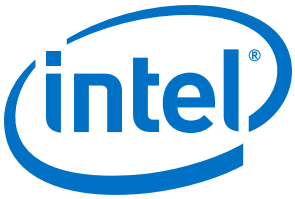

Intel® Quartus® Prime Pro Edition

Version 20.2 Software and Device Support Release Notes

Updated for Intel® Quartus® Prime Design Suite: **20.2**

RN-01082-20.2.0 | 2020.07.14
Latest document on the web: PDF | HTML

Contents

1. Intel® Quartus® Prime Pro Edition Version 20.2 Software and Device Support Release Notes

This document provides late-breaking information about Intel® Quartus® Prime Pro Edition Version 20.2.

For additional information about this software release, refer to the Intel Quartus Prime Pro Edition README file in the following location:<*installation directory*>/quartus/readme.txt

For information about operating system support, refer to the following web page: Intel FPGA Operating System Support.

Related Information

Intel Quartus Prime Standard Edition Software and Device Support Release Notes

1.1. New Features and Enhancements

Intel Quartus Prime Pro Edition Software Version 20.2 includes functional and security updates. Keep your software up-to-date and follow the technical recommendations that help improve the security of your Intel Quartus Prime installation. Additional security updates are planned and will be provided as they become available.

You should promptly install the latest version.

Intel Quartus Prime Pro Edition Software Version 20.2 includes the following new features and enhancements:

- For Intel Stratix® 10 devices, you can use a device migration dialog box to select compatible migration devices, including partial-migratable devices.

  When you compile your project for the device, the project becomes compatible with all selected migration devices.

  In addition, the Pin Planner provides a migration package view and displays the migration results in a table.
- For Intel Agilex™ devices, added simulation support for partial reconfiguration.

Intel Quartus Prime Pro Edition Software Version 20.2 also includes bug fixes. Review Software Issues Resolved on page 11 and Software Patches Included in this Release on page 12 to see if this version contains fixes for or otherwise resolves any of your customer service requests.

1.2. 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.

- For Intel Stratix 10 devices, the option to select an 80 MHz clock frequency as the active serial clock source (AS_CLK) has been removed from the Intel Quartus Prime Pro Edition GUI.

  Valid AS_CLK values near 80 MHz are 71.5 MHz or 100 MHz.
- Intel Quartus Prime Pro Edition software now requires processors with one of the following microarchitectures:

  — Intel Nethalem (2008) or later

  — AMD Bulldozer (2011) or later

  Processors must support SSE4.2 or later.
- Starting with the Intel Agilex device family, the EDA netlist writer does not support IBIS model generation. The EDA netlist writer continues to support IBIS model generation for earlier device families.

  You can download IBIS models for all device families from the following web page: IBIS Models for Intel Devices. This page is updated as IBIS models for devices become available.
- 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.
- Mentor Graphics* ModelSim*-Intel FPGA Edition included with Intel Quartus Prime Pro Edition requires licensing daemon version 11.16.4.0 (or later). You can obtain the licensing daemon from the Intel FPGA License Daemon Downloads web page.

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.

1.3. Operating System Support

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

As of Intel Quartus Prime Pro Edition Version 20.2, support for the following operating systems is deprecated and might be removed in a future release of Intel Quartus Prime Pro Edition:

- Red Hat* Enterprise Linux* 6
- Ubuntu* Linux 14 LTS

Related Information

- Operating System Support
- Download Center for FPGAs

1.4. 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 Agilex	AGFA012, AGFB012, AGFA014, AGFA014-R0, AGFB014, AGFB014-R0	64 GB
Intel Arria® 10	10AT115, 10AX115	48 GB
	10AT090, 10AX090	44 GB
	10AS066, 10AX066	32 GB
	10AS057, 10AX057	30 GB
	10AS048, 10AX048	28 GB
	10AS032, 10AX032	24 GB
	10AS027, 10AX027	22 GB
	10AS022, 10AX022	20 GB
	10AS016, 10AX016	18 GB
Intel Cyclone® 10 GX	10CX85, 10CX105, 10CX150, 10CX220	18 GB

continued...

Family	Device	Recommended Physical RAM
Intel Stratix 10	1SD21BP, 1SD280P, 1SG10MH, 1SG210H, 1SG211H, 1SG250H, 1SG250L, 1SG280H, 1SG280L, 1SM21BE, 1SM21BH, 1SM21CH, 1ST210E, 1ST250E, 1ST280E, 1SX210H, 1SX250H, 1SX250L, 1SX280H, 1SX280L	64 GB
	1SG165H, 1SG166H, 1SM16BE, 1SM16BH, 1SM16CH, 1ST165E, 1SX165H	48 GB
	1SD110P, 1SG040H, 1SG065H, 1SG085H, 1SG110H, 1ST040E, 1ST085E, 1ST110E, 1SX065H, 1SX085H,1SX110H, 1SX040H	32 GB

1.5. Device Support and Pin-Out Status

Table 2. Final Device Support

Final compilation, simulation, timing analysis, and programming support is available for the devices listed in this table. These devices have finalized device models, bitstream, and firmware.

