SX1500 & SX2500

(Sun Blade™ 1500 & Sun Blade™ 2500 Workstation Boards productized for OEMs)

Just the Facts

SunWIN Token # 396582

November 2003

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Last update: 12/07/2004

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Introduction:

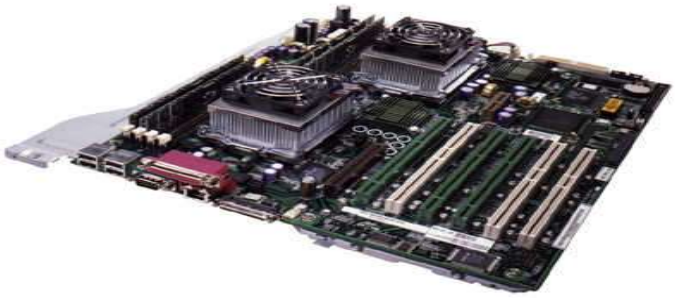
The SX1500 is the leveraged motherboard out of a Sun Blade 1500 Workstation with no modification. The SX2500 is the leveraged motherboard out of a Sun Bade 2500 Workstation with no modification. This productization continues to give OEM customers access to SPARC/Solaris technology enabling them to embedd and poliferate into markets such as Goverment, Health care, Digital Media and Manufacturing.

Positioning:

There is a constant and steady market demand for 1 and 2-way SPARC/Solaris OEM boards.

Sun needs to provide current single processor, ATX form factor AXi and AX1105 board customers an upgrade path to boards based on the next generation technology . SX1500 will fill this need.

Sun needs to provide current dual processor Axdp, Axmp and AX2200 board customers an upgrade path to boards based on next generation technology. SX2500 fills this need.



SX1500 & SX2500 Board Comparison

Feature	SX1500	SX2500
Placement	Single Processor, ATX Form Factor	Dual Processor, Extended ATX Form factor
CPU	One UltraSPARC-IIIi	Two UltraSPARC-IIIi
L2 Cache	1-MB Integrated	1-MB Integrated
Processor Speeds	1.06 GHz	1.28 GHz
Memory Capacity	8-GB ECC DDR-1 DIMMs in 4 slots	16GB ECC DDR-1 DIMMs in 8 slots
PCI Buses & Slots	2 Buses, 5 Slots (1@64bit 66MHz, 2@64bit 33MHz, 2@32bit 33MHz)	4 Buses, 6 Slots (3@64bit 66MHz, 3@64bit 33MHz)
Graphics Supported PCI Based 24-bit	Sun XVR-100 (3 max) Sun XVR-500 (2 max)	Sun XVR-100 (4 max) Sun XVR-500 (2 max) Sun XVR-1200 (2 max)
Drive Type	ATA 100 IDE	Ultra SCSI IV 320 and ATA 100 IDE
Drive Capacity	Up to two 80-GB internal disk drives	Up to two 36-GB internal disk drives
Solaris Operating Environment Support	Solaris 8 HW 5/03	Solaris 8 HW 5/03
OBP Revision	4.5.10 or newer	4.5.10 or newer
I/O		
Ethernet	10/100/1000BASE-T	10/100/1000BASE-T
USB1.1	2 ports	4 ports
USB 2.0 (via optional PCI card)	3 ports (via optional PCI card)	3 ports (via optional PCI card)
Parallel	1 port	1 port
Serial	2 ports	1 port
Size	ATX Form Factor (12” x 9.6”)	(Without Mounting Tray) Extended ATX Form Factor (12” x 13”)

Features, Functions and Benefits

SX1500 & SX2500 Features	Functions	Benefits
• Solaris 9 supported	• A robust and well-supported 64-bit UNIX environment that retains full binary compatibility with previous versions • Supported throughout Sun's product line • Binary compatibility with the 12,000 Solaris applications	• Provides extensive virtual memory addressing for those applications that require 64-bit addressability • Develop on the Sun Blade 1500 workstation, deploy with the SX1500 board
• Support for Sun XVR-100 graphics accelerator	• Up to 1920 x 1200 resolution at 75 Hz in simultaneous 8-bit and 24-bit mode	• Provides excellent quality 2D graphics without additional cost
• Support for Sun XVR-500 graphics accelerator	• Up to 1920 x 1080 @ 72 Hz 2D/3D resolution and up to 1280 x 800 @ 112 Hz 3D stereo resolution	• Provides professional-quality 3D graphics for a very low-cost
• GigabitEthernet, 10/100/1000BASE-T autosensing and autoswitching	• Built-in Gigabit high-performance Ethernet connection	• Enhances performance and helps eliminate the need to add a card to support Ethernet connectivity
SX1500 Specific Features	**Functions**	**Benefits**
• 1.06 GHz UltraSPARC-IIIi processor with 1-MB L2 cache	• A highly integrated, low-cost, high-performance 64-bit CPU	• Allows cost of 64-bit board to be attractive without sacrificing performance
• Up to 8GB of 168-pin DDR-1 SDRAM with error correction, in 4 slots (2GB DIMMs expected to be qualified for early 2004)	• Enough memory to support demanding applications	• Provides excellent expandability, beyond typical 32-bit boards.
• Supports up to two 80-GB ATA100 7200-RPM internal disk drives	• Supports large internal storage and expansion	• Excellent expandability support for investment protection
• Five PCI slots	• Provides access to a variety of graphics cards, SCSI expansion cards, and audio/video input cards	• Provides excellent flexibility for expansion and support for both Sun and third-party PCI cards
• Built-in USB1.1	• USB 1.1 is for low speed devices, such as a Sun USB keyboard and Sun USB mouse.	• Enable support for USB 1.1 devices. SX1500 has 2 USB 1.1 connectors on the rear of the board
• ATX Form Factor (12”W x 9.6”L)	• Uses a standard form factor	• Enables use of standard chassis

SX2500 Specific Features	Functions	Benefits
• 2 x 1.28GHz UltraSPARC-IIIi processor with 1MB L2 cache	• Highly integrated, low-cost, high-performance 64-bit CPU	• Allows cost of 64-bit system to be attractive without sacrificing performance
• Up to 16GB of 168-pin JEDEC DRAM with error correction (2GB DIMMs expected to be qualified for late 2003) supported	• Enough memory to support demanding applications	• Provides excellent expandability, beyond typical 32-bit boards.
• Up to two 36GB internal disk drive supported	• Supports large internal storage and expansion	• Excellent expandability for investment protection
• Six 64-bit PCI slots	• Provides access to a variety of graphics cards, SCSI expansion cards, and audio/video input cards	• Provides excellent flexibility for expansion and support for both Sun and third-party PCI cards
• Support for Sun XVR-1200 graphics accelerator	• Up to 1920 x 1080 @ 72 Hz 2D/3D resolution and up to 1280 x 1024 @ 112 Hz 3D stereo resolution	• Provides the highest performance professional-quality 3D graphics
• Built-in USB1.1	• USB 1.1 is for low speed devices, such as a Sun USB keyboard and Sun USB mouse.	• Enable support for USB 1.1 devices. SX2500 has 4 USB 1.1 connectors on the rear of the board
• Extended ATX Form Factor (12”W x13”L)	• Uses a standard form factor	• Enables use of standard chassis

Key Messages:

Innovation: Sun's latest technology is the UltraSPARC IIIi processor. This low-cost, high performance CPU that is used on SX1500 and SX2500 includes

- higher clock rates and increased performance
- lower voltage
- Reduced power consumption
- higher frequencies without increasing total power requirements or heat dissipation

Expandability: SX1500 and SX2500 has expansion capabilities that include

- USB support for low speed devices
- Five PCI slots on SX1500 & Six PCI slots on SX2500
- SX1500 supports ATA100
  SX2500 supports ATA100 and Ultra SCSI III 160
- SX1500 has Four 168-pin DIMM memory sockets
  SX2500 has Eight 168-pin DIMM memory sockets

