

DirectMemory Cache: Fast Just Got Faster



As time progresses and data sets mature, organizations continue to expect (and demand) more and more from their information. Expectations include everything from high availability, to interoperability with new technologies, to extreme performance. At Pure we've disrupted the entire storage industry by offering a truly non-disruptive data platform that customers can rely upon that includes operating system, firmware, and even full hardware upgrades. Our API-first engineering

methodology ensures our solutions are tightly aligned with applications and are effortless to integrate into nearly any environment. With regards to performance, we were the first to introduce end-to-end NVMe without charging a premium for the new media, and NVMe-oF. We've done this all without the need for existing customers to re-buy their capacity and conduct a forklift upgrade from a previous generation system.

Now we're doing it again by taking performance to the next level while keeping true to our Evergreen™ ideology. We're proud to introduce Storage Class Memory (SCM) as an option to further accelerate performance on the FlashArray™//X. With a large gap in performance between traditional NAND and local memory (DRAM), along with a similar gap in cost, the next logical evolution is an SCM component. With Purity Optimize, [DirectMemory Cache](#) effortlessly delivers improved database, analytics, and reporting performance.

As part of the core FlashArray operating system, Purity for FlashArray, DirectMemory Cache introduces software integrated SCM technology. DirectMemory Cache automatically refers reads from flash media in the array to onboard DirectMemory Modules (DMM). Once the DirectMemory Modules are non-disruptively added to a new or existing FlashArray//X70 R2 or //X90 R2, DirectMemory Cache immediately begins

working without the hassle of configurations or tuning. Users can expect the array to commence providing read latency improvements, along with additional throughput, for all FlashArray workloads—the most notable of which are online transaction processing (OLTP) and in-memory databases. In addition, workloads such as SAP Hana, using the Storage Extension Layer, can expect performance to be up to 90% of in-host memory – at only one-third of the cost!

DirectMemory Cache provides a significant performance boost to FlashArray//X, which currently achieves as low as 250us latency via 100% NVMe DirectFlash™ and DirectFlash Fabrics with NVMe-oF. Leveraging Purity Optimize, you can expect read-latency improvements of up to 50%, increased throughput capability, and the benefit of a FlashArray system resource offload for the ability to add more workloads to the FlashArray.

DirectMemory Modules fit into the FlashArray//X70 R2 and //X90 R2 array chassis with plug-and-play ease, and you can add them non-disruptively to an in-production FlashArray. DirectMemory Cache utilizes Intel



Optane technology to achieve latency speeds nearly that of DRAM memory. It has the added benefit of being persistent, compared to traditional DRAM memory, and capable of ultra-high wear endurance. Further, the DirectMemory capacity is available to both controllers, allowing the cache to stay warm even in the event of a failover. You can add the SCM capacity in either 3TB or 6TB DMM packs to cover a full range of requirements.

Get more technical details of Pure Storage DirectMemory Cache and Storage Class Memory in the [DirectMemory datasheet](#), the [Storage Class Memory white paper](#) and the [FlashArray//X datasheet](#). Contact your Pure Storage value-added-reseller or account team for additional information.