

Optimizing Supply Chain with TIBCO Integration for Retail Growth

ORGANIZATION

The client is a prominent global shoe retailer with over 4,800 stores spanning the USA, Canada, Central America, the Caribbean, and South America. Offering an extensive range of footwear and fashion accessories, the company emphasizes innovation and rapid responsiveness to market needs. The client's operations are supported by multiple warehouse facilities, and the supply chain is managed using the Manhattan Warehouse Management System (WMS).

CHALLENGE

The client faced significant challenges with its traditional batch-oriented processing methodology for fulfilling orders. Data from the mainframe system was processed overnight or during early morning hours and transferred to the WMS. E-commerce orders were processed alongside traditional retail store orders in these batches, creating a backlog of tasks and significantly increasing infrastructure load during peak hours.

This outdated approach led to:

- **Processing Delays:** Batch-based workflows couldn't meet modern expectations for real-time order processing, causing delays in e-commerce and in-store order fulfillment.
- **System Bottlenecks:** The increased data volume strained the WMS, leading to performance issues and time constraints.
- **Integration Challenges:** With distribution centers operating on separate WMS instances, synchronizing data between systems requires extensive manual intervention and complex data joins.

To remain competitive, the client needed an advanced solution to enable real-time synchronization of pick ticket requests from the mainframe system to the WMS. This solution had to support event-driven architecture, leverage messaging frameworks, and ensure seamless integration across distribution centers to improve operational efficiency and scalability.

TECHNICAL SOLUTION

XTIVIA implemented a cutting-edge solution based on an event-driven architecture and real-time messaging framework, transforming the client's order fulfillment process. Leveraging the TIBCO suite of enterprise integration tools, the solution enabled real-time synchronization of data between the mainframe system and the WMS instances at the Western Distribution Center (WDC) and Eastern Distribution Center (EDC).

Solution Details

- **Event-Driven Processing:**
 - Orders were processed as discrete events rather than batch jobs.

- Each pick ticket generated by the mainframe system triggered an event, initiating real-time data processing and synchronization with the respective WMS instance.

Real-Time Messaging Framework:

- The system employed a **Publisher-Subscriber model** to enable asynchronous communication between components.
- The Publisher component extracted, transformed, and formatted data into a **canonical message structure** and published it to the JMS server.
- Subscriber components consumed the messages, reformatted them for WMS compatibility, and loaded them into staging tables at the respective distribution centers.

Reliable File Transfer Mechanism:

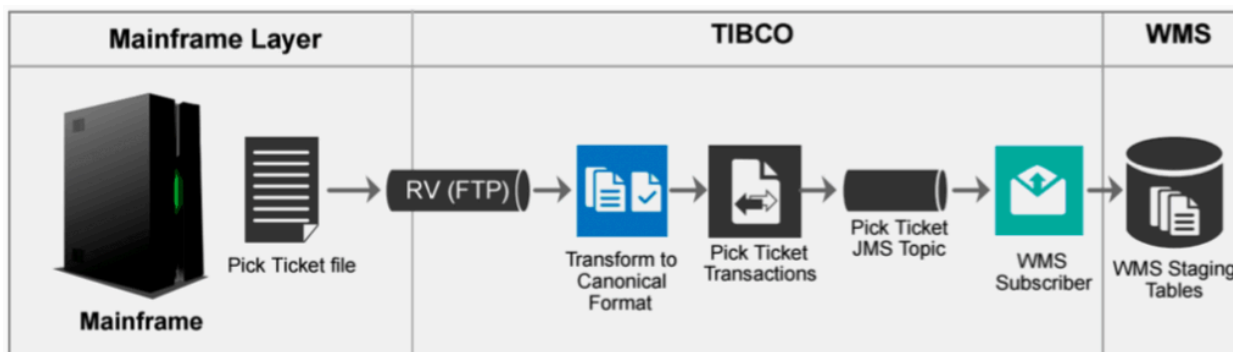
- TIBCO adapters operating in **file transfer mode** ensured data reliability, eliminating dependency on less reliable FTP protocols.
- A process completion notification was sent back to the mainframe system, confirming successful transaction completion.

Real-Time Synchronization Across Distribution Centers:

- Each WMS instance operated independently but adhered to a unified integration framework, ensuring consistency across the WDC and EDC.
- The architecture facilitated simultaneous processing and synchronization of orders at both locations.

Scalability and Extensibility:

- Designed for scalability, the solution allowed seamless integration of additional systems or stakeholders.
- Data reusability was prioritized, enabling the same data to be accessed by downstream systems beyond the WMS.



BUSINESS RESULT

The transition to an event-driven architecture with real-time messaging and synchronization delivered significant operational improvements:

- **Real-Time Order Fulfillment:** Orders were processed instantly, meeting modern customer expectations for rapid delivery.
- **Enhanced Efficiency:** By reducing reliance on batch processing, the solution streamlined workflows and reduced processing times.
- **Optimized WMS Performance:** Offloading data analysis tasks from the WMS minimized resource usage and improved overall system reliability.
- **Unified Operations:** Centralized management of distribution centers allowed for consistent, efficient operations.
- **Scalable Architecture:** The modular design ensured scalability, allowing the client to adapt to future business demands.
- **Improved Data Accessibility:** Real-time data was readily available for other business units, supporting analytics and decision-making.

KEYWORDS

Real-Time Order Processing, Event-Driven Architecture, Real-Time Synchronization, Publisher-Subscriber Model, TIBCO Integration, Warehouse Management System (WMS), E-Commerce Order Fulfillment, Data Transformation and Integration, Centralized Distribution Operations, Real-Time Data Processing, Operational Efficiency, Mainframe Integration, Reliable File Transfer, Canonical Data Format, Improved WMS Performance, Supply Chain Optimization, Retail Technology Solutions, Enterprise Integration

SOFTWARE

TIBCO™ BusinessWorks TIBCO DataExchange TIBCO Rendezvous TIBCO EMS TIBCO Object Star Adapter for Files (z/OS)

ABOUT XTIVIA

At XTIVIA, we've been providing IT solutions and consulting services for over 30 years with a wide range of services, including technology assessments, IT service and asset management, software development, data analytics, cloud migration, DevSecOps, ERP, and enterprise content management. Dedicated to each discipline, ensuring that our clients receive the best possible service. Through strategic acquisitions, we've acquired talented people who are experts in their industries, passionate about what they do, and committed to providing exceptional service to our clients. Whether you need to improve your IT infrastructure or implement new software solutions, XTIVIA is here to help you achieve your business goals. XTIVIA has offices in Colorado, New York, New Jersey, Texas, Virginia, and India. www.xtivia.com