

The background of the slide is an abstract, swirling pattern of concentric, wavy lines in various shades of blue and green. The lines create a sense of motion and depth, with some areas appearing more saturated than others. The pattern is most prominent in the top-left and bottom-right quadrants, while the top-right and bottom-left quadrants are white.

Performance
made flexible.

3rd Gen Intel® Xeon® Scalable processors

Built specifically for our customers' needs



Optimized for Cloud, Enterprise, HPC, 5G and Edge

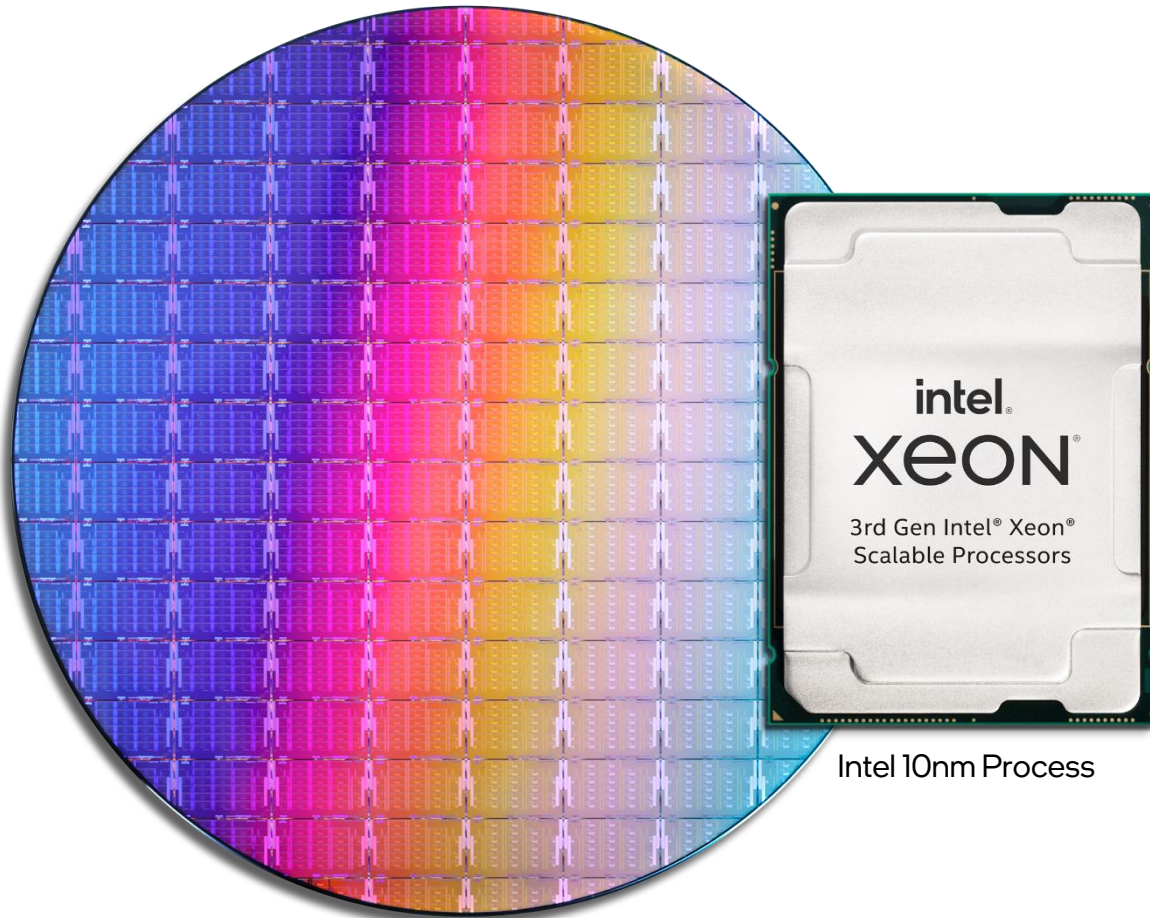
Built-in security with Intel Software Guard Extensions, Platform Firmware Resilience and Total Memory Encryption

Only data center processor with built-in AI (Intel DL Boost)

Built-in crypto acceleration reduces the performance impact of pervasive encryption

3rd Gen Intel® Xeon® Scalable processors

Performance made flexible



Up to 40 cores
per processor

20% IPC improvement
28 core, ISO Freq, ISO compiler

1.46x average performance increase
Geomean of Integer, Floating Point, Stream Triad, LINPACK
8380 vs. 8280

