



# Intel® Parallel Studio XE 2013

LEADING DEVELOPMENT SUITE FOR APPLICATION PERFORMANCE

Product Brief

## Top Features

- Industry-leading application performance that scales as processor core count and vector width increase
- Efficiently scale on tomorrow's hardware while preserving investment in existing code
- Compatible with leading development environments

### Also available with one language:

- Intel® C++ Studio XE
- Intel® Fortran Studio XE

### OS Support:

- Windows\*
- Linux\*

**“The analysis applications in Intel® Parallel Studio XE have dramatically sped up our ability to identify bottlenecks, find/fix memory problems and track down difficult to isolate threading errors before our packages are released to the field.”**

Peter von Kaenel, Director, Software Development, Harmonic Inc.

**“Intel Parallel Studio XE is driving innovation at Golaem, enabling us to achieve higher playback frame rates and faster render times - all which gives VFX and animation studios the ability to save both time and money while delivering impressive results.”**

Michaël Rouillé, CTO, Golaem

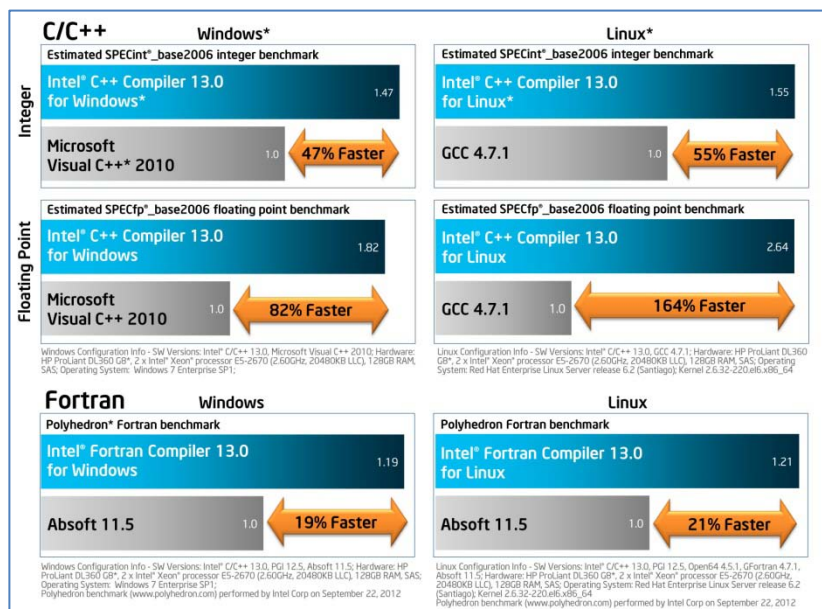
## Boost Performance Today, Great Performance Tomorrow

Deliver top application performance while minimizing development, tuning and testing time and effort. Intel® Parallel Studio XE provides C/C++ and Fortran developers cutting edge performing compilers and libraries, the right parallel programming models, and complementary and compatible analysis tools. It plugs seamlessly into Visual Studio\* and the GNU tool chain to keep you productive while preserving your development environment investment. Boost performance for your applications as they run on today and tomorrow's IA-compatible processors and coprocessors, including Intel® Xeon® Processors and Intel® Xeon Phi™ coprocessors.

Intel® Parallel Studio XE includes the next-generation software development tools:

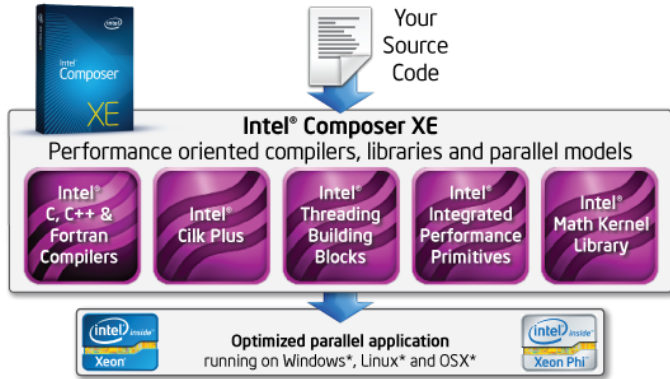
- Intel® C, C++ and Fortran Compilers** - Industry-Leading Compilers
- Intel® MKL and Intel® IPP** - Performance Libraries
- Intel® Threading Building Blocks and Intel® Cilk™ Plus** - Parallel Programming Models
- Intel® Advisor XE** - Threading Assistant
- Intel® VTune™ Amplifier XE** - Performance & Thread Profiler
- Intel® Inspector XE** - Memory and Thread Checker
- Static Analysis** - Locate Difficult to find Defects

**Get more performance with less effort.** Optimize performance by using the latest versions of broadly used Intel® Software Development Products. Simply rebuild with Intel compilers or relink libraries and performance-oriented applications can benefit from the latest IA-compatible processors. These tools enable developers, who are willing to invest the time and effort, to create ultimate application performance.



