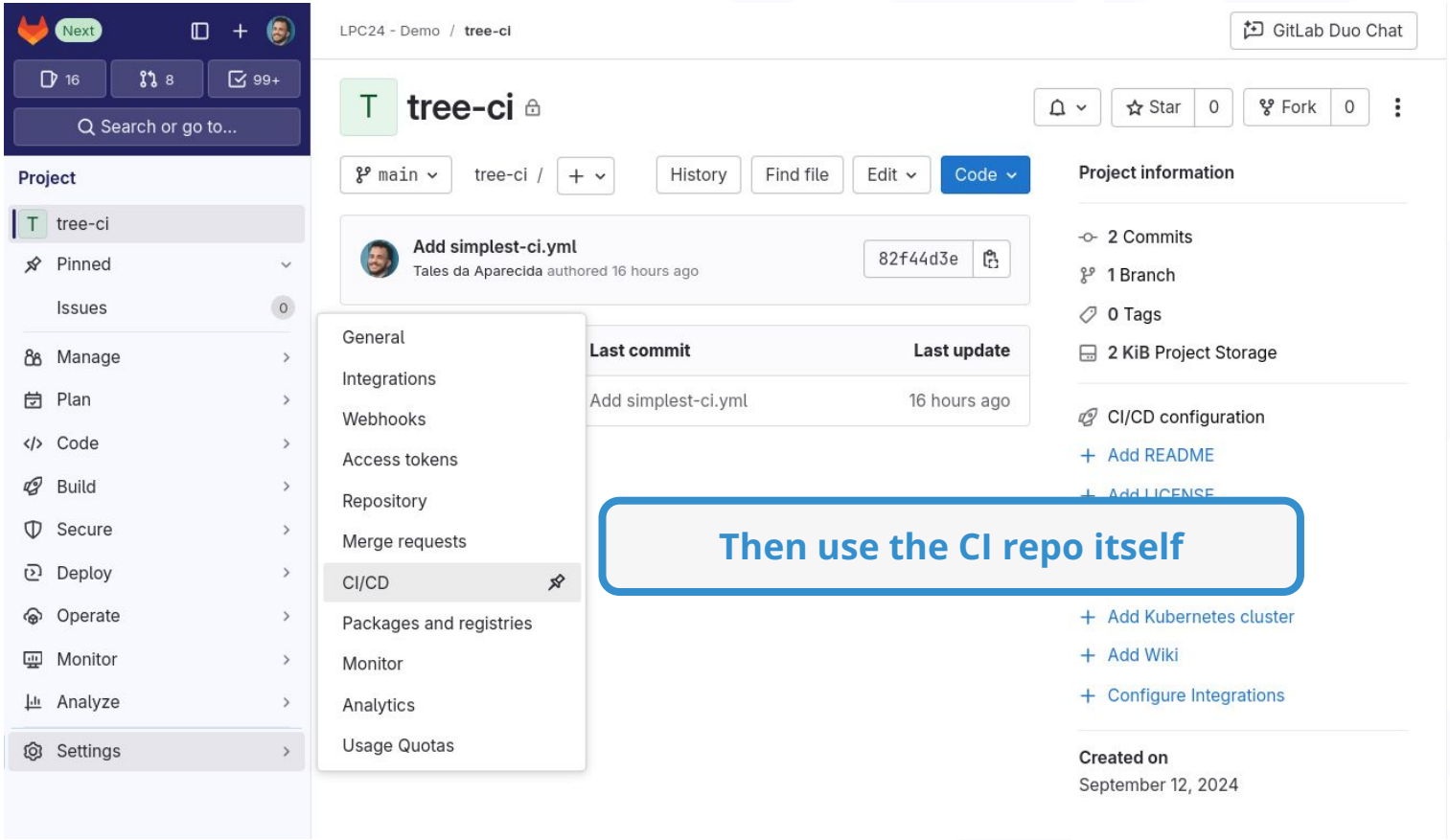
Option b: Mirror it

Hooking a tree! Option a: clone it

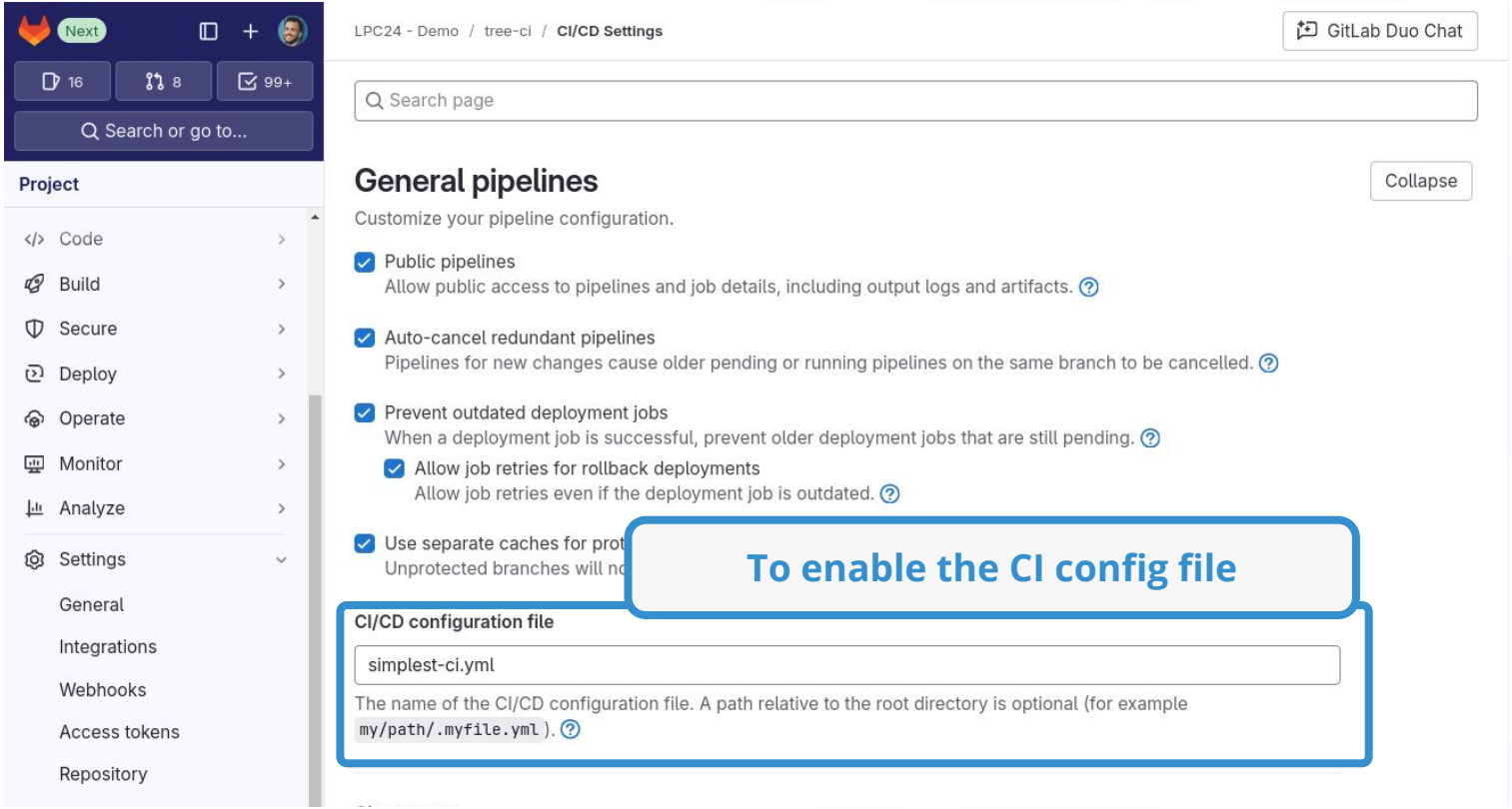
```
compile:
  image: quay.io/cki/builder-rawhide:production
  script:
    - |
      if [ "$(head -n1 README 2>/dev/null)" != "Linux kernel" ]; then
        git clone --depth 1 \
            https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git
        cd linux
      fi
    - make tinyconfig
    - make -j$(nproc)

```

You can add a step to clone the tree

Hooking a tree! Option a: clone it

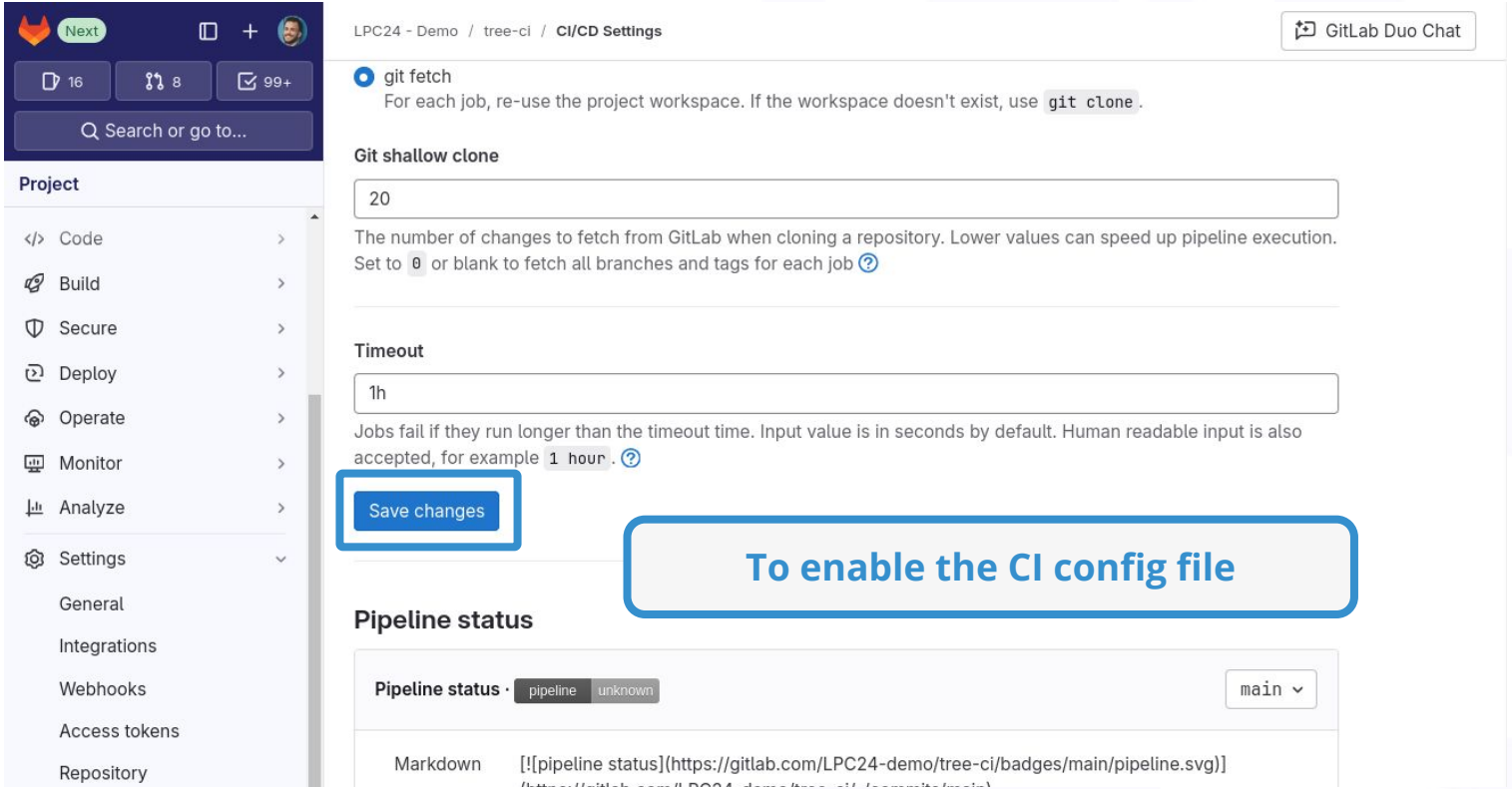


Hooking a tree! Option a: clone it



https://gitlab.com/LPC24-demo/tree-ci/-/settings/ci_cd

Hooking a tree! Option a: clone it

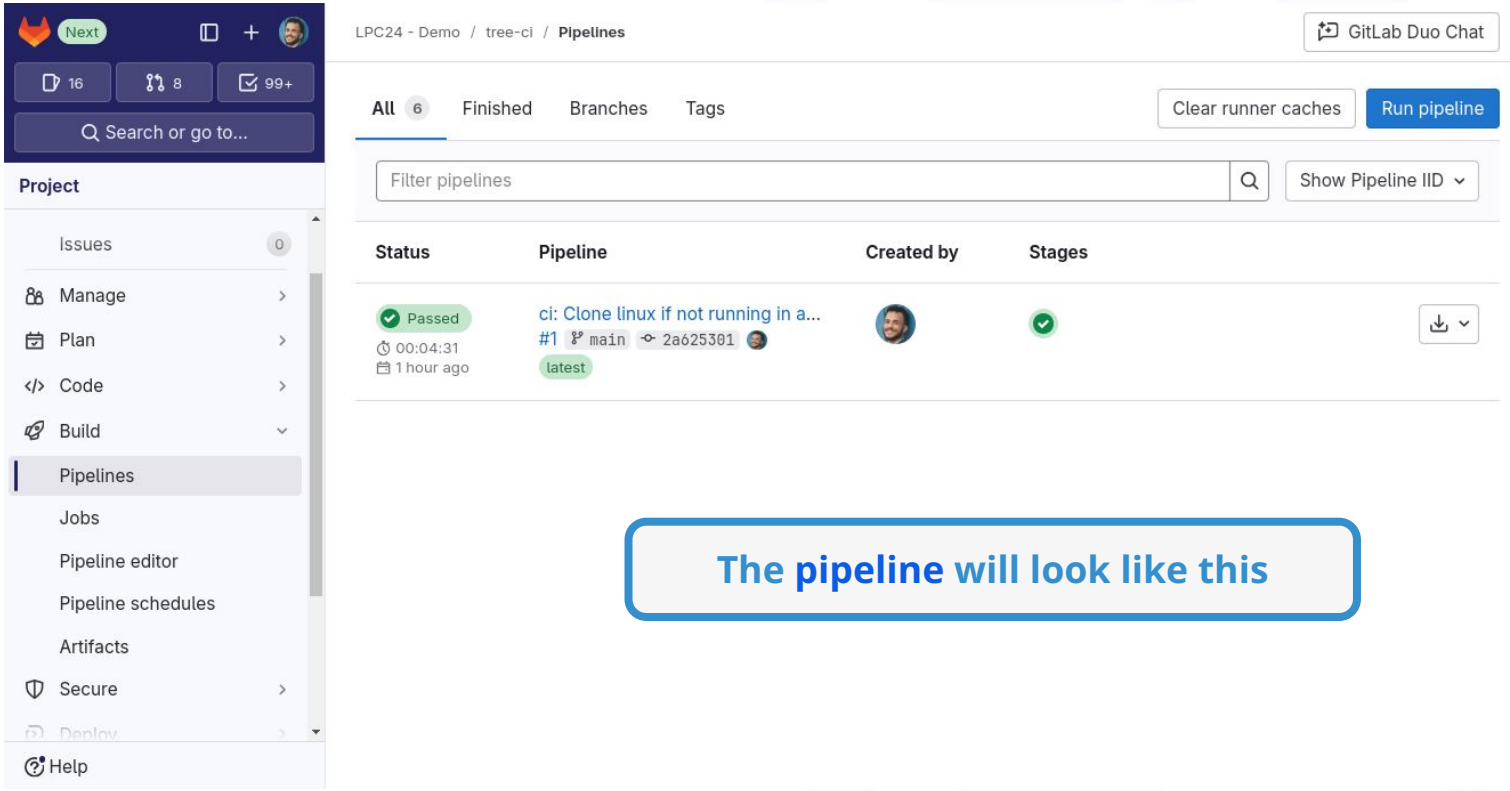


https://gitlab.com/LPC24-demo/tree-ci/-/settings/ci_cd

KernelCI

And in the next push to the **CI repo**...
(or by manually triggering it)

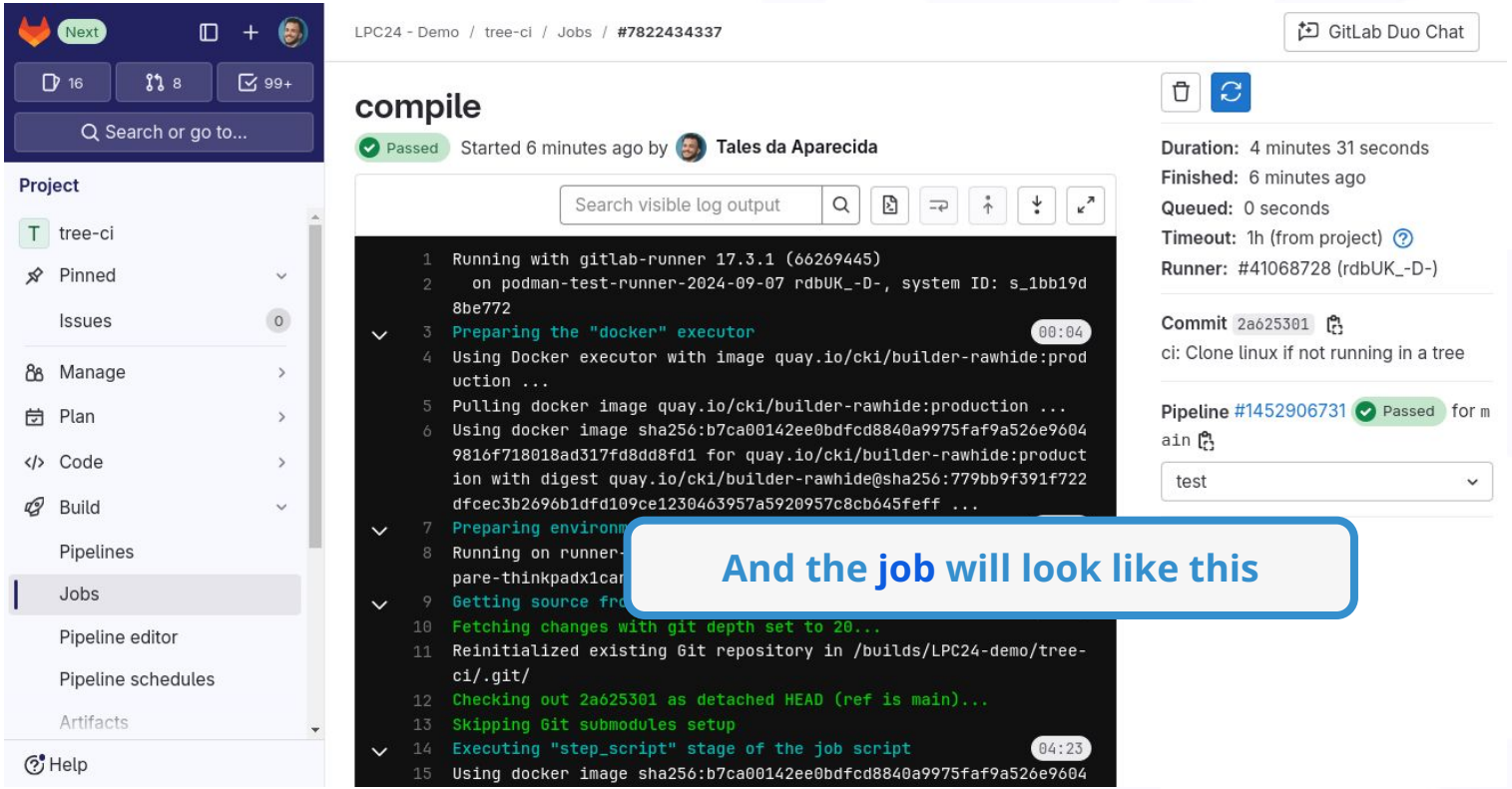
KernelCI



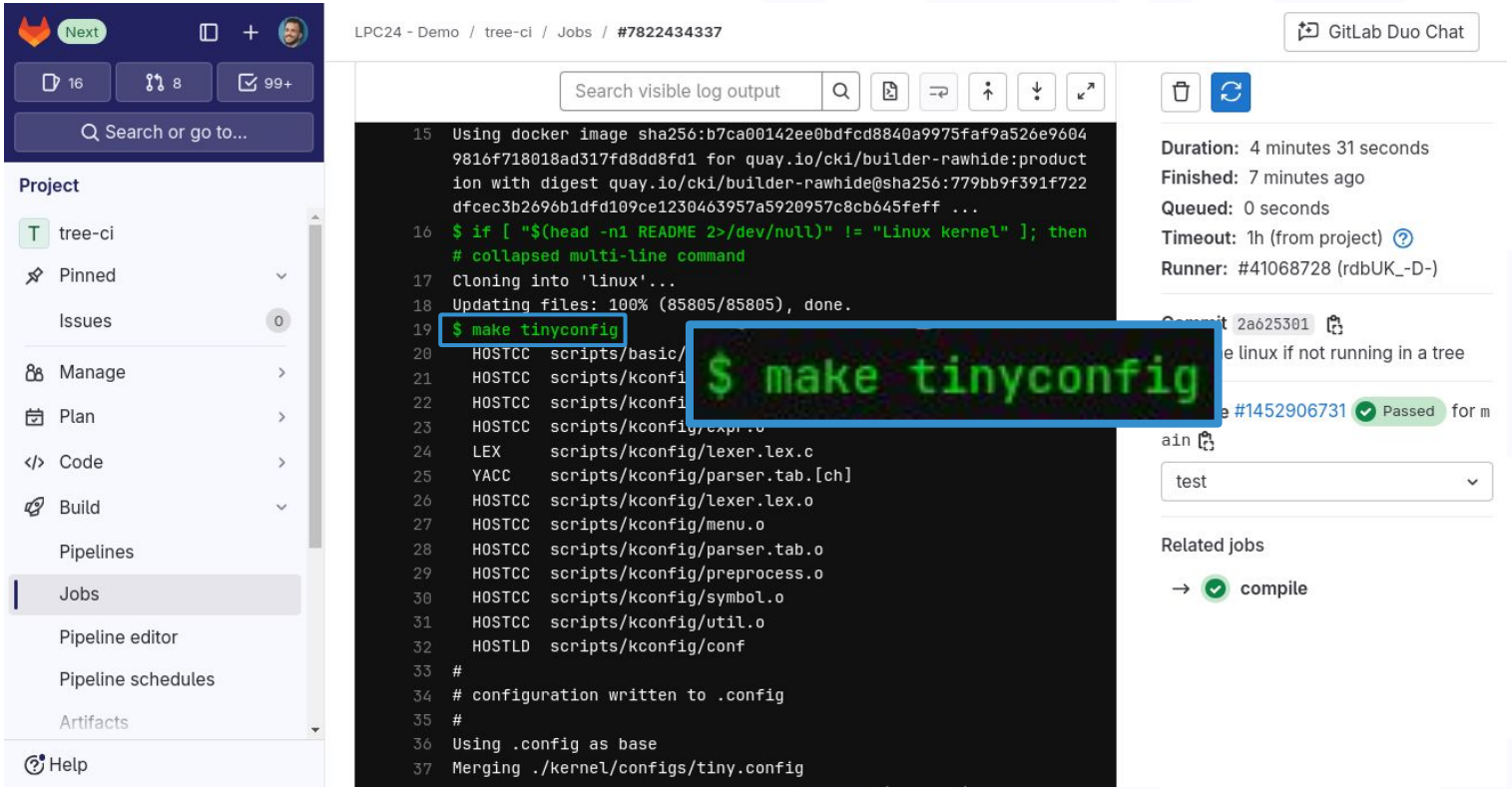
The pipeline will look like this

https://gitlab.com/LPC24-demo/tree-ci/-/pipelines

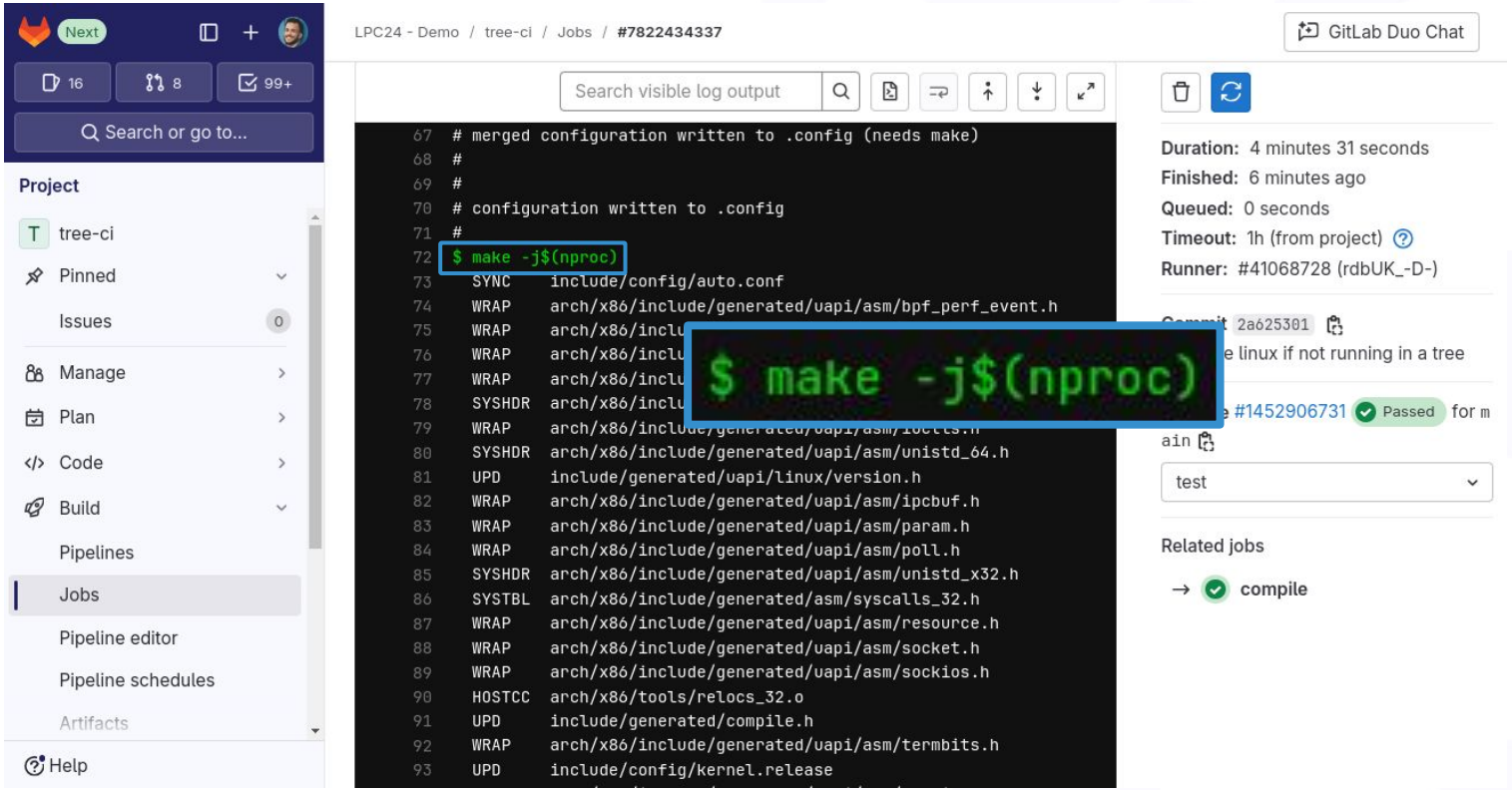
Hooking a tree! Option a: clone it



Hooking a tree! Option a: clone it

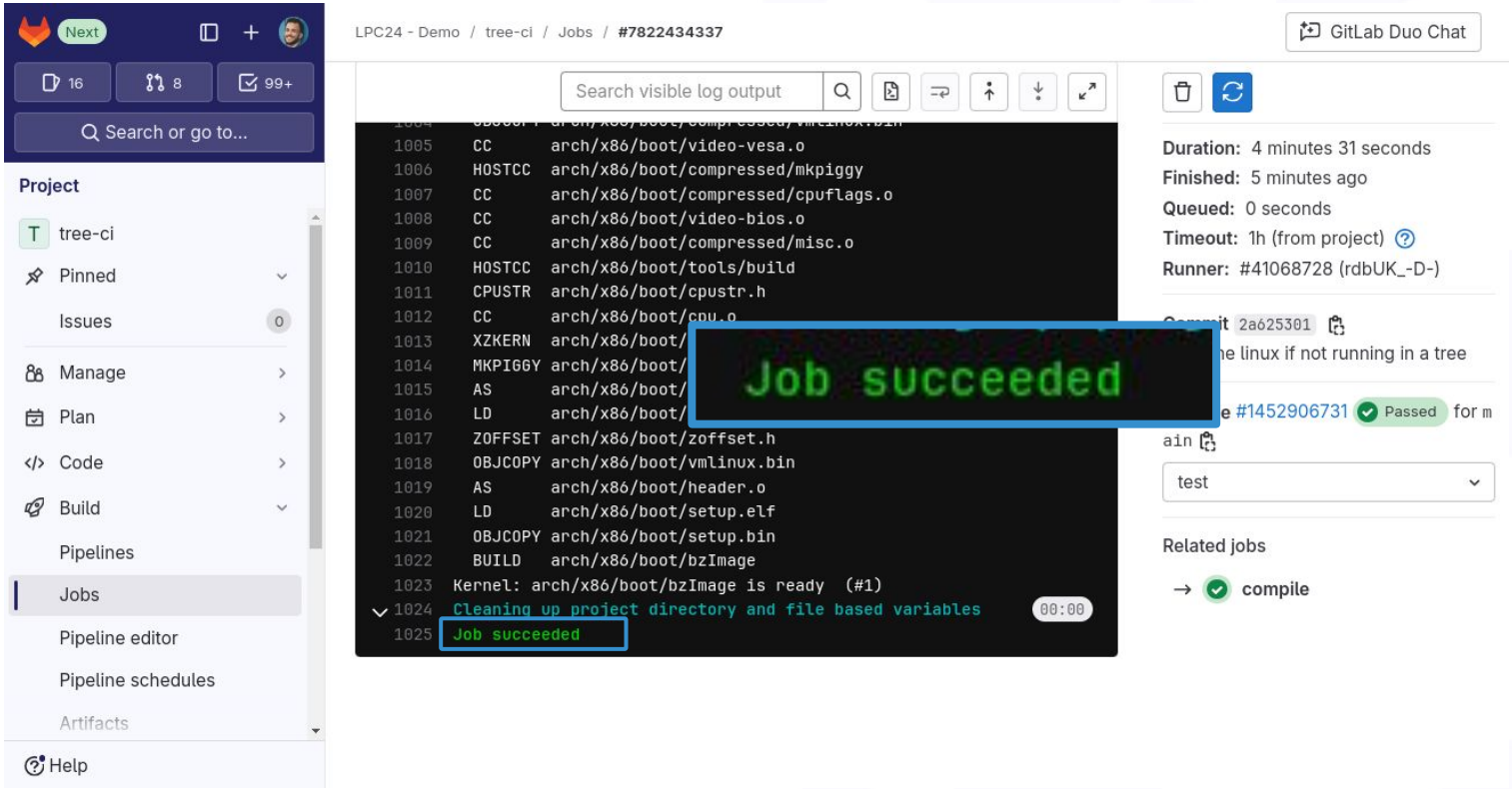


Hooking a tree! Option a: clone it

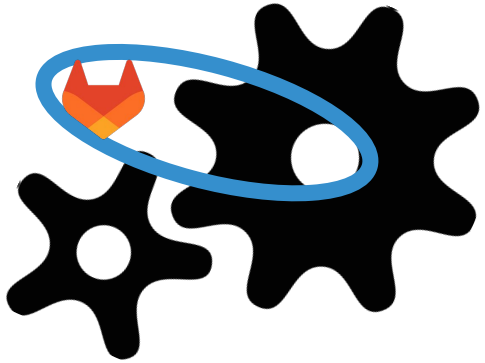


https://gitlab.com/LPC24-demo/tree-ci/-/jobs/7822434337

Hooking a tree! Option a: clone it



KernelCI

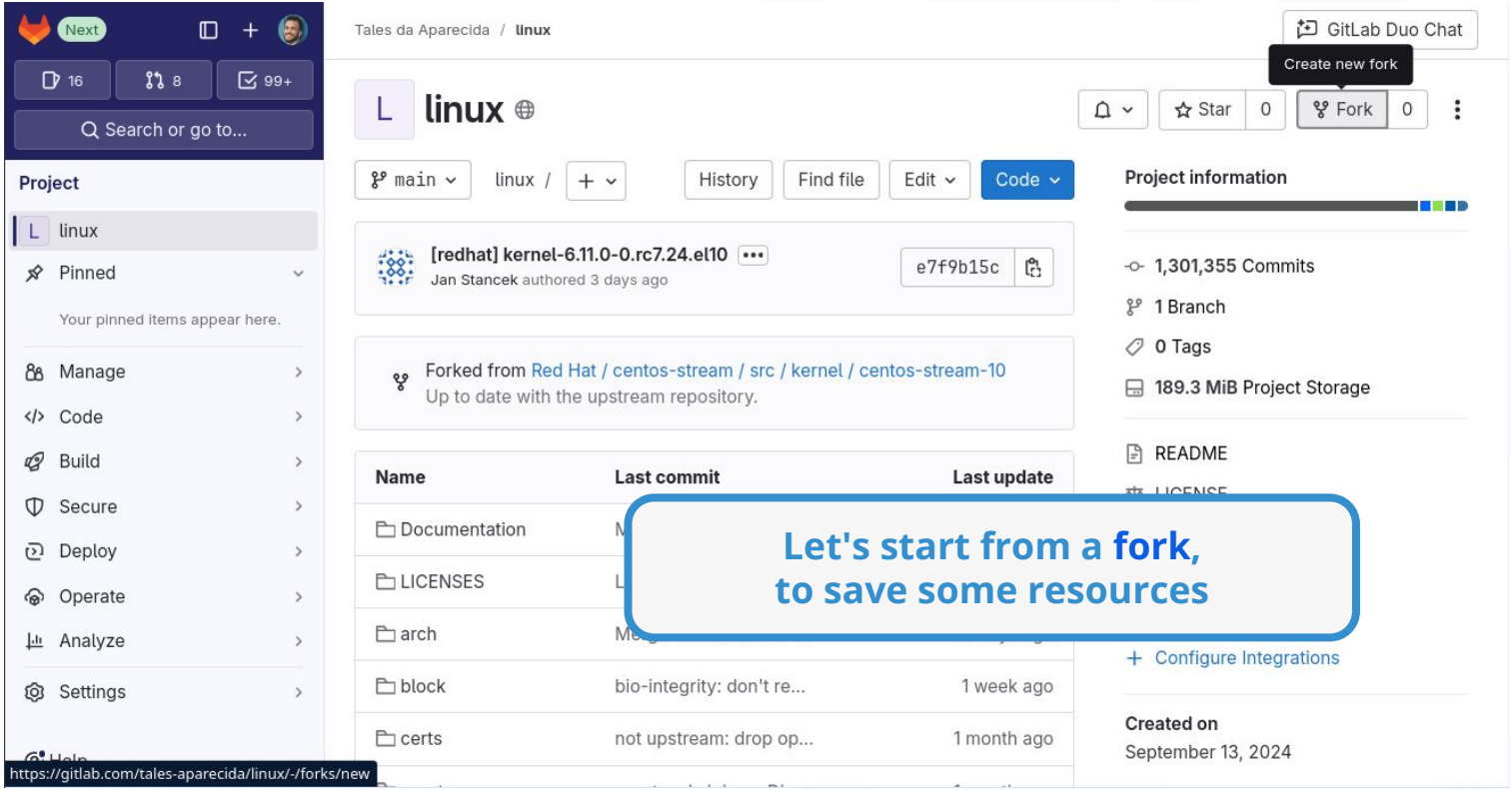


How do we connect it to a tree?

