



PRODUCT BRIEF

# INTEL® XEON® PROCESSOR E3-1200 V4 PRODUCT FAMILY

The New Data Center Graphics Powerhouse

Visual content is increasing in our digital world. According to a 2014 report by Sandvine, video delivery will account for 79 percent of Internet traffic by 2018.<sup>1</sup> Entertainment and social networking are driving this growth, yet data center graphics are also playing an increasing role in business, changing the way products are designed and sold, data is analyzed, and information is shared. Engineering work once done only on a desktop workstation is now being moved to the data center with complex 3D applications being delivered remotely to end devices. This enables better collaboration and offers increased security as data is stored in secure data centers.

This transition is impacting both the volume and characteristics of data center workloads. There is a growing need to deliver high quality video and complex 3D applications faster and at lower total cost.

Enter the Intel® Xeon® processor E3-1200 v4 product family. With up to 1.8x the overall graphics performance of the previous-generation,<sup>2</sup> these processors can deliver high-quality visual experiences with up to 1.4x more video transcoding performance per node and up to 4,300 simultaneous HD video streams per rack than the previous generation Intel® Xeon® processor E3-1200 v3 product family.<sup>3</sup>

The tight integration of compute and graphics in the same processor increases performance and density, while reducing power consumption and data movement. The result is another leap forward in graphics capability that can help you deliver better user experiences at lower cost for graphics-intensive workloads.

## Data Center Graphics

### Great HD Video Transcode Performance

Media service providers require transcode solutions with cost-efficient, dense designs and optimized performance to support real-time, multi-stream delivery of HD video. A data center graphics server based on the Intel Xeon processor E3-1200 v4 product family does just that.

These processors can support up to 1.4x more transcodes per processor than the previous generation Intel® Xeon® processor E3-1200 v3 family.<sup>4</sup> You can deliver high-quality content on demand—as well as live broadcasting and video-conferencing—to more users with a smaller data center footprint and lower power consumption.

For developers of video transcoding software, Intel® Media Server Studio gives you state-of-the-art encoding features for tailoring image quality versus performance, and for simplifying media application development. This comprehensive suite of development tools supports both Linux\* and Windows.\* It also provides access to the Intel Iris Pro graphics and Intel® Quick Sync Video media accelerators for high-speed media transcode.

[Learn more about this smart investment in data center graphics](#)



## Remote Workstations

### Rich Applications for Demanding Users

Design and manufacturing companies need simpler and more secure ways to share complex 3D application data across global design, sales, and service teams. Remote workstations provide a solution: Keep your critical design data in a centralized data center and deliver rich, responsive, 3D applications, such as CAD design applications, over local and wide-area networks to any user on any device at any location.

With the Intel Xeon processor E3-1200 v4 family, you can provide workstation-class visual experiences cost effectively to hundreds or even thousands of users. Intel® Graphics Virtualization Technologies (GVT) allow you to dedicate the resources of each processor to a single designer or engineer, or share them among hundreds of less demanding users.

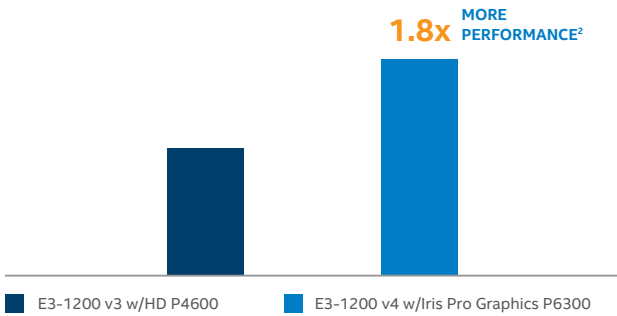
[Learn more about this smart investment in productivity](#)

## Graphics Performance

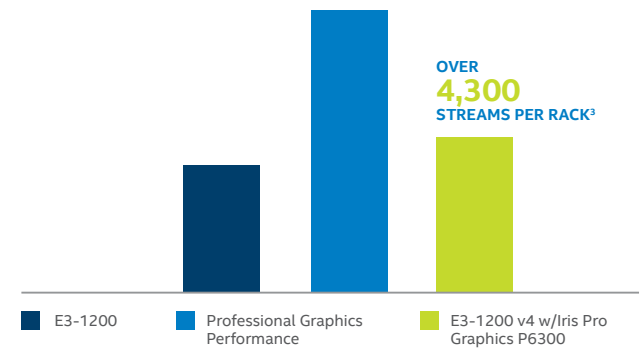
### Intel® Xeon® Processor E3 Family with Intel® Iris™ Pro Graphics P6300

