TechInsider MCAD

cadalyst

Maximize your productivity with professional workstations

This edition of Cadalyst's Tech Insider is sponsored by

intel DELL

September 28, 2011

IN THIS ISSUE

NEW AUTOCAD VIDEO TIPS

from Cadalyst & Lynn Allen

www.cadalyst.com/video

SUBSCRIBE

- ***Cadalyst*** Magazine
- E-Newsletters

Go Beyond Benchmarks to Gauge Workstation ROI

When evaluating a CAD system, test results are only one of several criteria you should consider.

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 Alex Herrera

When to buy, what to buy, and why to buy: When you boil down the issues to what really matters when considering a purchase of a new workstation, answers to these questions aren't all that hard to come by. The truth is, the rationale for forking over dollars for a new workstation is no different than for any other capital expenditure. In the end, whether any new capital expenditure makes sense comes down to ROI (return on investment).

When your current workstation starts to feel a little long in the tooth, you must decide if it's worth replacing it and if so, with what. And that means getting a feel for that ROI proposition. Computer marketing is still driven by benchmark tests, which put a system through a set of standardized processes to produce performance data you can compare and contrast. And while benchmarks have their place — and we'll get to that place in a moment — they're really providing supporting data, a set of potential performance indicators that will factor into ROI by churning through tough computing tasks quicker than the old hardware. But, they're just one set of indicators among many. What else should you think about?

Multi-Monitor Technology

For any MCAD (mechanical or manufacturing) professional who has jumped from one monitor to two (or three or four), the ROI is both compelling and undeniable. The productivity gains you realize are perhaps most noticeable during those instances you go back to one screen, say when you're working your laptop on the road. Those gains can dwarf any gains a faster CPU or GPU might provide, yet there's no benchmark that reflects those gains.

ECC and RAID

Error Correcting Code (ECC), absent in traditional PCs but a standard feature in Intel Xeon processor-based workstations, can detect and correct single-bit errors in memory.

- Account Management

CONTACT

- SALES
- EDITORIAL

Please do not reply to this e-mail. Send questions, comments, and suggestions for *AEC Tech News* to webmaster@cadalyst.com.To unsubscribe, please refer to the Account Managment instructions at the bottom of this newsletter.

Even now with NVIDIA Tesla and (select) NVIDIA Quadro add-in cards, you get the benefit of ECC support throughout GPU datapaths. A memory error that appears in an hour-long mechanical stress or air-flow simulation can result in wrong answers or the need to redo the simulation. Even if that error is caught on examination of results or by repeating a simulation, it still means an hour wasted. And how much is that hour worth? The small premium to step up to ECC can contribute a whole lot to hitting that ROI.

And if a lost hour can slow you down, you don't even want to think about a lost day or week could mean to you or your client. No matter what, you can't afford downtime. Most workstations offer fault-tolerant RAID storage that no vanilla PC can match, giving you the confidence that your data is always secure.

Multi-Core Processing

Furthermore, the evolving architecture of the underlying workstation architecture — most notably multi-core processing — means different ways to think about achieving ROI. Whether or not an application can run substantially faster on multiple cores, you an always reap some ROI from parallel processing, specifically by increasing your own level of multi-tasking. The combination of multi-core CPUs (with virtual concurrent multi-thread processing such as Intel's HyperThreading) and massively parallel multi-purpose GPUs, not only lets your workstation run more jobs at a time, it lets you do the same. Save a new version, then kick off a high-quality rendering or plastic flow analysis job at the same time, taking full advantage of the intelligent performance of the Intel Xeon and 2nd Generation Core processors. The more you can do at one time, the quicker that cycle gets and the faster you close in on your end goals.

Benchmarks Fit In

So how can benchmarks contribute to this ROI assessment exercise? Simply put: judiciously. Used improperly, benchmark results can be misleading, but while benchmarks should never be relied upon as conclusive end-all decision-makers, they can provide a worthwhile indication of a CAD workstation's ROI potential.

