

Intel® Xeon® Scalable Processors

Powering a New Wave of Digital Transformation

July 11, 2017 – Intel today announced the launch of the new Intel® Xeon® Scalable Processors, which builds upon the leading performance, scalability and reliability of the Intel Xeon processor family, to establish a new foundation for business innovation by delivering optimized, disruptive performance and capabilities for the widest range of workloads. Intel® Xeon® Scalable processors are uniquely architected for today's evolving data center and network infrastructure — offering businesses the industry's highest core and system-level performance averaging 1.65x higher performance² over the prior generation.

As new digital services develop rapidly and expand across industries in the coming years, the adoption rate of cloud services and the Internet of Things will increase to power those experiences, thus requiring a boost to compute, memory, storage, and I/O capabilities. To support these growing, changing workloads, Intel Xeon Scalable Processors offer a variety of scalable options to allow organizations to manage complex workloads of next-generation solutions and process data for fast and accurate insight.

From traditional applications to the most complex, mission-critical use cases, real-time analytics, and emerging workloads such as artificial intelligence (AI), augmented and virtual reality (AR/VR), autonomous driving and 5G, Intel Xeon Scalable Processors deliver the necessary performance to fuel the constantly evolving digital world.

Bringing Workload-Optimization to Manage Diverse, Complex Tasks

The Intel Xeon Scalable Processors advance virtually every aspect of the data center platform, including a brand new mesh on-chip interconnect topology, core, cache, on-die interconnects, memory controller and more to support Intel's global ecosystem for optimal data use across compute, storage, memory, network and security. The enhancements Intel is delivering with the Intel Xeon Scalable Processor represents the biggest advancements in platform capabilities in a decade. Features include:

- **Innovative Intel® Mesh on-chip interconnect topology:** Delivers low latency and high bandwidth among additional cores, memory, and I/O controllers. The Mesh architecture aligns cores, on-chip cache banks, memory controllers, and I/O controllers which are efficiently organized in rows and columns, with wires and switches connecting them at each intersection to allow for turns, resulting in improved performance and greater energy efficiency similar to a well-designed highway system that lets traffic flow at the optimal speed without congestion.
- **Intel® Advanced Vector Extensions 512 (Intel® AVX-512):** Delivers ultra-wide vector processing capabilities to boost performance for your most demanding computational tasks and enable rapid insights to improve customer engagement and product delivery
- **Intel® Omni-Path Architecture (Intel® OPA):** High-bandwidth and low-latency fabric that optimizes performance for HPC clusters, and is available as an integrated extension for the

Intel® Xeon® Scalable platform. Intel® OPA delivers the performance for today's high performance computing (HPC) workloads and agility for their rapid evolution with the ability to scale to tens of thousands of nodes to accelerate scientific discovery and tackle the most challenging business problems.

- **Intel® QuickAssist Technology (Intel® QAT):** Hardware acceleration for compute-intensive workloads, such as cryptography and data compression, by offloading the functions to a specialized logic engine (integrated into the chipset), freeing the processor to focus on other essential workload operations.
- **Enhanced Intel® Run Sure Technology:** As optimized digital services are imperatives for all industries, further extensions to Intel's world-class RAS (reliability, availability, and serviceability) help organizations achieve ideal operational efficiency business continuity.

Empowering Industries to Offer Next-Generation Digital Services

Intel Xeon Scalable processors enable new, differentiated services that will allow customers to innovate and grow into new markets; but to do so, performance efficiency must be as disruptive as the services being created. Intel Xeon Scalable processors deliver disruptive performance efficiency across workloads, and early adopters of the technology are experiencing performance improvements.

As markets grow and begin delivering new and expanded services, data centers will need to evolve to support the broadest set of today's workloads. With the Intel Xeon Scalable processors, the data center is architected for agility and scalability in compute, storage, memory, network and security to support service demands, no matter the size. Additionally, businesses can now further drive ambitious initiatives with this feature-rich, highly versatile and more secure platform designed to deliver agile services and improve total cost of ownership (TCO).

- **Bigger & faster analytics:** Enables faster advanced analytics queries, increasing the value of data through faster insights and larger data set analysis.
- **Faster & more efficient databases:** Increase database throughput, allowing customers to reduce the size of their database clusters saving infrastructure costs
- **Faster Artificial Intelligence deep learning:** 138X deep learning performance gains³ mean training algorithms modeled in hours vs. days on the same data set size.
- **Faster Artificial Intelligence inference:** 113X inference gains³ means customers can do more inference on general-purpose hardware without the need for specialized accelerators.
- **Faster Artificial Intelligence machine learning:** Increases machine learning performance using Intel® AVX-512, improving the personalized results of customer-facing AI recommendation engines.
- **Bigger & more complex HPC:** Higher FLOPS/clock enable Intel Xeon Scalable processors to put answers to bigger and more important scientific and business problems in reach.
- **Faster VR content rendering:** Content creators can create more rich content in less time.
- **Faster image processing:** Increased core count and Intel AVX-512 boost image processing and storage performance, helping speed up processing of images from the growing array of IOT devices such as MRI machines.

- **Higher-quality video streaming:** Better user experience for Ultra-HD video streaming thanks to faster video transcoding and better, lower-latency storage response times.
- **Higher-capacity communications networks:** Support more users at the edge with less infrastructure, saving costs and expanding deployment scenarios where space is a concern.
- **Increased virtualization capacity:** Operate up to 4.2x more virtual machines¹³ (VMs) versus a 4-year-old system leading to 65 percent TCO improvement.¹⁴
- **Security without compromise:** With near-zero overhead for data at rest encryption, you don't have to choose between security and performance.

Intel Xeon Scalable Processor Line up

The Intel Xeon Scalable Processor offers different levels of scale and performance capabilities to support various needs. Options include:

- **Intel® Xeon® Platinum Processor:** Offers best performance, hardware-enhanced security, and outstanding business agility to support mission-critical, real-time analytics, and AI, workload-optimized for general purpose compute and multi-cloud deployments, and performance for the most demanding storage and networking workloads and designed for 99.999% service availability
- **Intel® Xeon® Gold Processor:** Offers great performance, fast memory, more IO/accelerator engines, and advanced RAS for significant workload-optimized performance and platform improvements for general purpose compute.
- **Intel® Xeon® Silver Processor:** Offers efficient performance for solid compute capability and moderate range of workloads.
- **Intel Xeon Bronze Processor:** Offers entry performance for light range workloads and delivers capability upgrades vs. Intel® Xeon E3.



The Intel Xeon Scalable Processors are available to ship now. For more information, please visit www.intel.com/xeonscalable.

Intel technologies may require enabled hardware, specific software, or services activation. Performance varies depending on system configuration. Check with your system manufacturer or retailer.

For more complete information about performance and benchmark results, visit <http://www.intel.com/performance/datacenter> or www.intel.com/benchmarks.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors.

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 information on the performance and system configuration please see 2, 3, 13 and 14 at www.intel.com/xeonconfigs

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.

No computer system can be absolutely secure.

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