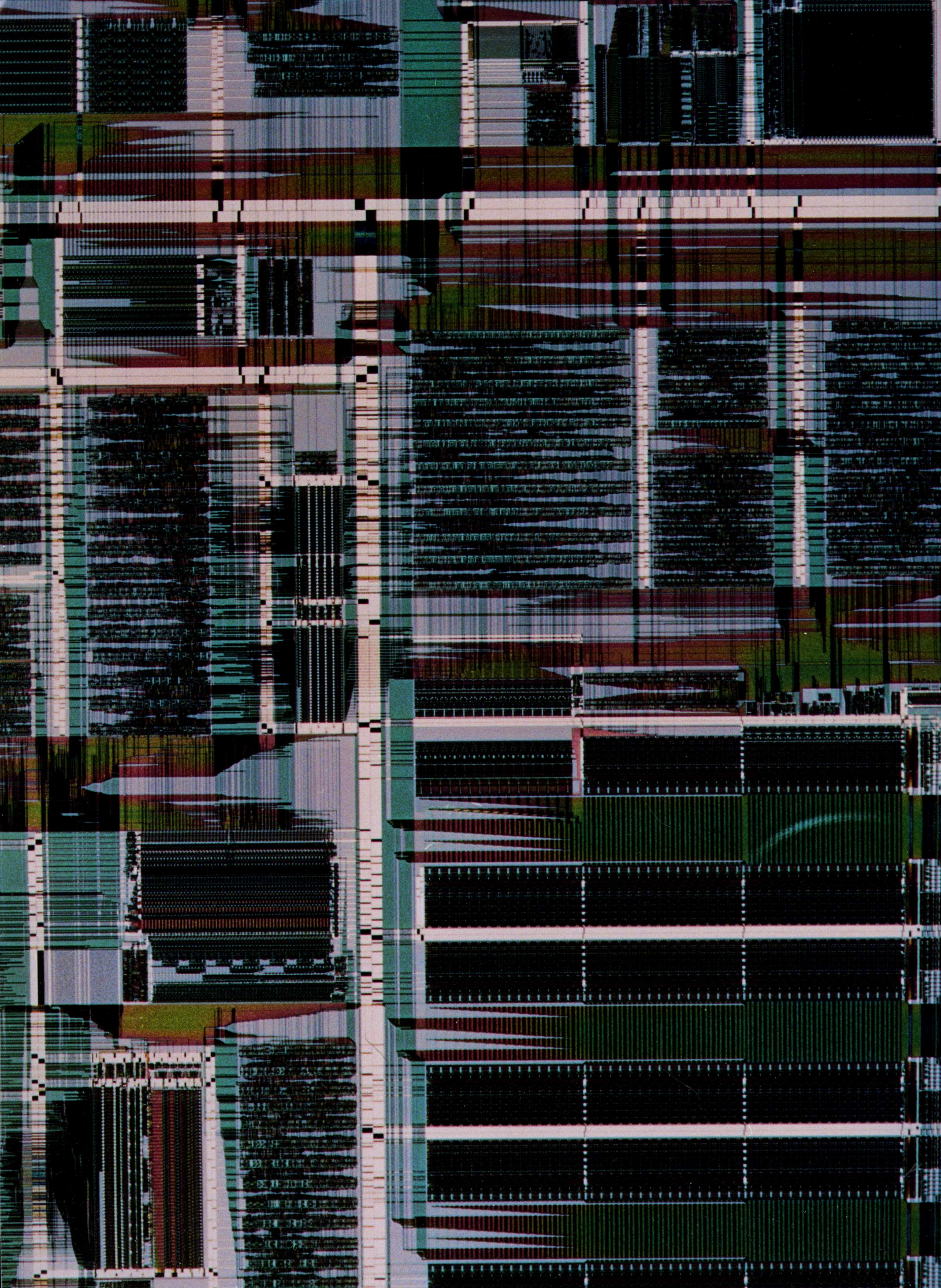




Solbourne



Series5
Product
Overview



Series5™ product family sets new standards in workstation and server compatibility and performance. Through advanced microprocessor design, multiprocessing architecture highly automated, vertically integrated manufacturing technology, Solbourne is able to offer a broad range of SPARC™ based products. The Series5 family provides quality and reliability with very competitive price/performance. And Solbourne provides support and service you can count on.



Solbourne is 100% SPARC compatible.

SPARC (Scalable Processor Architecture), upon which the Series5 product family is based, has become the leading architecture for high performance RISC processors. Because the Series5 adheres to the same standard as Sun Microsystems and other leading computer companies, you have the industry's largest library of RISC workstation software available to you. Your investment in workstation hardware and software is protected, and you have the flexibility to purchase from those who can provide the solutions most appropriate to your needs.

The Series5 is 100% binary and network compatible with all other SPARC implementations, including the entire Sun-4™ and SPARCsystem™ product line. To the network, a Series5 node looks like a Sun node. A Series5 server can operate as a file and/or compute server for Sun workstations, or vice versa.

To ensure complete compatibility, Solbourne licensed key technology from Sun Microsystems and others, including:

- SPARC Architecture
- SunOS™ (Sun's version of UNIX™), from which Solbourne's OS/MP™ is derived
- SunView™, NeWS™, X Window System™
- OpenLook™
- SunCGI™, SunCore™, Pixrects™
- ONC™, NFS™, TCP/IP
- C, FORTRAN compilers

Architecture versus implementation.

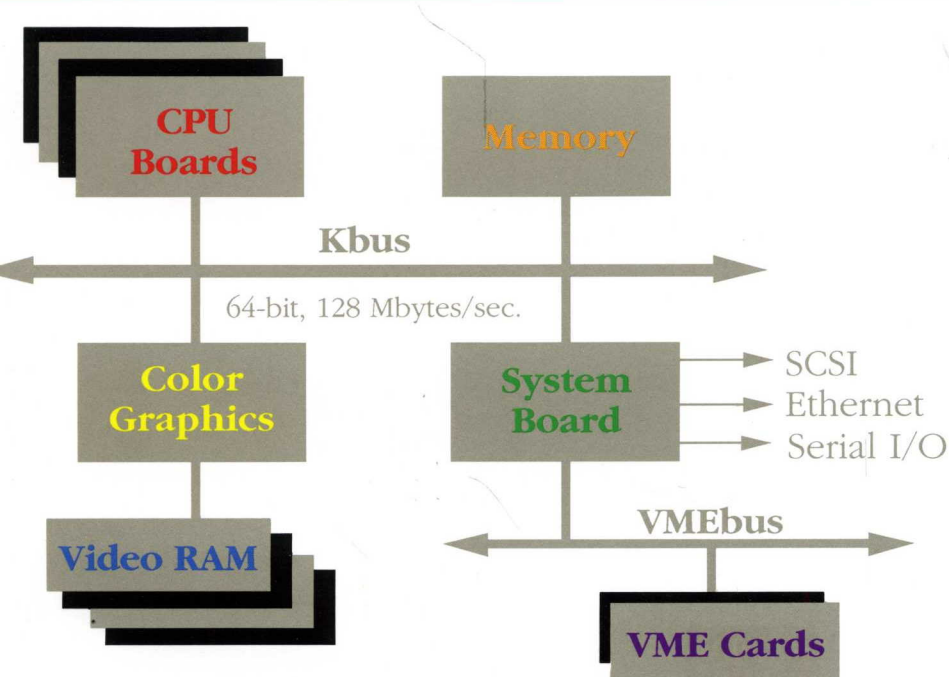
SPARC specifies the instruction set and the other external features of a processor that are visible to the program—it does not specify an implementation. SPARC chips are now available to Solbourne from leading semiconductor companies such as Fujitsu, Bipolar Integrated Technologies, Texas Instruments, and Cypress Semiconductor Corp.



