



# *CE Workgroup*

# **Linux Plumbers Conference Report and Community Status Update**

**September 2019**

Tim Bird

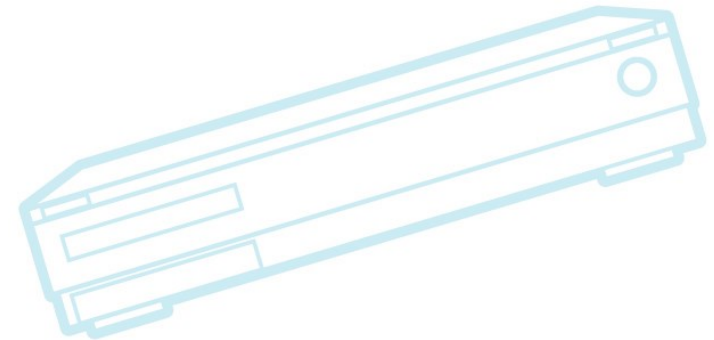
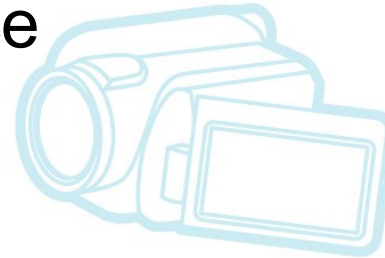
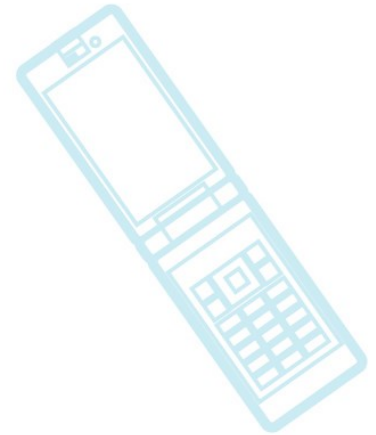
Sr. Staff Software Engineer, Sony Electronics



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# What this talk covers

- Report on recent conferences
  - ELC North America
  - Linux Plumbers Conference
  - CKI Hackfest
- Community discussions
  - Mostly from ksummit-discuss
- Recent kernel releases
- A few miscellaneous notes
- Not comprehensive!
  - Just stuff that I saw





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# Outline

ELC

Hot maintainer topics

Plumbers

CKI hackfest

Kernel releases

Miscellany



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# Outline

## ELC

Hot maintainer topics

Plumbers

CKI hackfest

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# ELC report

- August 21-23 in San Diego, California
- My report:
  - Sessions I saw
  - Discussions I had
  - General impressions
- For most presentations see:
  - [https://elinux.org/ELC\\_2019\\_Presentations](https://elinux.org/ELC_2019_Presentations)



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# Sessions I attended

- You might be a maintainer and not know it
  - by Frank Rowand
- Regression Testing with Fuego
  - by Hirotaka Motai
- gcc/clang optimizations for embedded
  - by Khem Raj
- CVE Monitoring and Management
  - by Ashkay Bhat
- Testing Laboratory API
  - by Pawel Wieczorek



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# Sessions (cont.)

- Open Source license variations in Linux and Android (OSS NA session)
  - by Peter Shin
- Toybox vs. Busybox
  - by Rob Landley
- Creating a BT PAN/USB RNDIS Router using OpenWrt
  - By Koichi Okamoto & Masayuki Ishikawa
- USB arsenal for the masses
  - by Krzysztof Opasiak



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# You might be a maintainer and not know it

- When you add a driver, you suddenly become a “Linux kernel maintainer”
- How to deal with it (options):
  - Ignore role
  - Advise sub-system maintainer
  - Review patches
  - Get your own tree and start accepting patches
- Role summarized:
  - Participate in the flow of a patch from developers to the upstream maintainer
  - Make your upstream maintainer’s job easier
  - Help contributors





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# Regression Testing with Fuego

- Interesting talk about converting LTP syscall tests into performance measurement
- Good overview of Fuego
- Added a time logger to Fuego
  - Uses strace to measure duration of syscalls by LTP
- Purpose is to detect performance regressions in syscalls, even if functional test passes
- Working on next generation (as Fuego Benchmark test)





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# gcc/clang optimizations for embedded

- Good overview of available compiler options
- Tips:
  - Measure!
    - Create baseline to avoid frivolous work
  - Use good tools
  - Examine generated code
- Help compiler optimize for you
  - Move hot code into hotpath
  - Help tail recursion
    - avoid processing return value
  - Many more... see presentation



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# CVE Monitoring and Management

- CVEs (Common Vulnerability and Exposure) are exploding
  - National database (NVD) is available
- Embedded DIY CVE tracking doesn't scale
- Need to re-use work by Linux distros
- Yocto project has tools:
  - `INHERIT += "cve-check"`
- Lots of false positives in kernel CVE reporting
- Should share work of reporting and fixing bugs



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# Testing Laboratory API

- Interesting talk about the SLAV testing stack
- Background about MuxPi dev board
  - Lesson learned: custom hardware makes it hard for other people to perform demos
- Creating modular CI stack
  - Resulted in smaller, more maintainable modules
  - Can be used independently
- Important, because in-house CI systems can't keep up with community CI systems in features
- Published code:  
<https://github.com/SamsungSLAV>



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# Open Source license variations in Linux and Android

