

# Breaking Down the Barriers to External Application Integration

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**ChainBuilder® Web Services**  
By Bostech Corporation

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A technological breakthrough in business-to-business communications is gaining momentum and widespread acceptance as the preferred means for wireless and system-to-system integration. Finally, enterprises considering new or alternative communication devices will be able to steer clear of the costly barriers that have prevented efficient, real time information sharing between systems. This breakthrough is called Web Services.

The boundaries (both physical and theoretical) between systems, business units, and organizations have made integrating systems inside and outside of the firewall extremely costly and complex for companies that wish to leverage investments in existing information systems. Although the technologies to connect internal systems and applications have matured, they have fallen short where the dynamics of inter-enterprise cooperation comes into play.

The advent of Web Services is proving to be an efficient solution for overcoming the complexity involved with inter-enterprise integration. Bostech's ChainBuilder® Integration Platform offers a practical, cost-effective approach to implementing a unique combination of both Web Services and Enterprise Application Integration in an existing IT environment.



Until recently, the Internet has been used primarily as an information tool for web-based marketing or consumer-oriented intranet applications; however, the need for real time, connected, business-to-business communications continues to surge. While the typical internet business scenario has been limited to individuals using a browser to navigate through linked documents, download files, or manually initiate purchases and simple transactions, the unspoken need for organizations is to allow its stakeholders to interact with critical business information using devices (cell phone, Personal Digital Assistant, car radio, etc...) other than web browsers. This is simply the natural evolution of technology being applied to everyday problems.

Clearly, this evolution to a connected world has been slow and fragmented. How many people remember the first copier, fax machine, or word processor that ever made its way into the office? Could you imagine that these devices would make your companies more efficient? Do you remember the first time the copier jammed or the fax ran out of that thermal paper (remember the rolls)? Efficient was probably not the first word that comes to mind when reminiscing about the good old days. So it is with the Internet. Email, e-Commerce, P2P, A2A, B2B, LAN, WAN, XML; the acronyms that fly around are not only confusing, but often contradictory. Nevertheless, the evolution is here.

Today, with virtually every computer and potentially every application connected to a single network, exciting business opportunities are emerging from the next generation of business-to-business (B2B) applications. Many organizations, and CIO's in particular, are intrigued by the idea that all of these applications, when connected, have the potential to dramatically improve the manner in which business is conducted over the Internet. The systems and applications within these organizations have the potential to have new life breathed into them. It is no longer necessary to consider infrastructure replacement in order to find value in the data and information


that has been collected for so many years. The assumption is that we can find a way to connect these systems with new solutions.

However, solution vendors have been slow to develop cost-effective, easy-to-implement integration points for these systems and applications. Why? Because it is a very expensive proposition to re-engineer systems that have been used for a decade or more. Many integration obstacles prevent applications, all of which might reside on different platforms, from inter-operating in a way that establishes a network of connected information and business logic. There simply has been no standard way to integrate communications and information between these systems. Without standards, devices like cell phones, wireless PDAs or bar code systems, which can work remotely and in real time with business critical applications, are forced to rely on proprietary methods of connecting to legacy applications. This can be a costly, even risky, proposition for most CIOs to undertake.

The most difficult integration obstacles have included:

- *The isolation of business processes within incompatible systems* – businesses today maintain huge amounts of data about customers, partners, employees and products and have invested staggering amounts of money in the systems that allow the collection and management of that data. Data, by itself, is not information. Without the business application to format it, this data is of significantly less value. Companies simply don't have many easy or cost-effective options for integrating legacy data or other applications given all of the possibilities for a fully integrated eBusiness infrastructure.
- *The changing dynamics of business relationships* – in a business climate that demands the ability to be more and more agile, the nature of business relationships are in a constant state of change. Mergers, acquisitions, a global economy and so forth, are impacting the way business is conducted. Adapting to the dynamics of a new business relationship or to a newly acquired application can be cumbersome, and integration obstacles can significantly delay intended results. In extreme cases, integration complexities can even jeopardize potential opportunities altogether.
- *The accelerated pace of change in technology and standards* – technology changes quickly, and IT departments often face the daunting task of architecting for an unknown future. This fact is the primary reason why IT departments are clamoring for a standards-based architecture that elevates enterprise application integration benefits while simplifying the means to achieve them.

