LTSI workshop @ LinuxConNA2014

project update (focused on 3.14 and testing)

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LTSI Status Update

< LTSI 3.10 development result >

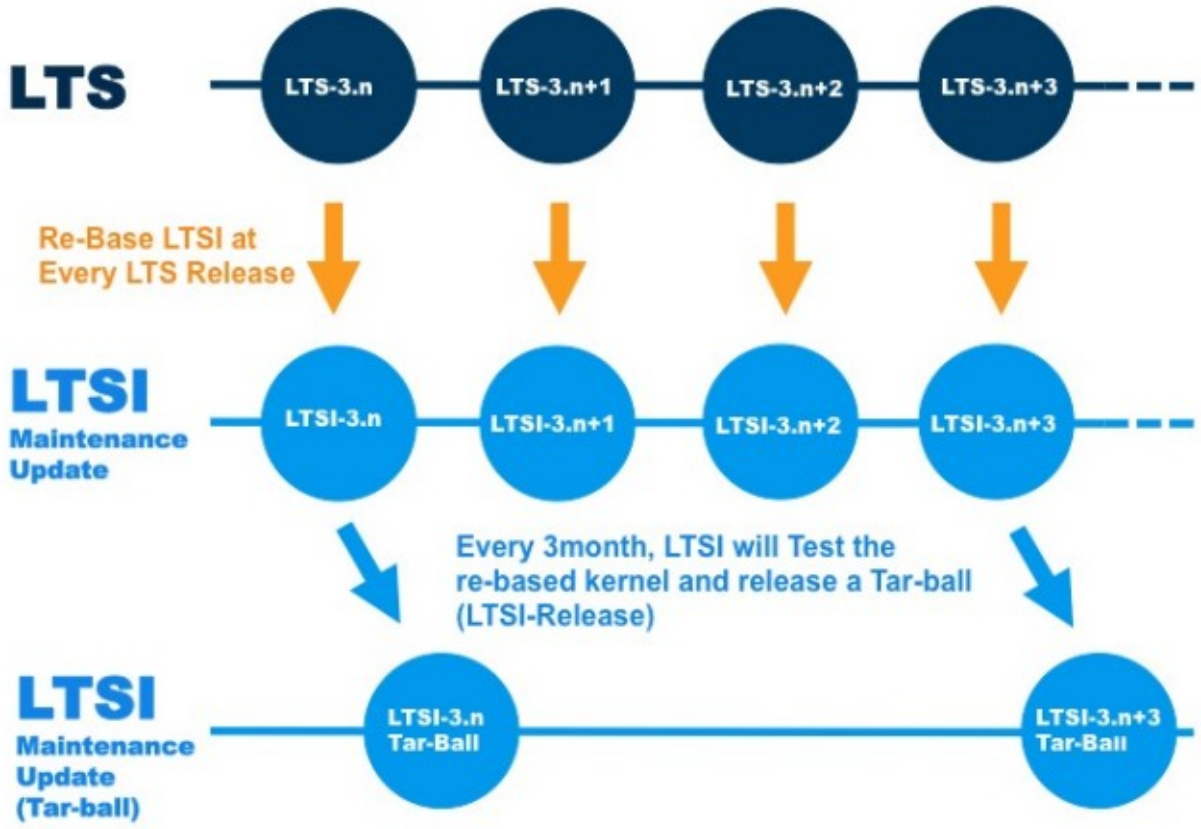
LTSI kernel update @ February 24, 2014

LTSI 3.0.79 --> 3.0.101 (EOL)
LTSI 3.4.46 --> 3.4.81 (update)

LTSI-3.10 development history

item	date
kernel 3.10 merge window open	2013.4.28
kernel 3.10 merge window close	2013.5.12
kernel 3.10 release	2013.6.30
Announce of 2013 LTS kernel version	2013.8.4
LTSI-3.10 git tree open	2013.9.11
3.10 becomes LTS (=3.12 release)	2013.11.15
LTSI-3.10 merge window open	2013.11.15
patch collection period	75 days
LTSI-3.10-rc1 (=merge window close)	2014.1.29
validation period	26 days
LTSI-3.10 release	2014.2.24

New LTS to LTSI update reflection cycle



Every stable update will be ported to existing LTSI code

2015 LTSI Development Schedule

Greg announced 2014 LTS will be 3.14

At the ELC2014 conference LTSI workshop, Greg stated next LTS (and LTSI) kernel version would be 3.14.

item	date
kernel 3.14 merge window open	2014.1.9
kernel 3.14 merge window close	2014.2.2
kernel 3.14 release	2014.3.30
LTSI-3.14 merge window open (target)	2014.8.21
patch collection period	70 days
LTSI-3.14-rc1 (=merge window close, target)	2014.10.30
validation period	50+ days
LTSI-3.14 release (target)	2014.12.25?

Please be ready for collecting patches to send LTSI-3.14 now!

LTSI Test Discussion

< LTSI Test in Development Process >

Why LTSI kernel validation becomes important ?

