

Press release

RTI Announces the First Software Framework Designed for Widely Distributed Autonomous Systems

Connex 6.1 Enables Real-Time Control over Large-Scale and Remotely-operated Systems

SUNNYVALE (USA)/London, May 11, 2021 – Real-Time Innovations (RTI), the largest software framework company for autonomous systems, today announced the latest version of its industry-leading software framework, RTI Connex®. Connex 6.1 is the first software framework designed to address the development and deployment challenges faced by companies building remotely-operated autonomous systems.

Autonomous systems must operate in inaccessible, remote, or hazardous environments. Examples include underwater drones, remotely-accessible medical devices, space systems, and construction and mining robots. Since artificial intelligence cannot handle all situations, these applications must use remote operators to supervise and intervene in difficult scenarios.

Connectivity for distributed control is extremely challenging. Applications require high reliability and real-time performance even though connectivity in these inhospitable environments is often unreliable and low bandwidth. Depending on the operator's proximity, communication may also span local, wide area, public and private networks.

Connex 6.1 introduces features to enable easy real-time remote operation over any network. For instance, if the network connection changes as the system moves, connectivity is seamless without reconnecting, secure without renegotiating, and reliable without losing information. Thus, remote operations can continue in real time without interruption.

Enterprise networking assumes reliable, stable connections and latency insensitivity. Unlike other distributed software frameworks for the enterprise,

Connex 6.1 supports and optimizes fast communications across highly variable local (LAN) and wide-area networks (WAN). Moreover, Connex 6.1 does not require software changes to support diverse network types. Its Application Programming Interfaces (API) abstracts the underlying networks, allowing developers to target any environment. Connex 6.1 offers the first practical design for control of remote autonomous systems.

Connect Geographically-Distributed Systems

New capabilities in Connex 6.1 that ease the development and deployment of geographically distributed systems include:

- Real-Time WAN Transport provides reliable, low latency and secure communication over lossy, low bandwidth, and public networks. It supports Network Address Translation (NAT) traversal and mobile applications with changing Internet addresses.
- Cloud Discovery Service simplifies deployment of dynamic systems in which applications, assets, and their network addresses may not be known at configuration time. It provides a means for applications to discover each other and directly communicate, peer-to-peer. This minimizes latency and maximizes throughput. It is far superior to traditional centralized broker solutions.
- Built-in data compression improves efficiency over bandwidth-constrained networks. Compression maximizes bandwidth use, lowering overhead and latency while increasing throughput. A choice of compression algorithms and levels allows optimization of processor versus network utilization for different payload types.

Efficiently Develop Large-Scale and Heterogeneous Systems

In addition to its support for complex networking environments, new features in Connex 6.1 facilitate the development of any large-scale and heterogeneous distributed system.

- Support for .NET Core 5 lets developers use C# and run their applications on any platform that supports .NET Standard 2.0. In addition to Windows, this includes Linux, macOS and the Unity game engine.
- A new System Designer tool provides a graphical way to easily and intuitively specify the configuration and interfaces in a Connex-based

system. This helps ensure that applications adhere to a common architecture and can interoperate in a plug-and-play manner.

- Administration Console includes enhanced graphical views to make it easier to visualize the components of live large-scale systems and their interconnectivity. This allows OEMs and systems integrators to better observe behavior during test and deployment, and to more quickly identify configuration or network problems.

Packaging and Availability

For pricing and licensing, please contact sales@rti.com

For more information on Connex 6.1 and a full list of new features, please visit: <https://www.rti.com/products/connex-6-1>. RTI customers can also access additional training on what's new in Connex 6.1 via RTI Academy.

Quotes

“The WAN Transport feature is one of the fastest and easiest ways to achieve peer-to-peer UDP WAN communication, especially for projects already using RTI Connex DDS, but also for those using other middleware or even starting from scratch,” said Charles Cross, Co-founder and CTO at Mission Robotics. “At Mission Robotics, we were able to create a proof of concept from scratch that allowed us to remotely control and monitor a robot over the internet in only three hours. Considering the time and resources that would have gone into this effort otherwise, this is an absolute game changer.”

“Robots are essential for space exploration, and will be used for complex operations such as building and maintaining infrastructure in space. Autonomy is not enough alone. These systems must combine human and machine intelligence. That allows robots to act as “avatars” for the human: the humans handle direction and complex situations, but the robots are smart enough to carry out the actual operation,” said Dr. Thomas Krueger, Human Robot Interaction Laboratory, European Space Agency. “This type of cooperative remote guidance is critical for all intelligent systems. It's not simple; guiding a semi-autonomous system from a distance over an unreliable. RTI Connex 6.1, with the new Real-Time WAN transport,

optimizes speed and repairs lost packets, letting us reliably control our system from orbit despite the inherent latencies.”

“Innovations in autonomy are accelerating at an unparalleled pace. As systems become more connected, intelligent and mobile, the challenges surrounding development and security remain highly complex,” said David Barnett, Vice President of Products and Markets at RTI. “RTI has always been dedicated to helping our customers solve the unique obstacles that go along with developing autonomous systems, and with the latest update to our Connex product, we are proud to provide our customers with the foundational software for their remotely-operated autonomous systems. From mission-critical medical devices to underwater drones and mining robots, it is our customers’ cutting-edge technology that is going to change the world for the better. We are honored to be a part of the journey.”

Picture (Source: iStock 1139306496 / Scharfsinn86, purchased royalty-free from RTI):



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About RTI (www.rti.com):

Real-Time Innovations (RTI) is the largest software framework company for autonomous systems. RTI Connex is the world's leading architecture for developing intelligent distributed systems. Uniquely, Connex shares data directly, connecting AI algorithms to real-time networks of devices to build autonomous systems.

RTI is the best in the world at ensuring our customers' success in deploying production systems. With over 1,700 designs, RTI software runs over 250 autonomous vehicle programs, controls the largest power plants in North America, coordinates combat management on U.S. Navy ships, drives a new generation of medical robotics, enables flying cars, and provides 24/7 intelligence for hospital and emergency medicine. RTI runs a smarter world.

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 offices in Colorado, Spain and Singapore.

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