

Interacting with kernel test results

Helen Koike
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LPC 2024



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Topics

- KernelCI data flow
- Identifying and managing test errors
- Data analysis and automatic error detection



KernelCI DataFlow

KernelCI
Maestro

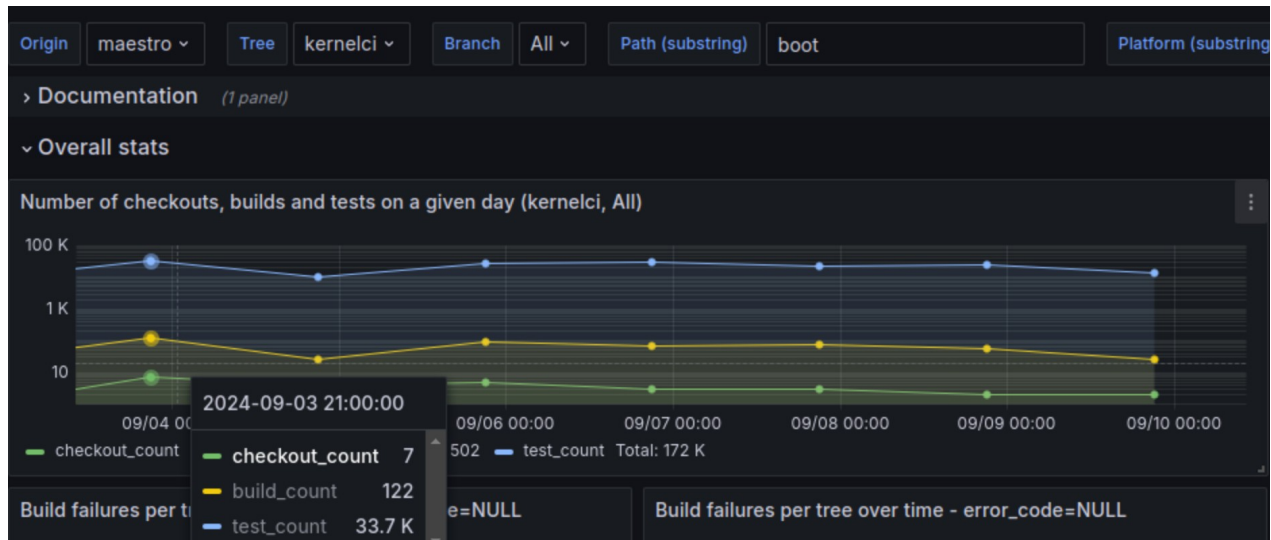


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KernelCI DataFlow

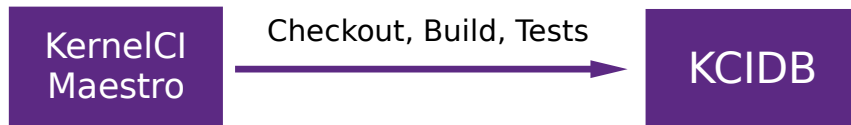
KernelCI
Maestro



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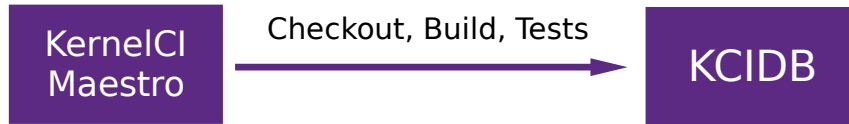
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KernelCI DataFlow



