

Simulink[®] Verification and Validation[™] Release Notes

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Simulink® Verification and Validation™ Release Notes

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Summary by Version	1
Version 2.6 (R2009b) Simulink® Verification and Validation Software	4
Version 2.5 (R2009a) Simulink® Verification and Validation Software	9
Version 2.4 (R2008b) Simulink® Verification and Validation Software	12
Version 2.3 (R2008a) Simulink® Verification and Validation Software	16
Version 2.2 (R2007b) Simulink® Verification and Validation Software	19
Version 2.1 (R2007a) Simulink® Verification and Validation Software	22
Version 2.0 (R2006b) Simulink® Verification and Validation Software	23
Version 1.1.2 (R2006a) Simulink® Verification and Validation Software	25
Version 1.1.1 (R14SP3) Simulink® Verification and Validation Software	26
Version 1.1 (R14SP2+) Simulink® Verification and Validation Software	27
Version 1.0.2 (R14SP2) Simulink® Verification and Validation Software	33

Version 1.0.1 (R14SP1) Simulink® Verification and Validation Software 34

Version 1.0 (R14) Simulink® Verification and Validation Software 35

Compatibility Summary for Simulink® Verification and Validation Software 38

Summary by Version

This table provides quick access to what's new in each version. For clarification, see "Using Release Notes" on page 2.

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Latest Version V2.6 (R2009b)	Yes Details	Yes Summary	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation
V2.5 (R2009a)	Yes Details	No	Bug Reports Includes fixes	No
V2.4 (R2008b)	Yes Details	No	Bug Reports Includes fixes	No
V2.3.1 (R2008a+)	No	No	Bug Reports Includes fixes	No
V2.3 (R2008a)	Yes Details	No	Bug Reports Includes fixes	No
V2.2.1 (R2007b+)	No	No	Bug Reports Includes fixes	No
V2.2 (R2007b)	Yes Details	No	Bug Reports Includes fixes	No
V2.1.1 (R2007a+)	No	No	Bug Reports Includes fixes	No
V2.1 (R2007a)	No	No	Bug Reports Includes fixes	No
V2.0 (R2006b)	Yes Details	No	Bug Reports Includes fixes	No
V1.1.2 (R2006a)	No	No	Bug Reports at Web site	No

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
V1.1.1 (R14SP3)	Yes Details	No	Bug Reports at Web site	No
V1.1 (R14SP2+)	Yes Details	No	Bug Reports at Web site	No
V1.0.2 (R14SP2)	No	No	Bug Reports at Web site	No
V1.0.1 (R14SP1)	No	No	Fixed bugs	No
V1.0 (R14)	Yes Details	No	Fixed bugs, and Additional Bug Fixes	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®). 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

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. 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.

Version 2.6 (R2009b) Simulink Verification and Validation Software

This table summarizes what's new in Version 2.6 (R2009b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
Yes Details below	Yes—Details labeled as Compatibility Considerations , below. See also Summary	Bug Reports Includes fixes	Printable Release Notes: PDF Current product documentation

New features and changes introduced in this version are:

- “New Coverage Reporting for Variable-Size Signals” on page 4
- “Model Coverage for Simulink® Design Verifier Blocks” on page 5
- “Force Block Reduction Off During Simulation” on page 5
- “Improved RMI Highlighting and Reporting” on page 6
- “Create Custom Configurations Using the Model Advisor Configuration Editor” on page 6
- “Licensing Revised for the Model Advisor” on page 7
- “New and Enhanced Model Advisor Checks” on page 7
- “Modeling Guidelines for High-Integrity Systems” on page 8

New Coverage Reporting for Variable-Size Signals

In R2009b, signal sizes in Simulink models can change during execution to facilitate modeling systems with varying environments, resources, and constraints. The Simulink® Verification and Validation™ software can report the minimum, maximum, and allocated space for all variable-size signals in a model, as recorded during simulation.

To enable this feature, in the Coverage Settings dialog box, on the **Coverage** tab, select the **Signal Range** option.

