



Intel[®] Quartus[®] Prime Pro Edition

Version 19.2 Software and Device Support Release Notes



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1. Intel® Quartus® Prime Pro Edition Version 19.2 Software and Device Support Release Notes

This document provides late-breaking information about the Intel® Quartus® Prime Pro Edition software release version 19.2.

For information about operating system support, refer to the `readme.txt` file in your `intelFPGA_pro/<version number>/quartus` directory.

Related Information

[Intel Quartus Prime Standard Edition Software and Device Support Release Notes](#)

1.1. New Features and Enhancements

The Intel Quartus Prime Pro Edition Software Version 19.2 includes the following new features and enhancements:

- Intel Quartus Prime Pro Edition Software Version 19.2 has been updated with unzip 6.10c23, protobuf 3.4.0, libcurl 7.64.0, Scintilla 3.7.2, tinyxml2 7.0.1, OpenJDK8u212, and Xerces 2.12.0, which include functional and security updates. Update to the latest version of Quartus Prime design software as soon as possible.
- Nios® II Embedded Design Suite (EDS) transitioned from Cygwin to Ubuntu 18.04 LTS running on Windows Subsystem for Linux (WSL).
This transition improves the performance, robustness, and security of the Nios II EDS.
- Added a new critical warning message if an Intel Stratix® 10 design does not include the Reset Release IP.

1.2. Operating System Support

Information about OS support for the Intel Quartus Prime Design Suite is available on the Operating System Support page of the Intel FPGA website.

Related Information

[Operating System Support](#)

1.3. Memory Recommendations

A full installation of the Intel Quartus Prime Pro Edition software requires up to 75 GB of available disk space.

Intel recommends that your system be configured to provide virtual memory equal to the recommended physical RAM that is required to process your design.



Note: Peak virtual memory might exceed these recommendations. These recommendations are based on the amount of physical memory required to achieve runtime within 10% of that achieved on hardware with an infinite amount of RAM.

Table 1. Memory Requirements for Processing Designs

These requirements are the same for both Windows and Linux installations.

Family	Device	Recommended Physical RAM
Intel Arria® 10	10AT115, 10AX115	48 GB
	10AX090	44 GB
	10AS066, 10AX066	32 GB
	10AS057, 10AX057	30 GB
	10AS048, 10AX048	28 GB
	10AX032, 10AS032	24 GB
	10AX027, 10AS027	22 GB
	10AX022, 10AS022	20 GB
	10AX016, 10AS016	18 GB
Intel Cyclone® 10 GX	10CX85, 10CX105, 10CX150, 10CX220	18 GB
Intel Stratix 10	1SG280L, 1SX280L, 1SG280H, 1SX280H, 1ST280E 1SG250L, 1SX250L, 1SG250H, 1SX250H, 1ST250E 1SG210H, 1SX210H, 1SM21BH, 1SM21CH, 1SM21BE 1SM21CE, 1ST210E	64 GB
	1SG165H, 1SX165H, 1SM16BH, 1SM16CH, 1SM16BE, 1SM16CE, 1ST165E	48 GB
	1SG110H, 1SX110H 1SG085H, 1SX085H	32 GB

1.4. Changes in Device Support

For information about known device issues and workarounds, see the [Intel FPGA Knowledge Base](#).

1.5. Changes to Software Behavior

This section documents instances in which the behavior and default settings of the Intel Quartus Prime Pro Edition software have been changed from earlier releases of the Intel Quartus Prime Pro Edition software.



- Quartus Prime does not generate programming files as part of the Quartus compilation process. Depending on your FPGA device, you must use one of the following tools to generate programming files:
 - For Intel Stratix 10 devices, use the Programming File Generator tool.
 - For other devices, use the Convert Programming File tool.
- Intel FPGA IP cores are transitioning to a new version number scheme. Previously, IP core version numbers aligned with Intel Quartus Prime version numbers.

