Product Guide

Silicon Graphics® Octane®

Visual Workstation

It's about performance.

Octane workstations from SGI deliver exceptional performance—empowering the next generation of visual computing solutions for manufacturing, entertainment, visual simulation, defense imaging, and the sciences.

Standard Features

- Single or dual R12000™ processors
- Fourhigh-speed XIO slots
- Autosensing 10Base-T and 100Base-TXEthernet
- Entry 256MB base memory, upgradable to 8GB maximum memory
- One parallel port, two serial ports
- Ultra SCSI 40MB/secinternal system disk, two additional diskbays (total capacity 54GB)
- External Ultra SCSI port (40MB/sec)
- Stereo I/O, speakers, and microphone
- 21-inch monitor
- Keyboard, mouse
- Octane/SE, Octane/SSE, or Octane/MXEgraphics

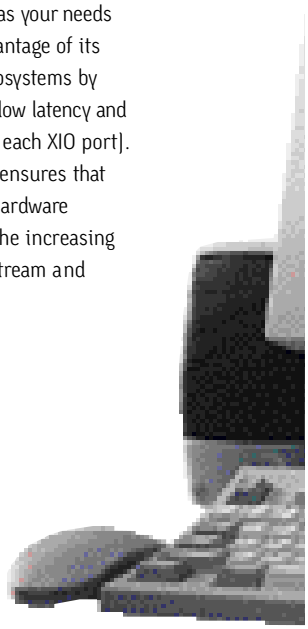
Professionals in these industries are using Octane to take control of larger, more complex, and growing data sets on the desktop. The revolutionary system architecture, with high-performance single or dual processors, means that Octane can simultaneously tackle more complex tasks such as design and analysis or motion modeling and behavior scripting. With more data and more tasks on the desktop, users can focus completely on any problem, work intuitively, gain insights, and get the job done better, faster.

Give YourBusiness a Competitive Edge

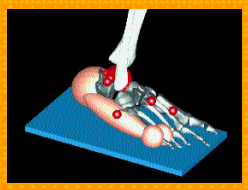
Silicon Graphics® workstations are tools that help companies achieve success. Animators working on the nextbox office hit, engineers developing an innovative product, and scientists who simulate military combat all have one thing in common: they use SGI™ technology to create higher-quality products and bring them to market faster. Octane gives you the processing power and visualization needed to develop innovative solutions by integrating tasks, combining steps, and shortening the time needed to achieve your goals.

Preserve YourInvestment

When you purchase an Octane system, you are investing in a long-term asset. Because of its modularity, you can upgradeOctane as your needs change. Octane lets you take full advantage of its advanced graphics, CPU, and I/O subsystems by providing a system architecture with low latency and high bandwidth (1.6GB per second for each XIO port). The upgradable, scalable bandwidth ensures that Octane can take advantage of future hardware technologies and can keep up with the increasing performance requirements of mainstream and leading-edge application software.



Houdini software takes advantage of the Octane workstation's dual processor and high I/O bandwidth, allowing changes to fully lighted, textured scenes while simultaneously previewing the animation.



Simulations performed with ADAMS virtual prototyping software have helped Nike design new athletic footwear that will help prevent ankle injuries.

It's about bandwidth.

Interactivity and responsiveness both depend on bandwidth. Octane employs one or two processors and a dramatic new architecture to shatter the bottlenecks associated with conventional systems and deliver large amounts of bandwidth.

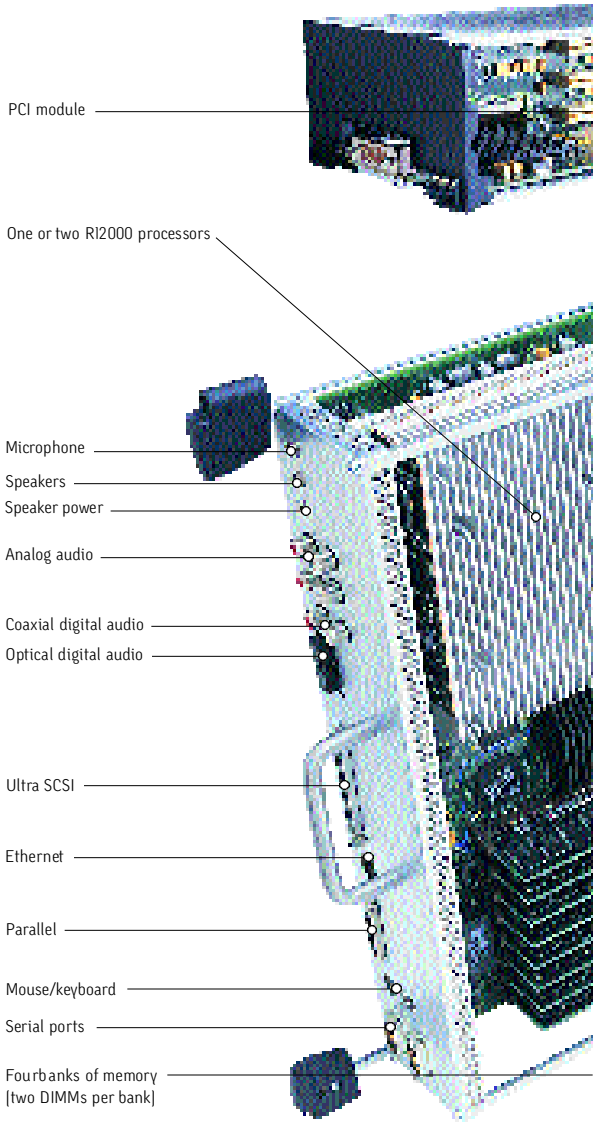
Key Architecture Features:

