

Intel® Parallel Amplifier Release Notes

Installation Guide and Release Notes

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1 Introduction

The Intel(R) Parallel Amplifier provides an integrated performance analysis and tuning environment with graphical user interface that helps you analyze code performance on systems with IA-32 or Intel(R) 64 architectures.

This document provides system requirements, installation instructions, issues and limitations, and legal information.

To learn more about this product, see:

- Documentation listed at `<install-dir>\documentation\<locale>\documentation_amplifier.htm`.
- Technical support, including answers to questions not addressed in the installed product. Visit the technical support forum at: <http://software.intel.com/sites/support/>

Please remember to register your product at <https://registrationcenter.intel.com/> by providing your email address. This helps Intel recognize you as a valued customer in the support forum.

2 What's New

Update 2:

- Now Microsoft Windows 7* is supported.
- Several minor bugs were fixed.

Update 1:

- Added a command line interface for regression analysis. Now you can automate tests you want to run frequently. (see "About the Intel® Parallel Amplifier Command-line Interface" in the Visual Studio* integrated help)
- Better performance. Collection is faster and results finalization is faster.
- CPU time accuracy is improved for applications with short scheduler time slices.
- New data collection options, including limiting the size of the data collected.
- Compare results can now open the source view.
- Several minor bugs were fixed.

3 System Requirements

For an explanation of architecture names, see <http://software.intel.com/en-us/articles/intel-architecture-platform-terminology/>

- A PC based on an IA-32 or Intel® 64 architecture processor supporting the Intel® Streaming SIMD Extensions 2 (Intel® SSE2) instructions (Intel® Pentium 4 processor or later, or compatible non-Intel processor)
 - Incompatible or proprietary instructions in non-Intel processors may cause the analysis capabilities of this product to function incorrectly. Any attempt to analyze code not supported by Intel® processors may lead to failures in this product.
 - For the best experience, a multi-core or multi-processor system is recommended
- 2GB RAM
- 4GB free disk space for all product features and architectures
- Microsoft Windows XP*, Microsoft Windows Vista*, Microsoft Windows 7*, Microsoft Windows Server 2003* or Microsoft Windows Server 2008*, 32-bit or "x64" editions (embedded editions not supported)

- Microsoft Visual Studio 2005* or 2008* Standard Edition (or higher edition) with C++ component installed [1]
- Application coding requirements:
 - Programming Language: C or C++ (native, not managed code)
 - Threading methodologies supported by the analysis tools:
 - OpenMP*[1]
 - Intel's C/C++ Parallel Language Extensions
 - Intel® Threading Building Blocks
 - Win32* Threads
- To read the on-disk documentation, Adobe Reader* 7.0 or later

Notes:

1. Intel® Parallel Amplifier supports analysis of applications built with Intel® Parallel Composer, Intel® C++ Compiler Professional Edition version 10.0 or higher, and/or Microsoft Visual C++ 2005 or 2008. Applications that use OpenMP and are built with the Microsoft compiler must link to the OpenMP “compatibility library” as supplied by an Intel compiler.

4 Installation Notes

If you are installing the product for the first time, please be sure to have the product serial number available so you can type it in during installation. A valid license is required for installation and use.

To begin installation, do one of the following:

- If you received your product as a downloadable file, double-click on the executable file (.EXE) to begin installation. If several different downloadable files are available (such as for different components), please read the download web page carefully to determine which file is appropriate for you.
- If you received your product on CD-ROM media, insert the first product CD in your computer's CD-ROM drive; the installation should start automatically. If it does not, open the top-level folder of the CD-ROM drive in Windows Explorer and double-click on setup.exe.

Default Installation Folders

The default top-level installation directory `<install-dir>` for this product is:

- `C:\Program Files\Intel\Parallel Studio\Amplifier`

If you are installing on a system with a non-English language version of Windows, the name of the `Program Files` folder may be different. On Intel® 64 architecture systems, the folder name is `Program Files (X86)` or the equivalent.

Changing, Updating and Removing the Product

If you want to add or remove components from an installation, open the Control Panel and select the Add/Remove Programs applet, select “Intel® Parallel Amplifier” and click **Change**. To remove the product, select **Remove** instead of **Change**.

Known Installation and Configuration Issues

5 Issues and Limitations

Known Issues and Limitations

- **Parallel Amplifier may cause conflicts with anti-virus software** (200051942)
 - The collection technology used by Intel Parallel Amplifier can cause conflicts with anti-virus software which detect process memory modifications, for example, McAfee* VirusScan* Enterprise Workstation. The workaround is to rename the executable to be profiled.
- **Installation doesn't check available space before installing the product** (200052860)
 - Product installation doesn't check the available disk space during installation and provides unclear error message when installation fails because of lack of free disk space. Workaround for this issue is to ensure that you have at least 750 MB of free space on the drive where you intend to install the product.
- **GUI may not be responsive when filtering results** (200052892)
 - When filtering large results, changing the filtering selection can take some time to process. This problem may cause the GUI to appear to hang.
- **Wrong concurrency values on thread pool applications** (200107465)
 - When collecting data in Hotspots and Concurrency analysis types, Intel Parallel Amplifier creates additional threads in the process being profiled. In certain cases the overhead of creation of these threads can be recognized by Windows thread pool scheduler as I/O activity of the worker thread. This can lead to having more threads in the pool when running under collector than without it.
 - A user-visible impact is that concurrency values can be slightly different from the ones observed in Locks/Waits analysis.
- **Data distribution by functions may look incorrect when PDB for a DLL is not found** (200107776)
 - When a PDB file is missing for a particular dynamic library, Intel Parallel Amplifier tries to attribute the symbolic information using library export table symbols. The

