

Apache CXF: Leveraging New Features

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Agenda

A little about Apache CXF

What's new in CXF 2.5.x

What's new in CXF 2.6.x

What's next?

CXF integration with Camel

Who am I?

Employed by Talend

- VP - Open Source Development
- Team of 8 people devoted to Apache projects
- Working on WebService/SOA related technology for over 10 years

Apache Software Foundation

- Involved since Apache CXF entered the incubator in 2006
- PMC Chair of Apache CXF
- Apache Maven, Apache WebServices, Apache Camel, Apache ServiceMix, Apache Aries
- Mentored couple other incubator projects
- ASF Member
- ASF Board of Directors

A Little About Apache CXF

Entered the Apache Incubator in August 2006

- Merger of Celtix and XFire
- Compete with Axis?
- Graduated in April 2008

7 Major Versions (2.6.0 released last month)

55 Patch releases

JAX-WS and JAX-RS Certified

DOSGi Reference Implementation of OSGi Remote Services Specification

33 Committers - 17 Active

Used by Talend, JBoss, FuseSource, WSO2, Pramati, MuleSoft, TomEE, etc...

Embedded All Over - Google "CXF - Service List"

CXF 2.5.x

Released in October 2011

Major theme: Security

- Services
 - WS-Notification Service
 - Security Token Service
- WS-* Updates
 - WS-RM 1.1 Support
 - WS-MetadataExchange
 - WS-Security updates
- JAX-RS Security
 - Oauth 1.0 Support
 - XML Security for JAX-RS

CXF 2.5.x - Services

WS-Notification Service

- Ported from ServiceMix WS-Notification Service
 - JBI removed, replaced with pure JAX-WS API's
 - API module for interacting with a WS-Notification Service
 - A WS-Notification Service using ActiveMQ as a backend

Security Token Service

- Production ready STS
- Authentication mechanisms: UsernameToken, SAML Token, KerberosToken, X509 Token
- Full support for Symmetric, Asymmetric, and Transport security bindings
- Support for Issue, Validate, and Cancel bindings (Renew added in 2.6)
- Support for Advanced RST elements: KeyType (Public, Symmetric, Bearer), Entropy (Symmetric, Public), OnBehalfOf, ActAs, Claims, SecondaryParameters, etc...
- Pluggable token validators, claims handlers, SAML token customizers, etc...

CXF 2.5.x - WS-* Updates

WS-Reliable Messaging

- Updated to 1.1 specification
- Also added a “hybrid” 1.1/1.0 implementation that .NET sometimes uses
- WS-RM components fully JMX instrumented
 - Sequences, Retries, Acknowledgments, etc...

WS-MetadataExchange

- All CXF endpoints can respond to WS-MEX requests to return information about the endpoint including the WSDL, Schema, policies, etc...
- The WS-SecurityPolicy runtime on the client side can use WS-MEX to obtain policies and endpoint information required to obtain Tokens to satisfy and IssuedToken assertion

WS-Security

- See previous slide relating to STS. :-)

CXF 2.5.x - JAX-RS Security

Oauth 1.0 Flows

XML Message Protection

- Enveloped
- Enveloping
- Detached

SAML

- Auth Header
- Token in Message
- Form value

CXF 2.6.x

Released April 2012

Major theme: OSGi

- OSGi Enhancements
- Security Enhancements
- JAX-RS updates
- Performance and scalability

CXF 2.6.x - OSGi

Everything is a bundle

- Large “everything and the kitchen sink” bundle no longer needed (still built though)
- Much less use of optional imports and dynamic imports - works better with OBR
- Can install just the functionality that is needed
- BundleListener to detect added CXF functionality

Configuration Admin Service support

- Work queue settings
- HTTP Conduit settings
- Jetty Configuration

Additional Blueprint Support

- HTTP Conduits
- Jetty Servers
- WS-RM Settings

CXF 2.6.x - Security

Stricter WS-SecurityPolicy Validation

- Loading policy documents
- Runtime policy processing

Security Token Service

- Support for the Renewal binding for SAML Tokens
- Support for bulk issuing/validation/canceling/renewing of tokens
- Support for pluggable Claims parsing, Claims Transformation, etc...

Enhanced Token Caching

- EhCache now the default implementation for caching Security Tokens
- Support for replay detection of Timestamp and UsernameToken nonces

CXF 2.6.x - JAX-RS

OAuth 2.0 support

Custom JAX-RS Context Providers

Enhanced SAML support

- SAML Web SSO Profile
- Various claim mapping enhancements

CORS - Cross-Origin Resource Sharing moved to new module, updated

CXF 2.6.x - Performance and Scalability

Performance improvements

- JMS Transport using text messages - keep as String
- Further reduction of Spring usage
 - Pretty much marked optional everywhere except JMS
- Memory profiling to reduce memory allocations, help startup speed

Scalability

- New support for server side asynchronous behavior
 - New `@UseAsyncMethod` annotation to allow CXF to call the async methods
 - Frees the transport thread to process additional requests
 - Jetty, Servlet 3, or JMS based transports

What's next?

Whatever the community decides to work on :-)

- Those who “do” are the ones that have a say

Apache CXF Fediz

- New CXF Subproject
- Helps you to secure your web applications and delegates security enforcement to the underlying application server
- Implements WS-Federation 1.1/1.2 Passive Requestor Profile

WSS4J 2.0 - Streaming XML Security

WS-Discovery - SOAP/UDP

Lots more work with REST relating to Security

More work on Async API's

CXF integration with Camel

Performance improvements - 2.9, but back ported to 2.8.3

- Streaming support for PAYLOAD mode
- 2x-3x performance gains

Started a discussion about a new mode that matches the CXF Message mode

- Allow CXF to handle security, compression, etc...
- Still provide access to the full message

JAX-RS updates

- All the improvements related to JAX-RS and security need to be exposed

For More Information

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CXF:

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Contributor blogs:

- Colm O hEigartaigh - “Mr Security”
 - <http://coheigea.blogspot.com/>
- Sergey Beryozkin - “Mr Rest”
 - <http://sberyozen.blogspot.com/>
- Glen Mazza - All things WebServices
 - <http://www.jroller.com/gmazza>

A black and white photograph of a long, multi-span steel truss bridge over water. The bridge features a series of repeating triangular truss structures supported by concrete piers. The sky is overcast, and the water is calm. The bridge extends from the left side of the frame towards the right, receding into the distance.

Thank You