

Polyspace[®] Code Prover[™] Access[™] Release Notes



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Polyspace® Code Prover™ Access™ Release Notes

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R2020a

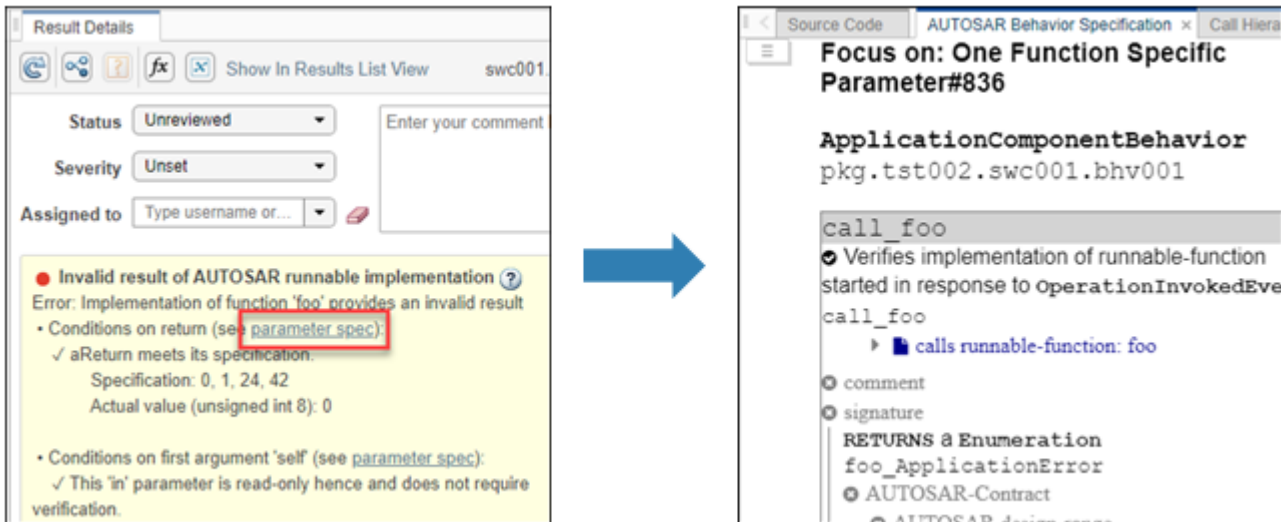
Version: 2.2

New Features

Bug Fixes

AUTOSAR Support: Navigate from Polyspace findings to AUTOSAR ARXML specifications

In R2020a, if you run Polyspace® on AUTOSAR code and upload the results to Polyspace Access, you can navigate from the AUTOSAR finding to the corresponding AUTOSAR behavior specification.



From the **Result Details** pane for an AUTOSAR finding, click **parameter spec** to open the **AUTOSAR behavior specification**. You can use the information in the spec to further investigate the cause of an AUTOSAR finding.

See also “Review Polyspace Results on AUTOSAR Code”.

Bug Tracking Tool Support: Create Redmine tickets for Polyspace Access results and assign to developers

In R2020a, Polyspace Access supports integration with the Redmine bug tracking tool. If you use Redmine, after you configure Polyspace Access, you can create a Redmine ticket to track Polyspace findings. The ticket is populated with details of the finding and a link to open that finding in Polyspace Access. You can add the ticket to any existing Redmine project.

Create Redmine ticket for finding #9 (10.1 The value of an expression...)

Project*

Tracker*

Subject* 10.1 The value of an expression of integer type shall not be implicitly converted to a

Description
 Implicit conversion of the expression of underlying type 'signed int' to the type 'signed char' that is not a wider integer type of the same signedness.
 Found in /local/test/sources/CP_C_R2019a/single_file_analysis.c
 - Go to Polyspace finding here:
<https://myAccess.company.com:9443/metrics/index.html?a=review&p=3&r=1&fid=9>

