

# **EDA Simulator Link™ IN Release Notes**

---

## How to Contact The MathWorks



[www.mathworks.com](http://www.mathworks.com) Web  
[comp.soft-sys.matlab](mailto:comp.soft-sys.matlab) Newsgroup  
[www.mathworks.com/contact\\_TS.html](http://www.mathworks.com/contact_TS.html) Technical Support



[suggest@mathworks.com](mailto:suggest@mathworks.com) Product enhancement suggestions  
[bugs@mathworks.com](mailto:bugs@mathworks.com) Bug reports  
[doc@mathworks.com](mailto:doc@mathworks.com) Documentation error reports  
[service@mathworks.com](mailto:service@mathworks.com) Order status, license renewals, passcodes  
[info@mathworks.com](mailto:info@mathworks.com) Sales, pricing, and general information



508-647-7000 (Phone)



508-647-7001 (Fax)



The MathWorks, Inc.  
3 Apple Hill Drive  
Natick, MA 01760-2098

For contact information about worldwide offices, see the MathWorks Web site.

*EDA Simulator Link™ IN Release Notes*

© COPYRIGHT 2006–2009 by The MathWorks, Inc.

The software described in this document is furnished under a license agreement. The software may be used or copied only under the terms of the license agreement. No part of this manual may be photocopied or reproduced in any form without prior written consent from The MathWorks, Inc.

FEDERAL ACQUISITION: This provision applies to all acquisitions of the Program and Documentation by, for, or through the federal government of the United States. By accepting delivery of the Program or Documentation, the government hereby agrees that this software or documentation qualifies as commercial computer software or commercial computer software documentation as such terms are used or defined in FAR 12.212, DFARS Part 227.72, and DFARS 252.227-7014. Accordingly, the terms and conditions of this Agreement and only those rights specified in this Agreement, shall pertain to and govern the use, modification, reproduction, release, performance, display, and disclosure of the Program and Documentation by the federal government (or other entity acquiring for or through the federal government) and shall supersede any conflicting contractual terms or conditions. If this License fails to meet the government's needs or is inconsistent in any respect with federal procurement law, the government agrees to return the Program and Documentation, unused, to The MathWorks, Inc.

### Trademarks

MATLAB and Simulink are registered trademarks of The MathWorks, Inc. See [www.mathworks.com/trademarks](http://www.mathworks.com/trademarks) for a list of additional trademarks. Other product or brand names may be trademarks or registered trademarks of their respective holders.

### Patents

The MathWorks products are protected by one or more U.S. patents. Please see [www.mathworks.com/patents](http://www.mathworks.com/patents) for more information.

<b>Summary by Version</b> .....	<b>1</b>
<b>Version 2.4 (R2009a) EDA Simulator Link IN</b> .....	<b>3</b>
<b>Version 2.3 (R2008b) EDA Simulator Link™ IN Software</b> .....	<b>4</b>
<b>Version 2.2 (R2008a) EDA Simulator Link™ IN Software</b> .....	<b>7</b>
<b>Version 2.1 (R2007b) Link for Cadence Incisive</b> .....	<b>8</b>
<b>Version 2.0 (R2007a) Link for Cadence Incisive</b> .....	<b>12</b>
<b>Version 1.0 (R2006b+) Link for Cadence Incisive</b> .....	<b>15</b>
<b>Compatibility Summary for EDA Simulator Link™ IN Software</b> .....	<b>17</b>



## Summary by Version

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

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
<b>Latest Version V2.4 (R2009a)</b>	Yes Details	No	Bug Reports	Printable Release Notes: PDF  Current product documentation
V2.3 (R2008b)	Yes Details	No	Bug Reports	No
V2.2 (R2008a)	No	No	Bug Reports	No
V2.1 (R2007b)	Yes Details	Yes Summary	Bug Reports	No
V2.0 (R2007a)	Yes Details	No	Bug Reports	No
V1.0 (R2006b+)	Yes Details	Not applicable	Bug Reports	No

### 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®) for enhancements, bugs, and compatibility considerations that also might impact you.

If you are upgrading from a software version other than the most recent one, review the release notes for all interim versions, not just for the version you are installing. For example, when upgrading from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

## **What's 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 is released appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so you should also review the fixed bugs in Bug Reports for any compatibility impact.