- 1.0GB/sec main memory peakbandwidth
- 1.6GB/sec peak, 1.2GB/sec sustained bandwidth between subsystems
- 64K primary cache, 2MB secondary cache
- 32- or 64-bit binaries
- Symmetric multiprocessing
- Priority I/O

Application software can control the flow of data within the machine and can guarantee that a critical data transfer, such as loading a 3D model from memory to the screen, gets the necessary bandwidth to remain interactive. With the unique bandwidth management from SGI, end users experience smooth, fluid operation.

Switching Away from Tradition

Octane incorporates a crossbar switch in place of a traditional shared bus. The crossbarcan dynamically and directly link any two computer subsystems, giving them a high-speed path without interfering or competing with other system activity. Once established,a link provides 1.6GB-per-second throughput, and no amount of other system traffic can take away from that reserved bandwidth. This unique design scheme results in a system with extremely high bandwidth and very low latency for guaranteed application performance.

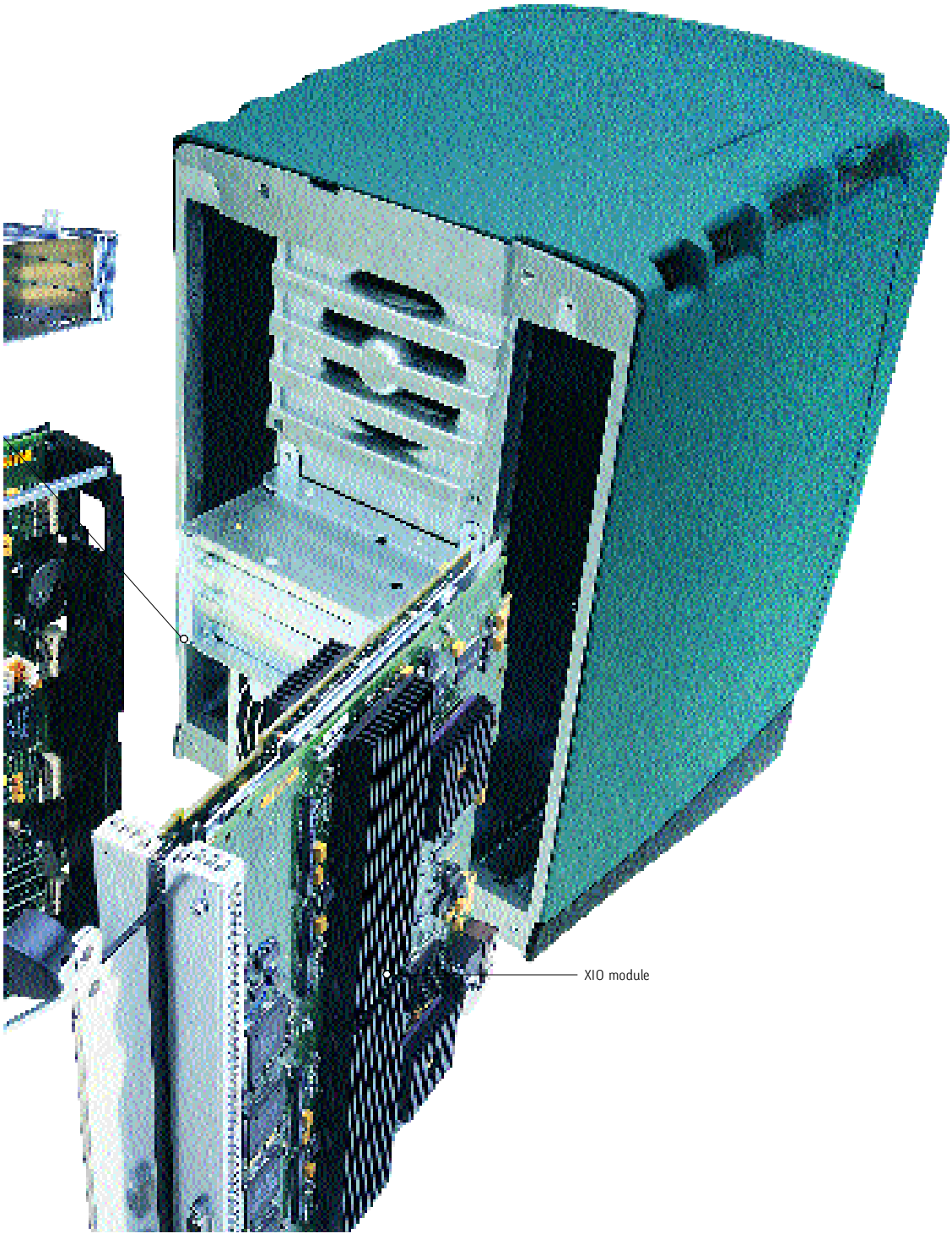


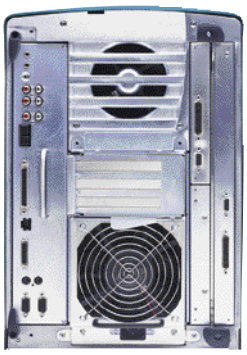
Dual Processors for Double the Power

