



# The Mainstream

An article from the IBM @server zSeries software newsletter

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## On demand and integration

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### Introduction

Like most companies, you face a common and growing problem: The past 40 years of IT evolution have created an enterprise computing infrastructure that is heterogeneous, widely distributed and increasingly complex. Business logic and application data may be scattered throughout the organization across multiple software assets. Furthermore, you are under constant pressure to create new applications that integrate business logic and application data within the organization and with suppliers, partners and customers in order to cut costs, build customer loyalties and gain a competitive advantage.

In the meantime, you are striving to become an on demand businesses, to keep up with growth, competition, changing market conditions, evolving customer expectations, etc. Whatever the reason, an on demand business is an enterprise whose business processes—integrated across the company and with key partners, suppliers and customers—can respond with speed to any customer demand, market opportunity or external threat through innovative business designs. These designs can sharpen focus and accelerate growth; and are, integrated, end-to-end business processes that are built to change: the result— an IT operating environment optimized for flexibility and resilience.

As an on demand business, you demand flexibility—that is the ability to quickly pull things together and rip them apart, change processes on the fly, focus on business issues and let them generate new channels and markets, which lead ultimately to new revenue streams. The ideal situation is to develop this without obstruction, positioning IT behind the on demand process, rather than focusing on IT first. That way, you're not in a position where your business is running in front of the shadow of an IT boulder thundering down a steep hill. The business should not be adapting to the IT strategy; the IT strategy should be wrapping itself around the business.



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### Time to market

In the early days of the Internet, when faced with time-to-market challenges, organizations were striving to achieve competitive advantage. One of the ways to do so was to quickly establish a customer channel out on the Web. As an example, some businesses may have tackled this challenge quickly by creating a new order entry system that wasn't directly tied to the inventory management system. In this instance, you'd have orders being taken from your customers even though you couldn't fill them. Customers would then receive back-order notices a day or two later, which hurt satisfaction. Today, speed to market is still critical, but not at the expense of customer satisfaction.

Collectively, you have billions of dollars of investment and years of business process automation in your existing business critical applications.

According to Gartner Group, 75% of the world's business is processed by COBOL applications, totaling 180 to 200 billion lines of code.

In a February research note, Gartner commented that 15% of all new application functionality through 2005 will be in COBOL. In the same research note, Gartner stated that 80% of all deployed applications through 2004 will include legacy extensions. These extensions involve Web-based applications triggering legacy system transactions that perform operational business functions and access legacy databases.

IBM CICS® forms the heart of many of the world's major enterprise business systems—upwards of 300 billion transactions flow through CICS systems each day.

These legacy applications within your infrastructure offer a lot of valuable business function and rules embedded in host applications. While your e-business solutions can enhance this functionality and benefit from it, manually extracting and integrating this legacy is slow and expensive. But rewriting everything in Java™ means prohibitive costs and will postpone your time to market. When faced with the option of leveraging that investment versus ripping it up



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and starting over, it makes more sense to establish a clear picture of where you are, choose the appropriate destination and embrace a new technology that will modernize your applications.

The most efficient way to open a new channel quickly is to modernize—essentially leveraging the investment you have, which allows you to meet your integration objectives much more quickly. By leveraging that tremendous investment in existing applications, you can meet your time-to-market objectives, do it at a lower cost and more efficiently integrate your environment.

### **Vertical and horizontal integration**

Of course, like many other organizations, you've been integrating on a vertical basis, tying together fairly tightly coupled CICS applications or sets of applications. Perhaps you've pulled together two or three applications that were once separate screens so they appear in one view. But is this approach really helping you derive the lasting business value you need?

As many of you are discovering, the real integration challenge is horizontal integration—the ability to integrate processes across different lines of business and types of functions, such as development, marketing and sales. And of course, each one of these business areas subsequently integrates with an extended set of applications, people and processes that could include customers, business partners and distribution channels, as well as other outsourced business functions.

