

dSPACE Release

New Features and Migration

Release 2019-A – May 2019

How to Contact dSPACE

Mail:	dSPACE GmbH Rathenaustraße 26 33102 Paderborn Germany
Tel.:	+49 5251 1638-0
Fax:	+49 5251 16198-0
E-mail:	info@dspace.de
Web:	http://www.dspace.com

How to Contact dSPACE Support

If you encounter a problem when using dSPACE products, contact your local dSPACE representative:

- Local dSPACE companies and distributors: <http://www.dspace.com/go/locations>
- For countries not listed, contact dSPACE GmbH in Paderborn, Germany.
Tel.: +49 5251 1638-941 or e-mail: support@dspace.de

You can also use the support request form:

<http://www.dspace.com/go/supportrequest>. If you are logged on to mydSPACE, you are automatically identified and do not need to add your contact details manually.

If possible, always provide the relevant dSPACE License ID or the serial number of the CmContainer in your support request.

Software Updates and Patches

dSPACE strongly recommends that you download and install the most recent patches for your current dSPACE installation. Visit <http://www.dspace.com/go/patches> for software updates and patches.

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dSPACE GmbH
Rathenaustraße 26
33102 Paderborn
Germany

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About This Document

Contents

This document informs you about the new features of all the dSPACE software products in Release 2019-A. It also gives you an overview of software products with no or minor changes. There are instructions on migrating from earlier dSPACE releases, especially from earlier product versions, if required.

Where to go from here






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Conventions Used in dSPACE User Documentation

Symbols

dSPACE user documentation uses the following symbols:

Symbol	Description
 DANGER	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
 NOTICE	Indicates a hazard that, if not avoided, could result in property damage.
 Note	Indicates important information that you should take into account to avoid malfunctions.

Symbol	Description
	Indicates tips that can make your work easier.
	Indicates a link that refers to a definition in the glossary, which you can find at the end of the document unless stated otherwise.
	Precedes the document title in a link that refers to another document.

Naming conventions

dSPACE user documentation uses the following naming conventions:

%name% Names enclosed in percent signs refer to environment variables for file and path names.

< > Angle brackets contain wildcard characters or placeholders for variable file and path names, etc.

Special folders

Some software products use the following special folders:

Common Program Data folder A standard folder for application-specific configuration data that is used by all users.

`%PROGRAMDATA%\dSPACE\`

or

`%PROGRAMDATA%\dSPACE\`

Documents folder A standard folder for user-specific documents.

`%USERPROFILE%\My Documents\dSPACE\`

Local Program Data folder A standard folder for application-specific configuration data that is used by the current, non-roaming user.

`%USERPROFILE%\AppData\Local\dSPACE\`

Accessing dSPACE Help and PDF Files

Introduction

After you install and decrypt your dSPACE software, the documentation for the installed products is available as online help in dSPACE Help and as Adobe® PDF files.

Online help

There are various ways to open dSPACE Help.

Note

Not all the ways to open dSPACE Help are available for all dSPACE software products.


Opening from Windows You can open dSPACE Help on its home page:

- Via Windows Start Menu

Opening from dSPACE software with menu bar You can open dSPACE Help on a product's start page:

- Via the menu bar in a dSPACE product

Opening from dSPACE software with ribbons If you use dSPACE software with ribbons, you can open dSPACE Help:


- Via the Start page in dSPACE software
- Via the Backstage view in dSPACE software (leftmost ribbon tab)
- Via the  button

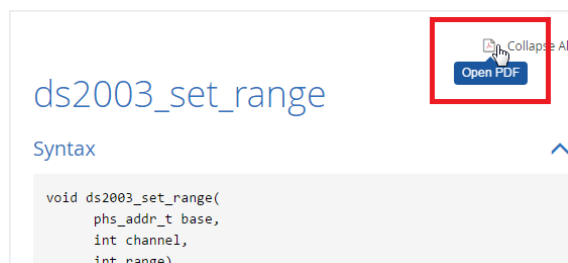
Opening context-sensitive help dSPACE Help provides context-sensitive help. You can open help on the active context in dSPACE software:

- Via F1
- Via the Help button


PDF files

You can open the PDF files as follows:

Opening from a topic in dSPACE Help You can access the PDF file with the current topic via the  button at the topic's top right. The following illustration shows an example:



The PDF document opens on its first page.

Opening from dSPACE software with ribbons If your dSPACE software has a user interface with ribbons, you can open a folder that contains the user documentation in PDF format via the  button in the Backstage view (leftmost ribbon tab).

Overview of dSPACE Release 2019-A

Introduction Gives you an overview of the new key features in Release 2019-A and information about unchanged products.

Where to go from here

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General Enhancements and Changes

Introduction The following new features and changes concern several dSPACE products.

Python distribution The libraries and components used with Python 3.6 and distributed on dSPACE DVDs have changed as shown in the following table.

Package	RLS 2018-B	RLS 2019-A
comtypes	1.1.4	1.1.7
Core	3.6.5	3.6.7
cycler	0.10.0	0.10.0
kiwisolver	1.0.1	1.0.1
matplotlib	2.2.2	3.0.1
numpy	1.14.3	1.15.4

Package	RLS 2018-B	RLS 2019-A
pillow	5.1.0	5.3.0
pip	9.0.3	18.1
py2exe	_1)	_1)
pyparsing	2.2.0	2.3.0
pypubsub	-	4.0.0
Python-dateutil	2.7.2	2.7.5
pythonnet	2.3.1	2.3.2
pytz	2018.4	2018.7
pywin32	223.10	224.10
six	1.11.0	1.11.0
wxPython	4.0.2	4.0.3

¹⁾ Because py2exe is not available in a stable version, it is not included in the dSPACE distribution. You can download alternative packages from the Internet, such as cx_Freeze or PyInstaller.

Using dSPACE software on virtual machines (VM)

As of dSPACE Release 2019-A, you can operate several dSPACE products on virtual machines. For more information, refer to [Using dSPACE Software on Virtual Machines \(VMs\)](#) on page 173.

RCP and HIL software: C/C++ compilers for building MATLAB MEX files

RCP and HIL software (such as RTI CAN MultiMessage Blockset, RTI LIN MultiMessage Blockset, or Automotive Simulation Models) now supports the following C/C++ compilers for building MATLAB MEX files:

- MinGW (GNU Compiler Collection (GCC 5.3.0)): In combination with MATLAB R2017b and R2018a.
- MinGW (GNU Compiler Collection (GCC 6.3.0)): MATLAB R2018b and R2019a.
- Microsoft Visual Studio 2015 Professional.

Printed user documentation

The printed user documentation is not delivered automatically. You can decide which of the available printed documents you would like to have. To order printed documentation, refer to <http://www.dspace.com/go/requestreleasematerial>.

Note

If you do not order printed documentation, use dSPACE Help or PDF files to learn about new features, enhancements, and the safety precautions regarding your products.

Discontinuations

Introduction

The following discontinuations for software and hardware are relevant to the current Release or are planned for future Releases.

For further end-of-life announcements, refer to <http://www.dspace.com/go/discontinuation>.

Discontinuation of dSPACE hardware

DS1103 PPC Controller Board This product was discontinued in December 2016. The software support for the DS1103 PPC Controller Board has now also been discontinued.

For new projects, we recommend that you use the successor, dSPACE MicroLabBox.

MicroAutoBox I/O boards The following MicroAutoBox II variants were discontinued in December 2015:

- MicroAutoBox II 1401/1501
- MicroAutoBox II 1401/1504
- MicroAutoBox II 1401/1505/1507

The software support for these MicroAutoBox variants has now also been discontinued.

For new projects, we recommend that you use the successor variants of MicroAutoBox II with the I/O boards DS1511, DS1513, and DS1514. The MicroAutoBox II variant 1401/1507 will still be available.

Discontinuation of software support

Python 2.7 The support of Python 2.7 was discontinued with dSPACE Release 2018-B. Python 3.6 is now supported.

You can find information on changes and migration aspects of Python scripts in dSPACE products on the dSPACE website. Refer to <http://www.dspace.com/go/Python36Migration>.

Product Version Overview

Product versions

The following table is an extract from product version histories showing the product versions of the current Release and of the three preceding Releases. If a product has new features, there is a link to the brief description in this document.

Product	dSPACE Release			
	2017-B	2018-A	2018-B	2019-A
AutomationDesk	5.5	5.6	6.0	6.1 Refer to AutomationDesk on page 27.

Product	dSPACE Release			
	2017-B	2018-A	2018-B	2019-A
Automotive Simulation Models	9.0	9.1	9.2	9.3 Refer to Automotive Simulation Models (ASM) on page 31.
Bus Manager (stand-alone)	6.0	6.1	6.2	6.3 Refer to Bus Manager (Stand-Alone) on page 67.
ConfigurationDesk	6.0	6.1	6.2	6.3 Refer to ConfigurationDesk on page 69.
Container Manager	5.0	5.0	5.1	5.1
ControlDesk	6.2	6.3	6.4	7.0 Refer to ControlDesk on page 75.
DCI Configuration Tool	3.8	3.9	3.10	3.11 Refer to DCI Configuration Tool on page 87.
dSPACE CAN API Package	3.0.2	3.0.3	4.0.1	4.0.2
dSPACE ECU Flash Programming Tool	2.4	2.5	2.5	2.6 Refer to dSPACE ECU Flash Programming Tool on page 89.
dSPACE FlexRay Configuration Package	4.0	4.1	4.2	4.3 Refer to dSPACE FlexRay Configuration Package on page 91.
dSPACE Python Extensions	2.4	2.5	3.0	3.1 Refer to dSPACE Python Extensions on page 93.
dSPACE XIL API .NET	2017-B	2018-A	2018-B	2019-A Refer to dSPACE XIL API .NET on page 97.
ECU Interface Manager	2.2	2.3	2.4	2.5 Refer to ECU Interface Manager on page 99.
Firmware Manager	2.4	2.5	2.6	2.7 Refer to Firmware Manager on page 103.
Model Compare	2.8	2.8	2.9	2.9
ModelDesk	4.6	4.7	5.0	5.1 Refer to ModelDesk on page 105.
Model Interface Package for Simulink	3.5	3.6	4.0	4.1 Refer to Model Interface Package for Simulink on page 109.
MotionDesk	4.1	4.2	4.3	4.4 Refer to MotionDesk on page 111.
MotionDesk Blockset	2.5.2	2.5.3	2.5.4	2.5.5 Refer to MotionDesk on page 111.
Real-Time Testing	3.3	3.4	4.0	4.1 Refer to Real-Time Testing on page 115.

Product	dSPACE Release			
	2017-B	2018-A	2018-B	2019-A
RTI ¹⁾	7.9	7.10	7.11	7.12 Refer to RTI/RTI-MP and RTLib on page 117.
RTI-MP ²⁾	7.9	7.10	7.11	7.12 Refer to RTI/RTI-MP and RTLib on page 117.
RTI Bypass Blockset	3.9	3.10	3.11	3.12 Refer to RTI Bypass Blockset on page 119.
RTI CAN Blockset	3.4.5	3.4.6	3.4.7	3.4.8
RTI CAN MultiMessage Blockset	4.6	5.0	5.1	5.2 Refer to RTI CAN MultiMessage Blockset on page 121.
RTI Electric Motor Control Blockset	1.4.1	1.4.1	1.4.1	1.4.1
RTI Ethernet Blockset	1.2.3	1.2.3	1.2.3	1.2.3
RTI Ethernet (UDP) Blockset	1.4.3	1.4.3	1.4.3	1.4.3
RTI FPGA Programming Blockset	3.4	3.5	3.6	3.7 Refer to RTI FPGA Programming Blockset on page 123.
RTI LIN MultiMessage Blockset	2.9	3.0	3.1	3.2 Refer to RTI LIN MultiMessage Blockset on page 127.
RTI RapidPro Control Unit Blockset	2.2.3	2.2.3	2.2.3	2.2.3
RTI Synchronized Time Base Manager Blockset	-	-	1.1	1.2 Refer to RTI Synchronized Time Base Manager Blockset on page 129.
RTI USB Flight Recorder Blockset	1.2.2	1.2.2	1.2.2	1.2.2
RTI Watchdog Blockset	2.1.1	2.1.1	2.1.1	2.1.1
Sensor Simulation	-	-	1.0	1.1 Refer to New Features of Sensor Simulation 1.1 on page 133.
SCALEXIO firmware	4.1	4.2	4.3	4.4 Refer to SCALEXIO Firmware on page 131.
SYNECT	2.4	2.5	2.6	2.7 Refer to SYNECT on page 137.
SystemDesk	5.0	5.1	5.2	5.3 Refer to SystemDesk on page 149.
TargetLink	4.3	4.3	4.4	4.4
Variable Editor ³⁾	2.4	2.4	2.4	2.4

Product	dSPACE Release			
	2017-B	2018-A	2018-B	2019-A
VEOS	4.1	4.2	4.3	4.4 Refer to VEOS on page 161.

- 1) Including the standard I/O blocksets.
- 2) Including the RTI Gigalink Blockset.
- 3) The Variable Editor is not part of the dSPACE Release DVD. It is available at <https://www.dspace.com/go/requestreleasedownload>.

If you have not performed regular updates, refer to the *New Features and Migration* documents for the dSPACE Releases listed above for information about the new features and necessary migration steps.

New Product Key Features

Introduction

This is an overview of each product's new key features. For more information, refer to the product-specific sections.

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SYNECT	23
SystemDesk	23
VEOS	23

AutomationDesk

The new key features of AutomationDesk are:

- New XML file format for exporting and importing AutomationDesk elements.
- Enhanced usability of the Python interpreter.

For more information on the new features, refer to [New Features of AutomationDesk 6.1](#) on page 27.

Bus Manager (stand-alone)

The new key features of the Bus Manager (stand-alone) are:

- Support of global time synchronization
- New Gateways bus configuration part to exchange CAN communication between two communication clusters
- New bus configuration feature to verify authentication information of received secured IPDUs
- Enhanced AUTOSAR support

For more information, refer to [Features of the Bus Manager \(Stand-Alone\) 6.3](#) on page 67.

ConfigurationDesk (Implementation Version)

The new key features of ConfigurationDesk are:

- Support of new SCALEXIO FPGA base boards and SCALEXIO AutoBox.
- Various enhancements of the Bus Manager for configuring bus communication for simulation, inspection, and manipulation purposes.

For more information, refer to [ConfigurationDesk - Implementation Version](#) on page 70.

ControlDesk

The new key features of ControlDesk 7.0 are:

Platform/device enhancements

- SCALEXIO: Support of new FPGA boards
- SCALEXIO: Display of connected clients
- Bus monitoring devices: Support of AUTOSAR 4.4.0
- Ethernet Bus Monitoring device: Support for signals of UDP Ethernet PDUs

For more information on the new features, refer to [New Features of Platform Management and Platforms/Devices \(ControlDesk 7.0\)](#) on page 76.

Variable management enhancements

- Improvement for handling variable descriptions

For more information on the new features, refer to [New Variable Management Features \(ControlDesk 7.0\)](#) on page 77.

Measurement and recording enhancements

- Specifying a default raster for measuring parameters
- Measurement data files: Display of the reference time, and the related UTC and DST offsets

- Using measurement time stamps when saving the measurement buffer and saving displayed data
- DSSIGCONV: Downsampling of ASAM MDF 4.x files
- Ethernet Bus Monitoring device: Observing variables

For more information on the new features, refer to [New Measurement and Recording Features \(ControlDesk 7.0\)](#) on page 77.

Bus Navigator enhancements

- Ethernet bus monitoring: Wireshark decoder support
- Ethernet Bus Monitoring device: Observing variables
- Support of global time synchronization in Bus Manager applications

For more information on the new features, refer to [New Bus Navigator Features \(ControlDesk 7.0\)](#) on page 78.

ECU Diagnostics enhancements

- Support of CAN FD

For more information on the new features, refer to [New ECU Diagnostics Features \(ControlDesk 7.0\)](#) on page 79.

dSPACE ECU Flash Programming Tool

The new key feature of the dSPACE ECU Flash Programming Tool is:

- Support of the CAN interface from PEAK-System Technik GmbH

For more information on the new feature, refer to [New Features of the dSPACE ECU Flash Programming Tool 2.6](#) on page 89.

dSPACE FlexRay Configuration Package

The new key feature of the dSPACE FlexRay Configuration Tool is:

- Support of the AUTOSAR 4.4 format

For more information on the new features, refer to [New Features of dSPACE FlexRay Configuration Package 4.3](#) on page 91.

dSPACE XIL API

dSPACE XIL API MAPort supports VEOS 64-bit applications.

For more information on the new features, refer to [New Features of dSPACE XIL API .NET 2019-A](#) on page 97.

ECU Interface Manager

The new key features of the ECU Interface Manager are:

- Support of the XCP on CAN ECU interface
- XCP: Support of MAX_ODT_ENTRY_SIZES < 4 byte

For more information on the new features, refer to [New Features of ECU Interface Manager 2.5](#) on page 99.

Firmware Manager

The new key feature of the Firmware Manager is:

- Support of new SCALEXIO boards.

For more information on the new feature, refer to [New Features of Firmware Manager 2.7](#) on page 103.

Model Interface Package for Simulink

The new key feature of Model Interface Package for Simulink is:

- Support of the row major format in Simulink

For more information on the new feature, refer to [Model Interface Package for Simulink](#) on page 109.

ModelDesk

The new key features of ModelDesk are:

- Road creation: Improved export of complex commercial OpenDRIVE network files.
- Scenario creation: Two methods to specify the distance between two objects.
- Traffic object management: Specification of object points of traffic objects: Radar reflection points, custom points, and NCAP reference points.
- Testing:
 - New evaluation library for evaluation scripts
 - Starting tests via tool automation.

For more information on the new features, refer to [New Features of ModelDesk 5.1](#) on page 105.

MotionDesk

The new key features of MotionDesk are:

- Improved control of sensor simulation
- Creating fisheye lens sensors
- Uniform object scaling
- Slider for the Motion Player

For more information on the new features, refer to [New Features of MotionDesk 4.4](#) on page 111.

Python Extensions

Python Extensions 3.1 does not have new features.

Since dSPACE Release 2018-B, Python Extensions supports Python 3.6. You have to migrate your custom scripts manually. For more information, refer to <http://www.dspace.com/go/Python36Migration> on the dSPACE website.

Real-Time Testing

The new key features of Real-Time Testing are:

- Real-Time Testing supports VEOS 64-bit applications.

For more information on the new features, refer to [New Features of Real-Time Testing 4.1](#) on page 115.

RTI, RTI-MP, and RTLib

The new key features of RTI, RTI-MP, and RTLib are:

- Support of MATLAB R2019a
- Support of the row major format in Simulink

For more information on the new feature, refer to [New Features of RTI/RTI-MP and RTLib](#) on page 117.

RTI CAN MultiMessage Blockset

The new key feature of the RTI CAN MultiMessage Blockset is:

- Support of the AUTOSAR 4.4 format

For more information on the new features, refer to [New Features of the RTI CAN MultiMessage Blockset 5.2](#) on page 121.

RTI FPGA Programming Blockset

The new key features of the RTI FPGA Programming Blockset 3.7 are:

- Extended Xilinx® software support.
- New FPGA Build Server and FPGA Build Monitor.
- New FPGA frameworks for the DS6601 and DS6602 FPGA base boards.

For more information on the new features, refer to [New Features of the RTI FPGA Programming Blockset 3.7](#) on page 123.

RTI LIN MultiMessage Blockset

The new key feature of the RTI LIN MultiMessage Blockset is:

- Support of the AUTOSAR 4.4 format

For more information on the new features, refer to [New Features of the RTI LIN MultiMessage Blockset 3.2](#) on page 127.

SCALEXIO firmware

The new key feature of the SCALEXIO firmware is:

- Support of the DS6601 FPGA Base Board
- Support of the DS6602 FPGA Base Board
- Support of SCALEXIO AutoBox

For more information on the new features, refer to [New Features of the SCALEXIO Firmware 4.4](#) on page 131.

Sensor Simulation

Sensor Simulation is a new product that lets you to validate camera and laser sensors.

For more information on the new product, refer to [New Features of Sensor Simulation 1.1](#) on page 133.

SYNECT

The new key features of SYNECT 2.7 are:

- Support for evaluating test case results in separate evaluations.
- Selecting executions to be executed in queues by search queries.
- Improved means to define queries, such as using relative times and the current user for attribute values.

For more information on the new features, refer to [New Features of SYNECT 2.7](#) on page 138.

SystemDesk

The new key features of SystemDesk 5.3 are:

- Support for the automatic configuration and code generation of the dSPACE Icu, Gpt, and Wdg MCAL modules.
- Support of the AUTOSAR 18-10 revision for developing Adaptive Platform software.
 - Extended support for specifying adaptive software components, service interfaces, and related data types.
 - Support for the instantiation of software components on machines by the automatic creation of executables and processes.
 - Support for the deployment of software components by the generation of required AUTOSAR descriptions, such as service instances and mappings, and service interface deployments according to the SOME/IP communication protocol.
- Creating adaptive V-ECUs based on an AUTOSAR model.
- Improved support for executing Classic Platform software on the Adaptive Platform.

For more information on the new features, refer to [New Features of SystemDesk 5.3](#) on page 150.

VEOS

The new key features of VEOS are:

- Adaptive Platform support enhancements
- Enhancements for classic V-ECUs
- Stimulating VPU variables of a 64-bit application
- Global time synchronization support

For more information on the new features, refer to [New Features of VEOS 4.4](#) on page 161.

Aspects of Migrating from Previous Releases

Introduction

After you install products of the current dSPACE Release, some additional steps might be required. The migration steps required when you update from the last dSPACE Release are described in the product-specific migration topics in this document. If you update from an earlier dSPACE Release, refer to the related *New Features and Migration* document.

Migrating to dSPACE Release 2019-A

Introduction

After you install Release 2019-A, some additional steps might be required.

Migrating from dSPACE Release 2018-B

Product-specific migration steps Product-specific migration steps are usually performed automatically. For exceptions, refer to the product-specific migration descriptions.

Migrating from dSPACE Release 2018-A or earlier

To migrate from dSPACE Release 2018-A or earlier to Release 2019-A, you also have to perform the migration steps of the intervening dSPACE Releases. All of the required migration steps can be performed using the software from dSPACE Release 2019-A.

For more information on the required migration steps, refer to the *New Features and Migration* documents of the intervening dSPACE Releases.

Previous release documents

The PDF files of previous Releases are called `NewFeaturesAndMigrationxx.pdf`, where xx stands for the Release number.

You can find the *New Features and Migration* files for previous Releases in the following locations:

- In the installation folder of the current dSPACE Help. Refer to `C:\Program Files\Common Files\dSPACE\Help 2019-A\Print\PreviousReleases`.
- On the dSPACE DVDs. Refer to `\Doc\PreviousReleases`.
- At www.dspace.com/go/migration for download. Here, you can also find *New Features and Migration* documents for very early Releases.

AutomationDesk

Where to go from here

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New Features of AutomationDesk 6.1

Where to go from here

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Enhancements to the Signal Editor	28
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Evaluation library	28
Enhancements to the COM API	28

General enhancements

New XML format for exporting and importing AutomationDesk elements

With AutomationDesk 6.1, a new XML format is introduced for exporting and importing AutomationDesk elements. It is more flexible than the old XML format and makes it easier to use tools for versioning, comparing, generating, or analyzing elements. The XML format used for exporting and importing elements with AutomationDesk 6.0 or earlier is now called *legacy XML*. It is available only for importing existing XML export files. The legacy XML format is not available for exporting elements and will be discontinued in future versions of AutomationDesk.

Enhancements to Python usage in AutomationDesk

The Python Editor has a new editor control, which provides the following enhanced functions:

- Zooming the Python code.
- Finding and replacing text more conveniently.
- Enhanced syntax check with error coloring and descriptive tooltips.

Enhancements to the Signal Editor

The Signal Editor provides the following new features:

- The default segment length is now the same for all segment types.
- The default setting for the **Show Signal Parameters** command is now the same for all signals.
- The use of an operation signal is now limited to **Action=None**.

Enhancements to the libraries

The following library was enhanced:

Evaluation library The `GetConditionTrueTimes` block now also supports the `changedpos` and `changedneg` methods in the block's `Condition` data object to detect signal changes in the positive and negative direction.

For more information, refer to [Evaluation](#) ([📖 AutomationDesk Basic Practices](#)).

Note

The MATLAB Access library does not support MATLAB R2019a. For more information, refer to [Supported MATLAB Releases](#) on page 169.

Enhancements to the COM API

The AutomationDesk COM API provides the following enhancements:

- You can use the existing `ExportFile` and `ImportFile` methods to use the new XML format for exporting and importing AutomationDesk elements. The XML format to be used is identified by the specified file suffix. If you want to export to a legacy XML file, an exception occurs. If you import a file in the legacy XML format, a warning is written to the log file, which informs you about the planned discontinuation.

For more information, refer to [📖 AutomationDesk Automation](#).

