



# How To Deliver ESB (Extraordinarily Significant Benefits) to Your Business


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## INTRODUCTION

In today's networked, plugged-in and IT-intensive businesses, leaders responsible for enterprise systems have their hands full when it comes to integration. They have to deal with all kinds of IT assets: legacy systems, trading partner systems, custom applications, systems from mergers and acquisitions, packaged applications, systems in autonomous business units and disconnected databases. All the while, technology keeps evolving. Business needs change. Pressures mount to reduce costs. And, all of these factors complicate the already troublesome challenge of achieving some semblance of integration and coordination among many heterogeneous parts.

Paralyzed by the risky prospect of "ripping and replacing" entire systems, most enterprises make do with point-to-point "spaghetti" connections between systems but realize less-than-optimal business benefits.

Meanwhile, other companies take a major step forward. These integration-savvy competitors know how to make critical business information accessible across the enterprise. They're realizing the benefits of seamless integration provided by an Enterprise Service Bus (ESB), which works across heterogeneous systems to improve communication and processes and enable high-value customer interactions, which in turn can lead to higher profits.

Which company would you rather be? One whose integration strategy looks like a bowl of spaghetti, or one that provides a platform that allows for integration of all its systems ?

If you're faced with integration challenges that have real business implications, here's your way forward: Software AG's webMethods Enterprise Service Bus (ESB) based on a Service-Oriented Architecture (SOA). It's your opportunity to achieve cost-efficient, evolutionary and flexible integration that drives innovative, next-generation solutions and produces benefits the business has long demanded.

## WHY THE WEBMETHODS ESB = EXTRAORDINARILY SIGNIFICANT BENEFITS

Designed to help create a more agile enterprise while maximizing the value of existing IT investments, the webMethods Enterprise Service Bus (ESB) provides the foundation for service-based integration of applications, Web services, customers and suppliers. It uniquely combines proven application integration capabilities, high-speed messaging and support for B2B, legacy applications and event-driven technologies to create the most complete integration infrastructure available.

The ESB is platform-neutral, code-neutral, messaging-neutral and application-server-neutral, so any application can use any data. Further, sufficiently-described data enables intelligent brokering and routing. So, if an application needs information XYZ, the webMethods ESB delivers the information where it is needed. If an application needs several services that depend on data from stovepiped legacy systems, that data gets there via the ESB.

Additionally, with a Service-Oriented Architecture (SOA), application developers gain a single standards-based platform to quickly and efficiently develop applications and processes as the business evolves. This means large-scale, risky “rip-and-replace” projects simply aren’t necessary. Instead, you build on your existing IT investments to achieve new levels of agility and performance.

The webMethods ESB combines traditional Enterprise Application Integration (EAI) technologies with standards-based ESB features to deliver a comprehensive platform to integrate virtually all of your applications and services. A robust and standards-compliant platform, the ESB offers enterprise-class clustering, guaran-

teed delivery, quality of service and fully compliance-based audit capabilities. It’s the foundation of your SOA and also the host to expanded integration needs – hosting other platform run-times, such as orchestration, partner and adapter integration. Because these services are built into the ESB, you can quickly and easily expand your partner community and adapter connectivity.

The comprehensive and powerful features of this one platform for all types of integration include:

- Support for open Internet and Web-services standards (SOAP, WSDL, WS-I and more)
- Flexible connectivity options for connecting to any type of system (JDBC, FTP, JMS, SMTP and more)
- Support for all integration patterns, including service-oriented, event-driven and enterprise application integration

These capabilities enable you to:

- Service-enable legacy systems, back-end applications and databases using easy-to-configure adapters
- Create, compose and orchestrate high-value business services from many diverse sources
- Scale your environment for easy integration of systems and information as organization and data volumes grow
- Secure transactions with standards-based encryption and XML security specifications

By enabling Web services, packaged applications, custom applications and legacy systems to communicate in an SOA, the webMethods ESB helps achieve real business benefits. You can:

- Support rapid and frequent business change
- Lower total cost of ownership by using existing systems
- Increase productivity of process designers and speed the creation of business processes
- Control the end-to-end process between internal applications, Web services, partners and suppliers
- Move quickly to address changing market needs
- Reduce application and data integration costs throughout SOA by simplifying and accelerating the process
- Extend your existing IT investments and avoid costly and risky ‘rip-and-replace’ initiatives
- Pursue an incremental implementation of SOA
- Leverage a proven, scalable, reliable and mission-critical platform for your business

The bottom line: The webMethods ESB helps you “get there faster” by making your enterprise more agile. With all the tools and infrastructure required for integrating applications and partners, the webMethods ESB transforms fine granular technical services and disparate functionality into high-value business services that make IT an even more valued partner in the enterprise.

