For the IBM Mainframe, Life Begins at 40

This April, the IBM mainframe will celebrate its 40th birthday. It was in 1964 that the venerable System/360 was introduced. And over the following four decades, IBM has continued to innovate on and around this platform, developing leadership technologies and building them into not only mainframes, but other products as well.

Today, the IBM mainframe is looking and feeling quite fit for a 40-year-old. Moreover, it's more vital to business than it's ever been. The primary reason is a hand-in-glove relationship with the fastest-growing trend in business computing: e-business on demand — that is, the ability to respond to marketplace changes as rapidly as those changes occur, in realtime.

zSeries and e-business on demand:
We have a match

In a 24x7x365 business environment, everything happens at an accelerated pace. Customers' needs change. The marketplace evolves. And today's IT executives must anticipate and rapidly respond to customer needs and marketplace changes, as well as streamline and integrate core applications and systems to maximize technology resources. And they must do all this in a highly secure environment that can support the most robust e-business demands.

For such a critical business initiative, customer-focused IT professionals are understandably seeking the inherent strengths of a mainframe built specifically for e-business on demand. And they are finding it in the IBM @server zSeries®. zSeries offers a powerful platform for e-business on demand. A platform that many organizations are already relying on to deliver 99.999 percent availability, fortress-like security, and extreme performance. A platform for responsive, resilient, flexible e-business on demand.

"Reports of my demise are greatly exaggerated"

The renewed spotlight on the mainframe represents an ironic twist of fate and perception. After all, for the past two decades, misguided pundits have repeatedly tried to bury the mainframe. In the 1980s, the migration to distributed client/server platforms supposedly signaled its demise. In the

1990s, it was the growth of the Internet. A few years back, it was Y2K. And when two longtime providers, Amdahl and Hitachi, left the business, it again triggered hand-wringing.

Quietly, however, the IBM mainframe kept adapting to new business demands, and adopting new technologies. IBM's consistent determination to exploit systems, software and services, research and development and technology assets is bringing clear leadership solutions to market — solutions that customers can depend on for business transformations in the e-business on demand era.

The Mainframe Charter: A heightened commitment

Today, with several key factors converging — IBM's aggressive middleware development, intense dedication to bringing new tools to the marketplace, and improved functionality to the existing tools portfolio — customers' commitment to the IBM mainframe continues to rise.

As does IBM's commitment to the mainframe community. This is definitively spelled out in a recent document that codifies the company's long-term dedication to the mainframe: the IBM Mainframe Charter.

Clearly, a server is a significant capital expense. So it's no surprise that organizations want to be reassured that their investment is a sound one for the long term. Is the mainframe a strategic investment? Is IBM committed to the mainframe? Is it central to IBM's on demand vision for the industry?

The IBM Mainframe Charter, announced last August, answers those questions with a resounding "absolutely." The Charter, which provides a strategic framework that restates IBM's commitment to and intentions for the platform going forward, comprises three core tenets: innovation, value and community.

Innovation: Providing technology leadership

The "innovation" leg of the Mainframe Charter states that IBM will continue to provide leadership and innovation in this platform, and do it in a way that will continue to differentiate the company from the rest of the industry.

While IBM has long offered mainframe software tools and utilities that are now quite familiar to mainframe managers, administrators and developers, other tools have emerged from the rapidly expanding WebSphere brand and, more recently, from IBM's Rational® software developers.

This mainframe tools and utilities strategy was first deployed in 2000 under IBM's Affordable Tools Initiative. And today, IBM continues to make heavy investments to provide a wider range of mainframe software tools. This has included:

– Developing important new additions

– Building significant extensions and upgrades to existing tools

– Adding heavily-improved functionality

– Applying increasingly common standards and methods

– Deploying its advanced autonomic computing technologies into a powerful and rapidly-expanding tools portfolio

As an indicator of the scale of this effort, well over 800 IBM software developers are currently engaged in this mission. IBM's tool developers work closely alongside the main development teams, at the main IBM software laboratories.

Value: Lowering the cost of computing

In the "value" leg of the Mainframe Charter, IBM states its commitment to enhancing overall computing value by lowering total computing costs. Recognizing that businesses are seeking ways to better match their software costs to their actual computing needs, IBM has recently introduced aggressive pricing structures (see the accompanying article, "New zSeries pricing: Lowering the cost of mainframe ownership," in this issue).

IBM has also significantly improved the price/performance of zSeries hardware, software and maintenance, as we continue to drive price/performance improvements across the board.

