

# Approach to Enhancing Kernel Quality

# The CKI Team

## Continuous Kernel Integration (CKI) Project

CI-as-a-service for Linux kernel changes



Kernel developers

[Start here if you are a kernel developer ...](#)



Test maintainers

[Start here if you are a test maintainer ...](#)



CKI contributors

[Start here if you want to contribute to CKI itself ...](#)

# We Run Pipelines

## Downstream

✓ cki-trusted-contr...  
#1297897348  
Multi-project >

✗ cki-trusted-contr...  
#1297897343  
Multi-project >

✓ cki-trusted-contr...  
#1297897338  
Multi-project <

**prepare**

- ✓ prepare builder aarch64
- ✓ prepare builder ppc64le
- ✓ prepare builder s390x
- ✓ prepare builder x86\_64
- ✓ prepare python

**merge**

- ✓ merge

**build**

- ✓ build aarch64
- ✓ build aarch64 debug
- ✓ build ppc64le
- ✓ build ppc64le debug
- ✓ build s390x
- ✓ build s390x debug
- ✓ build x86\_64
- ✓ build x86\_64 debug

**build-tools**

- ✓ build\_tools ppc64le
- ✓ build\_tools ppc64le debug
- ✓ build\_tools s390x
- ✓ build\_tools s390x debug

