

What's New In MapleSim™



New in MapleSim 6.3

MapleSim™ 6.3 contains significant enhancements to the simulation engine in MapleSim.

- **For all models, the symbolic pre-processing time prior to simulation has been reduced**, so the numerical simulation phase will begin sooner. This improvement is especially significant for models that include Modelica-based custom components defined using functions and algorithms.
- **Simulations of models that use the MapleSim Hydraulics Library from Modelon run significantly faster** due to a dramatic improvement in the pre-processing time for these models.
- **Code generation for all target platforms has been improved** so that more model parameters are modifiable when the simulation is run outside of MapleSim.
- **Support for Modelica-based custom components has been expanded** so that a wider class of functions can now be included in the component definition.

New in MapleSim 6.2

Faster Model Development

With usability improvements across many different aspects of the interface, MapleSim 6.2 speeds up model development of both simple and complex models.

Easier Connections

- Insert a new component between two connected components simply by dropping it onto the connecting line. MapleSim will automatically break and reform the connections appropriately to hook in the new component.
- See instantly if your intended connection will be compatible using a new popup that displays the port dimensions when you hover over the connection point.
- Easily join a dangling connection to an empty port or to another unattached line just by dragging to extend the connection.

Better Parameter Management

- Reorder your parameter list simply by dragging the parameter to the desired row.
- Delete parameters from the list easily with the click of a button.

More Intuitive Line Routing

- Invoke automatic line rerouting algorithms to clean up a subset of your diagram while leaving the rest untouched.
- When moving a component, improved rerouting algorithms make changes only when necessary, rather than automatically redrawing all affected connections.

- Copies of your model diagram retain the same routing as the original.
- Snap to Grid now applies to connections as well as components

Improved Diagram Viewing

- Easily scale your model diagram to fit the workspace, so you can see the entire diagram at once.
- Return to the default zoom factor at any time.

Mass and Inertia for CAD Geometry Components

- The CAD Geometry component now automatically takes into account physical quantities such as mass and inertia during the simulation process.
- You simply specify a density parameter for the component, and then MapleSim uses the density and the information in the .stl file to automatically calculate the volume, mass, and inertia of the rigid body.
- MapleSim incorporates the mass and inertia information in the simulation to give you a truer representation of how your model behaves.

Updated Modelica® Code View

- Updates to the Modelica Code View make it easier to read and work with the Modelica code for your model by displaying code annotations. Annotations provide an extra level of code markup and can be used to convey additional information on the appearance of the model.

New Componentets

- **Multibody:** A new axis component will display a set of Cartesian coordinate axes to help you visualize the local coordinate frame.
- **Electrical:** Five new semiconductor circuit components model the effects of junction temperature.

Linearizing Subsystems

- For some applications, such as designing a controller, it is helpful to have a linearized version of a subsystem to achieve increased speed and scalability. The MapleSim API has been updated to make it easy to programmatically linearize a MapleSim subsystem.
- A new API command returns the linearized form of the linked subsystem as a DynamicSystems object in Maple™, where it can then be analyzed and then returned back to MapleSim as a component.

MapleSim Hydraulics Library® from Modelon

Maplesoft has formed a technology partnership with Modelon, a renowned developer of high-quality Modelica libraries, to provide industry-tested hydraulics components within the system-level modeling environment of MapleSim. With the MapleSim Hydraulics Library from Modelon, available as a separate add-on component library, you can seamlessly incorporate advanced hydraulics components into your MapleSim models while continuing to take full advantage of all the modeling, analysis, and simulation abilities of MapleSim.

With the MapleSim Hydraulics Library from Modelon you can:

- Choose from over 150 components for modeling pumps, motors, cylinders, restrictions, valves, hydraulic lines, lumped volumes, and sensors
- Incorporate compressible oils and cavitation effects into your models
- Select from a list of pre-defined standard hydraulics oils or define your own
- Easily reuse, customize, and extend components to suit your specific needs



Toolchain Connectivity

MapleSim Connector

- **Feedthrough port designation:** The MapleSim Connector now designates all input ports that do not affect the outputs as non-feedthrough. This identification helps Simulink® deal with algebraic loops between Simulink® blocks more effectively.
- **External lookup tables:** A new option exports the lookup tables used by your model to a file that your compiled code reads at run time. This allows you to modify the table data between simulation runs without having to recompile your model.

MapleSim Connector for FMI

- More solvers are now available when generating an FMU. In addition to Euler, the RK2, RK3, RK4, and Implicit Euler fixed-step solvers are also available.

MapleSim Connector for JMAG®-RT

- New specialized components have been added to simulate motors designed in JMAG-RT to replace the previous generic motor component, so model diagrams are more understandable and settings are always applicable to your particular component.
- There are five new components:
 - **Permanent Magnet Synchronous Motor:** a permanent-magnet, three-phase, synchronous electric motor
 - **Stepper Motor:** a two-phase stepper motor
 - **Switched Reluctance Motor:** a multiphase switched-reluctance stepper motor
 - **Linear Synchronous Motor:** a three-phase, linear synchronous electric motor
 - **Solenoid:** a single-phase, linear solenoid

MapleSim Connector for VI-CarRealTime™

- Support has been expanded to include VI-CarRealTime v15. You can specify which version you are using to take full advantage of that particular release.
- You can specify if you want a 32-bit or 64-bit binary, according to the version of VI-CarRealTime you are using.

MapleSim Connector for B&R Automation Studio

- Numerous improvements were made to improve the efficiency of the generated code.
- Support has been expanded to include B&R Automation Studio 4.