Sun Fire™ X4100 Server

Fast, Reliable and Energy efficient 1-4 way servers

Sun Fire™ X4200 Server

Fast, Reliable and Expandable 1-4 way servers

Just the Facts

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10/03/06: Announcement of Sun Fire X4100 and X4200 M2.

10/03/06: Announcement of 4GB DDR1-400 Memory Option on X4100 and X4200.

08/29/06: Announcement of DC Power Supply Option.

08/29/06: Announcement of Solaris 10 U2/JES 4 XATO Option.

08/15/06: Announcement of DVD-ROM/CD-RW Option.

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04/04/06: Announcement of AMD Opteron single-core 256 processor and dual-core 285 processor Standard Configurations and Options.

03/07/06: Announcement of CPU Filler Panel XATO Option.

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01/10/06: Announce EOL of non-RoHS Conforming Standard Configurations and Options. **NOTE: All non-RoHS standard configurations and options have a Last Order Date (LOD) of 12/33/06.**

11/22/05: Sun Cluster 3.1 support. EOL of AMD 280SE processor Options.

11/15/05: New AMD Opteron SE 285 Standard Configurations and Options.

11/08/05: New AMD Opteron 280 Standard Configurations and Options. Single- and Dual-Gigabit Ethernet PCI-X cards.

Introduction

The Sun Fire™ X4100 and the Sun Fire™ X4200 are new 1 to 4-way x64 rack-optimized servers powered by AMD's (Advanced Micro Devices) award-winning Opteron™ processors . The first members in a new family of servers architectured by Sun, they are the industry's **premier x64 servers** delivering greater than one-and-a-half times the **performance,** one of the **highest reliability ratings** and up to 56% **savings** in power and heat costs over comparable Intel Xeon-based servers.

Demonstrating Sun's commitment to deliver one of the most compelling x64 (32-bit and 64-bit)

solutions in the market, the dual-core Opteron processor ready Sun Fire X4100 and Sun Fire X4200 servers deliver world-class 32-bit and 64-bit performance in rack-mountable 1U and 2U form factors with Sun's rock-solid, enterprise-class capabilities and quality.

The new Sun Fire™ X4100 M2 and Sun Fire™ X4200 M2 utilizes the Next-Generation Advanced Micro Devices (AMD) Opteron™ all-dual core processors, these servers include faster DDR2 memory, faster PCI-Express I/O slots and USB 2.0 ports.

The Next-Generation AMD Opteron processors offers a built-in memory controller and similar power requirements to the current AMD Opteron processor, coupled with DDR2 memory are anticipated to result in lower system power requirements and operational costs than competitive products using Intel Dempsey and Woodcrest processors. Also, the Next-Generation AMD Opteron processors will migrate to Quad-Core AMD Opteron processors with the same consistent socket design. The M2 designated servers are planned to be easily upgradeable with just processor and BIOS changes, thus reducing data center churn and acquisition costs.

Running Solaris(TM), Linux and Windows Operating systems – all supported by Sun, the Sun Fire X4100 and Sun Fire X4200 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 only family of x86 Industry-standard servers with application portability across the entire family through binary compatibility**, data center deployment of the X4100 and X4200 servers can help minimize required staff training and support as well as help reduce data center real estate and cooling needs.

The Sun Fire X4100 and X4200 are general-purpose servers designed for deployment in a wide range of architectures:

- Scale-out architectures: With large memory capacity, quad Gigabit Ethernet ports and high speed PCI-X Low Profile MD2(half-length) and PCI-E 8-lane expansion slots that enable high speed system interconnects such as fibre channel, Myrinet, and InfiniBand, these servers are able to solve complex computing problems that require large numbers of CPUs.
- Scale-up architectures: With up to 4 cores available, these servers are well-suited for databases and infrastructure services.
- Scale-within: With their ability to run Solaris 10 Containers and VMware, Sun Fire X4100 and X4200 servers are ideal platforms for consolidating multiple applications on a single platform.

Designed by Sun Microsystems from the ground up to facilitate system management, these servers help customers scale their computing resources without additional complexity by offering standardized solutions featuring state-of-the-art remote management capabilities. Fault identification and management features provided by Sun Integrated Lights Out Manager (ILOM), which is IMPI 2.0 compliant increase availability by reducing errors and speeding repair time. By utilizing ILOM features and the optional Sun N1™ System Manager software, customers can take advantage of state-of-the-art remote automation that integrates at the data center level. Zero-touch capabilities managed through a variety of interface options combined with full binary compatibility with other family members simplifies the installation, deployment, and maintenance of x64 systems.

The Sun Fire X4100 and X4200 servers, when combined with Sun's rich portfolio of software, storage, services and network switches, help reduce cost and complexity while accelerating time-to-revenue for web, app, database and grid applications.

For more information see:

Sun Fire X4100 and X4100 M2: http://www.sun.com/x4100

Sun Fire X4200 and X4200 M2: http://www.sun.com/x4200

Features, Functions, and Benefits

Sun Fire X4100 and Sun Fire X4200 Server Key Features, Functions, and Benefits

Feature	Function	Benefit
Performance		
Highest Performance in Class	• Sufficient power-envelope to support the fastest dual-core AMD Opteron processors • Native dual-core design • Delivers both 32- and 64-bit enterprise-class computing • Common socket design for Next-Generation and Quad Core AMD Opteron processors • AMD Direct Connect Architecture • AMD Virtualization™ Technology	• Provides fastest performance in this class of servers • Nearly doubles computing resources without power and cooling increases • Increases performance while providing investment protection for existing 32-bit application • Reduces data center churn as upgrade for increased performance • Integrated Memory Controller improves performance by more effectively handling the memory • AMD's Direct Connect Architecture helps guests run at near-native speed
HyperTransport Technology and integrated 128-bit wide DDR1 or DDR2 memory controller	• Provides a high-speed connection between processor and core logic. • Reduces memory bandwidth latency by pooling memory resources onto a single coherent space.	• Increases performance by eliminating performance bottlenecks found in traditional x86 Front Side Bus (FSB) architecture.
Raising the Bar for Industry Standard Servers with Reliability and Expandability		
Hot-swappable SAS HDDs	• Performance for I/O-bound applications and redundancy for mission-critical data	• Increase performance and availability
Up to 32GB of DDR 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 Expansion Slots (PCI-X and PCI-E)	• Allows connectivity to additional network or storage while supporting full CPU path bandwidth.	• Enables flexibility to meet evolving business and application requirements.
Energy Efficiency		

Feature	Function	Benefit
AMD Opteron Processors	• Consistent processor thermal/power window requirements across all generations • Integrated Memory Controller • PowerNow! Technology: dynamic processor voltage and frequency throttling technology which works with server BIOS and operating system	• Data centers using Next-Generation AMD Opteron-based servers should experience less churn during performance upgrades as processor power requirements are planned not to increase • AMD Opteron processors do not require an additional memory controller chip • When running OS's supported by this product for PowerNow! technology, power consumption is minimized
DDR2 Memory	• Proven, cost-effective technology	• DDR2 memory has been in the marketplace for years and requires less power than FBDIMM memory
Operating System and Management Environment		
Lights-out Remote Management	Sun 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 • ILOM is a core part of system, there is no additional charge for this functionality as with the competition
Infrastructure Lifecycle Management	Sun N1 System Manager • Optional software helps in the complete lifecycle management of Sun systems • Manage from one to hundreds of systems from a central location • Bare-metal discovery • firmware updating • OS patching • OS Provisioning • Monitoring • Event logging	• Helps in the rapid discovery and OS provisioning of groups of bare metal systems • Reduces total cost of ownership of x64 system, lowering Administrator overhead by offering grouping functionality and centralized control of all systems in the datacenter
Support for: • - Solaris 10 OS on x64 • - RHEL 3, 4 and SLES 9 Linux • - Windows Server 2003 • - VMware 3.0.x	• 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 X4100 M2 server, with Next-Generation AMD Opteron processors, is an enhanced replacement for the Sun Fire X4100 server.

The Sun Fire X4200 M2 server is ideal for those customers seeking a 1 or 2-socket server with increased I/O capacity for data and compute intensive applications or simulations.

The Sun Fire X2100 M2, X2200 M2, X4100 M2, and X4200 M2 servers are the newest members in Sun x64 server lineup. The Sun Fire X4100 M2 Server replaces the Sun Fire X4100 server while the Sun Fire X4200 M2 Server replaces the Sun Fire X4200 server offerings. For customers requiring up to 4-cores and limited I/O expansion, the Sun Fire X4200 M2 server replaces the low-end of Sun Fire V40z server in some cases. The Sun Fire V40z servers still remains in the product lineup for those customers not ready to transition to the later operating systems (Solaris 10 and SLES 9) or for those customers who may require its larger number of CPU cores (up to 8), its larger addressable memory (> 32GB) space, and it greater I/O (7 PCI slots) expansion capability.

X64 Server Family Comparison

The following table compares some features of the Sun Fire X4100, Sun Fire X4200, Sun Fire X4100 M2, Sun Fire X4200 M2 servers.

	Sun Fire X4100 M2	**Sun Fire X4200 M2**	**Sun Fire X4100**	**Sun Fire X4200**
CPU type	Next-Generation AMD Opteron 2000 Series processors (dual core only)	Next-Generation AMD Opteron 2000 Series processors (dual core only)	AMD Opteron 200 Series;	AMD Opteron 200 Series
CPU speed	2220 SE (2.8 GHz), 2218 (2.6 GHz), 2216 (2.4 GHz), 2210 (1.8 GHz)	2220 SE (2.8 GHz), 2218 (2.6 GHz), 2216 (2.4 GHz), 2210 (1.8 GHz)	248 (2.2 GHz), 252 (2.6 Ghz), 254 (2.8 GHz), 256 (3.0 GHz), 275 (2.2 GHz), 280 (2.4 GHz), 285 (2.6 GHz)	248 (2.2 GHz), 252 (2.6 Ghz), 254 (2.8 GHz), 256 (3.0 GHz), 275 (2.2 GHz), 280 (2.4 GHz), 285 (2.6 GHz)
Level 2 cache	1 MB Level 2 cache per core	1 MB Level 2 cache per core	1 MB Level 2 cache per core	1 MB Level 2 cache per core
CPU interconnect	HyperTransport@ 4 GB/s	HyperTransport@ 4 GB/s	HyperTransport@ 4 GB/s	HyperTransport@ 4 GB/s
Maximum memory	32 GB of DDR2/667 ECC registered DIMMs	32 GB of DDR2/667 ECC registered DIMMs	32 GB of DDR1/400 ECC registered DIMMs	32 GB of DDR1/400 ECC registered DIMMs
Graphics Controller	ATI Rage XL	ATI Rage XL	ATI Rage XL	ATI Rage XL
Internal HDDs	Up to two (w/ DVD-ROM) or four (w/o DVD-ROM) 2.5" SATA HDDs hot-swappable	Up to two (w/ DVD-ROM) or four (w/o DVD-ROM) 2.5" SATA HDDs hot-swappable	Up to two (w/ DVD-ROM) or four (w/o DVD-ROM) 2.5" SATA HDDs hot-swappable	Up to two (w/ DVD-ROM) or four (w/o DVD-ROM) 2.5" SATA HDDs hot-swappable

	Sun Fire X4100 M2	Sun Fire X4200 M2	Sun Fire X4100	Sun Fire X4200
Disk Drive Capacity	73 GB 10,000 RPM SAS	73 GB 10,000 RPM SAS	36 GB or 73 GB 10,000 RPM SAS	36 GB or 73 GB 10,000 RPM SAS
On-board RAID (two drives req'd)	Striping, Mirroring (RAID 0, 1) (LSI SAS 1064)	Striping, Mirroring (RAID 0, 1) (LSI SAS 1064)	Striping, Mirroring (RAID 0, 1) (LSI SAS 1064)	Striping, Mirroring (RAID 0, 1) (LSI SAS 1064)
Network connections	Integrated 4 x Gigabit Ethernet	Integrated 4 x Gigabit Ethernet	Integrated 4 x Gigabit Ethernet	Integrated 4 x Gigabit Ethernet
Removable media	DVD-ROM/CD-RW(optional)	DVD-ROM/CD-RW(optional)	DVD-ROM/CD-RW(optional)	DVD-ROM/CD-RW(optional)
Expansion Slots	Two internal PCI-Express low-profile 8-lane slots	Four internal PCI-Express low-profile 8-lane slots One internal MD2 low-profile 64-bit PCI-X slot at 133 MHz	Two internal MD2 low-profile 64-bit PCI-X slots (one at 133 MHz, one at 100 MHz)	Five internal MD2 low-profile 64-bit PCI-X slots (one at 133 MHz, one at 100 MHz, three at 66 MHz)
Integrated Service Processor	Yes, IPMI 2.0	Yes, IPMI 2.0	Yes, IPMI 2.0	Yes, IPMI 2.0
In-band management	IPMI v2.0 via KCS driver SNMP OS-resident agent	IPMI v2.0 via KCS driver SNMP OS-resident agent	IPMI v2.0 via KCS driver SNMP OS-resident agent	IPMI v2.0 via KCS driver SNMP OS-resident agent
Out-of-band management	IPMI v2.0;DMTF CLI; SNMP- v1, v2, v3; Web GUI	IPMI v2.0;DMTF CLI; SNMP- v1, v2, v3; Web GUI	IPMI v2.0;DMTF CLI; SNMP- v1, v2, v3; Web GUI	IPMI v2.0;DMTF CLI; SNMP- v1, v2, v3; Web GUI
Remote management features**Remote Keyboard, Video, Mouse (KVM), and remote media capability Video redirection, Remote power control, remote access to BIOS, remote FRU status**	Remote Keyboard, Video, Mouse (KVM), and remote media capability Video redirection, Remote power control, remote access to BIOS, remote FRU status	Remote Keyboard, Video, Mouse (KVM), and remote media capability Video redirection, Remote power control, remote access to BIOS, remote FRU status	Remote Keyboard, Video, Mouse (KVM), and remote media capability Video redirection, Remote power control, remote access to BIOS, remote FRU status	Remote Keyboard, Video, Mouse (KVM), and remote media capability Video redirection, Remote power control, remote access to BIOS, remote FRU status
System management paths	A single dedicated management 100BaseT port, system serial port and four system Ethernet ports	A single dedicated management 100BaseT port, system serial port and four system Ethernet ports	A single dedicated management 100BaseT port, system serial port and four system Ethernet ports	A single dedicated management 100BaseT port, system serial port and four system Ethernet ports
Rack unit height	1 RU	2 RU	1 RU	2RU
Depth	24.8 in. 632 mm	24.8 in. 632 mm	24.8 in. 632 mm	24.8 in. 632 mm
Power supply	Redundant, Hot-swappable, 550W each	Redundant, Hot-swappable, 550W each	Redundant, Hot-swappable, 550W each	Redundant, Hot-swappable, 550W each

	Sun Fire X4100 M2	Sun Fire X4200 M2	Sun Fire X4100	Sun Fire X4200
O/S	See http://www.sun.com for latest operating system support for each product			
I/O	See http://www.sun.com for latest I/O support for each product			

Key Messages

Scale Computing… not Complexity Customers seeking a business edge can look to Sun to provide smarter options for building a simple, secure, standardized IT infrastructure. The Sun Fire X4100 Server and Sun Fire X4200 Server are fast, reliable and energy-efficient enterprise-class x64 servers that run Solaris, Linux and Windows operating systems.

- **Performance…do more with less**
  - Up to 1.5 times the performance than comparable Intel Xeon-based servers
- **Maximize Uptime**
  - Enterprise-class reliability through hot-swap redundant power supplies and fans
  - Hot-swap disk drives with on-board RAID 0,1
- **Energy-efficient….save power and cooling costs**
  - Customers can save up to 56% per year on their power and cooling costs over comparable Xeon MP based servers
- **Manage One System…not a bunch of boxes…on your schedule**
  - Optional Sun N1 System Manager software centralizes lifecycle management (discovery, configuration, provisioning, and monitoring) of groups of systems
  - Integrated Lights Out Manager (ILOM), allows full remote KVMS functionality with video and media redirection.
- **Multi-platform……less complexity**
  - Runs Solaris, Linux and Windows operating systems – all supported by Sun.
  - Standardize on one hardware platform for all major operating systems in the data center
- **Fewer Variables…less complexity**
  - Common system image for Operating System, Service Processor, BIOS, Motherboard firmware and Fault Management architecture
  - Tune on one, deploy everywhere

- Binary compatibility across entire product line for easier application portability

Target Customers

The Sun Fire X4100 Server and Sun Fire X4200 Server are targeted at enterprise customers that want industry-standard servers running Solaris™, Linux and Windows operating systems.

Target Markets

- Primary
  - Financial Services
  - Telecommunications/Service Providers, Media and Broadband
  - Government
  - Education & Research
- Secondary
  - Manufacturing
  - Energy
  - Healthcare
  - Retail

Target Applications

- Web Servers
- Application Servers
- Databases, especially grid-type deployment like Oracle 9iRAC or 10g
- Virtualization
- Network/IT services (Security, DNS, proxy, caching)
- HPTC/Grid computing

Market Value Proposition

- Sun Fire X4100 and X4200 servers are fast, reliable and energy-efficient enterprise x64 servers that run Solaris™, Linux and Windows operating systems -all supported by Sun.
- Do More With Less: Highest Performance in class helps maximize Return On Investment. (Final benchmarks will be announced at launch).
- Improve Service Levels: High availability features such as hot swap and redundant power supplies, fans and disks lead to higher uptime.
- Cut IT operating expenses: the Sun Fire X4100 Server and Sun Fire X4200 Server are more power and heat efficient than competing Xeon-based systems, saving up to 56% annually in power and HVAC costs.

Availability

General availability for the Sun Fire X4100 Server will occurred on October 19, 2005, with Revenue Release occurring on October 15, 2005. General availability for the Sun Fire X4200 Server will occurred on November 2, 2005, with Revenue Release occurring on October 15, 2005.

Revenue Release and General Availability for the Sun Fire X4100 M2 and X4200 M2 Servers will occur on October 6, 2006. At RR/GA, only selected standard configurations and options will be available. The single processor standard configuration with the AMD Opteron 2210 processor and 4GB DDR2-667 will RR by end of October. Customer-specific ATO

configurations will RR within November timeframe.

Technology Overview

The Sun Fire X4100 Server and Sun Fire X4200 Server are symmetric, multiprocessor, x64-based, rack-optimized servers which has the following system architectural features:

- AMD Opteron processors (supporting both single and dual core CPUs)
- HyperTransport technology
- Integrated Lights Out Management (ILOM) with a dedicated Service Processor
- Sun N1 System Manager

AMD Opteron Processor

The AMD Opteron processor is part of a new computing platform that extends the ubiquitous x86 architecture to accommodate x64 64-bit processing. Formerly known as x86-64, AMD's enhancements to the x86 architecture allow seamless migration to the superior performance of x64 64-bit technology. AMD's Opteron processor was designed as CMP (Chip-level Multi-processing) from the start with Crossbar Switch and System Request Interface. This approach defines a new class of computing by combining full x86 compatibility, a high-performance 64-bit architecture, and the economics of an industry-standard processor.

Major enhancements over legacy x86 include:

- Sixteen 64-bit general-purpose integer registers that quadruple the general-purpose register space available to applications and device drivers as compared to x86 systems.
- Sixteen 128-bit XMM registers for enhanced multimedia performance to double the register space of any current SSE/SSE2 implementation.
- A full 64-bit virtual address space with 40 bits of physical memory addressing and 48 bits of virtual addressing that can support systems with up to 256 terabytes of physical memory.
- 64-bit operating systems to provide full, transparent, and simultaneous 32-bit and 64-bit platform application multitasking.
- A 128-bit wide, on-chip DDR memory controller that supports ECC and ChipKill technologies and provides low-latency memory bandwidth which scales as processors are added.

