



Sales Brief

Mainstream Server

Quad-Core Intel® Xeon® Processor 5400 Series

Intel® Xeon® Processor 5400² Series: Build Success into Your Business

Performance

- Up to 25% better performance than Quad-Core¹
- Up to 2x better performance than Dual-Core⁸
- Up to 5x increased performance over Single-Core⁷

Energy Efficiency

- Up to 38% performance per watt
- 3 GHz Quad-Core at 80 W
- Lower idle power reduces system power

Reliability

- Intel-based servers have been a foundation of business technology for nearly 30 years and are built with more reliability features than complete alternatives

Boost Performance with 45nm Quad-Core Intel® Xeon® Processors

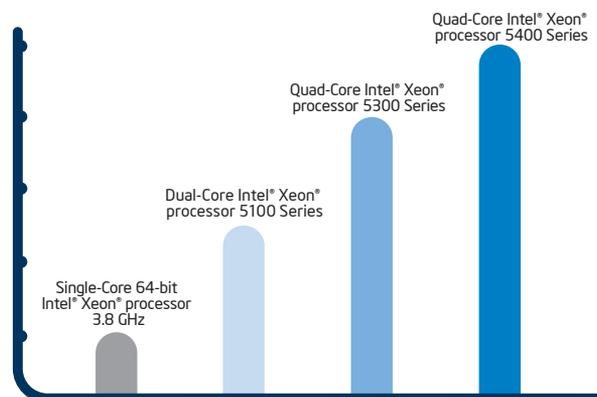
Since early 2006, multi-core Intel® processor-based servers have provided breakthrough performance and energy efficiency for organizations of all sizes, to help support an efficient, scalable, and flexible infrastructure. Now, the newest quad-core processors, built with Intel's high-performance, energy-efficient 45nm manufacturing technology, deliver up to 25% more performance than today's leading quad-core Intel processors! Offered in the same stable technology platform you rely on for the broadest range of business needs today.

Built on the enhanced Intel® Core™ microarchitecture, the Quad-Core Intel® Xeon® processor 5400² series-based platforms are ideal for dense computing environments where exceptional performance and performance-per-watt are key requirements. Supported by the Intel® 5000 chipset family and high-performing Front-Side Buses (FSB), Quad-Core Intel Xeon processor 5400 series-based servers are expected to deliver improved performance with better power efficiency, providing up to a 38% performance-per-watt improvement over previous-generation processors³

Enhanced Flexibility and Performance with Intel® Virtualization Technology

Intel® Virtualization Technology⁴ (Intel® VT) offers enhanced flexibility and performance. A new feature called Intel® VT FlexMigration⁵ enables you to build one compatible virtualization pool and conduct live VM migration across all Intel Core microarchitecture-based servers, including the new Intel Xeon processor 5400 series, giving you the power to choose the right server platform to best optimize performance, cost, power and reliability. In addition, a new processor extension, Intel® VT FlexPriority, optimizes virtualization software efficiency by improving interrupt handling.

Performance Comparison for Intel® Xeon® Processor 5400 Series
(Comparing Integer performance using SPECint*_rate_base2006 on 64-Bit Linux*)



