The Idea of Openness at Work

Everybody sells "open systems" these days, don't they? To be against openness would be more than politically incorrect; it would turn off potential customers in droves.

True as this may be, anyone who has tried to find the facts among the competing claims of vendors knows that *open systems* is a moving target, a term used to suit purposes of widely varying intent.

Perhaps it is more useful to consider some examples of the changes in computing that have been stimulated by the idea of openness. This month *UniForum's IT Solutions* examines issues in technology and, yes, marketing that reach from mission-critical solutions at the top of client/server architectures to alternatives on the desktop.

"More Than Money Can Buy" presents case studies of how some user organizations employ high-end Unix systems to handle jobs previously left to mainframes.

"The Changing Face of Midrange Platforms" examines how vendors of products well-known as proprietary in the middle tier try to deal with the demand for open systems.

"CDE Finds a Comfortable Niche" considers the outcome of efforts to establish the Common Desktop Environment as an open desktop alternative to Windows. It also looks at the maturing of the Single UNIX Specification (née Spec 1170, UNIX '95).

We hope that these articles will add to your understanding of the state of the art in this driving force in enterprise computing.

—Jeffrey Bartlett

More Than Money Can Buy

IS departments find that the real payoff in replacing mainframes with Unix servers is added functionality, not cost savings.

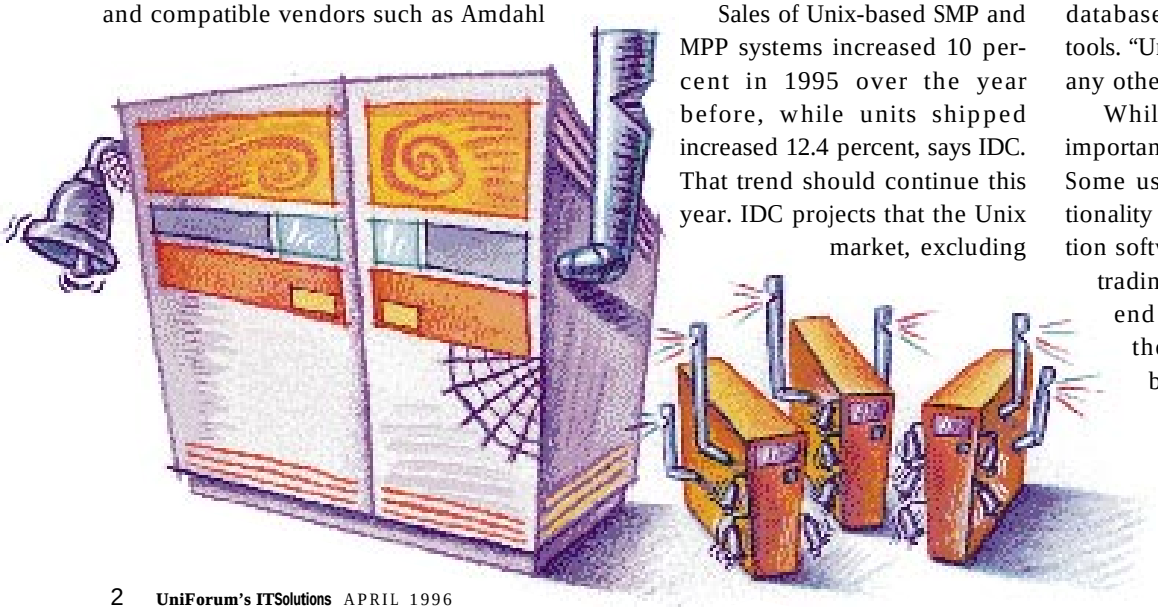
By Philip J. Gill

To no one's surprise, money has been the most common motivation behind pulling the plug on legacy IBM mainframes in favor of high-end Unix systems. Even in cases where they didn't pull the plug, companies chose to forgo expensive upgrades in favor of offloading new or rewritten core business applications to high-end Unix servers. Yet however true and sensible this motivation is, many users are finding that putting high-end Unix systems to work doing a mainframe's job has benefits beyond saving money. "The cost issue has somewhat lessened because costs have come down for proprietary systems as well," says Jim Johnson, president of the Standish Group International, a market research firm in Dennis, MA.

