Intel® E7520 Chipset

For Intel® Xeon™ Processor and Low Voltage Intel® Xeon™ Processor with 800 MHz System Bus

Product Overview

The Intel® E7520 chipset, utilizing next-generation dual-processor high-bandwidth chipset technology, enables reduced power consumption with improved platform reliability and system manageability compared to previous-generation solutions. It enables new dual-processor platforms to deliver outstanding performance, dependability and value to embedded customers and their applications.

The Intel E7520 chipset includes revolutionary PCI Express*[1] serial I/O technology and next-generation DDR2 memory technology to help increase I/O bandwidth and reduce system latency for data-intensive applications. The 800 MHz system bus allows it to support the Intel® Xeon™ processor and Low Voltage Intel® Xeon™ processor with 800 MHz system bus. These processors support Intel® Extended Memory 64 Technology[Δ] (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 chipset delivers a high-performance, balanced platform with greater bandwidth for increased memory and I/O throughput. Designed specifically for performance and volume applications, the chipset supports a variety of configuration options, allowing platforms to address a wide range of price points and unique application environments. The E7520 Memory Controller Hub (MCH) is the central hub for all data passing among the core system elements: processors, memory, PCI Express I/O and legacy I/O subsystems. It supports dual

Intel Xeon processors up to 3.2 GHz as well as Low Voltage Intel Xeon processors with 800 MHz system bus with 1 MB L2 cache, delivering bandwidth up to 6.4 GB/second.

Memory

Intel E7520 chipset-based platforms can be designed to support DDR 266, DDR 333 or DDR2-400. DDR2-400 memory technology is ideal for storage and memory-intensive applications, providing up to 20% increase in memory bandwidth, and up to 40% decrease in power consumption over DDR 333. 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 6.4 GB/second. The MCH supports up to 16 GB for DDR2-400 memory, up to 32 GB for DDR 266, and up to 24 GB for DDR 333.

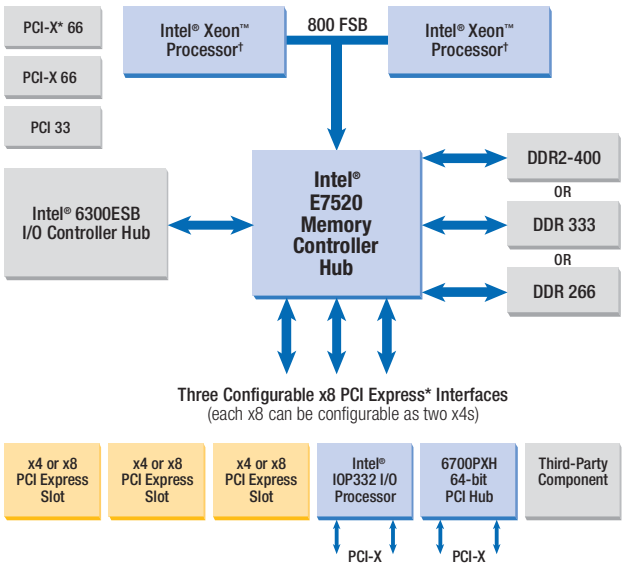

Figure 1. The Intel® E7520 chipset platform configuration suits a wide range of price points and unique application environments.

PCI Express*[1]

For demanding I/O and networking applications, PCI Express interfaces attach a variety of Intel and third-party I/O solution components and adapters directly to the MCH at throughput speeds of up to 4 GB/second on each x8 interface, allowing I/O to keep pace with the rest of the platform. The Intel E7520 MCH has three x8 PCI Express interfaces which can each be bifurcated into two x4 interfaces for additional configuration flexibility.

Intel® 6300ESB I/O Controller Hub

Available as the I/O controller hub for legacy I/O support, the Intel® 6300ESB I/O Controller Hub (ICH) attaches directly to the MCH through the Intel® Hub Interface 1.5 connection at 266 MB/second. For the most demanding storage data transfers and support for optional third-party software RAID 0, 1 technology, the Intel 6300ESB ICH integrates dual independent SATA controllers with 32-bit PCI connectivity, each capable of up to 150 MB/second transfer rate. 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 ICH includes a PCI-X* 64/66 bus supporting up to four PCI-X 64/66 MHz devices.

Optional Intel® 6700PXH 64-bit PCI Hub

The Intel® 6700PXH 64-bit PCI Hub connects to the MCH through a point-to-point x8 or x4 PCI Express interface. Each 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—and can be independently configured up to two PCI-X 64/133 MHz segments. The Intel 6700PXH 64-bit PCI Hub supports multiple PCI-X slots and frequencies for high-bandwidth I/O connectivity.

Features	Benefits
Supports two Intel® Xeon™ processors or two Low Voltage Intel® Xeon™ processors over an 800 MHz system bus for dual-processing platforms	Optimized performance for multiple dual-processor 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]	Direct connection between the MCH and PCI Express component/adapters; bandwidth up to 4 GB/second on each x8 PCI Express interface; higher bandwidth and less I/O bottlenecks than PCI-X*
DDR2-400 memory interface	■ Maximum memory bandwidth of 6.4 GB/second ■ Decreased power consumption – especially important on dense rack, Hot Plug Controller (HPC) and blade configurations
Intel® 6700PXH 64-bit PCI Hub (Optional)	■ 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® 6300ESB I/O Controller Hub provides 266 MB/second of bandwidth
Advanced Platform RAS	■ Features such as memory ECC, Intel® x4 Single Device Data Correction[2] (x4 SDDC), DIMM sparring, DIMM scrubbing and memory mirroring can improve system reliability ■ 32-bit Cyclic Redundancy Check (CRC) on PCI Express ■ Hot swap PCI Express enhances serviceability ■ SMBus port hooks into Intel® E7520 chipset for remote management operation and support for variety of third-party Base Management Controller (BMC) and BIOS solutions

Product	Product Code	Package
Intel® E7520 Memory Controller Hub (MCH)	NQE7520MC	1077 Flip Chip-Ball Grid Array (FC-BGA)
Intel® 6700PXH 64-bit PCI Hub	RG82870P2	567 Flip Chip-Ball Grid Array (FC-BGA)
Intel® 6300ESB I/O Controller Hub	FWE6300ESB	689 Plastic Ball Grid Array (PBGA)

[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 bit within a single device and provides error detection for up to 8 data bits within two devices.

† Dual Low Voltage Intel® Xeon™ Processors are also supported.

Δ Intel® EM64T requires a computer system with a processor, chipset, BIOS, operating system, 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. See http://www.intel.com/info/em64t for more information including details on which processors support Intel EM64T or consult with your system vendor for more information.

§ Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting Hyper-Threading Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See http://www.intel.com/info/hyperthreading/ for more information including details on which processors support HT Technology.

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