For more information on the Intel® Xeon® processor, visit www.intel.com/xeon



Quad-Core and Dual-Core Intel® Xeon® Processor 5400 and 5200 Series⁶

Features	Benefits
Multi-core Processing	<ul style="list-style-type: none"> 45nm technology boosts performance on a range of workloads. Increased headroom for multi-threaded applications and heavy multi-tasking scenarios. Helps boost system utilization through virtualization and application responsiveness. Quad-core performance and cost/virtual machines. Platform-compatible with other Quad-Core and Dual-Core Intel® Xeon® processors for ease of migration and IT stability.
Enhanced Intel® Core™ Microarchitecture	<ul style="list-style-type: none"> Boosts performance on multiple applications/user environments and data-demanding workloads, while enabling denser data center deployments, through improved performance per watt. The new 45nm Enhanced Intel Core microarchitecture delivers up to 38% more performance per watt in the same platforms and at the same system power level⁹. Reduced idle processor power, lowers average server power consumption.
Large 12 MB of on-die L2 Cache (2 x 6 MB)	<ul style="list-style-type: none"> Increases efficiency of L2 Cache-to-core data transfers, maximizing main memory to processor bandwidth. Reduces latency by storing larger data sets closer to the processor, reducing the number of trips to main memory. Up to 6 MB of L2 Cache can be allocated to one core.
Intel® Virtualization Technology ⁴ (Intel® VT)	<p>A suite of processor enhancements that assists virtualization software to deliver more efficient virtualization solutions and greater capabilities including 64-bit guest OS support.</p> <ul style="list-style-type: none"> Intel® VT FlexPriority, a new Intel® VT extension that optimizes virtualization software efficiency by improving interrupt handling. Intel® VT FlexMigration enables Intel Xeon processor 5400 and 5200 series-based systems to be added to the existing virtualization pool with single, 2, or 4+ socket Intel Core microarchitecture-based servers.
Intel® I/O Acceleration Technology (Intel® I/OAT) with next-generation improvements	<ul style="list-style-type: none"> Next-generation improvements designed to significantly accelerate data processing across the entire platform through CPU utilization and latency improvements.
Fully Buffered DIMM (FBDIMM) technology	<ul style="list-style-type: none"> Provides an increase in platform memory capacity and memory speed to either 533 or 667 MHz. Support for up to 16 memory slots and 64 GB of system memory. Enhances memory reliability with unique technology features compared to native DDR2 solutions.
Enhanced Front-Side Bus (FSB)	<ul style="list-style-type: none"> New dedicated high-speed bus design enables increased throughput and bandwidth between each of the processors and the chipset. Supporting 1333 and 1066 MHz.
Intel® 64 Architecture ¹⁰	<ul style="list-style-type: none"> Flexibility for 64-bit and 32-bit applications and operating systems.

Benchmark for Performance Comparison for the Intel Xeon processor 5400 series:

SPECint*_rate2006: X5460 vs X5365 - Published/measured results on SPECint*_rate2006 - October 2, 2007 with 64-Bit SUSE LINUX® Enterprise Server 10 16 GB (8x2 GB). SPEC binaries built with Intel® Compiler 10.1 for 32-bit/64-bit Linux.

¹ Quad-Core Intel® Xeon® processor 5300 Series ("CTN"). Up to 25% (1.25x) higher Performance X5460 vs X5365 - Published/measured results on SPECjbb2005* - Oct 2, 07.

² Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See www.intel.com/products/processor_number for details.

³ Quad-Core Intel® Xeon® processor 5300 Series ("CTN"). Up to 38% (1.38x) higher Perf/WattE5450 vs E5335 - Published/measured results on SPECjbb2005* - Oct 2, 07.

⁴ Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

⁵ Backward compatibility for live VM migration also exists with current dual-core Intel® Core™ microarchitecture products (Xeon 5100 and Xeon 3000) and forward compatibility with future dual and multi-core processors. Contact your preferred VMM vendor for support requirements.

⁶ Platforms based on Intel 5000p and 5000v chipset.

⁷ Single-Core 64-bit Intel® Xeon® processor 3.80GHz. Up to 443% (5.43x) higher Performance X5460 vs Xeon 3.80 - Published/ measured results on SPECint*_rate_base2006 - Oct 2, 07.

⁸ Dual-Core Intel® Xeon® processor 5100 Series ("WDC"). Up to 119% (2.19x) higher Performance X5460 vs 5160 - Published/measured results on SPECjbb2005* - Oct 2, 07.

⁹ Intel Server pre-production platform with two Quad-Core Intel® Xeon® processor E5450 3.0 GHz, 2x6 MB L2 Cache or E5335, 2x4 MB L2 Cache, 1333 MHz system bus, 16 GB Memory DDR2-667 FBDIMM, Microsoft Windows Server 2003® Enterprise x64 Edition SP1 (64-bit), BEA JRockit® 5.0 P27.2.0. Intel internal measurement - September 2007. Perf/Watt calculated by dividing the Performance by measured system power during steady state window.

¹⁰ 64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.

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