Sales Guide

2ND GENERATION INTEL® XEON® SCALABLE PROCESSOR

Move Faster. Store More. Process Everything.

Benefits of IT Modernization

Modernization is the first step to transforming IT from a cost center to a profit-driving engine for modern, data-driven businesses. Intel has a growing and differentiated portfolio of datacentric technologies designed for modern infrastructure that will accelerate a range of business-critical workloads and help drive faster value from data. This includes the 2nd Generation of Intel® Xeon® Scalable processors combined with Intel® Optane DC persistent memory.

Decrease "Technical Debt"

Modernize legacy applications and infrastructure, lower TCO, improve efficiencies, and reduce unplanned downtime

Improve Data Security

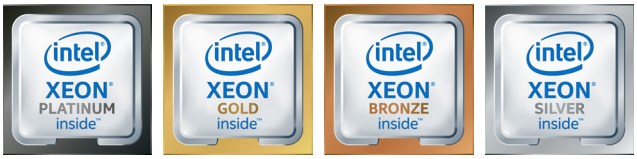
Trusted multilayer security and compliance is GDPR ready, delivers faster data recovery, and incorporates SDN for improved network security out to the edge.

Easier Path to Hybrid Cloud with Human-Computer Interaction (HCI)

Highly scalable performance with centralized management and orchestration enable agility with control for faster deployment of services.

Support Expanding Workloads and DevOps

Get faster insights from data intensive workloads, speed time to market of new apps and services, and deliver self-service & Dev-friendly tools.



PERFORMANCE

- Up to **4.4 GHZ** Intel® Turbo Boost Technology
- Up to **1.35X** Enhanced mainstream performance
- **2X** System memory capacity
- Up to **36TB** Intel® Optane™ DC Persistent Memory
- Up to DDR4 **2993** MT/s & **16 Gs** DIMMS
- Up to **11X** AI Inference Performace Deep-Learning Intel® DL Boost

SECURITY

- Mitigations for Side-Channel Analysis Methods
- Intel® Security Libraries
  - -Intel® Trusted Execution Techonology
  - -Intel® Threat Detection
- Encryption Accelerators
  - -Intel® QuickAssist Technology

AGILITY & EFFICENCY

- Intel® Speed Select Technology
  - -Configurable core/frequency processor
- Intel® Infrastructure Management Technologies
  - -Industry-leading Intel® Virtualization Tech

Key Selling Points

Intel® Deep Learning Boost

A Vector Neural Network Instruction (VNNI) for efficient AI/Deep Learning inference acceleration

- Important for cloud service providers, enterprise, and communications service providers
- Up to 3X Deep Learning throughput vs previous generation of Intel® Xeon® Scalable processors
- Accelerates AI/Deep Learning workloads, including image classification, speech recognition, language translation, and object detection

Intel® Optane™ DC Persistent Memory

- Extract more value from larger datasets than previously possible
- Scale delivery of services and support more customers at a compelling TCO
- Drive app innovation and explore new data-intensive use cases

Intel® Speed Select

- Multiple CPU personalities based on workload/VM Needs
- Improved server utilization in data center through SKU consolidation
- Improved guaranteed per-core performance SLAs

71%

Of IT organizations cite legacy infrastructure as biggest barrier to business transformation[1]

Outdated infrastructures result in a **6X** slower rate for product innovation and time to market[2]

AT 4 YEARS[2]

Server performance lags

33%

Maintence cost climb

148%

Processor Levels and Features

2nd Generation Intel® Xeon® Scalable Processor

Biggest Opportunity

	Perf Gains		2933	VNNI	AEP
Platinum-82xx: Performance leadership and unique features	5%	Perf/Core	×	×	×
Gold-62xx: Performance leadership on demanding workloads	5%		×	×	×
Gold-52xx: Leadership perf and system perf/$ Compelling gen-to gen performance	22% 35%	Cores and Perf/Core		×	×
Silver-42xx: Leadership perf and system perf/$ Compelling gen-to gen performance	25%			×	1 SKU
Bronze-32xx: Attractive Xeon-SP entry price point	10%	Perf/Core		×	

Sales Opportunities with Microsoft

The end of support for SQL Server 2008/R2 and Windows Server 2008/R2 represents a big opportunity for IT modernization.
Microsoft estimates over 20 million server instances of Windows Server and SQL Server 2008/R2 globally with an average server age of 7 years in 2017.