Status*

Priority*

Assignee

Estimated time

Create Cancel

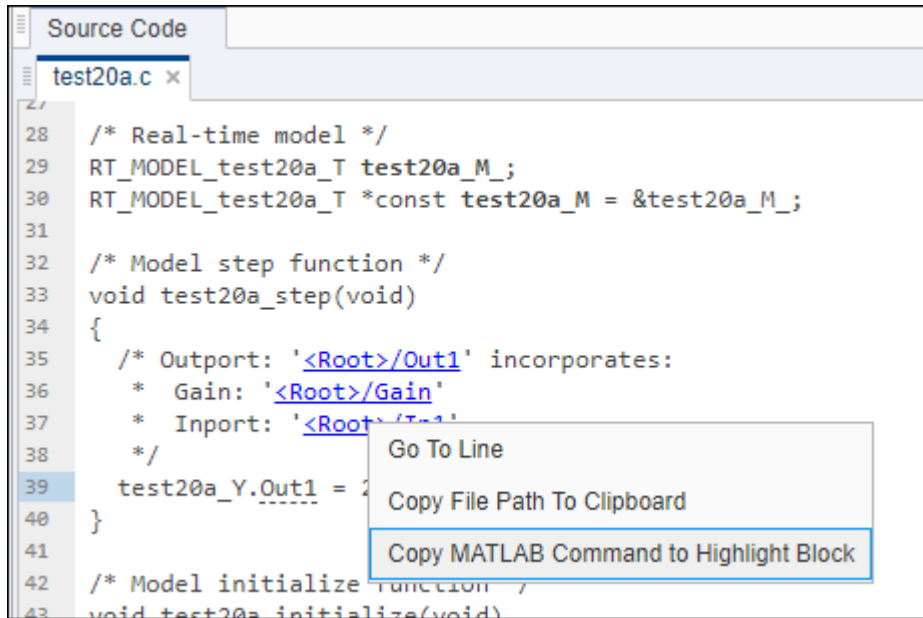
Once you create a ticket, the **Result Details** pane displays a link that you can click to open the ticket in the Redmine interface. See also “Track Issue in Bug Tracking Tool”.

Simulink Support: Navigate from generated code in Polyspace Access to blocks in model

In R2020a, if you run Polyspace on generated code in Simulink® and upload the results to Polyspace Access, you can navigate from the source code in Polyspace Access to blocks in the model.

On the **Source Code** pane in the Polyspace Access web interface, links in code comments show blocks that generate the subsequent lines of code. To see the block in the model:

- 1 Right-click a link and select **Copy MATLAB Command to Highlight Block**.



The screenshot shows a MATLAB source code editor window titled "Source Code" with a tab for "test20a.c". The code is as follows:

```
28 /* Real-time model */
29 RT_MODEL_test20a_T test20a_M_;
30 RT_MODEL_test20a_T *const test20a_M = &test20a_M_;
31
32 /* Model step function */
33 void test20a_step(void)
34 {
35     /* Outport: '<Root>/Out1' incorporates:
36      * Gain: '<Root>/Gain'
37      * Inport: '<Root>/In1'
38      */
39     test20a_Y.Out1 = 2;
40 }
41
42 /* Model initialize function */
43 void test20a_initialize(void)
```

A context menu is open over line 39, with the following options:

- Go To Line
- Copy File Path To Clipboard
- Copy MATLAB Command to Highlight Block

This action copies the MATLAB® command required to highlight the block. The command uses the Simulink.ID.hilite function.

- 2 In MATLAB, with the model open, paste and run the copied command.

Results Review: See review history of findings

In R2020a, you can open the **Review History** pane to see all the changes to the review fields of findings with a timestamp and the name of the user who made the change. On the Polyspace Access toolstrip, select **Layout > Show/Hide View**.

Date and Time	User	What Changed	Original value	New value
12/5/2019 5:12:33 PM	jsmith	Severity	Medium	Low
12/5/2019 5:12:25 PM	jsmith	Status	To investigate	To fix
12/5/2019 5:11:46 PM	Karen	Severity	Unset	Medium
12/5/2019 5:11:43 PM	Karen	Status	Unreviewed	To investigate
12/5/2019 5:11:39 PM	Karen	Comment		Discuss with manager.

You can use this information to better understand how and why the **Severity** or **Status** of a finding has changed, and retrieve previous comments that were overwritten.

For more information, see “Review History”.

Results Review: See the configuration options used for analysis

In R2020a, you can open the **Configuration Settings** pane to view the Polyspace configuration options that were enabled to generate the analysis results. On the Polyspace Access toolstrip, select **Layout > Show/Hide View**.

