Sun™ Enterprise™ Ultra™ 10S

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Sun™ Enterprise™ Ultra™ 10S Systems Positioning

Introduction

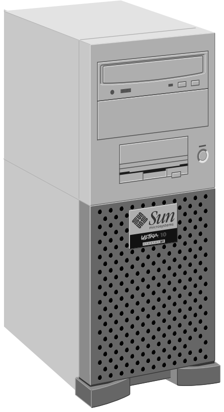


Figure 1. The Sun™ Enterprise™ Ultra™ 10S System

The Sun™ Enterprise™ Ultra™ 10S server is a new entry-level server based upon the UltraSPARC™-IIi processor running at 300 MHz. The Sun Enterprise Ultra 10S server features industry-standard components and PCI I/O. It is enclosed in a minitower, which allows for additional PCI-card and memory expansion.

The Sun Enterprise Ultra 10S server allows Sun to compete on both price and performance with the fastest available Pentium II-class PC server computers.

Key Messages

- Entry price-point server
  - A 300 MHz UltraSPARC-IIi processor delivers fast performance
  - 512 KB external cache
  - Up to 1 GB of 60 ns, 168-pin EDO JEDEC DRAM with ECC error correction
  - On-board graphics support for up to 21-inch color monitors
- Multiple PCI options available
  - Four full-size PCI slots provide access to a variety of Sun™ and third-party PCI cards
  - High-speed networking such as Gigabit Ethernet, ATM, Token Ring, FDDI, and many more are ready and available
- Easy internal storage and expansion
  - Up to two internal 4.3 GB EIDE hard disks, 4500 rpm
  - Internal 24X-speed Atapi CD-ROM, photo-CD compatible
  - PCMCIA bay provided for third-party PCMCIA options
- Simplified pricing gives the customer just the right server for the customer's job and budget
- Sun's technical leadership lets the customer take advantage of the most innovative solutions, including Java™ technology

Product Family Placement

The Sun Enterprise Ultra 10S system is a new addition to the current workgroup-server product family. Sun's new server product family scales from this low-cost server up to the four-way multiprocessing Sun Enterprise 450 workgroup server.

The Sun Enterprise systems in this product family have several things in common, including:

- The UltraSPARC processor
- Binary compatibility from the low end to the high end, including Sun's server family
- Scalable from the low end to the multiprocessor Sun Enterprise 450
- Modular, easy-to-swap CPUs and disk drives
- Excellent price-to-performance ratio

Server	Relative Price—Target Users and Markets
Enterprise Ultra 5S	The Sun Enterprise Ultra 5S system is Sun's lowest priced PCI-based server. With its pizza-box form factor, this server is ideal in situations where space is at a premium.
Enterprise Ultra 10S	The Sun Enterprise Ultra 10S system is a low-priced server that allows Sun to compete with the fastest available Pentium II-class PC server computers. This PCI-based system is ideal as a Web server, and also supports e-mail and print and file services.
Enterprise 2	With higher database, NFS™, and compute performance, the Sun Enterprise 2 system is targeted at medium-sized workgroups that need maximum performance for running business or technical applications.
Enterprise 450	The Sun Enterprise 450 system is Sun's most powerful workgroup server. This rack-mountable tower server's exceptional blend of computing power, storage capacity, disk I/O throughput, and network I/O performance make it perfect for running or front-ending databases from Oracle®, Sybase, and Informix, delivering e-mail or Web services to hundreds of concurrent users, or for implementing thousands of other critical two-tier and three-tier client-server business applications.

Sun Enterprise Ultra 10S System Model

The Sun Enterprise Ultra 10S system comes only in a 300 MHz model.

Processor Speed	300 MHz
UPA speed	100 MHz
Cache size	512 KB
SPECint_95*	12.1
SPECfp_95*	12.9

* SPECint_95 and SPECfp_95 results are preliminary; actual results may change.

Availability

- Sun Enterprise Ultra 10S system is available as of February 24, 1998.

Target Users

The Sun Enterprise Ultra 10S system is designed for price-sensitive customers who want to take advantage of Sun's Enterprise network computing expertise. This new PCI-based system uses the UltraSPARC processor, the Solaris™ operating environment, and Sun Enterprise system management functionality, and makes them available to support the information-processing needs of small businesses and workgroups.

Target Industries

The market opportunities for the Sun Enterprise Ultra 10S system are commercial areas in which low-cost, high-performance computing is required.

Industry	Key Features to Highlight
Financial – Stock and commodity traders – Banking – Insurance	• Branch-office servers, customer management, electronic commerce
Publishing	• Digital media management, Web publishing
Government	• Branch-office systems
Telecommunications – Long-distance carriers – Cable operators – Equipment OEMs	• CMS, billing, fraud detection, network monitoring and reporting
Education	• Registration and student records, library management
Health Care	• Satellite-office servers, billing, claims, medical imaging
Retail – Major retail chains	• In-store electronic retail systems, HQ customer management, merchandising systems, inventory management, distribution, electronic commerce

Target Applications

Applications	Key Features to Highlight
Web services **Internet gateway** **Legacy host gateway**	• Connectivity with heterogeneous systems and networks – TCP/IP, IPX™/SPX, NetBeui, NetBIOS, OSI, X.25, SNA, DECnet – Ethernet, Token Ring, FDDI, ATM, ISDN, T1, E1 – MS mail, UNIX® mail, POP3, IMAP • Exceptionally scalable multi-thread performance • Exceptional network connectivity and I/O bandwidth
Internet	• Secure, reliable, and cost-effective • Sun is the leading Internet provider; the majority of the servers on the Internet are Sun servers

Sun™ Enterprise™ Ultra™ 10S System Selling Highlights

Compatibility

The Sun Enterprise Ultra 10S system runs the following Solaris operating environment:

- Solaris 2.5.1 Hardware 11/97
- Solaris 2.6 Hardware: 3/98

As a result, it can run 32-bit applications unmodified from the Solaris 2.3 and Solaris 2.4 operating environment; therefore these new systems are totally compatible with previous Sun systems and software.

Market Value Propositions

- As a result of Sun I/O networking, a company is able to have comparatively faster networking throughput which increases application performance and user productivity.

Sun™ Enterprise™ Ultra™ 10S System Enabling Technologies

New UltraSPARC™ -IIi Processor

The Sun™ Enterprise™ Ultra™ 10S system uses the UltraSPARC™-IIi microprocessor which a highly integrated 64-bit SPARC™ V9 superscalar processor. Created for the new, entry-level Ultra 5 and Ultra 10 workstations, and the Sun Enterprise Ultra 10S server, the UltraSPARC-IIi processor is part of a second generation of products based on the UltraSPARC-I processor. In addition to using a new process technology, the UltraSPARC-IIi provides a higher clock frequency, multiple SRAM modes and system-to-processor clock ratios that accommodate varying economics for a range of products. At the same time, it provides software compatibility with existing systems based on the UltraSPARC-II processor technology.

New PCI Technology

PCI is a high-performance 32-bit / 64-bit local bus that is optimized for high-speed data transfers. It resides on the motherboard and operates at high speeds between highly integrated components such as peripherals, add-on boards, and memory systems. A high-performance bridge ASIC interfaces the UltraSPARC UPA bus to both the 33 MHz and 66 MHz PCI buses.

