

IBM® Rational® Rhapsody® Gateway Add On



Simulink Coupling Notes

Rhapsody[®]

**IBM[®] Rational[®] Rhapsody[®]
Gateway Add On**

Simulink Coupling Notes



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Introduction

This technical note describes how to capture the traceability information of requirements from Simulink/Stateflow (The MathWorks) using Rhapsody Gateway.

Some standard operations, such as navigating in a Simulink model from the Rhapsody Gateway tool, require the Simulink tool to be installed. In addition, importing a Simulink model with 'withRtfContents' option also needs Simulink to be installed.

Refer to the *Customization Guide* and run the Coupling example for more information about what is described in this technical note.

Simulink Analysis

This chapter describes how Rhapsody Gateway captures information items from Simulink and how these information items are analyzed to be used as requirements or references to higher level requirements.

This chapter covers the following topics:



- ◆ Getting the information items from Simulink.
- ◆ Configuring Rhapsody Gateway according to the traceability information in Simulink.



Simulink Versions Supported

Rhapsody Gateway supports Simulink R13 version to 2007b version.

Selecting the Simulink Model

To insert a Simulink model, follow these steps:

1. In the Project editor, click on the **Add a document**  button to insert a new document into the Traceability Description Area.
2. Select a **Type of Analysis** based on Simulink.
3. Click on the **File or Directory** field then on the **Browse**  button to select a Simulink file (with the `.mdl` extension) from the Rhapsody Gateway selection window.

Details Modification Files Covers				
	Name	Type of Analysis	File or Directory	lg
	Model	 MySimulink	fuelsys_docreq.mdl	

Specific Parameters of a Simulink Based Type

When you select a type of analysis defined to capture information from Simulink (either a default type or a customized one), you have the opportunity to define additional parameters:

- ◆ **Capture diagrams**—This option allows you to capture the Simulink diagrams. They will be displayed in an additional window when you select a Simulink element in the project workspace. Extraction of information from Simulink with diagrams is longer than the extraction without diagrams.
- ◆ **Get RTF Doc Blocks**—This option allows you to capture the Simulink formatted text of Doc Blocks. Extraction of Doc Blocks information from Simulink is longer than the extraction without this capture because the tool needs to be opened.

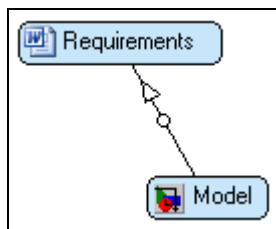
To activate the option, select it then click on the **Value** checkbox.

Details Modification Files Covers								
	Name	Type of Analysis	File or Directory	Ig...	In...	B...	Variable	Value
	Simulink Design	Simulink	cruise_control_r13_v	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Get RTF Doc Blocks	<input checked="" type="checkbox"/>

Adding a Cover

To define traceability, add a cover between the covering document and the covered document.

The Rhapsody Gateway project looks like the following:



Requirements Traceability

Rhapsody Gateway has different ways to perform traceability between high-level requirements and Simulink model elements:

- ◆ Creation of coverage links from Rhapsody Gateway.
- ◆ Capture of a pre-defined traceability tag in the **Description** field of a Simulink block or system **Properties** box. This tag can be typed manually or created automatically through copy-paste or drag&drop actions.

Rhapsody Gateway offers you easier ways to cover requirements if **Requirements Management Interface** (RMI) is installed with your Simulink tool. Refer to next chapter.

Links Created from Rhapsody Gateway

Rhapsody Gateway can create Coverage links using the **Graphical View** (see the *User Manual*).

These links are presented in the Rhapsody Gateway main window with a reference attribute **Internal creation**.

Using the 'Description' Field

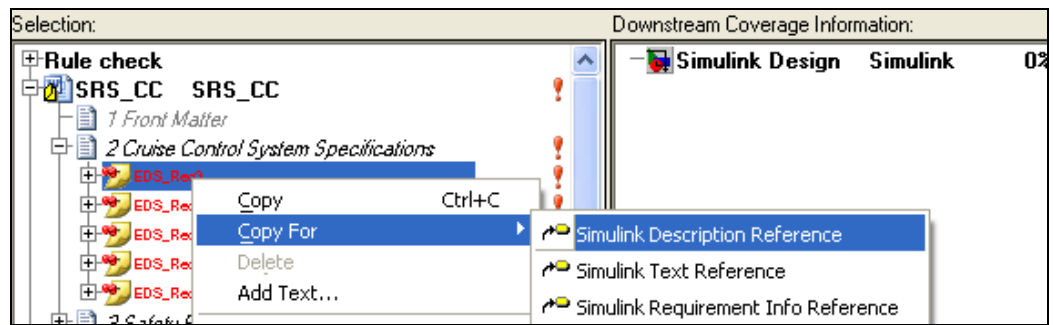
Another method to capture traceability information is to insert dedicated tags in the 'Description' fields of Simulink elements.

Rhapsody Gateway's default configuration considers the following standard:

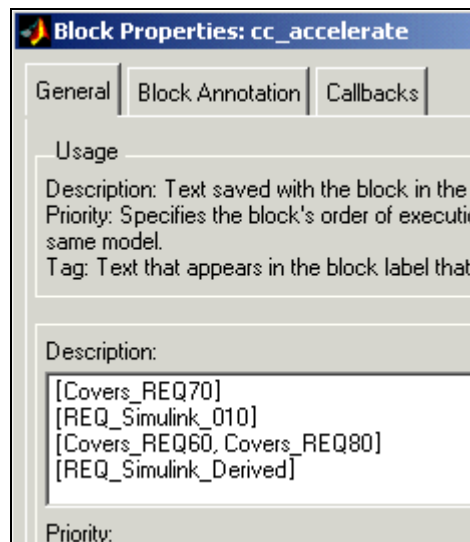
[Covers_XXX] where XXX is the requirement ID.

This can be typed manually by the user or automated using scripts:

1. Select the requirement.
2. Right click and select **Copy For > Simulink Description Reference**.



3. Rhapsody Gateway places in the clipboard a tag [Covers_...]. The user then pastes this tag in the description field of a Simulink element to create the traceability information. This tag is captured by Rhapsody Gateway when you save your Simulink model.



To create a requirement, use the syntax [REQ_<requirementID>].

4. Reload the Rhapsody Gateway project to visualize the traceability.

Depending on your requirements standards, you may need to customize the Simulink default type of analysis to elaborate your syntax. This takes only a few minutes and has to be done just once.

Note

No navigation from Simulink to Rhapsody Gateway is possible if Rhapsody Gateway interfaces Simulink without RMI.