### **Fixed Bugs and Known Problems**

The 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. This includes 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.

## Version 2.4 (R2009a) EDA Simulator Link IN

This table summarizes what's new in V2.4 (R2009a):

<b>New Features and Changes</b>	<b>Version Compatibility Considerations</b>	<b>Fixed Bugs and Known Problems</b>	<b>Related Documentation at Web Site</b>
Yes Details below	No	Bug Reports	Printable Release Notes: PDF  Current product documentation

### **Cadence Removes Limitation For Mixed Verilog/VHDL Design**

The limitation previously reported—that the Cadence VHPI reports the incorrect simulator precision when simulating mixed Verilog/VHDL design (See “Mixed-language (VHDL and Verilog) Cosimulation Support in Simulink Models” on page 12)—has been removed with the IUS-6.2 and IUS-8.1 releases.

## Version 2.3 (R2008b) EDA Simulator Link™ IN Software

This table summarizes what's new in V2.3 (R2008b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports	No

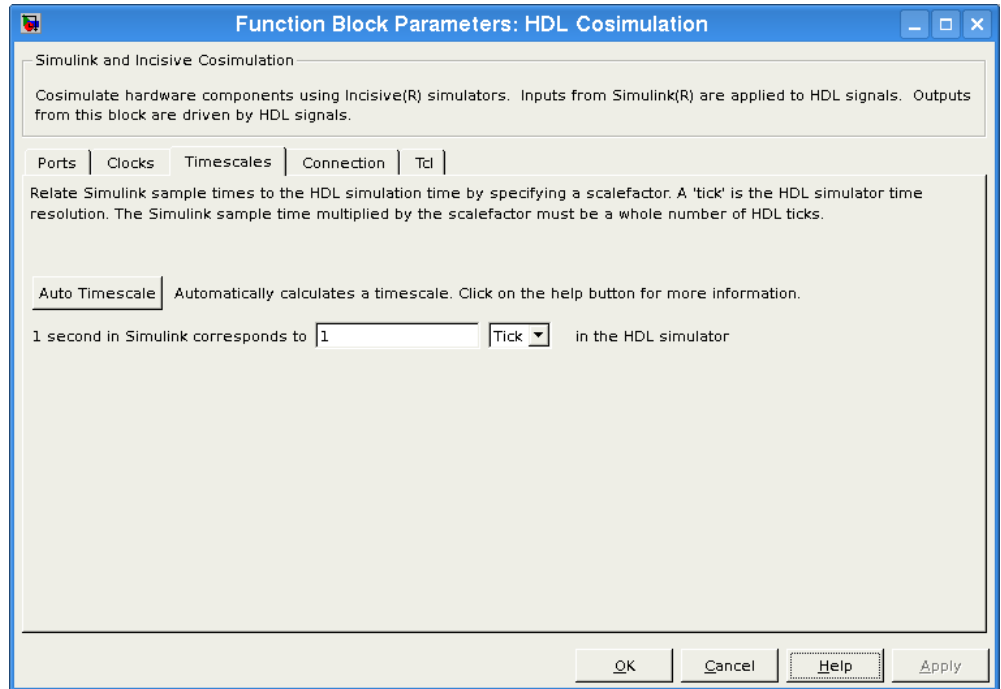
New features and changes introduced in this version are:

- “Automatically Calculate a Timescale Factor ” on page 4
- “Cosimulate Mixed-Language Designs (Verilog and VHDL) with MATLAB” on page 5
- “Improve Simulation Speed with Tip in New Best Practices Appendix” on page 5
- “Use Same M-Function for Multiple HDL Instances (Beta)” on page 6

### Automatically Calculate a Timescale Factor

The new Automatic Timescale button on the Timescales Pane assists you in calculating an initial timescale. The software scales all sample times to be a multiple of the HDL simulator resolution limit (tick) and allows you to approve the calculated timescale (by not making any changes) or reject it (by entering your own timescale).





See “Timescales Pane” in the HDL Cosimulation block reference.

