6 Steps to Workstation Upgrades

With so many options and form factors to choose from, it’s no wonder engineers might be put off by the idea of building the perfect workstation. A workstation setup designed to meet the requirements of a particular job and workflow, with the right mix of performance and expandability, is the key to cutting the setup time, reducing maintenance overhead, and increasing productivity.

1. Strike a balance between core speed and core count
   The typical multi-stage, multi-tier desktop CAD workflow is designed to take advantage of parallel execution on multiple cores. Instead, they benefit most from an investment in a super scalar CPU core running at the highest possible frequency. The rule of thumb, then, is to balance CPU speed on core speed and number of cores in a way that best meets the needs of your design tools.

2. Opt for storage-class storage technologies
   Hard disk drives are fine for consumer or general office applications, but when it comes to the needs of engineering professionals, it’s time to turn to higher performance storage options. Solid state drives (SSDs) offer compelling advantages in performance and reliability and are becoming a cost-effectiver storage alternative. Small engineering organizations that manage their own IT are going to pick SSDs over hard drives in most cases. They deliver noticeable performance when opening large data sets and closing multiple files and working with large data sets. SSDs are also a great way to provision the largest possible memory configuration.

3. Invest in professional GPU power
   Despite the huge impact that high performance graphics solutions can have on workstation productivity, consumer-grade graphics solutions don’t hold a candle to professional GPU horsepower when it comes to meeting the needs of design engineers. Professional GPUs are optimized for CAD applications in terms of both performance and accuracy. Equipping a workstation with an uncertified consumer-grade GPU doesn’t just limit what you can do—it can lead to a dramatic dip in software performance that will hinder any engineer’s productivity.

4. ECC memory is key
   Memory errors, while not common, can wreak havoc on an enginee’s productivity and cause serious project delays. Providing the largest possible memory memory configuration, investing in Error Correcting Code (ECC) memory enables your workstation to detect and correct single-bit memory errors.

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6. Put a premium on expandability
   The workstation you buy today will be better than systems available 12 to 18 months ago, but it will also likely need to be updated in the future to support new processing requirements. Because of this, ease of expansion is a key selection criteria—choose a workstation that can be easily upgraded mid-life via memory or storage expansion or with a new CPU or GPU in order to maximize the investment.

While there is no hard science to configuring the optimal workstation, these are clear guidelines to ensure you make the right choice. After all, a properly configured workstation is the consummate tool for engineers on the path to creative and innovative design.

A Workstation Checklist

In need of guidance to zero in on the optimal workstation?
Consider the following questions to pinpoint a workstation model that will meet both your engineer and budget needs.

1. Do I really need a workstation? Are doing full-blown FEA or CFDsimulation? Then the answer is “Yes.” Workstations are tested, optimized, and certified to run critical engineering applications and offer increased performance and productivity.

2. What is the best processor fit? Buying a system equipped with a processor that’s one or two frequencies down from the top-of-line model allows for savings that can be directed toward other, less expensive technologies that can have a greater impact on performance.

3. What kind of storage is appropriate? Engineering users can greatly benefit from the added performance of solid state disk drives (SSDs), which are a staple of most workstations. They deliver noticeable performance when opening and closing multiple files and working with large data sets.

Retire That Four-Year-Old Workstation

Performance Summary Xeon E5-2687W v3 vs X5690

What’s the optimum memory configuration?
The rule of thumb is to equip a system with twice as much memory as the largest model you are working with.

What should I choose for graphics?
If your day-to-day work involves non-linear editing or you handle extremely large graphics models, invest in a system with a top-of-line GPU. A mid-range or entry-level professional graphics card will deliver more than adequate performance for common CAD modeling tasks.

The Need for Solid State Drives

Everyone talks about the need for speed, but there’s more to boosting performance than a faster processor. Solid state drives (SSDs) can radically improve performance of CAD applications. Case in point: In tests, SolidWorks reseller CATI was able to boost the performance of SolidWorks by 47% by replacing the 7200 RPM hard drive with an SSD. Further optimizing the hard drive configuration saved two hours and 13 minutes on operations—a 56% improvement.

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Spec Your Ideal Workstation

Deciding on the proper workstation configuration is no easy task, but Intel aims to make it easier. With the online Workstation Configurator, engineers can zero in on the best hard drive, motherboard, and system configuration.

Check out the Workstation Configurator at http://www.intel.###

Computer Aided Engineering

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<thead>
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<th>ANSYS Mechanical (Geomean)</th>
<th>ANSYS Fluent (sedan_4m)</th>
<th>Abaqus std/exp (Geomean)</th>
<th>SolidWorks FEA</th>
<th>Autodesk Simulation CFD (large)</th>
<th>Digital Content Creation</th>
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Turbo Charge Design with a Dual-socket Workstation

Engineers reliant on simulation or photorealistic imaging software can’t afford performance delays from an inadequately-specced workstation. They will see significant performance gains with a workstation based on the most current dual socket Intel® Xeon® Processor E5-2687W v3 compared to a system configured with the latest single socket Intel® Xeon® Processor E5-1680 v3.

Management says your four-year-old workstation is fine, but sluggish model regeneration and incomplete renderings tell you otherwise. The Intel benchmark above shows significant performance boosts for FEA and CFD simulation as well as photorealistic editing tasks when upgrading from a four-year-old Intel® Xeon® Processor X5690-based system to a workstation outfitted with the latest Intel® Xeon® Processor E5-2687W v3.

Refresh a four-year-old workstation provided a 4X performance increase to some common engineering tasks.