# Intel® Integrated Performance Primitives (Intel® IPP) 2017 Release Notes

February 28, 2016

## Contents

# Overview

This document provides a general summary of new features and important notes about the Intel® Integrated Performance Primitives (Intel® IPP) library software product.

Please see the following links available online for the latest information regarding the Intel® Integrated Performance Primitives (Intel® IPP):

- Intel® IPP Main Product Page
- Intel® IPP 2017 Release Notes
- Intel® IPP 2017 Installation Guide
- Intel® IPP 2017 System Requirements
- Intel® IPP 2017 Bug Fixes

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# What's New in Intel® IPP 2017 Update 3

- Fixed some known problems in Intel® IPP Cryptography functions.
- Added support for Microsoft Visual Studio* 2017 on Windows*.
- Added Support for Conda* repositories installation

# What's New in Intel® IPP 2017 Update 2

- Added the new functions in ZLIB to support the user-defined Huffman tables, which allows to increase ZLIB compression ratio at the fastest compression level.
- Increased LZO compression performance by 20% t0 50%. Added level 999 support in LZO decompression.
- Introduced support for Intel® Xeon Phi™ processor x200 (formerly Knights Landing) leverage boot mode in the Intel IPP examples.
- Added an example code on building custom dispatcher for the processor-specific optimization codes.
- Fixed a number of internal and external defects. Visit the Intel® IPP 2017 bug fixes for more information.

# What's New in Intel® IPP 2017 Update 1

- Added Support of Intel® Xeon Phi™ processor x200 (formerly Knights Landing) leverage boot mode on Windows

- Added the following new functions in the cryptography domain:
  - Added functions for the finite field GF(p) arithmetic, and the elliptic curves over the finite field GF(p).
  - Added ippsECCPBindGxyTblStd functions that allow to control memory size for the elliptic curves over GF(p).
- Fixed a number of internal and external defects. Visit the Intel® IPP 2017 bug fixes for more information.

## What's New in Intel® IPP 2017

- Added Intel® IPP Platform-Aware APIs to support 64-bit parameters for image dimensions and vector length on 64-bit platforms and 64-bit operating systems:
  - This release provides 64-bit data length support in the memory allocation, data sorting, image resizing, and image arithmetic functions.
  - Intel® IPP Platform-Aware APIs support external tiling and threading by processing tiled images, which enables you to create effective parallel pipelines at the application level.
- Introduced new Integration Wrappers APIs for some image processing and computer vision functions as a technical preview. The wrappers provide the easy-to-use C and C++ APIs for Intel® IPP functions, and they are available as a separate download in the form of source and pre-built binaries.
- Performance and Optimization:
  - Extended optimization for Intel® Advanced Vector Extensions 512 (Intel® AVX-512) instruction set on Intel® Many Integrated Core Architectures (Intel® MIC Architectures). Please see the Intel® IPP Functions Optimized for Intel® AVX-512 article for more information.
  - Extended optimization for Intel® AVX-512 instruction set on Intel® Xeon® processors.
  - Extended optimization for Intel® Advanced Vector Extensions 2 (Intel® AVX2) instruction set on the 6th Generation Intel® Core™ processors. Please see the Intel® IPP Functions Optimized for Intel® AVX2 article for more information.
  - Extended optimization for Intel® Streaming SIMD Extensions 4.2 (Intel® SSE4.2) instruction set on Intel® Atom™ processors.
- Data Compression:
  - Added the patch files for the zlib source to provide drop-in optimization with Intel® IPP functions. The patches now supports zlib version 1.2.5.3, 1.2.6.1, 1.2.7.3 and 1.2.8.
  - Significantly improved performance of zlib compression functions on the standard compression modes.

