Intel® System Studio 2015 Update 4 for Windows* Installation Guide and Release Notes

Installation Guide and Release Notes for Windows* Host and Windows* target

21 October 2015

Contents

1 Introduction

This document provides a brief overview of the Intel® System Studio 2015 for Windows* and provides pointers to where you can find additional product information, technical support, articles and whitepapers.

It also explains how to install the Intel® System Studio product. Installation is a multi-step process and may contain components for the development host and the development target. Please read this document in its entirety before beginning and follow the steps in sequence.

The Intel® System Studio 2015 for Windows* consists of multiple components for developing, tuning and deploying system and application code targeted towards embedded, Intelligent Systems, Internet of Things and mobile designs.

It is intended for use on Microsoft* Windows* host operating systems with the intention of deploying build results and doing sampling analysis on Microsoft* Windows* and Microsoft* Windows* Embedded target.

The tool suite is targeting development for embedded intelligent system platforms ranging from Intel® Atom™ Processor based low-power embedded platforms to 3rd, 4th and 5th generation Intel® Core™ microarchitecture based designs. Please refer to the Intel® System Studio User's Guide for guidance on how to apply Intel® System Studio to the various use case scenarios that are available with this versatile product.

Due to the nature of this comprehensive integrated software development tools solution, different Intel® System Studio components may be covered by different licenses. Please see the licenses included in the distribution as well as the Disclaimer and Legal Information section of these release notes for details.

Intel® Software Manager

The installation now provides an Intel® Software Manager to provide a simplified delivery mechanism for product updates and provide current license status and news on all installed Intel software products.

You can also volunteer to provide Intel anonymous usage information about these products to help guide future product design. This option, the Intel® Software Improvement Program, is not enabled by default – you can opt-in during installation or at a later time, and may opt-out at any time. For more information please see http:\\intel.ly\SoftwareImprovementProgram.

Product Contents

The product contains the following components

1. Intel® C++ Compiler 15.0 Update 4
2. Intel® Integrated Performance Primitives 8.2 Update 3
3. Intel® Math Kernel Library 11.2 Update 4
4. Intel® Threading Building Blocks 4.3 update 6
5. Intel® System Studio System Analyzer, Frame Analyzer and Platform Analyzer 2014 R4
6. Intel® VTune™ Amplifier 2015 Update 3.1 for Systems with Intel® Energy Profiler
   6.1. Intel® VTune™ Amplifier Sampling Enabling Product (SEP) 3.15
   6.2. SoC Watch for Windows* 1.10.2
7. Intel® Inspector 2015 for Systems

2 Getting Started

Please refer to the Getting Started Guide and Intel® System Studio User's Guide for guidance on Intel® System Studio use cases and supported usage models.

Intel® System Studio User's Guide

- `<install-dir>System Studio 2015 for Windows.3.xxx\Documentation\en_US\embedded_compsupdoc.pdf`

Intel® System Studio Getting Started Guide

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Documentation\en_US\embedded_gsdoc_w.htm`

3 Technical Support and Documentation

Release Notes Location

The release notes and getting started guide for the tools components making up the Intel® System Studio product can be found at the following locations after installation is complete.

The paths are given relative to the installation directory <install-dir>. The default installation directory is C:\Program Files (x86)\Intel unless indicated differently.

Intel® System Studio Release Notes and Installation Guide

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Documentation\en_US\w-all-release-install.pdf`

Intel® C++ Compiler

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Documentation\en_US\compiler_c\ReleaseNotes_ISS_Compiler.pdf`

Intel® Integrated Performance Primitives

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Documentation\en_US\ipp\ReleaseNotes.htm`

Intel® Math Kernel Libraries

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Documentation\en_US\mkl\Release_Notes.htm`

Intel® Threading Building Blocks

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Documentation\en_US\tbb\tbb_documentation.htm`

Intel® VTune™ Amplifier

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Vtune Amplifier 2015 for Systems\Documentation\en\release_notes_amplifier_for_systems_windows.pdf`

Intel® Energy Profiler

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Vtune Amplifier 2015 for Systems\Documentation\en\Energy_Profiler_Guide.pdf`

Intel® Inspector

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Inspector 2015 for Systems\Documentation\en\Release_Notes_Inspector_Windows.pdf`