KernelCI DataFlow

“Noise” detection



KernelCI DataFlow



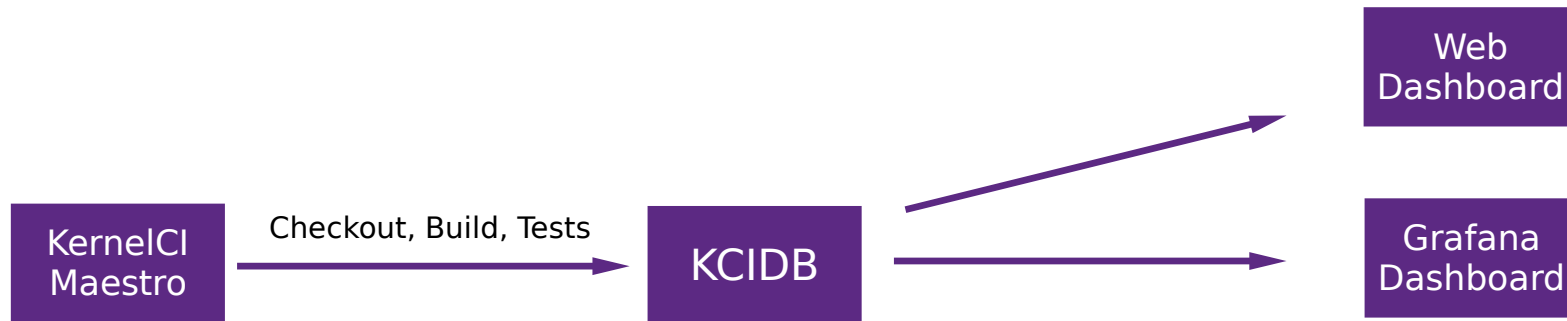
<https://dashboard.kernelci.org/>



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KernelCI DataFlow



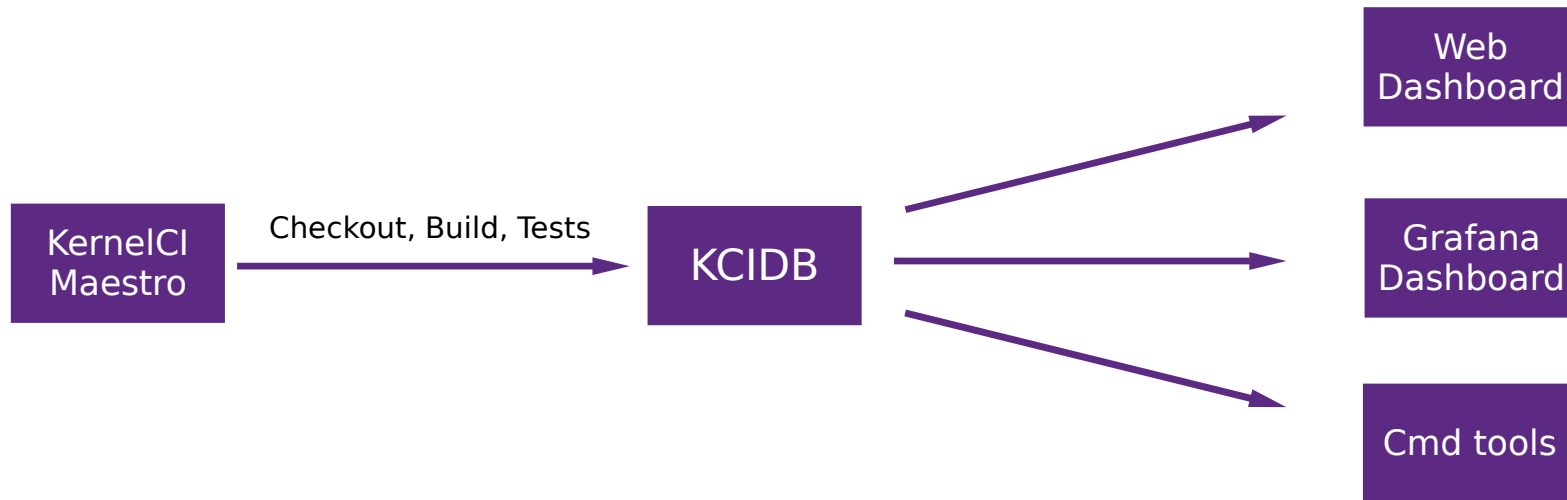
<https://grafana.kernelci.org/>



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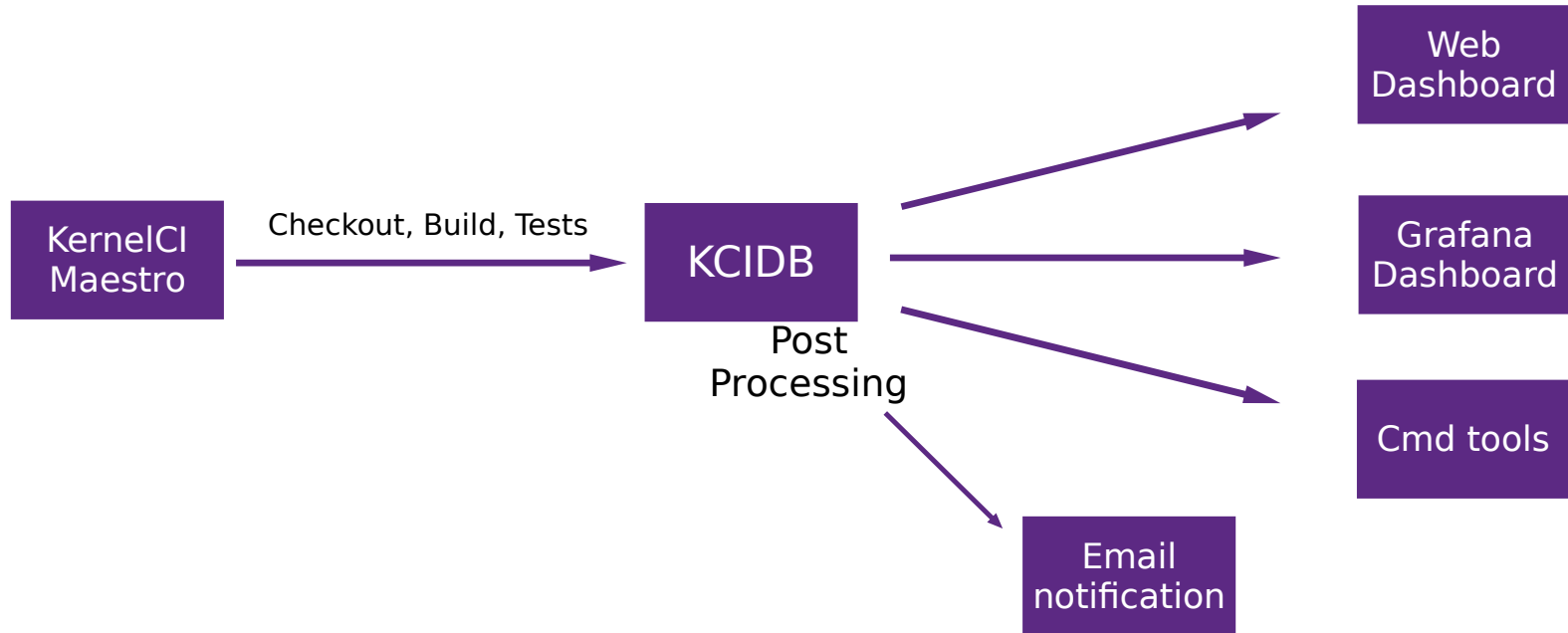
KernelCI DataFlow



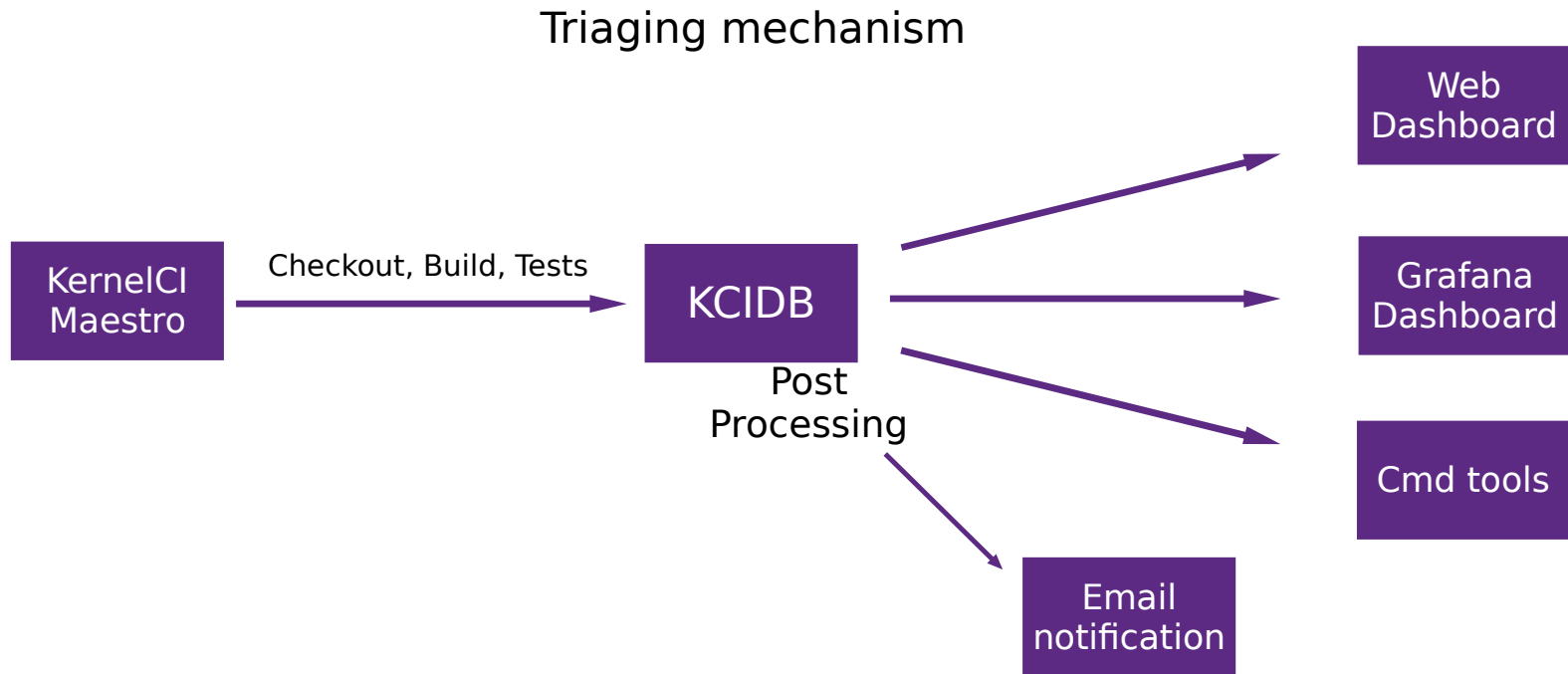
- <https://github.com/kernelci/kci-dev>
- <https://github.com/kernelci/kcidb>



