



WebSphere User Group (UK)

Web Service Policy - Concepts & Value to SOA

Katy Warr
WS-Policy Architect for WebSphere Application Server

(katy_warr@uk.ibm.com)

WebSphere User Group (UK)

September 2008

© 2008 IBM Corporation

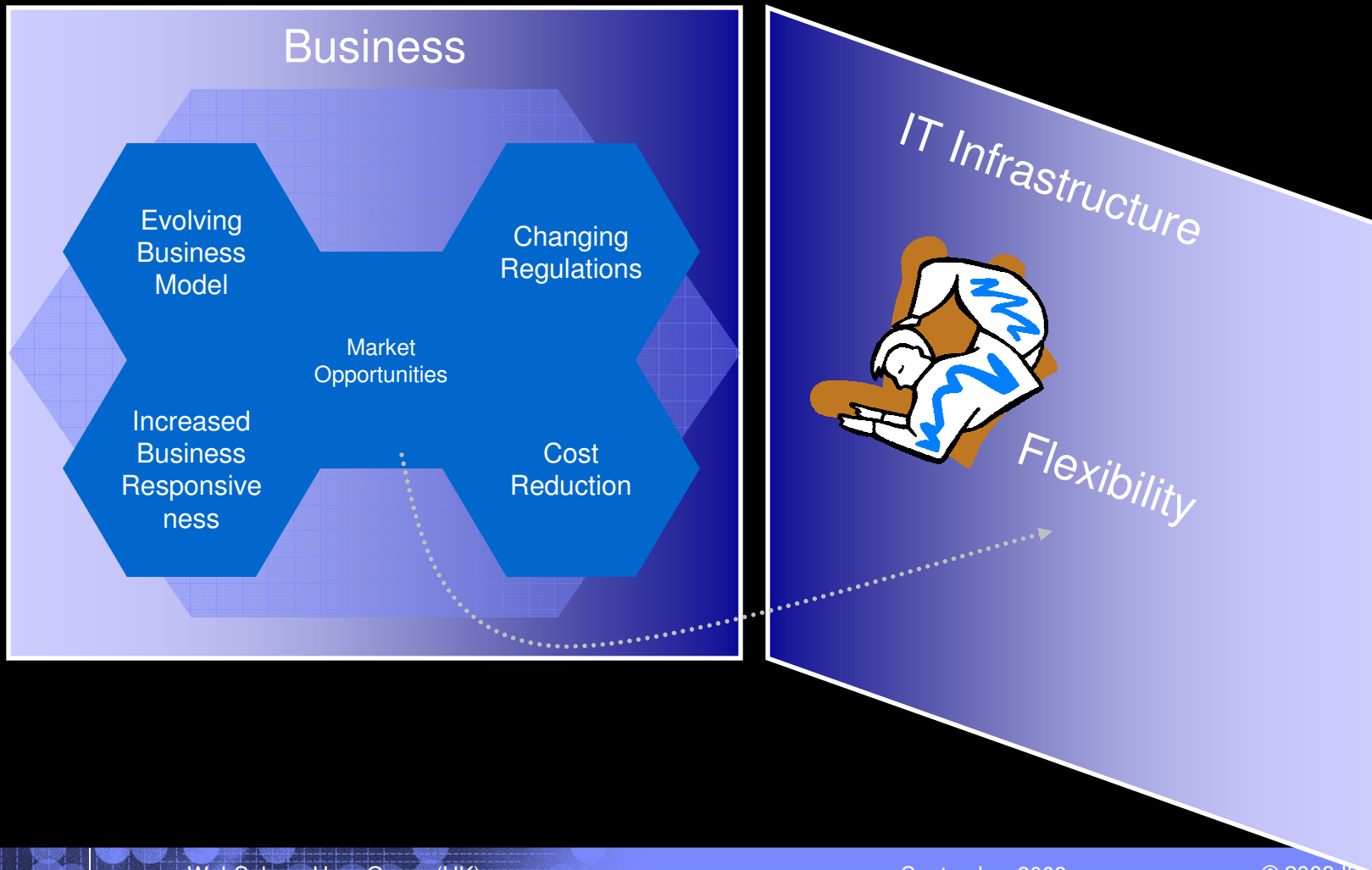
Contents

- SOA and Policy: What and Why?
- Policy Sets in WAS for *Standards Enforcement and Re-usable configurations*
- WS-Policy: What and Why?
- WS-Policy in WAS for *Dynamic, Interoperable Configurations*
 - **Service support**
 - **Client support**
- Summary and Crystal Ball

Contents

- SOA and Policy: What and Why?
- Policy Sets in WAS for *Standards Enforcement and Re-usable configurations*
- WS-Policy: What and Why?
- WS-Policy in WAS for *Dynamic, Interoperable Configurations*
 - **Service support**
 - **Client support**
- Summary and Crystal Ball

SOA for Enabling Business Growth – Alignment of IT with Business



What is Policy and Why?

- Policy provides a mechanism to express:
 - **Capabilities, requirements and standards**

What is Policy and Why?

- Policy provides a mechanism to express:
 - **Capabilities, requirements and standards**

Business Level Policies

Business Policy

- Artifacts and related infrastructure to represent policies as business people would describe them
- E.g. HIPAA, high-level policy such as expense reporting regulations

Business Services Policy

- Describe use-specific (i.e. application-specific) context for the desired characteristics and behavior of IT components
- E.g. Composite Business Application, SCA policies

Service Lifecycle Policy

- Active policies driving lifecycle transitions of services with associated governance validations and enforcement
- E.g. Lifecycle states, WS-I compliance, versioning

What is Policy and Why?

- Policy provides a mechanism to express:
 - **Capabilities, requirements and standards**

Operational Level Policies

Security Configuration Policy

- Technical policy associated with configuring IT infrastructure
- E.g. Security policies for access control