In the past, complete and seamless integration has been thwarted by the reality of middleware applications being monolithic and self-contained, not to mention written in a variety of different modes. As an example, you may have CICS, IMS™ and DB2® installed, or perhaps SAP. The question is, are any of them integrated? Have there ever really been any standards in place to enable these disparate applications and systems to work together, in a loosely coupled fashion?

Basic integration objectives are rooted in the ability to drive down the cost of your environment. By simplifying your infrastructure and having all those applications running on the same platform, you have a better opportunity to achieve your integration objectives. If your application servers are sitting beside your database servers, it becomes an easier, more efficient task to integrate that environment.



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### **Integration - the heart of on demand business**

Integration is the heart of on demand business. It's about integrating data, applications, processes and people across and beyond your company, so you can leverage existing IT investments while having the flexibility to adapt quickly to changing business conditions.

IBM can help you realize the benefits of end-to-end integration through six core capabilities:

- Model business functions and processes
- Transform applications, processes and data
- Integrate islands of applications, processes and information
- Interact with resources anytime, anywhere, with any device
- Manage performance against business objectives
- Accelerate the implementation of business processes

Each capability has the following qualities, built on a service-oriented infrastructure, that together make up a world-class integration portfolio:

- Simple Integrated Development
- Secure and Scalable Deployment
- Proven Experience
- Standards Leadership
- Service-Oriented Architecture enablement

### **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.



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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.

### **Patterns of integration**

Most organizations have evolved over decades through acquisition, merger and response to business demand. As a result, your IT infrastructure may be comprised of a hodgepodge of “legacy applications” found on different platforms, aging Windows® applications, custom-built applications and the like. These complex ecosystems require vast amounts of time and energy dedicated to the continuous process of integration, despite the ever-present need to reduce costs. It’s not surprising that integration issues are a primary concern for your CIO.

Here are some common pains your organization might be facing:

- Large investment in host infrastructure, which is costly to keep up
- New investment in e-business solutions demands duplication (additional cost) and additional maintenance
- High cost to leverage existing assets in new application
- Developer skills mismatch implies high training costs
- Avoidance of e-business servers proliferation

In the face of all these challenges, you need to gain competitive advantage and rapidly implement changes in response to business opportunities. You need reliable and scalable applications in production, and you have to minimize downtime from errors or capacity issues, or your business competitors will syphon off customers before you get there.

Generally, there is a basic pattern of integration that consists of a three-step process: modernizing existing assets, writing a layer of integration logic, and then exposing those applications as services in the service-oriented architecture.



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### *1. Modernizing existing assets*

Modernizing existing assets essentially encapsulates the semantics of these applications to provide a new face. For instance, you may take an IMS application, put it through some modernization tools or technology so that you can now expose the interfaces of that application as services in a service-oriented architecture. Exposing these legacy semantics on z/OS has substantial benefits, as they need to be very tightly integrated with the code. z/OS has a lot of optimizations built into the adapters.

Over the last several years, the z/OS operating system has been providing a local transaction manager, RRS, in the base operating system. This transaction manager allows for two-phase commit transactions to be coordinated across the resource managers that exist on z/OS (such as CICS, IMS, IMS DB, DB2 and MQ). Mapping OTS on top of RRS, along with new connection packages to the resource managers, allows IBM WebSphere® to coordinate transactions composed of resources that exist in all of these resource managers. That is the system transaction manager—and it is the transaction manager to which CICS, IMS and DB2 all adhere.

The rest of the world generally uses a technology called XA for flowing transactions. While z/OS and WebSphere certainly do support XA, if you want the tightest coupling and most efficient access to those resources, you want to be on the platform, because of the roots to the operating system.

### *2. Writing the layer of integration logic*

Integration logic is a key battleground right now. This new business logic will link your systems together and provide added value. From a product perspective, this is where IBM WebSphere Business Integration Server Foundation can really shine. WebSphere Business Integration Server Foundation is the next-generation composite application platform for building service-oriented architecture applications. The real meat of the WebSphere Business Integration Server Foundation—the ability to create composite applications for building service-oriented architecture—is the idea of choreography, which is the ability to take many different applications and choreograph them visually. It's a big moment for you, because it gives you the flexibility to use these advanced capabilities of WebSphere Business Integration Foundation Server.



