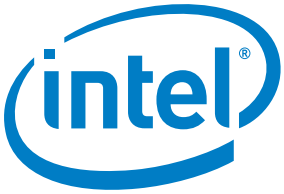

Intel® Distribution for Python* 2022 Update 3

Release Notes

26 August 2022

Version History/Revision History

Date	Revision	Description
26 August 2022	1.0	Release Notes for the Intel® Distribution for Python* 2022 Update 3

Intended Audience

The target audience for the release notes are software developers and end users of the Intel® Distribution for Python* 2022 Update 3.

Customer Support

For technical support, including answers to questions not addressed in this document, visit the technical support forum at https://software.intel.com/en-us/forums/intel-distribution-for-python or email Intel Corporation at scripting@intel.com.

Contents

1 Introduction

The Python* programming language is an open source programming language with increasing adoption by developers across many application domains and a large ecosystem of available free packages. In particular, the packages commonly used for numerical and scientific computation, called the SciPy stack, are very popular and heavily used.

Intel® Distribution for Python* is a binary distribution of Python interpreter and commonly used packages for computation and data intensive domains, such as scientific and engineering computing, big data, and data science. The product supports Python 3.9 for Windows, Linux, and macOS. The product simplifies Python installation by providing packages in a binary form so that everything is preconfigured and no compilation tools are needed, as well as contains all the dependences for running on popular OS platforms. Python packages have been accelerated with Intel® Performance Libraries, including Intel® Math Kernel Library (Intel® MKL), Intel® Threading Building Blocks (Intel® TBB), Intel® Integrated Performance Primitives (Intel® IPP), and Intel® Data Analytics Acceleration Library (Intel® DAAL). The packages have been optimized to take advantage of parallelism through the use of vectorization, multi-threading and multi-processing, as well as through the use of optimized communication across multiple nodes.

This document provides system requirements, installation instructions, and lists issues and limitations.

To learn more about this product, see:

- New features in the New in this Release section below, or in the product help.
- Reference documentation in the Related Documentation section below
- Installation instructions in the Installing this Release section below

2 New in this Release

2.1 Intel® Distribution for Python 2022 Update 3

The following are new features for the release:

- Addressed critical CVE -2018-25032

The full list of provided packages is in Release Content.

3 System Requirements

The Intel® Distribution for Python* supports the Intel® 64 architecture. For a complete explanation of this architecture name please read the following article:

Intel® Architecture Platform Terminology for Development Tools.

The lists below pertain only to the system requirements necessary to support application development with Intel® Distribution for Python*. If you are using Cython*, please review the documentation for your compiler (GCC*, Microsoft Visual Studio*, or Intel® Compiler) to determine the minimum hardware and software requirements.

Minimum System Requirements

- A system based on an Intel® 64 architecture processor supporting the Intel® Streaming SIMD Extensions 4.2 (Intel® SSE4.2) instructions (or compatible non-Intel® processor).
  NOTE:
  - Incompatible or proprietary instructions in non-Intel® processors may cause the analysis capabilities of this product to function incorrectly. Any attempt to analyze code not supported by Intel® processors may lead to failures in this product.
  - For the best experience, a multi-core or multiprocessor system is recommended.
- 2GB free disk space for all product features and all architectures

Note: Intel® Distribution for Python* is expected to work on many more Linux distributions as well. Let us know if you have trouble with the distribution you use.

Hardware Requirements

The same as the hardware requirements for Intel® oneAPI DPC++ Compiler. See details at Release Notes for Intel® DPC++ Compatibility Tool

- GPU:
  - 6th Gen Intel® Core™ processor or higher
  - Intel® Iris® Plus Graphics
  - Intel® Iris® Xe Graphics
  - Intel® Iris® Xe Max Graphics
  - Intel® Iris® Graphics
  - Intel® Iris® Pro Graphics
- CPU:
  - Intel Atom® Processors
  - Intel® Core™ Processor Family
  - Intel® Xeon® Processor Family
  - Intel® Xeon® Scalable Performance Processor Family

Apple M1* hardware is currently not supported

Software Requirements

These OS distributions are tested by Intel or known to work; other distributions may or may not work and are not recommended. If you have questions, access the Intel Community Forums when you need assistance. If you have Commercial Support, create a support ticket.