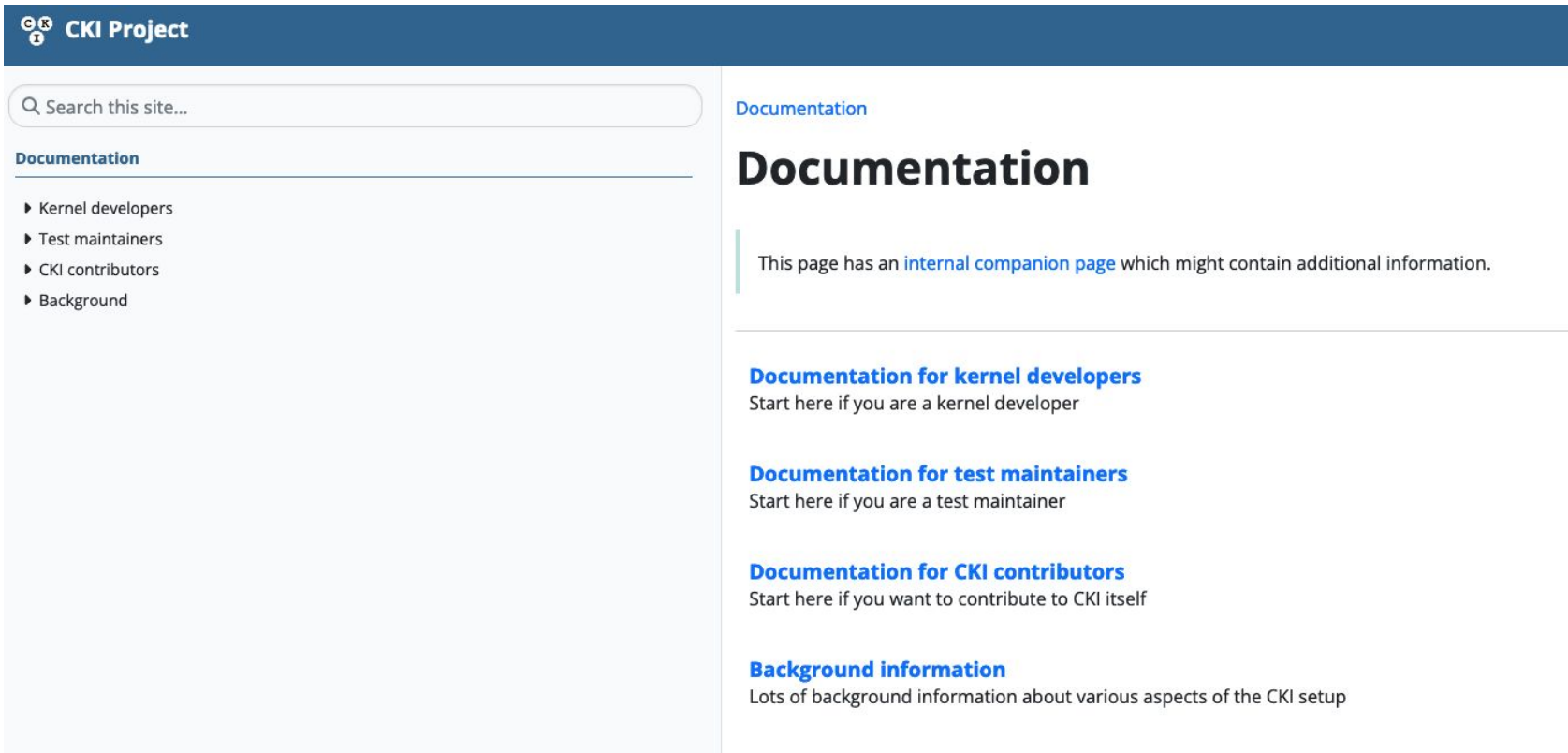
Things that help

# Internal Design & Collaboration

# Things that help

- Good Documentation
- Linters
- Tests
- Code review
- Metrics

# Things that help. Good Documentation.



The screenshot shows the CKI Project website. At the top left is the CKI Project logo and name. Below it is a search bar. A left sidebar contains a 'Documentation' section with a list of links: Kernel developers, Test maintainers, CKI contributors, and Background. The main content area has a 'Documentation' header, a note about an internal companion page, and four sub-sections: 'Documentation for kernel developers', 'Documentation for test maintainers', 'Documentation for CKI contributors', and 'Background information'.

**CKI Project**

Search this site...

**Documentation**

- ▶ Kernel developers
- ▶ Test maintainers
- ▶ CKI contributors
- ▶ Background

**Documentation**

This page has an [internal companion page](#) which might contain additional information.

---

**Documentation for kernel developers**  
Start here if you are a kernel developer

**Documentation for test maintainers**  
Start here if you are a test maintainer

**Documentation for CKI contributors**  
Start here if you want to contribute to CKI itself

**Background information**  
Lots of background information about various aspects of the CKI setup

# Things that help. Linters

```
1 Running with gitlab-runner 17.0.0~pre.88.g761ae5dd (761ae5dd)
2   on green-3.saas-linux-small-amd64.runners-manager.gitlab.com/default Jhc_Jxvh, system ID: s_0e6850b2
   bce1
3 Resolving secrets
4 Preparing the "docker+machine" executor 00:19
5 Using Docker executor with image quay.io/cki/hugo-docs:production ...
6 Pulling docker image quay.io/cki/hugo-docs:production ...
7 Using docker image sha256:e58ca8b8b0a03f1325d71e3c09e25654bde0971fa1ff0b8db41ec86620c7db52 for quay.io
   /cki/hugo-docs:production with digest quay.io/cki/hugo-docs@sha256:987f9b32de07583e04c0dc6c101201fd4f9
   702761dc1ba19a717493e11f86610 ...
8 Preparing environment 00:04
9 Running on runner-jhcjxvh-project-9286870-concurrent-0 via runner-jhcjxvh-s-l-s-amd64-1717415523-b9bea
   057...
10 Getting source from Git repository 00:08
11 Fetching changes with git depth set to 50...
12 Initialized empty Git repository in /builds/cki-project/documentation/.git/
13 Created fresh repository.
14 Checking out ffd22a7 as detached HEAD (ref is refs/merge-requests/509/merge)...
15 Skipping Git submodules setup
16 $ git remote set-url origin "${CI_REPOSITORY_URL}"
17 Executing "step_script" stage of the job script 00:02
18 Using docker image sha256:e58ca8b8b0a03f1325d71e3c09e25654bde0971fa1ff0b8db41ec86620c7db52 for quay.io
   /cki/hugo-docs:production with digest quay.io/cki/hugo-docs@sha256:987f9b32de07583e04c0dc6c101201fd4f9
   702761dc1ba19a717493e11f86610 ...
19 $ make lint
20 markdownlint content/
21 Cleaning up project directory and file based variables 00:01
22 Job succeeded
```