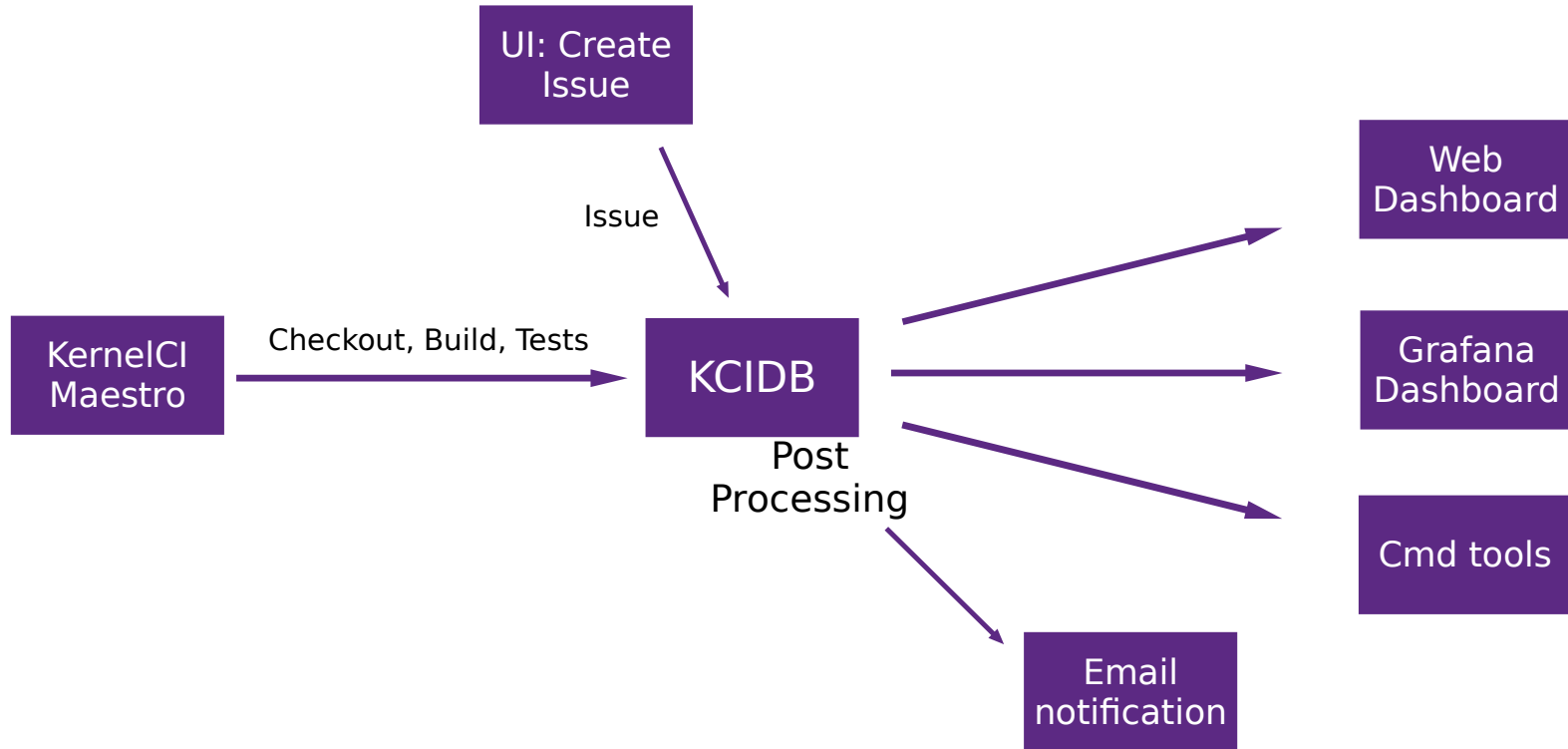
KernelCI DataFlow



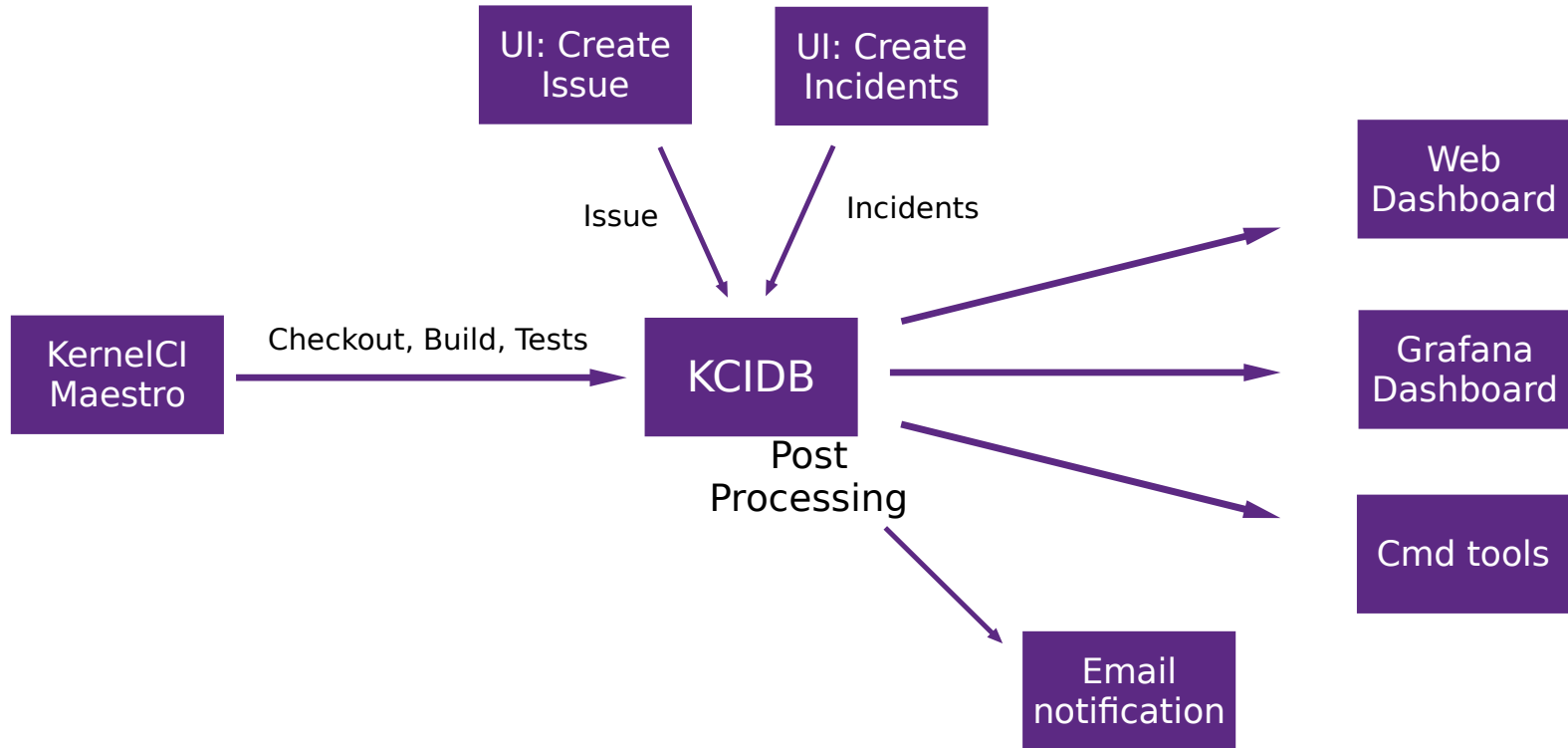
KernelCI DataFlow



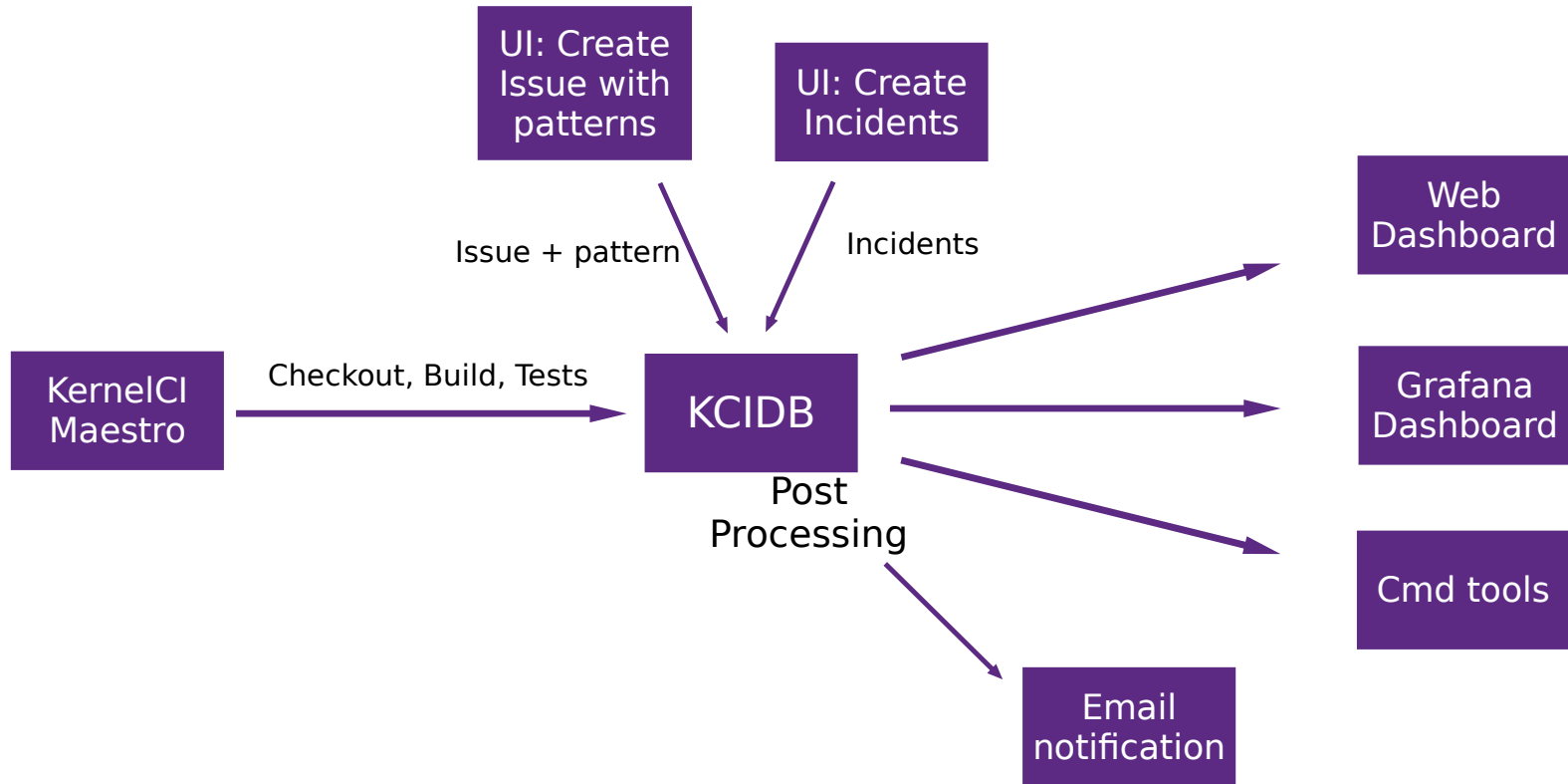
KernelCI DataFlow



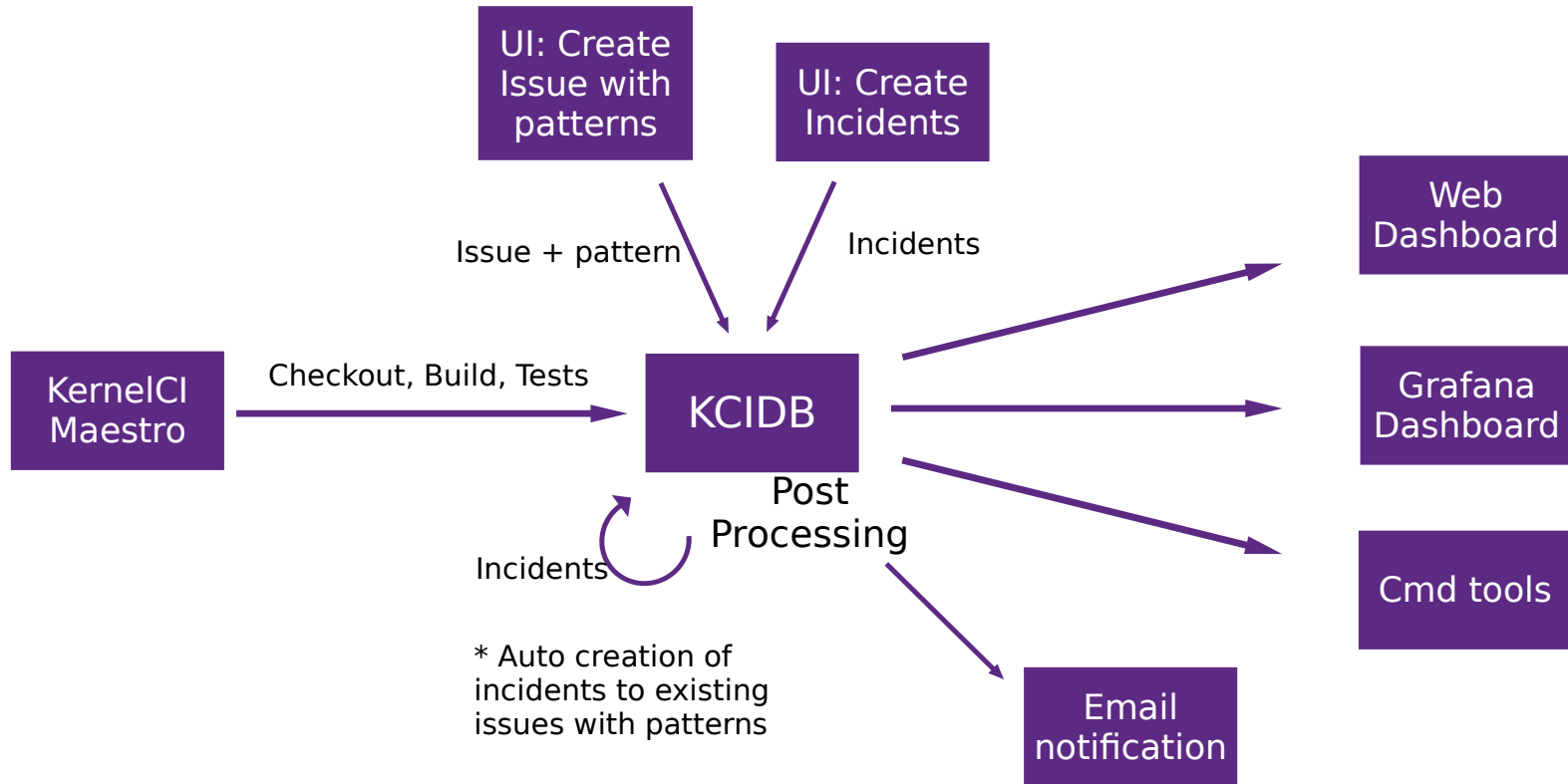
KernelCI DataFlow



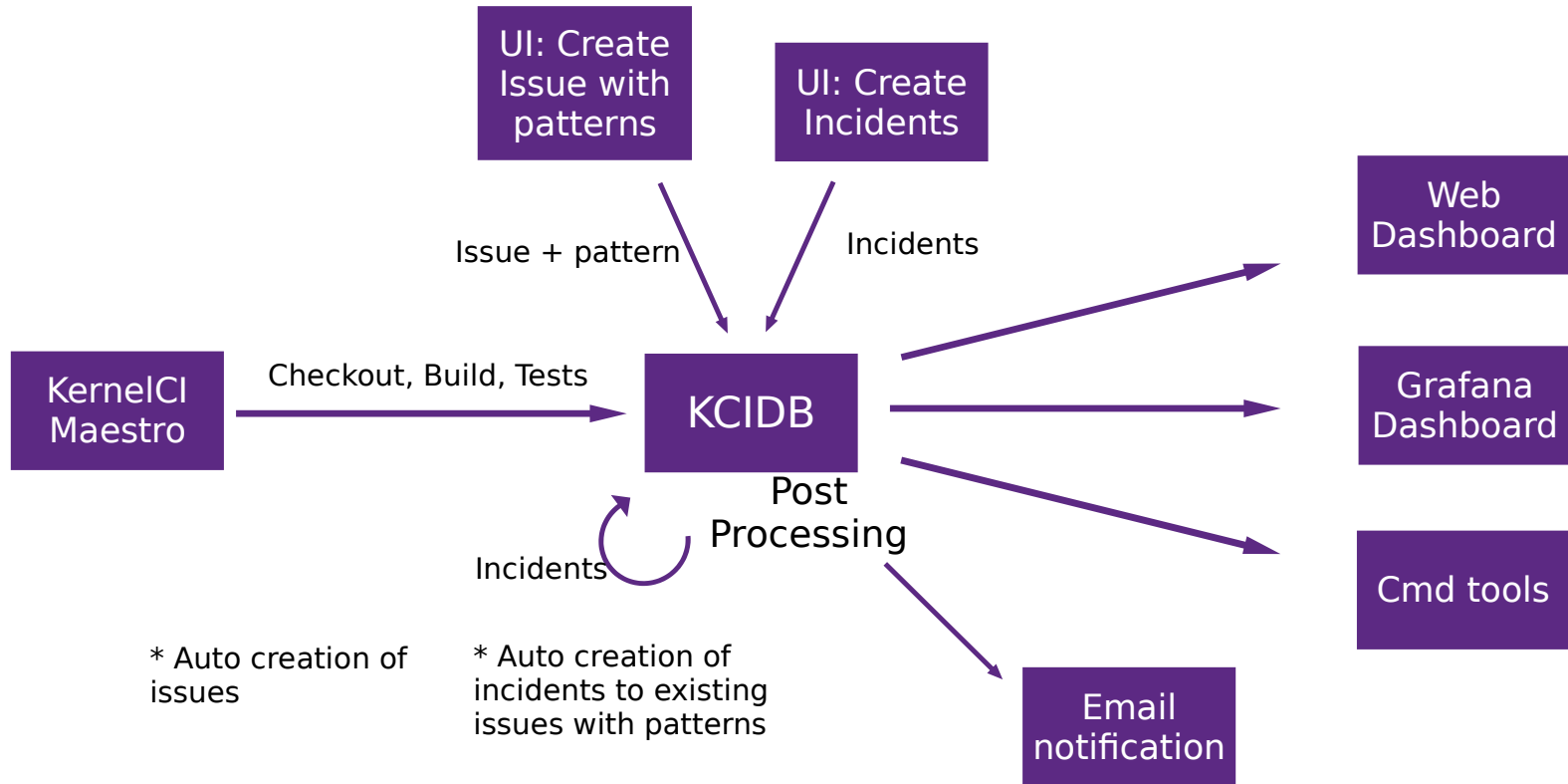
KernelCI DataFlow



KernelCI DataFlow



KernelCI DataFlow



Showing: 1 - 10 of 49 Tree Items per page: 10

Tree	Branch	Commit/Tag	Date	Build Status	Boot Status	Test Status
agross	ci-next	64a915bfae47...	2024-09-08	0 0 0	0 0 0	0 0 0
amlogic	for-next	v6.11-rc1-22...	2024-09-05	21 0 0	487 54 3	5500 5112 1522
android	android-4.19-stable	v4.19.321-81...	2024-09-09	23 7 2	20 0 0	20 0 1
android	android-mainline	v6.11-rc6-63...	2024-09-10	27 4 1	36 1 1	36 2 2
android	android11-5.4	android11-5....	2024-09-10	30 2 0	24 2 3	24 2 4
android	android12-5.10	android12-5....	2024-09-10	30 2 0	36 1 1	36 1 2
android	android12-5.4	android12-5....	2024-09-10	30 2 0	24 2 3	24 2 4
android	android12-5.4-lts	v5.4.283-494...	2024-09-06	16 8 0	24 1 3	24 1 3
android	android13-5.10	android13-5....	2024-09-10	29 3 0	36 0 1	36 0 2
android	android13-5.15	android13-5....	2024-09-10	32 0 0	36 1 1	36 1 2