Hyperconverged Infrastructure (HCI) solutions are maturing
- HCI units are up 80% YOY (IDC)
- HCI is forecasted to be a $10.4B market by 2022 (IDC)

GDPR ready solutions

SQL Server* is the only commercial database with AI built in

Intel® Optane™ DC persistent memory enabled—disruptive technology

Whether taking advantage of Intel® Select Solutions with the latest Windows Server* or SQL Server* software, or building custom data center solutions based on the 2nd Gen Intel® Xeon® Scalable processor, Intel and Microsoft* are optimized to be better together.

Qualification Questions

- Is your IT infrastructure able to deploy new services and scale fast enough?
- Do you have quick access to your data, or are you dealing with many data silos?
- Do you have an IT modernization strategy?
- How do you reduce your maintenance costs and achieve better data TCO?
- Is your IT infrastructure in compliance with current standards and regulations?
- Is your data encrypted at rest, in-flight, and in memory to deliver maximum security?
- Is your network able to handle the dynamic demands of today's modern workloads?
- Do you have a plan to accelerate deployment of a hybrid cloud infrastructure?

Frequently Asked Questions

Question: *My customer did not see enough price/performance value to upgrade to the 1st Gen Intel Xeon Scalable processor. What additional value does the 2nd Gen Intel Xeon Scalable processor offer?*

> **Answer:** The 2nd Gen Intel Xeon Scalable processor delivers compelling performance gains and TCO benefit for systems based on the Intel® Xeon® Silver and Intel® Xeon® Gold processors, creating a significant refresh opportunity. The original Intel Xeon Scalable platform delivered the biggest performance and TCO benefit for systems based on the Intel® Xeon® Platinum processor and continue to offer performance gains in the 2nd Generation as well.

Question: *Will the 2nd Gen Intel Xeon Scalable processors be easy to deploy for my customers?*

> **Answer:** Yes. 2nd Gen Intel Xeon Scalable processors are socket compatible with prior versions of the Intel Xeon Scalable processor motherboards and systems. In most cases, you simply need to update to the latest version of the BIOS to support the 2nd generation Intel Xeon Scalable processors. For customers who have already qualified existing motherboards and systems, it is a seamless upgrade offering significant price/performance gains vs. previous gen processors.

Question: *My customer is concerned about security, does the 2nd Gen Intel Xeon Scalable processor address some of the security issues that required software updates?*

> **Answer:** Yes. Several of the 'side-channel' security variants that were previously addressed with software updates now have hardware mitigations included in the 2nd Gen Intel Xeon Scalable processor.

Sales Resources

Drive IT Transformation www.intel.com/itp-xeonsp

Scale IT Up scaleitup.intel.com

Use this sales tool to compare configurations side-by-side and see the benefits of IT modernization across the infrastructure. The latest Intel® processor, storage, and network technologies are optimized to work together for maximum performance and TCO.

Intel® Select Solutions https://www.intel.com/content/www/us/en/architecture-and-technology/intel-select-solutions-overview.html

Explore how fast and easy infrastructure deployment can be with workload optimized data center solutions rigorously benchmark tested and verified on Intel® architecture.

Intel Data Center TCO Tool xeonprocessoradvisor.intel.com

Explore TCO for specific data center solutions and see recommended alternatives.

Recommended Training

Selling 2nd Generation Intel® Xeon® Scalable processors and the Latest Memory Innovations

Selling 2nd Generation Intel® Xeon® Scalable processors Workload Optimized SKUs

[1]IDC 2015 (https://www.emc.com/collateral/analyst-reports/idc-why-upgrade-server-infrastructure.pdf)

[2]The Enterprise Strategy Group, 2017

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure.

Tests document performance of components on a particular test, in specific systems. Differences in hardware, software, or configuration will affect actual performance. For more complete information about performance and benchmark results, visit http://www.intel.com/benchmarks.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit http://www.intel.com/benchmarks.