Migrating to AutomationDesk 6.1

General migration aspects

If you open an AutomationDesk project with a later AutomationDesk version, the software automatically detects whether migration is required. Click OK in the message dialog to start the migration. If you also want to continue working with the old project, you must not overwrite it with the migrated project, because the versions are not downward compatible. Save the migrated project to another path or name.

Note

Before you open an older project with the new AutomationDesk version, make sure that the following preconditions are fulfilled:

- You must create backups of the project and of the linked custom libraries.
- AutomationDesk must be running properly. The Log Viewer must not display any error messages.
- The built-in libraries, required custom libraries, and other packages must be loaded properly.

If you use a version control system, there are some preconditions for successful migration. Refer to [How to Migrate Projects Under Version Control](#) ([AutomationDesk Basic Practices](#)).

For more information, refer to [Migrating AutomationDesk](#) ([AutomationDesk Introduction And Overview](#)).

Note

Since dSPACE Release 2018-B, AutomationDesk has supported Python 3.6. For information on the Python 3.6 migration, refer to [AutomationDesk](#) ([AutomationDesk Introduction And Overview](#)).

Libraries

Main Library AutomationDesk's test automation object model (TAM) has been internally restructured. If you use undocumented features in Exec blocks, for example, specialized blocks implemented for engineering projects, the execution might fail. In this case, contact dSPACE Support for migration instructions.

ControlDesk Access library With ControlDesk 7.0, the following features changed. This also affects the ControlDesk Access library in AutomationDesk.

- Discontinuation of IDF file export
The `StopMeasurementAndRecording` block now uses the MF4 file format to save recorded data.
- Modified data set handling
Direct access to parameters and parameter values of a data set via automation is no longer supported. If you use the `SetParameterValue` and `GetParameterValue` blocks in AutomationDesk, an exception occurs. Use the `WriteVariableValues` and `ReadVariableValues` blocks instead.

For more information, refer to [AutomationDesk Accessing ControlDesk](#).

Discontinued commands

The **Import Data Objects** command to import data objects via Python files is no longer available.

For information on migrating this feature, contact dSPACE Support.

Automotive Simulation Models (ASM)

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All ASM Products

Changes in All ASM Demo Models

VEOS code generation

From the current Release on, ASM supports only the 64 bit version of VEOS. Before building the code, make sure *HostPC64* is set as the simulation target on the Build Options page during import to the VEOS Player.

ASM Base InCylinder

Where to go from here

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Migrating to ASM Base InCylinder Blockset 2.5	34

New Features of ASM Base InCylinder Blockset 2.5

Intake and exhaust valve

The VALVE blocks have been split into VALVE_LIFT and VALVE_FLOW. The separation of lift and flow calculations provides a better interface for customized valve timing and lift configurations.

This applies to the following blocks:

- INTAKE_VALVE
- EXHAUST_VALVE

ENGINE_SETUP block

Two new parameters and ports have been added to the block. You can now specify the flow direction through the intercooler and throttle valve, respectively the EGR cooler and EGR valve.

Migrating to ASM Base InCylinder Blockset 2.5

Dimension parameter error message

The error message that is displayed when a dimension parameter is changed (e.g., by ModelDesk download) has been improved and standardized.

This applies to the following blocks:

- ENGINE_SETUP

VALVE blocks

During migration, the INTAKE_VALVE and EXHAUST_VALVE blocks are moved to the former versions.

Related topics**Basics**

[Migrating ASM Models](#) (📖 ASM User Guide)

ASM Brake Hydraulics

New Features of ASM Brake Hydraulics Blockset 2.1.1

**MASTER_BRAKE_CYLINDER
block**

In brake-by-wire mode, the MASTER_BRAKE_CYLINDER block uses the ambient pressure as the output pressure if no brake pressure is specified via the Enable_p_Brake_Desired[0|1] inport.

ASM Diesel Engine

Where to go from here

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Changes in the ASM Diesel Engine Demo Model

New test cycles

Two new engine dynamometer test cycles have been added to the demo model:

- Non-Road Steady Cycle (NRSC)
- Non-Road Transient (NRTC)

Changes in EUDC test cycles

The first standstill time of the EUDC test cycles has been changed from 50 seconds to 11 seconds, according to the official resources. This change is not migrated for older test cycle versions.

SoftECU_SCR block

The inports of the system have been changed:

- T_Out_DPF[degC] (temperature downstream of the DPF) has been changed to T_Exh[degC] (temperature after urea decomposition).
- Xsi_Air_PumpHose[] (mass fraction of air in the pump hose) has been replaced by r_Volume_Air_PumpHose[] (volumetric fraction of air in the pump hose).

No changes are made to the system as a result of the migration process. To use the new features of the block, manually copy the new block from the library to the simulation model.

Measurement data handling

The exchange of measurement data from ModelDesk to the ASM Engine Testbench and ASM Optimizer is now based on ModelDesk measurement data files (MD) files and not separately created measurement files (M) files.

Migrating to ASM Diesel Engine Blockset 2.6.3

Dimension parameter error message

The error message that is displayed when a dimension parameter is changed (e.g., by ModelDesk download) has been improved and standardized.

This applies to the following blocks:

- RAIL_CONTROL_CRANKBASED
- HPP_CRANKBASED
- ENGINE_SETUP

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Diesel Exhaust

Where to go from here

Information in this section

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Migrating to ASM Diesel Exhaust Blockset 2.1.8	39

New Features of ASM Diesel Exhaust Blockset 2.1.8

SCR_PUMP_HOSE_CONTROL block

The block has been revised to improve the quality of control. For example, the controller now stops purging the pump hose when there is no AdBlue left.

A new parameter (*Sw_State_Purge*) has been introduced to purge the pump hose independently of the operating point. AdBlue starts pumping while the engine is starting. In addition, the logic of the control signal of the *VENT_VALVE* block has been revised. The signal becomes active only when the AdBlue pump delivers backwards (*Ctrl_Pump* < 0.001).

There is now a former version of the block: *SCR_PUMP_HOSE_CONTROL_1_0*. During migration, the library link of the *SCR_PUMP_HOSE_CONTROL* block is changed to the former version.

SCR_INJECTION_VALVE_CONTROL block

The block has been revised to improve the quality of control. There is now a former version of the block: *SCR_INJECTION_VALVE_CONTROL_1_0*. During migration, the library link of the *SCR_INJECTION_VALVE_CONTROL* block is changed to the former version.

Migrating to ASM Diesel Exhaust Blockset 2.1.8

COMMON_EXHAUST_PARAMETERS block

The block has new parameters:

- *Const_M_CO2*
- *Const_M_H2O*
- *Const_cp_CO2*
- *Const_cp_H2O*
- *Const_cp_NH3*

The corresponding outputs are terminated during migration.

UREA_DECOMPOSITION_4_0 block	There is now a former version of the UREA_DECOMPOSITION block. During migration, the library link of the UREA_DECOMPOSITION block is changed to UREA_DECOMPOSITION_4_0. To use the new features of the block, manually copy the new block from the library to the simulation model.
SCR_CATALYST block	Several signals of the ASMSignalBus have been renamed. During migration, the original signal names are restored.
SCR_PUMP_HOSE_CONTROL_1_0 block	There is now a former version of the SCR_PUMP_HOSE_CONTROL block. During migration, the library link of the SCR_PUMP_HOSE_CONTROL block is changed to SCR_PUMP_HOSE_CONTROL_1_0. To use the new features of the block, manually copy the new block from the library to the simulation model.
SCR_INJECTION_VALVE_CONTROL_1_0 block	There is now a former version of the SCR_INJECTION_VALVE_CONTROL block. During migration, the library link of the SCR_INJECTION_VALVE_CONTROL block is changed to SCR_INJECTION_VALVE_CONTROL_1_0. To use the new features of the block, manually copy the new block from the library to the simulation model.

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Diesel InCylinder

Changes in the ASM Diesel InCylinder Demo Model

Measurement data handling	The exchange of measurement data from ModelDesk to the ASM Engine Testbench and ASM Optimizer is now based on ModelDesk measurement data files (MD) files and not separately created measurement files (M) files.
Model structure	The model structure in Simulink has been redesigned. Intermediate subsystems have been introduced in the AirPath model. Further, several signals for exchange between these subsystems are now routed by bus. This allows for an easy modification of the model.
New test cycles	Two new engine dynamometer test cycles have been added to the demo model: <ul style="list-style-type: none"> ▪ Non-Road Steady Cycle (NRSC) ▪ Non-Road Transient (NRTC)
Changes in EUDC test cycles	The first standstill time of the EUDC test cycles has been changed from 50 seconds to 11 seconds, according to the official resources. This change is not migrated for older test cycle versions.
SoftECU_SCR block	<p>The inports of the system have been changed:</p> <ul style="list-style-type: none"> ▪ T_Out_DPF[degC] (temperature downstream of the DPF) has been changed to T_Exh[degC] (temperature after urea decomposition). ▪ Xsi_Air_PumpHose[] (mass fraction of air in the pump hose) has been replaced by r_Volume_Air_PumpHose[] (volumetric fraction of air in the pump hose). <p>No changes are made to the system as a result of the migration process. To use the new features of the block, manually copy the new block from the library to the simulation model.</p>

ASM Drivetrain Basic

Where to go from here

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Changes in the ASM Drivetrain Basic Demo Model

New test cycles

Two new engine dynamometer test cycles have been added to the demo model:

- Non-Road Steady Cycle (NRSC)
- Non-Road Transient (NRTC)

Changes in EUDC test cycles

The first standstill time of the EUDC test cycles has been changed from 50 seconds to 11 seconds, according to the official resources. This change is not migrated for older test cycle versions.

Migrating to ASM Drivetrain Basic Blockset 5.3

GEARBOX_MT block

The issue of gear synchronization failure during shifting through neutral has been solved. The shifting through neutral feature can be activated in the GEAR_SHIFTER block.

GEARBOX_AT block

The issue of gear synchronization failure during shifting through neutral has been solved.

LONGITUDINAL_CONTROLLER_HYBRID block

The block is discontinued and shifted to former version implementations. During migration, the library link to the LONGITUDINAL_CONTROLLER_HYBRID block is changed to the former version LONGITUDINAL_CONTROLLER_HYBRID_5_0.

**LONGITUDINAL_CONTROL
block**

The issue of increased turnaround time with active preview time has been solved by using a customized variable time delay block.

Related topics**Basics**

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Electric Components

Where to go from here

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New Features of ASM Electric Components Blockset 3.8

BATTERY_MULTICELL block

The model structure and the parameterization of the battery model have been changed:

- The capacity of the cells is now set as an difference from the reference cell capacity and no longer as an absolute value.
- The initial temperature of the cells is now set as the difference to a new initial temperature parameter and not as an absolute value.
- The unit of temperature parameters has been changed from *Kelvin* to *degree Celsius*.
- The table of internal resistance has been changed from SOC and current dependency to SOC and temperature dependency.
- The table that sets an internal resistance factor as a function of the temperature has been removed and replaced by a new current-dependent table.
- The linear temperature dependency of the battery capacity has been replaced by a table parameter.

BATTERY block

The model structure and the parameterization of the battery model have been changed:

- The capacity of the cells is now set as the difference from the reference cell capacity and no longer as an absolute value.
- The unit of temperature parameters has been changed from *Kelvin* to *degree Celsius*.
- The table of internal resistance has been changed from SOC and current dependency to SOC and temperature dependency.
- The table that sets an internal resistance factor as a function of the temperature has been removed and replaced by a new current-dependent table.
- The linear temperature dependency of the battery capacity has been replaced by a table parameter.

TRQ_REQUEST_COORDINATION_BEV block	A new State_DCLink[0Off 1On] inport has been added to set the torque request to zero if the DC voltage is off.
RC_LOAD_SERIES block	<p>A new V_Init[V] inport has been added to set the initial capacitor voltage.</p> <p>Two new outports V_C[V] and V_R[V] have been added to provide the capacitance and resistance voltage.</p> <p>A new Sw_V_Init[0Intern 1Extern] parameter has been added to define if the initial capacitor voltage is set via a parameter or via a block inport.</p>
ASM Electric Components Operator Library	<p>There is now an Operator version of the ASM Electric Components Library.</p> <p>The Operator version is available for hybrid applications (<i>Vehicle Dynamics Hybrid</i> and <i>Engine Gasoline Hybrid</i>) and battery electric vehicle applications.</p> <p>The library contains models that offer the same functionality, simulation quality, and parameterization options as the standard simulation package (Developer version).</p>

Changes in the ASM Electric Components Demo Model

Battery electric vehicle (BEV) demo model	<p>A vehicle start button and a DC link model with pre-charge functionality have been added to the demo model. The soft ECU torque manager gets the start request from the start button and controls the DC link to switch it on and off to provide the battery voltage to the electric machines.</p> <p>The Soft_ECU_Trq_Manager model has been extended with an interface for external torque requests from ACC and ESP ECUs.</p>
Vehicle Dynamics Hybrid demo model	The Soft_ECU_Hybrid_Manager model has been extended with an interface for external torque requests from ACC and ESP ECUs.

Migrating to ASM Electric Components Blockset 3.8

BATTERY_MULTICELL block	<p>The model structure and the parameterization of the model have been changed, so that parameters cannot be migrated automatically.</p> <p>During migration, the link to the BATTERY_MULTICELL library is changed to the former version BATTERY_MULTICELL_10_0 subsystem. Thus, the simulation behavior does not change. To use the new implementation, drag the</p>
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BATTERY_MULTICELL block from the ASM Electric Components Library to your model and adapt the inports, outports, and parameters to your requirements.

Note

When you use the older Operator version of the Engine Gasoline Hybrid demo model, some migration issues might occur because the BATTERY_MULTICELL_10_0 is not part of the ASM Electric Components Operator Library. To solve this issue, simply drag the new BATTERY_MULTICELL block to the model and adapt the initialization files accordingly.

BATTERY block

The model structure and the parameterization of the model have been changed, so parameters cannot be migrated automatically.

During migration, the link to the BATTERY library is changed to the former version BATTERY_13_0 subsystem. Thus, the simulation behavior is not changed. To use the new implementation, drag the BATTERY block from the ASM Electric Components Library to your model and adapt the inports, outports, and parameters to your requirements.

BATTERY_CELL block

The model structure and the parameterization of the battery model have been changed, so that the BATTERY_CELL block is no longer needed for the new battery model version. Therefore, the block is shifted to the former version subsystem of the library and the library link is changed to the former version during migration. Thus, the simulation behavior does not change.

BATTERY_THERMAL block

The model structure and the parameterization of the battery model have been changed, so that the BATTERY_THERMAL block is no longer needed for the new battery model version. Therefore, the block is shifted to the former version subsystem of the library and the library link is changed to the former version during migration. Thus, the simulation behavior does not change.

STARTER block

A new Factor_k_phi_PolePairs[V_s] outputport has been added to the DC_MACHINE subsystem to correct the maximum speed calculation for the overrunning clutch.

The model has been changed, so the model behavior cannot be migrated automatically. During migration, the link to the library is changed to the former version STARTER_5_0. Thus, the simulation behavior does not change. To use the new implementation, drag the STARTER block from the ASM Electric Components Library to your model and adapt the inports, outports, and parameters to your requirements.

THREE_PHASE_DCM_ INVERTER block

The discontinuous conduction mode of a three-phase electrical load by turning off all power switches has been improved.

During migration, the link to the library is changed to the former version `THREE_PHASE_DCM_INVERTER_7_0`. Thus, the simulation behavior does not change. To use the new implementation, drag the `THREE_PHASE_DCM_INVERTER` block from the ASM Electric Components Library to your model.

BRAKE_CONTROL_BEV block

The `ESP_Mode[0None|1ABS|2ESP|3ASR]` inport has been renamed to `Sw_Recuperation[0Enable|1Disable]`. The functionality of the inport has not been changed.

BRAKE_CONTROL block

The `ESP_Mode[0None|1ABS|2ESP|3ASR]` inport has been renamed to `Sw_Recuperation[0Enable|1Disable]`. The functionality of the inport has not been changed.

Related topics**Basics**

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Environment

Where to go from here

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Migrating to ASM Environment Blockset 4.10	49

New Features of ASM Environment Blockset 4.10

MANEUVER_SCHEDULER block

Segments can be triggered using a new transition condition. The new transition condition evaluates the distance between the bounding boxes of two vehicles on the road reference line. This feature is available only with an ASM Traffic license.

Tables that use the distance s along the route can be used. In previous Releases, only tables that use the driven distance in the current segment could be used.

Use the "`asm_migrate_scenario`" MATLAB script to perform the manual migration of maneuver and scenario MAT files created with previous dSPACE Releases. The "`asm_migrate_maneuver`" script has been discontinued.

LANE_NETWORK block

The ASM Environment library has been extended by the initial version of the LANE_NETWORK block. You can use the block to download static road information from ModelDesk. The static road information can be used with the OSI Groundtruth Interface block.

LANESENSOR_DYNAMIC_OUTPUT block

The block provides further information about the vehicle's current lane and the adjacent lanes.

The new outputs include:

- Curvatures of lanes and curvatures of related lane markings.
- Defined driving direction on lanes, or the direction of lanes.
- Detailed information on adjacent lanes, such as the position of corresponding lane markings and lane IDs. Thus, the information is as detailed as the information on the current lane.

Migrating to ASM Environment Blockset 4.10

LONGITUDINAL_CONTROLLER_HYBRID block

The block is discontinued and shifted to the former versions. During migration, the link to the block is changed to the former version LONGITUDINAL_CONTROLLER_HYBRID_5_0.

LONGITUDINAL_CONTROL block

The issue of increased turnaround time with active preview time has been solved by using a customized variable time delay block.

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Gasoline Engine Basic

Where to go from here

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Changes in the ASM Engine Gasoline Basic Demo Model

New test cycles

Two new engine dynamometer test cycles have been added to the demo model:

- Non-Road Steady Cycle (NRSC)
- Non-Road Transient (NRTC)

Changes in EUDC test cycles

The first standstill time of the EUDC test cycles has been changed from 50 seconds to 11 seconds, according to the official resources. This change is not migrated for older test cycle versions.

Measurement data handling

The exchange of measurement data from ModelDesk to the ASM Engine Testbench and ASM Optimizer is now based on ModelDesk measurement data files (MD) files and not separately created measurement files (M) files.

Migrating to ASM Gasoline Engine Basic Blockset 2.2.3

Dimension parameter error message

The error message that is displayed when a dimension parameter is changed (e.g., by ModelDesk download) has been improved and standardized.

This applies to the following blocks:

- ENGINE_SETUP

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Gasoline Engine

Where to go from here

Information in this section

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Changes in the ASM Engine Gasoline Demo Model

New test cycles

Two new engine dynamometer test cycles have been added to the demo model:

- Non-Road Steady Cycle (NRSC)
- Non-Road Transient (NRTC)

Changes in EUDC test cycles

The first standstill time of the EUDC test cycles has been changed from 50 seconds to 11 seconds, according to the official resources. This change is not migrated for older test cycle versions.

Measurement data handling

The exchange of measurement data from ModelDesk to the ASM Engine Testbench and ASM Optimizer is now based on ModelDesk measurement data files (MD) files and not separately created measurement files (M) files.

Migrating to ASM Gasoline Engine Blockset 4.0.3

Dimension parameter error message


The error message that is displayed when a dimension parameter is changed (e.g., by ModelDesk download) has been improved and standardized.

This applies to the following blocks:

- RAIL_CONTROL_CRANKBASED
- HPP_CRANKBASED
- ENGINE_SETUP

Related topics

Basics

[Migrating ASM Models](#) ( ASM User Guide)

ASM Gasoline InCylinder

Changes in the ASM Gasoline InCylinder Demo Model

Measurement data handling	The exchange of measurement data from ModelDesk to the ASM Engine Testbench and ASM Optimizer is now based on ModelDesk measurement data files (MD) files and not separately created measurement files (M) files.
Model structure	The model structure in Simulink has been redesigned. Intermediate subsystems have been introduced in the AirPath model. Further, several signals for exchange between these subsystems are now routed by bus. This allows for an easy modification of the model.
New test cycles	Two new engine dynamometer test cycles have been added to the demo model: <ul style="list-style-type: none">▪ Non-Road Steady Cycle (NRSC)▪ Non-Road Transient (NRTC)
Changes in EUDC test cycles	The first standstill time of the EUDC test cycles has been changed from 50 seconds to 11 seconds, according to the official resources. This change is not migrated for older test cycle versions.

ASM KnC

New Features of ASM KnC 8.1

Program start

ASM KnC can now be started directly from the Windows Start menu.

Suspension type templates

ASM KnC (Windows-based) now also contains templates for the following suspension types:

- Integral Link Strut
- Integral Multi Link
- Solid Twist Beam Control Arm

ASM Optimizer

Where to go from here

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Migrating to ASM Optimizer Blockset 1.9	54

New Features of ASM Optimizer 1.9

Import measurement data

When importing ModelDesk measurement data files to ASM Optimizer, you can now select whether to import the raw data variables or measurement data variables. If raw data variables are used, even variables that are not mapped in ModelDesk can be accessed.

When you import measurement data, variables calculated by measurement functions in ModelDesk are included.

Migrating to ASM Optimizer Blockset 1.9

Exporting measurement mapping

The measurement mapping export now only contains the mapping and not the variable values. The values are not imported/used at all by the ASM workflow. To use such data, use an 'Additional Function' in the ModelDesk Processing.

ASM Road Converter

New Features of ASM RoadConverter

Tool performance

The performance of the ASM RoadConverter algorithms has been improved. This is useful during import of roads with many GPS data points, for example.

ASM Traffic

Where to go from here

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Changes in the ASM Traffic Demo Model	57
Migrating to ASM Traffic Blockset 3.10	57

New Features of ASM Traffic Blockset 3.10

TRAFFIC_SCHEDULER block

Segments can be triggered using a new transition condition. The new transition condition evaluates the distance between the bounding boxes of two vehicles on the road reference line.

The longitudinal activity Distance[m] can be configured to use the rear or front edge of a vehicle as a reference point. In previous Releases, the activity always uses the main point (middle of front axle) as a reference point.

Tables that use the distance s along the route can now be used. Until now, only tables that use the driven distance in the current segment could be used.

Use the "asm_migrate_scenario" MATLAB script to perform the manual migration of traffic and scenario MAT files created with previous dSPACE Releases. The "asm_migrate_traffic" script has been discontinued.

Soft_ECU_ACC block

The functionality of the block has changed in reference to the autonomous emergency braking (AEB) intervention:

- The TARGET_SELECTION_ACC subsystem has been extended by a lane crossing check (LaneCrossingCheck_Fellow parameter) to enable a detection of moving objects crossing the lane of the ASM vehicle. With this feature, especially the NCAP VRU scenarios can be simulated and validated. However, the new functionality does not provide a full cross traffic assist.
- The calculation of the AEB activation time has been modified. The new functionality uses the time to collision (TTC) value and compares it with a predefined TTC threshold. If the TTC value falls below the threshold, the AEB is initiated.

Radar effects

The new Radar Effects library of ASM Traffic provides blocks for the simulation of some radar sensor effects. The blocks are intended to be used as an extension of the Object Sensor 3-D model.

Custom points The new Custom Points library of ASM Traffic provides blocks for the handling of user-defined points of traffic objects. The blocks are intended to be used as an extension of the Object Sensor 3-D model.

Nearest surface The Object Sensor 3-D model has been extended to calculate information about the nearest surface of objects in scope.

Changes in the ASM Traffic Demo Model

LINE_SENSOR block The LINE_SENSOR block has been disabled by default. It can be enabled via the Environment/Sensors/Line Sensor parameter page in ModelDesk.

Soft_ECU_ACC block The SoftECU ACC block has been extended by a lane crossing detection. Therefore, new inports and outports have been added to the TARGET_SELECTION_ACC and SOFT_ECU_ACC subsystems.

In addition, the condition for the AEB intervention is determined via a TTC threshold from now on. For this reason, the Map_AEBSafetyFactor parameter has been replaced by Map_TTCThresholdAEB.

Object_Sensor_3D block The Object_Sensor_3D subsystem has been extended by the RadarEffects and CustomPoints subsystems.

The SensorMapping subsystem of Object_Sensor_3D has been extended by the NearestSurfaceMapping subsystem, which provides information about the calculated nearest surfaces of detected objects.

DS1006 (single-core) support The number of features of the ASM Traffic demo model has grown with the current Release. This leads to task overruns on single-core DS1006 Processor Boards. The single-core DS1006 Processor Board is no longer qualified for ASM Traffic support.

Migrating to ASM Traffic Blockset 3.10

SOFT_ECU_ACC block The model structure and the parameterization of the SOFT_ECU_ACC implementation have been changed, so parameters cannot be migrated automatically.

During migration, the link to the SoftECU ACC library is changed to the former version SOFT_ECU_ACC_6_0 subsystem. Thus, the simulation behavior does not change. To use the new implementation, drag the SOFT_ECU_ACC block from the ASM Traffic library to the model and adapt the inports, outports, and parameters to your requirements.