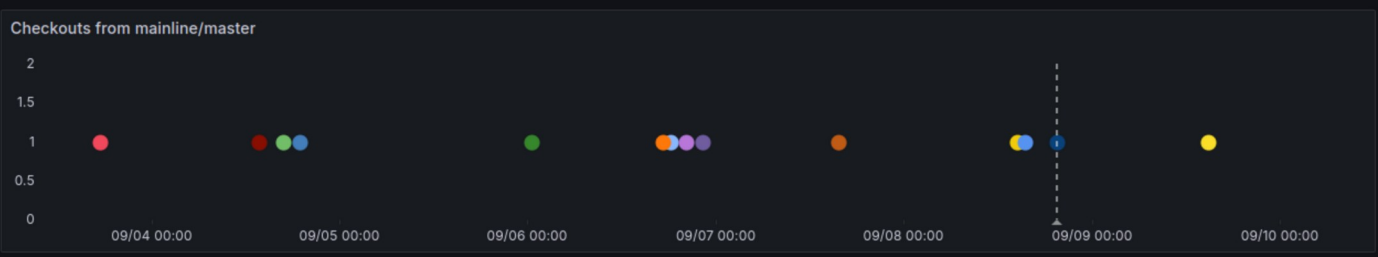
Showing: 1 - 10 of 49 Tree Items per page: 10

datasource default tree mainline branch master platform All
Git Commit Hash da3ea35007d0af457a0afc87e84fddaebc4e0b63
Test Suite fluster.v4l2.%.%
Highlight current commit

Golden Tips

- Click on the commit node, then click on "See commit" to move to it
- If no points are shown, click on "Zoom to data", or change the time range on the top right

Select below the commit you want to see:

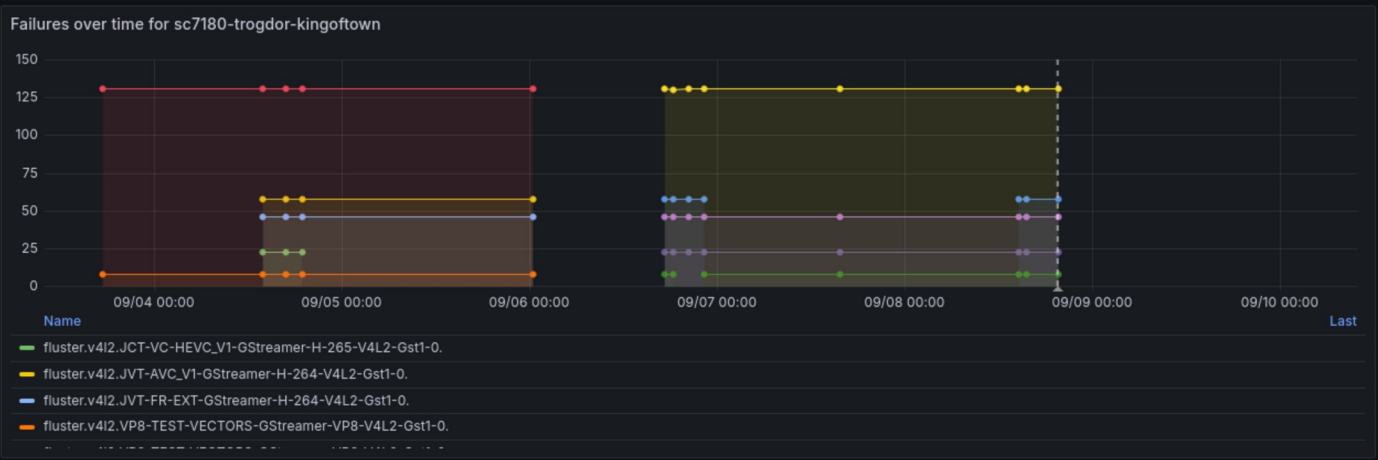


sc7180-trogdor-kingoftown

Scores of da3ea35007d0af457a0afc87e84fddaebc4e0b63

path_prefix	FAILS	PASSES	TOTAL
fluster.v4l2.gstreamer_h264.	58	77	135
fluster.v4l2.gstreamer_h264_frext.	46	23	69
fluster.v4l2.gstreamer_h265.	23	124	147
fluster.v4l2.gstreamer_vp8.	8	53	61
fluster.v4l2.gstreamer_vp9.	131	174	305

Count: 5



mt8192-asurada-spherion-r0

Scores of da3ea35007d0af457a0afc87e84fddaebc4e0b63

path_prefix	FAILS	PASSES	TOTAL
fluster.v4l2.gstreamer_h264.	37	98	135
fluster.v4l2.gstreamer_h264_frext.	42	27	69



KernelCI: Email report

- Custom reports

Subject: KernelCI report for fluster tests: master@v6.11-rc4

REVISION

Commit

name: v6.11-rc4
hash: 3d5f968a177d468cd13568ef901c5be84d83d32b
Checked out from
<https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git> master

FLUSTER TESTS

sc7180-trogdor-kingoftown:
-v4l2-decoder-conformance-av1: passed: 0, failed: 0
-v4l2-decoder-conformance-av1-chromium-10bit: passed: 0, failed: 0
-v4l2-decoder-conformance-h264: passed: 0, failed: 0
-v4l2-decoder-conformance-h264-frext: passed: 0, failed: 0
-v4l2-decoder-conformance-h265: passed: 1, failed: 1
-v4l2-decoder-conformance-vp8: passed: 0, failed: 0
-v4l2-decoder-conformance-vp9: passed: 0, failed: 0

sc7180-trogdor-lazor-limozeen:
-v4l2-decoder-conformance-av1: passed: 0, failed: 0
-v4l2-decoder-conformance-av1-chromium-10bit: passed: 0, failed: 0
-v4l2-decoder-conformance-h264: passed: 0, failed: 0
-v4l2-decoder-conformance-h264-frext: passed: 0, failed: 0
-v4l2-decoder-conformance-h265: passed: 0, failed: 0
-v4l2-decoder-conformance-vp8: passed: 0, failed: 0
-v4l2-decoder-conformance-vp9: passed: 0, failed: 2

See complete and up-to-date report at:

https://kcidb.kernelci.org/d/revision/revision?orgId=1&var-git_commit_hash=3d5f968a177d468cd13568ef901c5be8

Tested-by: kernelci.org bot <bot@kernelci.org>

Thanks,
KernelCI team



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KCIDB Triage Tool

Submit Issue

Name:

Email:

Report Subject:

Culprit Type:

Report URL:

Comment:

Misc:

Dry Run:

Submit Incidents

Name:

Email:

Issue ID:

Issue Version:

Incident Type:

IDs List:

Comment:

Misc:

Dry Run:

KernelCI: Issues On Grafana

Issues

All issues

created_at	last_incident_at	n_inciden	report_subject	id	versio	report_url	culprit_ty	submitter
2024-09-09 11:27:05	2024-09-09 11:28:05	2	net/xfrm/xfrm_policy.c:1287:8: error: variable 'dir' is uninitial...	kernelci_api:141c...	0	https://lore.kernel.org/all/CA+G9fYtemFfuhc7=eNyP3TezM9...	code	Laura Nao
2024-08-21 11:11:00	2024-08-21 11:14:01	3	Android clang issue: io-pgtable-arm.c stack frame size	kernelci_api:19a...	0		code	Helen Koike
2024-07-02 07:50:02	2024-08-13 06:53:00	238	kern :emerg : call_irq_handler: * No irq handler for vector	kernelci_api:bc8...	0		code	Laura Nao
2024-07-01 12:10:02	2024-08-13 06:46:00	149	RIP: 0010:usercopy_abort+0x74/0x76 kernel panic	kernelci_api:70d...	0	https://linux-regtracking.leemhuis.info/regzbot/regression/lo...	code	Laura Nao
2024-08-07 11:47:01	2024-08-07 11:47:01	5	fs/netfs/buffered_read.c:304:7: error: variable 'slice' is used ...	kernelci_api:c9b...	0	https://lore.kernel.org/lkml/20240801185321.GA2534812@th...	code	Laura Nao
2024-07-30 10:15:00	2024-08-07 11:38:00	6	invalid use of undefined type 'struct svm_range'	kernelci_api:233...	0	https://lore.kernel.org/linux-mm/202407252127.zvnxakRA-lk...	code	Laura Nao
2024-07-16 16:49:00	2024-07-16 17:41:00	6	usb_kill_anchored_urbs panic during boot on mt8195-cherry...	kernelci_api:131b...	0	https://lore.kernel.org/all/7851401b-e884-4ed4-998d-7651f...	code	Nicolas Prado



