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Solution brief

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HARNESS THE WORLD'S DATA WITH HPE SERVERS AND INTEL OPTANE SSDS

Turn storage bottlenecks into data center breakthrough

Prepare your enterprise with a server storage infrastructure designed to process more sales, deploy virtualized environments at scale, and unearth actionable insights from your data in real-time.

Every day, the amount of data created across the world is exploding to new levels. Enterprises thrive on this data to make critical decisions, gain new insights, 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.

INTEL OPTANE SSDS

With an industry-leading combination of high throughput, low latency, high QoS, and high endurance, Intel® Optane™ SSDs are optimized to break through data access bottlenecks. Intel Optane SSDs accelerate applications for fast caching and fast storage to increase scale per server and reduce transaction costs for latency-sensitive workloads. In addition, this SSD enables data centers to deploy bigger and more affordable datasets to gain new insights from large memory pools.

HIGH THROUGHPUT FOR BREAKTHROUGH PERFORMANCE

Intel Optane SSDs are designed to deliver 5–8x faster performance at low queue depth workloads,[1] 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, Intel Optane SSDs can reach as much as 500,000 IOPS, or ~2 GB/s, at a queue depth of 11.[2] Intel Optane technology is perfectly suited to accelerate enterprise applications to new, breakthrough levels of performance.

LOW LATENCY—RESPONSIVE UNDER LOAD

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. Intel Optane SSDs maintain consistent read response times regardless of the write throughput applied to the drive. Read response times remain below <30µ while withstanding up to 2 GB/s of random write pressure.[3]

PREDICTABLY FAST SERVICE: QOS

In an environment of fast-growing data and ever-demanding needs, business must deploy solutions that enable predictably fast service. Intel Optane SSDs are ideal for critical applications with demanding latency requirements. Its 99% read response time is 30x that of a high-endurance NAND SSD under random write workload.[4] Optimized to minimize delays in data access times, Intel Optane SSDs result in faster time to insight for decision-making.

[1, 2, 3, 4] For more complete information about performance and benchmark results, visit intel.com/benchmarks

HIGH ENDURANCE

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

FAST STORAGE

Fast storage or cache refers to the tiering and layering, which enable a better memory-to-storage hierarchy. Intel Optane SSDs provide a new storage tier that breaks through the bottlenecks of traditional NAND flash storage to accelerate applications and enable more work to be done per server.

Resources

HPE Solid State Drive Selector Tool

HPE SSD QuickSpecs

Intel Optane Technologies

[5] HPE internal lab testing conducted in May 2020. The up to 3.35 million-hour test quant is derived from a combination of drive qualification test plans, specifically HDDQ spec-supplier responsibility to perform HDDQ spec its HPE responsibility to perform, reliability demonstration test specification, CSI integration test specification, and pilot test requirements.

[6] Based on external firm conducting cybersecurity penetration testing of a range of server products from a range of manufactures, May 2019.

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HANDLES THE BREADTH OF STORAGE WORKLOADS

Intel Optane SSDs configured with HPE servers are ideal for working data and real-time data stored in large volumes, highly random storage-bound applications, and random workloads at low queue depths, which is where the majority of activity occurs in real-world scenarios.

Storage **Cloud and VMs** **Database/ Big Data** **AI/Analytics** **HPC** **OLTP**

A COMPLETE SOLUTION

Ensure you get the full performance benefits Intel Optane SSDs can provide by configuring them on industry-leading servers from HPE.

HPE Gen10 servers transform IT with insights to help optimize configurations, workload placement, and cost models, delivering better outcomes faster. When you choose HPE's server storage infrastructure, you get:

- **Enterprise performance:** HPE SSDs are enhanced for enterprise-level workloads and provide data protection that covers NAND error handling, power failure protection, and end-to-end data path protection.
- **Digitally signed firmware:** Prevents unauthorized access to your data, providing the security and assurance that drive firmware, which comes from a trusted source and protects against malicious attacks.
- **World-class manufacturing and testing exceeding industry standards:** HPE runs an industry-leading qualification program, which rigorously tests drives in servers under a variety of real-world conditions for up to 3.35 million hours.[5]
- **Integration:** HPE drives are specifically designed and tested for flawless operation in your HPE equipment. The integration of SSDs in HPE systems means that associated components are right for your HPE Gen10 server.

When configured with HPE Gen10 servers, Intel Optane SSDs allow you to accelerate your data performance, reduce the cost and complexity of your storage infrastructure, and protect your most confidential information with the high performance and secure silicon of the world's most secure industry-standard servers.[6]

TABLE 1. HPE NVMe High Performance Low Latency SSD with Intel Optane SSD P4800X Series

Description	HPE 375GB NVMe x4 WI SFF SCN DS SSD	HPE 750GB NVMe x4 WI SFF SCN DS SSD	HPE 750GB PCIe x4 WI HH DS Card
Capacity	375 GB	750 GB	750 GB
HPE Option Kit	878014-B21 878014-H21 878014-K21	P06952-B21 P06952-H21 P06952-K21	878038-B21 878038-H21 878038-K21
Qualified HPE Servers	Select HPE platforms: HPE ProLiant, HPE Apollo, HPE Integrity, and HPE Synergy servers		

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