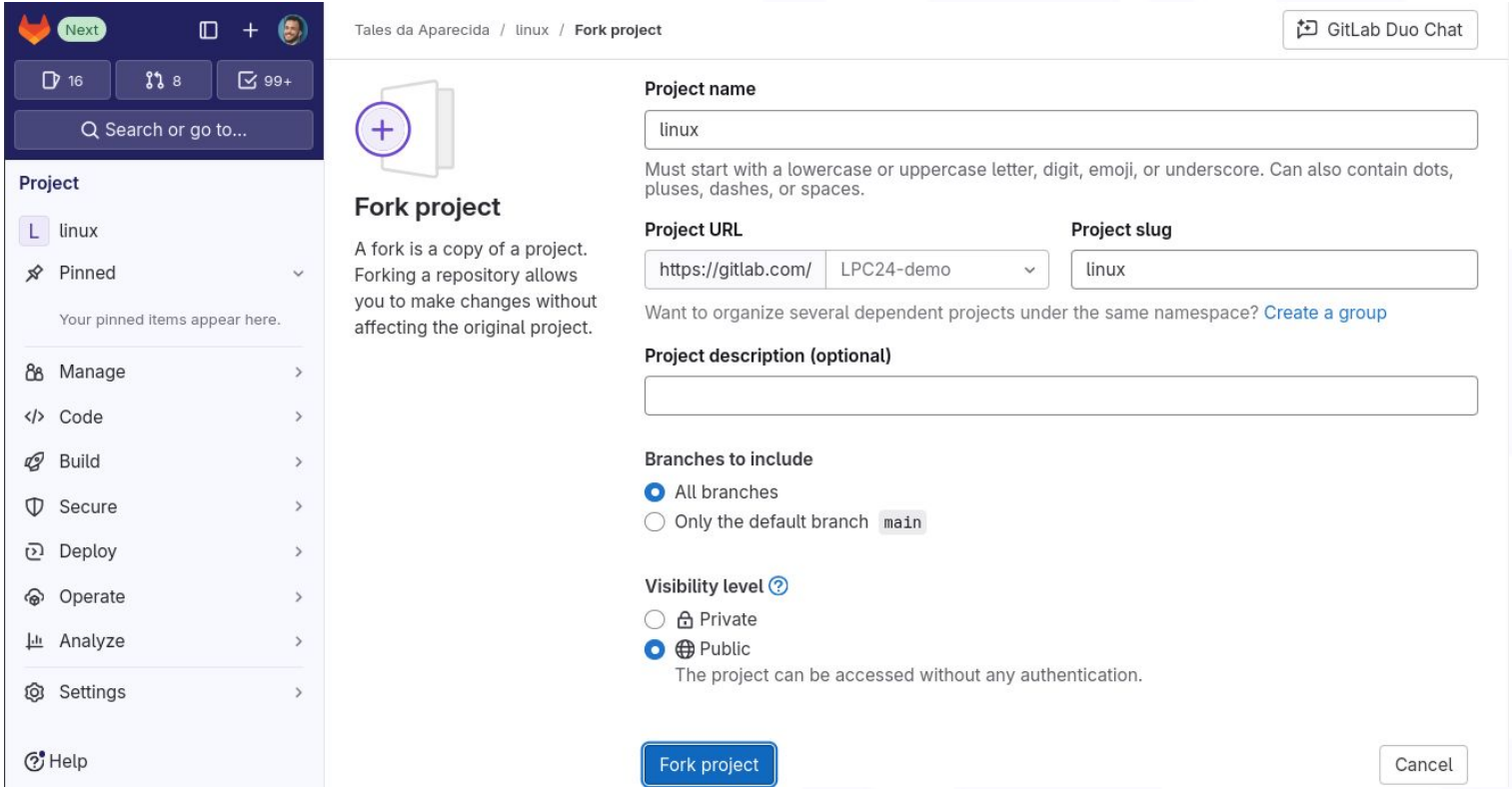
~~Option a: Clone it~~

Option b: Mirror it

Hooking a tree! Option b: mirror it

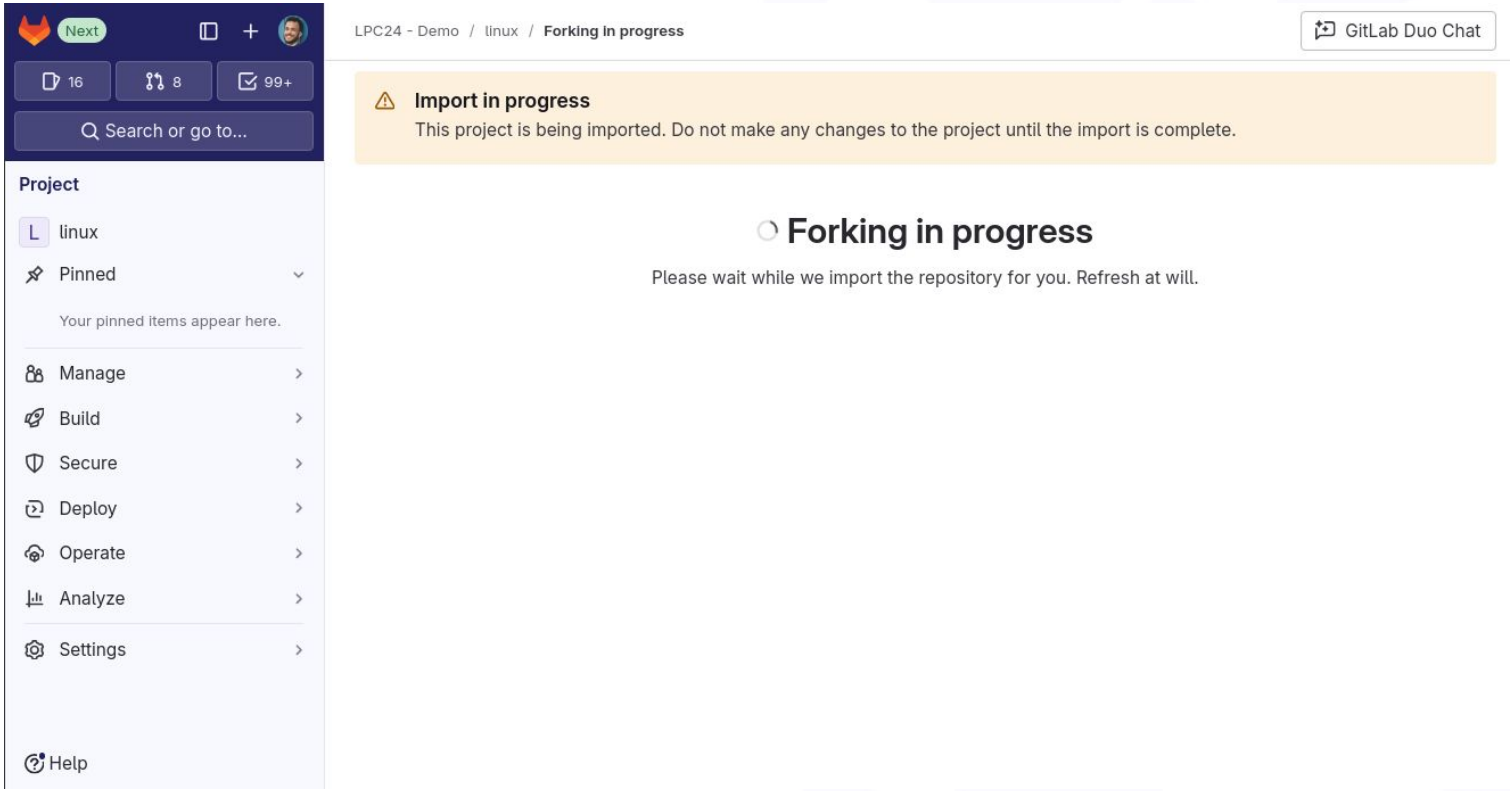


Hooking a tree! Option b: mirror it

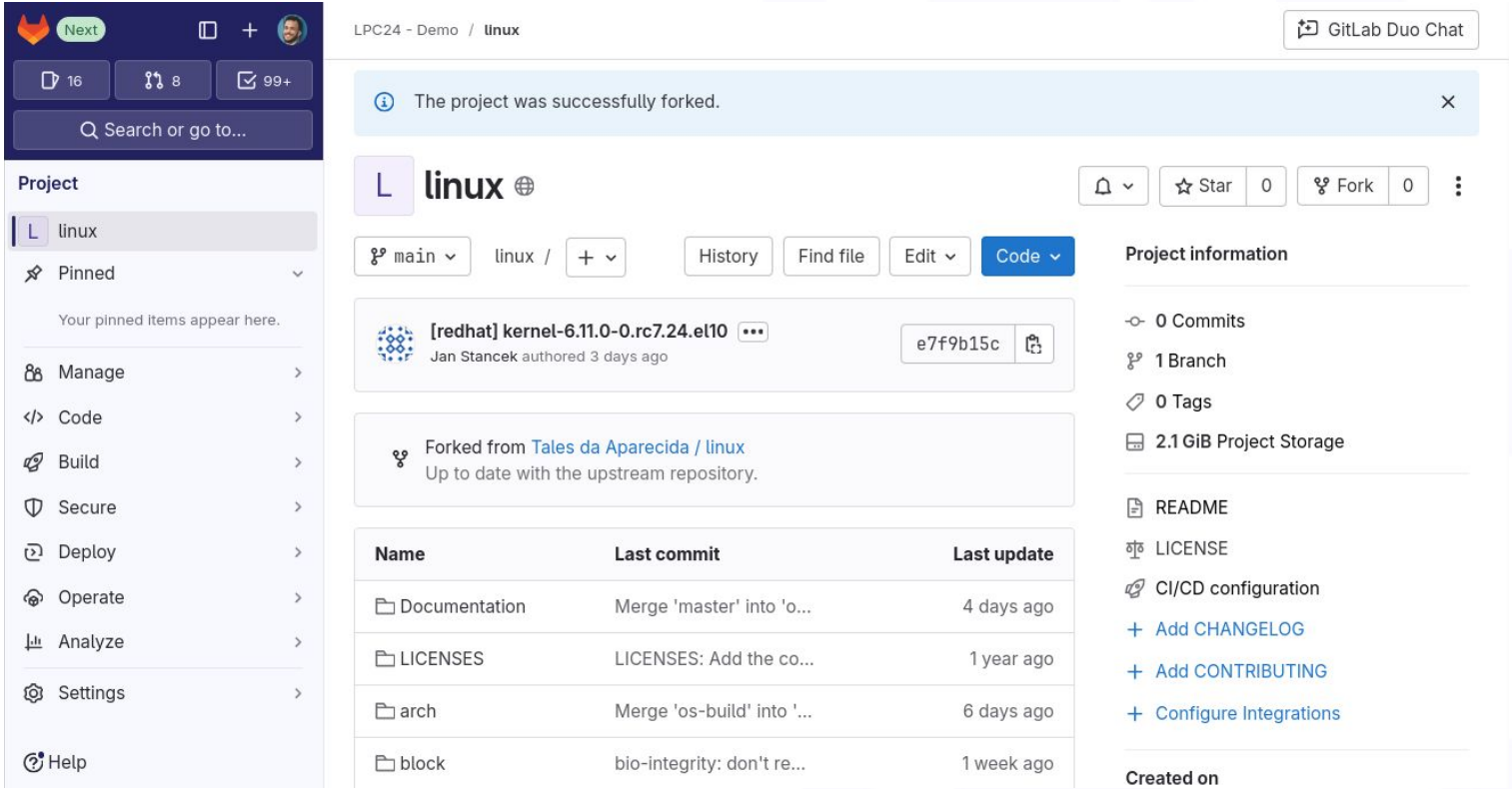


https://gitlab.com/tales-aparecida/linux/-/forks/new

Hooking a tree! Option b: mirror it

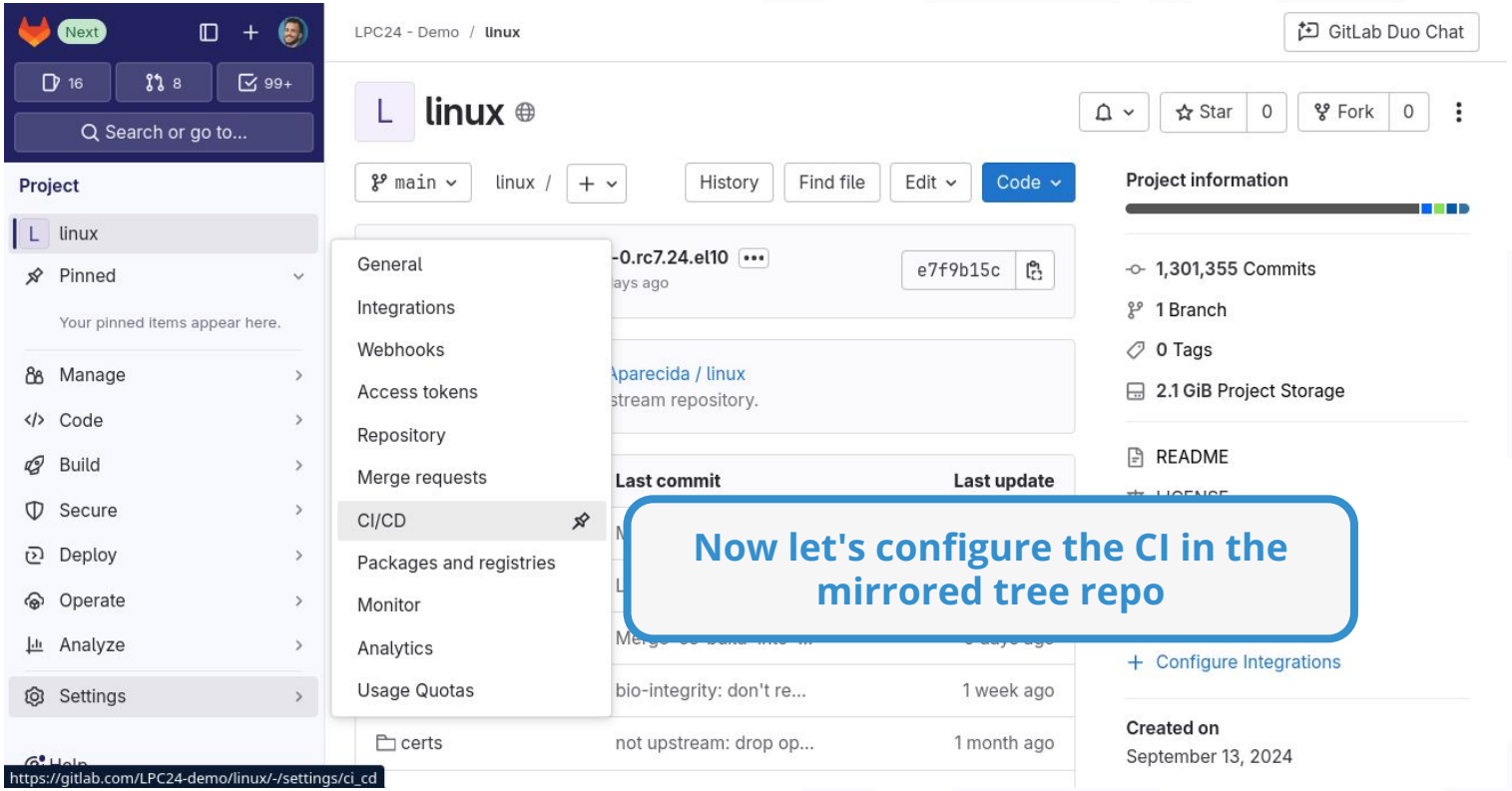


Hooking a tree! Option b: mirror it

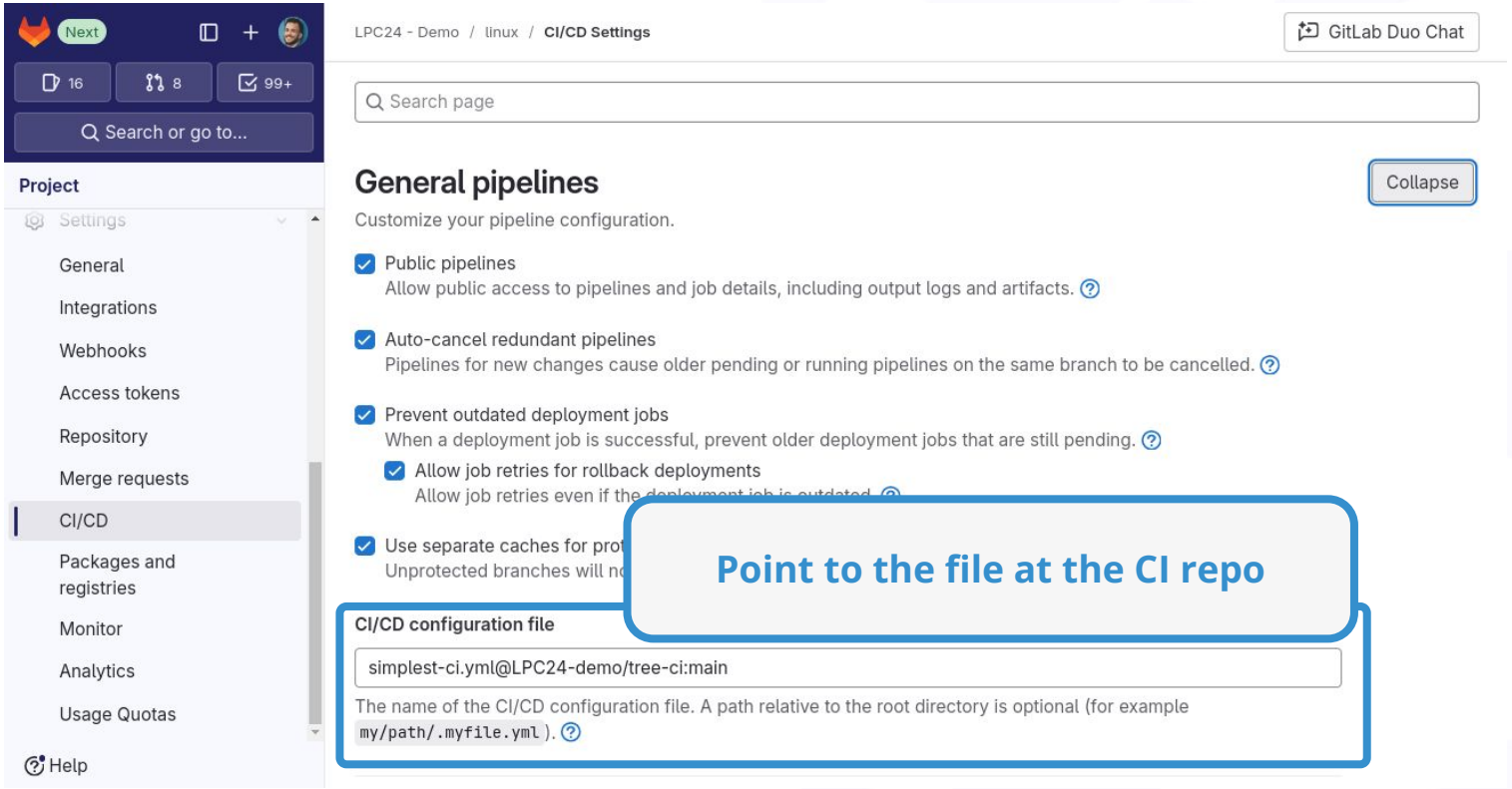


https://gitlab.com/LPC24-demo/linux

Hooking a tree! Option b: mirror it

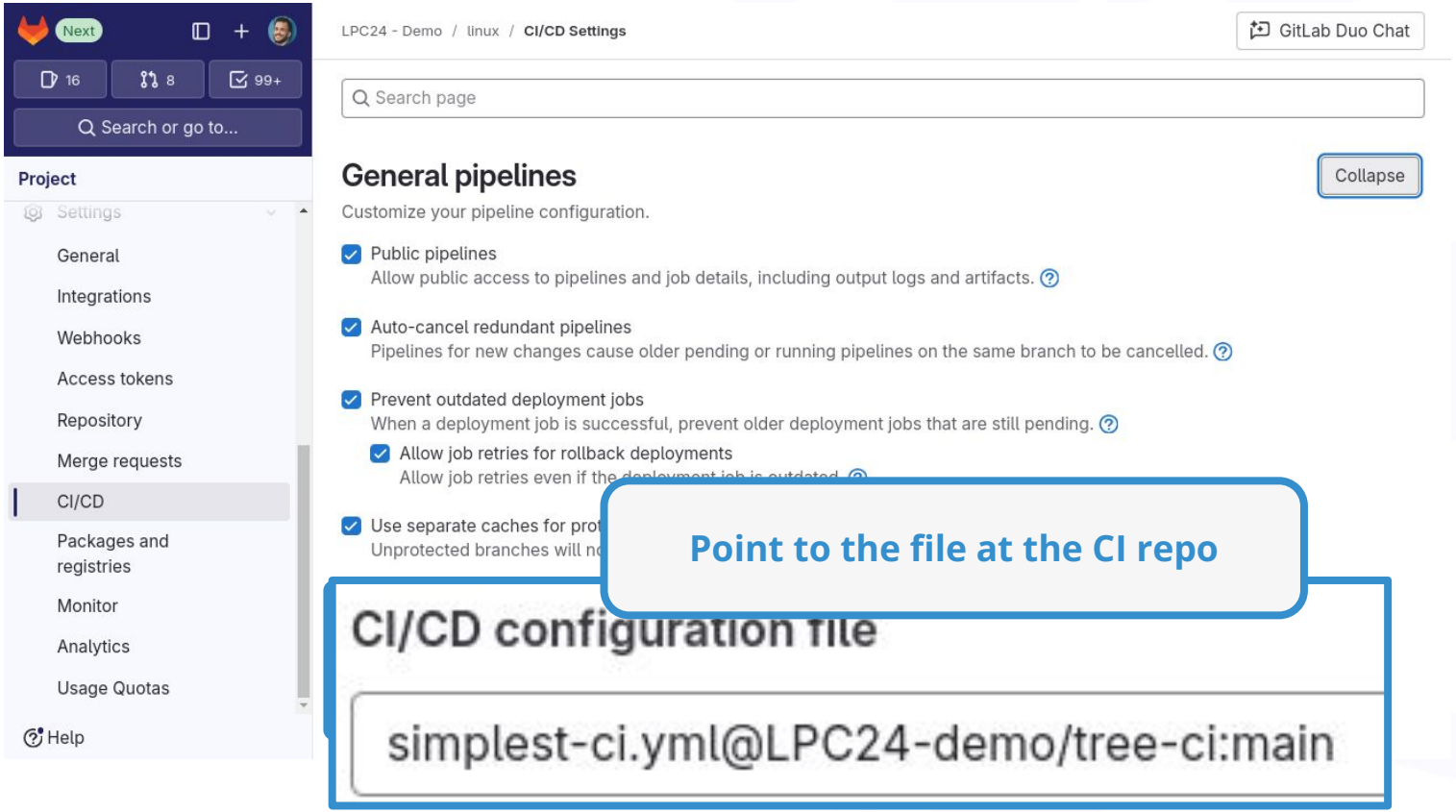


Hooking a tree! Option b: mirror it



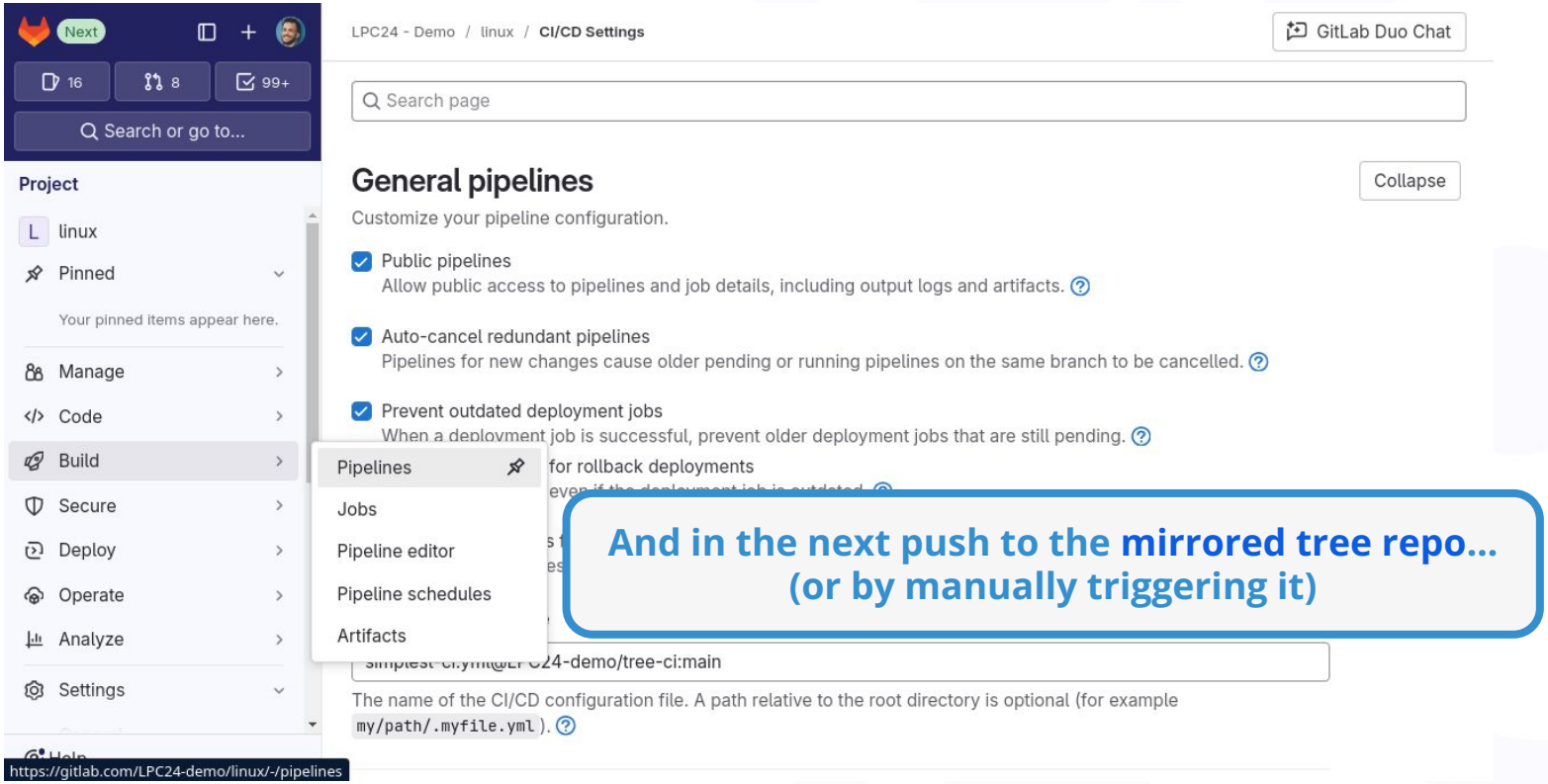
https://gitlab.com/LPC24-demo/linux/-/settings/ci_cd

Hooking a tree! Option b: mirror it



https://gitlab.com/LPC24-demo/linux/-/settings/ci_cd

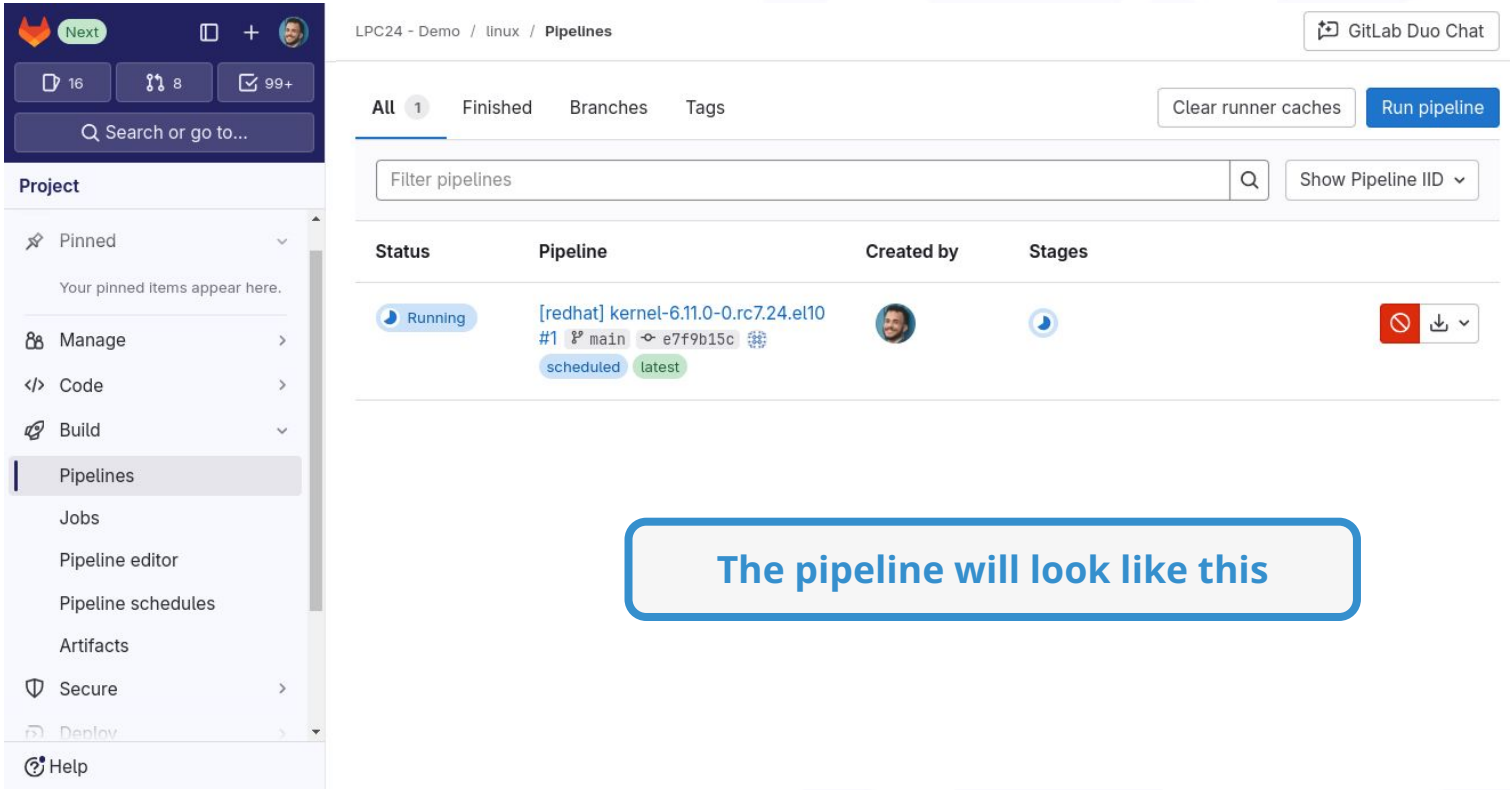
Hooking a tree! Option b: mirror it



And in the next push to the mirrored tree repo…
(or by manually triggering it)

https://gitlab.com/LPC24-demo/linux/-/settings/ci_cd

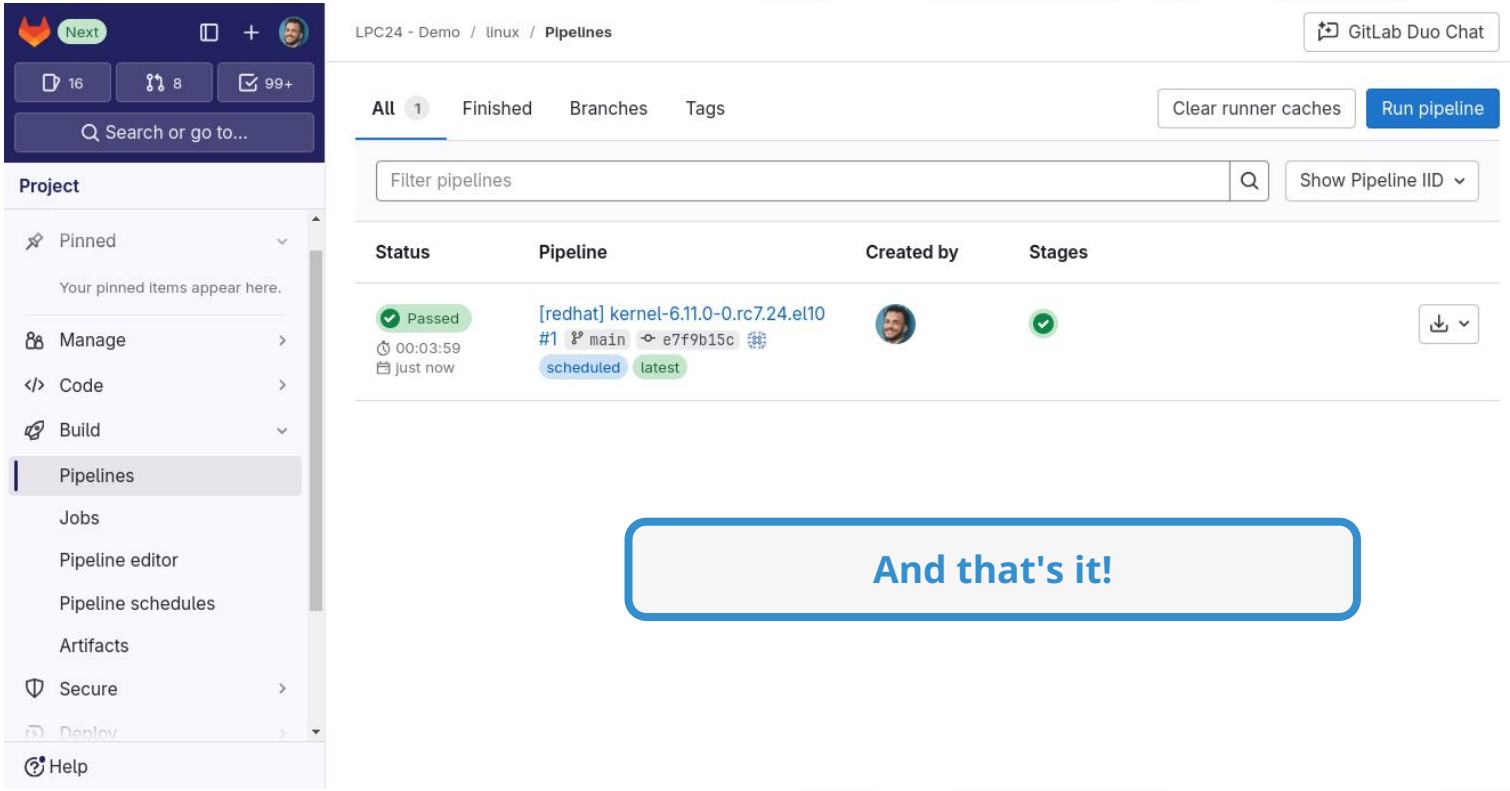
Hooking a tree! Option b: mirror it



The pipeline will look like this

https://gitlab.com/LPC24-demo/linux/-/pipelines

Hooking a tree! Option b: mirror it



And that's it!

https://gitlab.com/LPC24-demo/linux/-/pipelines

KernelCI

And what about tests?

Boot test

Booting in QEMU can be facilitated with

github.com/arighi/virtme-ng written by Andrea Righi (Canonical),

based on virtme, written by Andy Lutomirski

Boot test

```yaml
compile:
  image: docker.io/debian:trixie-slim
  variables:
    ARTIFACTS_PATH: "${CI_PROJECT_DIR:-/tmp}/artifacts"
    BUILD_PATH: "${ARTIFACTS_PATH}/build"
    INSTALL_PATH: "${ARTIFACTS_PATH}/kernel-install"
    ARCH: "x86_64"
    KSELFTEST_TARGETS: "size"
    COMMAND: |
      echo 'Successful boot!'
      cat /proc/version
      ${INSTALL_PATH}/run_kselftest.sh
  script:
    - |
      apt update && apt install -y --no-install-recommends \
        bash bc bison build-essential cpio flex gcc git iproute2 \
        libelf-dev libssl-dev make pahole pkg-config python3 udev \
        qemu-system-x86 systemd-sysv virtme-ng rsync
    - |
```

We'll need some new dependencies

Boot test

```
compile:
  image: docker.io/debian:trixie-slim
  variables:
    ARTIFACTS_PATH: "${CI_PROJECT_DIR:-/tmp}/artifacts"
    BUILD_PATH: "${ARTIFACTS_PATH}/build"
    INSTALL_PATH: "${ARTIFACTS_PATH}/kernel-install"
    ARCH: "x86_64"
    KSELFTEST_TARGETS: "size"
    COMMAND: |
      echo 'Successful boot!'
      cat /proc/version
      ${INSTALL_PATH}/run_kselftest.sh
  script:
    - |
      apt update && apt install -y --no-install-recommends \
        bash bc bison build-essential cpio flex gcc git iproute2 \
        libelf-dev libssl-dev make pahole pkg-config python3 udev \
        qemu-system-x86 systemd-sysv virtme-ng rsync
    - |
```

We can define a basic boot check

Boot test

```
13  script:
14    - |
15      apt update && apt install -y --no-install-recommends \
16        bash bc bison build-essential cpio flex gcc git iproute2 \
17        libelf-dev libssl-dev make pahole pkg-config python3 udev \
18        qemu-system-x86 systemd-sysv virtme-ng rsync
19    - |
20      if [ "$(head -n1 README 2>/dev/null)" != "Linux kernel" ]; then
21        git clone --depth 1 \
22            https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git
23        cd linux
24      fi
25    - mkdir -p "${ARTIFACTS_PATH}"
26    - mkdir -p "${BUILD_PATH}"
27    - mkdir -p "${INSTALL_PATH}"
28    # Create a basic .config supporting virtme
29    - virtme-configkernel --defconfig --arch "${ARCH}" O="${BUILD_PATH}"
30    # Build the kernel
31    - make O="${BUILD_PATH}" -j$(nproc)
```

And a new kind of .config

Boot test

```
25      - mkdir -p "${ARTIFACTS_PATH}"
26      - mkdir -p "${BUILD_PATH}"
27      - mkdir -p "${INSTALL_PATH}"
28      # Create a basic .config supporting virtme
29      - virtme-configkernel --defconfig --arch "${ARCH}" O="${BUILD_PATH}"
30      # Build the kernel
31      - make O="${BUILD_PATH}" -j$(nproc)
32      # Build kselftests
33      - make O="${BUILD_PATH}" headers
34      - |
35        make O="${BUILD_PATH}" -C "./tools/testing/selftests" \
36            TARGETS="${KSELFTEST_TARGETS}"
37      # install the kselftests
38      - |
39        make O="${BUILD_PATH}" -C "./tools/testing/selftests" \
40            TARGETS="${KSELFTEST_TARGETS}" install INSTALL_PATH="${INSTALL_PATH}"
41      # Boot test
42      - cd $BUILD_PATH
43      - vng --verbose --rwdir=/tmp="${ARTIFACTS_PATH}" --exec "${COMMAND}"
```

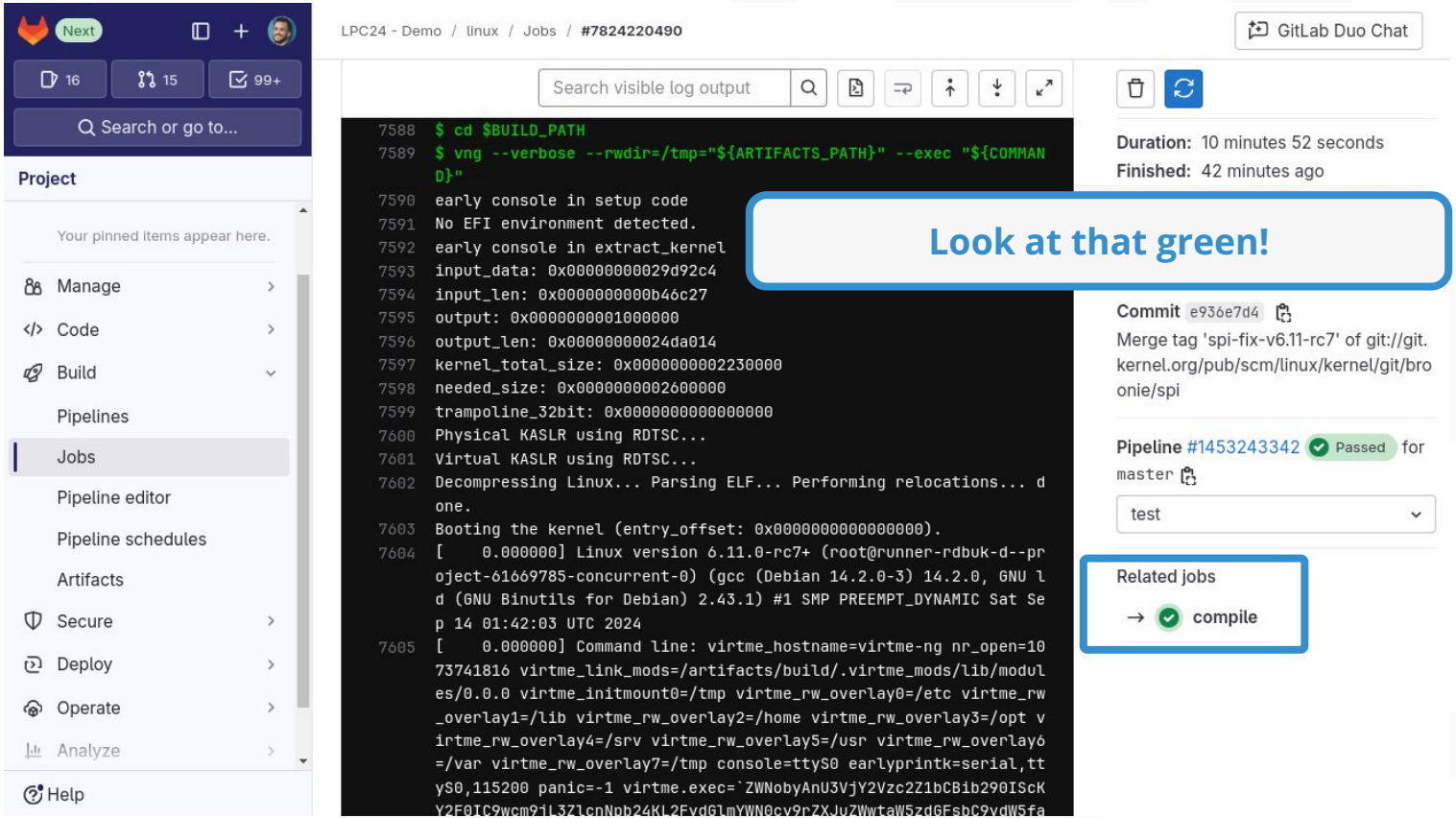
Compile everything that we'll need

Boot test

```
25      - mkdir -p "${ARTIFACTS_PATH}"
26      - mkdir -p "${BUILD_PATH}"
27      - mkdir -p "${INSTALL_PATH}"
28      # Create a basic .config supporting virtme
29      - virtme-configkernel --defconfig --arch "${ARCH}" O="${BUILD_PATH}"
30      # Build the kernel
31      - make O="${BUILD_PATH}" -j$(nproc)
32      # Build kselftests
33      - make O="${BUILD_PATH}" headers
34      - |
35        make O="${BUILD_PATH}" -C "./tools/testing/selftests" \
36            TARGETS="${KSELFTEST_TARGETS}"
37      # install the kselftests
38      - |
39        make O="${BUILD_PATH}" -C "./tools/testing/selftests" \
40            TARGETS="${KSELFTEST_TARGETS}" install INSTALL_PATH="${INSTALL_PATH}"
41      # Boot test
42      - cd $BUILD_PATH
43      - vng --verbose --rwdir=/tmp="${ARTIFACTS_PATH}" --exec "${COMMAND}"
```

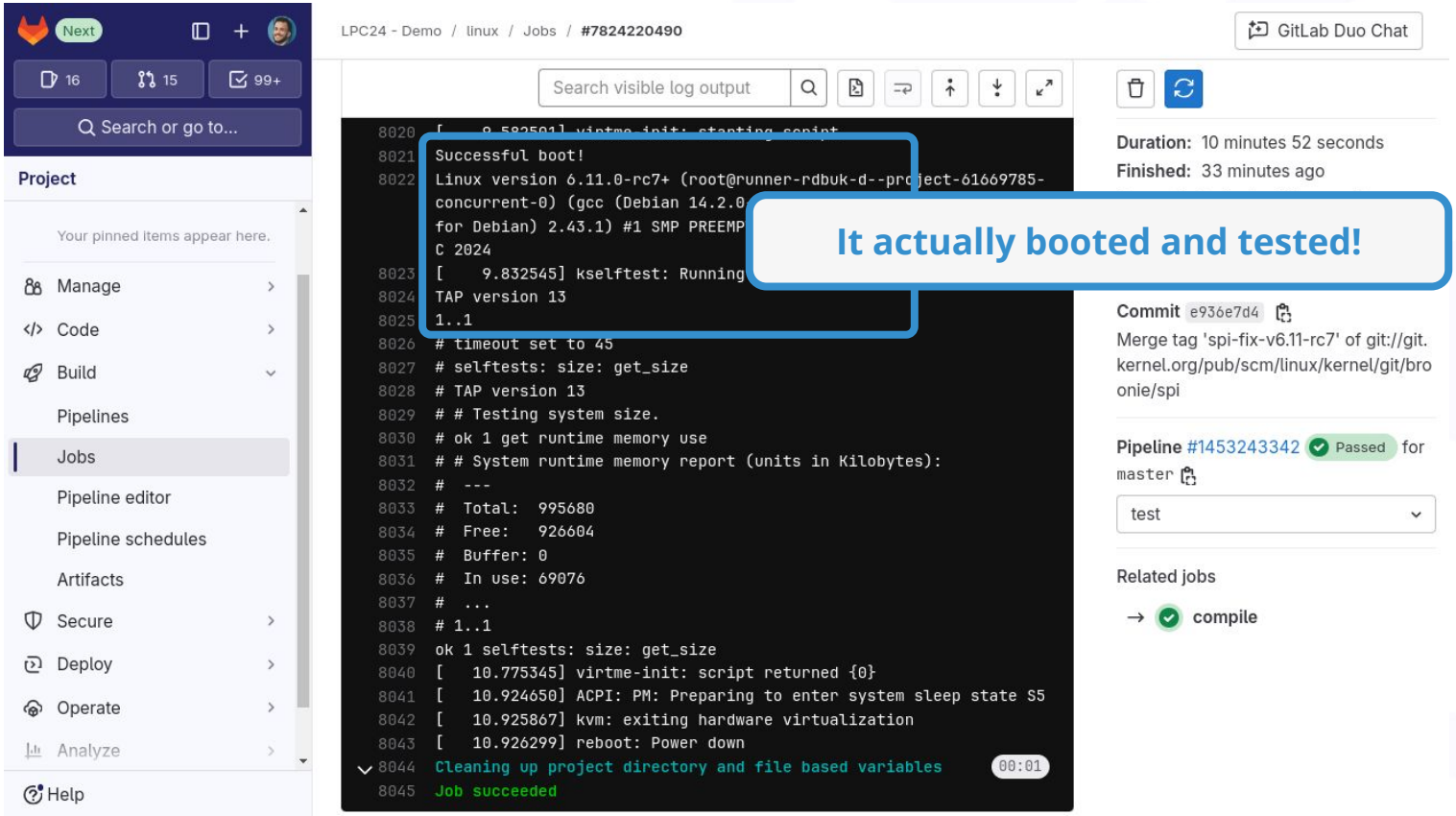
And we can already boot!

Boot test



https://gitlab.com/LPC24-demo/linux/-/jobs/7824220490

KernelCI Boot test



https://gitlab.com/LPC24-demo/linux/-/jobs/7824220490

Boot test

```
Successful boot!
Linux version 6.11.0-rc7+ (root@r
concurrent-0) (gcc (Debian 14.2.0-3) 14.2.0, GNU ld (GNU Binutils
for Debian) 2.43.1) #1 SMP PREEMPT_DYNAMIC Sat Sep 14 01:42:03 UT
C 2024
[    9.832545] kselftest: Running tests in size
TAP version 13
1..1
# timeout set to 45
# selftests: size: get_size
# TAP version 13
```

It actually booted and tested!

https://gitlab.com/LPC24-demo/linux/-/jobs/7824220490

KernelCI

Some real examples

KernelCI

Intel Xe DRM driver

Intel Xe DRM driver

Intel Xe

8 languages

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 **X**^{e} and pronounced as two separate letters,[1] abbreviation for "e**X**ascale for **e**veryone"[2]), earlier known unofficially as **Gen12**,[3][4] is a GPU architecture developed by Intel.[5]

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),[6] to enthusiast/high performance gaming (Xe-HPG), datacenter/high performance (Xe-HP) and high performance computing (Xe-HPC).[7][8]

Intel Xe

Release date	September 2, 2020; 3 years ago

History [edit]

https://en.wikipedia.org/wiki/Intel_Xe

Intel Xe DRM driver

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*
  - ✗ CI.Hooks: failure for MAINTAINERS: Update Xe driver maintainers (rev2) *Patchwork*
  - ✓ CI.checksparse: success for MAINTAINERS: Update Xe driver maintainers (rev2) *Patchwork*
  - ✓ CI.BAT: success for MAINTAINERS: Update Xe driver maintainers (rev2) *Patchwork*
  - ✗ CI.FULL: failure for MAINTAINERS: Update Xe driver maintainers (rev2) *Patchwork*
  - [PATCH v2] MAINTAINERS: Update Xe driver maintainers *Dave Airlie*
  - [PATCH v2] MAINTAINERS: Update Xe driver maintainers *Jani Nikula*
  - [PATCH v2] MAINTAINERS: Update Xe driver maintainers *Lucas De Marchi*
- [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*

https://lists.freedesktop.org/archives/intel-xe/2024-June/thread.html

Intel Xe DRM driver

tree ▾ Hardware List

Normally uses Intel GFX CI

Intel GFX CI

What Is It About?

We are continously 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

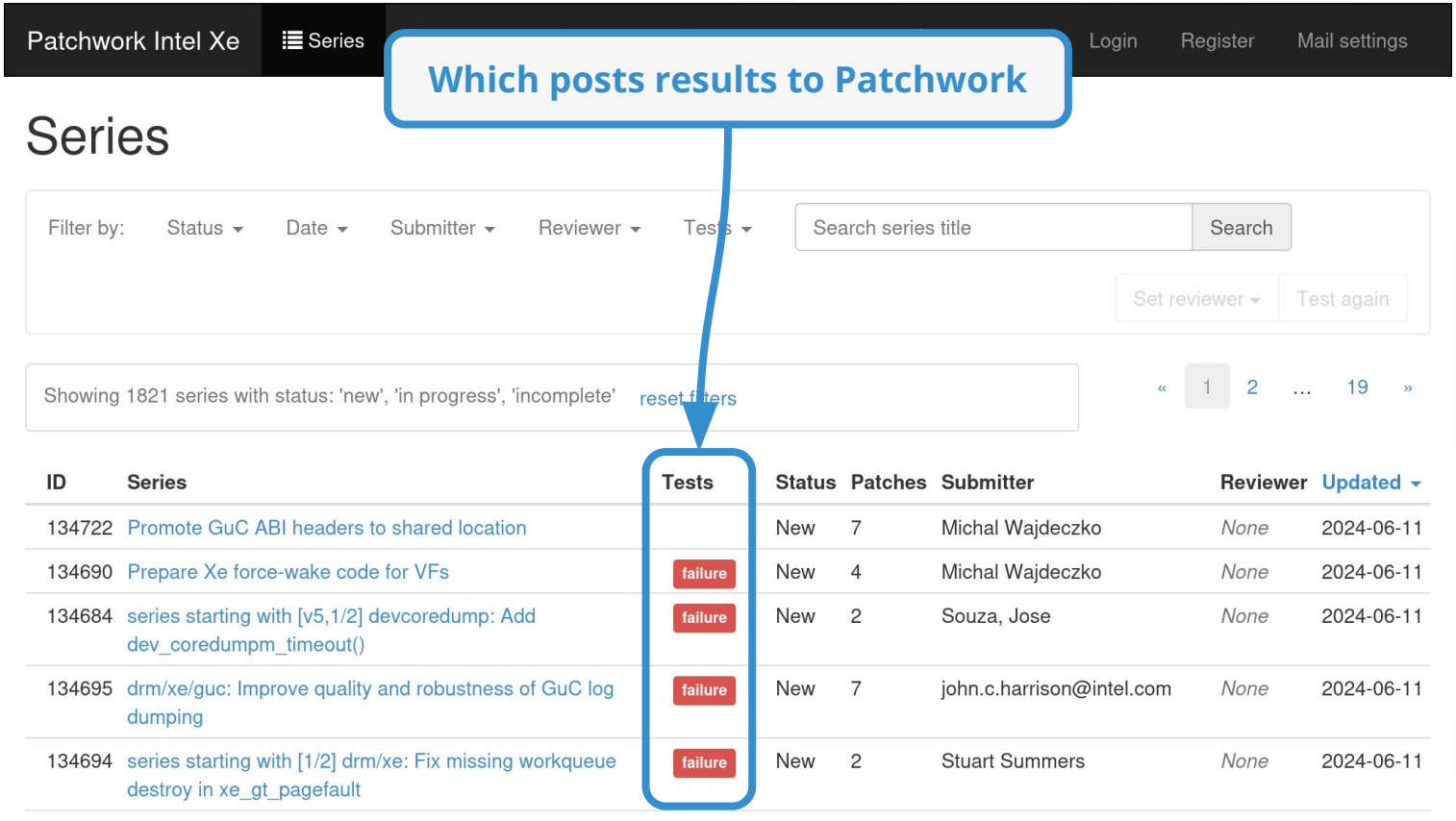
This is the crux of this CI system. We test each patch that goes in our driver (i915), Intel Xe or in the DRM drivers test suite we use (IGT GPU Tools) before it lands in the repository and compare the results with the post-merge baseline (we filter out known bugs). This shifts the cost of integration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

TABLE OF CONTENTS

Intel GFX CI
> What Is It About?
> Hardware List
> Pre-Merge Testing
> Trybot - available only for i915
> 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

Intel Xe DRM driver



https://patchwork.freedesktop.org/project/intel-xe/series/

Intel Xe DRM driver

June 2024 Archives by thread

Which then reports to the 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 877517f2dcba[illegible]367b64e3e0c616f26c62d4a8db *kernel test robot*
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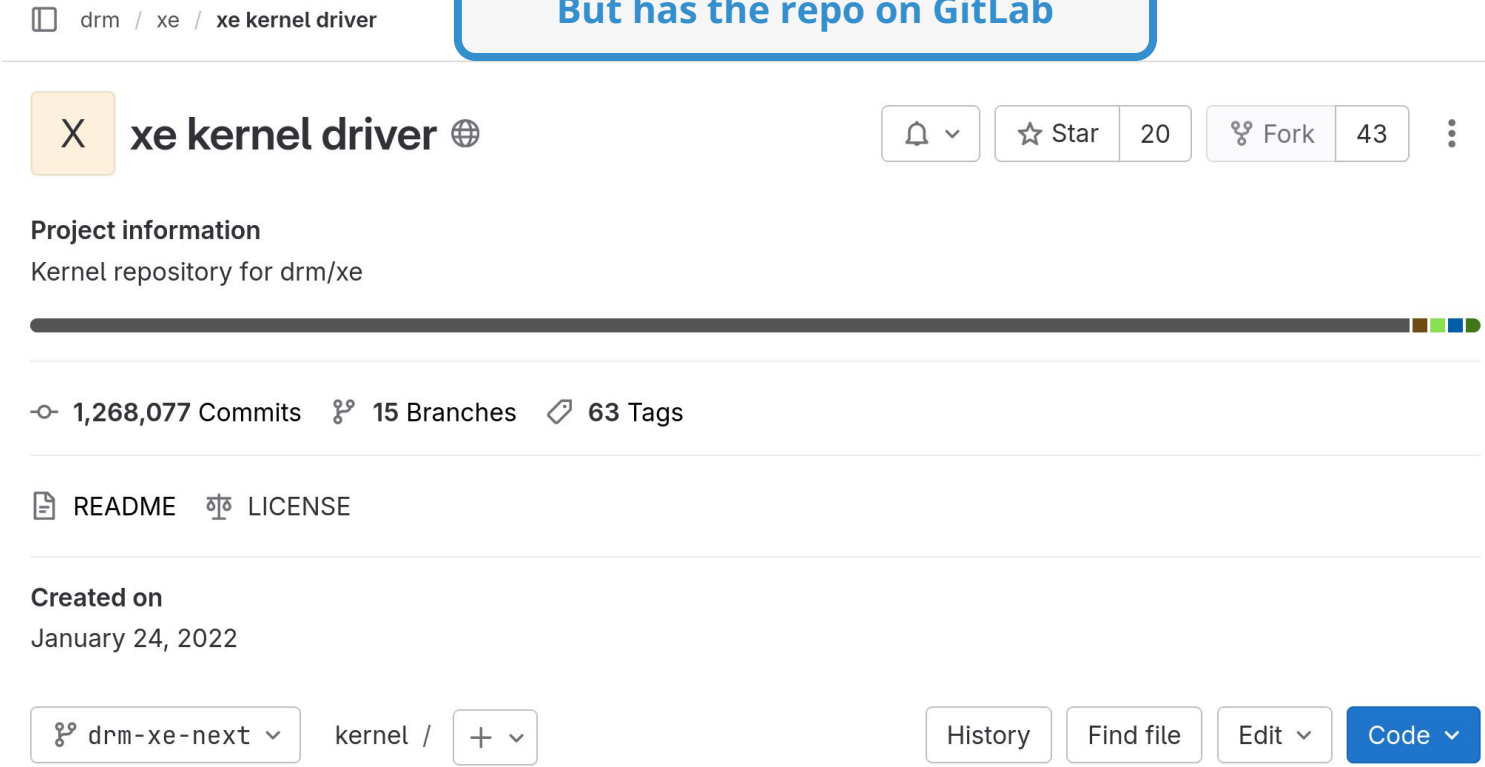
Intel Xe DRM driver

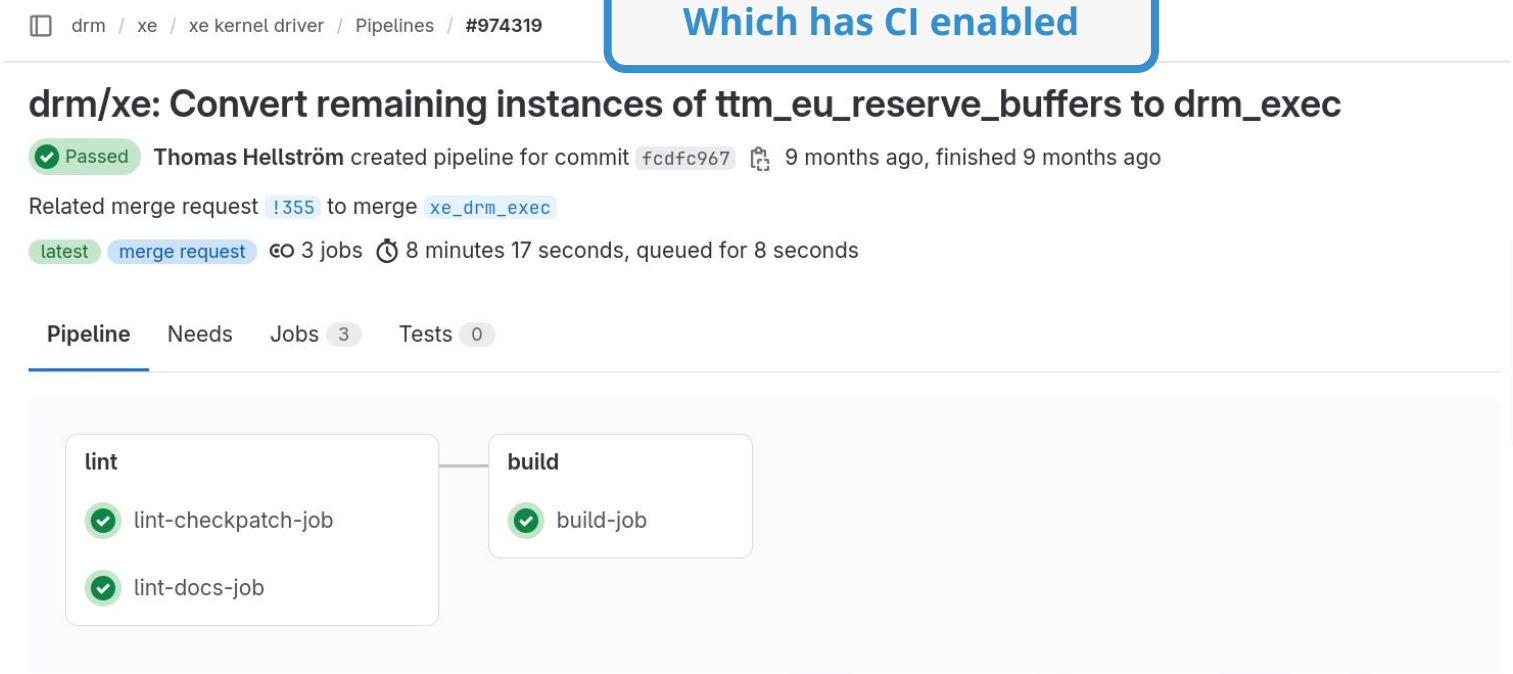
But has the repo on GitLab



https://gitlab.freedesktop.org/drm/xe/kernel

Intel Xe DRM driver

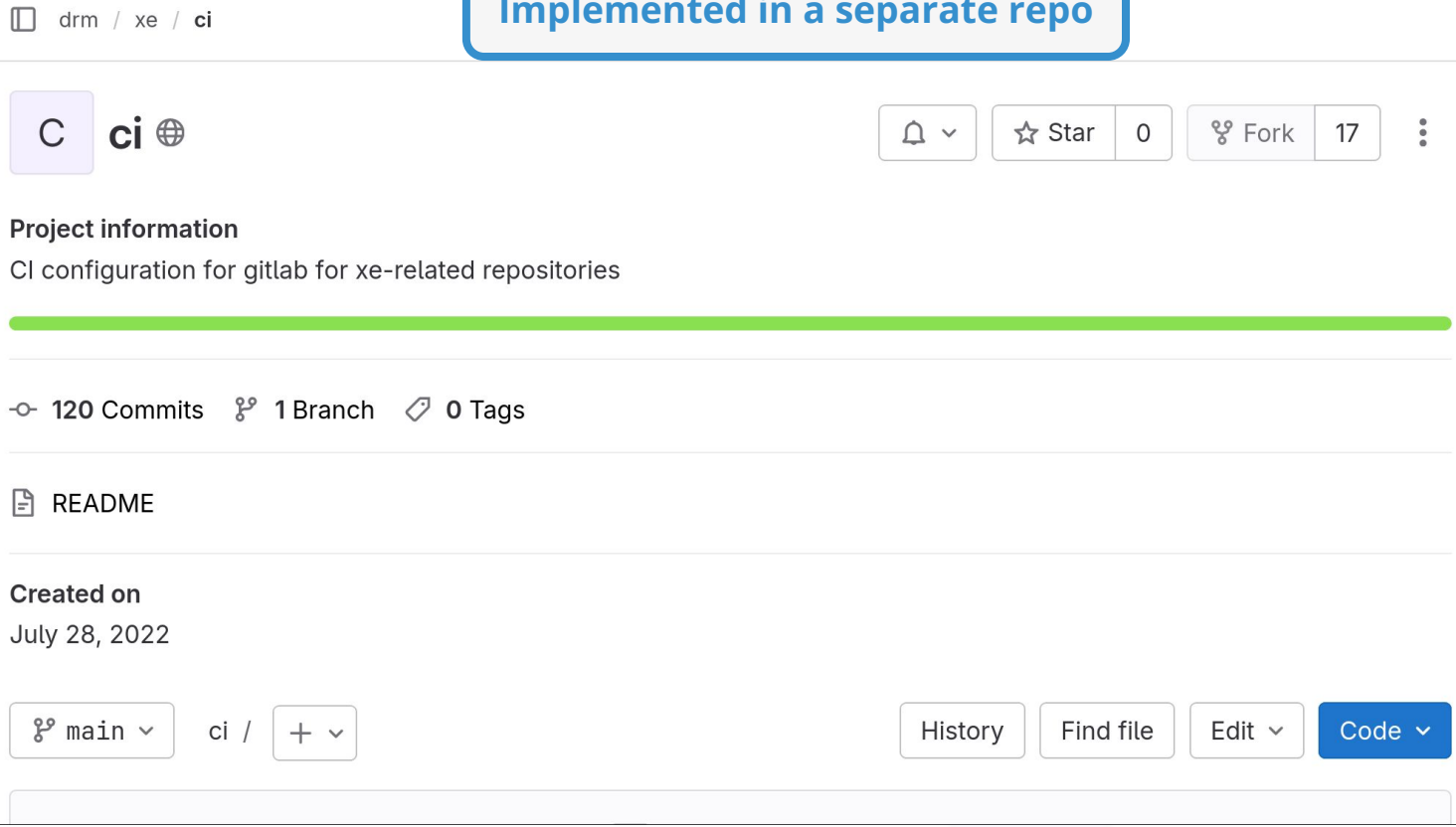
Which has CI enabled



https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

Intel Xe DRM driver

Implemented in a separate repo



https://gitlab.freedesktop.org/drm/xe/ci

Intel Xe DRM driver

Implemented in a separate repo

drm / xe / **ci**

Name	Last commit	Last update
hooks	hooks: Fix build after 6.10	5 days ago
kernel	Merge branch 'pr_fault-injection-r...	3 weeks ago
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

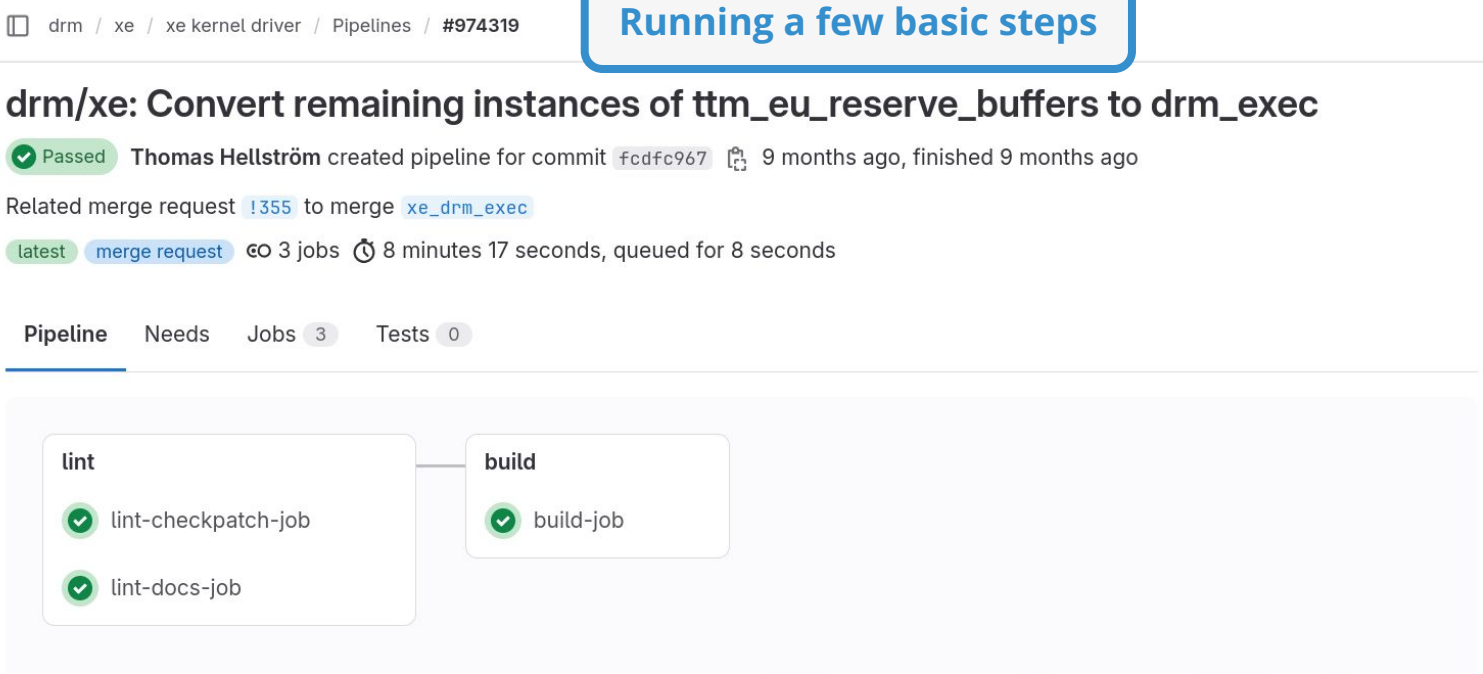
Xe CI

CI configuration for Xe-related repositories.

