Intel® Integrated Performance Primitives (IPP Library) v6.1 Update 5 for Microsoft* Windows* Release Notes

Installation Guide and Release Notes

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Contents

Introduction

The Intel® Integrated Performance Primitives (Intel IPP) library provides a broad range of functionality including general signal, image, speech, graphics, data compression, cryptography, text string processing, audio processing, vector manipulation, and matrix math; as well as more sophisticated primitives for the construction of audio, video and speech codecs including MP3 (MPEG-1 Audio, Layer 3), MPEG-4, H.264, VC-1,H.263, JPEG, JPEG2000, GSM-AMR* and G.729, plus computer vision. By supporting a variety of data types and layouts for each function, and minimizing the number of data structures used, the Intel IPP library delivers a rich set of options for developers to choose from while designing and optimizing an application.

The Intel IPP application programming interface (API) is a cross-platform, low-level software interface that abstracts your applications from the specific processor architecture underneath. This allows transparent use of new Intel architecture enhancements such as the Intel® 64 architecture (aka Intel® EM64T), Advanced Vector Extensions (Intel® AVX), Streaming SIMD Extensions (Intel® SSE, SSE2, SSE3, SSSE3, SSE4.1, SSE4.2), and MMX™ technology. Intel IPP is optimized for a broad range of Intel microprocessors, including: Intel® Core™ i7 processors, Intel® Atom™ processors, Intel® Core™2 Quad processors, Intel® Core™2 Duo processors, Intel® Xeon® processors, Intel® Pentium® 4 processor and Intel® Itanium® 2 processors.

Using a single API across a range of architectures, developers gain platform compatibility and reduce their cost of development. With Intel IPP, you can simplify the integration of basic functions and focus more of your time and efforts on building the value-add functionality that will differentiate your product in the market.

Intel IPP v6.1 provides new optimizations and support for the latest Intel microprocessors and new features to support algorithms and standards in image processing, cryptography, image codecs, etc. Intel IPP v6.1 also integrates with Microsoft Visual Studio*.

About this Document

This document provides system requirements, installation instructions, issues and limitations, and legal information. To learn more about:

- **New features**: see the information below and visit the main IPP product page on the Intel web site at: http://software.intel.com/en-us/intel-ipp.
- **Documentation, help, and samples**: see the Intel IPP Documentation item in the Start Menu program folder (*Intel(R) Software Development Tools*) and the documentation links on the IPP product page at: http://software.intel.com/en-us/intel-ipp.
- **Technical support**: visit the Intel IPP technical support forum at: http://software.intel.com/en-us/forums/intel-integrated-performance-primitives/ and search the IPP knowledge base articles at: http://software.intel.com/en-us/articles/intel-ipp-kb/all/1/

Please remember to register your product at https://registrationcenter.intel.com/ using your preferred email address. This helps Intel recognize you as a valued customer in the support forum. For information regarding Intel's privacy police please go here:

http://www.intel.com/sites/sitewide/en_US/privacy/privacy.htm?iid=ftr+privacy

Product Contents

The Intel® Integrated Performance Primitives (Intel® IPP) v6.1 for Microsoft* Windows* contains three separate install packages:

- Intel® IPP for Microsoft* Windows* OS on IA-32 Intel® Architecture
- Intel® IPP for Microsoft* Windows* OS on Intel® 64 architecture
- Intel® IPP for Microsoft* Windows* OS on Intel® Itanium® Architecture

Due to United States export laws and restrictions, the IPP cryptography domain must be downloaded separately. Use the following link to get more information on how to obtain the IPP cryptography domain library module.

http://software.intel.com/en-us/articles/download-ipp-cryptography-libraries/

What's New

Update 5

- See Issues and Limitations for a list of bug fixes, known issues, and limitations.
- This release contains no new features, only bug fixes.

Update 4

- New string processing code examples in the IPP signal processing reference manual.
- Optimizations for RSA-1024 based decryption added to the library.
- OpenSSL performance improvements and support for version 0.9.8j of OpenSSL.

Update 3

- New code examples in chapter 11 of the IPP signal processing reference manual.
- UMC documentation now includes motion estimation and mode decision components.
- Approximate 5% performance improvement to the BZIP2 decoder.

Update 2

- The library has been tested for compatibility with Microsoft* Windows* 7.
- Prebuilt library binaries are now included with the data compression samples (bzip2, zlib, and gzip) making it even easier to quickly utilize the IPP library as part of your data compression applications.
- The ippiDemo application has been updated to include additional demonstration features, especially for comparing optimized performance versus non-optimized performance. Please see the ippiDemo readme file for more information.
- Support for the Advanced Encryption Standard (AES) instructions that are part of the SSE instructions on the 32nm Westmere-based processors. These instructions enable the implementation of fast and secure data encryption and decryption algorithms.
- Data compression performance improvements for the Intel-64 architecture resulting in significant speed gains for the ZLIB Inflate algorithm.

