



# **Intel® VTune™ Amplifier XE 2017 Release Notes - Linux\* OS**

Intel Corporation

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# Intel® VTune™ Amplifier XE 2017 Release Notes - Linux\* OS

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## Introduction

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Intel® VTune™ Amplifier XE 2017 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® 64 architectures.

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

VTune Amplifier has a standalone graphical user interface (GUI) as well as a command-line interface (CLI).

Please visit our web site for training videos, technical articles, documentation and support: <https://software.intel.com/en-us/intel-vtune-amplifier-xe>.

## What's New

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### VTune Amplifier XE 2017 Update 4

- General Exploration, Memory Access, HPC Performance Characterization analysis types extended to support Intel® Xeon® Processor Scalable family
- Support for Ubuntu\* 17.04

### VTune Amplifier XE 2017 Update 3

- Application Performance Snapshot (Preview) provides a quick look at your application performance and helps you understand where your application will benefit from tuning. The revised tool shows metrics on MPI parallelism (Linux\* only), OpenMP\* parallelism, memory access, FPU utilization, and I/O efficiency with recommendations on further in-depth analysis.

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#### NOTE:

A **PREVIEW FEATURE** may or may not appear in a future production release. It is available for your use in the hopes that you will provide feedback on its usefulness and help determine its future. Data collected with a preview feature is not guaranteed to be backward compatible with future releases. Please send your feedback to [parallel.studio.support@intel.com](mailto:parallel.studio.support@intel.com).

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- Improved insight into parallelism inefficiencies for applications using Intel Threading Building Blocks (Intel TBB) with extended classification of high Overhead and Spin time.
- Automated installation of the VTune Amplifier collectors on a remote Linux target system. This feature is helpful if you profile a target on a shared resource without VTune Amplifier installed or on an embedded platform where targets may be reset frequently.

### VTune Amplifier XE 2017 Update 2

- Support for cross-OS analysis to all license types. Download installation packages for additional operating systems from [registrationcenter.intel.com](http://registrationcenter.intel.com).
- Support for Intel® Xeon Phi™ coprocessor targets codenamed Knights Landing
- Support for the Intel® Atom™ processors codenamed **Apollo Lake** and **Denverton**, and the Intel processors codenamed **KabyLake**

- Support for the mixed Python\* and native code in the Locks and Waits analysis including call stack collection
- HPC Performance Characterization analysis improvements:
  - Increased detail and structure for vector efficiency metrics based on FLOP counters in the FPU Utilization section
  - MPI Imbalance metric based on MPI Busy Wait time and parallel efficiency for a most awaited rank in the CPU Utilization section
  - New section presenting the data on the hottest loops and functions with arithmetic operations, which enables you to identify which loops/functions with FPU Usage took the most CPU Time
- DRAM Bandwidth Bound metric *based on uncore events* used in the Memory Usage viewpoint for the Memory Access and HPC Performance Characterization analyses
- GPU Hotspots Summary view extended to provide the **Packet Queue Depth** and **Packet Duration** histograms for the analysis of DMA packet execution
- Support for performance analysis of a guest Linux\* operating system via Kernel-based Virtual Machine (KVM) from a Linux host system with the **KVM Guest OS** option
- Support for the Ubuntu\* 16.10 and Fedora\* 25

### VTune Amplifier XE 2017 Update 1

- Support for locator hardware event metrics for the General Exploration analysis results in the Source/Assembly view that enable you to filter the data by a metric of interest and identify performance-critical code lines/instructions
- Support for hotspot navigation and filtering of stack sampling analysis data by the *Total* type of values in the Source/Assembly view
- **Summary** view of the General Exploration analysis extended to explicitly display measure for the hardware metrics: **Clockticks vs. Pipeline Slots**
- Command line `summary` report for the HPC Performance Characterization analysis extended to show metrics for CPU, Memory and FPU performance aspects including performance issue descriptions for metrics that exceed the predefined threshold. To hide issue descriptions in the `summary` report, use a new `report-knob show-issues` option.
- Support for the **Average Latency** metric in the Memory Access analysis based on the driverless collection
- PREVIEW: New **Full Compute** event group added to the list of predefined GPU hardware event groups collected for Intel® HD Graphics and Intel Iris™ Graphics. This group combines metrics from the **Overview** and **Compute Basic** presets and allows to see all detected GPU stalled/idle issues in the same view.
- **GPU Hotspots** analysis extended to detect hottest computing tasks bound by GPU L3 bandwidth

