White Paper:

Solving the Remote Warehouse Dilemma
with High Availability Distributed Solutions

RFgen.

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Executive Overview

Today's manufacturers are increasingly burdened with managing their supply chain IT systems. Due to outsourced manufacturing, acquisition of other companies, and globalization, an IT organization's ability to keep the manufacturing systems online and accurate during critical manufacturing operation times is a major challenge.

Inventory movement, receiving and shipping are core operations that must continue even if connections to remote enterprise systems are down. The problem is further increased by the traditional methods of addressing the problem with a separate warehouse system for each location. Maintaining completely separate data collection systems or entire manufacturing systems results in complicated interfaces and costly master data management projects. As a result, many IT managers find it difficult to respond to the changing requirements of the business.

Availability Through Replication

By employing a native feature of the database called replication, many organizations are realizing, when used in the right way, their system architecture can become even simpler and provide flexible scheduled and unscheduled downtime for the entire organization. Replication is the process of sharing information to ensure consistency between redundant resources, such as software or hardware components, to improve reliability, fault-tolerance, or accessibility.[1]

In addition to replication, local inventory tables are updated to keep track of movement records. All of these artifacts are brought together with local database views. The result is an accurate local system which represents the results of the activities performed by that remote user combined with the data from the remote enterprise system. A robust and intelligent queuing system is required to complete this architecture.

By using the Mobile Unity Platform™ and the techniques outlined in this document, many IT managers are finding they can provide a simple real-world solution to the very complex problem of availability.

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1 "Replication (computer science)" Wikipedia: The Free Encyclopedia. Wikimedia Foundation, Inc. 28 January 2011.

The Remote Warehouse Dilemma – A Common Problem

The manufacturing process is no longer a one-warehouse scenario. The cost-savings of outsourcing is making it more and more attractive for manufacturers to move some or all of their manufacturing processes overseas. While the savings to the organization justify these activities, the result is a much more complex environment for the IT organization. The need for continuous operations is more of a requirement than ever before and IT managers must cope with this complexity.

The traditional approach is to maintain a separate warehouse system. This provides uptime to the local facility but at a significant cost. Traditionally, IT managers design and build custom data synchronization routines to shuttle data back and forth from the local system to the enterprise system. This method addresses the short term problem but leaves the organization with a system that has an increasing number of points for failure and a lower ability to react to change and new IT initiatives. Most of the time organizations must employ full-time resources to make sure the synchronization routines are running properly and the data is flowing smoothly.
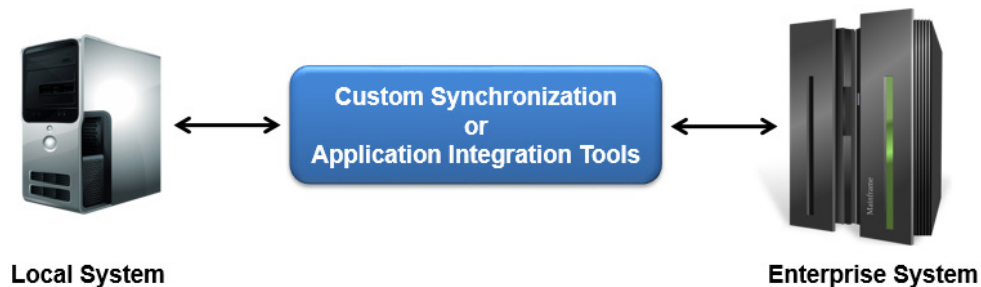

Figure 1: Many manufacturers are moving to a distributed warehouse model which is making it more challenging for IT to manage.

Using Replication Techniques to Solve the Remote System Problem

Despite the problems created by these remote warehouses and systems, companies continually face this issue. This problem is further exasperated due to mergers and acquisitions of other companies requiring adding even more remote systems.

The goal is to have a replicated view that is a combination of the current activity of the local warehouse combined with the activity of the enterprise at the same time. In this environment, the maintenance of multiple warehouses and costly interfaces are eliminated. Relevant activity of the local warehouse is added to the most recent enterprise data. The local warehouse user continues to operate even if the connection to the remote enterprise is down. When the connection is re-established or the enterprise comes back online, the queued transactions are executed and the local activity tables are cleared.