- Upstream LTS is managed to be completely safe.
- LTSI can based on community LTS kernel, and
- LTSI is the place to add various NEW things
  - Feature back port from latest mainline (relatively safe)
  - Industry demanded not-mainlined (but commonly used) open source project code
  - Privately maintained bug-fix code (may be valuable)
  - Privately developed feature code

We want to validate LTSI kernel does not include any bug or regression against the community LTS code

Beyond the LTS(I) kernel use, share the test case !

New value opportunity of sharing the kernel test case

- Now many industry start using LTS and LTSI kernel.
- Each company may spend a lot of time for validation.
- Some of fundamental kernel feature test might be duplicated
  - common kernel function test (detail later)
  - common kernel benchmark test (detail later)
  - common compatibility conformance test
- Now we can consider sharing the (part of) kernel test case on top of LTS(I) kernel across the industry.
- We need to assign appropriate OSS license to each test case itself so the we can share them.

Design target of shared LTSI test environment

feature

- Fully automated execution (nightly run)
- Easy to manage operation (add/edit test case)
- Trend monitoring capability (to catch the regression)
- User friendly interface (web access, GUI front end)

operation

- local text execution (can install to your computer)
- test case sharing mechanism
- test result sharing mechanism (future work)
- can penetrate to the upstream kernel development use

< Test environment update >

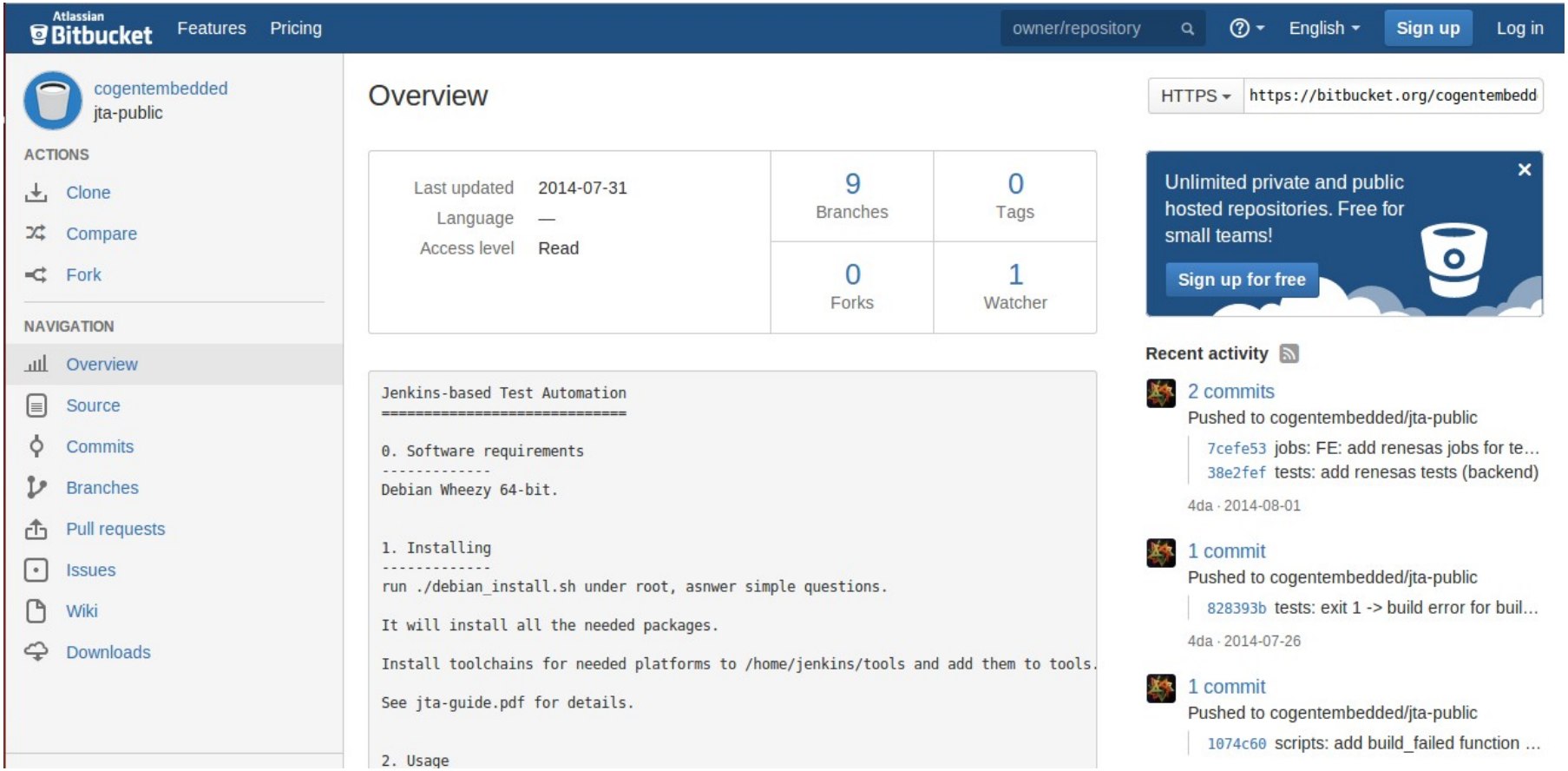
current shape -1/2

- Public tree to download whole test environment
  - [link]
  - https://bitbucket.org/cogentembedded/jta-public/
- Initial documentation
  - [link]
  - https://bytebucket.org/cogentembedded/jta-public/raw/7cefe53a09b5028bf2c99663d81ecde39b486713/docs/jta-guide.pdf
- Reports (automated)
  - [link]
  - http://145.255.234.170:8080/view/batch%20runs/job/Run%20SELECTED%20tests%20on%20SELECTED%20targets/ws/pdf_reports/minnow.2014-07-10_23-32-36.7.json.xml.pdf

