

A Fresh Look at the Mainframe



Independent analysts give their views on the changing world of the modern mainframe

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After years of the mantra of distributed computing the wheel is slowly turning and enterprises are beginning to take a critical look at how they architect their IT infrastructure. Simply deploying more and more distributed resources has resulted in a level of complexity that is difficult to manage, often under utilised and increasingly expensive to maintain.

No wonder that reducing this complexity and optimising the use of IT is high on the agenda for most CIO's today. This is why many businesses are now taking a fresh look at how they can use mainframes to make their IT environment more controllable, secure and cost effective.

It's not simply a case of centralised versus distributed, one good, one bad depending on which axe you have to grind. It's about getting the balance right and being in control of your technology environment. The mainframe of today is a very different beast to that of the first real commercial mainframe, the IBM 360, of forty years ago. But the factors that have made it a success over the years are still very much alive and have been refined to deliver a highly adaptable environment that distributed systems are still striving to emulate.

To gain an objective insight into the new mainframe world PMP asked four independent analysts to give their perceptions on the role of the mainframe in today's IT environment.



- **The Vitality of the Modern Mainframe** – Tony Lock, Chief Analyst at Bloor Research looks at the current vitality of the mainframe market



- **40 Years of Standards Leadership** – James Governor, Principal Analyst at RedMonk demonstrates how the mainframe has embraced 'Open Standards'



- **It's About the Business – Not the Technology** – Clive Longbottom, Service Director at Quocirca Ltd discusses how the mainframe has a key role to play in business integration



- **Security and Virtualization** – Joyce Becknell, Research Director at Sageza explains why the mainframe is so advanced in using virtualization to optimise computing resources

Additional information on the application of modern mainframe technology for providing business solutions can be found at:

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



The Vitality of the Modern Mainframe

Tony Lock – Chief Analyst, Bloor Research
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The mainframe computer, now known as the IBM eServer zSeries platform, has been around since commercial computing became a reality. In many organisations the mainframe's visibility is surprisingly small, despite routinely supporting huge tracts of essential business services. Today, despite decades of secure, highly available operations the mainframe does not attract the attention that its inherent qualities deserve.

Rather than facing a peaceful retirement, today's mainframe is in fact a veritable hot bed of development activity, a truth implicitly recognised by the many thousands of businesses that depend on the platform. Such is the trust that the machine holds that the usage of zSeries machines, as measured by licensed processor usage, is currently growing by around 40 percent per annum. Indeed, in the large server market, zSeries platforms continue to gain an increasing share of sales, up some 5% in 2004. Such increased market share alone is a clear indicator of the vigorous vitality enjoyed by the IBM mainframe.

The vigour of the ecosystem that surrounds the mainframe is something else that deserves far greater recognition. In addition to the significant resources that IBM devotes to the zSeries and its complementary software solutions (databases, middleware, integration and management tools) it is estimated that over 1,200 independent software vendors (ISVs) now supply front line business applications and solutions for the Mainframe. ISV application availability continues to ramp up on both the platforms established operating system, z/OS, and in the new workload environments of Java and Linux.

Whilst many of the systems now running on mainframes consist of secure and highly available database engines, it should be recognised that it is the so-called "new workloads", especially Linux and Java, that account for much of the growth in zSeries usage. For example, almost 225 ISVs currently deliver over 600 applications running on Linux on the IBM mainframe.

Many organisations now select IBM mainframe systems to host Web Servers and complex Linux virtualisation workloads as the IBM zSeries machines are ideal systems for new applications that require high availability and higher security whilst supporting highly variable workload demands. The recent introduction by IBM of the dedicated Java assist ZAAP Engine designed to enhance Java applications running on the mainframe in an economical fashion is indicative of the verve of the platform.

Beyond the realm of applications, another indication that the Mainframe ecosystem is flourishing can be found in the new Scholars programme that is currently attracting new universities to the zSeries. With a target to supply 20,000 workers skilled on the zSeries platform into the market, the Scholars programme is designed to add highly skilled youth to the zSeries community. It should also be recognised that one skill already possessed by many university IT students, namely Linux, is readily transferred to the Mainframe platform.

