Energize e-business with Web services from the IBM WebSphere software platform
The IBM WebSphere™ software platform for e-business is evolving to enable e-businesses to quickly extend existing applications to add Web services. And if you need to get started, or transition your business, the WebSphere software platform provides the tools you need to discover, develop and deploy Web services.

**Web services: the next generation of e-business**

There has been an explosive growth of e-business as companies of all sizes use the Internet to find new customers, provide new services and streamline supply chains. The potential of business-to-business relationships in e-commerce is well understood and has already been realized by many e-businesses. Until now, however, there has been an impediment to further growth: e-businesses with common objectives are not connecting or sharing resources and data. Because technologies and implementations vary across companies, e-business relationships have developed only between businesses that are already aware of each other and use the same static applications.

Web services are modular applications that perform specific tasks and are accessible through open protocols like HTTP, making them readily available to e-businesses. If you’re using the Internet, you can use Web services, and probably already have. Businesses can dynamically mix and match Web services to perform complex transactions with minimal programming. Web services allow buyers and sellers worldwide to connect dynamically and execute transactions in real-time.

Web services can be grouped into three categories:

- **Business information.** Share information with consumers or other businesses. You can use Web services to expand your reach through services like news streams, local weather reports and stock quotations.

- **Business integration.** Provide transactional, fee-based services for your customers. Create a global value network of suppliers that you can leverage as they conduct commerce. Offer Web services such as auction e-marketplaces, reservation systems and credit checking.

- **Business process externalization.** Differentiate yourself from the competition by creating a global value chain. Use Web services to dynamically integrate your processes with those of other e-businesses, or to streamline your own.
IBM and Web services
You can establish relationships through shared or exchanged Web services, as accessed through a collective meeting place known as the Universal Description, Discovery and Integration (UDDI) specification. UDDI registries allow you to be both a supplier and consumer through a complete library of modular applications stored on the Internet. Web services can be integrated into a wide range of business-to-business processes. UDDI defines open, platform-independent standards that enable you to share information in a global business registry, discover other participants' services and define how you can interact across the Internet. Web services are published in the UDDI Business Registry by means of the Web Services Description Language (WSDL). And they interact with each other by means of the Simple Open Access Protocol (SOAP).

IBM is a key participant in defining the UDDI specification, which is endorsed by dozens of industry leaders. And IBM is the first to deliver an open, integrated platform to build, test, deploy and publish Web services. Beyond that, IBM offers consulting services and extensive developer resources including demos and downloads and support.

With WebSphere software platform, IBM has established the lead in delivering software products for this next generation of e-business.

Extending e-business with Web services and the IBM WebSphere software platform
Web services are a natural extension of IBM's e-business strategy, which stipulates that any client should be able to connect to any service on any server. The WebSphere software platform offers a Web services solution to deliver information to customers, provide transactional capabilities, and differentiate your e-business from the competition by externalizing business processes.

The WebSphere software platform can already host end-to-end applications across multiple platforms through the support of open standards. By adding support for Web services, the WebSphere software platform becomes the ideal hosting environment for the next phase of e-business evolution. The WebSphere software platform is:

• Based on open standards. WebSphere software platform already supports standards such as HTTP, XML, JavaBeans™, servlets, Java Server Pages™ (JSP™), Enterprise JavaBeans, and J2EE. It is a natural extension to add the new Web services standards (SOAP, UDDI and WSDL). Because Web services are language-neutral, services can be integrated regardless of the underlying implementation (Java™ based applications, Visual Basic, and C++).
• **Server-centric.** By supporting the creation of server-based Java™ components, JSP, servlets and the XML programming model, WebSphere software platform allows users to deploy applications across multiple platforms, and facilitates migration of server-centric applications across platforms.

• **Designed to leverage existing systems.** The WebSphere software platform allows businesses to build on existing system architecture, extend existing e-business applications and create Web services that can be hosted on WebSphere application servers. The WebSphere software platform will also be usable as a UDDI registry.

• **Scalable.** Support for the UDDI Business Registry enables your developers to discover, transform and use other Web services, growing your e-business across an extended value network of global business trading partners, customers and clients.