Update 1

- Added new optimizations for video encoding coding related SATD functions optimization for H.264 encoding.
- Fixed an issue in Intel IPP data compression library for the zlib algorithm when handling data file sizes larger 4 Gb.
- Corrected parameter definitions in color space conversion function ippiYCbCr422ToYCrCb420_8u_C2P3R used in audio-video-coding Sample
- Corrected sample code in Packet Loss Concealment (PLC) algorithm implementation from plcg711.c from Speech Coding sample
- Fixed memory corruption issue used in morphological reconstruction function ippiMorphReconstructDilate_8u_C1IR
- Corrected decompression results in different threads for LZO algorithm
- Corrected results for image resize function ippiResizeSqlPixel with small size images
- Fixed issue for the access of managed memory in unmanaged code in Intel IPP C# Sample
- Fixed Intel IPP sample building issue (missing libiomp5.dylib) in Mac* OS environment

v6.1 (initial release)

- Support for the Intel® Advanced Vector Extensions (Intel® AVX) instructions.

- Support for the Intel® Core™ i7 processor with new optimization and threading control.
- 3D Image Processing: 3D Geometric Transforms and 3D Filters.
- New data compression function APIs.
- New Intel IPP Crypto support for RSA_SSA1.5 and RSA_PKCSv1.5.
- Unified Image Classes (UIC) now include support for the PNG format and new features to support DXT1, DXT3, DXT5 texture compression.
- Advanced lighting functions including spherical harmonic and Perlin noise generation functions.
- Windows Media* Photo Support (HD Photo): IPP PCT functions.
- New video coding areas improvement including Scene Analyzer in MPEG-2, Intensity Compensation and Overlap Smoothing in VC1.
- Menu driven selection of Intel IPP functions in Microsoft Visual Studio.
- New CHM and Help2 formats in Intel IPP manuals.
- Samples for signal processing, image processing, string processing, and for C++ and C# language support have been added to the .\Samples directory. Other samples can be downloaded by clicking the "Free Code Samples" link on the Intel IPP product page.
- Deprecated APIs have been marked as such in the reference manuals and header files.
- The online version of the Intel IPP Reference Manual now integrates into the Microsoft Visual Studio* IDE help system and is accessible through the *Help>TOC* or the *Help>Index* menu items. When working within the Visual Studio code editor, you can benefit from the context-sensitive help, which enables one-click access to help about the selected function.

Issues and Limitations

- The Visual Studio context-sensitive help may fail to work for some variants of the "generated domain" functions (functions with the "ippg" prefix).
- For a list of bug fixes, known issues, and limitations please see the following knowledge base article: http://software.intel.com/en-us/articles/intel-ipp-library-61-fixes-list/.

System Requirements

The Intel IPP library v6.1 release supports the IA-32, Intel® 64, and IA-64 architectures. For a complete explanation of these architecture names please read the following article:

http://software.intel.com/en-us/articles/intel-architecture-platform-terminology/

Please review the Microsoft* Visual Studio* or Intel® Compiler Pro hardware and software system requirements in the readme documentation provided with those products to determine your development system's minimum requirements to support your compiler product.

If you are installing the Intel IPP library along with the Intel Compiler Pro product your development system's minimum requirements will be greater than those described below for just the IPP library. In that case, please review the Intel® Compiler Pro hardware and software

system requirements in the readme documentation provided with that product to determine your development system's minimum requirements.

Intel IPP Library IA-32 Minimum Requirements
hardware:
- IA-32 Intel Architecture processors, and software-compatible processors, including software-compatible AMD* processors.
- 900 MB of free hard disk space, plus an additional 300 MB during installation for download and temporary files.

operating system (Intel IPP has been tested with the following):
- Microsoft* Windows 7
- Microsoft* Windows Vista
- Microsoft* Windows XP
- Microsoft* Windows Server 2008
- Microsoft* Windows Server 2003

compiler (Intel IPP has been tested with the following):
- Intel® Parallel Composer
- Intel® C++ Compiler for Windows* OS versions 10.1, 11.0 and 11.1
- Microsoft* Visual Studio* 2008
- Microsoft* Visual Studio* 2005
- Microsoft* Visual C++* .NET 2003
- Microsoft* Windows Software Development Kit for Microsoft* Windows Vista
- Microsoft* Windows Software Development Kit for Microsoft* Windows 7

