

OPTIMIZED FUNCTIONS MAKE SOFTWARE FASTER



Intel® Integrated Performance Primitives 8.0

Product Brief

NOW PREVIEWING INTEL® GRAPHICS SUPPORT!

Top Features

- **Previewing Intel® Processor Graphics Acceleration:** New Intel® IPP APIs supporting OpenCL* and Asynchronous C/C++.
- **Differentiation:** Spend More Time Differentiating and Less Time Optimizing your Code.
- **Cross Platform:** Windows*, Linux*, OS X*, and Android*.

Follow us on Twitter @Intel_IPP

Available Standalone or in the Following Suites:

- Intel® Cluster Studio XE
- Intel® Parallel Studio XE
- Intel® C++ Studio XE
- Intel® Composer XE
- Intel® C++ Composer XE

OS Support:

- Windows*
- Linux*
- OS X*
- Android*

Platform Support:

- Intel® Atom™ Processor
- Intel® Core™ Processor
- Intel® Xeon® Processor

A Library of Highly Optimized Functions for Multimedia and Signal Processing algorithmic development

Intel® Integrated Performance Primitives (Intel® IPP) is an extensive library of software functions to help you develop algorithms for multimedia codecs and filters, computer vision, and other 1D and 2D domains.

Optimized for Performance, Throughput, & Power Efficiency: Intel® IPP software functions are highly optimized using SSE and Intel® AVX instruction sets so your application will outperform what an optimized compiler can produce alone.

Now Previewing Intel® HD Graphics and Intel® Iris Graphics Acceleration! Intel® IPP has expanded by previewing two new APIs for OpenCL* and Asynchronous C/C++, both focused on the image processing domain. Both models enable targeting Intel® Processor Graphics. Try it out and take part in our forums dedicated to these APIs. For more info, check out our preview website at: software.intel.com/intel-ipp-preview

Focus Your Team: Because Intel has done the engineering on these ready-to-use, royalty-free functions, you'll not only have more time to develop new features that differentiate your application, but in the long run you'll also save development, debug and maintenance time while knowing that the code you write today will run optimally on future generations of Intel processors. Spend more time differentiating, less time optimizing!

Signal Processing (1D)		Image & Frame Processing (2D)				
Filters	Statistics	Transforms	Filters	Computer Vision	Color Conversion	Statistics
FFT FIR Threshold Convolution Median ...	Mean StdDev NormDiff Sum MinMax ...	FFT Resize Rotate Mirror Warp/Shear ...	Convolution Morphology Threshold Histogram ...	Canny Optical Flow Segmentation Haar Classifiers Hough Transform ...	RGB/BGR YUV/YCbCr 420, 422, 444 ...	Mean StdDev NormDiff Sum MinMax ...

Available in Many Options to Suit Your Needs: Intel® IPP is available as a part of several different product packages with single and multi-user licenses as well as volume, academic, and student discounts available. See page 3 Purchase Options for details.

Try Before You Buy! Download a trial version of Intel® IPP today at <http://intel.ly/sw-tools-eval>

Features and Benefits

Feature	Benefit
Previewing Intel® Processor Graphics Support!	Intel® IPP now previews two new APIs for OpenCL* and Asynchronous C/C++, both targeting Intel® Processor Graphics. The current focus of these new APIs is the Image Processing domain. To achieve the full benefit of the Intel processor, check this new feature set out today! For detailed performance data, visit the Intel IPP preview web page at http://software.intel.com/intel-ipp-preview
OS X* Standalone SKU	Intel® IPP now has a standalone OS X* SKU available for evaluation and purchase.
Pre-optimized for Performance, Throughput, & Power Efficiency	Intel® IPP functions are highly optimized using SSE and Intel® AVX instruction sets enabling your compute heavy algorithms to achieve maximum performance, beyond what an optimized compiler could produce alone. For detailed performance data, visit the Intel IPP product web page at http://intel.ly/intel-ipp
Future Proofed Optimizations	Intel® IPP enables you to code once now and then in the future simply rebuild with the latest version of Intel® IPP to realize future processor and instruction set performance gains. This future proofing saves you both time and money on application development.
Royalty-free Redistribution	Intel IPP allows you to redistribute unlimited copies of its runtime libraries with your application, saving you money long term.
Thousands of Pre-defined Functions	With thousands of functions provided, Intel® IPP speeds your application development letting you to focus on differentiating your application, not algorithmic optimization.
Source Code Usage Samples Jumpstart Your Application	Jumpstart your application development by taking advantage of Intel IPP source code samples.

