



# Intel<sup>®</sup> Quartus<sup>®</sup> Prime Standard Edition

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## Version 20.1 Software and Device Support Release Notes

Updated for Intel<sup>®</sup> Quartus<sup>®</sup> Prime Design Suite: **20.1.1**



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# 1. Intel® Quartus® Prime Standard Edition Version 20.1 Software and Device Support Release Notes

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This document provides late-breaking information about Intel® Quartus® Prime Standard Edition Version 20.1 and Version 20.1.1.

For additional information about this software release, refer to the Intel Quartus Prime Standard 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 Pro Edition Software and Device Support Release Notes](#)

## 1.1. New Features and Enhancements

Intel Quartus Prime Standard Edition Software Version 20.1 and Version 20.1.1 include 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.

## 1.2. Changes to Software Behavior

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

- Support for the following software has been removed from Intel Quartus Prime Standard Edition Version 20.1 and later:
  - DSP Builder for Intel FPGAs
  - Intel FPGA SDK for OpenCL™ (\*)
  - Intel FPGA RTE for OpenCL
  - Intel High-Level Synthesis (HLS) Compiler
- Mentor Graphics\* ModelSim\*-Intel FPGA Edition included with Intel Quartus Prime Standard 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.

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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.

#### Related Information

- [Operating System Support](#)
- [Download Center for FPGAs](#)

### 1.4. Memory Recommendations

A full installation of the Intel Quartus Prime Standard Edition software requires up to 40 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
	10AT090, 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
Arria V	5AGXB5, 5AGTD7, 5AGXB7, 5ASXB5, 5ASTD5	16 GB
	5AGXB1, 5AGXB3, 5AGTD3, 5ASTD3, 5ASXB3	12 GB
	5AGXA7, 5AGTC7	10 GB
	5AGTC3, 5AGXA3, 5AGXA5	8 GB
	5AGXA1	6 GB
Arria V GZ	5AGZE7	16 GB

*continued...*



Family	Device	Recommended Physical RAM
	5AGZE3, 5AGZE5	12 GB
	5AGZE1	8 GB
Arria II GX	EP2AGX260	6 GB
	EP2AGX95, EP2AGX125, EP2AGX190	4 GB
	EP2AGX65	2 GB
	EP2AGX45	1.5 GB
Arria II GZ	EP2AGZ350	8 GB
	EP2AGZ300	6 GB
	EP2AGZ225	4 GB
Intel Cyclone® 10 LP	10CL120	1.5 GB
	10CL080, 10CL055	1 GB
	10CL006, 10CL010, 10CL016, 10CL025, 10CL040	512 MB
Cyclone V	5CEA9, 5CGTD9, 5CGXC9	8 GB
	5CEA2, 5CGXC3, 5CEA4, 5CGXC4, 5CEA5, 5CGTD5, 5CGXC5, 5CSEA5, 5CSTD5, 5CSXC5, 5CSEA6, 5CSXC6, 5CEA7, 5CGTD7, 5CGXC7, 5CSEA2, 5CSEA4, 5CSXC2, 5CSXC4, 5CSTD6	6 GB
Cyclone IV GX	EP4CGX110, EP4CGX150	2 GB
	EP4CGX50, EP4CGX75	1.5 GB
	EP4CGX15, EP4CGX22, EP4CGX30	512 MB
Cyclone IV E	EP4CE115	1.5 GB
	EP4CE55, EP4CE75	1 GB
	EP4CE6, EP4CE10, EP4CE15, EP4CE22, EP4CE30, EP4CE40	512 MB
Intel MAX® 10	10M50	2 GB
	10M16	2 GB
	10M25	2 GB
	10M40	2 GB
	10M04, 10M08	1 GB
	10M02	512 MB
MAX V	All	512 MB
MAX II	All	512 MB
Stratix® V	5SEEB, 5SGXAB, 5SGXB9, 5SGXBB	28 GB
	5SGXA9, 5SEE9	24 GB
	5SGTC7, 5SGXA7, 5SGSD8	20 GB
	5SGSD5, 5SGXA5, 5SGXB5, 5SGSD6, 5SGXB6	16 GB
	5SGXA3, 5SGSD4, 5SGXA4, 5SGTC5	12 GB
	5SGSD3	8 GB

*continued...*



Family	Device	Recommended Physical RAM
Stratix IV	EP4SGX530, EP4SE530, EP4SE820, EP4S40G5, EP4S100G5	12 GB
	EP4SE360 EP4SGX360, EP4S100G3, EP4S100G4	8 GB
	EP4SGX290	6 GB
	EP4SE230 EP4SGX110, EP4SGX230, EP4S40G2, EP4S100G2	4 GB
	EP4SGX70	2 GB

## 1.5. Device Support and Pin-Out Status

All production devices currently have full compilation, simulation, timing analysis, and programming support.