Solbourne and Matsushita Electric are also developing a unique SPARC chip.

This competition between SPARC chip manufacturers and system vendors leads to lower prices, more products to choose from, and more computing power for you.

Solbourne compatibility assures that you can immediately execute the broad base of hundreds of SPARC software applications, with minimal modification. Solbourne's SPARC compatibility is widely accepted by the industry. A few of the leading software vendors who have confirmed



The System Board. With a 20,000 gate ASIC at its heart, this board provides as standard features a synchronous SCSI interface for attaching peripherals, two RS-232-compatible communications ports, an Ethernet connection, and the monochrome graphics controller and frame buffer.

Color Board. A Sun-4 compatible color frame buffer is provided.

On our larger servers and desktide workstations, the system board provides an interface to a VMEbus. Industry standard VMEbus cards allow attachment of cards for a variety of features available from Solbourne, such as Ethernet gateway cards, RS-232 communications cards, and peripheral interface cards. You can also attach qualified VME cards which you have purchased from others to satisfy special requirements.

their software is 100% compatible on Solbourne products are:

- Oracle
- Paradigm
- Autodesk (AutoCAD)
- DA Engineering (PATRAN)
- and many others.

available, as well as higher data rates to and from faster disk drives.

The Kbus connects up to four processors to:

Memory. Series5 products incorporate ECC memory, so that all double-bit errors can be detected (and most can be corrected). By contrast, products that provide only parity checking for memory cannot correct single-bit errors and cannot detect double-bit errors.

Bus: the soul of performance, the heart of the future.

At the center of the Series5 is the high speed 64-bit Kbus™. It supports a data transfer rate of 128 Mbytes per second and provides data reliability via error detection and correction circuitry (ECC).

The data path width and speed of the Kbus are sufficient to accommodate ever more powerful microprocessors as they become





Solbourne product line: breadth, depth and quality.

Solbourne provides a full range of high quality, compatible workstation and server products.

Our multiprocessing systems offer features designed to meet the price performance requirements of organizations with even the most diverse needs.

Multiprocessing provides scalability: you can start small but add additional processors quickly and inexpensively in the field when you need more power.



Desktop multiprocessing stations are available in a wide variety of configurations. Inexpensively add computing power to your workgroup or, with the compact SCSI workstation, gain the capacity to execute any application locally.

Solbourne deskmounted workstations combine greater computing power with more capacity for memory and mass storage.

Solbourne compatible servers offer high performance and flexibility to your workgroup, department or large network. Multiprocessing capabilities become available to all nodes on the network. High speed SMD mass storage together with high density helical scan backup tape capabilities provide the primary and secondary storage

capacity and reliability you need for the crucial network server function.

A full line of networking products streamlines the management of information flow and increases facility-wide communications capabilities.

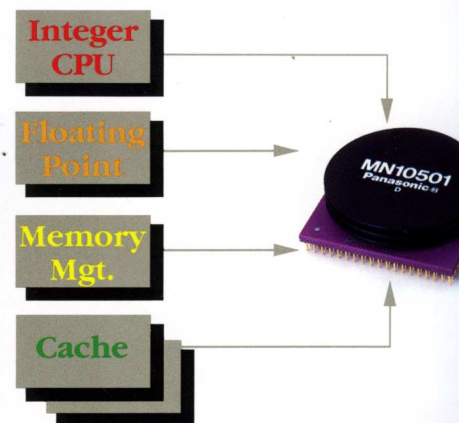


Custom SPARC chip: ultra performance for ultra-low cost.

Solbourne's partnership with Matsushita Electric Industrial Co., Ltd. combines the technical, manufacturing and financial strengths of one of the world's largest companies with the creativity and responsiveness of an American

entrepreneurial enterprise. Matsushita and Solbourne are jointly developing a custom SPARC microprocessor.

In 1990, Solbourne will introduce its first products based on this chip. Designed to take full



advantage of both the 64-bit data path width and multiprocessing architecture of current Solbourne products and of future technological advances, the chip integrates all the performance-critical elements of the system—integer CPU, floating point processor, memory management unit and cache memory—on a single 64-bit chip. Incorporating nearly 6 million transistors in sub-micron CMOS technology, the chip will deliver significant advantages in both performance and price, particularly for future low cost desktop members of the Solbourne product line.

Multiprocessing: Achievable high performance.

Solbourne's SPARC-compatible multiprocessing technology increases productivity through increased aggregate throughput. Multiple CPUs reside on the 64-bit bus, sharing a single memory and a single copy of the OS/MP UNIX-based operating system. Solbourne workstations and servers can support up to four processors, providing simultaneous execution of many different applications and system tasks, with workload automatically dis-

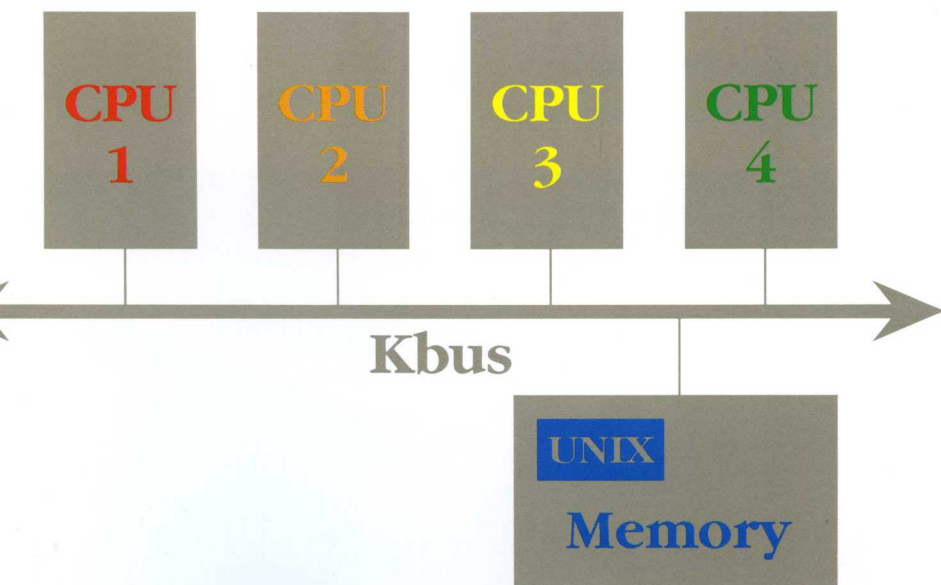


tributed among the processors for maximum throughput.

The benefits of multiprocessing can be immediately enjoyed in both single user and large networked environments, without software conversion or user training. The increased power and performance of multiprocessing is completely transparent to both the user and the application.