current shape -2/2

- Installation and update scripts
  (Debian only)
- More tests integrated
  (including Renesas evaluation board-specific tests)
- Misc. enhancements
  (e.g. error reporting)

Releasing beta version test suit



https://bitbucket.org/cogentembedded/jta-public/

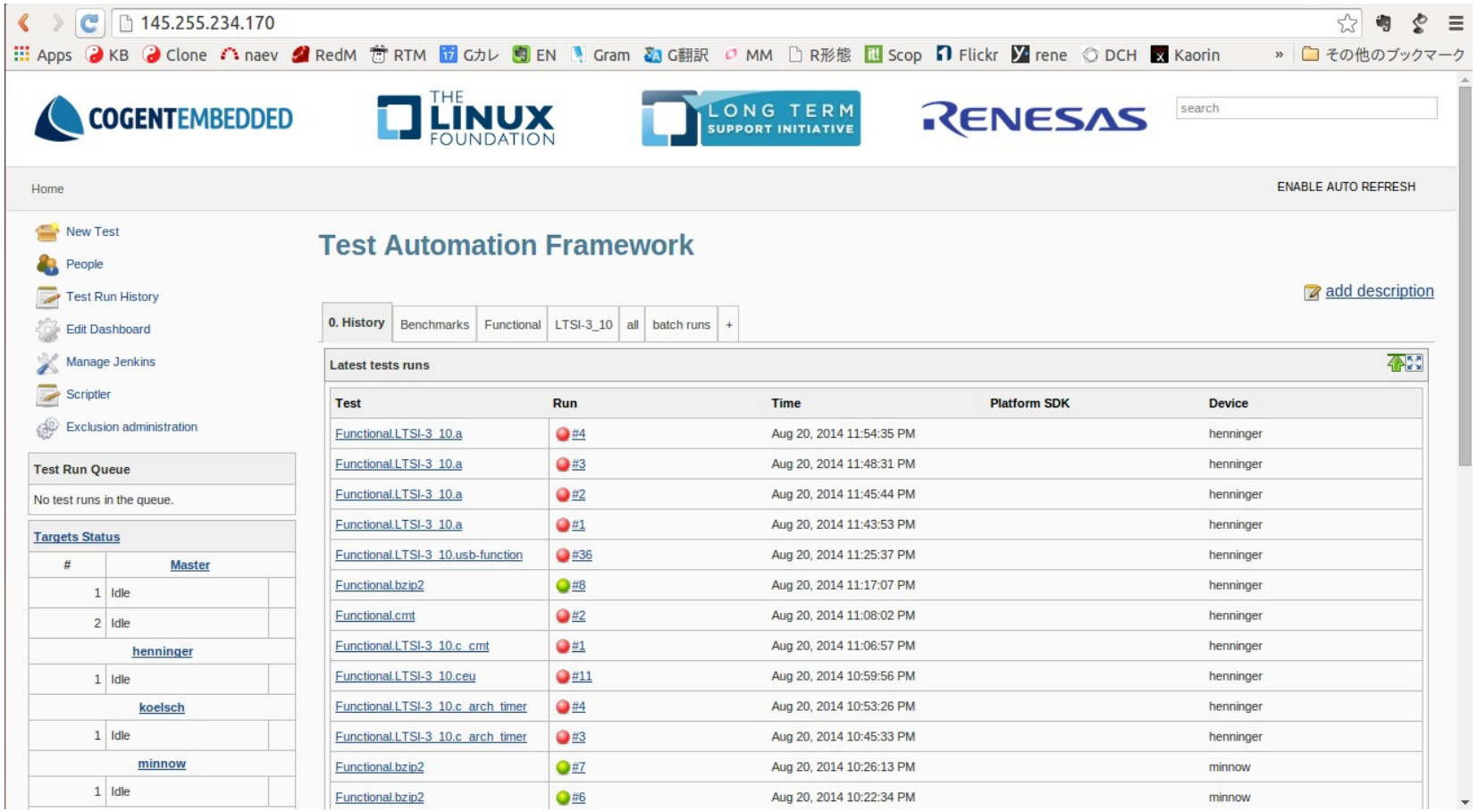
LTSI kernel testing (new/interesting bugs)

- File system robustness/power-cycle tolerance test
  - ext3 (with misc combination of options, e.g. data=journal) behaves better than ext4, btrfs, etc. (with misc. options evaluated)
  - Example: ext4 failures occurred after power outages during fsstress test run
- Need to pay attention for file system robustness and tolerance