## **INTEGRATION IN ACTION: SOLVING REAL BUSINESS PROBLEMS**

ESB/SOA implementations can eliminate manual processes and bring together information from a wide range of systems to create a single customer view.

Consider this example in the insurance industry. To settle customer claims, auto insurers typically need to access many internal and external legacy systems. Service agents need data and functionality from customer data files and systems for claims information, payment, billing and often police and traffic records. Agents often go through several manual processes and log in and out of various systems to gather all the right information in one place. Some data isn't current. To update it, phone calls go back and forth. Meanwhile, the customer has to wait. The work is hardly productive.

In contrast, with an ESB/SOA solution, customers are served faster and accurately because logic and data from disparate systems are exposed to create a single view of the customer within one application. In an ESB, the insurance call center agent's application is designed to work with reusable functions, such as Get Customer Name, Query Customer Claims or Report Customer Claims and so on, accessing all relevant systems at once. Partner systems, like the police records database, are also in the mix. So when a customer calls in a claim, a single application used by the insurance call center agent will look up customer and claims information, and the customer is paid – all in one transaction. These automatic steps make the agent more productive and the customer interaction more efficient.

Some of the world's leading automobile manufacturers use an ESB to connect parts catalogs and distribution systems so that car dealerships know – on one screen – if a part is available, its cost and how long it takes to receive it. All that information may reside in many different systems, including Electronic Data Interchange (EDI) and Enterprise Resource Planning (ERP) systems. With the ESB, those systems communicate with each other and deliver accurate answers in real time. Even postal systems can be integrated to include delivery confirmations.

Here's how other companies are achieving measurable improvements using a webMethods ESB-based solution:

- A major biotech firm wanted to replace operations systems to enable rapid on-boarding of new manufacturing facilities to achieve 40% annual revenue growth and better supply chain automation. Using the webMethods platform to replace production operations systems and eliminate point-to-point integrations, the company integrated seven business applications with more than 70 interfaces. Because the applications were integrated through the ESB, not directly connected to each other, the company was able to reduce the scope and cost of the integration effort and achieve better data integrity and compliance via a common information model.

- A leading convenience store chain needed to replace manual order processes and automate transactions with suppliers and stores. By integrating orders with the backend ERP system through the webMethods ESB, the company was able to automate processes and increase visibility across its supply chain to increase order accuracy. As a result, the chain made it less expensive for smaller trading partners to collaborate with the company. In all, it achieved real-time integration with 1,700 suppliers and 5,800 stores.
- A major pharmaceutical company needed a platform for integrating business processes and applications across 200+ operating companies. Using webMethods ESB for integration internally and with partners, the company is now able to handle 2.1 billion transactions per week across all operating units, adding up to about \$30 billion worth of transactions annually. In addition, the company reduced maintenance costs by eliminating point-to-point integrations.

Read more customer successes at [www.softwareag.com/Corporate/Customers/References](http://www.softwareag.com/Corporate/Customers/References)

## HOW YOU GAIN A COMPETITIVE ADVANTAGE

The webMethods ESB is a comprehensive, standards-based ESB that enables integration and interoperability of applications, services, processes and partners via a single platform. It builds upon enterprise-class technology to deliver proven performance, scalability, security and support for key industry standards. By using it, you can gain these key competitive advantages:

### Reduced time to market – thanks to SOA principles and flexibility

The webMethods ESB was built on the principles of SOA even before SOA became an architectural best practice. Every asset within the ESB is defined as a service, which can be built using the powerful Web Services Flow Language, a graphical language that allows easy creation and orchestration of services, as well as Java, C, C++, VB and other programming languages. Additionally, all other invocable constructs, such as adapter connectivity, XSLT transformation, EJB or .NET invocations, are available as services for re-use, which reduces your time-to-market.