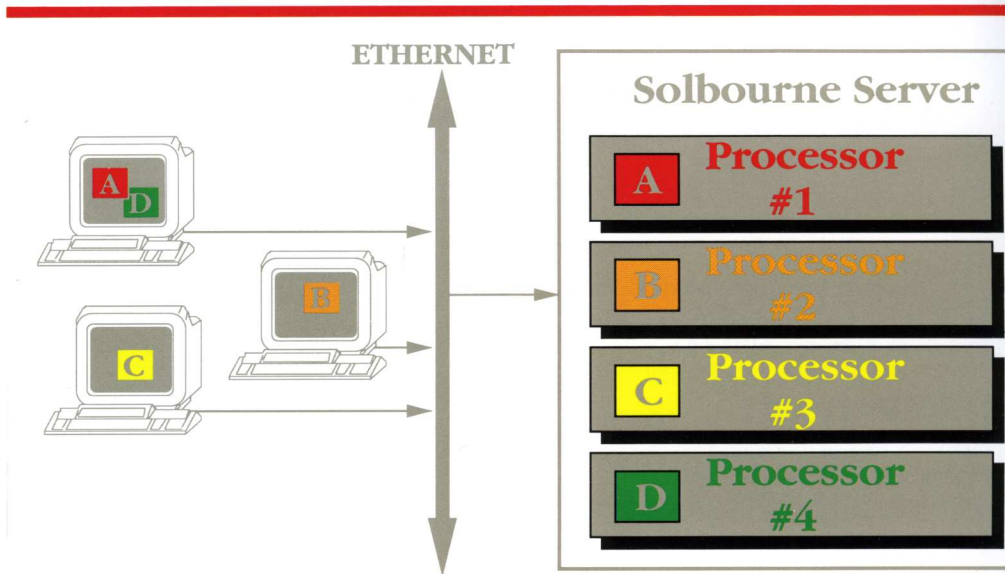
In an individual workstation configuration, each of up to four

CPUs can simultaneously execute a discrete process. Four tasks can be completed in little more time than a single task on a uniprocessor system, resulting in significantly increased productivity.



In a networked environment where a number of computers are connected to a server, all users on the network can access the capabilities of multiprocessing, with up to four processes executing concurrently. In a uniprocessor environment, several servers would be required to achieve the same performance.

Solbourne systems are designed to ensure a smooth migration path. As your processing requirements change, you can scale your Solbourne system to meet your needs while maintaining complete SPARC compatibility. Start with a single processor system and inexpensively add processing performance as your needs increase—on-site, without replacing your existing equipment.



We'll be there after the sale.

Solbourne is dedicated to providing service and support second to none. We believe that customer satisfaction begins with timely delivery of high quality, reliable products. By providing comprehensive educational services and prompt response from industry specialists and technical experts, we can help you achieve maximum value and performance from your Solbourne products every day.

Compatibility, performance, affordability and service. Throughout our family of multiprocessing workstations and servers, we offer high performance, scalable, standards-based solutions for any computing environment.

Our goal: to lower the cost of ownership compared to other products in the marketplace. See the benefits of the Solbourne alternative for yourself! We are committed to your success.





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102655074

Trademarks:

Solbourne Computer, Inc.: Solbourne, Series5, OS/MP and Kbus. Sun Microsystems, Inc.: Sun, Sun Microsystems, SPARC, Sun-4, SPARCsystem, SunOS, SunView, NeWS, SunCGI, SunCore, Pixrects, ONC, NFS, SPARCstation, and OpenLook. M.I.T.: X Window System. AT&T: UNIX. VMEbus Manufacturers Group: VMEbus.



At only 18" x 5 3/4" x 21 1/2", the Series5/500 combines high performance multiprocessing functionality with superior speed and flexibility. Choose SunView, NeWS or the X Window System for the advantages of a familiar working environment, eliminating the need for retraining.

Series5/500 Desktop

Multiprocessor Workstation

The Solbourne Series5/500™ Desktop Workstation combines the power and performance of multiprocessing with the ergonomics and convenience of a desktop workstation. Hosting one or two 22-MIPS SPARC™ processors, the Series5/500 provides up to 40 MIPS of processing power and 8.8 double precision MFLOPS of floating point performance.

Compatibility

To the other nodes on the network, the Solbourne Series5/500 Desktop Workstation looks just like a SPARCstation™. Like our Series5 servers, it is completely binary compatible with your Solbourne, Sun-4™ and SPARCsystem™ networks, executing your applications without modification.

Multiprocessing

The Series5/500 multiprocessing architecture supports simultaneous execution of multiple tasks, with the workload automatically distributed among the processors for maximum throughput.

As your performance requirements increase, the Series5/500 can be upgraded in the field, from a uniprocessor to a dual processor system.

Performance

The Solbourne Series5 is the first SPARC-based product line to utilize the high speed 33 MHz CPU. A number of technical features have been incorporated to take maximum advantage of the high performance CPU:

- ▶ A 33 MHz, single chip floating point SPARC coprocessor/controller for computation-intensive tasks.
- ▶ High speed GaAs TLB cache control to support faster data flow.
- ▶ 128 Kbytes of physical cache per CPU board.
- ▶ Up to 256 Mbytes of ECC RAM, providing headroom for the most memory intensive applications.

The high speed, 64-bit Kbus™ supports a data transfer rate of 128 Mbytes/second, permitting full utilization of the 33 MHz CPU and multiprocessing features of the Series5. The Kbus is engineered to support the Series6 and subsequent generations of microprocessors as well.

Flexibility

The Series5/500 is available in a variety of configurations. Inexpensively add computing power to your network or, with the compact SCSI subsystem, gain the capacity to execute any application locally.

In the **diskless** arrangement, the Desktop Workstation inexpensively provides additional computing power for your Solbourne, SPARC or Sun network.

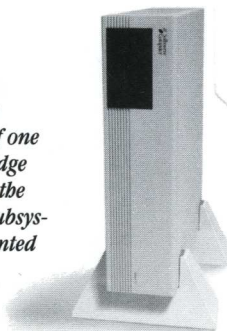
A **dataless** configuration, which includes one 3 1/2-inch hard disk drive, is a low-cost way to increase workstation performance while reducing the need for network resources.

The Series5/500 is also available in a **standalone** configuration. Combining multiprocessing with a flexible SCSI subsystem provides enough local power to execute any application.

Secondary Storage

Solbourne's 8mm Cartridge Tape Drive uses helical scan technology to place 2.0 Gbytes of reliable, high density secondary storage on a single video cartridge. The 1/2" and 1/4" Tape Drives, with 150 Mbyte capacity on reels or cartridges, provide industry-standard data interchange.

Add the SCSI subsystem to the Series5/500 for the benefits of one or two SCSI drives and cartridge tape storage. If desired, both the processor unit and the SCSI subsystem can conveniently be mounted as vertical towers.