Dual Core specifics:

- Each core has dedicated 1MB L2 Cache
- Both cores share the memory controller and HyperTransport interconnects
- Performance characterization of single-core based systems have revealed that the Memory and HyperTransport bandwidths are under-utilized even while running high-end server workloads

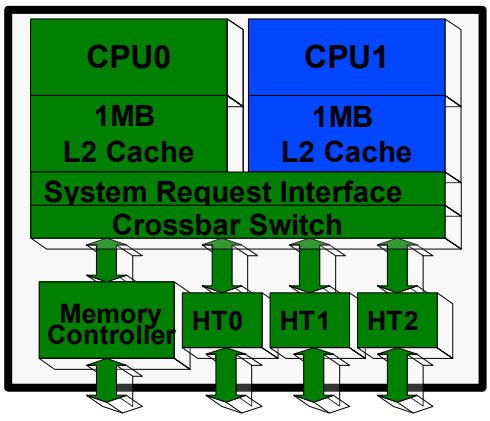


Figure 1. Opteron Dual-Core Processor Architecture

Next-Generation AMD Opteron Processor

The Next-Generation AMD Opteron processor leverages the same proven Direct Connect Architecture and CMP (Chip-level Multi-Processing) design features of the Single- and Dual-Core AMD Opteron (formerly known as Rev E) processors, including:

- 64-bit operating systems to provide full, transparent, and simultaneous 32-bit and 64-bit platform application multitasking
- Direct Connect Architecture
  - Addresses and helps reduce the real challenges and bottlenecks of system architecture
  - Memory is directly connected to the CPU, optimizing memory performance
  - I/O is directly connected to the CPU, for more balanced throughput and I/O
  - CPUS are connected directly to CPUS allowing for more linear symmetrical multiprocessing
- Integrated DDR2 Memory Controller
  - A 128-bit wide, on-chip DDR2 memory controller that supports ECC and ChipKill technologies and provides low-latency memory bandwidth which scales as processors are added
- AMD HyperTransport™ Technology
  - Provides a scalable bandwidth interconnect between processors, I/O subsystems and other chipsets
- Dedicated 1MB L2 Cache for each core

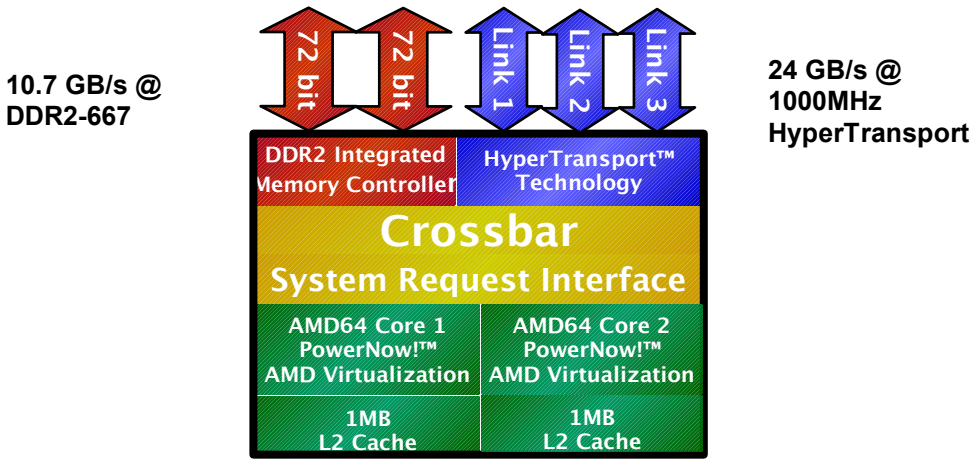


Figure 2. Next-Generation AMD Opteron Processor Design for Socket F (1207)

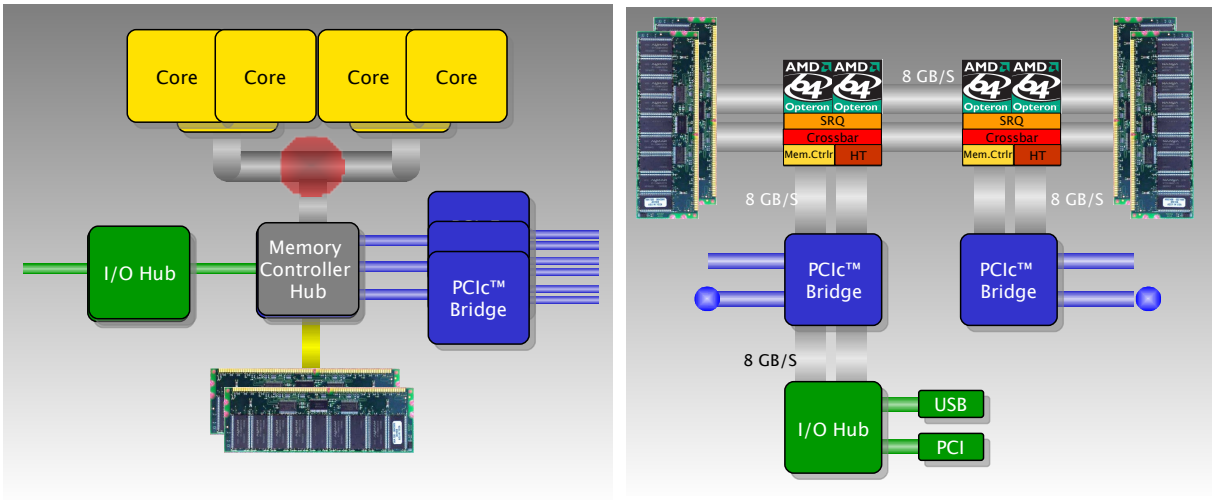
AMD HyperTransport™ Technology

The Next-Generation AMD Opteron processor continues to use HyperTransport Technology links to provide a scalable bandwidth interconnect among processors, I/O subsystems, and other chip sets. HyperTransport Technology:

- Helps increase overall system performance by removing I/O bottlenecks typically found in

Front Side Bus (FSB) architectures and efficiently integrating with legacy buses, increasing bandwidth and speed, and reducing latency of processors.

- Provides up to 8 GB/sec. bandwidth per link at 16x16 bits, 1 GHz operation, providing sufficient bandwidth for supporting new interconnects, such as PCI-Express.



Intel's Front-side Bus (FSB) Architecture **AMD Direct Connect Architecture**

Figure 3. **Intel vs. AMD processor Architecture**

Intel's Front Side Bus (FSB) architecture requires a separate memory controller. I/O bottlenecks and reduced efficiencies are seen as data from CPU to CPU, CPU to I/O and CPU to memory all funnel through a central Front-Side Bus.

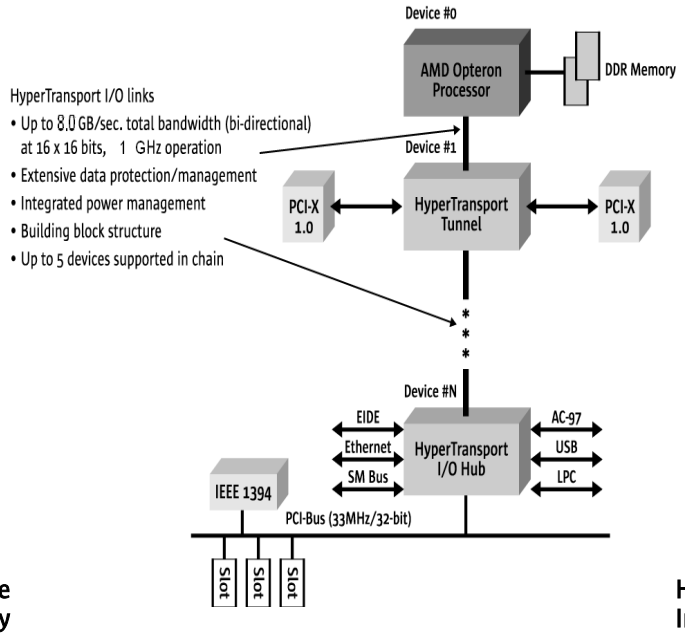


Figure 4. **Sample HyperTransport Technology Interconnect Block Diagram**

New Next-Generation AMD Opteron Processor Enhancements

The Next-Generation AMD Opteron Processor Design for Socket F (1207) (formerly known as "Rev F") is a redesign of the original AMD Opteron (formerly known as "Rev E") design and offer the following enhancements:

- New socket design, all native dual core processors
- Consistent processor power requirements
- Supports lower power DDR2 memory technology
- Consistent socket design and power requirements planned for Quad-Core AMD Opteron processors
- AMD PowerNow! Technology
- AMD Virtualization™ support (formerly known as Pacifica)

AMD Opteron Processor Power Requirements (Thermal Windows)

All AMD Opteron processor Series - current Single- and Dual-Core AMD Opteron processors, Next-Generation AMD Opteron processors and future Quad-Core AMD Opteron processors - have all been designed to a consistent power requirement (thermal window).

AMD Opteron Series[1]	***AMD Opteron Single- or Dual- Core***	***AMD Opteron Next-Generation Dual-Core***	***Quad-Core AMD Opteron***
100/1000 Series[2]	110 W	103 W	TBD W[3]
200/2000 Series	95 W	95 W	95 W
800/8000 Series	95 W	95 W	95 W

(1) SE processors in all series require higher power (100/1000 series SE are 125W; 200/800/2000/8000 series are 120W)
(2) AMD Opteron 100 Series processors are 110 W or less
(3) Awaiting information from AMD

When discussing processor power, it is very important to read footnotes on competitive information to ensure comparisons are apples to apples. Typically, AMD conservatively uses maximum power in their marketing materials, whereas Intel often utilizes average power.

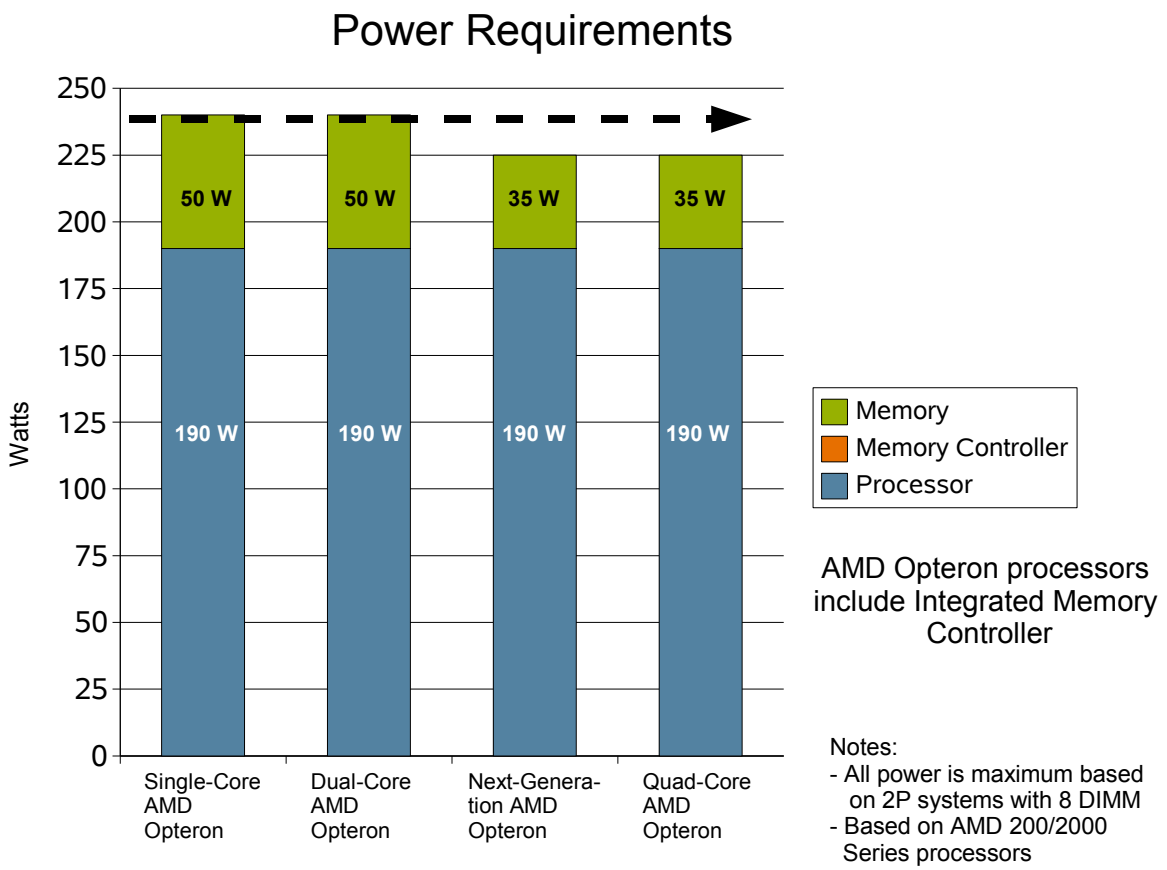


Figure 5. **Processor, Memory Controller and Memory Power Requirements**

A consistent thermal window often means a customer can migrate to the Next-Generation of a product without needing to reconfigure the quantity of servers per cabinet, add cabinets to the datacenter or increase the power grid to the datacenter.

Memory Technology Adoption, Memory Power Requirements

Current AMD Opteron Single- and Dual-Core AMD Opteron processors require DDR1 memory. Next-Generation and future Quad-Core AMD Opteron processors and current Intel Irwindale and Paxville processors require DDR2 memory. The new Intel Dempsey and Woodcrest processors require FBDIMM memory.

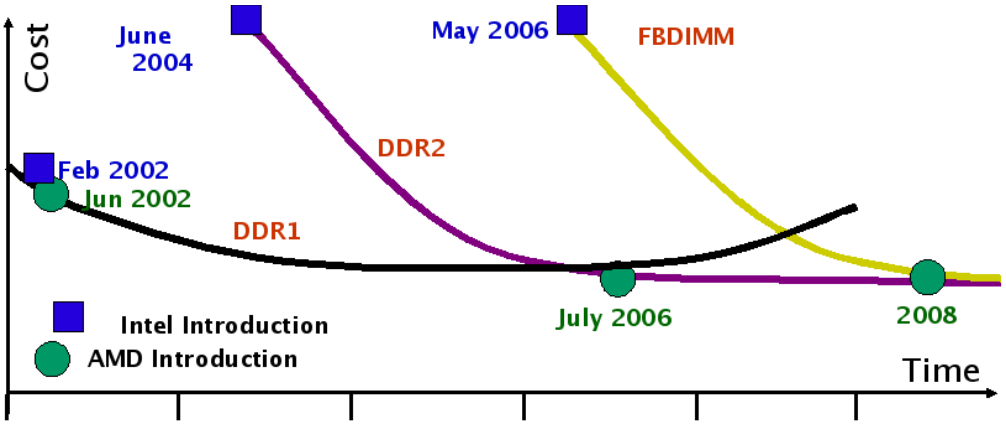


Figure 6.**Memory Technology Adoption by Processor Vendor**

AMD has selected to support the proven technology of DDR2 memory for its Next-Generation and future Quad-Core AMD Opteron processors for both cost and technology stability reasons. With DDR2 memory, customers get:

- Reduced cost of system acquisition as DDR2 DIMMs are forecast to be priced less than FBDIMM. (At this time, we are seeing high DDR2 costs due to supply constraints; we anticipate this will be temporary.)
- Proven memory buffer as DDR2 technology has already been in the marketplace for several years.
- Lower operational costs as DDR2 memory requires less power than FBDIMM. FBDIMM utilizes a 1st generation memory buffer chip that draws additional power.
  - DDR2 memory uses 30% less power[1] than DDR1
  - DDR2 memory uses 58% less power[1] than FBDIMM.

Supported Memory and Power Requirements

Processor	Memory Type	Memory Power[1] (W) for 8 DIMM
Single- and Dual-Core AMD Opteron	DDR1	50 W
Intel Irwindale and Paxville	DDR2	35 W
Next-Generation AMD Opteron	DDR2	35 W
Intel Dempsey, Woodcrest	FBDIMM	83 W
Quad-Core AMD Opteron	DDR2	35 W
Intel Clovertown	FBDIMM	83 W

(1) Measurement based on average power of DDR1, DDR2 and FBDIMM.

System Power Requirements

Servers and workstations designed with AMD Opteron processors do not require an additional

memory controller chip and associated power requirements.

Intel processors do not include a memory controller. Systems designed around Intel processors require an additional memory controller chip and its power requirements.

AMD's consistent processor power requirements (thermal window), Integrated Memory Controller and selection of DDR2 memory for use with the Next-Generation and Quad-Core AMD Opteron processors is anticipated to result in lower estimated total server/workstation power requirements versus competitive product using Next-Generation Intel processors.

