### Silicon Graphics® Octane2™ Visual Workstation with Advanced VPro™ Graphics

The Silicon Graphics Octane2 visual workstation delivers the world’s most advanced desktop visualization. Octane2 combines the ground-breaking VPro 3D graphics system, the industry-leading crossbar architecture, and the latest high-performance MIPS® processor in an affordable power desktop package.

Octane2 is designed to support a suite of industry-leading options, such as Dual Channel Display for efficient workspace management and the new DMediaPro™ DM2 video option for the most powerful high-definition solution on the desktop. You can tackle the world’s most challenging desktop computing problems with Octane2 and its unprecedented accuracy, interactivity, and performance.

### Datasheet

### Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tbody>
<tr>
<td>Advanced VPro Graphics</td>
<td>Outstanding scalable graphics performance with 128MB graphics memory capacity</td>
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<tr>
<td>Advanced texture management with up to 104MB of texture memory</td>
<td>Interactive rendering of volumetric data sets, high-performance processing of large textures</td>
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<td>OpenGL on a Chip™</td>
<td>Hardware acceleration of all OpenGL® 1.2 core features, including 3D textures for volume rendering and new imaging extensions</td>
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<td>Hardware-accelerated specular shading</td>
<td>Improved accuracy for lighting of 3D models; provides Phong effects without a performance penalty</td>
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<td>48-bit [12-bit per component] RGBA</td>
<td>High quality and precise control for 2D/3D imaging with 16-bit Z buffer capability</td>
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<td>Support for high resolutions, including HDTV; full-screen stereo support® and stereo in a window; industry-leading options such as Dual Channel Display</td>
<td>Capacity to display large data sets at high resolutions; stereo viewing options; cost-effective dual display for double the screen real estate without an extra graphics board</td>
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<td>96-bit hardware-accelerated accumulation buffer</td>
<td>High performance and accuracy with depth of field, full-scene anti-aliasing, motion blurs, and other effects</td>
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<td>High-speed, user-configurable graphics memory</td>
<td>Flexibility to make optimal use of color resolution, off-screen graphics memory, and screen resolution</td>
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<td>High-definition and standard-definition video formats, including 4:4:4 RGB with the DMediaPro DM2 option</td>
<td>High-quality, uncompressed, multi-resolution, and multifORMAT real-time video input and output for broadcast, post-production, and film</td>
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<td>Optimized System Architecture</td>
<td>Increased processing power, speed, and throughput with symmetric multiprocessing (SMP) architecture</td>
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<td>Single/dual, 360/400 MHz R12000A™ processors, 2MB Level 2 cache</td>
<td>Optimized memory-to-processor throughput (up to 20% improvement)</td>
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<td>Optimized front-side bus</td>
<td>Dynamically and directly links any two computer subsystems; error-checked “fire and forget” operation</td>
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<td>Cross-bar architecture for high-speed multipoint I/O interconnect</td>
<td>Superior interactivity, even with very large data sets</td>
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<td>8GB SDRAM memory capacity; fully addressable with the 64-bit system and OS</td>
<td>Optimum throughput and reliability, cost effectiveness, long-term investment protection, and ease of upgrading</td>
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<td>Balanced, scalable design and expandable 64-bit system architecture</td>
<td>Maximizes performance; provides industry-leading real-time response, reliability, serviceability, and binary compatibility with other SGI™ IRIX products</td>
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<td>Mature UNIX® OS from SGI</td>
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### Benefits

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Industry-Leading Feature Set Designed for Customer Value

The Silicon Graphics Octane2 visual workstation with VPro graphics advances the state of the art on the power desktop.

VPro graphics for Octane2 offer the very best graphics performance available with an unprecedented feature set, including many industry firsts:

- 104MB texture memory capacity
- Hardware acceleration of OpenGL 1.2 imaging extensions
- Hardware-accelerated specular shading (or per-pixel lighting) for Phong effects without a performance penalty
- Advanced texture management with asynchronous texture download2 capability
- 48-bit (12-bit per component) RGBA with 16-bit Z buffer
- 96-bit hardware-accelerated accumulation buffer for depth of field, full-scene anti-aliasing, motion blurs, and other effects
- Perspective-correct textures and colors
- High-performance hardware clipping

Octane2 now provides four breakthrough VPro graphics options. The newest graphics subsystems, the next-generation V10 and V12, double the geometry performance of the industry-leading V6 and V8 graphics. VPro graphics are available in two graphics memory configurations on Octane2:

- 32MB [V6 and the high-performance V10]
- 128MB [V8 and the high-performance V12 with its expanded feature set]

VPro graphics innovations for Octane2 are designed for the requirements of leading-edge professionals in manufacturing, entertainment, visual simulation, defense imaging, medical imaging, the oil and gas industries, and other fields of science.