Model Coverage for Simulink Design Verifier Blocks

The Simulink Verification and Validation model coverage tool can collect model coverage data for Simulink® Design Verifier™ blocks. Using this feature during simulation, you can verify Simulink Design Verifier generated test harnesses and user-defined requirements. The model coverage tool collects model coverage data for the following Simulink Design Verifier blocks:

- Proof Assumption
- Proof Objective
- Test Condition
- Test Objective

To enable this feature, in the Coverage Settings dialog box, on the **Coverage** tab, select **Simulink Design Verifier**.

Force Block Reduction Off During Simulation

The Simulink Verification and Validation software can override the value of the Simulink **Block reduction** parameter. When you set this option, the simulation records coverage for all blocks in the model.

To enable this feature, in the Coverage Settings dialog box, on the **Options** tab, select **Force block reduction off**.

Compatibility Considerations

Previously, model coverage ignored the value of the Simulink **Block reduction** parameter, creating incompatibilities between the model coverage data and the generated code coverage data. In R2009b, you can select **Force block reduction off** to override the **Block reduction** parameter and collect coverage for all blocks in the model.

Improved RMI Highlighting and Reporting

The Requirements Management Interface (RMI) has the following improvements to its highlighting and reporting capabilities:

- Differential highlighting of blocks and subsystems to easily locate model objects with requirements links
- Real-time update of highlighted view to reflect the current state of the model requirements links
- Improved requirements report that includes a document summary, and details about signal group requirements and objects with missing requirements
- New interface for modifying settings for the requirements report generation that is available to users who do not have a Simulink® Report Generator™ license
- IBM® Rational® DOORS® module paths stored with the requirements information for easier review. For requirement links created before R2009b, the module path information is still saved only in the DOORS module.

Create Custom Configurations Using the Model Advisor Configuration Editor

The Model Advisor Configuration Editor expedites creating and deploying custom configurations of the Model Advisor. The Configuration Editor assists with:

- Adding MathWorks and custom checks to your custom configuration with drag and drop.
- Creating new folders in your custom configuration from a toolbar icon.
- Deploying custom configurations in a MAT file.

For more information, see “Organizing Checks and Folders Using the Model Advisor Configuration Editor” and “How to Deploy Custom Configurations” in the *Simulink Verification and Validation User’s Guide*.

Licensing Revised for the Model Advisor

Previously, the Model Advisor populated the list of checks and folders based on the licenses available to you. When you ran checks, the software did not require a license checkout. In R2009b, the Model Advisor performs a checkout of the Simulink Verification and Validation license when you run Simulink Verification and Validation checks. For a list of Simulink Verification and Validation checks, see “Model Advisor Checks” in the Simulink Verification and Validation documentation.

Compatibility Considerations

The Model Advisor performs a checkout of a Simulink Verification and Validation license when you run:

- Checks in the Simulink Verification and Validation folder
- Custom checks

If you do not have a Simulink Verification and Validation license available, when you run the check, you see an error message that the required license is not available.

New and Enhanced Model Advisor Checks

The Simulink Model Advisor includes new and updated verification and validation checks.

DO-178B Checks

The **DO-178B Check** subfolder now includes “Check safety-related diagnostic settings for model initialization”.

The checks in the **DO-178B Checks** subfolder are reformatted for a consistent look and feel to the results.

For more information, see “DO-178B Checks” in the *Simulink Verification and Validation User’s Guide*.

IEC 61508 Checks

The **IEC 61508 Checks** subfolder now includes “Check for model objects that do not link to requirements”.

For more information, see “IEC 61508 Checks” in the *Simulink Verification and Validation User’s Guide*.

Modeling Guidelines for High-Integrity Systems

The MathWorks intends this document for engineers developing models and generating code for high-integrity systems using Model-Based Design with MathWorks products. This document describes creating Simulink models that are complete, unambiguous, statistically deterministic, robust, and verifiable. The document focus is on model settings, block usage, and block parameters that impact simulation behavior or code generated by the Real-Time Workshop® Embedded Coder™ product.

These guidelines do not assume that you use a particular safety or certification standard. The guidelines reference some safety standards where applicable, including DO-178B, IEC 61508, and MISRA C®.

You can use the Model Advisor to support adhering to these guidelines. Each guideline lists the checks that are applicable to that guideline.

For more information, see “Modeling Guidelines for High-Integrity Systems” in the Simulink Verification and Validation documentation.

