Sun Ultra™ 25 Workstation

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Sun Ultra 45 Workstation

Just the Facts

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Figure 1. Sun Ultra™ 25 workstation

Introduction

Sun Ultra™ 25 and Ultra 45 workstations are ideal for businesses demanding the legendary quality and reliability of Sun SPARC/Solaris workstations. Sun's entry-level SPARC® workstation, the Ultra 25 workstation, is a low-priced compliment to the powerful dual-processor Sun Ultra 45 workstation. Both systems share the same chassis, graphics and peripheral options and deliver SPARC/Solaris™ performance and reliability to a wide range of workstation and OEM markets including computer-aided design and analysis, imaging, exploration and visualization across the manufacturing, government, energy, and education markets.

A follow-on to the Sun Blade 150 and Sun Blade 1500 workstations, the Sun Ultra 25 workstation uses a 1.34-GHz UltraSPARC® IIIi processor. The Ultra 45, a follow-on to the Sun Blade 2500 and Sun Blade 1500 workstations, uses a 1.6Ghz UltraSPARC IIIi processor in single and dual processor configurations. Both systems feature enhancements in graphics, peripheral support, and support for latest operating systems and desktop software. The Sun Ultra 25 workstation is an ideal replacement and enhancement for all previous low-end Sun Blade™ and SPARC-based workstations. The Sun Ultra 45 is an ideal replacement for high end, multiprocessing SPARC workstations.

Every Sun Ultra workstation is shipped with the Solaris 10 Operating System and a full suite of development tools. Developers can conveniently start a software project immediately by utilizing Sun Studio 11, Sun Java™ Studio Creator, Sun Java Studio Enterprise, and NetBeans™ IDE. Valued at nearly $5,000, these tools help developers create and deploy Solaris and Java applications in less time.

In addition, these systems are bundled with the Sun N1™ Grid Engine software to boost ROI by leveraging unused compute cycles. The ability to incorporate groups of workstations with Sun N1 Grid Engine software enables enterprises to significantly decrease the management and increase the use of compute resources for enhanced productivity, saving money by stretching existing IT assets.

Visualization and graphics capabilities are delivered across a PCI-Express graphics bus – an 800 percent bandwidth increase over Sun's existing PCI-based graphics solutions. Sun's new Sun XVR-2500 3D graphics accelerator (performing over 80 million peak 3-D Gouraud-shaded X-buffered triangles per second) delivers 3.3 times the performance over Sun's previous generation Sun XVR-1200 graphics accelerator.

The Sun Ultra 25 and Ultra 45 workstations boast an increase in capacity and storage options, offering dual Gigabit Ethernet ports, five I/0 expansion slots (two PCI Express x16 slots, one PCI-Express x8 slot, and two PCI-x 100-MHz full-length expansion slots), and support for up to four 250-GB, 7200-rpm internal SATA or four 146-GB, 15000-rpm SAS hard drives. An 160-GB, 7200-rpm internal SATA drive comes with the Ultra 25 standard configurations. With a maximum memory of up to 16GB (8 GB for the Ultra 25) and a 1 TB of internal storage the Sun Ultra workstations deliver major improvements in data capacity.

Product Family Placement

The Sun Ultra 25 and 45 workstations compliment Sun's broad and complete workstation portfolio consisting of 64-bit SPARC-based, 64-bit Opteron-based and 64-bit Intel Core2-based workstations. These Sun Ultra workstations continue to deliver the best traditional RISC/Unix®-based systems into Sun's installed base of well over one million workstations. Sun continues to develop and enhance its traditional line of SPARC-based workstations to provide the reliability, stability, and broad application support that customers have come to expect from Sun Microsystems.

Sun Ultra 45 vs Sun Ultra 25 Workstation

The Sun Ultra 45 workstation, with support for two UltraSPARC IIIi processor, is ideal for customers who:

- Require the ultimate in performance from a SPARC desktop
- Have large datasets and memory needs
- Want to protect their investments in the SPARC/Solaris knowledge base
- Require binary compatibility with Sun SPARC processors
- Want to run particular applications available only on SPARC/Solaris platforms
- Are looking to upgrade a Sun Blade 2500, Sun Blade 2000, or other multiprocessor SPARC workstation

The Sun Ultra 25 workstation, with the UltraSPARC IIIi processor, is ideal for customers who:

- Want to protect their investments in the SPARC/Solaris knowledge base
- Require binary compatibility with Sun SPARC processors
- Want to run particular applications available only on the SPARC/Solaris platform
- Are looking to upgrade a Sun Blade 150, Ultra 5, Ultra 10, or other entry-level SPARC workstation

The table below shows a comparison of the Sun Ultra 45 workstation and the Sun Ultra 25 workstation.

Features	Sun Ultra 45 Workstation	Sun Ultra 25 Workstation
Max. Number of CPUs	2	1
Processor Type	Sun UltraSPARC® IIIi processor	Sun UltraSPARC IIIi processor
Processor Speed	1.6-GHz	1.34-GH
Level 2 cache	1 MB	1 MB
CPU interconnect	J-Bus (128-bit @ 200MHz)	J-Bus (128-bit @ 167MHz)
Maximum memory	16 GB (4 DIMM per CPU)	8 GB (4 DIMM per CPU)
Graphics Accelerators	• Sun XVR-300 graphics card • Sun XVR-2500 graphics accelerator	• Sun XVR-300 graphics card • Sun XVR-2500 graphics accelerator
Networking	Two 10/100/1000BASE-T Gigabit Ethernet ports	Two 10/100/1000BASE-T Gigabit Ethernet ports

Features	Sun Ultra 45 Workstation	Sun Ultra 25 Workstation
Optical	DVD-ROM/CD-RW	DVD-ROM/CD-RW
Hard disk drives	Up to four drives: SATA drives (250 GB) or SAS drives (146 GB)	Up to four drives: SATA drives (80 GB), SATA drives (250 GB), or SAS drives (146 GB)
FireWire/USB Ports	Six USB 2.0	Six USB 2.0
Audio	AC97	AC97
Parallel/Serial	0/2	0/2
PCI-Express slots	Two PCI-Express x16 graphics slots (x16 mechanically but x8 electrically) One PCI-Express 8x expansion slots (x8 mechanically but x4 electrically)	Two PCI-Express x16 graphics slots (x16 mechanically but x8 electrically) One PCI-Express 8x expansion slots (x8 mechanically but x4 electrically)
32 or 64-bit PCI slots	none	none
PCI-X slots	Two PCI-X @ 100 MHz, full length	Two PCI-X @ 100 MHz, full length
OS Validated by Sun	Solaris 10 Pre-installed Solaris 9 available	Solaris 10 Pre-installed Solaris 9 available
Height	445 mm (17.5 in.)	445 mm (17.5 in.)
Width	205 mm (8.1 in.)	205 mm (8.1 in.)
Depth	569 mm (22.4 in.)	569 mm (22.4 in.)
Weight	26.31 kg (58 lb.) fully configured depending on the configuration	26.31 kg (58 lb.) fully configured depending on the configuration
Power supply	1000W	1000W

Sun Ultra 25 and Ultra 45 vs Sun Blade 1500 Workstation

The Sun Ultra 25 and 45 Workstations allow customers to:

- Retain binary compatibility with their existing SPARC workstations
- Develop Solaris 10 applications immediately out of the box
- Maximize compute resources through N1 Grid Engine software
- Visualize more complex datasets with PCI-Express based graphics
- Store more data locally and retrieve them quicker by using SATA HDDs

The Sun Ultra 25 and 45 Workstations offer improvements over the Sun Blade 1500 workstation by using SAS or SATA disk drives (compared to ATA), allowing higher capacity and up to four internally supported disk drives, high-speed integrated USB ports, a second Gigabit Ethernet port, implementation of faster I/O and graphics buses and support of later released operating systems.

Features	Sun Ultra 25 Workstation	Sun Blade 1500 Workstation	Sun Ultra 45 Workstation
Pre-Installed Software	• Solaris 10 • Sun Studio 11 • Sun Java Studio Creator • Sun Java Studio Enterprise • NetBeans IDE	• Solaris 10 • Solaris 8	• Solaris 10 • Sun Studio 11 • Sun Java Studio Creator • Sun Java Studio Enterprise • NetBeans IDE
Processor Type	Sun UltraSPARC IIIi processor	Sun UltraSPARC IIIi processor	Sun UltraSPARC IIIi processor
Processor Speed Grades	1.34 GHz	1.5 GHz	Up to two 1.6GHz
Level 2 cache	1 MB	1 MB	1 MB
Memory	• 8 GB • 4 DIMM slots per CPU	• 8 GB • 4 DIMM slots per CPU	• 16 GB • 8 DIMM slots per CPU
Graphics Accelerators	• Sun XVR-300 graphics card (RoHS) • Sun XVR-2500 graphics accelerator (RoHS)	• Sun XVR-100 graphics card • Sun XVR-600 graphics card • Sun XVR-1200 graphics card	• Sun XVR-300 graphics card (RoHS) • Sun XVR-2500 graphics accelerator (RoHS)
Networking	Two 10/100/1000 BASE-T Gigabit Ethernet ports	One 10/100/1000 BASE-T Gigabit Ethernet ports	Two 10/100/1000 BASE-T Gigabit Ethernet ports
Optical Drives	DVD-ROM/CD-RW	DVD-RW/CD-RW (or DVD Dual Standard)	DVD-ROM/CD-RW
Floppy Disk Drive	None	None	None
Onboard Smart Card Reader	None	None	None
Hard disk drives	Up to 4: SATA drives (160 GB), SATA drives (250 GB) SAS drives (146 GB)	Up to 2: ATA 120-GB hard disk drive	Up to 4: SATA drives (250 GB) SAS drives (146 GB)
RAID 0/1	No	No	No