Timeout: 1h (from project) [?](#)

Runner: #12270852 (Jhc\_Jxvh8)  
3-green.saas-linux-small-  
amd64.runners-  
manager.gitlab.com/default

Commit [ffd22a7](#) [🔗](#) in [!509](#)

Merge: Draft: Update messaging headers for gitlab, sentry, & jira to include http.date

Pipeline [#1315893198](#) for [!509](#) with messaging\_headers [🔗](#) into main [🔗](#)



Related jobs

- build
- link-check
- lint
- shellcheck
- yamllint



# Things that help. Tests

- Manage >
- Plan >
- Code >
- Build v
- Pipelines
- Jobs**
- Pipeline editor
- Pipeline schedules
- Test cases
- Artifacts
- Secure >
- Deploy >
- Operate >
- Monitor >
- Analyze >
- Settings >

```
1368 tests/test_terminator.py::TestTerminator::test_run_main_success_cancel_exception PASSED [ 97%]
1369 tests/test_umb_bridge.py::TestUmbBridge::test_MappingType PASSED [ 97%]
1370 tests/test_umb_bridge.py::TestUmbBridge::test_SendQueue PASSED [ 97%]
1371 tests/test_umb_bridge.py::TestUmbBridge::test_get_project_mr_infos PASSED [ 97%]
1372 tests/test_umb_bridge.py::TestUmbBridge::test_get_project_mrs PASSED [ 98%]
1373 tests/test_umb_bridge.py::TestUmbBridge::test_get_session_projects PASSED [ 98%]
1374 tests/test_umb_bridge.py::TestUmbBridge::test_main PASSED [ 98%]
1375 tests/test_umb_bridge.py::TestUmbBridge::test_process_amqp_event PASSED [ 98%]
1376 tests/test_umb_bridge.py::TestUmbBridge::test_process_gitlab_mr PASSED [ 98%]
1377 tests/test_umb_bridge.py::TestUmbBridge::test_process_jira_event PASSED [ 98%]
1378 tests/test_umb_bridge.py::TestMRInfoCache::test_mrinfocache_new PASSED [ 98%]
1379 tests/test_umb_bridge.py::TestMRInfoCache::test_mrinfocache_new_raises PASSED [ 99%]
1380 tests/test_users.py::TestUser::test_from_owners PASSED [ 99%]
1381 tests/test_users.py::TestUser::test_from_user_dict PASSED [ 99%]
1382 tests/test_users.py::TestUser::test_user_init PASSED [ 99%]
1383 tests/test_users.py::TestUser::test_user_update PASSED [ 99%]
1384 tests/test_users.py::TestUserCache::test_usercache_init PASSED [ 99%]
1385 tests/test_users.py::TestUserCache::test_usercache_items PASSED [100%]
1386 -- generated xml file: /builds/cki-project/kernel-workflow/coverage/junit.xml --
1387 ===== 685 passed in 309.79s (0:05:09) =====
1388 Generating coverage reports
1389 Name Stmts Miss Branch BrPart Cover Missing
1390 -----
1391 webhook/_init__.py 0 0 0 0 100%
1392 webhook/ack_nack.py 514 45 287 42 88% 67->exit, 89-94, 123, 1
26-128, 132, 177->exit, 189->191, 191->187, 219->216, 248->266, 268, 313, 377, 383->385, 403, 416->exit,
486, 490->495, 505->507, 523-524, 535->537, 538, 550, 563->559, 574, 579->578, 591->590, 596, 606,
639, 642, 647->646, 671-673, 682-687, 692, 696->698, 717->719, 733, 747-748, 769, 797, 807->exit, 813-
```

