sgi®

Silicon Graphics Fuel® Visual Workstation

Powering a New Level of Performance, Productivity, and Precision on the Desktop

The Silicon Graphics Fuel visual workstation maximizes the performance of your desktop applications while offering you unprecedented price/performance value. A premium blend of industry-leading technology from SGI, Silicon Graphics Fuel features the latest MIPS® R16000A™ processor and the unparalleled VPro™ 3D graphics system for IRIX® in a new high-bandwidth architecture. Drive your creativity and productivity to a new level with Silicon Graphics Fuel.

Features	Benefits
• High-Performance Processing and Revolutionary High-Bandwidth Architecture	• Maximized Performance and Throughput
- Single 800 MHz or 700 MHz MIPS® R16000A processor with 4MB L2 cache; 200 MHz front-side bus; revolutionary system architecture based on the SGI® 3000 family	- Powerful MIPS® processing in a high-bandwidth architecture increases application performance with CPU-intensive applications
- Industry-leading 3.2GB-per-second memory bandwidth and 1.6GB-per-second system-to graphics interconnect	- Maximizes application perfomance and interactivity for image manipulation and real-time visualization with large models and data sets
- 4 integrated PCI slots, internal CD/DVD ROM option; external DVD-RAM	- Expanded range of affordable options
• Advanced VPro Graphics	• Accessibility of Highest Quality Desktop Graphics
- Outstanding scalable graphics performance with VPro™ V10 or V12 graphics with user-configurable graphics memory supported by the IRIX OS and SGI® APIs	- Extremely fast geometry and fill-rate performance for high-speed drawing, even with very complex designs, and high-speed image generation, even with fully textured designs; maximum flexibility with color and screen resolutions and off-screen graphics memory
- Advanced texture management with up to 104MB of texture memory; asynchronous texture download capability	- Interactive rendering of volumetric data sets; high-performance processing of textures
- OpenGL on a Chip™	- Hardware acceleration of OpenGL® core features, including 3D textures for volume rendering and imaging extensions
- Hardware-accelerated specular shading (Phong effects)	- Improved realism and accuracy for lighting of 3D models without a performance penalty
- 48-bit (12-bit-per-component) RGBA with 16-bit Z buffer capability	- Cinematic quality and highest precision for 2D/3D imaging
- Uncompressed standard-definition serial digital video options with DMediaPro™	- High-quality video input and output for editing, compositing, and visual effects
- Support for high resolutions, including HDTV; full-screen stereo support and stereo in a window; Dual Channel Display option	- Capacity to display large data sets at high resolutions; stereo viewing options; cost-effective dual display for double the screen real estate with a single graphics board
- 96-bit hardware-accelerated accumulation buffer	- High performance and accuracy with depth of field, full-scene anti-aliasing, motion blurs, and other effects
• Proven, Robust IRIX OS from SGI	• Provides Industry-Leading Real-Time Response and Reliability
- Built on the fifth-generation 64-bit IRIX operating system	- Industry-leading real-time response, serviceability, and reliability; binary compatibility with other IRIX products

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Technical Specifications

System Features

Processor Support
- 1 MIPS RISC 64-bit R16000A
- 800 MHz or 700 MHz R16000A
- 4MB L2 cache

Memory Capacity
- 512MB–4GB synchronous double-data rate RAM (DDR SDRAM)

Internal Storage
- 18GB, 36GB, or 73GB 10,000 RPM Ultra160 SCSI drive (3.5")
- Up to three drives

Graphics Subsystem
- Full hardware acceleration of OpenGL 1.2, GLX™ 1.3, OpenGL ARB imaging extensions

Graphics Memory
- VPro V10: 32MB graphics memory, including up to 8MB[1] texture memory
- VPro V12: 128MB graphics memory, including up to 104MB[1] 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
- 10-bit digital-to-analog (DAC) display interface
- Multiple concurrent visuals (8-bit window ID)
- Supports hardware lighting and shading, hardware texturing and advanced effects. See
  www.sgi.com/workstations/fuel/tech_specs.html

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
- 48-bit RGBA (12,12,12,12) (V10, V12); double-buffered (V12); 16-bit Z buffer (V12)
- 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
- 96-bit (24,24,24,24) hardware-accumulation buffer (V12)

Display Resolutions
- From 640x480 at 60 Hz
- Up to 1920x1200 pixels at 60 Hz and 72 Hz
  For the full list of supported resolutions for each graphics option, see
  www.sgi.com/go/resolution