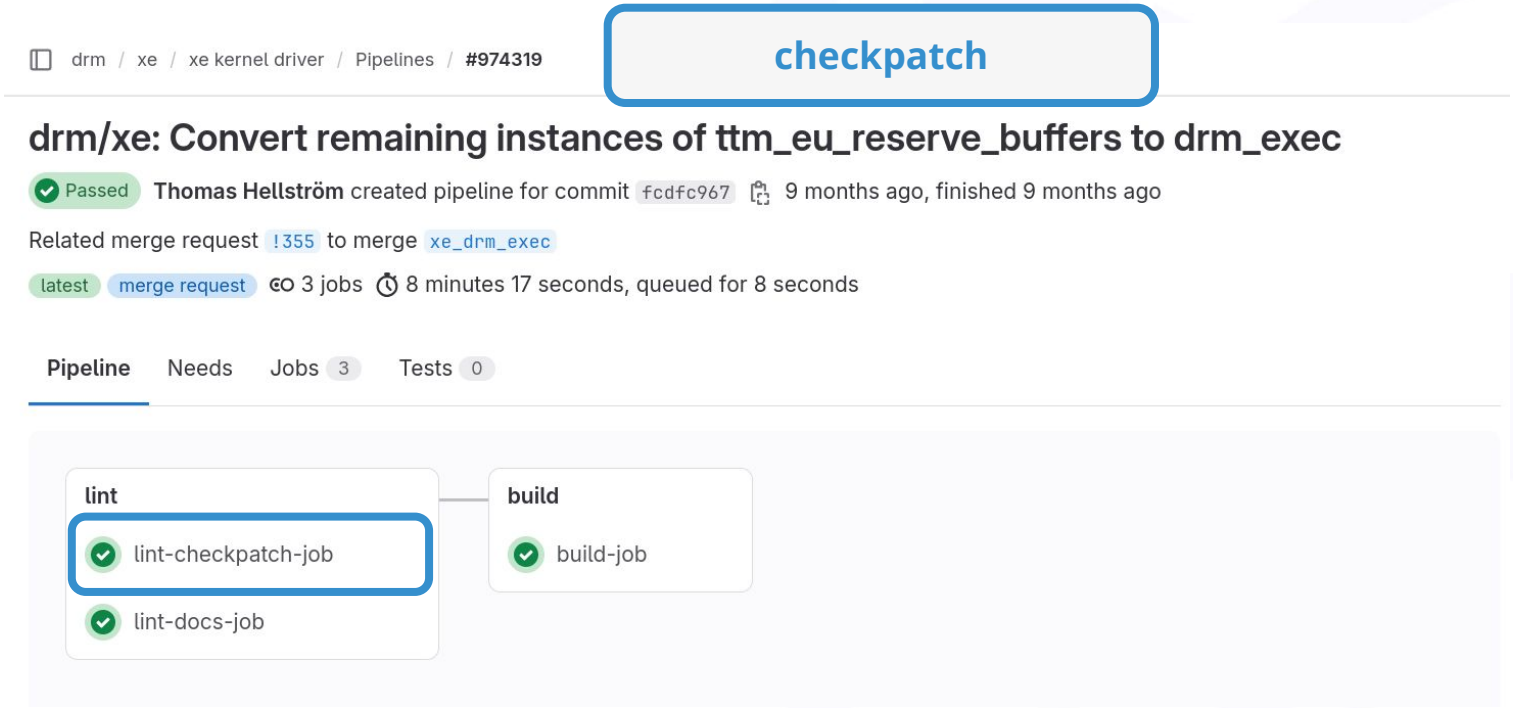
https://gitlab.freedesktop.org/drm/xe/ci

Intel Xe DRM driver

Running a few basic steps



Intel Xe DRM driver



https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

Intel Xe DRM driver

checkpatch

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

drm/xe: Convert remaining instances of ttm_eu_reserve_buffers to drm_exec

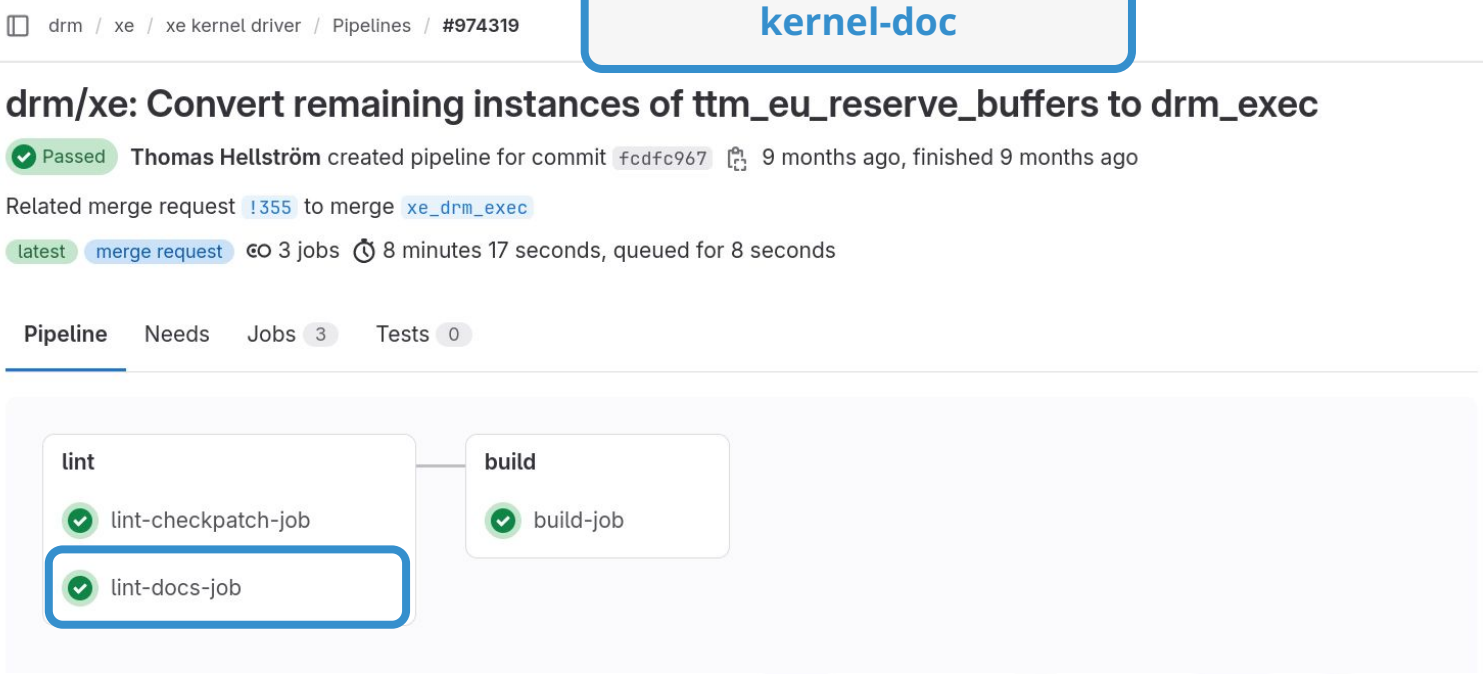
Passed **Thomas Hellström** created pipeline for commit `fcdfc967` 9 months ago, finished 9 months ago

```
17  Executing "step_script" stage of the job script                    00:59
18  Using docker image sha256:01f29b872827fa6f9aed0ea0b2ede53aea4ad9d66c
    7920e81a8db6d1fd9ab7f9 for ubuntu:22.04 with digest ubuntu@sha256:ec
    050c32e4a6085b423d36ecd025c0d3ff00c38ab93a3d71a460ff1c44fa6d77 ...
19  $ echo -e "\e[0Ksection_start:$(date +%s):install_dependencies[colla
    psed=true]\r\e[0KInstall dependencies"
20  Install dependencies                                                00:52
888 $ echo "checkpatch code ${CI_MERGE_REQUEST_DIFF_BASE_SHA}..HEAD..."
889 checkpatch code 72da4b45f58f2a95d45743801a10e1f1e1dcce05..HEAD...
890 $ ./scripts/checkpatch.pl -q --emacs --strict --show-types --max-lin
    e-length=100 --ignore=BIT_MACRO,SPLIT_STRING,LONG_LINE_STRING,BOOL_M
    EMBER -g ${CI_MERGE_REQUEST_DIFF_BASE_SHA}..HEAD
891 Cleaning up project directory and file based variables               00:00
892 Job succeeded
```

https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

Intel Xe DRM driver

kernel-doc



https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

Intel Xe DRM driver

kernel-doc

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

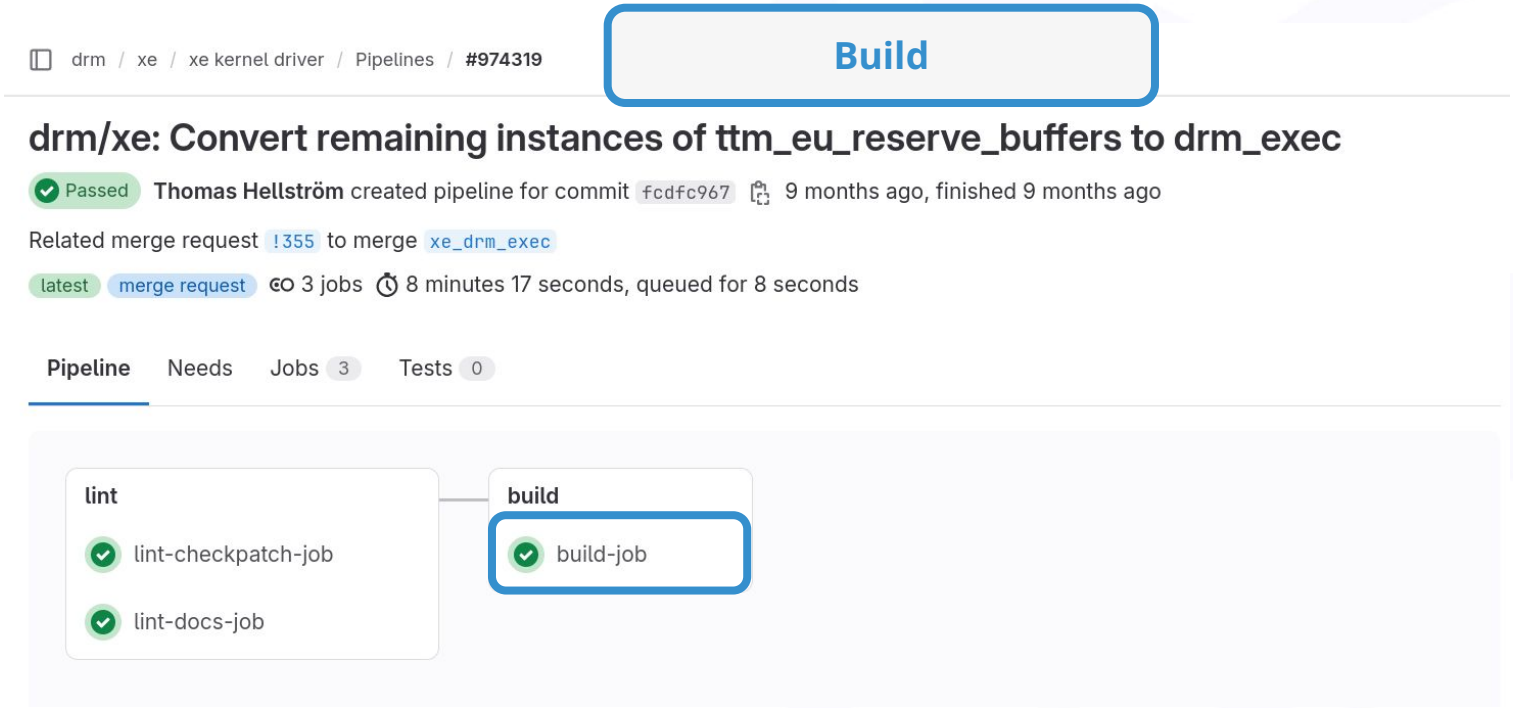
drm/xe: Convert remaining instances of ttm_eu_reserve_buffers to drm_exec

Passed **Thomas Hellström** created pipeline for commit `fcdfc967` 9 months ago, finished 9 months ago

```
15  Executing "step_script" stage of the job script                    00:52
16  Using docker image sha256:01f29b872827fa6f9aed0ea0b2ede53aea4ad9d66c
    7920e81a8db6d1fd9ab7f9 for ubuntu:22.04 with digest ubuntu@sha256:ec
    050c32e4a6085b423d36ecd025c0d3ff00c38ab93a3d71a460ff1c44fa6d77 ...
17  $ echo -e "\e[0Ksection_start:$(date +%s):install_dependencies[colla
    psed=true]\r\e[0KInstall dependencies"
18  Install dependencies                                                00:51
886 $ echo "kernel-doc lint..."
887 kernel-doc lint...
888 $ find drivers/gpu/drm/xe/ -name '*.[ch]' -not -path 'drivers/gpu/dr
    m/xe/display/*' -not -path drivers/gpu/drm/xe/i915_utils.h  | xargs
    ./scripts/kernel-doc -Werror  -none
889 Cleaning up project directory and file based variables                00:01
890 Job succeeded
```

https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

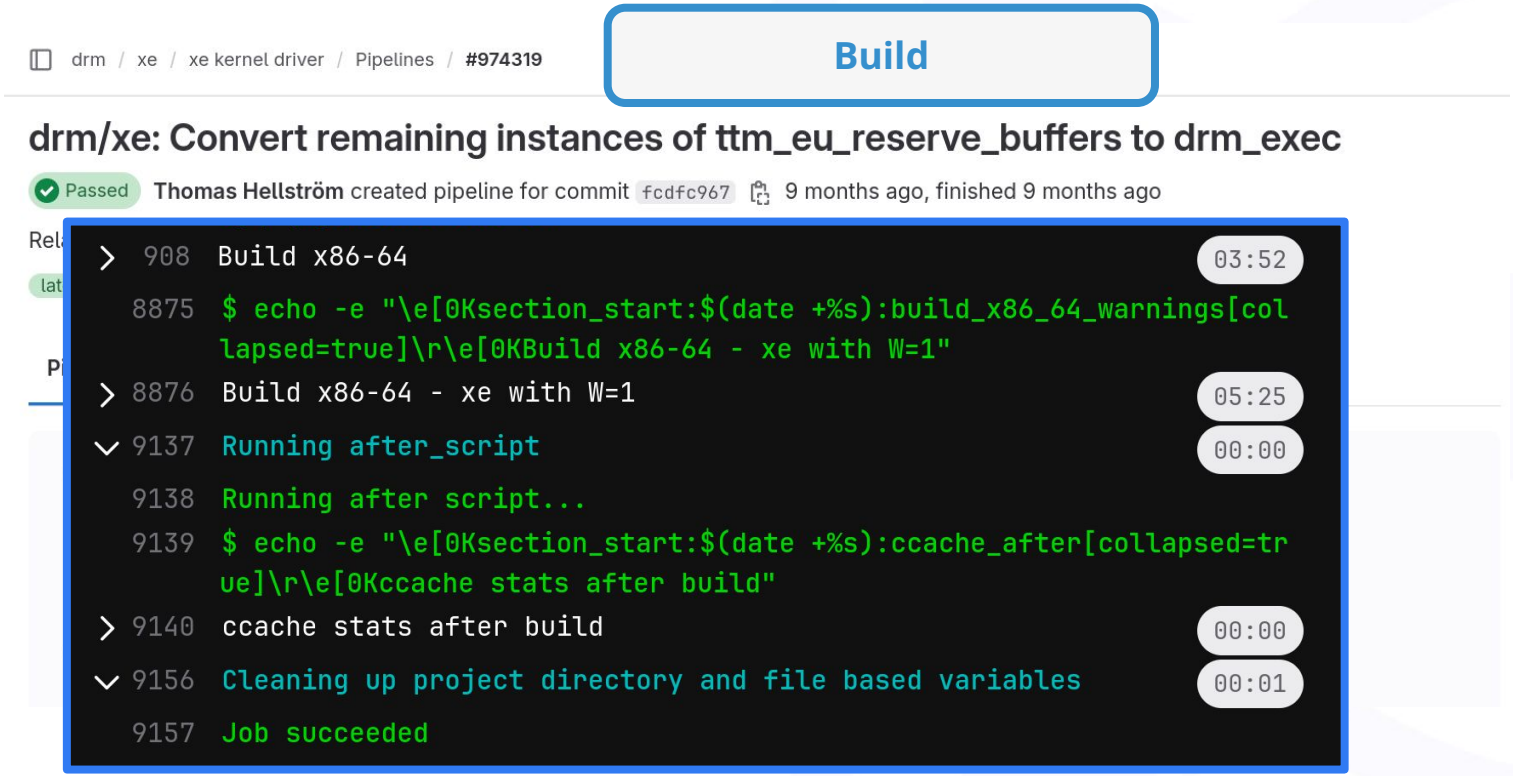
Intel Xe DRM driver



https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

Intel Xe DRM driver

Build



https://gitlab.freedesktop.org/drm/xe/kernel/-/pipelines/974319

Intel Xe DRM driver

The whole of CI YAML

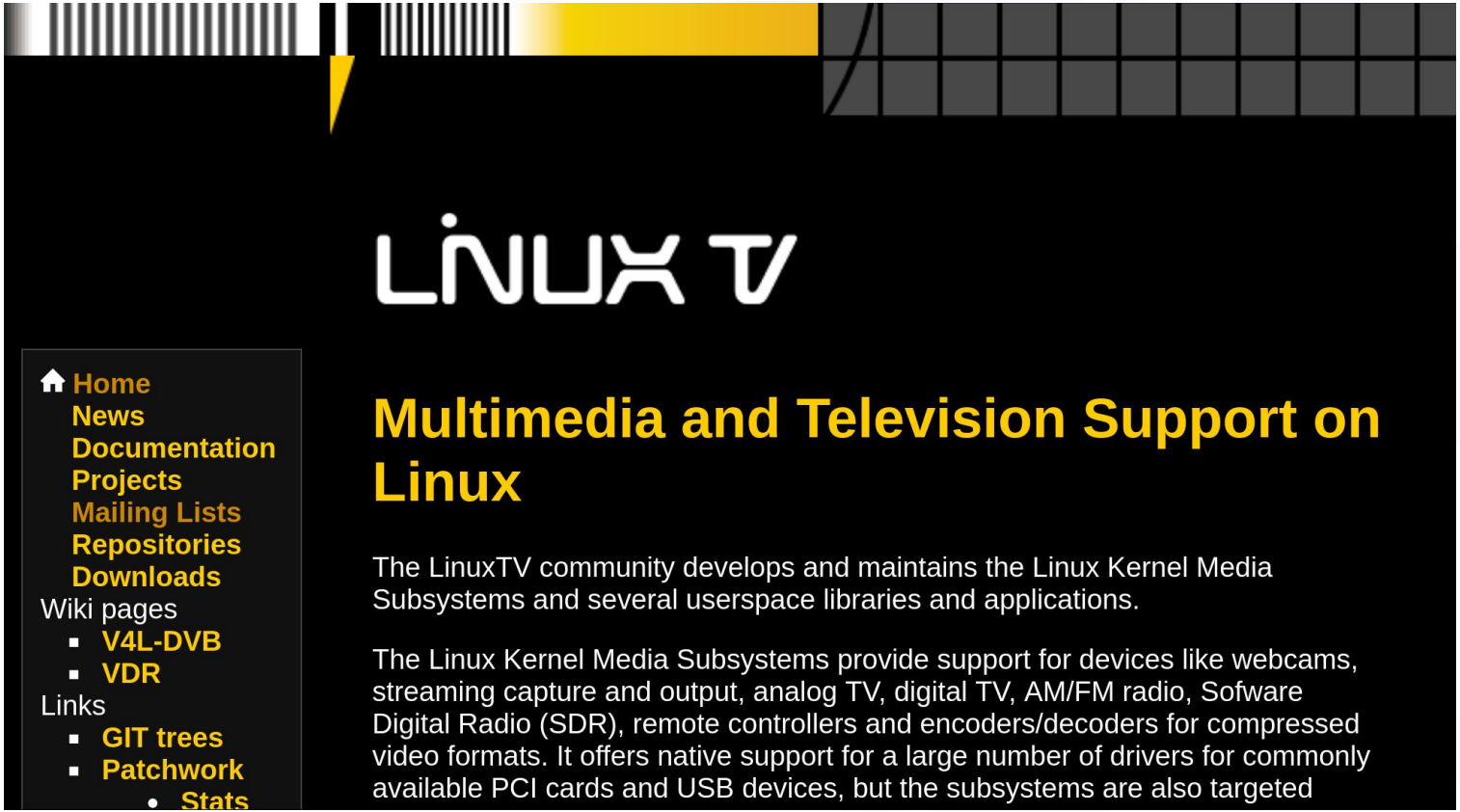
```yaml
workflow:
  rules:
    - if: $CI_PIPELINE_SOURCE == 'merge_request_event'

default:
  tags:
    - xe
  before_script:
    - echo -e "\e[0Ksection_start:$(date +%s):install_dependencies[collapsed=true]\r\e[0KInstall dependencies"
    - apt update
    - apt install --yes
        git perl-doc
        build-essential ccache
        bc gawk flex bison libelf-dev libpci-dev libiberty-dev autoconf xz-utils
    - echo -e "\e[0Ksection_end:$(date +%s):install_dependencies\r\e[0K"

stages:
  - lint
  - build

lint-checkpatch-job:
  stage: lint
  allow_failure: true
  # TODO: move to using dim from maintainer-tools
  script:
    - echo "checkpatch code ${CI_MERGE_REQUEST_DIFF_BASE_SHA}..HEAD..."
    - ./scripts/checkpatch.pl
        -q --emacs --strict --show-types
        --max-line-length=100
        --ignore=BIT_MACRO,SPLIT_STRING,LONG_LINE_STRING,BOOL_MEMBER
        -g ${CI_MERGE_REQUEST_DIFF_BASE_SHA}..HEAD

lint-docs-job:
  stage: lint
  script:
    - echo "kernel-doc lint..."
    - find drivers/gpu/drm/xe/ -name '*.[ch]'
        -not -path 'drivers/gpu/drm/xe/display/*'
        -not -path drivers/gpu/drm/xe/i915_utils.h  |
        xargs ./scripts/kernel-doc -Werror  -none

.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:$(date +%s):ccache_before[collapsed=true]\r\e[0Kccache stats before build"
    - ccache --show-stats
    - echo -e "\e[0Ksection_end:$(date +%s):ccache_before\r\e[0K"
  after_script:
    - 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"

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:$(date +%s):build_x86_64[collapsed=true]\r\e[0KBuild x86-64"
    - mkdir -p build64
    - cat .ci/kernel/kconfig > build64/.config
    - make O=build64 olddefconfig
    - make O=build64 -j$(nproc)
    - echo -e "\e[0Ksection_end:$(date +%s):build_x86_64\r\e[0K"

    - echo -e "\e[0Ksection_start:$(date +%s):build_x86_64_warnings[collapsed=true]\r\e[0KBuild x86-64 - xe with W=1"
      # CONFIG_DRM_XE_DISPLAY currently breaks build with W=1. Just disable it for now
    - ./scripts/config --file build64/.config --disable CONFIG_DRM_XE_DISPLAY
    - make O=build64 modules_prepare
    - make O=build64 M=drivers/gpu/drm/xe W=1 -j$(nproc)
    - echo -e "\e[0Ksection_end:$(date +%s):build_x86_64\r\e[0K"
```


https://gitlab.freedesktop.org/drm/xe/ci/-/blob/3a062caac3828cb339ce97e3f4da52a7cd6132d7/kernel/.gitlab-ci.yml

KernelCI

Multimedia and Television Support

Multimedia and Television Support



https://linuxtv.org/

Multimedia and Television Support

Linux Media

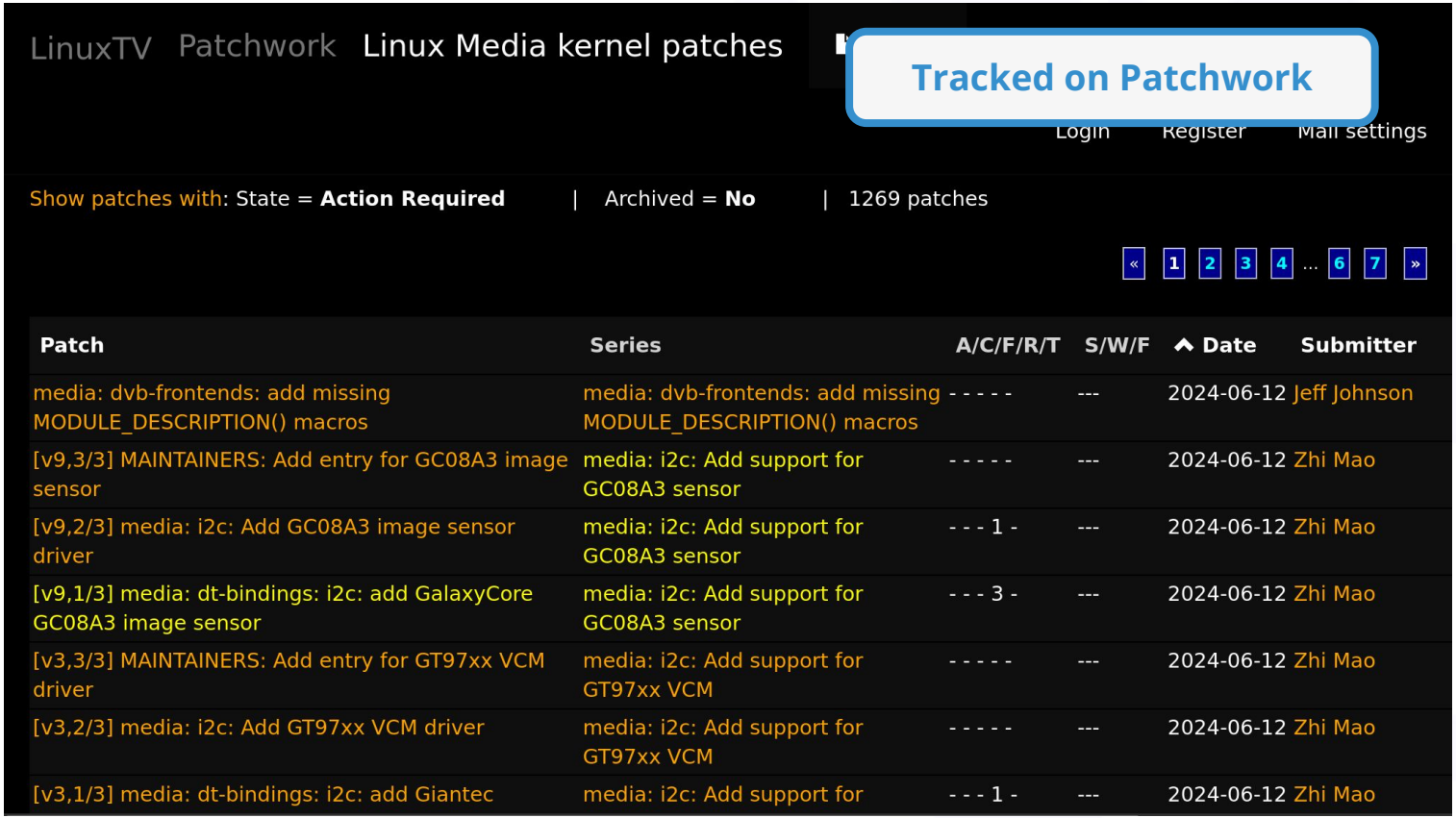
Developed on a maillist

- Date Index

[Prev Page][Next Page]

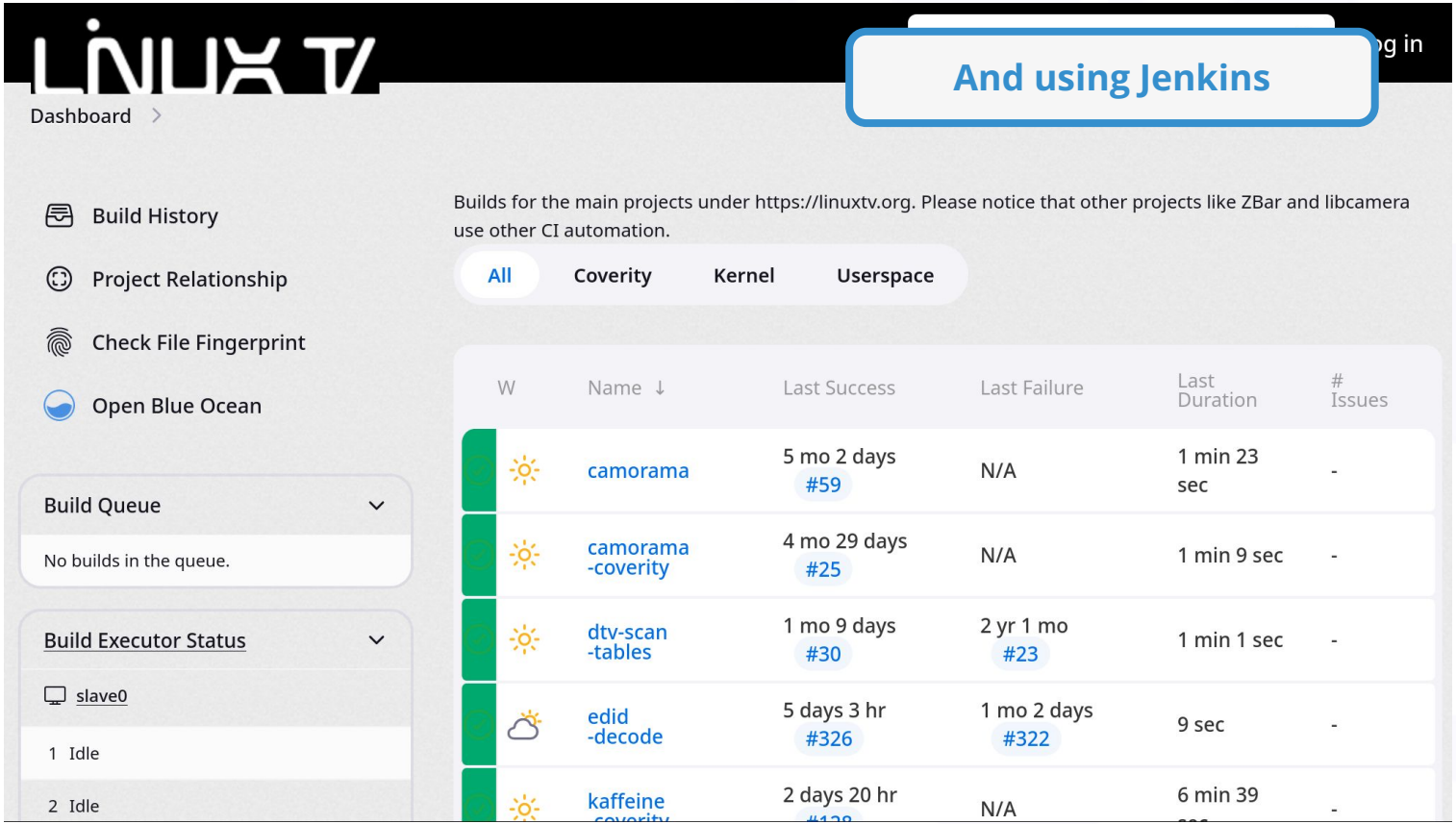
- **[PATCH] media: dvb-frontends: add missing MODULE_DESCRIPTION() macros**, *Jeff Johnson*
- **[PATCH v9 0/3] media: i2c: Add support for GC08A3 sensor**, *Zhi Mao*
  - **[PATCH v9 1/3] media: dt-bindings: i2c: add GalaxyCore GC08A3 image sensor**, *Zhi Mao*
  - **[PATCH v9 2/3] media: i2c: Add GC08A3 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*

Multimedia and Television Support

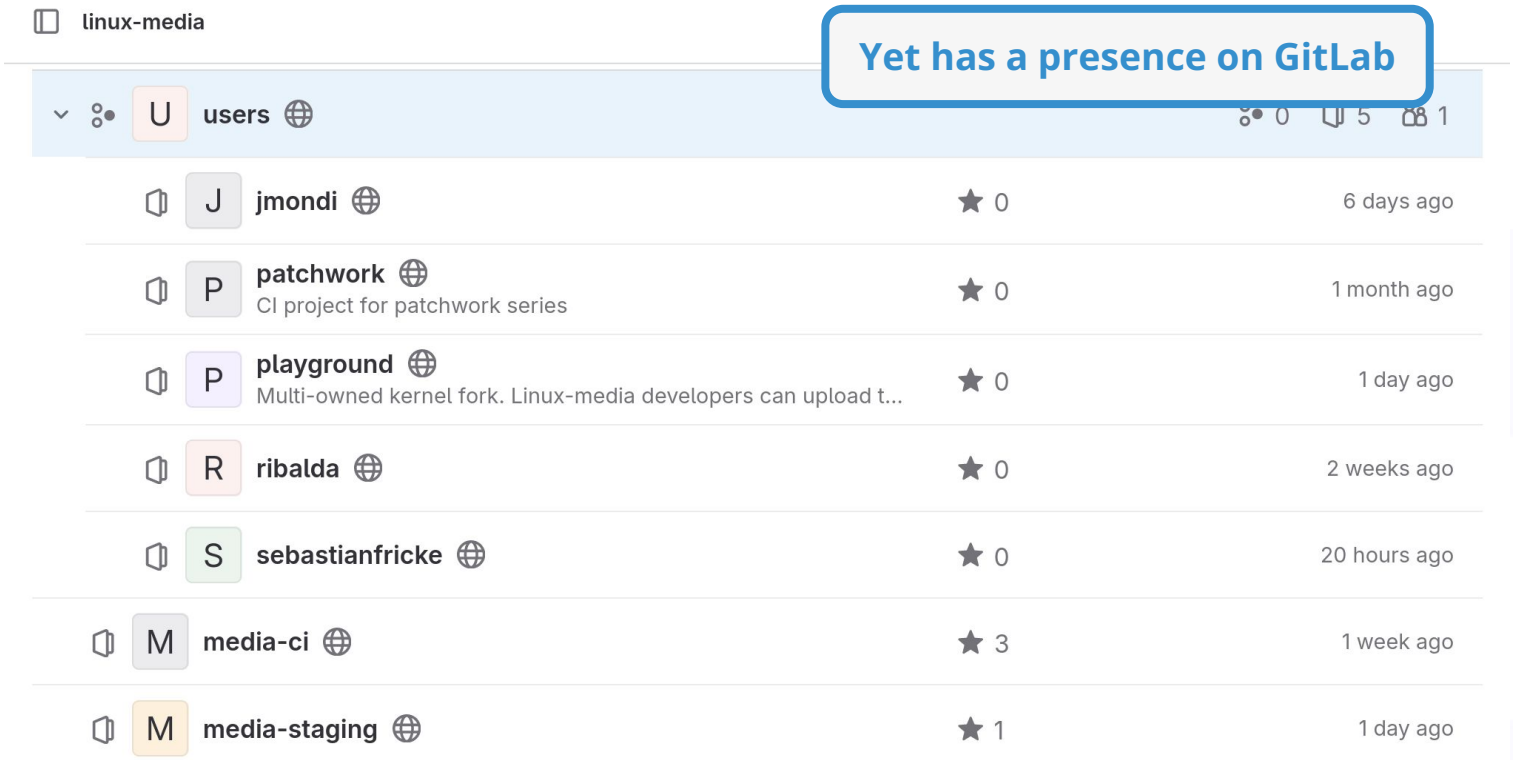


https://patchwork.linuxtv.org/project/linux-media/list/

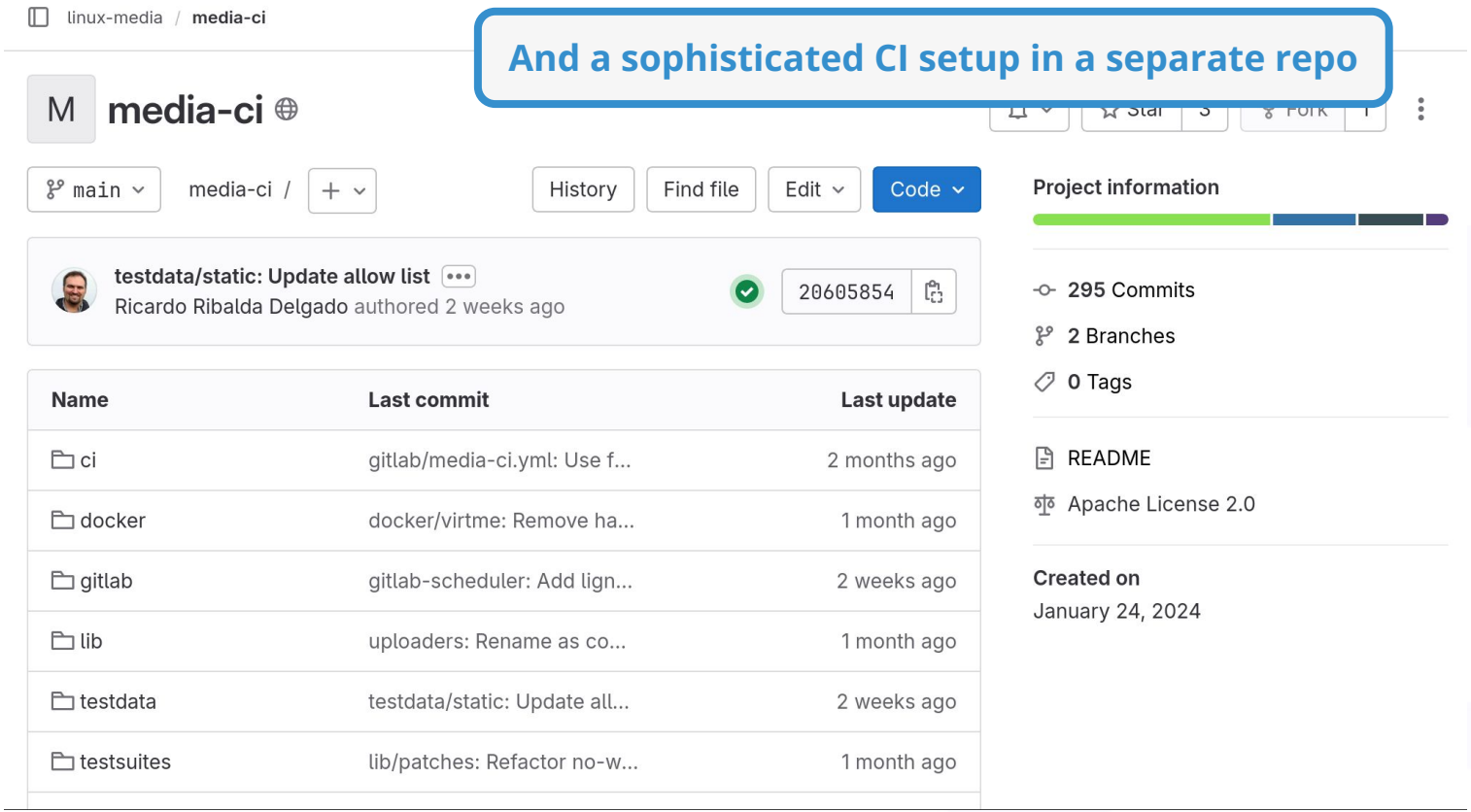
Multimedia and Television Support



Multimedia and Television Support



Multimedia and Television Support



Multimedia and Television Support

linux-media / **media-ci**

Seriously, check out the README.md there!

Linux-media CI

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 CI
  - Preparation
    - Gitlab
    - Public container
    - Self generated container
    - Locally
  - Tests
    - ABI testsuite
    - Build testsuite
    - LLVM testsuite
    - Build ancient testsuite
    - Bisect testsuite
    - Checkpatch testsuite
    - Doc testsuite
    - Static testsuite
    - Virtme testsuite
    - Trust testsuite

295 Commits

2 Branches

0 Tags

README

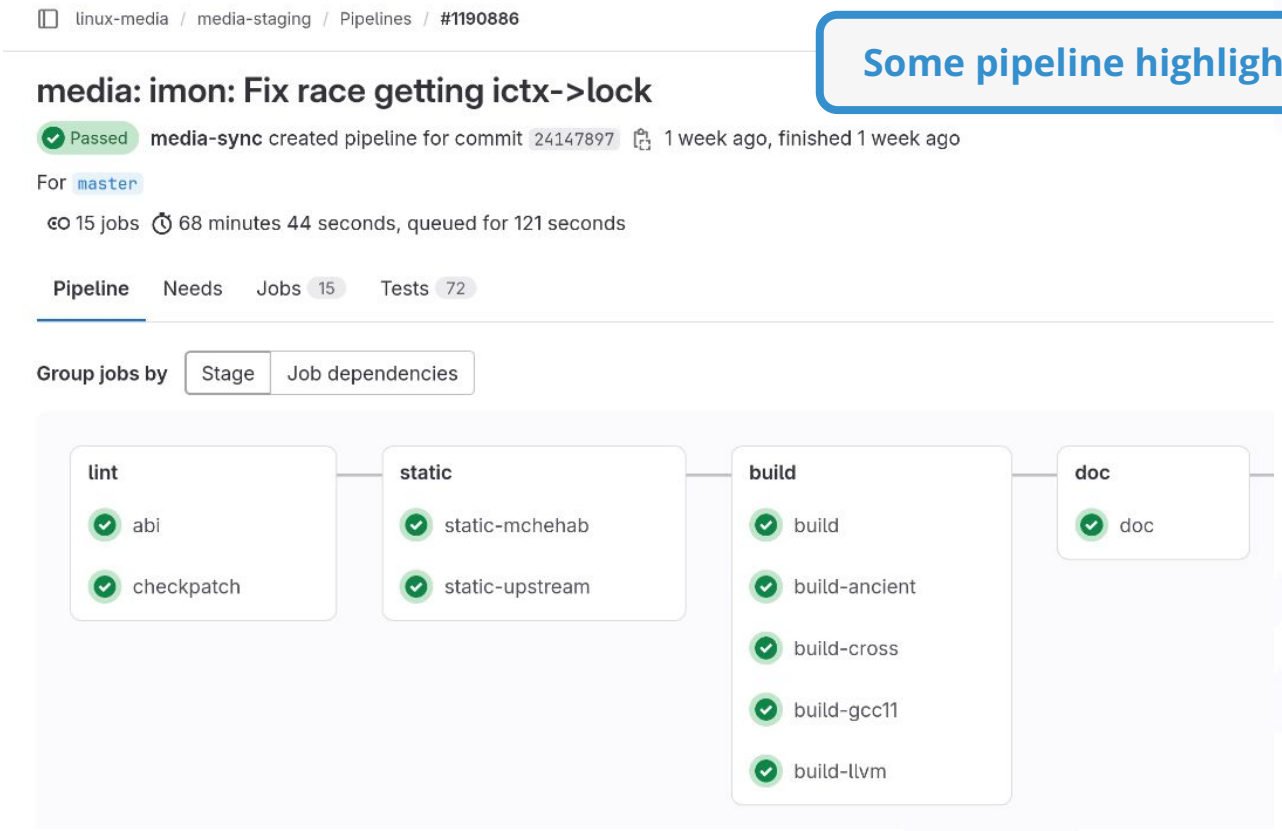
Apache License 2.0

Created on
January 24, 2024

https://gitlab.freedesktop.org/linux-media/media-ci

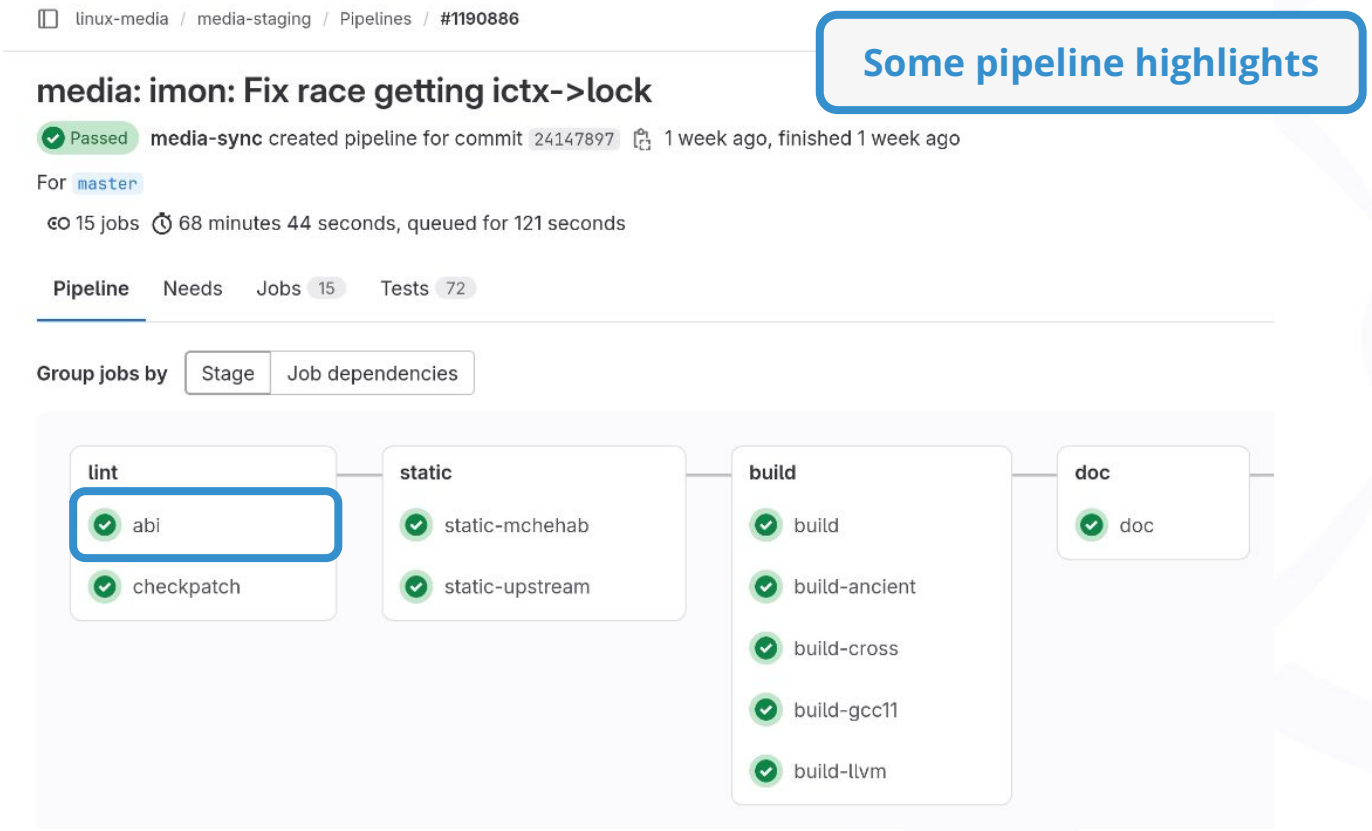
Multimedia and Television Support

Some pipeline highlights



https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

Multimedia and Television Support



Some pipeline highlights

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

Multimedia and Television Support

linux-media / media-staging / Pipelines / #1190886

Some pipeline highlights

media: imon: Fix race getting ictx->lock

Passed **media-sync** created pipeline for commit 24147897 1 week ago, finished 1 week ago

ABI testsuite

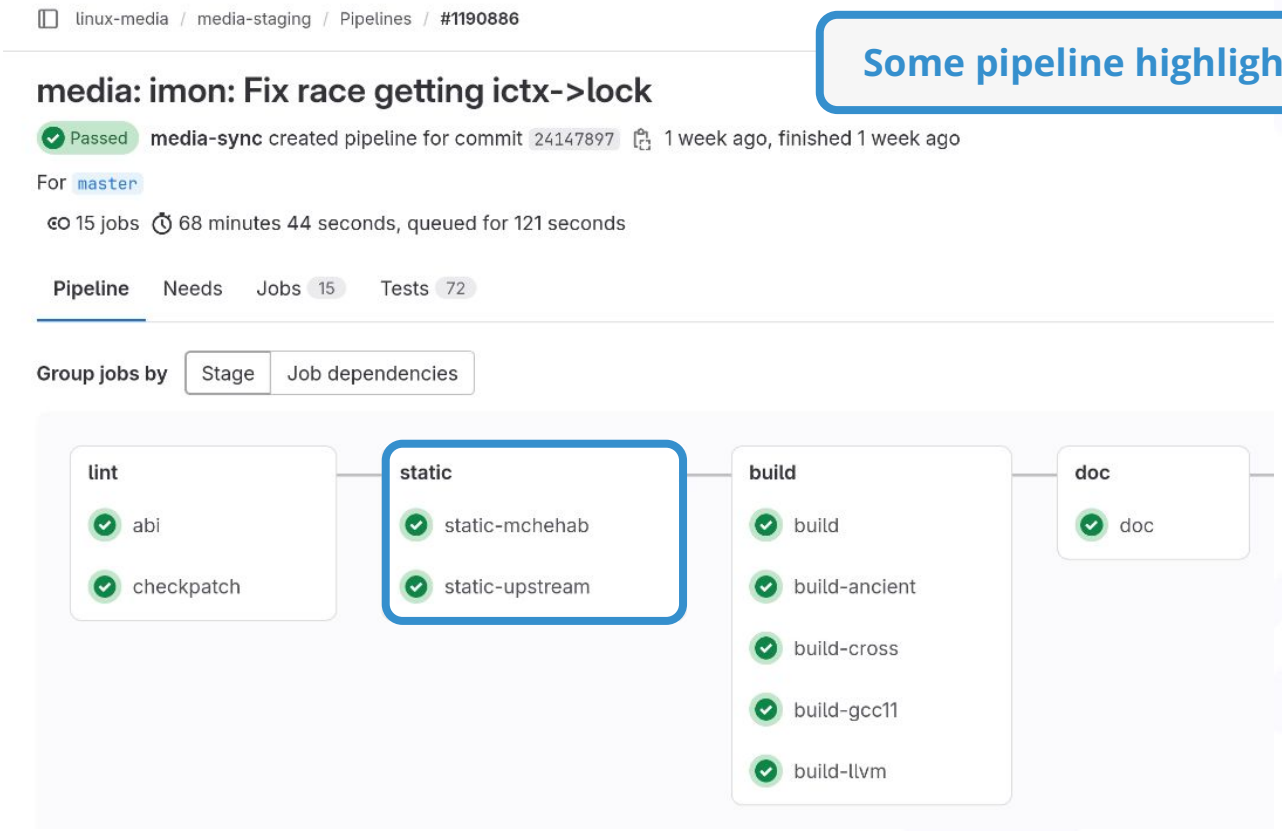
It validates that the ABI has not changed. It contains three tests:

- `test-compile-all.sh`:
  - Makes sure that all the media code is compiled.
- `test-pahole.sh`:
  - Compiles `pahole/pahole.c` for all the supported arches.
  - It checks that there are not holes or padding.
  - It checks that arm32 and x86 are identical to arm64 and x86_64 respectively.
- `test-abi-dumper.sh`:
  - Autogenerates a C file that contains all the media structures.
  - Use `abi-compliance-checker` (from `abi-dumper`) to validate that there is no ABI breakage.

build-llvm

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

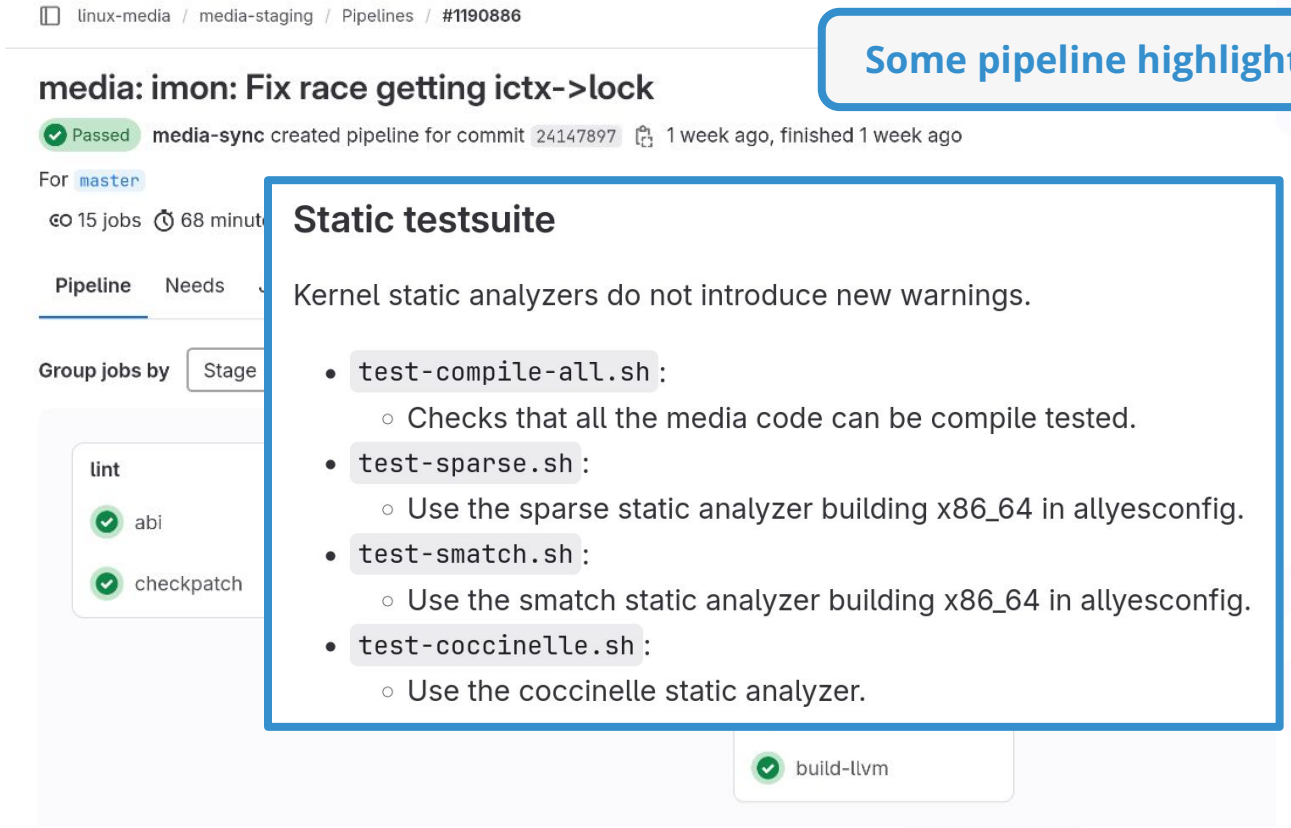
Multimedia and Television Support



Some pipeline highlights

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

Multimedia and Television Support



Some pipeline highlights

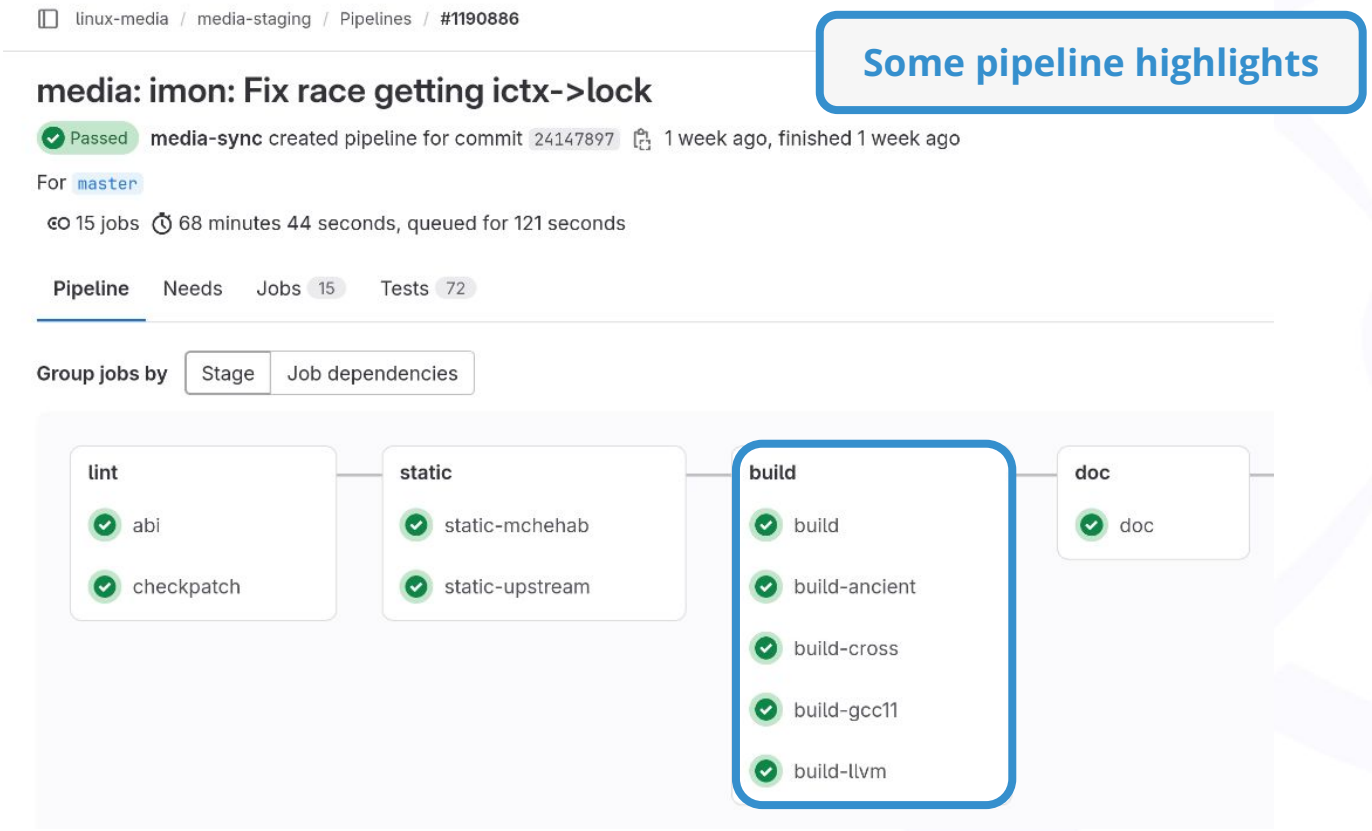
Static testsuite

Kernel static analyzers do not introduce new warnings.