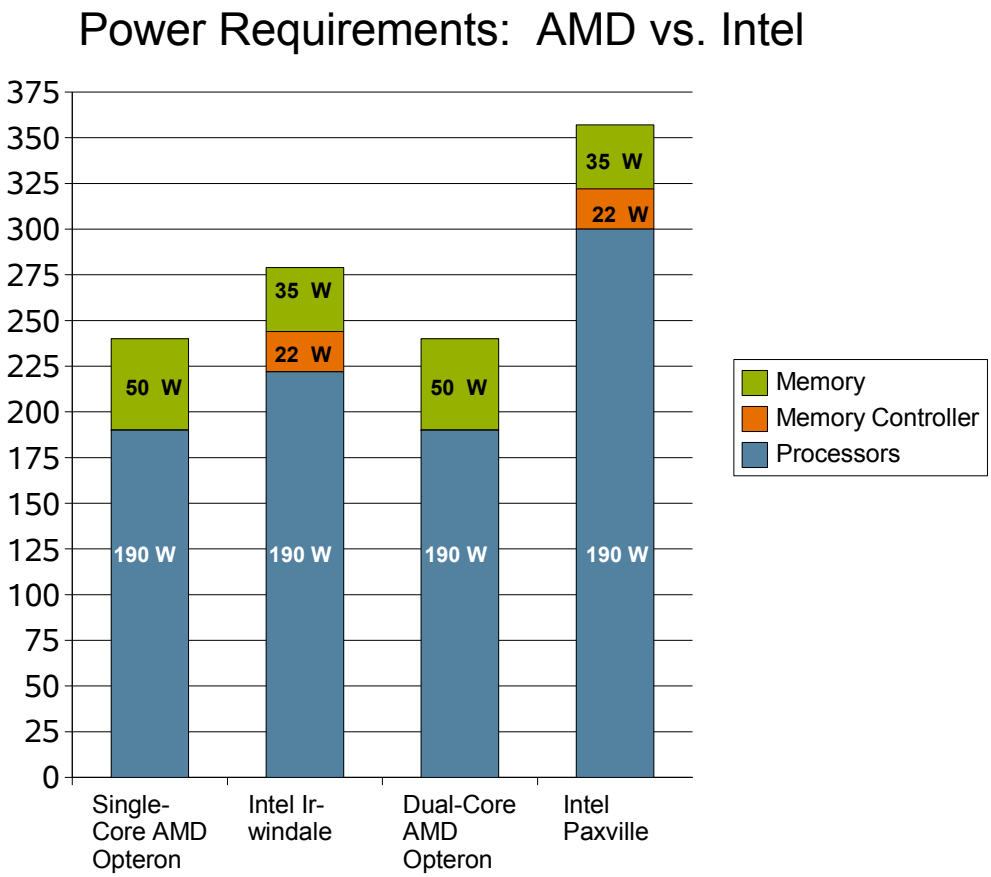


Figure 7. **Current Product Processor, Memory Controller & Memory Power Requirements**

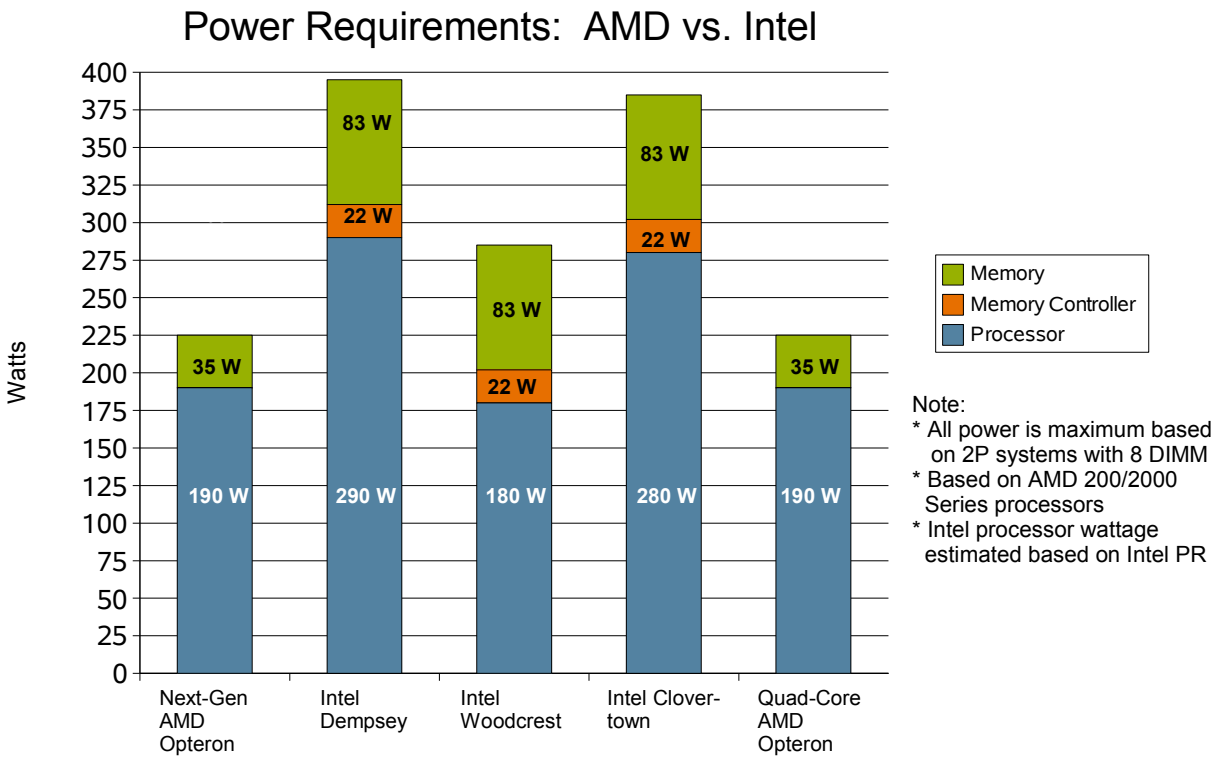


Figure 8. **Anticipated Future Product Processor, Memory Controller & Memory Power Requirements**

Processor Longevity: Socket Design and Architecture

The AMD Opteron processor socket design is planned to remain identical as AMD transitions the Next-Generation AMD Opteron processor to its upcoming Quad-Core AMD Opteron processor. Both generations of AMD Opteron processors are planned to maintain consistent processor power requirements (see above), utilize DDR2 memory and feature an Integrated Memory Controller.

Sun servers/workstation compatible with Next-Generation AMD Opteron processor are planned to be upgradable to Quad-Core AMD Opteron processors with only processor and BIOS changes.

Consistent processor and system architecture designs reduces total cost of system ownership. Less platform churn reduces application qualification and support costs. Consistent power requirements eliminate the need to reconfigure system racking or data center power.

Conversely, as figure 9 details, Intel plans numerous processor or platform/socket transitions with varying power requirements.

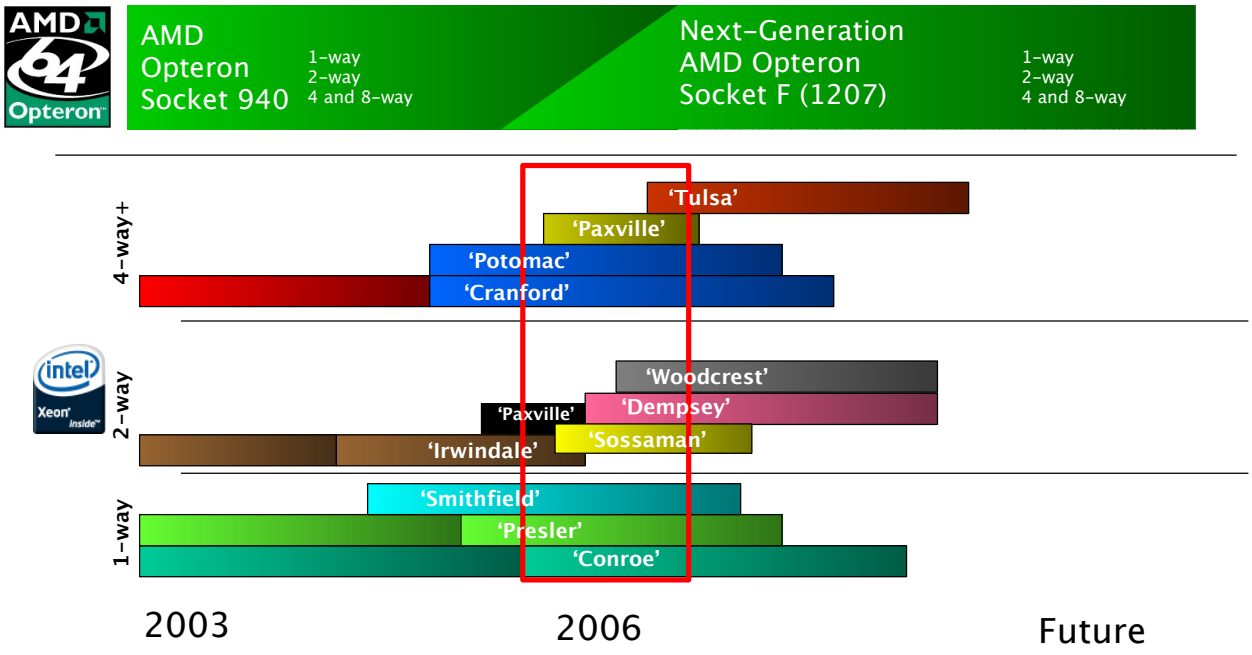


Figure 9. **AMD vs. Intel: Planned Processor Transitions**

AMD PowerNow™ Technology

AMD PowerNow™ is a dynamic processor voltage and frequency throttling technology that works in conjunction with a server's BIOs and the operating system to minimize power consumption under less than maximum workloads.

For AMD PowerNow technology to work, both the operating system and server BIOS must be qualified to run AMD's PowerNow.

Solaris Support for PowerNow!

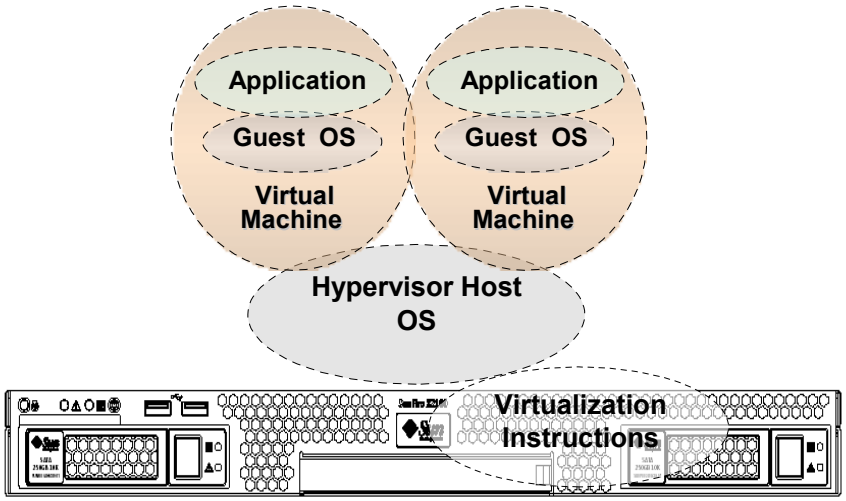
Solaris Engineering is currently aggressively working to add PowerNow support. Solaris is targeting a patch to add support at the end of this calendar year. PowerNow support is targeted for the Solaris 10 Update 4 release, planned to be released in Jan/Feb 2007.

For more information on AMD PowerNow, see:

http://enterprise.amd.com/us-en/Technology/PowerManagement/

AMD Virtualization™ Technology

Virtualization enables data centers to achieve higher levels of efficiency, utilization and flexibility by dividing a computer into several virtual machines or consolidating many systems onto one virtual machine.



Hardware-enabled AMD Virtualization™ offers:

- Reduces complexity of virtualization software by adding instructions to the hardware
- Reduces overhead by selectively intercepting information destined for guest OS's
- Enables simpler implementation and support by allowing guest OS's to run unmodified.
- Improves security of virtual machines by increasing isolation of host and guest OS's.
- Improves efficiency of switching between hypervisor and guest OS's through tagged TLB memory architecture.

AMD Virtualization versus Intel VT

- AMD's Direct Connect Architecture helps guests run at near-native speed. In shared FSB architectures, the FSB can become the bottleneck, decreasing guest applications performance.
- Intel's separate Memory Controller Hub is not virtualization-aware, so software must drive more memory management. AMD's memory controller is integrated into the processor and is virtualization-aware, providing better isolation of virtual machine memory resulting in enhanced data speed and security.
- AMD Virtualization utilizes tagged Translation Look-Aside Buffer (TLB) resulting in highly efficient switching between host and guests as the memory architecture selectively flushes data. Intel VT utilizes untagged TLB resulting in less efficient switching between hosts and guests require flushing the entire memory buffer when switching between host and guests.

Sun Integrated Lights-Out-Manager (ILOM)

Sun Integrated Lights-out Manager is driven by an integrated system 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. ILOM provides 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, or using in-band communication through the server's operating system. With out-of-band management, the system administrator can remotely control power of the system, monitor system FRU status, and load system firmware With in-band management, the system administrator can monitor system status and control system power down.

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

Sun N1 System Manager - Management of One to Thousands of Sun Systems

Optional Sun N1 System Manager software provides comprehensive infrastructure life cycle management for Sun systems, delivering an efficient way to manage multiple systems across the datacenter while simplifying management tasks, reducing repetition, and lowering the Total Cost of Ownership of Sun x64 systems. This software enables rapid discovery and provisioning of groups of bare metal Sun Fire X4100, Sun Fire X4200, Sun Fire V20z, Sun Fire V40z, Sun Fire V210, Sun Fire V240, Sun Fire V440, Netra™ 240 and Netra™ 440 servers. A trial version of Sun N1 System Manager ships with every Sun Fire X4100 and Sun Fire X4200 server.

Key features include:

- Discovery
- Grouping
- Bare Metal OS Provisioning
- Firmware updates
- Software updates
- Hardware Monitoring
- OS Monitoring
- Event Notification
- Event Logging
- Lights Out Management
- Role Based Access Control
- Hybrid UI with browser and CLI

System Architecture

Overview

The Sun Fire X4100 and Sun Fire X4200 servers feature up to 2 AMD Opteron processors, interconnected by a dedicated 8.0 GB/sec HyperTransport link. Each processor controls 2 pairs of DIMM slots, with 6.0 GB/sec access between processor and memory. Through HyperTransport, each processor can access the other processor's memory. Dual CPU Sun Fire X4100 and X4200 servers populated with 2GB DIMMs provide up to 16GB of memory. In a system with a single CPU, the processor must be placed into the designated processor slot0 that connects to the rest of the I/O infrastructure; this processor only has access to 2 pairs of memory slots or maximum of 8GB using 2GB DIMMs. DDR1/400MHz ECC registered memory components (a higher quality version of PC 3200 memory DIMMs) sold by Sun are supported.

The I/O architecture for the Sun Fire X4100 and X4200 servers are designed to provide balanced I/O, with high bandwidth connectivity to multiple devices. Two AMD 8131 chips provide 4 independent PCI-X segments for an on-board Serial Attached SCSI/ATA (SAS/SATA) interface for HDD control, built-in quad gigabit Ethernet support as well as PCI-X expansion slots.

The first AMD 8131 PCI-X bridge connects CPU0 to on-board I/O controllers. There are two PCI-X buses each running at 100Mhz/64bit. One bus is dedicated for the four embedded Intel gigabit Ethernet NIC's. The second bus is shared between the embedded LSI SAS controller and the 100Mhz/64bit PCI-X expansion slot. Because the bus is shared, PCI-X cards running slower than 100MHz should not be placed in this slot. This AMD8131 PCI-X bridge also provides the connectivity to an AMD 8111 HyperTransport I/O Hub. This I/O hub provides the USB1.1 ports, DVD IDE port, and other internal legacy buses.

The second AMD 8131 PCI-X bridge connects CPU0 to PCI-X expansion connectivity. There are two PCI-X buses from this bridge. One is dedicated for 133Mhz/64bit operation for a single low-profile 133Mhz/64bit PCI-X expansion slot. The second bus is shared between three low-profile 66Mhz/64bit expansion slots in the X4200 chassis.

On-board management for both the Sun Fire X4100 and the Sun Fire X4200 servers is provided by a separately-powered Service Processor (SP) based on a Motorola MPC8248 microcontroller that communicates with the two main system processors and the rest of the system . Accessible to the end user through a serial port and a dedicated 10/100 Ethernet NIC, ILOM provides the administrator with full lights-out manageability of the these servers which includes the ability to power cycle, setup, manage, monitor and maintain the system locally or remotely. ILOM supports both local and remote management, including remote KVM and media connectivity. ILOM also provides industry standard GUI and CLI interfaces. IPMI 2.0 and SNMP V1, v2c, V3 support also enable fast integration into a customers' existing monitoring schema.