## Cosimulate Mixed-Language Designs (Verilog and VHDL) with MATLAB

EDA Simulator Link™ IN software now supports mixed-language HDL models (models with both Verilog and VHDL components) for both MATLAB and Simulink, allowing you to cosimulate VHDL and Verilog signals simultaneously. Both MATLAB and Simulink software can access components in different languages at any level. See “Hardware Description Language (HDL) Support”.

## Improve Simulation Speed with Tip in New Best Practices Appendix

This new section contains tips for analyzing and improving cosimulation performance. Future releases will include additional new Best Practices. See .

## Use Same M-Function for Multiple HDL Instances (Beta)

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 M-function definition with an *HDL instance object* passed to the function as an argument. With this feature, `matlabcp` and `matlabtb` M-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.

With this feature you gain the following advantages:

- You can use the same M-function to represent behavior for different instances of the same module in HDL without need for 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 will 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 M-function callbacks.

The new argument, `-use_instance_obj`, is identical for both `matlabcp` and `matlabtb`. See `matlabcp` and `matlabtb` for documentation regarding this beta function argument.

The MathWorks encourages you to use this new feature and provide feedback.

## Version 2.2 (R2008a) EDA Simulator Link™ IN Software

This table summarizes what's new in V2.2 (R2008a):

<b>New Features and Changes</b>	<b>Version Compatibility Considerations</b>	<b>Fixed Bugs and Known Problems</b>	<b>Related Documentation at Web Site</b>
No	No	Bug Reports	No

## Version 2.1 (R2007b) Link for Cadence Incisive

This table summarizes what's new in V2.1 (R2007b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes—Details labeled as <b>Compatibility Considerations</b> , below. See also “Compatibility Summary for EDA Simulator Link™ IN Software” on page 17	Bug Reports	No

- “Solaris 32-Bit Mode Support (on 64-Bit Platforms)” on page 9
- “Improved Cosimulation Block GUI Eases Parameter Definition” on page 9
- “New Setup Script Assists in Installation Debug and Runtime Configuration” on page 9
- “Complete Cadence-Bundled GCC Library Compatibility” on page 9
- “Block Cosimulation Until HDL Simulator Is Ready with New Link for Cadence Incisive MATLAB Function” on page 10
- “Send Tel Commands to the HDL Simulator with New Link for Cadence Incisive MATLAB Function” on page 10
- “Suppress Error Message with New hlldaemon Property Name/Property Value Pair” on page 10
- “Limited Support for System Verilog” on page 10
- “Link and Target Products Regrouped in New Start, Help, and Demos Category” on page 10
- “Improved User’s Guide and Reference Documentation” on page 11

## **Solaris 32-Bit Mode Support (on 64-Bit Platforms)**

Link for Cadence Incisive is able to run the HDL simulator side of the link in 32-bit mode and the MATLAB/Simulink side in 64-bit mode, either on a single machine or in a true cross-platform mode. See “Using the EDA Simulator Link IN Libraries” in the .

## **Improved Cosimulation Block GUI Eases Parameter Definition**

Changes to the HDL Cosimulation block mask allow you to enter port information directly into the ports table. For more, see “Ports Pane” in the HDL Cosimulation block reference.

## **New Setup Script Assists in Installation Debug and Runtime Configuration**

Link for Cadence Incisive provides a guided setup script (`syschecklfi`) for configuring your simulator setup. This setup works whether you have installed Link for Cadence Incisive and MATLAB on the same machine as Cadence Incisive or if you have installed them on different machines. This script creates a configuration file containing the location of the appropriate Link for Cadence Incisive MATLAB and Simulink libraries. You can then include this configuration with any other calls you make using Cadence Incisive `ncsim` from the Incisive or NC simulator. You only need to run this script once. If you plan to use the MATLAB `nclaunch` function instead, no setup is required. See “Setting Up Your Environment for the EDA Simulator Link IN Software”.

---

**Note** The Link for Cadence Incisive guided setup configuration/diagnostic script works only on UNIX and Linux. Windows users: please see instructions in the for manually creating the configuration files.

---

## **Complete Cadence-Bundled GCC Library Compatibility**

The Link for Cadence Incisive libraries are compiled using the same compilers that MATLAB is compiled with (they vary by platform) as well as the

compilers that are available with Cadence Incisive (usually some version of gcc). This is done to ensure compatibility with other C++ libraries that may get linked into the HDL simulator, including SystemC libraries. See “Using the EDA Simulator Link IN Libraries” in the .

