

Platform progress

How are B2B platform developers incorporating support for web services into their products?

An organisation that needs to exchange data with key trading partners must typically choose between two options, says Brian Connell, chief technology officer of web services software company, WestGlobal: "It's either shovelling documents or finding a way of letting someone else access your systems."

The latter option, he acknowledges, is enormously complex – which is why so many companies revert to the former, paper-based approach. Those that do experiment with opening up their IT systems to third parties, he adds, quickly find "there are essentially hundreds of ways of doing it".

Web services, he says, is the best way conceived to date of exposing business software. The approach provides a set of standard tools for exposing business processes over the Internet so that organisations no longer have to worry about interoperability issues, and concentrate on the best way to conduct collaborative business processes.

Connell is not alone in this belief. In fact, most of the major vendors and B2B platform developers have announced plans to add web services interfaces to their products. In time, they claim, this will enable computers to select the best suppliers, place orders, and authorise payments without the need for human intervention.

This has been the goal of collaborative software packages for some time. However, early B2B platforms based on proprietary technology did not provide a standard way to collaborate, resulting in incompatibilities between different systems. Companies had to

agree to work in the same way and use the same standards to link these platforms, resulting in many companies sticking with tried and tested electronic collaboration technologies such as electronic data interchange.

So are web services capable of meeting all the requirements of B2B transactions? Are they secure? Do they have all the features necessary for every industry and marketplace?

FUTURE PERFECT?

The answer to all three questions is the same: not yet.

In short, web services technology is not yet sufficiently mature to have tackled these issues in more than a cursory manner. "Web services is the way that people will connect in



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future," claims David Burdett, director of product management for web services at B2B software company, Commerce One. "But basic SOAP is not going to be enough," he adds.

Among the main obstacles that need

to be addressed by suppliers providing web services-based products are issues of security, authentication, 'choreography' and data format.

At the moment, web services traffic is unencrypted text, meaning that anyone can intercept the data once it is outside the firewall and read it. Without an authentication standard, they can then alter the data and send it on to its destination. As a result, the

recipient has no idea if it has come directly from the right source, or been tampered with on that journey.

Without transaction 'choreography', there is no way to monitor the progress of complex transactions. In the case of a transaction that takes a long time or is particularly complicated – one that requires human intervention in order for a credit check to be performed, for example – the system will be unsure of the correct order in which it should be processed. And equally importantly, unless trading partners agree on how they define data – if two companies use different codes for their products but label them both 'product id', for instance – there will be no chance of automatic collaboration and each transaction will have to be handled manually.

"Web services is like a lingua franca but is more of a 'protocol franca'," elaborates chief technical architect for GE Global eXchange Services, John Radko. "In the real world, we've agreed that to send someone a letter, we'll write things on pieces of paper, put them in envelopes and then stick stamps on the envelopes. So we can send anyone anything we can write down. But it doesn't mean we can read the letter if it's in another language. It's just the same on the web: just because we can download a web page, doesn't mean we can read it."

Web services, argues Radko, does not establish standards for the data. Similarly, without signatures, the recipient of a letter might not be able to tell if it is from who it claims to be from and without the security of the

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WEB SERVICES – PRESENT AND FUTURE STANDARDS

The technology for B2B collaboration via web services currently consists of three central planks.

- **Simple object access protocol (SOAP)** provides a way to exchange data using the standard web site protocol (hypertext transfer protocol – HTTP) and extensible mark-up language (XML).
- **Web services description language (WSDL)** provides a way for web services-equipped applications to describe to other applications what services they provide.
- **Universal description, discovery and integration (UDDI)** provides a directory for web services – and businesses – to find other web services on the Internet or on a local network. The forthcoming WS-Inspection (WS-I) will then provide a way to find out information about a specific company or organisation.

However, there are standards (some of which compete with one another) being developed to address issues for B2B environments not served by current standards.

SECURITY

- **WS-Security:** An addition to SOAP developed by IBM, Microsoft and Verisign that can be used to implement integrity and confidentiality in web services applications. A first draft of the WS-Security standard has been proposed and is being developed by the OASIS web services security technical committee.
- **Security assertion mark-up language (SAML):** a way of providing vendor-independent security tokens set to become a standard before the end of 2002.

CHOREOGRAPHY

A business process may involve a number of web services working together to provide a common solution. Each service needs to be able to coordinate its activities with those of the other services for the process to succeed. Choreography protocols supply mechanisms to do that.

- **Business transaction protocol (BTP):** A protocol for managing complex, B2B transactions over the Internet. A competing standard to WS-Transaction and WS-Coordination proposed by HP, Sun, Oracle, Iona, Sybase, SeeBeyond and BEA. Version 1.0 of the protocol was approved in March 2002.
- **WS-Transaction:** Enables businesses to monitor the success or failure of each part of a business process. It provides a protocol to ensure consistent and reliable operations across distributed organisations. The specification also enables the business process to react to faults detected during execution. Proposed by IBM, Microsoft and BEA.
- **WS-Coordination:** In conjunction with WS-Transaction, provides the structure under which coordination can take place. Proposed by IBM, Microsoft and BEA in August 2002.
- **Web service choreography interface (WSCl):** Provides information about how WSDL operations can be choreographed and which properties these choreographies expose. Proposed by the vendors BEA, Intalio, SAP, and Sun in July 2002.
- **Web service conversation language (WSCL):** WSCL



provides a simple model for organising the sequence of WSDL operations. Proposed by HP in February 2002.

