Lawson Products:
Consolidating on the Mainframe: a Cost-Effective Path to Resiliency

An On Demand Business Case Study sponsored by IBM

Becoming on demand

Intensifying competitive pressures required Lawson Products to transform and integrate its key business processes to be better able to sense and respond to the marketplace. The need to deploy applications more broadly and deeply was clear. But as a medium-sized business, cost control was paramount. Lawson's answer was to develop a consolidated technology infrastructure that delivered high levels of resiliency while keeping costs down. This new infrastructure—and the processes it enabled—gives Lawson the responsiveness it needs and the scalability to keep pace with the company's growing business needs.

Why IBM

"IBM recognized our need to balance ambitious goals with tight budgets. Having a partner like IBM that's ahead of the curve on technology is key in helping us strike this balance."

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THE LAWSON PRODUCTS SOLUTION at a Glance

BUSINESS DRIVERS	**Customer Business Challenge**	A medium-sized business in an increasingly challenging business environment, Lawson stood poised to launch an ambitious series of e-business initiatives designed to improve efficiency and make the company better able to sense and respond to the marketplace. But while its vision called for a rapid expansion of e-business to become more responsive, budget and staffing factors greatly constrained its ability to deploy, manage and support the technology required to run a growing base of applications. Thus, Lawson was faced with the dilemma of needing to grow its business while keeping a lid on the costs of running the technology underneath.
	on demand Business Rationale	While Lawson saw the need to transform its processes to become more responsive to the marketplace, it needed to do so in a way that conformed to its resource and budget realities. The solution needed to be not only highly cost effective, but also create a new level of resiliency that would position Lawson to expand its customer-facing e-business activities.
BECOMING ON DEMAND	**Business Processes Adaptations**	To solve its growth-cost dilemma, Lawson invested in a new systems management infrastructure that consolidates the company's technology platforms while implementing new autonomic procedures for managing the configuration, optimization and protection of its systems. By deploying the key customer-facing applications on its mainframe, Lawson is able to deploy rapidly, without having to worry about "box-by-box" configuration issues and complex workload balancing across servers. The solution gives Lawson a new level of resiliency (99.999 availability on the mainframe), while the faster deployment it enables makes the company more responsive to its customers. Most importantly, Lawson was able to grow its base of customer-facing services within tight resource boundaries—made possible by avoiding additional expenditures on hardware, software and support.
	on demand Operating Environment	Lawson consolidated its e-business infrastructure onto an IBM eServer zSeries mainframe, with Linux as the core environment. Deployed with assistance from IBM's Poughkeepsie Design Center, the solution leverages IBM's Virtual Machine (VM) technology to run Linux alongside z/OS on the zSeries.
ON DEMAND BENEFITS		• Leveraging the eServer zSeries' autonomic capabilities enables Lawson to grow its solution while keeping its ongoing system administration costs low. • By using VM to run Linux alongside its core z/OS operating system, Lawson was able to stem the growth of a server farm, thus avoiding expenditures on hardware, software licenses and related support. • Running its portal application on the zSeries increases its resiliency by taking advantage of the zSeries's 99.999% availability. • Providing agents with realtime information has boosted their overall productivity and strengthened Lawson competitively.

SITUATION ANALYSIS

Background

Based in Des Plaines, Illinois, Lawson Products is a distributor of products used to repair and maintain capital equipment in the aerospace, agricultural, automotive, construction, and transportation industries. Screws and fasteners are its largest product catalog, accounting for roughly half its $400 million in sales. The lion's share (80 percent) of Lawson's customers use its products for plant and heavy-duty equipment maintenance. The company's direct distribution model—under which it relies on some 2,000 independent sales agents and inside sales personnel—represents a key element of its business model. To fulfill orders, Lawson employs a network of eight regional Distribution Centers located in the US (5), Canada (1), Mexico(1) and the UK (1), in rough proportion to the location of Lawson's customer base.

Business Challenge: How to Grow Applications…Affordably

With Lawson's competitive environment growing more challenging by the day, the need to adapt its business processes—by automating and integrating them—has intensified, bringing the issue of technology deployment to the fore.

In many ways, Lawson typifies a successful brick-and-mortar business that has crossed the threshold into a new, more technology-oriented phase of its development. On the one hand, its agents continue to represent its most important strategic assets—the nuts and bolts of an operation where "feet-on-the-street" are essential to reaching a sprawling base of nearly a quarter of a million customers. But sales to e-marketplaces account for a growing share of its revenues. And Lawson has also applied technology-based solutions internally in areas like fulfillment, which has always enabled them to ship 99 percent of its in-stock orders within 24 hours. To date, Lawson's e-business evolution has been characterized by modest, yet steady technology adoption that has served the company well. However, with Lawson's competitive environment growing more challenging by the day, the need to adapt its business processes—by automating and integrating them—has intensified, bringing the issue of technology deployment to the fore.