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KernelCI: Issues On Grafana

Issues

All issues

created_at	last_incident_at	n_incident	report_subject	id	versio	report_url	culprit_ty	submitter
2024-09-09 11:27:05	2024-09-09 11:28:05	2	net/xfrm/xfrm_policy.c:1287:8: error: variable 'dir' is uninitial...	kernelci_api:141c...	0	https://lore.kernel.org/all/CA+G9fYtemFfuhc7=eNyP3TezM9...	code	Laura Nao
2024-08-21 11:11:00	2024-08-21 11:14:01	3	Android clang issue: io-pgtable-arm.c stack frame size	kernelci_api:19a...	0		code	Helen Koike
2024-07-02 07:50:02	2024-08-13 06:53:00	2	kern :emerg : call_irq_handler: * No irq handler for vector	kernelci_api:bc8...	0		code	Laura Nao
2024-07-01 12:10:02	2024-08-13 06:46:00	9	RIP: 0010:usercopy_abort+0x74/0x76 kernel panic	kernelci_api:70d...	0	https://linux-regtracking.leemhuis.info/regzbot/regression/lo...	code	Laura Nao
2024-08-07 11:47:01	2024-08-07 11:47:01	5	fs/netfs/buffered_read.c:304:7: error: variable 'slice' is used ...	kernelci_api:c9b...	0	https://lore.kernel.org/lkml/20240801185321.GA2534812@th...	code	Laura Nao
2024-07-30 10:15:00	2024-08-07 11:38:00	6	invalid use of undefined type 'struct svm_range'	kernelci_api:233...	0	https://lore.kernel.org/linux-mm/202407252127.zvnxakRA-lk...	code	Laura Nao
2024-07-16 16:49:00	2024-07-16 17:41:00	5	usb_kill_anchored_urbs panic during boot on mt8195-cherry...	kernelci_api:131b...	0	https://lore.kernel.org/all/7851401b-e884-4ed4-998d-7651f...	code	Nicolas Prado



KernelCI: Issues On Grafana

Issues

All issues

created_at	last_incident_at	n_incident	report_subject	id	version	report_url	culprit_type	submitter
2024-09-09 11:27:05	2024-09-09 11:28:05	2	net/xfrm/xfrm_policy.c:1287:8: error: variable 'dir' is uninitial...	kernelci_api:141c...	0	https://lore.kernel.org/all/CA+G9fYtemFfuhc7=eNyP3TezM9...	code	Laura Nao
2024-08-21 11:11:00	2024-08-21 11:14:01	3	Android clang issue: io-pgtable-arm.c stack frame size	kernelci_api:19a...	0		code	Helen Koike
2024-07-02 07:50:02	2024-08-13 06:53:00	238	kernel:emerg : call_irq_handler: * No irq handler for vector	kernelci_api:bc8...	0		code	Laura Nao
2024-07-01 12:10:02	2024-08-13 06:46:00	149	Regressions:0010:usercopy_abort+0x74/0x76 kernel panic	kernelci_api:70d...	0	https://linux-regtracking.leemhuis.info/regzbot/regression/lo...	code	Laura Nao
2024-08-07 11:47:01	2024-08-07 11:47:01	5	fs/btrfs/buffered_read.c:304:7: error: variable 'slice' is used ...	kernelci_api:c9b...	0	https://lore.kernel.org/lkml/20240801185321.GA2534812@th...	code	Laura Nao
2024-07-30 10:15:00	2024-08-07 11:38:00	6	invalid use of undefined type 'struct svm_range'	kernelci_api:233...	0	https://lore.kernel.org/linux-mm/202407252127.zvnxakRA-lk...	code	Laura Nao
2024-07-16 16:49:00	2024-07-16 17:41:00	6	usb_kill_anchored_urbs panic during boot on mt8195-cherry...	kernelci_api:131b...	0	https://lore.kernel.org/all/7851401b-e884-4ed4-998d-7651f...	code	Nicolas Prado



KernelCI: Issues On Grafana

Issues

All issues

created_at	last_incident_at	n_inciden	report_subject	id	versio	report_url	culprit_ty	submitter
2024-09-09 11:27:05	2024-09-09 11:28:05	2	net/xfrm/xfrm_policy.c:1287:8: error: variable 'dir' is uninitial...	kernelci_api:141c...	0	https://lore.kernel.org/all/CA+G9fYtemFfuhc7=eNyP3TezM9...	code	Laura Nao
2024-08-21 11:11:00	2024-08-21 11:14:01	3	Android clang issue: io-pgtable-arm.c stack frame size	kernelci_api:19a...	0		code	Helen Koike
2024-07-02 07:50:02	2024-08-13 06:53:00	238	kern :emerg : call_irq_handler: * No irq handler for vector	kernelci_api:bc8...	0		code	Laura Nao
2024-07-01 12:10:02	2024-08-13 06:46:00	149	RIP: 0010:usercopy_abort+0x74/0x76 kernel panic	kernelci_api:70d...	0	https://linux-regtracking.leemhuis.info/regzbot/regression/lo...	code	Laura Nao
2024-08-07 11:47:01	2024-08-07 11:47:01	5	fs/netfs/buffered_read.c:304:7: error: variable 'slice' is used ...	kernelci_api:c9b...	0	https://lore.kernel.org/lkml/20240801185321.GA2534812@th...	code	Laura Nao
2024-07-30 10:15:00	2024-08-07 11:38:00	6	invalid use of undefined type 'struct svm_range'	kernelci_api:233...	0	https://lore.kernel.org/linux-mm/202407252127.zvnxakRA-lk...	code	Laura Nao
2024-07-16 16:49:00	2024-07-16 17:41:00	6	usb_kill_anchored_urbs panic during boot on mt8195-cherry...	kernelci_api:131b...	0	https://lore.kernel.org/all/7851401b-e884-4ed4-998d-7651f...	code	Nicolas Prado



KernelCI: Incidents On Grafana

All tests (boot, %, %)

start time ↓	status	error_code	id	path	git_commit_hash	arch	config	platform	log_line	related_issues
2024-08-08 01:51:18	ERROR	Test	maestro:66b44ec65...	boot	222a3380f92b8791d4eeedf7cd75	arm64	defconfig	qcs6490-rb3gen2	/bin/sh: can't access tty; job cont	
2024-08-08 01:51:11	FAIL	Job	maestro:66b44ebf5...	boot	222a3380f92b8791d4eeedf7cd75	arm64	defconfig	rk3399-gru-kevin	jumping to kernel	
2024-08-08 01:45:53	FAIL		maestro:66b44d815...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14a-cb0001xx-zork	SELinux: Could not open policy fil	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:45	FAIL		maestro:66b44d795...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	lenovo-TPad-C13-Yoga-zork	kern :emerg : call_irq_handler: 3.5	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:44	FAIL		maestro:66b44d785...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	asus-CM1400CXA-dalboz	kern :emerg : call_irq_handler: 3.5	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:29	FAIL		maestro:66b44d695...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-14b-na0052xx-zork	SELinux: Could not open policy fil	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:15	MISS	submit_error	maestro:66b44d5b5...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	sun7i-a20-cubieboard2		
2024-08-08 01:45:10	FAIL	Job	maestro:66b44d565...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	bcm2836-rpi-2-b	[7.233027] ---[end Kernel panic	
2024-08-08 01:45:02	FAIL	Job	maestro:66b44d4e5...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-12b-ca0010nr-n4020-oct	Error: Could not locate 'wifi_sar' i	RIP: 0010:usercopy_abort+0x74/0
2024-08-08 01:45:01	FAIL	Job	maestro:66b44d4d5...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14-G1-sona	ME: Error Code : No Error	RIP: 0010:usercopy_abort+0x74/0



