

INTEL[®] XEON[®] SCALABLE PLATFORM

Notices and Disclaimers

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 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/performance>.

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. § For more information go to <http://www.intel.com/performance>.

All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest Intel product specifications and roadmaps.

No computer system can be absolutely secure.

Intel, the Intel logo, Xeon, Intel vPro, Intel Xeon Phi, Look Inside., are trademarks of Intel Corporation in the U.S. and/or other countries.

© 2017 Intel Corporation.

*Other names and brands may be claimed as the property of others.

INDUSTRY TRANSFORMATION



CLOUD

CLOUD ECONOMICS

AI & ANALYTICS

INTELLIGENT DATA PRACTICES

5G

NETWORK TRANSFORMATION

MEGATRENDS





**TRANSFORMATION STARTS
ON THE INSIDE**

INTEL® XEON® SCALABLE PLATFORM



THE INDUSTRY'S
BIGGEST PLATFORM ADVANCEMENT
IN A DECADE

INTEL® XEON® SCALABLE PROCESSORS

THE FOUNDATION FOR AGILE, SECURE, WORKLOAD-OPTIMIZED HYBRID CLOUD

BEST



UP TO **28 CORES**

UP TO **2, 4 & 8 SOCKET SUPPORT** WITH UP TO **3 UPI LINKS**

DDR4 **2666 MHz** WITH UP TO **1.5 TB** TOPLINE MEMORY CHANNEL BANDWIDTH

HIGHEST ACCELERATOR THROUGHPUT

MAINSTREAM

GREAT



UP TO **22 CORES**

2 & 4 SOCKET SUPPORT

UP TO **3 UPI LINKS**

ADVANCED RELIABILITY, AVAILABILITY AND SERVICEABILITY



GOOD

SCALABLE PERFORMANCE AT LOW POWER
STANDARD RAS

MODERATE TASKS

INTEL® TURBO BOOST TECHNOLOGY AND INTEL® HYPER-THREADING TECHNOLOGY FOR MODERATE WORKLOADS

EFFICIENT



ENTRY

SCALABLE PERFORMANCE
HARDWARE-ENHANCED SECURITY
STANDARD RAS

LIGHT TASKS

ENTRY PERFORMANCE, PRICE SENSITIVE FOR LIGHT WORKLOADS

ENTRY



THE INTEL® XEON® SCALABLE PROCESSORS:

AN AGILE SOLUTION STACK FOR DATA CENTER WORKLOADS

INTEL® XEON® BRONZE PROCESSOR

31XX Series Bronze (2 Socket)

- Up to 8 cores
- 2S configuration
- Improved core interconnect (UPI) over past gen
- 48 PCIe 3.0 lanes
- Intel® AVX-512 feature enabled
- Standard RAS features

Entry Performance and security for price sensitive deployments

INTEL® XEON® SILVER PROCESSOR

41XX Series Silver (2 Socket)

- + Up to 12 cores
- + 2S configuration with Improved Memory channel performance
- + Intel® Turbo Boost Technology for higher frequency capability
- + Intel® HT Technology for hyper threaded workloads

Efficient Performance at Low Power. Provides more horsepower for single purpose workloads

INTEL® XEON® GOLD PROCESSOR

61XX Series Gold (2 and 4 Socket)

- + Up to 22 Cores
- + Added 3rd UPI link for increased dataflow across cores
- + Increased performance across memory channels⁶
- + Intel® AVX-512 with additional FMA
- + Added Node Controller Support to assist in scaled node management

51XX Series Gold (2 and 4 Socket)

- + Up to 14 cores
- + Supports 2S and 4S configuration for increased scalability
- + Increased core interconnect speed to boost data flow in multi-processor workloads
- + Advanced RAS features

Mainstream Performance, Fast Memory, More Interconnect Engines, Advanced Reliability

INTEL® XEON® PLATINUM PROCESSOR

81XX Series Platinum (2, 4, and 8 Socket)

- + Up to 28 Cores
- + 2,4, or 8 socket configurations for best performance and scalability⁵
- + Topline memory channel performance (1.5 TB memory bandwidth on select SKUs)
- + 3 UPI links option across 2S,4S,8S for improved scalability and inter-core data flow

The Best Performance, Scalability, Core options, and all Hardware-Enhanced Security features for the most robust capability

Better performance, interconnectivity, scalability, and memory

Unified Intel® Xeon® Scalable Platform



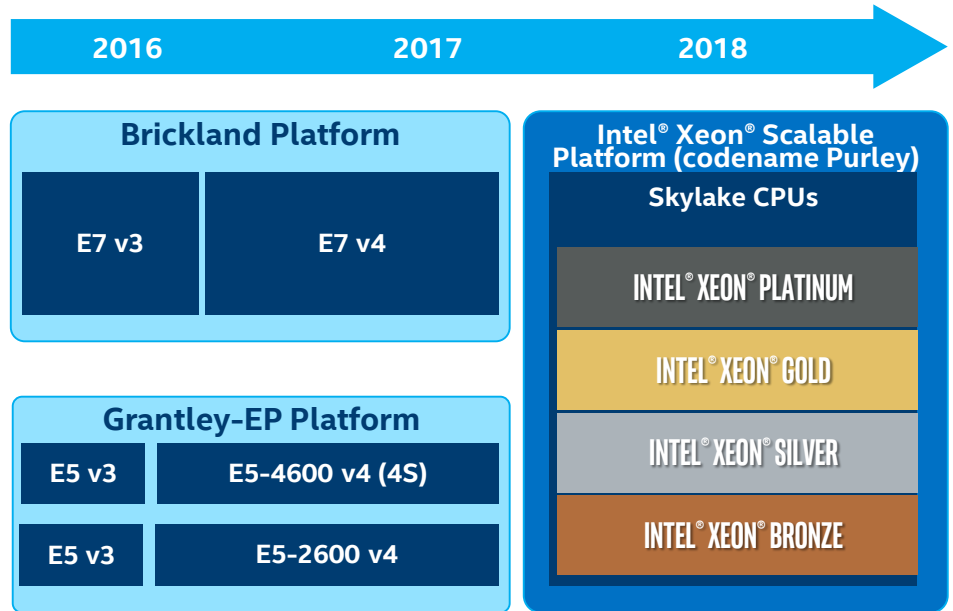
Intel® Xeon® Processor E7

Targeted at **mission-critical** applications that value a **scale-up** system with leadership **memory capacity** and **advanced RAS**



Intel® Xeon® Processor E5

Targeted at a wide variety of applications that value a **balanced system** with leadership **performance/watt/\$**