In addition to Sun's commitment to expand the capacity and performance of all Sun systems, Sun is continually looking for ways to increase the openness and standards-compliance of Sun systems. Sun has chosen to support PCI on the Sun Enterprise Ultra 10S and Sun Enterprise 450 systems, as well as on future systems, for the following reasons:

- **PCI is an open, architecture-independent bus**

  Because PCI is open and shipping in volume, it has been adopted quickly by both consumers and producers of computer hardware. As a result, the potential exists for a large number of platform-independent peripherals to be supported.

- **PCI is fast**

  The PCI bus architecture is designed to provide high performance, with its I/O performance a key differentiator from other bus architectures. Running at 33 MHz, PCI offers configurations that meet a variety of developer and user needs.

- **PCI is standardized**

  PCI is a standard bus architecture that has been adopted by the volume personal-computer industry. Because of its wide acceptance, PCI promises that compliant adapter cards will be available from more sources than ever before.

The PCI bus is based on the industry-standard PCI specification version 2.1. Unlike most standards, the PCI specification is very broad. It covers everything from multiple form factors and voltages to connector types.

Sun™ Enterprise™ Ultra™ 10S System Architecture

Product Architecture

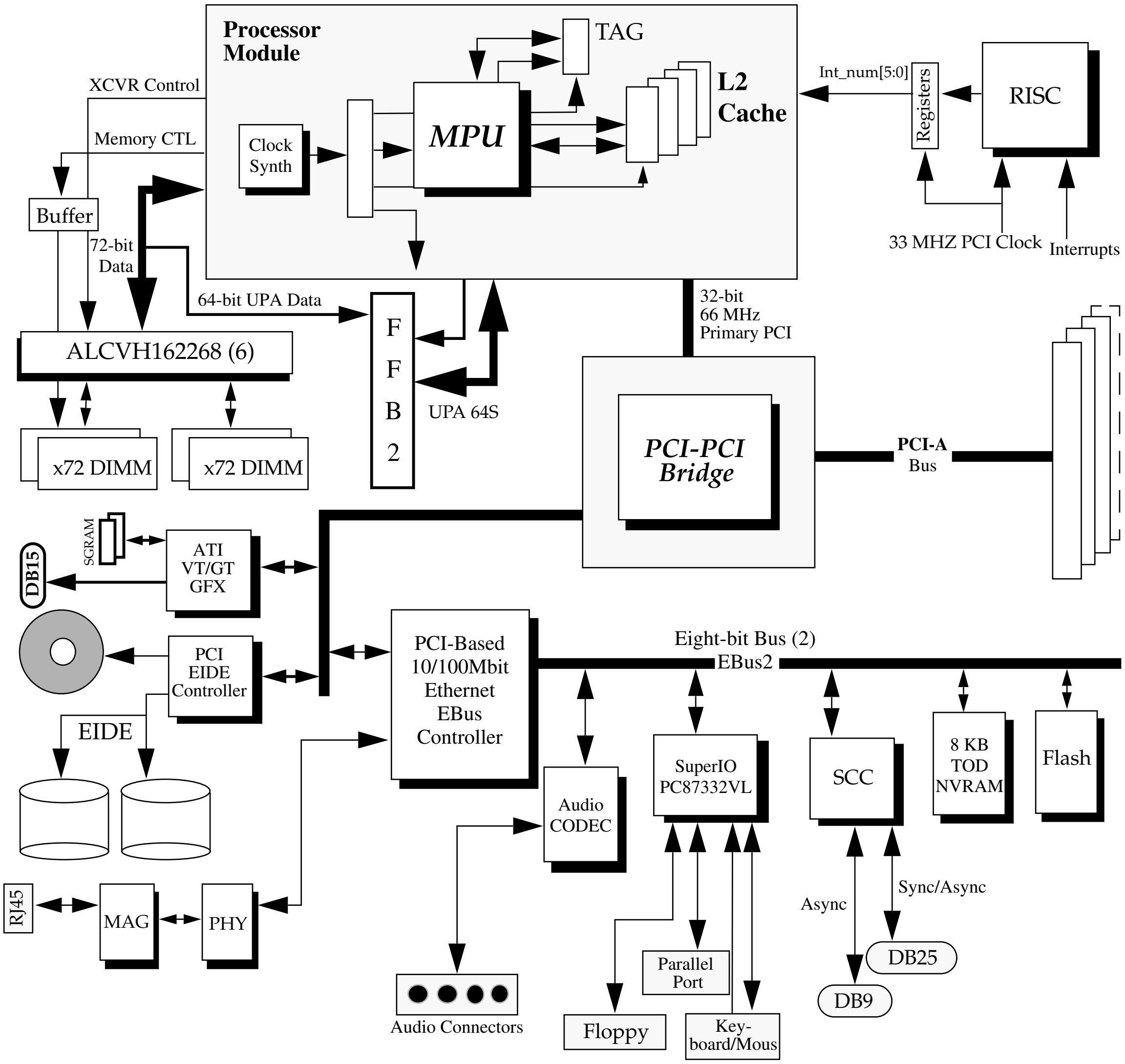


Figure 1. Sun™ Enterprise™ Ultra™ 10S System Block Diagram

The Sun™ Enterprise™ Ultra™ 10S system is designed to provide high performance, scalability, and flexibility at a very low cost. The use of high-volume components and application-specific integrated circuits (ASICs) has resulted in a greatly reduced part count, high reliability, and low cost without compromising access to a full complement of expansion options through high-performance, standardized interfaces.

Product Architecture *(cont.)*

In the Sun Enterprise Ultra 10S system, a single LPX-sized motherboard is used. Features integrated into or supported by the motherboard include:

- Modular processor card with 512 KB of external cache
- Four 60 ns, 168-pin EDO JEDEC DRAM DIMM sockets with ECC error correction
- Riser card connector to support four full-size, 32-bit, 33 MHz, 5-volt PCI slots
- 10/100BASE-T Fast Ethernet, self-sensing
- Two 16.7 MB/second EIDE connectors for hard disk and CD-ROM
- Two serial ports
  - Asynchronous/synchronous RS423A / RS232A, DB25 connector
  - Asynchronous RS423A, DB9 connector
- Centronics-compatible parallel port interface, IEEE 1284 bi-directional, DB25 connector
- Sun5 keyboard and mouse support
- CD quality, EBus-based audio
- ATI RAGEII+DVD onboard graphics, 8-bit support up to 1280 x 1024 resolution, DB15 connector
  - 2 MB VRAM
  - Supports 17-inch entry color, 19-inch color, and 21-inch color monitors
- Time-of-day NVRAM for clock and ID functions

See the *Ultra 5 and Ultra 10 Architecture* White Paper (refer to Materials Abstract section for availability) for more detailed information about the product architecture.

UltraSPARC™-IIi Processor

The Sun Enterprise Ultra 10S system is a high-performance system built around the UltraSPARC™-IIi microprocessor. The UltraSPARC-IIi processor is Sun's latest release of the SPARC™ II processor family and the second generation of 64-bit UltraSPARC processors. It utilizes the latest 0.35-micron technology. This process technology is the key to the higher clock rates and increased performance of the UltraSPARC-IIi processor. This process technology also enables the UltraSPARC-IIi processor to operate at a core voltage of 2.5 volts, rather than the 3.3 volts of the UltraSPARC-I processor. This lower voltage reduces power consumption and allows the chip to operate at higher frequencies without increasing total power requirements or heat dissipation—both major design issues in today's high-performance systems.

