

BNSF Gains Strategic Advantage with One Platform: Informatica

“Informatica has helped us control risk – the risk of losing customers, the risk of runaway costs, the risk of missing strategic advantage – all by unlocking our valuable operational data and making it available throughout the enterprise.”

Jeff McIntyre
Assistant Vice President of Technology Services
BNSF

BNSF RAILWAY COMPANY

Today's BNSF Railway Company, a subsidiary of Burlington Northern Santa Fe Corporation (NYSE: BNI), is the product of some 390 different railroad lines that merged or were acquired over a span of more than 150 years. BNSF offers shipping services over one of the largest rail networks in North America with about 32,000 route miles in 28 U.S. states and 2 Canadian provinces. Consider a few examples of the BNSF contribution to the world economy. BNSF hauls enough coal to generate 10 percent of the electricity produced in the United States. It moves enough fertilizer every year to fertilize a field the size of the state of Kansas and enough lumber to build 500,000 homes. It delivers enough grain across the country and to ports for export to make a year's supply of bread for 9.5 million people.



Faster Than a Speeding Bullet

For years, BNSF has offered its customers Web-based, self-service information regarding shipments and logistics so the customers can track their shipments, place orders, and run their businesses efficiently. But, as the pace of business has increased, the customers began demanding more real-time data. This was a challenge. In the original system, the data was locked in the BNSF transportation application, critical for running BNSF's business, and had to be ported to a data warehouse for use by customer-facing systems. In addition, BNSF outsources much of its transactional processing, and thus is on a “pay as you go” basis for mainframe CPU use, and the processing between the two repositories was already expensive.

BNSF installed an Informatica® data integration platform that populated an operational data store to support its customer-facing applications. With Informatica, BNSF allows its customers to pinpoint the location of their rail shipments within a 15-minute window. At the same time, the new platform has slashed the use of costly mainframe MIPS. Upgrading to version 8.6 further reduced MIPS cost by 30 percent. Not only has BNSF improved customer service and reduced the cost of its infrastructure, but it has also opened the door for extending the use of its operational data for competitive advantage.

The Challenge

The flip side of good fortune can be a challenge, and that was the case for BNSF Railway Company. A combination of both demographic and market shifts converged to give this innovative shipping company a dramatic increase in demand for its services earlier in this decade.

Top Three Factors for the Increase in the Demand for Rail Services



1

Asia's growing demand for western foods has meant more goods being transported to the West for shipping.



2

Growing demand for a cleaner and more efficient fuel has seen Western coal being shipped from the west for use across the country.



3

Trucking issues such as volatile fuel prices, highway congestion and insurance rates has led to more rail companies handling long-haul moves.

THE PROVERBIAL "PERFECT STORM"

Jeff McIntyre, assistant vice president of Technology Services, BNSF, summarizes the causes: "The Asian rim, energy prices, and issues for the trucking industry. From 2004 through early 2008, these factors fueled unprecedented growth in rail traffic." He went on to parse that summary.

First there was the increase in import business from the Asian rim. Goods reach ports on the West Coast and need to move East. In addition, inhabitants of many Asian countries have acquired a taste for Western foods, so Krispy Kreme doughnuts, McDonald's hamburgers, and American wheat have to move to the West Coast for export to Asian locations.

The second factor is energy. As energy prices soar, the demand for Western coal has risen because it burns more cleanly and efficiently than Eastern coal. So coal is now shipped from the West for use across the country.

And finally, trucking industry issues include volatile fuel prices, highway congestion, insurance rates, and driver recruitment and retention problems. So rail companies are more and more being called upon to handle the long-haul moves that used to be done over the road.

RISK AND SUCCESS ARE OFTEN CLOSELY RELATED

The customers who ship these goods demand easy access to tracking information that is as close as possible to real time. Through its customer logistics system (CLS), BNSF customers have on-line access to the status of their shipments 24x7. "Customers require access to real-time information," says McIntyre. "Without it, it is only a matter of time before they go to the competition."

The BNSF data required to report on shipments, however, is stored on a mainframe and tied to its transportation system, a system strategic to the planning and operations of the railroad. "It was mandatory to minimize the impact on our transportation system," says Sai Ragam, manager DBA, Mid-Tier Services, BNSF. "The transportation system

must run as efficiently as possible. But at the same time, we want to service our customers, both internal and external, with the information they need to run their businesses. So we always wanted that information ported to another platform."

