
Ans: Most applications are developed to interact with users; the user enters or searches for data through an interface and the application then responds to the user’s input. A Web service does more or less the same thing except that a Web service application communicates only from machine to machine or application to application. There is often no direct user interaction. A Web service basically is a collection of open protocols that is used to exchange data between applications. The use of open protocols enables Web services to be platform independent. Software that are written in different programming languages and that run on different platforms can use Web services to exchange data over computer networks such as the Internet. In other words, Windows applications can talk to PHP, Java and Perl applications and many others, which in normal circumstances would not be possible.

Because different applications are written in different programming languages, they often cannot communicate with each other. A Web service enables this communication by using a combination of open protocols and standards, chiefly XML, SOAP and WSDL. A Web service uses XML to tag data, SOAP to transfer a message and finally WSDL to describe the availability of services. Let’s take a look at these three main components of a Web service application.

The Simple Object Access Protocol or SOAP is a protocol for sending and receiving messages between applications without confronting interoperability issues (interoperability meaning the platform that a Web service is running on becomes irrelevant). Another protocol that has a similar function is HTTP. It is used to access Web pages or to surf the Net. HTTP ensures that you do not have to worry about what kind of Web server -- whether Apache or IIS or any other -- serves you the pages you are viewing or whether the pages you view were created in ASP.NET or HTML.

Because SOAP is used both for requesting and responding, its contents vary slightly depending on its purpose.

Web Services Description Language or WSDL

How do you know what methods are available in a Web service that you stumble across on the Internet? Well, WSDL takes care of that for you. WSDL is a document that describes a Web service and also tells you how to access and use its methods. Take a look at a sample WSDL file:

The main things to remember about a WSDL file are that it provides you with:

- A description of a Web service
- The methods a Web service uses and the parameters that it takes
- A way to locate Web services

UDDI:

UDDI is a directory service where businesses can register and search for Web services.

- UDDI stands for Universal Description, Discovery and Integration
- UDDI is a directory for storing information about web services
- UDDI is a directory of web service interfaces described by WSDL
- UDDI communicates via SOAP
- UDDI is built into the Microsoft .NET platform

2. What are the Web Services Security Standards? Explain in detail.

Ans: Security standards are implemented in non-XML frameworks at the transport level, and in XML frameworks at the application level. The following sections describe the standards that are key to providing secure and manageable SOA environments at both the transport and application levels.

- Web Services Interoperability Organization — Basic Security Profile
- Transport Layer Security — SSL
- XML Encryption (Confidentiality)
- XML Signature (Integrity, Authenticity)
- WS-Security
- WS-Security Tokens
- WS-Policy
- WS-SecurityPolicy
- Web Services Addressing (WS-Addressing)
- WS-Trust
- WS-ReliableMessaging

Web Services Interoperability Organization — Basic Security Profile

Oracle considers interoperability of Web services platforms to be more important than providing support for all possible edge cases of the Web services specifications. Oracle complies with the following specification from the Web Services Interoperability Organization and considers it to be the baseline for Web services interoperability.

Basic Security Profile 1.0: http://www.ws-i.org/Profiles/BasicsSecurityProfile-1.0.html

Transport Layer Security — SSL

Secure Sockets Layer (SSL), also known as Transport Layer Security (TLS), is the most widely used transport-layer data-communication protocol. SSL provides the following:

- Authentication — communication is established between two trusted parties.
- Message confidentiality — data exchanged is encrypted.
- Message integrity — data is checked for corruption.
- Secure key exchange between client and server

XML Encryption (Confidentiality)