Product Guide

SGI™ Digital Media

Video, Audio, Compression, and Image Processing

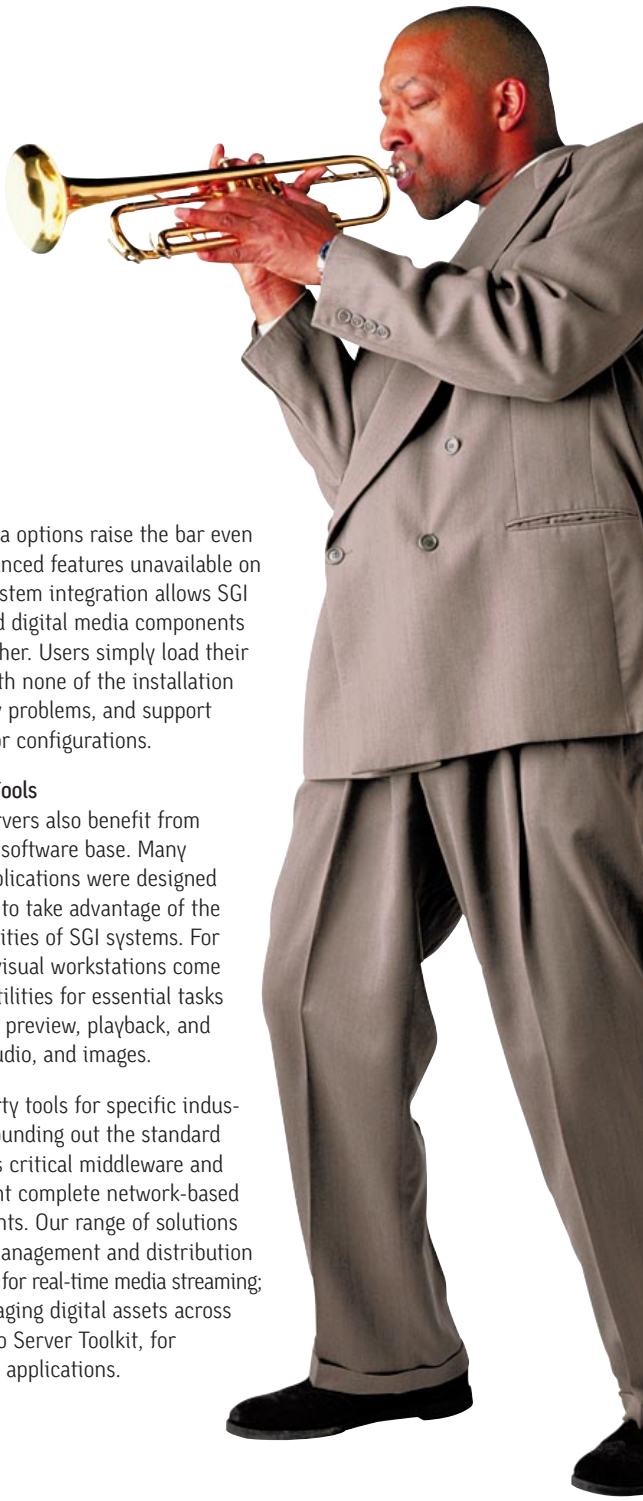
Solutions for Video, Audio, Compression, and Image Processing

SGI visual workstations and servers are the definitive digital media systems, providing unmatched performance and capabilities. No other company has SGI's breadth of high-performance digital media platforms—from Windows NT® to UNIX®, from low-cost yet surprisingly powerful desktop systems to the industry's leading scalable servers and advanced graphics workstations.

SGI offers the scalability, upgradability, and functional breadth of audio, video, compression, and imaging capabilities, from built-in digital media tools for scientists and engineers to high-end features used by the world's most demanding visual effects professionals. SGI's range of platform, price, and performance choices enables you to start modestly and add capabilities as your business grows.

From the outset, SGI has shaped what's possible in digital media. Today, SGI workstations and servers are a mainstay of the movie industry and set the pace in television broadcasting. SGI systems bring leading-edge digital media technology and media management tools to industries and fields such as government, medicine, manufacturing, communications, energy, science, and education.

Unmatched Integration and Performance
SGI systems were designed from the beginning with digital media in mind. Our system architectures provide the performance, bandwidth, and processing required for digital media, delivering capabilities other systems can't match even with expensive add-ons. When it comes to built-in functionality, SGI redefines "baseline features" by integrating support for video, audio, compression, and image processing.



