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Improving Kernel Builds with TuxMake and TuxBuild

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Reproducing build errors reported to a mailing list is a pain. How much time do we collectively spending asking "What kernel config did you use?", "What compiler?" and "What architecture?"?

What if we could version and distribute build environments similarly to how we version Linux source code?

TuxMake is a tool that provides portable and repeatable Linux kernel builds across a variety of architectures, toolchains, kernel configurations, and make targets. Critically, it supports docker natively so that build environments are portable and builds are fully repeatable. TuxMake provides Docker images with cross build toolchains for a comprehensive set of supported architectures.

TuxMake provides both a command line tool and a Python API. With each build, you can specify the target architecture; which compiler to use; whether to use ccache, sccache, or doing a clean build; which targets to build; which kernel predefined configuration to start from, and which additional configurations to apply on top of that. You can pass arbitrary environment variables, also control the build concurrency. TuxMake is then responsible for running all the necessary commands to build a kernel to your specification, collect artifacts, logs, and extract metadata from the build environment.

TuxMake is in its early development stages, and is being designed to be extensible.

TuxBuild is a highly scalable and parallel Linux kernel building service. It consists of a REST API and a command-line client which can perform individual or pre-defined sets of builds. All builds happen on-demand, in parallel, and are easy to use both interactively and from a CI system.

TuxBuild solves the problem of build capacity and build automation, and allows kernel developers to perform more builds, more quickly, and more easily.

TuxMake is open source software, and TuxBuild is a private build service provided by Linaro.

More information about TuxMake and TuxBuild can be found at https://gitlab.com/Linaro/tuxmake and https://gitlab.com/Linaro/tuxbuild.

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