- ✓ publish: [commit-compare, ...]
- ✓ publish: [component-webvi...]
- ✓ publish: [fixes, webhook/{fi...]
- ✓ publish: [jirahook, webhook...]
- ✓ publish: [kwf-utils, webhoo...]
- ✓ publish: [limited-ci, webhoo...]
- ✓ publish: [mergehook, webh...]
- ✓ publish: [metrics, webhook/...]
- ✓ publish: [signoff, webhook/...]
- ✓ publish: [sprinter, webhook/...]
- ✓ publish: [subsystems, {web...]
- ✓ publish: [terminator, webho...]
- ✓ publish: [umb-bridge, webh...]
- ✓ tests
- ✓ yamllint

# Things that help. Code review

The screenshot displays a GitLab merge request for the 'documentation' branch of the 'cki-project'. The merge request is titled 'cki.ready\_for\_test: document RPM package fields' and is merged into the 'main' branch. The diff shows changes to the file 'content/docs/test-maintainers/testing-builds.md'. The changes include updates to the 'team', 'docs', 'url', 'email', and 'irc' fields. A discussion thread is visible below the diff, with Bruno Goncalves asking a question about the 'irc' field and Michael Hofmann providing an answer.

Project: cki-project / documentation / Merge requests / 1495

Merged cki.ready\_for\_test: document RPM package fields by mh21\_rh/documentation:ck... into main

Overview 3 Commits 2 Pipelines 4 Changes 1

All threads resolved! Add a to do

content/docs/test-maintainers/testing-builds.md +10 -14 Viewed

```
38 38      "team": "CKI",
39 39      "docs": "https://cki-project.org/",
40 40      "url": "https://xci32.lab.eng.rdu2.redhat.com/",
      39 +      "docs": "https://cki-project.org",
      40 +      "url": "https://gitlab.com/cki-project",
41 41      "email": "cki-project@redhat.com",
42 42      "irc": "#kernelci"
* 42 +      "irc": "Slack #team-kernel-cki"
```

**Bruno Goncalves** @bgoncalv · 2 months ago  
Resolved 2 months ago by **Michael Hofmann**  
is `irc` field required or can be replaced to `slack`?

**Bruno Goncalves** @bgoncalv · 2 months ago  
just curious, not blocking this as the messages we send we continue to use `irc`.

**Michael Hofmann** @mh21\_rh · 2 months ago  
afaict the message format got copied from the OSCI messages, and contains all kinds of useless fields which we really need to clean up eventually 🙄

Reply... Unresolve thread

# Things that help. Metrics

The screenshot displays a Grafana dashboard with a dark theme. At the top, there is a search bar and navigation icons. The main content is organized into three columns: 'KWF', 'Infrastructure', and 'Datawarehouse'. Each column contains a list of dashboard widgets, each with a star icon for favorites. On the right side, there are two charts: 'Sentry exceptions rate' and 'OCP Warnings / 10 minutes'. The 'Sentry exceptions rate' chart is a stacked bar chart showing exceptions from 12:00 to 16:00, with categories like 'amqp-forwarder', 'autoscaler', 'cronjobs', etc. The 'OCP Warnings / 10 minutes' chart is a line graph showing warnings from 11:00 to 16:00, with categories like 'cyborg\_aws' and 'cyborg\_aws\_staging'. At the bottom right, there is a 'Gitlab.com Incidents' section with a date filter set to 'May 30' and a list of incident reports.