Value-added digital media options raise the bar even higher by providing advanced features unavailable on other platforms. Tight system integration allows SGI baseline and value-added digital media components to seamlessly work together. Users simply load their applications and go—with none of the installation difficulties, compatibility problems, and support headaches of multivendor configurations.

Complete Software and Tools
SGI workstations and servers also benefit from an extensive application software base. Many leading digital media applications were designed or enhanced specifically to take advantage of the performance and capabilities of SGI systems. For added productivity, SGI visual workstations come bundled with software utilities for essential tasks such as capture, editing, preview, playback, and management of video, audio, and images.

A wide array of third-party tools for specific industries is also available. Rounding out the standard software tools, SGI offers critical middleware and applications to implement complete network-based digital media environments. Our range of solutions for digital media asset management and distribution includes SGI™ MediaBase, for real-time media streaming; StudioCentral™, for managing digital assets across the enterprise; and Video Server Toolkit, for developing video serving applications.

Baseline Digital Media Features

Real-Time Analog and Digital Video
The built-in video system supports full-frame capture and playback of S-Video and composite analog video in NTSC or PAL formats. One 400Mb-per-second IEEE 1394 port provides interface to "prosumer" digital video cameras, digital video players, printers, and other devices. Genlock support is standard, as is real-time disk- and graphics-to-video output.

CD-Quality Analog Audio
The integrated analog audio system provides full stereo audio I/O at sample rates up to 48 KHz and 16-bit resolution. With their high overall system bandwidth, the Silicon Graphics® 320 and Silicon Graphics® 540 systems can process, mix, and play multiple channels of analog audio simultaneously. Sample-accurate audio/video sync is built in.

Bundled Digital Media Utilities
The Silicon Graphics 320 and Silicon Graphics 540 visual workstations ship with many powerful utilities, such as a video control panel for time-grained control over video capture.

SGI Value-Added Digital Media Options

Silicon Graphics® SDI100: Broadcast-Quality Digital Video
(For Silicon Graphics 540 only) This option board supports four real-time streams of 8- or 10-bit 4:2:2 ITU-R 601/SMPTE 259M serial video in NTSC or PAL formats, capturing 2 independent streams and playing back 2 additional streams in real time. The board bypasses traditional PCI bottlenecks by plugging into the 540 DVI high-bandwidth connector in the Silicon Graphics 540 workstation.

Silicon Graphics® DAI100: High-Quality Digital Audio
This PCI board provides high-quality digital audio I/O with resolutions up to 24 bits and sampling rates up to 48 KHz. DAI100 simultaneously supplies 8 discrete channels of ADAT optical I/O and 2 discrete channels of AES/EBU I/O. Up to 3 DAI100 boards can be installed in Silicon Graphics 320, and up to 5 can be installed in Silicon Graphics 540.

320

Silicon Graphics 320 and Silicon Graphics 540 Visual Workstations for Windows NT

Professional Digital Media for Windows NT at a Breakthrough Price

Silicon Graphics 320 and Silicon Graphics 540 visual workstations bring unprecedented performance, power, and possibilities to standard Windows NT applications. Pentium® III processors, high-speed system interconnects, and an architecture designed with digital media in mind deliver capabilities previously available only on systems costing many times more. These workstations are ideal for tasks such as real-time editing and compositing standard-definition analog and digital video; multimedia authoring and Web publishing; audio editing and mixing; 2D paint and cel animation; and real-time video texture mapping and broadcast effects.

Complete, Powerful Digital Media in an Affordable UNIX Desktop

Providing integrated professional-level digital media capabilities at a remarkably low cost, Silicon Graphics® O2™ breaks new ground in UNIX desktop systems. A fast MIPS® RISC processor, high-speed system interconnects, and an advanced architecture created from the ground up for digital media and visual computing deliver features and performance previously found only on systems costing much more. These versatile workstations are ideal for tasks such as 2D paint and cel animation; multimedia authoring and Web publishing; audio editing and mixing; compositing digital video; and real-time video texture mapping and broadcast effects. O2 offers an affordable entry to the wide range of SGI for UNIX solutions.