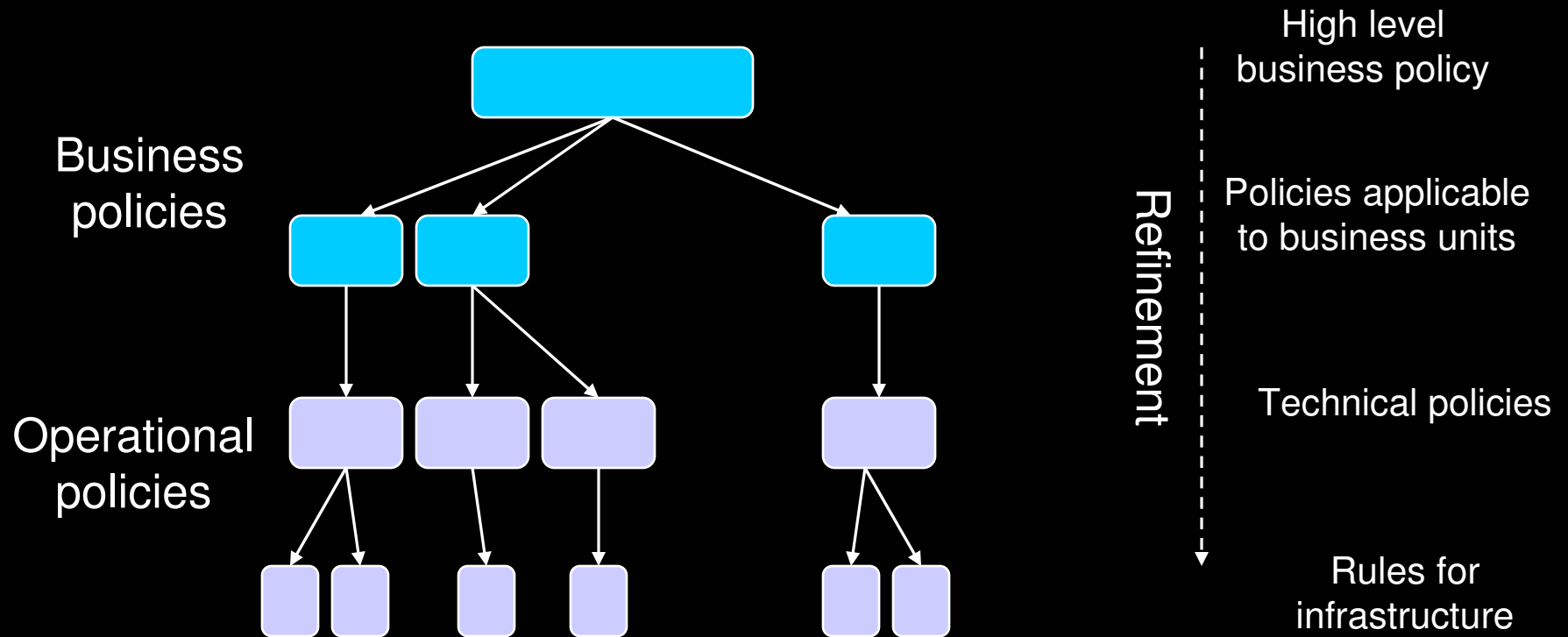
Service-level Policy

- Describes specific behaviors of the system in terms of performance, throughput, response time, workload etc.
- E.g. service-level policy (often called service level objective)

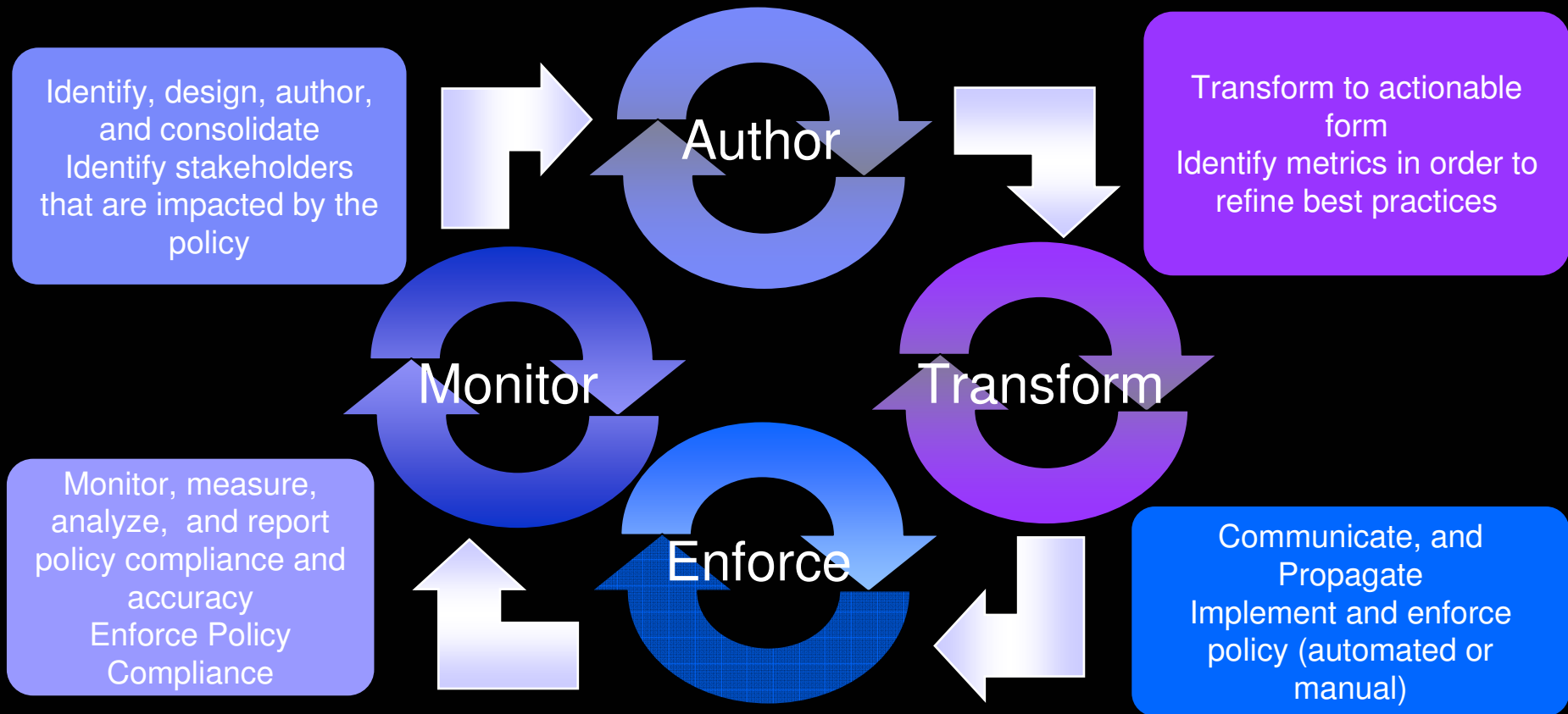
IT Governance Policy

- Describes best practices, standards, guidelines, patterns, rules etc. associated with IT
- Superset of SOA Governance policies
- E.g. ITIL processes

Policy Hierarchy – An Example

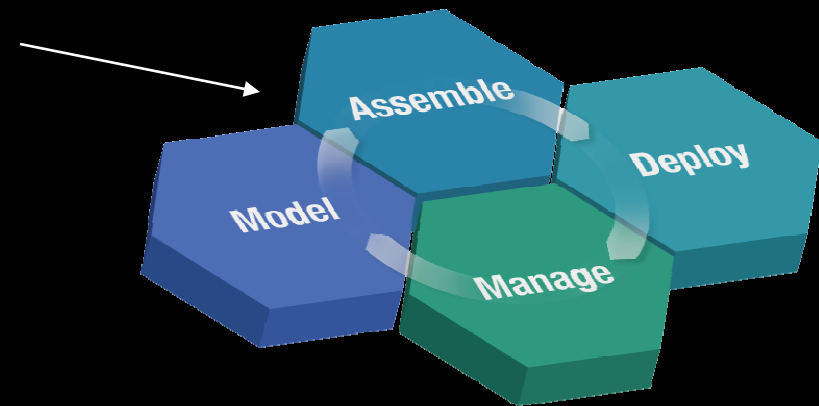


Policy Lifecycle and Governance in SOA



A Good SOA Policy Solution will provide ...

