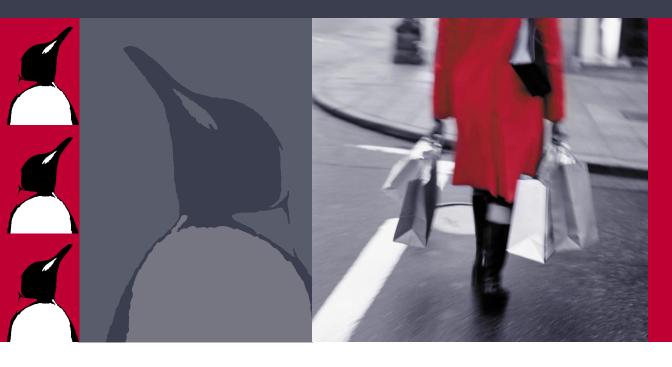# Real Advantages,
Proven Successes

Retail Solutions and Services on Linux

e-business

Linux has a rich history of supporting e-commerce applications: the first applications of Linux were in the Internet infrastructure areas. And now the fast, streamlined, Internet-ready characteristics of Linux have attracted even the largest retailers.

Linux: meeting today's retail business challenges

The evolving reality in retailing is that companies must better serve empowered customers, while also lowering costs. Information technology (IT) is critical to competitiveness—playing an even greater role today by enabling more streamlined operations, new ways of satisfying customers and opening new sales channels.

Many more consumers are doing their research online before making a purchase—not only selecting what to buy, but where to buy it. While most purchases are still made in stores, the Internet has greater influence over where the purchase is made. With a few large retailers staking out the low-cost position in their markets, an important key to competitiveness is providing a superior customer experience.

Consumers can control their shopping experience if they have a variety of ways to interact with the retailer—from self-service to high-touch interactions. The Linux® operating system can be a key ingredient to boosting the bottom line—and dramatically improving competitiveness.

Since it was introduced in 1991, no other operating system in history has spread as quickly across such a broad range of systems as Linux. According to studies by market research firm IDC, Linux is currently the fastest growing server operating system, with shipments expected to grow by more than 34 percent per year over the next four years.[1]

With its high performance, reliability and flexibility, Linux running on IBM systems can improve

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[1] IDC Server Market Forecaster, December 2002.

your ability to respond to unexpected customer demands and speed time to market for new initiatives. Linux, together with solutions from IBM, offers fast, effective low-risk options to help cut operating costs. By offering solid performance and cost-effectiveness, Linux is ready to perform the most demanding business-critical tasks.

The ibm.com Web site and the IBM intranet are powered by servers running Linux. And we use Linux to drive critical business applications—such as a new completely automated, $2.5 billion chip-manufacturing facility.

It is the *total* costs that can be lower with Linux. According to a senior analyst for the TowerGroup, "Linux is proving to have an advantage over alternative operating platforms with a lower TCO (total cost of ownership), both in terms of lower hardware and software expense and ongoing maintenance and support."[2]

In addition, recent research from the TowerGroup[3] also found that compared to UNIX® and Microsoft® Windows NT® platforms, Linux has the lowest license, installation, administrative and support costs for certain business functions.

Because Linux is open source, it allows freedom of choice—freedom to choose the best software, systems and solutions to meet your business needs. You can then more easily integrate your business with suppliers, strengthen your supply chain and continue to drive down costs.

IBM is playing a key role in encouraging Linux application development. We moved our middleware to Linux early on; our partners have been developing and porting applications to Linux for years. There are more than 4,000 Linux applications listed in the

[2,3] Dushyant Shahrawat, "Wall Street Romances the Penguin: The Growing Popularity of Linux," TowerGroup report, September 2002.

IBM Global Solutions Directory to enable retailers to leverage the value of Linux solutions through innovative new applications as well as through the proven applications that are in use today.

IBM has the expertise to get you into a Linux environment. We combine more than 20 years of experience in the retail arena—including our best-selling point-of-sale (POS) solutions—with industry-leading support and knowledge of Linux.

Linux benefits four key areas of retail IT

- **Workload consolidation:** By consolidating distributed workloads (such as Web serving) from competitors' systems onto IBM platforms, retailers can realize reduced costs, efficient resource utilization and simplified management.

- **Distributed enterprise computing:** Retailers with geographically dispersed locations can leverage low-cost, centrally managed, robust Linux servers that are easy to replicate.

- **Clusters:** IBM Linux clusters include scalable configurations of servers, storage hardware and cluster management infrastructure. These clusters are augmented with pre-integrated, pretested IBM middleware and IBM services tailored to retail requirements—providing you with superior scalability and low-cost modular growth that is easy to deploy and manage.

