



# Intel® Server Platforms SPSH4 & SRSH4

## Supporting Up to Four Intel® Xeon™ Processors MP

### Product Brief

- Up to Four Intel® Xeon™ Processors MP
- Availability and Reliability for Maximum Uptime
- Scalability for Investment Protection



# Highly Available and Scalable Intel® Xeon™ Processor-Based Server Platforms for Business Applications and Corporate Data Centers

## High-End Performance Using Up to Four Intel® Xeon™ Processors MP

With the Intel® Server Platforms SPSH4 and SRSH4 you can take advantage of the power of 4-way Intel® Xeon™ processors MP, which are specifically designed to provide the uncompromising performance required for eliminating bottlenecks in data flow and running performance-intensive applications such as Microsoft® Exchange 2000 groupware, storage management, and video streaming.

## Availability and Reliability for Maximum Uptime

The Server Platforms SPSH4 and SRSH4 are built for maximum uptime. From component selection to the latest in system architecture, these dependable platforms are designed to provide uninterrupted service with the help of such features as highly efficient system management, redundant hot-swap power supplies and fans, hot-swap SCSI drives, PCI hot-plug slots, and support from Intel® Server Management for managing the server while the operating system is up or down.



## Outstanding Scalability for Investment Protection

With their 4-way processor architecture, allowing a step-by-step upgrade, the Intel® Server Platforms SPSH4 and SRSH4 enable organizations to scale up according to changing business and application requirements. Each platform runs from one to four processors, supports five (Server

Platform SRSH4) or ten (Server Platform SPSH4) hot-swap SCSI hard drives, includes eight PCI slots, and supports PCI hot-plug adapters for the maximum in upgrade options. By supporting a “scale right” approach—replacing multiple 2-way servers with fewer 4-way servers—the Intel® Server Platforms SPSH4 and SRSH4 can help businesses to reduce costs while significantly extending workload capacity. All this makes the Intel® Server Platforms SPSH4 and SRSH4 an excellent form of investment protection.

## Features

## Benefits

Support for up to four Intel® Xeon™ processors MP with 512KB–1MB L3 Cache and Hyper-Threading Technology	Performance and scalability for the most demanding server applications
12 DIMM sockets, supporting up to 24 GB of registered ECC DDR200/266 SDRAM	Memory capacity and flexibility to support a wide range of server solutions
Five peer PCI buses providing 3 GB/sec of I/O bandwidth	Minimized data bottlenecks and increased bandwidth for intensive I/O needs
Eight available PCI slots: four 64-bit/66MHz hot-plug, two 64-bit/100MHz PCI-X non-hot-plug, and two 32-bit/33MHz non-hot-plug	Flexible and balanced architecture for multiple configurations with high scalability for future expansion
PCI hot-plug access and support	No server downtime required for adding or removing many peripherals
Two integrated Ultra160 SCSI channels	Maximum data throughput and configuration flexibility
Two integrated Intel® Server Network Connections: one Intel® PRO/100+ Server Network Connection and one Intel® PRO/1000 XT Network Connection	Widespread compatibility, scalable bandwidth, and redundant links for excellent networking capabilities
Integrated ATI® Rage® XL graphics controller with 4 MB of memory	High-quality video without the need for a video-adaptor card
Advanced Intel® Server Management software including integrated remote management, event alerting, and proactive fault management	Security, troubleshooting, problem resolution, and maintenance
Three-year limited warranty	Peace of mind
Designed by Intel	Performance and value

# Intel® Server Platform SPSH4: Versatility, Performance, and Superior Internal Scalability

## Expandability and Flexibility

The Intel® Server Platform SPSH4 is available in either rack or two pedestal configurations. There's room to grow with eight PCI slots, up to 24GB memory capacity, up to ten hard drives, and dual integrated Intel® Server Network Connections.

## High-Capacity Storage

Capable of supporting up to ten one-inch Ultra160 or Ultra320 hard drives, the Server Platform SPSH4 provides storage sufficient for meeting the most demanding enterprise data-center applications.



## Availability and Reliability

With fully redundant 600W power supplies and fans, the Server Platform SPSH4 vastly reduces the probability of service interruption due to power or cooling problems.

## Ease of Service

The Server Platform SPSH4 is easy to service thanks to its tool-free access; redundant, hot-swap power supplies, hard drives, and fans; and support for PCI hot-plug—all of which enable the addition of peripherals with minimal downtime. What's more, the ease of servicing its modular, highly accessible chassis helps to minimize the total cost of ownership.

