

by CHRISTOPHER FERRIS AND JOEL FARRELL

# What Are Web Services?

A Web service, as defined by the W3C Web Services Architecture Working Group, is “a software application identified by a URI, whose interfaces and bindings are capable of being defined, described, and discovered as XML artifacts. A Web service supports direct interactions with other software agents using XML-based messages exchanged via Internet-based protocols.”<sup>1</sup> Others refine this definition further by requiring the description be a Web Services Description Language (WSDL) document and the protocol be SOAP.

The benefits of Web services include the decoupling of service interfaces from implementations and platform considerations, the enablement of dynamic service binding, and an increase in cross-language, cross-platform interoperability. These benefits derive from the standard XML interface and access descriptions in WSDL. The WSDL description is used to power a service-oriented architecture enabling the likes of enterprise application integration (EAI), business-to-business application integration (B2B), and grid computing.

In a service-oriented architecture, as shown in the accompanying figure, the service provider has a service designed for others to use. The provider creates a WSDL service description that details the interface, that is, the operations of the service and the input and output messages for each operation. A binding implementation description for the services is then created that describes how to send each message on the wire where the service is located. The WSDL now contains all the information needed to invoke the service. The service provider now publishes the WSDL service description to one or more discovery agencies. Typically the role of the discovery agency will be fulfilled by a registry, such as UDDI, that allows additional information describing the hosting business and makes associations with the taxonomy to be published

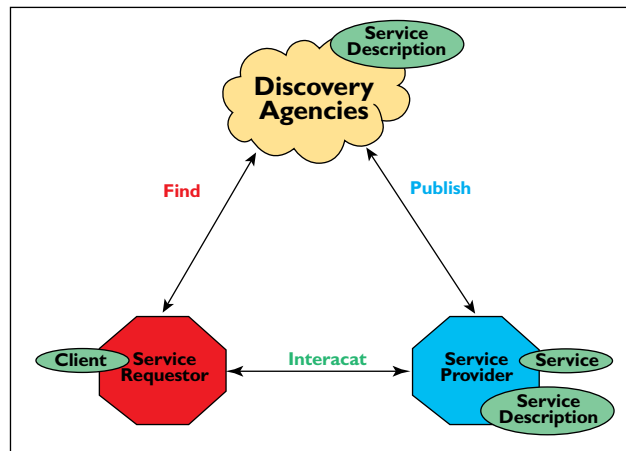


Diagram from Web Services Architecture Draft; [www.w3.org/TR/2002/WD-wsa-xxx](http://www.w3.org/TR/2002/WD-wsa-xxx)

## Web service-oriented architecture.

along with the WSDL description so that others can find the service using a wide variety of search criteria, including category-based searches. Eventually, the service requester finds the service description via the discovery agency. It then uses the WSDL description to develop or configure a client that will interact with the service through the service provider. ■

**CHRISTOPHER FERRIS** ([chrisfer@us.ibm.com](mailto:chrisfer@us.ibm.com)) is an architect in the Emerging E-business Architecture group of IBM's Software Solutions Division. **JOEL FARRELL** ([joelf@us.ibm.com](mailto:joelf@us.ibm.com)) is senior technical staff member in the Emerging Technologies group of IBM's Software Solutions Division, Research Triangle Park, NC.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, to republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

<sup>1</sup>Web services definition from W3C Web Services Architecture Working Group, Web Services Architecture Requirements, W3C Working Draft (Aug. 19, 2002); [www.w3.org/TR/2002/WD-wsa-reqs-20020819](http://www.w3.org/TR/2002/WD-wsa-reqs-20020819).