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 addition 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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Thank You