

"I thought I told you to buy a PC."

"This runs like a workstation."

"I know."

"But this has the best of both."

"I suppose it costs more, too?"

"No."

"You just get more."

 Silicon Graphics

IRIS INDIGO

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Step beyond traditional workstations and PCs by exploring the IRIS Indigo™ family of desktop systems.

You'll discover a new class of computer — the RISC PC — that combines workstation performance with PC simplicity. Plus all of the advanced 3D graphics capabilities you'd expect from a company called Silicon Graphics.

Welcome inside the dream machine.

Because Silicon Graphics started with a general-purpose, standards-based workstation design, the IRIS Indigo family makes use of UNIX®/POSIX, X™/Motif™, Display PostScript®, high-speed 2D graphics, virtual memory, TCP/IP, NFS™, and the IRIS Graphics Library™ (IRIS GL™). All built around the industry-standard MIPS® R3000A RISC CPU and R3010A floating-point unit. On-board memory interleave controllers, a high-speed system bus, and custom ASICs transfer data at up to 133 MB/sec. while making use of as much as 96 MB of system memory.

But the IRIS Indigo family offers much more than standard workstation fare. You get the kind of compute performance — rated at 30 MIPS, 4.2 MFLOPS, and 26 SPECmarks — you'd expect from more expensive solutions. And you get the lifelike, interactive 3D graphics that have become Silicon Graphics' hallmark — realistic images that make use of such advanced capabilities as texture mapping, transparency, spot lighting, and arbitrary clipping planes.

The IRIS Indigo family owes its robust performance to 25 custom ASICs (designed by Silicon Graphics) that encompass more than 700,000 custom gates. And, because this technology can be flexibly configured, the IRIS Indigo family can meet virtually any budgetary or applications requirement.

All of which makes the IRIS Indigo family stand out. But don't take our word for it. See IRIS Indigo for yourself.

Two system bus slots offer additional expandability to meet your I/O and networking needs.

Low-speed fan quietly cools the system.

Three 3-1/2" SCSI slots allow you to simply slide in the mass storage options you want — including DAT floppy disk, and up to 1.3 GB of hard disk storage.

The Motorola 56001 DSP chip is part of an audio system that delivers impressive digital sound.

Expandable SIMM memory allows you to configure your system from 8 to 96 MB to fit your needs.

High-performance VLSI design combines with high-speed GIO-32 bus to transfer information at up to 133 MB/second.

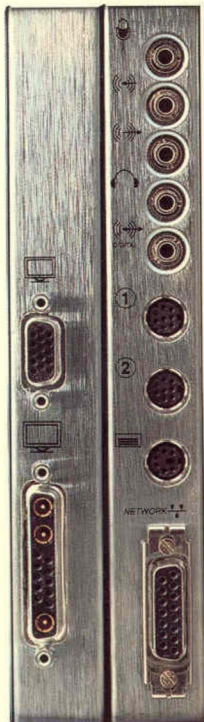
IRIS Indigo's peripheral controller chip delivers 2.3 MB/second sustained disk transfer rates.

MIPS RISC R3000A CPU and R3010A FPU deliver performance rated at 30 MIPS, 4.2 MFLOPS, and 26 SPECmarks.

IRIS Indigo's unique graphics architecture delivers fast 2D graphics, interactive 3D graphics, advanced imaging capabilities, Virtual24" color, and a high-speed video bus.



Input/Output Panel



On the back of IRIS Indigo you'll find a rich set of standard I/O connections. These allow you to customize your system to meet your current and future needs.

- Stereo digital input/output jack for digital audio input and output from DATdeck, CD player, or MIDI device.
- Stereo line-in jack records analog audio input from tape deck, CD player, or similar device.
- Stereo line-out jack sends audio out to external tape decks, amplifiers, speakers, or other components.
- Microphone input jack allows you to capture live audio via the microphone included with the system.
- Stereo headphone jack gives you rich sound in privacy.
- Two Macintosh[®]-compatible serial ports interface with modems, laser printers, terminals, MIDI devices and other serial peripherals.

Most of today's — and many of tomorrow's — industry standards are bundled into the IRIS Indigo family.