Series5/500	#Processors	MIPS	Double Precision	
			MIPS	MFLOPS*
501	1	22		4.9
502	2	40		8.8

*Relative to Sun Microsystems benchmarks

Specifications

Features & Capacities

Central Processors

Maximum	Two central processors per workstation
Microprocessor	Cypress CY7C601 SPARC 32-bit RISC CPU
Clock Rate	33 MHz
Floating Point	Weitek 3171 floating point processor, 32-bit single-precision, 64-bit double precision
System Bus	Solbourne's 64-bit Kbus™ provides five slots, error checking and correction; operates at 128 Mbytes/second
I/O Port	Synchronous SCSI
Cache	128 Kbytes/processor direct mapped physical instruction & data cache

Real Memory

Minimum	16 Mbytes
Expansion	16 or 32 Mbyte increments to 96 Mbytes (Configuration dependent) 128 Mbyte increments to 256 Mbytes (Available 1/90)

Virtual Memory

Address Size	32 bits data/instruction
Address Space	4 Gbytes per process

Display

	Monochrome	Color
Format	19" landscape	16" or 19" landscape
Resolution	1152 x 900 pixels	1152 by 900 pixels
Refresh Rate	69 Hz Non-interlaced	66 Hz Non-interlaced
Aspect Ratio	1:1	1:1
Frame Buffer	1 bit per pixel	8-bit color storage plus 2-bit overlay storage
Color Support		Simultaneous display of 256 colors from a palette of more than 16.7 million colors
Controls	Brightness, on/off	Contrast, brightness, degauss, on/off

Disk Drive (optional)

Maximum	One drive
Type	3 1/2 -inch Winchester full-height
Interface	Synchronous SCSI
Capacity	200 Mbytes (formatted)
Average Access	16 ms seek, 8.33 ms latency

SCSI Subsystem

Maximum	Two drives
Type	5 1/4 -inch Winchester full-height
Interface	Synchronous SCSI
Capacity	327 Mbytes to 1.3 Gbytes (formatted, 327 or 661 Mbytes per drive)
Average Access	18 ms seek, 8.33 ms latency

1/4 -Inch Cartridge Tape Drive (optional)

Maximum	One drive
Type	Half-height 1/4 -inch cartridges QIC-24 and QIC-150. (Can read and write Sun-4 and SPARCstation tapes)
Interface	SCSI
Capacity	QIC-150: 150 Mbytes/cartridge with 600XTD tape cartridge; QIC-24: 60 Mbytes/cartridge with 600 tape cartridge
Transfer Rate	1.25 Mbytes/second
Tape Speed	90 inch/second read or write

8mm Cartridge Tape Drive (optional)

Maximum	One drive
Type	Helical scan, full-height
Interface	SCSI
Capacity	2.0 Gbytes/cartridge with 106 m tape cartridge
Transfer Rate	1.25 Mbytes/second



Ethernet

Data Rate	10 Mbits/second
Cabling	802.3 coaxial — 15 pin

Serial I/O

Ports	Two RS-423A (RS-232C-compatible)
Data Rates	57.6 Kbaud asynchronous, 92.1 Kbaud synchronous

Interaction Devices

Keyboard	107-key, PC-style 126-key, engineering-style (optional)
Mouse	Optical, 3-button, 1.8m (6 foot) cable

Weights & Dimensions

	Monochrome-19"	Color-16"	Color-19"
Display			
Height	46 cm (18.1 in.)	40 cm (16 in.)	47 cm (18.7 in.)
Width	46 cm (18.1 in.)	40 cm (16 in.)	48 cm (18.9 in.)
Depth	27 cm (10.6 in.)	45 cm (17.7 in.)	53 cm (21.1 in.)
Net Weight	20 kg (45 lbs.)	29 cm (65 in.)	41 kg (90 lbs.)
Ship Weight	23 kg (50 lbs.)	32.1 cm (70.6 in.)	48.5 kg (106.7 lbs.)
Keyboard		PC-Style	Engineering Style
Height		2.28 cm (0.9 in.)	7 cm (2.8 in.)
Width		43.94 cm (17.3 in.)	54 cm (21.3 in.)
Depth		15.75 cm (6.2 in.)	21 cm (8.3 in.)
Net Weight		10.16 kg (4 lbs.)	2.3 kg (5 lbs.)
Ship Weight		11.43 kg (4.5 lbs.)	2.7 kg (6 lbs.)

Processor Unit with SCSI Subsystem

Height	14.7 cm (5.8 in.)
Width	54.6 cm (21.5 in.)
Depth	45.7 cm (18 in.)
Net Weight	23 kg (50 lbs.)
Ship Weight	28 kg (60 lbs.)

Electrical

AC Voltage	100/230 VAC (switchable)
Frequency	47 to 66 Hz
Power	8 amps @ 115 VAC (920 VA) (max.) (Processor) 3 amps @ 115 VAC (345 VA) (max.) (SCSI Subsystem)

Environmental

Temperature	
Operating	10° to 40°C (50° to 104°F)
Power-Off	-20° to 75°C (-4° to 167°F)
Humidity	
Operating	20 to 80%, noncondensing at 40°C
Power-Off	95%, noncondensing at 40°C

Standards: Meets or Exceeds These Requirements

Safety	UL 478 CSA certified per C22.2, No. 220-M1986 G.S. licensed by TUV per VDE 0806/8.81, IEC 380
RFI/EMI	FCC part 15 Class A Canadian DOC Class A VDE Class A
Ergonomic	G.S. licensed by TUV per DIN ZH1/618
X-Ray Emit	DHHS Rule 21 (subchapter J), PTB (mono. only)
Software	
Operating System	Solbourne OS/MP™ 4.0 (derived from SunOS™) C, Fortran 77 (optional), DBX, and XDB tool
Compilers	Ethernet, Network File System (NFS™), Open Network Computing (ONC™), TCP/IP network protocol
Networking	Pixrects Graphics library, SunCGI™, SunCore™, GKS/C™ (optional)
Graphics	SunView™, X.11™, Solbourne X Window Manager, NeWS™ (optional)
User Interfaces	Virtual PC (optional)

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Series5/530

Workgroup Server



The Series5/530 combines up to 40 MIPS of compute power with up to 256 Mbytes of RAM and up to 2.6 Gbytes of high speed SCSI storage in a compact under-desk twin tower configuration.

The Solbourne **Series5/530™ Workgroup Server** provides the advantages of low-cost SPARC™-based multiprocessing to your workgroup. The Series5/530 combines a fully SPARC-compatible multiprocessor system with up to 256 Mbytes of ECC RAM and 2.6 Gbytes of mass storage capacity. This compact server provides from 22 to 40 MIPS of processing power and up to 8.8 double precision MFLOPS, yet is small enough to be placed on a desktop.

Compatibility

The Solbourne Series5/530 Workgroup Server looks just like a SPARCserver™ to the other nodes on the network. Like our Series5 workstations, it is completely binary compatible with your Solbourne, Sun-4™ and SPARCsystem™ networks, executing your applications without modification.

Multiprocessing

The Series5/530 multiprocessing architecture supports simultaneous execution of multiple tasks, with the workload automatically distributed among the processors for maximum throughput. The Workgroup Server makes multiprocessing immediately available to all users on the network, even to nodes such as X terminals and PCs.

As your performance requirements increase, the Series5/530 can be upgraded in the field, without replacing your existing equipment.

Performance

The Solbourne Series5 is the first SPARC-based product line to utilize the high speed 33 MHz CPU. A number of technical features have been incorporated to take maximum advantage of the high performance CPU:

- ▶ A 33 MHz, single chip floating point SPARC coprocessor/controller for computation-intensive tasks.
- ▶ High speed GaAs TLB cache control to support faster data flow.
- ▶ 128 Kbytes of physical cache per CPU board.
- ▶ Up to 256 Mbytes of ECC RAM, providing headroom for the most memory intensive applications.

The high speed, 64-bit Kbus™ supports a data transfer rate of 128 Mbytes/second, permitting full utilization of the 33 MHz CPU and multiprocessing features of the Series5. The Kbus is engineered to support the Series6 and subsequent generations of microprocessors as well.