TARGET_SELECTION_ACC block

The model structure and the parameterization of the TARGET_SELECTION_ACC model have been changed, so parameters cannot be migrated automatically.

During migration, the link to the TARGET_SELECTION_ACC library is changed to the former version TARGET_SELECTION_ACC_4_0. Thus, the simulation behavior does not change. To use the new implementation, drag the TARGET_SELECTION_ACC block from the ASM Traffic library to the model and adapt the inports, outports, and parameters to your requirements.

USER_INTERFACE_ACC block

The model structure and the parameterization of the USER_INTERFACE_ACC model have been changed, so parameters cannot be migrated automatically.

During migration, the link to the USER_INTERFACE_ACC library is changed to the former version USER_INTERFACE_ACC_3_0. Thus, the simulation behavior does not change. To use the new implementation, drag the USER_INTERFACE_ACC block from the ASM Traffic library to the model and adapt the inports, outports, and parameters to your requirements.

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Trailer

Migrating to ASM Trailer Blockset 2.6.5

Sideview angle

The *caster* angle has been renamed to *sideview* angle.

This applies to the following blocks:

- SUSKIN_TRAILER_FRONT_ASYM_3DOF
- SUSKIN_TRAILER_FRONT_SYM_3DOF
- SUSKIN_RIGID_SYM_TRAILER_FRONT
- SUSKIN_RIGID_TRUCK_TRAILER_FRONT
- SUSKIN_TRAILER_REAR_ASYM_3DOF
- SUSKIN_TRAILER_REAR_SYM_3DOF
- SUSKIN_RIGID_SYM_TRAILER_REAR
- SUSKIN_RIGID_TRUCK_TRAILER_REAR
- SUSKIN_TRAILER_REAR_2ND_ASYM_3DOF
- SUSKIN_TRAILER_REAR_2ND_SYM_3DOF
- SUSKIN_RIGID_SYM_TRAILER_REAR_2ND
- SUSKIN_RIGID_TRUCK_TRAILER_REAR_2ND
- SUSKIN_TRAILER_REAR_3RD_ASYM_3DOF
- SUSKIN_TRAILER_REAR_3RD_SYM_3DOF
- SUSKIN_RIGID_SYM_TRAILER_REAR_3RD
- SUSKIN_RIGID_TRUCK_TRAILER_REAR_3RD
- RELATIVE_POSITION_TRAILER_FRONT
- SUSCOMP_RIGID_SYM_TRAILER_FRONT
- SUSCOMP_OPP_TRAILER_FRONT
- SUSCOMP_TRAILER_FRONT
- RELATIVE_POSITION_TRAILER_REAR
- SUSCOMP_RIGID_SYM_TRAILER_REAR
- SUSCOMP_OPP_TRAILER_REAR
- SUSCOMP_TRAILER_REAR
- RELATIVE_POSITION_TRAILER_REAR_2ND
- SUSCOMP_RIGID_SYM_TRAILER_REAR_2ND
- SUSCOMP_OPP_TRAILER_REAR_2ND
- SUSCOMP_TRAILER_REAR_2ND
- RELATIVE_POSITION_TRAILER_REAR_3RD
- SUSCOMP_RIGID_SYM_TRAILER_REAR_3RD
- SUSCOMP_OPP_TRAILER_REAR_3RD
- SUSCOMP_TRAILER_REAR_3RD

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Truck

Migrating to ASM Truck Blockset 3.1.1

Sideview angle

The *caster* angle has been renamed to *sideview* angle.

This applies to the following blocks:

- SUSKIN_REAR_2ND_ASYM_3DOF
- SUSKIN_REAR_2ND_SYM_3DOF
- SUSKIN_RIGID_SYM_REAR_2ND
- SUSKIN_RIGID_TRUCK_REAR_2ND
- SUSKIN_REAR_3RD_ASYM_3DOF
- SUSKIN_REAR_3RD_SYM_3DOF
- SUSKIN_RIGID_SYM_REAR_3RD
- SUSKIN_RIGID_TRUCK_REAR_3RD
- RELATIVE_POSITION_REAR_2ND
- SUSCOMP_RIGID_SYM_REAR_2ND
- SUSPENSION_COMPLIANCE_OPP_REAR_2ND
- SUSPENSION_COMPLIANCE_REAR_2ND
- RELATIVE_POSITION_REAR_3RD
- SUSCOMP_RIGID_SYM_REAR_3RD
- SUSPENSION_COMPLIANCE_OPP_REAR_3RD
- SUSPENSION_COMPLIANCE_REAR_3RD

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)

ASM Turbocharger

New Features of ASM Turbocharger Blockset 3.2.4

COMPRESSOR block

An optional PT1 delay on the input mass flow has been added. This improves the operating point stability in the look-up tables for efficiency and pressure ratio. The PT1 constant for temperature and pressure output has also been limited to the simulation step size.

COMPRESSOR_HP block

An optional PT1 delay on the input mass flow has been added. This improves the operating point stability in the look-up tables for efficiency and pressure ratio. The PT1 constant for temperature and pressure output has also been limited to the simulation step size.

TURBO_BASIC block

A switch parameter to decide if the control signal influence is multiplied with the relative or absolute pressure has been added to the block.

ASM Utils

Where to go from here

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Migrating to ASM Utils 4.1.1	63

New Features of ASM Utils 4.1.1

Customized variable time delay

A customized variable delay block based on an S-function has been introduced. The delayed signal is calculated in discrete time and no interpolation/extrapolation is performed for the values between successive simulation steps. The block delivers a precise result when the delay time is not continuously changed during the simulation. Therefore, for real-time applications where the delay time is not altered continuously or when small errors resulting from such changes are negligible, the block shows a significant reduction in turnaround time.

Migrating to ASM Utils 4.1.1

Unit Conversion block

The Unit Conversion block has been optimized. Depending on the selected conversion, only the required operations are inserted (multiply with a gain and/or add an offset).

Compare Value block

The output of the Compare Value block has been renamed from Const_match[0]1] to Const_mismatch[0]1].

The behavior is unchanged. The output value is:

- 0 if the input matches the reference value
- 1 if the input does not match the reference value

ModelDesk processing

The automatic generation of a measurement file has been discontinued. The existence of the `WriteMeasFile` struct field in the general settings now triggers a warning.

Until now, the measurement file had been used by ASM Engine Testbench and ASM Optimizer. Now, both can read the related data directly from the

ModelDesk measurement data (MD) file, including the calculated measurement variables. Remove the `WriteMeasFile` field in the general settings and import the measurement data to your ASM Testbench and ASM Optimizer project.

In special cases (e.g., if measurement data is combined to one measurement file), you have to introduce an *additional function* in ModelDesk Processing.

This function is available with the current ModelDesk Engine demo file at:

```
Pool\Processing\Function\PostFcns\  
WriteCombinedMeasurementFile.m
```

ASM Engine Testbench

When you import ModelDesk measurement data files to the ASM Engine Testbench, the measurement data variables are used instead of the raw data variables. Therefore, variables that result from measurement functions in ModelDesk can be used in ASM Engine Testbench.

In contrast to the raw data variables, the measurement data variables have a fixed unit defined by the measurement type. This reduces the risk of errors when handling raw data with different units.

ASM Vehicle Dynamics

Migrating to ASM Vehicle Dynamics Blockset 4.1.1

GEARBOX_MT_RIGID block	The issue of gear synchronization failure during shifting through neutral has been solved. The shifting through neutral feature can be activated in the GEAR_SHIFTER block.
GEARBOX_AT_RIGID block	The issue of gear synchronization failure during shifting through neutral has been solved.
GEARBOX_MT block	The issue of gear synchronization failure during shifting through neutral has been solved. The shifting through neutral feature can be activated in the GEAR_SHIFTER block.
GEARBOX_AT block	The issue of gear synchronization failure during shifting through neutral has been solved.
Sideview angle	<p>The <i>caster</i> angle has been renamed to <i>sideview</i> angle.</p> <p>This applies to the following blocks:</p> <ul style="list-style-type: none"> ▪ MC_PHERSON_STRUT ▪ SUSKIN_FRONT_ASYM_3DOF ▪ SUSKIN_FRONT_SYM_3DOF ▪ SUSKIN_RIGID_SYM_FRONT ▪ SUSKIN_RIGID_TRUCK_FRONT ▪ SUSPENSION_KINEMATICS_FRONT_ASYMMETRIC ▪ SUSPENSION_KINEMATICS_FRONT_SYMMETRIC ▪ RELATIVE_POSITION_FRONT ▪ SUSCOMP_2D_FRONT ▪ SUSCOMP_RIGID_SYM_FRONT ▪ SUSPENSION_COMPLIANCE_FRONT ▪ SUSPENSION_COMPLIANCE_OPP_FRONT ▪ ROTATION_SWITCH ▪ RIGID_AXLE ▪ SEMI_TRAILING_ARM ▪ SUSKIN_REAR_ASYM_3DOF ▪ SUSKIN_REAR_SYM_3DOF

- SUSKIN_RIGID_SYM_REAR
- SUSKIN_RIGID_TRUCK_REAR
- SUSPENSION_KINEMATICS_REAR_ASYMMETRIC
- SUSPENSION_KINEMATICS_REAR_SYMMETRIC
- RELATIVE_POSITION_REAR
- SUSCOMP_2D_REAR
- SUSCOMP_RIGID_SYM_REAR
- SUSPENSION_COMPLIANCE_OPP_REAR
- SUSPENSION_COMPLIANCE_REAR

TIRE_MF block

A bug concerning the external tire radius connection has been fixed.

Related topics

Basics

[Migrating ASM Models \(📖 ASM User Guide\)](#)


Bus Manager (Stand-Alone)

Features of the Bus Manager (Stand-Alone) 6.3

Support of global time synchronization (GTS)


The Bus Manager (stand-alone) now supports global time synchronization (GTS) according to AUTOSAR for simulation purposes.

If global time synchronization is specified in the communication matrix, you can assign global time domains to the Simulated ECUs part of bus configurations. Via bus configuration features, you can access the time base data of time masters and time slaves or control the timing of time synchronization, for example.

For more information, refer to [Implementing Global Time Synchronization in Executable Applications](#) ( [Bus Manager \(Stand-Alone\) Implementation Guide](#))

Exchanging CAN bus communication between two communication clusters

The Bus Manager now lets you exchange CAN bus communication between two communication clusters. For this purpose, a new Gateways part is available for each bus configuration. For each gateway you want to specify, you must add a Frame Gateway element to the Gateways part of a bus configuration. Via the bus access requests of the Frame Gateway, you can specify the communication clusters between which CAN bus communication is exchanged. Additionally, you can specify the gateway direction or disable a gateway via the Frame Gateway Direction bus configuration feature.

For more information, refer to [Specifying CAN Gateways](#) ( [Bus Manager \(Stand-Alone\) Implementation Guide](#)).

Verifying authentication information of received secured IPDUs


The Bus Manager (stand-alone) lets you verify the authentication information of received secured IPDUs. When you add the SecOC bus configuration feature to an RX secured IPDU that is assigned to the Simulated ECUs part of a bus configuration, the received authentication information can be verified according to verification algorithms that are provided by user code.

For more information, refer to [Implementing Secure Onboard Communication in Executable Applications](#) ( [Bus Manager \(Stand-Alone\) Implementation Guide](#)).

Enhanced AUTOSAR support

The Bus Manager (stand-alone) now provides enhanced AUTOSAR support, i.e., the Bus Manager (stand-alone) supports the following:

- AUTOSAR files based on AUTOSAR 4.4 as communication matrices
- Container IPDUs with a static container layout
- AUTOSAR E2E transformers for end-to-end protected bus communication

For more information, refer to [Aspects of Supported AUTOSAR Features](#) ( [Bus Manager \(Stand-Alone\) Implementation Guide](#)).

ConfigurationDesk

Two variants for different use scenarios

ConfigurationDesk is provided in two variants that are useful for different use scenarios. You can use ConfigurationDesk - Implementation Version to implement real-time applications. You can use ConfigurationDesk - Configuration Version to configure dSPACE RapidPro hardware.

ConfigurationDesk - Implementation Version


Where to go from here

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Migrating to ConfigurationDesk 6.3	73

New Features of ConfigurationDesk 6.3 (Implementation Version)

Configuring bus monitoring for application processes

ConfigurationDesk now lets you configure CAN, LIN, and Ethernet bus monitoring for application processes. For this purpose, ConfigurationDesk provides the Bus monitoring task property, which lets you specify in which task the bus monitoring service must be executed. Refer to [Configuring Application Processes for Bus Monitoring](#) ( [ConfigurationDesk Real-Time Implementation Guide](#)).

Improved behavior when adding Simulink behavior models

If you want to add Simulink behavior models to the ConfigurationDesk application and the model analysis fails, no behavior model is added. A dialog displays error messages and refers to the MATLAB Command Window, which provides more information on the errors that have occurred in the Simulink behavior models. While you correct the errors in the behavior models, the Add Model dialog remains open and keeps its configuration. Then, you can add the behavior models to the ConfigurationDesk application again without having to select them again.

Supported SIC file versions

ConfigurationDesk 6.3 supports SIC file versions as listed below:

SIC Files Created With ...	SIC Version
dSPACE Release 2019-A: <ul style="list-style-type: none"> ▪ Model Interface Package for Simulink 4.1 	1.6
dSPACE Release 2018-B: <ul style="list-style-type: none"> ▪ Model Interface Package for Simulink 4.0 ▪ TargetLink 4.4 	1.5
dSPACE Release 2018-A: <ul style="list-style-type: none"> ▪ Model Interface Package for Simulink 3.6 	1.4
dSPACE Release 2017-B: <ul style="list-style-type: none"> ▪ Model Interface Package for Simulink 3.5 	1.3

Supported BSC file versions

ConfigurationDesk 6.3 supports BSC files of version 1.6.

Supported V-ECU implementation container versions

ConfigurationDesk 6.3 supports V-ECU implementation container versions as listed below:

V-ECU Implementations Created With...	V-ECU Implementation Version
dSPACE Release 2019-A: ▪ SystemDesk 5.3	2.9 ¹⁾
dSPACE Release 2018-B: ▪ SystemDesk 5.2 ▪ TargetLink 4.4	2.8 ¹⁾
dSPACE Release 2018-A: ▪ SystemDesk 5.1	2.7 ¹⁾
dSPACE Release 2017-B: ▪ SystemDesk 5.0 ▪ TargetLink 4.3	2.6 ¹⁾

¹⁾ There is a migration issue for VEOS if the container file to be imported contains static libraries. For more information, refer to [Migration issue when importing container files with static libraries compiled with VEOS 4.1 or earlier](#) ([📖 VEOS Manual](#)).

New features concerning ECU interfacing with SCALEXIO

ConfigurationDesk now supports CAN ECU interfaces for ECU interfacing with SCALEXIO. You can import EIC files that specify CAN ECU interfaces to ECU Interface Configuration function blocks. To set up the CAN interface in ConfigurationDesk, you can reference a CAN function block in an ECU Interface Configuration function block, assign a suitable hardware resource to the CAN function block, and configure CAN-specific settings in the CAN function block.

For more information, refer to [Basics on ECU Interfacing with SCALEXIO Systems](#) ([📖 ConfigurationDesk Real-Time Implementation Guide](#)).

Enhanced function block types

Virtual Ethernet Setup The Virtual Ethernet Setup function block type now lets you prioritize Ethernet frames within a VLAN. Refer to [Virtual Ethernet Setup](#) ([📖 ConfigurationDesk I/O Function Implementation Guide](#)).

New features of the Bus Manager

Support of global time synchronization (GTS) The Bus Manager now supports global time synchronization (GTS) according to AUTOSAR for simulation purposes. If global time synchronization is specified in the communication matrix, you can assign global time domains to the Simulated ECUs part of bus configurations. Via bus configuration features, you can access the time base data of time masters and time slaves or control the timing of time synchronization, for example.

For more information, refer to [Implementing Global Time Synchronization in Executable Applications](#) ([📖 ConfigurationDesk Bus Manager Implementation Guide](#)).

Exchanging CAN bus communication between two communication clusters The Bus Manager now lets you exchange CAN bus communication between two communication clusters, i.e., gateway CAN communication. For

this purpose, a new Gateways part is available for each bus configuration. For each gateway you want to specify, you must add a Frame Gateway element to the Gateways part of a bus configuration. Via bus access requests of the Frame Gateway, you can specify the communication clusters between which CAN bus communication is exchanged. Additionally, you can specify the gateway direction or disable a gateway via the Frame Gateway Direction bus configuration feature.

For more information, refer to [Specifying CAN Gateways](#) ([📖 ConfigurationDesk Bus Manager Implementation Guide](#)).

Verifying authentication information of received secured IPDUs The Bus Manager now lets you verify the authentication information of received secured IPDUs. When you add the SecOC bus configuration feature to an RX secured IPDU that is assigned to the Simulated ECUs part of a bus configuration, the received authentication information can be verified according to verification algorithms that are provided by user code.

For more information, refer to [Implementing Secure Onboard Communication in Executable Applications](#) ([📖 ConfigurationDesk Bus Manager Implementation Guide](#)).

Enhanced AUTOSAR support The Bus Manager now provides enhanced AUTOSAR support, i.e., the Bus Manager supports the following:

- AUTOSAR files based on AUTOSAR 4.4 as communication matrices
- Container IPDUs with a static container layout
- AUTOSAR E2E transformers for end-to-end protected bus communication

For more information, refer to [Aspects of Supported AUTOSAR Features](#) ([📖 ConfigurationDesk Bus Manager Implementation Guide](#)).

New features concerning hardware support

ConfigurationDesk supports the following new SCALEXIO hardware:

- DS6601 and DS6602 FPGA base boards
 - New SCALEXIO FPGA base boards with the Xilinx® Kintex® Ultrascale KU035 FPGA (DS6601) and Xilinx Kintex Ultrascale+ KU15P FPGA (DS6602). The new FPGA base boards are compatible with the DS2655 FPGA base boards.
- SCALEXIO AutoBox (8-slot)
 - SCALEXIO AutoBox is a shock-resistant and vibration-resistant enclosure for using SCALEXIO boards for in-vehicle control experiments.

The implementation of UART serial communication is now supported for the SCALEXIO Processing Unit and the DS6001 Processor Board, each via a single UART channel. Refer to [Example of UART Serial Communication Using Onboard UART of SCALEXIO Processing Hardware](#) ([📖 ConfigurationDesk Real-Time Implementation Guide](#)).

New features of the tool automation interface

ConfigurationDesk's automation interface supports additional features of ConfigurationDesk. For more information, refer to [Changes to the Automation Interface for Release 2019-A](#) ([📖 ConfigurationDesk Automating Tool Handling](#)).

Migrating to ConfigurationDesk 6.3

Discontinuation of Python 2.7

The support of Python 2.7 was discontinued with dSPACE Release 2018-B. Python 3.6 is now supported.

You can find information on changes and migration aspects of Python scripts in dSPACE products on the dSPACE website. Refer to <http://www.dspace.com/go/Python36Migration>.

Note

Python scripts that have been added to a ConfigurationDesk project in a previous ConfigurationDesk version via `Insert Script` or `Import Script` are automatically converted to Python 3.6 when you open the project. The script migration cannot be reverted.

Discontinuation of SCALEXIO Ethernet Solution

The SCALEXIO Ethernet Solution is discontinued as follows:

- The end-of-life date is January 31, 2021. You can still buy the product up to and including January 31, 2019.
- New Releases of the SCALEXIO Ethernet Solution will still be available for customers with a Software Maintenance Service contract until at least January 31, 2020.
- Customers with a Software Maintenance Service contract who work with dSPACE Release 2018-B will be automatically migrated to the new ConfigurationDesk UDP/TCP function blocks.

For new projects (using dSPACE Release 2018-A and later), we recommend that you use the new UDP/TCP function blocks that are natively integrated in ConfigurationDesk. They provide additional and new options such as IPv6, UDP Multicast support, and enhanced TCP status information.

Note: The dedicated license is required for using the new UDP/TCP function blocks in ConfigurationDesk.

FPGA custom function blocks with APU functionality

With dSPACE Release 2018-B, the angle range handling of the angular processing unit (APU) was changed. FPGA custom function blocks that use the APU in the 360° angle range are incompatible if they are built with the FPGA Programming Blockset 3.5 or earlier.

To resolve the incompatibility, use the FPGA model/code of the incompatible FPGA custom function block and build a new FPGA custom function block with the RTI FPGA Programming Blockset 3.6 or later. The RTI FPGA Programming Blockset automatically migrates the framework of the FPGA model/code to the current version.

ControlDesk

Where to go from here

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New Features of ControlDesk 7.0

Where to go from here

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New Features of Platform Management and Platforms/Devices (ControlDesk 7.0)

SCALEXIO: Support of new FPGA boards

ControlDesk now supports the following FPGA boards:

- DS6601 FPGA Base Board
- DS6602 FPGA Base Board

SCALEXIO: Display of connected clients

ControlDesk now lets you get details on the clients that are currently connected to the SCALEXIO platform or SCALEXIO Processing Unit selected in the Platforms/Devices controlbar. For each processing unit, the Connected Client Overview dialog displays all the client processes that currently access the unit.

Refer to [Show Connected Clients](#) ( [ControlDesk Platform Management](#)).

Bus monitoring devices: Support of AUTOSAR 4.4.0

The ControlDesk bus monitoring devices (CAN, Ethernet, LIN) now support AUTOSAR 4.4.0 system description files.

Ethernet Bus Monitoring device: Support for signals of UDP Ethernet PDUs

ControlDesk now lets you add a variable description to the Ethernet Bus Monitoring device. ControlDesk supports AUTOSAR system description files.

Adding a variable description lets you do the following:

- Visualize signals transmitted over Ethernet in ControlDesk instruments.
 - The following protocols are supported:
 - IPv4
 - IPv6
 - UDP
- Measure signals transmitted over Ethernet, and include them in recordings.

For information on the supported variable description versions, refer to [Variable Descriptions Supported by ControlDesk](#) ([📖 ControlDesk Variable Management](#)).

New Variable Management Features (ControlDesk 7.0)

Improvement for handling variable descriptions

Up to and including ControlDesk 6.4, the following actions to handle variable descriptions required ControlDesk to be in the offline calibration state for *all* platforms/devices. As of ControlDesk 7.0, you can perform these actions also if only the related platform/device is in the offline calibration state:

- [Activate Variable Description](#) ([📖 ControlDesk Variable Management](#))
- [Add Variable Description](#) ([📖 ControlDesk Variable Management](#))
- [Reload \(Variable Description\)](#) ([📖 ControlDesk Variable Management](#))
- [Replace \(Variable Description\)](#) ([📖 ControlDesk Variable Management](#))

New Measurement and Recording Features (ControlDesk 7.0)

Specifying a default raster for measuring parameters

You can now specify whether to use the default measurement raster of the selected platform/device as the default raster for measuring parameters.

Refer to [Platform Properties](#) ([📖 ControlDesk Measurement and Recording](#)).

Using measurement time stamps when saving the measurement buffer and saving displayed data

You can now specify whether to use measurement time stamps also when saving the measurement buffer and saving displayed data. If enabled, the time stamps are calculated from the beginning of the measurement in ControlDesk.

For more information on saving the measurement buffer and on saving displayed data, refer to [Storage Information Properties](#) ([📖 ControlDesk Measurement and Recording](#)).

**Measurement data files:
Display of the reference time,
and the related UTC and DST
offsets**

For measurement data files, ControlDesk now also displays the following information:

- Reference time
The date and time to which the time stamps of the measurement refer (start time of the measurement in local time).
- Time zone offset
The time zone offset in hours in relation to universal time coordinated (UTC).
- DST offset
The daylight saving time offset in hours.

Refer to [Measurement Data Properties](#) ([📖 ControlDesk Measurement and Recording](#)).

**DSSIGCONV: Downsampling
of ASAM MDF 4.x files**

The DSSIGCONV tool now also supports downsampling destination files with the ASAM MDF 4.x file format.

Refer to [Using DSSIGCONV](#) ([📖 ControlDesk Measurement and Recording](#)).

**Ethernet Bus Monitoring
device: Observing variables**

The Ethernet Bus Monitoring device now also lets you observe variables.

Refer to [Observing Variables](#) ([📖 ControlDesk Measurement and Recording](#)).

New Bus Navigator Features (ControlDesk 7.0)

**Ethernet bus monitoring:
Wireshark decoder support**

The ControlDesk Bus Navigator now lets you use the Wireshark plug-ins for decoding Ethernet communication.

Refer to [Decoding View](#) ([📖 ControlDesk Bus Navigator](#)).

**Ethernet Bus Monitoring
device: Observing variables**

The Ethernet Bus Monitoring device now also lets you observe variables.

Refer to [Observing Variables](#) ([📖 ControlDesk Measurement and Recording](#)).

**Support of global time
synchronization in Bus
Manager applications**

The concept of *global time synchronization* was introduced and standardized by AUTOSAR as a means of providing and distributing synchronized times across all ECUs in a vehicle.