Category	Widget Name	Source	
KWF	Missing users by GL project	KWF	
	General		
	Alerts		
	GitLab namespace paid plans and expiry		
	Ina Overview		
	Izmapier's dashboard		
	Metrics Playground		
	Node Exporter Full		
	Node Exporter Overview		
	OCP Resources		
	Overview		
	Prometheus 2.0 Overview		
	Prometheus Blackbox Exporter		
	random playground		
	S3 Buckets		
Sentry			
Infrastructure	AWS EC2 Reserved Instances / Savings Plans	Infrastructure	
	Certificate expiry	Infrastructure	
	GitLab CI/CD schedules	Infrastructure	
	GitLab OSP status	Infrastructure	
	Gitlab Runners	Infrastructure	
	GitLab webhook alert status	Infrastructure	
	Koji/Brew Pipeline Triggers	Infrastructure	
	Loki Global Metrics	Infrastructure	
	Machine kernel and OS versions	Infrastructure	
	Micro Services	Infrastructure	
	Pipeline Herder	Infrastructure	
	Datawarehouse	Analytics - NGINX / LOKI v2+ Data Source / Promtail v2+ Tool	Datawarehouse
		Common Known Issues	Datawarehouse
		DataWarehouse RabbitMQ messages	Datawarehouse
		Let's triage all subtests	Datawarehouse
Manual Waivers for CKI Tests		Datawarehouse	
Memcached		Datawarehouse	
PostgreSQL Database		Datawarehouse	
Test durations per build		Datawarehouse	
Triaqing Latency		Datawarehouse	

### Sentry exceptions rate

Category	12:00	16:00
amqp-forwarder	~10	~10
autoscaler	~10	~10
cronjobs	~10	~10
datawarehouse	~10	~10
datawarehouse-submitter	~10	~10
datawarehouse-triager	~10	~10
datawarehouse-umb-submitter	~10	~10
going-reporter	~10	~10

### OCP Warnings / 10 minutes

Category	11:00	12:00	13:00	14:00	15:00	16:00
cyborg_aws	~1	~1	~1	~1	~1	~1
cyborg_aws_staging	~1	~1	~1	~1	~1	~1