Intel® VTune™ Amplifier Sampling Enabling Product

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Vtune Amplifier 2015 for Systems\Documentation\en\SEP_Users_Guide.pdf`

Intel® System Studio System Analyzer

- http://software.intel.com/en-us/articles/intel-gpa-online-help

Article & Whitepaper Locations

Intel® System Studio Tutorials and Samples

- `<install-dir>\System Studio 2015 for Windows.3.xxx\Documentation\en_US\samples-and-tutorials.html`

Intel® System Studio Articles and Whitepapers

- https://software.intel.com/en-us/articles/intel-system-studio-articles
- For a list of all available articles, whitepapers and related resources please visit the Intel® System Studio product page at http:\\software.intel.com\en-us\intel-system-studio and look at the Support tab.

Support

If you did not register your compiler 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.

To submit issues related to this product please visit the Intel Premier Support webpage and submit issues under the product **Intel(R) System Studio**.

Additionally you may submit questions and browse issues in the Intel® System Studio User Forum.
For information about how to find Technical Support, product documentation and samples, please visit http:\\software.intel.com\en-us\intel-system-studio.

Note: If your distributor provides technical support for this product, please contact them for support rather than Intel.

Optimization Notice
Intel's compilers may or may not optimize to the same degree for non-Intel microprocessors for optimizations that are not unique to Intel microprocessors. These optimizations include SSE2, SSE3, and SSSE3 instruction sets and other optimizations. Intel does not guarantee the availability, functionality, or effectiveness of any optimizations on microprocessors not manufactured by Intel. Microprocessor-dependent optimizations in this product are intended for use with Intel microprocessors. Certain optimizations not specific to Intel microarchitecture are reserved for Intel microprocessors. Please refer to the applicable User and Reference Guides for more information regarding the specific instruction sets covered by this notice. Notice revision #20110804

4 What's New

Intel® System Studio 2015 Update 4 for Windows*

1. Intel® C++ Compiler: several bug fixes (see Compiler release notes for details).
2. Intel® Integrated Performance Primitives (IPP): bug fixes, see IPP release notes for details.
3. Intel® Threading Building Blocks (TBB): several improvements and bug fixes, see TBB release notes for details.
4. Microsoft* Visual Studio* integration for Intel® C++ Compiler and Intel® Performance Libraries.

5 System Requirements

Supported Host Platforms

One of the following operation distributions (this is the list of distributions supported by all components; other distributions may or may not work and are not recommended - please refer to Technical Support if you have questions).

- Windows* 7, 8.x

If you have any doubts about installation requirements, please check the Prerequisites Guide

Individual Intel® System Studio 2015 components may support additional distributions. See the individual component's installation guide and release notes after you ran the installer for the tool suite distribution

```
w_cembdw_p_2015.4.xxx.exe
```

or

```
w_cembdw_p_2015.4.xxx_online.exe
```

for details.

Microsoft* Visual Studio* Integration

The prerequisite for successful Microsoft* Visual Studio* integration and use of use the Microsoft Visual Studio* development environment or command-line tools to build IA-32 or Intel® 64 architecture applications, is the presence of one of:

- Microsoft* Visual Studio* 2015 Professional Edition with C++ component installed
- Microsoft* Visual Studio* 2013 Professional Edition (or higher edition) with C++ component installed

- Microsoft* Visual Studio* 2012 Professional Edition (or higher edition) with C++ component installed
- Microsoft* Visual Studio* 2010 Professional Edition (or higher edition) with C++ and “X64 Compiler and Tools” components installed

To use command-line tools only to build IA-32 architecture applications, one of:

- Microsoft Visual C++ Express 2015 for Windows Desktop*
- Microsoft Visual C++ Express 2013 for Windows Desktop*
- Microsoft Visual C++ Express 2012 for Windows Desktop*
- Microsoft Visual C++ 2010* Express Edition

To use command-line tools only to build Intel® 64 architecture applications, one of:

- Microsoft Visual C++ Express 2015 for Windows Desktop*
- Microsoft Visual C++ Express 2013 for Windows Desktop*
- Microsoft Visual C++ Express 2012 for Windows Desktop*
- Microsoft Windows* Software Development Kit for Windows 8* or 8.1*