Features	Sun Ultra 25 Workstation	Sun Blade 1500 Workstation	Sun Ultra 45 Workstation
FireWire/USB Ports	None/ Six USB 2.0	Two 1394/ Three USB 2.0 & two USB 1.1	None/ Six USB 2.0
Audio	AC97	AC97	AC97
Parallel/Serial	No parallel/Two serial	One parallel/Two serial	No parallel/Two serial
PCI-Express slots	2 x PCI-Express x16 (x8 Electrically) 1 x PCI-Express x8 (x4 Electrically)	None	2 x PCI-Express x16 (x8 Electrically) 1 x PCI-Express x8 (x4 Electrically)
PCI-X 1.0 slots (100 or 133 MHz)	2 x PCI-X @100 MHz	None	2 x PCI-X @100 MHz
64-bit PCI slots (66 or 33 MHz)	None	1 x 64-bit @ 66 MHz, 2 x 64-bit @ 33 MHz	None
32-bit PCI slots (33 MHz)	None	2 x 32-bit @ 33MHz	None
OS Validated by Sun	Solaris 10 update 1 (1/06 or later) Solaris 9	Solaris 10 Solaris 9	Solaris 10 update 1 (1/06 or later) Solaris 9
Height	445 mm (17.5 in.)	483 mm (19.0 in.)	445 mm (17.5 in.)
Width	205 mm (8.1 in.)	210 mm (8.3 in.)	205 mm (8.1 in.)
Depth	569 mm (22.4 in.)	490 mm (19.3 in.)	569 mm (22.4 in.)
Weight	26.31 kg (58 lb.) fully configured depending on the configuration	22.5 kg (49.6 lb.) fully configured	26.31 kg (58 lb.) fully configured depending on the configuration
Power supply	1000W	420W	1000W

Sun Ultra 25 vs Sun Blade 150 Workstation

The Sun Ultra 25 workstation allows customers to:

- Retain binary compatibility with their existing SPARC workstations
- Develop Solaris 10 applications immediately out of the box
- Maximize compute resources through N1 Grid Engine software
- Visualize more complex datasets with PCI-Express based graphics
- Store more data locally and retrieve them quicker by using SATA HDDs

The Ultra 25 offers significant improvements over the Sun Blade 150 workstation. Substantial improvements in CPU performance, memory capacity, storage capacity and graphics. Additionally high-speed integrated USB ports, a second Gigabit Ethernet port, implementation of faster I/O and graphics buses and support of the latest released operating systems.

Features	Sun Blade 150 Workstation	Sun Ultra 25 Workstation
Pre-Installed Software	Solaris 10 Solaris 8	Solaris 10 Sun Studio 11 Sun Java Studio Creator Sun Java Studio Enterprise NetBeans IDE
Processor Type	Sun UltraSPARC IIi processor	Sun UltraSPARC IIIi processor
Processor Speed Grades	550 and 650 MHz	1.34 GHz
Level 2 cache	512 KB	1 MB
Memory	2 GB 4 DIMM slots per CPU	8 GB 4 DIMM slots per CPU
Graphics Accelerators	PGX-64 onboard graphics Sun XVR-600 graphics card	Sun XVR-300 graphics card (RoHS) Sun XVR-2500 graphics accelerator (RoHS)
Networking	One 10/100 BASE-T Gigabit Ethernet ports	Two 10/100/1000 BASE-T Gigabit Ethernet ports
Optical Drives	CD-RW or DVD-ROM	DVD-ROM/CD-RW
Floppy Disk Drive	Yes	None
Onboard Smart Card Reader	Yes	None
Hard disk drives	Up to 2: EIDE 80-GB hard disk drive	Up to 4: SATA drives (160 GB), SATA drives (250 GB), SAS drives (146 GB)
RAID 0/1	No	No
FireWire/USB Ports	One 1394/Four USB 1.1	No/Six USB 2.0
Audio	AC97	AC97
Parallel/Serial	One parallel/Two serial	No parallel/Two serial
PCI-Express slots	None	2 x PCI-Express x16 (x8 Electrically) 1 x PCI-Express x8 (x4 Electrically)
PCI-X 1.0 slots (100 or 133MHz)	None	2 x PCI-X @100 MHz
64-bit PCI slots (66 or 33 MHz)	None	None

Features	Sun Blade 150 Workstation	Sun Ultra 25 Workstation
32-bit PCI slots (33 MHz)	3 x 32-bit @ 33 MHz	None
O/S Validated by Sun	Solaris 10 Solaris 9 Solaris 8	Solaris 10 update 1 (1/06 or later) Solaris 9 (
Height	117 mm (4.6 in.)	445 mm (17.5 in.)
Width	457mm (18.0 in.)	205 mm (8.1 in.)
Depth	446 mm (17.6 in.)	569 mm (22.4 in.)
Weight	12.2 kg (26.9 lb.) fully configured	26.31 kg (58 lb.) fully configured depending on the configuration
Power supply	250W	1000W

Sun Ultra 45 vs Sun Blade 2500 Workstation

The Sun Ultra 45 Workstation will enable customers to:

- Maximize compute resources through N1 Grid Engine software
- Develop Solaris 10 applications immediately out of the box
- Be more productive by gaining the highest system performance found on a 2-socket SPARC workstation
- Visualize more complex datasets with PCI-Express based graphics
- Store more data locally and retrieve them quicker by using SATA HDDs

The Ultra 45 offers improvements over its predecessors by using SAS or SATA disk drives compared to SCSI or ATA, allowing higher capacity and up to four internally supported disk drives, high speed integrated USB ports, a second Gigabit Ethernet port, implementation of faster I/O and graphics buses and support of later released operating systems.

Table 1-2: Sun Blade 2500 workstation and Sun Ultra 45

Features	Sun Blade 2500 Workstation	Sun Ultra 45
Pre-Installed Software	Solaris 10 Solaris 8	Solaris 10 Sun Studio Creator Sun Java Studio 11 Sun Java Studio Enterprise Net Beans IDE
Processor Type	Sun UltraSPARC© IIIi processor	Sun UltraSPARC© IIIi processor
Maximum Number of Processors	Two	Two
Processor Speed Grades	1.6GHz	1.6GHz
Level 2 cache	1 MB	1 MB
Front Side Bus		
Memory	16GB 4 DIMM slots per CPU	16GB 4 DIMM slots per CPU /8GB max per processor
Graphics Accelerators	XVR-100 XVR-600 XVR-1200	XVR-300 Graphics card (RoHS) XVR-2500 Graphics accelerator (RoHS)
Networking	1 X 10/100/1000 Base T Gigabit Ethernet ports	2 X 10/100/1000 Base T Gigabit Ethernet ports
Optical Drives	DVD-ROM/CDRW	DVD-RW / CD-RW (or DVD Dual Standard)
Floppy Disk Drive	None	None
Onboard Smart Card Reader	None	None
Hard disk drives	Up to 2 SCSI 146 Hard disk drive	Up to 4: SATA drives (250GB) or SAS drives (146GB)
RAID 0/1	No	No
FireWire/USB Ports	1 x1394/	No/Six USB 2.0
Audio	AC97	AC97
Parallel/Serial	One parallel / Two serial	no parallel / Two serial
PCI-Express slots	none	2 x PCI-Express x16 (x8 Electrically) 1 x PCI-Express x8 (x4 Electrically)
PCI-X 1.0 slots (100 or 133MHz)	None	2 x PCI-X @100 Mhz
64-bit PCI slots (66 or 33MHz)	3 x 64-bit @ 66Mhz, 3 x 64-bit @ 33Mhz	None
32-bit PCI slots (33MHz)	0	None
O/S Validated by Sun	Solaris 10 Solaris 9	Solaris 10 update 1 (1/06 or later) Solaris 9
Height	483 mm (19.0 inches)	445 mm (17.5 inches)
Width	210 mm (8.3 inches)	205 mm (8.1 inches)

Features	Sun Blade 2500 Workstation	Sun Ultra 45
Depth	490 mm (19.3 inches)	569 mm (22.4 inches)
Weight	22.5 kg (49.6 lb) fully configured	26.31 kg (58 lbs) fully configured depending on the configuration
Power supply	600w	1000w
Price Range (U.S. List Price)	$7,195.00 (2GB, 3D)	$3,695.00 (1GB, 2D)

Key Features

Coupled with competitive pricing, a free N1 Grid Engine software license, and pre-installed Solaris OS plus a full suite of developer tools, a one year base warranty with options to upgrade to 3 years and next-business-day support, the Sun Ultra 25 and 45 Workstations offer amongst the best total cost of ownership (TCO) on workstations.

Performance

- **PCI-Express Graphics.** The Sun Ultra 25 and 45 Workstations utilize PCI-Express graphics. PCI-Express is the best input/output implementation update in a decade. Effectively replacing PCI, PCI-X and AGP, this third-generation I/O interconnect standard doubles the bandwidth of AGP 8x.
- **High-Density, Performance, Reliable Internal Storage.** Utilizing Serial ATA for density, the Sun Ultra 25 and 45 Workstations can accommodate up to four internal 250-GB SATA drives or up to four 146-GB SAS drives. A 160-GB SATA drive ships in the standard configurations of the Ultra 25.
- **High-performance, high-throughput, single-processor workstation,** includes:
  - Sun UltraSPARC IIIi processors
  - Support for up to 16 GB (8 GB on Ultra 25) of ECC-protected memory
  - Visualization-class graphics
  - High bandwidth memory subsystem with error correction
  - Dual Gigabit Ethernet ports
  - Four PCI-Express expansion slots that enable high-speed system interconnect, such as external Ultra320 SCSI, additional Gigabit Ethernet adapters, and so on
  - Expandable, high-performance storage options

Value

- **Pre-Installed Operating Systems and Development Tools.** Every Sun Ultra 25 and 45 Workstations are shipped with the Solaris 10 Operating System and a full suite of development tools. Developers can conveniently start a software project immediately by utilizing Sun Studio 11, Sun Java Studio Creator, Sun Java Studio Enterprise, and Net Beans IDE. Valued at nearly $5,000, these tools help developers create and deploy Solaris and Java applications in less time.
- **Environmental Control.** The Sun Ultra 25 and 45 Workstation's cooling system includes low-noise fans with fan speed controlled by monitoring multiple component temperatures. Structure-borne vibration and acoustic noise are also minimized by rigid chassis design and control of disk drive vibration.
- **Sun Custom Design.** Sun custom motherboard form factor allows component placement for optimized airflow to ensure low component temperatures for high-reliability, low acoustic noise, usability, and ruggedness.
- **Serviceability.** The Sun Ultra 25/45 chassis provides access to configurable and upgradeable components such as CPUs, memory, PCI card and disk drives via a side panel, and installation and replacement of these components is simple and reliable.
- **Competitive pricing.** The Sun Ultra 25 and 45 Workstations compete with any RISC/UNIX® workstation (IBM, SGI, HP).
- **Compatibility/ISV Certification.** Sun maintains strategic partnerships with leading workstation Independent Software Vendors (ISVs) to certify the Sun Ultra 25 and 45 Workstation for compatibility. Through rigorous validation, Sun helps ensure flawless compatibility in the most complex and technically demanding computing environments. The Ultra 25 and 45 Workstations have been tuned for optimal performance with each application and deliver a best-in-class price-performance ratio for 64-bit workstations in its class.

