RTI DDS Toolkit

Release Notes

Version 2.0.0

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Release Notes

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1   Supported Platforms

RTI® DDS Toolkit is supported on these platforms:

❏ Windows® Systems:

- Windows 7 SP1 (32-bit and 64-bit)
- Windows 8.1 (32-bit and 64-bit)
- Windows 10 (32-bit and 64-bit)
- Windows Server 2008 R2 SP1 (64-bit)
- Windows Server 2012 R2 (64-bit)

On 64-bit platforms, it runs in 32-bit mode.

❏ Real-Time Targets:

- NI™ Linux® 3 on ARMv7 CPU (tested on cRIO-9068 target)
- NI Linux 3 on 64-bit Intel® CPU (tested on cRIO-9031 target)

You will also need:

❏ National Instruments® LabVIEW® 2015 SP1 (32-bit)

❏ JKI VI Package Manager 2014 or later

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2   Compatibility

2.1   Incompatible with Older Versions of Connext DDS using UDPv6 and Shared Memory

RTI Connext® DDS 5.1.0 and earlier releases used a UDPv6 locator kind that was not compliant with the value in the RTPS specification. The value used in *Connext DDS* 5.1.0 was 5 while the RTPS specification specifies a value of 2. Because of this issue, *Connext DDS* could not interoperate with other DDS vendors over UDPv6.

This problem is resolved starting with 5.2.0. Note, however, that out-the-box backward compatibility with *Connext DDS* 5.1.0 and lower, when using both the UDPv6 and SHMEM transports, is broken.

See the *RTI Connext DDS Core Libraries Release Notes*' section on Transport Compatibility for information on how to resolve this compatibility issue.

2.2 Incompatible with Older Versions of Connext DDS

In *Connext DDS* 5.1.0, the default **message_size_max** for the UDPv4, UDPv6, TCP, Secure WAN, and shared-memory transports changed to provide better out-of-the-box performance. *RTI DDS Toolkit* 1.1.0 and higher also uses the new default value for **message_size_max**. Consequently, *RTI DDS Toolkit* 1.1.0 and higher is not out-of-the-box compatible with applications running older versions of *Connext DDS* or *RTI Data Distribution Service*.

See the *RTI Connext DDS Core Libraries Release Notes*' section on Transport Compatibility for instructions on how to resolve this compatibility issue.

2.3 Additional Steps when Upgrading from a Release Older than 2.0.0.104

If you are upgrading from a release older than 2.0.0.104, there are important steps you must take. Briefly, changes are required because:

❑ The *Create Reader/Writer* subVIs have been removed. These subVIs have been replaced by the *Simple Create Reader/Writer* and *Advanced Create Reader/Writer* subVIs.

❑ The Complex-Type Templates subpalette has been removed. Use the RTI DDS Complex-Type Generator instead.

❑ The **ForceNewDomainParticipant?** flag has been deleted from the *Advanced Reader/Writer Configuration* controls. These clusters need to be updated.

If you have issues upgrading from previous versions, please contact us at **support@rti.com**.

See Sections 1.4, 6.2, 6.6, and 6.7 in the *Getting Started Guide* for details.

2.4 Required: VI Package Manager Version 2014

The *RTI DDS Toolkit* requires VI Package Manager (VIPM) to be installed. Due to a limitation in VIPM, version 2014 of VIPM is required. For details visit JKI website: http://support.jki.net/entries/66745297-VIPM-2013-cannot-install-packages-built-in-VIPM-2014.

2.5 Toolkit Uses String Length of 1024

In *RTI DDS Toolkit,* the default string length is 1024 characters. This may create incompatibilities with other DDS data types in your system that use string lengths != 1024. If you are sure your types are compatible, use the new QoS profile, **LabVIEWLibrary::NoTypeCodeProfile**.

2.6 Improved Performance when Managing Large Data

We have improved the performance when managing large data by setting these properties. (Note: they cannot be changed from the QoS XML file):

❑ Dynamic data:

- **serialization.trim_to_size** = DDS_BOOLEAN_TRUE
- **serialization.max_size_serialized** = DDS_LENGTH_UNLIMITED
- **serialization.min_size_serialized** = TypeCode's minimum serialized size

❑ Data Writer:

- **dds.data_writer.history.memory_manager.fast_pool.pool_buffer_max_size** = 1024

❑ Data Reader:

- **dds.data_reader.history.memory_manager.fast_pool.pool_buffer_max_size** = 1024

3 What's New in 2.0.0

3.1 Product Name Change

The name *RTI DDS Toolkit for LabVIEW* has been replaced with *RTI DDS Toolkit*.

3.2 Support for ContentFilteredTopics

ContentFilteredTopics are now supported. To create them, they need to be specified in the *Advanced Create Reader* VI. This means the ContentFilteredTopic cannot be modified once it is running.

