

# Quartus Prime Pro Edition Software and Device Support Release Notes Version 16.0

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This document provides late-breaking information about the Altera® Quartus® Prime Pro Edition software release version 16.0.

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

## Related Information

[Quartus Prime Standard Edition Software and Device Support Release Notes Version 16.0](#)

## New Features and Enhancements

The Quartus Prime Pro Edition software release version 16.0 includes the following new features and enhancements:

- Development kit setup feature that allows you to select a development kit and translate board specifications directly into the Quartus Prime assignments, including pin assignments, while initiating a new Quartus Prime project. This feature also provides a board-specific reference design to the selected development kit.
- Improved BluePrint Platform Designer GUI that shows the association between related clock elements to provide improved feedback and guidance on clock planning.
- Improved BluePrint Platform Designer's Autoplace feature that reports best partial placements for no-fit scenarios.
- Improved BluePrint Platform Designer GUI that allows you to revert back to a previous placement in the BluePrint Platform Designer by selecting **Undo** for a particular operation in the **Placement History** pane of the GUI.
- Support for the Back-Annotate Assignments feature that allows you to preserve pin, cell, routing, device assignments, or LogicLock® Plus regions.
- Qsys Pro system integration tool that offers the following capabilities:
  - Isolated and independent regeneration of all systems, subsystems, and IP
  - Incremental regeneration of modified IP RTL only
  - Ability to insert generic, blackbox components as placeholders that you can then customize by importing specific RTL
  - Ability to record a design footprint consisting of interfaces, properties, and ports for team-based designs.
  - Support for IP-XACT format.

Qsys Pro is a beta feature in the Quartus Prime Pro Edition software version 16.0.

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- Support for the OpenCore Plus feature that allows you to evaluate licensed MegaCore<sup>®</sup> IP cores in simulation and hardware before purchase.
- DSP Register Packing Summary report for Arria 10 designs that lists the unpacked DSP registers and provides an explanation for each failed packing attempt.
- Per-Stage Compilation flow that allows you to incrementally invoke each Fitter stage (that is, plan, place, route, and finalize). Per-Stage Compilation is a beta feature in the Quartus Prime Pro Edition software version 16.0.
- Improved routing visualization in the Chip Planner that provides additional feedback for creating routing regions. Chip Planner's improved routing visualization capability is a beta feature in the Quartus Prime software version 16.0.
- Improved routability for Arria 10 designs.
- The `quartus_fit --post_route=route_fixup` command that allows you to fix hold failures after routing.
- Full timing model support for Arria 10 devices.
- Improved TimeQuest Timing Analyzer timing report that includes all timing closure results.
- Improved TimeQuest Timing Analyzer capability that allows the inclusion of multiple `-through` constructs for all applicable Synopsys Design Constraints (SDC) commands and exceptions. This improvement enables more precise path filtering in the TimeQuest Timing Analyzer.
- Support for the Generate Simulator Setup Script for IP... feature that allows you to generate or update a combined simulator setup script sourced from the top-level simulation script.
- Support for the import and export capabilities of a version-compatible Quartus Prime project database.
- Support for the Clean Project feature that allows you to clean the Quartus Prime project database and remove all prior compilation results.
- Lower peak virtual memory requirements for Arria 10 designs.

## Operating System Support

Information about OS support for the Quartus Prime Design Suite<sup>®</sup> is available on the Operating System Support page of the Altera website.

### Related Information

[Operating System Support](#)

## Memory Recommendations

A full installation of the Quartus Prime software requires up to 24 GB of available disk space.

Altera 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 may 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
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

## Changes in Device Support

### Related Information

[Altera Knowledge Base](#)

For more information about known device issues and workarounds.

## Changes to Software Behavior

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

Refer to the 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 Quartus Prime software.

### NativeLink automation feature is not supported in the Quartus Prime Pro Edition software

The NativeLink EDA integration tool has been removed from the Quartus Prime Pro Edition software GUI.

### Use Spectra-Q TimeQuest to analyze your Arria 10 designs

Only use Spectra-Q™ TimeQuest to analyze your Arria® 10 designs. Using previous versions of the TimeQuest Timing Analyzer to analyze an Arria 10 design is not allowed.

The Quartus Prime Pro Edition software only supports Spectra-Q TimeQuest.]

### Large Periphery Clock is not supported in the Quartus Prime Pro Edition software

If you select **Large Periphery Clock** to be a **Global Signal** assignment via the Assignment Editor, the Quartus Prime Pro Edition software issues an error message during compilation.

