Release Notes for DO Qualification Kit

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Release Notes for DO Qualification Kit

Trademarks

Patents

Contents

R2009b+

R2009a+

R2012b

Version: 2.0
New Features: Yes
Bug Fixes: Yes

DO-330 Software Tool Qualification Considerations (DO-178C and DO-278A) support for Simulink and Polyspace code verifiers

The DO Qualification Kit product includes documents, templates, test cases, and test procedures that you can submit to certification authorities to satisfy DO-330 Software Tool Qualification Considerations software coding verification objectives for:

- Simulink® Verification and Validation™
- Simulink Report Generator™
- Simulink Code Inspector™
- Polyspace® Client™ for C/C++, Polyspace Server™ for C/C++
- SystemTest™

DO-331 Model-Based Development and Verification Supplement (DO-178C and DO-278A) support for Simulink products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures that you can submit to certification authorities to satisfy DO-331 Model-Based Development and Verification Supplement to DO-178C and DO-278A objectives for:

- Simulink Verification and Validation
- Simulink Report Generator
- Simulink Code Inspector
- SystemTest

DO-332 Object-Oriented Technology and Related Techniques Supplement (DO-178C and DO-278A) support for Polyspace code verifiers

The DO Qualification Kit product includes documents, templates, test cases, and test procedures that you can submit to certification authorities to satisfy DO-332 Object-Oriented Technology and Related Techniques Supplement to DO-178C and DO-278A objectives for:

- Polyspace Client for C/C++, Polyspace Server for C/C++

DO-333 Formal Methods Supplement (DO-178C and DO-278A) support for Polyspace code verifiers

The DO Qualification Kit product includes documents, templates, test cases, and test procedures that you can submit to certification authorities to satisfy DO-333 Formal Methods Supplement to DO-178C and DO-278A objectives for:

- Polyspace Client for C/C++, Polyspace Server for C/C++

Support for new versions of MathWorks products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts in projects involving the DO-178C and related standards when you use the following MathWorks® products and capabilities:

- Simulink Verification and Validation Version 3.4 (R2012b): DO-178C/DO-331 checks and model coverage
- Simulink Report Generator Version 3.13 (R2012b): System Design Description report
- Simulink Code Inspector Version 1.2 (R2012b): Code Inspection report
- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 8.4 (R2012b)
- SystemTest Version 2.6.4 (R2012b): Limit Check element

For details, see "DO Qualification Kit Components" in the DO Qualification Kit documentation.

Model Advisor checks for bug reports

The DO Qualification Kit now provides Model Advisor bug report checks, allowing you to display bug reports for:

- Simulink Verification and Validation
- DO Qualification Kit
- Simulink Code Inspector
- Simulink Report Generator
- SystemTest
- Polyspace Client for C/C++, Polyspace Server for C/C++
- Embedded Coder®

When you run the individual checks, the Model Advisor lists the bug reports for the products. To access the checks, from the Model Advisor window, select **By Product** > **DO Qualification Kit**.

Microsoft Word docx files for certification artifacts

The DO Qualification Kit certification artifacts are now available in a smaller file size, Microsoft® Word `.docx`. Previously, the artifacts were available in `RTF` files.

New Simulink default file format

In R2012b, the DO Qualification Kit test models are delivered in the new Simulink model format, with the extension `.slx`. For more information, see "Saving Models in the SLX File Format" in the Simulink documentation.

R2010bSP2

Version: 1.3.2
New Features: Yes
Bug Fixes: No

Using Version 1.3.2 of the DO Qualification Kit Product

The DO Qualification Kit version 1.3.2 (R2010bSP2) includes documents, templates, test cases, and test procedures that have not changed between R2010b, R2010bSP1, and R2010bSP2. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 3.0.1 (R2010bSP1): DO-178B checks and model coverage
- Simulink Report Generator Version 3.9 (R2010b): System Design Description report
- SystemTest Version 2.6 (R2010b): Limit Check element
- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 8.0 (R2010b)

Note You can install:

- Version 3.0.1 of the Simulink Verification and Validation product from the R2010bSP2 DVD.
- Version 3.9 of the Simulink Report Generator product from the R2010bSP2 DVD.
- Version 2.6 of the SystemTest product from the R2010bSP2 DVD.
- Polyspace products using the R2010b DVD. Version 8.0 of the Polyspace products are not part of R2010bSP2.

When you customize the artifacts, update the revision history and version information as follows:

- Simulink Verification and Validation artifacts
  - Add the following new line to the revision history:

```
April 2012   Online only    Rereleased for Version 1.3.2 (For Release 2010bSP2)
```

- Examine and appropriately update the software version information within the artifacts.

