HIGHLIGHTS

Safe, secure platform with proven data-centric connectivity and real-time performance

Robust self-forming and self-healing resilient systems with no single point of failure

Extremely low latency with real-time Quality of Service (QoS)

Fast local control loop with reliable operation over harsh and unpredictable conditions

Extensive developer and debugging tools that compliment ROS assets

Migratory pathway from original ROS and direct integration with ROS2

DEVELOP AND RUN HIGH-PERFORMANCE, HIGH-PRECISION ROBOTICS

Robotics and haptic systems are complex machines of interconnected autonomous, semi-autonomous and/or human controlled modules which often operate in harsh and unpredictable conditions. Terabytes of streaming data need to be processed in real-time for safe, effective operation. Compounding the communication challenges, a human operator often needs to control the robots across very large distances and over unreliable network transports.

Proven in robotic operations from the ocean floor to outer space, RTI Connext DDS is the connectivity platform to develop and run next-generation, high-precision robotics. It integrates a wide range of demanding robotic system requirements in one real-time data connectivity framework. Robotic and haptic systems built on Connext DDS are resilient, self-forming and self-healing with no single point of failure. Built-in security based on the proven DDS Security standard provides for confidentiality, authentication, non-repudiation and access control, keeping robots safe from security breaches.

RTI Connext DDS seamlessly integrates robotic subsystems to process, analyze and act on high-volume, real-time data with low latency in a redundant, fault-tolerant architecture. As the only framework that can meet both safety certification and security requirements of connected robotics, it enables autonomy and decentralized control from cloud to edge and can evolve to meet tomorrow’s requirements.

Solving the challenges of complex, cooperative, and autonomous robotics systems, Connext DDS helps to:

- Scale the system with decentralized peer-to-peer communication and data-centric architectures
- Secure the network with a fine-grained security architecture that is transparent to application software, making it easy to develop, deploy and maintain
- Establish reliable communication over multiple physical networks and transport protocols, including intermittent and wireless channels
- Achieve physics-speed real-time response with low-latency and high-bandwidth performance that is tunable using extensive Quality of Service (QoS) settings
- Create modular architectures that support multiple nodes, multiple development teams, and future expansion of the system with a data-centric DDS compliant databus
FROM HUMAN CONTROLLED TO FULLY AUTONOMOUS

Connext DDS is used to connect and run interconnected human controlled, collaborative and fully-autonomous robotic systems. Its databus seamlessly distributes data in motion, allowing robotic subsystems to work as a single integrated solution - reliably, securely and in real time.

PERSISTENT CONNECTIVITY WITH REAL-TIME QOS

Robotic systems often operate in remote locations. Connext DDS delivers low latency with high throughput through real-time QoS, eliminating system bottlenecks and ensuring optimal performance even with fluctuating operating conditions. It offers reliable systems operation over low-bandwidth communication links with long transmission delays. Systems are self-forming and self-healing with no single point of failure.

Connext DDS runs across high-speed networks, Wi-Fi, radio and/or satellite links and provides tools to fine-tune the deployment for specific networking environments. Human operators remotely control motion and behavior to large teams of remote robots over very large distances, through unreliable network transports. The RTI Routing Service provides bridging between different network domains and technologies with zero programming. Connext DDS includes a Persistence Service that maintains system-critical configuration data on disk in the event of network disruptions.

ROS INTEGRATION AND MIGRATION PATHWAY

RTI offers a natural migration path from ROS-based systems to architectures that use RTI Connext DDS, either natively or with production-ready connectivity to a ROS2 architecture. Developers can integrate the original ROS ecosystem of drivers, applications and tools with production track development in native-DDS systems. By moving directly to the DDS platform, users gain optimized performance, fine-grained QoS control, world-class security and data modelling; simplified architecture and API layers; and standards-based interfaces.

ABOUT RTI

Real-Time Innovations (RTI) is the Industrial Internet of Things (IIoT) connectivity company. The RTI Connext® 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 networking.

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.