

Release Notes for Polyspace® Model Link Products

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Release Notes for Polyspace® Model Link Products

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R2012b

Version: 5.10
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Configuration of MISRA AC AGC directly from Simulink

The Polyspace® coding rules checker now supports the MISRA® AC AGC coding standard, an independent standard for generated code.

Polyspace Model Link™ SL software allows you to check compliance with MISRA AC AGC coding rules, as well as MISRA C® rules, directly from your Simulink® model.

For more information, see “Check Coding Rules Compliance”.

Code annotation for justifying Polyspace checks

You can apply Polyspace verification to generated code using the Polyspace Model Link SL product. The software detects run-time errors in the generated code and helps you to locate and fix model faults.

Because of the way Embedded Coder® implements certain operations, Polyspace may indicate potential overflows for operators or operations that are legitimate.

Previously, you had to manually justify the associated orange checks in the Polyspace verification environment.

Now, if you select the new check box **Configuration Parameters > Code Generation > Comments > Auto generate comments > Operator annotations**, the software annotates the generated code with comments for Polyspace. When you run a Polyspace verification, the software uses the comments to justify overflows associated with legitimate operations and assigns the Not a Defect classification to the corresponding checks.

For more information, see “Code Annotation for Justifying Polyspace Checks”.

Data range support for Simulink buses

Polyspace Model Link SL software now supports data range specifications for nested structures. This allows the software to generate data ranges for buses in Simulink models.

For more information on data range specification, see “Configure Data Range Settings”.

Automatic download of verification results from Polyspace server

When you run verification on a Polyspace server, your results are now downloaded automatically to the Polyspace client system. You no longer need to manually download your results from the server.

Monitor progress of server verifications from Polyspace Project Manager

You can configure the software to automatically open the Polyspace Project Manager when you launch a verification. This allows you to monitor the progress of your verification from the Project Manager. When verification is complete, you can switch to the Results Manager perspective to review the results.

For more information, see “Open Polyspace Project Manager Automatically”.

Coding rules checker recognizes boolean type identifiers

Polyspace Model Link SL software now reads boolean type identifiers from a Simulink model and applies them to the Polyspace option **Effective boolean types**.(-boolean-types).

The Polyspace MISRA C checker then treats these data types as Boolean, which can improve the checking of MISRA C rules 12.6, 13.2, and 15.4.

For more information, see “Effective boolean types”.

Simulink Software Support

Added support for Simulink Version 8.0 (R2012b).

Polyspace Model Link TL Product

Verification improvements with range information and function scheduling in generated main

Compatibility Considerations: Yes

Polyspace Model Link TL now supports the same functionality as Polyspace Model Link SL for data range specification and automatically generated mains.

Data Range Specification

Polyspace Model Link TL software now allows you to run different modes of verification, such as robustness vs. contextual, by specifying how the verification handles data ranges on model inputs, outputs, and tunable parameters within the model.

For more information, see “Configure Data Range Settings”.

Main Generator Improvements

Enhanced main-generator improves verification results for generated code.

The new main-generator is specifically designed for cyclic programs, to support generated code and Model-Based Design. The main generator considers the scope of:

- `_step`
- initialization functions
- calibrations

This improves verification results at the subsystem level.

Automatically generated mains now have the same structure as in Polyspace Model Link SL:

```
init parameters
init_fct()
while (1){
  init inputs
  step_fct()
```

```
}  
terminate_fct()
```

For more information, see “Main Generation for Model Verification”.

Compatibility Considerations

Due to precision improvements, verification results may change when compared to previous versions of the software. Some checks may change color, and the Selectivity rate of your results may change.

Support for TargetLink 3.3

Polyspace Model Link TL now supports dSPACE® TargetLink® Version 3.3.

TargetLink 3.0.1 no longer supported

Polyspace Model Link TL no longer supports dSPACE TargetLink Version 3.0.1.

Simulink Software Support

Added support for Simulink Version 8.0 (R2012b).

