

IBM POWER7 multicore server processor

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Abstract:

The IBM POWER® processor is the dominant reduced instruction set computing microprocessor in the world today, with a rich history of implementation and innovation over the last 20 years. In this paper, we describe the key features of the POWER7® processor chip. On the chip is an eight-core processor, with each core capable of four-way simultaneous multithreaded operation. Fabricated in IBM's 45-nm silicon-on-insulator (SOI) technology with 11 levels of metal, the chip contains more than one billion transistors. The processor core and caches are significantly enhanced to boost the performance of both single-threaded response-time-oriented, as well as multithreaded, throughput-oriented applications. The memory subsystem contains three levels of on-chip cache, with SOI embedded dynamic random access memory (DRAM) devices used as the last level of cache. A new memory interface using buffered double-data-rate-three DRAM and improvements in reliability, availability, and serviceability are discussed.

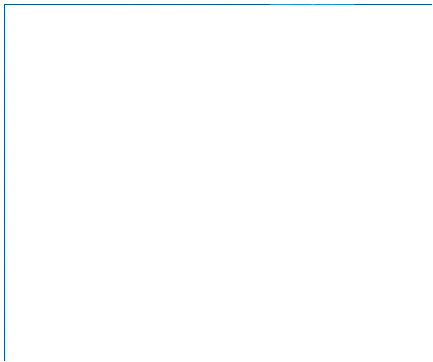
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