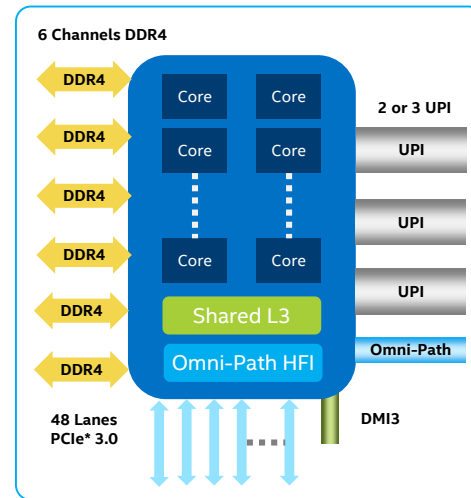


INTEL® XEON® SCALABLE PROCESSOR

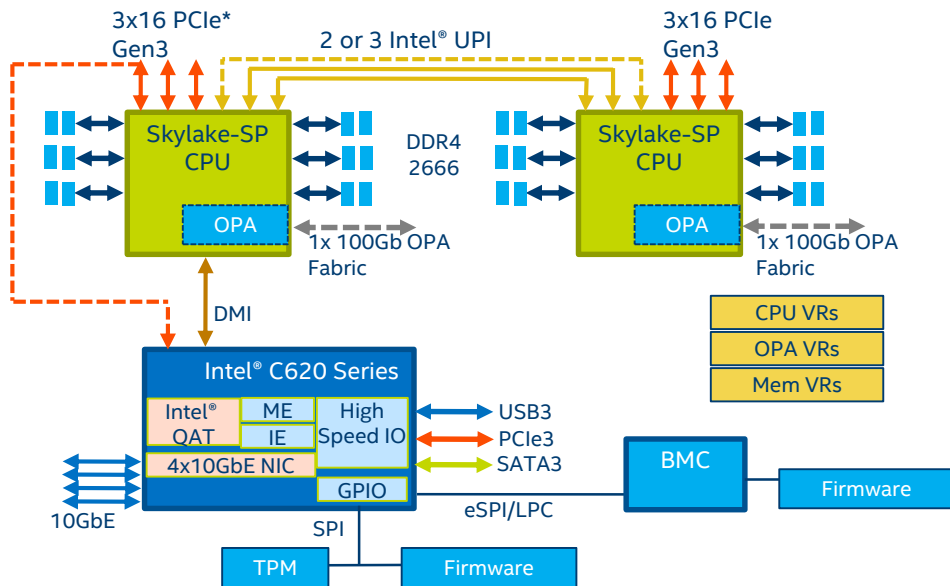
Re-architected from the Ground Up

- Skylake core microarchitecture, with data center specific enhancements
- Intel® AVX-512 with 32 DP flops per core
- Data center optimized cache hierarchy – 1MB L2 per core, non-inclusive L3
- New mesh interconnect architecture
- Enhanced memory subsystem
- Modular IO with integrated devices
- New Intel® Ultra Path Interconnect (Intel® UPI)
- Intel® Speed Shift Technology
- Security & Virtualization enhancements (MBE, PPK, MPX)
- Optional Integrated Intel® Omni-Path Fabric (Intel® OPA)

Features	Intel® Xeon® Processor E5-2600 v4	Intel® Xeon® Scalable Processor
Cores Per Socket	Up to 22	Up to 28
Threads Per Socket	Up to 44 threads	Up to 56 threads
Last-level Cache (LLC)	Up to 55 MB	Up to 38.5 MB (non-inclusive)
QPI/UPI Speed (GT/s)	2x QPI channels @ 9.6 GT/s	Up to 3x UPI @ 10.4 GT/s
PCIe* Lanes/Controllers/Speed(GT/s)	40 / 10 / PCIe* 3.0 (2.5, 5, 8 GT/s)	48 / 12 / PCIe 3.0 (2.5, 5, 8 GT/s)
Memory Population	4 channels of up to 3 RDIMMs, LRDIMMs, or 3DS LRDIMMs	6 channels of up to 2 RDIMMs, LRDIMMs, or 3DS LRDIMMs
Max Memory Speed	Up to 2400	Up to 2666
TDP (W)	55W-145W	70W-205W



Platform Overview

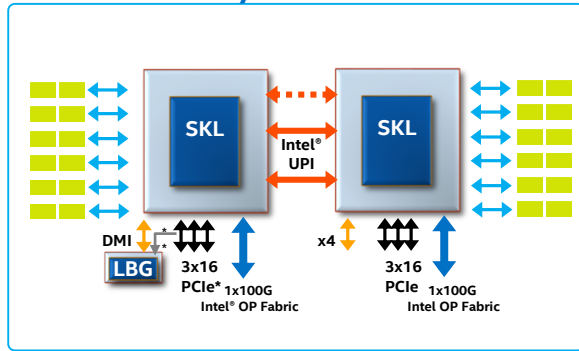


BMC: Baseboard Management Controller	PCH: Intel® Platform Controller Hub	IE: Innovation Engine
Intel® OPA: Intel® Omni-Path Architecture	Intel QAT: Intel® QuickAssist Technology	ME: Manageability Engine
NIC: Network Interface Controller	VMD: Volume Management Device	NTB: Non-Transparent Bridge

Capabilities	Details
Socket	Socket P
Scalability	2S, 4S, 8S, and >8S (with node controller support)
CPU TDP	70W – 205W
Chipset	Intel® C620 Series (code name Lewisburg PCH)
Networking	Intel® Omni-Path Fabric (integrated w/ CPU + discrete) 4x10GbE (integrated w/ chipset) 100G/40G/25G discrete options
Compression and Crypto Acceleration	Intel® QuickAssist Technology option in chipset to support 100Gb/s comp/decomp/crypto 100K RSA2K public key
Storage	CPU integrated QuickData Technology, VMD, and NTB Intel® Optane™ SSD, Intel® 3D-NAND NVMe* & SATA SSD
Security	CPU Instruction Set enhancements (MBE, PPK, MPX) Manageability Engine with multiple secure boot options Intel® Platform Trust Technology Intel® Key Protection Technology
Manageability	Intel® Node Manager Intel® Datacenter Manager Innovation Engine (IE)