R2012a

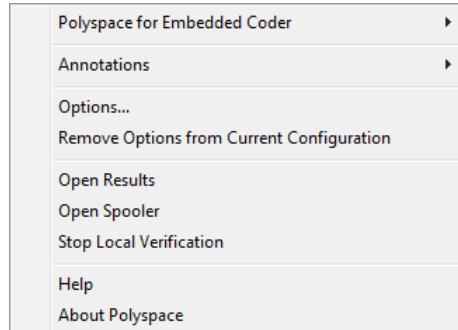
Version: 5.9
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

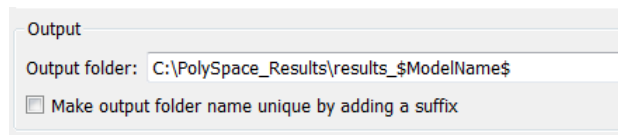
GUI Enhancements

The following enhancements are available:

- Updated Simulink **Tools > Polyspace** menu.



- Option on **Configuration Parameters > Model Link** pane to specify the automatic creation of a new folder for verification results.



- Subsystem (right-click) context menu with similar items as the **Tools > Polyspace** menu, for example **Options** for project configuration and **Open Results** for downloading of verification results. Previously, you could start verifications only through the subsystem context menu.

New Commands to Replace PolySpaceForEmbeddedCoder and PolySpaceForTargetLink

R2012a provides the new commands `pslinkrun` and `pslinkoptions` to replace `PolySpaceForEmbeddedCoder` and `PolySpaceForTargetLink`.

Note Support for `PolySpaceForEmbeddedCoder` and `PolySpaceForTargetLink` will cease in a future release.

For information about the new commands, see *Polyspace Model Link Products User's Guide*.

Automatic Import of Target Hardware Attributes

The software now automatically imports target word lengths and byte ordering (endianess) from Simulink model hardware configuration settings. The software maps **Device vendor** and **Device type** settings on the Simulink **Configuration Parameters > Hardware Implementation** pane to **Target processor type** settings on the Polyspace **Configuration** pane. For more information, see [Hardware Mapping Between Simulink and Polyspace](#).

Data Range Specification Enhancements

The software now provides Data Range Specification (DRS) support for:

- More signal and parameter storage classes in the base workspace
- Code generated from configured function prototypes
- Reusable code
- Code generated from referenced models and submodels

For more information, see [Data Range Specification](#).

Verification of Model Reference Code

The following features are available:

- Client verification — Previously, verification of model reference code was possible only on the Polyspace server. Now, you can run a client verification on model reference code.
- Verification from top model — To verify generated model reference code, select **Tools > Polyspace > Polyspace for Embedded Coder > Verify Generated Model Reference Code**.

Simulink Software Support

Added support for Simulink Version 7.9 (R2012a).

Polyspace Model Link TL Product

Simulink Software Support

Added support for Simulink Version 7.9 (R2012a).

R2011b

Version: 5.8
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Polyspace Verification Pane in Simulink Configuration Tree

The software provides a new pane **Polyspace Model Link** that allows you to check your Simulink model settings and configure and start your Polyspace verification within the Configuration Parameters dialog box.

After you create your Simulink model, from the model window, select **Tools > Polyspace > Options**. The software opens the Configuration Parameters dialog box with the new **Polyspace Model Link** pane displayed.

To remove the pane and Polyspace configuration information from your model, select **Tools > Polyspace > Remove Polyspace settings from model**.

For more information, see the Polyspace Model Link Products User's Guide .

Support for 16-Bit Cross Compiler

Previously, if you wanted to verify code generated for a 16-bit target processor, you had to perform command line actions to specify header files for the 16-bit compiler. Furthermore, the software could not automatically identify the specified compiler from the Simulink model.

Now, through the **Include** (-include) and **Include Folders** (-I) options on the **Configuration** pane, you can specify header files for your 16-bit compiler. In addition, the software automatically identifies the compiler from the Simulink model. If the compiler is 16-bit and you do not specify the necessary header files, the software produces an error when you try to run a verification.