A key architectural highlight of the ESB is the abstraction of protocol from services. Any service can be invoked over any protocol that is supported by the ESB, providing greater flexibility. Loose coupling enables any service consumer to change the invocation method without any recoding of services. You also achieve greater flexibility because the webMethods ESB is designed to connect to applications via standards or adapters.

### High performance as your enterprise grows

The webMethods ESB scales easily with your enterprise. Here's how:

- The ESB supports flexible and scalable configurations that can be tuned to provide the best balance among performance, ease of deployment and cost effectiveness.

- The platform can be scaled from a single server in a department-level implementation to a global backbone encompassing multiple servers and data centers. This can be accomplished transparently without changes to any business logic or process definitions and without interrupting existing business processes.
- The platform's fully distributed, multi-threaded architecture allows components to be clustered, load-balanced, individually optimized and deployed across the network as required to optimize system performance. The distributed architecture helps avoid individual processing bottlenecks.
- An individual component, such as an adapter or piece of application logic running in an adapter, can be scaled easily by using the ESB's built-in ability to create multiple copies of any adapter and load balance between them.
- Individual processes scale easily on the webMethods ESB because they do not have to be implemented in a monolithic fashion – a process may have many chunks of logic (sets of business rules) executing across any number of adapters.
- With intelligent adapters, which can run on the machine hosting the backend system, business rules can execute in the adapter local to the resource being integrated, a critical factor in scalability. By allowing the business rules to execute in intelligent adapters running local to each resource, you often can eliminate the need to move large amounts of data across the network. In addition to reducing network traffic, scalability is increased in that a given transaction can often be executed faster and with fewer messages.

### Vertical scalability

You can scale the webMethods ESB vertically to maximize the performance of the software on individual servers. This means, for example, you can use 64-bit JVMs to maximize the amount of available resources, leverage processor capacity and tune the run-time environment to exploit all of those resources. Aside from

disk space and available RAM, the webMethods ESB has no constraints that limit it to processing a message of any size. Software AG provides built-in mechanisms and sample architectures that allow for large message processing without affecting the processing of other messages or other resources running on the server. Large message support can be applied to any type of message format.

Software AG components also provide memory-based and disk-based document queuing options. These options enable you to tune run-time performance by logging only critical documents to persistent storage, while relegating non-critical documents to faster memory-based queues. Other run-time components offer similar controls for optimizing performance.

### Horizontal scalability

Once you've reached the limits of vertical scalability, you can scale horizontally by deploying additional platform nodes and configuring them to be load balanced. Load-balancing mechanisms are part of the Software AG clustering architecture, allowing the messaging load to be distributed across multiple physical machines. The clustering feature uses a shared repository to hold Software AG state information for use in load balancing and automatic fail-over.

The repository contains information that allows a redirected client to access session and state information stored there by the previous server. Because this activity is transparent to the client, clustering makes multiple servers look and act as one. As processing requirements increase, you can add new machines and servers to the cluster. You can use clustering in addition by obtaining larger machines to support your growing processing needs.

## Increased ROI in your existing IT investments

The webMethods ESB is well suited to provide service enabling, service mediation and service orchestration capabilities in a heterogeneous SOA environment that has standards-based and proprietary-based connectivity requirements. This makes the ESB ideal for organizations that have best-of-breed applications and systems that need to be integrated to make services available to other consumers.

The service-based architecture of the ESB ensures that any service can be accessed over any protocol that's supported. The ESB supports many protocols and transports, including HTTP, HTTPS, FTP, FTPS, JMS, POP3, IMAP4, SMTP and SOAP. Protocol support is further enhanced by the ESB's capability to support any data format, including XML, EDI or flat file formats, ensuring that any data format can be transported over any of the standard protocols for connectivity to any application.

Via support for the latest Web-services (WS) standards, including WSDL and SOAP, the ESB is interoperable with any other system that supports WS. Support for WS-I compliance ensures that the Web services being created or consumed comply with this interoperable specification. The creation and consumption of WS is easily accomplished through wizard-driven user interfaces (UIs) that automatically create the WS provider and consumer definitions, which can then be browsed dynamically.