Indeed, International Data Corp. (IDC) of Framingham, MA, says IBM mainframe and compatible vendors such as Amdahl Corp. shipped more units last year, but they charged less for each box. Unit shipments increased between three and four percent in 1995 over the year before, but the revenues they put in manufacturers' coffers actually declined three percent. IDC predicts more of the same for this year, when it expects similar advances in units shipped but another three percent of negative growth revenues generated.

In the meantime, sales of large-scale Unix systems, including symmetric multiprocessing (SMP) systems and massively parallel processing (MPP) systems, continue to grow at a brisk pace, says Jean Bozman, an analyst in the Unix and server operating environments service at IDC in Mountain View, CA. These two categories of Unix systems provide the same or greater performance than mainframes, usually at a lower cost, and have become popular substitutes for data center operations.

Sales of Unix-based SMP and MPP systems increased 10 percent in 1995 over the year before, while units shipped increased 12.4 percent, says IDC. That trend should continue this year. IDC projects that the Unix market, excluding workstations, will increase 20 percent in both revenues and units shipped.



High Marks

One reason for this boom is that high-end Unix systems are regarded highly in the information systems (IS) departments of large organizations. Unix systems scored higher than proprietary legacy systems in 10 key selection criteria in a recent Standish Group survey of 367 chief information officers (CIOs) in *Fortune* 500 firms. The CIOs preferred Unix not just in overall system costs and price/performance ratio, but also in system availability, dependability, ease of growth, ease of support, ease of use, ease of installation, security and the variety of applications available. (For details, see "System Criteria Report Card" on the opposite page.)

These same CIOs also rated Unix higher in seven out of 10 categories against Microsoft's Windows NT Advanced Server (NT AS). Despite Microsoft's marketing efforts, the CIOs scored Unix the winner in every category except ease of use and installation and overall cost.

Johnson says that Unix systems scored so well against legacy and NT systems because they are the only platforms available today that deliver the functionality users need to run their businesses. In choosing what platform to build on, Johnson says, users should concentrate on the availability of such things as mission-critical software and applications, infrastructure solidity and enhancements, Internet and electronic commerce technology, database technology and development tools. "Unix has more in these scores than any other operating system," he says.

While cost considerations remain important, they are no longer paramount. Some users cite the extra or new functionality of Unix-based business application software as their primary motive for trading in their mainframes for high-end Unix systems. Others point to the easy growth path that Unix-based SMP and MPP servers provide.

This is not to say that Unix still doesn't have a way to go to overcome some old bugaboos. For instance, Unix still

lags behind legacy systems in systems management tools. Mainframes might have lost the edge in functionality, but they will be around for a long time to come, users and analysts say. "People have such an investment in these systems, it takes a long time to write that off," says Roger Howard, a systems analyst at Hewitt Associates, a benefits consulting firm in Lincolnshire, IL. His company has offloaded some key business applications to Unix-based servers but retains its three IBM mainframes for others.

"The mainframe isn't dead," says IDC's Bozman, "but many companies are definitely planning for its retirement." The following case studies show how three major user organizations are using high-end Unix systems to replace their mainframes.

