Application Note: Benchmark Summary For Trenton System Host Boards Using Two, Quad-core Intel® Xeon® C5549 and Two, Quad-core Intel® Xeon® E5440 Processors

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The Trenton JXT6966 features two, quad-core Intel® Xeon® C5500 Series processors (i.e. Jasper Forest) featuring the Nehalem-EP core micro-architecture with integrated memory controllers and PCI Express® Gen 2.0 links. This SBC design utilizes the single component chipset design made possible with the Intel® 3420 Platform Controller Hub or PCH. The following benchmark comparison charts illustrate the performance advantages of the Trenton JXT6966 system host board.

The memory bandwidth benchmark results clearly show the performance advantages of having the board’s memory interfaces connect directly to the processors. For comparison purposes, the Trenton MCXT board is shown in order to provide a relative performance comparison between two different processor architectures. The results illustrate an overall memory bandwidth performance increase of approximately 440% with the Intel® Xeon® EC5549 (Jasper Forest) architecture compared to the Intel® Xeon® E5440 architecture.

The memory latency benchmark results offer a good indicator of how well integrating the memory controller into the CPU, and using a single component chipset, reduces latency and associated memory delays. The results illustrate a 35% reduction in memory latency and a 57% reduction in memory delays with the Intel® Xeon® EC5549 and Intel® 3420 PCH (Ibex Peak) combination compared to the Intel® Xeon® E5440 with the Intel® 5000P MCH and the Intel® ESB2 ICH.
The chart to the left illustrates the performance advantages delivered by the Nehalem-EP micro architecture deployed in the Intel® Xeon® EC5500 Processor series. In addition to supporting dual-processor SHB designs like the Trenton JXT6966; the Nehalem-EP micro architecture enables a 166% performance gain in inter-core bandwidth with a corresponding reduction in inter-core latency of 174% on the JXT6966 with two, quad-core Intel® Xeon® EC5549 processors.

The processor arithmetic benchmark test is a basic measurement of a board’s computational horsepower. For comparison purposes, the Trenton MCXT board is shown in order to provide a relative performance comparison between two different processor architectures. The results illustrate an arithmetic performance increase of approximately 38% with the Intel® Xeon® EC5549 (Jasper Forest) architecture compared to the Intel® Xeon® E5440 architecture.

The processor multimedia benchmark test focuses on the board’s ability to process video information. There is an element of processor performance in this benchmark, but the board’s video controller or graphics processing unit and on-board video memory capacity largely determines this test result. The results illustrate an overall multimedia performance increase of approximately 3.5% with the Trenton JXT6966. Which is impressive considering the JXT6966 has 8MB of on-board video memory compared to the MCXT’s 16MB.

This information is provided for comparison purposes only. Actual system performance is application dependent and will vary.