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Bare-metal testing using containerised test suites

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The traditional approach of testing software on real hardware usually involves creating a rootfs which contains the test suites that need to be run, along with its run-time dependencies (network, mounting drives, time synchronization, …).

Maintaining one rootfs per test suite is a significant packaging burden, but also prevents running multiple test suites back to back which slows down testing. The alternative is also not a clear win as this makes the creation of the rootfs harder when having conflicting requirements between test suites or if a test suite silently modifies some configuration which would impact other test suites, potentially leading to test failures being mis-attributed.

Fortunately, Linux namespaces and OCI containers are now becoming commonplace and can now be used to package our test suites along with their dependencies, without having to integrate them all in one image. Provided that you have a well configured host kernel and OS, this enable running test suites in relative isolation thus reducing the chances of interference between test suites. Finally, the packaging problem can be alleviated by having the test suites provide releases as containers, thus allowing re-use in many CI systems without modifications.

In this presentation, we will further present the benefits of containers, and introduce boot2container: A podman-powered initramfs that gets configured declaratively using the kernel command line, is deployable via PXE thanks to its small size (<20 MB), and that makes it easy to share files with/from the test machine via an S3-compatible object storage.

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