

EDA Simulator Link™ Release Notes

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EDA Simulator Link™ Release Notes

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Summary by Version

This table provides quick access to what's new in each version. For clarification, see "Using Release Notes" on page 1, below.

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Latest Version V3.3 (R2011a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.2 (R2010b)	Yes Details	Yes	Bug Reports
V3.1 (R2010a)	Yes Details	No	Bug Reports
V3.0 (R2009b)	Yes Details	No	Bug Reports

Using Release Notes

Use release notes when upgrading to a newer version to learn about:

- New features
- Changes
- Potential impact on your existing files and practices

Review the release notes for other MathWorks® products required for this product (for example, MATLAB® or Simulink®). Determine if enhancements, bugs, or compatibility considerations in other products impact you.

If you are upgrading from a software version other than the most recent one, review the current release notes and all interim versions. For example, when you upgrade from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

What Is in the Release Notes

New Features and Changes

- New functionality
- Changes to existing functionality

Version Compatibility Considerations

When a new feature or change introduces a reported incompatibility between versions, the **Compatibility Considerations** subsection explains the impact.

Compatibility issues reported after the product release appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so review the fixed bugs in Bug Reports for any compatibility impact.

Fixed Bugs and Known Problems

MathWorks offers a user-searchable Bug Reports database so you can view Bug Reports. The development team updates this database at release time and as more information becomes available. Bug Reports include provisions for any known workarounds or file replacements. Information is available for bugs existing in or fixed in Release 14SP2 or later. Information is not available for all bugs in earlier releases.

Access Bug Reports using your MathWorks Account.

Documentation on the MathWorks Web Site

Related documentation is available on mathworks.com for the latest release and for previous releases:

- Latest product documentation
- Archived documentation

Version 3.3 (R2011a) EDA Simulator Link

This table summarizes what's new in V3.3 (R2011a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are described here:

- “FPGA-in-the-Loop Simulation” on page 3
- “Multiple Cosimulation Sessions Support with Parallel Computing” on page 4
- “New User Guide Section for Using HDL Instance Object with Test Bench and Component Functions” on page 4
- “EDA Cosimulation Assistant Name Change to Cosimulation Wizard” on page 4
- “EDA Simulator Link Supported Software and System Updates” on page 5
- “Functions and Function Elements Being Removed” on page 5

FPGA-in-the-Loop Simulation

This release provides the capability for verification of FPGA designs with FPGA-in-the-Loop (FIL) simulation. The FIL Wizard, using HDL files that you provide, creates all the necessary programming files and downloads them to a development board. It also provides you with a FIL block to insert into your existing model so that you can then run and test your FPGA implementation on the development board using Simulink. See “FPGA-in-the-Loop (FIL)” for details.

EDA Simulator Link™ tested FIL simulation with: Xilinx® ISE 12.1; Supports Windows® 32, Windows 64, Linux® 32, Linux 64.

Multiple Cosimulation Sessions Support with Parallel Computing

You can use the EDA Simulator Link and Parallel Computing Toolbox™ products together for up to eight cosimulation sessions on local machine. Use MATLAB® Distributed Computing Server™ to farm out sessions to any number of other computers or to run more than eight sessions on a local machine.

Refer to the Parallel Computing Toolbox and the MATLAB Distributed Computing Server documentation for details and examples of using parallel computing with MATLAB and Simulink.

New User Guide Section for Using HDL Instance Object with Test Bench and Component Functions

Expanded documentation helps you learn how to use the `use_instance_obj` argument for MATLAB functions `matlabcp` and `matlabtb`. You can use this feature to pass an HDL instance object to the function as an argument. In previously releases, the `iport`, `oport`, `tnext`, `tnow`, and `portinfo` arguments of the MATLAB function definition served this purpose. With this feature, `matlabcp` and `matlabtb` function callbacks get the HDL instance object passed in: to hold state, provide read/write access protection for signals, and allow you to add state as needed.

