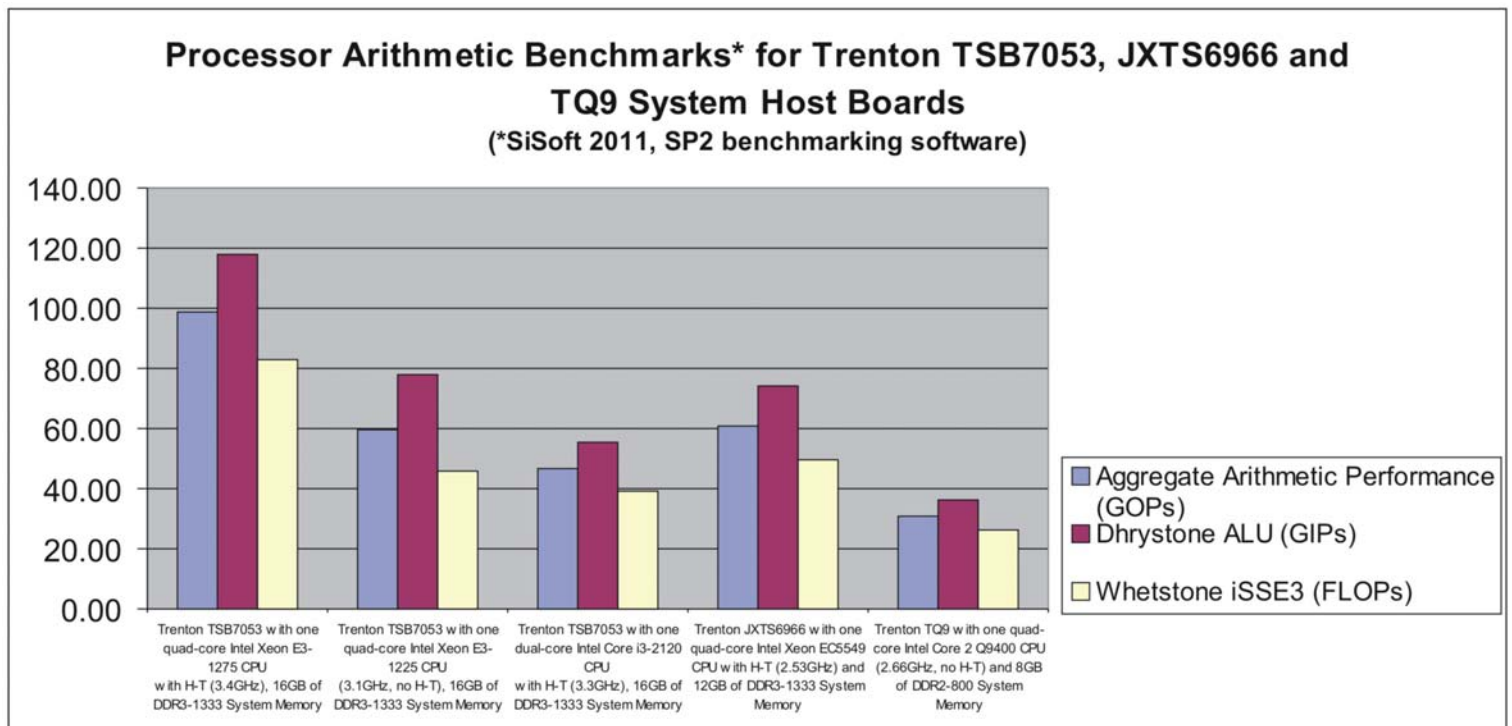


**Application Note:** Benchmark Summary For Trenton TSB7053 System Host Board Using the Intel® Xeon® E3-1200 Processor Family (Sandy Bridge)