Octane2 Delivers Optimal Application Performance for Power Users

For power users in 3D modeling and advanced visualization and imaging, Octane2 optimizes application performance:

- 3D modeling: Octane2 brings a new level of visualization power and functionality to power CAD and power 3D animation professionals by offering the best graphics performance, new features, and more interactivity with large models.
- Advanced visualization and imaging: Octane2 provides industry-leading visual precision and data management for professionals in CAD styling and digital prototyping, the geosciences, entertainment, and the medical and advanced simulation fields. The visual precision and system performance of Octane2 drive enhanced realism and interactivity with fully assembled models. The high-performance Octane2 V12 system—with its large texture memory capacity, support for 3D textures, 8GB system memory capacity, and Dual Channel Display option—is specifically designed for high-performance with big data. You can roam through gigabytes of volumetric data with the Octane2 V12 system. The deep pixel resolution [12 bit per component RGBA] dramatically increases the accuracy of imaging operations. Combined with the new DMediaPro DM2 option, Octane2 V12 delivers unprecedented video quality, versatility, and performance on the desktop.

Choose Octane2 for Performance and Interactivity

Octane2 offers high-performance graphics in a high-bandwidth system for maximum performance and interactivity. Octane2 with VPro graphics features OpenGL on a Chip for full hardware acceleration of the OpenGL 1.2 pipeline. The integrated image and texture engine dramatically speeds up texture loading for fast rendering of large, complex models or volumetric data. The asynchronous texture download capability streamlines texture management for even better...
combined with perspective-correct color and texture, equates to more accurate color, more realistic blending of colors for transparent objects, higher quality volume visualization using 3D textures, and expanded image-processing capabilities. High resolution is retained through the display interface, where 10 bit per component digital-to-analog converters ensure display accuracy.

The Octane2 workstation’s hardware-accelerated specular shading also introduces a new level of accuracy to desktop graphics. Specular shading, or per-pixel lighting with normal interpolation, produces highly accurate lighting and highlights to create very realistic shaded surfaces for 3D modeling. Traditional Gouraud lighting can distort color and highlights, especially when coarsely tessellated solids are being rendered. This is the result of calculating the color only at each triangle vertex and then interpolating that color across the triangle. By contrast, specular shading interpolates normals (not colors) and does an interpolation for each pixel. In this way, specular shading provides a more accurate representation of the curvature of surfaces, improving the viewer’s ultimate understanding of the model.

Choose Octane2 for Versatility and Interoperability
Octane2 is built on IRIX, the advanced, high-performance 64-bit operating system from SGI, and is complemented by the industry’s most comprehensive selection of software tools and applications. Octane2 combines IRIX, digital media capabilities, and a full complement of interoperability, connectivity, and system administration tools. This allows broad application utilization and convenient integration into heterogeneous environments. This versatility and interoperability translate directly into time and cost savings.

Choose Octane2 for Long-Term Value
When you purchase an Octane2 system, your investment becomes a long-term asset. Scalable components let you easily upgrade your system as your computational and application requirements grow. For example, you can easily upgrade to higher processors, more memory, and new graphics.

An evolution of proven technology, Octane2 offers the stability and reliability required in demanding real-world applications. Octane2 is designed with future product enhancements in mind, ensuring that you can take advantage of ongoing visualization and performance advancements from SGI.
### Technical Specifications

#### Silicon Graphics Octane2

### System Features

**Processor Support**
- 1-2 MIPS RISC 64-bit R12000A
- 2MB L2 cache

**Memory Capacity**
- 256MB–8GB synchronous DRAM (SDRAM)

**Internal Storage**
- 9GB or 18GB 10,000 RPM Fast/Wide Ultra SCSI drive

**Graphics Subsystem**
- Full hardware acceleration of OpenGL 1.2, GLX 1.3, OpenGL ARIB imaging extensions

**Graphics Memory**
- VPro V6: 128MB graphics memory, including up to 8MB texture memory
- VPro V12: 128MB graphics memory, including up to 104MB texture memory

**Graphics Architecture**
- Integrated vertex processing engine
- Integrated image and texture engine
- 12-bit per component color and alpha, double-buffered
- 24-bit eye space Z buffer and 8-bit stencil buffers
- 12-bit direct-to-analog (DAC) display interface
- Multiple concurrent views (8-bit window ID)

**Hardware Lighting and Shading**
- Flat shading, Gouraud shading
- Specular shading with normal interpolation for accurate lighting and specular highlights
- Separate specular color (post-texture lighting)

