IBM

An extreme journey of rapid evolution

Today's complex and highly competitive marketplace requires agility and speed, yet, the infrastructure and applications that organizations have in place, are in many cases, too rigid and complex to be responsive to the requirements of the market. As a result, organizations are determined to improve the business processes which are affected by fluctuations within their industry.

The marketplace dictates that only the flexible survive, only those agile enough to respond to customer requirements, nimble enough to respond to competitive activity. To achieve this business flexibility, you need an integrated IT environment, where processes are automated, applications are integrated and legacy applications are transformed while protecting the valuable and critical business logic that has been developed over many years.

An on demand business is one where business processes are integrated end-to-end across the company with key partners, suppliers and customers; one where they can respond with flexibility and speed to marketplace occurrences; to customer demands, to marketplace opportunity, and to external threats.


Integration

Business flexibility through integration of people, processes and information within and beyond the enterprise

- On demand businesses requires **flexible business processes and flexible IT...**

- Flexible IT requires a world-class platform for **integration of applications and data** across the entire enterprise.

- *IBM offers an **unmatched integration platform** for the on demand world*

Rational. WebSphere. DB2.

IBM zSeries® software is designed to help customers in four areas:

1. To help customers become flexible on the path to On Demand through the automation of processes, the integration of their legacy applications, packaged applications and new developments, and the transformation and extension of their existing IT assets.

2. As transaction volumes rise, management complexity increases, and IT environments become more unpredictable, IBM provides an integrated way of managing workload and infrastructure end to end within a heterogeneous environment.

3. As a platform environment that's ready for new workload, that's positioned to be integrated, that is ready to be managed, that can provide you with cost efficient pricing models.

4. And to facilitate optimizing your IT environment, IBM offers a complete set of mainframe tools, integrated across the portfolio.
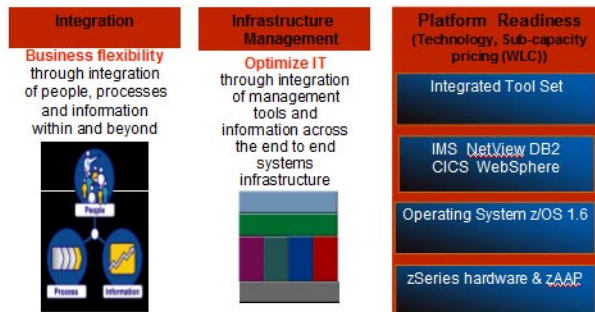
A proliferation of web-facing composite applications

At last year's IT Expo, Gartner Group reported that in the near future, nearly 75% of all Web-facing applications will be composite applications. A composite application is created when new code or new business logic is combined with your legacy assets—basically anything that already exists.

In most cases today, a legacy system or application is one that has been around for a while and is fundamental to a business operation. Although z/OS® itself has a long history, so do its users' suites of applications. It's not unusual for a z/OS customer to have millions of dollars invested in business-critical applications that have been operating and evolving on z/OS and its predecessors for 20 years or more.

With new workloads, existing applications, the Web, browser-based interfaces, cell phone interfaces, ATMs, business-to-business partner portals, new interfaces, and demands on some applications that have been in existence for 10, 15, 20 years, the complexity of your IT infrastructure has reached a critical stage. And, as transaction volumes explode, the management of complexity continues to increase, and unpredictable becomes the norm. As a result, the relationship between business results and the successful synchronicity of your IT and business applications becomes even more imperative.

Loosely coupled integration is a key term that organizations today are beginning to adopt. It is very difficult to actually develop code that is flexible enough to be changed to adapt to different business needs. Loosely coupled integration also means you have the flexibility to treat business processes and the underlying infrastructure as defined components that can be mixed and matched at will.

A service-oriented architecture introduces flexibility in a technology environment

There is growing acceptance of service-oriented architectures as an approach to integration and to structure collections of interacting applications. A service-oriented architecture (SOA) enables flexible connectivity of applications or resources by representing every application or resource as a service with a standard interface, and enabling it to exchange structured information.

Service-oriented architectures can improve your ability to construct software for integrated business processes, so you can respond in real time to changing competition. Today, the entire zSeries platform is providing more and more advanced capability for service oriented architecture to provide new levels of integration to customers, productivity, and ultimately business benefits.

Managing complexity

Traditionally, organizations have deployed fixed processes, supported by fixed applications and silo applications that support and perform very specific tasks as there is enormous value within these fixed processes, applications and assets. Transforming these assets so they can be

leveraged to their fullest capacity involves integrating the different environments—automating processes that exist in the organization; connecting the different applications together; and transforming the applications from silo-based applications by identifying those application components of high value and which can be quickly, easily and cost effectively be reused to build applications more expediently so that the IT infrastructure corresponds to the design of the actual business.

As your infrastructure evolves from silos of complex, proprietary hardware and software to a standards-based infrastructure, it can be optimized across the whole organization. The ability to manage both the systems and the applications, in order to keep moving towards automation is impacted by a number of trends simultaneously.

