

Intel® Array Building Blocks

Product Brief

“Intel® Array Building Blocks will help us take full advantage of the power of data parallelism.”

*Xia Zhang
Neusoft CTO*

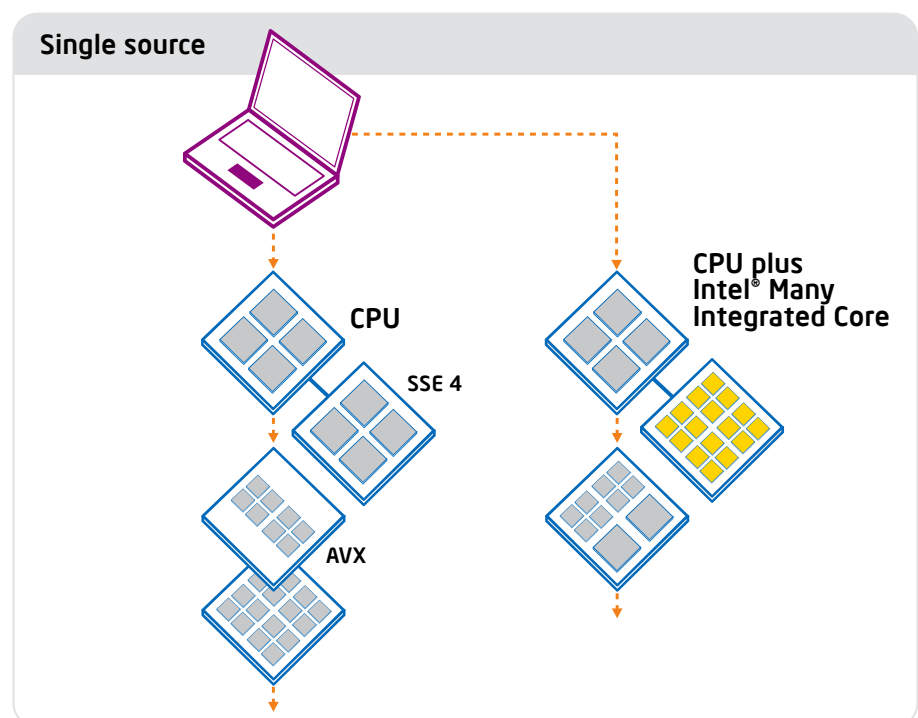
“(Intel® Array Building Blocks) is an exciting new technology that is very promising for data-intensive computing environments.”

*Laurent Clerc
VP Technology Services
CGGVeritas*

Sophisticated C++ library for data parallelism

Intel® Array Building Blocks (Intel® ArBB) provides a generalized data parallel programming solution that frees application developers from dependencies on particular low-level parallelism mechanisms or hardware architectures. It is comprised of a combination of a standard C++ library interface and powerful virtual machine. It produces scalable, portable, and deterministic parallel implementations from a single high-level source description.

Intel® ArBB is ideal for applications that require data-intensive mathematical computations such as those found in medical imaging, digital content creation, financial analytics, energy, data mining, science and engineering. It is a component of Intel® Parallel Building Blocks, and complements other Intel developer and parallel programming tools.



From a single C++ source program, Intel® Array Building Blocks can efficiently drive the parallel cores and vector units in the latest CPUs as well as in future Intel® Many Integrated Core and hybrid architectures.

Features	Benefit
Performance	Programs written with Intel Array Building Blocks are scalable and efficient. Programs can use all cores and vector units (via SIMD instructions) allowing them to fully harness available CPU resources. Intel ArBB can offer many times the performance of straight C++ compilation, depending on the algorithm.
Productivity	Intel ArBB offers powerful, compact language constructs that allow developers to quickly express complex data parallel workloads with minimal code. Fitting easily into existing development environments, Intel ArBB also minimizes the learning curve. Intel ArBB allows developers to develop parallel programs as if they were serial while deriving the benefits of multithreading and vectorization.
Forward Scaling	Allows a single-source application to work consistently across multiple multicore and manycore processors with different Intel compatible architectures, instruction sets, cache architectures, core counts, and vector widths. Programs written with Intel ArBB do not require developers to rewrite programs over and over. Since code modification or even recompilation is not required to take advantage of future architectures, programs written with Intel ArBB are future proof.
Safety	By default, Intel ArBB prevents parallel programming bugs such as data races and deadlocks. Parallel programs are composed by combining a powerful set of structured, deterministic patterns. Such programs are serially consistent and race-free by construction.
Compatibility	Supports all standard C++ compilers including Intel, Microsoft Visual C++ and GCC C++ compilers. Runs on Windows* and Linux*.

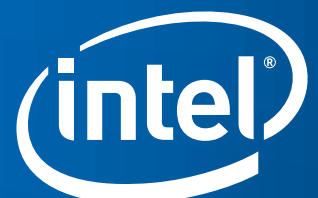
Intel® Array Building Blocks Technical Specifications

Processor Support	Intel Array Building Blocks is validated for use with multiple generations of Intel and compatible processor families including: Intel® Core™ i3, Intel® Core™ i5, Intel® Core™ i7, Intel® Xeon™, and Intel® Pentium® 4.
Development Tools and Environments	The tool is compatible with other development tools from Intel such as compilers, performance profiling and correctness tools, and Intel® Performance Libraries. In addition, it is easily used and integrated with popular development tools and environments such as Microsoft Visual Studio* (2005, 2008, 2010) and the GNU Compiler Collection* (GCC*).
Operating Systems	Windows* and Linux*
Programming Languages	Natively supports C++. A portable low-level interface is available in C. Additional language support is under consideration.
System Requirements	Please refer to www.intel.com/software/products/systemrequirements/ for details on hardware and software requirements
Support	Every purchase of an Intel® Software Development Product includes a year of support services, which provides access to Intel® Premier Support and all product updates during that time. Intel Premier Support gives you online access to technical notes, application notes, and documentation. Customer forum available here: http://software.intel.com/en-us/forums/intel-array-building-blocks/

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While Intel believes our compilers and libraries are excellent choices to assist in obtaining the best performance on Intel® and non-Intel microprocessors, Intel recommends that you evaluate other compilers and libraries to determine which best meet your requirements. We hope to win your business by striving to offer the best performance of any compiler or library; please let us know if you find we do not.

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