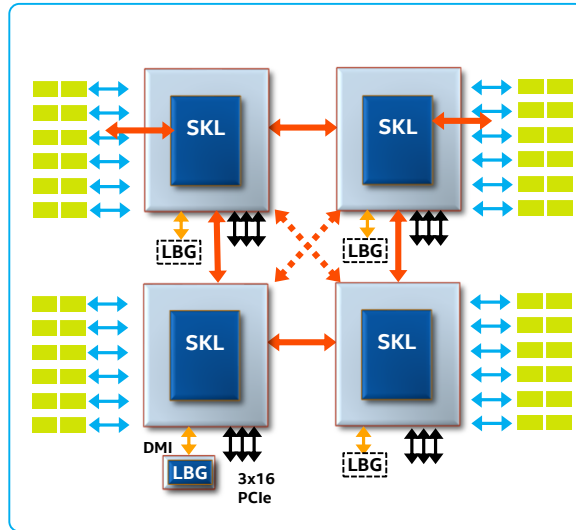
Platform Topologies

2S Configurations General Purpose/Storage/ HPC/Comms SP



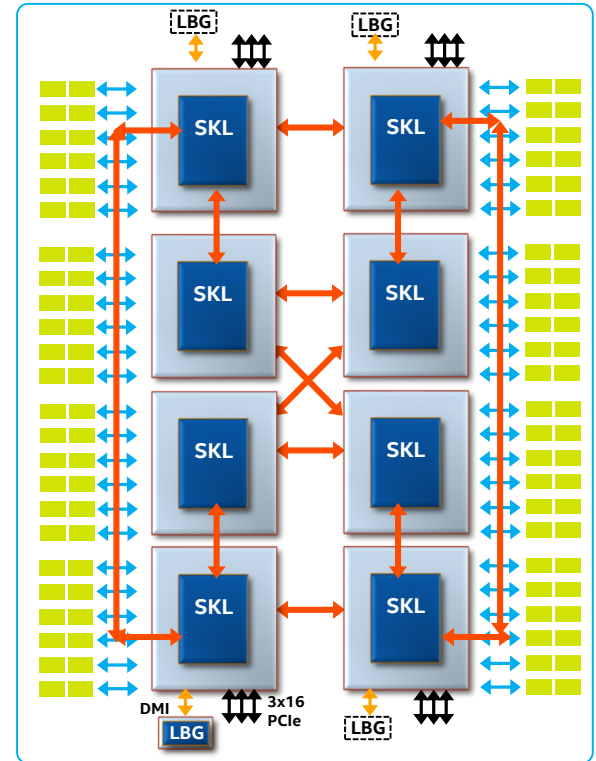
(2S-2UPI & 2S-3UPI shown)

4S Configurations Enterprise and Cloud



(4S-2UPI & 4S-3UPI shown)

8S Configuration Enterprise



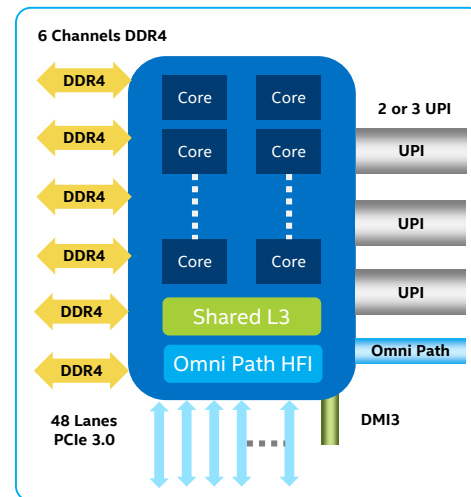
**INTEL® XEON® SCALABLE PLATFORM SUPPORTS
CONFIGURATIONS RANGING FROM 2S-2UPI TO 8S**

INTEL® XEON® SCALABLE PROCESSORS – ARCHITECTURAL ENHANCEMENTS

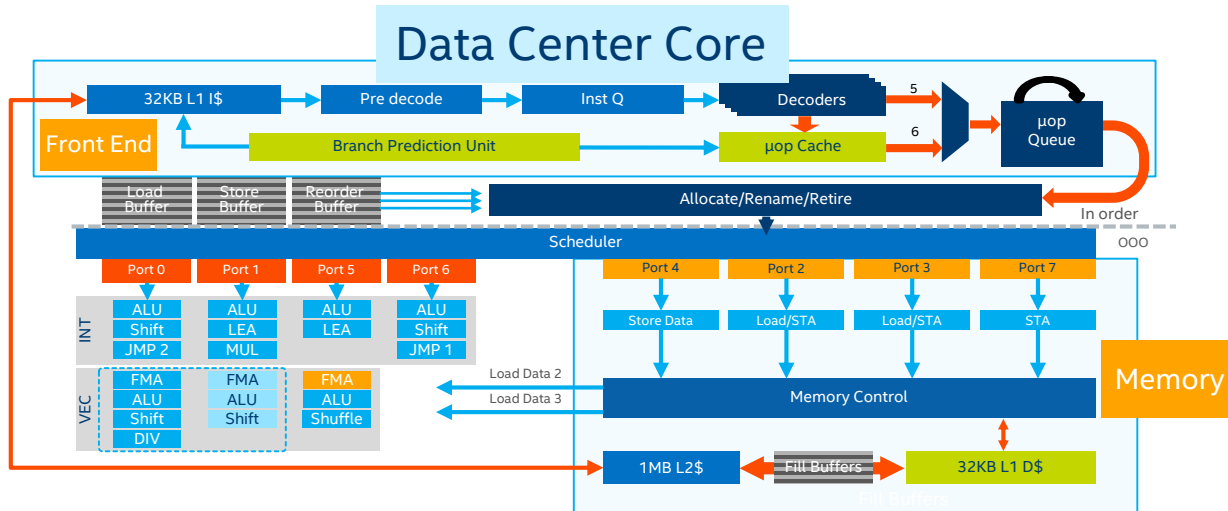
Overview

- Skylake core microarchitecture, with data center specific enhancements
- Intel® AVX-512 with 32 DP Flops per core
- Data center optimized cache hierarchy – 1MB L2 per core, non-inclusive L3
- New mesh interconnect architecture
- Enhanced memory subsystem
- Modular IO subsystem with integrated devices
- New Intel® Ultra Path Interconnect (Intel® UPI)
- Intel® Speed Shift Technology
- Security & Virtualization enhancements
- Optional Integrated Intel® Omni-Path Fabric (Intel® OPA)

Features	Intel® Xeon® Processor E5-2600 v4	Intel® Xeon® Scalable Processor (Skylake-SP)
Cores Per Socket	Up to 22	Up to 28
Threads Per Socket	Up to 44 threads	Up to 56 threads
Last-level Cache (LLC)	Up to 55 MB	Up to 38.5 MB (non-inclusive)
QPI/UPI Speed (GT/s)	2x QPI channels @ 9.6 GT/s	Up to 3x UPI @ 10.4 GT/s
PCIe* Lanes/ Controllers/Speed(GT/s)	40 / 10 / PCIe 3.0 (2.5, 5, 8 GT/s)	48 / 12 / PCIe 3.0 (2.5, 5, 8 GT/s)
Memory Population	4 channels of up to 3 RDIMMs, LRDIMMs, or 3DS LRDIMMs	6 channels of up to 2 RDIMMs, LRDIMMs, or 3DS LRDIMMs
Max Memory Speed	Up to 2400	Up to 2666
TDP (W)	55W-145W	70W-205W