With an architecture optimized for the advanced features of the MIPS® R12000 processor, the Octane compute engine can unleash the complete power of one or two R12000 processors to accelerate real-world application software. The symmetric multiprocessing (SMP) architecture gives users the choice of how to apply the power: use two processors to quickly solve one task or to simultaneously solve two previously separate problems such as engineering design and analysis.

Flexible Configurations

The Octane architecture expands and scales as your needs grow. Users can start with an entry-level single-processor Octane/SE system and later add more memory, texture, geometry, processor, and graphics upgrades to meet their changing system needs.





Octane I/O

- Two full- and one half-size optional industry-standard PCI slots for 32- and 64-bitwide PCI devices
- Three 3.5-inch Ultra SCSI drive bays
- Four XIO slots for graphics, networking, and storage cards

XIO

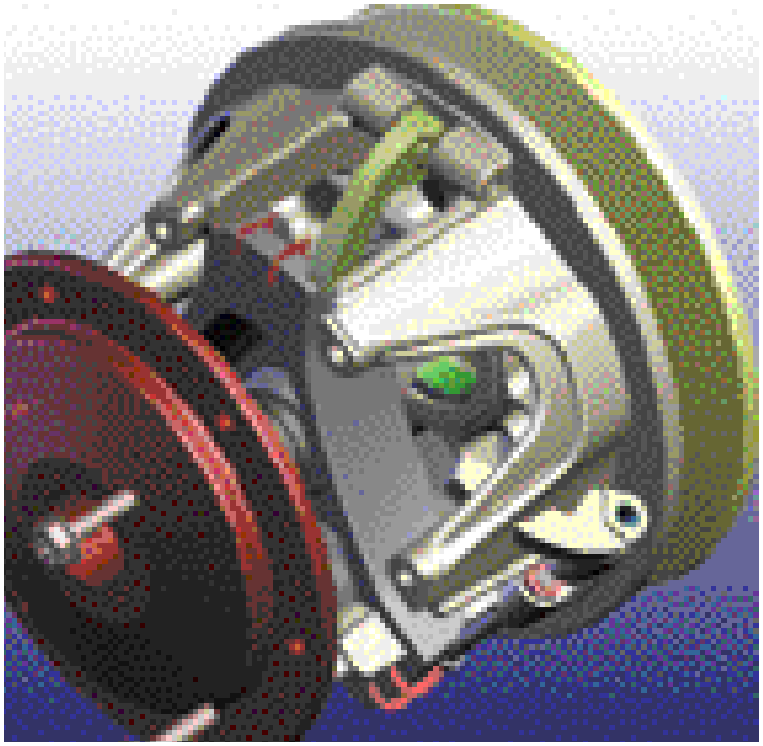
- 4-port Ultra SCSI (4 differential)
- 4-port 100Base-TX and 6 460Kb/sec serial ports
- 2-port Fibre Channel
- Octane Channel Option
- Octane Digital Video
- Octane Personal Video (analog video)
- Octane Compression (JPEG compression)

PCI
(Requires PCI Expansion Unit)

- Single-port 1000Base-TX
- Single-port 100Base-TX
- Single-port differential Ultra SCSI
- Single-port single-ended Ultra SCSI
- Single-port Fibre Channel
- Single-attached FDDI
- Dual-attached FDDI
- ISDN basic rate interface
- Digital audio

It’s about graphics.

