

# Updates in 10.3.3

In this release, we've focused on support for new compilers and extended our support for coding standards, including MISRA 2008.

## Support for New Compilers

- Microsoft Visual C++ 14.1x/ 2017
- WindRiver GCC 4.8.x (Static Analysis only)
- IAR Compiler for ARM 8.11.x

## Enhanced Unit Testing

We've added support for using enumerator values in data sources; see [Handling Enum Values](#) and [Execution Tab Settings: Defining How Tests are Executed](#).

## Enhancements to Static Analysis

In this release, we've added new static analysis rules to cover the MISRA C++ 2008; see [New Code Analysis Rules](#).

The severity levels for MISRA C++ 2008 rules have been updated:

- Required Severity 2
- Advisory Severity 4
- Document Severity 5

Flow Analysis has been extended with support for C++11 Thread API (for BD-TRS rules) and new configuration options that allow you to:

- disable terminators / functions with the `noreturn` attribute
- parameterize the BD-PB-VOVR rule with the "Report when there is at least one path where the value of the variable is not used" option; see the rule documentation for details.
- disable reporting violations whose paths pass via inline assembly code
- enable or disable all tainted data sources in the rule parameters

The RuleWizard Module has been extended with the following nodes and properties:

- `IsFinal` - returns true if function or class was declared with 'final' or 'sealed' specifier
- `IsExplicitFinal` - returns true if function or class was declared with 'final' specifier
- `IsSealed` - returns true if function or class was declared with 'sealed' specifier

See RuleWizard 10.3.3 User's Guide for more details.

## New Code Analysis Rules

Rule ID	Header
BD-PB-PTRARR	A pointer operand and any pointer resulting from pointer arithmetic using that operand shall both address elements of the same array
BD-TRS-CMF	Make const member functions thread-safe
CODSTA-CPP-90	Using-directives and using-declarations (excluding class scope or function scope using-declarations) shall not be used in header files
CODSTA-CPP-91	The overloaded binary operator should be implemented in terms of its corresponding compound assignment operator
CODSTA-CPP-92	All accessible entity names within a multiple inheritance hierarchy should be unique
GLOBAL-COMPATDECLS	All declarations of an object or function shall have compatible types
GLOBAL-EXCSPECDECL	If a function is declared with an exception-specification, then all declarations of the same function (in other translation units) shall be declared with the same set of type-ids
GLOBAL-ONEDEFRULE	The One Definition Rule shall not be violated

GLOBAL-ONEFILEDECL	A type, object or function that is used in multiple translation units shall be declared in one and only one file
GLOBAL-ONEUSEVAR	A project shall not contain non-volatile POD variables having only one use
GLOBAL-TEMPLNOINST	All class templates, function templates, class template member functions and class template static members shall be instantiated at least one
GLOBAL-UNIQUETYPEDEF	A typedef name (including qualification, if any) shall be a unique identifier
GLOBAL-UNUSEDTYPE	A project shall not contain unused type declarations
GLOBAL-UNUSEDVIRTPARAM	There shall be no unused parameters (named or unnamed) in the set of parameters for a virtual function and all the functions that override it
GLOBAL-VIRTBASECLASS	A base class shall only be declared virtual if it is used in a diamond hierarchy
MISRA2008-0_1_12	There shall be no unused parameters (named or unnamed) in the set of parameters for a virtual function and all the functions that override it
MISRA2008-0_1_4	A project shall not contain non-volatile POD variables having only one use
MISRA2008-0_1_5	A project shall not contain unused type declarations
MISRA2008-0_1_6	Avoid unused values
MISRA2008-0_1_9:	All non-null statements shall either have at least one side-effect however executed or cause control flow to change
MISRA2008-0_3_1_a	Avoid accessing arrays out of bounds
MISRA2008-0_3_1_b	Avoid null pointer dereferencing
MISRA2008-0_3_1_c	Avoid division by zero
MISRA2008-0_3_1_d	Avoid buffer overflow due to defining incorrect format limits
MISRA2008-0_3_1_e	Avoid overflow due to reading a not zero terminated string
MISRA2008-0_3_1_f	Do not check for null after dereferencing
MISRA2008-0_3_1_g	Avoid overflow when reading from a buffer
MISRA2008-0_3_1_h	Avoid overflow when writing to a buffer
MISRA2008-0_3_1_i	Pointer arithmetic shall only be applied to pointers that address an array or array element
MISRA2008-0_3_1_j	,=,= shall not be applied to objects of pointer type, except where they point to the same array
MISRA2008-2_10_3	A typedef name (including qualification, if any) shall be a unique identifier
MISRA2008-3_2_1	All declarations of an object or function shall have compatible types
MISRA2008-3_2_2	The One Definition Rule shall not be violated
MISRA2008-3_2_3	A type, object or function that is used in multiple translation units shall be declared in one and only one file
MISRA2008-3_2_4	An identifier with external linkage shall have exactly one external definition
MISRA2008-5_0_16_a	Avoid accessing arrays out of bounds
MISRA2008-5_0_16_b	A pointer operand and any pointer resulting from pointer arithmetic using that operand shall both address elements of the same array

