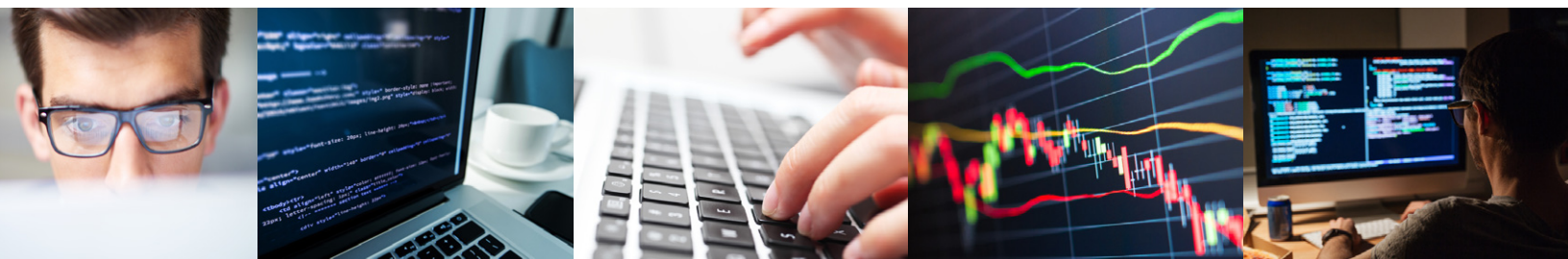


RTI Connex Tools



Accelerating the Development of Distributed Systems



RTI Connex[®] Tools provide deep visibility into running systems, help troubleshoot application connectivity, solve complex data integration problems and speed time to market. Connex Tools are critical for Industrial Internet of Things developers whether they are just starting out with DDS or have been building DDS applications for a while. Connex Tools ease the entire development lifecycle - from design to production.

Highlights:

Powerful tools for developing deep insights into the performance, health and resource utilization of IIoT systems

Multiple views of distributed data for debugging, monitoring, analytics and administration

Quick access to install, configure and run RTI Connex DDS services

Data logging with real-time notifications as error or warning conditions occur

Record and replay DDS data for algorithm development, regression testing and post-mission analysis

Integration with Microsoft Excel for rapid understanding of real-time DDS data

Wireshark plug-in for viewing and analyzing packets at the wire level for online troubleshooting or offline analysis

Fun and powerful Shapes demo to quickly learn about Connex DDS

Simple command-line utilities for checking connectivity and data activities

Powerful Tools for Entire Development Process

Development and troubleshooting

Diagnosing a connectivity issue is challenging, especially during development when most debugging mechanisms are primitive. Tools that provide insight into a distributed system can help analyze the root cause, find the right solution and shorten product time to market.

System monitoring and administration

Maintaining the health of application connectivity is critical in developing IIoT systems. Insightful tools that provide minimally-intrusive visibility into running systems will enable developers to resolve operational problems, fine tune system performance and take preventative actions.

Functional, systems and performance testing

Tools that provide a variety of ways to simulate error conditions significantly improve code quality and reduce the effort for both R&D and QA teams.

RTI Tools included in Connex DDS Professional

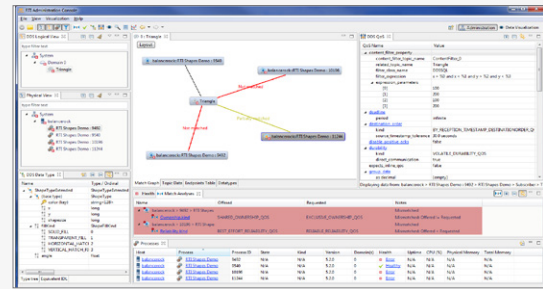
Launcher: Start Here

Launcher is a “single pane of glass” view for insight into the entire Connex DDS environment. It keeps tabs on all Connex Tools. An intuitive Launcher interface helps effortlessly add new components and target platforms to the current Connex DDS environment, see what is already installed, find documentation and web resources, create new source-code projects and run all the Connex tools and command-line utilities.



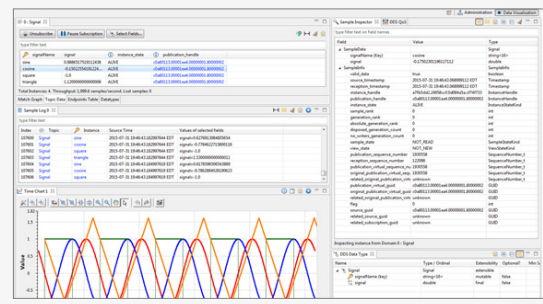
Administration Console: Take Control

Administration Console is an essential tool for troubleshooting and monitoring all Connex DDS infrastructure services as well as visualizing data directly from your system. The Administration Console minimizes troubleshooting time and effort in all stages of application development by proactively analyzing system configuration and log messages. Problems get highlighted, making them easy to find and address.



