

ISPASS 2007 Keynote Address

KEYNOTE 1:

Workloads, Scalability, and QoS Considerations in CMP Platforms

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ABSTRACT

We have entered the CMP era and are continuously accelerating the pace at which more cores are integrated on the same die. It is now possible to imagine building a 32-core CMP platform in the near future. To make best use of these cores, the workload scenarios are also evolving rapidly. For example, consolidation via virtualization is a rapidly growing phenomenon in the server marketplace. In this talk, we will start by describing our vision of large-scale CMP platforms and future workload scenarios over the next decade. We will then re-visit the typical performance requirements and behavior of these platforms. Based on analysis of several commercial server workloads running individually, we will demonstrate platform scalability considerations. Based on simultaneous execution of heterogeneous workloads, we will show platform quality of service considerations. The intent is to describe the opportunities and challenges that 2015 CMP platforms will face and discuss potential solutions that need further research.

BIOGRAPHICAL SKETCH

Donald Newell is a Sr. Principal Engineer in Intel's Systems Technology Lab. He has spent most of his career working on networking and systems software for server platforms and real-time systems. Don has worked on a number of emerging technologies at Intel. This includes leading the group that developed Intel's frameworks for media streaming over the Internet and to support data broadcast for DTV. Don chaired the Advanced Television System Committee (ATSC) work on data broadcast in DTV and was a co-author of IETF RFC 2429. Don and his group were also key contributors to the recently announced Intel(r) I/O Acceleration Technology (Intel(r) I/OAT). Currently, he leads a group working on Platform QoS with an emphasis on large-scale CMP architectures.