size of the symbols is approximated as distance between neighbour export symbols and data which fall into this range is attributed to the previous export symbol.

- In most cases, the calculated size is larger than real size and data distribution may look incorrect when grouping by functions. A workaround for this issue is to provide debugging information for the modules.
- **Recursion representation in Grid and Call Tree (200107777)**
 - Intel Parallel Amplifier doesn't try to collapse recursive elements in the call chains. This behavior is by design.
- **Cannot show creation callsite for object from DllMain of implicitly linked DLLs (200107895)**
 - Due to collection technology limitations, Intel Parallel Amplifier cannot currently capture creation of synchronization objects in DllMain functions of dynamic libraries
- **Object type can't be determined sometimes (displayed as of None type in GUI) (200107896)**
 - Intel Parallel Amplifier determines types of synchronization objects by the API used to create the object - CreateMutex for mutexes, CreateEvent for events and so on. When existing objects are reused by name (Open* API) the type can also be determined. But when existing object is reused by handle by passing this handle from parent process to child process and specifying the inherit handles flag, the product is not able to determine the object type and will display None type for this object.
- **Can't profile application with big reserved and committed stack size (200108571)**
 - There may be product crashes observed when the profiled application has big reserved and committed thread stack size (/STACK:reserve[,commit] command line switch of link.exe). An indication of this problem is the following error message in Intel Parallel Amplifier output window during the data collection - "Error: failed to create a sampling thread: Not enough storage is available to process this command"
 - The workaround for this problem is reducing the reserved/committed thread stack size to profile application
- **Using Intel Parallel Amplifier and Intellisense can hang Microsoft Visual Studio occasionally (200108578)**
 - The issue is very rare to reproduce
- **Resolved names for export thunks should have modified names (200108678)**
 - When a function is called into a dynamic library, compiler/linker insert into the caller module a short auxiliary code sequence used to resolve the address of the callee function dynamically. During Hotspots and Concurrency analysis a small portion of time indicated as running can occur on these code sequences. Currently the addresses of these code regions are resolved to the name of the

function being called. This can confusingly look like a function being displayed in a wrong module.

- **Results not collected for processes terminated with TerminateProcess()** (200108689)
 - No results are displayed for any process being profiled that is terminated by a different process calling TerminateProcess(). Instead, a different method should be used to terminate the process.
- **GUI doesn't allow changing of fonts** (200109518)
 - User interface fonts cannot be changed by user.
- **Unable to profile applications with copy-protection system** (200004946)
 - Parallel Amplifier does not support profiling applications utilizing copy-protection systems such as SecuROM* (<http://www.securom.com/default.asp>)
- **Not enough samples collected in the Hotspot analysis** (200109925)
 - Hotspot analysis of some applications which perform intermittent calculations, e.g. frame-by-frame computation like video decoders, may result little data collected during even long time of execution.
- **Intel® Parallel Amplifier adds time/overhead when floating-point code operates on uninitialized data** (200111363)
 - Microsoft* Windows* normally zeros the stack segment before launching user applications. Intel® Parallel Amplifier uses the stack before launching a user program; this action may expose problems in the user code that could have a serious performance impact. Arrays allocated on the stack may now contain data that result in time-consuming exceptions when processed by floating-point instructions. If you find your program running much slower under Intel Parallel Amplifier, double-check that all the arrays and variables are used in your application after they are initialized. One way to check for this is to use Intel Parallel Inspector memory error analysis (use Level 2 on code compiled without the /RTC[1|s] options)
- **Stack information may be incorrect when PDB for a DLL is not found** (200005927)
 - When a PDB file is missing for a particular dynamic library on Intel 32 architecture, Intel Parallel Amplifier tries to unwind the stack using various heuristics. However if application code is optimized and does not use EBP based frame pointers stack unwinding without PDB may fail. A workaround for this issue is to provide debugging information for the modules. Please refer to documentation how to get PDBs for Windows* system DLLs.
- **A comma in the path of VS project name prevents Parallel Amplifier collection** (200006393)
 - Simple work-around would be to eliminate commas from the path.
- **Can't open source view when Sync Object Name - Wait Thread -Wait Function – Bottom-up Tree grouping mode is selected** (200006489)