Hardware Requirements

- IA32 or Intel® 64 architecture based host computer supporting the Intel® Streaming SIMD Extensions 2 (Intel® SSE2) instructions (Intel® Pentium® 4 processor or later), or compatible non-Intel processor
    - For the best experience, a multi-core or multi-processor system is recommended
- Development target platform based on the Intel® Atom™ processor Z5xx, N4xx, N5xx, D5xx, E6xx, N2xxx, D2xxx, Z2xxx, Z3xxx, E3xxx, C2xxx or Intel® Atom™ processor CE4xxx, CE53xx and the Intel® Puma™ 6 Media Gateway
- Development platform based on the Intel® Atom™ x7 Z8700 & x5 Z8500/X8400 processor series
- Alternatively development platform based on 2nd, 3rd or 4th generation Intel® Core™ processor.
- Alternatively development platform based on 2nd, 3rd or 4th generation Intel® Xeon® processor.

Host Prerequisites and Resource Requirements

5.1.1 Host Space Requirements by Component

	Minimum RAM	Recommended RAM	Disk Space
Intel® System Studio	2Gb	4Gb	5Gb
Intel® C++ Compiler	1Gb	2Gb	2.5Gb
Intel® Integrated Performance Primitives	1Gb	4Gb	1-2Gb
Intel® Math Kernel Library	1Gb	4Gb	2.3Gb
Intel® VTune™ Amplifier for Systems	2Gb	4Gb	650Mb
Intel® Inspector for Systems	2Gb	4Gb	350Mb
Intel® Threading Building Blocks	1Gb	2Gb	300Mb

5.1.2 Intel® Integrated Performance Primitives (Intel® IPP) Details

Intel® Integrated Performance Primitives (Intel® IPP) for IA-32 Hardware Requirements:

- 1800MB of free hard disk space, plus an additional 400MB during installation for download and temporary files.

Intel® Integrated Performance Primitives (Intel® IPP) for Intel® 64 Hardware Requirements:

- 1900MB of free hard disk space, plus an additional 700MB during installation for download and temporary files.

Target Software Requirements

The target platform should be based on one of the following environments:

- Microsoft Windows* 7, 8.x
- Microsoft Windows* Embedded Standard 7, 8.x

Note:

The level of target OS support by a specific Intel® System Studio component may vary.

Target Prerequisites and Resource Requirements

5.1.3 Target Space Requirement by Component

	Minimum RAM	Dependencies	Disk Space
Intel® C++ Compiler	application dependent	Linux kernel 1.26.18 or newer glibs-2.5 or compatible libgcc-4.1.2 or compatible libstdc++-3.4.7 or compatible	13Mb (IA-32) 15Mb (Intel® 64)
Intel® VTune™ Amplifier CLI	4Gb	Specific kernel configuration reqs. Details below.	200Mb
Intel® VTune™ Amplifier SEP	(# logical cores+2) Mb	Specific kernel configuration reqs. Details below.	8Mb
SoC Watch	(# logical cores+2) Mb	Specific kernel configuration reqs. See SoCWatch documentation	8Mb

6 Installation Notes

Installing the Tool Suite

The default installation directories are:

- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\`
- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\bin`
- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\compiler`
- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\ipp`
- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\mkl`
- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\tbb`
- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\vtune_amplifier_2015_for_systems\`
- `C:\Program Files (x86)\Intel\System Studio 2015 for Windows.3.xxx\inspector_2015_for_systems\`

for the different Intel® System Studio 2015 for Windows* components Intel® C++ Compiler, Intel® IPP, Intel® MKL, Intel® TBB, Intel® VTune™ Amplifier for Systems and Intel® Inspector for Systems respectively.

Note: Please be aware that the presence of a Microsoft* Visual Studio* 2010 – 2015 installation is required for successful product installation and usage.

Using the online installer

For installation of the tool suite on the development host please follow the steps below:

1. Ensure that you are connected to the internet and that https protocol based component downloads are permitted by your firewall.
2. Execute the online installer executable.
   `> w_cembdw_p_2015.4.xxx_online.exe`
3. After launching the online installer you will see the Installer splash screen with a small message stating: "`download_configuration_files`". Afterwards the installation follows the same steps as the full product install, except that the selected components are being downloaded from the server one by one.

