



The Tools and Machinery Behind the Curtain

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Meru Peak



One of the hardest routes for climbing in the world

Elevation: 21,850' Mountain range: Himalayas

First climbed in October 2011

Our customer build mission critical systems



































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FOCUS ON QUALITY



RTI Quality Management System



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RTI Quality Manual and Management System

Document ID: RTI-000-QualityManual Version 3.x.01 March 22, 2018

Real-Time Innovations, Inc

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- Audit process
- Vulnerability management process
- Etc.



Customers can sign up to the security notification list by emailing security@rti.com

Software Vulnerability Management Process

Document ID: RTI-DEVP018 Version 1.0 December, 2017

This document captures the guidelines to manage vulnerabilities in the RTI Software Products.

Why a software Vulnerability Management Process?

When is a bug considered a vulnerability? <u>Nomenclature</u> <u>Internal tracking of vulnerabilities and vulnerability related information</u> <u>Jira</u> <u>How to Track & Document Individual Vulnerabilities</u> <u>How to Group Set of Vulnerabilities</u> <u>Salesforce</u> <u>Email list</u> <u>Fixing vulnerabilities</u>

Documenting vulnerability fixes <u>Release notes</u> <u>Critical issues report</u> <u>Security Notice or Notification</u> <u>Internal-only</u> <u>Security Vulnerabilities - Technical summary</u> <u>Security Notification Coordination Document</u> <u>Security Notification FAQ</u>

Vulnerability related patches

Sharing information about vulnerabilities When do we share vulnerabilities with customers? Review and approvals Internal Communication External Communication

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Carnegie Mellon University

Software Engineering Institute

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Pages

SPACE SHORTCUTS

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Secure Coding Home

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PAGE TREE

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Pages

SEI CERT Coding Standards

Created by Admin, last modified by Barbara White on Jan 04, 2018

MAINTENANCE NOTICE

All planned maintenance on the Secure Coding wiki is complete. More information can be found here.

Welcome

This site supports the development of coding standards for commonly used programming languages such as C, C++, Java, and Perl, and the Android[™] platform. These standards are developed through a broad-based community effort by members of the software development and software security communities.

For more information about this project and to see tips on how to contribute, please see the Development Guidelines.

Downloads



re Standard (errata) The SEI CERT C++ Coding Standard, 2016 Edition (errata)

Standards Development Area

News

December 2017: The Fall 2017 Edition of the Secure Coding newsletter was published on 20 December 2017.

November 2017: Lori Flynn and Will Klieber authored a blog post on Automated Detection of Information Leaks in Mobile Devices.

April 2017: David Svoboda writes in the SEI Blog about the CERT C++ Secure Coding Guidelines.

March 2017: The SEI CERT C++ Coding Standard (2016 Edition) is released.

September 2016: Aaron

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Confluence Spaces •

- MEM02-C. Immediately cas...
- MEM03-C. Clear sensitive i...
- MEM04-C. Beware of zero-l...
- MEM05-C. Avoid large st...
- MEM06-C. Ensure that sens...
- MEM07-C. Ensure that the ...
- MEM10-C. Define and use ...
- MEM11-C. Do not assume i...
- MEM12-C. Consider using ...
- Rec. 09. Input Output (FIO)
- Rec. 10. Environment (ENV)
- Rec. 11. Signals (SIG)
- Rec. 12. Error Handling (ERR)
- Rec. 13. Application Program...
- Rec. 14. Concurrency (CON)
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~

- > 4 Back Matter
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- Space tools

Pages /... / Rec. 08. Memory Management (MEM)

MEM05-C. Avoid large stack allocations

Created by rlane, last modified by Svyatoslav Razmyslov on Mar 12, 2018

Risk Assessment

Program stacks are frequently used for convenient temporary storage because allocated memory is automatically freed when the function returns. Generally, the operating system grows the stack as needed. However, growing the stack can fail because of a lack of memory or a collision with other allocated areas of the address space (depending on the architecture). When the stack is exhausted, the operating system can terminate the program abnormally. This behavior can be exploited, and an attacker can cause a denial-of-service attack if he or she can control or influence the amount of stack memory allocated.