Generational Performance Gains

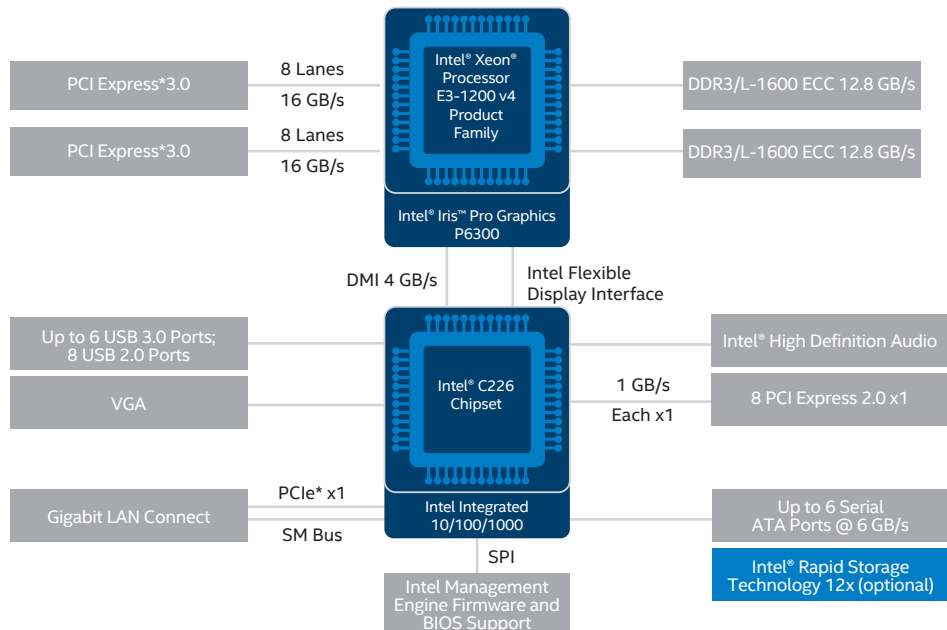
Graphics Performance



Video Stream Performance



## Typical Intel® Xeon® Processor E3 v4 Platform



Features may vary depending on processor and chipset SKUs.