- Provide re-usable Best Practices, Standards and Requirements
- Provide *Governance* - Enforcement and monitoring of Policies across large scale infrastructures
- Span complete SOA lifecycle
- Provide interoperability
- Be easily extensible
- Automatable where possible



Flexible, manageable IT infrastructure that responds to business requirements

Contents

- SOA and Policy: What and Why?
- Policy Sets in WAS for *Standards Enforcement and Re-usable configurations*
- WS-Policy: What and Why?
- WS-Policy in WAS for *Dynamic, Interoperable Configurations*
 - **Service support**
 - **Client support**
- Summary and Crystal Ball

Policy for Web service Configuration in WebSphere Application Server

- **Web service Policy Sets:**
 - Ease complex Quality of Service (QOS) configurations of JAX-WS applications
 - Configurations are re-usable
 - Aids standards (WS-I) compliance
 - Introduced in WAS 6.1 FP
 - Enhanced and extended to WS-Policy in WAS 7

 ***flexible, re-usable configurations***

Policy for Web service Configuration in WebSphere Application Server

Policy Set

- Reusable configuration
- Named collection of policies (pre-canned or user defined)
- Administratively attached to JAX-WS Web services
- E.g. WS-SecureConversation, WS-Security Default, WS-I Reliable RSP

Policy Type

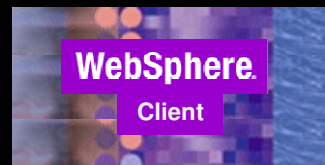
- A Single, cohesive type of Quality of Service (QoS)
- Defined by an XML schema
- E.g. WS-Security, WS-Addressing, WS-Reliable Messaging, HTTPS, WS-Transactions

Policy Sets can be attached to JAX-WS application, service, endpoint or operation

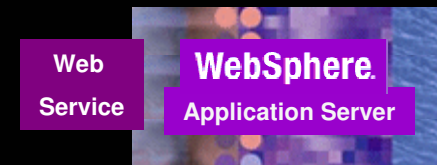
- As administrative task (WAS admin console/command line)
- During development/deploy via RAD (un-managed client)