Secondary Storage

Solbourne's 8mm Cartridge Tape Drive uses helical scan technology to place 2.0 Gbytes of reliable, high density secondary storage on a single video cartridge. The ½" and ¼" Tape Drives, with 150 Mbyte capacity on reels or cartridges, provide industry-standard data interchange.

Series5/530	#Processors	MIPS	Double Precision MFLOPS*
531	1	22	4.9
532	2	40	8.8

*Relative to Sun Microsystems benchmarks

Specifications

Features & Capacities

Central Processors

Maximum Microprocessor	Two central processors per workstation Cypress CY7C601 SPARC 32-bit RISC CPU
Clock Rate	33 MHz
Floating Point	Weitek 3171 floating point processor, 32-bit single-precision, 64-bit double precision
System Bus	Solbourne's 64-bit Kbus™ provides five slots, error checking and correction; operates at 128 Mbytes/second

I/O Port	Synchronous SCSI
Cache	128 Kbytes/processor direct mapped physical instruction & data cache

Real Memory

Minimum	16 Mbytes
Expansion	16 or 32 Mbyte increments to 96 Mbytes (Configuration dependent) 128 Mbyte increments to 256 Mbytes (Available 1/90)

Virtual Memory

Address Size	32 bits data/instruction
Address Space	4 Gbytes per process

Disk Drive (optional)

Maximum	One drive
Type	3 1/2 -inch Winchester
Interface	Synchronous SCSI
Capacity	200 Mbytes (formatted)
Average Access	16 ms seek, 8.33 ms latency

SCSI Subsystem

Disk Drives

Maximum	Two drives
Type	5 1/4 -inch Winchester full-height
Interface	Synchronous SCSI
Capacity	327 Mbytes to 1.3 Gbytes (formatted, 327 or 661 Mbytes per drive)
Average Access	18 ms seek, 8.33 ms latency

1/4 -Inch Cartridge Tape Drive (optional)

Maximum	One drive
Type	Half-height 1/4 -inch cartridges QIC-24 and QIC-150. (Can read and write Sun-4 and SPARCstation tapes)
Interface	SCSI
Capacity	QIC-150: 150 Mbytes/cartridge with 600XTD tape cartridge; QIC-24: 60 Mbytes/cartridge with 600 tape cartridge
Transfer Rate	1.25 Mbytes/second
Tape Speed	90 inch/second read or write

1/2 -Inch Reel-to-Reel Tape Drive (optional)

Maximum	One drive
Type	Front-loading, self-threading, 9-track, desktop enclosure
Interface	SCSI
Capacity	NRZI: 25 Mbytes/reel, 800 bpi PE: 40 Mbytes/reel, 1600 bpi GCR: 150 Mbytes/reel, 6250 bpi
Transfer Rate	0.75 Mbytes/second (GCR)
Tape Speed	125 inch/second read or write

8mm Cartridge Tape Drive (optional)

Maximum	One drive
Type	Helical scan, full-height
Interface	SCSI
Capacity	2.0 Gbytes/cartridge with 106 m tape cartridge
Transfer Rate	1.25 Mbytes/second

Ethernet

Data Rate	10 Mbits/second
Cabling	802.3 coaxial — 15 pin

Serial I/O

Ports	Two RS-423A (RS-232C-compatible)
Data Rates	57.6 Kbaud asynchronous, 92.1 Kbaud synchronous

Weights & Dimensions

Processor Unit with SCSI Subsystem

Height	14.7 cm (5.8 in.)
Width	54.6 cm (21.5 in.)
Depth	45.7 cm (18 in.)
Net Weight	23 kg (50 lbs.)
Ship Weight	28 kg (60 lbs.)

Electrical

AC Voltage	115/230 VAC (switchable)
Frequency	47 to 63 Hz
Power	8 amps @ 115 VAC (920 VA) (max.) (Processor) 3 amps @ 115 VAC (345 VA) (max.) (SCSI sub.)

Environmental

Temperature

Operating	10° to 40°C (50° to 104°F)
Power-Off	-20° to 75°C (-4° to 167°F)

Humidity

Operating	20 to 80%, noncondensing at 40°C
Power-Off	95%, noncondensing at 40°C

Standards: Meets or Exceeds These Requirements

Safety	UL 478 CSA certified per C22.2, No. 220-M1986 G.S. licensed by TUV per VDE 0806/8.81, IEC 380
RFI/EMI	FCC part 15 Class A Canadian DOC Class A VDE Class A
X-Ray Emit	DHHS Rule 21 (subchapter J), PTB (mono. only)

Software

Operating System	Solbourne OS/MP™ (derived from SunOS™)
Compilers	C, Fortran 77 (optional), DBX, and XDB tool
Networking	Ethernet, Network File System (NFS™), Open Network Computing (ONC™), TCP/IP network protocol
User Interfaces	SunView™, X.11™, Solbourne X Window Manager, NeWS™ (optional)

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Series5/600 Deskside

Multiprocessor Workstation



To speed the completion of compute-intensive tasks, the greater computing power of Solbourne multiprocessors can be accessed by other users on the network through remote windowing and execution facilities.

The Solbourne **Series5/600™ Deskside Workstation** is a fully SPARC™-compatible multiprocessor system. Hosting up to four 22-MIPS SPARC processors, the Series5/600 provides up to 65 MIPS of computing power and 14.5 MFLOPS of double precision floating point performance. Up to four SCSI disk drives are supported, containing 327 Mbytes to 2.6 Gbytes of high speed storage capacity. Up to 256 Mbytes of ECC RAM provide enough memory for the most demanding applications. The Series5/600 Deskside Workstation blends easily into your office environment and has no special power requirements.

Compatibility

The Solbourne Series5/600 Deskside Workstation looks just like a SPARCstation™ to the other nodes on the network. Like our Series5 servers, it is completely binary compatible with your Solbourne, Sun-4™ and SPARCsystem™ networks, executing your applications without modification.

Multiprocessing

The Series5/600 multiprocessing architecture supports simultaneous execution of multiple tasks, with the workload automatically distributed among the processors for maximum throughput.

Solbourne single CPU performance is superior to competitive uniprocessor models. In some applications, additional processors result in four times the throughput! As your performance requirements increase, the Series5/600 can be upgraded in the field, without replacing your existing equipment.

Performance

The Solbourne Series5 is the first SPARC-based product line to utilize the high speed 33 MHz CPU. A number of technical features have been incorporated to take maximum advantage of the high performance CPU:

- ▶ A 33 MHz, single chip floating point SPARC coprocessor/controller for computation-intensive tasks.
- ▶ High speed GaAs TLB cache control to support faster data flow.
- ▶ 128 Kbytes of physical cache per CPU board.
- ▶ Up to 256 Mbytes of ECC RAM, providing headroom for the most memory intensive applications.

Solbourne's integrated SCSI bus runs at 4 Mbytes/second in synchronous mode, ensuring that the SCSI disk drives can perform to full advantage.

The high speed, 64-bit Kbus™ supports a data transfer rate of 128 Mbytes/second, permitting full utilization of the 33 MHz CPU and multiprocessing features of the Series5. The Kbus is engineered to support the Series6 and subsequent generations of microprocessors as well.

Secondary Storage

Solbourne's 8mm Cartridge Tape Drive uses helical scan technology to place 2.0 Gbytes of reliable, high density secondary storage on a single video cartridge. The ½" and ¼" Tape Drives, with 150 Mbyte capacity on reels or cartridges, provide industry-standard data interchange.

