



Research Report

System z Solution Editions: a Major Pricing Action at IBM

Introduction

For years, the single biggest objection to adopting a mainframe computer has been acquisition cost (the cost of the hardware, operating environment, infrastructure, and software). When comparing mainframe acquisition costs to those of distributed server environments (Unix/RISC or EPIC servers, or Windows/Linux x86-based servers), mainframes appear to cost 40% or more than alternative solutions (mainframe hardware does indeed cost more than distributed server hardware — but mainframes cost significantly less to operate than distributed server environments).

To counter these pricing objections, IBM mainframe sales representatives immediately shift the discussion to total-cost-of-ownership (TCO). Prospective customers are asked to think beyond the acquisition cost — and also weigh networking, management, energy, and space costs, as well as the costs related to systems failures (security breaches, loss of service, etc.) when they compare mainframes to distributed systems. Sometimes this TCO argument works — but more often than not, information technology (IT) executives opt for the “less expensive” distributed systems solutions.

Under the leadership of System z's new general manager, Tom Rosamila, IBM has decided to structure certain packaged offerings that offer substantial discounts for mainframe hardware and the software that runs on it. These new packaged offerings are called “Solution Editions” — and they are specifically designed to bring mainframes closer in price from an acquisition perspective to distributed systems competitors.

In this *Research Report*, Clabby Analytics examines IBM’s Solution Edition mainframe (System z) offerings. We see IBM Solution Editions as a huge step in the right direction as the company seeks to grow new workloads on its mainframe, expand its customer base, and beat its distributed server competitors.

What Are IBM System z Solution Editions?

In short, IBM System z Solution Editions are cost reduced, integrated, hardware and software solutions that — when purchased as a bundled package — cost significantly less than buying individual hardware and software components separately).

IBM currently offers 10 System z Solution Editions — each targeted at specific markets where IBM believes that mainframes have a distinct competitive advantage (such as in banking, security, or Linux consolidation). It is important to note that eight of these System z Solution Editions operate on IBM’s highly sophisticated z/OS operating system. The remaining System z Solution Editions (the Enterprise Linux Edition and the Cloud Computing Edition) operate under IBM’s z/VM environment (VM stands for “virtual machine”), an operating environment that has been perfected over the past 35 years (z/VM

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can be compared with EMC's VMware ESX plus Vcenter — only z/VM is far, far more sophisticated). z/VM's role is to manage partitions and systems images — including Linux images that operate on a specialized IBM microprocessors known as an IFL (integrated facility for Linux).

One of the ways that IBM lowers its Linux environment cost on mainframes has been to reduce the cost for mainframe IFL specialty processors as well as memory. Additionally, IBM has obtained special Linux pricing from Red Hat and Novell (the major Linux operating environment providers of enterprise-class Linux). A discussion of Red Hat pricing is contained later in this report.

A Closer Look at IBM's System z Solution Editions and Its New Enterprise Linux Server

The current portfolio of System z Solution Editions includes:

1. System z Solution Edition for ACI;
2. System z Solution Edition for Application Development;
3. System z Solution Edition for Chordiant;
4. System z Solution Edition for Cloud Computing;
5. System z Solution Edition for Data Warehousing;
6. System z Solution Edition for Enterprise Linux;
7. System z Solution Edition for GDPS;
8. System z Solution Edition for SAP Applications;
9. System z Solution Edition for Security; and,
10. System z Solution Edition for WebSphere.

In addition to its Solution Editions, IBM has also announced heavily discounted mainframe server environment known as the IBM Enterprise Linux Server that has been designed specifically to run Linux workloads. IBM's Enterprise Linux Server is discussed in greater depth on page 7. The remainder of this section focuses on IBM's ten System z Solution Editions.

IBM's System z Solution Edition for ACI

ACI is one of the industry's largest automated payment software suppliers — and an important strategic partner to banks located around the world. To date, ACI's solutions have largely been deployed on aging Hewlett-Packard high-availability NonStop servers — and as these servers need to be replaced, HP has asked its customers to move to a completely different hardware architecture based upon Intel's Itanium chip set.

Clabby Analytics opinion of Intel's Itanium architecture is well known. We see it as a legacy architecture that will be usurped by Intel's new Xeon-class Nehalem+/Beckton and successive multi-core architectures. Needless to say, we expect HP NonStop customers to seriously examine whether moving to Intel Itanium is a wise idea. Should these choose not to adopt Itanium-based NonStop servers, the best alternative in the industry is IBM's System z. And with IBM's System z Solution Edition for ACI, IBM is making a migration from NonStop to System z highly attractive.

