

# Intel® VTune™ Performance Analyzer

Performance Tools Lab  
Intel Corporation





# Agenda

- Overview of the VTune™ Performance Analyzer
- Sampling O.S. and User-Defined performance monitoring counters
- Summary

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# Some Performance Tool Goals

- The act of measuring performance shouldn't change the performance of the software
  - Accurate, representative results with no instrumentation
  - Low intrusive performance measurements
  - Interrupt based sampling driven by CPUs registers
- Programmers need to see System-wide performance
  - Identify the software that is consuming most of the CPU
    - Application, shared objects, O.S. layer, device driver, ...
- Source code should be the normal view of the performance data
  - Each executable statement annotated with perf. data



# VTune™ Performance Analyzer - Products

- **VTune™ Performance Analyzer 7.2**
  - “Traditional” VTune analyzer
  - Remote capability, inc. Linux\*
  - Command line interface (Windows\*) included
- **VTune Performance Analyzer 3.0 for Linux\***
  - GUI-based tool runs on Eclipse
  - Stand alone viewers, command line tool also
- **VTune™ Analyzer Driver Kit**
  - Rebuild VTune™ Analyzer Linux driver for non-standard kernels (ex: errata kernels, modified kernels)
  - Red Hat, SuSE production distributions supported



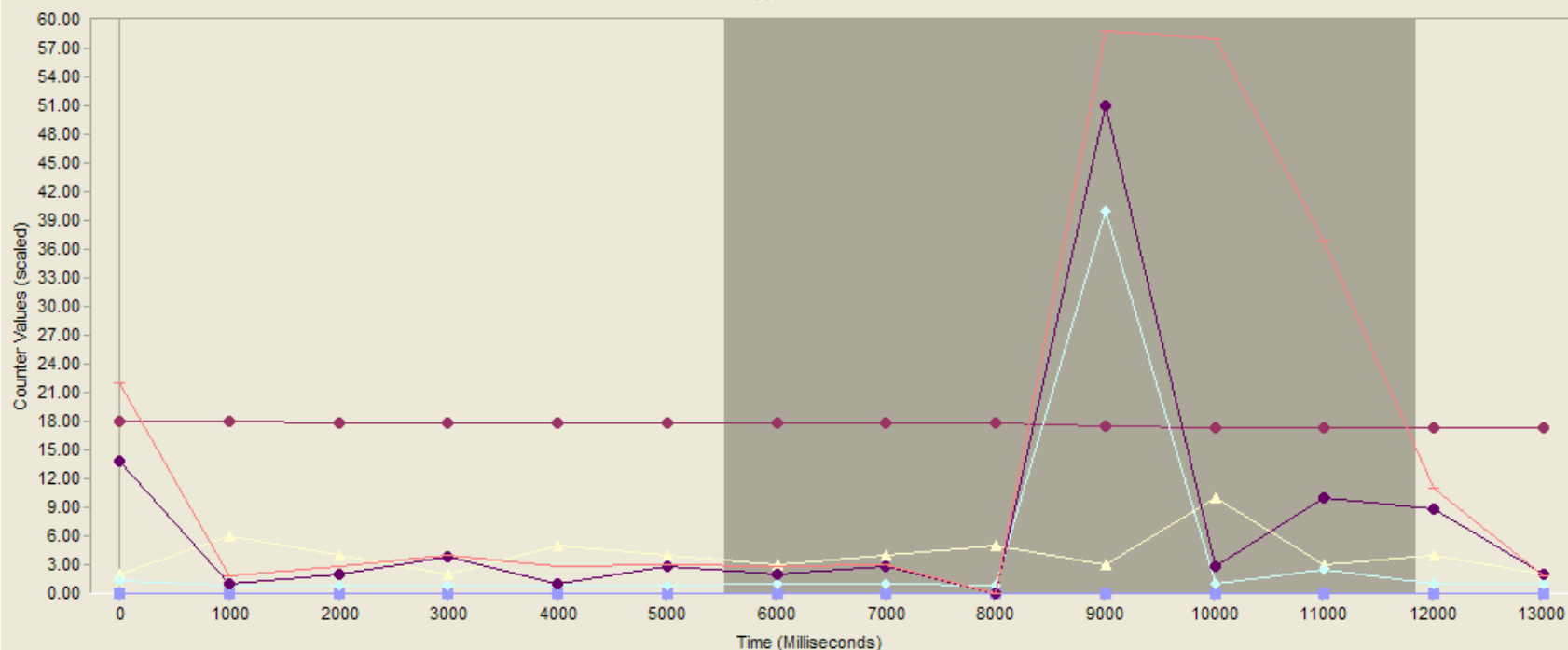
# Performance Analysis Technologies

- **Sampling - Identify Performance Bottlenecks**
  - Interrupt based sampling
    - CPU events (Event Based Sampling)
    - O.S. events (Perfmon counters)
  - Lower Overhead, less data
- **Call Graph - Examine flow of control through the app**
  - Which functions took the longest
  - Which functions were blocked the longest
  - Calling sequence critical path
  - Higher Overhead, more data



