RTI Data Distribution Service, Professional Edition

Getting Started Guide

Version 4.5

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Welcome to RTI Data Distribution Service, Professional Edition

RTI Data Distribution Service, Professional Edition includes RTI's core DDS libraries; a set of basic utilities for generating code, testing your connectivity, and examining network packets; plus a rich set of tools and run-time services that can record, route, and analyze DDS data.

RTI Data Distribution Service, Professional Edition includes these components:

- **RTI Analyzer** is a system-level debugging tool that can find *RTI Data Distribution Service* objects in a running system, organize them, and display their communication parameters.
- **RTI Data Distribution Service** is network middleware available for a wide variety of processors and operating systems. *RTI Data Distribution Service* is delivered as linkable binary libraries (target libraries) with development tools and documentation that aid in the use of the libraries.
- **RTI Message Service** is publish/subscribe networking middleware that implements the Java Message Service (JMS) specification. *RTI Message Service* is specifically designed for high-performance distributed applications. Its unique peer-to-peer architecture and targeted high-performance and real-time capabilities extend the specification to provide unmatched value.
- **RTI Persistence Service** saves data from *RTI Data Distribution Service* publishing applications to memory or permanent storage, so it can be delivered to subscribing applications that join the system at a later time—even if the publishing application has already terminated. Data can be persisted to files or an external database. *RTI Persistence Service* implements the optional Persistence Profile, defined in the OMG's Data Distribution Service for Real-time Systems specification.

- **RTI Real-Time Connect** provides bidirectional integration between *RTI Data Distribution Service* and a database. The database can be used to log and persist real-time data and messages, to provide a SQL interface to *RTI Data Distribution Service*, and for integration between *RTI Data Distribution Service* and enterprise applications. *RTI Real-Time Connect* uses *RTI Data Distribution Service* and supports three databases: Oracle Database, Oracle TimesTen In-Memory Database, and MySQL.
- **RTI Recorder** can record high-rate data arriving in real time with minimal impact on system behavior. It can reliably record large amounts of real-time data without having prior knowledge of the data-types or topics in the system. *RTI Recorder* is operating system and programming language agnostic, recording data from a heterogeneous networked system running *RTI Data Distribution Service*.
- **RTI Routing Service** is an out-of-the-box solution for integrating disparate and geographically dispersed systems. It scales DDS applications across domains, LANs and WANs, including firewall and NAT traversal. *RTI Routing Service* also supports DDS-to-DDS bridging by allowing you to make transformations in the data along the way. This allows unmodified DDS applications to communicate even if they were developed using incompatible interface definitions. This is often the case when integrating new and legacy applications or independently developed systems.
- **RTI Shapes Demo** is an application that illustrates the powerful real-time messaging and application integration capabilities of *RTI Data Distribution Service*, including data-centric publish/subscribe, real-time Quality of Service (QoS), fault tolerance and automatic discovery. *RTI Shapes Demo* is a turnkey, graphical application and does not require any programming.
- **RTI Spreadsheet Add-in for Microsoft Excel** integrates *RTI Data Distribution Service* with Microsoft® Excel®. By using cell functions, Excel can subscribe to topic data and display it in real-time. You can use this live data for formulas, graphs and other Excel features, just like any other regular cell data. You can also publish data from a spreadsheet. *RTI Spreadsheet Add-in for Microsoft Excel* works with all data types. (Available for Windows systems only.)
- **Wireshark** is a network-level analysis tool that can capture RTPS packets, show their contents, and analyze network usage. (Note: For Windows Systems, WinPcap is also included with this component.)

If you have questions, please email **support@rti.com** or call (408) 990-7444.

