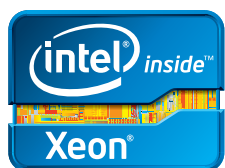




# Workstation or PC: How To Decide What Type of System Is Right For You

## Comparison Brief

Intel® Xeon® Processor  
E3 Family



From Computer Aided Design (CAD) to number-crunching to video editing, compared to a desktop PC an entry-level workstation will provide intelligent performance for many applications. Still, not everyone needs a workstation. A typical office worker running standard office applications such as word processing, e-mail, and presentation software will get all the performance needed from a standard business PC.

However, designers, engineers, financial analysts, and researchers running more demanding applications – rendering complex graphics, digital content creation, and financial analysis and computations – can expect to be more productive, creative, and satisfied using a workstation. Even office “power users” will most likely find that an entry-level workstation is a smart investment that enables new capabilities that can help increase productivity, improve reliability, and limit downtime.

### The Workstation Advantage

Workstations are purpose built for high performance and heavy workloads. They are also designed so you can tailor the system, and the price, to match your application requirements in five key ways:

- **Faster Rendering for Complex Graphics** – A workstation is designed to support one or more professional-grade graphics cards, while a PC typically supports only consumer-grade cards. Anyone working with detailed 2D or 3D graphics can expect to see dramatic improvements in system responsiveness using a workstation, even if the two systems are otherwise identical. In addition, entry systems based on the new Intel® Xeon® processor E3 family with Intel® HD Graphics P3000 present users with optimized graphics built in that reduce the need for third-party graphic cards. It delivers the graphics performance and quality demanded by many CAD, media, and entertainment applications.



- **Processing Power for Compute-intensive Applications** – A workstation can be configured with more processors than a PC, and with more powerful processors. Demanding applications, such as computer aided design, animation and digital content creation, will respond more quickly, and multiple applications can be run simultaneously without performance loss. This can make the creative process more fluid and provide designers, engineers, analysts and scientists with faster access to needed information. Even entry-level workstations based on the new Intel Xeon processor E3 family deliver the performance and capacity for basic interactive design and digital content creation, as well as moderate rendering and ray-tracing.

- **Memory for Large Tasks** – An entry-level work-station can typically be configured with about twice the memory of a desktop PC (or with the same amount of memory using smaller, lower cost DIMMs). Artists and designers can create on larger canvases and engineers can work on larger assemblies. This can improve workflows in fundamental ways. It can also allow designers to identify interferences and other design flaws earlier in the process, when they are far easier and less costly to fix. Plus, all Intel® Xeon® processor-based workstations support Error-Correcting Code Memory (ECC Memory), which automatically detects and corrects up to 99.9998 percent of memory errors to improve data integrity and system uptime. Since the probability of data errors increases with the size of memory footprints, this is an essential feature for anyone working with large and complex designs.

- **Large Hard Drives for Massive Jobs** – Workstations are designed to support up to terabytes of internal storage, so jobs of almost any size can be stored on the system. Workstations based on the Intel Xeon processor E3 family come with Serial ATA (SATA) 3.0 technology that doubles the data transfer rate to 6.0 Gbps and delivers a number of improved features while remaining completely backward-compatible






### Expert Workbench with Near-Supercomputing Performance

If you need to run multiple simulations per day without slowing their interactive tasks, so you can play “what if?” with unprecedented speed and flexibility, consider an expert workbench powered by two Intel® Xeon® processors 5600 series. With up to 12 computational cores, 24 threads and memory configurations as large as 192 GB,<sup>1</sup> these powerful systems enable digital prototyping and analysis-driven design right on the desktop.

with existing drives, controllers, connectors, and cables. Intel Xeon processor E3-based systems with affordable Intel® Solid State Drives (SSD) installed use less power than those with hard disk drives, and deliver data faster data and higher reliability.