- Not an ELC session (was from Open Source Summit)
- Showed results of an exhaustive analysis of license texts in the kernel
  - Result: There are lots of minor variations, some of which are hard to reconcile or fix
- SPDX people were in the room, and there was a good discussion about remedies
- Not being a lawyer – I said we should just fix the mistakes that were made





# Toybox vs. Busybox

- (Note: I didn't see the whole session)
- Rob Landley gave lots of information about how previous work on busybox motivated the current Toybox work
- Toybox is now the default multi-tool in Android
  - Mostly done
  - Some things still in progress
- Rob invited the 0BSD license
  - Simplest license possible
  - Trying to achieve “public domain” status
  - Available as option on [github.com](https://github.com)

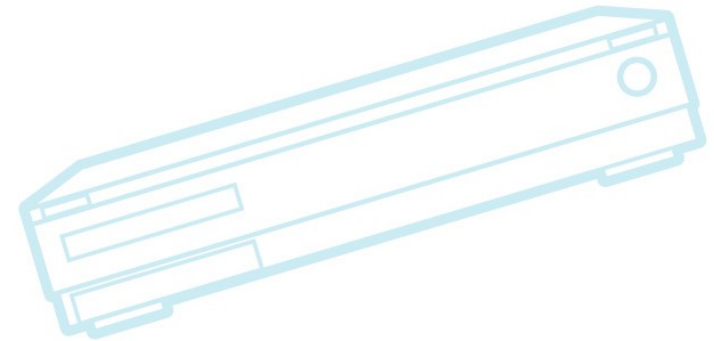
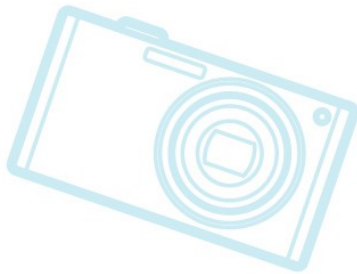




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# Why use Toybox

- Simplest possible development environment
- Less legacy stuff than busybox
- There's help text for every command
- Better ps/ls/uuencode implementations
- License clarity
  - (ie – no possibility of legal issues)





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# Creating a BT PAN/USB RNDIS Router using OpenWrt

- Described using NuttX for extending router for use with low-end hardware
- Starting with an OpenWRT-based router:
  - Added Bluetooth PAN support
  - Added RNDIS support
- Showed
  - Bluetooth support in NuttX
  - RNDIS support in NuttX
  - Wireless network support in NuttX
  - Porting of Alexa SDK to NuttX
- Demonstrated use of networking in Sony SPRESENCE board



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# USB arsenal for the masses

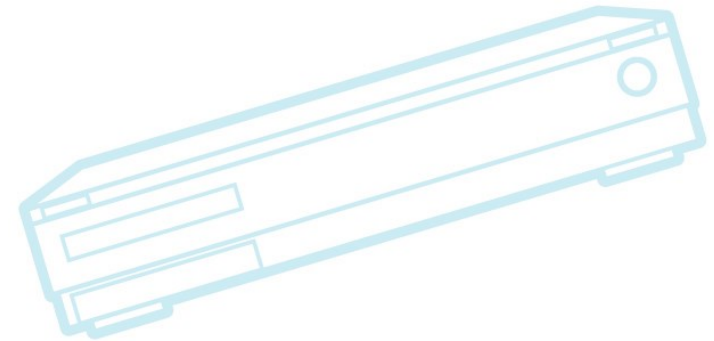
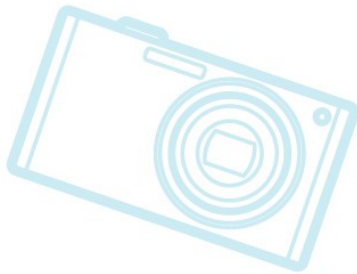
- Good introduction to USB
- Listed lots of tools (hardware and software) for USB tracing
- Focus by Samsung on USB security testing
- Introduced new USB fuzzing framework
  - Based on concepts from Syzkaller
- See <https://lwn.net/Articles/798266/>



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# Closing game

- A few of my favorite trivia questions:
  - Has Linux been to another planet?
  - Does the US military have a program called “Skynet”?

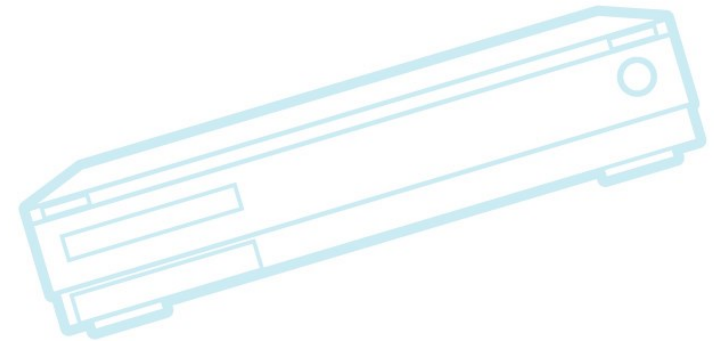
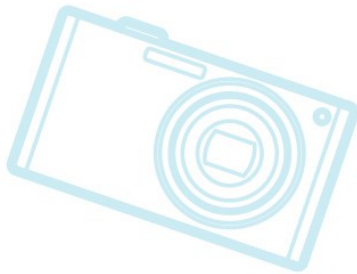




