Sun Fire™ X4450

2-RU 4-Socket (24-way) x64 Rackmount Server

Industry Leading Performance, Density & Power Efficiency

Just the Facts

SunWIN Token # 508680

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Introduction

The Sun Fire™ X4450 is the smallest 4-socket enterprise class x64 server from top-tier vendors. The Sun Fire X4450 is the best 4-socket enterprise class x64 server in terms of **performance**, **density** and **power efficiency**. This is yet another example of Sun's innovative engineering delivering one of the most compelling x64 (32-bit and 64-bit) solutions in the market. The Sun Fire X4450 server delivers world-class 32-bit and 64-bit performance in rack-mountable 2U form factor with Sun's rock-solid, enterprise-class capabilities and quality.

Running Solaris(TM), Linux, Windows and VMware operating systems, the Sun Fire X4450 servers allow customers to run existing 32-bit applications on the same hardware as they migrate to their choice of next generation 64-bit applications. **The Sun Fire X4450** servers can help minimize required staff training and support as well as help reduce data center real estate and cooling needs.

The Sun Fire X4450 are general-purpose servers designed for deployment in a wide range of architectures:

- Scale-out architectures: With large memory capacity, internal storage, quad Gigabit Ethernet ports and high speed PCI-Express expansion slots that enable high speed system interconnects such as fibre channel and InfiniBand, these servers are able to solve complex computing problems that require intense compute resources.
- Scale-up architectures: With up to 24 cores available, these servers are well-suited for database, datawarehousing and business processing applications.
- Scale-within: With their ability to run Solaris 10 Containers and VMware, Sun Fire X4450

servers are ideal platforms for consolidating multiple applications on a single platform.

In addition, these servers help customers scale their computing resources without additional complexity. The Lights Out Manager (embedded LOM or ILOM) comes standard on all systems without extra cost, enabling the system to be managed and monitored locally or remotely.

The Sun Fire X4450 servers, when combined with Sun's rich portfolio of software, storage, service offerings, help reduce cost and complexity while accelerating time-to-revenue for data centers that run a broad range of applications including web and database applications.

For more information see: http://www.sun.com/x4450.

Features, Functions, and Benefits

Sun Fire X4450 Server Key Features, Functions, and Benefits

Feature	Function	Benefit
Performance		
Highest Performance in class	• Sufficient power-envelope to support the fastest Intel Xeon processors • Delivers both 32- and 64-bit enterprise-class computing	• Provides fastest performance in this class of servers • Increases performance while providing investment protection for existing 32-bit applications
Industry Leading Reliability and Expandability		
Hot-swappable HDDs	• Performance for I/O-bound applications and redundancy for mission-critical data	• Increase performance and availability
Up to 128 GB of memory with ECC and ChipKill	• Support memory-intensive applications • ECC provides automatic single-bit error correction • ChipKill allows a single DRAM chip to fail and the system will continue to run	• Improve application performance • ECC helps to ensure data integrity • improving availability • ChipKill improves system availability
Integrated Quad Gigabit Ethernet	• Outstanding network I/O performance • Increased network availability when installed in failover configurations	• Increases network efficiency, flexibility, and availability
64-bit PCI-Express Slots	• Allows connectivity to additional network or storage while supporting full CPU path bandwidth.	• Enables flexibility to meet evolving business and application requirements.
Energy Efficiency		
Intel Xeon Processors	• Supports Intel Xeon processors with 2-core, 4-core and 6-core, placing up to 24 CPU cores in a compact form factor • Supports the 50W processor with 4-core and 65W processor with 6-core for energy conscious customers	• Nearly doubles computing resources with minimal power and cooling increases • Reduces the processor energy consumption by up to 320W per system
Operating System and Management Environment		

Feature	Function	Benefit
Lights Out Mnager for Remote Management	Embedded Lights Out Manager (embedded LOM) or Integrated Lights Out Manager (ILOM): • Remote management with full Keyboard, Mouse, Video, Storage (KVMS) • Remote media capability (floppy, CD etc.) • Full DMTF CLI • Browser UI for control of the system through a graphical interface. • IPMI 2.0 compliant for management and control • SNMP v1, V2c, V3 for system monitoring • Monitor and report system and component status on all FRUs	• All management which does not require physically touching the system can be performed remotely • Easily integrates into customer's existing management environment by supporting industry standards • LOM is a core part of system, there is no additional charge for this functionality as with some of the competition
Runs applications on: • Solaris 10 • Linux (RHEL 4, RHEL 5, SLES 9 and SLES 10) • Windows Server 2003 and 2008 • VMware ESX 3.0.2	• Run applications on industry standard platform running OS of choice	• Maximize application performance with best OS • Ease transition to 64-bit computing • Maximize IT investment by standardizing hardware to reduce required training and spares

Product Family Placement

The Sun Fire X4450 server is a 2-RU 4-socket x64 server based on the Intel Xeon processor.

X64 Server Family Comparison

The following table compares some features of the Sun Fire X4440 and Sun Fire X4450 servers.

Features	Sun Fire X4440	Sun Fire X4450
Form Factor	2 RU	2 RU
Processor Architecture	AMD Opteron	Intel Xeon
Processor Type	4x Dual/Quad-Core	4x 2/4/6-Core
Level 2 Cache	1MB per core	2x2MB or 2x4MB
CPU Interconnect	HyperTransport	Front Side Bus
Memory Controller	Embedded in processor	Separate chip
Memory Type	667 MHz registered DDR2	667 MHz registered FB-DIMM

Features	Sun Fire X4440	Sun Fire X4450
DIMM Slots	32	32
DIMMs per CPU	8 DIMMs per processor	2 to 32 DIMMs per system regardless of processor count
Max Memory	256 GB (with 8GB DIMM)	128 GB (with 4GB DIMM)
Internal Disk	8x 2.5” SAS	8x 2.5” SAS
Onboard RAID	SW RAID 0, 1 for SATA	SW RAID 0, 1 for SATA
Add-on RAID	RAID 0, 1, 5, 6 with SAS RAID HBA	RAID 0, 1, 5, 6 with SAS RAID HBA
Removable Media	DVD+/-RW	DVD+/-RW
Onboard GigE	4 GigE	4 GigE
PCI-Express	6x PCI-Express	6x PCI-Express
Service Processor	Integrated LOM	Embedded LOM for Intel Xeon 7200/7300 series; Integrated LOM for Intel Xeon 7400 series
Redundant, Hot-Swap PSU	Yes	Yes
Redundant, Hot-Swap Fans	Yes	Yes

Key Messages

- **Performance...do more with less**
  - Run a broad range of applications more efficiently and quickly
- Density.... save precious data center real estate
  - Half the footprint as similar systems from top-tier vendors
- Expandability.... headroom to grow your business
  - Up to twice the memory and networking connectivity of similar systems in its class
- **Energy-efficient.....save power and cooling costs**
  - Customers can save on energy consumption, cooling cost and the environment
- **Manage and Monitor the System.....locally or remotely**
  - Embedded Lights Out Manager (embedded LOM) allows full remote KVMS functionality with video and media redirection
- **Maximize Uptime**
  - Enterprise-class reliability through redundant and hot-swappable power supplies and fans
  - Hot-swappable disk drives make drive replacement fast and easy
  - SAS host bus adapters offer RAID choices to meet the customer's requirements
- **Multi-platform.....less complexity**

- Runs Solaris, Linux, Windows and VMware operating systems
- Standardize on one hardware platform for all major operating systems in the data center

Target Customers

The Sun Fire X4450 server is targeted at customers that want enterprise class x64 servers that are small, fast, expandable and energy efficient.

Target Markets

- Financial Services
- Service Providers
- Manufacturing
- Video Rendering
- Government
- Education & Research

Target Applications

- Virtualization and Consolidation
- Web Server
- Application Server
- Database Server
- Datawarehousing
- Business Processing

Market Value Proposition

Sun Fire X4450 servers are small, fast, expandable and energy-efficient enterprise class x64 servers that run Solaris™, Linux, Windows and VMware operating systems.

- Do More With Less: High performing server helps to maximize Return On Investment.
- Occupies less data center space: Half the space as similar systems from top-tier vendors
- More Headroom to Grow: More expandable in memory, storage and networking connectivity.
- Cut IT operating expenses: More power efficient that results in power consumption and cooling cost.
- Improve Service Levels: High availability features such as hot swappable and redundant power supplies, fans and disks lead to higher uptime.

Availability

Standard and xATO configurations with Intel Xeon processor 7200/7300 series were revenue released in November 2007. General availability was in March 2008.

Standard configurations with non-130W Intel Xeon processor 7400 series have target Revenue

Release on October 1, 2008 , and target General availability of October 8, 2008.

Standard configurations with 130W Intel Xeon processor 7400 series and all xATO Configurations have target Revenue Release on October 30, 2008, and target General Availability of November 7, 2008.

Enabling Technology

Technology Overview

The Sun Fire X4450 Server is a high-density, x64-based, rack-optimized servers which has the following system architectural features:

- Ultra high density chassis design
- Supports Quad-Core Intel® Xeon® processor 7300 series and Dual-Core Intel® Xeon® processor 7200 series with embedded Lights Out Manager (embedded LOM) or Integrated Lights Out Manager (ILOM)
- Supports Intel Xeon processor 7400 series with Integrated Lights Out Manager (ILOM)

Intel Xeon processor 7200 and 7300 Series

The Dual-Core Intel Xeon processor 7200 series and Quad-Core Intel Xeon processor 7300 series incorporate two die per processor package, with each die capable of containing two processor cores. In the Dual-Core Intel Xeon 7200 series, each die includes one processor core, but in the Quad-Core Intel Xeon 7300 series, each die contains two cores. In a Sun Fire X4450 server with four processors, this enables up to 16 execution cores in a compact 2U enclosure. Some key features include on-die, 32 KB Level 1 instruction data caches per core and 4 MB shared Level 2 cache per die (8 MB Total Cache per processor). The processors support a Dual Independent Bus (DIB) architecture with one processor on each bus, up to two processor sockets in a system. The DIB architecture provides improved performance by allowing increased FSB speeds and bandwidth. The 1066 MT/s Front Side Bus is based on a 266 MHz system clock for an 8.5 GBytes per second data transfer rate.

The Intel Xeon Processor 7200 and 7300 series support Intel® Virtualization Technology for hardware-assisted virtualization within the processor. Intel Virtualization Technology is a set of hardware enhancements that can improve virtualization solutions. Intel Virtualization Technology is used in conjunction with Virtual Machine Monitor software enabling multiple, independent software environments inside a single platform.

Intel Xeon processor 7400 Series

The new Intel Xeon processor 7400 series delivers higher performance, better energy efficiency and improved processor core density.

Attribute	***Intel Xeon 7300 Series***	***Intel Xeon 7400 Series***
Cores Per Processor	Up to 4 cores per processor	Up to 6 cores per processor
Process Technology	65 nm	45 nm
Frequency	Up to 2.93 GHz	Up to 2.66 GHz
Processor Wattage	50W, 80W, 130W	50W, 65W, 90W, 130W
L2 Cache	Up to 4MB per core pair	Up to 3MB per core pair
L3 Cache	No L3 Cache	Up to 16MB L3 Cache

Ultra High Density Chassis Design

Density is the cornerstone of the Sun Fire X4450 server design. The Sun Fire X4450 is a 2 RU system that can house up to 4 processors, 32 memory DIMMs, 8 storage bays, 1 removable media with 4 GigE ports and Lights-Out-Manager onboard.