Next steps

- Public server 24h/7d up/running with LTSI kernels for selected hardware (Intel Minnow, Renesas Henninger)
- More I/O and platform-specific tests
- Polished docs, deployment/installation scripts

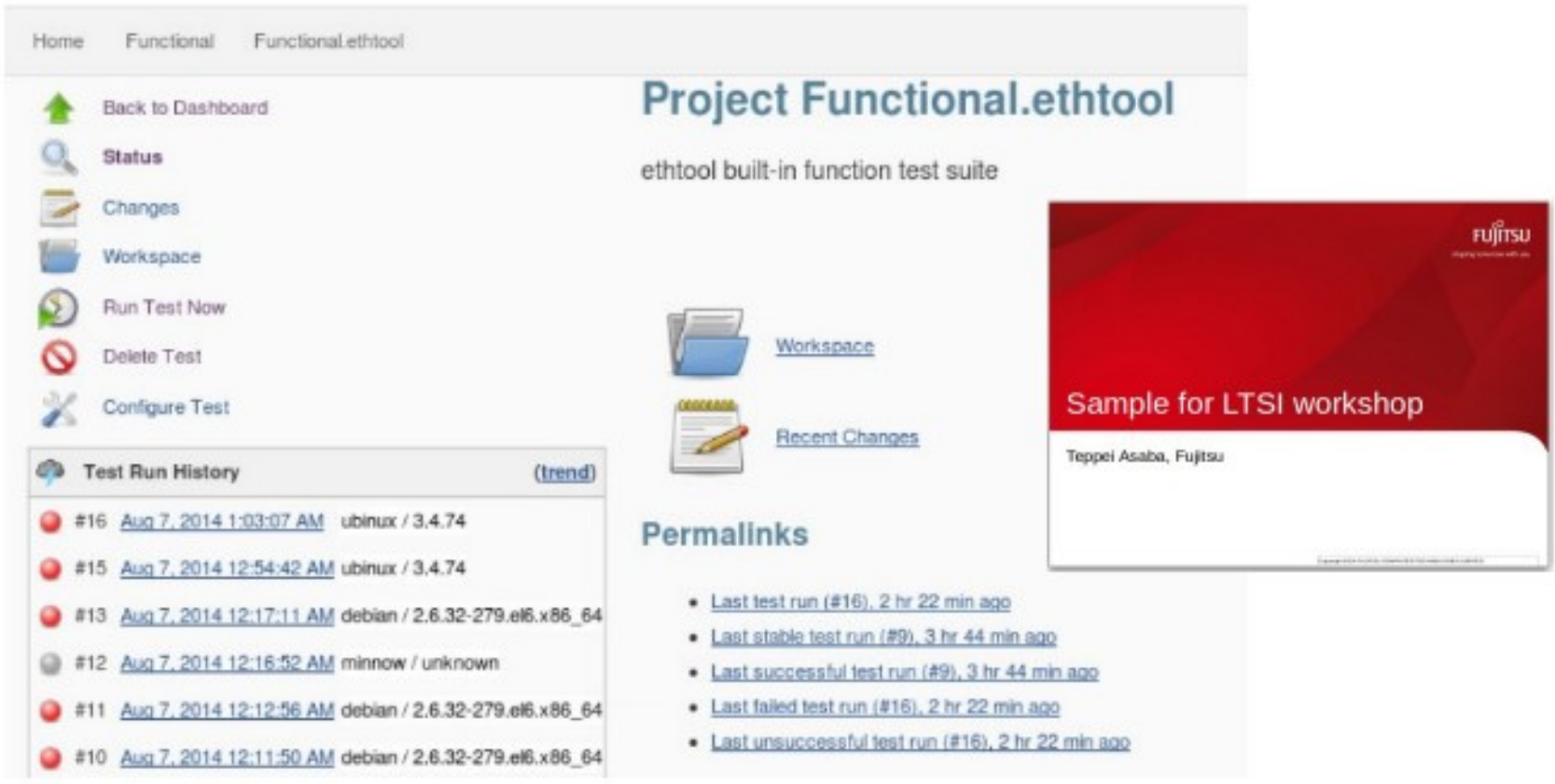
Public server 24h/7d up/running with LTSI kernels



Test	Run	Time	Platform SDK	Device
Functional.LTSI-3_10.a	#4	Aug 20, 2014 11:54:35 PM		henninger
Functional.LTSI-3_10.a	#3	Aug 20, 2014 11:48:31 PM		henninger
Functional.LTSI-3_10.a	#2	Aug 20, 2014 11:45:44 PM		henninger
Functional.LTSI-3_10.a	#1	Aug 20, 2014 11:43:53 PM		henninger
Functional.LTSI-3_10.usb-function	#36	Aug 20, 2014 11:25:37 PM		henninger
Functional.bzip2	#8	Aug 20, 2014 11:17:07 PM		henninger
Functional.cmt	#2	Aug 20, 2014 11:08:02 PM		henninger
Functional.LTSI-3_10.c_cmt	#1	Aug 20, 2014 11:06:57 PM		henninger
Functional.LTSI-3_10.ceu	#11	Aug 20, 2014 10:59:56 PM		henninger
Functional.LTSI-3_10.c_arch_timer	#4	Aug 20, 2014 10:53:26 PM		henninger
Functional.LTSI-3_10.c_arch_timer	#3	Aug 20, 2014 10:45:33 PM		henninger
Functional.bzip2	#7	Aug 20, 2014 10:26:13 PM		minnow
Functional.bzip2	#6	Aug 20, 2014 10:22:34 PM		minnow

