Performance Analysis for Intel architecture

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Intel® VTune™ Amplifier XE 2013

Second Generation VTune™ Analyzer

Fast, Accurate Performance Profiles

- Hotspot (Statistical call tree)
- Hardware-Event Based Sampling[1]

Thread Profiling

- Visualize thread interactions on timeline
- Balance workloads

Easy set-up

- Pre-defined performance profiles
- Use a normal production build

Compatible

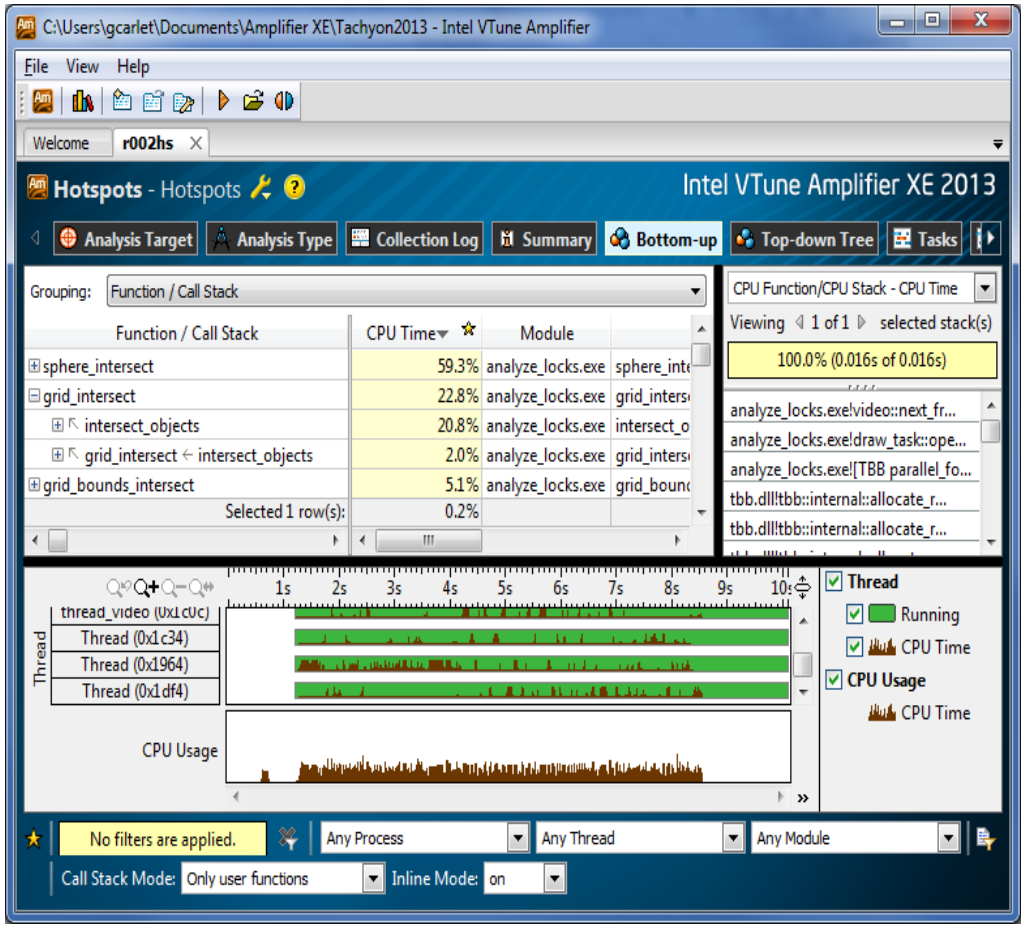
- Microsoft, GCC, Intel compilers
- C/C++, Fortran, Assembly, .NET, Java*
- Latest Intel® processors and compatible processors[1]

Find Answers Fast

- Filter extraneous data
- View results on the source / assembly
- Event multiplexing

Windows or Linux

- Visual Studio Integration (Windows)
- Standalone user i/f and command line
- 32 and 64-bit



[1] IA32 and Intel® 64 architectures. Many features work with compatible processors. Event based sampling requires a genuine Intel® Processor.

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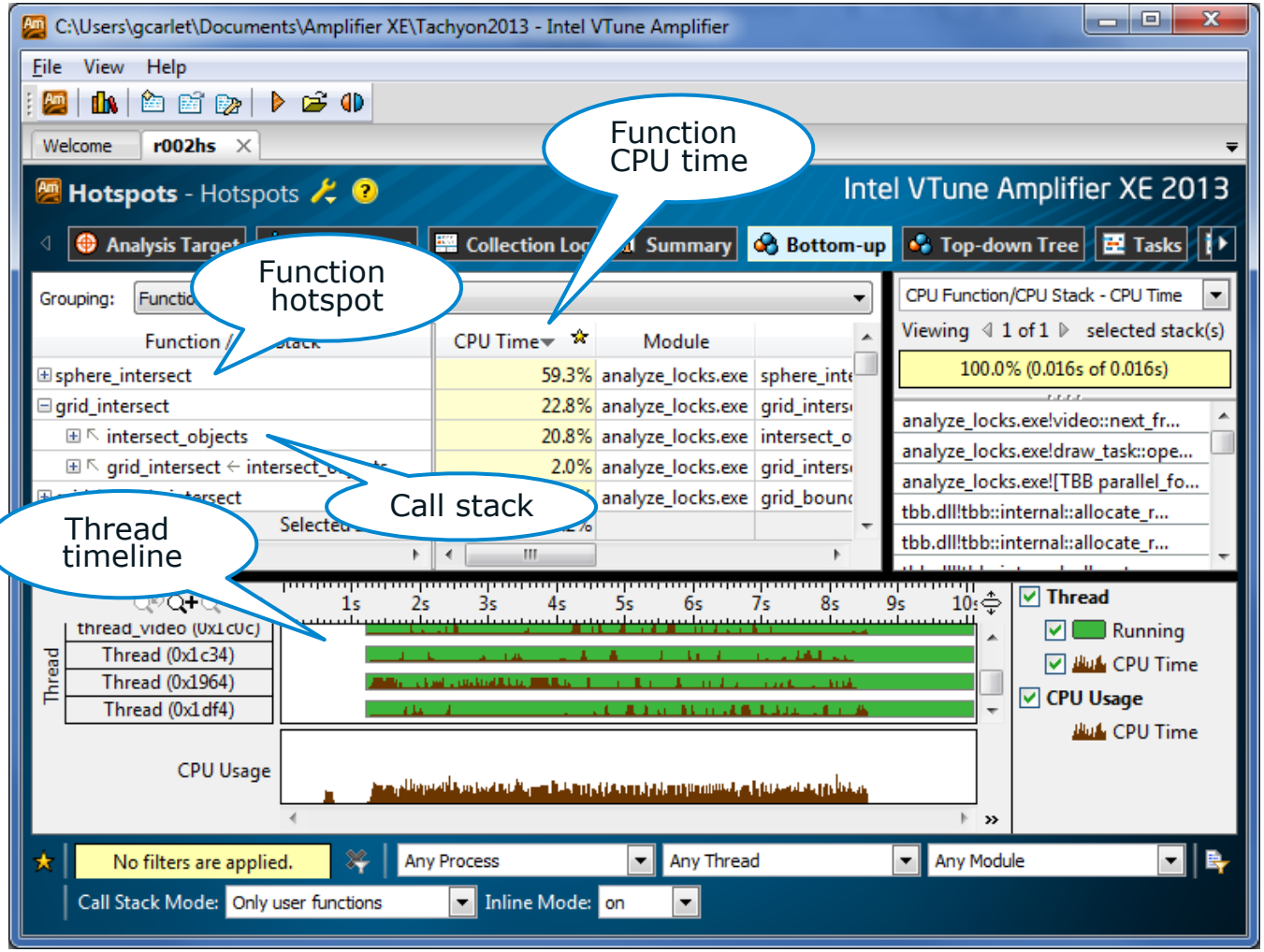
Hotspots analysis



