

# **RTI TLS Support**

## **Installation Guide**

**Version 7.1.0**



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# 1 Introduction

*RTI® TLS Support* is an optional product for use with the TCP transport that is included with *RTI Connex®*. If you choose to use *TLS Support*, it must be installed on top of a *Connex* installation with the same version number; it can only be used on architectures that support TCP transport.

To see a simple ‘Hello, World’ example application that uses TCP and TLS, look in the **hello\_world\_tcp** example directory for C. (See [2 Paths Mentioned in Documentation on page 2](#) for the path to the examples.)

## 2 Paths Mentioned in Documentation

The documentation refers to:

- **<NDDSHOME>**

This refers to the installation directory for *RTI® Connex®*. The default installation paths are:

- macOS® systems:  
**/Applications/rti\_connex\_dds-7.1.0**
- Linux systems, non-*root* user:  
**/home/<your user name>/rti\_connex\_dds-7.1.0**
- Linux systems, *root* user:  
**/opt/rti\_connex\_dds-7.1.0**
- Windows® systems, user without Administrator privileges:  
**<your home directory>\rti\_connex\_dds-7.1.0**
- Windows systems, user with Administrator privileges:  
**C:\Program Files\rti\_connex\_dds-7.1.0**

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_connex_dds-7.1.0\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/7.1.0/examples*
- Linux systems: */home/<your user name>/rti\_workspace/7.1.0/examples*
- Windows systems: *<your Windows documents folder>\rti\_workspace\7.1.0\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 *Controlling Location for RTI Workspace and Copying of Examples* in the *RTI Connex Installation Guide*.

## 3 Download Instructions

Download *TLS Support* from the RTI Customer Portal, accessible from <https://support.rti.com/>.

You will need your username and password to log into the portal; these are included in the letter confirming your purchase or evaluation copy. If you do not have this letter, please contact [license@rti.com](mailto:license@rti.com).

*TLS Support* also requires OpenSSL. OpenSSL is available from RTI's Customer Portal, or you may obtain it from another source.

Once you have logged into the portal, select the **Downloads** link, then select the appropriate version of *TLS Support* and OpenSSL for your platform. You can choose OpenSSL 1.1.1t or 3.0.8. Please note that OpenSSL 1.1.1t reaches end-of-life Sept. 11, 2023.

For *TLS Support*, download both:

- rti\_tls\_host\_support-7.1.0-openssl-<1.1.1 or 3.0>-<host platform>.rtipkg
- rti\_tls\_support-7.1.0-openssl-<1.1.1 or 3.0>-<target architecture>.rtipkg

The host package includes the compiler-independent *TLS Support* dependencies (documentation, headers, and the libraries used by RTI tools and services) for the host platform.

The target package contains the *TLS Support* libraries you will link against for your target architecture.

For OpenSSL, download both:

- openssl-<1.1.1t or 3.0.8>-7.1.0-host-<host platform>.rtipkg
- openssl-<1.1.1t or 3.0.8>-7.1.0-target-<target architecture>.rtipkg

The host package includes the OpenSSL distribution files for RTI tools and services.

The target package includes OpenSSL distribution files to link against your application.



Where:

- <host platform> depends on your host (**x64Linux** for Linux systems, **darwin** for macOS systems, **x64Win64** for Windows systems).
- <target architecture> names are described in the *RTI Connex Core Libraries Platform Notes*.

If you need help with the download process, contact **support@rti.com**.

## 4 Installing on Windows Systems

You do not need administrator privileges. All directory locations are meant as examples only; adjust them to suit your site. <NDDSHOME> is described in [2 Paths Mentioned in Documentation on page 2](#).

1. Install the *TLS Support* host and target **.rtipkg** files on top of *Connex*.

There are two ways to install: from *RTI Launcher* or from the command line.

### To install from *RTI Launcher*:

- a. Start *RTI Launcher*:

```
cd <NDDSHOME>  
bin\rtilauncher
```

- b. From the **Configuration** tab, click on **Install RTI Packages**.
- c. Use the + sign to add the **.rtipkg** files that you want to install.
- d. Click **Install**.

### To install from the command line:

```
cd <NDDSHOME>  
bin\rtipkginstall <path to .rtipkg file>
```

The installer will put the TLS libraries in <NDDSHOME>\lib\<architecture>.