Lights-Out-Manager: Embedded LOM and ILOM

All Sun Fire X4450 systems with Intel Xeon processor 7200 series and 7300 series are shipped with the embedded Lights-Out-Manager (embedded LOM).

The Embedded Lights-out Manager (embedded LOM) is driven by an integrated AST2000 service processor that follows x86 standards and is different from SPARC(R) technology-based system remote management solutions. It provides for full remote KVMS (Keyboard, Video, Mouse, Storage) support together with remote media functionality. Lights-out management (LOM) is achieved using an on-board, independently powered service processor with its own robust, security hardened OS. Embedded LOM provides secure remote administration via an intuitive browser-based GUI, DTMF CLI, remote console, SNMP V1, v2c, v3 or IPMI v2.0 protocols using the out-of-band management Ethernet. With out-of-band management, the system administrator can remotely control power of the system, monitor system FRU status, and load system firmware

The Service Processor (SP) provides the following functions:

- Capability to remotely manage the server through remote keyboard, video, mouse, and storage redirection
- Extensive control and reporting over environmentals, power, hardware and BIOS/OS features
- Remote flash upgrades of system BIOS and service processor software
- Remote diagnosis of failed components allows for rapid correction
- User configurable serial console accessible via a physical port or re-directed through the management network

Systems with Intel Xeon processor 7400 series require and are shipped with the Integrated Lights-Out-Manager (ILOM).

For systems upgrading to the Intel Xeon processor 7400 series, the embedded LOM must be upgraded to ILOM. The firmware supporting ILOM can be found on "Sun Fire X4450 Server Tools and Drivers CD Version 2.0.0" and can be downloaded from

http://www.sun.com/servers/x64/x4450/downloads.jsp

Before performing the firmware upgrade, it is strongly recommended to read the ELOM to ILOM user guide beforehand:

http://docs.sun.com/source/820-4930-10/

System Architecture

Overview

The architecture of the Sun Fire X4450 has multiple host processors connect to a Northbridge Memory Controller Hub (MCH 7000P) which in turn connects to a Southbridge I/O Hub (IOH).

Front Side Bus

The Sun Fire X4450 has multiple host processors interface to the Northbridge MCH over four Front-Side Buses (FSBs) operating at 1066MT/s. The 64-bit wide FSBs are capable of peak bandwidths of 8.5 GB/s. The Northbridge Memory Controller Hub (MCH) in turn connects to the Southbridge I/O Hub (IOH), enabling expandability along with high I/O throughput.

Northbridge

The Intel 7000P, also known as Memory Controller Hub or MCH, controls up to 32 DIMM slots organized in 4 channels of 8 DIMMs each. The supported DIMM type is PC2-5300 DDR2-667 ECC FB-DIMMs and they must be populated by pair of identical DIMMs. The 7000P offers a total of 32 PCIe lanes.

Southbridge

The ESB-2 Southbridge is interconnected to the MCH using one ESI link and one PCIe link. The ESB-2 provides two built-in Gigabit Ethernet NICs going to external NIC ports 0 and 1. One Dual gigabit Intel Ophir 82571 is connected to the ESB-2 using a 4-lane PCIe link to provide two additional GigE NICs, port 2 and 3. From the ESB-2 two USB ports go to the rear of the system, one to an internal USB hub for two front accessible USB ports and one USB port is available inside the chassis for internal boot/storage USB-based devices. The ESB-2 supports up to six SATA disks connected to the disk backplane in SATA configurations. SAS configurations have the disk backplane connected to a PCIe HBA inserted in PCIe expansion slot 1.

Memory Subsystem

The Sun Fire X4450 memory subsystem features four independent memory channels, with each channel supporting up to eight memory modules for up to 32 FB-DIMMs per system. The system supports 667 MHz PC2-5300 DDR2 FBDIMM modules. Peak read bandwidth to the FB-DIMMs is 5.3GB/s per channel, and peak write bandwidth is 2.7GB/s per channel. Memory modules feature Error Checking and Correcting (ECC) with Chipkill technology for high reliability.

AST2000

The Aspeed AST2000 combines the graphics controller and the Service Processor (SP or BMC) in one single chip, saving space and power. It is integrated on the motherboard and is powered via stand-by power to operate independently from the main system's power state. The AST2000 is connected to the ESB-2 using 2 USB ports for virtual devices and one 32-bit 33 MHz PCI bus for data. The AST2000 provides one 10/100 MB/s Ethernet NIC and one SVGA Video port.

Block Diagram – SATA

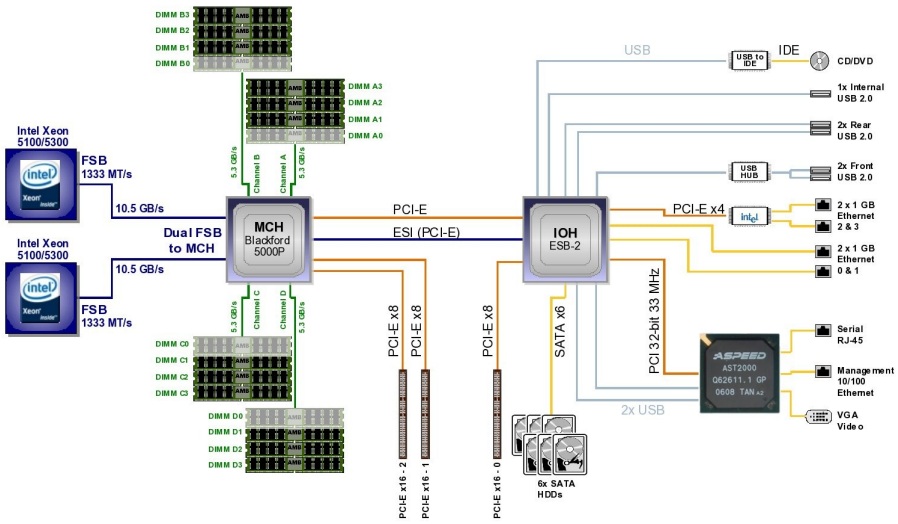

Figure 3. Sun Fire X4450 SATA Server Block Diagram

Block Diagram – SAS

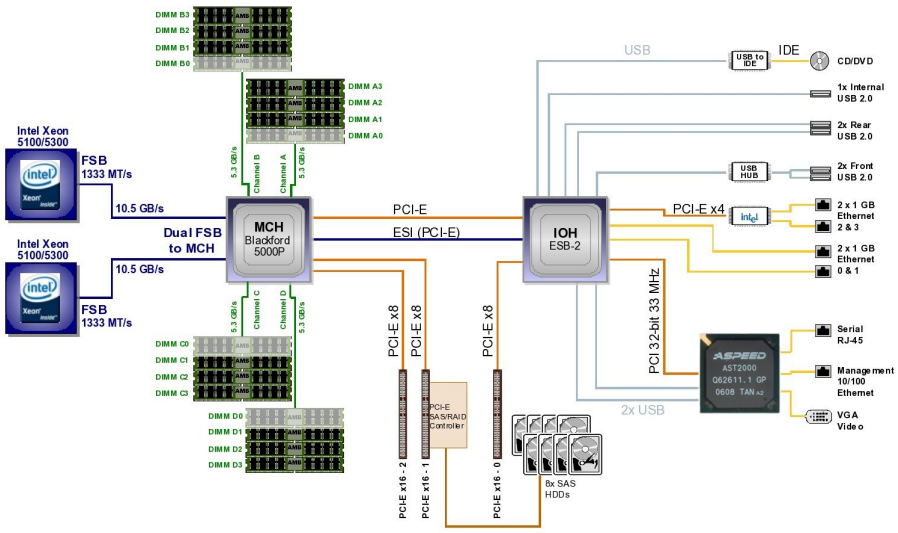

Figure 4. Sun Fire X4450 SAS Server Block Diagram

Reliability, Availability, and Serviceability (RAS)

Reliability

- Software RAID 0, 1 with SATA controller onboard.
- Add-on 8-port SAS host bus adapter supports RAID 0, 1, 0+1.
- Add-on 8-port SAS RAID host bus adapter has 256MB of DDR2 memory and battery-backed write cache for 72 hour backup, in addition to supporting RAID 0, 1, 10, 1E, 5, 50, 5EE, 6, 60.
- ECC memory with ChipKill supported.

Availability

- High processor density available with up to 6 processing cores combined with the small form factor of the Sun Fire X4450 servers allow redundant deployment in a compact space to increase overall service availability.
- Redundant hot-swappable power supplies and fan modules allow for system service without downtime.
- Built-in quad Gigabit Ethernet ports provide redundancy.

Serviceability

- Front-accessible, hot-swappable disk drives.
- Front-accessible DVD+/-RW drive can be easily removed without opening the top cover of the chassis.
- Fan modules can be replaced without power down or complete removal of system from rack.
- Identical Indicator LEDs on the front and back of the chassis allow problems to be detected and isolated easily.
- A fault indicator LED stays on following a fault even if the system has been powered off (but still connected to the power source).
- Diagnostic LEDs are included on the motherboard.
- Front power switch (toggles between standby and power-on) provides easy access.
- Rack mounting slide rails for easy installation and removal of a unit are available as x-options.
- Single-step power supply removal: Power-supplies can be serviced without sliding the servers out of the rack.

Operating System

Sun Fire X4450 Server Operating Systems

A world-class performance platform, the 64-bit Sun Fire X4450 servers allow customers to run the operating system that best fits their needs. With a multitude of operating systems fully supported and/or certified, the Sun Fire X4450 servers provide customers with more choices within the same hardware architecture. The Sun Fire X4450 supports Solaris OS, Linux, Windows and VMware.

Latest OS Information

For more information on the latest OS support for the Sun Fire X4450 Server , see http://www.sun.com/servers/x64/x4450/os.jsp

Solaris 10 OS – The most advanced operating system on the planet

Key Messaging

In a class by itself, the Solaris Operating System is a significant leap forward form the Solaris 9 OS, establishing it in a class by itself when compared to competing operating systems. It offers many innovative technologies that fundamentally change the equation for organizations needing to reduce costs, reduce complexity, and minimize risk. The new features in the Solaris 10 OS bring mainframe-quality software to even the smallest single-processor servers and provide a stepping stone into tomorrow's data center.

For CIOs and Line of Business Managers who are dissatisfied with high infrastructure costs and security vulnerabilities in their workgroup server environments, the Solaris 10 OS on x64 brings a proven, enterprise-class OS at 1/11th the cost of Microsoft and 20-60% off the cost of Red Hat over three years. The Solaris 10 OS is designed to help organizations optimize system utilization levels, deliver extreme performance and provide virtually unparalleled security – all with relentless, around-the-clock availability.

- **Optimal Utilization** of computing systems is a priority for IT managers where server consolidation is a common approach and is improved in the Solaris environment by:
    - **Solaris Containers** enable as much a 4x increase in system utilization by helping to efficiently and securely support thousands of applications per system. Highly configurable, Solaris Containers can dynamically adjust system resources to business goals within and across Containers with the added benefit of isolating applications from each other and from system faults, so a problem in one application cannot affect the system or other applications.
    - **Solaris ZFS File System** (zetabyte file system) integrates devices, storage, and file systems structures into a single structure, simplifying file system management and providing a reliable and flexible solution that can help reduce cost, complexity, and risk.
- **Extreme Performance** is delivered with optimization for the latest UltraSPARC(R), AMD Opteron and Intel Xeon processors as well as:
    - **Dynamic Tracing (DTrace),** designed for use live use in production situations, is a powerful tool for analyzing and diagnosing elusive problems

and increasing system performance. It is non-invasive and has no system overhead when not in use, but with its pervasive coverage, root cause for intermittent system problems can be found quickly and performance gains in real-world applications have been optimized to run as much as 30 times faster.

