

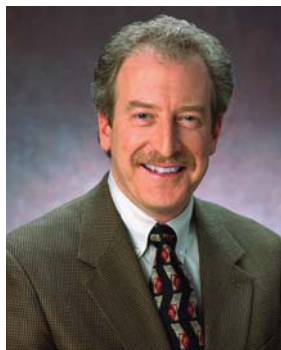
## CSC Perspective: Mainframe Makes U-Turn on Path to Extinction

Technology guru Stewart Alsop once predicted the last mainframe computer would be unplugged in 1996. He and other critics argued that the reign of the mainframe dinosaur would finally succumb to a menagerie of easier-to-use minicomputers and servers. Despite the mainframe's "imminent extinction," mounting evidence indicates the mainframe is here for a much longer haul. Mainframes are actually selling better than they were 10 years ago, and they're cheaper to operate. In light of the IT sector's continued focus on controlling costs and new developments such as IBM's Linux platform, the mainframe, as it celebrates its 40<sup>th</sup> anniversary, is finally beginning to silence its critics.

Of course, the mainframe as we know it has evolved into the IBM zSeries server — a high-end server engineered to process large workloads. The new zSeries server has a lot to offer including hyper-threading and multi-threading capabilities, huge quantities of cache and extreme cache management delivered from a standard network interface.

"All you have to do is look around the big banks, and you won't find many CIOs thinking about moving off the mainframe — not in the foreseeable future," said Paul DeFuria, chief technology officer for CSC's Financial Services Group. "The mantra at most of these companies is about leveraging existing IT investments. Organizations will almost always gain durable competitive advantages by exploiting new features and capabilities of existing platforms over any wholesale replacement technology. Nothing on the horizon is good enough to warrant starting over."

Mainframes have long been criticized for the cost and complexity associated with applications and programming languages required for their usage. Due to the negative image of the mainframe, the United States and Europe experienced a "computer-downsizing" effect in the mid-1990s. Mainframe functions were downsized to smaller systems such as AS/400s and minicomputers running on Unix and PC servers. The concept of distributed systems with end users exerting more control seemed to align with the growing popularity of decentralization and employee empowerment.



*"Many things in technology have improved over the last 10 years, but above all, the IBM mainframe has demonstrated a remarkable ability to reinvent itself into the IBM zServer. It just keeps running, and running and running. It's not a dinosaur anymore — it's the Energizer Bunny®."*

— Paul DeFuria,  
Chief Technology Officer,  
CSC's Financial Services Group

Requests for new software and new servers seldom met major resistance. Most companies quickly realized, however, that the perceived value of alternative platforms can be overshadowed by hidden costs — not to mention the disruption associated with transitioning to a new platform.

Looking back at the mergers and acquisitions in the banking industry, the high-end servers certainly played a key role. “The successful M&As among large banks since the early 1990s were paid for, in no small measure, by IT workload consolidations,” DeFuria said. “Many of our clients went through acquisitions that increased the demands on CSC’s Hogan Systems by millions of transactions. We’re talking about mission-critical core banking systems that met the challenge. An infinitely scalable application architecture running on the world’s most scalable computer may not make headlines, but it’s definitely the bottom line for a top-tier bank that’s in acquisition mode.”

### **New Growth for the Mainframe**

Gartner recently predicted a strong future for IBM’s high-end servers, which accounted for \$4.2 billion in sales in 2003, up 6 percent over the previous year. Gartner predicts growth will continue to increase at “big shops” with 10,000 or more MIPS installed. IBM only sold about 30 to 35 new high-end servers a year in the 1990s, but it welcomed more than 70 new customers in 2001 and 100 new customers the following year. While many IT shops are moving to other platforms, IBM reports that 80 percent of them have fewer than 40 MIPS, and many are in the 3- to 15-MIPS range.

One leading U.S. retail bank, for example, processes 45 million accounts with peak online activity averaging about 1,500 transactions per second. The bank is able to meet the challenges associated with its high volumes with CSC’s Hogan Banking System operating on the IBM zSeries. The bank’s account processing must be completed flawlessly each day — a level of service that would overwhelm most computing platforms.

“Low-end platforms do not have the technological feasibility to take over large transactional workloads from the IBM zSeries, at least not now and not anytime soon,” added DeFuria. “And IBM continues to lead the pack in price and performance gains among the high-end platforms.”

