

Web Services in WebSphere:  
An Overview of the Feature Pack  
for Web Services

Smart  
SOA

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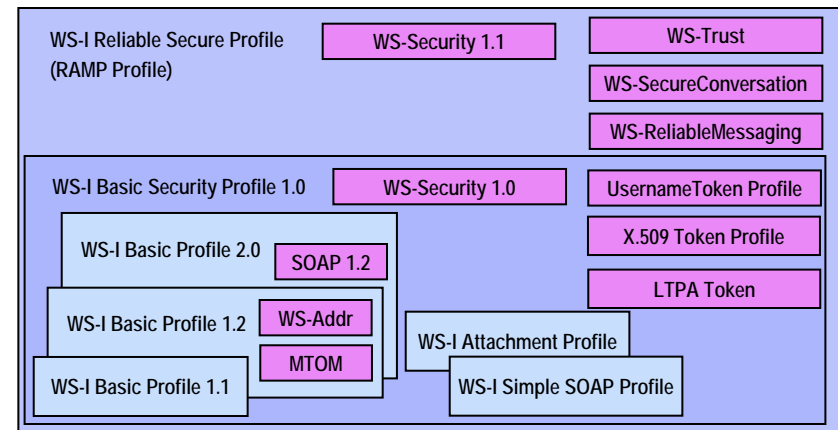
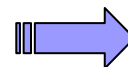
## Objective

- The session will cover the capabilities delivered in the WebSphere Application Server Feature Pack for Web Services and how they are being used as the basis of support for integration within WebSphere Application Server and other IBM products.

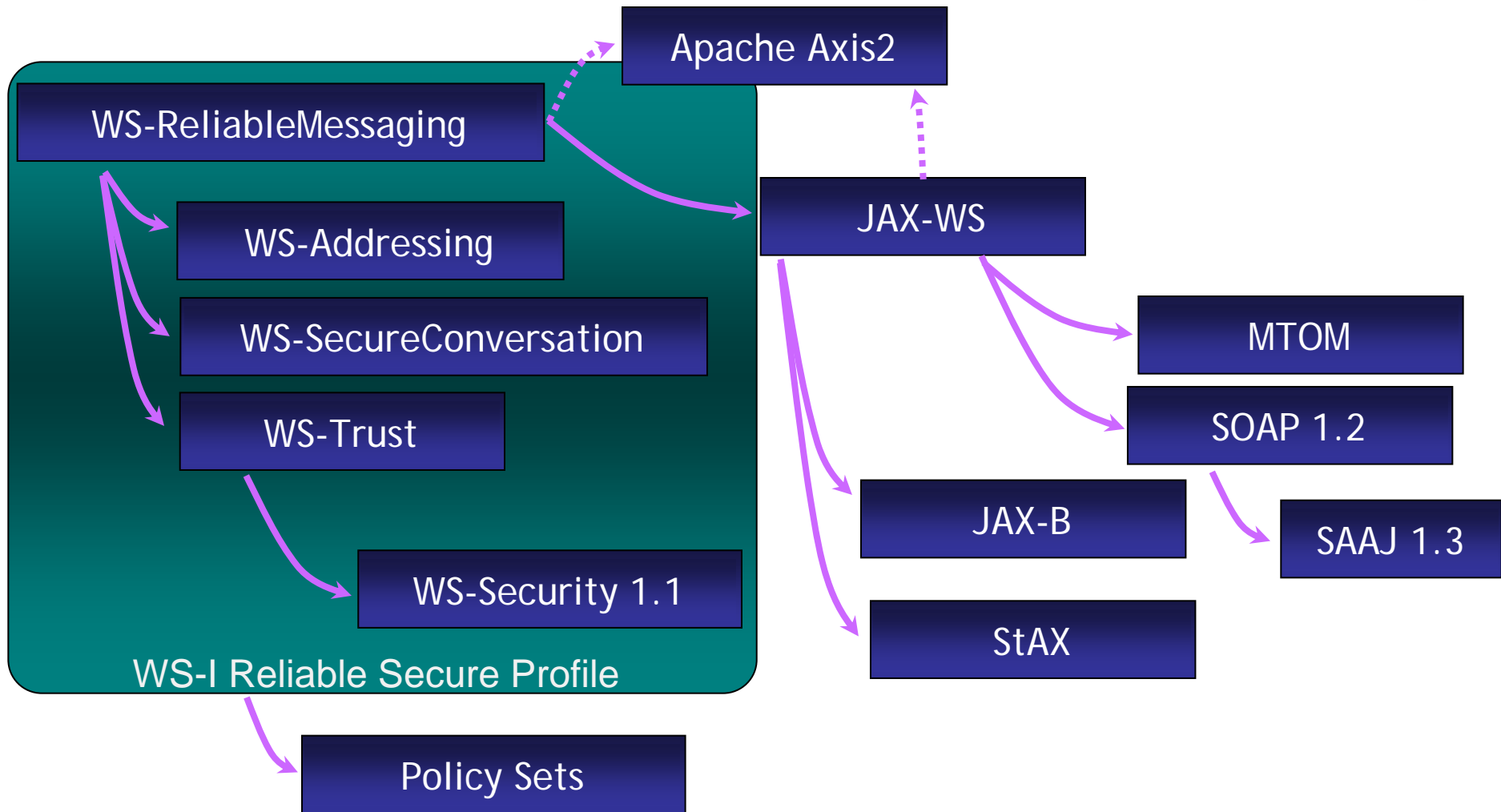
# Feature Pack for Web Services Objectives

- Early Delivery of Function
- Simplification
  - Profiles for prioritization
  - JAX-WS / JAXB 2.0 for programming model
  - Policy Sets and Intelligent Defaulting for deployment and administration
- Interoperability
  - WS-I Reliable Secure Profile

XQuery, XACML, MTOM, XOP, SOAP with Attachments, DIME, XForms, WS-Acknowledgement, WS-Federation, WS-Addressing, WS-Agreement, WS-I18n, WS-Attachments, WS-Authorization, WS-AtomicTransaction, WS-BusinessActivity, WS-CAF, WS-Callback, WS-Coordination, WS-Eventing, WS-Inspection, WS-Manageability, WS-Federation PassiveProfile, WS-EndpointResolution, WS-MessageData, WS-MetadataExchange, WS-Policy, WS-PolicyAssertions, WS-PolicyAttachment, WS-Provisioning, WS-Privacy,, WS-Reliability, WS-ReliableMessaging, WS-Routing, WS-SecureConversation, WS-Polling, WS-Security 1.0 & 1.1, WS-SecurityPolicy, WS-Transaction, WS-TransmissionControl, WS-Trust,, WSDM, WS-Resource, WS-ResourceProperties, WS-ResourceLifetime, WS-ServiceGroup, WS-BaseFaults, WS-BaseNotification, WS-Topics, WS-BrokeredNotification, SOAP 1.1, SOAP 1.2, WSDL 1.1, WSDL 2.0, UDDI 3.0, SAML 1.0, SAML 2.0, BPEL4WS, WS-BPEL, WS-Choreography, WSRP



# Focus on providing value and scoping the work



# Web Services Feature Pack Support

## Features

- JCP-based programming model
  - JAX-WS 2.0
  - JAXB 2.0
  - SAAJ 1.3
  - StAX 1.0
  
- Web Services Standards
  - WS-I Reliable Secure Profile
    - WS-ReliableMessaging
    - WS-SecureConversation
    - WS-Addressing
    - WS-I Basic Security Profile
    - WS-I Basic Profile 1.0
  - SOAP 1.2, MTOM / XOP
  - WS-Transactions
  - WS-Distributed management (WSDM)
  