Octane takes graphics performance to the next level with E-Series graphics, available across the entire line. By making extensive use of dedicated processing hardware, Octane optimizes visualizations, clarifying problems and speeding your progress toward solutions.



Graphics Specifications:

- Geometry Engine®: 1,344 MFLOPS
- RDRAM frame buffer: 32-bitdouble buffer with Z
- Raster engine: high-performance pixel fill
- Texture engine: zoom, warp, rotate images
- Texture cache: 4MB upgradecan be added to any Octane/SE or Octane/SSE system

Octane graphics, combined with one or two R12000 compute engines, let you execute more tasks on your desktop—simultaneously tackling both design and analysis—with system responsiveness that can keep up with your thought process. Coupled with OpenGL®, the industry-standard open graphics library, Octane translates into optimal application performance for power users.

Graphics Engine and Texture Memory

The Octane system's E-Series graphics acceleration subsystem includes a hardware Geometry Engine processor, dedicated rasterization, and the ability to take advantage of a texturing engine if installed. The dedicated frame buffer memory is specifically tuned for handling 3D images and texture caching memory.

Octane/SE

For solid modeling applications, Octane/SE brings high-end desktop graphics performance to mainstream engineers and technical users. The entry-level Octane/SE system includes a single Geometry Engine processor and can be configured with a texture subsystem or later upgraded to add enhanced realism.

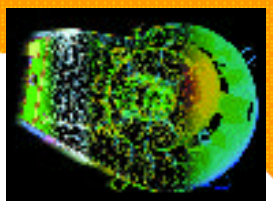
Octane/SSE

Octane/SSE uses two hardware Geometry Engine processors and two raster engines for twice the solid modeling performance of an Octane/SE system. Octane/SSE is the ideal machine for large solid modeling, mechanical analysis, pre- and post-production processing, and untextured 3D animation. If your requirements change—a new project or application—hardware texture support can be added at any time. Italso supports HDTV resolutions.

Octane/MXE

Octane/MXE sets the graphics performance standard with the addition of a full-performance texture subsystem. An Octane/MXE system fills two XIO slots, leaving two more slots for high-speed networking and peripheral options. The right choice for users with demanding visualization needs, Octane/MXE lets you accomplish more on yourdesktop, whether you are working with digital prototypes, virtual reality, or the most complex 3D models. Italso supports HDTV resolutions.

Geographic Terrain Visualization



Visual Prototyping

Interactive 3D Volume Rendering

Mechanical Design and Analysis

It's about your vision.

