

# Web Services Crack App Integration Nut

By [RICHARD KARPINSKI](#)

Application integration is proving to be the first killer app for Web services, as early adopters build on these standards to improve internal and cross-enterprise collaboration.

The experiences of Imperial Sugar, Nordstrom.com, Hewitt & Associates and other enterprises suggest that Web services represent a third major wave of Internet adoption.

The grassroots support for Web services bears striking similarities to the proliferation of TCP/IP and HTTP, which drove commercial adoption of the Internet and then the Web in the first two waves.

## See Also

[The ABCs Of Web Services](#)

[Soap Dish: Assessing Web Services](#)

"The integration aspect is the main thing that attracted us to Web services," says George Muller, CIO of Imperial Sugar, which is moving an initial group of five suppliers to an order management extranet based on Web services protocols.

"Companies like us have grown by rapid expansion and acquisition, and we've found ourselves with a multitude of platforms that don't talk to each other."

Indeed, integration is the common theme among other Web services pioneers.

Online retailer Nordstrom.com this month completed development of Web services software to connect its Web site to legacy enterprise resource planning (ERP) applications. Human resources service provider Hewitt & Associates is doing final testing of a Web services architecture to let customers access its mainframe applications through their HR portals.

These enterprises note that the speed and simplicity with which they've been able to activate Web services ensures a speedy return on their software investments.

But that's not to say Web services are perfect. They still lack the security, quality of service and transactional functionality needed to build enterprise-class applications.

Enterprise application integration vendors such as CrossWorlds, Tibco and WebMethods also must figure out how to support Web services in their existing proprietary architectures. Packaged app vendors must determine how, and when, to build new XML interfaces into their customer relationship management, ERP and supply chain apps.

And application development rivals, particularly Microsoft with .Net and Sun with Java, must put aside their differences over the direction of Web services to cooperate on standards even as they compete on underlying technologies. The bitter rivals at times have done more to obscure the value of Web services than to make their benefits clear.

One thing's for certain, however: Web services enjoy near-universal support. Earlier this month, both Microsoft and Sun detailed plans to support Web services protocols. Smaller vendors, including Cape Clear Software, Iona Technologies, and SilverStream Software, in recent weeks unveiled Web services development tools and runtime platforms.

Software vendors large and small have pledged support for key Web services standards, including Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI) and Web Services Description Language (WSDL). That universal agreement should overcome any of the technology's shortcomings because, as with TCP/IP and HTTP, simple and universal wins. Just as inclusion of a TCP/IP stack in Windows made basic connectivity a commodity, so too will Web services' inclusion in major software platforms fuel their ubiquity.

"When the original Web technologies came out--things like HTTP and CGI-BIN--all of us good system architects laughed," O'Toole says. "It was a bit of a toy. Yet somehow, largely because the technology was so simple, the world took it on board. Web services promise the same thing. We've got this application container out there, this thing called the Internet, and if we can just add a thin layer of XML over it, all of our apps can sit in that container and run over native Internet protocols."

Nordstrom.com is using Web services to let its e-commerce site connect to two legacy applications: gift card management and cosmetics replenishment. The company's systems architecture spans a wide range of software--ERP, warehouse management, mainframe and Web storefronts--that run on several platforms, including AS/400s, Java app servers and Windows Web servers. At the center of Nordstrom.com's Web services deployment are new XML messaging formats from Iona Technologies that make queries against the gift card and cosmetics databases. If a Web customer buys cosmetics, the transaction updates the company's cosmetics replenishment system.

Java connections are transported using Java Messaging Service, or JMS. Links between the Web site and the middle tier are made via SOAP over HTTP, says Nordstrom.com chief technology officer Paul Onnen.

"I don't have to reinvent the wheel," Onnen says. "We can define interfaces one at a time and use them over again multiple times."

Nordstrom.com's ultimate goal is to use Web services to create a universal inventory system that ties together its Web inventory platform with the inventory systems at Nordstrom's brick-and-mortar stores. "Using Web services, we'll be able to do that even though the systems all run on a vastly different underlying architecture," Onnen says.

