

RTI Connexx Messaging



Fast and Scalable Communication for Real-Time Operational Systems



Are your applications pushing the boundaries on performance and scalability? Connexx Messaging is a universal communications backbone for operational and enterprise applications. It satisfies demanding real-time and mission-critical requirements that are well beyond the reach of traditional enterprise messaging implementations. Connexx Messaging has been proven in hundreds of unique applications with stringent performance and scalability requirements, in areas such as aerospace & defense, manufacturing, control systems, energy and automotive.

Highlights:

Ultra low-latency and high throughput

Scalable to millions of addressable data points, thousands of applications and nodes

Completely decentralized and easy-to-embed architecture with no message brokers or daemon processes

Extensive Quality of Service control, including filtering by time and content

Standards compliant: DDS and JMS programming interfaces, RTPS wire interoperability protocol

Rich set of productivity tools and runtime services

Support for many communication patterns, including publish/subscribe and request/reply and guaranteed delivery

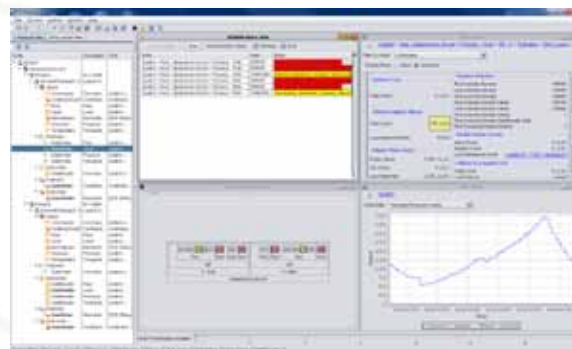
Adapters for integration with existing applications and IT systems

Proven in over 350,000 deployed CPUs, 500 unique product designs and 350 research and university projects

The world has seen an explosion in the prevalence of *operational systems* — industrial control systems, smart meters, sensor networks, unmanned vehicles, medical equipment and more. Developers are faced with a daunting challenge to integrate these increasingly sophisticated systems with one another, often into systems-of-systems, and with the wider enterprise.

Connexx Messaging provides a versatile and highly scalable messaging platform for developing operational systems. Connexx Messaging flexibility reduces development, integration and testing costs and enables rapid implementation of new system requirements.

Additionally, Connexx Messaging includes a rich tool suite to accelerate debugging, simplify testing and provide visibility into running systems.



RTI Monitor, included in the Connexx Messaging tool suite, provides unparalleled visibility into system performance and health.

Comprehensive Communication Platform

Broad Interface Support

Embedded DDS and JMS programming interfaces

Included libraries comply with the DDS and Java Message Service (JMS) standards. Applications that use RTI's libraries can communicate peer-to-peer for the highest possible performance.

RTPS interoperability

Native support for the Real-Time Publish-Subscribe (RTPS) wire protocol provides direct interoperability with other RTPS compliant applications and devices. No bridge is required.

Rich Run-Time Tools and Services

RTI Connexx Messaging includes a rich set of tools to accelerate debugging and testing while easing management of deployed systems.

Analyzer

Accelerates integration and debugging by providing visibility into a running system, including applications, QoS and interface definitions.

Monitor

Accelerates testing and optimization while easing management of deployed systems. Provides comprehensive insight into real-time performance and system health. Application logging is provided to allow a single location for viewing status from all your networked systems.

Spreadsheet Add-In

Allows use of Microsoft Excel for real-time data visualization, analysis and injection.

Recording Service

Logs high speed, real-time data for future analysis. Replays recorded data for testing and simulation.

Persistence Service

Persists real-time data in-memory or to disk, making it available to late-joining subscribers even if the original data source is no longer accessible.

Wireshark Integration

Captures and displays Connexx DDS discovery metadata and user data, aiding in the diagnosis of network-level connection and timing issues.

Mix and Match Design Patterns

Connexx Messaging supports a rich set of communication patterns to enhance system robustness and ease development. These include publish/subscribe, request/reply, command/response or a hybrid of patterns for unique customization.

Optimized for Real-Time and Embedded Systems

Peer-to-peer communication

An innovative, completely decentralized architecture delivers low-latency, high throughput and virtually unlimited scalability. Applications directly exchange data in a true peer-to-peer manner. There are no servers, message brokers or daemon processes acting as bottlenecks or single points of failure.

Inherently secure architecture

Because applications directly communicate, security policies can be enforced by the operating system (OS) – such as Mandatory Access Control (MAC) or portioned OS. Secure transports are also supported for authentication and encryption.

Plug-and-play communication

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 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 subscribers for extremely efficient streaming data distribution. Messages are routed and filtered by the switch, not by software.

Integrated data cache

A built-in data cache frees developers from having to write complex data structures and search algorithms. SQL-like queries provide fast and flexible data access.

Transport flexibility

Applications are independent of the underlying transport and protocol. TCP and IP are not required. RTI's reliability protocol supports Disconnected, Intermittent and Low-bandwidth (DIL) networks such as radio and satellite. Additional TLS/SSL and DTLS encryption supported transports can be plugged in for easy use while protecting your data.

Wire efficiency

The RTPS protocol is extremely wire efficient. Data is sent in a compact binary representation. Most metadata is only exchanged once, at discovery time.

High-performance architecture

Zero-copy interfaces and shared memory communication support High Performance Computing (HPC). Core libraries are written in C for maximum performance and efficiency. Non-Java applications do not require a Java Virtual Machine (JVM) or application server.

About RTI

RTI is the world leader in delivering fast, scalable, communications software that address the challenges of building and integrating real-time operational systems. RTI Connexx solutions meet the needs of enterprise-wide integration — from the operational edge to the enterprise data center. The RTI standards-based software infrastructure improves the efficiency of operational systems while facilitating better decisions, actions and outcomes for the business enterprise.

For over ten years, RTI has delivered industry-leading products and solutions for customers in markets ranging from Aerospace & Defense, Process Automation, Financial Services, Energy, Automotive, Health Sciences and Transportation Management.

Founded in 1991, RTI is privately held and headquartered in Sunnyvale, California.



Your systems. Working as one.

CORPORATE HEADQUARTERS
232 E. Java Drive
Sunnyvale, CA 94089
Tel: +1 (408) 990-7400
Fax: +1 (408) 990-7402
info@rti.com
www.rti.com