1.74x AI inference increase
8380 vs. 8280 BERT

2.65x average performance increase
vs. 5-year-old system
8380 vs. E5-2699v4

3rd Gen Intel® Xeon® Scalable processors

Performance made flexible

Only x86 data center processor with
built-in AI & security solutions

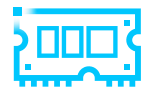
Advanced security solutions



Intel Software
Guard Extensions



Intel
Crypto
Acceleration



Intel Total Memory
Encryption

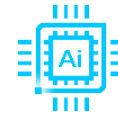


Intel Platform
Firmware
Resilience



Targeted for 1S-2S systems

Scalable, flexible, customizable



Intel Deep
Learning Boost



Intel Speed Select
Technology



Intel
AVX-512



Optimized
Software

Next-gen Xeon Scalable Platform

Up to
6TB

System Memory
Capacity
(Per Socket)
DRAM + PMem

Up to
8CH

DDR4-3200
2 DPC
(Per Socket)

Up to
2.6X

Memory Capacity
Increase vs.
2nd Gen Xeon
Scalable

Up to
64

Lanes
PCI Express 4
(per Socket)

Breakthrough Data Performance



Intel®
Optane™
persistent
memory 200
series



Intel®
Optane™
SSD P5800X
series



Intel® SSD
D series

Faster, Flexible, Data Scale



Intel® Ethernet
800 series
network adapters



Intel® Agilex™
FPGA
solutions



Performance Made Flexible for IoT and The Edge



Reduce Response Time and Lower Latency



Built-in AI Acceleration and Flexibility to Service AI, Storage, Virtualization and Networking Workloads



Advanced Security to Secure Sensitive Data

Performance Made Flexible for Cloud & Enterprise

3rd Gen Intel® Xeon® Scalable processors
deliver over

50%

higher performance on latency sensitive
workloads such as database, e-
commerce, and web server applications



Foundation for True
Hybrid and Multi-Cloud



Consistent Performance



Seamless Migration for
Virtual Machines



Global Scale

3rd Gen Intel Xeon Scalable Processors

Performance made flexible for 1 and 2-socket solutions

Flexible Performance

Up to 40 cores per processor, up to 80 cores in a 2S configuration
Up to 60 MB of L3 Cache (1.5 MB/core), per processor
Support for 85W* to 270W TDP

Up to 3.7 GHz single-core turbo frequency
Up to 3.6 GHz all-core turbo frequency
Up to 3.6 GHz highest base frequency

Intel Turbo Boost 2.0 Technology, Intel Hyper-Threading Technology (Intel HT),
Intel Speed Shift Technology, Enhanced Intel SpeedStep Technology

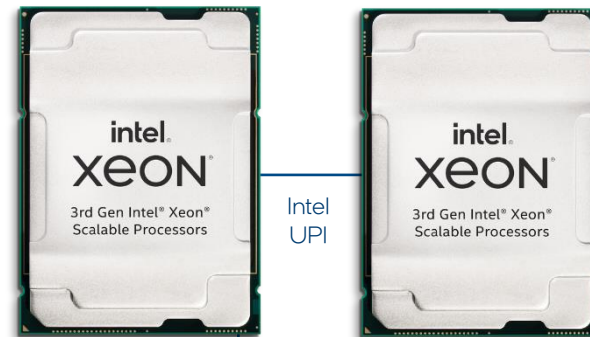
Up to 3 Intel Ultra Path Interconnect (Intel UPI) with up to 11.2 GT/s per processor

Next-gen Xeon Scalable Platform

8 channels, 2 DPC, DDR4, Up to 3200 MT/s
Support for up to 6 TB of system memory per processor, up to 12 TB in a
2S configuration

Support for Intel Optane persistent memory 200 series
Support for up to 4 TB of PMem per processor, up to 8 TB in a 2S
configuration

64 lanes of PCI Express 4.0 per processor, 128 lanes in a 2S configuration



Intel
UPI

4 DMI 3.0 Links

FC-LGA14 package
LGA4189-4/5 SMT socket
77.5mm x 56.5mm
4189 pins

PCI Express 3.0 (Up to 20 lanes)
USB 3.0 (Up to 10 ports)
USB 2.0 (Up to 14 ports)
SATA Gen 3 (Up to 14 ports)