Currently the only supported **Filter Type** is **DDS_SQLFILTER_NAME**. If any field of 'Content-FilteredTopic Name' or 'Filter Expression' is empty, the ContentFilteredTopic will not be created.

A ContentFilteredTopic is owned by a DDS Reader. As long as the DDS Reader is still alive, the ContentFilteredTopic will also be alive.

3.3 Ability to Get All Values from a Secure Profile

In the previous release, only the *names* of previously created Secure Profiles could be recovered. Now DDS Toolkit can load *all* the information contained in these profiles. You can display these values with the *Get Security Profile Values* VI.

3.4 New Error Messages upon Failed Secure Entity Creation

New error messages have been added to report when an error occurs creating a Secure DataWriter or DataReader.

3.5 Changes to All RTI DDS Toolkit VIs

All the VIs included in *RTI DDS Toolkit* have been modified in order to be more LabVIEW compliant.

3.6 Wizard for Creating Custom Complex Data Types SubVIs

A wizard for creating custom complex data types subVIs has been added. You can find this wizard under the menu **Tools/RTI DDS Toolkit/RTI DDS ComplexType Generator**.

This wizard allows you to create the minimal set of subVIs needed to run a *Connext DDS* application for any type. A Creation writer and reader, as well as write and read subVIs, will be generated based on the provided Type Definition (***.ctl**).

You can choose Simple or Advanced creation. You can also choose whether a simple example is created for this type using this generated subVIs.

3.7 Increased participant_property_string_max_length

Because the Secure DDS properties point to some files using the full path, the previous value of **participant_property_string_max_length** was not large enough. This value has been increased to 4096.

3.8 New Examples

Two new examples have been added to *RTI DDS Toolkit*. One of them shows how to use ContentFilteredTopics. The other one shows how to use *RTI Secure DDS Plugins* in *RTI DDS Toolkit*.

3.9 Additional Installation of OpenSSL No Longer Needed

Previously, to use *RTI Secure DDS Plugins* with *RTI DDS Toolkit*, you had to install OpenSSL separately. Now *RTI DDS Toolkit* will use OpenSSL that is installed with LabVIEW. This affects both supported operating systems: Windows and NI Linux (RT Targets).

3.10 Windows and RT Target Bundles Merged

The *RTI DDS Toolkit* bundles for Windows platforms and RT Targets are now shipped in the same package.

A correct installation of the full package may require administration privileges, otherwise it may not be correctly installed.

3.11 Internal VIs now Password-Protected

Some internal VIs which make direct calls to a Call Library Function are now protected by a password.

3.12 Updates to CDFs for Installing RT Bundle

The Component Definition Files (CDFs) that are used to install *RTI DDS Toolkit* in a Real-Time Target have been updated.

3.13 RTI DDS Toolkit now Wire Aligned with DDS Security Specification

RTI DDS Toolkit is now wire aligned with the DDS Security Specification.

For the Shared Secret Algorithm:

❏ **rsa** is no longer an option.

❏ **ecdsa-ecdh** and **dsa-dh** have been renamed to **ecdh** and **dh**, respectively. Their meanings remain the same.

The value **aes-128-ctr** is no longer an option for the Encryption Algorithm.

3.14 RTI DDS Toolkit now under NI License Agreement

Since *RTI DDS Toolkit* is now part of LabVIEW 2017, it will follow the same license that LabVIEW does. Both of them are under the NI License Agreement.

3.15 Deleted 'Force New DomainParticipant' Flag

The 'Force New DomainParticipant' flag is no longer used. This flag has been deleted from the "Advanced Reader Configuration" and "Advanced Writer Configuration" clusters. If these clusters were being used in any VIs from a previous release of DDS Toolkit, they may need to be modified manually.

3.16 Previously Deprecated DDS Create Reader/Writer VIs have been Deleted

The old *DDS Create Reader/Writer* VIs, which were deprecated in version 1.2.0.90, have been deleted from *DDS Toolkit*.

4 What's Fixed in 2.0.0

4.1 TypeName was Truncated to 128 Characters

Previously the TypeName may have been truncated to 128 characters, even though the maximum length was 256 characters. This problem has been resolved.

[RTI Issue ID LABPLG-432]

4.2 Arrays of Enums were Unsupported

Previously the documentation stated that *RTI DDS Toolkit* supported arrays of enums. However, that type (or others that included it) couldn't be created. This problem has been resolved. Arrays of enums are now supported.

[RTI Issue ID LABPLG-483]

4.3 Possible Crash when Opening Administration Panel if External QoS Profile Loaded Incorrectly

RTI DDS Toolkit may have crashed when opening the Administration Panel. This occurred if an external QoS profile was loaded incorrectly. This problem has been resolved.