# Sampling – O.S. Events

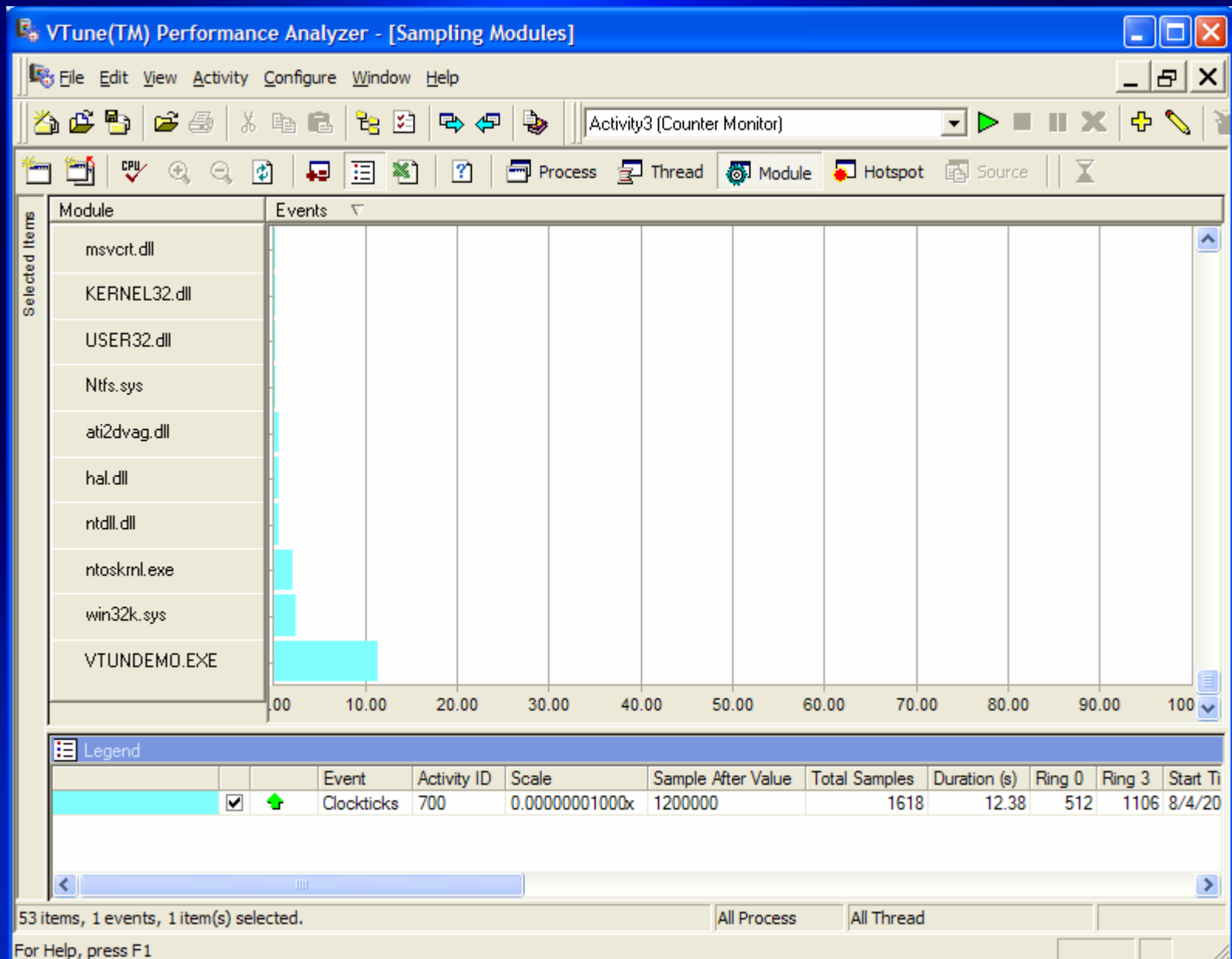
- **Monitor the Counters in Registry**
  - Sample the counters periodically
  - Show a real-time graph of the data
- **Allows addition of user defined counters**
- **When a counter value does something bad:**
  - What was the app doing when the counter value changed?
    - Highlight that part of the graph on the overall run
    - Do the VTune™ Analyzer's normal drill down to source