Core Microarchitecture Enhancements



	Broadwell uArch	Skylake uArch
Out-of-order Window	192	224
In-flight Loads + Stores	72 + 42	72 + 56
Scheduler Entries	60	97
Registers – Integer + FP	168 + 168	180 + 168
Allocation Queue	56	64/thread
L1D BW (B/Cyc) – Load + Store	64 + 32	128 + 64
L2 Unified TLB	4K+2M: 1024	4K+2M: 1536 1G: 16

- Larger and improved branch predictor, higher throughput decoder, larger window
- Improved scheduler and execution engine, improved throughput and latency of divide/sqrt
- More load/store bandwidth, deeper load/store buffers, improved prefetcher
- **Data center specific enhancements → Intel® AVX-512 with 2 FMAs per core, larger 1MB L2 per core**

DATA CENTER-SPECIFIC ENHANCEMENTS TO THE CORE

Key Instruction Set Architecture Enhancements

COMPUTE

Intel® AVX-512

2x compute density per core for vector operations

Cache Management Instructions

CLFLUSHOPT – Lower latency cache line flush

CLWB – Cache line writeback to memory without invalidation

VIRTUALIZATION

Improved Time Stamp Counter Virtualization

Reduces overhead on VMs migrating across processors running at different base frequency

SECURITY

Page Protection Keys (PPK)

Extends paging architecture to provide a page-granular, thread-private user-level memory protection

Mode Based Execution (MBE)

Protects against malicious kernel updates in a virtualized system

Intel® Advanced Vector Extensions 512 (Intel® AVX-512)

- 512-bit wide vectors
- 32 operand registers
- 8 64b mask registers
- Embedded broadcast
- Embedded rounding

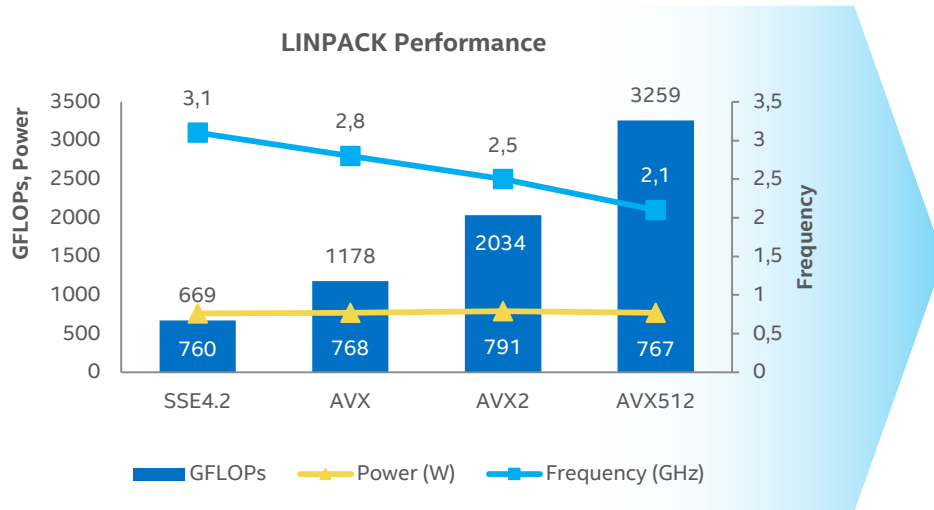
Microarchitecture	Instruction Set	SP FLOPs / cycle	DP FLOPs / cycle
Skylake	Intel® AVX-512 & FMA	64	32
Haswell / Broadwell	Intel® AVX2 & FMA	32	16
Sandybridge	Intel® AVX (256b)	16	8
Nehalem	SSE (128b)	8	4

Intel AVX-512 Instruction Types

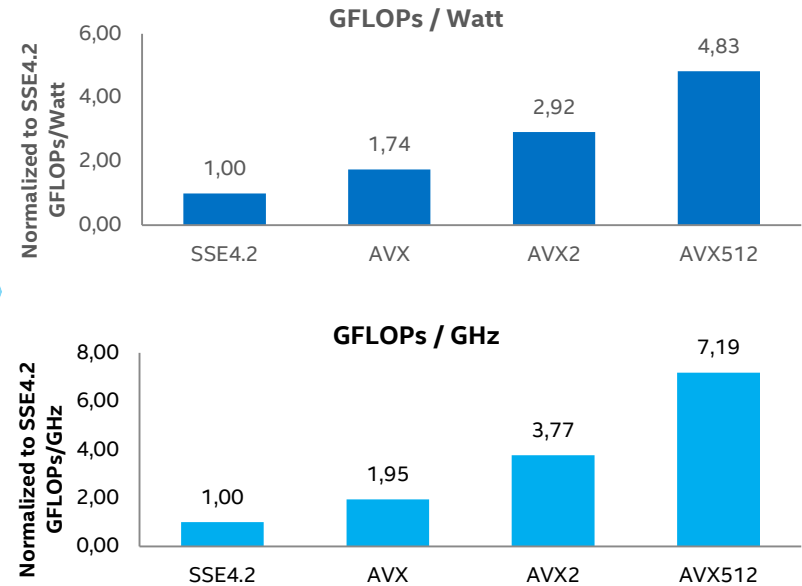
Intel AVX-512-F	AVX-512 Foundation Instructions
AVX-512-VL	Vector Length Orthogonality: ability to operate on sub-512 vector sizes
AVX-512-BW	512-bit Byte/Word support
AVX-512-DQ	Additional D/Q/SP/DP instructions (converts, transcendental support, etc.)
AVX-512-CD	Conflict Detect: used in vectorizing loops with potential address conflicts