View more benchmarks at <http://intel.ly/composer-xe>

# Top Features



## Acclaimed C++ and Fortran Compilers and Libraries

**Intel® Composer XE** is a performance-oriented developer tool that includes Intel C++ and Fortran compilers, and threading, math, multimedia and signal processing performance libraries.

- Industry-leading **Intel® C++ and Fortran compilers** produce code that runs faster (see benchmark on previous page) than alternatives and compatible with Microsoft Visual C++\* and gcc\*.
- **Intel® Cilk™ Plus and Intel® Threading Building Blocks** provides parallelism models to make it easier to take advantage of today and tomorrow's high-performance computing systems.
- Industry-leading **Intel® Math Kernel Library and Intel® Integrated Performance Primitives** include a wealth of routines to improve performance and cut development time.
- Compatible with leading development environments and compilers on Windows\*, Linux\* and OSX\*.

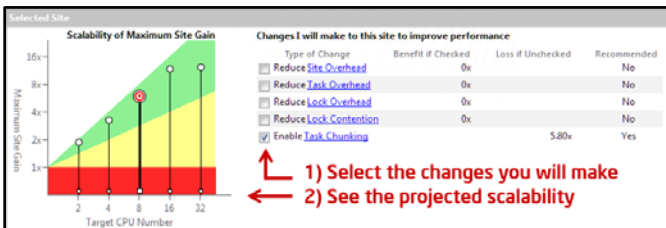
Additional information: <http://intel.ly/composer-xe>

## Innovative threading assistant for Linux and Windows

**Intel® Advisor XE** is a threading assistant for C, C++, C# and Fortran developers. It finds regions with the greatest performance potential from parallelism and identifies critical synchronization issues.

- Evaluate alternatives before investing in implementation.
- Estimate the speed-up.
- Identify correctness issues.
- Select the options with the best return on investment.

Additional information: <http://intel.ly/intel-advisor-xe>



/Function /Call Stack	CPU Time
initialize_2D_buffer	11.768s
grid_intersect	5.916s
intersect_objects	5.431s
grid_intersect ← intersect_objects	0.485s
sphere_intersect	5.044s

Quickly locate code taking a lot of CPU time

Line	Source	CPU Time
473	float minP = 0.f, maxP = 1.f;	0.561s
474	float rx, ry, rz = 1.f/(pos.z - prev	6.846s
475		
476	float param1 = (AABB.zMin - prevPos.	3.593s

See the results on your source

## Optimize Serial and Parallel Performance

**Intel® VTune™ Amplifier XE** is the premier performance and thread profiler to tune your application's performance.

- Profile C, C++, C#, Fortran, Assembly and Java\*.
- Receive rich performance data for hotspots, threading, locks & waits, DirectX\*, bandwidth and more.
- Sort, filter and visualize results on the timeline and on your source.
- Use command line input to automate regression tests and make remote collection easy.

Additional information: <http://intel.ly/vtune-amplifier-xe>

## Deliver More Reliable Applications

**Intel® Inspector XE 2013** is an easy to use memory and threading error detector for serial and parallel applications on Windows\* and Linux\*.

- Inspect C, C++, C#, F# and Fortran.
- Require no special builds. Use your normal build.

Additional information: <http://intel.ly/inspector-xe>

**Static analysis** for C, C++ and Fortran developers is included in Intel® Studio XE products.

- Locate difficult to find defects that cause crashes and run-time errors.
- Test all code paths automatically without test cases, complementing Intel® Inspector XE's dynamic analysis.

Additional information: <http://intel.ly/static-analysis>

Description	Source	Function	Module	Object Size	Offset
Write	find_and_fix_memory_errors.cp...	operator()	find_and_fix_memory_errors...		
164					find_and_fix_memory_errors.exe!o
165	for (unsigned int i=0;i<=(mboxsize/(				find_and_fix_memory_errors.exe!e
166	local_mbox[i]=0; //Memory Error				tbb_debug.dll!local_wait_for_all
167					tbb_debug.dll!local_spawn_root_a
168	for (int y = r.begin(); y != r.end())				tbb_debug.dll!spawn_root_and_wai

Intel Inspector XE's dynamic and static analysis shows the source locations of threading and memory errors and provides a call stack for navigation

## Compatibility

Intel software development tools preserve your investments in existing development environments and code bases while providing capabilities that maximize application performance. Intel Parallel Studio XE offers excellent compatibility with leading compilers. Intel tools also support development and maintenance of software targeted to run on systems using processors compatible with the Intel Architecture.

Intel® Software Development Products are compatible with leading development environments. On Windows\*, they are compatible with Microsoft Visual Studio\* 2008, 2010 and next-generation tools. On Linux\*, they are compatible with GNU\* tools.