KernelCI: Incidents On Grafana

All tests (boot, %, %)

start time ↓	status	error_code	id	path	git_commit_hash	arch	config	platform	log_line	related_issues
2024-08-08 01:50:18	ERROR	Test	maestro:66b44ec65...	boot	222a3380f92b8791d4eeedf7cd75	arm64	defconfig	qcs6490-rb3gen2	/bin/sh: can't access tty; job cont	
2024-08-08 01:50:11	FAIL	Job	maestro:66b44ebf5...	boot	222a3380f92b8791d4eeedf7cd75	arm64	defconfig	rk3399-gru-kevin	jumping to kernel	
2024-08-08 01:49:53	FAIL		maestro:66b44d815...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14a-cb0001xx-zork	SELinux: Could not open policy fil	kern :emerg : call_irq_handler: * N
2024-08-08 01:49:45	FAIL		maestro:66b44d795...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	lenovo-TPad-C13-Yoga-zork	kern :emerg : call_irq_handler: 3.5	kern :emerg : call_irq_handler: * N
2024-08-08 01:49:44	FAIL		maestro:66b44d785...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	asus-CM1400CXA-dalboz	kern :emerg : call_irq_handler: 3.5	kern :emerg : call_irq_handler: * N
2024-08-08 01:49:29	FAIL		maestro:66b44d695...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-14b-na0052xx-zork	SELinux: Could not open policy fil	kern :emerg : call_irq_handler: * N
2024-08-08 01:49:15	MISS	submit_error	maestro:66b44d5b5...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	sun7i-a20-cubieboard2		
2024-08-08 01:49:10	FAIL	Job	maestro:66b44d565...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	bcm2836-rpi-2-b	[7.233027] ---[end Kernel panic	
2024-08-08 01:49:02	FAIL	Job	maestro:66b44d4e5...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-12b-ca0010nr-n4020-oct	Error: Could not locate 'wifi_sar' i	RIP: 0010:usercopy_abort+0x74/0
2024-08-08 01:49:01	FAIL	Job	maestro:66b44d4d5...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14-G1-sona	ME: Error Code : No Error	RIP: 0010:usercopy_abort+0x74/0



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2024-08-08 01:51:11	FAIL	Job	maestro:66b44ebf5...	boot	222a3380f92b8791d4eeedf7cd75	arm64	defconfig	rk3399-gru-kevin	jumping to kernel	
2024-08-08 01:45:53	FAIL		maestro:66b44d815...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14a-cb0001xx-zork	SELinux: Could not open policy fil	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:45	FAIL		maestro:66b44d795...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	lenovo-TPad-C13-Yoga-zork	kern :emerg : call_irq_handler: 3.5	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:44	FAIL		maestro:66b44d785...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	asus-CM1400CXA-dalboz	kern :emerg : call_irq_handler: 3.5	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:29	FAIL		maestro:66b44d695...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-14b-na0052xx-zork	SELinux: Could not open policy fil	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:15	MISS	submit_err	maestro:66b44d5b5...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	sun7i-a20-cubieboard2		
2024-08-08 01:45:10	FAIL	Job	maestro:66b44d565...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	bcm2836-rpi-2-b	[7.233027] ---[end Kernel panic	
2024-08-08 01:45:02	FAIL	Job	maestro:66b44d4e5...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-12b-ca0010nr-n4020-oc	Error: Could not locate 'wifi_sar' i	RIP: 0010:usercopy_abort+0x74/0
2024-08-08 01:45:01	FAIL	Job	maestro:66b44d445...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14-G1-sona	ME: Error Code : No Error	RIP: 0010:usercopy_abort+0x74/0



KernelCI: Incidents On Grafana

All tests (boot, %, %)

start time ↓	status	error_code	id	path	git_commit_hash	arch	config	platform	log_line	related_issues
2024-08-08 01:51:18	ERROR	Test	maestro:66b44ec65...	boot	222a3380f92b8791d4eeedf7cd75	arm64	defconfig	qcs6490-rb3gen2	/bin/sh: can't access tty; job cont	
2024-08-08 01:51:11	FAIL	Job	maestro:66b44ebf5...	boot	222a3380f92b8791d4eeedf7cd75	arm64	defconfig	rk3399-gru-kevin	jumping to kernel	
2024-08-08 01:45:53	FAIL		maestro:66b44d815...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14a-cb0001xx-zork	SELinux: Could not open polic	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:45	FAIL		maestro:66b44d795...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	lenovo-TPad-C13-Yoga-zork	kern :emerg : call_irq_handler: * N	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:44	FAIL		maestro:66b44d785...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	asus-CM1400CXA-dalboz	kern :emerg : call_irq_handler: * N	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:29	FAIL		maestro:66b44d695...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-14b-na0052xx-zork	SELinux: Could not open polic	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:15	MISS	submit_error	maestro:66b44d5b5...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	sun7i-a20-cubieboard2		
2024-08-08 01:45:10	FAIL	Job	maestro:66b44d565...	boot	222a3380f92b8791d4eeedf7cd75	arm	multi_v7_...	bcm2836-rpi-2-b	[7.233027] ---[end Kernel pac	
2024-08-08 01:45:02	FAIL	Job	maestro:66b44d4e5...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-12b-ca0010nr-n4020-oc	Error: Could not locate 'wifi_s	RIP: 0010:usercopy_abort+0x74/0
2024-08-08 01:45:01	FAIL	Job	maestro:66b44d4d5...	boot	222a3380f92b8791d4eeedf7cd75	x86_64	cross://ch...	hp-x360-14-G1-sona	ME: Error Code : No Error	RIP: 0010:usercopy_abort+0x74/0



KernelCI: Incidents On Grafana

All tests (boot, %, %)

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2024-08-08 01:51:18	ERROR	Test	maestro:66b44ec65...	boot	222a3380f92b8791d4eedf7cd75	arm64	defconfig	qcs6490-rb3gen2	/bin/sh: can't access tty: job	
2024-08-08 01:51:11	FAIL	Job	maestro:66b44ebf5...	boot	222a3380f92b8791d4eedf7cd75	arm64	defconfig	rk3399-gru-kevin	jumping to kernel	
2024-08-08 01:45:53	FAIL		maestro:66b44d815...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eedf7cd75	x86_64		01xx-zork	SELinux: Could not open policy	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:45	FAIL		maestro:66b44d795...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eedf7cd75	x86_64		oga-zork	kern :emerg : call_irq_handler:	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:44	FAIL		maestro:66b44d785...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eedf7cd75	x86_64		dalboz	kern :emerg : call_irq_handler:	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:29	FAIL		maestro:66b44d695...	boot.nfs.dmesg.emerg	222a3380f92b8791d4eedf7cd75	x86_64		hp-14b-na0052xx-zork	SELinux: Could not open policy	kern :emerg : call_irq_handler: * N
2024-08-08 01:45:15	MISS	submit_error	maestro:66b44d5b5...	boot	222a3380f92b8791d4eedf7cd75	arm		sun7i-a20-cubieboard2		
2024-08-08 01:45:10	FAIL	Job	maestro:66b44d565...	boot	222a3380f92b8791d4eedf7cd75	arm		bcm2836-rpi-2-b	[7.233027] ---[end Kernel pa	
2024-08-08 01:45:02	FAIL	Job	maestro:66b44d4e5...	boot	222a3380f92b8791d4eedf7cd75	x86_64		hp-x360-12b-ca0010nr-n4020-oc	Error: Could not locate 'wifi_s	RIP: 0010:usercopy_abort+0x74/0
2024-08-08 01:45:01	FAIL	Job	maestro:66b44d4d5...	boot	222a3380f92b8791d4eedf7cd75	x86_64		hp-x360-14-G1-sona	ME: Error Code : No Error	IP: 0010:usercopy_abort+0x74/0

Unclassified



Problems

- Noise detection by Maestro can be misleading
- Post-processing noise detection is hard
- Understand when to send notifications
- Understand which data to show



Questions

- Are there smarter ways to filter noise?



COLLABORA

Data analysis and automation

Rationale

Leverage the tests and builds result data collected in KCIDB to extract information / patterns from it to inform and direct automatic processes.

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Leverage the tests and builds result data collected in KCIDB to extract information / patterns from it to inform and direct automatic processes.

In other words:

Use the data we have to automate the processing of new data.



Initial use case

Characterize known error information to do automatic matching in new results.



- classify errors
- provide new possibilities for queries
- find patterns



How?

Find a way to automatically "profile" an error.



How?

Find a way to automatically "profile" an error.



Now we have a way to compare and match errors



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Find a way to automatically "profile" an error.



Now we have a way to compare and match errors

logspec: <https://gitlab.collabora.com/rcn/logspec>
An extensible log parser (proof of concept)



How?