• **Features**	• **Benefits**
– Integrated VIS™ instruction set	– Ready for increased performance on multimedia and networking operations
– Utilizes the latest 0.35-micron process technology which greatly decreases the die size	– Results in a significant increase in performance and a decrease in power consumption (due to a lower core voltage of 2.5 volts)
– CPU is mounted on field-installable module card with associated UPA data buffers and 512 KB of external cache	– Facilitates easy system service

System Rack Mounting

The Sun Enterprise Ultra 10S system is not designed to be rack-mountable.

Sun Enterprise Ultra 10S System Architecture *(cont.)*

Memory

The Sun Enterprise Ultra 10S system supports up to 1 GB of 60 ns, 168-pin EDO JEDEC DRAM with ECC error correction. The four double in-line memory modules (DIMMs) used by the Sun Enterprise Ultra 10S system are the same as those used in the Ultra 5 and Ultra 10, but are not compatible with DRAM modules used in any other Sun™ workstation or server. The Sun Enterprise Ultra 10S system supports 32 MB, 64 MB, 128 MB, and 256 MB DIMM units.

Note: ***DRAM DIMMs must be installed in pairs of identical size. Adding DIMMs in a set of four results in the best memory system performance.***

• **Features**	• **Benefits**
– Lower cost, industry-standard memory modules	– Less expensive; allows customers to move up to higher levels of memory at lower cost
– ECC memory	– Superior error correction and system reliability

System I/O—High-Performance PCI Technology

System I/O for the Sun Enterprise Ultra 10S system is provided by the industry-standard Peripheral Component Interconnect (PCI) data bus. The PCI bus in the Sun Enterprise Ultra 10S complies with the 2.1 revision of the PCI specification, released in March 1995.

To provide maximum expandability, the Sun Enterprise Ultra 10S servers feature four full-size 32-bit, 33 MHz, 5-volt PCI slots.

Sun supports a variety of PCI-based adaptor cards, including Ethernet, Token Ring, ATM, and FDDI networking cards, video and audio input, SCSI adapters, and high-speed serial and parallel interfaces. In addition, Sun is working with a host of third-party partners to develop PCI hardware and software that is certified for operation on Sun's entire line of servers, including the Sun Enterprise Ultra 10S system. The following adaptor cards are under development or, are currently available:

- Fast Ethernet/SCSI
- Quad Fast Ethernet
- ISDN—basic rate
- ISDN—primary rate
- Hard bus
- "TGX+-like"
- RAID arrays
- IEEE-488
- DR11W
- T1/E1
- 8/16/32 Port MUX
- Imaging and cameras
- Parallel
- Audio
- SBus Expansion
- PCMCIA
- Ultra/Diff/SCSI
- 10/100 Ethernet
- Gigabit Ethernet
- Token ring (TRI/S)
- High-speed serial
- VDC/MPEG
- Video teleconference
- HIPPI
- 1394
- PCI Bus expansion
- SCSI
- SS7
- Pentium co-CPU
- Fax
- Fibre Channel
- 1553
- ATM 155 single and multi
- ATM 155/622 (PCI 66)
- ATM 25 MB
- FDDI single attach
- FDDI dual attach
- Serial-parallel controller
- 2K x 2K frame buffers
- Video frame grabber
- X.25
- ESCON
- Telephony
- A/D and enablers
- Voice/speech
- SCI
- DR-11W

Check the options list for the Sun PCI cards that are supported on the Enterprise Ultra 10S. See `http://www.sun.com/pci/pci.solutions.html` for a list of tested PCI cards.

Storage

Internal data storage for the Sun Enterprise Ultra 10S system is provided by up to two internal 4.3 GB 3.5-inch Enhanced IDE hard disks that run at 4500 rpm.

The Sun Enterprise Ultra 10S system includes a 1.6-inch CD-ROM bay for the 24X-speed Atapi CD-ROM drive.

A 1.44 MB, 3.5-inch, manual-eject floppy drive is standard.

• **Features**	• **Benefits**
– Up to two 4.3 GB Enhanced IDE internal disk drives	– Ample storage capacity for storing large files and applications locally
– Photo-CD compatible internal 24X-speed CD-ROM drive	– Provides access to large multimedia and data files

The Sun Enterprise Ultra 10S system minitower enclosure features the following device bays:

- Two 1.6-inch, half-height 5.25-inch front-accessible bay (for CD-ROM and second storage device)
- One 3.5-inch internal hard-drive mount (for primary hard disk)
- One 3.5-inch floppy-drive bay
- One PCMCIA-ready front-access bay with flip-up access door

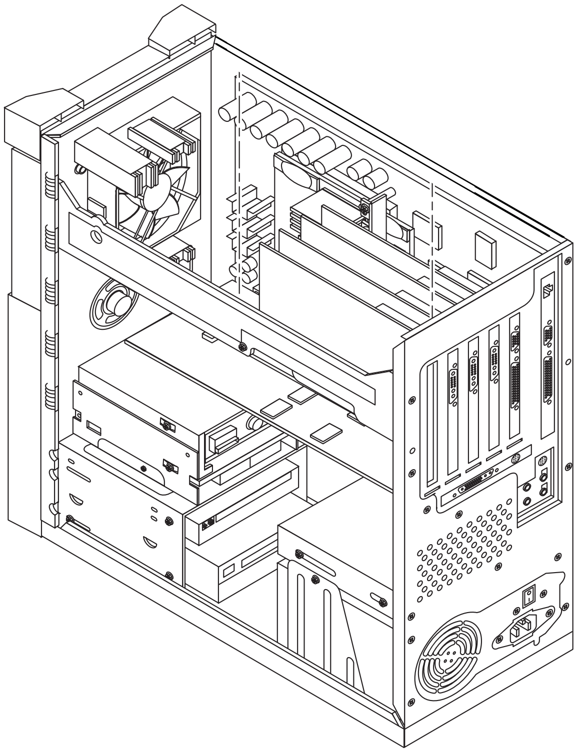


Figure 2. Sun Enterprise Ultra 10S system chassis with access panel removed, provides full access to internal options.

Sun Enterprise Ultra 10S System Configuration

Sun Enterprise Ultra 10S	
Dimensions and weight	
– Height	– 40.2 cm (15.8 inches)
– Width	– 17.6 cm (6.9 inches)
– Depth	– 43.5 cm (17.1 inches)
– Weight	– 20.0 kg (44 lb.) (not rack-mountable; minitower)
CPU and UPA	
– Architecture	– UltraSPARC-IIi
– Clock rate	– 300 MHz
– Processor slots	– 1 slot
– External cache	– 512 KB
– UPA speed	– 100 MHz
Memory	
– Memory type	– 168-pin EDO JEDEC, ECC error correction
– Number of slots	– 4 (stacked)
– Capacity	– 64 MB to 1 GB
– DRAM speed	– 60 ns
– DIMM sizes	– 32, 64, 128, and 256 MB (installed in pairs)
Storage	
– Maximum internal	– Up to two 4.3 GB EIDE hard disks
I/O Interfaces	
– Graphics	– One UPA graphics slot – On-board 8-bit frame buffer with accelerated test, windowing, 2-D and 3-D wireframe, 1280 x 1024 resolution at 76 Hz, support for color monitors up to 21-inch
– Serial ports	– One D-Sub 25-pin, asynch/synch RS423A/RS232A – One D-Sub 9-pin, asynch RS423A
– Parallel port	– One D-Sub 25-pin, IEEE 1284 Bidirectional
– PCI I/O bus	– Four full-size, 33 MHz PCI slots (version 2.1)
– PCMCIA bay	– One front-access bay with flip-up access door
Networking ports	– 10/100BASE-T Fast Ethernet, self sensing
Backup and distribution	
– Floppy	– 1.44 MB, 3.5-inch, manual-eject floppy
– CD-ROM	– 24X-speed Atapi, photo-CD compatible
Operating environment	– Solaris™ 2.5.1 Hardware: 1/98 – Solaris 2.6 Hardware: 3/98, or later

Licensing and Usage

All Sun system and system-board products include a Solaris operating environment license. The type of Solaris OS license(s) shipped with each platform reflects the way in which that system is most commonly used. Additional Solaris operating environment licenses are available to allow increased usage of the software.