- Policy Sets

## Benefits

- Standardized (and portable) application programming model
  - Simple annotation based
  - Fast pull parser based
  - Asynchronous programming model
  
- Standards-based Interoperability w/other vendors implementations
  - Securely
  - Reliably
  - Asynchronously
  
  - Efficiently
  - Transactionally
  
- Standards-based Manageability
  
- Administration Improvements

# WebSphere Feature Pack for Web Services

## Feature Pack Download -

<http://www-1.ibm.com/support/docview.wss?rs=180&uid=swg21264563>

## Feature Pack - Application Server Toolkit Download -

<http://www-1.ibm.com/support/docview.wss?rs=180&uid=swg24016184>

Software > WebSphere >

**Utility: Feature Pack for Web Services for WebSphere Application Server V6.1**

**Support & downloads**

- WebSphere Application Server
- Compare editions
- Features and benefits
- System requirements
- Library
- Success stories
- News**
- Trials and demos
- How to buy
- Events
- Training and certification
- Services
- Support

**Document information**

Product categories:

- Software
- Application Servers
- Distributed Application & Web Servers
- WebSphere Application Server

Operating system(s):

- AIX, HP-UX, Linux, Solaris, Windows, i5/OS

Software version:

**6.1**

Software edition:

**Feature Pack for Web Services**

**News**

**Abstract**  
IBM® WebSphere® Application Server Feature Packs are optionally installable product extensions that offer targeted, incremental new features.

**Content**  
IBM WebSphere Application Server V6.1 Feature Pack for Web Services extends the capabilities of Application Server V6.1 to enable Web Services messages to be sent asynchronously, reliably, and securely, focusing on interoperability with other vendors.

Through support for key Web Services standards, you can send messages:

- Reliably - be confident that your message will reach its destination
- Asynchronously - communicate reliably even if one of the parties is temporarily off-line, busy, or unobtainable
- Securely - rest assured your messages are not vulnerable to attack
- Interoperably - flexibility to interoperate with other vendors' offerings

**Easy-to-implement**  
Programming model enhancements simplify application development through...

Related software

- WebSphere Application

# Basic Scenarios (Core Functionality)

- Focus on Scenarios
  - Annotate java classes and reduce the need for deployment descriptors (mapping information)
    - JAX-WS and JAXB
  - Develop asynchronous loosely-coupled applications
    - At a programming model level
    - At a wire level
      - JAX-WS and WS-Addressing
  - Send binary data like images and documents efficiently
    - MTOM
  - Bind to varying formats (from raw XML to a Java object rendering of the XSD) with full XSD support
    - JAX-WS and JAXB
  - Lazily parse (and write) XML data
    - StAX

# WS-Reliable Messaging Scenarios

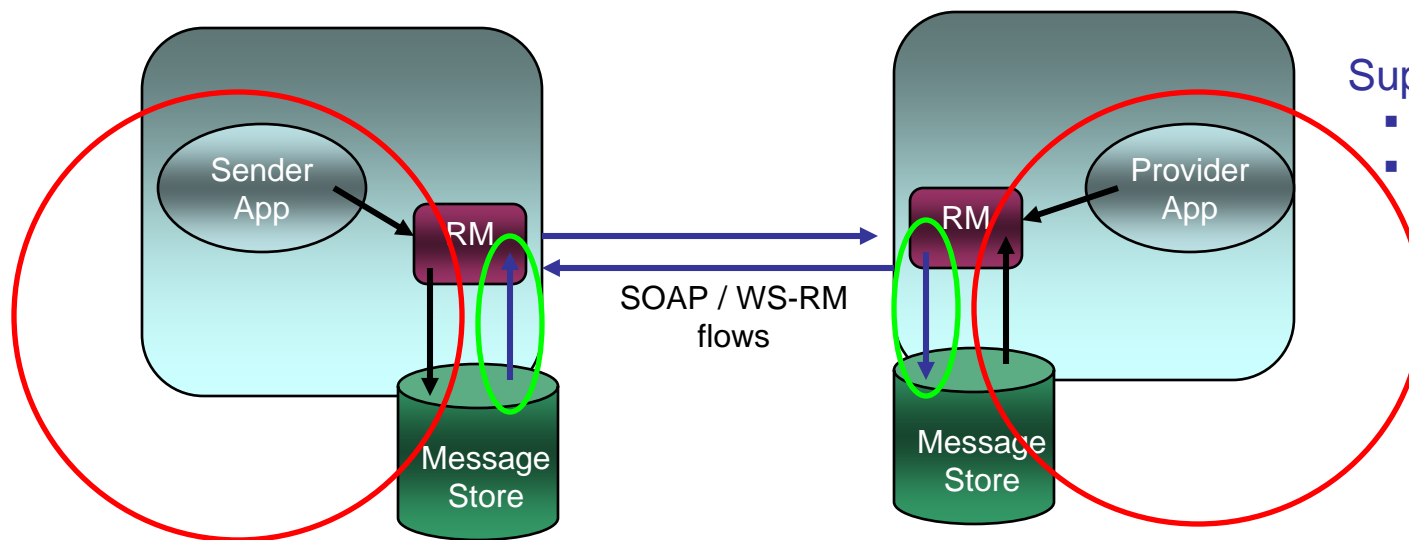
- How do customers today use reliable messaging?
  - Point-to-point B2B
    - E.g. Automotive companies <-> main dealerships
      - Most interactions are 1-way “request for update” using SOAP/HTTP over VPN
      - Current solutions require custom retry logic
      - Dealerships will not use vendor-specific technology
    - WS-RM middleware removes need for custom retry logic
    - Composition with security removes need for VPN
  - B2B hub/supply chain
    - E.g. Automotive Industry Action Group
    - Usage of standards-based middleware:
      - Legacy EDI (few large suppliers) -> SOAP/HTTP + WS-RM
      - Fax, phone (many small suppliers) -> SOAP/HTTP + WS-RM
      - Leased lines/VPN -> secure Web Services over internet
    - One-way SOAP moving to async request/reply as WS-Addressing is adopted



# WS-Reliable Messaging Scenarios

- How do customers communicate between WebSphere/.NET interoperability today?
  - Synchronous SOAP/HTTP for non-transactional “requests for information”
  - SOAP/HTTP + WS-Atomic Transactions for synchronous transactional services
  - Many large customers using MQ for async transactional services
- Tomorrow??
  - WS-RM enables Web Services interoperability for async transactional services
    - Extends async transactional interoperability to smaller customers
    - No vendor specific technology ‘on the wire’

# WS-Reliable Messaging



- Support for
- Feb 2005 WS-RM 1.0
  - OASIS WS-RX WM-RM 1.1

	Thin client	Client container	Web container	EJB container	Additional comments
<b>Unmanaged Non-persistent</b> non-transactional and provides resend for network failure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	- provider not supported in WAS cluster or zOS - lost messages if process fails
<b>Managed Non-persistent</b> transactional, state managed by messaging engine and protects against network loss			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	- lost messages if messaging engine fails (or stopped/restarted)
<b>Managed Persistent</b> recoverable, transactional, state managed by messaging engine and protects against network loss, server, and messaging engine failure			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	- Used in async communication only

