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Handling User Page Faults from Kernel Tracers

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There are scenarios where tracer inputs come from user-space and are not paged in. Tracepoints invoked at system call entry immediately after an exec(2) system call are very likely to require page faults to access arguments located in the ELF data section.

This issue is not limited to system call instrumentation, it also affects instrumentation ABIs such as User Events.

Discuss our "Faultable tracepoints" proposal [1], which lays the groundwork required to allow kernel tracers to handle page faults, and the approaches which can be taken by Ftrace, Perf, eBPF and LTTng to handle those faults.

[1] "Faultable tracepoints" https://lore.kernel.org/lkml/20240626185941.68420-1-mathieu.desnoyers@efficios.com/

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