A Closer Look at Intel® Integrated Performance Primitives

IPP Performance	Performance Comparison Details												
<p style="text-align: center;">Intel® Integrated Performance Primitives (Intel® IPP) 8.0 ippiFilter_Bu_C1R Performance Comparison</p> <table border="1"> <caption>ippiFilter_Bu_C1R Performance Comparison Data</caption> <thead> <tr> <th>Compiler/Configuration</th> <th>Clock Cycles per Element (CpE)</th> </tr> </thead> <tbody> <tr> <td>icpc</td> <td>74.3</td> </tr> <tr> <td>IPP SSE3</td> <td>22.8</td> </tr> <tr> <td>IPP SSSE3</td> <td>17.6</td> </tr> </tbody> </table> <p><small>Configuration Info - Versions: Intel® Integrated Performance Primitives (Intel® IPP) 8.0, Hardware: Intel® Core™ i7-2600K Processor, 3.40 GHz, 8MB cache, 4GB RAM; Operating System: Ubuntu 11.10; Intel® Compiler version (icpc): 12.1.4.20120410; Benchmark Source: Intel Corporation; Notes: 5x5 Template, 4096x4096 image. Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, refer to www.intel.com/performance/resources/benchmark_limitations.htm. * Other brands and names are the property of their respective owners.</small></p> <p><small>Optimization Notice: Intel's compilers may or may not optimize to the same degree for non-Intel microprocessors for optimizations that are not unique to Intel microprocessors. These optimizations include SSE2, SSE3, and SSSE3 instruction sets and other optimizations. Intel does not guarantee the availability, functionality, or effectiveness of any optimization on microprocessors not manufactured by Intel. Microprocessor-dependent optimizations in this product are intended for use with Intel microprocessors. Certain optimizations not specific to Intel microarchitecture are reserved for Intel microprocessors. Please refer to the applicable product User and Reference Guides for more information regarding the specific instruction sets covered by this notice. Notice revision #20110804</small></p>	Compiler/Configuration	Clock Cycles per Element (CpE)	icpc	74.3	IPP SSE3	22.8	IPP SSSE3	17.6	<p>ippiFilter</p> <p>Performance an order of magnitude faster than an optimized compiler with further improvements over multiple generations of SSE and Intel® AVX instruction sets.</p>				
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What's New in Intel® Integrated Performance Primitives 8.0

Feature	Benefit
Previewing Intel® Processor Graphics Acceleration!	Two new APIs: OpenCL* and Asynchronous C/C++ both enable you to target Intel® Processor Graphics. Try this out to get the most out of your full platform, either by itself or in addition to the traditional synchronous C/C++ API.
Intel® AVX & Intel® AVX2 Performance Optimizations	Achieve new performance optimizations for the Intel® AVX and Intel® AVX2 for faster floating-point and integer operations in the signal processing and image processing domains for Sandy Bridge (Intel AVX), Haswell (Intel AVX2), and later processors.

Purchase Options: Language Specific Suites

Several suites are available combining the tools to build, verify and tune your application. The products covered in this product brief are highlighted in blue. Single or multi-user licenses along with volume, academic, and student discounts are available.



Suites >>		Intel® Cluster Studio XE	Intel® Parallel Studio XE	Intel® C++ Studio XE	Intel® Fortran Studio XE	Intel® Composer XE	Intel® C++ Composer XE	Intel® Fortran Composer XE
Components	Intel® C / C++ Compiler	●	●	●		●	●	
	Intel® Fortran Compiler	●	●		●	●		●
	Intel® Integrated Performance Primitives ³	●	●	●		●	●	
	Intel® Math Kernel Library ³	●	●	●	●	●	●	●
	Intel® Cilk™ Plus	●	●	●		●	●	
	Intel® Threading Building Blocks	●	●	●		●	●	
	Intel® Inspector XE	●	●	●	●			
	Intel® VTune™ Amplifier XE	●	●	●	●			
	Intel® Advisor XE	●	●	●	●			
	Static Analysis	●	●	●	●			
	Intel® MPI Library	●						
	Intel® Trace Analyzer & Collector	●						
	Rogue Wave IMSL* Library ²							●
	Operating System ¹	W, L	W, L	W, L	W, L	W, L	W, L, O	W, L, O

Note: ¹ Operating System: W=Windows*, L= Linux*, O= OS X*. ² Available in Intel® Visual Fortran Composer XE for Windows with IMSL*

³ Not available individually on OS X, it is included in Intel® C++ & Fortran Composer XE suites for OS X

Technical Specifications

Specs at a Glance	
Processor Support	Validated for use with multiple generations of Intel and compatible processors including but not limited to: Intel® Xeon™ Processor, Intel® Core™ processor family and Intel® Atom™ processor family.
Operating Systems	Use the same API for application development on multiple operating systems: Windows*, Linux*, Android*, and OS X*.
Development Tools and Environments	Compatible with compilers from vendors that follow platform standards (e.g., Microsoft*, GCC, Intel). Can be integrated with Microsoft Visual Studio* (2005, 2008, and 2010).
Programming Languages	Natively supports C/C++ and OpenCL* development.
System Requirements	Refer to www.intel.com/software/products/systemrequirements/ for details on hardware and software requirements.
Support	All product updates, Intel® Premier Support services and Intel® Support Forums are included for one year. Intel Premier Support gives you secure, web-based, engineer-to-engineer support.
Community	Share experiences with other users of Intel® IPP and other programming tools at the Intel moderated forum: http://software.intel.com/en-us/forums/

	<p>Learn more about Intel Integrated Performance Primitives</p> <ul style="list-style-type: none"> Click or enter the link below: http://intel.ly/intel-ipp Or scan the QR code on the left 		<p>Download a free 30-day evaluation</p> <ul style="list-style-type: none"> Click or enter the link below: http://intel.ly/sw-tools-eval Click on 'Compilers and Libraries' link
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Optimization Notice

Notice revision #20110804

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