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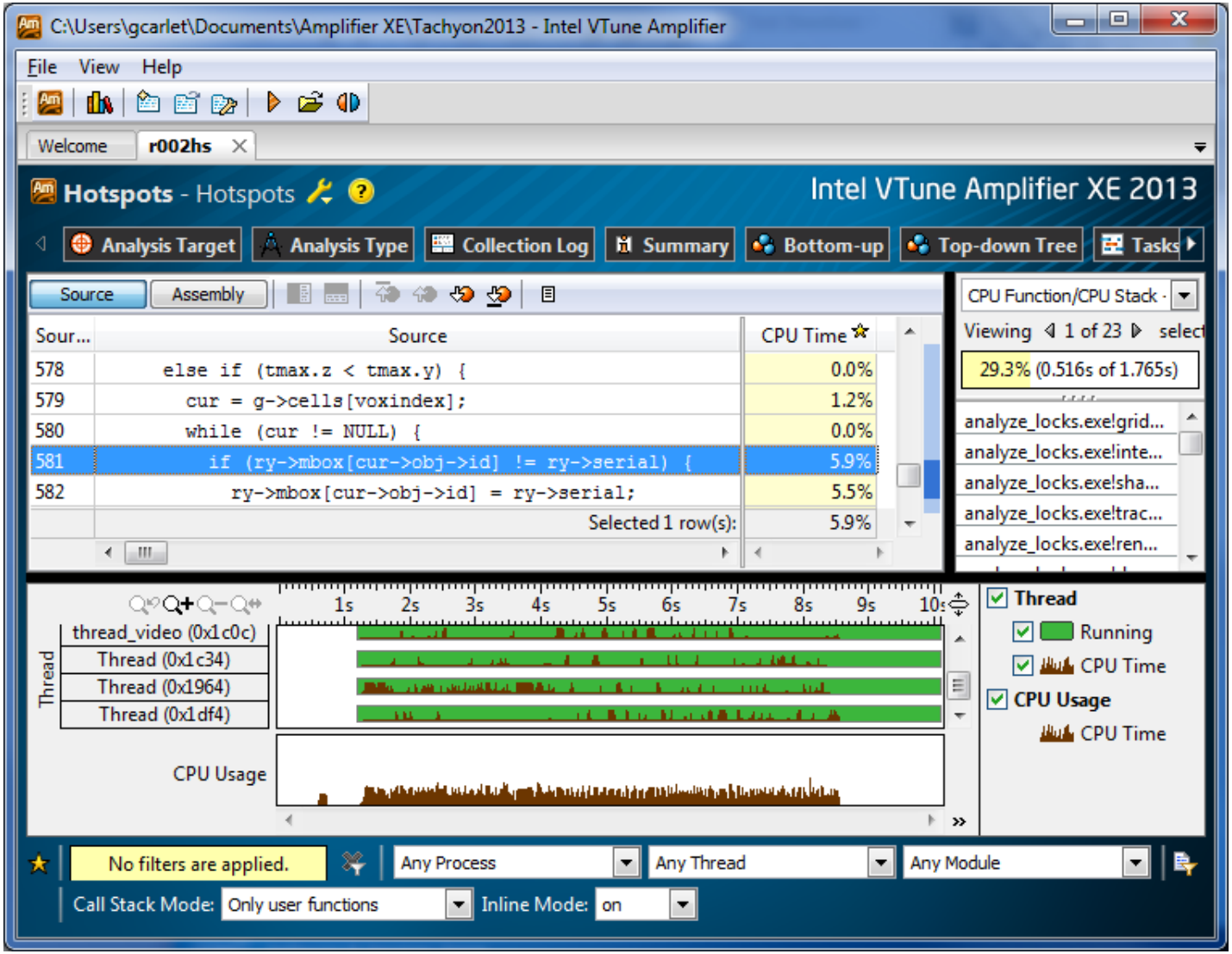
Hotspots analysis – Source View



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Advanced Processor Analysis – General Exploration

- Predefined Analysis Type that collects different types of CPU performance events
- Good for first look at whether any CPU event categories are affecting performance
- GUI highlights those events and functions that have performance problems