Compatability: Sun offers OEM customers a flexible upgrade path to next generation Sun system boards

- ATX Form Factor = Axi or AX1105 to SX1500
- Solaris = provides binary compatibility with existing applications

Choice:

- 1-way = SX1500
- 2-way = SX2500

Target Users and Markets

SX1500 & SX2500 OEM Boards are ideal for the following embedded markets:

- **Government**
  - *Military*
    - *Command and Control: Tactical Operation Centers, Ground Stations -- C2 on the Move*
    - *Intelligence, Surveillance, and Reconnaissance*
    - *Communications: Mission and Network Planning*
    - *Platforms: Weapons, Airborne, and Shipborne*
    - Infrastructure: Logistics and Training
- **Healthcare**
  - Medical Imaging
    - MRI Scan
    - CT Scan
    - Ultrasound

- **Digital Media**
  - Digital Imaging
    - Printer
    - Copier

- **Manufacturing**
  - Semiconductor Test Equipment
  - Factory Automation
  - Flight simulation

- **Others**

Market Value Proposition

- Proliferation: The SX1500 & SX2500 boards are targeted at OEM customers that cannot embed a Sun Blade 1500 Workstation or Sun Blade 2500 Workstation into their application. These markets include the government, digital media, and healthcare. The government/military for example need to embed these boards into a specialized chassis that can withstand environments such as salt and water. The digital media markets needs to embed these boards into systems such as copy machines. The healthcare market uses these board in medical imaging machines such a CT catscan and MRI. With such penetration in these markets, Sun will continue to proliferate SPARC/Solaris technology into them.

- Relationships: Most OEM customers have long-term relationships and familiarity with Sun and the architecture of Sun Workstations.

- Lifecycle: SX1500 and SX2500 lifecycle will allow OEM customers to rapidly respond to marke needs

- Peripherals: Vast list of Sun X-Options supported and available

- Reliability: SPARC/Solaris enables an architecture that is robust and reliable, scales readly, provides binary compatibility with existing applications.

- Serviceability: Single Fru for easy replacement

Ordering Part Number and Availability

SX1500 Ordering Part Number

Ordering Part Number (Marketing P/N) is: SX1500S-1100

SX1500 Availability

The SX1500 is scheduled for Revenue Release by December 2, 2003 and General Availability by January 2004.

SX2500 Ordering Part Number

Ordering Part Number (Marketing P/N) is: SX2500S-1200

SX2500 Availability

The SX2500 is scheduled for Revenue Release by December 2, 2003 and General Availability by January 2004.

UltraSPARC™IIIi Processor

The heart of these two new SX OEM Boards is the UltraSPARC IIIi microprocessor. This processor utilizes the latest 0.13-micron fabrication technology. This process technology is the key to the UltraSPARC IIIi processor's higher clock rates and increased performance. This low voltage solution provides relief from two major design issues in high performance systems. Reduced power consumption allows the chip to operate at higher frequencies without increasing total power requirements or heat dissipation.

The UltraSPARC IIIi processor supports both 2D and 3D graphics as well as image processing, video compression and decompression, and video effects through the sophisticated visual instruction set (VIS™ software). VIS provides high levels of multimedia performance, including real-time H.261 video compression and decompression and two streams of MPEG-2 decompression at full broadcast quality with no additional hardware support.

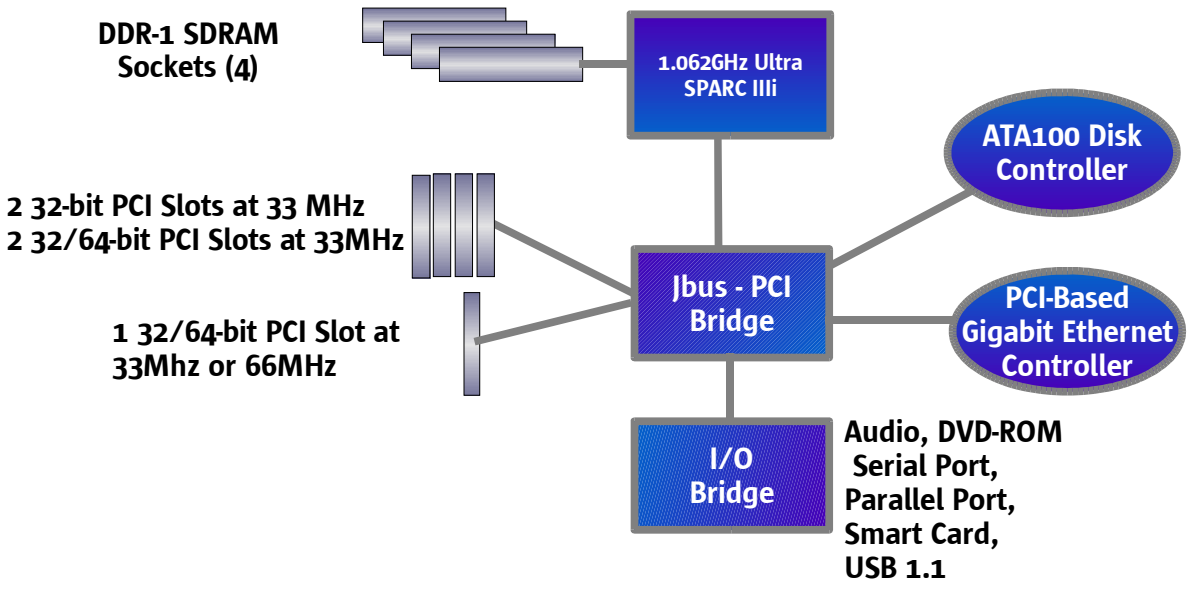
The UltraSPARC IIIi processor interfaces have been optimized to the "sweet spot" of typical uniprocessor system requirements. This provides a balanced price-performance solution delivering the power and features that the majority of high-end applications need, optimizing power utilization and supporting manufacturability and ease of use.

Features	Benefits
• Integrated VIS instruction set	• Ready for increased performance on multimedia and networking operations
• Uses the latest 0.13-micron process technology which greatly decreases the die size	• Results in a significant increase in performance and a decrease in power consumption

System Architecture

The UltraSPARC IIIi SX boards are designed to provide high-performance, scalability, and flexibility at a low-cost. The use of high-volume components and application-specific integrated circuits (ASICs) have resulted in a greatly reduced part count, high reliability, and low-cost without compromising access to a full complement of expansion options through standardized high-performance interfaces.

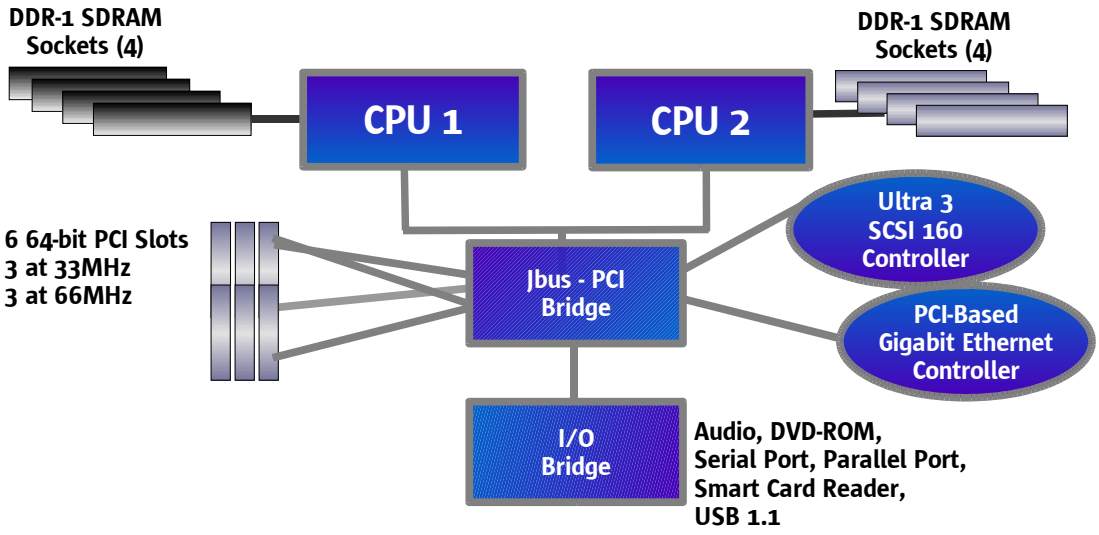
Figure 2.1: SX1500 block diagram



Features integrated into the SX1500 motherboard include:

- 1.06GHz UltraSPARC™-IIIi processor with integrated 1-MB L2 cache
- Four DIMM sockets, 168-pin JEDEC DDR-1 DRAM with error correction
- Five PCI slots; 2x32-bit @ 33MHz, 2x 32/64-bit @ 33 MHz, 1x32/64-bit@33 or 66 MHz, 5/3.3-volt
- PCI-bus support for Sun graphics cards
  - Sun™ XVR-100 2D PCI graphics accelerator with 8-MB SGRAM video RAM (HD15 connector)
  - Sun™ XVR-500 3D PCI graphics accelerator with 48 MB of graphics memory
- 10BASE-T/100BASE-T/1000BASE-T Gigabit Ethernet, self-sensing
- Two ATA100 channels/connectors for a hard drive and CD-ROM
- Two D-sub 9-pin, asynchronous RS-232 serial port
- One Centronics-compatible, IEEE-1287, DB25 parallel-port interface
- Two USB 1.1-compliant ports
- Onboard Audio (line in & line out)

Figure 3.1: SX2500 block diagram



Features integrated into the SX2500 motherboard include:

- 1.28GHz UltraSPARC™IIIi processor with integrated 1-MB L2 cache
- Eight DIMM sockets, 168-pin JEDEC DDR-1 DRAM with error correction
- Six full-length, 64-bit (3 x 33MHz and 3 x 66MHz) 5/3.3-volt PCI slots
- PCI-bus support for Sun graphics cards
  - Sun™ XVR-100 2D PCI graphics accelerator with 8-MB SGRAM video RAM (HD15 connector)
  - Sun™ XVR-500 3D PCI graphics accelerator with 48 MB of graphics memory
  - Sun™ XVR-1200 3D PCI graphics accelerator with over 400 MB of graphics memory
- 10BASE-T/100BASE-T/1000BASE-T Gigabit Ethernet, self-sensing
- Two Ultra SCSI III 160 connectors for hard disk drive and CD-ROM
- Two ATA100 channels/connectors for a hard drive and CD-ROM
- DB-9-pin, asynchronous serial port
- One Centronics-compatible, IEEE-1287, DB25 parallel-port interface
- Four USB1.1-compliant ports

Memory

The UltraSPARC IIIi SX1500 and SX2500 uses standard 168-pin JEDEC DDR-1 DRAM modules with error correction code (ECC), in paired DIMMS only. These memory DIMMS are sold as X-options and have gone through extensive testing and qualification before being added to Sun's price list. Note: Not all vendors perform equally, and some third-party memory vendors do not provide the reliability and quality Sun customers expect. Sun recommends that customers use only Sun qualified memory for maximum reliability.

The SX1500 board supports up to 8GB of memory through 256-MB, 512-MB, and 1-GB DIMM modules (8-GB support via 4 x 2-GB DIMMs).

The SX2500 board supports up to 16GB of memory through 512-MB DIMM modules and 1-GB DIMM modules (16-GB support via 8 x 2-GB DIMMs).

Features	Benefits
• Lower cost, industry-standard memory modules	• Less expensive, allowing customers to move up to higher levels of memory at lower cost
• DDR-1 ECC memory	• Outstanding error code correction and system reliability, superior to parity error correction
• 64-bit architecture	• Extensive memory addressability

Storage

One area of difference between the SX1500 and SX2500 is internal storage.

The SX1500 board has ATA100 connectors (and does not have an external SCSI connector), the user can employ one of the PCI-SCSI host adapter cards to access Sun's external SCSI storage options. The four Sun SCSI hardware cards that have been tested for the Sun Blade 1500 workstation are shown in the table below.

The SX2500 board has Dual channel Ultra 160/320 SCSI controller support and two ATA100 connectors.

Part Number	Description
X5010A	PCI adapter single-channel SCSI card
X6540A	PCI adapter Sun single-channel, single-ended UltraSCSI
X6541A	PCI adapter Sun dual-channel differential UltraSCSI
X1032A	PCI adapter UltraSCSI and 10/100-Mbit buffered Ethernet card

With the installation of these cards, users have the option of one of several Sun StorEdge™ products. Please see the Options section of this document.

System I/O

System I/O for these SX Boards is provided by the industry-standard peripheral component interconnect (PCI) data bus. The PCI bus in the SX Boards complies with the 2.1 revision of the PCI specification, released in March 1995.

To provide maximum expandability, the SX1500 features a total of five PCI slots, and the SX2500 features at total of 6 PCI slots. All slots on both boards are 5v (with 3.3 V power supplied). See the following table for more details on the PCI slots for each board

Sun Blade 1500	Sun Blade 2500

• 5 PCI slots:
  • Two 32-bit slots at 33-MHz
  • Two 32-bit or 64-bit slots at 33-MHz
  • One 32-bit or 64-bit slots at 66-MHz
	• 6 full length PCI slots:
	  • Three 64-bit slots at 33-MHz
	  • Three 64-bit slots at 66-MHz

Sun supports a variety of PCI-based adapter cards, including Ethernet, token ring, ATM, and FDDI networking cards, video and audio input, SCSI adapters, and high-speed serial and parallel interfaces. In addition, Sun is working with a host of third-party partners to develop PCI hardware and software that is certified for operation on Sun's entire line of Sun Blade 1500 and Sun Blade 2500 workstations.

USB Interface

SX1500 has 2 USB 1.1 connectors, SX2500 has 4 USB 1.1 connectors for interface with a variety of devices. USB devices supported by the Solaris 8 HW 5/03 Operating Environment include:

- Human interface devices including the Sun USB keyboard and Sun USB mouse.
- USB 1.1 storage devices, as indicated in the table below

Device Name	Medium Capacity
• Iomega Zip USB 100	• 100-MB Zip disks
• Iomega Zip USB 250	• 100/250-MB Zip disks
• Iomega Jaz 1-GB drive	• 1-GB Jaz disks

Device Name	Medium Capacity
• Iomega Jaz 2-GB drive	• 1-/2-GB Jaz disks
• Iomega USB Klik! PC Card Doc	•
• Iomega USB Zip CD, CDRW	•
• Addonics USB Pocket CDRW	•
• Addonics USB Pocket DVD	•
• Addonics USB ExDrive Hard Drive	•
• Castlewood ORB 2.2-GB external USB drive	• 2.2-GB ORB disks
• Hagiwara Sys-Com FlashGate (SmartMedia Reader/Writer USB version, Type I only	• 2/4-MB (5 volt) • 2/4/8/16/32/64-MB (3.3 volt)
• Hagiwara Sys-Com FlashGate CF (CompactFlash Reader/Writer USB version)	• 8/16/32/48/64/96/128-MB (3.3 volt or 5 volt)
• Hagiwara Sys-Com FlashGate Dual (SmartMedia+PCMCIA R/W)	•
• Hagiwara Sys-Com FlashGate USB CompactFlash R/W	•
• Hagiwara Sys-Com FlashGate USB SD Card/MMC R/W	•
• Plextor Plexwriter PX-W8432Ti CD-RW	•
• Plextor Plexwriter PX-W12432Ti CD-RW	•
• Plextor Plexwriter PX-W12432Te CD-RW	•
• Plextor Plexwriter PX-W8220Ti CD-RW	•
• Plextor Plexwriter PX-W8220Te CD-RW	•
• Plextor Plexwriter PX-W161040a CD-RW	•
• Plextor Plexwriter PX-W121032s CD-RW	•
• SCM Microsystems SCSI to USB Converter	•
• SCM Microsystems SwapBox PCMCIA	•
• Sony Spressa CRX140 e/ch	•
• Sony Spressa CRX140 s/c [EOL'ed}	•