Web Service Policies - WAS 6.1 FP Policy Sets and Bindings

- Requires message to be encrypted
- Requires transactions



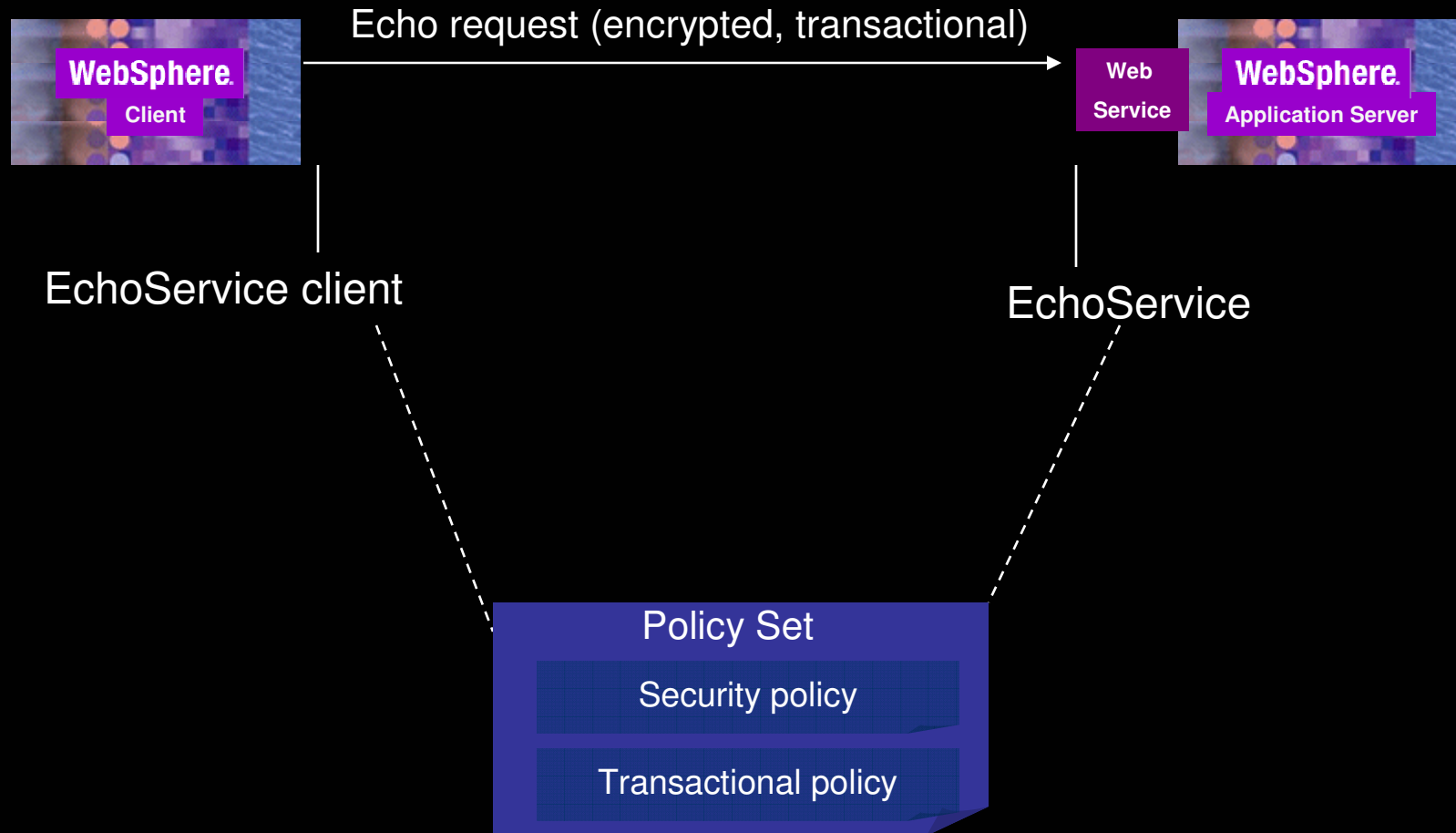
EchoService client



EchoService

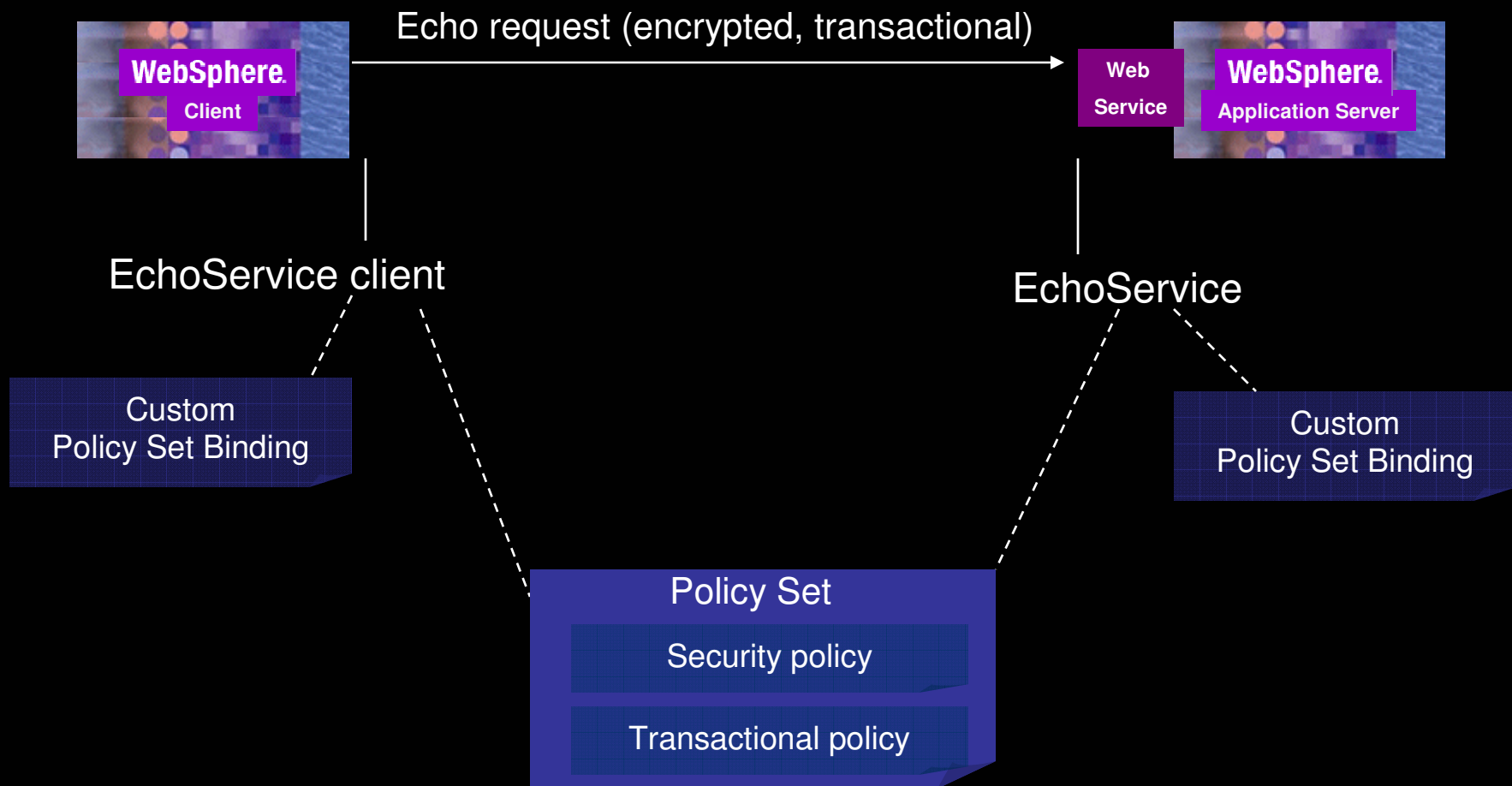
Web Service Policies - WAS 6.1 FP Policy Sets and Bindings

- Requires message to be encrypted
- Requires transactions



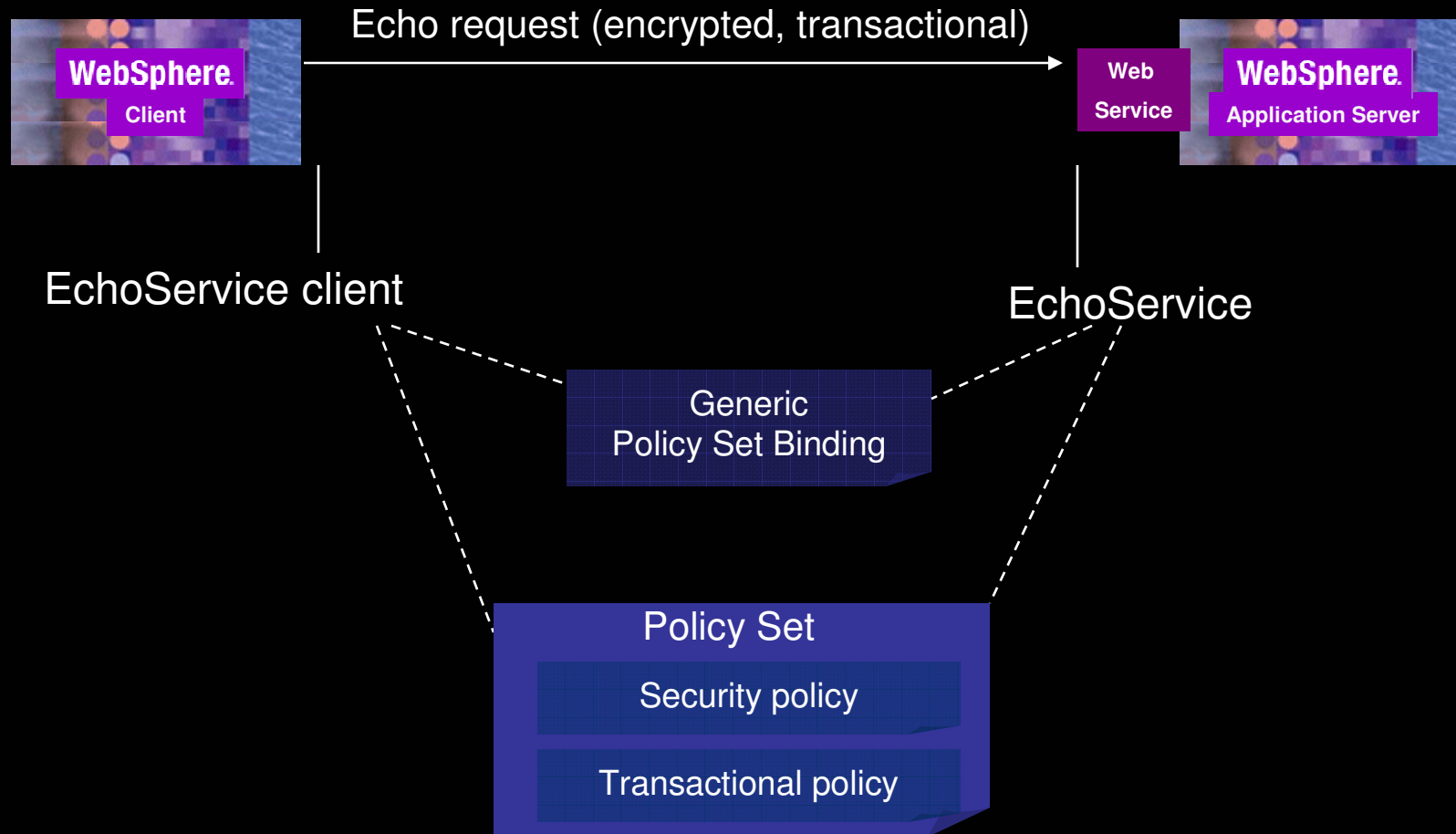
Web Service Policies - WAS 6.1 FP Policy Sets and Bindings

- Requires message to be encrypted
- Requires transactions



Web Service Policies - WAS 7.0 Policy Sets and Bindings

- Requires message to be encrypted
- Requires transactions



Service providers

[Service providers](#) > EchoService

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/}EchoService
```

Additional Properties

- [WSDL document](#)
- Application: [JaxWServicesSamples](#)
- Module: [SampleServicesSei.war](#)

Policy Set Attachments

Attach a policy set to the service, endpoints, or operations. Access the Policy Sharing link to allow clients to acquire the provider policy. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

⊕ Preferences

Attach Policy Set ▾ Detach Policy Set Assign Binding ▾

Select	Service/Endpoint/Operation ⚡	Attached Policy Set ⚡	Binding ⚡	Policy Sharing ⚡
You can administer the following resources:				
<input type="checkbox"/>	EchoService	None	Not applicable	Not applicable
<input type="checkbox"/>	EchoServicePort	None	Not applicable	Not applicable
<input type="checkbox"/>	echoOperation	None	Not applicable	Not applicable
Total 3				

Service providers

[Service providers](#) > EchoService

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/}EchoService
```