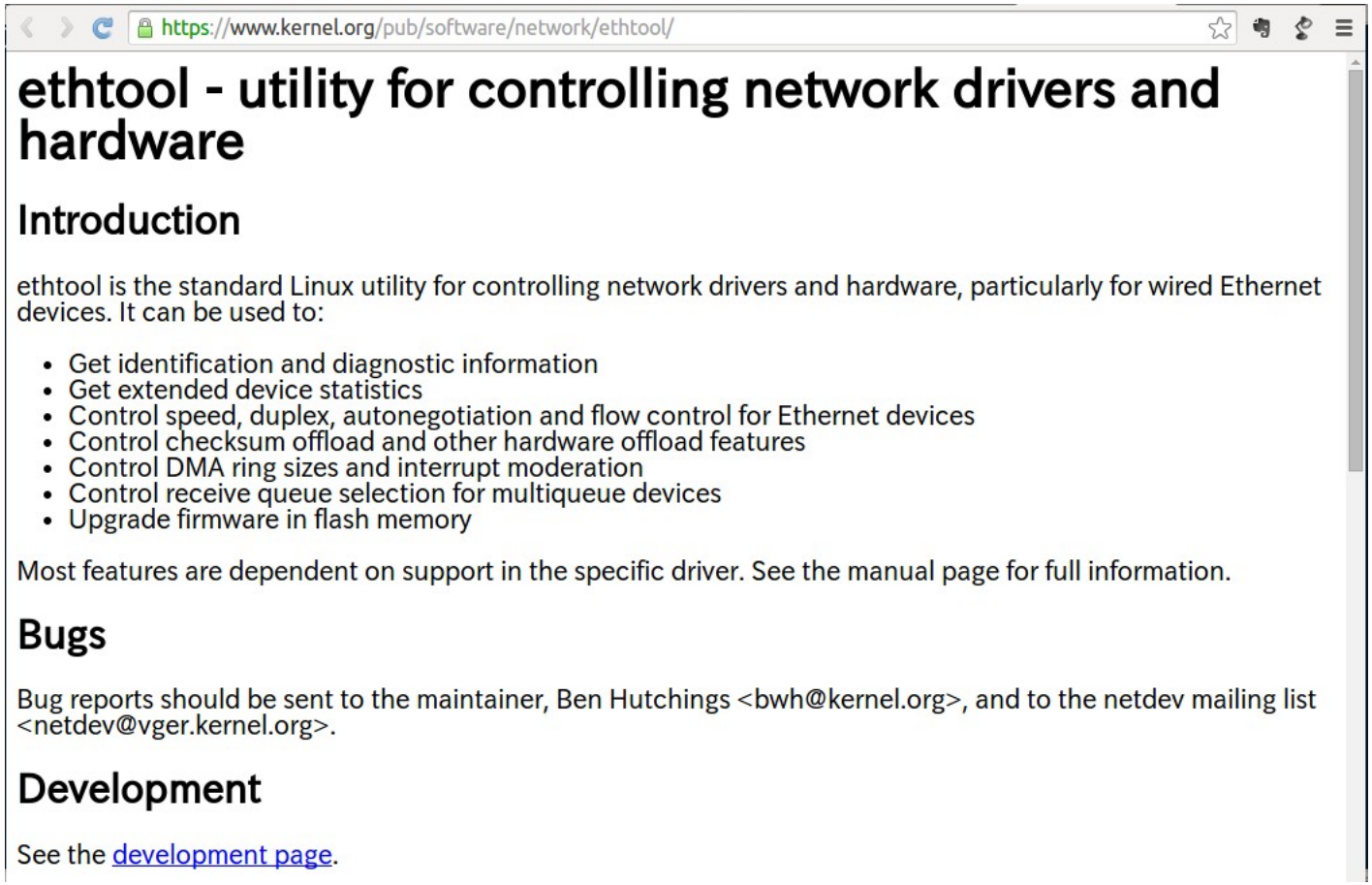
http://145.255.234.170/

Test case enhancement case-1 (Fujitsu : Ethertool)