- Four-port and seven-port expansion USB 1.1 hubs (either bus or self-powered) are supported. At product introduction, USB 2.0 hubs will only support USB 1.1 speeds; USB 2.0 speed is expected to be supported in a future release of Solaris.
- Selected Lexmark and Xerox USB printers are supported. Printers compliant with the USB printer class standards should function properly. Refer to the Solaris Ready program for details. The following PostScript™ printers are supported:

  - Lexmark Optra E310
  - Lexmark Optra M410
  - Lexmark Optra T616
  - Lexmark Optra W810
  - Lexmark Optra Color45
  - Xerox DocuPrint N2125

Supported Graphics

Sun™ XVR-100 2D PCI-based Graphics Accelerator (supported on SX1500 and SX2500)

The Sun(tm) XVR-100 2D PCI-based Graphics Accelerator, installed in a 33MHz PCI slot, provides the customer with a very low-cost, flexible 24-bit, 2D graphics board. Sun Blade 1500 supports up to three XVR-100 boards, while Sun Blade 2500 supports up to four XVR-100 boards.

The Sun XVR-100 provides the following features:

- 8+24 bit simultaneous multiple colormaps for 2D
- 1920 x 1200 at 75 Hz 2D resolution
- Support for all Sun monitor products released since 1997, including support for Sun's new 24” Flat Panel Monitor
- 32-MB DDR SDRAM provides
- HD15 and DVI-I video connector
- Dual display capability with up to 1920 x 1200 resolution for each display
- Solaris 8 and Solaris 9 support
- FBPM support
- 33-MHz, 32-bit, 5-volt PCI card, short form factor (< 7-inch length)
- Low power consumption (< 8 watts)
- Compatible with OpenWindows™ environment and CDE windowing, and supports the following APIs: X11, Motif, JDK and OpenGL API via a software pipeline.
- Backward compatibility with Sun's PGX64™ Graphics Accelerator

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio	Color Depth
1920 x 1200	75 Hz	Sun	16:10	8-bit
1920 x 1200	75 Hz	Sun	16:10	24-bit
1920 x 1200	72 Hz	Sun	16:9	8-bit
1600 x 1280	76 Hz	Sun	5:4	8-bit
1600 x 1200	75 Hz	VESA	4:3	24-bit
1600 x 1000	66, 76Hz	Sun	4:3	24-bit
1440 x 900	76 Hz	Sun	16:10	24-bit
1280 x 1024	60, 75, 85 Hz	VESA	16:10	24-bit
1280 x 1024	67, 76 Hz	Sun	5:4	24-bit
1280 x 800	76 Hz	Sun	5:4	24-bit
1152 x 900	Not on ATI spec sheet 10/24/02	Sun	5:4	

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio	Color Depth
1152 x 864	75 Hz	VESA	4:3	24-bit
1024 x 768	60, 70, 75, 85 Hz	VESA	4:3	24-bit
800 x 600	56, 60, 72, 75, 85 Hz	VESA	4:3	24-bit
720 x 480	85 Hz	VESA	9:5	24-bit
640 x 480	60, 72, 75, 85 Hz	VESA	4:3	24-bit

Sun XVR-100 graphics supports 64-bit/66-MHz, 64-bit/33-MHz, or 32-bit/33-MHz PCI slots in all PCI-based Sun workstations, as indicated in the following table.

Workstation	Standard Configuration	X-option	Max. Number of Boards per System	Slot Configuration	Number Supported, if UPA Graphics also Configured
Sun Blade™ 150	on-board version	Yes	3	3 in 33-MHz slots	NA
Sun Blade 1500	PCI	Yes	3	3 in 33-MHz slots	NA
Sun Blade 2500	ATO	Yes	4	1 in 66-MHz slot; 3 in 33-MHz slots	1 or 2
Sun Blade 2000	ATO	Yes	4	1 in 66-MHz slots; 3 in 33-MHz slots	1 or 2

Sun XVR-500 Graphics Accelerator (supported on SX1500 and SX2500)

The Sun XVR-500 graphics accelerator doubles the geometry performance and improves the texture performance by up to 50 percent over the Sun Expert3D-Lite graphics, which it replaces. Sun's XVR-500 graphics accelerator provides a very affordable graphics solution for demanding 3D graphics applications that require fast geometry performance and reasonable texture mapping performance. Key markets for the Sun XVR-500 graphics accelerator are MCAD, MCAE, medical imaging, high-end EDA, GIS, and energy markets. Both Sun Blade 1500 and Sun Blade 2500 support up to two XVR-500 boards. For maximum performance, installing the XVR-500 in the 66-MHz slot is recommended. If minimal graphics performance is required, the XVR-500 board can be installed in the 33-MHz slot, freeing up a 66-MHz slot for other usage.

The Sun XVR-500 graphics accelerator is based on the 3Dlabs Wildcat architecture. It is positioned as part of a total solution serving the technical and professional workstation market. The Sun XVR-500 graphics outperforms previous Sun graphics accelerators such as the Sun Creator3D and Sun Elite3D graphics for most MCAD/MCAE applications.

The Sun XVR-500 graphics accelerator offers state-of-the-art handling of color and gamma correction, and advanced 3D functionality, including hardware-accelerated texture mapping with on-board texture memory. The Sun XVR-500 graphics accelerator supports monitor refresh rates of up to 112 Hz and provides double-buffered/Z-buffered support for 3D graphics up to 1920 x 1080 with support for stereoscopic 3D up to 1280 x 800.

Key Features

The Sun XVR-500 graphics accelerator is a 64-bit board and is supported in both 33- and 66-MHz PCI bus slots. It provides many advanced features including the following:

- 32-MB frame buffer memory
- 16-MB on-board texture mapping memory and acceleration
- Support for 2D and 3D resolutions (1920 x 1080 @ 72Hz, double-buffered/Z-buffered)
- Support for 3D stereo resolutions (1152 x 900 @ 120Hz, 1280 x 800 @ 112Hz)
- 32-bit Z-buffering at all supported resolutions
- Synchronization of two to four displays at 1280 x 800 @ 112 Hz stereo
- Multi-display support (up to four) in the Enchilada workstations

Hardware acceleration for the features listed above in OpenGL applications using Sun OpenGL for Solaris API versions 1.2.1 and late

Display Resolutions

The Sun XVR-500 graphics accelerator's video timings/monitor screen resolutions (32-MB frame buffer) and HD15 output is listed below.

