

VTune™ Analyzer JIT Profiling plug-in for Tamarin

This document describes the required steps for installing and configuring the VTune™ Analyzer JIT Profiling plug-in for Tamarin. It covers the following topics:

1. The instructions for installing the VTune™ Analyzer JIT Profiling plug-in for Tamarin
2. Creating a VTune build of Tamarin
3. Creating VTune™ Analyzer sampling project for Tamarin
4. Creating VTune™ Analyzer call-graph project for Tamarin JIT'ed code

If you are already familiar with the VTune™ Analyzer, you only need to follow the instructions in section A and B and learn C.14 and D.5. The details of other steps are here only for the sake of completeness. More information about the VTune™ Analyzer is available at <http://www.intel.com/software/products/>.

A. Installation Instructions for the VTune™ Analyzer JIT Profiling plug-in for Tamarin

1. Download and install the latest version of the VTune™ Analyzer for Windows. This should be version 9.0, update 7 or higher.
2. Get the VTune™ Analyzer JITProfiling plug-in by submitting a request at the Intel Premier Support page at <https://premier.intel.com/>. Indicate that you are interested in receiving the VTune™ Analyzer JITProfiling plug-in, and request that the ticket be assigned to Gary Carleton. Adobe folks can get a copy of the plug-in from Rick Reitmaier who has already obtained the package.
3. Create a directory named "vtune" under your Tamarin "modules" directory at the same level as the "zlib" directory.
4. Unzip and copy the plug-in package to the "vtune" directory you just created in step 3 above.
5. Verify that you have a header file named JITProfiling.h directly in the "vtune" directory. Also verify that the file "IA32\LIBCMT\JITProfiling.lib" exists directly in your "vtune" directory.
6. Save a backup copy of the following DLL's that may exist in your VTune™ Analyzer bin directory: cgbe.dll, CGP.dll, cgraphinst.dll, JitPI.dll
VTune™ Analyzer bin directory is located at C:\Program Files\Intel\VTune\Analyzer\bin.
7. Copy the DLL's listed in step 6 above from the corresponding platform directory of the plug-in package to the VTune™ Analyzer's bin directory (e.g., from vtune\ia32 to C:\Program Files\Intel\VTune\Analyzer\bin).
8. Set the environment variable ENABLE_JITPROFILING=1 in your system settings.

Your VTune™ Analyzer Tamarin JIT Profiling installation is complete.

B. Creating a VTune-enabled build of Tamarin

1. Open your Visual Studio Tamarin Solution (avmplus_8.sln).
2. Select VTune from the Solution Configurations menu and build the solution.
3. If you ran to a compile problem regarding a missing header file (JITProfiling.h) or a link problem regarding a missing library (JITProfiling.lib), make sure that you have followed the steps in Section A above.

C. Creating VTune™ Analyzer sampling project for Tamarin

1. Launch the VTune™ Performance Analyzer.
2. Select the "New Project" button.
3. Select "Sampling Wizard". You can also choose a Project Name if you would like. Press OK.
4. Make sure the "Windows*/Windows* CE/Linux* profiling" button is selected. Press Next.
5. In the "Application to Launch" area, point to the VTune enabled build of Tamarin, for instance point to C:\tamarin-central\platform\win32\obj_8\shell\VTune\avmplus.exe.
6. In "Command line arguments", specify Tamarin switches, for example -Dforcemir hello.abc.
7. In "Working directory", point to the directory that contains your application's file (hello.abc).
8. If you would like, uncheck "Run Activity when done with the wizard" so it doesn't launch the application immediately after the wizard configuration.
9. You can press the Finish button or the Next button if you would like further configurations.
10. Start the sampling session by pressing the "Run Activity" button, the little green arrow.
11. When the sampling session is complete, VTune will present you its system-wide results. If you would like to stop the sampling session before its normal completion, you can do so by pressing the stop button, the little red square on VTune task bar.
12. Double click the "avmplus.exe" to see the Tamarin results.
13. VTune will take you to the Thread View of Tamarin. Double click the displayed thread to go to the Module View.

14. In the Module View, the line "avmplus.exe" includes the sampling information about the Tamarin VM while the line "avmplus.exe.jit" contains the sampling results of the JIT'ed code.
15. Choose your module of interest by double clicking on it.
16. If you select the JIT'ed code (avmplus.exe.jit), and if this is the first time you run this application, VTune will ask your help in locating the source of your application. Point it to the directory that contains the application .as or .js file and choose the file name.
17. Now, you should see the script source with its sampling information. Among other options, you can choose to see the mix of source and assembly code.

Refer to the VTune™ Analyzer Help for a comprehensive guide to its many features such as its micro-architectural events sampling among others.

D. Creating VTune™ Analyzer call-graph project for Tamarin

1. Launch the VTune™ Performance Analyzer.
2. Select the "New Project" button.
3. Select "Call Graph Wizard". You can also choose a Project Name if you would like. Press OK.
4. Make sure the "Windows*/Windows* CE/Linux* profiling" button is selected.
5. If you would like to see the Call Graph of the Tamarin JIT'ed code, make sure that "Enable JIT Profiling" is selected. Otherwise, uncheck the "Enable JIT Profiling" and you will get the Call Graph of the Tamarin VM. Press Next.
6. In the "Application to Launch" area, point to the VTune enabled build of Tamarin, for instance point to C:\tamarin-central\platform\win32\obj_8\shell\VTune\avmplus.exe.
7. In "Command line arguments", specify Tamarin switches, for example -Dforcemir hello.abc.
8. In "Working directory", point to the directory that contains your application's file (hello.abc).
9. If you would like, uncheck "Run Activity when done with the wizard" so VTune doesn't launch the application immediately after the wizard configuration.
10. If you would like to see or change further configuration settings, press the Next button; otherwise, press the Finish button.
11. Start the sampling session by pressing the "Run Activity" button, the little green arrow.

12. When the sampling session is complete, VTune will present you its system-wide results. If you would like to stop the sampling session before its normal completion, you can do so by pressing the stop button, the little red square on VTune task bar.
13. After VTune displays the call-graph for you, you can navigate through the graph nodes and edges. By moving the mouse over an edge, you will get the statistics information that VTune has gathered about that particular call. Similarly, by moving the mouse over a node, you'll get the information about the selected method. By right clicking on a node in the graph, you will get other options among which is linking to the source of the method. You can also click on the "Call List" to view the call-graph information in a list format. For more details of VTune call-graph features, please refer to its Help.