Series5/600	#Processors	MIPS	Double Precision	
			MIPS	MFLOPS*
601	1	22		4.9
602	2	40		8.8
603	3	54		12.0
604	4	65		14.5

*Relative to Sun Microsystems benchmarks

Specifications

Features & Capacities

Central Processors

Maximum Microprocessor	Four central processors per workstation Cypress CY7C601 SPARC 32-bit RISC CPU
Clock Rate	33 MHz
Floating Point	Weitek 3171 floating point processor, 32-bit single-precision, 64-bit double precision
System Bus	Solbourne's 64-bit Kbus™ provides seven slots, error checking and correction; operates at 128 Mbytes/second
VMEbus™	Industry-standard VMEbus provides seven slots; operates at 25 Mbytes/second
I/O Port	Synchronous SCSI
Cache	128 Kbytes/processor direct mapped physical instruction & data cache

Real Memory

Minimum	16 Mbytes
Expansion	16 or 32 Mbyte increments to 160 Mbytes (Configuration dependent) 128 Mbyte increments to 256 Mbytes (Available 1/90)

Virtual Memory

Address Size	32 bits data/instruction
Address Space	4 Gbytes per process

	Monochrome	Color
Display Format	19" landscape	16" or 19" landscape
Resolution	1152 x 900 pixels	1152 by 900 pixels
Refresh Rate	69 Hz Non-interlaced	66 Hz Non-interlaced
Aspect Ratio	1:1	1:1
Frame Buffer	1 bit per pixel	8-bit color storage plus 2-bit overlay storage
Color Support		Simultaneous display of 256 colors from a palette of more than 16.7 million colors
Controls	Brightness, on/off	Contrast, brightness, degauss, on/off

Disk Drive (optional)

Maximum	Four drives (three if cartridge tape installed)
Type	5 1/4 -inch Winchester full-height
Interface	Synchronous SCSI
Capacity	327 Mbytes to 2.6 Gbytes (formatted, 327 or 661 Mbytes per drive)
Average Access	16 ms seek, 8.33 ms latency

1/4 -Inch Cartridge Tape Drives (optional)

Maximum	Two drives
Type	Half-height 1/4 -inch cartridges QIC-24 and QIC-150. (Can read and write Sun-4 and SPARCstation tapes)
Interface	SCSI
Capacity	QIC-150: 150 Mbytes/cartridge with 600XTD tape cartridge; QIC-24: 60 Mbytes/cartridge with 600 tape cartridge
Transfer Rate	1.25 Mbytes/second
Tape Speed	90 inch/second read or write

8mm Cartridge Tape Drive (optional)

Maximum	One drive
Type	Helical scan, full-height
Interface	SCSI
Capacity	2.0 Gbytes/cartridge with 106 m tape cartridge
Transfer Rate	1.25 Mbytes/second

Ethernet

Data Rate	10 Mbits/second
Cabling	802.3 coaxial cable — 15 pin

VME/Ethernet (optional)

Data Rate	10 Mbits/second
Cabling	802.3 coaxial cable — 15 pin



VME/16 Line Multiplexer (optional)

Data Rate	50 to 38,400 baud
Ports	16 RS-232 channels (maximum 64 channels) Full modem support on all 16 channels

Serial I/O

Ports	Two RS-423A (RS-232C-compatible)
Data Rates	57.6 Kbaud asynchronous, 92.1 Kbaud synchronous

Interaction Devices

Keyboard	107-key, PC-style 126-key, engineering-style (optional)
Mouse	Optical, 3-button, 1.8m (6 foot) cable

Weights & Dimensions

	Monochrome-19"	Color-16"	Color-19"
Display Height	46 cm (18.1 in.)		
Display Width	46 cm (18.1 in.)		
Display Depth	27 cm (10.6 in.)		
Net Weight	20 kg (45 lbs.)		
Ship Weight	23 kg (50 lbs.)		
Display Height		40 cm (16 in.)	47 cm (18.7 in.)
Display Width		40 cm (16 in.)	48 cm (18.9 in.)
Display Depth		45 cm (17.7 in.)	53 cm (21.1 in.)
Net Weight		29 kg (65 lbs.)	41 kg (90 lbs.)
Ship Weight		32.1 kg (70.6 lbs.)	48.5 kg (106.7 lbs.)
Deskside Unit Height	76.20 cm (30 in.)		
Deskside Unit Width	45.72 cm (18 in.)		
Deskside Unit Depth	55.88 cm (22 in.)		
Deskside Unit Net Weight	76 kg (167 lbs.)		
Deskside Unit Ship Weight	95 kg (209 lbs.)		
Keyboard Height	2.28 cm (0.9 in.)		
Keyboard Width	43.94 cm (17.3 in.)		
Keyboard Depth	15.75 cm (6.2 in.)		
Keyboard Net Weight	10.16 kg (4 lbs.)		
Keyboard Ship Weight	11.43 cm (4.5 lbs.)		
Engineering Style Height	7 cm (2.8 in.)		
Engineering Style Width	54 cm (21.3 in.)		
Engineering Style Depth	21 cm (8.3 in.)		
Engineering Style Net Weight	2.3 kg (5 lbs.)		
Engineering Style Ship Weight	2.7 kg (6 lbs.)		

Electrical

AC Voltage	115/230 VAC (switchable)
Frequency	47.5 to 66 Hz
Power	12 amps @ 115 VAC (1380 VA) (max.) (Processor)

Environmental

Temperature Operating	10° to 40°C (50° to 104°F)
Temperature Power-Off	-20° to 75°C (-4° to 167°F)
Humidity Operating	20 to 80% , noncondensing at 40°C
Humidity Power-Off	95% , noncondensing at 40°C

Standards: Meets or Exceeds These Requirements

Safety	UL 478 CSA certified per C22.2, No. 220-M1986 G.S. licensed by TUV per VDE 0806/8.81, IEC 380
RFI/EMI	FCC part 15 Class A Canadian DOC Class A VDE Class A
Ergonomic	G.S. licensed by TUV per DIN ZHI/618
X-Ray Emit	DHHS Rule 21 (subchapter J), PTB (mono. only)
Software Operating System	Solbourne OS/MP™ (derived from SunOS™)
Compilers	C, Fortran 77 (optional), DBX, and XDB tool
Networking	Ethernet, Network File System (NFS™), Open Network Computing (ONC™), TCP/IP network protocol
Graphics	Pixrects Graphics library, SunCGI™, SunCore™, GKS/C™ (optional)
User Interfaces	SunView™, X.11™, Solbourne X Window Manager, NeWS™ (optional)
Emulation	Virtual PC (optional)

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Series5/670

Departmental Server



The Series5/670 combines up to 65 MIPS of compute power with up to 256 Mbytes of RAM and up to 2.6 Gbytes of high speed SCSI storage in a compact deskside unit.

The Solbourne **Series5/670™ Departmental Server** provides the advantages of cost-effective SPARC™-based multiprocessing to your department or small enterprise. With up to four 22-MIPS SPARC processors, the Series5/670 delivers up to 65 MIPS of processing power and 14.5 MFLOPS of double precision floating point performance. Up to four SCSI disk drives are supported, containing 327 Mbytes to 2.6 Gbytes of high speed storage capacity. Up to 256 Mbytes of ECC RAM provide enough memory for the most demanding applications.