O2
Visual Workstation

Baseline Digital Media Features

Real-Time Analog Video (O2 with Video I/O Option)
The built-in video system supports full-frame capture and playback of both S-Video and composite analog video with NTSC or PAL timing. In addition, capture and playback of 8-bit serial digital video is also possible using the built-in digital camera port and a third-party adapter. The digital camera is included for applications such as videoconferencing and Web cams.

CD-Quality Analog Audio
The on-board analog audio system provides full stereo audio I/O at sample rates up to 48 KHz and 16-bit resolution. O2 provides bandwidth sufficient to process, mix, and play multiple channels of analog audio simultaneously. Support for sample-accurate audio/video synchronization is built in.

Real-Time Compression
Hardware-based compression is built in, supporting variable-rate (up to 4:1 compression ratio) single-stream motion-JPEG (M-JPEG) encode and decode, as well as MPEG-1 encode and decode. Hardware-assisted compression is provided for other standards such as Cinepak.

Bundled Digital Media Utilities
The O2 visual workstation ships standard with powerful utilities for functions such as video capture, video editing, and Web authoring.

SGI Value-Added Digital Media Options

O2 Digital Video Module: Broadcast-Quality Digital Video
This add-in module provides 2 channels of 8- or 10-bit 4:2:2 ITU-R 601/SMPTE 259M serial video (1 stream in/2 out) in NTSC or PAL timing. Alpha channel and Genlock support are built in.

Silicon Graphics® DVLink: Complete IEEE 1394 Interface
This PCI board provides multiple 400Mb-per-second IEEE 1394 ports for connection to "prosumer" digital video cameras, digital video players, printers, and other devices. DVLink enables frame-accurate import and export of digital video clips in real time.

Digital Audio Board for O2: High-Quality Digital Audio
The O2 Digital Audio PCI board provides high-quality digital audio I/O with resolution up to 24 bits and sampling rates up to 48 KHz. The board supplies 8 channels of ADAT optical I/O and 2 channels of AES/EBU I/O and has built-in support for audio/video synchronization.

SGI Value-Added Digital Media Options

Octane® Digital Video Board: Broadcast-Quality Digital Video
This XIO board provides four 8- or 10-bit 4:2:2 ITU-R 601/SMPTE 259M serial video channels (2 independent streams in/2 out) in NTSC or PAL timing. A dual-link mode enables 1 channel in and 1 out of 8- or 10-bit 4:4:4:4- serial digital video. Alpha channel and Genlock support are built in.