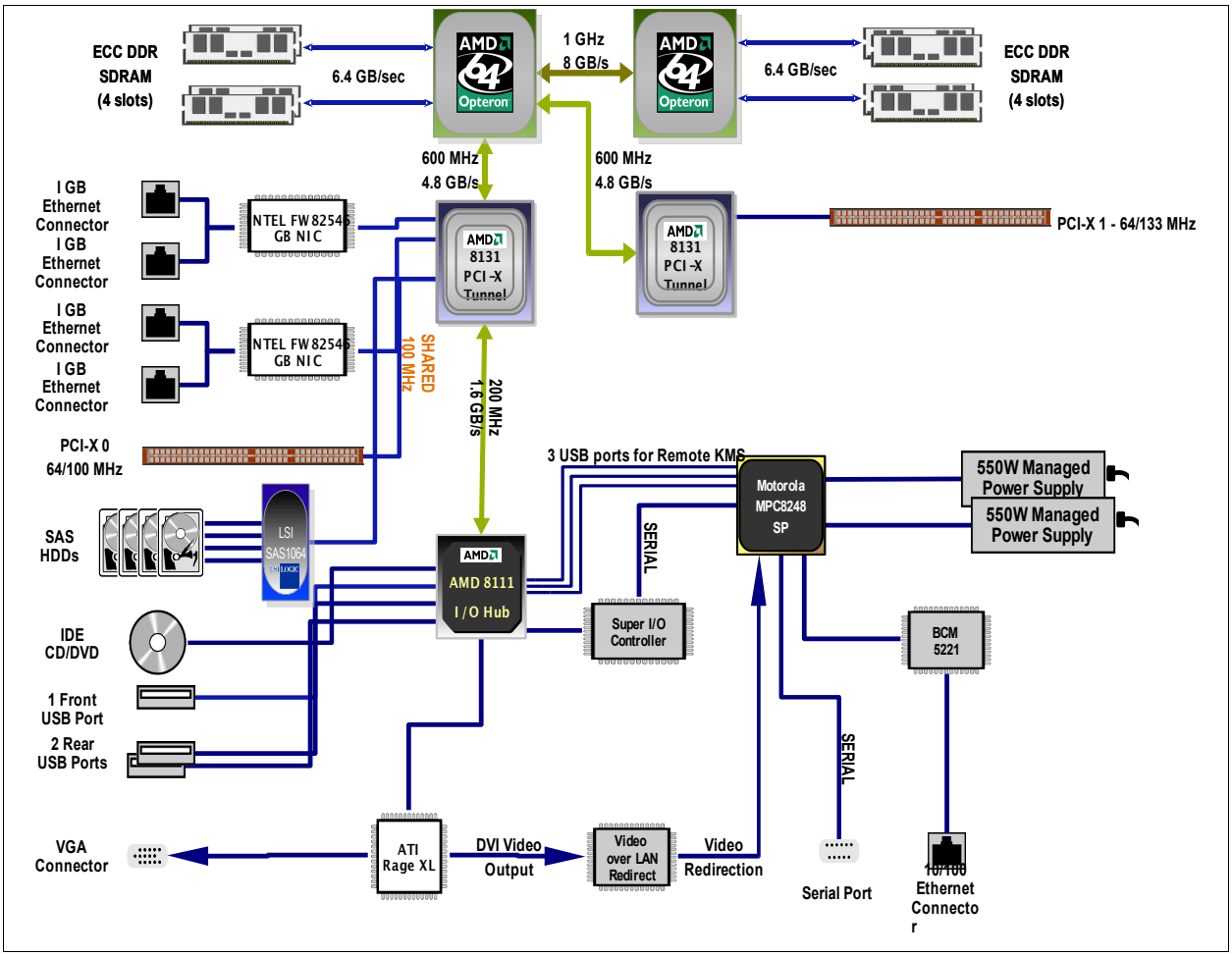


Figure 10. **Sun Fire X4100 Server Block Diagram**

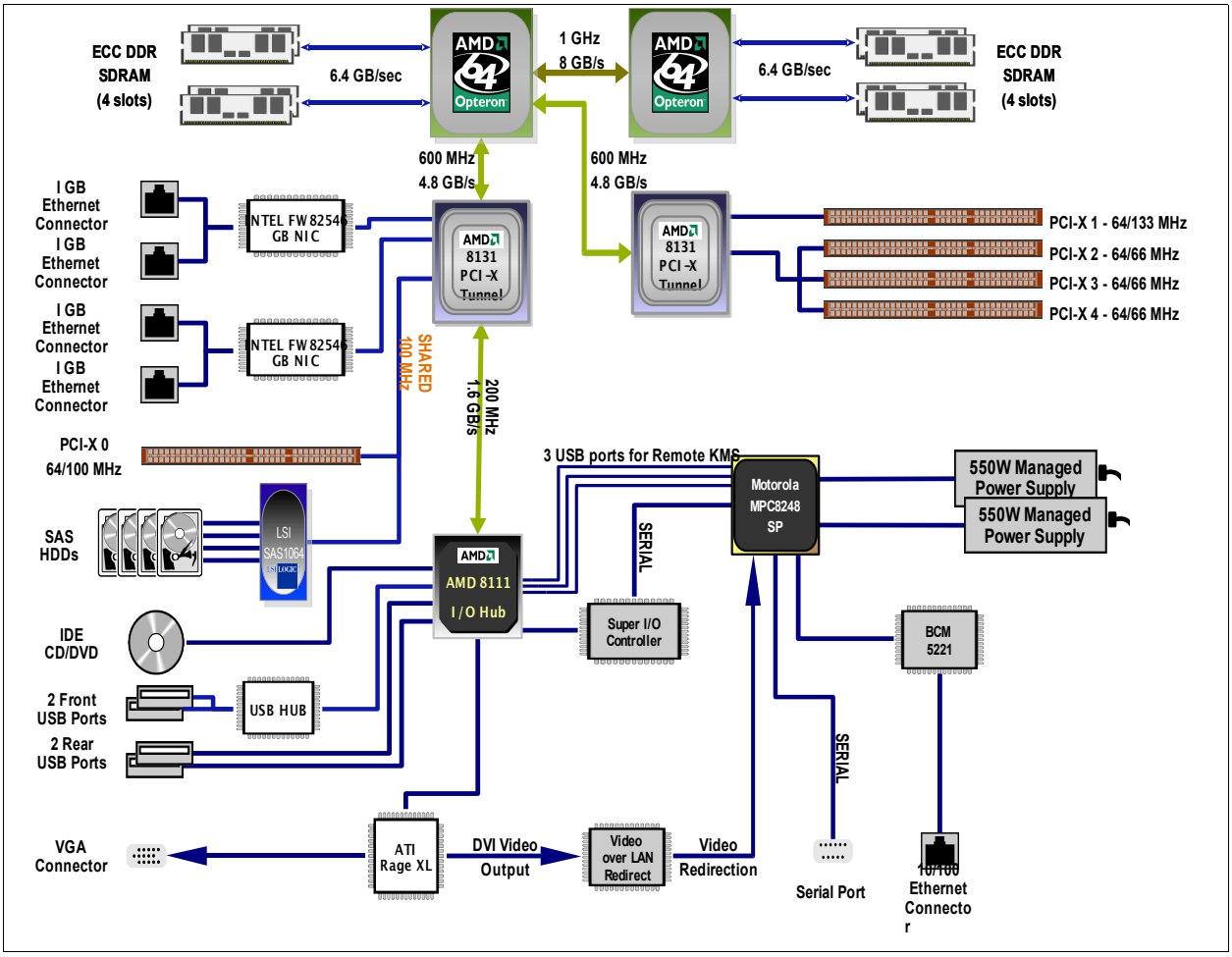


Figure 11.Sun Fire X4200 Server Block Diagram

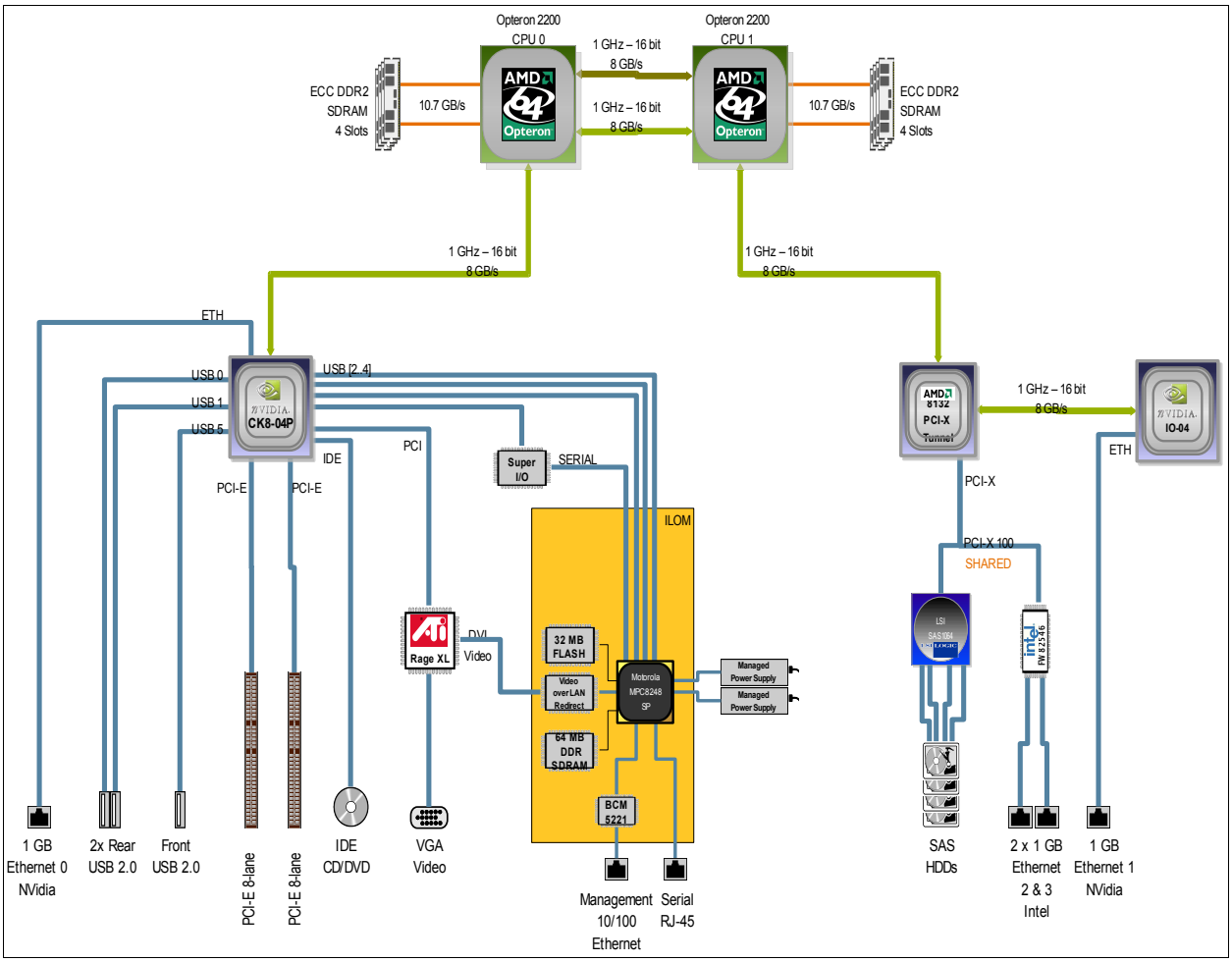


Figure 12. Sun Fire X4100 M2 Server Block Diagram

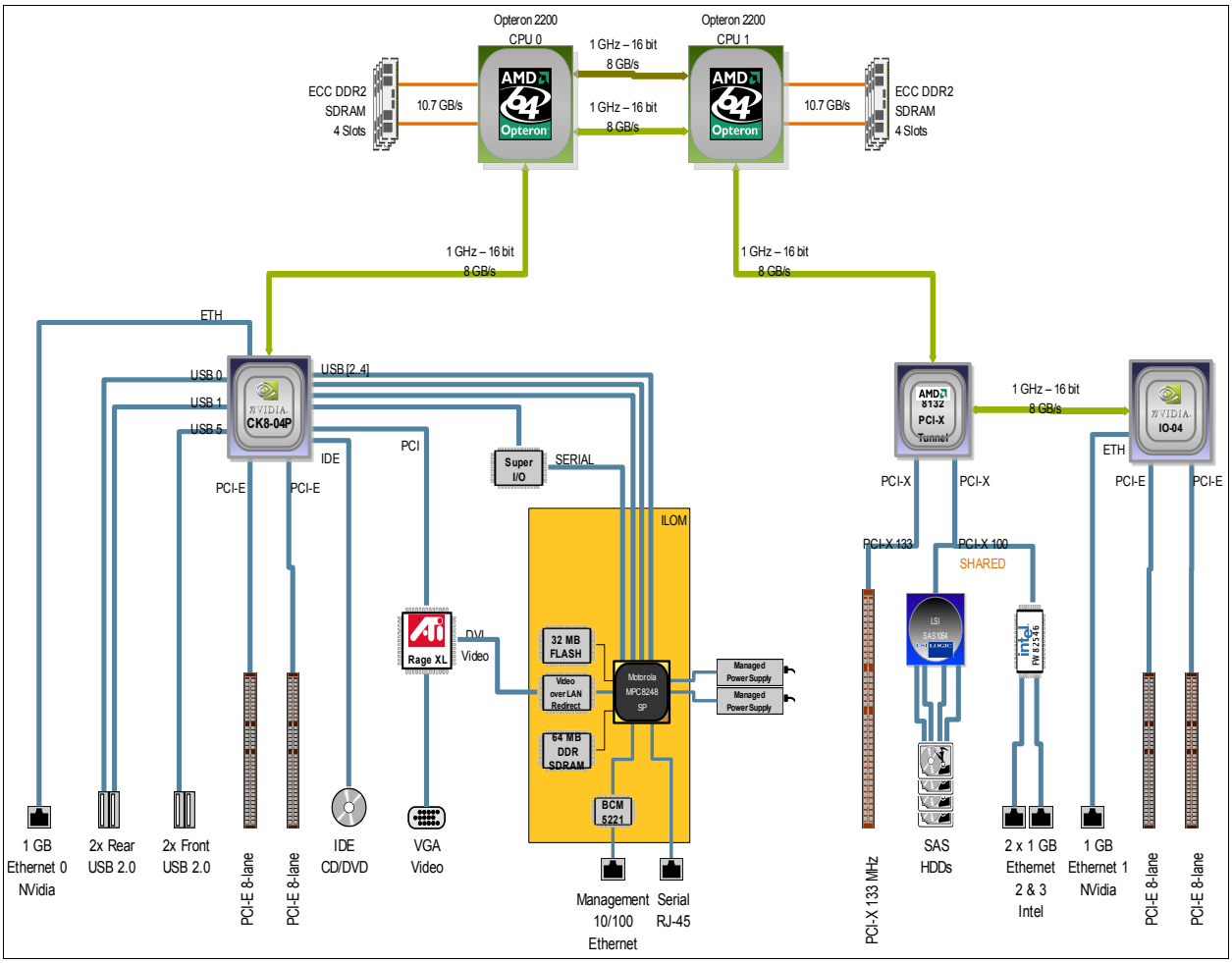


Figure 13. Sun Fire X4200 M2 Server Block Diagram

Reliability, Availability, and Serviceability (RAS)

Reliability

- Simplicity of design with the AMD Opteron processors and HyperTransport requires less components and thus provides higher reliability
- RAID 0, 1 of the on-board SAS disks
- ECC memory with ChipKill supported

Availability

- High CPU density available with dual core combined with the small form factor of the Sun Fire X4100 and Sun Fire X4200 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.
- 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.
- Rackmount slide rails for easy installation and removal of a unit are available as an X-option.
- Single-step power supply removal: Power-supplies can be serviced without sliding the servers out of the rack.

Operating System

Sun Fire X4100 and X4200 Server Operating Systems

A world-class performance platform, the 64-bit Sun Fire X4100 and Sun Fire X4200 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 X4100 and X4200 servers provide customers with more choices, within the same hardware architecture, than competing servers in its class.

Sun Fire X4100 and X4200:

Operating Systems	Supported by Sun	Certified	Sold by Sun	Factory Installed
Solaris 10 U2 (06/06) x64 (64-bit)	Yes	Yes	Yes	Yes
Red Hat Enterprise Linux 3, U8 32-bit	Yes	Yes	Yes	No[1]
Red Hat Enterprise Linux 3, U8 (64-bit)	Yes	Yes	Yes	No[1]
Red Hat Enterprise Linux 4, U4 (32-bit)	Yes	Yes	Yes	No[1]
Red Hat Enterprise Linux 4, U4 (64-bit)	Yes	Yes	Yes	No[1]
SUSE Linux Enterprise Server 9, SP3 (64-bit)	Yes	Yes	Yes	No[1]
Windows Server 2003 Enterprise Edition, SP1 (32-bit / 64-bit)	Yes	Yes	No	No[2]
Windows Server 2003, Standard Edition, SP1 (32-bit / 64-bit)	Yes	Yes	No	No[2]
VMware ESX 3.0.x	Call Sun	Yes	Call Sun	No

Sun Fire X4100 M2 and X4200 M2:

Operating Systems	Supported by Sun	Certified	Sold by Sun	Factory Installed
Solaris 10 U2 (06/06) x64 (64-bit)	Yes	Yes	Yes	Yes
Red Hat Enterprise Linux 4, U4 (64-bit)	Yes	Yes	Yes	No[1]
Windows Server 2003 Enterprise Edition, SP1 (32-bit / 64-bit)	Yes	Yes	No	No[2]
Windows Server 2003, Standard Edition, SP1 (32-bit / 64-bit)	Yes	Yes	No	No[2]

1. Red Hat Enterprise Linux 3, Red Hat Enterprise Linux 4, SUSE Linux Enterprise Server 9, and Solaris OS on x64 can be ordered from Sun. Support contracts are also available.
2. "Designed for Windows" designation as a certified platform, January 2006.
3. Sun System Service Plans for Windows Server 2003 are available from Sun for the Sun Fire X4100 and X4200, January 2006.

Supported Operating Systems

For more information on the latest OS support for the Sun Fire X4100, X4100 M2 and Sun Fire X4200, X4200 M2 Server:

http://www.sun.com/servers/entry/x4100/os.html

Firmware and Drivers

For the latest firmware and drivers:

http://www.sun.com/servers/entry/x4100/downloads.jsp

Supported I/O Cards

For the latest supported I/O cards:

http://www.sun.com/servers/entry/x4100/optioncards.jsp

Supported Storage and Associated HBAs

For the latest supported storage and assocated HBAs:

http://www.sun.com/servers/entry/x4100/storage.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

Subscriptions are available with or without media (CDs, manuals). All levels of support provide access to either Red Hat Network or SUSE's Linux Portal. During the support period, if any new versions of SLES or RHEL for AMD64 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

The Sun Fire X4100 and Sun Fire X4200 Servers are certified to run the Microsoft Windows Server 2003 Enterprise and Standard Edition operating systems. Sun System Service Plans will be available from Sun Microsystems at an additional charge. Please see the "Services" section for more details.

Please bookmark and refer to the following Windows on Sun sites for frequently updated information:

External: http://www.sun.com/software/windows

Internal: https://onestop.central.sun.com/windows

Key Messaging

- **Designed For Windows**
  - Sun's x64 servers and workstations, as well as most of Sun's storage products, have passed Microsoft's stringent compatibility testing suite and are listed in the Windows Catalogs.
  - Sun systems have thus earned the "Designed for Windows"(TM) certification, demonstrating Sun's commitment to providing the best platforms to run not only Solaris and Linux, but Windows as well.

- **Flexibility for Sun's Heterogeneous Customers**
  - To provide customers freedom to choose solutions that best meet their business needs, Sun supports the Microsoft Windows operating environment on select new Sun x64 systems.
  - The ability to run Solaris, Microsoft Windows, or Linux software on Sun x64 servers and workstations allows customers to use a single vendor to meet a wide range of requirements.
  - Sun's support for multiple operating systems enables customers to deploy their choice of operating system without having to change hardware platforms when their requirements change. This helps reduce the cost and complexity required to support and manage multiple vendors, in turn helping to increase return on investment while reducing risk.

Other Windows on Sun Activities

- Please bookmark and refer to the external and internal URL's listed above in this section for frequent updates on other Windows on Sun activities, including:
  - Up-to-date Windows on Sun certification tables
  - Microsoft Cluster certification listings
  - Windows System and option card drivers posted on Sun's website
  - World record Windows on Sun x64 system benchmarks
  - Windows FAQ's and sales tools
  - Documentation and tools for installing and running Windows on Sun

Sun Fire X4100 and X4200 Server Specifications

Processor Options

	Sun Fire X4100 and Sun Fire X4200	Sun Fire X4100 M2 and Sun Fire X4200 M2
Processor	One or two AMD Opteron Processor 200 Series; single-core (248, 252, 254, 256), dual-core (270, 275) or dual-core AMD Opteron SE (280). (248 = 2.2 Ghz) (252 = 2.6 GHz) (254 = 2.8 Ghz) (256 = 3.0 GHz) (270 = 2.0 GHz) (275 = 2.2 GHZ), (280 = 2.4 GHZ), (285 = 2.6 GHZ)	One or two AMD Opteron Processor 2000 Series; Dual-Core (2210 – 1.8 GHz, 2216 – 2.4 GHz, 2218 – 2.6GHz) or Dual-Core SE (2220 - 2.8GHz)
Cache	1 MB Level 2 per core	1 MB Level 2 per core

Main Memory

DIMM Slots	4 DIMM slots per CPU socket 8 DIMM slots total system	4 DIMM slots per CPU socket 8 DIMM slots total system
Memory Type	DDR1/400 ECC registered DIMMs (128 bit plus ECC databus)	DDR2/667 ECC registered DIMMs (128 bit plus ECC databus)
DIMM Sizes	512MB, 1GB, 2GB and 4GB memory	1GB, 2GB and 4GB memory
DIMM Configurations	System configurations from 1 GB up to 32 GB. For optimal performance, install DIMMS in pairs. Pairs of DIMMS must be matched.	System configurations from 2 GB up to 32 GB.` For optimal performance, install DIMMS in pairs. Pairs of DIMMS must be matched.