The Sun Enterprise Ultra 10S servers come with a Solaris Server License. The Solaris Server License is an unlimited-user license.

Solaris™ 2.5.1 Operating Environment

The Sun™ Enterprise™ Ultra™ 10S system offers customers the reliability, performance, scalability, and interoperability of Sun's industry-leading Solaris™ operating environment. Solaris OS optimizes the UltraSPARC™ processor, and provides a reliable and stable platform for mission-critical applications.

Beginning in April 1998, users will have the choice of using Solaris 2.5.1 or Solaris 2.6 Hardware: 3/98. The default version loaded on all systems will be the Desktop Edition and Developer Cluster of Solaris 2.6 Hardware: 3/98. When the server is first powered on, customers will have the option of accepting the existing operating system or re-installing. At that time, customers should re-install the server version of Solaris 2.6 HW 3/98 either from their network or from the Server Media Kit, which can be purchased separately. (See ordering instructions for more information.) If customers want 2.5.1 HW: 11/98, SSIE will be available for an additional US$595.

Enterprise Ultra 10S customers who are ready for the latest Solaris operating environment release will be able to take full advantage of all the powerful new server features added to Solaris 2.6 operating environment with this system. One of these features is the ability to use a browser (Solaris™ Web Start) to easily install Solaris operating environment and co-packaged software.Sun Enterprise Ultra 10S customers will be especially interested in the new administration features, intranet, and Internet capabilities, and desktop services for PCs, Macintoshes, UNIX® workstations, and Java™ Network Computers (NCs) that are bundled with the Solaris 2.6 operating environment (and available separately in the Solaris™ Server Intranet Extension™ 1.0 for Solaris 2.5.1 operating environment customers).

Sun Enterprise Ultra 10S System Management *(cont.)*

Key Workgroup Server Features in Solaris 2.5.1Operating Environment

Ease of Installation and Administration	Reliability/ Serviceability	Web Features	PC Connectivity
Bundled with Solaris 2.5.1			
Solstice™ AdminSuite™			
Solstice™ DiskSuite™	SunVTS™		
Solstice™ Backup™ (single server)			
Available Separately			
Solstice™ AutoClient™			SunLink™ PC
			Solstice™ NFS™ Client™

Key Workgroup Server Features Available With Solaris 2.6 Operating Environment

Ease of Installation and Administration	Reliability/ Serviceability	Web Features	PC Connectivity
Solaris Web Start	ShowMe™ How™	Sun™ WebServer™	SunLink PC (server plus one client)
Solstice AdminSuite		HotJava™ Web Browser	Solstice NFS Client (one client)
Solstice AutoClient (server plus 1 client)	SunVTS	Java Virtual Machine	
Solstice DiskSuite		Simple Key Management for IP (SKIP)	
Solstice Backup (single server)		Dynamic Host Configuration Protocol	
		WebNFS™	
		PPP	

Sun Enterprise Ultra 10S System Management *(cont.)*

Solaris Server Features and Benefits

Installation and Administration

• **Features**	• **Benefits**
– With Solaris 2.6 operating environment, every Sun™ server comes available with Solaris Web Start for fast network-based installation of the Solaris operating environment	– Eases and speeds the installation of Solaris operating environment on hosts and clients
– Includes Solstice AdminSuite, which provides a consistent, easy-to-use, graphical interface for common system administration functions. Includes a User Manager for managing user account, a Database Manager for manipulating Solaris operating environment administration data, a Host Manager for connecting client systems to the network, a Software Manager for controlling installation of Solaris software packages, a Serial Port Manager for managing serial ports remotely, and a Print Manager for network printing	– Eases system administration
– Includes AnswerBook™ for on-line network access to all Sun manuals, including browse and network print capability.	– Speeds access to information, reduces cost
– Solstice™ SunNet Manager™ enables administration, monitoring, and troubleshooting of LANs and WANs	– Remote monitoring and control of networks lowers costs, increases uptime
– Third-party network and system-management tools provide administration, monitoring, and troubleshooting tools for distributed systems.	– Users have a choice of network-management solutions

Solaris Server Features and Benefits *(cont.)*

Compatibility

Features	**Benefits**
Solaris operating environment is binary-compatible across all SPARC™ platforms, from desktops to Sun Enterprise servers	Allows customers to deploy systems with confidence, knowing their applications can grow and their investment in network technology, software, and training will be protected.
Solaris operating environment is supported on SPARC, c86, and PowerPC platforms	Makes it easy to deploy on other platforms the applications developed on SPARC platforms
The Sun Enterprise Ultra 10S runs Sun's powerful and dependable Solaris operating environment network operating system, and is 100 percent binary compatible with all software that runs on Sun Enterprise 1 through 6000 server family	Runs over 12,000 of the most extensively tested, highest-quality software packages available today for both commercial and technical applications.

Performance and Scalability

Features	**Benefits**
Outstanding performance and functionality in a variety of application areas, including database, networking, groupware, and multiuser business applications	Provides maximum productivity for individuals and workgroups
Multi-threading	Enables a single application to be partitioned into independent components that can be executed simultaneously, reducing response time and increasing throughput

Reliability

Features	**Benefits**
Proven and reliable network operating systems	Maximum uptime for running business-critical applications

Sun Enterprise Ultra 10S System Management *(cont.)*

Solaris Server Features and Benefits *(cont.)*

Low-Cost Data Management and Backup

• **Features**	• **Benefits**
– Solstice DiskSuite provides data redundancy and enhanced disk system performance using RAID technology	– Increases data availability and speeds system throughput
– Journaling File System improves performance of directory operations and reduces file system check times during system restarts	– Enhances system throughput and increases system availability
– Solstice Backup automates network backup, recovery, and media management.	– Simplifies data administration, improves data security and availability

Global Networking and Resource Sharing

• **Features**	• **Benefits**
– Connectivity for TCP/IP, NFS™, NetWare, IPX™/SPX, LAN Manager, and AppleTalk	– Provides complete corporate-wide connectivity and integration
– NFS	– Provides easy transparent network access to remote file systems, applications, and data on heterogeneous computer systems

Security

• **Features**	• **Benefits**
– Simple Key Management for IP is a standard protocol that provides privacy and authentication services for data over the network	– Allows for secure communications over the Internet or intranet, without requiring any changes to the application

Sun Enterprise Ultra 10S System Management *(cont.)*

Solaris Server Features and Benefits *(cont.)*

Internet Services

• **Features**	• **Benefits**
– WebNFS is a robust and scalable file system	– Enables users to quickly access and share files over the web.
– Dynamic Host Configuration Protocol (DHCP) allows administrators to easily add clients to the intranet by dynamically assigning IP addresses	– Eliminates need for administrator to assign IP addresses manually to each client.
– HotJava Browser provides an easy-to-use, customizable user interface.	– Provides easy-to-use interface for installing software, performing web-based admin tasks, and accessing data over the Web.
– Sun WebServer	– Provides fast response for accessing data over the Internet or when performing Web-based administration tasks.