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### *3. Exposing the applications as services in the SOA*

Flows are done at a business level, starting out with a very graphical process, allowing for different pieces of logic to be combined, and recombined in different ways easily. As an example, if you are trying to use J2EE™ and write applications in code, it's difficult to provide that flexibility. So integration will be a combination of J2EE applications, flows and processes. Once they are in place, those services can be exposed in the service-oriented architecture.

### **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 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.

Fortunately, with the acceptance of this definition and its underlying technologies, the industry has begun to adopt a set of standards that allow applications to communicate with each other in an infrastructure that can be self-defined and “loosely coupled”—that is, supported with tooling and allowing an extra layer of applications and processes to come together. Service-oriented architectures can improve your ability to construct software for integrated business processes, so you can respond in real time to changing competition.

### **How WebSphere Business Integration Server Foundation for z/OS works**

WebSphere Business Integration Server Foundation for z/OS is designed to exploit the advanced capabilities of the IBM zSeries® family of products. It allows for deployment of J2EE-based applications to the mainframe and is designed to provide application programming model consistency with WebSphere Application Server for z/OS. WebSphere Business Integration Server Foundation for z/OS combines the best of two worlds:

- Integrated, open and industry-standards based J2EE environment
- Reliability and availability of the zSeries and S/390® products

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### Find more information on the Web

#### *WebSphere Business Integration Server Foundation*

This white paper describes the process of building and deploying service-oriented applications that extend and integrate existing IT assets.

[ftp://ftp.software.ibm.com/software/integration/library/whitepapers/wbisf\\_dhbrown0414.pdf](ftp://ftp.software.ibm.com/software/integration/library/whitepapers/wbisf_dhbrown0414.pdf)

#### *IBM Redbook: XML on z/OS and OS/390®: Introduction to a Service-Oriented Architecture*

This IBM Redbook describes the use of XML on IBM servers running z/OS or OS/390, and how it can be extended to modernize legacy applications. It provides both a high-level discussion of service-oriented architecture and practical, detailed information about XML.

<http://publibb.boulder.ibm.com/Redbooks.nsf/94445fa5b416f6e32852569ae006bb65f/ecba76920e89360585256b87006dd7d8?OpenDocument&Highlight=0.waswebservices>

#### *IBM Redbook: z/OS WebSphere Application Server V5 and J2EE 1.3 Security Handbook*

What do you think of when someone mentions z/OS security? Probably of something that is trustworthy, or even impenetrable. Perhaps you also think of something that is a little complex and challenging to administer. This IBM Redbook will help application programmers, WebSphere and security administrators and application and network architects to understand and use these products.

<http://publibb.boulder.ibm.com/Redbooks.nsf/94445fa5b416f6e32852569ae006bb65f/73ebcdfb3ccdf3fd85256d4400680c13?OpenDocument>

#### *WebSphere Business Integration Family*

<http://www.ibm.com/software/integration/integrate/>

#### *The WebSphere Business Integration zone of Developer Domain*

<http://www.ibm.com/developerworks/websphere/zones/businessintegration>





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*The Washington Systems Center Techdocs site has valuable information*

<http://www.ibm.com/support/techdocs/atmastr.nsf/Web/Techdocs>

*z/OS and OS/390 Internet libraries*

<http://www.ibm.com/servers/eserver/zseries/zos/bkserv/>

<http://www.ibm.com/s390/os390/bkserv/>

*z/Series and S/390 e-business Internet*

Presents a wide range of information including the latest announcements, customer success stories, and technical information.

<http://www.ibm.com/servers/eserver/zseries/ebusiness/>

*Intelligent Resource Director*

<http://www1.ibm.com/servers/eserver/zseries/library/techbriefs/pdf/irdtechbrief.pdf>

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