### Features

Pedestal or 7U rack configuration
Up to ten one-inch hot-swap Ultra160 or Ultra320 SCSI hard drives with support for 15K RPM drives
Redundant hot-swap power supplies and fans
Modular, highly accessible chassis
Intel® Server Management software

### Benefits

Choice of form factor
High-capacity storage for the most demanding data needs
High availability for power and cooling, with no server downtime required for replacement of defective units
Ease of service
Increased server uptime and simplified system administration

# Intel® Server Platform SRSH4: Availability and Scalability with High-Density Computing Power

## 4U Rack Form Factor for High-Density Environments

The Intel® Server Platform SRSH4 is ideal for high-density rack needs, being specially designed to offer outstanding performance in a high-density form factor.

## High-Capacity Storage

Capable of supporting five one-inch Ultra160 or Ultra320 SCSI hard drives in a thin 4U chassis, the Server Platform SRSH4 provides exceptional storage in a system designed for rack environments.



## Availability and Reliability

With fully redundant fans and 430W power supplies, the Server Platform SRSH4 vastly reduces the probability of service interruption due to power or cooling problems.

## Ease of Service

The Server Platform SRSH4 is easy to service thanks to its redundant, hot-swap power supplies, hard drives, and fans and its support for PCI hot-plug—all of which enable the addition of peripherals with minimal downtime. What's more, the ease of servicing its modular, highly accessible chassis helps to minimize the total cost of ownership.

### Features

4U rack form factor
Up to five one-inch hot-swap Ultra160 or Ultra320 SCSI hard drives with support for 15K RPM drives
Redundant hot-swap power supplies and fans
Modular, highly accessible chassis
Intel® Server Management software

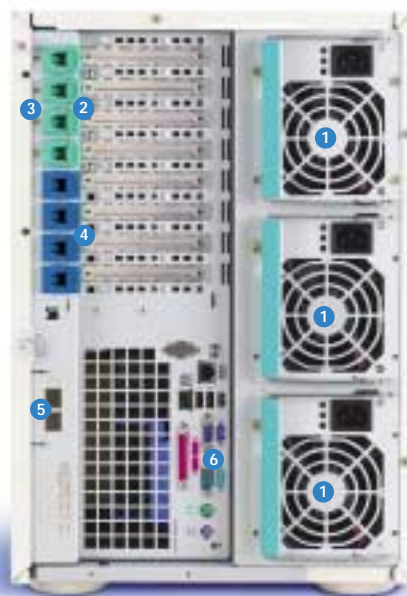
### Benefits

High-density rack format for maximum power in minimum space
High-capacity storage for the most demanding data needs
High availability for power and cooling, with no server downtime required for replacement of defective units
Ease of service
Increased server uptime and simplified system administration

# Intel® Server Platform SPSH4



1. Up to four Intel® Xeon™ processors MP
2. Memory unit supporting up to 24 GB of registered ECC DDR200/266 SDRAM
3. Integrated graphics with 4 MB of memory
4. Two integrated Intel® Server Network Connections: one Intel® PRO/100+ Server Network Connection and one Intel® PRO/1000 XT Network Connection
5. Three (2+1 redundant)<sup>1</sup> hot-swap 600W power supplies
6. Two hot-swap hard-drive bays that support up to ten one-inch Ultra160 or Ultra320 hard drives<sup>2</sup>
7. Six dual-speed electronic fans with 2+2 redundant fan banks
8. Two integrated Ultra160 SCSI channels
9. Eight available PCI slots (four 64-bit/66MHz hot-plug, two 64-bit/100MHz PCI-X, and two 32-bit/33MHz)
10. Advanced Intel® Server Management



## Intel® Server Platform SPSH4 Rear Panel

1. Hot-swap redundant power<sup>1</sup>
2. Four hot-plug 64-bit/66MHz slots
3. Hot-plug PCI power/fault LEDs
4. Two 64-bit/100MHz PCI-X slots and two 32-bit/33MHz PCI slots
5. Intelligent Chassis Management Bus (ICMB) knock out
6. I/O panel including two USB connectors, two LAN (RJ45) connectors, PS/2 keyboard and mouse ports, video connector, serial port A, serial port B knock out, external SCSI connector knock out

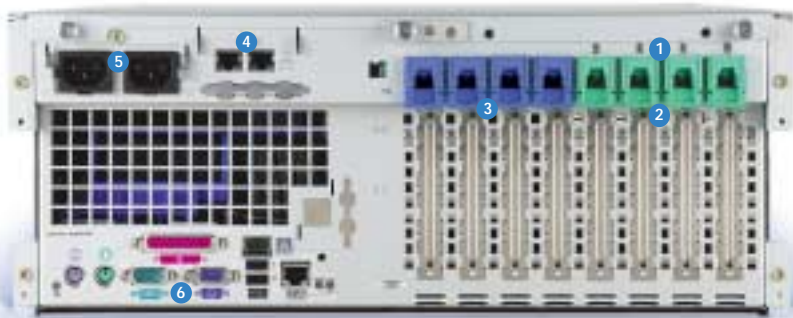
<sup>1</sup> The Intel® Server Platform SPSH4 ships with two 600W power supplies. Full redundancy requires a third 600W power supply, order code AC3POWER.