Criteria	Unix	Proprietary	NT AS
Availability	49.6	23.0	27.3
Dependability	53.0	27.0	20.0
Ease of growth	53.0	18.0	29.0
Ease of support	43.0	20.0	37.0
Ease of use	31.0	19.0	50.0
Installation ease	34.0	17.0	49.0
Overall cost	39.0	18.0	43.0
Overall functionality	51.0	19.0	30.0
Price/performance	45.0	17.0	38.0
Security	42.0	32.0	26.0
Variety of applications	46.0	20.0	34.0

System Criteria Report Card (figures are percentages)

Source: Standish Group International

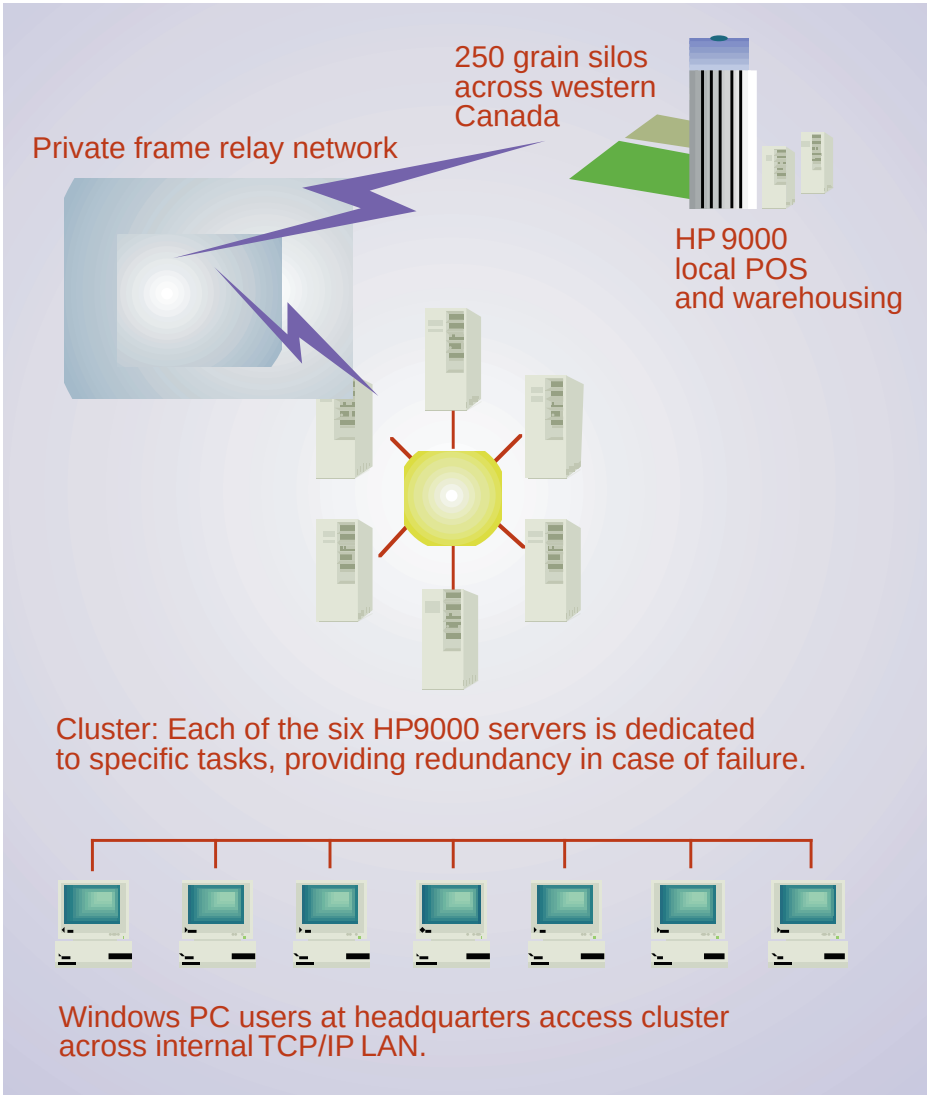
United Grain Growers

Change Begets Change

The first big change at United Grain Growers (UGG) came seven years ago, when the Winnipeg, Manitoba-based organization transformed itself from a nonprofit wheat farmers' wholesale and distribution cooperative into a profit-driven, publicly traded corporation. Today, the $1.2 billion (US$875 million) firm, listed on the Toronto Stock Exchange, operates 250 grain silos in Western Canada, from where it buys, stores and transports grains for domestic and international consumption. It also operates local retail operations at each silo that sells farm goods and supplies.