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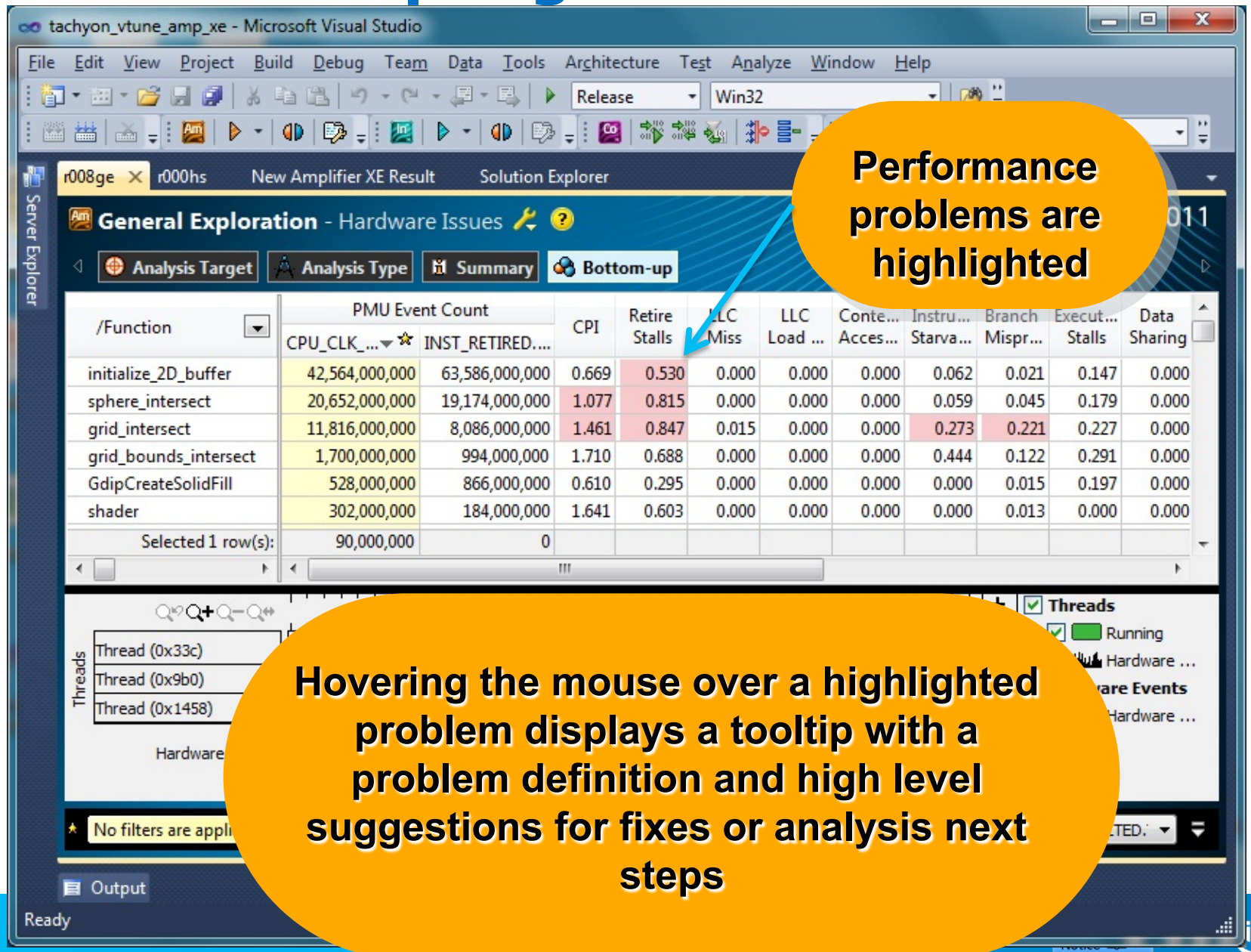
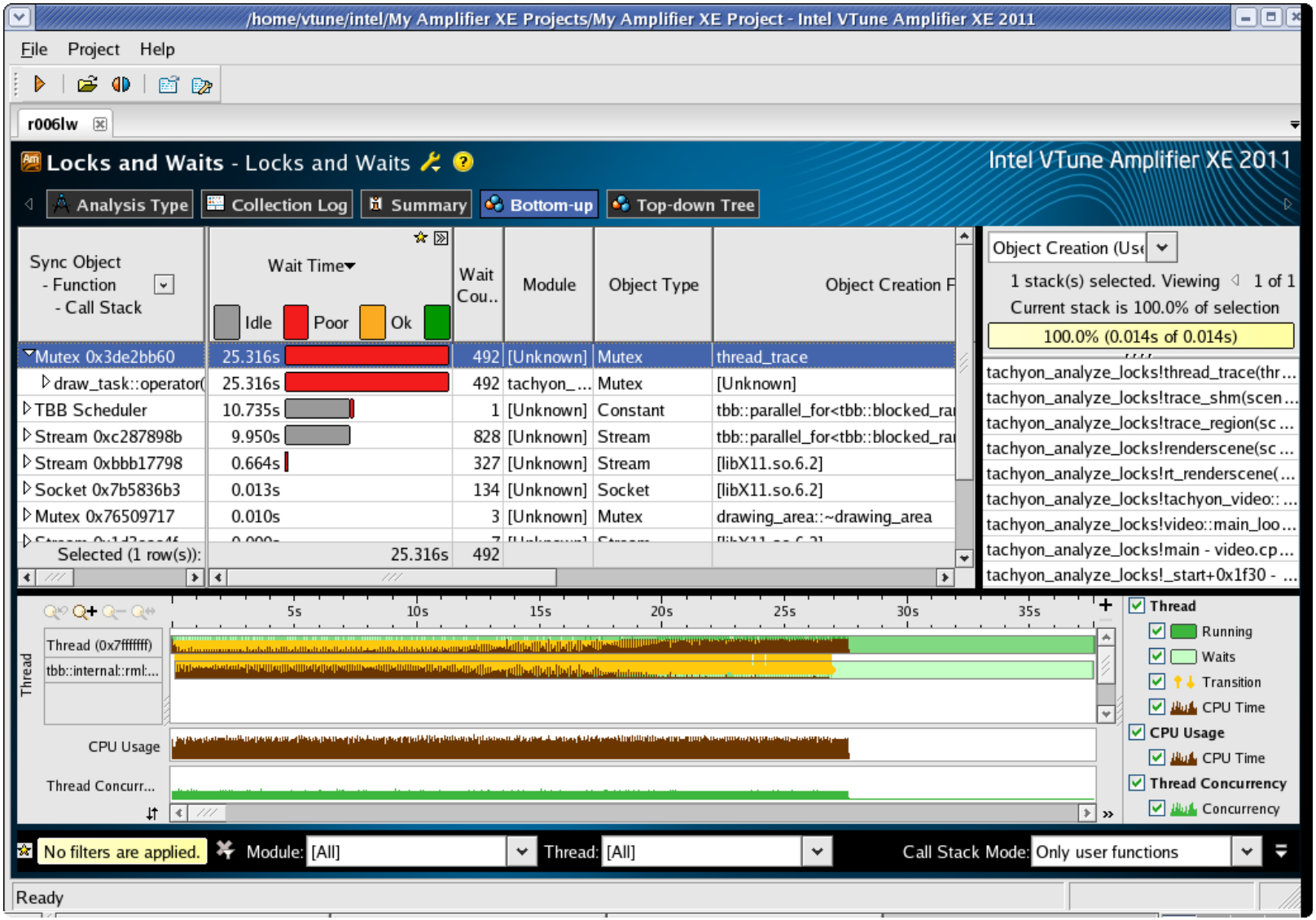
CPU HW Sampling results



