Increase MP Performance

WITH PLATFORMS BASED ON THE DUAL-CORE INTEL® XEON® PROCESSOR 7000 SEQUENCE

Introducing Intel's first multi-core CPU for the MP platform.

For enterprise computing, nothing less than four-way processor systems will do. And Intel is proud to announce the seventh-generation of MP processors, now featuring dual-core technology. The Dual-Core Intel® Xeon® processor 7000[1] sequence offers up to 51% projected performance increase over previous-generation single-core processors based on Intel initial preliminary testing,[2] while delivering expandability and outstanding reliability for mid-tier enterprise applications.

Each Dual-Core Intel Xeon processor 7000 sequence supports up to four tasks or software threads and can run both 64-bit and 32-bit applications. This makes an MP platform based on the Dual-Core Intel Xeon processor 7000 sequence ideal for supporting multiple, simultaneous transactions, and for consolidating numerous operating systems, applications, and workloads onto a single server.

## With Intel built in, your company has success built in.

To move forward, your business has to be agile—recreating itself daily to better compete in today's environment. Acting and reacting on the turn of a dime. Taking advantage of innovations at the same time you make the most of your existing technology investment.

That's just what server platforms based on Intel's multi-core technology let you do, help give you greater performance and responsiveness than previous-generation single-core server platforms and a foundation based on the industry's leading business computing architecture.

With millions of Intel® processor-based servers shipped since 1996, and a 10-year track record of delivering enterprise-class performance, you know you can count on Intel to deliver quality and reliability. And currently, with over six million 64-bit processors already shipped, you can depend on Dual-Core Intel Xeon processor-based servers to handle your 32-bit and 64-bit applications.

The power is in the platform.
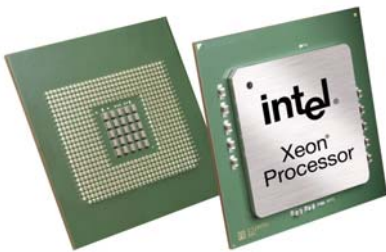
The chips in the Dual-Core Intel Xeon Processor 7000 sequence are based on Intel's 90 nm wafer fabrication process. They benefit from Intel's dual-core technology, which helps increase compute power and throughput by 51% projected performance increase over previous-generation single-core processors based on Intel initial preliminary testing.[2]

This means they can handle large peak demands and help increase your return on investment. And they deliver outstanding performance for 32-bit software and increased headroom for 64-bit applications—compared to previous-generation, single-core processors—running both simultaneously. The result? An investment that helps lower your Total Cost of Ownership (TCO), while giving you the performance and flexibility you need to grow your business.

What is the 7000 Sequence?

Manufacturers in many industries use a product-numbering system to differentiate products within a product line or brand. This helps customers compare specific products that offer a variety of different features. The same is true with processors, especially in today's world when so many additional features contribute to performance above and beyond clock speed.

By changing how it identifies components on server platforms, Intel is making it easier for customers to take into account all the things that contribute to their overall experience—including features like architecture, cache, front side bus, and other Intel® technologies.

Intel offers four processor number sequences for server applications.

Processor Sequence	Used For
Intel® Pentium® 4/Pentium® D processor 3000[1] sequence	Small business, entry or first server
Dual-Core Intel® Xeon® processor 5000[1] sequence	Volume DP servers/workstations based on the Intel Xeon processor
Dual-Core Intel® Xeon® processor 7000[1] sequence	Greater scalability than DP platforms with MP enterprise servers based on the Intel Xeon processor MP
Intel® Itanium® 2 processor 9000[1] sequence	Maximum performance and scalability for RISC replacement usage

Processor Number[1]	Description
Intel® Xeon® processor 7041 (available in early 2006)	3.0 GHz 2x2MB L2 800 MHz front-side bus
Intel® Xeon® processor 7040	3.0 GHz 2x2MB L2 667 MHz front-side bus
Intel® Xeon® processor 7030 (available in early 2006)	2.8 GHz 2x1MB L2 800 MHz front-side bus
Intel® Xeon® processor 7020	2.66 GHz 2x1MB L2 667 MHz front-side bus

Architected for Intel Dual-Core processors.