Additional Properties

- [WSDL document](#)
- Application: [JaxWServicesSamples](#)
- Module: [SampleServicesSei.war](#)

Policy Set Attachments

Attach a policy set to the service, endpoints, or operations. Access the Policy Sharing link to allow clients to acquire the provider policy. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

⊕ Preferences

Attach Policy Set ▾ Detach Policy Set Assign Binding ▾

Select	Service/Endpoint/Operation	Attached Policy Set	Binding	Policy Sharing
You can administer the following resources:				
<input checked="" type="checkbox"/>	EchoService	None	Not applicable	Not applicable
<input type="checkbox"/>	EchoServicePort	None	Not applicable	Not applicable
<input type="checkbox"/>	echoOperation	None	Not applicable	Not applicable
Total 3				

Service providers

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

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
/}EchoService
```

Additional Properties

- [WSDL document](#)
- Application: [JaxWSServicesSamples](#)
- Module: [SampleServicesSei.war](#)

Policy Set Attachments

Attach a policy set to the service, endpoints, or operations. Access the Policy Sharing link to allow clients to acquire the provider policy. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

⊕ Preferences

Attach Policy Set ▾
Detach Policy Set
Assign Binding ▾

Kerberos V5 HTTPS default			
LTPA WSSecurity default			
SSL WSTransaction			
Username SecureConversation	Attached Policy Set ▾	Binding ▾	Policy Sharing ▾
Username WSSecurity default			
WS-I RSP	resources:		
WS-I RSP ND	None	Not applicable	Not applicable
WSAddressing	Policies: WSReliableMessaging, WSSecurity, WSAddressing This policy set enables unmanaged non-persistent WS-ReliableMessaging, which provides the ability to deliver a message reliably to its intended receiver. This policy set only works in a single server environment and does not work in a clustered environment. 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.		pplicable
WSHTTPS de			pplicable
WSReliableM			pplicable
Total 3			

Service providers

[Service providers](#) > EchoService

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/}EchoService
```

Additional Properties

- [WSDL document](#)
- Application: [JaxWServicesSamples](#)
- Module: [SampleServicesSei.war](#)

Policy Set Attachments

Attach a policy set to the service, endpoints, or operations. Access the Policy Sharing link to allow clients to acquire the provider policy. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

⊕ Preferences

Attach Policy Set ▾
Detach Policy Set
Assign Binding ▾

Select	Service/Endpoint/Operation	Attached Policy Set	Binding	Policy Sharing
You can administer the following resources:				
<input type="checkbox"/>	EchoService	WS-I RSP	Default	Disabled
<input type="checkbox"/>	EchoServicePort	WS-I RSP (inherited)	Default (inherited)	Disabled (inherited)
<input type="checkbox"/>	echoOperation	WS-I RSP (inherited)	Default (inherited)	Disabled (inherited)
Total 3				

Contents

- SOA and Policy: What and Why?
- Policy Sets in WAS for *Standards Enforcement and Re-usable configurations*
- WS-Policy: What and Why?
- WS-Policy in WAS for *Dynamic, Interoperable Configurations*
 - **Service support**
 - **Client support**
- Summary and Crystal Ball

WS-Policy Standard <http://www.w3.org/TR/ws-policy/>

- **Interoperable Standard XML format for policy**
 - (machine-readable)
- **Language for combining policies to find an acceptable policy for all parties (intersection)**
- **Framework for many policy domains:**
 - Standard policy semantics that can be re-used across many *policy domains*

Importance of WS-Policy for SOA

Standard policy representation enables:

- **Policy Governance**

- Single representation of policy across the enterprise simplifies governance


- **Interoperability**

- No proprietary formats

- **Loose coupling**

- Deployed assets may be dynamically configured
- Flexible configuration model (assets may advertise a choice of policies)
- Dynamic configuration (clients automatically reconfigure as provider policy changes)

WS-Policy Nitty-Gritty

- WS-Policy 1.5 (W3C Recommended) Specification is here:
 - <http://www.w3.org/TR/ws-policy/> 
 - <http://www.w3.org/TR/ws-policy-attach/>
- **Terminology**
 - A **policy assertion** represents a capability, requirement or other behaviour
 - Policy assertion semantics are defined by the relevant domain specification
 - A **policy alternative** is a collection of one or more policy assertions
 - A **policy** is a collection of one or more policy alternatives
 - A policy subject is an entity (e.g., an endpoint, message, resource, operation) with which a policy can be associated.
 - A policy scope defines the collection of policy subjects to which a policy may apply
 - A policy attachment is a mechanism for associating one or more policies with a policy scope

WS-Policy Nitty-Gritty (Syntax)

WS-Policy Language:

- **Policy Nesting**
- Policies may be **referenced** (either via external URI or relative identifier)
- 2 operators:
ExactlyOne = OR
All=AND
- **'Optional'** assertion in order to allow more policies to be expressed more compactly

WS-Policy Nitty-Gritty – Indicating that Web service invocations should be either secured or encrypted

```
<wsp:Policy
  xmlns:sp="http://docs.oasis-open.org/ws-sx/ws-
  securitypolicy/200702"
  xmlns:wsp="http://www.w3.org/ns/ws-policy" >
  <wsp:ExactlyOne>
    <wsp:All>
      <sp:SignedParts>
        <sp:Body/>
      </sp:SignedParts>
    </wsp:All>
    <wsp:All>
      <sp:EncryptedParts>
        <sp:Body/>
      </sp:EncryptedParts>
    </wsp:All>
  </wsp:ExactlyOne>
</wsp:Policy>
```

} Policy Alternative1

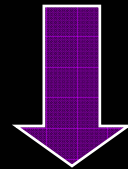
} Policy Alternative2

WS-Policy Nitty-Gritty – Indicating that AtomicTransactions are supported but not mandated by service

```

<wsp:Policy
  xmlns:wsat="http://docs.oasis-open.org/ws-tx/wsat/2006/06"
  xmlns:wsp="http://www.w3.org/ns/ws-policy" >
  <wsp:ExactlyOne>
    <wsp:All> } Policy Alternative1
    </wsp:All> } (no trans)
    <wsp:All> }
      <wsat:ATAssertion> } Policy Alternative2
    </wsp:All> } (transactions mandated)
  </wsp:ExactlyOne>
</wsp:Policy>

```




Shorthand 'compact form'

```

<wsp:Policy
  xmlns:wsat="http://docs.oasis-open.org/ws-tx/wsat/2006/06"
  xmlns:wsp="http://www.w3.org/ns/ws-policy" >
  <wsat:ATAssertion wsp:Optional="true">
</wsp:Policy>

```

WS-Policy Nitty-Gritty

- WS-Policy 1.5 (W3C Recommended) Specification is here:
 - <http://www.w3.org/TR/ws-policy/>
 - <http://www.w3.org/TR/ws-policy-attach/> 
- **Terminology**
 - A policy assertion represents a capability, requirement or other behaviour
 - Policy assertion semantics are defined by the relevant domain specification
 - A policy alternative is a collection of one or more policy assertions
 - A policy is a collection of one or more policy alternatives
 - A **policy subject** is an entity (e.g., an endpoint, message, resource, operation) with which a policy can be associated.
 - A **policy scope** defines the collection of policy subjects to which a policy may apply
 - A **policy attachment** is a mechanism for associating one or more policies with a policy scope

