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Disrupting High Performance Storage with Intel DC Persistent Memory & DAOS

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With an exponential growth of data, distributed storage systems have become not only the heart, but also the bottleneck of datacenters. High-latency data access, poor scalability, impracticability to manage large datasets, and lack of query capabilities are just a few examples of common hurdles. With ultra-low latency and fine-grained access to persistent storage, Intel Optane DC Persistent Memory Modules (DCPMM) represents a real opportunity to transform the industry and overcome many of those limitations. But existing distributed storage software was not built for this new technology, and completely masks the value DCPMM could provide. One needs to rethink the software storage stack from the ground up, to throw off irrelevant optimizations designed for disk drives and to embrace fine-grained and low-latency storage access, in order to unlock the potential of these revolutionary technologies for distributed storage. This presentation will introduce the ground-breaking technology from Intel in relation to Storage Class Memory and NVMe SSD, and the libraries being developed to take advantage of that technology. We introduce the architecture of the Distributed Asynchronous Object Storage (DAOS), which is an open-source software-defined multi-tenant scale-out object store designed from the ground up to take advantage of DCPMM and NVMe SSDs.

Keywords

persistent memory, DAOS, software-defined storage

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