• **Manageable and secure.** The WebSphere software platform is renowned for its ability to manage multiple servers while protecting corporate assets, as demonstrated by its use in the 2000 Sydney Olympics, and countless other commercial, production-level applications. The official 2000 Olympics Games Web site (Olympics.com) powered by IBM, handled unprecedented Internet traffic with 11.3 billion hits and more than 8.7 million unique visitors accounting for 230 million Web pages viewed from September 13 to October 1.

For more information about Web services and the WebSphere software platform, visit the developerWorks Web services special topic on the developerWorks Web site at [ibm.com/developerWorks/webservices](http://ibm.com/developerWorks/webservices).

You can download the IBM Web services toolkit which provides a simple runtime environment as well as demonstrations and examples to design and execute Web services without programming requirements or human intervention. You'll find simple Web services examples to use or manually modify to create new web services. The toolkit demonstrates how some of the emerging technology standards such as UDDI and WSDL work together. The toolkit code can be found at [alphaworks.ibm.com/tech/webservicestoolkit](http://alphaworks.ibm.com/tech/webservicestoolkit).

If you have working knowledge of Web services, the IBM XML and Web Services Development Environment will enable you to create Web services out of existing legacy code as well as to develop Web services from newly developed code.
The IBM XML and Web services development environment

The IBM XML and Web services development environment is the first development environment that creates open, platform-neutral Web services for deployment across heterogeneous systems. The development environment allows HTML, Java technology, and XML developers to quickly extend existing e-business applications so that they can deliver business informational Web services. Web developers can create Web services with minimal knowledge of Java technology or SOAP.

The IBM XML and Web services development environment provides all of the tools needed to create Web services:

- **Discover**: Browse the UDDI Business Registry to locate existing Web integration services. The Web becomes an extension of the development environment.

- **Create and transform**: Develop new Web services using XML editing functions. Complete transformation (edit and mapping) tools are provided so that developers can create Web services from existing XML, Java technology-based or Visual Basic® applications.

- **Build**: Generate SOAP wrappers for existing JavaBeans components or servlets to create services that can be run, bound, and executed by remote requestors. Generate the WSDL definition of those services for the UDDI Business Registry with minimal knowledge of SOAP or WSDL.

- **Deploy**: Deploy the Web service on the developer’s machine or to a remote, production-level server for immediate testing. After testing, publish the Web service instantly to the application server.

- **Test**: Test applications locally or remotely, with dynamic feedback.

- **Publish**: Publish newly created and deployed Web services to the UDDI Business Registry for access and use by other e-business developers.

The tools built into the IBM XML and Web services development environment are completely integrated, offering a high level of programmer productivity.
Java technology development
The IBM XML and Web services development environment is not a replacement for IBM VisualAge® for Java or IBM WebSphere Studio. It should be used in conjunction with VisualAge for Java and WebSphere Studio to extend existing applications (such as beans, servlets and EJB access beans) during the creation of new Web services. Applications created in other Java IDEs can also be imported into the IBM XML and Web services development environment to take advantage of the Web services generation capabilities.

Who can use the IBM XML and Web services development environment
• Java technology developers who want to extend existing applications to take advantage of Web services
• XML and Web developers who want a highly productive environment to create new Web services
• Visual Basic developers who are looking for a means to deploy Web services to platforms other than Microsoft® Windows®

Summary
The IBM XML and Web services development environment enables e-businesses to leverage existing applications and build new Web services. With the WebSphere software platform, your Web services can be deployed and run on scalable platforms and accessed globally. For more information on Web services visit ibm.com/developerWorks/webservices.

Get the IBM XML and Web services development environment
Download the alpha version of the IBM XML and Web services development environment from ibm.com/alphaworks.

1The IBM XML and Web services development environment also offers just-in-time availability of coordinated support. A wide variety of support options will be made available. In the initial alpha version, requirements will be captured from the VisualAge Developer Domain site at ibm.com/vadd.

2The IBM XML and Web services development environment forms the basis for business informational Web services. For development of business transactional or business process management, IBM WebSphere Business-to-Business Integrator should be used. WebSphere BtoB Integrator leverages the strength of IBM MQSeries® integration technologies and the WebSphere software platform enabling you to join the "transactional Web", automating machine-to-machine transactions, for a dynamic BtoB environment.