Compatibility

The Solbourne Series5/670 Departmental Server looks just like a SPARCserver™ to the other nodes on the network. Like our Series5 workstations, it is completely binary compatible with your Solbourne, Sun-4™ and SPARCsystem™ networks, executing your applications without modification.

Multiprocessing

The Series5/670 multiprocessing architecture supports simultaneous execution of multiple tasks, with the workload automatically distributed among the processors for maximum throughput. The Departmental Server makes multiprocessing immediately available to all users on the network, even to nodes such as X terminals and PCs.

As your performance requirements increase, the Series5/670 can be upgraded in the field, without replacing your existing equipment.

Performance

The Solbourne Series5 is the first SPARC-based product line to utilize the high speed 33 MHz CPU. A number of technical features have been incorporated to take maximum advantage of the high performance CPU:

- ▶ A 33 MHz, single chip floating point SPARC coprocessor/controller for computation-intensive tasks.
- ▶ High speed GaAs TLB cache control to support faster data flow.
- ▶ 128 Kbytes of physical cache per CPU board.
- ▶ Up to 256 Mbytes of ECC RAM, providing headroom for the most memory intensive applications.

Solbourne's integrated SCSI bus runs at 4 Mbytes/second in synchronous mode, ensuring that the SCSI disk drives can perform to full advantage.

The high speed, 64-bit Kbus™ supports a data transfer rate of 128 Mbytes/second, permitting full utilization of the 33 MHz CPU and multiprocessing features of the Series5. The Kbus is engineered to support the Series6 and subsequent generations of microprocessors as well.

Secondary Storage

Solbourne's 8mm Cartridge Tape Drive uses helical scan technology to place 2.0 Gbytes of reliable, high density secondary storage on a single video cartridge. The ½" and ¼" Tape Drives, with 150 Mbyte capacity on reels or cartridges, provide industry-standard data interchange.

Series5/670	#Processors	MIPS	Double Precision	
				MFLOPS*
671	1	22		4.9
672	2	40		8.8
673	3	54		12.0
674	4	65		14.5

*Relative to Sun Microsystems benchmarks

Specifications

Features & Capacities

Central Processors

Maximum Microprocessor	Four central processors per workstation
Clock Rate	Cypress CY7C601 SPARC 32-bit RISC CPU 33 MHz
Floating Point	Weitek 3171 floating point processor, 32-bit single-precision, 64-bit double precision
System Bus	Solbourne's 64-bit Kbus™ provides seven slots, error checking and correction; operates at 128 Mbytes/second

VMEbus™ Industry-standard VMEbus provides seven slots; operates at 25 Mbytes/second

I/O Port Synchronous SCSI
Cache 128 Kbytes/processor direct mapped physical instruction & data cache

Real Memory

Minimum	16 Mbytes
Expansion	16 or 32 Mbyte increments to 160 Mbytes (Configuration dependent) 128 Mbyte increments to 256 Mbytes (Available 1/90)

Virtual Memory

Address Size	32 bits data/instruction
Address Space	4 Gbytes per process

Disk Drives (optional)

Maximum	Four drives (three if cartridge tape option installed)
Type	5 ¼-inch Winchester full-height
Interface	Synchronous SCSI
Capacity	327 Mbytes to 2.6 Gbytes (formatted, 661 Mbytes per drive)
Average Access	18 ms seek, 8.33 ms latency

¼-Inch Cartridge Tape Drives (optional)

Maximum	Two drives
Type	Half-height ¼-inch cartridges QIC-24 or QIC-150. (Can read Sun-4 and SPARCstation tapes)
Interface	SCSI
Capacity	QIC-150: 150 Mbytes/cartridge with 600XTD tape cartridge; QIC-24: 60 Mbytes/cartridge with 600 tape cartridge
Transfer Rate	1.25 Mbytes/second
Tape Speed	90 inch/second read or write

½-Inch Reel-to-Reel Tape Drive (optional)

Maximum Type	One drive Front-loading, self-threading, 9-track, desktop enclosure
Interface	SCSI
Capacity	NRZI: 25 Mbytes/reel, 800 bpi PE: 40 Mbytes/reel, 1600 bpi GCR: 150 Mbytes/reel, 6250 bpi 0.75 Mbytes/second (GCR)
Transfer Rate	125 inch/second read or write

8mm Cartridge Tape Drive (optional)

Maximum Type	One drive Helical scan, full-height
Interface	SCSI
Capacity	2.0 Gbytes/cartridge with 106 m tape cartridge
Transfer Rate	1.25 Mbytes/second

Ethernet

Data Rate	10 Mbits/second
Cabling	802.3 coaxial — 15 pin

VME/Ethernet (optional)

Data Rate	10 Mbits/second
Cabling	802.3 coaxial — 15 pin

VME/16 Line Multiplexer (optional)

Data Rate	50 to 38,400 baud
Ports	16 RS-232 channels (maximum 64 channels) Full modem support on all 16 channels

Serial I/O

Ports	Two RS-423A (RS-232C-compatible)
Data Rates	57.6 Kbaud asynchronous, 92.1 Kbaud synchronous

Weights & Dimensions

Height	76.20 cm (30 in.)
Width	45.72 cm (18 in.)
Depth	55.88 cm (22 in.)
Net Weight	76 kg (167 lbs.)
Ship Weight	95 kg (209 lbs.)

Electrical

AC Voltage	115/230 VAC (switchable)
Frequency	47.5 to 66 Hz
Power	12 amps @ 115 VAC (1380 VA) (max.)

Environmental

Temperature

Operating	10° to 40°C (50° to 104°F)
Power-Off	-20° to 75°C (-4° to 167°F)

Humidity

Operating	20 to 80%, noncondensing at 40°C
Power-Off	95%, noncondensing at 40°C

Standards: Meets or Exceeds These Requirements

Safety	UL 478 CSA certified per C22.2, No. 220-M1986 G.S. licensed by TUV per VDE 0806/8.81, IEC 380
RFI/EMI	FCC part 15 Class A Canadian DOC Class A VDE Class A
X-Ray Emit	DHHS Rule 21 (subchapter J), PTB (mono. only)

Software

Operating System	Solbourne OS/MP™ 4.0 (derived from SunOS™ 4.0)
Compilers	C, Fortran 77 (optional), DBX, and XDB tool
Networking	Ethernet, Network File System (NFS™), Open Network Computing (ONC™), TCP/IP network protocol
User Interfaces	SunView™, X.11™, Solbourne X Window Manager, NeWS™ (optional)

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Series5/800

Network Server



The versatile Series5/800 provides high performance multiprocessing functionality with superior speed, flexibility and high capacity disk storage. As functionality and storage requirements increase, additional microprocessors and SMD drives are economically field-installed.

The Solbourne **Series5/800™ Network Server** is a fully SPARC™-compatible multiprocessor system. Hosting up to four 22-MIPS SPARC processors, the Series5/800 provides up to 65 MIPS of computing power and 14.5 MFLOPS of double precision floating point performance. The system supports four SMD (Storage Module Device) subsystems, each containing from 0.83 to 3.3 gigabytes, for a total of up to 13.3 gigabytes of high speed mass storage.

Competitive products can require two or more servers to provide the computing power of the Series5/800. Twice the cost, twice the physical space, twice the administrative overhead. The deskside Network Server requires less space than a rackmount unit, blends easily into your office environment and has no special power requirements.