- Simulink Report Generator artifacts
  - Add the following new line to the revision history:

    ```
    April 2012   Online only    Rereleased for Version 1.3.2 (For Release 2010bSP2)
    ```

  - Examine and appropriately update the software version information within the artifacts.

- SystemTest artifacts
  - Add the following new line to the revision history:

    ```
    April 2012   Online only    Rereleased for Version 1.3.2 (For Release 2010bSP2)
    ```

  - Examine and appropriately update the software version information within the artifacts.

- Polyspace Client/Server for C/C++ artifacts
  - Add the following new line to the revision history:

    ```
    April 2012   Online only    Rereleased for Version 1.3.2 (For Release 2010bSP2)
    ```

  - Examine and appropriately update the software version information within the artifacts.

R2012a

Version: 1.6
New Features: Yes
Bug Fixes: Yes

Simulink Code Inspector Qualification Support

The DO Qualification Kit product now supports using the Simulink Code Inspector code inspection report in projects involving the DO-178B and related standards.

Simulink Code Inspector automatically compares generated code with its source model to satisfy code-review objectives in DO-178 and other high-integrity standards. The code inspector systematically examines blocks, parameters, and settings in a model to determine whether they are structurally equivalent to operations, operators, and data in the generated code. Simulink Code Inspector provides detailed model-to-code and code-to-model traceability analysis. It generates structural equivalence and traceability reports that you can submit to certification authorities to satisfy DO-178 software coding verification objectives.

For more information, see DO Qualification Kit: Simulink Code Inspector Tool Operational Requirements.

Support for New Versions of *MathWorks* Products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 3.3 (R2012a): DO-178B checks and model coverage
- Simulink Report Generator Version 3.12 (R2012a): System Design Description report
- Simulink Code Inspector Version 1.1 (R2012a): Code inspection report
- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 8.3 (R2012a)
- SystemTest Version 2.6.3 (R2012a): Limit Check element

For details, see DO Qualification Kit Components in the DO Qualification Kit documentation.

Enhanced Model-Based Design Workflow Document

The DO Qualification Kit document Model-Based Design Workflow for DO-178B has added a new first chapter containing detailed tool descriptions.

Enhanced Simulink Verification and Validation Tool Qualification Plan

The DO Qualification Kit document Simulink Verification and Validation Tool Qualification Plan now provides more detailed DO-178 certification credit information for the Simulink Verification and Validation DO-178B checks and model coverage capabilities.

R2011b

Version: 1.5
New Features: Yes
Bug Fixes: Yes

Support for New Versions of MathWorks Products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 3.2 (R2011b): DO-178B checks and model coverage
- Simulink Report Generator Version 3.11 (R2011b): System Design Description report
- SystemTest Version 2.6.2 (R2011b): Limit Check element
- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 8.2 (R2011b)

For details, see DO Qualification Kit Components in the DO Qualification Kit documentation.

Certification Artifacts Explorer Display Enhancements

The Certification Artifacts Explorer dialog box has been enhanced in the following ways to support simpler and more flexible viewing of artifacts:

- The display pane previously located on the right-hand side of the dialog box has been removed. Qualification artifacts now open and display in a separate window.

- Certification package properties, formerly displayed in the right-hand pane, now are accessible by right-clicking a package and selecting **Properties**.

- Folder and file information now is dynamically displayed in the Certification Artifacts Explorer status bar.

R2011a

Version: 1.4
New Features: Yes
Bug Fixes: Yes

Traceability Matrix Generation

On Windows® systems, R2011a allows you to generate a *traceability matrix* for your model. For a given model, the generated traceability matrix can provide information about:

- Model objects that are traceable between the model and generated code, such as Simulink blocks, Stateflow® objects, and MATLAB® functions.

- Model objects that are untraceable between the model and generated code, such as eliminated and virtual blocks.

- Requirements documents that you link to model objects using the Simulink Verification and Validation Requirements Management Interface (RMI).

Generate the traceability matrix using either the `do178b.ExportTraceReport` function from the MATLAB Command Window or the **Generate Traceability Matrix** button in the Embedded Coder generated HTML code generation report for your model. For more information, see Generate a Traceability Matrix in the DO Qualification Kit documentation.

Support for New Versions of MathWorks Products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 3.1 (R2011a): DO-178B checks and model coverage

- Simulink Report Generator Version 3.10 (R2011a): System Design Description report

- SystemTest Version 2.6.1 (R2011a): Limit Check element

- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 8.1 (R2011a)

For details, see DO Qualification Kit Components in the DO Qualification Kit documentation.