MP platforms based on the Dual-Core Intel Xeon processor 7000 sequence are architected specifically for Intel dual-core processors. Multi-core products are designed by including two or more full processor cores within a single processor, enabling simultaneous management of activities. Plus, each core supports Hyper-Threading Technology[3] (HT Technology), which allows a Dual-Core Intel Xeon processor 7000 sequence to process four software threads simultaneously—a total of 16 threads in a 4-way multi-processor platform!

These platforms are architected with dual front-side buses running at 667 MHz, which substantially increases bandwidth and throughput compared to previous-generation, single front-side bus MP platforms (with single 400 MHz system bus). In addition, the platform supports quad-channel DDR2-400 memory, which offers increased DIMMs per system for enhanced memory scalability compared to previous-generation MP platforms. DDR2-400 is ideal for data-intensive applications, providing increased memory bandwidth over DDR1-333 and decreased power consumption.[4]

The performance, reliability, and flexibility you need.

The Dual-Core Intel Xeon processor 7000 sequence helps deliver enhanced platform performance and dependability through a variety of innovative technologies, including the following:

- Fast response times with two processor cores per CPU running at speeds up to 3.0 GHz, each with their own 2MB integrated L2 cache.

- Up to three times the system bus bandwidth of previous-generation Intel Xeon processors MP with a high-speed, 3-load front-side bus with a frequency of 667 MHz.

- Power savings and system density for server applications by using Demand-Based Switching (DBS) with Enhanced Intel SpeedStep® technology.

- Scale bandwidth with PCI Express,* an I/O technology that helps match the performance and capabilities of next-generation serial interconnects.

- Quad-channel DDR2-400 memory-based subsystem offers large memory capacity and low latency, while consuming less power (vs. DDR1 memory technology).

- Reliability with enhanced RAS features including an Error Correcting Code (ECC) bus, memory RAID, and I/O and memory hot-plug.

- SMBus with PIROM and thermal sensor allows for scheduled service in the event of a system manufacturing defect or cooling device failure.

Dual-Core Intel® Xeon® Processor 7000² Sequence

Server Platform Performance: Dual-core platform versus prior-generation single-core platform

DUAL-CORE INTEL® XEON® PROCESSOR 7040² VS. INTEL® XEON® PROCESSOR MP 3.33 GHZ 8MB L3 CACHE

SPECjbb2000 — **1.51**

SPECint*_rate_base2000 — **1.43**

Baseline — **1.00**
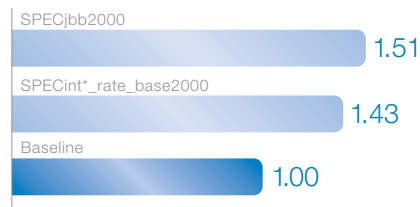
Relative Performance: Higher is Better

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance.

Benchmark notes:

Dual-Core Intel® Xeon® Processor 7000 Sequence: Server Platform Performance

SPECint_rate_base2000. This benchmark evaluates the integer throughput of the measured system. Baseline Platform Configuration: ProLiant* ML570 G3 Server System with four 64-bit Intel® Xeon® Processor MP 3.33 GHz with 8MB L3 Cache, E8500 Chipset, 667 MHz FSB; Hyper Threading ON; Windows 2003 Enterprise Edition.* SPECcpu2000 binaries built with Intel® compiler version 8.1 for 32-bit Windows. Results at http://www.spec.org/cpu2000/results/res2005q1/cpu2000-20050218-03875.html. New Platform Configuration: HP ProLiant* ML570 G3 Server System with four Intel® Xeon® Processors 7040, 3.0 GHz with 2x2MB L2 Cache, E8500 Chipset, 667 MHz FSB; Hyper Threading OFF; Windows 2003 Enterprise Edition SP1.* SPECcpu2000 binaries built with Windows Intel® C++ Compiler for 32-bit applications, (Version 9.0 Build 20050624Z). Results at http://www.spec.org/cpu2000/results/res2005q4/cpu2000-20051003-04877.html

