



# Strategic Snapshot

## IBM zSeries: Powering On Demand Infrastructures for Dynamic Business Needs

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April 2003

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## INTRODUCTION

*IBM's On Demand initiative has helped to codify the company's ongoing provision of strategic and technological solutions for dynamic business processes and to define their end-to-end value across enterprise IT environments. But the fact is that many enterprises have been operating in an "on demand" manner for years, perhaps without being entirely cognizant of or prepared for this reality. The growing influence of IT has enabled enterprises to establish new avenues for communicating and working with partners, suppliers and customers, and has broken down the barriers between technological means and business strategy ends. A retailer, for example, might use IT solutions to track products from the warehouse to store shelves, and feed sales data back into manufacturers' and distributors' supply chains. However, as companies shift critical processes and initiatives increasingly online, allowing them to extend their reach globally and temporally, they also consciously or unconsciously invest increasing reliance in their computing infrastructures. As a result, the size and complexity of many IT environments have expanded to the point where what might constitute a simple glitch or minor stutter in a smaller system can have potentially catastrophic repercussions for a globally-focused and extended enterprise.*

*IBM's On Demand imagines enterprise IT environments that combine in-house systems with additional integrated Capacity On Demand (COD) services and hosted solutions, providing a model whereby computational technologies can respond flexibly, dynamically, and predictably towards enterprises' deepest business needs. The critical role IBM's zSeries mainframe solutions play in On Demand scenarios is indisputable. Besides providing much of the essential infrastructural underpinnings (i.e., autonomic self-healing and self-managing tools and virtualization technologies) needed to support such an effort, IBM zSeries leadership in areas including Linux development, server consolidation, business application support, virtual services, and COD solutions make it a natural element of On Demand enterprise offerings. Additionally, the evolution of new zSeries products and services has increased the flexibility and reduced the cost of mainframe solutions, extending their application and influence even further. In a literal sense, IBM's zSeries mainframe technologies are helping to power On Demand solutions that combine the benefits of today's data centers with the promises of tomorrow's.*

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## Pain, Evolution and Dynamic Business Solutions

It is ironic that during one of the most difficult times in the history of the high tech sector, enterprises continue to deploy technology solutions for a wide variety of business functions and processes. Why that is the case is clearly evident. During the 1990s, businesses became increasingly aware of how valuable technology solutions could be across a growing range of applications and industries. Additionally, the increasing sophistication of server and storage technologies, along with dramatically shifting price/performance metrics, made technology solutions affordable for most businesses. But change is usually accompanied by some sort of pain. Over the past three years as companies of every stripe have been impacted by the dismal economy and geopolitical instability, enterprises have been sensitized to the following IT-related pain points:

- ◆ Financial pressures: The free-spending days of the mid-90s are definitely over. To help offset ongoing budget and staff reductions, most businesses are pushing aggressively to control IT costs and spending. As a result, companies are looking to both enhance technology asset TCO and improve IT asset utilization.
- ◆ Increase revenues: Along with saving money, businesses are looking at how they can leverage IT assets to earn it. In general, that process begins with satisfying existing customers to increase their loyalty (and spending), a process that can be particularly enhanced with IT-based solutions and services. Technology solutions can play critical parts in any company's drive to increase market share and gain competitive advantage.
- ◆ Simplify IT complexity: The sheer complexity of current computing environments has complicated efforts to integrate systems, databases, applications, and business processes, and has decreased management and operational efficiency. Making IT infrastructures flexible enough to respond quickly and effectively to dynamic customer requirements, marketplace shifts, and competitive demands remains a dream (or fantasy) many enterprises want to make real.
- ◆ Security and operational resiliency: As enterprises have come to rely on a 24/7 seamless exchange of information to enhance their partner and customer relationships, protecting the privacy and security of that information must evolve in kind. Data security has reasonably and rightfully become a hallmark of effective business continuity practices.
- ◆ Accelerate time to market: In a fast-changing market, business survival depends on adapting to quickly altering competitive landscapes. Well designed IT solutions can act as catalysts for this evolution, helping enterprises increase development and engineering efficiencies, thus speeding the introduction of new products and services.
- ◆ Deploy new capabilities: The Internet may have leveled the competitive playing field for many companies, but another result is that IT-enabled enterprises must work harder to differentiate themselves among larger, often globally dispersed pools of competitors. Rather than simply investing in new technologies, businesses need solutions that are or can be integrated with existing infrastructures, and which are complementary to existing employee skill sets. This bespeaks an essential need to approach business technologies strategically rather than tactically.

