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Robust Linux Binaries

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The data processing of HEP data relies on rich software distributions, made of experiment specific software and hundreds of other software products, developed by our community and outside it.
This kind of software stacks are traditionally distributed on shared file systems as a set of packages coherently built. This has the benefit of reducing as much as possible any coupling with the libraries present in the system on which HEP applications are executed.
Such large projects require an appropriate shell environment, for example, on Linux, a LD_LIBRARY_PATH allowing to find a consistent set of binaries and shared libraries. This solution can have side-effects, for instance causing incompatibilities between system binaries that find themselves linked with libraries incompatible with the expected ones.
This presentation proposes a solution to improve the current setup relying heavily on the usage of RPATH and the Gentoo build system. Despite its usefulness, so far, RPATH-based builds are little to not used on Linux in High energy Physics. We show how build systems can be adjusted for RPATH-based builds, what the result is and how it enables trivial multiple installations of binaries and libraries with otherwise conflicting versions.

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