Version 2.5 (R2009a) Simulink Verification and Validation Software

This table summarizes what's new in Version 2.5 (R2009a):

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

New features and changes introduced in this version are:

- “Recording Coverage for External Embedded MATLAB M-Files” on page 9
- “API for Customizing Model Advisor Results” on page 10
- “New and Enhanced Model Advisor Checks” on page 10
- “MathWorks Automotive Advisory Board Control Algorithm Modeling Guidelines Using MATLAB, Simulink, and Stateflow Included in Help” on page 11

Recording Coverage for External Embedded MATLAB M-Files

Embedded MATLAB Function blocks and functions can call external M-files. The Model Coverage Tool extends the model coverage capabilities to record coverage for these M-files. By default, this option is disabled; coverage is not collected for external M-files.

Enable this option if you want the software to collect and report coverage for all M-files associated with the Embedded MATLAB Function blocks. To enable this option, in the Coverage Settings dialog box, select **Coverage for External Embedded MATLAB files**.

API for Customizing Model Advisor Results

In R2009a, there is a new API to customize the results of the Model Advisor for a common look and feel for all of your customized checks. The API includes templates for you to organize the results in tables or lists. For more information, see *Customizing Model Advisor* in the *Simulink Verification and Validation User's Guide*.

New and Enhanced Model Advisor Checks

The Simulink Model Advisor includes new and updated verification and validation checks.

DO-178B Checks

The **DO-178B Check** subcategory includes the following new checks:

- Check for blocks that do not link to requirements
- Check for proper usage of Math blocks

For more information, see “DO-178B Checks” in the *Simulink Verification and Validation User's Guide*.

IEC 61508 Checks

The checks in the **IEC 61508 Checks** subfolder are reformatted for a consistent look and feel to the results. For more information, see “IEC 61508 Checks” in the *Simulink Verification and Validation User's Guide*.

Modeling Standards for MAAB Checks

There is a new **Modeling Standards for MAAB** subfolder in the **By Task** folder of the Model Advisor, which includes subfolders that organize the MAAB checks so you can more easily determine which checks you want to run.

MathWorks Automotive Advisory Board Control Algorithm Modeling Guidelines Using MATLAB, Simulink, and Stateflow Included in Help

The MathWorks Automotive Advisory Board (MAAB) involves major automotive original equipment manufacturers (OEMs) and suppliers in the process of evolving MathWorks controls, simulation, and code generation products, including the Simulink, Stateflow®, and Real-Time Workshop® products. An important result of the MAAB has been the “MathWorks Automotive Advisory Board Control Algorithm Modeling Guidelines Using MATLAB, Simulink, and Stateflow.” Help for the Simulink Verification and Validation product now includes these guidelines. The MAAB guidelines link to relevant Model Advisor MAAB check help and MAAB check help links to relevant MAAB guidelines.

For more information on the MAAB guidelines, see “MathWorks Automotive Advisory Board Control Algorithm Modeling Guidelines Using MATLAB, Simulink, and Stateflow”. For information on the Model Advisor MAAB checks, see “MathWorks Automotive Advisory Board Checks.”

Version 2.4 (R2008b) Simulink Verification and Validation Software

This table summarizes what's new in Version 2.4 (R2008b):

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

New features and changes introduced in this version are:

- “New and Enhanced Model Advisor Checks” on page 12
- “Improved Selection-Based Linking” on page 14
- “Enhanced Model Coverage Report” on page 14

New and Enhanced Model Advisor Checks

Context-sensitive help is now available for all Model Advisor checks.

DO-178B Checks

The **DO-178B Check** subcategory includes these new and enhanced checks:

- Check safety-related diagnostic settings for saving — This new check helps enforce and document adherence to coding standards for DO-178B, Software Considerations in Airborne Systems and Equipment Certification.
- Check safety-related diagnostic settings for signal data — This check now checks whether the parameter `SignalRangeChecking` is set to error.
- New Action box for the following checks that you can use to automatically fix failures:
 - Check safety-related optimization settings

- Check safety-related diagnostic settings for solvers
- Check safety-related code generation settings
- Check safety-related diagnostic settings for compatibility
- Check safety-related diagnostic settings for bus connectivity
- Check safety-related diagnostic settings for signal connectivity
- Check safety-related diagnostic settings for data store memory
- Check safety-related diagnostic settings for data used for debugging
- Check safety-related diagnostic settings for parameters
- Check safety-related diagnostic settings for signal data
- Check safety-related diagnostic settings that apply to function-call connectivity
- Check safety-related diagnostic settings for model referencing
- Check safety-related model referencing settings
- Check safety-related diagnostic settings for sample time
- Check safety-related diagnostic settings for type conversions
- Check safety-related diagnostic settings for saving

For more information, see “DO-178B Checks” in the Simulink Verification and Validation documentation.