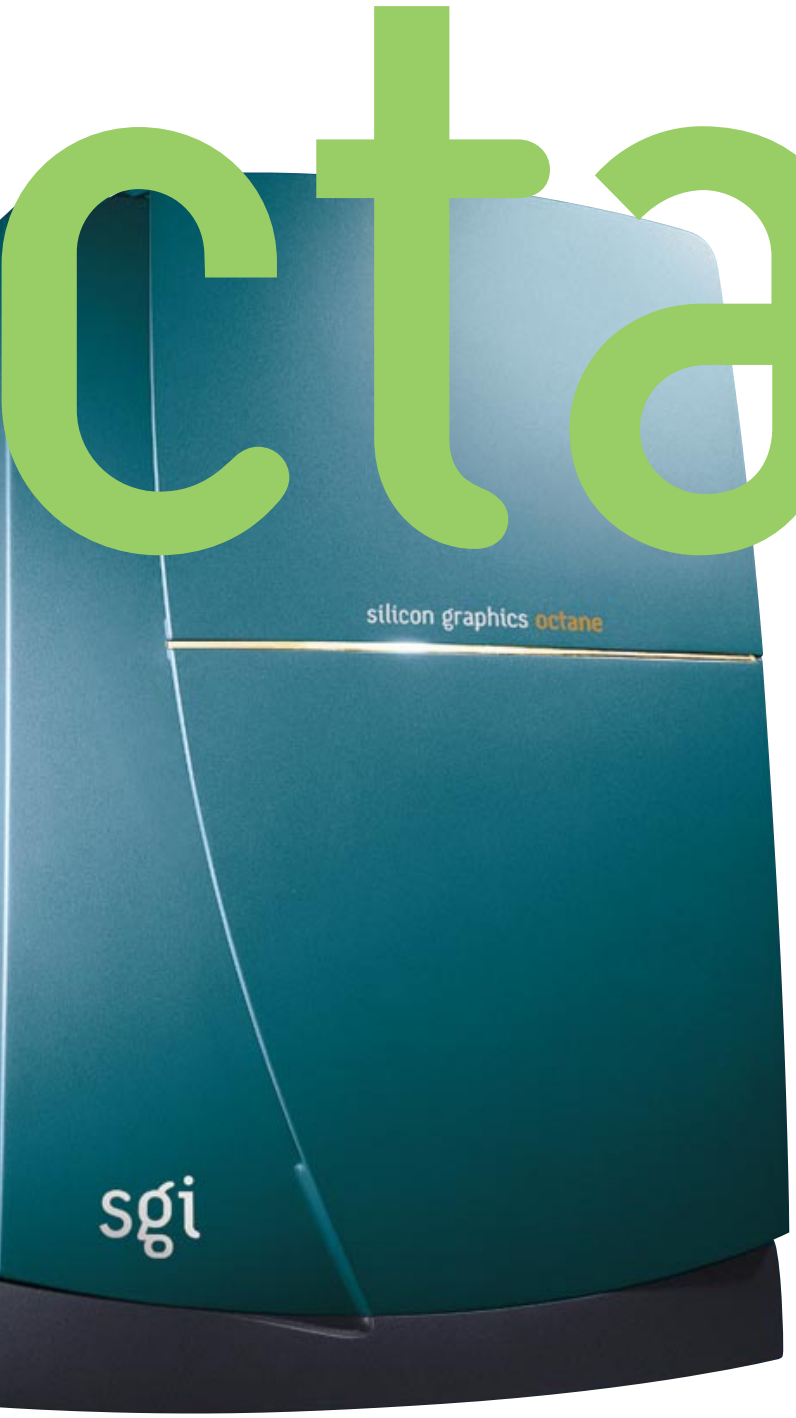
Octane® Compression Board: Dual-Channel M-JPEG
This XIO board provides real-time motion-JPEG (M-JPEG) compression at ratios as low as 2:1. The Octane compression board can decode 2 streams of M-JPEG video simultaneously, allowing real-time multistream editing of compressed source material.

Octane® Personal Video Board: Real-Time Analog Video
This XIO board supports full-frame capture and playback of S-Video and composite analog video in NTSC or PAL timing. In addition, capture and playback of serial digital video is also possible using a third-party adapter. A digital camera is included for applications such as video conferencing and Web cams.

Digital Audio Board for Octane: High-Quality Digital Audio
The Octane® Digital Audio PCI board provides 10 channels (8 ADAT, 2 AES/EBU) of high-quality digital audio. Up to 3 Digital Audio boards can be added to a system for a total of 40 channels of digital audio. The board supports full audio/video synchronization and has a connector for external clocks.

The Ultimate in Desktop Performance

Offering a spectrum of configurations from midrange to high-end, the Silicon Graphics® Octane® visual workstation is one of the most powerful digital media systems ever to sit on a desk. With its breathtaking speed and bandwidth, Octane performs feats never before achievable with a desktop system. Imagine editing four or more uncompressed digital video streams simultaneously, previewing high-definition video in real time, or creating multilayer high-definition or film-resolution effects. Octane is ideal for jobs such as advanced editing and compositing for broadcast or film; sophisticated special effects; real-time processing of complex images such as satellite photos; and advanced audio editing and mixing.



octane

Visual Workstation

Baseline Digital Media Features

CD-Quality Analog and Digital Audio
The Octane on-board analog audio system provides full stereo audio I/O, at sample rates up to 48 KHz and 16-bit resolution. The system provides bandwidth sufficient to process, mix, and play multiple channels of analog audio simultaneously. In addition, Octane includes built-in digital audio, supporting high-quality digital audio I/O with resolution up to 24 bits and sampling rates up to 48 KHz. The system simultaneously provides eight discrete channels of ADAT optical I/O and two discrete channels of AES/EBU I/O. It features sample-accurate audio/video synchronization and has a connector for external clocks. Powered stereo speakers are included.

Bundled Digital Media Utilities
The Octane visual workstation ships standard with powerful utilities for functions such as video capture, video editing, and Web authoring.