Locks-and-Waits View



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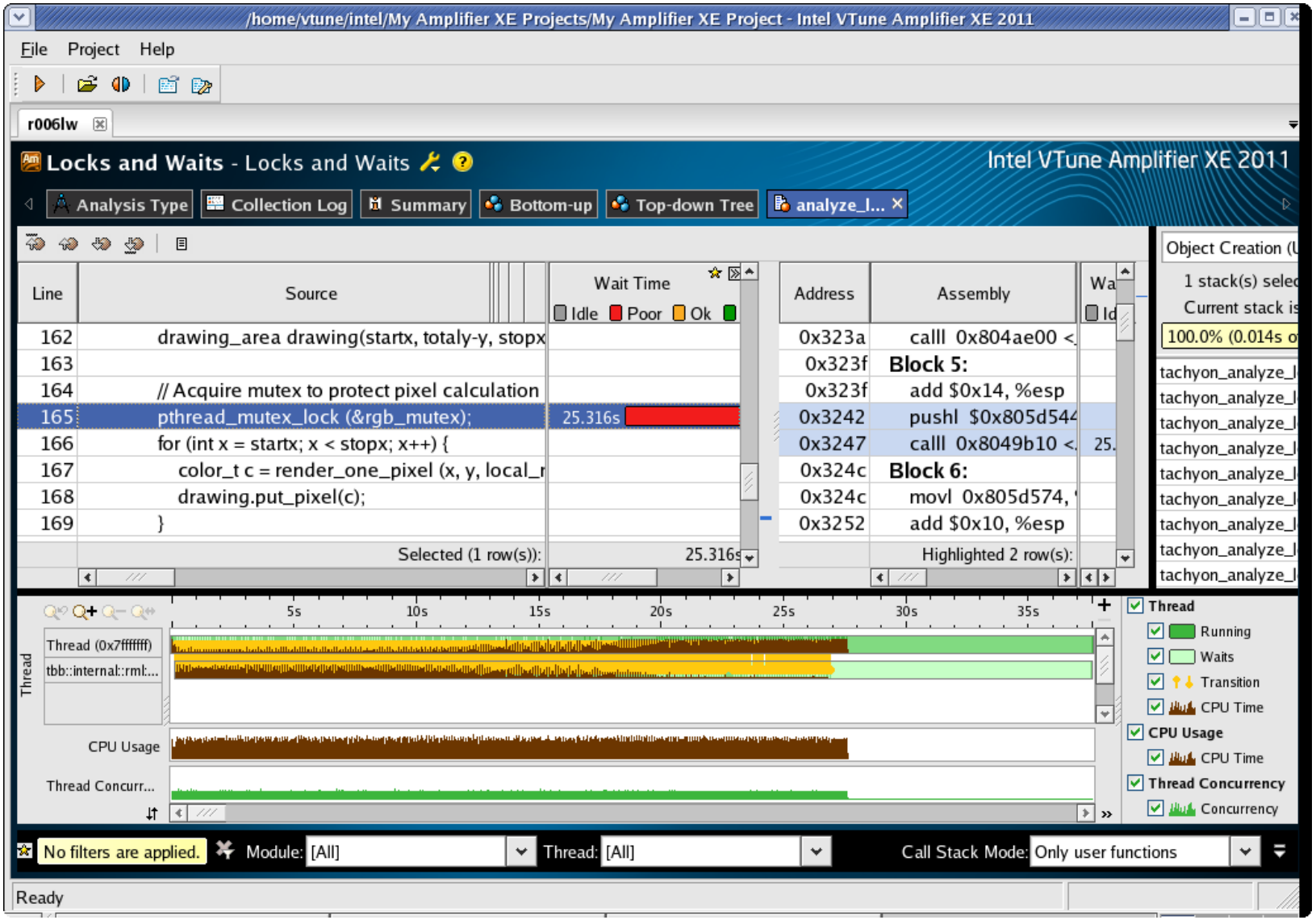
Locks-and-Waits Source View



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Summary

- The Intel® VTune Amplifier XE can be used to find:
  - Source code for performance bottlenecks
  - Characterize the amount of parallelism in an application
  - Determine which synchronization locks or APIs are limiting the parallelism in an application
  - Easily find CPU performance events that are causing additional CPU clocks