Standard/Integrated Interfaces

	Sun Fire X4100 and Sun Fire X4200	Sun Fire X4100 M2 and Sun Fire X4200 M2
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	Four channel SAS interface, internal access only.	
USB	X4100: One USB 1.1 port (Front), Two USB 1.1 ports (Rear) X4200: Two USB 1.1 ports (Front), Two USB 1.1 ports (Rear)	X4100 M2: One USB 2.0 port (Front), Two USB 2.0 ports (Rear) X4200 M2: Two USB 2.0 port (Front), Two USB 2.0 ports (Rear)

Expansion bus	X4100: Two internal MD2 Low Profile 64-bit PCI-X slots (one at 100 MHz, one at 133 Mhz) X4200: Five internal MD2 Low Profile 64-bit PCI-X slots (one at 100 MHz, One at 133 MHz, Three at 66 Mhz)	X4100 M2: Two internal low-profile 8-lane PCI-E slots X4200 M2: Four internal low-profile 8-lane PCI-E slots and one internal MD2 Low Profile 64-bit PCI-X slots (133 MHz)

Mass Storage and Media (for both Sun Fire X4100 M2 and Sun Fire X4200 M2 servers)

	Sun Fire X4100 and Sun Fire X4100 M2	**Sun Fire X4200 and Sun Fire X4200 M2**
Hot-swappable, 2.5" SAS Internal disk	Up to two HDDs w/ DVD-ROM/CD-RW, Up to four HDDs w/o DVD-ROM/CD-RW, two different chassis	Up to four HDD w/ DVD-ROM/CD-RW
Internal DVD-ROM	One EIDE DVD-ROM or DVD-ROM/CD-RW	
External disk	See http://www.sun.com/servers/entry/x4100/storage.html See http://www.sun.com/servers/entry/x4200/storage.html	

Software

	Sun Fire X4100 and Sun Fire X4200	**Sun Fire X4100 M2 and Sun Fire X4200 M2**
Operating environment	Solaris 10 Operating System on x64, 64-bit Red Hat Enterprise Linux 3, 32-bit/64-bit Red Hat Enterprise Linux 4, 32-bit/64-bit SUSE Linux 9 Professional 64-bit Windows Server 2003, Enterprise Edition, 32-bit/64-bit Windows Server 2003, Standard Edition, 32-bit/64-bit VMware 3.0.x See See http://www.sun.com/servers/entry/x4100/OS.html See http://www.sun.com/servers/entry/x4200/OS.html	Solaris 10 Operating System on x64, 64-bit Red Hat Enterprise Linux 4, 64-bit Windows Server 2003, Enterprise Edition, 32-bit/64-bit Windows Server 2003, Standard Edition, 32-bit/64-bit See See http://www.sun.com/servers/entry/x4100/OS.html See http://www.sun.com/servers/entry/x4200/OS.html
Sun Java Enterprise System 4	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	CLI (in-band and out-of-band), IPMI 2.0 (in-band and out-of-band), SNMP (out-of-band only)	

Power Supplies (for both Sun Fire X4100 M2 and Sun Fire X4200 M2 servers)

Quantity	Dual redundant, hot-swappable power supply
UL Maximum(AC Input)	800 W
Power Supply Rating (DC output)	550 W
Typical Power Consumption	X4100 and X4100 M2: 450 W X4200 and X4200 M2: 475
Power Calculator	http://www.sun.com/servers/entry/x4100/calc/index.jsp

Environment (for both Sun Fire X4100 M2 and Sun Fire X4200 M2 servers)

AC power	90–264 V AC (47–63 Hz)
DC power	-48 V DC or -60 V DC (10.4 A at -48 V DC, 8.3 A at -60 V DC), -48 V DC or -60 V DC (10.4 A at -48 V DC, 8.3 A at -60 V DC)
Operating temperature/humidity (single, non-rack system)	10 ºC to 35 ºC (41 ºF to 95 ºF), 10% to 90% relative humidity, non-condensing, 27 ºC max wet bulb
Nonoperating temperature/humidity (single, non-rack system)	-40 ºC to 65 ºC (-40 ºF to 149 ºF), up to 93% relative humidity, non-condensing, 38 ºC max wet bulb
Altitude (operating) (single, non-rack system)	Up to 3048 m, maximum ambient temperature is derated by 1 degree C per 300 m above 900 m
Altitude (nonoperating) (single, non-rack system)	Up to 12000 m

Acoustic Noise Emissions (for both Sun Fire X4100 M2 and Sun Fire X4200 M2 servers)

Declared noise emissions in accordance with ISO 9296, A-weighted,operating and idling:		
Measure & Environment	**Sun Fire X4100 and Sun Fire X4100 M2**	**Sun Fire X4200 and Sun Fire X4200 M2**
LwAd (1B = 10dB) at or below 25C at max ambient	 7.8 B 8.3 B	 8.0 B 8.4 B
LpAm bystander at or below 25C at max ambient	 63 dB 67 dB	 64 dB 69 dB

Regulations (for both Sun Fire X4100 M2 and Sun Fire X4200 M2 servers)

Meets or exceeds the following requirements:	
Safety	IEC60950, UL/CSA60950-1, EN60950, CB Scheme with all country differences
RFI/EMI	FCC Class A, Part 15 47 CFR, EN55022, CISPR 22, EN300-386:v1.3.2, ICES-003
Immunity	EN55024,EN300-386:v1.3.2

Certifications: Safety EMC	 cULus Mark, UL/Demko GS Mark, CE Mark, CCC, GOST R, S-Mark CE Mark (93/68/EEC), Emissions and Immunity Class A Emissions Levels: FCC, VCCI, C-Tick, MIC, *CCC, *GOST R, *BSMI * = Applicable at GA
Other	Labeled per WEEE (Waste Electrical and Electronic Equipment) Directive

Dimensions and Weight (for both Sun Fire X4100 M2 and Sun Fire X4200 M2 servers)

	Sun Fire X4100 and Sun Fire X4100 M2	Sun Fire X4200 and Sun Fire X4200 M2
Height	43.8 mm (1.72 in.)	87.6 mm (3.44 in.)
Width	445 mm (17.5 in.)	445 mm (17.5 in.)
Depth	632 mm (24.8 in.)	632 mm (24.8 in.)
Weight (maximum with rack kit)	18.6 kg (41.1 lb.)	25.5 kg (56.2 lb.)

System Requirements, Configuration and Management

System Requirements

The Sun Fire X4100 and Sun Fire X4200 servers run the Solaris 10 Operating System on x64 as well as standard Linux distributions and Microsoft Windows Server 2003, Enterprise and Standard Editions. For a list of supported OS versions, please refer to section “Sun Fire X4100 and X4200 Server Operating Systems Support “

System Configuration

The Sun Fire X4100 and X4200 servers have the following standard components:

- 1 or 2 x AMD Opteron Processor 200 Series; single-core (248, 252, 254 or 256), dual-core AMD Opteron Processor Series (270, 275, 280, 285).
- Eight memory slots supporting DDR1/400 MHz Registered ECC DIMMs - Up to 16 GB (1 CPU system) or 32 GB (2 CPU system) main memory
- Three USB 1.1 ports on X4100, Four USB 1.1 ports on Sun Fire X4200 server
- MD2 Low Profile 64-bit PCI-X slots
    - 1 @100MHz, 1 @ 133MHz in the Sun Fire X4100 server
    - 1 @ 100MHz, 1 @ 133MHz, 3 @ 66MHz in the Sun Fire X4200 server

The Sun Fire X4100 M2 and X4200 M2 servers have the following standard components:

- 1 or 2 x AMD Opteron Processor 2000 Series; dual-core AMD Opteron Processor Series (2210, 2216, 2218, 2220SE).
- Eight memory slots supporting DDR2/667 MHz Registered ECC DIMMs - Up to 16 GB (1 CPU system) or 32 GB (2 CPU system) main memory
- Three USB 2.0 ports on X4100 M2, Four USB 2.0 ports on Sun Fire X4200 M2 server
- Expansion slots
    - 2 @ 8-lane PCI-E slots in the Sun Fire X4100 M2 server
    - 4 @ 8-lane PCI-E, 1 @ 133MHz slots in the Sun Fire X4200 M2 server

Both the Sun Fire X4100, X4100 M2, X4200 and X4200 M2 servers have the following standard components:

- Two disk drive bays and DVD-ROM/CD-RW (optional) or four disk drive bays in the Sun Fire X4100 or X4100 M2 servers. PLEASE NOTE: a two-disk chassis with DVD-ROM/CD-RW CANNOT be field converted to a four disk Sun Fire X4100 or X4100 M2 servers.
- Four disk drive bays and DVD-ROM/CD-RW (optional) in the Sun Fire X4200 and X4200 M2 servers
- Four 10/100/1000Base-T Ethernet ports
- Redundant hot-swappable fan modules
- AC power supply, (hot-swappable in redundant configuration)
- DC power supply, (hot-swappable in redundant configuration)
- Integrated Lights Out Manager (ILOM) with dedicated 10/100BaseT Ethernet port

- 19-inch rack-mount kit (optional)
- Cable management arm (optional)

Licensing/Usage

The Sun Fire X4100 and X4200 Servers can be ordered either with the Solaris 10 OS on x64 edition server license with Sun Java Enterprise Server or Linux from Sun. Solaris 10 on x64 RTU is given when the system is registered with Sun. Windows must be purchased from Microsoft or their partners/resellers.

MTBF Information

The MTBF (Mean Time Between Failure) for the Sun Fire X4100 and X4200 servers vary depending upon configuration. Operating at 35º C, the MTBF for the Sun Fire X4100 is predicted by calculations to range from 55,000 to 112,000 hours. Operating at 35º C, the MTBF for the Sun Fire X4200 is predicted by calculations to range from 70,000 to 142,000 hours. For more specific information, please refer to:Operating at 35º C, the MTBF for the Sun Fire X4100 is predicted by calculations to range from 55,000 to 71,000 hours. For more specific information, please refer to MTBFTool at: http://ras4sun.sfbay.sun.com/servlet/RASsuiteServlet

BTU Information

BTUs/hr for the Sun Fire X4100 and X4200 servers will vary depending upon configuration. Estimates are provided for informational purposes for systems populated with the 95W dual-core Opteron 275 processors and the 118W dual-core Opteron SE 280 processors.

- Sun Fire X4100 Server with two AMD dual-core Opteron 275 (95 W) processors (2.2 GHz): power consumption is estimated at 413 W = 1409 BTUs/hr = 0.117 Tons. Typical airflow is 56 CFM and maximum airflow is 96 CFM.
- Sun Fire X4100 Server with two AMD dual-core Opteron SE 280 (118 W) processors (2.4 GHz): power consumption is estimated at 453 W = 1546 BTUs/hr = 0.129 Tons. Typical airflow is 56 CFM and maximum airflow is 96 CFM.
- Sun Fire X4200 Server with two AMD dual-core Opteron 275 (95 W) processors (2.2 GHz): power consumption is estimated at 428 W = 1460 BTUs/hr = 0.122 Tons. Typical airflow is 115 CFM and maximum airflow is 151 CFM.
- Sun Fire X4200 Server with two AMD dual-core Opteron SE 280 (118 W) processors (2.4 GHz): power consumption is estimated at 474 W = 1617 BTUs/hr = 0.135 Tons. Typical airflow is 115 CFM and maximum airflow is 151 CFM.

Rack Mounting

The Sun Fire X4100 server is 1.72 inches (43.8 mm) high, 17.5 inches (445 mm) wide and 25.2 inches (640 mm) deep. The Sun Fire X4200 server is 3.44 inches (87.6mm) high, 17.5 inches (445 mm) wide and 25.2 inches (640 mm) deep. The air-flow direction in both configurations is from front to back. I/O ports are located on the rear panels. Informational LEDs are located on the front panel. 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 Slide Rail Kit (X8029A-Z) and optional Cable Management Arm (X8028A-Z).

The optional slide rail kit is a 4-point mounted slide rail kit and is designed to enable Sun Fire X4100 and X4200 servers to be racked in the Sun Rack 900, 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.

Rack Density

Sun Fire X4100 and Sun Fire X4200 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.

Sun Cluster Support

The Sun Fire X4100 and Sun Fire X4200 servers are supported by Sun Cluster 3.1 08/05 or later with the Sun StorEdge™ 3310 RAID product. For features of the Sun Cluster software please refer to the SunCluster 3.1 8/05 Product Intro Q4FY2005-83I. Supported configurations include:

- Solaris 10 HW1 x64 or later
- Sun Cluster 3.1 08/05 or later plus 64 patch
- Network Cards: X9271A, X7291A, X9272A, X9273A and onboard Ethernet
- Host Bus Adapters: SG-XPCI1SCSI1-LM320 (low profile)

For more information, please go to: http://suncluster.eng.sun.com

Origin Statement

The Sun Fire X4100 and Sun Fire X4200 servers have components from various countries of origin. The motherboard is manufactured in Thailand. The power supply/chassis are manufactured in China. The commodity parts such as disk drivers, memory, and CPU come from a variety of countries. Final system assembly is performed in Dublin, Ireland or Huntsville, Alabama, 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 X4100 Server Non-RoHS Standard Configurations

Part Number	Description	Availability
A64-NFB1-1N-1G-AL8	X4100, 1xAMD 248 (2.2 GHz), 2 x 512MB DDR/400, No HDD, 1 PSU, **non-ROHS**	RR LOD 12/31/06
A64-NGB2-2N-2G-AL7	X4100, 2xAMD 252 (2.6 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A64-NGB2-2H-4G-CA7	X4100, 2xAMD 252 (2.6 GHz), 4 x 1GB DDR/400, 1 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A64-NPB2-2N-2G-AL7	X4100, 2xAMD 254 (2.8 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A64-NPB2-2H-8G-CB7	X4100, 2xAMD 254 (2.8 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A64-PFB2-2H-4G-CB7	X4100, 2xAMD 275 (2.2 GHz), 4 x 1GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A64-PZB2-2H-8G-CB7	X4100, 2xAMD 280 (2.4 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR/GA 11/18/05 LOD 12/31/06
A64-EGB2-2H-8G-CB7	X4100, 2xAMD SE 285 (2.6 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR 12/16/05 GA 11/18/05 LOD 12/31/06

Sun Fire X4100 Server RoHS Compliant Standard Configurations

A64-NFZ1-1N-1G-AL9	X4100, 1x AMD 248, 2x 512MB DDR1-400, 1PSU, **4-Disk Chassis, ROHS Compliant**	Announce 4/4/06 RR 5/26/06
A64-NPZ2-2H-4G-CA7	X4100, 2x AMD 254, 4x1GB DDR1-400, 73GB 10K, DVD, 2 PSU, **ROHS Compliant**	Announce 4/4/06 RR 5/26/06
A64-NQZ2-2H-8G-CB7	X4100, 2x AMD 256, 4x2GB DDR1-400, 2x73GB 10K, DVD, 2 PSU, **ROHS Compliant**	Announce 4/4/06 RR 5/26/06
A64-PZZ2-2H-4G-CB7	X4100, 2x AMD 280, 4x1GB DDR1-400, 2x73GB 10K, 2 PSU, **ROHS Compliant**	Announce 4/4/06 RR 5/26/06
A64-PGZ2-2H-8G-CB9	X4100, 2x AMD 285, 4x2GB DDR1-400, 2x73GB 10K, 2 PSU, **4-Disk Chassis, ROHS Compliant**	Announce 4/4/06 RR 5/26/06

Sun Fire X4100 M2 Server RoHS Compliant Standard Configurations

A86-FWZ11N2GAL9	G1M2 1x2210, 2x1GB DDR2-667, 1xPSU, 4-Disk Chassis	Announce 10/03/06 RR 10/26/06
A86-FJZ22H4GCBA	G1M2 2x2216, 4x1GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06
A86-FGZ22H8GCBA	G1M2 2x2218, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06
A86-KPZ22H8GCBA	G1M2 2x2220SE, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06

Sun Fire X4200 Non-RoHS Standard Configurations

Part Number	Description	Availability
A65-NFB1-1N-1G-AL8	X4200, 1xAMD 248 (2.2 GHz), 2 x 512MB DDR/400, No HDD, 1 PSU, **non-ROHS**	RR LOD 12/31/06
A65-NGB2-2N-2G-AL7	X4200, 2xAMD 252 (2.6 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A65-NGB2-2H-4G-CA7	X4200, 2xAMD 252 (2.6 GHz), 4 x 1GB DDR/400, 1 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A65-NPB2-2N-2G-AL7	X4200, 2xAMD 254 (2.8 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A65-NPB2-2H-8G-CB7	X4200, 2xAMD 254 (2.8 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A65-PFB2-2H-4G-CB7	X4200, 2xAMD 275 (2.2 GHz), 4 x 1GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR LOD 12/31/06
A65-PZB2-2H-8G-CB7	X4200, 2xAMD 280(2.4 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR/GA 11/18/05 LOD 12/31/06
A65-EGB2-2H-8G-CB7	X4200, 2xAMD SE 285 (2.6 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, **non-ROHS**	RR 12/16/05 GA 11/18/05 LOD 12/31/06

Sun Fire X4200 RoHS-Compliant Standard Configurations

A65-NFZ1-1N-1G-AL8	X4200, 1x AMD 248, 2x512MB DDR1-400, 1PSU, **ROHS Compliant**	Announce 4/4/06 RR 5/26/06
A65-NPZ2-2H-4G-CA7	X4200, 2x AMD 254, 4x1GB DDR1-400, 73GB 10K, DVD, 2PSU, **ROHS Compliant**	Announce 4/4/06 RR 5/26/06

A65-PZZ2-2H-8G-CB7	X4200, 2x AMD 280, 4x2GB DDR1-400, 2x73GB 10K, DVD, 2PSU, **ROHS Compliant**	Announce 4/4/06 RR 5/26/06
A65-PGZ2-2H-8G-CB7	X4200, 2x AMD 285, 4x2GB DDR1-400, 2x73GB 10K, DVD, 2PSU, **ROHS Compliant**	Announce 4/4/06 RR 5/26/06

Sun Fire X4200 M2 Server RoHS Compliant Standard Configurations

A87-FWZ11N2GAL8	G2M2 1x2210, 2x1GB DDR2-667, 1xPSU	Announce 10/03/06 RR 10/26/06
A87-FJZ22H4GCBA	G2M2 2x2216, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06
A87-FGZ22H16GCDA	G2M2 2x2218, 4x4GB DDR2-667, 4x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 10/16/06
A87-KPZ22H8GCBA	G2M2 2x2220SE, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06

XATO Orders

Sun Fire X4100 and X4200 Server XATO Non-RoHS Chassis Options

Part Number	Description	Availability
A64-AD	X4100 Base Chassis, Four HDD slots, 1 PSU/SP/Fan, **non-ROHS**	RR LOD 12/31/06
A64-AV	X4100 Base Chassis, Two HDD slots with DVD-ROM, 1 PSU/SP/Fan, **non-ROHS**	RR LOD 12/31/06
A65-AV	X4200 Base Chassis, Four HDD slots with DVD-ROM, 1 PSU/SP/Fan, **non-ROHS**	RR LOD 12/31/06

Sun Fire X4100 and X4200 Server XATO RoHS Compliant Chassis Options

Part Number	Description	Availability
A64-ZD	X4100 Base Chassis, Four HDD slots, 1 PSU/SP/Fan, **ROHS Compliant**	Announce 4/4/06 LOD 11/29/06
A64-ZV	X4100 Base Chassis, Two HDD slots with DVD-ROM, 1 PSU/SP/Fan, **ROHS Compliant**	Announce 4/4/06 LOD 11/29/06

Part Number	Description	Availability
A64-BD	X4100 Base Chassis, Four HDD slots, No PSU, **ROHS Compliant**	Announce 08/29/06 RR 08/29/06
A64-BV	X4100 Base Chassis, Two HDD slots with DVD-ROM, No PSU, **ROHS Compliant**	Announce 08/29/06 RR 08/29/06
A65-ZV	X4200 Base Chassis, Four HDD slots with DVD-ROM, 1 PSU/SP/Fan, **ROHS Compliant**	Announce 4/4/06 LOD 11/29/06
A65-BV	X4200 Base Chassis, Four HDD slots with DVD-ROM, No PSU, **ROHS Compliant**	Announce 08/29/06 RR 08/29/06

Sun Fire X4100 M2 and X4200 M2 Server XATO RoHS Compliant Chassis Options

Part Number	Description	Availability
A86-BV	G1M2 Base Model – 2-Disk System, DVD, No PSU – RoHS	Announce 10/03/06 RR 11/07/06
A86-BD	G1M2 Base Model – 4-Disk System, No DVD, No PSU – RoHS	Announce 10/03/06 RR 11/07/06
A87-BV	G2M2 Base Model – Chassis, Motherboard, No PSU – RoHS	Announce 10/03/06 RR 11/07/06

Power Cords

Due to regulatory requirements of other countries, Sun Fire X4100, X4100 M2, X4200 and X4200 M2 Servers 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
X332A	(Taiwan) Localized power cord kit
X383L	(Danish) Localized power cord kit

Part Number	Description
X384L	(Italian) Localized power cord kit
X386L	(Australian) Localized power cord kit
X312F	(Argentina) Localized power cord kit
X312G	(Korean) Localised power cord kit

Sun Fire X4100 and X4200 Server CRS Systems

The following CRS server 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.

