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Intel® Xeon® Processor E5-2650 v4 (30M Cache, 2.20 GHz)

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Specifications

⊖ Essentials

Status	Launched
Launch Date	Q1'16
Processor Number	E5-2650V4
Cache	30 MB SmartCache
Bus Speed	9.6 GT/s QPI
# of QPI Links	2
Instruction Set	64-bit
Instruction Set Extensions	AVX 2.0
Embedded Options Available 🔍	Yes
Lithography	14 nm
Scalability	2S
VID Voltage Range	0
Recommended Customer	
Conflict Free	Yes
Datasheet	Link

⊖ Performance

# of Cores	12
# of Threads	24
Processor Base Frequency	2.2 GHz
Max Turbo Frequency	2.9 GHz
TDP	105 W

⊖ Memory Specifications

Max Memory Size (dependent on memory type)	1536 GB
Memory Types	DDR4 1600/1866/2133/2400
Max # of Memory Channels	4
Max Memory Bandwidth	76.8 GB/s
Physical Address Extensions	46-bit
ECC Memory Supported ‡ 🔍	Yes

⊖ Graphics Specifications

Processor Graphics ‡	None

⊖ Expansion Options

PCI Express Revision	3.0
PCI Express Configurations ‡	x4, x8, x16
Max # of PCI Express Lanes	40

⊖ Package Specifications

Max CPU Configuration	2
T$_{CASE}$	80°C
Package Size	45mm x 52.5mm
Sockets Supported	FCLGA2011-3
Low Halogen Options Available	See MDDS

⊖ Advanced Technologies

Intel® Turbo Boost Technology ‡	2.0
Intel® vPro Technology ‡ 🔍	Yes
Intel® Hyper-Threading Technology ‡ 🔍	Yes
Intel® Virtualization Technology (VT-x) ‡	Yes
Intel® Virtualization Technology for Directed I/O (VT-d) ‡ 🔍	Yes
Intel® VT-x with Extended Page Tables (EPT) ‡ 🔍	Yes
Intel® TSX-NI	Yes
Intel® 64 ‡ 🔍	Yes
Idle States	Yes
Enhanced Intel SpeedStep® Technology 🔍	Yes
Intel® Demand Based Switching 🔍	Yes

Related Products

- Intel® Xeon® Processor E5 v4 Family
- Intel® Xeon® Processor E5-2600 v4 Product Family
- Products formerly Broadwell

CONFLICT FREE

Learn how Intel is pursuing conflict-free technology. ➤

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PCN/MDDS Information

SR2N3
947616: PCN | MDDS
948198: PCN | MDDS

Thermal Monitoring Technologies	Yes
Intel® Flex Memory Access	No
Intel® Identity Protection Technology ‡	No

Intel® Data Protection Technology	
Intel® AES New Instructions 🔍	Yes
Secure Key	Yes

Intel® Platform Protection Technology	
OS Guard	Yes
Trusted Execution Technology ‡ 🔍	Yes
Execute Disable Bit ‡	Yes

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Refer to Datasheet for formal definitions of product properties and features.

"Announced" SKUs are not yet available. Please refer to the Launch Date for market availability.

Some products can support AES New Instructions with a Processor Configuration update, in particular, i7-2630QM/i7-2635QM, i7-2670QM/i7-2675QM, i5-2430M/i5-2435M, i5-2410M/i5-2415M. Please contact OEM for the BIOS that includes the latest Processor configuration update.

‡ This feature may not be available on all computing systems. Please check with the system vendor to determine if your system delivers this feature, or reference the system specifications (motherboard, processor, chipset, power supply, HDD, graphics controller, memory, BIOS, drivers, virtual machine monitor-VMM, platform software, and/or operating system) for feature compatibility. Functionality, performance, and other benefits of this feature may vary depending on system configuration.

"Conflict free" and "conflict-free" means "DRC conflict free", which is defined by the U.S. Securities and Exchange Commission rules to mean products that do not contain conflict minerals (tin, tantalum, tungsten and/or gold) that directly or indirectly finance or benefit armed groups in the Democratic Republic of the Congo (DRC) or adjoining countries. Intel also uses the term "conflict-free" in a broader sense to refer to suppliers, supply chains, smelters and refiners whose sources of conflict minerals do not finance conflict in the DRC or adjoining countries. Intel processors manufactured before January 1, 2013 are not confirmed conflict free. The conflict free designation refers only to product manufactured after that date. For Intel Boxed Processors, the conflict free designation refers to the processor only, not to any additional included accessories, such as heatsinks/coolers.

See http://www.intel.com/content/www/us/en/architecture-and-technology/hyper-threading/hyper-threading-technology.html?wapkw=hyper+threading for more information including details on which processors support Intel® HT Technology.

Max Turbo Frequency refers to the maximum single-core processor frequency that can be achieved with Intel® Turbo Boost Technology. See www.intel.com/technology/turboboost/ for more information.

The Recommended Customer   1,000-unit purchase quantities, and are subject to change without notice. Taxes and shipping, etc. not included. Prices may vary for other package types and shipment quantities, and special promotional arrangements may apply. If sold in bulk, price represents individual unit. Listing of these RCP does not constitute a formal pricing offer from Intel. Please work with your appropriate Intel representative to obtain a formal price quotation.

System and Maximum TDP is based on worst case scenarios. Actual TDP may be lower if not all I/Os for chipsets are used.

Low Halogen: Applies only to brominated and chlorinated flame retardants (BFRs/CFRs) and PVC in the final product. Intel components as well as purchased components on the finished assembly meet JS-709 requirements, and the PCB / substrate meet IEC 61249-2-21 requirements. The replacement of halogenated flame retardants and/or PVC may not be better for the environment.

For benchmarking data see http://www.intel.com/performance.

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See http://www.intel.com/content/www/us/en/processors/processor-numbers.html for details.

Processors that support 64-bit computing on Intel® architecture require an Intel 64 architecture-enabled BIOS.

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