

Moving livepatch module building to kselftests

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Agenda

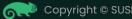
- kselftests What are kselftests and its goal
- 2. Livepatch testing modules How tests are run today

3. Problems

kselftests weak points

4. Proposal

Our approach the problem

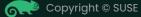


What are kselftests and its goal





- Designed to exercise specific code paths in the kernel



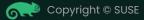
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- Only userspace tests
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 - Shell scripts
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- Small programs
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 - Userspace programs
- Useful targets:
 - make kselftest TARGETS=livepatch
 - make -C tools/testing/selftests run_tests



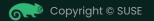
- make -C tools/testing/selftest gen_tar
 - Packs compiled tests to be executed on different system
 - Only binaries
 - (And different systems...?)



How tests are run today



- Modules live on lib/livepatch
 - Only compiled on kernel build
 - CONFIG_TEST_LIVEPATCH=m



- Modules live on lib/livepatch
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 - CONFIG_TEST_LIVEPATCH=m
- How to run the tests on different systems without having the kernel source?
 - How to run the tests on distro kernels?

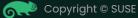


CONFIG_LIVEPATCH=y CONFIG_TEST_LIVEPATCH=m

Kernel building

make modules_install make install reboot

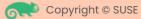
make kselftest TARGETS=livepatch



- qa_test_klp (https://github.com/SUSE/qa_test_klp/)
 - Out-of-tree tests
 - Compiles the test modules on the fly
 - Used on SLE kernels



Kselftest weak points



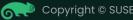
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- How to get the tests to run on different systems?
 - gen_tar only packs binaries
- Currently kselftests doesn't allow kernel modules
 - (bpf...?)
 - No rules to build modules
- When modules are built (with our proposal) _
 - They can only run on machines with the same kernel version



Our approach the problem



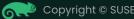
- https://lore.kernel.org/live-patching/20231031-send-lp-kselftests-v3-0-2b1655c2605f@suse.com/T/#t
 - Already on v3



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- Move modules from lib/livepatch to tools/testing/selftests/livepatch



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- Move modules from lib/livepatch to tools/testing/selftests/livepatch -
- Compile the modules before running the tests
 - Makes the tests system agnostic
 - Need kernel-headers



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 - Already on v3
- Move modules from lib/livepatch to tools/testing/selftests/livepatch
- Compile the modules before running the tests
 - Makes the tests system agnostic
 - Need kernel-headers
- Port the remaining tests from qa_test_klp



- Future work:
 - Add option to gen_tar to enable building the sources on the target





Thank you

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