Sun Fire X4100 AND X4200 Server CRS Non-RoHS Standard Configurations

CRS Part Number	Description	Availability
A64-NFB11N1GAL8-IP	X4100, 1xAMD 248 (2.2 GHz), 2 x 512MB DDR/400, No HDD, 1 PSU, CRS	LOD 12/31/06
A64-NGB22N2GAL7-IP	X4100, 2xAMD 252 (2.6 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, CRS	LOD 12/31/06
A64-NGB22H4GCA7-IP	X4100, 2xAMD 252 (2.6 GHz), 4 x 1GB DDR/400, 1 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A64-NPB22N2GAL7-IP	X4100, 2xAMD 254 (2.8 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, CRS	LOD 12/31/06
A64-NPB22H8GCB7-IP	X4100, 2xAMD 254 (2.8 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A64-PFB22H4GCB7-IP	X4100 2xAMD 275 (2.2 GHz), 4 x 1GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A64-PZB22H8GCB7-IP	X4100, 2xAMD 280 (2.4 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A64-EGB22H8GCB7-IP	X4100, 2xAMD SE 285 (2.6 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A65-NFB11N1GAL8-IP	X4200, 1xAMD 248 (2.2 GHz), 2 x 512MB DDR/400, No HDD, 1 PSU, CRS	LOD 12/31/06
A65-NGB22N2GAL7-IP	X4200, 2xAMD 252 (2.6 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, CRS	LOD 12/31/06
A65-NGB22H4GCA7-IP	X4200, 2xAMD 252 (2.6 GHz), 4 x 1GB DDR/400, 1 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A65-NPB22N2GAL7-IP	X4200, 2xAMD 254 (2.8 GHz), 4 x 512MB DDR/400, No HDD, DVD, dual PSU, CRS	LOD 12/31/06

CRS Part Number	Description	Availability
A65-NPB22H8GCB7-IP	X4200, 2xAMD 254 (2.8 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A65-PFB22H4GCB7-IP	X4200, 2xAMD 275 (2.2 GHz), 4 x 1GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU, CRS	LOD 12/31/06
A65-PZB22H8GCB7-IP	X4200, 2xAMD 280(2.4 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU	LOD 12/31/06
A65-EGB22H8GCB7-IP	X4200, 2xAMD SE 285 (2.6 GHz), 4 x 2GB DDR/400, 2 X 73GB SAS HDD, DVD, dual PSU	LOD 12/31/06

Sun Fire X4100 Server CRS RoHS Compliant Standard Configurations

A64-NFZ11N1GAL9-IP	X4100, 1x AMD 248, 2x 512MB DDR1-400, 1PSU, **4-Disk Chassis, ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06
A64-NPZ22H4GCA7-IP	X4100, 2x AMD 254, 4x1GB DDR1-400, 73GB 10K, DVD, 2 PSU, **ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06
A64-NQZ22H8GCB7-IP	X4100, 2x AMD 256, 4x2GB DDR1-400, 2x73GB 10K, DVD, 2 PSU, **ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06
A64-PZZ22H4GCB7-IP	X4100, 2x AMD 280, 4x1GB DDR1-400, 2x73GB 10K, 2 PSU, **ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06
A64-PGZ22H8GCB9-IP	X4100, 2x AMD 285, 4x2GB DDR1-400, 2x73GB 10K, 2 PSU, **4-Disk Chassis, ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06

Sun Fire X4200 Server CRS RoHS Compliant Standard Configurations

A65-NFZ11NGAL8-IP	X4200, 1x AMD 248, 2x512MB DDR1-400, 1PSU, **ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06
A65-NPZ22H4GCA7-IP	X4200, 2x AMD 254, 4x1GB DDR1-400, 73GB 10K, DVD, 2PSU, **ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06
A65-PZZ22H8GCB7-IP	X4200, 2x AMD 280, 4x2GB DDR1-400, 2x73GB 10K, DVD, 2PSU, **ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06
A65-PGZ22H8GCB7-IP	X4200, 2x AMD 285, 4x2GB DDR1-400, 2x73GB 10K, DVD, 2PSU, **ROHS Compliant, CRS**	Announce 4/4/06 RR 5/26/06

Sun Fire X4100 M2 Server CRS RoHS Compliant Standard Configurations

A86-FWZ11N2GAL9-I	G1M2 1x2210, 2x1GB DDR2-667, 1xPSU, 4-Disk Chassis	Announce 10/03/06 RR 10/26/06
A86-FJZ22H4GCBA-I	G1M2 2x2216, 4x1GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06

A86-FWZ11N2GAL9-I	G1M2 1x2210, 2x1GB DDR2-667, 1xPSU, 4-Disk Chassis	Announce 10/03/06 RR 10/26/06
A86-FGZ22H8GCBA-I	G1M2 2x2218, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06
A86-KPZ22H8GCBA-I	G1M2 2x2220SE, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU	Announce 10/03/06 RR 09/27/06

Sun Fire X4200 M2 Server CRS RoHS Compliant Standard Configurations

A87-FWZ11N2GAL8-I	G2M2 1x2210, 2x1GB DDR2-667, 1xPSU, CRS	Announce 10/03/06 RR 10/26/06
A87-FJZ22H4GCBA-I	G2M2 2x2216, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU, CRS	Announce 10/03/06 RR 09/27/06
A87-FGZ22H16GCDA-I	G2M2 2x2218, 4x4GB DDR2-667, 4x73GB HDD, DVD/CD-RW, 2xPSU, CRS	Announce 10/03/06 RR 10/16/06
A87-KPZ22H8GCBA-I	G2M2 2x2220SE, 4x2GB DDR2-667, 2x73GB HDD, DVD/CD-RW, 2xPSU, CRS	Announce 10/03/06 RR 09/27/06

Sun Fire X4100 and X4200 Server Non-RoHS Options

The following part numbers are available as X- , XATO and CRS options as noted for the Sun Fire X4100 and X4200 Servers:

X-Option	XATO	CRS	Description	Max. X4100	Max. X4200
X8031A	8031A	-	AMD Opteron 248 Processor (2.0 GHz Single Core CPU) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	LOD 12/31/6
X8033A	8033A	-	AMD Opteron 252 Processor (2.0 GHz Single Core CPU) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	LOD 12/31/6
X8034A	8034A	-	AMD Opteron 254 Processor (2.2GHz Single Core CPU) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	LOD 12/31/6
X8036A	8036A	-	AMD Opteron 270 Processor (2.0 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
X8037A	8037A	-	AMD Opteron 275 Processor (2.2 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	LOD 12/31/6
X8038A	8038A	-	AMD Opteron SE 280 Processor (2.4 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers EOL'd 11/22/05	LOD 2/22/06	LOD 2/22/06

X-Option	XATO	CRS	Description	Max. X4100	Max. X4200
X8044A	8044A	-	AMD Opteron 280 Processor (2.4 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	LOD 12/31/6
X8045A	8045A	-	AMD Opteron SE 285 Processor (2.6 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	LOD 12/31/6
X8021A	8021A	8021A	1GB DDR1/400 Registered ECC DIMMs (2x512MB) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
X8022A	8022A	8022A	2GB DDR1/400 Registered ECC DIMMs (2x1GB) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
X8023A	8023A	8023A	4GB DDR1/400 Registered ECC DIMMs (2x2GB) for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
-	8030A		DVD-ROM Drive for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
-	8042A		Filler Panel for disk bay for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
-	8043A		Filler Panel for DVD bay for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
-	8048A		Power supply unit filler panel for Sun Fire X4100 and X4200 x64 servers. XATO option.	LOD 12/31/6	
XRA-SS2CD-36G10K	RA-SS2CD-36G10K	RA-SS2CD-36G10K	36GB 2.5" SAS 10K RPM disk drive	LOD 12/31/6	LOD 12/31/6
XRA-SS2CD-73G10K	RA-SS2CD-73G10K	RA-SS2CD-73G10K	73GB 2.5" SAS 10K RPM disk drive	LOD 12/31/6	LOD 12/31/6
X8026A	8026A	8026A	Redundant Hot-Swappable Power Supply for Sun Fire X4100 and X4200 servers	LOD 12/31/6	
X8028A	8028A	8028A-IP EOL 11/22/05 Use XATO	Cable Mgmt Arm for Sun Fire X2100, X4100 and X4200 servers	LOD 12/31/6	LOD 12/31/6
X8029A	8029A	8029A-IP EOL 11/22/05, Use XATO	X2100, X4100 and X4200 Rack-Mount Rail Kit	LOD 12/31/6	LOD 12/31/6
SG-XPCI1SCSI-LM320	SG-PCI1SCSI-LM320	SG-PCI1SCSI-LM320	Sun StorEdge Single Channel SCSI PCI-X Card, low-profile, half-length, xx MHz. EOL-01/10/06	2	5
SG-XPCI1FC-QLC	SG-XPCI1FC-QLC	SG-XPCI1FC-QLC	Sun StorEdge 2Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz. EOL-01/10/06	2	5
SG-XPCI1FC-QF2	SG-XPCI1FC-QF2	SG-XPCI1FC-QF2	Sun StorEdge 2Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz. EOL-01/10/06	2	5
SG-XPCI1FC-EM2	SG-XPCI1FC-EM2	SG-XPCI1FC-EM2	Sun StorEdge 2Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	2	5
SG-XPCI2FC-EM2	SG-XPCI2FC-EM2	SG-XPCI2FC-EM2	Sun StorEdge 2Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	2	5
SG-XPCI1FC-QF4	SG-XPCI1FC-QF4	SG-XPCI1FC-QF4	Sun StorEdge 4Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	2	5
SG-XPCI2FC-QF4	SG-XPCI2FC-QF4	SG-XPCI2FC-QF4	Sun StorEdge 4Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	2	5
X1235A	1235A	1235A	Infiniband PCI-X Card. EOL-01/10/06	1	1
X7285A	7285A	-	Dual Gigabit Ethernet low-profile PCI-X Card (Cu)	2	5
X7286A	7286A	-	Single Gigabit Ethernet Low-profile PCI-X Card (fiber)	2	5

X-Option	XATO	CRS	Description	Max. X4100	Max. X4200
X5544A-4	-	-	10 Gigabit Ethernet (fiber) PCI-X card with transceiver. EOL-01/10/06	1	2
X5558A	-	-	10 Gigabit Ethernet (fiber) transceiver	N/A	N/A
X8040A	8040A	8040A	Solaris 10 64-bit and Java Enterprise System pre-installation	1	1

Sun Fire X4100 and X4200 Server RoHS Compliant Options

The following part numbers are available as X- , XATO and CRS options as noted for the Sun Fire X4100 and X4200 Servers:

X-Option	XATO	CRS	Description	Notes
X8031A-Z	8031A-Z	-	AMD Opteron 248 Processor (2.2 GHz Single Core CPU) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8033A-Z	8033A-Z	-	AMD Opteron 252 Processor (2.6 GHz Single Core CPU) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8034A-Z	8034A-Z	-	AMD Opteron 254 Processor (2.8 GHz Single Core CPU) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8035A-Z	8035A-Z	-	AMD Opteron 256 Processor (3.0 GHz Single Core CPU) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8037A-Z	8037A-Z	-	AMD Opteron 275 Processor (2.2 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8044A-Z	8044A-Z	-	AMD Opteron 280 Processor (2.4 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8046A-Z	8046A-Z	-	AMD Opteron 285 Processor (2.6 GHz Dual Core CPU) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8021A-Z	8021A-Z	8021A-Z	1GB DDR1/400 Registered ECC DIMMs (2x512MB) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8022A-Z	8022A-Z	8022A-Z	2GB DDR1/400 Registered ECC DIMMs (2x1GB) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8023A-Z	8023A-Z	8023A-Z	4GB DDR1/400 Registered ECC DIMMs (2x2GB) for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
X8024A-Z	8024A-Z	8024A-Z	8GB DDR1/400 Registered ECC DIMMs (2x4GB) for Sun Fire X4100 and X4200 servers	Announce 10/03/06 RR 09/19/06
X8030A-Z	8030A-Z	8030A-Z	DVD-ROM Drive for Sun Fire X4100 and X4200 servers	ATO Announce 4/4/06 RR 5/26/06; X-Option RR 6/6/06
-	8042A-Z		Filler Panel for disk bay for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06
-	8043A-Z		Filler Panel for DVD bay for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06

X-Option	XATO	CRS	Description	Notes	
-	8048A-Z		Power supply unit filler panel for Sun Fire X4100 and X4200 x64 servers. XATO option.	Announce 4/4/06 RR 5/26/06	
	8053A-Z		CPU filler panel for Sun Fire X4100 and X4200 x64 servers. XATO option.	Announce 4/4/06 RR 5/26/06	
XRA-SS2CD-36G10KZ	RA-SS2CD-36G10KZ	RA-SS2CD-36G10KZ	36GB 2.5" SAS 10K RPM disk drive	LOD 12/01/06	
XRA-SS2CD-73G10KZ	RA-SS2CD-73G10KZ	RA-SS2CD-73G10KZ	73GB 2.5" SAS 10K RPM disk drive	Announce 4/4/06 RR 5/26/06	
X8026A-Z	8026A-Z	8026A-Z	Redundant Hot-Swappable Power AC Supply for Sun Fire X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06	
X8051A-Z	8051A-Z	8051A-Z	Redundant Hot-Swappable DC Power Supply for Sun Fire X4100 and X4200 servers	Announce 08/29/06 RR 08/29/06	
X8028A-Z	8028A-Z	8028A-Z	Cable Mgmt Arm for Sun Fire X2100, X4100 and X4200 servers	Announce 4/4/06 RR 5/26/06	
X8029A-Z	8029A-Z	8029A-Z	X2100, X4100 and X4200 Rack-Mount Rail Kit	Announce 4/4/06 RR 5/26/06	
SG-XPCI1SCSILM320Z	SG-PCI1SCSILM320Z	SG-PCI1SCSILM320-Z	Sun StorEdge Single Channel SCSI PCI-X Card, low-profile, half-length, xx MHz.	Max 2	Max 5
SG-XPCI1FC-QLC-Z	SG-XPCI1FC-QLC-Z	SG-XPCI1FC-QLC-Z	Sun StorEdge 2Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz.	Max 2	Max 5
SG-XPCI1FC-QF2-Z	SG-XPCI1FC-QF2-Z	SG-XPCI1FC-QF2-Z	Sun StorEdge 2Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz.	Max 2	Max 5
SG-XPCI1FC-EM2	SG-XPCI1FC-EM2	SG-XPCI1FC-EM2	Sun StorEdge 2Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	Max 2	Max 5
SG-XPCI2FC-EM2	SG-XPCI2FC-EM2	SG-XPCI2FC-EM2	Sun StorEdge 2Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	Max 2	Max 5
SG-XPCI1FC-QF4	SG-XPCI1FC-QF4	SG-XPCI1FC-QF4	Sun StorEdge 4Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	Max 2	Max 5
SG-XPCI2FC-QF4	SG-XPCI2FC-QF4	SG-XPCI2FC-QF4	Sun StorEdge 4Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	Max 2	Max 5
X1333A-4	1333A-4	1333A-4	Infiniband PCI-X Card.	Max 1	Max 1
X7285A	7285A	-	Dual Gigabit Ethernet low-profile PCI-X Card (Cu)	Max 2	Max 5
X7286A	7286A	-	Single Gigabit Ethernet Low-profile PCI-X Card (fiber)	Max 2	Max 5
X5544A	-	-	10 Gigabit Ethernet (fiber) PCI-X card with transceiver.	Max 1	Max 2
X5558A	-	-	10 Gigabit Ethernet (fiber) transceiver	N/A	N/A
-	8040A	-	Solaris 10 64-bit and Java Enterprise System v3 pre-installation	Announce 4/4/06 RR 5/26/06	
-	8047A	-	Solaris 10 U1 -bit and Java Enterprise System v4 pre-installation	Announce 4/4/06 RR 5/26/06	

Sun Fire X4100 M2 and X4200 M2 Server RoHS Compliant Options

The following part numbers are available as X- , XATO and CRS options as noted for the Sun Fire X4100 M2 and X4200 M2 Servers:

X-Option	XATO	CRS	Description	Notes
X4221A-Z	**4221A-Z**	**-**	AMD Opteron 2210 Processor – 1.8GHz/1MB	Announce 10/03/06 RR 09/27/06
X4222A-Z	**4222A-Z**	**-**	AMD Opteron 2216 Processor – 2.4GHz/1MB	Announce 10/03/06 RR 09/27/06
X4223A-Z	**4223A-Z**	**-**	AMD Opteron 2218 Processor – 2.6GHz/1MB	Announce 10/03/06 RR 09/27/06
X4224A-Z	**4224A-Z**	**-**	AMD Opteron 2220 SE Processor – 2.8GHz/1MB	Announce 10/03/06 RR 09/27/06
X4225A-Z	**4225A-Z**	**4225A-Z**	2GB DDR2-667 Registered ECC Memory (2x1GB)	Announce 10/03/06 RR 09/27/06
X4226A-Z	**4226A-Z**	**4226A-Z**	4GB DDR2-667 Registered ECC Memory (2x2GB)	Announce 10/03/06 RR 09/27/06
X4227A-Z	**4227A-Z**	**4227A-Z**	8GB DDR2-667 Registered ECC Memory (2x4GB)	Announce 10/03/06 RR 10/19/06
X8049A-Z	**8049A-Z**	**8049A-Z**	DVD-ROM/CD-RW Optical Drive	Announce 08/15/06 RR 08/15/06
-	**8042A-Z**		Filler Panel for disk bay. XATO option.	Announce 10/03/06 RR 11/07/06
-	**8043A-Z**		Filler Panel for DVD bay. XATO option.	Announce 10/03/06 RR 11/07/06
-	**8048A-Z**		Power supply unit filler panel. XATO option.	Announce 10/03/06 RR 11/07/06
	4232A-Z		CPU filler panel. XATO option.	Announce 10/03/06 RR 11/07/06

X-Option	XATO	CRS	Description	Notes	
XRA-SS2CD-73G10KZ	**RA-SS2CD-73G10KZ**	**RA-SS2CD-73G10KZ**	73GB 2.5" SAS 10K RPM disk drive	Announce 4/4/06 RR 5/26/06	
X8026A-Z	**8026A-Z**	**8026A-Z**	Redundant Hot-Swappable AC Power Supply	Announce 4/4/06 RR 5/26/06	
X8028A-Z	**8028A-Z**	**8028A-Z**	Cable Management Arm	Announce 4/4/06 RR 5/26/06	
X8029A-Z	**8029A-Z**	**8029A-Z**	Rack-Mount Slide Rail Kit	Announce 4/4/06 RR 5/26/06	
SG-XPCI1SCSILM320Z	**SG-PCI1SCSILM320Z**	**SG-PCI1SCSILM320-Z**	Sun StorEdge Single Channel SCSI PCI-X Card, low-profile, half-length, xx MHz.	0	Max 1
SG-XPCI1FC-QLC-Z	**SG-XPCI1FC-QLC-Z**	**SG-XPCI1FC-QLC-Z**	Sun StorEdge 2Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz.	0	Max 1
SG-XPCI1FC-QF2-Z	**SG-XPCI1FC-QF2-Z**	**SG-XPCI1FC-QF2-Z**	Sun StorEdge 2Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz.	0	Max 1
SG-XPCI1FC-EM2	**SG-XPCI1FC-EM2**	**SG-XPCI1FC-EM2**	Sun StorEdge 2Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	0	Max 1
SG-XPCI2FC-EM2	**SG-XPCI2FC-EM2**	**SG-XPCI2FC-EM2**	Sun StorEdge 2Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	0	Max 1
SG-XPCI1FC-QF4	**SG-XPCI1FC-QF4**	**SG-XPCI1FC-QF4**	Sun StorEdge 4Gb Single Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	0	Max 1
SG-XPCI2FC-QF4	**SG-XPCI2FC-QF4**	**SG-XPCI2FC-QF4**	Sun StorEdge 4Gb Dual Port Fibre Channel PCI-X card, low-profile, half-length,xx MHz	0	Max 1
X1333A-4	**1333A-4**	**1333A-4**	Infiniband PCI-X Card.	0	Max 1
X7285A	**7285A**	**-**	Dual Gigabit Ethernet low-profile PCI-X Card (Cu)	0	Max 1
X7286A	**7286A**	**-**	Single Gigabit Ethernet Low-profile PCI-X Card (fiber)	0	Max 1
X5544A	**-**	**-**	10 Gigabit Ethernet (fiber) PCI-X card with transceiver.	0	Max 1
X5558A	**-**	**-**	10 Gigabit Ethernet (fiber) transceiver	0	N/A
-	**8054A**	**-**	Solaris 10 U2 and Java Enterprise System 4 pre-installation	Announce 08/29/06 RR 08/29/06	