Recommendation	Severity	Likelihood	Remediation Cost	Priority	Level
MEM05-C	Medium	Likely	Medium	P12	L1

Automated Detection

ТооІ	Version	Checker	Description
CodeSonar	4.5p1	IO.TAINT.SIZE	Tainted Allocation Size
		MISC.MEM.SIZE.BAD	Unreasonable Size Argument
Coverity	2017.07	STACK_USE	Can help detect single stack allocations that are dangerously large, although it will not detect excessive stac use resulting from recursion
Klocwork	2017	MISRA.FUNC.RECUR	
LDRA tool suite	9.7.1	44 S	Enhanced Enforcement
Polyspace Bug Finder	R2016a	Tainted size of variable length array	Size of the variable-length array (VLA) is from an unsecure source and may be zero, negative, or too large Size of variable-length array is zero or negative
		Maniala la santa anna cuith	

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Development Milestones



- Each release can include new features, new RTI Connext products, architecture ports and bug fixes.
- Certain features are listed as 'experimental' or products may be 'Beta' releases

Note: not shown are release branches

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The Tools



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- Configuration management: Git; Atlassian Fisheye
- Defect management and traceability: Atlassian JIRA
- Enhancement management: Atlassian JIRA (and Salesforce.com)
- Customer case tracking: Salesforce.com
- Project tracking and collaboration: Atlassian Jira, Atlassian Crucible, Software Development Folders in Egnyte, Trello, Microsoft Project and Excel
- IDE: Visual Studio, Eclipse, SlickEdit, Xcode, atom, zerobrane, Wireframe Sketcher
- Continuous Integration: Atlassian Bamboo
- Memory tools: MemScope, Rational Purify, Instruments (Mac), LeadDiag, drmemory, Valgrind and JVisualVM
- Code coverage tools: Rational PureCoverage, gcov
- CPU profilers: Callgrind, Rational Quantify, JProfiler
- Static Analysis tools: FindBugs (Java), clang and cppcheck
- Installers: BitRock InstallBuilder

Work in progress: Atlassian BitBucket, Jenkins Cl

Atlassian tools provides us full traceability



lan-2018 Issues: 45 created and 21 resolved Period: last 300 days (grouped Daily) Created vs. Resolved Chart: DASHBOARD: all non-doc Core (Including RR) and Plug-In bugs ordered by affected versions 🛛 🕂 🗖 📼



Dynamic Analysis using Valgrind with/without Buffer Pools

	5		
E			

Build projects / Core - Build and Test / RHEL 5 x64 (gcc4.1.1) DISABLED Build #2 VNDDS520_SUPPORT -

① #2	① Job: Test queue.1.0 failed
Stages & jobs	
Default Stage	Job Summary Tests Commits Artifacts Logs Metadata
⊘ Build	Queue: Test case result
Unit Test	The below summarizes the result of the test "Queue" in build 2 of Core - Build and Test - RHEL 5 x64 (gcc4.1.1) - NDDS520_SUPPORT - Test queue.1.0. 🕒
⊘ Test advlog.1.0	Description Queue Duration < 1 sec
⊘ Test cdr.1.0	Test class valgrind-memcheck Status Failed (Existing Failure)
⊘ Test clock.1.0	Method queue
⊘ Test commend.1.0	Error Log
⊘ Test core_version.1.0	
⊘ Test dds_c.1.0 - 1 (1)	Invalid Tree() / delete / delete[] (see: http://valgrind.org/docs/manual.html#mc-manual.badfrees) at 0x4A05D21: free (vg replace malloc.c:325)
⊘ Test dds_c.1.0 - 2	by 0x5B8AD2E: RTIOsapiHeap_freeMemoryInternal (heap.c:557) by 0x4EDD463: DDS_String_free (String.c:51) by 0x5D5264. DUBUEScruteSpreaderty finalize (Convice c:184)
⊘ Test dds_c.1.0 - 3	by 0x6D55AF: QUEUEServiceProperty_delete (Service.c:261) by 0x66C6C: QUEUEServiceConfigTester_testConfigLoading (ServiceConfigTester.c:111)
⊘ Test dds_c.1.0 - PART 4	by 0x7E4F7D: RTITestSetting_runTests (Setting.c:524) by 0x466D57: QUEUEServiceConfigTester_run (ServiceConfigTester.c:137) by 0x7E4E7D: RTITestSetting_runTests (Setting_c:524)
⊘ Test dds_c.1.0 - PART 5	by 0x43570C: QUEUETester_run (Tester.c:72) by 0x43589D: main (Tester.c:161)
⊘ Test dds_c.1.0 - PART 6	Address 0x8216da is not stack'd, malloc'd or (recently) free'd