Community: Supporting zSeries users

The third Mainframe Charter focus is on "community," which refers to building a vibrant zSeries ecosystem. We're not only giving organizations the right hardware, but also supporting the plat-

form with powerful middleware and application solutions, be they z/OS®-based or Linux-based. (Did you know that more than 100 new Linux-based applications were added to the zSeries lineup in 2003?)

IBM is delivering strong technical support programs to cultivate a strong, vibrant zSeries community, ensuring that customers have access to the right kinds of skills and expertise. Today, over 1,000 skilled technical and software support professionals and more than 20 design centers worldwide are helping customers build zSeries-based on demand solutions.

Moreover, IBM continues to invest in technical support skills, adding multiple new architecture disciplines to help customers modernize their enterprise. In fact, a new enterprise modernization specialty was recently created. And in the months ahead, businesses will discover a number of announcements focusing on building the zSeries community.

zSeries support is showing up not only in the field, but in the academic community, where we're helping train the next generation of zSeries IT professionals through various scholars and co-op programs.

Not your father's mainframe

Goals are fixed, but the marketplace and technology change. Often, those changes are incremental. Sometimes, however, the market landscape or information technology surges forward dramatically. And what's required is a ground-up rethinking and redesign of an entire platform.

That was the case four years ago. In 2000, it became apparent that e-business wasn't just an IT trend — it was the IT trend. In response, IBM built a brand new platform, from the microchip up, designed specifically for a web-enabled, e-business on demand environment. That platform is the zSeries.

What makes the zSeries the ideal platform for an e-business on demand world? Let us count the ways:

Securing confidential information

There's no escaping the fact that doing business on the web raises security issues. When organizations reach out to their customers and suppliers online, they're potentially exposing confidential information.

In light of this, zSeries provides the most high-level security in the industry. Period. That's no small statement when one considers the traditional costs of a security breach — from $2 million to $5 million. zSeries is designed to not only help prevent breaches, but also to automatically manage high-security situations. Its co-processing capability can execute a high number of SSL statements, which means businesses can manage security statements automatically, instead of having to staff up with security administrators.

High security isn't limited to zSeries hardware. It's also built into all zSeries software as well. And core zSeries middleware — including DB2® Universal Database, WebSphere®, Tivoli® and Lotus® — protect applications and data from unauthorized access. And the z/OS operating system lets businesses dynamically change security mapping, such as authorizing only certain individuals to access certain information.

Embracing Linux

In industry parlance, support for new and evolving platforms and IT environments is known as "open standards." In real-world zSeries computing, that's best illustrated in a tight link with Linux and the entire open source software movement.

Linux-on-zSeries is a major trend in the making. The numbers tell the story. Today, more than 20 percent of zSeries installations are coupled with Linux. And Linux-on-zSeries is now supported by more than 360 applications from 170 independent software vendors.

How strong a solution is Linux-on-zSeries? Plenty strong enough for Tamkang University, widely recognized as the finest private university in Taiwan. When the school decided to consolidate its data storage functions, it replaced its decade-old mainframe with an @server zSeries system

running Linux. The results: Server performance increased eightfold, while reducing power consumption by 95 percent. Server floor space was reduced by nearly 97 percent, from 540 square feet to only 18 square feet.

Simplifying (and saving on) infrastructure

Linux also partners with zSeries to facilitate an ongoing trend: infrastructure simplification. For several years, organizations have focused on simplifying their IT environments by consolidating servers, from several small ones to fewer large ones. Using virtualization technologies to support a large number of applications, zSeries is yielding a significant return on organizations' investment in simplification.

In instances where that's not enough, IT departments can expand on demand by borrowing capacity from an IBM Blade Center — essentially renting computing capacity on an as-needed basis, instead of purchasing extra hardware that's only needed during infrequent peaks in demand. One application development company, for example, relies on this "virtual server" solution when its developers' requirements spike. It's far less expensive and far more convenient than purchasing additional servers.

Now, the next step is simplifying areas such as networking and storage, where businesses want to consolidate and scale out these capabilities. Among the key enabling technologies to do so is Linux, which has become a go-to operating system for further IT simplification.

Supporting e-business software

Linux isn't the only evidence of zSeries' open standards. The platform embraces the most popular, and critical, applications in e-business. That includes not only IBM's leading products — CICS®, IMS, DB2 Universal Database, WebSphere, Lotus and Tivoli — but also products and packages from industry-leading vendors such as SAP®, PeopleSoft® and Siebel®, to name a few.

