IRIX® 6.5

Breakthrough Scalable Performance and Reliability for High-Performance Computing and Visualization

IRIX 6.5 provides a consistent operating system base for all Silicon Graphics® systems. With IRIX 6.5, Silicon Graphics focuses on increasing its industry-leading performance and reducing the cost of system ownership through advances in scalability, reliability, availability, data center resource management, heterogeneous enterprise integration, a Web-enabled visual desktop, and a rich development environment.

IRIX 6.5 offers the maturity of UNIX® with many valuable tools to support complex computing tasks where system reliability is key. With high-performance networks, interoperability tools, and a wealth of third-party solutions, you can build solutions successfully and efficiently on Silicon Graphics servers or workstations.

IRIX Is UNIX

IRIX 6.5 is the Silicon Graphics mature 64-bit UNIX operating system whose roots originate from IRIX 6.0, introduced in 1994. IRIX 6.5 is UNIX 95 certified by The Open Group and supports all the major industry standards, including POSIX, UNIX SVR4, Year 2000, X11 and Motif, and OpenGL®.

IRIX Preserves Your Existing Investment

IRIX 6.5 supports all Silicon Graphics systems, including the current product line, Origin™, Onyx2™, OCTANE™, and O2™, and the older systems, CHALLENGE®, Onyx®, Indigo2™, Indigo®, and Indy®. Most applications built on earlier IRIX releases, IRIX 5.3 and above, run without recompilation on IRIX 6.5.

New Packaging

IRIX 6.5 is available in two configurations, Advanced Workstation Environment (AWE) for visual workstations and Advanced Server Environment (ASE) for multiprocessor servers. ASE and AWE bring greater value to your system, providing tools for interoperability and enterprise system management.

	ASE	AWE
Mature Operating Environment		
• IRIX 6.5	X	X
• XFS™ 64-bit filesystem	X	X
TCO/Enterprise Management		
• NFS™	X	X
• EnlightenDSM® Basic	X (Server)	X (Client)
• Computer Associates® Unicenter® TNG™ Framework	X	
• HP-UX MIB (SNMP)	X	X
Interoperability		
• Novell NetWare™ Client	X	X
• SAMBA	X	X
• Xinet AppleTalk®	X	X
Web Tools		
• Netscape® Communicator	X	X
• Netscape Fast Track Server	X	X
• Cosmo™ Create	X	X
• Outbox	X	X
Desktop Productivity		
• Adobe Acrobat Reader™	X	X
• IRIS Showcase™	X	X
• Digital Media Tools	X	X
• Personal System Administration Tools	X	X

Continued High Performance

World-class performance is achieved with Origin200™ and Origin2000™ systems and IRIX 6.5 for SPECweb96 benchmark, LADDIS, SPECrate, and AIM 7. In addition, IRIX 6.5 achieved guaranteed 1 millisecond latency for real-time applications on Origin and Onyx2 systems.

Silicon Graphics has been a long-time leader in 3D graphics and visualization performance. OpenGL is embedded in the graphics hardware for O2, OCTANE, and the scalable graphics pipe Onyx2, enabling the most optimized performance for simple to complex graphics applications.

Scalability with Symmetric Multiprocessing (SMP)

IRIX 6.5 provides breakthrough SMP scalability by supporting up to 128 processors in a single-system implementation on Origin systems. For the workstations, Onyx2 supports up to 64 processors and OCTANE up to two processors. Through the use of fine-grained multithreading and innovative scheduling and virtual memory enhancements, we have extended IRIX to efficiently deliver industry-leading scalable SMP performance for parallel applications and complex workloads. The specific memory enhancements support up to 256GB of physical memory and 82GB-per-second sustained I/O.

RAS = Reliability + Availability + Serviceability

Reliability
IRIX 6.5 is the most reliable operating system ever released by Silicon Graphics. IRIX 6.5 has undergone months of testing to ensure it can interoperate in a host of heterogeneous environ-ments without difficulties. Additional error recovery code has been added to IRIX 6.5 to allow applications to gracefully recover from a variety of errors and conditions. For example, Checkpoint/Restart provides facilities to take a snapshot, or checkpoint, of an application periodically so that in the event the application is stopped, it can be restarted from the checkpointed state.

