Intel® Integrated Performance Primitives (IPP Library) v6.1 update 5 for Linux* OS Release Notes

Installation Guide and Release Notes

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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.

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 installed with the library or 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 Linux* contains four separate install packages:

- Intel® IPP for Linux* OS on IA-32 Intel® Architecture
- Intel® IPP for Linux* OS on Intel® 64 architecture
- Intel® IPP for Linux* OS on IA-64 architecture
- Intel® IPP for Linux* OS on Intel® Atom™ Processors

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

- 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

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.
- 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.

Issues and Limitations

- 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 GCC* 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.
- 1600 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):

Linux system with glibc 2.2.4, 2.2.5, 2.2.93, 2.3.2 or 2.3.3 and the 2.4.x or 2.6.x Linux kernel as represented by the following distributions:

- Red Hat Enterprise Linux* OS 3, 4 or 5
- SUSE* Linux 9.1, 10, 11
- SUSE Linux Enterprise Server* 8, 9, 10 or 11
- Debian* 4.0r1 or 5
- Ubuntu* 8 or 9
- Asianux* Server 3.0
- Red Flag* 5.0

Note: not all distributions listed above have been validated and not all distributions are listed.

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

- Intel® C++ Compiler version 10.1, 11.0 and 11.1 for the Linux* OS for IA-32 processors.
- Linux Developer tools component installed, including gcc, g++ and related tools.

Intel IPP Library Intel 64 Requirements

hardware:

- A system with an Intel® Xeon® processor with Streaming SIMD Extensions 3 (SSE3) and Intel 64 or an Intel® Pentium® D processor, including software-compatible AMD* processors.
- 1700 MB of free hard disk space, plus an additional 600 MB during installation for download and temporary files.

operating system (Intel IPP has been tested with the following):

Linux system with glibc 2.2.4, 2.2.5, 2.2.93, 2.3.2 or 2.3.3 and the 2.4.x or 2.6.x Linux kernel as represented by the following distributions:

- Red Hat Enterprise Linux* OS 3 ,4 or 5
- SUSE Linux Enterprise Server* 10 or 11
- Debian* 4.0r1 or 5
- Ubuntu* 8 or 9
- Asianux* Server 3.0
- Red Flag* 5.0

Note: not all distributions listed above have been validated and not all distributions are listed.

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

- Intel® C++ Compiler version 10.1, 11.0 and 11.1 for the Linux* OS for Intel 64 processors.
- Linux Developer tools component installed, including gcc, g++ and related tools.

Intel IPP Library IA-64 Requirements

hardware:

- A system with an Intel® Itanium® 2 processor.
- 1100 MB of free hard disk space, plus an additional 600 MB during installation for download and temporary files.

operating system (Intel IPP has been tested with the following):

Linux system with glibc 2.2.4, 2.2.5, 2.2.93, 2.3.2 or 2.3.3 and the 2.4.x or 2.6.x Linux kernel as represented by the following distributions:

- Red Hat Enterprise Linux* OS 3, 4 or 5
- SUSE Linux Enterprise Server* 8, 9, 10 or 11
- Debian* 4.0r1 or 5
- Ubuntu* 8 or 9
- Asianux* Server 3.0
- Red Flag* 5.0

Note: not all distributions listed above have been validated and not all distributions are listed.

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

- Intel® C++ Compiler version 10.1, 11.0 and 11.1 for the Linux* OS for Intel Itanium processors.
- Linux Developer tools component installed, including gcc, g++ and related tools.

Intel IPP Library Intel® Atom™ Processor Requirements

hardware:

- A system with an Intel® Atom™ Processor.
- 1200 MB of free hard disk space, plus an additional 340 MB during installation for download and temporary files.

operating system (Intel IPP has been tested with the following):

Linux system with glibc 2.2.4, 2.2.5, 2.2.93, 2.3.2 or 2.3.3 and the 2.4.x or 2.6.x Linux kernel as represented by the following distributions:

- Ubuntu* 7.10
- Red Flag* 5.0
- Midinux* 2

Note: not all distributions listed above have been validated and not all distributions are listed.

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

- Intel® C++ Compiler version 10.1, 11.0 and 11.1 for the Linux* OS for IA-32 processors.
- Linux Developer tools component installed, including gcc, g++ and related tools.

Installation Notes

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.

Guidance on the installation of Intel IPP is provided at install time. Links are provided to a file with step by step instructions (`install.txt`). This file can also be found in the \doc directory.

Please see the separate "Installation Guide" for additional instructions.

Default Installation Folders

IA-32 Systems

`/opt/intel/ipp/6.1.x.xxx/ia32`

Intel 64 Systems

`/opt/intel/ipp/6.1.x.xxx/em64t`

IA-64 Systems

`/opt/intel/ipp/6.1.x.xxx/itanium`

Intel AtomSystems

`/opt/intel/ipp/6.1.x.xxx/lp32`

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

```
/opt/intel/ipp/6.1.x.xxx/ia32
      include
      lib
      sharedlib
      Doc
      Tools
```

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

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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.

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