To achieve this goal, the system must have a lightly-coupled architecture to the enterprise to minimize the amount of replicated tables required. Further, it must contain a robust queuing mechanism to keep track of the local activity performed and it must use replication and database views to bring all of the data together to provide an accurate view to the local warehouse user.
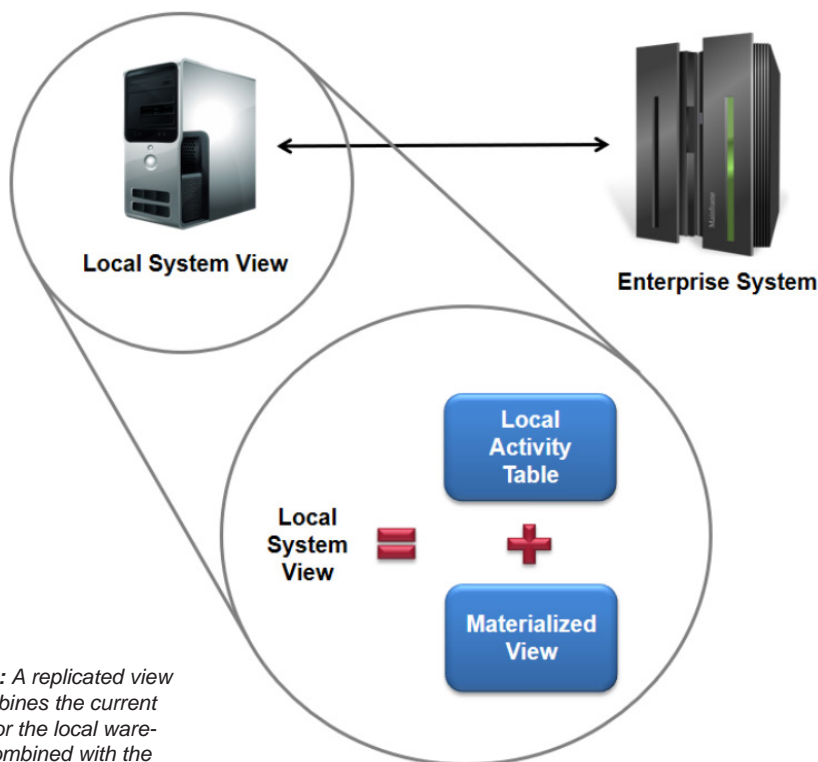
RFgen represents and promotes your freedom of choice. We want you to succeed and take complete ownership of our ADC solution!

Local System View

Enterprise System

Local System View = **Local Activity Table** + **Materialized View**

Figure 2: *A replicated view that combines the current activity for the local warehouse combined with the activity of the enterprise can solve remote system problems.*

RFgen's Approach to The Remote Warehouse Problem

At the heart of the Mobile Unity Platform™ is the RFgen Transaction Queue. This transaction queue is a robust and intelligent queuing mechanism that records and queues the local activity. When the enterprise is available, it intelligently submits the transactions. Another important component is RFgen's Mobile Foundations for Oracle E-Business Suite. This certified open-source suite provides a very effective yet lightly-coupled architecture enabling this approach. Finally, the RFgen High-Availability Toolkit comes pre-packaged with a set of pre-tested database scripts used to build the required database artifacts.

Figure 3: *The RFgen remote warehouse technology stack.*

Conclusion

Warehouse data collection systems have provided value to organizations for years. However, the remote system problem has affected many IT organizations' ability to effectively manage downtime, data synchronization, and integrity. A system that employs advanced replication techniques, intelligent queuing and lightly-coupled architecture will help reduce costs while dramatically increasing system uptime.

RFgen provides a robust and flexible approach that enables IT to create a simplified architecture based on these principles. The pre-tested, packaged solution of the Mobile Unity Platform™, RFgen's Transaction Queue, RFgen's Mobile Foundations for Oracle E-Business Suite, and the RFgen High-Availability Toolkit offers an unparalleled solution all based on a standard industry leading platform. Intelligent replication techniques coupled with RFgen's technology can reduce complexity, improve change management, and improve the organization's ability to add additional remote warehouses in the future.

RFgen Software—The Data Collection Experts

RFgen Software, a division of the DataMAX Software Group, helps organizations reduce supply chain implementation costs and increase accuracy and efficiency with the industry's most reliable and flexible wireless and mobile automated data collection (ADC) software and open source supply chain solutions.

In business since 1983, RFgen is known in the manufacturing and distribution industry for its solid, high-quality products and high customer satisfaction ratings among its more than 2,600 customers. With a global reach and local touch, RFgen and its network of more than 125 certified solution partners can service and support your organization no matter where you're operations are located around the world.

With RFgen, you can easily connect wireless and mobile devices (e.g., RFID, barcode scanners, mobile phones, tablets, handheld computers, speech recognition devices, label printers, and more) to your back office ERP systems and databases—enabling you to increase productivity by providing your mobile workforce with real-time and on-demand access to enterprise data.

Offering a suite of integrated solutions, RFgen provides pre-written, pre-tested, proven and certified open source transactions and integration expertise for Oracle E-Business Suite, Oracle's JD Edwards, SAP, Deltek Costpoint and Microsoft Dynamics.

Whether you are looking for solutions to automate your warehouse and better manage your inventory, comply with government regulations, ensure 24/7 warehouse operations, track and trace your products, voice-enable your warehouse, or manage your remote inventory, RFgen is the smart choice.

To learn more, please call us at 888-426-2286, or visit our website at: www.RFgen.com.

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