1x inference throughput improvement in July 2017: Tested by Intel as of July 11th 2017: Platform: 2S Intel® Xeon® Platinum 8180 CPU @ 2.50GHz (28 cores), HT disabled, turbo disabled, scaling governor set to "performance" via intel_pstate driver, 384GB DDR4-2666 ECC RAM. CentOS Linux release 7.3.1611 (Core), Linux kernel 3.10.0-514.10.2.el7.x86_64. SSD: Intel® SSD DC S3700 Series (800GB, 2.5in SATA 6Gb/s, 25nm, MLC).Performance measured with: Environment variables: KMP_AFFINITY='granularity=fine, compact', OMP_NUM_THREADS=56, CPU Freq set with cpupower frequency-set -d 2.5G -u 3.8G -g performance. Caffe: (http://github.com/intel/caffe/), revision f96b759f71b2281835f690af267158b82b150b5c. Inference measured with "caffe time --forward_only" command, training measured with "caffe time" command. For "ConvNet" topologies, dummy dataset was used. For other topologies, data was stored on local storage and cached in memory before training. Topology specs from https://github.com/intel/caffe/tree/master/models/intel_optimized_models (ResNet-50),and https://github.com/soumith/convnet-benchmarks/tree/master/caffe/imagenet_winners (ConvNet benchmarks; files were updated to use newer Caffe prototxt format but are functionally equivalent). Intel C++ compiler ver. 17.0.2 20170213, Intel MKL small libraries version 2018.0.20170425. Caffe run with "numactl -l".

11X inference thoughput improvement with 2nd Gen Intel® Xeon® Scalable processor: 2nd Gen Intel Xeon Scalable processor results have been estimated or simulated using internal Intel analysis or architecture simulation or modeling, and provided to you for informational purposes. Any differences in your system hardware, software or configuration may affect your actual performance vs Tested by Intel as of July 11th 2017: 2S Intel® Xeon® Platinum 8180 CPU @ 2.50GHz (28 cores), HT disabled, turbo disabled, scaling governor set to "performance" via intel_pstate driver, 384GB DDR4-2666 ECC RAM. CentOS Linux release 7.3.1611 (Core), Linux kernel 3.10.0-514.10.2.el7.x86_64. SSD: Intel® SSD DC S3700 Series (800GB, 2.5in SATA 6Gb/s, 25nm, MLC).Performance measured with: Environment variables: KMP_AFFINITY='granularity=fine, compact', OMP_NUM_THREADS=56, CPU Freq set with cpupower frequency-set -d 2.5G -u 3.8G -g performance. Caffe: (http://github.com/intel/caffe/), revision f96b759f71b2281835f690af267158b82b150b5c. Inference measured with "caffe time --forward_only" command, training measured with "caffe time" command. For "ConvNet" topologies, dummy dataset was used. For other topologies, data was stored on local storage and cached in memory before training. Topology specs from https://github.com/intel/caffe/tree/master/models/intel_optimized_models (ResNet-50),. Intel C++ compiler ver. 17.0.2 20170213, Intel MKL small libraries version 2018.0.20170425. Caffe run with "numactl -l".

Intel® Advanced Vector Extensions (Intel® AVX)* provides higher throughput to certain processor operations. Due to varying processor power characteristics, utilizing AVX instructions may cause a) some parts to operate at less than the rated frequency and b) some parts with Intel® Turbo Boost Technology 2.0 to not achieve any or maximum turbo frequencies. Performance varies depending on hardware, software, and system configuration and you can learn more at http://www.intel.com/go/turbo.

Intel's compilers may or may not optimize to the same degree for non-Intel microprocessors for optimizations that are not unique to Intel microprocessors. These optimizations include SSE2, SSE3, and SSSE3 instruction sets and other optimizations. Intel does not guarantee the availability, functionality, or effectiveness of any optimization on microprocessors not manufactured by Intel. Microprocessor-dependent optimizations in this product are intended for use with Intel microprocessors. Certain optimizations not specific to Intel microarchitecture are reserved for Intel microprocessors. Please refer to the applicable product User and Reference Guides for more information regarding the specific instruction sets covered by this notice.

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.

The benchmark results may need to be revised as additional testing is conducted. The results depend on the specific platform configurations and workloads utilized in the testing, and may not be applicable to any particular user's components, computer system or workloads. The results are not necessarily representative of other benchmarks and other benchmark results may show greater or lesser impact from mitigations. Intel does not control or audit third-party benchmark data or the web sites referenced in this document. You should visit the referenced website and confirm whether referenced data are accurate.

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