**INTEL® XEON® PROCESSOR E3-1200 V4 PRODUCT FAMILY OVERVIEW**

<b>FEATURES</b>	<b>BENEFITS</b>
Intel® Xeon® Processor E3-1200 v4 product family	Performance optimized for graphics intensive workloads <ul style="list-style-type: none"> <li>• Integrated graphics acceleration with Intel® Iris™ Pro Graphics P6300</li> </ul>
Intel 14 nm Technology	Enhanced energy efficiency and performance <ul style="list-style-type: none"> <li>• Intel's industry-leading 14 nm transistor technology</li> </ul>
<b>Responsive Performance for Graphics Workloads</b>	
Intel® Iris™ Pro graphics P6300 with Integrated on-package eDRAM memory	Accelerates video transcoding and remote workstation workloads <ul style="list-style-type: none"> <li>• Up to 1.8x the graphics performance of the prior generation<sup>2</sup></li> <li>• 16 GB of addressable video memory</li> <li>• 51 GB/s bandwidth between eDRAM and system memory</li> </ul>
Intel® Quick Sync Video	Dedicated, fixed function video processing makes video transcoding faster and easier
Intel® Advanced Vector Extensions 2 (Intel® AVX2)	Provides significant performance benefit for developers of imaging, video editing, modeling, and simulation applications
Intel® Turbo Boost Technology 2.0	Higher performance when you need it most <ul style="list-style-type: none"> <li>• Takes advantage of power and thermal headroom to accelerate processor and graphics performance during peak loads</li> </ul>
Intel® Hyper-Threading Technology (Intel® HT Technology)	Faster performance for many demanding business applications <ul style="list-style-type: none"> <li>• Thread-level parallelism benefits multi-threaded and concurrently running applications</li> </ul>
PCI Express* 3.0 ports	Extra capacity and flexibility for storage and networking connections <ul style="list-style-type: none"> <li>• Up to double the I/O bandwidth of prior-generation PCIe* 2.0<sup>5</sup></li> </ul>
Serial ATA 3.0 (SATA 3.0)	Faster data access, system startups, and application load times <ul style="list-style-type: none"> <li>• Doubles data throughput versus previous generation for faster hard drive performance<sup>6</sup></li> </ul>
Intel® Virtualization Technology (Intel® VT) for IA-32 and Intel® 64 (Intel® VT-x)	Faster performance for core virtualization processes <ul style="list-style-type: none"> <li>• Helps to improve application performance, live migration, provisioning dynamic load balancing and disaster recovery</li> </ul>
Intel® Virtualization Technology for Directed I/O (Intel® VT-d)	Built-in hardware support for I/O virtualization <ul style="list-style-type: none"> <li>• Helps to improve I/O performance, increase system reliability, and strengthen memory protection</li> </ul>
Intel® Graphics Virtualization Technologies (Intel® GVT)	Built-in hardware support for graphics virtualization <ul style="list-style-type: none"> <li>• Enables dedicated or shared access to Intel® Iris™ Pro graphics P6300 for remote workstation users</li> </ul>
<b>Reliability and Security to Protect Your Business</b>	
Support for error-correcting code (ECC) memory	Enables better data integrity and system reliability through automatic data correction
Intel Rapid Storage Technology enterprise 3.x (Intel RSTe) for servers	Helps to provide uninterrupted operation and quick data recovery in the event of a hard drive failure <ul style="list-style-type: none"> <li>• Supports latest server operating systems (OSs), including Red Hat* and SUSE* Linux*</li> </ul>
Intel Data Protection Technology with Advanced Encryption Standard New Instructions (AES-NI)	Accelerates and strengthens encryption so you can implement pervasive data protection, without slowing application response times
Intel Platform Protection Technology with BIOS Guard	Helps protect your system from malware and denial-of-service (DoS) attacks
Intel Platform Protection Technology with OS Guard	Improves security by strengthening malware protection <ul style="list-style-type: none"> <li>• Provides hardware-based protection for your server operating system</li> </ul>
Intel Platform Protection Technology with Trusted Execution Technology (TXT)	Protects your business by increasing security against many digital threats <ul style="list-style-type: none"> <li>• Helps to ensure that they system launches into a known good state</li> </ul>
USB Blocker (for servers)	Improves security and productivity <ul style="list-style-type: none"> <li>• Helps prevent malware and unauthorized data transfers by blocking classes of devices, enforcing company policies, and providing the flexibility to whitelist specific devices</li> </ul>
<b>Energy Efficiency and Manageability</b>	
Range of CPU options	Enables matching of performance versus energy efficiency to maximize total value <ul style="list-style-type: none"> <li>• Choice of 95W/65W/47W/35W processor SKUs</li> </ul>
Intel® Node Manager (Intel® NM)	Allows servers to host more and heavier workloads while guarding against server overheating <ul style="list-style-type: none"> <li>• Enables dynamic monitoring and limiting of server power consumption</li> </ul>

**INTEL® XEON® PROCESSOR E3-1200 V4 PRODUCT FAMILY SKU LIST**

Processor Number <sup>A</sup>	CPU Cores	Graphics Core	Speed	L3 Cache	Intel® Turbo Boost Technology 2.0	eDRAM	Intel® Iris™ Pro Graphics P6300**	Power
<b>Data Center Graphics SKUs</b>								
Intel® Xeon® processor E3-1285 v4	4	3	3.50 GHz	6 MB	●	128M	●	95 W
Intel Xeon processor E3-1285L v4	4	3	3.40 GHz	6 MB	●	128M	●	65 W
Intel Xeon processor E3-1265L v4	4	3	2.30 GHz	6 MB	●	128M	●	35 W
Intel Xeon processor E3-1278L v4	4	3	2.0 GHz	6 MB	●	128M	●	47 W
Intel Xeon processor E3-1258L v4	4	2	1.8 GHz	6 MB	●	–	–	47 W

\*\*Intel® Iris™ Pro Graphics P6300 requires the latest-version Intel® Graphics Driver, Intel C226 chipset, and Intel® Xeon® processor E3-1285 v4, Intel Xeon processor E3-1285L v4, Intel Xeon processor E3-1278L v4, or Intel Xeon processor E3-1265 v4 to enable data center graphics application optimizations.

To learn more about Intel Xeon processors for data center graphics, visit [intel.com/datacentergraphics](http://intel.com/datacentergraphics).

