

DATASHEET

RTI Connext DDS Secure

FIRST CONNECTIVITY SOFTWARE DESIGNED FOR ARCHITECTING AND SECURING IIOT SYSTEMS OF SYSTEMS

HIGHLIGHTS

Fine-grain security offers flexibility of protecting different parts of the RTPS message

Provides authentication, authorization, confidentiality and integrity

Protects discovery information, metadata and data

Defends against unauthorized access, tampering and replay

Operates without centralized servers for high performance, scalability and availability

Fully compliant with the OMG® DDS Security Specification

SECURING THE INDUSTRIAL INTERNET

Securing IIoT systems – such as those in autonomous vehicles, medical, energy, transportation and defense industries – requires careful architecting of the entire IIoT system from edge to cloud. This includes considerations for integrating diverse technology components from different project teams or third-party suppliers. However, now a connectivity framework that promotes interoperability between devices is available. One option is for OEMs to write and maintain the integration code to connect these complex devices.

Security must also be balanced with performance. Intelligent systems must perform reliably with the added processing requirements for security functions such as encrypting and signing data.

The Connext Databus is a data-centric framework for distributing and managing real-time data in the Industrial IoT. It allows applications and devices to work together as one, integrated system. As a software databus with a security framework, Connext DDS Secure takes a data-centric approach to securing data including:

RTI Connext® DDS Secure is a connectivity framework that enables Industrial Internet of Things (IIoT) system architects to build secure and scalable systems of systems. Built on the Connext Databus, and fully compliant with the OMG® DDS Security Specification, Connext DDS Secure supports fine-grained security, providing the flexibility to implement capabilities required by their systems, such as authentication, encryption and access control without compromising performance.

- Interoperability between DDS Security applications based on the system's data model.
- Optimized security and performance by authenticating and encrypting only sensitive data.
- Automatic discovery of each participant for peer-to-peer communications.

Connext DDS Secure is backed by RTI's unparalleled expertise in architecting, developing and deploying IIoT systems.

CAPABILITIES DELIVERED WITH BUILT-IN SECURITY PLUGINS

Authentication

- X.509 Public Key Infrastructure (PKI) with a pre-configured shared Certificate Authority (CA)
- RSA or Elliptic Curve DSA (ECDSA) for authentication
- Diffie Hellman (DH) or ECDH for shared secret

Access Control

- Configured by domain using a shared Governance file signed by shared CA
- Control over ability to join DDS Domains and Partitions and reading or writing topics
- Control on individual objects and Quality of Service (QoS) via plugins

Cryptography

- AES128-GCM and AES256-GCM for encryption
- AES128-GMAC and AES256-GMAC for authentication and integrity
- Protected Key Distribution

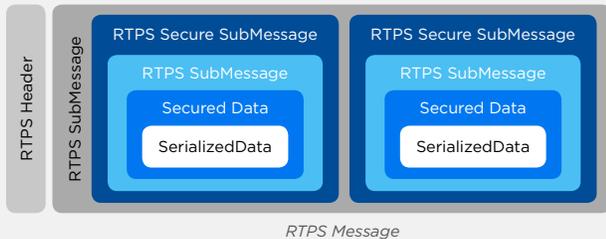
Logging

- Log security events to a file or distribute securely over DDS

Fine-grained security

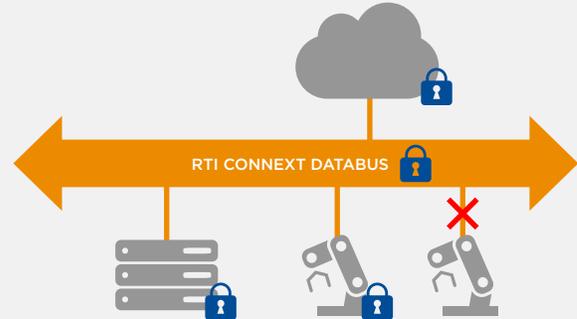
Choose between non-secured, signed and encrypted topics to meet your performance needs. Not only can select topics be protected, but they can be protected at varying levels of granularity to provide further optimization. Fine-grained security allows architects to:

- Sign/encrypt the entire RTPS message
- Sign/encrypt select RTPS sub messages
- Sign/encrypt the serialized user data



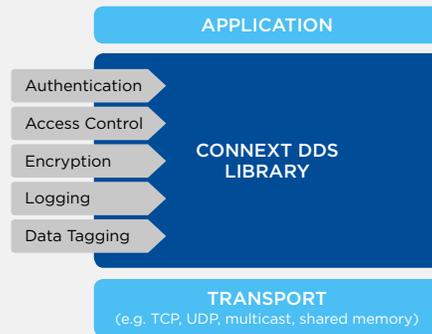
Security over multicast

Security is implemented above the transport layer. Therefore, any Connext DDS transport can be used securely, including UDP, TCP and shared memory. Support for UDP multicast (both reliable and best effort) enables efficient data distribution to multiple authenticated subscribers to the same data.



Pluggable and customizable

Minimal-to-no changes are required for existing DDS applications when using built-in plugins. The plugins only need to be configured via XML to enable security. An optional SDK is available for custom plugins, crypto modules or support for custom hardware such as crypto accelerators or TPMs.



Built-in plugins accelerate DDS application development

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.

Download a free 30-day trial of the latest, fully-functional Connext DDS software today: <https://www.rti.com/downloads>.

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