### VTune Amplifier XE 2017

- Support for **Intel® Xeon Phi™ processor codenamed Knights Landing** and Intel® Xeon® Processor E5 v4 Family (formerly codenamed Broadwell EP), including General Exploration, Memory Access (including high bandwidth analysis), and HPC Performance Characterization analysis
- **Disk Input and Output analysis** that monitors utilization of the disk subsystem, CPU and PCIe buses, helps identify long latency of I/O requests and imbalance between I/O and compute operations. Use the *Analyzing Input/Output Waits* tutorial for a hands-on exercise with the sample code.
- **Memory Access analysis** improvements:
  - Automatic detection of maximum system DRAM bandwidth characteristics. This option helps understand how you utilize the available DRAM bandwidth.
  - Support for custom memory allocators via **Memory Allocation API** that help correctly determine memory objects
  - *Identifying False Sharing* tutorial providing a hands-on exercise for running Memory Access analysis for a sample application to identify and remove false sharing issues

- HPC workloads profiling improvements:
  - **HPC Performance Characterization analysis** that explores the following performance aspects of the application scalability: CPU utilization with parallel efficiency for MPI and OpenMP\*, memory access efficiency and FPU utilization with basic vectorization metrics
  - MPI analysis extended with the event-based sampling collection supported for multiple ranks per node with an arbitrary MPI launcher and natural syntax. **Arbitrary targets** command line configuration extended with MPI launcher options. You can now use the **Copy Command Line to Clipboard** dialog box to automatically generate a command line for MPI analysis from GUI.
  - An option enabling/disabling the OpenMP\* regions analysis added to selected analysis configurations
  - An option controlling result finalization, `finalization-mode`, that enables you to perform a full finalization on the target, defer or skip the finalization. The deferred finalization mode is especially useful on target platforms with a single-thread performance lower than on the host. In this mode, the VTune Amplifier calculates a binary checksum to match the binaries for finalization on the host machine.
  - *Analyzing an OpenMP and MPI Application* web-based tutorial providing a hands-on exercise to identify memory utilization inefficiencies and load imbalance for a sample hybrid application
- More languages support:
  - **Python\* applications** profiling with Basic Hotspots analysis running via the Launch Application or Attach to Process modes
  - **Go\* applications** profiling with hardware event-based analysis types
- GPU analysis improvements:
  - **GPU Hotspots analysis** targeted for GPU-bound applications and providing options to analyze execution of OpenCL™ kernels and Intel Media SDK tasks
  - **GPU analysis Summary** introducing a set of metrics to estimate GPU utilization per engine, identify stalled or idle Execution Units and explore the most typical problems with low occupancy or frequent sampler accesses
  - Navigation from the Hottest GPU computing tasks summary to the details provided in the **Graphics** tab
  - Support for the **Attach to Process** target analysis for **Intel Media SDK** and **OpenCL™ programs**
  - Detection of the OpenCL™ 2.0 Shared Virtual Memory (SVM) usage types per kernel instance
- Usability improvements:
  - Support for the **Attach to Process** target analysis with the event-based sampling for low privileged Java\* daemons on Linux\*
  - Event selection mechanism for custom hardware event-based sampling analysis extended with filtering options
  - Arbitrary target GUI configuration to generate a command line for performance analysis on a system that is not accessible from the current host
  - UI improvements for the grid views and identification of performance issues
- Intel Performance Snapshot (Preview) introducing the following tools as part of the VTune Amplifier:
  - **Application Performance Snapshot** tool provides a quick look at your application performance and helps you understand whether your application will benefit from tuning. It identifies how effectively your application uses the hardware platform and displays basic performance enhancement opportunities.
  - **Storage Performance Snapshot** tool analyzes your system's storage, CPU, memory, and network usage and displays basic performance enhancement opportunities for systems using Intel hardware.