- **A Unified TCP/IP Stack** where the TCP and IP layers are partially merged, delivers a 30- to 50-percent improvement in network throughput with a 10- to 15-percent lower CPU load than previous Solaris OS versions.

- **Unparalleled Security** continues to be a focus as Solaris 10 OS adds significant features that can help defend against attacks by preventing unauthorized access to data and applications with:
  - **Process Rights Management** replaces the traditional UNIX(R) platform's "all or nothing" root mechanism with a fine-grained set of privileges for control over the resources and objects that processes can manipulate.
  - **Solaris Cryptographic Framework** library secures data flows by providing a set of programming interfaces for application-level and kernel-level cryptographic operations, allowing developers to utilize highly optimized cryptographic algorithms and providing transparent access to the same hardware encryption acceleration devices used by the operating system kernel.
- **Relentless Availability –** Expected in a Solaris OS environment, predictive self-healing technologies provide new levels of application availability with:
  - **Solaris Fault Manager** proactively handles system problems by removing components before failure. CPU, memory and I/O problems are diagnosed and corrected – before they can cause downtime.
  - **Solaris Service Manager** manages application software running on the system, monitoring applications and restarting entire application trees if necessary.

Compatibility

- **Same OS—Low-End to High-End Systems.** The Solaris OS is built from a single source base and optimized to run on multiple platforms, providing customers with the same best of breed OS on SPARC, Opteron AMD64 64-bit, and x86 32-bit processor-platforms.
- **Solaris Application Guarantee Program.** This program guarantees binary compatibility between versions of Solaris OS on each platform and has been extended to include source code compatibility as well.
- **Linux Compatibility.** With unwavering support for interoperability and open standards, and a commitment to delivering customer choice, Sun has made Linux interoperability a high priority.
  - **Six Key Linux Libraries included in Solaris OS are:** Glib, Gtk+, JPEG, PNG, TIFF, and XML2
  - **Hundreds of Linux applications and libraries** are provided with the Solaris OS including the GNOME desktop.
  - **Linux Compatibility Assurance Toolkit (LinCat)** helps to simplify the process of porting Linux applications to run natively on the Solaris OS.

Pricing/Support

Solaris 10 OS is free to end-users upon registration and is available via free download. Media kits are available for purchase. Support is available at an additional charge.

Linux - Complementing Sun's Solaris OS Strategy

Key Messaging

Sun, the #1 systems provider, brings a Comprehensive Systems Approach to Linux--providing customers with a full Linux solution of hardware, OS choice with Sun's value added Sun Java(TM) Enterprise System, Sun Java Desktop System, tools, and services. Sun enhances standard Linux distributions with an integrated systems offering that includes fully supported OS, x64 rack-mount servers, and the Sun Java Enterprise System that simplifies platform support for customers and partners. Sun brings added value to the system offering with faster, low-cost hardware which is the primary concern for most Linux customers seeking cost-sensitive server alternatives.

- **Choice and Platform Neutrality – "The right tool for the right job"**

  Customers can choose the OS platform to best meet their server to desktop computing needs.

  - With the Sun Java Enterprise System for Linux, customers can standardize on a set of Java technology-based network services across their heterogeneous infrastructure of volume x86 systems based on the Solaris OS or standard Linux to large SMP systems from Sun on x64 or SPARC processor based systems.
  - A growing line of Sun and third-party Intel Xeon and AMD Opteron processor-based servers allows Linux customers to scale to 64-bit computing

- **Systems Approach - Simplified Operations - One-Stop Linux Support**

  Sun brings a complete systems approach to Linux: a value-added web services stack for the entire system, hardware, OS, tools, and applications backed by Sun's global support infrastructure.

  - Delivering Linux--from leading vendors (Red Hat and SUSE Linux)--with front-line support and training worldwide from Sun on x64 (Xeon and Opteron processors) hardware platforms from Sun and third parties.
  - Selling the simplest and most comprehensive middleware & web services offering with Sun Java Enterprise System.

- **Optimized Java Technology – Java Everywhere – Broaden the reach of Java technology investments**
  - Sun is focused on maximizing Java technology performance benefits and stretching customers' application investments by creating a common application engine.
  - Linux and Java platform integration - Alliances with Red Hat and SUSE Linux to distribute Sun's latest Java Virtual Machine (JVM(TM) machine) included as part of the OS distributions. (The JVM software technology allows the Java 2 Software to host applications on any computer or operating system without rewrite or recompile).

Pricing/Support

Sun resells subscriptions for Red Hat Enterprise Linux (RHEL) & SUSE Linux Enterprise Server/Desktop (SLES/D). Support includes access to either Red Hat Network or Novell

Customer Center. During the support period, if any new versions of SLES/D or RHEL for Intel Xeon are made available, users with current support entitlements have access to those new versions from the maintenance sites of Red Hat and SUSE. Please see the "Services" section for more details.

Windows OS

Sun resells the Microsoft Windows Server 2003 and 2008 Enterprise and Standard Edition operating systems. Sun System Service Plans are available from Sun Microsystems at an additional charge. Please see the “Services” section for more details.

VMware OS

Sun resells the VMware operating system. Sun System Service Plans are available from Sun Microsystems at an additional charge. Please see the “Services” section for more details.

Installation Data

Sun Fire X4450 Server Specification

Processor Options

Processor	Two or four Intel Xeon Processors; • Dual-Core Intel Xeon E7220 (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 80W) • Quad-Core Intel Xeon L7345 (2x4MB L2, 1.86 GHz, 1066 MHz FSB, 50W) • Quad-Core Intel Xeon E7320 (2x2MB L2, 2.13 GHz, 1066 MHz FSB, 80W) • Quad-Core Intel Xeon E7340 (2x4MB L2, 2.40 GHz, 1066 MHz FSB, 80W) • Quad-Core Intel Xeon X7350 (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 130w) • Intel Xeon processor E7420 (4-Core, 8MB L3, 2.13 GHz, 1066 MHz FSB, 90W) • Intel Xeon processor E7440 (4-Core, 16MB L3, 2.40 GHz, 1066 MHz FSB, 90W) • Intel Xeon processor L7455 (6-Core, 12MB L3, 2.13 GHz, 1066 MHz FSB, 65W) • Intel Xeon processor E7450 (6-Core, 12MB L3, 2.40 GHz, 1066 MHz FSB, 90W) • Intel Xeon processor X7460 (6-Core, 16MB L3, 2.66 GHz, 1066 MHz FSB, 130W)

Main Memory

32 DIMM slots total for PC2-5300 667 MHz ECC Fully Buffered DDR2 DIMMs
System configurations from 2 GB (2x1GB) to 128 GB (32x4GB) of memory

Standard/Integrated Interfaces

Network	Four 10/100/1000Base-T Ethernet ports
Network management	One dedicated 10/100Base-T Ethernet port
Serial	One TIA/EIA-232-F asynchronous RJ45 Port
SAS	Eight channel SAS interfaces for internal or external drives with add-on SAS Host Bus Adapter
USB	Two USB 2.0 ports (Front), Two USB 2.0 ports (Rear), One USB 2.0 port (Internal)
Expansion bus	Six internal MD2 Low Profile PCI-Express slots: • two 8-lane slots with x16 mechanical connector • one 4-lane slot with x16 mechanical connector • three 4-lane slots with x8 mechanical connector

Mass Storage and Media

Hot-swappable, 2.5” Internal disk	Up to eight SAS disk drives with add-on SAS Host Bus Adapter
Removable Media	One EIDE DVD+/-RW drive
External disk	See http://www.sun.com/servers/x64/x4450/storage.html

Software

Operating environment	Solaris 10 08/07 Release Red Hat Enterprise Linux 4 Update 5, 32-bit/64-bit Red Hat Enterprise Linux 5, 32-bit/64-bit SUSE Linux 9 SP4 64-bit SUSE Linux 10 SP1 64-bit Windows Server 2003 Standard & Enterprise Edition, 32-bit/64-bit Windows Server 2008 Standard & Enterprise Edition, 32-bit/64-bit VMware ESX 3.0.2 Update 1 See http://www.sun.com/servers/x64/x4450/OS.html
Sun Java Enterprise System 5	Solaris 10 on X64 Operating System Standard Linux distributions
Languages	C/C++, FORTRAN, Java programming language, all other standard Sun-supported languages
Networking Software	ONC™, ONC+(TM), NFS(TM), WebNFS(TM), TCP/IP, SunLink™, OSI, MHS, IPX™/SPX, SMB technologies, and XML
Management	Local and remote KVM, remote media (DVD, CD, floppy, USB) capability, browser GUI, DMTF style, CLI (in-band and out-of-band), IPMI 2.0 (in-band and out-of-band), SNMP (out-of-band only)

Power Supplies

Dual redundant, hot -swappable power supply	
Power Supply Rating (DC input)	12 Amps RMS at 100 VAC
Power Supply Rating (DC output)	100-240VAC, 1050W and 1100W

Environment

AC power	90–264 V AC (47–63 Hz)
Operating temperature/humidity (single, non-rack system)	At sea level: • 5 ºC to 35 ºC (41 ºF to 95 ºF), 10% to 90% relative humidity, non-condensing at sea level for 50W and 80W processors • 5 ºC to 31 ºC (41 ºF to 88 ºF), 10% to 90% relative humidity, non-condensing at sea level for 130W processors At altitude: • 5 ºC to 31 ºC (41 ºF to 88 ºF), 10% to 90% relative humidity, non-condensing at sea level for 50W and 80W processors • 5 ºC to 27 ºC (41 ºF to 81 ºF), 10% to 90% relative humidity, non-condensing at sea level for 130W processors
Nonoperating temperature/humidity (single, non-rack system)	-40 ºC to 65 ºC (-40 ºF to 149 ºF), up to 93% relative humidity, non-condensing
Altitude (operating) (single, non-rack system)	Up to 3,048 m, maximum ambient temperature is derated by 1 degree C per 300 m above 900 m
Altitude (nonoperating) (single, non-rack system)	15kPa

Acoustic Noise Emissions

Declared noise emissions in accordance with ISO 9296, A-weighted, operating and idling:	
Measure & Environment	
LwAd (1B = 10dB) at max ambient	7.3 B (idle and operating, room temp.) 7.7 B (max. ambient)
LpAm bystander at max ambient	65.8 dB

Regulations

Meets or exceeds the following requirements:	
Safety	IEC 60950, UL/CSA 60950, EN60950, CB Scheme with all country differences
RFI/EMI	FCC CFR 47 Part 15 Class A, EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 300-386
Immunity	EN55024,EN300-386
Certifications: Safety EMC	 UL/cUL, UL DEMKO, CE, BSMI, CCC, GOST-R, S-Mark CE, FCC, VCCI, ICES, C-Tick, MIC, CCC, GOST-R, BSMI Class A
Other	Complies with WEEE Directive (2002/96/EC) and RoHS Directive (2002/95/EC)

Dimensions and Weight

Chassis	
Height	88 mm (3.49 in.)
Width	426 mm (16.75 in.)
Depth	714 mm (28.125 in.)
Weight	25.6 kg (56.3 lb.) maximum without rack mounting slide rail kit

System Requirements, Configuration and Management

System Requirements

The Sun Fire X4450 servers run the Solaris 10, standard Linux distributions, Microsoft Windows, as well as VMware operating systems. For a list of supported OS versions, please refer to section “Sun Fire X4450 Server Operating Systems Support “

System Configuration

The Sun Fire X4450 servers have the following standard components:

- Up to 4 Intel Xeon processors 7200, 7300 and 7400 series
- Thirty-two memory slots supporting PC2-5300 667 MHz ECC Fully Buffered DDR2 DIMMs - Up 128 GB of main memory with 4GB DIMMs
- Eight 2.5-inch SAS disk drives (with add-on SAS Host Bus Adapter)
- DVD+/-RW drive (optional)
- Four 10/100/1000Base-T Ethernet ports
- Five USB 2.0 ports: two front, two rear, one internal
- Six MD2 Low Profile PCI-Express slots (two x8 and four x4 slots)
- Redundant hot-swappable fan modules
- 1050 Watt or 1100 Watt AC power supply (hot-swappable in redundant configuration)
- Lights Out Manager (Embedded LOM or ILOM) with dedicated 10/100BaseT Ethernet port
- 19-inch rack-mount kit (optional)
- Cable management arm (optional)

Licensing/Usage

The Sun Fire X4450 servers can be ordered with the Solaris 10 and Sun Java Enterprise Server pre-installed. Solaris 10 RTU is given when the system is registered with Sun.

