

Intel® Advisor XE 2013 Update 5 Release Notes for Linux* OS

Installation Guide and Release Notes

Document number: 326242-006US

2 October 2013

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1 Introduction

Intel® Advisor XE 2013 guides developers to add parallelism to their existing C/C++ or Fortran programs.

Intel Advisor XE provides a standalone graphical user interface (GUI) as well as a command line interface (CLI). You can use the Intel Advisor XE to:

- Find the most time-consuming serial code regions in your program.
- Insert Intel Advisor XE annotations to identify these as possible parallel code regions.
- Predict the approximate parallel performance characteristics of the proposed parallel code regions.
- Check for data sharing problems that could prevent the application from working correctly when parallelized.

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

To learn more about this product's:

- Documentation, help, and samples, open the `documentation_advisor_xe.htm` file in the following directory: `<install-dir>/documentation/<locale>/`. For example, if you choose the

default installation path, you can find the `documentation_advisor_xe.htm` file in the `/opt/intel/advisor_xe_2013/documentation/en` directory.

- Technical support, including answers to questions not addressed in the installed product, please visit: <http://software.intel.com/en-us/support/>

Please remember to register your product at <https://registrationcenter.intel.com/> by providing your email address. This helps Intel recognize you as a valued customer in the support forum.

2 What's New

Update 5 adds:

- A new Option lets you choose which Linux editor appears when you double-click a Source window line. The corresponding file and location appears in the specified Linux editor. You can still specify a Linux editor using an environment variable.
- The annotation assistant pane now appears with the Suitability Report and Correctness Report No Data messages to help you insert annotations (as well as in Survey windows).
- New command line options for the collect action: `data-limit`, `interval`, `mrte-mode`, `no-follow-child`, and `target-duration-type`.
- Various usability and stability improvements, such as improved wording in the annotation assistant pane.

Update 4 adds:

- Increased values for the Target CPU Count in the Suitability Report window, including the scalability graph. To modify the current value, specify the Maximum CPU Count in the Options > General dialog box.
- Ways to skip program initialization for Survey and Suitability analysis, by either starting the tools in a paused collection state or pausing collection for a specified time. To resume collection, either use the Resume Collection annotation or click the **Resume** button.
- The side command toolbar is more accessible. For example, to start Survey or Suitability analysis in a paused collection state, use the << button to show it. After analysis completes, use the >> button to hide it, which increases the width available for the Report window.
- New options that let you display or hide the warning message for missing debug information (Survey) and set the Suitability Report's Maximum CPU Count.
- Several new messages, a visual indication in the result tab name when a tool is waiting for you to click a button, and other usability enhancements.

Update 3 adds:

- Improved assistance window
- Snapshot copy procedure cancellation functionality

- Improved suitability by excluding paused time
- New educational sample for matrix multiplication
- Several usability improvements

Update 2 adds:

- New Pause/Resume API and GUI functionality
- New “Create Read-only snapshot” feature for taking snapshots of results
- Fortran annotations API improvements provided for `Observe Uses` and `Clear Uses` annotations
- Fix for external editor support
- Usability improvements in the Intel® Advisor XE Standalone GUI

Update 1 adds:

- A small toolbar for the Survey Report
- A Getting Started Tutorial for the Fortran nqueens sample
- Various bug fixes and improvements

Initial Release:

Intel® Advisor XE 2013 is a successor to the Intel® Parallel Advisor 2011. The key features provided by this new product include:

- Fortran (native code) support
- OpenMP* parallel framework documentation support for Fortran and C/C++ native code
- A command line interface (CLI) invoked using the `advixe-cl` command
- A product (standalone) GUI
- A new dashboard-like Summary window
- The ability to copy annotation examples and build settings from the Survey windows
- Numerous usability and feature enhancements

3 System Requirements

Supported Architectures and Terminology

Intel® Advisor XE supports the following architectures:

- **IA-32 Architecture** refers to systems based on 32-bit processors generally compatible with the Intel® Pentium® processors (such as, Intel® Pentium® 4 processor or Intel® Xeon® processor), or processors from other manufacturers supporting the same instruction set, running a 32-bit operating system.
- **Intel® 64 Architecture** refers to systems based on IA-32 architecture processors that have 64-bit architectural extensions (such as, Intel® Core™ processor family), running a 64-bit operating system. If the system is running a 32-bit operating system, then IA-32 architecture applies instead. Processors from other manufacturers supporting the same instruction set and running a 64-bit operating system are also supported.