SPECjbb2000. This workload evaluates the performance of Server-side Java* Application. Measured in Operations Per Second. Baseline Platform Configuration: Dell PowerEdge* 6850 server with 4 x Intel® Xeon® Processor MP 3.33 GHz with 8MB L3 Cache, Memory 16 GB Microsoft Windows* 2003 Server Enterprise Edition*; JVM: BEA WebLogic* JRockit* 1.5.0_02-b05 32-bit JVM (build dra-+41772-20050225-1644-win-ia32). Results at http://www.spec.org/jbb2000/results/res2005q2/jbb2000-20050315-00319.html. New Platform Configuration: Intel® Server System pre-production hardware with four Intel® Xeon® Processors 7040, 3.0 GHz with 2x2MB L2 Cache, E8500 Chipset, 667 MHz FSB; 16 GB memory; Hyper Threading ON; HWP and ASP disabled; Windows 2003 Enterprise Edition.* Application Server software: BEA WebLogic* JRockit* 1.5.0_02-b05 32-bit JVM (Build dra-42311-20050310-2002-win-ia32). Results submitted to www.spec.org as of November 10, 2005.

Move forward with agility built in.

This new generation of Intel Xeon processor offers an 800 MHz dual-independent system bus, helping businesses get the most productivity from their applications.

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

2 SPECint_rate_base2000. This benchmark evaluates the integer throughput of the measured system. Baseline Platform Configuration: ProLiant* ML570 G3 Server System with four 64-bit Intel® Xeon® Processor MP 3.33 GHz with 8MB L3 Cache, E8500 Chipset, 667 MHz FSB; Hyper Threading ON; Windows 2003 Enterprise Edition.* SPECcpu2000 binaries built with Intel® compiler version 8.1 for 32-bit Windows. Results at http://www.spec.org/cpu2000/results/res2005q1/cpu2000-20050218-03875.html. New Platform Configuration: HP ProLiant* ML570 G3 Server System with four Intel® Xeon® Processors 7040, 3.0 GHz with 2x2MB L2 Cache, E8500 Chipset, 667 MHz FSB; Hyper Threading OFF; Windows 2003 Enterprise Edition SP1.* SPECcpu2000 binaries built with Windows Intel® C++ Compiler for 32-bit applications, (Version 9.0 Build 20050624Z). Results at http://www.spec.org/cpu2000/results/res2005q4/cpu2000-20051003-04877.html

SPECjbb2000. This workload evaluates the performance of Server-side Java* Application. Measured in Operations Per Second. Baseline Platform Configuration: Dell PowerEdge* 6850 server with 4 x Intel® Xeon® Processor MP 3.33 GHz with 8MB L3 Cache, Memory 16 GB Microsoft Windows* 2003 Server Enterprise Edition*; JVM: BEA WebLogic* JRockit* 1.5.0_02-b05 32-bit JVM (build dra-+41772-20050225-1644-win-ia32). Results at http://www.spec.org/jbb2000/results/res2005q2/jbb2000-20050315-00319.html. New Platform Configuration: Intel® Server System pre-production hardware with four Intel® Xeon® Processors 7040, 3.0 GHz with 2x2MB L2 Cache, E8500 Chipset, 667 MHz FSB; 16 GB memory; Hyper Threading ON; HWP and ASP disabled; Windows 2003 Enterprise Edition.* Application Server software: BEA WebLogic* JRockit* 1.5.0_02-b05 32-bit JVM (Build dra-42311-20050310-2002-win-ia32). Results submitted to www.spec.org as of November 10, 2005.

3 Hyper-Threading Technology requires a computer system with an Intel® Xeon® processor supporting HT Technology and a HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See www.intel.com/homepage/land/hyperthreading_more.htm for additional information.

4 Based on Intel power testing utilizing Intel® Xeon® processor 3.66 GHz with 667 MHz system bus. Dual-Core Intel Xeon Processor 7041 expected to exhibit similar power consumption characteristics. Actual power savings will vary based on system configuration and workloads.

Contact

United States and Canada
Intel Corporation
Robert Noyce Building
2200 Mission College Blvd.
P.O. Box 58119
Santa Clara, CA 95052-8119
USA

Europe
Intel Corporation (UK) Ltd.
Pipers Way
Swindon
Wiltshire SN3 1RJ
UK

Asia-Pacific
Intel Semiconductor Ltd.
32/F Two Pacific Place
88 Queensway, Central
Hong Kong, SAR

Japan
Intel Japan (Tsukuba HQ)
5-6
Tokodai Tsukuba-shi
300-2635 Ibaraki-ken
Japan

South America
Intel Semicondutores do Brasil LTDA
Av. Dr. Chucri Zaidan, 940-10° andar
04583-904 São Paulo, SP
Brazil