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Maximize your productivity with professional workstations

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The Right Tool for the Job

Workstation-grade PCs promise more speed, greater power, and enhanced productivity. Do CAD managers agree?

Editor's note: *Through a sponsorship by Dell and Intel, Cadalyst editors bring you this feature, part of a special series of articles designed to educate CAD users and managers about the benefits and realities of professional workstations. Find even more information at the* ***CADspeed blog****.*

By Cyrena Respini-Irwin

Whether you use Dassault Systemes SolidWorks, Siemens Solid Edge, PTC Creo, or another CAD package, you know that 3D design software is power-hungry and demanding; you can't run it on just any old machine you happen to have lying around. To produce increasingly complex designs and visualizations, you need hardware that can handle your software and not slow you down. Does that mean you need a workstation?

You've likely heard a variety of facts and opinions about workstations — especially regarding how they affect software performance, and whether they merit the investment required. Users, vendors, and even budget-conscious members of upper management all have their own viewpoints, and the cacophony can be confusing. To provide another perspective, two veteran CAD managers offered to share their experiences and advice for supporting CAD software with professional hardware.

Curt Moreno is a CAD manager in a 130-person firm, where he oversees the requisition of new CAD software and hardware. His group transitioned from standard PCs to professional workstations more than a decade ago, and has never looked back.

"We made the change from 'off-the-shelf' computers to workstations in 2000. However, we spent several years using custom workstations running various versions of Windows [before] we began to purchase workstation-grade PCs," said Moreno.

"The move from consumer PCs — even 2000–2001 gaming PCs — was simply [to improve] video performance," he explained. "That period was dominated by dual-CPU workstations. Of course, those were the days before multiple-core CPUs. [We chose the systems we have today because of] the improved quality of name-brand workstations, the improvements made in Windows 64-bit systems, and wider availability of graphics cards with greater memory capacities."

Uriel Castillo, a CADD technician working leader in a 50-person department, also cites performance as a driver behind the transition to workstations.

"It was about five or six years ago when we made a request to move to 'workstation-branded' computers," Castillo recalled. "The primary reason for making the move was performance needs. As with many other companies, we have to be efficient, productive, and competitive. As our core software applications improved over the years, their

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minimum hardware requirements increased and unless we upgraded our computers, we would either see performance issues or we wouldn't be able to run the newer software."

Dollar Signs in Their Eyes

Given the extra expense of workstations versus standard PCs, efforts to upgrade sometimes face resistance from upper management. According to Castillo, good research and communication are essential.

"When it was time to upgrade our specialized application computers, management was very reasonable about moving to workstations," Castillo reported. "It was discussed that even though a workstation usually costs more than a standard consumer computer, the workstation performs better and usually results in greater efficiency, productivity, performance, etc. Also, by investing upfront and going with a workstation, it allowed us the possibility to stretch the upgrade cycle to about five or six years [from the usual four], dependent on the workstation performance at the end of the cycle. We just replaced a workstation that we purchased in 2005."

Moreno called the move to workstations not a choice, but an imperative. "It's really very simple: Hardware is the foundation we build our productivity on. You cannot build a three-story house on a foundation of bubble wrap. In other words, you cannot see software as the only area of your infrastructure that requires investment.

"With software in the $6,000 to $8,000 range," he explained, "it is a simple decision to spend a few more dollars on a workstation-grade PC to get the most out of our software investments. Without the added stability and performance of these workstations there are functions that the software just will not perform. Add to that the added efficiencies we enjoy with faster video cards, larger memories, improved [hard disk drives and solid-state drives], and faster front-end buses, and the benefits rise by an order of magnitude.

"If you only have *X* number of dollars, upgrade the hardware first. It's the cheapest ROI out there," Moreno opined.

Making the (Up)grade

Once you've decided on new hardware and gotten the necessary approvals, there are still a few questions remaining: How often should you upgrade? What can you expect after the fact?

"When we upgrade, we always try to spec our workstations above and beyond what the minimum requirements of our core software applications are. This ensures us that they will be able to handle the next five to six years' worth of software and hardware upgrades and requirements," said Castillo.

Moreno takes a different approach: "Hardware upgrades are not a scheduled process for me; I tend to get new hardware with new software. For CAD drafters in my firm on the whole, the average workstation lifespan is about one and a half to two years. At that point, workstations are reformatted and moved down a list of technical requirements (i.e., they become hand-me-downs).

"The obvious risk in the delay of upgrades lies in the diminishing returns on efficiency from the software investment. However, upgrades can bring compatibility issues that will halt production," Moreno warned. "This is why we rarely upgrade components and opt to pass on whole, working units."

Castillo has seen faster workstations yield both expanded work capabilities and enhanced employee productivity. "The faster, multicore processors, larger RAM, new operating systems, etc. have allowed us to handle larger, more dynamic projects and data in a more manageable and efficient way — something that wasn't possible before. We can do more things, faster.

"One other outcome that you probably don't hear about much ... is the increase in employee pride, satisfaction, morale, and ultimately productivity. When an employee is dealing with an outdated and slow computer, he or she can get frustrated and upset pretty quickly."

"If management doesn't acknowledge the problem and at least make a commitment to

upgrade as soon as possible, most employees will become bitter, angry, or both. The company will not only have a performance and productivity issue because of the slow and obsolete computer, but also possibly because of the dissatisfied employee. Along with the faster workstations, you usually see an obvious gain in productivity," Castillo explained.

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Cyrena Respini-Irwin in Cadalyst's senior editor.

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