



# Accelerate Your Ability to Create, Test, and Optimize Your Ideas

## Intel® Xeon® Processor-based Workstations

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Choosing a workstation that's up to your job demands is a smart investment. Engineers, designers, researchers, financial analysts, and other power users depend on their workstations more than any other single tool to support their creative efforts. A sufficiently powerful system is essential to maximize their productivity and to help avoid frustrating delays that could stall or even derail their work.

### Which Workstation Best Meets Your Needs?

Workstations are purpose-built systems that offer enhanced reliability, stability, and performance. Choose from a range of workstation solutions, each designed for a certain user level, from entry to expert.

Most workers running standard office applications will get all the performance they need from their business PCs. But, for more demanding applications, nothing beats the power, productivity and satisfaction of a workstation based on the Intel® Xeon® processor product family:

**The Intel® Xeon® processor E5-2600<sup>1</sup> v4** product family-based expert workstation is designed with the most compute capacity of any Intel® dual-processor-based workstation. It powers the design suites that let you seamlessly combine creation with analysis and simulation. Dual-processor architecture also doubles the processor infrastructure, including memory and memory controllers. This design enables "mega-tasking" for fast, efficient interaction with models while concurrently executing simulations, renderings, ray tracing, and modeling on the same system.

**The Intel® Xeon® processor E5-1600<sup>1</sup> v4** product family-based professional workstation is ideal for demanding workloads and efficient multitasking. With greater compute and memory capacity than its previous generation of single-processor-based workstations, the Intel Xeon processor E5-1600 v4 product family offers excellent performance for advanced model generation and complex applications. The processor also features Intel® Turbo Boost Max Technology 3.0 providing an extra performance boost to frequency-bound applications

**The Intel® Xeon® processor E3-1200<sup>1</sup> v5 (for desk-side) and Intel® Xeon® processor E3-1500M v5 (for mobile)** product family-based entry-level systems bring workstation performance to designers, engineers, and others who until now might not have experienced this level of speed and capacity. With integrated Intel® Iris Pro Graphics 580<sup>2</sup> (E3-1500M v5) Intel® HD Graphics P530<sup>2</sup> (E3-1200 v5) entry workstations provide the visual performance and quality demanded by professional CAD and media/entertainment applications. This new processor also includes error-correcting code (ECC) technology for improved data integrity and uptime.

Now, all of these product families feature Intel® vPro™ technology for secure manageability in your workstation.

## Protect Your Essential Work with ECC Memory

Roughly one in three computers will experience a memory error. And, according to Lambda Diode, a computer without ECC RAM has up to a 96 percent chance of experiencing a bit error in three days.<sup>3</sup> The impact could be hardly noticeable – an error in unused memory or an odd pixel color – or it could be catastrophic, resulting in irretrievable data, and hours or days of recreating lost work. For serious professionals whose livelihood depends on data integrity, ECC RAM isn't optional – it's essential.



## Key Technologies Set Workstations Apart

An assortment of Intel Xeon processor-based technologies can help move your data faster than ever before. They include:

**Intel® Advanced Vector Extension 2.0 (Intel® AVX 2.0)** supports wider vector units and new instructions to perform more work per clock cycle.

**Intel® Hyper-Threading Technology** doubles the number of execution threads to increase processing efficiency and overall performance for complex workloads including financial analysis such as Monte Carlo\* simulations, ray tracing and rendering, and digital prototyping.

### PCI Express\* 3.0 Interface

Offers up to 8GT/S for fast access to peripheral devices and networking up to 40 lanes<sup>5</sup>. PCI Express ports can be configured as 1x16, 2x8, or 1x8 and 2x4 depending on the motherboard designs.

**Intel® Turbo Boost Max Technology 3.0 (Intel® Xeon® processor E5-1600 only)** identifies the fastest core on the processor die to provide improved single threaded performance. The driver provided along with the feature allows end users to direct workloads to the fastest core by setting priority to preferred applications<sup>1</sup>.

**Integrated Intel® Graphics (Intel® Xeon® processor E3 v5 family only)** provides graphics built right in to the processor, bringing stunning visuals to thinner and lighter portable devices like mobile workstations and small form factor workstations.

**Intel® vPro™ Technology** enables organizations to efficiently and securely manage their workstation client environment the same way they manage business client desktop solutions. Intel vPro technology protects workstation assets through hardware-enhanced identity protection, theft protection, and execution protection.

