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

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

Detailed Meeting minutes of ATS @ ELC-E Edinburg: https://elinux.org/ATS_2018_Minutes

Questions / Feedback

- Kevin Hilman -- khilman@baylibre.com
- Tim Bird -- 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](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 513eb98595522bc0cb83831a9daee1d5738e66f1
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