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- **Removed** synchronization of displaying the highlighted program units in the Bottom-up/Top-Down Tree/Timeline panes. If the removed functionality is still on demand, please send your feedback to [parallel.studio.support@intel.com](mailto:parallel.studio.support@intel.com).
- Support for Fedora\* 23 and 24, Ubuntu\* 15.10 and 16.04
- Support for Linux\* kernel up to 4.4

## System Requirements

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For an explanation of architecture names, see <https://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 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, 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 available in the following environments virtualizing the on-chip Performance Monitoring Unit (PMU):
    - VMware Fusion\* 5 and higher
    - KVM with Linux Kernel 3.2 and QEMU 1.4
    - XEN 4.0 and higher for User Domain (domU)

Event-Based Sampling and Sampling with stacks data collection is functional inside a virtual machine only for architectural events.

Please see the Performance Monitoring Unit Sharing Guide at <http://software.intel.com/file/30388/> for more details on the supported architectural events.

VTune Amplifier installation detects virtual environment and disable sampling drivers installation to avoid system instability.

Hardware Event-based Sampling (EBS) analysis runs a driverless sampling collection via Linux Perf\* tool.

- The list of supported processors is constantly being extended. In general VTune Amplifier supports publicly launched Desktop, Mobile, Server and Embedded Processors listed at <https://ark.intel.com/>. For pre-release processor support please file a support request at Online Service Center (<https://www.intel.com/supporttickets>).

## System Memory Requirements

At least 2 GB of RAM

## Disk Space Requirements

900 MB free disk space required for all product features and all architectures

## Software Requirements

- Supported operational systems:
  - Red Hat\* Enterprise Linux 6 and 7
  - CentOS\* versions equivalent to Red Hat\* Enterprise Linux\* versions listed above
  - SUSE\* Linux\* Enterprise Server (SLES) 11 and 12
  - Fedora\* 24 and 25
  - Ubuntu\* 14.04, 16.04, 16.10 and 17.04
  - Debian\* 7.0 and 8.0

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### NOTE:

- 32-bit graphical user interface support is removed. A 64-bit operating system host is required to use the VTune Amplifier graphical user interface to analyze collected profile data. Command line profiling and reporting is supported on a 32-bit operating system host. Use the command line installer instructions to install on a 32-bit operating system.
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- Supported compilers:
  - Intel® C/C++ Compiler 11 and higher
  - Intel® Fortran Compiler 11 and higher
- Application coding requirements
  - Supported programming languages:
    - Fortran
    - C
    - C++
    - Java\*
    - OpenCL\*
    - Python
    - Go
  - 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\*
    - Intel's C/C++ Parallel Language Extensions

**NOTE:**

- VTune Amplifier 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, GNU\* C/C++ Compiler 4.2 or higher , .
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- Supported Java\* environments:
  - Oracle\* JVM 6, 7 and 8 – Hotspots and Hardware event-based analysis types
  - OpenJDK 8 (Linux only)
- Supported OpenCL\* environments:
  - Intel® SDK for OpenCL Applications version 2013 and newer
- Hardware event-based sampling analysis with stacks requirements:
  - Linux kernel version 2.6.32 or above
- Driverless hardware event-based sampling analysis requirements:
  - Linux kernel version 2.6.32 or above, exporting CPU PMU programming details over /sys/bus/event\_source/devices/cpu/format file system
- Supported Intel® Manycore Platform Software Stack (Intel® MPSS) versions for Intel® Xeon Phi™ coprocessor codenamed Knights Corner profiling:
  - Hardware event-based sampling analysis: the MPSS 2.1, 3.3.\*, 3.4.\*, 3.5.\*, 3.6.\* and 3.7.\*
  - Hardware event-based sampling analysis with stacks: the MPSS 3.3.5, 3.4, 3.4.1, 3.4.2, 3.4.3, 3.4.4, 3.4.5, 3.5.2, 3.6, 3.7
- Supported Intel® Manycore Platform Software Stack (Intel® MPSS) versions for Intel® Xeon Phi™ coprocessor codenamed Knights Landing profiling:
  - Hardware event-based sampling analysis: the MPSS 4.3.\*, 4.4.\*
- 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.

### Floating Licensing Service Requirements

Intel® Software License Manager version 2.4, available on the Intel® Registration Center (choose the right OS and platform; only users with floating license registrations have access to this link).

For more details please refer to the <https://software.intel.com/en-us/articles/intel-software-license-manager-getting-started-tutorial>

## Technical Support

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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.

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## Installation Notes

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Please refer to the *Installation Guide* document that is also available online: <https://software.intel.com/en-us/Intel-VTune-Amplifier-XE-Install-Guide-Linux>.

