

# **RTI Ada Language Support**

**Release Notes**

**Version 7.3.0**



## **Trademarks**

RTI, Real-Time Innovations, Connex, Connex Drive, NDDS, the RTI logo, 1RTI and the phrase, “Your Systems. Working as one.” are registered trademarks, trademarks or service marks of Real-Time Innovations, Inc. All other trademarks belong to their respective owners.

## **Copy and Use Restrictions**

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form (including electronic, mechanical, photocopy, and facsimile) without the prior written permission of Real-Time Innovations, Inc. The software described in this document is furnished solely under and subject to RTI's standard terms and conditions available at <https://www.rti.com/terms> and in accordance with your License Acknowledgement Certificate (LAC) and Maintenance and Support Certificate (MSC), except to the extent otherwise accepted in writing by a corporate officer of RTI.

## **Third-Party Software**

RTI software may contain independent, third-party software or code that are subject to third-party license terms and conditions, including open source license terms and conditions. Copies of applicable third-party licenses and notices are located at [community.rti.com/documentation](https://community.rti.com/documentation). IT IS YOUR RESPONSIBILITY TO ENSURE THAT YOUR USE OF THIRD-PARTY SOFTWARE COMPLIES WITH THE CORRESPONDING THIRD-PARTY LICENSE TERMS AND CONDITIONS.

## **Notices**

### *Deprecations and Removals*

Any deprecations or removals noted in this document serve as notice under the Real-Time Innovations, Inc. Maintenance Policy #4220 and/or any other agreements by and between RTI and customer regarding maintenance and support of RTI's software.

*Deprecated* means that the item is still supported in the release, but will be removed in a future release. *Removed* means that the item is discontinued or no longer supported. By specifying that an item is deprecated in a release, RTI hereby provides customer notice that RTI reserves the right after one year from the date of such release and, with or without further notice, to immediately terminate maintenance (including without limitation, providing updates and upgrades) for the item, and no longer support the item, in a future release.

## **Technical Support**

Real-Time Innovations, Inc.

232 E. Java Drive

Sunnyvale, CA 94089

Phone: (408) 990-7444

Email: [support@rti.com](mailto:support@rti.com)

Website: <https://support.rti.com/>

# Contents

---

<b>1 Release Notes</b> .....	<b>1</b>
<b>2 System Requirements</b>	
2.1 Supported Operating Systems .....	2
2.2 Disk and Memory Usage .....	2
2.3 Networking Support .....	2
<b>3 Compatibility</b>	
3.1 Wire-Protocol Compatibility .....	3
3.2 Code Compatibility (Differences with Other Connex API) .....	3
<b>4 What's New in 7.3.0</b>	
4.1 Ada Source Code Updated to Support GNAT 21.1 and GNAT 23.2 .....	5
4.2 Support for GNAT Pro 18.2 Deprecated .....	5
<b>5 Limitations</b> .....	<b>6</b>
<b>6 Known Issues</b>	
6.1 Reopening IDL Modules not Supported by rtiddsgen for Ada .....	8
6.2 API Reference HTML Documentation for Ada May be Inaccurate Regarding Internal APIs .....	8
6.3 API Reference HTML Documentation for Ada May Use Incorrect Entity Names .....	9

# 1 Release Notes

This document provides information on *RTI® Ada Language Support* and supplements the *RTI Connex® Release Notes*. All requirements, compatibility, and known issues described in the *RTI Connex Core Libraries Release Notes* are also applicable to *RTI Ada Language Support*.

# 2 System Requirements

## 2.1 Supported Operating Systems

See [Supported Platforms, in the RTI Connex Core Libraries Release Notes](#). *Ada Language Support* provides the libraries required to build *Connex* Ada applications for those platforms when using AdaCore GNAT Pro 18.2 (<http://www.adacore.com>).

**Note:** Support for GNAT Pro 18.2 is deprecated, meaning GNAT Pro 18.2 is still supported in this release but will be removed in a future release.

## 2.2 Disk and Memory Usage

Disk usage for the combined host and target installation is approximately 350 MB.

## 2.3 Networking Support

Networking support is the same as described in the *RTI Connex Core Libraries Release Notes*.

## 3 Compatibility

Below is basic compatibility information for this release.

For backward-compatibility information between this and previous releases, see the *Migration Guide* on the RTI Community Portal (<https://community.rti.com/documentation>).

### 3.1 Wire-Protocol Compatibility

*Ada Language Support* communicates over the wire using Real-Time Publish-Subscribe (RTPS) protocol. RTPS 1.0 was introduced in 2001. The currently supported version is [OMG Real-Time Publish-Subscribe \(RTPS\) specification, version 2.5](#), although some features are not supported. Unsupported features currently are FilteredCountFlag in GAP Submessage, HeartbeatFrag Submessage, Checksum, and ALIVE\_FILTERED instance state. RTI plans to maintain interoperability between middleware versions based on RTPS 2.1. For more details, see "Wire Protocol Compatibility" in the *RTI Connex Core Libraries Release Notes*.