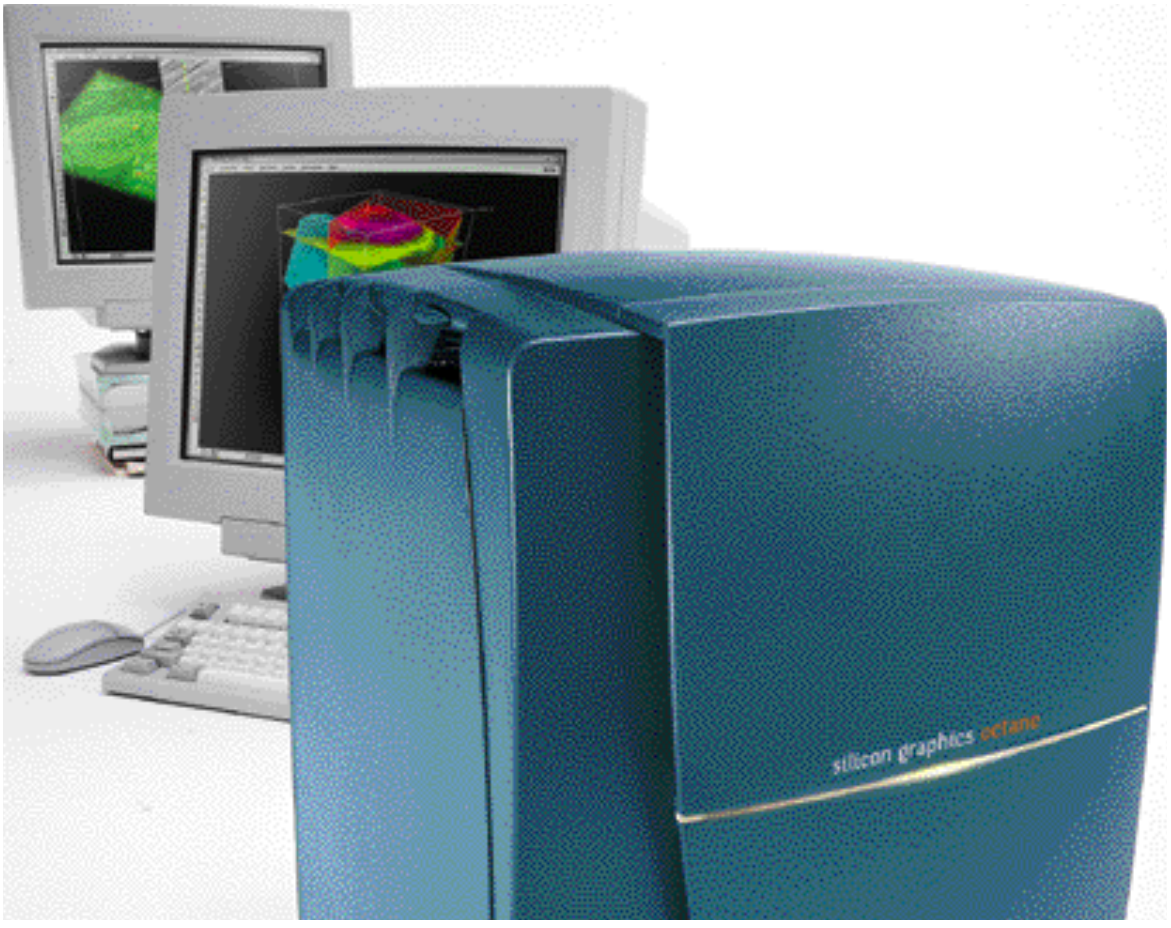
The highly flexible product design of Octane provides answers for the most demanding desktop configuration requirements. Four XIO slots directly connect into the high-speed system architecture of Octane. Users can fill up to two slots with graphics options and still leave two other slots open for a variety of high-speed multimedia and peripheral options.

Digital Media Optional Features:

- Uncompressed real-time 8- or 10-bit serial digital I/O
- Two streams of JPEG compression at 2:1
- Low-cost analog video I/O
- Real-time color space conversion
- Video as a texture for effects
- Real-time graphics to video out

Standard Audio Features:

- Microphone
- Stereo loudspeakers
- Line-level stereo I/O
- Eight channels of 24-bit digital audio I/O



Digital Media Capabilities

Octane manipulates digital media as effortlessly as any other type of data on the desktop. Digital media processing and I/O are integral parts of the architecture. This powerful integrated technology allows users to radically change the way they work and communicate. Mechanical designers can now make a movie of an interesting design concept, editit, add titles and comments, and post it on the Web for the rest of the team to review. Similarly, animators of a high-end feature film can instantly preview their effects, creating a higher-quality product.

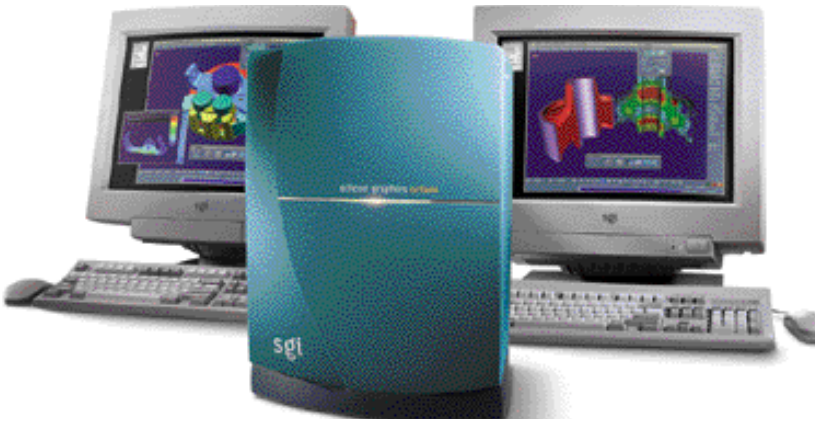
The following options are available on the Octane workstation:

- Octane Personal Video: a low-cost video processing card that allows users to create and manipulate content for a variety of uses ranging from collaboration to video conferencing and multimedia Web sites
- Octane Digital Video: industry-leading multi-channel video performance with features such as video texturing for unique special effects and color space conversion for real-time translation between video formats
- Octane Compression: state-of-the-art compression capabilities that can be used for anything from Web-based moviemaking to high-end broadcast graphics