For more information, see [Specifying Header Files for Target Compiler](#) in the [Polyspace Model Link Products User's Guide](#).

Enforcement of Modeling rules for Optimal Verification Results

Before you start a Polyspace verification, you can now check that your Simulink model is configured to generate code that yields optimal verification results: in the **Configuration Parameters > Polyspace Model Link** pane, click **Check Configuration**. In addition, if you try to run a verification without selecting the correct options, the software generates warnings or errors. The software checks settings for the following model parameters .

Parameter	Recommended Setting
MultiInstanceERTCode	'off'
MatFileLogging	'off'
InlineParams	'off'
ZeroExternalMemoryAtStartup	'off' when Configuration Parameters > Polyspace Model Link > Data Range Management > Output is Global assert
InitFltsAndDblsToZero	'on'

For more information, see Run Polyspace Verification in the Polyspace Model Link Products User's Guide.

Simulink Software Support

Added support for Simulink Version 7.8 (R2011b).

Polyspace Model Link TL Product

Simulink Software Support

Added support for Simulink Version 7.8 (R2011b).

R2011a

Version: 5.7
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Overflow Check Customization

Compatibility Considerations: Yes

New options allow you to customize how OVFL checks are handled during verification. You can customize computation through overflow constructions, control the presence of overflow checks, and the dynamic behavior in case of a run-time error.

These options allow you to:

- Not generate OVFL checks on all computations (values are computed the same way processors do).
- Not truncate the value after an OVFL check, and carry on with wrapped values (OVFL check does not impact values during verification).

For more information, see Detect overflows on (-scalar-overflows-checks) and Overflows computation mode (-scalar-overflows-behavior) in the Polyspace Products for C/C++ Reference.

Compatibility Considerations

When using the new options, verification results may change when compared to previous versions of the software. Some checks may change color, and the Selectivity rate of your results may change.

Main Generator Improvements

Compatibility Considerations: Yes

Enhanced main-generator to improve verification results for generated code.

The new main-generator is specifically designed for cyclic programs, to support generated code and Model-Based Design. The main generator considers the scope of:

- `_step`
- initialization functions
- calibrations

This improves verification results at the subsystem level.

Sample main:

```
initialize_parameters
call_initialization_functions
while (1){
    initialize_inputs
    call_step_functions
}
call_terminate_functions
```

For more information, see Main Generation for Model Verification in the Polyspace Model Link Products User's Guide, and Automatically Generating a Main in the Polyspace Products for C/C++ User's Guide.

Compatibility Considerations

Due to precision improvements, verification results may change when compared to previous versions of the software. Some checks may change color, and the Selectivity rate of your results may change.

Data Range Management

Polyspace Model Link SL software now allows you to run different modes of verification, such as robustness vs. contextual, by specifying how the verification handles data ranges on model inputs, outputs, and tunable parameters within the model

Note The new Data Range Management settings require Simulink Version 7.4 (R2009b) or later.

For more information, see [Configuring Data Range Settings](#) in the Polyspace Model Link Products User's Guide.

Block Annotation

You can now annotate blocks in your Simulink model to justify known run-time checks or coding-rule violations.

Annotating a block allows you to highlight and categorize checks identified in previous verifications, so that you can focus on new checks when reviewing your verification results.

The Polyspace Run-Time Checks perspective displays the information that you provide, and marks the checks as Justified.

For more information, see [Annotating Blocks to Justify Known Checks or Coding-Rules Violations](#) in the Polyspace Model Link Products User's Guide.

Precision Improvements

Compatibility Considerations: Yes

Precision enhancements on arrays and functions provide improved Selectivity (less orange) in your verification results.

Compatibility Considerations

Verification results may change when compared to previous versions of the software. Some checks may change color, and the Selectivity rate of your results may change.