Intel IPP Library Intel 64 Requirements
IMPORTANT NOTE: *for applications built to run on Intel 64 Architecture systems.*

Due to an incompatible change made by Microsoft in the Windows calling standard, code compiled and built for systems with Intel® 64 architecture against versions of the Microsoft Platform SDK earlier than Build 1289, including those compiled with version 8.1.015 or earlier of the Intel C++ Compiler, must be recompiled with the version 9.1 compiler and with Build 1289 or later of the Platform SDK. Failure to do so could cause unpredictable application failures when run on newer versions of Microsoft Windows, including Windows XP Professional x64 Edition and Windows 2003 Server x64 Edition.

hardware:
- A system with an Intel® Xeon® processor with Streaming SIMD Extensions 3 (SSE3) and Intel 64 or an Intel® Pentium® D processor.
- 800 MB of free hard disk space, plus an additional 300 MB during installation for download and temporary files.

operating system (Intel IPP has been tested with the following):
- Microsoft* Windows 7

- Microsoft* Windows Vista x64 Edition
- Microsoft* Windows XP x64 Edition
- Microsoft* Windows Server 2008 R2
- Microsoft* Windows Server 2008 x64 Edition
- Microsoft* Windows Server 2003 x64 Edition

compiler (Intel IPP has been tested with the following):
- Microsoft* Visual Studio* 2008
- Microsoft* Visual Studio* 2005
- Intel® C++ Compiler for Windows* OS versions 10.1, 11.0 and 11.1 for Intel® 64 processors.
- Microsoft* Platform SDK, Version 3790.1830 (April 2005)
- Microsoft* Platform SDK R2, Version 3790.2075 (March 2006)

Intel IPP Library IA-64 Requirements
hardware:
- A system with an Intel® Itanium® 2 processor.
- 600 MB of free hard disk space, plus an additional 300 MB during installation for download and temporary files.

operating system (Intel IPP has been tested with the following):
- Microsoft* Windows Server 2008
- Microsoft* Windows Server 2003

compiler (Intel IPP has been tested with the following):
- Intel® C++ Compiler for Windows* OS version 10.1,11.0 and 11.1 for Intel Itanium Processors
- Microsoft* Platform SDK, Version 3790.1830 (April 2005)
- Microsoft* Platform SDK R2, Version 3790.2075 (March 2006)

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 provide it during installation. A valid license is required for installation and use.

Do one of the following to begin your installation:

- If you downloaded your product, double-click the executable file (.EXE) to begin installation. If several different download files are available (such as for different components), please read the download web page carefully to determine which file is appropriate for your system.

- If you received your product on CD-ROM media, insert the first product CD in your computer's CD-ROM drive; the installation should start automatically. If it does not, open

the top-level folder of the CD-ROM drive in Windows Explorer and double-click on setup.exe.

Multiple versions of the IPP library can be installed side-by-side on your development system. You do not need to remove existing versions when installing a new version of the product.

Default Installation Folders

IA-32 Systems
```
C:\Program Files\Intel\IPP\6.1.x.xxx\ia32
```

Intel 64 Systems
```
C:\Program Files\Intel\IPP\6.1.x.xxx\em64t
```

IA-64 Systems
```
C:\Program Files\Intel\IPP\6.1.x.xxx\itanium
```

If you are installing on a system with a non-English language version of Windows, the name of the `Program Files` folder may be different. On Intel® 64 architecture systems, the folder name is `Program Files (X86)` (or equivalent).

This product installs into an arrangement of folders shown in the diagram below:

```
C:\Program Files\Intel\IPP\6.1.x.xxx\ia32
      bin
      include
      lib
      stublib
      Doc
      Tools
      Demo
      Samples
```

Where `x.xxx` is the update version number.

Changing, Updating and Removing the Product

If you need to add or remove components from an installation, open the Control Panel and select the Add or Remove Programs applet, select "Intel® Integrated Performance Primitives" and click **Change** (to remove the product select **Remove** instead of **Change**).

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Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting Intel's Web Site.

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See http://www.intel.com/products/processor_number for details.

MPEG-1, MPEG-2, MPEG-4, H.263, H.264, MP3, DV SD/25/50/100, VC-1, G.711, G.722, G.722.1, G.723.1A, G.726, G.728, G.729, GSM/AMR, GSM/FR, JPEG, JPEG 2000, Aurora, TwinVQ, AC3 and AAC are international standards promoted by ISO, IEC, ITU, SMPTE, ETSI and other organizations. Implementations of these standards or the standard enabled platforms may require licenses from various entities, including Intel Corporation. This document may contain information on products in a development phase.

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