Distribution Extensions

A Distributed Property is a property of a Block or a Value Type used to apply a probability distribution to the values of the property. Specific distributions can be defined by applying a Subclass of the «DistributedProperty» stereotype to a property according to OMG SysML 1.4, E.7 Distribution Extensions. Magic Model Analyst supports three types of distributions: Uniform, Normal, and Triangular.

To set a distributed property

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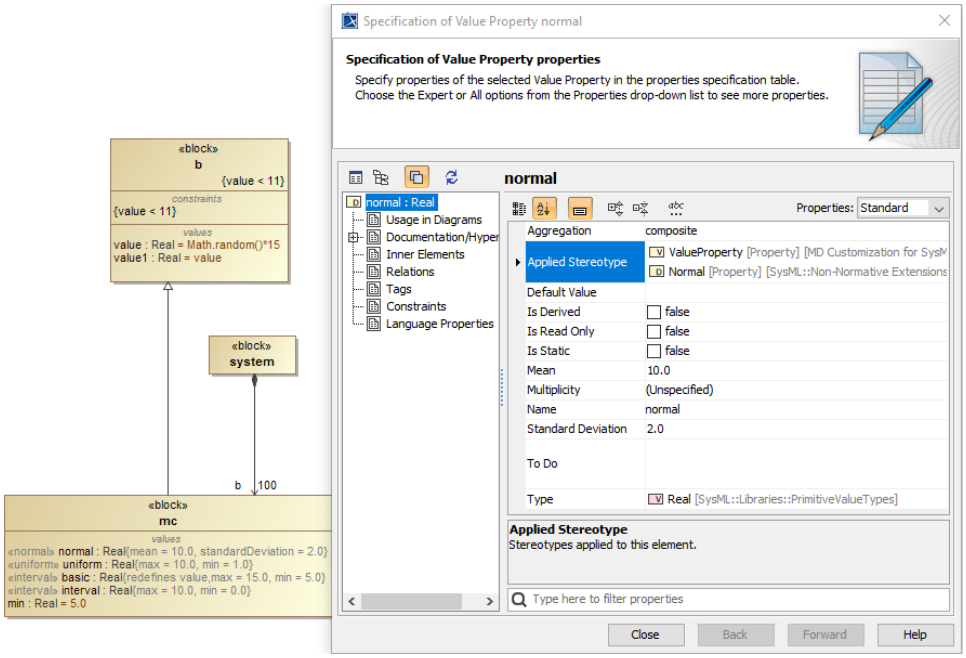
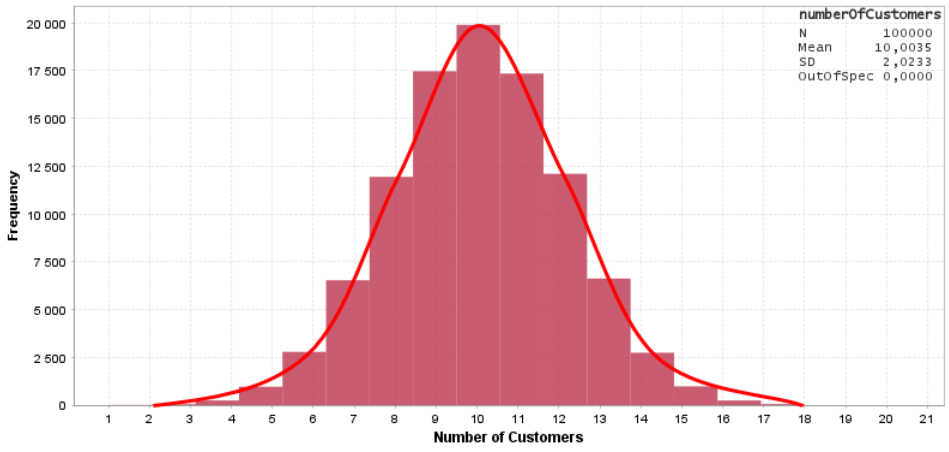
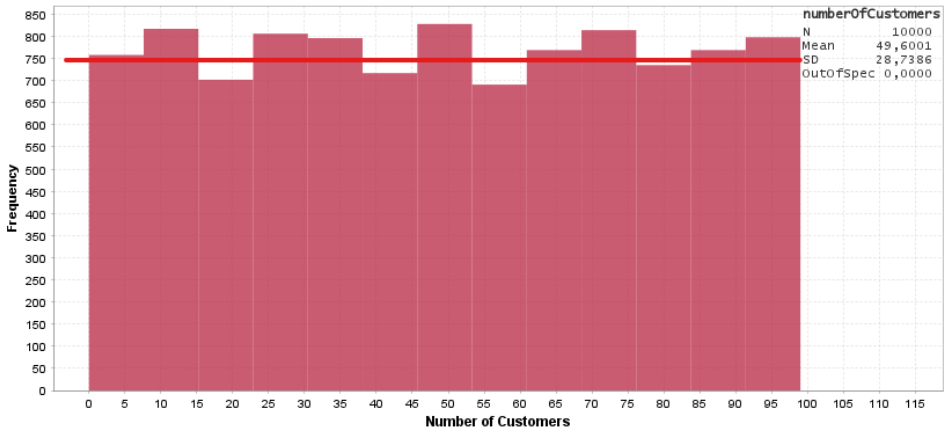
1. Select a property and double-click it to open the Specification window.
2. Select **Applied Stereotype** and click [...] to include a distribution property.
3. Specify the required properties. These include **Mean**, **Standard Deviation**, etc. for «normal» and **Min**, **Max**, etc. for other distributed properties.



