Solution Brief

Intel® Select Solutions
Hybrid Cloud and Analytics

Intel Select Solutions from Lenovo

Eliminate the guesswork with verified Lenovo solutions that include the latest Intel technologies.

Eliminate the guesswork

Together, Intel and Lenovo have done the legwork so you can deploy optimized and verified solutions from Lenovo that include the latest Intel technologies. Intel Select Solutions are pre-defined, workload-optimized solutions designed to minimize the challenges of infrastructure evaluation and deployment.

Introduction

Data center administrators and IT decision makers (ITDMs) want more than boxes of hardware to install. They face complex challenges, and they are looking for proven solutions from trusted providers built on reliable platforms and the latest technologies. Lenovo, with a proven record of reliability, offers rack servers with 3rd Generation Intel® Xeon® Scalable processors and 2nd Generation Intel® Optane™ memory and storage components. Lenovo also offers Intel Select Solutions that include those same Intel technologies, optimized for particular workloads, that have been rigorously tested and verified to take the guesswork out of configuring your data center.

Current-generation Intel technologies

Intel processors and memory and storage technologies deliver the capabilities to support your data center infrastructure and the most demanding applications—from cloud and in-memory analytics to high-performance computing (HPC) and artificial intelligence (AI).

3rd Generation Intel Xeon Scalable processors

Lenovo servers are available with a wide range of 3rd Generation Intel Xeon Scalable processors at the Silver, Gold, and Platinum levels. These processors deliver significant performance improvements over the previous generation, thanks to:[1]

- Up to 40 cores
- More memory and input/output (I/O) bandwidth
- Intel Deep Learning Boost (Intel DL Boost) for built-in AI acceleration
- Support for PCIe 4.0
- Intel Volume Management Device (Intel VMD) for enterprise-grade management of NVM Express (NVMe) solid state drives (SSDs)

PCIe 4.0 on the motherboard

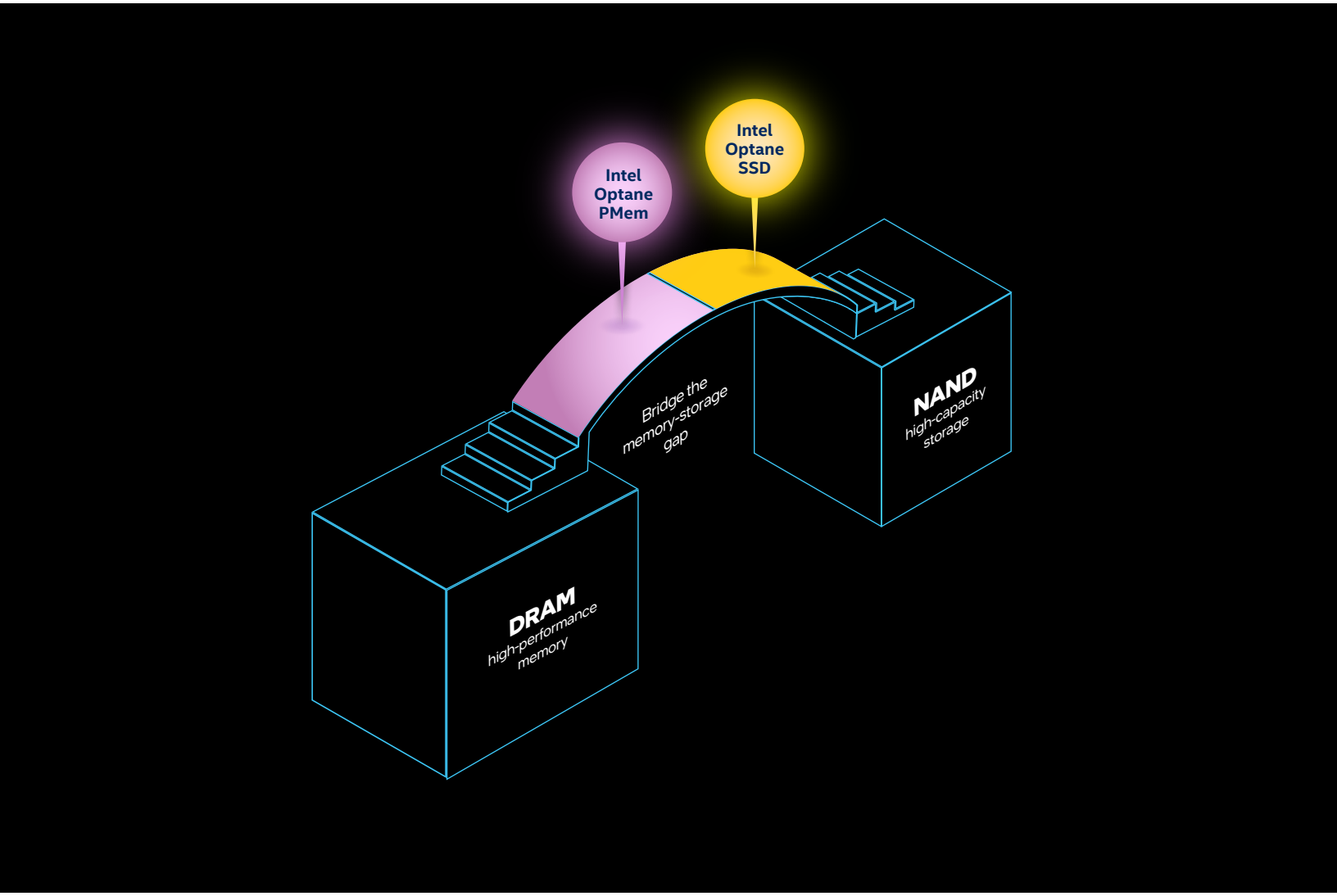
PCIe is a widely adopted interface for connecting high-speed components, and version 3.0 has been the standard in recent years. 3rd Generation Intel Xeon Scalable processors now provide PCIe Gen4 interface slots, which support double the data-transfer rate as PCIe 3.0, enabling much higher speeds for NVMe drives that are able to take advantage of them.[2] As processors become capable of processing more data in more cores at higher speeds, the ability of SSDs to transfer data to and from the processor fast enough can become a bottleneck. The PCIe 4.0 interface on the Lenovo motherboard helps ensure that the fastest possible data-transfer rates are available.