To get a feel for any workstation's system-level capability running typical MCAD loads, the Standard Performance Evaluation Corporation (SPEC) provides some useful benchmarking tools as well as a database of submitted results from a range of typical workstation configurations. SPEC's Graphics and Workstation Performance Group manages two benchmark development efforts, SPECapc and SPECviewperf. SPECapc (application performance characterization) tests are some of the better — though far from perfect or conclusive — indicators of how a system will perform in professional applications, while SPEC's Viewperf tests effectively isolate the rendering load on the graphics cards themselves.

SPECapc tests run application scripts using 3D models that are intended to be representative of what a typical user of that application would work with on a daily basis. One or more among the tests for SolidWorks, Solid Edge, Pro/ENGINEER, NX (Unigraphics), and 3DS Max will pique the interest of the MCAD professional. And for AutoCAD, *Cadalyst* has you covered with a system-level benchmark similar to SPECapc. Less formal, more ad hoc benchmarking tools and results can be found elsewhere on the web — http://www.solidmuse.com for Solidworks, is one example — but as always, tread carefully, keep a healthy degree of skepticism and tone down the emphasis placed on any one number.

Look at the Whole Picture

Definitely, do your homework on benchmarks. Use unbiased, third-party test results for benchmarks that are most relevant for your mission-critical — and schedule-dictating — tasks. But, don't start and end with individual test results. Instead, think big picture about what your biggest workflow time sink is, be it performance for one application, occasional reliability hiccups or constraints in your current workstation or display technology that are getting in the way of your own multi-tasking. You'll likely find many features — ones found only in workstations — that are at least as valuable as benchmark numbers when it comes to contributing to that return on your investment.

. . . . . .

With more than 25 years of engineering, marketing, and management experience in the semiconductor industry, Alex Herrera is a consultant focusing on high-performance graphics and workstations. Author of frequent articles covering both the business and technology of graphics, he is also responsible for the Workstation Report series, published by Jon Peddie Research.

Mark Your Calendar: MCAD Events

PLM Road Map 2011

October 4–5, 2011
Plymouth, Michigan
At PLM Road Map 2011, attendees can find out which issues are confronting end users in design and engineering. Presentations will cover simulation-based design, embedding simulation across the entire product lifecycle, mechatronics, transforming PLM into a dynamic infrastructure for business decisions, and more. Read more »

3D Insiders' Summit 2011

October 11–12, 2011
Westminster, Colorado
The Summit provides an opportunity for attendees to interact directly with fellow application developers, as well as Spatial developers, product managers, and executive management of Spatial, a division of Dassault Systemes. Read more »

FABTECH 2011 Tradeshow & Expo

November 14–17, 2011
Chicago, Illinois
The FABTECH Exposition & Conference is North America's largest metal forming, fabricating, welding, and finishing trade show and educational conference. The programming will cover technical, economic, operational, and management issues. The show floor is organized in pavilions that are geared toward specific industries and technologies, including Forming & Fabricating, Laser, Metalforming, Tool/Die, Tube & Pipe, Finishing, Welding, and Thermal Spray. Read more »

2011 Autodesk University User Conference and Exhibition

November 29–December 1, 2011
Las Vegas, Nevada
Save the date! Autodesk University will include technical classes and hands-on labs, free Autodesk certification exams, and more. Read more »

Digital Plant 2011 Conference

December 5–7, 2011
Houston, Texas
Co-hosted by FIATECH, this event is a plant lifecycle conference for the chemicals, power, oil and gas, offshore, and pharmaceuticals industries. Digital Plant features a program that addresses the critical factors for plant operations, maintenance, design, and construction. The presentations are prepared and delivered by practitioners from owner, engineering-procurement-construction, and equipment supplier companies. Read more »

For a complete list of CAD meetings, conferences, training sessions, and more, check out our calendar of events on Cadalyst.com. Are you hosting an event that you would like to include in our calendar? Submit details at least two weeks in advance to news@cadalyst.com.

What's New at Cadalyst.com

How to Configure a Workstation for CAD

Cadalyst Labs Report: Performance, longevity, value: Your next system can have it all if you know how to shop. We're here to help. Read more »

Everyday Improvements in AutoCAD 2012

Circles and Lines Tutorial: They might not be showy, but these important features will save you time and reduce tedium. Read more »