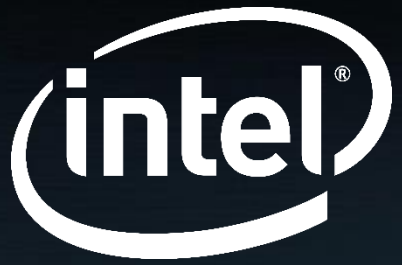

INTEL® XEON® E PROCESSORS

FOR ENTRY SERVERS AND SECURE CLOUD SERVICES

Content Revision Date: 31 October 2018

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INTEL® XEON® E PROCESSOR LANDSCAPE

MOBILE & ENTRY WORKSTATIONS

Performance and visuals for workstation professionals

ENTRY SERVERS

Support small business demands for on-premise, cloud-ready solutions

SECURE CLOUD SERVICES

Protect the most sensitive portions of a workload or service, with hardware-enhanced security

ESSENTIAL PERFORMANCE FOR ENTRY SERVER SOLUTIONS

UP TO 1.48X PERFORMANCE IMPROVEMENT 4-YEAR REFRESH[1]

UP TO 1.39X PERFORMANCE IMPROVEMENT GEN-ON-GEN[2]

UP TO 4.7 GHZ WITH INTEL® **TURBO** BOOST TECHNOLOGY 2.0

UP TO 64GB → 128GB* DDR4 **2666 MHZ**

UP TO 6 CORES

ENHANCED INTEL® SOFTWARE GUARD EXTENSIONS DELIVERS ADVANCED SECURITY CAPABILITIES

ESSENTIAL PERFORMANCE AND VISUALS WITH EXPANDABILITY, RELIABILITY, SECURITY

AVAILABLE IN SINGLE-SOCKET CONFIGURATION ONLY

*Support for up to 128GB system memory capacity will be available in 2019 through a published BIOS update. Please contact your hardware provider for availability and support.

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. Performance results are based on testing as of 10/12/2018 and may not reflect all publicly available security updates. See configuration disclosure for details. No product can be absolutely secure. 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. Please see Slide 15 for complete details on the performance claims and configurations.

DATA IS ESSENTIAL TO SMALL BUSINESS

53% OF SMALL BUSINESSES PLAN TO INCREASE TECHNOLOGY INVESTMENT+

SMALL BUSINESS SMART APPS CAN DELIVER INSIGHTS DIRECTLY FROM CUSTOMERS+

CRITICAL APPLICATIONS RUN IN-HOUSE CAN HELP MAINTAIN A COMPETITIVE ADVANTAGE+

INTEL OFFERS A PORTFOLIO OF PRODUCTS, THOUGHTFULLY DESIGNED FOR SMALL BUSINESS CUSTOMERS

AN ON-PREMISE, CLOUD-CONNECTED ENTRY SERVER, PROVIDES A POWERFUL AND FLEXIBLE RESOURCE TO A GROWING SMALL BUSINESS

UP TO 48% INTEL® XEON® E-2100 PROCESSOR PERFORMANCE IMPROVEMENT COMPARED TO A 2014 ENTRY SERVER[1]

ACCELERATE SMALL BUINSESS DATA INSIGHTS WITH INTEL® XEON® E PROCESSORS

+ Source: "SMB Group's 2017 Top 10 SMB Technology Trends." SMB Group, 2017. https://www.smb-gr.com/wp-content/uploads/2017/01/2017_top_10_final.pdf

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ENTRY SERVER SOLUTIONS START WITH INTEL® XEON® E PROCESSORS

ENHANCING PROTECTION OF SENSITIVE DATA

USED IN CONCERT
WITH EXISTING DATA-CENTRIC
INFRASTRUCTURE

INTEL® XEON® E PROCESSORS
FEATURE ADVANCED SECURITY CAPABILITIES
INTEL® SOFTWARE GUARD EXTENSIONS (INTEL® SGX)

ENHANCE AND HELP PROTECT
THE MOST SENSITIVE PORTIONS
OF A WORKLOAD OR SERVICE

Fortanix®

Fortanix provides Runtime Encryption® software to protect keys, data, and x86 applications

IBM

IBM Cloud Data Shield powered by Fortanix protects run time data at scale on Kubernetes Service

Microsoft

Azure confidential computing protects customer's most sensitive data while it's being processed

r3.