<sup>2</sup> AD2C3HSDRVUG is required to upgrade the Intel® Server Platform SPSH4 to total ten hard drives. For the Intel® Server Platform SRS4, AD2C3HSDRVUG is used as a spare hot-swap drive bay.

# Intel® Server Platform SRSH4



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| <ol style="list-style-type: none"> <li>1. Up to four Intel® Xeon™ processors MP</li> <li>2. Memory unit supporting up to 24 GB of registered ECC DDR200/266 SDRAM</li> <li>3. Eight available PCI slots (four 64-bit/66MHz hot-plug, two 64-bit/100MHz PCI-X, and two 32-bit/33MHz)</li> <li>4. Two integrated Ultra160 SCSI channels</li> </ol> | <ol style="list-style-type: none"> <li>5. Six (5+1 redundant) electronic bay fans</li> <li>6. Three (2+1 redundant)<sup>3</sup> hot-swap 430W power supplies</li> <li>7. Slimline floppy/CD-ROM pair</li> <li>8. Hot-swap hard-drive bay that supports up to five one-inch Ultra160 or Ultra320 hard drives</li> </ol> | <ol style="list-style-type: none"> <li>9. Advanced Intel® Server Management</li> <li>10. Integrated graphics with 4 MB of memory</li> <li>11. Two integrated Intel® Server Network Connections: Intel® PRO/100+ Server Network Connection and one Intel® PRO/1000 XT Network Connection</li> </ol> |
|--|--|--|



## Intel® Server Platform SRSH4 Rear Panel

1. Hot-plug PCI power/fault LEDs
2. Four hot-plug 64 bit/66MHz slots
3. Two 64 bit/100MHz PCI-X slots and two 32-bit/33MHz PCI slots
4. Intelligent Chassis Management Bus (ICMB) knock out
5. Dual-line cord
6. I/O panel including two USB connectors, two LAN (RJ45) connectors, PS/2 keyboard and mouse ports, video connector, serial port A, serial port B knock out, external SCSI connector knock out

<sup>3</sup> Intel® Server Platform SRSH4 ships with two 430W power supplies. Full redundancy requires a third 430W power supply, order code AD2POWER.

## Complete Your Server Platform with Intel Server Building Blocks



Intel® Xeon™ Processors MP with 512KB-1MB L3 Cache and Hyper-Threading Technology provide the performance to keep your server customers up and running, along with the reliability, flexibility, and headroom necessary for e-Business transaction surges.



Intel® Server Management monitors key server components and helps to solve many problems easily with integrated in-band and out-of-band remote management through LAN and modem connections, event logging and alerting through e-mail or paging devices, and proactive fault management.



Intel® RAID Controllers are designed to protect data, applications, and the server operating system from disk failures. Intel offers an affordable high-performance line of RAID products, which are tested and validated for easy integration with Intel server building blocks.



Intel® PRO Server Adapters, available as Fast Ethernet and Gigabit Ethernet server adapters, help to reduce bottlenecks and improve availability.



## Build Value with Intel: Server Products, Programs, and Support



Intel is committed to providing industry-leading server building blocks, programs, and support services to help system integrators successfully compete in the evolving Internet economy. Get the high-value server solutions you need to succeed by taking advantage of the outstanding value Intel provides its system integrators:

- High-quality server building blocks
- Extensive breadth of server building blocks
- Solutions and tools to enable e-Business
- Comprehensive training services
- Worldwide 24x7 technical support
- World-class service, including a three-year limited warranty and Advanced Warranty Replacement

For more information on Intel's added-value server offerings, please visit: [www.intel.com/go/serverbuilder](http://www.intel.com/go/serverbuilder)

# Intel® Server Platforms SPSH4 & SRSH4 Specifications

## Processors Supported

Up to four Intel® Xeon™ processors MP. For the latest processor support information, visit <http://support.intel.com/support/motherboards/server>

## System Memory

Memory Capacity	Support for up to 24 GB of registered ECC DDR200/266 memory
Memory Type	DDR200/266 (200MHz) registered ECC SDRAM 72-bit-wide, 184-pin gold-plated DIMMs
DIMM Sizes	128 MB, 256 MB, 512 MB, 1 GB, 2 GB
Memory Voltage	2.5 V only
Error Detection	ECC single-bit correction and multiple-bit detection, supports Chipkill™ feature and memory scrubbing

