Breakthrough Performance with Intel® Xeon Phi™

The world’s most incredible discoveries, the engines of the global economy, and life-changing innovations are made possible in large part to supercomputers. Today, more than 75 percent of the world’s super computing centers are powered by Intel® Xeon processors. Now, the next generation of research and discovery can benefit from Intel® Xeon Phi™ co-processors.

Compared to a Xeon® E5 processor, the Intel® Xeon Phi™ co-processor has many more, but smaller processor cores and many more hardware threads that generate greater parallelism, despite lower clock frequencies. At the high end, Xeon Phi 7100 promises up to 1.2 TeraFLOPS (that’s 1 trillion floating-point operations per second) performance in every chip. Xeon Phi is based on Intel architecture unlike accelerators and is capable of hosting an operating system so it’s ready for existing, highly parallel applications without requiring extensive re-coding like GPUs.

Applications can run on both a Xeon E5 main processor and Xeon Phi co-processor, which will allow for tasks to be split between the multi-core processor and the many-core co-processor. Intel industry-standard tools can help you maximize core utilization by optimizing your code for parallelization opportunities.

To determine if your customers’ applications can benefit from the Xeon Phi, consider two key characteristics: First, how parallel are the parallel segments of the application, and can they scale to 100 or more simultaneously running threads? Second, can the applications take advantage of the Xeon Phi co-processors’ 512-bit vector width or greater local memory bandwidth? The resources available at intel.com/xeonphi can help you determine if your customers’ applications could benefit from Xeon Phi.

“The Intel® Xeon Phi™ co-processor seems so painless compared to GPUs.”

–Director – HPC R&D, UBS CTO Innovation Team

The good news for developers is that they can optimize and test various offload strategies with their existing Intel architecture-based code without having to write code from scratch. A broad ecosystem of programming languages, models and tools support the Intel® architecture, and all of them can be used with both the Intel Xeon processors and Intel Xeon Phi co-processors. Applications that run on one processor family will run on the other. This uniformity can greatly reduce the
complexity of software development. Existing applications will need to be tuned and recompiled to maximize throughput, but your developers won’t need to rethink the entire problem or master new tools and programming models. Instead, they can reuse existing code and maintain a common code base using familiar tools and methods.

Intel Xeon Phi co-processors provide up to 61 cores, 244 threads, and 1.2 TeraFLOPS of performance, and they come in a variety of configurations to address diverse hardware, software, workload, performance and efficiency requirements.

You can learn more about Xeon Phi co-processors here and peruse testimonials and use-case studies.