## Issues and Limitations

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

To collect the data about time-consuming running regions of the target, the Intel® VTune™ Amplifier 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 (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 while running fine on its own. This happens because the VTune Amplifier 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 on Intel Core i7 processor-based systems.

### **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 does not support profiling an application launched under debugger (200092508)**

The Basic Hotspots, Concurrency, Lock and Waits, Memory Access with object tracking and Disk I/O analysis types provide incorrect results when analyzing an application launched under a debugger. VTune Amplifier 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.

### **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.

### **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.

**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.

**Do not use `-ipo` option with Intel compiler version earlier than 13.0. (200260765)**

If using the Intel® compiler version earlier than 13.0, to get performance data on inline functions, use the additional option `-inline-debug-info`, but avoid using the `/Qipo` option. Currently this option disables generating the inline debug information in the compiler. Note that the Intel compiler integrated into the Microsoft Visual Studio\* IDE uses the `-ipo` by default in the Release configuration.

**Java source line may be shown incorrectly for Oracle JDK 6u25 x64 (200167001)**

Drilling down to Java source code from VTune Amplifier XE results may show incorrect source line. The issue occurs with Java applications built with Oracle JDK 6u25 x64. This is the JDK problem, refer to issues JDK-7051767 and JDK-7047624 in Oracle bug database.

**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.

**Call stack can't be unwound via no return functions (200263851)**

If analyzed application contains functions without `ret` instruction (for example, calling `exit()`), unwinding call stack to its caller and higher may fail (no stack frames shown).

**Attaching the VTune Amplifier to a process may take some time (200276420)**

Your target application may complete before the data collection starts, so the VTune Amplifier may report an error. Increase the duration of your test application if necessary.

Command line option "`amplxe-cl -command status`" is currently supported only for user-mode sampling and tracing based analysis types, but not for EBS analysis types.

**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 name 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 or Custom Hardware event-based analysis with precise events on these systems unless a BIOS workaround for the erratum is provided.

**VTune Amplifier may detect which timer source to use incorrectly on Intel® Xeon® processor E5-XXXX processors (200287361)**

In User-mode Sampling 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 ``<path>\data.0\18385-18389.0.trace`' (SampleCallback: timestamps aren't ascended!).*

To work around the problem collect results from command line using the `-run-pass-thru` option:

```
amplxe-cl -collect hotspots -run-pass-thru=-timestamp=sys -- <application>
```

**Hardware event-based analysis does not work if more than 128 events are gathered simultaneously (200293868)**

Decrease number of PMU events in analysis settings to resolve it.

**Results should be closed before comparing them (200236090)**

VTune Amplifier does not support opening the same result twice. Due to that limitation it is not possible to compare (via the **Compare** button) results if one of them is already opened. You should close results first then compare them.

#### **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.

#### **An application may experience the stack overflow exception when running under the VTune Amplifier (200249394)**

An application allocating massive chunks of memory on a thread stack may experience the stack overflow exception and fail when running under the VTune Amplifier, while running flawlessly on its own. This happens because the VTune Amplifier requires additional space on an application thread stack for profiling needs. To work around this problem, consider using larger thread stack space.

#### **JIT writer API cannot handle too long file names on Windows (200587412)**

This issue happens when file name of JIT trace file is longer than 260 symbols. VTune is then not able to generate a proper result when the result directory has long name.

#### **VTune Amplifier is not able to resolve debug information when an application is compiled with the "/DEBUG:FASTLINK" option. (200414493)**

This issue is prevalent only in Microsoft\* Visual Studio 2015. To fix this issue, please use the "/DEBUG" option instead. For more information, please see [HTTPS://BLOGS.MSDN.MICROSOFT.COM/VCBLOG/2015/10/16/DEBUGFASTLINK-FOR-VS2015-UPDATE-1](https://blogs.msdn.microsoft.com/vcblog/2015/10/16/debugfastlink-for-vs2015-update-1).

#### **Security-enhanced Linux\* is not supported (200155374)**

Security-enhanced Linux settings (SELinux) are currently not supported by the VTune Amplifier 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/>".*

#### **VTune Amplifier user mode collection may fail to run on Ubuntu\* (200197563)**

VTune Amplifier may fail to collect data for Hotspots, Concurrency, and Locks and Waits analysis types on the Ubuntu operating system. Once a collection is started, the message appears in the output: *"Failed to start profiling because the scope of ptrace() system call application is limited. To enable profiling, please set /proc/sys/kernel/yama/ptrace\_scope to 0. See the Release Notes for instructions on enabling it permanently."*

To workaround this problem for the current session, set contents of the `/proc/sys/kernel/yama/ptrace_scope` sysctl file to 0.