He continues, "Our customers weren't able to get the information they needed in the time they needed it because the volume of data, and the number and type of customer requests for data interfered with the transportation system on the mainframe. We couldn't serve our customers as they needed to be served."

As a result, the lack of up-to-date information in the customer system was driving up the call volumes in the customer centers, and it was driving up the support calls within the organization. Like many companies, BNSF outsources much of its transactional processing, so it is on a "pay as you go" basis for mainframe CPU use. Avoiding extraneous mainframe cycles, while opening the door to new ways to extend the use of its operational data, could impact the bottom line and provide a strategic advantage. More importantly, it was essential to serve the customers.

THE FAST TRACK TO A SOLUTION

In 2006, in response to these issues, BNSF undertook a project to accomplish a number of strategic goals. To modernize business, reduce IT costs, and improve customer service, it determined to improve operations in several ways:

- BNSF envisioned an environment where customers and customer service representatives could access near real-time status on freight.
- It sought a scalable platform to extract data from the transportation system on the mainframe and propagate the data into an operational data store (ODS) in near real time. This would reduce the stress on the mainframe system and act as a one-stop shop throughout the organization for all applications that needed this data.
- It outsourced all IT operations to IBM, and it aimed to reduce total cost of ownership for services ranging from ongoing support to MIPS use.

THE RACE BELONGS TO THE SWIFT – AND THE NEUTRAL

After doing due diligence with industry analysts as well as with software consumers, BNSF evaluated a number of possible solutions and quickly narrowed its choices down to two, IBM and Informatica. Although IBM had a significant advantage as the infrastructure service provider, the BNSF team found that Informatica offered a series of strategic advantages:

- **Neutrality and openness:** The platform had to support interfaces with any data that might need to be integrated in the future; BNSF couldn't afford to be held hostage by a single vendor.
- **Universal access:** BNSF wanted to be prepared to target many platforms. For example, it was planning an SAP implementation.
- **Rapid ROI:** The key was developer productivity; the software needed to be easy to use and easy to implement. Informatica's intuitive GUI provided a quick jump start.
- **Ability to support real-time data integration 24x7:** Nothing else could satisfy BNSF's customers.
- **Integrated data quality:** The ability to integrate data quality as part of the platform would support future governance plans.

At BNSF, the Data Platform Committee provides data governance oversight; its mission is to mitigate risk and ensure the growth of the company by carefully evaluating plans for the handling of data assets. After an exhaustive evaluation, the committee agreed with the IT team that Informatica was the best choice for the ODS.

THE REAL-TIME SOLUTION

An Informatica data integration platform now provides BNSF with a flexible foundation for integrating real-time shipments and logistics data from its mainframe transactional systems to the ODS within a 60-second window. This platform makes the information available to BNSF customers via the Web in near real time. Bill Heinrich, director of Technical Services for BNSF, estimates that, even in its initial

phases, the solution captured more than 30 million data changes per day and replicated them to a UNIX platform, with minimal impact on mainframe performance, while providing the scalability to handle not only progressively larger data volumes but also entirely new applications as BNSF technology moves forward.

"Informatica provides us with a scalable framework for leveraging the tremendous amount of data generated by the transportation systems that literally run the railroad day to day," says Heinrich. "Equally as important, Informatica also provides a unified platform with PowerCenter Advanced Edition that addresses the entire data integration lifecycle."

Informatica PowerCenter® Advanced Edition™ and Informatica PowerExchange® are the foundation for this and other applications going forward. The PowerExchange Change Data Capture Option™ supplies non-invasive access to mainframe data. Only changed data is captured, and these changes are immediately incorporated into the ODS for end-user querying. Because the data is captured as soon as it changes, Informatica has decreased the latency for end-user availability to less than 15 minutes. And because only changed data is captured, Informatica saves BNSF expensive mainframe CPU cycles. In addition, the non-invasive nature of the capture minimizes interference with the transportation system and its mainframe environment, increasing stability over the system it replaced.