**Date:** September 9, 2011

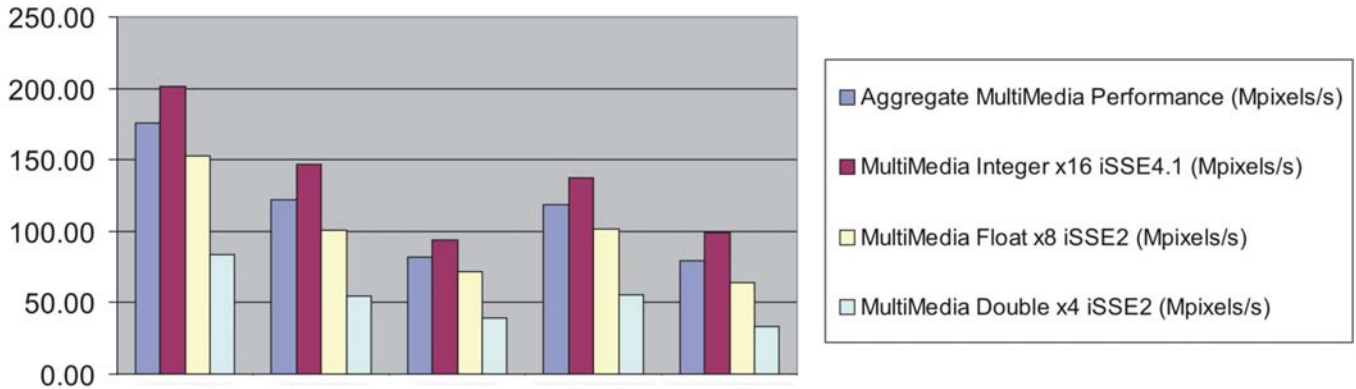
The Trenton TSB7053 supports dual and quad-core Intel® processors featuring the Sandy Bridge core micro-architecture with integrated memory controllers and PCI Express® Gen 2.0 links. This SBC design utilizes the single component chipset design made possible with the Intel® C206 Platform Controller Hub or PCH. The following benchmark comparison charts illustrate the performance advantages of the [Trenton TSB7053](#) system host board.



The processor arithmetic benchmark results clearly show how the Sandy Bridge processor micro-architecture enables system host boards like the TSB7053 to process more instructions as compared to previous Intel processor technologies. For comparison purposes, the Trenton JXTS6966 and Trenton TQ9 boards are shown in order to provide a relative performance comparison between the three different processor architectures. The results illustrate an aggregate processor arithmetic performance increase of approximately 62.3% with the Intel® Xeon® E3-1275 (Sandy Bridge) architecture compared to the Intel® Xeon® EC5549 (Jasper Forest) architecture and an increase of 220% compared to the Intel Core 2 Quad Q9400 (Yorkfield) processor micro-architecture.

### Processor MultiMedia Benchmarks\* for Trenton TSB7053, JXTS6966 and TQ9 System Host Boards

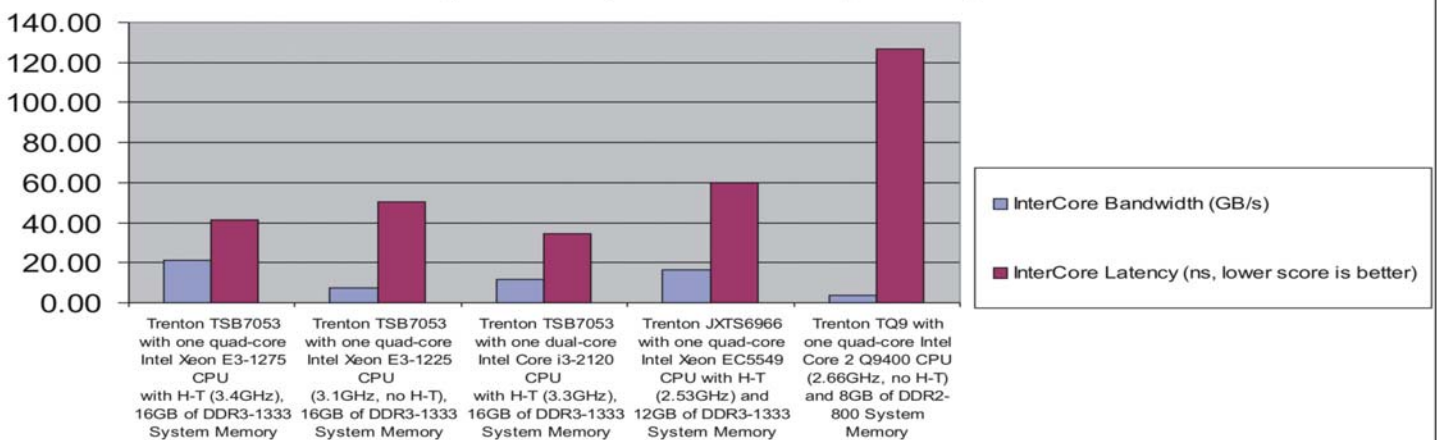
(\*SiSoft 2011, SP2 benchmarking software)



