

Reactis V2016

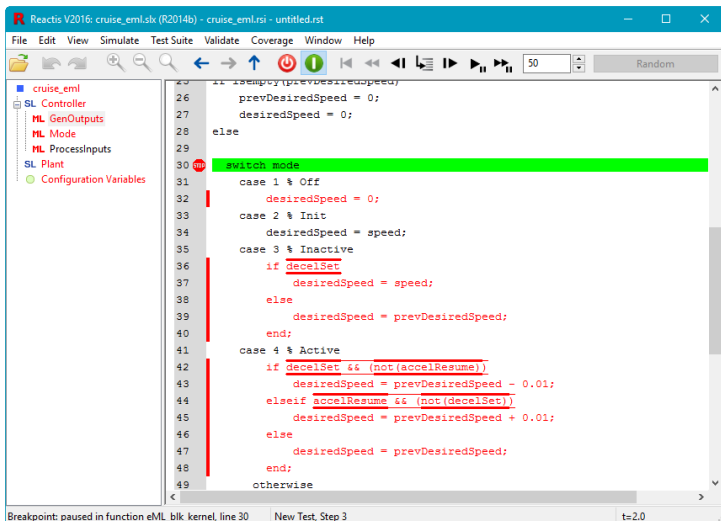
Released June 20, 2016



New Simulink Support

- ▶ R2016a.
- ▶ Support for Simulink® data dictionaries.
- ▶ Use data dictionary entry as configuration variable.
- ▶ Support *Input port* setting for breakpoint data in Pre-Lookup block.
- ▶ Support *Input port* setting for table data in Interpolation block.
- ▶ Support Manual Switch block (current setting).

EML Plugin: Embedded MATLAB® Debugging



The screenshot shows the Reactis V2016 IDE interface. The title bar reads "Reactis V2016: cruise_eml.sx (R2014b) - cruise_eml.rsi - untitled.rst". The menu bar includes File, Edit, View, Simulate, Test Suite, Validate, Coverage, Window, and Help. The toolbar contains icons for file operations, search, navigation, and simulation control, along with a speed control slider set to 50 and a "Random" button. The left sidebar shows a project tree with "cruise_eml" expanded to show "SL Controller", "ML GenOutputs", "ML Mode", "ML ProcessInputs", "SL Plant", and "Configuration Variables". The main editor displays MATLAB code for a speed control system. A red breakpoint is set at line 30, which is highlighted in green. The code includes a switch statement for different modes: Off, Init, Inactive, and Active. The status bar at the bottom indicates "Breakpoint: paused in function eML_blk_kernel, line 30", "New Test, Step 3", and "t=2.0".

```
25 if isempty(prevDesiredSpeed)
26     prevDesiredSpeed = 0;
27     desiredSpeed = 0;
28 else
29
30 switch mode
31     case 1 % Off
32         desiredSpeed = 0;
33     case 2 % Init
34         desiredSpeed = speed;
35     case 3 % Inactive
36         if decelSet
37             desiredSpeed = speed;
38         else
39             desiredSpeed = prevDesiredSpeed;
40         end;
41     case 4 % Active
42         if decelSet && (not(accelResume))
43             desiredSpeed = prevDesiredSpeed - 0.01;
44         elseif accelResume && (not(decelSet))
45             desiredSpeed = prevDesiredSpeed + 0.01;
46         else
47             desiredSpeed = prevDesiredSpeed;
48         end;
49     otherwise
```

EML Plugin: Embedded MATLAB® Debugging

The screenshot shows the Reactis V2016 IDE interface. The main window displays MATLAB code for a function named `eML_blk_kernel`. The code includes a `switch mode` block with several cases. Breakpoints are indicated by red vertical bars on the left side of the code editor, specifically on lines 30, 32, 34, 36, 42, and 44. A callout box with a yellow background and a black border points to line 30, containing the text "Set breakpoints. Step into EML." The status bar at the bottom of the IDE indicates "Breakpoint: paused in function eML_blk_kernel, line 30" and "New Test, Step 3".

```
25 if isempty(prevDesiredSpeed)
26     prevDesiredSpeed = 0;
27     desiredSpeed = 0;
28 else
29
30 switch mode
31     case 1 % Off
32         desiredSpeed = 0;
33     case 2 % Init
34         desiredSpeed = speed;
35     case 3 % Inactive
36         if decelSet
37             desiredSpeed = speed;
38         else
39             desiredSpeed = prevDesiredSpeed;
40         end;
41     case 4 % Active
42         if decelSet && (not(accelResume))
43             desiredSpeed = prevDesiredSpeed - 0.01;
44         elseif accelResume && (not(decelSet))
45             desiredSpeed = prevDesiredSpeed + 0.01;
46         else
47             desiredSpeed = prevDesiredSpeed;
48         end;
49     otherwise
```

Breakpoint: paused in function eML_blk_kernel, line 30 New Test, Step 3 t=2.0

Set breakpoints.
Step into EML.