Platform and Storage Manageability
Enhanced Firmware Security
Advanced Server Reliability, Serviceability and Availability (RAS) Feature Set
Available with optional Intel QuickAssist technology (Intel QAT)

Built-In Acceleration and Advanced Security Solutions

Intel Deep Learning Boost (Intel DL Boost) with VNNI (int8)

Intel Advanced Vector Extension 512 (Intel AVX-512) with 2 FMA

Intel Direct Data I/O Technology (Intel DDIO)

Intel Software Guard Extensions (Intel SGX)

- up to 512 GB of secure enclave capacity per processor, up to 1 TB in a 2S configuration

Intel Crypto Acceleration

- Vector AES-NI, Vector CLMUL, Intel Secure Hash Algorithm Extensions, VPMADD52 instructions, and RSA/DH encryption protocols

Intel Total Memory Encryption (Intel TME) with AES-XTS encryption

Intel Platform Firmware Resilience (Intel PFR)

Scalable, Flexible and Customizable

Intel Speed Select Technologies

- Performance Profile 2.0, on select SKUs
- Base Frequency, Turbo Frequency, and Core Power, available on most SKUs

Intel Infrastructure Management Technologies (Intel IMT)

- Intel Resource Director Technology (Intel RDT)
- Intel Virtualization Technology (Intel VT-x, VT-d)

Processors, chipset and diagram provided for illustration purposes only and is not to scale

Two socket example shown

No product or component can be absolutely secure

Please visit intel.com/xeon to obtain the latest product specifications

*Deterministic configurable TDP of 85W with 4309Y

Performance made flexible.

Broad Intel Portfolio for HCI Delivers a Consistent Foundation

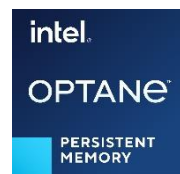
3rd Gen Intel® Xeon® Scalable processors



Compute Virtualization

- Wide range of SKUs to tailor cores and frequency to workload requirements
- Integrated virtualization technologies
- Security technologies integrated into silicon
- Built-in AI acceleration

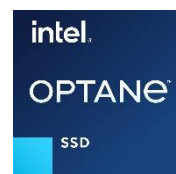
Intel® Optane™ persistent memory 200 series



Memory Virtualization

- Serves as volatile memory or persistent storage, based on mode
- Hardware security mitigations and automatic data encryption
- Affordable way to increase memory space
- Reduce total amount of DRAM needed

Intel® Optane™ SSDs P5800X



Storage Virtualization

- Intel Data Center SSDs designed for low latency and high performance
- Intel Optane SSDs deliver high endurance, low latency, and high QoS for the cache tier
- Extend capacity with 2nd Gen Intel 3D NAND SSDs