For simulation applications configured with the Bus Manager, the ControlDesk Bus Navigator now lets you display and manipulate CAN PDUs that contain time synchronization information.

For general information on global time synchronization, refer to [Basics on Global Time Synchronization](#) ([📖 ControlDesk Bus Navigator](#)).

For more information on the related instruments, refer to [Bus Instrument \(TX Type for CAN\)](#) ([ControlDesk Bus Navigator](#)) and [Bus Instrument \(RX Type for CAN\)](#) ([ControlDesk Bus Navigator](#)).

New ECU Diagnostics Features (ControlDesk 7.0)

Support of CAN FD

The ControlDesk ECU Diagnostics device now supports *CAN with Flexible Data Rate* (CAN FD) in connection with CAN-based ECU diagnostics.

For details on using CAN FD in connection with the ECU Diagnostics device, refer to <https://www.dspace.com/go/DiagCANFD>.

Migrating to ControlDesk 7.0

Where to go from here

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Gives you an overview of the discontinuations in ControlDesk.	
Migrating to ControlDesk 7.0	82
To migrate from ControlDesk 6.4 to ControlDesk 7.0 and reuse existing experiments, you might have to carry out the following migration steps.	

Discontinuations in ControlDesk

Discontinuations as of ControlDesk 7.0

DS1103 PPC Controller Board platform As of ControlDesk 7.0, the DS1103 PPC Controller Board platform is no longer available, and the DS1103 is no longer supported.

For migration aspects, refer to [Experiments containing a DS1103 platform](#) on page 83.

Video support As of version 7.0, ControlDesk no longer supports capturing and monitoring video data:

- The Video Capturing device is no longer available.
For migration aspects, refer to [Experiments containing discontinued devices](#) on page 83.
- The Video Monitoring instrument is no longer available.
For migration aspects, refer to [Experiments containing a Video Monitoring instrument](#) on page 85.

XCP on FlexRay device As of ControlDesk 7.0, the XCP on FlexRay device is no longer available.

For migration aspects, refer to [Experiments containing discontinued devices](#) on page 83.

FlexRay Bus Monitoring device As of ControlDesk 7.0, the FlexRay Bus Monitoring device is no longer available.

For migration aspects, refer to [Experiments containing discontinued devices](#) on page 83.

Data Set Manager As of ControlDesk 7.0, the Data Set Manager, the ControlDesk software component for managing the data sets of an experiment, is no longer available.

As a consequence:

- Showing and listing the data sets of the active experiment and displaying their parameter values is no longer possible.

- Creating, comparing, and merging data sets is no longer possible.
- Generating data set reports is no longer possible.

The following data-set-related features have also been discontinued in ControlDesk 7.0:

- Data set container support
- Exporting function groups

However, ControlDesk continues to support data sets and calibration page handling.

Bus Navigator: FlexRay support As of ControlDesk 7.0, the Bus Navigator no longer supports FlexRay bus communication.

- The Bus Navigator tree no longer displays FlexRay bus configuration structures.
- You can no longer monitor and log FlexRay bus communication.
- You can no longer create Bus Instruments for FlexRay.

Tip

When you migrate from older ControlDesk versions and reuse existing experiments containing Bus Instruments for FlexRay, you can continue working with these instruments.

IDF file export As of ControlDesk 7.0, recording and exporting files in the IDF format is no longer supported.

For migration aspects, refer to [Automatic recording file type migration](#) on page 85.

MDF file (format versions 2.0 and 3.0) import As of version 7.0, ControlDesk no longer supports the import of MDF measurement data files (MDF file format versions 2.0 and 3.0).

To import measurement data, use the ASAM MDF 4.1 file format (file name extension: MF4), which is the standard ControlDesk file format for measurement data files.

Measurement Property Filter dialog As of version 7.0, ControlDesk no longer provides the Measurement Property Filter dialog to filter measurements for specified filter strings.

Discontinuations in ControlDesk (dSPACE Release 2019-B and later)

FXF file support As of dSPACE Release 2019-B, ControlDesk will no longer support FXF files for exchanging formulas of calculated variables.

However, ControlDesk will continue to support VXF files to exchange calculated variables and the assigned formulas.

DCM and DSV file support As of dSPACE Release 2019-B, ControlDesk no longer supports the import and export of the following file formats for data sets:

- BOSCH DCM file format
- dSPACE Cal Data (DSV) file format

Use the CDFX file format, which is the standard ControlDesk file format for data set files.

Taking snapshots As of dSPACE Release 2019-B, ControlDesk no longer lets you take snapshots, i.e., read the current values of variable values defined in a label list, and save them to a CSV file.

Defining calculated variables based on recorded signals As of dSPACE Release 2019-B, ControlDesk no longer lets you define calculated variables using recorded signals as input signals in the Measurement Data Pool controlbar.

As an alternative, you can do the following:

1. Define calculated variables *before* a recording in the Variables controlbar.
2. Include the variables in the recording.

Bookmark types 'Failure pattern/pin (de)activated' As of dSPACE Release 2019-B, ControlDesk no longer supports the following bookmark types:

- Failure pattern/pin activated
- Failure pattern/pin deactivated

IDF file import As of dSPACE Release 2020-A, importing files in the IDF format will no longer be supported.

Use the ASAM MDF 4.1 file format (file name extension: MF4), which is the standard ControlDesk file format for measurement data files.

End of software support for discontinued dSPACE hardware

For information on the end of software support for discontinued dSPACE hardware, refer to [Discontinuations](#) on page 15.


Migrating to ControlDesk 7.0

Introduction

To migrate from ControlDesk 6.4 to ControlDesk 7.0 and reuse existing experiments, you might have to carry out the following migration steps.

Note

To migrate to ControlDesk 7.0 from versions earlier than 6.4, you might also have to perform the migration steps of the intervening ControlDesk versions.

For more information, refer to [Migrating from Prior Versions of ControlDesk](#) ( [ControlDesk Introduction and Overview](#)).

Where to go from here

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Experiments containing a DS1103 platform	83
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Experiments containing CAN/LIN Bus Monitoring devices	84
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Experiments containing a DS1103 platform

When you open an experiment with a DS1103 PPC Controller Board platform in ControlDesk 7.0 or later, a message is displayed in the dSPACE Log. The platform is nonfunctional.

This is due to the discontinuation of the DS1103 PPC Controller Board platform.

However, you can reuse experiment parts if you use newer dSPACE real-time hardware such as MicroLabBox, which is the successor of the DS1103.

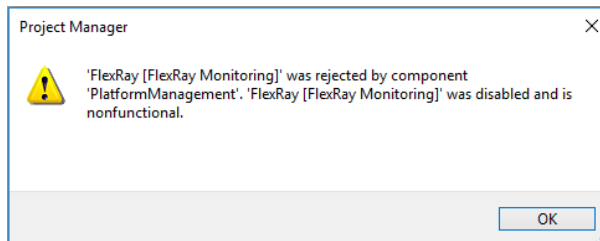
For details on reusing experiment parts, refer to [Switching the Simulation Platform and Reusing Experiment Parts](#) ([ControlDesk Platform Management](#)).

Experiments containing discontinued devices

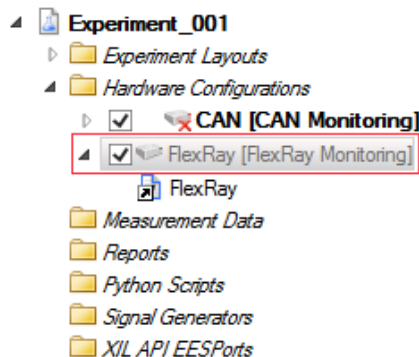
As of version 7.0, the following devices are no longer available:

- Video Capturing device
- XCP on FlexRay device
- FlexRay Bus Monitoring device

When you open an experiment with a discontinued device in ControlDesk 7.0 or later, you are shown a message similar to the following one:



After you confirm the message dialog, the experiment displays the device as shown below:



The device is nonfunctional. Remove it from the experiment. If the variable description assigned to the device is not used in another experiment, remove it from the project.

Experiments containing CAN/LIN Bus Monitoring devices

If your experiment contains one of the following devices, an error message is displayed when you try to connect to the device hardware:

- CAN Bus Monitoring device to which the variable description was added in ControlDesk 5.4 or earlier
- LIN Bus Monitoring device to which the variable description was added in ControlDesk 5.5 or earlier

To reuse experiments with these devices in ControlDesk 7.0 or later, you have to replace or reload the variable description, or add a new variable description to the device.

Repairing variable connections Due to different variable paths, ControlDesk cannot restore the original variable connections even if you added the same variable description.

You can use the `MigrateBusMonitoringDevices` Python script to repair the variable connections. The script is enclosed in a ZIP archive that you can download from <http://www.dspace.com/go/mbmd>.

The ZIP archive contains two folders:

- `RLS2018-A_or_earlier` for use with ControlDesk 6.3 or earlier
- `RLS2018-B_or_later` for use with ControlDesk 6.4 or later

To repair the variable connections, perform the following steps:

1. Start ControlDesk and activate the experiment that contains affected variable connections.
2. In the respective folder, double-click the `MigrateBusMonitoringDevices.pyc` file.
In the ControlDesk Project Manager, the script adds the context menu entry `Migrate Bus Monitoring Devices` to the node of the active experiment.
3. From the context menu of the active experiment, select `Migrate Bus Monitoring Devices` and confirm the start dialog.


The affected variable connections in each layout of the experiment are repaired. Closed layouts are opened, modified, saved, and closed.

The following limitations remain after you run the script:

- **Bus Navigator:** User-defined objects in the Bus Navigator tree, such as monitor, logger, and replay nodes, are lost.
- **Measurement Configuration:** Affected variables in the measurement and recording signal lists are lost.
- **Measurement Configuration:** Trigger rules that contain affected variables remain corrupted and must be removed or repaired manually.

Tip

If you want to add the context menu entry permanently, you can use the script as an extension script. Copy it and the `MigrateMonitoringDevice.extscript` file to the appropriate place in the file system.

For more information on using extension scripts, refer to [Executing Extension Scripts When ControlDesk Starts Up](#) ( [ControlDesk Customization](#)).

Experiments containing a Video Monitoring instrument

When you open an experiment with a Video Monitoring instrument in ControlDesk 7.0 or later, the Video Monitoring instrument is replaced by a Frame instrument.

Remove the instrument from the layout.

This is due to the discontinuation of the video support.

Automatic recording file type migration

If IDF was selected as the Recording file type or as the Automatic export: file type in an experiment to be reused in ControlDesk 7.0 or later, the selection is automatically changed to ASAM MDF 4.1 Files (*.mf4) during project/experiment migration due to the discontinuation of the IDF file export. A related entry is added to the dSPACE Log.

Refer to Storage Information Properties.

Changed behavior of the 'Measure continuously on newly added dSPACE platforms' option

The behavior of the Measure continuously on newly added dSPACE platforms option has been changed as follows:

- Up to and including ControlDesk 6.4, the option was applied when you added a new platform to an experiment, i.e., *it was applied only once*. As a consequence, when you reloaded the platform's variable description afterwards, the option was not applied to new rasters described in that variable description.
- As of ControlDesk 7.0, the option is applied when new rasters are added to a platform, i.e., not only when you add a new platform to an experiment, but also when you reload or replace the platform's variable description, or add a new variable description to it.


The option has been renamed **Measure continuously on new rasters** in ControlDesk 7.0.

Refer to [Measurement Configuration Page](#) ( [ControlDesk Measurement and Recording](#)).


Tool automation changes

Discontinued interfaces The following features and components have been discontinued in ControlDesk 7.0:

- Video support
- DS1103 PPC Controller Board platform
- XCP on FlexRay device
- FlexRay Bus Monitoring device
- Data Set Manager
- Bus Navigator: FlexRay support


As a consequence, the related automation interfaces have also been discontinued in ControlDesk 7.0. For a complete list of these interfaces, refer to [Automation Interfaces Discontinued in ControlDesk 7.0](#) ( [ControlDesk Automation](#)).

Change to the IXaApplication interface As of ControlDesk 7.0, when you exit ControlDesk by using the `Quit` method of the `Application / IXaApplication <<Interface>>` interface, an exception is displayed if ControlDesk is in the measuring/recording or online calibration started state.


For an important note on exiting ControlDesk via automation, refer to [Important Note on Closing/Opening Projects, and on Exiting ControlDesk via Automation](#) ( [ControlDesk Automation](#)).


For more information on the `IXaApplication` interface, refer to `Application / IXaApplication <<Interface>>`.

Migrating from earlier ControlDesk versions


To migrate from earlier ControlDesk versions and reuse existing experiments, you might have to carry out additional migration steps. For more information on the migration steps, refer to [Migrating from Prior Versions of ControlDesk](#) ( [ControlDesk Introduction and Overview](#)).

Related topics**Basics**

[Basics on Migrating from Prior Versions of ControlDesk](#) ( [ControlDesk Introduction and Overview](#))

[Discontinuations as of ControlDesk 7.0](#) ( [ControlDesk Introduction and Overview](#))

References

[Automation Interfaces Discontinued in ControlDesk 7.0](#) ( [ControlDesk Automation](#))

DCI Configuration Tool

New Features of the DCI Configuration Tool 3.11

Firmware versions for DCI-GSI1 and DCI-GSI2 interfaces

The following firmware versions for the DCI-GSI1 and DCI-GSI2 interfaces are delivered with the DCI Configuration Tool 3.11:

- DCI-GSI1 firmware version 1.6.8
- DCI-GSI2 firmware version 1.5.0

Note

The firmware version delivered with the DCI Configuration Tool is not always the latest firmware version available. If you encounter any problems, contact dSPACE Support to check if a later firmware version is available.

dSPACE ECU Flash Programming Tool

New Features of the dSPACE ECU Flash Programming Tool 2.6

Support of CAN interface from PEAK-System Technik GmbH

The dSPACE ECU Flash Programming Tool now also supports the *PCAN-miniPCle FD* interface from PEAK-System Technik GmbH for CAN/CAN FD networks.

Refer to [Supported ECU Interface Types](#) ( [ECU Flash Programming](#)).

dSPACE FlexRay Configuration Package

New Features of dSPACE FlexRay Configuration Package 4.3

FlexRay Configuration Tool

Support of AUTOSAR 4.4 format The FlexRay Configuration Tool now also supports the format of AUTOSAR System Templates based on AUTOSAR Release 4.4.0 for describing FlexRay networks. However, no new features of AUTOSAR Release 4.4.0 are supported.

dSPACE Python Extensions

New Features of dSPACE Python Extensions 3.1

New features

Python Extensions 3.1 does not have new features.

Support of Python 2.7 was discontinued with dSPACE Release 2018-B. Python 3.6 is now supported.

You find information on changes and migration aspects of Python scripts in dSPACE products on the dSPACE website. Refer to <http://www.dspace.com/go/Python36Migration>.

Note

The `matlablib2` Python module does not support MATLAB R2019a. For more information, refer to [Supported MATLAB Releases](#) on page 169.

dSPACE Installation Manager

Where to go from here

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New Features of dSPACE Installation Manager 5.3

New features for managing installations

Activation of dSPACE installations in one step You can activate all dSPACE installations on your PC that belong to a specific dSPACE Release in one step. Refer to [How to Activate All Installations of a Specific dSPACE Release in One Step](#) ([📖 Managing dSPACE Software Installations](#)).

Activating/deactivating dSPACE installations and decrypting via Python scripts possible Now dSPACE Installation Manager API supports activating/deactivating dSPACE installations and decrypting archives of the installed dSPACE software via Python scripts. Refer to [Features of the API and Important Notes](#) ([📖 dSPACE Installation Manager API Reference](#)).

New features for managing licenses

Support of license borrowing You can now borrow floating network licenses from a CmContainer on a dSPACE License Server to a dSPACE Borrow Container (software-based CmContainer) or to a CmDongle.

License borrowing offers the following advantages:

- A borrowed license does not require access to the source CmContainer while working with it. You can use it on a PC that is not connected to the dSPACE License Server.

- A borrowed license is treated like an exclusive single-user license. This means that it is blocked for other users of the floating network license and guaranteed to be available on the PC with the dSPACE Borrow Container or the target CmDongle.

Refer to [License Borrowing](#) ([Working with CodeMeter Licensing Technology](#)).

LAN access is disabled by default dSPACE Installation Manager can access CmContainers on other PCs via LAN and perform the required actions (activate licenses, update licenses, deactivate licenses) there. To protect CmContainers on PCs in a LAN from unintended actions, LAN access is disabled by default.

To use the LAN access feature, the PC with Installation Manager must have access to an activated InstallationManager – Extended Admin license.

Migrating to dSPACE Installation Manager 5.3

Using CmDongles

If you want to work with licenses on CmDongles in combination with dSPACE Installation Manager 5.3, for example, to activate, deactivate, or update licenses, the dongles must have firmware version 4.10.

To use CmDongles shipped for Releases earlier than dSPACE Release 2019-A, a firmware update is required. CmDongles shipped for dSPACE Release 2019-A and later contain the required firmware version.

dSPACE Installation Manager checks if the firmware of a connected dongle matches the required firmware version and displays if an update is necessary.

For instructions on updating the firmware, refer to [How to Update the Firmware of a CmDongle](#) ([Working with CodeMeter Licensing Technology](#)).

dSPACE XIL API .NET

New Features of dSPACE XIL API .NET 2019-A

New features

The dSPACE XIL API.NET 2019-A has the following new feature:

- dSPACE XIL API MAPort supports measuring and stimulating VEOS 64-bit applications.

For information on the Python and XIL API support changed with dSPACE Release 2018-B, refer to <http://www.dspace.com/go/Python36Migration> and the *New Features and Migration* document from dSPACE Release 2018-B.

ECU Interface Manager

Where to go from here

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An overview of the new features of ECU Interface Manager 2.5.	
Compatibility of ECU Interface Manager 2.5	100
Provides information on the compatibility of ECU Interface Manager 2.5.	
Migrating to ECU Interface Manager 2.5	101
Information on how to migrate to ECU Interface Manager 2.5.	

New Features of ECU Interface Manager 2.5

Support of the XCP on CAN ECU interface

The ECU Interface Manager 2.5 now supports the XCP on CAN ECU interface in connection with ConfigurationDesk/SCALEXIO. Standard CAN and CAN with Flexible Data Rate (CAN FD) are supported.

Support for the XCP on CAN ECU interface includes:

- Function access configuration (refer to Basics on Configuring Function Accesses ([ECU Interface Manager Manual](#)))
- Data access configuration (refer to Basics on Configuring Data Accesses ([ECU Interface Manager Manual](#)))
- ECU calibration page handling (refer to Preparing ECU Calibration Page Handling ([ECU Interface Manager Manual](#)))

To configure the XCP on CAN ECU interface, the dSPACE XCP Service or a third-party XCP service must be integrated in the ECU application.

For instructions on configuring the XCP on CAN ECU interface, refer to [How to Configure the Access to the ECU Interface](#) ([ECU Interface Manager Manual](#)).

XCP: Support of MAX_ODT_ENTRY_SIZES < 4 byte

In combination with XCP-based ECU interfaces, the ECU Interface Manager now supports XCP service configurations with maximum ODT entry size (MAX_ODT_ENTRY_SIZE) values < 4 byte.

Up to and including ECU Interface Manager 2.4, only MAX_ODT_ENTRY_SIZE values ≥ 4 byte were supported.

Related topics

HowTos

[How to Configure the Access to the ECU Interface \(ECU Interface Manager Manual\)](#)

Compatibility of ECU Interface Manager 2.5

Compatibility in general

dSPACE recommends using only software products from the same dSPACE Release. This ensures maximum run-time compatibility.

Compatibility between EIC files and ConfigurationDesk

The following table shows the compatibility between EIC files and ConfigurationDesk:

	EIC Files Created With ...					
	ECU Interface Manager 2.0p1 ¹⁾	ECU Interface Manager 2.1 ²⁾	ECU Interface Manager 2.2 ³⁾	ECU Interface Manager 2.3 ⁴⁾	ECU Interface Manager 2.4 ⁵⁾	ECU Interface Manager 2.5 ⁶⁾
ConfigurationDesk 6.3 ⁶⁾	✓	✓	✓	✓	✓	✓
ConfigurationDesk 6.2 ⁵⁾	✓	✓	✓	✓	✓	-
ConfigurationDesk 6.1 ⁴⁾	✓	✓	✓	✓	-	-
ConfigurationDesk 6.0 ³⁾	✓	✓	✓	-	-	-
ConfigurationDesk 5.7 ²⁾	✓	✓	-	-	-	-

	EIC Files Created With ...					
	ECU Interface Manager 2.0p1 ¹⁾	ECU Interface Manager 2.1 ²⁾	ECU Interface Manager 2.2 ³⁾	ECU Interface Manager 2.3 ⁴⁾	ECU Interface Manager 2.4 ⁵⁾	ECU Interface Manager 2.5 ⁶⁾
ConfigurationDesk 5.6 SP1 ¹⁾	✓	✓	–	–	–	–

- ¹⁾ dSPACE Release 2016-B
- ²⁾ dSPACE Release 2017-A
- ³⁾ dSPACE Release 2017-B
- ⁴⁾ dSPACE Release 2018-A
- ⁵⁾ dSPACE Release 2018-B
- ⁶⁾ dSPACE Release 2019-A

Migrating to ECU Interface Manager 2.5

Automatic migration of projects

You can reuse projects in ECU Interface Manager 2.5 if the projects were last saved with ECU Interface Manager 2.0 p1 or later.

When you open the projects in ECU Interface Manager 2.5, they are migrated automatically.

Note

In ECU Interface Manager 2.5, you cannot reuse projects that were last saved with ECU Interface Manager 2.0 or earlier.

Additional migration steps in some cases

To migrate to ECU Interface Manager 2.5 from versions earlier than ECU Interface Manager 2.2, you might also have to perform the migration steps of the intervening ECU Interface Manager versions.

Firmware Manager

New Features of Firmware Manager 2.7

Enhanced platform support

The Firmware Manager supports updating the firmware of the following SCALEXIO hardware:

- DS6333-CS Automotive Ethernet Board
- DS6333-PE Automotive Ethernet Board
- DS6335-CS Ethernet Board
- DS6601 FPGA Base Board
- DS6602 FPGA Base Board

The Firmware Manager is now also able to update the firmware of a SCALEXIO Hypervisor Extension for a SCALEXIO Processing Unit.

ModelDesk

Where to go from here

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New Features of ModelDesk 5.1

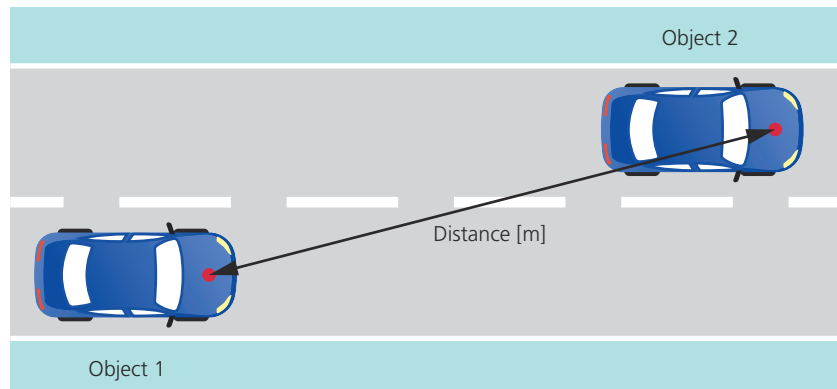
Road creation

OpenDRIVE export You can specify properties for road elements especially for the export in OpenDRIVE format: road type, country, speed unit, lane types, and user data.

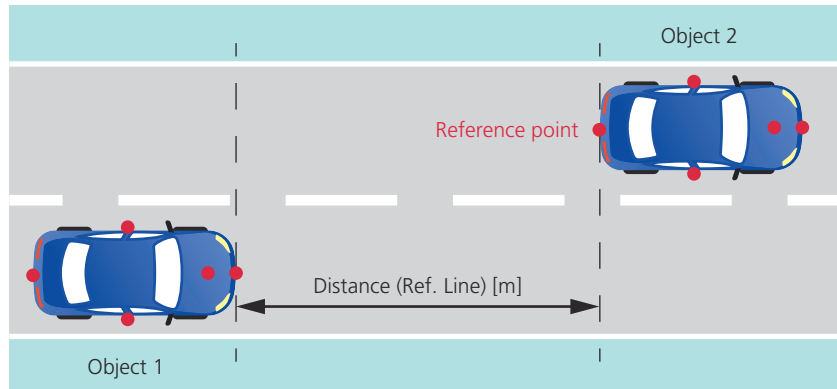
Scenario creation

Specifying distances You can specify the distances in scenarios in two ways.

- Distance between the main points of the objects.