## Matching Your Needs to the Right Workstation

••• Highly recommended •• Recommended • Acceptable

WORKSTATION	EXPERT (2S)	PROFESSIONAL (1S)	ENTRY (1S)
<b>Processor Options<sup>1</sup></b>	<b>Intel® Xeon® Processor E5-2600W v4 Product Family</b>	<b>Intel® Xeon® Processor E5-1600 v4 Product Family</b>	<b>Intel® Xeon® Processor E3 v5 Product Family</b>
<b>Number of Processors</b>	Up to 2	1	1
<b>Processor-based Graphics</b>	N/A	N/A	Yes
<b>Maximum Cores</b>	12	8	4
<b>Maximum Frequency</b>	3.0 GHz	3.7 GHz @ 4 core	3.6 GHz
<b>Maximum Memory Speed</b>	DDR4-2400	DDR4-2400	DDR4-2133
<b>Advanced Business &amp; Finance</b>	•••	••	••
<b>Risk Analytics</b>	•••	••	••
<b>Trading Stations</b>	•••	••	••
<b>Final or Detailed Design</b>	•••	••	••
<b>Simulation-based Design</b>	•••	••	Not Recommended
<b>Digital Prototyping</b>	•••	••	Not Recommended
<b>Large Assemblies</b>	•••	••	Not Recommended
<b>Small Assemblies</b>	•	••	•••
<b>Large-scale Non-linear Editing</b>	•••	•	Not Recommended
<b>Ray Tracing and Rendering</b>	•••	•	Not Recommended
<b>Photorealistic Imaging</b>	•••	•	Not Recommended
<b>Electronic Design and Analysis</b>	•••	••	Not Recommended
<b>Reservoir Modeling</b>	•••	•	Not Recommended
<b>Seismic Processing</b>	•••	•	Not Recommended
<b>Computation Chemistry</b>	•••	•	Not Recommended
<b>Surveillance and Image Processing</b>	•••	••	Not Recommended

## Intel® Xeon® Processors for Workstations

PROCESSOR NUMBER <sup>1</sup>	Base Clock Speed (GHz)	Turbo Boost Frequency (GHz)	Cores/Threads	Cache	Memory Support	TDP
Intel® Xeon® Processor E5-2687W v4	3.0	Up to 3.5	12/24	30	4 channels DDR4-2400	160
Intel® Xeon® Processor E5-1680 v4	3.4	Up to 4.0	8/16	20	4 channels DDR4-2400	140
Intel® Xeon® Processor E5-1660 v4	3.2	Up to 3.8	8/16	20	4 channels DDR4-2400	140
Intel® Xeon® Processor E5-1650 v4	3.6	Up to 4.0	6/12	15	4 channels DDR4-2400	140
Intel® Xeon® Processor E5-1630 v4	3.7	Up to 4.0	4/8	10	4 channels DDR4-2400	140
Intel® Xeon® Processor E5-1620 v4	3.5	Up to 3.8	4/8	10	4 channels DDR4-2400	140
Intel® Xeon® Processor E3-1575M v5	3.0	Up to 3.9	4/8	8	2 channels DDR4-2133	45
Intel® Xeon® Processor E3-1545M v5	2.9	Up to 3.8	4/8	8	2 channels DDR4-2133	45
Intel® Xeon® Processor E3-1535M v5	2.9	Up to 3.8	4/8	8	2 channels DDR4-2133	45
Intel® Xeon® Processor E3-1515M v5	2.8	Up to 3.7	4/8	8	2 channels DDR4-2133	45
Intel® Xeon® Processor E3-1505M v5	2.8	Up to 3.7	4/8	8	2 channels DDR4-2133	45
Intel® Xeon® Processor E3-1275 v5	3.6	Up to 4.0	4/8	8	2 channels DDR4-2133	80
Intel® Xeon® Processor E3-1245 v5	3.5	Up to 3.9	4/8	8	2 channels DDR4-2133	80
Intel® Xeon® Processor E3-1225 v4	3.3	Up to 3.7	4/8	8	2 channels DDR4-2133	80
Intel® Xeon® Processor E3-1235L v5	2.0	Up to 3.0	4/8	8	2 channels DDR4-2133	25

## Conclusion

Choosing a workstation that's optimized for your job is a wise investment. A balanced workstation is essential to maximizing your productivity.

### **Intel Xeon Processor E5-2600 v4 Product Family – Powerful Ideas Deserve Powerful Compute**

Workstations using the Intel Xeon processor E5-2600 v4 product family are designed and engineered for demanding multi-tasking and parallel workflows. They are not only certified and tested with professional software titles, they are optimized to deliver the compute, memory and I/O performance demanded by these applications.

### **Intel Xeon Processor E5-1600 v4 Product Family – Adding Fuel for More Innovation**

Workstations using the Intel Xeon processor E5-1600 v4 product family represent our most powerful single processor for professional workstation users. Unlike the Intel Xeon processor E3-1200 v5 product family, this processor is modeled after the Intel Xeon processor E5-2600 v4 product family and delivers richer I/O and expanded memory capability, making it possible to design, measure, analyze, and improve more designs than when using entry-level processors.

### **Intel Xeon Processor E3-1500M and Intel Xeon Processor E3-1200 v5 Product Families – Transforming the Technical Desktop**

Workstations using the Intel Xeon processor E3 v5 product family with Intel Iris Pro Graphics P580 and Intel HD Graphics P530 provide technical users an application-optimized platform to view and interact with the complex data they need in order to make the right product decisions – from planning and development through manufacturing and support data.

## Learn More

Choosing the right workstation is a smart investment that will accelerate your ability to create, test, and optimize your ideas. Visit [www.intel.com/workstation](http://www.intel.com/workstation) for more information and resources.

<sup>1</sup> Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See [www.intel.com/products/processor\\_number](http://www.intel.com/products/processor_number) for details.

<sup>2</sup> Intel Iris Pro Graphics P580 and Intel HD Graphics P530 only available on select models of the Intel® Xeon® processor E3-1200 v5 product family. For more information, visit [www.intel.com/workstation](http://www.intel.com/workstation).

<sup>3</sup> Source: <http://lambda-diode.com/opinion/ecc-memory>.

<sup>4</sup> 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.

<sup>5</sup> Number of PCIe lanes is dependent on processor family. See [www.intel.com/products/processor\\_number](http://www.intel.com/products/processor_number) for details.

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