

Intel® VTune™ Amplifier XE 2013 Release Notes for Linux* OS

Installation Guide and Release Notes

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1 Performance Profiling with Intel VTune Amplifier XE

Please visit our [web site](#) for training videos, technical articles, documentation and support.

2 What's New

Update 16 - **Recommended**

- Graphical interface for remote data collection on Linux* systems via SSH
- Simplified User API collection setting for native analysis on the Intel® Xeon Phi™ coprocessor
- Grouping options in Timeline pane
- Event reference help for Intel microarchitecture code name Haswell and Intel® Xeon Phi™ coprocessor (code name: Knights Corner)
- Collection data limit option supported for hardware event-based analysis types
- Usability improvements for the structure of hardware event-based sampling analysis types to introduce cross-CPU basic configurations and separate advanced CPU-specific analysis configurations
- Search functionality for the grid views added to the toolbar

- Support for external data collection launched from the VTune Amplifier with the Custom collector target configuration option or-custom-collector command line option.
- An option in the graphical and command line interface to import a csv file with the externally collected data into an existing VTune Amplifier result. Importing a csv file does not affect symbol resolution in the existing result.
- Support for importing a csv file that does not specify a hostname for the target system but contains time stamps represented in the UTC format. In this case, the VTune Amplifier displays global data (not attributed to specific threads/processes) only.
- Single HTML help format across Linux* and Windows*.
- Fedora* 20 support
- Bug fixes

Update 15 - **Optional** update unless you need the new features listed below:

- Ability to change the focus function from the Caller/Callee panes
- Ability to collapse recursive functions in the Call Stack pane
- Improved Frame Rate Histogram representation per frame domain in the Summary window
- Automatic positioning of the hottest line in the Source/Assembly window after drilling down from the grid
- Support for importing global discrete counters collected externally

Update 14:

- Standalone interface improved to provide more workspace for the analysis results
- Ability to cache source files and explore collected performance statistics later even if the source file has been changed
- Ability to show kernel stacks as continuation of user stacks
- Support for Intel(R) microarchitecture code named Silvermont
- Support for Intel(R) Xeon(R) E5-2600 v2 & E5-1600 v2 processors based on the Intel microarchitecture code name IvyBridge-EP
- Simplified syntax for searching binary and symbol files with the `--search-dir` and `source-search-dir` command line options

Update 13:

- Support for ITT pause/resume APIs on the Intel® Xeon Phi™ coprocessor
- Support for adding external collection data (in the CSV format with a predefined structure) to the VTune Amplifier analysis result collected in parallel with external statistics.
- SSH-based remote collection via `amplxe-cl`
- Debian 7.1, SLES 11 SP3 support
- Bug fixes

Update 12:

- Fedora* 19 support
- Graphical User Interface (GUI) install (via special install script)
- Bug fixes

Update 11:

- Support for scientific data representation in the grid

- Source Function Stack grouping level enabling more accurate result comparison in the Top-down Tree pane
- Change Stack Layout option in the Top-down Tree and Bottom-up panes to switch between chain and tree types of stack layout
- Support for identifying function boundaries using static binary analysis methods for binaries without symbol information
- Bug fixes

Update 10:

- Bug fixes

Update 9:

- Source and assembly data available in the command line reports
- Advanced Hotspots analysis (formerly, Lightweight Hotspots) introducing several collection levels
- Total metric for flat groupings in the Source/Assembly panes
- Overhead and Spin time classification for GCC* runtime
- Top-Down performance analysis methodology in General Exploration analysis type for the 4th generation Intel® Core™ processors based on the Intel microarchitecture code name Haswell
- Bug fixes

Update 8:

- Bug fixes for upcoming 4th generation Intel® Core™ processors based on the Intel microarchitecture code name Haswell

Update 7:

- Assembly grouping by RVA, basic blocks, and function ranges
- Support for applications generated by MinGW/Cygwin GCC*

- Event summary for hardware event-based sampling analysis results in the command line reports
- Highlighting performance issues based on filtered-in data
- Bug fixes

For more detailed information on the new capabilities, please visit our VTune Amplifier XE product page:

<http://software.intel.com/en-us/intel-vtune-amplifier-xe#pid-15465-910>

Search for the technical article titled: “What’s New? Update 7 – Intel® VTune™ Amplifier XE 2013”.