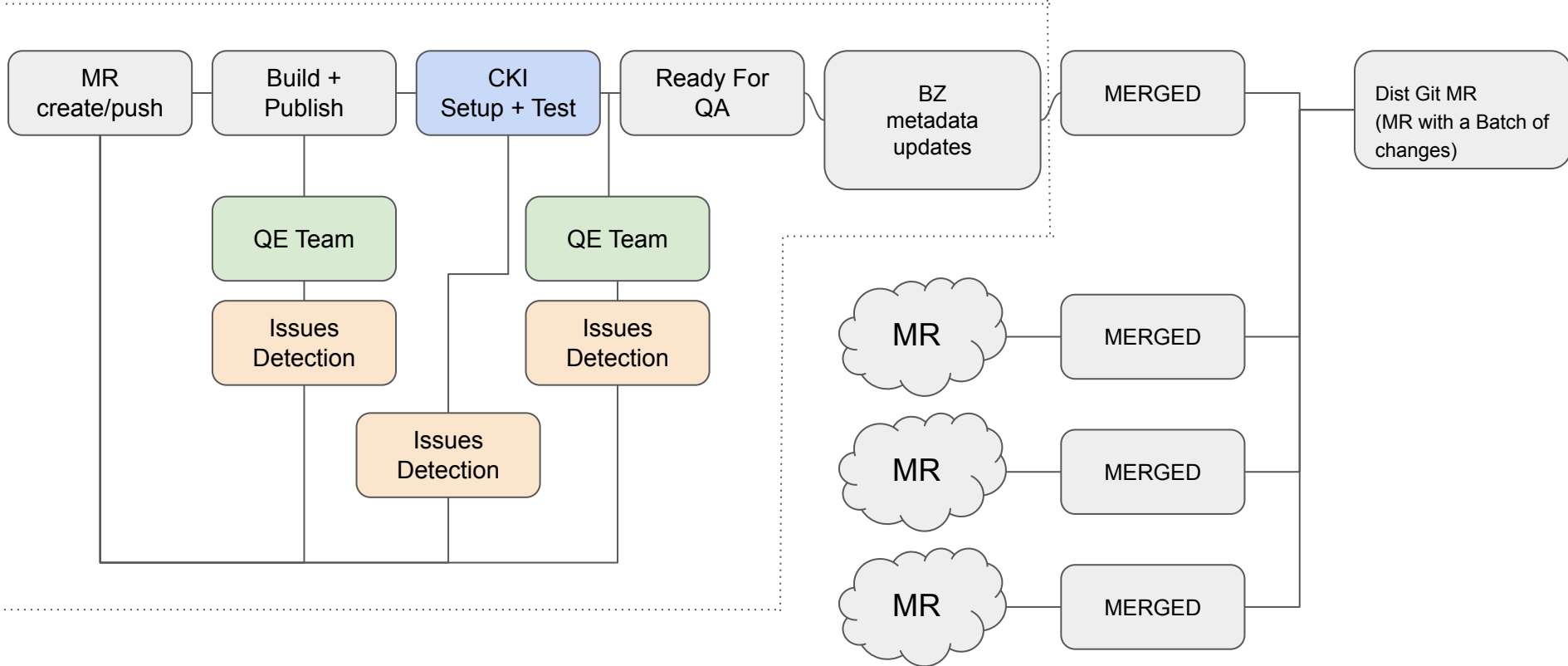
### Gitlab.com Incidents

May 30

[Multiple reports of authentication failures accessing GitLab.com](#)

May 14, 2024 03:27 UTC Identified - Token lifetime limits have been implemented on GitLab.com. If you are experiencing increased authentication errors accessing GitLab.com, ...

