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NEW



NEW: Intel® Parallel Studio XE 2013

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Liebe Leserinnen und Leser,

Europa wächst immer weiter zusammen und auch unser Kundenkreis erweitert sich mehr und mehr in diese Richtung. Grund genug für uns mit diesem Newsletter einen neuen Weg einzuschlagen. Er ist diesmal, vom Editorial abgesehen, ganz in englischer Sprache. Da es heute im Wesentlichen um technische Details der neuen Intel-Tools geht, sollte dies kein Problem sein - es ist meist wenig sinnvoll etwa Compilerfeatures zu übersetzen.

Intel hat am 5. September neue Versionen fast aller Compiler und Tools vorgestellt. Zudem gibt es noch eine Upgradeaktion auf die immer beliebteren XE-Studios. Bitte rufen Sie uns hierzu an, die Bedingungen sind etwas kompliziert

In diesem Herbst sind wir auf zahlreichen Veranstaltungen vertreten. Besuchen Sie uns in Stuttgart, Wien, Aachen oder lernen Sie in Köln Intel Parallel Studio XE ganz praktisch kennen - auf unserm 2-tägigen Training Ende Oktober heisst es wieder einmal Hands-On.

Für heute alles Gute und viele Grüße aus Köln, Ihr

Dear readers,



Europe is growing and gets closer and closer together. As many of our customers speak English, we decided to provide this newsletter in english language.

ho-COMPUTER is in business for more than 20 years now. We are focused on high performance compilers and tools, mostly in C++ and Fortran. Since a long time we are a so called Intel Software Elite reseller providing excellent support to our customers before and after sales.

Early september Intel released Version 2013 of many compilers and XE-studios. If you use only a compiler at this time, you may now upgrade to a XE-Studio package at a heavily discounted rate - please call for details!

You will find all Intel compilers, tools and XE-Studios at shop.hocomputer.de. Our shop supports German, English and French. As a company or institution in Europe you do not have to pay by Credit Card. Try it out!

Good luck and all the best from Gemany

Harald Odendahl, General Manager
h.o.-COMPUTER Software GmbH

NEW: Intel Parallel Studio XE 2013

Intel Parallel Studio XE 2013 delivers

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.

New Features in Intel Parallel Studio XE 2013 and it's components

Performance & Scalability, Latest Standards

- Tuned for Ivy Bridge & Haswell
- Enhanced numerical reproducibility
- Threading advice – simplifies adding threading Windows* 8, new Linux* releases incl. RHEL 6.3

Intel C++ Composer 2013 Improvements

- Uses Intel AVX and Intel AVX2 instructions
- Intel Xeon Phi™ support: Compiler, debugger support (Linux)
- Intel Cilk™ Plus: Tasking and vectorization
- More C++11 support: Additional type traits, initializer lists (partial), generalized constant expressions (partial), noexcept (partial), range based for loops, conversions of lambdas to function pointers, Variadic templates, null pointer

Intel Fortran Composer 2013 Improvements

- More Performance
- Access to Intel AVX and Intel AVX2 instructions (-xa or /Qxa)
- Enhanced directives for more SIMD optimization
- Coarrays and synchronization constructs support parallel programming
- Directives to tune loop optimizations – VECTOR,

Intel VTune™ Amplifier XE 2013 Improvements

- More Profiling Data - Statistical Call Counts (better data for inlining and Parallelization decisions), Hardware Events with Stacks, Uncore Event Counting (more accurate bandwidth analysis), supports Ivy Bridge, Haswell & Intel Xeon Phi™ Coprocessors by hardware events

- MPI 2.2, OpenMP 3.5
- Key elements of C++11, Fortran 2008
- Optimized compilers and performance libraries
- Intel Xeon Phi™ coprocessor support

constant, template aliases, late-specified return types, default template arguments for function templates, char16_t and char32_t types, new-style SFINAE (Substitution Failure Is Not An Error), standard attributes

- Productivity aids : C++ Performance Guide (requires VTune) - Windows, More improvements to MSFT C++ and GCC compatibility

PARALLEL, SIMD

- More control over array data alignment (align arrayNbytes)
- More Fortran standards support: ATOMIC_DEFINE and ATOMIC_REF, initialization of polymorphic INTENT(OUT) dummy arguments, standard handling of G format and of printing the value zero

- Easier To Use - Source View for In-lined Code, faster results finalization, Task Annotation API (Label and visualize tasks), User Defined Metrics (meaningful metrics from events), Java Tuning (results map to the Java source), More/Better Advanced Profiles



It's all about...

