



## What are the available interfaces and APIs to interact with Speedgoat & Simulink Real-Time as a Test Engineer in R2020b onwards?



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MathWorks Support Team **STAFF**

on 6 Sep 2023

Edited: MathWorks Support Team **STAFF** on 28 Dec 2023**Accepted Answer:** MathWorks Support Team **STAFF**

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What are the available user interfaces and APIs to interact with a real-time application on a Speedgoat target computer in R2020b onwards, without needing the full suite of Simulink Real-Time licenses (MATLAB, Simulink, MATLAB Coder, Simulink Coder, Simulink Real-Time)?

For example, a Test Engineer will not need to open the real-time model in Simulink, modify it, and rebuild it. They will only need an interface or API to interact with the compiled MLDATX real-time application running on the Speedgoat target computer.

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### ✓ Accepted Answer

MathWorks Support Team **STAFF**

on 11 Dec 2023

Edited: MathWorks Support Team **STAFF** on 28 Dec 2023

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Simulink Real-Time went through a major product update in the R2020b release. As part of this, a new "Test Engineer" license model was introduced: Simulink, MATLAB Coder, and Simulink Coder are no longer required if you don't need to modify and rebuild the real-time application MLDATX file.

The following workflows require only MATLAB and Simulink Real-Time to be installed and licensed on the host computer:

## 1. Simulink Real-Time Explorer

The easiest interactive way to interact with a real-time application, without extra development effort, is by using the Simulink Real-Time Explorer GUI:

- Simulink Real-Time Explorer

## 2. MATLAB API for Simulink Real-Time

To develop a custom script using MATLAB code, or interact with a real-time application from the MATLAB command window, the the following APIs are available:

- Install, load, start, or stop real-time applications: 'srealtime' target object
- Apply Input Stimulation: Target.Stimulation (R2021a+)
- Tune Parameters: setparam or Parameter Sets (R2021a+)
- Signal Logging & Live Streaming: Simulation Data Inspector, instrument objects, and start/stopRecording API (R2022a+)
- Import and Visualize File Logs: Target.FileLog.import

## 3. MATLAB App

The recommended way to create a fully customizable GUI to interact with applications on Speedgoat is with MATLAB App Designer. Using App Designer gives you access to the full MATLAB API for Simulink Real-Time as mentioned in item 2. To facilitate the app development, use the handy automatic **App Generator** (R2022a+) and dedicated Simulink Real-Time App Components (R2021b+). For more information, see:

- How can I create an App Designer app to control, tune, and visualize my Simulink Real-Time application?
- Create App Designer Instrument Panels by Using App Generator

## 4. MATLAB Engine API

You can write a script or design GUIs in languages like C#, C/C++, or Python using MATLAB External Language Interfaces. This method also gives you access to the full MATLAB API for Simulink Real-Time as mentioned in item 2. For more information, see:

- External Language Interfaces with MATLAB
- Run Real-Time Application by Using Python Script

## 5. Simulink Real-Time ASAM XIL API (R2021b+)

Starting from R2021b, you can interface Simulink Real-Time models with automatic test cases from third-party software that supports the ASAM XIL API (e.g. TraceTronic ECU-TEST or Picketec TPT). To use this workflow, you need to install the Simulink Real-Time XIL API support package. It provides an API that allows control of real-time applications using a C# program. For more information, see:

- Install the Simulink Real-Time Support Package for ASAM XIL Standard
- Control Real-Time Application by Using C# Code

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