See “Writing Functions Using the HDL Instance Object” for details.

EDA Cosimulation Assistant Name Change to Cosimulation Wizard

The feature name "EDA Cosimulation Assistant" has been changed to "Cosimulation Wizard". The function used to launch the wizard has changed also. The function `edaCosimAssist` will be removed in a future release. Although `edaCosimAssist` is supported for backward compatibility, you should use function `cosimWizard` instead. See “HDL Cosimulation Wizard” for details.

Compatibility Considerations

Replace all existing instances of `edaCosimAssist` with `cosimWizard`.

EDA Simulator Link Supported Software and System Updates

- For FPGA Automation (with Simulink or Filter Design HDL Coder™):
 - Tested with Xilinx ISE 12.1
 - Added Windows 64 support
- For HDL Cosimulation:
 - ModelSim® SE 6.6c, 6.5f, 6.4g
 - ModelSim PE 6.6c, 6.5f, 6.4g
 - ModelSim DE 6.6c (Windows 32 only)
 - Questa® 6.6c
 - Support for Synopsys® Discovery™ will be removed in a future release.
- Windows 64 Support Added for TLM Component Generation

Functions and Function Elements Being Removed

Function or Function Element Name	What Happens When you use the Function or Element?	Use This Instead	Compatibility Considerations
edaCosimAssist	Still runs	cosimWizard	Replace all existing instances of edaCosimAssist with cosimWizard.

Function or Function Element Name	What Happens When you use the Function or Element?	Use This Instead	Compatibility Considerations
launchDiscovery	Warns		Support for Synopsys Discovery will be removed in a future release.
HDL Cosimulation block—Discovery	Warns		Support for Synopsys Discovery will be removed in a future release.
FPGA hardware-in-the-loop	Warns	FPGA-in-the-Loop	Support for FPGA HIL will be removed in a future release.

Version 3.2 (R2010b) EDA Simulator Link

This table summarizes what's new in V3.2 (R2010b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes	Yes—Details labeled as Compatibility Considerations, below. See also Summary.	Bug Reports

New features and changes introduced in this version are described here:

- “HDL Cosimulation Updates” on page 7
- “FPGA Automation Updates” on page 9
- “TLM Generation Updates” on page 10

HDL Cosimulation Updates

- “EDA Cosimulation Assistant Creates Blocks and Functions from Existing HDL Code” on page 8
- “Updated Timescales Pane Offers New Options for Simulation Timescale Factoring” on page 8
- “To VCD File Block Supports Simulation Using Rapid Accelerator Mode” on page 8
- “EDA Simulator Link Supports ModelSim DE” on page 8
- “EDA Simulator Link Supports Cosimulation on 64-Bit Windows” on page 8
- “HDL Cosimulation Support for Synopsys Updated” on page 8
- “Zero Value of First Output for All Signals Corrected” on page 9

EDA Cosimulation Assistant Creates Blocks and Functions from Existing HDL Code

Get started quickly using existing HDL code and the EDA Cosimulation Assistant. This tool will guide you through the steps necessary to create a test bench or component function for cosimulation with MATLAB or an HDL Cosimulation block for cosimulation with Simulink. See “Quick Start: Using The Cosimulation Wizard” in the *EDA Simulator Link Getting Started Guide*.

Updated Timescales Pane Offers New Options for Simulation Timescale Factoring

The updated timescale features allows you to choose when EDA Simulator Link software should calculate a timescale for you. In addition, you can make changes to the calculated timescale with an interactive GUI. See the HDL Cosimulation block reference for more information.

To VCD File Block Supports Simulation Using Rapid Accelerator Mode

To VCD File block now supports simulation using Rapid Accelerator mode. Select **Simulation > Rapid Accelerator Mode** in the model window before beginning cosimulation. See the To VCD File block reference for more information about this feature and block settings.

