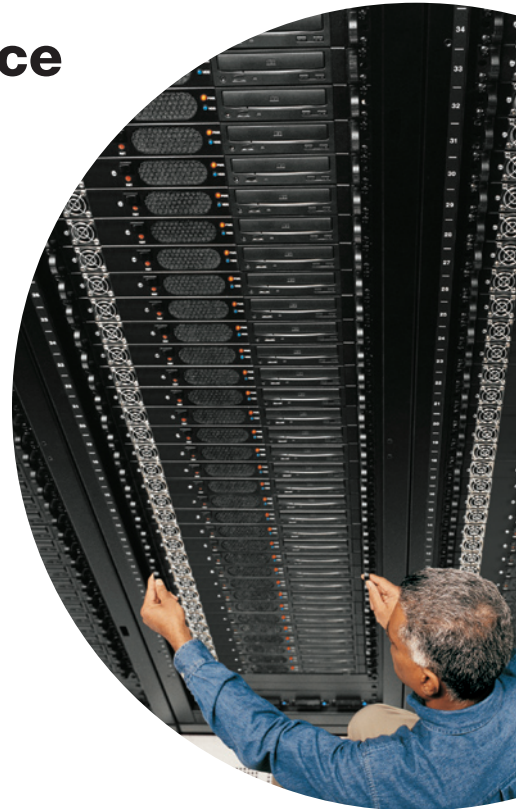




Offer your customers versatility, performance and value.

Intel® E7520 and E7320 chipsets support a variety of new technologies and configuration options, allowing platforms to offer superior value for a wide range of price and performance needs.

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Intel® E7520 and E7320 Chipsets Enable Outstanding Performance at Lower Costs

The Intel® E7520 and the Intel® E7320 chipsets, the next generation Intel dual-processor server chipset technology, enable reduced power consumption, improved platform reliability and system manageability compared to previous generation server platforms. These chipsets enable new dual-processor servers to deliver outstanding performance, dependability and value to enterprise front-end, small-medium business (SMB) or high performance computing (HPC) applications.

The Intel® E7520 and the Intel® E7320 chipsets include revolutionary PCI Express*¹ serial I/O technology and DDR2, the next generation memory technology to help increase I/O bandwidth and reduce system latency for data-intensive applications. The Intel Xeon Processor with 800 MHz system bus allows these chipsets to support the Intel® Xeon™ processor with Intel® Extended Memory 64 Technology (Intel® EM64T), Hyper Threading technology, Enhanced Intel SpeedStep® Technology and Streaming SIMD Extensions 3 (SSE3) Instructions.

Advanced Technology Enhances Price/Performance and Flexibility

The Intel E7520 and E7320 chipsets support a variety of configuration options, allowing platforms to address a wide range of price points and unique application environments. The Intel E7520 memory controller hub (MCH) is designed specifically for performance and volume applications. The Intel E7320 MCH is designed for value dual-processor (DP) platforms.

Intel E7520- and Intel E7320-based platforms can be designed to support any of three memory technologies: DDR 266, DDR 333 or DDR2-400. DDR2-400 memory technology is ideal for HPC and memory-intensive applications, providing up to 20% increase in memory bandwidth over DDR 333 and up to a 40% decrease in power consumption.

The PCI Express interfaces directly attach Intel and third-party components to the MCH at speeds up to 4 GB/second on each x8 interface. Another option is the Intel® 6700PXH 64-bit PCI hub. It provides two bus segments that support hot plug and can be independently configured up to two PCI-X 64/133 MHz segments.

There are two I/O controller hub options for legacy I/O support: the Intel® 82801ER I/O Controller Hub (ICH5R) and the Intel® 6300ESB. They attach directly to the MCH through the Intel® Hub Interface 1.5 connection. Both offer serial ATA (SATA) interfaces and 32-bit PCI connectivity, and both are enabled for optional third-party software RAID 0, 1. The Intel 6300ESB additionally supports PCI-X 64/66 MHz.

The Intel® E7520 and Intel® E7320 Chipset MCH is the central hub for all data passing between the core system elements: processors, memory, PCI Express I/O and legacy