Update 6:

- Caller/Callee window enabling the detailed analysis of the parent and child functions for a particular focus function
- Optimized welcome page providing direct access to analysis configurations and recent analysis results
- Separate configuration tabs for Binary/Symbol Search and Source Search
- Context help for hardware events and performance metrics columns in the grid
- Overhead and Spin time metrics in the grid and Timeline pane
- Time scale configuration (Elapsed time, OS timestamp, and CPU timestamp options) for the Timeline pane
- Fedora* 18 and Red Hat* Enterprise Linux* 6.4 support
- Bug fixes

Update 5:

- User API support on the Intel® Xeon Phi™ coprocessor
- Support of Hotspots, General Exploration and Bandwidth viewpoints for upcoming 4th generation Intel® Core™ processors based on the Intel microarchitecture code name Haswell

- Bug fixes

Update 4:

- Support for upcoming 4th generation Intel® Core™ processors, codenamed Haswell, including Lightweight Hotspots, General Exploration and Bandwidth analysis
- General Exploration analysis for the Intel® Xeon Phi™ coprocessor
- General Exploration viewpoint for Intel microarchitecture code named Ivy Bridge
- Frame analysis for OpenMP parallel regions
- Attaching to Java* processes for hardware event-based sampling analysis types
- CPU utilization data in the Hotspots viewpoint for event-based sampling analysis results
- Event-based sampling analysis for OpenCL* applications on the Intel® Xeon Phi™ coprocessor (JIT collection)
- Usability improvements in the Timeline view, including sorting and separate band height set up
- Ubuntu* 12.10 support
- Bug fixes

Update 3:

- Loop Mode switch in the filter bar to view a hierarchy of the loops in application call tree
- Support for multiple domains for `__itt_frame_*` API to mark up program code into regions with any number of domains
- Better stack quality for applications that use Java or Intel® Math Kernel Library (Intel® MKL) (offline stack walk is the default method now)
- Bug fixes

Update 2:

- Improved support for the Intel® Xeon Phi™ coprocessor (codename: Knights Corner), including automated install of hardware event-based sampling collector on the coprocessor card(s), predefined Memory Bandwidth analysis within the coprocessor card and getting started guide "Finding Hotspots" tutorial.
- Search functionality in all grid panes, including Bottom-up, Top-down Tree and Source/Assembler views.
- Expanded Analysis Type tree for the current CPU
- Self-contained command line generation from GUI referencing low-level collection options
- Bug fixes

Update 1:

- Bug fixes

Intel® VTune™ Amplifier XE 2013

- Support for new processors: 3rd Generation Intel® Core™ processors (formerly code named Ivy Bridge) and Intel® Xeon® processor E5-XXXX (formerly code named Sandy Bridge-EP), including General Exploration and Bandwidth analysis.
- Support for platforms based on Intel® Xeon Phi™ coprocessor (codename: Knights Corner), including timeline correlation for results collected from multiple coprocessor cards.
- Task analysis support for all collections via APIs.
- Java* support, including drill-down to source code.
- Power analysis for Linux systems based on Intel® Xeon® processors. Supported only with Linux kernel version 2.6.32 and later.
- Hardware event-based sampling analysis with stacks, supported with Linux kernel version 2.6.32 and later.
- User-defined performance metrics.
- Improved call tree analysis, including statistical call count data collection and call tree command line reports.

- Usability improvements and bug fixes.

3 System Requirements

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

Processor requirements

- For general operations with user interface and all data collection except Hardware event-based sampling analysis
 - 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).
 - For the best experience, a multi-core or multi-processor system is recommended.
 - Because the VTune Amplifier XE requires specific knowledge of assembly-level instructions, its analysis may not operate correctly if a program contains non-Intel instructions. In this case, run the analysis with a target executable that contains only Intel® instructions. After you finish using the VTune Amplifier XE, you can use the assembler code or optimizing compiler options that provide the non-Intel instructions.
- For Hardware event-based sampling analysis (EBS)
 - EBS analysis makes use of the on-chip Performance Monitoring Unit (PMU) and requires a genuine Intel processor for collection. EBS analysis is supported on Intel® Pentium® M, Intel® Core™ microarchitecture and newer processors (for more precise details, see the list below).
 - EBS analysis is not supported on the Intel Pentium 4 processor family (Intel® NetBurst® MicroArchitecture) and non-Intel processors.
 - However, the results collected with EBS can be analyzed using any system meeting the less restrictive general operation requirements.
 - EBS analysis within a virtual machine is supported only in VMware Fusion* 5 virtual environment. EBS is not supported within other virtual machine environments.
- The list of supported processors is constantly being extended. Here is a partial list of processors where the EBS analysis is enabled:

Mobile processors

Intel® Atom™ Processor

Intel® Core™ i7 Mobile Processor Extreme Edition (including 2nd, 3rd and 4th Generation

Intel® Core™ processors)

Intel® Core™ i7, i5, i3 Mobile Processors (including 2nd, 3rd and 4th Generation Intel® Core™ processors)

Intel® Core™2 Extreme Mobile Processor

Intel® Core™2 Quad Mobile Processor

Intel® Core™2 Duo Mobile Processor

Intel® Pentium® Mobile Processor

Desktop processors

Intel® Atom™ Processor

Intel® Core™ i7 Desktop Processor Extreme Edition (including 2nd, 3rd and 4th Generation Intel® Core™ processors)

Intel® Core™ i7, i5, i3 Desktop Processors (including 2nd, 3rd and 4th Generation Intel® Core™ processors)

Intel® Core™2 Quad Desktop Processor

Intel® Core™2 Extreme Desktop Processor

Intel® Core™2 Duo Desktop Processor

Server and workstation processors

Intel® Xeon® processors E7 family

Intel® Xeon® processor E5 family

Intel® Xeon® processors E3-1200 family

Intel® Xeon® processors 65xx/75xx series

Intel® Xeon® processors 36xx/56xx series

Intel® Xeon® processors 35xx/55xx series

Intel® Xeon® processors 34xx series

Quad-Core Intel® Xeon® processors 7xxx, 5xxx, and 3xxx series

Dual-Core Intel® Xeon® processors 7xxx, 5xxx, and 3xxx series

System Memory Requirements

- At least 2 GB of RAM

Disk Space Requirements

- 650 MB free disk space required for all product features and all architectures

Software Requirements

- Supported Linux distributions:
 - Red Hat* Enterprise Linux 5 and 6 [1]
 - CentOS* versions equivalent to Red Hat* Enterprise Linux* versions listed above
 - SUSE* Linux* Enterprise Server (SLES) 10 and 11 [1]
 - Fedora* 18, 19 and 20 [2]
 - Ubuntu* 10.04, 12.04 and 13.10
 - Debian* 6.0 and 7.0

- Supported compilers:
 - Intel® C/C++ Compiler 11 and higher
 - Intel® Fortran Compiler 11 and higher
 - GNU C/C++ Compiler 3.4.6 and higher
- Application coding requirements
 - Supported programming languages:
 - Fortran
 - C
 - C++
 - Java*
 - OpenCL*
 - Concurrency and Locks and Waits analysis types interpret the use of constructs from the following threading methodologies:
 - Intel® Threading Building Blocks
 - Posix* Threads on Linux*
 - OpenMP* [3]
 - Intel's C/C++ Parallel Language Extensions
- Supported Java* environments
 - Oracle* JVM 6 and 7 – Hotspots and Hardware event-based analysis types
 - IBM* J9 – Hardware event-based analysis types only
- Supported OpenCL* environments:
 - Intel® SDK for OpenCL Applications XE 2013 Beta
- Power analysis requirements
 - Intel® Xeon® processors based on Intel® microarchitecture code named Nehalem or above
 - Linux kernel version 2.6.32 or above
- Hardware event-based sampling analysis with stacks requirements
 - Linux kernel version 2.6.32 or above
- To view PDF documents, use a PDF reader, such as Adobe Reader*.
- To enable automatic product updates with the Intel Software Update Manager, use Java* version 1.6 or higher.

Notes:

1. **Red Hat Enterprise Linux 5* and SuSE Enterprise Linux 10* are deprecated.** Support for these operating system versions is deprecated, and support may be removed in a future release.

2. On Fedora* 18 pango packages should be installed, including pango-compat.

3. VTune Amplifier XE supports analysis of OpenMP* applications built with Intel® Fortran Compiler Professional Edition version 11.0 or higher, Intel® C++ Compiler Professional Edition version 11.0 or higher, or GNU* C/C++ Compiler 4.2 or higher.