X-Option	XATO	CRS	Description	Notes	
SG-XPCIE2FC-QF4	**SG-PCIE2FC-QF4**	**SG-PCIE2FC-QF4**	4 Gb Dual FC PCI-E Host Bus Adapter	Max 2	Max 4
SG-XPCIE1FC-QF4	**SG-PCIE1FC-QF4**	**SG-PCIE1FC-QF4**	4 Gb Single FC PCI-E Host Bus Adapter	Max 2	Max 4
SG-XPCIE2FC-EM4	**SG-PCIE2FC-EM4**	**SG-PCIE2FC-EM4**	4 Gb Dual FC PCI-E Emulex Host Bus Adapter	Max 2	Max 4
SG-XPCIE1FC-EM4	**SG-PCIE1FC-EM4**	**SG-PCIE1FC-EM4**	4 Gb Single FC PCI-E Emulex Host Bus Adapter	Max 2	Max 4
SG-XPCIE2SCSIU320Z	**SG-PCIE2SCSIU320Z**	**SG-PCIE2SCSIU320Z**	Sun StorageTek PCI Express x4 Dual Channel Ultra320 SCSI HBA	Max 2	Max 4
X7280A-2	**7280A-2**	**7280A-2**	Sun Dual Gigabit Ethernet UTP PCI-E Low Profile Adapter	Max 2	Max 4
X7281A-2	**7281A-2**	**7281A-2**	Sun Dual Gigabit Ethernet MMF PCI-E Low Profile Adapter	Max 2	Max 4
X1236A-Z	**1236A-Z**	**1236A-Z**	Sun Dual Port 4x IB Host Channel Adapter PCI-Ex is a low profile card used to provide 4x(10Gbps) connectivity to InfiniBand Fabric Network	Max 2	Max 4
X6000A	**6000A**	**6000A**	Sun Crypto Accelerator 6000 Board, SSL/IPsec with FIPS Level 3, PCIe Standard Low Profile Bracket	Max 2	Max 4
X6099A	**-**	**-**	Sun Crypto Accelerator 6000 Software CD, to enable IPsec support	Max 1	Max 1

General Configuration Notes:

1. Single processor systems can be expanded with a second CPU of the identical model/speed only, e.g. AMD Opteron 1x248 processor based system can only use another AMD Opteron 248 processor; mixing with a 252 CPU is not supported.
2. The entry-level single CPU standard configuration has only 2 memory slots that are usable; the other 4 memory slots only work if a second CPU is installed. This can be done by purchasing the optional second CPU option.
3. Memory must be installed in pairs. Pairs of different densities may be mixed, e.g. 2X512MB and 2x1GB on CPU 1 memory slots. Symmetry is best for memory performance on 2 CPU systems, e.g. 4 GB should have 2x1GB on CPU 1 memory slots and 2x1GB CPU 2 memory slots. While 3 GB would run (2x1GB on CPU 1, 2x512MB on CPU2), it will experience slower memory performance.

4. Any combination of two same type drives supported. If onboard RAID 1 mirroring is going to be used, it requires identically-sized drives.
5. The 100 MHZ PCI-X slot 0 in both the Sun Fire X4100 and Sun Fire X4200 servers share the bus to the 8131 with LSI SAS 1064 hard drive controller. Placing slower PCI-X cards in this slot will slow the bus reducing the available bandwidth for both HDD and PCI-X traffic.
6. The (X)1235A, X5544A, and 4455A are supported in the 133MHz slot only on both the Sun Fire X4100 and Sun Fire X4200.
7. There is no RAID 5 PCI-X card supported on the Sun Fire X4100 and Sun Fire X4200.

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. A minimum of one CPU option required. Single processor systems can be expanded with a second CPU of the identical model/speed only, e.g. AMD Opteron 1x248 processor based system can only use another AMD Opteron 248 processor; mixing with a 254 CPU is not supported.
3. A minimum of one memory option per CPU required. Memory must be installed in pairs. Pairs of different densities may be mixed, e.g. 2X512MB and 2x1GB on CPU 1 memory slots. Symmetry is best for memory performance on 2 CPU systems, e.g. 4 GB should have 2x1GB on CPU 1 memory slots and 2x1GB CPU 2 memory slots. While 3 GB would run (2x1GB on CPU 1, 2x512MB on CPU2), it will experience slower memory performance. A fully configured 16 GB system requires two CPUs. Only 8 GB memory is possible in a single CPU system. Example: A single CPU system can utilize up to 2 memory options (4 DIMMs total for a maximum of 8 GB). The unpopulated second CPU socket prevents the use of the second memory bank (4 DIMM slots).
4. A disk filler panel is required for any HDD slot not filled. For example, a diskless Sun Fire X4200 system will require 4 disk drive filler panels.
5. A CPU filler panel is required for any CPU slot not filled.
6. A PSU filler panel is required for any PSU slot not filled.
7. A DVD-ROM or DVD filler panel is required when selecting the X4100 or X4200 M2 chassis'.

Sun Fire X4100 and X4200 PCI-X card support by OS

Part numbers are designated as X-option/XATO. For more information on individual PCI-X cards, please visit: http://www.sun.com/servers/entry/x4100/optioncards.html

Option Card	*Solaris 10 on x64*	*Red Hat RHEL 3.0 (32-bit)*	*Red Hat RHEL 3.0 (64-bit)*	*Red Hat RHEL 4.0 (64-bit)*	*Novell SUSE SLES 9 (64-bit)*	*Windows2003 (32-bit)*	*Windows2003 (64-bit)*
SG-XPCI1SCSI-LM320	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCI2FC-QF4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCI1FC-QF4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCI2FC-QF2-Z	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCI1FC-QL2	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCI1FC-QLC-Z	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCI1FC-EM2	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCI2FC-EM2	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
X7285A	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
X7286A	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
X5544A	TBD	Yes	Yes	Yes	Yes	N/A	N/A
X1235A	Driver Included in OS	Yes	Yes	Yes	Yes	N/A	N/A

Sun Fire X4100 M2 and X4200 M2 PCI-E card support by OS

Part numbers are designated as X-option/XATO. For more information on individual PCI-E cards, please visit: http://www.sun.com/servers/entry/x4100/optioncards.html

Option Card	*Solaris 10 on x64*	*Red Hat RHEL 3.0 (32-bit)*	*Red Hat RHEL 3.0 (64-bit)*	*Red Hat RHEL 4.0 (64-bit)*	*Novell SUSE SLES 9 (64-bit)*	*Windows2003 (32-bit)*	*Windows2003 (64-bit)*
SG-XPCIE2FC-QF4	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCIE1FC-QF4	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCIE2FC-EM4	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCIE1FC-EM4	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
SG-XPCIE2SCSIU320Z	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
X7280A-2	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
X7281A-2	Driver Included in OS	Yes	Yes	Yes	Yes	Yes	Yes
X1236A-Z	Driver Included in OS	Yes	Yes	Yes	Yes	No	No

Services

Warranty Support

The Sun Fire X4100 and Sun Fire X4200 servers have 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 Global Services™ offers a full range of services to assist customers who deploy the Sun Fire X4100 and Sun Fire X4200 servers. 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 customers needs: the SunSpectrum℠ Service Plan for full system support ranging from basic to mission critical service levels, the Sun Hardware Only Service Plan, and Sun Software Service Plan. All three Service Plans are available for the Sun Fire X4100 and Sun Fire X4200 servers.

- 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.
- Sun Software Service Plans: For fundamental software services such as technical phone or web-based support and software maintenance (updates and upgrades), Sun offers two levels of service for your production system software.

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
- All the essentials for one great price
- Priority service
- No "per incident" limits
- Includes Solaris 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.

Warranty Upgrade to SunSpectrum Service Plan for Sun Fire X4100 and X4200 Server

The following are part numbers and descriptions for the warranty upgrade to SunSpectrum Service Plan

Part Number	Description
W9D-A64-1S	Upgrade to 1 year SunSpectrum Silver(TM) Plan for Sun Fire X4100 Server

W9D-A64-2S	Upgrade to 2 years SunSpectrum Silver Plan for Sun Fire X4100 Server
W9D-A64-3S	Upgrade to 3 years SunSpectrum Silver Plan for Sun Fire X4100 Server
W9D-A64-1G	Upgrade to 1 year SunSpectrum Gold(TM) Plan for Sun Fire X4100 Server
W9D-A64-2G	Upgrade to 2 years SunSpectrum Gold Plan for Sun Fire X4100 Server
W9D-A64-3G	Upgrade to 3 years SunSpectrum Gold Plan for Sun Fire X4100 Server
W9D-A64-24-1G	Upgrade to 1 year SunSpectrum Gold 7x24 Plan for Sun Fire X4100 Server
W9D-A64-24-2G	Upgrade to 2 years SunSpectrum Gold 7x24 Plan for Sun Fire X4100 Server
W9D-A64-24-3G	Upgrade to 3 years SunSpectrum Gold 7x24 Plan for Sun Fire X4100 Server
W9D-A64-1P	Upgrade to 1 year SunSpectrum Platinum(TM) Plan for Sun Fire X4100 Server
W9D-A64-2P	Upgrade to 2 years SunSpectrum Platinum Plan for Sun Fire X4100 Server
W9D-A64-3P	Upgrade to 3 years SunSpectrum Platinum Plan for Sun Fire X4100 Server
W9D-A65-1S	Upgrade to 1 year SunSpectrum Silver Plan for Sun Fire X4200 Server
W9D-A65-2S	Upgrade to 2 years SunSpectrum Silver Plan for Sun Fire X4200 Server
W9D-A65-3S	Upgrade to 3 years SunSpectrum Silver Plan for Sun Fire X4200 Server
W9D-A65-1G	Upgrade to 1 year SunSpectrum Gold Plan for Sun Fire X4200 Server
W9D-A65-2G	Upgrade to 2 years SunSpectrum Gold Plan for Sun Fire X4200 Server
W9D-A65-3G	Upgrade to 3 years SunSpectrum Gold Plan for Sun Fire X4200 Server
W9D-A65-24-1G	Upgrade to 1 year SunSpectrum Gold 7x24 Plan for Sun Fire X4200 Server
W9D-A65-24-2G	Upgrade to 2 years SunSpectrum Gold 7x24 Plan for Sun Fire X4200 Server
W9D-A65-24-3G	Upgrade to 3 years SunSpectrum Gold 7x24 Plan for Sun Fire X4200 Server
W9D-A65-1P	Upgrade to 1 year SunSpectrum Platinum Plan for Sun Fire X4200 Server
W9D-A65-2P	Upgrade to 2 years SunSpectrum Platinum Plan for Sun Fire X4200 Server
W9D-A65-3P	Upgrade to 3 years SunSpectrum Platinum Plan for Sun Fire X4200 Server

Warranty Upgrade to SunSpectrum Service Plan for Sun Fire X4100 M2 and X4200 M2 Server

The following are part numbers and descriptions for the warranty upgrade to SunSpectrum Service Plan

Part Number	Description
W9D-A86-1S	Upgrade to 1 year SunSpectrum Silver(TM) Plan for Sun Fire X4100 M2 Server
W9D-A86-2S	Upgrade to 2 years SunSpectrum Silver Plan for Sun Fire X4100 M2 Server
W9D-A86-3S	Upgrade to 3 years SunSpectrum Silver Plan for Sun Fire X4100 M2 Server
W9D-A86-1G	Upgrade to 1 year SunSpectrum Gold(TM) Plan for Sun Fire X4100 M2 Server
W9D-A86-2G	Upgrade to 2 years SunSpectrum Gold Plan for Sun Fire X4100 M2 Server
W9D-A86-3G	Upgrade to 3 years SunSpectrum Gold Plan for Sun Fire X4100 M2 Server
W9D-A86-24-1G	Upgrade to 1 year SunSpectrum Gold 7x24 Plan for Sun Fire X4100 M2 Server
W9D-A86-24-2G	Upgrade to 2 years SunSpectrum Gold 7x24 Plan for Sun Fire X4100 M2 Server
W9D-A86-24-3G	Upgrade to 3 years SunSpectrum Gold 7x24 Plan for Sun Fire X4100 M2 Server
W9D-A86-1P	Upgrade to 1 year SunSpectrum Platinum(TM) Plan for Sun Fire X4100 M2 Server
W9D-A86-2P	Upgrade to 2 years SunSpectrum Platinum Plan for Sun Fire X4100 M2 Server
W9D-A86-3P	Upgrade to 3 years SunSpectrum Platinum Plan for Sun Fire X4100 M2 Server
W9D-A87-1S	Upgrade to 1 year SunSpectrum Silver Plan for Sun Fire X4200 M2 Server
W9D-A87-2S	Upgrade to 2 years SunSpectrum Silver Plan for Sun Fire X4200 M2 Server
W9D-A87-3S	Upgrade to 3 years SunSpectrum Silver Plan for Sun Fire X4200 M2 Server
W9D-A87-1G	Upgrade to 1 year SunSpectrum Gold Plan for Sun Fire X4200 M2 Server
W9D-A87-2G	Upgrade to 2 years SunSpectrum Gold Plan for Sun Fire X4200 M2 Server
W9D-A87-3G	Upgrade to 3 years SunSpectrum Gold Plan for Sun Fire X4200 M2 Server

W9D-A87-24-1G	Upgrade to 1 year SunSpectrum Gold 7x24 Plan for Sun Fire X4200 M2 Server
W9D-A87-24-2G	Upgrade to 2 years SunSpectrum Gold 7x24 Plan for Sun Fire X4200 M2 Server
W9D-A87-24-3G	Upgrade to 3 years SunSpectrum Gold 7x24 Plan for Sun Fire X4200 M2 Server
W9D-A87-1P	Upgrade to 1 year SunSpectrum Platinum Plan for Sun Fire X4200 M2 Server
W9D-A87-2P	Upgrade to 2 years SunSpectrum Platinum Plan for Sun Fire X4200 M2 Server
W9D-A87-3P	Upgrade to 3 years SunSpectrum Platinum Plan for Sun Fire X4200 M2 Server

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 X4100 and X4200 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-A64W-1S	Upgrade to 1 year Sun Windows Standard Support for Sun Fire X4100 Server
W9D-A64W-2S	Upgrade to 2 years Sun Windows Standard Support for Sun Fire X4100 Server
W9D-A64W-3S	Upgrade to 3 years Sun Windows Standard Support for Sun Fire X4100 Server
W9D-A64W-1G	Upgrade to 1 year Sun Windows Global Support for Sun Fire X4100 Server
W9D-A64W-2G	Upgrade to 2 years Sun Windows Global Support for Sun Fire X4100 Server
W9D-A64W-3G	Upgrade to 3 years Sun Windows Global Support for Sun Fire X4100 Server
W9D-A64W-1P	Upgrade to 1 year Sun Windows Premium Support for Sun Fire X4100 Server
W9D-A64W-2P	Upgrade to 2 years Sun Windows Premium Support for Sun Fire X4100 Server
W9D-A64W-3P	Upgrade to 3 years Sun Windows Premium Support for Sun Fire X4100 Server
W9D-A65W-1S	Upgrade to 1 year Sun Windows Standard Support for Sun Fire X4200 Server
W9D-A65W-2S	Upgrade to 2 years Sun Windows Standard Support for Sun Fire X4200 Server
W9D-A65W-3S	Upgrade to 3 years Sun Windows Standard Support for Sun Fire X4200 Server
W9D-A65W-1G	Upgrade to 1 year Sun Windows Global Support for Sun Fire X4200 Server
W9D-A65W-2G	Upgrade to 2 years Sun Windows Global Support for Sun Fire X4200 Server
W9D-A65W-3G	Upgrade to 3 years Sun Windows Global Support for Sun Fire X4200 Server
W9D-A65W-1P	Upgrade to 1 year Sun Windows Premium Support for Sun Fire X4200 Server
W9D-A65W-2P	Upgrade to 2 years Sun Windows Premium Support for Sun Fire X4200 Server
W9D-A65W-3P	Upgrade to 3 years Sun Windows Premium Support for Sun Fire X4200 Server

Warranty Upgrade to Sun[sm] System Service Plans for Windows OS for Sun Fire X4100 M2 and X4200 M2 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-A86W-1S	Upgrade to 1 year Sun Windows Standard Support for Sun Fire X4100 M2 Server
W9D-A86W-2S	Upgrade to 2 years Sun Windows Standard Support for Sun Fire X4100 M2 Server
W9D-A86W-3S	Upgrade to 3 years Sun Windows Standard Support for Sun Fire X4100 M2 Server
W9D-A86W-1G	Upgrade to 1 year Sun Windows Global Support for Sun Fire X4100 M2 Server
W9D-A86W-2G	Upgrade to 2 years Sun Windows Global Support for Sun Fire X4100 M2 Server
W9D-A86W-3G	Upgrade to 3 years Sun Windows Global Support for Sun Fire X4100 M2 Server
W9D-A86W-1P	Upgrade to 1 year Sun Windows Premium Support for Sun Fire X4100 M2 Server
W9D-A86W-2P	Upgrade to 2 years Sun Windows Premium Support for Sun Fire X4100 M2 Server
W9D-A86W-3P	Upgrade to 3 years Sun Windows Premium Support for Sun Fire X4100 M2 Server
W9D-A87W-1S	Upgrade to 1 year Sun Windows Standard Support for Sun Fire X4200 M2 Server
W9D-A87W-2S	Upgrade to 2 years Sun Windows Standard Support for Sun Fire X4200 M2 Server
W9D-A87W-3S	Upgrade to 3 years Sun Windows Standard Support for Sun Fire X4200 M2 Server
W9D-A87W-1G	Upgrade to 1 year Sun Windows Global Support for Sun Fire X4200 M2 Server
W9D-A87W-2G	Upgrade to 2 years Sun Windows Global Support for Sun Fire X4200 M2 Server
W9D-A87W-3G	Upgrade to 3 years Sun Windows Global Support for Sun Fire X4200 M2 Server
W9D-A87W-1P	Upgrade to 1 year Sun Windows Premium Support for Sun Fire X4200 M2 Server
W9D-A87W-2P	Upgrade to 2 years Sun Windows Premium Support for Sun Fire X4200 M2 Server
W9D-A87W-3P	Upgrade to 3 years Sun Windows Premium Support for Sun Fire X4200 M2 Server

Warranty Upgrade to Sun HW Only Service for Sun Fire X4100 and X4200 Server

Part Number	Description
W9D-A64-SD-1H	Upgrade to 1 year Sun HW Only SBD for Sun Fire X4100 Server
W9D-A64-SD-2H	Upgrade to 2 years Sun HW Only SBD for Sun Fire X4100 Server
W9D-A64-SD-3H	Upgrade to 3 years Sun HW Only SBD for Sun Fire X4100 Server
W9D-A64-24-1H	Upgrade to 1 year Sun HW Only 7x24 for Sun Fire X4100 Server
W9D-A64-24-2H	Upgrade to 2 years Sun HW Only 7x24 for Sun Fire X4100 Server
W9D-A64-24-3H	Upgrade to 3 years Sun HW Only 7x24 for Sun Fire X4100 Server
W9D-A65-SD-1H	Upgrade to 1 year Sun HW Only SBD for Sun Fire X4200 Server
W9D-A65-SD-2H	Upgrade to 2 years Sun HW Only SBD for Sun Fire X4200 Server
W9D-A65-SD-3H	Upgrade to 3 years Sun HW Only SBD for Sun Fire X4200 Server
W9D-A65-24-1H	Upgrade to 1 year Sun HW Only 7x24 for Sun Fire X4200 Server
W9D-A65-24-2H	Upgrade to 2 years Sun HW Only 7x24 for Sun Fire X4200 Server
W9D-A65-24-3H	Upgrade to 3 years Sun HW Only 7x24 for Sun Fire X4200 Server

Warranty Upgrade to Sun HW Only Service for Sun Fire X4100 M2 and X4200 M2 Server

Part Number	Description
W9D-A86-SD-1H	Upgrade to 1 year Sun HW Only SBD for Sun Fire X4100 M2 Server
W9D-A86-SD-2H	Upgrade to 2 years Sun HW Only SBD for Sun Fire X4100 M2 Server
W9D-A86-SD-3H	Upgrade to 3 years Sun HW Only SBD for Sun Fire X4100 M2 Server
W9D-A86-24-1H	Upgrade to 1 year Sun HW Only 7x24 for Sun Fire X4100 M2 Server
W9D-A86-24-2H	Upgrade to 2 years Sun HW Only 7x24 for Sun Fire X4100 M2 Server
W9D-A86-24-3H	Upgrade to 3 years Sun HW Only 7x24 for Sun Fire X4100 M2 Server
W9D-A87-SD-1H	Upgrade to 1 year Sun HW Only SBD for Sun Fire X4200 M2 Server
W9D-A87-SD-2H	Upgrade to 2 years Sun HW Only SBD for Sun Fire X4200 M2 Server
W9D-A87-SD-3H	Upgrade to 3 years Sun HW Only SBD for Sun Fire X4200 M2 Server
W9D-A87-24-1H	Upgrade to 1 year Sun HW Only 7x24 for Sun Fire X4200 M2 Server
W9D-A87-24-2H	Upgrade to 2 years Sun HW Only 7x24 for Sun Fire X4200 M2 Server
W9D-A87-24-3H	Upgrade to 3 years Sun HW Only 7x24 for Sun Fire X4200 M2 Server

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™	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.
IIPMI	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. The AMD Opteron processor integrates 1 MB of L2 cache per CPU.
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 AMD and others.