The processor multimedia benchmark test focuses on the board’s ability to process video information. The Sandy Bridge processor micro-architecture features a dedicated CPU-to-PCH data path for video information called the Flexible Display Interface (FDI). The the FDI is made up of two channels featuring differential signaling supporting 2.7Gb/s video data transfers between a video monitor connected to the SHB and the processors’ display engine. The graphics display controller in the Sandy Bridge processor also features support for one or two video monitors. These test results illustrate an overall multimedia performance increase of approximately 48.1% with the Intel® Xeon® E3-1275 (Sandy Bridge) architecture compared to the Intel® Xeon® EC5549 (Jasper Forest) architecture and an increase of 121% compared to the Intel Core 2 Quad Q9400 (Yorkfield) processor micro-architecture.

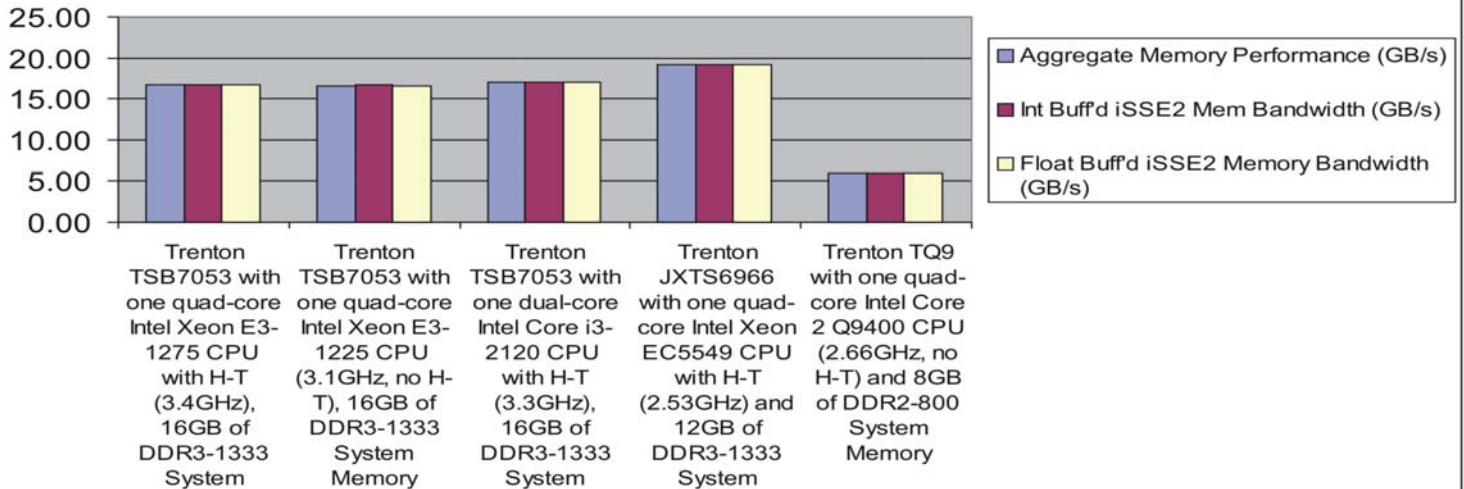
### MultiCore Efficiency Benchmarks\* for Trenton TSB7053, JXTS6966 and TQ9 System Host Boards

(\*SiSoft 2011, SP2 benchmarking software)