- `test-compile-all.sh`:
  - Checks that all the media code can be compile tested.
- `test-sparse.sh`:
  - Use the sparse static analyzer building x86_64 in allyesconfig.
- `test-smatch.sh`:
  - Use the smatch static analyzer building x86_64 in allyesconfig.
- `test-coccinelle.sh`:
  - Use the coccinelle static analyzer.

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

Multimedia and Television Support



Some pipeline highlights

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

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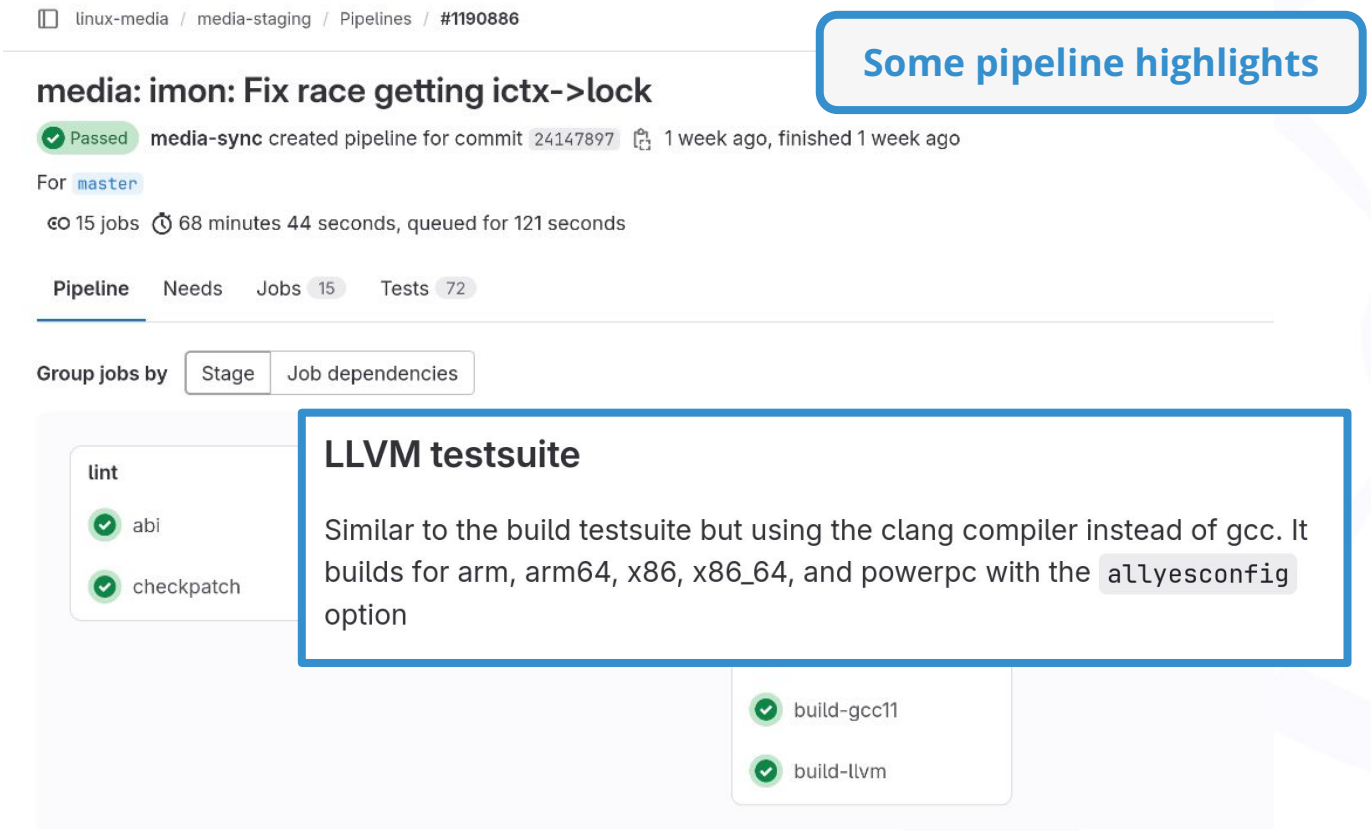


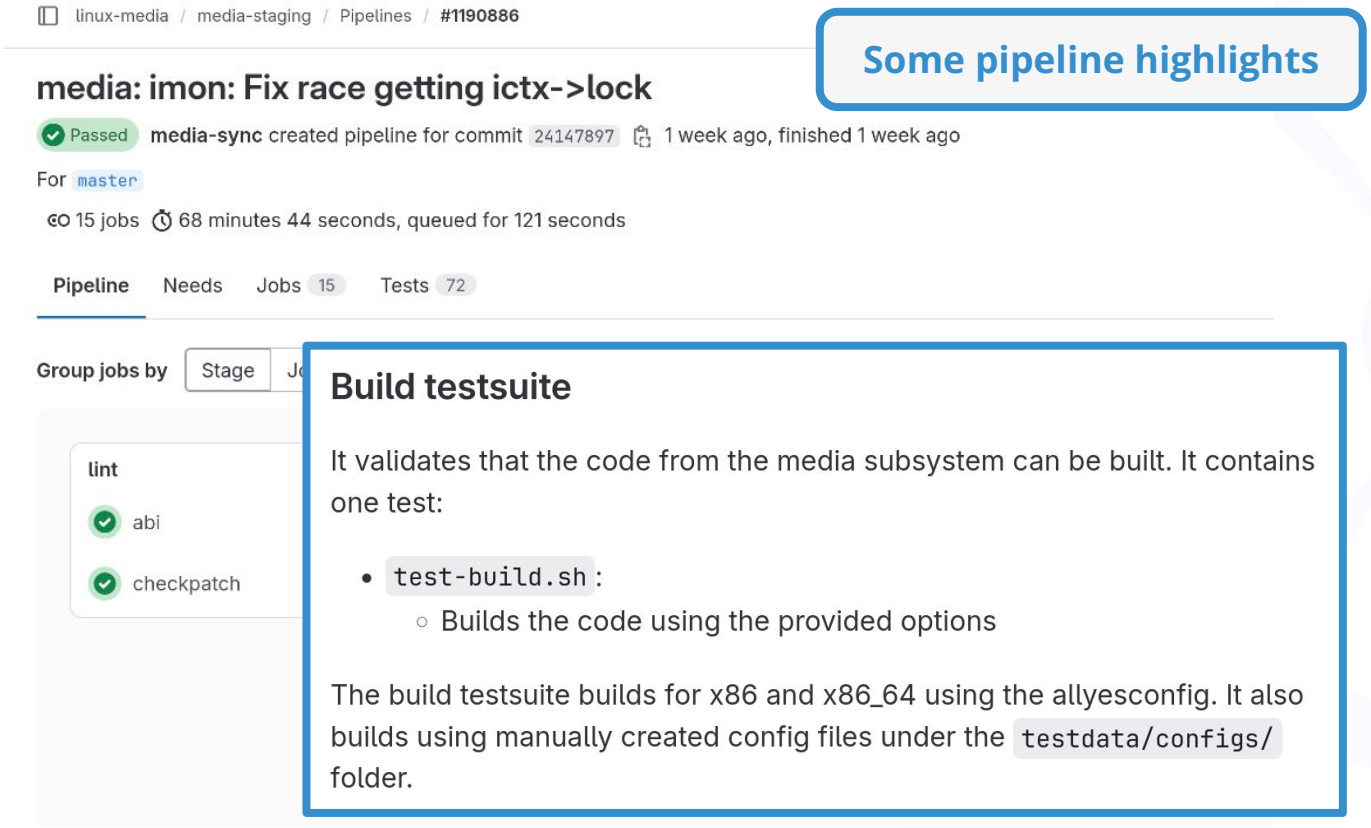
Some pipeline highlights

LLVM testsuite

Similar to the build testsuite but using the clang compiler instead of gcc. It builds for arm, arm64, x86, x86_64, and powerpc with the `allyesconfig` option

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

Multimedia and Television Support



Some pipeline highlights

Build testsuite

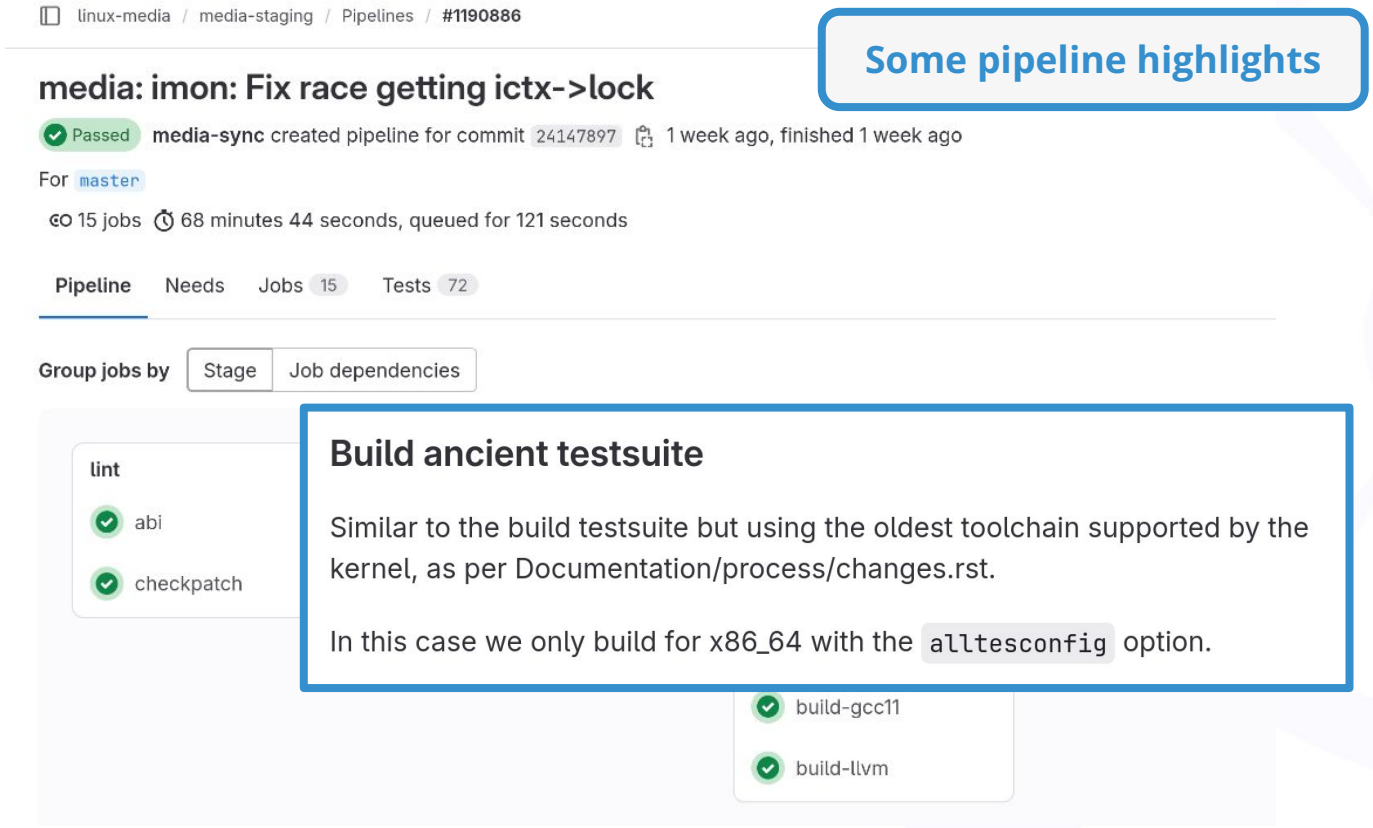
It validates that the code from the media subsystem can be built. It contains one test:

- `test-build.sh`:
  - Builds the code using the provided options

The build testsuite builds for x86 and x86_64 using the allyesconfig. It also builds using manually created config files under the `testdata/configs/` folder.

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

Multimedia and Television Support



Some pipeline highlights

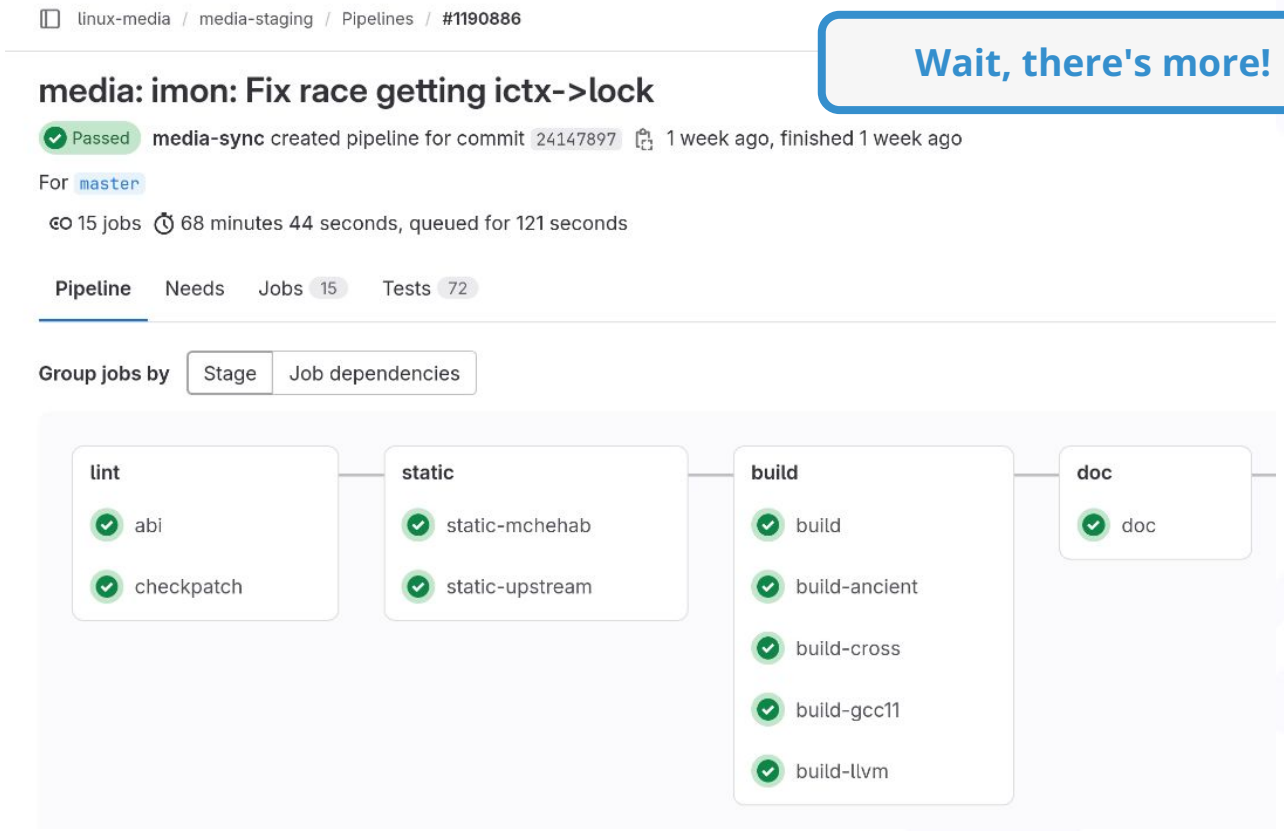
Build ancient testsuite

Similar to the build testsuite but using the oldest toolchain supported by the kernel, as per Documentation/process/changes.rst.

In this case we only build for x86_64 with the `alltesconfig` option.

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

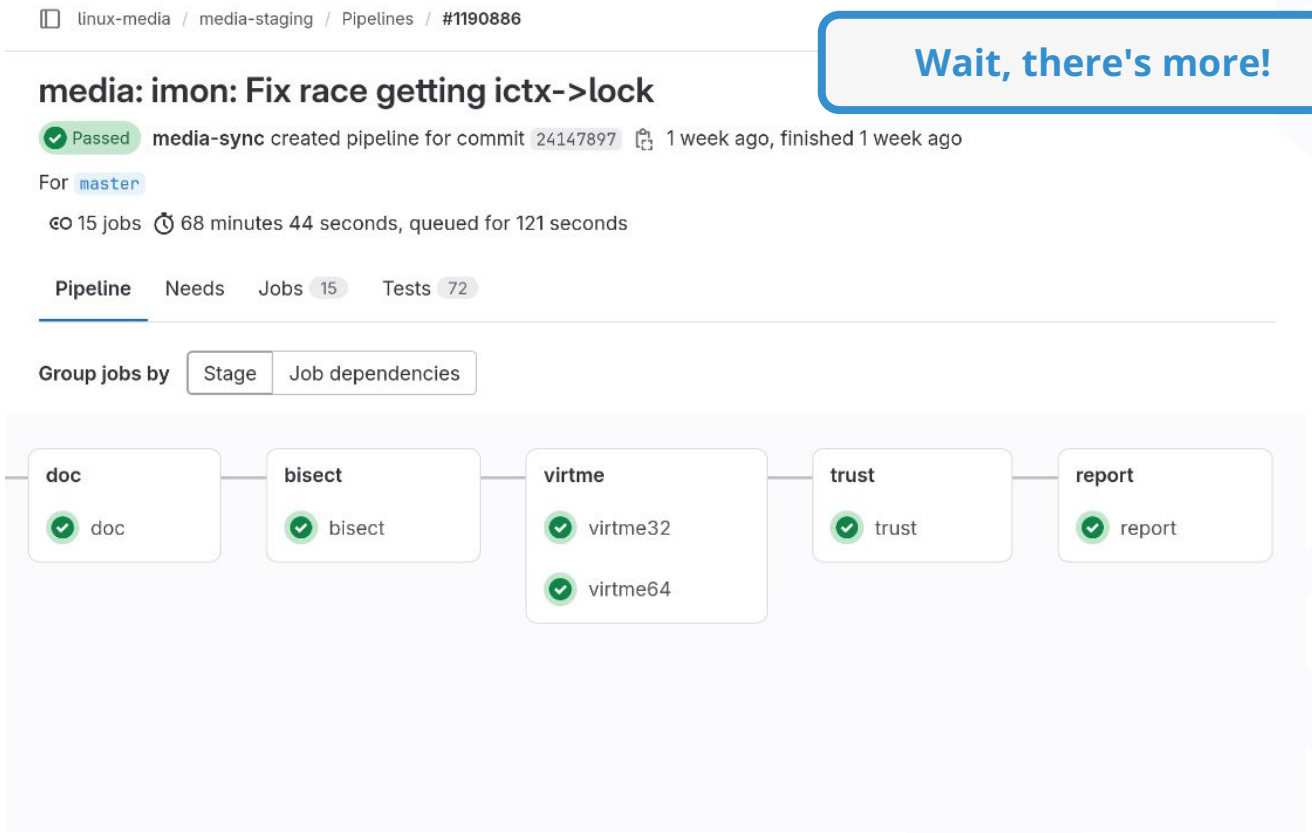
Multimedia and Television Support



Wait, there's more!

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

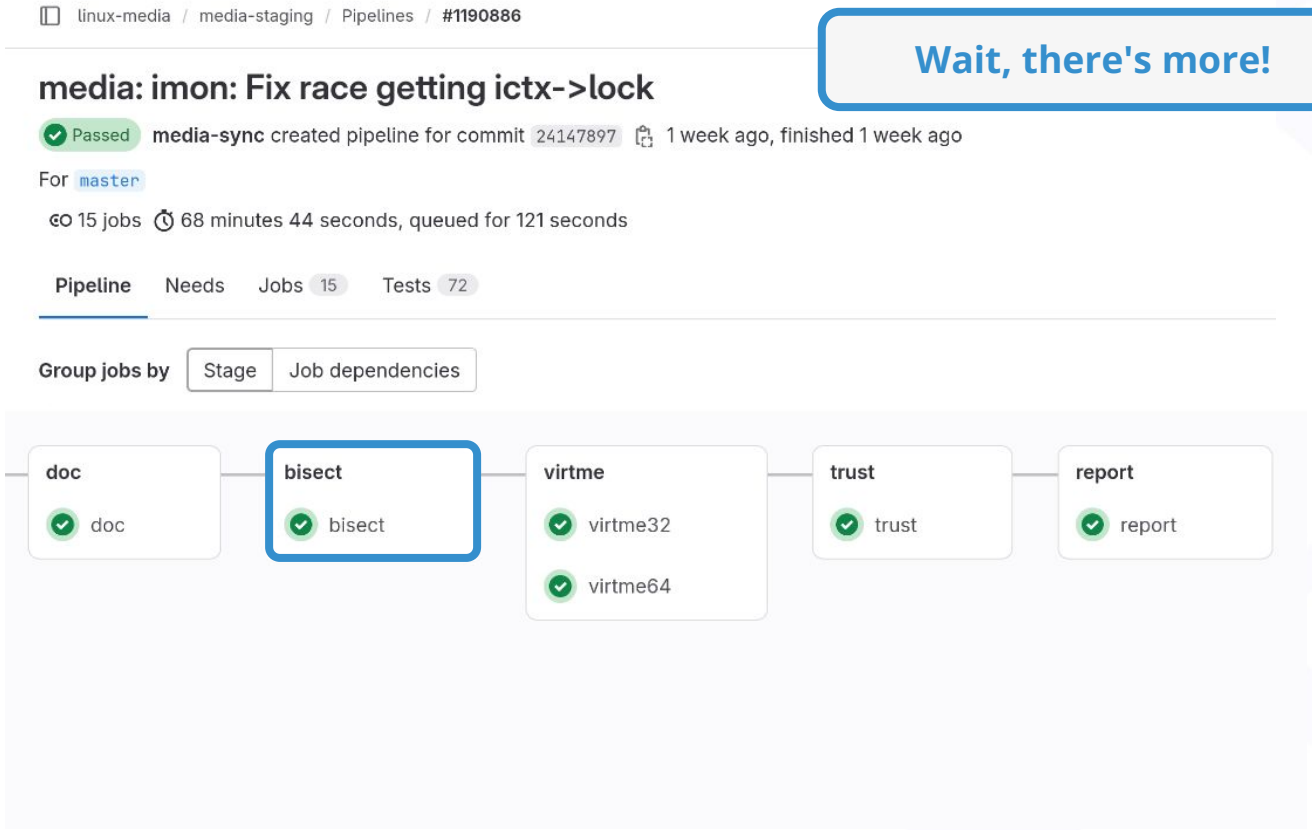
Multimedia and Television Support



Wait, there's more!

https://gitlab.freedesktop.org/linux-media/media-staging/-/pipelines/1190886

Multimedia and Television Support



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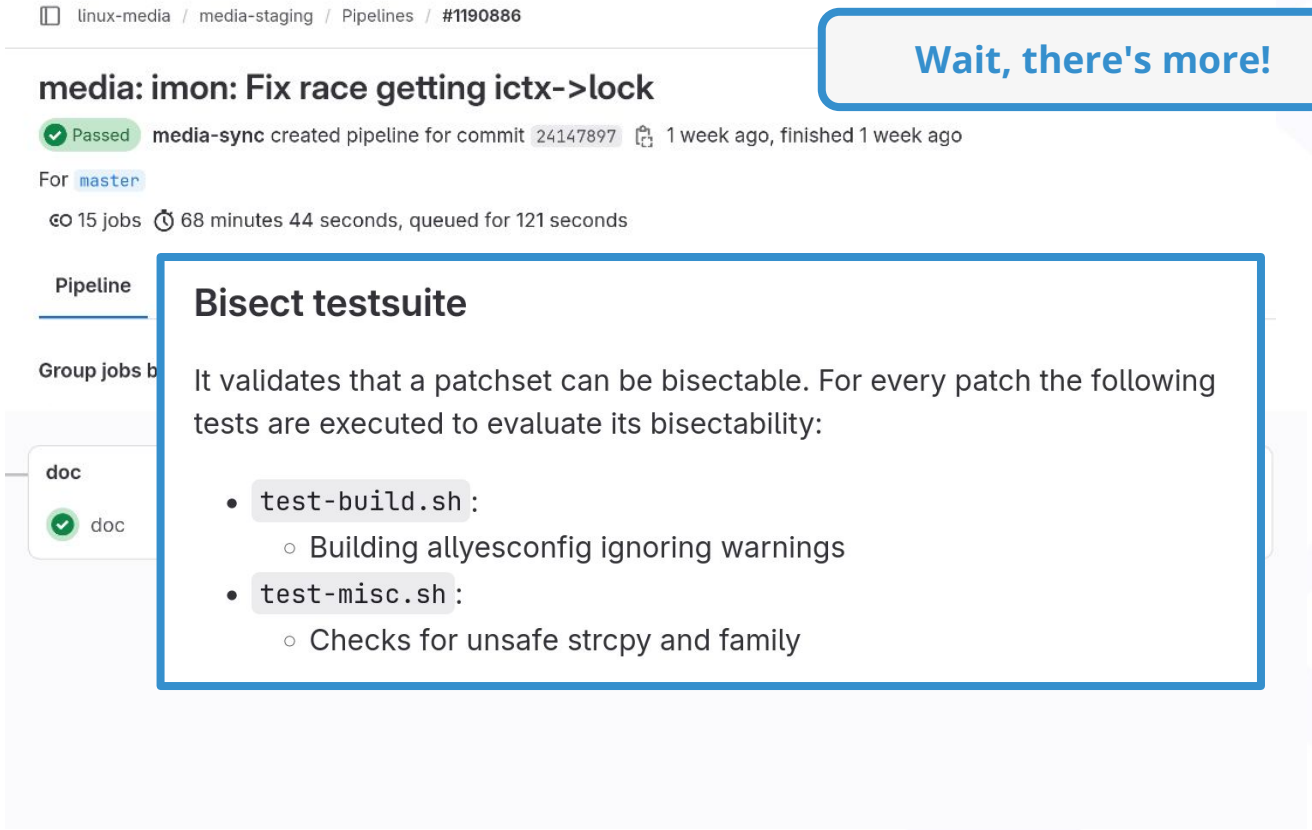
Multimedia and Television Support



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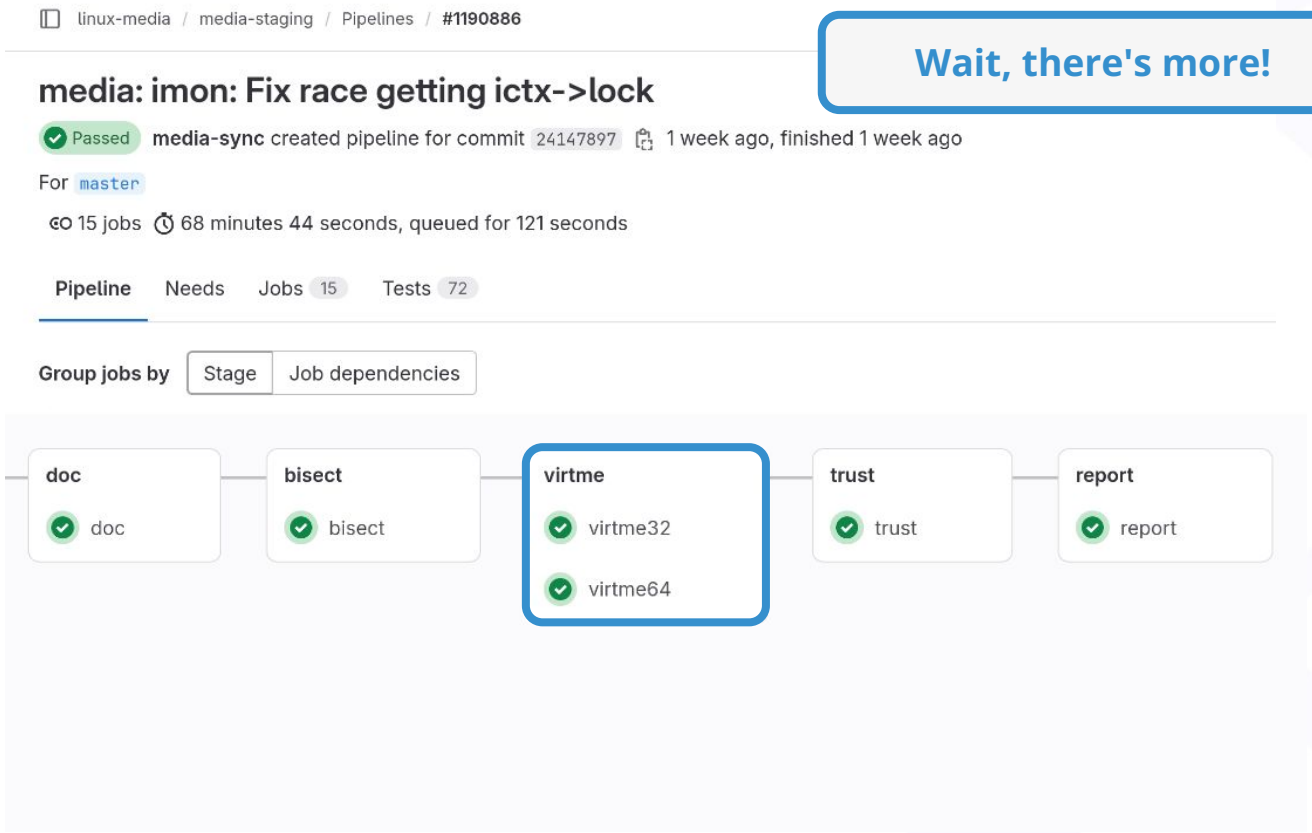

Wait, there's more!

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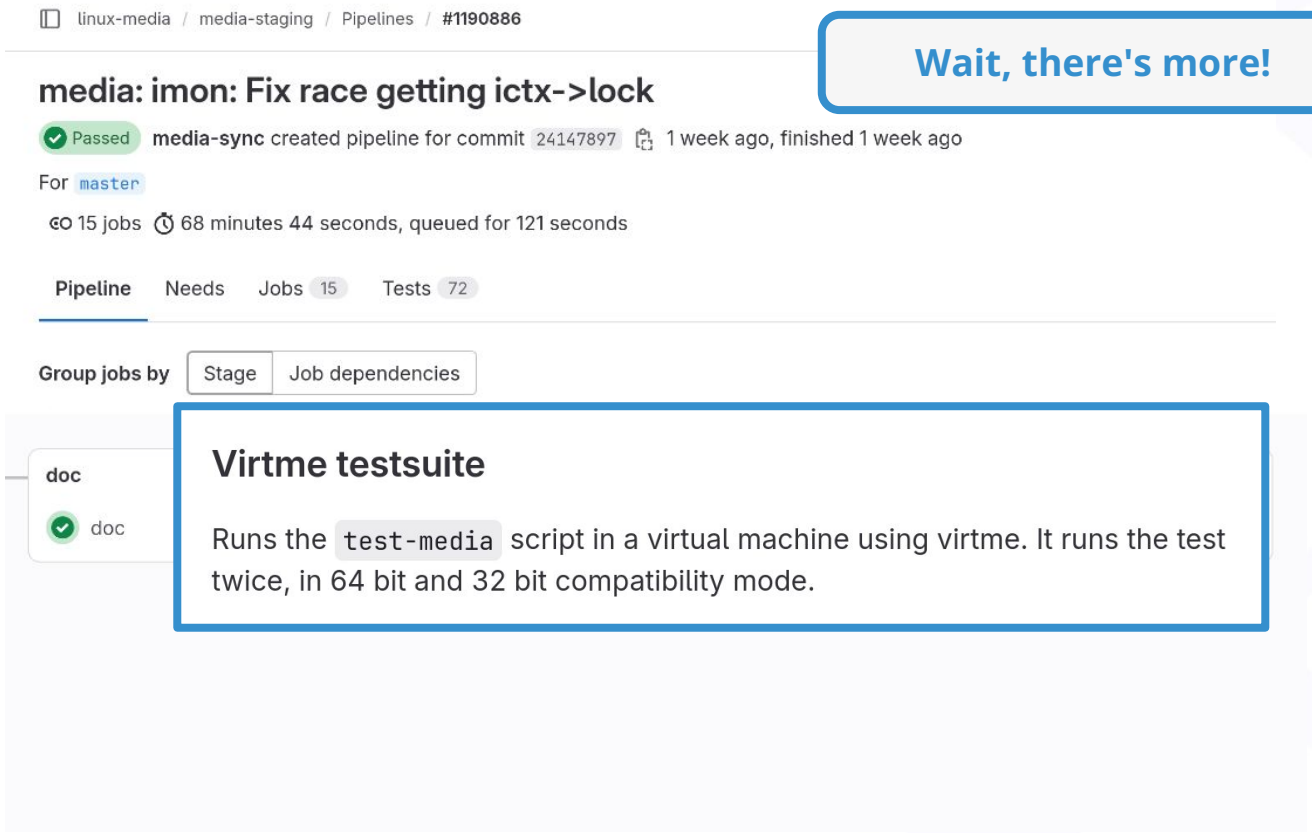

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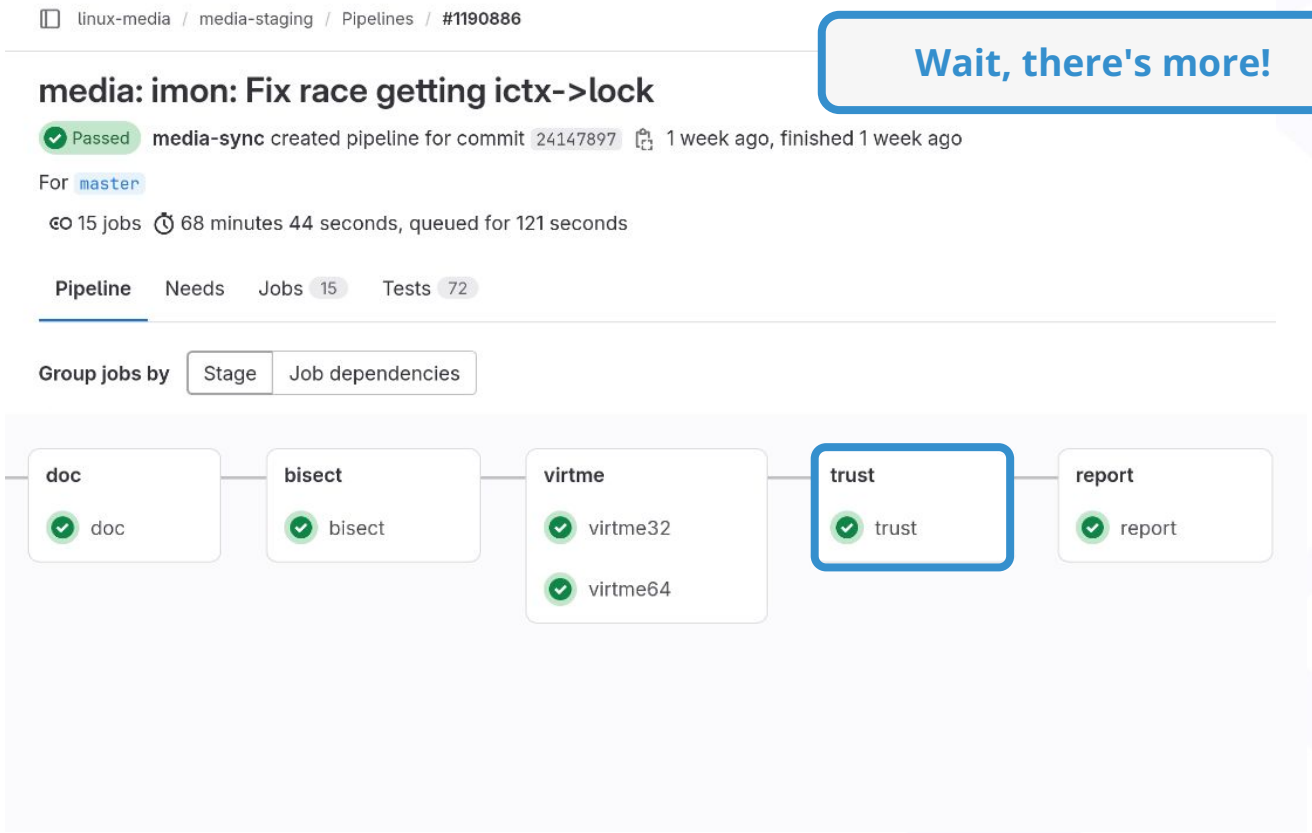
Multimedia and Television Support



Wait, there's more!

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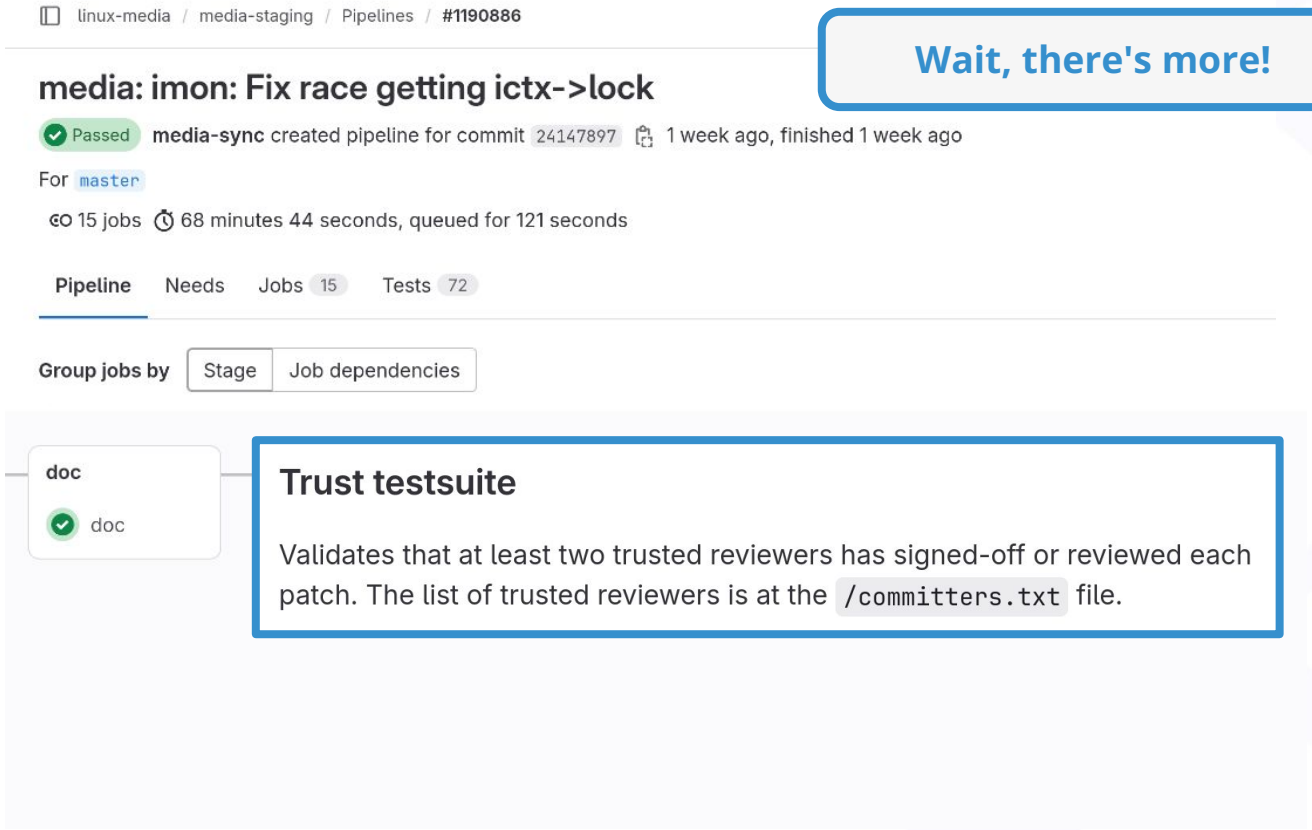
Multimedia and Television Support



Wait, there's more!

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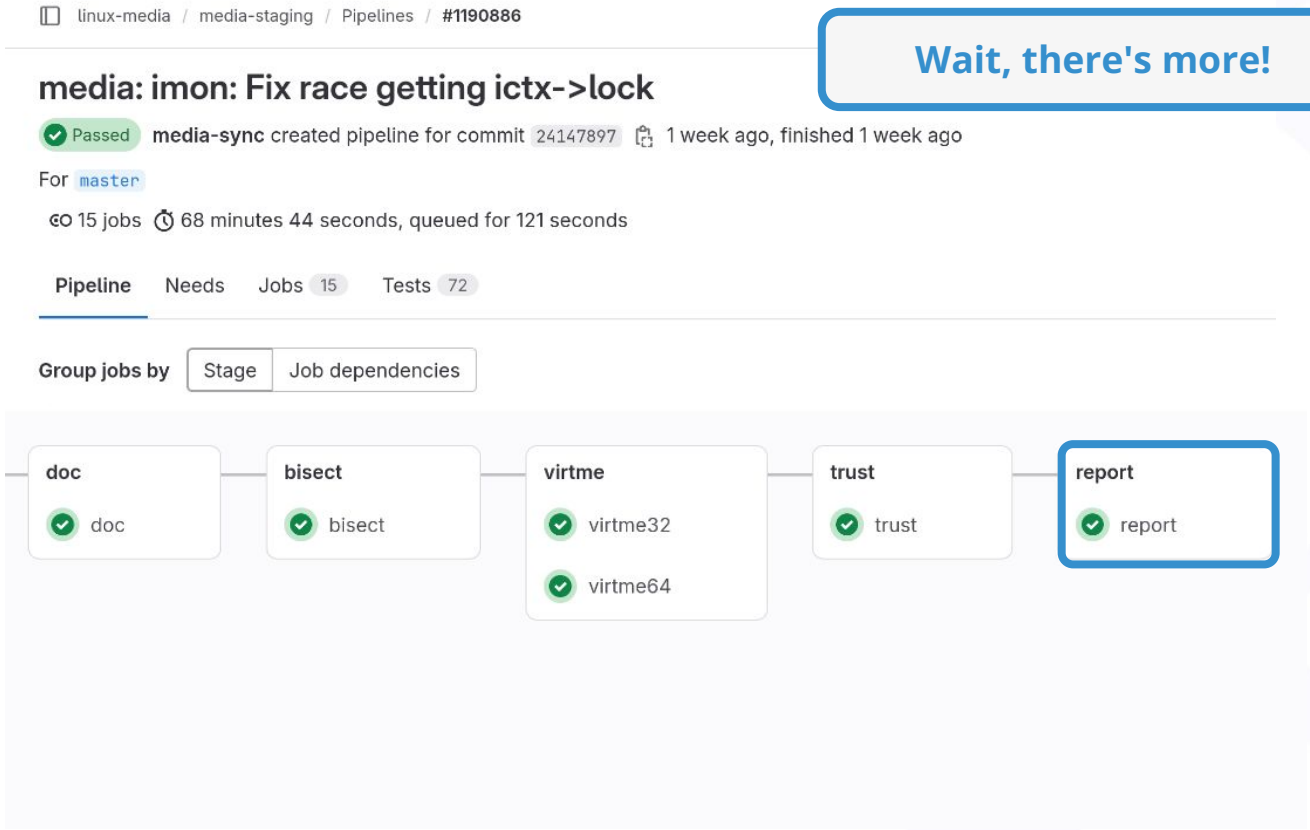
Multimedia and Television Support



Wait, there's more!