PC Integration and PC Interoperability

Sun's strategy is to support any client, including PCs, Macintoshes, UNIX workstations, and Java NCs Computers. Because PCs are by far the most common desktop, Sun is putting a lot of focus on PC services and PC interoperability.

To achieve this strategy, Sun is focusing on open industry standards, which are evolving Internet standards for all network services, including file, print, directory, security, messaging, and objects. In addition, Sun will provide or work with ISVs to provide a bridge to popular standards such as Microsoft's standards.

New PC Interoperability Features in Solaris 2.6 operating environment

File/Print	
• SunLink PC	This server-side software allows a Sun server to provide file and print services to PCs running LAN Manager or Novell NetWare and Macintoshes running Appletalk. Nothing is required on the client.
• Solstice NFS Client	This client software allows a PC running Microsoft Windows 95 or Microsoft Windows NT to use NFS file and print services on a network without having to install and pay for other network applications and functionality that the average user does not require. It provides higher performance and more robust services than TotalNET, but requires changes to the client.
E-mail	
• Solstice NFS Client	This client software allows a PC running Microsoft Windows 95 or Microsoft Windows NT to use NFS file and print services. It provides higher performance and more robust services than TotalNET, but requires changes to the client.

PC Integration and PC Interoperability (cont.)

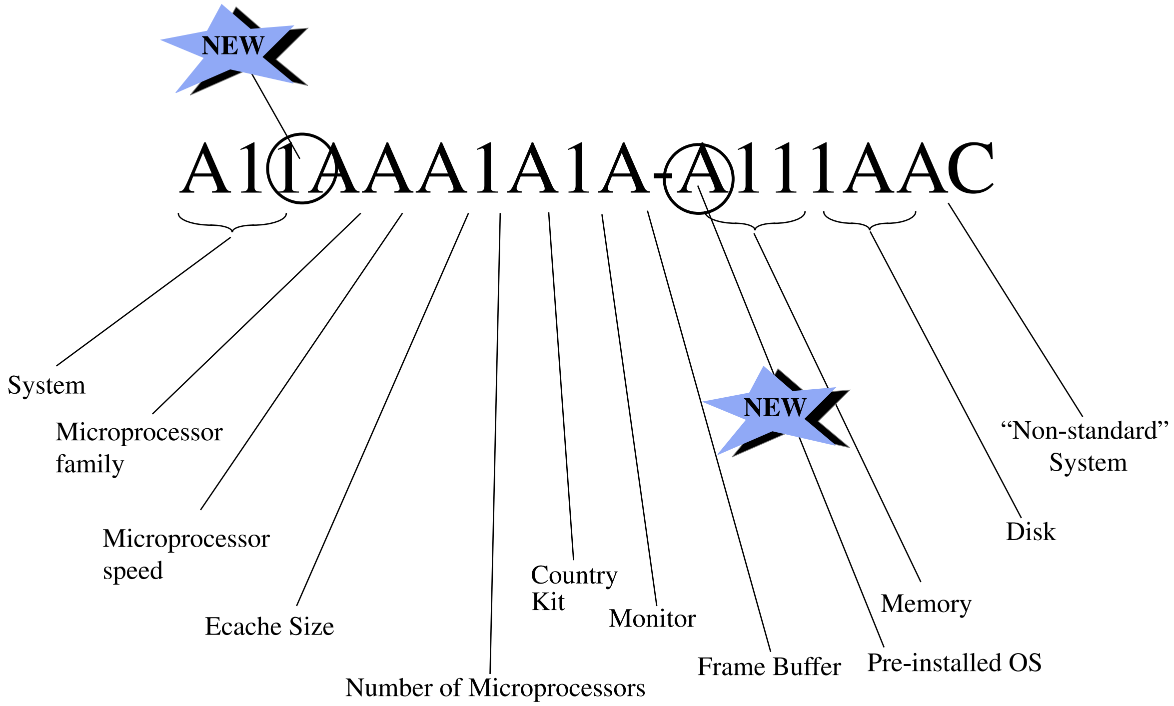
Future Interoperability Features

Management	
• Manage PC Clients	Sun's ISVs, including Computer Associates (CA) and Tivoli, offer best-of-breed software tools for managing PC clients. In addition, once these are enhanced with Java, these products can be integrated into Sun's Solstice family of tools. Over 40 management ISVs, including CA and Tivoli, will enhance their applications with JMAPI.
• Manage from anywhere, manage from any PC	Sun's Solstice tools are being enhanced with Java and will soon conform to the Java Management API (JMAPI). That means they will be managed over the Web form any console that has a Java-enabled browser.
Directory	
• NDS	Sun has announced an alliance with Novell to port their directory service, NDS, to Solaris operating environment.
• LDAP	Also, Sun will be supporting LDAP, an industry-standard protocol for interoperating with Microsoft Windows NT's future directory service.

Sun™ Enterprise™ Ultra™ 10S Ordering Information

Ordering Information

The Sun™ Ultra™ systems use a new marketing part-number scheme that is designed to provide greater flexibility and expandability. This page explains how to read the new part numbering scheme.



(Note: A = alpha character, 1 = numeric character, C = optional alpha or numeric character)

Model Key (Subset of Part Number Definitions)

System A22 = Sun™ Enterprise™ Ultra™ 10S **Microprocessor Family** U = UltraSPARC™ **Microprocessor Speed** E = UltraSPARC 300 MHz **Ecache Size** A = 512 KB **Number of Processors** 1 = Single processor	**Country Kit** C = Logoless Z = no country kit **Monitor** 9 = No monitor **Frame Buffer** S = Full server license	NEW **Pre-installed Solaris** A= 2.6 HW 3/98 desktop version **Memory** 128 = 128 MB 256 = 256 MB 512 = 512 MB	**Disk** CG = 4.3 GB + CD-ROM

Sun Enterprise Ultra 10S Ordering Information *(cont.)*

Choice of Country Kit

If the customer requires a country kit, this should be ordered as a separate line item when ordering The Sun Enterprise Ultra 10S system to avoid additional charge. If customers choose not to purchase a country kit, they must order a power cord.

Code	Country Kit
C	Logoless - no country kit
Z	no country kit

Server Media Kit

If the customer wants the Server Media Kit, it must be ordered as a separate line item; part number is SOLS-2.6MAR98; price is US$100. SSIE can be purchased for Solaris™ 2.5.1 operating environment for US$595. SSIE is included with Solaris 2.6 HW 3/98.

Special instructions for installing Solaris 2.6 HW 3/98 for the server configuration

The preinstalled operating environment includes Solaris 2.6 HW 3/98 Foundation, Desktop Extensions, and "try and buy" software. The server license allows the customer to use the Solaris 2.6 operating environment Foundation as a server with no modifications necessary. However, if the customer would like to install Solaris Server Intranet Extensions (SSIE), this can be done by selecting JumpStart™ when the system is first powered on and installing Solaris 2.6 operating environment from either the network or the Server Media Kit.