Under the new scheme, IP core version numbers move to a three-part version numbering scheme (X.Y.Z) that is independent of Intel Quartus Prime version numbers. Changes in the parts of an IP core version number indicate different things and might require actions on your part:

- X: A change in X indicates a major revision of the IP. You must regenerate the IP.
- Y: A change in Y indicates that the IP includes new features, but retains backwards compatible behavior, ports, and parameters with all X level IP cores. Regenerate the IP to include these new features.
- Z: A change in Z indicates that the IP includes bug fixes and minor improvements, but retains backwards compatible behavior, ports, and parameters with all X level IP cores. Regenerate the IP to include the fixes and improvements.

In addition, new IP cores start their version numbering at 1.0.0. Existing IP cores adopt the new numbering scheme but increment the version number from their current version number.

Review your IP core release notes to confirm the versioning scheme for your IP core.

Refer to the Intel Quartus Prime Default Settings File (.qdf), *<Quartus Prime installation directory>/quartus/bin/assignment_defaults.qdf*, for a list of all the default assignment settings for the latest version of the Intel Quartus Prime software.

1.6. Device Support and Pin-Out Status

Table 2. Full Device Support

Full compilation, simulation, timing analysis, and programming support is now available for the new devices listed in this table.

Device Family	Devices
Intel Arria 10	10AS016, 10AS022, 10AS027, 10AS032, 10AS048, 10AS057, 10AS066, 10AT090, 10AT115, 10AX016, 10AX022, 10AX027, 10AX032, 10AX048, 10AX057, 10AX066, 10AX090, 10AX115
Intel Cyclone 10 GX	10CX085, 10CX105, 10CX150, 10CX220
Intel Stratix 10	1SG085H, 1SG110H-S1, 1SG110H, 1SG165H, 1SG166H-AS, 1SG210H-S1, 1SG210H, 1SG211H-AS, 1SG250H-AS, 1SG250H, 1SG250L, 1SG280H-AS, 1SG280H-S1, 1SG280H-S2, 1SG280H-S3, 1SG280H, 1SG280L-S2, 1SG280L-S3, 1SG280L, 1SM16BE-S1, 1SM16BE, 1SM16BH-S1, 1SM16BH, 1SM16CH, 1SM16CH-S1, 1SM21BE-S1, 1SM21BE, 1SM21BH-S1, 1SM21BH, 1SM21CH-S1, 1SM21CH, 1ST165E, 1ST210E-S1, 1ST210E, 1ST250E-F55, 1ST280E-
<i>continued...</i>	



Device Family	Devices
	F50-S1, 1ST280E-F55, 1SX085H, 1SX110H-S1, 1SX110H, 1SX165H, 1SX210H, 1SX250H, 1SX250L, 1SX280H-AS, 1SX280H-S1, 1SX280H-S3, 1SX280H, 1SX280L-S1, 1SX280L-S2, 1SX280L

Table 3. Advance Device Support

Compilation, simulation, and timing analysis support is provided for these devices. The Compiler generates pinout information for these devices in this release, but does not generate programming files.

Device Family	Devices
Intel Stratix 10	1SG166H, 1SG211H, 1ST085E, 1ST110E, 1ST280E-F50, 1ST250E-F50

Table 4. Initial Device Support

Compilation, simulation, and timing analysis support is provided for these devices. Programming files and pinout information are not generated for these devices in this release.

