Simulink® Verification and Validation Release Notes

The Simulink Verification and Validation 1.1.1 Release Notes describe the changes introduced in the latest version of Simulink Verification and Validation. The following topics are discussed in these Release Notes:

- "New Features" on page 1-2
- "Major Bug Fixes" on page 1-3
- "Upgrading from an Earlier Release" on page 1-4
- "Known Software and Documentation Problems" on page 1-5

The Simulink Verification and Validation Release Notes also provide information about recent versions of the product, in case you are upgrading from an earlier version:

- Chapter 2, "Simulink Verification and Validation 1.1 Release Notes"
- Chapter 3, "Simulink Verification and Validation 1.0.2 Release Notes"
- Chapter 4, "Simulink Verification and Validation 1.0.1 Release Notes"
- Chapter 5, "Simulink Verification and Validation 1.0 Release Notes"

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Simulink Verification and Validation 1.1.1 Release Notes

New Features

This section introduces the new features and enhancements added in Version 1.1.1 (Release 14 with Service Pack 3).

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 "Customizing the Model Advisor" in the Simulink Verification and Validation documentation.

Major Bug Fixes

To view major bug fixes made in R14SP3 for Simulink Verification and Validation, use the Bug Reports interface on the MathWorks Web site.

Note If you are not already logged into Access Login, when you link to the Bug Reports interface (see below), you will be prompted to log in or create an Access Login account.

After you are logged in, use this Bug Fixes link. You will see the bug report for Simulink Verification and Validation. The report is sorted with fixed bugs listed first, and then open bugs.

For bug fixes added prior to R14SP2, see

- R14SP1 Major Bug Fixes
- R14 Major Bug Fixes

Upgrading from an Earlier Release

After upgrading to R14SP3, rerun the DOORS setup script by typing the following command in the MATLAB Command Window:

```
rmi setup
```

Known Software and Documentation Problems

To view important open bugs in R14SP3 for Simulink Verification and Validation, use the Bug Reports interface on the MathWorks Web site.

Note If you are not already logged into Access Login, when you link to the Bug Reports interface (see below), you will be prompted to log in or create an Access Login account.

After you are logged in, use this Bug Reports link. You will see the bug report for Simulink Verification and Validation. The report is sorted with fixed bugs listed first, and then open bugs. You can select the **Status** column to list the open bugs first

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Simulink Verification and Validation 1.1 Release Notes

New Features

This section introduces the new features and enhancements added since Version 1.0.2 (Release 14 with Service Pack 2).

- "Support for New Location Types" on page 2-2
- "PDF Document Support" on page 2-3
- "Custom Requirements Documents" on page 2-3
- "Selection-Based Linking" on page 2-3
- "Navigation from Requirements Documents Using ActiveX and Persistent Identifiers" on page 2-4
- "System Requirements Block for Displaying Requirements in a Diagram" on page 2-4
- "DOORS Links Without a Surrogate" on page 2-5
- "DOORS Synchronization Changes" on page 2-5
- "Menu Additions" on page 2-6

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
Word file	Bookmark	Bookmark label, for example, `mybookmark`
	Page number	Page number, for example, `156`
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 documentation.

Selection-Based Linking

Selection-based linking lets you create links to the currently selected text in Word, active cell in Excel, or last selected object in DOORS 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 documentation.

Navigation from Requirements Documents Using ActiveX and Persistent Identifiers

Simulink Verification and Validation 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 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 documentation.

DOORS Links Without a Surrogate

In this release, you can establish requirement links directly to items in a formal module without using a DOORS 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

DOORS synchronization is now an optional process that is only needed if you want to enable further analysis within DOORS, use various tracking tools that are built on top of DOORS, or use DOORS 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 Simulink during synchronization. Similarly, links between model objects and DOORS requirement items are exported to DOORS 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 DOORS hierarchy. It is identified uniquely with its creation number that is stored in the model. It is no longer necessary to ensure that DOORS is started in a particular project.

Menu Additions

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

The **Tools** menu on the Simulink diagram 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 DOORS project.

When you right-click on 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 Word document.

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

- **Add link to current DOORS object** — Makes a selection-based link to a 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.

Major Bug Fixes

Simulink Verification and Validation 1.1 includes several bug fixes made since Version 1.0.2. This section lists the important Version 1.1 bug fixes.

If you are viewing these Release Notes in PDF form, please refer to the HTML form of the Release Notes, using either the Help browser or the MathWorks Web site and use the link provided.

Simulink Verification and Validation 1.0.2 Release Notes

Major Bug Fixes

Simulink Verification and Validation 1.0.2 includes several bug fixes made since Version 1.0.1. This section lists the important Version 1.0.2 bug fixes.

If you are viewing these Release Notes in PDF form, please refer to the HTML form of the Release Notes, using either the Help browser or the MathWorks Web site and use the link provided.

Simulink Verification and Validation 1.0.1 Release Notes

Major Bug Fixes

Simulink Verification and Validation 1.0.1 includes several bug fixes made since Version 1.0. This section lists the important Version 1.0.1 bug fixes.

If you are viewing these Release Notes in PDF form, please refer to the HTML form of the Release Notes, using either the Help browser or the MathWorks Web site and use the link provided.

Simulink Verification and Validation 1.0 Release Notes

These Release Notes describe Version 1.0 of Simulink Verification and Validation. The following topics are discussed in these Release Notes:

Introduction to Simulink Verification and Validation

Simulink Verification and Validation is a new product introduced in Release 14.

Simulink Verification and Validation includes a new tool called the Verification Manager.

Simulink Verification and Validation also includes two tools that were previously part of other MathWorks products:

- Requirements Manager, which was packaged in the Requirements Management Interface product in Release 13 with Service Pack 1

- Model Coverage Tool, which was part of the Simulink Performance Tools in Release 13 with Service Pack 1

Note Release 14 does not include a product called the Simulink Performance Tools or a product called the Requirements Management Interface. Release 14 includes a new product called Simulink Accelerator, which includes two tools that previously were part of the Simulink Performance Tools.

New Features

This section summarizes features in the new Simulink Verification and Validation Version 1.0 product for Release 14.

- "New Requirements Manager" on page 5-3
- "New Verification Manager" on page 5-3
- "New Model Coverage Features" on page 5-3

New Requirements Manager

The new Requirements Manager replaces the old Requirements Manager Interface (RMI) tool. The new Requirements Manager includes requirement descriptions and links to documents (MS Word (.doc), Excel (.xls), and HTML), which are mapped directly to model elements in Simulink and Stateflow. The new Requirements Manager is fully compatible with models that already map requirements with the old RMI tool. For a detailed description of this new feature, see "Managing Modeling Requirements" in the Simulink Verification and Validation documentation.

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 documentation.

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 Report" in the Simulink Verification and Validation documentation.

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 lookup 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 documentation.

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 documentation.

Major Bug Fixes

Simulink Verification and Validation 1.0 includes bug fixes for assigned to the use of the old Requirements Management Interface tool. This section describes the particularly important categories of Version 1.0 bug fixes.

If you are viewing these Release Notes in PDF form, please refer to the HTML form of the Release Notes, using either the Help browser or the MathWorks Web site and use the link provided.

Additional Bug Fixes

Problems with Objects Not Synchronizing

In many cases, Simulink blocks, and especially Simulink 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 for DOORS 1.0.

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 with the new Simulink Verification and Validation 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 Simulink Verification and Validation Requirements Management Interface.