



# Intel® C++ Compiler Professional Edition for QNX\* Neutrino\* RTOS

In-Depth

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## Intel® C++ Compiler Professional Edition for QNX® Neutrino® RTOS

### Overview

The Intel® C++ Compiler Professional Edition for QNX® Neutrino® RTOS is a tool suite consisting of Intel® C++ Compiler and Intel® Integrated Performance Primitives (Intel® IPP) Library. Both are tailored for QNX® Neutrino® RTOS-based application software development to provide maximum application performance. The compiler provides a significant performance gain over the standard GCC compiler, which is used by default for QNX based development. Intel IPP is a set of optimized routines for multimedia, signal processing and data communication.

The Tool Suite can be downloaded for free, and is available for Windows®-hosted systems. To initiate your product download, read and accept the License Agreement at: <http://www.intel.com/cd/software/products/asm-na/eng/compilers/413513.htm>

### Features and Benefits

Intel® C++ Compiler Professional Edition for QNX® Neutrino® RTOS features:

- Generate optimized executables and libraries optimized for Intel® IA-32 Architecture, Intel® Atom™ Processor and QNX® Neutrino® RTOS
- Integration into QNX Momentics® Development Suite

Intel® Integrated Performance Primitives library features:

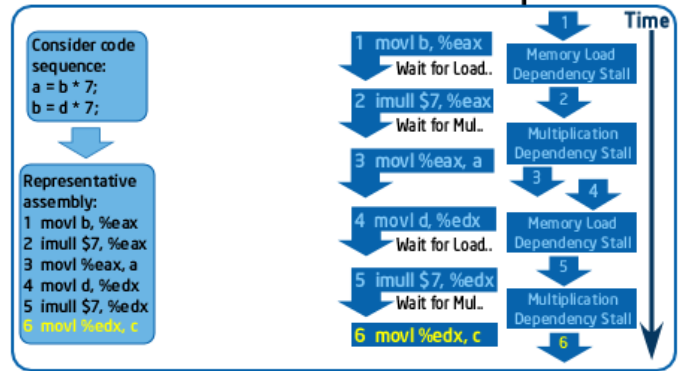
- Highly optimized multimedia functions (Image and video, communication and signal processing, data processing)
- Rapid application development
- Cross-platform compatibility and code re-use
- Outstanding performance

### Product Component Features and Benefits—Compiler Performance

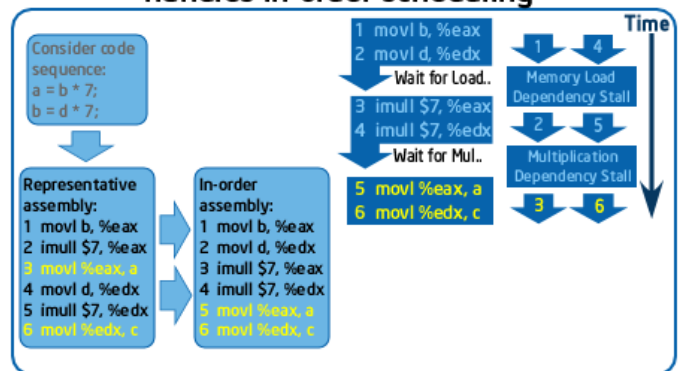
New in-order scheduler for Intel Atom processors and additional improvements in the compiler provide a significant performance advantage over GCC.

The in-order scheduler Compiler feature for Intel Atom processors provides an additional performance gain by minimizing dependency stalls due to low power Intel® Architecture optimized instruction scheduling.

### Lack of *in-order scheduling* results in slower execution and increased power



### Intel® Compiler automatically handles *in-order scheduling*



The new low-power Intel Architecture does not provide an integrated out-of-order scheduler that schedules instruction dispatch into the execution pipeline to take optimum advantage of the architecture and minimize dependency stalls. The Intel C++ Compiler models the low-power Intel Architecture pipeline and execution flow, thus enabling it to produce code with the optimum instruction execution sequence for low-power Intel Architecture.