EDA Simulator Link Supports ModelSim DE

EDA Simulator Link software now supports ModelSim DE 6.6a (for Windows only). See “Product Requirements” for more information on supported products.

EDA Simulator Link Supports Cosimulation on 64-Bit Windows

This release adds support for Windows 64-bit machines. See “Product Requirements” for more information on supported products.

HDL Cosimulation Support for Synopsys Updated

With the release of R2010b, EDA Simulator Link software now supports VCS MXi. The software no longer supports VCX MX. See “Compatibility Summary for EDA Simulator Link” on page 15.

Compatibility Considerations. Attempts to cosimulate with VCX MX will be unsuccessful.

Zero Value of First Output for All Signals Corrected

Previously, the first output value of all signals in the HDL code was set to zero in Simulink (unless you used direct feedthrough, which works correctly). Effective this release, the output value of all signals now correctly pass from the HDL simulator to Simulink.

Compatibility Considerations. You will no longer see zero as the first output value of all signals in Simulink. You may need to modify your code or procedures to accommodate the corrected behavior.

FPGA Automation Updates

- “FPGA Project Generation with MATLAB and Filter Design HDL Coder” on page 9
- “Clock Module Generation Now Supports Verilog” on page 9

FPGA Project Generation with MATLAB and Filter Design HDL Coder

You can create Xilinx ISE projects from Filter Design HDL Coder and MATLAB. From the Filter Design & Analysis Tool GUI, select **Targets > Generate HDL**. Select the **FPGA Automation** tab. Use context-sensitive help to assist you in setting project generation options.

The software now supports FPGA project generation with MATLAB and Filter Design HDL Coder on 32-bit Windows systems and on 32- and 64-bit Linux systems.

See “FPGA Automation with Filter Design HDL Coder” in the *EDA Simulator Link User’s Guide* to get started.

Clock Module Generation Now Supports Verilog

The limitation for DCM design containing only VHDL code has been removed. You may select Verilog on the Simulink® HDL Coder™ pane or the Generate

HDL pane (in Filter Design HDL Coder) when you specify options for FPGA project generation.

TLM Generation Updates

- “Single Source and Sink Blocks Now Supported” on page 10
- “New Algorithm Processing Options” on page 10
- “Temporal Decoupling Added to Generated TLM and Test Bench” on page 10

Single Source and Sink Blocks Now Supported

This release removes the previous limitation that designs under generation must contain both inputs and outputs. Your design now may have only source blocks or only sink blocks.

New Algorithm Processing Options

Choose the type of function execution trigger you want to use in the generated TLM component—SystemC thread or callback. Use a SystemC thread for a more accurate simulation (at the expense of time) and use a callback for faster execution (at the expense of accuracy).

Temporal Decoupling Added to Generated TLM and Test Bench

This release includes complete temporal decoupling implementation with quantum for faster processing for generated TLM and test bench.

Version 3.1 (R2010a) EDA Simulator Link

This table summarizes what's new in V3.1 (R2010a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes	No	Bug Reports

New features and changes introduced in this version are described here:

- “Support for Latest Synopsys Discovery Release” on page 11
- “Enable Direct Feedthrough for HDL Designs with Pure Combinational Datapaths” on page 12
- “New Functions for HDL Simulator Client Communication” on page 12
- “Batch, CLI, and GUI Mode Support Added for Cosimulation with HDL Simulators” on page 12
- “Use Same MATLAB Function for Multiple HDL Instances” on page 12
- “Generating Transaction Level Models for Use with Virtual Platforms” on page 13
- “Specializing FPGA Implementations” on page 13

Support for Latest Synopsys Discovery Release

EDA Simulator Link now supports the latest Synopsys release. See EDA Simulator Link requirements page on the MathWorks Web site for specific platforms supported and detailed information about the software and

hardware required to use EDA Simulator Link software with the current release.