# The flow

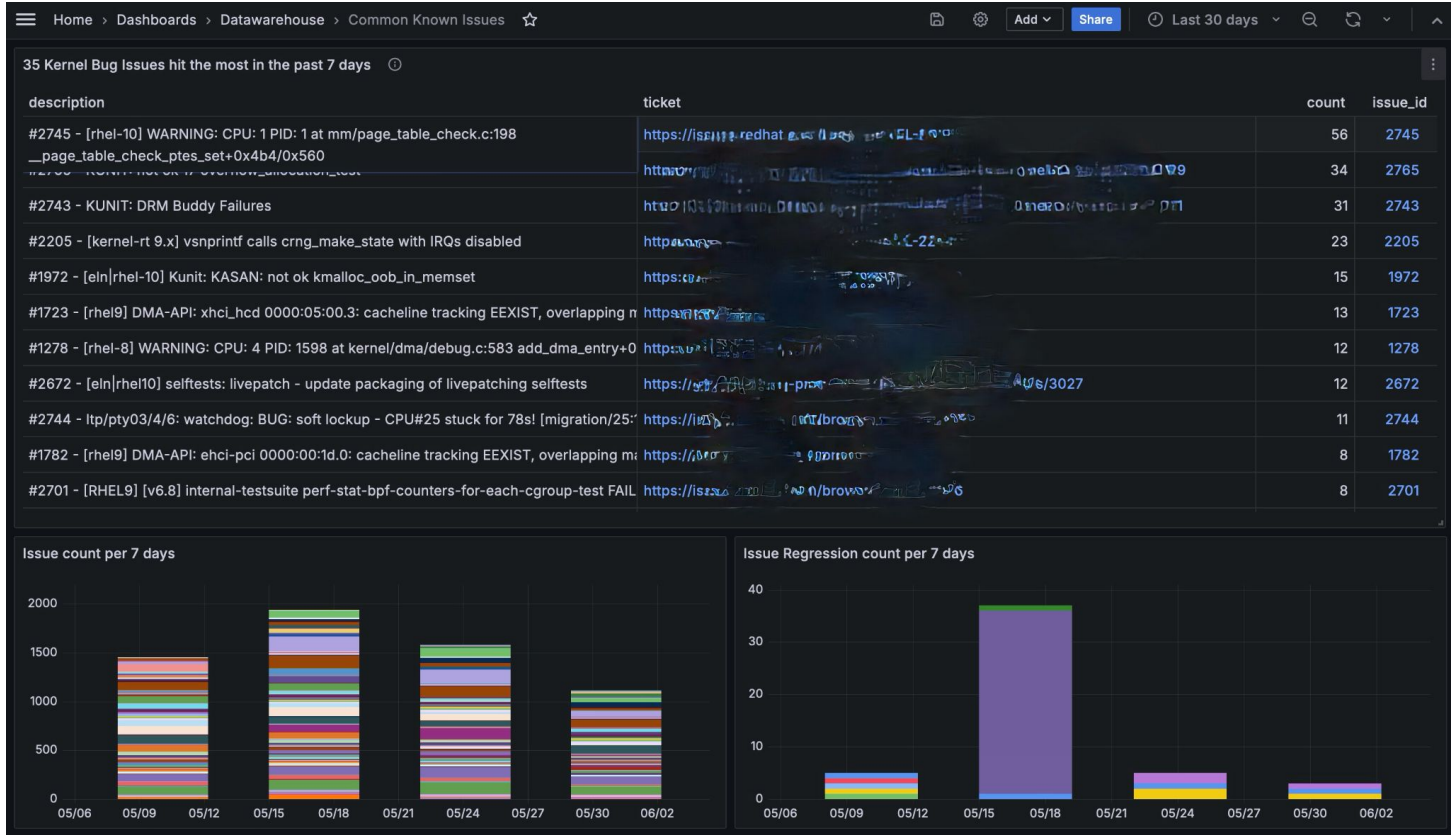


# Triaging issues



- Determine the correct issue tracker depending on issue type and kernel tree
- Search the issue tracker, subsystem mailing list to see whether the issue was already reported
- If this is a new issue, create a new ticket
- Create a regex for automated triaging

# We have monitoring



# Weekly Summary: Top 10 Unstable Tests Encountered by the CKI Team

Hello team,

Below is our weekly summary of the top 10 unstable tests the CKI team has encountered most frequently in the past week.

[@Hangbin Liu](#), [@Nico Pache](#), [@Huanian Li](#), [@Fendy Tjahjadi](#), [@Eirik Fuller](#) [@Ping Fang](#) Please work with your team to ensure they are being addressed and moving forward.

If you think an issue is incorrect, please let me know. Thanks!

Title	Created_days_ago	Updated_days_ago	Status	Assignee	Hit_count
<a href="#">KUNIT: slub_test: test_next_pointer: EXPECTATION FAILED at lib/slub_kunit.c:66</a>	440	13	opened	Nico Pache	32
<a href="#">LTP lite: perf_event_open03.c:58: TFAIL: Likely kernel memory leak detected</a>	825	48	opened	Fendy Tjahjadi; Li Wang	13
<a href="#">KUNIT: clk_gate_test_hiword_enable: EXPECTATION FAILED at drivers/clk/clk-gate_t...</a>	563	13	opened	Nico Pache	11
<a href="#">[upstream] [s390x] KUNIT: clk-gate-invert-test - clk_gate_test_invert_enable: EX...</a>	97	13	opened	Nico Pache	11
<a href="#">[upstream] [s390x] KUNIT: clk-gate-is_enabled-test - clk_gate_test_is_disabled: ...</a>	97	6	opened	Nico Pache	11
<a href="#">[upstream] [s390x] KUNIT: clk-gate-test - clk_gate_test_enable: EXPECTATION FAIL...</a>	97	6	opened	Nico Pache	11
<a href="#">[upstream] [s390x] KUNIT: drm_format_helper_test - drm_test_fb_xrgb8888_to_xrgb2...</a>	97	13	opened	Nico Pache	11
<a href="#">kselftests: bpf:test_tunnel.sh fails</a>	223	13	opened	Hangbin Liu	9
<a href="#">Usex - version 1.9-29 - /bin/strace HANG</a>	376	54	opened	Fendy Tjahjadi; Eirik Fuller	1
<a href="#">LTP lite: preadv203: TBROK: Test killed! (timeout?)</a>	375	13	opened	Li Wang; Ping Fang	1

# Reports we send

- Top 10 Issues Encountered by the CKI Team Last Week
- Top 10 Unstable Tests Encountered by the CKI Team
- Top Failed Fedora Tests Encountered by the CKI Team



# Plans

Have everything in one place

SW Developers and QE should know about the issues

Increase collaboration between CKI, Developers and QE

# Wrapping up

We love cookies & We care about the issues



Thank you!