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio
1920 x 1080	72 Hz	Sun	16:9
1600 x 1280	76 Hz	Sun	5:4
1600 x 1200	75 Hz	VESA	4:3
1600 x 1000	66, 76 Hz	Sun	16:10
1440 x 900	76 Hz	Sun	16:10
1280 x 800	112 Hz	Sun-Stereo	16:10
1280 x 800	76 Hz	Sun	16:10
1280 x 1024	60, 75, 85 Hz	VESA	5:4
1280 x 1024	67, 76 Hz	Sun	5:4
1152 x 900	120 Hz	Sun-Stereo	5:4
1152 x 900	66, 76, 120 Hz	Sun	5:4
1024 x 800	84 Hz	Sun	5:4
1024 x 768	75 Hz	VESA	4:3
1024 x 768	60, 70, 77 Hz	Sun	4:3
1200 x 680	108, 112 Hz	Sun-Stereo	Sun-Stereo
768 x 575	50i Hz	PAL	PAL
640 x 480	60 Hz	VESA	4:3
640 x 480	60i Hz	NTSC interlaced	NTSC

Sun XVR-1200 Graphics Accelerator (supported only on SX2500)

The Sun XVR-1200 is the newest member of Sun's graphics family. The XVR-1200 has 1.5X the geometry performance and over 4X the texture mapping performance of our current Sun XVR-1000. The XVR-1200 graphics accelerator is our highest performing graphics solution for demanding 3D graphics applications. It provides Sun's fastest geometry performance and texture mapping performance. Key markets for the Sun XVR-1200 graphics accelerator are MCAD, MCAE, high-end EDA, GIS, energy markets and workstation based Visual Simulation.

Sun XVR-1200 graphics will be offered as a standard Sun Blade 2500 configuration, as well as through ATO and X-option. The rich feature set makes this a good choice for customers wanting both flexibility and performance. The XVR-1200 is one of the best performing professional-level,high-performance 3D graphics frame buffers available in the market place today. The XVR-1200 has over 400 Mbytes of memory to insure excellent performance and image quality. It combines excellent graphics image quality with high performance 3D acceleration and the flexibility required by many professionals in Sun's technical markets.

Key Features

The Sun XVR-1200 is a 64-bit board and is supported in both 33- and 66-MHz PCI bus slots. It is a Universal double wide PCI (single PCI slot electrical, double PCI slot width physical), .

It provides many advanced features including the following:

- 128-MB frame buffer memory
- 256-MB on-board texture mapping memory and acceleration
- 32- MB on board display list memory
- Support for resolutions up to 1920 x 1200 @ 75 Hz, at 30 -bit color
- Dual DVI-I video output
- Support for single video (default) or two independent video streams
- 10-bit gamma correction
- Stereoscopic viewing support (frame sequential)
- Frame locking of the video timing to an external timing source
- Multiview functionality for framelocking of multiple workstations
- Stereo output – stereo connector
- Multisampling support

Hardware acceleration for the features listed above in OpenGL applications using Sun OpenGL for Solaris API versions 1.2.3 or 1.3 and subsequent compatible Sun OpenGL versions.

Display Resolutions

The Sun XVR-1200 graphics accelerator's video timings/monitor screen resolutions are listed below

Sun XVR-1200 Graphics Accelerator Screen Resolutions

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio Format	Maximum Number of spp Single Screen	Maximum Number of spp Dual Screen
2048 x 1536	40 Hz	Sun	16:10	1	1
1920 x 1200	60, 70, 75 Hz	Sun	16:10	1	1
1920 x 1200	60_240T Hz	Sun	16:10	1	1
1920 x 1080	72 Hz	Sun	16:9	2	1
1792 x 1344	75 Hz	VESA	4:3	1	1
1600 x 1280	76 Hz	Sun	5:4	1	1
1600 x 1200	60, 75 Hz	VESA	4:3	2	1
1600 x 1000	66, 76 Hz	Sun	16:10	2	1
1440 x 900	76 Hz	Sun	16:10	1	1
1280 x 1024	60, 75, 85 Hz	VESA	5:4	4	1
1280 x 1024	67, 76 Hz	Sun	5:4	4	1
1280 x 1024	112 Hz	Sun-stereo	5:4	2	1
1280 x 800	112 Hz	Sun-stereo	16:10	2	1
1280 x 800	76 Hz	Sun	16:10	4	1
1152 x 900	66, 76 Hz	Sun	5:4	4	2
1152 x 900	120 Hz	Sun-stereo	5:4	2	1
1024 x 800	84 Hz	Sun	5:4	4	2
1024 x 768	75 Hz	VESA	4:3	4	2
1024 x 768	60, 70, 77 Hz	Sun	4:3	4	2
960 x 680	108, 112 Hz	Sun-stereo	Sun-Stereo	4	2
800 600	75	VESA	4:3	8	4
640 x 480	60 Hz	VESA	4:3	16	8

SunPCi™ III Coprocessor Card

The SunPCi™ III card is a cost-effective hardware and software product that allows customers to share data, peripherals, and network connections between Microsoft Windows and Solaris Operating Environment systems. The SunPCi III card allows popular PC productivity applications to run on Sun systems side by side with Solaris Operating Environment applications at native speeds, saving valuable desk space and helping to improve personal productivity. Best of all, the SunPCi III card leverages Sun's biggest strength, reliable and robust network computing.

The SunPCi III card integrates a PC motherboard into a SPARC-processor-based system along with software to run Microsoft Win98, Win/NT (3 flavors), Win2000 (2 flavors), Win XP, and Win.Net Server. (Microsoft Windows licenses are sold separately). Unlike software emulators such as Wabi™ and Insignia's SoftWindows, the SunPCi III card uses a 1.6GHz AMD Athlon XP Mobile processor. Applications run natively and at Athlon-class speeds on the SunPCi III card.

The card fits into a single PCI slot. Two full-size 32-bit or 64-bit PCI slots are required for full installation. If installed, the serial/parallel port second PCI backplate (included with the SunPCi III card) obstructs access to the adjacent PCI slot. Up to two SunPCi III coprocessor cards are supported on Sun Blade workstations.

Specifications and Regulations

Environment

SX1500 meets below Environmental in a Sun Blade 1500 Chassis
SX2500 meets below Environmental in a Sun Blade 2500 Chassis

Feature	Sun Blade 1500 Specifications	Sun Blade 2500 Specifications
AC Power	100 to 120; 220 to 240 VAC, 47 to 63 Hz, 0.3 K VA	
Operating	5° to 40° C (41° to 104° F)	5° to 40° C (41° to 104° F)
Nonoperating	-32° to 65° C (-25.6° to 149° F)	-40° to 65° C (-40° to 149° F)
Acoustic Noise • Operating • Idling	• 5.0 bels • 4.5 bels	• 5.4 bels • 5.1 bels

Regulations

SX1500 meets or exceeds the below requirements in a Sun Blade 1500 Chassis
SX2500 meets or exceeds the below requirements in a Sun Blade 2500 Chassis

Feature	Sun Blade 1500 Specifications	Sun Blade 2500 Specifications
Safety	UL /CSA-60950, EN 60950,IEC60950 CB Scheme with all national differences,IEC825-1,2 and CFR21 part 1040	UL /CSA-60950, EN 60950,IEC60950 CB Scheme with all national differences
Regulatory Markings	CE, FCC, ICES-003, C-Tick, VCCI, GOST-R, BSMI, MIC, UL/cUL, TUV-GS, CCC, S-Mark	CE, FCC, ICES-003, C-Tick, VCCI, GOST-R, BSMI, CCC, S-Mark
Ergonomics	EK ITB-2000	
RFI/EMU	FCC Class B, ICES-003 Class B, VCCI Class B, EN55022 Class B BSMI Class B, EN61000-3-2, EN61000-3-3	
Immunity	EN55024	
X-ray	DHHS 21 Subchapter J; PTB German X-ray Degree	

The Solaris Operating Environment

The Solaris 8 HW 5/03 Operating Environment is the latest release of one of the industry's leading enterprise operating environments. The Solaris 8 Operating Environment contains the complete functionality required for SX1500 and SX2500 OEM boards. The Solaris 8 Operating Environment is a solid, scalable 64-bit operating environment that also supports 32-bit applications. The Solaris 8 Operating Environment includes:

- Reliable, Internet-ready operating environment for 64-bit SPARC™-processor-based platforms
- Enhanced ease of use and PC-interoperability features
- Integrated, high-performance Java™ technology and tools
- Robust software developer environment
- Advanced, standards-based networking
- Improved systems installation and management tools
- Enterprise-class directory services
- Enhanced desktop tools, I/O standards, and security

The Solaris Operating Environment delivers a competitive advantage to businesses through networked computing, scalability, and multiarchitecture support. The Solaris Operating Environment provides an advanced, superior solution for all customer IT needs, both technical and business. With its strength in enterprise-class reliability, scalability, and performance, the Solaris Operating Environment is an industrial-grade solution with the quality and robustness required to deliver mission-critical computing.