INTEL® AVX-512 DOUBLES THE NUMBER OF FLOPS PER CYCLE

Performance and Efficiency with Intel® AVX-512



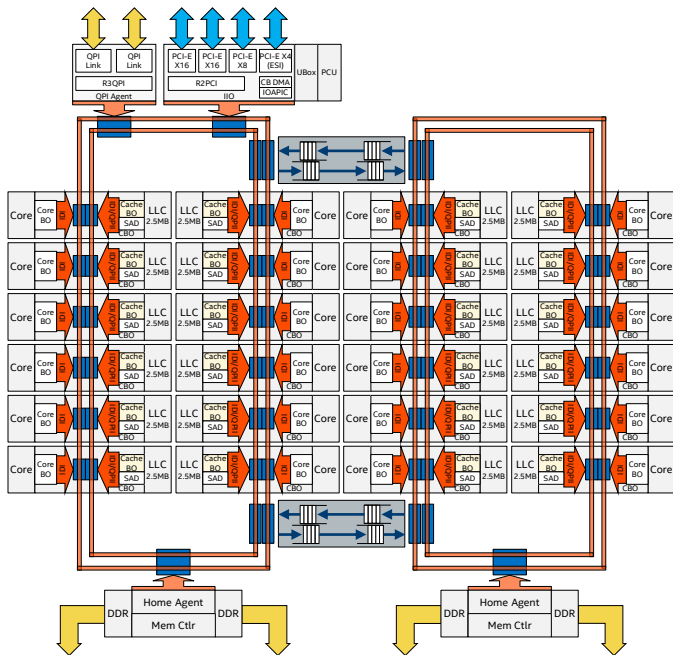
Intel® AVX is designed to balance power consumed by lowering frequency when needed, while delivering significant performance gains and reduced runtimes



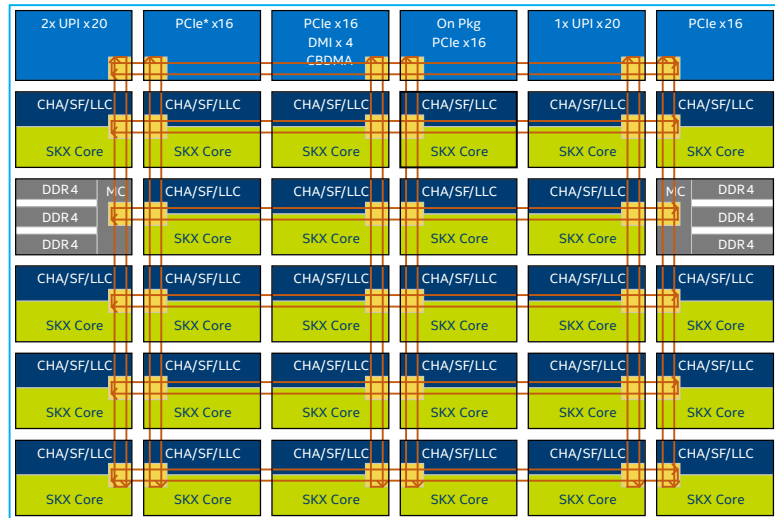
Source as of June 2017: Intel internal measurements on platform with Xeon Platinum 8180, Turbo enabled, UPI=10.4, SNC1, 6x32GB DDR4-2666 per CPU, 1 DPC. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark 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.

New Mesh Interconnect Architecture

Xeon® E7 v4 24-core die



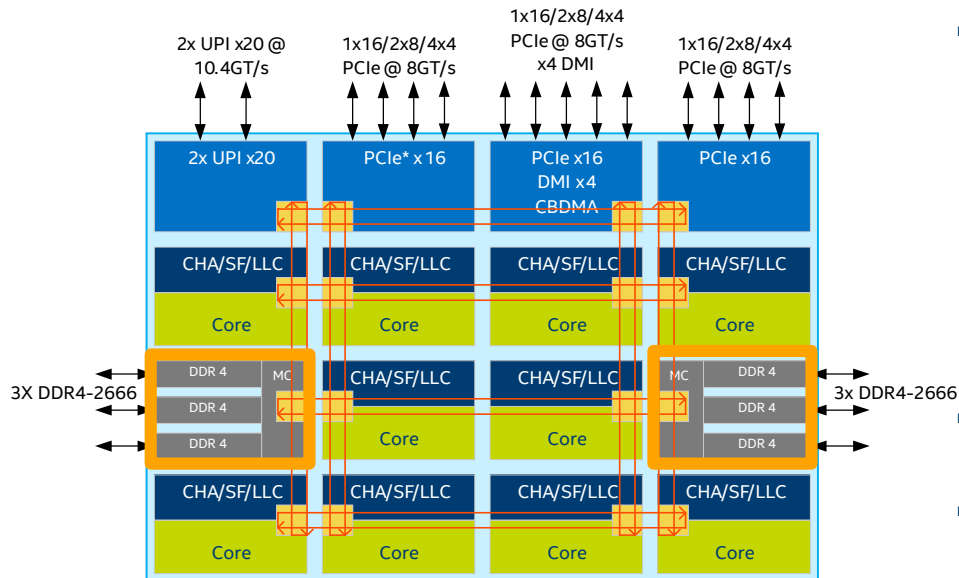
Skylake-SP 28-core die



CHA – Caching and Home Agent ; SF – Snoop Filter; LLC – Last Level Cache ;
SKX Core – Skylake-SP Core ; UPI – Intel® UltraPath Interconnect