Options	Value
-author	MathWorks
-checkers	BAD_PLAIN_CHAR_USE, BITWISE_NEG, FLOAT_ABSORPTION, FLOAT_CONV_OVFL, FLOAT_OVFL, FLOAT_STD_LIB, FLOAT_ZERO_DIV, INT_CONSTANT_OVFL, INT_CONV_OVFL, INT_OVFL, INT_PRECISION_EXCEEDED, INT_STD_LIB, INT_TO_FLOAT_PRECISION_LOSS, INT_ZERO_DIV, INVALID_OPERATION_ON_BOOLEAN, SHIFT_NEG, SHIFT_OVFL, SIGN_CHANGE, UINT_CONSTANT_OVFL, UINT_CONV_OVFL, UINT_OVFL
-compiler	gnu4.6
-critical-section-begin	BEGIN_CRITICAL_SECTION:Cs10, acquire_sensor:Cs11, acquire_printer:Cs12, acquire_sensor2:Cs13, acquire_printer2:Cs14
-critical-section-end	END_CRITICAL_SECTION:Cs10, release_sensor:Cs11, release_printer:Cs12, release_sensor2:Cs13, release_printer2:Cs14
-date	08/12/2019
-do-not-generate-results-for	all-headers
-dos	true
-entry-points	bug_datarace_task1, bug_datarace_task2, bug_datarace_task3, bug_datarace_task4, bug_deadlock_task1, bug_deadlock_task2, bug_doublelock_task, bug_doubleunlock_task, bug_badlock_task, bug_badunlock_task, bug_dataracstdlib_task1, bug_dataracstdlib_task2, bug_destroylocked_task, corrected_datarace_task1, corrected_datarace_task2, corrected_datarace_task3, corrected_datarace_task4, corrected_deadlock_task1, corrected_deadlock_task2, corrected_doublelock_task, corrected_doubleunlock_task, corrected_badlock_task, corrected_badunlock_task, corrected_dataracstdlib_task1, corrected_dataracstdlib_task2, corrected_destroylocked_task
-lang	C
-misra3	mandatory
-prog	Bug_Finder_Example
-results-dir	D:\Polyspace\Bug_Finder_Example\BF_Result_1
-target	x86_64
-verif-version	1.0

You can use this information to better understand your results. For instance, you might expect to see a certain coding rule violation but the checker for this rule is not enabled. Previously, you had to parse the **Run Log** to see which options and checkers were enabled.

For more information, see “Configuration Settings”.

Code Quality Objectives: Customize thresholds used to track the quality of your code

In R2020a, if you use Quality Objectives to track the quality of your code, you can customize the thresholds you use as pass/fail criteria to better align with your company or project requirements. For instance, you can define quality gates to ensure adherence to a specific external coding standard.

Changes to settings apply to all projects.

Quality Objectives Criteria

- Defects 289/289
- Run-time Checks 20/30
- Global Variables 0/4
- Code Metrics 13/31
- Custom Rules 0/43
- MISRAAC AGC 1/129
- MISRA C:2012 49/170
- MISRA C++:2008 73/202
- MISRA C:2004 49/131**
- JSF AV C++ 0/157
- SEI CERT C 0/203
- SEI CERT C++ 0/126
- ISO/IEC TS 17961 0/46
- AUTOSAR C++14 0/251