Static Analysis

- Using clang and cppcheck, integrated in CI
- For Connext DDS: Work in progress.
- No critical issues

Ŧ	Core - Code Analysis	Connext - Library size check	⊘ #23	6 days ago	No tests found	Manual r
		Connext ClangCheck OS X 10.8	⊘ #10	4 months ago	No tests found	Manual r
		Connext Code Coverage RHEL 5 x86	⊘ #28	5 days ago	38 passed	Schedule
		Connext CppCheck OS X 10.8	Ø #21	3 months ago	No tests found	Manual r
		Connext Warnings OS X 10.10 Þ	() #42	6 days ago	60221 of 60242 failed	Schedule
		Connext Warnings RHEL 7 x64 V	() #52	3 days ago	4348 of 4381 failed	Manual r
		Micro CppCheck OS X 10.8	⊘ #4	6 months ago	No tests found	Manual r



- queue.1.0/srcC/config/CfgFileParser.c: Variable used as Gonzalo José Carracedo Carballal 7. 🕗 Q., RESOLVED parameter and destination in s[n]printf()
- Resource leak: file Gonzalo José Carracedo Carballal Q., RESOLVED queue.1.0/srcC/queueProcessor/QueueUtils.c: Variable used Gonzalo José Carracedo Carballal 9. 🕗 Q., RESOLVED as parameter and destination in s[n]printf().
- 10. router.1.0/adapters/socket/src/SocketAdapter.c: Uninitialized ۹. Gonzalo José Carracedo Carballal RESOLVED variable
- Gonzalo José Carracedo Carballal 11. conter.1.0/adapters/tutorial/C/SimpleFileAdapter.c: RESOLVED deallocuse Gonzalo José Carracedo Carballal 12. volter.1.0/example/shapes/transformation/src/shapestransf.c: 🖫 RESOLVED memory leak Gonzalo José Carracedo Carballal

Q.,

Q.,

RESOLVED

RESOLVED

Gonzalo José Carracedo Carballal

- router.1.0/srcC/config/CfgFileParser.c
- router.1.0/srcC/config/Utils.c: Resource leak



Testing

- **Regression testing**
- Feature testing
- Interoperability testing
- Install testing
- Performance and scalability testing
- Security testing
- **Endurance testing**



Unit tests - Regression testing Also provide a level of single node feature testing

