

Real Time Integrator™ 2.0

Technical Overview

An overview of Real Time Integrator 2.0 solutions, architecture and features



Introducing Real Time Integrator™ 2.0

Real Time Integrator (RTI) 2.0 provides a highly distributed, Real Time data collection and forwarding infrastructure. RTI incorporates services and components that are designed to run in many remote locations such as Stores, Depots or Suppliers. RTI services can be configured to integrate with local systems in order to collect data and to reliably transmit content onto any number of remote collection points. The RTI platform is designed to be highly flexible and allows for the use of many collection and transmission protocols in order to achieve a best fit integration approach for any organisation.

Solutions Overview

RTI 2.0 enables the implementation of a powerful real-time integration backbone and lets you achieve complete systems integration using a number of approaches including:-

- Flat Files
- Messaging
- Web Services
- Custom base level Protocols (e.g. TCP/IP)
- Native APIs

RTI can also move data bi-directionally to and from distributed sites using synchronous and asynchronous modes of communication.

System Highlights

RTI provides a suite of applications, components and services that let you build integration architectures that adhere to the principles of:-

- Flexibility
- Systems Decoupling
- Scalability
- Security
- Operational Simplicity

Extensibility

RTI comes equipped 'out of the box' with many high specification adapters that enable:-

- Total connectivity with systems
- Powerful data transformation activities

RTI also offers developers the opportunity to extend beyond base implementations through an easy to use adapter development model.



Note

Native RTI Adapters must be developed using the Microsoft .NET framework

Rapid Solutions Development

RTI greatly simplifies the process of integrating distributed systems. Most common activities associated with integration can be achieved through straightforward configuration changes rather than custom development. The unique approach taken by RTI allows solutions to be developed in minimal time with minimal resources.

Management

Implementing massively distributed infrastructures can be disconcerting because of the level of systems management that is required. RTI delivers architecture and services that are built on top of the principles of distributed systems management. An RTI solution offers an approach and the tools to ensure that irrespective of infrastructure size, operations and support activities are always straightforward.

Scaling and Performance

RTI has been designed, developed and tested to support the scalability and performance demands of large organisations. In the field, RTI implementations have been successfully scaled to several thousand sites and have a proven track record of processing thousands of messages per second. RTI services and components are designed with performance in mind and fully support multi server and clustered server deployment scenarios.

RTI 2.0 Software Requirements

In order to run RTI components and services effectively, the following hardware and software requirements must be met:

Hardware Requirements

RTI requires the minimum following hardware specification:-

- Personal Computer or Server with 300 megahertz (MHz) or higher processor clock speed recommended; 233-MHz minimum required;* Intel Pentium/Celeron family, AMD K6/Athlon/Duron family, or compatible processor
- 128 megabytes (MB) of RAM or higher
- 50 megabytes (MB) of available hard disk space

RTI Services are able to operate in a fully “lights out” environment – a user does not need to be logged on and the P.C. or Server does require a monitor, keyboard or mouse.

If there is a requirement for RTI to be configured in-situ at the distributed site, the following addition hardware is required:-

- Super VGA (800 × 600) or higher resolution video adapter and monitor
- Keyboard
- Microsoft Mouse or compatible pointing device

It is recommended that all hardware is listed on the relevant Microsoft Windows Compatibility List or Server Catalogue.

Operating System Requirements

RTI will run on any of the following operating systems:-

- Microsoft Windows NT 4 Workstation
- Microsoft Windows NT 4 Server
- Microsoft Windows 2000 Professional
- Microsoft Windows 2000 Server
- Microsoft Windows XP Professional (32bit and 64bit)
- Microsoft Windows 2003 Server (32bit and 64bit)

System Software Dependencies

The RTI Agent requires the following system software:-

- Microsoft .NET Framework 2.0
- Microsoft Internet Information Server (IIS) 5.0 or later
- Microsoft Message Queuing (MSMQ) 2.0 or later
- Microsoft SQL Server 2000/2005 (latest service packs)



