



THE ONLY WAY TO GO

Family Dollar finds success with the combination of Linux and IBM @server xSeries servers

BY JIM UTSLER

There's something to be said for all of those non-big box retail outlets out there. For example, you don't need to spend hours wandering the aisles looking for a screwdriver, park half-a-mile away or camp out in a 20-customer check-out lane waiting for everyone in front of you to finish writing out their checks.

Today's retail businesses are facing new and daunting challenges, especially as the competition in this business sector continues to heat up. It's no longer enough to have low prices and good service, but they also need ways to react quickly to changing dynamics, dealing with vendors and complicated supply-chain matters, not to mention internal day-to-day operations such as inventory, accounts receivable and payable, and human resources.

Fortunately, they don't have to invest a great amount of dollars in their IT environments. They can often get by on less-costly, but no less robust alternatives, including Linux* and physical servers such as the IBM* @server xSeries* server, as is the case with the Matthews, N.C.-based Family Dollar. Rather than using overpowered UNIX* and big mainframe boxes, which can be too costly to both purchase and maintain, the company relies on xSeries boxes and a small mainframe—both running Linux. This has allowed the company to run a lean and flexible computing environment that meets the demands of today's competitive retail market.

mainframe, which was replaced by a newer IBM mainframe around two years ago. Needing to run a key UNIX financial application, however, it began moving toward UNIX-capable HP boxes, including some HP 9000s. Even though the company began to rely on these UNIX servers, it also began investigating Linux for internal purposes, "we began running it on some desktops. And then, as we were looking at putting additional applications on the HP-UX boxes, we thought, well, why don't we look at Linux running on IBM hardware."

Based on this early Linux experience, the company began introducing Linux applications to its IT environment as they became available and a proper fit was found. "We started looking at alternatives to the HP server to perhaps run our sales audit application," explains Poff. "So we picked up an x345, loaded Linux and put the sales audit application on it. When we compared that to a similar configuration on HP-UX, we found they were pretty comparable in terms of performance. That opened a lot of eyes around here, and we started taking a closer look at what we could do with Linux on the xSeries [servers]."

were introduced into its IT environment to run Windows.

As Poff remembers, "The Windows team came to us, saying, 'These are really nice, powerful boxes; you should consider running Linux on them as well.' That, in addition to our earlier experimentation with Linux, kind of helped get the ball rolling, and that's when we started evaluating them."

When asked about the rather odd notion of Windows administrators suggesting that the company should also deploy Linux, Poff laughs, saying, "We all get along pretty well unlike other places. In fact, I read about a place where, when the Linux and Windows teams had meetings together, they would have to have an HR representative with them because of a previous fist fight. Here at Family Dollar, we know we're all on the same team with the same goals, which are the betterment of the company."

Just a Bit More

Since adopting Linux on the xSeries servers, the company has added additional applications. For example, one instance supports an FTP server that allows its vendors to upload and download files. It also has a database running on Linux and is piloting a portal that's partially hosted on Linux. This portal, which is part of the company's larger "Store of the Future project," now allows a limited number of beta-store sites to access key



operational data. This will help the individual stores, which are all corporately owned, better serve their customers.

Notably, Family Dollar is also running a Linux instance on its mainframe. It's used for a number of purposes, including as a file server for its warehouse conveyor system and a print server for the mainframe. As Poff explains about the latter,

"We have some big dot-matrix printers on the network, both in the warehouse and in our building here, and we use a Linux partition as a print server so the mainframe can access them. This was just a matter of deciding that since the mainframe was available and capable of running Linux, as well as our legacy apps, we might as well get some additional use out of it."

This multiplatform approach to its IT environment has allowed Family Dollar to create the flexible computing backbone needed to remain competitive in the retail market. Linux, it has discovered, is a less expensive, better performing and more easily managed alternative to other proprietary operating systems (OSs), especially when it runs on the xSeries server. As Poff points out, the HP systems might be more powerful, but they also cost much more than the xSeries boxes. That's why the company is relying more heavily on the xSeries servers to run everyday Linux-based applications instead of putting them on the more expensive servers.