		Unit tests															
00	Status Summar	Screen – RTI_CI	Report details														
H http://ci-bamboo:8085/te	lemetry.action	_	CStart Time Thu Jun 22	13:48:30 2017				_									
✓ i86Linux2.6gcc4.4.3 Launcher 4 days age Dependent of LAUNCHER-RHEL532-108	✓ i86Linux2.6gcc4.4.5 Launcher d days app Dependent of LAUNCHER-RHEL532-108	✓ i86Win32VS2005 Launcher 4 days ago Dependent of LAUNCHER-RHEL532-108	Last Modified [Mon Juli 26] Performed by [puild Log file prefix [2017.06,22] Log path [home/build] Branch [release/conr NDDS tree [home/build] NDDS tree on shared drive	_13-48 /rti/waveworks/log_nddst iextdds/5.3.0 /rti/waveworks/ndds530/d	530/f9a77830e connextdds	cf1c475dfae9bc	c5b0f90722e29c6	3b1									
			Log path on shared drive														
Launcher	Launcher	Launcher	Summary														
4 days ago Dependent of LATINCHER PHELER2 109	4 days ago	4 days ago	Arch/Module	Status osapiTester	clockTester	redaTester	advlogTester	rtixmlTester	eventTester cd	rTester	transportTester	netioTester	migTester commendTe	ster writer_historyTester	presTester disc	Tester core_	versionTester
Dependant of EXONONET#INNEL332-108	Dependent of EXONOREMARELOS2*108	Separation Excitoner whee Ecose 108	64p7AIX7.1xlc12.1	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
✓ RTI_Makehome	✓ i86Linux2.6gcc3.4.3	✓ i86Linux2.6gcc4.1.1	arm64iOS8clang6.1	Done Passed	Failed clockTeste	r Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
Makehome 6 days ago	Recording Service 4 days ago	Recording Service 4 days ago	armv6vfphLinux3.xgcc4.7.2	Done <u>Passed</u>	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed P	Assed	Passed
Manual build by Abhi Vaishnav	Dependant of RECORDINGSERVICE-RHEL532-423	Triggered by child RECORDINGSERVICE-RHEL564	ermv7Linux3.0gcc4.6.1.cortex-a9	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed Passed Passed Passed Passed	Passed	Passed	Passed	Passed
	1061 inux2 6aco4 4 5		armv7aAndroid2.3gcc4.8	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	<u>Falled</u> net/oTester.apik	Passed Passed	Passed	Passed	Passed	Passed
Recording Service	Recording Service	Pecording Service	armv7aAndroid5.0gcc4.9ndkr10e armv7aLinux3.12gcc4.9.3cortex-a9	Done Rassed	Passed	Passed	Passed Passed	Passed Passed	Passed	Passed Passed	Passed Passed	Passed	Passed Passed Passed Passed	Passed Passed	Passed P	Passed	Passed
4 days ago Triggered by child RECORDINGSERVICE-INSTALLERS	4 days ago Dependent of RECORDINGSERVICE-RHEL532-423	4 days ago Dependent of RECORDINGSERVICE-RHEL532-423	armv7aQNX6.5.0SP1qcc_cpp4.4.2	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Failed	Passed	Epiled	Passed	Passed
			armv7aQNX6.6.0qcc_cpp4.7.3	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
✓ i86Win32VS2005 LM	 Installers 	✓ x64Linux2.6gcc3.4.5	armv7aVx6.9gcc4.3.3	Done <u>Passed</u>	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed E	lassed	Passed
Recording Service 4 days ago	Recording Service 4 days ago	Pecording Service 4 days ago	armv7aVx6.9gcc4.3.3_rtp	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
Dependent of RECORDINGSERVICE-RHEL532-423	Dependent of RECORDINGSERVICE-WIN32-225	Dependant of RECORDINGSERVICE-RHEL532-423	armv7aWRLinux7gcc4.9.1cortex-a15 i86Linux2.6gcc4.1.1	Done Passed	Passed Passed	Passed Passed	Passed Passed	Passed Passed	Passed Passed	Passed Passed	Passed Passed	Passed Passed	Passed Passed Passed Passed	Passed Passed	Passed P Passed	Passed Passed	Passed Passed
			i86Linux2.6gcc4.1.2	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
Recording Service	Recording Service	Recording Service - Branch	186Linux2.6gcc4.2.1 186Linux2.6gcc4.4.5	Done Rassed	Passed	Passed	Passed Passed	Passed Passed	Passed	Passed Passed	Passed Passed	Passed Passed	Passed Passed Passed Passed	Passed Passed	Passed P	Passed	Passed
4 days ago Dependent of RECORDINGSERVICE-RHEL532-423	4 days ago Decendent of RECORDINGSERVICE-RHEL532-423	f hour ago Dependent of BECSERVBBAN-BHEL532-7	i86Linux3.xgcc4.6.3	Timed Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
			i86Linux3gcc4.3.4	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Failed writer_historyTast	Passed	Passed	Passed
× i86Linux2.6gcc4.1.1LM	¥ i86Linux2.6gcc4.4.3	✓ i86Linux2.6gcc4.4.5	186Linux3gcc4.8.2	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
Recording Service - Branch 1 hour ago	Recording Service - Branch 1 hour ago	Recording Service - Branch 1 hour ago	i86Linux3gcc5.4.0	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
Manual build by Abhi Vaishnav	Dependant of RECSERVBRAN-RHEL532-7	Dependant of RECSERVBRAN-RHEL532-7	I86QNX6.4.1qcc_gpp	Done Rassed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	lassed	Passed
A . 1			I86QNX6.5qcc_gpp4.4.2	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	assed	Passeo
Atlassian			186QNX6.6qcc_cpp4.7.3	Done Passo	Passed	Target Issue	Passeo	Passeo	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	<u>Assec</u>	Target Issue
			mips32r2sfbeVx6.9gcc4.3.3	Done Passed	Passed	redaTester.so	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed E	Passed Core	versionTester.so
: Hami	າດດ		mpc8349Inty5.0.11.mds8349	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
			p4080Inty11.devtree-fsl- e500mc.comp2012.1	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Rassed
-			p4080Inty11.devtree-fsl- e500mc.comp2013.5.4	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
			p7AIX7.1xic12.1	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Passed	Passed	Passed	Passed
			pentium64Vx6.9gcc4.3.3	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Rassed	Passed Passed	Passed	Passed	Falled Tester.ao	Passed
			pentium64Vx6.9gcc4.3.3 rtp	Done Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed Passed	Cannot Connect t	Target Issue	Esiled	Passed