## Integrated On-Board

Chipset	ServerWorks™ Grand Champion HE
Ultra160 SCSI Controller	Adaptec® AIC-7899 Dual-Channel Ultra160 SCSI Controller
Intel® Server Network Connections	One Intel® PRO/100+ Server Network Connection (Intel® 82550PM controller, supports 10BASE-T and 100BASE-TX), one Intel® PRO/1000 XT Network Connection (Intel® 82544GC controller, supports 10BASE-T, 100BASE-TX, and 1000BASE-T); RJ45 output
Graphics	ATI® Rage™ XL VGA PCI graphics controller with 1200x1600 maximum resolution, 4 MB of video memory (SDRAM)
Super I/O Controller	National Semiconductor® Super I/O PC87417 controller chip providing all PC-compatible I/O

## Input/Output

IDE	Single channel for a total of two IDE devices
Serial Ports	Two asynchronous, RS-232C, 9-pin
Parallel Port	IEEE 1284, 25-pin bidirectional
Floppy Controller	CMOS 765B and 82077AA-compatible
Keyboard/Mouse Port	PS/2, 8240A-compatible
USB Port	Three USB 1.0-compatible connectors (two rear, one front access)
ICMB Connectors	Two SEMCONN six-pin connectors

## PCI Expansion Slots

Five-peer PCI, with eight slots: four 64-bit/66MHz hot-plug, two PCI-X 64-bit/100MHz non-hot-plug, two 32-bit/33MHz non-hot-plug

## Intel® Server Management

Remote Management	Remote access both in-band and out-of-band to system status, logs, configuration data, and utilities without the need for a remote-management card: event filtering and proactive alerting through LAN and mobile devices
System Monitoring and Autorecovery	System health indicators and corrective actions including automated power cycling, OS watchdog timer, and fault-resilient booting
Server Troubleshooting	Continuous health monitoring, text console redirection, and error logs
Server Maintenance	Integrated with Intel® SmaRT Tool Module for Server Platforms SPSH4 and SRSH4
Supported Operating Systems	Microsoft® Windows® 2000, Red Hat® Linux®, and Novell® NetWare®
Intelligent Platform Management Support	Intelligent Platform Management Interface (IPMI) 1.5

## Fully Validated Operating Systems

Microsoft® Windows® 2000 Advanced Server, Red Hat® Linux®, Caldera®, Open Unix, and Novell® NetWare®

## System BIOS

BIOS Type	8Mb Flash EEPROM with Phoenix BIOS, Multiboot
Special Features	Plug and Play, IDE drive autoconfigure, DMI 2.0, ECC/parity support, multilingual support
Configuration Utility	System Setup Utility (SSU) for easy system setup of BIOS and server management

## Environment

Ambient Temperature	Operating: 10°C to 35°C; non-operating: -40°C to +70°C
Relative Humidity	Non-operating: 90%, non-condensing at 25°C to 30°C
Electrostatic Discharge (ESD)	Tested to ESD levels up to 15 kilovolts (kV) air discharge and up to 8 kV contact discharge without physical damage per Environmental & Reliability Board and System Validation Test Handbook
Acoustic	Sound pressure: < 55 dBA at ambient temperatures < 28°C ±2°C measured at bystander positions in operating mode Sound power: < 7.0 dBA at ambient temperatures < 28°C ±2°C in operating mode

## Safety Compliance

Argentina	IRAM Resolution No. 92/98
Europe	EN60950 low-voltage directive; 73/23/EEC (CE Mark)
International	IEC60950
Nordic countries	EMKO-TSE (74-SEC) 207/94
Russia	GOST R 50377-92
U.S. and Canada	UL – CSA 60950

## Electromagnetic Compatibility (EMC)

Australia/New Zealand	AS/NZS 3548 – Class A Limit (Radiated & Conducted Emissions)
Canada	ICES-003 – Class A Limit (Radiated & Conducted Emissions)
Europe	EMC Directive, 89/336/EEC (CE Mark); EN55022 – Class A Limit (Radiated & Conducted Emissions); EN55024 (Immunity); EN61000-3-2 / EN610003-3, Harmonic Currents / Voltage Flicker
International	CISPR 22 – Class A Limit (Radiated & Conducted Emissions); CISPR 24 (Immunity)
Japan	VCCI (via CISPR 22 – Class A Limit)
Korea	RRL, MIC Notices No. 1997-41 & 1997-42 – Class A Limit (Radiated & Conducted Emissions)
Russia	GOST R 29216-91 – Class A Limit (Radiated & Conducted Emissions); GOST R 50628-95
Taiwan	BSMI, CNS13438 – Class A Limit (Radiated & Conducted Emissions)
U.S.	FCC 47 CFR Parts 2 and 15, Class A Limit, Radiated & Conducted Emissions