R3 Corda's approach to privacy and security shares data only with those who need to see it, enabling strict confidentiality for enterprise blockchain applications

ENHANCED SECURE CLOUD SERVICES USE INTEL® XEON® E PROCESSORS
LEARN MORE AT INTEL.COM/SGX

INTEL® XEON® E PROCESSOR FOR ENTRY SERVER SOLUTIONS

Enhanced performance, advanced security, reliability and affordability for professional-grade entry server solutions and secure cloud services.

ESSENTIAL PERFORMANCE

Up to 6 cores and 12 threads with up to 4.7 GHz Intel® Turbo Boost Technology frequency combined with up to 128GB* DDR4 ECC 2666 MHz memory support delivering rapid workload loading and processing

EXPANDED I/O

Up to 40 lanes of PCI Express 3.0 for graphics, storage and network expandability. Enjoy a faster, smoother, and amazingly responsive computing experience with Intel® Optane™ memory, a smart, adaptable system accelerator.

ADVANCED SECURITY

Enhanced Intel® Software Guard Extensions supports increased security for application code and data protection.

SERVER MANAGEMENT

Entry reliability, serviceability and availability (RAS) with Intel® Server Platform Services deliver hardware-enhanced security and remote manageability.

New Intel® Xeon® E Processor

*Support for up to 128GB system memory capacity will be available in 2019 through a published BIOS update. Please contact your hardware provider for availability and support.

INTEL® XEON® E PROCESSOR

Boost in processor speed, enhanced memory capabilities, advanced hardware-enhanced security, reliability features and affordability for professional-grade entry server solutions and secure cloud services.

- Up to 6 cores, 12 threads
- Up to 128GB* DDR4 ECC 2666 MHz memory
- Intel® Hyper-Threading Technology (Intel® HT Technology)
- Intel® Turbo Boost Technology 2.0
- Intel® Advanced Vector Extensions 2.0
- Support for LGA 1151 socket
- Up to 40 PCI Express 3.0 lanes
- Support for USB 3.1 Gen 2 (Up to 10 Gbps)
- Support for Thunderbolt™ 3.0 technology
- Intel® Server Platform Services
- Enhanced Intel® Software Guard Extensions (Intel® SGX)
- Support for Intel® Optane™ memory for 1-node HDD storage performance
- Support for 1 Gigabit Intel® Ethernet and Intel® Wireless-AC

Not a comprehensive of all features and capabilities.

