

RTI Real-Time Connect

Easing Integration of Enterprise and Real-Time Applications

BENEFITS

- Reduces integration time, cost and complexity by replacing the need for custom solutions
- Eases migration to higher-performance messaging by retaining interoperability with existing software
- Enables persistent logging of high-throughput real-time data
- Provides embedded systems with access to remote databases

RTI Real-Time Connect integrates enterprise applications with real-time applications that require:

Low latency messaging—as fast as 65 microseconds between nodes*

High throughput—up to 80,000 messages or 950 megabits of data per second*

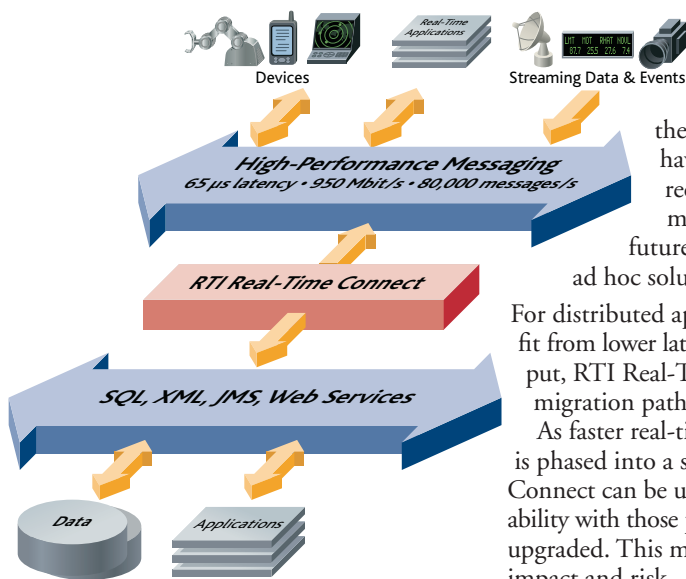
Embedded and real-time operating system support—for use in intelligent devices and sensors

RTI Real-Time Connect overcomes the major challenges traditionally associated with integrating enterprise and real-time systems: transforming messages and data between the different native formats used in each domain and preventing high-throughput real-time traffic from overwhelming slower enterprise infrastructure.

as 65 microseconds*. These rates are 10 to 25 times faster than can be achieved with most implementations of the leading enterprise middleware standards, JMS and Web services.

RTI Data Distribution Service supports real-time enterprise applications as well as embedded computer-based devices and sensors. It is available for over 44 platforms, including leading enterprise, embedded and real-time operating systems (RTOS). In addition to Java, C and C++ interfaces are provided to facilitate deployment in resource-constrained devices that cannot afford the memory or performance overhead of a Java virtual machine.

RTI Data Distribution Service complies with the Object Management Group (OMG) Data Distribution Service for Real-Time Systems standard (DDS).



RTI Real-Time Connect significantly reduces integration time, cost and complexity versus the custom approaches that have historically been required. It is also much more easily adapted to future requirements than typical ad hoc solutions.

For distributed applications that can benefit from lower latency or increased throughput, RTI Real-Time Connect provides a migration path to higher performance.

As faster real-time messaging technology is phased into a system, RTI Real-Time Connect can be used to provide interoperability with those portions that have not been upgraded. This minimizes the transition's impact and risk.

Real-Time Integration

RTI Real-Time Connect interfaces to real-time applications using RTI Data Distribution Service, RTI's high-performance messaging solution. RTI Data Distribution Service allows applications to stream up to 950 megabits of data or 80,000 messages per second with inter-node latencies as low

Database Integration

RTI Real-Time Connect uses a SQL database as its native interface to enterprise applications. Bidirectional bridging is provided between SQL and RTI Data Distribution Service.

Real-time messages and data received via RTI Data Distribution Service are buffered in the database. Buffering isolates enterprise applications from potentially overwhelming high-frequency real-time messages. Enterprise applications can control the rate at which messages are received by polling for them in the database.

Enterprise applications send messages and data updates to real-time applications by inserting them in the database. Updates are automatically distributed to real-time applications via RTI Data Distribution Service, which allows each real-time application to specify whether it wants to poll for updates or receive them asynchronously.

RTI Real-Time Connect does not require a dedicated database. A general-purpose database can be employed that provides persistent storage in addition to buffering. This allows the database to be used as a log for real-time messages and data.



* Performance given is per application. Aggregate throughput can be significantly higher. Measured over Gigabit Ethernet between 2.0 GHz Opteron PCs.