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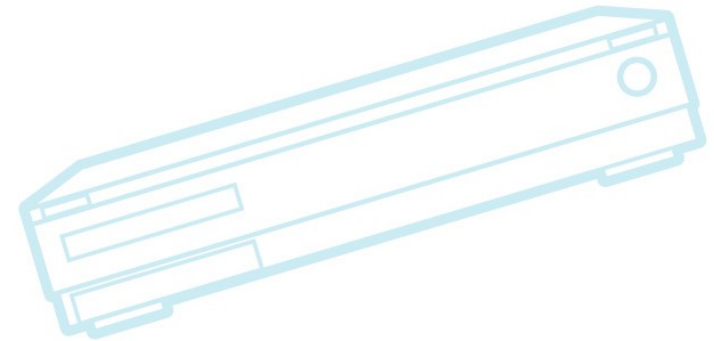
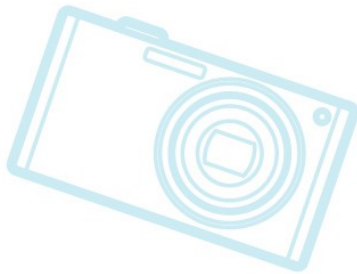




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  - Has Linux been to another planet?
    - YES!!
  - Does the US military have a program called “Skynet”?
    - YES !?





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# ELC Resources

- Most presentations:
  - [https://elinux.org/ELC\\_2019\\_Presentations](https://elinux.org/ELC_2019_Presentations)
- Videos:
  - Long story...
  - Short version:
    - Available now on Vimeo, will be available on YouTube soon
    - Links will get added to wiki page
- Lots of really great in-depth technical content
  - sensors, IIO, USB, pwm, graphics, yocto, etc.



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# Outline

ELC

Hot maintainer topics

Plumbers

CKI hackfest

Kernel releases

Miscellany



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# Hot Maintainer topics

- Discussions over the summer from ksummit-discuss mailing list
- Ksummit-discuss is used every summer to discuss process issues with Linux
  - How to improve things
- Big Issues:
  - Change-id in the commit messages
  - E-mail as the main review method and patch transport
  - Maintainer profiles



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# Change-id in commit messages

- Proposal was made to add Change-Id field to patches
  - To track patches over their lifetime
    - As they go from email to git
- There were many objections
  - Linus said it's only valuable to those with the archive that manages that ID
- Suggested to use Link: tag, and have tools to manage it
  - Some developers already using it as link to e-mail message
- See <https://lwn.net/Articles/797613/>





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# lore.kernel.org

- Is a new(?) system for archiving messages from kernel sub-system mailing lists
  - Lists have to opt-in to be archived
- Kernel commit messages can have a link to a message
  - Very handy for cross-referencing commits to the patches and discussion related to them
- Some tools already can create Link: tags in git commit messages
- Over 1800 references already in mainline kernel commit messages
  - `git log | grep lore.kernel.org`
- Adding support in gitk to follow links



# email woes

- More complaints about e-mail not being a good way to manage patches
- Konstantin Ryabitsev posted a description of a tool for handling patch reviews
  - See <https://lists.linuxfoundation.org/pipermail/ksummit-discuss/2019-September/006863.html>
- Jan Nikula raised the possibility of a non-email transport:
  - <https://lists.linuxfoundation.org/pipermail/ksummit-discuss/2019-September/006875.html>
- New mailing list: [workflows@vger.kernel.org](mailto:workflows@vger.kernel.org) to discuss workflow requirements



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# Maintainer profiles

- Maintainer profile documents
  - Idea is to document the policies of maintainers that are unique to their sub-system
    - Hopefully aggregate lots of data, and point out outliers (with the hope of eliminating them)
- Make it easier for newcomers to learn rules for a particular sub-system
- See <https://lists.linuxfoundation.org/pipermail/ksu-mmit-discuss/2019-September/006909.html>
- Is part of Maintainer Guide work:
  - <https://lwn.net/Articles/772882/>



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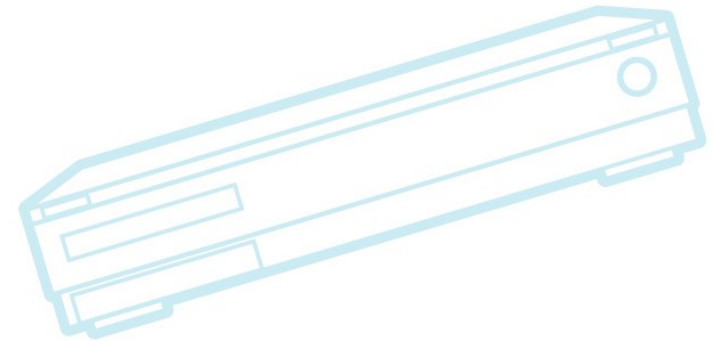
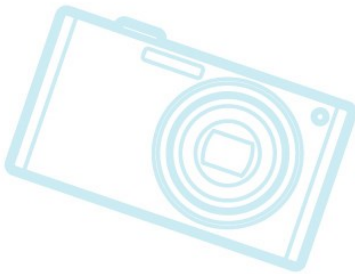
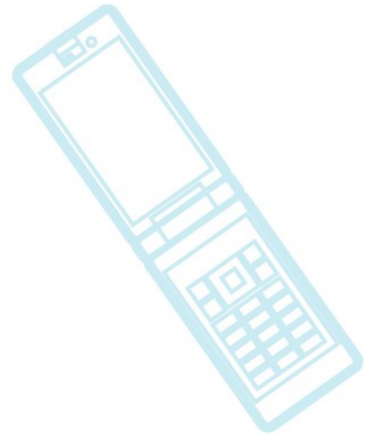