R2010bSP1

Version: 1.3.1
New Features: Yes
Bug Fixes: No

Using Version 1.3.1 of the DO Qualification Kit Product

The DO Qualification Kit version 1.3.1 (R2010bSP1) includes documents, templates, test cases, and test procedures that have not changed between R2010b and R2010bSP1. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 3.0.1 (R2010bSP1): DO-178B checks and model coverage

- Simulink Report Generator Version 3.9 (R2010b): System Design Description report

- SystemTest Version 2.6 (R2010b): Limit Check element

- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 8.0 (R2010b)

Note You can install:

- Version 3.9 of the Simulink Report Generator product from the R2010bSP1 DVD.

- Version 2.6 of the SystemTest product from the R2010bSP1 DVD.

- Polyspace products using the R2010b DVD. Version 8.0 of the Polyspace products are not part of R2010bSP1.

When you customize the artifacts, update the revision history and version information as follows:

- Simulink Verification and Validation artifacts — Add the following new line to the revision history:

  ```
  March 2011   Online only    Rereleased for Version 1.3.1 (For Release 2010bSP1)
  ```

- Simulink Report Generator artifacts

- Add the following new line to the revision history:

  ```
  March 2011   Online only     Rereleased for Version 1.3.1 (For Release 2010b)
  ```

- Change `Version 1.3 (For Release 2010b)` to `Version 1.3.1 (For Release 2010b)` within the text of the following artifacts:

  - DO Qualification Kit: Simulink Report Generator Tool Qualification Plan

  - DO Qualification Kit: Simulink Report Generator Tool Operational Requirements

  - DO Qualification Kit: Simulink Report Generator Test Cases, Procedures, and Results

- SystemTest artifacts

  - Add the following new line to the revision history:

    ```
    March 2011   Online only     Rereleased for Version 1.3.1 (For Release 2010b)
    ```

  - Change `Version 1.3 (For Release 2010b)` to `Version 1.3.1 (For Release 2010b)` within the text of the following artifacts:

    - DO Qualification Kit: SystemTest Tool Qualification Plan

    - DO Qualification Kit: SystemTest Tool Operational Requirements

    - DO Qualification Kit: SystemTest Test Cases, Procedures, and Results

- Polyspace Client/Server for C/C++ artifacts

  - Add the following new line to the revision history:

    ```
    March 2011   Online only     Rereleased for Version 1.3.1 (For Release 2010b)
    ```

  - Change `Version 1.3 (For Release 2010b)` to `Version 1.3.1 (For Release 2010b)` within the text of the following artifacts:

    - DO Qualification Kit: Polyspace Client/Server for C/C++ Tool Qualification Plan

    - DO Qualification Kit: Polyspace Client/Server for C/C++ Theoretical Foundation

    - DO Qualification Kit: Polyspace Client/Server for C/C++ Tool Operational Requirements

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- DO Qualification Kit: Polyspace Client/Server for C/C++ Test Cases, Procedures, and Results

R2010b

Version: 1.3
New Features: Yes
Bug Fixes: Yes

Simulink Report Generator Qualification Support for System Design Description Report

The DO Qualification Kit product now supports using the Simulink Report Generator System Design Description report in projects involving the DO-178B and related standards.

The Simulink Report Generator product includes the capability to generate a System Design Description (SDD) report for your Simulink model. The report provides detailed information about the system design represented by a model. You can use the System Design Description to

- Review a system design without having the model open
- Generate detailed descriptions of the design
- Assess compliance with design requirements
- Archive the system design in a format independent of the modeling environment

For more information, see DO Qualification Kit: Simulink Report Generator Tool Operational Requirements in the DO Qualification Kit documentation.

Artifacts Explorer for Accessing and Managing Qualification Materials

The qualification materials that are part of the DO Qualification Kit product are in many different locations. Now you can use the Certification Artifacts Explorer to access and manage the qualification materials. Using the Certification Artifacts Explorer, you can:

- Browse the qualification materials that are part of the DO Qualification Kit product.

- Access qualification artifacts for editing.

For details, see Access and Manage Qualification Artifacts in the DO Qualification Kit documentation. For limitations that apply, see Certification Artifacts Explorer Limitations in the DO Qualification Kit documentation.

Model-Based Design for DO-178B Workflow Document

The DO-178B software life cycle consists of objectives that must be met for each of the life cycle stages. In Appendix A of DO-178B, these objectives are summarized in tables. The DO Qualification Kit product now summarizes those tables and provides recommendations on meeting the objectives using a Model-Based Design process.

For details, see DO Qualification Kit Model-Based Design Workflow for DO-178B in the DO Qualification Kit documentation.

Support for New Versions of MathWorks Products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 3.0 (R2010b): DO-178B checks and model coverage
- Simulink Report Generator Version 3.9 (R2010b): System Design Description report
- SystemTest Version 2.6 (R2010b): Limit Check element
- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 8.0 (R2010b)

For details, see DO Qualification Kit Components in the DO Qualification Kit documentation.

