software AG

Web Services Stack Guide

Glossary

WEB SERVICES STACK

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Glossary

Glossary entries exist beginning with the following letters:

A

AAR files	Compressed files for Apache Axis2, which contain classes and data for a web service. The .aar is a .jar file, and is therefore based on the standard .zip file format. Note that an .aar file contains a services.xml file under the META-INF folder.
ACID Transactions	ACID = Atomicity, Consistency, Isolation, Durability. ACID is a set of properties that guarantee that database transactions are processed reliably. In the context of databases, a single logical operation on the data is called a transaction. An example of a transaction is a transfer of funds from one account to another, even though it might consist of multiple individual operations (such as debiting one account and crediting another).

Transactions are called ACID transactions if they fulfill the following requirements:

- Atomicity: Either the transaction is fully completed or it is not executed at all.
- Consistency: The transaction always has to provide consistent results.
- Isolation: The transaction is independent of any other process that may be run in parallel.
- Durability: Once the transaction is completed, the results remain as persistent data.

Apache HTTP Server	A popular web server available for many operating systems. See also **Web Server**.
Apache <Web Services> Project	Open-source software project of the Apache Software Foundation. See *http://ws.apache.org/* for a project list.

Argus Agents	Collections of distributed entities in the context of the **Systems Management Hub** product. Argus agents access and perform management tasks in a particular managed element (host, router, etc.) located in the network.

A System Management Hub agent is invoked by the Client Server Layer Server, executing it with different parameter strings depending on the request mode. The results are always embedded in an XML document that is sent to the standard output.

The System Management Hub's agents have the following general characteristics:

- They are generally command-line tools (executables) based on product/system-specific API.

- They are controlled via parameters at the command-line level or `stdin`.

- The output format is XML.

- Each agent program receives a GUID as name (refer to the COM specification for more information on GUIDs).

- They are product and platform-dependent but each agent retains the same name for all supported platforms.

- Invoked by the System Management Hub Client Server Layer Server at a framework request; interaction with it is transparent for the user.

AXIOM	Acronym for Axis Object Model. AXIOM is also known as Object Model (OM). AXIOM, or OM, refers to the XML infoset model that is initially developed for Apache Axis 2. XML infoset refers to the information included inside the XML, and for programmatic manipulation it is convenient to have a representation of this XML infoset in a language specific manner. For an object oriented language the obvious choice is a model made up of objects. DOM is an XML model, and OM is conceptually similar to such an XML model by its external behavior, being very different at the same time.
Authentication	The process by which the security system verifies that a client user is actually who it claims to be. Authentication is performed at the user point of entry, which avoids the need for multiple sign-ons to the different security systems.
Authorization	The process whereby a client's access rights to a specific service or resource are verified.

B

Binding	Associating an interface, a valid data format, and a protocol to ensure smooth message transmission.
BTP	Business Transaction Protocol - A protocol used to exchange messages in XML between businesses in a set of B2B transactions over the Internet.

C

CA	Certificate Authority - A third party that registers users and certifies their identity by signing their public-key certificates.
Class MessageContext	Java class (java.lang.Object -> org.apache.axis.MessageContext). The implemented Interfaces are: MessageContext and SOAPMessage-Context. MessageContext is the Axis implementation of the javax SOAPMessageContext class, and is core to message processing in handlers and other parts of the system. This class also contains constants for accessing some well-known properties.
Client	In any client/server system, the software requesting services or information from the server.
COM	Component Object Model - A software architecture developed by Microsoft to develop applications from binary software components.
CORBA	Common Object Request Broker Architecture)—Generic interface developed by the Object Management Group (OMG) allowing objects to communicate with each other in a network, irrespective of their language and operating system.
CPA	Collaboration Protocol Profile - Profile of a company with a description of its capabilities (Information Technology-related).

D

DCOM	Distributed Component Object Model - Architecture developed by Microsoft to extend COM, thus enabling objects located on different LANs, WANs, or on the Internet to communicate with each other.
Digital Signature	A cryptographic method that can be used to verify the origin of a document, the identity of the sender, the time and date a document was sent and/or signed, the identity of a computer or user, and more.

A document's digital signature is based on both the document and the signer's private key.

DOM | Document Object Model - A generic interface (platform- and language-neutral) that allows external programs to edit a document's contents, structure, and style.

DTD | Document Type Definition - A document defining the format of the contents present between the tags in an XML or SGML document, and the way they should be interpreted by the application reading the XML or SGML document.

H

Handler | Apache terminology given for the message interceptors in any messaging system.

High Availability | High availability is defined as the ability of a system to perform its function continuously (without interruption) for a significantly longer period of time than the reliability of its components would suggest.

HTTP | Hyper Text Transfer Protocol)—A protocol defining how messages should be formatted and what action servers have to take on them. For Web-based messages.

J

JAXP | Java API for XML Processing)—Converts XML into a format independent of any particular business implementation.

M

MEP | Acronym for a Message Exchange Pattern (MEP) describes the pattern of messages required by a communication protocol to establish or use a communication channel. There are two major message exchange patterns - a request-response pattern, and a one-way pattern. For example, the TCP has a request-response pattern protocol, and the UDP has a one-way pattern.

Message | The basic unit of communication containing the data to be transmitted between the client and server.