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# Plumbers report

- September 9-11 - Lisbon, Portugal
- My report:
  - Sessions I attended
  - Discussions I had
- Dmitry Vyukov bombshell talk
- Some material from Maintainers summit







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# Lots of technical content

- Microconferences:
  - BPF, RISC-V, Tracing, Distribution kernels
  - Containers and Checkpoint/Restore
  - IOT, Live Patching, Open Printing, Toolchains
  - Testing and Fuzzing, Real-time, Databases
  - RDMA, Scheduler, VFIO/IOMMU/PCI
  - Android, Power Management
  - System Boot and Security



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# Sessions I attended

- Distribution kernels microconference
- Testing and Fuzzing microconference
- Sessions:
  - Monitoring and stabilizing the in-kernel ABI
  - KernelCI applied to Distribution kernels
  - Automatically testing distribution kernel packages
  - KernelCI: testing a broad variety of hardware
  - Dealing with complex test suites
  - GWP-ASAN
  - Fighting uninitialized memory in the kernel



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# More sessions

- Syzbot update and open problems
- Collaboration/unification around unit testing frameworks
- All about Kselftest
- Linux Fastboot
- CKI introduction
- Finding DRAM
- Kunit testing framework
- Reflections on kernel quality



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# Monitoring and stabilizing the in-kernel ABI

- Interesting presentation about keeping LTS kernels ABI-stable
  - Apparently, patches in stable sometimes break the ABI
- Google has created tool to check for function signature and data structure changes
  - Using libabigail
- Personal note: Would be useful to incorporate into embedded CI loop to avoid having backported patches break ABI for a product





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# KernelCI applied to Distribution kernels

- KernelCI only tests upstream kernel now
- Discussion was about features needed to be able to test downstream (distribution) kernels
  - Need distribution kernel headers, in order to build tests against the right kernel
  - Are there other distribution dependencies (like in user space?)
  - Would be nice to have a 'make distro' feature
- IMHO – this is very relevant for embedded kernels





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# Automatically testing distribution kernel packages

- Presentation on how Gentoo was testing the kernel
- Some interesting notes:
  - Gentoo is currently using buildbot
  - Want to switch to LAVA and kernelci
    - Kind of complemented the previous talk
  - RedHat was using Jenkins, but found that they spent more time managing groovy scripts than they liked



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# KernelCI: testing a broad variety of hardware

- Was a basic intro to KernelCI and how much testing they are doing
  - It's a lot
- Historically focused on build and boot testing
- Are now branching into sub-system-specific runtime tests
  - Intention is to be capable of being used as the gatekeeper for a sub-system's acceptance of new patches
- Have to on-board each sub-system test manually (and very laboriously)
- Want to customize notifications to sub-system maintainer's needs



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# Dealing with complex test suites

- Would like to standardize elements of the test pipeline
- One example: git bisection
  - Guillaume Tucker wrote a new standalone git bisection tool called 'scalpel'
  - Is working on a successor called 'kci\_bisect'
  - Bisection is a difficult problem that shouldn't have to be solved by every CI system independently



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# GWP-ASAN

- Described a new pointer-checking feature
- electric fence and others add guard pages, and perform checks on every access
  - This degrades performance and can not be done in production systems
- New system does checks, but in a sampled way, randomized per system
  - Selects a sub-set of allocations to track
- At scale, this still uncovers the same memory bugs
- Overhead is low enough to turn on checks even in production hardware





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# Fighting uninitialized memory in the kernel

- There are lots of usages of uninitialized memory in the kernel
- Google made a new mechanism to find such references – called KMSAN
- Have found 150 bugs, with 42 already fixed
- There are configs and compiler options for pre-initializing memory
- Also have boot time flags:
  - `init_on_alloc=1`
  - `init_on_free=1`





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# Syzbot update and open problems

- Syzbot runs Syzkaller (a syscall fuzzing testing)
- Syzbot has found thousands of bugs
  - reported: 2281
  - fixed: 1523
  - open: 758
- Recommend all test frameworks test with KMEMLEAK and fault injection
- Bisection is hard – only 50% success rate
- Need to test old kernels, but had problems
  - As you go back versions, things are missing that are required for syzbot to run:
    - missing kbuild rules, perl version, missing 'make' features, kconfig changes, etc.



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# Collaboration/unification around unit testing frameworks

- Was basically a veiled pitch to unify the Kunit and KTF work
- Kunit just got accepted into the kernel
- KTF has some work to do to get accepted
- One area of unification:
  - use the same 'assert' names
  - disappointed that kernel devs wanted kunit-specific names



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# All about Kselftest

- kselftest continues to grow
  - about 70 test areas, with multiple test programs per area (and testcases per program)
- Questions about:
  - making a kselftest binary package for distros
  - distro testers don't like that kselftest requires config options turned on
    - Can't test production kernels
    - kselftest developers are working on better skip logic in tests



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# Kselftest (cont.)