- Distance in relation to the s coordinate of the road



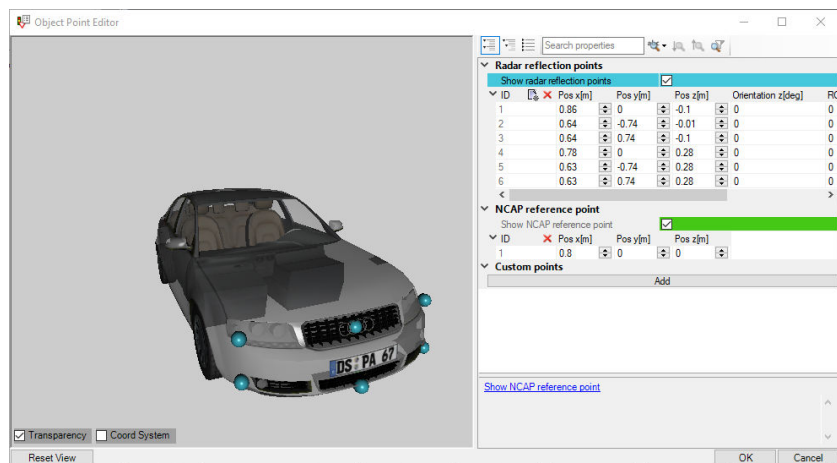
In this case, you can select different reference points, indicated by the red dots in the illustration above.

Traffic Object Manager

In the Traffic Object Manager, you can specify object points for traffic objects that are used when the traffic objects are detected by sensors. You can specify three types of object points:

- Radar reflection points
- NCAP reference point
- Custom points

The object points are specified via the Object Point Editor.



ModelDesk Testing

ModelDesk Testing has been improved.

Custom evaluation scripts To write your own evaluation scripts, dSPACE provides a new library containing methods to compare signals.

Tool automation You can start the complete test, a logical test case, or a concrete test case via tool automation.

Processing You can close all plots using the Close Plots command on the Processing ribbon.

Related topics

Basics

[Implementing a Python Script for Validation](#) (📖 ModelDesk Testing)

References

[Close Plots](#) (📖 ModelDesk Processing)

[Custom Points](#) (📖 ASM Traffic Reference)

[Object Point Editor](#) (📖 ModelDesk Traffic Object Management)

[Radar Reflection Points](#) (📖 ASM Traffic Reference)

Migration to ModelDesk 5.1

Platform support As of ModelDesk 5.1, the DS1103 PPC Controller Board is no longer supported.

Maneuver Editor

As of ModelDesk 4.7, the Maneuver Editor is obsolete. You can specify maneuvers using the Scenario Editor. Maneuvers specified with the Maneuver Editor are automatically migrated to scenarios for the Scenario Editor. However, scripts that use the tool automation of the Maneuver Editor cannot be migrated. If you want to use such scripts, you must activate the Maneuver Editor by using the Maneuver Compatibility command.

Note

When you enable maneuver compatibility, manual modifications of the simulation model might be required to enable proper usage of the maneuver definition by the Maneuver Editor.

Tool automation for plotting As of ModelDesk 4.4, ModelDesk has new plotters, and the tool automation for plotting has been changed. To reuse scripts for plotting, you must adapt scripts written for ModelDesk 4.3 and earlier.

Triggering of plots

As of ModelDesk 4.6, plotting is triggered by the simulation model. Previously, ModelDesk triggered plotting. The plots are usually identical but can differ in some cases.

Tip

To compare measurements, it is useful to use the XY Plotter and use the maneuver time as a signal for the x-axis.

Related topics

References

[Maneuver Compatibility](#) (📖 ModelDesk Scenario Creation)

Model Interface Package for Simulink

Where to go from here

Information in this section

[New Features of the Model Interface Package for Simulink 4.1](#) 109

[Migration Aspects of the Model Interface Package for Simulink](#) 109

New Features of the Model Interface Package for Simulink 4.1

Support of the row major format in Simulink

The *row major* format, introduced with MATLAB R2018b, for multi-dimension matrices is now supported. If you use the *row major* option, the first index of a matrix indicates the row.

The *row major* format is not supported for A2L file generation.

Migration Aspects of the Model Interface Package for Simulink

Modified A2L file generation

With dSPACE Release 2019-A, the generation of A2L files for the dSPACE Run-Time Target has changed. The Configuration Parameters dialog now provides the Variable description file format property, which lets you specify A2L file generation for the dSPACE Run-Time Target (dsrt.tlc). For more information, refer to [Generating A2L Files](#) ([Model Interface Package for Simulink - Modeling Guide](#)).

Handling configuration sets at version change

If you change the MATLAB version and/or the dSPACE Release version, configuration sets stored in a MAT file with the old version might cause

problems. Therefore, you are recommended to create these configuration sets again when you change the Release version.

MotionDesk

Where to go from here

Information in this section

New Features of MotionDesk 4.4	111
Migrating to MotionDesk 4.4	112

New Features of MotionDesk 4.4

Sensor Simulation

In MotionDesk, you can configure SensorSim application instance connections and add sensors to the MotionDesk scene. The sensor output from the ASM simulation can be shared as raw data and displayed in a composition window for sensor simulation. For more information on Sensor Simulation features, refer to [New Features of Sensor Simulation 1.1](#) on page 133.

Material management

You can view and edit the MotionDesk material mapping database. The database contains entries for the materials that are used in the 3-D objects by ModelDesk and MotionDesk.

You can add materials to the database and assign a preview color and additional optional characteristics to each material.

The different materials used in each 3-D object are mapped to the relevant pixels of the image to produce a textured image of the object. Textured images are included for all ModelDesk-generated objects in the 3-D object library.

Performance optimization

Road geometry generation has been optimized using improved graphic geometric primitives to reduce the graphic vertex count.

Uniform object scaling	You can scale static and movable objects and retain their proportions. You can scale an object by setting the percentage along the x-, y-, or z-axis of the object in the properties pane or by dragging the arrows in the 3-D scene.
Motion player slider	When you replay an animation in MotionDesk, you can use a slider to move the animation forward and backward through the frames to a specific point. You can now also edit the time to jump to a specific frame in the animation.
Tool automation	MotionDesk tool automation now supports the control of SensorSim application connections and enabling sensors in a scene. For more on information tool automation for Sensor Simulation, refer to New Features of Sensor Simulation 1.1 on page 133.
Related topics	<p>Basics</p> <ul style="list-style-type: none"> New Features of Sensor Simulation 1.1 133 Working with the Model and Sensor Interface Blockset (MotionDesk) Calculating and Streaming Motion Data

Migrating to MotionDesk 4.4

Using endless ground plate and horizon	In MotionDesk 4.0 and earlier, the virtual world of a scene was built using ground plate and dome 3-D objects. If you want to use the endless ground plate and sky, these 3-D objects are obsolete. When you use an old scene, delete these objects before activating the endless ground and sky.
Using advanced lighting mode	In advanced lighting mode, the static objects used for domes are not suitable for building the virtual world. Use the endless sky of the environment instead.
Migrating 3-D custom objects	If you want to use 3-D custom objects in the VRML2 format that you used in MotionDesk 2.2.1 or earlier, you have to convert the VRML2 files to COLLADA format files. You can convert the files at any time using the 3-D Library Manager.
Migrating from MotionDesk version 2.2.1 and earlier	The current MotionDesk version cannot read old MotionDesk experiments in the MDX file format (used in MotionDesk 2.1.6 and earlier) or scenes stored in the ESD format (used in MotionDesk 2.2.1 and earlier). It is therefore not possible to migrate from MotionDesk projects and experiments of these versions.

If you want to use older projects and experiments, you can migrate them by using MotionDesk 3.0 up to MotionDesk 3.6 and then open them in the current MotionDesk version.

Real-Time Testing

Where to go from here

Information in this section

New Features of Real-Time Testing 4.1	115
Migrating to Real-Time Testing 4.1	115

New Features of Real-Time Testing 4.1

Platform support


Real-Time Testing supports VEOS 64-bit applications.

Migrating to Real-Time Testing 4.1

rttbytecodegenerator module

As of Real-Time Testing 4.1, the `rttbytecodegenerator` module is no longer supported. It is replaced by the `rttManager.BCGServiceProvider` module.

Incompatible BCG files

The BCG files generated with Real-Time Testing 4.0 or earlier cannot be used for Real-Time Testing 4.1. You must create the BCG file of the Real-Time Testing sequence again. Refer to [Creating and Starting RTT Sequences in Python Scripts](#) ( [Real-Time Testing Guide](#)).

Static code analysis

As of Real-Time Testing 4.0, the static code analysis is no longer included.

Variable access and rounding behavior

If the Simulink variable type is integer and the value written to the variable is of floating point type, the floating point value is rounded to fit the Simulink integer variable.

Related topics

References

[BCGServiceProvider Class Description](#) ( Real-Time Testing Library Reference)

RTI/RTI-MP and RTLib

Where to go from here

Information in this section

New Features of RTI/RTI-MP and RTLib	117
Migration Aspects of RTI/RTI-MP and RTLib	118

New Features of RTI/RTI-MP and RTLib

New features in RTI/RTI-MP

RTI and RTI-MP have the following new features:

- Supporting MATLAB R2019a
- The *row major* format, introduced with MATLAB R2018b, for multi-dimension matrices is now supported. If you use the *row major* option, the first index of a matrix indicates the row.

Not supported new features of MATLAB R2019a

The following new features introduced with MATLAB R2019a are not supported by RTI/RTI-MP:

- Support for uint64 and int64 as built-in Simulink data types
The 64-bit integer data types can be used in an RTI model, but you cannot use them for the inports and outports of an RTI block. Variables of 64-bit integer data type are not generated into the variable description file.
- The parameter override feature for referenced configuration sets is not supported.

Migration Aspects of RTI/RTI-MP and RTLib

Modified features in later MATLAB versions

Switching to a later MATLAB version If you install a new MATLAB version, some settings are adopted from previously installed MATLAB versions. To prevent unexpected behavior of Simulink models when you switch to a later MATLAB version or dSPACE Release, always reset the MATLAB and Simulink preferences to their default values before you start using the models.

If you change the MATLAB version and/or the dSPACE Release version, configuration sets stored in a MAT file with the old version might cause problems. Therefore, you are recommended to create these configuration sets again when you change the Release version.

RTI Bypass Blockset

Migrating to RTI Bypass Blockset 3.12

Working with models from earlier RTI Bypass Blockset versions 3.x and 2.x

The current Release contains RTI Bypass Blockset 3.12, which is compatible with earlier blockset versions 3.x and 2.x. However, there are some points to note:

- *Working with models from RTI Bypass Blockset 2.5 or earlier*

Data management was changed in comparison to the prior RTI Bypass Blockset versions. If you have a Simulink model built with RTI Bypass Blockset 2.5 or earlier and you open it with RTI Bypass Blockset 3.12, the old Data Dictionary file (with the file name extension .dd) is replaced by a new Data Dictionary file (.vdb) using the information stored in the Setup block. This happens as soon as you open and close the Setup block dialog by clicking OK, or you open the Read, Write, Upload, or Download block dialog and click Fill Variable Selector on the Variables page.

If you have a model that was saved with RTI Bypass Blockset 3.12 and want to use it with RTI Bypass Blockset 2.5 or earlier, the model's Data Dictionary file required for blockset version 2.5 or earlier (file name extension .dd) is created. This happens when you update the A2L files in the Setup block, or you open the Read, Write, Upload, or Download block and click Fill Variable Selector on the Variables page. The Data Dictionary file created under RTI Bypass Blockset 3.12 (.vdb) remains on the disk.

To enable the RTI Bypass Blockset to recreate the Data Dictionary, the database files specified in the Setup block must be accessible at the specified location and be unchanged.

- *Working with models from RTI Bypass Blockset 2.6 up to and including RTI Bypass Blockset 3.11*

If a Simulink model was built with RTI Bypass Blockset 2.6 up to RTI Bypass Blockset 3.11, and you open it with RTI Bypass Blockset 3.12, the old Data Dictionary file is replaced by a new Data Dictionary file. However, the new Data Dictionary file cannot be used in earlier RTI Bypass Blockset versions. If you want to reuse the model with RTI Bypass Blockset 2.6 up to RTI Bypass Blockset 3.11, you have to create a suitable database in the earlier RTI Bypass Blockset version by reimporting the database files (A2L files) specified in the Setup block.

RTI CAN MultiMessage Blockset

Where to go from here

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New Features of the RTI CAN MultiMessage Blockset 5.2	121
Migrating to RTI CAN MultiMessage Blockset 5.2	121

New Features of the RTI CAN MultiMessage Blockset 5.2

Support of the AUTOSAR 4.4 format

The RTI CAN MultiMessage Blockset supports the format of AUTOSAR System Templates based on AUTOSAR Release 4.4.0 for describing CAN networks.

Refer to [General Settings Page \(RTICANMM MainBlock\)](#) ([RTI CAN MultiMessage Blockset Reference](#)).

However, no new features of AUTOSAR Release 4.4.0 are supported.

Migrating to RTI CAN MultiMessage Blockset 5.2

Working with models from earlier RTI CAN MultiMessage Blockset versions

To reuse a model created with an earlier RTI CAN MultiMessage Blockset version, you must update the S-functions for all the RTICANMM blocks and save the model before modifying the CAN configuration.

To create new S-functions for all the RTICANMM blocks in a model in one step, you can perform one of the following actions after opening the model:

- In the MATLAB Command Window, enter `rtimmsu_update('System', bdroot)`.

For more information on the command and its options, enter `help rtimmsu_update` in the MATLAB Command Window.

- Select the Create S-Function for all CAN Blocks command from the Options menu of the RTICANMM GeneralSetup block.

For more information, refer to [Limitations with RTICANMM](#) ([RTI CAN MultiMessage Blockset Reference](#)).

Compiler messages when using code generated by an RTI CAN MultiMessage Blockset version < 4.0

If you use code that was generated by an RTI CAN MultiMessage Blockset version < 4.0, several compiler warning messages that contain the phrase `<<argument of type "can_tp1_canChannel *" is incompatible with parameter of type "DsTCanCh">>` will be displayed during the build process of a simulation model. This is due to a modified data type. These warnings can be ignored and disappear after you use the current blockset version to generate the RTICANMM code again.

Using existing checksum algorithms

Checksum algorithms that were originally developed for an application and contain CAN messages cannot be reused for applications that contain CAN FD messages, because CAN FD includes new message types and longer data fields. Existing checksum algorithms can still be used for applications that contain only classic CAN messages. For CAN FD applications, you must adapt the checksum algorithms.

RTI FPGA Programming Blockset

Where to go from here

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Migrating to RTI FPGA Programming Blockset 3.7	125

New Features of the RTI FPGA Programming Blockset 3.7

Extended Xilinx® support

The RTI FPGA Programming Blockset now supports the following products and versions of the Xilinx design tools:

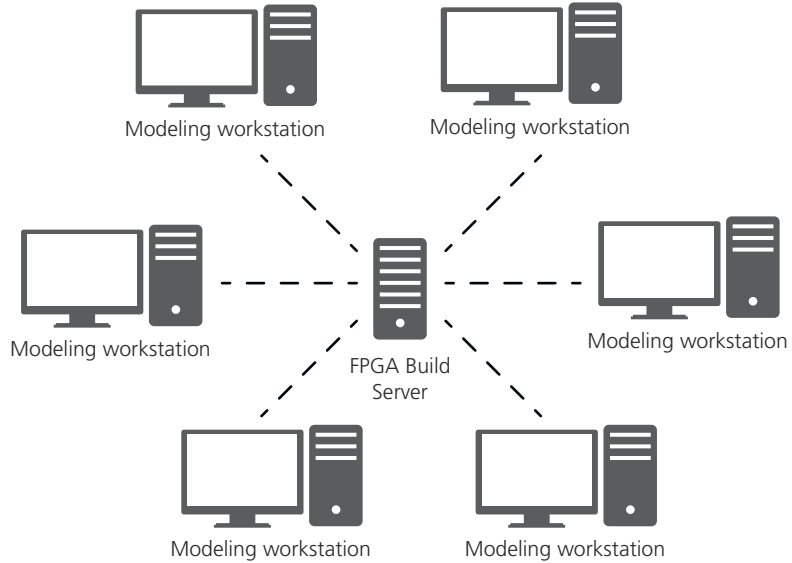
Xilinx Design Tools Version	MATLAB Version ¹⁾	Operating System
Vivado 2018.2 ²⁾	<ul style="list-style-type: none"> ▪ MATLAB R2017b ▪ MATLAB R2018a 	Windows operating system that is supported by the RCP and HIL software of the current Release. Refer to Operating System on page 170.

¹⁾ The Processor Interface sublibrary of the RTI FPGA Programming Blockset also supports MATLAB R2018b and R2019a.

²⁾ The Vivado HL WebPACK Editions of the Xilinx design tools also support the DS2655 (7K160) and DS6601 FPGA base boards. A separate license for the Xilinx System Generator for DSP is required for modeling FPGA applications with the RTI FPGA Programming Blockset.

New tools for the build process

The new dSPACE FPGA Build Server and FPGA Build Monitor let you execute FPGA builds for several modeling workstations. You can continue FPGA modeling after you started the build process with the RTI FPGA Programming Blockset.



For more information, refer to [Using an FPGA Build Server](#) (RTI FPGA Programming Blockset Guide).

New SCALEXIO FPGA base board frameworks

The new *DS6601 (KU035) FPGA Base Board* and *DS6602 (KU15P) FPGA Base Board* frameworks now support the DS6601 and DS6602 FPGA base boards.

The frameworks support the following features of the SCALEXIO FPGA base boards:

- Functions for exchanging data with the processor application via registers and buffers.
- Functions for requesting processor interrupts outside of the FPGA application.
- Functions for reading/writing angle-based time base values from/to the IOCNET bus.

I/O interfaces are provided by up to 5 DS2655M1 or DS2655M2 I/O modules that are installed in a SCALEXIO FPGA base board. The new SCALEXIO FPGA base boards also support the direct data exchange with other SCALEXIO FPGA base boards via inter-FPGA communication. To implement the I/O and inter-FPGA interfaces, the frameworks of the I/O modules and the inter-FPGA interface now support the new SCALEXIO FPGA base boards.

Tip

All FPGA models of the *DS2655 (7K160) FPGA Base Board* framework can be migrated to the *DS6601 (KU035) FPGA Base Board/DS6602 (KU15P) FPGA Base Board* frameworks. The DS6601 and DS6602 FPGA base boards are compatible and provide more FPGA resources.

However, you have to use the same I/O modules and to consider the I/O slot assignments.

For more information on the *DS6601 (KU035) FPGA Base Board* framework, refer to [RTI Block Settings for the DS6601 FPGA Base Board Framework](#) ([RTI FPGA Programming Blockset - FPGA Interface Reference](#)) or [I/O Functions of the DS6601 FPGA Base Board Framework](#) ([RTI FPGA Programming Blockset - FPGA Handcode Interface Reference](#)).

For more information on the *DS6602 (KU15P) FPGA Base Board* framework, refer to [RTI Block Settings for the DS6602 FPGA Base Board Framework](#) ([RTI FPGA Programming Blockset - FPGA Interface Reference](#)) or [I/O Functions of the DS6602 FPGA Base Board Framework](#) ([RTI FPGA Programming Blockset - FPGA Handcode Interface Reference](#)).

Related topics**Basics**

[Migrating to RTI FPGA Programming Blockset 3.7](#) 125

Migrating to RTI FPGA Programming Blockset 3.7

Introduction

There are various ways to migrate an existing model, depending on the blockset version used.

Migrating from RTI FPGA Programming Blockset 1.1 and higher to 3.7

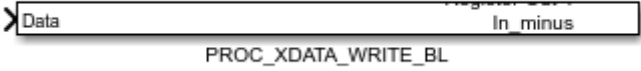
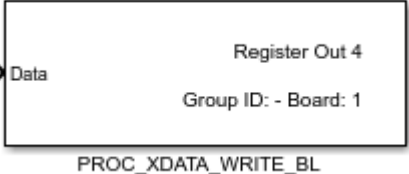
If you implemented an FPGA application with RTI FPGA Programming Blockset Version 1.1 and later and want to use it with RTI FPGA Programming Blockset 3.7, the framework automatically updates itself to the current framework version.

The update handles all the subsystems in the model/subsystem. The parameters of the blocks stay the same after updating to the current framework version.

Appearance of migrated processor interfaces with Goto and From blocks

With RTI FPGA Programming Blockset 3.1 ... 3.3, you modeled the processor interface of a SCALEXIO system with Simulink Goto and From blocks. If you migrate a model with Goto and From blocks, the update process migrates these blocks to the processor interface blocks of the Processor Interface sublibrary. The migration process does not change the size of the original blocks

to keep the block arrangement of the model. Therefore, the appearance of the migrated blocks is different from the default appearance of processor interface blocks. The following illustrations give you an example.

Appearance After Migration	Default Appearance
	

ConfigurationDesk custom functions incompatible with dSPACE Release 2018-B

FPGA custom function block types that are not built with the RTI FPGA Programming Blockset 3.7 might be incompatible with the current ConfigurationDesk version.

FPGA Programming Blockset 3.5 or earlier With dSPACE Release 2018-B, the angle range handling of the angular processing unit (APU) was changed. FPGA custom function blocks that use the APU in the 360° angle range are incompatible if they are built with the FPGA Programming Blockset 3.5 or earlier. To resolve the incompatibility, use the FPGA model/code of the incompatible FPGA custom function block and build a new FPGA custom function block with the RTI FPGA Programming Blockset 3.6 or later. The RTI FPGA Programming Blockset automatically migrates the framework of the FPGA model/code to the current version.

RTI FPGA Programming Blockset 2.5 An FPGA custom function block generated with RTI FPGA Programming Blockset 2.5 from dSPACE Release 2013-A and the real-time applications containing the FPGA custom function block are incompatible with the current dSPACE Release. To produce a usable custom function, you have to rebuild the FPGA model by using the current RTI FPGA Blockset.

Using different dSPACE hardware

Using an FPGA model on different dSPACE hardware requires some model modifications. Refer to [Migrating to Different FPGA Hardware](#) ([RTI FPGA Programming Blockset Guide](#)).

RTI LIN MultiMessage Blockset

Where to go from here

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New Features of the RTI LIN MultiMessage Blockset 3.2

Support of the AUTOSAR 4.4 format

The RTI LIN MultiMessage Blockset supports the format of AUTOSAR System Templates based on AUTOSAR Release 4.4.0 for describing LIN networks.

Refer to [General Settings Page \(RTILINMM MainSetup\)](#) ( [RTI LIN MultiMessage Blockset Reference](#)).

However, no new features of AUTOSAR Release 4.4.0 are supported.

Migrating to RTI LIN MultiMessage Blockset 3.2

Working with models from earlier RTI LIN MultiMessage Blockset versions

To reuse a model created with an earlier RTI LIN MultiMessage Blockset version, you must update the S-functions for all the RTILINMM blocks and save the model before modifying the LIN configuration.

To create new S-functions for all the RTILINMM blocks in a model in one step, you can perform one of the following actions after opening the model:

- In the MATLAB Command Window, enter `rtimmsu_update('System', bdroot)`.

For more information on the command and its options, enter `help rtimmsu_update` in the MATLAB Command Window.

- Select the Create S-Function for all LIN Blocks command from the Options menu of the RTILINMM GeneralSetup block.

For more information, refer to [Limitations of RTI LIN MultiMessage Blockset](#) ( [RTI LIN MultiMessage Blockset Reference](#)).

RTI Synchronized Time Base Manager Blockset

Features of the RTI Synchronized Time Base Manager Blockset 1.2

Product availability

The RTI Synchronized Time Base Manager Blockset is now available on of the dSPACE Release DVD.

Features

The RTI Synchronized Time Base Manager Blockset implements global time synchronization (GTS) on dSPACE systems by using the dSPACE ECU time base manager (DsEcuTbM) contained in the RTLib of SCALEXIO and other supported hardware. The blockset provides the following tasks, among others:

- Creating and configuring synchronized time base instances.
- Reading the synchronized time information from the synchronized time base instances, and providing the time and status of a time base instance.
- Simulating global time masters.

For more information, refer to  [RTI Synchronized Time Base Manager Blockset Reference](#).