- **Investment protection.** By using the same architecture to run 64-bit operating systems and applications, the Sun Ultra 25 and 45 Workstations help customers protect their investments.
- **World-Class Services.** The Sun Ultra 25 and 45 Workstations are supported by the world-class Sun Enterprise Services[SM] organization, which provides a wide range of services to help customers reduce cost and complexity, accelerate network deployment, and deliver mobility with security, all from a single source.

Flexibility

- **Multiple graphics options.** The Sun Ultra 25 and 45 Workstations support both 2D and 3D graphics accelerators. The new Sun XVR-2500 graphics accelerator is a high-performance card from 3D Labs' Realizm series and delivers industry-leading 3D graphics and texture-mapping performance along with support for driving multiple displays per card, up to four displays total in the Sun Ultra 25 and 45 Workstations.

Innovation

- **Robust and Compact Design.** The Sun Ultra 25 and 45 Workstations feature a custom Sun tower form factor along with six USB 2.0 ports, two built-in Gigabit Ethernet ports, two PCI-X 100-MHz slots, and three PCI-Express slots.
- **ECC.** The Sun Ultra 25 and 45 Workstations use ECC memory. ECC detects errors and corrects memory errors before they spread, helping to ensure the integrity of the data stored in memory.

Target Markets and Customers

The Sun Ultra 25 and 45 workstations are targeted at Sun's existing customer base of workstation users who value the reliability and stability of SPARC/Solaris systems.

The Sun Ultra 25 and 45 Workstations are targeted at users who:

- Design automobiles, aircraft, and other mechanical structures (MCAD/MCAE)
- Design, simulate and verify ASICs or microprocessors (EDA)
- Research, explore and visualize large complex datasets (Energy, Education, and Defense industries)
- Use SPARC workstations as controllers or consoles within their own products

The table below shows the target markets, target customers, and target customer needs for the Sun Ultra 25 and 45 Workstations.

Sun Ultra 25/45 Workstation Target Markets	**Sun Ultra 25 /45 Workstation Target Customers**	**Sun Ultra 25/45 Workstation Target Customer Needs**
OEM	Manufactures of medical, telecommunications, military and industrial systems	• Stable ad reliable platform • Predictable life cycles • World class service and support
• Semiconductor manufacturers • Motherboard manufacturers • PCB manufacturers	• Electronic engineers who design and layout PCBs • Electronic engineers who design and verify complex ASICs	• High-performance CPUs • Entry-level professional 3D graphics • Large memory capacity • Low cost
• Automobile • Aerospace • Heavy machinery	Mechanical engineers who design automobiles and aircraft and simulate crash tests of automobiles and aircraft	• Large amounts a memory • Increased I/O bandwidth
Government	Defense electronics researchers who want mission-critical workstations to perform combat simulations	• Large memory capacity • High-quality 3-D graphics • Ability to manage large textures
• Higher Education • Government • Healthcare	Scientific computing researchers who need to manipulate large datasets	• High-performance CPUs • High-quality 3-D graphics

Features, Functions, and Benefits

Feature	Function	Benefit
• UltraSPARC IIIi processors	• High quality, reliable SPARC processor	• Provides high performance while ensuring investment protection
• Embedded dual-channel memory controller per processor	• Enables a high-speed, bi-directional communications link between the CPU and main memory at a bandwidth of 6.4 GB/sec.	• Increases productivity and reduces time to market
• Support for up to 16-GB (8GB on Ultra 25) registered ECC memory in 8 slots (4 slots per CPU)	• Provides flexible memory configuration to support a variety of applications and computing tasks	• Increases performance and productivity

Feature	Function	Benefit
• Flexible graphics accelerator options	• Gives customers a choice of two graphics accelerators ranging from 2D to high-performance 3D, and provides the capability to visualize, analyze, and solve the most complex data sets	• Enables customers to choose the graphics card that suits their needs
• PCI-Express I/O architecture	• Provides three PCI-Express expansion slots	• Offers efficient I/O utilization for I/O-bound applications
• Support for up to four SATA or SAS disk drives	• Enables fast access to internal storage	• Increased application performance and disk swapping flexibility
• Rich connectivity suite	• Offers six USB 2.0 ports, two Gigabit Ethernet ports that enable convenient connections to peripheral devices	• Provides a flexible platform to meet changing business requirements
• Solaris 10 Operating System	• Runs Solaris x64 applications	• Enables customers to run popular applications on one of the most robust, reliable operating systems available
• Rich suite of pre-installed Sun Software Development Tools	• Sun Studio 11, Java Studio Creator, Java Studio Enterprise, Net Beans IDE	• Enables software developers to start programming right out of the box
• 1-year next business day warranty	• Provides a robust service offering for warranty-level support	• Peace of mind to customers knowing their Sun Ultra 25 and 45 Workstations are covered by a global services organization
• Same business day and 24x7 hardware support options	• Competitively priced, industry-standard hardware service and support options to meet the customer's service and system availability requirements	• Allows customers to choose which option best suits their needs and helps protect their investments in Sun hardware
• Sun custom motherboard form factor	• Allows component placement for optimized airflow	• Ensures low component temperatures for high-reliability and whisper quiet chassis

Availability

Both the Ultra 24 and Ultra 45 workstations are shipping today and will be available through CY 2010.