Intel Optane persistent memory (PMem) 200 series

Intel Optane PMem makes higher memory capacity available at a lower price than traditional DRAM.[3] Larger memory capacity lets companies process increasingly large datasets in memory to deliver business insights faster, to support more virtual desktop infrastructure (VDI) users in a cluster, and to consolidate more workloads onto hyperconverged infrastructure (HCI) clusters. 3rd Generation Intel Xeon Scalable processors with Intel Optane PMem 200 series can deliver up to 6 TB of total memory per socket and on average 32 percent higher memory bandwidth than the previous generation of Intel Optane PMem.[4] With Intel Optane PMem, companies can fulfill their large memory-capacity needs with a high-performance, lower cost alternative to DRAM, which can help improve their overall return on investment (ROI).

2nd Generation Intel Optane SSDs

The Intel Optane SSD P5800X—the world's fastest data center SSD—is available with select Lenovo ThinkSystem servers.[5] Companies can deploy Intel Optane SSDs as cache or tiered storage to consolidate HCI appliance nodes, increase NAND disk endurance by handling write-intensive operations, and accelerate access to metadata, indexes, or temporary storage of hot data.



Lenovo ThinkSystem rack servers offer the latest Intel technologies

Lenovo rack servers offer the value, flexibility, and efficiency to meet critical demands with legendary quality and reliability. The Lenovo ThinkSystem server platform has been recognized as a leader in reliability and uptime for eight straight years.[6]

Lenovo ThinkSystem SR630 V2 (1U)

The Lenovo ThinkSystem SR630 V2 is an ideal 2-socket 1U rack server for small businesses up to large enterprises that need reliability, management, and security capabilities, in addition to high performance and flexibility for future growth. The Lenovo ThinkSystem SR630 V2 server is powered by 3rd Generation Intel Xeon Scalable processors, and it makes use of Intel Optane PMem 200 series.

Lenovo ThinkSystem SR650 V2 (2U)

The Lenovo ThinkSystem SR650 V2 is designed to handle a wide range of workloads, such as databases, virtualization and cloud computing, VDI, infrastructure security, systems management, enterprise applications, collaboration/e-mail, streaming media, web, and HPC. The Lenovo ThinkSystem SR650 V2 server is designed to take advantage of the features of 3rd Generation Intel Xeon Scalable processors, such as the full performance of 270 W 40-core processors, support for 3,200 MHz memory, and PCIe 4.0 support.