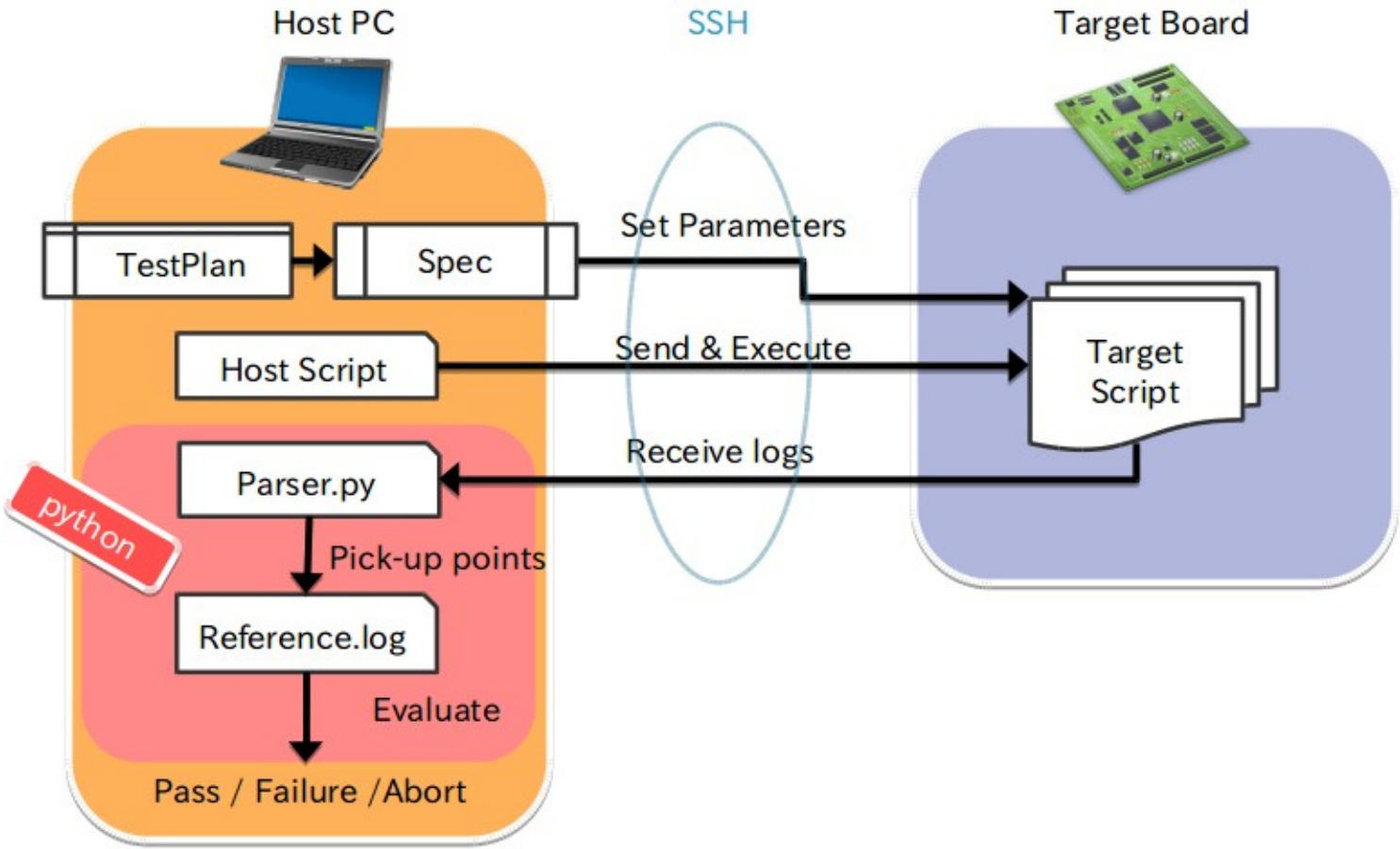
Fujitsu added Ethertool test in their environment