Sun Enterprise Ultra 10S Ordering Information *(cont.)*

Sun Enterprise Ultra 10S Server Configurations

Part Number	**System**
A22UEA1C9S-A128CG	Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 128 MB ECC DRAM • 4.3 GB hard drive • 24 X CD-ROM • Full Solaris 2.6 server license • Logoless; no country kit
A22UEA1Z9S-A128CG	Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 128 MB ECC DRAM • 4.3 GB hard drive • 24 X CD-ROM • Full Solaris 2.6 server license • no country kit
A22UEA1C9S-A256CG	Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 256 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full Solaris 2.6 server license • Logoless; no country kit
A22UEA1Z9S-A256CG	Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 256 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full Solaris 2.6 server license • no country kit
A22UEA1C9S-A512CG	Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 512 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full Solaris 2.6 server license • Logoless; no country kit
A22UEA1Z9S-A512CG	Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 512 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full Solaris 2.6 server license • no country kit

Ordering Guidelines and Notes

Memory

- The Sun Enterprise Ultra 10S supports up to 1 GB of 60 ns, 168-pin EDO JEDEC DRAM with ECC error correction. The DIMMs are the same as those used in the Ultra 5 and Ultra 10 servers but are not compatible with other Sun workstations or servers. The Sun Enterprise Ultra 10S server supports 32 MB, 64 MB, 128 MB, and 256 MB DIMM units.
- The Sun Enterprise Ultra 10S server can accommodate up to four DIMM units which must be installed in pairs. Adding DIMMs in a set of four results in the best memory system performance.

Memory Expansion Options	Part Number
64 MB ECC DRAM Expansion Kit (two 32 MB DIMMs)	X7030A
128 MB ECC DRAM Expansion Kit (two 64 MB DIMMs)	X7031A
256 MB ECC DRAM Expansion Kit (two 128 MB DIMMs)	X7032A
512 MB ECC DRAM Expansion Kit (two 256 MB DIMMs)	X7033A

Keyboard

- The Type 5 keyboard is ordered as a separate line item.

Internal storage devices

- The internal hard disk drive and CD-ROM drive are unique to the Sun Enterprise Ultra 5S, Sun Enterprise Ultra 10S, Ultra 5, and Ultra 10 servers, and are not compatible with other Sun workstation or server systems. In addition, all other internal hard disks, CD-ROM drives, and other storage devices are not compatible with the Sun Enterprise Ultra 10S, Ultra 5, and Ultra 10 server.

Internal Storage Device	Part Number
Internal 4.3 GB EIDE hard disk, 4500 rpm	X5227A

External and internal SCSI devices

- A PCI SCSI Adapter card is required to attach any external SCSI device since SCSI is not a feature of the Sun Enterprise Ultra 10S server. In addition, all internal SCSI options are incompatible with the Sun Enterprise Ultra 10S server.

Ordering Guidelines and Notes (*cont.*)

Monitors

The choice of monitors is not reflected in the Sun Enterprise Ultra 10S Marketing Part Number. Monitors can be ordered as a separate line item. The Sun Enterprise Ultra 10S server supports the monitors listed below. For some monitor and frame-buffer combinations, a video adapter cable may be required; consult the table below.

Monitor		Video Adapter Required
		On-board 8-bit
17-inch entry color	(X7103A)	none
19-inch color	(X7119A)	none
21-inch color	(X7121A)	X470A

Sun Enterprise Ultra 10S Options

Options

Below is a partial list of options that are available for the Sun Enterprise Ultra 10S system. Many of the options listed below have been retired and can no longer be ordered from Sun, but are shown here for reference purposes. Refer to the Sun Price Book and configuration guides for currently available option listings, configuration notes, and ordering information. When no maximum number is listed, refer to ordering or configuration notes for that option.

Part Number	Option description	Maximum number supported	Comments
Memory			
X7030A	64 MB, 60 ns DIMM memory expansion (2 x 32 MB)	2	These are all pairs of DIMM units
X7031A	128 MB, 60 ns DIMM memory expansion (2 x 64 MB)	2	
X7032A	256 MB, 60 ns DIMM memory expansion (2 x 128 MB)	2	
X7033A	512 MB, 60 ns DIMM memory expansion (2 x 256 MB)	2	
Internal Disks			
X5227A	4.3 GB EIDE internal drive	2	
Mass Storage—External			
X814A	5.0 GB, 8 mm tape backup drive, desktop storage module	4	
X827A	8-20 GB, 4 mm tape autoloader, desktop storage module	4	
X580A	535 MB Fast SCSI-2 desktop disk pack	4	
X545A	1.05 GB Fast SCSI-2 desktop disk pack	4	
X567A	2.1 GB Fast SCSI-2 desktop disk pack	4	
X737A	2.1 GB Fast SCSI-2 desktop disk pack	4	
X660A	150 MB QIC tape drive, desktop storage pack	4	
X822A	5.0 GB, 4 mm tape drive, desktop storage pack	4	
X834A	10 GB, 8 mm backup tape drive, desktop storage module	4	
X844A	14.0 GB, 8 mm tape drive, desktop storage pack	4	
X540A	424 MB SCSI desktop disk pack	4	
X6071A	140–280 GB SPARCstorage™ DLT™ 4700 Autoloader, desktop	4	
X680A	Front-load half-inch tape drive, tabletop	4	
X6063A	Optional internal 35–70 GB SPARCstorage DLT7000 tape	4	
X6272A	16–32 GB, 4 mm DDS-2 Autoloader, desktop	4	
SG-XLIB8MM1-400G	Sun StorEdge™ L400 400GB/8mm w/Tape	4	
SG-XTAP4MM-031A	Tape 72GB 4MM DDS-3 Autoloader	4	
SG-XARY122A-16G	16-GB Sun StorEdge A1000 tabletop configuration (4 x 4.2 GB, 10000 rpm) with Hardware RAID	8	
SG-XARY122A-50G	50-GB Sun StorEdge A1000 tabletop configuration (12 x 4.2 GB, 10000 rpm) with Hardware RAID	8	
SG-XARY123A-16G	16-GB Sun StorEdge D1000 tabletop configuration (4 x 4.2 GB, 10000 rpm) with host-based RAID	8	
SG-XARY123A-50G	50-GB Sun StorEdge D1000 tabletop configuration (12 x 4.2 GB, 10000 rpm) with host-based RAID	8	
X5228A	4-GB Disk for Sun StorEdge D1000 (10000 rpm)		

Sun Enterprise Ultra 10S Options *(cont.)*

Options *(cont.)*

Part Number	Option description	Maximum number supported	Comments
Mass Storage—UniPack	*The following UniPack options come with a 68–68 pin SCSI cable*:		Note: 68-pin is required on the Sun Enterprise Ultra 10S; these options supported if the correct cable is substituted
X5101A	1.05 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X5151A	1.05 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X5203A	2.1 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X5209A	4.2 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack (68–68 pin)	4	
X5253A	9.1 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack (68–68 pin)	4	
X6151A	SunCD™ 4x CD-ROM UniPack	1	
X6101A	2.5 GB QIC tape UniPack	4	
X6201A	14 GB, 8 mm tape UniPack	4	
X6208A	14 GB, 8 mm tape UniPack	4	
X6251A	5 GB, 4 mm tape UniPack	4	
X6261A	4–8 GB, 4 mm DDS-2 drive	4	
X6253A	4-8 GB, 4 mm DDS-2 tape drive	4	
X6280A	12–24 GB, 4 mm DDS-3 tape drive	4	
X6230A	20–40 GB, 8 mm tape drive	4	
X6108A	4–8 GB SLR Tape	4	
X6157A	SunCD 12 UniPack, 12X CD-ROM	1	
SG-XDSK010A-4G	4.2GB/7200RPM Disk UniPack	4	
SG-XDSK010A-9G	9.1GB/7200RPM Disk UniPack	4	
SG-XDSK010B-18G	18.2GB/7200RPM Disk UniPack	4	
SG-XTAP4MM-010A	Tape 4-8GB 4MM DDS-2 UniPack	4	
SG-XTAP4MM-011A	Tape 12-24GB 4MM DDS-3 UniPack	4	
SG-XTAP8MM-010A	Tape 7-14GB 8MM UniPack	4	
SG-XTAP8MM-011A	Tape 20-40GB 8MM UniPack	4	
SG-XTAPSLR-010A	Tape 4GB SLR UniPack	4	
	The following UniPack options come with a 50–68 pin SCSI cable:		
X5102A	1.05 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X5152A	1.05 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X5204A	2.1 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X5213A	4.2 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X5254A	9.1 GB, 7200 rpm Fast/Wide SCSI-2 disk UniPack	4	
X6152A	SunCD 4x CD-ROM UniPack	1	
X6102A	2.5 GB QIC tape UniPack	4	
X6202A	14 GB, 8 mm tape UniPack	4	
X6209A	14 GB, 8 mm tape UniPack	4	
X6252A	5 GB, 4 mm tape UniPack	4	
X6262A	4–8 GB, 4 mm DDS-2 tape drive	4	
X6254A	4–8 GB, 4 mm DDS-2- tape drive	4	
X6281A	12–24 GB, 4 mm DDS-3 tape drive	4	
X6231A	20–40 GB, 8 mm tape drive	4	
X6109A	4–8 GB SLR Tape	4	
X6158A	SunCD 12 UniPack, 12x CD-ROM drive	1	