DUAL-RING IN BROADWELL SERVER (INTEL® XEON® PROCESSOR E5/E7) V. MESH IN SKYLAKE-SP

Memory Subsystem

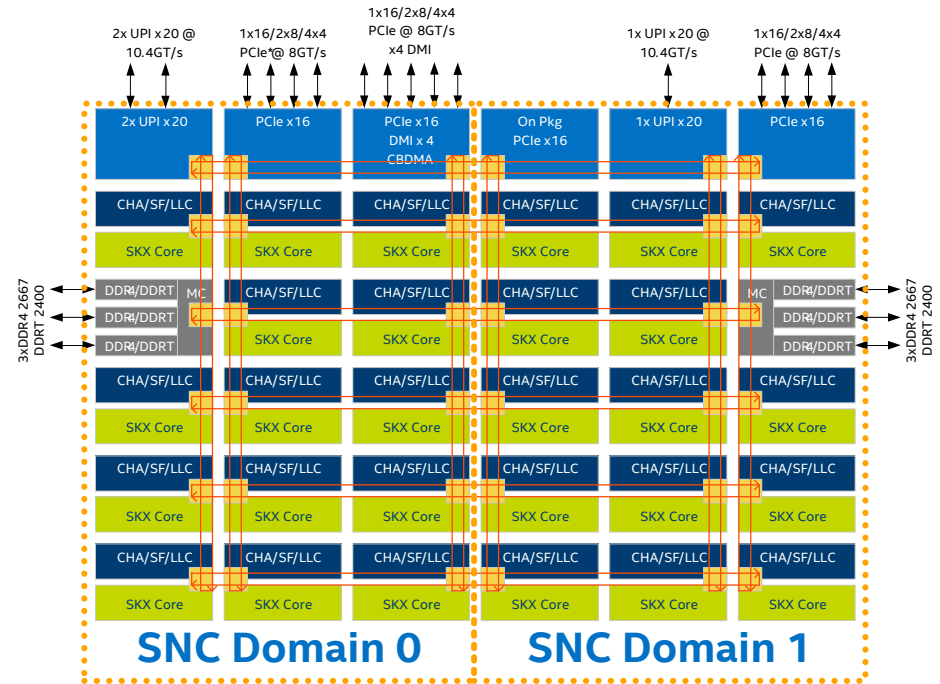


- 2 Memory Controllers, 3 channels each → total of 6 memory channels
 - DDR4 up to 2666, 2 DIMMs per channel
 - Support for RDIMM, LRDIMM, and 3DS-LRDIMM
 - 1.5TB Max Memory Capacity per Socket (2 DPC with 128GB DIMMs)
 - >60% increase in Memory BW per Socket compared to Intel® Xeon® processor E5 v4
- Supports various optimizations to reduce LLC miss latency
- Introduces a new memory device failure detection and recovery scheme - Adaptive Double Device Data Correction (ADDDC) - that reduces bandwidth and capacity overhead

Sub-NUMA Cluster (SNC)

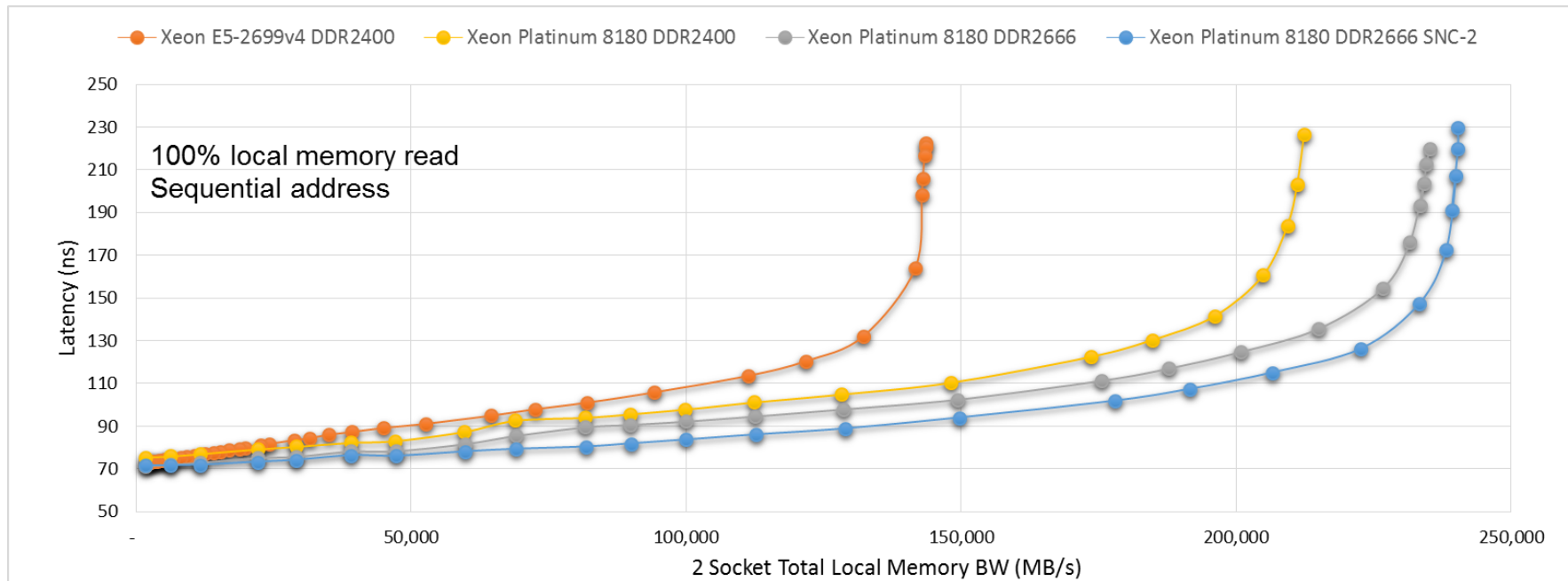
- Prior generation supported Clusters-On-Die (COD)
- SNC provides similar localization benefits as COD, without some of its downsides:
 - One UPI caching agent even in 2-SNC mode
 - Latency for memory accesses in remote cluster is smaller, no UPI flow
 - LLC capacity is utilized more efficiently in 2-cluster mode, no duplication of lines in LLC

	SNC	UPI Prefetch	
UMA	Disabled	Disabled	UMA, No prefetch
NUMA	Disabled	Enabled	Recommended default setting, 1 cluster/socket
NUMA	Enabled	Enabled	2 clusters per socket