## What Is Driving IBM's On Demand Vision?

In essence, IBM's On Demand initiative is designed to address the growing dynamic between IT solutions and business strategies. Increasingly, enterprises regard technology as a means to power business evolution. To compete and win in today's markets, companies must be flexible and responsive to customer demands, marketplace shifts, and competitive pressures.

On Demand solutions' ability to leverage existing IT infrastructures with additional integrated services and capacity solutions has implications for enterprises of every size. Small to medium-sized businesses can use On Demand solutions to gain the economic scale of large companies. Large enterprises can use On Demand to become as nimble as small businesses.

At its heart, IBM's On Demand initiative proffers enterprise IT environments where every single employee, customer, partner, application, and process has seamless access to any and all necessary business assets, information, and resources. To achieve this vision, IBM believes that Information resources must be:

- ◆ Virtualized – Allowing business assets including data, applications and resources to flow freely wherever and whenever they are needed;
- ◆ Integrated – Enabling the efficient movement of information between systems, applications, databases, and business processes;
- ◆ Open – Assuring the free integration and flow of business assets in an IT world that is both practically and philosophically heterogeneous;
- ◆ Autonomic – Empowering the stability and reliability of solutions in endemically complex enterprise IT environments.

While On Demand takes an essentially visionary approach to the evolution of enterprise IT environments, IBM has discussed the practical steps and measures it will require to make this imagined future real. First, the company believes On Demand will be embraced by enterprises because it offers realistic means to attain new levels of business transformation that will help companies become and remain more competitive. To that end, IBM plans to promote On Demand by leveraging the company's hardware and software offerings with its Business Consulting Services (BCS) solutions. IBM sees the recent acquisition of PriceWaterhouseCooper (PwC) as key to the success of this effort. Additionally, IBM regards its ongoing work in operating environment and infrastructure development as critical to creating dynamic On Demand solutions. In particular, On Demand will benefit from IBM's efforts in integrating middleware, open standards, virtualized systems, and autonomic/automated capabilities. Finally, the utility services portion of On Demand will profit from IBM's long-standing commitment to develop and deliver cross-company solutions. To that end, IBM will initiate joint efforts between the company's technology, consulting, hosting, and services groups to create and deliver a portfolio of horizontal/vertical processes and services with utility-based pricing.

## The Role of Mainframes in On Demand

It is worth noting that much of the technology and potential for success underlying On Demand is due to the ongoing evolution of IBM's eServer zSeries mainframe product line. To better understand those benefits, it would help to understand how that evolution has proceeded. In part, traditional mainframe solutions drove and were driven by early models of enterprise computing. In highly centralized, raised floor datacenter environments, mainframes were designed to support critical applications and business processes that demanded the highest levels of data and transaction processing performance. To that end, mainframes combined the flexibility of multi-platform support with the stability of extreme fault tolerance and high availability requirements into almost literally unstoppable high-end business solutions.

Those well recognized features' characteristics are critical to the support and success of On Demand, but some other characteristics are also worth considering. First, many of the key data and transactions assets required for On Demand applications already reside on and are supported by IBM mainframe solutions including the company's zSeries products, potentially

simplifying the incorporation of these assets into On Demand solutions and services. Additionally, mainframe environments' proven high security, accessibility, and recoverability are critical for delivering computing resources in a utility-style model. Finally, established mainframe capabilities including autonomic self-healing and self-managing technologies, virtual services, and server consolidation will be critical for developing the flexibility, scalability, and resilience necessary for the delivery of true On Demand solutions.