2. If not already included, add <NDDSHOME>\lib\<architecture> to your Path environment variable. For example (enter this on one line):

```
set PATH=<NDDSHOME>\lib\<architecture>;%PATH%
```

3. Optionally, install the OpenSSL host package. This is needed if you want to use *TLS Support* with tools such as *RTI Admin Console*. (Use the same process that you used for the **.rtipkg** files above.)

4. Install the OpenSSL target package. (Use the same process that you used for the **.rtipkg** files above.)

The installer will put the OpenSSL target libraries in `<NDDSHOME>\third_party\openssl-<1.1.1t or 3.0.8>\<architecture>`.

5. Add the OpenSSL **lib** directory to your Path environment variable. For example, assuming you want to use the "release" version of the OpenSSL 3.0.8 libraries (enter this on one line):

```
set PATH=  
<NDDSHOME>\third_party\openssl-3.0.8\<architecture>\release\lib;%PATH%
```

6. To verify your OpenSSL installation, enter:

```
openssl version
```

You should see a response similar to:

```
OpenSSL <version>
```

If you see a version that you didn't expect, your PATH may be pointing with a higher precedence to a different version of OpenSSL. You may need to place the version you just installed first or earlier in your PATH.

You may run into this OpenSSL warning:

```
WARNING: can't open config file: [default openssl built-in path]\openssl.cnf
```

To resolve this issue, set the environment variable `OPENSSL_CONF` to the path to the **openssl.cnf** file you are using. For example (enter this all on one line):

```
set OPENSSL_CONF=  
<NDDSHOME>\third_party\openssl-3.0.8\<architecture>\release\ssl\openssl.cnf
```

# 5 Installing on Linux and Other Systems

This chapter applies to all supported operating systems except Windows, which is covered in [4 Installing on Windows Systems on page 6](#).

All directory locations are meant as examples only; adjust them to suit your site. <NDDSHOME> is described in [2 Paths Mentioned in Documentation on page 2](#).

1. Install the *TLS Support* host and target **.rtipkg** files on top of *Connex*.

There are two ways to install: from *RTI Launcher* or from the command line.

## To install from *RTI Launcher*:

- a. Start *RTI Launcher*:

```
cd <NDDSHOME>
./bin/rtilauncher
```

- b. From the **Configuration** tab, click on **Install RTI Packages**.
- c. Use the + sign to add the **.rtipkg** files that you want to install.
- d. Click **Install**.

## To install from the command line:

```
cd <NDDSHOME>
./bin/rtipkginstall <path to .rtipkg file>
```

The installer will put the TLS libraries in <NDDSHOME>/lib/<architecture>.

2. If not already included, add <NDDSHOME>/lib/<architecture> to your library search path (pointed to by the LD\_LIBRARY\_PATH environment variable on Linux systems, DYLD\_LIBRARY\_PATH on macOS systems).

For example (enter this on one line):

```
export LD_LIBRARY_PATH=
<NDDSHOME>/lib/<architecture>:${LD_LIBRARY_PATH}
```

3. Optionally, install the OpenSSL host package. This is needed if you want to use *TLS Support* with tools such as *RTI Admin Console*. (Use the same process that you used for the **.rtipkg** files above.)
4. Install the OpenSSL target package. (Use the same process that you used for the **.rtipkg** files above.)

The installer will put the OpenSSL target libraries in `<NDDSHOME>/third_party/openssl-<1.1.1t or 3.0.8>/<architecture>`.

5. Add the OpenSSL **lib** directory to your library search path. For example, assuming you want to use the "release" version of the OpenSSL 3.0.8 libraries (enter this on one line):

```
export LD_LIBRARY_PATH=  
<NDDSHOME>/third_party/openssl-3.0.8/<architecture>/release/lib:${LD_LIBRARY_PATH}
```

6. To verify your OpenSSL installation, enter:

```
openssl version
```

You should see a response similar to:

```
OpenSSL <version>
```

If you see a version that you didn't expect, your PATH may be pointing with a higher precedence to a different version of OpenSSL. You may need to place the version you just installed first or earlier in your PATH.

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```
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```

To resolve this issue, set the environment variable `OPENSSL_CONF` to the path to the **openssl.cnf** file you are using. For example (enter this all on one line):

```
export OPENSSL_CONF=  
<NDDSHOME>/third_party/openssl-3.0.8/<architecture>/release/ssl/openssl.cnf
```