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Intel® Select Solutions for VDI on Citrix Virtual Apps and Desktops or VMware Horizon

Deploy a hyperconverged Virtual Desktop Infrastructure (VDI) that can support hundreds of VDI sessions per node[1] and help lower costs through server consolidation, using 3rd Generation Intel® Xeon® Scalable processors, Intel® Optane™ technology, and other innovations from Intel

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SELECT SOLUTIONS

CITRIX® vmware®

Executive Summary

The COVID-19 pandemic has upended traditional workplace orthodoxy for the foreseeable future, leaving organizations faced with a new and largely virtual reality. Businesses across a wide range of verticals are increasingly dependent on virtual computing for their day-to-day operation, increasing the need for more agile work environments with more robust virtual desktop infrastructures. Intel® Select Solutions for Virtual Desktop Infrastructure (VDI) address this need with hardware and software solutions preconfigured for optimal scalability, operational efficiency, and cost-effectiveness.

Intel Select Solutions for VDI support remote workforces, providing workers with seamless access to workplace applications. They also save businesses time and resources that would otherwise be spent on researching technology, hardware components, memory and storage, and network products. Users gain optimal flexibility, while businesses maintain productivity with a solution that provides speed and adaptability.

All Intel Select Solutions are a combination of Intel data center compute, memory, storage, and network technologies that deliver predictable, trusted, and compelling performance, especially for data-centric workloads. Each solution offers assurance that the workload will perform as expected, if not better.

Intel® Select Solutions for VDI

Intel Select Solutions power VDI deployments with 3rd Gen Intel® Xeon® Scalable processors, Intel® Optane™ technology, and Intel® Ethernet Network Adapters.

LATEST GATK RELEASE	VALIDATED DESIGN STREAMLINES DEPLOYMENT	HIGH-PERFORMANCE INTEL TECHNOLOGY	DELIVER PERFORMANCE OPTIMIZED TO A SPECIFIC THRESHOLD

Business Challenge

Workplace landscapes are changing faster than most could have ever imagined. The trend toward remote working, first unceremoniously imposed by COVID-19, has gained broad acceptance from workers and employers across a wide range of industries. As businesses adapt to the "new realities" of a post-pandemic world, more and more are investing in virtual desktop infrastructures (VDI). In fact, the global VDI market is expected to grow from USD 10.5 billion in 2019 to more than USD 38.4 billion by 2027, increasing at a CAGR of 17.6 percent during the forecast period 2020-2027.[2]

Businesses and enterprises are urgently challenged with the need to:

- Enable and support work-from-home arrangements.
- Ease access to applications and data for improved workforce productivity.
- Increase security and centralized management.
- Reduce costs and optimize hardware requirements for user productivity.

Solution Value

VDI deployments are notoriously complex and can quickly engulf even the savviest IT support teams with performance issues, security concerns, and mounting costs, particularly if the supporting overall VDI or individual VMs are under-provisioned. Running VDI deployments on hyperconverged infrastructure (HCI) enables scalability to meet future needs, simplifies infrastructure management, and has the potential to lower infrastructure costs. In particular, vSAN for VDI delivers flexible and efficient compute and storage for virtualized environments.

What Are Intel® Select Solutions?

Intel® Select Solutions are predefined, workload-optimized solutions designed to minimize the challenges of infrastructure evaluation and deployment.

These solutions are validated by OEM/ODMs, certified by ISVs, and verified by Intel.

All Intel Select Solutions are a tailored combination of Intel data center compute, memory, storage, and network technologies that deliver predictable, trusted, and compelling performance. Each solution offers assurance that the workload will work as expected, if not better, which can save individual businesses from investing the resources that might otherwise be used to evaluate, select, and purchase the hardware components to gain that assurance themselves.

Solution Benefits

- **Enhance scalability** with 3rd Generation Intel® Xeon® Scalable processors
- **Increase cost-effectiveness and lower TCO** by supporting more VDI users per node, while reducing need for DRAM, by using Intel® Optane™ persistent memory (PMem)
- **Improve efficiency** by fast-tracking VDI deployments and delivering more flexible work environments

Intel® Select Solutions for VDI take the pain and guesswork out of VDI deployments—businesses can save countless hours internally researching, configuring, and testing as well as fast-track VDI deployments. These HCI solutions are carefully selected, tested, and pre-configured for seamless implementation, saving businesses precious resources while avoiding common missteps. All Intel Select Solutions are validated by OEM/ODMs, certified by ISVs, and verified by Intel to perform as expected. They are also *guaranteed* to meet or exceed minimum performance levels.