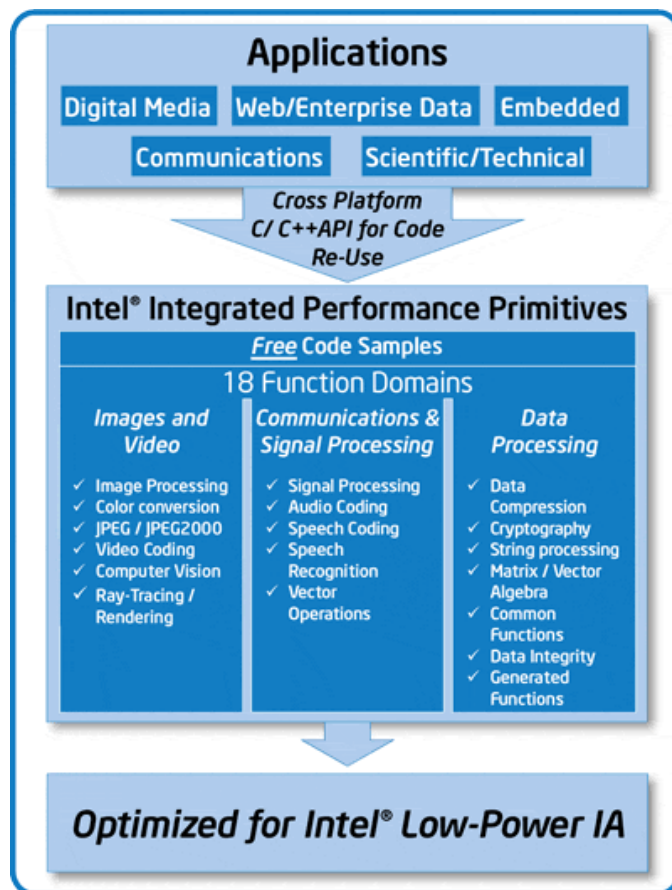
Other compiler features include:

- **Compatibility with GCC Compiler** saves efforts in porting/re-using existing code
- **Multi-pass optimization techniques** (Profile Guided Optimization, Interprocedural Optimizations) are some key compiler techniques to obtain an extra performance advantage
- **Auto-vectorization** parallelizes code to utilize the Intel® Streaming SIMD Extensions (SSE) instruction set architectures (SSE, SSE2, SSE3, SSSE3, and SSE4) of our latest processors.

- **High-Performance Parallel Optimizer (HPO)** restructures and optimizes loops to ensure that auto-vectorization makes best use of cache and memory accesses, SIMD instruction sets, and multiple cores. Compiles in a single pass, improving compile-time and producing more reliable code.
- **Interprocedural Optimization (IPO)** dramatically improves performance of small- to mid-sized functions, especially in programs containing calls within loops. IPO analysis gives feedback on vulnerabilities and coding errors, such as uninitialized variables which cannot be detected as well by other compilers.
- **Profile-guided Optimization (PGO)** improves application performance by reducing instruction-cache thrashing, reorganizing code layout, shrinking code size, and reducing branch mispredictions.

### Intel Integrated Performance Primitives

Intel Integrated Performance Primitives (Intel IPP) is an extensive library of highly optimized software functions covering 18 major domains of functionality for multimedia data processing, and communications applications. The Intel IPP library is highly optimized for low-power Intel Architecture technology running on QNX® Neutrino® RTOS applications. Developers can concentrate on feature development rather than optimization. Intel IPP also provides cross platform compatibility and code re-use. Just use the same set of APIs, now available for QNX based development. Port your application code with less effort to your QNX based device. With the download of the tools there are IPP library code samples available, which explain how to build a customer IPP DLL to include only the functions that users need to reduce library size, as well as other useful techniques.



### Pricing

The Intel C++ Compiler Professional Edition for QNX® Neutrino® RTOS is available for free download. Product support is also available for separate purchase.