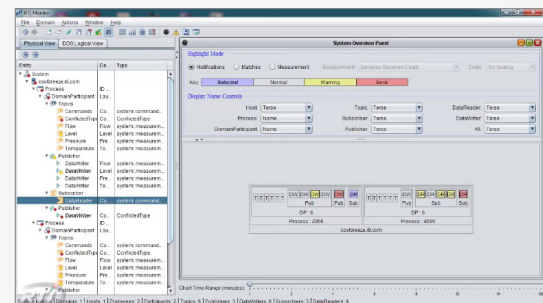
The Administration Console provides multiple views into your system, allowing developers to:

- Inspect and visualize instances and samples
- Show samples as graphs or tables
- Identify QoS mismatches (match graphs)
- Find data type mismatches
- Discover and inspect processes, topics and data types
- And much more



Monitor: Troubleshoot Like a Pro

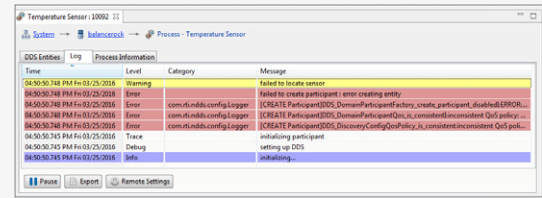
Monitor helps troubleshoot DDS-enabled applications throughout the entire process of integration and testing. It also provides continuous visibility into deployed systems in production through real-time graphical views of the entire ecosystem of applications connected by Connex DDS. Monitor aids in diagnosing unusual behavior patterns and reduces risks associated with connectivity issues and network usage.



Monitor is critical when it comes to performance optimization. RTI provides an instrumentation package in addition to the Connex DDS libraries. The package can produce a wealth of real-time performance data from the running applications and publish this data to the Monitor. The instrumentation has minimal performance overhead for applications.

Distributed Logger: Receive Real-Time Warnings

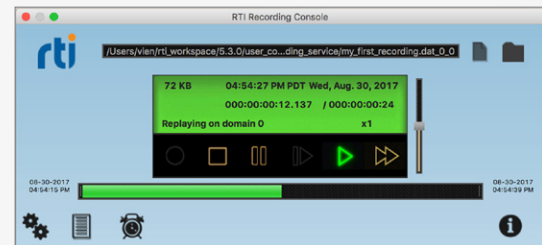
Distributed Logger delivers real-time notifications when error or warning conditions occur anywhere in the DDS environment. It enables applications to log messages using existing logging infrastructure and to publish them to Connex DDS. It also publishes Connex DDS log messages to the same topics. Warnings and errors are correlated from Connex DDS with log messages from applications, greatly aiding troubleshooting. All the log messages can be centrally collected and saved for later analysis and troubleshooting. Both Monitor and Admin Console can be used to see and analyze the messages.



Time	Level	Category	Message
04:50:14Z PM Fri 07/25/2016	Warning		failed to locate sensor
04:50:14Z PM Fri 07/25/2016	Error	com.rti.nds.config.Logger	failed to create participant : error creating entity
04:50:14Z PM Fri 07/25/2016	Error	com.rti.nds.config.Logger	ICREATE ParticipantDDS_DomainParticipantFntory_create_participant_distributedDISCOVER...
04:50:14Z PM Fri 07/25/2016	Error	com.rti.nds.config.Logger	ICREATE ParticipantDDS_DomainParticipantDiscoveryConfigPolicy_is_consistent_inconsistent QoS poli...
04:50:14Z PM Fri 07/25/2016	Trace		initializing participant
04:50:14Z PM Fri 07/25/2016	Debug		setting up DDS
04:50:14Z PM Fri 07/25/2016	Info		initializing...

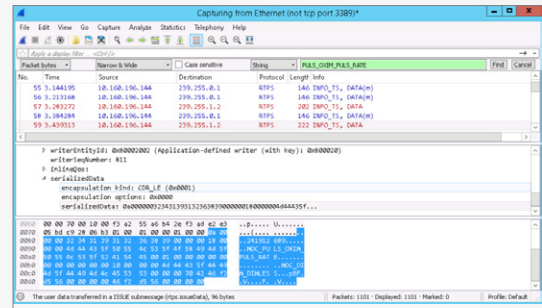
Recording Console: Capture Data

Recording Console is a simple interface for using the RTI Record and Replay Services. This tool significantly reduces Recording Service configuration time and complexity, and does not require any programming. The Recording Console makes it easy to use the Recording Service for testing algorithms and other processing logic against pre-recorded test data, conducting regression testing from 'golden' data inputs, or recording live data from the field for post-mission analysis.



Wireshark: Understand Network Packets

Wireshark is a purpose-built network protocol analyzer that looks at all the network packets and captures the ones of interest. RTI provides special plugins for decoding DDS messages and examining their content. The display shows packets in real time as they arrive. Wireshark is invaluable for learning DDS as well as a go-to tool for deep packet inspection and network connectivity troubleshooting. It is free and available for download from the RTI Community Portal (<https://community.rti.com/downloads>).