Dual-processor Chipsets Offer A Range of Configuration Options

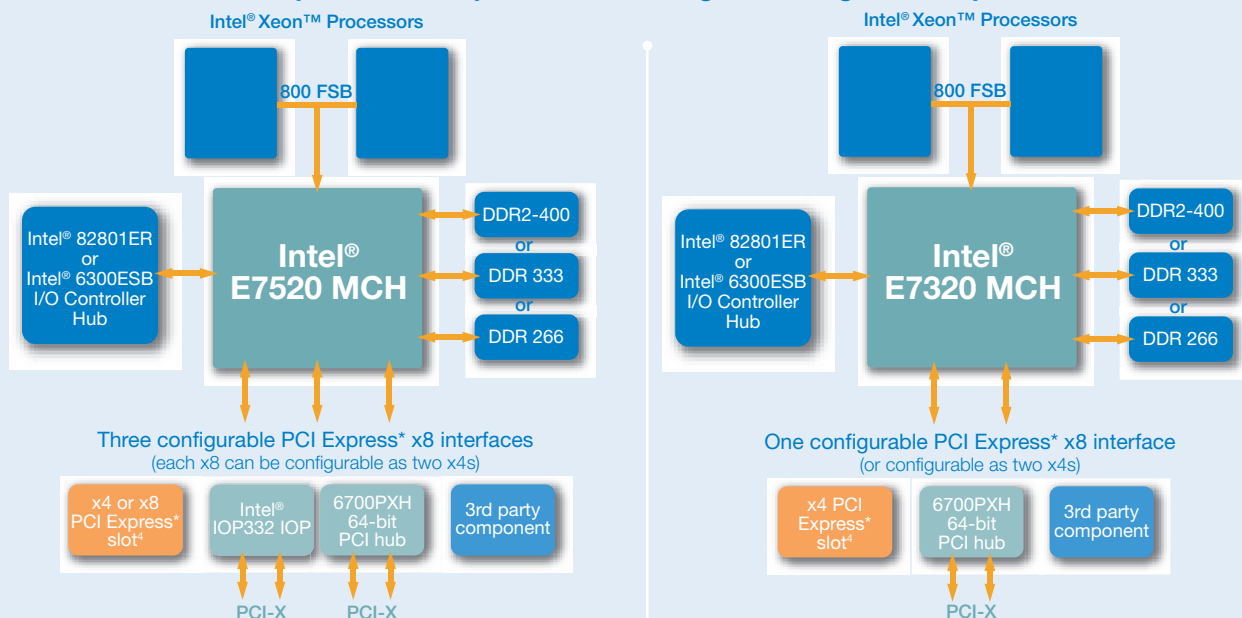


Figure 1 - The Intel E7520 and E7320 chipsets support platform configurations to suit a wide range of price points and unique application environments.

I/O subsystems. It supports dual Intel® Xeon™ processors up to 3.60 GHz with 1 MB L2 cache over the 800 MHz system bus interface, delivering bandwidth up to 6.4 GB/second. The MCH also supports all of the Intel Xeon processor features, such as Intel® Extended Memory 64 Technology (Intel® EM64T), Hyper-Threading Technology, Enhanced Intel® SpeedStep® Technology and Streaming SIMD Extensions 3 (SSE3) Instructions.

The memory subsystem interface to the MCH is dual channel, supporting three or four registered DIMMs per channel, depending on memory technology, for a total system bandwidth of up to 6.4GB/second. With DDR2-400 and DDR 333 memory, up to 16 GB is supported by the MCH. With DDR266 memory, up to 32 GB is supported.

A variety of Intel and third-party I/O solutions communicate directly with the MCH through the PCI Express x8 interfaces. The Intel E7520 MCH has three x8 PCI Express interfaces, and the Intel E7320 MCH supports one x8 PCI Express interface. These x8 interfaces can be bifurcated into two x4 interfaces for additional configuration flexibility. The bandwidth of the PCI Express x8 interface is up to 4 GB/second.

The legacy I/O connects to the MCH through the Intel Hub Interface architecture at 256 MB/second. The two I/O controller hub options are the Intel 82801ER I/O Controller Hub (ICH5R) and the Intel 6300ESB I/O Controller Hub.

- The Intel 6700PXH 64-bit PCI Hub connects to the MCH through a point-to-point PCI Express x8 or x4 interface. Each Intel 6700PXH 64-bit PCI hub contains two bus segments that can be independently configured to operate in PCI (33 or 66 MHz) or 64-bit PCI mode 1 (66, 100, or 133 MHz), for either 32-bit or 64-bit PCI/PCI-X devices. In addition, each Intel 6700PXH 64-bit PCI hub integrates two PCI standard hot plug controllers, one per PCI/PCI-X interface. The Intel 6700PXH 64-bit PCI hub supports multiple PCI-X slots and frequencies for

the high-bandwidth I/O connectivity required in today's server market segment.

- The Intel® 82801ER I/O Controller Hub (ICH5R) offers dual independent Serial ATA controllers, each capable of up to 150 MB/second transfer rate, for the most demanding storage data transfers and support for optional third-party software RAID 0, 1 technology. Four Hi-Speed USB 2.0 ports allow easy I/O connection, while offering improved bandwidth compared to USB 1.1 devices.
- The Intel® 6300ESB I/O Controller Hub integrates dual independent Serial ATA controllers, each capable of up to 150MB/second transfer rate, for the most demanding storage data transfers and support for optional third-party software RAID 0, 1 technology. Four Hi-Speed USB 2.0 ports allow easy I/O connection, while offering improved bandwidth compared to USB 1.1 devices. Unlike the Intel 82801ER I/O Controller Hub (ICH5R), the Intel 6300ESB I/O Controller Hub also includes two PCI-X 64/66 buses supporting up to 4 PCI-X 64/66 MHz devices.