# Security Usage Scenarios

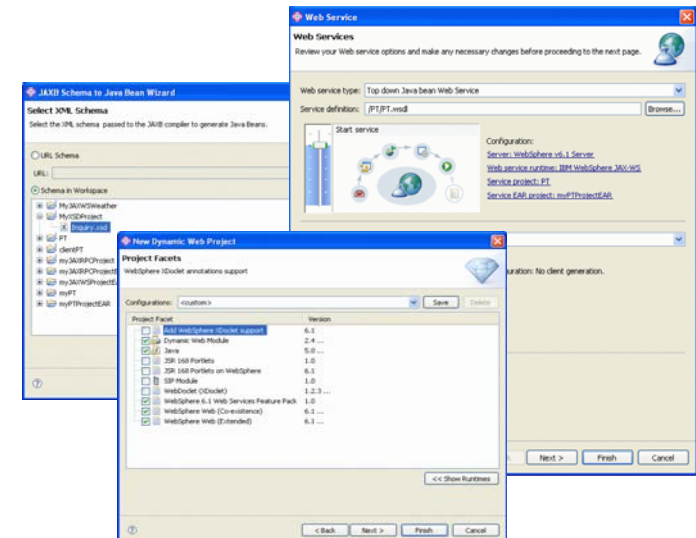
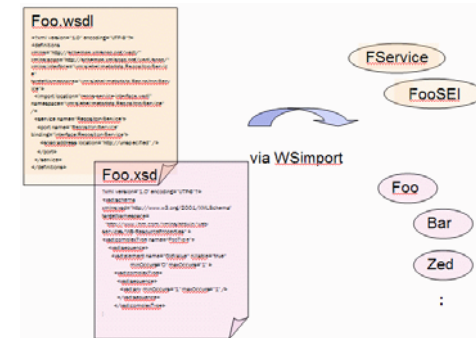
- What about security scenarios – what's new there???
  - WS-I Reliable Secure Profile introduces WS-SecureConversation
    - Session-based Security for continuous message exchange
      - Usage of WS-SecureConversation (WS-SC) and WS-Trust
      - Leveraging symmetric cryptographic algorithm for performance
        - » Asymmetric cryptographic algorithm (RSA) is expensive
      - Signature confirmation and Key material (derived key)
        - » Via standard uplift to OASIS WSS 1.1 scenario
  - Complementing Session-based security with Reliable Messaging Sequences
  - Ability to use WS-Security from a thin-client
    - Programmatic security configuration via an API

# Development Lifecycle Roles

- Application Architect
  - Develop WSDL/XSD contracts
- Application Developer
  - Generate top-down Java artifacts
  - Annotate java bean classes
- Assembler
  - Package portable classes, schemas, and WSDLs
- Deployer
  - Deploy packaged WAR
- Administrator
  - Administer applications, manage “policy”

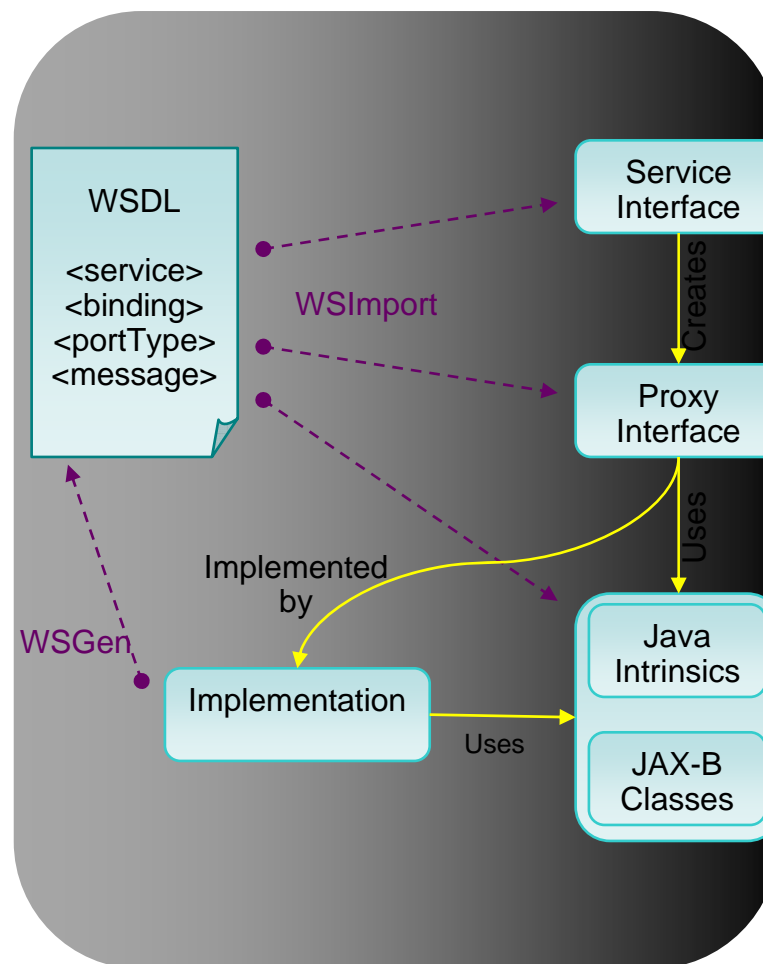
# Tools

- Command-line tooling
  - JAXB 2.0 XSD->Java generation (xjc)
  - JAX-WS 2.0 WSDL->Java (wsimport)
  - JAX-WS 2.0 Java->WSDL (wsgen)
- RAD and WebSphere AST
  - GUI Wizards to drive command-line tooling
  - Feature Pack Awareness (facet)
  - Annotation validation
    - WSDL / XSD validators
    - JAX-WS validators
  - JAX-WS navigator view
  - Policy Set support



# JAX-WS 2.0

- Java API for XML Web services.
- Successor to JAX-RPC 1.1.
- Maps WSDL <-> Java.
- Supports
  - asynchrony.
  - multiple data bindings
    - JAX-B 2.0 - Preferred.
    - SAAJ 1.3 (SOAPMessage).
    - XML Source.
    - Activation DataSource.
  - Java SE 5.0 annotations (including JSR 181)
  - WSDL customizations.
  - SOAP 1.1, SOAP 1.2, MTOM, WS-I Basic Profile
- To be included in Java SE 6.



# JAX-WS / JAX-RPC Comparison

## JAX-RPC 1.1 Code

```
public interface StockQuote extends
Remote {
    public float getQuote(String sym)
throws RemoteException;
}

public class QuoteBean implements {
    public float getQuote(String sym) { ...
    }
}
```

