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In this issue:

- **Becoming Golden—IBM's Mainframe Turns 50**

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Becoming Golden—IBM's Mainframe Turns 50

By Charles King, Pund-IT, Inc.

Longevity is a trait that doesn't get much respect in the tech industry. That's partly an issue that arose as new technologies regularly entered and then dominated industries and commercial sectors. But cultural factors contribute, as well. Much of the vibrancy of IT arises from the start-up culture and youthful frontline employees who willingly take on crushing 80-hour work weeks for a chance to become millionaires (or billionaires, if Facebook takes a fancy to you).

That sort of success is the tech industry equivalent of winning the lottery, but there is actually a form of success that's even rarer—creating, nurturing and evolving a technology that becomes elemental to the fabric of IT for years or decades. Most are simple and not so simple components—CPU architectures, storage media, memory and so on. Far fewer are complex platforms, and the most exceptionally long-lived—IBM's signature mainframe (now System z) platform—celebrated the 50th anniversary of its introduction last week.

Mainframe Matters

As IBM pointed out at its *Mainframe50* celebration in New York City, the arrival of the original System (S)/360 mainframes in April 1964 signaled a radical shift in its own and competitors' development practices and strategies. While the company began selling custom commercial and scientific computers starting in 1952, clients were typically responsible for all programming chores and design, including operating systems. Over time, the rapidly growing hodgepodge of proprietary code made supporting and upgrading mini, midrange and mainframe systems increasingly difficult and unwieldy.

Then-IBM chairman Thomas Watson, Jr. determined to fundamentally change that approach with the S/360 (so-named because it was a 360º or "all around" computer); a series of compatible mainframe systems that could be used for virtually any computing purpose, including business and scientific processes. The S/360 was the first widely used computer to support commercial operating systems and it also offered a larger, 24-bit address space than older mainframes.

The Enterprise Angle

All that innovation came at a significant cost—though Watson originally expected the S/360 would cost about $600M to develop, by the time it finally rolled out the door IBM had spent over $4B. Since then, the company has invested over $55B on evolutionary mainframe development. Do not take the term "evolutionary" lightly here. Despite significant threats (both real and rhetorical) IBM's System z mainframes continue to retain their place in enterprise data centers because they:

1. Continually, reliably meet the core business and technical needs/requirements of enterprises and their customers

2. Successfully address and adapt to constantly changing business practices and technology trends.

The reality of these points was clearly evident at the *Mainframe50* event where testimonials from notable IBM customers, including executives from Citibank and Visa, and a video presentation from Wal-Mart, extolled the benefits System z solutions provide their organizations. That dynamic has also delivered exceptional value to IBM in terms of customer loyalty and continuing sales. In fact, Visa's representative noted that not long ago, a significant uptick in mainframe performance and capabilities led the company to replace *all* of the IBM mainframes in *all* of its global data centers with new System z solutions (qualifying as the most literal "forklift" upgrade in our memory).

That effect can be seen more widely in IBM's global mainframe sales where the number of MIPS (millions of instructions per second—the key mainframe sizing/performance metric) sold doubled during the past calendar year. The ongoing leadership of mainframe solutions in core transaction processing functions is also creating new sales opportunities, particularly in banking and financial organizations in rapidly developing markets in China and India.

An Open Road to Mainframe Cloud

It wouldn't be a major mainframe event without the introduction of new/improved System z offerings, and IBM's New York celebration was no exception. These included a System z Solution for Mobile Computing that is designed to help businesses rapidly integrate and deliver mobile and cloud services, including supporting mobile financial and business transactions.

Other new offerings included zDoop software, the industry's first commercial Hadoop for Linux on System z distribution, the next generation of flash storage on IBM's DS8870, a new version of IBM CICS Transaction Server which enhances mobile and cloud support for CICS, IBM WebSphere Liberty z/OS Connect for rapid, secure web, cloud and mobile access to z/OS assets, and IBM Security zSecure SSE which offers enhanced security intelligence and compliance reporting.

The company also announced the new IBM Enterprise Cloud System, a factory-built and configured solution combining System z hardware, IBM storage and IBM cloud management software, including automated cloud orchestration and monitoring, into a single Linux-based infrastructure-as-a-service (IaaS) solution. The Enterprise Cloud System is designed to allow clients to rapidly deploy enterprise-grade cloud services, making it valuable to both IT organizations and cloud service providers.

According to IBM, the ability to support up to 6,000 virtual machines in a single system, provide a secure multi-tenant environment and dynamically share resources across work-

loads makes the Enterprise Cloud System uniquely able to meet the needs of enterprises and service providers that wish to deploy dynamic private cloud environments. In addition, the company said that due to higher system efficiency and scalability, some Linux on System z cloud deployments can cost as much as 55 percent less than comparable x86-based cloud infrastructures. In all, the new solution testifies to both the evolutionary nature of the System z platform and to the value of IBM's continuing, substantial support of open standards and open source efforts such as Linux.

Final Analysis

Mainframe50 obviously celebrated the remarkable longevity of IBM's signature enterprise computing platform, but we would be remiss if we didn't note that some new offerings carried an air of déjà vu. The company has positioned System z as a cloud computing platform for several years now, based on the mainframe's decades-long history of supporting core cloud processes and functions. Plus, though zDoop is an interesting twist that should enhance System z's big data position, the mainframe has long been a robust platform for enterprise-class business intelligence and analytics processes.

So it's understandable that some might consider IBM's *Mainframe50* announcements to be minor variations on well-explored themes. That said, there have been some interesting related developments that we believe cast last week's IBM events in a somewhat different light. During the half decade that cloud computing has become an increasingly irresistible IT force, it has also become indelibly clear that there are some applications and data that enterprises will likely never entrust to public clouds and service providers.

As a result, numerous vendors and proponents of scale-out cloud solutions have ramped up offerings and rhetoric around private cloud infrastructures that would reside behind corporate firewalls, though they could also leverage dedicated IT resources hosted by trusted cloud and managed service providers (CSPs/MSPs). In those situations, the value of migrating enterprise applications and workloads to x86 become somewhat murky. While new generation x86 systems, such as those leveraging Intel's latest Xeon processors, are enterprise-class in most every sense, many would argue that the cost and complexity of migrating to a new computing platform significantly erodes their value.

That is certainly IBM's point of view and the company's new Enterprise Cloud System and related solutions mean to continue underscoring System z's capabilities while keeping up the pressure on scale-out competitors. Not only are these System z solutions designed to extend the value of customers' existing mainframe investments and skills, but by deploying the new solutions in its own existing and upcoming SoftLayer data centers, IBM is also on track to expand its role in enterprise-managed cloud services.

None of these points are engraved in stone, and despite IBM's notable new and improved solutions, many of the central challenges to mainframe computing, like developing sales opportunities outside of traditional markets, remain. But by carefully evaluating and addressing the needs of its core customers and broader related market trends, IBM is effec-

tively reimagining and renewing the mainframe for the next generation of enterprise computing.

The likelihood that any information technology could last for a hundred years seems wildly remote. But given the enthusiasm evident at last week's *Mainframe50* celebration and the advances evident in IBM's new System z solutions, anything seems possible.

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Pund-IT™ emphasizes understanding technology and product evolution and interpreting the effects these changes will have on business customers and the greater IT marketplace. Though Pund-IT provides consulting and other services to technology vendors, the opinions expressed in this commentary are those of the author alone.