- *First, the volume of transactions and requests and the interfaces driving that volume are increasing and show every sign of continuing to increase significantly over time.*

- *Secondly, the variability and unpredictability of the timing of those transactions and the changes that happen—as an example, a torrent of mortgage applications being submitted as a result of comments made by Alan Greenspan about interest rates.*

- *The third thing is the business impact or the importance of those applications to the revenue of a given business—the dependence on the success of those new workloads on the profitability of the business has never been more critical.*

The key is identifying, reacting and ensuring that the entire infrastructure is adaptive enough to maintain Service Level Agreements. You can't achieve this adaptive state without an end to end approach. End to end systems management is not just about fixing and identifying problems. It's about adjustments, provisioning and making adjustments to systems, it's also about capturing and then automating those changes when similar situations arise.

End to end management

The IBM portfolio of zSeries hardware and software now provides an end to end view of your environment and an integrated way of managing end to end within a heterogeneous environment. And with the Cyanea acquisition (which delivers WSAM to the IBM portfolio),

IBM now boasts the broadest array of integrated tools for building, deploying and managing composite applications across an infrastructure—end to end.

Platform readiness provides new levels of business value

In order to fully exploit the capabilities of the zSeries platform, to ready integration, improve management and control costs as well as take full advantage of the On Demand operating environment, it is essential to understand the importance of platform readiness. Platform readiness provides new levels of business value.

Layering

Platform readiness has five layers. The first two—the hardware (the platform itself) and the operating system—are inextricably linked. The platform's fundamental assets center on workload sharing, security, availability, scalability and the ability to run multiple-mix, mainframe-unique workloads. IBM drives these forward to meet the ever-increasing demands of extreme commercial computing.

This layer demonstrates the value of running the latest zSeries 890 and zSeries 990, along with the z/OS, through sub-capacity pricing, the zSeries Application Assist Processor (zAAP) facility—which lets you run Java™ workload with no additional software costs—and enhanced performance capabilities availability. These can help drive down the effective cost of running the zSeries platform while helping drive up throughput.

z/OS and its users' suites have a history. It's common for a z/OS customer to have millions of dollars invested in business-critical applications that operate and evolve on z/OS, having started on its predecessors more than 20 years ago.

The Middleware Layer

The second platform-readiness layer is middleware interoperability, enhanced for zSeries middleware components—IBM CICS, IBM DB2, IBM IMS, IBM Tivoli NetView and IBM WebSphere Application Server—to interact with each other as well as with Java through Service-Oriented Architecture (SOA) techniques and Java links. The industry standard, open interfaces of Java lets users transparently download and seamlessly run applications. It's becoming widely used and is platform independent. As these key middleware products are enhanced, IBM continually adds capabilities that enable composite application creation and use, allowing years of legacy applications and data assets to be quickly turned into business advantages.

With the continued importance of Java in new application development, IBM has enhanced IMS Java support and the IMS Connector for Java for the latest in standards and ease of use to allow customers to take advantage of the latest tooling. IMS is also providing enhanced performance for this environment.

In the case of DB2 for z/OS Version 8.1, it was released earlier this year as a complete rewrite of the platform that among other things opens it up for the future in terms of scalability and makes it much more common with distributed SQL implementations. DB2 for z/OS Version 8.1 is the first middleware product to break the bonds of 31-bit computing and begin to exploit the enormous scalability within IBM's 64-bit zSeries machines, allowing customers to drive greater workloads through their systems and "do more with less."

Major advances in improving data availability, further reducing planned downtime and allowing today's demanding 24x7 applications to stay active for longer. As a result, you will be able to use these features to implement changes to your databases more frequently, allowing you to react more rapidly to changing market conditions or unexpected performance issues.

The move to a 64-bit environment offers significant performance enhancements in Version 8—many of which can be realized with little or no application changes being required. The performance enhancements drive down the total ownership cost for DB2 applications, making each transaction cheaper to execute and allowing greater workloads to be handled by a given server.

As an example, Univar, a leading chemical distributor in the United States, provides more chemicals and related chemical distribution services than any other company in the marketplace. With the introduction of DB2 for z/OS V8, they saw an opportunity to gain the long term availability and stability benefits for their core transaction processing system and realize hard cost savings by moving the Oracle applications (primarily eCommerce and Info Warehouse) to DB2 for z/OS. This helped to substantially streamline and simplify their computing environment, and bring the easy recoverability of the mainframe to a broader audience. And with its support for longer column names and larger SQL statements, Version 8 offered the potential to dramatically reduce both the costs and the risks of porting Univar's applications, and made it possible for the company to contemplate an ambitious server consolidation project onto the zSeries platform. Major cost savings were realized with the elimination of software maintenance fees for Oracle, and the supporting infrastructure (tape backup utility licenses, AIX support fees, etc).

Another example is WebSphere Version 5 which has been rewritten to run on the mainframe. There are a number of customers now porting their applications from distributed, back to the mainframe in a very seamless and easy fashion. And with WebSphere 5.1, and the new shipment of Release 1.6 of the operating system, there are now customers moving into production with the zAAP (zSeries Application Assist Processors) facility. zAAP is a sidecar Java assist capability that dramatically improves the price performance for Java workload on a mainframe.