- IRIX[™] 4.0 — SVR3 UNIX with 4.3BSD and other extensions, like the TCP/IP network protocol, give you an advanced, standard operating environment.
- IRIX 4.0 also provides full implementations of the X11R4 window system, the Motif-based 4D Window Manager, and Display PostScript, giving you an industry-standard graphical user interface.
- WorkSpace[™] — bundled with IRIX 4.0 — helps you graphically manage files and basic UNIX functions.
- System Manager[™] — an integrated graphically-oriented system management package — allows you to quickly and easily manage the network and other resources.
- Audio Tools — a multi-track sound editor with a 10 MB sound library.
- IRIS Showcase[™] — a multimedia presentation development environment.
- ACE compatibility makes IRIS Indigo capable of running future ACE operating systems and applications.



- SCSI II port offers connections to external SCSI devices, such as disk, tape, and CD-ROM drives.
- Ethernet allows you to access local networks.
- Bi-directional Centronics parallel port connects you with parallel devices, including scanners and printers.

The IRIS Indigo family offers a unique sensory approach to computing. The audio subsystem and video bus allow you to add sound and video input and output to your computing options.

- A powerful digital signal processor (DSP), with its own real-time kernel, ensures that audio timing isn't affected by other demands on the CPU.
- Optional DAT and CD drives can read both audio and data. The DAT drive also allows you to write audio and data to tape, meaning you can use the same devices for music and data storage.
- Bundled audio tools help you to create high-quality digital or analog audio recordings on your desktop.
- Built-in video support and an optional live video I/O board make it possible for you to mix video with graphics or to record your work on video tape.
- Video bus accepts add-on video cards at reduced costs because video and graphics share common back-end circuitry.
- Support for recording in NTSC and PAL formats allows you to accommodate a wider variety of input options.

The IRIS Indigo family gives you all the color and graphics you'd expect from Silicon Graphics at a breakthrough price.

- Dynamic 3D graphics allow for real-world modeling and simulation.
- Virtual24 color creates a full-color look for 8-bit systems, while 24-bit systems offer added clarity, together with true alpha-blending and advanced anti-aliasing capabilities.
- Acceleration of X primitives ensures fast 2D X-Windows[™] performance.
- Full support for IRIS Graphics Library capabilities guarantees compatibility with all existing IRIS GL applications.



IRIS Indigo

If your work includes software engineering, digital media, education, or drafting — or if it requires basic electronic design, mechanical design, engineering, chemistry, visualization, or earth-sciences research — IRIS Indigo is the system of choice. Using the high-speed MIPS R3000A RISC CPU, IRIS Indigo delivers high-speed geometry calculations and Z buffering to give you interactive 3D graphics performance at a low cost. To keep image quality high without raising the price, IRIS Indigo dithers 24-bit color values into an 8-bit framebuffer, which allows the cost-effective IRIS Indigo to deliver the entire range of colors and maintain complete compatibility with full 24-bit applications. IRIS Indigo is also available in server configurations.

Meet our extended family.

IRIS Indigo Dual-Head

IRIS Indigo can be configured in a “dual head” mode — with support for IRIS-class graphics on two 16 and/or 19-inch monitors. The dual-head system is ideal for screen-intensive applications, such as seismic mapping, oil and gas exploration, image processing, color publishing, mechanical design, and scientific visualizations. (made all the easier by the IRIS Explorer environment bundled with IRIS Indigo).

IRIS Indigo XS

IRIS Indigo XS offers all of the same capabilities IRIS Indigo does, plus expandability, 1280 x 1024 resolution, and four times the 3D graphics performance — making IRIS Indigo XS an outstanding solution for software engineering, publishing, and electronic design automation. With an optional 24-bit Z buffer, Indigo XS is ideal for computer-aided design, solids modeling, and architectural applications. The system features a custom VLSI Geometry Engine and a high-resolution (1280 x 1024) monitor, which can be refreshed at 60 or 72 Hz. IRIS Indigo XS also employs the same RISC CPU and Virtual24 color support included with the entry IRIS Indigo system, allowing you to keep your costs low without sacrificing performance.

IRIS Indigo XS24

This leading-edge graphics system delivers true 24-bit color for professionals working in color publishing and image processing applications. The addition of an optional 24-bit Z buffer delivers the kind of performance required by volume visualization, medical imaging, molecular modeling, computational chemistry and mechanical design. IRIS Indigo XS24 also offers true 24-bit RGB anti-aliasing and alpha blending in a low-cost package. The custom VLSI Geometry Engine delivers leading-edge 3D graphics affordably — allowing you to work with moving lifelike objects for just a fraction of what you'd expect to pay.