The RTI Synchronized Time Base Manager Blockset can be used with the following dSPACE products:

- RTI CAN MultiMessage Blockset (as of version 5.0p1)
- FlexRay Configuration Package (as of version 4.1p1)
- Bus Manager (as of version 6.3)
- VEOS (as of version 4.4)

SCALEXIO Firmware

New Features of the SCALEXIO Firmware 4.4

New supported hardware

The SCALEXIO firmware supports the following new I/O boards:

- DS6601 FPGA Base Board

The board provides a user-programmable FPGA platform. The board is designed for high-speed HIL applications that require the model to be computed, at least partly, on an FPGA. It has the following features:

- Xilinx Kintex Ultrascale FPGA
- 1 connector providing 4 multi-Gigabit transceivers (MGT)
- Up to 6 angular processing units
- 5 connectors for I/O modules (DS2655M1 Multi-I/O Module or DS2655M2 Digital I/O Module)
- Requires 1 slot

- DS6602 FPGA Base Board

The board provides a user-programmable, high-end FPGA platform. The board is designed for high-speed HIL applications that require the model to be computed, at least partly, on an FPGA. It has the following features:

- Xilinx Kintex Ultrascale+ KU15P FPGA
- Onboard DRAM: 4 GByte
- 1 connector providing 4 multi-Gigabit transceivers (MGT)
- Up to 6 angular processing units
- 5 connectors for I/O modules (DS2655M1 Multi-I/O Module or DS2655M2 Digital I/O Module)
- Requires 2 slots

New enclosure

The SCALEXIO firmware supports the SCALEXIO AutoBox. This is an enclosure with the following features:

- Shock- and vibration-resistant chassis (ISO 16750-3)
- Integrated automotive power supply for 12 V, 24 V, 48 V power levels including cranking conditions (6 V)

- Extended temperature range (0°C ... 55°C / 32°F ... 131°F)
- System slot for a DS6001 Processor Board or DS6051 IOCNET Router
- Up to 7 I/O slots for SCALEXIO I/O boards (5 slots equipped with additional PCIe interfaces)



DS6001 Processor Board

The firmware of the DS6001 Processor Board has a new feature:

Serial interface support You can use the serial interface of the Real-Time PC for data communication. To use it, you must implement a custom I/O function for ConfigurationDesk.

SCALEXIO Processing Unit

The firmware of the SCALEXIO Processing Unit has new features:

Serial interface support You can use the serial interface of the Real-Time PC for data communication. To use it, you must implement a custom I/O function for ConfigurationDesk.

DS5202 Link Board The DS2502 Link Board supports 2.5 Gbit/s.

Related topics

Basics

- [DS6601 FPGA Base Board \(SCALEXIO Hardware Installation and Configuration\)](#)
- [DS6602 FPGA Base Board \(SCALEXIO Hardware Installation and Configuration\)](#)
- [SCALEXIO AutoBox \(SCALEXIO Hardware Installation and Configuration\)](#)

Sensor Simulation

New Features of Sensor Simulation 1.1

Introduction

MotionDesk supports further developments in Sensor Simulation.

- Distributing sensors across multiple SensorSim application instances
- Controlling the SensorSim application connection instances using a monitoring application that runs on each SensorSim PC
- Assigning sensors to one or more SensorSim application instances
- Downloading the scene, including the 3-D object material database, to all running SensorSim application instances
- Creating and configuring fish-eye lens sensors
- Automation interface support for SensorSim applications and sensors
- Synchronizing the rendered frames from the simulation to each SensorSim application instance

SensorSim multi-instancing

You can configure multiple SensorSim application instances on the SensorSim PCs. Each application instance must have a unique name and configuration file.

SensorSim application monitoring

The SensorSim application instances on each SensorSim PC are controlled by a monitoring service.

The monitoring service starts, stops, and reports the status of each application instance on that PC. The status information is displayed in MotionDesk, where you configure the connections.

SensorSim connections

In MotionDesk, you configure a connection to each SensorSim application instance. This connects the SensorSim application instances to the monitoring service on the SensorSim PC.

In MotionDesk, you can start and stop all connected and running SensorSim application instances. You can also start and stop the instances together or individually.

Sensor assignment

You can assign each sensor to one or more SensorSim application instances. The SensorSim application renders the sensors that are assigned to that application instance. The composition window displays only the sensors that you assign to the instance.

You can also add a unique sensor name and sensor ID.

Scene download

The material database downloads to the running SensorSim application instances, when you select scene download. For more information on the material management database, refer to Material management.

Laser sensor Material ID output

You can produce the Material ID output for laser sensors. You can also see this display output in the sensor composition window.

If the sensor detects an object in the scene whose material matches a material in the database, the object is displayed in a specific color.

Fish-eye sensor

You can add and configure a fish-eye sensor for sensor simulation. Fish-eye lenses provide a wide-angle field of view that can exceed 180 degrees in all directions.

Shared memory synchronizer

You can synchronize the output to the shared memory of multiple SensorSim application instances so that the frames are rendered with the same frame from the simulation.

Tool automation

MotionDesk automation lets you control MotionDesk with scripts, for example, with the Python programming language. The interface contains several classes that you can use in your scripts.

The MotionDesk automation interface has been expanded to support the below Sensor Simulation features:




- SensorSim application instance: Download the current scene to the running application instances that were started by MotionDesk.
- Sensor control: Enable or disable the sensors in the loaded scene.

License optimization

In MotionDesk, you can now add and configure any number of sensors using the basic MotionDesk license. To download a scene to the SensorSim application that contains sensors, you must install the relevant sensor license.

Related topics

Basics

New Features of MotionDesk 4.4	111
 MotionDesk Sensor Simulation Control	
 Sensor Simulation Hardware and Software Overview	
 Sensor Simulation Manual	

SYNECT

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New Features of SYNECT 2.7

Where to go from here

Information in this section

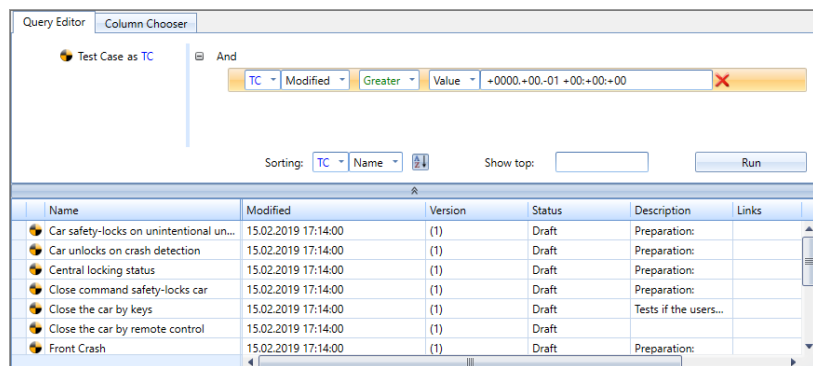
New General Features of SYNECT	138
Provides an overview of new general SYNECT features.	
New Features of Test Management	140
Provides an overview of the new SYNECT test management features.	
New Features of Workflow Management	144
Provides an overview of the new SYNECT workflow management features.	

New General Features of SYNECT

Query improvements

The following improvements were made for queries:

- You can now specify relative times for queries. This lets you find items that are related to a specific point in time, such as items that were modified since the previous day. Refer to the following illustration:

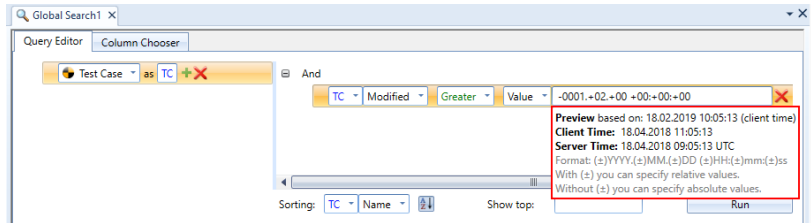


You can specify searches such as the following:

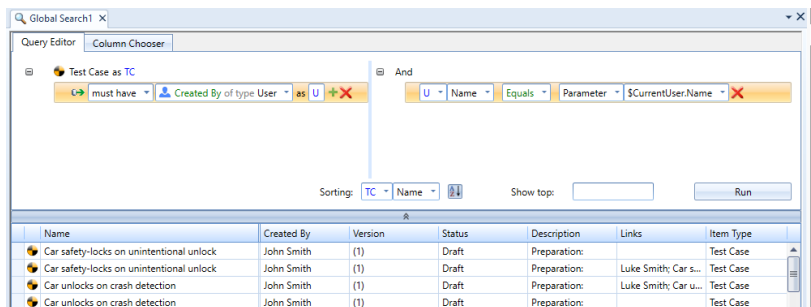
Use Case	Search Phrase
Modified since the previous day.	Greater +0000.+00.-01+00:+00:+00
Modified before the previous day.	Less +0000.+00.-01+00:+00:+00
Modified since February of the previous year.	Less -0001.02.+00+00:+00:+00

You have to specify a date time object in the yyyy.mm.dd hh:mm:ss format. Plus (+) and minus (-) signs before each block let you specify relative time periods, such as 1 day ago or in the next 12 hours. You can mix relative time specifications with absolute time specifications, such as 2018 or 12 a.m.

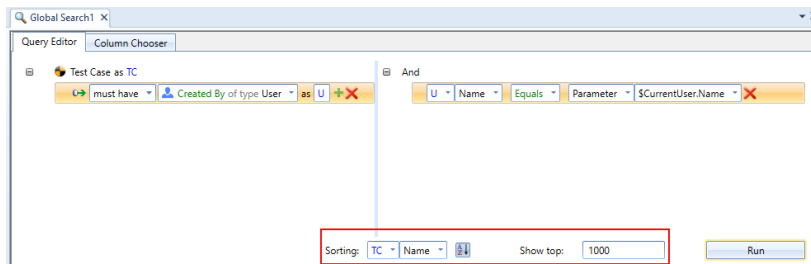
You have to specify absolute time values in coordinated universal time (UTC) using digit blocks without leading signs. However, the SYNECT client converts all the displayed times to client times. A tooltip helps you to enter the correct date time object.



- You can now use the current user for queries. This lets you find items that are related to the current user, such as items that were created by the current user.



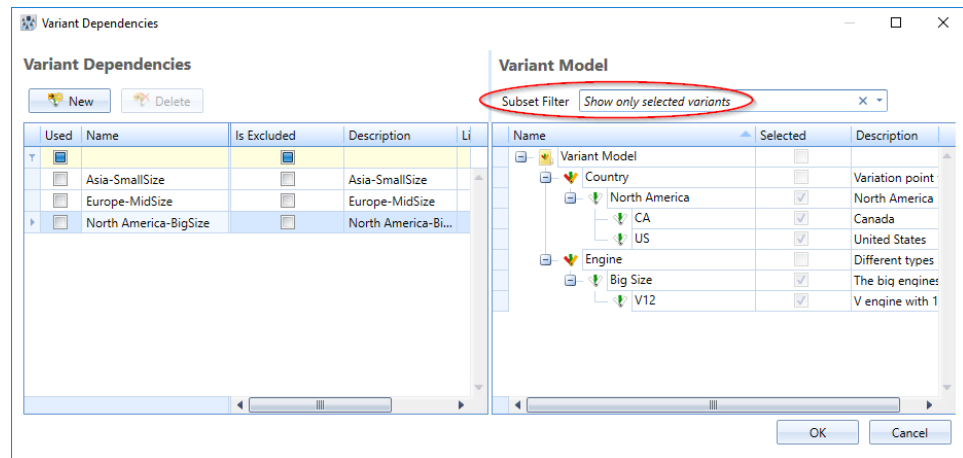
- You can now limit the number of items that are displayed in the result list to show only a specified number of top results according to the sorting that you selected. This improves search performance.



Further reading Refer to [Searching Database Items](#) ([SYNECT Guide](#)).

Filtering the variant model

Specifying variant dependencies has been improved. You can now filter the variant model according to the selected variants. This simplifies the view on the variant model for variant dependencies.



Discontinuation of the Script Sequencer

As of dSPACE Release 2019-B the Script Sequencer for executing Python scripts in a sequence will no longer be available.

However, the alternative will be to execute the Python scripts with workflow management.

New Features of Test Management

Evaluating test results

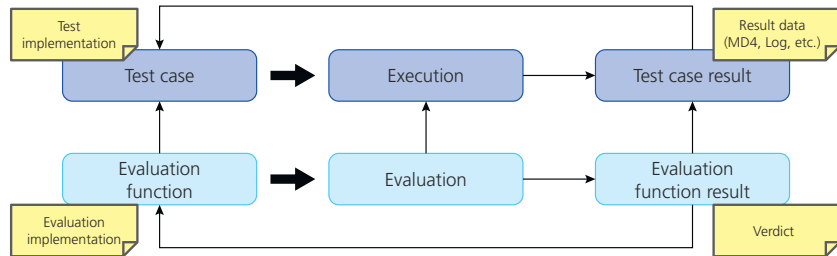
SYNECT now provides evaluations for separating test execution and test result evaluation.

You can use evaluations for the following purposes:

- To save time when executing tests on HIL simulators.
Evaluating tests in a later step, e.g., on a PC can help you reduce the execution time of tests on simulators.
- To use test results for multiple evaluations.
Separating test execution from result evaluation lets you use test result data multiple times, e.g., to rework evaluation functions or use multiple evaluation functions.

Test results and evaluations Test automation tools such as AutomationDesk let you implement test cases and result evaluations separately. Test case execution returns test case results, such as capture data, MDF files, and LOG files that you can evaluate to generate a verdict.

SYNECT support SYNECT provides evaluation functions that reference test cases and evaluations that reference test case results. You can run evaluations separately.



Creating evaluations You can create evaluations on the basis of finished executions. SYNECT adds the evaluation functions that reference the test cases of the finished execution.

Configured references

	EF_1	EF_2	EF_3
TC_A	X	X	X
TC_B	X	X	-
TC_C	X	-	-

Evaluation function verdict

	EF_1	EF_2	EF_3
TCR_A	Failed	Passed	Failed
TCR_B	Failed	Passed	
TCR_C	Passed		

TC: Test case
 TCR: Test case result
 EF: Evaluation function
 X: Evaluation function references test case

Executing evaluations SYNECT lets you execute evaluations with plug-ins. The Python plug-in supports the execution of evaluations.

Further reading Refer to [Evaluating Test Results](#) (SYNECT Guide).

Query-based execution plans

You can now use search queries to dynamically select the test cases that you plan to execute. The query is evaluated to prepare each execution. This is an alternative to planning the recurring execution of a specific number of test cases.

You can perform the following steps to create an execution plan that uses a query to get the test cases to execute:

1. Create a query that gets items of the test case context item type. You can use the Test Cases data grid for this.

Tip

You can also use the Global Search data grid to specify the query. This lets you use additional features of queries such as sorting criteria.

Name	Description	Links	Last Verdict	Last Execution D...	Verdict History	# Test Case Results	Execution Duration	Execution Environ...	Priority	Source Project
Car safety-locks...	Preparation: Lisa Hilde: Car sa...		Passed	16.02.2019 02:14...	✓ ✓ ✓ ✓ ✓	7	00:00:56	AutomationDesk	3	Central Locking
Car unlocks on ci...	Preparation: Tara Douglas: Car...		Passed	16.02.2019 02:14...	✓ ✓ ✓ ✓ ✓	7	00:01:42	AutomationDesk	1	Central Locking
Central locking st...	Preparation: Tara Douglas: Ce...		Passed	16.02.2019 02:14...	✓ ✓ ✓ ✓ ✓	7	00:07:29	AutomationDesk	1	Central Locking

- Save the query and share it with other SYNECT users.

Note

You must share the query to use it for an execution plan.

- Create an execution plan and configure it as required.
- Select the query to get test cases.

Execution Plan Details

If you select a query to get test cases, adding test cases on the Test Cases page (execution plan) is disabled. You can preview the test cases that will be executed instead. However, the query to get the test cases and add them is executed when the execution is prepared.

- Plan and execute executions as required.

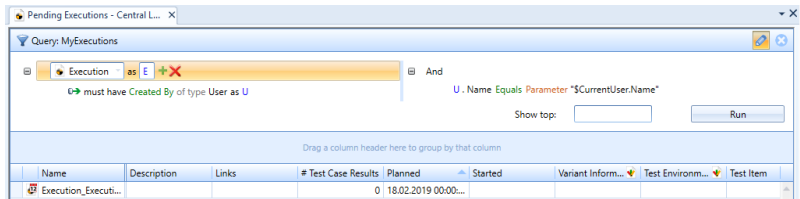
Further reading Refer to [How to Plan Executions Based on Search Queries](#) ([SYNECT Guide](#)).

Changed execute queues

Executing pending executions non-interactively in a queue has been changed. You can now create execute queues based on queries that let you get pending executions.

You can perform the following steps to create an execute queue:

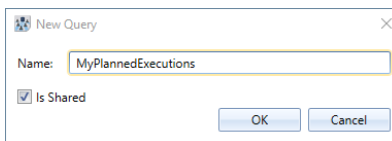
1. Create a query that gets executions. You can use the Pending Executions data grid for this.



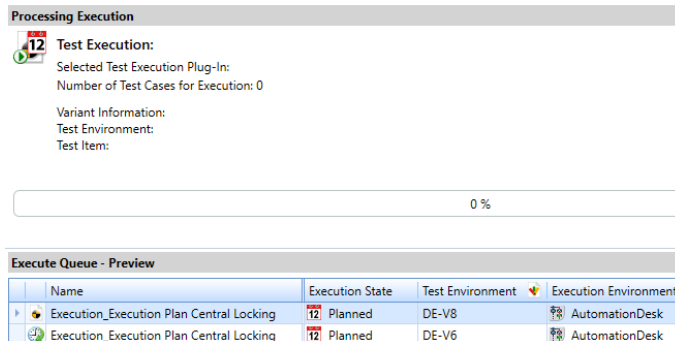
2. Save the query and share it with other SYNECT users.

Note

You must share the query to use it for an execute queue.



3. Create an execute queue and specify its settings.



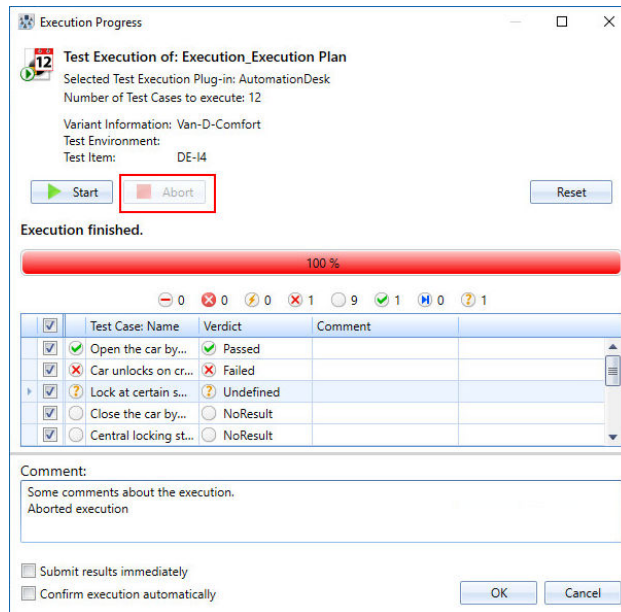
You can execute the queue. The queue is updated frequently and planned executions that match the query are added automatically.

Further reading Refer to [Executing Executions in a Queue](#) ([SYNECT Guide](#)).

Aborting test case execution

You can abort the execution of test cases, e.g., if you execute test cases interactively in the Execution Progress dialog.

With this version of SYNECT, the AutomationDesk plug-in supports aborting running test cases in AutomationDesk.

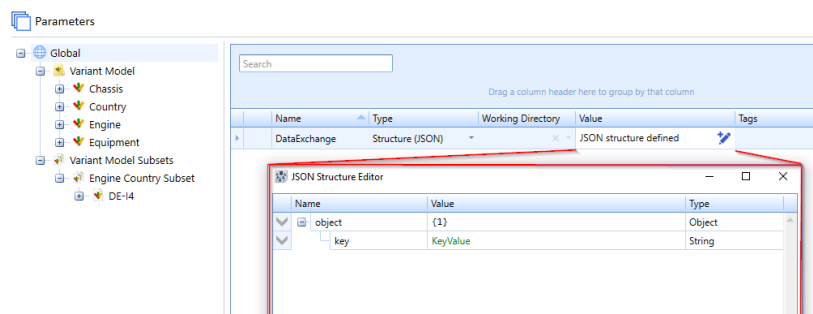


New Features of Workflow Management

Improvements

The following improvements have been made for workflow management.

- You can now use workflow parameters that represent JSON structures. This lets you efficiently exchange data.
SYNECT provides an editor for JSON structures to specify parameter values.



- You can now use an XML-based wizard for parameter overwrite steps that you can define as required. You can edit the wizard XML on the Wizard XML page (parameter overwrite step).
You can load a template for the wizard XML to start defining the wizard.

Further reading Refer to [Managing Workflows](#) (SYNECT Guide).

Migrating to SYNECT 2.7

Where to go from here

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Some parts of the SYNECT data model have been changed from SYNECT 2.6 to SYNECT 2.7.	

Migrating Databases

Introduction

To use the data from previous SYNECT versions with SYNECT 2.7, you have to migrate the SYNECT database.

To migrate databases for SYNECT Versions 2.0 - 2.6 to SYNECT 2.7, SYNECT 2.7 provides the Database Migrator.

Note

Contact dSPACE Support if you want to migrate SYNECT versions prior to SYNECT 2.0.

For basic information and instructions on migrating databases, refer to [Migrating Databases from Previous SYNECT Versions](#) ([PDF](#) The SYNECT Server Guide).

Discontinuation of SQL Server versions

dSPACE support of SQL Server 2008 and SQL Server 2008R2 will end with dSPACE Release 2019-A (May 2019). Microsoft® is planning to end its support for SQL Server 2008 and SQL Server 2008R2. The extended support will end on the July 09, 2019. Thereafter, Microsoft will no longer provide security patches and new support information. Therefore, dSPACE Release 2019-A will be the final software version that will be released for SQL Server 2008 and SQL Server 2008R2.

Discontinuation of operating system versions on the SYNECT server

dSPACE support of Windows Server 2008 R2 will end with dSPACE Release 2019-B (November 2019). Microsoft® is planning to end its support for Windows Server 2008 R2. The extended support will end on the January 14, 2020.

Thereafter, Microsoft will no longer provide security patches and new support information. Therefore, dSPACE Release 2019-B will be the final software version that will be released for Windows Server 2008 R2.

Migrating from SYNECT 2.6

Changed additional Python module

The FormattedTextConverter module that you can import to client API scripts has been changed. The methods that the converter module provides are no longer static. You now have to create an instance of the FormattedTextConverter class to use the methods.

Old listing The following listing shows an old script that used a method without creating an instance of the class.

```
from dSPACE.Synect.SynectUtilities import FormattedTextConverter
...
text = FormattedTextConverter.ConvertRtfToPlainText("{\rtf1\ansi\....}")
```

New listing The following new listing shows how to create an instance of the class and use a method of the created class instance.

```
from dSPACE.Synect.SynectUtilities import FormattedTextConverter
...
converter = FormattedTextConverter()
text= converter.ConvertRtfToPlainText("{\rtf1\ansi\....}")
```

Changed Python plug-in import behavior

Importing references to variant dependencies with Python plug-ins has been changed:

Old listing

```
reference_vd1 = Base.Reference()
reference_vd1.Name = "Europe"
reference_vd1.ForeignId = "Europe"
variantDependency.References.Add(reference_vd1)
```

New listing

```
reference_vd1 =
VariantHandling.VariantDependencyVariantBaseReference()
reference_vd1.Name = "Europe"
reference_vd1.ForeignId = "Europe"
reference_vd1.UnrollDepth = 0
reference_vd1.UnrollDepthSpecified = True
variantDependency.References.Add(reference_vd1)
```

Refer to [VariantDependencyVariantBaseReference](#) ( SYNECT Guide).

Data Model Changes From SYNECT 2.6 to SYNECT 2.7

Introduction Some parts of the SYNECT data model have been changed from SYNECT 2.6 to SYNECT 2.7.

Deleted item types Item types were not deleted.

Deleted attributes Attributes were not deleted.

Deleted reference types Reference types were not deleted.

New item types The following item types have been added to the SYNECT data model:

- [Execute Queue](#) ([SYNECT Data Model Reference](#))
- [Evaluation Function](#) ([SYNECT Data Model Reference](#))
- [Evaluation](#) ([SYNECT Data Model Reference](#))
- [Evaluation Function Result](#) ([SYNECT Data Model Reference](#))

New attributes The following attributes have been added to the SYNECT data model:

Domain	Item Type	Attributes
Test Management	Evaluation (SYNECT Data Model Reference)	<ul style="list-style-type: none"> ▪ Duration ▪ Evaluation State ▪ Finished ▪ Planned ▪ Started ▪ Queued
Test Management	Evaluation Function (SYNECT Data Model Reference)	Estimated Duration
Test Management	Evaluation Function Result (SYNECT Data Model Reference)	<ul style="list-style-type: none"> ▪ Duration ▪ Date ▪ Execute
Test Management	Execute Queue (SYNECT Data Model Reference)	Ignore Planned Date

New reference types The following reference types have been added to the SYNECT data model:

Name	Source	Target
Evaluations/Execution	Execution (SYNECT Data Model Reference)	Evaluation (SYNECT Data Model Reference)
Evaluation Functions/Project	Test Management Project (SYNECT Data Model Reference)	Evaluation Function (SYNECT Data Model Reference)

Name	Source	Target
Test Item Variant Dependencies/Referencing Execute Queues (Test Item)	Execute Queue (SYNECT Data Model Reference)	Variant Dependency (SYNECT Data Model Reference)
Test Environment Variant Dependencies/Referencing Execute Queues (Test Environment)	Execute Queue (SYNECT Data Model Reference)	Variant Dependency (SYNECT Data Model Reference)
Test Case Contexts/Referencing Evaluation Functions	Evaluation Function (SYNECT Data Model Reference)	Test Case Context (SYNECT Data Model Reference)
Evaluation Function Results/Evaluation	Evaluation (SYNECT Data Model Reference)	Evaluation Function Result (SYNECT Data Model Reference)
Test Case Result/Referencing Evaluation Function Results	Evaluation Function Result (SYNECT Data Model Reference)	Test Case Result (SYNECT Data Model Reference)
Evaluation Function/Referencing Evaluation Function Results	Evaluation Function Result (SYNECT Data Model Reference)	Evaluation Function (SYNECT Data Model Reference)

SystemDesk

Where to go from here

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New Features of SystemDesk 5.3

Where to go from here

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Provides information on new features for configuring ECUs.	
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SystemDesk now assists you in developing software for adaptive V-ECUs.	
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Provides information on improvements that were made for managing V-ECUs.	
Executing Classic Platform Software on the Adaptive Platform	156
The support for executing Classic Platform software on the Adaptive Platform was improved.	

