RTI Connext DDS

Installation Guide

Version 6.0.1

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Chapter 1 Installing RTI Connext DDS

RTI® Connext® DDS is delivered as static and dynamic libraries with development tools, examples, and documentation that will help you use the libraries.

Connext DDS distributions are provided in two types of bundles: *hosts* and *targets*.

- A *host* bundle contains non-target-specific files, such as documentation, header files, tools, and infrastructure services executables. The host bundle is provided in a **.run** or **.exe** file that will run an installer.

  Host bundles are named:

    - **rti_connext_dds-<version>-<package_type>-host-<host-platform>.run** on UNIX-based systems.

    - **rti_connext_dds-<version>-<package_type>-host-<host-platform>.exe** on Windows systems.

  The <package_type> can be pro, basic, core, or eval.

  The <host_platform> depends on your development platform, such as x64Win64 for a 64-bit Windows platform.

- A *target* bundle contains libraries and any applications that have target-specific dependencies. A target bundle is an "RTI Package" (***.rtipkg**) file that must be installed on top of your host bundle. .

  Target bundles are named:

    - **rti_connext_dds-<version>-<package_type>-target-<target_architecture>.rtipkg**

  The <target_architecture> depends on your target machine (where you will deploy your completed application). These strings are listed in the *Connext DDS Platform Notes*; examples are x64Win64VS2013 and i86Linux3gcc4.8.2.

Notes:

- You may have more than one target bundle if you are developing for multiple targets.
- If you have an evaluation package type for your host bundle, you may not have a target bundle.

  If you are installing the evaluation package, your installation includes *RTI Security Plugins* and OpenSSL® version 1.1.1d. The installer provides a prebuilt version of OpenSSL 1.1.1d. If you wish to build your own version of OpenSSL 1.1.1d, you can find the source code here: https://www.openssl.org/source/.
- If you are installing a patch, read Chapter 5 Special Backup of RTI Libraries on page 15.

There are two ways to install a *Connext DDS* host bundle:

- using an installer, which will prompt you for information such as where to install, or
- using a script, which allows you to run in "unattended mode" so you will not be prompted for information while it is installing.

Both ways are described below.

Running in Unattended Mode

When running in unattended mode, the installer will use default values for its parameters unless you specify them at the command line (see Table 1.1 Command-Line Options when Installing from a Script).

Table 1.1 Command-Line Options when Installing from a Script

Parameter	Values	Meaning	Default
--mode	win32 gtk xwindows osxqt text [not available on Windows] unattended [all platforms] [not available for Evaluation package]	Should the installer display a graphical or a text-based UI? Should the installer ask for user feedback?	GUI available on your platform
--unattendedmodeui	none [not available on Windows] minimal [not available on Windows] minimalWithDialogs [required on Windows if using --mode unattended]	If you chose --mode unattended, how much graphical feedback should the installer display?	none

Parameter	Values	Meaning	Default
--prefix	directory to install into	The installation directory the product will be placed into. Note that the installer will always place the product in a directory named rti_connext_dds-6.0.1. See Chapter 2 Paths Mentioned in Documentation on page 8	Platform-dependent Windows Example: c:\program files\rti_connext_dds-6.0.1
--install_spreadsheet_addin [Windows only]	true false	Also install RTI Spreadsheet Ad-din?	false
--disable_copy_examples	true false	Should the installer disable the copying of examples into **rti_workspace** during installation (true) or not (false)?	false

Installing on a UNIX-Based System

In these instructions, we assume your host bundle is named **rti_connext_dds-6.0.1-pro-host-i86Linux.run** and your target bundle is named **rti_connext_dds-pro-target-6.0.1-i86Linux3gcc4.8.2.rtipkg**. Your filenames will be different depending on your package type and architecture.

1. Download the host and target(s) bundles to a location of your choice; for example, **/home/<your user name>/Downloads**.

2. Install the host bundle. As described above, you can use an installer or a script:

   - Using the installer:

     Run the host bundle installer (the **.run** file). For example:

     ```
     /home/<your user name>/Downloads/rti_connext_6.0.1-dds-pro-host-i86Linux.run
     ```

     Follow the on-screen prompts. You will be asked if you want to use the default installation directory (**/home/<your user name>**) or specify a different path. We refer to the installation directory as <NDDSHOME>, see Chapter 2 Paths Mentioned in Documentation on page 8.