WSDL Policy Attachments – Embedding policy within WSDL

```
:  
<wsdl:binding name="EchoSOAP" type="tns:EchoServicePortType">  
  <soap:binding style="document"  
    transport="http://schemas.xmlsoap.org/soap/http"/>  
  <wsp:Policy  
    xmlns:sp="http://docs.oasis-open.org/ws-sx/ws-  
securitypolicy/200702"  
    xmlns:wsp="http://www.w3.org/ns/ws-policy" >  
    :  
    </wsp:Policy>  
</wsdl:binding>  
:
```

WS-Policy in WSRR 6.2: Extending Service Metadata Management and Governance Capabilities

- WSRR 6.2 provides:
 - Mechanism for authoring/attaching policies in WS-Policy format
 - Policy Management activities
 - Policy Libraries for best practice and interoperability

The screenshot displays the 'Edit Composite Policy' page in the WebSphere Service Registry and Repository (WSRR) 6.2. The page is titled 'WebSphere Service Registry and Repository' and includes a navigation menu on the left with options like 'Logout', 'Welcome', and 'Policy Authoring Tool'. The main content area is divided into two sections: 'Policy Properties - WS-Policy Domain' and 'Document Properties'. The 'Policy Properties' section includes fields for 'Policy Name' (www.tonawanda.com/TestPolicy/CompositePolicy), 'Description' (Illustration of a composite policy), and 'WSU:ID' (CompositePolicy). The 'Document Properties' section includes fields for 'Policy Document Name' (CompositePolicy.xml), 'Namespace' (http://www.tonawanda.com/TestPolicy), and 'Version' (1.0). Below these sections is a 'Policy Contents' area with a tree view showing a composite policy structure. The tree view includes a 'Policy' container with an 'AllOf' container and two 'OneOf' containers. Each 'OneOf' container contains a 'PolicyReference' element with a URI. The URIs are: 'http://tonawanda.sr.ibm.com/policies#HighRiskClaimPolicy', 'http://tonawanda.sr.ibm.com/policies#LowRiskClaimPolicy', 'http://tonawanda.sr.ibm.com/PolicyDefinitions#SecureMessagePolicy', and 'http://tonawanda.sr.ibm.com/PolicyDefinitions#ReliableMessagingPolicy'. The interface also includes buttons for 'Add OneOf', 'Add AllOf', 'Add Policy Reference', and 'Remove'.

Still need a standard way to exchange WS-Policy...

- **For example:**
 - Policy Enforcement Point acquires its policy from central repository or other
- **Policy can be exchanged via:**
 - HTTP GET to acquire WSDL
 - WS-MetadataExchange (WS-Mex)

Exchanging WS-Policy Metadata - WS-MetadataExchange (WS-Mex)

- Exchange of Metadata in order to bootstrap communication with Web services
 - **Endpoints can support operations specifically for retrieval of metadata**
 - **(Mechanism for embedding Metadata in EndpointReferences)**
- Metadata exchange spec deals with other types of Metadata.
 - **Focus on exchange of WSDL containing policy**
- **Initial Specification:**
<http://download.boulder.ibm.com/ibmdl/pub/software/dw/specs/ws-mex/metadataexchange.pdf>
- **Specification is now being standardised (been submitted to W3C)**

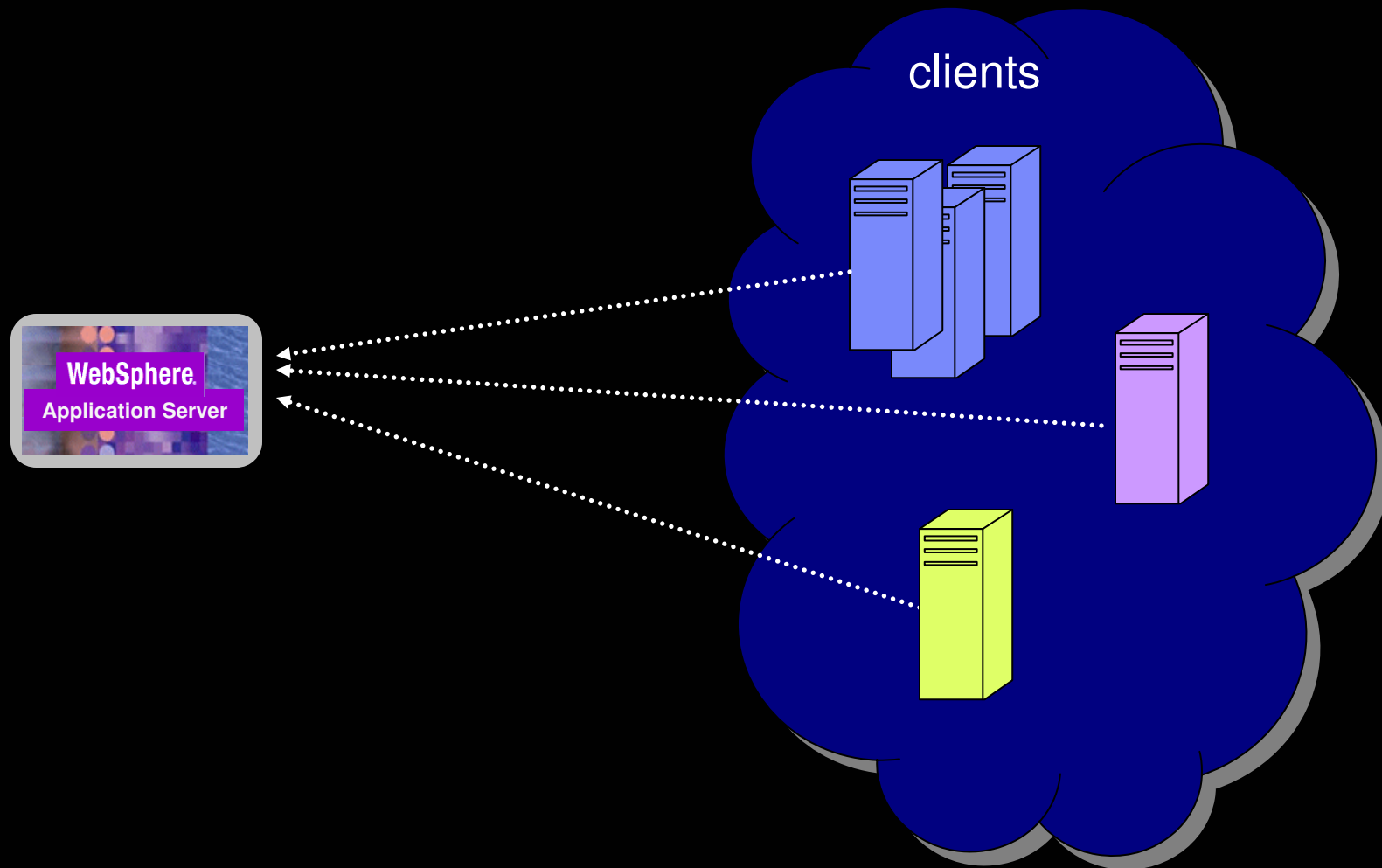
Recap – WS-Policy and WS-MetadataExchange

