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Eliminating WrapFS hackery in Android with ExtFUSE (eBPF/FUSE)

Tuesday, September 10, 2019 5:00 PM (15 minutes)

This work proposes to adopt Extended FUSE (ExtFUSE) framework for improving the performance of Android SDCard FUSE daemon, thereby eliminating a need for out-of-tree WrapFS hackery in the Android kernel.

ExtFUSE leverages eBPF framework for developing extensible FUSE file systems. It allows FUSE daemon in Android to register "thin"eBPF handlers that can serve metadata as well as data I/O file system requests right in the kernel to improve performance. Our evaluation with Android SDCardFS under ExtFUSE shows about 90% improvement in app launch latency with less than thousand lines of eBPF code in the kernel. In the presentation, I will share my findings and progress made to get feedback from the Android kernel developers.

Overall, this work benefits millions of Android devices that are currently running out-of-tree WrapFS-based code in the kernel for emulating FAT functionality and enforcing custom security checks.

I agree to abide by the anti-harassment policy

Yes

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