Audio

Every Octane workstation comes with an extensive suite of built-in audio capabilities. Each additional half-height multiple channel audio PCI card offers:

- ADAT Optical Input and Output (fiber-optic connector): eight additional channels of 24-bitdigital audio
- AES3-1992 Input and Output (AES-3id BNC): two additional channels of 24-bit serial digital audio input/output; also serves as a synchronization source input/output (AES11) and provides professional jitter continuation
- Video Composite Sync Input ("black burst"): PAL or NTSC provides professional audio locked-to-video sample clock generation



Octane CADduo

Octane CADduo allows you to support two simultaneous CAD/CAE users on a dual-processor Octane workstation, significantly lowering your hardware and administrative costs per seat. Octane CADduo has the flexibility to adapt to your company's workflow. In addition, itcan work as the ideal large assembly review station for a single user, providing access to dual CPUs and twice the memory and diskcapacity of a standard CAD seat.

High-Resolution 24-Inch Monitor

Available as an upgrade to the standard 21-inch monitor for Octane/SSE and Octane/MXE workstations, the 24-inch monitor supports the display of virtually any output resolution or pixel timing. The high-resolution 24-inch monitor lets you handle requirements ranging from VGA to HDTV resolution. See technical specifications on back for details.

For applications that require additional screen space or two separate screens, Octane supports a dual-head option that includes a 24-bitgraphics head and an additional 21-inch monitor. Dual-head configurations offer independent windows on each head and give programmers the flexibility they need for advanced data modeling and analysis applications. One head might continuously display complex visual information such as seismic data, while the other head is reserved for the user interactions required to analyze and update the visual data.

It's about integration.

Octane excels in today's complex computing environments. Following SGI's tradition of fostering collaboration and creativity, all Octane systems include solutions for reaching beyond the desktop. A highly evolved operating system and versatile interoperability tools deliver seamless integration into heterogeneous environments. The attention paid to integration and interoperability translates into time and cost savings.

Bundled software for integration:

Connectivity

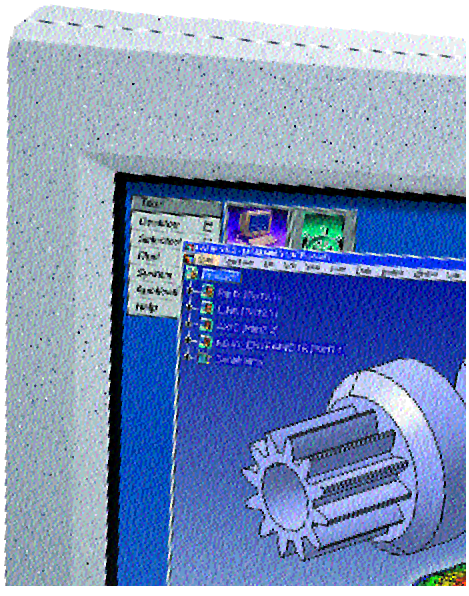
- XFS™
- ISDN/PPP support
- Novell NetWare™ Client
- Xinet AppleTalk®
- Samba

Collaboration

- Outbox
- InPerson®
- IRIS Annotator™
- IRIS Showcase™
- Netscape Communicator® 4.05
- Cosmo Player
- Cosmo Create
- Netscape® FastTrack Server
- Adobe® Acrobat Reader™
- InfoSearch
- SGI Meeting
- Teleffect

The World's Most Advanced Operating System

IRIX® 6.5, the SGI mature 64-bit UNIX® operating system, maximizes the performance of your Octane workstation. The same IRIX operating system spans the SGI UNIX product line from yourSilicon Graphics® O2® system to your 128-processor SGI™ Origin™ server. Most applications built on earlier releases of IRIX will run without recompilation. IRIX 6.5 is Year 2000 compliant and supports all major industry standards. IRIX 6.5 gives you the high reliability you demand from an operating system. With a focus on serviceability and a predictable maintenance schedule, IRIX gives you control over the administration and integration of your computing environment.



Interoperability

In today's complex computing environment, where networks can involve PCs and Apple® Macintosh® systems alongside UNIX workstations, Octane has the right solution to fit into your network. Octane integrates seamlessly into existing networking environments such as Fast Ethernet, GigabitEthernet, ATM, and FDDI. With a variety of software products, Octane provides the right tools to enhance your workflow in a multi-OS environment.