It is important to note that IBM is investing very heavily in joint research with ACI in order to help the company deploy its product set on IBM-driven SOA infrastructures. Although IBM would not provide *Clabby Analytics* with any data on the exact amount of investment

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it has made in helping ACI move to SOA, one source indicated that IBM's investment exceeds its investment in helping SAP make the same move (an indicator that IBM is very serious about helping to establish ACI as a market leader in the SOA space). For its part, ACI is not only moving its payment system to SOA, but is optimizing on IBM POWER Systems and System z. What is becoming abundantly clear given IBM's heavy investment here is that the company is very serious about SOA-based banking — and plans to make ACI a flagship partner in its efforts to target next generation of banking systems.

IBM's System z Solution Edition for Application Development

IBM states that its primary goal for this Solutions Edition is to “make mainframe deployment of new workloads affordable, simple and accessible to application developers while at the same time, facilitating a development environment that is consistent with distributed platforms.” What IBM is attempting to accomplish with this offering is a dramatic change in the price for developing software on a System z. This offering gives developers access to a mainframe image from their desktops — as well as access to middleware and compiler capabilities needed to build and test their applications.

IBM's System z Solution Edition for Chordiant

Chordiant Software is a leading international provider of customer experience solutions. Its front office solutions blend multi-channel interaction management with predictive decision making, enabling Chordiant customers to capture, anticipate and respond to customer behaviors in real time. This software is particularly valuable in the financial services, insurance/healthcare, and telecommunications industries where a deeper understanding of customers strengthens one-to-one relationships between customers and their business partners.

The reason this Solution Edition is interesting is that it creates very attractive pricing for new Chordiant Customer Experience applications System z. Customers need to install Chordiant Decision Manager (CDM) or Chordiant Enterprise Platform (also referred to as Foundation Server) in order to run these applications. But, with the price break on System z hardware, maintenance and z infrastructure as well as on database products (DB2 for z/OS, WAS for z/OS), it is now very attractive to run Chordiant on a mainframe.

IBM's System z Solution Edition for Cloud Computing (A Linux Solution)

The Solution Edition for Cloud Computing (also known as “Blue Insights”) includes the IBM System z hardware, Tivoli software and IBM services needed to deliver a cloud computing foundation. With this foundation, clouds of various types can be built (for instance, smart analytics clouds) on the best virtualization/provisioning/workload management environment in the industry.

IBM's System z Solution Edition for Data Warehousing

The Solution Edition for Data Warehousing eliminates having to move data around amongst various distributed systems, thus reducing data handling/updating issues as well as data management overhead and network latency problems. Given the mainframe's ability to scale into very large configurations — and its massive internal bus architecture (allowing for extremely fast I/O) — mainframes make excellent servers for large databases.

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IBM's System z Solution Edition for Enterprise Linux

Linux on the mainframe is central to IBM's strategy to grow its mainframe new customer base — as well as to enabling existing customer to expand workloads that can run on an IBM System z. This Solution Edition — and IBM's related Enterprise Linux Server are described in greater detail in the following section (page 6).

IBM's System z Solution Edition for GDPS

The System z Solution Edition for GDPS (geographically dispersed parallel sysplex) focuses on ensuring business resiliency. This Solution Edition should be attractive to enterprises that are looking to ensure business continuance.

Included as part of this offering are GDPS/ PPRC HyperSwap Manager (allows automatic and transparent switching from primary to secondary disk as well as entry-level disaster recovery); and GDPS/ Metro Mirror and GDPS/Global Metro Mirror (allows disk and application availability and automated disaster recovery long distances. Combining these products with IBM's renowned highly-available/reliable mainframe architecture can help enterprises ensure near continuous availability and disaster recovery.

IBM's System z Solution Edition for SAP Applications

SAP is the industry's leading supplier of run-the-business enterprise resource planning software. When deployed on a mainframe, enterprises can achieve near-continuous availability (due to mainframe reliability/availability characteristics). And enterprises can avoid having to partition data (because mainframes can drive very large databases). Further, no other commercial server offers stronger security than an IBM System z (see next subsection).

IBM's System z Solution Edition for Security

IBM's System z Solution Edition for Security builds on a key IBM theme introduced a few years ago — the mainframe positioned as a centralized security hub. With the industry's highest security rating (EAL level 5), a mainframe can be configured and deployed to act as a clearinghouse for all data traffic within a networked environment. Enterprises that run distributed systems environments should consider this reduced cost solution as it may provide better security than is currently available within an existing networked environment at a cost that is far less than current cost for a multitude of security licenses spread across dozens or hundreds of servers.

IBM's System z Solution Edition for WebSphere

The System z Solution Edition for WebSphere also picks up on a theme that IBM introduced several years ago — positioning the mainframe as the central service-oriented architecture (SOA) hub for enterprises (IBM's WebSphere is the home for IBM's message passing/SOA infrastructure software). SOA is based on an industry standard for program-to-program communications known as "Web services". Web services are heavily based on message passing (programs ask other programs for services — so message traffic increases as services are requested and fulfilled). In the distributed world, message passing creates major logjams on networks during peak periods — whereas in the mainframe world,

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mainframes have extremely fast internal high-speed busses that can pass network traffic at lightening speeds — improving SOA performance while reducing network costs.

