

# Intel® VTune™ Amplifier XE 2016 Release Notes for OS X\* Viewer

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Installation Guide and Release Notes

2 June 2016

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You can find the latest Release Notes versions [online](#).

## 1 Performance Profiling with Intel VTune Amplifier XE

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

Intel VTune Amplifier for OS X\* supports viewing of results collected on other OSs. Native collection on OS X\* is not currently available.

Intel® Parallel Studio XE users: Intel® Advisor XE can now assist with vectorization optimization. If you have Intel Parallel Studio XE Professional or Cluster Edition it may already be installed. See <https://software.intel.com/en-us/intel-advisor-xe> for details.

## 2 What's New

### Intel® VTune™ Amplifier XE 2016 Update 4:

- Support for the Intel® Xeon Phi™ Processor Codenamed **Knights Landing** (KNL) including **General Exploration**, **Memory Access** and **HPC Performance Characterization** analysis.
- Performance Monitoring Events reference for **Intel® Xeon® Processor E5 v4 Family** (formerly codenamed "Broadwell-EP")

### Intel® VTune™ Amplifier XE 2016 Update 3:

- Detection of the **OpenCL™ 2.0 Shared Virtual Memory** (SVM) usage types per kernel instance

- **Arbitrary targets** command line configuration extended with MPI launcher options
- Driverless event-based sampling collection for uncore events enabled for the **Memory Access** analysis
- **Preview** features:
  - **Disk Input and Output** analysis that monitors utilization of the disk subsystem, CPU and processor buses, helps identify long latency of I/O requests and imbalance between I/O and compute operations
  - **GPU Hotspots** analysis targeted for GPU-bound applications and providing options to analyze execution of OpenCL™ kernels and Intel Media SDK tasks
  - Basic Hotspots analysis extended to **support Python\* applications** running via the Launch Application or Attach to Process modes
- Support for the next generation **Intel® Xeon® Processor E5 v4 Family** (formerly codenamed "Broadwell-EP")
- Ability to load/unload VTune Amplifier product environment with *modulefile* for **Environment Modules** system"
- Support for Intel® Manycore Platform Software Stack (Intel® MPSS) version 3.7

## Intel® VTune™ Amplifier XE 2016 Update 2

- Metric-based navigation between call stack types replacing the former Data of Interest selection
- Updated filter bar options, including the selection of a filtering metric used to calculate the contribution of the selected program unit (module, thread, and so on)
- Source/Assembly analysis available for OpenCL™ kernels (with no metrics data)
- SGX Hotspots analysis support for identifying hotspots inside security enclaves for systems with the Intel Software Guard Extensions (Intel SGX) feature enabled
- HPC Characterization analysis that monitors utilization of the CPU, memory, and FPU for a compute-intensive or throughput application and helps identify floating point operation and memory optimization opportunities. This is a preview feature. 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) in the next 30 days.
- Default project configuration changed to apply existing target (thresholds for frame rate, region/ interrupt/function duration) and filtering (call stack mode, inline mode, loop mode) settings to all subsequent results generated for this project
- New option to measure the maximum local bandwidth and use this data to scale the DRAM Bandwidth overtime view and calculate the bandwidth histogram thresholds
- Support for the Fedora\* 23, Ubuntu\* 15.10

## Intel® VTune™ Amplifier XE 2016 Update 1

- General Exploration analysis for Intel microarchitecture codename Cherry Trail
- Event-based sampling collection for multiple ranks per node with an arbitrary MPI launcher
- Command-line option -knob event-config extended to display a list of PMU events available on the target system
- Algorithm analysis views extended to display confidence indication (greyed out font) for non-reliable metrics data resulted, for example, from the low number of collected samples
- Support for Intel® Manycore Platform Software Stack (Intel® MPSS) version 3.6
- Support for Linux\* kernel 4.1 and 4.2

## Intel® VTune™ Amplifier XE 2016 (since 2015 release)

- **OpenMP\*** analysis enhancements with:
  - **Spin** and **Overhead Time** metrics classified by reasons for OpenMP\* analysis
  - **Potential Gain** expansion by parallelization inefficiencies representing their wall time cost
  - **Precise trace-based imbalance** calculation that is especially useful for profiling of small region instances. Requires Intel® Composer XE 2015 Update 3 or higher
  - Detailed analysis by barrier-to-barrier region segments to explore performance of OpenMP work-sharing constructs and barrier cost inside a region
  - Display of **atomic operations cost** and **iteration counts** (min/max/average) per parallel loop and identifying the iterations insufficient to saturate working threads
  - Direct access to the source analysis for an OpenMP parallel region when using the /OpenMP Region/.. granularity in the grid
- **OpenMP and MPI multi-rank analysis** on a compute node with:
  - MPI rank ID automatically embedded into an MPI process name to better distinguish multiple ranks for Intel MPI analysis
  - New **trace-mpi** knob CLI option and Trace MPI GUI target configuration option for enabling collectors to determine MPI rank IDs in case of a non-Intel MPI library implementation
  - Per-rank Intel MPI communication busy wait time detected and displayed in the Summary, grid and Timeline views