*Ada Language Support* is compatible with *Connex* 5.x and higher, and 4.5f, as well as *RTI Data Distribution Service* 4.2 - 4.5, except as noted in the *RTI Connex Core Libraries Release Notes* for 5.3.1 or the *Migration Guide* for 7.3.0.

### 3.2 Code Compatibility (Differences with Other Connex APIs)

Like the *Connex* Core Libraries, *Ada Language Support* uses an API that is an extension of the DCPS layer of the [OMG Data Distribution Service \(DDS\) standard API, version 1.4](#).

*Ada Language Support* supports the DDS Standard APIs as well as some RTI extension APIs.

#### API Differences:

The following features are supported in other languages, but are *not* supported in *Ada Language Support*:

- Dynamic Data
- TypeCode, TypeCodeFactory
- Custom flow controllers
- Custom content filters
- Transport Registration and configuration through the NDDS\_Transport\_Support API
- Request-Reply and RPC API
- TopicQuery
- FlatData™ language binding
- Distributed Logger

The above unsupported features are not part of the OMG DDS specification; they are RTI extensions.



## 4 What's New in 7.3.0

### 4.1 Ada Source Code Updated to Support GNAT 21.1 and GNAT 23.2

Since the last updates to *Ada Language Support* in release 6.1.0 (see the [Ada Language Support Release Notes in 6.1.0](#)), the Ada source code has been updated to support GNAT 21.1 and GNAT 23.2. The Ada source package (`rti_ada_language_support-7.3.0-src.tar.gz`) can now be compiled with both GNAT versions.

**Note:** The `rti_ada_language_support-7.3.0-x64Linux3gcc4.8.2.rtipkg` target package still requires GNAT 18.2.

### 4.2 Support for GNAT Pro 18.2 Deprecated

Support for GNAT Pro 18.2 is deprecated, meaning GNAT Pro 18.2 is still supported in this release but will be removed in a future release.

## 5 Limitations

- Bit fields in the IDL are not supported for Ada.
- The **Hello\_dynamic** example that is available in other languages is not available in Ada.
- When using the **-example** flag in *rtiddsgen* to generate example code for Ada, the generated project file for compiling and the publisher and subscriber source files are placed under the **samples** directory, instead of at the top-level directory. Use the Ada project file under the **samples** directory to compile the example (or use the generated makefile that is located at the top level to compile).
- The code generated by *rtiddsgen* for Ada language is not in pure Ada—it will contain both C and Ada code (Ada code is a wrapper around the C code); therefore a compatible C compiler is needed to compile the generated code.
- Generated code for nested modules in Ada may not compile. *Code Generator* follows the Object Management Group (OMG) IDL-to-Ada specification in order to map modules:
  - Top level modules (i.e., those not enclosed by other modules) shall be mapped to child packages of the subsystem package, if a subsystem is specified, or root library packages otherwise. Modules nested within other modules or within subsystems shall be mapped to child packages of the corresponding package for the enclosing module or subsystem. The name of the generated package shall be mapped from the module name.
  - The generated code produced by following this specification does not compile when referencing elements from a nested module within the top-level module, as shown in the following example:

```
module Outer
{
  module Inner
  {
    struct Structure
    {
      long id;
```

```
};  
};  
  
struct Objects  
{  
    Inner::Structure nest;  
};  
};
```

This failure to compile happens because Ada does not allow a parent package to reference definitions in child packages. [RTI Issue ID CODEGENII-813]

## 6 Known Issues

**Note:** For an updated list of critical known issues, see the Critical Issues List on the RTI Customer Portal at <https://support.rti.com>.

### 6.1 Reopening IDL Modules not Supported by *rtiddsngen* for Ada

Reopening a module in IDL is not supported when using *rtiddsngen* for Ada. For example, the following IDL file is not supported in Ada:

```
module ModuleA {
    struct Struct1 {
        long longValue;
    };
};
.....
module ModuleA {
    struct Struct2 {
        short shortValue;
    };
};
```

[RTI Issue ID CODEGENII-231]

### 6.2 API Reference HTML Documentation for Ada May be Inaccurate Regarding Internal APIs

Due to the way the online documentation is generated in this release, some of the internal APIs that are not intended to be called by users (typically with filenames ending with **Low\_Level.ads** or **impl.ads**, and those APIs that are lacking detailed descriptions) may also appear in the Ada online documentation and should be ignored. When in doubt, refer to the corresponding documentation for another language to determine which APIs are meant to be public.

The parameter names mentioned in the descriptions of some of the APIs may not exactly match the actual parameter names that appear in the Ada **.ads** file. However, there is usually an obvi-

ous one-to-one correspondence between the parameters as described in the descriptions compared to the APIs listed in the Ada **.ads** file.

[RTI Issue ID CORE-6290]

### **6.3 API Reference HTML Documentation for Ada May Use Incorrect Entity Names**

Links in the Ada online documentation may display wrong entity names. For example, for DDS.DomainParticipant, the displayed name may be DomainParticipant.DDS. This only affects the links. This issue is caused by AdaCore's tool for documentation generation. RTI is investigating it with AdaCore.

[RTI Issue ID CORE-6270]