Onyx2

Supreme Power

For High-End Digital Media

This highly scalable system is the world's most powerful visual workstation, providing breathtaking performance for the most demanding digital media jobs. Work with high-definition uncompressed video or film-resolution images (up to 4K by 4K or above), create multilayered 2D and 3D film-resolution effects, or edit simultaneous streams of standard- or high-definition video—all in real time. With its warp-speed processing and awesome bandwidth, Silicon Graphics® Onyx2™ is the workstation of choice for high-end TV and film production/post-production; real-time broadcast effects; digital theme parks and other location-based interactive media; and real-time processing of high-definition satellite images.

Baseline Digital Media Features

Real-Time Analog Video
Onyx2 provides full-frame graphics-to-video output of both S-Video and composite analog video in NTSC or PAL timing. The system includes Genlock support.

CD-Quality Analog and Digital Audio
The Onyx2 on-board analog stereo audio system supports sample rates up to 48 KHz with 16-bit resolution. The system provides bandwidth sufficient to process, mix, and play multiple channels of analog audio simultaneously. In addition, Onyx2 includes built-in digital audio, supporting high-quality digital audio I/O with resolution up to 24 bits and sampling rates up to 48 KHz. The system simultaneously provides eight discrete channels of ADAT optical I/O and two discrete channels of AES/EBU I/O. It also features sample-accurate audio/video synchronization and has a connector to external clocks.

SGI Value-Added Digital Media Options

Digital Video Option Board: Broadcast-Quality Digital Video
This XIO board provides 8- or 10-bit 4:2:2:2, 4:2:2:4, 4:4:4:4, or 4:2:2 ITU-R 601/SMPTE 259M/SMPTE 272M serial video channels (1 in and 1 out, independent and simultaneous) in NTSC or PAL timing. An SDTI data mode, alpha channel, and Genlock support are built in. The digital video option board also supports real-time lossless packing and unpacking mode.

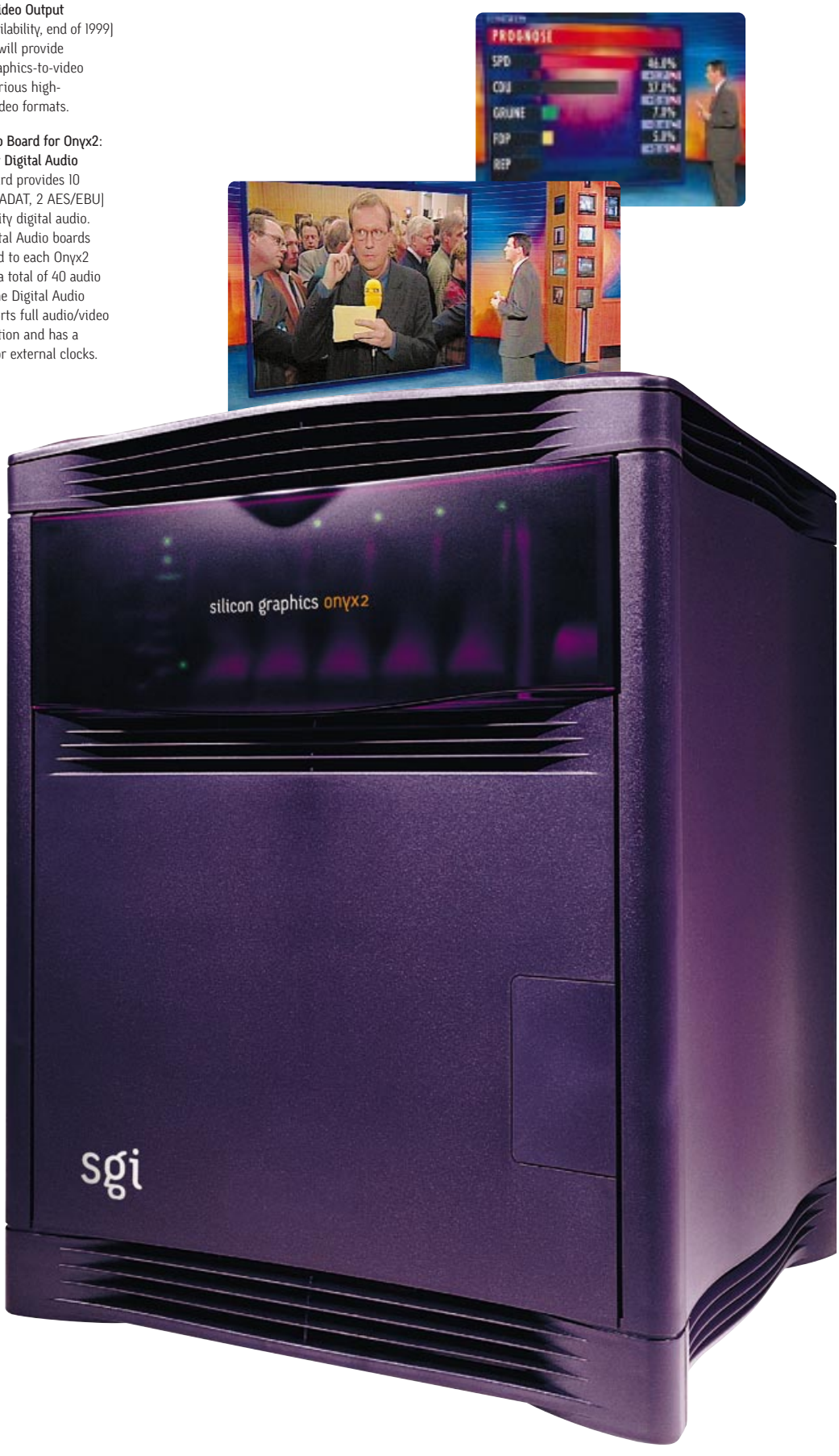
DIVO for DVCPRO Board: Broadcast-Quality Digital Video with DVC Compression
This XIO board performs all the functions of the digital video option board plus real-time DVCPRO 25 encoding and decoding for 2 independent video streams (1 in and 1 out).