Device Family	Devices
N/A	N/A

1.7. Timing and Power Models

Table 5. Timing and Power Model Status

Device Family	Device	Timing Model Status	Power Model Status
Intel Arria 10	10AX016, 10AS016, 10AX022, 10AS022, 10AX027, 10AS027, 10AX032, 10AS032,	Final – 16.1 ⁽¹⁾ ⁽²⁾	Final – 17.0
	10AX048, 10AS048	Final – 16.0.2 ⁽²⁾	
	10AX057, 10AS057, 10AX066, 10AS066, 10AX090	Final – 16.0.1 ⁽²⁾	Final – 16.0.1
	10AX115, 10AT115	Final – 16.0 ⁽²⁾	Final – 16.0
Intel Cyclone 10 GX	10CX085, 10CX105, 10CX150, 10CX220	Final – 17.0	Final – 18.0
Intel Stratix 10	1SG280L, 1SX280L, 1SG250L, 1SX250L	Final – 18.0.1	Final – 18.1.1
	1SG280H, 1SX280H, 1SG250H, 1SX250H, 1SG210H, 1SX210H, 1SG165H, 1SX165H, 1SG110H, 1SX110H, 1SG085H, 1SX085H	Final – 18.1.1	Final – 18.1.1
	1SM21BH, 1SM21CH, 1SM16BH, 1SM16CH	Final – 19.1	Final – 19.1
	1ST280E, 1ST250E	Final – 18.1.1	Preliminary
	1ST210E, 1SM21BE, 1ST165E, 1SM16BE	Final – 19.2	Preliminary

Related Information

[System Design with Advance FPGA Timing Models](#)

⁽¹⁾ Devices with a -1 speed grade were finalized in Intel Quartus Prime software version 17.0

⁽²⁾ All automotive and military grade devices are preliminary.



1.8. IBIS Models

Table 6. IBIS Model Status for the Intel Quartus Prime Pro Edition Software Release Version 19.2

Device families have IBIS model statuses that are either Advance, Preliminary, or Final.

Device Family	IBIS Model Status
Intel Arria 10	Final – 16.1.2
Intel Cyclone 10 GX	Final – 17.0
Intel Stratix 10	Final – 18.1

1.9. EDA Interface Information

Table 7. Synthesis Tools Supporting the Intel Quartus Prime Pro Edition Software Release Version 19.2

Synthesis Tools	Version
Mentor Graphics* Precision	Mentor Graphics Precision versions that support the Intel Quartus Prime software are typically released after the release of the Intel Quartus Prime software. Contact Mentor Graphics for versions of Mentor Graphics* Precision that support Intel Quartus Prime Pro Edition Software Release Version 19.2.
Synopsys* Synplify, Synplify Pro, and Synplify Premier	Synopsys Synplify, Synplify Pro, and Synplify Premier versions that support the Intel Quartus Prime software are typically released after the release of the Intel Quartus Prime software. Contact Synopsys for versions of Synopsys Synplify, Synplify Pro, and Synplify Premier Precision that support Intel Quartus Prime Pro Edition Software Release Version 19.2.

Table 8. Simulation Tools Supporting the Intel Quartus Prime Pro Edition Software Release Version 19.2

Simulation Tools	Version	Gate-Level Simulation Support
Aldec Active-HDL	10.5 (Windows 32-bit only)	Yes
Aldec Riviera-PRO	2018.10 (64-bit only)	Yes
Cadence Incisive Enterprise Simulator (IES)	15.20 (64-bit Linux only)	Yes
Cadence Xcelium Parallel Logic Simulation	18.03 (64-bit Linux only)	Yes
Mentor Graphics ModelSim* PE	10.6d (Windows 32-bit only)	Yes
Mentor Graphics ModelSim SE	10.6d (64-bit only)	Yes
Mentor Graphics ModelSim-Intel FPGA Edition	10.6d (32-bit only)	Yes
Mentor Graphics Questa* Advanced Simulator	10.6d (64-bit only)	Yes
Synopsys VCS and VCS MX	N-2017.12-SP2-4 (64-bit Linux only)	Yes

1.10. Antivirus Verification

The Intel Quartus Prime software release version 19.2 has been verified virus free with the following software:



Antivirus Verification Software

Windows McAfee Endpoint Security 10.5 Version: 10.5.5.5124
 Hotfix number: 190108
 Patch: 5
 McAfee Agent Version: 5.5.1.342
 Adaptive Threat Protection Version: 10.5.5.5094
 Threat Protection Version: 10.5.5.5128

1.11. Software Issues Resolved

Table 9. Issues Resolved in the Intel Quartus Prime Pro Edition Version 19.2

Customer Service Request Numbers							
00278095	00284846	00284913	00360032	00387783	00388550	00388680	00389949
00402868	00403480	00407039	00411014	00411182	00416168	00416940	00421932
00422384	00422693	00423959	00424255	00426370	00426370	00428004	00428004
00428138	00429383	00432977	00434427	07235250	08990526	11281187	11326405
11348777	11364811	11381205	11386675	11387037	11403468		