Simulink Software Support

Added support for Simulink Version 7.7 (R2011a).

Polyspace Model Link TL Product

Simulink Software Support

Added support for Simulink Version 7.7 (R2011a).

R2010b

Version: 5.6
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Data Range Management

Improved DRS generation in the Polyspace Model Link SL product using the Embedded Coder `codeInfo` feature.

DRS generation can now:

- Locate input ports, and gather min/max data from the MATLAB workspace or blocks in the model to use as constraints.
- Locate output ports, and gather min/max data from the MATLAB workspace or blocks in the model to use as properties to be proven.

For more information, see the Polyspace Model Link Products User's Guide.

Verification Options Set by Default

Compatibility Considerations: Yes

The following options are no longer set by default when you launch a verification.

- `-ignore-float-rounding`
- `-allow-ptr-arith-on-struct`

Compatibility Considerations

Verification results may change when compared to previous versions of the software. Some checks may change color, and the Selectivity rate of your results may change.

Changes to verification results will be more significant when compared to release R2008b or earlier, and less significant with R2009a or later.

Simulink Software Support

Added support for Simulink Version 7.6 (R2010b).

Polyspace Model Link TL Product

Simulink Software Support

Added support for Simulink Version 7.6 (R2010b).

R2010a

Version: 5.5
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

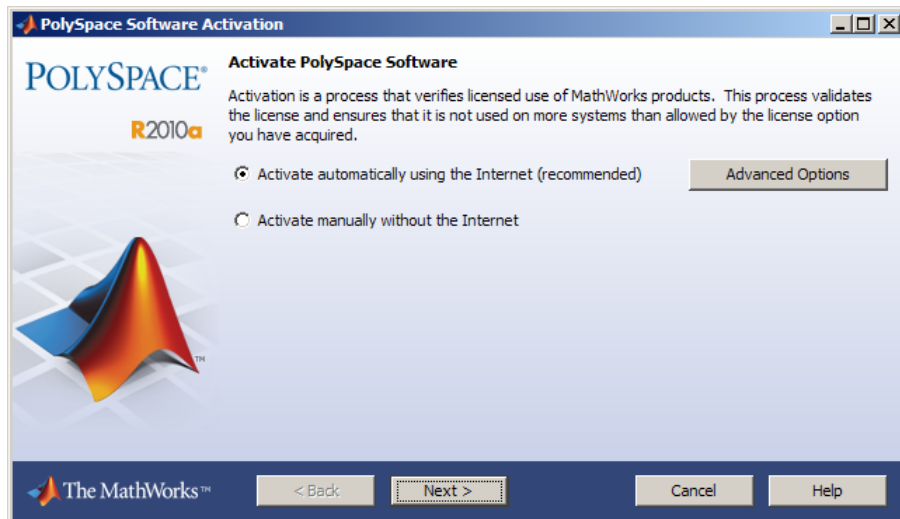
License Activation

Polyspace products now support the MathWorks software activation mechanism.

Activation is a process that verifies licensed use of MathWorks® products. The process validates your product licenses and ensures that they are used correctly. You must complete the activation process before you can use Polyspace software.

Note If you are using Designated Computer (Individual) licenses, you must activate the license for each Polyspace system individually. However, if you are using Concurrent licenses for multiple Polyspace systems, you do not need to activate each Polyspace system. You activate the license once (for the FLEXnet license server), then provide license files for each Polyspace system.

The easiest way to activate the software is to log in to your MathWorks Account during installation. At the end of the installation process, the Polyspace Software Activation dialog box opens.



Follow the prompts in the Polyspace Software Activation dialog box to complete the activation process.

If you do not have a MathWorks account, you can create one during the activation process. To create an account, you must have an Activation Key, which identifies the license you want to install and activate.

If your Polyspace system is not connected to the internet, you can access the MathWorks License Center on a computer with internet access, activate your license, and download a license file for transfer to your Polyspace system. If you do not have access to a computer with an Internet connection, contact Customer Support.