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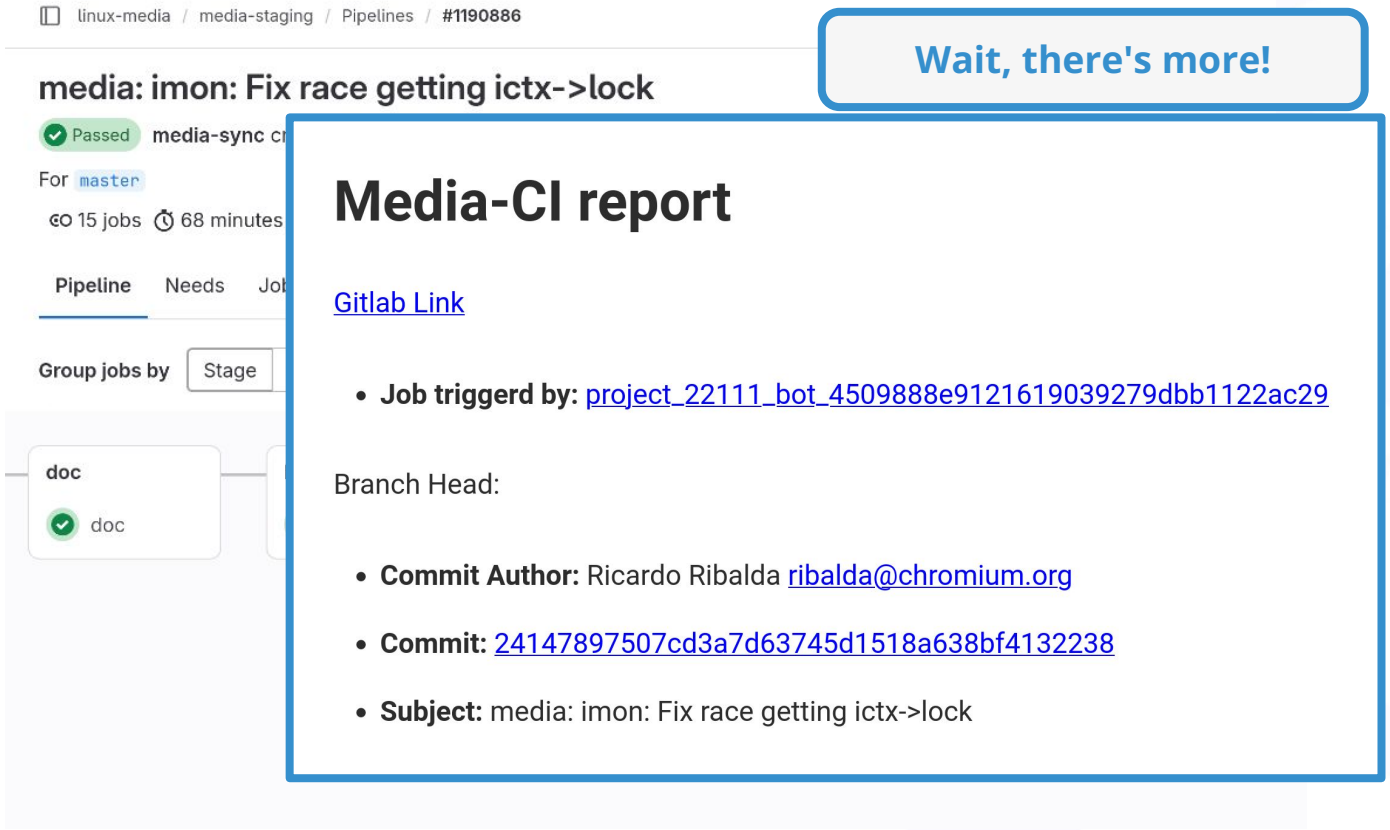
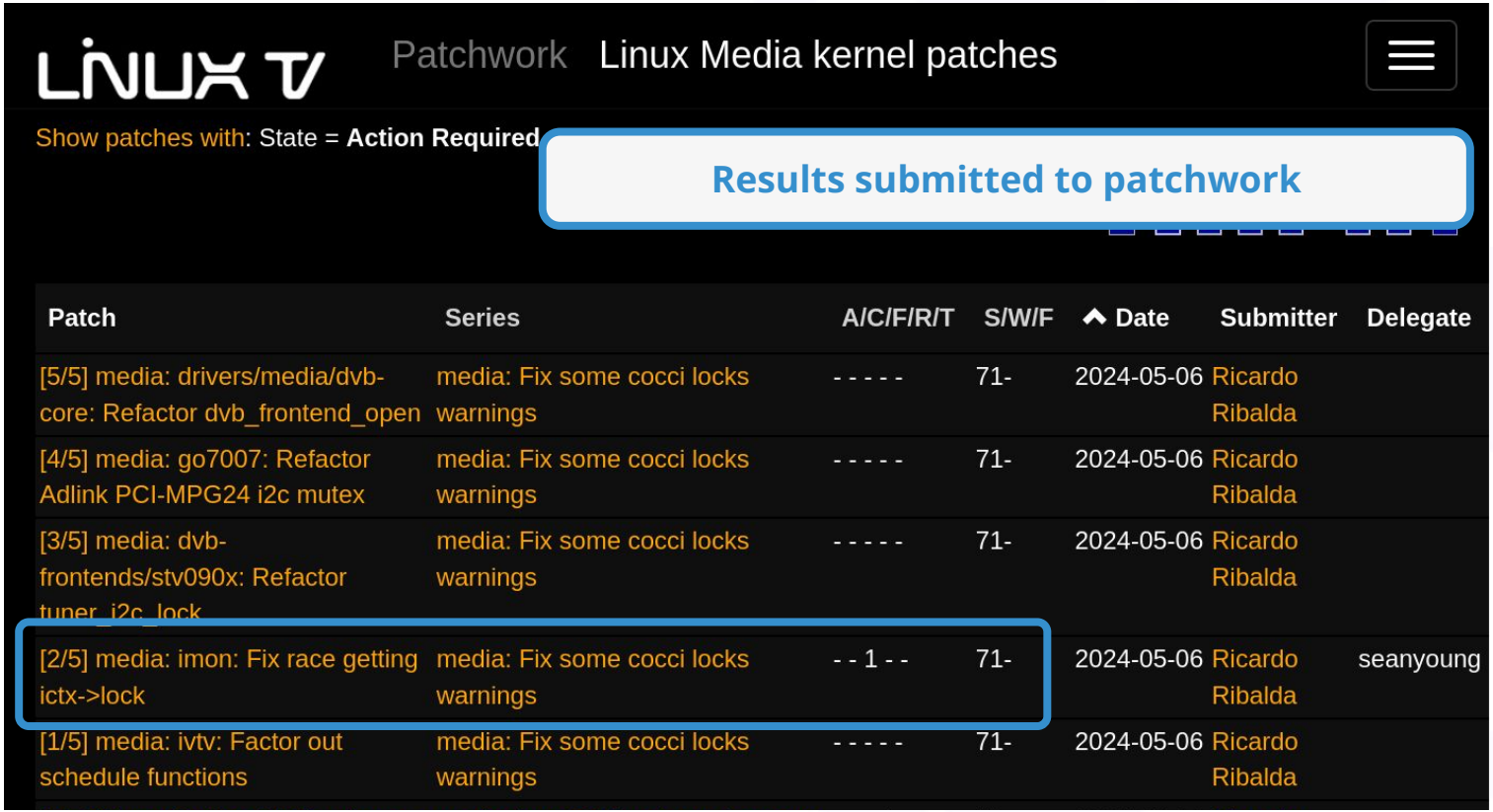
Multimedia and Television Support



https://linux-media.pages.freedesktop.org/-/media-staging/-/jobs/59387936/artifacts/report.htm

Multimedia and Television Support



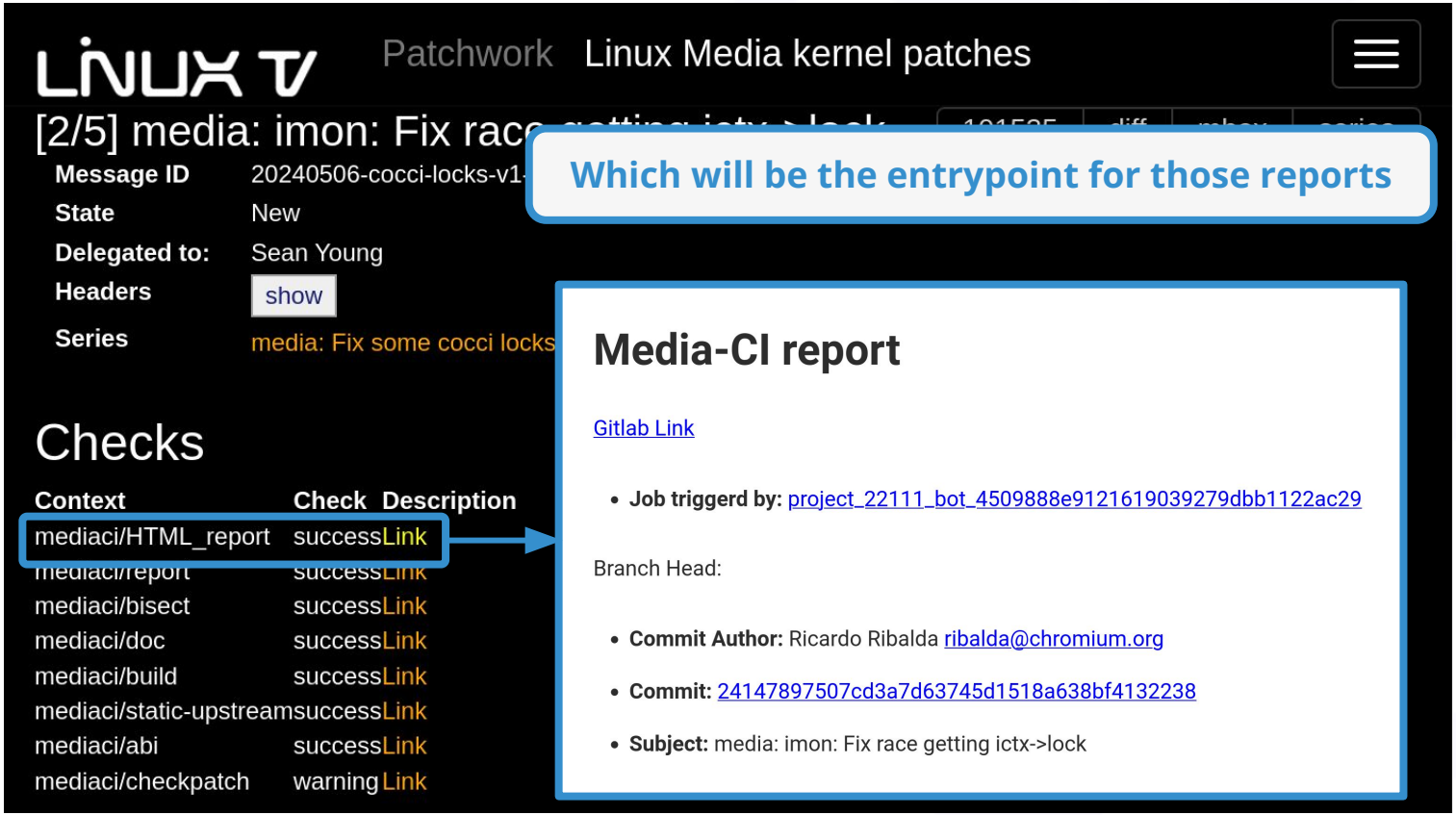
Patch	Series	A/C/F/R/T	S/W/F	Date	Submitter	Delegate
[5/5] media: drivers/media/dvb-core: Refactor dvb_frontend_open	media: Fix some cocci locks warnings	- - - - -	71-	2024-05-06	Ricardo Ribalda	
[4/5] media: go7007: Refactor Adlink PCI-MPG24 i2c mutex	media: Fix some cocci locks warnings	- - - - -	71-	2024-05-06	Ricardo Ribalda	
[3/5] media: dvb-frontends/stv090x: Refactor tuner_i2c_lock	media: Fix some cocci locks warnings	- - - - -	71-	2024-05-06	Ricardo Ribalda	
[2/5] media: imon: Fix race getting ictx->lock	media: Fix some cocci locks warnings	- - 1 - -	71-	2024-05-06	Ricardo Ribalda	seanyoung
[1/5] media: ivtv: Factor out schedule functions	media: Fix some cocci locks warnings	- - - - -	71-	2024-05-06	Ricardo Ribalda	

https://patchwork.devel.linuxdvb.org/project/linux-media/list/

Multimedia and Television Support

https://patchwork.devel.linuxdvb.org/project/linux-media/patch/20240506-cocci-locks-v1-2-a67952fe5d19@chromium.org/

Multimedia and Television Support



https://patchwork.devel.linuxdvb.org/project/linux-media/patch/20240506-cocci-locks-v1-2-a67952fe5d19@chromium.org/

Multimedia and Television Support

linux-media / media-ci / **Repository**

```
21  stages:
22    - prep
23    - lint
24    - docker
25    - integration
26    - deploy
27
28  # Do not trigger CI for unchanged branches
29  workflow:
30    rules:
31    - if: $CI_COMMIT_BRANCH == $CI_DEFAULT_BRANCH
32      when: always
33    - if: $CI_COMMIT_BRANCH
34      changes:
35        paths:
36        - '*'
37        - '**/*'
38        compare_to: refs/heads/main
39      when: always
40
```

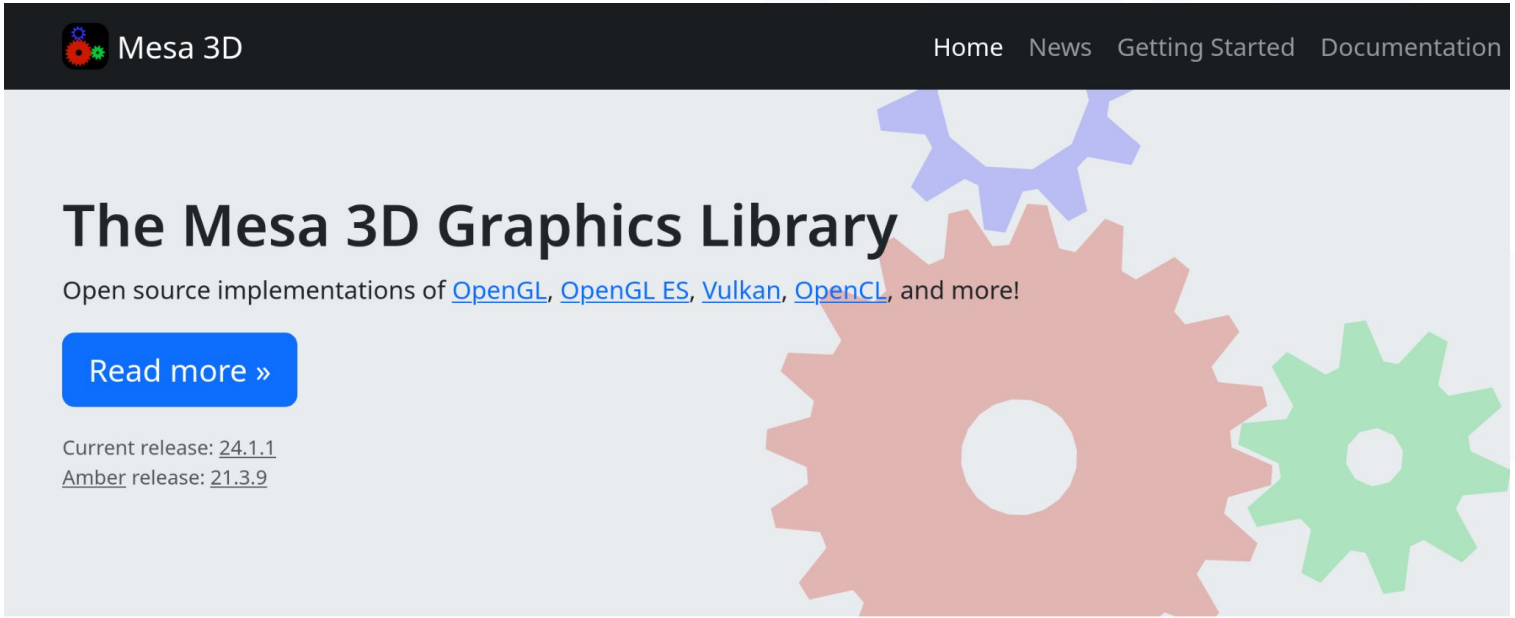
But used via pushes and patches, not merge requests

https://gitlab.freedesktop.org/linux-media/media-ci/-/blob/main/gitlab/media-ci.yml

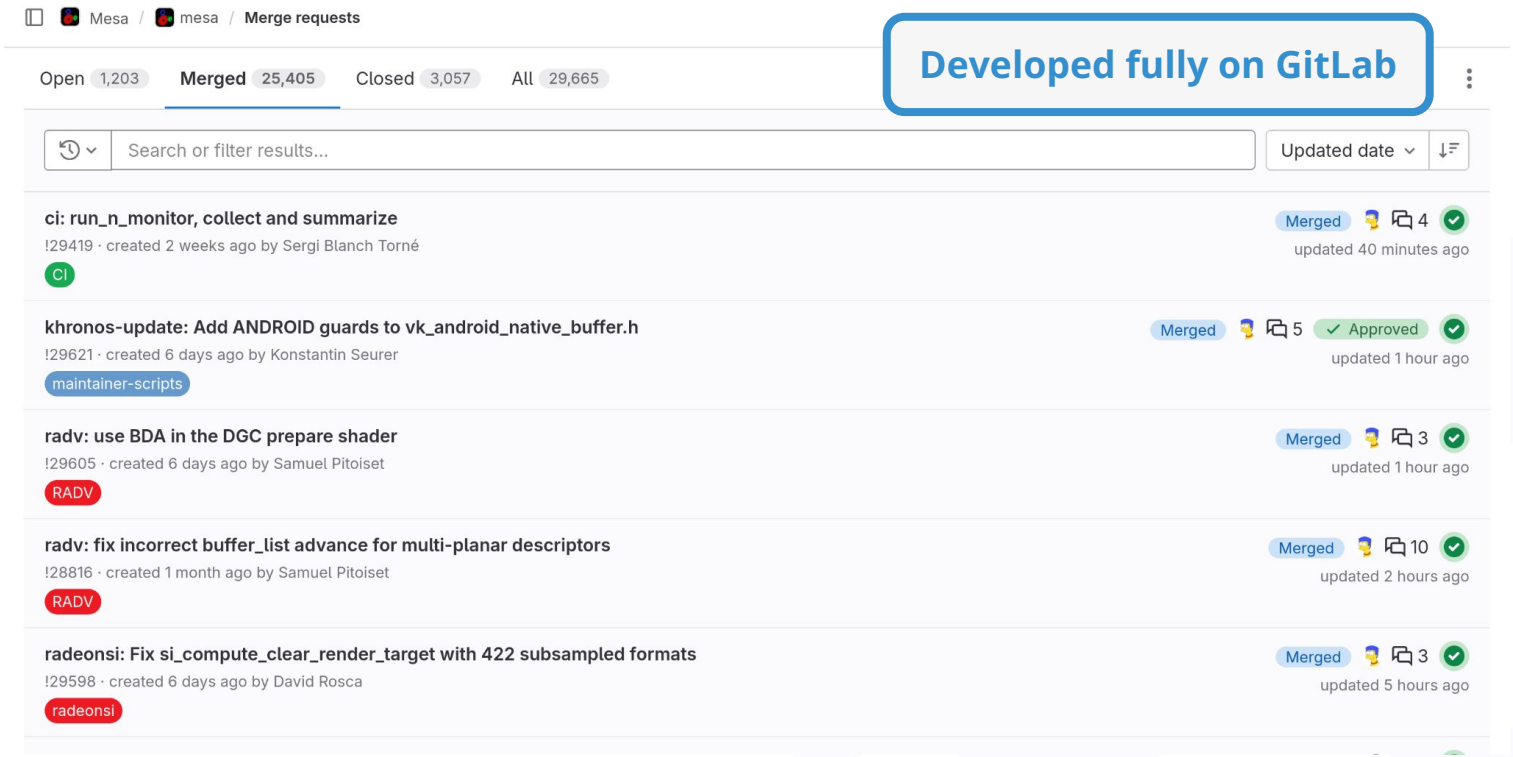
KernelCI

Mesa3D

KernelCI Mesa3D

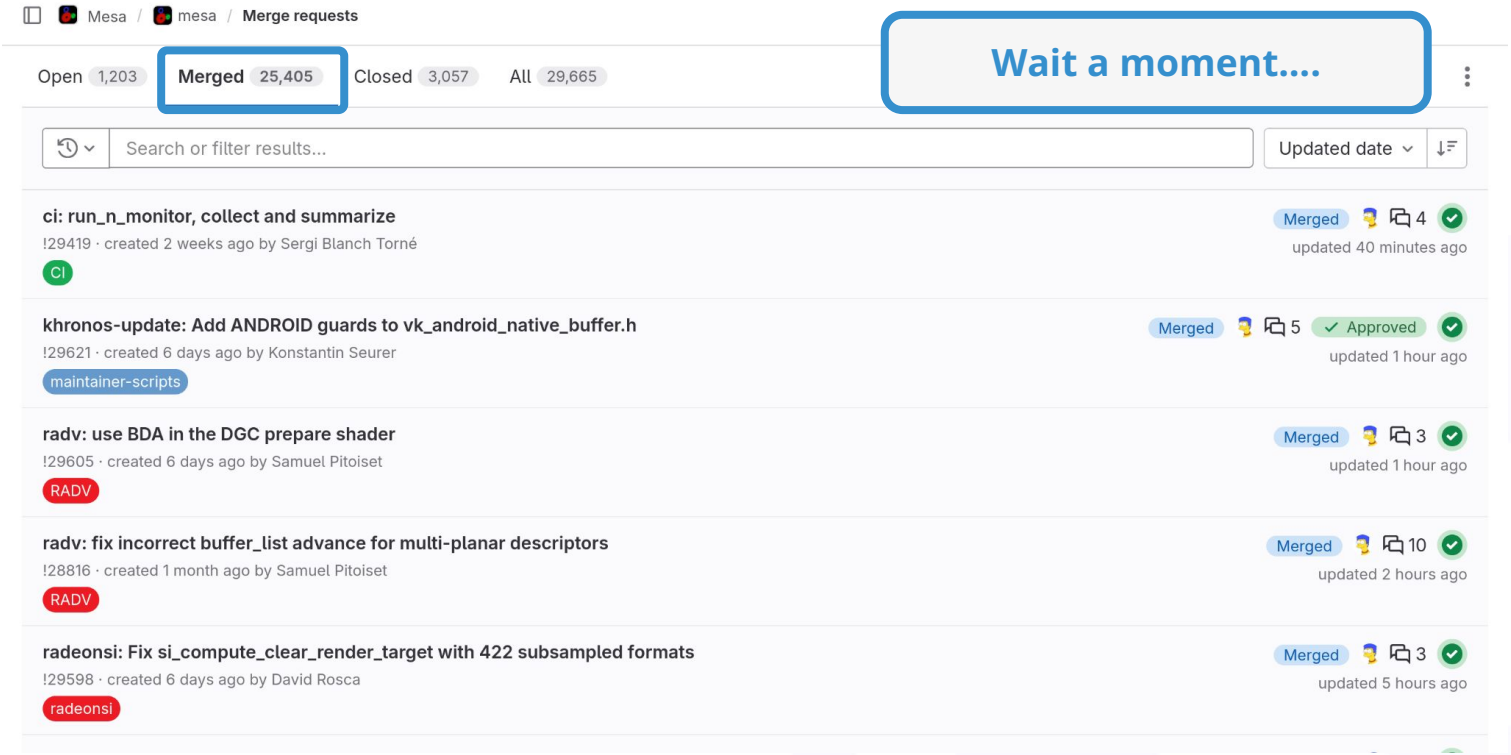


KernelCI Mesa3D



https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests?scope=all&state=merged

KernelCI Mesa3D

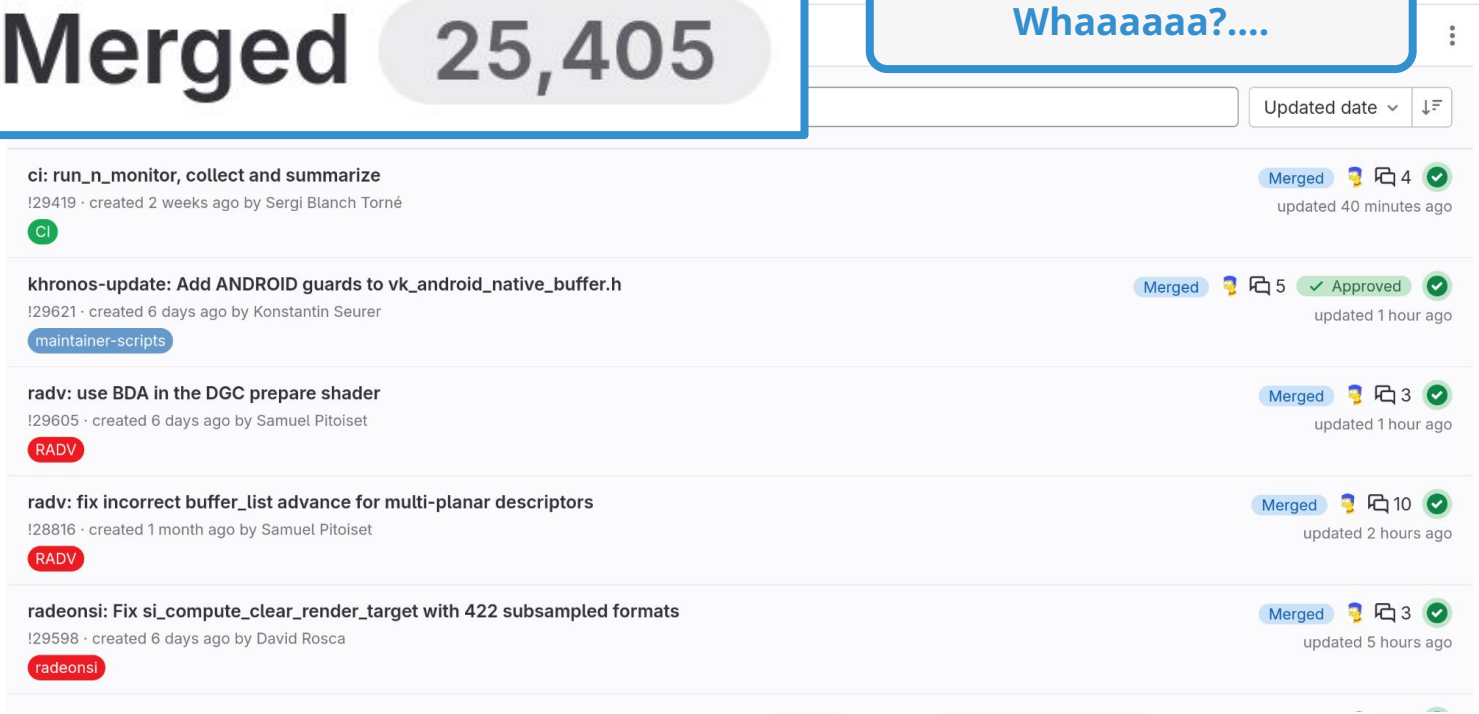


https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests?scope=all&state=merged

KernelCI Mesa3D

Merged 25,405

Whaaaaaa?....



https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests?scope=all&state=merged

KernelCI Mesa3D

One example

Mesa / mesa / Merge requests / !9989

Fix compositor alpha-blending with EGL on X11

Code

Merged **Robert Mader** requested to merge `rmader/mesa:egl-transpar…` into `main` 3 years ago

2 unresolved threads | Add a to do | Expand

Overview 159 | Commits 5 | Pipelines 81 | Changes 8

Why?

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

This impacts multiple apps, but most notably everything based on **GTK** toolkit and **Firefox browser**. Applications usually resolve situations in three ways:

- 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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KernelCI

Mesa3D

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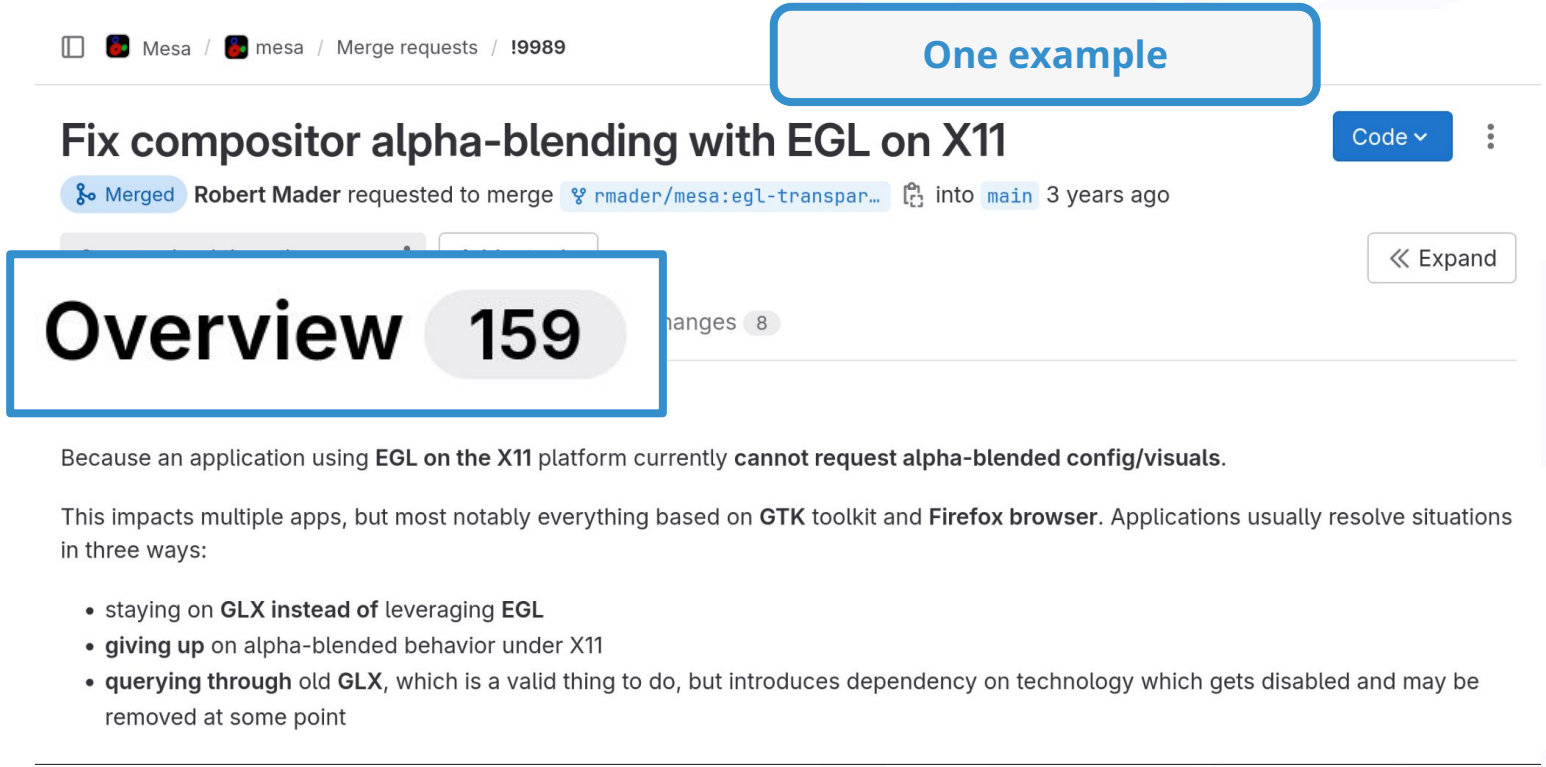
KernelCI Mesa3D



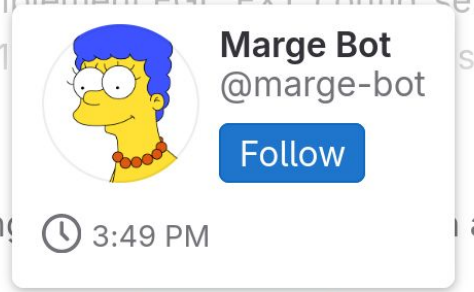
https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests/9989

KernelCI Mesa3D

Tended to by Marge Bot

- **David Heidelberg** added 51 commits 1
  - `3fb88e40...9f42a346` - 46 commits from branch `mesa:main`
  - `5888db2b` - egl: Implement EGL_EXT_config_select_group
  - `608cbbed` - egl/x11 … second config selection group

  Toggle commit list



- **David Heidelberg** chang… ago
- **David Heidelberg** assigned to @marge-bot and unassigned @rmader 1 month ago
- **David Heidelberg** mentioned in commit `rmader/mesa@3736c999` 1 month ago

https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests/9989

KernelCI Mesa3D

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

https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests/9989

KernelCI

Mesa3D

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)

https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests/9989

KernelCI Mesa3D

One example

Mesa / mesa / Merge requests / !9989

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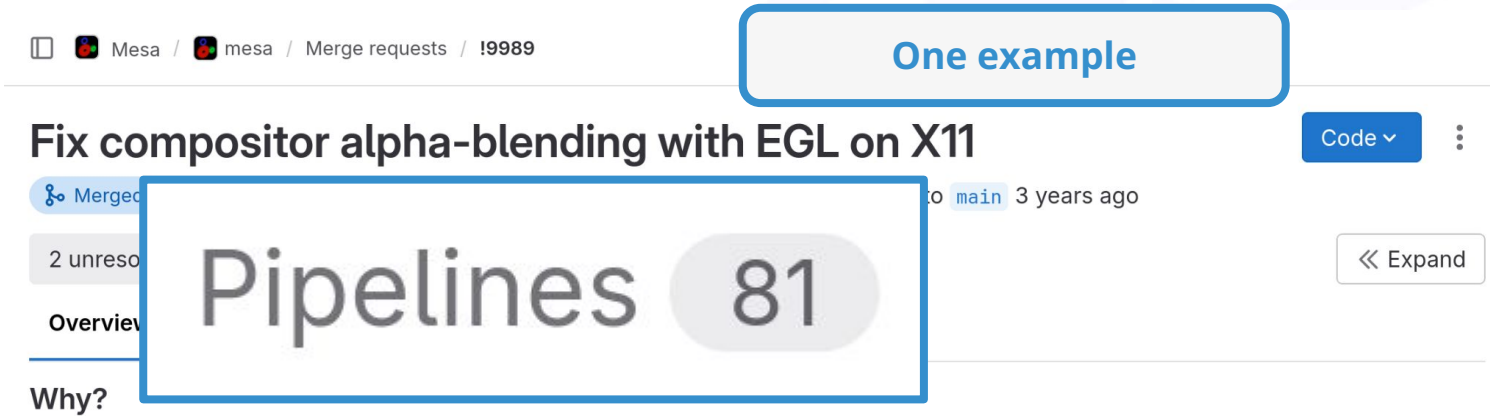
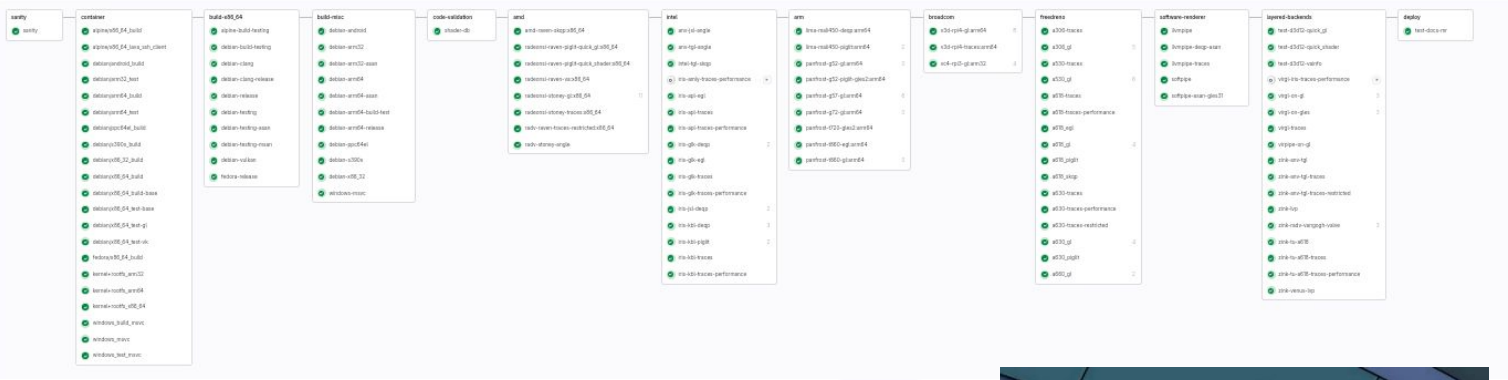
KernelCI Mesa3D



https://gitlab.freedesktop.org/mesa/mesa/-/merge_requests/9989

KernelCI Mesa3D

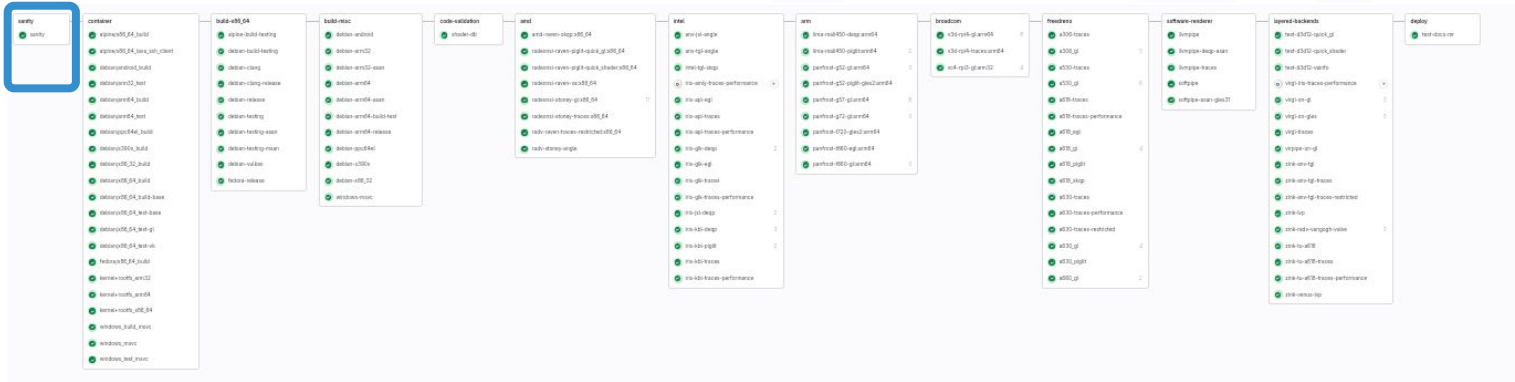
A recent successful pipeline



https://gitlab.freedesktop.org/mesa/mesa/-/pipelines/1175259

KernelCI Mesa3D

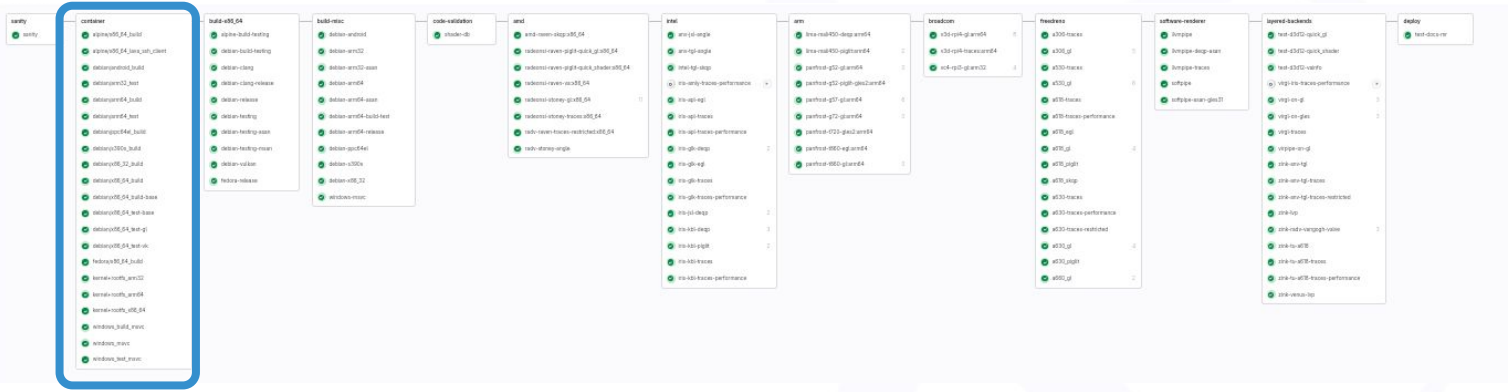
Check if pipeline can run



https://gitlab.freedesktop.org/mesa/mesa/-/pipelines/1175259

KernelCI Mesa3D

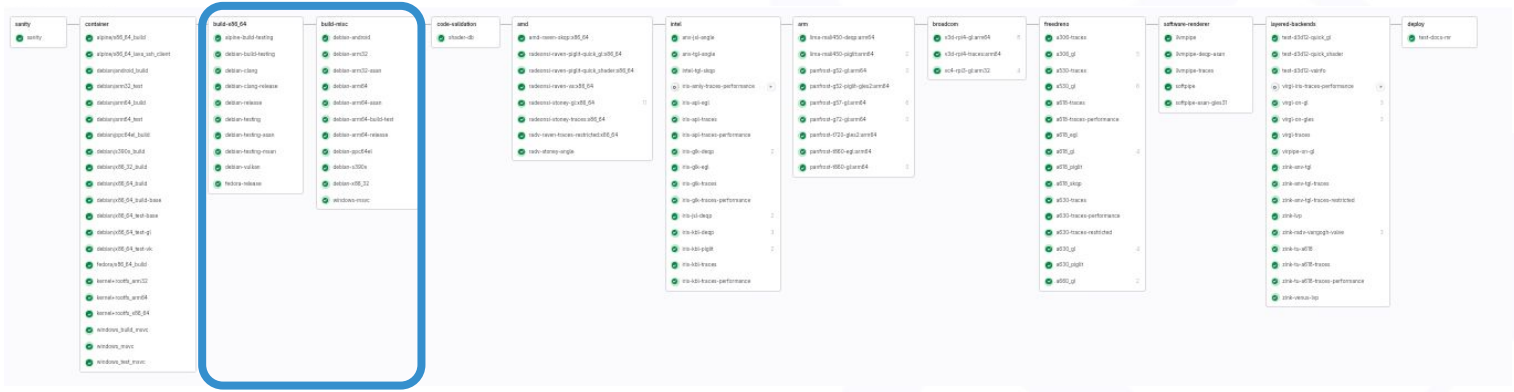
Prepare builders



https://gitlab.freedesktop.org/mesa/mesa/-/pipelines/1175259

KernelCI Mesa3D

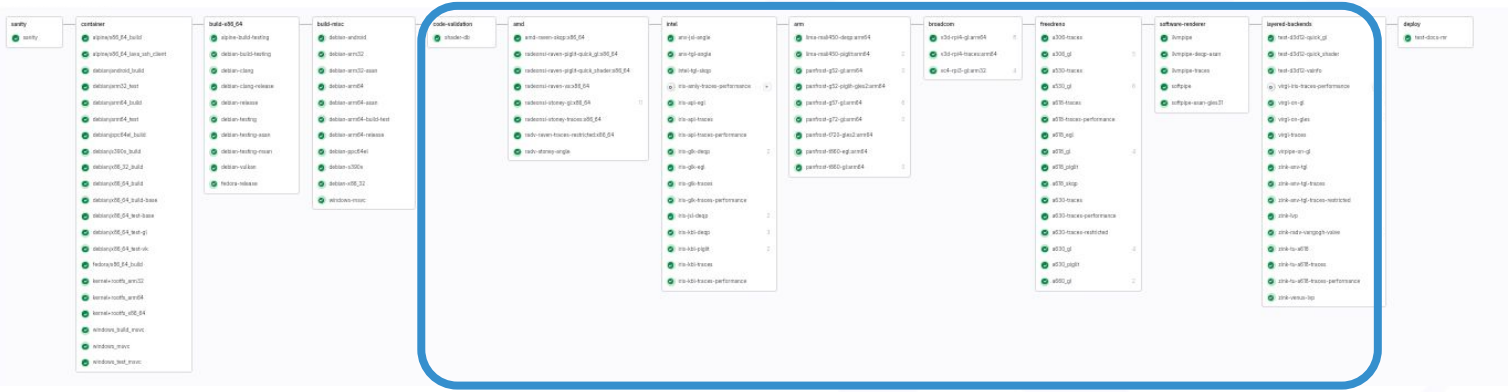
Build test suites



https://gitlab.freedesktop.org/mesa/mesa/-/pipelines/1175259

KernelCI Mesa3D

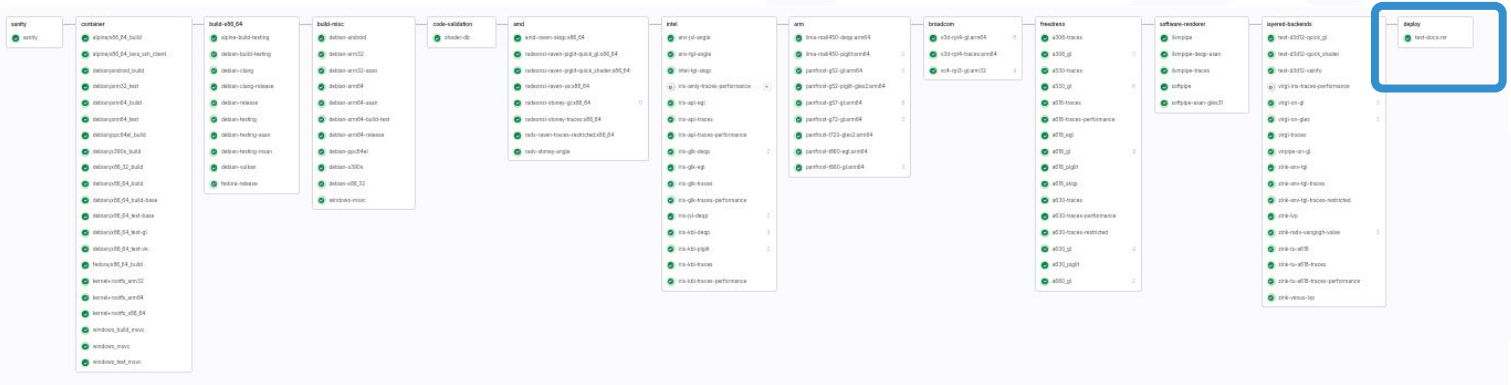
Run tests in devices



https://gitlab.freedesktop.org/mesa/mesa/-/pipelines/1175259

KernelCI Mesa3D

Publish results



https://gitlab.freedesktop.org/mesa/mesa/-/pipelines/1175259

KernelCI

Mesa3D

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.

Check out the talk for details

Speakers

David Heidelberg

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

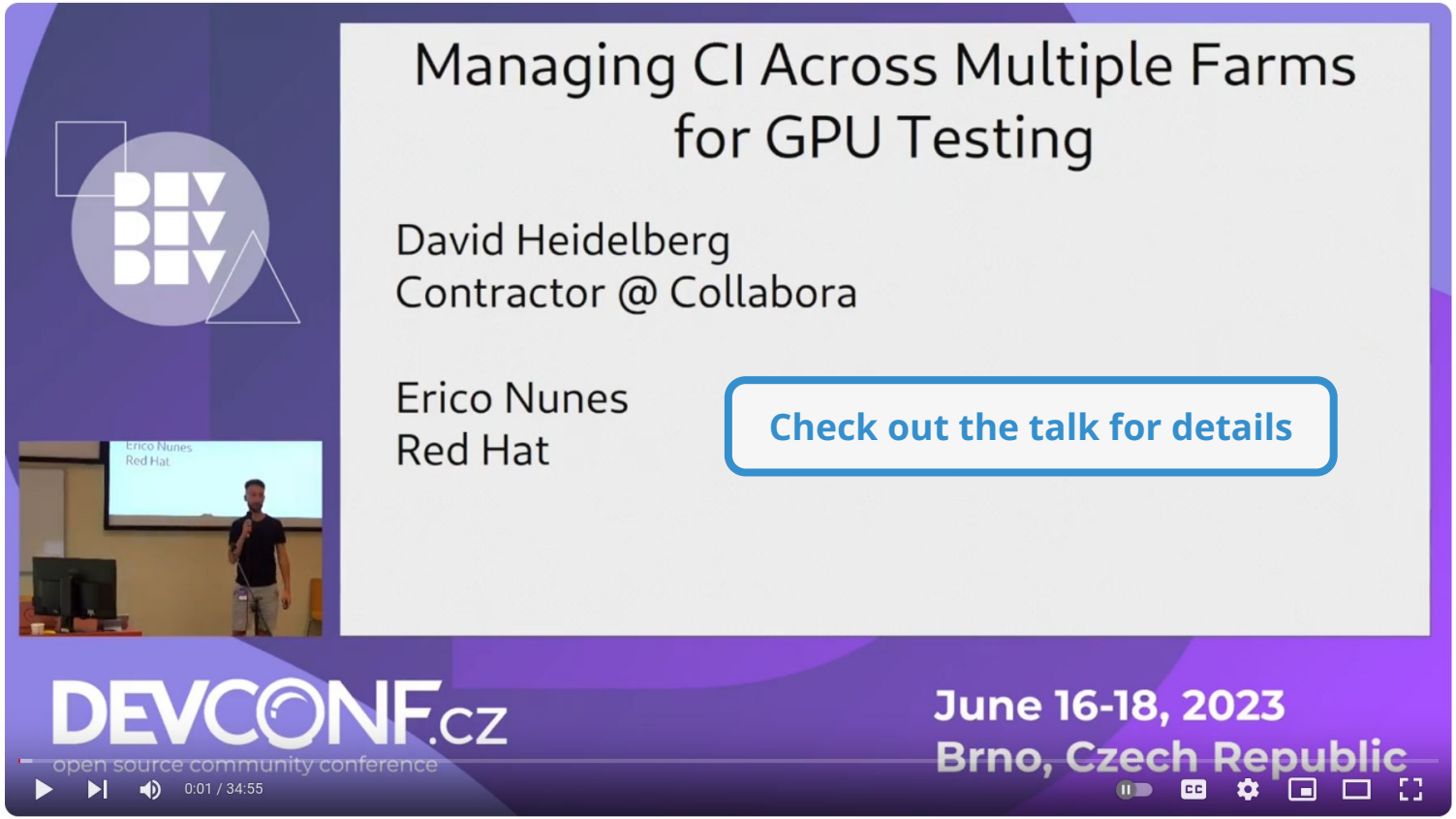
I fell in love with Linux at young age and since then I've been diving in it and enjoying various fields from developing a Linux kernel up to managing front-end application development.

EN

Erico Nunes

Red Hat

KernelCI Mesa3D



https://www.youtube.com/watch?v=P8r5JHhsnTw

KernelCI

DRM

KernelCI DRM

freedesktop.org

dri/ DRM

Edit | Page History | Repo Info

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?

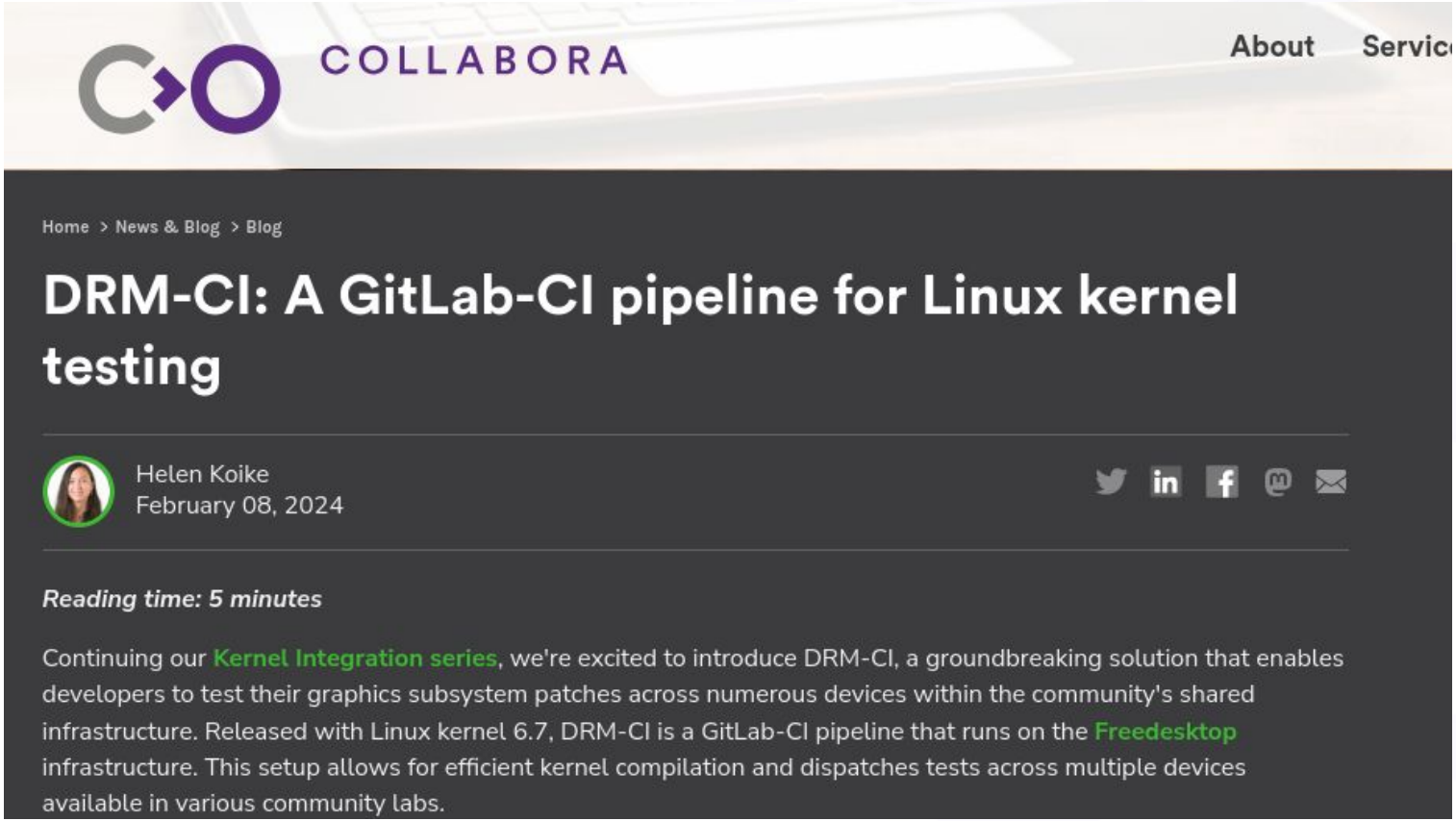
Since internal Linux kernel interfaces and data structures may be changed at any time, DRI kernel modules must be specially compiled for a particular kernel version. The DRI kernel modules reside in the `/lib/modules/.../kernel/drivers/gpu/drm` directory. (The kernel modules were in the `/lib/modules/.../kernel/drivers/char/drm` 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

https://dri.freedesktop.org/wiki/DRM/

KernelCI DRM



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DRM-CI: A GitLab-CI pipeline for Linux kernel testing

Helen Koike
February 08, 2024

Reading time: 5 minutes

Continuing our Kernel Integration series, we're excited to introduce DRM-CI, a groundbreaking solution that enables developers to test their graphics subsystem patches across numerous devices within the community's shared infrastructure. Released with Linux kernel 6.7, DRM-CI is a GitLab-CI pipeline that runs on the Freedesktop infrastructure. This setup allows for efficient kernel compilation and dispatches tests across multiple devices available in various community labs.

https://www.collabora.com/news-and-blog/blog/2024/02/08/drm-ci-a-gitlab-ci-pipeline-for-linux-kernel-testing/

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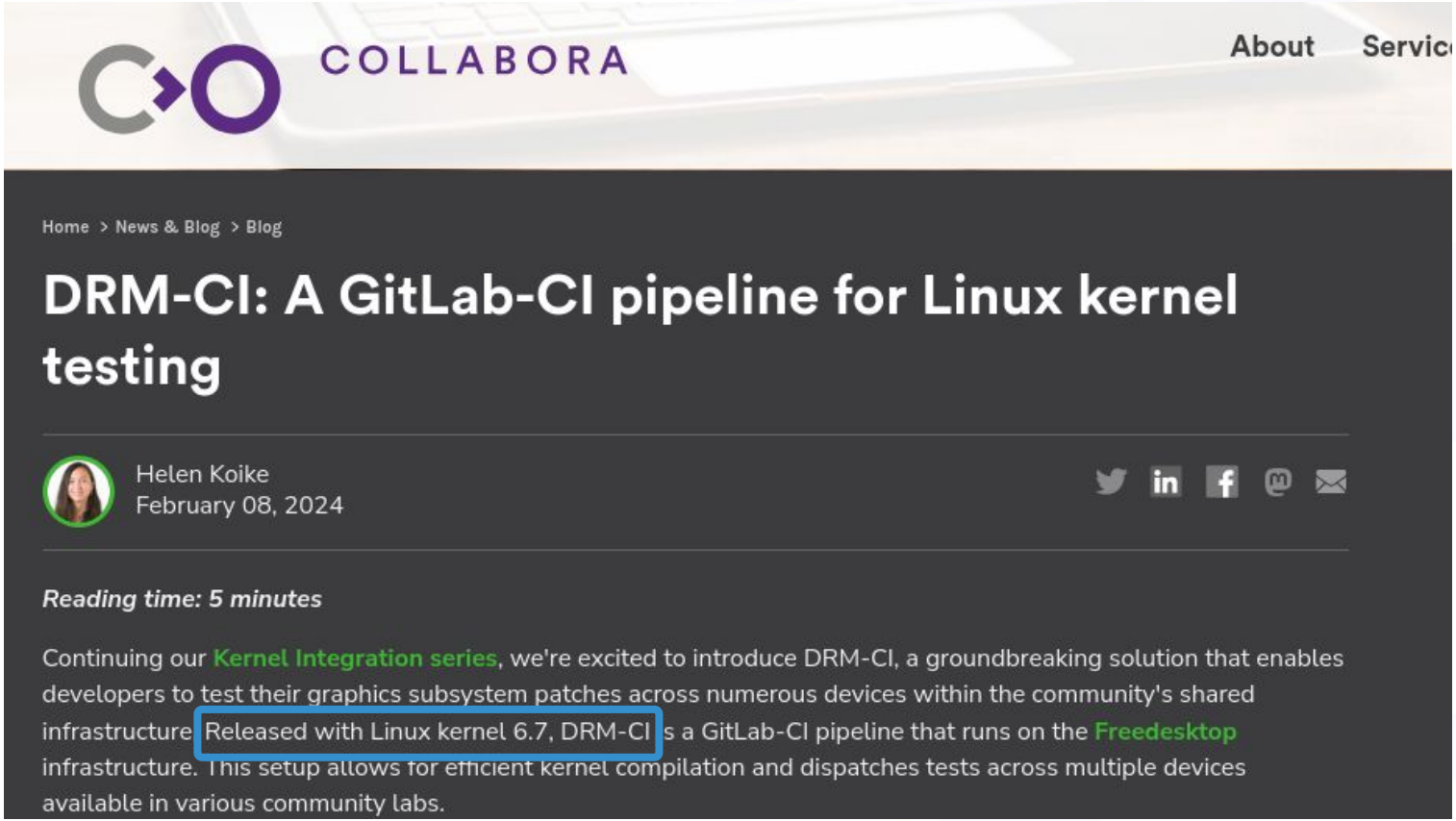

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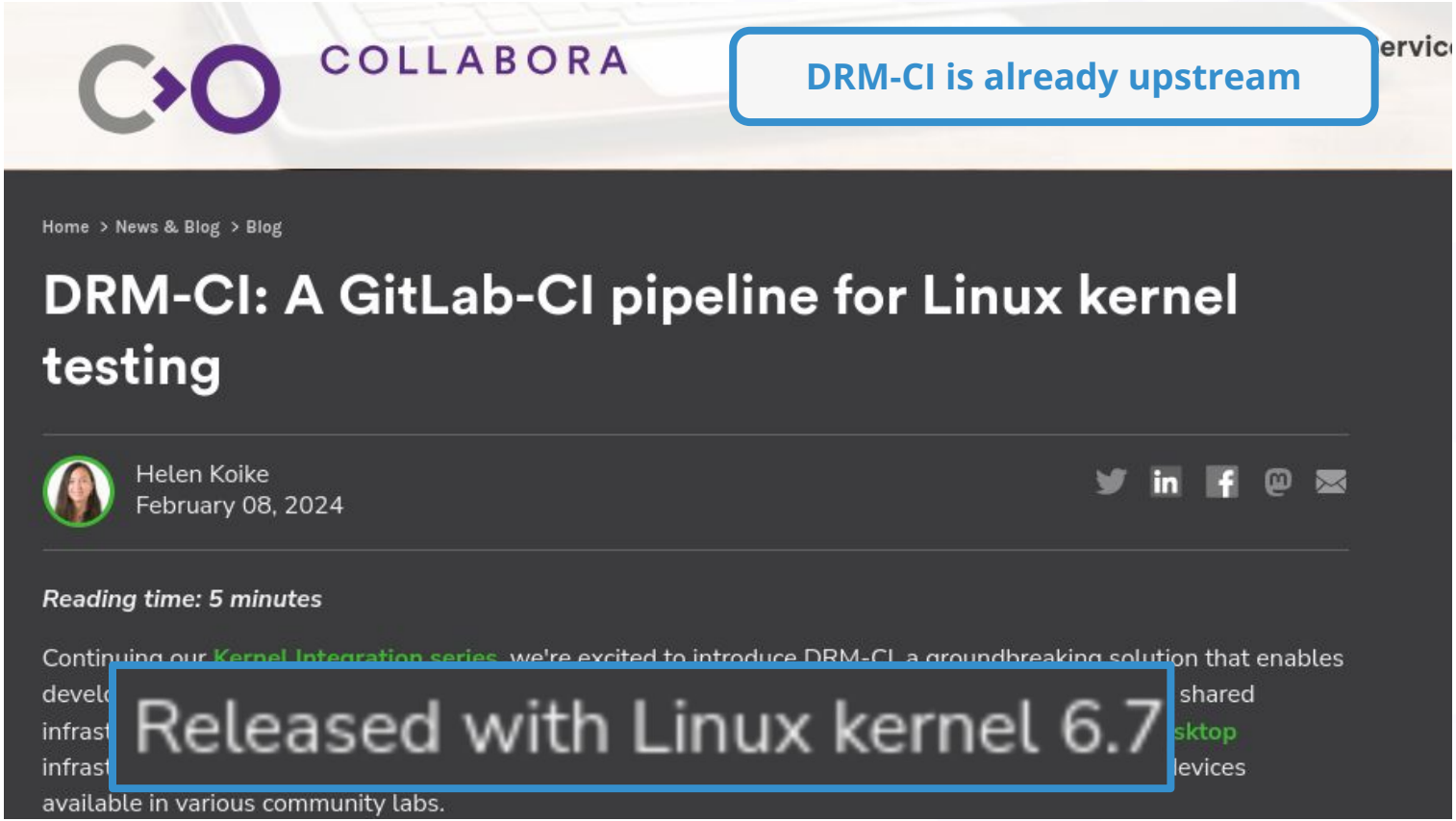

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KernelCI DRM

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 v4l2 kernel subsystem.