## Multiple OS Support, Multiple Language Support

Intel® Parallel Studio XE is available for Windows\*, and, separately, Linux\*. C/C++, Fortran compilers, and performance and parallelism libraries bring advanced optimizations on the OSX\* platform.

Intel® Parallel Studio XE is for Fortran developers who need a matched set of C++ and Fortran compilers. For developers interested in a single language, there's Intel® C++ Studio XE and Intel® Fortran Studio XE. Licenses support all IA-32 and Intel 64 architectures and feature one year of support and updates.

## Try Tools from Intel

The unified suite of supported development tools from a single company eases the use and procurement of software development tools to maximize performance on today and tomorrow's hardware.

Buying Intel tools include the benefit of joining the Intel community and taking advantage of the growing communities via the Intel Forums for getting/sharing code and ideas. In addition, receive technical expertise through Intel® Premium Support.

Free, 30-day evaluation copies are available for download from our web site, <http://intel.ly/sw-tools-eval>. The download includes tutorials and lots of code samples, or you can jump right in using your own code. Try now!

## What's New

Feature	Benefit
<b>Latest Processor Support</b> Intel® Xeon® Processors and Intel® Xeon Phi™ coprocessors	Intel consistently offers the first set of tools to take advantage of the latest performance enhancements in the newest Intel product, while preserving compatibility with older Intel and compatible processors. New support includes Intel AVX2, TSX and FMA3.
<b>Conditional Numerical Reproducibility</b>	Overcome the inherently non-associativity characteristics of floating-point arithmetic results with new support in the Intel® Math Kernel Library, along with special Intel support for OpenMP and Intel® Threading Building Blocks.
<b>New Threading Assistant, Intel® Advisor XE</b>	Add parallelism to a threaded or an unthreaded app. Evaluate alternatives before investing in implementation. Intel® Advisor XE can assist developers in producing scalable, maintainable C, C++, C# and Fortran code.
<b>C++ Performance Guide</b>	If you're not a performance expert, you will love the new C++ Performance Guide. Quick 5 step process for more performance.
<b>Fortran and C++ Standards Support</b>	Intel Fortran supports widely used features of the F2003 standard and key parts of the 2008 standard, including co-arrays. Intel demonstrates its commitment C++11 standard support in this release.
<b>Find and Eliminate More Errors with Intel® Inspector XE</b>	Intel® Inspector XE is an efficient way to increase your application reliability to ensure performance in C, C++, C#, Fortran, Java and MPI applications. The new heap growth analysis feature is another way to look for memory leaks.
<b>Additional Profiling Data while Easier to Use</b>	Intel® VTune™ Amplifier XE is now easier to use and provides additional profiling data. Its powerful bandwidth and memory access analysis means spending less time puzzling over cryptic performance data and more time developing.
<b>Pointer Checker</b>	This new, compiler-based diagnostic tool helps you find code that accesses memory addresses beyond the allocated addresses. This helps with 'security hardening' and finding difficult memory corruption type bugs.

# Purchase Options: Language Specific Suites

Combined and single language suite editions are shown in blue. If you need MPI cluster tools, consider Intel® Cluster Studio XE. 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 <sup>3</sup>	●	●	●		●	●	
	Intel® Math Kernel Library <sup>3</sup>	●	●	●	●	●	●	●
	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 <sup>2</sup>							●
Operating System <sup>1</sup>	W, L	W, L	W, L	W, L	W, L	W, L, O	W, L, O	

Note: <sup>1</sup> Operating System: W=Windows, L= Linux, O= OSX\*. <sup>2</sup> Available in Intel® Visual Fortran Composer XE for Windows with IMSL\*

<sup>3</sup> Not available individually on OSX, it is included in Intel® C++ & Fortran Composer XE suites for OSX

## 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 and Intel® Xeon Phi™ coprocessors.
Operating Systems	Windows* and Linux*.
Development Tools and Environments	Compatible with compilers from vendors that follow platform standards (e.g., Microsoft*, GCC, Intel). Can be integrated with GNU* tools and Microsoft Visual Studio* 2008, 2010 and 2012.
Programming Languages	Natively supports C, C++ and Fortran development.
System Requirements	For details on hardware and software requirements, refer to <a href="http://www.intel.com/software/products/systemrequirements/">www.intel.com/software/products/systemrequirements/</a> .
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	Join the Intel® Support Forums community to learn, contribute, or just browse! <a href="http://software.intel.com/en-us/forums">http://software.intel.com/en-us/forums</a>



Learn more about Intel Parallel Studio XE

- Click or enter the link below:  
<http://intel.ly/parallel-studio-xe>
- Or scan the QR code on the left



Download a free 30-day evaluation

- Click or enter the link below:  
<http://intel.ly/sw-tools-eval>
- Click on 'Product Suites' link

### Optimization Notice

Notice revision #20110804

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.