MISRA C:2004

View by Group | View by Category

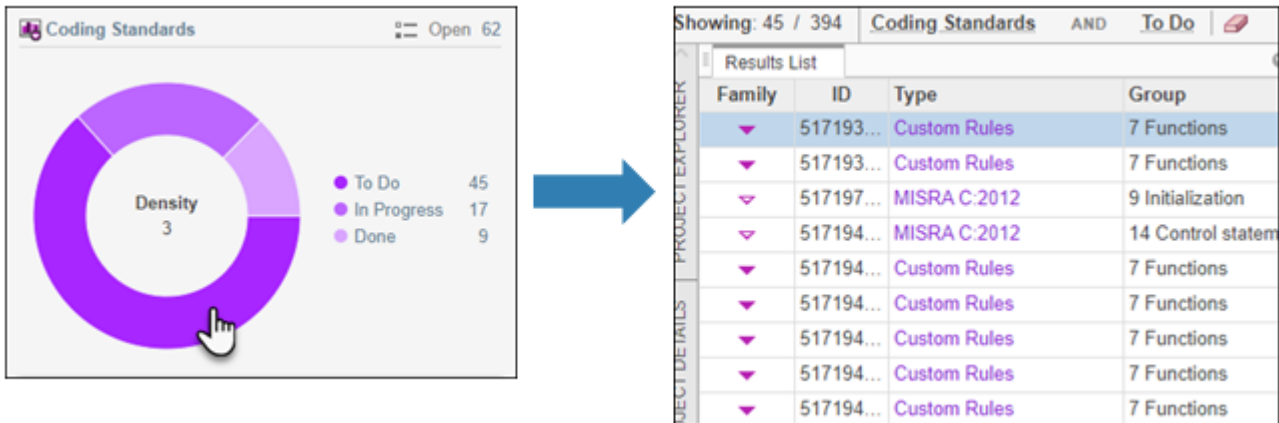
	Category	SQO1	SQO2	SQO3	SQO4	SQO5	SQO6	Exhaus
▾ MISRA C:2004 49/131	–	■	■	■	■	☑	☑	☑
▶ 1 Environment 0/1	–	–	–	–	–	–	–	☑
▶ 2 Language extensions 0/3	–	–	–	–	–	–	–	☑
▶ 3 Documentation 0/1	–	–	–	–	–	–	–	☑
▶ 4 Character sets 0/2	–	–	–	–	–	–	–	☑
▶ 5 Identifiers 1/7	–	☑	☑	☑	☑	☑	☑	☑
▶ 6 Types 1/5	–	☑	☐	☐	☐	☑	☑	☑
▶ 7 Constants 0/1	–	–	–	–	–	–	–	☑
▶ 8 Declarations and definitions 3/12	–	■	■	■	■	☑	☑	☑
▶ 9 Initialization 2/3	–	☐	☐	☐	☐	☑	☑	☑
▶ 10 Arithmetic type conversions 2/6	–	☐	☐	☐	☐	☑	☑	☑
▶ 11 Pointer type conversions 4/5	–	■	■	■	■	☑	☑	☑
▶ 12 Expressions 7/13	–	■	■	■	■	☑	☑	☑
▶ 13 Control statement expressions 6/7	–	■	■	■	■	☑	☑	☑
▶ 14 Control flow 4/10	–	■	■	■	■	☑	☑	☑

To make changes to the quality objectives settings, you must have a role of **Administrator**.

Previously, you could track the quality of your code only against predefined thresholds. See “Customize Software Quality Objectives”.

Project Dashboard: Open results by clicking Dashboard charts

In R2020a, you can click a section of a pie chart or the legend of a pie chart to open the corresponding findings in the **Results List** and more easily narrow the scope of your review.




Bug Tracking Tool Support: Manage tickets for multiple findings

In R2020a, if you create a bug tracking tool ticket in Polyspace Access, you can select multiple findings that you associate with the ticket. If a ticket already exists, you can add that ticket to additional findings or you can detach the ticket from findings that are associated with the ticket.

Previously, you could create a ticket for only one finding at a time and you could not detach a ticket from a finding.


For more information, see “Track Issue in Bug Tracking Tool”.

Results Review: View error call graph

In R2020a, if you review **Run-Time Checks**, click the  icon to open the **Error Call Graph** pane.

The pane displays the call sequence that leads to the detected finding. Click a node on the graph to navigate back to the source code.

Results Review: View variable access graph

In R2020a, if you review **Global Variables** findings, click the  icon to open the **Variable Access Graph** pane.

The pane displays a graphical representation of the access operations on global variables. Click a node on the graph to navigate back to the source code at the location of calling and called functions.

Installation and Configuration: Issue Tracker service

In R2020a, use the new **Issue Tracker** service to configure Polyspace Access to integrate with the Jira software or Redmine bug tracking tools.

Issue Tracker
Node: master ▼
Port number: 5002
Use HTTPS protocol:
Trusted certificates file:
Provider: JIRA ▼
URL: None pathworks.com
Authentication type: JIRA
Redmine

See “Configure the User Manager and Issue Tracker”.

Installation and Configuration: Change in default location of Polyspace Access data volume and working directories

In R2020a, the default location of the working directories of the Polyspace Access **Web Server** and **ETL** services and of the data volume is inside the folder where you unzipped the Polyspace Access ZIP file, under the `polyspace` folder.

Previously, the working directories of the **Web Server** and **ETL** were stored in the temporary files folder of your system (`/tmp` on Linux or `%TEMP%` on Windows). The data volume was stored under `/var/lib/docker/volumes` on Linux.

R2019b

Version: 2.1

New Features

Bug Fixes

User Authentication: Use LDAP search filters to restrict number of users to authenticate

In R2019b, if you use your organization's Lightweight Directory Access Protocol (LDAP) to authenticate users, you can filter for and load a subset of users from your LDAP database when you start Polyspace Code Prover™ Access™. Previously, you loaded all LDAP users listed under the **LDAP base** that you specified when you started Polyspace Code Prover Access.