4. Follow the same steps as outlined in “Installing the full distribution package” steps 3 through 13 below.

6.1.1 Online Installer Failure Reasons

6.1.1.1 Symptom 1: Online install bootstrapper cannot connect to IRC.

```
Starting installer...
This is an online-installer for Intel(R) System Studio 2015
Connection to the IRC site cannot be established.
```

Root Cause:

- Port 443 not opened in firewall
- Port 443 not opened in ACL for specific server (can be verified using network trace).
- The Intel® System Studio online installer currently does not fully support proxy servers.

6.1.1.2 Symptom 2: Download stops in an infinite loop

Download stops in an infinite loop.

```
Extracting data...
Starting installer...
```

Root Cause:

- Proxy server not specified on calling shell

Using the offline installer

For installation of the tool suite on the development host please follow the steps below:

1. Upon registering for the program you will receive a serial number and email with a license file. You will need either of these two to complete the installation process. If you want to use the license file you can point to it during install, but you can also copy it to `C:\Program Files (x86)\Common Files\Intel\Licenses\`for automatic pickup by the installer.
2. Execute one of the installer executables.

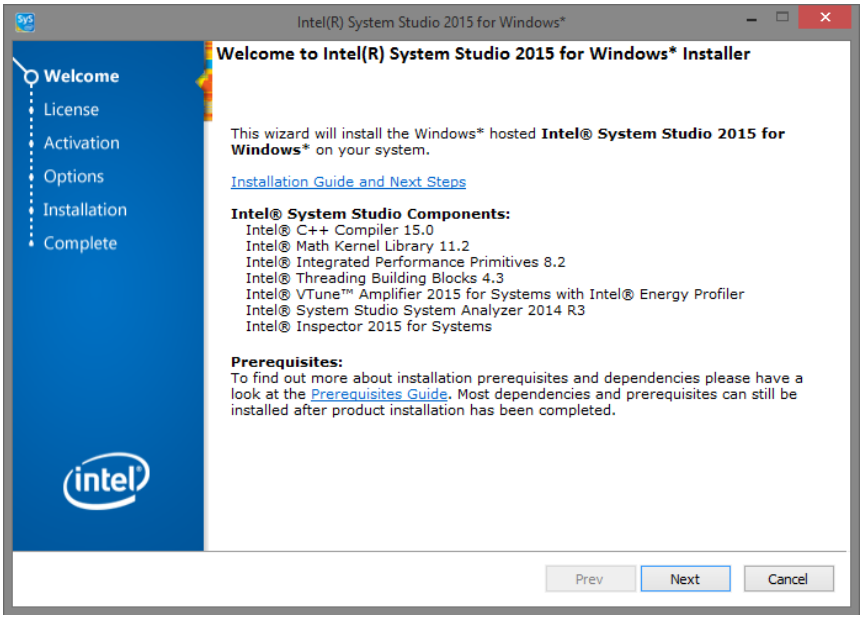
   `w_cembdw_p_2015.4.xxx.exe`

   `or`

   `w_cembdw_p_2015.4.xxx_online.exe`

   The later one is an online installer reducing the initial package download size

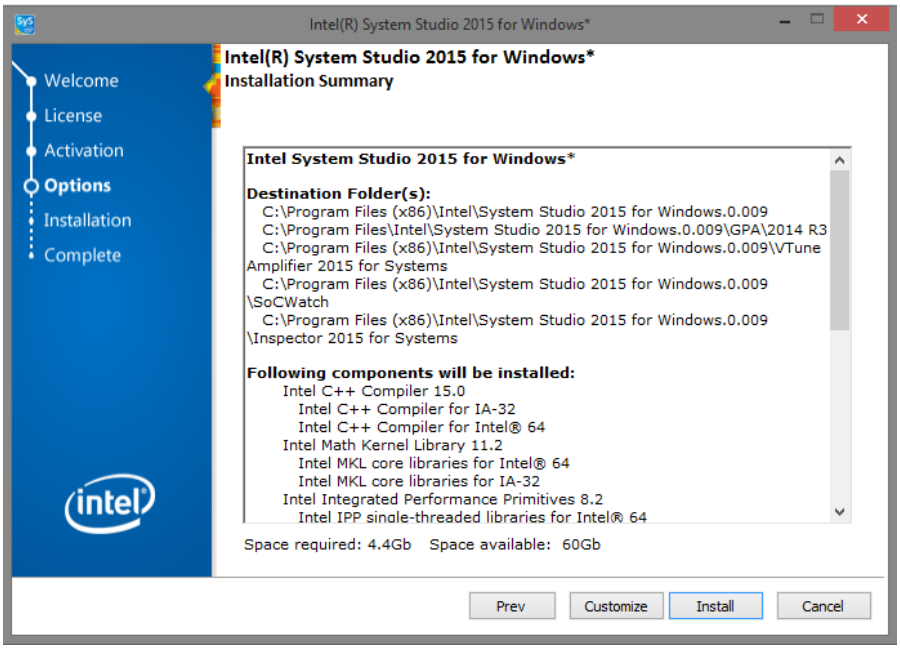
3. The welcome message to the Intel® System Studio installation process appears.