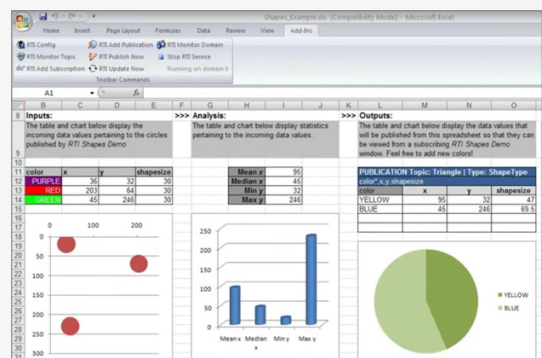
No.	Time	Source	Destination	Protocol	Length	Info
55	1.244195	10.140.196.144	239.255.0.1	RTPS	144	INFO_T5, DATA(0)
56	1.211168	10.140.196.144	239.255.0.1	RTPS	144	INFO_T5, DATA(0)
57	1.283772	10.140.196.144	239.255.1.1	RTPS	200	INFO_T5, DATA(0)
58	1.384284	10.140.196.144	239.255.0.1	RTPS	144	INFO_T5, DATA(0)
59	1.439313	10.140.196.144	239.255.1.1	RTPS	222	INFO_T5, DATA(0)

While the standard ping utility can confirm basic reachability between machines, it cannot check if the ports needed for DDS discovery are open. RTI Ping (rtiddsping) utility does exactly that! It can find out in seconds if firewall settings on the network are preventing DDS discovery traffic.

Add-in for Microsoft Excel: Teach Spreadsheets New Tricks

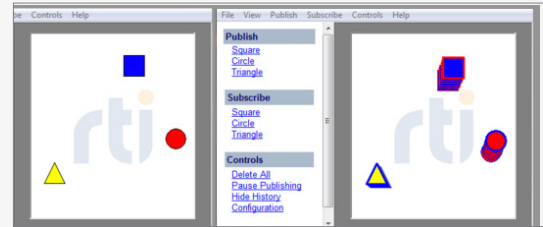
Turn spreadsheets into powerful analytic and visualization capability for IIoT systems. RTI Add-in for Microsoft Excel provides turnkey, bi-directional integration between Connex DDS and Microsoft Excel. It displays IIoT data in spreadsheets as cells; formulas and charts come to life with real-time data streams.

The integration of Connex DDS with Excel is simple to configure and use, with no need for external servers or gateways. The add-in automatically discovers available data streams and schemas. Spreadsheets simply participate in the DDS "conversation" with other applications as data publishers and data subscribers. Wizards help easily create ad-hoc publications and subscriptions using an intuitive point-and-click interface.



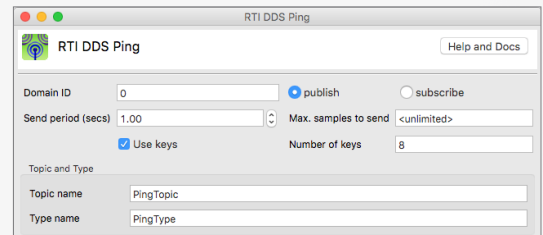
Shapes: Learn DDS Fast

Development teams come up to speed quickly on DDS fundamentals with Shapes. The Shapes Demo is a powerful learning tool for understanding DDS concepts, such as publish-subscribe messaging, data centricity and Quality of Service (QoS). Shapes is a visually appealing, game-like application that allows you to experiment by modeling the desired behavior without coding. It is suitable for users of any level and does not require programming skills or prior DDS knowledge. It is free and available for download from the RTI Community Portal (<https://community.rti.com/downloads>).



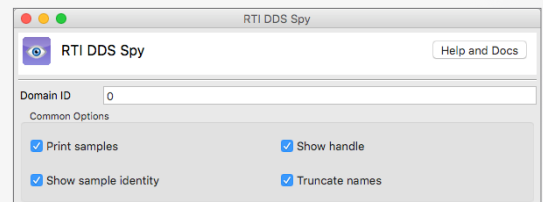
DDS Ping: Reach Out

DDS Ping can help discover quickly if firewall settings on the network are preventing DDS discovery traffic. While the standard ping utility can confirm basic reachability between machines, it cannot check if the ports needed for DDS discovery are open. DDS Ping (rtiddsping) utility does exactly that.



DDS Spy: Take a Peek

DDS Spy enables inspection of data that applications are publishing. It is a command-line utility that can subscribe to select DDS topics and display data samples it receives to the terminal.



About RTI

Real-Time Innovations (RTI) is the Industrial Internet of Things (IIoT) connectivity company. The RTI Connex[®] databus is a software framework that shares information in real time, making applications work together as one, integrated system. It connects across field, fog and cloud. Its reliability, security, performance and scalability are proven in the most demanding industrial systems. Deployed systems include medical devices and imaging; wind, hydro and solar power; autonomous planes, trains and cars; traffic control; Oil and Gas; robotics, ships and defense.

RTI lives at the intersection of functional artificial intelligence and pervasive networkingSM.

RTI is the largest vendor of products based on the Object Management Group (OMG) Data Distribution Service[™] (DDS) standard. RTI is privately held and headquartered in Sunnyvale, Calif.



Your systems. Working as one.

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