

## Re: Fortran compilers for multi-core chips

**Source:** <http://coding.derkeiler.com/Archive/Fortran/comp.lang.fortran/2004-12/0215.html>

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Date: Wed, 08 Dec 2004 13:45:22 -0500

On 8 Dec 2004 06:07:31 -0800, beliavsky@aol.com wrote:

>A Wall Street Journal article (page B8, Dec 8 2004) says that Intel  
>aims for a tenfold boost in chip performance by 2008 by using dual and  
>multi-core chips. An article from EWeek is at  
><http://www.eweek.com/article2/0,1759,1737050,00.asp>.  
>  
>Will current Windows and Linux Fortran 95 compilers from vendors like  
>Intel, Absoft, and Lahey/Fujitsu be able to exploit the new chips, or  
>will one need to buy new versions of them?  
>  
>Will Fortran programs need to be written differently to maximize speed?  
>I have heard of terms like OpenMP and MPI but am not knowledgeable about  
>them. What is a good book on small-scale parallel programming for  
>Fortran programmers?

Let me also recommend "Programming with Hyper-Threading Technology" by Richard Gerber and Andrew Binstock - Intel Press ([www.intel.com/press](http://www.intel.com/press)), ISBN 0-9717861-4-3. While not Fortran oriented, it does discuss many general concepts that are useful for writing efficient parallel applications in a tightly-coupled environment.

Intel's compilers already do support multithreaded development, with support for OpenMP and automatic parallelization. We have a number of things we're looking at to further exploit multi-core designs. Some designs have independent caches per core, so they look more like a traditional SMP design. Others have some form of shared cache or other high-speed communication among the cores, leading to the NUMA concepts of "local" and "distant" memory.

I was at a "birds of a feather" session on development environments last month at Supercomputing, and the host asked the audience which programming model they wanted to use for multicore. Nearly everyone wanted to treat multicore the same as multiprocessor, recognizing that programming for a NUMA environment is difficult and not always rewarding. (I recall that, while I was with DEC, we put NUMA features into our Tru64 UNIX Fortran compiler to take advantage of the new AlphaServer GS series, but couldn't get anyone to even try it out. Everyone wanted to treat the system as a traditional SMP. So we never released the feature.)

comp.lang.fortran: Re: Fortran compilers for multi-core chips

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User communities for Intel Software Development Products

<http://softwareforums.intel.com/>

Intel Fortran Support

<http://developer.intel.com/software/products/support/>