5.2 Maintenance Release / EDDYMAINT-366 EDDY Maintenance Unit Test Failure Traceability

/ Edit	Comment Assign More Action	ons - Close Issue Reoper	Admin -
Details			
Туре:	☑ Task	Status:	RESOLVED (View Workflow)
Priority:	Ondefined	Resolution:	Fixed
Introduced in	None None	Fix Version/s:	build4
Component/s	s: None		
Labels:	traceability		

Description

This task encapsulates all of the unit test failures that were present in the last build before releasing the EDDY Maintenance Release (RTI Connext DDS 5.2.3)

Process to Follow While Closing Subtasks of this Issue

- 1. Rerun the failed unit tests in your issue
- 2. Figure out why the tests failed:

If the reason why it failed is one of the following, add the appropriate label to the issue:

- timing
 - · Attach a log of a successful run to the subtask
 - · Close the Issue as 'Won't Fix'
- infrastructure
 - · File a JIRA issue in the appropriate Project, linking the subtask and the new issue
 - · Close the subtask as 'Won't Fix'
- memory
 - Close the subtask as 'Won't Fix'
- · cleanup (if some of the subtests failed because of a bad cleanup in a previously failed test)
 - · Attach a log of a successful run to the subtask
 - · File a JIRA issue in the appropriate Project, linking the subtask and the new issue
 - · Close the subtask as 'Won't Fix'
- machine_state (leftover shmem segments, possible interference from other processes running, any situation where a
 reboot might clean-up the state enough to have the test pass)
 - Attach a log of a successful run to the subtask
 - Close the issue as 'Fixed'
- known_product_issue (if there is already a JIRA issue existing for this failure and we plan on fixing it in the future)
 Link the known JIRA issue to this sub-task

All failing unit tests are analyzed. Note that a unit test may fail not only because of a functional issue. Other reasons include timing issues, infrastructure issue, platform issue, etc.

5.2 Maintenance Release / EDDYMAINT-1

Stabilize HEAD	(Core + Infrastructure S	Services)
----------------	--------------------------	-----------