- Selective rank profiling for MPI applications, including Microarchitecture analysis for multiple ranks on a node by using Intel MPI library v5.0.3 or higher
- VTune Amplifier XE command line generation for selective rank profiling through Intel Trace Analyzer and Collector v9.0.2 or higher
- **GPU analysis** improvements including:
  - Support for Intel microarchitectures code name Broadwell, Skylake, Braswell and Cherry Trail.
  - **CPU/GPU Concurrency** analysis using a predefined configuration to explore GPU usage per basic hardware metrics and correlate this data with the CPU usage at the same time frames
  - Support for analyzing applications using **Intel® HD Graphics** on **Linux\* OS**, including:
 

Intel® HD Graphics Driver 16.4.2.1.X or newer version is required for analyzing processor graphics hardware metrics on Linux\*

    - **GPU usage analysis** including the **GPU hardware metrics**
    - **GPU Architecture Diagram** added to the **Timeline** pane to facilitate interpretation of the OpenCL™ application analysis data and easily match the GPU hardware metrics with the corresponding architecture blocks
    - **OpenCL** application analysis (for Intel HD Graphics), including display of compute-originated batch buffers on the GPU software queue in the Timeline pane
    - **Intel Media SDK** program analysis, including display of information on packet submission in the Timeline pane
- **Microarchitecture Analysis** enhancements:
  - **General Exploration** analysis views extended to display confidence indication (greyed out font) for non-reliable metrics data resulted, for example, from the low number of collected samples
  - **General Exploration** analysis support for the 6th Generation Intel® Core™ processors (code name: Skylake)
  - Optimized configuration for the **Microarchitecture Analysis** that now includes platform-independent analysis types
  - **Hardware Events** viewpoint, displaying an estimated count and/or the number of collected samples, replaced **Hardware Event Counts** and **Hardware Event Sample Counts** viewpoints

- Support for **Perf\* based driverless hardware event-based sampling collection with stacks**
- **Loop trip count** collection level supported for the Advanced Hotspots and custom hardware-event-based sampling analysis types
- Intel Processor Event Reference integrated into the VTune Amplifier help system
- Hardware event-based stack sampling collection supported for kernel-mode threads for Linux targets
- Support for a collection of system-wide context switches that enables an analysis of detailed scheduling layout for all threads on the system and identifies the nature of context switches for a thread (preemption or synchronization)
- New **Memory Access** analysis that replaces the Bandwidth analysis (now deprecated) and extends its functionality to:
  - Identify memory-related issues, including bandwidth issues
  - Provide configuration options to attribute performance events to memory objects (data structures) for Linux targets.
  - Support the 5th Generation Intel® Core™ processors (code name: Broadwell) and Intel microarchitecture code name Silvermont
  - Provide Intel® QuickPath Interconnect (Intel® QPI) Bandwidth data analysis for server platforms
  - Present Total, Read and Write Bandwidth timeline areas in a single area
  - Group the CPU Time timeline area by package
- Intel® **Transactional Synchronization Extensions** (Intel TSX) **Hotspots** analysis that helps analyze hotspots inside transactions on processors starting with the Intel microarchitecture code name Haswell
- User Interface enhancements:
  - Optimized project configuration that provides a straightforward workflow for specifying an analysis target (formerly, Project Properties dialog box) and analysis type within the same **Choose Target** and **Analysis Type** window
  - Support for the **? CLI** argument for **filter**, **group-by** and **column** options to get a list of option values available for the specified report
  - CLI reports synchronized with the data provided in the **Top-down** and **Bottom-up** views of the GUI viewpoints

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## Software Requirements

- Supported OS X\* distributions:
  - OS X\* 10.8.\*
  - OS X\* 10.9.\*
  - OS X\* 10.10.\*
- To view PDF documents, use a PDF reader, such as Adobe Reader\*.

## 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.

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## 5 Installation Notes

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

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Xulrunner

Modified source code and instructions for building the Xulrunnerpackage shipped as a part of the Intel® VTune Amplifier are available at the following link:  
<https://software.intel.com/en-us/articles/xulrunner-for-intel-vtune-amplifier-xe>

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""""

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""""

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*
*/
"""

```

- HTTP Parser, located at `deps/http_parser`. HTTP Parser's license follows:

```

"""
http_parser.c is based on src/http/nginx_http_parse.c from NGINX copyright
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```

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# Project: http://code.google.com/p/lao-dictionary/
# Dictionary: http://lao-dictionary.googlecode.com/git/Lao-
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