Intel® Integrated Performance Primitives v5.2 for Windows
Release Notes

Contents

Overview

The Intel® Integrated Performance Primitives (Intel® IPP) 5.2 for Windows* contains 5 separate install packages.

- Intel® IPP 5.2 for Windows* on IA-32 Intel® Architecture
- Intel® IPP 5.2 for Windows* on Intel® Itanium® Architecture
- Intel® IPP 5.2 for Windows* on Intel® 64 (Intel® EM64T) architecture
- Intel® IPP 5.2 for Windows* on Intel® IXP4XX Network Processors

Intel® Integrated Performance Primitives (Intel IPP) is a software library which provides a broad range of functionality including general signal, image, speech, graphics, data compression, cryptography, text strings and audio processing, vector manipulation and matrix math, as well as more sophisticated primitives for construction of audio, video and speech codecs such as 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 multimedia and signal processing functionality from the processor underneath. This allows transparent use of recent Intel® architecture enhancements such as

Intel® Core™2 Quad and Intel® Core™ 2 Duo Microarchitectures, Intel® 64 Technology (Intel® EM64T), Streaming SIMD Extensions (SSE), SSE2, SSE3, SSSE3, MMX™ technology, and Intel XScale® technology. Intel IPP is optimized for the broad range of Intel® microprocessors: Intel® Core™2 Quad processors, Intel® Core™ 2 Duo Processors, Intel® Xeon® processors, Intel® Pentium® 4 processor, the Intel® Itanium® 2 processor and Intel® IXP4XX Network Processors. With a single API across the range of architectures, application developers can have platform compatibility and reduced cost of development. Using Intel IPP, you can simplify 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.

Processor Terminology
Intel IPP supports 4 platforms: general combinations of processor and operating system type. This section explains the terms that Intel uses to describe the platforms in its documentation, installation procedures and product web site.

IA-32: Any systems based on 32-bit processors generally compatible with the Intel Pentium® processor, (for example, Intel® Core™2 Duo, Intel® Core™, Pentium® 4, Pentium® D, Centrino®, Celeron® or Intel® Xeon®), or processors from other manufacturers supporting the same instruction set, running a 32-bit operating system.

Intel® 64 (Intel® Extended Memory 64 Technology): any systems based on IA-32 processors which have 64-bit architectural extensions, (for example, Quad-Core Intel® Xeon® Processor and Intel® Core™2 Duo processor), running a 64-bit operating system such as Microsoft* Windows* XP Professional x64 Edition or Microsoft Windows Server 2003 x64 Edition.

Intel Itanium® :any systems based on the Intel Itanium® 2 processor running a 64-bit operating system.

Intel® IXP4XX Network Processors: any systems based on Intel® IXP4XX communications and embedded networking processors, and extension to Intel XScale® technology for embedded operating systems.

Information on Intel software development products is available at http://www.intel.com/software/products. Some of the related products include:

- The Intel® Software College provides interactive tutorials, documentation, and code samples that teach Intel architecture and software optimization techniques.
- The VTune Performance Analyzer allows you to evaluate how your application is utilizing the CPU and helps you determine if there are modifications you can make to improve your application's performance.
- The Intel® C++ and Fortran Compilers are an important part of making software run at

top speeds and fully support the latest Intel IA-32 and Itanium processors.

- The Intel® Performance Libraries provide a set of routines optimized for various Intel processors. The Intel® Math Kernel Library, which provides developers of scientific and engineering software with a set of linear algebra, fast Fourier transforms and vector math functions optimized for the latest Intel Pentium and Intel Itanium processors.

What Is New in the Intel® IPP 5.2?