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	1SD110P, 1SD21BP, 1SD280P, 1SG085H, 1SG10MH, 1SG110H, 1SG165H, 1SG166H, 1SG210H, 1SG211H, 1SG250H, 1SG250L, 1SG280H, 1SG280L, 1SM16BE, 1SM16BH, 1SM16CH, 1SM21BE, 1SM21BH, 1SM21CH, 1ST040E, 1ST085E, 1ST110E, 1ST165E, 1ST210E, 1ST250E, 1ST280E, 1SX085H, 1SX110H, 1SX165H, 1SX210H, 1SX250H, 1SX250L, 1SX280H, 1SX280L

Table 3. Preliminary Device Support

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

Device Family	Devices
Intel Agilex	AGFA014-R0, AGFB014-R0
Intel Stratix 10	1SD110P-S1, 1SD280P-S1, 1SG110H-S1, 1SG280H-S2, 1SG280H-S3, 1SG280L-S2, 1SG280L-S3, 1SM21BH-S1, 1SM21CH-S1, 1SX110H-S1, 1SX280H-S3, 1SX280L-S3

Table 4. 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	1SG040H, 1SG065H, 1SX040H, 1SX065H

Table 5. 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
Intel Agilex	AGFA012, AGFB012, AGFA014, AGFB014

1.5.1. Changes in Device Support

Starting with Intel Quartus Prime Version 20.1, a new device support level is introduced: ***Preliminary*** device support.

For devices with ***Preliminary*** device support, Intel Quartus Prime provides full compilation, simulation, timing analysis, and programming support but the device models, bitstreams, and firmware for the devices are not finalized.

Devices with ***Final*** device support (previously *Full*) have finalized device models, bitstreams, and firmware.

The definitions of ***Initial*** and ***Advance*** device support levels are unchanged.

For information about known device issues and workarounds, refer to the following web page: Intel FPGA Knowledge Base.

1.6. Timing Model, Power Model, and Device Status

Only devices with a timing model, power model, and device status of **Final** are suitable for production systems.

Table 6. Timing Model, Power Model, and Device Status

Device Family	Device	Timing Model Status	Power Model Status	Device Status
Intel Agilex	AGFA014-R0, AGFB014-R0	Preliminary	Preliminary	Preliminary
	AGFA012, AGFB012, AGFA014, AGFB014	Preliminary	Advance	Preliminary
Intel Arria 10	10AX016, 10AS016, 10AX022, 10AS022, 10AX027, 10AS027, 10AX032, 10AS032	Final – 16.1 (1) (2)	Final – 17.0	Final – 17.0
	10AX048, 10AS048	Final – 16.0.2 (2)		
	10AX057, 10AS057, 10AX066, 10AS066, 10AT090, 10AX090	Final – 16.0.1 (2)	Final – 16.0.1	Final – 16.0.1
	10AX115, 10AT115	Final – 16.0 (2)	Final – 16.0	Final – 16.0
Intel Cyclone 10 GX	10CX085, 10CX105, 10CX150, 10CX220	Final – 17.0	Final – 18.0	Final – 18.0
Intel Stratix 10	1SG280L, 1SX280L, 1SG250L, 1SX250L	Final – 18.0.1	Final – 18.1.1	Final – 18.1.1
	1SG280H, 1SX280H, 1SG250H, 1SX250H, 1SG210H, 1SX210H, 1SG165H, 1SX165H, 1SG110H, 1SX110H, 1SG085H, 1SX085H	Final – 18.1.1	Final – 18.1.1	Final – 18.1.1
	1ST280E, 1ST250E	Final – 18.1.1	Final – 19.4	Final – 19.4
	1SM21BH, 1SM21CH, 1SM16BH, 1SM16CH	Final – 19.1	Final – 19.1	Final – 19.1
	1SG10MH, 1SG166H, 1SG211H	Final – 19.1	Final – 19.3	Final – 19.3
	1ST210E, 1SM21BE, 1ST165E, 1SM16BE	Final – 19.2	Final – 19.4	Final – 19.4
	1SD280P, 1ST040E, 1ST085E, 1ST110E	Final – 20.1	Final – 20.1	Final – 20.1
	1SD110P	Final – 20.2	Final – 20.2	Final – 20.2
	1SD21BP, 1SG040H, 1SG065H, 1SX040H, 1SX065H	Preliminary	Preliminary	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 military grade devices were finalized in Intel Quartus Prime software version 18.0.1.

