

HPC Processor Trends from High-end to Volume, Small, Large, Open, or Embedded

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As one of the fastest growing segments in Enterprise computing, the HPC Market Segment is enjoying a center-stage position within the computing community. Given the extent of the old promises fulfilled and the new promises of discovery and innovation for science and engineering, HPC is maturing into an indispensable tool with ubiquitous utility. Indeed, there are no signs of market saturation; the insatiable need for ever-increasing performance in more applications domains has resulted in a rapidly growing market segment. Combining this growth with the pioneering spirit of the core segments within the HPC community, there is much opportunity and motivation for Intel to innovate and accelerate technology production, from concept to product. In his talk, Dr. Wheat will briefly review the market trends supporting this perspective. He will then address the challenges of providing for balanced HPC platforms, providing an overview of Intel's research in each of the areas of I/O, memory bandwidth and latency, chip-to-chip communication, going from dual-core through quad-core to many-core, and heterogeneous computing through the facilitation of ASICs and FPGAs. Dr. Wheat will describe Intel's technology pipeline for innovation at the high-end HPC segment that contributes to the continued advances in the volume and embedded HPC segments. The scientist and engineer attending this talk will obtain clear expectations of the key trends in the HPC platforms of the future with an understanding of the opportunities for their own innovation. The HPC platform designer attending this talk will obtain the fundamental understanding of the building blocks to come, including provisioning trends of power, heat, space, and costs.