Memory Performance

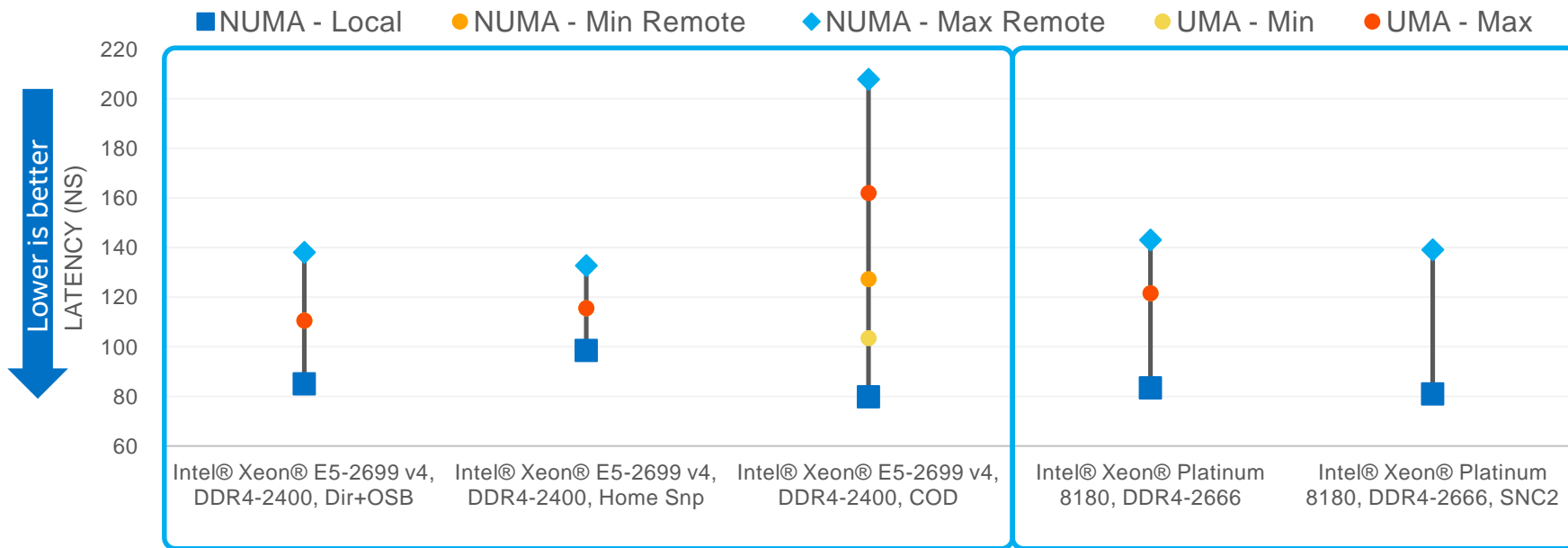
Bandwidth-Latency Profile



Source as of June 2017: Intel internal measurements on platform with Xeon Platinum 8180, Turbo enabled, UPI=10.4, SNC1/SNC2, 6x32GB DDR4-2400/2666 per CPU, 1 DPC, and platform with E5-2699 v4, Turbo enabled, 4x32GB DDR4-2400, RHEL 7.0. 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 go to <http://www.intel.com/performance>

Memory Performance

Core to Memory Latency

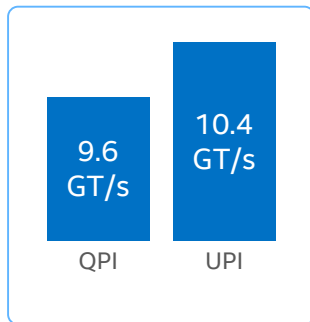


Source as of June 2017: Intel internal measurements on platform with Xeon Platinum 8180, Turbo enabled, UPI=10.4, 6x32GB DDR4-2666, 1 DPC, and platform with E5-2699 v4, Turbo enabled, 4x32GB DDR4-2400, RHEL 7.0. Software and workloads used in performance tests may have been optimized for performance 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/performance>.

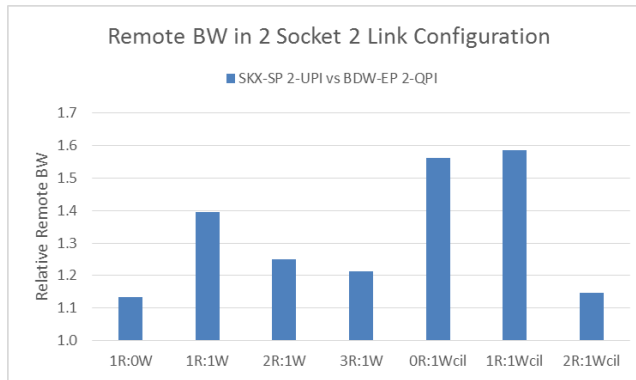
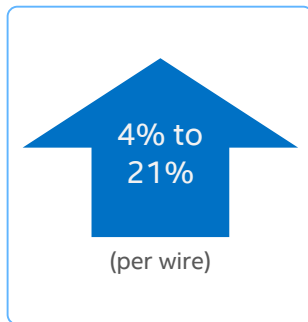
Intel® Ultra Path Interconnect (Intel® UPI)

- Intel® Ultra Path Interconnect (Intel® UPI), replacing Intel® QPI
- Faster link with improved bandwidth for a balanced system design
 - Improved messaging efficiency per packet
- 3 UPI option for 2 socket – additional inter-socket bandwidth for non-NUMA optimized use-cases

Data Rate



Data Efficiency



INTEL® UPI ENABLES SYSTEM SCALABILITY WITH HIGHER INTER-SOCKET BANDWIDTH

Source as of June 2017: Intel internal measurements on platform with Xeon Platinum 8180, Turbo enabled, UPI=10.4, 6x32GB DDR4-2666, 1 DPC, and platform with E5-2699 v4, Turbo enabled, 4x32GB DDR4-2400, RHEL 7.0. 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/performance>.

Intel® Xeon® Scalable Processor with Integrated Fabric

Single on-package Intel® Omni-Path Host Fabric Interface (HFI)

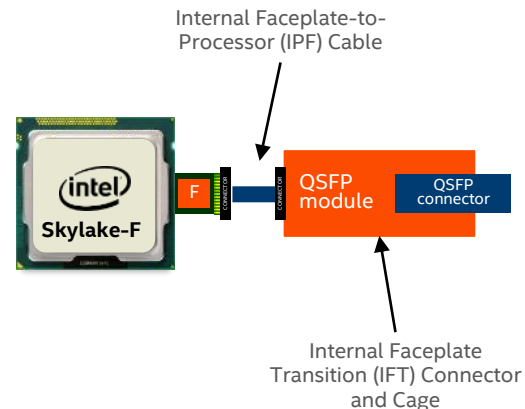
Fabric component interfaces to CPU using x16 PCIe* lanes

Fabric PCIe lanes are additional to the 48 PCIe lanes

Single cable from SKL-F package connector to QSFP module

Same socket for Skylake-SP and Skylake-F processors

- Intel® Xeon® Scalable platform can be designed to support both processors
- Platform design requires an expanded keep-out zone and additional board components to accommodate both processors



Intel® Xeon® Scalable Processor Architecture Summary

New Architectural Innovations for Data Center

- **Up to 60% increase** in compute density with Intel® AVX-512
- **Improved performance and scalability** with Mesh on-chip interconnect
- L2 and L3 cache hierarchy **optimized for data center workloads**
- Improved memory subsystem with **up to 60% higher memory bandwidth**
- Faster and more efficient Intel® UPI interconnect for **improved scalability**
- Improved integrated IO with **up to 50% higher aggregate IO bandwidth**
- **Increased protection** against kernel tampering and user data corruption
- **Enhanced power management and RAS capability** for improved utilization of resources

WHAT'S NEW



INTRODUCING THE NEW INTEL® XEON® SCALABLE PROCESSOR
BREAKTHROUGH PERFORMANCE
FOR EXPERT WORKSTATIONS†



INTRODUCING THE NEW INTEL® XEON® W PROCESSOR
PERFORMANCE OPTIMIZED
FOR MAINSTREAM WORKSTATIONS†

BREAKTHROUGH PERFORMANCE FOR EXPERT WORKSTATIONS[†]



WORLD RECORD PERFORMANCE

UP TO **2.71X** PERFORMANCE IMPROVEMENT 4-YEAR REFRESH¹

UP TO **1.65X** PERFORMANCE IMPROVEMENT GEN-ON-GEN²

UP TO **56 CORES**

UP TO **112 THREADS**

UP TO **4.2 GHz TURBO** WITH INTEL[®] BOOST TECHNOLOGY 2.0

UP TO **3 TB** DDR4 266 MHz

ACCELERATOR THROUGHPUT WITH EXPANDABILITY, RELIABILITY, SECURITY[†]

INFORMATION BASED ON DUAL-SOCKET CONFIGURATION

New Intel[®] Xeon[®] Scalable Processor



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 www.intel.com/benchmarks. Configuration: Refer to Performance Benchmark Disclosure slide. 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. *Other names and brands may be claimed as the property of others.

