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More Effective Approach to Detecting Potential Deadlocks, DEPT(DEPendency Tracker)

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Lockdep is a tool in the Linux kernel designed to detect potential deadlocks by tracking the order in which locks are acquired. However, deadlocks can occur not only due to incorrect lock acquisition order, but also from waits that cannot be resolved. For more effective deadlock detection, it is crucial to track the waits and events themselves, rather than focusing on lock acquisition order. This is where DEPT (DEPendency Tracker) comes in. DEPT accurately identifies conditions that can lead to deadlocks by tracking waits and events. Let me introduce DEPT and explain how it works.

[limitation of lockdep]

<https://lore.kernel.org/lkml/6383cde5-cf4b-facf-6e07-1378a485657d@I-love.SAKURA.ne.jp/>

<https://lore.kernel.org/all/20250513175633.85f4e19f4232a68ab04c8e41@linux-foundation.org/>

[dept playing role in practice]

<https://lore.kernel.org/lkml/1674268856-31807-1-git-send-email-byungchul.park@lge.com/>

<https://lore.kernel.org/all/b6e00e77-4a8c-4e05-ab79-266bf05fcc2d@igalia.com/>

[dept series]

<https://lore.kernel.org/all/20250519091826.19752-1-byungchul@sk.com/>

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