IEC 61508 Checks

The **IEC 61508 Checks** subcategory includes a new check, Check usage of Stateflow, that helps enforce and document compliance with coding standards for functional safety in electrical, electronic, and programmable electronic systems, as the IEC 61508 standard outlines.

For more information, see “IEC 61508 Checks” in the Simulink Verification and Validation documentation.

MathWorks Automotive Advisory Board Checks

The **MathWorks Automotive Advisory Board Checks** subcategory includes new checks that have been implemented to support the MathWorks Automotive Advisory Board (MAAB) 2.0 rules:

- Check for difference in font and font sizes
- Check Transition orientations in Flowcharts
- Check for display of non-default block attributes
- Check for proper labeling on Signal lines
- Check for propagated labels on Signal lines
- Check default Transition placement on Stateflow Charts
- Check setting Stateflow Graphical Function return value
- Check for proper use of Switch Blocks
- Check for proper use of Signal Busses and Mux block usage

For more information, see “MathWorks Automotive Advisory Board Checks” in the Simulink Verification and Validation documentation.

Improved Selection-Based Linking

To create links between a model and a Microsoft® Word or Microsoft® Excel® file, you can open the file from within both the model and the requirements document. The Requirements Management Interface (RMI) establishes communication with the appropriate application when you initiate selection-based linking.

For more information, see in the Simulink Verification and Validation documentation.

Enhanced Model Coverage Report

The Model Coverage report now includes information about:

- Model being analyzed
- Simulation optimization options

- Model coverage options

For more information, see “Understanding Model Coverage Reports” in the Simulink Verification and Validation documentation.

Version 2.3 (R2008a) Simulink Verification and Validation Software

This table summarizes what's new in Version 2.3 (R2008a):

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

New features and changes introduced in this version are

- “Enhanced Coverage Support for Referenced Models” on page 16
- “New Requirements Submenu in Model Explorer” on page 17
- “Model Advisor Checks for Modeling Standards Enhanced” on page 17
- “API for Customizing Model Advisor Enhanced” on page 18

Enhanced Coverage Support for Referenced Models

The previous release introduced coverage support for referenced models, but only by means of functions that you invoke programmatically. This release includes the following enhancements to coverage support for referenced models:

- Redesigned Coverage Settings dialog box now includes controls that allow you to enable coverage for referenced models graphically (see “Coverage Settings Dialog Box” in the *Simulink Verification and Validation User’s Guide*).
- New Coverage by Model summary that allows you to navigate easily to coverage reports associated with referenced models in a hierarchy (see “Types of Coverage Reports” in the *Simulink Verification and Validation User’s Guide*).

New Requirements Submenu in Model Explorer

Full access to the Requirements Management Interface is now available from within the Model Explorer. In this release, a **Requirements** submenu replaces the **Edit requirements** item that appears in Model Explorer context menus. This new submenu provides several options for adding requirements to model elements and specifying link preferences. This same submenu is available by right-clicking objects in a Simulink model or a Stateflow chart. For more information, see “Managing Model Requirements” in the *Simulink Verification and Validation User’s Guide*.

Model Advisor Checks for Modeling Standards Enhanced

The Simulink Model Advisor has been enhanced with new and updated verification and validation checks.

- In the Task Hierarchy tree, the check category **By Product > Simulink Verification and Validation > Modeling Standards** includes the new subcategory **IEC 61508 Checks**.
- The **IEC 61508 Checks** subcategory includes new checks that help enforce and document adherence to coding standards for functional safety in electrical, electronic, and programmable electronic systems, as the IEC 61508 standard outlines. For descriptions of the IEC 61508 checks, see “Model Advisor Checks” in the Simulink Verification and Validation documentation.
- The IEC 61508 checks also appear under the new category **By Task > Model-Based Design for IEC 61508**.
- Some **MathWorks Automotive Advisory Board Checks** have been updated.