Materials Abstract

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

Collateral	Audience	Purpose	SunWIN Token #
Product Literature			
Sun Fire X4100 Server Datasheet	Customer	Sales Tool,Training	447332
Sun Fire X4200 Server Datasheet	Customer	Sales Tool,Training	447333
Services for Sun Fire x64 Servers Datasheet	Customer	Sales Tool,Training	450493
Sun Fire X4100 and X4200 Server Architecture White Paper	Customer	Sales Tool,Training	447327
The New Era of Serial Attached SCSI White Paper	Customer	Sales Tool,Training	454747
2.5-inch Enterprise Disk Drives: Key to Cutting Data Center Cost White Paper	Customer	Sales Tool,Training	454749
Sun Fire X4100 and X4200 Server Reviewer's Guide		Sales Tool,Training	447328
Sales Tools			
Sun Fire X4100 and X4200 Servers, Just the Facts	Sales,SEs, Partners	Sales Tool,Training	447326
Sun Fire X4100 and X4200 Server Technical Presentation	Sales,SEs, Partners, Customer	Sales Tool,Training	447329
Sun Fire X4100 and X4200 Server Customer Presentation	Customer Presentation	Sales Tool,Training	447330
Sun Fire X4100 and X4200 Server Sales Training Presentation	Sales,SEs, Partners	Training	447331
Competitive Information			
Beating HP with the Sun Fire X4100 Server	Sales,SEs	Sales Tool,Training	447334
Beating HP with the Sun Fire X4100 Server	Sales,SEs	Sales Tool,Training	447335
Beating IBM with the Sun Fire X4100 Server	Sales,SEs	Sales Tool,Training	447336
Beating IBM with the Sun Fire X4200 Server	Sales,SEs	Sales Tool,Training	447337
Beating Dell with the Sun Fire X4100 Server	Sales,SEs	Sales Tool,Training	447340
Beating Dell with the Sun Fire X4200 Server	Sales,SEs	Sales Tool,Training	447341
External Web Sites			
Sun Fire X4100 and X4200 Server Web Site	http://www.sun.com/servers/entry/x4100 http://www.sun.com/servers/entry/x4200		
Internal Web Sites			
Sun Fire X4100 and X4200 Server Internal Web Site	http://onestop.central/		
Reseller Web Site			
Sun Reseller General Information	http://reseller.sun.com		

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Competitive Information

Competitive beat sheets are posted regularly to http://competitive.central . These reports contain information about competitor's products, the strengths and weaknesses of the Sun Fire X4100 and Sun Fire X4200 servers versus competitors' products, and positioning information.

A summary of the Sun Fire X4100 and X4200 servers vs. the leading competition is shown below.

Sun Fire X4100 Server

	Sun Fire X4100 Server	*IBM eServer 326*	*Dell PowerEdge 1850*	*HP DL145*
Number of processors	1–2	1–2	1–2	1–2
CPU	AMD Opteron Processor	AMD Opteron Processor	Intel Xeon EM64T	AMD Opteron
Predicted L2 cache size	1 MB	1 MB	Up to 2MB	1MB L2
CPU interconnect	3 available HyperTransport links per CPU*	3 available HyperTransport links per CPU**	FSB (Front Side Bus) at 800MHz	FSB of AMD Opteron processor runs at the speed of the processor
Min/max memory	1-16 GB (32 GB when 4 GB DIMMS avail)	1 GB–16GB	512 MB–12GB (16 GB using dual rank 4GB DIMMs – not yet available)	1-16 GB
O/S	Solaris 10 OS on x64/Linux/Windows	Windows/Linux*** Solaris 10 HCL	Windows/Linux/ Netware/VMware ESX	Windows/Linux
Disk number	2 SAS	2 SATA or SAS	2 (Ultra320 SCSI)	Standard ATA with support for two non-hot-plug ATA; choice of SCSI or ATA drives, SCSI storage would need to use PCI-X slot for SCSI controller
Raid	RAID 1	RAID 1	Optional	Optional
PCI-X slots	2 Low Profile MD2 (1 at 100 MHz and 1 at 133 MHz)	2 (1 full-length at 133MHz and 1 half-length at 100 MHz)	2 (1 full-length at 133 MHz and 1 full-length at 100 MHz) or 2 PCIe (1x4 lane and 1x8 lane)	1 full-length at 133 MHz
Ethernet ports	4 x 10/100/1000	2 x 10/100/1000	2 x 10/100/1000	2 x 10/100/1000
Height	1U	1U	1U	1U
Power Supply	550 W	411 W	550 W	500 W
Remote Mgmt	ILOM	Partial, RSA-II (Extra cost)	Yes, extra cost	Yes, extra cost
Warranty	3 year NBD onsite	1 year NBD onsite	3 year NBD onsite	1 year NBD parts only, 0 years labor & on-site support

*Currently, each HyperTransport link is 16 x 16 bits at 1GHz.

** Currently, each HyperTransport link is 16 x 16 bits at 800MHz.

***IBM has not yet announced support for Windows 2000, Windows 2003 is qualified for the e326

Sun Fire X4100 Server vs. Competition Operating System Advantages:

- Competition offers no enterprise class UNIX as a bundle.
- Competition offers no free RTU for an enterprise class UNIX like Solaris 10 OS as a bundle.
- Competition offers no free virtualization like the Solaris Containers that is offered with the Sun Fire X4100 Server.

Sun Fire X4100 Server vs. IBM eServer 326 Hardware Advantages:

- 3 year next business day hardware warranty vs. 1 year same day on-site warranty
- RAID 0 is not standard
- X4100 has quad GbE versus dual GbE of the IBM e326
- e326 doesn't offer dual hot-swap power as an option, Sun Fire X4100 does offer this critical option
- IBM has no 2U/2-socket Opteron processor-based upgrade for the e326
- IBM has stated no public plans to scale Opteron processors beyond 2-socket/1U
- IIBM e326 is 26" deep and the Sun Fire X4100 server 1 is only 25.2" deep
- Expanded environmental monitoring RSA-II (remote management features) is an extra cost for the e326
- Linux on POWER(IBM's proprietary hardware) is IBM's long-term strategic 64-bit.
- IBM remains a company using Linux on x64 and Linux on POWER as a perceived low cost to sell higher-margin software, middleware, financing, services and storage
- Sun has a unique long-term strategic partnership to develop larger systems around the AMD Opteron processor
- JES is less expensive than WebSphere
- Sun N2000 Secure Application switch is both developed and supported by Sun, while the IBM alternative is OEMed and has slower performance.
- X4100's ILOM management functionality is vastly superior to the functionality offered on the IBM system. ILOM offers full remote manageability with remote KVM and media support – IBM does not.

Sun Fire X4100 Server vs. Dell PowerEdge 1850 Hardware Advantages:

- Higher bandwidth with HyperTransport technology compared with FSB bottlenecks inherent in the Intel architecture
- The Sun Fire X4100 server has an on-board memory controller, allowing memory bandwidth to scale with the number of cores. Dell PowerEdge 1850 has an external memory controller, limiting memory bandwidth as the number of processors is increased.
- Quad GbE is standard on X4100. It's an additional charge for PowerEdge 1850.
- Dual core is not available with PowerEdge 1850 until Q1CY2006.
- RAID 0,1 is an additional charge.
- More streamlined form factor: 25.2 inch depth vs. PowerEdge 1850's 30-inch depth
- ILOM is a core part of the system at no additional cost. Dell has an additional charge for the same functionality.

Sun Fire X4100 Server vs. HP DL145 Hardware Advantages:

- HP DL145 does not have RAID standard.
- SAS more powerful and reliable than ATA100; HP DL145 is fitted with ATA or SCSI hard drives
- 3 year next business day vs. 1 year parts, 0 years labor, 0 years on-site warranty.
- Two PCI-X slots vs. one PCI-X slot.
- HP DL145 has no redundant power supply and no redundant fans.
- X4100 pre-installs Java Enterprise System versus cost of utilizing 3rd party middleware.
- X4100 has quad GbE versus dual GbE of the HP DL145 servers.
- HP DL145 does not have hot plug drives and DVD-ROM is optional on HP DL145
- ILOM is a core part of the system at no additional cost. HP make an additional charge for the same functionality.

Sun Fire X4200 Server

	Sun Fire X4200 Server	*IBM xSeries 346*	*Dell PowerEdge 2850*	*HP DL385*
Number of processors	1–2	1–2	1–2	1–2
CPU	AMD Opteron Processor	Intel Xeon DP	Intel Xeon EM64T	AMD Opteron Processor
Predicted L2 cache size	1 MB	2 MB	Up to 2MB	1MB L2 cache
Interconnect	3 available HyperTransport links per CPU	FSB (Front Side Bus) at 800MHz	FSB (Front Side Bus) at 800MHz	Front side bus of AMD Opteron processor runs at the speed of the processor
Min/max memory	1-16 GB	1GB–16GB	512 MB–12GB (16 GB using dual rank 4GB DIMMs)	1-16 GB
O/S	Solaris 10 OS on x64/Linux/Windows	Windows/Linux**	Windows/Linux/ Netware/VMware ESX	Windows/Linux
Disk number	4 SAS	2 (Ultra320 SCSI)	6 (Ultra320 SCSI)	6 hot plug SCSI drives
Raid	RAID 1	RAID 1	Optional	Optional
PCI-X slots	5 Low Profile MD2 (1 at 100 MHz, 1 at 133 MHz,3 at 66 MHz)	4 (2 full-length at 133MHz and 2 full-length at 100 MHz)...PCI-EXP optional upgrade	3 (3 full-length at 133 MHz) or 2 PCIe (1x4 lane and 1x8 lane, 1 PCI-X at 100MHz)	3 64-bit PCI-X slots; 2 non-hot plug 100MHz slots and one non-hot plug 133MHz slot
Ethernet ports	4 x 10/100/1000	2 x 10/100/1000	2 x 10/100/1000	2 x 10/100/1000
Height	2U	2U	2U	2U
Power Supply	550 W	625 W	700 W	575 W
Remote management	ILOM	RSA-II Extra, Partial Rmt Mgmt Standard	Yes	Yes
Warranty	3 year next business day onsite	3-year NBD Hardware	3 year next business day onsite	3 year next business day onsite

Sun Fire X4200 Server vs. vs. Competition Operating System Advantages:

- Competition does not offer their enterprise class UNIX operating system on x86 platform as a bundle.
- Competition offers no free RTU for an enterprise class UNIX like Solaris 10 OS as a bundle.
- Competition offers no free virtualization like the Solaris Containers that is offered with the X4200.

Sun Fire X4200 Server vs. IBM eServer 346 Hardware Advantages:

- No RAID 0 standard on the x346
- X4200 has quad GbE versus dual GbE on the IBM x346
- No dual-core upgrades for the x346 until Q42005 at the earliest
- The x346 suffers from the FSB (front side bus) bottleneck, reducing bandwidth to memory
- The x346 doesn't have on-board memory controllers and doesn't scale memory bandwidth with the number processors or cores added like Opteron processors on the Sun Fire X4200 server
- IBM has a proprietary chipset to scale Xeon MPs beyond four processors

- IBM x346 is 28” deep and the X4200 is only 25.2” deep…with the cable bend the Sun Fire X4200 server would fit in smaller racks than the x346
- Expanded environmental monitoring RSA-II is an extra cost for the x346, full hardware environmental monitoring is standard for the X4200
- Sun has a unique long-term strategic partnership to develop larger systems around the AMD Opteron processor
- Full server power for the Sun Fire X4200 server is 550 Watts; full server power for the x346 is 625 Watts (power supply ratings). The customer must pay twice extra for both power and air conditioning to cool the extra heat. On a per core power basis, the Sun Fire X4200 server has a huge advantage.
- The x346 doesn't have a common system image with the e326 like it has with the Sun Fire X4200 server and the rest of the Galaxy family.

Sun Fire X4200 server vs. Dell PowerEdge 2850 Hardware Advantages:

- Higher bandwidth with HyperTransport technology compared with FSB bottlenecks inherent in the Intel architecture.
- The Sun Fire X4200 server has an on-board memory controller, allowing memory bandwidth to scale with the number of cores. Dell PowerEdge 2850 has an external memory controller, limiting memory bandwidth as the number of processors is increased.
- Power supply consumes 150 Watts less for similar Dell 2850 configuration – a big difference in compute farm deployments.
- Quad GbE standard on the Sun Fire X4200 server, additional charge for PowerEdge 2850
- Dual core – not available with PowerEdge 2850 until Q1CY2006
- RAID 0,1 are an additional charge
- More streamlined form factor: 25.2 inches deep versus PowerEdge 2850's 29.79-inch depth (27.85 inches w/out bezel)
- ILOM is a core part of the system at no additional cost. Dell make an additional charge for the same functionality.

Sun Fire X4200 Server vs. HP DL385 Hardware Advantages:

- SAS drives versus more expensive SCSI on the HP DL385
- Quad GbE vs. dual GbE
- DL385 has 575 Watt power supply. Power supply consumes 25 Watts less for similar configuration – a big difference in compute farm deployments.
- RAID 0, 1 vs. optional RAID
- HP DL385 has hot plug fans and power with optional redundancy
- Less PCI-X slots on the HP DL385 server
- Slightly better form factor over the DL385; DL385 is 26.01 inches deep verus 25.2 inches on the Sun Fire x4200 Server
- ILOM is a core part of the system at no additional cost. HP make an additional charge for the same functionality – HP iLO Advanced.

Service Processor Comparison

Service Processor Comparison

Sun Proprietary/Confidential.

Feature	NSG Sps			Competition					
	Sun			HP		IBM		Dell	
	Sun Fire V20z & V40z	ILOM 1.0 (Sun Fire X4100, X4200)	Sun Fire X2100	HP iLO Standard Pack	HP iLO Advanced Pack	IBM eServer 325/326 (AMD-based) – BMC, no RSA option available	IBM xSeries (Intel-based) BMC + RSA II	Dell Server Administrator 2.0 (Installs on top of OS) + BMC	Dell Server Administrator 2.0 + Dell Remote Access Card (DRAC)
SP Cost (per server)	$0	$0	$149	$0	$349	$0	$399	$0	$299
Interfaces									
Virtual media media capability	X	√	X	X	√	X	√	X	√
Remote KVM	X	√	X	X	√	X	√	X	√
Fully comprehensive CLI	√	√	X	√	√	X	√	√	√
DMTF 'SMASH' CLP support	X	√	X	√	√	X	√	X	X
Browser-based GUI (English, i18n)	X	√	X	√	√	X	√	√	√
Serial Over LAN capability	√	√	√*	√	√	√	√	√	√
Dedicated 10/100 Management Port	√	√	X	√	√	X	√	X	?
Security									
SSH 2.0	√	√	X	√	√	X	√	√	√
LDAP support	√	√	X	√	√	X	√	X	X
RADIUS support	X	X	X	√	√	X	X	X	X
RBAC	√	√	X	√	√	√	√	√	√
Microsoft Active Directory	X	X	X	X	√	√	√	√	√
Initial password allocation	√	√	√	√	√	√	√	?	?
Password reset capability	√	√	√	√	√	√	√	?	?
Standards support									
IPMI v1.5	√	√	√	X	X	√	√	√	√
IPMI v2.0	X	√	X	X	X	X	X	X	X
SNMP V1	√	√	X	√	√	X	√	√	√
SNMP V2c	√	√	(trap only)	√	√	X	√	√	√
SNMP V3	X	√	X	√	√	X	√	√	√
Monitoring & Logging									
SNMP Monitoring	√	√	X	√	√	X	√	√	√
SNMP Management	√	X	X	√	√	X	√	√	√
Monitoring of FRUs/components	√	√	Limited**	√	√	√	√	√	√
Email/Pager/SMS notification of alerts	√	X	X	√	√	X	√	√	√
Watchdog Timer	√	√	√	√	√	√	√	√	√
Event Logging	√	√	√	√	√	√	√	√	√
Configurable Alert Thresholds	√	√	√	√	√	√	√	√	√
Auditing Capability	X	X	X	X	X	X	X	X	X
Access									
Access to SP while powered down	√	√	√	√	√	√	√	X	√
Multiple User Account administration	√	√	√	√	√	√	√	√	√
Control									
Forced Power Off	√	√	√	√	√	√	√	X	√
Graceful Shutdown	√	√	X	√	√	√	√	√	√
LED identification	√	√	X	√	√	√	√	√	√
FRU/component data accessible	√	√	√	√	√	√	√	√	√
Other									
Upgradeable firmware/BIOS	√	√	√	√	√	√	√	√	√
Remote control of system LEDs	√	√	X	√	√	√	√	√	√
Non-Volatile SP Flash memory	√	√	√	√	√	√	√	√	√