- Running kselftest from top-of-tree with older kernels
  - LKFT (Linaro) have lots of data
  - Get better test coverage, but lots of false positives
  - Is a lot to manually process
  - kselftest developers are working on fixes





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# Linux Fastboot

- Intel reduced kernel boot time from 3 seconds to 0.3 seconds
  - For rearview camera in automobile
- Used separate, lightweight init as root init
  - systemd took too long
- Saw big improvements with async probing
  - Let other modules initialize while waiting for probing results
  - Easy to add, but needs to be tested
    - `.probe_type = PROBE_PREFER_ASYNCHRONOUS`
- Tried to add more tunables to mainline kernel, but were rejected





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# CKI introduction

- CKI = RedHat distribution kernel tester
  - Based on old in-house test system
- Some notes:
  - Each test has a maintainer who is responsible for managing any detected failures
    - fix test or fix kernel
  - Has fixed many bugs so far
  - Have data about source code related to test
    - Can schedule test based on source affected by patch
  - Have enough info to reproduce test later



# Finding DRAM

- Crazy system to reclaim idle app memory
- Reclaims at runtime, instead of at killing processes at OOM time
- Detects idle memory
  - Uses proposed 'process\_madvise()' syscall
  - Indicate to kernel that process memory is idle
  - ex: popular game had 1.8GB allocated, but after reclaim only used 700MB physical RAM
- Requires tuning for good performance
  - 2-minute idle => 32% idle memory, 14% of which can be reclaimed
- Is a work-in-progress – not upstream



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# Kunit testing framework

- KUnit is a unit-testing framework just introduced into the Linux kernel (v5.4)
- It runs very fast
  - Can boot the code in UML and run multiple tests in seconds
- Is for white-box (unit) testing of the kernel
- Based on more elaborate system from Google that has mocking
- Is integrated into kselftest
  - e.g. produces TAP output



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# Reflections on kernel quality

- Was a huge “bombshell” talk
- Kernel appears to be getting more bugs with every release
  - Based on syzbot data showing bug increases
  - 20,000 new bugs every kernel release
- Kernel processes are fragmented and flawed
- Had a list of recommendations
- See <https://lwn.net/Articles/799134/>





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# Plumbers resources

- See <https://linuxplumbersconf.org/event/4/page/21-lpc-2019-overview>
- Some talks and etherpads are in the schedule (online)
  - Look at each talk page
  - ex: [https://etherpad.net/p/LPC2019\\_Testing\\_and\\_Fuzzing](https://etherpad.net/p/LPC2019_Testing_and_Fuzzing)





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# CKI Hackfest

- Held September 12-12 in Lisbon
- Sponsored by RedHat
- CKI = Continuous Kernel Integration
  - A RedHat project
- Wants to join community of upstream testing groups (syzbot, 0-day, kernelci)



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# Hackfest (cont.)

- Groups represented
  - Linaro/LFT, Fuego, KernelCI, IBM/Ozlabs, RedHa/CKI, Google/Syzbot, OpenXT
- Topics discussed
  - Test data standards
  - Common results repository
    - Actually created a BigQuery database instance and some sample clients, during the hackfest
    - Can try it out:
  - Avoiding effort duplication
  - Common hardware pools
    - Try to see if sharing between Beaker and LAVA labs is possible



# More topics

- Notifications and reporting
  - Discussion of what upstream maintainers want
    - Recent failures first
    - Descriptions (what is test doing)
    - Reason for failure
  - Need more tests, but not more test suites
    - Onboarding a new test suite is expensive
    - Please add to existing suites:
      - Prefer to add new tests to LTP or kselftest
- Onboarding tests
  - CKI onboards tests using a phase-in approach
  - Standardized output, or a common parser, would be good



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# More topics

- Interpreting results
  - People turning to machine learning to find solutions and classify bugs
- Security for untrusted tests
  - Very difficult problem – a new test runs on real hardware that might be expensive
    - Also might be inside corporate firewall
  - 0day suffered a prototype exploit
  - May have to only test trees, and not just random patches off list
    - But that loses quick-response inbound patch testing





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# Action items

- Lots of people took action items
  - Mine are to Document kernel deviation from TAP13
  - Keep working on test definition meta-data
    - Maybe propose something for kselftest



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# CKI Hackfest resources

- Meeting minutes are at:  
<https://docs.google.com/document/d/1EIU-GEJpChfB2TLzi3ebXQqUnXQ1CQ2gyl48FE-dfQI/edit>
- Proof-of-concept code for BigQuery common results database:
  - <https://github.com/spbnick/kcidb>



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# Kernel Versions

- Linux v4.19 – 22 Oct 2018 – 71 days
  - Author: Greg Kroah-Hartman
- Linux v4.20 – 23 Dec 2018 – 62 days
- Linux v5.0 – 3 Mar 2019 – 71 days
- Linux v5.1 – 5 May 2019 – 63 days
- Linux v5.2 – 7 Jul 2019 – 63 days
- Linux v5.3 – 15 Sep 2019 – 70 days
- We're in the Linux 5.4 merge window now





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# Linux 4.19

- L1TF mitigation (a variant of meltdown)
  - <https://lwn.net/Articles/762570/>
  - The fun continues...
- time-based packet transmission
  - Allows a program to schedule data for transmission in the future
  - <https://lwn.net/Articles/748879/>
- EROFS – enhanced read-only filesystem
  - High-performance
  - Good for certain embedded situations
  - (in staging)



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# Linux 4.19 (cont.)

- Block I/O latency controller
  - Regulates latency instead of bandwidth
  - See <https://lwn.net/Articles/758963/>
- Common Applications Kept Enhanced (CAKE) packet queuing discipline
  - For devices behind consumer-level routers on relatively slow broadband links
    - Avoids bufferbloat, shapes traffic, etc.
  - See <https://lwn.net/Articles/758353/>



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# Linux 4.19 (cont.)