Lenovo ThinkSystem SR670 V2 (3U)

The Lenovo ThinkSystem SR670 V2 is a versatile, graphics processing unit (GPU)-rich 3U rack server powered by 3rd Generation Intel Xeon Scalable processors and Intel Optane PMem 200 series. The Lenovo ThinkSystem SR670 V2 server delivers high performance for AI, HPC, and graphical workloads across an array of industries including retail, manufacturing, financial services, and healthcare.

Lenovo ThinkSystem SR860 V2 (4U)

The Lenovo ThinkSystem SR860 V2 is a 4-socket server optimized for price and performance, with high expandability. The Lenovo ThinkSystem SR860 V2 server features a 4U rack design with support for up to eight high-performance GPUs, and it offers technology advances that include 3rd Generation Intel Xeon Scalable processors with support for Intel Optane PMem 200 series.

Intel Select Solutions by Lenovo

Intel Select Solutions are pre-defined, workload-optimized solutions designed to reduce the challenges of infrastructure evaluation and deployment. Solutions are validated by Lenovo, certified by ISVs, and verified by Intel. Lenovo Implementation Services and Intel Select Solutions enable the rapid deployment of workload-optimized infrastructure that has been rigorously benchmark tested.

Intel Select Solutions for Microsoft Azure Stack HCI

The Microsoft Azure Stack HCI operating system is designed by Microsoft to connect on-premises resources and Azure cloud resources. Intel Select Solutions for Azure Stack HCI are ideal for customers who wish to run workloads on premises and extend easily to the Azure cloud for hybrid capabilities such as backup, site recovery, storage, and cloud-based monitoring.

These solutions include Base and Plus configuration options. The Plus configuration is built on Lenovo ThinkSystem SR630 V2 and SR650 V2 servers and includes 3rd Generation Intel Xeon Scalable processors and 2nd Generation Intel Optane memory and storage components.

Benefits of these Intel Select Solutions from Lenovo include:

- There is no up-front cost for the Azure Stack HCI software—it's part of your Azure subscription. According to a survey by Enterprise Strategy Group (ESG), 54 percent of organizations would prefer a consumption-based model for data center infrastructure, up from 42 percent two years earlier.[7]
- Solutions are certified under the Windows Server Software-Defined program, so customers can deploy with confidence.[8]
- You can lower costs per virtual machine (VM) by up to 25 percent for the same performance when deploying 3rd Generation Intel Xeon Scalable processors with Intel Optane PMem 200 series.[3]

Intel Select Solutions for VMware vSAN

Enterprise-class VMware vSAN storage-virtualization software helps manage compute and storage with a single platform. Intel Select Solutions for VMware vSAN can help IT departments better manage volatile workloads and growing data with predictable costs and elastic storage scalability.

These solutions include Base and Plus configuration options. The Plus configuration is built on Lenovo ThinkSystem servers and includes 3rd Generation Intel Xeon Scalable processors and 2nd Generation Intel Optane memory and storage components.

Benefits of these Intel Select Solutions from Lenovo include:

- Enjoy the performance capabilities of 3rd Generation Intel Xeon Scalable processors, including Intel PCIe 4.0 device support to see up to double the throughput compared to PCIe 3.0.[2]
- Expand memory capacity with Intel Optane PMem 200 series, which enables more and larger VMs at a lower cost than typical DRAM.[3]
- Create a low-latency and high-endurance cache tier using Intel Optane SSD P5800X drives to deliver an optimal environment for VMware vSAN to perform at its best.

Intel Select Solutions for VMware Horizon VDI on vSAN

VMware Horizon VDI allows IT departments to remotely deliver virtual desktops and applications from centralized servers to employees, wherever they might be working. Intel Select Solutions for VMware Horizon VDI on vSAN can help IT departments meet the challenge of scaling their infrastructures while delivering performance that satisfies users.

These solutions include Base and Plus configuration options. The Plus configuration is built on Lenovo ThinkSystem servers and includes 3rd Generation Intel Xeon Scalable processors and 2nd Generation Intel Optane memory and storage components.

Benefits of these Intel Select Solutions from Lenovo include:

- **A consistently rich user experience** for office workers, mobile workers, and even 3D developers across devices, locations, media, and connections.
- **Streamlined management** with a turnkey solution that allows IT to dynamically allocate resources with virtual compute, virtual storage, and virtual networking to simplify management.
- **Twice as many VDI users** at half the cost per user—with comparable desktop response time—compared to DRAM-only configurations, thanks to the larger memory footprint and lower cost of Intel Optane PMem.[9]

Intel Select Solutions for SAP HANA

The SAP HANA in-memory platform for real-time analysis of large data volumes was the first major application to implement the memory-persistence feature (App Direct Mode) of Intel Optane PMem.[10] Intel Select Solutions for SAP HANA provide these real-time insights and can scale performance, manage huge data volumes, and deliver proven reliability.