Connectivity

YourOctane system comes bundled with software that enables files resident on Octane to be read and manipulated by Apple Macintosh, MS-DOS, Microsoft® Windows® 98, Windows NT®, or other UNIX workstations or servers as if they resided on the local computer. With bundled and optional software, Octane can also read and manipulate files that reside remotely on those same machines.

Collaboration

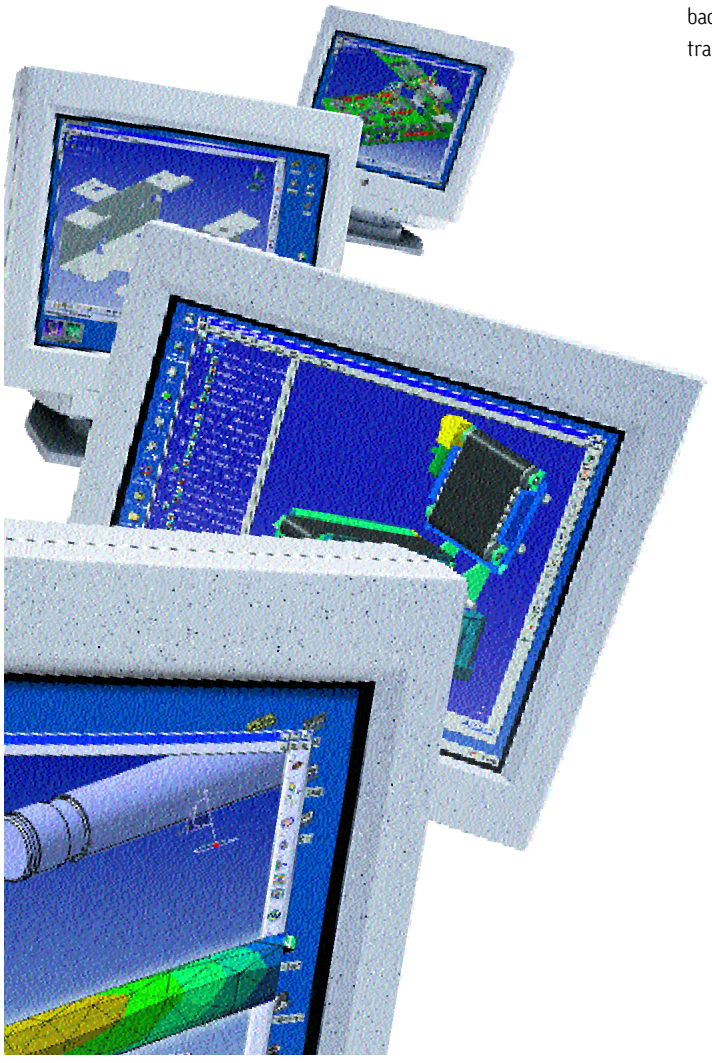
As a pioneer in collaboration solutions, SGI has included software tools that make sharing of information and communication simple. Drag-and-drop intranet publishing and data conferencing tools make remote collaboration simple and easy.

Emulation

Technical and creative professionals can also use Microsoft personal productivity applications on Octane through a variety of bundled or third-party applications. Likewise, UNIX productivity applications can be run on a PC via third-party solutions.

Intuitive System Administration

With the personal administration tool, any user can manage some tasks right on the desktop, relieving the support staff of simple but time-consuming requests. Individuals can use the tool to add user accounts, back up and restore local disks, manage network traffic, and track disk usage.



Octane
Technical Specifications

Base System Features

Processor Support
- 1-2 MIPS RISC 64-bit R12000
- 2MB L2 cache

Memory Capacity
- 128MB–8GB synchronous DRAM (SDRAM)

System Graphics
Resolution (with double-buffered 32-bit color):
- Octane/SE 1280x1024 at 72 Hz
- Octane/SSE 1920x1035 at 60 Hz
- Octane/MXE 1920x1035 at 60 Hz

Formats:
- 8-bit, 12-bit, 24-bit RGB single-buffered, z-buffered
- 24-bit, 36-bit RGB double-buffered, z-buffered
- 16-bit, 32-bit RGBA double-buffered, z-buffered, stereo

Graphics Features
Texture cache:
- 4MB standard for Octane/MXE
- 4MB optional upgrade on Octane/SE and Octane/SSE

Alpha blending, accumulation buffer, anti-aliased RGB lines and points, texture mapping, fog, lighting features (spot lighting, eight light sources, two-sided lighting, ambient, diffused, and specular), arbitrary clipping planes, depth cueing, soft shadow and depth of field, subpixel positioning, stenciling, stereo graphics, pan and zoom, XII pixel operations