### New naming scheme for clock buffer locations

The BluePrint Platform Designer, TimeQuest Timing Analyzer and Quartus Prime software-generated reports now show clock buffer locations in the following convention:

*<clock name>\_<source bank>\_<clock type and region>\_<clock tree index>*

For example: CLKCTRL\_2A\_G\_I31

**Note:** The Quartus Prime software offers backward compatibility for designs that you generated in a previous version of the Quartus Prime software. The location constraints in these designs will work in the current version of the software.

### Partition boundary ports now accepts clock definitions as assignments

To allow for more flexibility in setting the timing constraints for a partition, you can now assign `create_clock` and `create_generated_clock` to partition boundary ports.

## Device Support and Pin-Out Status

The Arria 10 ordering part number (OPN) list has been updated for the Quartus Prime software version 16.0.

**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
Arria 10	10AS066ES, 10AX066ES, 10AX115ES, 10AX115E2, 10AT115E2, 10AX115E3, 10AX016, 10AS016, 10AX022, 10AS022, 10AX027, 10AS027, 10AX032, 10AS032, 10AX048, 10AS048, 10AX057, 10AS057, 10AX066, 10AS066, 10AX090, 10AX115, 10AT115

## Timing and Power Models

**Table 3: Timing and Power Model Status**

Device Family	Device	Timing Model Status	Power Model Status
Arria 10	10AX016, 10AS016, 10AX022, 10AS022, 10AX027, 10AS027, 10AX032, 10AS032, 10AX048, 10AS048, 10AX057, 10AS057, 10AX066, 10AS066, 10AX090	Preliminary	Preliminary
	10AX115, 10AT115	Final – 16.0	Final – 16.0

**Related Information****System Design with Advance FPGA Timing Models**

## IBIS Models

**Table 4: IBIS Model Status for the Quartus Prime Pro Edition Software Release Version 16.0**

Beginning in the Quartus Prime Pro Edition software version 16.0, device families will have IBIS model statuses that are either Advance, Preliminary, or Final.

Device Family	IBIS Model Status
Arria 10	Preliminary - 16.0

## EDA Interface Information

**Table 5: Synthesis Tools Supporting the Quartus Prime Pro Edition Software Release Version 16.0**

Synthesis Tools <sup>(1)</sup>	Version
Mentor Graphics® Precision	2015b
Synopsys® Synplify, Synplify Pro, and Synplify Premier	2015.09-SP1

**Table 6: Simulation Tools Supporting the Quartus Prime Pro Edition Software Release Version 16.0**

Simulation Tools	Version	Gate-Level Simulation Support
Aldec Active-HDL	10.2 (Windows only)	Yes
Aldec Riviera-PRO	2015.10	Yes
Cadence Incisive Enterprise Simulator (IES)	14.2 (Linux only)	Yes
Mentor Graphics® ModelSim® PE	10.4d	Yes
Mentor Graphics ModelSim SE	10.4d	Yes
Mentor Graphics ModelSim-Altera	10.4d	Yes
Mentor Graphics Questa®	10.4d	Yes
Synopsys VCS and VCS MX	2014.12-SP1 (Linux only)	Yes

<sup>(1)</sup> EDA Synthesis tools that support the Quartus Prime software version 16.0 will be released by vendors shortly after the release of the Quartus Prime software. Contact your vendor account manager for details.

## OS support for Mentor Graphics ModelSim-Altera version 10.4d (requires 32-bit libraries)

- Windows 7 SP1 (64-bit)
- Windows 8.0 (64-bit)
- Windows Server 2008 R2 SP1(64-bit)
- Red Hat Enterprise Linux 5.10 (64-bit)
- Red Hat Enterprise Linux 6.5 (64-bit)

## Antivirus Verification

The Quartus Prime software release version 16.0 has been verified virus free using the following software:

### Antivirus Verification Software for Windows

McAfee Agent Version: 5.0.1.516  
McAfee VirusScan Enterprise + AntiSpyware Enterprise Version: 8.8.0 (8.8.0.1445)  
Scan Engine Version (32 bit): 5800.7501  
Scan Engine Version (64 bit): 5800.7501  
DAT Version: 8124.0000

### Antivirus Verification Software for Linux

McAfee VirusScan Enterprise for Linux Version 1.9.1  
Engine Version: 5700.7163  
DAT Version: 7720

## Latest Known Quartus Prime Software Issues

Information about known issues that affect the Quartus Prime software version 16.0 is available on the Altera Knowledge Base webpage .

### Known Software Issues Affecting the Quartus Prime software version 16.0

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

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

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

### Related Information

- [Altera Knowledge Base](#)
- [Quartus Prime and Quartus II Software Support](#)
- [Altera IP Release Notes](#)

## Document Revision History

Table 7: Quartus Prime Software Release Version 16.0 Document Revision History

Date	Version	Changes
May 2016	16.0.0	Initial release.