CICS provides a range of access options to support modern connectivity architectures, such as Web services and J2EE, and other standard transport mechanisms. With the right external

connectors and internal adapters, you can maximize the reuse of your existing mission-critical
CICS assets.

Moving forward with new versions of DB2, IMS, MQ Series, and Lotus Domino, IBM will continue
to implement more and more commonalities between the host middleware and distributed
middleware, enable the movement of data and logic and screens back and forth much
more seamlessly, and provide evermore aggressive levels of price performance to make the
mainframe more affordable.

And, all of this world class middleware is available with sub-capacity (WLC) pricing—so you
only pay for what you use.

A complete and integrated set of tools

To further facilitate optimizing your IT environment, IBM offers a complete set of mainframe
tools, integrated to provide all the utilities you require to develop, test, deploy, transact, manage
your databases, manage your infrastructure, manage your applications and monitor ongoing
performance.

zSeries Integrated Tools Portfolio
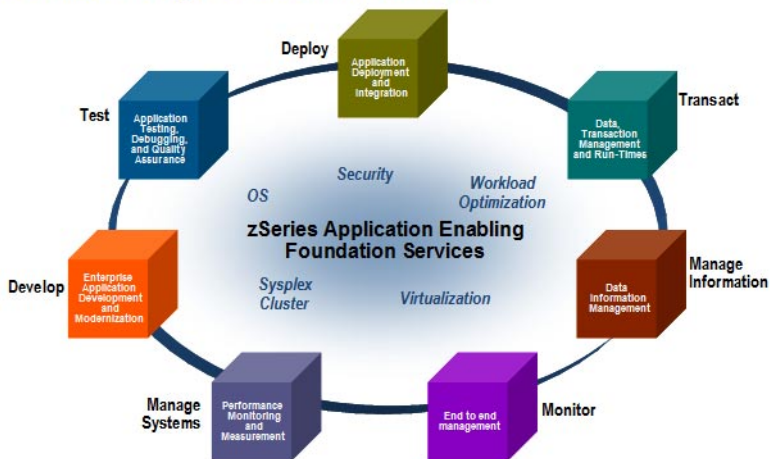
Fundamentally, you now have a complete set of tooling with very deep function and it is that complete set of tooling that lets you make the next stride forward in terms of affordably integrating, managing and developing your on demand operating environment. So in effect, you now have a critical mass in the tool set that will give you the ability to start integrating the tools together, to achieve new levels of productivity across the life cycle of application development to deployment, management and monitoring, tools that IBM continues to invest in for leadership function with over 1000 developers.

At the end of the day, it isn't about affordable tools only. It isn't about having a broad tool portfolio only. It isn't even about cross tool integration only. It's about support for the middleware on a timely basis, the operating system on a timely basis, and the entire zSeries complex providing more and more advanced capability for service oriented architecture to provide new levels of integration to customers, productivity, and ultimately business benefits.

Sub capacity pricing - pay only for what you use

Sub-capacity pricing, announced four years ago, is IBM's response to customer requests for control over rising software costs. It bases software charges on an LPAR utilization measurement, and has now been extended to various zSeries International Program License Agreement (IPLA) software, including CICS, IMS, Tivoli, WebSphere and application development tools. An IBM z800, z890 or z990 running z/OS in 64-bit mode is the only requirement.

Consider this MLC sub-capacity example: A zSeries mainframe rated at 100 MSUs (millions of service units) with three LPARs: one LPAR running DB2, one LPAR running CICS and one LPAR for development work. z/OS runs in all three LPARs. Traditional, full-capacity methods would price DB2, CICS and z/OS based on 100 MSUs (the rated capacity of the machine).

Using the sub-capacity LPAR utilization measurement algorithm, the DB2 workload may require only 50 MSUs and the CICS workload may require only 30, and the combined measurement for all three LPARs where z/OS executes may be only 70 MSUs. Sub-capacity pricing means

paying based on the LPAR workload utilization, in this case, 50 MSUs for DB2 and 30 MSUs for CICS, respectively a 50% and 70% reduction in MSUs billed. z/OS would be priced based on 70 MSUs, a 30% reduction compared to traditional full machine capacity billing.

A wise man once said …

A wise man once said, "That which does not evolve will surely decline." IBM sought the need four years ago to take a major set of steps around the zSeries: renaming the mainframe platform; changing the pricing model to move to a more flexible on demand workload license charging model; reinvigorate the operating system from a technology perspective in order to drive it forward; and also change the middleware, so that it was more related to distributed middleware, and much more open in terms of the way that the middleware participates with open standards. There are fundamental assets around workload sharing, security, availability, scalability, the ability to run multiple mix workloads that are unique to a mainframe so you are better equipped to meet the ever-increasing demands of extreme commercial computing. IBM will continue to drive z/OS forward with a view toward it being a major technology provider to the world of IT.