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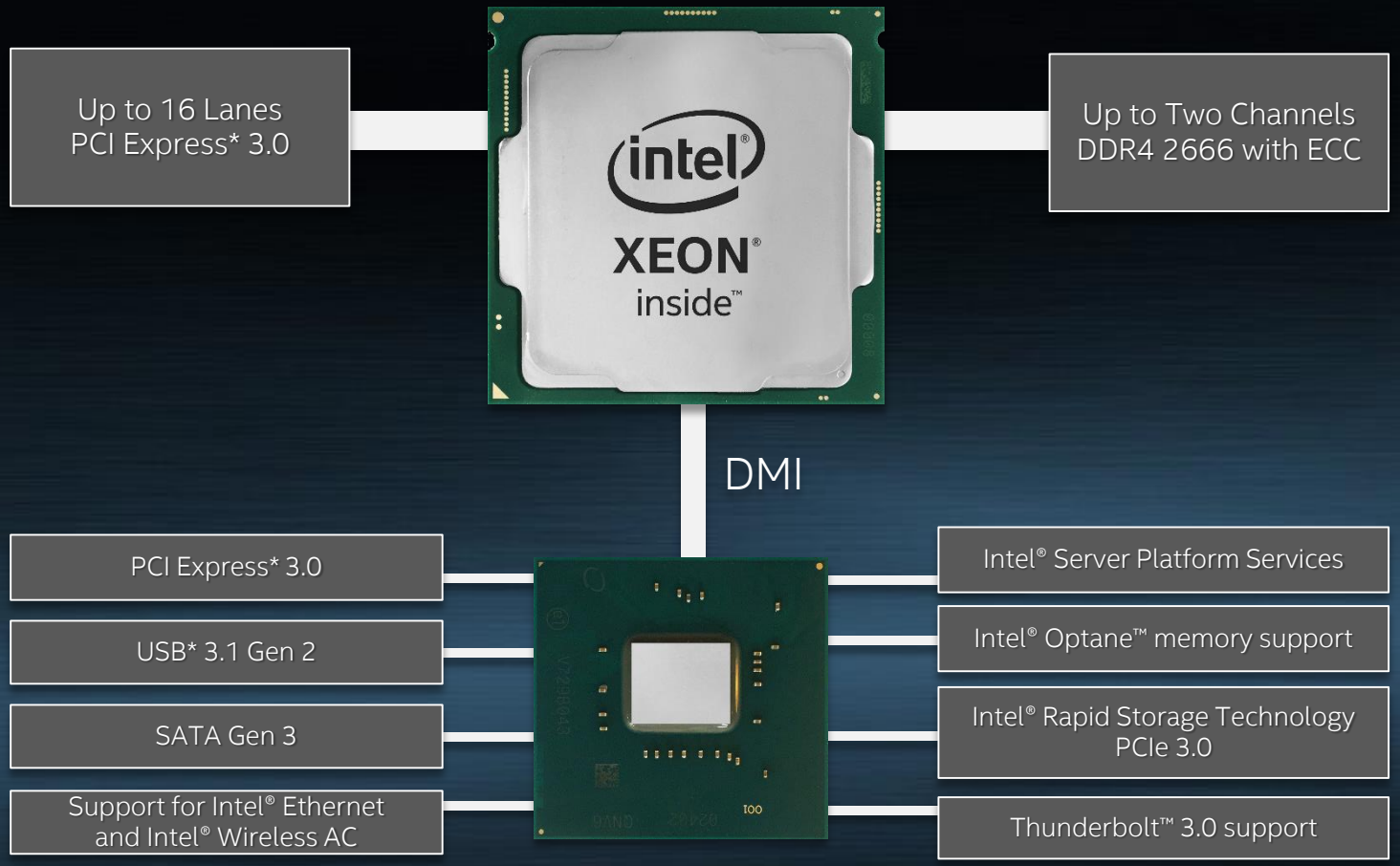
INTEL® XEON® E PROCESSORS

Essential performance for entry server solutions with advanced security technologies for secure cloud services



AVAILABLE IN SINGLE-SOCKET CONFIGURATION ONLY

Processor, chipset and diagram provided for illustration purposes only.
Diagram and table are not a comprehensive of all features and capabilities.

Maximum Core Count Supported	6
Maximum Base Frequency Supported	3.8 GHz
Maximum Intel® Turbo Boost Technology 2.0 Frequency Supported	4.7 GHz
Processor Cache Memory Support	Up to 12MB Intel® Smart Cache
Processor Performance Support	Intel® Turbo Boost 2.0 Technology, Intel® Hyper-Threading Technology (Intel® HT)
Maximum Number of Processor Sockets Supported	One Socket
Thermal Design Point (TDP)	Up to 95 Watts
Socket Type	LGA-1151 Socket
System Memory Support	2 channels of DDR4 ECC 2666 MHz 2 DPC
Maximum System Memory Supported	Up to 128GB*
Supported Chipset	Intel® C246 Series Chipset
I/O	PCI Express 3.0 – Up to 40 lanes (CPU + Chipset) USB 3.1 – Up to 6 ports 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 v12 with Intel® Active Management Technology (Intel® AMT); Intel® vPro™ Technology; and Intel® Server Platform Services
Intel® Rapid Storage Technology	Intel® Rapid Storage Technology PCIe 3.0
Processor Manufacturing Process	Intel's latest 14nm process technology

*Support for up to 128GB system memory capacity will be available in 2019 through a published BIOS update. Please contact your hardware provider for availability and support.