Minimum System Requirements

- A system 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)
 - Since the Intel Advisor XE requires specific knowledge of assembly-level instructions, its analysis may not operate correctly if code contains non-Intel® instructions. In this case, run the analysis with a target executable that contains only Intel® instructions. After you finish using the Intel Advisor XE, you can use the assembler or optimizing compiler options that provide the non-Intel instructions.
 - For the best experience, a multi-core or multi-processor system is recommended
- 2GB RAM
- 4GB free disk space for all product features and architectures
- Supported operating systems:
 - Red Hat* Enterprise Linux* 5.9 and 6.4
 - CentOS* versions equivalent to Red Hat Enterprise Linux versions listed above
 - Fedora* 18 and 19 (pango packages should be installed, including `pango-compat` on Fedora 18)
 - SUSE* Linux Enterprise Server* 10 SP4 and 11 SP3
 - Debian* 6 and 7
 - Ubuntu* 10.04, 12.04, 12.10 and 13.04
- Application coding requirements:
 - Programming Language:
 - C or C++
 - Fortran
- Supported compilers:
 - Intel® C++ Compiler 12 and higher

- Intel® Fortran Compiler 12 and higher
- GNU* C/C++ Compiler 3.4.6 and higher
- Supported threading methodologies:
 - Intel® Threading Building Blocks (Intel® TBB)
 - Intel® Cilk™ Plus
 - OpenMP*
 - POSIX* Threads (low-level)
- To view PDF documents, you need a PDF reader, such as Adobe Reader* 6 or later

Notes:

1. Intel Advisor XE samples work with the Intel TBB by using the environment variable TBBROOT. Intel TBB is included with the Intel® Composer XE and is available from <http://software.intel.com/en-us/intel-tbb/>. To build the Intel TBB applications, you will need to define the TBBROOT environment variable. To set the TBBROOT environment variable, see the Intel Advisor Help or Getting Started Tutorial.

4 Installation Notes

If you are installing the product for the first time, please be sure to have the product serial number available so you can type it in during installation. A valid license is required for installation and use.

To begin installation:

1. Uncompress the package: `gunzip <package-name>.tar.gz`
2. Extract the files: `tar xf <package-name>.tar`
3. Start the installation. (Note: For successful installation, you should have read and write permissions for the /tmp directory.)
4. To install on a local system enter the following:

```
cd <package-name>
./install.sh
```

Note: If you want to install the software for use by any user, you must do this as the root user. To install to a network-mounted drive or shared file system for multiple users, become the root user then enter:

```
cd <package-name>
./install.sh --SHARED_INSTALL
```

5. Follow the prompts to complete the installation and activation of the software.

Activation

You must activate the product to finish installation. Use one of these methods:

- Activation using serial number. Internet connection is required;
- Remote activation using serial number. Used when your computer is not connected to the internet. You can use another computer with internet access;
- Activation using license file;
- Activation using license server.

You can also evaluate the product for 31 days.

Intel® Software Manager

Intel® Software Manager is a utility that allows users to:

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Intel Software Manager installs with Intel Software Development Products on Windows*, Linux*, and Mac OS* X operating systems.

To obtain more information about Intel® Software Manager, please refer to the <https://registrationcenter-ssl.intel.com/Docs/ism.htm> web-page.

Default Installation Folders

The default top-level installation folder for this product is:

- `/opt/intel/advisor_xe_2013`

A different top-level folder name can be chosen during a custom installation.

Setting Up Your Command Line Environment

Before you can use the Intel Advisor XE `advixe-cl` and `advixe-gui` commands or display the `advixe-cl(1)` man page, you must first set up your command line environment. Source the provided shell script `advixe-vars.sh` (if you are using `csh`, source `advixe-vars.csh`):

1. Locate the directory where the `advixe-vars` script file was installed. If you accepted the default location when installing the Intel Advisor XE, the location is `/opt/intel/advisor_xe_2013`.

2. Open a command window and type the following source command to execute the script file: `source /opt/intel/advisor_xe_2013/advixe-vars.sh`

The script file displays the product name and the build number. You can now use the `advixe-cl` and `advixe-gui` commands as well as display the `advixe-cl(1) man` page.

NOTE: To build the Intel Advisor XE sample applications, you need to first define the `ADVISOR_XE_2013_DIR` environment variable. Running the `advixe-vars.sh` script will do this automatically. This variable can also be set manually. For example, if you used the default path during installation, type:

```
export ADVISOR_XE_2013_DIR=/opt/intel/advisor_xe_2013
```

Removing the Product

To remove the product, execute the following commands:

Note: Replace `/opt/intel` with the chosen install folder name if the default folder was not used.

1. `cd /opt/intel/advisor_xe_2013`
2. `uninstall.sh` (as a root user or the same user who performed the install)

Known Installation and Configuration Issues

- None

5 Issues and Limitations

Known Issues and Limitations

- The Suitability tool cannot accurately measure and analyze the behavior of loops with very small task times (on the order of sub-microseconds) if those tasks are annotated with the `TASK_BEGIN/TASK_END` annotations. If possible, use the `ITERATION_TASK` annotation instead.
- The Suitability Report combines all lock data into a single lock and may not have source line information for `LOCK_ACQUIRE` and `LOCK_RELEASE` annotations.
- If your sources include huge source files that contain annotations, be aware that only the first 8 MB of each file will be parsed for annotations. If not all of your annotations are being parsed in such huge source files, consider breaking that source file into several source files each less than 8MB.
- Security-enhanced Linux* settings (SELinux) are currently not supported by the Intel Advisor XE and need to be either disabled or set to permissive for a successful tool suite

installation. This product supports only "Permissive" mode. To run the product successfully 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 a SELinux mode adjustment by - setting the line "SELINUX=permissive" in your `/etc/sysconfig/selinux` file or ask your system administrator to make a 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/research/selinux/index.shtml>.