For Information on How To...	See...
Develop models and code that comply with industry standards and guidelines, such as the IEC 61508 standard and MathWorks Automotive Advisory Board (MAAB) guidelines	“Developing Models and Code That Comply with Industry Standards and Guidelines” in the Real-Time Workshop Embedded Coder documentation

For Information on How To...	See...
Use the Model Advisor	“Consulting the Model Advisor” in <i>Simulink User’s Guide</i>
Customize the Model Advisor with your own tasks and checks	in the <i>Simulink Verification and Validation User’s Guide</i>

API for Customizing Model Advisor Enhanced

R2008a provides an enhanced API that allows you to customize the behavior of the Model Advisor for checking and reporting on how well your Simulink models are optimized for simulation and code generation. The API provides classes and functions for defining custom checks and tasks, and writing your own callback functions. For more information, see Customizing Model Advisor in the *Simulink Verification and Validation User’s Guide*.

Version 2.2 (R2007b) Simulink Verification and Validation Software

This table summarizes what's new in Version 2.2 (R2007b):

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

New features and changes introduced in this version are

- “Model Coverage Support for Referenced Models” on page 19
- “Model Advisor Checks for Modeling Standards Enhanced” on page 19
- “API for Customizing Model Advisor HTML Reports ” on page 20

Model Coverage Support for Referenced Models

This release introduces model coverage support for referenced models that operate in Normal mode. That is, you can now record coverage for Model blocks whose **Simulation mode** parameter specifies Normal. Toward that end, this release provides three new functions:

- `cvsimref`
- `cv.cvdatagroup`
- `cv.cvtestgroup`

For more information, see “Using Model Coverage Commands for Referenced Models” in the *Simulink Verification and Validation User's Guide*.

Model Advisor Checks for Modeling Standards Enhanced

The Simulink Model Advisor has been enhanced with new and updated verification and validation checks.

- In the Task Hierarchy tree, the check category **By Product > Simulink Verification and Validation > Modeling Standards** includes two new subcategories: **DO-178B Checks** and **MathWorks Automotive Advisory Board Checks**.
- The **DO-178B Checks** subcategory includes new checks that help enforce and document adherence to coding standards for DO-178B, Software Considerations in Airborne Systems and Equipment Certification. If a piece of software will be flying on a commercial aircraft, the development and verification process must comply with DO-178B. For descriptions of the DO-178B checks, see “Model Advisor Checks” in the *Simulink Verification and Validation User’s Guide*.
- The DO-178B checks also appear under the new category **By Task > Safety Critical for DO-178B**.
- Checks listed under **By Product > Simulink Verification and Validation > Modeling Standards** in earlier releases, appear under the new subcategory **MathWorks Automotive Advisory Board Checks**. These checks ensure that Simulink block diagrams adhere to style guidelines published by the MathWorks Automotive Advisory Board (MAAB).
- Some **MathWorks Automotive Advisory Board Checks** have been updated. For example, the check for “hd_0001, Prohibited Simulink Sink and Data Store blocks” was modified to allow Data Store Memory, Data Store Read, and Data Store Write blocks and the check for “db_0146, Triggered or enabled subsystems” was modified to include For Iterator, While Iterator, and Case blocks.

For Information on How To...	See...
Use the Model Advisor	“Consulting the Model Advisor” in <i>Simulink User’s Guide</i>
Customize the Model Advisor with your own tasks and checks	in the <i>Simulink Verification and Validation User’s Guide</i>

API for Customizing Model Advisor HTML Reports

This release provides a new API that allows you to customize Model Advisor HTML reports. The API provides classes and methods for formatting custom

HTML reports, making it easier to create, understand, and maintain Model Advisor HTML reports. See “Formatting Model Advisor Results” in the *Simulink Verification and Validation User’s Guide*.