HD I/O Board: High-Definition Video
This XIO board provides parallel full-bandwidth real-time input and output of 8- or 10-bit, high-definition digital video in resolutions from 4:2:2 to 4:4:4:4, with alpha channel and Genlock support. The HD I/O board supports multiple video and film rates and formats.

GVO Upgrade Option: Real-Time Graphics to Video Output
This upgrade provides a real-time graphics-to-video output for serial digital video (up to 4:4:4:4). The GVO option limits latency from graphics to video to less than 1 field. Genlock support is built in.

GVO HD Upgrade Option: Real-Time Graphics to High-Definition Video Output
(Planned availability, end of 1999) This option will provide real-time graphics-to-video output in various high-definition video formats.

Digital Audio Board for Onyx2: High-Quality Digital Audio
This PCI board provides 10 channels (8 ADAT, 2 AES/EBU) of high-quality digital audio. Up to 3 Digital Audio boards can be added to each Onyx2 module, for a total of 40 audio channels. The Digital Audio Board supports full audio/video synchronization and has a connector for external clocks.



Origin™ 200 Gigachannel

Origin™ 200

Origin™ 2000

Multipro

SGI Value-Added Digital Media Options

Digital Video Option Board: Broadcast-Quality Digital Video
This XIO board provides 8- or 10-bit 4:2:2:2, 4:2:2:4, 4:4:4:4, or 4:2:2 ITU-R 601/SMPTE 259M/SMPTE 272M serial video channels (1 in and 1 out, independent and simultaneous) in NTSC or PAL timing. An SDTI data mode, alpha channel, and Genlock support are built in. The digital video option board also supports real-time lossless packing and unpacking mode.

DIVO for DVCPRO Board: Broadcast-Quality Digital Video with DVC Compression
This XIO board performs all the functions of the digital video option board plus real-time DVCPRO 25 encoding and decoding for 2 independent video streams (1 in and 1 out).

HD I/O Board: High-Definition Video
This XIO board provides parallel full-bandwidth real-time input and output of 8- or 10-bit, high-definition digital video in resolutions from 4:2:2 to 4:4:4:4, with alpha channel and Genlock support. The HD I/O board supports multiple video and film rates and formats.

Digital Audio Board for Origin: High-Quality Digital Audio
This PCI board provides 10 channels (8 ADAT, 2 AES/EBU) of high-quality digital audio. Up to 3 Digital Audio boards can be added to each Origin module, for a total of 40 channels. The Digital Audio Board supports full audio/video synchronization and has a connector for external clocks.

ocessing Servers

Peerless Performance, Massive Scalability

Open, highly scalable, and powerful, the SGI™ Origin™ family provides the server platforms of choice for networked digital media environments such as digital production suites, enterprise-wide intranets, the world's busiest Web sites, TV broadcast servers, electronic news gathering systems, and video-on-demand. With their extraordinary bandwidth and capacity, Origin servers are the perfect choice for digital media distribution, streaming, and asset management applications. The Origin family supplies an array of deskside, rack, and multirack configurations with virtually unlimited headroom to accommodate the highest traffic loads, serving tens of thousands of video streams and thousands of users simultaneously.