Solaris Operating Environment Features and Benefits

Features	Benefits
• 100 percent binary compatibility	• Software investment protection — all of today's Solaris Operating Environment-certified 32-bit applications continue to run on the Solaris 8 HW 5/03 Operating Environment without modification
• Reliability, availability, and serviceability (RAS)	• Less downtime, more productivity, and faster project completion
• 64-bit computing	• Higher performance, capacity, and precision on 64-bit SPARC processor-based systems and Intel systems with 32-bit binary compatibility • Compliant with UNIX® 98 and Aspen Group LP64 standards

Features	Benefits
• 64-bit compilers	• Quickly develop and certify 64-bit applications for SPARC and IA-64 processors using Solaris Operating Environment APIs, 64-bit C/C++ and FORTRAN compilers, and ABI certification tools
• Java 2 SDK	• Provides a high-performance, scalable Java virtual machine • Offers improved memory management, optimized JIT compiler and faster Java thread synchronization
• IPv6/IPsec/Mobile IP	• Helps increase addressing range, provides better authentication and privacy, and enables new quality of service capabilities. Mobile IP permits intermittent connection to the Internet with no data loss.
• Scale from 1 to 512 processors per node	• Helps increase compute resources as a customer's needs grow. Expand to four processors on the desktop, or use up to 64 processors per server, with up to eight servers per cluster.
• LDAP directory services	• High-speed, enterprise-class directory service, using the Solaris 8 Operating Environment LDAP client and the iPlanet™ Directory Server, supports complex, data intensive network applications. Includes Microsoft Active Directory support.
• System management tools	• Helps reduce the time spent on system administration duties using Web-based wizards and graphical interfaces, powered by Java technology.
• Desktop management and productivity tools	• Helps increase productivity with intuitive Desktop, Printer, PDA sync, HotKey, and CDE 1.4 control panel tools. The StarOffice™ productivity suite easily handles Microsoft Office documents, and creates complex documents, spreadsheets, and presentations. Use PC Launcher and the SunPCi™ IIpro coprocessor card to run Windows, Lotus 1-2-3, and AutoCAD applications on Sun workstations.
• Extended device and support	• I/O Connect with Sun, using the customer's favorite devices, including DVD, ZIP, and JAZ drives, and USB, 1394, SCSI, UPA, and PCI buses.
• Internationalization	• The Solaris 8 Operating Environment is a comprehensive global product that supports 37 languages and over 90 locales, the euro currency symbol, and complex text formats for the Arabic, Thai, and Hebrew languages. Additional language installation tools, expanded Unicode support, and improved data interoperability utilities greatly simplify the development and testing of applications for international markets.
• X11R6.4	• Runs X applications in a browser and provides single logical screen across multiple display devices

Features	Benefits
• Real Time application	• Offers scalable, fixed-priority, and fully preemptive scheduling using multiple high-resolution, per-CPU interval timers. Provides priority inheritance for synchronization by multi-threaded realtime applications, such as simulation, telemetry, data acquisition, signal processing, and video-on-demand.
• Enhanced security features	• Increased support for security protocols and technologies including IPSec, AMI, Kerberos v5, and smart cards reduce the chance of security-related downtime

Solaris 8 Operating Environment Features

The Solaris 8 HW 5/03 Operating Environment is Sun's latest release in this product family. The Solaris 8 Operating Environment continues the tradition of reliability, availability, and scalability (RAS) of the earlier operating environment releases, including features IPv6/IPsec/Mobile IP, realtime application support, file system logging, and remote console.

Existing applications that adhere to the Solaris application binary interface (ABI) will run unmodified with Solaris 8 software on both SPARC processor-based platforms and Intel platforms. In addition, Sun provides an easy-to-use AppCert testing tool for developers, so they can verify existing Solaris application binaries and report on any potential incompatibilities.

- **Productivity features**

  Solaris 8 software offers enhanced diagnosing capabilities, availability, scalability, performance, Java technology, and graphics. With the Solaris 8 Operating Environment, the customer gets a full suite of integrated tools for browsing, collaborating, and interoperating with PCs. The Solaris 8 Operating Environment provides a 32-bit and 64-bit UNIX platform that provides customizable workspaces, graphical system monitoring, and business/office productivity tools, including the StarOffice productivity suite.

- **Advanced networking**

  Support for IPv6 in the Solaris 8 Operating Environment is integrated into NFS, RPC, NIS, NIS+, and DNS. IPsec enables secure virtual private networks and network access control. Mobile IP provides Internet disconnect/reconnect capabilities with no data loss.

- **Bundled software**

  Includes Oracle 8i Enterprise Edition, `lxrun` for Linux application compatibility (for Solaris on Intel), Apache™ WebServer, Netscape™ Communicator, iPlanet Directory Server, `gzip`, `bash`, and `tcsh`.

  The Solaris 8 Operating Environment ships with support for a number of software components that increase overall availability including Solaris Resource Manager software for fine-grained control of system resources, Solaris Bandwidth Manager software for enhanced network resource availability, and Sun Cluster 3.0 software for even greater application availability through a clustered file system, scalable data services, and built-in load balancing.

- **Enhancements to the Common Desktop Environment (CDE)**

  The latest generation of the Common Desktop Environment (CDE) comes standard, providing workstation users with an easy-to-use, open, secure platform. Personal Digital Assistant (PDA) support synchronizes data from most Palm Computing devices with the CDE calendar, mail, memo, and address book. CDE now features streaming video using MPEG1, MPEG2, Quicktime, and AVI formats as well as MIDI audio using the Java Media Framework.

- **Improved system error messages, system debugging capabilities, and remote console capability**

  Allows the customer to apply scarce system expertise remotely across the enterprise.

- **File system logging**

  Logging file system features and parallel SCSI probes make rebooting faster.

- **Live Upgrade**

  Allows Solaris 8 software to be installed on a separate partition from the currently running version of the operating environment. When installation is complete, a simple reboot enables the Solaris 8 Operating Environment to take control. Since Live Upgrade includes a version migration and fallback feature, the customer can also fallback to the previous release — through a simple reboot — without losing administration information.

- **Real-time video creation and broadcast support**

  A Java Media Framework (JMF) player provides access to the latest industry-standard audio and video files, including MPEG1/2, Quicktime, VIVO, AVI, AIFF, GSM, WAV, RMF, AU, and MIDI.

Graphics Software Interfaces

The SX1500 and SX2500 OEM boards will support all Solaris 8 Operating Environment graphics and window system APIs, including OpenGL® and Display PostScript™. A large number of Sun and third-party graphics APIs are also supported, including OpenGL, and Java 3D™ software. Industry-standard X-extension libraries, such as Xlib and PEXlib, are available.