Intel® Ethernet 800 series

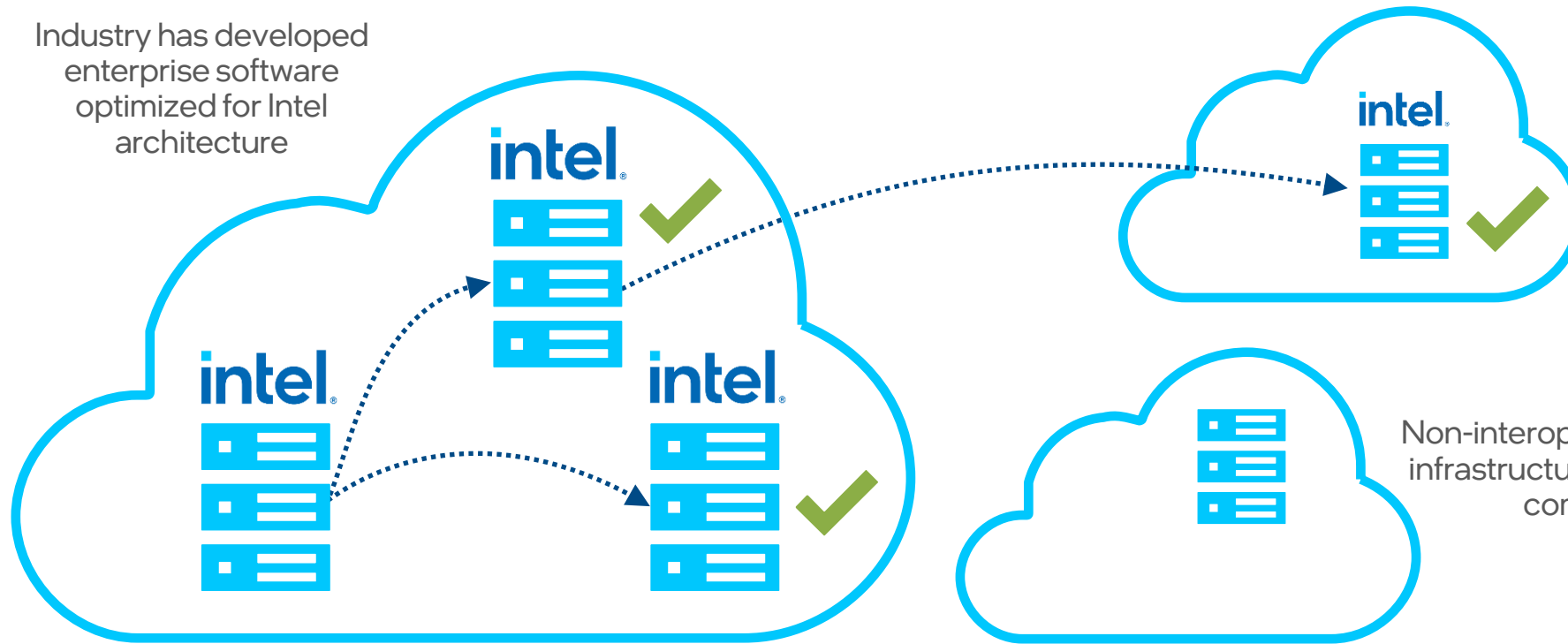


Network Virtualization

- Greater intelligence and performance for virtualization with network packet processing
- Flexible and scalable I/O virtualization
- Intelligent offloads for improved performance and efficiency
- RDMA streamlines and accelerates node-to-node network traffic

Consistent Infrastructure Matters

Industry has developed enterprise software optimized for Intel architecture



"AMD currently does not support VM migration from EPYC to Xeon processors."



Source: Jag Bolaria, July 2017, Linley Group, AMD Sponsored Whitepaper

Non-interoperable virtualization infrastructure requires isolated compute silos¹

All Intel-based Cloud Instances are Optimized for Live Migration between Clouds and across HW Generations

Accelerate Insight and Innovation

Intel® Optane™ persistent memory (PMem) 200 series fills the DRAM gap



Extract more from larger datasets. Expand your memory pool in persistent memory and support near-real-time data analysis; deliver deep insights, improve operations, or create new revenue streams.



Lower overall total cost of ownership (TCO).³ Do more with each server—increase CPU utilization, in-memory database capacity, throughput, virtual machine (VM) density, and services for users on a consolidated footprint.



Protect data automatically. Help secure all data at rest in persistent memory with application-transparent AES-256 encryption, which enhances security without code changes.

High performance. High capacity. Hardware-enhanced security.

Intel® Optane™ Persistent Memory 200 Series Value

Extract more value from larger datasets than previously possible



- 128, 256, and 512 GB modules
- Larger datasets can exist closer to the CPU for faster processing, which means greater insights
- Larger memory pools help break through input/output (I/O) bottlenecks
- More affordable to keep larger datasets in memory
- Faster restart times for in-memory databases

Solves: Existing memory and high-latency storage systems cannot meet high-throughput, high-bandwidth demands

Scale delivery of more services to more customers at compelling TCO



- Support more VMs and more memory per VM, all at a cost lower than typical DRAM
- Memory cost savings can help fulfill large memory capacity needs
- Increase VM, user, and application density and meet business service-level agreements (SLAs) with fewer servers
- Improve business uptime during power failure

Solves: Data-intensive workloads perform best when hot data is stored in memory, but DRAM is expensive and limited in capacity

Automatically improve security without sacrificing performance



- AES 256-bit hardware encryption helps protect firmware and data
- Data put on the module is always encrypted
- Security-enabled cryptographic erasure and DIMM over-write help keep data from being accessed on repurposed or discarded modules

Solves: Data is vulnerable to constant, sophisticated attacks, but enabling security and encryption can sacrifice performance

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Performance varies by use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

Intel contributes to the development of benchmarks by participating in, sponsoring, and/or contributing technical support to various benchmarking groups, including the BenchmarkXPRT Development Community administered by Principled Technologies.

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Some results may have been estimated or simulated.

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