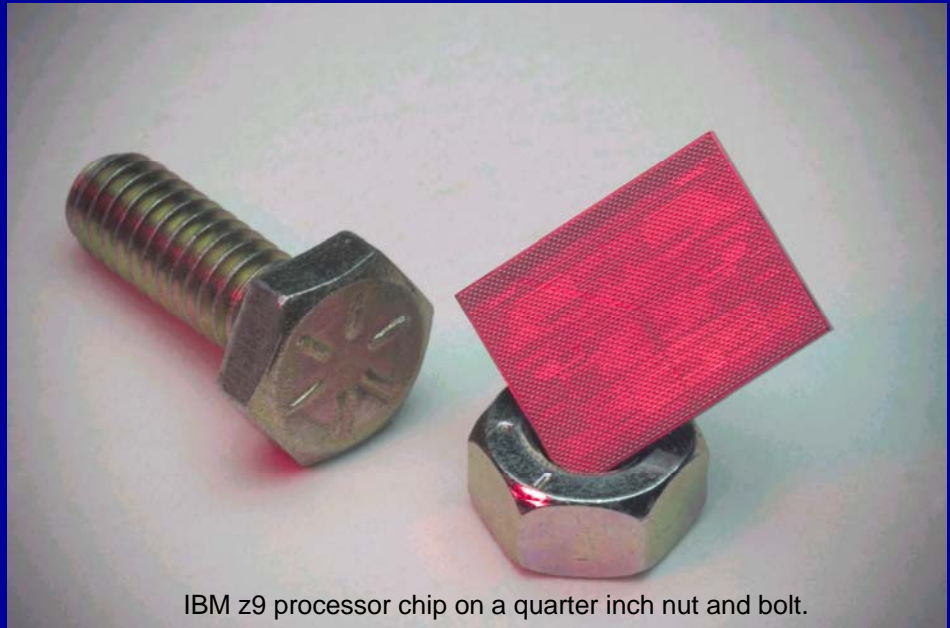


IBM System z9 – The Next Generation



Independent analysts give their views on the role the IBM System z9 can play in the collaborative enterprise.

IBM System z9 – The Next Generation

At the end of July 2005 IBM rolled out its latest generation of mainframe computers the System z9, the culmination of a three year, \$1.2billion development effort. Just looking at the raw figures is impressive; the z9 doubles the processing power and capacity of its predecessor. It processes data at a speed of 17,800 MIPs and the largest configuration of 54 processors will sport 18 billion transistors and pipe data at 172.8GB per second, or 80 percent faster than previously.

But the raw facts and figures, on their own, mean very little, it's how they are deployed that is important. IBM is now thinking and acting differently in response to its assessment of the real time demands of today's competitive business climate. It is positioning the System z9 at the heart of the collaborative enterprise based on traditional mainframe virtues coupled with a highly secure, virtualized and open environment.

Has it been worth the wait? Should we get excited? Does the z9 really have a significant role to play in the twenty first century IT environment?

To provide an objective assessment of the IBM System z9, PMP has asked five independent analysts for their opinions on the role it can play in the collaborative enterprise. This white paper gives a synopsis of these views, with more in-depth analysis available by clicking on the article title.

The contributing analysts are:



- **IBM renews its mainframe vows**
Gary Barnett, Research Director, Ovum



- **Spectacular System z9 Mainframes Leap Ahead with Doubled Power, Enterprise Hub Roles**
Strong Virtualization, Security, SOA & Value Advances
Ian Bramley, Managing Director, Software Strategies



- **IBM System z9 – Enterprise Service Bulldozer**
James Governor, Principal Analyst, RedMonk



- **Big Blue's Big Strategy: Anything but Singing the Blues**
Clay Ryder, Managing Director, Sageza



- **IBM System z9 – the secure, scalable, and resilient Enterprise solution in a box**
Tony Lock, Chief Analyst, Bloor Research

Additional information on the System z9 can be found at:

www-1.ibm.com/servers/eserver/zseries/about/





IBM renews its mainframe vows

Gary Barnett – Research Director, OVUM

www.ovum.com



In July, IBM unveiled the next generation of its mainframe technology, the System z9. The new mainframe represents a quantum leap in performance and scalability – delivering nearly double the MIPS (millions of instructions per second) of its predecessor, 80% more bandwidth, double the number of partitions and double the memory capacity. This will deliver a significant change to the economics of running mainframe hardware and brings a new lease of life to a platform that is older than most people working in the IT industry today. The launch of the System z9 – coupled with a renewed Systems Group agenda that focuses on virtualisation, openness and standards – demonstrates that the IBM mainframe is very much alive among the Fortune 2000.

“The new mainframe represents a quantum leap in performance and scalability.”