..... Performance



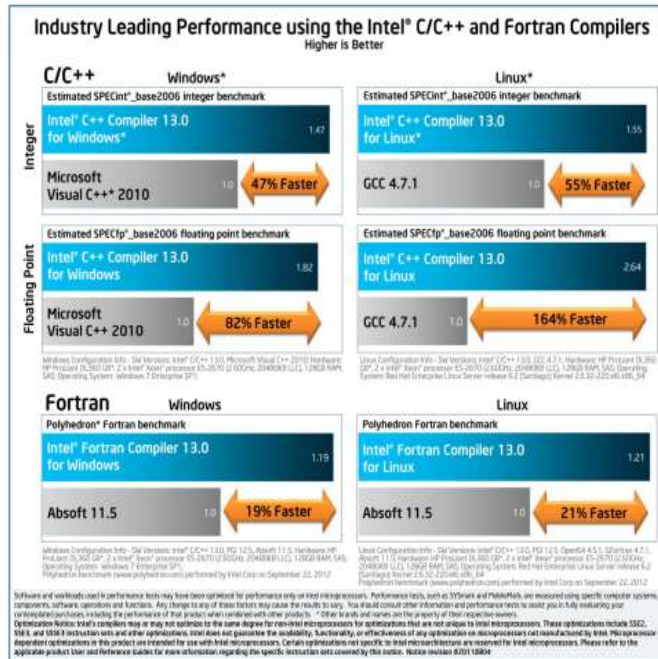
Intel® Parallel Studio XE 2013

LEADING DEVELOPMENT SUITE FOR APPLICATION PERFORMANCE

*Special Upgrades to Studio XE are available at a huge discount
Call for details: +49/221/762086



Boost Performance Today, Great Performance Tomorrow



row

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

- Intel C, C++ and Fortran 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



Intel Advisor XE Threading Assistant

Included in all Intel XE-Studios



- Add parallelism to a threaded or unthreaded application

- Evaluate alternatives before investing in implementation
- C/C++, C#, Fortran, Windows and Linux



Included in all Intel XE- Studios:

Intel® VTune™ Amplifier XE 2013

PERFORMANCE AND THREAD PROFILER



Top Features

/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

Hotspot analysis gives you a sorted list of the functions using a lot of CPU time. Click [+]
for the call stacks. Double click to see the source.

Line	Source	CPU Time
579	cur = g->cells[voxindex];	0.204s
580	while (cur != NULL) {	0.048s
581	if (ry->mbox[cur->obj->id] != 0)	1.611s
582	ry->mbox[cur->obj->id] = ry->	1.025s
583	cur->obj->methods->intersect	1.098s

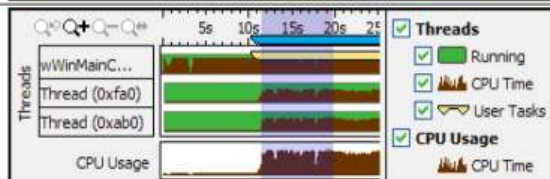
See the Results on Your Source

A double click from the function list takes you to the hottest spot in the function.

/Sync Object /Function /Call Stack	Wait Time	Wait Count
Manual Reset Event 0xbe5a38e	36.070s	2
GdipCreateSolidFill	36.070s	1
video::~video	0.000s	1
Multiple Objects	20.966s	515

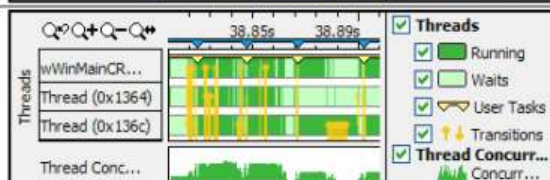
Tune Threading with Locks and Waits Analysis

Quickly find a common cause of slow performance in parallel programs: waiting too long
on a lock while the cores are underutilized during the wait. Profiles like hotspot and
locks & waits use a software collector that works on both Intel and compatible
processors.



Mine the Data with Timeline Filtering

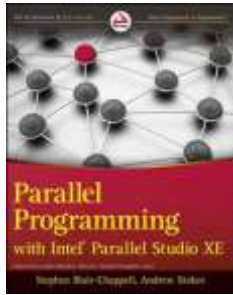
Select a time range in the timeline to filter out data (e.g., application startup) that masks
the information you need. When you select and filter in the timeline, the grid that lists
functions using a lot of CPU time updates to show the list filtered for the selected time.



Visualize Thread Behavior

See when threads are running and waiting, and when transitions occur. Balance
workloads.

ho-COMPUTER / Intel Workshop & Training - Cologne, October 23 & 24



How to produce safe, fast, parallel code with Intel Parallel Studio XE

In this two-day hands-on training with Stephen Blair-Chappell, the author of the book Parallel Programming with Intel Parallel Studio XE, you will learn how to:

- Use Intel Parallel Studio XE to create a parallel application, using the classic four step methodology (Analyze, Implement, Debug, Tune)
- Produce optimised code that is both parallel and vectorised
- Use the Intel compiler's reporting features to help fine tune your code

- Create applications that are safe to run on both Intel and non-Intel CPUs
- Use VTune Amplifier XE to see how well your application is utilizing the CPU

The programming language used will be C\C++ but much of the learning can be applied to Fortran also.

On the first morning you will get an overview about the new version 2013 of the Intel Software tools. Intel Notebooks will be provided for the course, but you can also bring your own Laptop.



Participation is free but seats are limited, so please apply early at <http://hocomputer.de/et>.

