Get Ready for the Future with Modern IT Infrastructure

Jump-start IT modernization with Microsoft Windows Server* 2019 and SQL Server* 2017 on 2nd Gen Intel® Xeon® Scalable processors with Intel® Optane™ DC persistent memory

AVOID UNNECESSARY RISK

by addressing the end of support now:
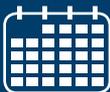
- SQL Server 2008 and 2008 R2 – Extended support ended July 9, 2019.
- Windows Server 2008 and 2008 R2 – Extended support ends January 14, 2020.

In business, rapid, disruptive change is the new normal. Business leaders know that they must adapt quickly, or risk getting left behind—but for many, legacy infrastructure is slowing them down. More frequent and sophisticated security exploits combined with network bottlenecks and a massive influx of new data are challenging businesses' ability to keep up. In fact, 71 percent of IT organizations cite legacy infrastructure as the biggest barrier to transformation.[1] For companies looking to gain or maintain a competitive advantage, moving now to Microsoft Windows Server 2019 and SQL Server 2017 makes sense. Optimized for 2nd Gen Intel® Xeon® Scalable processors with Intel® Optane™ DC persistent memory, Windows Server 2019 and SQL Server 2017 deliver breakthrough, highly scalable performance, strengthened security, and faster insights from data—all while improving total cost of ownership (TCO). In addition, these hyperconverged infrastructure (HCI) solutions from Intel and Microsoft help organizations get future-ready by easing the path to hybrid cloud, for increased agility without giving up control.

6X slower rate of product innovation and time to market with outdated infrastructure[2]

AT 4 YEARS

Server performance lags **33%**

and maintenance costs climb **148%**[3]

Modern Software Runs Best on Modern Hardware

Updating both hardware and software at the same time delivers the maximum functionality, as the two are designed to work best together. Upgrading only software will yield some performance improvement—but less than could be realized by upgrading both—and maintenance costs will continue to climb. In addition, a lack of hardware-level security exposes an organization to increased risk from security threats—a significant concern, particularly as compliance regulations continue to evolve. Similarly, upgrading only hardware translates to slower performance than might be achieved by upgrading both—because older software is unable to leverage all the compute, storage, and network benefits of new hardware. And upgrading only hardware also leads to increased security vulnerability—in this case, from a lack of software-level security.

ACCELERATE INNOVATION WITH PERFORMANCE UP TO 3.9X FASTER THAN 4 TO 5-YEAR-OLD SERVERS.[4]

IMPROVE TCO

UP TO 59% SAVINGS WITH FEWER SERVERS BUT SIMILAR PERFORMANCE LEVELS.[5,6]

Benefits of the Latest Software and Hardware Innovation

Modernizing IT infrastructure with Windows Server 2019 and SQL Server 2017 on 2nd Gen Intel Xeon Scalable processors accelerates innovation and delivers business value with these benefits:

- **Reduced "technical debt"** – Unplanned downtime and maintenance costs decrease, and IT staff efficiency improves.
- **Improved data security and compliance** – The latest hardware- and software-level security features strengthen network security from data center to cloud to edge and provide support to meet GDPR and other compliance requirements.
- **An easier path to hybrid cloud** – HCI improves infrastructure efficiencies, enabling rapid deployment of IT services while reducing costs. Intel® Select Solutions for Microsoft Azure Stack HCI*, a pre-defined, workload-optimized solution that includes all applicable platform elements, minimizes the challenges of infrastructure evaluation and deployment.
- **Support for expanding workloads** – Combining improved performance with advanced analytics and artificial intelligence (AI) technologies speeds time to insight from data and allows for faster delivery of apps and releases. SQL Server is the only commercial database with AI built in. SQL Server 2017, running on 2nd Gen Intel Xeon Scalable processors with the AI acceleration of Intel® Deep Learning Boost, delivers four times more queries per hour at 30 percent the cost per query compared to a five-year-old server.[7]

Memory and storage technologies from Intel are key to the value that Windows Server 2019 and SQL Server 2017 deliver. Compared to an eight-year-old server paired with Windows Server 2008 R2, a new server—based on the Intel Xeon Scalable platform, with 2nd Gen Intel Xeon Scalable processors and Intel Optane DC persistent memory and running Windows Server 2019—provides 18 times more memory. And storage capacity gets a boost from Intel® Optane™ solid state drives (SSDs).

Build with Confidence

Building an infrastructure capable of meeting modern business challenges can seem overwhelming. With so many components to choose from, it's not always easy to know which will work best together. Pre-configured, Intel-verified Intel Select Solutions can help. Comprised of tightly specified hardware and software components—designed and benchmarked to deliver optimal performance for specific workloads—Intel Select Solutions allow you to build with confidence. Pre-defined settings and system-wide tuning make deployment fast and easy. A wide variety of pre-configured solutions are available, including Intel Select Solutions for Microsoft Azure Stack HCI, for Microsoft SQL Server Business Operations, for SQL Server Enterprise Data Warehouse, and for Windows Server Software Defined Storage. Learn more about Intel Select Solution options at intel.com/selectsolutions.