The following technologies are preconfigured for an all-in-one VDI deployment solution:

- 3rd Generation Intel® Xeon® Scalable processors can handle demanding workloads and enhanced scalability. The wide range of SKUs offers flexibility to tailor the infrastructure to user requirements.
- Intel® Optane™ persistent memory (PMem) 200 Series delivers enhanced memory capacity and increases the number of VMs on a single host.
- Intel® Optane™ SSD P5800X delivers an industry-leading combination of low latency, outstanding quality of service, and high endurance, accelerating storage workloads.
- Intel® Ethernet 800 Series provides optimal network performance with hardware virtualization technologies and RDMA support with vSAN.

These latest technologies from Intel are designed to greatly enhance the overall value of VDI. For example, Intel Optane PMem affordably delivers DRAM-like performance, enabling solutions to meet existing end-user latency SLA requirements while consolidating infrastructure.[3]

Solution Architecture Highlights

Intel Select Solutions for VDI (see Figure 1) support either VMware Horizon or Citrix Virtual Apps and Desktops service, allowing customers to choose the VDI solution that best fits their needs.

- **VMware Horizon** enables a digital workspace with the efficient delivery of virtual desktops and applications that equips workers anywhere, anytime, and on any device. With deep integration into the VMware technology ecosystem, the platform offers an agile cloud-ready foundation. More detail is available at VMware Horizon.

- **Citrix Virtual Apps and Desktops** is an innovative platform that allows companies to deliver VDI and desktop-as-a-service (DaaS) to any device, over any network, with a high degree of security. More details can be found at Citrix.

Intel Select Solutions for VDI are available in a Base and a Plus design. The design choice depends on the user profile, specifically whether there is a single OS or a pooled/multi-user OS, and how many users are on the host. The primary distinction between the two designs is the inclusion of Intel Optane PMem in the Plus design. Intel Optane PMem allows businesses to cost-effectively support a large number of VDI users or provide increased memory to each VDI user to boost productivity. The Plus design is typically the best choice for medium to large businesses with accelerating compute demand and increasing need to scale. Intel Optane PMem helps businesses accommodate growth without having to constantly purchase more hardware.

The Intel Select Solutions' design is based on 3rd Gen Intel Xeon Scalable processors, which have many performance enhancements compared to the previous-generation processors:[4]

- CPU: 42 percent more cores (40 cores per socket) to boost VM density.
- Memory: 33 percent more memory channels for richer desktop performance.
- Intel Optane PMem support: Reduced TCO for applications that require large memory.
- I/O: 33 percent more PCIe lanes and 2x the I/O bandwidth for low latency and better desktop experience.

Intel Optane SSDs provide fast I/O, fast boot times, high endurance, and stable performance, while the Intel Ethernet 800 Series offers high bandwidth and can help improve application efficiency and connectivity.
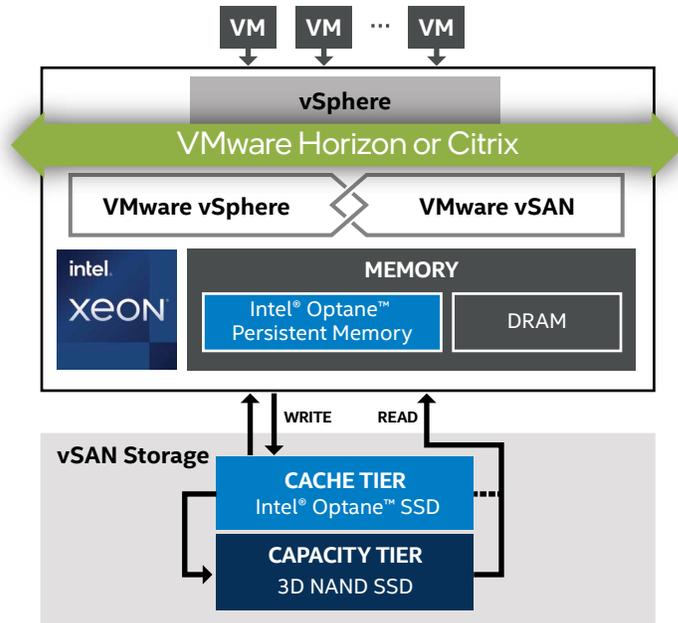
Figure 1. Intel® Select Solutions for VDI offer a scalable hyperconverged infrastructure that provides the compute, storage and memory, and networking resources modern VDI deployments require.