Tying It All Together:

SGI Professional Tools

Whether your project is big or small, SGI has the optimal solution to fit your digital media requirements. Our workstations, servers, and software provide unmatched performance and capabilities—at affordable prices. In addition, comprehensive service and support programs help you get the most out of your systems to solve the toughest challenges.

SGI Digital Media Software Solutions

SGI software solutions encompass the middleware and applications you need to implement a complete digital media environment.

StudioCentral
StudioCentral is a comprehensive digital asset management environment for all types of media content. In addition to managing video, audio, image, and text files, StudioCentral integrates with SGI MediaBase and Video Server Toolkit. It includes desktop client tools for Windows NT and Windows® 95 and Macintosh®, a robust server for a variety of metadata and content storage devices, and Web-based administration tools. A flexible development environment allows you to extend and customize StudioCentral to your needs.

Video Server Toolkit
Video Server Toolkit (VST) transforms an Origin server into a multichannel, multiformat video server with frame-accurate control. It enables basic video/audio input and output and supports clip creation, deletion, cueing to timecode, record, playback, jog, and shuttle functions. VST is the basis for digital news, program playout, broadcast, and post-production video serving solutions.

SGI MediaBase
SGI MediaBase is the most scalable, reliable, interactive media server solution available today for delivering Web-based content. It is ideal for real-time streaming of media at various bit rates over internal and external networks. SGI MediaBase supports a broad range of applications, such as video-on-demand, Webcasting, distance learning, and video archiving. It also offers media management capabilities through industry-leading relational database products.

Bundled Digital Media Utilities
SGI systems ship standard with various digital media software utilities for audio and video capture, playback, compression, decompression, and basic editing functionality. The range of functionality and software included varies with the individual system.

Silicon Graphics 320 and Silicon Graphics 540 Visual Workstations

Digital Media Capabilities
Entry-level to intermediate digital media for consumers through professionals

Standard-definition compressed and uncompressed analog and digital video

Analog and digital audio

Sample-accurate A/V sync

Broadcast effects and real-time video texture mapping

Key Architectural Features

Pentium III processors—up to 2 in Silicon Graphics 320; up to 4 in Silicon Graphics 540

Up to 1GB system memory in Silicon Graphics 320 and up to 2GB system memory in Silicon Graphics 540

Integrated Visual Computing (IVC) architecture

High-speed system interconnects

Cobalt™ graphics chipset

O2 Visual Workstation

Digital Media Capabilities
Entry-level to intermediate digital media for consumers through professionals

Standard-definition compressed or uncompressed analog and digital video

Analog and digital audio

Sample-accurate A/V sync

Broadcast effects and real-time video texture mapping

Lossy compression

Key Architectural Features

1 high-performance MIPS RISC processor

Up to 1GB system memory

Unified Memory Architecture (UMA)

High-speed system interconnects

Octane Visual Workstation

Digital Media Capabilities

Intermediate to advanced digital media for professionals

Standard- and high-definition compressed or uncompressed digital video

Analog and digital audio

Sample-accurate A/V sync

Sophisticated multilayer broadcast and film effects

Real-time processing of high-resolution image data

Lossy compression

Key Architectural Features

1-2 high-performance MIPS RISC processors

Up to 4GB system memory

High-speed crossbar architecture

Four high-bandwidth XIO slots for graphics, video, storage

Highly scalable through processor, memory, texture, geometry, graphics upgrades

Three levels of E-series graphics (SE, SSE, MXE)