[RTI Issue ID LABPLG-494]

4.4 Update to Description for Error 5048

Error 5048 is reported when two incompatible QoS profiles (e.g., having the same profile name) are loaded. Previously the description for this error was inaccurate. This problem has been resolved.

[RTI Issue ID LABPLG-499]

4.5 Error Deleting Topics

Sometimes a Topic was not deleted even though no DataWriters or DataReaders were using it. It was only deleted when the DomainParticipant was deleted. This problem has been resolved.

[RTI Issue ID LABPLG-503]

4.6 Crash when Connecting Reader Output ref num to Writer Input ref num (and Vice Versa)

A crash may have occurred when connecting a Reader's output ref num to a Writer's input ref num and vice versa. This problem has been resolved.

Note: The name **ref num** has been replaced in this release with **DDS Object Ref.**

[RTI Issue ID LABPLG-506]

4.7 Error 5058 when Reading in Parallel with Reentrant Read SubVI

Error 5058 may have been thrown when two readers were working in parallel. If the error was thrown, that reader would have been stopped. This only happened when we encapsulated the Read CLF node into a subVI and made that subVI reentrant. This problem has been resolved.

[RTI Issue ID LABPLG-526]

4.8   Error Loading RTI DDS Secure Plugins using Standalone Application

An error occurred when using *RTI Secure DDS Plugins* in a standalone application. This problem has been resolved.

[RTI Issue ID LABPLG-526]

5   Previous Releases

This section includes:

- ❏ What's New in 1.5.0 (Section 5.1)
- ❏ What's Fixed in 1.5.0 (Section 5.2)

5.1   What's New in 1.5.0

RTI DDS Toolkit 1.5.0 was an Early Access Release.

5.1.1   Integration of RTI Secure DDS

Now you can use *RTI Secure DDS* from within *RTI DDS Toolkit*. You can use security for user data as well as discovery data. The security communication relies on OpenSSL®. To use security, it must be enabled in the DomainParticipant QoS when you create a reader or a writer.

You can manage your own DomainParticipant Secure QoS Profiles with these VIs:

- ❏ **Create Custom Secure Profile**
- ❏ **Delete Custom Secure Profile**
- ❏ **Get Custom Secure Profiles List**

There is a new Security Panel for working with Custom Secure Profiles on Windows systems. You will find this panel under **Tools**, **RTI DDS Toolkit...**, **RTI DDS Security Setting Panel**.

5.2   What's Fixed in 1.5.0

5.2.1   DomainParticipant may be Created with Incorrect QoS Profile

Multiple objects (writers and readers) may be created from the same DomainParticipant, as long as all objects use the same Domain ID. However in the previous release, only one DomainParticipant could be created per domain ID; even if the new DomainParticipant used a different QoS profile. Any subsequent objects created with the same domain ID always used the DomainParticipant QoS profile of the first object. Suppose you created an object with Domain ID 0 and MyProfile1, then created a second object with Domain ID 0 and MyProfile2. The second object was created using MyProfile1.

This problem has been resolved. Now multiple object (writers and readers) will only use an existing DomainParticipant if it has the same DomainParticipant QoS profile name and Domain ID.

[RTI Issue ID LABPLG-453]

5.2.2   Possible Crash when Releasing Entities

When two or more entities (writers are readers) were running in the same VI, if one entity was released by using the **Release Reader** or **Release Writer** subVI and another entity was released by clicking on the **Abort** button, LabVIEW may have crashed. This problem has been resolved.

[RTI Issue ID LABPLG-454]

5.2.3 LabVIEWLibrary::DefaultProfile was not Default Profile

LabVIEWLibrary::DefaultProfile was not loaded as the default profile. This problem has been resolved.

[RTI Issue ID LABPLG-455]

6 Known Issues

6.1 Reader/Writer Create SubVIs Fail if QoS Settings not Provided

When creating a new Reader or Writer, QoS settings are optional. However, if there are no QoS settings when working on a cRIO-9068 system, you may encounter error 5052 ("XML Configuration File not found").

A workaround is to add an empty string to the **qos_profile** pin.

[RTI Issue ID LABPLG-240]

6.2 Monitoring Library cannot be Used as DomainParticipant's Base Profile when Creating Custom Secure Profile

When creating a DomainParticipant from a Custom Secure Profile, non-secure Monitoring cannot be enabled for that DomainParticipant. If this situation occurs, the toolkit will throw error 5080, which means that the DomainParticipant cannot be created.

[RTI Issue ID LABPLG-474]

7 Additional Documentation

RTI DDS Toolkit uses *RTI Connext DDS* for communication. For details on *RTI Connext DDS* and the Quality of Service (QoS) settings, visit http://community.rti.com/documentation.