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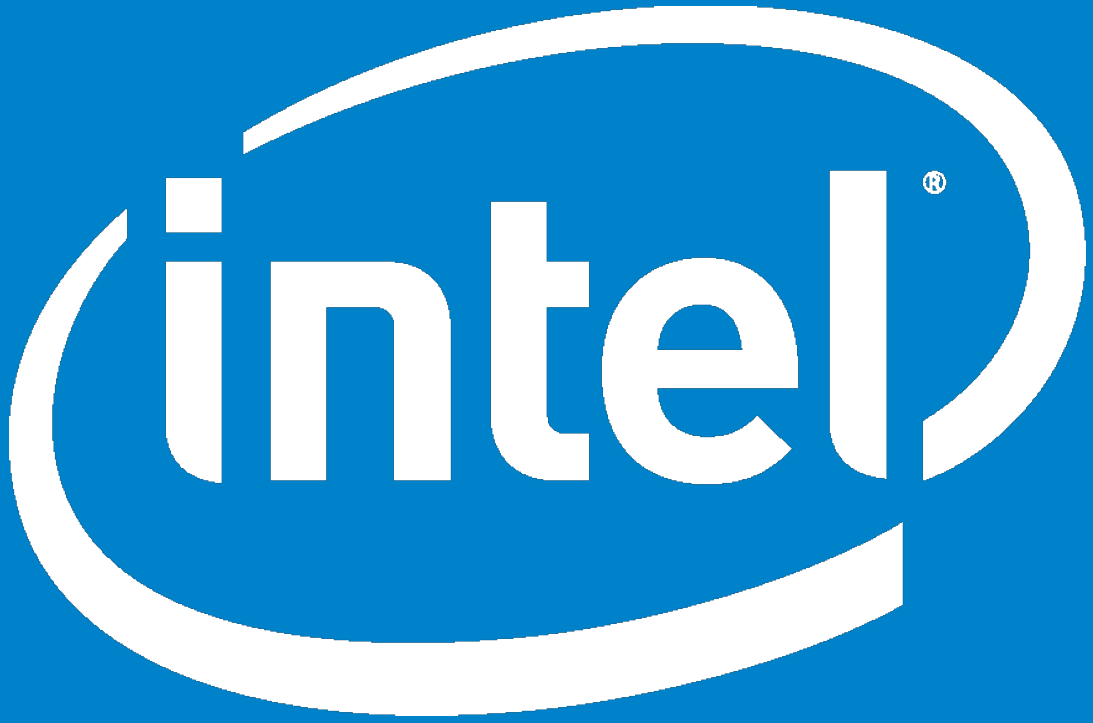
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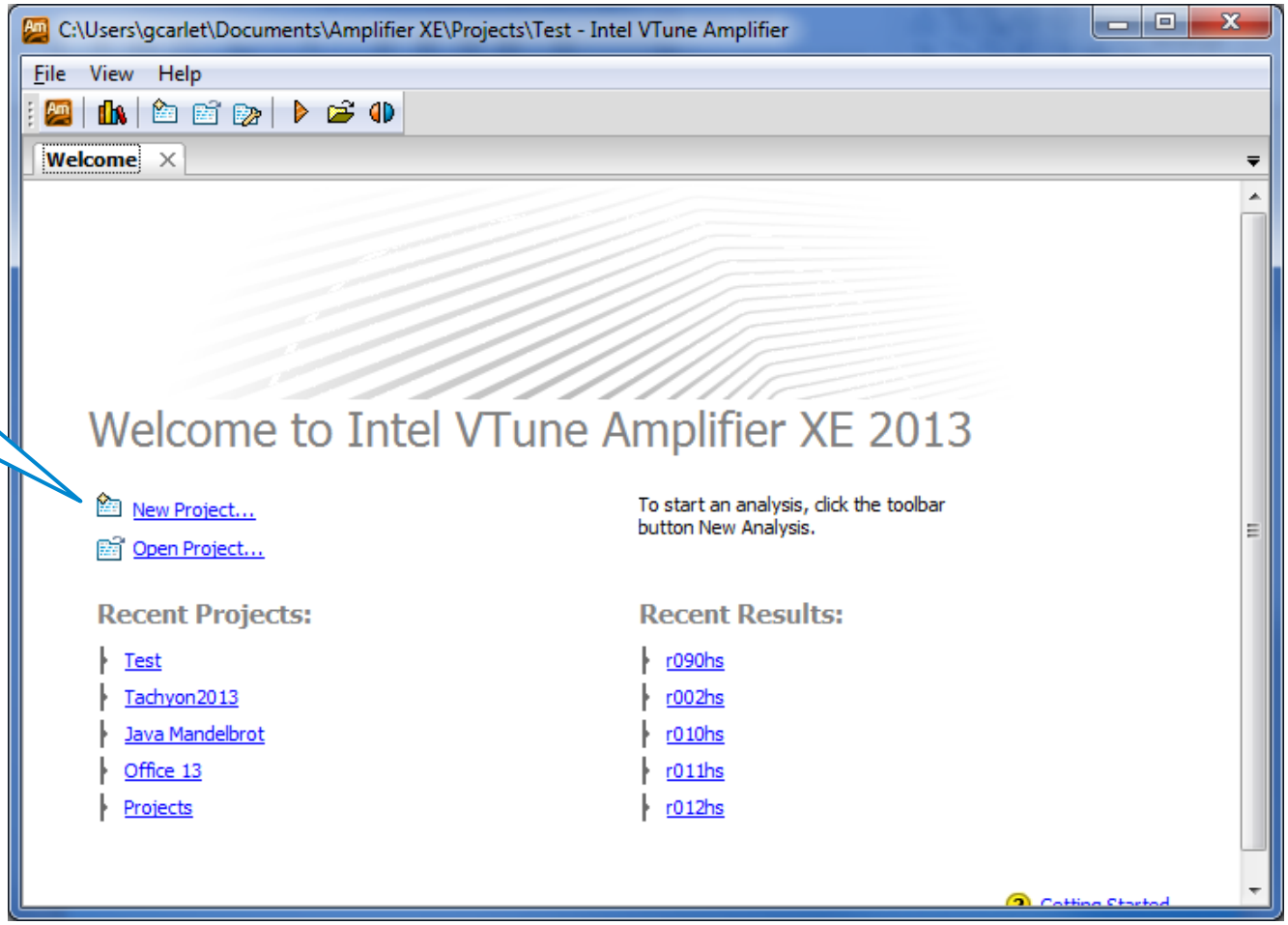
Starting VTune™ Amplifier XE - The First Time