### 1.5.1. Changes in Device Support

## 1.6. Timing Model, Power Model, and Device Status

Table 2. Timing Model, Power Model, and Device Status

Device Family	Device	Timing Model Status	Power Model Status	Device Status
Intel Arria 10	10AX016, 10AS016, 10AX022, 10AS022, 10AX027, 10AS027, 10AX032, 10AS032	Final – 16.1 <sup>(1)</sup> ( <sup>2</sup> )	Final – 17.0	Final – 17.0
	10AX048, 10AS048	Final – 16.0.2 <sup>(2)</sup>		
	10AX057, 10AS057, 10AX066, 10AS066, 10AT090, 10AX090	Final – 16.0.1 <sup>(2)</sup>	Final – 16.0.1	Final – 16.0.1
	10AX115, 10AT115	Final – 16.0 <sup>(2)</sup>	Final – 16.0	Final – 16.0
Intel Cyclone 10 LP	10CL006, 10CL010, 10CL016, 10CL025, 10CL040, 10CL055, 10CL080, 10CL120	Final – 17.0	Final – 17.1	Final – 17.1
Intel MAX 10	10M02, 10M04, 10M08	Final – 15.1 <sup>(3)</sup>	Final – 15.1	Final – 15.1
	10M16, 10M25, 10M40, 10M50	Final – 15.1.2	Final – 15.1	Final – 15.1

The current version of the Intel Quartus Prime software also includes final timing and power models for the Arria II GX, Arria II GZ, Arria V, Arria V GZ, Arria V SoC, Cyclone IV E, Cyclone IV GX, Cyclone V, Cyclone V SoC, MAX II, MAX II Z, MAX V, Stratix IV, and Stratix V device families. Timing models for these device families became final in the Intel Quartus Prime software versions 11.1 or earlier.

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

<sup>(2)</sup> All military grade devices were finalized in Intel Quartus Prime software version 18.0.1.

<sup>(3)</sup> Timing model statuses for MAX 10 A6 speed grade parts remain as Preliminary.



## 1.7. IBIS Models

**Table 3. IBIS Model Status for the Intel Quartus Prime Standard Edition Software Release Version 20.1**

Beginning in the Intel Quartus Prime Standard Edition software version 16.0, 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
Arria V	Correlated with PHY device operation – 14.0
Arria II GX	Correlated with PHY device operation – 11.1
Arria II GZ	Correlated with PHY device operation – 11.1
Intel Cyclone 10 LP	Final – 17.0
Cyclone V	Correlated with PHY device operation – 14.0
Cyclone IV E	Correlated with PHY device operation – 11.1
Cyclone IV GX	Correlated with PHY device operation – 11.1
Intel MAX 10	Final – 16.0
MAX V	Correlated with PHY device operation – 11.1
Stratix V	Correlated with PHY device operation – 13.0 SP1
Stratix IV	Correlated with PHY device operation – 11.1

Updated IBIS models are available 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 4. Synthesis Tools Supporting the Intel Quartus Prime Standard Edition Software Release Version 20.1**

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 Standard Edition Software Release Version 20.1.
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 Standard Edition Software Release Version 20.1.

**Table 5. Simulation Tools Supporting the Intel Quartus Prime Standard Edition Software Release Version 20.1**

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

Simulation Tools	Version
Aldec* Active-HDL*	10.3 (32-bit Windows only)
Aldec Riviera-PRO*	2015.10 (64-bit only)
<i>continued...</i>	



Simulation Tools	Version
Cadence* Incisive* Enterprise Simulator (IES)	14.20 (64-bit Linux only)
Mentor Graphics ModelSim PE	10.4d (32-bit Windows only)
Mentor Graphics ModelSim SE	10.4d (64-bit only)
Mentor Graphics ModelSim-Intel FPGA Edition*	2020.1 (32-bit only)
Mentor Graphics Questa* Advanced Simulator	10.4d (64-bit only)
Synopsys VCS* and VCS MX	2014.12-SP1 (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 20.1.1 has been verified virus free with the following software:

### Antivirus Verification Software

McAfee VirusScan Command Line for Win64 Version: 6.1.2.226  
AV Engine version: 6000.8403 for Win64.  
Dat set version: 9810 created Nov 19 2020

The Intel Quartus Prime software release version 20.1 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: 9562 created Mar 16 2020

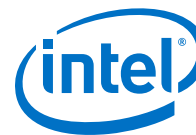
## 1.10. Software Issues Resolved

The following customer service requests were fixed or otherwise resolved in Intel Quartus Prime Standard Edition Version 20.1.1:

**Table 6. Issues Resolved in the Intel Quartus Prime Standard Edition Version 20.1.1**

Customer Service Request Numbers						
00513730						





The following customer service requests were fixed or otherwise resolved in Intel Quartus Prime Standard Edition Version 20.1:

**Table 7. Issues Resolved in the Intel Quartus Prime Standard Edition Version 20.1**

Customer Service Request Numbers							
00436358	00469666	00476701	00477646	00485378	04069306	04447787	11319086