4 Technical Support

If you did not register your product during installation, please do so at the [Intel® Software Development Products Registration Center](#). Registration entitles you to free technical support, product updates and upgrades for the duration of the support term.

For information about how to find Technical Support, Product Updates, User Forums, FAQs, tips and tricks, and other support information, please visit <http://www.intel.com/software/products/support/>

Note: If your distributor provides technical support for this product, please contact them for support rather than Intel.

5 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.

This product package can be used to install the software on both IA-32 systems and Intel® 64 systems. The installer determines the system architecture and installs the appropriate files.

To begin installation, do the following:

1. *gunzip* and *untar* to retrieve the installation package.
2. Execute the `./install.sh` script file (available at the top level in the extracted contents) as a root user. Activation is required.

Notes:

- To install all components to a network-mounted drive or shared file system, execute the following command in place of the one in step 2 above: `./install.sh -- SHARED_INSTALL`
- The install can be run as a non-root user, but in this case not all collectors will be available to the user.

- For successful installation you should have read and write permissions for the `/tmp` directory.

Activation

It is required to activate the product to finish installation. There are several methods for product activation:

- Activation using serial number. Internet connection is required.
- Remote activation using serial number. Used when your computer is not connected to the internet. You can use another computer with internet access.
- Activation using license file.
- Activation using license server.

You can also evaluate the product for 31 days.

Installing Collectors on Remote Systems

You can install the command line data collection features of the product on remote systems to reduce overhead and simply collect data remotely. Data collection on a remote system does not require a license; however, viewing of the data cannot be done on the remote system unless a license is present.

The results of any data collection that is run on the remote system must then be copied to the system where the regular install was done for analysis, viewing, and reporting.

To do this:

1. Copy the `CLI_install` folder (found at the top level in the extracted product install package) to the remote machine.
2. Execute `./install.sh` script file (this file is located inside the `CLI_install` folder). No activation will be required.

Default Installation Directories

The default top-level installation directory for this product is:

- `/opt/intel/vtune_amplifier_xe_2013/` - for root user;
- `$HOME/intel/vtune_amplifier_xe_2013/` - for regular users

This product installs into an arrangement of directories shown in the list below. Not all directories will be present in a given installation.

- <install-dir>
 - bin32
 - bin64*
 - config
 - documentation
 - include
 - lib32
 - lib64*
 - man
 - message
 - powerdk
 - resources
 - samples
 - sdksepdk

(*) bin64 and lib64 are available for Intel® 64 architecture install package

Establishing the VTune Amplifier XE Environment

Use the `amplxe-vars.sh` or `amplxe-vars.csh` script to establish the VTune Amplifier XE environment, depending on used command interpreter (bash or csh/tcsh).

The command takes the form:

```
source <install-dir>/amplxe-vars.sh or
```

```
source <install-dir>/amplxe-vars.csh
```

Advanced Installation Options

VTune Amplifier XE uses kernel drivers to enable event-based sampling (EBS) analysis and power analysis. If you are not using a default kernel on the supported Linux* distributions listed above, use the SEP Driver Kit and the PWR Driver Kit in the VTune Amplifier XE to compile drivers for your kernel.

The VTune Amplifier XE installer will automatically use the SEP Driver Kit and the PWR Driver Kit to try and build a driver for your kernel. The driver can also be built manually after the product is installed using the SEP Driver Kit and the PWR Driver Kit.

Note: Kernel header sources and other additional software may be needed to build and load the kernel drivers on the Linux* operating system. For details, see the README.txt files in the `sepdk/src` and `powerdk/src` directories.

When the Advanced installation is chosen, the following options are available:

- Sampling driver install type [build driver (default) / driver kit files only]
- Power driver install type [build driver (default) / driver kit files only]

You may change the option to 'driver kit files only' if you do not want to build/install driver or want to do it manually after installation.

- Driver access group [vtune (default)]

Setting the driver access group ownership is a security feature and is used to control access to the kernel module. By default, the group for accessing the driver is "vtune". You may set your own group during installation or change it manually after installation by executing `./boot-script --group <your_group>` from the `sepdk/src` and `powerdk/src` directories.

- Driver permissions [660 (default)]

You may change permissions for the driver.

- Load driver [yes (default)]

By default, installation loads the driver into the kernel upon successfully building it.