- New asynchronous polling interface
  - Yet another API, not a replacement for existing APIs
  - <https://lwn.net/Articles/743714/>
  - [https://kernelnewbies.org/Linux\\_4.19#New\\_asynchronous\\_I.2FO\\_polling\\_interface](https://kernelnewbies.org/Linux_4.19#New_asynchronous_I.2FO_polling_interface)



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# Linux 4.20

- XArray data structure
  - A reworking of the radix tree structure, with better APIs
    - Provides a normal API and advanced API
  - The page cache has been converted to use it
  - <https://lwn.net/Articles/745073/>
  - <https://linuxplumbersconf.org/event/2/contributions/259/>
- PCI subsystem support of peer-to-peer DMA operations between peripherals (P2PDMA)
  - <https://lwn.net/Articles/767281/>





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# Linux 4.20 (cont.)

- Many block drivers converted to multiqueue API
  - Plan to remove the legacy API in the next development cycle
  - <https://lwn.net/Articles/552904/>



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# Linux v5.0

- Energy-aware scheduling
- Finished 64-bit version of syscalls with time fields
  - For year-2038 improvements
- Legacy block layer IO scheduler removed
- Binderfs – backward-compatible filesystem for Android's binder IPC mechanism
- Adiantum crypto module



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# Linux v5.0 (cont.)

- JSON schemas for device-tree bindings
  - <https://lwn.net/Articles/771621/>
- Dynamic events interface to tracing subsystem



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# Linux v5.1

- Finally deprecating support for a.out binaries
  - [https://www.phoronix.com/scan.php?page=news\\_item&px=Linux-Dropping-A.Out](https://www.phoronix.com/scan.php?page=news_item&px=Linux-Dropping-A.Out)
- Lots of DRM changes
  - [https://www.phoronix.com/scan.php?page=news\\_item&px=Linux-5.1-DRM-Changes](https://www.phoronix.com/scan.php?page=news_item&px=Linux-5.1-DRM-Changes)
- More Y2038 work
  - More syscalls with 64-bit time values
    - See <https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git/commit/?id=b1b988a6a035> for a list of new syscalls (20 of them)





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# Linux v5.1 (cont.)

- New sysctl knob (kernel/sched\_energy\_aware)
  - To enable/disable EAS
- Also, new documents on energy-aware scheduling
  - Documentation/scheduler/sched-energy.txt
  - Documentation/power/energy-model.txt
- Improved idle behavior in tickless systems
  - Added timer-events oriented (TEO) CPU-idle governor
    - Uses timer interrupts timing instead of device interrupt timing for predicting next wake-up
  - See <https://lwn.net/Articles/775618/>



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# Linux v5.1 (cont1.)

- Modification to memfd for Android use case
  - Add `F_SEAL_FUTURE_WRITE` operation for memfd regions
    - Caller can continue to write to region, but others can't
  - Want to eliminate use of ashmem (legacy Android memory manager)
- F2FS has a new mode bit that disables copy-on-write behavior for a file (`F2FS_NOCOW_FL`)



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# Linux v5.2

- ext4 supports case-insensitive lookups
- New system calls for filesystem mounting
  - See <https://lwn.net/Articles/759499/>
- Support for ARM Mali GPUS (more later)
- Support for Fieldbus protocol
- New “mitigations=” command-line option to control speculative execution features
- Improved support for gcc ‘-Wimplicit-fallthrough’
- Lots of BPF improvements



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# Linux v5.2 (cont.)

- Pressure stall monitors added
  - Allow user-space to detect and respond quickly to memory pressure
  - Monitor can open `/proc/pressure/memory` and write a stall notification specification
    - indicates to the kernel what frequency to check for stalls (which can be as little as .5 seconds)
  - Monitor can then use `poll()` to receive stall notification events
  - Android can use the functionality to detect mounting memory pressure and kill processes before the device becomes sluggish
  - See <https://lwn.net/Articles/775971/>





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# Linux v5.3

- new pidfd feature – to handle pid reuse
- Scheduler utilization clamping
  - (see next slide)
- 0.0.0/8 IPv4 address support
  - Allows 16 million new IPv4 addresses
- Added CONFIG\_PREEMPT\_RT
  - But not the final code yet
- init\_on\_alloc and init\_on\_free boot options
  - pre-initialize memory from heap allocations
- See [https://kernelnewbies.org/Linux\\_5.3](https://kernelnewbies.org/Linux_5.3)





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# Scheduler utilization clamping

- Extension to Energy Aware Scheduling
- Allows specifying minimum or maximum frequency for a process
- Can clamp user-visible (foreground) tasks to high minimum frequency
- Can clamp background tasks to low maximum frequency
- Helps conserve power while still keeping responsiveness
- See <https://lwn.net/Articles/762043/>



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# v5.3 last minute revert

- Last-minute revert of useful patch
  - Improved ext4 performance by reducing needed disk I/Os
  - So much, that not enough entropy was generated on boot
    - Causing an end-user system to not boot
- All new end-user failures are regressions
  - “No regressions” is the kernel’s “First rule”
- Have to work out how to add new feature without breaking end users
- See <https://lwn.net/Articles/799249>



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# Contributions for recent kernels

Version	Changesets	Developers
4.15	14,866	1801
4.16	13,630	1805
4.17	13,541	1713
4.18	13,283	1728
4.19	14,043	1752
4.20	13,884	1749
5.0	12,808	1757
5.1	13,304	1737
5.2	14,024	1783
5.3	14,435	1846

