

Sun Systems for MCAD

Real benefits for MCAD professionals

Highlights

- Rigorously tested for Windows Vista and XP Professional, plus Red Hat and SUSE Linux operating systems
- Supported through strategic relationships with leading MCAD/MCAE ISVs
- Extensive MCAD application support
- World-record performance at affordable prices
- Large workstation memory capacity (up to 64 GB)
- Industry-leading NVIDIA Quadro FX graphics accelerators for higher performance, excellent image quality, and application compatibility
- Up to four graphics accelerators and up to eight displays supported
- Whisper-quiet operation



Today's competitive marketplace and challenging engineering environments demand the very best workstations: Getting designs right the first time has never held more strategic importance. Catching flaws earlier in the design cycle helps reduce costs while improving product quality and safety. And getting to market faster with a quality product can be an effective competitive weapon for manufacturers, helping them provide higher value to their customers.

Collaboration is now an essential engineering capability. The design phase is one of many aspects of the product lifecycle management (PLM) process and often involves development teams that need to collaborate on different components of the same product. This collaboration often extends across organizational boundaries, requiring cross-platform hardware and software consistency to avoid problems.

Complicating matters, digital designs are becoming larger and more complex. Building a complete digital mock-up of an airplane or automobile requires sophisticated hardware and software for creation, visualization, and interactive manipulation of the 3D design. If designers are to be productive and efficient, they need powerful compute capacity and high-end visualization features on the desktop, including:

- The ability to load multigigabyte models without overwhelming the workstation and degrading its performance
- The ability to run demanding MCAE applications in addition to MCAD tools
- Accurate and fast graphics for rendering 3D surfaces
- Multidisplay support for increased productivity, collaboration, and visualization

- A realistic view of designs through tools such as virtual prototyping
- Cost-effective computing solutions
- The ability to deliver high-quality designs in less time

Performance under pressure

Modern mechanical designs have grown in size and complexity, and with multigigabyte models now common, many designs push the limits of the single-core, 4-GB memory space available on 32-bit operating systems. This limitation can cause excessive memory paging and very poor performance when large models contend with the operating system for memory resources. Even multiprocessor 32-bit systems can suffer when memory-constrained applications spend time thrashing instead of utilizing the power of additional processors.

In contrast, Sun's 64-bit Ultra™ workstations can offer scalability and real benefits. For example, a two-socket (with one quad-core processor per socket) Sun Ultra 40 M2 workstation running a 64-bit OS and equipped with up to 64 GB of ECC memory can support multiple jobs simultaneously with good performance. Installed with Sun N1™ Grid Engine software, each processor core can be used as an additional computational resource to run MCAE simulations — even as the workstation is used for interactive MCAD applications.

“Since their introduction, the AMD Opteron based Sun workstations have dominated the top in performance among all commercially available workstations for Pro/ENGINEER.”

Olaf Corten

Developer of the OCUS Benchmark

Sun Ultra workstations featuring Intel and AMD processors

- Sun Ultra 24 workstation, based on Intel Core 2 processors
- Sun Ultra 20 M2 and Ultra 40 M2 workstations, based on AMD Opteron processors
- A complete line of industry-leading Sun Fire™ x64 servers, Sun Blade™ modular systems, and the Sun™ Grid Rack System for HPC that integrate MCAD and MCAE solutions

Sun Ultra workstations featuring Intel® Core™ 2 and AMD Opteron™ processors

Sun's x64 workstations offer a balanced architecture that is designed for performance, while leveraging innovative aspects of Intel and AMD processor technology — proven standards in the MCAD compatibility.