When the nature of the company's operations changed, its information needs changed as well. That prompted a reevaluation of its IT operations and eventually a second big change. At the end of 1994, UGG pulled the plug on its IBM ES/9000 mainframe. In its place, UGG installed a cluster of six Unix-based Hewlett-Packard HP 9000 corporate business servers. Although it has saved more than US$750,000 in reduced hardware and operating costs thus far, money was not the main reason for the switch, says Guy Wood, director of MIS.

"Functionality was the main motivation for the change," explains Wood. "We had not believed that our long-term future rested with mainframe computing for some time before we actually replaced it. As early as 1992 we started to think about



United Grain Growers has replaced its IBM mainframe with a cluster of Unix-based servers.

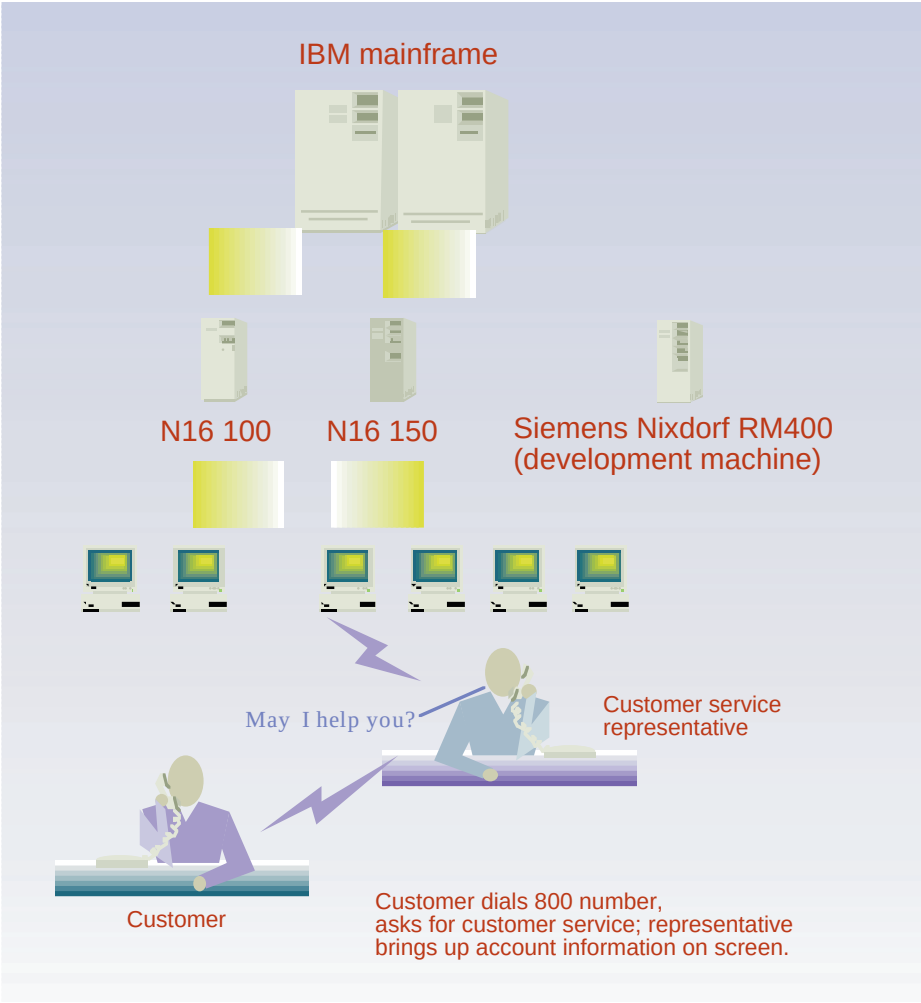
moving to client/server. The critical issue for us is information—how we handle it and what information we give our managers and employees to do their jobs."