IBM is 100% committed to the mainframe

IBM's commitment to its mainframe platform isn't born out of sentimentality, it's based on a real belief that the mainframe will continue to represent a significant commercial opportunity for some time to come. IBM's mainframe revenues have enjoyed something of a renaissance since the transition from OS/390 to the zSeries, and demand for mainframe capacity in the very large (2,000 MIPS+) mainframe-centric corporations will continue to grow. IBM's belief in the platform is supported by a huge investment; the z9 is the result of \$1.2 billion in R&D effort involving a team of over 5,000 people.

IBM is making excellent progress with its mainframe charter

When IBM announced its mainframe charter in 2003 the company was responding to concerns among its customers about the long-term future of the mainframe. It committed to continue its investment in the mainframe platform and to address concerns over the cost of owning mainframe technology and the complexity of integrating it with other platforms. IBM deserves credit for the extent to which it has delivered on these promises.

“The cost of Linux on the mainframe creates a significant opportunity for large organisations to consolidate non-mainframe workload.”

For higher-end users the IBM mainframe is unstoppable

The massive scalability of the z9 makes it an obvious choice as a consolidation platform for existing mainframe applications. The improvements that IBM has made to the performance and cost of Linux on the mainframe create a significant opportunity for large organisations to consolidate non-mainframe workload on the same platform.

The economics of Linux on the mainframe have improved

The z9 delivers a very significant improvement in the cost of running Linux on the mainframe, making it a more viable alternative for Linux workloads that make use of mainframe data. However, there is still a way to go before the mainframe becomes an 'obvious' platform for generic Linux workloads.



Spectacular System z9 Mainframes Leap Ahead with Doubled Power, Enterprise Hub Roles

Strong Virtualization, Security, SOA & Value Advances

Ian Bramley – Managing Director, Software Strategies

www.software-strategies.net



IBM, in its usual conservative style, described these new mainframes as “One of the most sophisticated computing systems ever”. “Coolness” is just as an important a marketing factor in the IT industry as in fashion and popular culture. The “coolest” technologies in the IT industry today, those that are creating the greatest market buzz and customer advances, are well known and much written about in the 2005 IT media. These “coolest technologies” clearly include:

- Dual and multi-core core processor chips
- System-On-A-Chip integration (SOC) for higher performance, density and lower power consumption.
- Dense module packaging, for reduced footprint and electrical power use/unit of processing power.
- System virtualization and hipervisors for efficient resource utilization.
- SOA open applications software architectures, Web services and open standards.
- Linux and open source software support.

The System z9 109 integrates world-leadership-class capabilities in each of these “today’s coolest” technologies blended in an optimized, holistic systems architecture and design where all the parts compliment and support each other. In our assessment, the new System z9 109 can therefore justly be considered the “Coolest Computer System on the Planet” today.

Mainframe hardware costs per MIPS have plummeted 70-fold from 1990-2003, and mainframe software price/performance improvements have increased from 15% p.a. to 20/25% p.a. between 1997 and 2003, the latter rate continuing through 2005. These drastic changes had cumulatively transformed the economics of the mainframe. Indeed, we reported findings confirming that, for larger enterprise workloads, the mainframe now showed a 2- to 3-fold Total Cost Per User advantage over distributed UNIX and Windows/Intel platforms, when the mainframe’s far lower staffing needs are properly valued. With the System z9 109, IBM has once again implemented substantial and significant further price/performance improvements to both the hardware and software that further enhance the value and economics of using the platform, both in its traditional as well as the new enterprise hub roles proposed.

When viewed alongside the parallel and supportive operating systems developments and the SOA middleware software stack advances it is clear that the System z9 109 represents a substantial, integrated advance for the mainframe platform. The new System z9 109 is thus, in our view, well equipped to assume the new role of the enterprise hub in collaborative computing infrastructures. Mainframes typically support the central, corporate databases and mission-critical, enterprise-wide applications most likely to be extended out to, and integrated with, those of partners and suppliers in the customer’s ecosystem. The substantial new advances build on the platform’s established and inherent leadership strengths in security, reliability and availability, intelligent workload management, integration, I/O capability, and virtualization, now clearly make the System z9 109 an ideal platform for supporting these next-generation applications, as well as traditional workloads.

“In our assessment, the new System z9 109 can justly be considered the “Coolest Computer System on the Planet” today.”

“System z9 is well equipped to assume the new role of the enterprise hub in collaborative computing infrastructures.”





IBM System z9 – Enterprise Service Bulldozer

James Governor – Principal Analyst, RedMonk
www.redmonk.com



For all the talk of “collaborative processing” at the recent System z9 launch event, the hot news was Big Blue is positioning Big Iron at the heart of its Service-Oriented Architecture strategy (SOA). IBM intends to employ its ever more capable mainframe platform to retake the moral and technical high ground.

“Mainframes make an ideal strategic hub for SOA.”