Performance-Enhancing Features

- Dual Intel Xeon processors and an 800 MHz system bus provide up to 6.4 GB/second of available bandwidth delivering a high performance, balanced platform with greater bandwidth for increased memory and I/O throughput compared to previous generation platforms.
- Dual DDR2-400 memory channels deliver 6.4 GB/second bandwidth and up to 16 GB/second of physical memory, providing up to 20% increase in memory bandwidth over DDR333 and up to a 40% decrease in power consumption memory-intensive.
- PCI Express I/O delivers up to 4 GB/second throughput on each x8 interface for demanding I/O and networking applications, allowing I/O to keep pace with the rest of the platform.

| Feature | Benefit |
|--|---|
| Supports two Intel® Xeon™ processors over an 800 MHz system bus for dual-processing workstation and server platforms | Optimized performance for multiple DP market segments and price points, supporting a larger number of users/transactions with faster response times |
| 800 MHz system bus capability | Increased platform bus bandwidth (50% more than 533 MHz) delivers increased system performance |
| PCI Express* ¹ | Serial I/O technology that provides a direct connection between the MCH and PCI Express* devices with bandwidth up to 4 GB/second on each PCI Express* x8 interface; PCI Express offers higher bandwidth, lower latency and less I/O bottlenecks than PCI-X |
| DDR2-400 memory interface | <ul style="list-style-type: none"> • Offers a maximum memory bandwidth of 6.4 GB/second • Decreased power consumption – especially important on dense rack, HPC and blade configurations • Increased DIMMs per system providing enhanced memory scalability for memory-intensive applications |
| Intel® 6700PXH 64-bit PCI hub | <ul style="list-style-type: none"> • Optional component introduces next-generation PCI/PCI-X performance and significant enhancements to platform flexibility • Supports two independent 64-bit, 133 MHz PCI-X segments and two Hot-Plug controllers (one per segment) |
| Intel® Hub Interface 1.5 connection to the MCH | Point-to-point connection between the MCH and the Intel® 82801ER I/O Controller Hub or Intel® 6300ESB I/O Controller Hub provides 266 MB/s of bandwidth |
| Advanced Platform RAS | <ul style="list-style-type: none"> • Features such as memory ECC, Intel® x4 Single Device Data Correction² (x4 SDDC), DIMM sparing, DIMM scrubbing and memory mirroring³ can improve system reliability • 32-bit CRC on PCI Express* • SMBus port hooks into Intel E7520 and Intel E7320 chipsets MCH for remote management operation and support for variety of third-party BMC (base management controller) and BIOS solutions |

| Product | Package |
|--|---|
| Intel® E7520 Memory Controller Hub (MCH) | 1077 Flip Chip-Ball Grid Array (FC-BGA) |
| Intel® E7320 Memory Controller Hub (MCH) | 1077 Flip Chip-Ball Grid Array (FC-BGA) |
| Intel® 6700PXH 64-bit PCI hub | 567 Flip Chip-Ball Grid Array (FC-BGA) |
| Intel® 82801ER (ICH5R) | 460 Micro Ball Grid Array (µBGA) |
| Intel® 6300ESB I/O Controller Hub | 689 Plastic Ball Grid Array (PBGA) |
| Intel Access | |
| Products Web Site | http://www.intel.com/products/server |
| Intel® Chipsets Home Page | http://www.intel.com/products/server/chipsets |
| Intel® Xeon™ processor with 800 MHz system bus | http://developer.intel.com/design/xeon.htm |
| Intel® Gigabit Ethernet Controllers | http://developer.intel.com/design/network/products/ethernet/index.htm |
| Intel® I/O Processor | http://developer.intel.com/design/ii/index.htm |
| Other Intel Support | http://appzone.intel.com/literature/index.asp 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 |

¹ PCI Express reduced power-state L0s not supported.

² In an x4 DDR memory device, the Intel® x4 Single Device Data Correction (x4 SDDC) provides error detection and correction for 1 to 4 data bits within a single device and provides error detection for up to 8 data bits within two devices.

³ Memory mirroring is supported on the Intel E7520 chipset only.

⁴ Support for PCI Express adapters on track for Q4'04.

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Intel® Extended Memory 64 Technology (Intel® EM64T) requires a computer system with a processor, chipset, BIOS, OS, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel EM64T-enabled OS, BIOS, device drivers and applications may not be available.

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