   - Using a script:

     Run from a command prompt:

     ```
     rti_connext_dds-6.0.1-<package_type>-host-<host_platform>.run
     --mode unattended --prefix <installation path>
     ```

     The **--prefix** option allows you to specify the installation directory; if you omit this, the installer will install into a default location.

For example (enter on one line):

```
rti_connext_dds-6.0.1-pro-host-x64Linux.run
--mode unattended --prefix /home/user/rti_connext_dds-6.0.1
```

Note: You cannot run the installer from a script if you have an Evaluation package.

3. Install the target bundle(s). There are two ways to do this:

    - From *RTI Launcher*:

      Start *RTI Launcher* (**<NDDSHOME>/bin/rtilauncher**), select the **Configuration** tab, and click on **Install RTI Packages**. Add the location of your target file. Click **Install**.

    - From the command line:

      Open a command prompt and change to the **rti_connext_dds-6.0.1/bin** directory. Use **<NDDSHOME>/bin/rtipkginstall** to install the target bundle. For example (enter on one line):

```
rtipkginstall
    /home/<your user name>/Downloads/rti_connext_dds-6.0.1-pro-target-
i86Linux3gcc4.8.2.rtipkg
```

4. Read Chapter 3 License Management on page 10.

After installation:

- From *Launcher*, right-click each icon to access documentation about that component. See the *RTI Launcher User's Manual* (in **<NDDSHOME>/doc/manuals/launcher**).

- See the *RTI Connext DDS Core Libraries Getting Started Guide* (in **<NDDSHOME>/doc/manuals/connext_dds**).

Installing on a Windows System

In these instructions, we assume your host bundle is named **rti_connext_dds-6.0.1-pro-host-x64Win64.exe** and your target bundle is named **rti_connext_dds-6.0.1-pro-target-x64Win64VS2013.r-tipkg**. Your filenames will be different depending on your package type and architecture.

Depending on your version of Windows and where you want to install these files, your user account may or may not require administrator privileges.

1. Download the host and target(s) bundles to a location of your choice; for example, **C:\Users\<your user name>\Downloads**.

2. Install the host bundle. As described above, you can use an installer or a script:

- Using the installer:

  From your file explorer, open (double-click) the host bundle installer (the **.exe** file).

  Follow the on-screen prompts. You will be asked if you want to use the default installation directory (**C:\Program Files**) or specify a different path.

- Using a script:

  Run from a command prompt:

  ```
  rti_connext_dds-<version>-<package_type>-host-<host_platform>.exe
  --mode unattended --unattendedmodeui minimalWithDialogs --prefix <installation
  path>
  ```

  The **--prefix** option allows you to specify the installation directory. If you do not specify a prefix, the installer will install into a default location.

  For example (enter on one line):

  ```
  rti_connext_dds-6.0.1-pro-host-i86Win32.exe --mode unattended
  --unattendedmodeui minimalWithDialogs --prefix c:\program files\rti_connext_dds-
  6.0.1
  ```

  > When running in unattended mode on a Windows system, you must specify **--unattendedmodeui minimalWithDialogs** or the installation will fail.

3. Install the target bundle(s). There are two ways to do this:

   - From *RTI Launcher*:

     Start *RTI Launcher* (**<NDDSHOME>\bin\rtilauncher** or from the Windows **Start** menu), select the **Configuration** tab, and click on **Install RTI Packages**. Add the location of your package file. Click **Install**.

   - From the command line:

     Open a command prompt and change to the **rti_connext_dds-6.0.1\bin** directory. Use the **rtipkginstall** batch file to install the target bundle. For example (enter on one line):

     ```
     rtipkginstall C:\Users\<your user name>\Downloads\rti_connext_dds-6.0.1-pro-target-
     x64Win64VS2013.rtipkg
     ```

4. Read .

After installation:

- From *Launcher*, right-click each icon to access documentation about that component. See the *RTI Launcher User's Manual* (in **<NDDSHOME>\doc\manuals\launcher**).
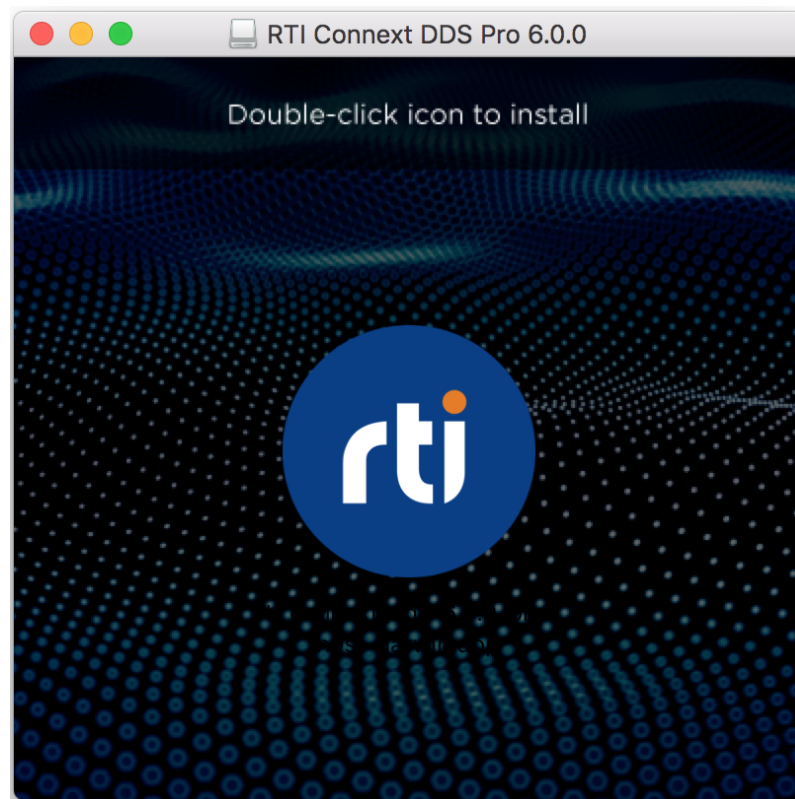
- See the *RTI Connext DDS Core Libraries Getting Started Guide* (in **<NDDSHOME>\doc\manuals\connext_dds**).

Installing on a macOS System

In these instructions, we assume your host bundle is named **rti_connext_dds-6.0.1-pro-host-darwin.dmg** and your target bundle is named **rti_connext_dds-6.0.1-pro-target-x64Darwin12clang4.1.rtipkg**. Your filenames will be different depending on your package type and architecture.

1. Download the host and target(s) bundles to a location of your choice; for example, **/Users/<your user name>/Downloads**.

2. Double-click on the host bundle **.dmg** file. You should see a screen similar to this:

3. Double-click on the file to run the installer application.

4. Follow the on-screen prompts. You will be asked if you want to use the default installation directory (**/Applications/rti_connext_dds-6.0.1** or specify a different path. Note that the installer will always place the product inside a folder named **rti_connext_dds-6.0.1**. We refer to the installation directory as <NDDSHOME>, see Chapter 2 Paths Mentioned in Documentation on page 8.

5. Install the target bundle(s). There are two ways to do this:

- From *RTI Launcher*:

  Start *RTI Launcher* (**<NDDSHOME>/RTI Launcher**), select the Configuration tab, and click on **Install RTI Packages**. Add the location of your target file. Click **Install**.
- From the command line:

  Open a command prompt and change to the **rti_connext_dds-6.0.1/bin** directory. Use **<NDDSHOME>/bin/rtipkginstall** to install the target bundle. For example (enter on one line):

```
rtipkginstall /Users/<your user name>/Downloads/rti_connext_dds-6.0.1-pro-target-
x64Darwin12clang4.1.rtipkg
```

6. Read .

After installation:

- From *Launcher*, right-click each icon to access documentation about that component. See the *RTI Launcher User's Manual* (in **<NDDSHOME>/doc/manuals/launcher**).
- See the *RTI Connext DDS Core Libraries Getting Started Guide* (in **<NDDSHOME>/doc/manuals/connext_dds**).

Chapter 2 Paths Mentioned in Documentation

The documentation refers to:

- **<NDDSHOME>**

  This refers to the installation directory for *RTI® Connext® DDS*. The default installation paths are:
    - macOS® systems:
      /Applications/rti_connext_dds-6.0.1

    - Linux systems, non-*root* user:
      /home/<*your user name*>/rti_connext_dds-6.0.1

    - Linux systems, *root* user:
      /opt/rti_connext_dds-6.0.1

    - Windows® systems, user without Administrator privileges:
      <*your home directory*>\rti_connext_dds-6.0.1

    - Windows systems, user with Administrator privileges:
      C:\Program Files\rti_connext_dds-6.0.1

  You may also see **$NDDSHOME** or **%NDDSHOME%,** which refers to an environment variable set to the installation path.