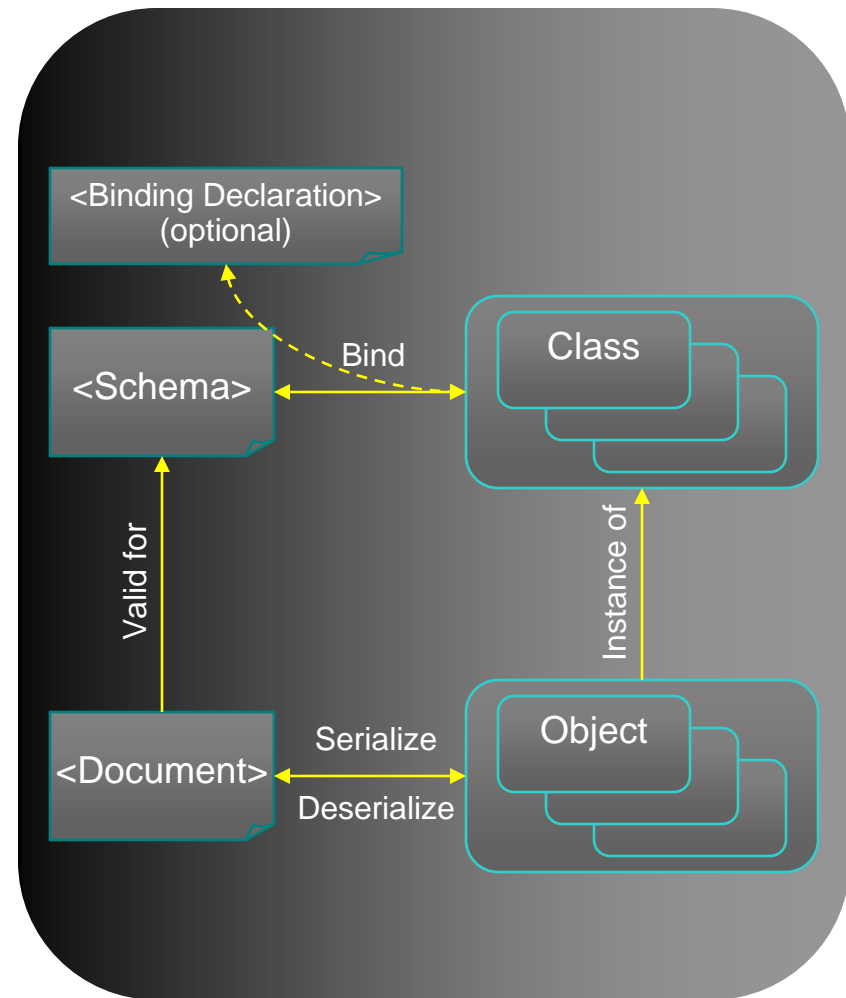
## JAX-WS 2.0 Code

```
@WebService public interface
    StockQuote {
        public float getQuote(String sym);
    }

@WebService public class QuoteBean
    implements StockQuote {
        public float getQuote(String sym) { ... }
    }
```

# JAXB

- Annotating XML Schema
  - `<jaxws:class>`
  - `<jaxws:method>`
- MTOM mappings supported
  - Image
  - MIME DataHandler





# JAXB mapping

## @XmlType

```
public class Trade {
    @XmlElement(
        name="tickerSymbol")
    public String symbol;
    @XmlAttribute
    int getQuantity() {...}
    void setQuantity() {...}
}
```

```
<xs:complexType name="trade">
    <xs:sequence>
        <xs:element
            name="tickerSymbol"
            type="xs:string"/>
    </xs:sequence>
    <xs:attribute name="quantity"
        type="xs:int"/>
</xs:complexType>
```

# SOAP 1.2

- SOAP 1.2 “formalizes” many of the clarifications and ambiguities SOAP 1.1 had but were resolved by WS-I
- Customer value obtained is mostly interoperability with Microsoft WCF
  - WCF WsHttpBinding defaults to SOAP 1.2
- JAX-WS uses a binding annotation to declare SOAP 1.2 in the Java implementation

```
import javax.jws.WebService;
import javax.xml.ws.BindingType;
import javax.xml.ws.soap.SOAPBinding;

@WebService
@BindingType (SOAPBinding.SOAP12HTTP_BINDING)
:
```

- Command line tools for SOAP 1.2 requires **-extension** flag to be used
  - E.g. To generate WSDL with SOAP 1.2 bindings, 2 addition options are required  
`wsgen -classpath . example.Stock -wsdl:Xsoap1.2 -extension`

# MTOM / XOP

- Customer Pain Points Addressed
  - Sending binary attachments (e.g. images, documents) is very costly
    - Doubles the size of the message (base64 encoding)
  - Microsoft doesn't support Soap with Attachments
- Message Transmission Optimization Mechanism
  - A W3C Recommendation.
  - Has both SOAP 1.1 and 1.2 bindings
  - To be profiled by WS-I BP 1.2/2.0.
  - An alternative to the WSDL MIME binding or WS-I "swaRef".
  - Defines the ability to encode binary portions of a SOAP message.
  - Defines the requirement to preserve the SOAP message XML infoset.
  - Defines a MIME multipart/related serialization based on XOP.
  - Defines a binding of the MIME serialization over HTTP.
  - Plays nicely with other qualities of service, like WS-Security.
- XML-binary Optimized Packaging
  - A W3C Recommendation.
  - Defines the ability to encode binary portions of an XML document.
  - Defines an XOP Package as interchangeable with an XML Infoset.

# MTOM Serialization

... other transport headers ...

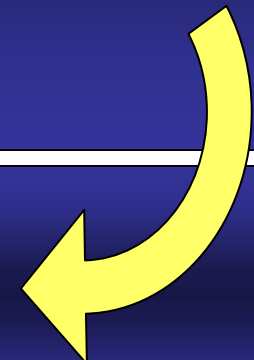
```
Content-Type: multipart/related; boundary=MIMEBoundaryurn_uuid_0FE43E4D025F0BF3DC11582467646812;
type="application/xop+xml"; start="<0.urn:uuid:0FE43E4D025F0BF3DC11582467646813@apache.org>";
start-info="text/xml"; charset=UTF-8
```

```
--MIMEBoundaryurn_uuid_0FE43E4D025F0BF3DC11582467646812
content-type: application/xop+xml; charset=UTF-8; type="text/xml";
content-transfer-encoding: binary
content-id: <0.urn:uuid:0FE43E4D025F0BF3DC11582467646813@apache.org>

<?xml version="1.0" encoding="UTF-8"?>
  <soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
    <soapenv:Header/>
    <soapenv:Body>
      <sendImage xmlns="http://org.apache.axis2/jaxws/sample/mtom">
        <input>
          <imageData>
            <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include"
              href="cid:1.urn:uuid:0FE43E4D025F0BF3DC11582467646811@apache.org"/>
          </imageData>
        </input>
      </sendImage>
    </soapenv:Body>
  </soapenv:Envelope>
```

```
--MIMEBoundaryurn_uuid_0FE43E4D025F0BF3DC11582467646812
content-type: text/plain
content-transfer-encoding: binary
content-id: <1.urn:uuid:0FE43E4D025F0BF3DC11582467646811@apache.org>
```

... binary data goes here ...



# StAX 1.1 and SAAJ 1.3

- StAX 1.1
  - Streaming API for XML
    - Pull vs. Push (SAX) or Tree (DOM)
    - Symmetrical read and write APIs
    - JAXB uses under the covers to read/write through standardized interfaces
  - Customer Value:
    - Increased performance (less transformation)
    - Ability to lazily read and/or write XML
  
- SAAJ 1.3
  - Extends the existing SAAJ 1.2 specification
  - Existing methods retain same SAAJ 1.2 semantics
    - Support for DOM Level3
    - Support for SOAP 1.2
      - e.g. Factories can now create SOAP 1.2 or SOAP 1.1 payloads
  
  - NOTE: SAAJ 1.3 base functionality changed in fix pack stream (in base code)
    - SAAJ 1.3 methods are disabled in base Application Server profile
    - SAAJ 1.3 methods become “implemented” when applications are hosted on a Feature Pack augmented server

# WS-Security Client API

- Simple programming model
  - <5 lines of code to enable key functions
  - allow for options for advanced function of WSS
- Compliment to Policy Set (configuration model)
- Supported in all environments
- Support Pluggable Token Framework
  - same framework for both API and Policy Set configurable
- Intelligent Defaults