- Expanded Optimizations in latest Intel Microarchitecture
  - Intel® Core™ 2 Duo Processors for Intel® 64 (Intel® EM64T) architecture
  - Intel® Core™ 2 Quad processor optimizations in functions and code sample
- Expanded Mac OS* Support
  - New optimizations for 64-bit Intel® Architecture
  - Added new samples for JPEG & Image Processing (See Mac OS samples)
- New support for Microsoft* Windows* Vista* operating system.
- Data Compression: Performance Improvement and Expanded Functionality (See Data Compression Sample)
  - Improvements on Compression and Decompression performance for Intel IPP based zlib primitives
  - Improvement on ease of integration from open source zlib library* to Intel IPP based zlib functionality
  - Improvements on performance for Intel IPP based LZSS primitives
  - Primitives necessary for implementing the libbzip2 API set
- Expanded new features and optimizations for High Definition (HD) video applications
  - Added SMPTE 421M video codec standard (VC-1) support
    - VC-1 Simple/Main/Advanced Profiles video decoder support functions
    - VC-1 full featured decoder (Simple/Main/Advanced Profiles) component in Media Processing Sample
  - Expanded H.264 support and Optimizations
    - H.264 High Profiles decoder support (High 4:2:0, High 4:2:2 and High 10) in H.264 decode component
    - H.264 High Profile encoding support in 2 new added functions
    - H.264 encoding functions optimizations
- Added New DV codecs: DV50\100 decoders primitives and DV25\50 encoders primitives
- Documentation Improvements:
  - Sample build documentation improvements
  - Added documents for Unified Media Class (UMC) model in Media Processing Sample
  - Added documents for Unified Speech Class (USC) model in Speech Coding Sample
- New ippRR domain that contains Realistic Rendering functionality.

- Audio Coding:
  - Floating point versions of PQMF filters for MP3 encoder and decoder.
  - Functions for supporting of fixed point version of HEAAC decoder.
  - Fixed point version of forward and inverse mode of MDCT designed especially for AAC and MP3 decoders.
  - New version of VLC functions designed especially for platforms with low (or bad) data cache.
- Signal Processing: Several new customer requested functionalities including IIRGen
- Image Processing: 16u data support added
- JPEG processing: New functions for JPEG Extended Baseline mode (12-bit per sample) and RLE coding support, used in DICOM medical images (Check JPEG Samples)
- OpenCV performance optimizations
- Computer Vision:
  - New Fixed filters 8u8s and Separable column filters 16s8s
  - New True L2 distance transform and Fast Marching distance transform functions
  - Image inpainting (restoration)
  - Image segmentation
  - Transform color gradient to gray-scale
    - Image segmentation by image gradient
    - Image segmentation by watershed
    - Image segment handling (border draw and labeling)
    - Background/foreground segmentation by Gaussians and by histograms
  - SIFT features support for Gaussian filters and Peak search
- **Backward compatibility note**: The ippaligh.h file from \include directory has been removed, please visit "*Support Resource*" at Intel IPP Web Page to find more details about how to use alternative APIs. The ippalign.h file translates legacy API function definitions (originally only used on the Intel PXA27x processors) to the current supported Intel IPP functions.

System Requirements

1) Intel® IPP 5.2 for Windows* on IA-32 Intel® Architecture

Minimum Hardware Requirements to Develop Applications

- a PC, workstation or server, with Intel® Xeon® processor or Intel® Pentium® 4 processor
- 300 MB of free hard disk space, plus an additional 300 MB during installation for download and temporary files.

Software Requirements to Develop IA-32 Applications

- A supported operating system (Intel IPP has been tested with the following):
  - Microsoft* Windows Vista
  - Microsoft* Windows XP
  - Microsoft* Windows Server 2003
- A supported C compiler (Intel IPP has been tested with the following):
  - Intel® C++ Compiler version 10.0 for IA-32 and Intel Itanium processors
  - Intel® C++ Compiler version 9.1 for IA-32 and Intel Itanium processors
  - Microsoft* Visual Studio* 2005
  - Microsoft* Visual C++* .NET 2003
  - Microsoft* Visual Studio* 6.0
- Microsoft* Windows Software Development Kit for Microsoft* Windows Vista
- Recommended documentation viewer:
  - Adobe* Acrobat* Reader version 7.0 or later (provides better keyword search capabilities for viewing documentation in PDF format)

2) Intel® IPP 5.2 for Windows* on Intel® Itanium® Architecture

Minimum Hardware Requirements to Develop Applications

- a PC, workstation or server, with an Intel® Itanium® 2 processor
- 300 MB of free hard disk space, plus an additional 300 MB during installation for download and temporary files.