- **WS-Policy:**
 - W3C Recommendation
 - Interoperable machine-readable format for expressing policy
 - Flexible
 - Extensible
- **WS-MetadataExchange**
 - Submitted to W3C for standardisation
 - Define standard mechanism for Metadata Exchange (including policy) over SOAP

Contents

- SOA and Policy: What and Why?
- Policy Sets in WAS for *Standards Enforcement and Re-usable configurations*
- WS-Policy: What and Why?
- WS-Policy in WAS for *Dynamic, Interoperable Configurations*
 - **Service support**
 - **Client support**
- Summary and Crystal Ball

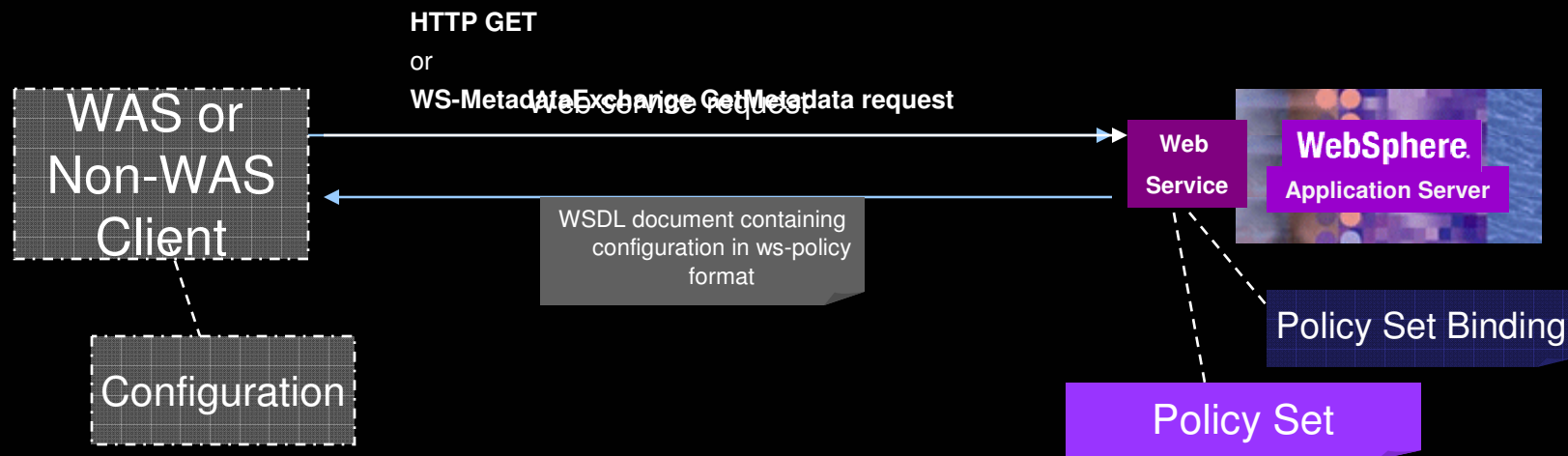
How Can a Service Share its Policy Set Configuration in standard format?



WAS 7.0 JAX-WS Services can be configured to Share their Policy Set Configuration in WS-Policy Format

- **Administratively**
 - Using Admin Console or Command Line interfaces
- **During Development**
 - Using RAD 7.5 development tools

Interoperability: Sharing Policy Set configuration in WS-Policy Format



Service providers ? -

Service providers > **EchoService**

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

Configuration

General Properties

Service provider

Additional Properties

- [WSDL document](#)
- Application: [JaxWSServicesSamples](#)
- Module: [SampleServicesSei.war](#)

Policy Set Attachments

Attach a policy set to the service, endpoints, or operations. Access the Policy Sharing link to allow clients to acquire the provider policy. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

⊞ Preferences

Attach Policy Set ▾ Detach Policy Set Assign Binding ▾

Select	Service/Endpoint/Operation	Attached Policy Set	Binding	Policy Sharing
You can administer the following resources:				
<input type="checkbox"/>	EchoService	WS-I RSP	Default	Enabled
<input type="checkbox"/>	EchoServicePort	WS-I RSP (inherited)	Default (inherited)	Enabled(inherited)
<input type="checkbox"/>	echoOperation	WS-I RSP (inherited)	Default (inherited)	Enabled(inherited)
Total 3				

Service providers

[Service providers](#) > [EchoService](#) > [Policy Sharing](#)

Use this page to specify whether, and by which methods, clients can acquire the provider policy.

Service Provider WS-Policy Control Properties

Allow clients to acquire policy from:

- Exported WSDL (HTTP messages secured with the application transport policy if defined)
- WS-MetadataExchange request (secured with the application transport policy if defined)
- Attach a system policy set to the WS-MetadataExchange

Policy set:

SystemWSSecurityDefault

Binding:

Default

Apply

OK

Reset

Cancel

Help

Field help

For field help information, select a field label or list marker when the help cursor is displayed.

Page help

[More information about this page](#)

Command Assistance

[View administrative scripting command for last action](#)

Securing the Policy Exchange

- **Authentication and Integrity particularly important for GetMetadata response:**
 - Client needs to be sure the provider sending its policy is valid before it sends its message
 - (Should be nothing confidential in the policy exchange)
- **WAS provides a default System Policy Set for securing WS-MetadataExchange GetMetadata**
- **HTTP GET policy acquisitions secured by transport**

Service providers ?

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

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

Configuration

General Properties

Service provider

Additional Properties

- [WSDL document](#)
- Application: [JaxWSServicesSamples](#)
- Module: [SampleServicesSei.war](#)

Policy Set Attachments

Attach a policy set to the service, endpoints, or operations. Access the Policy Sharing link to allow clients to acquire the provider policy. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

⊞ Preferences

Attach Policy Set ▾ Detach Policy Set Assign Binding ▾

Select	Service/Endpoint/Operation ⚡	Attached Policy Set ⚡	Binding ⚡	Policy Sharing ⚡
You can administer the following resources:				
<input type="checkbox"/>	EchoService	WS-I RSP	Default	Enabled
<input type="checkbox"/>	EchoServicePort	WS-I RSP (inherited)	Default (inherited)	Enabled(inherited)
<input type="checkbox"/>	echoOperation	WS-I RSP (inherited)	Default (inherited)	Enabled(inherited)
Total 3				

WS-I RSP – A *bit* of the (machine readable) WS-Policy associated with the service

```

<sp:SymmetricBinding xmlns:sp="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702">
  <wsp:Policy>
    <sp:ProtectionToken>
      <wsp:Policy>
        <sp:SecureConversationToken sp:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702/IncludeToken/AlwaysToRecipient">
          <wsp:Policy>
            <sp:RequireDerivedKeys/>
            <sp:RequireExternalUriReference/>
            <sp:BootstrapPolicy>
              <wsp:Policy>
                <sp:AsymmetricBinding>
                  <wsp:Policy>
                    <sp:InitiatorToken>
                      <wsp:Policy>
                        <sp:X509Token sp:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702/IncludeToken/AlwaysToRecipient">
                          <wsp:Policy>
                            <sp:WssX509V3Token10/>
                          </wsp:Policy>
                        </sp:X509Token>
                      </wsp:Policy>
                    </sp:InitiatorToken>
                    <sp:RecipientToken>
                      <wsp:Policy>
                        <sp:X509Token sp:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702/IncludeToken/AlwaysToInitiator">
                          <wsp:Policy>
                            <sp:WssX509V3Token10/>
                          </wsp:Policy>
                        </sp:X509Token>
                      </wsp:Policy>
                    </sp:RecipientToken>
                    <sp:AlgorithmSuite>
                      <wsp:Policy>
                        <sp:Basic128Rsa15/>
                      </wsp:Policy>
                    </sp:AlgorithmSuite>
                    <sp:Layout>
                      <wsp:Policy>
                        <sp:Strict/>
                      </wsp:Policy>
                    </sp:Layout>
                    <sp:IncludeTimestamp/>
                    <sp:EncryptSignature/>