**Note:** WSS API is disabled when there is a Policy Set attached, i.e., Policy Set overrides the API.

# Simple WS-Security Client Example

```
WSSFactory factory = WSSFactory.getInstance();
WSSGenerationContext gencont = factory.newWSSGenerationContext();
```

```
// Create a new X509Token for signing
X509GenerateCallbackHandler xgCallbackHandler = new X509GenerateCallbackHandler(
    ""
    "c:/WebSphere/AppServer/etc/ws-security/samples/dsig-sender.ks",
    "jks", "client".toCharArray(), "soaprequester", "client"
    .toCharArray(), "", null);
SecurityToken st = factory.newSecurityToken(X509Token.class, xgCallbackHandler);

// Create a new X509Token for encryption
X509GenerateCallbackHandler xgCallbackHandler2 = new X509GenerateCallbackHandler(
    ""
    "c:/WebSphere/AppServer/etc/ws-security/samples/enc-sender.jceks",
    "jceks", "storepass".toCharArray(), "bob", null, "keyname", null);
SecurityToken st2 = factory.newSecurityToken(X509Token.class, xgCallbackHandler2 );
```

getToken

}
   
**2 Lines of Code**

```
// Set signing information
// DEFAULT signed part : Body, WS-Addressing header, and Timestamp
// DEFAULT data encryption algorithm: RSA-SHA1
// DEFAULT digest algorithm : SHA1
// DEFAULT canonicalization algorithm: Exc-C14N
WSSSignature sig = factory.newWSSSignature(st);
gencont.add(sig);
```

signature

}
   
**2 Lines of Code**

```
// Set encryption information
// DEFAULT encrypted part : Body-Content
// DEFAULT data encryption algorithm: AES128
// DEFAULT key encryption algorithm : KW-RSA-OEAP
WSEncryption enc = factory.newWSEncryption(st2);
gencont.add(enc);
```

encryption

}
   
**2 Lines of Code**

## Other programmatic enhancements

- Interoperate with Microsoft WCF (WsHttpBinding)

- SOAP 1.2, WS-Addressing, MTOM as chosen as the defaults

```
@WebService(serviceName="SOAP12Service", portName="SOAP12Port",
    targetNamespace = "http://test.soap12.proxy",
    endpointInterface = "a.b.SOAP12PortImpl"
    wsdlLocation="WEB-INF/wsdl/soap12doclit.wsdl")
@BindingType(value=SOAPBinding.SOAP12HTTP_BINDING)
public class SOAP12PortImpl implements SOAP12Port {
```

- Allow long-running services to respond back with via a separate connection

- i.e. Asynchronous Messaging on-the-wire

- Query the reliable messaging runtime to know whether or not the message was sent (and acknowledgement received)

- Standard JAX-WS properties (e.g. setting MTOM enabled, bindings, etc...)

```
SOAPBinding binding = (SOAPBinding)dispatch.getBinding();
binding.setMTOMEnabled(true);
```



# Packaging model

- Simple jar file packaging
  - Provider side
    - bundle JAX-WS “annotated” classes, WSDL, and XSD schema within a WAR module
  - Client side
    - bundle JAX-WS “annotated” classes, WSDL, and XSD schema within any J2EE module
  - Thin client
    - Place JAX-WS “annotated” classes , WSDL, and XSD schema along with the stand-alone thin client web services redistributable runtime

# Enhanced administration to ease management

- Simplified Security Administration
- View of installed JAX-WS web services (client and provider)
- Ability to define and reuse defined configurations for associating qualities of service with web services
- Functional enhancements for Security-related and Reliable Messaging aspects

The screenshot displays the Integrated Solutions Console interface. The top navigation bar includes 'View: All tasks', 'Welcome Administrator', and 'Help | Logout'. The left sidebar shows a tree view with categories like 'Guided Activities', 'Servers', 'Applications', 'Resources', 'Security', 'Environment', and 'Services'. The 'Services' category is expanded to show 'Service providers', 'Service clients', 'Policy sets', 'Security trust service', and 'Reliable messaging state'. The main content area is titled 'Service providers' and shows a list of installed JAX-WS services. Below this, there are two detailed views: 'Configuration' for a specific service provider and 'Policy set attachments' for a service endpoint.

Select	Name	Type	Application	Application status
<input type="checkbox"/>	EchoService	JAX-WS	WSSampleServicesSei	✖
<input type="checkbox"/>	EchoService12	JAX-WS	WSSampleServicesSei	✖
<input type="checkbox"/>	MtomSampleService	JAX-WS	WSSampleMTOMService	✔
<input type="checkbox"/>	PTService	JAX-WS	WebServiceProjectEAR	✔
<input type="checkbox"/>	PingService	JAX-WS	WSSampleServicesSei	✖
<input type="checkbox"/>	PingService12	JAX-WS	WSSampleServicesSei	✖

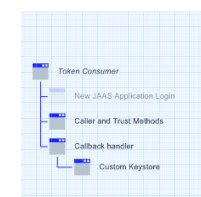
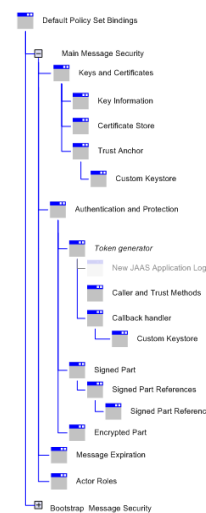
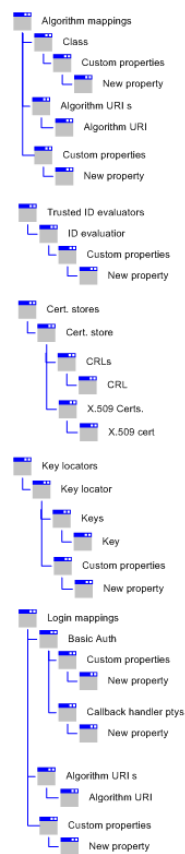
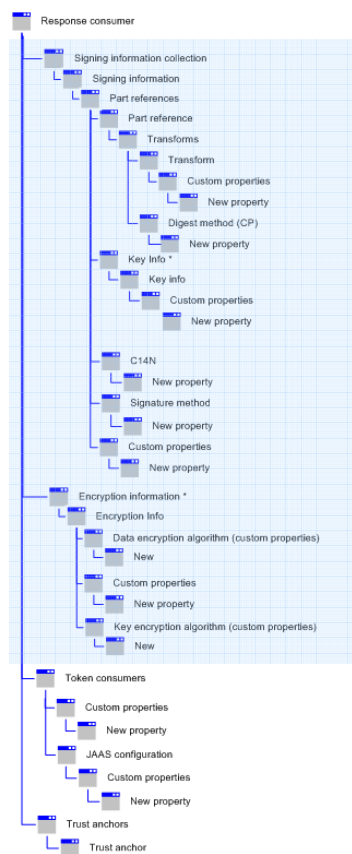
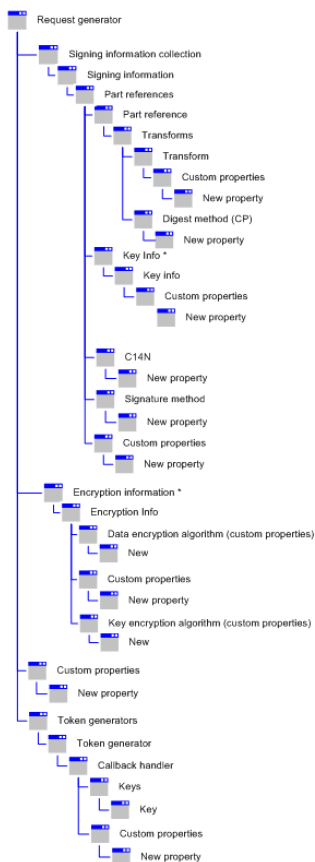
  

Select	Service/Endpoint/Operation	Attached policy set	Binding
<input type="checkbox"/>	EchoService12	None	Not applicable
<input type="checkbox"/>	EchoService12Port	None	Not applicable
<input type="checkbox"/>	echoOperation	None	Not applicable

# WS- Security Binding Simplification

## 6.1

## Feature Pack



**Shaded areas represent panels that are duplicated (with different data) based on whether or not the bindings are for generator or consumer**

# Services Navigation view

Integrated Solutions Console    Welcome Administrator    Help | Logout

View: All tasks

- Welcome
- ⊕ Guided Activities
- ⊕ Servers
- ⊕ Applications
- ⊕ Resources
- ⊕ Security
- ⊕ Environment
- ⊕ Services
  - Service providers
  - Service clients
  - ⊕ Policy sets
  - ⊕ Security trust service
    - Secure conversation client
    - Reliable messaging state

Service providers

**Service providers**

All JAX-WS and SCA service providers are displayed. JAX-RPC services are not displayed.