Get Ready for the Future, on Your Terms

Don't let legacy infrastructure hold your business back. Get the performance, efficiency and security you need to be able to compete—today and in the future—with Microsoft SQL Server 2017 and Windows Server 2019 on the Intel Xeon Scalable platform with 2nd Gen Intel Xeon Scalable processors. By making it easier to take advantage of the benefits of cloud, these solutions from Intel and Microsoft help you get future-ready, on your terms.

Discover the better together benefits of Windows Server 2019, SQL Server 2017 and 2nd Gen Intel Xeon Scalable processors at intel.com/microsoftdatacenter.

[1, 2] Enterprise Strategy Group (ESG). "How IT Transformation Maturity Drives IT Agility, Innovation, and Improved Business Outcomes." April 2017. www.emc.com/collateral/analyst-reports/esg-dellemc-it-transformation-maturity-report.pdf

[3] IDC. "Why Upgrade Your Server Infrastructure Now?" July 2016. https://www.emc.com/collateral/analyst-reports/idc-why-upgrade-server-infrastructure.pdf

[4] Per node 3.9X higher integer throughput performance: estimate based on SPECrate*2017_int_base on Intel internal platforms as of November 2018 and April 2019 respectively: 1-node, 2x Intel® Xeon® processor E5 v2 product family, ucode=0x42d, total memory/node=128 - 8 x 16GB DDR3-1866 (some SKUs may run at lower memory speed), OS: Red Hat 7.6, 3.10.0-957.el7.x86_64. SPECrate2017*_int_base – HT on, Turbo on, SPECrate2017*_fp_base – HT on, Turbo on, LINPACK – HT off Turbo on, Stream – HT off, Turbo on, 1GB/s = (MB/s ÷ 1024), Score: 82, vs 1-node, 2x 2nd Gen Intel® Xeon® Scalable processor family, ucode=0x400000a/0x4000013/0x5000017, 12 X 32GB 2933 MT/s (some SKUs may run at lower memory speed), Red Hat 7.6, 3.10.0-957.el7.x86_65, SPECrate2017*_int_base (using IC19u1)– HT on, Turbo on, SPECrate2017*_fp_base – HT on, Turbo on, LINPACK – HT off Turbo on, Stream – HT off, Turbo on, 3GB/s = (MB/s ÷ 1024), Score: 321. Testing by Intel. Cost reduction scenarios described are intended as examples of how a given Intel- based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

[5] Up to 3.5x VM density performance: 1-node, 2x E5-2697 v2 on Canon Pass with 256 GB (16 slots / 16GB / 1600) total memory, ucode 0x42c on RHEL7.6, 3.10.0-957.el7.x86_65, 1x Intel 400GB SSD OS Drive, 2x P4500 4TB PCIe, 2*82599 dual port Ethernet, Virtualization Benchmark, VM kernel 4.19, HT on, Turbo on, score: VM density=74, test by Intel on 1/15/2019. vs. 1-node, 2x 8280 on Wolf Pass with 768 GB (24 slots / 32GB / 2666) total memory, ucode 0x2000056 on RHEL7.6, 3.10.0-957.el7.x86_65, 1x Intel 400GB SSD OS Drive, 2x P4500 4TB PCIe, 2*82599 dual port Ethernet, Virtualization Benchmark, VM kernel 4.19, HT on, Turbo on, score: VM density=21, test by Intel on 1/15/2019.

[6] Configuration details: Up to 59% TCO savings with Intel® Xeon® Scalable processor compared to 5-year old system. Cost reduction scenarios described are intended as examples of how a given Intel- based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction. Example based on estimates as of March 2019 of equivalent rack performance over 4-year operation on virtualization workload running VMware vSphere Enterprise Plus on Red Hat Enterprise Linux Server and comparing 20 installed 2-socket servers with Intel® Xeon® processor E5-2697 v2 (formerly "IvyBridge") at a total cost of $796,563 [Per server cost $39.8K: acquisition=13.7K, infrastructure and utility=4.2K, os & software=12.2K, maintenance=9.7K] vs. 6 new Intel® Xeon® Platinum 8280 (costs based on Platinum 8180 assumptions) at a total cost of $325,805 [Per server cost $54.3K: acquisition=28.9K, infrastructure and utility=3.5K, os & software=12.2K, maintenance=9.7K]. Assumptions based on https://xeonprocessoradvisor.intel.com, assumptions as of Feb 13, 2019.

[7] Up to 4x performance improvement and up to 30% lower cost claim based on TPC-H workload comparing baseline HPE Proliant DL580 Gen8 server with four Intel® Xeon® processor E7-4890 v2 scoring 404,005 QphH, costing $941,800, $2.34/QphH (source: http://tpc.org/3298) to Cisco UCS C480 M5 server with four Intel® Xeon® Platinum 8280M processors scoring 1,651,514 QphH, costing $1,157,254, $0.71/ QphH (Source: http://www.tpc.org/3337).