### **The Linux Revolution**

The growth of Linux has also been a surprise to the industry, even to IBM. What started as a small effort in Germany has grown to account for more than 20 percent of net new MIPS. The big draw is the ability to combine Linux with the zSeries’ proven reliability, speed and management tools to drive down the cost of running critical applications. The sweet spot for Linux



*IBM has introduced the Mainframe Charter to provide a framework for planned future investment and to highlight specific ways in which IBM intends to deliver ongoing value to zSeries customers.*

today is server consolidation — replacing dozens or even hundreds of separate Intel-based Linux or Windows servers with a partition that dedicates a single processor, memory and other system sources to running Linux. Some of the best candidates for consolidation are infrastructure applications such as file and print services, e-mail, domain name servers and Web servers.

According to DeFuria, “The most recent IBM zSeries product announcements deliver another 60 percent gain in performance over earlier models and a threefold increase in capacity, and now IBM is embracing Linux. These breakthroughs will continue to support the financial services-wide trend for server consolidation onto the zSeries — not off the zSeries, as some predicted — and deployment of new applications on that platform.”

### **The Real Costs of Computing**

In today’s uncertain market, companies are more discriminating about how they spend IT dollars. To study the cost effectiveness of high-end servers as opposed to other platforms such as Unix and PC servers, Xephon, a technical and market research organization, recently compared the cost of the hardware, the cost of the application software and the personnel costs associated with operating and troubleshooting the hardware and software. Xephon’s study concluded that the average five-year cost per end-user for the high-end server is \$6,250, compared to \$19,000 for Unix and \$24,000 for PC servers.

For the high-end server, personnel account for 21 percent of overall costs, compared to 68 percent of Unix and PC server costs. It also got high marks for data integrity, 99.99 percent availability, data speed and security, which are fundamental requirements of top-tier financial services firms.

More than 50 leading banks worldwide use CSC’s Hogan Systems, and many of those organizations have significantly

lowered their costs and improved performance by simply upgrading their hardware. Hogan has been successively redesigned and upgraded to take advantage of enhancements that give the high-end servers improved capacity, fail-safe reliability and make it easier to operate.

## **Celebrating 40<sup>th</sup> Anniversary with zServer**

On April 7, 2004, IBM celebrated the 40<sup>th</sup> anniversary of the System/390, the first true mainframe capable of processing multiple tasks simultaneously. Since then, IBM has advanced it to new levels of performance and reliability with the IBM zServer.

A shortage of skills continues to be a concern, especially with data center managers who wonder how they will replace retiring COBOL wizards with workers bred on Windows and open systems. However, IBM also is increasing the \$250 million it spends annually on technical support by creating a new class of technical support consultants called IBM system architects.

IBM has also increased its spending on hardware and software support. About half of the new support investment is being spent on system architects, who will be available free of charge to zSeries customers. IBM is initially deploying about 150 system architects to top accounts on an as-needed basis.

Finally, IBM has introduced the Mainframe Charter to provide a framework for planned future investment and to highlight specific ways in which IBM intends to deliver ongoing value to zSeries customers. The principles or pillars of the charter are specific, achievable goals that offer ways to derive ongoing benefit from the zSeries and the IBM relationship. IBM has already delivered the zSeries 990 and host of products and features that support the goals of the charter. Articulating these principles demonstrates IBM's strategy to work to continue to deliver more zSeries value and to establish vision for the future.

## **From Dinosaur to Energizer Bunny**

Despite its critics, the mainframe is not just a survivor. It has reinvented itself. The high-end server is positioned to continue dominating top-tier financial services companies, including many of CSC's clients, for years to come. "Many things in technology have improved over the last 10 years, but above all, the IBM mainframe has demonstrated a remarkable ability to reinvent itself into the IBM zServer," DeFuria said. "It just keeps running, and running and running. It's not a dinosaur anymore — it's the Energizer Bunny."

Energizer Bunny® is a registered trademark of Eveready Battery Company, Inc.

### **About CSC**

*Computer Sciences Corporation, one of the world's leading consulting and IT services firms, helps clients in industry and government achieve strategic and operational results through the use of technology. The company's success is based on its culture of working collaboratively with clients to develop innovative technology strategies and solutions that address specific business challenges.*

*Having guided clients through every major wave of change in information technology since 1959, CSC combines the newest technologies with its capabilities in consulting, systems design and integration, IT and business process outsourcing, applications software, and Web and application hosting to meet the individual needs of global corporations and organizations.*

### **About CSC in Financial Services**

*CSC distinguishes itself through its time-tested ability to plan, build and operate highly reliable, efficient and secure business and IT solutions for leading financial services firms around the world. To complement its capabilities in consulting, systems integration and outsourcing, CSC brings financial services industry knowledge and experience, a comprehensive portfolio of financial services application software and an extensive network of industry and technology partners. More than 10,000 CSC employees are dedicated to serving financial services clients, including more than 1,500 major banks, insurers, healthcare organizations, and investment management and securities firms.*

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