/ Edit	Comment Assign More Actions - Resolve Issue Close Issue Admin -		
1. 🥥	PRESCstWriterHistoryDriverOdbcTester_run:test[117]? Segmentation Fault	9 0	RESOLVED
2. 🥑	QUEUEServiceTester_run:test[54] failed!!!!!!!!!!!!!!	۹.	RESOLVED
3. 🥑	DDSCPPTester_run:test[17] failed!!!!!!!!!!!	e.	RESOLVED
4. 🥑	StatusTester:test[13] failed!!!!!!!!!!!!	۹.	RESOLVED
5. 🥑	QUEUEServiceTester_run:test[35] failed!!!!!!!!!!!!!!	۹.	RESOLVED
6. 🥑	QUEUEServiceTester_run:test[52] failed!!!!!!!!!!!!!!	9 0	RESOLVED
7.	disc_staticTester failing on iOS platforms	۹.	OPEN
8. 🥑	ROUTERProcessorTester_run:test[3] failed!!!!!!!!!!!!!	e.	RESOLVED
9. 🥑	NDDS_Transport_TLS_DTLSConnectionTester_run:test[1] failed!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	P.	RESOLVED
10. 🥑	DDSCBuiltinTypesTester_run:test[2] failed!!!!!!!!!!!!	Po	RESOLVED
11. 🥑	DDSCProtocolTester_run:test[29] failed!!!!!!!!!!!!	Po	RESOLVED
12. 🕑	DDSCProtocolTester_run:test[27] failed!!!!!!!!!!!!	Po	RESOLVED
13. 🕑	DDSCBatchingTester_run:test[4] failed!!!!!!!!!!!!	9 0	RESOLVED
14. 🥑	DDSCProtocolTester_runAckDisabledTest Timing issues	Po	RESOLVED

Feature testing

- Our previous automated RTI Connext DDS distributed feature framework has been phased out and will be replaced by a new feature test framework.
 - Local node feature testing is covered partially within unit tests.
 - Manual feature testing
- **RTI Connext Micro** has a modern distributed feature test framework and test description language.



Interoperability testing

- Vendor interoperability testing done at OMG events through shapes demo.
- RTI Connext product interoperability testing is *currently* done manually
 - During install testing of various services and tools, during development, and during release testing of Micro.
 - Manual testing with older RTI versions is done, when after analysis, we determine there is a risk of break interoperability.
- Language interoperability testing is done indirectly through the usage of tools like admin console (written in Java) in combination with applications in other languages. We have also added automated regression tests for specific features (e.g., keyhash).
- Note: Interoperability issues are documented in the release notes, including backward interoperability options.

Install testing captures integration and interop issues

Manual install tests plan procedures cover

- Installation are all files properly installed?
- Graphical User Interface tests, e.g.,
 - Integration RTI Launcher with Prototyper, with rtiddsgen,
 - Admin Console
- Documentation tests
- Minimal functionality tests for all products using the shipped examples. For some products, we run a full functionality test using the Getting Started Guide. This is performed on a variety of platforms.
- Product and language interoperability testing (limited)

DO NOT MODIFY

This is now an archived version of the document which is specific to the Eddy delivery (5.2.0).

Eddy Manual Install Test Procedures

Introduction

This document contains the manual install test procedures for each RTI product as well as general instructions you should read. It is intended to provide the basic tests common to any release. Of course, each release is different and it is expected that each release will add steps to satisfy its particular needs.

This document is work in progress, so please provide feedback to improve it and make testing easier for everybody.

How to read this document?

- <u>Fully</u> read the "General instructions" section.
- After that, find the instructions for the product you are testing.

Introduction General instructions Procedures Test assignment and feedback Filing and resolving issues Domain IDs Resources Testing machines Users Bundles and installers Licenses

Install Test Procedures 1

Automated Install testing

- Installation filecheck to make sure files are properly installed.
- Running rtiddsping, rtiddsspy and prototyper
- Running rtiddsgen generated examples in C, C++, C++03. C++11, C++ CLI, C#, Java, using a combination of static/dynamic and release/debug DDS libraries
- Running shipped examples using a combination of static/dynamic and release/debug DDS libraries
- Performance examples in C++ and Java
- TCP shipped examples in C
- On more than 80 different architectures including Windows, Linux, Solaris, Lynx, QNX, Darwin, VxWorks platforms. Not covered on e.g., VxWorks 653, etc.

Performance and memory profiling tests

- Unit tests capture performance and memory information for specific functions
- A bespoke performance test (PerfTest) is used to characterize the performance of Connext DDS, and can be used in conjunction with other products, e.g., Routing Service. (Available on community.rti.com)
- A specific memTest was created to monitor the memory footprint of Connext DDS.
- Connext Micro captures memory information through its test framework
- Admin Console takes performance snapshots of performance critical functions. The results are analyzed over time
- Continuous integration of PerfTest and MemTest tests ensures we do not regress as new features are added to the Connext DDS product.