Operating Systems:

- 64-bit Linux*: Ubuntu* 18.04, 20.04 (CPU & GPU)
- 64-bit Windows* Pro & Enterprise 10 (CPU & GPU)
    - Using Microsoft's Windows Subsystem for Linux 2 (WSL2) in Windows 10, you can install the native Linux distribution of Intel oneAPI toolkits and libraries on Windows for CPU and GPU workflows. Details here
- Windows* Server 2016, 2019 (CPU & GPU)
- Red Hat Enterprise Linux 7, 8 (CPU & GPU)
- SUSE Linux Enterprise 15 SP2, 15 SP3, 15 SP4 (CPU & GPU)
- CentOS 7 (CPU & GPU)

To build examples with DPC++ API extensions, you also need:

- GNU* Make on Linux*, nmake on Windows*

ICC Deprecation Notice

Intel® C++ Compiler Classic (icc) is deprecated and will be removed in a oneAPI release in the second half of 2023. Intel recommends that customers transition now to using the LLVM-based Intel® oneAPI DPC++/C++ Compiler (icx) for continued Windows* and Linux* support, new language support, new language features, and optimizations. Note that starting with release 2021.7, macOS* support is limited to Mac* computers with Intel® Processors. For more information on icx, see the Intel® oneAPI DPC++/C++ Compiler Developer Guide and Reference.

OS Deprecation Notice

These operating systems are deprecated in this release, Intel oneAPI 2022.1, and will be removed in a future release:

- Windows Server 2016*
- Red Hat* Enterprise Linux 7
- SUSE Linux Enterprise Server* 15 SP2
- Ubuntu* 18.04 LTS
- CentOS* 7
- Fedora 34

- Fedora 35
- Clear Linux*
- Yocto
- macOS* 10

Support for macOS 10 is deprecated. oneAPI 2022.1 was the last supported release.

External Dependencies

For **Windows***: None

For **Linux***: glibc 2.14-2.29 supported

Visual Studio Code (VS Code) Extensions for Intel® oneAPI Toolkits

The VS Code extensions for oneAPI Toolkits provide assistance to developers who are creating, debugging and profiling oneAPI applications. The Using Visual Studio Code with Intel® oneAPI Toolkits User Guide provides additional detail.

The following VS Code extensions are available in the VS Code marketplace:

- Sample Browser for Intel® oneAPI Toolkits
- Environment Configuration for Intel® oneAPI Toolkits
- DevCloud Connector for Intel® oneAPI Toolkits

See also:

- Get Started with Intel® oneAPI Base Toolkit for Linux
- Get Started with Intel® oneAPI Base Toolkit for Windows
- Get Started with Intel® oneAPI Base and HPC Toolkit for MacOS*

4 Installation

Installing this Release

The Intel® Distribution for Python* is compatible with the Conda* package management tool. All modules included in the distribution are initially installed into the root Conda* environment. A virtual environment is also created.

On **Windows*** (if using the standalone installer):

1. Change directory to the installation path. Ensure **intelpython** does not exist
2. Download the zip file for Intel® Distribution for Python* and unzip the file post-download.
3. Change directory to **intelpython**

4. Run from command prompt : **cmd /c setup_intel_python.bat**
5. When the installation completes, activate your root Intel® python conda environment:
   - To modify only your current command shell, use the following command:
     - **.\Scripts\activate**

On **Linux/macOS*** (if using the standalone installer)**:**

1. Change directory to the installation path. Ensure **intelpython** does not exist
2. Download the tarball for Intel® Distribution for Python* and un-tar the file post-download.
3. Extract the contents using the following command:
   tar -xvzf <filename>
4. Change directory to **intelpython**
5. Run from shell: **bash setup_intel_python.sh**
6. When the installation completes, activate your root Intel® python conda environment:

   - To modify only your current shell, use the following commands:
     - **source ./bin/activate root**
   - To modify all future logins, do one of the following:
     - Add "source <install>/bin/activate root" to your .bashrc (bash) or other logon script.
     - Manually add the <install>/bin directory to your PATH.
   - Use the following command to ensure your environment points to the Intel® Distribution for Python*:
     run "**which python**"

Default Installation Folders

The Intel® oneAPI installer uses the Intel® oneAPI Toolkit installation root, which is /opt/intel/oneapi by default. Intel® Distribution for Python* standalone installer uses the current directory as the installation root. Intel® Distribution for Python* is installed under the installation root (<installdir>) in <installdir>/**intelpython/python3.9**. Installation into a directory containing files is not supported.

Changing, Updating, or Removing the Product

The installer always adds new conda packages to the conda_channel directory included in Intel® oneAPI, located by default at /opt/intel/oneapi/conda_channel. That directory is initially added to your conda configuration file (.condarc). If a root python environment does not exist at <installdir>/intelpython/python3.9, the installer will create a new python root environment there. ***The installer will NOT modify a pre-existing python root environment***. To update your python root environment, use the conda commands listed following the next paragraph. All releases, including updates, will create a *virtual environment* in **<installdir>/intelpython/releases/** containing all new release content.

Intel® Distribution for Python* removal: On **Windows*** or **Linux***: Delete the installation directory and remove additions to your PATH.

You can also use the Conda* package management tool to update individual modules. You can find the Conda* tool in the bin directory on Linux* or in the Scripts directory on Windows*. Use these commands to do the following with the Conda* tool:

- To install a new module: conda install <module name>
- To update an existing module: conda update <module name>
- To remove an existing module: conda remove <module name>

5 Release Content

Intel® Distribution for Python* packages (New*, Updated**)

Name	Version	Platform
_libgcc_mutex	0.1*	Linux
_openmp_mutex	4.5*	Linux
asn1crypto	1.4.0	Linux,Windows,macOS
brotlipy	0.7.0*	Linux,Windows,macOS
bzip2	1.0.8	Linux,Windows,macOS
c_ares	1.18.1**	Linux,Windows,macOS
ca-certificates	2022.2.1**	Linux,Windows,macOS
certifi	2021.10.8	Linux,Windows,macOS
cffi	1.15.0**	Linux,Windows,macOS
chardet	4.0.0	Linux,Windows,macOS
common_cmplr_lib_rt	2022.1.0**	Linux,Windows,macOS
conda	4.11.0**	Linux,Windows,macOS
conda-package-handling	1.7.3	Linux,Windows,macOS
cryptography	36.0.0**	Linux,Windows,macOS
cycler	0.11.0**	Linux,Windows,macOS
cython	0.29.25**	Linux,Windows,macOS
dal	2022.1.0**	Linux,Windows,macOS
dpcpp_cpp_rt	2022.1.0**	Linux,Windows,macOS
dpctl	0.12.0**	Linux,Windows
dpnp	0.10.1**	Linux
fortran_rt	2022.0.0**	Linux,Windows,macOS
freetype	2.10.4	Linux,Windows,macOS
funcsigs	1.0.2	Linux,Windows,macOS
future	0.18.2	Linux,Windows,macOS
icc_rt	2022.1.0**	Linux,Windows,macOS
idna	2.10	Linux,Windows,macOS
impi_rt	2021.6.0**	Linux,Windows,macOS