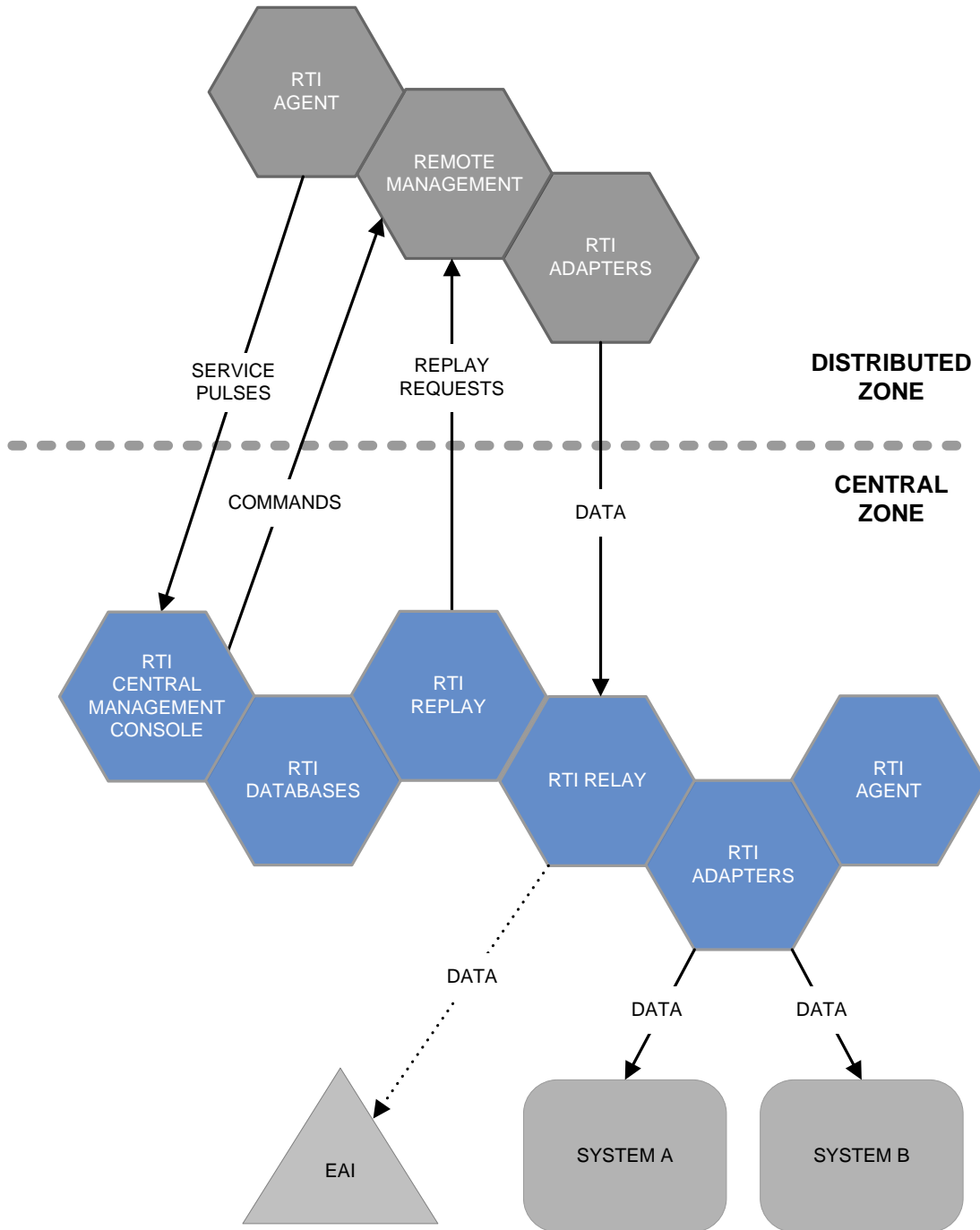
Note

Microsoft SQL Server, IIS and MSMQ are optional for distributed installations of RTI

RTI Architectural Overview

The architecture of RTI incorporates all the components and services that are required to implement a real time enabled integration infrastructure. The modular nature of RTI also enables co-existence with Enterprise Application Integration (EAI) software such as Microsoft BizTalk Server.

The following figure shows the architecture of RTI with an optional EAI presence:-



As illustrated, core components of RTI can be deployed in both Distributed and Centralised zones to achieve consistent end to end integration.

Concepts

The following are useful concepts and terms with respect to the architecture and functionality of RTI:-

RTI Agent™

The RTI Agent is a lightweight, high performance windows service that hosts defined integration processes (RTI Instructions). RTI Agents can be distributed or centralised and can be remotely controlled and reconfigured.

RTI Agent Service Pulse

An RTI Agent can be configured to periodically transmit a message (Service Pulse) that contains information including configuration changes, health status and system events.

RTI Instructions

An RTI Instruction is a user-definable collection of receive, transformation and transmission tasks.

- Receive tasks enable data to be retrieved from source systems
- Transformation tasks enable the data to be compressed, re-shaped or encrypted
- Transmission tasks enable the data to be sent to one or many remote systems over a wide range of protocols

An Instruction can be 'Hosted' i.e. it is started and managed by the RTI Agent hosting service, or 'Un-hosted' i.e. the configuration is defined in the RTI Agent configuration file but the instruction is started on an ad-hoc basis by a calling client and **not** by the RTI Agent.

Instruction definitions are persisted as XML within the local configuration of an RTI Agent.

RTI Adapters

RTI Adapters are .NET components that encapsulate functionality with respect to:-

- Receiving data
- Transforming data
- Transmitting data

RTI Adapters are property driven and can emit and load configuration information that is persisted by an RTI Agent. The properties of an adapter can be set at design time or at runtime to enable dynamic operations. RTI Adapters implement transactions via a well defined interface and support batching in order to optimise performance.

RTI Applications

RTI provides easy to use windows applications to manage many all aspects of RTI services and components. RTI windows applications adhere strongly to the most up to date standards and styles adopted by many Microsoft applications.