P

Parser	A program, usually part of a compiler, that receives input in the form of sequential source program instructions, interactive online commands, markup tags, or some other defined interface and breaks it up into parts that can then be managed by other programs. A parser may also check to see that all input has been provided that is necessary.
	In the context of XML, a parser transforms an XML document into an internal representation (e.g. a tree structure suitable for DOM access, or a sequence of SAX events).
Participant	This is a web service operation that takes place into a web service transaction.
POJO	Acronym for Plain Old Java Object. It carries the idea that the simpler the design, the better.

R

REST	Acronym for Representational State Transfer. REST is a style of software architecture for distributed hypermedia systems such as the World Wide Web. The term is also often used in a loose sense to describe any simple interface that transmits domain-specific data over HTTP without an additional messaging layer such as SOAP or session tracking via HTTP cookies. These two meanings can conflict as well as overlap. An important concept in REST is the existence of resources, each of which can be referred to using a global identifier (URI). In order to manipulate these resources, components of the network (clients and servers) communicate via a standardized inter-face (e.g. HTTP) and exchange representations of these resources (the actual documents conveying the information).

S

Secure Hypertext Transfer Protocol (HTTPS)	A secure modification of HTTP that encrypts and decrypts user page requests as well as the pages that are returned by the web server.
Secure Socket Layer Protocol (SSL)	A security protocol that prevents eavesdropping, tampering, or message forgery and provides server-side, and optionally client-side, authentication.
SDO	Acronym for Service Data Object; SDO is a technology that allows heterogeneous data to be accessed in a uniform way. The SDO specification was originally developed in 2004 as a joint collaboration between BEA and IBM and approved by the Java Community Pro-

cess. Version 2.0 of the specification was introduced in November 2005 as key part of the Service Component Architecture.

Server	In general, a computer program that provides services to other computer programs in the same or other computers. The computer in which a server program runs is also frequently referred to as a server (though it may contain a number of server and client programs). In the client/server programming model, a server is a program that awaits and fulfills requests from client programs in the same or other computers. A given application in a computer may function as a client with requests for services from other programs and also as a server of requests from other programs. A Web server is the computer program (housed in a computer) that serves requested HTML pages or files. A Web client is the requesting program associated with the user. The Web browser in your computer is a client that requests HTML files from Web servers.
Service	A facility or application offered by an organization.
Servlet	Servlets are to the web server what applets are to the browser: a way to extend the given environment with a powerful, portable, object-oriented language. Just as applets make it possible to enrich browser functionality, so servlets perform a similar role for the HTTP server. The Servlet API is a well-defined set of function calls for sending and getting information to and from the server. The servlet must be able to access server-defined variables, issue redirects, and send error messages. The primary output of servlets is HTML. This means that servlets provide all the benefits of Java/Bolero with all the advantages of thin-client computing.
StAX	Acronym for streaming API for XML. StAX is an application programming interface to read and write XML documents in the Java programming language.
SOAP	Simple Object Access Protocol - A lightweight, XML-based messaging protocol that contains an envelope, header, and body, designed to exchange information in a decentralized, distributed environment.
System Management Hub	The standard, GUI-based, central point of administration for Software AG's products. See also the online documentation for System Management Hub at *http://documentation.softwareag.com/webmethods/smh8/overview.htm* See also **Argus Agents**.

U

UDDI	Universal Description, Discovery, and Integration - An XML-based lookup service for locating Web Services in an Internet scenario.
URI	Uniform Resource Identifier - A character string that identifies the name and address of a web object and the protocol used to access it. See also: **URL**.
URL	The address of a file or other resource that can be accessed on the Internet.

W

W3C Recommendation	The final, approved form of a new standard resulting from the W3C review procedure, effectively releasing the standard for general use by the IT community. See *http://www.w3.org*/ for a description of the W3C review process.
Web Application	A collection of **servlets**, HTML pages, classes, and other resources that make up a complete application on a web server. The web application can be bundled and run on multiple containers from multiple vendors.
Web Server	A program that uses the client/server model and the World Wide Web's Hypertext Transfer Protocol to serve the files that form web pages to web users (whose computers contain HTTP clients that forward their requests). Every computer on the Internet that contains a web site must have a web server program. Web servers often come as part of a larger package of Internet- and intranet-related programs for serving e-mail, downloading requests for File Transfer Protocol files, and building and publishing Web pages. Also a synonym for HTTP server.
Web service	An application interacting with other software applications, capable of being defined, located via the Internet protocol, and identified by a Uniform Resource Identity.

X

X.509	A standard for the binary representation of a certificate.
XML	eXtensible Markup Language - A language specialized for Web documents, enabling the creation of tags customized to the com-

pany's needs and business logic. It not only has data but also contains metadata. It uses DTD and SCHEMA to describe the data.

XML Encoding

Used to support foreign languages.

XML Namespaces

It is possible for documents to have elements with the same name. XML namespaces are used to differentiate between them to avoid element name conflict.

XPath

Used to define the parts of an XML document, using path expressions.

Xpointer

XML Pointer Language)—Provides a framework for addressing internal structures of XML documents, such as elements, attributes, and content.

Xquery

Provides functionality to query an XML document.

XSD

XML Schema Definition - Describes a well-structured XML document.

XSL

eXtensible Stylesheet Language - A language created for describing stylesheets for XML documents. Consists of XSLT, XPath, and XML Formatting Objects.

XSLT

eXtensible Stylesheet Language Transformation - Language to transform the format of XML data into data of other formats, on the basis of a set of well-defined rules.