MTBF Information

The MTBF (Mean Time Between Failure) for the Sun Fire X4450 servers vary depending upon configuration. For more specific information, please refer to MTBF Tool at http://ram-server.eng

BTU Information

BTUs/hr for the Sun Fire X4450 servers will vary depending upon configuration.

Min BTU:

887.4 BTUs/hr at idle for Sun Fire X4450 with two Quad-Core Intel Xeon L7345 processors (2x4MB L2, 1.86 GHz, 1066 MHz FSB, 50W), 4x1GB PC2-5300 667 MHz ECC Fully-Buffered DDR2 DIMM, no DVD, one 73GB 10K RPM 2.5” drive, 8-port internal SAS Host Bus Adapter,

one power supply unit.

Max BTU:

3454 BTUs/hr at max stress for Sun Fire X4450 with four Quad-Core Intel Xeon X7350 processors (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 130W), 32x4GB PC2-5300 667 MHz ECC Fully-Buffered DDR2 DIMM, DVD+/-RW drive, eight 146GB 10K RPM 2.5" SAS drive, six PCI-Express cards, two power supply units.

Power Consumption Information

Please refer to Power Calculator at http://www.sun.com/servers/x64/x4450/calc/index.jsp

Rack Mounting

The Sun Fire X4450 server is 3.49 inches (88 mm) high, 16.75 inches (426 mm) wide and 28.125 inches (714 mm) deep. The air-flow direction is from front to back. I/O ports are located on the front and rear panels. Informational LEDs are located on the front and rear panels. Access to the power connection is at the rear of the chassis.

Every current Sun Rack is supported for in-field installation and for shipment pre-installed by Sun Customer Ready (CRS) program. Field installation in the Sun Fire Hardware Expansion Cabinet, the Sun StorEdge(TM) Array Cabinet as well as 3rd party ANSI/EIA 310-D-1992 or IEC 60927 compliant cabinets is supported with the optional Rack Mounting Slide Rail Kit (X6326A) and optional Cable Management Arm (X6324A).

The optional rack mounting slide rail kit is a 4-point mounted slide rail kit and is designed to enable Sun Fire X4450 servers to be racked in the Sun Rack 938, the Sun Rack 1038, the Sun Rack 1042 and 3rd party ANSI/EIA 310-D-1992 or IEC 60927 compliant racks. No other kits will be available to allow 2 point, front-mount, nor mid-mount configuration. The slide kit will include hardware that enables mounting to any of the following types of rack rails:

- 6 mm threaded holes
- #10-32 threaded holes
- #10 clearance holes
- square unthreaded holes per EIA and IEC standards listed above

Rack requirements to support installation are:

- rack horizontal opening and unit vertical pitch conforming to ANSI/EIA 310-D-1992 and/or IEC 60927
- four-post structure (i.e. mounting at both front and rear)
- distance between front and rear mounting planes between 610mm and 915mm (24 to 36 inches)
- clearance depth (to front cabinet door) in front of front rack mounting plane at least 25.4mm (1 inch)
- clearance depth (to rear cabinet door) behind front rack mounting plane at least 800mm (31.5inches), or 700mm (27.5inches) without cable management arm
- clearance width (between structural supports, cable troughs, etc.) between front and rear mounting planes at least 456mm (18 inches)

Please note that not all 3rd party racks meet these parameters and are not compatible with

these slide rail kits. Also,some third-party rack vendors do not support a completely filled rack with this type of server, due to the amount of power required.

The Tool-less Rack Mounting Rail Kit cannot be used to mount servers prior to shipment.

Rack Density

Sun Fire X4450 server rack density will vary widely based on systems installed, power distribution installation (in-cabinet, external), power source (single-phase, three-phase) and whether redundant power is required.

When using the 60A 3 phase MPS, up to 18 Sun Fire X4450 can be mounted in the Sun Rack 938 or the Sun Rack 1038, and up to 20 Sun Fire X4450 can be mounted in the Sun Rack 1042.

Sun Cluster Support

The Sun Fire X4450 servers are supported by Sun Cluster.

For the latest information, please go to: http://suncluster.sfbay.sun.com

Origin Statement

The Sun Fire X4450 servers have components from various countries of origin. The motherboard is manufactured in China. The power supply is from Thailand. The chassis is manufactured in Mexico. The commodity parts such as disk drivers, memory, and CPU come from a variety of countries. Final system assembly is performed in Aachen, Germany or Fremont, California, USA.

Hardware Global compliance

Hardware Global compliance for this product complies with the guidelines as specified for hardware at: http://global.eng/compliance/i18nl10nbigrules.html

The localized documents will be located at:
http://www.sun.com/products-n-solutions/hardware/docs/Servers/

Ordering Information

Sun Fire X4450 Server RoHS Compliant Standard Configurations

Part Number	Description	Availability
B15-VR2-CC-4GB-JL6	Sun Fire X4450: 2x Quad-Core Intel Xeon E7320 (2x2MB L2, 2.13 GHz, 1066 MHz FSB, 80W), 4x 1GB FB-DIMM, no HDD, DVD+/-RW, 1x 1050W PSU, embedded LOM	Announce 10/09/07 RR 11/09/07
B15-VZ4-CB-8GB-JL6	Sun Fire X4450: 4x Dual-Core Intel Xeon E7220 (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 80W), 8x 1GB FB-DIMM, no HDD, DVD+/-RW, 2x 1050W PSU, embedded LOM	Announce 10/09/07 RR 11/09/07
B15-VW4-AC-8GB-JL6	Sun Fire X4450: 4x Quad-Core Intel Xeon L7345 (2x4MB L2, 1.86 GHz, 1066 MHz FSB, 50W), 8x 1GB FB-DIMM, no HDD, DVD+/-RW, 2x 1050W PSU, embedded LOM	Announce 10/09/07 RR 11/09/07
B15-VJ4-CC-16G-KD6	Sun Fire X4450: 4x Quad-Core Intel Xeon E7340 (2x4MB L2, 2.40 GHz, 1066 MHz FSB, 80W), 8x 2GB FB-DIMM, 4x 146GB 10K RPM SAS HDD, SAS RAID HBA, DVD+/-RW, 2x 1050W PSU, embedded LOM	Announce 10/09/07 RR 11/09/07
B15-VZ4-FC-16G-KD6	Sun Fire X4450: 4x Quad-Core Intel Xeon X7350 (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 130W), 8x 2GB FB-DIMM, 4x 146GB 10K RPM SAS HDD, SAS RAID HBA, DVD+/-RW, 2x 1050W PSU, embedded LOM	Announce 10/09/07 RR 11/09/07 EOL 08/05/08
B15-VJ2-CC-8GB-JLB	Sun Fire X4450: 2x Quad-Core Intel Xeon E7340 (2x4MB L2, 2.40 GHz, 1066 MHz FSB, 80W), 4x 2GB FB-DIMM, no HDD, no DVD+/-RW, 1x 1050W PSU	Announce 01/08/08 RR 02/15/08
B15-VZ2-FC-8GB-JLB	Sun Fire X4450: 2x Quad-Core Intel Xeon X7350 (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 130W), 4x 2GB FB-DIMM, no HDD, no DVD+/-RW, 1x 1050W PSU, embedded LOM	Announce 01/08/08 RR 02/15/08 EOL 08/05/08
B15-WZ2-FC-8GB-JLB	Sun Fire X4450: 2x Quad-Core Intel Xeon X7350 (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 130W), 4x 2GB FB-DIMM, no HDD, no DVD+/-RW, 1x 1100W PSU, embedded LOM	Announce 07/08/08 RR 07/08/08
B15-WZ4-FC-16G-KD6	Sun Fire X4450: 4x Quad-Core Intel Xeon X7350 (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 130W), 8x 2GB FB-DIMM, 4x 146GB 10K RPM SAS HDD, SAS RAID HBA, DVD+/-RW, 2x 1100W PSU, embedded LOM	Announce 07/08/08 RR 07/08/08
B15-WR2-GC-4GB-JL6	Sun Fire X4450: 2x Intel Xeon E7420 (4-Core, 8MB L3, 2.13 GHz, 1066 MHz FSB, 90W), 4x 2GB FB-DIMM, no HDD, DVD+/-RW, 1x 1100W PSU, ILOM	Announce 09/16/08 RR 10/01/08
B15-WR2-GD-4GB-JLB	Sun Fire X4450: 2x Intel Xeon E7450 (6-Core, 12MB L3, 2.40 GHz, 1066 MHz FSB, 90W), 2x 2GB FB-DIMM, no HDD,no DVD+/-RW, 1x 1100W PSU, ILOM	Announce 09/16/08 RR 10/01/08
B15-WJ4-GD-24G-KD6	Sun Fire X4450: 4x Intel Xeon E7450 (6-Core, 12MB L3, 2.40 GHz, 1066 MHz FSB, 90W), 12x 2GB FB-DIMM, 4x 146GB 10K RPM SAS HDD, SAS RAID HBA, DVD+/-RW, 2x 1100W PSU, ILOM	Announce 09/16/08 RR 10/01/08

Part Number	Description	Availability
B15-WG2-FD-4GB-JLB	Sun Fire X4450: 2x Intel Xeon X7460 (6-Core, 16MB L3, 2.66 GHz, 1066 MHz FSB, 130W), 2x 2GB FB-DIMM, no HDD,no DVD+/-RW, 1x 1100W PSU, ILOM	Announce 09/16/08 RR 10/30/08
B15-WG4-FD-24G-KD6	Sun Fire X4450: 4x Intel Xeon X7460 (6-Core, 16MB L3, 2.66 GHz, 1066 MHz FSB, 130W), 12x 2GB FB-DIMM, 4x 146GB 10K RPM SAS HDD, SAS RAID HBA, DVD+/-RW, 2x 1100W PSU, ILOM	Announce 09/16/08 RR 10/30/08

Sun Fire X4450 Server XATO RoHS-Compliant Chassis Options

Part Number	Description	Availability
B15-AA	Sun Fire X4450 Base Chassis with 4x processor sockets, 32x memory slots, 8x 2.5” disk bays, 1x DVD drive bay, 6x PCI-Express slots, 4x GigE ports, 5 USB 2.0 ports, embedded LOM, 1x 1050W PSU	Announce 10/09/07 RR 11/30/07
B15-BA	Sun Fire X4450 Base Chassis with 4x processor sockets, 32x memory slots, 8x 2.5” disk bays, 1x DVD drive bay, 6x PCI-Express slots, 4x GigE ports, 5 USB 2.0 ports, embedded LOM, 1x 1100W PSU	Announce 07/08/08 RR 07/08/08
B15-CA	Sun Fire X4450 Base Chassis with 4x sockets for Intel Xeon processor 7400 series, 32x memory slots, 8x 2.5” disk bays, 1x DVD drive bay, 6x PCI-Express slots, 4x GigE ports, 5 USB 2.0 ports, ILOM, 1x 1100W PSU	Announce 09/16/08 RR 10/30/08

Power Cords

Due to regulatory requirements of other countries, Sun Fire X4450 server Standard Configurations and XATO Chassis options are required to bundle their power cord separately. These are shippable anywhere in the world.