- Install boot script [yes (default)]

By default, installation sets up a boot script that loads the driver into the kernel each time the system is rebooted. The boot script can be disabled later by executing `./boot-script --uninstall` from the `sepdk/src` and `powerdk/src` directories, as well as enabled via `./boot-script --install`.

- Enable per-user collection mode [no (default) / yes]

When the per-user collection mode is on, the collector gathers data only for the processes spawned by the user who started the collection. When it is off (default), samples from all processes on the system are collected.

- Driver build options ...

With this option you may specify the location of the kernel header files on this system, the path and name of the C compiler to use for building the driver, the path and name of the make command to use for building the driver. Otherwise, installation will attempt to locate these by looking in the default directories.

Note: While a number of Linux* OS distributions are supported, the product testing has been limited to the stock Linux* kernel version associated with a distribution release. Updating the kernel to a newer version after the VTune Amplifier XE has been installed will require rebuilding its sampling (SEP) driver. Since the kernel is updated, the driver may not build due to changes in the kernel. You are recommended to back out the kernel updates until the kernels are officially supported in future releases of the VTune Amplifier XE. To check availability, please submit an issue at Intel® Premier Support (<https://premier.intel.com>).

Intel® Software Manager

Intel® Software Manager is a utility that allows users to:

- Download and install updates for your Intel® Software Development Products.
- Manage subscription status of installed software.
- Activate serial numbers.
- Find out about the latest news for Intel Software Development Products.
- Intel Software Manager requires an Internet connection to connect to a remote server for information and updates.

Intel Software Manager installs with Intel Software Development Products on Windows*, Linux*, and OS X* operating systems.

To obtain more information about Intel® Software Manager, please refer to the <https://registrationcenter-ssl.intel.com/Docs/ism.htm> web-page.

Removing the Product

If you want to remove an installation, run the `uninstall.sh` script from the product installation folder.

6 Issues and Limitations

Known Issues and Limitations

- **Running time is attributed to the next instruction** (200108041)

- To collect the data about time-consuming running regions of the target, the VTune™ Amplifier XE interrupts executing target threads and attributes the time to the context IP address.
 - Due to the collection mechanism, the captured IP address points to an instruction AFTER the one that is actually consuming most of the time. This leads to the running time being attributed to the next instruction (or, rarely to one of the subsequent instructions) in the Assembly view. In rare cases, this can also lead to wrong attribution of running time in the source - the time may be erroneously attributed to the source line AFTER the actual hot line.
 - In case the inline mode is ON and the program has small functions inlined at the hotspots, this can cause the running time to be attributed to a wrong function since the next instruction can belong to a different function in tightly inlined code.
- **An application that allocates massive chunks of memory may fail to work under VTune Amplifier XE (200083850)**
 - If a 32-bit application allocates massive chunks of memory (close to 2 GB) in the heap, it may fail to launch under the VTune Amplifier XE while running fine on its own. This happens because the VTune Amplifier XE requires additional memory when profiling an application. The workaround could be in using larger address space (for example, converting the project to 64-bit).
- **Hardware event-based analysis may crash certain Intel® Core™ i7 processor-based systems when deep sleep states are enabled (200149603)**
 - On some Intel® Core™ i7 processor-based (code named Nehalem) systems with C-states enabled, sampling may cause system hanging due to a known hardware issue (see errata AAJ134 in <http://download.intel.com/design/processor/specupdt/320836.pdf>). To avoid this, disable the “Cn(ACPI Cn) report to OS” BIOS option before sampling with the VTune Amplifier XE analyzer on Intel Core i7 processor-based systems.
- **Link to instruction guide: instruction set reference document is not positioned on description of proper instruction. (200091200)**
 - The reference information for assembly instructions can be opened in any PDF viewer, but only Adobe Acrobat Reader* supports positioning the instruction reference document on the required page. To ensure correct functionality of this feature, you are recommended to install the latest available version of Adobe Acrobat Reader.
- **VTune™ Amplifier XE does not support profiling an application launched under debugger (200092508)**
 - The Hotspot, Concurrency or Lock and Waits analysis types provide incorrect results when analyzing an application launched under a debugger. VTune Amplifier XE does not detect whether a debugger is attached to a profiled application. Make sure that no debugging tools are attached to the application that is profiled with the VTune Amplifier XE.
- **Security-enhanced Linux* is not supported (200155374)**