Ultra 25 System Architecture

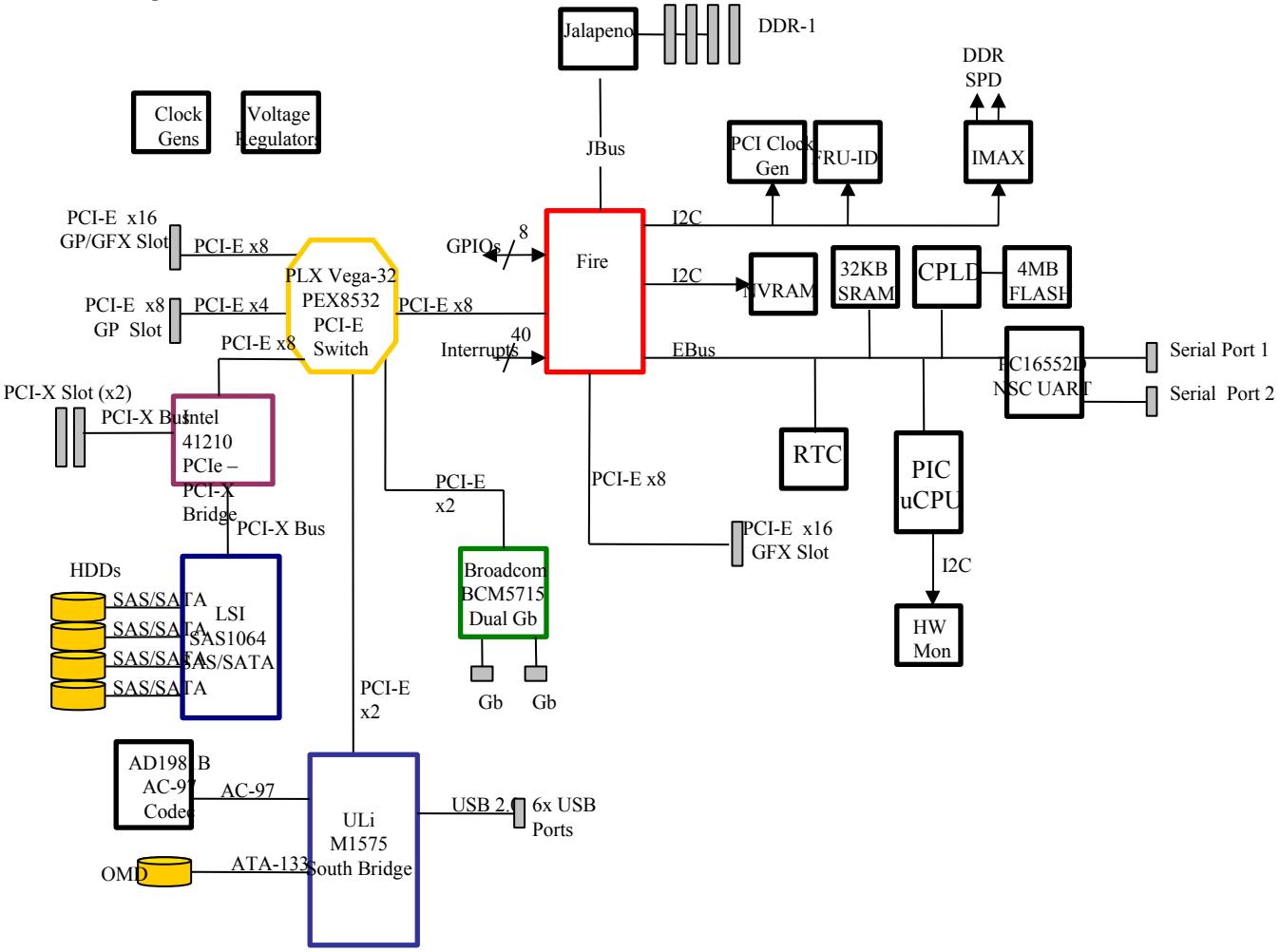

Figure 2. Sun Ultra 25 architecture block diagram

Ultra 45 System Architecture

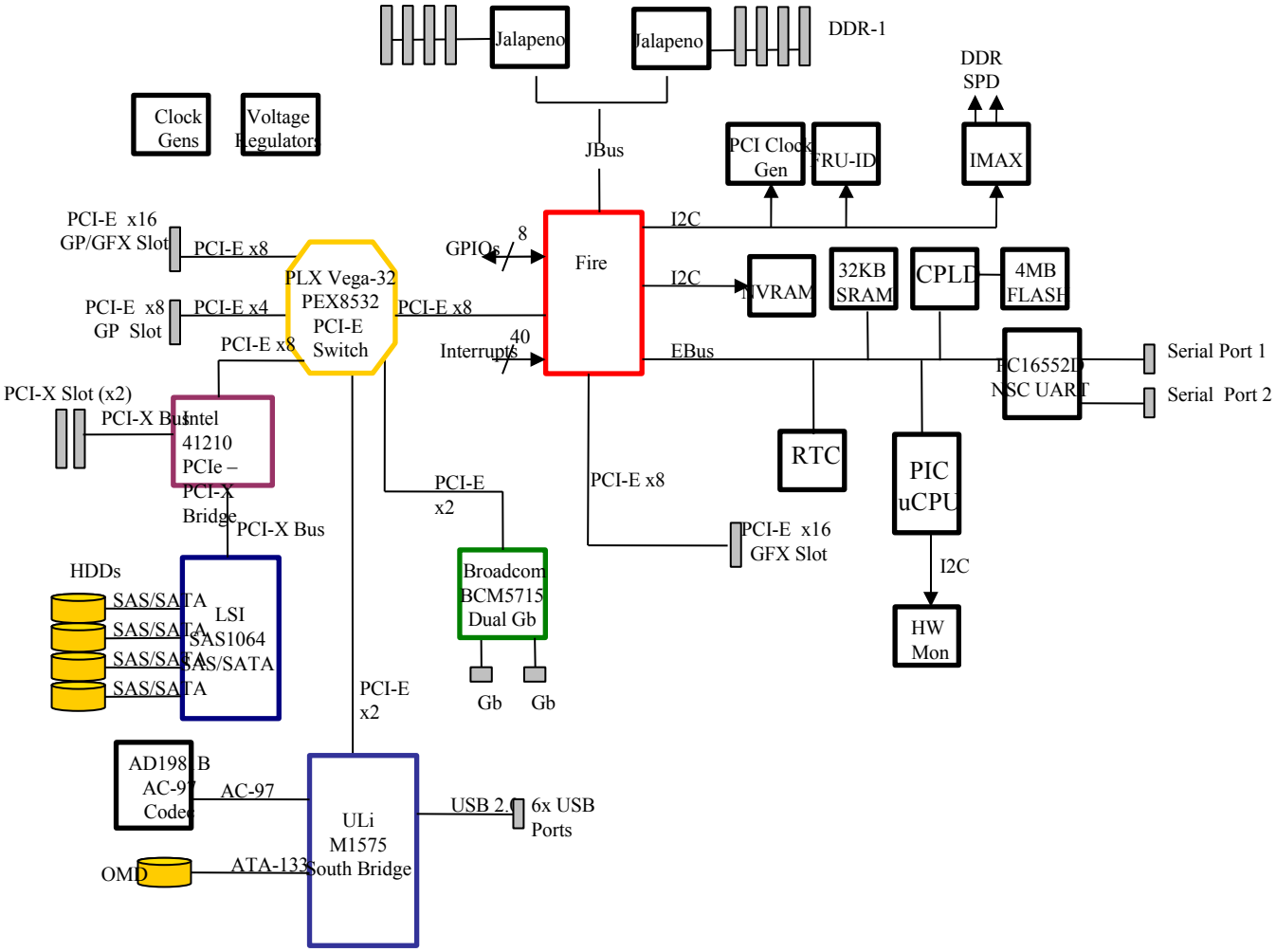

Figure 3. Sun Ultra 45 architecture block diagram

UltraSPARC IIIi Processors

The core architecture in the Sun Ultra 25 and 45 Workstations are comprised of the UltraSPARC IIIi processor CPU chip and the JBus to PCI-E bridge chip. These two chips work together to form the core JBUS architecture and comprise the cache coherent address space seen by the UltraSPARC IIIi processor CPU chips.

Leveraging the core technologies from Sun's flagship UltraSPARC III processor, the UltraSPARC IIIi microprocessor powers systems used in applications such as web servers, application servers, CAD/CAM and high performance technical computing. While our flagship s-Series UltraSPARC III processor was designed to meet the needs of large SMP (symmetric multiprocessing)-based datacenter servers, the UltraSPARC IIIi processor was developed with a clear objective: to provide the real-world application performance, improved cost efficiency and robust RAS features mandated by volume servers and performance workstations.

The UltraSPARC IIIi processor leverages the core technologies from the UltraSPARC III processor, and further optimizes the microprocessor to exceed customer requirements. Features such as the 1 MB on-chip L2 cache, a high-speed JBus SMP system interface, 16 GB of main memory capacity and an integrated 266-MHz DDR-1 memory controller, provide the necessary application performance required for customer deployments at web/ application servers and on the desktop. Additionally, the use of asynchronous design techniques to counter clock skew in the memory interface represents one of the several new design innovations in this microprocessor. Designed and optimized in concert with the Solaris Operating System and Sun systems, the UltraSPARC IIIi processor offers impressive price/performance in its targeted tiers of applications. With 15 years of binary compatibility, and Sun's determination to maintain it, customers should expect that their investments in the SPARC and Solaris platform can continue to pay dividends in the future.

- 64-bit open standards-based SPARC V9 with VIS Instruction Set
- 4-way superscalar
- 14-stage non-stalling pipeline
- Seamless support for up to 4 processors
- L1 Cache: on-chip 64 KB (data), 32 KB (instruction)
- L2 Cache: on-chip 1 MB (4-way, set-associative)
- System Bus: new cache coherent JBus interface operating up to 200 MHz
- Integrated 266-MHz DDR-1 system memory interface
- 16 GB of addressable memory per CPU
- 4.2 GB/sec. per processor off-chip memory bandwidth
- Implemented in a 7LM Cu 0.13µ process
- Low power consumption (59W at 1 GHz)
- Robust RAS features
- Solaris Operating Environment support
- 15 years of binary compatibility
- Clock Frequency: up to 1.34 GHz and 1.6GHz

Processor Cache Details

The UltraSPARC IIIi processor provides a number of cache memory structures in its various functional units to reduce bandwidth requirements of its external interfaces.

The following describes Level 1 and Level 2 caches within the Sun Ultra 25 and 45 Workstations:

- The instruction issue Unit (IIU) contains 32 kilobyte (Kbyte) 4-way associative instruction cache (I-cache or I$) and the 16 entry fully-associative Instruction Translation Buffer (ITB) which provides four instruction per cycle.
- The data cache unit (DCU) contains a 64 Kbyte 4-way associative write thru data cache (D-cache or D$), a 2KByte 4-way associative write-cache (W$), a 2Kbyte 4 way associative prefetch cache (P$), and the 1024-entry Data Translation Buffer (DTB)
- The embedded Cache Unit (ECU) acts as the cache controller for the 1 Mbyte 4-way associative level-2 (L2) cache, which operates at half the CPU frequency
- The processor uses a 32-byte line size for the I-Cache, and a 64-byte line size for the D-cache and L2 cache.

Memory

The memory controller on the CPU provides a 137-bit wide memory bus to the memory installed on the board. The data path across the bus is 128-bits wide. The remaining 9-bit are associated with ECC.

These are four physical DDR-1 slots per CPU. The slots are divided into two physical banks of two DIMMs each. DIMMs must be installed in pairs since the processor accesses memory across the 128-bit data bus. The Ultra 25 and 45 Workstations with the UltraSPARC IIIi processor uses DDR-1 registered ECC memory at 266 MHz.

The table below explains the paths for upgrading memory on the Sun Ultra 25 workstation.

System	Memory Amount	Instructions	Remaining DIMM Sockets
Sun Ultra 25 w/4 GB (4 x 1-GB DIMMs)	5 GB	• Leave in existing four 1-GB DIMMs • Install two 512-MB DIMMs	Two
	6 GB	• Leave in existing four 1-GB DIMMs • Install four 512-MB DIMMs	Zero
	6 GB	• Leave in existing four 1-GB DIMMs • Install two 1-GB DIMMs	Two
	8 GB	• Leave in existing four 1-GB DIMMs • Install four 1-GB DIMMs	Zero
	8 GB	• Leave in existing four 1-GB DIMMs • Install two 2-GB DIMMs	Two
Sun Ultra 25 w/1 GB (2x512-MB DIMMs)	2 GB	• Leave in existing two 512-MB DIMMs • Install two 512-MB DIMMs	Zero
	3 GB	• Leave in existing two 512-MB DIMMs • Install two 1-GB DIMMs	Zero
	4 GB	• Remove existing two 512-MB DIMMs • Install four 1-GB DIMMs	Zero
	5 GB	• Leave in existing two 512-MB DIMMs • Install two 2-GB DIMMs	Zero
	8 GB	• Remove existing two 512-MB DIMMs • Install four 2-GB DIMMs	Zero

The table below explains the paths for upgrading memory on the Sun Ultra 45 workstation.