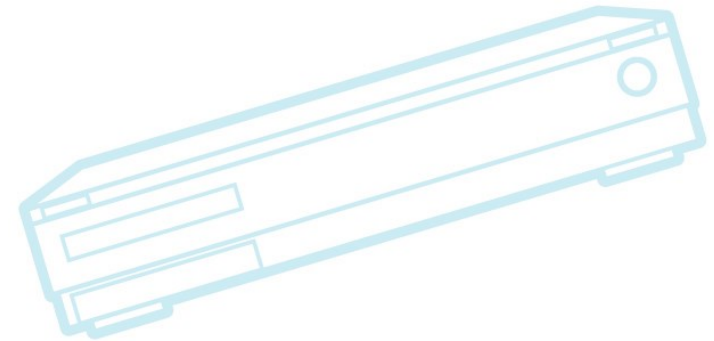
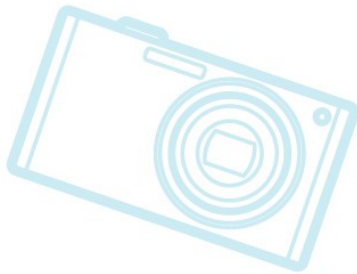
Source: <https://lwn.net/Articles/798505/>



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# Interesting stats

- 256 new contributors
  - Developers who have never contributed before
- 3 of the top 5 “reported-by” lines for bugfixes are for automated testing systems:
- At least 14% of commits are fixes for bugs
- See <https://lwn.net/Articles/798505/>





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# Outline

ELC

Hot maintainer topics

Plumbers

CKI hackfest

Kernel releases

**Miscellany**

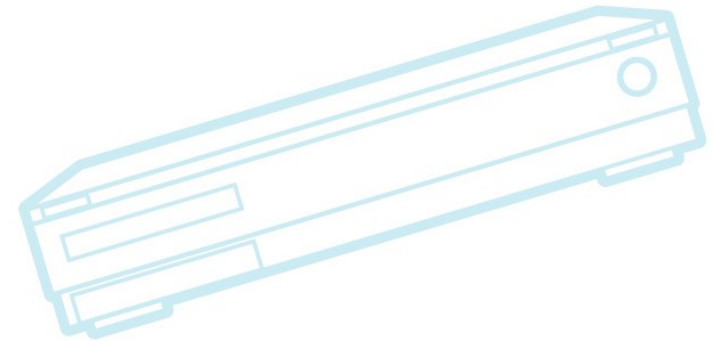
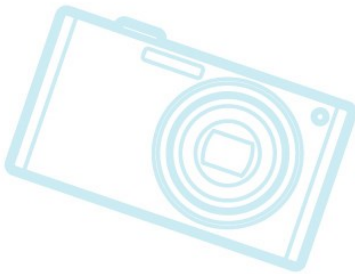
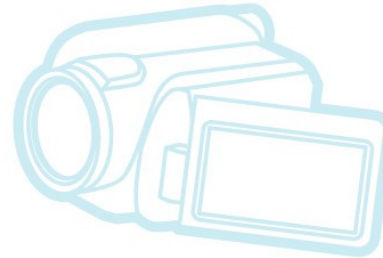
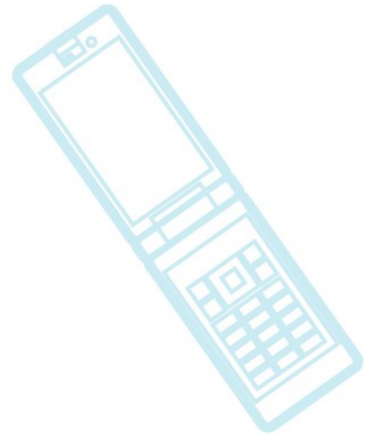




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# Miscellany

- Conferences
- Industry news





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# Conferences - 2019

- ELC Europe 2019
  - October 28-30, Lyon, France
- Automated Testing Summit 2019
  - October 31, Lyon, France
- NuttX workshop
  - October 31, Lyon, France
- LinuxConf AU – Jan, Australia
- FOSDEM – Feb, Belgium



# Automated Testing Summit

October 31, 2019 | Lyon, France, Lyon Convention Centre

The Automated Testing Summit (ATS) is a new technical conference for companies and developers doing automated testing of Open Source products, particularly Linux-based products and services. It is dedicated to sharing knowledge, techniques, and standards for Open Source Quality Assurance. The main organizer of ATS is the Core Embedded Linux Project of the Linux Foundation.

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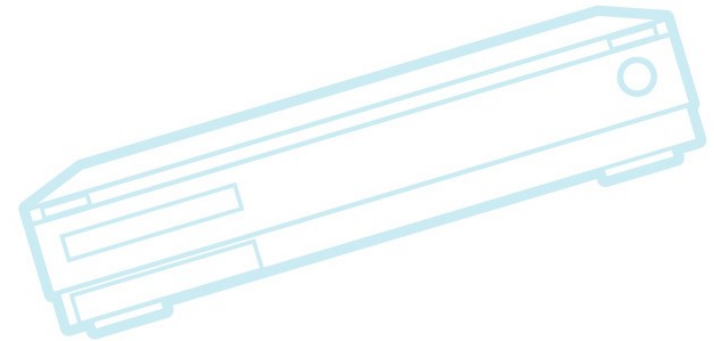
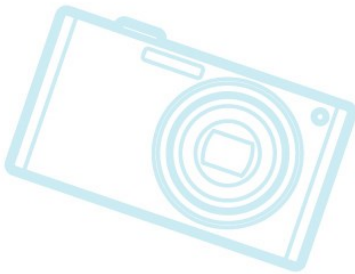
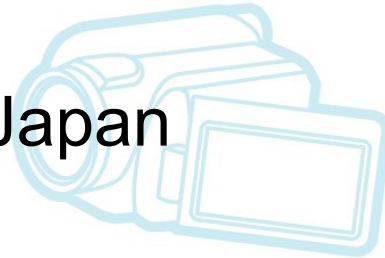
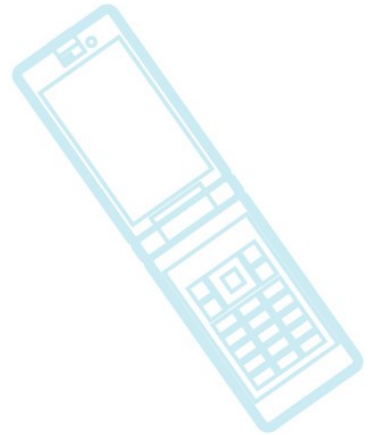




