



“We had a library of PowerBuilder applications as well as experience using PowerBuilder. With EAServer we kept our development environment in the same family while leveraging the skills and knowledge we already had with the Sybase product.”

— Brad Ashton,
Systems Analyst, The Greenbrier Companies

The Greenbrier Companies

solutions

- Intro:** Greenbrier builds and leases railcars. Four years ago they began developing PowerBuilder® applications. When they decided to develop customer interfaces for the Web they chose Sybase EAServer as their Web application server. EAServer gave Greenbrier the features they needed and its seamless integration with PowerBuilder code made it the perfect tool to take their large library of PowerBuilder applications online.
- Industry:** Railcar manufacturing, maintenance, and leasing
- Business Requirements:** Change the existing method of distributing large railcar lease reports from printing, assembling and physically shipping the paper reports to making them electronically available for downloading through a Web interface. Build a generalized login and authentication interface to use for the lease reports and future Web-enabled applications.
- Solution:** An extensible Web presence powered by Sybase EAServer. The solution leverages existing PowerBuilder code and PowerBuilder development skills and utilizes the latest Java™ 2 Platform, Enterprise Edition (J2EE™) technology. The user interface uses Java Server Pages™ developed with PowerJ.®
- Architecture:** Sybase EAServer for NT running servlets and Enterprise Java Beans™ (EJBs) controlling PowerBuilder business rule objects.
- Products Used:** Sybase EAServer, PowerBuilder, and PowerJ.
- Results:** A dynamic Website providing a single sign-on entry point for customer applications. The previously printed and shipped railcar lease reports are immediately available for downloading in PDF and Excel formats and the site is very well received by the customers. Greenbrier has implemented an online server-to-server ordering capability for the railcar wheelsets they manufacture. Legacy PowerBuilder tasks have been embellished with automation features that had been unavailable before the EAServer implementation.

Web Locomotion — Supercharging a PowerBuilder Library

If you've stood by the railroad tracks watching a long freight train go past, feeling the ground rumble beneath your feet with a whiff of diesel in the air, chances are you've seen a product of The Greenbrier Companies. Headquartered in Lake Oswego, OR, Greenbrier (NYSE: GBX, www.gbrx.com) is a leading supplier of transportation equipment and services to the railroad industry in North America. Greenbrier builds new railroad freight cars in the U.S., Canada and Mexico, and repairs and refurbishes freight cars and wheels at eleven locations across North America. The company also builds new railroad freight cars and refurbishes freight cars for the European market through its manufacturing operations in Poland and various sub-contractor facilities throughout Europe. At Greenbrier's Portland, Oregon manufacturing facility, it also builds ocean-going barges for the maritime industry.

Greenbrier employs about 120 people in their headquarters and sales offices, and about 2000 people worldwide.

Selecting the Right Application Server

Greenbrier saw a need to Web-enable some of the established paper interfaces they had with their customers. The first function they wanted to move to the Web was the distribution of large reports they were printing and mailing to their railcar leasing customers. They also wanted to enable online ordering of railcar wheelsets and further enhance the functionality of their existing PowerBuilder code base. Norm Alexander, Director of Information Systems for The Greenbrier Companies, talks about the early requirements for an application server, “We put up a Website several years ago. The rail supply industry is not as dynamic as some other industries, and so for the most part our Website was electronic brochureware. The site was

pretty static; it contained press releases, photos and descriptions of our products, along with a bit about our business. We wanted to automate the Website and add a separate restricted section for our customers to log into where we could present them with the reports for their company. We offer various services; some customers want us to process only the railcar usage payments and other customers want us to manage maintenance work as well. As a result, there is a mix of leasing and maintenance reports. We wanted to be able to customize the information presented to the customer based on the services we provide them.”

Deciding what they wanted to do with the Website was perhaps easier than selecting an application server to power it. Norm Alexander and his team had little concrete experience in developing Web applications and decided to poll various consultants. Norm Alexander tells of this phase of the project, “It was interesting because we’d bring in three or four different people and we would get three or four different stories as to how to build the Website and what products we should use. We were thinking if we could get a few people to start gravitating towards the same answer then we would know it was the right one. Instead it started splitting off in all different directions, I guess at one point we were more confused than when we started.”