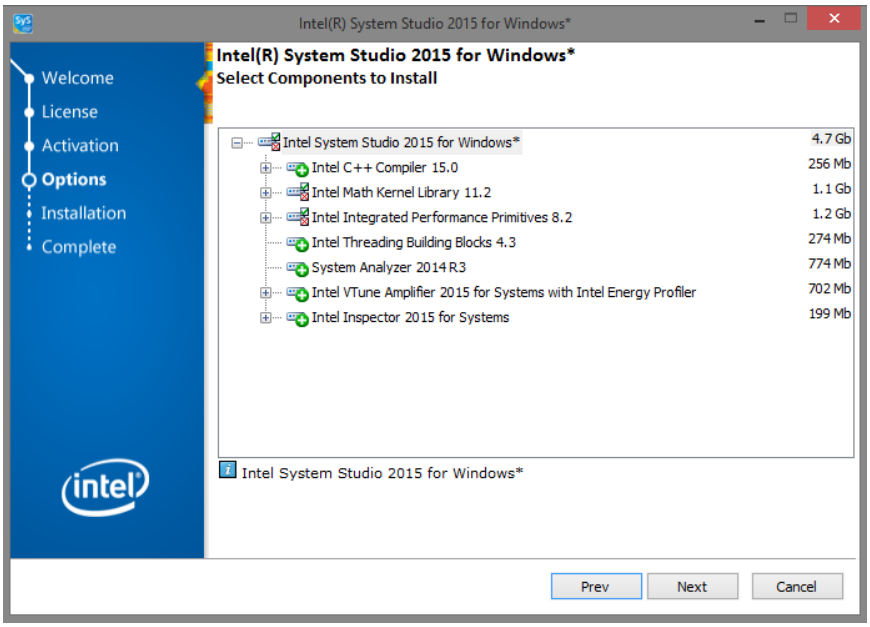
   Selecting `Next` will move you to the next step in the installation process.

   If you have any doubts about installation requirements, please check the Prerequisites Guide

4. The installation routine checks for the availability of all product dependencies. Please address these dependencies, if a warning message appears.
5. Afterwards you will be asked to read the end-user license agreement for the tool suite.
6. When asked whether you would like to activate and install your product select one of the options provided depending on whether you have a license file available or not. If there is already a valid license file available and installed on your system, the installation routine will recommend to simply use the existing license file. If you do not have access to the internet at the time of installation, select the alternative activation option.
7. The next screen will ask you whether you would like to participate in the Intel® Software Improvement Program. This will help us identify opportunities for product improvement.
8. The following screen lets you review your installation options.



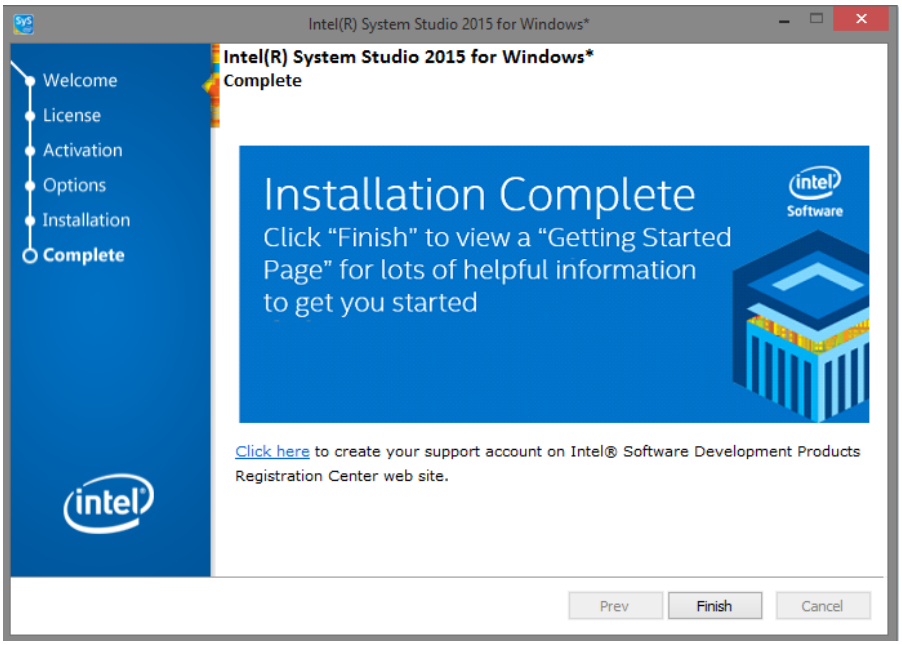
9. If you would like to only install a specific tool suite component, and change the components settings you can select custom installation.