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—John Poff, senior systems engineer, Family Dollar

Investigating Linux

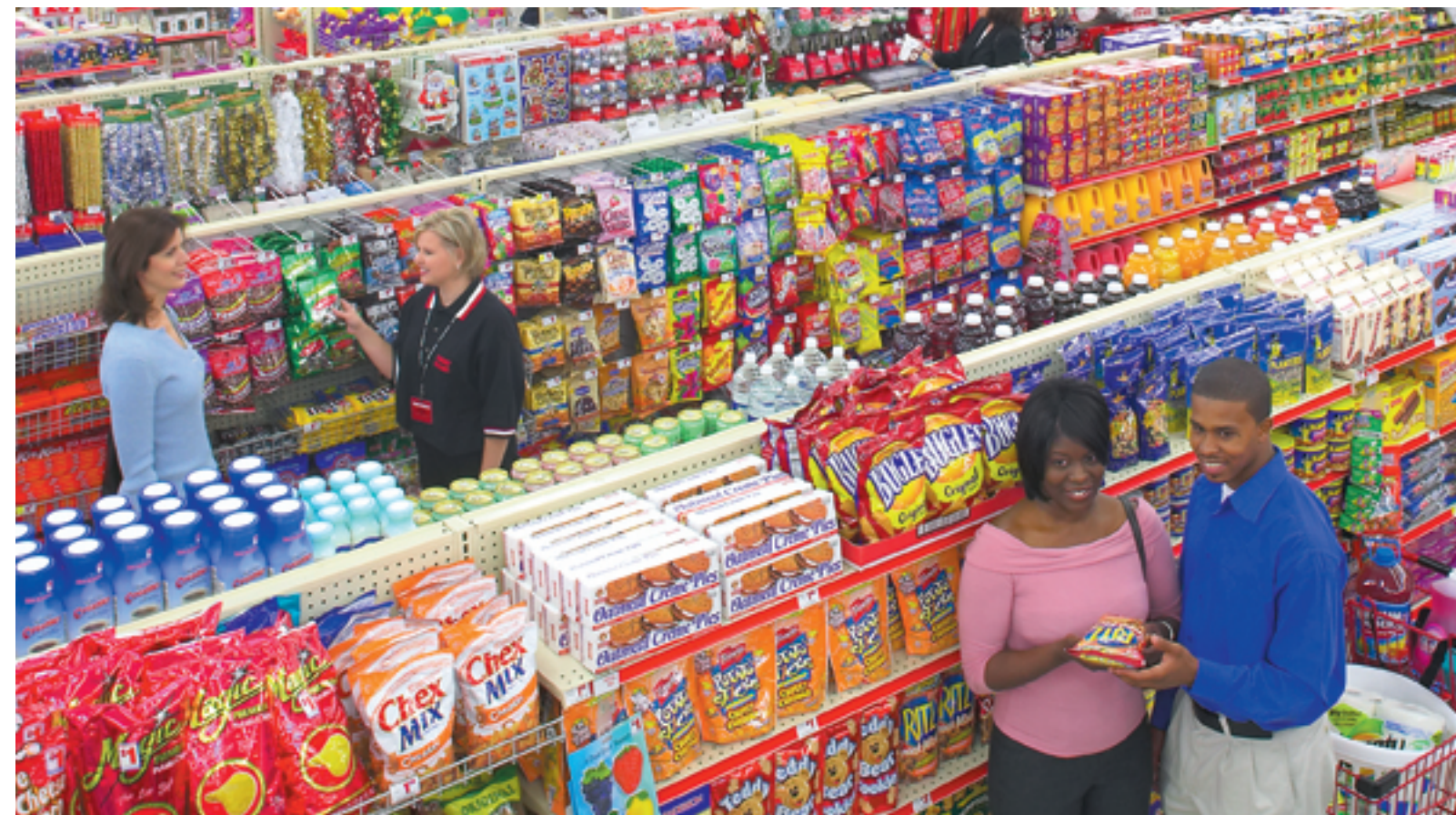
Despite its name, Family Dollar isn't a dollar store in the purest sense of the term. In fact, according to John Poff, senior systems engineer with Family Dollar, "We have items that run up to \$15 or \$20, although those are probably our most expensive items." Thanks in large part to its low prices (not to mention its customer-centric retail philosophy), the company continues to grow. As of late 2004, it had more than 5,500 stores in 44 states, from Arizona to Maine.

