



## Intel® Pentium® 4 processor and Intel® E7221 chipset for affordable and dependable entry-level servers

### Small Business Needs

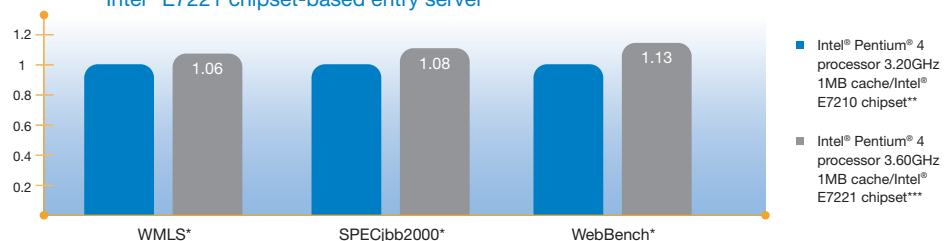
For small companies productivity and revenue rely on dependable and trouble free servers handling their computing workloads. Should a server go down, these businesses lose their life blood — worker productivity and revenue. As they grow, small companies want to improve the performance and scalability of their business systems to accommodate more customers, more employees and more transactions. At the same time, they want reduced operating and maintenance costs because uptime is critical in order to ensure ongoing customer service and support 24 x 7. They require servers that are not only powerful enough to handle growing computing workloads, but also provide reliable and trouble-free operation at an affordable price.

### The Intel® E7221 Chipset Response

Intel offers an affordable and highly dependable server platform targeted for the small business market segment. This entry-level platform incorporates the Intel® Pentium® 4 processor supporting HT (Hyper-Threading) Technology<sup>1</sup> with the Intel® E7221 Chipset. Also for value-conscious business users, the Intel® E7221 chipset is an ideal server-platform solution for file and print sharing, web serving, load sharing and firewalls. This entry-level server chipset delivers impressive computing performance without compromising speed, affordability or system reliability — while also delivering the memory bandwidth, small businesses are looking for.

- The performance of a 3.60 GHz Intel Pentium 4 processor supporting HT Technology and the Intel E7221 chipset based server, as measured using the WebBench\* benchmark, shows up to a 13% improvement in transactions per second when compared to a previous generation Intel Pentium 4 processor 3.20 GHz and Intel® E7210 chipset-based system.
- The highly integrated Intel E7221 chipset contains the Intel® E7221 Memory Controller Hub, the Intel® 6702PXH 64-bit PCI Hub and the Intel® 82801FR (ICH6R).
- Dual channel DDR2-400/533 and DDR-333/400 memory support options provide speeds up to 533 MHz and an aggregate memory bandwidth of up to 8.5 gigabytes per second (GB/s).
- Single memory channel operation keeps the system operating if a single channel fails.
- Error correction on the memory interface (ECC) protects vital data.
- More than 20 years of Intel® chipset expertise, significant investment in research and development, and thousands of man-hours committed to chipset and software validation.

Figure 1: Intel® Pentium® 4 processor  
Intel® E7221 chipset-based entry server



System configurations:  
Source: Veritest\* Labs (Sept '04)

- (\*\*) **WMLS\***: Intel® Pentium® 4 processor 3.20 GHz with 1MB cache, Intel® E7210 chipset-based server board, 4 GB DDR-400 ECC Unbuffered, Microsoft Windows® 2003, 2 Intel® PRO/1000 Gigabit Server adapters, Disk Subsystem: Adaptec AIC-7901, HD Make/Model/Size: Seagate/ST373453LC/70GB.  
**SPECjbb2000\***: Intel® Pentium® 4 processor 3.20 GHz with 1MB cache, Intel® E7210 chipset-based server board, 4 GB DDR-400 ECC Unbuffered, Microsoft Windows 2000 Advanced Server with Service Pack 4, BEA Jrockit 8.1 JVM, Disk Subsystem: Adaptec AIC-7901, HD Make/Model/Size: Seagate/ST373453LC/70GB.  
**WebBench\***: Intel® Pentium® 4 processor 3.20 GHz with 1MB cache, Intel® E7210 chipset-based server board, 4 GB DDR-400 ECC Unbuffered, Microsoft Windows® 2003, 2 Intel® PRO/1000 Gigabit Server adapters, Disk Subsystem: Adaptec AIC-7901, HD Make/Model/Size: Seagate/ST373453LC/70GB.
- (\*\*\*) **WMLS\***: Intel® Pentium® 4 processor 3.60 GHz with 1MB cache, Intel® E7221 chipset-based server board, 4 GB DDR2-533 ECC Unbuffered, Microsoft Windows® 2003, 2 Intel® PRO/1000 Gigabit Server adapters, Disk Subsystem: Intel 82801EB Ultra ATA, HD Make/Model/Size: Maxtor/6Y060L0/60GB.  
**SPECjbb2000\***: Intel® Pentium® 4 processor 3.60 GHz with 1MB cache, Intel® E7221 chipset-based server board, 4 GB DDR2-533 ECC Unbuffered, Microsoft Windows 2000 Advanced Server with Service Pack 4, BEA Jrockit 8.1 JVM, Disk Subsystem: Intel 82801EB Ultra ATA, HD Make/Model/Size: Maxtor/6Y060L0/60GB.  
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## Features & Benefits