Enable Direct Feedthrough for HDL Designs with Pure Combinational Datapaths

The HDL Cosimulation block now supports *direct feedthrough*, which means that the output is controlled directly by the value of an input port. The input value change propagates to the output ports in zero time, thus eliminating one output-sample delay for HDL designs with pure combinational logic datapaths. This feature eliminates the need to modify the test bench portion of Simulink to compensate for cosimulation block delay.

New Functions for HDL Simulator Client Communication

A new function, `notifyMatlabServer`, allows you to send HDL simulator event and process IDs to MATLAB server. Another new function, `waitForHdlClient`, waits to begin processing until the specified event ID is obtained or a user-specified time-out occurs.

Batch, CLI, and GUI Mode Support Added for Cosimulation with HDL Simulators

You can execute cosimulation in batch mode for background processing or CLI mode for ease in debugging.

Use Same MATLAB Function for Multiple HDL Instances

This release adds a new argument, `use_instance_obj`, to the MATLAB functions `matlabcp` and `matlabtb`. This feature replaces the `iport`, `oport`, `tnext`, `tnow`, and `portinfo` arguments of the MATLAB function definition with an HDL instance object passed to the function as an argument. With this feature, `matlabcp` and `matlabtb` function callbacks get the HDL instance object after it has passed into hold state. They also provide read/write access protection for signals and allow you to add state as needed.

With this feature you gain the following advantages:

- You can use the same MATLAB function to represent behavior for different instances of the same module in HDL without need to create one-off wrapper functions.
- You no longer need special "portinfo" argument on first invocation.
- You no longer need to use persistent or global variables.
- You receive better feedback and protections on reading/writing of signals.
- You can use object fields to identify the instance path and whether the call comes from a component or test bench function.
- You can use the field argument to pass user-defined arguments from the `matlabcp` or `matlabtb` instantiation on the HDL side to the function callbacks.

The new argument, `-use_instance_obj`, is identical for both `matlabcp` and `matlabtb`. See the Function Reference for `matlabcp` and `matlabtb` for instructions in using this new function argument.

Generating Transaction Level Models for Use with Virtual Platforms

- Export of Simulink algorithm models as OSCI TLM 2.0 components
- Generation of standalone SystemC test bench for generated TLM 2.0 component

Limitations The design under generation must contain both inputs and outputs. Designs that only have inputs or only have outputs (sink or source blocks) are not supported in this release. If you do not include both, EDA Simulator Link displays an error message and discontinues code generation.

Specializing FPGA Implementations

Generation of Xilinx ISE projects for FPGA designs

Version 3.0 (R2009b) EDA Simulator Link

This table summarizes what's new in V3.0 (R2009b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes	No	Bug Reports

New features and changes introduced in this version are described here:

EDA Simulator Link DS, EDA Simulator Link IN, and EDA Simulator Link MQ Merge

As of R2009b, EDA Simulator Link DS, EDA Simulator Link IN, and EDA Simulator Link MQ functionality are merged into a new product, EDA Simulator Link. EDA Simulator Link DS, EDA Simulator Link IN, and EDA Simulator Link MQ are no longer available.

Compatibility Summary for EDA Simulator Link

This table summarizes new features and changes that might cause incompatibilities when you upgrade from an earlier version, or when you use files on multiple versions. Details are provided in the description of the new feature or change.

Version (Release)	New Features and Changes with Version Compatibility Impact
Latest Version V3.3 (R2011a)	See the Compatibility Considerations subheading for each of these new features and changes: <ul style="list-style-type: none"> • “EDA Cosimulation Assistant Name Change to Cosimulation Wizard” on page 4 • “Functions and Function Elements Being Removed” on page 5
V3.2 (R2010b)	Yes. See the Compatibility Considerations subheading for this new feature or change: <ul style="list-style-type: none"> • “HDL Cosimulation Support for Synopsys Updated” on page 8 • “Zero Value of First Output for All Signals Corrected” on page 9
V3.1 (R2010a)	None
V3.0 (R2009b)	None