10. Select the installation folder.
11. During the Intel® System Studio 2015 installation you will see installation messages for the components you selected.

12. In the next step you can decide to have the installation program do the Microsoft* Visual Studio* integration of Intel® System Studio for you.

13. After the installation is complete an installation summary screen will be displayed and the Intel® System Studio Getting Started Guide will be automatically opened.



Note: Your browser may block Java Script* on the page by default (depending on browser settings) and ask the user to enable it. If the user does not enable it, some links on the page will not work.

14. The various Intel® System Studio components that are available outside of Microsoft* Visual Studio* can also be accessed through the Windows* OS start menu.

Removing the Product

To uninstall the Intel® System Studio use the Windows* Control Panel Program uninstall feature.

7 Issues and Limitations

Known Issues and Limitations

For known issues of individual Intel® System Studio components please refer to the individual component release notes. Their location in the installed product can be found in chapter 2:

Technical Support and Documentation

7.1.1 MSBuild.exe should be closed before installation

During installation/uninstallation of Intel® System Studio 2015 for Windows you may get the following dialog:

The following application should be closed before continuing the install:

- MSBuild.exe

In order to continue installation/uninstallation, please, close MSBuild.exe process and click “Retry” button.

In order to avoid this situation, please, make sure MSBuild.exe process is closed before starting the installation/uninstallation of Intel® System Studio 2015 for Windows*.

7.1.2 Running online-installer behind proxy server fails

Running online-installer behind proxy server produces error: "Connection to the IRC site cannot be established". Please see the Installation Notes for more details

7.1.3 No coexistence of Intel® Parallel Studio XE 2015 and Intel® System Studio 2015 Visual Studio* Integration

If Intel® System Studio for Windows* 2015 are installed on the same machine as Intel® Parallel Studio XE 2015, then the following issues may be observed:

1. Visual Studio* displays dialog windows with error message that package is not loaded correctly.

2. Missing “Use Intel® C++” menu item in “Project -> Intel Compiler” context menu

3. Intel® C++ Compiler options do not load correctly in “Tools -> Options -> Intel Compilers and Tools” dialog.

The workaround is the following:

1. Open Microsoft Windows* Explorer as Administrator and go to "<Visual Studio Install Directory>\Common7\IDE\Extensions\Intel\C++"

2. Copy *.ISS.pkgdef files to *.pkgdef files (overwrite existing .pkgdef files):

IntelPkg.<ISS>.pkgdef -> IntelPkg.pkgdef

IntelLibOptPkg.<ISS>.pkgdef -> IntelLibOptPkg.pkgdef

IntelCppOptPkg.<ISS>.pkgdef -> IntelCppOptPkg.pkgdef

ICProjConvPkg.<ISS>.pkgdef -> ICProjConvPkg.pkgdef

3. Go to <Visual Studio* Install Directory>\Common7\IDE\Extensions\Intel\Common

4. Copy *.ISS.pkgdef to *.pkgdef files (overwrite existing .pkgdef files):

- Intel.CommonTools.<ISS>.pkgdef -> Intel.CommonTools.pkgdef
- Intel.CommonTools.OptPkg.<ISS>.pkgdef -> Intel.CommonTools.OptPkg.pkgdef

5. Open Developer command prompt for selected Visual Studio*:

"Start -> All Programs -> Microsoft Visual Studio <2010|2012|2013|2015> -> Visual Studio* Tools"

6. On command prompt type: devenv /setup

7.1.4 Graphics Analysis Tools installation failure on Windows* host with script custom actions

The installation of Intel® System Studio System Analyzer, Frame Analyzer and Platform Analyzer may fail on rare occasions with the following Windows* error message:

1. 2738, Could not access VBScript run time for custom action [2].
2. 2739, Could not access JScript run time for custom action [2].

