

Linux Plumbers Conference 2024



Contribution ID: 401

Type: **not specified**

Towards Programmable Memory Management with eBPF

Friday 20 September 2024 13:00 (30 minutes)

The increase in memory capacity in datacenters, coupled with the proliferation of memory-intensive applications, has made memory management a significant performance bottleneck. This issue is poised to worsen due to several factors, such as the inherent hardware limits of TLB scaling and the advent of terabyte-scale memory capacity through technologies like CXL.

In this talk, I will present our vision of a programmable memory management interface with eBPF that can provide a pliable solution. Specifically, the discussion will cover our ongoing work on (a) ensuring contiguity for larger translations, such as huge pages, and (b) introducing learned virtual memory management, a novel solution based on lightweight machine learning, that can effectively address the bottleneck of address translation.

Primary author: SKARLATOS, Dimitrios (Carnegie Mellon University)

Co-author: ZHAO, Kaiyang (Carnegie Mellon University)

Presenters: SKARLATOS, Dimitrios (Carnegie Mellon University); ZHAO, Kaiyang (Carnegie Mellon University)

Session Classification: eBPF Track

Track Classification: eBPF Track