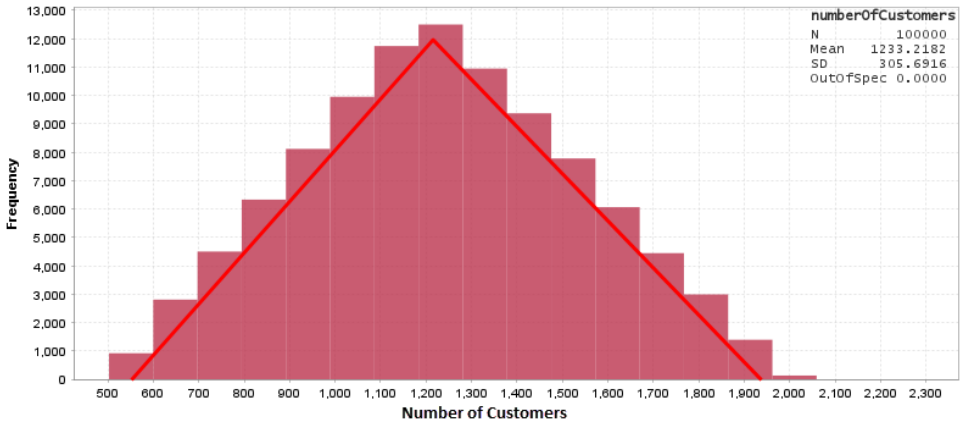
4. Click **Close**. The distributed property will be applied.
5. Run the simulation model. Depending on the applied stereotype, the distributed properties will be initialized with a random value, such as normal distribution, constant distribution between min & max values. You can review sampling results by running the model with association end multiplicity (e.g., 100), and keep the result with «CSVExport» for analysis.
6. Results of the distributed property «normal» (with 100000 samples) with a Mean value of 10 and a Standard Deviation value of 2.



7. You can apply a «uniform» distributed property stereotype with Min and Max properties (e.g., 0 and 100) to plot a uniform distribution chart.



8. You can apply a «triangular» distributed property stereotype with Min, Max, and Peak properties to plot a triangular distribution chart. The sample project used is *<modeling_tool_installation_directory>\samples\simulation\AircraftProjectAnalysis.mdzip*.



Related pages

- Supported SysML elements
- Requirements traceability from the Variables pane