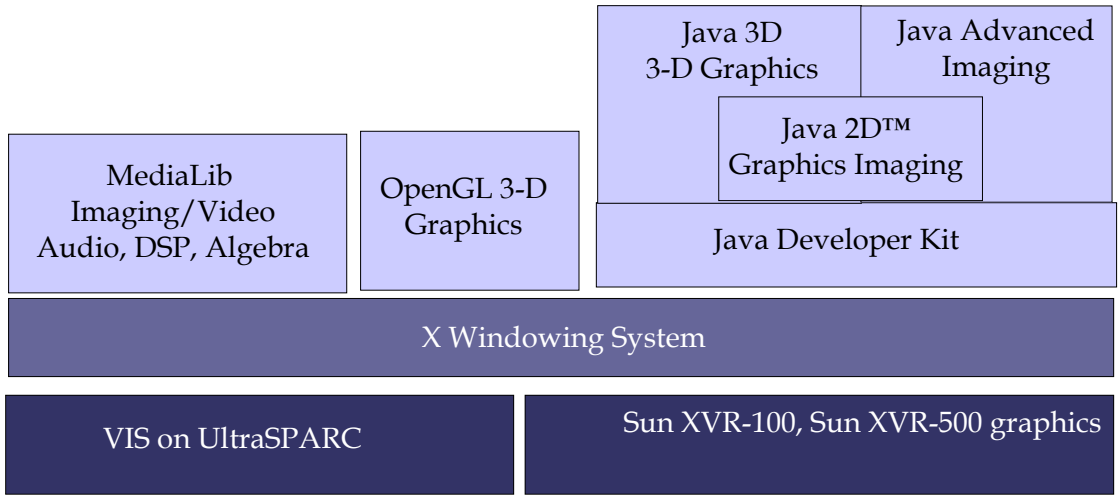


Figure 4. Graphics software interfaces

The Solaris Operating Environment System Requirements

Feature	Specification
• Memory	At least 64-MB
• Disk space	Typically 600-MB to 1-GB

Note: *Required disk space will vary based on OS packages selected, desktop or server use, desired swap tmp space, localization or translations, online documentation, and applications installed.*

The Solaris Operating Environment Licensing and Usage

Under the Free Solaris Binary License Program program, Sun is making the binary (runtime) version of its Solaris 8 Operating Environment available to everyone who accepts the terms of the Solaris 8 Binary Code License (BCL) and the Free Solaris Binary License Program. There are no fees for the right to use the software on computers with a capacity of eight or fewer processors; just a small charge for the media kit.

Refer to `http://www.sun.com/software/solaris` for current licensing details. Some features of the Solaris Operating Environment license include the following:

- No longer a distinction between desktop and server licenses

- Free binary (runtime) license for all systems of 8 or fewer CPUs for customers who accept the terms of the Solaris 8 Binary Code License and the free Solaris Binary License Program
- Solaris 8 Operating Environment software is provided via the Solaris 8 Media Kit available for purchase on-line at `http://www.sun.com/solaris/binaries`
- Single Solaris Media Kit can be used to install multiple systems
- Solaris Media Kit contains additional bundled software
- Solaris Supplemental CD of bundled user and system management tools
- Oracle 8i Enterprise Edition (with development license)
- StarOffice 6.0 productivity suite
- Solaris Software Companion CD of popular freeware
- iPlanet Advantage Software (with development licenses)

Options

Below is a list of system expansion, networking, graphics, and multimedia options that are supported by SX2500 boards. Refer to the configuration guides on Sun Blade 2500 Workstations for currently available option listings, and ordering information. When no maximum number is listed, refer to Sun Blade 2500 Workstation ordering or configuration notes for that option.

Part Number	Option Description	Maximum Number Supported	Comments
Processors			
X9005A	Sun Blade 2500 Motherboard with 1 x 1.28GHz CPU	1	
X9006A	Sun Blade 2500 Motherboard with 2 x 1.28GHz CPU	1	
Memory			
X7403A	1GB (2x512MB DIMMS), paired DIMMS required	4	
X7404A	2GB (2x1GB DIMMS), paired DIMMS required	4	
Mass Storage Internal			
X5261A	Internal 36GB 10,000rpm Ultra SCSI IV 320 hard disk	1	
X9004A	48X CD-RW with IDE cable	1	
Mass Storage UniPack			
SG-XDSK010C-18G	18-GB UniPack Disk	4	SCSI cables required
SG-XDSK010C-36G	36-GB UniPack Disk		
Mass Storage Sun StorEdge™ Multipack			
SG-XDSK020-36G	36.4-GB Multipack (2 X 18.2-GB, 10000-RPM) UltraSCSI	1	
SG-XDSK020-72G	72-GB Multipack (2 X 36-GB, 10000-RPM) UltraSCSI	1	
SG-XDSK060C-109G	109-GB Multipack (6 x 18-GB, 10000-RPM)UltraSCSI	1	
SG-XDSK060C-218G	218-GB Multipack (6 x 36-GB, 10000-RPM) UltraSCSI	1	
X5237A	18-GB UltraSCSI 10000- RPM disk (for Packs)		
X5242A	36-GB UltraSCSI 10000- RPM disk (for Packs)		
Mass Storage - Sun StorEdge FlexiPack			
SG-XTAP4MM-021A	12-GB, 4-mm DDS-3 in a Sun StorEdge FlexiPack desktop enclosure	2	
X5242A	36-GB UltraSCSI 10000- RPM disk (for Packs)		
Mass Storage - Sun StorEdge FlexiPack			
SG-XTAP4MM-021A	12-GB, 4-mm DDS-3 in a Sun StorEdge FlexiPack desktop enclosure	2	

Part Number	Option Description	Maximum Number Supported	Comments
SG-XTAP4MM-031A	72-GB, 4-mm DDS-3 in a Sun StorEdge FlexiPack desktop enclosure	1	
SG-XTAP8MM-021A	20-GB, 8-mm drive in a Sun StorEdge FlexiPack desktop enclosure	2	
SG-XTAPDLT-021A	36-GB DLT7000 tape drive	2	
X6236A	20 to 40-GB, 8-mm internal tape drive for Sun StorEdge FlexiPack		
X6282A	12-GB, 4-mm DDS-3 internal tape drive, OEM ready		
X6295A	20-GB, 4-mm DDS-4 tape drive		
Mass Storage - Sun StorEdge A1000/D1000 Arrays			
SG-XARY151A-72G	72-GB (4 x 18-GB, 10000-RPM disks) Sun StorEdge A1000 tabletop/deskside array	2	
SG-XARY155A-72G	72-GB (4 x 18-GB, 10000-RPM disks) Sun StorEdge A1000 rackmount array	2	
SG-XARY170A-145G	145-GB (4 x 36-GB, 10000-RPM disks) Sun StorEdge A1000 tabletop/deskside array	2	
SG-XARY171A-145G	145-GB (4 x 36-GB, 10000-RPM disks) Sun StorEdge A1000 tabletop/deskside array	2	
SG-XARY151A-218G	218-GB (12 x 18-GB, 10000-RPM disks) Sun StorEdge A1000 tabletop/deskside array	2	
SG-XARY155A-218G	218-GB (12 x 18-GB, 10000-RPM disks) Sun StorEdge A1000 rackmount array	2	
SG-XARY170A-436G	436-GB (12 x 36-GB, 10000-RPM disks) Sun StorEdge A1000 tabletop/deskside array	2	
SG-XARY171A-436G	436-GB (12 x 36-GB, 10000-RPM disks) Sun StorEdge A1000 rackmount array	2	

