PRODUCT BRIEF

Intel® Optane™ SSD DC P4800X Series
Data Center (DC), PCI Express* (P)

World's Most Responsive Data Center SSD[1]

Solve the most demanding storage and memory challenges with the Intel® Optane™ SSD DC P4800X Series.

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.

Combines Attributes of Memory and Storage

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.

High Throughput for Breakthrough Performance

Realize breakthrough application performance with the DC P4800X. It is designed to deliver 5-8x faster performance at low queue depth workloads,[2] exhibiting extremely high throughput for single accesses and super low latency. Where NAND-based SSDs are often measured at a queue depth of 32 (SATA) or 128 (NVMe*) in order to showcase maximum throughput, the DC P4800X can reach as much as 500,000 IOPS, or ~2GB/s, at a queue depth of 11.[1] This new technology is perfectly suited to accelerate enterprise applications to new, breakthrough levels of performance.

intel OPTANE™

Low Latency: Responsive Under Load

With a new data storage tier created by Intel® Optane™ technology, data centers can consistently realize amazing response times under any workload. With NAND-based SSDs, random write operations require an immense amount of background media management. These tasks can add significant delay to the read operations. The Intel® Optane™ SSD DC P4800X maintains consistent read response times regardless of the write throughput applied to the drive. Read response times remain below <30µs while withstanding up to 2GB/s of random write pressure.[3]

Predictably Fast Service: QoS

In an environment of fast growing data and ever demanding needs, data centers must deploy solutions that enable predictably fast service. The DC P4800X is ideal for critical applications with demanding latency requirements. Its 99% read response time is 60x that of a high-endurance NAND SSD under random write workload.[4] Optimized to minimize delays in data access times, the DC P4800X results in faster time to insight for decision making.

Ultra-High Endurance

Endurance affects the life expectancy and costs of enterprise SSDs. The DC P4800X is designed for high write environments, and can withstand intense write traffic that is typically demanded of memory. With its extremely high endurance, the life of the DC P4800X is extended, making it suitable for write-intensive applications such as online transaction processing, high performance computing, write caching and logging.

Use Cases for Today's Data Center

Data centers can explore two key use cases for the DC P4800X: fast storage or cache, or extended memory.

Fast storage or cache refers to the tiering and layering which enable a better memory-to-storage hierarchy. The DC P4800X provides a new storage tier that breaks through the bottlenecks of traditional NAND storage to accelerate applications, and enable more work to get done per server.

The extended memory use case allows an Intel® Optane™ SSD to participate in a shared memory pool with DRAM at either the OS or application level enabling bigger memory or more affordable memory. Bigger memory dramatically increases the size of 'working sets' to enable new insights from data in growing segments such as scientific computing, healthcare and autonomous driving. More affordable memory means data centers can use Intel® Optane™ SSDs to displace some DRAM.

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

FEATURE	SPECIFICATION
Capacity	375GB, 750GB
Form Factor	Add-in-Card (AIC), Half-height, Half-length, Low-profile; U.2 2.5in
Interface	PCIe* 3.0 x4, NVMe*
Latency (typical) R/W	<10µs
Quality of Service (QoS): 99.999%	4KB[5] Random, Queue Depth 1, Read/Write: <60/100 µs 4KB Random, Queue Depth 16, R/W: <150/200 µs
Throughput[6]	4KB Random, Queue Depth 16, Read/Write: up to 550/500k IOPS 4KB Random, Queue Depth 16, Mixed 70/30 Read/Write: up to 500k IOPS
Endurance	30 Drive Writes per day (JESD219 workload) 375GB - 20.5 Petabytes Written (PBW) 750GB - 41 PBW

For more information, visit intel.com/ssd

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 Server System, 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 396 GB DDR @ 2133MHz. Intel drives evaluated - Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P3700 1600 GB. 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. Common Configuration - Intel 2U Server System, 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. Configuration – Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P3700 1600 GB. Performance – measured under 4K 70-30 workload at QD1-16 using FIO 2.15.
3. Common Configuration - Intel 2U Server System, 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. Configuration – Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P3700 1600 GB. Latency – Average read latency measured at QD1 during 4K Random Write operations using FIO 2.15.
4. Common Configuration - Intel 2U Server System, 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. Configuration – Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P3700 1600 GB. QoS – measures 99% QoS under 4K 70-30 workload at QD1 using FIO 2.15.
5. 4 KB = 4,096 bytes
6. Performance measured using FIO* rev 2.13, with 4 workers with total Queue Depth of 16.

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Benchmark results were obtained prior to implementation of recent software patches and firmware updates intended to address exploits referred to as "Spectre" and "Meltdown". Implementation of these updates may make these results inapplicable to your device or system.

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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Поставка электронных компонентов

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