Version 2.1 (R2007a) Simulink Verification and Validation Software

This table summarizes what's new in Version 2.1 (R2007a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	No	Bug Reports Includes fixes	No

Version 2.0 (R2006b) Simulink Verification and Validation Software

This table summarizes what's new in Version 2.0 (R2006b):

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

New features and changes introduced in this version are

- “Requirement Links Checking” on page 23
- “Modeling Standards Checking” on page 23

Requirement Links Checking

This release introduces Model Advisor tasks for ensuring the consistency and validity of requirement links in a Simulink block diagram. These checks enable you to identify and fix the following situations:

- The requirements document is missing.
- The location (e.g., bookmark, line number, anchor) specified within the requirements document is invalid.
- The description of a selection-based link does not match its requirements document text.
- The requirements document path does not match your preferred path type (i.e., absolute or relative).

See “Consulting the Model Advisor” in *Simulink User’s Guide* for more information about using Model Advisor.

Modeling Standards Checking

This release introduces Model Advisor tasks for ensuring that a Simulink block diagram adheres to the style guidelines published by the MathWorks

Automotive Advisory Board (MAAB). See “Consulting the Model Advisor” in *Simulink User’s Guide* for more information about using Model Advisor. For information about the MAAB modeling style guidelines, see <http://www.mathworks.com/industries/auto/maab.html>.

Version 1.1.2 (R2006a) Simulink Verification and Validation Software

This table summarizes what's new in Version 1.1.2 (R2006a):

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

Version 1.1.1 (R14SP3) Simulink Verification and Validation Software

This table summarizes what's new in Version 1.1.1 (R14SP3):

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

New features and changes introduced in this version are

- “API for Customizing the Model Advisor” on page 26
- “Upgrading from an Earlier Release” on page 26

API for Customizing the Model Advisor

This release provides an API that allows you to customize the behavior of the Model Advisor for checking and reporting on how well your Simulink models are optimized for simulation and code generation. The API provides classes and functions for defining custom checks and tasks, and writing your own callback functions. See in the *Simulink Verification and Validation User's Guide*.

Upgrading from an Earlier Release

After upgrading to V1.1.1 (R14SP3), rerun the Requirements Management Interface setup script by typing the following command in the MATLAB Command Window:

```
rmi setup
```

For more information, see in the *Simulink Verification and Validation User's Guide*.

Version 1.1 (R14SP2+) Simulink Verification and Validation Software

This table summarizes what's new in Version 1.1 (R14SP2+):

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

New features and changes introduced in this version are

- “Support for New Location Types” on page 27
- “PDF Document Support” on page 28
- “Custom Requirements Documents” on page 28
- “Selection-Based Linking” on page 28
- “Navigation from Requirements Documents Using ActiveX and Persistent Identifiers” on page 29
- “System Requirements Block for Displaying Requirements in a Diagram” on page 29
- “DOORS Links Without a Surrogate” on page 30
- “DOORS Synchronization Changes” on page 30
- “Menu Additions” on page 31

Support for New Location Types

In previous releases, each document type had a single way of identifying locations. In this release, you can choose from several ways of identifying a location based on the type of document. For example, you can specify a line number location or a unique string location for a text file. You select the location type using a drop-down menu in the Requirements dialog box. For backward compatibility, the default location type is the same as previous releases.

The following table lists the new location types.

Document	Location Type	Format
Microsoft Word file	Bookmark	Bookmark label, for example, mybookmark
	Page number	Page number, for example, 156
Microsoft Excel file	Named cell	Cell label, for example, totalSales
	Explicit range	Spreadsheet range, for example, A5 or B1:C4
Text file	Line number	Line number, for example, 21538
PDF file	Page number	Page number, for example, 156
	Named destination	Named destination label, for example, G5.1673

PDF Document Support

PDF requirement documents are supported in this release. You can specify either a page number location or a named destination location within a document.

Custom Requirements Documents

Custom requirement documents let you extend the requirement interface to new document types by supplying the M-code that is invoked to navigate to the document. For more information, see *Linking to Custom Types of Requirements Documents* in the *Simulink Verification and Validation User's Guide*.

Selection-Based Linking

Selection-based linking lets you create links to the currently selected text in a Word document, active cell in an Excel® workbook, or last selected object in Telelogic® DOORS® software without using the Requirements dialog box. This is the recommended way to establish requirement links to these documents.