To filter the LDAP users, use the new **LDAP search filter** field in the Cluster Operator settings for the **User Manager** service. For more information, see Use Your Organization LDAP.

User Management: Update list of users from LDAP database or LDIF file

In R2019b, if you remove users from your organization's Lightweight Directory Access Protocol (LDAP) database or from the Polyspace Access embedded LDAP LDIF file, you can update the list of users stored in the Polyspace Access database. Previously, users that were removed from the LDAP database or from the LDIF file were still visible in the list of users you selected when assigning findings or managing project permissions.

To update the list of users stored in the Polyspace Access database, append `/users/list/removed` to the URL that you use to Open the Polyspace Access Web Interface. Only an **Administrator** can perform this operation. For more information, see Manage LDAP Users in Polyspace Access.

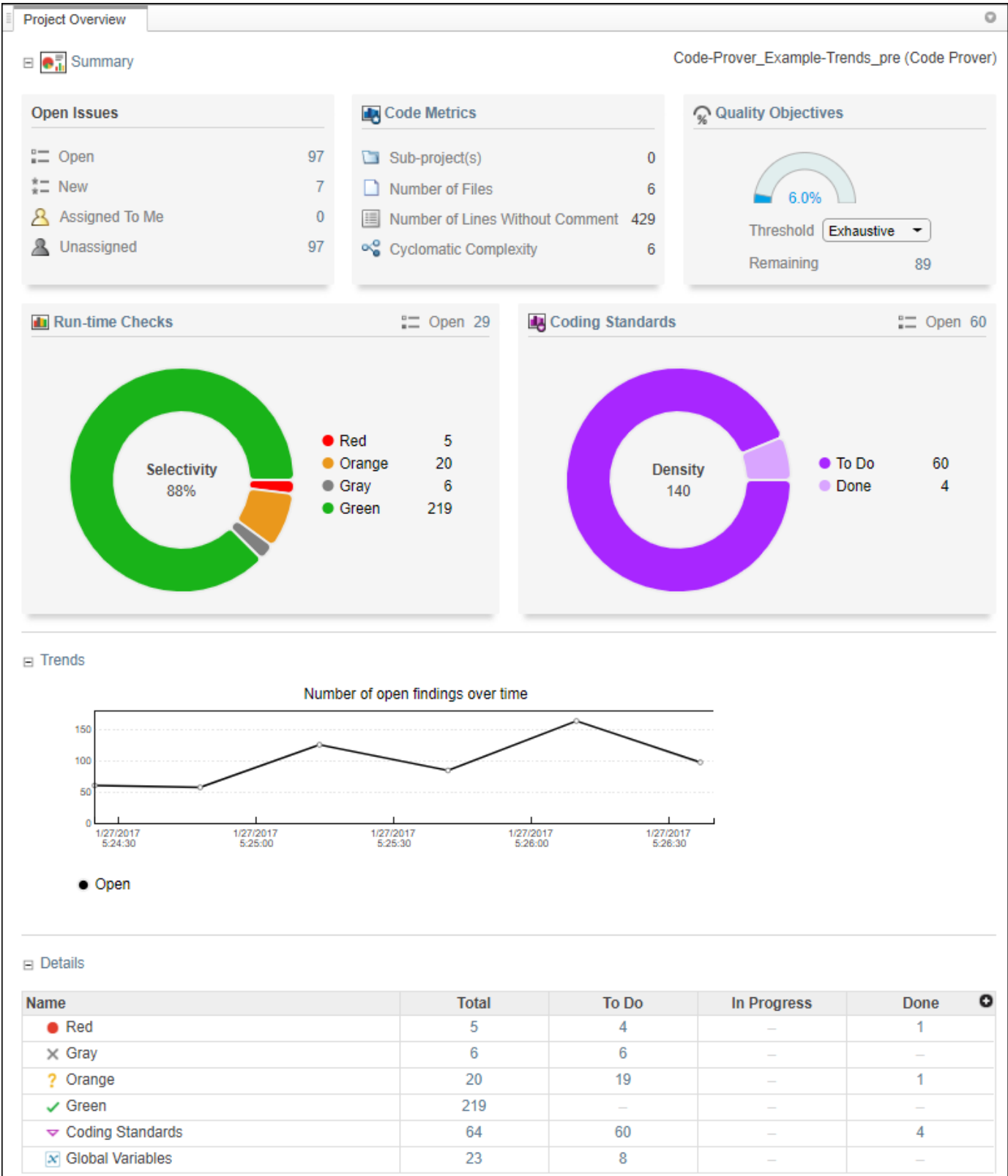
R2019a

Version: 2.0

New Features

Project Dashboard: Track progress of code quality via Polyspace results

Summary: In R2019a, you can track the progress of the code quality of your projects using the new intuitive Polyspace Code Prover Access **DASHBOARD**. When an analysis run is uploaded to the Polyspace Access database, the dashboard updates to give a snapshot of all the available findings, including a progress trend for number of findings compared to previous runs.