If one or more of these obstacles exist within an organization, the promise of a connected enterprise becomes a near impossibility. The evolution of Web services, however, has the potential to minimize the cost and risk of attaining this goal and protecting your investment in systems and applications for years to come.




The term “services” is key to understanding this concept. Think about the kinds of services that are available today, or more specifically, public utility services, such as electricity, water, natural gas and so on. These service companies, in an effort to reduce the cost or burden associated with obtaining each service in isolation, evolved to serve collective needs. Certainly, people always had the option to dig their own well or buy their own generator, but the option of simply plugging into an existing infrastructure was far easier and more cost effective. Utility companies realized that there were economies of scale associated with building and maintaining the infrastructure to serve large groups of customers.

The same parallels can be drawn with Web services. Software applications can now be shared with many participants without having to create and maintain each point of connection independently. Users also have the choice of services they wish to use. Further, the guidelines for using these services are straightforward and well documented allowing consumers to quickly take advantage of new solutions as they develop. In short, Web services are a standards-based approach to allow access to applications over the Internet regardless of the consumer or requesting mechanism.

Web Services unlock previously isolated business functions, and when coupled with a robust EAI (enterprise application integration) solution, allow incompatible systems to interoperate, regardless of language, platform, and operating system. EAI is relevant in this discussion in that so much of what happens within an integration project is dependent on systems that are inside the firewall. EAI has been proven to be highly successful in leveraging existing legacy systems to share information with more modern applications by facilitating the mapping, routing and monitoring of these systems. Web services are particularly well suited for communications to devices or systems that reside outside of the firewall. The combination of EAI and Web services makes for a particularly powerful solution for companies that still rely on legacy based applications (the majority of companies in business today), or those that have multiple business critical applications inside the firewall.

Web Services are self-contained, self-describing, software components (building blocks) that can be published, located, and invoked across the Web. By “modularizing” critical business applications into specific functions, companies can now push those functions outside of the firewall – in a secure manner, giving remote users access to information. In summary, Web Services are business functions or applications made universally available (published) to designated users (subscribers).

A cell phone or handheld device that is Web service enabled, for example, could invoke a Web service such as a request for inventory availability. The requested information might actually reside on a legacy system that was not built to handle real-time interactivity, but the Web service, when coupled with an EAI application such as Bostech’s ChainBuilder Pro Integration Engine, establishes a single standard for which all devices can ask for information without a direct integration to the mainframe. Likewise, a key partner or vendor ERP application could also invoke that same Web service using the same entry point and message standard to retrieve the same information.



Web services standardize the way applications call business functions from other applications by using a common, documented method to interact with the systems that contain the service. To make this happen you need only create a software component that represents the business function and defines the necessary elements of interaction via a Web Services Description Language (WSDL) Document. The three components that the WSDL document defines are the communication address (location) of the application, the function to be performed by the application, and the message format to be used by the application. These mini applications are then made available to the client for direct access via an application server. Mini-apps can also be pre-defined so that the client (customer) requires little or no effort to web-service enable his/her system to speak with the publishing company's web service. The client simply needs to know how to communicate with the application service.

A good example of the advantages of web services can be seen with wireless PDA integration to back office systems. If a user wants the ability to check the status of an order, the user can either write a special program that talks directly to the system (dealing with all the complexity of connecting, security and data formats), or he/she can simply format a request in the manner described in the WSDL document and submit it to the service. Whereas a PDA using Wireless Markup Language (WML) and a web browser can only be used for viewing the information it receives in an HTML format, information retrieved by a web service is free from the presentation-only restrictions of the web browser. This means that the data a PDA (or any device for that matter) requests and receives using web services can then be utilized by other applications on the device, such as a spreadsheet or OLAP (On-Line Analytical Processing) application. Furthermore, web services can dramatically increase the potential for PDA users to manipulate or work offline with the data.