Software Requirements to Develop Applications

A supported OS (Intel IPP has been tested with the following):
- Microsoft* Windows Server 2003

A supported C compiler (Intel IPP has been tested with the following):
- Intel® C++ Compiler version 10.0 for IA-32 and Itanium® processors
- Intel® C++ Compiler version 9.0 for IA-32 and Itanium® processors
- Microsoft* Platform SDK, Version 3790.1830 (April 2005)

3) Intel® IPP 5.2 for Windows* on Intel® 64 Platforms

Minimum Hardware Requirements to Develop for systems with Intel® 64 (Intel® EM64T) architecture

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

IMPORTANT NOTE FOR APPLICATIONS BUILT TO RUN ON SYSTEMS WITH INTEL® 64 architecture

Due to an incompatible change made by Microsoft in the Windows calling standard, code compiled and built for systems with Intel® EM64T 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 9.0 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.

Software Requirements to Develop for systems with INTEL® 64

A supported OS (Intel IPP has been tested with the following):

- Microsoft* Windows Vista x64 Edition
- Microsoft* Windows XP x64 Edition Version 2003
- Microsoft* Windows Server 2003 x64 Edition

A supported C compiler (Intel IPP has been tested with the following):

- Intel® C++ Compiler version 10.0 for processors with Intel® 64
- Intel® C++ Compiler version 9.0 for processors with Intel® 64
- Microsoft* Platform SDK, Version 3790.1830 (April 2005)

4) Intel® IPP 5.2 for Windows* on the Intel IXP4XX Network Processors

Minimum Hardware Requirements to Develop Applications

- a PC, workstation or server, with Intel® Xeon® processor or Intel® Pentium® 4 processor
- 150 MB of free hard disk space, plus an additional 75 MB during installation for download and temporary files.

Minimum Hardware Requirements to Run Applications

- A system from the Intel® IXP4XX Network Processors

Software Requirements to Develop Applications

- A supported OS (Intel IPP has been tested with the following):

    - Microsoft* Windows XP
- A supported C compiler (Intel IPP has been tested with the following):
    - Microsoft* eMbedded Visual C++* 4.0 SP4

Software Requirements to Run Applications for the Intel® IXP4XX Network Processors

- A supported OS (Intel IPP has been tested with the following):
    - Microsoft* Windows CE .NET 5.0
    - Microsoft* Windows CE .NET 4.2

Recommended documentation viewer:

- Adobe* Acrobat* Reader version 7.0 or later (provides better keyword search capabilities for viewing documentation in PDF format)

Installation

Please see the separate Installation Guide for information on installing Intel IPP. The default installation directory is:

- C:\Program Files\Intel\IPP\5.2\<arch>

Resources for Additional Information

- The Intel IPP cryptography library requires a separate registration and access to download, please follow the instructions to make request.
- To get started using the library and to find information on building options, please refer to the Getting Started document included in this release.
- For the latest product support information and errata, please click the <*Support Resources*> tab at the Intel IPP Website.
- Several encoder-decoder samples have been created to help demonstrate the use of Intel® IPP and to help accelerate the development of your application, components, and codecs. More information can be found at the Intel® IPP Sample Website.

Technical Support and Feedback

Your feedback is very important to us. To receive technical support for the tools provided in this product, technical information including FAQ's and product updates, you need to be registered at https://registrationcenter.intel.com with your given serial number of this product to create an account at secure Intel® Premier Support web site.

- If you are having trouble registering or are unable to access your Intel® Premier Support account, please contact us via this channel.

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

For information about the Intel IPP's, FAQ's, tips and tricks, Users Forums and other support information, please visit the <*Support Resources*> tab at the Intel IPP Website.

Submitting Issues

Steps to submit an issue:
1. Go to https://premier.intel.com/.
2. Log in to the site. Note that your username and password are case-sensitive.
3. Click on the "Go" button next to the "Product" drop-down list.
4. Click on the "Submit Issue" link in the left navigation bar.
5. Choose "Development Environment (tools,SDV,EAP)" from the "Product Type" drop-down list.
6. If this is a software or license-related issue, choose "**Intel® IPP for Windows***" from the "Product Name" drop-down list.
7. Enter your question and complete the fields in the windows that follow to successfully submit the issue.

Guidelines for problem report or product suggestion:
1. Describe your difficulty or suggestion.
   For problem reports please be as specific as possible, so that we may reproduce the problem. Please include a small test case if possible.
2. Describe your system configuration information.
   Be sure to include specific information that may be applicable to your setup: operating system, name and version number of installed applications, and anything else that may be relevant to helping us address your concern.

License Definitions

Please see the End User License Agreement file for the license definitions and restrictions on the library.

MPEG-1, MPEG-2, MPEG-4, H.263, H.264, VC-1 MP3, DV, 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

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