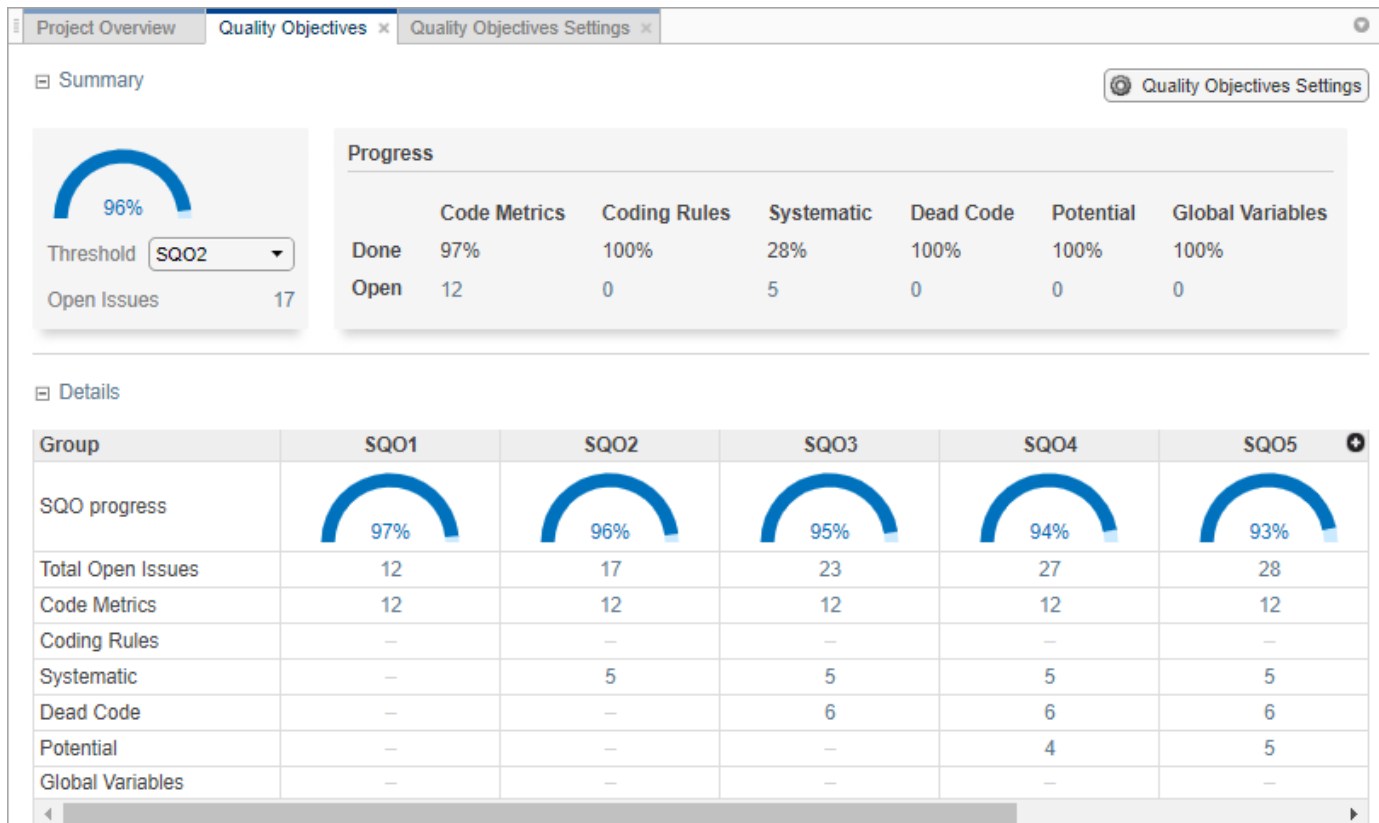


Additional Benefits:

- *Prioritize reviews:* See new and open issues that have not been fixed or justified, then open a detailed results list for just those issues. You can drill down on a set of findings filtered by new, open, unassigned, by family of findings, or by file.
- *Aggregate results for multiple projects:* If your team works on multiple projects, you can move all of those under an umbrella project and view a snapshot of the code quality for all your team's projects.
- *Authenticate client access:* The web interface is behind a login. Only users with a Polyspace Code Prover Access license and the appropriate credentials can view the dashboard from their web browser.

