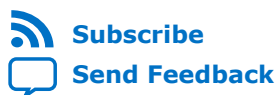


# Intel® High Level Synthesis Compiler Standard Edition

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## Version 19.1 Release Notes

Updated for Intel® Quartus® Prime Design Suite: **19.1**



**RN-1224 | 2019.03.26**

Latest document on the web: [PDF](#) | [HTML](#)



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# 1. Intel® High Level Synthesis Compiler Standard Edition Version 19.1 Release Notes

The *Intel® High Level Synthesis Compiler Standard Edition Release Notes* provide late-breaking information about the Intel High Level Synthesis Compiler Standard Edition Version 19.1.

For most recent Pro Edition release notes, see the [Intel High Level Synthesis Compiler Pro Edition Release Notes](#).

## About the Intel HLS Compiler Standard Edition Documentation Library

Documentation for the Intel HLS Compiler Standard Edition is split across a few publications. Use the following table to find the publication that contains the Intel HLS Compiler information that you are looking for:

**Table 1. Intel High Level Synthesis Compiler Standard Edition Documentation Library**

Title and Description	STD
<p><i>Release Notes</i> Provide late-breaking information about the Intel HLS Compiler.</p>	<a href="#">Link</a>
<p><i>Getting Started Guide</i> Get up and running with the Intel HLS Compiler by learning how to initialize your compiler environment and reviewing the various design examples and tutorials provided with the Intel HLS Compiler.</p>	<a href="#">Link</a>
<p><i>User Guide</i> Provides instructions on synthesizing, verifying, and simulating intellectual property (IP) that you design for Intel FPGA products. Go through the entire development flow of your component from defining your component and testbench up to integrating your component IP into a larger system with the Intel Quartus Prime software.</p>	<a href="#">Link</a>
<p><i>Reference Manual</i> Provides reference information about the features supported by the Intel HLS Compiler. Find details on Intel HLS Compiler command options, header files, pragmas, attributes, macros, declarations, arguments, and template libraries.</p>	<a href="#">Link</a>
<p><i>Best Practices Guide</i> Provides techniques and practices that you can apply to improve the FPGA area utilization and performance of your HLS component. Typically, you apply these best practices after you verify the functional correctness of your component.</p>	<a href="#">Link</a>
<p><i>Quick Reference</i> Provides a brief summary of Intel HLS Compiler declarations and attributes on a single two-sided page.</p>	<a href="#">Link</a>

## 1.1. New Features and Enhancements

The Intel High Level Synthesis Compiler Standard Edition Edition Version 19.1 includes the following new features:

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\*Other names and brands may be claimed as the property of others.



- The Intel High Level Synthesis Compiler documentation library has been split into separate libraries for Pro Edition and Standard Edition. For details, see [About the Intel HLS Compiler Standard Edition Documentation Library](#) on page 3.

## 1.2. Intel High Level Synthesis Compiler Standard Edition Prerequisites

The Intel HLS Compiler Standard Edition is part of the Intel Quartus® Prime Standard Edition Design Suite. You can install the Intel HLS Compiler as part of your Intel Quartus Prime software installation or install it separately. It requires Intel Quartus Prime and additional software to use.

For detailed instructions about installing Intel Quartus Prime Standard Edition software, including system requirements, prerequisites, and licensing requirements, see [Intel FPGA Software Installation and Licensing](#).

The Intel HLS Compiler requires the following software in addition to Intel Quartus Prime:

### C++ Compiler

For Linux, install GCC 4.4.7 including the GNU C++ library.

These libraries are included in the version of Linux supported by the Intel HLS Compiler.

*Important:* The Intel HLS Compiler Standard Edition software does not support versions of the GCC compiler other than GCC 4.4.7.

For Windows, install Microsoft Visual Studio 2010 Professional.

*Important:* The Intel HLS Compiler Standard Edition software does not support versions of Microsoft Visual Studio other than Microsoft Visual Studio 2010 Professional.

### Mentor Graphics\* ModelSim\* Software

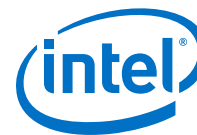
On Windows and RedHat Linux systems, you can install the ModelSim\* software from the Intel Quartus Prime software installer. The available options are:

- ModelSim - Intel FPGA Edition
- ModelSim - Intel FPGA Starter Edition

Alternatively, you can use your own licensed version of Mentor Graphics\* ModelSim software.