Helen Koike Ossna 24 Presentation Submit PDF

Check out the talk for details

https://ossna2024.sched.com/event/1aBNe/quickly-test-your-kernel-with-gitlab-ci-helen-koike-collabora

What is DRM-CI

- Original patch from Tomeu Vizoso

What is DRM-CI

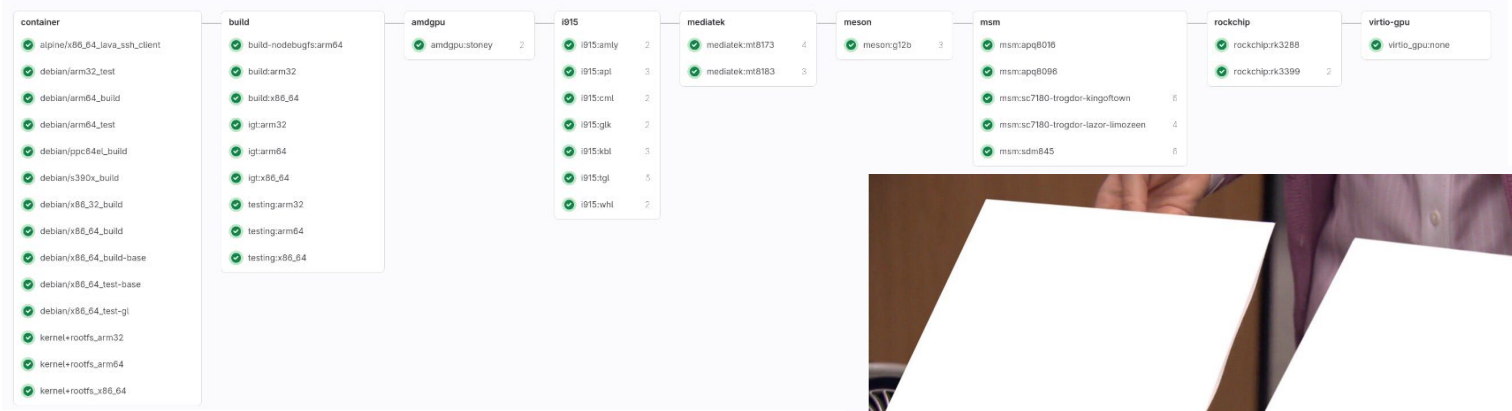
- Original patch from Tomeu Vizoso
- **Used mostly by maintainers to validate patches**

What is DRM-CI

- Original patch from Tomeu Vizoso
- Used mostly by maintainers to validate patches
- **Derives from Mesa-CI project**

KernelCI DRM

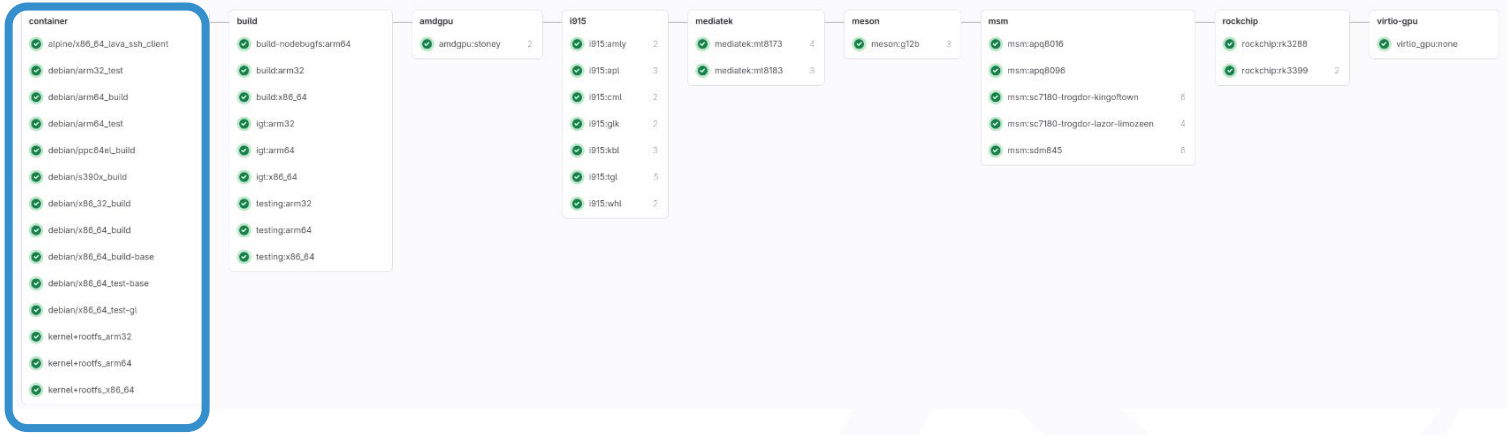
let's compare them



https://gitlab.freedesktop.org/vigneshraman/linux/-/pipelines/1166575

KernelCI DRM

Prepare builders



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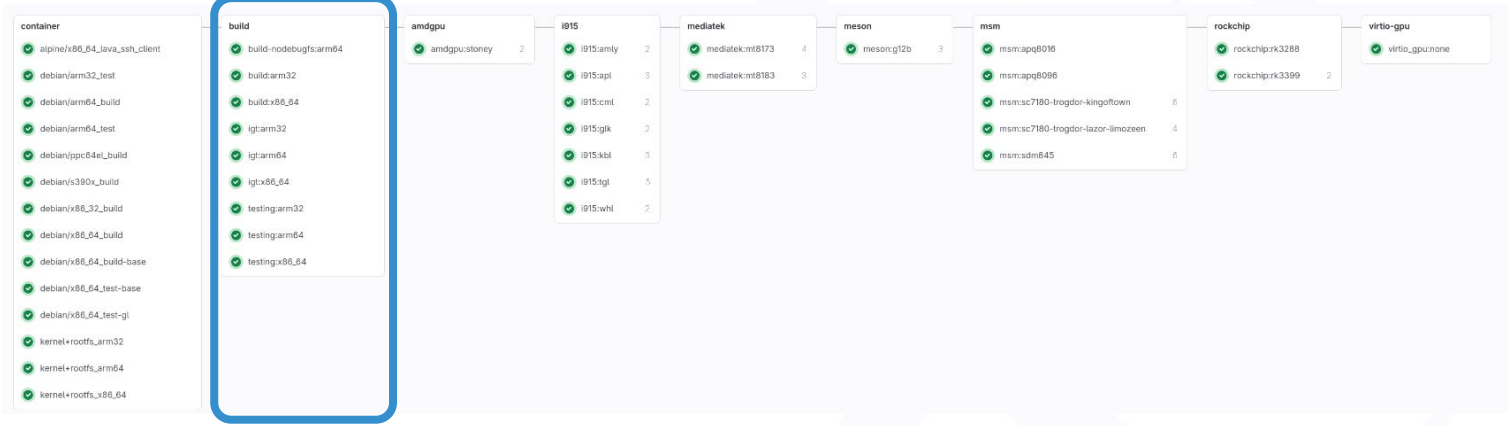
KernelCI DRM

Build the kernel and test suites



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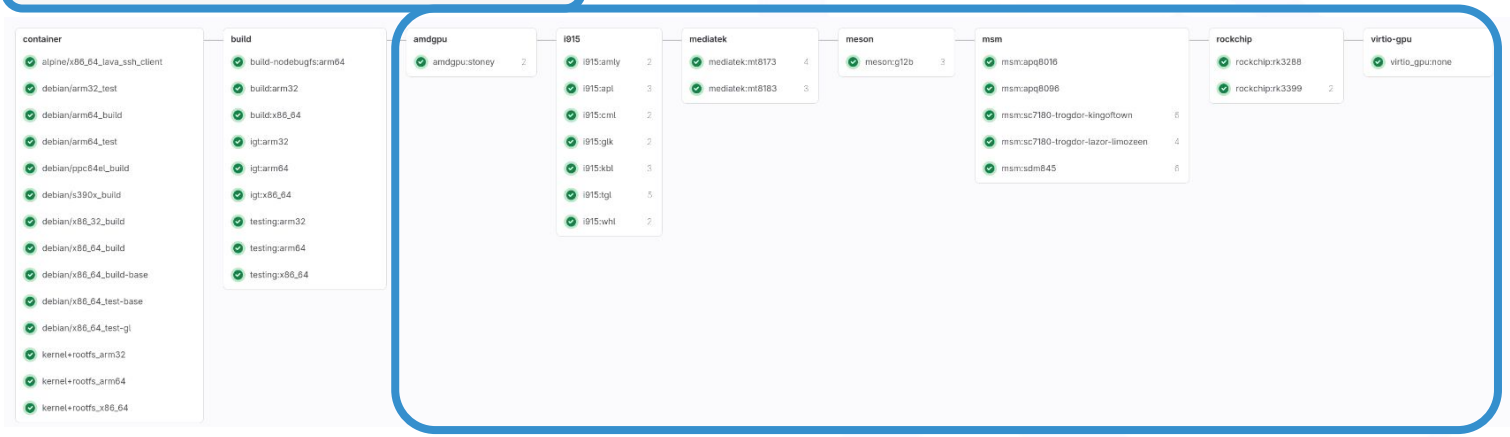
KernelCI DRM

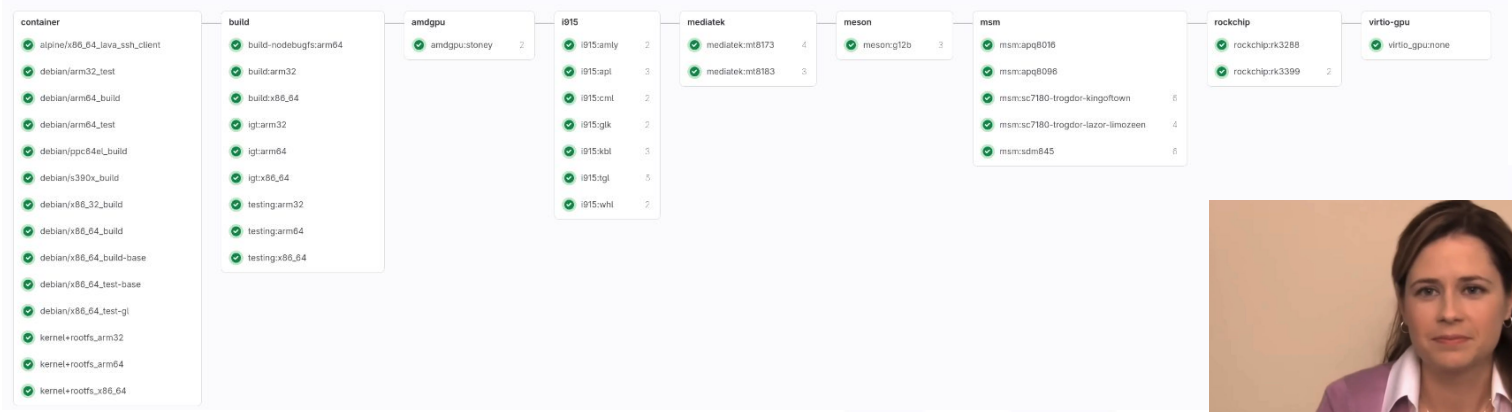
Run tests in devices



https://gitlab.freedesktop.org/vigneshraman/linux/-/pipelines/1166575

KernelCI DRM

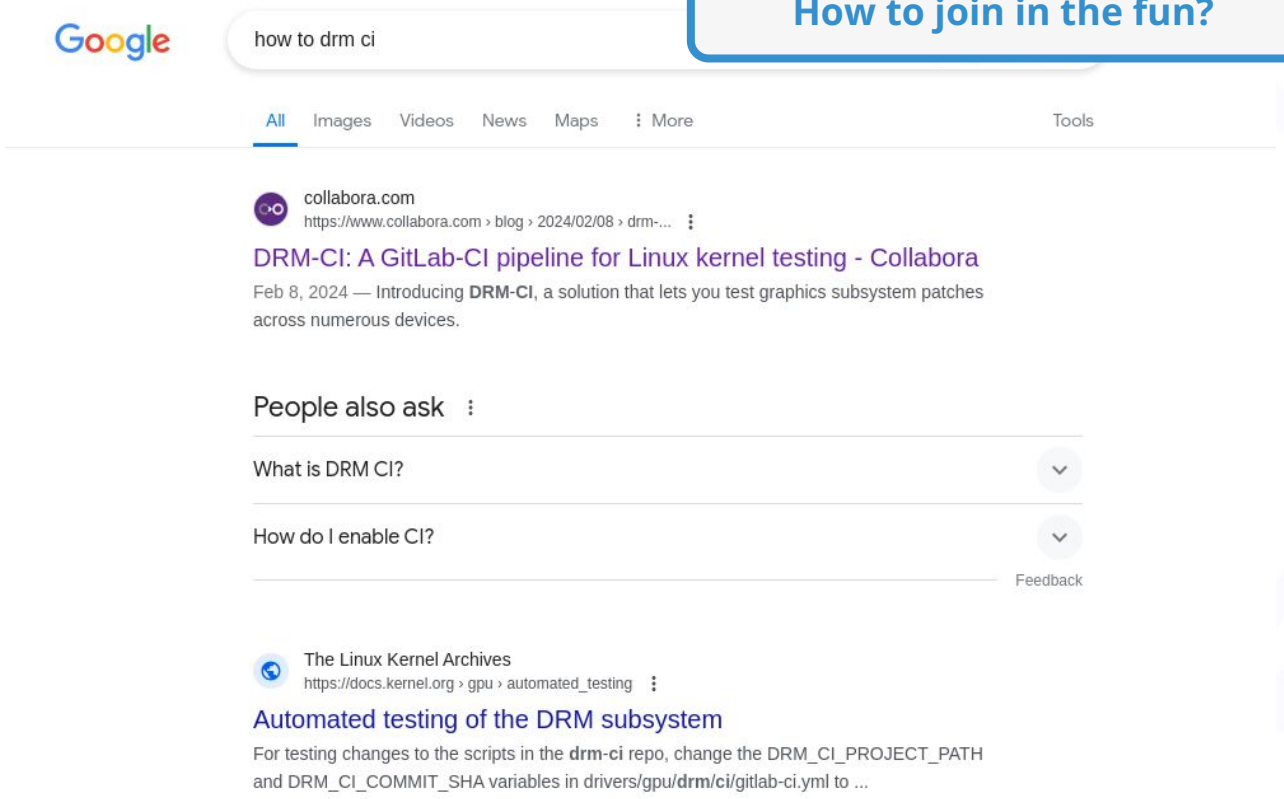
They are the same picture



https://gitlab.freedesktop.org/vigneshraman/linux/-/pipelines/1166575

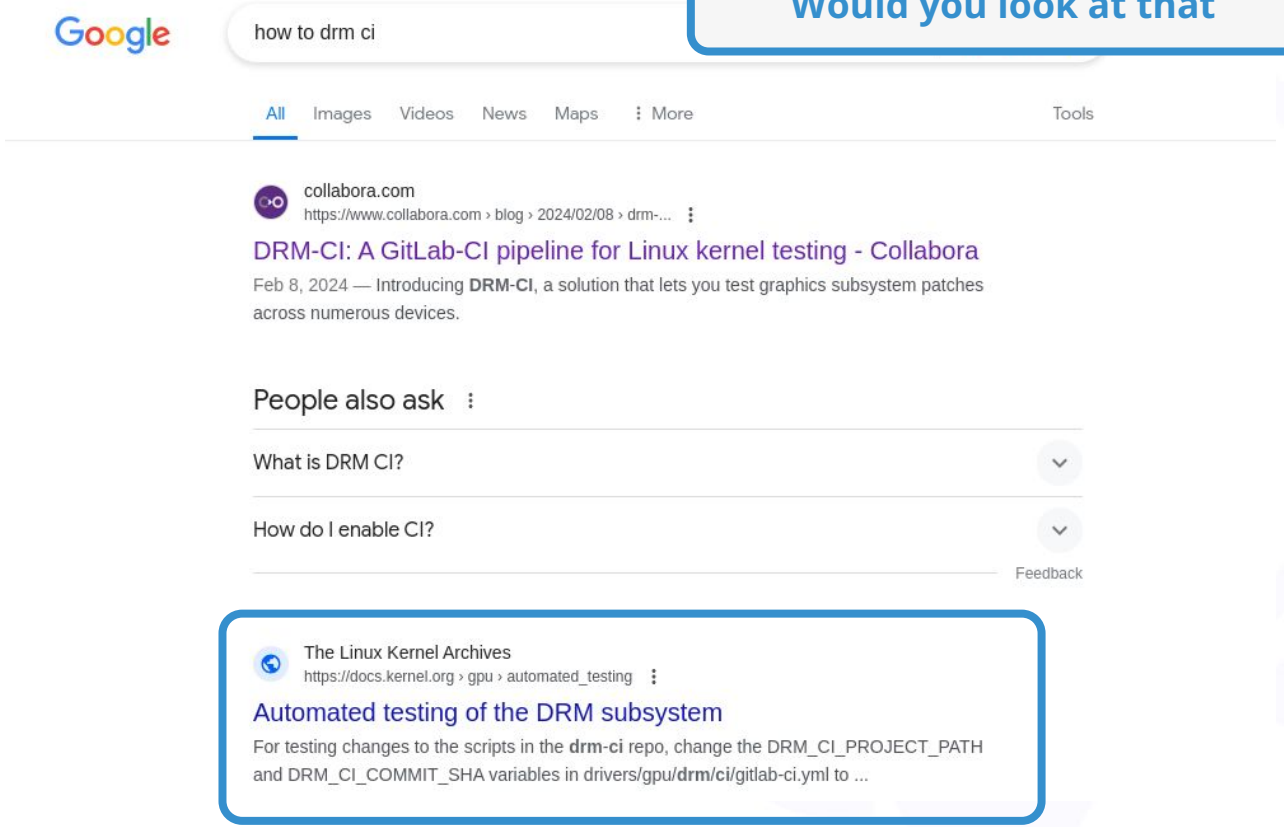
KernelCI DRM

How to join in the fun?



DRM

Would you look at that



DRM

It's already documented

next-20240613

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All development-process docs

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Driver APIs
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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_U
# 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. https://gitlab.freedesktop.org/janedoe/linux/-/settings/ci_cd), 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)

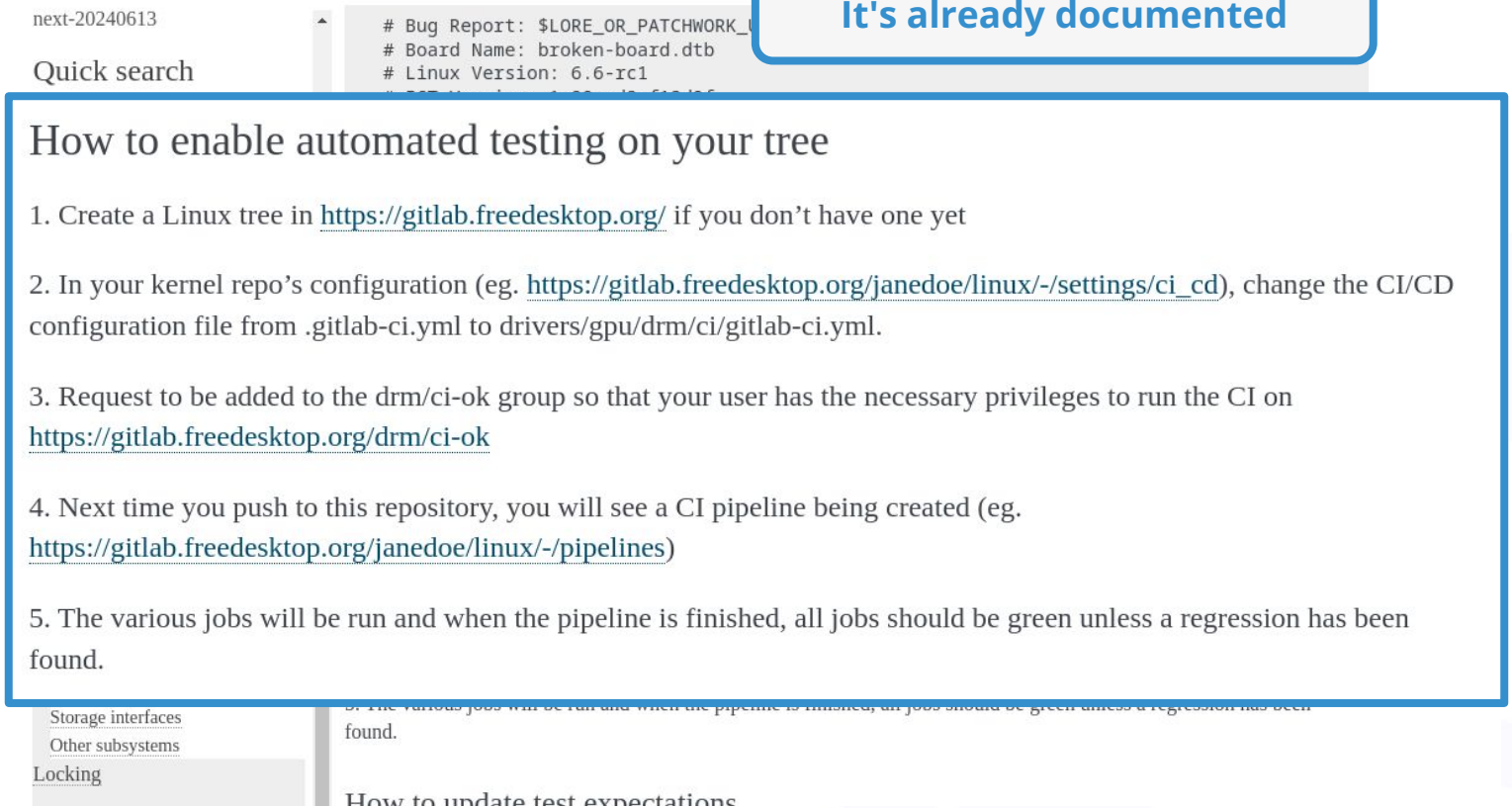
5. The various jobs will be run and when the pipeline is finished, all jobs should be green unless a regression has been found.

How to update test expectations

https://www.kernel.org/doc/html/next/gpu/automated_testing.html#how-to-enable-automated-testing-on-your-tree

KernelCI DRM

It's already documented



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KernelCI DRM

1, 2, 3, Go!

next-20240613

Quick search

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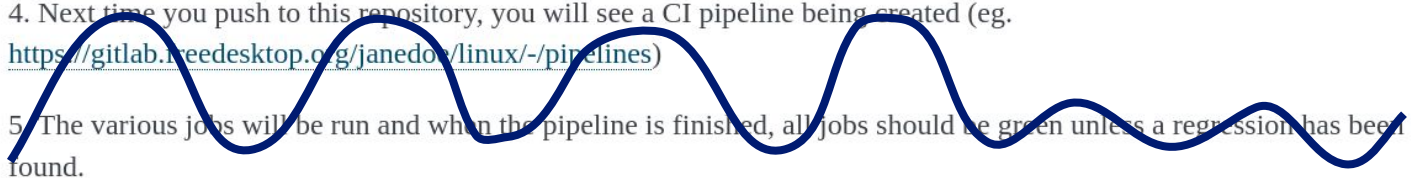

Storage interfaces

Other subsystems

Locking

found.

How to update test expectations

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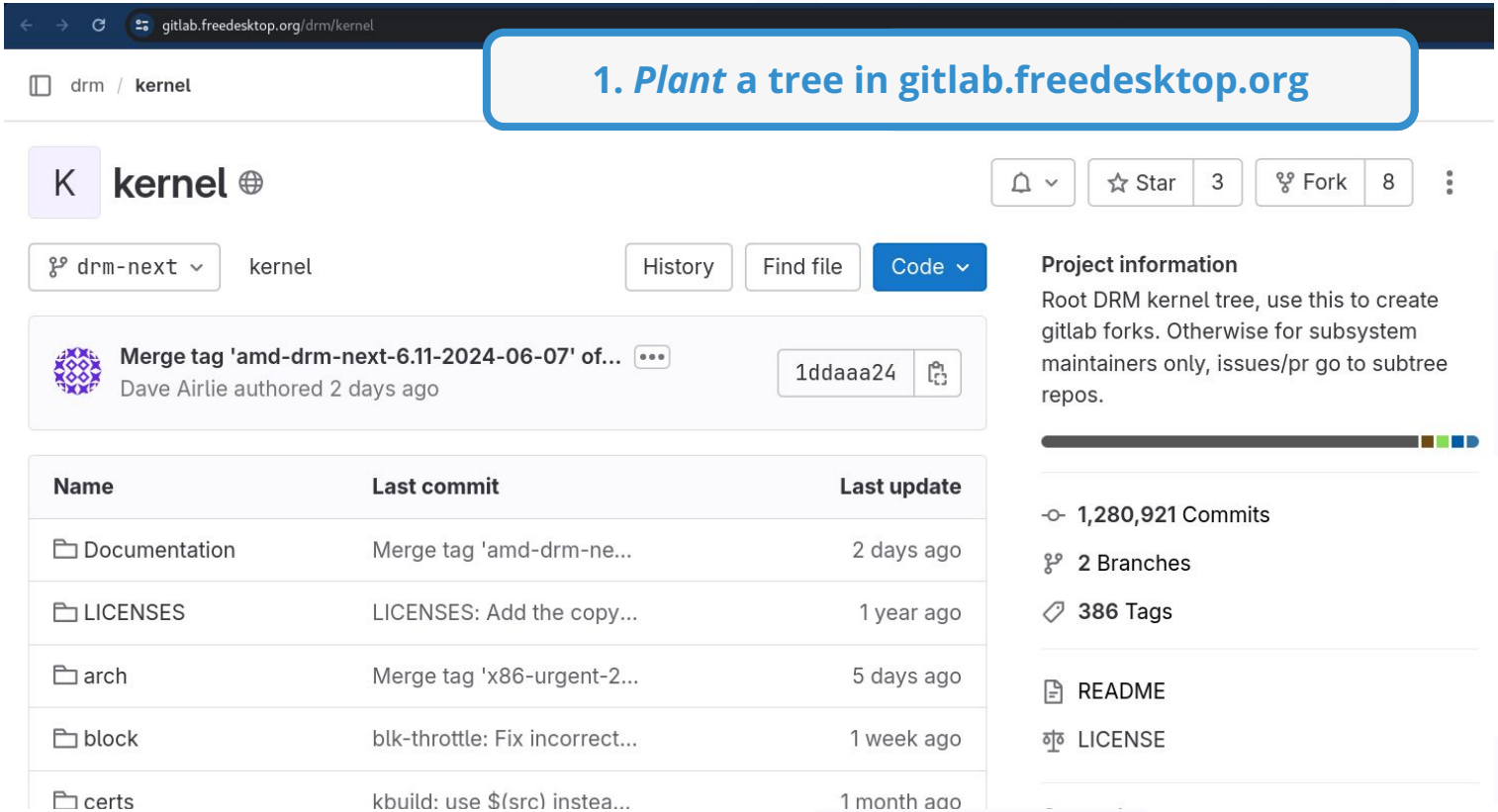
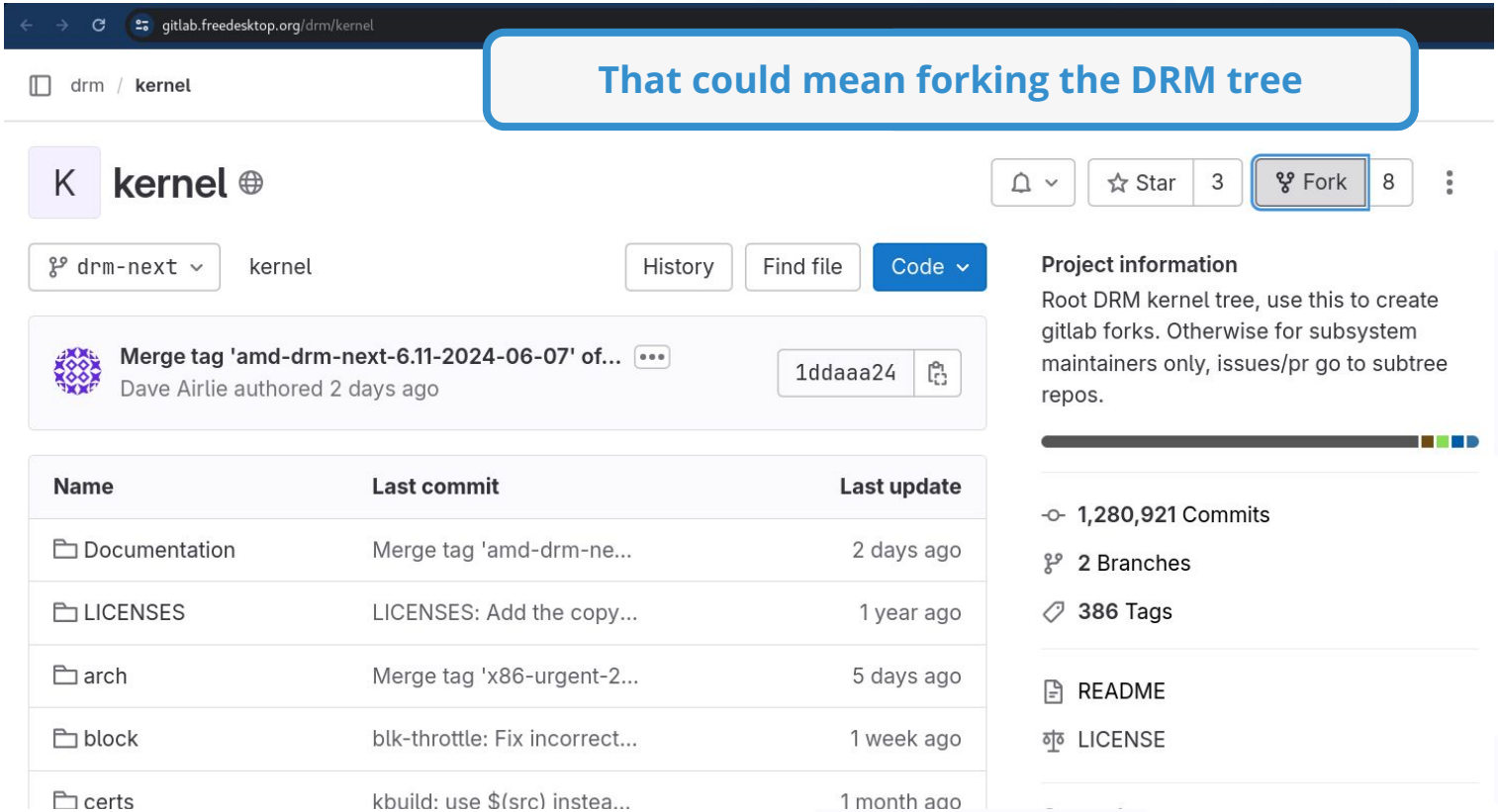
KernelCI DRM



KernelCI DRM



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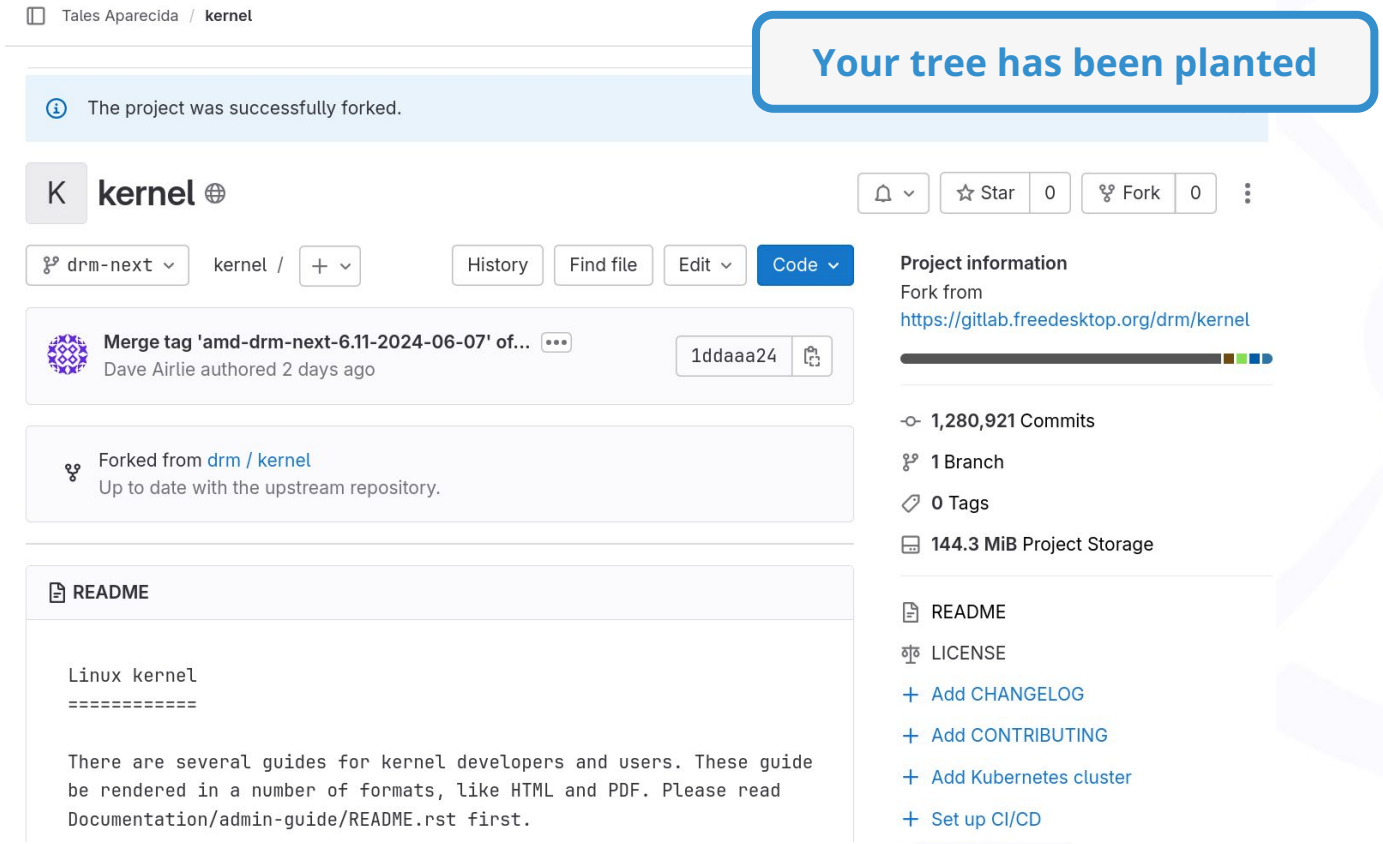
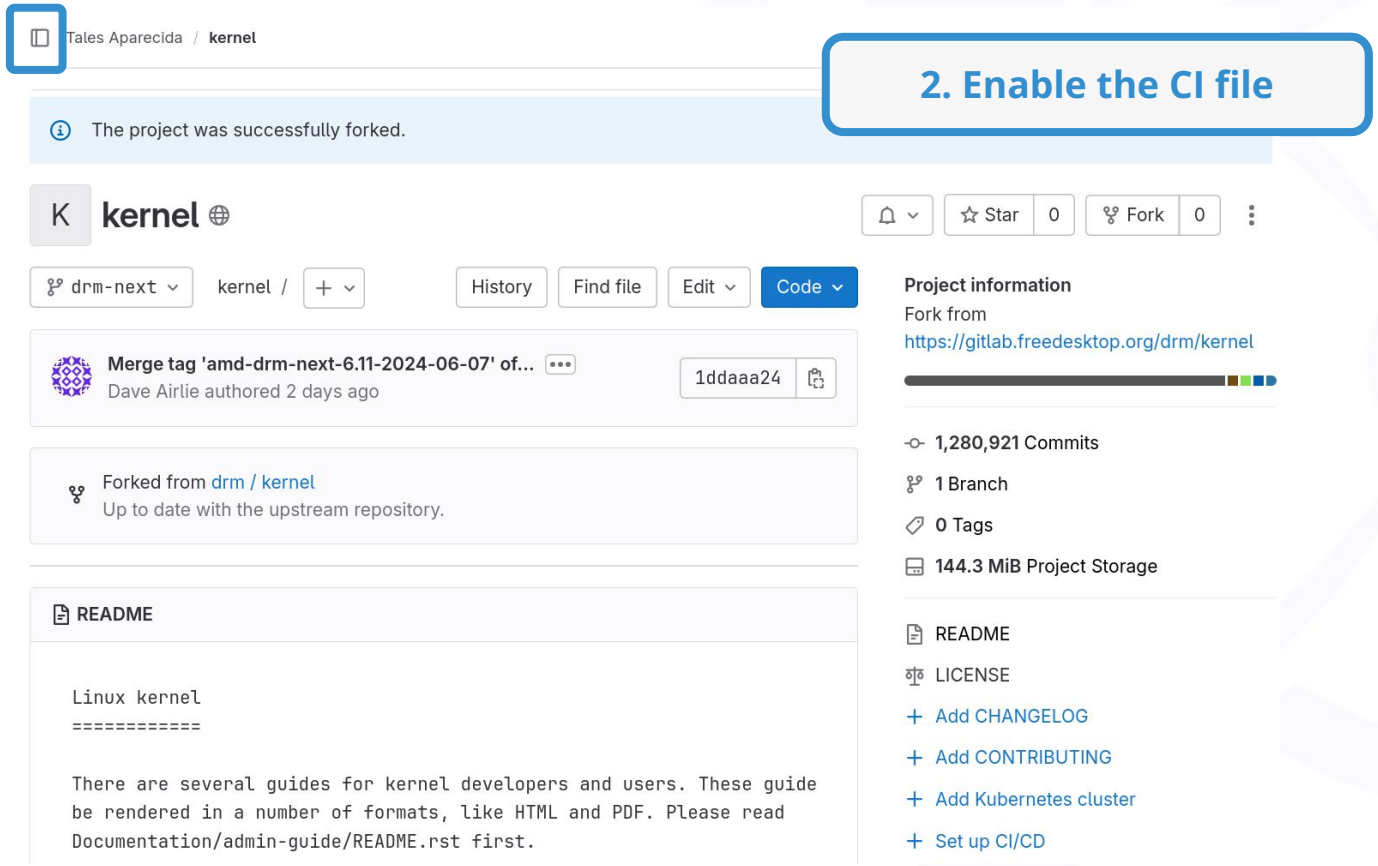
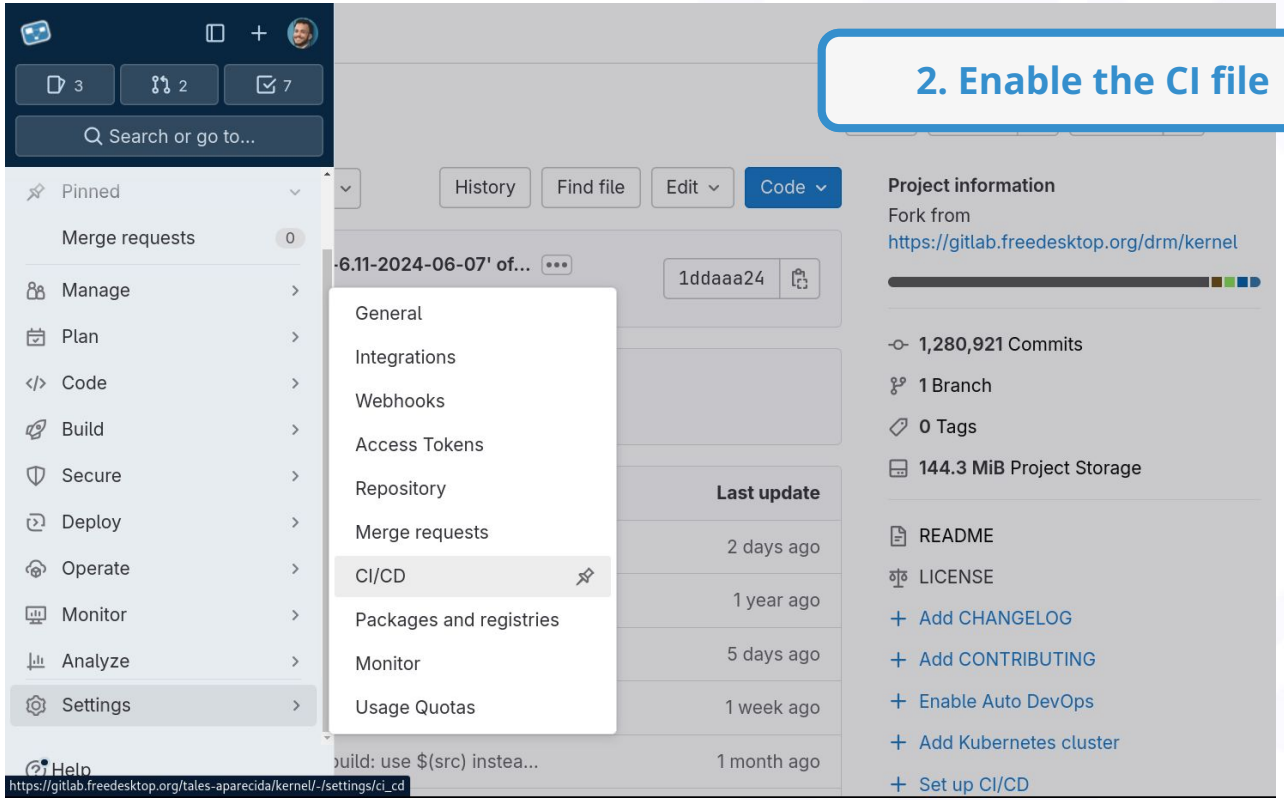


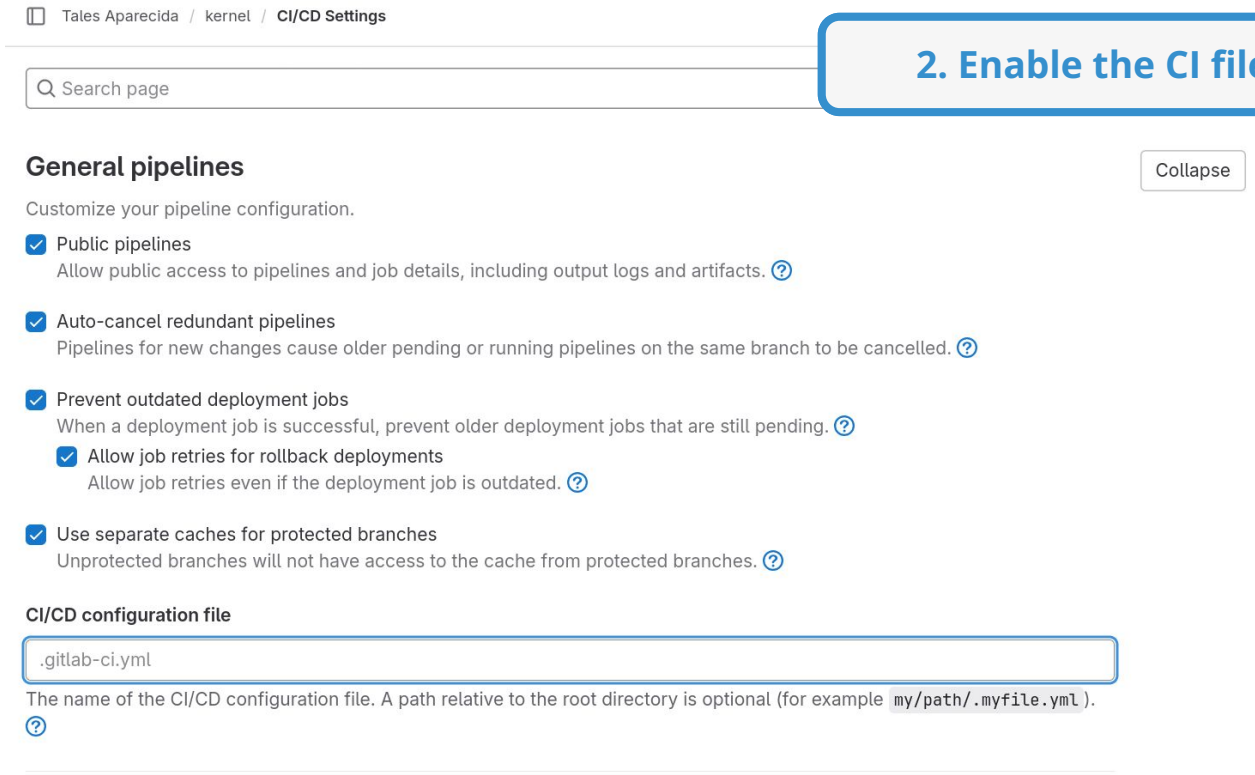
https://gitlab.freedesktop.org/tales-aparecida/kernel

KernelCI DRM

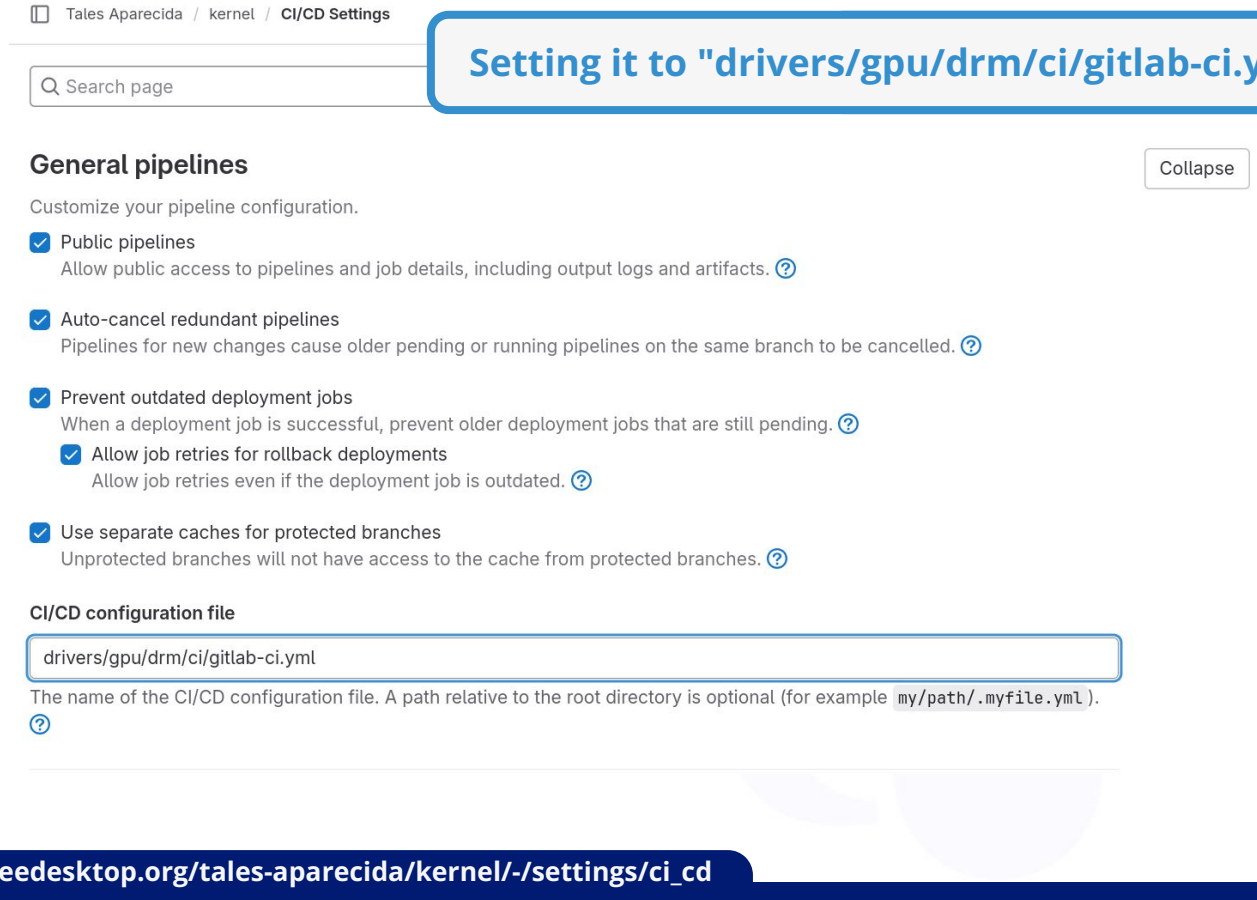


KernelCI DRM



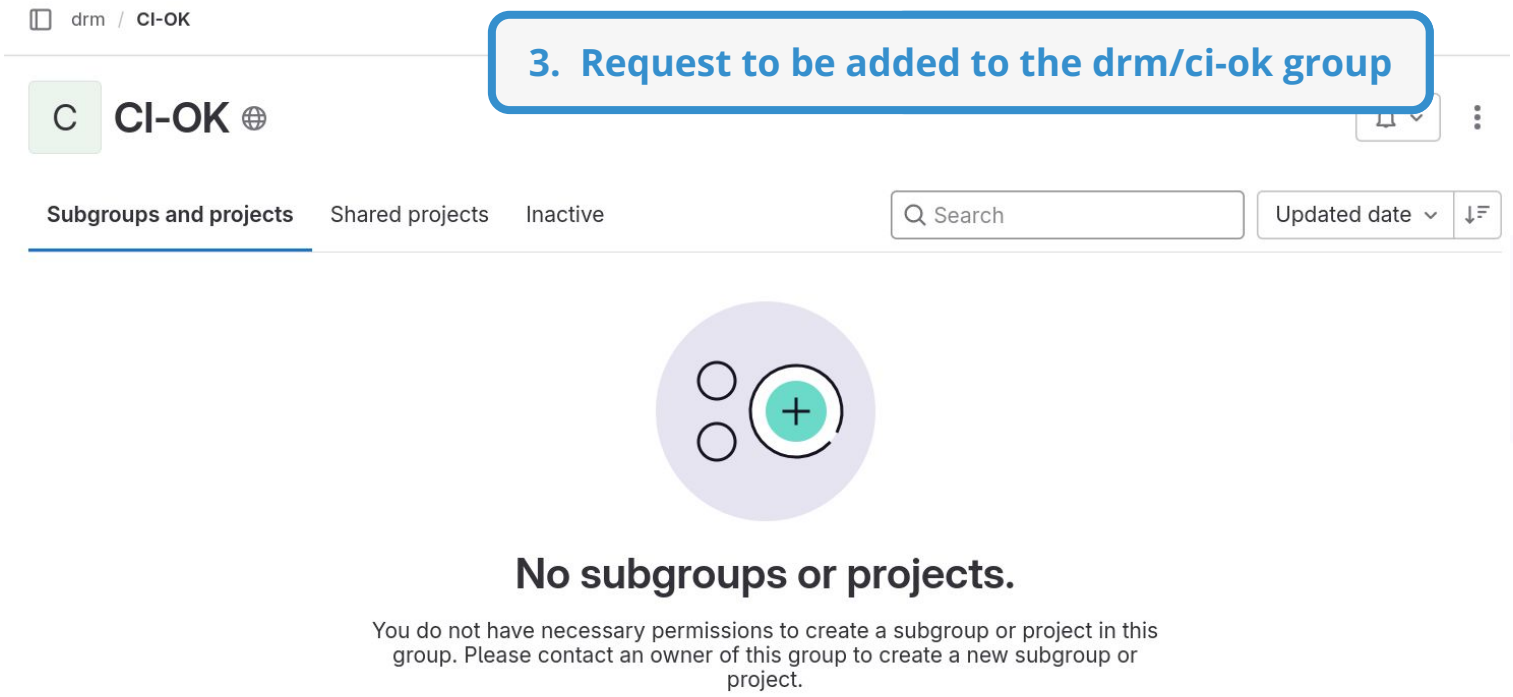

Tales Aparecida / kernel / CI/CD Settings
Search page
2. Enable the CI file
General pipelines
Collapse
Customize your pipeline configuration.
Public pipelines
Allow public access to pipelines and job details, including output logs and artifacts.
Auto-cancel redundant pipelines
Pipelines for new changes cause older pending or running pipelines on the same branch to be cancelled.
Prevent outdated deployment jobs
When a deployment job is successful, prevent older deployment jobs that are still pending.
Allow job retries for rollback deployments
Allow job retries even if the deployment job is outdated.
Use separate caches for protected branches
Unprotected branches will not have access to the cache from protected branches.
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 example my/path/.myfile.yml).