1.12. Software Patches Included in this Release

Table 10. Software Patches included in Intel Quartus Prime Pro Edition Version 19.2

Software Version	Patch	Customer Service Request Number
Intel Quartus Prime software version 19.1	1.01	00442022
Intel Quartus Prime software version 19.1	0.19	00429419
Intel Quartus Prime software version 19.1	0.14fwp	00416168
Intel Quartus Prime software version 19.1	0.14fw	00416168
Intel Quartus Prime software version 19.1	0.09p	00412250
Intel Quartus Prime software version 19.1	0.09	00412250
Intel Quartus Prime software version 19.1	0.08	00407489
Intel Quartus Prime software version 19.1	0.04	-
Intel Quartus Prime software version 19.1	0.03p	-
Intel Quartus Prime software version 19.1	0.03	-
Intel Quartus Prime software version 19.1	0.01p	-
<i>continued...</i>		



Software Version	Patch	Customer Service Request Number
Intel Quartus Prime software version 18.1.2	2.06p	-
Intel Quartus Prime software version 18.1.2	2.06	-
Intel Quartus Prime software version 18.1.1	1.21p	00416168
Intel Quartus Prime software version 18.1.1	1.21	00416168
Intel Quartus Prime software version 18.1.1	1.20	00412250
Intel Quartus Prime software version 18.1.1	1.19	00396588

1.13. Latest Known Intel Quartus Prime Software Issues

Information about known issues that affect the Intel Quartus Prime software version 19.2 is available in the Intel Programmable Solutions Knowledge Base.

Table 11. Important Known Issues Affecting the Intel Quartus Prime Pro Edition Version 19.2

Description	Workaround
<p>If your LC_ALL environment variable does not match the locale settings (such as LANG), a Perl warning might be generated during IP generation:</p> <pre>perl: warning: Setting locale failed.</pre> <p>This warning also results in IP generation failure.</p>	<p>Ensure that your operating system locale is set up correctly. In particular, the locale specified with the LC_ALL environment variable must match the locale settings (such as LANG).</p>
<p>For Intel Stratix 10 devices, Intel Quartus Prime throws an error message if there is an invalid pin placement of the HPS EMIF IP PLL reference clock and RZQ pin.</p>	<p>For details, see the following article in the Intel Programmable Solutions Knowledge Base: Are there any placement restrictions for the Intel Stratix 10 HPS EMIF IP PLL reference clock and RZQ pin?</p>

You can find known issue information for previous versions of the Quartus Prime software on the Knowledge Base webpage.

Information about known software issues that affect previous versions of the Quartus II software is available on the Intel Quartus Prime and Quartus II Software Support webpage.

Information about issues affecting the Intel FPGA IP Library is available in the *Intel FPGA IP Release Notes*.

Related Information

- [Intel Programmable Solutions Knowledge Base](#)
- [Intel Quartus Prime and Quartus II Software Support](#)
- [Intel FPGA IP Release Notes](#)



1.14. Intel Quartus Prime Pro Edition Version 19.2 Software and Device Support Release Notes Archives

Intel Quartus Prime Pro Edition	User Guide
19.1	Intel Quartus Prime Pro Edition Version 19.1 Software and Device Support Release Notes
18.1	Intel Quartus Prime Pro Edition Version 18.1 Software and Device Support Release Notes
18.0	Intel Quartus Prime Pro Edition Software and Devices Support Release Notes
17.1	Intel Quartus Prime Pro Edition Software and Devices Support Release Notes
17.0	Intel Quartus Prime Pro Edition Software and Devices Support Release Notes

1.15. Document Revision History

Table 12. The Intel Quartus Prime Pro Edition Software Release Version 19.2 Document Revision History

Document Version	Intel Quartus Prime Version	Changes
2019.07.01	19.2	Initial release.