Datasheet

SGI® Onyx® 300 with InfiniteReality® Family Graphics

Features

- The industry's best visual quality
- Departmental flexibility and affordability
- High-performance computing, group visualization, and Visual Area Networking
- Binary compatible with Silicon Graphics Onyx2 and SGI Onyx 3000 series

The Industry's Best Visual Quality

Today's cost-conscious business environment demands innovative solutions and tangible return on investment. SGI Onyx 300 with InfiniteReality family graphics fulfills these requirements with the ultimate in cost-effective, interactive realism. The SGI Onyx 300 visualization system with InfiniteReality family graphics enables new forms of photorealistic rendering and volumetric imaging by combining advanced hardware, software, and system functionality into an integrated system. It combines midrange compute and I/O scalability with the unique features of InfiniteReality family graphics to allow interactive imaging of unbounded terrain and model data, fully interactive volume visualization of seismic or medical data sets, and immersive, real-time, six-degrees-of-freedom interaction with unmatched visual realism in almost any virtual reality environment you can imagine.

Departmental Flexibility and Affordability

The combination of compute and graphics modularity make SGI Onyx 300 with InfiniteReality family graphics the most cost-effective advanced visualization system on the planet. Utilizing the innovative NUMAflex™ modular computing architecture, SGI Onyx 300 delivers InfiniteReality family graphics at more affordable price points and denser rack configurations than ever before. Specific departmental needs can be met with cost-effective configurations that scale from 2 to 32 CPUs and one to eight InfiniteReality family graphics pipes. Furthermore, because the SGI Onyx 300 system is built using the NUMAflex modular computing architecture, you need only to purchase the capability and infrastructure that match today's needs. You can then expand the system to meet additional requirements as they arise.

High-Performance Computing, Group Visualization, and Visual Area Networking Maximize Impact and ROI

The compact form factor and scalable compute and visualization power of the SGI Onyx 300 system with InfiniteReality family graphics—up to 32 CPUs and two graphics pipes in a single rack—make it the ideal departmental workhorse. A single system delivers the high-performance computing power to solve a department's most complex problems and the graphics capabilities to fully comprehend the results. An SGI Onyx 300 system with InfiniteReality family graphics can simultaneously drive an SGI® Reality Center™ facility for immersive group visualization and support an entire department with high-performance visualization delivered directly to existing desktops through SGI® Visual Area Networking solutions. Everyone in an organization directly benefits from an SGI Onyx 300 system with InfiniteReality family graphics, so the return on investment is always maximized.

Binary Compatible with Silicon Graphics® Onyx2® and SGI® Onyx® 3000 Series with InfiniteReality Family Graphics

Binary compatibility is maintained throughout the SGI® Onyx® family of platforms—Onyx2, the Onyx 3000 series, and Onyx 300 with InfiniteReality family graphics. Powerful software tools and application programming interfaces, including OpenGL Performer™, OpenGL Volumizer™, REACT™, and OpenGL Optimizer™, expedite application development in visual simulation, imagery exploitation, mission planning, styling and design review, energy, and scientific visualization, all with optimum performance.

SGI Onyx 300 with InfiniteReality Family Graphics Technical Specifications

Compute Module
- 2 or 4 64-bit MIPS® R14000™ CPUs at 500 MHz with 2Mbytes/CPU cache or at 600 MHz with 4Mbytes L2 cache per CPU/module
- Up to 8 modules or 32 CPUs per system with full hardware cache coherency
- 512Mbytes to 4Gbytes ECC SDRAM memory per module
- 4-way memory interleaving per bank
- 5-port crossbar memory controller with 3.2Gbytes/sec peak memory bandwidth/module
- 2 full-size 64-bit/66 MHz 3.3 V Universal PCI slots/module
- 1 internal plus 1 external 160Mbytes/sec Ultra160 channel/module
- 2 3.5" hot-pluggable fixed-disk drive bays/module
- XIO™ port for direct connection to one InfiniteReality3 graphics pipe
- NUMAlink™ port for system expansion

Compute Module Networking and Communication
- 1 10Base–T/100Base-TX Ethernet
- 3 115.2 Kbaud serial ports
- 1 NUMAlink port
- 1 XIO port (graphics usage only)
- 1 RTO (real-time interrupt) output
- 1 RTI (real-time interrupt) input
- 2 USB ports, one LI port

Graphics Module (Graphics Subsystem)
- 1 or 2 graphics pipes per graphics module, up to 8 pipes per system
- InfiniteReality architecture with Geometry Engine®, Raster Manager, and Display Generator subsystems
- XIO host connection—dedicated 1.6Gbytes/sec/pipe
- Display up to 8.3M pixels/pipe and 133M pixels/system
- Base display includes 2-channel RGBHV output, 1 S-Video output, genlock with internal or external sync, and hardware swap synchronization for multiple graphics pipes
- Display options: 6 additional RGBHV output channels (8 total), HD and SD graphics-to-video output with real-time colorspace conversion, digital-video multiplexer, hardware-in-the-loop interface
- True 8 subsample full-scene anti-aliasing from a 64-element grid and per-pixel samples
- 48-bit RGBA for up to 68 billion colors
- Quad-buffered active and passive stereo with emitter connections
- Hardware-accelerated clip-mapping and texture paging
- Interactive volume rendering using texture lookup tables with volumes from texture memory; unlimited volumes paged from system memory or disk

