

# VehicleSim System Requirements & Software Compatibility

## VehicleSim Products

- CarSim, TruckSim, and BikeSim

## Operating Systems

- Windows 7 SP1 (32-bit and 64-bit), 8 (32-bit and 64-bit), and 10 (32-bit and 64-bit)
- Red Hat Enterprise Linux 7.2 (64-bit)\*
- CentOS 7 (64-bit)\*
- Ubuntu 14.04.3 LTS and 16.04.1 LTS (64-bit)\*

## Minimum Hardware Specifications

- Hard Drive: 3 GB free disk space
- Memory: 1 GB RAM
- CPU: 1 GHz Intel® Pentium or equivalent
- Graphic processing unit (GPU): OpenGL 2.1 hardware support with 128 MB video memory (NVIDIA, AMD, or similar)

## Recommended Hardware Specifications (Required for DS)

- Hard Drive: 10 GB free disk space
- Memory: 4 GB RAM
- CPU: 2.2 GHz Intel® i5 or equivalent for laptop; 3.0 GHz for desktop
- GPU: OpenGL 3.0 hardware support, 1 GB video memory (NVIDIA, AMD, or similar)
- For a driving simulator, consider a high-end gaming computer

## External Software Compatibility

**Notes** Both 32-bit and 64-bit versions are supported unless indicated otherwise.

For products and versions not listed, please contact Mechanical Simulation for more information. See also the summary for external tire and powertrain programs in Table 1.

- MATLAB: releases between 2011b and 2018b. Running VS Models with 64-bit versions of MATLAB requires a compatible C compiler. See <http://www.mathworks.com/support/compilers/R2014b/index.html> for more information.
- LabVIEW: tested with versions 2011 and 2012. No known issues for LabVIEW versions back to 8.5 (32-bit only)
- ASCET 5.2 (32-bit only)
- TNO MF-Tyre 6.1 (32-bit only), 6.1.2 and 6.2.0.2
- TNO MF-Swift 6.1 (32-bit only), 6.1.2 and 6.2.0.2 (optional license required from TNO/TASS)
- TASS/Siemens MF-Tyre/MF-Swift 7.0, 7.1 and 7.3 for CarSim (optional license required from Siemens)
- TASS/Siemens MF-Tyre/MF-Swift 7.0, 7.1 and 7.3 (dSPACE DS1006 and Concurrent Real-Time) for CarSim RT (optional license required from Siemens)
- Siemens MF-Tyre/MF-Swift 7.3 (dSPACE SCALEXIO, dSPACE release 2017A and up) for CarSim RT (optional license required from Siemens)
- Siemens MF-Tyre/MF-Swift 7.3 for BikeSim (optional license required from Siemens)
- Siemens MF-Tyre/MF-Swift 7.3 (dSPACE DS1006 only, dSPACE release 7.2 and up) for BikeSim RT (optional license required from Siemens)
- COSIN FTire: tested versions 2011-1 through 2013-1, 2013-4, 2014-4, 2015-4, and 2016-1 through 2018-2 (optional license required from COSIN)
- AVL Cruise for CarSim starting with Version 2010.1 (optional licenses required from AVL and Mechanical Simulation). Tested versions 2010.1 through 2017.
- AVL Cruise for TruckSim starting with Version 2011.1 (optional licenses required from AVL and Mechanical Simulation). Tested versions 2011.1 through 2017.
- ADAS Research Platform Version 5.1.2015.1 for MSVC 18.00.

Table 1. Summary of system compatibility with external tire and powertrain programs

| External software   | Platform  | C | T | B |
|---|---|---|---|---|
| TNO MF-Tyre/MF-Swift 6.2  | Windows 32-bit                                  | ○ | ○ | ○ |
| TASS/Siemens MF-Tyre/MF-Swift 7.0/7.1/7.3<br>*SCALEXIO is supported with v7.3<br>**BikeSim is supported with v7.3 which includes circular cross section contact model.              | Windows 32/64                                   | ○ |   | ○ |
|   | dSPACE DS1006                                   | ○ |   | ○ |
|   | Concurrent RT 64-bit                            | ○ |   |   |
|   | dSPACE SCALEXIO                                 | ○ |   |   |
| COSIN FTire   | Windows 32/64                                   | ○ | ○ | ○ |
| AVL CRUISE  | Windows 32/64                                   | ○ | ○ |   |
| General 3 <sup>rd</sup> -party tire model interface*** (VS/STI)<br><br>***VehicleSim only supports the interface. 3 <sup>rd</sup> -party tire models need to support each platform. | Windows 32/64                                   | ○ | ○ | ○ |
|   | dSPACE DS1006                                   | ○ | ○ | ○ |
|   | Concurrent RT 32/64                             | ○ | ○ |   |
|   | dSPACE SCALEXIO                                 | ○ | ○ |   |
| C: CarSim; T: TruckSim; B: BikeSim<br>MF-Tyre 7.x, FTire and CRUISE require separate licenses.  | ○: tested and supported<br>Blank: not supported |   |   |   |

## Real-Time System Compatibility (Optional Licenses Required)

**Note** Mechanical Simulation has tested CarSim, TruckSim, and BikeSim on some versions of each supported RT system, but not all combinations. For more details about specific combinations, please contact us at [tech@carsim.com](mailto:tech@carsim.com) or 734-668-2930.