SiliconGraphics

IRIS INDIGO

ELAN

IRIS INDIGO

XS²⁴

IRIS INDIGO

XS

IRIS INDIGO



Features	IRIS Indigo IRIS Indigo Dual-Head†	IRIS Indigo XS	IRIS Indigo XS24	IRIS Indigo Elan
CPU/FPU	R3000A/3010A	R3000A/3010A	R3000A/3010A	R3000A/3010A
Geometry Engines	System CPU	1	1	4
Screen Refresh Rate	60 Hz	60/72Hz	60/72Hz	60/72Hz
Z Buffer	In Software	Optional	Optional	Standard Hardware
Color Planes	8-bit (Virtual24)	8-bit (Virtual24)	24-bit	24-bit
Overlay/Window Clipping				
ID Planes	2/2	4/4	4/4	4/4
Screen Resolution	1024 x 768	1280 x 1024	1280 x 1024	1280 x 1024
Performance				
MIPS	30	30	30	30
MFLOPS	4.2	4.2	4.2	4.2
SPECmarks	26	26	26	26
2D Lines*	450K	250K	250K	1 Million
3D Lines*	230K	250K	250K	1 Million
Polygons**				
Flat No-Z, TMesh	35K	80K	80K	350K
Gouraud Z, TMesh	15K	60K	60K	225K
Gouraud Z Quads***	6.6K	25K	25K	100K
3D Points/Transforms	270K	250K	250K	1 Million
Characters	120K	100K	100K	200K
Software Pixel DMA Transfers				
8 bit/pixel	30 Million	30 Million	30 Million	30 Million
32 bit/pixel	8.8 Million	12 Million	12 Million	12 Million
Screen Clear	41 msec	8 msec.	8 msec.	8 msec.

* 10-pixel, connected, arbitrarily rotated.

** 50-pixel triangles, arbitrarily rotated.

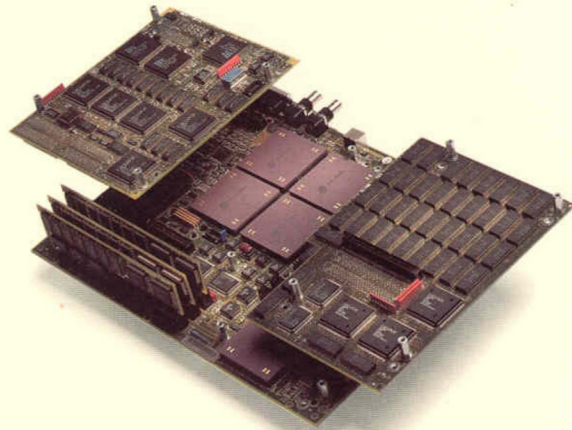
*** Filled 10 x 10 pixels, 4-sided, independent quadrilaterals, arbitrarily rotated.

† May incur a slight decrease in performance when running IRIS GL programs on two heads concurrently.