I/O
- 2 internal SCSI Ultra160 controllers/buses
- 2 66 MHz, 64-bit 3.3V PCI card slots
- 2 33 MHz, 64-bit 3.3V PCI card slots

Communication
- Single 10Base-T/100Base-TX port
- Dual serial RS422/RS423 DB-9 ports
- Single bidirectional parallel port
- 2 USB-A ports

Display Options

Monitors
- See *http://www.sgi.com/peripherals/displays/*

Graphics
- Analog RGB and TMDS video on a single DVI-I monitor port
- Additional ports for stereo view and genlock signals
- Dual Channel Display option (V12); 80MB texture memory available when using this option; Dual Channel supplies two DVI-I monitor ports

Digital Media

Features
- Baseline audio output through USB with optional analog desktop speakers

Options
- Analog desktop speakers
- Digital audio
  - 24-bit AES-3id I/O (2 channels)
  - 24-bit ADAT optical I/O (8 channels) DMediaPro™ DM6 standard-definition digital I/O
  - SMPTE 259M SDI video I/O
  - PAL and NTSC support DMediaPro™ DM7 Standard-Definition Graphics-to-Video Output[2]
- Compatible with DM6
- PAL and NTSC

Expansion Options

PCI
- Single-port 1000Base-SX (supports 100Base-TX)
- Dual-port Ultra160 SCSI LVD
- Dual-port Ultra SCSI HVD
- Single-port 2GB Fibre Channel
- Dual-port serial card
- Dual-port 2GB Fibre Channel

Storage Options

Internal
- 3 internal 3.5" hard drive storage bays (one occupied by system drive)
- 2 internal 5.25" option drive storage bays for DVD-ROM option or other removable media

- 12X DVD-ROM[3]
- 20GB 4 mm DAT drive

External
- DVD-RAM[4]
- SGI® Total Performance 900 (TP900), SGI® Total Performance 9100 (TP9100), SGI® Total Performance 9300 (TP9300), SGI® Total Performance 9400 (TP9400), SGI® Total Performance 9500 (TP9500) storage systems, SGI® NAS and SAN solutions.

Software

System
- IRIX 6.5 Advanced Workstation Environment supports UNIX® 95, MIPS® ABI, Year 2000
- REACT™ real-time extensions

Graphics APIs
- OpenGL, OpenGL Performer™, OpenGL Volumizer™, OpenGL Shader™, and OpenML®

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 787/90 compilers, ProDev™ WorkShop debugger with SGI® SpeedShop™ performance analysis tool, Power Fortran, APO (Automatic Parallelization Option), SCSL scientific and math libraries and MPT (Message Passing Toolkit) for MPI and SHMEM™ programming

Other Software
- See
  www.sgi.com/workstations/fuel/tech_specs.html

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

Physical Environment

System Dimensions and Weight
- 19.0" H x 8.9" W x 19.4" D
- 8.3" W (chassis width)
- 42 lb

Environmental (Operating)
- Temperature
  +5°C to +35°C up to 5,000 ft altitude
  +5°C to +30°C from 5,000 ft to 10,000 ft altitude
- Relative humidity
  10% to 80% noncondensing
  Maximum wet bulb 32°C
- Altitude
  10,000 ft
- Vibration
  - Sine sweep
  0.02" displacement 5–19 Hz, 0.25 G
  19–500 Hz (exception: the optional internal
  DVD-ROM is limited to 0.003" displacement
  5–36 Hz, 0.2 G 36–500 Hz)
  - Random
  0.10 Grms for 15 minutes
- Shock
  - Half sine wave
  30 G, 3 msec. (vertical);
  15 G, 3 msec. (horizontal)
- Heat Dissipation
  977 BTU/hour

Environmental (Nonoperating)
- Temperature
  -40°C to +85°C
- Relative humidity
  5% to 95%
- Altitude
  40,000 ft
- Vibration
  - Sine sweep
  0.10" displacement 3–10 Hz,
  0.5 G 10–200 Hz
  - Random
  1.15 Grms for 15 mins.
- Shock
  - Trapezoidal wave
  35 G, 200 in/sec.

Acoustics (per ISO 7779)
- Sound power
  4.92 bels
- Sound pressure
  38.8 dBA at operator position

Voltage and Frequency
- 100–120/200–240 VAC

Regulatory Agency
- Electromagnetic FCC Class A

Emissions
- Canada DOC Class A
- CISPR22 Class A
- VCCI Class A

[1] At 1280x1024 resolution
[2] See DMedia Pro™ DM7 specifications fo platform specifics
[3] Requires IRIX® 6.5.20
[4] Requires IRIX 6.5.21