UGG realized it needed better tools to present information to its users. As in many other organizations, desktop PCs running Microsoft Windows and personal productivity applications such as the Lotus 1-2-3 spreadsheet were common throughout the organization. The graphical user interface and quick response time those systems provide set users' expectations, and mainframes could not live up to them. "We had some people working five hours a day on Lotus on Windows, then going to [IBM] 3270 terminals and waiting and waiting," says Wood. "They were not impressed."

Conversely, much of that mainframe data wasn't easily available to Lotus users on the desktop. To satisfy their needs, UGG built a new client/server infrastructure that ties all its users into the same network resources. At the top sits the Unix cluster, located in the data center of the company's Winnipeg headquarters. An Ethernet TCP/IP local-area network links together the six systems, as well as local PC users.

The servers run a new set of core client/server business applications. The SmartStream Financials suite from Dun & Bradstreet Software of Atlanta runs on top of a Sybase System 10 relational database management system (RDBMS), alongside a number of legacy applications written in the Natural fourth-generation language (4GL) for the Adabas database, both from Software AG of Reston, VA.

UGG also maintains a frame relay wide-area network that interconnects its 250 grain silos with corporate headquarters. Each silo has an HP 9000 Unix server to support local operations, such as retail point-of-sale and monitoring of grain stores. Each server has a dial-up connection to one of eight access points in the corporate network.



Hewitt Associates moved its business-critical customer service system off the mainframe onto a pair of Pyramid N16 servers running Unix and the Oracle RDBMS.

The Desired Results

The new network has dramatically improved functionality, says Wood. Instead of switching back and forth between PCs and 3270 terminals, users at company headquarters now have one interface to corporate data: their PCs. They can log onto and download information from the SmartStream Financials applications running on the Unix servers, analyze the data in a local Lotus spreadsheet, then upload the results back to the central servers.

The new environment meets a key requirement by supporting three kinds of applications: batch, online and client/server. "We can mix all three, according to what's best for the particular application," says Wood. "We still use batch and online; they'll never go away. And we found that client/server is the best architecture for applications where users need to work with lots of data locally."

Wood believes the cost savings of moving off mainframes are widely misunderstood. "People say that client/server costs less, then two years down the road, they take a second look and say it costs more," says Wood. "Client/server isn't so much cost savings as cost avoidance."

If your business is growing, either way of computing—mainframe or Unix-based client/server—is going to cost more over time, says Wood. Any graphing of computer operating expenses would start at a certain time and show costs trending upward into the future. The difference, in his view, is that with Unix systems, the chart starts at a much lower price point and stays lower over time. "You've got two sloping lines," he adds. "One is $1 million below the other."

UGG's cluster configuration provides another benefit the mainframe couldn't supply. Each of the six systems is dedicated to a specific application, such as the financials, or supporting incoming and outgoing information requests from local users at the 250 silos.

If one HP 9000 should fail, the clus-

ter configuration provides the network with built-in redundancy. Another system can take up the slack with only minor performance degradation, says Wood. This architecture also facilitates system upgrades. Since its machines are dedicated systems, UGG can expand the processing power application by application simply by adding extra processors to the appropriate box. "We can keep operating on a seven-days-a-week, 24-hours-a-day basis," he adds.

Hewitt Associates

Side By Side

UGG may have retired its mainframe completely, but far more common, say analysts, is a weaning process. In these cases, high-end Unix systems often reside in the data center next to the legacy systems. For example, Hewitt Associates, a privately held benefits consulting and outsourcing firm in Lincolnshire, IL, has begun to move key business applications to a Unix-based system, while leaving other applications on its legacy IBM systems.

"It's more complementary to the mainframe than a replacement of it," explains Roger Howard. "We want to promote a better architecture, so we have begun to migrate applications to an alternative platform where they've got the MIPS and cycle time to run the applications the way we'd like."