New General Features

Classic Platform support by SystemDesk 5.3

AUTOSAR release for modeling SystemDesk lets you model Classic Platform software and system architectures with a data model according to the AUTOSAR 4.4.0 Release. However, SystemDesk lets you exchange data according to other AUTOSAR releases as well.

Data exchange support SystemDesk supports AUTOSAR 4.4.0, 4.3.1, 4.3.0, 4.2.2, 4.2.1, 4.1.3, 4.1.2, 4.1.1, 4.0.3, and 4.0.2 for data exchange.

Adaptive Platform support

SystemDesk supports AUTOSAR 18-10 for developing Adaptive Platform software. The revision is also supported for exchanging data.

Configuring ECUs

Additional support of MCAL BSW modules

SystemDesk provides basic software modules of the microcontroller abstraction layer for the integration of third-party basic software in a virtual ECU.

SystemDesk now also supports the following MCAL BSW modules:

Module	Description	Commands
Input capture unit driver (Icu)	The Icu module lets you define input capture channels for simulating the following tasks: <ul style="list-style-type: none"> ▪ Detecting signal edges ▪ Controlling wake-up events ▪ Measuring periodic signals ▪ Counting signal edges Refer to <i>AUTOSAR_SWS_ICUDriver.pdf</i> . ¹⁾	<ul style="list-style-type: none"> ▪ Generate Icu Code
General purpose timer driver (Gpt)	The Gpt module lets you define general-purpose timers for simulating the following tasks: <ul style="list-style-type: none"> ▪ Starting and stopping timers ▪ Getting timer values ▪ Controlling time-triggered notifications and wake-up events Refer to <i>AUTOSAR_SWS_GPTDriver.pdf</i> . ¹⁾	<ul style="list-style-type: none"> ▪ Update Gpt Configuration ▪ Update Handle IDs ▪ Generate Gpt Code
Watchdog driver (Wdg)	The Wdg module lets you define watchdog channels for simulating the following tasks: <ul style="list-style-type: none"> ▪ Controlling timings ▪ Invoking services of the diagnostic event manger Refer to <i>AUTOSAR_SWS_WatchdogDriver.pdf</i> . ¹⁾	<ul style="list-style-type: none"> ▪ Generate Wdg Code

¹⁾ The document is available at www.autosar.org

The dSPACE_EcuCParamDef_ViVa_2.9.arxml file provides the parameter definitions that are required to add the modules to an ECU configuration.

Further reading

Refer to [Configuring ECUs](#) ( [SystemDesk Manual](#)).

Developing Software for Adaptive V-ECUs

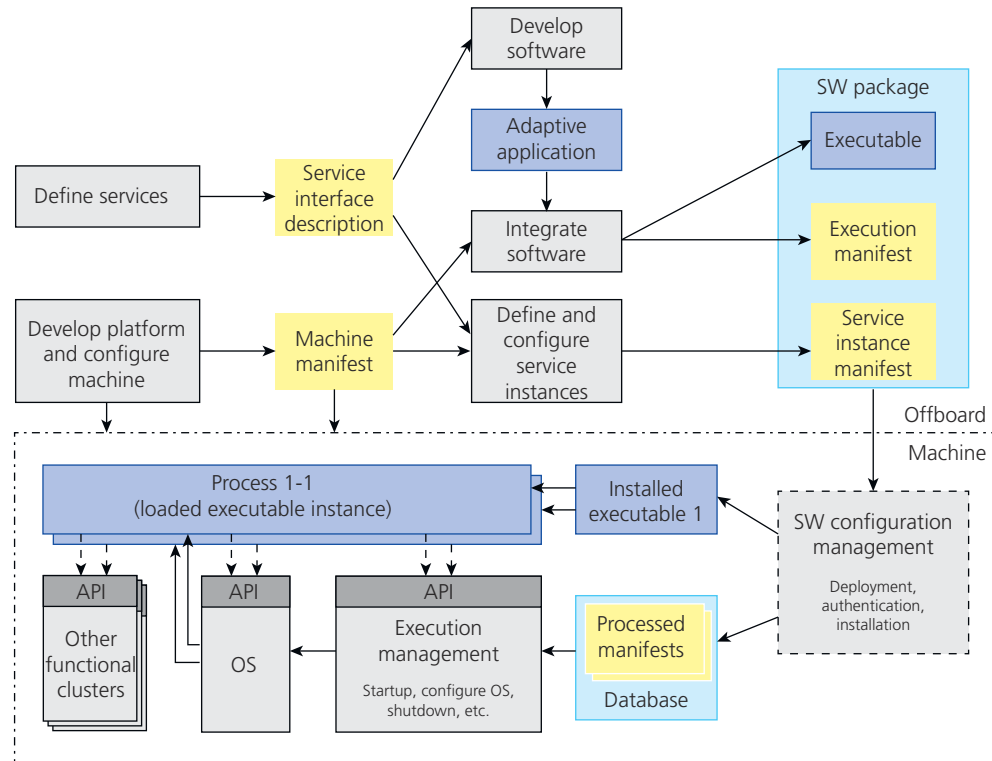
Introduction

SystemDesk now assists you in developing software for adaptive V-ECUs.

You can deploy the software to a machine, based on which you can configure an adaptive V-ECU for virtual validation of the software.

Adaptive Platform development workflow

The following illustration places the development of software in the context of the AUTOSAR Adaptive Platform development workflow.

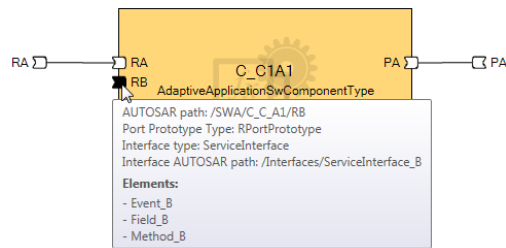


SystemDesk assists you at various stages of the development of software packages:

- Defining the service interface description.
- Creating executables for adaptive application software components.
- Creating an execution manifest. SystemDesk provides support by mapping executables to processes in a machine configuration.
- Creating a service instance manifest. SystemDesk provides support by generating the required elements for the communication deployment.

Developing adaptive software components

Adaptive applications are collections of C++ software components that communicate via service interfaces. AUTOSAR provides elements for the development of adaptive software components. You can import, edit, and export all the elements according to the supported AUTOSAR schema. Furthermore, you can use modeling features, such as diagrams, analogously to modeling Classic Platform software.

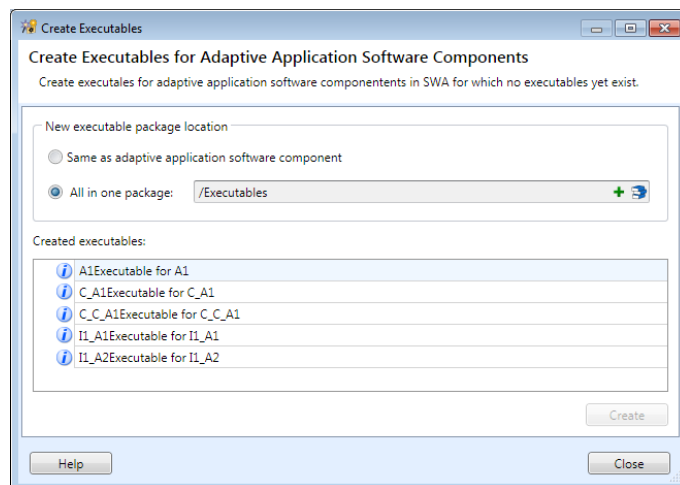


The following list contains a selection of elements with extended editing support for developing adaptive applications:

- Adaptive application software components
- Service interfaces with the following subelements:
 - Events
 - Fields
 - Methods
- CPP implementation data types

Automatic creation of executables and processes

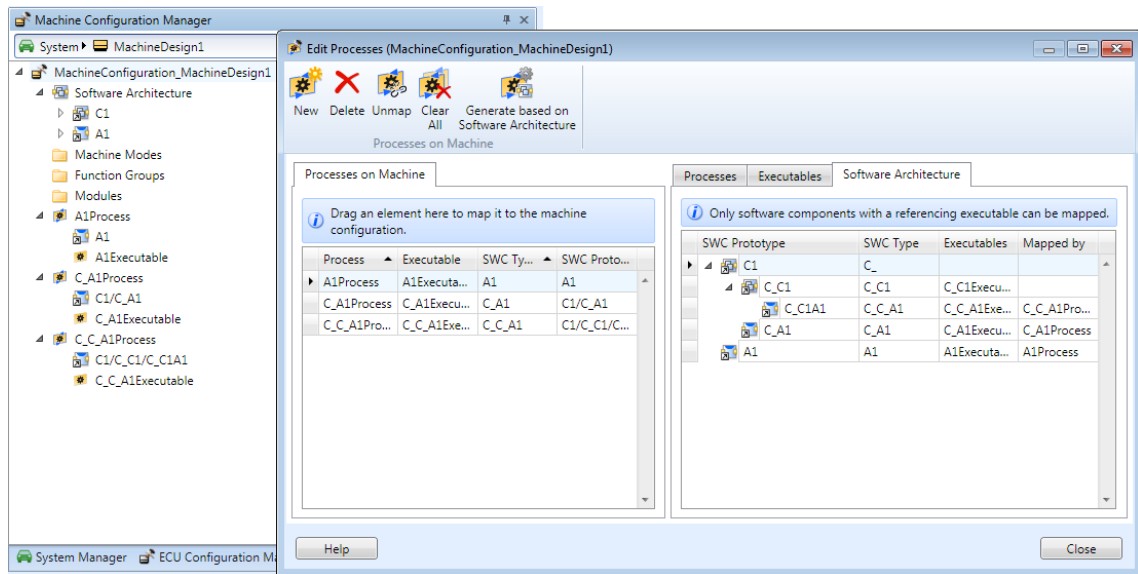
SystemDesk lets you automatically create executables for all the software components of a package via the Create Executable wizard.



As in Classic Platform modeling, you can create a system via the System Manager and map the software components to machine designs.

Once you have mapped the software components to machine designs, you can create machine configurations in the Machine Configuration Manager and use SystemDesk's Process Editor to automatically create a process for each software component instance of a machine.

The following illustration shows the Machine Configuration Manager and the Process Editor.



Communication deployment

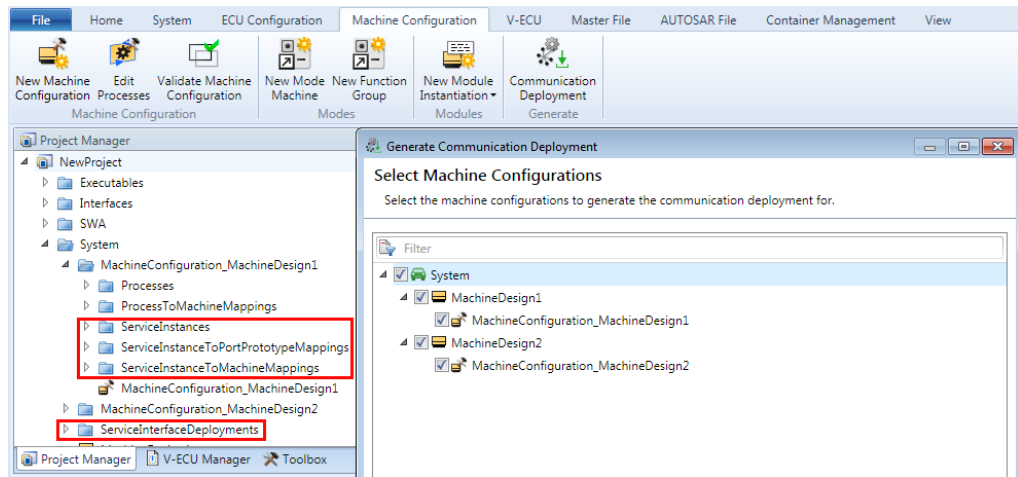
The AUTOSAR run-time environment for adaptive applications (ARA) enables the communication of adaptive applications with each other and with the functional clusters of the AUTOSAR Foundation. A description of the service interface deployment is required to generate the ARA.

SystemDesk provides the Generate Communication Deployment wizard to help you create the following elements that are required for the generation of the ARA:

- Service instances
- Service instance-to-port prototype mappings
- Service instance-to-machine mappings
- Service interface deployments

The wizard calls a Python script that generates the communication deployment according to the SOME/IP protocol. You can adapt the script to support other protocols, to change the assignment of IDs to elements such as service interfaces, or to change the distribution of elements in the package structure.

The following illustration shows the Generate Communication Deployment wizard and the results in the Project Manager.



Further reading

Refer to [Developing Software for Adaptive V-ECUs](#) (SystemDesk Manual).

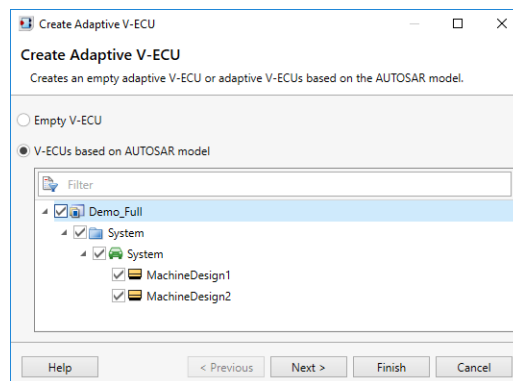
Managing V-ECUs

Creating adaptive V-ECUs from an AUTOSAR model

You can now select an AUTOSAR model when you create an adaptive V-ECU.

SystemDesk adds the software including references to C++ source code files to the V-ECU. You can reference scripts to build executables at the executable elements in the V-ECU Manager.

This lets you integrate adaptive software components in an adaptive V-ECU for virtual validation.



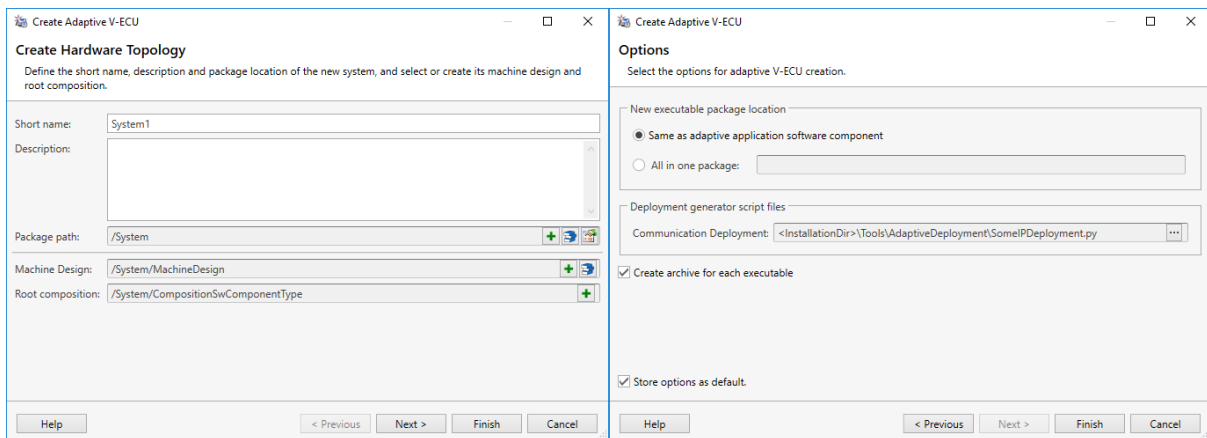
Create Adaptive V-ECU wizard

SystemDesk now provides a wizard that lets you create an adaptive V-ECU from a selected adaptive software component or a composition that contains adaptive SWCs.

The wizard lets you configure the following tasks for creating an adaptive V-ECU:

- Creating the system, machine design, and root composition elements for the system that SystemDesk uses to integrate the selected software component to a V-ECU.
- Creating the simulation system and adaptive V-ECU elements.
- Creating executables for the selected adaptive SWCs.
- Selecting a script to generate the communication deployment for the ARA.

You can use the V-ECU in simple virtual validation scenarios or use the V-ECU as a starting point to develop adaptive V-ECUs.



Further reading

Refer to [Creating Simulation Systems for Virtual Validation](#) ([SystemDesk Manual](#)).

Executing Classic Platform Software on the Adaptive Platform

Introduction

The support for executing Classic Platform software on the Adaptive Platform was improved.

Changes according to the Adaptive Platform development support

Due to the new AUTOSAR-compliant development support for Adaptive Platform software, you can no longer add adaptive applications and executables to V-ECUs.

The context menu of the dSPACE ARA adapter module configuration provides the **Generate Adaptive Software Component** command, which lets you now create an executable element that references the code files of the Classic

Platform software and the dSPACE ARA adapter. You can use the executable to create adaptive V-ECU.

You can use one of the following methods to create V-ECUs for the virtual validation of adaptive software components with integrated Classic Platform software:

- SystemDesk provides the **Create Adaptive V-ECU** wizard, which lets you create an adaptive V-ECU from selected adaptive software components. The wizard simplifies the creation of the elements that SystemDesk requires to integrate Adaptive Platform software in an adaptive V-ECU.
- You can use SystemDesk to configure machines for the execution of adaptive software components. This lets you distribute software across more than one machine and model the processes for software execution.
- You can build an adaptive application according to the code files that are referenced by the executable, create an empty adaptive V-ECU, and add the archives of the adaptive application to the V-ECU implementation.

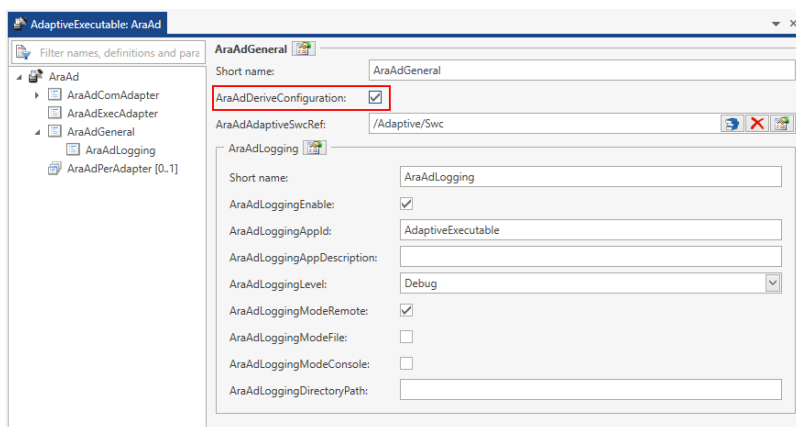
Improved configuration of the dSPACE ARA adapter

You can now derive the communication part of the dSPACE ARA adapter module configuration from the description of an adaptive software component. The component ports and referenced service interfaces are used to generate the port structure of the module configuration.

This lets you integrate Classic Platform software if you have the description of an adaptive software component.

To derive the configuration, you have to perform the following steps:


1. Import the adaptive software component to SystemDesk.
2. In the AraAd module configuration, reference the adaptive software component.
3. In the AraAd module configuration, select the **AraAdDeriveConfiguration** parameter.



4. Use the **Update ARA Adapter Configuration** command to create ports and reference interfaces according to the adaptive software component.

The command creates and deletes AraAdCom port parameter containers with their subcontainers as required. The command does not change existing parameters of AraAdCom port subcontainers such as the AraAdEventQueueSize parameter.

Further reading

Refer to [Basics on Executing Classic Platform Software on the Adaptive Platform](#) ( [SystemDesk Manual](#)).

Migrating to SystemDesk 5.3

Migrating to SystemDesk 5.3

Automatic migration of projects

SystemDesk 5.3 automatically migrates SystemDesk 5.1, and 5.2 SDP project files when it loads.

Note

You are recommended to install the most recent patch for SystemDesk 5.1 or 5.2. Then, save the SDP project files you want to migrate before opening them in SystemDesk 5.3.

Migrating SystemDesk 5.1 projects with Dap module

configurations You have to perform manual steps to migrate SystemDesk 5.1 projects that contain Dap module configurations with DAP blocks with signals in both directions due to a platform compatibility issue regarding VPU ports.

To do so, you have to perform the following steps:

1. Load the project with SystemDesk 5.3.
2. Execute the Auto configure and generate command on the ECU configuration or V-ECU that contains the Dap module configuration you have to migrate.

The command adds separate DAP blocks for the signals and updates the data access function references of the DAP user. The names of related VPU ports are changed.

3. Connect the updated VPU ports in VEOS Player.

Migrating from SystemDesk 5.2

Migrating scripts for automating SystemDesk The SystemDesk API was changed with SystemDesk 5.3. Some interfaces were added with respect to SystemDesk 5.2. A number of interfaces were changed as well.

For more information, refer to API Changes from SystemDesk 5.2 to SystemDesk 5.3.

VEOS

Where to go from here


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To migrate from VEOS 4.3 to VEOS 4.4, you might have to carry out the following migration steps.	
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Provides information on the features discontinued as of VEOS 4.4.	

New Features of VEOS 4.4

Adaptive Platform support enhancements

Support of AP R18-10 VEOS 4.4 supports R18-10 of the AUTOSAR Adaptive Platform.

Adaptive Platform demos VEOS provides *Adaptive Platform demos* that illustrate the handling of adaptive V-ECUs in VEOS, and demonstrate the associated workflows in SystemDesk and VEOS. Refer to [Working with the VEOS Adaptive Platform Demos](#) ( VEOS Manual).

AUTOSAR Adaptive Platform Demonstrator support The AUTOSAR Adaptive Platform Demonstrator contains sample applications for simulating a simple radar fusion scenario where radar data is provided as a service. In SystemDesk, you can build adaptive V-ECUs that are based on the AUTOSAR Adaptive Demonstrator. You can simulate the resulting adaptive V-ECUs on VEOS. Refer to [Working with the AUTOSAR Adaptive Platform Demonstrator Samples](#) ( VEOS Manual).

Support for Microsoft Hyper-V VEOS now also supports Microsoft Hyper-V for the simulation of adaptive V-ECUs. Microsoft Hyper-V is supported on all Windows 10 operating systems supported by dSPACE. Refer to [Operating System](#) on page 170.

Enhancements for classic V-ECUs

Enhanced support for basic software modules of the microcontroller abstraction layer (MCAL) VEOS 4.4 lets you build and simulate V-ECUs that contain a configuration and implementation of the following microcontroller abstraction layer (MCAL) modules:

Module	Description
Input Capture Unit (Icu) driver	The Icu module lets you define input capture channels for simulating the following tasks: <ul style="list-style-type: none"> ▪ Detecting signal edges ▪ Controlling wake-up events ▪ Measuring periodic signals ▪ Counting signal edges Refer to <i>AUTOSAR_SWS_ICUDriver.pdf</i> . ¹⁾
General Purpose Timer (Gpt) driver	The Gpt module lets you define general-purpose timers for simulating the following tasks: <ul style="list-style-type: none"> ▪ Starting and stopping timers ▪ Getting timer values ▪ Controlling time-triggered notifications and wake-up events Refer to <i>AUTOSAR_SWS_GPTDriver.pdf</i> . ¹⁾
Watchdog (Wdg) driver	The Wdg module lets you define watchdog channels for simulating the following tasks: <ul style="list-style-type: none"> ▪ Controlling timings ▪ Invoking services of the diagnostic event manger Refer to <i>AUTOSAR_SWS_WatchdogDriver.pdf</i> . ¹⁾

¹⁾ The document is available at www.autosar.org

Refer to [Basic Software Module Support for V-ECUs](#) ([📄 Virtual Validation Overview](#)).

Simulation of multicore V-ECUs VEOS now lets you simulate multicore V-ECUs.


For more information, refer to [Simulating Multicore V-ECUs](#) ([📄 VEOS Manual](#)).

Stimulating VPU variables of a 64-bit application

Stimulating VPU variables of a 64-bit application by means of dSPACE test and experiment software such as Real-Time Testing or the ControlDesk Signal Editor is possible.

Global time synchronization support

VEOS supports *global time synchronization*. The concept of global time synchronization was introduced and standardized by AUTOSAR as a means of providing and distributing synchronized times across all ECUs in a vehicle.

Sampling period information for signals For signals selected in the Port Topology pane, the VEOS Player Properties pane now displays the sampling period of the related model.
For more information, refer to [Signal](#) ( [VEOS Manual](#)).