For security, the webMethods ESB supports the most frequently used standards, including SSL/TLS for securing the HTTP and JMS transports, and WS-Security for securing messages, including options to encrypt and digitally sign the messages as well as support for different authentication tokens.

Other standards support that enhances and enriches the integration with other systems includes JDBC for database integration and LDAP/LDAPS for authentication against directory services.

Efficient, high-performance operation in a heterogeneous environment also requires native connectivity to packaged applications and systems. The webMethods ESB provides more than 100 out-of-the-box adapters for connectivity to a wide range of ERP, CRM, SCM, database, messaging, marketplace and vertical industry applications and systems. Because mainframes are core systems in most IT landscapes, the webMethods ESB provides high-performance connectivity to mainframe systems for invocation of COBOL, Natural or RPG applications as well as the ability to monitor mainframe queues for documents that need to be retrieved.

Adapters provide introspection capability into the applications or systems they connect to and make business objects and components available that need to be exposed. A developer merely has to select the operation and business object that needs to be accessed through a wizard-driven interface that then generates an adapter service that can be self-invoked, called from another service or exposed as an operation within a WS. The services created within the ESB can be easily registered within an UDDI registry/repository to facilitate design-time governance and re-use.

Via tight integration with J2EE and .NET application servers, the webMethods ESB also supports service enablement of business logic created through EJBs and .NET services. Additionally, the introspection capabilities extend to those applications also, which allows for available business logic to be invocable as services in the ESB.

The webMethods ESB provides a rich application programming interface (API) for Java, C, C++, VB and .NET developers to build custom applications and integrate seamlessly into the ESB. The API allows custom logging facilities to be defined so that all logging and auditing information can be sent to a central location. Additionally, the ESB Adapter Development Kit (ADK) allows easy integration to home-grown or custom backend applications for which an out-of-the box adapter is unavailable.



## **Faster results, thanks to easier application development**

By taking the complexity out of application development, the webMethods ESB provides a ready tool for analysts who are not technically savvy and programmers who want to develop services rapidly and like being able to use Java, C or C++ to create interfaces.

The webMethods ESB development environment also allows services to be easily created using the Flow Language, a fully graphical representation of the logical operations that a developer will typically need to use when creating a service. Flow supports programming constructs like loops and branching but represents them in a way that allows a higher-level business analyst to use the tool and easily figure out how to chain together the mediation logic needed for an integration. In many cases, adapters facilitate service enablement of applications, systems and resources, which reduces the complexity of connectivity for developers. They instead can focus on the type of business information that needs to be accessed and updated. Further, all assets developed within the ESB are services, including adapter services, which can be re-used efficiently in other orchestrations.

You can install the ESB in minutes. Following installation, the administration and monitoring is done via the browser. Uniquely, communication between the development environment and the server takes place over HTTP, allowing development teams to connect easily to the server, even across internal firewalls. Development assets can be easily deployed to other environments via a highly flexible deployer tool, which first allows for deployment projects and targets to be defined and then deploys all the assets to the target server. The tool allows the deployment to be scripted and scheduled.

## **SEVEN REASONS TO CHOOSE THE WEBMETHODS ESB**

Here's what makes the webMethods ESB the ideal platform for your SOA:

### ***1. Ease of development***

The Flow graphical environment allows users to rapidly create and orchestrate services. Even complex integration patterns can be implemented relatively easily, requiring only the skills of an analyst, not a programmer. In fact, customer projects typically go live in about six weeks, in part because the development environment easily allows the user to implement integration and mediation logic.

### ***2. World-class mapping capabilities***

Both services and application-based integration often deal with different document formats and, in many cases, syntactical differences – the source may be XML and the target may be a flat file. To effectively mediate between the different consumers and providers, the webMethods ESB provides a graphical editor that allows easy mapping and transformation of elements. Through the innovative use of transformers, the transformation services can either be applied as a separate invocable service step within the orchestration or inline within the map step, which allows multiple transformers to be applied simultaneously. This simplifies both development and maintenance.