Storage and I/O
- Crossbar: 1.6GB/sec/port (6 ports)

Internal single-ended
- SCSI controller

External single-ended
- SCSI controller
- 4 XIO board slots
- 3 internal 3.5" storage bays
- Single half-height, dual full-height PCI slots with optional PCI cardcage

Communication
- Single 10Base-T/100Base-TX port
- Dual serial RS422/RS423 DB-9 ports
- Single bidirectional parallel port
- Six audio I/O ports

Display Options

Monitors
- 21" color monitor standard
- 24" color monitor option with Octane/SSE and Octane/MXE

Graphics
Dual-head and CADduo configurations:
- Octane/SE and Octane/SE
- Octane/SE+texture and Octane/SE+texture
- Octane/SE and Octane/SSE
- Octane/SE and Octane/MXE

Digital Media Features

Analog Audio (Standard)
Mono-microphone, self-powered stereo desktop loudspeakers with headphone output, stereo analog—10dBV line level (18-bit A to D and D to A)

Digital Audio (Standard)
16-bit analog stereo I/O (two channels), 24-bit AES-3id I/O (two channels), and 24-bit ADAT optical I/O (eight channels)

Digital Audio I/O (Optional)
8 channels, 24-bit ADAT optical I/O 2 channels, 24-bit AES-3id I/O AESII synchronization

Octane Personal Video (Optional)
S-Video, composite, Silicon Graphics digital video input and output for NTSC and PAL standards; real-time graphics to video output

Octane Digital Video (Optional)
Two fully independent input and output channels of SMPTE 259M (CCIR 601 serial digital video) or single dual-link signal with key for NTSC and PAL (8 or 10 bits per component), real-time graphics to video output

Octane Compression (Optional)
Dual-stream M-JPEG compression as low as 2:1 for composite and S-Video or 601 when used with Octane Digital Video

Expansion Options

XIO
- 4-port Ultra SCSI (4 differential)
- 4-port 100Base-TX and 6 460Kb/sec serial ports
- 2-port Fibre Channel
- Octane Channel Option
- Octane Digital Video
- Octane Personal Video (S-Video and composite)
- Octane Compression (JPEG compression), lossless on IRIX 6.5 for JPEG

PCI (Requires PCI Expansion Unit)
- Single-port 1000Base-TX
- Single-port 100Base-TX
- Single-port differential Ultra SCSI
- Single-port single-ended Ultra SCSI
- Single-port Fibre Channel
- Single-attached FDDI
- Dual-attached FDDI
- ISDN basic rate interface
- Digital audio

Storage Options

Internal
- 9GB Ultra Fast/Wide drive
- 18GB Ultra Fast/Wide (optional)
- 12GB 4 mm DAT drive

External
- 9GB Ultra Fast/Wide (optional)
- 3.5" floppy drive
- 12GB 4 mm DAT drive
- 32X CD-ROM
- Digital linear tape

Bundled Software

Collaboration
- Outbox
- InPerson
- IRIS Annotator
- IRIS Showcase
- Cosmo Player
- Netscape Communicator 4.05
- InfoSearch
- Netscape FastTrack Server
- Cosmo Create
- Adobe Acrobat Reader
- SGI Meeting
- Teleffect

Connectivity
- NFS™
- ISDN/PPP support
- Novell NetWare Client
- Xinet AppleTalk
- Samba

Digital Media
- SoundEditor
- MovieMaker
- ImageWorks
- SoundTrack
- FXBuilder
- MediaRecorder
- MediaPlayer
- CD/DAT Player
- Audio Panel
- Video Panel
- Synth Panel
- Media Convert

Run-Time Libraries
- OpenGL Image Extensions
- OpenGL

Physical Environment

System
- 16.25" H x 11.0" W x 13.25" D
- 14.75" D (depth in localized area of power supply)
- 16.25" D (depth in localized area of optional PCI module)
- 54 lb
- 21" monitor: 17.6" H x 16" W x 16.5" D

Voltage and Frequency
- 100-120/200-240 VAC

Heat Dissipation
- 2,400 BTU/hour
- +13°C to +35°C operating
- -10°C to +65°C nonoperating

Relative Humidity
- 10% to 80% operating, no condensation
- 10% to 95% nonoperating, no condensation

Altitude
- 10,000 ft operating
- 40,000 ft nonoperating

Vibration
- 0.02",5-19 Hz; 0.35G, 19-500 Hz

Regulatory Agency

Electromagnetic
- FCC Class A

Emission
- Canada DOC Class A
- CISPR22 Class A
- VCCI Class A

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