This is not to say that a WML/Web Browser approach is necessarily inefficient for simple query / reply type applications; in fact, it may be the preferred method for those companies that need only to access simple functionality because the WML approach requires no mini-application installation and it immediately services clients of any PDA platform. However, Web services provide infinitely more functionality, flexibility and re-usability than a straight WML to back office system approach.

In the cases where an application is required or already resides on the requesting device, Web Services is THE best means of interacting with an infrastructure.

From an architectural view, Web Services are based on three standards:

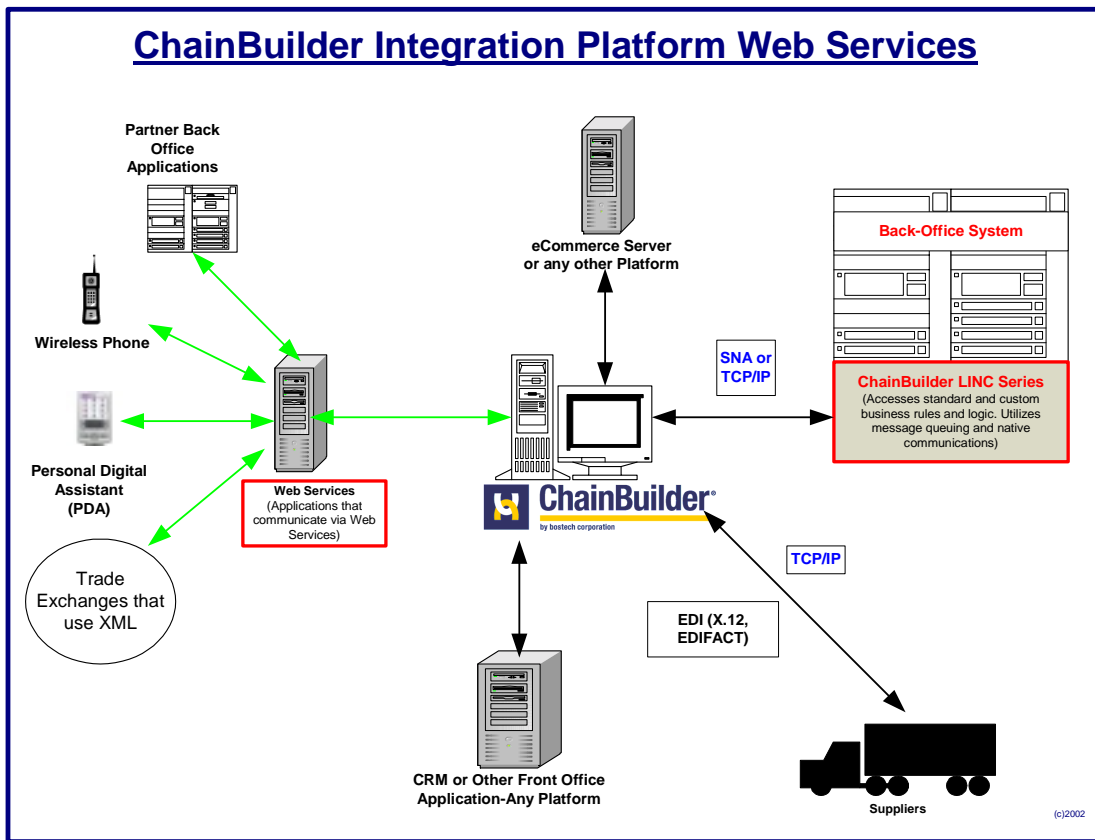
- Simple Object Access Protocol (SOAP): the XML-based communication protocol used to access and communicate with Web services
- Web Services Description Language (WSDL): the Web Services description API for interacting with a Web service
- Universal Description, Discovery and Integration (UDDI): the means for publishing Web services through a centralized locating methodology

These standards form the basis for describing, discovering and deploying Web services. Numerous organizations (World-Wide Web Consortium, Web Services Interoperability Organization) have participated in the creation of these standards and have been very focused on producing an unbiased working model for public domain purposes. Entire volumes have been written about these subjects and are therefore beyond the scope of this document. However a list of resources are available in the appendix of this paper for further study of the technical aspects of Web services standards.