Compatibility of VEOS 4.4

Where to go from here

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Compatibility in general dSPACE recommends using only software products from the same dSPACE Release. This ensures maximum run-time compatibility.

Supported compiler versions For information on supported compiler versions, refer to [Basics on Integrating the Simulation System](#) ( [VEOS Manual](#)).

Real-Time Testing compatibility To use RTT in connection with VEOS and ControlDesk, the Real-Time Testing (RTT) version used by the VEOS Simulator that runs the simulation system and the RTT version that is active on the PC must be identical.

The following table shows the VEOS Simulator version and the corresponding RTT version:

VEOS Simulator	Version
... from VEOS 4.4	Real-Time Testing Version 4.1
... from VEOS 4.3	Real-Time Testing Version 4.0
... from VEOS 4.2	Real-Time Testing Version 3.4
... from VEOS 4.1	Real-Time Testing Version 3.3
... from VEOS 4.0	Real-Time Testing Version 3.2

ControlDesk 7.0 automatically uses the VEOS Simulator of VEOS 4.4. You can therefore use RTT in connection with VEOS and ControlDesk if RTT 4.1 is active on the PC.

File import compatibility

BSC compatibility VEOS 4.4 is compatible with bus simulation container (BSC) files created with the Bus Manager of dSPACE Release 2019-A (BSC version 1.6).

CTLGZ compatibility The following table shows the compatibility between VEOS 4.4 and CTLGZ files (V-ECU implementations):

V-ECU Implementations Created With...	V-ECU Implementation Version
dSPACE Release 2019-A: ▪ SystemDesk 5.3	2.9 ¹⁾
dSPACE Release 2018-B: ▪ SystemDesk 5.2 ▪ TargetLink 4.4	2.8 ¹⁾
dSPACE Release 2018-A: ▪ SystemDesk 5.1	2.7 ¹⁾
dSPACE Release 2017-B: ▪ SystemDesk 5.0 ▪ TargetLink 4.3	2.6 ¹⁾

¹⁾ There is a migration issue for VEOS if the container file to be imported contains static libraries. For more information, refer to [Migration issue when importing container files with static libraries compiled with VEOS 4.1 or earlier](#) (📖 VEOS Manual).

FMU compatibility VEOS supports:

- Functional Mock-up Units (FMUs) that comply with the FMI 2.0 standard
- Only the FMI for Co-Simulation interface, but not the FMI for Model Exchange interface

For detailed and up-to-date compatibility information on dSPACE's FMI support, refer to:

<http://www.dspace.com/go/FMI-Compatibility>.

OSA compatibility The following table shows the compatibility between VEOS 4.4 and offline simulation application (OSA) files:

OSA Files Created with Products Of ...	OSA Version
dSPACE Release 2019-A	4.4 ¹⁾
dSPACE Release 2018-B	4.3 ²⁾

OSA Files Created with Products Of ...	OSA Version
dSPACE Release 2018-A	4.2 ²⁾
dSPACE Release 2017-B	4.1 ²⁾

- 1) OSA files created or modified with VEOS 4.4 cannot be loaded in earlier VEOS versions.
- 2) You cannot modify the properties of VPUs contained in an OSA file if you open the OSA file in a later VEOS version than the version with which the OSA file was originally created. However, port and network connections can be edited. As a consequence, it is recommended to rebuild the binary OSA files from existing model implementation container files (CTLGZ, SIC, BSC, FMU) when you migrate from one VEOS version to another.

SIC compatibility The following table shows the compatibility between VEOS 4.4 and Simulink implementation container (SIC) files:

SIC Files Created With ...	SIC Version
dSPACE Release 2019-A: ▪ Model Interface Package for Simulink 4.1	1.6
dSPACE Release 2018-B: ▪ Model Interface Package for Simulink 4.0 ▪ TargetLink 4.4	1.5 ^{1), 2)}
dSPACE Release 2018-A: ▪ Model Interface Package for Simulink 3.6	1.4 ^{1), 2)}
dSPACE Release 2017-B: ▪ Model Interface Package for Simulink 3.5	1.3 ^{1), 2)}

- 1) There is a migration issue for VEOS if the container file to be imported contains static libraries. For more information, refer to [Migration issue when importing container files with static libraries compiled with VEOS 4.1 or earlier](#) (📖 VEOS Manual).
- 2) If the SIC file is created with a previous dSPACE Release and if the SIC file contains an ASM model, you cannot simulate the model in VEOS 4.4 (dSPACE Release 2019-A). For more information, refer to [Migrating ASM Models](#) (📖 VEOS Manual).

SMC compatibility The following table shows the compatibility between VEOS 4.4 and system model container (SMC) files:

SMC Files Created With ...	SMC Version
dSPACE Release 2019-A ▪ SYNECT 2.7 ▪ VEOS 4.4	1.1
dSPACE Release 2018-B: ▪ SYNECT 2.6 ▪ VEOS 4.3	1.1
dSPACE Release 2018-A: ▪ SYNECT 2.5 ▪ VEOS 4.2	1.1
dSPACE Release 2017-B: ▪ SYNECT 2.4	1.0

You also have to consider the following compatibility restrictions of the individual container files contained in the SMC file to be imported: If the SMC file contains a container of an unsupported version, VEOS 4.4 imports neither the

unsupported container nor the connections to the application process based on the unsupported container.

SMC files exported with VEOS 4.4 have file version 1.1.

Hypervisor compatibility

The simulation of adaptive V-ECUs with VEOS requires a hypervisor.

The following hypervisor software is supported:

- VMware Workstation 14 Player or Pro
- Microsoft Hyper-V on all Windows 10 operating systems supported by dSPACE. Refer to [Operating System](#) on page 170.

Only one hypervisor can be active on the Windows operating system. If several hypervisors are installed, VEOS uses the active one.

Hardware support for virtualization (Intel VT-X/AMD-V) in the BIOS or UEFI of the host PC must be activated.

AUTOSAR Adaptive Platform

VEOS 4.4 is compatible with R18-03 and R18-10 of the AUTOSAR Adaptive Platform.

Migrating to VEOS 4.4

Introduction

To migrate from VEOS 4.3 to VEOS 4.4, you might have to carry out the following migration steps.

Note


To migrate to VEOS 4.4 from versions earlier than 4.3, you might also have to perform the migration steps of the intervening VEOS versions.

Migrating ASM models

You cannot simulate an ASM model on VEOS if the model is contained in an OSA or SIC file that was created with a dSPACE Release earlier than the one to which your VEOS installation belongs.

To simulate an ASM model that was last saved with a dSPACE Release earlier than the dSPACE Release to which your VEOS version belongs, perform the following steps:

1. Migrate the ASM model to the dSPACE Release to which your VEOS version belongs.

For information on migrating ASM models, refer to [Migrating ASM Models](#) ( [ASM User Guide](#)).

2. Generate a Simulink implementation container (SIC) file on the basis of the ASM model by using the *Model Interface Package for Simulink*.

For instructions, refer to [Generating Simulink Implementation Containers \(📖 Model Interface Package for Simulink - Modeling Guide\)](#).

3. Import the SIC file to the VEOS Player of your VEOS version.

For instructions, refer to [How to Import Simulink Implementations \(📖 VEOS Manual\)](#).

Migrating from prior VEOS versions

To migrate from prior VEOS versions and reuse existing offline simulation applications, you might have to carry out additional migration steps. For more information on the migration steps, refer to [Migrating from Prior Versions of VEOS \(📖 VEOS Manual\)](#).

Discontinuations in VEOS 4.4

Discontinuations as of VEOS 4.4

Simultaneous access to a V-ECU by two tools As of VEOS 4.4 (dSPACE Release 2019-A), you can access a V-ECU by only one external tool, such as ControlDesk, at a time. The tool accesses the V-ECU via an XCP port of the XCP service implemented in the V-ECU code.

Up to and including VEOS 4.3, simultaneous access to a V-ECU via two external tools was possible.

The relevant setting is available on the XCP Service page of the VEOS Import dialog. The relevant `XcpPort1` and `XcpPort2` properties of the `IImportSettings` automation interface are deprecated. Use the `XcpPort` property instead.

Related topics

Basics

[Discontinuations in VEOS \(📖 VEOS Manual\)](#)

Compatibility Information

Where to go from here

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Supported MATLAB Releases

MATLAB®/Simulink®

Working with various dSPACE products requires that MATLAB is installed on your host PC.

Tip

For system requirements of MathWorks® software, refer to <http://www.mathworks.com/support/sysreq.html>.

MATLAB Release...	...Is Supported by dSPACE Release 2019-A					
	RCP and HIL Software ^{1), 2)}	AutomationDesk 6.1 ³⁾	TargetLink 4.4	Model Compare 2.9	dSPACE Python Extensions 3.1 ⁴⁾	XIL API .NET MAPort 2019-A
R2019a	✓ ⁵⁾	✓ ⁶⁾	–	–	✓ ⁷⁾	✓
R2018b	✓	✓	✓	✓	✓	✓
R2018a	✓	✓	✓	✓	✓	✓
R2017b	✓	✓	✓	✓	✓	✓
R2017a	–	–	✓	✓	–	–

- ¹⁾ 'RCP and HIL software' is a generic term for a software package containing several dSPACE software products, for example, ASM, RTI, ConfigurationDesk, MotionDesk and ModelDesk. These software products are installed in a common folder.
- ²⁾ MATLAB/Simulink Student Suite does not support Automotive Simulation Models (ASM).
- ³⁾ The AutomationDesk MATLAB Access library requires MATLAB.
- ⁴⁾ matlablib2 of dSPACE Python Extensions requires MATLAB.
- ⁵⁾ R2019a is not supported by the RTI FPGA Programming Blockset – FPGA Interface.
- ⁶⁾ R2019a is not supported by the MATLAB Access library in AutomationDesk.
- ⁷⁾ R2019a is not supported by the matlablib2.

For up-to-date information on additional MATLAB releases that can be used in combination with dSPACE software, refer to <http://www.dspace.com/go/MATLABCompatibility>.

Operating System

Operating system on host PC

The dSPACE products of dSPACE Release 2019-A support the following operating systems:

- Windows 7 Professional, Ultimate, and Enterprise with Service Pack 1 (64-bit versions)

Only the listed editions are supported. The Windows 7 Home and Starter editions are not supported.

Note

dSPACE support of Windows 7 will end with dSPACE Release 2019-B (November 2019). Microsoft® is planning to end its support for Windows 7. The extended support will end on January 14, 2020. Thereafter, Microsoft will no longer provide security patches or new support information. Therefore, dSPACE Release 2019-B will be the final software version that will be released for Windows 7.

- The following editions, channels, and servicing options of Windows 10:
 - Windows 10 Professional, Education, and Enterprise (64-bit versions)
The Windows 10 Home, Mobile, and Windows 10 S editions are not supported.
 - Long-Term Servicing Branch: LTSB 2016
 - Semi Annual Channel (formerly known as Current Branch (CB)): The compatibility statement of Microsoft applies. This means that newer versions released in this channel should be compatible with all previous versions. dSPACE used the 1803 version of the Semi Annual Channel for testing.

Some limitations apply when you use dSPACE software in conjunction with features of Windows. Refer to [Limitations for Using Windows Features](#) on page 177.

Using MicroAutoBox Embedded PC as host PC

ControlDesk can also be installed on:

- MicroAutoBox Embedded PC 3rd Gen. Intel® Core™ i7-3517UE Processor, running on Windows 7 Professional, Ultimate, and Enterprise, 64-bit version
- MicroAutoBox Embedded PC 6th Gen. Intel® Core™ i7-6822EQ Processor, running on Windows 10 IOT Enterprise, LTSB 2016, 64-bit version

Operating system on SYNECT server

The SYNECT server supports the following operating systems:

- The same operating systems as listed above for all dSPACE products of dSPACE Release 2019-A.
- The 64-bit versions of Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2 and Windows Server 2016. The Windows Server Semi Annual Channel versions are not supported.

Note

Do not install the SYNECT client on a Windows server operating system, such as Windows Server 2016.

Note

dSPACE support of Windows Server 2008 R2 will end with dSPACE Release 2019-B (November 2019). Microsoft® is planning to end its support for Windows Server 2008 R2. The extended support will end on January 14, 2020. Thereafter, Microsoft will no longer provide security patches or new support information. Therefore, dSPACE Release 2019-B will be the final software version that will be released for Windows Server 2008 R2.

Operating system on server for floating network licenses

If you purchased floating network licenses, you have to specify one of the network PCs as a license server. Every PC with CodeMeter Runtime software can be used as a license server.

Valid for servers without dSPACE software dSPACE tests license servers only with Microsoft Windows operating systems in combination with protected dSPACE software.

Note

Non-Windows operating systems, such as Ubuntu Linux, are not tested. You can use them at your own risk. dSPACE does not provide support in this case.

Valid for servers with dSPACE Installation Manager dSPACE Installation Manager supports the same operating systems as the other dSPACE software products described above.

Allowing communication

Installing of additional firewall rules Additional Windows firewall rules are installed during the installation of various dSPACE software products. For example, one rule allows communication with a dSPACE expansion box, such as AutoBox. Another rule allows MotionDesk to receive motion data from a network channel. These example rules are created by the following commands:

- `netsh advfirewall firewall add rule name="dSPACE Net Service" service=any dir=in action=allow profile=any protocol=icmpv4:0, any description="Allow the dSPACE Net Service to connect to a dSPACE expansion box via network."`
- `netsh advfirewall firewall add rule name="dSPACE MotionDesk" program=<main installation path>\dSPACERCPHIL2019-A\MotionDesk\Bin\MotionDesk.exe" dir=in action=allow profile=any description="Allow dSPACE MotionDesk to receive motion data via network."`

Required open TCP/IP network ports If you are using third-party firewall software on your host PC, ensure that the TCP/IP communication of dSPACE software is not blocked:

- VEOS requires the following open TCP/IP network ports: 111 (TCP and UDP), 3702 (UDP), 7214 (TCP and TCP6), 8090 (TCP), 9923 (UDP), 15000 (UDP), 49152 ... 65535 (TCP, TCP6 and UDP)
- dSPACE Installation Manager and CodeMeter licensing software require the following open TCP/IP network ports:
 - 22350 (TCP and UDP) for communication in a LAN network (if not changed from the default setting).
 - 22352 (TCP and UDP): To access CodeMeter WebAdmin via http.
 - 22353 (TCP and UDP): To access CodeMeter WebAdmin via https.
- dSPACE Help requires an open TCP/IP network port for interprocess communication between its components. The default port number is 11000. If this port number is already being used, another free port is used automatically. The related processes can be identified via the following prefixes: `HelpApsLayer<xxx>`, `HelpInstaller<xxx>`.

Using dSPACE Software on Virtual Machines (VMs)

Introduction

As of dSPACE Release 2019-A, you can operate several dSPACE products installed on virtual machines. However, some dSPACE product support VMs only with limitations, and other dSPACE products cannot be operated on VMs at all.

Usage restrictions

Note

The dSPACE End User License Agreement (EULA) does not allow:

- Using a virtual machine for circumventing license protection mechanisms, for multiple use of an acquired license or for use outside the use determined by the license type.
- Accessing dSPACE software via Internet or network applications (e.g., Citrix, Microsoft Remote Desktop or other terminal/device servers) or to grant such access to third parties.

If you have any questions or encounter any problems, contact dSPACE Support (www.dspace.com/go/supportrequest).

Recommended virtual machine software

dSPACE tests the functionality of dSPACE software products with current VMware products and VM hardware compatibility version 10.

Support of dSPACE software on virtual machines

Note

The following table shows the compatibility for all dSPACE products. For products that support VMs with limitations, the known limitations are listed. For these products, further limitations might apply depending on the use case.

Product	Full Support	Support with Known Limitations	No Support
ASM	✓	—	—
AutomationDesk	—	✓ Supported only in combination with the VEOS platform. Combinations with other platforms are not tested and therefore not released for use on VMs.	—
Bus Manager	✓	—	—
ConfigurationDesk - Configuration Version	—	✓ Limitations apply if the RapidPro system is used as an intelligent I/O subsystem to extend DS1005 modular systems. ConfigurationDesk cannot access a real-time application if the DS1005 modular system is connected to the host PC via dSPACE link boards. If the DS1005 modular system is connected to the host PC via an Ethernet connection and a slot CPU, communication and therefore performance is very low.	—
ConfigurationDesk - Implementation Version	✓	—	—
Container Manager	✓	—	—
ControlDesk	—	✓ Known limitations: <ul style="list-style-type: none"> ▪ Access to DS1005/DS1006 modular systems via dSPACE link boards is not possible. ▪ Access to DS1005/DS1006 modular systems via Ethernet connection and slot CPU: Communication and therefore performance is very low. ▪ Access to DS1104 R&D Controller Boards is not possible. 	—
Data Dictionary Manager	✓	—	—
DCI-GSI Configuration Package	✓	—	—
dSPACE Installation Manager	✓	—	—
ECU Flash Programming Tool	✓	—	—
ECU Interface Base Package	✓	—	—
ECU bypassing target compiler	✓	—	—
Failure Simulation Package	—	✓ Supported only in combination with the VEOS platform. Combinations with other platforms are not tested and therefore not released for use on VMs.	—

Product	Full Support	Support with Known Limitations	No Support
Firmware Archives	—	✓ Limitations: <ul style="list-style-type: none"> ▪ Access to DS1005/DS1006 modular systems via dSPACE link boards is not possible. ▪ Access to DS1005/DS1006 modular systems via Ethernet connection and slot CPU: Communication and therefore performance is very low. ▪ Access to DS1104 R&D Controller Boards is not possible. 	—
Firmware Manager			
FlexRay Configuration Tool	✓	—	—
Model Compare	✓	—	—
ModelDesk	—	✓ Limitations: <ul style="list-style-type: none"> ▪ The Traffic Object Manager cannot show custom sensor points in the preview. ▪ Plotting occasionally does not start if a start trigger is used. 	—
Model Interface Package for Simulink	✓	—	—
MotionDesk	—	—	✓ ¹⁾
Platform API Package	—	✓ Supported only in combination with the VEOS platform. Combinations with other platforms are not tested and therefore not released for use on VMs.	—
Real-Time Testing	—	✓ Supported only in combination with the VEOS platform. Combinations with other platforms are not tested and therefore not released for use on VMs.	—
RTI Blocksets (Real-Time Interface)	—	✓ Limitations: <ul style="list-style-type: none"> ▪ Access to DS1005/DS1006 modular systems via dSPACE link boards is not possible. ▪ Access to DS1005/DS1006 modular systems via Ethernet connection and slot CPU: Communication and therefore the performance is very low. ▪ Access to DS1104 R&D Controller Boards is not possible. 	—
SensorSim	—	—	✓ ¹⁾
SYNECT	✓	—	—
SYNECT Server	✓	—	—
SystemDesk	✓	—	—
TargetLink	✓	—	—
VEOS	✓ ²⁾	—	—

¹⁾ VMs do not fulfill the requirements for graphics adapters.

²⁾ If you want to simulate adaptive AUTOSAR V-ECUs and use Hyper-V (Hypervisor from Windows 10), the VM hardware compatibility version 12 or higher is required.

Required knowledge for setting up a virtual machine

To set up a virtual machine, you must have knowledge about the technology of VMs.

In virtual environments, significantly higher latencies and lower network performance (network throughput) must be expected compared to physical PCs. dSPACE has no influence on this.

Using a virtual machine on the host PC

System requirements PCs that host virtual machines with dSPACE software, must meet at least the requirements listed in [Appendix: System Requirements](#) ([📖 Installing dSPACE Software](#)). You are recommended to use a PC with more resources so that the software runs smoothly on a VM, because the VM software itself uses up some of the resources:

- The CPU speed and RAM size must be sufficient to run the operating system and the software on the host PC as well as the guest operating system and the application software on the VM.
- You also require sufficient free disk space to install the VM software and the software you want to run, just as you would if you were installing it directly on your PC.

Connecting the WIBU-BOX/U device If you use dongle-based single-user licenses to use dSPACE software, you have to connect the WIBU-BOX/U device to the virtual machine on the host PC. For instructions, refer to the documentation of the VM software you use.

Optimal display of dSPACE Help For an optimal display of the content in dSPACE Help, you have to activate the ClearType setting in the VM (= default setting).

You can access this setting via the Windows Start menu (Start – Control Panel – Appearance and Personalization – Display – Adjust ClearType text).

Run-Time Compatibility of dSPACE Software

Definition

Run-time compatibility means that:

- dSPACE products can be used in parallel after software installation, even if they are installed in different folders.
- dSPACE products without interaction can run independently of each other.

Compatibility of products in dSPACE Release 2019-A

dSPACE recommends using only software products from the same dSPACE Release. This ensures maximum run-time compatibility.

Observe the following points:

- Limitations regarding run-time compatibility in the dSPACE tool chain might occur if products from different dSPACE Releases are used together.

If dSPACE products interact directly (through automation interfaces) or indirectly (through common file types like A2L), limitations might apply. For minor limitations, refer to the relevant product documentation. The major limitations are described in the following.

In rare cases, an additional patch must be installed for a product to achieve run-time compatibility. For more information on the patch and whether a patch is required, refer to <http://www.dspace.com/go/CompPatch>.

- RCP and HIL software products (of Release 2019-A) cannot be used in combination with RCP and HIL software products from earlier dSPACE Releases.

Major limitation for working with a SCALEXIO system The products for working with a SCALEXIO system must be compatible. This is guaranteed only for products delivered with the same dSPACE Release. Contact dSPACE for more information.

Compatibility of real-time applications loaded to a DS1005, DS1006, DS1104 or MicroAutoBox platform If a real-time application is loaded to one of these platforms with a software product of dSPACE Release 2016-B or later, software products of dSPACE Release 2016-A (and earlier) do not detect that the loaded real-time application is the same as the real-time application stored on your host PC. In this case, you cannot work with the related software product without restrictions.

This also applies if you load a real-time application with a software product of dSPACE Release 2016-A or earlier and use software products of dSPACE Release 2016-B or later, for example, for experimenting.

Combining dSPACE products from earlier Releases

For more information and notes on the combined use of different products from and with earlier Releases, refer to http://www.dspace.com/go/ds_sw_combi.

Limitations for Using Windows Features

Motivation	Some limitations apply to using dSPACE software in conjunction with features of Windows.
Fast user switching not supported	dSPACE software does not support the fast user switching feature of Windows.
Closing dSPACE software before PC shutdown	The shutdown process of Windows operating systems might cause some required processes to be aborted although they are still being used by dSPACE software. To avoid a loss of data, it is recommended to close the dSPACE software manually before shutting down the PC.
User Account Control	It is recommended to disable the Windows User Account Control (UAC) during the installation of dSPACE software. If you cannot disable UAC, note the following Windows behavior: If UAC is enabled, the setup programs use the administrator account instead of the user account. Therefore, it is important that the administrator account has access to the required drives, particularly the required network drives.

USB devices

If you connect dSPACE USB devices that use cables with optoisolation to the PC for the first time, there might be a message that the device driver software was not installed successfully. However, the dSPACE device will work properly later on.

FIPS support

dSPACE software was not developed for or tested against the FIPS PUB 140-2 U.S. government computer security standard (Security Requirements for Cryptographic Modules). Therefore, dSPACE products are not guaranteed to work if the respective setting is enabled in Windows. By default, the setting is disabled. For more information on FIPS, refer to <https://technet.microsoft.com/en-us/library/security/cc750357.aspx>.

Long paths

dSPACE software does not support the long path syntax of the Windows API. If a path that exceeds 260 characters is used directly or indirectly, the behavior of the dSPACE software is not defined.

Enabling Windows 8dot3name creation option

Note

It is strongly recommended that the Windows 8dot3name creation option is enabled for all drives (drives used for installation and drives used for work) before you install third-party software, such as MATLAB®/Simulink®, and the dSPACE software.

If the option is disabled during software installation, serious errors can occur when you run the dSPACE software. For example, the build process might be aborted. To repair an installation that was installed while the 8dot3name creation option was disabled, you have to install dSPACE software and required third-party software again.

For instructions on checking the setting and enabling the option, refer to <http://www.dspace.com/faq?346> or to the Microsoft Windows documentation.

Settings in Windows for user locale and system locale must match

MATLAB reads the user locale and system locale settings that are specified in Windows operating systems. The user locale and the system locale must match. If these settings are not the same, the system might not behave as expected when working with MATLAB and dSPACE software.

For instructions on checking and changing the settings, refer to https://www.mathworks.com/help/matlab/matlab_env/setting-locale-on-windows-platforms.html?s_tid=gn_loc_drop.

This affects all MATLAB versions and all Windows operating systems, that are supported by dSPACE.

**Valid for Windows 10:
Microsoft .NET Framework 3.5
feature must be enabled**

The Microsoft .NET Framework 3.5 feature must be installed and enabled. If the Microsoft .NET Framework 3.5 is not enabled, the dSPACE software installation is interrupted and an error message is displayed.

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