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# 2020 events

- ELC 2020
  - June 22-24, Austin, Texas
- OSSJ/ALS
  - September 15-16, Tokyo, Japan
  - Moved due to Olympics





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# Community news

- Linux Foundation Technical Advisory Board (TAB)
  - Is changing election process
  - This year: election by email/online ballot
    - Instead of in-person, by paper ballot
  - Next year: widen voting pool to whole community
    - Was restricted to attendees at a particular event





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# Industry News

- Richard Stallman resigns from MIT, FSF, others
  - I don't know enough details to have a strong opinion on the issue that caused Richard's resignation
  - My weak opinion is that it appears to me that some of Richard's messages in the recent discussion of a scandal have been misinterpreted



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# Microsoft involvement

- Overall impression:
  - There were a lot of Microsoft people at Plumbers
- Sasha Levin – a Microsoft employee, and stable kernel maintainer – was elected to the Linux Foundation Technical Advisory Board
  - An MS employee advising the Linux Foundation!
- Sorry to say, I lost my seat on the TAB
  - These things are somewhat event-related
    - I was elected when voting was at ELCE
    - Sasha was elected when voting was at Plumbers



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# ExFAT filesystem in Linux kernel

- Microsoft is:
  - Publishing the ExFAT specs
    - But will not provide the implementation for the kernel
  - Will allow reference OIN system to include ExFAT in the kernel
  - Meaning... (what about exFAT royalties?)
- See:
  - <https://techcrunch.com/2019/08/28/microsoft-wants-to-bring-exfat-to-the-linux-kernel/amp/>
  - <https://www.zdnet.com/google-amp/article/microsoft-readies-exfat-patents-for-linux-and-open-source/>



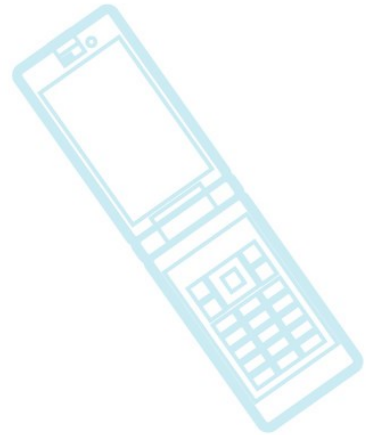
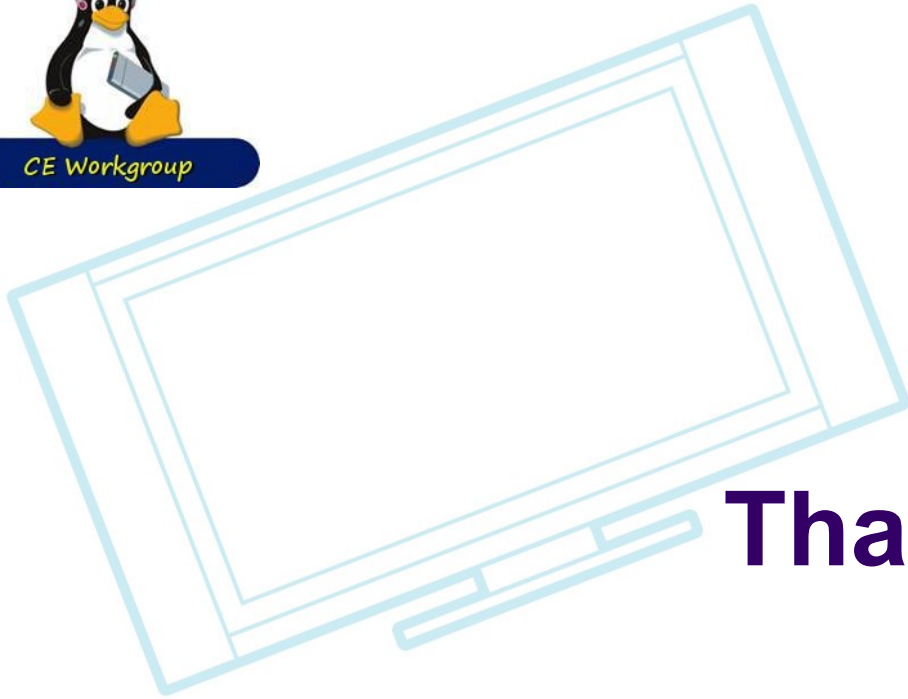
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# KernelCI LF project

- Has migrated from Linaro-sponsored project, to background hobby project, to LF project
- Will be formally announced at ELCE in October
- People are starting to see it as the way to unify kernel automated testing
- Personally, I will be doing more work in Fuego to integrate with common initiatives
  - Which mostly means integrating with KernelCI



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**Thanks!**

