Multicore Transformation of Sequential Applications for achieving high Performance

Abstract

Multicore processor [1] architecture brings a new dimension to the computing arena. Though the proliferation of multicore processor into the commodity market has promising effect on addressing hardware scalability to address the heat and power consumption, high performance computations, but with all these benefits to its credit, there are challenges in adapting multicore technology. In multicore processor architecture, CPU speed has been
reduced to accommodate additional cores. A sequential application running in a higher CPU frequency needs to adjust with the reduced CPU frequency in multicore architecture. There are smart caching mechanisms which can speed up the data access, however in order to fully exploit the power of multicore requires a new way of program design and development. Therefore the existing applications require multicore transformation in order to be able to effectively utilize multicore computation capabilities [14]. This research work demonstrates why multicore transformation is required and how SMPF [16] can be used for transforming sequential application to achieve parallelism on a multicore architecture.

**Reference**

- Planning Considerations for Multicore Processor Technology, John Fruehe, Dell Power Solutions, May 2005.

**Index Terms**

- Computer Science
- Wireless

**Key words**

- Parallelism
- Multithreading
- Shared memory
- Synchronization
- UML
- Template

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