Available Intel Software Products - Overview

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	W, L, O	W, L, O

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

³ Not available individually on OSX, it is included in Intel* C++ & Fortran Composer XE suites for OSX.

This fall ho-COMPUTER will sponsor several events. Conference language is always English. Links are provided at <http://events.hocomputer.de>

We will be present at all the events listed and we are happy to meet you there! In Stuttgart and Vienna you can win a notebook or tablet PC!

Facing the Multicore-Challenge, Sept. 19-21, Stuttgart

The prevalence of multicore and manycore technologies has brought ubiquitous parallelism and a huge theoretical potential for compute-intensive tasks. In

theory, advancements in technology bring us closer to the solution of the Grand Challenges in modern computing. In practice however, it is hard to achieve maximal throughput in the results and to exploit all available capabilities.

Due to the inevitable paradigm shift towards multicore technologies, parallelism is now affecting all kinds of software development processes – from large-scale numerical simulation to desktop com-



The annual meeting has a long, rich tradition, and the 19th European MPI Users' Group Meeting will again be a lively forum for discussion of everything related to usage and implementation of MPI and other parallel programming interfaces. Traditionally, the meeting has focused on the efficient implementation of aspects of MPI, typically on high-performance computing platforms, benchmarking and tools for MPI, short-comings and extensions of MPI, parallel I/O and fault tolerance, as well as parallel applications using MPI.



September 23 - 26, Vienna, Austria

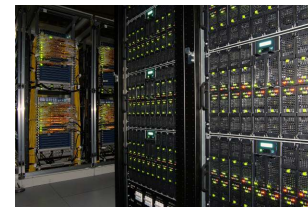
EuroMPI is the preeminent meeting for users, developers and researchers to interact and discuss new developments and applications of message-passing parallel computing, in particular in and related to the Message Passing Interface (MPI).

October 8 - 10, RWTH Aachen

The number of cores per processor chip is increasing. Today's "fat" compute nodes are equipped with up to 16 eight-core Intel® Xeon™ processors, resulting in 128 physical cores, with up to 2 TB of main memory. Furthermore, special solutions like a ScaleMP vSMP system may consist of 16 nodes with 4 eight-core Intel® Xeon™ processors each and 4 TB of accumulated main memory, scaling the number of cores even further up to 1024 per machine.



This tuning workshop will in detail cover tools and methods to program big SMP systems. The first day will focus on OpenMP programming on big NUMA systems, the second day will focus on Intel Performance Tools as well as the ScaleMP machine, and the third day will focus on Hybrid Parallelization.



Special Pricelist - Fall 2012

All prices are in Euro and subject to 19% German VAT (if applicable) and are valid till end of September 2012.

Price increase reserved, for example due to exchange rate changes.

Find out more at <http://shop.hocomputer.de>

Intel Tool	NEW, commercial Windows / Linux	UPGRADE*, com. Windows / Linux	NEW, Academic Windows / Linux	UPGRADE*, Acad. Windows / Linux
Parallel Studio XE - SU 2 User Floating 5 User Floating	1890 / 1890 9550 / 9550 18990 / 18990	1490 / 1490 7590 / 7590 15290 / 15290	950 / 950 4790 / 4790 9550 / 9550	780 / 780 3790 / 3790 7590 / 7590
Fortran Studio XE - SU 2 User Floating 5 User Floating	1550 / 1550 7890 / 7890 15790 / 15790	1290 / 1290 6320 / 6320 12650 / 12650	780 / 780 3950 / 3950 7890 / 7890	689 / 689 3160 / 3160 6330 / 6330
C++ Studio XE - SU 2 User Floating 5 User Floating	1290 / 1290 6650 / 6650 13290 / 13290	1080 / 1080 5330 / 5330 10590 / 10590	650 / 650 3290 / 3290 6650 / 6650	540 / 540 2660 / 2660 5330 / 5330
Cluster Studio XE - SU 2 User Floating 5 User Floating	2450 / 2450 12190 / 12190 24490 / 24490	1990 / 1990 9790 / 9790 19500 / 19500	1240 / 1240 6090 / 6090 12190 / 12190	990 / 990 4890 / 4890 9790 / 9790
Composer XE - SU 2 User Floating 5 User Floating	990 / 1199 3490 / 4240 7490 / 8990	- n / a -	399 / 490 1399 / 1699 3230 / 3620	- n / a -
Fortran Comp. XE - SU 2 User Floating 5 User Floating	699 / 799 2490 / 2890 5290 / 6240	*Special Upgrades to Studio XE are available at a huge discount Call for details: +49/221/762086	329 / 369 1090 / 1320 2390 / 2790	- n / a -
C++ Comp. XE - SU 2 User Floating 5 User Floating	579 / 579 2040 / 2040 4350 / 4350		199 / 199 699 / 699 1540 / 1540	- n / a -

SU: single user = 1 named user, one (physical) person only may use the software.

2/5 User Floating = 2/5 user out of a group or network can use the software at one time (uses FlexLM).

NEW = new licence. UPGRADES from Intel Composer with valid Intel Premier Support to Studio XE. Call for special upgrades!

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