## **Block Cosimulation Until HDL Simulator Is Ready with New Link for Cadence Incisive MATLAB Function**

The Link for Cadence Incisive MATLAB function `pingHdlSim` blocks cosimulation by not returning until the Simulink server is loaded or until a specified timeout occurs. This function is useful if you are trying to automate a cosimulation and you need to know that the Simulink server has loaded before your script continues the simulation. See in .

## **Send Tcl Commands to the HDL Simulator with New Link for Cadence Incisive MATLAB Function**

`tclHdlSim` executes a Tcl command immediately on the HDL simulator using a shared or socket connection. See in .

## **Suppress Error Message with New `hdldaemon` Property Name/Property Value Pair**

`hdldaemon` property name/property value pair "quiet", "true" suppresses printing messages to the standard queue. Errors are still shown. See in .

## **Limited Support for System Verilog**

You can cosimulate a model using SystemVerilog and/or SystemC with MATLAB or Simulink using Link for Cadence Incisive. Write simple wrappers around the SystemC and make sure that the SystemVerilog cosimulation connections are to ports or signals of data types supported by Link for Cadence Incisive.

## **Link and Target Products Regrouped in New Start, Help, and Demos Category**

A new product category, Links and Targets, now contains all MathWorks software products that link, target, or cosimulate code.

## **Compatibility Considerations**

This change impacts you in the following ways:

- Finding and viewing these products through the MATLAB Desktop **Start** button and in the Help browser **Contents** and **Demos** panes.
- Using the `demo` command to access the product demos.

For more about this new product category, see “Demos and Help Browser Contents Now Include New Category for Links and Targets”, in the *MATLAB Release Notes*.

## **Improved User’s Guide and Reference Documentation**

The Link for Cadence Incisive User’s Guide (including the Getting Started Guide) and Reference Guide have been reorganized as a result of intense technical review and documentation usability testing, resulting in product documentation that follows a realistic workflow for EDA verification and testing.

## Version 2.0 (R2007a) Link for Cadence Incisive

This table summarizes what's new in V2.0 (R2007a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports	No

New features and changes introduced in this version are

- “Native VHDL Support” on page 12
- “Mixed-language (VHDL and Verilog) Cosimulation Support in Simulink Models” on page 12
- “Option to Deactivate HDL Cosimulation for Faster Simulink Model Debugging ” on page 13

### Native VHDL Support

Link for Cadence® Incisive® now supports VHDL models directly. All Link for Cadence Incisive MATLAB functions, and the HDL Cosimulation block, offer the same language-transparent feature set for both Verilog and VHDL models. For more information, see “Hardware Description Language (HDL) Support”.

### Mixed-language (VHDL and Verilog) Cosimulation Support in Simulink Models

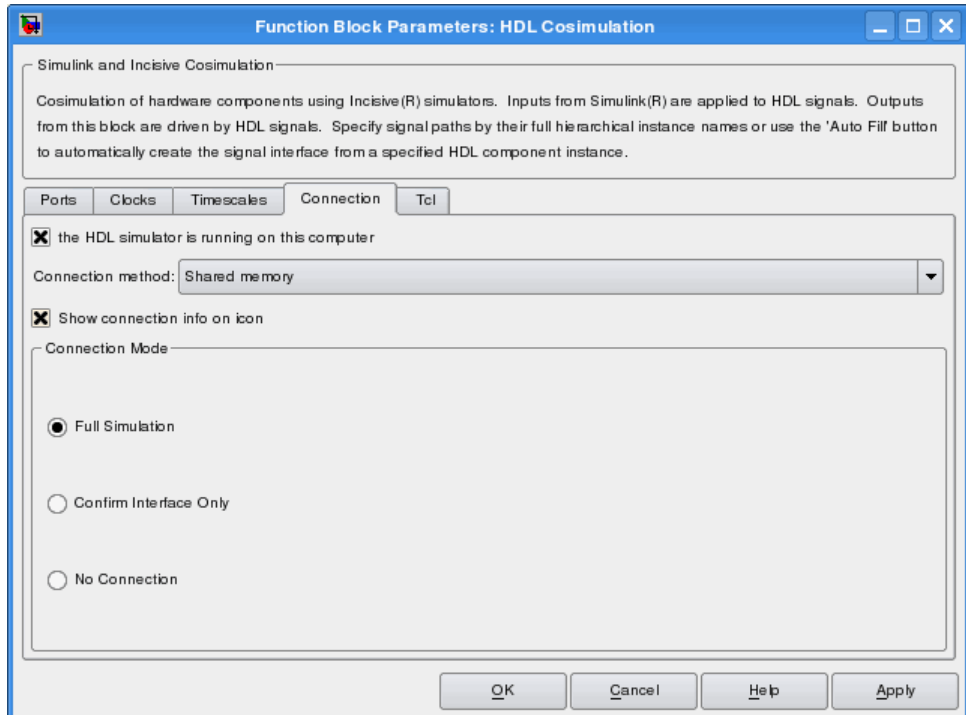
Link for Cadence Incisive software now supports mixed-language HDL models (models with both Verilog and VHDL components), allowing you to cosimulate VHDL and Verilog signals simultaneously.