It is abundantly clear that the Mainframe is very, very much alive and kicking as a platform to support critical business systems today. It is equally certain that it will continue to be so for the foreseeable future. The question is not "should my organisation be using a mainframe", but rather "how many business solutions can I exploit using the mainframe platform?"

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40 Years of Standards Leadership

James Governor – Principal Analyst RedMonk
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The 40 year history of the IBM mainframe, and its relation to industry standards, reflects the history of the IT industry. Standards define industries. Tesco, for example, defines standards across the UK retail supply chain. Suppliers must comply, which affects everything from the price of milk to the shape and size of apples.

There are two different types of standards—*de facto* and *de jure*.

De facto standards are created by “facts on the ground”, and are often created by monopolies. Two well known examples are Microsoft Internet Explorer and the Intel microprocessor.

De jure standards, on the other hand, are created by committees and standards bodies, such as the World Wide Web consortium (W3C). Examples of *de jure* standards include XML, used to tie different systems together, and TCP/IP, the foundation of the Internet.

“zSeries is a proven platform for running Linux applications”

The mainframe defined computing standards in the first 20 years of its life, when IBM dominance of the industry was complete. Standardisation drove the creation of an ecosystem of third party suppliers and led to the saying: “IBM is not the competition; it’s the environment in which you compete.”

By the 1990s however IBM's dominance had lessened and a new imperative kicked in—to do the best job of supporting standards defined *outside* the platform. IBM has pursued this goal religiously; zSeries today is one of the most open computing platforms.

IBM seemingly supports every standard it can on zSeries. Thus, IBM's SNA protocol has been superseded by TCP/IP although IBM has not forced customers to migrate from one to the other (ongoing support is an article of faith for IBM's mainframe business). zSeries supports SSL for secure Internet transactions, as well as the latest XML Web Services standards. Standards support is effective enough that many IBM mainframe customers are ahead of other groups when it comes to building Service-Oriented Architectures. zSeries also seamlessly runs leading packaged applications; including PeopleSoft, SAP, and WebSphere.

Linux is the new *de facto* standard for operating systems, although not dominated by a single supplier. zSeries is a proven platform for running Linux applications, and supports the two main distributions, RedHat and SuSE. Supporting the latest standards is one way to increase the available skills base. Thus, anyone with Linux skills is potentially a *de facto* mainframe engineer, while J2EE developers are *de facto* mainframe programmers.

IBM strategy is to offer mainframe quality of service for these new environments, while hiding mainframe complexity for the developer or operator, with zSeries acting as a superserver for standards-based computing environments.

Microsoft is current being targeted by the EU for its refusal to implement remedies around abuse of industry standards in Europe, to protect its monopoly. Unlike Microsoft, IBM learned its lesson a long time ago: the best way to make customers, partners, and regulators happy is to adopt open standards. zSeries as a platform has done just that, at the application, operating system and networking protocol. Open standards means investment protection, IBM's greatest strength. After all, an application written to the mainframe standard 40 years ago will run unchanged today on IBM's latest zSeries hardware.

It's About the Business – Not the Technology

Clive Longbottom - Service Director, Quocirca Ltd
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The current perception driven by the media tends to be that technological innovation has come through utilising decentralised systems, as we have seen the move from the mainframe era through the mini-computer, client/server and web-based systems. Certainly, the next move seems to be towards a service oriented architecture (SOA), consisting of a set of discrete functions provided by low-price, easily replaceable commodity technological components.

But hang on – the PC was launched in 1981, heralding the death of the mainframe, and yet mainframe sales have continued – indeed are growing. Surely not all of this can be down to organisations expanding existing mainframes and writing extra hand-crafted Cobol solutions? No, it's not – the mainframe is undergoing a revival, driven by the business needs of organisations and the high level of process integration that is now possible between the mainframe and non-mainframe worlds. Not only does the mainframe have the long background of reliability and security, capabilities such as dynamic partitioning (the capability to have the mainframe appear to be many different machines at the same time), the lack of data latencies that can plague distributed systems and a more flexible approach to mainframe pricing models are making the mainframe into an interesting solution for today's organisations.