Availability
The IRIX journaled 64-bit filesystem, XFS, maintains filesystem consistency after a failure, allowing many applications to recover from failure in less than a minute (varies by application). XFS supports virtually unlimited filesystems and file sizes proven to hundreds of terabytes today, capable of expanding to more than 100 times that size. And the IRIX volume manager, XLV, has features to ensure reliability of data. XLV can automatically provide mirroring of important data so that no data is lost in the event of a disk failure. With IRIS FailSafe™, two systems run as a cluster, sharing disk and exchanging a heartbeat. In the event of a failure in one of the systems, the surviving system will take over the failed system's network address and filesystem, restart the failed application, and resume services to clients on the network.

Serviceability
Performance monitoring tools such as Performance Co-Pilot™ can identify problems before they affect system operation. Availmon, a support diagnostic tool, will send electronic messages to Silicon Graphics' service organization if it believes a failure is imminent because of a high number of errors. IRISconsole™ can provide console services to any Origin system and allow for remote service and console monitoring.

Data Center Resource Management

The world's most demanding technical data centers rely on Silicon Graphics systems to serve as the central computing resources for mission-critical work such as national weather forecasting or product development. With IRIX 6.5, resource management supports:

- Efficient scheduling of high-priority, complex workloads
- Effective resource allocation, tracking, and accounting
- Efficient batch scheduling and workload distribution
- Security through Trusted IRIX™
- Integration with the industry-leading system administration frameworks from Computer Associates, Hewlett-Packard, and Tivoli/IBM

IRIX Works with the Enterprise

Managing the distributed enterprise of computer systems is a challenge for all corporations. With the help of tools and a well-designed infra-structure, enterprise integration can be stream-lined into easy-to-manage automated tasks. Interoperability and system management are important for managing the enterprise.

UNIX, PC, and Macintosh® Interoperability
With a suite of tools bundled with IRIX 6.5, PC and Macintosh applications can be run on an IRIX desktop, files can be shared with other UNIX systems, PCs, and Macintosh computers, and external devices such as printers can be driven from any system and accessible from Silicon Graphics systems and in general have transparent interoperability. The bundled tools are included with IRIX in the Advanced Workstation Environment and Advanced Server Environment IRIX operating system bundles.

Tools	File Sharing	Print Sharing
NFS (UNIX, PCs)	X	
SAMBA (Windows NT®, Windows® 95)	X	X
Novell Netware Client	X	X
Xinet AppleTalk	X	X

Enterprise System Management
Heterogeneous networks of hundreds to thousands of systems are supported by enterprise system management tools. Silicon Graphics leverages the expertise of industry-leading solutions, and alliances with Computer Associates, Tivoli, and Hewlett-Packard bring the best-of-breed tools to support small to large enterprise networks.

Work Group System Management
Silicon Graphics provides a host of tools from Silicon Graphics and from third-party vendors. Enlighten Software's EnlightenDSM server and client support tasks such as password management, job/queue management for printers, file and NFS management for disks, security management by identifying obvious passwords, and many others. Silicon Graphics builds products to support local and work group software installation with Inst and its GUI front-end Software Manager and RoboInst for automated network software installation. Software licensing is supported with GLOBEtrotter® FLEXlm® and the Silicon Graphics GUI front-end License Manager tool.

Desktop System Management
Silicon Graphics Personal System Administration Tools guide the user through tasks to manage the system without requiring help from a system administrator. The System Manager contains information about your system and tools for software installation and licensing, adding and removing hardware and devices, managing security and access control, setting up network connections, backing up files and data, and monitoring system performance.

Visual Desktop

IRIX Interactive Desktop offers increased value in the areas of Web integration, system administration, network awareness, and multimedia support. Many of the tools are integrated with the Web, including the File Manager, which enables manipulation of directories of files with many data types. The data types include text, audio, video, 3D, HTML, and any other file on an intranet or the Internet and InfoSearch that enables searchable Web-based documentation and help documents. IRIX Interactive Desktop continues to support rich multimedia, collaborative, and web publishing tools, including a suite of digital media tools to browse and manipulate video, audio, and image files, InPerson for visual real-time collaboration, IRIS Showcase for creating and displaying integrated multimedia presentations, Cosmo Create for authoring simple to complex Web pages, and Netscape Communicator for HTML browsing, e-mail, newsgroups, and Web authoring.

For customers who require Common Desktop Environment (CDE), Silicon Graphics resells CDE from Triteal Corporation. See www.triteal.com for a detailed description of CDE for Silicon Graphics systems.

