Datasheet

SGI® Onyx® 3000 Series with InfinitePerformance™ Graphics

The Ultimate in Interactive Graphics Performance

Features

- Ultimate single-screen performance for interactive applications
- Breakthrough price/performance for advanced visual computing
- Affordable, high-performance virtual reality capabilities
- Diverse operating modes drive productivity and economy
- Modular flexibility and serviceability
- APIs and services that make implementation a breeze

Ultimate Single-Screen Performance for Interactive Applications

Are your scientific and engineering analysis problems becoming too complex to visualize on workstations? Are you looking for ways to interactively visualize complete models instead of single subassemblies? The SGI Onyx 3000 series with InfinitePerformance graphics offers up to 141 million polygons per second and an unbelievable 3.8 billion pixels per second of sustained performance, allowing you to interactively visualize your toughest problems. This remarkable performance is available in an economical package that simplifies work for people doing polygon-intensive applications such as collaborative design, engineering, defense, geospatial imaging, and energy.

Breakthrough Price/Performance for Advanced Visual Computing

The SGI Onyx 3000 series with InfinitePerformance graphics provides multi-user graphics performance at prices that have never before been achieved. The unique SGI® NUMAflex™ architecture eliminates the internal bandwidth constraints that cause data congestion in most computer systems. This enables polygon-intensive applications to run quickly and effortlessly, so users can get to work immediately rather than wait minutes for data to load. Complex features are found quickly because parallel CPUs generate them in real time. Now is the time to purchase your first advanced graphics system or add graphics capabilities to existing SGI® Origin® 3000 high-performance servers.

Affordable, High-Performance Virtual Reality Capabilities

With the SGI Onyx 3000 series with InfinitePerformance graphics, it is possible to drive a multichannel SGI® Reality Center™ room or wall facility with a dedicated graphics pipe per channel at a fraction of the former price, adding incredible immersive visualization to your daily work routine. The single system image and the availability of optimized, third-party software applications offer a new experience that provides a different way to see into your data. Greater affordability allows you to make collaborative visualization available to many teams, empowering your users to make critical decisions in a timely manner.

Diverse Operating Modes Drive Productivity and Economy

The SGI Onyx 3000 series with InfinitePerformance graphics offers flexible operating modes to keep it working around the clock. You can use it simultaneously as an interactive multiuser workstation, as a visual server, and to drive an SGI Reality Center facility. Put it to work at night and on weekends as a compute server to create data for analysis during the next business day.

Modular Flexibility and Serviceability

SGI Onyx 3000 series visualization systems offer the best scalability, flexibility, and reliability available today, offering unprecedented modularity and configurability that enable you to solve your most important graphics problems. The SGI Onyx 3000 series with InfinitePerformance graphics enables you to scale graphics, CPU, memory, storage, and I/O components independently, allowing you to deploy, upgrade, service, expand, and redeploy your system in every possible dimension. Plus, it's binary compatible with existing applications and other SGI graphics computers, further protecting your investment.

APIs and Services That Make Implementation a Breeze

Great hardware is only part of the solution. To ensure your success, SGI also delivers software tools and application programming interfaces (APIs) including OpenGL Performer™, OpenGL Optimizer™, and OpenGL Vizserver™. OpenGL Multipipe™ and OpenGL Multipipe™ Software Development Kit allow you to scale single-pipe applications across multiple InfinitePerformance graphics pipes. With a single point of contact and accountability, SGI Professional Services integrates Managed Services and Support Services expertise to design, build, deploy, and maintain a technologically advanced graphics system that exceeds expectations and is on target, on budget, and on time.

SGI Onyx 3000 Series with InfinitePerformance Graphics Technical Specifications

SGI® Onyx® 3200		SGI® Onyx® 3800-B		SGI® Onyx® 3900	
Processors:	4–8	4–128		4–128	
Graphics pipelines:	1	1–8		1–8	
System bandwidth:	11.2Gbytes/sec	189Gbytes/sec max.		189Gbytes/sec max.	
Maximum memory:	16Gbytes	256Gbytes		256Gbytes	
Router type:	None	8-port		8-port (internal)	
System disk:	36Gbytes	36GB		36Gbytes	
Operating system:	IRIX® 6.5	IRIX 6.5		IRIX 6.5	

Compute Bricks

- C-brick (Onyx 3200 and 3800-B)
  - Processor: 2 or 4 500 MHz or 600 MHz R14000™ with 8Mbytes DDR full-speed SDRAM secondary cache/CPU
  - Memory: Up to 8Gbytes ECC SDRAM
  - Memory controller: 5-port crossbar (3.2Gbytes/sec peak bandwidth)
- Cx-brick (Onyx 3900)
  - Processor: 4 to 16 R14000A™ at 600 MHz with 8Mbytes DDR full-speed SDRAM secondary cache/CPU
  - Memory: Up to 32Gbytes ECC SDRAM
  - Memory controller: one to four 5-port crossbars (3.2-12.8Gbytes/sec peak bandwidth)
  - Internal router: 8-port