On RedHat Linux systems, ModelSim software requires the Red Hat development tools packages. Additionally, any 32-bit versions of ModelSim software (including those provided with Intel Quartus Prime) require additional 32-bit libraries. The commands to install these requirements are provided in [Intel Quartus Prime Standard Edition Getting Started Guide](#).

For information about all the ModelSim software versions that the Intel software supports, refer to the *EDA Interface Information* section in the Software and Device Support Release Notes for your edition of Intel Quartus Prime Standard Edition



### Related Information

- [Intel High Level Synthesis Compiler Standard Edition Getting Started Guide](#)
- [Supported Operating Systems](#)
- [Software Requirements](#)  
in *Intel FPGA Software Installation and Licensing*
- [EDA Interface Information \(Intel Quartus Prime Standard Edition\)](#)
- [Mentor Graphics ModelSim Website](#)

## 1.3. Known Issues and Workarounds

This section provides information about known issues that affect the Intel HLS Compiler Standard Edition Version 19.1.

Description	Workaround
Intel Quartus Prime Standard Edition Version 19.1 (which contains the Intel HLS Compiler Standard Edition) is not available at the publication date for this document (2019.12.16).	Occasionally check the <a href="#">Download Center for FPGAs</a> for Intel Quartus Prime Standard Edition availability.
(Windows only) Compiling a design in a directory with a long path name can result in compile failures.	Compile the design in a directory with a short path name.
(Windows only) A long path for your Intel Quartus Prime installation directory can prevent you from successfully compiling and running the Intel HLS Compiler tutorials and example designs.	Move the tutorials and examples to a short path name before trying to run them.
When you use the <code>-c</code> command option to have separate compilation and linking stages in your workflow, and if you do not specify the <code>-march</code> option in the linking stage (or specify a different <code>-march</code> option value), your linking stage might fail with or without error messages.	Ensure that you use the same <code>-march</code> option value for both the compilation with the <code>-c</code> command option stage and the linking stage.
(Windows only) Pragmas used in templated code are not recognized	Manually specialize the templated code.
(Windows only) C++ libraries are not supported	Use C libraries where possible. For example using <code>printf</code> instead of <code>cout</code> .
Enqueueing a component with a slave memory might result in a hang in simulation. This hang is an issue in the generated testbench not the component hardware.	If your component uses slave memory, use standard function calls to invoke the component from the testbench.
(Windows only) When you compile your component, the compiler might issue the following warning:  <pre>warning LNK4088: image being generated due to /FORCE option; image may not run</pre>	Ignore this warning. The executable is expected to work correctly.

## 1.4. Software Issues Resolved

The following customer service request cases were corrected or otherwise resolved in the Intel HLS Compiler Standard Edition Version 19.1.

**Table 2. Issues Resolved in the Intel HLS Compiler Standard Edition Version 19.1**

Customer Service Request Numbers						
00402868	00412640	00415384	11345379	11406453	11364116	11364838
11410991	11411334					



## 1.5. Intel HLS Compiler Standard Edition Release Notes Archives

Intel HLS Compiler Version	Title
19.1	<a href="#">Intel HLS Compiler Standard Edition Version 19.1 Release Notes</a>
18.1	<a href="#">Intel HLS Compiler Version 18.1 Release Notes</a>
18.0	<a href="#">Intel HLS Compiler Version 18.0 Release Notes</a>
17.1	<a href="#">Intel HLS Compiler Version 17.1 Release Notes</a>

## 1.6. Document Revision History for Intel HLS Compiler Standard Edition Version 19.1 Release Notes

Document Version	Intel Quartus Prime Standard Edition Version	Changes
2020.03.26	19.1	<ul style="list-style-type: none"><li>Corrected <a href="#">Intel High Level Synthesis Compiler Standard Edition Prerequisites</a> on page 4 to indicate that you can install the Intel HLS Compiler as part of your Intel Quartus Prime software installation or install it separately.</li></ul>
2019.12.18	19.1	<ul style="list-style-type: none"><li>Removed Intel HLS Compiler Pro Edition content. For Intel HLS Compiler Pro Edition Version 19.1, Release Notes, see <a href="#">Intel High Level Synthesis Compiler Version 19.1 Release Notes</a>.</li></ul>
2019.06.04	19.1	<ul style="list-style-type: none"><li>Initial release.</li></ul>