To address the confusion, Greenbrier brought in Don Lewis of CSG Professional Services, Inc. CSG had worked with Greenbrier in the past and had expertise with EAServer and PowerBuilder. Don helped them contact Sybase and put together their Sybase EAServer evaluation. At the end of the evaluation period they chose Sybase EAServer. Norm Alexander explains the reasoning behind selecting Sybase EAServer as their application server platform, “One of the things we looked at was our current environment. We had a substantial library

of PowerBuilder applications that represented a large investment of development time and money. The applications worked, and they fit our business needs. From the standpoint of lowering our development costs, it made the most sense for us to choose the Sybase EAServer product because of its relationship with PowerBuilder and our ability to reuse our PowerBuilder applications and cast them onto the Web in a straightforward manner. From the high level IT perspective, the pricing structure was significantly less than some of the other alternatives. I thought that was an important selling point and it was certainly one of the things we examined.”

“Sybase EAServer was a better fit for us both technically and financially.”

– Norm Alexander, Director of Information Systems, The Greenbrier Companies

Route to a Partner’s Area through EAServer

The development team’s first goal was to automate the voluminous paper reports they were sending to their railcar leasing customers. Rather than hardwire a quick login for the leasing customers, they decided to build an extensible partner’s area on the Greenbrier Website where customers could login and select various applications to run. Brad Ashton, Systems Analyst for Greenbrier says, “We put in a lot of design and up-front effort to build this central login area. We took a good look at the various login security models supported by EAServer, from native NT login to using a Java Server Pages™ front-end to make it a little bit prettier.”

“We decided to create an extensible login for the partner’s area, and we came up with what we thought was the best architectural solution. We were quite successful, we modularized it and we’ve been able to easily add new feature areas to it as needed.”

– Brad Ashton, Systems Analyst, The Greenbrier Companies

The partner’s area Greenbrier developed makes extensive use of the J2EE Model-View-Controller architectural guidelines. Greenbrier uses Session EJBs as the Model, persisting the detailed information to their database. For their Controller functionality they use a central servlet as the main controller for the partner’s area and other servlet controllers for each partner’s area application. The individual application’s controller calls session EJBs on the backend to coordinate the business logic and then passes the information to the appropriate JSP, which renders the View. Greenbrier uses Sybase PowerJ for all their JSP and Java™ development.

Tracking Railcar Leases

Greenbrier has a railcar leasing business managing a fleet of 40,000 to 45,000 railcars. Greenbrier owns about a third of them, the rest are owned by short lines and other rail shippers who want to outsource the complexities of collecting monthly rents on their railcars as they roll across North America.

All railcars have a transponder bolted to each side of the car; at major junction points the railroads have a reader alongside the tracks. When the car goes by the reader, it gets hit with a radio beam and the car’s

transponder replies with its unique car identification number which is recorded by the reader. The reader system is fully automated and allows all the railroads in North America to continuously collect information about where individual railcars have been, what junction points they hit, and when they get handed off to other railroads. The collected information is sent to the Association of American Railroads in Washington, DC, which sorts the data by car owner and sends a tape monthly to the owner detailing their railcar fleet’s travels over the last month.

For leasing clients, Greenbrier reads the information from the tapes, compares it against their database of contracts containing the terms and conditions of the leases, and generates invoices and reports. The reports contain a summary area and then detail the mileage and the costs for the individual railcars. Prior to implementing Sybase EAServer, Greenbrier had been printing the reports, some of which ran to hundreds of pages, and mailing them to their customers — a slow, expensive, and wasteful process.

Greenbrier’s on-line solution produces the same individual customer reports as the paper version. But rather than printing the reports, the reports are converted into Adobe® Acrobat® PDF files or Excel files available for downloading by customers who are authenticated by the partner’s area login. Brad Ashton describes the advantages of distributing the reports electronically, “We were able to exchange printed paper for disk space. We saved costs in the printer maintenance and the effort involved in packaging and shipping the reports. It also took time to print these reports; there was quite a bit of clicking and waiting and clicking and waiting. Now it is literally clicking and moving on as we electronically pull it into our database and put it on to the Web for viewing. Now since they can pull it down on demand, customers can look at the report if they want to or leave it there.”