### **SOAP's Clean Links**

Hewitt & Associates is using Web services to communicate with customers. The

service provider will distribute data and applications to its customers beginning Jan. 1, 2002. Although many companies offer partners secure access to enterprise applications from their own Web sites, it's considerably more challenging to move the entry point into those apps out to the customer, says Tim Hilgenberg, Hewitt's chief technology strategist for applications.

"What complicates the situation is we have a lot of clients wanting access--about 250 customers, with 12 to 14 million participants," Hilgenberg says. "And a lot of these applications are running on mainframe platforms. It's difficult to manage all those connections, and we don't necessarily want to set up proprietary interfaces for each client."

SOAP-based Web services let Hewitt define and publish XML interfaces so that any client can access its services, regardless of the technology the client uses internally Hewitt uses IBM's WebSphere app server in its middle tier. It added Web services capabilities using the Apache SOAP Runtime tool kit.

From their Web portals, Hewitt customers build SOAP-over-HTTP requests, which are transported over the Internet and ultimately to Hewitt's WebSphere middle tier. There, a Java servlet unwraps the SOAP envelope, invokes the requested service and makes a call to Hewitt's mainframe CICS environment, which returns the data to the middle tier. There, the data is encapsulated in a SOAP response envelope and sent back over the Internet for presentation at the customer site.

### **Fast ROI**

For financially struggling Imperial Sugar, Web services are a way to build a more efficient supply chain without making a huge technology investment.

The company recently completed a Web services-based extranet application that gives key suppliers access to its order management system. The application laid the groundwork for further access via SOAP interfaces that would let suppliers query and input data.

Using SilverStream's eXtend Composer platform, Imperial built XML interfaces into its mainframe order management system--typically accessed internally from green screen terminals--and opened it up to external users. That application is live today with five suppliers, with more slated to sign up shortly.

The company, with annual revenue of \$1.6 billion, filed for bankruptcy protection last January. So it scrutinizes every IT expense.

"It's very tough for us to fund new projects right now," says Imperial CIO Muller. "But we're looking at an ROI here of just a couple of months. Because of that, we know our executive management is behind this project 100 percent."

Web services protocols also span the .Net and Java worlds, which makes them perfect for stitching together heterogeneous application environments. Even as

Sun and its partners trumpet Java 2 Enterprise Edition while Microsoft touts .Net, enterprises can count on Web services to span both platforms.

"One of the reasons Web services really represent a quantum leap forward is that they take a lot of these religious issues off the table," says Fred Holahan, vice president and general manager of e-business integration at SilverStream. "They allow people to do important work without worrying about platform politics." But Web services also have a long way to go before they support the full breadth of enterprise-class applications. There's little in the way of built-in security in the key Web services protocols.

That has forced Hewitt, for example, to build its own digital certificate infrastructure. In addition, there's little or no support for quality-of-service or transactional applications capabilities, such as two-phase commit to ensure that transactions are recorded, or "committed," in a database.

So although Web services are great for passing data and enabling remote queries, they're not so good at supporting apps that require uninterrupted sessions, where a dropped piece of data can be a disaster. For instance, it would be difficult today to use Web services protocols to let a user conduct an online banking or stock trading session with a legacy application. Such "stateful" apps require a continuous, secure connection with the user and a guarantee that no data is lost during the transaction--something the XML protocols supporting Web services can't manage today.

The World Wide Web's Consortium's XML Protocol Working Group seeks to add such capabilities. But it's unclear whether such features would improve Web services or burden them with the same complexity that stalled past distributed computing environments such as CORBA.

"Part of the reason that Web services have taken off is that they're simple," says John Rymer, vice president of product marketing at Iona and a longtime industry analyst. "Hopefully, as we add new layers of functionality, we won't lose the benefits of simplicity."

Web services aren't like a drag race, where cars start from a standing stop, notes Giga Information Group analyst Randy Heffner. Instead, Heffner draws an analogy to sailboat racing, where boats drift about behind the starting line, trying to time their approach to the exact instant when the race begins.

"When things mature, that's when it matters where everyone is positioned in relation to the starting line," he says. "Sooner or later, everybody will be there."