

COVER STORY: Dollar General



Ryan Boone, SVP and CIO for Dollar General, uses a cloud-based solution to find opportunities in market basket analysis.

What's in Your Market Basket?

DOLLAR GENERAL ADOPTS A NEXT-GENERATION, CLOUD-BASED DATA WAREHOUSE AND REPORTING SYSTEM FOR LARGE-SCALE, HIGH-SPEED ANALYSIS

A massive cloud over Europe obscured views and disrupted air travel this spring thanks to airborne dust from an active volcano, while another large cloud within Dollar General was having the opposite effect. It was producing new levels of clarity by doing large-scale, high-speed analysis on billions of rows of stored data and delivering actionable insight to marketing and merchandising executives who were effectively putting it to use.

Insight from this cloud-based, data warehouse and reporting solution was uncovering previously hidden opportunities for key executives to make more informed decisions to increase same-store sales, which is essential to help drive one of the fastest growing retailers in the country.

Results from this system and other strategic steps taken by Dollar General in the past two years have produced impressive financial gains. At its

tives in the industry.

Despite the promise of cost reduction and productivity gains, many retailers are still taking a cautious approach to this emergent technology, which uses XML and hosted Web services to access a centralized database over the Internet.

Cautious retailers believe storing critical data off premises carries serious risk. Fears that come to mind are service outages that halt business operations, poor response times that hamper productivity, and questions about data ownership and transfer at the end of a contract.

The Dollar General deployment goes a long way toward allaying these fears, in part because it is a \$12 billion enterprise with 8,800 stores. Its cloud-based data warehouse system currently handles 45 terabytes with 70 billion rows of data.

“Initially, I was skeptical about cloud technology for enterprise data warehouse needs, but it runs on standard or commodity servers, so it is completely scalable, and instead of a big cap-ex investment, we just buy the capacity we need.”

most recent quarterly filing, on March 31, Dollar General reported a net income increase of 121 percent to \$172.9 million along with 9.5 percent growth in same-store sales in 2009 on top of nine percent growth in 2008.

“We accomplished these objectives while investing for future growth, a balance that positions us well for the long-term,” said Rick Dreiling, chairman and CEO. “We are confident that we have the right strategy in place to continue building on our track record of profitable growth as we enter 2010.”

Proof of ConCePt

Aside from strong financial results, another interesting outcome of the project, headed by Ryan Boone, senior vice president and CIO, was demonstrating a proof of concept for a cloud-based solution in the retail environment, something still viewed with skepticism by many IT execu-

If a retailer the size of Dollar General can use a cloud-based tool to handle core business operations, then most retailers also can use it and the technology may be more bullet proof than many retail CIOs think.

Cloudy with a ChanCe of insight

The project began in late 2007 when Dollar General decided it needed a better way to access historical data for market basket analysis. Reports at the time were difficult to assemble and hard to provide a complete picture for marketers to analyze.

“We had data stored in lots of different places,” says Boone. “We wanted to restructure it so there was a single source to go to with a quick and easy ability to extract information.”

Traditionally, when tier-one retailers go down this path they install big-iron servers with proprietary software requiring a large capital expenditure.

While most retailers are in a slow-growth or no-growth mode, Dollar General is expanding by 600 stores this year and its data needs are increasing exponentially. In a growing enterprise like this, data requirements will be very different in five years than they are today.

This scenario raises a classic IT dilemma: Should you buy big iron today knowing you are paying for unused capacity for many years to come? Or should you explore newly emerging technologies that promise pay-as-you go?

Boone decided to take a look at a Web service solution from 1010Data delivered

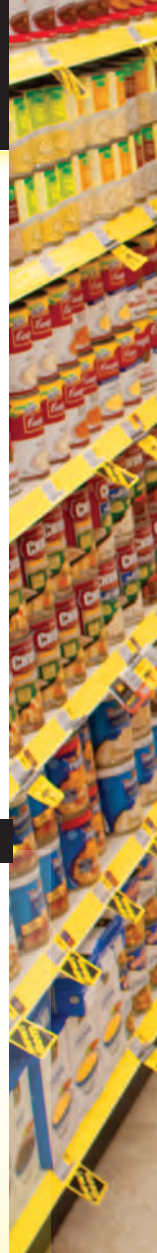
rebuilding the architecture from the ground up to create a single-instance database with attributes that go to the lowest level of each transaction — SKU, price, number of items, couponing and more.