Each Geography must select their specific Country Power cord kit as listed in table to be included with each system or chassis.

Part Number	Description
X311L	(US/Asia (except China) Localized power cord kit
X312E	(China) Localized power cord kit
X312L	(Continental Europe) Localized power cord kit
X314L	(Switzerland) Localized power cord kit
X317L	(U.K.) Localized power cord kit
X333A-25-10-IL	Power cord, Israel, 2.5m, SI-32, 10A, C13
X333A-25-15-JP	Power cord, Japan, 2.5m, PSE 5-15, 15A, C13
X333F-25-15--JP	Power cord, Japan, 2.5m, PSE 6-15, 15A, C13
X333A-25-15-TW	Power cord, Taiwan, 2.5m, CNS10917, 15A, C13

Part Number	Description
X383L	(Danish) Localized power cord kit
X384L	(Italian) Localized power cord kit
X386L	(Australian) Localized power cord kit
X312F	(Argentina) Localized power cord kit
X312G	(Korean) Localized power cord kit
X320A	N. America/Asia 220V power cord kit
X340L	Localized power cord kit for N. America/Asia220V

Sun Fire X4450 System and Processor Upgrade Offerings

For system upgrade from Sun or non-Sun systems to the Sun Fire X4450, or for processor upgrade from Intel Xeon processor 7200/7300 series to the 7400 series, see:

http://www.sun.com/tradeins/offerings/x64intel/

Sun Fire X4450 Server RoHS Compliant Options

The CRS part numbers are "Customer Ready Systems", and can be combined with other Sun and 3rd party products into customer-specific systems by the Sun CRS program. These servers are identical to their Standard Configuration counterparts, but require CRS-specific part numbers for factory integration.

The following part numbers are available as X- , XATO and CRS options as noted for the Sun Fire X4450 servers.

X-Option	XATO	CRS	Description	Notes
X6370A	**6370A**	**Mfg P/N**	2x Dual-Core Intel Xeon E7220 processor (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 80W)	Announce 10/09/07 RR 11/30/07
X6371A	**6371A**	**Mfg P/N**	2x Quad-Core Intel Xeon L7345 processor (2x4MB L2, 1.86 GHz, 1066 MHz FSB, 50W)	Announce 10/09/07 RR 11/30/07
X6372A	**6372A**	**Mfg P/N**	2x Quad-Core Intel Xeon E7320 processor (2x2MB L2, 2.13 GHz, 1066 MHz FSB, 80W)	Announce 10/09/07 RR 11/30/07
X6373A	**6373A**	**Mfg P/N**	2x Quad-Core Intel Xeon E7340 processor (2x4MB L2, 2.40 GHz, 1333 MHz FSB, 80W)	Announce 10/09/07 RR 11/30/07
X6374A	**6374A**	**Mfg P/N**	2s Quad-Core Intel Xeon X7350 processor (2x4MB L2, 2.93 GHz, 1066 MHz FSB, 130W)	Announce 10/09/07 RR 11/30/07

X-Option	XATO	CRS	Description	Notes
X6375A	**6375A**	**Mfg P/N**	1x Intel Xeon processor E7420 (4-Core, 8MB L3, 2.13 GHz, 1066 MHz FSB, 90W)	Announce 09/16/08 RR 10/30/08
X6376A	**6376A**	**Mfg P/N**	1x Intel Xeon processor E7440 (4-Core, 16MB L3, 2.40 GHz, 1066 MHz FSB, 90W)	Announce 09/16/08 RR 10/30/08
X6377A	**6377A**	**Mfg P/N**	1x Intel Xeon processor L7455 (6-Core, 12MB L3, 2.13 GHz, 1066 MHz FSB, 65W)	Announce 09/16/08 RR 10/30/08
X6378A	**6378A**	**Mfg P/N**	1x Intel Xeon processor E7450 (6-Core, 12MB L3, 2.40 GHz, 1066 MHz FSB, 90W)	Announce 09/16/08 RR 10/30/08
X6379A	**6379A**	**Mfg P/N**	1x Intel Xeon processor X7460 (6-Core, 16MB L3, 2.66 GHz, 1066 MHz FSB, 130W)	Announce 09/16/08 RR 10/30/08
X6380A	**6380A**	**Mfg P/N**	2GB memory kit with 2x1GB PC2-5300 667 MHz ECC fully buffered DDR2 DIMM	Announce 10/09/07 RR 11/30/07
X6381A	**6381A**	**Mfg P/N**	4GB memory kit with 2x2GB PC2-5300 667 MHz ECC fully buffered DDR2 DIMM	Announce 10/09/07 RR 11/30/07
X6382A	**6382A**	**Mfg P/N**	8GB memory kit with 2x4GB PC2-5300 667 MHz ECC fully buffered DDR2 DIMM	Announce 10/09/07 RR 11/30/07
X6380A	**6380A**	**Mfg P/N**	Two FB-DIMM slot filler panels	Announce 10/09/07 RR 11/30/07
X6331A	**6331A**	**Mfg P/N**	Disk bay filler panel	Announce 10/09/07 RR 11/30/07
XRA-SS2CF-73G10K	**RA-SS2CF-73G10K**	**Mfg P/N**	73GB 10K RPM 2.5” SAS disk drive	Announce 10/09/07 RR 11/30/07
XRA-SS2CF-146G10K	**RA-SS2CF-146G10K**	**Mfg P/N**	146GB 10K RPM 2.5” SAS disk drive	Announce 10/09/07 RR 11/30/07
XRA-SS2CF-73G15K	**RA-SS2CF-73G15K**	**Mfg P/N**	73GB 15K RPM 2.5” SAS disk drive	Announce 12/04/07 RR 02/15/08
-	**6332A**	**Mfg P/N**	DVD drive filler panel	Announce 10/09/07 RR 11/30/07

X-Option	XATO	CRS	Description	Notes
X6323A	**6323A**	**Mfg P/N**	DVD+/-RW drive	Announce 10/09/07 RR 11/30/07
-	**6334A**	**Mfg P/N**	1050W/1100W power supply filler panel	Announce 10/09/07 RR 11/30/07
X6328A	**6328A**	**Mfg P/N**	Redundant hot-swappable 1050W power supply	Announce 10/09/07 RR 11/30/07
X6385A	**6385A**	**Mfg P/N**	Redundant hot-swappable 1100W power supply	Announce 07/08/08 RR 07/08/08
X6324A	**-**	**Mfg P/N**	Cable management arm	Announce 10/09/07 RR 11/30/07
X6325A	**6325A**	**-**	Tool-less rack mounting slide rail kit	Announce 10/09/07 RR 11/30/07
X6326A	**6326A**	**Mfg P/N**	Rack mounting slide rail kit	Announce 10/09/07 RR 11/30/07
-	**6363A**	**Use Solaris and JES -IP part #**	Solaris 10 and Java ES pre-install on SAS disk drives connected to 8-port internal SAS Host Bus Adapter for Sun Fire X4450	Announce 10/09/07 RR 11/30/07
-	**6364A**	**Use Solaris and JES -IP part #**	Solaris 10 and Java ES pre-install on SAS disk drives connected to 8-port internal SAS SRL RAID Host Bus Adapter for Sun Fire X4450	Announce 10/09/07 RR 11/30/07
SG-XPCIE8SAS-I-Z	**SG-PCIE8SAS-I-Z**	**Mfg P/N**	8-port internal SAS host bus adapter	Announce 10/09/07 RR 11/30/07
SGXPCIESAS-R-INT-Z	**SG-PCIESAS-R-INT-Z**	**Mfg P/N**	8-port internal RAID host bus adapter	Announce 10/09/07 RR 11/30/07
SG-XPCIE8SAS-E-Z	**-**	**Mfg P/N**	8-port external SAS host bus adapter	Announce 10/09/07 RR 11/30/07
SGXPCIESAS-R-EXT-Z	**-**	**Mfg P/N**	8-port external RAID host bus adapter	Announce 01/29/08 RR 09/22/08
SG-XPCIE2SCSIU320Z	**-**	**SG-PCIE2SCSIU320Z**	Ultra320 SCSI 2-port host bus adapter	Announce 10/09/07 RR 11/30/07

X-Option	XATO	CRS	Description	Notes
SG-XPCIE1FC-QF4	**-**	**SG-PCIE1FC-QF4**	4Gb single-port FC-AL PCI-Express card	Announce 10/09/07 RR 11/30/07
SG-XPCIE2FC-QF4	**-**	**SG-PCIE2FC-QF4**	4Gb dual-port FC-AL PCI-Express card	Announce 10/09/07 RR 11/30/07
SG-XPCIE1FC-EM4	**-**	**SG-PCIE1FC-EM4**	4Gb single-port FC-AL PCI-Express card	Announce 10/09/07 RR 11/30/07
SG-XPCIE2FC-EM4	**-**	**SG-PCIE2FC-EM4**	4Gb dual-port FC-AL PCI-Express card	Announce 10/09/07 RR 11/30/07
X1236A-Z	**-**	**1236A-Z**	Dual-port 4x Infiniband host channel adapter	Announce 10/09/07 RR 11/30/07
X4217A-Z		**Mfg P/N**	Sun DDR IB-HCA PCI-Express card	Announce 01/08/08 RR 03/15/08
X7280A-2	**-**	**7280A-2**	Dual Gigabit-Ethernet PCI-Express card (copper)	Announce 10/09/07 RR 11/30/07
X7281A-2	**-**	**7281A-2**	Dual Gigabit-Ethernet PCI-Express card (fiber)	Announce 10/09/07 RR 11/30/07
X4446A-Z	**-**	**Mfg P/N**	Quad Gigabit-Ethernet PCI-Express card (copper)	Announce 10/09/07 RR 11/30/07
X1027A-Z	**-**	**Mfg P/N**	10 Gigabit-Ethernet PCI-Express card	Announce 10/09/07 RR 11/30/07
X5558A	**-**	**Mfg P/N**	10 Gigabit-Ethernet short range Transceiver	Announce 10/09/07 RR 11/30/07
X5560A-Z	**-**	**Mfg P/N**	10 Gigabit-Ethernet long range Transceiver	Announce 10/09/07 RR 11/30/07
X6000A	**-**	**6000A**	Sun Crypto Accelerator 6000 SSL/IPsec accelerator PCI-Express card with keystore and FIPs support	Announce 10/09/07 RR 11/30/07
X6099A	**-**	**Mfg P/N**	IPsec enabler CD	Announce 10/09/07 RR 11/30/07