1 Available Architectures

RTI Data Distribution Service, Professional Edition is available for the following architectures:

Table 1.1 **Available Architectures**

Operating System	CPU	Compiler or Software Development Kit	RTI Architecture
Red Hat Enterprise Linux 4.0 (2.6 kernel)	Pentium class	gcc 3.4.3	i86Linux2.6gcc3.4.3
	x86_64 and AMD64	gcc 3.4.5	x64Linux2.6gcc3.4.5
Red Hat Enterprise Linux 5.0 (2.6 kernel)	Pentium class	gcc 4.1.1	i86Linux2.6gcc4.1.1
	x86_64 and AMD64	gcc 4.1.1	x64Linux2.6gcc4.1.1
Windows 7	x86	Visual Studio 2010	i86Win32VS2010
	x64		x64Win64VS2010
Windows 2003	x86	Visual Studio 2008 SP1	i86Win32VS2008
	x64	Visual Studio 2005 SP1	x64Win64VS2005
		Visual Studio 2008 SP1	x64Win64VS2008
Windows Server 2008 R2, x64 Edition	x64	Visual Studio 2010	x64Win64VS2010
Windows Vista	x86	Visual Studio 2005 SP1	i86Win32VS2005
		Visual Studio 2008 SP1	i86Win32VS2008
	x64	Visual Studio 2005 SP1	x64Win64VS2005
		Visual Studio 2008 SP1	x64Win64VS2008
Windows XP Professional	x86	Visual Studio 2005 SP1	i86Win32VS2005
		Visual Studio 2008 SP1	i86Win32VS2008
	x64	Visual Studio 2005 SP1	x64Win64VS2005
		Visual Studio 2008 SP1	x64Win64VS2008

2 Installing on a Linux System

RTI Data Distribution Service, Professional Edition is provided in a self-extracting file, one per architecture. You do not need to be *root* to run the self-extracting file.

Throughout this document, we refer to 4.5*x;* the *x* represents the letter of the current release.

The installer will guide you through the installation process and allow you to specify an installation location (the default is your $HOME directory)—the directory **RTI** will be added to the location you specify. This is *not* a GUI-based installer.

1. Run the self-extracting file for your architecture. For example:

   ```
   ./RTI_Professional_Edition-4.5x-RHEL5_32_lic.sh
   ```

   Assuming you have selected **/opt** as your installation directory, you will end up with the following components under **/opt/RTI** (the **RTI** directory is appended to your installation path automatically):

   - **installers_<version>/Wireshark_<version>** — This directory contains a compressed distribution (**.tar.gz**) file for *Wireshark* and the *RTI Wireshark Getting Started Guide*.
   - **RTI_Analyzer_<version>**
   - **ndds.<version> —** This directory includes *RTI Data Distribution Service, RTI Message Service,* and *RTI Persistence Service.*
   - **docs_<version>/RTI_DDS_ProfessionalEdition_GettingStarted.pdf —** This document.
   - **RTI_Real-Time_Connect_<version>**
   - **RTI_Recorder_<version>**
   - **RTI_Routing_Service_<version>**
   - **rti_set_bash_<version>.sh —** You can use this script to set some of the environment variables in bash.
   - **rti_set_tcsh_<version>.sh —** You can use this script to set some of the environment variables in tcsh.
   - **RTI_Shapes_Demo_<version>**

2. *RTI Wireshark* is not automatically installed with the *RTI Professional Edition* self-extracting file because it requires root privilege. The *RTI Wireshark* installer is extracted into the **installers_<version>/Wireshark_<version>** directory. Install *Wireshark* using the instructions in **installers_<version>/Wireshark_<version>/RTI_Wireshark_GettingStarted.pdf**.

3. See Installing the License File (Section 4).

After Installation:

- ❑ See the documentation for each component. Each of the components you installed may have *Release Notes*, a *Getting Started Guide*, and a *User's Manual*.

  While you can skip the installation instructions in each component's *Getting Started Guide* or *User's Manual*, please read the rest of the document. These documents may describe other required steps for setting up the components.