KernelCI DRM



https://gitlab.freedesktop.org/tales-aparecida/kernel/-/settings/ci_cd

KernelCI DRM



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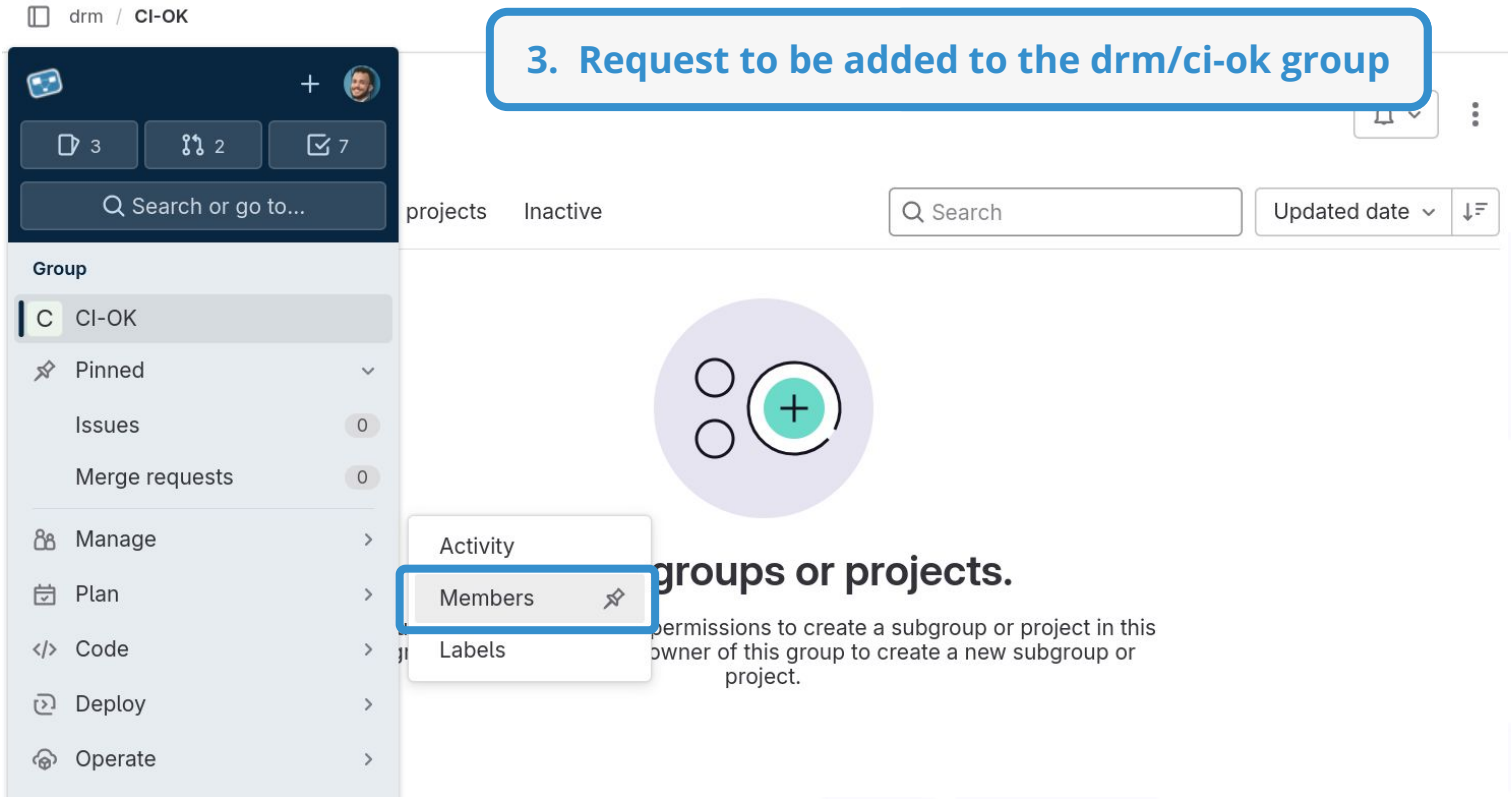

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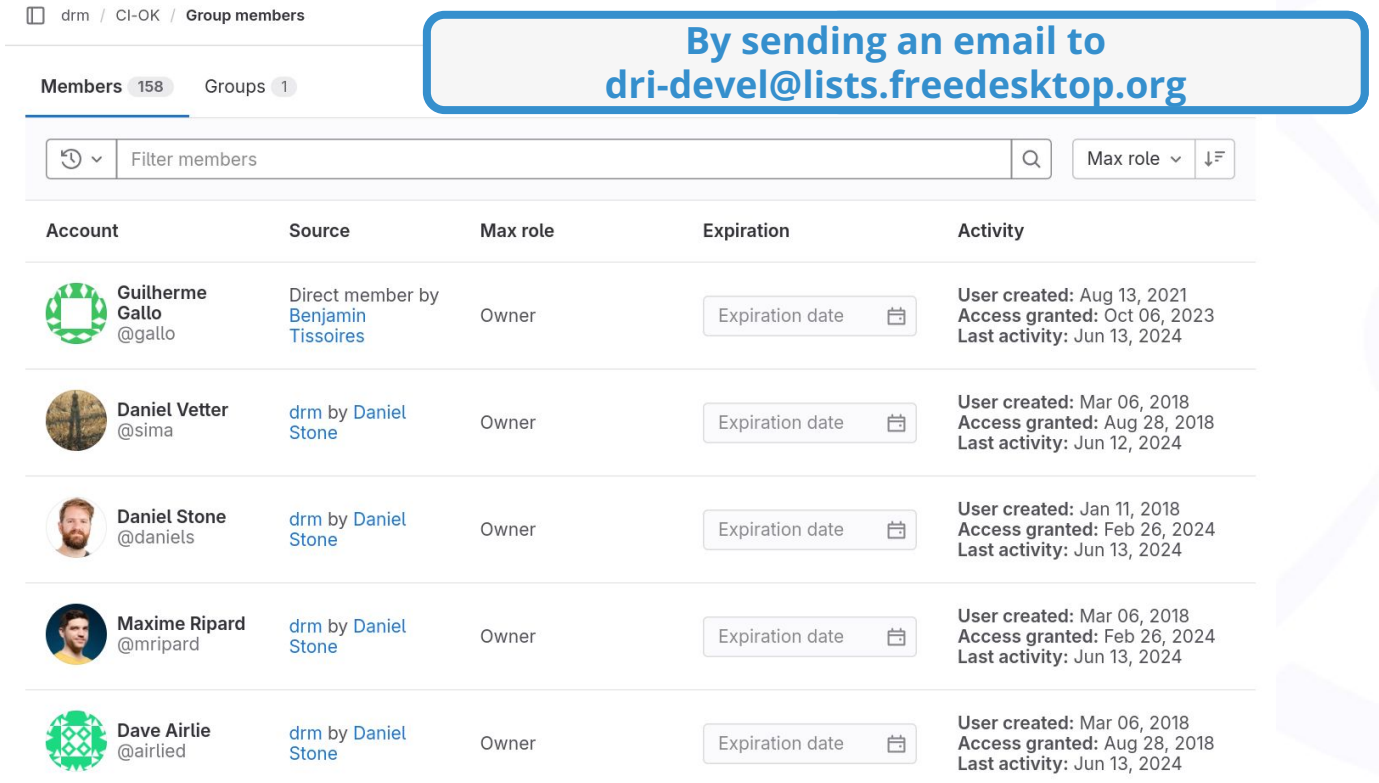

https://gitlab.freedesktop.org/groups/drm/ci-ok/-/group_members

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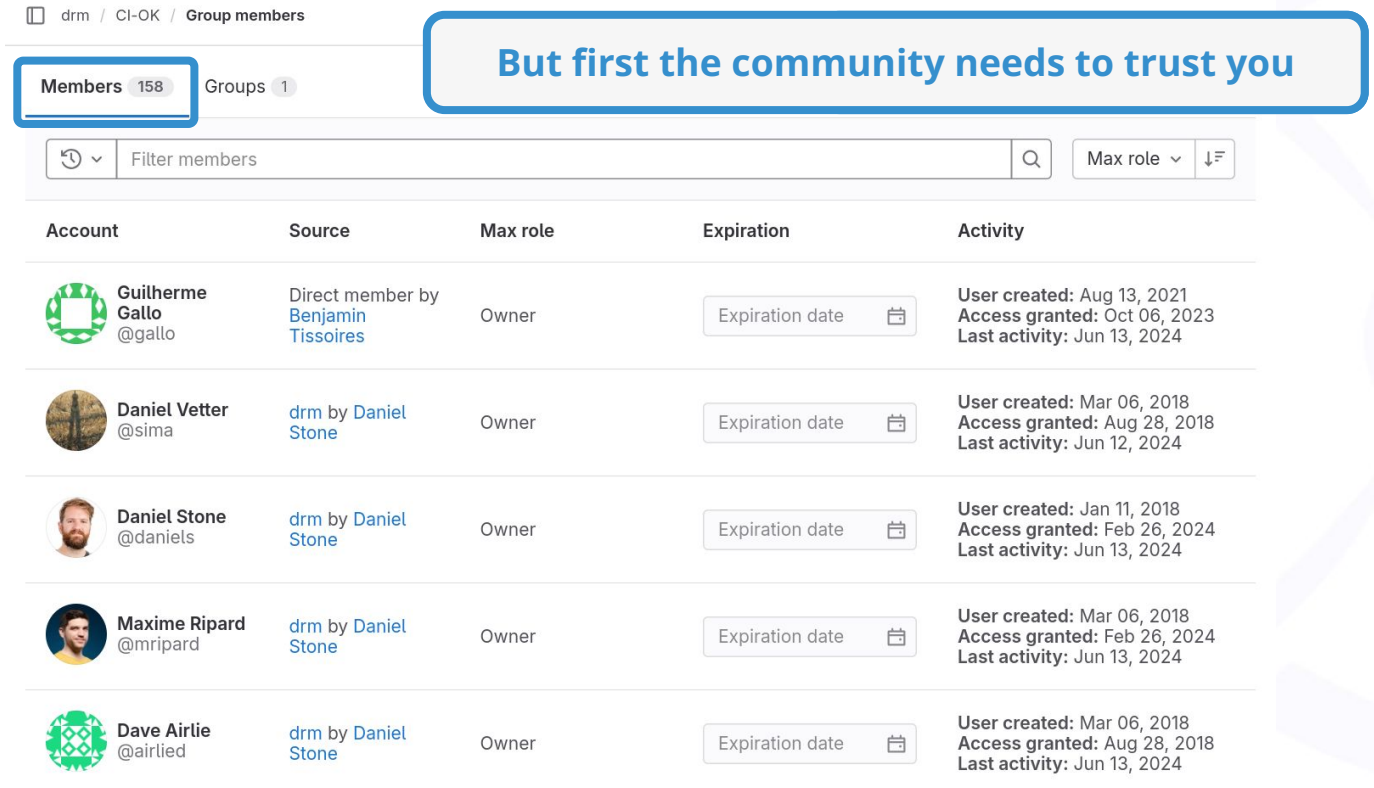

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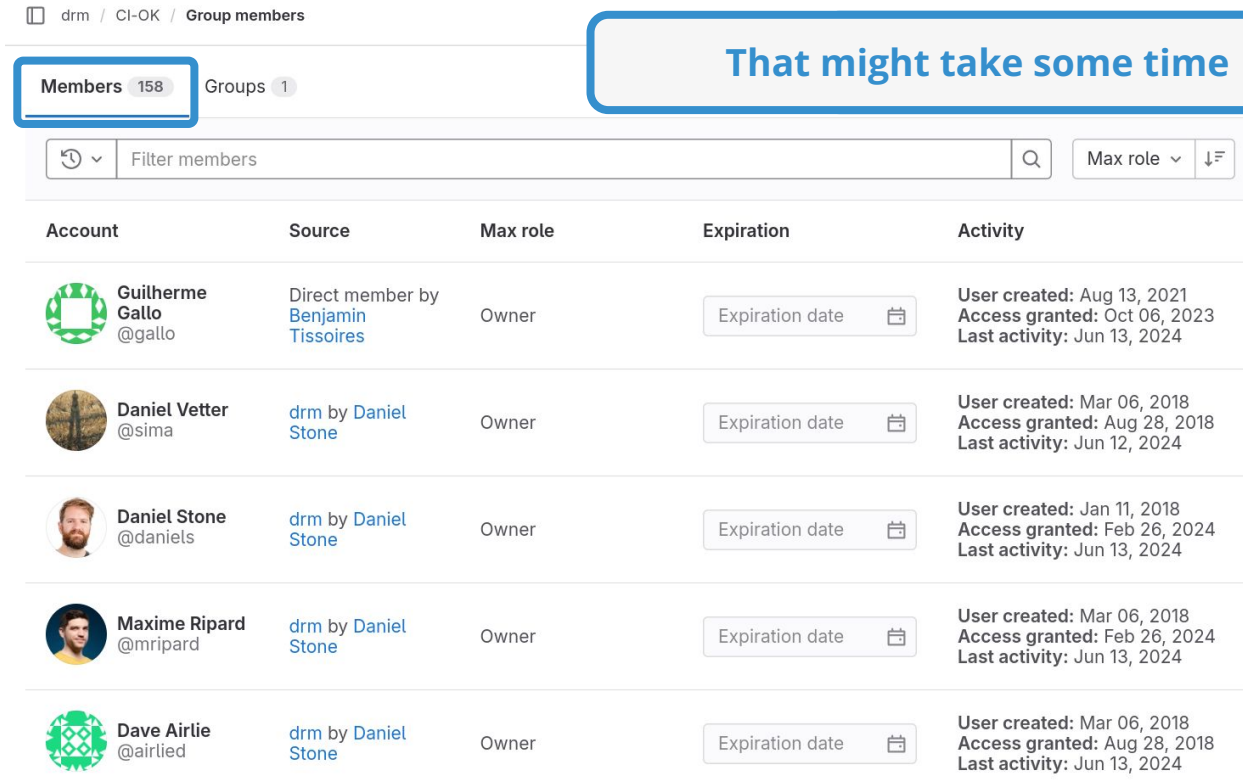

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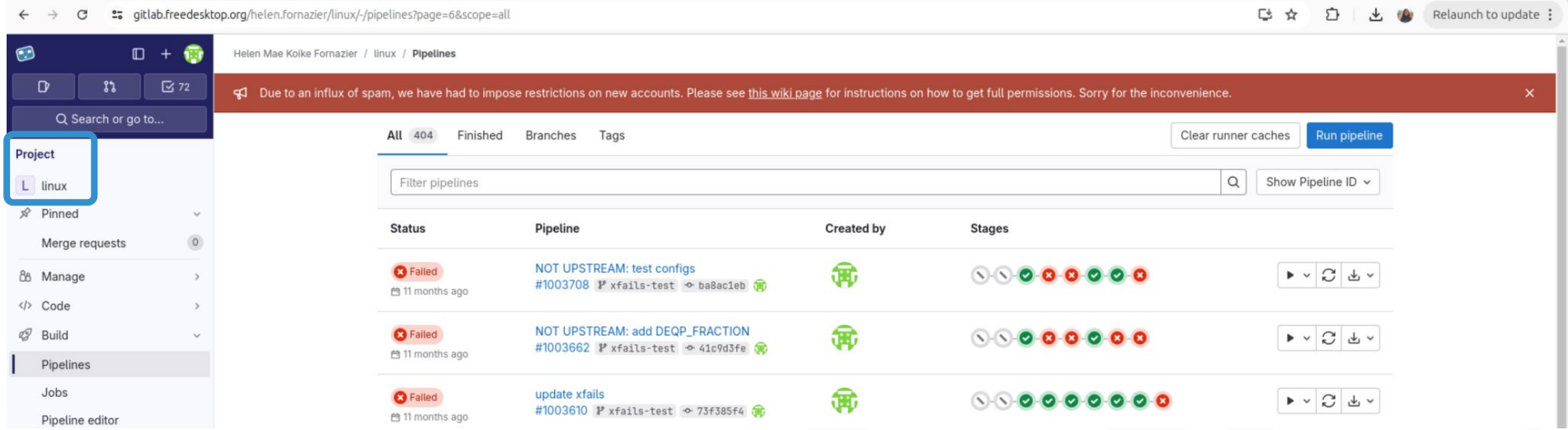
KernelCI DRM

Just push



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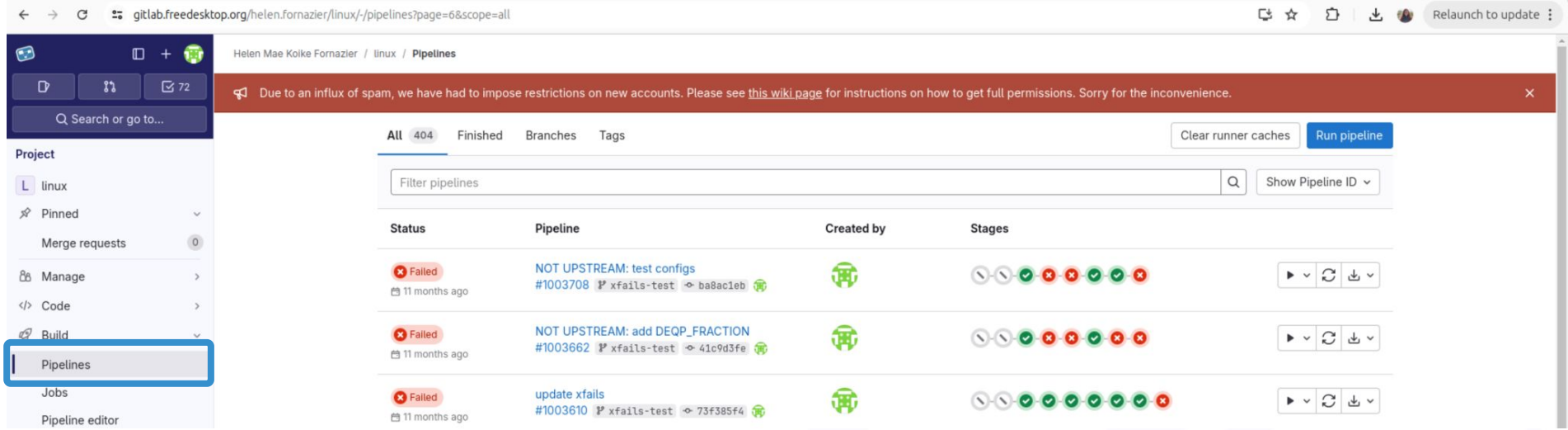

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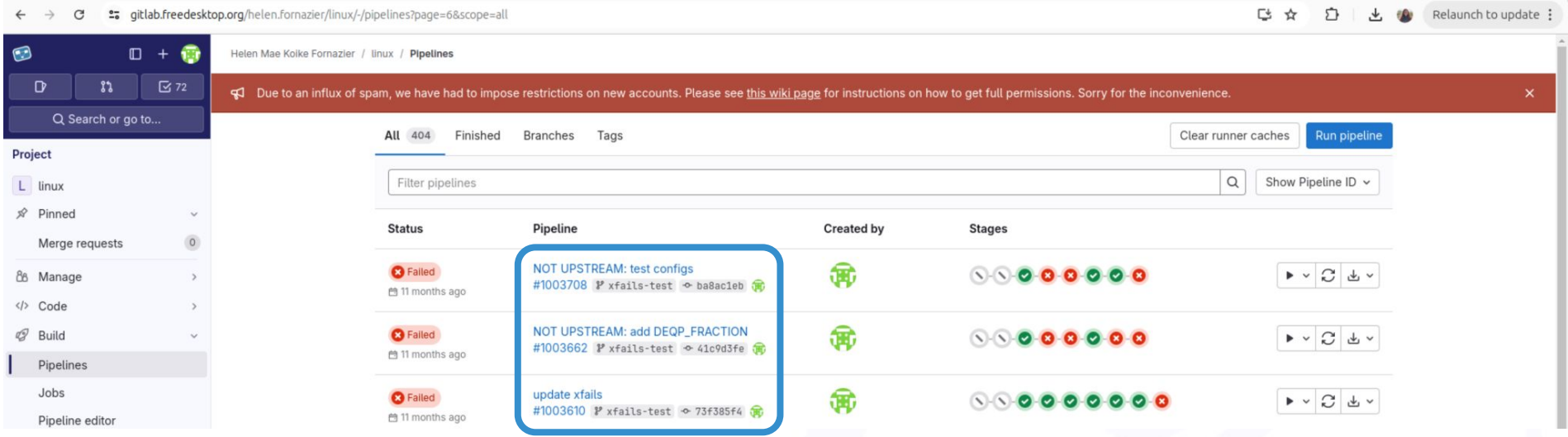
KernelCI DRM

Voilá!



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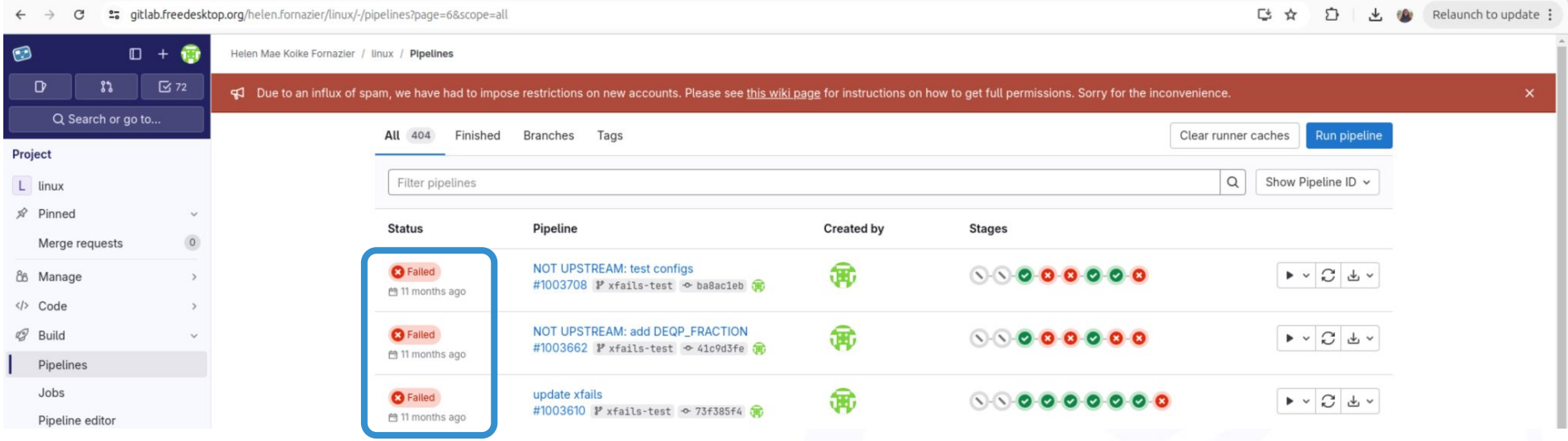

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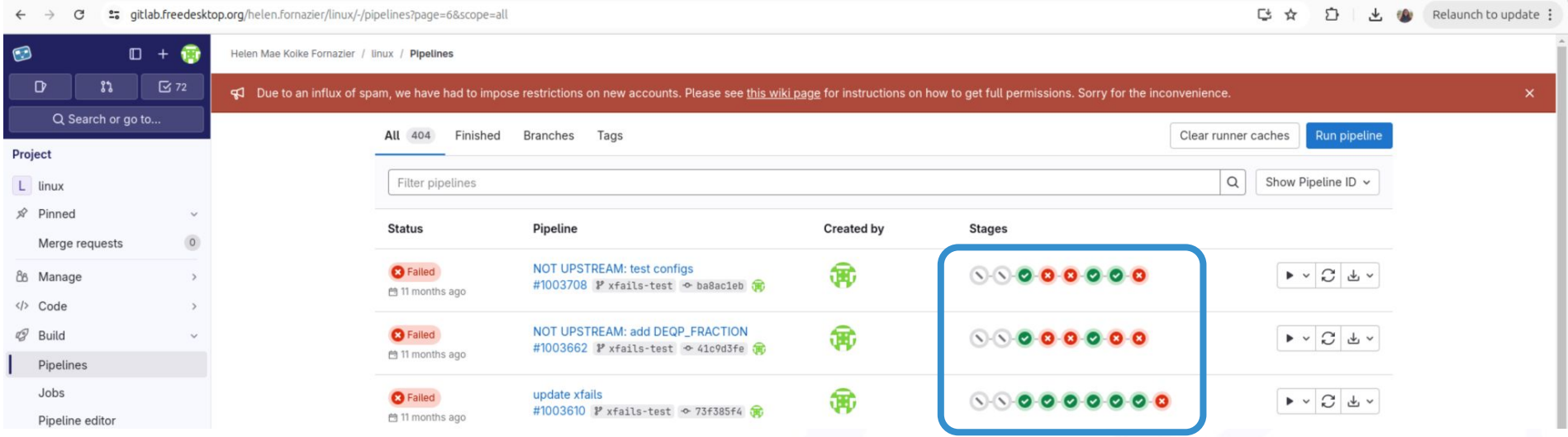

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DRM-CI limitations

- Specific to DRM subsystem

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DRM-CI limitations

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- Runners are shared across all projects on Freedektop
- Mesa-CI uses the same devices and it is more time critical
  - **DRM-CI runs with lower priority**

DRM-CI limitations

- Specific to DRM subsystem
- Only works on Freedesktop GitLab instance
- Runners are shared across all projects on Freedektop
- Mesa-CI uses the same devices and it is more time critical
  - DRM-CI runs with lower priority

Proposed new solution: KCI-GITLAB!

KernelCI

Mainline

What is KCI-GITLAB

- Patchset submitted on Feb 28th 2024

What is KCI-GITLAB

- Patchset submitted on Feb 28th 2024
- **Developed together with the KernelCI community**

What is KCI-GITLAB

CI for everyone

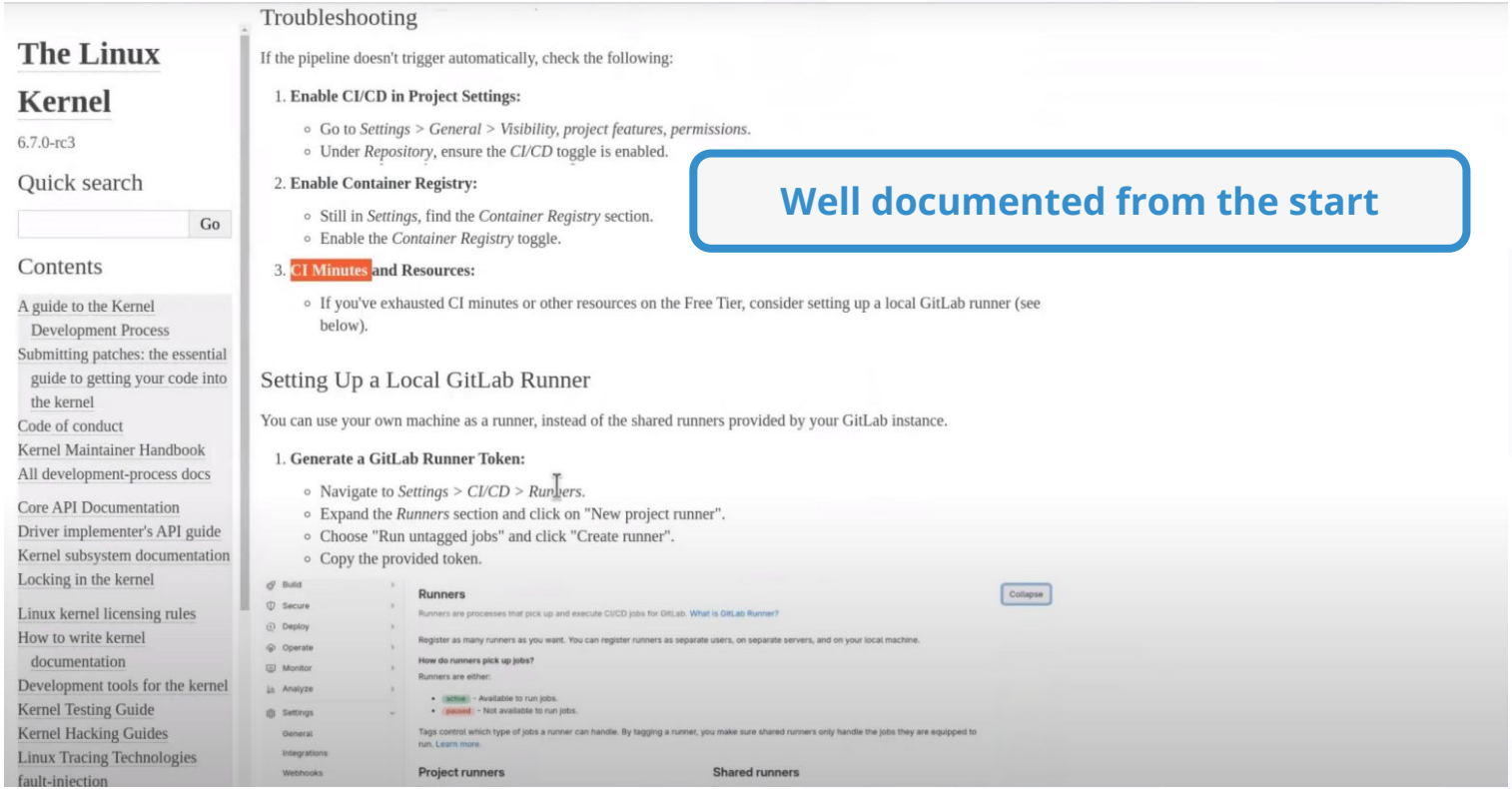
- Patchset submitted on Feb 28th 2024
- Developed together with the KernelCI community
- **More generic solution (common base)**

What is KCI-GITLAB

"Devicetree like"

- Patchset submitted on Feb 28th 2024
- Developed together with the KernelCI community
- More generic solution (common base)
- **Allows customizations (useful for subsystems)**

Mainline



The Linux Kernel

6.7.0-rc3

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Code of conduct
Kernel Maintainer Handbook
All development-process docs

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Driver implementer's API guide
Kernel subsystem documentation
Locking in the kernel

Linux kernel licensing rules
How to write kernel documentation
Development tools for the kernel
Kernel Testing Guide
Kernel Hacking Guides
Linux Tracing Technologies
fault-injection

Troubleshooting

If the pipeline doesn't trigger automatically, check the following:

1. **Enable CI/CD in Project Settings:**
   - Go to *Settings* > *General* > *Visibility, project features, permissions*.
   - Under *Repository*, ensure the *CI/CD* toggle is enabled.
2. **Enable Container Registry:**
   - Still in *Settings*, find the *Container Registry* section.
   - Enable the *Container Registry* toggle.
3. **CI Minutes and Resources:**
   - If you've exhausted CI minutes or other resources on the Free Tier, consider setting up a local GitLab runner (see below).

Setting Up a Local GitLab Runner

You can use your own machine as a runner, instead of the shared runners provided by your GitLab instance.

1. **Generate a GitLab Runner Token:**
   - Navigate to *Settings* > *CI/CD* > *Runners*.
   - Expand the *Runners* section and click on "New project runner".
   - Choose "Run untagged jobs" and click "Create runner".
   - Copy the provided token.

Build
Secure
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Runners

Collapse

Runners are processes that pick up and execute CI/CD jobs for GitLab. What is GitLab Runner?

Register as many runners as you want. You can register runners as separate users, on separate servers, and on your local machine.

How do runners pick up jobs?

Runners are either:

- active - Available to run jobs.
- paused - Not available to run jobs.

Tags control which type of jobs a runner can handle. By tagging a runner, you make sure shared runners only handle the jobs they are equipped to run. Learn more.

Project runners

Shared runners

Well documented from the start

Mainline

Thread overview: 58+ messages / expand[flat|nested] mbox.gz 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
2024-02-29 2:44 ` Bird, Tim
2024-02-29 16:15 ` Nicolas Dufresne
2024-02-29 9:02 ` Maxime Ripard
2024-02-29 9:23 ` Nikolai Kondrashov
2024-02-29 9:56 ` Maxime Ripard
2024-02-29 10:05 ` Laurent Pinchart
2024-02-29 20:21 ` Linus Torvalds
2024-03-01 10:27 ` Nikolai Kondrashov
2024-03-01 14:07 ` Mark Brown
2024-03-01 14:21 ` Nikolai Kondrashov
2024-03-01 20:10 ` Linus Torvalds
2024-03-04 21:45 ` Helen Koike
2024-03-07 22:43 ` Leonardo Brás
2024-05-23 13:21 ` Daniel Vetter
2024-03-02 22:10 ` Guenter Roeck
2024-03-03 0:01 ` Randy Dunlap
2024-03-03 9:30 ` Geert Uytterhoeven
2024-03-04 8:12 ` Geert Uytterhoeven
2024-03-04 9:15 ` Maxime Ripard
2024-03-04 10:07 ` Geert Uytterhoeven
2024-03-04 10:19 ` Maxime Ripard
2024-03-04 11:12 ` Geert Uytterhoeven
2024-03-04 11:28 ` Maxime Ripard
2024-03-04 9:24 ` Maxime Ripard
2024-03-04 15:46 ` Guenter Roeck
2024-03-04 16:05 ` Maxime Ripard

Got a lot of feedback

https://lore.kernel.org/all/20240228225527.1052240-1-helen.koike@collabora.com/

Mainline

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

https://lore.kernel.org/all/17341b96-5050-4528-867a-9f628434e4e6@collabora.com/

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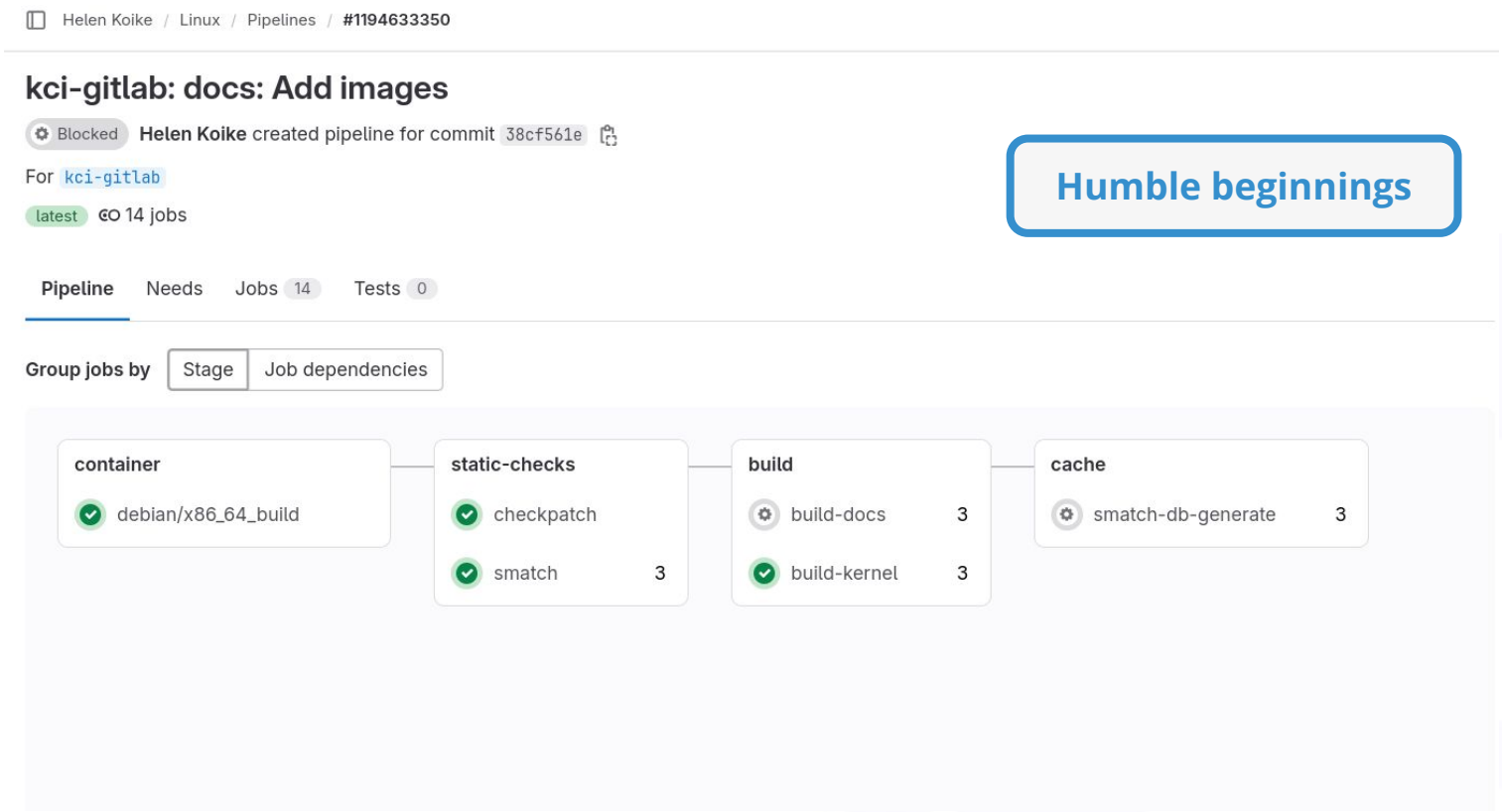
KernelCI Mainline



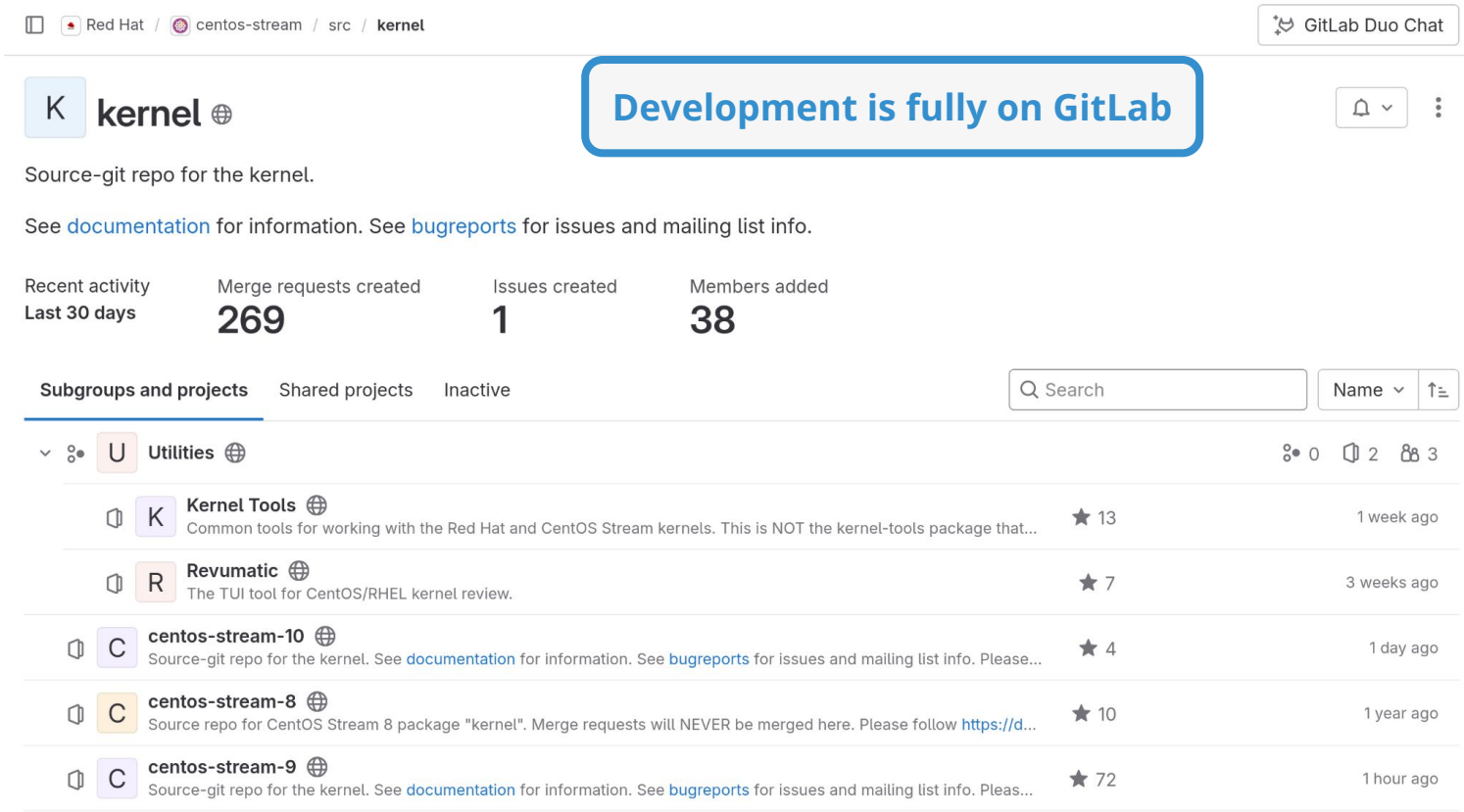
Humble beginnings

https://gitlab.com/helen-fornazier/linux/-/pipelines/1194633350

KernelCI

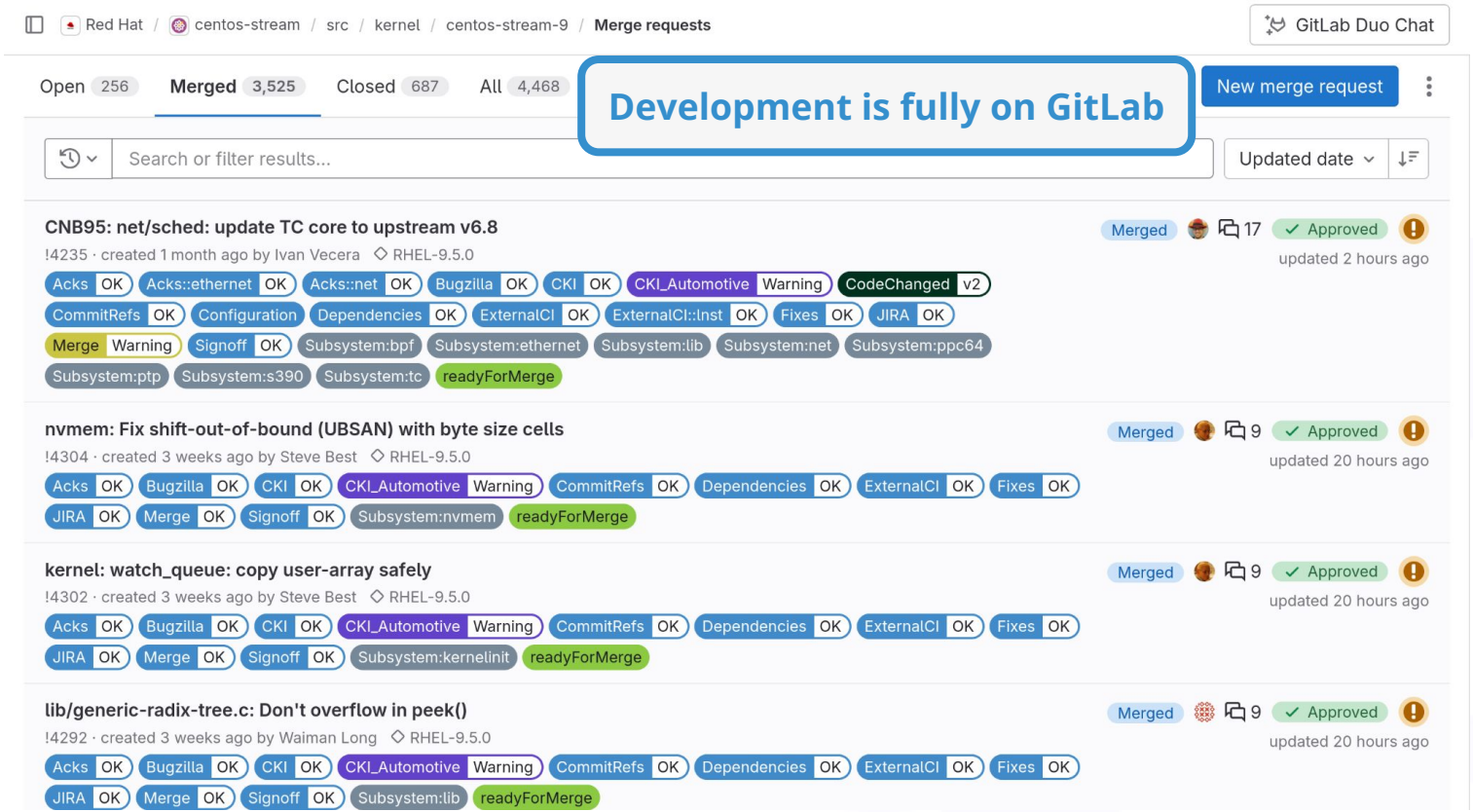
Red Hat

KernelCI Red Hat



https://gitlab.com/redhat/centos-stream/src/kernel

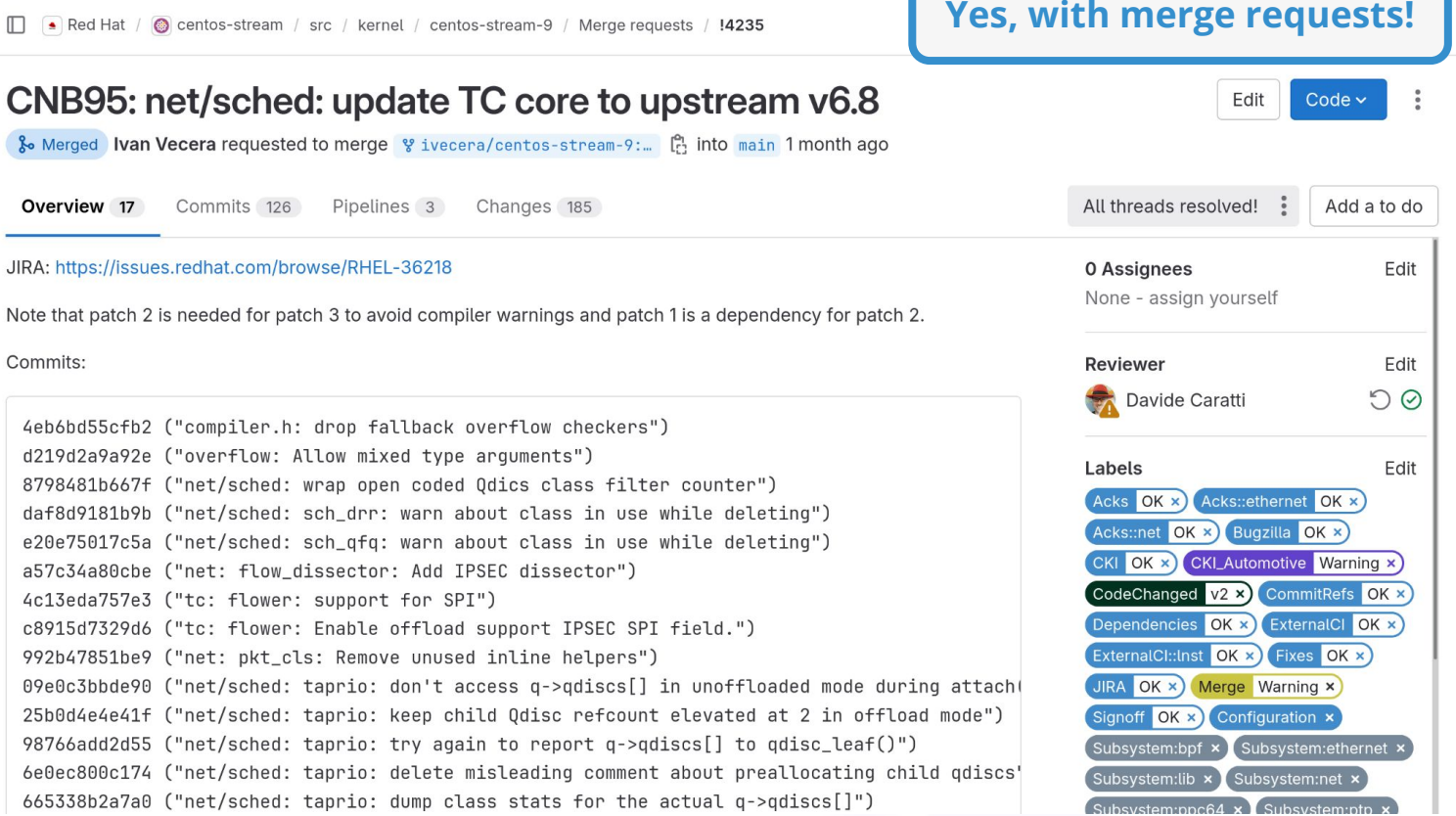
KernelCI Red Hat



https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests?scope=all&state=merged

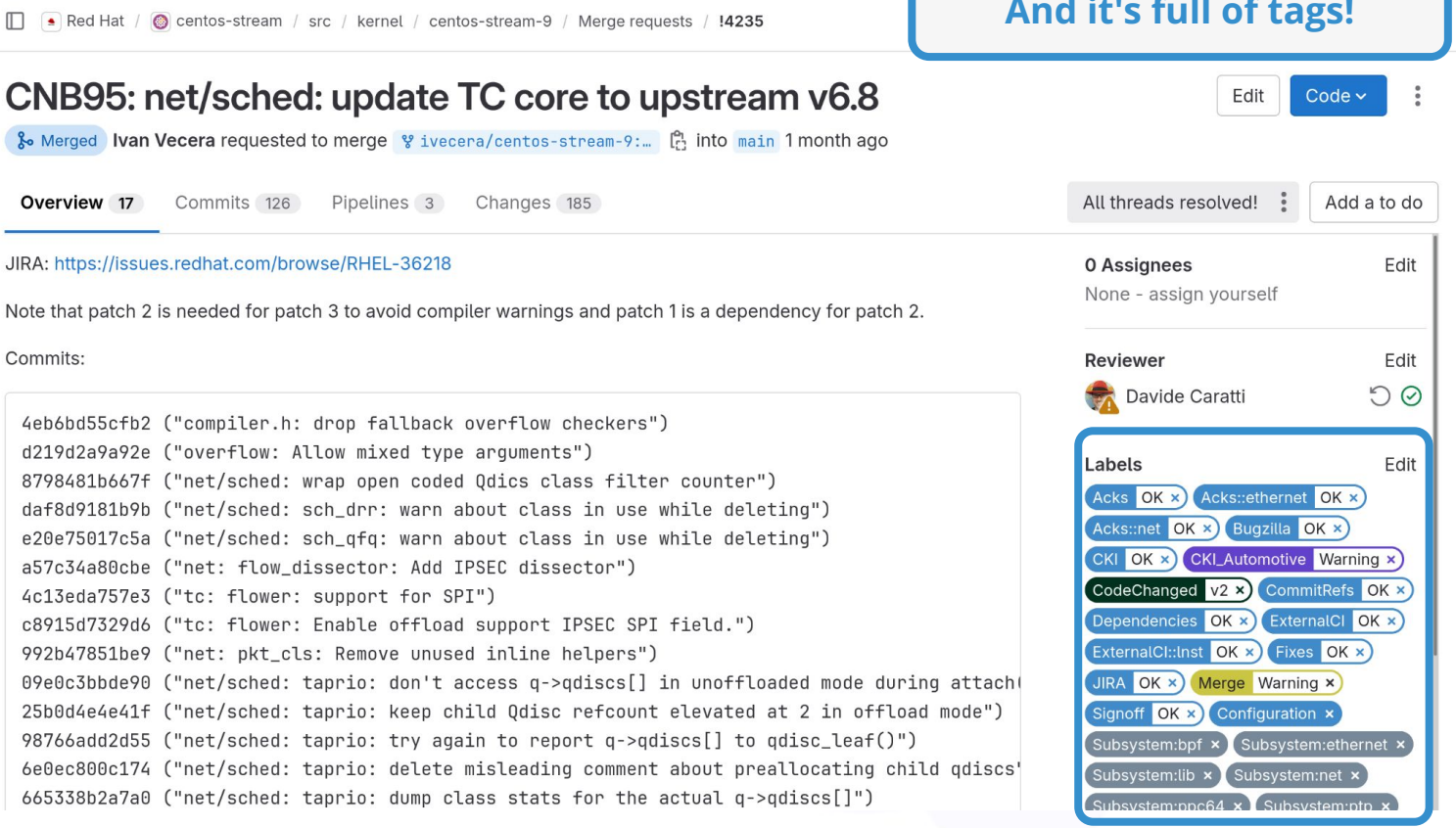
KernelCI Red Hat

Yes, with merge requests!