1.7. IBIS Models

Table 7. IBIS Model Status for the Intel Quartus Prime Pro Edition Software Release Version 20.2

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

Starting with the Intel Agilex device family, IBIS models are available only online at the following web page: IBIS Models for Intel Devices. This page is updated as IBIS models for devices become available or are updated.

1.8. EDA Interface Information

Table 8. Synthesis Tools Supporting the Intel Quartus Prime Pro Edition Software Release Version 20.2

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 Version 20.2.
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 that support Intel Quartus Prime Pro Edition Software Version 20.2.

Table 9. Simulation Tools Supporting the Intel Quartus Prime Pro Edition Software Release Version 20.2

The following simulation tools support RTL and functional gate-level simulation.

Simulation Tools	Version
Aldec* Active-HDL*	10.5 (Windows 32-bit only)
Aldec Riviera-PRO*	2019.10 (64-bit only)
Cadence* Incisive* Enterprise Simulator (IES)	15.20 (64-bit Linux only)
Cadence Xcelium* Parallel Logic Simulation	19.09 (64-bit Linux only)
Mentor Graphics ModelSim PE	2019.2 (Windows 32-bit only)
Mentor Graphics ModelSim SE	2020.1 (64-bit only)
Mentor Graphics ModelSim-Intel FPGA Edition*	2020.1 (32-bit only)
Mentor Graphics Questa* Advanced Simulator	2020.1 (64-bit only)
Synopsys VCS* and VCS MX	P-2019.06 (64-bit Linux only)

*Mentor Graphics ModelSim-Intel FPGA Edition requires licensing daemon version 11.16.4.0 (or later). You can obtain the licensing daemon from the Intel FPGA License Daemon Downloads web page.

Operating System Support for Mentor Graphics* ModelSim-Intel FPGA Edition version 2020.1 (requires 32-bit libraries)

- Windows 10 (64-bit)
- Red Hat Enterprise Linux 6 (64-bit)
- Red Hat Enterprise Linux 7 (64-bit)
- Red Hat Enterprise Linux 11 (64-bit)
- Red Hat Enterprise Linux 12 (64-bit)

1.9. Antivirus Verification

The Intel Quartus Prime software release version 20.2 has been verified virus free with the following software:

Antivirus Verification Software

McAfee VirusScan Command Line for Linux64 Version: 6.1.3.242
AV Engine version: 6010.8670 for Linux64.
Dat set version: 9636 created May 29, 2020

1.10. Software Issues Resolved

The following customer service requests were fixed or otherwise resolved in Intel Quartus Prime Pro Edition Version 20.2:

Table 10. Issues Resolved in the Intel Quartus Prime Pro Edition Version 20.2

Customer Service Request Numbers							
00284846	00284846	00402321	00422849	00434025	00450147	00457615	00460040
00464557	00470889	00478873	00480296	00487553	00487553	00489028	00490442
00492070	00494192	00495198	00495244	00495257	00497072	00498088	00498099
00499388	00499704	00499721	00500290	00501613	00501644	00505872	00505991
00506314	00508340	00508901	00509503	00511143	00512163	00513973	00514170
00520328	04593782	11362554					

1.11. Software Patches Included in this Release

Intel Quartus Prime Pro Edition Version 20.2 contains the following patches for previous versions of Intel Quartus Prime Pro Edition software:

Table 11. Software Patches included in Intel Quartus Prime Pro Edition Version 20.2

Software Version	Patch	Customer Service Request Number
Intel Quartus Prime Version 20.1	0.25	00509503
Intel Quartus Prime Version 20.1	0.21	00489028
Intel Quartus Prime Version 20.1	0.20	00513029
Intel Quartus Prime Version 20.1	0.18	–
Intel Quartus Prime Version 20.1	0.17	00499704
Intel Quartus Prime Version 20.1	0.16fw	–
Intel Quartus Prime Version 20.1	0.13	–
Intel Quartus Prime Version 20.1	0.12	–
Intel Quartus Prime Version 20.1	0.11	–
Intel Quartus Prime Version 20.1	0.09	–
Intel Quartus Prime Version 20.1	0.08	–
Intel Quartus Prime Version 20.1	0.07	00508340
Intel Quartus Prime Version 20.1	0.05	–
Intel Quartus Prime Version 20.1	0.04	–
Intel Quartus Prime Version 20.1	0.03	00422849
Intel Quartus Prime Version 20.1	0.02	–
Intel Quartus Prime Version 20.1	0.01	–
Intel Quartus Prime Version 19.4	0.27	–
Intel Quartus Prime Version 19.4	0.26	–
Intel Quartus Prime Version 19.4	0.23	00492070
Intel Quartus Prime Version 19.4	0.19	–
Intel Quartus Prime Version 19.4	0.17	00489028
Intel Quartus Prime Version 19.3	0.50	00499704
Intel Quartus Prime Version 19.3	0.49	–
Intel Quartus Prime Version 19.3	0.48fw	00505872
Intel Quartus Prime Version 19.3	0.47	00508340
Intel Quartus Prime Version 19.3	0.46	–
Intel Quartus Prime Version 19.3	0.30fw	–
Intel Quartus Prime Version 19.2	0.21	00284846
Intel Quartus Prime Version 19.2	0.20	–
Intel Quartus Prime Version 19.2	0.19	–