- Security-enhanced Linux settings (SELinux) are currently not supported by the VTune Amplifier XE and need to be either disabled or set to permissive for a successful tool suite installation. If your Linux distribution has SELinux enabled the following error message will be issued by the installer: "Your system is protected with Security-enhanced Linux (SELinux). We currently support only "Permissive" mode, which is not found on the system. To rectify this issue, you may either disable SELinux by - setting the line "SELINUX=disabled" in your /etc/sysconfig/selinux file - adding "selinux=0" kernel argument in lilo.conf or grub.conf files or make SELinux mode adjustment by - setting the line "SELINUX=permissive" in your /etc/sysconfig/selinux file or ask your system administrator to make SELinux mode adjustment. You may need to reboot your system after changing the system parameters. More information about SELinux can be found at <http://www.nsa.gov/selinux/>"
- **Concurrency analysis may provide incorrect Wait time data if Linux futexes are used** (200163557)
 - In certain cases, custom synchronization constructions based on Linux futexes are not detected by the VTune Amplifier XE. System libraries may also use such constructions. To ensure Wait time correctness in the Concurrency analysis, use syscall(SYS_futex, ...) API in your code.
- **VTune Amplifier XE collectors may crash or produce corrupted data while profiling stripped binaries.** (200165647)
 - VTune Amplifier XE may fail to collect data for Hotspots, Concurrency, and Locks and Waits analysis types if the main executable of an analysis target statically links some symbols from libc.so or libpthread.so (for example, pthread_create). To avoid this, do not strip the main executable. Use the -E linker switch to export the statically linked symbols to the dynamic symbol table of the main executable. For the list of symbols required for correct profiling, see the Analyzing Statically Linked Libraries topic in the online help.
- **Timeline pane displays incorrect concurrency and thread states for a paused region in the Concurrency and Locks and Waits analyses.** (200204715)
 - Concurrency and thread state data may be incorrect in the Timeline pane for a region corresponding to the time when data collection was paused. Ignore the timeline data in a paused region during result analysis.
- **Running other PMU-based tools simultaneously with hardware event-based sampling collection is not supported** (200166101)
 - The Sampling Driver requires exclusive use of the PMU resources. Running multiple PMU based tools will cause incorrect results and/or system instability.
- **Hotspots, Concurrency and Locks and Waits analysis types may not work on executables that do not depend on the libpthread.so.0 library.** (200208975)
 - There is currently a limitation in the product regarding profiling application targets where the executable does not depend on the libpthread.so.0 library. The message "Link libpthread.so to the application statically and restart profiling" appears when profiling an application where program image does not depend on

libpthread.so.0 but then it dlopen()-s a shared library which does depend on libpthread.so.0. The collector is not able to follow the program execution and module load/unload so the collection results are likely to be misleading. A workaround is to set "LD_PRELOAD=libpthread.so.0" before running the collection.

- **Result finalization may be slow if results are located in a remote network directory** (200169322)
 - The problem is caused by slow network access. To improve performance use local directory for result storage.
- **Opening results significantly delayed on Linux systems configured with "large pages"** (200215471)
 - To work around this issue make sure that you have hugectl utility and libhugetlbfs library on the system. VTune Amplifier XE can be started this way:
 - `hugectl --heap <amplxe install dir>/bin32/amplxe-gui`
 - `LD_PRELOAD=libhugetlbfs.so <amplxe install dir>/bin64/amplxe-gui`
- **Event-based profiling results may be incorrect if nmi_watchdog interrupt capability is enabled** (200171859)
 - If the nmi_watchdog interrupt capability is enabled on a Linux system, event-based profiling results may be incorrect. For example, when using a pause-resume scenario for event-based analysis on 64-bit Red Hat* Enterprise Linux* 6.1 with this feature enabled, no data will be collected after the collection is resumed. Before running event-based analysis on Linux systems, ensure that the nmi_watchdog interrupt capability, if available, is disabled. Disabling the nmi_watchdog interrupt is accomplished by adding the Linux kernel boot parameter 'nmi_watchdog=0' to your system boot loader and then rebooting the system.
- **Information collected via ITT API is not available when attaching to a process.** (200172007)
 - When collecting statistics data using ITT API injected into a source code, like Frame Analysis or JIT-profiling, attaching to a process will not bring expected results. Use the VTune Amplifier XE analysis to start an application instead of attaching to a process.
- **Only one stack frame is shown in Java code if IBM* J9* JVM is used** (200227950)
 - Currently Java stack unwinding is not supported for IBM* J9* JVM.
- **Do not use -ipo option since it causes the inline debug information to switch off.** (200260765)
 - If using the Intel® compiler to get performance data on inline functions, use the additional option "-inline-debug-info", but avoid using the -ipo option. Currently this option disables generating the inline debug information in the compiler.
- **Intel® Compiler 13.0 and earlier doesn't support function split ranges in debug info which may lead to wrong performance data attribution in case function**

ranges are overlapped (e.g. performance data attributed to one function, but should have been split by two). (200260768)

