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Leveraging New Interfaces to Low-Latency Storage

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The gap between I/O performance and memory performance is decreasing due to the emergence of fast, low-latency storage such as NVMe and persistent memory (PMEM). However, traditional interfaces to storage (e.g., POSIX) do not fully leverage these new device characteristics, resulting in significant performance degradation. New interfaces to storage must be utilized in order to achieve the full potential of these low-latency technologies. To demonstrate this, we present pMEMCPY: a simple, lightweight, and portable I/O library for storing data in persistent memory. As opposed to traditional storage APIs, pMEMCPY uses memory mapping. We demonstrate that our approach is up to 2x faster than alternative interfaces to storage under real workloads.

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