

Unify vDSOs across multiple architectures

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vDSO (virtual dynamic shared object) is a mechanism that the Linux kernel provides as an alternative to system calls to reduce, where meaningful, the costs in terms of cycles.

This is possible because certain syscalls like `gettimeofday()` do not write any data and return one or more values that are provided by the kernel, which makes calling them directly as a library function relatively safe.

Even if the mechanism is pretty much standard, every architecture in the last few years ended up implementing its own vDSO library in the architectural code. The purpose of this presentation is to examine the approach adopted from Linux 5.2 that identifies the commonalities between the architectures and tries to consolidate the common code paths in a unified vDSO library.

The presentation will start with a generic introduction to the vDSO concepts, it will proceed to cover some of the design choices, implementation details and issues encountered during the unification and it will conclude with an analysis of the possible future development (e.g. addition of new architectures, new syscalls conversions, new possible features, etc.).

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