When you use selection-based linking, the active Word document or Excel workbook is modified to include a new bookmark or named cell that uniquely identifies the location in the document. You can optionally modify the document to provide an icon for navigating from the requirement to the Simulink object. For more information, see Selection-Based Linking in the *Simulink Verification and Validation User's Guide*.

Navigation from Requirements Documents Using ActiveX and Persistent Identifiers

The Simulink Verification and Validation software supplies an ActiveX® control to enable navigation from a requirements document to an object in a Simulink model. The ActiveX control is automatically inserted into Microsoft Word and Excel documents when you use selection-based linking.

You can use the ActiveX control in other applications to support custom interfaces between documents and Simulink models.

The Requirements Management Interface automatically creates unique identifiers for external navigation whenever you add a requirement link to a model object. The unique identifiers ensure that the correct item will be found after its name has been modified. The identifier is embedded in the property of the ActiveX control.

System Requirements Block for Displaying Requirements in a Diagram

The System Requirements block in the new Simulink Verification and Validation block library lets you view the requirements for a subsystem or model directly on the block diagram for convenience, printing, and easy navigation.

When you place the System Requirements block in a diagram, it automatically updates the requirements list as you add, modify, or delete requirements for the model or subsystem. Double-clicking a requirement label in the System Requirements block navigates to the requirements document. For more information, see the System Requirements block reference page in the *Simulink Verification and Validation User's Guide*.

DOORS Links Without a Surrogate

In this release, you can establish requirement links directly to items in a Telelogic DOORS formal module without using a surrogate module. You can combine DOORS links with links to other document types and add them before or after the optional synchronization.

DOORS Synchronization Changes

Telelogic DOORS software synchronization is now an optional process that is needed only if you want to enable further analysis within the DOORS software, use various tracking tools that are built on top of the DOORS software, or use the DOORS software as an alternative to storing requirements information in the model.

Synchronization Settings

Several synchronization settings are available to control the way the surrogate module is created and managed. You can configure these settings by using the DOORS settings dialog box, which is automatically opened whenever you start synchronization. The synchronization settings are saved with the model.

Control over Model Detail

You can control the objects that are inserted into the DOORS surrogate module. In prior releases, all the model objects were inserted into the surrogate, resulting in extremely large and detailed surrogate modules and long synchronization times. Now you can specify that only the items with DOORS requirement links are placed in the surrogate, or you can choose a desired detail level to make the surrogate better reflect the model.

Synchronization of Link Information

By default, links between DOORS surrogate items and DOORS requirement items are imported into the Simulink software during synchronization. Similarly, links between model objects and DOORS requirement items are exported to the DOORS software during synchronization. You can disable these options by using the DOORS settings dialog box.

When both options are enabled, link information is merged between the Simulink model and the DOORS surrogate modules so that each representation has complete linking information.

Ability to Specify Surrogate Path

You can choose the surrogate module arbitrarily by browsing the hierarchy in the DOORS software. It is identified uniquely with its creation number that is stored in the model. It is no longer necessary to ensure that the DOORS software is started in a particular project.

Menu Additions

In this release, the Simulink Verification and Validation software provides some additional menu items to improve usability and simplify the workflow.

The Simulink **Tools** menu now contains a **Requirements** item that provides access to several commonly used utilities.

- **Link settings** — Opens the Selection-based linking dialog box, which lets you open the external applications and specify preferences for selection-based linking.
- **Generate Report** — Generates a report on all the requirements associated with the model and its blocks.
- **Highlight model** — Highlights all the blocks in the Simulink diagram that have requirements associated with them.
- **Synchronize with DOORS** — Synchronizes the Simulink model with a formal module in a Telelogic DOORS project.

When you right-click a Simulink or Stateflow object and select **Requirements** from the resulting pop-up menu, you see a list of requirement links for the selected object and some additional menu items.

- **Add link to Word selection** — Makes a selection-based link to a Microsoft Word document.
- **Add link to active Excel cell** — Makes a selection-based link to a Microsoft Excel document.

- **Add link to current DOORS object** — Makes a selection-based link to a Telelogic DOORS object.
- **Edit/Add links** — Opens the Requirements dialog box.
- **Link settings** — Opens the Selection-based linking dialog box, which lets you open the external applications and specify preferences for selection-based linking.

