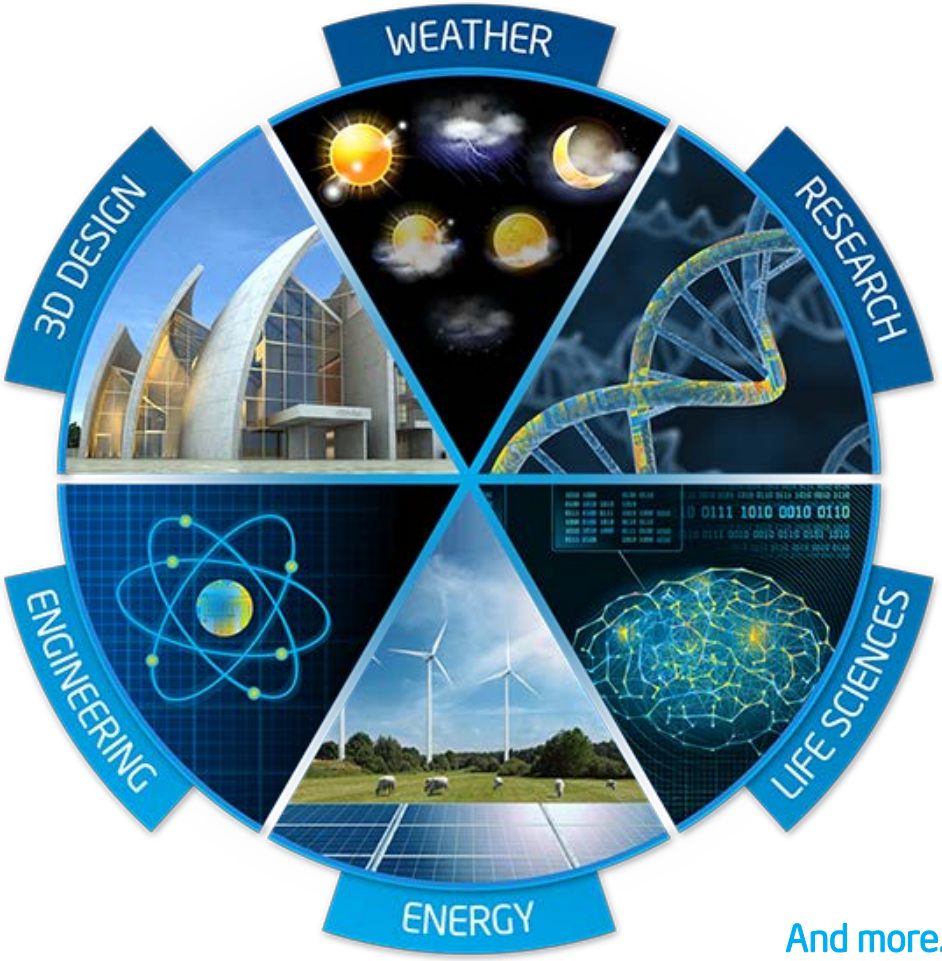
Introducing the Intel® Xeon Phi™ Coprocessor

Architecture for Discovery

Imagine The Possibilities

Many industries are poised to benefit dramatically from the highly-parallel performance of the Intel® Xeon Phi™ product family:



And more...

Architecture for Discovery:
Biophysics Research

To help develop effective vaccines and cures, biophysicists are constantly trying to create better models to simulate viral infections.

With millions of atoms interacting in a given scenario, the highly-parallel processing power of the Intel® Xeon Phi™ coprocessor can make a huge performance difference by processing many aspects of the simulation in parallel.

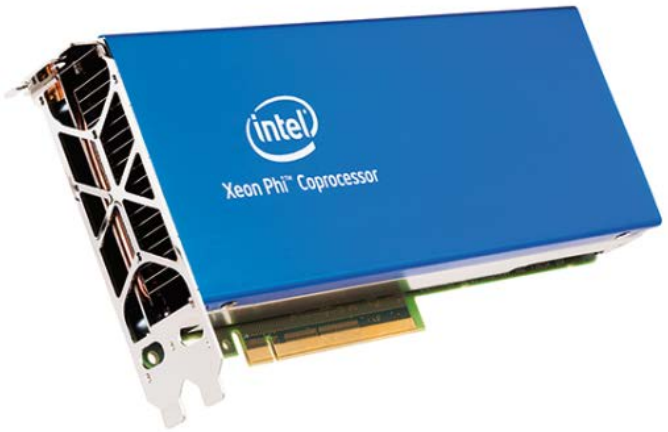
And most importantly, programmers don't have to "start over."

