



Barnes & Noble

Helping suppliers track sales and inventory in real time

Overview

The need

Create an online reporting tool that tells suppliers what books and other items have and have not sold.

The solution

Barnes & Noble improved communications with suppliers by deploying a web-based sales and inventory portal on a pre-integrated, pre-optimized data warehouse appliance from IBM. Publishers log on to get metrics on sales and inventory, then use the information to optimize inventory levels and avoid costly returns and stock-outs.

The benefit

Reduced inventory levels and inventory carrying costs; empowered small publishers to improve business results with real-time, sell-through status; decreased time to run queries from weeks to seconds.

Barnes & Noble, the No. 1 bookseller in the United States, has an unusual supply challenge: Its inventory is a mile wide and an inch deep. A store can carry up to 200,000 titles, including single copies that can sit on a shelf for a year. That makes it difficult to track results, especially for publishers.

How can they get accurate sales and inventory updates and avoid returns and stock-outs?

Barnes & Noble has built a solution, using the IBM Netezza® data warehouse appliance as its platform for a web-based sales and inventory portal that feeds metrics right to the publishers.

“Suppliers can log in on a daily basis and see sales and stock ratios,” says Tom Williams, director of Web Services for Barnes & Noble. “It shows them what’s selling and how, and the categories they’re strong or weak in.”

The goal of this service? To integrate the supply chain and help publishers reduce their costs. “We win if they win,” Williams says.



Smarter Computing: The IT infrastructure of a Smarter Planet

Barnes & Noble transformed a four terabyte data warehouse with hundreds of billions of rows into a dynamic, agile platform that delivers real-time insight into product sales and stock ratios. Moving from a traditional data warehouse to a pre-integrated, pre-optimized platform enabled the company to perform analytics that were previously impossible. Barnes & Noble can now provide suppliers with a view of their inventory as never seen before, including big supply chain views, geographic views of the data, stack charts and heat maps showing entire groups of titles and subjects over time. The platform's simplicity has enabled Barnes & Noble to manage the environment with one part-time person, instead of 3.5 full-time equivalents (FTEs) that would be needed for other platforms.

Building better supplier relationships

A nationwide retailer with more than 700 stores, an online subsidiary (barnesandnoble.com) and an e-reader (the Nook), Barnes & Noble provides a comfortable environment whatever the channel. Readers can order a book online, load one on the Nook, browse through the racks or sip coffee in an in-store Starbucks. But one goal had not yet been achieved: to integrate with suppliers the same way it had with customers. "We wanted to make it easy and transparent for them to work with us," Williams says.

Specifically, publishers needed a better way to track results. "There isn't a really good way with the leading industry solutions to get a picture of how things are going," Williams explains. "Those solutions provide weekly data. You don't get to see inventory over time."

The consequences of this weak snapshot? Publishers absorb the losses on returns when they print too many books, and have stock-outs when they print too few. And the impact is worse on small publishers, those at the end of what Williams calls "the long tail" of the traditional supply-and-demand model.

Big publishers have resources; the smaller players don't. So Barnes & Noble sought to provide "one materialized view." But it had to be easy to use because the firm was in no position to train 10,000 independent publishers. And given the thin amounts of inventory and the wide range of products, there were unique business intelligence (BI) requirements.

"Peers from the apparel industry can have 10,000 SKUs," Williams says. "Here there are 20 million, and it's even greater with eBooks, where you don't have stock and can keep it as an active title indefinitely."

Solution components

- IBM Netezza® 1000
 - IBM Netezza 100
-

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In 2011, Barnes & Noble tested an early version of its portal, using Microsoft SQL Server as a platform. The system was tested in a limited pilot with 10 large publishers. “We learned quickly that the solution had reached the limits in terms of what could be accomplished with analysis services,” says Williams. “There was simply too much data.”

Seeking greater performance and simplicity, Barnes & Noble switched to an IBM Netezza data warehouse appliance in order to speed up the queries and deliver higher concurrency.

“The first version lacked the ability to say, ‘There’s still one copy on the shelf,’” Williams says. “It’s now organized around transitions—did one come in, did one go out?—and constructing a snapshot of where things are in real time.”

He adds, “We knew what we wanted. We could have looked at Vertica and [Oracle] Exadata, but Exadata would have put us where we were. We didn’t want to manage an Oracle database putting cubes on top of it and running custom UDX [user defined extensions] for it.”