If this error message occurs, the installation can be completed after applying the following steps:

- Check that vbscript.dll and jscript.dll aren't registered in HKEY_CURRENT_USER (HKCU), checking for the registry keys below.
- VBScript, HKCU\SOFTWARE\Classes\CLSID\{ B54F3741-5B07-11CF-A4B0-00AA004A55E8}
- JScript, HKCU\SOFTWARE\Classes\CLSID\{ F414C260-6AC0-11CF-B6D1-00AA00BBBB58}
- JScript, HKCU\SOFTWARE\Classes\CLSID\{ F414C261-6AC0-11CF-B6D1-00AA00BBBB58}
- JScript, HKCU\SOFTWARE\Classes\CLSID\{ F414C262-6AC0-11CF-B6D1-00AA00BBBB58}
- Remove these keys if they exist in HKEY_CURRENT_USER.

8 Change History

This section highlights important changes from the previous product version and changes in product updates. For information on what is new in each component, please read the individual component release notes.

Intel® System Studio 2015 Update 3 for Windows*

1. Intel® C++ Compiler: several bug fixes (see Compiler release notes for details).
2. Intel® Integrated Performance Primitives (IPP): bug fixes, performance improvements, deprecation of selected primitives including functions for internal memory allocation (see IPP release notes for more details).
3. Intel® Threading Building Blocks (TBB): several bug fixes and improvements, added application-wide control of allowed parallelism and thread stack size.
4. Intel® VTune Amplifier for Systems:
    a. Basic hotspots, Locks & Waits and EBS with stacks for RT kernel and RT applications
    b. EBS based stack sampling for kernel mode threads
    c. KVM guest OS profiling from host based on Linux Perf tool
    d. GPU usage analysis for OpenCL™ applications extended to display compute-originated batch buffers on the GPU software queue in the Timeline pane
    e. Support for Intel® Atom™ x7 Z8700 & x5 Z8500/X8400 processor series (Cherry Trail) including GPU analysis
    f. SoFIA: remote EBS by leveraging SEP existing on SoFIA target

Intel® System Studio 2015 Update 2 for Windows*

1. Various minor improvements in Intel® C++ Compiler and libraries
2. Compiler, libraries and analysis tools support for Intel® Atom™ x7 Z8700 & x5 Z8500/X8400 processor series
3. Intel® VTune™ Amplifier for Systems:
    a. Memory bandwidth analysis for current Intel® Atom™ Processors N29xx, C2xxx, E38xx, Z37xx and N35xx.
    b. Experimental feature: SoC bandwidth analysis

Intel® System Studio 2015 Update 1 for Windows*

1. Intel® Math Kernel Library Optimizations for Intel® Advanced Vector Extensions 512 (Intel® AVX-512)
2. Various minor fixes and updates. Please consult component release notes for detail

Intel® System Studio 2015 for Windows*

1. Initial release
2. Microsoft* Visual Studio* integration for Intel® C++ Compiler, Intel® VTune™ Amplifier for Systems
3. Intel® Threading Building Blocks

4. SoC Watch for Windows*

9 Attributions

This product includes software developed at:

The Apache Software Foundation (http:\\www.apache.org\).

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- the SAX project (http:\\www.saxproject.org)
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This product includes hashtab.c.
Bob Jenkins, 1996.

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Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. Go to: http:\\www.intel.com\products\processor_number\

MPEG-1, MPEG-2, MPEG-4, H.261, H.263, H.264, MP3, DV, VC-1, MJPEG, AC3, AAC, G.711, G.722, G.722.1, G.722.2, AMRWB, Extended AMRWB (AMRWB+), G.167, G.168, G.169, G.723.1, G.726, G.728, G.729, G.729.1, GSM AMR, GSM FR are international standards promoted by ISO, IEC, ITU, ETSI, 3GPP and other organizations. Implementations of these standards, or the standard enabled platforms may require licenses from various entities, including Intel Corporation.

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