⊕ Preferences

Start Application    Stop Application

Select	Name	Type	Application	Application status
<input type="checkbox"/>	<a href="#">PTService</a>	JAX-WS	<a href="#">WebServiceProjectEAR</a>	
Total 1				

# Service Provider Collection View

Integrated Solutions Console    Welcome Administrator    Help | Logout

View: All tasks

- Welcome
- Guided Activities
- Servers
- Applications
- Resources
- Security
- Environment
- Services
  - Service providers
  - Service clients
  - Policy sets
  - Security trust service
    - Secure conversation client
    - Reliable messaging state
- System administration
- Users and Groups
- Monitoring and Tuning

Service providers Close

**Service providers**

All JAX-WS and SCA service providers are displayed. JAX-RPC services are not displayed.

Preferences

Start Application    Stop Application

Select	Name	Type	Application	Application status
<input type="checkbox"/>	<a href="#">EchoService</a>	JAX-WS	<a href="#">WSSampleServicesSei</a>	✘
<input type="checkbox"/>	<a href="#">EchoService12</a>	JAX-WS	<a href="#">WSSampleServicesSei</a>	✘
<input type="checkbox"/>	<a href="#">MtomSampleService</a>	JAX-WS	<a href="#">WSSampleMTOMService</a>	➔
<input type="checkbox"/>	<a href="#">PTService</a>	JAX-WS	<a href="#">WebServiceProjectEAR</a>	➔
<input type="checkbox"/>	<a href="#">PingService</a>	JAX-WS	<a href="#">WSSampleServicesSei</a>	✘
<input type="checkbox"/>	<a href="#">PingService12</a>	JAX-WS	<a href="#">WSSampleServicesSei</a>	✘

Total 6

# Application Details View

**Service providers**

[Service providers](#) > **EchoService12**

Use this page to manage policy sets and bindings or to access additional information for this service provider.

Configuration

---

**General Properties**

Service provider  
 { http://com.ibm/was/wssample/sei/echo/ }  
 EchoService12

**Detail properties**

- [WSDL document](#)

**Application**

- [WSSampleServicesSei](#)

**Module**

- [SampleServicesSei.war](#)

---

**Policy set attachments**

Attach policy sets to the service, endpoints, or operations and assign the default bindings, create new bindings, or assign existing custom bindings for the attached policy sets. Note that you can view or modify the default bindings from the cell- or server-level security panels. Also note that you can only directly attach a policy set to an operation if the policy set has WS-Addressing enabled or if the WSDL specifies WS-Addressing headers.

☑ Preferences

Attach ▾ Detach Assign Binding ▾

Select	Service/Endpoint/Operation ▾	Attached policy set ▾	Binding ▾
<input type="checkbox"/>	EchoService12	None	Not applicable
<input type="checkbox"/>	EchoService12Port	None	Not applicable
<input type="checkbox"/>	echoOperation	None	Not applicable
Total 3			

# Policy Sets

- Goal:
  - Simplify web services configuration – allow reuse of configuration
  - Manage Qualities of Service (QoS) as a single entity
- Quality of Service Definitions:
  - Policy Type - A single cohesive type of QoS, defined by an XML Schema.
  - Policy - A named, configured Policy Type, described by an XML instance.
  - Policy Set - A named collection of Policies, pre-canned or user-defined.
  - Bindings – Topological configuration of Policies
- Policy Sets:
  - managed via the WAS Admin Console
  - attached to service components (both client and provider) externally from the application



# Web Services: Qualities of Service and Policy Sets

- Examples of Policies:
  - WS-Security
  - WS-Addressing
  - WS-Reliable Messaging
  - HTTPS
  - WS-Transactions
  - :
  
- Examples of Policy Sets
  - WS-Reliable Messaging Persistent
  - WS-I Reliable Secure Profile Default
  - Username WS-Security Default
  - :



# Policy Set Collection View

View: All tasks

- Welcome
- Guided Activities
- Servers
- Applications
- Resources
- Security
- Environment
- Services
  - Service providers
  - Service clients
  - Policy sets
    - Application policy sets**
    - Default policy set bindings
    - System policy sets
  - Security trust service
    - Secure conversation client cache
    - Reliable messaging state
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting
- Service integration
- UDDI

Application policy sets

**Application policy sets**

Use this page to manage, create, copy, or export policy sets.

Preferences

New Delete Copy Export

Select	Name	Editable	Description
<input type="checkbox"/>	<a href="#">LTPA RAMP default</a>	Read only	This policy set enables WS-ReliableMessaging which provides the ability to deliver a message reliably to its intended receiver. Message integrity is provided by digitally signing the body, the time stamp, and the WS-Addressing headers. Message confidentiality is provided by encrypting the body and the signature. Message authentication is provided by using the Lightweight Third Party Authentication (LTPA) Token. This policy set follows the WS-SecureConversation and WS-Security specifications.
<input type="checkbox"/>	<a href="#">LTPA SecureConversation</a>	Read only	This policy set provides message integrity by digitally signing the body, the time stamp, and the WS-Addressing headers. Message confidentiality is provided by encrypting the body and the signature. Message authentication is provided by using the Lightweight Third Party Authentication (LTPA) Token. This policy set follows the WS-SecureConversation and WS-Security specifications.
<input type="checkbox"/>	<a href="#">LTPA WSSecurity default</a>	Read only	This policy set provides message integrity by digitally signing the body, time stamp, and WS-Addressing headers using RSA encryption. Message confidentiality is provided by encrypting the body and signature using RSA encryption. Message authentication is provided by using the Lightweight Third Party Authentication (LTPA) Token. This policy set follows the WS-Security specifications.
<input type="checkbox"/>	<a href="#">RAMP default</a>	Read only	This policy set enables WS-ReliableMessaging which provides the ability to deliver a message reliably to its intended receiver. Message integrity is provided by digitally signing the body, the time stamp, and the WS-Addressing headers. Message confidentiality is provided by encrypting the body and the signature. This policy set follows the WS-SecureConversation and WS-Security specifications.

# Policy Set Detail View

**Application policy sets** > **RAMP default**

This is a default Policy Set. You can view, transfer, or remove attachments, but you cannot edit the name, description, policies included, or policy details.

**General Properties**

Name: RAMP default

Description: This policy set enables WS-ReliableMessaging which provides the ability to deliver a message reliably to its intended receiver. Message integrity is provided by digitally signing the body, the time stamp, and the WS-Addressing headers. Message confidentiality is provided by encrypting the body and the signature. This policy set follows the WS-SecureConversation and WS-Security specifications.

