RTI Connext DDS Micro
FIRST CONNECTIVITY SOFTWARE DESIGNED FOR
ARCHITECTING RESOURCE-CONSTRAINED IIoT SYSTEMS

HIGHLIGHTS

- Supports resource-constrained devices
- User-configurable feature set through build options
- Scalability from embedded 16-bit microcontrollers to multi-core 64-bit CPUs
- Bundled source code
  - Ability to run on Linux (x86), Windows, FreeRTOS (ARM), VxWorks (PowerPC) and devices without OS (ARM)
- Supports the OMG® DDS Security™ specification and is inter-operable with other implementations of DDS Security

OVERVIEW

Embedded systems and devices are in cars, production-line environments and medical equipment - and they increasingly connect to a network or even the Internet. With the emergent IIoT, system developers are faced with the challenge of distributing the increasing variety and volume of data produced by these systems and devices. It is critical that the data can be acted upon in real-time for enhanced automation, analytics and business intelligence.

Connext DDS Micro provides a small-footprint modular messaging solution for resource-limited devices that have minimal memory, flash or CPU power, or even no operating system at all.

By abstracting out low-level networking and communication details and providing a flexible integration framework, Connext DDS Micro minimizes the amount of device or application specific code that needs to be created.

Built on the Connext databus - a data-centric framework for distributing and managing real-time data in the IIoT - Connext DDS Micro provides a high-level and standards-compliant alternative to in-house development. It significantly reduces the development costs as well as system communications risks.

COMPREHENSIVE MESSAGING SOLUTION

Peer-to-peer communication
Connext DDS Micro uses an innovative, completely decentralized architecture. Applications directly exchange data in a true peer-to-peer manner - no servers, message brokers or daemon processes act as bottlenecks or single points of failure. As a result, Connext DDS Micro delivers the consistent low-latency, high throughput and scalability required for big data in motion.

Plug-and-play communication
Devices and applications are automatically discovered and connected at run-time. No system administration or directory service is required, allowing use in autonomous, dynamic and ad hoc intelligent systems.

Real-time Quality of Service (QoS)
Applications have comprehensive control over and visibility into real-time behavior, including timing, deadlines, resource
utilization and system state. QoS can be specified per-topic and per-subscriber.

**Optimized publish/subscribe**
Data can be reliably multicast to multiple applications and devices for extremely efficient streaming data distribution. With multicast, messages can be routed and filtered by the network switch instead of by the middleware or application software.

**Wire efficiency**
The Real-Time Publish-Subscribe (RTPS) protocol is extremely wire efficient. Data is sent in a compact binary representation. Most metadata is only exchanged once, at discovery time.

**OPTIMIZED FOR SMALL-FOOTPRINT APPLICATIONS**

**Low memory requirement**
Connext DDS Micro is a library that links with your application. The library size is optimized for small footprint applications and memory allocation is kept to a minimum.

**Highly portable**
Bundled source code enables developers to port Connext DDS Micro to new operating systems, compilers or processor architectures. It has no built-in dependency on operating system services. Applications can be implemented on platforms with minimal operating system capabilities or no operating system at all. Processor support ranges from 16-bit microcontrollers with 32-bit integer support to multicore Intel and PowerPC CPUs. Leading enterprise operating systems, including Linux and Windows, are supported as well to ease application development and testing.

**Modular and user-configurable architecture**
A small kernel provides the baseline capabilities for publish/subscribe messaging. By rebuilding the kernel from source code, additional features such as asynchronous notification, reliable communication and filtering can be compiled in, allowing application-specific trade offs between available features and footprint. A modular user-configurable architecture enables developers to trade off available features and footprint.

**COMPLEMENTARY PRODUCTS**
Connext DDS Micro is fully interoperable with Connext DDS Secure, the trusted connectivity framework for developing and integrating secure Industrial IoT systems, from edge to cloud.

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**ABOUT RTI**
Real-Time Innovations (RTI) is the largest software framework provider for smart machines and real-world systems. The company’s RTI Connext® product enables intelligent architecture by sharing information in real time, making large applications work together as one.

With over 1,500 deployments, RTI software runs the largest power plants in North America, connects perception to control in vehicles, coordinates combat management on US Navy ships, drives a new generation of medical robotics, controls hyperloop and flying cars, and provides 24/7 medical intelligence for hospital patients and emergency victims.

RTI is the best in the world at connecting intelligent, distributed systems. These systems improve medical care, make our roads safer, improve energy use, and protect our freedom.

RTI is the leading vendor of products compliant with the Object Management Group® (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California with regional headquarters in Spain and Singapore.