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		4	
		4	Universal
	High-speed Serial Interface PCI Adapter (HSI)	3	
	Serial Asynchronous Interface (SAI) PCI adapter	4	Universal
	SunFDDI™ single-attach PCI Adapter (SAS)	4	
	SunFDDI dual-attach PCI Adapter (DAS)	4	
	Dual single-ended UltraSCSI disk controller, PCI	4	
	Dual Differential UltraSCSI controller, PCI	4	
	PGX graphics card, PCI (32/33/5v)	1	
	SunPCI UltraSCSI and 10/100 Mbit buffered Ethernet card	1	
	Sun™ Quad FastEthernet™ PCI Adapter	1	
	SunATM/P-155 Multimode Fiber	2	
	SunATM/P-155 Cat-5 UTP	2	
	SunATM/P-622 Multimode Fiber	1	

Sun Enterprise Ultra 10S Options *(cont.)*

Options *(cont.)*

Part Number	Option description	Maximum number supported	Comments
Mass Storage—FlexiPack	*The following FlexiPack options come with a 68–68 pin SCSI cable:*		Note: 68-pin is required on the Sun Enterprise Ultra 10S; these options supported if the correct cable is substituted
X6057A	DLT4000	4	
X6060A	DLT7000	4	
X6290A	72–144 GB, 4 mm DDS-3 autoloader tape FlexiPack	4	
X6284A	12–24 GB, 4 mm DDS-3 tape FlexiPack	4	
X6264A	4–8 GB, 4 mm DDS-3 tape FlexiPack	4	
X6232A	20–40 GB, 8 mm tape FlexiPack	4	
X6210A	14 GB, 8 mm tape FlexiPack	4	
X6110A	4–8 GB SLR tape FlexiPack	4	
X6052A	20–40 GB SPARCstorage DLT4000 tape, desktop	4	
X6159A	SunCD 12x CD-ROM FlexiPack	1	
X6236A	Optional internal 20–40 GB, 8 mm tape drive for FlexiPack	4	
SG-XTAP4MM-020A	Tape 4-8GB 4MM DDS-2 FlexiPack	4	
SG-XTAP4MM-021A	Tape 12-24GB 4MM DDS-3 FlexiPack	4	
SG-XTAP8MM-020A	Tape 7-14GB 8MM FlexiPack	4	
SG-XTAP8MM-021A	Tape 20-40GB 8MM FlexiPack	4	
SG-XTAPDLT-020A	Tape 20GB DLT4000 FlexiPack	4	
SG-XTAPDLT-021A	Tape 35GB DLT7000 FlexiPack	4	
SG-XTAPSLR-020A	Tape 4GB SLR FlexiPack	4	
	The following FlexiPack options come with a 50–68 pin SCSI cable:		
X6058A	DLT4000	4	
X6061A	DLT7000	4	
X6291A	72–144 GB, 4 mm DDS-3 autoloader tape FlexiPack	4	
X6285A	12–24 GB, 4 mm DDS-3 tape FlexiPack	4	
X6263A	4–8 GB, 4 mm DDS-3 tape FlexiPack	4	
X6233A	20–40 GB, 8 mm tape FlexiPack	4	
X6211A	14 GB, 8 mm tape FlexiPack	4	
X6111A	4–8 GB SLR tape FlexiPack	4	
X6051A	20–40 GB SPARCstorage DLT4000 tape, desktop	1	
X6160A	SunCD 12x CD-ROM FlexiPack	1	
X6059A	20–40 GB SPARCstorage DLT4000 tape	4	
X6286A	Optional internal DDS-3 tape drive for FlexiPack	4	
X6212A	Optional internal 7–14 GB, 8 mm tape drive for FlexiPack	4	
X6229A	Optional 140 GB SPARC storage Library Tape drive	4	

Sun Enterprise Ultra 10S Options *(cont.)*

Options *(cont.)*

Part Number	Option description	Maximum number supported	Comments
Other Options			A PCI SCSI Adapter card is required to attach any external SCSI device to the E5S and E10S
X901A	0.8-meter, Wide-to-Narrow, 68-68 pin UltraSCSI	1	
X902A	2.0-meter, Wide-to-Narrow, 68-68 pin UltraSCSI	1	
X903A	1.2-meter, Wide-to-Narrow, 68-68 pin SCSI adapter cable	1	
X904A	2.0-meter, Wide-to-Narrow, 68-68 pin SCSI adapter cable	1	
X907A	Optional power cable, CPU to monitor, 1.5 meter	1	
X908A	Optional power cable, CPU to monitor, 2.5 meter	1	
X7103A	17-inch entry color monitor	1	One monitor per graphics accelerator
X7119A	19-inch color monitor	1	
X7121A	21-inch color monitor	1	
X470A	13W3F-to-HD15M Video Adapter cable	1	
Type-5 Country Kits			Kits contain a Type-5c keyboard, optional mechanical mouse and pad, and a localized power cord
X3500A	North American	1	
X3550A	North American Universal	1	
X3540A	UNIX®	1	
X3551A	UNIX Universal	1	
X3552A	Euro UNIX (power cordless)	1	
X3502A	French	1	
X3503A	German	1	
X3504A	Swiss-French	1	
X3505A	Swiss-German	1	
X3506A	Swedish	1	
X3577A	Finnish	1	
X3507A	U.K.	1	
X3547A	U.K. UNIX	1	
X3570A	Norwegian	1	
X3571A	Portuguese	1	
X3572A	Spanish	1	
X3573A	Danish	1	
X3574A	Italian	1	
X3575A	Netherlands	1	
X3544A	Taiwan	1	
X3545A	Korean	1	
X3546A	Japanese	1	
X3542A	Japanese UNIX	1	
X3576A	Australian	1	
X3579A	Canadian Bilingual	1	
X3578A	European Universal	1	
X3548A	European UNIX	1	

Sun™ Enterprise™ Ultra™ 10S Upgrades

Key Messages

Sun upgrades offer customers superior investment protection for their existing Sun™ equipment.