- The problem is specific for Locks and Waits analysis only. All other types of analysis and grouping modes have no such problems.
- **Assembly view may incorrectly display system functions (200006762)**
 - The assembly view may incorrectly display some system library functions because of incomplete symbol information. This happens most often when PDB files are downloaded from the Microsoft* symbol server. There is no workaround at this time.
- **Opening multiple results simultaneously can cause a crash (200007152)**
 - In very rare circumstances, selecting multiple Parallel Amplifier results in the Solution Explorer and opening them simultaneously can cause Microsoft* Visual Studio* to crash.
- **Intel(R) Parallel Amplifier does not support collecting data on shared network drives (200007160)**
 - If profiling projects which located on shared network drive, you will receive the warning message: "Analysis of read-only project". The dialog window will propose the alternative location for collecting data of analysis.
- **Collection hangs when using Print Preview or Print Setup commands on 64-bit Windows Vista* (200007199)**
 - Collection never ends when using Windows application's Print Preview or Print Setup commands on 64-bit Vista. In this case, close the collection window and start the collection again.
- **DirectX applications may cause system crash when profiled (200007634)**
 - Parallel Amplifier may crash the system when profiling DirectX applications if the graphics card driver does not have unwind information.
- **Parallel Amplifier does not currently support solutions containing more than one start-up project. (200007728)**
 - When a solution is configured with multiple start-up projects, Parallel Amplifier will randomly select a project to launch when the "Profile" button is pressed. The only workaround is to reconfigure the solution to have one start-up project – the project that Parallel Amplifier should launch.
- **Stacks include unexpected functions (200008043)**
 - Occasionally, system functions may appear in a call stack where they are not expected. In particular, GetLastError and TlsGetValue may be shown as being called from EnterCriticalSection (or other functions) when the "Assign system function time to calling user function if available" option is turned off. These calls can be ignored and are the result of Parallel Amplifier's preserving of the thread's state during its own processing.
- **Amplifier is not able to properly profile applications with dynamic-generated code (200135763)**

- If dynamically-generated code is an application's hotspot or it resides on the stack, Parallel Amplifier may fail to unwind the stack and [Unknown] frames will appear in the top-down and bottom-up trees. No workaround is known so far.
- **Error in compiler can cause collection to fail (200083206)**
 - An error in the Intel Fortran compiler, versions 10.1 to 11.1, can cause Parallel Amplifier collection to fail. The compiler incorrectly stores some global variables in the thread information block (TIB) which causes Parallel Amplifier to detect an error condition and abort. Currently, there is no workaround.
- **Slow Performance of Data Finalization (200083651)**
 - Anti-virus software can interfere with Parallel Amplifier's data finalization technology and overload the I/O system. You can disable the anti-virus software during finalization, at your own risk, which may improve performance.
- **An application which allocates massive chunks of memory may fail to work under Amplifier (200083850)**
 - If 32-bit application allocates massive chunks of memory (close to 2 GB) in the heap, it may fail to launch under Amplifier while running fine by its own. This happens because Amplifier requires additional memory in the profiled application process for doing the analysis. The workaround could be in using larger address space (e.g. converting the project to 64-bit).
- **Results lost when console application under profile is closed using system Close button [x] (200084121)**
 - Sometimes, if profiling is started on a console application and the app is closed by pressing the system Close button [x] in the console's caption bar, Parallel Amplifier will not save any results. The workaround is to use the "Stop" button of Parallel Amplifier to close the application and stop data collection.
- **Parallel Amplifier may fail due to out of memory problem (200084367)**
 - On large applications with a lot of modules, Parallel Amplifier may fail to open results or re-finalize results due to memory consumption problems. To workaround these problems, try to restart Microsoft Visual Studio* or open results in a separate instance of Visual Studio.
 - Another possible workaround is to increase memory allowed for applications in Microsoft Windows*. To do that, follow these instructions:
 - 1. Increase virtual address space available for user using the following command:
 - C:\> BCDEdit /set increaseuserva Megabytes
 - On Windows Server 2003 and earlier: To enable 4GT, add the /3GB switch to the Boot.ini file. The /3GB switch is supported on the following systems:
 - * Windows Server 2003
 - * Windows XP Professional
 - * Windows 2000 Datacenter Server
 - * Windows 2000 Advanced Server
 - 2. Modify the Visual Studio executable image header to allow large address space support:

- C:\>editbin.exe /LARGEADDRESSAWARE devenv.exe
 - For Visual Studio 2005, the file is located at "C:\Program Files\Microsoft Visual Studio 8\Common7\IDE\devenv.exe."
- For more information, please see <http://msdn.microsoft.com/en-us/library/bb613473%28VS.85%29.aspx> and <http://msdn.microsoft.com/en-us/library/aa366912%28VS.85%29.aspx>
- **Matching values in results between command line and GUI (200138658)**
 - When viewing results collected from the command line in the GUI, the button 'Assign system function time to calling user function if available' should be 'OFF' for consistency with the command line report output.

6 Attributions

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/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.3, July 18th, 2005

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