RTI Real-Time Connect also provides a remote database access solution for embedded systems, which typically lack the resources to host their own local database. Embedded applications that use RTI Data Distribution Service can read and update a remote database using RTI Real-Time Connect as a bridge.

SOA, XML and JMS Integration

RTI Real-Time Connect can be used in conjunction with Business Process Execution Language (BPEL) for easy integration with Service-Oriented Architectures (SOA) and other data management and messaging standards such as XML, Web services, and JMS. BPEL tools provide a visual programming environment used to compose business processes, including specifying the transformation of data between different schemas.

BPEL enables a straightforward approach to integrating applications that natively support different messaging interfaces. To distribute real-time messages and data to enterprise applications, simple BPEL processes can be

implemented that read and filter updates from the integration database. These updates can then be transformed and distributed via Web services, XML, JMS or any other connector supported by the BPEL engine. The inverse process can be used to send enterprise messages and data to real-time applications.

Oracle® Integration

RTI Real-Time Connect is fully optimized for use with Oracle Database and SOA products. Oracle TimesTen In-Memory Database provides an ideal message and data buffer for RTI Real-Time Connect. Oracle TimesTen is a memory-optimized database delivering exceptionally high performance, enabling it to support the high throughput that can be generated by real-time applications and data sources. Oracle TimesTen is available directly from RTI for use with RTI Real-Time Connect.

Oracle Database can also be used, as either the native integration database or in conjunction with Oracle TimesTen, which can provide a front-end cache.

Easy integration with enterprise applications is provided by Oracle BPEL Process Manager, which provides connectivity to hundreds of systems through native protocol support and pluggable adapters.

Multiple copies of RTI Real-Time Connect can run in parallel on different nodes. To maximize throughput between real-time and enterprise systems, each instance can be responsible for a discrete set of messages and data. For high availability and fault tolerance, multiple instances can bridge the same messages and data.

Near-Zero Administration

RTI Real-Time Connect requires near-zero administration. An initialization file specifies the database and ODBC connection attributes that RTI Real-Time Connect should use. Two tables of meta-data within the database are used to specify the messages and data types that should be bridged, one for each direction. If they do not already exist, RTI Real-Time Connect will automatically create the database tables used for buffering.

Supported Platforms

Linux

- Red Hat Enterprise Linux 3.0 (2.4 kernel; 32- and 64-bit)
- Red Hat Enterprise Linux 4.0 (2.6 kernel; 32- and 64-bit)

Solaris (SPARC)

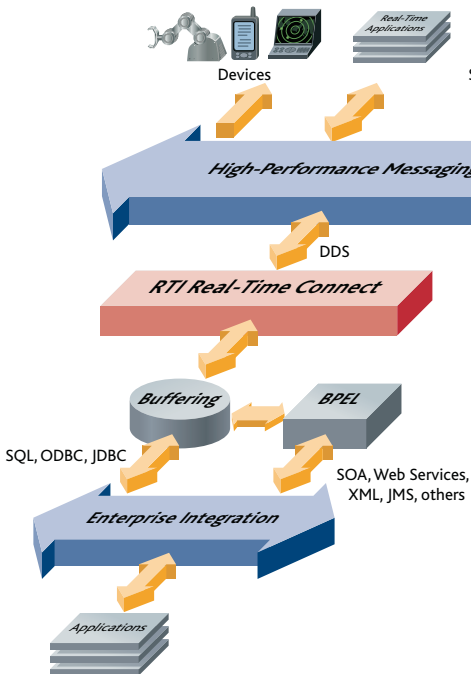
- Solaris 2.8 (32-bit)
- Solaris 2.9 (32-bit)
- Solaris 2.10 (32- and 64-bit)

Windows

- Windows 2000
- Windows XP

About RTI

Real-Time Innovations (RTI) provides the highest performance messaging and software integration solutions for real-time applications, data and devices. Founded in 1991, RTI's software and services have been leveraged in a broad range of industries including defense, intelligence, simulation, industrial control, transportation, finance and communications.



Scalability and Availability

RTI Real-time Connect is highly scalable and can meet demanding throughput, availability and fault tolerance requirements.

RTI Real-Time Connect employs a multi-threaded architecture that takes full advantage of multi-processor systems. Running with a single thread on a system with two 2.0 GHz dual core Opteron processors, RTI Real-Time Connect used in conjunction with Oracle TimesTen In-Memory Database can bridge over 28,000 messages or data updates per second. When taking advantage of all four available cores, throughput grows to over 100,000 transactions per second.

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