DO-254 Support

You can use the DO Qualification Kit product to assist in qualifying verification tools for projects that follow DO-254. For details, see DO-254 in the DO Qualification Kit documentation.

R2010a

Version: 1.2
New Features: Yes
Bug Fixes: Yes

Support for New Versions of MathWorks Products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 2.7 (R2010a): DO-178B checks and model coverage

- SystemTest Version 2.5 (R2010a): Limit Check element

- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 7.2 (R2010a)

For details, see DO Qualification Kit Components in the DO Qualification Kit documentation.

R2009bSP1

Version: 1.1.1
New Features: Yes
Bug Fixes: No

Using Version 1.1.1 of the DO Qualification Kit Product

The DO Qualification Kit version 1.1.1 (R2009bSP1) includes documents, templates, test cases, and test procedures that have not changed between R2009b and R2009bSP1. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 2.6.1 (R2009bSP1): DO-178B checks and model coverage
- SystemTest Version 2.4 (R2009b): Limit Check element
- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 7.1 (R2009b)

Note You can install:

- Version 2.4 of the SystemTest product from the R2009bSP1 DVD.
- Polyspace products using the R2009b DVD. Version 7.1 of the Polyspace products are not part of R2009bSP1.

When you customize the artifacts, update the revision history and version information as follows:

- Simulink Verification and Validation artifacts — Add the following new line to the revision history:

  ```
  April 2010   Online only     Rereleased for Version 1.1.1 (For Release 2009bSP1)
  ```

- SystemTest artifacts
  - Add the following new line to the revision history:

    ```
    April 2010   Online only     Rereleased for Version 1.1.1 (For Release 2009b)
    ```

- Change `Version 1.1 (For Release 2009b)` to `Version 1.1.1 (For Release 2009b)` within the text of the following artifacts:

  - DO Qualification Kit: SystemTest Tool Qualification Plan

  - DO Qualification Kit: SystemTest Tool Operational Requirements

  - DO Qualification Kit: SystemTest Test Cases, Procedures, and Results

- Polyspace Client/Server for C/C++ artifacts

  - Add the following new line to the revision history:

    ```
    April 2010   Online only    Rereleased for Version 1.1.1 (For Release 2009b)
    ```

  - Change `Version 1.1 (For Release 2009b)` to `Version 1.1.1 (For Release 2009b)` within the text of the following artifacts:

    - DO Qualification Kit: Polyspace Client/Server for C/C++ Tool Qualification Plan

    - DO Qualification Kit: Polyspace Client/Server for C/C++ Theoretical Foundation

    - DO Qualification Kit: Polyspace Client/Server for C/C++ Tool Operational Requirements

    - DO Qualification Kit: Polyspace Client/Server for C/C++ Test Cases, Procedures, and Results

R2009b+

Version: 1.1
New Features: Yes
Bug Fixes: Yes

Support for New Versions of MathWorks Products

The DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts when you use the following MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 2.6 (R2009b): DO-178B checks and model coverage

- SystemTest Version 2.4 (R2009b): Limit Check element

- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 7.1 (R2009b)

For details, see DO Qualification Kit Components in the DO Qualification Kit documentation.

Model Coverage Support

The DO Qualification Kit software includes documents, templates, test cases, and test procedures. You can use these artifacts and tests when you use Simulink Verification and Validation model coverage in projects involving the DO-178B and related standards.

By qualifying the model coverage capability of the Simulink Verification and Validation product, you can claim credit for demonstrating completeness and correctness of the test cases that Simulink Design Verifier™ generates. Use the model coverage capability instead of reviewing the Simulink Design Verifier report. You can demonstrate completeness and correctness by running the generated test cases against the model, measuring the model coverage, and reviewing the model coverage report. You can run the test cases on the executable object code and compare the actual results to the simulation results. The model coverage capability does not assess the correctness of the simulation results, only the test case coverage of the model. Therefore, you must verify that the results from the model are correct.

For details, see DO Qualification Kit Components in the DO Qualification Kit documentation.

R2009a+

Version: 1.0
New Features: No
Bug Fixes: No

Version 1.0 of the DO Qualification Kit

Version 1.0 of the DO Qualification Kit product includes documents, templates, test cases, and test procedures. You can use these artifacts when you use the following versions of MathWorks products and capabilities in projects involving the DO-178B and related standards:

- Simulink Verification and Validation Version 2.5 (R2009a): DO-178B checks

- SystemTest Version 2.3 (R2009a): Limit Check element

- Polyspace Client for C/C++, Polyspace Server for C/C++ Version 6.1 (R2009a)