- Intel Advisor XE may fail to collect data on the Ubuntu 11.04 and Ubuntu 11.10 operating systems. Collection fails with an internal error. To workaround this problem for the current session, set the `/proc/sys/kernel/yama/ptrace_scope` sysctl to 0. One way to do this is by using the command: `echo 0 | tee /proc/sys/kernel/yama/ptrace_scope`. To make this change permanent, set the `kernel.yama.ptrace_scope` value to 0 at `/etc/sysctl.d/10-ptrace.conf` file using root permissions and reboot the machine.
- Intel Advisor XE samples (Tachyon sample, for example) may fail to compile Cilk and OpenMP binaries on the Ubuntu 12.04 operating system with the following error message:

```
compilation aborted for src/util.cpp (code 4)
/usr/include/features.h(324): catastrophic error: cannot
open source file "bits/predefs.h"
#include <bits/predefs.h>
```

Adding `/usr/include/i386-linux-gnu` directory to the `CXXFLAGS` environment variable helps build the samples successfully.

- When using certain HTML browsers to view the Intel Advisor XE 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
- Navigating or interacting with the Intel Advisor XE Correctness Report while Correctness analysis is still running may cause the GUI to freeze or display empty Correctness results.
- The Intel Software Manager feature that enables automatic product updates requires Java* software version 1.6 or higher.
- The Survey Report may incorrectly report loops if a function contains calls to a non-returning function such as the `exit()` function.

- Loops within a function that does not contain debug information may not be reported as a loop in the Survey Report. For the suggested build settings, see the help topics under Choosing and Building a Target: Build Settings for C/C++ Applications or Build Settings for Fortran Applications. After you fix the build settings to specify debug information, rebuild the target and run Survey analysis again.
- After analyzing the specified target executable, the Survey tool may report that no significant hotspot areas were detected. In this case, view the collected result using the Survey Report window. The suggested build settings are described in the help topics under Choosing and Building a Target: Build Settings for C/C++ Applications or Build Settings for Fortran Applications.
- If debug information correlating an instruction to source code is not available to an Intel Advisor XE tool, the tool cannot correlate collected data with source code. In this case it will show an empty field, question mark, or broken icon. Source correlation may not be available for many different reasons, including:
 1. Omitting debug information options when building the target executable – see the help topics under Choosing and Building a Target: Build Settings for C/C++ Applications or Build Settings for Fortran Applications.
 2. A compiler error.
 3. The compiler not generating debug information for this specific source line.
 4. The compiler not generating debug information for this specific source file.
 5. The linker not copying the debug information into the debug information database.
 6. The debug information database not being found by the finalization step in the Intel Advisor XE, because it was not moved along with the executable to the location where the Intel Advisor XE is being run.
 7. When using the Intel Advisor XE GUI, insufficient project properties were specified for the Binary/Symbol Search tab. In this case, see the help topic Specifying Project Properties Using the Intel Advisor XE GUI.
- Intel Advisor XE may crash while opening results on Ubuntu 10.10 or later if a license file is not present. This is caused by checking a license with enabled trusted storage. To workaround this issue, disable the ptrace protection in the OS by using the command:

```
echo 0 | tee /proc/sys/kernel/yama/ptrace_scope
```
- When the Intel Advisor XE GUI is launched from a Linux OS desktop GUI (such as the KDE* or GNOME* GUI) the output of the non-GUI target application being analyzed will not be displayed. To avoid this, launch the Intel Advisor XE GUI from a command shell with the `advixe-gui` command instead of the desktop GUI, or redirect the non-GUI application output to the Intel Advisor XE output window by choosing **File > Options > Application output destination > Application output window**.

- If you encounter problems searching the Intel Advisor XE help using a certain web browser, consider using a newer version of that browser or use a different web browser as your default browser.
- Intel Advisor XE may detect which timer source to use incorrectly on extreme desktop SNB-E (e.g. Intel Core i7-3960X) processors. In Survey and Suitability collections the following message may be displayed in the command line or Debug Window:

Warning: Cannot load data file `tmp/linux/openmp_triad/r007hs/data.0/25448-25455.0.trace' (Data file is corrupted).

To work around the problem, collect results from the command line using "-run-pass-thru" option: `advixe-cl -collect survey -run-pass-thru=-timestamp=sys -- <application>`

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/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.3, July 18th, 2005

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*/

Limxml2

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```
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