**Hardware Texturing**
- 3D textures, texture color tables, texture coordinate clamp, texture LOD bias, texture scale bias, detail texture, pixel texture

**Effects**
- Convolution, histogram, color matrix, color table
- Hardware accumulation buffer (Octane2 V8, V12)
- Quad-buffered stereo support
- Perspective-correct texture and color
- Per-pixel fog, fog function, fog offset
- Line anti-aliasing
- Hardware-assisted full-scene anti-aliasing
- Blend color, blend logic op, blend minmax, blend subtract

**Visual Formats**
- 32-bit RGBA (8,8,8,8) double-buffered, 24-bit Z buffer, 8-bit stencil
- 32-bit RGBA (10,10,10,2) double-buffered, 24-bit Z buffer, 8-bit stencil
- 4-bit RGBA (RGB[12,12,12,12]) (Octane2 V6, V8, V10, V12), 16-bit Z buffer (Octane2 V12 only)
- 16-bit RGBA quad-buffered (stereo), 24-bit Z buffer, 8-bit stencil
- 12-bit Colorindex, double-buffered, 24-bit Z buffer, 8-bit stencil
- 12-bit Colorindex, quad-buffered (stereo), 24-bit Z buffer, 8-bit stencil
- 8-bit overlay and 8-bit window ID
- 8-bit RGB (24,24,24) hardware accumulation buffer (Octane2 V8, V12)

**Display Resolutions**
- From 640x480 at 60 Hz
- Up to 1920x1200 pixels at 60 Hz and 72 Hz

**Digital Media Features**
- Analog Audio
  - Mono-microphone, self-powered stereo
  - Desktop loudspeakers with headphone output, stereo analog—10 dBV line level [16-bit A to D and D to A]
- Digital Audio
  - 16-bit analog stereo I/O [2 channels]
  - 24-bit AES-3d I/O [2 channels]
  - 24-bit ADAT optical I/O (8 channels)
- DMediapro DM2°
  - SMPTE 259M and 292M SDI inputs and outputs for video and audio
  - SD video formats: 480i (NTSC), 576i (PAL)
  - HD video formats: 720p, 1080i, 1080p
  - Video sampling: Y’Cr’Cb 4:2:2 8- or 10-bit, Y’Cr’Cb 4:2:2:4 10-bit, RGB 4:4:4:8 8-bit

**Expansion Options**
- XID
  - 4-port Ultra SCSi (4 differential)
  - 4-port 100Base-TX and 6 40/100/1000/sec serial ports
  - 2-port Fibre Channel
- PCI (Requires PCI Expansion Unit)
  - Radical Audio
  - Single-port 100Base-TX
  - Single-port 100Base-TX
  - Single-port differential Ultra SCSI
  - Single-port single-ended Ultra SCSI
  - Single-port Fibre Channel

**Storage Options**
- Internal
  - 3 internal 5.5" storage bays
  - 20GB 4 mm DAT drive
- External
  - 18GB 10,000 RPM Fast/Wide Ultra SCSI
  - 3.5" 120MB Superdisk floppy drive
  - 20GB 4 mm DAT drive
  - 60X CD-ROM
  - Digital linear tape

### Bundled Software

**Collaboration**
- Outbox
- IRIS Annimator™
- IRIS Showcase™
- Cosmos Player
- Netscape Communicator
- InfoSearch
- Netscape FastTrack Server
- Cosmo Create
- Adobe Acrobat Reader
- SGImeeting™
- Telefect

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

**Digital Media Software**
- ShotMaker
- SMconver
- SoundEditor
- MovieMaker
- ImageWorks
- SoundTrack
- FX Builder
- MediaPlayer
- 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 13.5" D
- 14.75" D (depth in localized area of power supply)
- 16.25" D (depth in localized area of optional PCI module)
- 5l
- 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**
- 1,000 ft operating
- 40,000 ft nonoperating

**Vibration**
- 0.25 g, 5–50 Hz, 0.5G, 19–500 Hz

**Regulatory Agency**
- Electromagnetic FCC Class A
- ISDN/PPP support
- Novell NetWare Client
- Xinet AppleTalk°
- Samba

**Emissions**
- CANADA DCC Class A
- Class B (2000)
- Class A (2001)
- Class B (2002)

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

**Digital Media Software**
- ShotMaker
- SMconver
- SoundEditor
- MovieMaker
- ImageWorks
- SoundTrack
- FX Builder
- MediaPlayer
- Audio Panel
- Video Panel
- Synth Panel
- Media Convert

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**Emissions**
- CANADA DCC Class A

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