EML Plugin: Embedded MATLAB® Debugging

The screenshot shows the Reactis V2016 IDE interface. The title bar reads "Reactis V2016: cruise_eml.slx (R2014b) - cruise_eml.rsi - untitled.rst". The menu bar includes File, Edit, View, Simulate, Test Suite, Validate, Coverage, Window, and Help. The toolbar contains icons for file operations, search, and simulation control, with a "50" value and a "Random" button. On the left, a project tree shows "cruise_eml" with sub-items: "SL Controller", "ML GenOutputs", "ML Mode", "ML ProcessInputs", "SL Plant", and "Configuration Variables". The main editor displays MATLAB code with several red vertical markers indicating breakpoints. A yellow callout box points to these markers with the text "Set breakpoints. Step into EML." Another yellow callout box points to a green highlighted line of code with the text "Execute 1 statement at a time." The code includes a switch statement for "mode" with cases for "Off", "Init", "Inactive", and "Active". The "Init" case contains the highlighted line: `desiredSpeed = speed;`. The "Active" case contains several conditional assignments to `desiredSpeed`. The status bar at the bottom shows "New Test, Step 3" and "t=2.0".

```
25 if isempty(prevDesiredSpeed)
26     prevDesiredSpeed = 0;
27     desiredSpeed = 0;
28 else
29
30     switch mode
31         case 1 % Off
32             desiredSpeed = 0;
33         case 2 % Init
34             desiredSpeed = speed;
35         case 3 % Inactive
36             if decelSet
37                 desiredSpeed = speed;
38             else
39                 desiredSpeed = prevDesiredSpeed;
40             end;
41         case 4 % Active
42             if decelSet && (not(accelResume))
43                 desiredSpeed = prevDesiredSpeed - 0.01;
44             elseif accelResume && (not(decelSet))
45                 desiredSpeed = prevDesiredSpeed + 0.01;
46             else
47                 desiredSpeed = prevDesiredSpeed;
48             end;
49         otherwise
```

Set breakpoints.
Step into EML.

Execute
1 statement
at a time.

EML Plugin: Embedded MATLAB® Debugging

Reactis V2016: cruise_eml.sx (R2014b) - cruise_eml.rsi - untitled.rst

File Edit View Simulate Test Suite Validate Coverage Window Help

20 if isempty(prevDesiredSpeed)
26 prevDesiredSpeed = 0;
27 desiredSpeed = 0;
28 else
29
30 om switch mode
31 case 1 % Off
32 desiredSpeed = 0;
33 case 2 % Init
34 **desiredSpeed = speed;**
35 case 3 % Inactive
36 if decelSet **speed = 24.02237926925215: double**
37 desiredSpeed = speed;
38 else
39 desiredSpeed = prevDesiredSpeed;
40 end;
41 case 4 % Active
42 if decelSet && (not(accelResume))
43 desiredSpeed = prevDesiredSpeed - 0.01;
44 elseif accelResume && (not(decelSet))
45 desiredSpeed = prevDesiredSpeed + 0.01;
46 else
47 desiredSpeed = prevDesiredSpeed;
48 end;
49 otherwise

Set breakpoints.
Step into EML.

Execute
1 statement
at a time.

Hover to see
variable value.

New Test, Step 3 t=2.0

EML Plugin: Embedded MATLAB® Debugging

Reactis V2016: cruise_eml.slx (R2014b) - cruise_eml.rsi - untitled.rst

File Edit View Simulate Test Suite Validate Coverage Window Help

25 if isempty(prevDesiredSpeed)
26 prevDesiredSpeed = 0;
27 desiredSpeed = 0;
28 else
29
30 switch mode
31 case 1 % Off
32 desiredSpeed = 0;
33 case 2 % Init
34 **desiredSpeed = speed;**
35 case 3 % Inactive
36 if decelSet
37 desiredSpeed = speed;
38 else
39 desiredSpeed = prevDesiredSpeed;
40 end;
41 case 4 % Active
42 if decelSet && (not(accelResume))
43 desiredSpeed = prevDesiredSpeed - 0.01;
44 elseif accelResume && (not(decetSet))
45 desiredSpeed = prevDesiredSpeed + 0.01;

speed = 24.02237926925215 : double

Variable Value Type
cruise_eml.Controller.GenOutputs[calcDesiredSpeed].speed 24.02237926925215 double

New Test, Step 3

Hover to see variable value.

Set breakpoints. Step into EML.

Execute 1 statement at a time.

Add variable to watch list.

Reactis for C Plugin

- ▶ Assign pre-compiled library for use by Stateflow custom C code.
- ▶ Ignore incomplete variable or function declarations which are never used.
- ▶ The argument of a #include directive can now be a macro.
- ▶ Improved formatting of value shown when hovering on scalar character values and arrays of characters.
- ▶ Produce warnings instead of errors for GCC-style extended asm statements (the assembly code will be ignored).

Other Enhancements

- ▶ Support for Windows 10.
- ▶ Option to use Z3 SMT Solver to improve the coverage of Tester-generated tests for some models and to improve the static analysis that identifies unreachable coverage targets.
- ▶ Allow comparing enumerated values of different types in Stateflow.
- ▶ Launch a quick HTML coverage report from the top-level Coverage menu.
- ▶ Option to export Booleans as integers in CSV file.

Other Enhancements

- ▶ Checkbox in Tester launch dialog to enable/disable pruning of tests after the random phase.
- ▶ Reactis now stores information about model's top-level output ports and their types in the .rsi file to facilitate automatic harness creation for Reactis for C and simplify back-to-back testing with Reactis and Reactis for C.

Thank You!

Reactis is a registered trademark of Reactive Systems, Inc.
MATLAB, Simulink, and Stateflow are registered trademarks of
MathWorks, Inc.