**Additional Properties**

- Attached applications

**Policies**

Policy	State	Description
WS-Addressing	Enabled	Policies for addressing Web services using endpoint references and message addressing properties.
<b>WS-ReliableMessaging</b>	Enabled	Policies for enabling the reliable delivery of messages in the event of a component, system, or network failure.
WS-Security	Enabled	Policies for sending security tokens and providing message confidentiality and integrity, based on the OASIS Web Service Security and Token Profiles specifications.
Total 3		

# Reliable Message Policy Detail View

Integrated Solutions Console    Welcome Administrator    Help | Logout   

View: All tasks    Application policy sets    [Close page](#)

- Welcome
- ▣ Guided Activities
- ▣ Servers
- ▣ Applications
- ▣ Resources
- ▣ Security
- ▣ Environment
- ▣ Services
  - Service providers
  - Service clients
  - ▣ Policy sets
    - Application policy sets
    - Default policy set bindings
    - System policy sets
  - ▣ Security trust service
    - Secure conversation client cach
    - Reliable messaging state

**Application policy sets**

[Application policy sets](#) > [Test RM](#) > **WS-ReliableMessaging**

These policies are enforced on inbound messages and applied to outbound messages.

Standard  
 WS-ReliableMessaging 1.1

Enable "MakeConnection" for synchronous two-way message exchange

Deliver messages in the order that they were sent

**Quality of service**

Unmanaged non-persistent - Tolerates network and remote system failures. The state is not stored in a

Managed non-persistent - Tolerates system, network, and remote system failures. The state is stored in

Managed persistent - Tolerates system, network, and remote system failures. The state is stored in a me

Apply    OK    Reset    Cancel

# Policy Set Bindings WS-Reliable Messaging View

Integrated Solutions Console    Welcome Administrator    Help | Logout

**View:** All tasks

- Welcome
- ▣ Guided Activities
- ▣ Servers
- ▣ Applications
  - Enterprise Applications
  - Install New Application
- ▣ Resources
- ▣ Security
- ▣ Environment
- ▣ Services
  - Service providers
  - Service clients
  - ▣ Policy sets
    - Application policy sets
    - Default policy set bindin
    - System policy sets
  - ▣ Security trust service
    - Secure conversation client
    - Reliable messaging state

Default policy set bindings

**Default policy set bindings** ? -

**Default policy set bindings > WS-ReliableMessaging**

Select the service integration bus and messaging engine to use for reliable message delivery. The link provides access to the Bus collection, from which you can create, delete and modify buses, bus members and messaging engines.

[Manage buses, bus members, and messaging engines](#)

Bus name

Messaging engine

# Policy Set WS-Security Bindings View

Integrated Solutions Console    Welcome Administrator    Help | Logout

**View:** All tasks

- Welcome
- ▣ Guided Activities
- ▣ Servers
- ▣ Applications
  - Enterprise Applications
  - Install New Application
- ▣ Resources
- ▣ Security
- ▣ Environment
- ▣ Services
  - Service providers
  - Service clients
  - ▣ Policy sets
    - Application policy sets
    - Default policy set bindin
    - System policy sets
  - ▣ Security trust service
    - Secure conversation client

Default policy set bindings

**Default policy set bindings** ? -

**Default policy set bindings > WS-Security**

Follow the links for bindings associated with message security policies.

**Main message security policy bindings**

- [Keys and certificates](#)
- [Authentication and protection](#)
- [Caller](#)
- [Message expiration](#)

# Application Policy Set Attachment View

**Service providers** > **PTService**

Use this page to manage policy sets and bindings or to access additional information for this service provider.

Configuration

**General Properties**

Service provider

**Detail properties**

- [WSDL document](#)

**Application**

- [WebServiceProjectEAR](#)

**Module**

- [WebServiceProject.war](#)

**Policy set attachments**

Attach policy sets to the service, endpoints, or operations and assign the default bindings, create new bindings, or assign existing custom bindings for the attached policy sets. Note that you can view or modify the default bindings from the cell- or server-level security panels. Also note that you can only directly attach a policy set to an operation if the policy set has WS-Addressing enabled or if the WSDL specifies WS-Addressing headers.

⊕ Preferences

Attach ▾ Detach Assign Binding ▾

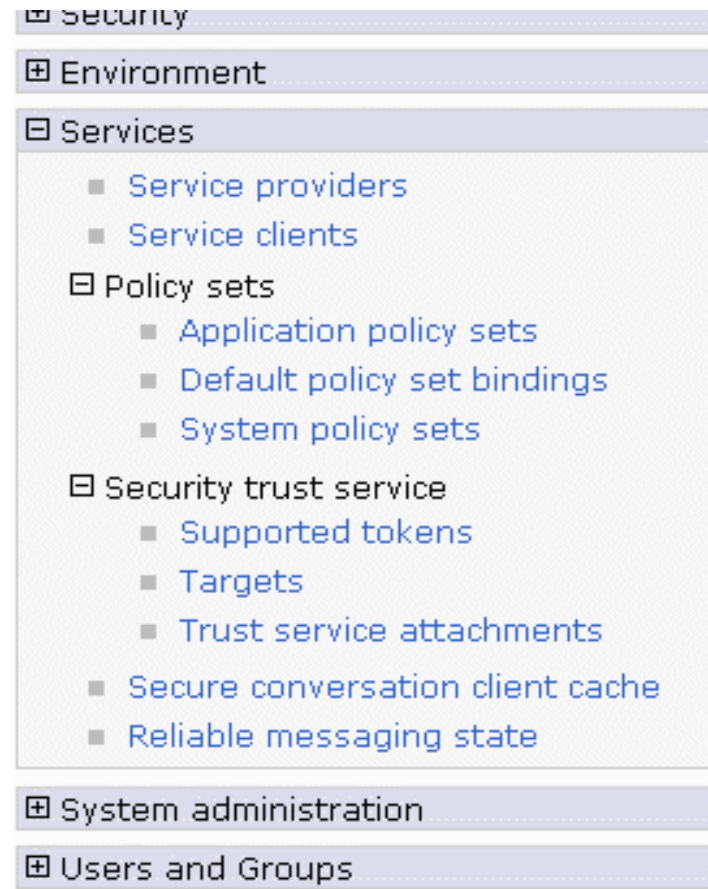
☑ 📄 ↕ ↕

Select	Service/Endpoint/Operation	Attached policy set	Binding
<input type="checkbox"/>	PTService	<a href="#">RAMP default</a>	Default
<input type="checkbox"/>	PT	RAMP default (Inherited)	Default (Inherited)
<input type="checkbox"/>	op1	RAMP default (Inherited)	Default (Inherited)
Total 3			



# Functional Administration Enhancements

- Additional Administrative Control
  - System Policy Sets
  - Default Policy Set Bindings
  - Additional Security enhancements
    - WS-Trust Configuration
    - WS-SecureConversation Client Cache
  - WS-Reliable Messaging
    - State Management



# Miscellaneous

- Web Services Distributed Management (WSDM) Support
  - Allows management of WebSphere Application Server via the WSDM Specification
  
- Thin Client support
  - Standalone shippable thin client .jar file
  - Simple WS-Security client programming model
  
- WS-Atomic Transactions support

## Policies

Policy	State	Description
WS-Transaction	Enabled	Policies for controlling the use of Web service transactions.
Total 1		