Version 1.0.2 (R14SP2) Simulink Verification and Validation Software

This table summarizes what's new in Version 1.0.2 (R14SP2):

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

Version 1.0.1 (R14SP1) Simulink Verification and Validation Software

This table summarizes what's new in Version 1.0.1 (R14SP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems	Related Documentation at Web Site
No	No	Fixed bugs	No

Version 1.0 (R14) Simulink Verification and Validation Software

This table summarizes what's new in Version 1.0 (R14):

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

New features and changes introduced in this version are

- “Improved Requirements Management Interface ” on page 35
- “New Verification Manager” on page 35
- “New Model Coverage Features” on page 36
- “Additional Bug Fixes” on page 37

Improved Requirements Management Interface

The user interface for requirements management has been updated and integrated with Model Explorer. The new interface includes requirement descriptions and links to Microsoft Word (.doc), Microsoft Excel (.xls), and HTML documents, which are mapped directly to Simulink and Stateflow model elements. The new requirements management interface is fully compatible with models that already map requirements using the earlier interface. For a detailed description of this new feature, see Managing Modeling Requirements in the *Simulink Verification and Validation User's Guide*

New Verification Manager

The GUI interface for the Signal Builder block now includes a new Verification Manager to manage the verification blocks in a model. From this central location, you can construct configurations of verification blocks to accompany each test group. Each of these configurations enables, disables, and override enables individual verification blocks to assert during testing. For a detailed

description of this new feature, see Managing Verification Blocks in the *Simulink Verification and Validation User's Guide*.

New Model Coverage Features

Signal Range Analysis Report

This new feature provides a report at the bottom of the standard Model Coverage report with the maximum and minimum signal values at each block in the model measured during simulation.

For details on this new feature, see “Signal Range Analysis” in the *Simulink Verification and Validation User's Guide*.

N-Dimensional Lookup Table Report

This report section displays an interactive chart that summarizes the extent to which elements of a lookup table are accessed. The report contains up to n two-dimensional tables representing the elements of the lookup table. Each cell contains a shade of the color green representing the number of execution counts for its lookup value. If you click an individual table cell, you receive a dialog that displays the index location of the cell and the exact number of execution counts generated for it during testing.

For details on this new feature, see N-Dimensional Lookup Table Report in the *Simulink Verification and Validation User's Guide*.

Colored Simulink Diagram Coverage Display

Model coverage displays results for individual blocks directly in Simulink diagrams as follows:

- Highlights (colors) blocks that have received model coverage during simulation.
- Provides a context-sensitive display of summary model coverage information for each block.

For details on this new feature, see “Colored Simulink Diagram Coverage Display” in the *Simulink Verification and Validation User's Guide*.

Additional Bug Fixes

This version includes additional bug fixes, listed here:

Problems with Objects Not Synchronizing

In many cases, Simulink blocks and especially Stateflow objects (states, junctions, transitions, and so on) did not synchronize and appear in the DOORS synchronized module. This has been fixed by the new Requirements Management Interface.

Problems with the Navigator

Numerous bugs have been reported with the Requirements Navigator GUI. This GUI has been deprecated in favor of integrating requirements directly into Simulink models with the new Requirements Management Interface.

Problems with Navigating to Requirements

Numerous bugs have been reported with navigation to text, HTML, and Excel files requirements documents through the old Requirements Management Interface Navigator. These issues have been fixed in the new Requirements Management Interface.

Compatibility Summary for Simulink Verification and Validation 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 V2.6 (R2009b)	See the Compatibility Considerations subheading for each of these new features or changes: <ul style="list-style-type: none"> • “Force Block Reduction Off During Simulation” on page 5 • “Licensing Revised for the Model Advisor” on page 7
V2.5 (R2009a)	None
V2.4 (R2008b)	None
V2.3 (R2008a)	None
V2.2 (R2007b)	None
V2.1 (R2007a)	None
V2.0 (R2006b)	None
V1.1.2 (R2006a)	None
V1.1.1 (R14SP3)	None
V1.1 (R14SP2+)	None
V1.0.2 (R14SP2)	None
V1.0.1 (R14SP1)	None
V1.0 (R14)	None