    - Introduced a new fastest zlib data compression mode, which can significantly improve compression performance with only a small sacrifice in compression ratio.
- Signal Processing:
    - Added the ippsIIRIIR functions that perform zero-phase digital IIR filtering.
    - Added 64-bit data length support to the ippsSortRadixAscend and ippsSortRadixDescend functions.
    - Added unsigned integer data support to the ippsSortRadixAscend, ippsSortRadixDescend, ippsSortRadixIndexAscend and ippsSortRadixIndexDescend functions.
- Image Processing:
    - Added the ippiScaleC functions to support image data scaling and shifting for different data types by using 64-bit floating multiplier and offset.
    - Added the ippiMulC64f functions to support image data multiplication by a 64-bit floating point value.
- Removed the tutorial from the installation package, and its sample code and documentation are now provided online.
- Threading Notes: Though Intel® IPP threaded libraries are not installed by default, these threaded libraries are available by the custom installation, so the code written with these libraries will still work as before. However, the multi-threaded libraries are deprecated and moving to external threading is recommended. Your feedback on this is welcome.
- Installation on IA-32 architecture hosts is no longer supported, and the Intel IPP packages for Intel® 64 architecture hosts include both 64-bit and 32-bit Intel IPP libraries.

## System Requirements

For information about the Intel® IPP system requirements, please visit Intel® Integrated Performance Primitives (Intel® IPP) 2017 System Requirements page.

## Known Intel® IPP 2017 Issues and Limitations

- Some issues were identified in Intel® IPP Cryptography XTS-AES, GFp, and HMAC functions in Intel® IPP 2017 Update 2 and previous releases. These issues were fixed in Intel® IPP 2017 Update 3. Visit the known problems in Intel® IPP Cryptography for more information.
- Documentation viewing issue with Microsoft Internet Explorer* 10 and Windows Server* 2012: If on Windows Server* 2012 you find that you cannot display help or documentation from within Internet Explorer 10, modifying a security setting for

Microsoft Internet Explorer* usually corrects the problem. From **Tools > Internet Options > Security**, add “about:internet” to the list of trusted sites. Optionally, you can remove “about:internet” from the list of trusted sites after you are finished viewing the documentation.

- Context-sensitive (F1) Help issue with Microsoft Edge*: If Microsoft Edge* is set as the default browser for Microsoft* Visual Studio*, context-sensitive (also known as F1) calls to a specific function/feature will open the title page of the corresponding document instead of the topic related to the function/feature description. Allow correct behavior by changing Microsoft* Visual Studio* settings to use a different default browser.

## Product Contents

The Intel® IPP 2017 for Windows*, Linux* OS, and OS X* are available as:

- The installation package for both IA-32 and Intel® 64 architectures
- Online installer that downloads materials chosen during installation and the following optional add-on packages:
- Intel® IPP for Windows* Cryptography Add-on
- Intel® IPP for Linux* OS Cryptography Add-on
- Intel® IPP for OS X* Cryptography Add-on

## Cryptography for Intel® IPP is a Separate Download

Cryptography for Intel® IPP is a separate installation package that contains the binaries and header files needed to utilize the functions contained in the Intel IPP cryptography domain. It is an add-on to the Intel IPP library and, therefore, requires that the core Intel IPP already be installed on your system. You must first install an Intel® development product that includes Intel IPP and then request access to the Cryptography library. To obtain Cryptography for Intel IPP, which is distributed separately from the main Intel IPP, please review this knowledge base article: Where do I download the Intel® IPP Cryptography libraries?

## Technical Support

If you did not register your Intel® software product during installation, please do so now 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.

For technical information about the Intel® IPP, including FAQ's, tips and tricks, and other support information, please visit the Intel® IPP forum: http://software.intel.com/en-

us/forums/intel-integrated-performance-primitives/ and browse the Intel® IPP support page: https://software.intel.com/en-us/intel-ipp-support/.

For general information about Intel technical support, product updates, user forums, FAQs, tips and tricks and other support questions, please visit http://www.intel.com/software/products/support/.

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

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Intel® Integrated Performance Primitives (Intel® IPP) includes content from several 3rd party sources that was originally governed by the licenses referenced below:

- zlib library:

  zlib.h -- interface of the 'zlib' general purpose compression library version 1.2.8, April 28th, 2013
  Copyright© 1995-2013 Jean-loup Gailly and Mark Adler
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- bzip2:

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