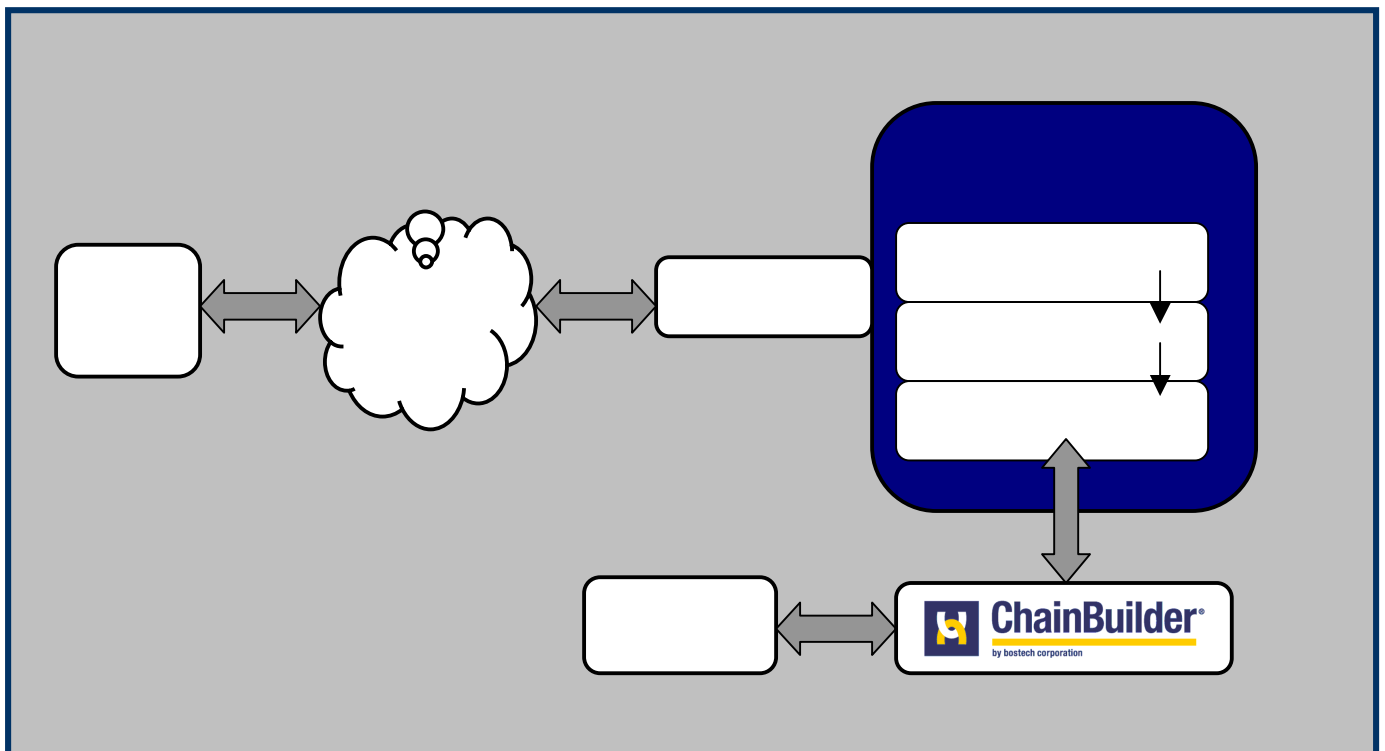
ChainBuilder Web Services will empower your organization to create a simplified access point for many different business communication requirements – such as wireless PDA to critical back office information.

ChainBuilder Web Services creates a standard communication framework for your existing business systems supplementing the internal integration benefits of the ChainBuilder Integration Platform with new external communication efficiencies without the need to write new code. Developers can use Bostech's Web Services graphical design tools to build WSDL documents easily and efficiently. No programming knowledge is necessary to generate services that can leverage existing functionality in ERP or CRM systems, legacy applications, and diverse data sources.