- ❑ *RTI Real-Time Connect* requires one of these databases: Oracle Database, Oracle TimesTen In-Memory Database, or MySQL. See the *RTI Real-Time Connect Release Notes* for details on supported database versions.

- ❑ To build and run your first *RTI Data Distribution Service*-based application, see Chapter 3 in the *RTI Data Distribution Service Getting Started Guide*.

3 Installing on a Windows System

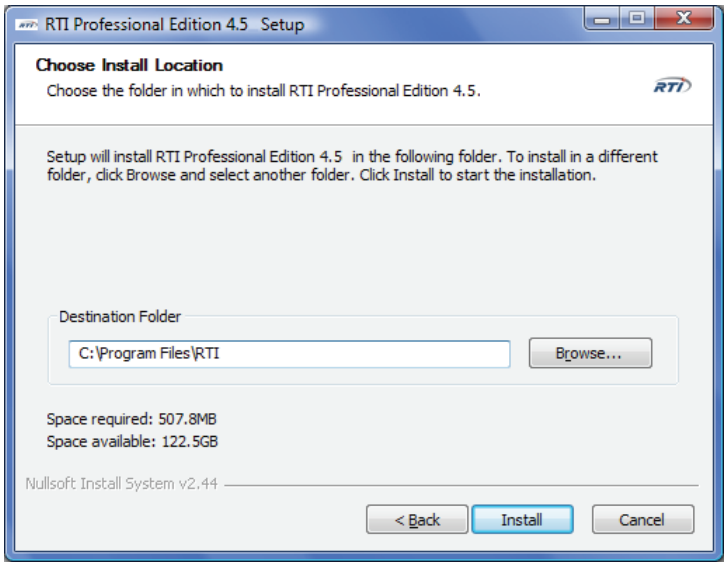
RTI Data Distribution Service, Professional Edition is provided as an installer, one for 32-bit Windows architectures and another for 64-bit Windows architectures. You do not need to have administrator privilege to run the installer.

If you run the installer with administrator privilege, *RTI Professional Edition* will be installed for all users on the same machine. The *RTI Real-Time Connect* daemons will be installed as Windows services in manual mode.

If you run the installer without administrator privilege, *RTI Professional Edition* will be installed for the current user only. The *RTI Real-Time Connect* daemons will be installed, but not as Windows services; they will have to be run from the command line.

Note: If you need to install both the 32- and 64-bit versions on the same machine, see Section 3.1 before continuing with the installation instructions below.

1. Open the **.exe** file to run the installer, which will guide you through the installation process and allow you to select an installation directory. The default installation directory is **C:\Program Files\RTI** if you have administrator privilege, or **C:\Documents and Settings\<user>\My Documents\RTI** if you do not have administrator privilege.



You will end up with the following components in your installation directory:

- **installers <version>\RTI Spreadsheet Add-in for Microsoft Excel <version>** — This directory contains the installer for *RTI Spreadsheet Add-in for Microsoft Excel* and its *Getting Started Guide*.
- **installers <version>\Wireshark <version>** — This directory contains the installer for *Wireshark* and its *Getting Started Guide*.
- **ndds.<version>** — **This directory includes *RTI Data Distribution Service*, *RTI Message Service*, and *RTI Persistence Service*.**
- **RTI Analyzer <version>**
- **docs <version>\RTI_DDS_ProfessionalEdition_GettingStarted.pdf** — This document.
- **RTI Real-Time Connect <version>**
- **RTI Recorder <version>**
- **RTI_Routing_Service_<version>**
- **RTI Shapes Demo <version>**
- **rti_set_env_<version>.bat** — You can use this batch file to set some of the environment variables.
- **uninstall_RTI_Professional_Edition_<version>.exe**