The best way to trace Lawson's evolution is to look back at the seminal factors that shaped its IT strategy and put it on the path toward becoming an on demand business. With a softening economy and increasing competition, Lawson faced both top-line and bottom-line pressures. Looking for solutions, the distributor turned to the heart of its operation—its customer relationships and, equally important, the agents who played such a strong role in strengthening them. As the first line of contact with Lawson's base of mainly industrial customers, these agents represent both the engine of the company's product sales and a key conduit of market information back to Lawson. Thus, for Lawson to be responsive to the marketplace, agents had to be effective at sensing changes in these needs and communicating them upstream. And that, in turn, required an effective flow of information between Lawson and its agents.

To make the most efficient use of customer face-time, Lawson's agents should have a clear picture of that customer's needs walking in the door. This means at the very least knowing the customer's recent ordering history, which can serve as a reliable proxy for current needs as well as an early indicator of emerging needs.

However, getting this picture was difficult given that information was disseminated through a largely paper-based information flow. The ability to get current information into the hands of agents would allow them to quickly become more responsive to customers. So if Lawson wanted to grow its sales within existing accounts, helping agents to "work smarter" was a good place to start. Thus, the widely accepted belief that agents needed to be more productive helped to create a quiet consensus that e-business within Lawson had to grow. It was the job of Frank Snyder, Lawson's Manager of Technical Support, and his team to articulate a strategy that could translate this consensus into action.

Lawson's first agent-based e-business initiative actually came into being as an outgrowth of another project. The company had just deployed a new financial and accounting platform from IBM Business Partner Elevon. While the core platform was an enterprise application that would be used by Lawson's internal staff, it also included an add-on portal capability that provided Web-based access to enterprise data. In this, Lawson saw a window of opportunity to empower agents with little or no additional upfront cost (i.e., software and installation time). The potential benefits were both simple and compelling. By gaining realtime access to customer data, agents would be better positioned to sense customer needs proactively and to manage their own time more productively. But the question, however, was not about whether to implement it, but instead how.

ACTION PLAN AND DECISION PROCESS

The Road Not Taken

Lawson needed to establish a resilient, yet economically viable foundation on which to build its future applications, one that could accommodate its ambitious goals without busting the budget.

Frank Snyder was in a quandary. Sure, Elevon's Web portal was the right solution at the right time, but the standard deployment approach called for the addition of three servers to run the platform. With budgets tight and his development and support team lean, Snyder looked at this prospect with a skeptical eye. Three new boxes meant installation, software licenses and above all support—all in triplicate. While these additional investment requirements affected the business case for the portal solution in the near term, Snyder's anxiety was most acute looking down the road, as his company expanded its portfolio of e-business applications. Under his long-term vision, Snyder and his team planned to roll out a string of such applications, following a roadmap that would increasingly automate both informational and transactional processes used by Lawson's agents. If, however, this expansion were to result in a runaway expansion of servers to support these applications, Snyder's vision did not square with his resource limitations. Put simply, Lawson needed to establish a resilient, yet economically viable foundation on which to build its future applications, one that could accommodate its ambitious goals without busting the budget. Thus, the question of how to deploy the portal application served as an important and telling test case.

To assist in his decision, Snyder consulted with IBM, Lawson's longtime core technology vendor. Hearing his concerns about server proliferation, staff from IBM's Poughkeepsie Design Center proposed an alternative approach that would leverage Lawson's recently upgraded mainframe and obviate the need for

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— Frank Snyder, Manager of Technical Support, Lawson Products

additional servers. The plan's central thrust was to create a resilient environment by leveraging Lawson's mainframe. The use of open technologies—which would keep the company's software options open down the road—was also key.

Snyder viewed IBM's proposal in a highly favorable light. By deploying the portal solution on the mainframe, Lawson could nix the addition of new boxes and their associated costs (e.g., installation, software licenses, support, security) both upfront and down the road. In fact, it was this near-term perspective—that a mainframe-based solution would reduce the total cost of ownership (TCO) for the project—that shaped the business case Snyder presented to Lawson's senior management. "We saw Linux on the mainframe as a way to extract more value from our existing assets while at the same time avoiding the proliferation of servers," says Snyder. "Plus, the fact that we could deliver such a valuable service at such a low TCO really sent the right message to our management at the right time, since we were just beginning to move down the e-business path. On the whole, it gave us a new technology roadmap that would deliver both resiliency and cost effectiveness."

