

Case Study:

A subsidiary of Burlington Northern Santa Fe Corporation (NYSE:BNI), BNSF Railway Company operates one of the largest railroad networks in North America, with about 32,000 route miles in 28 states and two Canadian provinces. The railway is among the world's top transporters of intermodal traffic, moves more grain than any other American railroad, transports the components of many of the products we depend on daily, and hauls enough low-sulphur coal to generate about ten percent of the electricity produced in the United States. BNSF Railway is also an industry leader in Web-enabling a variety of customer transactions at www.bnsf.com.

The BNSF Technology Services Division, located in Forth Worth, prides itself on the use of technology to manage the business of keeping the railway running. The 500-person Technology Services team, led by Vice President and CIO Jeffrey Campbell, has been recognized countless times for innovation and best practices by Computerworld, the IT Services Management Forum, and CIO Magazine.

The Challenge

Managing the railway, and the business for that matter, is all about minimizing and if possible eliminating risk. The Technology Services group within BNSF is charged with building and maintaining a host of business critical software applications – all essential to the railway's reliable and safe operation. These applications include voice technology for train reporting and crew calling and a train dispatch system (similar to air traffic control for a railroad). The team has traditionally managed these applications with a variety of tools, and three separate change management systems including Serena PVCS and CVS for distributed platforms, and Serena ChangeMan ZMF for the mainframe.

In early 2005, the railway's internal and external audit firm identified several areas where BNSF could benefit

from tighter IT controls. Specifically, auditors recommended that to enable a solid foundation for Sarbanes-Oxley compliance, the BNSF team should improve its release management and application deployment processes. Like many IT organizations, the BNSF team lacked a mechanism for clearly showing the audit trail, approvals, configuration and bill of materials of a particular release.

The team took immediate heed of the auditors' recommendations and set to work to improve its processes. They also quickly realized that there was a greater opportunity: the situation represented a chance to standardize BNSF development teams, management and consulting constituents on a common set of tools and processes resulting in enhanced productivity, collaboration and efficiency. The audit-related requirements were rolled up into a larger Application Lifecycle Management (ALM) project, with a goal to deliver a comprehensive cross-platform requirements, change, process, configuration and release management automation solution across teams and locations.

The Solution

First whistle stop on the team's journey toward its project goal was to Gartner, for the analyst firm's advice and recommendations. From this discussion the BNSF team narrowed its choices down to a short list of three vendors – Serena and Rational due to the company's previous experience with those vendors – and MKS. The three vendors were brought in for closer scrutiny.

The ability of each vendor to meet BNSF's technology requirements was one half of the battle for MKS and its competitors. The other was the vendor's ability to meet BNSF's extremely aggressive implementation schedule. The Technology Services team was charging down the tracks toward an August 1, 2005 deadline for the completed

implementation. The auditors were returning to BNSF in October, and the BNSF team needed the ALM system up and running by August 1 to enable them to meet the auditors' requirement that they have a full 45 days of experience with the functioning system prior to assessment.

After comprehensive and in-depth product and business evaluations, MKS was selected as BNSF's vendor of choice. MKS was selected for its highly integrated architecture and "connected" functionality, its integrated build and deployment capability, and its overall ease of use. But even more importantly, MKS was selected for its low Total Cost of Ownership (TCO), its ability to implement quickly and its low administrative overhead. BNSF saw ongoing administrative effort as the biggest cost driver and recognized an order of magnitude difference between the MKS offering and those of its competitors.

BNSF's comprehensive ALM solution included MKS Requirements for integrated requirements management; MKS Source Integrity® Enterprise for enterprise software configuration management; MKS Integrity Manager® for process and workflow management; MKS Build & Deployment; the MKS Federated Server™ Architecture for geographically distributed team support; Openmake for build management and the MKS Toolkit® product for UNIX to NT interoperability.

"BNSF selected MKS as our partner for three primary reasons. First, we had a very tight timeline for implementation and they proved they could meet that timeline. Second, their solution was the most integrated of all that we looked at, from requirements through production implementation. And last, their architecture would blend easily into that of BNSF," says Jeffrey McIntyre, Assistant Vice President, Technology Services, BNSF Railway Company.

The Results

From an initial purchase in May, BNSF had 12 short weeks to get their ALM solution up and running for a 500-person team comprised of employees, domestic contractors, and offshore partners. MKS met this challenge full on with its inherent ease of implementation leveraged by a well-executed implementation plan. In ten weeks, MKS and its partners Aspen Software Consultants Inc., a Dallas-based software project management and software process optimization firm, and Catalyst Systems, experts in enterprise build management, together migrated existing PVCS and CVS configuration artifacts for more than 30 application teams, while also automating their development, build and release best practices. Leveraging MKS's ease of use, BNSF's own project staff contributed significantly to the rollout. In addition approximately 200 end users, including both Eclipse and .NET developers, received direct training from MKS onsite during this time period.

"The MKS Integrity Suite allows us to establish standardized processes and tools across our distributed teams and locations. This will ultimately aid in our compliance efforts, but more importantly, it makes our development process more efficient and our staff more productive," says Jeffrey McIntyre.

The MKS team also implemented MKS's Federated Server Architecture, enabling teams in Forth Worth, Topeka and India to work on development projects in real-time against a centralized code repository, liberating them from the administrative burden found in other solutions. The implementation of MKS's Build & Deployment and Openmake for build management allowed the BNSF to directly address one of their biggest challenges in the area of IT controls. This technology automated the team's

build processes, providing a complete audit trail of changes, progression and approvals through each lifecycle stage. Finally, the implementation team used MKS Integrity Manager's capabilities to manage the implementation itself. Employing MKS Integrity Manager as a help desk solution, the team could trend and tailor ensuing transitions, further streamlining the project.

"This was a rock solid implementation plan and effort against a really aggressive deadline," says Charlie Whitney, BNSF Tools Manager. "To get 500 people up, running and productive in a mere 10 weeks is nothing short of a miracle. Kudos to MKS, its partners and our team for their focus and ability to execute."

With a distributed change management solution now in place across their Technology Services Department, BNSF can confidently enter their next audit with the knowledge that they have fully addressed the challenges initially identified surrounding their release management process. They can now completely trace the versions and configurations used to produce their production applications, and can document every step of the process in the MKS ALM system. Beyond meeting compliance requirements, there are a number of additional benefits to the BNSF Technology Services team:

- All associated code is now securely managed in one centralized solution and location;
- There is now a consistent and standardized process in place across all application teams;
- BNSF now has the ability to build reports and mine metrics across the entire application lifecycle from a single, connected, repository.

The team, which has remote team members in India through a partnership with Infosys, has also improved support for offshore development and is enjoying improved performance and enhanced security. BNSF now has an open and flexible application lifecycle management platform from which to expand.

Planned future enhancements include the implementation of more advanced process, and integrations into Primavera TeamPlay, Marimba, Tivoli, and Serena ChangeMan ZMF's mainframe SCM system. BNSF continues to define and improve its development best practices and business processes. As the railway's business evolves, so will its use of MKS technology, thanks to MKS's adaptable and integrated architecture.

MKS

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