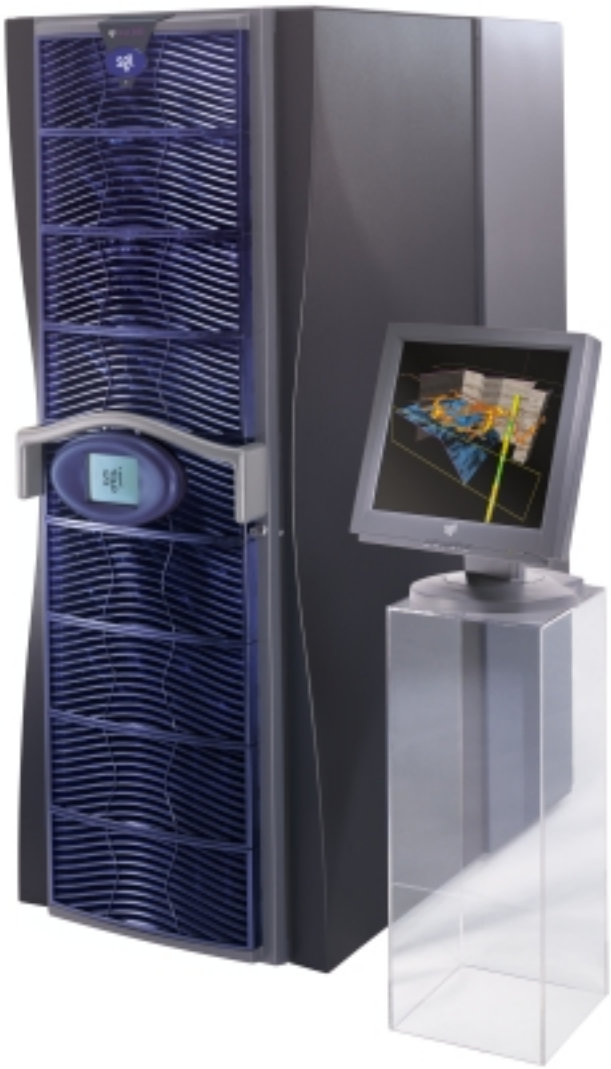
Datasheet

SGI® Onyx® 3000 Series with InfiniteReality® Family Graphics

The Ultimate in Realism for Outstanding Real-Time Graphics

Features

- The industry's richest graphic feature set
- Unparalleled capabilities delivering breathtaking graphic quality
- Industry-leading support for all major high-definition and standard-definition video formats and graphic-to-video output
- Modular flexibility and serviceability
- Diverse operating modes driving productivity and economy for parallel construction
- APIs and service that make implementation a breeze



The Industry's Richest Graphic Feature Set

SGI Onyx 3000 series visualization systems with InfiniteReality family graphics are the world's most powerful, providing breakthrough image quality and performance for the most demanding visual computing challenges. Designed to simultaneously process 3D graphics, 2D imagery, and video data, the SGI Onyx 3000 series scales from single-user systems to those that combine the ultimate in supercomputing and visualization technologies. The SGI Onyx 3000 series with InfiniteReality family graphics delivers high-performance I/O, scalable computing, high color precision, and flexible display capabilities, giving you the flexibility to meet today's needs as well as tomorrow's growth requirements.

Unparalleled Capabilities Deliver Breathtaking Graphics Quality

Whether it's used for engineering, training, science, or entertainment, the SGI Onyx 3000 series with InfiniteReality family graphics is the optimal computing platform for the challenges of the 21st century. The advanced visualization capabilities allow you to achieve astounding visual realism, exceptional dynamic rendering, and superior collaboration. Whether you want to extend your current lead in visualization or add graphics to an existing high-performance computing infrastructure, the SGI Onyx 3000 series with InfiniteReality family graphics fits your needs and budget by providing:

- Advanced computation and visualization for styling and design review
- Massive graphics bandwidth for satellite image processing
- Largest volume 3D visualization for medical and energy applications
- Full-screen anti-aliasing and large texture memory with hardware clip-mapping for visual simulation
- High-quality uncompressed HD and SD video I/O and graphics-to-video out for video editing, compositing, broadcast graphics, and visual effects

Modular Flexibility and Serviceability

SGI Onyx 3000 series visualization systems offer the best scalability, flexibility, and reliability available today. Based on the award-winning SGI® NUMAflex™ architecture, SGI Onyx 3000 series systems offer unprecedented modularity and configurability that enable you to solve your most demanding graphics problems. With the SGI Onyx 3000 series with InfiniteReality family graphics, you can 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 the entire family of SGI® servers and platforms, including Silicon Graphics® Onyx2®, as well as existing software applications, further protecting your investment.

Diverse Operating Modes Drive Productivity and Economy

The SGI Onyx 3000 series with InfiniteReality family 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 as the driving force in 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.

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™, OpenGL Vizserver™, and OpenML®. OpenGL Multipipe™ and OpenGL Multipipe™ Software Development Kit allow you to scale applications across multiple InfiniteReality family 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 InfiniteReality Family Graphics Technical Specifications

SGI® Onyx® 3200

Processors:	2–8
Graphic pipelines:	1–2
System bandwidth:	Up to 11.2Gbytes/sec
Maximum memory:	16Gbytes
Router type:	None
System disk:	36Gbytes
Operating system:	IRIX® 6.5

SGI® Onyx® 3800-B

4–128
1–16
Up to 189Gbytes/sec
256Gbytes
8-port
36Gbytes
IRIX 6.5

SGI® Onyx® 3900

4–128
1–16
Up to 89Gbytes/sec
256Gbytes
8-port internal to Cx-brick
36Gbytes
IRIX 6.5

Compute Bricks

- C-brick (CPU and Memory)
  - 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

G-Brick (Graphics Subsystem)

- 1 or 2 graphics pipes per G-brick, up to 16 per system
- InfiniteReality architecture with Geometry Engine®, Raster Manager, and Display Generator subsystems
- XIO™ host connection—dedicated 1.6Gbytes/sec per pipe
- Display up to 8.3M pixels/pipe and 133M pixels/system
- Base display: 2-channel RGBHV output, one S-video output, genlock with internal or external sync, hardware swap synchronization
- 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 with per pixel variations
- 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, performance 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 700M pixels/sec/pipe Up to 11.2G pixels/sec/system	Up to 1.27G pixels/sec/pipe Up to 20.4G pixels/sec/system
Volume rendering	Up to 400M voxels/sec/pipe Up to 6.4G voxels/sec/system	Up to 800M voxels/sec/pipe Up to 12.8G voxels/sec/system

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

N-Brick (4-Port InfiniteReality Graphics Connection)

- Connects 4 InfiniteReality family graphics pipes to 4 C-bricks

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: CD-ROM, Fibre Channel system and data disk
- 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 3.2Gbytes/sec peak total bandwidth

Power Bay

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

XIO Adapters

- 1-port each FDDI dual attach, HIPPI 800 serial, GSN half bandwidth, and GSN full bandwidth
- DMediaPro™ DM3 high-definition and standard-definition video in/out
- Digital video in/out with DVCPRO™
- VME 6U and 9U; ATMOC3
- 4-port

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

Dimensions and Weights

- SGI Onyx 3200 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

- Power bay
  - Voltage: 200-230 VAC, single-phase and 3-phase
  - Power/heat: 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
- Graphics module
  - Voltage: 200–230 VAC single phase
  - Power/heat: 2000 W, 6,824 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®, X11 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 CoPilot™, 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; 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® FullExpress 7x24, SGI® or FullCare™

[1]PCI-X available in QICY03

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