



PERFORMANCE PROFILER

Intel® VTune™ Amplifier XE

Product Brief

Intel® VTune™ Amplifier XE
Performance Profiler



Optimize Performance and Multicore Scalability

Is your software sluggish? Are you not seeing the performance scaling you expected on multicore processors? How do you diagnose the cause of poor performance and find a solution?

Intel® VTune™ Amplifier XE is our newest performance profiler that builds on the success of Intel® VTune™ Performance Analyzer. It includes all the capabilities of Intel® Parallel Amplifier plus a number of advanced capabilities for developers needing to dig deeper.

- **Accurate performance data**—Without data you are just guessing about the location of the performance bottleneck and can easily waste a lot of time.
- **Easy setup**—We've added a number of pre-defined performance profiling experiments to the full custom capabilities of earlier versions of Intel VTune analyzer. This makes it easier to get great profiling information without needing to know microarchitectural details.
- **Powerful profile analysis**—Getting good profiling data is only the first step. We've added a number of features like the timeline, filtering, and frame analysis to help turn that data into actionable information.
- **Tune threaded and non-threaded code**—Identify the threads and synchronization objects that impact performance. See the distribution of work to threads and pinpoint load imbalances.
- **Low overhead**—Collecting data always has a cost. Intel VTune Amplifier XE keeps the overhead low, making data collection faster and the results more accurate.
- **Normal production build**—Use a production build with symbols from your normal compiler or assembler. No special builds are required.
- **C++, Fortran, assembly, and more**—Use compilers from any vendor (Microsoft*, GCC, Intel) that follow platform standards.
- **Intel® processors and non-Intel® processors**—Many of the profiling features work on both genuine Intel® processors and compatible processors. Some features, which use the on-chip performance monitoring unit, require a genuine Intel® processor for data collection, but the results can be saved and analyzed on any compatible processor.
- **Windows* or Linux*, 32 bit and 64 bit**—Both Windows and Linux versions are available. Windows 7, Vista, XP, Windows Server, RHEL, Fedora, and Suse. See the [release notes](#) for details.
- **Windows: Microsoft Visual Studio 2005*, 2008*, and 2010* Integration**—Integrate performance analysis into the Microsoft Visual Studio environment or run standalone.
- **Linux: No root privileges required**—Root privileges are not required for basic performance analysis. Installation of the driver for event-based sampling (EBS) requires root access, but it can be done later if needed.

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Concurrency - View hotspots colored by thread concurrency

Hotspots - View CPU time hotspots and stacks

Locks and Waits - Locks and Waits

Optimize Performance and Multicore Scalability

Concurrency - Where are the cores underutilized?

- Color shows # of cores utilized
- Click [+] to view call stacks

Function	CPU Time	Legend
GenerateScanLine	1.655s	Idle
DO_BookToPrimary	0.547s	Poor
Paint - Generate_Display - BaseThreadStart	0.547s	Ok
DO_Int	0.031s	Ok
Paint	0.016s	Ideal

Easy EBS setup with pre-defined analyses

- Hardware Event Based Sampling (EBS) is very low overhead
- EBS finds tuning opportunities like cache misses

(Sample analysis types shown. Analysis availability varies by processor model.)

- Bandwidth
- Bandwidth Breakdown
- Cycles and uOps
- General Exploration
- Memory Access

Easy profiling of remote systems

Local System Graphical Interface ↔ Remote System Command line

- Copy command line
- Copy results file

- Lightweight collector gathers data on remote system
- Analyze results locally in the graphical interface

Purchase Options

The Intel VTune Amplifier XE performance profiler is available as a part of an Intel® Parallel Studio XE bundle that adds optimizing compilers, performance libraries, threading libraries, and a memory and thread checker. It is also available separately. Both single-user and floating licenses are available. Volume, academic, and student discounts are also available.

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.

Hotspot - Where is the app spending time?

- Find performance bottlenecks
- Functions sorted by amount of CPU time

Function - Call Stack	CPU Time	Module
algorithm_2	3.560s	matrix.exe
algorithm_1	1.412s	matrix.exe
BaseThreadInitThunk	0.000s	kernel32.dll
main	0s	matrix.exe

Profiling made easy

- View results on your source and assembly
- No special compiles - use release build with symbols

Line	Source	CPU Time
180	int ik = i*N + k;	
181	int kj = k*N + j;	
182	c2 [i,j] += a [i,k] * b [k,j];	3.458s

Visualize thread activity

- Threading Timeline Shows CPU Utilization and EBS event data
- See where threads do not keep the CPU busy.

Turn raw data into useful information

- Eliminate extraneous data - Filter profile results using the timeline

More Information

Visit our website at www.intel.com/software/products for details about our entire line of products.

For more information about Intel® VTune™ Amplifier XE, including how-to videos, visit www.intel.com/software/products/vtune.

Download a trial version of Intel VTune Amplifier XE today.

www.intel.com/software/products/eval