First create a project



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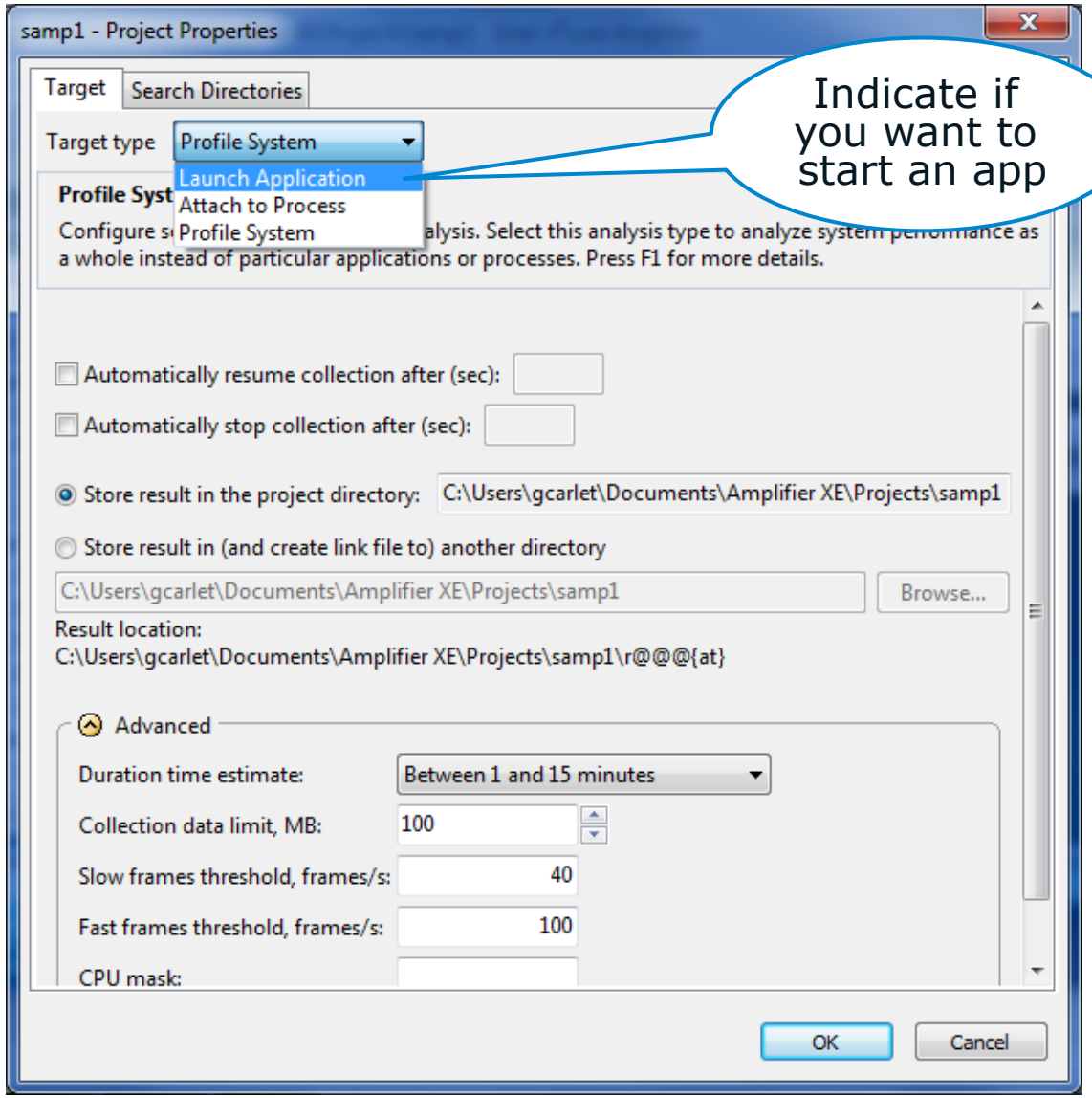
Specify optional app to launch



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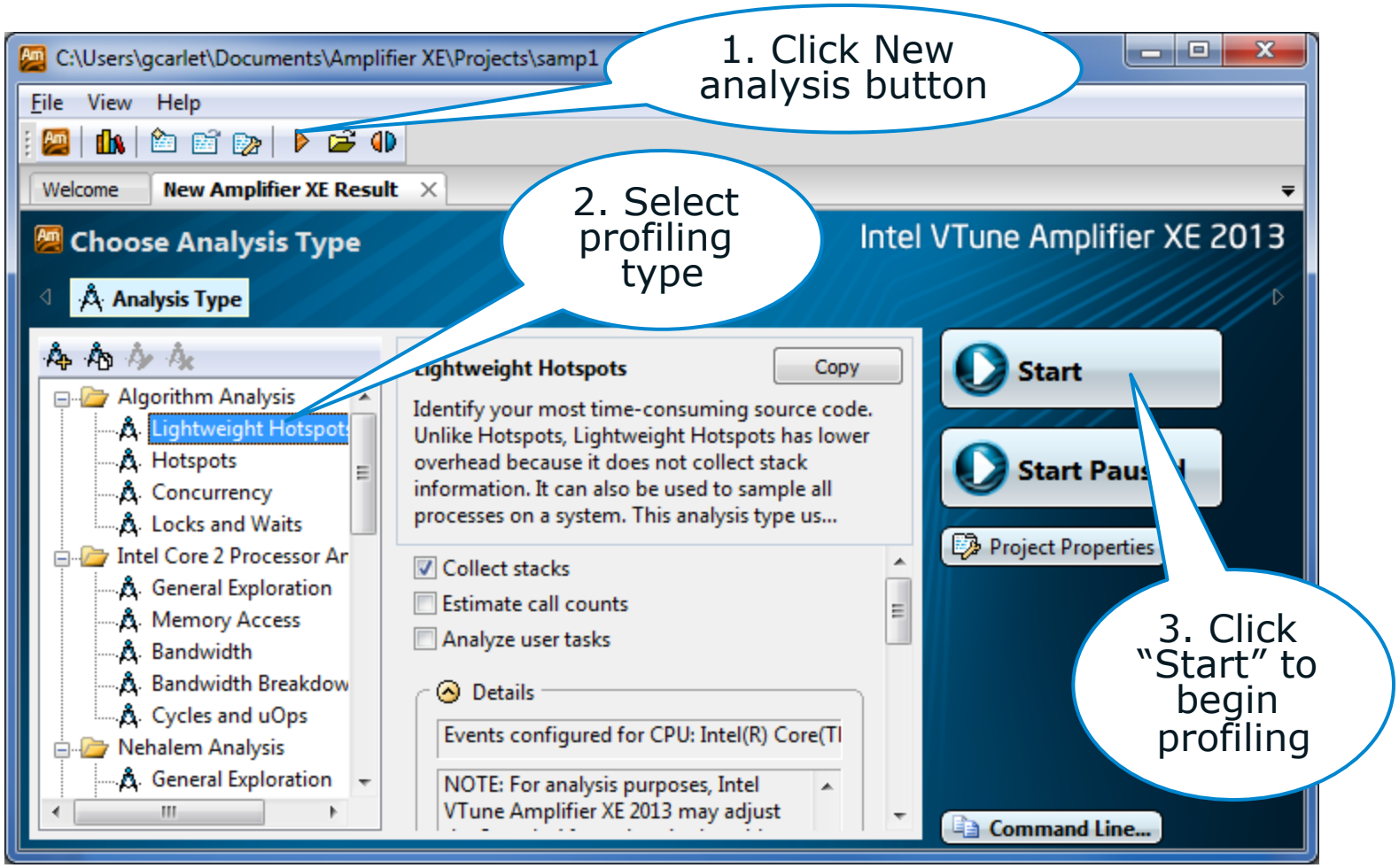
Indicate type of profiling (ex: Lightweight Hotspots)



