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基于64位CPU系统的计算性能比较: Opteron vs. Xeon

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摘要 目前配置的计算机服务器大量采用64位AMD Opteron和Intel Xeon两种处理器。Opteron和Xeon处理器在时钟频率、内存控制器和I/O连接等诸多方面有所不同, 这些差异导致基于这两种处理器的计算机集群系统有不同的特点, 其性能与具体使用的应用程序密切相关。在构建面向高性能科学计算的集群系统时, 选择基于何种64位处理器最为合理是众多用户所关心的一个重要话题, 针对这个问题, 对基于AMD Opteron 252 (2.6 GHz) 和Intel Xeon 3.6 GHz (L2 cache: 1 M) 处理器的计算机集群系统进行了一系列科学计算性能的测试和比较。

关键词 [高性能计算](#) [集群系统](#) [64位处理器](#) [计算流体力学](#)

分类号

Performance comparison between computer systems based on 64 bit CPU: Opteron vs. Xeon

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Abstract

The 64 bit processors, AMD Opteron and Intel EM64T Xeon, are widely adopted in present deployed computer server. Opteron and Xeon are vastly different in their CPU frequency, memory and I/O subsystem etc., which results in the different characteristics of Opteron-based and Xeon-based systems, and the performance, therefore, relates closely with application code. To build a cluster for high-performance scientific computing, choosing the most suitable 64 bit processor for user's application is an important problem, which many users are interested in. For this purpose, the performance comparisons for applications including computational fluid dynamics (PHOENICS & FLUENT), quantum chemistry (GAMESS), quantum physics (VASP), and atmospheric research & numerical weather forecasts (MM5) etc. between computer systems based on AMD252 (2.6 GHz) and Intel EM64T Xeon 3.6 GHz processors are conducted.

Key words [High Performance Computing \(HPC\)](#) [cluster](#) [64 bit CPU](#) [CFD](#)

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