Business Process Adaptations

To solve its growth-cost dilemma, Lawson invested in a new systems management infrastructure that consolidates the company's technology platforms while implementing new autonomic procedures for managing the configuration, optimization and protection of its systems. By deploying the key customer-facing applications on its mainframe, Lawson is able to deploy rapidly, without having to worry about "box-by-box" configuration issues and complex workload balancing across servers. Under a server-farm architecture, Snyder's staff would need to manually install and tune each application, and then integrate them with each other across a distributed architecture. Under the mainframe approach, configuring infrastructure for a new application requires literally minutes of effort. For optimization, Lawson can use mainframe-based tools that automatically manage system resources to maximize overall performance. Because this greatly streamlines the process, Snyder and his team can respond more rapidly to the need or opportunity to roll out new applications and services to its customers, suppliers and partners.

By establishing the mainframe as its emerging e-business platform, Lawson is able to automate the configuration and optimization of its new applications.

While automated configuration and optimization represent the core process adaptations, it's also instructive to look at how the new infrastructure has been used to roll out agent-facing applications. The most fundamental process change associated with the portal solution is the ability for agents to access customer data in realtime. Providing realtime access to customer data led to an overall improvement in efficiency by enabling agents to channel more time into productive sales calls. Another process improvement enabled by the portal solution is the ability to better sense and respond to customers' needs by accessing realtime information on customer buying patterns.

Key Components

Software

- IBM WebSphere Application Server for Linux
- IBM z/OS and VM
- IBM CICS
- IBM DB2 Universal Database
- IBM Lotus Domino
- Elevon e-2

Servers

- IBM eServer zSeries
- IBM eServer iSeries

Business Partner

- Elevon

Services

- IBM Design Center (Poughkeepsie, NY)
- zSeries New Technology Center (Poughkeepsie, NY)

The Solution: Design and Function

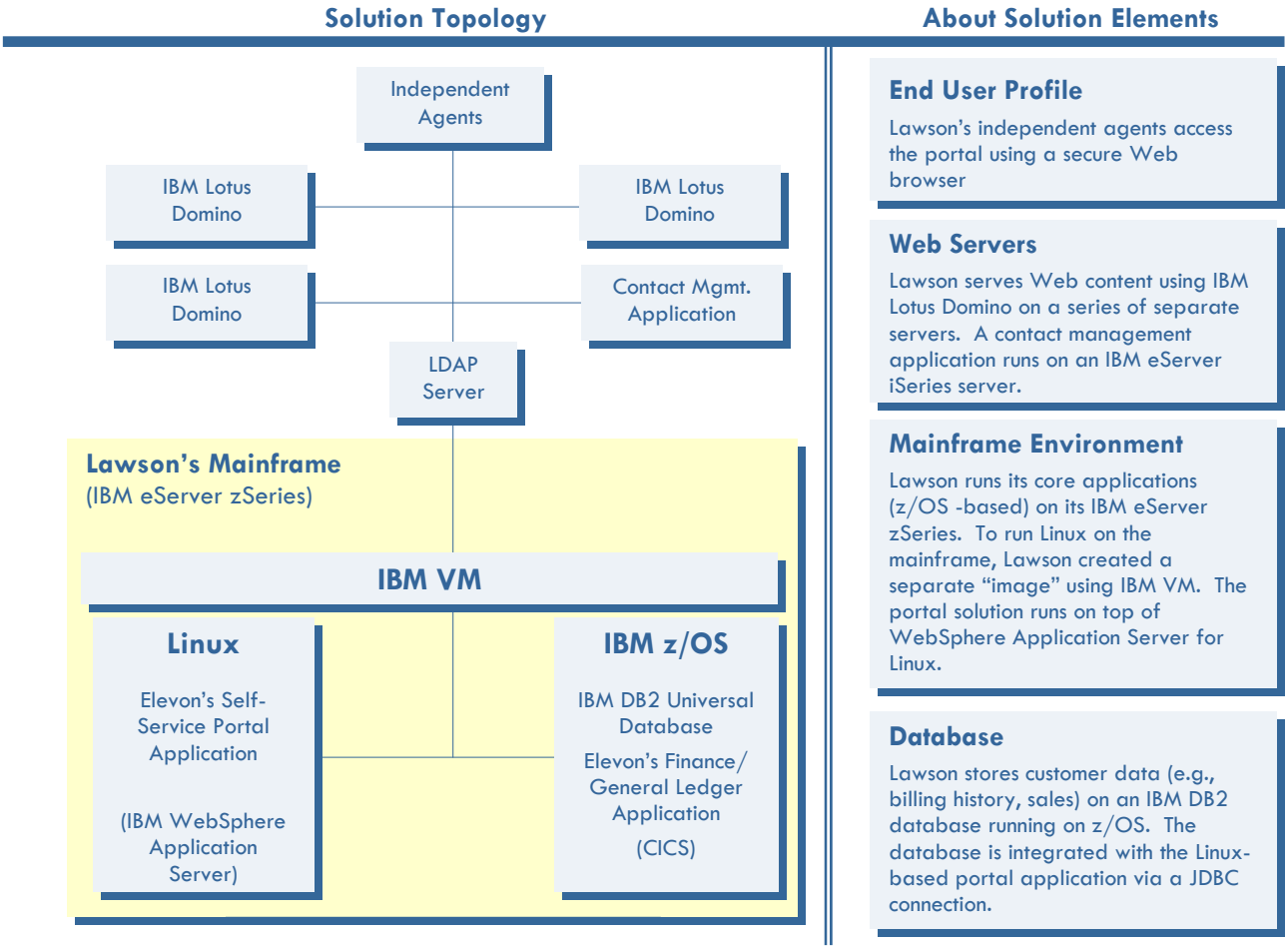
Lawson's solution, based on an offering from IBM Business Partner Elevon known as e-2, employs portlets that let agents view realtime accounts receivable data, account history information and invoices. The portal runs on top of WebSphere Application Server for Linux and is housed on a single zSeries server. To get Linux up and running on the zSeries for the portal portion, Lawson and IBM chose to leverage IBM's VM (Virtual Machine) operating system, which enables customers to run multiple operating systems as "guests" within the overall environment. The ease and speed with which Lawson was able to create these guests—which initially lent a strong appeal to the idea of running Linux on the zSeries—eventually turned out to be a big factor in the project's success.