  Wherever you see **<NDDSHOME>** used in a path, replace it with your installation path.

Note for Windows Users: When using a command prompt to enter a command that includes the path **C:\Program Files** (or any directory name that has a space), enclose the path in quotation marks. For example:

```
"C:\Program Files\rti_connext_dds-6.0.1\bin\rtiddsgen"
```

Or if you have defined the **NDDSHOME** environment variable:

```
"%NDDSHOME%\bin\rtiddsgen"
```

- **<path to examples>**

By default, examples are copied into your home directory the first time you run *RTI Launcher* or any script in **<NDDSHOME>/bin**. This document refers to the location of the copied examples as *<path to examples>*.

Wherever you see *<path to examples>*, replace it with the appropriate path.

Default path to the examples:

- macOS systems: **/Users/<*your user name*>/rti_workspace/6.0.1/examples**
- UNIX-based systems: **/home/<*your user name*>/rti_workspace/6.0.1/examples**
- Windows systems: ***<your Windows documents folder>*\rti_workspace\6.0.1\examples**

  Where 'your Windows documents folder' depends on your version of Windows. For example, on Windows 10, the folder is **C:\Users\<*your user name*>\Documents**.

Note: You can specify a different location for **rti_workspace**. You can also specify that you do not want the examples copied to the workspace. For details, see Chapter 4 Controlling Location for RTI Workspace and Copying of Examples on page 13.

Chapter 3 License Management

Most package types (Professional, Secure, Basic, and Evaluation) require a license file in order to run.

If your *Connext DDS* distribution requires a license file, you will receive one from RTI via email.

If you have more than one license file from RTI, you can concatenate them into one file.

A single license file can be used to run on any architecture and is not node-locked. You are not required to run a license server.

3.1 Installing the License File

Save the license file in any location of your choice; the locations checked by the middleware are listed below.

You can also specify the location of your license file in *RTI Launcher's* **Configuration** tab. Then *Launcher* can copy the license file to the installation directory or to the user workspace.

Each time your *Connext DDS* application starts, it will look for the license file in the following locations until it finds a valid license:

1. In the PropertyQosPolicy of the *DomainParticipant*, there may be a property called **dds.license.license_string**. (Only if you have an evaluation version of *Connext DDS* Professional.) The value for this property can be set to the content of a license file. (This may be necessary if a file system is not supported on your platform.) You can set the property either in source code or in an XML file. An XML file example is shown below:

```
<participant_qos>
    <property>
        <value>
            <element>
                <name>dds.license.license_string</name>
```

```
            <value>contents of license file</value>
          </element>
        </value>
      </property>
</participant_qos>
```

If the content of the license file is in XML, special characters for XML need to be escaped in the license string. Special characters include: quotation marks (") (replace with "), apostrophes (') (replace with **'**), greater-than (>) (replace with **>**), less-than (<) (replace with **<**), and ampersands (&) (replace with **&**).

2. In the PropertyQosPolicy of the *DomainParticipant*, there may be a property called **dds.license.license_file**. (Only if you have an evaluation version of *Connext DDS* Professional.) The value for this property can be set to the location (full path and filename) of a license file. (This may be necessary if a default license location is not feasible and environment variables are not supported.) You can set the property either in source code or in an XML file.

   Example XML to set **dds.license.license_file**:

```
<participant_qos>
    <property>
        <value>
            <element>
                <name>dds.license.license_file</name>
                <value>path to license file</value>
            </element>
        </value>
    </property>
</participant_qos>
```

3. In the location specified in the environment variable **RTI_LICENSE_FILE**, which you may set to point to the full path of the license file, including the filename.

   Note: When you run any of the scripts in the **<NDDSHOME>/bin** directory, this automatically sets the RTI_LICENSE_FILE environment variable (if it isn't already set) prior to calling the executable. It looks for the license file in two places: your **rti_workspace** directory and the installation directory (NDDSHOME). (See Chapter 2 Paths Mentioned in Documentation on page 8.)