For more information on how to activate your software, see *Activating Polyspace Software* in the Polyspace Installation Guide.

For more information on software activation, including frequently asked questions, refer to the MathWorks Web site:
www.mathworks.com/support/activation/polyspace.html

Data Range Specifications for Custom Simulink Data Objects

Compatibility Considerations: Yes

Polyspace Model Link SL software now accepts every Simulink or mpt object containing min and max values.

In previous releases, the software did not create DRS entries for custom Simulink Data Objects, only for `Simulink.Parameter`, `mpt.Parameter`, `Simulink.Signal`, and `mpt.Signal`.

Compatibility Considerations

Verification results may change when compared to previous versions of the software, due to data ranges being applied to additional objects.

Simulink Software Support

Added support for Simulink Version 7.5 (R2010a).

Polyspace Model Link TL Product

Simulink Software Support

Added support for Simulink Version 7.5 (R2010a).

R2009b

Version: 5.4
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Simulink Software Support

Added support for Simulink Version 7.4 (R2009b).

Polyspace Model Link TL Product

Simulink Software Support

Added support for Simulink Version 7.4 (R2009b).

R2009a

Version: 5.3
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Polyspace Menu Option in Simulink

New option in the Simulink Tools menu to launch Polyspace software directly from Simulink.

For more information, see [Running Verification with Polyspace Model Link SL Software](#) in the [Polyspace Model Link Products User's Guide](#).

Manual Selection of Data Range Specifications (DRS) File

You can now manually select a Data Range Specification (DRS) file within Simulink, instead of accepting the default DRS file.

For more information, see Data Range Specification in the Polyspace Model Link Products User's Guide.

Simulink Software Support

Added support for Simulink Version 7.3 (R2009a).

Polyspace Model Link TL Product

Simulink Software Support

Added support for Simulink Version 7.3 (R2009a).

R2008b

Version: 5.2
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Model Reference Support

Added support for Simulink Model Reference.

Polyspace Model Link SL software now automatically detects model references in Simulink models, allowing you to quickly track any verification issues back to the original model.

For more information, see the Polyspace Model Link Products User's Guide.

Stateflow Chart Support

Added support for Stateflow® Charts within Simulink models.

Polyspace Model Link SL software now supports Stateflow Charts within Simulink models, allowing you to quickly track any verification issues back to the original Stateflow chart. In addition, any Stateflow comments are now highlighted in the Polyspace source code view.

For more information, see the Polyspace Model Link Products User's Guide.

Simulink Software Support

Added support for Simulink Version 7.2 (R2008b).

Operating System Support

Added support for 64-bit Linux.

For more information, see the Polyspace Installation Guide.

Polyspace Model Link TL Product

Operating System Support

Added support for 64-bit Linux.

For more information, see the Polyspace Installation Guide.

Simulink Software Support

Added support for Simulink Version 7.2 (R2008b).

R2008a

Version: 5.1
New Features: Yes
Bug Fixes: Yes

Polyspace Model Link SL Product

Enhanced Installer

Version 5.1 includes an enhanced and simplified installer for all Polyspace products. The installation process is now faster and easier to complete than in previous releases.

For more information, see the Polyspace Installation Guide.

Simulink Software Support

Added support for Simulink Version 7.1 (R2008a).

Operating System Support

Added support for the following operating systems:

- Solaris™ 2.10
- Windows® XP x64 (32-bit mode)

For more information, see the Polyspace Installation Guide.

Polyspace Model Link TL Product

Enhanced Installer

Version 5.1 includes an enhanced and simplified installer for all Polyspace products. The installation process is now faster and easier to complete than in previous releases.

For more information, see the Polyspace Installation Guide.

Operating System Support

Added support for the following operating systems:

- Solaris 2.10
- Windows XP x64 (32-bit mode)

For more information, see the Polyspace Installation Guide.

Simulink Software Support

Added support for Simulink Version 7.1 (R2008a).