- Sun offers customers a variety of flexible upgrade paths to the most popular Sun systems
- Existing investments in non-Sun hardware can be preserved by upgrading to Sun through competitive full-system upgrades

Sun Enterprise Ultra 10S Upgrade Paths

From	Receive	Return
Full system upgrade from any Sun Server to Sun™ Enterprise™ Ultra™ 10S	Complete Sun Enterprise Ultra 10S server	Complete Sun server chassis, including CPU board, primary memory, and internal disk
Qualified Category 3 competitive server upgrade to Sun Enterprise Ultra 10S	Complete Sun Enterprise Ultra 10S server	Complete Category 3 competitive server

Marketing Upgrade Numbering Scheme

New System Part
A22UEA1Z9S-A128CG

Sun-to-Sun chassis Upgrade
UG-UEA1Z-9S-A128CG

Competitive Upgrade
CU-UEA1Z-9S-A128CG

- The differences between the upgrade and new system part numbers lie in the first three characters; the fifteen trailing characters carry the same interpretation as new system parts.
- Sun-to-Sun upgrades begin with U or UG; competitive upgrades begin with CU.
- Character representations following the Upgrade type designation have the same interpretation as new system parts, but dashes may be removed from left to right, as necessary, to meet the maximum part number length of 18 characters.

Sun Enterprise Ultra 10S Upgrades from Previous Sun™ Servers

Part Number	**System**
UG-UEA1Z-9S-A128CG	Upgrade from any Sun Server to a Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC™-IIi processor • 128 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full server license • No Country Kit
UG-UEA1Z-9S-A512CG	Upgrade from any Sun Server to a Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 512 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full server license • No Country Kit
UG-UEA1C9S-A128CGO	Upgrade from any Sun Server to a Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 128 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full server license • Japanese/Logoless Country Kit (included)
UG-UEA1C9S-A512CGO	Upgrade from any Sun Server to a Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 512 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full server license • Japanese/Logoless Country Kit (included)

Sun Enterprise Ultra 10S Upgrades *(cont.)*

Sun Enterprise Ultra 10S Upgrades from Competitive Servers

Part Number	**System**
CU-UEA1Z-9S-A128CG	Upgrade from Category 3 Competitive Server to a Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 128 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full server license • No Country Kit
CU-UEA1Z-9S-A512CG	Upgrade from Category 3 Competitive Server to a Sun Enterprise Ultra 10S server with • 300 MHz UltraSPARC-IIi processor • 512 MB ECC DRAM • 4.3 GB hard drive • 24x CD-ROM • Full server license • No Country Kit

Service and Support

SunSpectrum^{SM} is an innovative and flexible service offering that allows customers to choose the level of service best suited to their needs — ranging from mission-critical support for maximum solution availability to backup assistance for self-support customers. SunSpectrum provides a simple pricing structure in which a single fee covers support for an entire system, including related hardware and peripherals, the Solaris™ operating system software, and telephone support for Sun™ software packages. The majority of Sun’s customers today take advantage of the SunSpectrum program, underscoring the value it represents. Customers should check with their local SunService^{SM} representative for program/feature variance and availability in their area.

FEATURE	**SUNSPECTRUM^{SM} PLATINUM^{SM}** **Mission-Critical Support**	**SUNSPECTRUM^{SM} GOLD^{SM}** **Business-Critical Support**	**SUNSPECTRUM^{SM} SILVER^{SM}** **Systems Support**	**SUNSPECTRUM^{SM} BRONZE^{SM}** **Self Support**
Systems Features				
Systems approach coverage	Yes	Yes	Yes	Yes
System availability guarantee	Customized	No	No	No
Account Support Features				
Service account management team	Yes	No	No	No
Personal technical account support	Yes	Yes	No	No
Account support plan	Yes	Yes	No	No
Software release planning	Yes	No	No	No
On-site account reviews	Monthly	Semi-annual	No	No
Site activity log	Yes	Yes	No	No
Coverage / Response Time				
Standard telephone coverage hours	7 day/24 hour	7 day/24 hour	8 a.m.–8 p.m., Monday–Friday	8 a.m.–5 p.m., Monday–Friday
Standard on-site coverage hours	7 day/24 hour	8 a.m.–8 p.m., Monday–Friday	8 a.m.–5 p.m., Monday–Friday	N/A
7-day/24-hour telephone coverage	Yes	Yes	Option	No
7-day/24-hour on-site coverage	Yes	Option	Option	N/A
Customer-defined priority setting	Yes	Yes	Yes	Option
– Urgent (phone/on-site)	Live transfer/ 2 hour	Live transfer/ 4 hour	Live transfer/ 4 hour	4 hour / N/A
– Serious (phone/on-site)	Live transfer/ 4 hour	2 hour/next day	2 hour/next day	4 hour / N/A
– Not critical (phone/on-site)	Live transfer/ customer convenience	4 hour/ customer convenience	4 hour/ customer convenience	4 hour / N/A
Additional contacts	Option	Option	Option	Option

Service and Support *(cont.)*

FEATURE	**SUNSPECTRUM PLATINUM** **Mission-Critical Support**	**SUNSPECTRUM GOLD** **Business-Critical Support**	**SUNSPECTRUM SILVER** **Systems Support**	**SUNSPECTRUM BRONZE** **Self Support**
Enhanced Support Features				
Mission-critical support team	Yes	Yes	No	No
Sun Vendor Integration Program (SunVIP™)	Yes	Yes	No	No
Software patch management assistance	Yes	No	No	No
Field change order (FCO) management assistance	Yes	No	No	No
Remote Systems Diagnostics				
Remote dial-in analysis	Yes	Yes	Yes	Yes
Remote systems monitoring	Yes	Yes	No	No
Remote predictive failure reporting	Yes	Yes	No	No
Software Enhancements and Maintenance Releases				
Solaris enhancement releases	Yes	Yes	Yes	Yes
Patches and maintenance releases	Yes	Yes	Yes	Yes
Sun unbundled software enhancements	Option	Option	Option	Option
Internet and CD-ROM Support Tools				
SunSolve™ license	Yes	Yes	Yes	Yes
SunSolve EarlyNotifier℠ Service	Yes	Yes	Yes	Yes

Glossary

3D-RAM	Dual-ported video memory with graphics functionality built into the memory chip.
100BASE-T	See FastEthernet.
DIMM	Double Inline Memory Module. A memory unit that can come in a variety of sizes, such as 16, 32, 64, and 128 MBs.
FastEthernet	IEEE standard for 100 Mb Ethernet.
MII	Media Independent Interface. Used for connecting external transceivers to Fast Ethernet.
NFS™	Network File System. Sun's distributed computing file system, providing heterogeneous data sharing. NFS, in conjunction with NIS+, AutoFS, CacheFS™, and Volume Management, provides the user with automatic data location, navigation, and access over wide-area networks. The data appears instantly on the user's desktop, even if it is stored on a system in another city.
NIS+	Network information services plus. Naming service used as a data repository for network and system management information.
ODBC	Open Database Connectivity.
PCI	Peripheral Component Interconnect. A industry-standard for connecting peripherals such as disk drives, tapes drives, and other devices used in the PCs.
UPA	Ultra Port Architecture. A high-speed, crossbar-oriented, packet-switched mother board interconnect.
V9	Version 9 of the SPARC™ definition.
VIS™	Visual Instruction Set. The UltraSPARC™ processor implements a special instruction set that is primarily aimed at image and video processing. Some of the instructions allow the CPU to directly access and operate on image data with a high degree of parallelism. Other instructions provide facilities for formatting and moving data at very high rates of speed both within the CPU, and between the CPU and the other system components.
XGL™	A foundation geometry-oriented 2-D/3-D graphics library that provides high functionality and performance to geometry applications and application program interfaces (APIs).