What Is the Intel® Xeon Phi™ Coprocessor?

Intel® Xeon Phi™ Coprocessor 3100
- Outstanding parallel computing solution
- Ideal for compute bound workloads

Intel® Xeon Phi™ Coprocessor 5100
- Optimized for high density environments
- Ideal for memory bandwidth/capacity bound workloads

Intel® Xeon Phi™ Coprocessor 7100
- For the most demanding users and large deployments
- Up to 1.2 teraFLOPS performance in every chip[1]



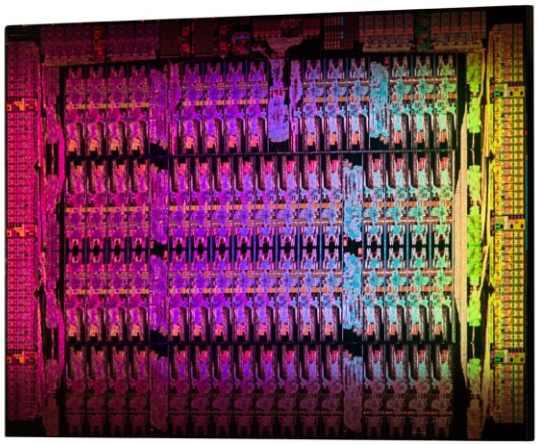
- Up to 61 Cores and 244 Threads per coprocessor
- Up to 352 GB/s memory bandwidth
- 512 Bit SIMD Vectors
- PCI Express and Dense form-factors
- Works synergistically with Intel® Xeon® processors

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to http://www.intel.com/performance

Results have been estimated based on internal Intel analysis and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance.

1 Claim based on calculated theoretical peak double precision performance capability for a single coprocessor. 16 DP FLOPS/clock/core * 61 cores * 1.238Hz = 1.208 TeraFlop/s.

Parallel Performance



Up to 2.53X Faster[2]
Seismic Imaging Performance

Up to 2.52X Faster[2]
Molecular Dynamics Application Performance

Up to 10.75X Faster[3]
Financial Application Performance

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2 2 socket Intel® Xeon® processor E5-2600 product family server vs. Intel® Xeon Phi™ coprocessor (2.52x: Measured by Los Alamos Labs June 2012. 2 socket E5-2687 (8 core, 3.1GHz) vs. 1 pre-production Intel® Xeon Phi™ coprocessor (60 cores, 1.0GHz) on a Molecular Dynamics application. Workload completion time of 4hr 7m 10s vs. 1hr 38m 16s) (2.53x: Measured by Sinopec October 2012. 2 socket E5-2680 (8 core, 2.7GHz) server without a coprocessor vs. same server with 2 pre-production Intel® Xeon Phi™ coprocessors (61 cores, 1.091GHz) on a Seismic Imaging application. Workload completion time of 1342 seconds vs. 528.6 seconds).

3 2 socket Intel® Xeon® processor E5-2600 product family server vs. Intel® Xeon Phi™ coprocessor (10.75x: Measured by Intel October 2012. 2 socket E5-2670 (8 core, 2.6GHz) vs. 1 Intel® Xeon Phi™ coprocessor SE10P (61 cores, 1.1GHz) on a Single Precision Monte Carlo Simulation. 45,501 options/sec vs. 489,354 options/sec)

Energy Efficiency

Built using Intel's 22nm process technology – Intel's most energy efficient process yet – featuring the world's first 3-D Tri-Gate transistors

Server Density

Up to 8x greater FLOPS per rack by adding Intel® Xeon Phi™ coprocessors to your Intel® Xeon® processor E5 family-based servers[4]