INTEL® XEON® E PROCESSORS

Processor Number	Base Clock Speed (GHz)	Intel® Turbo Boost Technology 2.0 Frequency (GHz)	Cores/ Threads	Intel® UHD Graphics 630	Cache (MB)	PCI Express 3.0 Lanes (CPU + Chipset)	Memory Support	Thermal Design Power (TDP)	Socket (LGA)	Recommended Customer Pricing ($ US Dollars)
Intel® Xeon® E-2186G Processor	3.8	4.7	6/12	Yes	12MB SmartCache	40	Two channels DDR4-2666	95W	1151	$450
Intel® Xeon® E-2176G Processor	3.7	4.7	6/12	Yes	12MB SmartCache	40	Two channels DDR4-2666	80W	1151	$362
Intel® Xeon® E-2174G Processor	3.8	4.7	4/8	Yes	8MB SmartCache	40	Two channels DDR4-2666	71W	1151	$328
Intel® Xeon® E-2146G Processor	3.5	4.5	6/12	Yes	12MB SmartCache	40	Two channels DDR4-2666	80W	1151	$311
Intel® Xeon® E-2144G Processor	3.6	4.5	4/8	Yes	8MB SmartCache	40	Two channels DDR4-2666	71W	1151	$272
Intel® Xeon® E-2136 Processor	3.3	4.5	6/12	No	12MB SmartCache	40	Two channels DDR4-2666	80W	1151	$284
Intel® Xeon® E-2134 Processor	3.5	4.5	4/8	No	8MB SmartCache	40	Two channels DDR4-2666	71W	1151	$250
Intel® Xeon® E-2126G Processor*	3.3	4.5	6/6	Yes	12MB SmartCache	40	Two channels DDR4-2666	80W	1151	$255
Intel® Xeon® E-2124G Processor*	3.4	4.5	4/4	Yes	8MB SmartCache	40	Two channels DDR4-2666	71W	1151	$213
Intel® Xeon® E-2124 Processor*	3.3	4.3	4/4	No	8MB SmartCache	40	Two channels DDR4-2666	71W	1151	$193

See intel.com/products/processor_number for details. *Intel® Xeon® E-2126G, E-2124G and E-2124 processors do not support Intel® Hyper-Threading Technology (Intel® HT technology).
Processor details, features, cost and availability are subject to change without notice. Please visit intel.com/xeone for the latest product information.

INTEL® XEON® E PROCESSORS

INTEL® TURBO BOOST TECHNOLOGY 2.0 FREQUENCIES (GHz)

Processor Number	Base Clock Speed (GHz)	CPU Cores	Number of Cores Running Intel® Turbo Boost Technology 2.0 (GHz)					
			1	2	3	4	5	6
Intel® Xeon® E-2186G Processor	3.8	6	4.7	4.6	4.6	4.5	4.4	4.3
Intel® Xeon® E-2176G Processor	3.7	6	4.7	4.6	4.5	4.4	4.4	4.3
Intel® Xeon® E-2174G Processor	3.8	4	4.7	4.5	4.4	4.3		
Intel® Xeon® E-2146G Processor	3.5	6	4.5	4.4	4.3	4.3	4.3	4.2
Intel® Xeon® E-2144G Processor	3.6	4	4.5	4.4	4.3	4.2		
Intel® Xeon® E-2136 Processor	3.3	6	4.5	4.4	4.3	4.3	4.3	4.2
Intel® Xeon® E-2134 Processor	3.5	4	4.5	4.4	4.3	4.2		
Intel® Xeon® E-2126G Processor*	3.3	6	4.5	4.4	4.3	4.2	4.2	4.1
Intel® Xeon® E-2124G Processor*	3.4	4	4.5	4.4	4.2	4.1		
Intel® Xeon® E-2124 Processor*	3.3	4	4.3	4.2	4.1	3.9		