## Leveraging Tradition and Vision

IBM competitors like to knock mainframes as too highly technical and too rooted in the past to satisfy modern business needs. We respectfully disagree, and find a less than gentle irony in detractors who speak condescendingly of IBM mainframe products' supposed shortcomings while describing their own products' "mainframe-like" virtues. To better understand the business value of mainframe solutions, it is worth considering some IBM zSeries capabilities in more detail.

- ◆ Capacity, scalability, and performance: zSeries solutions offer enterprises the flexibility to both "scale up" to support large data serving applications and "scale out" via virtualization technology and Linux to support other application-serving assets. The performance and predictability of IBM's more traditional mainframe solutions are well known and documented, and have been notably enhanced in the company's z900 systems. Additionally, the company's development of the newer z800 mainframe series offers a wide variety of options to "entry level" customers and mainframe clients with more modest performance requirements. For customers, this means that mainframe class solutions have become increasingly available for virtually every business need.
- ◆ Server utilization/efficiency: zSeries design and development emphasizes the support of multiple applications by managing large varieties of workloads and balancing computing resources. The result of this effort is better server utilization, which improves IT administration costs and overall TCO. Additionally, it means that zSeries products can be used to accurately predict and deliver near-capacity utilization levels for SLAs. In other words, zSeries solutions offer the robust performance and predictability necessary to meet dynamic business demands.
- ◆ Operational resiliency: Mainframes may outdate other IT solutions, but this means that their capabilities have been more rigorously tested and are better understood than many other IT solutions. The reliability of zSeries solutions has decades-deep roots in other IBM mainframe technologies, and the company claims 99.999% availability levels with associated firmware, Parallel Sysplex clustering, and multi-site GDPS business continuity solutions. Additionally, zSeries products feature IBM's well known self-healing, self-managing, and self-optimizing capabilities. Reliability may denote stodginess in some circles, but in this case it means that enterprises can reasonably expect zSeries products to perform as advertised.
- ◆ Multi-dimensional virtualization: IBM's z/VM virtualization technologies allow hundreds or even thousands of physical servers to be consolidated into a single zSeries mainframe, helping to reduce server farm sprawl and easing the flow of and access to computing assets. Additionally, these capabilities can help improve the integration of business processes, systems, applications, and data. This "fluid" resource provision can support hundreds of applications, each of which has the illusion that it has all of a system's resources at its disposal. For customers, the ability to consolidate a multiplicity of servers into a single zSeries cabinet has TCO ramifications that resonate far beyond initial purchase price, potentially improving long term facilities, staff, and management costs.

- ◆ **Open Standards/Security:** IBM has used the zSeries as a flagship for the company's support of Linux and Open Standards efforts, reasoning that Linux will be a key to enabling easier coexistence for both customers and vendors in heterogeneous computing environments. The company has extended Open Standards support in the zSeries via z/OS, z/Linux, z/VM and VSE/ESA environments. IBM has extended the zSeries security capacities through multiple, integrated data encryption capabilities. Open solutions offer enterprises remarkable levels of flexibility, especially when they are buttressed with mainframe-class security solutions.
- ◆ **Flexible pricing:** Non-mainframe vendors often claim that expensive traditional pricing methodologies as reason enough to abandon mainframe solutions, but those notions are badly out of date. The expansion of the zSeries product line has allowed IBM to refine its value-unit and sub-capacity WLC pricing methods. Additionally, the company's development of Open Source mainframe solutions provided the opportunity to create discrete hardware/software pricing models for Linux vs. traditional workload environments. Finally, the company's On Demand initiative will offer businesses the opportunity to enjoy mainframe-class performance delivered and paid for as a utility. In practical terms, this means that scalable, affordable zSeries solutions are available for enterprises of most every shape and size.