BUSINESS PROCESS LANGUAGES

- **Business process execution language for web services (BPEL4WS):** BPEL4WS enables companies to describe business processes that include multiple web services and standardise message exchange internally and between partners. Proposed by IBM, Microsoft and BEA in August 2002.
- **Business process mark-up language (BPML):** Defines the business process behind a web service, mapping business activities to message exchanges. Proposed in August 2000 by a consortium of companies including Intalio, Bowstreet, Cap Gemini Ernst & Young, and VerticalNet.
- **Partner interface processes (PIP):** A common ebusiness language that uses XML to define business processes between trading partners. Maintained by RosettaNet, a non-profit organisation.

DATA DEFINITIONS

- **Electronic business using extensible mark-up language (EBXML):** A modular suite of XML schema, designed to provide common meanings for documents exchanged over the Internet. Sponsored by the United Nations and companies such as PeopleSoft and Commerce One.
- **Universal business language (UBL):** A standard library of XML business documents (such as purchase orders and invoices) based on existing libraries such as EDI. Backed by Microsoft, Sun, Commerce One, SeeBeyond and others.

envelope and the postal service, neither the sender nor the recipient would know if the letter had been read.

OVERCOME OR CIRCUMVENT

For any B2B platform or business process based on web services to succeed, it has to overcome or circumvent these problems.

As a result, uptake of web services-based B2B software has been patchy. John Watton, UK marketing manager of B2B platform developer Ariba, claims that although web services is important for the future of B2B collaboration, his company has encountered very few companies that are seriously considering using the technology for anything more than internal integration programmes.

"We've got over 400 business customers. I could count on one hand the number asking for web services. It's a solution area still in its relative infancy and demand isn't going to take off for a couple of years," he says.

Cormac Watters, senior vice president at collaborative platform developer Intentia, concurs, saying that his company's customers have started using web service-enabled exchanges – but mostly behind the firewall and within their own companies, rather than with trading partners, so they do not have the problems of security that B2B would involve.

However, in the next few years, most industry watchers believe web services will have filled in the gaps in its capabilities and will be more than ready to meet the challenges of B2B collaboration.

"Web services-based electronic hubs are emerging as the central nervous system for collaborative commerce," argues Charles Abrams, research director at research company Gartner. Starting in 2003, he predicts, the first real take up of web services for B2B will begin. In 2004, companies will be using B2B web services to work with their existing trading partners, while by 2005, directory-based web services will be helping companies to locate new trading partners.

And there is some evidence that early adopters are notching up significant success with web services projects. "The last four jobs we've had

have all been Internet integrations, rather than internal projects. They were all for large organisations, and they all chose web services," says Connell of WestGlobal.

These companies, he says, have demanded the ability to manage web services, the resources they access, and other business related processes – in short, they have insisted that WestGlobal provide them with web services choreography functions in what are reasonably sophisticated web services implementations.

Likewise, GXS' Radko says that his company and customers use standard SSL encryption, as used by secure web sites or even virtual private networks, to secure web services traffic – although they do require more work to



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configure than a pure web services solution would. "There are a lot of people kicking tyres," says Larry Alston, chief technology officer of XML database company Excelon. "But there are not a lot with experience of building large-scale asynchronous programs – and that's one of the major bars to adoption." Excelon pitches its database technology as a way to overcome some of these problems. It can, says Alston, sit on the firewall, acting as a recorder for all web services traffic. It can also create an audit trail for transactions.

The edge of the network is also where Commerce One is positioning its new product, Commerce One Conductor, an "interoperability engine" for web services that will address the issues of security and data transformation, among other challenges. "It can take data coming in from B2B marketplaces, EDI [electronic data interchange] or web services and change the data from one schema to another," says Commerce One's Burdett. It also uses the draft WS-Security standard, although this will change as the standards evolve.

"We recognise that web services technology is not yet mature, but that will change over time. Security will

change and whatever becomes standard we will adopt, maintaining backward compatibility all the time." The system will maintain a registry of the standards that trading partners use to transfer data – be they ebXML, web services with WS-Security, .Net or RosettaNet – and use the appropriate standards to communicate with them.

But picking those standards may cause difficulties. Gartner's Abrams says that, already, there are too many standards. "We need consolidation, but we don't have it yet."

He cites the example of a consulting project for one commercial vendor that he has just completed that had service clients with 150 XML specifications, all of which were 'standards'.

STANDARD CONSOLIDATION

Some consolidation is occurring. IBM recently dropped its web services flow language and Microsoft put aside its own XLANG flow language in favour of the jointly developed business process execution language for web services. But other companies will have to abandon their own proprietary technologies before these standards acquire the same stature as SOAP, WSDL and UDDI.

Nevertheless, says Abrams, despite the lack of a complete web services solution, every company needs to be considering web services, particularly in their own vertical industries. Otherwise, he says, they will find themselves deploying in a hurry at a late stage.

Rather than worry about collaborating with all their partners, they should concentrate on collaborating with the 10% of their customers that generally account for 80% of their revenue.

Pressure to keep up with Microsoft and other industry leaders is forcing B2B platform vendors to adapt their products to provide web services capabilities. Now web services has to meet the pace set by the suppliers if its adoption by the B2B world is to be anything more than perfunctory. **EB**

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