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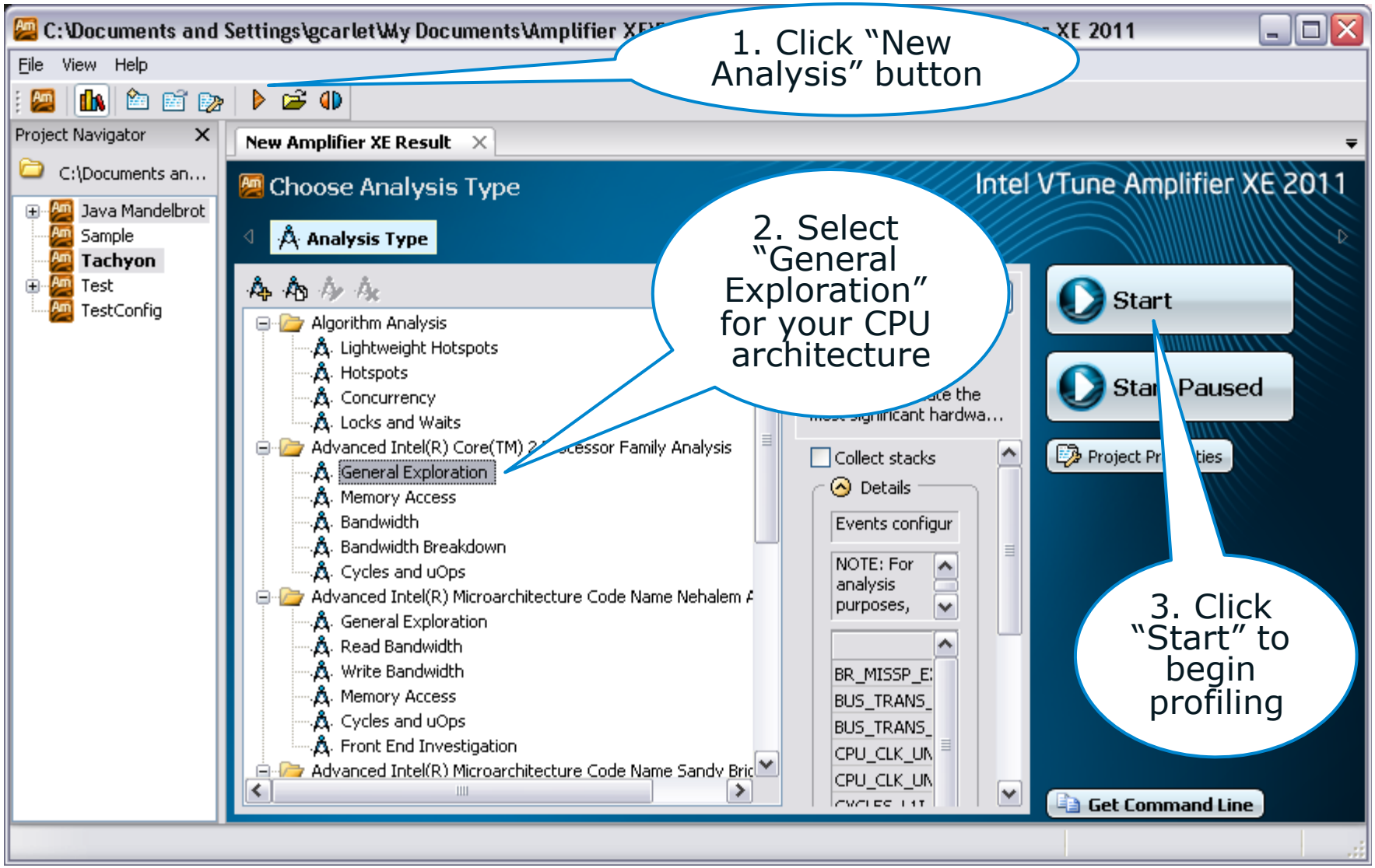
Running the General Exploration collector



