

# ATS report

Linux Plumbers 2018, Vancouver  
Kevin Hilman



# Automated Testing Summit @ ELC-E

## Background

- Discussions began at ELC-E 2017 BoF on embedded board farms
- Follow-ups: automated-testing list, eLinux.org wiki
- Led to ATS: co-organized by Tim Bird and Kevin Hilman
- 1 day invitation-only: 35 people, 22 projects

## Main problems

- Lots of testing activity, very little collaboration
- No common place to share resources, development, ideas
- Growing set of open-source test suites, but wide variety of usage
- No common test definitions/plans or common machine-parsable output/results format

0-day  
Fuego  
Gentoo CI system  
Buildbot  
Jenkins  
KernelCI  
kerneltests.org  
Kselftest  
ktest  
LAVA  
Labgrid  
LKFT  
LTP  
Opentest  
Yocto ptest  
R4D  
SLAV  
syzkaller/syzbot  
tbot  
Xilinx testing  
Texas Instruments



# Discussion overview

- Why is there so little sharing
  - test frameworks and test suites are often considered “secret sauce”
  - tests are dependent on lab, framework or specific hardware
- Defining common terminology, and phases of CI loop
  - clarification of embedded vs server terms (DUT, etc.)
- Identifying the best areas to start collaboration
  - Test Definitions
  - Output formats` / interchange formats
- Learning how various hardware labs / board farms are built, maintained
- Some specifics of certain existing frameworks



# Next steps

## Actions

- Refine terminology / glossary
- Collaborate on test definition: starting with survey
- pdudaemon: collect tools for automating various PDUs
- full list: [https://elinux.org/Automated\\_Testing\\_Summit#Action\\_items\\_from\\_meeting](https://elinux.org/Automated_Testing_Summit#Action_items_from_meeting)

## Next meeting

- (probably) ELC-E 2019, October 28-30, Lyon France



# Resources

eLinux wiki: [https://elinux.org/Automated Testing Summit](https://elinux.org/Automated_Testing_Summit)

Mailing list: <https://lists.yoctoproject.org/listinfo/automated-testing>

Detailed Meeting minutes of ATS @ ELC-E Edinburg:

[https://elinux.org/ATS 2018 Minutes](https://elinux.org/ATS_2018_Minutes)

Questions / Feedback

- Kevin Hilman -- [khilman@baylibre.com](mailto:khilman@baylibre.com)
- Tim Bird -- [tim.bird@sony.com](mailto:tim.bird@sony.com)





# kernelCI update

Linux Plumbers 2018, Vancouver, CA  
Kevin Hilman

# kernelCI: hardware-focused upstream kernel testing

- Centralized kernel build: multiple trees / branches
  - mainline, linux-next, stable, stable-rc, 20+ maintainer trees
- Distributed boot and test
  - x86, arm, arm64, mips (now) -- arc, riscv (in progress)
  - boards/systems distributed across multiple labs
- Centralized reporting: <https://kernelci.org>
- Breadth: basic boot test on LOTS of hardware
  - 250+ unique boards/systems, 37 unique SoCs, 4M boots
- Depth: test suites on a subset of hardware
  - kselftest, LTP, IGT, DRM, V4L2, ...



# What's new / in progress?

- More test suites
  - display / video: IGT, DRM, v4l2-compliance
  - subsystem basics: USB, suspend/resume, RTC
- reporting for test suites (e-mail + web)
- standardized debian-based rootfs for all arches (debos)
- Jenkins: moved to pipelines
- Documentation -- `wiki.kernelci.org`
- automatic bisection on boot failures
  - beta testing email reports to limited audience





Bisection result for mainline/master (v4.19-12838-g71e56028173b) on beagle-xm

Good: 83650fd58a93 Merge tag 'arm64-upstream' of git://git.kernel.org/pub/scm/linux/kernel/git/arm64/...  
Bad: 71e56028173b Merge branch 'sched-urgent-for-linus' of git://git.kernel.org/pub/scm/linux/kernel/...  
Found: 513eb9859552 ARM: defconfig: Update multi\_v7 to use PREEMPT

Details:

Good: <https://kernelci.org/boot/all/job/mainline/branch/master/kernel/v4.19-12735-g83650fd58a93/>  
Bad: <https://kernelci.org/boot/all/job/mainline/branch/master/kernel/v4.19-12838-g71e56028173b/>

Checks:

revert: PASS  
verify: PASS

Parameters:

Tree: mainline  
URL: <http://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git>  
Branch: master  
Target: beagle-xm  
Lab: lab-baylibre  
Config: multi\_v7\_defconfig+CONFIG\_SMP=n  
Plan: boot

Breaking commit found:

-----  
commit 513eb98595522bc0cb83831a9dae1d5738e66f1  
Author: [...]  
Date: [...]



# What's next

kernelCI is becoming a project under the LF

Recruiting Founding members now

Features we want to work on

- Better reporting / visualization
- advanced metrics & analytics
- more arches
- more toolchains
- more test suites