ethtool



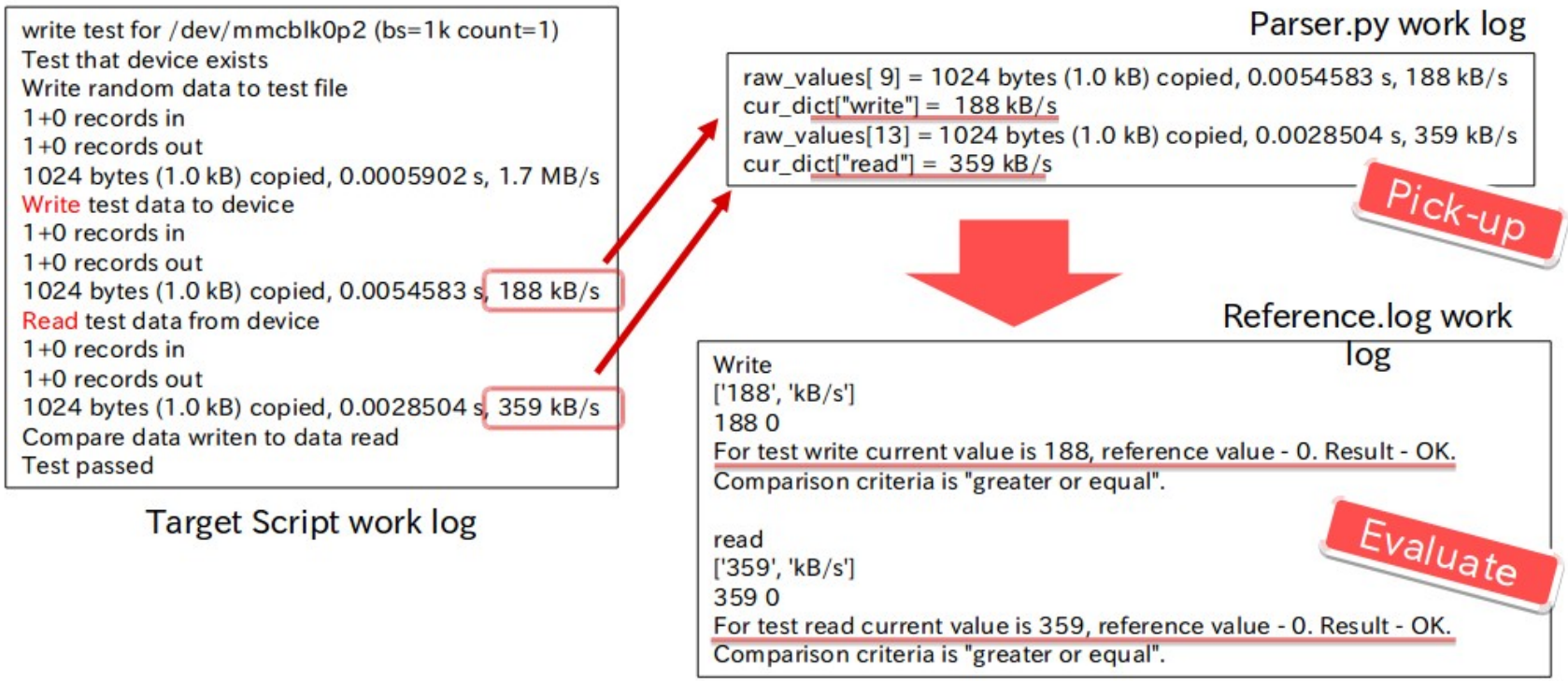
https://www.kernel.org/pub/software/network/ethtool/

Test case enhancement case-2 (Renesas: driver)



Renesas added device driver test in our environment

Test case enhancement case-2 (Renesas: driver)



capture -> transfer -> evaluate -> report

< Test case collection >

Sharing the future plan of test case aggregation

(Discussion) Test case spec, License, etc.