Furthermore, the proximity of IBM's tool developers to our middleware and product developers means that IBM is better prepared to support new versions of our middleware products, because of better collaboration throughout the development cycles.

One organization that appreciates zSeries' open software support is Grupo Ferrovial S.A., Europe's second largest construction company. In a drive to increase profitability, Ferrovial needed to control costs and gain efficiencies across its business. But its legacy IT infrastructure — multiple independent applications and numerous cross-application interfaces — didn't measure up. Maintenance was costly, the technology was dated, and the system's availability and scalability were insufficient to keep up with the company's growth.

In search of a group-wide ERP application that could support accounting, controlling and financial applications in a flexible environment, Ferrovial chose a solution consisting of the $@$ server zSeries 800 platform running SAP R/3 software. With the new z800, response times for SAP users improved dramatically, and batch processing was completed outside normal office hours, ensuring that data availability was maximized when it was needed most.

Nearly eliminating downtime

Of course, downtime has always been a dirty word. But in today's 24x7x365 e-business, it can be downright debilitating. Fortunately, with zSeries running the z/OS operating system, downtime is reduced to an average of 5 minutes per year.

Contributing to zSeries' remarkable availability is its scalability. zSeries provides one of the world's most reliable and scalable environments for running new e-business applications alongside core business applications. Multiple and diverse workloads can be easily managed, while resources can be balanced across those workloads for optimal performance and maximum utilization.

During spikes in demand, the ability to scale up and out at a moment's notice can make the difference between flawless execution and slow response times — or even system crashes.

One beneficiary of zSeries — and its accompanying systems management tools — is home appliance giant Whirlpool Corporation. When they deployed IBM Tivoli software on the zSeries platform, they achieved a 46 percent increase in productivity in 18 months, with 99.998 percent application availability.

Conducting millions of transactions on a single server

To serve the needs of business, multiple systems must dynamically recombine their relationships with each other and get information across applications. When that happens, a single server can scale up to millions of transactions per day or scale out to manage tens to hundreds of virtual servers. It's called "virtualization," and in today's zSeries platforms, three components — hardware, channel architecture and software — work to provide it at a very high level.

The virtualization capabilities of zSeries allow businesses to divide their server resources so multiple operating systems and applications can run simultaneously. This helps reduce costs and minimize complexity while enabling business integration and easy access to resources. For example, an organization can run hundreds of virtual Linux servers, consolidating racks and racks of servers to a single-server environment. One cost-effective server, then, can run multiple mission-critical applications such as file and print serving, web application serving and mail serving.

What does this mean? It means being able to sense and adapt to shifting market conditions in real time, making business more responsive to customer needs.

Consider the case of America First Credit Union, the largest credit union in the state of Utah, managing more than $2.7 billion in assets for more than 330,000 members. On the horizon, America First foresaw vigorous growth for both applications and member volume. And they knew they needed a system to provide 24x7 availability and be responsive and scalable as demand increased. That system was an IBM @server zSeries 800 (z800) server. Running IBM z/VM®, Linux and IBM VSE/ESA™ operating systems as guests on the z800, America First uses advanced zSeries virtualization techniques to set up multiple virtual test and production servers within the same physical server.

These virtual servers enable administrators to implement and test application changes without affecting the production environment, and also facilitate the dynamic reallocation of resources to accommodate changes in workload. By boosting their ability to deploy new services, they can effectively respond to customer demands without investing in new hardware.

Managing workload automatically

Built into a zSeries platform running on z/OS is Intelligent Resource Director (IRD), an automatic workload management system. It ensures that your high-priority applications receive the capacity they need when they need it, based on priorities you've pre-defined.

If, for example, one server is running multiple applications — e-commerce, HR, inventory management, etc. — and there's a sudden spike in demand for one of them, IRD senses it and automatically responds by shifting capacity away from lower-priority applications to the high-priority environment. In this way, IRD allows businesses to optimize their IT environments to take full advantage of the zSeries platform.

The platform of choice for an on demand world

As business enters a new world — the on demand world — the ability to detect and respond to changing market conditions, customer demands and external threats is a critical consideration in determining a company's success. For many organizations, building a responsive, resilient, flexible e-business on demand environment is no place for small thinking. They want big performance. And none is bigger than IBM zSeries.

The IBM mainframe. A centerpiece of 21st century e-business. It seems life really can reinvent itself again at 40.