- **Infrastructure:** IBM Linux-based infrastructure servers—for firewalls and for print, e-mail and Web servers—are pretested, low cost and easy to use, install, set up and expand.

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The evolving retail experience: put the customer in charge

Armed with more information than ever, empowered consumers are gaining more control over the shopping experience. The widespread adoption of technologies by retail companies is enabling many new ways for consumers to shop and for retailers to communicate with them. Technology also can help retailers lower operating costs. With industry consolidation underway, the winners will be retailers that meet customers' demands while controlling costs. Linux can play a particularly important role in achieving both these objectives by enabling initiatives that can have a fast payback.

Use Linux to transform the customer experience

e-business applications must integrate with other systems to provide customers with the complete personalized shopping experience they desire.

Linux has a rich history of supporting e-commerce applications: the first applications of Linux were in Internet infrastructure areas. And now the fast, streamlined, Internet-ready characteristics of Linux have attracted even the largest retailers to build their e-business systems on Linux.

IBM has experience with thousands of Linux customer engagements worldwide. We have learned that successful e-business applications depend on an open, flexible approach to encourage the rapid development of new e-business solutions. From innovative POS applications to wireless e-commerce systems, IBM can help identify new uses of IT to expand your retail opportunities, improve customer loyalty and ultimately create a competitive edge.

Casas Bahia, Brazil's largest non-food retailer with 320 stores, had no upgrade path with its DOS-based POS systems and wanted to expand their functionality. Casas Bahias now has a Linux-based IBM POS system and is moving toward an all-Linux environment, including its mainframe and in-store processors.

Use Linux to enable new sales channels

Multichannel marketing is a significant opportunity for leveraging IT to expand sales. In addition to the Web, Linux enables other customer self-service channels, such as kiosks. Whether they are used in transactions, merchandising or customer care, reliable Linux-based kiosks can increase sales without increasing square footage.

IBM has the people, products, skills and experience to help you develop other sales channels and the expertise to help you derive the most value from customer self-service.

Lawson, one of Japan's largest convenience store chains, is running Linux on IBM @server™ xSeries® servers for kiosks in its 7,600 stores, allowing customers to download music, book airline reservations and order concert tickets. Lawson chose Linux because of the ease of application development and integration with its existing systems.

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Wolferman's, a gourmet baked goods company, uses a cluster of xSeries servers running Linux and the eOne Group's eOne Commerce application to power its booming Internet business, which has quadrupled in size over the past four years. More than 1 million online shoppers use the site each day during the holiday season.

Use Linux to reduce costs of operations

IT automation holds great untapped potential to improve efficiency throughout a business. Information can empower your associates with the tools to serve the customer more effectively and can manage their day-to-day work in the most efficient manner.

But the potential for streamlining does not end at the borders of your business. Working closely with trading partners can help you develop and introduce new products, manage fluctuations in demand, enter new markets quickly and maximize supply chain efficiencies. Many companies use Linux as a platform for automating trading partner interactions with retail planning, ordering and merchandising systems. Linux also can facilitate interaction with partners handling peripheral functions, helping retailers drive down costs to provide focus on their core business.

IBM has the integration middleware and consulting expertise to help you respond to changing demand and deliver the optimal product mix to meet your customers' needs. We can help retailers use real-time information to get the right products to the right stores at the right time.

The value of Linux in retail

- **Freedom to choose**—With Linux, there are no dead-end application migration or integration scenarios. Linux eliminates the vendor lock-in that can interfere with execution and business goals.

- **On demand capability**—Retailers can leverage the Internet to reach customers and partners in the on demand computing era.

- **Flexible**—Linux, known for its record-setting horizontal scalability,[4] can help meet the growth demands of your business.

- **Exceptional price/performance**—Reduced licensing costs and exceptional power combine to make Linux a great price/performer, giving retailers the opportunity to consolidate workloads onto fewer and less expensive servers.

- **Open**—Dependency on proprietary operating systems and solutions can create inflexibility. Linux integrates into multivendor environments, helping to deliver applications to better serve customers.

- **Reliable**—Linux provides greater uptime than Microsoft Windows® platforms, according to the Standish Research Group.[5]

- **Low cost**—Total costs (including equipment, software, administration and environmental factors) can be much lower than other operating systems.