The first application to be rewritten and moved to a high-end Unix environment is a customer service application that manages information for deferred benefits plans, such as 401K retirement plans. Written in the Oracle RDBMS, the application resides on a pair of Nile SMP Unix systems, each with eight CPUs, from Pyramid Technology of Mountain View, CA. An Information Systems RM400 dual-CPU Unix system from Siemens-Nixdorf, Pyramid's parent company, is the department's development machine.

Hewitt's customers are typically employees of companies that have outsourced to it the management of their 401K plans. Hewitt provides an 800-number voice response system for inquiries on such things as account balances, updates, stock and mutual fund trades, and other information.

At any given point in the call, Howard explains, users can opt out of the voice response system in favor of a live operator. Any information the caller has entered via the telephone touchpad appears on the customer service representative's computer screen. "This shortens the call and also makes the customer feel better

toward us. They feel like we know them," says Howard.

Overhead Reduction

Cost was a major factor behind Hewitt's decision to move part of its operations to Unix, but not the costs that first come to mind. Mainframes not only cost more up front than high-end Unix systems, they carry more overhead. "They're water-cooled, have high energy consumption rates and physically take up a lot of floor space," says Howard.

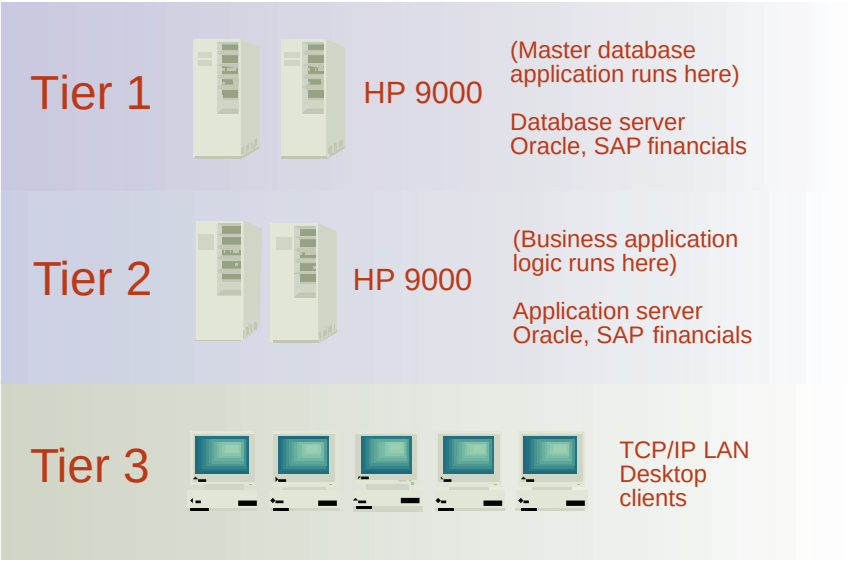
In contrast, the Pyramid Unix systems not only cost less to buy, but they require no water, less energy and less floor space. In addition to those costs, Hewitt wanted to move key applications such as the customer service inquiry operations to an architecture that could handle the load and provide growth potential.

"The financial services industry today is pretty much a Unix industry," explains Howard. "That's because you simply couldn't get the amount of transactions you need to do stock trades and the like on a mainframe. The only thing right now that can handle that is Unix."

Unix systems also offer an easy upgrade path from SMP to MPP as transaction needs increase. "It's an easy fit to move from one to the other," he says. The Nile systems can scale from two to over 100 processors.

To monitor and manage its growing transaction requirements, Hewitt has installed UniKix, a Unix clone of the IBM mainframe CICS transaction processing (TP) monitor from UniKix, Inc., of Phoenix. Howard says TP software is widely available on high-end Unix systems today, unlike in the past. What still remains a problem is systems management.

