

MS CpE Scholarly Paper Presentation

A Comparison of Memory Systems for Intel Based Computers Along with the Future Trends and New Concepts

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Abstract

The ever increasing demands of multi-media applications, games, and data servers are continuing to push for the development of faster, better performing computer systems. However, certain components have advanced in capabilities quicker than others. The one part that has evolved the slowest and is creating a major amount of the bottleneck in computers is the memory bandwidth system. Intel is one of the major companies tackling this issue and has implemented various technologies to help combat inadequate bandwidth. This paper discusses Intel's exploitation of memory latency using Hyper-Threading Technology and then the further performance achievements made with the new Core 2 microarchitecture. The paper also talks about some of the other memory designs Intel has helped contribute to such as FB-DIMMs and Turbo Memory. A look at the upcoming Nehalem microarchitecture and its new QuickPath memory system is also included as well as some possible designs needed to meet and exceed the 1TB/s bandwidth range.