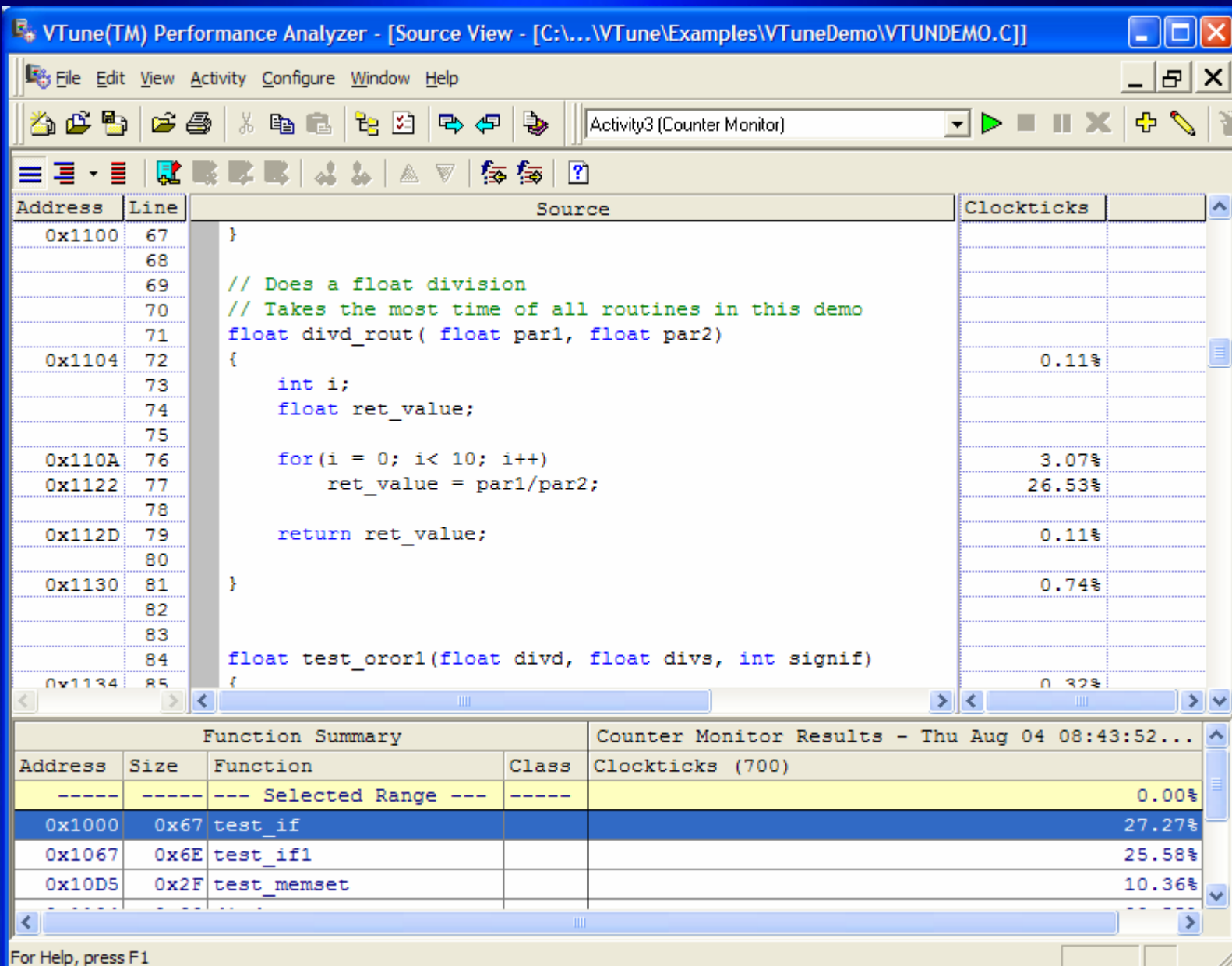
### Legend

Counter Name	Graph Scale	Average	Min	Max	Std. Dev.	
Redirector : Network Errors/sec	1.0	0.000	0.000	0.000	0.000	
Memory : Available Bytes	0.0000001	177634736.000	174051328.000	180236288.000	2398297.000	
System : Processor Queue Length	1.0	4.071	2.000	10.000	2.093	
System : Context Switches/sec	0.001	3922.143	865.000	40032.000	10401.394	
Processor (_Total) : % Privileged Time	1.0	7.501	0.000	51.022	13.154	
Processor (_Total) : % Processor Time	1.0	15.001	0.000	58.982	21.011	











# Summary

- Free evals, supported platforms, technical papers, ...
  - [www.intel.com/software/products/vtune/](http://www.intel.com/software/products/vtune/)
- VTune™ Analyzer User Forums
  - <http://softwareforums.intel.com/ids>