To Clabby Analytics, this Solution Edition has the potential to save enterprises hundreds of thousands or millions of dollars in communications and networking gear because mainframe architecture can drive communications traffic internally instead of having to put it out on the net.

IBM's System z Solution Edition for Enterprise Linux

IBM's Linux-on-the-mainframe strategy can best be categorized as follows:

1. Drive the cost of mainframe computing downward;
2. Increase the application base in order to expand mainframe appeal within the existing installed base as well as to capture new customers;
3. Exploit the mainframe's extreme scalability in order to position the mainframe as a Linux consolidation server. (This positioning appeals to existing mainframe accounts that are looking to consolidate and virtualize their x86 environments — plus mainframes as Linux consolidation servers also appeals to net new customers).

Driving Mainframe Costs Down

IBM uses two approaches to drive mainframe prices downward: 1) packaging; and 2) the use of specialty processors. (Specialty processors perform specific tasks such as accelerated Java processing or accelerated Linux processing and the like). IBM uses three “specialty processors” to drive down mainframe costs:

1. IFL specialty processors reduce the cost for deploying Linux applications;
2. zIIP specialty processors reduce the costs related to running specific DB2 (an IBM database) workloads; and,
3. zAAP processors reduce cost related to running Java and XML workloads.

From a packaging perspective, IBM's Solution Edition for Enterprise Linux provides additional capacity on installed System z servers that allows existing customers to run very large Linux workloads. Customers who buy this configuration receive steep discounts for various components such as memory and on IFLs, as well as discounts on related software and maintenance.

Increasing the Mainframe Application's Base

One of the first lessons that *Clabby Analytics* learned about servers is this: a server can be the best server in the world, but if it doesn't run the application(s) that a customer wants, the customer won't buy it. Therefore, it is imperative that IBM expand its application base on mainframes in order to broaden mainframe appeal.

To this end, as of 3Q, 2009, IBM has added:

- 142 new ISVs (independent software vendors);
- 850+ new or upgraded applications;
- 1,625+ ISVs on z;
- 6,364+ apps on z (Linux, z/OS, z/VM, zVSE);

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- 2,732+ apps on z/OS 1.8 and above; and,
- 3,000+ apps on Linux on System z.

It is also important to note that IBM's ChipHopper program (advanced tools and utilities that make migration easier) is playing a big part in IBM's System z Linux application capture.

Exploiting z Scalability by Repositioning the Mainframe as a Linux Consolidation Server

Most IT buyers who are familiar with mainframes consider IBM's System z to be a highly scalable, general workload processor. But, thanks to IBM's decision to make Linux available on its System z, as well as thanks to IBM's decision to build lower cost IFL processors, IBM's System z can be positioned as a highly-scalable Linux consolidation server capable of delivering hundreds of Linux virtual servers for under \$2K each.

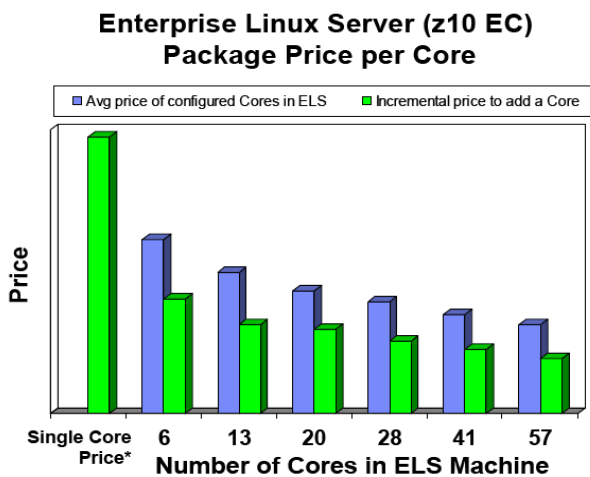
Combine this low server cost with all of the other mainframe strengths such as the strongest commercial security in the world (mainframes don't get viruses — and security breaches are a rarity); the strongest virtualization infrastructure and management facilities in the industry; and lower operating costs (such significantly lower energy usage [at about 10-12%] as compared with an x86 server farm) — and buying a mainframe as a Linux consolidation server makes solid business and economic sense.

IBM's Enterprise Linux Server: A Pricing Discussion

IBM's Enterprise Linux Server provides an excellent example of how IBM has reduced mainframe pricing. As described earlier, IBM has lowered pricing by reducing the price of its hardware (primarily by lowering IFL and memory costs); and by working with its business partners to deliver reduced software pricing.