# Interoperability

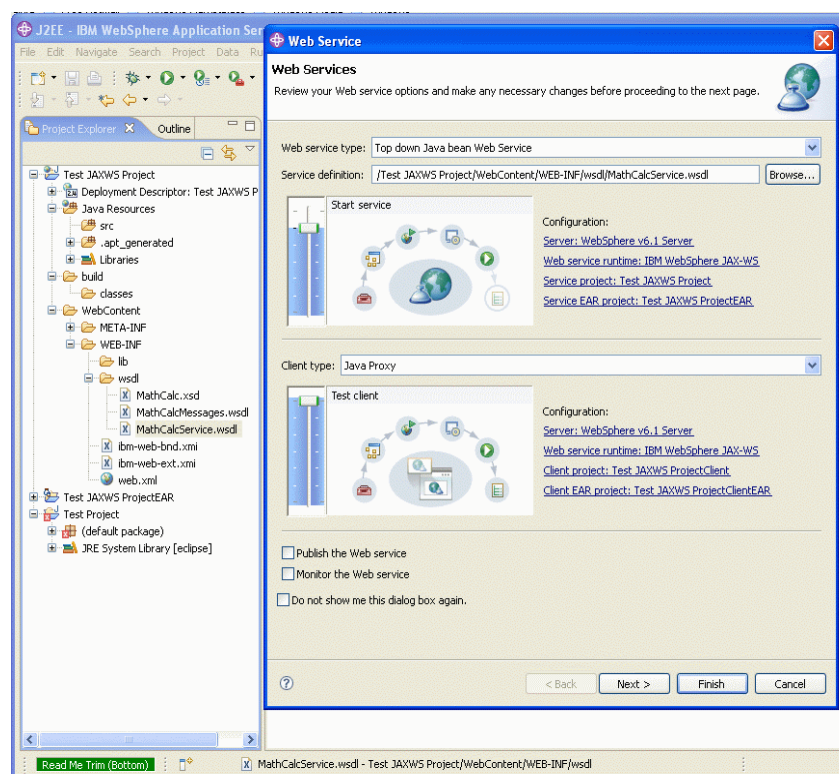
- Shipping Simple Message Exchange (MEP) Samples
  - Used internally to validate IBM/Microsoft interoperability at the product level
  - Both IBM and Microsoft samples have been shipped, along with documentation, in the Feature Pack to demonstrate core functionality
    - Validating that it's not just “supporting latest standards” but that it operates with real products
- Updating WS-I Supply Chain Management (SCM) application to use new JAX-WS programming model
  - Ensure Feature Pack continues to comply with WS-I BP & BSP profiles
- Continuing focus on Standards Body Participation
  - WS-I, OASIS
  - Product code used in Standards Body Participation

# Feature Pack Install

- Leverages the Fix Pack Install process
- Overlays the Fix Pack on top of an existing 6.1 system
- Introduces a new “augmentation” of a feature pack.
  - Create a new “profile” to denote a Feature Pack enabled server.
  - Augments the administration panels with additional Web Services functionality
- Delivers sample applications that can be installed

# Application Server Toolkit

- **Functionality**
  - XSD to JAXB Java wizard
  - Top down WSDL to skeleton via wsimport
  - WebSphere V6.1 Web Services Feature Pack facet
  - Publishing control
  - Annotations validation
  - Top down WSDL to client dynamic proxy
  - Jython command assistance
  - Bottom up Java->WebService wizard
  - JAX-WS Navigator
  - Policy Set support
  - Code generation preferences



# Web Services Standards Update



- OASIS

- WS-ReliableExchange – WS-RX (Reliable Messaging)
  - Officially approved as a standard – June 21, 2007
- WS-SecureExchange – WS-SX (WS-SecureConversation, WS-Trust)
  - Officially approved as a standard – April 2, 2007

- WS-I Reliable Secure Profile

- Requirements and use case document are at Working Group Approval Draft (WGAD)
- Due to test/approval cycles – target final: 1Q 2009



- WS-I Basic Profile

- 1.2 (BP 1.1, WS-Addressing, MTOM for SOAP 1.1)
  - Board Approval Draft on March 28, 2008, and republished in Nov due to WS-A Metadata
  - Target final: 1<sup>st</sup> half 2008
- 2.0 (BP 1.1, WS-Addressing, MTOM, SOAP 1.2, UDDI)
  - Profile issue resolution close to complete
  - Discussion on test scenarios starting
  - WGAD approved Nov 2nd
  - Target final: 2<sup>nd</sup> half 2008

# Best Practices

- Check Release Notes and InfoCenter information for documented restrictions and/or limitations
- Check shipped samples for similar desired support
  - Scripting examples to attach/detach policy set
  - Functional MEP examples
  - Microsoft WCF examples
- Check IBM developerWorks for Information
  - 4-part series on JAX-WS and JAX-RPC comparison
    - Web Services hints and tips: JAX-WS vs. JAX-RPC (high level overview)  
<http://www-128.ibm.com/developerworks/webservices/library/ws-tip-jaxwsrpc.html>
    - Web Services hints and tips: JAX-WS vs. JAX-RPC part 2 (XML mapping comparison)  
<http://www-128.ibm.com/developerworks/webservices/library/ws-tip-jaxwsrpc2.html>
    - More coming
  - 4-part series on Web Services Feature Pack and Interoperability
  - 2-part series on AST tools and the Web Services Feature Pack
  - Multiple-parts on various functionality (MTOM, RM, etc...)



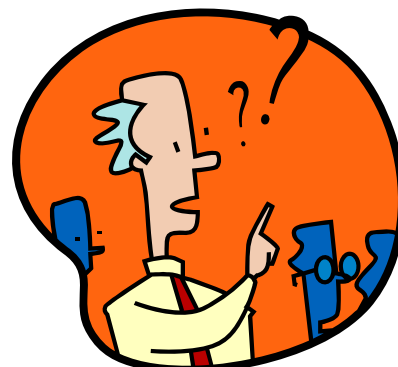
# Summary

WebSphere is approaching it's delivery of Web Services differently

- Web Services Feature Pack
  - Simplification
    - Profiles
  - Interoperability
    - WS-I Reliable Secure Profile
  - Simply the Development model
    - JAX-WS / JAXB 2.0
  - Simplify the Deployment/Administration model
    - Policy Sets
    - Intelligent Defaulting

# Questions

- Thank you!!



# Resources

- **WS-I Reliable Secure Profile**  
<http://www.ws-i.org/deliverables/workinggroup.aspx?wg=reliablesecure>
- **JAX-WS 2.0**  
<http://www.jcp.org/en/jsr/detail?id=224>
- **JAXB 2.0**  
<http://www.jcp.org/en/jsr/detail?id=222>
- **Pattern Solutions**  
<http://www-128.ibm.com/developerworks/rational/products/patternsolutions/>
- **SOAP 1.2**  
<http://www.w3.org/TR/soap/>
- **MTOM**  
<http://www.w3.org/TR/2005/REC-soap12-mtom-20050125/>



## Resources (continued)

- **OASIS WS-ReliableExchange**  
[http://www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=ws-rx](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ws-rx)
- **W3C WS-Addressing**  
<http://www.w3.org/2002/ws/addr/>
- **OASIS WS-Security**  
[http://www.oasis-open.org/committees/tc\\_home.php?wg\\_abbrev=wss](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wss)
- **WS-SecureConversation**  
<http://www-128.ibm.com/developerworks/library/specification/ws-secon/>
- **WS-Transactions**  
<http://www.alphaworks.ibm.com/wsspec/agreement/ws-tx>
- **Apache Axis2**  
<http://ws.apache.org/axis2>

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