There's plenty of systems management software out there. The problem is stability. Howard says it's difficult to find "best-of-breed" tools whose developers are financially stable. "You don't know if some of these vendors are going to be around in three to five years," he says. "You have to evaluate these companies, their finances, their partnerships with other vendors to see if they're going to be around for the long term."



Bantam Doubleday Dell moved from centralized DEC VAX systems to a three-tier client/server architecture.

However, Howard says he isn't worried. "If it took 25 years for mainframes to get there, the rationale with Unix is that, with all the attention and market momentum it has, it will get there in half the time," says Howard. "I think we'll see within the next five years a quantum leap in Unix systems management tools."

Bantam Doubleday Dell

Driven by Software

For some users, it's the software that drives the change from legacy to high-end Unix systems. That's the case at Bantam Doubleday Dell, the New York-based trade book publisher. According to Bill Pratt, vice president and CIO, Bantam Doubleday undertook the move to Unix and open systems because it wanted to enable managers and staff to work in teams to achieve common goals and objectives. "We wanted to reengineer some of our core processes and align them back with systems initiatives," says Pratt. "To do that, we needed to take applications that were vertically isolated processes and flip those over into horizontally integrated processes."

Each of its major functional business areas operated more or less in isolation from the others, and the company's computer systems reflected this fact, says Pratt. For example, applications for administration, warehousing and distribution functions could not easily exchange information.

An earlier effort to redesign the company's computer systems into a client/server environment had failed, because the company had not undertaken initiatives at the same time to redesign the business processes they supported. "Users weren't involved," he says. "It was a tech push, rather than a business pull."

This time out, however, Bantam Doubleday has assembled cross-discipline teams, including IS staff and business managers, to help guide the development of the new systems. The team approach also is meant to foster the new mind-set the company hopes to instill, that of having common goals and objectives throughout the corporation.

To make this plan a success, the IT systems had to reflect and support the philosophy. The IS department saw that a distributed computing architecture could do that, but choosing the right software was key to making this happen. The publisher chose R/3 business application software from SAP America of Philadelphia, whose architecture permits information to flow between discrete functions, such as sales and manufacturing.

Transition Under Way

In January, Bantam Doubleday, a subsidiary of privately held German publish-

ing media giant Bertelsmann, completed the first of a two-phase transition from proprietary Digital Equipment Corp. VAX systems to a new three-tier client/server network computing environment based on Unix and open technologies. The two top tiers consist of HP 9000 Unix-based servers running the financial modules of R/3 and Oracle's RDBMS connected to a bottom tier of Windows-based clients.

In phase two of its migration, scheduled for later this year, Bantam Doubleday plans to install SAP's production planning, inventory or materials management, and sales and distribution modules, along with a third-party warehouse management system that plugs into the SAP environment. These new modules will integrate and exchange information with SAP's financials, which have been in production since the first of the year, says Pratt.

He also expects applications to flow more easily into Bantam Doubleday's substantial electronic data interchange (EDI) efforts. About 70 percent of its business transactions are handled electronically. Virtually all of its transactions with large wholesalers and bookstore chains are done through EDI, for instance.

Another part of phase two will address system management issues. Pratt says Unix lags in critical areas of systems management tools, but he remains hopeful the problems can be solved. He expects to address some major administration concerns later this year when the company installs HP's OpenView network and systems management framework.

Pratt doesn't necessarily expect the IS department to operate on less money, though that may happen. Instead, he sees the department putting its money to more beneficial purposes. "We're not doing this as a way to save IS dollars," he says, "but I do think there's going to be a dramatic change in where our dollars are spent."

About 10 percent of the IS budget under the old systems architecture was spent in reconciling the results of one system against another, for example. Since the applications weren't integrated, IS staff had to do the job. "That cost should be totally eliminated," Pratt says.

The real savings for the company should come not from IT but from lower business operating costs. Bantam Doubleday already has reduced inventory, improved stock movement and lowered the cost of its business transactions. And it's less than half finished with its transition to the new network computing infrastructure. IT

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