The turnover went smoothly, and the suppliers in the pilot “didn’t even know that happened,” Williams says. “The IBM Netezza implementation started in the winter and went live in the spring,” he adds. “With the Microsoft implementation, we were out there for over a year.”

Given the scope of the challenge, all you need for a successful implementation is “the proper thought process upfront,” says Williams.

Barnes & Noble now has about four terabytes of data on the IBM Netezza data warehouse appliance. “It’s not a lot of data because it’s stored in an unusual way,” Williams says. “The effective row count is in the hundreds of billions, but they are relatively thin. Compression is gained by not storing things you don’t need. The appliance idea was just perfect for a group like ours. And it’s evolved, so we can do more than we intended to do.”

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—Tom Williams

Stronger reporting leads to better supply decisions

Barnes & Noble is now rolling the portal out beyond the pilot stage. “We’ve got more than 50 percent of the publishing market seeing it, although we don’t have more than 50 percent of the publishers,” Williams notes. And the IBM Netezza data warehouse appliance—the “simplest and easiest-to-maintain solution” according to Williams—provides several benefits:

- **Insight**

“Our suppliers now get pictures that we have never seen before at Barnes & Noble: big supply chain views, geographic views of the data, stack charts and heat maps showing entire groups of titles and subjects over time,” says Williams. “Having the IBM Netezza data warehouse appliance allows us to stop on a dime. We’re more agile at development, and we can even offer features that we don’t have for our own teams. In fact, while the system was originally designed for suppliers, it has been so successful, buyers are now using it as well.”

One happy user is a middle-tier publisher without the resources to develop its own tool. “They now receive pictures of their business that they wouldn’t have had,” Williams says. “The further publishers are in the long tail, the more excited they are.”

- **Speed**

Queries are now answered in real time. Case in point: “A leading national publisher wanted to see sell-through, or the relationship between sales and stock in our distribution centers, over two years, but it took weeks to export data from the Microsoft warehouse into Access,” Williams says. “We now do that for this leading publisher in seconds.”

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• **ROI**

The IBM Netezza data warehouse appliance has helped the company reduce costs. Williams estimates that it would have taken 3.5 full-time equivalents (FTEs) to run the previous system, including part-time storage area network (SAN) administrators and database administrators (DBAs). “We can manage the IBM Netezza data warehouse appliance effectively with one person,” says Williams. “And very soon, it will be only part of the person’s job. I can’t imagine another project of this scale that has required only half a headcount to keep running.”

That’s not the only potential savings. “Over time, we’ll also spend less on hardware because we can scale out and still do the same things with one IBM Netezza system,” Williams says.

Barnes & Noble could charge for a tool like this, but the company prefers to use it “as an incentive to do business with us,” Williams adds.

What’s next? “Forecasting, predicting out-of-stocks, clustering stores,” Williams says. “It’s nice to get the historic pictures. Now let’s do a little more prediction.”

For example, big publishers might identify stores with similar buying patterns—those strong in sports, say—and use that insight to plan smaller, more efficient print runs. “Whether you’re a self-publisher or the biggest publishing house in New York City, we want you to be able to use this application,” Williams says.

Whatever the future, Williams expects to be “throwing algorithms” at the IBM Netezza data warehouse appliance. “Am I happy with IBM Netezza? I am,” he concludes. “Would I do something similar again? Absolutely.”

About IBM Netezza data warehouse appliances

IBM Netezza data warehouse appliances revolutionized data warehousing and advanced analytics by integrating database, server and storage into a single, easy-to-manage appliance that requires minimal set-up and ongoing administration while producing faster and more consistent analytic performance. The IBM Netezza data warehouse appliance family simplifies business analytics dramatically by consolidating all analytic activity in the appliance, right where the data resides, for industry-leading performance. Visit: ibm.com/software/data/netezza to see how our family of data warehouse appliances eliminates complexity at every step and helps you drive true business value for your organization. For the latest data warehouse and advanced analytics blogs, videos and more, please visit: thinking.netezza.com

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For more information

To learn more about the IBM Netezza data warehouse appliance, please contact your IBM sales representative or IBM Business Partner, or visit the following website: ibm.com/software/data/netezza

To increase the business value of your IBM data warehouse appliance, participate in an online community. Join the IBM Netezza community at: www.enzeecommunity.com

For more information about Barnes & Noble, visit: www.bn.com



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