### ***3. More than 100 intelligent out-of-the-box adapters***

Using more than 100 out-of-the-box adapters, you can achieve fast and seamless connectivity to information resources and enterprise applications. You can connect a diverse array of applications, ranging from IBM mainframes and older SAP R/3 versions to modern Web services-based applications. Intelligent introspection into the application's

metadata allows adapters to reconfigure themselves and adapt to application customizations.

### ***4. Reverse gateway capability for B2B***

webMethods ESB can be deployed in the DMZ as a reverse gateway server. Although the functionality provided is that of a proxy, two unique features of this gateway make it a must-have for enterprises with B2B applications. First, the connection established between the reverse gateway and the internal ESB server is from the "inside out." That means that the connection goes from the internal server (in the secure layer) to the DMZ – a configuration that is firewall-friendly and requires no special opening up of ports other than what is needed for standard HTTP access to the internet. Second, the reverse gateway streams all requests to the internal server, which allows very large documents (as well as multiple documents) to be sent through the reverse gateway without exceeding allocated memory.

### ***5. Award-winning platform***

webMethods ESB, v.7.1, was named a 2007 Product of the Year for Service Assembly and Integration by SearchSOA.com, TechTarget's leading online media resource for the SOA market. The webMethods platform also was ranked Best in Class in 11 Categories in the 2007 SOAWorld Readers Choice Awards and #1 in Application Integration at the ebizQ Readers Choice Awards. According to the world's most respected industry analyst firms, Software AG is a leader in every product category we serve.

### ***6. Customer-focused professional services***

Software AG professional services teams use best practices and proven methodologies. They are experienced in projects of every size, from those that take a week to implement to projects spanning two or



more years. We measure our success based on yours. In fact, one of Software AG's key metrics is the ROI our customers realize from our products.

### **7. Industry-recognized customer support**

For eight straight years, Software AG has achieved Support Center Practices certification under the prestigious Support Center Practices certification program. This demonstrates the industry's highest level of customer service as measured by our peers and based on criteria that include corporate commitment and strategic direction, customer satisfaction and performance metrics.

### **YOUR OPPORTUNITY TO MAKE A REAL DIFFERENCE TO YOUR BUSINESS**

If you're ready to get rid of point-to-point "spaghetti" connections and get on with cost-efficient and flexible integration, the webMethods ESB offers a real opportunity to make a difference to your business. You'll be able to deliver these Extraordinarily Significant Benefits to your business:

- Improved productivity due to easy connections between disparate systems, applications and databases within and across corporate boundaries
- Seamless communication with partners and suppliers as well as more efficient interactions with customers
- Faster application development by re-using assets
- Improved ROI in existing IT systems – rather than undertaking a risky "rip and replace" initiative
- Rapid results because you can quickly implement the webMethods ESB
- In the end, you'll provide the scalable, standards-based platform that makes your business integration-savvy – ready for virtually any change and ready to take on the competition.

Take the next step to get there - faster. For more information, visit [www.softwareag.com/esb](http://www.softwareag.com/esb)

### **ABOUT THE AUTHOR**

John Fitzgerald, Software AG's Director of Product Marketing for ESB, Enterprise Integration and B2B, has been developing, implementing and selling enterprise software applications for more than 10 years.

Over the course of his career, Mr. Fitzgerald has helped implement enterprise software applications for a number of Federal agencies, media companies and Fortune 500 companies, including the Department of Justice, Department of Defense, Department Of State, Federal Bureau of Investigation, Department of Commerce, and others.

Mr. Fitzgerald has a wide range of both technology and industry experience, having worked in technical pre-sales, product development, business development and product management for database, development tool, content management and security-focused enterprise software companies. Mr. Fitzgerald has a BS in Management Information Systems from Syracuse University.

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Software AG is the world's largest independent provider of Business Infrastructure Software. Our 4,000 global customers achieve business results faster by modernizing, automating and improving their IT systems and processes to rapidly build measurable business value and meet changing business demands. Using our solutions, organizations are able to liberate and govern their data, systems, applications, processes and services - achieving new levels of business automation and transparency.

Our industry-leading product portfolio includes best-in-class solutions for managing data, developing and modernizing applications, enabling service-oriented architecture, and improving business processes. By combining this proven technology with industry expertise and best practices, our customers improve and differentiate their businesses – faster.

Software AG – Get There Faster

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