Onyx2 Visual Workstation

Digital Media Capabilities

Advanced digital media for the most demanding professional applications

Standard- and high-definition compressed or uncompressed digital video

Film-resolution images

Analog and digital audio

Sample-accurate A/V sync

Sophisticated multilayer 2D/3D broadcast and film effects

Real-time processing of high-resolution image data

Lossless and DVCPRO 25 compression

Key Architectural Features

Deskside, rack, and multirack configurations

Up to 128 MIPS RISC processors

Up to 2GB system memory per processor

Up to 16 visualization subsystems in a single system

ccNUMA architecture

High-bandwidth XIO slots

Origin 200 and Origin 200 Gigachannel Servers

Digital Media Capabilities

Multiple media formats, compressed or uncompressed

Standard-definition compressed or uncompressed digital video

High-definition compressed or uncompressed digital video

Digital audio

Lossless and DVCPRO 25 compression

Key Architectural Features

Deskside or rack configurations

1-4 MIPS RISC processors

Up to 4GB system memory

Up to 10 high-speed XIO slots and 14 PCI slots

Scalable ccNUMA architecture

ECC memory, redundant power supplies, and hot-pluggable disks

Origin 2000 Servers

Digital Media Capabilities

Multiple media formats, compressed or uncompressed

Standard-definition compressed or uncompressed digital video

High-definition compressed or uncompressed digital video

Digital audio

Lossless and DVCPRO 25 compression

Key Architectural Features

Deskside, rack-mountable, and multirack systems, each hosting multiple Origin 2000 modules

Up to 8 MIPS RISC processors per module

Up to 16GB system memory per module

Up to 12 high-bandwidth XIO slots (or 11 XIO slots plus 3 PCI slots)

Scalable ccNUMA architecture

ECC memory, redundant power supplies, and hot-pluggable disks

Product-Line Features

	Visual Workstations for Windows NT		UNIX Visual Workstations			Servers	
	Silicon Graphics 320	Silicon Graphics 540	O2	Octane	Onyx2	Origin 200 Origin 200 Gigachannel	Origin 2000
Standard-Definition Video I/O							
Uncompressed Analog (Composite and S-Video)	Standard	Standard	Standard	Optional	Optional (6)	Optional (6)	Optional (6)
Compressed Analog (Composite and S-Video)	Optional	Optional	Standard	Optional	-	-	-
Uncompressed Digital (ITU-R 601)	-	Optional	Optional (6)	Optional	Optional	Optional	Optional
Compressed Digital	-	Optional	Optional (6)	Optional	Optional	Optional	Optional
Dual-Link	-	Optional	-	Optional	Optional	Optional	Optional
Alpha Channel Support	-	Optional	Optional	Optional	Optional	Optional	Optional
Genlock Support	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Graphics Preview Support	Standard		Standard	Standard	Standard	Standard	-
Silicon Graphics Digital Camera	-	-	Optional	Optional	-	-	-
High-Definition Video I/O							
High-Definition Digital	-	-	-	-	Optional	Optional	Optional
Graphics Preview Support	Standard	Standard	Standard	Standard	Standard	-	-
Real-Time Graphics to Video Output							
Standard-Definition Analog (Composite and S-Video)	Standard	Standard	Standard	Optional	Standard	-	-
Standard-Definition Digital (ITU-R 601)	-	Optional	Optional (6)	Optional (6)	Optional	-	-
High-Definition Analog	Optional (1)	Optional (1)	Optional (1)	Optional (1)	Standard	-	-
High-Definition Digital	Optional (1)	Optional (1)	Optional (1)	Optional (1)	Optional (1,5)	-	-
Compression							
Motion-JPEG Support	-	-	Standard	Optional	-	-	-
MPEG1 Support	Standard (3)	Standard (3)	Standard	Optional (1)	Optional (1)	Optional (1)	Optional (1)
MPEG2 Support	Standard (3)	Standard (3)	Optional (1)	Optional (1)	Optional (1)	Optional (1)	Optional (1)
DV		Standard (4)	Standard (4)	-	Optional	Optional	Optional
DVCPRO 25	Standard (4)	Standard (4)	Optional	-	Optional	Optional	Optional
DVCPRO 50	-	-	-	-	-	Optional (5)	Optional (5)
Lossless (Packing and Unpacking)	-	-	-	-	Optional	Optional	Optional
Audio							
Microphone Input	Standard	Standard	Standard	Standard	Standard	-	-
Stereo Analog Input and Output	Standard	Standard	Standard	Standard	Standard	-	-
AES/EBU Digital	Optional	Optional	Optional	Standard	Standard	Optional	Optional
Optical ADAT	Optional	Optional	Optional	Standard	Standard	Optional	Optional

Notes: 1. Supported through third-party product. 2. Playback only, summer 1999. 3. Decode, Q2 1999. 4. Decode and playback. 5. Future SGI product. 6. SGI and third party.

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