

Simulink® Compiler™ Release Notes



MATLAB® & SIMULINK®



How to Contact MathWorks



Latest news: www.mathworks.com
Sales and services: www.mathworks.com/sales_and_services
User community: www.mathworks.com/matlabcentral
Technical support: www.mathworks.com/support/contact_us



Phone: 508-647-7000



The MathWorks, Inc.
1 Apple Hill Drive
Natick, MA 01760-2098

Simulink® Compiler™ Release Notes

© COPYRIGHT 2020–2021 by The MathWorks, Inc.

The software described in this document is furnished under a license agreement. The software may be used or copied only under the terms of the license agreement. No part of this manual may be photocopied or reproduced in any form without prior written consent from The MathWorks, Inc.

FEDERAL ACQUISITION: This provision applies to all acquisitions of the Program and Documentation by, for, or through the federal government of the United States. By accepting delivery of the Program or Documentation, the government hereby agrees that this software or documentation qualifies as commercial computer software or commercial computer software documentation as such terms are used or defined in FAR 12.212, DFARS Part 227.72, and DFARS 252.227-7014. Accordingly, the terms and conditions of this Agreement and only those rights specified in this Agreement, shall pertain to and govern the use, modification, reproduction, release, performance, display, and disclosure of the Program and Documentation by the federal government (or other entity acquiring for or through the federal government) and shall supersede any conflicting contractual terms or conditions. If this License fails to meet the government's needs or is inconsistent in any respect with federal procurement law, the government agrees to return the Program and Documentation, unused, to The MathWorks, Inc.

Trademarks

MATLAB and Simulink are registered trademarks of The MathWorks, Inc. See www.mathworks.com/trademarks for a list of additional trademarks. Other product or brand names may be trademarks or registered trademarks of their respective holders.

Patents

MathWorks products are protected by one or more U.S. patents. Please see www.mathworks.com/patents for more information.

R2021b

Improvements for FMU Export	1-2
Export nested FMU	1-2
Save and restore FinalState in Dataset format in deployed applications	1-2
Tune block parameters at simulation runtime via workspace variables	1-2

R2021a

Find All the Tunable Variables with simulink.compiler.getTunablevariables function	2-2
Export Simulink Models to FMUs with C Source Code	2-2
Non-real input and output variables are now exported with discrete variability	2-2

R2020b

Automatically Generate a MATLAB App for the Model	3-2
Specify Runtime Callbacks in the Deployed Applications	3-2
Win32 toolchain support: Generate 32-bit FMU with Microsoft Visual Studio Compilers	3-2

Introducing Simulink Compiler	4-2
Supports sim Command API	4-2
Export Models to FMU	4-2

R2021b

Version: 1.3

New Features

Bug Fixes

Improvements for FMU Export

In R2021b, FMU Export functionality has following improvements:

- Simulink® Compiler™ now supports FMU parameter selection and configuration on the FMU export dialog.
- Export FMU variables now have units and variable description.
- You can now export FMU with MATLAB® project.

Export nested FMU

In R2021b, you can export a Simulink model with a FMU Import blocks as nested standalone FMU. When exporting a nested FMU, Simulink packs all dependent inner FMUs into the resources/ folder of the nested FMU. When the nested FMU is instantiated in a simulation environment, all inner FMUs will share the same callback functions provided by the environment, for example, logger and memory allocation functions.

Save and restore FinalState in Dataset format in deployed applications

In R2021b, Simulink Compiler allows you to save and restore the FinalState of a model in Dataset format in deployed applications. Dataset format enables you to save and restore the state even if there are virtual bus elements.

Tune block parameters at simulation runtime via workspace variables

In R2021b, you can tune block parameters at simulation runtime via workspace variables with the `simulink.compiler.modifyParameters` function. You can use modify variables only during a running simulation. For more information, see `simulink.compiler.modifyParameters`.

R2021a

Version: 1.2

New Features

Bug Fixes

Find All the Tunable Variables with `simulink.compiler.getTunableVariables` function

in R2021a, the function `simulink.compiler.getTunableVariables` enables you to find the names of all the tunable variables along with their nominal values. You can use `simulink.compiler.getTunableVariables` to find variables for simulations before and after deployment.

Export Simulink Models to FMUs with C Source Code

In R2021a, Simulink Compiler enables you to export a Simulink model to FMU along with C source code. You can check **Save Source Code** in the **Export Model to FMU Co-Simulation** window or use the command line API, `exportToFMU2CS('mdlName', 'SaveSourceCodeToFMU', 'on')` to export the model to FMU with C source code.

Non-real input and output variables are now exported with discrete variability

During standalone FMU export, non-real input and output variables are exported with discrete variability, instead of continuous variability.

R2020b

Version: 1.1

New Features

Automatically Generate a MATLAB App for the Model

In R2020b, you can use the `simulink.compiler.genapp` function in Simulink Compiler to automatically generate a MATLAB App, that can be compiled and deployed. The `simulink.compiler.genapp` function analyzes the Simulink Compiler model, creates its rapid accelerator simulation target, and generates a MATLAB App. You can use the generated App to simulate the model in rapid accelerator simulation mode with different inputs, parameters, and initial conditions and to plot the results. For more information, see `simulink.compiler.genapp`.

Specify Runtime Callbacks in the Deployed Applications

In R2020b, you can specify callback functions for root inport blocks and root outport blocks, in the deployable applications. The callback functions are specified as MATLAB functions. Use the callback functions to set the values at the root inport blocks and to obtain the values at the root outport blocks at every step. With the callback functions, you can specify input data and view the progress of the simulation while the simulation is running, and view the progress of the simulations.

Win32 toolchain support: Generate 32-bit FMU with Microsoft Visual Studio Compilers

Simulink Compiler now supports exporting Co-simulation FMUs with 32-bit binaries. This enables the FMUs to run on legacy hardware.

R2020a

Version: 1.0

New Features

Introducing Simulink Compiler

Simulink Compiler enables you to share Simulink simulations as standalone executables. You can build the executables by packaging the compiled Simulink model and the MATLAB code used to set up, run, and analyze a simulation. Standalone executables can be complete simulation apps that use MATLAB graphics and UIs designed with MATLAB App Designer. To cosimulate with an external simulation environment, you can generate standalone Functional Mockup Unit (FMU) binaries that adhere to the Functional Mockup Interface (FMI) standard.

To provide browser-based access to your deployed simulation, you can create a web app and host it with MATLAB Web App Server™. Simulink simulations can be packaged into software components for integration with other programming languages (with MATLAB Compiler). Large-scale deployment to enterprise systems is supported through MATLAB Production Server™.

Supports `sim` Command API

Simulink Compiler only supports `sim` function syntax that takes `Simulink.SimulationInput` object and returns `Simulink.SimulationOutput` object.

Any APIs making a structural change to the model, such as `add_block`, `set_param` are not supported.

Export Models to FMU

As a part of Simulink Compiler now you can export models to Functional Mock-up Unit (FMU) that supports Co-Simulation in FMI version 2.0.