RTI Agent Administrator

The RTI Agent Administrator allows a user to interact with an RTI Agent in the following ways:-

- Stopping, Starting and Restarting an Agent
- Reconfiguring the properties of an Agent
- Loading, Creating and Saving RTI Agent configuration files
- Creating, Modifying and Deleting RTI Agent Instructions
- Modifying adapter runtime properties

RTI Central Management Console

The RTI Central Management Console enables interaction with all RTI Agents installed within an organisation in the following ways:-

- Stopping, Starting and Restarting many Agents simultaneously
- Reconfiguring the properties of many Agents simultaneously
- Altering the RTI Instruction configuration of many Agents simultaneously
- Ascertaining the health and processing status of Agents

RTI DDS Management Console

The RTI DDS Management Console enables the monitoring and operational control of DDS Transmissions to and from centralised or remote sites. Key features of the RTI DDS Management Console are:-

- Monitoring and Control of Transmissions
- Access to multiple DDS service instances (i.e. databases) from one console
- Creation of new DDS service instances
- Creation of DDS Transmissions

RTI Adapters

The list below details some of the adapters that are available for use with RTI:-

Source	Transformation	Destination
File	Text	File
DDS Transport	XML	DDS Transport
FTP	XSLT	FTP
Web Services	xScript	Microsoft Message Queue
Microsoft Message Queue	Compression	SQL Server 2000/2005
SQL Server 2000/2005	Encryption	Oracle
Oracle	Envelope	IBM DB2
IBM DB2	Content Selection	Pervasive SQL
Pervasive SQL	Base 64 Encoding	Windows Event Log
MySQL	Property Bag	MySQL
Windows Event Log		SMTP
SeeBeyond eGate		Web Services
IBM WebSphereMQ		Processes (e.g. EXE, Scripts)
		XML
		RTI Agent (Peer to Peer)
		SeeBeyond eGate
		IBM WebSphereMQ



Note

New adapters and enhancements to existing adapters are made available through upgrades to the standard RTI Adapters pack

All RTI Adapters adhere strongly to the following design principles:-

- High Performance
- Simplicity of use
- Support for streaming to ensure memory usage limits when processing large data sets
- Extensive support of protocol properties
- Support for the dynamic setting of adapter properties

RTI Services

RTI comes equipped with additional services that add to the core capabilities of an RTI infrastructure.

RTI Relay™

RTI Relay is a high performing and scalable MTOM (Message Transfer Optimisation Mechanism) enabled web service that can be used in combination with the RTI Web Service adapter. Using RTI Relay it is possible to move data from distributed locations to a central point and then route that information to specific physical endpoints such as Microsoft Message Queues. Physical endpoints can be implemented using RTI Relay Providers or RTI Agent Instructions.

RTI Replay™

RTI Replay is a Web based application that enables data that has been transmitted by an RTI Agent to be replayed from a distributed site. In circumstances where data loss has occurred centrally, replay requests can be issued to RTI Agents requesting that individual or ranges of transactions are re-supplied.

RTI Data Distribution Service (DDS)

The Data Distribution Service (DDS) for Real Time Integrator (RTI) provides components and services that enable RTI to be used as a high performance, scalable and robust data distribution service encapsulating concepts such as durable publish/subscribe and multicasting.

RTI Agent Broadcasting System

Used in conjunction with the RTI Central Management Console (RTICMC), the RTI Agent Broadcasting System enables multiple RTI Agents to be remotely controlled simultaneously. The Broadcasting System allows broadcast requests to be scheduled to run at specific times and integrates directly with the RTICMC to enable reporting on the status of running and completed broadcasts.

xScript Programming Language and Runtime

RTI incorporates xScript which is an xml based scripting language which can be used for the transformation and analysis of xml documents. The primary goal of xScript is to provide a semantically simple approach to xml document transformation or investigation. The xScript language is based upon a conventional sequential programming model in which the programmer utilises sequences of core commands to carry out set transformation tasks. These commands are structured within a containing xml document to make an xScript document. The xScript document can then be compiled and executed via the xScript runtime.

Note

RTI Agent Instructions can take advantage of xScript through the XML Transformation adapter.

RTI Setup and Deployment

All RTI components and services are deployed using standard MSI based installations that support:-

- Optional installation via components
- Setting of locally defined properties such as User Accounts, Installation location, IIS Web Site affinity etc
- Unattended installation and removal via MSIEXEC and command line switches
- Single installation file packaging

 **Note**

RTI Components and Services are distributed as three MSI installations; RTI Core, RTI Adapters and RTI Replay

Copyright

Information in this document, including URL and other Internet Web site references, is subject to change without notice. Unless otherwise noted, the companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted in examples herein are fictitious. No association with any real company, organization, product, domain name, e-mail address, logo, person, place, or event is intended or should be inferred. Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of Sysrepublic Ltd.

Sysrepublic may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Sysrepublic, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property.

© 2007 Sysrepublic Ltd. All rights reserved.

Real Time Integrator (RTI) is a trademark of Sysrepublic Ltd in the United Kingdom and/or other countries.

Microsoft, Windows, Windows Server, BizTalk, Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.