From a hardware perspective, a single IFL costs about \$75K. But when purchased in volume, price per core drops radically (IFL pricing on a 57 core mainframe drops the price per IFL by 80% — see Figure 1).

Figure 1 — IBM's Enterprise Linux Server IFL Pricing Scheme



- **Huge Economies of Scale:**
 - Dramatic savings in the average cost per core
 - For very large scale, an incremental core can be 80% less than the single core price
 - You don't have to buy big to save big!
- **And with System z virtualization:**
 - Delivering a virtual server for under \$2K

* Based on July 2009 pricing for Core (\$75K) and memory (\$2250/GB) with discounted software and hardware maintenance for 3 years.
Note: participation and pricing may vary by country.

Source: IBM Corporation — November, 2009

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From a software perspective, IBM and Red Hat have worked together to deliver a specially priced Red Hat Solution Edition bundle. This bundle included Red Hat Enterprise Linux as well as management, update, and provisioning entitlements to the Red Hat Network (this additional software can be used to build a Linux cloud environment). As for pricing, the Red Hat Solution Edition price has been lowered \$20,000/IFL to \$8,400/IFL (a 59% discount). Furthermore, Red Hat has created volume discount schedules, which begin at quantity 2, to ensure customers retain a high price/performance ratio and encourage workload expansion.

IBM has also worked closely with Novell and together both companies have architected a promotional offering called SUSE Linux Enterprise Consolidation Suite for System z. Good until December 31, 2010, this product bundle is based on SUSE Linux Enterprise Server for System z and sold at a discounted price. On IBM System z Business Class systems it includes 2 IFL subscriptions to SUSE Linux Enterprise Server for System z for 3 years with the option to grow to 4 IFLs at no additional cost. On IBM Enterprise Class systems it includes 4 IFL subscriptions to SLES for System z for 3 years. Novell also offers Multi-IFL package pricing for SUSE Linux Enterprise Server for System z — a permanent discount offer to the existing 1-IFL pricing. Further, Novell offers volume discounts for subscriptions to multiple IFLs and is available for all IBM System z machine types, not only for IBM Solution Edition for Enterprise Linux machines.

It is important to note that hundreds of Linux servers can be consolidated and deployed on a single mainframe server. And aggressive pricing lowers the cost per Linux server to less than \$2,000 per virtual instance. Further, the consolidation of x86 server farms onto a single mainframe offers the opportunity to improve reliability, availability, and security — while lowering management and other operational costs.

x86 servers, however, are not the only server environments that should be considered for migration. Given Sun's current woes — as well as the stagnancy taking place in the Hewlett-Packard (HP) Itanium-based server marketplace — both Sun and HP Unix environments are logical candidates for porting to a mainframe/Linux platform.

Summary Observations

The cost of acquisition is a big issue in the mainframe world. High mainframe acquisition costs make it difficult for IT managers to justify running workloads on mainframes. And high costs also inhibit the adoption of mainframes by new customers.

IBM's Solution Editions meet this mainframe pricing issue head-on — dropping prices to acquire new mainframes and prices to add more capacity to mainframes by 20-40%. By doing this, IBM is 1) making it easier for existing customers to justify new mainframe workloads internally; 2) making it possible for new customers to afford a mainframe; and, 3) creating competitive pressure on IBM's competitors (particularly Sun and HP).

Although the majority of IBM Solution Editions focus on z/OS deployments, IBM's new Linux solutions are particularly interesting to *Clabby Analytics*. Its Solution Edition for Enterprise Linux appeals to existing customers who want to expand the role of mainframes within their organizations (leading to the deployment of new workloads on mainframes); its

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Enterprise Linux Server enable mainframe customers to buy more mainframes — but also strongly appeals to prospective new mainframe buyers.

The mainframe buyers that we talk to (and we've done case studies on several of them) all acknowledge that mainframe acquisition costs are high. But they also all agree that mainframe total-cost-of-ownership as well as mainframe service levels actually lead to reduced operational costs — less costly to operate than competing systems. Case studies that we have posted on www.ClabbyAnalytics.com as well as on www.goMainframe.com show how mainframes actually lead to lower computing costs.

If you choose to peruse our case studies, pay particular attention to the Baldor Electric case study (Baldor's computing expense is less than 1% of the company's total revenue); to El Banco del Credito del Peru (this account runs many different servers — and mainframes cost the least to operate from their experience); to KMD (an HP/UX and Oracle consolidation to a mainframe); and to Cornèr Banca (a bank that overtly states that mainframe acquisition costs are high — but then goes on to explain why mainframe TCO and service levels make mainframes a great investment).

As we stated at the outset of this report, we believe that IBM's Solution Edition pricing is a huge step in the right direction. As the worldwide economic situation improves, we expect these Solution Edition packages to increase the adoption of mainframe by existing customers as well as by new mainframe users.

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