Silicon Graphics® Onyx4™ UltimateVision™ Family

System Highlights

- Industry-leading performance using standards-based technologies
- Programmable graphics features that enable new innovations
- High-bandwidth architecture to effortlessly visualize vast data sets
- Binary compatible with existing SGI® Onyx® family systems
- Compact and affordable for small teams and individuals

Application Highlights

- Whole-model digital mockup and design review
- Multisource data fusion for SGI® Decision Support Center solutions
- Visual simulation with ultimate realism
- Interactive large data visualization for scientific discovery
- Massive throughput for exploration and production optimization
- SGI® Reality Center® facilities made affordable

A Revolution in Visualization

The Silicon Graphics Onyx4 UltimateVision family is tailored to meet the demands of visual computing. It effortlessly visualizes terabytes of data, transforming a tidal wave of information into a rich, visual, interactive experience. The result is greater insight, better decisions, superior outcomes, and competitive advantage.

Combining the power of the unique SGI® high-bandwidth, scalable, shared-memory architecture with best-of-breed industry-standard graphics components, the Onyx4 UltimateVision family delivers the most powerful visualization solution on the planet.

Quantum Leap in Price/Performance

Onyx4 UltimateVision transforms the price and performance of visualization. Capabilities previously only affordable to major facilities can now be routinely deployed in small labs and companies, delivering an affordable competitive edge. Advanced visual computing is finally within the reach of individuals and small teams traditionally limited to workstation or PC solutions, transforming their productivity and insight.

Unparalleled Capability

Onyx4 UltimateVision solutions are based on the award-winning SGI® NUMAflex™ architecture, which provides independent scaling for all of the major system components including CPU, memory, storage, I/O, and graphics. This high-bandwidth architecture is based on a shared-memory model that delivers maximum application throughput and performance for any-size problem.

Powerful new rendering features including floating-point precision, programmable shaders, multiple textures per pass, and anisotropic filtering enable vast improvements in image quality and performance. Most significantly, new techniques using programmable shaders create a fundamental shift in how visualization problems can be solved. For example, techniques such as dynamic shadows, highly realistic materials, and self-animating objects make real-time cinematic-quality scenes feasible.

Many problems require harnessing the power of not one, but many graphics pipelines, all working seamlessly together to produce the desired results. The SGI Scalable Graphics Compositor provides the glue that enables these graphics pipelines to work together. The combination of the compositor's zero latency and dynamic load balancing of each pipeline is used to its maximum potential.

Powerful APIs

High-performance APIs make the development of differentiated software applications a snap. SGI has a complete portfolio of advanced visualization software optimized, because great hardware is only part of the solution. It doesn't matter if you are starting from scratch or adding new features into existing code; software developed by SGI makes it easy to leverage the power of the Onyx4 UltimateVision family.

Configurable to Diverse Needs

Targeted at all users, from individuals to team rooms to extreme immersive environments, the Onyx4 UltimateVision family is available at price points and in form factors designed to fit specific visualization needs. For the first time, Onyx family-class visualization power slips under the desk at affordable prices. The compact deskside configuration is ideal for accelerating team workflow. The high-end configuration easily scales to solve the most extreme visualization challenges.

Whether visualizing vast amounts of data or creating stunning realism, now more than ever, Onyx4 sets the standard.

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Silicon Graphics Onyx4 UltimateVision Technical Specifications

System Specifications	Onyx4 UltimateVision Power	Onyx4 UltimateVision Team	Onyx4 UltimateVision Extreme
Processor quantity	2–8	8–16	16–64
Graphics pipes	2–4	4–8	8–32
Memory	Up to 16GB	Up to 64GB	Up to 128GB
I/O expansion	Up to 8 PCI/PCI-X slots	Up to 32 PCI/PCI-X slots	Up to 64 PCI/PCI-X slots
Form factor	19" rack mount or 17U tall 19" rack	19" rack mount or 17U tall 19" rack	39U tall 19" rack
Height (each U is 1.75 inches)	4U or 6U	6U–12U	22U and above
Voltage per module	110/220 VAC auto-sensing worldwide power supply	110/220 VAC auto-sensing worldwide power supply	110/220 VAC auto-sensing worldwide power supply
Power	1200 W max.	2700 W max.	6600 W max.
Heat dissipation	5000 BTU/hr max.	9000 BTU/hr max.	33000 BTU/hr max.
Electrical service type: racked systems	NEMA L6-30R, 208 VAC at 30 amp (rack PDU)	NEMA L6-30R, 208 VAC at 30 amp (rack PDU)	NEMA L6-30R, 208 VAC at 30 amp (rack PDU)
Visualization Specifications*			
Fill G pixels/sec no FSAA	Up to 9.6G pixels/sec	Up to 19.2G pixels/sec	Up to 76.8G pixels/sec
Fill G pixels/sec with FSAA	Up to 6.4G pixels/sec	Up to 12.8G pixels/sec	Up to 51.2G pixels/sec
Polygons/sec	Up to 600M poly/sec	Up to 1200M poly/sec	Up to 4800 M poly/sec
Display resolution	Up to 12.4M pixels	Up to 24.8M pixels	Up to 99.2M pixels
Display channels	Up to 8	Up to 16	Up to 64
Graphics memory	Up to 1GB	Up to 2GB	Up to 8GB

*peak

Visualization Features

Multisample anti-aliasing
- 2, 4, or 6 subsample full-scene AA; 2x, 4x, 8x, or 16x anisotropic texture filters

Color fidelity
- 32-bit RGBA frame buffer

Floating-point buffers
- 96-bit RGBA floating-point off-screen buffers

Stereo
- Passive and active

Genlock
- Inter-pipe synchronization, no external source support

OpenGL® pipeline
- OpenGL® 1.4 compliant, future compatibility with OpenGL® 2.0

Vertex programs
- Up to 65,280 instructions

Fragment programs
- Up to 16 textures per rendering pass

Z buffer
- 24-bit

Scalable Graphics Compositor

- Combines 2–4 digital display inputs (TMDS via DVI-D) into a single digital (DVI-I) or analog (13W3) output using flexible composition modes with zero latency and load balancing; 2u form factor

Environmental (Operating)

Temperature
- +5 to +35ºC, altitude 5,000 MSL
- +5 to +30ºC, altitude 10,000 MSL

Humidity
- 10% to 90% noncondensing

Environmental (Operating)

Temperature
- -40 to +60ºC

Humidity
- 10% to 95% noncondensing

Altitude
- 40,000 MSL

Software

System
- IRIX® 6.5.21 or later, REACT™ real-time extensions

Graphics
- X11 R6, Motif® Window Manager, OpenGL 1.4 with SGI imaging extensions, OpenML®

OpenGL Performer™
- Multipipe scene graph toolkit with support for image-based rendering, clipmapping, and real-time rendering

OpenGL Shader™
- Dynamic, parameterized multipass shaders compiled from a high-level image shader language OpenGL

Volumizer™
- Interactive multipipe volume rendering toolkit with support for roaming, shading, and performance scaling

OpenGL Vizserver™
- Visual Area Networking provides universal access to advanced visualization and enables multiuser collaboration

OpenGL Multipipe™ SDK
- Toolkit for applications to leverage multiple graphics pipe systems

OpenGL Multipipe™
- Application-transparent software enables OpenGL applications to run in multipipe environments

Service and Support

- SGI also offers appropriate services to manage and support these products. For more information on available services, please see www.sgi.com/support.

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