As one might expect, the company needs a rock-solid and easily adjustable IT environment to support this large and expanding presence. To that end, it has a host of xSeries boxes, an IBM mainframe and other systems in place. The xSeries servers consist of an x445, an x360 and 19 x345s, most of which are running Red Hat Linux Advanced Server version 2.1. (The others are running Advanced Server 3.0.) The mainframe, which the company is slowly phasing out, runs a variety of legacy applications as well as several partitioned instances of Linux. It also has, in addition to some Windows* technology-based servers (many of which are also running on xSeries servers).

Prior to 1998, Family Dollar had relied heavily on an IBM

Because the company already had an HP-UX box in place, it didn't immediately dismiss other HP platforms as viable alternatives on which to run Linux. As it conducted further tests, however, it became clear that the xSeries servers had the advantage when it came to price/performance measurements. This became especially evident when the company was considering a Linux-based transportation-management system to help it more easily administer shipments coming from its vendors, through its carriers and to its distribution centers. The application provides a Web site that its carriers can log onto to update information and perform other tasks. "We decided to run the application, which saves our carriers a lot of money, on Linux, and we wound up going with the x345s, which we rolled out and put into production about a year ago," Poff recalls.

This decision to run the transportation-management application, as well as others, on the xSeries servers was based on performance and cost. According to Poff, this Linux on xSeries solution came in less expensively than a similar solution on an HP platform. Other issues also related to ease of use and manageability, with—in an unlikely scenario—Family Dollar's Windows administrators encouraging the use of Linux on the xSeries servers. In fact, the company's first xSeries servers





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As far as Linux, which we consider an important tool in our IT toolbox, is concerned, the primary benefit is cost.”

— John Poff

Despite minor performance differences, Poff indicates that the company will continue introducing Linux-based applications on the xSeries servers as needed, seeing no need to revert to other systems, unless heavier—and often significantly more expensive—iron is required. “We’ve been very happy with our choice of the IBM hardware; it’s been very good for us. And now, it’s our preferred choice. If we’re going to get some additional boxes, that’s our default, being a known quantity.”

The company is also exploring ways to cluster its xSeries environment, seeing this as a way to introduce new applications into its xSeries technology-based Linux environment. Although still in the planning stages, Poff says this will benefit the company greatly, giving it another way to exploit not only Linux, but also the affordable power of the xSeries platform.

The Business Mindset

Because the retail industry has become increasingly competitive over the past several years, organizations such as Family Dollar need ways to respond quickly to changing market pressures, ways to “react fast,” as Poff puts it. “If you have an issue in the retail business,” he continues, “you’re probably losing money. You have to move now and solve the problem. You have to find the best solution with the best fit that’s also economical. It’s that type of business mindset that drives what we do in IT at Family Dollar.”

Thankfully, combinations such as Linux on the xSeries server allow for this type of problem solving—at a reasonable cost. As Poff explains, “When new applications come out, we know we have solid platform for it, both on the operating-system and hardware fronts. And instead of going through a six-month implementation process, which other industries have the luxury of enduring, we can now get it up and running very quickly. Coming from a cost/performance perspective, it’s really the way for us to go.”

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