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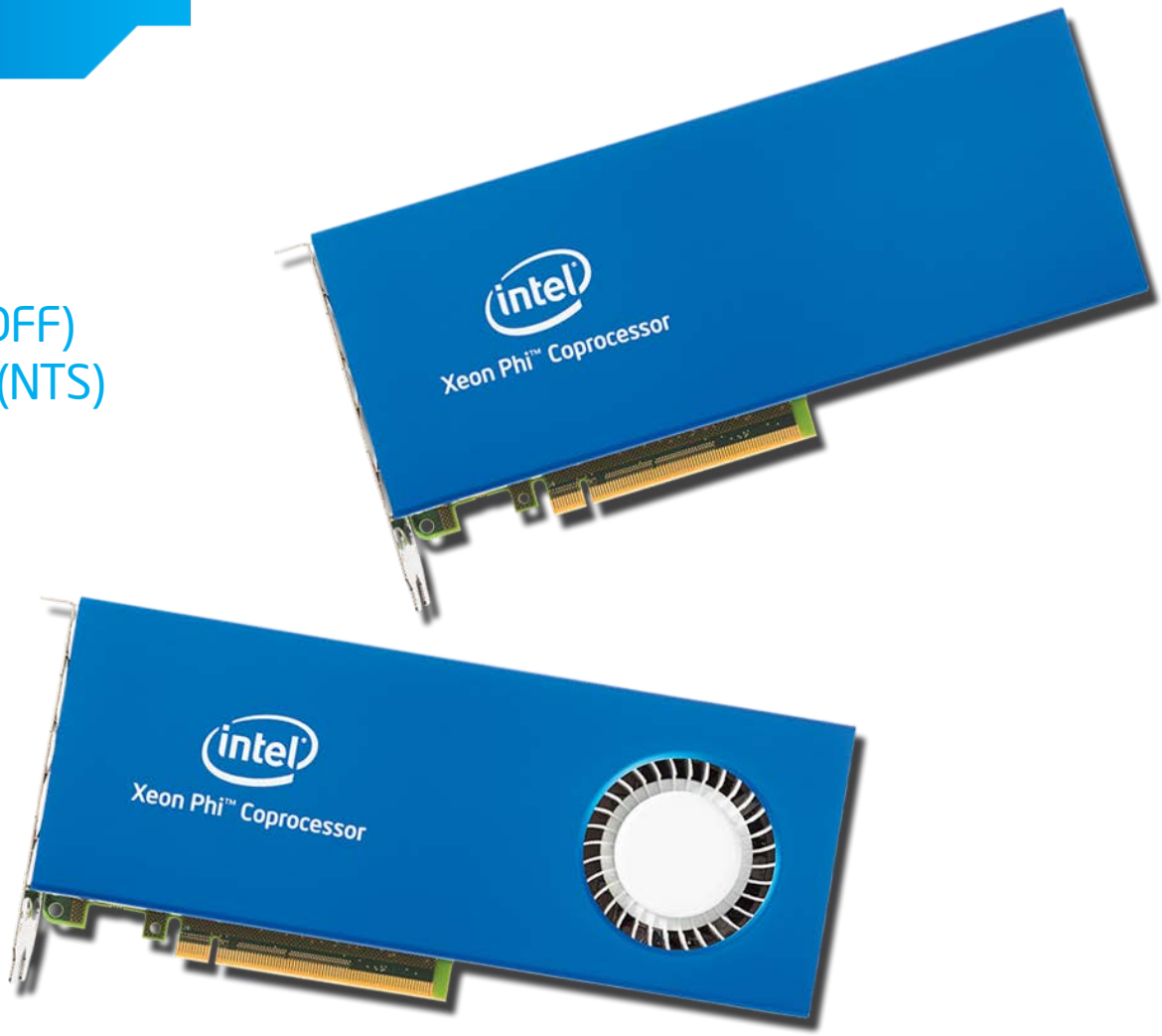
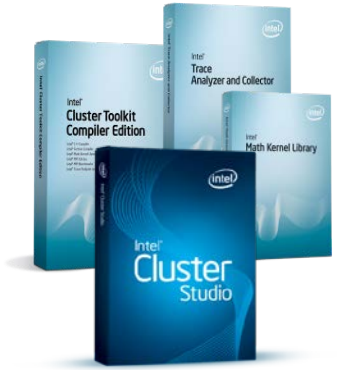
4 2 socket Intel® Xeon® processor E5-2670 server vs. same 2 socket server with 2 Intel® Xeon Phi™ coprocessor 7120P installed (Calculated Theoretical Peak Dual Precision FLOPS: 332.8 GF/s vs.(332.8 +(2 x 1208 GF/s)))

Available in Multiple Form Factors

- Passive
- Active
- Dense Form Factor (DFF)
- No Thermal Solution (NTS)



Common Programming Model



Common Intel® architecture enables applications to run across the full spectrum of Intel® Xeon® family based servers so programmers don't have to "start over".

Use the same development tools you used for Intel® Xeon® processors, such as Intel® Cluster Studio XE / Intel® Parallel Studio XE

http://software.intel.com/en-us/mic-developer

Get Started Now

Download the programming guide to find out whether your workload can take the leap forward with Intel® Xeon Phi™ coprocessors.

Visit www.intel.com/xeonphi to find out more.