Where does it get the error information from?
Build and test logs.



How?

Where does it get the error information from?
Build and test logs.

Not ideal. Logs are generally:

- Unstructured
- Ad-hoc
- Noisy

But let's see how far we can get with just that.



How does it work?

- 1) Parse a plain text log (context-sensitive parsing).
- 2) Found an error? Turn it into structured data.
- 3) Generate a unique “signature” for that structured data.
- 4) Submit that as an issue in KCIDB.



How does it work?

- 1) Parse a plain text log (context-sensitive parsing).
- 2) Found an error? Turn it into structured data.
- 3) Generate a unique “signature” for that structured data.
- 4) Submit that as an issue in KCIDB.

We can now use the structured data to parameterize queries (search for issues with specific details) and the signature to match new results with known issues **automatically** in a **performant** way.



Example 1

```
[ 4.393792] -----[ cut here ]-----  
[ 4.398412] UBSAN: shift-out-of-bounds in ./include/linux/log2.h:57:13  
[ 4.404940] shift exponent 32 is too large for 32-bit type 'long unsigned int'  
[ 4.412164] CPU: 2 UID: 0 PID: 1 Comm: swapper/0 Not tainted 6.11.0-rc4-next-20240823 #1  
[ 4.413158] Hardware name: Google Shuboz/Shuboz, BIOS  
Google_Shuboz.13434.780.2022_10_13_1418 09/12/2022  
[ 4.413158] Call Trace:  
[ 4.413158] dump_stack_lvl+0x94/0xa4  
[ 4.413158] dump_stack+0x12/0x18  
...
```



Example 1

```
{
  "logspec": {
    "error": {
      "hardware": "Google Shuboz/Shuboz, BIOS Google_Shuboz.13434.780.2022_10_13_1418
09/12/2022",
      "location": "./include/linux/log2.h:57:13",
      "error_type": "linux.kernel.ubsan",
      "log_excerpt": [...],
      "error_summary": "shift-out-of-bounds: shift exponent 32 is too large for 32-bit type
'long unsigned int'"
    },
    "parser": "generic_linux_boot",
    "version": "1.0.0"
  }
}
```

Signature: ae160f6f27192c3527b2e88faba35d85d27c285f



Example 1

Associated test runs:

Incidents							
Origin	Path	Comment	Architecture	Start time	Duration	Present	Status
maestro	boot.dmesg.emerg	emerg on hp-x360-14a-cb0...	i386	2024-08-24 20:43:15		✓ yes	✗ FAIL
maestro	boot.dmesg.emerg	emerg on asus-CM1400CX...	i386	2024-08-24 13:28:06		✓ yes	✗ FAIL
maestro	boot.dmesg.emerg	emerg on asus-CM1400CX...	i386	2024-08-25 09:07:33		✓ yes	✗ FAIL
maestro	boot.dmesg.emerg	emerg on asus-CM1400CX...	i386	2024-08-25 18:37:59		✓ yes	✗ FAIL
maestro	boot.dmesg.emerg	emerg on asus-CM1400CX...	i386	2024-08-26 10:44:38		✓ yes	✗ FAIL
maestro	boot.dmesg.emerg	emerg on asus-CM1400CX...	i386	2024-08-24 13:57:44		✓ yes	✗ FAIL
maestro	boot.dmesg.emerg	emerg on hp-x360-14a-cb0...	i386	2024-08-24 13:28:29		✓ yes	✗ FAIL
maestro	boot.dmesg.emerg	emerg on hp-14b-na0052xx...	i386	2024-08-24 13:38:48		✓ yes	✗ FAIL



Example 2

```
[...]  
drivers/iommu/arm/arm-smmu-v3/arm-smmu-v3.c: In function 'arm_smmu_probe_device':  
drivers/iommu/arm/arm-smmu-v3/arm-smmu-v3.c:3301:17: error: implicit declaration of function  
'pci_prepare_ats'; did you mean 'pci_enable_ats'? [-Werror=implicit-function-declaration]  
 3301 |             pci_prepare_ats(to_pci_dev(dev), stu);  
      |             ^~~~~~  
      |             pci_enable_ats  
[...]  
cc1: all warnings being treated as errors  
make[6]: *** [scripts/Makefile.build:244: drivers/iommu/arm/arm-smmu-v3/arm-smmu-v3.o] Error  
1  
make[5]: *** [scripts/Makefile.build:490: drivers/iommu/arm/arm-smmu-v3] Error 2  
make[4]: *** [scripts/Makefile.build:490: drivers/iommu/arm] Error 2  
make[3]: *** [scripts/Makefile.build:490: drivers/iommu] Error 2  
make[2]: *** [scripts/Makefile.build:490: drivers] Error 2  
make[2]: *** Waiting for unfinished jobs....
```



Example 2

```
{
  "logspec": {
    "error": {
      "script": "scripts/Makefile.build:244",
      "target": "drivers/iommu/arm/arm-smmu-v3/arm-smmu-v3.o",
      "location": "3301:17",
      "src_file": "drivers/iommu/arm/arm-smmu-v3/arm-smmu-v3.c",
      "error_type": "kbuild.compiler.error",
      "log_excerpt": [...],
      "error_summary": "implicit declaration of function 'pci_prepare_ats'; did you mean
'pci_enable_ats'? [-Werror=implicit-function-declaration]"
    },
    "parser": "kbuild",
    "version": "1.0.0"
  }
}
```

Signature: 82a57e441e2a200819aa41d0608e95bcdd31394d



Example 3

```
[ 13.283706] -----[ cut here ]-----
[ 13.289547] mmc1: sdhci: ===== SDHCI REGISTER DUMP =====
[ 13.294285] WARNING: CPU: 3 PID: 143 at drivers/soc/qcom/rpmh.c:386
rpmh_write_batch+0x1f0/0x2c8
[ 13.300891] mmc1: sdhci: Sys addr: 0x00000000 | Version: 0x00007202
[ 13.309898] Modules linked in:
[ 13.316503] mmc1: sdhci: Blk size: 0x00000000 | Blk cnt: 0x00000000
[ 13.316504]
[ 13.316511] CPU: 3 UID: 0 PID: 143 Comm: sugov:0 Not tainted 6.11.0-rc4-next-20240823 #1
[ 13.319644] mmc1: sdhci: Argument: 0x80000c08 | Trn mode: 0x00000000
[ 13.326249] Hardware name: Google Lazor Limozeen without Touchscreen (rev5 - rev8) (DT)
[...]
```

[13.561679]	x5 : 00000000510f8050	x4 : 0000000000f0000f	x3 : 0000000000000000
[13.569008]	x2 : 0000000000000000	x1 : 0000000000000000	x0 : 0000000000000000

```
[ 13.576339] Call trace:
[ 13.578858] rpmh_write_batch+0x1f0/0x2c8
[...]
```



Example 3

```
{
  "logspec": {
    "error": {
      "hardware": "Google Lazor Limozeen without Touchscreen (rev5 - rev8) (DT)",
      "location": "drivers/soc/qcom/rpmh.c:386 rpmh_write_batch+0x1f0/0x2c8",
      "call_trace": [
        "rpmh_write_batch+0x1f0/0x2c8",
        "qcom_icc_bcm_voter_commit+0x328/0x4cc",
        [...]
      ],
      "error_type": "linux.kernel.warning",
      "log_excerpt": [...],
      "error_summary": "WARNING at drivers/soc/qcom/rpmh.c:386 rpmh_write_batch+0x1f0/0x2c8"
    },
    "parser": "generic_linux_boot",
    "version": "1.0.0"
  }
}
```

Signature: cebf91e4fb0073627bd82b96173eda9f817e3197



Using this data in queries

Get all issues caused by a kernel warning on amdgpu_irq.c:

```
SELECT      id
FROM        issues
WHERE       misc->'logspec'->'error'->>'error_type' = 'linux.kernel.warning'
AND        misc->'logspec'->'error'->>'location' LIKE '%amdgpu_irq.c%';
```

Get all the test results where that happened:

```
SELECT      tests.id
FROM        tests
            JOIN incidents ON incidents.test_id = tests.id
            JOIN issues ON incidents.issue_id = issues.id
WHERE       issues.misc->'logspec'->'error'->>'error_type' = 'linux.kernel.warning'
AND        issues.misc->'logspec'->'error'->>'location' LIKE '%amdgpu_irq.c%';
```





Open questions

- Are there other tools you would like to see KernelCI integrated to? Patchwork? B4? Which one do you prefer?
- How to integrate the extracted knowledge into the workflow
- Anything else? Ideas are welcome



Thank you!



COLLABORA

Open First