When it went live it was targeted for 30 to 40 users, mostly line of business executives in marketing and merchandising. Analysis was used to get insight into pricing trends, promotional and campaign effectiveness, and demand affinities between unrelated products.

A half-day of training got most executives up to speed with the system while others were

requently helps up increase productivity and better run our business, not only in merchandising but across multiple functions such as supply chain and finance.”

Two other big benefits Thorpe noted were: “One, we can now make decisions in absolutes and not in averages, which is important when you have 8,800 stores and averages tend to level things. This makes us a much better merchandising team, because we can more accurately assess cur-



BY THE NUMBERS

- \$11.8 billion** Revenue in 2009
- 80,000** Employees
- 8,800** Stores
- 1955** Year first store opened in Springfield, KY
- 600** Planned store openings in 2010
- 35** States with stores

DOLLAR GENERAL®

TECH TOOL BOX

- **DATA WAREHOUSE**
1010Data
- **NETWORK INFRASTRUCTURE**
Cisco
- **SERVERS**
HP and IBM
- **FINANCIALS**
Lawson
- **MERCHANDISING**
Custom
- **POS**
Custom

in a private cloud. “Initially, I was pretty skeptical about cloud technology for enterprise data warehouse needs,” says Boone, “but 1010Data had significant experience serving big clients like the New York Stock Exchange. The database software is proprietary, but it runs on standard or commodity servers, so it is completely scalable. Instead of a big cap-ex investment, we just buy the capacity we need.”

MARKET BASKET TRANSPARENCY

After two months of planning and implementation the market basket project went live in early 2008 with two years of raw POS data, which comprised six terabytes or 10 billion rows of data, according to Boone.

A great deal of effort by a small internal team went into refining the data master and

able to pick it up on the fly. Boone designed the system to serve three different types of users:

1. Casual: executives that need a fixed amount of data in daily reports with flexible drill-down capability.
2. Primary: those that use BI proactively and need a tool that points at the data warehouse to extract relevant information to create tailored reports.
3. Power Users: those that get into the lowest level of data using native scripting language and creating complex scenarios.

After using the market basket analysis through 2008, Jim Thorpe, SVP of consumables merchandise for Dollar General, noted there were measurable productivity gains. “We used to wait to look at item-level performance at the end of the month, but now we can use it every day,” says Thorpe. “Extracting data fre-

quent campaigns and adjust much more quickly on the fly. And two, we can build item clusters and store clusters by doing analysis faster and in more detail. We are even beginning to determine affinities in the basket and analyze patterns by day of week or time.”

Like all major IT investments, the market basket project was based on an ROI goal and, according to Boone it met expectations and “we are very happy with results.” Another measure of success was that business executives quickly understood the benefits of using the new system and the user base rapidly grew.

EXPANDING THROUGH THE ENTERPRISE

After the successful deployment of the market basket project, Boone decided to expand the



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cloud-based data warehouse and reporting system throughout the enterprise, and today all of the company’s data is handled through this leading-edge system.

“The store operations department can use it to analyze traffic conversion and store-to-store comparisons,” he says. “And supply chain executives can use it to examine on-shelf availability, vendor scorecarding and inventory analysis. You can’t really anticipate all the future uses of the system, because when the user base catches on they will uncover new possibilities and become drivers of adoption.”

Today, 250 executives use the system and when the enterprise data

warehouse rolls out in a couple of months the plan is to grow the user base to more than 750.

Some of the achievements Boone cites include greater database flexibility, getting information closer to decision makers, and getting rid of the IT bottleneck to build queries and reports.

“The key to any enterprise data warehouse is to make it relevant with actionable information and getting it into the right hands,” says Boone. “That’s really the magic. When you get all the data in one source to help make decisions in a timely manner it will make a difference in your company’s business performance.” **RIS**