The Diagram above represents the topography of how a data request would be submitted to ChainBuilder, (through a PDA, partner system, or any device outside of the firewall) is translated and routed to the appropriate back office system, and then re-translated to the ChainBuilder Web Services application server as a response to the requesting device. Notice that the Web Services interface can be viewed as an extension of the ChainBuilder Integration Platform. It provides a common interface for all Web Service enabled applications to interact with existing integrations. Once a business function is defined as a WSDL document, no additional development is required to leverage existing back-office integrations if multiple clients wish to use that particular web service.

A closer examination of the process shows how the ChainBuilder Web Services solution enables applications to interact with existing applications. A wireless device (SOAP Client) submits a request to a web server that contains a Web service. This request is processed by the LINC for Web Services and handed off to the ChainBuilder Integration Server. The request is translated, routed and monitored by ChainBuilder and returns the result to the LINC for Web Services, which returns it to the wireless device.



The advantages of combining both the ChainBuilder Integration platform and ChainBuilder Web Services into a single solution are numerous, particularly if a company has multiple internal business applications, AS/400 or Windows-based platforms, various databases, or legacy systems. Some of these advantages include:

- Pre-built configurations to many applications are immediately available as Web Services without the need to re-engineer the applications
- ChainBuilder Integration Platform is built to handle XML, providing a message broker to translate from XML messages to virtually any other format
- The ChainBuilder Integration Server gives a central management point for all incoming requests, guarantees message delivery, handles many proprietary message formats beyond XML, communicates using numerous protocols, allows system monitoring and alerts, and centralizes security through HTTPS.
- ChainBuilder Web Services is an extremely efficient, flexible way to distribute information and to protect the investment in your existing systems, while allowing you adapt to newer technologies as needed


More and more, businesses today compete on the basis of process advantages. The likes of Dell Computer, Honda, and Wal-Mart have been leaders in using integration for process improvement. ChainBuilder Web Services permits any company, including those with modest IT budgets, to compete with even the largest competitors through IT-enabled process improvement. ChainBuilder Web Services provides organizations with a fast, cost-effective way to integrate IT assets with each other and to those of their trading partners.

**This document is intended to provide a summary overview of ChainBuilder Web Services.  
For additional information, contact Bostech Corporation**

**Call: 1 (888) 817-3820**  
**Visit: [www.bostechcorp.com](http://www.bostechcorp.com)**  
**Email: [info@bostechcorp.com](mailto:info@bostechcorp.com)**

#### About Bostech Corporation

Bostech Corporation is the premier provider of embedded packaged integration software to enterprise software vendors. The Bostech Powered Packaged Integration Program delivers a unique combination of world-class integration technology, marketing, sales, and training support that enables software vendors to extend their core product offerings with pre-built, branded features for easily interfacing their applications with their customers' business systems. At the core of Bostech's Program is the ChainBuilder® Integration Platform, which is built on industry-leading EAI technology used by more than 1,300 companies around the globe. Customers benefit from thousands of interfaces built over nearly a decade, including the Company's LINC Series, which delivers pre-built connectivity to various technology platforms, ERP, Supply Chain, CRM, e-commerce, and many industry-specific applications.

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- ChainBuilder Server – Comprehensive EAI engine that enables integration and collaboration between internal applications and with those of customers and suppliers.

Integration Adaptors for popular applications and standards

- Adaptor for J.D. Edwards WorldSoftware
- Adaptor for J.D. Edwards OneWorld
- Adaptor for CA-PRMS
- Adaptor for Lawson Insight
- Adaptor for SAP R/3
- Adaptor for WebSphere Commerce Suite
- Adaptor for XML
- Adaptor for X.12

LINC Series Connectors for popular applications and technologies

- LINC for AS/400: Versions for TCP/IP and SNA
- LINC for J.D. Edwards WorldSoftware
- LINC for J.D. Edwards OneWorld
- LINC for CA-PRMS
- LINC for COM
- LINC for Lawson Insight
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