Compatibility

The Solbourne Series5/800 Network Server looks just like a SPARCserver™ to the other nodes on the network. Like our Series5 workstations, it is completely binary compatible with your Solbourne, Sun-4™ and SPARCsystem™ networks, executing your applications without modification.

Multiprocessing

The Series5/800 multiprocessing architecture supports simultaneous execution of multiple tasks, with the workload automatically distributed among the processors for maximum throughput. The Network Server makes multiprocessing immediately available to all users on the network, even to nodes such as X terminals and PCs.

As your performance requirements increase, the Series5/800 can be upgraded in the field, without replacing your existing equipment.

Performance

The Solbourne Series5 is the first SPARC-based product line to utilize the high speed 33 MHz CPU. A number of technical features have been incorporated to take maximum advantage of the high performance CPU:

- ▶ A 33 MHz, single chip floating point SPARC coprocessor/controller for computation-intensive tasks.
- ▶ High speed GaAs TLB cache control to support faster data flow.
- ▶ 128 Kbytes of physical cache per CPU board.
- ▶ Up to 256 Mbytes of ECC RAM, providing headroom for the most memory intensive applications.

The high speed, 64-bit Kbus™ supports a data transfer rate of 128 Mbytes/second, permitting full utilization of the 33 MHz CPU and multiprocessing features of the Series5. The Kbus is engineered to support the Series6 and subsequent generations of microprocessors as well.

To further support the speed of the 33 MHz CPU, a high performance disk subsystem is included in the Series5/800. Each eight-inch SMD drive operates at a sustained transfer rate of 3 megabytes/second, which is up to 25% faster than competitive models. Block transfers of data between the disk controller and the system memory reduce VMEbus contention. Custom silicon sustains 25 Mbyte/second transfers on the VMEbus. Preserving bandwidth in this way enables four subsystems to be hosted at once!

Secondary Storage

Solbourne's 8mm Cartridge Tape Drive uses helical scan technology to place 2.0 Gbytes of reliable, high density secondary storage on a single video cartridge. The ½" and ¼" Tape Drives, with 150 Mbyte capacity on reels or cartridges, provide industry-standard data interchange.

Series5/800	#Processors	MIPS	Double Precision MFLOPS*
801	1	22	4.9
802	2	40	8.8
803	3	54	12.0
804	4	65	14.5

*Relative to Sun Microsystems benchmarks

Specifications

Features & Capacities

Central Processors

Maximum Microprocessor	Four central processors per workstation Cypress CY7C601 SPARC 32-bit RISC CPU
Clock Rate	33 MHz
Floating Point	Weitek 3171 floating point processor, 32-bit single-precision, 64-bit double precision
System Bus	Solbourne's 64-bit Kbus™ provides seven slots, error checking and correction; operates at 128 Mbytes/second
VMEbus™	Industry-standard VMEbus provides seven card slots; operates at 25 Mbytes/second
I/O Port	Synchronous SCSI
Cache	128 Kbytes/processor direct mapped physical instruction & data cache

Real Memory

Minimum	16 Mbytes
Expansion	16 or 32 Mbyte increments to 160 Mbytes (Configuration dependent) 128 Mbyte increments to 256 Mbytes (Available 1/90)

Virtual Memory

Address Size	32 bits data/instruction
Address Space	4 Gbytes per process

Disk Drives (optional)

Disk drives are housed in peripheral cabinets. A maximum of four cabinets may be linked in one Series5/800, with up to four drives per cabinet. The Series5/800 can accommodate up to four controllers, with four drives per controller.

Maximum	16 drives
Type	8-inch SMD (Storage Module Device)
Interface	SMD-E
Capacity	830 Mbytes to 13.3 Gbytes (formatted, 830 Mbytes per drive)
Average Access	16 ms seek, 8.33 ms latency
Transfer rate	3 Mbytes/second

¼-Inch Cartridge Tape Drives (optional)

Maximum	Two drives
Type	Half-height ¼-inch cartridges QIC-24 and QIC-150 (Can read and write Sun-4 and SPARCstation tapes)
Interface	SCSI
Capacity	QIC-150: 150 Mbytes/cartridge with 600XTD tape cartridge; QIC-24: 60 Mbytes/cartridge with 600 tape cartridge
Transfer rate	1.25 Mbytes/second
Tape speed	90 inch/second read or write

½-Inch Reel-to-Reel Tape Drive (optional)

Maximum	One drive
Type	Front-loading, self-threading, 9-track, desktop enclosure
Interface	SCSI
Capacity	NRZI: 25 Mbytes/reel, 800 bpi PE: 40 Mbytes/reel, 1600 bpi GCR: 150 Mbytes/reel, 6250 bpi
Transfer Rate	0.75 Mbytes/second (GCR)
Tape Speed	125 inch/second read or write

8mm Cartridge Tape Drive (optional)

Maximum	One drive
Type	Helical scan, full-height
Interface	SCSI
Capacity	2.0 Gbytes/cartridge with 106 m tape cartridge
Transfer Rate	1.25 Mbytes/second



Ethernet

Data Rate	10 Mbits/second
Cabling	802.3 coaxial — 15 pin

VME/Ethernet (optional)

Data Rate	10 Mbits/second
Cabling	802.3 coaxial — 15 pin

VME/16 Line Multiplexer (optional)

Data Rate	50 to 38,400 baud
Ports	16 RS-232 channels (maximum 64 channels) Full modem support on all 16 channels

Serial I/O

Ports	Two RS-423A (RS-232C-compatible)
Data Rates	57.6 Kbaud asynchronous, 92.1 Kbaud synchronous

Weights & Dimensions

	Processor Unit	Peripheral Cabinet
Height	76.20 cm (30 in.)	76.20 cm (30 in.)
Width	45.72 cm (18 in.)	45.72 cm (18 in.)
Depth	55.88 cm (22 in.)	55.88 cm (22 in.)
Net Weight	76 kg (167 lbs.)	50 kg (110 lbs.)
Ship Weight	95 kg (209 lbs.)	69 kg (150 lbs.)

Electrical — Processor Unit

AC Voltage	115/230 VAC (switchable)
Frequency	47.5 to 66 Hz
Power	12 amps @ 115 VAC (1280 VA) (max.)

Electrical — Peripheral Cabinet

AC Voltage	100/240 VAC (switchable)
Frequency	50 to 60 Hz
Power	8.6 amps @ 115 VAC (989 VA) (max.)

Environmental

Temperature	
Operating	10° to 40°C (50° to 104°F)
Power-Off	-20° to 75°C (-4° to 167°F)

Humidity

Operating	20 to 80 %, noncondensing at 40°C
Power-Off	95 %, noncondensing at 40°C

Standards: Meets or Exceeds These Requirements

Safety	UL 478 CSA certified per C22.2, No. 220-M1986 G.S. licensed by TUV per VDE 0806/8.81, IEC 380 FCC part 15 Class A
RFI/EMI	Canadian DOC Class A VDE Class A
Ergonomic	G.S. licensed by TUV per DIN ZH1/618
X-Ray Emit	DHHS Rule 21 (subchapter J), PTB (mono. only)
Software	
Operating System	Solbourne OS/MP™ 4.0 (derived from SunOS™ 4.0) C, Fortran 77 (optional), DBX, and XDB tool
Compilers	Ethernet, Network File System (NFS™), Open Network Computing (ONC™), TCP/IP network protocol
Networking	SunView™, X.11™, Solbourne X Window Manager, NeWS™ (optional)
User Interfaces	

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