Results

When customers choose Intel Select Solutions, they can deploy data center infrastructure quickly and efficiently to help achieve reliable, security-enabled, and workload-optimized performance on a balanced platform. Customers can spend less time, effort, and expense evaluating hardware and software options. Intel Select Solutions help customers simplify design choices by bundling hardware and software pieces together while verifying performance.

According to benchmark results,[5] Intel Select Solutions for VDI can sustain up to 840 simultaneous VDI sessions. These results demonstrate the solution's ability to support the most demanding VDI environments.

Learn More

You may also find the following resources useful:
- Intel® Select Solutions
- 3rd Gen Intel® Xeon® Scalable processors
- Intel® SSD D7-5500
- Intel® Optane™ SSDs
- Intel® Optane™ PMem
- Intel® Ethernet 800 Series
- Intel® Select Solutions for vSAN
- VMware Horizon
- Citrix Virtual Apps and Desktops Service

Find the solution that is right for your organization. Contact your Intel representative.

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[1] Testing by Intel as of July 1 through September 17, 2020.

Base Configuration (DRAM only): Four-node cluster, 2x Intel® Xeon® Platinum 8358 processor (32 cores, 2.6 GHz), 1x Intel® Server Board M50CYP2SB2U 2U, total memory: 1024 GB DDR4 (16 slots/64 GB/3200 MT/s), Intel® Hyper-Threading Technology = ON, Intel® Turbo Boost Technology = ON, Intel® Volume Management Device = Enabled, microcode = 0xd000280, BIOS = SE5C6200.86B.0022.D27.2104140041, boot drive = 1x Samsung SSD 860 EVO M.2 2 TB, storage (cache) = 2x 400 GB Intel® Optane™ SSD P5800X Series, storage (capacity) = 6x 3.84 TB Intel® DC P5510 SSD Series, network devices = 2x Intel® Ethernet CNA XXV810-DA2 at 25 GbE, network speed: 25 GbE, NIC driver = I40en 12.0.2.6, OS/Software = VMware 7.0.U2. Supports 800-840 VDI sessions.

Plus Configuration (DRAM +Intel® Optane™ PMem): Four-node cluster, 2x Intel® Xeon® Platinum 8358 processor (32 cores, 2.6 GHz), 1x Intel® Server Board M50CYP2SB2U 2U, total memory: 1024 GB Intel Optane PMem (8 slots/128 GB/3200 MT/s) and 256 GB DDR4 (16 slots/16 GB/3200 MT/s), Intel® Hyper-Threading Technology = enabled, Intel® Turbo Boost Technology = enabled, Intel® Volume Management Device = enabled, microcode = 0xd000280, BIOS = SE5C6200.86B.0022.D27.2104140041, boot drive = 1x Samsung SSD 860 EVO M.2 2 TB, storage (cache) = 2x 400 GB Intel® Optane™ SSD P5800X Series, storage (capacity) = 6x 3.84 TB Intel® DC P5510 SSD Series, network devices = 2x Intel® Ethernet CNA XXV810-DA2 at 25 GbE, network speed: 25 GbE, NIC driver = I40en 12.0.2.6, OS/Software = VMware 7.0.U2. Supports 810-820 VDI sessions, similar to DRAM-only performance.

[2] The Neighbor, September 28, 2021, "Expedient Adds VDI to Growing Portfolio of Universal Multi-Cloud Services," https://www.mdjonline.com/neighbor_newspapers/news/national/expedient-adds-virtual-desktop-infrastructure-vdi-to-growing-portfolio-of-universal-multi-cloud-services/article_0af6d99b-e64f-531b-8649-918805bff2aa.html

[3] See endnote 1.

[4] Source: https://www.intel.com/content/www/us/en/products/docs/processors/xeon/3rd-gen-xeon-scalable-processors-brief.html

[5] See endnote 1.