Automated performance, memory profiling and stress tests compare variations with previous revisions. Performance data is gathered at all levels of the product

≡ ¢B	amboo Build - Branch plans Deploy - Reports -			Search	Q ⑦ - Log in	I86LINUX2.6G	CC4.4.5	MEMOR	CONSU	MPTION R	EPOR
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Ø #18	Changes by Fernando Garcia Aranda and Aida Jimenez	5 days ago	Testless build			Sample	845	845	0	0	ок
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⊘ #13	Changes by David Luengo López	1 week ago	Testless build			Samples DR	627	800	-173	-21	ок
⊘ #12	Changes by 11 people	1 week ago	Testless build			Remote Participant	31120	30547	573	1	ок
2 Latest b	uild 🖉 Last successful build										
Feed fo	all builds or just the failed builds.										

Automated Memory Usage Statistics

RTI Connext Micro Version 2.4.1.0

Main Page	RTI Connext Micro Documo	entation	Data Structures	Files	Q- Search							
RTI Connext M RTI Connex	ficro t Micro Documentation	RTI Co	onnext Micro D	atashe	eet Reference							
 RTI Conni Porting Config Buildin Config 	ext Micro User Guides g RTI Connext Micro uring Discovery and Transport ig RTI Connext Micro for iOS uring and Interpreting RTI Con	Module Datas Datas	S heet for armv6leLinux heet for i86Linux2.6g	2.6gcc4.6. cc4.1.2	.6.3							
Genera RTI Co RTI Co	ating Type Support with rtiddsg nnext Micro Threading Model nnext Micro UDP Transport	Detailed Description Introduction										
 RTI Conn RTI Conn RTI Conn 	ext Micro DDS C API Reference ext Micro DDS C++ API Refere ext Micro OS API Reference	This docu as guidan the follow	iment provide metrics f ice and actual numbers ving two platforms:	or the RTI (will vary a	II Connext Micro libraries. The information contained here is only meant across different hardware and compilers. Datasheets are provided for							
RTI Conn RTI Conn Documen	ext Micro Resource Limit Refer ext Micro Datasheet Reference Itation Conventions	Raspberry Pi Model B+ Datasheet for armv6leLinux2.6gcc4.6.3 i86 Core2 2.4Ghz 2 cores, 32 bit, 2GB RAM CentOS 5.5 Datasheet for i86Linux2.6gcc4.1.2										
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1

Version 11

DDS Secure Testing

- DDS Secure functionality testing, including negative testing. E.g.,
 - configure DDS Secure with invalid governance or permissions file
 - configure DDS Secure with configuration files, with duplicate grant or subject names.
 - muck with the clock (e.g., provide a file with date past 2038)
 - tamper with wire communication
 - enable DDS Secure plugin with missing functions
- DDS feature interoperability testing validating how security interoperates with various DDS features and products (e.g., reliability, batching, built-in types, CFT, different transports, routing service, persistence service, etc)
- DDS Vendor interoperability testing
- Robustness and Performance testing
 - Valgrind (with/without RTI buffer mgt), perftest, discovery scalability
- Usability testing
- Red team testing at DoD IA Range in Quantico VA, part of the USS SECURE project
- Fuzz testing

Endurance Testing

Testing for memory growth, or other unexpected scenarios in long running scenarios:

- 1. Start publishing samples using a high sequence number.
- 2. Remote participants appearing and disappearing.
- 3. Remote endpoints appearing and disappearing.
- 4. Endpoints communicating with different instances and message sizes, including batching.

More to come.

The RTI IIoT Lab



Our products are supported on a large set of architectures

						Connext DDS Professional												Connext I	DDS Secure	Premium Offerings															
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The RTI HQ Lab Infrastructure consists of a large variety of target architectures, a virtualized build and test infrastructure for enterprise systems and a performance lab





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Deployment Framework

















RTI HQ IP Mobility Test Lab



rti



Great products are built ... by great and motivated people ... with the right tools ... and guided by the professional processes



Thank you



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