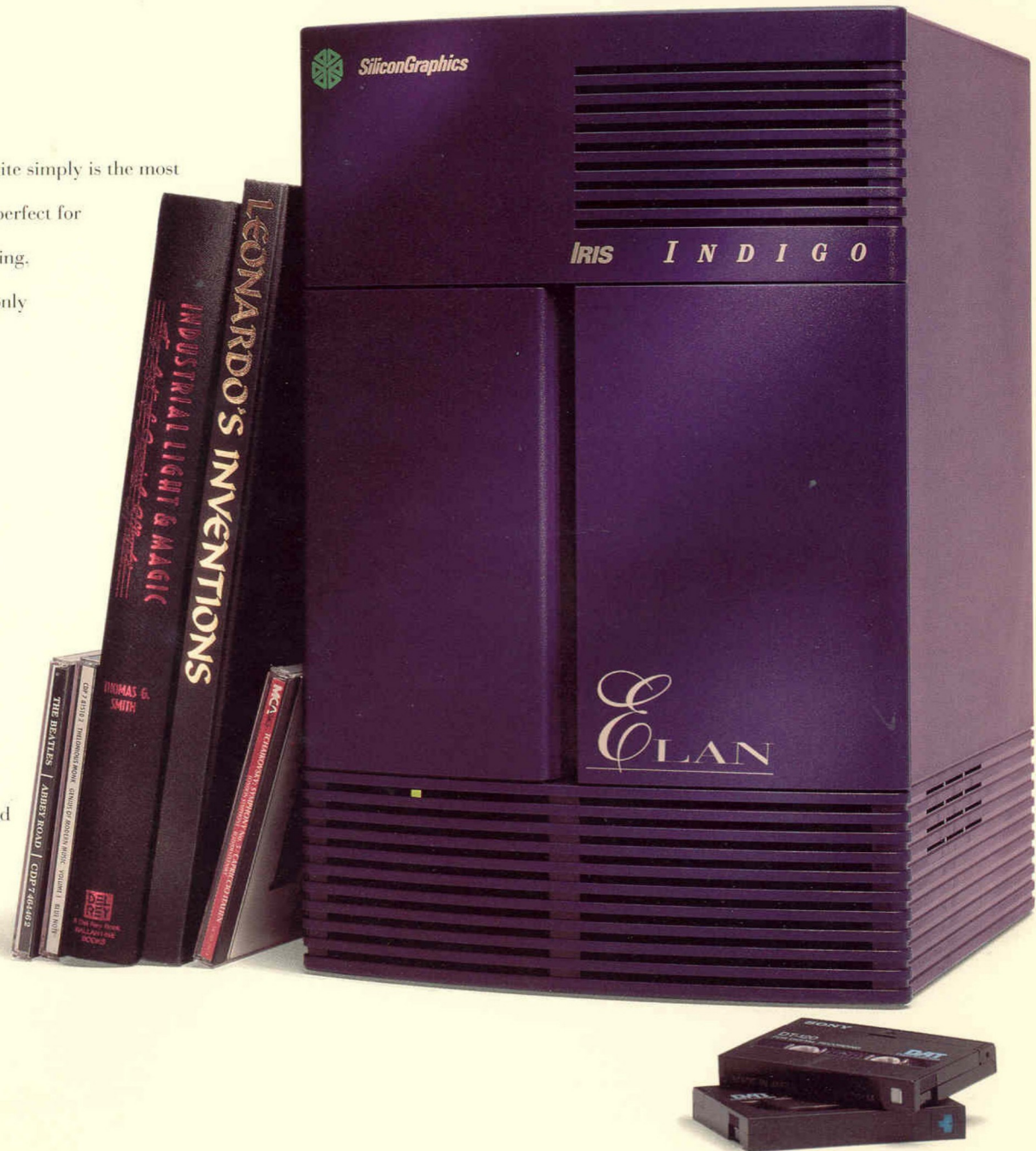
All performance measurements — made running IRIX 4.01 — may vary slightly with subsequent IRIX releases.

IRIS Indigo Elan™

Introducing a new class of desktop graphics. IRIS Indigo Elan quite simply is the most powerful desktop 3D graphics system in the world — making it perfect for scientific visualization, simulation, high-end design and engineering, entertainment and animation applications. In fact, cost was the only thing we cut while building this system.



Blessed with all the features of our other IRIS Indigo systems, and propelled by four times the graphics performance of Indigo XS and XS24, IRIS Indigo Elan is the top of the line. Four custom parallel VLSI Geometry Engines deliver exceptional realism with interactive solids and complex models — making IRIS Indigo Elan the system of choice for cost conscious power users.



Processing

CPU/FPU MIPS R3000A/R3010A @ 33 MHz
Cache 32 KB Data, 32 KB Instruction
Memory Storage 8 to 96 MB of SIMM memory
Hardware support for both big and little endian byte ordering

Graphics

Advanced Features Texture mapping
Alpha blending
Accumulation buffer
Anti-aliased RGB lines and points
Full-scene anti-aliasing
Fog
Lighting features
Spot lighting
Eight light sources
Two-sided lighting
Ambient, diffused, and specular
Arbitrary clipping planes
Depth cueing
Soft shadow and depth of field
Sub-pixel positioning
Stenciling (XS, XS24, Elan)
Stereo graphics (XS, XS24, Elan)
Pan and zoom
Sphere rendering
X11 pixel operations

Color Maps 4 (256 colors each) — IRIS Indigo
2 (4096 colors each)
(XS, XS24, Elan)

