PRODUCT BRIEF

Intel® Optane™ SSD DC P4800X Series with Intel® Memory Drive Technology
Data Center

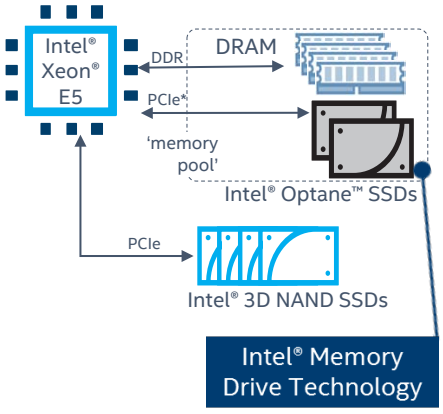
Delivering the Combination of Memory Capacity and Cost-Efficiency

Bundle Intel® Memory Drive Technology with the Intel® Optane™ SSD DC P4800X Series to transparently integrate SSDs into the memory subsystem.

Every day, the amount of data created across the world is exploding to new levels. Enterprises and cloud service providers thrive on this data to make critical decisions, gain new insights from the data, and differentiate services. But, today's current storage technologies leave a technology gap in data storage tiers. DRAM is far too expensive to scale and while NAND has the capacity and cost structure to scale, it lacks sufficient performance to function in the memory space. To address the gap, a storage solution that behaves like system memory is needed.

Intel® Optane™ SSD DC P4800X: Most Responsive Data Center SSD[1]

The Intel® Optane™ SSD DC P4800X is the first product to combine the attributes of memory and storage. With an industry-leading combination of high throughput, low latency, high QoS and ultra-high endurance, this innovative solution is optimized to break through data access bottlenecks by providing a new data storage tier. The DC P4800X accelerates applications for fast caching and fast storage to increase scale per server and reduce transaction costs for latency sensitive workloads. In addition, the DC P4800X enables data centers to deploy bigger and more affordable datasets to gain new insights from large memory pools.



Simplify Memory Extension with Intel® Memory Drive Technology

Intel® Memory Drive Technology enables data centers to deliver more affordable memory pools by displacing a portion of DRAM or significantly grow the size of memory pools. When bundled with the Intel® Optane™ SSD DC P4800X, Intel® Memory Drive Technology transparently integrates the drive into the memory subsystem and makes the SSD appear like DRAM to the OS and applications. Due to the low latency and ultra-high endurance of the DC P4800X Series, it is optimal for use by the Intel® Memory Drive Technology.

Together, the DRAM and the SSD emulate a single volatile memory pool. The software intelligently determines where data should be located in the pool to maximize performance, enabling servers to deliver performance across many workloads—even when DRAM is only supplying one-third to one-tenth of the memory pool capacity.

Delivers New Possibilities and Savings Opportunities Across Use Cases

Intel® Memory Drive Technology enables data centers to dramatically expand the memory pool. The combination of increased capacity and cost-efficiency means enterprises can breakthrough today's memory limits, enabling new possibilities – like accessing higher-capacity, in-memory datasets to deliver better, faster analytics insight. As example, cloud providers can reduce capital cost for memory by enabling them to oversubscribe workloads by providing greater overall capacity. Or, high-performance computing centers can increase simulation sizes, improve research and scientific results, and quickly and cost-effectively test new simulations.

The innovative Intel® Memory Drive Technology simplifies memory extension and requires no change to the OS or applications.

About Intel® Optane™ Technology

Intel® Optane™ technology is a unique combination of 3D XPoint™ memory media with Intel's advanced system memory controller, interface hardware and software IP. This revolutionary technology is offered in several form factors to unleash vast system performance in a range of products.

In the Intel® Optane™ DC P4800X, Intel® Optane™ technology delivers the unparalleled combination of high throughput, low latency, high QoS and ultra-high endurance.

For more information, visit intel.com/ssd

FEATURE	SPECIFICATIONS
Memory Capacity	320 GiB[2,3]
Operating Systems	RHEL* 6.5, 6.6, 6.7, 6.8 ,7.0, 7.1, 7.2, 7.3 SLES* 11 SP4, 12, 12 SP1, 12 SP2 Intel® Memory Drive Technology Software[4] requires a bootable media. Supported protocols: IDE, UHCI, EHCI. Linux OS must be installed in legacy (non-UEFI) mode
Supported Processors	Intel® Xeon® E5-x6xx v2 or later, E7-x8xx v2 or later
Maximum Processor Sockets	8
Maximum Software-defined Memory	64 TiB[2]
Recommended DRAM Expansion	Up to 8x[5]
Hot-plug	Hot-plug is not supported
HARDWARE	
Form Factor	Add-in-Card (AIC); Half-height, Half-length, Low-profile
Interface	PCIe* 3.0x4, NVMe*
Power	AIC: 12V (3.3V Aux) Supply Rail Active/Idle: Up to 18 W/5 W (TYP)

1. Responsiveness defined as average read latency measured at queue depth 1 during 4k random write workload. Measured using FIO 2.15. Common configuration - Intel 2U PCSD Server ("Wildcat Pass"), OS CentOS 7.2, kernel 3.10.0-327.el7.x86_64, CPU 2 x Intel® Xeon® E5-2699 v4 @ 2.20GHz (22 cores), RAM 396GB DDR @ 2133MHz. Intel drives evaluated - Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P3700 1600GB. Samsung drives evaluated – Samsung® SSD PM1725a, Samsung® SSD PM1725, Samsung® PM963, Samsung® PM953. Micron drive evaluated – Micron® 9100 PCIe® NVMe™ SSD. Toshiba drives evaluated – Toshiba® ZD6300. Test – QD1 Random Read 4K latency, QD1 Random RW 4K 70% Read latency, QD1 Random Write 4K latency using FIO 2.15.
2. GiB = 1,073,741,824 bytes, TiB = 1,099,511,627,776 bytes
3. Total physical capacity is 375GB. Total usable capacity towards Memory Drive is 320 GiB.
4. Technology licensed from ScaleMP*
5. For example: 128GiB DRAM can be expanded up to 1024GiB based on the capacity of the non-volatile memory media installed. Higher expansion ratios may be supported, with possibly suboptimal performance.

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at intel.com.

Tests document performance of components on a particular test, in specific systems. Differences in hardware, software, or configuration will affect actual performance. Consult other sources of information to evaluate performance as you consider your purchase. For more complete information about performance and benchmark results, visit www.intel.com/benchmarks.

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