intel-openmp	2022.1.0**	Linux,Windows,macOS
intelpython	2022.1.0**	Linux,Windows,macOS
ipp	2021.6.0**	Linux,Windows,macOS
joblib	1.0.1	Linux,Windows,macOS
kiwisolver	1.3.2	Linux,Windows,macOS
libarchive	3.5.2	Linux,Windows,macOS
libcxx	11.0.1	macOS
libevent	2.1.12**	Linux,Windows,macOS
libffi	3.3	Linux,macOS
libgcc-ng	9.3.0	Linux
libgomp	9.3.0	Linux
libiconv	1.16**	Windows,macOS
libllvm11	11.0.0	Linux,Windows,macOS
libpng	1.6.37	Linux,Windows,macOS
libprotobuf	3.19.0**	Linux,Windows,macOS
libstdcxx-ng	9.3.0	Linux
libxml2	2.9.12	Linux,Windows,macOS
llvm	11.0.0	Linux,Windows
llvmlite	0.38.0**	Linux,Windows,macOS
llvm-spirv	11.0.0	Linux,Windows
lz4-c	1.9.3	Linux,Windows,macOS
lzo	2.10	Linux,Windows,macOS
matplotlib	3.1.2	Linux,Windows,macOS
menuinst	1.4.18**	Windows
mkl	2022.1.0**	Linux,Windows,macOS
mkl-dpcpp	2022.1.0**	Linux,Windows
mkl-service	2.4.0	Linux,Windows,macOS
mkl_umath	0.1.1	Linux,Windows,macOS
mkl_fft	1.3.1	Linux,Windows,macOS
mkl_random	1.2.2	Linux,Windows,macOS
mpi4py	3.0.3	Linux,Windows
ncurses	6.3*	Linux,macOS
numba	0.55.1**	Linux,Windows,macOS
numba-dppy	0.18.0**	Linux,Windows,macOS
numexpr	2.8.1**	Linux,Windows,macOS
numpy	1.21.4**	Linux,Windows,macOS
numpy-base	1.21.4**	Linux,Windows,macOS
opencl_rt	2022.1.0**	Linux,Windows
openssl	1.1.1m**	Linux,Windows,macOS
pandas	1.3.5**	Linux,Windows,macOS
pip	21.2.4	Linux,Windows,macOS
pycosat	0.6.3	Linux,Windows,macOS
pycparser	2.21	Linux,Windows,macOS
pyeditline	2.0.1	Linux

pyopenssl	22.0.0**	Linux,Windows,macOS
pyparsing	3.0.4**	Linux,Windows,macOS
pysocks	1.7.1**	Linux,Windows,macOS
python	3.9.10**	Linux,Windows,macOS
python-dateutil	2.8.2	Linux,Windows,macOS
python-libarchive-c	2.9	Linux,Windows,macOS
pytz	2021.3	Linux,Windows,macOS
pywin32	302**	Windows
pyyaml	6.0	Linux,Windows,macOS
requests	2.25.1	Linux,Windows,macOS
ruamel_yaml	0.15.100	Linux,Windows,macOS
scikit-learn	0.24.2	Linux,Windows,macOS
scikit-learn-intelex	2021.6.0**	Linux,Windows,macOS
scipy	1.7.3**	Linux,Windows,macOS
setuptools	58.0.4	Linux,Windows,macOS
six	1.16.0	Linux,Windows,macOS
smp	0.1.4	Linux
snappy	1.1.8	Linux, Windows
spirv-tools	2020.5	Linux
sqlite	3.37.2	Linux,Windows,macOS
tbb	2021.6.0**	Linux,Windows,macOS
tbb4py	2021.6.0**	Linux,Windows,macOS
tcl	8.6.10	Linux,Windows,macOS
threadpoolctl	2.2.0**	Linux,Windows,macOS
tk	8.6.10	Linux,Windows,macOS
tqdm	4.62.2	Linux,Windows,macOS
urllib3	1.26.8**	Linux,Windows,macOS
vc	14.2	Windows
vs2015_runtime	14.27.29016**	Windows
wheel	0.37.1**	Linux,Windows,macOS
win_inet_pton	1.1.0	Windows
wincertstore	0.2	Windows
xgboost	1.4.2	Linux
xz	5.2.5	Linux,Windows,macOS
yaml	0.2.5	Linux,Windows,macOS
zlib	1.2.11.1	Linux,Windows,macOS
zstd	1.4.5	Linux,Windows,macOS

The installation package contains all the necessary native libraries required by the packages.