X-Option	XATO	CRS	Description	Notes
X1106A-Z	**-**	**Mfg P/N**	Sun 10 GbE XFP SR PCI-Express card containing the Intel(R) 82598 10 Gigabit Ethernet controller and fixed transceivers	Announce 04/15/08 RR 04/15/08
X1107A-Z	**-**	**Mfg P/N**	Sun Dual 10 GbE XFP SR PCI-Express card containing the Intel(R) 82598 10 Gigabit Ethernet controller and fixed transceivers	Announce 04/15/08 RR 04/15/08

General Configuration Notes:

1. Dual processor systems can be expanded with two more processors of the identical model/speed only, e.g. 2X Quad-Core Intel Xeon E7320 processor based system can only add two more Quad-Core Intel Xeon E7320 processor. Mixing with a different processor is not supported. Systems configured with one processor or three processors are not supported with Intel Xeon processor 7200/7300 series, and are supported with Intel Xeon processor 7400 series.
2. Memory must be installed in pairs. Pairs of different densities may be mixed, e.g. 2x1GB and 2x2GB can be used in the same system chassis.
3. The internal disk drives must be of the same type: they must all be SAS drives or all be SATA drives.
4. All systems are configured with both the SAS cable and SATA cable. There is no need to add the SAS cable kit or the SATA cable kit when adding disk.
5. If RAID 1 mirroring is going to be used, the drives to be mirrorred must be identical in size.
6. There are two Internal SAS host bus adapter options for the Sun Fire X4450 server. The 8-port SAS host bus adapter supports RAID 0, 1, 0+1. The 8-port SAS RAID host bus adapter has 256MB of DDR2 memory and battery-backed write cache for 72 hour backup, and supports RAID 0, 1, 10, 1E, 5, 50, 5EE, 6, 60.

XATO Configuration Notes:

1. XATO allows the configuration of systems to exact customer requirements. This provides the customer with a fully tested and configured system that requires little, if any, additional configuration prior to deployment. All XATO orders require a working configuration.
2. With Intel Xeon processor 7200/7300 series, a minimum of two processors are required. Dual processor systems can be expanded with two more processors of the identical model/speed only, e.g. 2X Quad-Core Intel Xeon E7320 processor based system can only add two more Quad-Core Intel Xeon E7320 processors. Mixing with different processor is not supported. Systems configured with one processor or three processors are not supported.
3. With Intel Xeon processor 7400 series, systems configured with one processor, two processors, three processors or four processors are supported. All processors in the system must be of identical model and speed.
4. Memory must be installed in pairs. Pairs of different densities may be mixed, e.g. 2x1GB and 2x2GB can be used in the same system chassis. There is no memory to processor ratio requirement - all memory slots can be populated in a one processor system or a two processor system. Any memory slots that are not occupied by memory DIMM must have filler panels. These filler panels for emtpy memory DIMM slots help make air flow more efficient in cooling the memory DIMMs, lower the fan RPM and reduce the noise acoustics.
5. A disk filler panel is required for any hard disk drive slot that is not filled.
6. A power supply filler panel is required for any power supply slot not filled.
7. A DVD+/-RW drive or DVD filler panel is required when selecting the B15-AA, B15-BA or B15-CA base chassis.

8. The base system chassis option includes cabling for both SAS and SATA disk drives. There is no need to add the SAS cable kit or the SATA cable kit for configurations with or without disk drives.

Sun Fire X4450 PCI-Express Card Support by OS

For the latest information on PCI-Express card support, go to
http://www.sun.com/servers/x64/x4450/optioncards.jsp

PCI-Express Card	*Sun P/N*	*Max Config*	*S10*	*RHEL 4 RHEL 5*	*SLES 10*	*Win 2003*
Software RAID 0,1	Onboard SATA controller	N/A	Yes	Yes	Yes	Yes
8-port Internal SAS HBA	SG-PCIE8SAS-I-Z; SG-XPCIE8SAS-I-Z	TBD	Yes	Yes	Yes	Yes
8-port External SAS HBA	SG-XPCIE8SAS-E-Z	TBD	Yes	Yes	Yes	Yes
8-port Internal SAS RAID HBA	SGPCIESAS-R-INT-Z; SGXPCIESAS-R-INT-Z	TBD	Yes	Yes	Yes	Yes
8-port External SAS RAID HBA	SGXPCIESAS-R-EXT-Z	TBD	Yes	Yes	Yes	Yes
Ultra320 SCSI 2-port HBA	SG-XPCIE2SCSIU320Z	TBD	Yes	Yes	Yes	Yes
4Gb Single-Port FC-AL	SG-XPCIE1FC-QF4	TBD	Yes	Yes	Yes	Yes
4Gb Dual-Port FC-AL	SG-XPCIE2FC-QF4	TBD	Yes	Yes	Yes	Yes
4Gb Single-Port FC-AL	SG-XPCIE1FC-EM4	TBD	Yes	Yes	Yes	Yes
4Gb Dual-Port FC-AL	SG-XPCIE2FC-EM4	TBD	Yes	Yes	Yes	Yes
Sun DDR IB-HCA PCI-Express card	X4217A-Z	TBD	TBD	TBD	TBD	TBD
Dual Port 4x Infiniband HBA	X1236A-Z	TBD	TBD	TBD	TBD	TBD
Dual Gigabit-Ethernet (copper)	X7280A-2	TBD	TBD	TBD	TBD	TBD
Dual Gigabit-Ethernet (fiber)	X7281A-2	TBD	TBD	TBD	TBD	TBD
Quad Gigabit-Ethernet (copper)	X4446A-Z	TBD	TBD	TBD	TBD	TBD
10 Gigabit-Ethernet (fiber)	X1027A-Z	TBD	TBD	TBD	TBD	TBD
10 Gigabit Ethernet SR XFP Transceiver	X5558A	TBD	TBD	TBD	TBD	TBD
10 Gigabit Ethernet LR XFP Transceiver	X5560A	TBD	TBD	TBD	TBD	TBD
Sun Crypto Accelerator 6000 SSL/IPsec	X6000A	TBD	TBD	TBD	TBD	TBD
IPsec enabler CD	X6099A	TBD	TBD	TBD	TBD	TBD

PCI-Express Card	*Sun P/N*	*Max Config*	*S10*	*RHEL 4 RHEL 5*	*SLES 10*	*Win 2003*
Sun 10 GbE XFP SR PCI-Express card containing the Intel(R) 82598 10 Gigabit Ethernet controller and fixed transceivers	X1106A-Z	TBD	TBD	TBD	TBD	TBD
Sun Dual 10 GbE XFP SR PCI-Express card containing the Intel 82598 10 Gigabit Ethernet controller and fixed transceivers	X1107A-Z	TBD	TBD	TBD	TBD	TBD

Sun Fire X4450 Storage Options

For the latest information on PCI-Express card support, go to
http://www.sun.com/servers/x64/x4450/storage.jsp

Workgroup Storage Options	*Sun SKU*	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
Sun StorageTek 2540 FC Array	ST2540	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Sun StorageTek 2530 SAS Array	ST2530	SG-XPCIE8SAS-E-Z	SG-XPCIE8SAS-E-Z	SG-XPCIE8SAS-E-Z	SG-XPCIE8SAS-E-Z
Sun StorageTek 1400 SAS Array	ST1400	SG-XPCIE8SAS-E-Z, SGXPCIESAS-R-EXT-Z	SG-XPCIE8SAS-E-Z, SGXPCIESAS-R-EXT-Z	SG-XPCIE8SAS-E-Z, SGXPCIESAS-R-EXT-Z	SG-XPCIE8SAS-E-Z, SGXPCIESAS-R-EXT-Z
Sun StorEdge 3320 SCSI (RAID)	XTA3320	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
Sun StorEdge 3320 SCSI (JBOD)	XTA3320	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
Sun StorEdge 3510 FC Array (RAID)	XTA3510	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Sun StorEdge 3510 FC Array (JBOD)	XTA3510	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Sun StorEdge 3120 SCSI (JBOD)	XTA3120	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
Sun StorageTek 2510 iSCSI Array	ST2510	Ethernet	Ethernet	Ethernet	Ethernet

Midrange Storage Options	*Sun SKU*	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
Sun StorageTek 6140	ST6140	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4

Midrange Storage Options	*Sun SKU*	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
Sun StorageTek 6540	ST6540	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4

The ST9900 High End Data Center Storage System supports a wide variety of Sun servers based on SPARC, AMD Opteron and Intel Xeon processors. Please refer to your local Sun Storage Sales or SE Specialist, and have them refer to the following documents:

- **"What Works With What" document located at SunWin Token 344150**
- **"Feature Availability Report" document located at SunWin Token 385413**

Data Center Storage Options	*Sun SKU*	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
Sun StorEdge 9985	SE9985	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Sun StorEdge 9990	SE9990	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Sun StorEdge 9970	SE9970	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Sun StorEdge 9980	SE9980	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4

NAS Storage Options	*Sun SKU*	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
Sun StorageTek 5220	XTB5220	Ethernet	Ethernet	Ethernet	Ethernet
Sun StorageTek 5320	XTB5320	Ethernet	Ethernet	Ethernet	Ethernet

Sun Fire X4450 Tape and Applications

Standalone Tape Options	*Sun SKU*	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
DAT 72 Desktop (SCSI)	SG-XTAPDAT72-D2	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
DAT 72 Desktop (USB)	DAT72-USB-DTOP-Z	USB	USB	USB	USB
DAT 72 1U HH Rackmount	SG-XTAPDAT72-R-2	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
LTO 2 HH Desktop (SCSI)	SG-XTAPLT02V-D	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
LTO 3 FH Desktop (SCSI)	SG-XTAPLT03-D-2	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
LTO 2 1U HDD Rackmount (SCSI)	SG-XTAPLT02V-R	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
LTO 3 2U FH Rackmount (SCSI)	SG-XTAPLT03-R-Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
SDLT 320 Desktop (SCSI)	SG-XTAPSDLT320-D-Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
SDLT 600 Desktop (SCSI)	SG-XTAPSDLT600-D-Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
SDLT 600 2U FH Rackmount (SCSI)	SG-XTAPSDLT6-R-Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
DLT S4 Desktop (SCSI)	DLTS4-DTOP-SC-DR-Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
LTO 4 FH Desktop (SCSI & SAS)	LTO4-HP-SC-DTOP-Z, LTO4-HP-SAS-DTOP-Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z

Tape and library support varies by backup storage applications listed below. Please refer to your local Sun Storage Sales or SE Specialist, and have them refer to the "Library, Tape and Application" support matrix.