Project Dashboard: Compare Polyspace Code Prover results against Software Quality Objectives

Summary: In R2019a, check the quality of your code against pre-defined quality objective thresholds using the new Polyspace Code Prover Access **Quality Objectives** dashboard web interface. Use the thresholds to establish PASS/FAIL criteria for the code quality of your projects. For instance, the dashboard displays the progress and remaining open issues across thresholds and categories of findings. Use the available dropdown menu to select a threshold and see a more detailed view of completion by category of finding.

**Additional Benefits:**

- *Achieve better quality code:* The dashboard lets you drill down to categories of open issues for each threshold. Click a cell in the table to open a list of findings you need to address to pass a given quality objective threshold.

Collaborative Review Support: Review Polyspace Code Prover results and source code in web browser

Summary: In R2019a, review Polyspace analysis findings and view the findings in your source code using the new Polyspace Code Prover Access **REVIEW** web interface. You do not need to install a Polyspace product on your machine to open and review analysis results.

Family	ID	Type	Group	Check
● *	58538	Red Check	Static memory	Illegally deref...
● *	58603	Red Check	Other	Invalid use of
● *	58686	Red Check	Control flow	Non-terminat
● *	58701	Red Check	Static memory	Out of bound
● *	58845	Red Check	Control flow	Non-terminat
X *	58534	Gray Check	Data flow	Unreachable
X *	58627	Gray Check	Data flow	Unreachable
X *	58681	Gray Check	Data flow	Unreachable
X *	58725	Gray Check	Data flow	Unreachable
X *	58767	Gray Check	Data flow	Unreachable
X *	58847	Gray Check	Data flow	Unreachable
? *	58543	Orange Check	Static memory	Illegally deref
? *	58570	Orange Check	Numerical	Division by ze
? *	58582	Orange Check	Numerical	Overflow
? *	58585	Orange Check	Numerical	Overflow
? *	58589	Orange Check	Numerical	Overflow
? *	58597	Orange Check	Numerical	Overflow
? *	58599	Orange Check	Data flow	Non-initialize
? *	58601	Orange Check	Other	User assertio
? *	58626	Orange Check	Data flow	Non-initialize
? *	58674	Orange Check	Data flow	Non-initialize
? *	58675	Orange Check	Data flow	Non-initialize
? *	58676	Orange Check	Static memory	Illegally deref
? *	58707	Orange Check	Data flow	Non-initialize
? *	58712	Orange Check	Other	User assertio
? *	58766	Orange Check	Numerical	Overflow
? *	58773	Orange Check	Static memory	Out of bound
? *	58778	Orange Check	Data flow	Non-initialize
? *	58783	Orange Check	Other	User assertio
? *	58785	Orange Check	Data flow	Non-initialize
? *	58790	Orange Check	Other	User assertio
? *	58818	Orange Check	Numerical	Overflow
? *	58833	Orange Check	Numerical	Overflow
▼ *	58879	MISRA C:2012	9 Initialization	9.1 The value
▼ *	58880	MISRA C:2012	9 Initialization	9.1 The value

Event	File	Scope
1	Entering function 'RTE'	main.c main()
2	Entering function 'Point...	example.c RTE()
3	● Illegally dereference...	example.c Pointer_Arithmetic()

```

94 for (i = 0; i < 100; i++) {
95     *p = 0;
96     p++;
97 }
98
99 if (get_bus_status() > 0) {
100     if (get_oil_pressure() > 0) {
101         *p = 5; /* Out of bounds */
102     } else {
103         i++;
104     }
105 }
106
107 i = get_bus_status();
108
109 if (i >= 0) {*(p - i) = 10;}

```

Additional Benefits:

- *Facilitate collaborative review:* The web interface streamlines the review efforts of your team. For instance:

- During a team meeting, findings can be assessed and assigned to developers.
- Developers can log into the web interface to review findings assigned to them, and determine whether to justify the findings or fix them.
- A project manager can track the progress of the review by filtering the list of results for findings that are still open.
- *Authenticate client access:* The web interface is behind a login. Only users with a Polyspace Code Prover Access license and the appropriate credentials can view the results from their web browser.