Following are the minimum hardware requirements for each supported RT system.

### dSPACE

We support dSPACE DS Board 6.6 and newer; we have tested releases 6.6, 7.4, 2016B, 2017A, 2017B, and 2018A.

|                        | CarSim  | TruckSim | BikeSim |
|------------------------|---------|----------|---------|
| DS1006                 | 2.0 GHz | 2.0 GHz  | 2.0 GHz |
| SCALEXIO (7.4 – 2018A) | 2.2 GHz | 2.2 GHz  | 2.2 GHz |

\*DS1401 (MicroAutobox II) is supported for BikeSim only.

\*For SCALEXIO, we currently support PC-based only. We do not support 6001 yet.

\*DS1005 and DS1103 builds are available in this release. However, Mechanical Simulation will not support installations using these hardware platforms. These platforms cannot maintain real-time and support all solver features.

### RT-Lab

We support RT-Lab 10.4.x and newer based on documented support from Opal-RT; we have tested releases 10.4.x, 11.0.8 and 11.3 on QNX 6.3.2 and Linux. Support for RT-Lab 7.x – 8.x was discontinued from 2018 release. However, we cannot support breaking changes between versions which are produced by Opal-RT.

|                   |                   |                   |
|-------------------|-------------------|-------------------|
| CarSim            | TruckSim          | BikeSim           |
| 2.0 GHz Dual Core | 2.4 GHz Dual Core | 2.0 GHz Dual Core |

### ***ETAS LabCar***

We support LabCar 5 and newer; we have tested release 5.31, 5.40, 5.4.2, and 5.4.4.

|                   |                   |                   |
|-------------------|-------------------|-------------------|
| CarSim            | TruckSim          | BikeSim           |
| 2.0 GHz Dual Core | 2.4 GHz Dual Core | 2.0 GHz Dual Core |

### ***National Instruments***

For NI ETS Real-Time system, we support and have tested LabVIEW 2015/2016/2017/2018 & VeriStand 2015/2016/2017/2018.

|            |                   |                   |                   |
|------------|-------------------|-------------------|-------------------|
|            | CarSim            | TruckSim          | BikeSim           |
| LabVIEW-RT | 2.0 GHz Dual Core | 2.4 GHz Dual Core | 2.0 GHz Dual Core |
| VeriStand  | 2.0 GHz Dual Core | 2.4 GHz Dual Core | 2.0 GHz Dual Core |

For NI Linux Real-Time system, we support LabVIEW 2015 and newer; we have tested LabVIEW 2015/2016/2017/2018 & VeriStand 2015/2016/2017/2018. On cRIO/cDAQ Real-Time Linux target, “Write all outputs” should not be checked. We have tested the NI Industrial Controller (IC-3173) with Linux RT system and LabVIEW 2016.

|            |  |
|------------|--|
|            | BikeSim, CarSim and TruckSim             |
| LabVIEW-RT | cRIO/cDAQ 1.9 GHz CPU and IC-3173 i7 CPU |
| VeriStand  | cRIO 1.9 GHz CPU                         |

NI cRIO with 1.9 GHz CPU is either cRIO-9034 (4 slots) or cRIO-9039 (8 slots). NI cDAQ with 1.9 GHz CPU is either cDAQ-9136 (4 slots) or cDAQ-9137 (8 slots).

NI Industrial Controller, for example IC-3173 with i7 2.2 GHz CPU, runs Linux Real-Time system with NI-9144/9145 expand chassis, for IO, and EtherCAT Real-Time data synchronization.

### ***Concurrent Redhawk with Simulation Workbench (SimWB)***

We support Concurrent Redhawk 32bit/64bit Real-Time system, Linux Real-Time system, with SIMulation Workbench (SimWB). For 32bit Linux from Redhawk 5.4 with SimWB 6.0 or newer. For 64bit Linux from Redhawk 6.3 with SimWB 7.2 or newer.

|                   |                   |                   |
|-------------------|-------------------|-------------------|
| CarSim            | TruckSim          | BikeSim           |
| 2.4 GHz Dual Core | 2.4 GHz Dual Core | 2.0 GHz Dual Core |

### ***A&D***

We support A&D hardware 5436, 5445/5446/5447, and the following software.

|                   |                 |
|-------------------|-----------------|
| AD5436            | 01.04.00 and up |
| AD5445            | 02.07.00 and up |
| VirtualDSPConsole | 03.03 and up    |

### ***AVL ARTE.Lab***

CarSim is supported and was tested on ARTE.Lab 3.1.