“We wanted to expand the use of the Web to help with distributing information to our railcar leasing clients. I think it has worked out really well; it has certainly helped us gain, or maintain a competitive advantage in the industry.”

– Norm Alexander

True success is defined by the reaction of the user community when they notice your technology making a positive impact on their business. Norm Alexander talks about the reaction from the customer base, “The director of our Lease Administration Department has gotten a lot of positive feedback from our customers, they love getting their reports this way. It is easy for them to obtain and it’s available as soon as the report has been generated because it doesn’t have to percolate through the mail system. Customers can use the posted spreadsheets with the data for their internal fleet management purposes so they eliminate re-keying, and the inevitable errors that came with the paper. They see all these features as real pluses.”

Automating PowerBuilder Heavy Lifting with EAServer

Keeping track of thousands of railcars begs for automation. Early on, Greenbrier wrote Microsoft® Access desktop applications. As application development aggregated under the umbrella of the IS department, Greenbrier started using a central database. About four years ago they began using Sybase PowerBuilder to develop their database related applications. Greenbrier does not have a mainframe system; PowerBuilder and stored procedures in their database perform all of their computations. Discussing their PowerBuilder usage, Norm Alexander says, “Actually our shop here is fairly new, and by industry standards, the company

itself is pretty new. As we started to get the IS department in gear we began to pull our legacy Access applications into a more centralized environment. As our company grew and we looked at things that were more extensible, we went with Sybase PowerBuilder as the application development platform. Any new applications we developed would be put in PowerBuilder and later, as an application needed a rewrite, it was rewritten in PowerBuilder as well. About two years ago we started re-implementing our whole car hire processing system. We enhanced it and gave it features and capabilities we dreamed up that weren’t part of the original version of the software. We developed it all in PowerBuilder.”

PowerBuilder has been an effective tool for Greenbrier’s development staff. For Greenbrier, the next logical step from PowerBuilder was Web-enabled PowerBuilder via Sybase EAServer. EAServer provides seamless integration of PowerBuilder objects to an application server, a capability which Greenbrier used to establish a Web presence without losing any of their existing business rule logic.

“It is a powerful combination to be able to reuse our non-visual PowerBuilder objects on EAServer, and at the same time implement the latest in technology with the J2EE standards. It gives us the opportunity to really pick and choose the best way to go for any given project.”

– Brad Ashton

Writing an Industrial PowerBuilder Job Scheduler

Periodically, Greenbrier receives large, unstructured, and complicated files containing an inventory of all railcars in North America. The files are huge equipment lists with information on each car, who owns it, the dimensions, maintenance information, and any special equipment it has for handling particular types of loads. Due to the volume and complexity of the files, each one takes about 24 hours for a PowerBuilder program to process and import into the Greenbrier database.

Before Greenbrier started using EAServer, the import process needed to be manually started by an operator. Ideally, the job would be run during off-hours on weekends. EAServer made it possible to easily set up scheduling for the task so the job would run automatically without needing an operator's intervention. Brad Ashton tells about using EAServer's scheduling features, "I took advantage of several built-in EAServer/Java pieces. I wanted to defer this task to any date and time in the future. For instance, let's start this on Saturday morning when no one is here. I wrote the import using a session bean, an EJB. I kick that off within EAServer based on a service object that checks every 10 minutes to see if it needs to take action. I built a nice PowerBuilder front end to connect back to the EJB for our internal users. The front end tells EAServer that when there is a new file out there, here is when I want you to run it. I also wanted to be able to pick up any background activity so they can see what is going on during the 24 hours it is running. I used the session bean to accomplish those two tasks."

It's important to note that the file import job scheduler is not a Web-based application. It is an example of Greenbrier using EAServer's capabilities to bring added value to internal processes within the business. Sybase EAServer enabled Ashton to create an automated, off-hours, task scheduler. The scheduler

means less babysitting by the operator, and timely importing of the files because EAServer senses the file's presence and then follows the handling directives of the scheduler.