IBM’s argument is classic one-two punch. Firstly it repositions core “mainframe values” as strengths, contending that if such infrastructure attributes are needed then a mainframe is the natural platform to attain and sustain them. Secondly IBM argues further that the key characteristics of enterprise Service Oriented Architecture (SOA) are scale, security, flexibility, manageability and resilience. SOA and mainframe values are thus entwined. If we accept this worldview, mainframes make an ideal strategic hub for SOA.

Framing the Frame

SOA is currently one of the IT industry’s hottest buzzwords so let’s start by laying down some groundwork: it’s best to focus on what a SOA should accomplish from a functional perspective rather than attempting a precise definition of which technical widgets comprise it, because the associated terminology is still evolving.

A SOA should enable asset and service reuse, unlike monolithic development approaches, by enabling the management and orchestration of loosely-coupled services described using standardized interface definitions. SOA applications are also sometimes referred to as “composite applications” since they are comprised of underlying composite services, tied together using a message-oriented middleware approach. SOA is closely associated with the XML Web Services Stack defined by the OASIS standards body. It is important however to avoid reductionism: SOA is a broad concept and set of design patterns. It might include Electronic Data Interchange (EDI) integration, for example, using existing vertical industry standards.

“SOA is all about breaking down business and technical silos and walls.”

While derided as monolithic by those lacking a genuine grasp of the architecture, mainframes have always been somewhat service-oriented. Whereas the concept of shared enterprise resources may be alien to many client server bigots, it’s long been core to IBM mainframe design. The mainframe basically regards *all* its resources as services that must be used and protected from unauthorized or inappropriate access. This isn’t to suggest that manipulating mainframe code is a snap.

First it’s time to introduce another SOA-related buzzword: the Enterprise Service Bus (ESB). Loosely defined, ESB is a SOA backplane, which allows applications, services and other resources to be plugged in, integrated and managed. IBM’s WebSphere ESB Advanced Edition is squarely targeted at this job.

Mainframe quality of service is such that perhaps we ought to call the System z9 platform an Enterprise Service Bulldozer. One can’t, after all, expect to drive through obstacles on a bus, yet SOA is all about knocking down business silos and technical walls. Bulldozers offer raw power although they aren’t ideal for every construction job. The mainframe isn’t appropriate for all SOA tasks but for auditability, reliability and sheer power, it is unsurpassed. As a hub it makes sense, to which SOA spokes on other platforms can be attached.





IBM System z9 – the secure, scalable and resilient Enterprise solution in a box

Tony Lock – Chief Analyst, Bloor Research
www.bloor-research.com



I recently wrote about IBM's adoption of a 'Systems' approach to delivering solutions to its customer base. Today I will look at one of the first easily identified instantiations – the IBM System z9 mainframe. The System z9 deliberately avoids following the naming convention adopted by IBM for its existing eServer zSeries servers and a close look at the System z9 shows that much more than just a name change is heralded with its launch.

“Whilst the performance and resilience characteristics are formidable, it is the security features that are likely to attract most attention”

The System z9 brings together advances not just in the core hardware of the mainframe but also encompasses significant developments in the operating system, z/OS v 1.7, security and many other areas. IBM declares that the System z9 will deliver even better price performance than existing mainframes. All told, the new range accounts for more than \$1.2 billion of research and development effort and has taken over three years to bring to market.

This new generation of mainframes is designed to both scale and be extremely reliable. When it comes to scalability the first model in the range, a fully spec'd IBM System z9-109, will be capable of handling over one billion transactions a day – more than double that of the current IBM eServer z990. The System z9 family will initially present 5 models offering between 1 and 54 processors and will handle up to 512 Gigabytes of memory. I/O bandwidth is improved by up to eighty percent.

In terms of flexibility, the IBM z9-109 will be able to handle up to 60 LPARs (logical partitions) – once again twice that of the current top of the range IBM eServer z990 – making it simple to host many hundreds of virtual machines. System z9 will, moreover, host a new version of IBM's Virtualisation Engine and be capable of the most sophisticated workload management of any server platform. Operating system support naturally will include z/OS, z/VM, z/VSE, z/TPF and Linux.

However, whilst the performance and resilience characteristics are formidable, it is the security features that are likely to attract most attention. The System z9 has been built on top of the security platform that is the mainframe. The System boasts a range of updated and new security features that push system security to a whole new level. The mainframe can now act as a centralised repository of encryption keys to facilitate security management. Beyond this, the System z9 can utilise Crypto Express2 PCI-X adapters as accelerators to handle up to 6,000 SSL handshakes per second, thus enabling fast, secure online transactions. There is no doubt that the mainframe remains the platform for secure computing.

These are just a few of the many technological developments to be found in the System z9. It is readily apparent that the System z9 highlights IBM's commitment that the zSeries will continue to be the major platform chosen to host much of the company's technology investments.

It is easy to see why IBM believes that its System z9 will be attractive as the heart of secure business solutions, both within and, increasingly, outside the enterprise. I believe that the System z9 will ensure that the mainframe remains as the foundation and 'gold standard' of enterprise computing solutions for the foreseeable future.