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INTEL® XEON® E PROCESSORS

INTEL® UHD GRAPHICS P630 FREQUENCIES

Processor Number	CPU Cores	Base Clock Speed (GHz)	Intel® Turbo Boost Technology 2.0 Frequency (GHz)	Intel® UHD Graphics P630	
				Graphics Base Frequency (MHz)	Graphics Maximum Dynamic Frequency (GHz)
Intel® Xeon® E-2186G Processor	6	3.8	4.7	350	1.2
Intel® Xeon® E-2176G Processor	6	3.7	4.7	350	1.2
Intel® Xeon® E-2174G Processor	4	3.8	4.7	350	1.2
Intel® Xeon® E-2146G Processor	6	3.5	4.5	350	1.15
Intel® Xeon® E-2144G Processor	4	3.6	4.5	350	1.15
Intel® Xeon® E-2126G Processor	6	3.3	4.5	350	1.15
Intel® Xeon® E-2124G Processor	4	3.4	4.5	350	1.15

See intel.com/products/processor_number for details.
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1: Up to a 48% performance improvement with an Intel® Xeon® E-2100 processor-based entry server. Config: Tested at Intel Corp as of 10/12/2018. 1x Intel® Xeon® E-2124G Processor, Platform: Moss Beach, 4 x 8GB DDR4 2666 ECC(32GB 2666MHz) ,OS: Ubuntu 18.04.1 LTS (Kernel 4.15.0-29-generic) ,Benchmark: SPECrate*2017_fp_base (Estimated), Compiler: ICC 18.0.2 20180210,BIOS: CNLSE2R1.R00.X138.B81.1809120626, uCode:0x96, Storage: SSD S3710 Series 800GB, Score: 30.6 (Estimated) compared to 1x Intel® Xeon® E3-1226v3 Processor Platform: S1200RP, 4 x 8GB DDR3 1600MHz (32GB 1600MHz) ,OS: Ubuntu 18.04.1 LTS (Kernel 4.15.0-29-generic), Benchmark: SPECrate*2017_fp_base (Estimated), Compiler: 18.0.2 20180210,BIOS: S1200RP.86B.03.04.0007.082920181422, uCode:0x25, Storage: Intel® SSD S3710 Series 800GB, Score: 20.6 (Estimated)

2: Up to a 39% performance improvement with an Intel® Xeon® E-2100 processor-based entry server. Config: Tested at Intel Corp as of 10/12/2018. 1x Intel® Xeon® E-2186G Processor, Platform: Moss Beach, 4 x 8GB DDR4 2666 ECC(32GB 2666MHz) ,OS: Ubuntu 18.04.1 LTS (Kernel 4.15.0-29-generic) ,Benchmark: SPECrate*2017_int_base (Estimated), Compiler: ICC 18.0.2 20180210,BIOS: CNLSE2R1.R00.X138.B81.1809120626, uCode:0x96, Storage: SSD S3710 Series 800GB, Score: 41.4 (Estimated) compared to 1x Intel® Xeon® E3-1285v6 Processor Platform: S1200RP, 4 x 8GB DDR4 2400 (32GB 2400MHz) ,OS: Ubuntu 18.04.1 LTS (Kernel 4.15.0-29-generic), Benchmark: SPECrate*2017_int_base (Estimated), Compiler: 18.0.2 20180210,BIOS: S1200SP.86B.03.01.0038.062620180344, uCode:0x8e, Storage: SSD S3710 Series 800GB, Score: 29.7 (Estimated)

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