From	To	Actions	Remaining DIMM Sockets
Sun Ultra 45 Workstation w/ 8GB (4 x 2-GB DIMM)	9 GB	• Leave in existing four 2 GB DIMMs • Install two 512 MB DIMMs	• Two DIMM sockets remaining
	10 GB	• Leave in existing four 2 GB DIMMs • Install four 1 GB DIMMs	• Zero DIMM sockets remaining
	10 GB	• Leave in existing four 2 GB DIMMs • Install two 1 GB DIMMs	• Two DIMM sockets remaining
	12 GB	• Leave in existing four 2 GB DIMMs • Install four 1 GB DIMMs	• Zero DIMM sockets remaining
	12 GB	• Leave in existing four 2 GB DIMMs • Install two 2 GB DIMMs	• Two DIMM sockets remaining
	16 GB	• Leave in existing four 2 GB DIMMs • Install four 2 GB DIMMs	• Zero DIMM sockets remaining
Sun Ultra 45 Workstation w/ 4GB (4 x 1-GB DIMMs)	5 GB	• Leave in existing four 1 GB DIMMs • Install two 512 MB DIMMs	• Two DIMM sockets remaining
	6 GB	• Leave in existing four 1 GB DIMMs • Install four 512 MB DIMMs	• Zero DIMM sockets remaining
	6 GB	• Leave in existing four 1 GB DIMMs • Install two 1 GB DIMMs	• Two DIMM sockets remaining
	8 GB	• Leave in existing four 1 GB DIMMs • Install four 1 GB DIMMs	• Zero DIMM sockets remaining
	8 GB	• Leave in existing four 1 GB DIMMs • Install two 2 GB DIMMs	• Two DIMM sockets remaining
	12 GB	• Leave in existing four 1 GB DIMMs • Install four 2 GB DIMMs	• Zero DIMM sockets remaining
	16 GB	• Remove existing four 1 GB DIMMs • Install eight 2 GB DIMMs	• Zero DIMM sockets remaining
Sun Ultra 45 Workstation w/ 1GB (2x512-MB DIMMs)	2 GB	• Leave in existing two 512 MB DIMMs • Install two 512 MB DIMMs	• Zero DIMM sockets remaining
	3 GB	• Leave in existing two 512 MB DIMMs • Install two 1 GB DIMMs	• Zero DIMM sockets remaining
	4 GB	• Remove existing two 512 MB DIMMs • Install four 1 GB DIMMs	• Zero DIMM sockets remaining
	5 GB	• Leave in existing two 512 MB DIMMs • Install two 2 GB DIMMs	• Zero DIMM sockets remaining
	8 GB	• Remove existing two 512 MB DIMMs • Install four 2 GB DIMMs	• Zero DIMM sockets remaining

Internal and External Storage

The Sun Ultra 25 and 45 Workstations provide support for four internal 3.5-inch SAS or SATA disk drives supported by an integrated PCI-X SAS/SATA disk controller. The workstation supports: 160- and 250-GB SATA disk drives at 7200 revolutions per minute (rpm) 146-GB SAS disk drives at 15000 rpm.

The Sun Ultra 25 and 45 Workstations provide users with the option of SAS or SATA disk drives operating at 7200 or 15000 rpm through the support of an integrated 1 GB/sec. SAS/SATA disk controller. The SAS disk drives offer higher spin speeds and higher mean time between failure. The dual-ported disk drives operate at 300 MB/sec. SAS disk drives meets the performance and availability demanded by I/O-intensive, mission-critical, online applications. SATA disk drives, which operate at 150 MB/sec, offer users a lower-cost solution for high-performance disk drives without requiring the performance and availability of SAS disk drives. Drive types must be all either SATA or SAS within each drive bay; they cannot be mixed within the drive bays.

Optical Disk Drives

The Sun Ultra 25 and 45 Workstations have a slot-load DVD-RW drive with ATAPI interface. Systems that ship without an optical disk drive require an optical disk drive EMI filler panel in the unoccupied bay to cover the slot opening.

Expansion Slots

The Sun Ultra 25 and 45 Workstations have five expansion slots:

- Two PCI-Express x16 slots (x8 electrically)
- One PCI-Express x8 slots (x4 electrically)
- Two PCI-X 100-MHz/64 bit slots

Two PCI-Express slots can be used for up to two graphics cards. If only one graphics card is required, the extra x16 PCI-E slot can be used by another PCI-E card. The PCI-Express x8 slot is fitted with x8 (mechanical) connectors. Two PCI -X slots can be used for optional cards such as additional Gigabit Ethernet, disk controllers and legacy PCI based graphics cards. . The table below shows the layout of the expansion slots.

Type	Description
PCI-E x16	Secondary graphics slot
PCI-E x8	I/O expansion
PCI-E x16	Primary graphics slot
PCI-X 100 MHz/64 bit	I/O expansion
PCI-X 100 MHz/64 bit	I/O expansion

External Connectivity Ports

The Sun Ultra 25 and 45 workstations contain a rich suite of connectivity ports, as shown in the following table. Most ports are conveniently located in the front and the back, providing easy access to peripherals, connectors, and visual indicators. The Sun Ultra 25 and 45 Workstations are a legacy-free design that does not include PS2 keyboard/mouse or parallel ports. A serial header is provided on the motherboard for debug/repair purposes, but no serial connector is externally accessible.

Port Type	Front	Back
USB 2.0	2	4
Gigabit Ethernet	0	2
Audio	2	2
Serial	0	2

PCI Express Slots

The Sun Ultra 25 and 45 Workstations implement the high-speed, point-to-point PCI-Express (PCI-E) bus, which provides a raw-bit data transmission rate of 2.5 Gb/sec. per PCI-E lane, or 250 MB/sec. in single direction mode and 5 Gb/sec. or 500 MB/sec. in full duplex mode. The maximum realized bandwidth for each unidirectional link is 256 MB after applying the 8-bit/10-bit encoding scheme.

In general PCI-E supports lane widths of x1, x2, x4, x8, x16, and x32 links. The Sun Ultra 25 and 45 Workstations PCI-E bus provides support for two PCI-E x16 links expansion slots for high-end graphics cards or general purpose expansion, and one PCI-E x8 expansion slot for general purpose expansion. The PCI-E x16 graphics slot provide a maximum unidirectional bandwidth of 4 GB/sec.

The Ultra 25 and 45 Workstations implementation uses PCI-Express x16 connectors and drives eight lanes through them. This allows support for industry standard PCI-Express x16 graphics cards, but drives them at a maximum unidirectional bandwidth of 2 GB/sec., a substantial improvement over the 500 MB/sec. bandwidth of PCI 64/66 used in the Sun Blade 2500 system.

Supported Graphics Accelerators

The Sun Ultra 25 and 45 Workstations support two Sun graphics accelerators, the Sun XVR-300 and the Sun XVR-2500.

Sun XVR-300 Graphics Accelerator

Feature	Specifications
Form Factor	Half height
Bus Type	PCI Express x16
Memory	64 MB of DDR SDRAM (64-bit interface)
Connector	One high-density connector (DMS-59) to support dual DVI-I
Single DVI Support	Yes
Dual DVI Support	Yes
Max. Resolution	• Sun 17-inch Sun color CRT: 1280 x 1024 • Sun 19-inch LCD: 1280 x 1024 • Sun 19-inch Sun TFT flat panel LCD: 1600 × 1200 • Sun 24-inch flat screen AG CRT: 2048 x 1536
Max. Display Supported	Four
Max. Boards per Ultra 25/45 system	Two
Standard Configuration	Yes
ATO	Yes
X-Option	Yes
Available Drivers	Solaris OS

Sun XVR-2500 Graphics Accelerator

FIgure 3. Sun XVR-2500 graphics accelerator

The key specifications and features of the Sun XVR-2500 graphics accelerator are listed in the table below.

Feature	Specifications
Form Factor	Full-height
Bus Type	PCI Express x16
Memory	256MB of DDR SDRAM (256-bit interface)
Connectors	• DVI-I 1.0 (Single Link) • VGA • HDTV out 9-pin mini-DIN
Single DVI Support	Yes
Dual DVI Support	Yes
Max. Resolution	Sun 17-inch Sun color CRT: 1280 x 1024 Sun 19-inch Sun TFT flat panel LCD: 1600 × 1200 × 32 bpp at 60 Hz Sun 22-inch flat screen AG CRT: 2048 x 1536 Sun 24.1-inch LCD: 1920 × 1200
Max. Display Supported	Four
Max. Boards per Ultra 25/45 system	Two
Standard Configuration	No
ATO	Yes
X-Option	Yes
Available Drivers	Solaris 10 OS

The Sun XVR-2500 graphics accelerator is based on a version of the 3Dlabs Realizm architecture.

The Sun XVR-2500 graphics accelerator is a PCI-Express board and provides the following advanced features:

- 256-MB GDDR3 unified memory with 256-bit wide interface bus
- Standard PCI-Express graphics card compatible with the 16-lane form factor
- Single slot, full-length and full height card

- Virtual memory support allowing (i) on-board memory to be used as an efficient L2 cache, (ii) seamless handling of huge datasets, (iii) automatic paging out of unused buffers, and (iv) very large individual texture sizes, for example, 2K x 2K
- 16 programmable 36-bit Vertex shaders supporting up to 1 K instructions, 32 light sources, subroutines, loops, and conditionals
- SuperScene multisampling support
- 48 programmable fragment shaders supporting up to 256 K instructions, subroutines, loops and predicates
- Programmable pixel shader
- Two single link DVI-I ports supporting the following configurations:
  - One analog display device
  - One single link digital display device
  - Two analog display devices
  - Two single link digital display devices
  - One single link digital display device and one analog display device
- Sun's most complete acceleration of the Sun OpenGL® for Solaris™ API to date, including 2D and 3D texture mapping and image processing

Sun XVR-2500 Graphics Accelerator Feature Comparison

Feature	Sun XVR-600	Sun XVR-1200	Sun XVR-2500
Bus	PCI 32/64 bit, and 33/66 MHz	**PCI 32/64 bit, and 33/66 MHz**	**PCI-Express x16**
Max. 2D resolution	1920 x 1080	**2048 x 1536**	**2048 x 1536**
Max. 3D resolution	1920 x 1080	**2048 x 1536**	**2048 x 1536**
Stereo resolution	1280 x 800 @ 112 Hz	**1280 x 1024 @ 112 Hz**	**1280 x 1024 @ 112 Hz**
Memory type	SDRAM	**SDRAM**	**GDDR3**
Memory	128 MB	**256 MB**	**256 MB**
Geometry performance (tri/sec.)	17 M	**30 M**	**80M**
Texture fill rate (pix/sec.)	200 M	**412 M**	**1 B**
APIs supported (software interfaces)	OpenGL, Java 3D	**OpenGL, Java 3D**	**OpenGL, Java 3D**