- Sun Ultra 24 workstations, based on Intel® Core™ 2 processors, combine multicore technology and high operating frequency. With four execution cores, the Intel Core 2 Quad processor delivers outstanding performance for processor-intensive tasks in demanding multitasking environments, and it makes the most of highly threaded applications. Whether you're building a complete digital mock-up of a complicated model, or running multiple compute-intensive applications at one time, the Intel Core 2 processors unleash the power of multithreading.
- Sun Ultra 20 and Ultra 40 workstations, based on AMD Opteron™ processors, feature an innovative integrated DDR DRAM memory controller on each processor to provide lower memory latency for shorter runtimes. Available memory and memory bandwidth can scale with the number of processors, enabling the system to provide up to 19.2 GB per second of bandwidth for really big jobs. Also, innovative point-to-point HyperTransport technology eliminates the I/O bottlenecks in traditional front-side bus (FSB) architectures, and since I/O doesn't compete for bandwidth, overall system performance is increased.

World-record MCAD/MCAE benchmark results

These architectural strengths yield substantial real-world performance benefits. The Sun Ultra 24 workstation featuring the Intel Core 2 Quad processor and Sun Ultra 20 M2 and Ultra 40 M2 workstations featuring AMD Opteron processors have claimed top spots in well-recognized, industry-standard MCAD application benchmarks. For example, these workstations consistently outperform competitors on the OCUS benchmark v4 for PTC Pro/ENGINEER Wildfire 2.0 — an industry-accepted independent benchmark that compares workstation performance for Pro/ENGINEER — as well as benchmarks such as SPECcapc, Fluent, and Ensight.

Next-generation graphics for MCAD, visualization, and collaboration

To accelerate demanding MCAD and visualization applications as well as other interactive and graphically intensive environments, Sun's balanced workstation designs supply high performance and graphical throughput. With up to four x16 PCI Express interfaces, Sun Ultra 24, Sun Ultra 20 M2, and Sun Ultra 40 M2 workstations support a range of powerful NVIDIA Quadro FX graphics accelerators for cutting-edge multidisplay visualization. NVIDIA Quadro FX graphics accelerators provide the performance and sophisticated feature set that MCAD applications require:

- Hardware texture-mapping and an advanced shading architecture with a fully programmable GPU and support for high-level shader languages
- High-resolution antialiasing with 12-bit subpixel sampling precision and rotated grid full-scene antialiasing (FSAA)
- Support for multiple high-resolution displays with up to 3840 x 2400 digital resolution and 2048 x 1536 analog resolution.
- Support for 24-inch and 30-inch LCD flat-panel displays

“We are extremely impressed with the functionality and stability of the Sun Ultra 40 workstation. Running both the Solaris 10 OS and Linux on the system has vastly improved our performance and analysis times, which enables us to do more in less time and has resulted in more robust designs with shorter design cycles. I can see how the features and benefits of the new Sun workstations will be invaluable to any company involved with MCAD or visualization.”

Wayne Johnson

Senior Systems Engineer, Siemens Power Generation

NVIDIA Quadro FX 3500 graphics

The NVIDIA Quadro FX 3500 graphics accelerators provide the ultimate workstation performance and features for professional MCAD and scientific visualization applications. Up to four FX 3500 graphics accelerator cards can be installed in the Sun Ultra 40 M2 workstation to work independently, or combined in SLI-mode to scale graphics performance.

- 256 MB of GDDR3 memory
- Two dual-link DVI-I connectors and stereo
- PCI Express x16 bus interface with 42.2-GB/sec memory bandwidth
- NVIDIA SLI technology

NVIDIA Quadro FX 5600 graphics

NVIDIA Quadro FX 5600 graphics accelerators are based on the industry’s first unified architecture designed to dynamically allocate compute, geometry, shading, and pixel processing power to deliver optimized GPU performance. Combining the industry’s most advanced feature set, including the largest frame buffer (1.5 GB), with GPU computing technology for visualization, the FX 5600 graphics accelerator solves the most complex problems. The reference standard for Shader Model 4.0 and DirectX 10, the FX 5600 graphics accelerator enables next-generation applications with unprecedented image quality. Up to two FX 5600 cards can be installed in the Sun Ultra 40 M2 workstation to work independently or combined in SLI mode, to scale graphics performance.