“.. the mainframe is undergoing a revival driven by the business needs of organisations”

From a business process point of view, the mainframe can now be viewed as any other resource – it is a tool suitable for a specific set of jobs, and therefore we can (and should) look at how it can help our company. Certainly, if we use a mainframe as a means of minimising the number of instances of a previously distributed application, the means of integrating the business to the solution and of managing that solution will be easier. Existing mainframe workloads can be easily accessed through process and workflow engines, passing information into and out of the mainframe environment seamlessly. New workload requirements can be facilitated by a mainframe, offering higher uptime, better manageability and dynamic workload management capabilities that help to optimise our cost base.

Within the new SOA environments, the mainframe has responded strongly – as a callable, high-throughput transaction engine, as a scalable engine for new services and as a highly partitioned, virtualised set of functional compute engines backed up by associated data and I/O services capable of being rapidly re-modelled to fulfil new duties as required through an on demand model.

At the end of the day, it's not the technology that is important – the business has to define the way forward. It then comes down to ensuring that we choose the right technologies to support our business needs – and that these are fully capable of participating as peers within our overall business process streams. That the mainframe is still there after over 50 years does not point to it being old legacy technology – it is a sign of longevity, of mature, manageable and continuously evolving technology. That virtualisation of the infrastructure and the evolution of standards are now in place to ensure that the mainframe can be seen as such a peer within the rest of the technology landscape is to be applauded – and should bring the mainframe back in to the equation when companies are looking for the right (technology) tool for the right (business) job.

Security and Virtualization

Joyce Becknell - Research Director, Sageza Ltd
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Most IT managers' perception of the mainframe fits the system of ten years ago – isolated, expensive, and complicated. They may not realise how much the mainframe has changed over the last few years to become a much more approachable, mainstream, versatile system than it was in the old days of raised floors, COBOL, and glass houses. The reason the mainframe has lasted for over 30 years is that its core value proposition continues to make as much sense in today's computing environment as it did in the past. It is also one of the most efficiently designed systems on the market. In an age when many managers are worried about the utilisation rate achieved for the system investment made, it is not uncommon to find utilisation rates between 70-90%, and where multiple mixed workloads have been finely tuned – 100% utilisation. In the open systems world, where systems are managing 10s of virtual systems, the mainframe world can easily manage 100s of virtual systems.

“The mainframe allows managers to leverage state-of-the-art technology across architectures.”

Many computing environments today suffer from islands of data and applications functioning as individual groups and not as a coherent whole. It is therefore difficult to leverage investments in areas such as security, business continuity, and automation across the data centre because vendors have developed separate architectures with minimum overlap in technology and the IT staff usually do not have cross-platform expertise, resulting in complexity that scales as the enterprise scales. Additionally, business managers want IT solutions that add business value rather than adding cost to the organisation. An increasingly popular way to handle these problems is to add virtualization technologies to the IT architecture.

Virtualization is a way to share resources between systems and applications. It works by automating levels of technology and data interaction, thereby reducing the amount of human intervention needed and minimising the likelihood of error. When coupled with policy-based systems management, variables can act interdependently, giving various systems and data greater prioritisation over others based on variables such as time of day, time of month, user, location, or connection type. The mainframe also has self-healing capabilities – IBM calls this autonomic computing – that means that when problems occur, the system can correct them and keep business continuity instead of merely alerting administrators of problems.

The combination of the virtualization of resources combined with policy-based management results in powerful capabilities for managing all corporate infrastructure and not just the mainframe. The mainframe allows managers to leverage state-of-the-art technology across architectures and provide better business continuity to corporate data, as it is now capable of running Linux workloads directly and can backup and mirror data from other systems to protect it and provide better overall security for corporate data. With Tivoli software, the mainframe can also serve as the focal point for corporate systems management, leveraging the disciplines mainframe managers have developed for that system to open environments, centralising systems management decisions across the enterprise.