R-Brick (NUMAlink™ Router Infrastructure)

- 8-port: Shared-memory systems up to 128 CPUs

I-Brick (Base System I/O)

- Ports: 2-ports USB, 100Base-T; 1-port serial, Fibre Channel
- Internal devices: System disk, data disk, CD-ROM drive
- Disk interface: Fibre Channel
- I/O interface: 1 64-bit/66 MHz PCI bus, 2 slots; 1 64-bit/33 MHz PCI bus, 3 slots

Px-Brick (PCI-X Expansion Module)[1]

- Interface: 64-bit/133 MHz PCI-X, compatible with 3.3V and Universal 64-bit/66 MHz PCI
- Number of slots: 12 full length on 6 buses
- Total I/O bandwidth: 4.8Gbytes/sec peak

X-Brick (XIO™ Expansion Slots)

- 4 XIO slots at 2.4Gbytes/sec peak total bandwidth

V-Brick (Graphics Subsystem)

- 1–2 independent InfinitePerformance graphics pipes/V-brick
- InfinitePerformance graphics with full hardware acceleration of OpenGL® 1.2, GLX™ 1.3, OpenGL ARB imaging extensions
- 1–8 independent InfinitePerformance graphics pipelines with two output channels per pipeline; Multiple independent pipes can be connected using the scalable graphics compositor
- Each independent InfinitePerformance graphics pipe offers:
  - 128Mbytes of shared 2D/3D texture/frame buffer memory with up to 104Mbytes of texture memory, texture lookup tables (TLUTs), detail texture, pixel texture
  - 128 bits/pixel including 24-bit eyespace Z buffer
  - 48-bit RGBA for up to 68 billion colors, Gouraud shading, specular shading
  - 7x7 hardware convolution, histogram, color matrix, color table
  - Up to 2.6M pixels monoscopic or 1.3M pixels stereo driving 1 or 2 output channels/pipe, genlock and swap synchronization

Scalable Graphics Compositor

- Combines 2 or 4 digital video inputs from InfinitePerformance graphics pipes into a single digital or analog video output
- Support for various composition modes to meet diverse needs
- Zero latency compositing for maximum interactivity
- Real-time load balancing
- Supported by OpenGL, OpenGL Performer, OpenGL Optimizer, and OpenGL Multipipe SDK

Power Bay

- Power requirements: 200–240 VAC external source
- Power distribution: 48 VDC internally distributed to all bricks

PCI Adapters

- 1-port 1Gbit/sec, 1-port 2Gbit/sec or 2-port 2Gbit/sec Fibre Channel optical or copper, SAN aware
- 1-port each ATM-OC3, ATM-OC12, Gigabit Ethernet (copper or optic)
- 2-port each serial, Ultra SCSI differential and Ultra160 SCSI (LVD)
- 8-port digital audio

XIO Adapters

- 1-port each FDDI dual attach, HIPPI 800 serial, GSN half bandwidth, and GSN full bandwidth
- Digital video in/out with DVCPRO™
- DMediaPro™ DM3 HD and SD video in/out
- VME 6U and 9U
- 4-port ATM-OC3, 4-port fast Ethernet (100Base-T)

Dimensions and Weights

- SGI Onyx 3200: 34" H, 40" D, 24" W; 17U internal usable space; 250 lb max.
- SGI Onyx 3400 and Onyx 3800: 74" H, 50" D, 30" W; 39U internal usable space; 970 lb max.
- I/O rack: 74" H, 50" D, 30" W; 39U internal usable space; 1,050 lb max.
- RAID/JBOD rack: 71" H, 32" D, 24" W; 38U internal usable space; 1,265 lb max.

Environmental (Operating)

- Temperature: +5 to +35°C, altitude 5,000 MSL; +5 to +30°C, altitude 10,000 MSL
- Humidity: 10% to 90% noncondensing

Environmental (Nonoperating)

- Temperature: -20 to +60°C
- Humidity: 10% to 95% noncondensing
- Altitude: 40,000 MSL

Electrical and Power

- Voltage: 200–230 VAC, single-phase and 3-phase
- Heat/power: 4,500 W available per power bay, N+1 (6 x 750 W supplies), 15,100 BTU/hr
- Electrical service/type: NEMA L6-30, 208 VAC @ 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 file-system, ISO 9660 (CDFS), NFS V3, Samba
- Desktop environments: IRIX interactive environment with personal system administration; Common Desktop Environment; GNOME (Freeware); KDE (Freeware)
- Development tools: MIPSpro™ C, C++, Fortran 77/90 compilers, Ada95, ProDev™ WorkShop debugger with SGI® 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™

[1] PCI-X available in QIC Y03

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