

Java API for RESTful Web Services

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JAX-RS: Java API for RESTful Web Services (JAX-RS)

is a Java programming language API spec that provides support in creating web services according to the Representational State Transfer (REST) architectural pattern.^[1] JAX-RS uses annotations, introduced in Java SE 5, to simplify the development and deployment of web service clients and endpoints.

From version 1.1 on, JAX-RS is an official part of Java EE 6. A notable feature of being an official part of Java EE is that no configuration is necessary to start using JAX-RS. For non-Java EE 6 environments a (small) entry in the `web.xml` deployment descriptor is required.

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Java API for RESTful Web Services (JAX-RS)

Developer(s)	Oracle Corporation (initial code from Sun Microsystems)
Stable release	2.0 / May 24, 2013
Development status	Active
Written in	Java
Operating system	Cross-platform
Platform	Java Virtual Machine
Type	Application framework
License	CDDL v1.1 and GPL v2
Website	jax-rs-spec.java.net (https://jax-rs-spec.java.net)

Specification

JAX-RS provides some annotations to aid in mapping a resource class (a POJO) as a web resource. The annotations include:

- `@Path` specifies the relative path for a resource class or method.
- `@GET`, `@PUT`, `@POST`, `@DELETE` and `@HEAD` specify the HTTP request type of a resource.
- `@Produces` specifies the response Internet media types (used for content negotiation).
- `@Consumes` specifies the accepted request Internet media types.

In addition, it provides further annotations to method parameters to pull information out of the request. All the `@*Param` annotations take a key of some form which is used to look up the value required.

- `@PathParam` binds the method parameter to a path segment.
- `@QueryParam` binds the method parameter to the value of an HTTP query parameter.
- `@MatrixParam` binds the method parameter to the value of an HTTP matrix parameter.
- `@HeaderParam` binds the method parameter to an HTTP header value.
- `@CookieParam` binds the method parameter to a cookie value.
- `@FormParam` binds the method parameter to a form value.
- `@DefaultValue` specifies a default value for the above bindings when the key is not found.
- `@Context` returns the entire context of the object (for example `@Context HttpServletRequest request`).

JAX-RS 2.0

In January 2011 the JCP formed the JSR 339 expert group to work on JAX-RS 2.0.^[2] The main targets are (among others) a common client API and support for Hypermedia following the HATEOAS-principle of REST. In May 2013, it reached the Final Release stage.^[3]

Implementations

Implementations of JAX-RS include:^[4]

- Apache CXF, an open source Web service framework
- Jersey, the reference implementation from Sun (now Oracle)
- RESTeasy (<http://www.jboss.org/resteasy>), JBoss's implementation
- Restlet
- Apache Wink, Apache Software Foundation Incubator project, the server module implements JAX-RS
- WebSphere Application Server from IBM:
 - Version 7.0: via the "Feature Pack for Communications Enabled Applications" (<http://www-01.ibm.com/software/webservers/appserv/was/featurepacks/cea/index.html>)
 - Version 8.0 onwards: natively
- WebLogic Application Server from Oracle, see notes (http://docs.oracle.com/cd/E24329_01/web.1211/e24963/standards.htm#g1090347)
- Apache Tuscany (<http://tuscany.apache.org/documentation-2x/sca-java-bindingrest.html>)
- Cuubez framework (<http://www.cuubez.com>)
- Everrest (<https://github.com/codenvy/everrest/wiki>), Codenvy's Implementation
- Jello-Framework (<http://jello-framework.com>), Java Application Framework optimized for Google App Engine, including a powerful RESTful engine and comprehensive Data Authorization model.

Tutorials

- <http://docs.oracle.com/javaee/6/tutorial/doc/giepu.html>
- <http://www.vogella.com/tutorials/REST/article.html>
- <http://www.mkylong.com/tutorials/jax-rs-tutorials/>
- <http://www.coderpanda.com/jax-rs-tutorial/>

Notes

- Jersey Restful Web Services - Best Practice And Examples (<http://www.skbh.in/category/restful-webservices/>)
1. Hadley, p. 1.
 2. JSR 339 Group, Java Community Process (JCP) (<http://jcp.org/en/jsr/detail?id=339>)
 3. JSR 339: JAX-RS 2.0: The Java API for RESTful Web Services (<http://jcp.org/en/jsr/detail?id=339>)
 4. Mark Little, A Comparison of JAX-RS Implementations (<http://www.infoq.com/news/2008/10/jaxrs-comparison>)

References

- Hadley, Marc and Paul Sandoz, eds. (September 17, 2009). *JAX-RS: Java API for RESTful WebServices* (<http://jcp.org/en/jsr/detail?id=311>) (version 1.1), Java Community Process

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