System	SPSH4	SPSH4	SRSH4
Form Factor	Pedestal	Rack	Rack
Height	18.06" (459 mm) with feet	7U	4U
Width	12.22" (311 mm)	Fits 19" rack	17.5" (445mm)
Depth	25.25" (641mm)	25.25" (641mm)	28.0" (711 mm)
Weight (minimum configuration)	96 lbs. (44 kg)	90 lbs. (41 kg)	57 lbs. (25.9kg)

## Hot-Swap Drive Bays

	SPSH4	SRSH4
Number	Up to two	One
Supported Drives	One SCSI drive bay supporting five one-inch-high hot-swap drives; option for second drive bay for a total of ten one-inch-high drives	One SCSI drive bay supporting five one-inch-high hot-swap drives

SCSI Backplane	80-pin SCA-2 connectors, thermal sensors	80-pin SCA-2 connectors, thermal sensors
Drive Cooling	Two fans attached to bay	Interchassis fans

## Additional Drive Bays

	SPSH4	SRSH4
Total	Four	Two
Empty	Two 5.25"	One 5.25"
Filled	One 3.5" floppy drive and one CD-ROM	One slimline floppy/CD-ROM drive

## Redundant Cooling

	SPSH4	SRSH4
Total Number of Fans	Eight	Six
Purpose	Three fans for the electronics bay, three for cooling all system for the hard-drive bay components	Redundancy using a 5+1 configuration for redundancy, two for cooling all system for the hard-drive bay components

## Front Panel Buttons

Reset	Resets system to initial state
Sleep	Activates the sleep mode
NMI (hidden behind bezel door)	Causes a non-maskable interrupt
Power	Toggles system power
Chassis ID	Activates the chassis-ID LED on both the front-panel board and on the base board at the rear panel of the chassis

## LEDs

Chassis (blue)	Indicates that matching chassis-ID LED will be present at rear panel of chassis to ease identification when servicing rear of system in a rack
Power (green)	When lit continuously, indicates the presence of power in the server (LED goes out when power is turned off or power source is disrupted); when flashing, indicates the system is in ACPI sleep mode
HDD (green)	Indicates system hard-drive activity
LAN 1 (green)	Indicates 10/100Mb Ethernet port activity
LAN 2 (green)	Indicates 10/100/1000Mb Ethernet port activity

System Fault (yellow) Indicates a system-fault condition

## I/O Connectors

USB	USB port 3	
RJ45	Serial port B	
Power	SPSH4	SRSH4
DC Power Supplies (with third power supply)	Three <sup>1</sup> 600W redundant hot-swap	Three <sup>2</sup> 430W redundant hot-swap
AC Voltage/Frequency	100-127/200-240V~; 4.6/2.3A	115V/60Hz; 230V/50Hz auto-ranging
+5 V	64.6 A maximum	34 A maximum
+5 V Standby	2.0 A maximum	2.0 A maximum
+12 V	68.4 A maximum	49 A maximum
+3.3 V	76 A maximum	31 A maximum
-12 V	1.0 A maximum	0.5 A maximum

For the most current product information on Intel server building blocks, visit: [www.intel.com/go/serverbuilder](http://www.intel.com/go/serverbuilder)

## Intel® Server Platforms SPSH4 & SRSH4 Product Codes

For a complete list of spares and accessories, see Intel® Server Platforms SPSH4 and SRSH4 Configuration Guide at <http://support.intel.com/>

Platform	Server Platform SPSH4 (beige pedestal)	Server Platform SPSH4 (black pedestal)	Server Platform SPSH4 (7U black rack-optimized)	Server Platform SRSH4 (4U black rack-optimized)
SPSH4 and SRSH4 Rack Mount Rail Kit (required)	N/A	N/A	AD2C3RACKMT	AD2C3RACKMT
SPSH4 and SRSH4 Hard Drive Bay (optional upgrade or spare) <sup>1</sup>	AD2C3HSDRVUG	AD2C3HSDRVUG	AD2C3HSDRVUG	AD2C3HSDRVUG
SPSH4 600W PFC Power Supply (required for full redundancy)	AC3POWER	AC3POWER	AC3POWER	N/A
SRSH4 430W Power Supply (required for full redundancy)	N/A	N/A	N/A	AD2CPOWER

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