IRIS GL Display Modes RGB double buffer
RGB single buffer
Color index double buffer
Color index single buffer
Stereo viewer connector
(XS, XS24, Elan)

Audio/Video

Controller/Processor Motorola 56001 DSP @ 20 MHz
Input Stereo line-level analog
Mono microphone
Serial digital (stereo), IEC958
Output Stereo line-level analog
Stereo headphone
Serial digital (stereo), IEC958
Internal mono speaker
Sampling Rates 48, 44.1, 32 KHz, and many lower rates
Converters Analog to digital conversion (16 bit stereo, 64 I/C oversampling)
Digital to analog conversion (stereo 16/18 bit stereo, 8x oversampling with digital filter)
Connectors 5 stereo mini-phone jacks, 1/8 inch (3.5 mm)
Video Video slot on graphics board
Independent video bus
Genlock (XS, XS24, Elan)

Storage

Internal 3 Internal mass storage bays
236 MB formatted disk drive
2.3 MB/sec transfer rate
432 MB formatted disk drive
2.3 MB/sec transfer rate
540 MB formatted disk drive (Europe only)
2.3 MB/sec transfer rate
2.0 GB DAT tape drive (supports both 2.0 and 1.3 GB tapes)
1.44 MB floppy disk drive
External 600 MB CD ROM disk drive
150 MB 1/4" QIC disk drive
Monitors 16-inch dual scan, 60 Hz vertical refresh rate (non-interlaced)
19-inch dual scan, 60 Hz vertical refresh rate (non-interlaced) (Europe only)
19-inch dual scan, 60/72 Hz vertical refresh rate (non-interlaced) stereo ready
I/O Ports 2 Serial RS422 (38.4 Kbaud)
1 Bidirectional parallel
1 Ethernet
1 SCSI II
5 Audio I/O connectors
2 GIO-32 bus slots

Software

IRIX 4.01 IEEE POSIX 1003.1
X/Open XPG3, Vol 1, 2, 3
FIPS 151-1
UNIX System V
4.3 BSD enhancements
SVID Issue 2
X11R4 Window System
OSF/Motif Toolkit 1.1.1
Motif Window Manager 1.1.1
Display PostScript
IRIS GL
IRIS Showcase (with audio and hyperlink extensions)
ImageVision™ Tools
IRIS Explorer
Audio Tools Multi-Track Recorder
Audio Tools Sound Library
Languages ANSI C
C++ 2.0
Fortran77
Ada
Pascal
CASEVision™
Programming Env.
Networking TCP/IP
NFS™
FDDI
DECnet™; LAT emulator
IBM 3270™; 5080™ emulator
TCP3270™; SNA3270™
SNA3770™; & SNA LU6.2™
Macintosh EtherTalk™
NetVisualizer™
Spectrum SNMP management
SNMP Agent
Ethernet

Physical and Environmental

System 15 inches H x 9.5 inches W x 10.9 inches D
24 lbs.
16-Inch Monitor 16.1 inches H x 16.0 inches W x 18.8 inches D
52.9 lbs
19-Inch Monitor 18.7 inches H x 18.9 inches W x 19.9 inches D
71.6 lbs
Power Requirements Voltage and Frequency
100-240 VAC
2.5 - 1.6A 47-63 Hz
120 V 2.3A (without monitor)
120 V 2.5A (with monitor)
Heat Dissipation 1000 BTU/hour
Ambient Temperature +13 to +35 degrees C operating
-40 to +65 degrees C non-operating
Noise 33 dB (A) in typical operating position
Relative Humidity 10% to 80% operating no condensation
10% to 95% non-operating no condensation
Altitude 10,000 feet operating
40,000 feet non-operating
Vibration 0.02 inches, 5-19 Hz
0.35 G, 19-500 Hz

Regulatory Agency Approvals

Indigo	XS, XS24, and Elan
Electromagnetic FCC Class B	FCC Class A
Emission Canada DOC, Class B CISPR 22 Class B Germany VDE Class B VCCI Class 2	Canada DOC, Class A CISPR 22 Class A Germany VDE Class A VCCI Class 1
Product Safety UL 1950, CSA 22.2 No. 950, IEC 950 EN 60—950 Class 1 SELV	UL 1950, CSA 22.2 No. 950, IEC 950 EN 60—950 Class 1 SELV
Ergonomic/Health Germany ZH618	Germany ZH618



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