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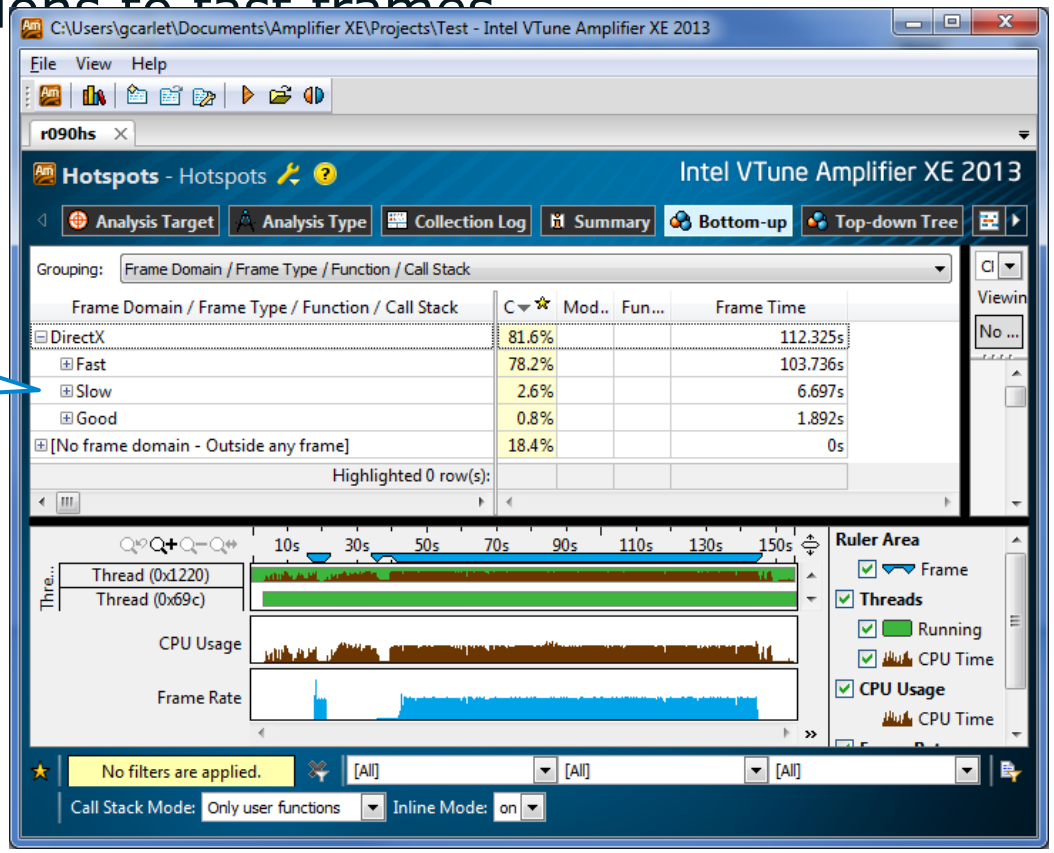
AutoDetect DirectX* Frames

- Find occasional slow video frames
  - Identify causes of intermittently slow frames by comparing slow frame functions to fast frames
  - Definition of "slow" is user configurable

2.6% of DirectX frames were too slow



- Expand "Slow" and "Fast" nodes to see the differences and identify slow frame causes

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"JIT" APIs

Profiling Runtime generated code

APIs to indicate attributes of code

- Code memory address
- Symbol information
  - Function names, Line Numbers

Drill down to source code when viewing profiling analysis

APIs are defined in jitprofiling.h

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Locks and Waits Collection

Identifies those threading items that are causing the most thread block time

- Synchronization locks
- Threading APIs
- I/O

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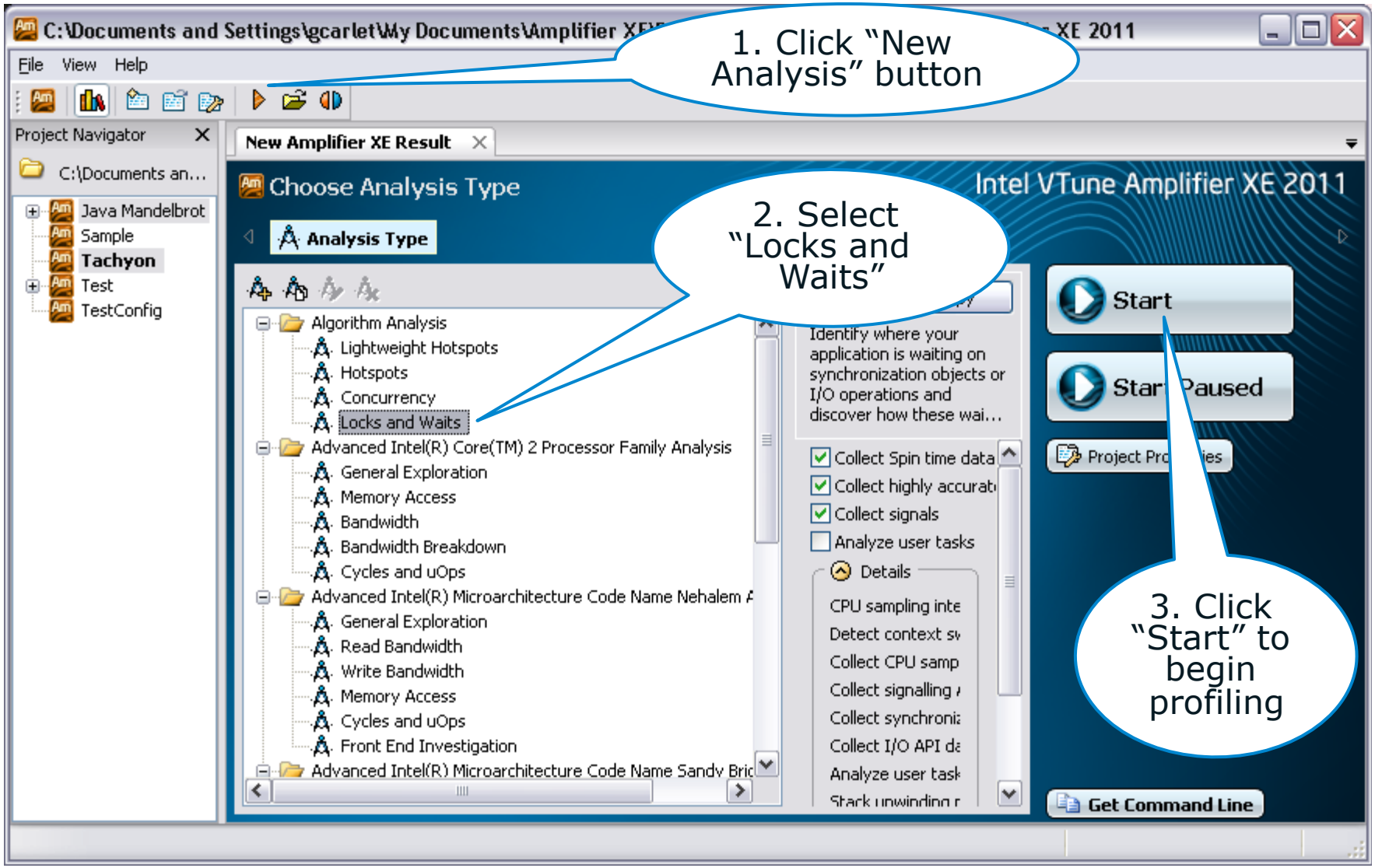
Running the "Locks and Waits" collector



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