Sun XVR-2500 Features and Benefits

Features	Benefits
• Industry-leading 3D graphics and texture-mapping performance	• Sets a new level of Sun graphics performance allowing users to capitalize on 3D application functionality • Helps increase productivity of both users and computer resources
• Supports 32 lights in hardware	• Designed to minimize any performance hits to CPU and system memory

Features	Benefits
• Hardware accelerated 3D volumetric texture	• 3D textures are applied, in real-time, throughout the volume of a model, not just on the external surface
• 64-bit hardware accumulation buffers	• Accelerate performance of accumulation buffer operations used in depth-of-field, motion blur, shadow, and multi-pass rendering algorithms
• High-resolution 3D display, featuring support for 1920 x 1200 @ 75 Hz	• Supports 24-bit (RGB)/32-bit (RGBA) 2D and 3D on all of Sun's monitors, including Sun's 24-inch flat-panel display
• Unified 256 MB of 256-bit wide GDDR3 memory	• Provides ultra-high performance without tradeoffs
• Support for up to four monitors in a Sun Ultra 25 or 45 workstation	• Multi-head support gives customers a much large display surface to view images. The result is that interpreting complex data or images is much easier.
• Stereoscopic graphics at 1280 x 1024 @ 112-Hz resolutions supports up to four displays	• Allows customers to use stereoscopic graphics viewing for immersive applications, which helps enhance data comprehension in three dimensions. • Higher stereo refresh rates mean less perceived flicker on screen allowing longer viewing times.
• Support for up to independent 1920 x 1280 displays per board (based upon dual pipeline architecture)	• By using one simple command, users get the functional equivalent of having two independent graphics cards from each Sun XVR-2500 graphics accelerator.
• Two DVI-I video output	• Users get excellent quality using the digital interface for the new monitors, while still supporting their existing analog monitors.
• On-board hardware 3D texturing and 256-MB texture memory, plus the necessary processing power to fully support these features	• High-quality textures in images, which are required in applications such as the 3D volumetric rendering and interpretation of CAT scans and seismic data, are displayed to the user.
• 32-bit Z-buffer at all supported resolutions	• The 32-bit Z-buffer provides a high level of 3D accuracy, helping to eliminate anomalies such as the flickering of objects when moving around a 3D image.
• 10-bit RAMDAC video output	• Allows professionals to match color parameters better at full 24-bit color quality for a variety of displays.
• 64-bit hardware accumulation buffer support	• Provides high-speed support of advanced graphics features such as soft shadows and motion blur add to the realism that a customer sees in the final image.
• 32 hardware-accelerated lights	• More lights adds realism to images, which can help in decision making. • Using multiple hardware accelerated light sources helps ensure excellent performance (as compared to graphics that only support 8 to 10 sources).
• Hardware-based, per-pixel fog support	• Fog values such as transparency, depth, or color are determined separately for each pixel, which helps to provide maximum realism for fog, smoke, and clouds.

Sun XVR-2500 Display Resolutions

Display Resolution	Refresh Rates	Aspect Ratio Format	Sync Standard	Max. Number of spp Single Screen	Max. Number of spp Dual Screen
1920 x 1200	60, 75		Sun	8	-
1920 x 1080	60, 72		Sun	8	-
1600 x 1280	76		Sun	8	-
1600 x 1200	60, 75		VESA	8	-
1600 x 1200	60		Sun	8	-
1600 x 1024	60		Sun	16	-
1600 x 1000	66, 76		Sun	16	-
1440 x 900	76		Sun	16	-
1280 x 1024	98, 108, 112		Sun stereo	16	-
1280 x 1024	67, 76		Sun	16	-
1280 x 1024	60, 75, 85		VESA	16	-
1280 x 800	112		Sun stereo	16	4
1280 x 800	76		Sun	16	4
1280 x 768	56		Sun	16	4
1152 x 900	66, 76		Sun	16	4
1152 x 900	120		Sun stereo	16	4
1024 x 800	84		Sun	16	4
1024 x 768	77		Sun	16	8
1024 x 768	96		Sun	16	4
1024 x 768	60, 70, 75		VESA	16	8
1024 x 692	100		Sun Stereo	16	4
960 x 680	108, 112		Sun Stereo	16	8
800 x 600	75		VESA	16	8
640 x 480	60, 72, 75		VESA	16	8

Sun XVR-2500 Monitor Support

The Sun XVR-2500 graphics accelerator supports all of Sun's current displays including the following:

- 17-inch entry-level color CRT
- 19-inch flat-panel LCD display
- 21-inch color monitor
- 24-inch flat panel LCD display

Note: Not all displays support all of Sun XVR-2500 graphics accelerator resolutions.

Sun XVR-255 DVI and Stereoscopic Interfaces and Connectors

The Sun XVR-2500 board is a single-slot, full-length, full-height PCI-Express card.

Feature	Description
DVI-I	Dual DVI-I connectors are available which support digital or analog video signal. To use the digital signal, please use a DVI-D to DVI-D cable. To use the analog signal, use a DVI-I to D-sub cable. The system cannot use both signals at the same time.
Stereoscopic Connector	Sun XVR-2500 graphics accelerator supports stereoscopic video output through a 3-pin DIN connector to carry sync signal to stereo LCD shutter glass devices.

The primary and secondary video ports employ the DVI-I connector to obtain both an analog and digital output. When configured for single-screen mode, both analog and digital outputs are available on the primary DVI-I port, and there are no output on the secondary output port. When configured for dual screen mode, both analog and digital outputs are available on both ports.

Pin	Signal	Pin	Signal
1	TMDS Data2 -	16	Hot Plug Detect
2	TMDS Data2 +	17	TMDS Data0 -
3	TMDS Data2/4 Shield	18	TMDS Data0 +
4	TMDA Data4-	19	TMDS Data0/5 Shield
5	TMDS Data4+	20	TMDA Data5
6	DDC Clock (SCL)	21	TMDS Data5 +
7	DDC Bidirectional Data (SDA)	22	TMDS Clock Shield
8	Analog Vertical Sync	23	TMDS Clock +
9	TMDS Data1 -	23	TMDS Clock -
10	TMDS Data1 +	C1	Analog Red
11	TMDS Data1/3 Shield	C2	Analog Green
12	TMDS Data 3 -	C3	Analog Blue
13	TMDS Data 3 +	C4	Analog Horizontal Sync
14	+5V DC Power	C5	Analog Ground Return (analog RGB)
15	Ground Return: +5V, Hsync, VSync		

The Sun XVR-2500 graphics accelerator supports stereoscopic viewing using either support-interlaced or frame-sequential formats. The stereo port (female, 3-pin, mini-DIN connector) provides connection to an

LCD shutter glasses emitter module or to other stereo shutter devices. This port uses the VESA standard 3-pin pinout specification. The following table defines the pinouts.

Pin	Signal Name
1	+5V
2	Ground
3	Stereo Sync

Sun XVR-2500 Dimensions

The Sun XVR-2500 graphics accelerator uses only one electrical PCI-Express x16 slot. The dimensions of the Sun XVR-2500 graphics accelerator are shown in the table below.

Feature	Specification
Board Width	111.15 mm
Total Height	18.56 mm
Board Length	313.90 mm
Weight	410g
Power Requirements (normal operations)	75 Watts total power 3.0 A – PCI Express3.3V current 5.1 A - PCI Express 12V current

Specifications

Environment

The Sun Ultra 25 and 45 Workstations meet or exceed the following environmental specifications.

Feature	Specifications
AC Power	1,000 watts
Operating	2° C to 35° C (41° F to 95° F); 7 to 93 percent relative humidity, noncondensing
Non-operating	-40° C to 68° C (-40° F to 158° F); 93 percent relative humidity, noncondensing
Operating Acoustic Noise	5.0
Idling Acoustic Noise	5.0

Regulations

The Sun Ultra 25 and 45 Workstations meet or exceed the following regulations.

Feature	Specifications
Safety	UL/CSA-60950, EN 60950, IEC 60950 CB
Ergonomics	EK1-1TB-2000, RFI/EMC, EN 55022/CISPR22
RFI/EMC	Class B, FCC CFR47 , Part 15 Class B; EN 6100-3-2, EN 61000-3-3
Immunity	EN 55024
Regulatory Markings	UL/cUL, TUV-GS, CE FCC, ICES-003, C-Tiek, VCCI, GOST-R, BSMI CCC, S-Mark
Power Management	Supports PowerNow standard ACPI power states for Windows

Operating System

Operating System	Certified	Pre-installed Option at the Factory?
Solaris 10 update 1	Yes	Yes
Solaris 9 update 9	Yes	No

Ordering Information

Sun Ultra 25 Workstation Standard Configurations

The following are part numbers and descriptions for the Sun Ultra 25 workstation factory standard configurations.

Part Number	Description
A89-XHZB1-9AT-1GDU	Sun Ultra 25 workstation:RoHS-6 model, one 1.34-GHz UltraSPARC IIIi processor with 1-MB on-die L2 cache, Sun XVR-3000 graphics, 1-GB DDR1 memory (2x512-MB DIMMs), one 160-GB, 7200-rpm SATA hard disk, one DVD-Dual, two 10/100/1000 BASE-T Ethernet ports, two serial ports, six USB 2.0 ports, two full-length PCI-X slots, three PCI-Express slot, Solaris 10 OS pre-installed (standard configuration)
A89-XHZB1-9AG-1GDU	Sun Ultra 25 workstation:RoHS-6 model one 1.34-GHz UltraSPARC IIIi processor with 1-MB on-die L2 cache, Sun XVR-2500 graphics,1-GB DDR1 Memory (2 * 512MB DIMMS),1 * 160GB 7200rpm SATA Hard Disk, 1 * DVD-Dual, 2 * 10/100/1000 BaseT Ethernet ports, 2 * Serial ports, 6 * USB2.0 ports, 2 * full-length PCI-X slots, 3 * PCI-Express slots, Solaris 10 pre-installed (standard configuration)

Sun Ultra 45 Workstation Standard Configurations

The following are part numbers and descriptions for the Sun Ultra 45 workstation factory standard configurations.