## 1.11. Software Patches Included in this Release

Intel Quartus Prime Standard Edition Version 20.1.1 contains the following patches for previous versions of Intel Quartus Prime Standard Edition software:

**Table 8. Software Patches included in Intel Quartus Prime Standard Edition Version 20.1.1**

Software Version	Patch	Customer Service Request Number
Intel Quartus Prime Version 20.1	0.08std	-
Intel Quartus Prime Version 20.1	0.06std	-
Intel Quartus Prime Version 20.1	0.04std	-
Intel Quartus Prime Version 20.1	0.49	-
Intel Quartus Prime Version 19.4	0.38	-
Intel Quartus Prime Version 19.3	0.68	-
Intel Quartus Prime Version 19.2	0.29	-
Intel Quartus Prime Version 19.1	0.09std	-
Intel Quartus Prime Version 17.0.2	2.18std	00513730

Intel Quartus Prime Standard Edition Version 20.1 contains the following patches for previous versions of Intel Quartus Prime Standard Edition software:

**Table 9. Software Patches included in Intel Quartus Prime Standard Edition Version 20.1**

Software Version	Patch	Customer Service Request Number
Intel Quartus Prime Version 19.1	0.06std	00498574
Intel Quartus Prime Version 19.1	0.05std	00493198
Intel Quartus Prime Version 19.1	0.03std	-
Intel Quartus Prime Version 19.1	0.02std	-
Intel Quartus Prime Version 19.1	0.01std	00467083
Intel Quartus Prime Version 19.1	0.37	00436358
Intel Quartus Prime Version 18.1.1	1.23	00433102
Intel Quartus Prime Version 18.1.1	1.04std	00459576
Intel Quartus Prime Version 18.1	0.13std	00433102
Intel Quartus Prime Version 18.1	0.07std	1506800484
<i>continued...</i>		



Software Version	Patch	Customer Service Request Number
Intel Quartus Prime Version 18.1	0.06std	00398067
Intel Quartus Prime Version 18.1	0.41	–
Intel Quartus Prime Version 18.1	0.27	1506800484
Intel Quartus Prime Version 18.0.1	1.59	00433102
Intel Quartus Prime Version 18.0	0.15std	–
Intel Quartus Prime Version 18.0	0.13std	00433102
Intel Quartus Prime Version 18.0	0.12std	1506800484
Intel Quartus Prime Version 18.0	0.34	00433102
Intel Quartus Prime Version 18.0	0.33	1506800484
Intel Quartus Prime Version 17.1.2	2.22	00433102
Intel Quartus Prime Version 17.1.1	1.42	00433102
Intel Quartus Prime Version 17.1.1	1.20std	00433102
Intel Quartus Prime Version 17.1	0.19std	00433102
Intel Quartus Prime Version 17.1	0.15std	00386048
Intel Quartus Prime Version 17.0.2	2.15std	–
Intel Quartus Prime Version 17.0.2	2.14std	00433102
Intel Quartus Prime Version 17.0.2	2.13std	–
Intel Quartus Prime Version 17.0.2	2.08	00433102
Intel Quartus Prime Version 17.0	0.19	–

## 1.12. Latest Known Intel Quartus Prime Software Issues

Information about known issues that affect Intel Quartus Prime Standard Edition Version 20.1 is available in the Intel Programmable Solutions Knowledge Base.

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 release 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 Standard Edition Version 20.1 Software and Device Support Release Notes Archives

Intel Quartus Prime Standard Edition	Publication
20.1	<a href="#">Intel Quartus Prime Standard Edition Version 20.1 Software and Device Support Release Notes</a>
19.1	<a href="#">Intel Quartus Prime Standard Edition Version 19.1 Software and Device Support Release Notes</a>
18.1	<a href="#">Intel Quartus Prime Standard Edition Version 18.1 Software and Device Support Release Notes</a>
18.0	<a href="#">Intel Quartus Prime Standard Edition Software and Devices Support Release Notes</a>
17.1	<a href="#">Intel Quartus Prime Standard Edition Software and Devices Support Release Notes</a>
17.0	<a href="#">Intel Quartus Prime Standard Edition Software and Devices Support Release Notes</a>

## 1.14. Document Revision History

**Table 10. The Intel Quartus Prime Standard Edition Software Release Version 20.1 Document Revision History**

Document Version	Intel Quartus Prime Version	Changes
2020.11.23	20.1.1	<ul style="list-style-type: none"> <li>Update Release Notes for Intel Quartus Prime Standard Edition Software Release Version 20.1.1.</li> </ul>
2020.10.02	20.1	<ul style="list-style-type: none"> <li>Revise <a href="#">Operating System Support</a> on page 4 to remove references to Intel Quartus Prime Pro Edition.</li> </ul>
2020.07.14	20.1	<ul style="list-style-type: none"> <li>Changed a link in <a href="#">Latest Known Intel Quartus Prime Software Issues</a> on page 10 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.</li> </ul>
2020.06.15	20.1	<ul style="list-style-type: none"> <li>Initial release.</li> </ul>