[4] Transaction Processing Performance Council, www.tpc.org. The TPC-H is a decision-support benchmark. The benchmark test was performed on a four-node xSeries 350, with each node featuring four Intel® Pentium® III Xeon processors at 900 MHz and 4GB of memory, and running IBM DB2 Universal Database™ version 7.2 software and Turbolinux 7 Server.

[5] Standish Research Group report, "Is Linux Legit?" 2001.

Linux is proving to have an advantage over alternative operating platforms because of its lower total cost of ownership.

Tommy Hilfiger Corporation chose xSeries servers and Linux along with eOne Group's eOne Commerce and eOne Configurator applications for its e-business infrastructure as the company expands its presence among thousands of U.S. specialty retailers. It created three innovative Web portals, including a virtual employee store. A new business-to-business (B2B) portal allows retailers and the sales force to view apparel and inventory availability and then to place, ship and track orders. A business-to-plant Web site links production facilities around the world, helping to reduce design-to-product time and significantly decrease costs.

Use Linux to lower IT costs

With IT representing a bigger part of overall costs, streamlining IT itself can be a key objective. Thanks to the low TCO of Linux—including low equipment, software and administrative costs—IT initiatives are often more easily justifiable on Linux-based servers than on many other platforms. This can result in more compelling business cases for using IT to gain a competitive advantage.

Linux-based servers can deliver both capital and operating cost reductions. The operating system itself is very efficient, requiring less hardware resources than alternatives such as Windows and UNIX.[6] And because Linux is available on so many platforms, you can select the one that best fits the workload, thus helping optimize your use of capital. A greater use of Linux may increase your efficiency by enabling you to reduce the number of server operating systems needing support.

Linux scalability means that you do not have to over-buy capacity to meet unanticipated customer demand. In addition, IBM servers offer capacity on demand, so you can easily obtain or reduce capacity as computing needs vary by day, week or season.

Boscov's, the largest family-owned department store in the U.S., replaced its expensive server farm with a single IBM @server zSeries® mainframe running Linux. Boscov's infrastructure was becoming unmanageable, and the zSeries is less expensive, easier to run and more energy-efficient than 44 servers running the Microsoft Windows NT operating system. The new infrastructure also is more scalable and reliable than the server farm. Boscov's is looking to Linux for future applications on the Web and in store.

Use Linux to create better marketing programs

Business intelligence (BI) systems can help leverage the information you collect about your customers and transform it into better marketing programs to increase profits.

[6] Dushyant Shahrawat, "Wall Street Romances the Penguin: The Growing Popularity of Linux," TowerGroup report, September 2002.

These analysis programs can require extensive computing resources—historically expensive computers. By deploying Linux-based clusters, however, you can create supercomputer-class power using commodity servers. This can dramatically improve the return on investment (ROI) from these applications, making them more affordable.

IBM invented relational database technology in the 1960s, and the first data warehouses were implemented on IBM mainframes. IBM DB2® software is built for BI and runs on Linux with integrated Web services.

IBM—the leading provider of Linux-based solutions

IBM can help retailers become on demand businesses today. We offer proven solutions with the security and resilience required in this on demand era. Retail-optimized IBM products include Linux-based POS systems, kiosks, servers, storage and other hardware as well as retail applications and middleware. IBM consulting focuses on business transformation, IT strategy and planning, store operations improvement and supply chain optimization. Other IBM services include financing, outsourcing, managed operations, systems integration and application development and design.

IBM and Linux can make this a retail reality

In an environment where you must provide a superior customer experience while also being more efficient, Linux can be the foundation for key IT initiatives that can make a difference. Better customer service, empowered employees, lower costs, more sales channels and better marketing information—all are possible today with cost-effective Linux-based systems. And who better to work with than IBM? We know retail and we know Linux. Use our experience to leverage Linux and make these key IT initiatives a reality in your business.

Why work with IBM to leverage Linux?

- IBM has thousands of Linux customer engagements worldwide.
- IBM has Linux-enabled its entire portfolio of hardware, software and services.
- More than 4,700 IBM Business Partners support Linux.
- IBM Linux Integration Centers, IBM Competency Centers and IBM Solution Partnership Centers around the world help customers design and deploy Linux solutions, help software vendors migrate their applications to Linux and provide software vendors with facilities to test their applications.

- An IBM Linux Retail Competency Center specifically supports IBM Business Partners.
- IBM has invested more than $1 billion, and 7,500 employees are involved in Linux development, research, services and sales.
- IBM has strategic relationships with key Linux distributors.
- IBM's dedicated Linux Operational Support Services provide world-class support, including training, technical support, consulting and implementation services.

For more information about Linux and IBM, please visit **ibm.com**/linux.

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