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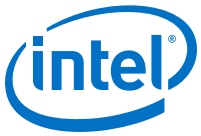

Software Version	Patch	Customer Service Request Number
Intel Quartus Prime Version 19.1	0.49	–
Intel Quartus Prime Version 19.1	0.48	00508340
Intel Quartus Prime Version 19.1	0.47	00504349
Intel Quartus Prime Version 18.1.2	2.07	–
Intel Quartus Prime Version 18.1.1	1.25	–
Intel Quartus Prime Version 18.1	0.45	–
Intel Quartus Prime Version 18.0.1	1.62	–

1.12. Latest Known Intel Quartus Prime Software Issues

Information about known issues that affect the Intel Quartus Prime Version 20.2 is available in the Intel Programmable Solutions Knowledge Base.

Table 12. Important Known Issues Affecting Intel Quartus Prime Pro Edition Version 20.2

Description	Workaround
For all device families, Logic Analyzer Interface (LAI) is not supported.	N/A
The Intel Quartus Prime Pro Edition software might fail to program the 1ST085E-AS or 1ST110E-AS security feature-enabled devices via the AVSTx8 configuration mode.	Do not program the 1ST085E-AS or 1ST110E-AS security feature-enabled devices via the AVSTx8 configuration mode.
When configuring an Intel Agilex device with P-Tile transceivers in CvP mode, the CvP_CONFDONE signal fails to assert, and the device does not enter user mode.	For details about this issue and the availability of any fixes, refer to the following article in the Intel Programmable Solutions Knowledge Base: Why do Intel Agilex devices with P-Tile Transceivers fail to enter user mode when configuring the core in CvP mode?
For Intel Agilex AGFA012 and AGFB012 devices, the following Intel Quartus Prime components report an incorrect number of adaptive logic modules (ALMs) in the device: • Device Selector • Chip Planner Intel Agilex AGFA012 and AGFB012 devices have 399,500 ALMs available. Compilation is not affected and has access to all ALMs available on the device.	For details about this issue and the availability of any fixes, refer to the following article in the Intel Programmable Solutions Knowledge Base: Why does the Intel Quartus Prime Pro Edition software version 20.2 report an incorrect Adaptive Logic Module count for the Intel Agilex AGFA012 and AGFB012 devices?

You can find known issue information for previous versions of the Quartus Prime software on the Intel FPGA Knowledge Base web page.

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 web page.

Information about issues affecting the Intel FPGA IP Library is available in the relase notes for each IP. You can find the IP release notes on the *Intel FPGAs and Programmable Devices Release Notes* web page.

Related Information

- Intel FPGA Knowledge Base
- Intel Quartus Prime and Quartus II Software Support
- Intel FPGAs and Programmable Devices Release Notes

1.13. Intel Quartus Prime Pro Edition Version 20.2 Software and Device Support Release Notes Archives

Intel Quartus Prime Pro Edition	Publication
20.1	Intel Quartus Prime Pro Edition Version 20.1 Software and Device Support Release Notes
19.4	Intel Quartus Prime Pro Edition Version 19.4 Software and Device Support Release Notes
19.3	Intel Quartus Prime Pro Edition Version 19.3 Software and Device Support Release Notes
19.2	Intel Quartus Prime Pro Edition Version 19.2 Software and Device Support Release Notes
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

1.14. Document Revision History

Table 13. The Intel Quartus Prime Pro Edition Software Release Version 20.2 Document Revision History

Document Version	Intel Quartus Prime Version	Changes
2020.07.14	20.2	• Changed a link in Latest Known Intel Quartus Prime Software Issues on page 14 to IP release notes. The previous link pointed to an obsolete document that then pointed you to the correct location. The changed link takes you directly to the correct location.
2020.06.22	20.2	• Initial release.