- In some cases the Intel® Compiler 13.0 and earlier generates imprecise debug information about ranges of inline functions. This may lead to wrong performance data attribution when the Inline mode is turned on, for example: instead of two functions performance data is attributed just to one of them.
- **Call stack can't be unwound via no return functions** (200263851)
 - If analyzed application contains functions without ret instruction, e.g. calling exit(), unwinding call stack to its caller and higher may fail (no stack frames shown).
- **Help TOC is truncated in some Linux browsers.** (200272063)
 - When using certain HTML browsers to view the VTune Amplifier XE documentation, if the Contents tab width appears truncated and hides some of the topic titles:
 - - Click the Index (or Search) button
 - - Click the Contents button
- **VTune™ Amplifier XE data collection on Intel® Xeon Phi™ coprocessor (codename: Knights Corner) currently is limited to hardware event-based sampling data collected from target units** (200179057)
 - No information on function call stacks is recorded during collection. However, you may mistake partial call chains appearing in result Groups for real call stack information. These partial chains are the result of inline function information in debug symbol tables and can be ignored.
- **Attaching the VTune Amplifier XE to a process may take some time** (200276420)
 - Your target application may complete before the data collection starts, so the VTune Amplifier XE may report an error. Increase the duration of your test application if necessary.
- **VTune Amplifier XE user APIs are not supported for static binaries** (200279211)
 - To use ITT and JIT APIs with software based collectors (Hotspots, Concurrency, Locks and Waits) user needs to link their application dynamically. Otherwise ITT and JIT API notifications will be missing in the result.
- **Command "status" is not supported for hardware event-based analysis types** (200281661)
 - Command line option "\$ ampxe-cl -command status" is currently supported only for user mode sampling and tracing based analysis types, but not for EBS analysis types.
- **Limited event description for Intel® Xeon® processor E5-XXXX and the 2nd Generation Intel® Core™ processor family desktop processors.** (200285238)
 - Developers can find more details on events by checking the Intel® 64 and IA-32Architectures Software Developer's Manual

<http://download.intel.com/products/processor/manual/325462.pdf>, Tables 19-3, 19-4 and 19-5.

- **Hardware event-based analysis may cause unpredictable system behavior on processors based on Intel® microarchitecture code named Sandy Bridge** (200285401)
 - On processors based on Intel microarchitecture code named Sandy Bridge, hardware event-based sampling may cause unpredictable system behavior due to a known hardware issue (see erratum BK105 in <http://www.intel.com/content/dam/www/public/us/en/documents/specification-updates/2nd-gen-core-family-mobile-specification-update.pdf>). To avoid this, you are not recommended to run General Exploration, Client Analysis, Cycles and Uops, Loop Analysis or Custom Hardware event-based analysis with precise events on these systems unless a BIOS workaround for the erratum is provided.
- **Hot functions are duplicated in the grid if inline mode is ON. When turning it off, only one entry remains but the stack for it is not resolved.** (200287043)
 - Change stack unwinding mode to "After collection". For doing this create a new custom analysis and select 'After collection' in 'Stack unwinding mode' drop-down list.
- **Intel(R) VTune(TM) Amplifier XE may detect which timer source to use incorrectly on Intel® Xeon® processor E5-XXXX processors.** (200287361)
 - In User mode Samplign and Tracing based analysis (Hotspots, Concurrency, Locks and Waits) the following message may be displayed in command line or Debug Window:
 - Warning: Cannot load data file `C:\art\tmp\1\r003hs\data.0\18385-18389.0.trace' (SampleCallback: timestamps aren't ascended!).
 - To work around the problem collect results from command line using "-run-pass-thru" option:
 - `amplxe-cl -collect hotspots -run-pass-thru=-timestamp=sys -- <application>`
- **List of hotspots may contain "Outside any known module" on systems with kernel older than 2.6.20** (200233501)
 - Results of user mode sampling and tracing based analysis types may contain "Outside any known module" region. Those samples may actually come from vsyscall module. This is kernel problem that fixed in later versions.
- **Hardware event-based analysis doesn't work if more than 128 events are gathered simultaneously** (200293868)
 - Decrease number of PMU events in analysis settings to resolve it.
- **When installing on a Xen* virtual machine, it may happen that installation script exits claiming CPU is unsupported.** (200294340)
 - To skip the check for CPU model, add --ignore-cpu parameter to install script command line:
 - `./install.sh --ignore-cpu`