Ordering Wheelsets Online

Greenbrier assembles train wheelsets for their new railcars, as well as for sale to other companies as replacement wheels. The typical railcar traverses many thousands of miles of track in a year and the steel wheels eventually wear out over time. Historically, each railroad had its own maintenance shops for replacing the wheels. However, in recent years, the railroads have outsourced these types of maintenance services to third parties.

A large Greenbrier customer runs multiple field maintenance locations providing railcar repair services. This customer ordered wheelsets in bulk from Greenbrier and asked them to receive orders over the Internet, instead of using the previous method of faxing these orders. The customer had been faxing an order to a Greenbrier wheelset supply shop where the order fulfillment information was handwritten on the sheet and faxed back to the customer. The customer would then manually enter the information into their ERP system. The new method has the client's user entering the order on their own Website. The order is forwarded to the Greenbrier Website by programmatically calling and filling out a JSP form on Sybase EAServer. The information is saved to the database and emailed to the appropriate Greenbrier wheelset shop where it is printed out. Once the shop decides how to fill the order, they logon to the Greenbrier partner site, click on the order and enter the fulfillment information. The updated order information is immediately sent back to the client's Website and imported into their ERP system.

The new system benefits the customers and Greenbrier. Previously handwritten records are now self-auditing and saved throughout the process. The order now originates just once from the customer, and both Greenbrier and the customer receive the data and the order resolution automatically into their back end databases. The process is faster, more accurate, and requires less human intervention.

Support from Sybase

In addition to liking Sybase's products, Greenbrier has high praise for Sybase's people. During any evaluation period, customers expect to get excellent support. During the implementation period after the software has been purchased, customers also expect excellent service, but the difference is they notice when it's delivered.

“I have seen other efforts like this—going to the Web and trying new technologies—fail in a big way because they didn't get the support they needed in the beginning. It can be a pretty big hurdle. That problem didn't happen here because Greenbrier had the support and had the resources to do it.”

— Don Lewis, Senior Account Manager, CSG Professional Services

Norm tells about working with Sybase over the long haul, “Our Sybase field support engineer Jim Kawanami, was very helpful with navigating things on the Sybase side of the house. His guidance was a big help in getting this project up and running.”

“I think the implementation went very well. In the early days when we were getting EAServer running, we traded emails fairly regularly with Jim. He was very responsive and got back to us with answers to our questions and quickly resolved any issues.”

— Norm Alexander

Looking Down the Line

Greenbrier plans to expand the reach of their Partner's Website. Using EAServer as the foundation, they have built the necessary infrastructure to easily add new services. Norm shares their near term plans, “For the Web related items, we would like to take the existing environment for posting reports out to the Web and expand it to our other applications. We certainly plan to continue to expand reporting to all of our car hire customers. We want to expand the types of reports we post to our Website. We want to be able to do more things that way and carry it over into our mechanical services department as well. We could post the reports they are currently sending out via email to the Web, making things easier for us and for our customers. We want to continue doing what we have been doing and expand the existing environment to take the maximum advantage of what we have already built.”

Magic and Flexibility

From children putting pennies on railroad tracks, to adults hearing the distant train whistle through an open window on a warm evening, for some, trains never lose their magic. Railroads are fundamental to our economy and deeply rooted in our culture.

Greenbrier uses EAServer in diverse ways to bring added value to their piece of this venerable industrial institution. First, Greenbrier established a true dynamic Web presence with their partner's area for customers to login and download railcar lease reports. Then Greenbrier used EAServer to enable electronic server-to-server ordering of wheelsets—this creative B2B type of application demonstrated the agility of Greenbrier's electronic business operations. Greenbrier also uses Sybase EAServer to make their internal tools more effective and their people more efficient. Clearly, Greenbrier has tapped into the magic of EAServer's flexibility. They don't use EAServer as a single purpose platform; instead it's a tool they creatively employ, addressing many different types of needs. Innovation is alive and well in the railroad business.

“Linking back to EAServer from PowerBuilder, and watching the two work very well together with minimal effort was impressive.

This capability lets our department develop in Java if we want to and put it on EAServer, then someone else can put on a nice GUI front-end to access it. This built-in flexibility was a big reason I would go home thinking, ‘Hey, this is really cool.’”

– Brad Ashton

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