"With these on-line self-service functions, our customers now rarely need to contact our call centers. They manage their shipments through our on-line self-service functions," explains Heinrich. "We make hundreds of reports available that they run against our data. And we allow them to customize these reports with diverse search parameters." The reports can be simple ad hoc queries to check the status of a delivery or more complex reports delivered regularly based on a customer's schedule. "For example," Mr. Heinrich adds, "many reports are delivered first thing in the morning and then a lot more during the course of the day. These reports are essential for our



The Partnering of BNSF and Informatica Was a Predictable Match

Following is an excerpt from the BNSF website www.bnsf.com

While many different railroads combined to form the modern BNSF Railway, all shared one or more common features:

- **Pioneering Spirit** - laying hundreds of miles of track over previously undeveloped land, overcoming great geographic obstacles and challenges
- **Innovative Thinking:**

Equipment - AC traction locomotives, tri-level auto rack cars, land-bridge container trains to link both Asia and Europe and other rolling stock specifically designed for various products carried on the BNSF Railway

Supporting technology -the printing telegraph, radio dispatching, centralized traffic control, and, more recently, a football field-sized, data-driven Network Operations Center

Services - in-route mail sorting, intermodal services and new business tools for specific markets, such as an industry leading grain logistics system

- **Efficiency** - applying the energy efficiency of rail transit to supply shippers with cost savings and speed

customers to manage their shipments, to get us their orders, and to do business efficiently with their own customers. Now that this data is near real time, they're calling our service center less frequently."

The Results

BNSF CUSTOMERS TESTIFY TO THE RESULTS

Informatica has powered a flexible foundation to deliver a real-time, Web-enabled goods and services tracking system and other customer-facing applications. BNSF customers have responded to the improved customer service.

REDUCED IT COSTS AND INCREASED DEVELOPER PRODUCTIVITY

"The new platform has helped us manage our mainframe costs by reducing the loads, and what we're seeing is reduced costs as a result of the Informatica platform," says Heinrich.

With such features as table-driven coding, reusable objects, and an intuitive interface, the flexible Informatica platform has increased developer productivity. Already, the platform has enabled the completion of a new application that hadn't been possible with hand-coding methods. The Pipeline Project supports BNSF planning as it analyzes traffic flows on the rail network and then develops train schedules to manage the network most effectively.

"BNSF had been trying to write the pipeline application against the mainframe," says Ragam, "but the amount of resources the pipeline application consumes affected the performance of the transportation system on the mainframe and increased the CPU cost significantly. But once the Informatica replicated ODS environment was made available, we quickly moved the pipeline application against it, and have been able to accomplish what we wanted."

SAP IMPLEMENTATION ENABLED

BNSF showed important foresight in choosing a neutral platform. The Informatica solution is now being used to support the implementation of SAP HR and Financials. Informatica is synchronizing legacy and SAP information until the cutover to SAP. When the cutover occurs, BNSF will use Informatica to migrate live data to the new ERP environment.

NO END IN SIGHT

"It's important to have the capability for unlocking critical data from mainframe transaction systems," Assistant Vice President McIntyre concludes, "but it is equally important to do so in a cost-effective, efficient, and extensible fashion. Informatica's innovative, stable technology has cut our infrastructure costs by avoiding extraneous

mainframe cycles. At the same time, it has opened the door to extend throughout the enterprise the use of our operational data for competitive advantage. Perhaps most importantly, it has allowed us to serve our customers the way they need to be served. In the end, Informatica has helped us greatly mitigate risk throughout our business."

FAST FACTS

Business Initiatives

- Mitigate the risk of dissatisfied customers with real-time Web-enabled access to logistics data
- Reduce IT costs by slashing outsourced services and CPU cycles
- Increase operational efficiency by raising developer productivity
- Position for future growth with easy access to operational data enterprise-wide

Technology Strategy

A unified, high-performance platform that integrates data from the mainframe system non-invasively and distributes changed data to an operational data store for use by consuming applications throughout the enterprise

Data Integration Platform

- Informatica PowerCenter Advanced Edition with Real Time Option
- Informatica PowerExchange for DB2 with Change Data Capture Option

Benefits

- On-demand availability of shipping logistics information to customers within a 15-minute latency
- Significant reduction of call center support costs with decrease in call volumes
- High performance and scalability to meet growing demands
- Greater productivity through flexible software and an intuitive GUI
- Cost-effective reusability to extend data integration across the enterprise
- Improvement of on-schedule arrivals of trains by optimizing the network

Source / Target

- Source: DB2 on z/OS mainframe
- Target: ODS on DB2