One of the key measures of an infrastructure's autonomic capability is the degree to which it can self-configure, self-optimize and self-protect. As a solution expands horizontally (by adding more servers), the task of getting and keeping systems up and running consumes an ever expanding share of resources, while the task of securing them and making them work together (e.g., through workload balancing) becomes more complex. IBM's Poughkeepsie team showed Snyder how running all of its applications on the zSeries would deliver a highly autonomic solution by facilitating:

- Self-Configuration—The zSeries ability to "clone" new images meant that applications could be rapidly deployed without the need to install and configure servers.
- Self-Optimization—Running applications on the zSeries meant less time spent tuning them and balancing workloads across multiple servers.
- Self-Protection—Because IBM's Hypersockets technology (a key feature of the zSeries) enables "memory-to-memory" integration between applications, transactions are more secure from "sniffers" than distributed architectures.

Agents in the field access the portal application via a secure browser and are authenticated via an LDAP server. Upon authentication, agents issue a Java request (within the WebSphere Application Server environment) for either invoice information (e.g., receivables) or customer sales data (e.g., products purchased, year-to-date totals). The system then retrieves the information from an IBM DB2 database, which—while also housed on the mainframe—runs on the IBM z/OS operating system. To bridge the gap between its Linux-based portal application and its z/OS-based database, Lawson created a JDBC connection. This connection, which facilitates the creation of platform-independent database applications, was critical to Lawson's strategy of consolidating its applications and databases onto a single hardware platform. While its zSeries represents the core of its infrastructure, Lawson also runs a contact management application (used by agents and inside sales staff) on an IBM eServer iSeries server. The company also serves a variety of Web site data via IBM Lotus Domino, which runs on a number of smaller servers.

EXHIBIT 1: BASIC ARCHITECTURE OF LAWSON'S PORTAL SOLUTION



Source: Lawson and IDC

Solution Deployment

After selecting the mainframe option, Snyder and his team spent the next few months working on a design and implementation plan for the solution. Soon after, the team met with staff at the IBM Design Center in Poughkeepsie, NY. In addition to discussing Linux installation issues, the team worked with IBM staff to audit and validate its design. After getting the green light from Design Center staff, Snyder and his team began the deployment by installing Linux, WebSphere Application Server and (with the assistance of Elevon staff) the portal solution. The team completed the installation after a two-week effort. Staff from the Poughkeepsie Design Center and the zSeries New Technology Center provided Snyder's team with development and installation support throughout the early deployment stage, as well as assistance in deploying an LDAP server that would be used to control user access to the solution. With the software infrastructure in place on Lawson's zSeries mainframe, Snyder's team turned its attention to the deployment of specific applications, which were to be rolled out sequentially over a roughly 18-month period.