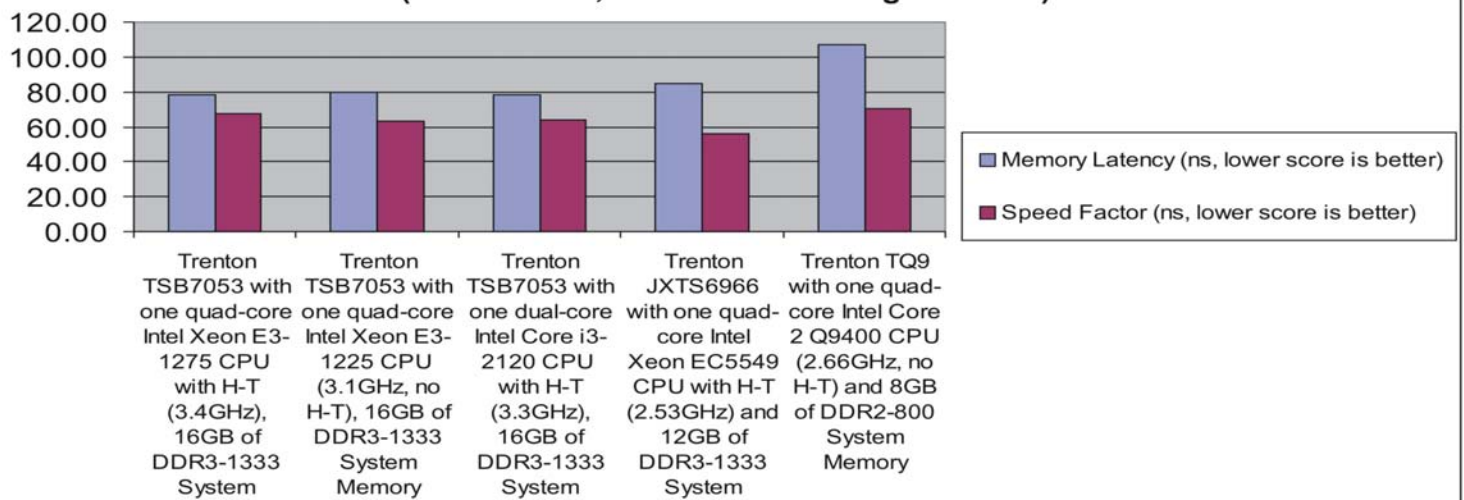
A smaller number indicates a better performance score (i.e. a reduction in inter-core latency delays) when running inter-core latency benchmark tests. This test result shows an overall improvement in reduced inter-core latency times of approximately 44.9% with the Intel® Xeon® E3-1275 (Sandy Bridge) architecture compared to the Intel® Xeon® EC5549 (Jasper Forest) architecture and a performance improvement of 207% compared to the Intel Core 2 Quad Q9400 (Yorkfield) processor micro-architecture.

### Memory Bandwidth Benchmarks\* for Trenton TSB7053, JXTS6966 and TQ9 System host boards (\*SiSoft 2011, SP2 benchmarking software)



In this test the previous generation processor micro-architecture (i.e. Jasper Forest) actually outperformed the Sandy Bridge micro-architecture. The Jasper Forest memory bandwidth performance advantage relates to the three-channel memory interface on the JXTS6966 vs. the Sandy Bridge dual-channel memory interface implementation on the TSB7053. With memory bandwidth, the three-channel memory interface of the Intel® Xeon® EC5549 on the JXTS6966 slightly outperforms the dual-channel memory interface of the Intel® Xeon® E3-1275 on the TSB7053 by a factor of 17%. The TSB7053's Intel® Xeon® E3-1275 (Sandy Bridge) provides a memory bandwidth performance improvement of 178% compared to the Intel Core 2 Quad Q9400 (Yorkfield) processor micro-architecture.

### Memory Latency Benchmarks\* For Trenton TSB7053, JXTS6966 and TQ9 System Host Boards (\*SiSoft 2011, SP2 benchmarking software)



Again, a smaller number indicates a better performance score (i.e. a reduction in memory interface latency delays) when running this benchmark. This test result shows an overall improvement in reduced memory latency times of approximately 8.2% with the Intel® Xeon® E3-1275 (Sandy Bridge) architecture compared to the Intel® Xeon® EC5549 (Jasper Forest) architecture and a performance improvement of 117% compared to the Intel Core 2 Quad Q9400 (Yorkfield) processor micro-architecture.