**INTEL® C226 SERIES CHIPSET**

Chipset	Intel® Iris™ Pro Graphics	Intel® ATM 9.0	Intel® Node Manager	PCI EXPRESS* PORTS				SATA PORTS		Intel® Rapid Storage Technology	LAN
				Gen 3 PCH	Gen 2 PCH	USB 3.0 Ports	USB 2.0 Ports	6 GB/s	3 GB/s		
Intel® C226	●	●	●	16	8*	6*	8	6*	●	●	Integrated MAC

+ Port counts are dependent on how I/O flexibility is configured between PCIe\*, SATA 6G, and USB 3.0 for a total of 18 ports. The Intel C226 Series Chipset will support SATA 1.5/3/6 GB/s. Intel Anti-Theft Technology is not supported on any SKU of the Intel C220 series chipset.

For more information on the Intel Xeon processor E3-1200 v4 product family, visit [intel.com/xeon3](http://intel.com/xeon3)

<sup>A</sup> Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families..

<sup>1</sup> Source: Sandvine, 2014

<sup>2</sup> Up to 1.8x better performance on 3DMark\* 11. Baseline configuration: Intel® Hermosa Beach 2 CRB platform with Intel® Xeon® processor E3-1286v3, 32GB memory (4x 8GB DDR3-1333 UDIMM), 64GB SATA SSD, Intel® Turbo Boost enabled, HT enabled, Red Hat Enterprise Linux\* 6.3, Oracle\* Java\* Hotspot Java 1.7.0\_17. 3DMark\* Score 1524, Source: Internal Intel measurements as of April 2014.

Intel® Xeon® processor workstation platform (Intel® Server Board S1200RP) with one Intel® Xeon® processor E3-1285 v4 (quad-core, 3.5GHz, 6M cache) BIOS S1200RP.8 6B.03.01.0002.041520151123, Intel® Hyper-Threading Technology best configuration, 32GB memory (4x8GB DDR3-1600 ECC UDIMM), Intel® Iris™ Pro graphics P6300 with driver 10.18.10.3980, Intel SSDSC2BB300G4, Microsoft Windows 8.1\*. 3DMark\* Score 2881, Source: Intel internal testing as of June 2015.

<sup>3</sup> Up to 4300 streams per rack, or 1.4x vs previous generation.

Rack density based on the Supermicro\* SuperServer 5038ML-H24TRF 3U chassis with 12 sleds. Each sled containing 2 Intel® Xeon® E3-1200 v3 or v4 processors for a total of 24 E3-1200 v3 or v4 processors per 3U chassis. Assuming 2U for top of rack switches, 13 3U chassis could fit in each rack, giving 24\*13=312 sockets in a 42U rack. 312\*10=3120 streams E3-1286L v3; 312\*14=4368 streams on E3-1285L v4

<sup>4</sup> Up to 1.4x transcoding performance with Intel® Xeon® E3-1285L v4 when compared with Intel® Xeon® E3-1286L v3 on Intel Media Server Studio 2015 R3 Essentials Edition. Number of real time threads transcoded simultaneously: 10 on E3-1286L v3, 14 on E3-1285L v4, using 1080p30 20Mbps streams. Baseline configuration: Intel Rainbow Pass SR1200V3RP platform with Intel® Xeon® E3-1285L v4 (65W, 4C, 3.4GHz, Intel® Iris Pro Graphics P6300) or Intel® Xeon® Processor E3-1286L v3 (65W, 4C, 3.2GHz, Intel® HD Graphics P4700), 32 GB (4x8GB DDR3-1600MHz UDIMM), 160GB 7200 SATA HDD, Turbo Boost Enabled, HT Enabled, Windows Server 2012 R2, Intel Media Server Studio 2015 R3 Essentials Edition, Multi Transcoding Sample Version 6.0.0.36, Intel graphics driver pGFX 10.18.14.4172, BIOS S1200RP.86B.03.01.002. Source: Intel internal measurements as of May 2015

<sup>5</sup> Results have been estimated based on internal Intel analysis and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance.

<sup>6</sup> The SATA 3.x specification enables double the data rate (from 3 GB/s to 6 GB/s) of that enabled by the SATA 2.x specification. Source: [sata-io.org/technology/6Gbdetails.asp](http://sata-io.org/technology/6Gbdetails.asp)

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