< Test result collection >

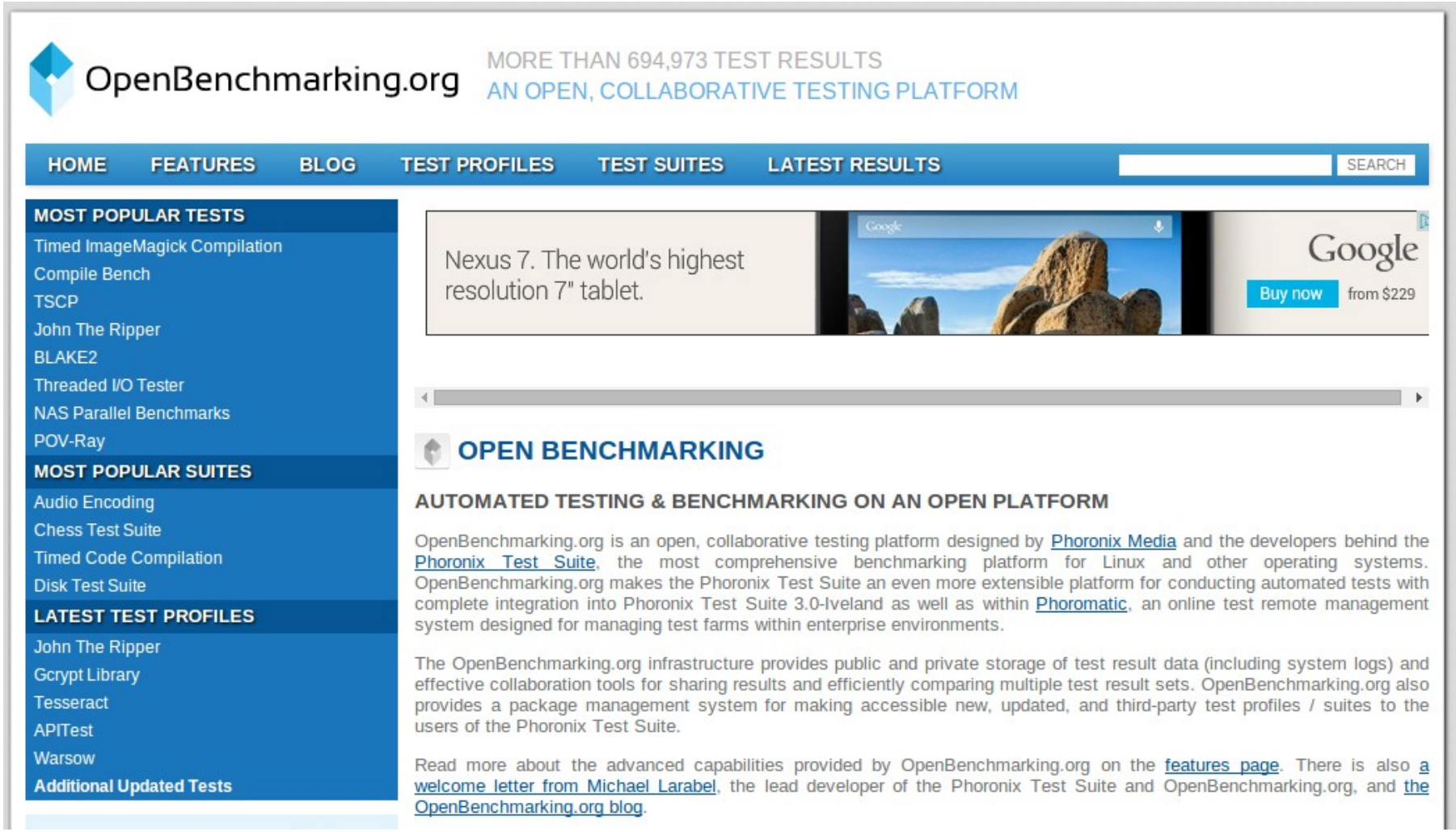
Test result aggregation

- Multiple instances of test frameworks (+targets, tests, configurations, parameters, bootcode/kernel/userspace combinations)
- How to aggregate/process (e.g. compare results, identify anomalies, remove duplicates)?
  - Step 1. Local anomalies/bugs can be handled/stored in centralized bugzilla-like system
  - Step 2. Test results can be processed /converted into a database, with proper indexing/ parameterization (e.g. company/node reporting results, kernel version/patch level, tag/branch of test repository, etc)

Sharing the validation result (option 1)

- So far we have identified similar project/solution ``openbenchmarking.org'' that may be reused (still not 100% sure)
- Which came from Phoronix project (nice set of benchmarks)
- We will study if openbenchmarking.org infrastructure could be reused
- And,contact maintainer

http://openbenchmarking.org/



http://www.phoronix-test-suite.com/

PHORONIX TEST SUITE

THE LEADING SOFTWARE FOR AUTOMATED, OPEN-SOURCE TESTING & BENCHMARKING

LATEST RELEASE
PHORONIX TEST SUITE 5.2.1-KHANINO
11 JULY 2014

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Open-Source Benchmarking

The Phoronix Test Suite is the most comprehensive testing and benchmarking platform available that provides an extensible framework for which new tests can be easily added. The software is designed to effectively carry out both qualitative and quantitative benchmarks in a clean, reproducible, and easy-to-use manner.

The Phoronix Test Suite is based upon the extensive testing and internal tools developed by Phoronix.com since 2004 along with support from leading tier-one computer hardware and software vendors. This software is open-source and licensed under the GNU GPL.

Originally developed for automated Linux testing, support to the Phoronix Test Suite has since been added for Apple OS X, Microsoft Windows, BSD, and Solaris operating systems, among other POSIX compliant platforms such as GNU Hurd. The Phoronix Test Suite consists of a lightweight processing core (*pts-core*) with each benchmark consisting of an XML-based profile and related resource scripts. The process from the benchmark installation, to the actual benchmarking, to the parsing of important hardware and software components is heavily automated and completely repeatable, asking users only for confirmation of actions.

The Phoronix Test Suite interfaces with OpenBenchmarking.org as a collaborative web platform for the centralized storage of test results, sharing of test profiles and results, advanced analytical features, and other functionality. Phoromatic is an enterprise component to orchestrate test execution across multiple systems with remote management capabilities.

Software Features

- Runs On Linux, Solaris, Mac OS X, Windows & BSD Operating

Overview

The Phoronix Test Suite can be used for simply comparing your computer's performance with your friends and colleagues or can be

Sharing the validation result (option 2)

- Alternatively - we could just start with a database, that is filled in (in automated way) based on reports (xml reports) coming from each test environment setup/system.
- As for front-end/easy search/visualization - could be simple html front-end, tied with database search (there are open source frameworks available for that)
- If everyone has its own test version, test name, configuration, etc. (kernel version, patch/level, board/soc/ipblock revision, etc.), we would need to create formal identifiers/parameters for integration database (e.g. for search, index, etc.)

Resources

Resources = ltsi.linuxfoundation.org

- LTSI process document (new) = http://ltsi.linuxfoundation.org/participate-in-ltsi/ltsi-development-guide
- ML
  - ML subscription = https://lists.linuxfoundation.org/mailman/listinfo/ltsi-dev
  - ML archives = http://lists.linuxfoundation.org/pipermail/ltsi-dev/
  - ML patchwork = https://patchwork.kernel.org/project/ltsi-dev/list/
- git(each patch) = http://git.linuxfoundation.org/?p=ltsi-kernel.git;a=summary
- download (tar ball) = http://ltsi.linuxfoundation.org/downloads/releases
- twitter = @LinuxLTSI
- document archives = http://ltsi.linuxfoundation.org/resources