PERFORMANCE OPTIMIZED FOR MAINSTREAM WORKSTATIONS[†]

UP TO **1.87X** PERFORMANCE IMPROVEMENT 4-YEAR REFRESH³

UP TO **1.38X** PERFORMANCE IMPROVEMENT GEN-ON-GEN⁴



UP TO **4.5 GHz** WITH INTEL[®] TURBO BOOST TECHNOLOGY 2.0

UP TO **512 GB** DDR4 266 MHz

UP TO **18 CORES**

UP TO **36 THREADS**

OPTIMIZED MAINSTREAM PERFORMANCE WITH EXPANDABILITY, RELIABILITY, SECURITY[†]

AVAILABLE IN SINGLE-SOCKET CONFIGURATION ONLY

New Intel[®] Xeon[®] W Processor



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 www.intel.com/benchmarks. Configuration: Refer to Performance Benchmark Disclosure slide. 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. *Other names and brands may be claimed as the property of others.

NEW INTEL® XEON® W PROCESSOR

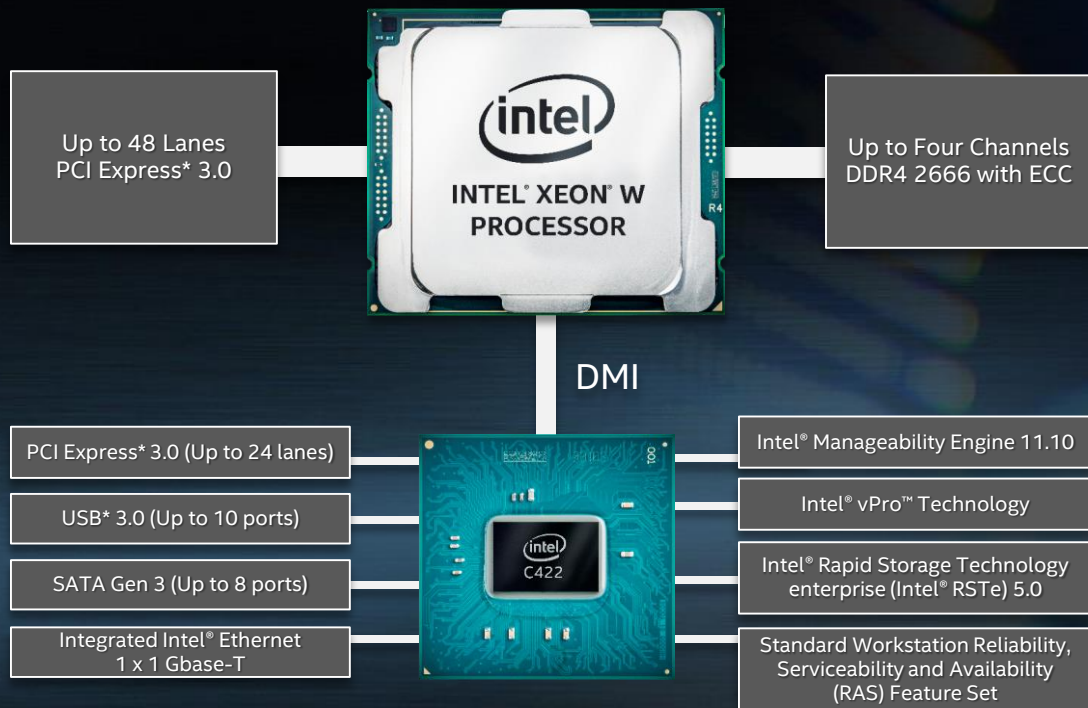
Mainstream performance, enhanced memory capabilities, hardware-enhanced security and reliability features for professional workstations.

- Up to 18 cores, 36 threads
- Four channel DDR4-2666 ECC memory support
- Intel® Turbo Boost Technology 2.0
- Intel® AVX-512 acceleration with up to 2 FMA
- Support for LGA 2066 socket
- 48 PCI Express 3.0 lanes
- Intel® Mesh Architecture
- Intel optimized 14nm+ process technology
- Rebalanced Intel® smart cache hierarchy
- Intel® vPro™ Technology
- Intel® Hyper-Threading Technology (Intel® HT Technology)
- Intel® Virtual RAID on Chip (Intel® VROC)
- Integrated Intel® Ethernet: 1 Gigabit Ethernet



NEW INTEL® XEON® W PROCESSORS

PERFORMANCE OPTIMIZED FOR MAINSTREAM WORKSTATIONS †



Processor, chipset and diagram provided for illustration purposes only

Processor Manufacturing Process	Intel's optimized 14nm+ process technology featuring Intel® Mesh Architecture
Maximum Core Count Supported	Up to 18
Maximum Base Frequency Supported	Up to 4.0 GHz
Maximum Intel® Turbo Boost Technology 2.0 Frequency Supported	Up to 4.5 GHz
Processor Cache Memory Support	Up to 24.75 MB of L3 Cache featuring rebalanced Intel® Cache hierarchy
Processor Performance Support	Intel® Turbo Boost 2.0 Technology, Intel® Hyper-Threading Technology (Intel® HT), Intel® Speed Shift Technology
Intel® Advanced Vector Extension 512 (Intel® AVX-512) Support	Intel® AVX-512 with up to 2 FMA support
Maximum Number of Processor Sockets Supported	One Socket
Thermal Design Point (TDP)	Approximately 140 Watts
Socket Type	Socket R4 (LGA-2066 Socket)
System Memory Support	4 channels of DDR4 2666 MHz 2 DPC RDIMM and LRDIMM with ECC support
Maximum System Memory Supported	Up to 512GB
Supported Chipset	Intel® C422 Workstation Chipset
PCH I/O	PCI Express* 3.0 – Up to 24 lanes USB* 3.0 – Up to 10 ports SATA* 3.0 – Up to 8 ports DMI – Up to 4 lanes, Gen 3
Intel® Manageability Engine (Intel® ME)	Intel® ME 11.11 with Intel® Active Management Technology (Intel® AMT) and Intel® vPro™ Technology
Intel® Rapid Storage Technology enterprise (Intel® RSTe)	Intel® RSTe 5.0 and Intel® Virtual RAID on CPU (Intel® VROC)