To make this change permanent, set `kernel.yama.ptrace_scope` value to 0 at `/etc/sysctl.d/10-ptrace.conf` file using root permissions and reboot the machine.

#### **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. 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 may cause KVM guest virtual machine to crash (200384245)**

In some cases, when you run Event-Based Sampling analysis on a host machine, a guest KVM virtual machine may experience kernel panic. This happens only if precise events are used, for example, with General Exploration analysis type. Upgrade KVM to a newer version, there is a KVM patch that fixes the problem.

### **VTune Amplifier GUI may not have scrollbars on Ubuntu\* OS (200534347)**

On Ubuntu 12.04 and newer with the overlay scrollbars style, there may be no scrollbars available in the VTune Amplifier GUI. To get them shown, change the scrollbar style by invoking the command below before running `amplxe-gui`:

- On Ubuntu 12.x:  
`gsettings set org.gnome.desktop.interface ubuntu-overlay-scrollbar false`
- On Ubuntu 13.x and newer:  
`gsettings set com.canonical.desktop.interface scrollbar-mode normal`

### **Symbols are not resolved for binaries remapped with hugtlibfs utility (200244405)**

`hugtlibfs` remaps segments from executable file to its temporary file system or to anonymous memory regions. VTune Amplifier can't map those segments to the original executable.

Workaround for this problem is to rename the original executable to the one that `hugtlib` exposes, i.e. the module name that you see in VTune Amplifier results.

`my_exe` (original executable) -> `my_exe_32_2` (file name on `hugtlib` file system in case of sharing between processes)

`my_exe` (original executable) -> `libhugtlibfs.tmp.<random hash>` (memory region name in case of anonymous mappings)

### **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.

### **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 `libhugtlibfs` library on the system. VTune Amplifier can be started this way:

```
hugectl --heap <amplxe install dir>/bin32/amplxe-gui
LD_PRELOAD=libhugtlibfs.so <amplxe install dir>/bin64/amplxe-gui
```

### **Help TOC is truncated in some Linux browsers (200272063)**

When using certain HTML browsers to view the VTune Amplifier offline 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

**Decreasing sampling interval for user-mode sampling and tracing collection may lead to wrong CPU usage data (200296537)**

User-mode sampling and tracing analysis 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.

**User-mode sampling and tracing collection may cause an error when profiling COI/SCIF application on Intel® Xeon Phi™ processor (200234639)**

If you get a COI buffer error with User-mode sampling and tracing collection, use hardware event-based analysis instead.

**Collection fails with error "No CONFIG\_PERF\_EVENTS=y kernel support configured" (200372350)**

Driverless EBS collection on Linux can fail with the error: "No CONFIG\_PERF\_EVENTS=y kernel support configured" even having the kernel config has been set. This is a known Linux kernel issue that is resolved in kernel version 4.1. There is a simple patch that provides a workaround: <http://halobates.de/ivb-allow-mem-load-uops>

**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 "stop" command.

**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
```

**VTune Amplifier help does not open from GUI on some Linux systems (200377881)**

On some Linux systems, like Wind River Linux, default ways to open web browser may not work. You may export environment variable 'BROWSER' (before starting VTune Amplifier) with the path to web browser to get VTune Amplifier help working.

For example:

```
>export BROWSER=/usr/bin/firefox
```

**VTune Amplifier 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.

**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.

**VTune Amplifier XE may report less data than expected on Intel Xeon Phi coprocessor due to power management settings (200343917)**

VTune Amplifier 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 Intel Xeon Phi coprocessor 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 profiling again.

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### Xulrunner

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Changes to standard library modules:

A brief summary of changes made to Python 2.5.2 source:

- On Windows\*, the code of import, zipimport, and execfile was modified to handle directories containing Unicode characters.

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## **zlib.h**

zlib.h -- interface of the 'zlib' general purpose compression library

version 1.2.3, July 18th, 2005

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New data are always welcome, especially if they are accurate. If you have anything to contribute, please follow the instructions at the web site.

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