These solutions are available in many configurations ranging up to 12 TB of Intel Optane PMem in 1:1, 1:2, or 1:4 proportions to DRAM.

Benefits of these Intel Select Solutions from Lenovo include:

- **Record-setting performance:** In 2021, the Lenovo ThinkSystem SR860 V2 server using Intel Xeon Platinum 8380HL processors delivered world-record performance for Phase 2 of the SAP Business Warehouse edition for SAP HANA Standard Application Benchmark Version 3 with 7.8 billion initial records.[11]
- **Flexibility:** Lenovo solutions for SAP HANA support a wide range of server platforms, from bare metal to hyperconverged, to fit any environment, and they are available in appliance, customized SAP HANA Tailored Data Center Integration (TDI), and private cloud offerings.
- **Experience:** With more than 16,000 SAP HANA instances installed, Lenovo's deployment experience helps ensure rapid and reliable installation and integration.

Conclusion

Lenovo offers Intel Select Solutions for a wide range of specialized applications and workloads that are rigorously tested, certified, and tailored to meet customer needs. They run on Lenovo ThinkSystem servers with a proven record of reliability, and they incorporate the latest generation of Intel Xeon Scalable processors and Intel Optane technologies.

Learn more about Intel Select Solutions and see other deployment-ready solutions from Lenovo.

[1] Source: Intel. "3rd Generation Intel® Xeon® Scalable Processors – Performance Index." https://edc.intel.com/content/www/us/en/products/performance/benchmarks/3rd-generation-intel-xeon-scalable-processors/.

[2] Trenton Systems. "Everything You Need to Know About PCIe 4.0." March 2021. trentonsystems.com/blog/pcie-gen-4-reference-guide.

[3] Source: Claim 3 at Intel. "Intel® Optane™ Persistent Memory 200 Series – Performance Index." https://edc.intel.com/content/www/us/en/products/performance/benchmarks/intel-optane-persistent-memory-200-series/.

[4] Source: Claim 1 at Intel. "Intel® Optane™ Persistent Memory 200 Series – Performance Index." https://edc.intel.com/content/www/us/en/products/performance/benchmarks/intel-optane-persistent-memory-200-series/.

[5] Source: Claim 14 at: Intel. "Intel Optane SSD P5800X Series – Performance Index." https://edc.intel.com/content/www/us/en/products/performance/benchmarks/intel-optane-ssd-p5800x-series/. Systems supporting the Intel Optane SSD P5800X include the Lenovo ThinkSystem SR630 V2, SR650 V2, SR670 V2, and SN550 V2.

[6] Lenovo. "ITIC Reliability Study." November 2021. https://lenovopress.com/lp1117-itic-reliability-study.

[7] Enterprise Strategy Group (ESG). "2022 Technology Spending Intentions Survey." November 2021. esg-global.com/hubfs/ESG-Infographic-2022-Technology-Spending-Intentions-Survey.pdf.

[8] Lenovo. "Lenovo Performance Configuration for Microsoft Storage Spaces Direct." lenovo.com/us/en/resources/data-center-solutions/solution-brief-documents/lenovo-performance-configuration-for-microsoft-storage-spaces-direct/.

[9] Lenovo. "A Principled Technologies report: Increase your virtual desktop density with Intel Optane persistent memory." January 2021. lenovo.com/us/en/resources/data-center-solutions/whitepapers/principled-technologies-virtual-desktop-density-intel-optane-persistent-memory-whitepaper.html/.

[10] Intel. "Intel Optane Persistent Memory and SAP HANA Platform Configuration." February 2021. intel.com/content/dam/www/public/us/en/documents/technical-specifications/sap-hana-and-intel-optane-configuration-guide.pdf.

[11] Lenovo. "ThinkSystem SR860 V2 Sets a World Record for Phase 2 with New SAP BW Edition for SAP HANA (7.8B Records) Benchmark Result." July 2021. https://lenovopress.com/lp1508-sr860-v2-sap-bw-hana-78b-benchmark-result-2021-06-22.

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