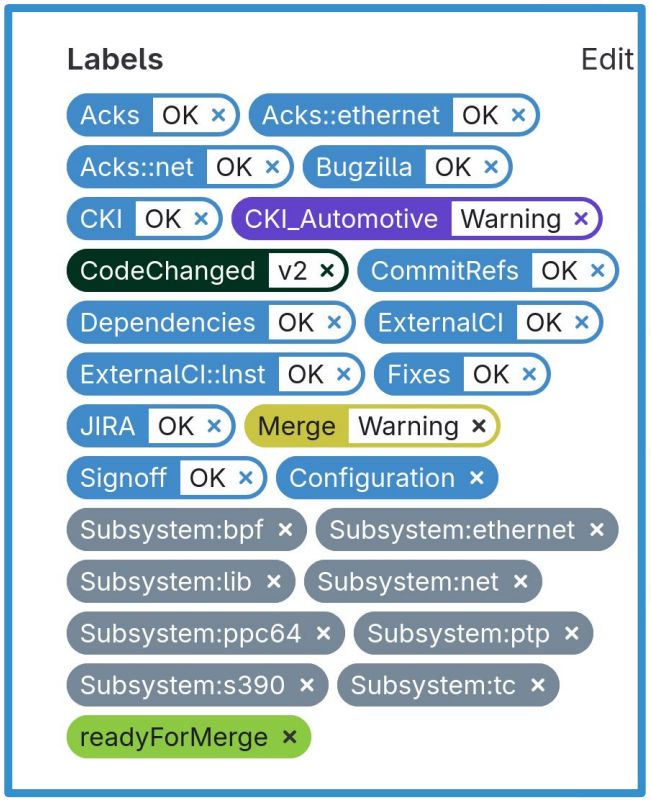


https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat



Red Hat



And it's full of tags!

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat

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

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat

And bots!

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	-

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat

And bots!

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

CKI KWF Bot · 1 month ago Maintainer

DCO Signoff Check Report Signoff OK

The DCO Signoff Check for all commits and the MR description has **PASSED**.

Updated 2024-05-14 13:47 UTC by signoff - KWF FAQ - Slack #team-kernel-workflow - Source - Documentation - Report an issue

Edited 1 month ago by CKI KWF Bot

- **CKI KWF Bot** added JIRA Planning label 1 month ago

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat

And bots!

- **CKI KWF Bot** added CKI Running CKI_64k Running CKI_Autom CKI_RT Running labels 1 month ago

CKI KWF Bot · 1 month ago Maintainer

CKI Pipelines Status: CKI OK

Blocking pipelines

Successful pipelines

These pipelines have been completed successfully or have been waived.

- CKI_CentOS OK c9s_merge_request was successful.
- CKI_RHEL OK c9s_rhel9_compat_merge_request was successful.
- CKI_RT OK c9s_rt_merge_request was successful.
- CKI_64k OK c9s_64k_merge_request was successful.

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat

And bots!

Non-blocking pipelines

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]

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat

And bots!

- **CKI KWF Bot** added Dependencies OK label 1 month ago
- **CKI KWF Bot** added ExternalCI NeedsTesting ExternalCI::Inst NeedsTesting Subsystem:bpf Subsystem:ethernet Subsystem:lib Subsystem:net Subsystem:ppc64 Subsystem:ptp Subsystem:s390 Subsystem:tc labels 1 month ago

CKI KWF Bot · 1 month ago Maintainer

Affected subsystem(s): ethernet, bpf, ppc64, s390, lib, ptp, net

Requesting review of subsystem ethernet with 0 required approval(s) from user(s) @jwilsonrh @kheib @kencox @poros2 @vinschen @mschmidt2 @ibakolla @sassmann_rh @jtornosm

Requesting review of subsystem bpf with 0 required approval(s) from user(s) @jbencrh @vmalikrh @artem.savkov @jeromemarchand

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

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI Red Hat

And bots!

Requesting review of subsystem bpf with 0 required approval(s) from user(s) @vmalikrh @artem.savkov @jeromemarchand

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) @prarit @jbencrh

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

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

Red Hat

I got tired making bot screenshots

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI

Red Hat

Check the link for much more

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI

Red Hat

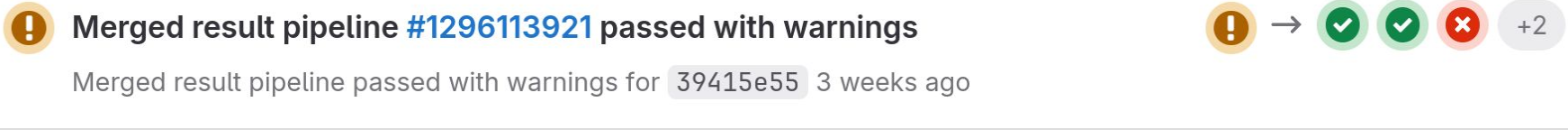
The point is no humans were involved in these checks

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

KernelCI

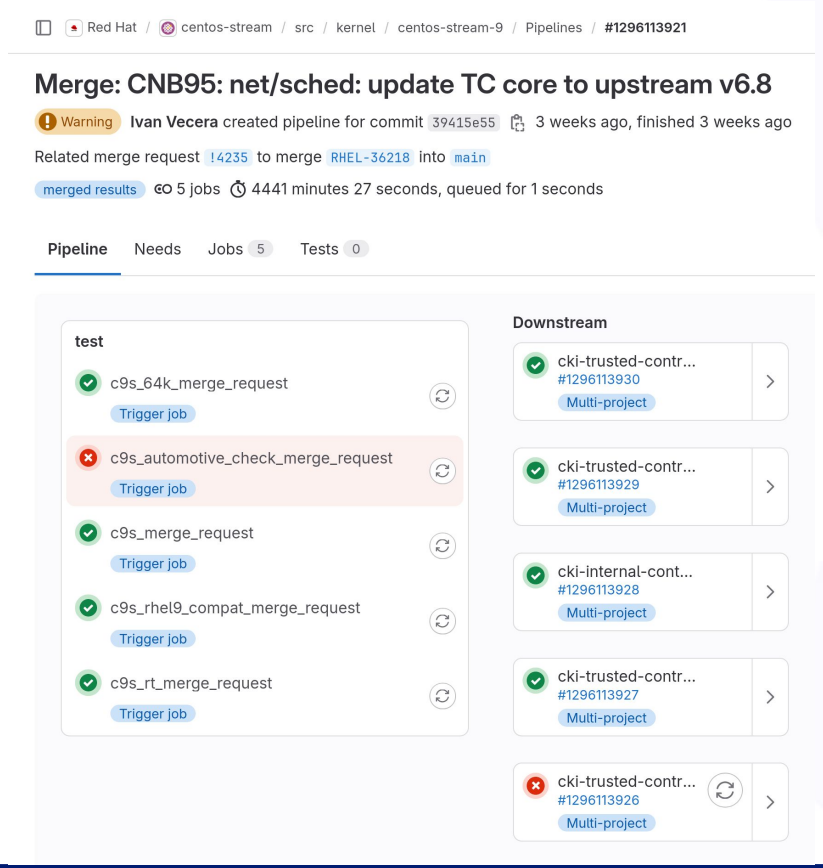
Red Hat

The testing summary



https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/merge_requests/4235

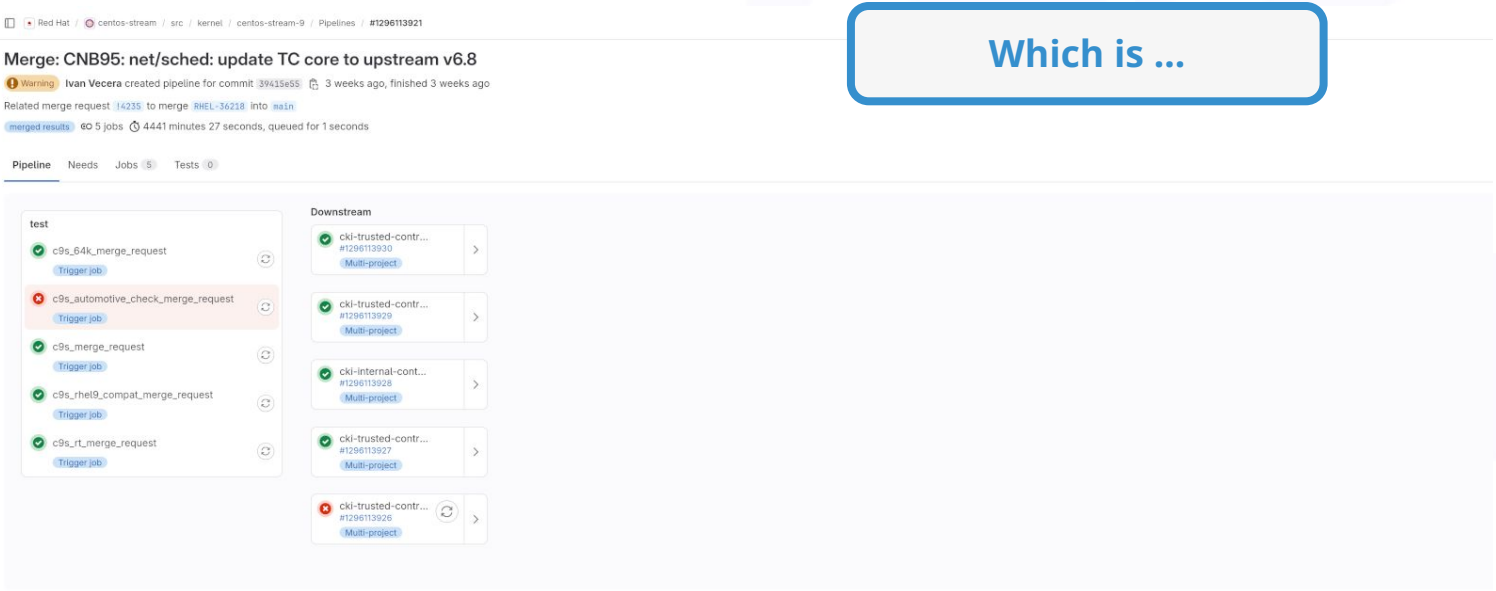
KernelCI Red Hat



Hides this

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

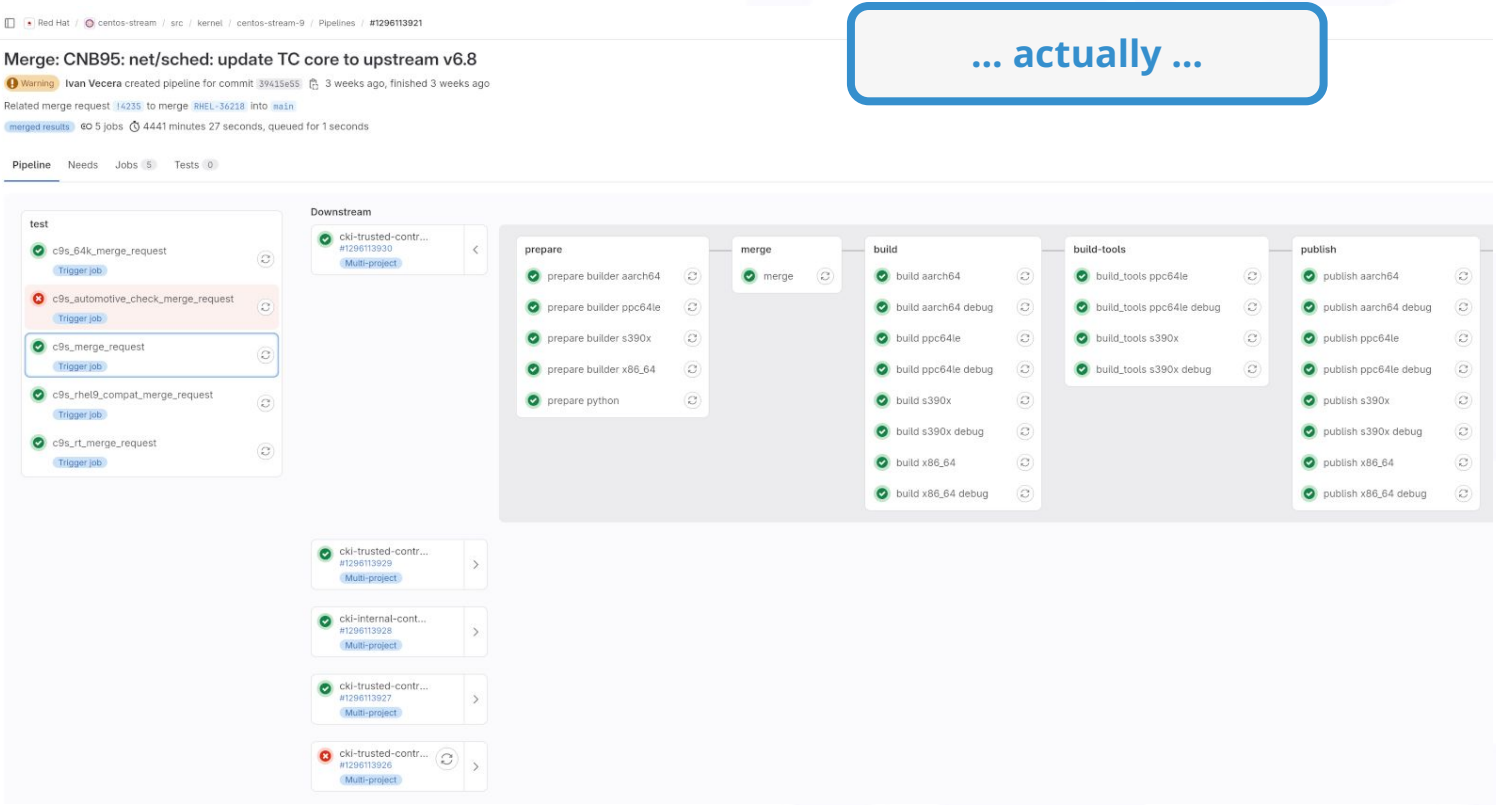
KernelCI Red Hat



Which is ...

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

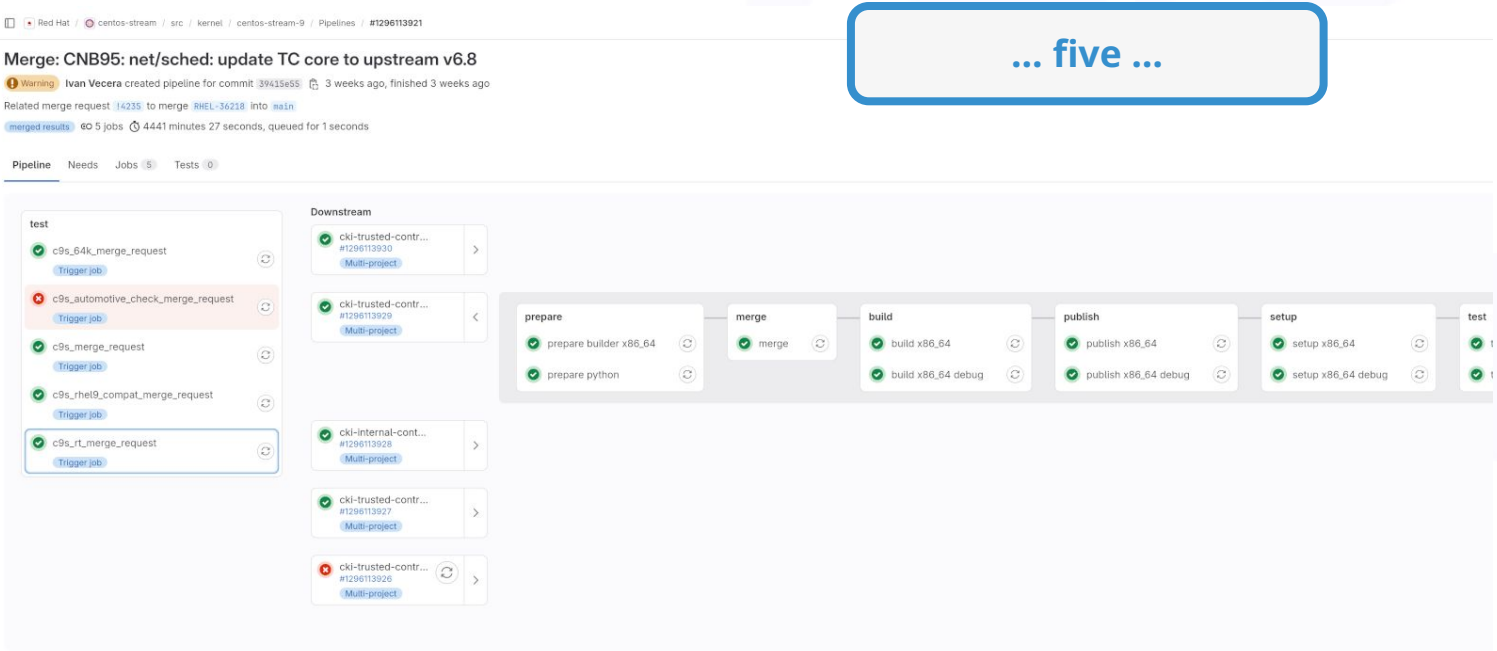
KernelCI Red Hat



... actually ...

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

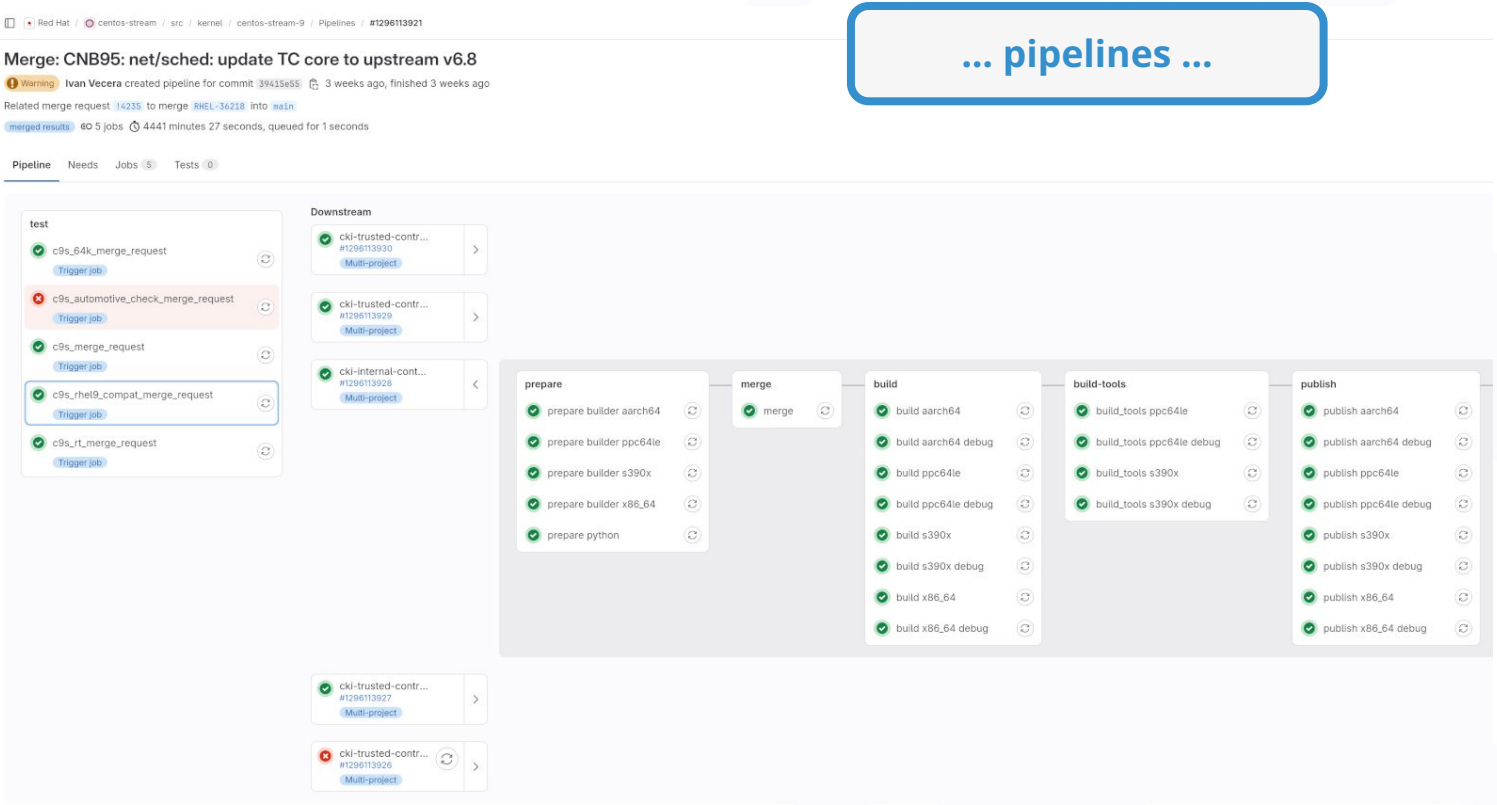
KernelCI Red Hat



... five ...

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

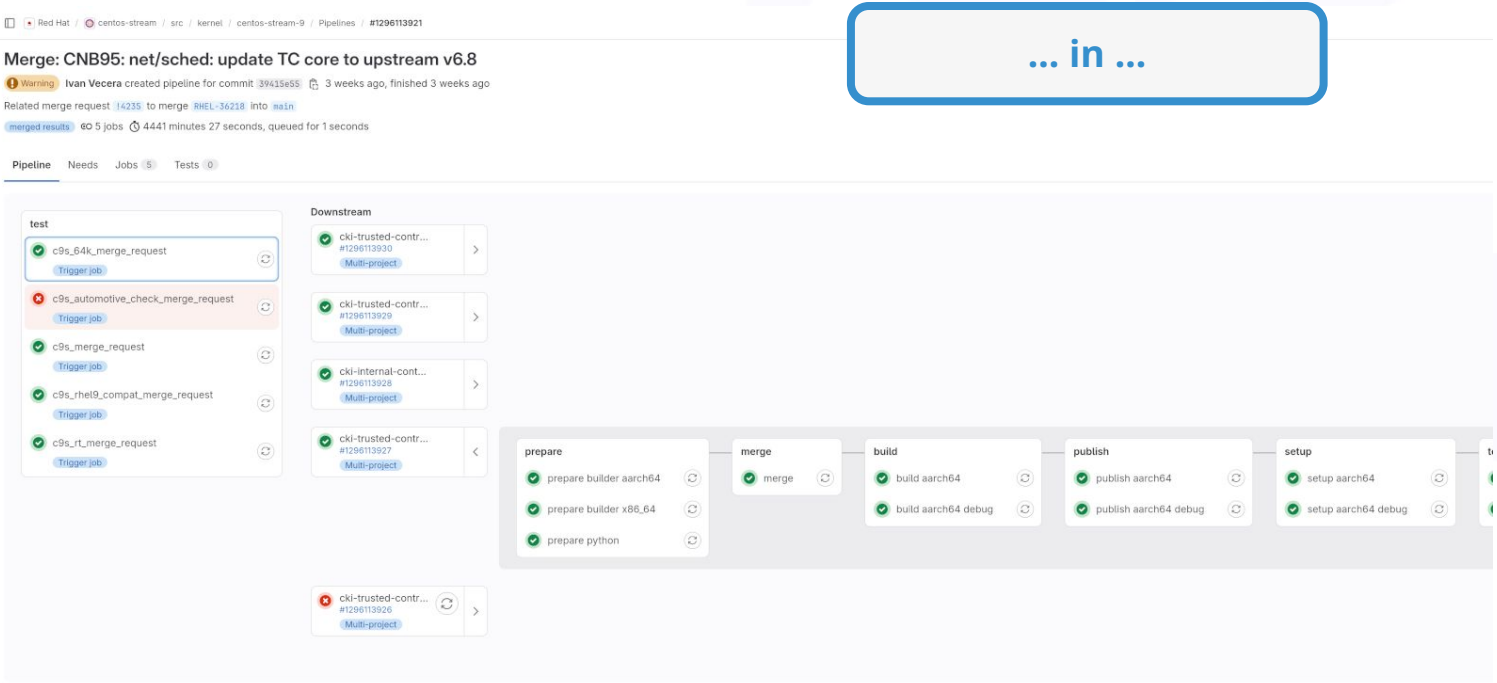
KernelCI Red Hat



... pipelines ...

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

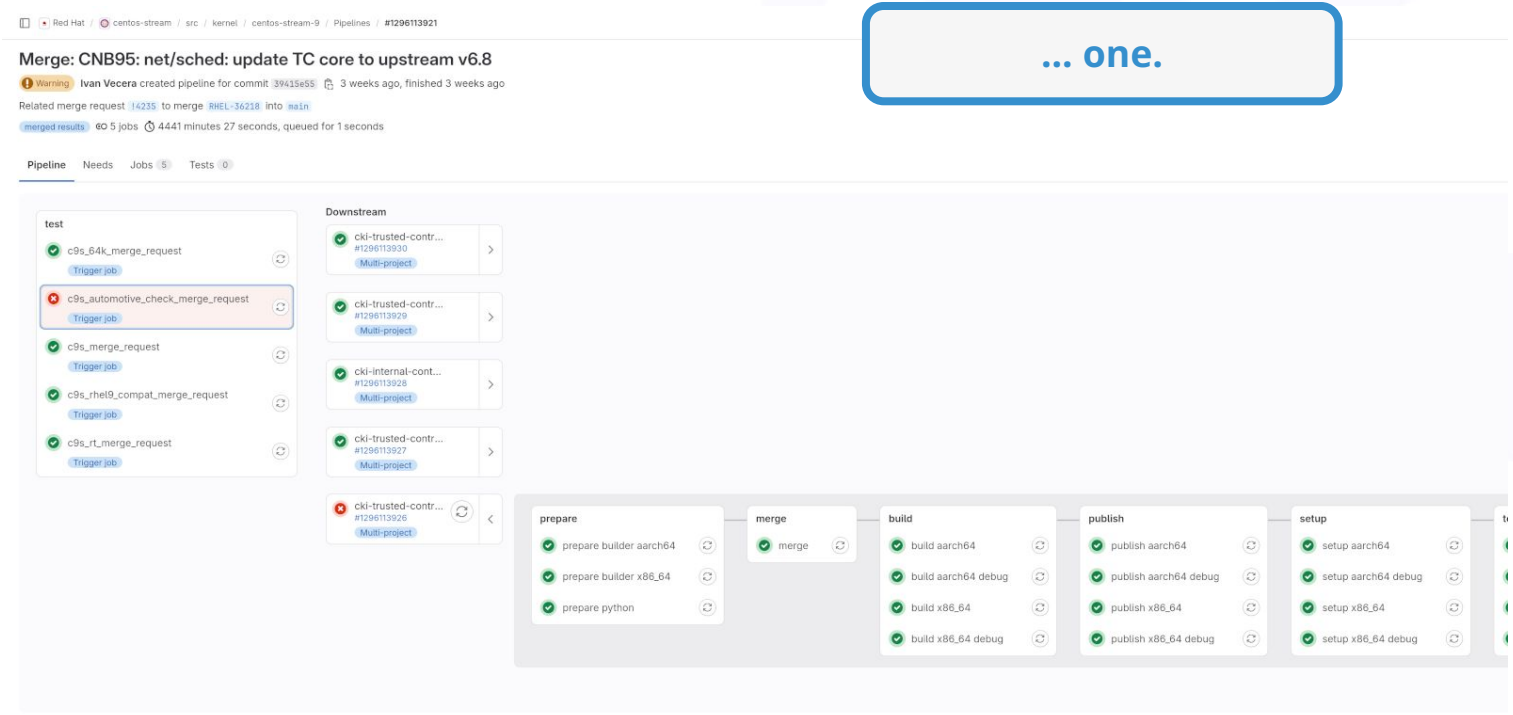
KernelCI Red Hat



... in ...

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

KernelCI Red Hat



... one.

https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

KernelCI

Red Hat

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

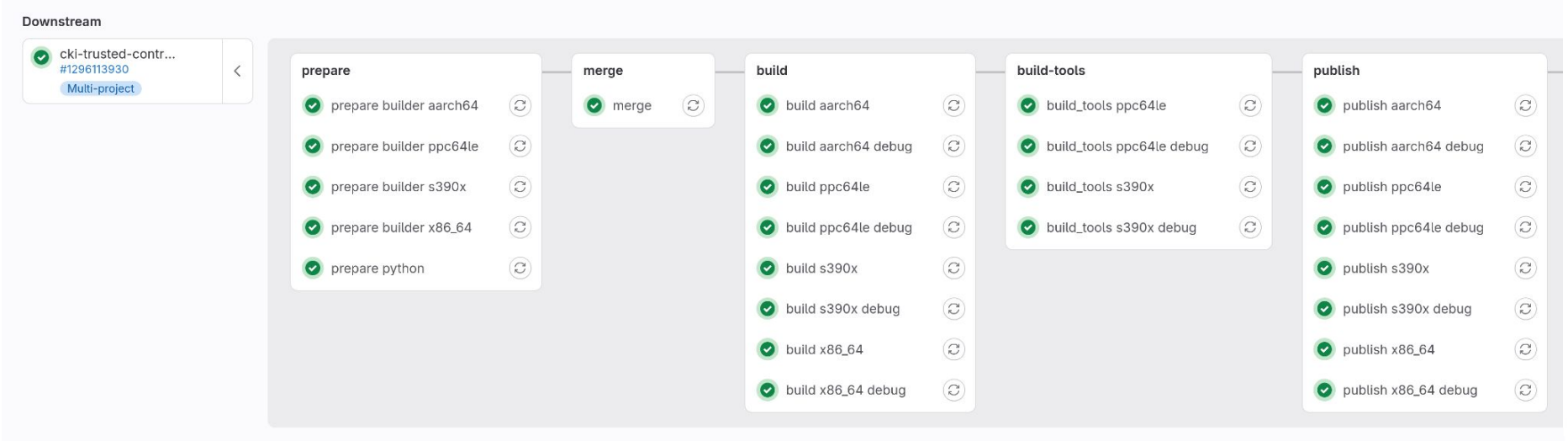
KernelCI

Red Hat

Don't ask us to show you our YAML

KernelCI Red Hat

The main part of a pipeline?



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KernelCI

Red Hat

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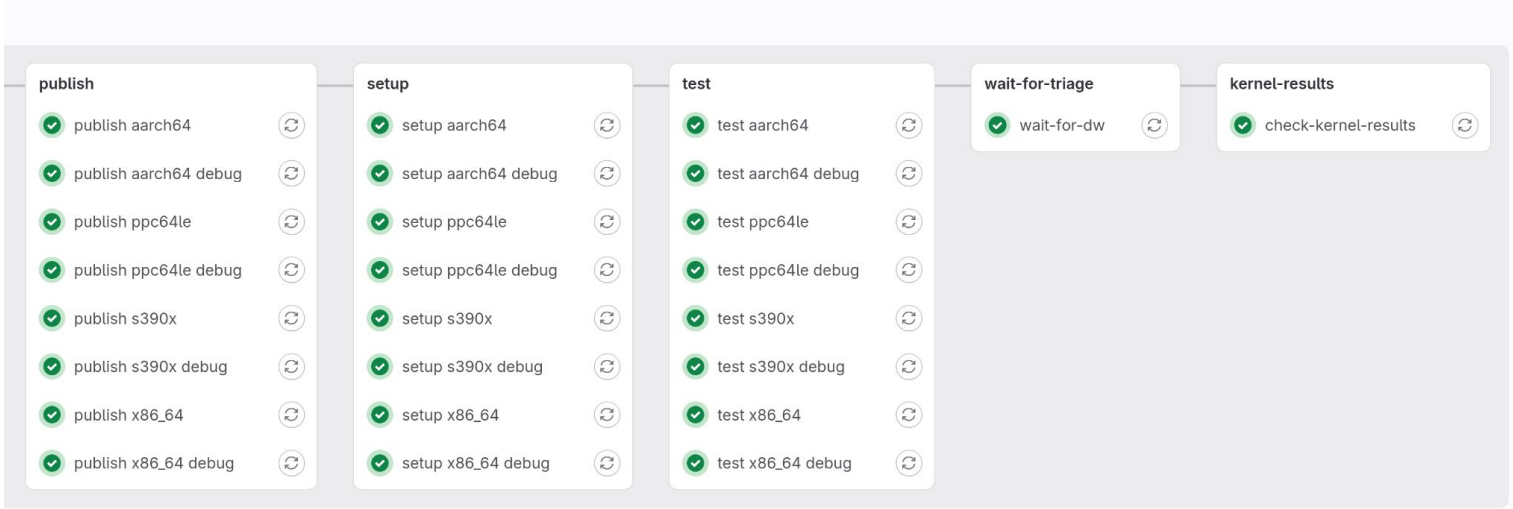
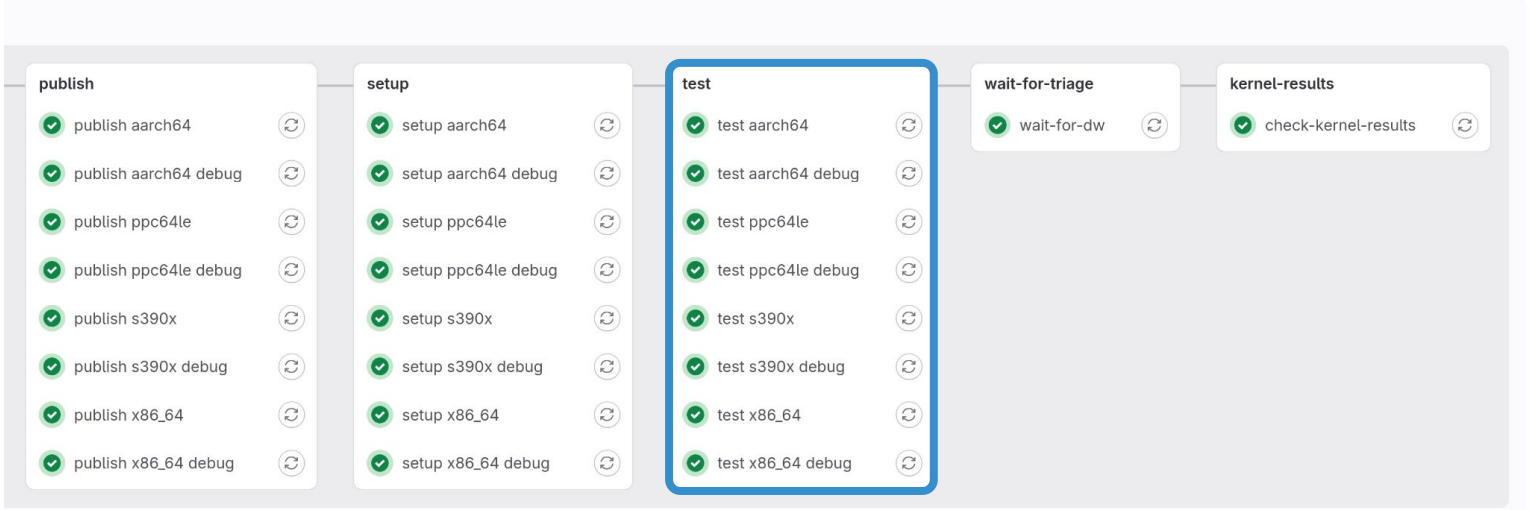


https://gitlab.com/redhat/centos-stream/src/kernel/centos-stream-9/-/pipelines/1296113921

KernelCI

Red Hat

Testing!



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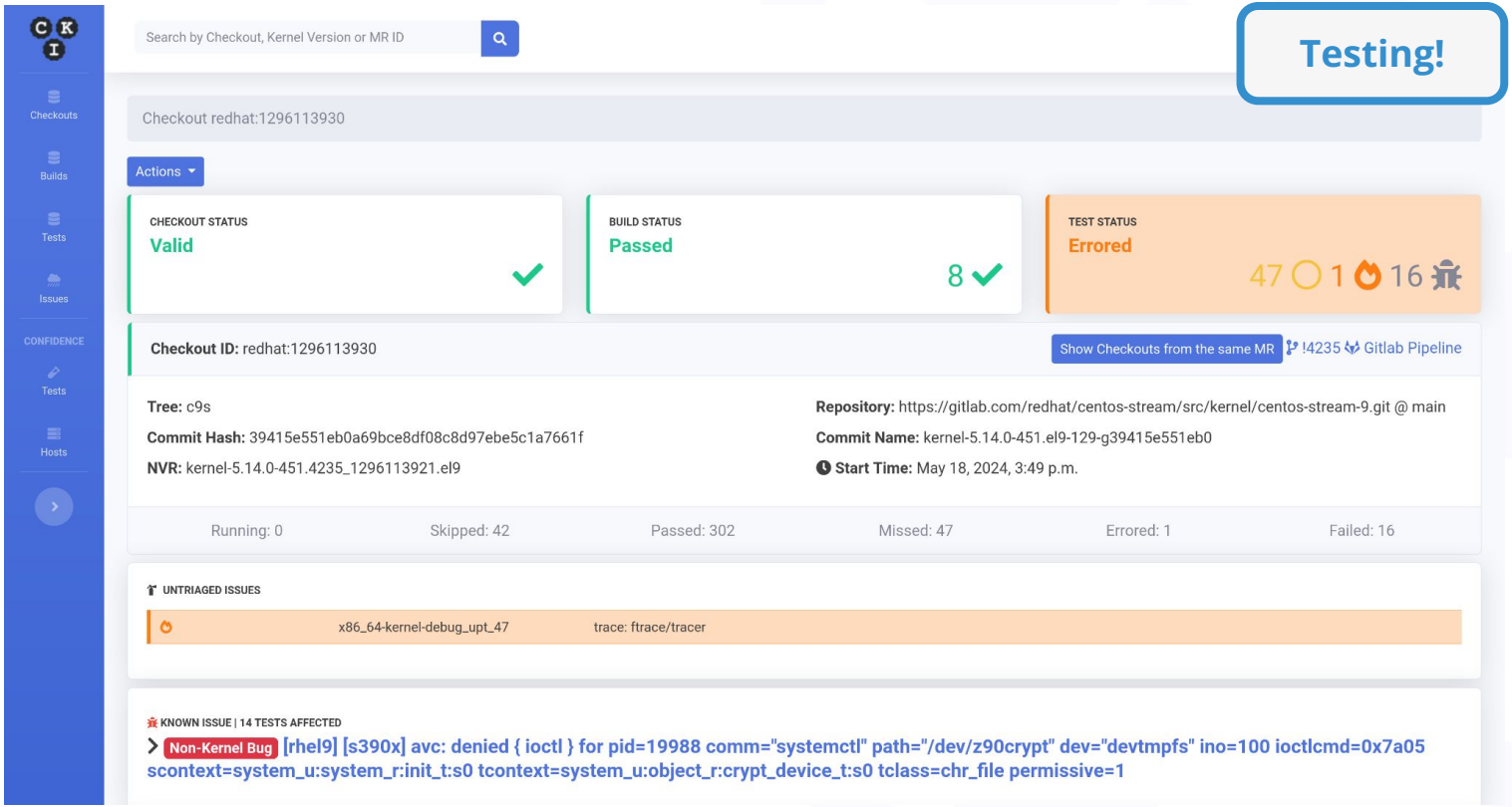
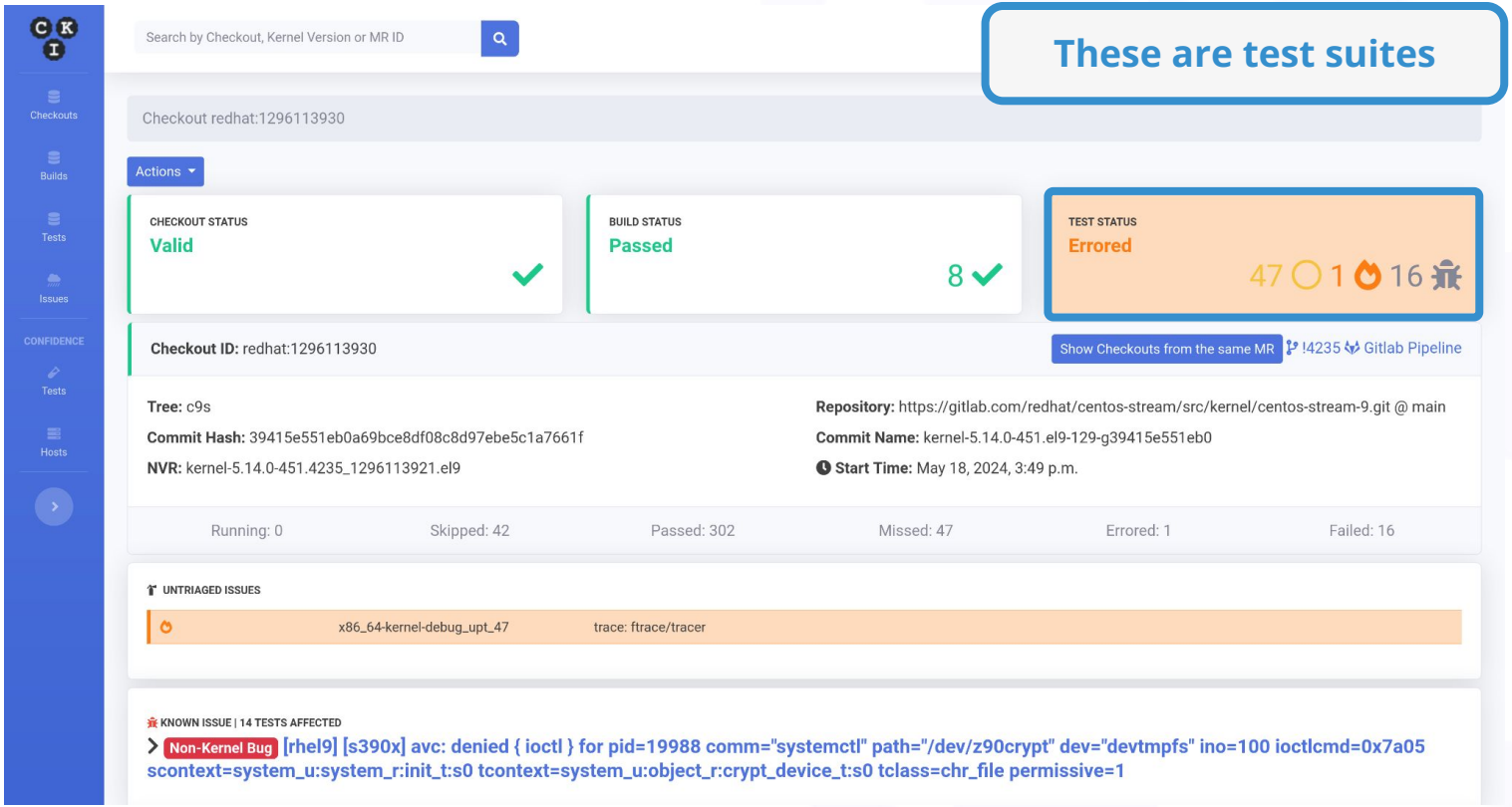
KernelCI Red Hat



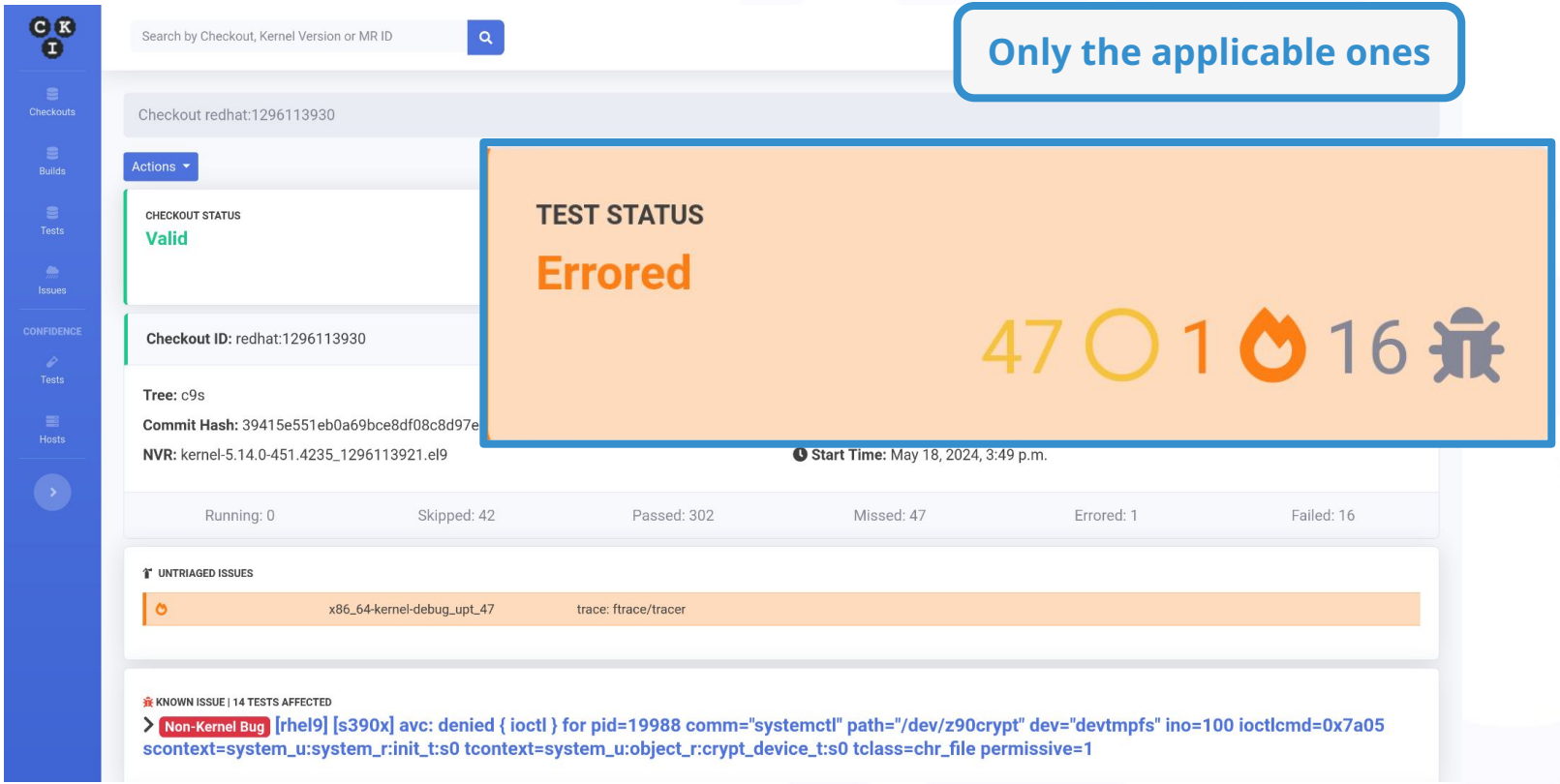
https://datawarehouse.cki-project.org/kcidb/checkouts/148416

KernelCI Red Hat



https://datawarehouse.cki-project.org/kcidb/checkouts/148416

KernelCI Red Hat



https://datawarehouse.cki-project.org/kcidb/checkouts/148416

KernelCI

So what?

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

So what?

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

So what?

Yes:

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

KernelCI

So what?

GitLab comes at a cost of
learning and limitations.

Yet *saves you time and effort*
through automation and integration

Need help?

For help with your GitLab setup

reach out to KernelCI IRC channel

#kernelci at libera.chat

and the maillist

kernelci@lists.linux.dev

KernelCI

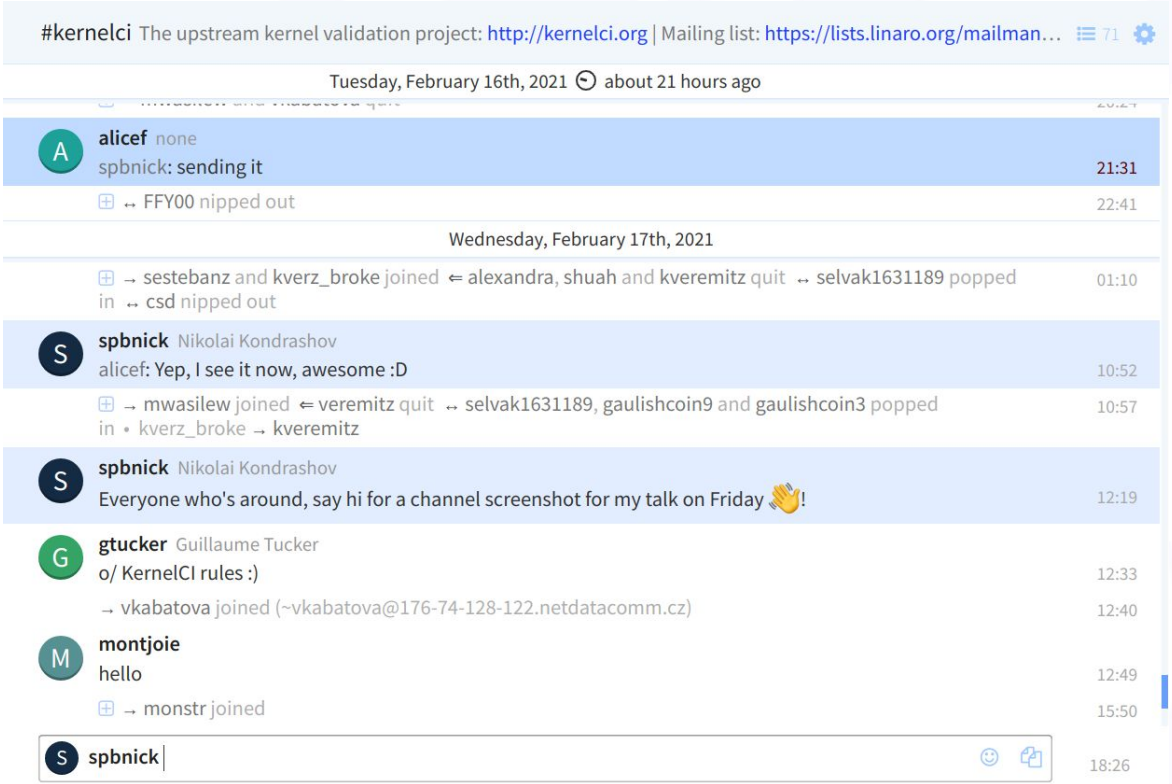
Discussion time!

KernelCI

Thank you!

KernelCI

Join Us!

IRC channel

#kernelci at libera.chat