Tape Backup Storage Applications	*Sun SKU*	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
Autoloader C2 (2RU) SCSI	**SG-XAUTO8LTO3-C2, SG-**XAUTO16LTO3-C2, SG-XAUTO8LSDTO3-C2, SG-XAUTO16LSDTO3-C2	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
Tape Library C4 (4RU) SCSI & FC	**SG-XLIBLTOS-C4, SG-**XLIBSDLTS-C4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Autoloader SL24 SCSI & FC	**SL24-IL3-SCSI-Z SL24-IL3-FC-Z SL24-IL2H-SCSI-Z**	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Tape Library SL48 SCSI & FC	**SL48-IL3-SCSI-Z SL48-IL3-FC-Z SL48-IL2H-SCSI-Z**	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
StorageTek SL500 SCSI	**SL500-30-SCSI-Z, SL500-50-**SCSI-Z	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4

Tape Backup Storage Applications	***Sun SKU***	***S10***	***RHEL 4, RHEL 5***	***SLES 10***	***Win 2003***
StorageTek SL500 FC	**SL500-30-FC-Z, SL500-50-FC-**Z	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
StorageTek L180 SCSI & FC	YSL-180-140-HV-STK, YSL-180-174-HV-STK, YSL-184-84-HV-STK	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE2SCSIU320Z, SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
StorageTek L1400 SCSI	SL1400MA-STK-Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z	SG-XPCIE2SCSIU320Z
StorageTek L1400 FC	SL1400-M1-STK-Z	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4
Sun StorageTek SL8500 FC	SL8500-BASE-LIB-Z	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4	SG-XPCIE1FC-QF4, SG-XPCIE2FC-QF4, SG-XPCIE1FC-EM4, SG-XPCIE2FC-EM4

Tape Backup Storage Applications	***S10***	***RHEL 4, RHEL 5***	***SLES 10***	***Win 2003***
Symantec (Veritas) NetBackup	Client Only	Client/Server 32-bit/64-bit	Client Only	Client/Server 32-bit
Sun EBS / EMC (Legato) Networker	Client/Server 64-bit	Client/Server 32-bit/64-bit	Client/Server 64-bit	Client/Server 32-bit/64-bit
CA BrightStor ARCserve	Not supported	Client/Server 32-bit/64-bit	Client/Server 64-bit	Client/Server 32-bit/64-bit
IBM TSM	Client/Server 32-bit/64-bit	Client/Server 32-bit/64-bit	Not supported	Client/Server 32-bit/64-bit
Symantec (Veritas) Backup Exec	Not supported	Not supported	Not supported	Client/Server 32-bit

Tape Backup Storage Applications	*S10*	*RHEL 4, RHEL 5*	*SLES 10*	*Win 2003*
HP DataProtector	Not supported	Client/Server 64-bit	Client/Server 64-bit	Client/Server 64-bit
BakBone NetVault	Client/Server 32-bit/64-bit	Client/Server 32-bit/64-bit	Client/Server 64-bit	Client/Server 32-bit/64-bit

Services

Warranty Support

The Sun Fire X4450 server has a three year, next business day warranty.

Duration:	3 years Next Business Day
HW Coverage Hours:	Business Hours
HW Response Times:	Next Business Day
Delivery Method:	Parts Exchange or Onsite
HW Phone Coverage:	Business Hours
HW Phone Response Time:	8 hours

Sun Service Plans

Sun Services offers a full range of services to assist customers who deploy the Sun Fire X4450 server. Whether it is architecture services, implementation services, or services to help customers manage the servers once released to production, Sun has the right services during every phase of the project's life cycle.

Sun provides a service plan to meet every customer's needs. Sun System Packs optimize system performance and help maintain high availability. A Sun System Pack combines Sun's proven technology with award-winning support services to deliver improved system availability and operational efficiencies. Moreover, the combined system and support pricing is often less than the traditional cost of purchasing the items as separate and individual components. The Sun System Pack for the Sun Fire X4450 server offers several options so customers can choose the coverage model that suits their business needs.

Customers can purchase a System Pack that includes both hardware and operating system support, or they can choose a System Pack with hardware only support.

More information: http://sun.com/systempacks

Customers who elect to not purchase the server and support as an integrated Sun System Pack can choose to purchase SunSpectrum support separately. The SunSpectrum Service Plan for full system support ranging from basic to mission-critical service levels, abd the Sun Hardware Only Service Plan.

- SunSpectrum Service Plans: Get integrated hardware and software support.
- Hardware Service Plans: Provide an affordable, convenient way to help maintain your Sun systems. With easy access to Sun technical support and quick system repair or replacement.

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 may not suit customer needs. It's just that 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: www.sun.com/comparewarranty

SunSpectrum Service Plans

SunSpectrum Service Plans provide integrated hardware and Solaris OS support for Sun systems as well as comprehensive storage system support. For each Sun system, customers can choose the service plan that best fits their needs. Customers benefit from lower SunSpectrum Instant Upgrade (SIU) pricing when purchasing support at time of system sale. More information at: www.sun.com/service/support/sunspectrum

SunSpectrum Service Plan Highlights:
- Integrated whole-system support, *including the operating system*
- All the essentials for one great price
- Priority service
- No "per incident" limits
- Includes Solaris Operating System releases and updates
- Resources for proactive system management
- A choice of four simple plans
- Proven return on investment * [1]

*1 Based on Total Economic Impact Study by Forrester Research. This study is available at: sun.com/service/support/sunspectrum

SunSpectrum Service Plans

Features	Platinum Service Plan Mission-critical Systems	Gold Service Plan Business-critical Systems	Silver Service Plan Basic System Support	Bronze Service Plan Self-Maintenance Support
Telephone and Online Technical Support	24/7 Live transfer	24/7 Live transfer	8-8, M-F Live transfer	8-5, M-F 4hr response
One-stop Interoperability Assistance	Yes	Yes	No	No
Hardware Service Coverage	24/7 2hr On-site Service	8-8, M-F 4hr On-site Service	8-5, M-F 4hr On-site Service	Replacement parts 2nd business day
Solaris™ Releases	Yes	Yes	Yes	Yes
On-demand Solaris™ Updates	Yes	Yes	Yes	Yes
Online System Admin Resources	Yes	Yes	Yes	Yes
Support Notification Services	Yes	Yes	Yes	Yes
SunSpectrum℠ eLearning Library	Yes	Yes	Yes	Yes
System Health Check Subscription	Yes	No	No	No
Additional Services for Qualifying Sites	Customer sites meeting an annual SunSpectrum contract minimum (approximately $160,000 USD) can receive additional services including the creation of a personalized support plan, periodic support reviews, patch assessments and educational services. For local qualification criteria, visit sun.com/service/support/localinfo.html			

- Availability of specific features, coverage hours and response times may vary by location or product.
- Response times are determined by customer-defined priority. The response times shown are for service requests designated by the customer as "Priority 1."
- To receive the best support, Sun recommends that customers install Sun Net Connect software on SPARC®-based systems. This software creates a secure, customer-controlled link to the Sun Solution Center which helps enable expedited Solaris OS troubleshooting, remote diagnostics, and a number of customer-enabled alerting and reporting functions.

Part Number	Description
W9D-B15-1S	Sun Fire X4450 server upgrade to 1 year of Silver support
W9D-B15-1G	Sun Fire X4450 server upgrade to 1 year of Gold support
W9D-B15-24-1G	Sun Fire X4450 server upgrade to Gold support + 7X24 On-Site support for 1 year
W9D-B15-1P	Sun Fire X4450 server upgrade to 1 year of Platinum support
W9D-B13-2S	Sun Fire X4450 server upgrade to 2 years of Silver support
W9D-B13-2G	Sun Fire X4450 server upgrade to 2 years of Gold support
W9D-B13-24-2G	Sun Fire X4450 server upgrade to Gold support + 7X24 On-Site support for 2 years
W9D-B13-2P	Sun Fire X4450 server upgrade to 2 years of Platinum support
W9D-B13-3S	Sun Fire X4450 server upgrade to 3 years of Silver support
W9D-B13-3G	Sun Fire X4450 server upgrade to 3 years of Gold support
W9D-B13-24-3G	Sun Fire X4450 server upgrade to Gold support + 7X24 On-Site support for 3 years
W9D-B13-3P	Sun Fire X4450 server upgrade to 3 years of Platinum support

Sun[sm] System Service Plans for Windows OS

The Sun[sm] System Service Plans for Windows OS are designed to be flexible enough to cover most customers' requirements for support:
Highlights:
• Integrated whole-system support for Sun's X64 systems running Microsoft Windows
• All the essentials for one great price
• Priority service
• No "per incident" limits

Sun System Service Plans for Windows OS: Features Matrix

Features	Premium Service Plan (Mission Critical Systems)	Global Service Plan (Business Critical Systems)	Standard Service Plan (Same Day Support)	Basic Service Plan (Non-Critical Support)
Telephone and Online Technical Support	24/7 Live transfer	24/7 Live transfer	8-8, M-F Live transfer	8-5, M-F 4hr response
Hardware Service Coverage	24/7 2hr onsite	8-8, M-F 4hr onsite	8-5, M-F 4hr onsite	Replacement Parts 2nd Business Day
Online System Admin Resources	Yes	Yes	Yes	Yes
Support Notification Services	Yes	Yes	Yes	Yes

* Availability of specific features, coverage hours and response times may vary by location and/or product.
* Response times are determined by customer defined priority. The response times shown are for service requests designated by the customer as "Priority 1".

Warranty Upgrade to Sun[sm] System Service Plans for Windows OS for Sun Fire X4450 Server

The following are part numbers and descriptions for the warranty upgrade to Sun[sm] System Service Plans for Windows OS

Part Number	Description

W9D-B15W-1S	Sun Fire X4450 Server with Windows Operating System Upgrade to 1 year of Silver support
W9D-B15W-1G	Sun Fire X4450 Server with Windows Operating System upgrade to 1 year of Gold support
W9D-B15W-1P	Sun Fire X4450 Server with Windows Operating System Upgrade to 1 year of Platinum support
W9D-B15W-2S	Sun Fire X4450 Server with Windows Operating System Upgrade to 2 years of Silver support
W9D-B15W-2G	Sun Fire X4450 Server with Windows Operating System Upgrade to 2 years of Gold support
W9D-B15W-2P	Sun Fire X4450 Server with Windows Operating System Upgrade to 2 years of Platinum support
W9D-B15W-3S	Sun Fire X4450 Server with Windows Operating System Upgrade to 3 years of Silver support
W9D-B15W-3G	Sun Fire X4450 Server with Windows Operating System Upgrade to 3 years of Gold support
W9D-B15W-3P	Sun Fire X4450 Server with Windows Operating System Upgrade to 3 years of Platinum support

Warranty Upgrade to Sun HW Only Service for Sun Fire X4450 Server

Part Number	Description
W9D-B15-SD-1H	Sun Fire X4450 server upgrade to 1 year of same day hardware only support
W9D-B15-SD-2H	Sun Fire X4450 server upgrade to 2 years of same day hardware only support
W9D-B15-SD-3H	Sun Fire X4450 server upgrade to 3 years of same day hardware only support
W9D-B15-24-1H	Sun Fire X4450 server upgrade to 1 year of 7x24 hardware only support with 4 hour response
W9D-B15-24-2H	Sun Fire X4450 server upgrade to 2 years of 7x24 hardware only support with 4 hour response
W9D-B15-24-3H	Sun Fire X4450 server upgrade to 3 years of 7x24 hardware only support with 4 hour response
W9D-B15-22-1H	Sun Fire X4450 server upgrade to 1 year of 7x24 hardware only support with 2 hour response
W9D-B15-22-2H	Sun Fire X4450 server upgrade to 2 years of 7x24 hardware only support with 2 hour response
W9D-B15-22-3H	Sun Fire X4450 server upgrade to 3 years of 7x24 hardware only support with 2 hour response

Installation Service for Sun Fire X4450 Server

Sun's exceptional support for server installation is also available for the Sun Fire X4450 server. This service can be purchased at the time of the server sale. Use the following part numbers to order the installation service.

