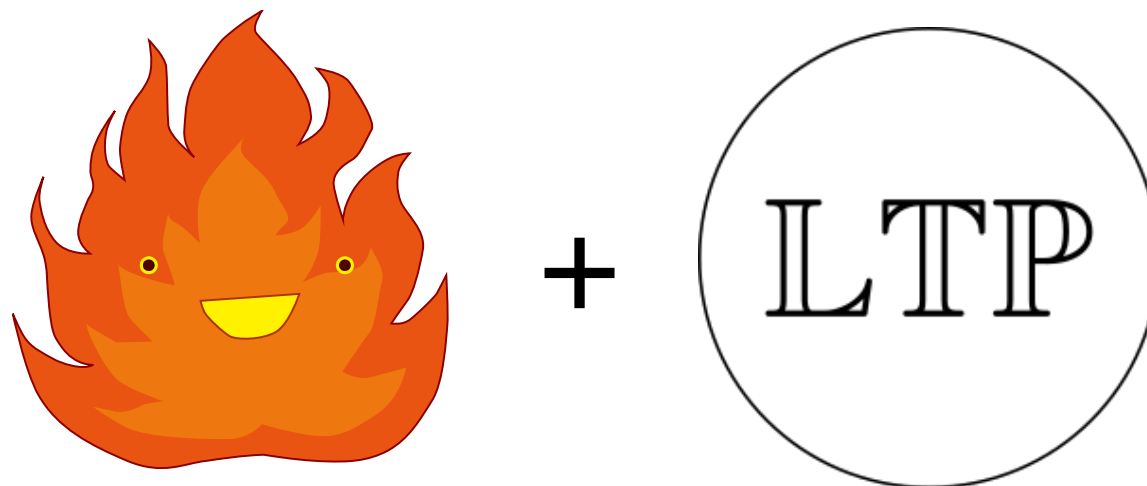


FUEGO: LTP improvements



Daniel Sangorrín,
IoT technology center, TOSHIBA
Linux Jamboree, 27 Oct 2016
Sony creative lounge, Shinagawa (Japan)

Background



LTP: Linux Test Project

- Main goal:
 - Validate the reliability, robustness, and stability of Linux
- Tests groups (each group has multiple tests):
 - 80 LTP native groups:
 - syscalls, fs, ipc, containers, filecaps, nfs, tracing, rpc, cpuhotplug, dio, ...
 - 8 Open Posix testsuite groups:
 - AIO, MEM, MSG, SEM, SIG, THR, TMR, TPS
 - 17 Real-time testsuite groups
 - latency, measurement, hrtimer-prio, gtod_latency, periodic_cpu_load, pthread_kill_latency, sched_football, pi-tests, thread_clock, rt-migrate, matrix_mult, prio-preempt, prio-wake, pi_perf, sched_latency, async_handler, sched_jitter
- References:
 - [LTP GitHub repository](#)
 - [LTP Test Writing Guidelines](#)
 - [LTP Mailing list](#)

State of LTP in FUEGO



Available tests

- 0.3/80 LTP native groups
 - 24/61 of fs + 1/14 test from kernel_misc
- 7/8 Open Posix testsuite groups
 - THR and some tests disabled
 - Isn't "Functional.posixtestsuite" redundant?
- 0/17 Real-time testsuit groups

No post-processing

- You need to go through the test logs
 - Your customer wants to know the test results

New LTP improvements



Added Functional.LTP

- 100/100 test groups!
- Uses the latest LTP
- Allows choosing which tests to run using checkboxes

Post-processing tool

- Summarizes the results of all tests
 - Creates a spreadsheet (results.xlsx)

Target preparation



Kernel configuration

- See [ltp/README.kernel_config](#)
 - Example: `CONFIG_NAMESPACES=y`
 - ★ Not complete: `CONFIG_FILE_LOCKING=y` (required by `ltp-pan`)

Root filesystem

- **Command tools**
 - `Sar`, `losetup` (required by `runltp`) ..
 - `Bash` may be required (`checkbashisms.pl`) in root
- **RW filesystem**
 - This can be substituted with a `tmpfs` folder `fuego`.. But some tests (e.g.: `dio`) do not work
- **Users**
 - `Nobody`, `bin`, `daemon`, `users`, `sys`
- **Others**
 - If `glibc` version is too old some tests will fail (`syscalls/madvise04`, `containers/mountns*`, ...)
 - Lack of libraries and kernel headers may cause some tests to fail (`quota`, `mkisofs`, `libaio`, `libnuma`, `libattr`, `libcap`, `expect`, `service`, `gcc`)
 - `Busybox` commands may not work in some test cases

Project Functional.LTP

This test run requires parameters:

Device

(target)

Reboot

If checked target device will be rebooted before running test.

Rebuild

If checked all existing build instances of the test suite will be deleted and test suite will be rebuilt from tarball.

Target_Cleanup

TESTPLAN

ltplite

selection of tests

syscalls

Kernel system calls

syscalls-ipc

quickhit

A small subset of the syscalls

fs

Filesystem stress tests

fs_readonly

fs_perms_simple

These tests are setting file permissions/group/uid and are trying to open/write/execute the file.

fs_bind

Bind mounts and shared subtrees

ipc

Interprocess communication stress

Test selection





Test results

results-jamboree.xlsx - LibreOffice Calc

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2	Test Case	Result Value	Result Output	Result Type
3	clock_gettime02	0		PASS
4	clock_gettime03	0		PASS
5	clock_settime02	5	clock_settime02 2 TFAIL : clock_settime02.c:126: Error Setting Time, errno=22	WARN FAIL
6	clock_settime03	0		PASS
7	timer_create02	0		PASS
8	timer_create03	0		PASS
9	timer_create04	0		PASS
10	timer_delete02	0		PASS
11	timer_delete03	0		PASS
12	timer_settime02	0		PASS
13	timer_settime03	0		PASS
14	leapsec timer	2	incrementing stop	BROK
15				SUCCESS
16				FAILED
17				TOTAL
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fs_perms_simple ipc timers AIO MEM MSG SEM SIG THR TMR TPS

Sheet 3 of 11 | 1048576 rows, 1 columns selected | PageStyle_timers | Sum=0 | 90%

TODO list



Some things that need to be improved

- Use GIT instead of tarballs
 - I discovered some bugs that were already fixed upstream
- Network tests
 - Make it automatic for the user
- LTP extra tests
 - Some hidden tests exist (tomoyo..)
- Detail the target dependencies to run each test group
 - Kernel and rootfs

Contribute to LTS

- Unify test interface
- Remove bashisms
- Improve error messages
- Not all RT tests put a clear FAIL/PASS message