6 Known Issues

Please refer to the **Known Issues** in the **Resources** section of the document that is available online:

https://software.intel.com/en-us/articles/intel-distribution-for-python-support-and-documentation

7 Related Documentation

Name	Documentation
arrow-cpp	https://github.com/apache/arrow
asn1crypto	https://github.com/wbond/asn1crypto
bzip2	http://www.bzip.org/docs.html
certifi	https://certifi.io
cffi	http://cffi.readthedocs.org
chardet	https://github.com/chardet/chardet
conda	http://conda.pydata.org/docs/
conda-package-handling	https://github.com/conda/conda-package-handling
cryptography	https://cryptography.io
cycler	http://matplotlib.org/cycler/
cython	http://cython.org/#documentation
dpctl	https://github.com/IntelPython/dpctl
dpnp	https://github.com/IntelPython/dpnp
freetype	http://freetype.sourceforge.net/freetype2/documentation.html
funcsigs	http://funcsigs.readthedocs.org/en/latest/
idna	https://github.com/kjd/idna
intel-openmp	http://software.intel.com
ipp	http://software.intel.com/en-us/articles/intel-ipp/
joblib	https://joblib.readthedocs.io/en/latest/
kiwisolver	https://kiwisolver.readthedocs.io/en/latest/
libarchive	http://www.libarchive.org/
libffi	http://sourceware.org/libffi/
libiconv	https://www.gnu.org/software/libiconv/
libpng	http://www.libpng.org/pub/png/libpng.html
llvmlite	https://github.com/numba/llvmlite
lz4-c	https://www.lz4.org
lzo	http://www.oberhumer.com/opensource/lzo/
matplotlib	http://matplotlib.org/contents.html#
menuinst	https://pypi.python.org/pypi/menuinst/
mkl	http://software.intel.com/en-us/articles/intel-mkl/
mkl_fft	http://github.com/IntelPython/mkl_fft
mkl_random	http://github.com/IntelPython/mkl_random
mpi4py	http://mpi4py.readthedocs.org/
numba	http://numba.pydata.org/
numexpr	https://github.com/pydata/numexpr/wiki/Numexpr-Users-Guide
numpy	http://numpy.scipy.org/

openssl	http://www.openssl.org/
pandas	http://pandas.pydata.org/pandas-docs/stable/
pip	https://pip.pypa.io/en/stable/
pyarrow	https://github.com/apache/arrow
pycosat	https://github.com/ContinuumIO/pycosat
pycparser	https://github.com/eliben/pycparser
pyopenssl	https://pyopenssl.readthedocs.org/en/stable/
pyparsing	http://pyparsing.wikispaces.com/Documentation
pysocks	https://github.com/Anorov/PySocks
python	https://www.python.org/doc/versions/
python-dateutil	https://dateutil.readthedocs.org/en/latest/
python-libarchive-c	https://github.com/Changaco/python-libarchive-c
pytz	http://pytz.sourceforge.net/
pywin32	https://github.com/mhammond/pywin32
pyyaml	http://pyyaml.org/
requests	http://docs.python-requests.org/
ruamel_yaml	https://bitbucket.org/ruamel/yaml
scikit-learn	http://scikit-learn.org/stable/
scipy	http://www.scipy.org/docs.html
setuptools	http://pythonhosted.org/setuptools/
six	http://pythonhosted.org/six/
smp	https://github.com/IntelPython/smp
snappy	https://github.com/google/snappy
sqlite	http://www.sqlite.org/docs.html
tbb	http://www.threadingbuildingblocks.org
tcl	http://www.tcl.tk/doc/
thrift-cpp	https://github.com/apache/thrift
tk	http://www.tcl.tk/doc/
tqdm	https://pypi.python.org/pypi/tqdm
urllib3	https://urllib3.readthedocs.io/
vc	https://github.com/conda/conda/wiki/VC-features
vs2015_runtime	http://www.microsoft.com
wheel	http://wheel.readthedocs.org/en/latest/
win_inet_pton	https://github.com/hickeroar/win_inet_pton
wincertstore	https://bitbucket.org/tiran/wincertstore
xgboost	https://github.com/dmlc/xgboost
xz	http://tukaani.org/xz/
yaml	http://yaml.org/
zlib	http://zlib.net/manual.html

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