BUSINESS RESULTS

Lawson has derived a payoff from its portal project on two levels. First, it addressed the business problem—the need to make agents more productive—that was the project's impetus. With realtime access to key customer data, agents now spend more time selling and less addressing the administrative snafus endemic to its paper-based system. What's more, by having access to fresher and more detailed data, Lawson's agents are now better positioned to sense changes in customer needs and to respond proactively—an important leg up given today's challenging economic climate. While secondary to its initial goals, the project is also expected to generate significant operational cost savings in printing, mailing and other administrative costs that go by the wayside with the widespread adoption of Web-based self-service.

EXHIBIT 2: BUSINESS RESULTS FOR THE LAWSON PORTAL SOLUTION

Business-Level Benefits	Enabling Process Changes	Linkage to Solution
Cost Avoidance	Lawson was able to stem the growth of a server farm, thus avoiding expenditures on hardware, software licenses and related support.	By using VM to run Linux alongside its core z/OS operating system, Lawson was able to consolidate the solution on the mainframe.
Increased Productivity	By spending more time selling and less addressing administrative issues, agents have boosted their overall productivity, increased sales per agent and strengthened Lawson competitively in a soft economy.	Providing agents with realtime information has given them the information they need when they need it.
Cost Reduction	Printing, mailing and administrative costs are expected to drop drastically, while at the same time freeing sales managers to focus on improving their selling strategies and working with agents.	Delivering information via the Web obviates the need for sales managers to mail reports.
Technology Benefits	**Underlying Product/Attribute**	**Benefit in Action**
Increased Resiliency	**IBM eServer zSeries/VM**	Running its portal application on the zSeries increases its resiliency by taking advantage of the zSeries's 99.999% availability.
Improved Security/Performance	**IBM eServer zSeries/Hypersockets**	Using Hypersockets technology to internally integrate applications within the zSeries improves security and performance.
Cost Avoidance	**IBM Workload Manager/Autonomic Capability**	Leveraging the eServer zSeries' autonomic capabilities enables Lawson to grow its solution while keeping system administration costs at bay.

Source: Lawson and IDC

Lawson also created a highly cost-efficient method of deploying e-business applications. By consolidating the application onto its zSeries mainframe, Lawson was able to avoid upfront costs for additional hardware. But the real TCO story was in software, where Lawson's decision to run Linux as a guest image within its existing VM environment enabled the company to avoid substantial software licensing fees. All in all, Snyder sees the project as a powerful argument for leveraging existing assets. "Because we're now able to run significantly more transactions over the infrastructure at very low added cost, our average cost per transaction goes down," says Snyder. "Based on that formula, we've been able to extend our functionality even as budgets have tightened." The leverage theme extends beyond TCO, into the realms of resiliency, system performance and security. Indeed, by running its portal application on the zSeries Lawson is able to leverage the system's 99.999 percent availability to deliver industrial strength resiliency. On the performance side, the biggest benefits relate to the solution's use of IBM's Hypersocket technology—a core property of VM that enables high-speed (up to 24Gbytes/sec) virtualized connections between applications like Elevon and DB2 on a single zSeries. On top of this, the fact that Hypersockets enables "memory-to-memory" integration between applications makes transactions more secure than distributed architectures.

As Lawson seeks to grow the solution and add new applications, the benefits of its consolidated architecture are equally compelling. Down the road, as usage of the system grows, Lawson can adapt to increases in system utilization on demand by leveraging the system's ability to grow internally through cloning. Snyder also sees the centralization of its processes on the zSeries as taking the pressure off its IT resources as Lawson's base of applications grows. "Keeping everything on the zSeries makes its much easier from a systems management standpoint because we're not always adding or removing boxes," says Snyder. "The less time my staff spends on administrative tasks, the more they can spend developing new applications—like the portal—that enable us to work smarter as a company."

CASE EPILOGUE

Lawson's plan for the immediate future is built on the success of the portal application by getting even more information out to agents. The company also plans to consolidate an existing order entry application as well as its Domino-based Web servers onto the mainframe. As Snyder points out, these actions represent the first steps toward Lawson consolidating many of its applications on WebSphere for Linux on the mainframe. "We're moving toward a model that allows us to stretch our resources—to do more with less—by simplifying things like systems management," says Snyder. "IBM recognized our need for simplicity and saw the opportunity to use Linux to help us achieve it. We see this as one of the benefits of having a partner that's a thought leader in areas like autonomic computing and on demand business. But even more, it shows that IBM is focused on solving business problems in the real world, today—which is what we care about most."

02-04

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