Graphics	InfiniteReality3	InfiniteReality4
2D/3D texture memory	256Mbytes/pipe Up to 4Gbytes/system	1Gbyte/pipe Up to 16Gbytes/system
Frame buffer memory	80Mbytes/Raster Manager Up to 320Mbytes/pipe Up to 5.1Gbytes/system	2.5Gbytes/Raster Manager Up to 10Gbytes/pipe Up to 160Gbytes/system
Pixel fill(*)	Up to 700Mpizels/sec/pipe Up to 5.6Gpixels/sec/system	Up to 1.27 Gpixels/sec/pipe Up to 10.2Gpixels/sec/system
Volume rendering	Up to 400Mvoxels/sec/pipe Up to 6.4Gvoxels/sec/system	Up to 800Mvoxels/sec/pipe Up to 6.4Gvoxels/sec/system

*pixel fill numbers are for 8 sub-sample anti-aliased, Z-buffered, textured, lit pixels with 10-bit per component color

NUMAlink Module Option
- 8 NUMAlink ports in 3.5" (2U) enclosure
- Each port connects to either a CPU module or a PCI module
- Allows scalability up to 32 CPUs with 8 InfiniteReality family graphics pipes and 16 PCI slots or 16 CPUs with 4 InfiniteReality family graphics pipes and 56 PCI slots

PCI Module Option
- Additional 12 hot-pluggable 64-bit/66 MHz PCI slots
- 6 buses, 2 slots/bus, 7" (4U) enclosure
- 400Mbytes/sec sustained, 512Mbytes/sec peak bandwidth per bus and 2.4Gbytes/sec and 3.1Gbytes/sec peak per module
- 1 PCI module per CPU module, up to a maximum of 4 PCI modules

PCI Adapters
- 1-port 1Gb/sec or 2Gb/sec Fibre Channel optical or copper, SAN aware
- 1-port ATM-OC3, ATM-OC12
- LVD/single-ended Ultra160 SCSI (2 ports)
- 8-port audio
- 1-port Gigabit Ethernet—copper or optical
- 1-port Myrinet-2000™

Dimensions and Weights
- Rack dimensions: 75.82" H (39U), 23.62" W, 41.28" D
- Max. weight/rack: 1,130 lbs

Environmental (Operating)
- Temperature: +5°C to 35°C @ 5000 ft MSL
+5°C to 30°C @ 10,000 ft MSL
- Humidity: 10–95% noncondensing

Environmental (Nonoperating)
- Temperature: -20°C to 60°C @ 40,000 ft MSL
- Humidity: 10–95% noncondensing

Electrical and Power
Compute Module
- Voltage: 110/220 VAC auto-sensing worldwide power supply
- Power: 275 W
- Heat: 938 BTU/hr
- Service type: NEMA L6-30R, 208 VAC at 30 amp (PDU)

Graphics Module
- Voltage: 200–230 VAC single phase
- Power: 2000 W
- Heat: 6,824 BTU/hr
- Service type: NEMA L6-30, 208 VAC at 30 amp

Software
- System: IRIX® 6.5 Advanced Server Environment, X/Open™ XPG BASE 95, IEEE POSIX 1003.2, 1003.1b, 1003.1c, FIPS 151-2, UNIX® SVR4, BSD 4.3 extensions, SVID3, MIPS ABI, REACT real-time extensions
- Graphics: OpenGL®, XII R6, Motif® Window Manager 1.2, OpenGL Performer, OpenGL Volumizer, OpenGL Optimizer, OpenGL Vizserver™, ImageVision Library®, Open Inventor™
- Digital Media: OpenML™ and Digital Media Software Development Kit (dmSDK), SoundEditor, MovieMaker®, ImageWorks, FX Builder, MediaPlayer, Audio Panel, Video Panel, Synth Panel, Media Convert
- Visual Area Networking: SGI® OpenGL Vizserver with clients for SGI® IRIX®, Sun™ Solaris™, Linux®, and Microsoft® Windows®
- System and Network Management: SGIconsole™, SGI FailSafe™ high-availability solution, Performance Co-Pilot™, Platform Computing Load Sharing Facility (LSF) Suite, TCP/IP, RSVP, DHCP, NetVisualyzer™, SNMP management, SNMP MIB, NIS/ONC+
- Filesystem and Data Management: XFS™ 64-bit journaled filesystem with guaranteed rate I/O, Clustered XFS (CXFS™) high-performance multivendor shared SAN filesystem, ISO 9660 (CDFS), NFS V3, Samba®
- Desktop Environments: IRIX interactive environment with personal system administration for ease of use without system administrator assistance; Common Desktop Environment; GNOME (Freeware); KDE (Freeware)
- Development Tools: MIPSpro™ C, C++, Fortran 77/90 compilers, Ada95, ProDev™ WorkShop debugger with SpeedShop performance analysis tool, Power Fortran, APO (Automatic Parallelization Option), SCSL libraries and Message Passing Toolkit for MPI, PVM, and SHMEM programming
- Utilities: Adobe® Acrobat Reader®, Netscape Communicator®, SGI® Web server based on Apache, Teleffect, InfoSearch for online documentation, RoboInst™ for streamlined network-based software and update installation, Impressario™ printing software
- Security: Trusted IRIX™ B1 security, Commercial Security Pack

Support Services
- Embedded Support Partner (ESP): 7x24 system monitoring, flexible real-time notification, and proactive system management for increased system availability
- SGI® Supportfolio™: Instant Web access to customer support information
- SGI® Knowledgebase: Online access to thousands of proven support solutions
- Hardware and Software Support: Mission Critical, SGI® FullExpress™, SGI® FullCare™, HardwareCare, SoftwareCare

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