4. If you are running any of the tools/services as executables via **NDDSHOME/bin/<executable script>** or through *Launcher*:

   - In your rti_workspace/<version> directory, in a file called **rti_license.dat**.
   - In your rti_workspace directory, in a file called **rti_license.dat**.
   - In <NDDSHOME> (the *Connext DDS* installation directory), in a file called **rti_license.dat**.

5. If you are running your own application linked with *Connext DDS* libraries:

- In your current working directory, in a file called **rti_license.dat**.

- In <NDDSHOME> (the *Connext DDS* installation directory), in a file called **rti_license.dat**.

As *Connext DDS* attempts to locate and read your license file, you may (depending on the terms of the license) see a printed message with details about your license.

If the license file cannot be found or the license has expired, your application may be unable to initialize *Connext DDS*, depending on the terms of the license. If that is the case, your application's call to **DomainParticipantFactory.create_participant()** will return null, preventing communication.

If you have any problems with your license file, please email **support@rti.com**.

3.2 Adding or Removing License Management

If you are using a package type that requires a license file and your license file changes—for example, you receive a new license for a longer term than your original license—you do not need to reinstall *Connext DDS*.

However, if you switch from a license-managed distribution of *Connext DDS* to one of the same version that does not require license management, or vice versa, RTI recommends that you first uninstall your original distribution before installing your new distribution. Doing so will prevent you from inadvertently using a mixture of libraries from multiple installations.

Chapter 4 Controlling Location for RTI Workspace and Copying of Examples

By default, the **rti_workspace** directory is created here:

- macOS systems: **/Users/<*your user name*>/rti_workspace**
- UNIX-based systems: **/home/<*your user name*>/rti_workspace**
- Windows systems: **<*your Windows documents folder*>\rti_workspace**

Here's how to specify a different location for **rti_workspace** and/or disable copying the examples into the workspace.

UNIX-based systems:

- To configure the behavior for *all* users, edit **<NDDSHOME>/resource/scripts/rticommon_config.sh**.

- To configure the behavior for the *current* user (takes precedence), create **$HOME/.rti/rticommon_config.sh** as follows:

```
# Customize RTI Workspace Directory and Copy Behavior
####################################################
# copy_examples=false
# workspace_dir=$HOME/rti_workspace
```

  Uncomment the line(s) that you want to use (remove the #).

Windows systems:

- To configure the behavior for *all* users, edit **<NDDSHOME>\resource\scripts\rticommon_config.sh**.

- To configure the behavior for the *current* user (takes precedence), create **<your home directory>\rti\rticommon_config.bat** as follows:

```
@REM Customize RTI Workspace Directory and Copy Behavior
@REM ###################################################
@REM set copyExamples=false
@REM set "workspaceDir=C:\Users\%USERNAME%\Documents\rti_workspace"
```

Uncomment the line(s) that you want to use (delete "@REM" at the start of the line).

Chapter 5 Special Backup of RTI Libraries

When installing a new RTI package that overwrites the libraries in the **<NDDSHOME>/lib/<architecture>** directory, a backup will be created of all the previous libraries in the **<NDDSHOME>/lib/<architecture>** directory. That backup will be created in **<NDDSHOME>/lib/<architecture>/<current_installed_version>**.

For example, if you install a patch version 6.0.1.1 to the RTI core libraries for i86Win32VS2010, your 6.0.1 libraries will be copied into the following directory before the 6.0.1.1 libraries are installed: **<NDDSHOME>/lib/i86Win32VS2010/6.0.1**.

If you install another patch later, before overwriting the 6.0.1.1 libraries, they will be copied into **<NDDSHOME>/lib/i86Win32VS2010/6.0.1.1**.

Chapter 6 Uninstalling Connext DDS

To uninstall *Connext DDS*, run the uninstaller application.

- On Windows platforms:

  If available from the Start Menu, run the uninstaller by clicking on the **Uninstall RTI Connext DDS <package>** option. Note that this is not available from the menu on Windows 8 systems. Alternatively, use Add/Remove Programs from the Windows Control Panel to uninstall *Connext DDS*, or run the application from the **<NDDSHOME>\uninstall** directory.

- On other platforms:

  Run the uninstaller from the **<NDDSHOME>/uninstall** directory.

Note: The uninstaller does not delete the **rti_workspace** directory. To delete all RTI files, delete the **rti_workspace** directory in your home directory. (See .)