Intel® oneAPI HPC Toolkit 2023 Release Notes

ID 768266

Updated 4/17/2023

Version 2023.1

Public

New in 2023.1.0

Toolkit Level Updates

- Intel oneAPI HPC Toolkit for macOS on x86 is now deprecated and will be discontinued in the 2024.0 release. Several Intel-led open source developer tool projects will continue supporting macOS on Apple Silicon including oneAPI Threading Building Blocks (oneTBB) and Intel® Implicit SPMD Program Compiler and we welcome the opportunity to work with contributors to expand support to additional tools in the future.
- Intel® Cluster Checker is now deprecated and will be discontinued in a future release.

Intel® oneAPI DPC++/C++ Compiler 2023.1.0

- Intel® oneAPI DPC++/C++ Compiler adds auto cpu_dispatch to efficiently dispatch to specific intrinsics at runtime, kernel properties for SYCL for developers to write efficient, high-performance code, and enhances SYCL* 2020 conformance to improve developer productivity and boost CPU and GPU offload performance. Bfloat16 is now a full feature (out of the experimental namespace) in the compiler to accelerate machine learning (deep learning training, in particular) algorithms on the latest platforms.
- The compiler enhances OpenMP* 5.0 and 5.1 compliance, adds new standard features, and improves performance.
- Enhanced developer efficiency with better compiler error messaging and error handling for SYCL and OpenMP code.

Intel® C++ Compiler Classic 2021.9.0

- The Intel® C++ Compiler Classic has been updated to include recent versions of 3rd party components, which include functional and security updates.

Intel® Fortran Compiler 2023.1.0

- Intel® Fortran Compiler enhanced OpenMP 5.0, 5.1 compliance, and improved performance.
- Other bug fixes, stability improvements & security enhancements.

Intel® Fortran Compiler Classic 2021.9.0

- The Intel® Fortran Compiler Classic has been updated to include recent versions of 3rd party components, which include functional and security updates.

Intel® Cluster Checker 2021.7.2

- Intel® Cluster Checker is now deprecated and will be discontinued in the 2023.2 release

Intel® MPI Library 2021.9.0

- Intel® MPI Library improves performance for collectives using GPU buffers.
- Intel® MPI Library improves performance through default process pinning on CPUs with E-cores and P-cores.
- Intel® MPI Library resolves performance regressions and improves stability.

Intel® Inspector 2023.1.0

- Intel® Inspector now can be started from Microsoft* Visual Studio* 2022.
- Intel® Inspector has been updated to include recent versions of 3rd party components, which include functional and security updates.

Intel® Trace Analyzer and Collector 2021.9.0

- Intel® Trace Analyzer and Collector has been updated to include recent versions of 3rd party components, which include functional and security updates.

Known Issues

- When using Intel® oneAPI DPC++/C++ Compiler on a Linux machine, users may run into an issue if the highest version of GNU gcc detected doesn't have the equivalent g++ package installed. More details on the error and workarounds can be found here.
- For users who have a supported version of Visual Studio* installed, the installation of IDE integration can be very slow. It may take 30+ minutes just for the IDE integrations installation sometimes. Please be extra patient and it will be eventually installed.
- Installing oneAPI 2022.1, then installing oneAPI 2022.2, and subsequently uninstalling oneAPI 2022.1 will lead to gdb_oneapi.zip and com.intel.samples.update-1.0.0-SNAPSHOT.zip plugins being unable to be found in the <installdir>/etc/eclipse directory. Workarounds:

    1. Take the plugins from their original locations:

       <installdir>/debugger/latest/ide_support/eclipse/gdb_oneapi.zip
       <installdir>/dev-utilities/latest/ide-support/eclipse/com.intel.samples.update-1.0.0-SNAPSHOT.zip

       where <installdir> is /opt/intel/oneapi by default, if the directory was changed during installation, please use it here

    2. Manually restore the symlinks:

       ONEAPI_INSTALL_DIR=/opt/intel/oneapi # if the directory was changed during installation, please use it here
       ln -sT $ONEAPI_INSTALL_DIR/dev-utilities/latest/ide-support/eclipse/com.intel.samples.update-1.0.0-SNAPSHOT.zip $ONEAPI_INSTALL_DIR/etc/eclipse/com.intel.samples.update-1.0.0-SNAPSHOT.zip
       ln -sT $ONEAPI_INSTALL_DIR/debugger/latest/ide_support/eclipse/gdb_oneapi.zip $ONEAPI_INSTALL_DIR/etc/eclipse/gdb_oneapi.zip

    3. Repair oneAPI 2022.2 using the Installer app:
       <installdir>/oneapi/installer/installer

- Latest GPU driver available at https://dgpu-docs.intel.com/ introduces an Ahead-Of-Time (AOT) build issue for OpenMP offload applications running on Gen9 iGPU when using oneAPI compilers. A fix for this issue will be available in the upcoming driver release.
  For assistance with downgrading to a version of driver which does not have this issue, contact us via Graphics - Intel Communities.
- Users who installed 2021.1 packages for Linux* via package managers YUM/DNF or Zypper may encounter errors during the upgrade process. Please see https://www.intel.com/content/www/us/en/developer/articles/news/yum-dnf-apt-zypper-packages-oneapi-2021-1-gold.html for details.

- If you have chosen to download the Get Started Guide to use offline, viewing it in Chrome, may cause the text to disappear when the browser window is resized. To fix this problem, resize your browser window again, or use a different browser.
- Diagnostics Utility for Intel® oneAPI Toolkits:
  - Diagnostics utility supports to run executing checkers only in .sh format.
  - Diagnostics utility may not find oneAPI system check if they installed in some custom directory.
  - Diagnostics utility doesn't run oneAPI system checks with root privileges.
  - If you would like to run all checks from a single checker and some check has dependency checks from other checker (checks that must be run before the desired check):
    - By the --single_checker option - the tool will not be able to find the dependencies and check will not be run.
    - By the --config and --filter options - the tool will not be able to find the dependencies and check will not be run. Workaround: Add dependency checks to run list.
    - The oneAPI products detection check will not find products version, if oneAPI installer cache was removed.

Tools Included in Intel® oneAPI HPC Toolkit

- Intel® oneAPI DPC++/C++ Compiler Pro - Release Notes
- Intel® Fortran Compiler & Intel® Fortran Compiler Classic - Release Notes
- Intel® MPI Library - Release Notes
- Intel® Inspector - Release Notes
- Intel® Trace Analyzer and Collector - Release Notes
- Intel® Cluster Checker - Release Notes

Also reference the Intel® oneAPI Base Toolkit Release Notes for additional information.