Part Number	Description
EIS-4WYWGS-E	Install 4-socket Workgroup Server
EIS-4WYWGS-E-AH	Install 4-socket Workgroup Server-AH
EIS-4WYWGS-5-E	Install 5 4-socket Workgroup Servers
EIS-4WYWGS-5-E-AH	Install 5 4-socket Workgroup Servers-AH
EIS-4WYWGS-10-E	Install 10 4-socket Workgroup Servers
EIS-4WYWGS-10-E-AH	Install 10 4-socket Workgroup Servers-AH

For additional information about the server installation service see:

http://www.sun.com/service/support/install/entrylevel-server.html

Learning Services

Sun offers a wide range of expert training services, from consulting to courseware to certification, to improve expertise and accelerate productivity, to help enable maximum uptime for IT environments, & to provide lower total cost of ownership for technology investments.

For more information see:
http://www.sun.com/training

All of these courses are available at:

https://slp.sun.com/sun

https://slp.sun.com/partners

Sun Consolidation/Virtualization Services

Sun's consolidation and virtualization solutions span the entire datacenter and are a combination of servers, software, storage, and services that can help reduce IT costs by as much as $2M/year, achieve 99.99 % availability, improve utilization by 80% and simplify infrastructure management.

Services include:

- Sun Consolidation Workshop: two-day collaborative working sessions designed to better understand the current state of your architectural efforts and identify actionable next steps aligned with your business goals.
- Sun Consolidation Justification Review Service: a 10- to 14-day engagement that provides an in-depth justification and total cost of ownership (TCO) analysis.
- Sun Consolidation Architecture Service: an 8- to 14-week engagement designed to articulate the architecture and configuration plan for consolidation and virtualization, across your enterprise or specific to your web or business infrastructures.
- Sun Consolidation Implementation Service: Sun consultants work with your business and IT teams to deploy your new consolidated and virtualized architecture, documenting new management processes, training your staff, and providing a variety of managed services offerings both remotely and on-site.

More information: http://www.sun.com/datacenter/consolidation/service.jsp

Connected Services

Provision new systems. Manage updates and configuration changes with Sun Connection, the Solaris and Linux life cycle management tool.
http://www.sun.com/service/sunconnection/index.jsp

Glossary

1U or RU	One rack unit as defined by the Electronic Industries Alliances (EIA). A vertical measurement equal to 1.75 inches.
ATA	AT-Attachment. A type of hardware interface widely used to connect hard disks, CD-ROMs and tape drives to a PC.
ChipKill^{T}	ChipKill, or advanced ECC memory, is an IBM xSeries memory subsystem technology that increases memory reliability several times over, helping to reduce the chances of system downtime caused by memory failures.
ECC	Error Correcting Code. A type of memory that corrects errors on the fly.
Ethernet 10/100/1000Base-T	The most widely used LAN access method defined by the IEEE 802.3 standard; uses standard RJ-45 connectors and telephone wire. 100Base-T is also referred to as Fast Ethernet. And 1000Base-T is also referred to as Gigabit Ethernet.
FRU	Field Replaceable Unit.
Hot-pluggable	A feature that allows an administrator to remove a drive without affecting hardware system integrity.
Hot-swappable	A feature that allows an administrator to remove and/or replace a device without affecting software integrity. This means that, while the system does not need to be rebooted, the new component is not automatically recognized by the system.
EIDE	See ATA.
IKE	Internet Key Exchange. A method for establishing a security association that authenticates users, negotiates the encryption method and exchanges the secret key. IKE is used in the IPSec protocol.
I/O	Input/output. Transferring data between the CPU and any peripherals.
IPSec	IP Security. A security protocol from the IETF (Internet Engineering Task Force) that provides authentication and encryption over the Internet. Unlike SSL, which provides services at layer 4 and secures two applications, IPSec works at layer 3 and secures everything in the network.
IPMI	Intelligent Platform Management Interface. System management architecture for providing an industry-standard interface and methodology for system management.
L2 cache	Also referred to as Ecache or External Cache. A memory cache external to the CPU chip.
MTBF	Mean Time Between Failures. The average time a component works without failure.
RAM	Random Access Memory.
SAS	Serial Attached SCSI. A serial hardware interface that allows the connection of up to 128 devices and point-to-point data transfer speeds up to 3 Gbits/sec.
SATA	Serial Attached ATA. The resulting evolution of the ATA (IDE) interface from a parallel to a serial and from a master-slave to a point-to-point architecture with data transfer speeds up to 1.5 Gb/s.
SCSI	Small Computer Systems Interface. Pronounced “scuzzy.” An ANSI standard hardware interface that allows the connection of up to 15 peripheral devices to a single bus.
SNMP	Simple Network Management Protocol. A set of protocols for managing complex networks. The first versions of SNMP were developed in the early 80s. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.
X86	Refers to the Intel 8086 family of microprocessor chips as well as compatible microprocessor chips made by Intel and others.

Materials Abstract

All materials will be available on SunWIN except where noted otherwise.

Collateral	Audience	Purpose	SunWIN Token #
Sales Tools			
• *Sun Fire X4450 Server Datasheet*	Customer	Sales Tool,Training	508679
• *Sun Fire X4450 Server Just the Facts*	Sales,SEs, Partners	Sales Tool,Training	508680
• *Sun Fire X4450 Server Customer Presentation*	Sales,SEs, Partners, Customer	Sales Tool,Training	514226
• *Sun Fire X4450 Server Technical Presentation*	Customer Presentation	Sales Tool,Training	508682
• *Sun Fire X4450 Server Sales Presentation*	Sales,SEs, Partners	Training	508683
• *Sun Fire X4450 Server Technical Whitepaper*	Sales,SEs, Partners, Customer	Sales Tool,Training	508684
• *Sun Fire X4450 Server Reviewer's Guide*	Customer	Sales Tool,Training	509344
External Web Sites			
• *Sun Fire X4450 Server Web Site*	http://www.sun.com/servers/x64/x4450		
Internal Web Sites			
• *Sun Fire X4450 Server Internal Web Site*	http://mysales.central/x4450		
Reseller Web Site			
• *Sun Reseller General Information*	http://partner.sun.com/products/servers/x64/x4450		

Competitive Information

Positioning Sun Fire X4450 server

Elevator Pitch

The Sun Fire X4450 server is the smallest 4-socket enterprise class x64 server among top-tier vendors. It is the best 4-socket x64 server in terms of performance, density and energy efficiency that runs Solaris, Linux, Windows and VMware.

Value Proposition

- Sun Fire X4450 is half the size as other 4-socket enterprise class x64 servers from top-tier vendors.
- Sun Fire X4450 has up to two times the memory capacity and integrated networking connectivity than other systems in the same class, leaving more headroom to grow.
- Sun Fire X4450 is energy efficient, consuming less power, requires less cooling and reduces negative impact to the environment. The 1050W power supply in the Sun Fire X4450 is less than half the wattage of similar competitive products.
- Sun Fire X4450 comes standard with embedded Lights Out Manager for system management and monitoring at no extra cost. It also has redundant and hot-swappable components, such as cooling fans, power supplies and disk drives, that make component swap-out fast, easy and effortless.

Key Differentiators

- Half the footprint as other 4-socket enterprise class x64 servers from top-tier vendors
- Highly expandable with up to twice the amount of memory and integrated networking connectivity as other systems in the same class
  - 32 memory DIMM slots (128 GB of memory with 4GB DIMMs)
  - 4 GbE ports on-board

Competitive Positioning	
HP competitive offerings	
HP DL580 G5	The Sun Fire X4450 server is half the size and saves precious data center real estate. Also, it has 4 GbE ports on the system board, which will save a PCIe slot for other usages. On the eco friendly side, the Sun Fire X4450 power supplies uses about half the power at only 1050W. The DL580 G5 servers are twice the size in 4-RU form factor. And it only offers 2 GbE ports on-board the system. Additionally, the DL580 G5 requires 2x1200W power supply to operate.

Competitive Positioning

HP touts the fact that it sells high energy efficient servers.

HP offers Eco-friendly products and services to help customers manage their power consumption of their data centers. With each product HP also provides documentation for use by end-of-life recyclers or treatment facilites. It provides the basic instructions for the disassemby of HP products to remove components and materials requiring selective treatment, as defined by EU directive 202/96/EC, Waste Electrical and Electronic Equipment (WEE).

HP sells the fact that their ProLiant systems are specifically designed for dense server environments by including lights-out technology for reduced reactive support time, fault resilient technologies for reduced downtime, and balanced performance architectures to handle greater transaction. workloads for various applications.

IBM competitive offerings

IBM x3850 M2	The Sun Fire X4450 server is half the size and saves precious data center real estate. Also, it has twice the internal storage and GbE ports on the system board. The x3850 M2 servers comes in 4-RU form factor, only supports 4 disks and offers 2 GbE ports on-board.

IBM will paint Sun as an Opteron only provider with an inadequate Xeon line. They will co-market with Microsoft and Red Hat. IBM sells at higher levels in a corporation, at times above a CIO. IBM will lose money on System x hardware when bundling with IBM middleware, storage, services or financing. IBM will sell its ability to deliver models to customers faster. IBM will use periodic web/hard drive/memory promotions to gain business. IBM will push its qualification matrix (more versions of OSes, more EMC storage, etc...) to its advantage in certain deals. IBM will use its better/longer/more-in-depth expertise in Windows/VMware to advantage to position Sun as a one dimension x86 player.

Dell competitive offerings

Dell PE R900	The Sun Fire X4450 server is half the size and saves precious data center real estate. The R900 supports the same number of memory DIMM slots, 2.5-inch SAS drive bay and onboard GigE ports as the Sun Fire X4450.

Dell will always sell on price especially in the lower end units as this area is more price sensitive.

Attribute	Sun Fire X4450	HP DL580 G5	Dell R900	IBM x3850 M2
Form Factor	**2U**	4U	4U	4U
Processor	Intel Xeon 2, 4, 6-Core	Intel Xeon 2, 4, 6-Core	Intel Xeon 2, 4, 6-Core	Intel Xeon 2, 4, 6-Core
Socket	4-socket	4-socket	4-socket	4-socket
Memory	32 DIMMs (128GB max with 4GB DIMM)	32 DIMMs (256GB max with 8GB DIMM)	32 DIMMs (256GB max with 8GB DIMM)	32 DIMMs (256GB max with 8GB DIMM)

Attribute	Sun Fire X4450	HP DL580 G5	Dell R900	IBM x3850 M2
Disk Drives	8x2.5” SAS	16x 2.5” SAS/SATA	8x 2.5” SAS or 3x 3.5” SAS	4x 2.5” SAS
RAID	RAID 0,1,5,6	RAID 0,1,5,6	RAID 0,1,5,6	RAID 0,1 std; RAID 5 option
GigE Ports	**4**	2	4	2
I/O Slots	6x PCIe	8x PCIe + 3x PCIe/PCI-X via mezzanine	7x PCIe	7x PCIe
Hot Swap PSU	**2x 1100 W**	4x 1300 W	2x 1570 W	2x 1440 W
Hot Swap Fans	Yes	Yes	Yes	Yes
Lights Out Manager	LOM	iLO2	IPMI 2.0 (add-on option)	IPMI 2.0
Warranty	3 Yr NBD	3 Yr NBD	3 Yr NBD	3 Yr NBD

How to Beat Your Competition

Visit http://competitive.central (or MySales > Systems > Competitive) for a broad range of tools available to counter competitive claims.

Engage the SSC War room for competitive deal support, sscwarrom@sun.com, x86484