Collaborative Review Support: Share Polyspace Code Prover results using web links

Summary: In R2019a, you can right-click an analysis result in the Polyspace Code Prover Access interface to obtain a URL that you can share with other team members. The link that you provide opens the Polyspace Code Prover Access interface and displays the finding along with the corresponding source code.

The image shows two screenshots of the Polyspace Code Prover Access interface. The left screenshot shows a table of findings with a context menu open over the finding with ID 550320. The right screenshot shows the detailed view of this finding, including its source code.

Family	ID	Type	Group	Check
●	549792	Red Check	Static memory	Illegally
●	549935	Red Check	Other	Invalid
●	550104	Red Check	Control flow	Non-ter
●	550134	Red Check	Static memory	Out of t
●	550320	Red Check	Control flow	Non-ter
×	549784	Gr	low	Unreact
×	549983	Gr	low	Unreact
×	550094	Gr	low	Unreact
×	550188	Gray Check	Data flow	Unreact

The right screenshot shows the detailed view of the finding with ID 550320. The finding is a "Red Check" of type "Control flow" in the "Control flow" group. The source code is as follows:

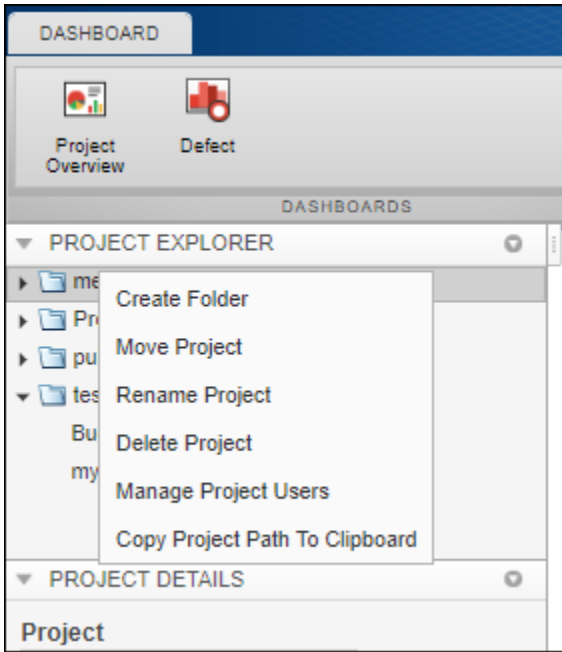
```

example.c
140
141     Recursion(depth);
142 }
143
144
145 static void Recursion_caller
146 {
147     int x = random_int();
148
149
150     if ((x > -4) && (x < -1))
151         Recursion(6x);
152 }

```

Project Authorization Management: Create and enforce authorization policies for access to project

Summary: In R2019a, you can manage project users in Polyspace Code Prover Access by right-clicking a project in the **PROJECT EXPLORER** and assigning roles to member of your team. The roles authorize or forbid users from viewing projects.

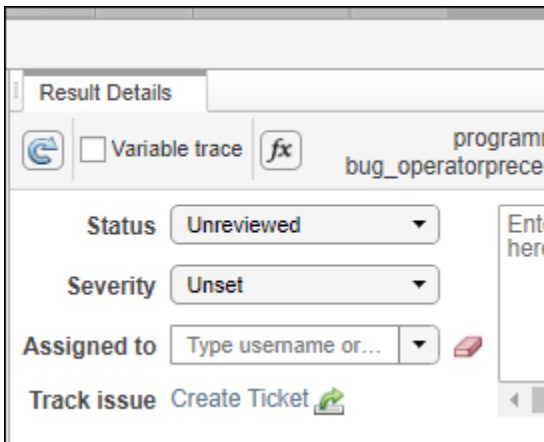


Additional Benefits:

- *Restrict access to your source code:* Use the authorization policy to restrict who can view the source code you upload with your analysis results.
- *Display relevant projects only:* When they log in to Polyspace Access, users can only see projects for which they are administrators, owners, or contributors. Use the authorization policy so that team members only see projects that they are working on.

Bug Tracking Tool Support: Create JIRA issues for Polyspace Code Prover results and assign to developer

Summary: In R2019a, Polyspace Code Prover supports integration with the JIRA software. If you have an instance of the JIRA software, after you configure Polyspace Code Prover, you can create a JIRA ticket to track Polyspace findings. The ticket is populated with details of the finding and a link to open that finding in Polyspace Access. You can add the ticket to any existing JIRA project.



Once you create a ticket, the **Result Details** pane in the Polyspace Code Prover web interface displays a link to the corresponding JIRA issue.