MISRA2008-5_17_1	The overloaded binary operator should be implemented in terms of its corresponding compound assignment operator
MISRA2008-5_19_1_a	Integer overflow or underflow in constant expression in '+', '-', '**' operator
MISRA2008-5_19_1_b	Integer overflow or underflow in constant expression in " operator
MISRA2008-7_2_1	An expression with enum underlying type shall only have values corresponding to the enumerators of the enumeration
MISRA2008-7_3_6	Using-directives and using-declarations (excluding class scope or function scope using-declarations) shall not be used in header files
MISRA2008-10_1_2	A base class shall only be declared virtual if it is used in a diamond hierarchy
MISRA2008-10_2_1	All accessible entity names within a multiple inheritance hierarchy should be unique
MISRA2008-14_5_1	Do not declare non-member generic functions in associated namespaces
MISRA2008-14_6_2	The function shall resolve to a function declared previously in the translation unit
MISRA2008-14_7_1	All class templates, function templates, class template member functions and class template static members shall be instantiated at least one.
MISRA2008-15_4_1	If a function is declared with an exception-specification, then all declarations of the same function (in other translation units) shall be declared with the same set of type-ids
MISRA2012-RULE-18_1_c	A pointer operand and any pointer resulting from pointer arithmetic using that operand shall both address elements of the same array
PB-70	An expression with enum underlying type shall only have values corresponding to the enumerators of the enumeration
TEMPL-13	Do not declare non-member generic functions in associated namespaces
TEMPL-14	The function shall resolve to a function declared previously in the translation unit

## Updated Code Analysis Rules

- BD-PB-OVERFWR, BD-PB-OVERFRD, BD-PB-VOVR, BD-SECURITY-ARRAY, BD-TRS-LOCK, BD-TRS-TSHL
- CODSTA-103, CODSTA-163\_b
- COMMENT-13
- INIT-06
- JSF-071\_b, JSF-111, JSF-171, JSF-187, JSF-204\_b
- MISRA2004-14\_2, MISRA2004-15\_1, MISRA2004-17\_2, MISRA2004-17\_3, MISRA2004-17\_6\_a
- MISRA2008-0\_1\_6, MISRA2008-0\_1\_9, MISRA2008-0\_3\_1\_g, MISRA2008-0\_3\_1\_h, MISRA2008-0\_3\_1\_i, MISRA2008-0\_3\_1\_j, MISRA2008-5\_0\_17, MISRA2008-5\_0\_18, MISRA2008-5\_19\_1\_a, MISRA2008-5\_19\_1\_b, MISRA2008-6\_4\_3\_a, MISRA2008-6\_4\_4, MISRA2008-7\_5\_1, MISRA2008-7\_5\_2\_a
- MISRA2012-DIR-4\_1\_g, MISRA2012-DIR-4\_1\_h, MISRA2012-DIR-4\_1\_i, MISRA2012-DIR-4\_1\_j, MISRA2012-DIR-4\_13\_d, MISRA2012-DIR-4\_14\_a, MISRA2012-RULE-1\_3\_d, MISRA2012-RULE-1\_3\_e, MISRA2012-RULE-1\_3\_m, MISRA2012-RULE-2\_2\_a, MISRA2012-RULE-3\_2, MISRA2012-RULE-10\_3\_b, MISRA2012-RULE-12\_4\_a, MISRA2012-RULE-12\_4\_b, MISRA2012-RULE-16\_1\_b, MISRA2012-RULE-16\_2, MISRA2012-RULE-18\_2, MISRA2012-RULE-18\_3, MISRA2012-RULE-18\_6\_a, MISRA2012-RULE-21\_17\_b
- PB-11, PB-66\_a, PB-66\_b

## Resolved Bugs and FRs

Bug/FR ID	Description
CPP-18579	Rule MISRA2012-RULE-10_3_b (CODSTA-163_b) reports false positives

CPP-36999	base_from_member.hpp", line 136: error: expected a ")" ::new ((void*) 0) MemberType( static_cast<T&&>(x)... )
CPP-38187	The rule MISRA2004-17_6_a reports false positive violation
CPP-38241	PB-11 incorrect behaviour
CPP-38336	MISRA2004-17_6_a-3 reporting a false positive
CPP-38342	Rule MISRA2004-15_1 throwing a false positive with 'default
CPP-38589	CDD rules regression in C++test 10.3.2 (Japanese only)
CPP-38602	Add C++11 "final" specifier for function to RuleWizard dictionary
CPP-38661	Seeing log4cplus:ERROR when running the cpptestcli
CPP-39168	Cannot generate BDF using msbuild on Windows 7
CPP-39210	Report generation failed for exemplary ut_ds_details_to_csv.xml (Visual Studio)
CPP-39211	User rule may not be executed if there's a sub-rule (text rule) in the same directory
CPP-39356	Parse errors related to C++11 with Keil for ARM v5.x
CPP-39405	INIT-06 false positive for default move constructor
CPP-39406	[DESKTOP] TC editor shows inappropriate selection for the radio button rule parameter
CPP-39407	double argument to static_assert
CPP-39409	MISRA2012-RULE-7_1 false positive
CPP-39410	MISRA2012-RULE-16_4_b false positive
CPP-39415	RVCT compilers accept the big-letter '--C99' flag
CPP-39495	Support for IAR EWARM 8.x