Ordering IRIX 6.5

Please contact your local Silicon Graphics sales office or reseller to order IRIX 6.5 for your systems. For customers with active Silicon Graphics software support, you will receive your updates directly from Silicon Graphics. For new customers, please order the Advanced Workstation Environment or the Advanced Server Environment.

IRIX 6.5
Technical Specifications

TECHNOLOGY

UNIX SVR4, Distributed Shared Memory (DSM), multithreaded, virtual memory scalability, with fine-grained kernel locking

PRODUCT SPAN

OS base for Origin2000 R10000®, Origin200 R10000, Onyx2 R10000, OCTANE R10000, O2 R5000®, O2 R10000, CHALLENGE R4x00, CHALLENGE S/M R4x00, CHALLENGE S R5000, CHALLENGE R10000, POWER CHALLENGE™ R8000®, POWER CHALLENGE R10000, Indigo R4x00, Indigo2 R4x00, Indigo2 R10000, POWER Indigo2™ R8000, Indy R4x00, Indy R5000, Onyx R4x00, Onyx R10000, POWER Onyx™ R8000

SUGGESTED MEMORY

A minimum of 64MB is highly recommended for all systems. The minimum memory requirement for Indy, Indigo R4000, and Indigo2 is 32MB.

FILESYSTEMS

VFS (vnode) interface, XFS filesystem support for 9 million TB filesystems, NFS, xlv for striping, mirroring, and concatenation, FAT (MSDOS), HFS (Macintosh) support on removable devices, CD support for ISO 9660 and Rockridge format

LOADABLE DEVICE DRIVERS

SVR4.0 MP DDI/DKI, device drivers

TERMINAL SUPPORT

STREAMS, international support

IPC

SVR4 messages, semaphores, shared memory, FIFOs, BSD sockets

REAL-TIME SUPPORT

Preemptable kernel, fixed-priority scheduling, memory lockdown, high-resolution timers, multithreaded application support, queued signals, POSIX 1003.1b

USER MP FACILITIES

Lightweight process parallelism, memory-based synchronization, processor affinity, parallelizing compilers (C and Fortran*), POSIX threads

DISTRIBUTED COMPUTING

ONC 4.1* (NFS, NIS, RPC, automount, locked, etc.) ONC+* (NFS version 3 protocol, Caching File System (CFS)), DCE, and DFS

NETWORKING

Sockets TCP/IP stack, TLI, DLPI driver interface, Ethernet, SLIP, PPP, HIPPI*, FDDI*, BDS*, Token Ring*

NETWORK MANAGEMENT

SNMP with MIB II, HP OpenView*

ENTERPRISE SYSTEM MANAGEMENT

Task-based personal administration tools (System Manager, Printer Manager, Process Manager, Filesystem Manager, Software Manager, License Manager), EnlightenDSM, Computer Associates Unicenter Framework, Performance Co-Pilot*, Performance Management tools, Software Installation tools (Inst, Software Manager, RoboInst)

SECURITY

Auditing, shadow passwords, password aging, expanded login options, B1 and CSP versions, Gauntlet™ firewall*

BACKUP/RESTORE

Dump/restore, bru, cpio (backup/restore), tar, IRIS NetWorker for IRIX*, xfsdump, xfsrestore

PRINTING SUPPORT

lpd, lpdsched, Printer Manager, IRIS Impressario™ printer management system

INTERNATIONALIZATION

XPG4-compliant message catalogs, local support for currency, date, etc., wide-character support, country kits*, EUC, SHIFT-JIS, and BIG5 internationalization formats

GRAPHICS SUPPORT

OpenGL 1.1, IRIS Performer™*, Open Inventor™*, ImageVision Library®*, X11R6, PEX, IRIX IM (Motif 1.2.4), Display PostScript

SOFTWARE DEVELOPMENT

Developer Magic™, ProDev™ Workshop*, ANSI C*, C++*, Fortran 77*, Fortran 90*, Pascal, Ada

COLLABORATIVE AND DIGITAL MEDIA SOFTWARE

IRIX Interactive Desktop, Adobe Acrobat Reader, Netscape Communicator, IRIS Showcase, InfoSearch, SoftWindows 95, Cosmo Player, Cosmo Create, Digital Media Tools

* Denotes unbundled products

SiliconGraphics
Computer Systems