2. *RTI Spreadsheet Add-in for Microsoft Excel* is not automatically installed by the *RTI Professional Edition* installer because it requires administrator privilege. The *RTI Spreadsheet Add-in* installer is extracted into the **installers <version>\RTI Spreadsheet Add-in for Microsoft Excel <version>** directory. Install the add-in using the instructions in **installers <version>\RTI Spreadsheet Add-in for Microsoft Excel <version>\RTI_Spreadsheet_Addin_GettingStarted.pdf**.
3. *Wireshark* is not automatically installed by the *RTI Professional Edition* installer because it requires administrator privilege. The *RTI Wireshark* installer is extracted into the **installers <version>\Wireshark <version>** directory. Install Wireshark using the instructions in **installers <version>\Wireshark <version>\RTI_Wireshark_GettingStarted.pdf**.
4. See Installing the License File (Section 4).

After Installation:

- ❏ See the documentation for each component. Each of the components may have *Release Notes*, a *Getting Started Guide*, and a *User's Manual*. They can all be accessed through the **Start** menu under **RTI/<component name>**.

  While you can skip the installation instructions in each component's *Getting Started Guide* or *User's Manual*, please read the rest of the document. These documents may describe other required steps for setting up the components, such as license-file installation.
- ❏ *RTI Real-Time Connect* requires one of these databases: Oracle Database, Oracle TimesTen In-Memory Database, or MySQL. See the *RTI Real-Time Connect Release Notes* for details on supported database versions.
- ❏ The installation of *RTI Real-Time Connect* adds ***<RTI Real-Time Connect install dir>*/lib/*<architecture>*** to your System Path environment variable if you install as administrator or to your User Path environment variable if you install as non-administrator.
- ❏ To build and run your first *RTI Data Distribution Service*-based application, see Chapter 3 in the *RTI Data Distribution Service Getting Started Guide*.

3.1 Installing 32-bit and 64-bit Packages on the Same Machine

This section describes a special situation not applicable to most users.

If you need to install both the 32-bit and 64-bit packages on the same machine (for example, if you need 32-bit *and* 64-bit libraries on the same machine for cross compilation), we recommend installing both packages under the same directory.

If you install both packages on a 32-bit machine, some 64-bit products will not be installed because they cannot be run on a 32-bit machine (specifically, *RTI Real-Time Connect*, *RTI Routing Service*, and *RTI Persistence Service* will not be installed).

If you install both packages on a 64-bit machine, the last installation of some products will overwrite the previous installation.

4 Installing the License File

Depending on your *RTI Professional Edition* distribution, you may or may not require a license to run the components in the edition. If you need a license file, you will receive one via email after you download the software.

If a license is required, you can put the common license file in either of the following locations; this will allow all the components to use the same license file:

1. The file 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 (for example, **C:\RTI\my_rti_license.dat**).
2. The file **rti_license.dat** in the directory specified by the environment variable NDDSHOME (assuming you have set NDDSHOME to be **<installation dir>/ndds.<version>** after installation)

There are additional license locations that will work for each individual component. Refer to the individual component's *Getting Started Guide* for details.

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

5 Uninstalling RTI Professional Edition

On a Linux System:

No uninstaller is provided for *RTI Professional Edition* on Linux systems. Simply remove the directories that you want to uninstall.

To remove the *entire* contents of the installation directory, enter the following (if you changed any files that you want to save, copy them to a new location first):

```
rm -rf <installation directory>
```

On a Windows System:

The *RTI Professional Edition* uninstaller will remove *all* the components that were previously installed by the *RTI Professional Edition* installer. It will remove both 32-bit and 64-bit installations, as well as all files that you added to any of the component directories.

Run the uninstaller by selecting **Start, RTI, Uninstall RTI Professional Edition 4.5*x*** or **Start**, **Control Panel**, **Add or Remove Programs**, **RTI Professional Edition 4.5*x*** (where *x* represents the letter of the current release).

This will not uninstall *Wireshark* or *RTI Spreadsheet Add-in for Microsoft Excel*, since they were not installed by the *RTI Professional Edition* installer. To uninstall these two components, see the instructions in their individual *Getting Started Guides*.