This feature has the following limitation: The Cadence VHPI reports the incorrect simulator precision when simulating mixed Verilog/VHDL design. For more information, see “Hardware Description Language (HDL) Support”.



## Option to Deactivate HDL Cosimulation for Faster Simulink Model Debugging

New option panel on the Connection Pane provides the following check boxes for bypassing the HDL simulator when running a Simulink simulation.



Select one of the following:

- **Full Simulation:** Confirm interface and run HDL simulation (default).
- **Confirm Interface Only:** Check HDL simulator for proper signal names, dimensions, and data types, but do not run HDL simulation.
- **No Connection:** Do not communicate with the HDL simulator. The HDL simulator does not need to be started.

With the 2nd and 3rd options, the Link for Cadence Incisive interface does not communicate with the HDL simulator during Simulink simulation.

More about the HDL Cosimulation block can be found in HDL Cosimulation.

## Version 1.0 (R2006b+) Link for Cadence Incisive

This table summarizes what's new in V1.0 (R2006b+):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	No	Bug Reports	No

### Introduction to Link for Cadence Incisive

Link for Cadence Incisive software integrates MATLAB and Simulink into your integrated circuit development flow. It lets you cosimulate and verify hardware description language (HDL) code using Incisive® platform simulators from Cadence Design Systems.

Link for Cadence Incisive Version 1.0 includes these features:

- Native Verilog support and support for VHDL via Verilog modules
- Connection of a Simulink model to one or more Incisive simulators
- MATLAB test bench capability, enabling the use of MATLAB code to stimulate and check HDL code
- MATLAB component capability, enabling simulation of MATLAB code in place of entities not yet coded in HDL
- User-selectable communication modes between MATLAB and Simulink and the Incisive simulator, which provides shared memory (for faster performance) and TCP/IP sockets (for versatility)
- Interactive or batch mode cosimulation, debugging, testing, and verification of HDL code from MATLAB

Link for Cadence Incisive Version 1.0 also includes the following beta-level feature:

## **HdlServer.m for Managing Multiple HDL Simulator Connections**

Link for Cadence Incisive 1.0 contains a preliminary, beta-level scripting solution, `HdlServer.m`. As a replacement for `nc1launch.m` for Simulink connections, `HdlServer.m` adds capabilities for managing multiple HDL simulator connections, both remotely and locally. The script also allows for cross-platform connections, including using MATLAB and Simulink on a Windows machine. For more information, type

```
>> help HdlServer
```

at the MATLAB prompt. If you have feedback about this beta feature, please contact The MathWorks.

### **For More Information**

See the for comprehensive information on the Link for Cadence Incisive software.

## Compatibility Summary for EDA Simulator Link™ IN Software

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 V2.4 (R2009a)	None
V2.3 (R2008b)	None
V2.2 (R2008a)	None
V2.1 (R2007b)	See the <b>Compatibility Considerations</b> subheading for each of these new features or changes: <ul style="list-style-type: none"> <li>• “Link and Target Products Regrouped in New Start, Help, and Demos Category” on page 10</li> </ul>
V2.0 (R2007a)	None
V1.0 (R2006b+)	None