- **User-mode sampling and tracing collection may cause an error when profiling COI/SCIF application on Intel(R) Xeon Phi(TM) processor (200234639)**
 - If you get a COI buffer error with User-mode sampling and tracing collection, use hardware event-based analysis instead.
- **Decreasing sampling interval for user-mode sampling and tracing collection may lead to wrong CPU usage data (200296537)**
 - TPSS sampling technology is based on OS timers which cannot tick faster than HZ value configured during kernel compilation. Sampling interval should not be less than HZ value.
- **Results should be closed before comparing them (200236090)**
 - VTune Amplifier XE doesn't support opening same result twice. Due to that limitation it is not possible to compare (via "Compare" button) results if one of them is already opened. You should close results first then compare them.
- **User tasks, events and frames marked with ITT APIs may not be shown if target application is finished by Ctrl+C (200304207)**
 - Use another method to stop application, or VTune Amplifier XE "stop" command.
- **Functions from kernel modules do not appear in the collection results (200311949)**
 - Hardware event-based analysis results may not contain functions from kernel modules if kernel pointers were explicitly hidden by setting the "kptr_restrict" sysctl to non-zero value. As a result you may see CPU time associated with the [Outside any known module] item.
 - To workaround this problem for the current session, set contents of the /proc/sys/kernel/kptr_restrict sysctl file to 0 before starting VTune Amplifier.
- **ITT API task or frame is not shown in results if its end occurs when collector is inactive (200331811)**
 - When ITT task or frame end notification occurs after collection was paused, or detach or stop command issued, the frame or task is not displayed in the result.
- **VTune Amplifier XE may report less data than expected on Intel Xeon Phi coprocessor due to power management settings (200343917)**
 - VTune Amplifier XE may show less data than expected when profiling an Intel Xeon Phi application. E.g. results may contain data collected only on a few CPUs, data collected only on a short period of time, etc. This issue does not occur on Intel® Xeon Phi™ Coprocessor 5110P. The problem is caused by interoperability with system power management.
 - As a workaround you can disable power management for the Xeon Phi card:
 - 1. In configuration file /etc/mpss/mic0.conf if exists, otherwise in /etc/sysconfig/mic/mic0.conf:
 - change: PowerManagement "cpufreq_on;corec6_on;pc3_on;pc6_on"
 - to: PowerManagement "cpufreq_on;corec6_off;pc3_off;pc6_off".
 - 2. Issue the following commands:
 - sudo service micras stop
 - sudo service mpss unload

- sudo micctrl --resetconfig
 - sudo service mpss start
 - 3. Start VTune Amplifier XE profiling again.
- **ITT domain and string handle creation API cannot be used from static code for EBS collections** (200248521)
 - ITT API cannot be used from the static code or main code of a dynamic library.
 - You may workaround this limitation as follows:
 - 1. Declare corresponding handlers as static within a function that needs ITT API.
 - VTune Amplifier will merge all string handles and domains by their name passed to the corresponding APIs.
 - 2. Declare variables globally in the C file to initialize them from an init function of the given dynamic library, if it exists.
 - **Attaching to processes with credentials different from those used by VTune Amplifier is not supported on Windows XP operating system for Hotspots, Concurrency and Locks&Waits analysis types** (200403973)
 - On Windows XP operating system, attaching to a target process for Hotspots, Concurrency and Locks&Waits analysis types is possible only if the process and VTune Amplifier run with the credentials of the same user account.
 - **Reporting disassembly for multiple objects in command line is not allowed** (200252973)
 - VTune amplifier does not support reporting disassembly for multiple objects. As a result if a user defines in CLI filter by function that has 2 or more function instances CLI will report an error.

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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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```

```
*/
```

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