

Integration with Big Lever Software Gears

On this page

- [Connecting asset and system projects](#)
- [Specifying the variation points in the system model](#)
- [Generating a particular product variant](#)

Prerequisites

- An asset model is defined in the Big Lever Software Gears program.
- A system model (a superset or 150% model) is defined in MagicDraw, the modeling tool developed by No Magic Inc.



Modeling tool

MagicDraw as a modeling tool is used in descriptions as an example.

Connecting asset and system projects

To connect asset and system models



Note

This procedure is required when starting the project for the first time.

1. In Big Lever Software Gears, click **Add New Asset**, choose the **MagicDraw Project or Package** type of an asset name, and click **OK**.
2. Open the system project in MagicDraw.
3. Define the Bridge Asset URI. In MagicDraw, select the root package (the Model) of your system project. On the main menu, click **Tools > Gears > Show Project or Package URI**. The URI address appears in the **Gears Output** window. Copy the address and return to the Gears program. Paste the address in the **Bridged Asset URI** box in the **Asset Properties Editor** dialog and click **OK**.
4. Set the Gears focus in MagicDraw. Switch to MagicDraw and, on the main menu, click **Tools > Gears > Set Gears Focus**. In the **Set Gears Focus** dialog, browse to the Gears project and click **Select** after you are done.

Specifying the variation points in the system model

In the system model, in a modeling tool, you must specify variation points and define how the feature choices impact the variation point. Variation points can be set on Blocks.

To set variation points

1. In the Block Definition Diagram (BDD), select an element (either an element in the Model Browser or a symbol on a diagram pane) for a variation point.
2. Open the shortcut menu of the selected element. Click **Gears > Convert to Variation Point**.
3. Provide the variation point logic to define how the feature choices impact this variation point. Select an element declared as a variation point and, in the element's shortcut menu, click **Gears > Edit Logic**.

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- Logic of variation point Class SunRoof
- File Edit Tools Window Help
- Text Structure Graph
- Logic of variation point Class SunRoof
 - guideline:
 - Logic Clauses
 - When
 - (climate == {tropical})
 - Select
- Help
- Help Output

- ### Generating a particular product variant

To preview a particular product variant realization

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- The diagram illustrates the relationship between requirements and their implementation in a car system. It consists of the following elements:
- Car Doors Requirement (R):** Id = "CAR-10075", Text = "The car shall have {doors} doors."
 - Sun Roof Requirement (R):** Id = "CAR-10095", Text = "Car driver shall be able to open and close sun roof"
 - Car Class:** Contains attributes: -engine : Engine [1], -doors : Door [4], -roof : SunRoof [0..1], -maxMass : Integer = 1500, -bodyColor : Color = . It has a red diagonal line across it, indicating it is deprecated or not to be used.
 - Engine Class:** Contains the attribute: -engine : Engine [1]. It has a red diagonal line across it, indicating it is deprecated or not to be used.
 - Engine Subclasses:** Gasoline, Diesel, Electric, and Hybrid. These are subclasses of the Engine class, indicated by hollow triangle arrows pointing from each subclass to the Engine class.
 - SunRoof Class:** Contains the attribute: -engine : Engine [1]. It has a red diagonal line across it, indicating it is deprecated or not to be used.
 - Relationships:**
 - A dashed line with the stereotype «satisfy» connects the Car Doors requirement to the Sun Roof requirement.
 - A dashed line with the stereotype «satisfy» connects the Car Doors requirement to the Car class.
 - A dashed line with the stereotype «satisfy» connects the Sun Roof requirement to the Car class.
 - A solid line with the stereotype «satisfy» connects the Car class to the Engine class.
 - A solid line with the stereotype «satisfy» connects the Car class to the SunRoof class.

Notation of elements in the model after actuating the project by a defined product configuration.

To generate a particular product variant

1. On the main menu, click **Tools > Gears > Actuate to Staging Area**.
2. In the **Actuate to Staging Area** dialog, select a product to actuate, specify a location to save a product variant, and type a suffix and/or prefix to add to a project name if needed. Click **OK** after you are done.



Note

You can also generate a particular project variant in the Gears program. In this way, you can cut not only the system model in MagicDraw, but all artifacts connected to the Gears project - requirements, documentation, etc.

Related pages

- [Integration with pure:variants](#)
- [Creating variants using transformations](#)

Other resources

- [Product Line Engineering Meets MBSE — the Best of Both Worlds](#). A record of the webinar.