- **Reliability and Less Downtime** – Now available on Intel Xeon processor E3 family entry workstations and 2nd generation Intel® Core™ i7 vPro™ processor-based mobile workstation, Intel® vPro™ Technology adapts to the needs of your work style and your company's business with smart security, cost-saving manageability, and intelligent performance. Intel vPro Technology is designed to keep your productivity high and downtime and desk-side visits to a minimum.<sup>2</sup> Remote monitoring, diagnosis, and repair of your workstation can be performed – even if the system is shut down or the OS is unresponsive.<sup>3</sup> And hardware-enabled KVM Remote Control (keyboard, video, mouse) capability means your IT support staff can “see” what’s going on with your system even if you have the dreaded blue-screen.<sup>4</sup>

## Matching Your Needs to the Right Workstation

Computing System	Business Desktop	Mobile Workstation	Entry Workstation	Essential Workstation	Expert Workbench
Processor Options	 2nd Gen Intel® Core™ i5 vPro™ Processor Family	 2nd Gen Intel® Core™ i7 vPro™ Processor Family	 Intel® Xeon® Processor E3 Family	 Intel® Xeon® Processor 3600 Series	 Two Intel® Xeon® Processors 5600 Series
Graphics Adapter	Integrated Intel® HD graphics optimized for business applications	Supports up to 1 discrete professional graphics adapter	Optimized Intel® HD Graphics P3000 built in	Supports up to 2 discrete professional graphics adapters	Supports up to 2 discrete professional graphics adapters
Memory Support	Up to 16 GB non-ECC	Up to 8 GB non-ECC	Up to 32 GB with ECC	Up to 48 GB with ECC	Up to 192 GB with ECC¹
Application					
Business Applications (Typical User)	●	●●	●●	●●	●●
Business Applications (Power User)	○	●	●	●	●●
2D Design	○	●	●	●	●●
3D Design	○	●	●	●	●●
Model Generation	○	●	●	●	●●
Large Assemblies	○	○	○	○	●
Analysis-driven Design	○	○	○	○	●
Rapid Prototyping	○	○	○	○	●

●● Performance headroom for growth and innovation     
 ● Ideal system     
 ○ Not recommended

## Choosing the Right System

Ideally, you should always choose the most affordable computing system that will fully meet your needs. If you choose an overly powerful system, you will pay more than you should. If you choose a system that is not powerful enough, you will limit the productivity, efficiency, creativity and satisfaction of you or your employees.

Which system is right for you? See the table, "Matching Your Needs to the Right Workstation." If you're still not sure, test drive an Intel® processor-based workstation and compare performance and price with that of a business desktop. You'll most likely be amazed at just how much extra performance you can get for a small additional cost.

### Mobile Workstation for Creativity On-the-Go

Sometimes you need to be onsite and collaborate closely with your customers. Mobile workstations based on 2nd generation Intel® Core™ i7 vPro™ processors deliver performance nearly equal to the entry workstations, so you can design with your customer, not just for your customer. These powerful laptops include the built-in security and manageability features of Intel® vPro™ Technology that help keep your system up and on the go.

For more information on Intel processor-based workstations, visit [www.intel.com/go/workstation](http://www.intel.com/go/workstation)

<sup>1</sup> With 16 GB DIMMS. Supports up to 96 GB with 8 GB DIMMS under current design.

<sup>2</sup> Intel® vPro™ Technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software, and IT environment. To learn more visit: <http://www.intel.com/technology/vpro/>.

<sup>3</sup> Requires activation and a system with a corporate network connection, an Intel® AMT-enabled chipset, network hardware, and software. For notebooks, Intel AMT may be unavailable or limited over a host OS-based VPN, when connecting wirelessly, on battery power, sleeping, hibernating, or powered off. Results dependent upon hardware, setup, and configuration. For more information, visit <http://www.intel.com/technology/platform-technology/intel-amt>.

<sup>4</sup> KVM Remote Control (Keyboard Video Mouse) is only available with select Intel® vPro™ Technology based processors with Intel® Active Management technology activated and configured and with integrated graphics active. Discrete graphics are not supported.

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