Part Number	Option Description	Maximum Number Supported	Comments
SG-XARY153A-72G	72-GB (4 x 18-GB, 10000-RPM disks) Sun StorEdge D1000 tabletop/deskside array	1	
SG-XARY154A-72G	72-GB (4 x 18-GB, 10000-RPM disks) Sun StorEdge D1000 rackmount array	1	
SG-XARY172A-145G	145-GB (4 x 36-GB, 10000-RPM disks) Sun StorEdge D1000 tabletop/deskside array	1	
SG-XARY173A-145G	145-GB (4 x 26-GB, 10000-RPM disks) Sun StorEdge D1000 rackmount array	1	
SG-XARY153A-218G	218-GB (12 x 18-GB, 10000-RPM disks) Sun StorEdge D1000 tabletop/deskside array	1	
SG-XARY154A-218G	218-GB (12 x 18-GB, 10000-RPM disks) Sun StorEdge D1000 rackmount array	1	
SG-XARY172A-436G	436-GB (12 x 36-GB, 10000-RPM disks) Sun StorEdge D1000 tabletop/deskside array	1	
SG-XARY173A-436G	2436-GB (12 x 36-GB, 10000-RPM disks) Sun StorEdge D1000 rackmount array	1	
Tape Libraries			
SG-XAUTODLT8D-L9	Sun StorEdge L9 (360-GB) tape autoloader desktop	1	
SG-XRACKIT-L9	Sun StorEdge L9 rackmounting kit	1	
SG-XLIBDLT71-L20	Sun StorEdge L20 700-GB tape library, desktop	1	
SG-XLIBDLT1-280G	Sun StorEdge L280 tape library autoloader, desktop model	1	
SG-XLIBDLT2-280G	Sun StorEdge L280 tape library autoloader, rackmount	1	
Input Devices			
SUNX-MICII/G5	SunMicrophone™ II	1	
PCI Expansion Cards			
X1032A	10/100BASE-T Ethernet with Sun PCI UltraSCSI	3	
X1033A	10/100BASE-T with MII PCI adapter	3	
X1034A	PCI Quad FastEthernet controller PCI adapter	1	
X1141A	PCI Gigabit Ethernet network interface card	3	
X1150A	GigaSwift Ethernet (UTP)		
X1155A	High-speed serial – 4 port	3	
X1157A	Sun ATM™/P-155 MMF	3	
X1158A	Sun ATM/P-155 UTP	3	
X2156A	Serial Asyn interface – 8 port	3	
X5010A	Single channel SCSI	3	

Part Number	Option Description	Maximum Number Supported	Comments
X6540A	Dual-channel, single-ended UltraSCSI adapter	3	
X6541A	Dual-channel, differential UltraSCSI controller	3	
X2134A	SunPCi™-III Coprocessor Card	2	
X7066A	1 x 256MB DIMM memory expansion for SunPCi III Card		
X7067A	1 x 512MB DIMM memory expansion for SunPCi III Card		
Graphics			
X3769A	Sun XVR-100 graphics	4	
X3685A	Sun XVR-500 graphics	4	
X3689A	Sun XVR-1200 graphics	2	
Monitors and Graphics			
X7147A	17-inch color CRT monitor		* X471A adapter needed
X7137A	18.1-inch TFT LCD color monitor*		
X7146A	21-inch color CRT*		
X7146A-STH	21-inch color CRT, Southern Hemisphere version*		
X7134A	24-inch wide screen flat panel monitor		
X471A	13W3F-to-HD15M video adapter cable		
X3872A	HD15F-to-13W3 video adapter		
Other Options	A PCI SCSI adapter card is required to attach any external SCSI device to the Sun Blade Enchilada workstation		
X901A	0.8-meter wide-to-narrow 68-68-pin UltraSCSI		
X902A	2.0-meter wide-to-narrow 68-68-pin UltraSCSI	1	
X903A	1.2-meter wide-to-narrow 50-68-pin SCSI adapter cable	1	
X904A	2.0-meter wide-to-narrow 50-68-pin SCSI adapter cable	1	
X3856A	Fast-wide 68 to 68 pin SCSI cable and GEO-specific power cord		
X3857A	Fast-narrow 50 to 68 pin SCSI cable and GEO-specific power cord		
Solaris 8 Media Kit	Customer must order media kit to get recovery CD and Solaris documentation		
SOLZS-08JB9AYM	System Administrator Kit - Multilingual CDs and English hardcopy		
SOLZS-08JB9AYC	Japanese Kit – Multilingual CDs + Japanese hardcopy		

Part Number	Option Description	Maximum Number Supported	Comments
Type 6 USB Country Kits			
X3531A	North American Universal ("PC style")	1	
X3532A	French	1	
X3533A	German	1	
X3534A	Swiss-French	1	
X3535A	Swiss-German	1	
X3536A	Swedish	1	
X3537A	United Kingdom	1	
X3538A	United States UNIX	1	
X3539A	Japanese UNIX	1	
X3554A	Taiwanese	1	
X3555A	Korean	1	
X3556A	Japanese	1	
X3558A	United Kingdom UNIX	1	
X3559A	European UNIX	1	
X3560A	Norwegian	1	
X3561A	Portuguese	1	
X3562A	Spanish	1	
X3563A	Danish	1	
X3564A	Italian	1	
X3565A	Dutch (Netherlands)	1	
X3566A	Australian	1	
X3567A	Finnish	1	
X3568A	European Universal	1	
X3582A	Chinese	1	
X3583A	Euro UNIX (Power Cordless)	1	

Service and Support

SX1500 and SX2500 will be covered under standard Warranty terms and conditions, which includes a 12 month warranty with a next business day on-site parts exchange.
SX1500 and SX2500 Training Requirements will be leveraged from the existing Sun Blade 1500 and Sun Blade 2500 Workstation product training. No additional board training will be required

Global Warranty:

Hardware - Support Timeline/ Start date	12 month hardware warranty support is provided. This begins on the day the product is shipped from Sun Microsystems or a Sun parts provider.
Hardware- Call Response	Eight (8) business hours.
Hardware - Repair Response	15 day return to depot.
Hardware - DOA Policy	Failures within 72 hours from installation.
Software - Support	Ninety (90) calendar days from installation or first service call, whichever occurs first (certain exceptions within each Country may apply). If software is installed on systems prior to shipment, the software warranty will begin on the same date as the warranty for the systems on which the software is installed.
Software - Call Response	Eight (8) business hours.
Software – Delivery	An explanation or clarification of Sun documents regarding installation and configuration of Sun products. Replacement of 1) defective media, 2) missing or unusable documentation or 3) software license certificates.

Glossary

3D-RAM	Dual-ported video memory with graphics functionality built into the memory chip.
100BASE-T	*See* Fast Ethernet.
Antialiasing	A graphics technique that greatly enhances the quality of images by eliminating many of the inaccuracies (jaggies) inherent to rendering on a raster display. Typically found only in high-end graphics systems.
DIMM	Double inline memory module. A memory unit that can come in a variety of sizes, such as 16, 32, 64, and 128-MB.
Fast Ethernet	IEEE standard for 100-Mb Ethernet.
MII	Media independent interface. Used for connecting external transceivers to Fast Ethernet.
ODBC	Open database connectivity.
OpenGL®	A standard software interface for graphics hardware that allows programmers to create interactive 3D applications. OpenGL provides a full-featured, network-transparent application programming interface.
PCI	Peripheral component interconnect. An industry standard for connecting peripherals such as disk drives, tapes drives, and other devices used in the PCs.
VIS™	Visual instruction set. The UltraSPARC™ processor implements a special instruction set that is aimed primarily at image and video processing. Some of the instructions allow the CPU to directly access and operate on image data with a high degree of parallelism. Other instructions provide facilities for formatting and moving data at very high rates of speed both within the CPU, and between the CPU and the other system components.
XGL™	A foundation geometry-oriented 2D/3D graphics library that provides high functionality and performance to geometry applications and application program interfaces (APIs).

Materials Abstract

All materials are available on SunWIN, except where noted otherwise.

Collateral	Description	Purpose	Distribution	Token #
Just the Facts				
– *SX1500 and SX2500: Just the Facts*	Reference Guide (this document)	Training Sales Tool	SunWIN	396582
Product Collateral				
– *SX Board Data Sheet*	Data Sheet	Sales Tool	SunWIN	369615
Product Presentations				
– *SX1500 & SX2500 Customer Pitch*	Presentation	Sales Tool	SunWIN	396583
External Web Sites				
– *SX1500*	http://www.sun.com/sx1500/			
– *SX2500*	http://www.sun.com/sx2500/			