Part Number	Description
A70-XHZB1-9AT-1GDT	Sun Ultra 45 Workstation- RoHS-6 model 1.6GHz-,1 * 1.6GHz UltraSPARC IIIi Processor with 1MB on-die L2 Cache, Sun XVR-300 Graphics Accelerator, 1GB DDR1 Memory (2 * 512MB DIMMS), 1 * 250GB 7200rpm SATA Hard Disk, 1* DVD-Dual, 2 *10/100/1000 BaseT Ethernet ports, 2 * Serial ports, 6 * USB2.0 ports, 2 * full-length PCI-X slots, 3 * PCI-Express slots, Solaris 10 pre-installed (StandarConfiguration)
A70-XHZB1-9AG-1GDT	Sun Ultra 45 Workstation- RoHS-6 model 1.6GHz, 1 * 1.6GHz UltraSPARC IIIi Processor with 1MB on-die L2 Cache,Sun XVR-2500 Graphics Accelerator,1GB DDR1 Memory (2 * 512MB DIMMS),1 * 250GB 7200rpm SATA Hard Disk, 1 * DVD-Dual, 2 * 10/100/1000 BaseT Ethernet ports, 2 * Serial ports, 6 * USB2.0 ports, 2 * full-length PCI-X slots, 3 * PCI-Express slots, Solaris 10 pre-installed (Standard Configuration)
A70-XHZB2-9AT-2GDT	Sun Ultra 45 Workstation- RoHS-6 model 1.6GHz, 2 * 1.6GHz UltraSPARC IIIi Processor with 1MB on-die L2 Cache,Sun XVR-300 Graphics Accelerator, 2GB DDR1 Memory (2 * 1GB DIMMS), 1 * 250GB 7200rpm SATA Hard Disk, 1 * DVD-Dual, 2 * 10/100/1000 BaseT Ethernet ports, 2 * Serial ports, 6 * USB2.0 ports, 2 * full-length PCI-X slots, 3 * PCI-Express slots, Solaris 10 pre-installed Standard Configuration)

X-Options and XATO Options

The following are part numbers and descriptions for the Sun Ultra 25 and Ultra 45 workstation X-Options and XATO (External Assemble to Order) options.

Part Number	Description
A89-AAZ	Sun Ultra 25 workstation ATO Base ROHS-6; 1 * CPU slot, 4 * useable memory slots,, one internal SATA/SAS disk drive bay, one removable media bay for DVD-Dual, two 10/100/1000 BASE-T Ethernet ports, two serial ports, six USB 2.0 ports, two full-length PCI-X slots, three PCI-Express slots, Solaris license. No CPU, disk, memory, or graphics included.
9027A	Ultra 25 workstation motherboard with 1 x 1.34-GHz -ROHS-6 UltraSPARC IIIi CPU. ATO option.
A70-AA	Sun Ultra 45 Workstation ATO Base ROHS-6; 2 * CPU slot, 8 * useable memory slots , 4 * internal SATA/SAS disk drive bays, 1 * removable media bay for DVD-Dual, 2 * 10/100/1000 BaseT Ethernet ports, 2 * Serial ports, 6* USB2.0 ports, 2 * full-length PCI-X slots, 3 * PCI-Express slots,Solaris license, CPU, Motherboard, disk, memory, or graphics order separately.
9025A	Ultra 45 workstation motherboard with 1 x 1.6-GHz -ROHS-6 UltraSPARC IIIi CPU. ATO option.
9026A	Ultra 45 workstation motherboard with 2 x 1.6-GHz -ROHS-6 UltraSPARC IIIi CPU. ATO option.
Graphics Options	
X7295A	Sun XVR-2500 graphics accelerator, 24-bit color, high resolution 2D and 3D graphics accelerator w/256-MB texture memory, PCI-Express X-option
7295A	Sun XVR-2500 graphics accelerator, 24-bit color, high resolution 2D and 3D graphics accelerator w/256-MB texture memory, PCI-Express ATO-option
4240A	XVR-300 2D Graphics Frame Buffer. 24-bit color, high resolution 2D graphics accelerator. PCI Express based and dual DVI-I. ATO-Option RoHS-6.
X4240A	XVR-300 2D Graphics Frame Buffer. 24-bit color, high resolution 2D graphics accelerator. PCI Express based and dual DVI-I. X-Option RoHS-6.
X7296A	*RoHS-compliant* Sun XVR-100 graphics accelerator, 2D graphics, 24-bit color, 64-MB frame buffer memory, single slot PCI, max resolution 1920x1200, DVI and HD-15 connectors, dual video support,
Memory Options	
8703A	ROHS-6- 2-GB Memory Expansion Kit for XATO (2x512 MB) low-profile DDR1 PC2700 ECC DIMMs for use in Sun Ultra 25 workstation
X8703A	ROHS-6- 1-GB Memory Expansion Kit (2x512 MB) low-profile DDR1 PC2700 ECC DIMMs for use in Sun Ultra 25 workstation
X8704A	ROHS-6- 2-GB Memory Expansion Kit (2x1 GB) low-profile DDR1 PC2700 ECC DIMMs for use in Sun Ultra 25 workstation
8704A	ROHS-6- 2-GB Memory Expansion Kit for XATO(2x1 GB) low-profile DDR1 PC2700 ECC DIMMs for use in Sun Ultra 25 workstation
8711A	ROHS- 6- 4-GB Memory Expansion Kit for XATO (2x2 GB) low-profile DDR1 PC2700 ECC DIMMs for use Sun Ultra 25 workstation
X8711A	ROHS-6- 4-GB Memory Expansion Kit (2x2 GB) low-profile DDR1 PC2700 ECC DIMMs for use Sun Ultra 25 workstation
Hard Drive Options	
XRC-ST1CE-160G7KZ	Internal 160-GB 7200-rpm serial ATA hard disk drive with bracket

Part Number	Description
RC-ST1CE-160G7KZ	Internal 160-GB 7200-rpm serial ATA hard disk drive with bracket (ATO)
XRA-ST1CE-250G7K	RoHS-6. Internal 250-GB 7200-rpm serial ATA hard disk drive with bracket
RA-ST1CE-250G7K	RoHS-6. Internal 250-GB 7200-rpm serial ATA hard disk drive with bracket. XATO option
XRA-SS1CE-146G15K	RoHS-6. Internal 146-GB 15000-rpm SAS HDD, 3.5-inch x 1-inch drive. XATO and factory integration.
RA-SS1CE-146G15K	RoHS-6. Internal 146-GB 15000-rpm SAS HDD, 3.5-inch x 1-inch drive. XATO and factory integration.
Optical Media Options	
X7277A	RoHS-6- X-Option DVD dual drive (slot load) for Sun Ultra 45 workstation
7277A	RoHS-6- DVD Dual drive (ATO)
8017A	Filler panel for empty optical drive slot (ATO only)
SCSI and Fiber-Channel Host Bus Adapters (HBA)	
SG-XPCI2SCSI-LM320	Dual Port Ultra320 SCSI PCI-X HBA (Jasper 320 replacement)
SG-XPCIE2SCSIU320Z	RoHS 6 Compliant Sun StorageTek PCI Express x4 Dual Channel Ultra320 SCSI HBA
SG-XPCI2FC-QF2-Z	PCI-X Dual Port, 2Gb Fibre Channel Adaptor
SG-XPCI2FC-EM2	PCI-X Emulex Dual Fibre Channel Adapter 2Gb
SG-XPCI1FC-EM2	PCI-X Emulex Single Fibre Channel Adapter 2Gb
SG-XPC1E2FC-QF4	PCI-E Dual Port 4Gb Fibre Channel Adapter
SG-XPC1E1FC-QF4	PCI-E Single Port 4Gb Fibre Channel Adapter
PCI Communication (Serial) Adapters	
X2156A-2	SAI (Serial Asynchronous Interface) for connecting multiple serial devices.
X1355A-2	HSI/U (High Speed Serial Interface), supports S10
Network Adapters	
X5544A-4, X5558A Order both together.	X5544A-4 Sun base board product with a 133MHz PCI-X, 10 Gigabit Ethernet fiber. Board requires MMF or SMF transceiver: X5558A or third party. X5558A Ethernet transceiver for 10-GE board. Required in order for X5544A-4 to operate.
X4445A	Sun Quad GigaSwift PCI-X Ethernet UTP Adapter
X4150A-2	GigaSwift Ethernet UTP PCI adapter (GCS)
X4151A-2	GigaSwift Ethernet UTP PCI adapter (GFS)
X7280A-2	Sun PCI-E Low profile Dual GigE UTP (No Solaris 9 OS support)
X7281A-2	Sun PCI-E Low-Profile Dual GigE MMF (No Solaris 9 OS support)
X1027A-Z	Multithreaded Dual 10GE
Encryption Cards	
X6000A/6099A	HSM 6000 Crypto (MARs) Lead Free Q3FY06, PCI-Express based , supports S10
PCI III Card	
X2136A	SunPCi™ IIIpro
PCI Combination Adapters	
X4422A-2	PCI Adapter with two 10/100/1000Mbps Ethernet UTP (RJ45) and two 80 MBps Wide-Ultra2 SE/LVD SCSI interfaces. RoHS Compliant