- 1.5 GB of GDDR3 memory (384-bit memory interface)
- Two dual-link DVI-I connectors and stereo
- PCI Express x16 bus interface with 76.8-GB/sec memory bandwidth
- NVIDIA SLI technology

The Sun Ultra 40 M2 workstation supports up to four NVIDIA Quadro FX 1500 or 3500 cards to provide up to eight high-resolution displays, or up to two Quadro FX 5600 graphics boards to provide up to four high-resolution displays.

A choice of powerful MCAD Workstations

With a choice of Intel or AMD processors, Sun provides workstations that deliver performance and flexibility.

Sun performance, AMD power

Sun Ultra workstations with AMD Opteron processors have met or exceeded the needs of the most demanding MCAD professionals. The Ultra 20 M2 and Ultra 40 M2 have been placed in the most critical paths of large projects and are trusted worldwide. Their compatibility with MCAD applications, certifications on Windows, and record-breaking performance have helped engineers worldwide eliminate design cycles and finish designs on time.

Sun engineering, Intel performance

Technology is at the core of MCAD, and because all design projects are different, Sun offers workstation technology flexible enough to satisfy different needs. The Sun Ultra 24 workstation is a powerful MCAD system featuring the Intel Core 2 processor. With MCAD application compatibility, absolute Windows compatibility, and record-breaking performance, this system helps you eliminate design cycles and speed time to project completion.

In addition to platform choice, Sun Ultra workstations offer considerable flexibility, resulting from their ability to support a wide choice of operating systems, including:

- The Solaris™ Operating System
- Both Red Hat and SUSE Linux
- Microsoft Windows Vista and Windows XP Professional

Sun leads the way in MCAD, HPC, and visualization innovation

Sun has a long history building workstations and servers for scientists, researchers, and technical professionals. Now Sun is back in the lead with innovative architectures, record setting HPC and graphics application benchmarks (www.sun.com/mcad), and high-end graphics options that can power exciting HPC and visualization solutions.

Capable x64 servers for visualization and HPC

Sun now offers a broad line of record-breaking x64 servers that are fully compatible with its x64 workstations, making them ideal solutions for HPC applications such as MCAE. With a range of innovative high-performance system architectures and a wealth of world record benchmarks, these systems are demonstrating new ways to handle, manage, visualize, and collaborate around the world's most challenging computational and visual problems. Sun is once again positioned to help commercial and engineering organizations alike see the critical information beyond their designs. And, of course, all Sun systems are also backed by reliable and responsive service and support programs that can help improve productivity by minimizing downtime and service interruptions.

Sun Intel-based Ultra Workstations for MCAD

Sun Ultra 24 Workstation

- One Intel Core 2 processor (quad-core or dual-core)
- Up to 8 GB of unbuffered DDR2-667 ECC memory
- Up to two NVIDIA Quadro FX 3700, FX1700, FX570 graphics accelerators to drive four large MCAD displays

Sun AMD-based Workstations for MCAD

Sun Ultra 20 M2 Workstation

- One Next Generation AMD Opteron 1200 series processor (dual-core)
- Up to 8 GB of unbuffered DDR2-667 ECC memory
- Up to two NVIDIA Quadro FX5600 to drive up to four displays. Maximum of one FX 3500 or one FX 1500 for up to two displays

Sun Ultra 40 M2 Workstation

- One or two Next Generation AMD Opteron 2200 series processors (quad-core or dual-core)
- Up to 64 GB of DDR2-667 ECC memory
- Up to two NVIDIA Quadro FX 5600, FX 5500, or FX 4600 to drive up to four displays; up to four FX 3500, FX 1500, or FX 560 graphics accelerators to drive up to eight displays

Learn More

For more information about Sun's x64 MCAD and HPC solutions, visit sun.com/mcad-solution or sun.com/servers/hpc, or talk to your local Sun representative about scheduling a half-day session.