Features	Benefit
Platform supports the latest Intel® Pentium® 4 processor supporting HT Technology	<ul style="list-style-type: none"> <li>Helps protect investment — supports the latest CPU features</li> </ul>
Hyper-Threading Technology	<ul style="list-style-type: none"> <li>Increases system response time by extending system performance beyond GHz operation</li> </ul>
Intel® Extended Memory 64 Technology	<ul style="list-style-type: none"> <li>Allows users 64-bit memory addressability for greater application flexibility</li> <li>Processors with Intel® EM64T will support 64-bit extended operating systems from Microsoft, Red Hat and SuSE*</li> </ul>
PCI Express* I/O (1X8 and 4X1 PCI E* Ports)	<ul style="list-style-type: none"> <li>Supports latest PCI I/O technology for improved I/O performance</li> <li>Provides flexible I/O configuration via X8 and X4 add-in cards or by directly attaching to server</li> </ul>
PCI-X/PCI Hot Replacement	<ul style="list-style-type: none"> <li>Reduces downtime as PCI cards can be hot swapped without turning the server off</li> </ul>
Memory Support for Dual Channel DDR2 533 w/ ECC support memory bus	<ul style="list-style-type: none"> <li>Lower power versus DDR1 improves reliability and increases server life</li> <li>Improves performance</li> <li>Ensures data reliability and integrity (ECC)</li> <li>Protects valuable data (ECC RAS)</li> </ul>
Integrated graphics in MCH	<ul style="list-style-type: none"> <li>Provides graphics for servers at a lower cost</li> </ul>
4 Serial ATA (SATA) Ports	<ul style="list-style-type: none"> <li>Increases hard drive configuration options</li> <li>Maximizes disk performance</li> <li>Improves sensitive data integrity and protection</li> </ul>
Direct Media Interface	<ul style="list-style-type: none"> <li>Improves performance via a new MCH/ICH interconnect with almost 8 times the concurrent bandwidth over previous generation hub links</li> </ul>

## Additional Resources

Intel® Pentium® 4 Processor	<a href="http://developer.intel.com/design/pentium4">http://developer.intel.com/design/pentium4</a>
Intel® Chipsets Home Page	<a href="http://developer.intel.com/design/chipsets">http://developer.intel.com/design/chipsets</a>
Intel® Server Products	<a href="http://developer.intel.com/design/servers/buildingblocks">http://developer.intel.com/design/servers/buildingblocks</a>
Intel® Reseller Center	<a href="http://program.intel.com">http://program.intel.com</a>
Other Intel Support	<a href="http://support.intel.com">http://support.intel.com</a>
Intel Literature Center	(800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
General Information Hotline	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

<sup>1</sup> Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting HT Technology, a chipset and BIOS that utilize this technology, and an operating system that includes optimizations for this technology. Look for systems with the Intel® Pentium® 4 Processor with HT Technology logo which your system vendor has verified utilize Hyper-Threading Technology. Performance will vary depending on the specific hardware and software you use. See [www.intel.com/info/hyperthreading](http://www.intel.com/info/hyperthreading) for information.

The Intel® Pentium® 4 processor and the Intel® E7221 chipset may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request. Intel Corporation assumes no responsibility for the use of any circuitry other than circuitry embodied in an Intel® product. Information contained herein supersedes previously published specifications on these devices from Intel. Intel, the Intel logo and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

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