Part Number	Description
Cardbus PCMCIA Card Reader	
PCM-CR-PC2IC2	Synchrotech PCI Cardbus/PCMCIA Card Reader
External Storage Devices	
External Tape Storage	
SG-XTAPDAT72-D2	Sun StorEdge[TM] DAT 72 drive in desktop config-36GB capacity, 3MB/sec throughput. RoHS compliant.
SG-XTAPDAT72-R-2	Sun StorEdge[TM] DAT 72 tape drive in 1U rackmount config with empty 2nd drive bay-36GB capacity, 3MB/sec throughput. RoHS compliant.
SG-XTAPLTO2-D-2	LTO Gen 2 SCSI Single Tape Drive Desktop with 200GB Capacity and 30MB/Sec. throughput. RoHS compliant.
SG-XTAPLTO3-D-2	Sun StorEdge[TM] LTO 3 LVD SCSI drive in desktop config-400GB capacity, 80MB/sec throughput. RoHS compliant.
SG-XTAPLTO3-R-Z	Sun StorEdge[TM] LTO 3 tape drive, RoHS-6 compliant, in 2U rackmount config with empty 2nd drive bay-400GB capacity, 80MB/sec throughput. LVD SCSI
SG-XTAPSDLT600-D-Z	Sun StorEdge(TM) SDLT 600 single tape drive desktop, RoHS-6 compliant. Provides 300GB capacity, 36MB/sec throughput.
SG-XTAPSDLT6-R-Z	Sun StorEdge[TM] SDLT 600 tape drive in 2U rackmount config with empty 2nd drive bay-300GB capacity, 36MB/sec throughput. LVD SCSI. RoHS compliant.
SG-XTAPLTO3R-B2-Z	Bare LTO3 drive, RoHS-6 compliant, for 2nd bay in 2U rackmount configuration, LVD SCSI. 400 GB native capacity, 80MB/sec throughput
SG-XAUTO8LTO2-C2	Sun StorEdge C2 autoloader with LTO 2 HH, LTO 3 and SDLT 600 drives
SG-XLIBLTOS-C4-Z	Sun StorEdge C4 with LTO 2, LTO 3 and SDLT 600 drives

Sun Ultra 25 and 45 Workstations Display Options

The following are part numbers and descriptions for the various Sun Ultra 25 and 45 Workstations display options.

Part Number	Description
X7204A	17-inch TFT LCD Color Monitor, RoHS Compliant
X7205A	19-inch TFT LCD Color Monitor, RoHS Compliant
X7200A	20.1-nch TFT LCD Color Monitor, RoHS Compliant
X7206A	24.1-inch TFT LCD Color Monitor, RoHS Compliant

Country Kits for the Sun Ultra 25 and 45 Workstations

The Sun Ultra 25 and 45 Workstations uses the Type 7 RoHS-6 compliant country kits. The Type 6 country kits DO NOT work with the Sun Ultra 25 and 45 Workstations.

Part Number	Description
X3731A	North American Universal ("PC style")
X3732A	French
X3733A	German
X3734A	Swiss-French
X3735A	Swiss-German

Part Number	Description
X3736A	Swedish
X3737A	United Kingdom
X3738A	UNIX Universal
X3754A	Taiwanese
X3755A	Korean
X3756A	Japanese
X3758A	United Kingdom UNIX
X3759A	European UNIX
X3760A	Norwegian
X3761A	Portuguese
X3762A	Spanish
X3763A	Danish
X3764A	Italian
X3765A	Dutch (Netherlands)
X3766A	Australian
X3767A	Finnish
X3768A	European Universal
X3782A	Chinese
X3783A	UNIX (Power Cordless)
X3785A	Russian
X3787A	Turkish-Q
X3790A	Belgian
X3791A	Arabic
X3730A	Spanish N. Amer. PC
X3799A	Hebrew

Supported External Options

External Tape Storage	
SG-XTAPDAT72-D2	Sun StorEdge DAT 72 drive in desktop config-36GB capacity, 3MB/sec throughput. RoHS compliant.
SG-XTAPDAT72-R-2	Sun StorEdge DAT 72 tape drive in 1U rackmount config with empty 2nd drive bay-36-GB capacity, 3 MB/sec throughput. RoHS compliant.
SG-XTAPLTO2-D-2	LTO Gen 2 SCSI Single Tape Drive Desktop with 200-GB Capacity and 30 MB/sec. throughput. RoHS compliant.
SG-XTAPLTO3-D-2	Sun StorEdge LTO 3 LVD SCSI drive in desktop config-400-GB capacity, 80 MB/sec throughput. RoHS compliant.
SG-XTAPLTO3-R-Z	Sun StorEdge LTO 3 tape drive, RoHS-6 compliant, in 2U rackmount config with empty 2nd drive bay-400-GB capacity, 80 MB/sec throughput. LVD SCSI
SG-XTAPSDLT600-D-Z	Sun StorEdge(TM) SDLT 600 single tape drive desktop, RoHS-6 compliant. Provides 300-GB capacity, 36 MB/sec throughput.
SG-XTAPSDLT6-R-Z	Sun StorEdge SDLT 600 tape drive in 2U rackmount config with empty 2nd drive bay-300-GB capacity, 36 MB/sec throughput. LVD SCSI. RoHS compliant.
SG-XTAPLTO3R-B2-Z	Bare LTO3 drive, RoHS-6 compliant, for 2nd bay in 2U rackmount configuration, LVD SCSI. 400 GB native capacity, 80 MB/sec throughput
SG-XAUTO8LTO2-C2	Sun StorEdge C2 autoloader with LTO 2 HH, LTO 3 and SDLT 600 drives
SG-XLIBLTOS-C4-Z	Sun StorEdge C4 with LTO 2, LTO 3 and SDLT 600 drives

Service and Support

Why the Warranty Isn't Enough

While computer system warranties provide business customers with some assurance of product quality, they do not provide many essential system services or operating system support. In addition, warranties provide default repair times and coverage hours which might not suit customer needs. A warranty and a Service Plan are two very different things with two very different objectives. Break/fix is no way to live - make sure your customers have Service Plan coverage on all their active Sun systems. For more information go to: http://www.sun.com/compare warranty

The SunSpectrum℠ Service Plan

The SunSpectrum℠ Service Plan is an innovative and flexible service offering that allows customers to choose the level of service best suited to their needs, ranging from mission-critical support for maximum solution availability to backup assistance for self-support customers. The SunSpectrum Service Plan provides a simple pricing structure in which a single fee covers support for an entire system, including related hardware and peripherals, the Solaris Operating System software, and telephone support for Sun software packages. The majority of Sun's customers take advantage of the SunSpectrum Service Plan, underscoring the value that it represents. Customers should check with their local Sun Services representatives for program and feature availability in their areas.

SunSpectrum program support contracts are available both during and after the warranty program. Customers can choose to uplift the service and support agreement to meet their business needs by purchasing a SunSpectrum contract. Always use the SunSpectrum Service Plan for total system support when Solaris is the operating system of choice.

The four levels of SunSpectrum support contracts are outlined below.

Program	Description
Mission-Critical SunSpectrum Platinum℠ Support	Designed to support client-workstation, mission critical solutions by focusing on failure prevention, rapid recovery and year-round technical services planning. Support is provided 24x7.
Business-Critical SunSpectrum Gold℠ Support	Includes a complete package of proactive and responsive services for customers who require maximum uptime for their strategic business-critical systems. Support is provided 24x7.
System Coverage SunSpectrum Silver℠ Support	Combines the service expertise, responsive on-site support and technical support by telephone and SunSolve™ CD/on-line services. Support is provided 8 AM to 8 PM Monday through Friday.
Self-Directed SunSpectrum Bronze℠ Support	Provided for customers who rely primarily upon their own in-house service capabilities. Enables customers to deliver high quality service by giving them access to UNIX® expertise, Sun certified replacement parts, software releases and technical tools. Support is provided 8 AM to 5 PM Monday through Friday.

Installation Service for the Sun Ultra 25 and 45 Workstations

Enterprise Installation Services, or “EIS” is a proven methodology by which Sun and Sun authorized partners install and test Sun systems. The standard of installation quality is unmatched, which means that

the customer has the best possible start to his/her IT deployment of the Ultra 25 and 45 Workstations. The easiest way to quote an installation service is to use the EIS-% part numbers on Webdesk.

http://www.sun.com/service/consulting/installintegrate/installation.html

The Online Support Center

The Online Support Center (OSC) provides Web-based solutions anytime, anywhere. Providing high-quality availability services has always been a top priority at Sun. As a pioneer in web-based customer solutions, Sun continues to utilize the power and versatility of the Internet to offer customers a broad variety of online service offerings.

The online answer/transaction process can save customers valuable time by eliminating the time spent waiting on the phone for a customer service representative. The Online Support Center empowers the user by offering anywhere, anytime access to Web-based support, training, and consulting solutions for Sun hardware and software products. The site serves as a portal for proactive service offerings, systems support features, and resource links.

For more information on the any of the above Sun support offerings, please visit: http://www.sun.com/service/support.

Materials Abstract

Collateral	Description	Purpose	Distribution	Token # or COMAC Order #
Product Literature				
– *Sun Ultra 25 Workstation, Just the Facts*	Reference Guide (this document)	Training Sales Tool	SunWIN	473547
– *Sun Ultra 25 Workstation Customer Presentation*	Customer Presentation	Sales Tool	SunWIN	475346
– *Sun Ultra 25 Workstation Datasheet*	Data Sheet	Sales Tool	SunWIN	475345
– *Sun Ultra 25 Workstation Services Datasheet*	Data Sheet	Sales Tool	SunWIN	456725
– *Sun Workstation Solution Brief for MCAD*	Solution Brief	Sales Tool	SunWIN	450625
– *Sun XVR-2500 Graphics Just the Facts*	Reference Guide	Training Sales Tool	SunWIN	470797
– *Sun XVR-2599 Graphics Datasheet*	Data Sheet	Sales Tool	SunWIN	469174
– *Sun Ultra 45 Workstation Datasheet*	Data Sheet	Sales Tool	SunWIN	463507
– *Sun Ultra 45 Workstation Services Datasheet*	Data Sheet	Sales Tool	SunWIN	456725
– *Sun Ultra 45 Just The Facts*	Reference Guide	Training Sales Tool	SunWIN	460409
– *Sun Ultra 45 Customer Presentation*	Customer Presentation	Sales Tool	SunWIN	463505
External Web Sites				
–				
Internal Web Sites				
– *Sun Ultra 25 Workstation*	Http://www.sun.com/desktop/workstation/ultra25/			
– *Sun Ultra 25 Workstation Photographs*	http://photos.sun.com			
– *Sun Ultra 45 Workstation Photographs*	http://photos.sun.com			