## The Heart and Soul of the On Demand Datacenter

How does all this translate for enterprise customers who want to know how mainframes fit into IBM's future plans? In our view, the IBM zSeries capabilities represent the heart and soul of the On Demand data environment: integrated, resilient, virtualized, and open. The zSeries ability to efficiently support and manage large data applications and other application serving resources translates into improved asset and cost management, issues that are dear to the heart of business managers. The intelligence to sense and respond to dynamic workloads makes the zSeries a solid, agile solution for today's evolving business demands. zSeries environments are proven to be secure, available, accessible, and recoverable, all issues critical to IT-driven enterprises that measure downtime in dollars, not minutes. Well established zSeries capabilities such as autonomic self-healing, self-managing and self-optimizing technologies, virtual, services and server consolidation are valuable for any enterprise IT environment, and are particularly applicable in On Demand settings.

Essentially, IBM continues to disprove claims that the mainframe is a dated or dying breed not fit for modern enterprise computing. Recent zSeries developments including z/OS 1.4, z/OS.e, sub-80 MIPS z800 solutions, and new software licensing and pricing models demonstrate IBM's enthusiasm for developing flexible solutions that improve the performance of and access to zSeries products. Along with On Demand, the zSeries plays a critical role in the company's efforts in Web services and is a driver for company solutions including DB2, Web Sphere, and Tivoli. IBM is continuing to invest in and extend the capabilities of the mainframe. To extend the zSeries' central position in enterprise computing, the company is working to further streamline and consolidate security features, to enhance heterogeneous workload integration and management, and to improve the performance and efficiency of virtualization features. Additionally, the company is introducing the z990, a mainframe system optimized to meet On Demand business needs. The z990 provides mainframe customers new levels of scalability and multi-dimensional virtualization capabilities, and IBM is offering flexible financing options for system purchases and upgrades.

Most importantly, IBM regards the zSeries as a solution set whose capabilities extend far into the future. The company is committed to the evolution of the zSeries family through

continuing improvements in hardware, application, and networking performance, as well as expanded virtualization capabilities. As a result, we expect the role of the zSeries in grid and other distributed computing environments to continue to expand notably. Additionally, we expect IBM will utilize the unique capabilities of the zSeries to push the On Demand envelope with new Capacity On Demand and other service offerings. Finally, if recent history is any indicator, it would be natural for IBM to expand the company's increasingly flexible options for configuring and financing zSeries-related On Demand business services and solutions.

## What Does It All Mean?

In today's enterprises, IT solutions are no longer a luxury but a necessary part of effectively dealing with and responding to day-to-day business demands. The evolution of global markets is increasing the complexity of and pressure on IT solutions, and on the companies that employ them. Through its On Demand initiative, IBM is seeking to flexibly and cost-effectively mitigate those demands by supporting enterprise customers in transforming their businesses via integrated hardware and software solutions, consulting offerings, and COD services with utility-model pricing. The purpose of On Demand is to help IBM clients, and their partners and customers, prepare for and respond to the dynamic shifts and ongoing evolution of global markets.

On Demand may represent IBM's latest thinking on this subject, but many of the technologies and capabilities necessary for powering On Demand infrastructures are already available in the company's zSeries products. Traditional mainframe technologies such as high-performance data and transaction processing and multiple platform and application support provide one part of the solution. Additionally, well-established zSeries capabilities including autonomic self-healing and self-managing technologies, Linux support, virtual services, and server consolidation will be critical to the success of On Demand, as will the ability of zSeries solutions to scale "up" for demand response needs and "out" for broadened application support. Overall, zSeries products today offer the integrated, resilient, virtualized, and open computing environments that On Demand will eventually deliver across entire enterprise data infrastructures.

The zSeries demonstrates IBM's long-term experience and commitment to mainframe solutions, but it also represents the company's dedication to aggressively pursue future mainframe development. Even as the evolution of IBM mainframe solutions has presaged and supported the ongoing evolutions of greater business computing solutions such as On Demand, IBM's continuing investment in zSeries development should enhance and drive future On Demand offerings and other business solutions. In essence, we see the evolution of zSeries solutions as a signal of IBM's intention and ability to combine the benefits of the datacenter of today with the promises of tomorrow. What that means for customers is the continuation and enhancement of powerful, flexible mainframe solutions that deliver measurable business benefits.