Rt-tests – Status report

- Quick overview of the tests in the suite
- Discussion of recent changes and new features
- Ideas for the future
- Discussion / Open the floor to a wishlist for the future.
rt-tests

• Suite of tests, originally from Thomas Gleixner
  – cyclicetest: high resolution timer test
  – signaltest: signal roundtrip test
• Small number of “core” developers, fairly stable software suite. Surprising number of people who contribute one or two patches and disappear
• Development tends to occur in spurts.
rt-tests

- Tests from Carsten Emde
  - pmqtest: POSIX message queue test
  - svsematest: SYSV semaphore latency tests
  - sigwaittest: sigwait() latency test
  - ptsematest: POSIX threads mutex latency test
  - sendme: send a signal from a driver to userspace
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• From Clark Williams
  – pi_stress: priority inheritance stress test
  – hwlatdetect: hardware latency detect
    • Front end to Jon Master's kernel hardware latency detector
    • Clark currently working to update hwlatdetect to use either old version of module or Steve's rewrite / ftrace-hwlatdetector

• From John Kacur
  – pip_stress: priority inheritance with processes
rt-tests

• From Steven Rostedt
  – rt-migrate-test:
  – SCHED_DEADLINE
    • deadline_test:
    • cyclicdeadline
rt-tests - rteval

- Rteval: originally from Clark Williams and David Sommerseth
  - Tests the suitability of a system for realtime, using cyclictest and running various loads such as hackbench in order to stress test the system.
Rt-tests Social Engineering (being good open source citizens)

- Moved rt-tests out of our home directories on kernel.org into pub/scm/utils/rt-tests
- Removed most distribution specific code outside of rt-tests
- Posting all changes, even small ones.
rt-tests – New Features

- Building with -DHAVE_PARSE_CPUSTRING_ALL
  - To use numa_parse_cpustring_all() used in isolating cpus. (no autotools!)
- Support added for Android (Bionic) by Henrik Austad.
  - Android lacks certain features such as pthread_barriers, pthread_setaffinity
  - Support for a subset of tests
- Many fixes to the build system, such as generating .o, .a and .d files in a blddir, etc (John)
- cyclicetest –tracemark from Luis Capitulino
  - Bypass cyclicetest tracing and allow it to be done by external programs, in particular tracecmd
    - Cyclicetest must still do a minimum amount of set-up such as writing to the trace_marker file
rt-tests – New Features

- **--spike=trigger** (feature to record spikes from John Kacur)
  - Any time a spike > trigger occurs we record the data. (Thread and time stamp
  - **--spike-nodes=num_of_nodes**, is the amount of data we can record, default is 1024

- Change in hwlatdetect to allow kernel module to be a built-in (Clark Williams)

- **cyclicetest**: SMI count/detection via MSR/SMI counter (Daniel Bristot de Oliveira)
  - **--smi** Enable SMI count/detection on processors with SMI count support
rt-tests 1.0 – yay!

- After a lot of necessary clean-up, all that niggling stuff like spelling fixes, complete manpages, etc
- stable/v1.0 released May 2016
- Maintenance branch called stable/devel/v1.0.1
- Unstable version originally called v2.0, renamed to unstable/devel/v1.1.1
  - Still struggling with a good way to number this.
rt-tests 1.0

• Maintained stable version, for people who just need the tests to work, such as OSADL, and rteval (Red Hat), and many unknown developers.

• Unstable version for people who want to get creative with the next version of rt-tests
rt-tests – Future ideas

- Version of cyclictest that runs on small embedded systems
- More modular code, better code sharing throughout the tests.
- Removal of old code to handle ancient kernels and software environments.
- Rework / rewrite and simplification of options in cyclictest
- Rip out tracing and use external tracing software, in particular trace-cmd (part way there)
- Ability to query rteval and cyclictest during a long run
- Simple network latency test?
- Always open to new useful tests
rt-tests – Wish List

- Ideas, wish lists, brainstorming, the floor is yours!