```


Mapping between administered Policy Sets and Shared Policy Configuration

- **Policy Sets are close to ws-policy in format**
 - Transformations for spec levels
 - Driven by interop testing
- **A single administrative decision may result in more than one possible policy:**
 - E.g. transactions

Where appropriate, WAS provider will automatically include choice in its policy for *flexible* configurations...

Application policy sets

Application policy sets > TransactionsOn > WS-Transaction

Specify the policies for WS-AtomicTransaction and WS-BusinessActivity protocols. WS-AtomicTransaction supports coordination of activities so that all occur, or none occurs. WS-BusinessActivity supports coordination of compensation. These policies are used when a client sends a request, when a provider receives a request, and when generating a WSDL file containing policy for a Web service endpoint.

WS-AtomicTransaction

- Mandatory - clients must send, and providers must receive, WS-AT context
- Supports - if WS-AT context is available, clients can send it and providers can use it
- Never - clients must not send, and providers must not receive, WS-AT context

WS-BusinessActivity

- Mandatory - clients must send, and providers must receive, WS-BA context
- Supports - if WS-BA context is available, clients can send it and providers can use it
- Never - clients must not send, and providers must not receive, WS-BA context

Apply OK Reset Cancel

```

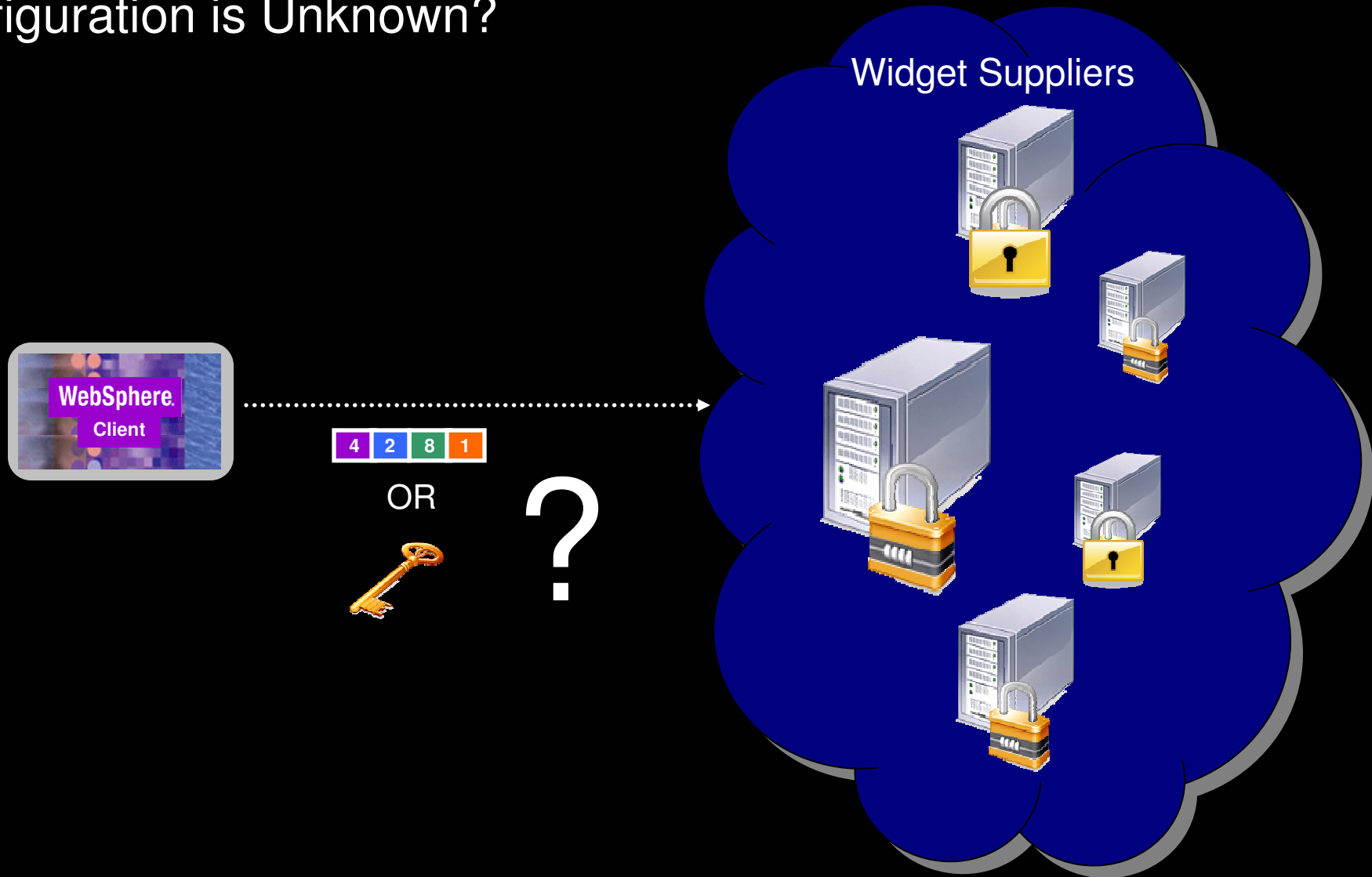
<wsp:ExactlyOne>
  <wsp:All> <atassertion:ATAssertion xmlns:atassertion=
"http://schemas.xmlsoap.org/ws/2004/10/wsat"/> </wsp:All> = WS-AtomicTransaction 1.0
  <wsp:All> <atassertion:ATAssertion xmlns:atassertion=
"http://docs.oasis-open.org/ws-tx/wsat/2006/06"/> </wsp:All> =WS-AtomicTransaction 1.1
</wsp:ExactlyOne>

```

Contents

- SOA and Policy: What and Why?
- Policy Sets in WAS for *Standards Enforcement and Re-usable configurations*
- WS-Policy: What and Why?
- WS-Policy in WAS for *Dynamic, Interoperable Configurations*
 - Service support
 - **Client support**
- Summary and Crystal Ball

How Can a Client Perform Configuration when the Supplier's Configuration is Unknown?



WAS Client can be configured to dynamically acquire ws-policy

- **Administratively**
 - Using Admin Console or Command Line interfaces
- **During Development**
 - Using RAD 7.5 development tools

Provider's policy is acquired DYNAMICALLY when required (i.e. policy acquisition is triggered by first Web service request from client)

Specifying Provider-Only Policy

Policy Set Attachments

Define policy and binding configuration for the service reference, endpoints, or operations. Access the Policies Applied link to indicate whether to use and how to acquire policy from the service provider. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

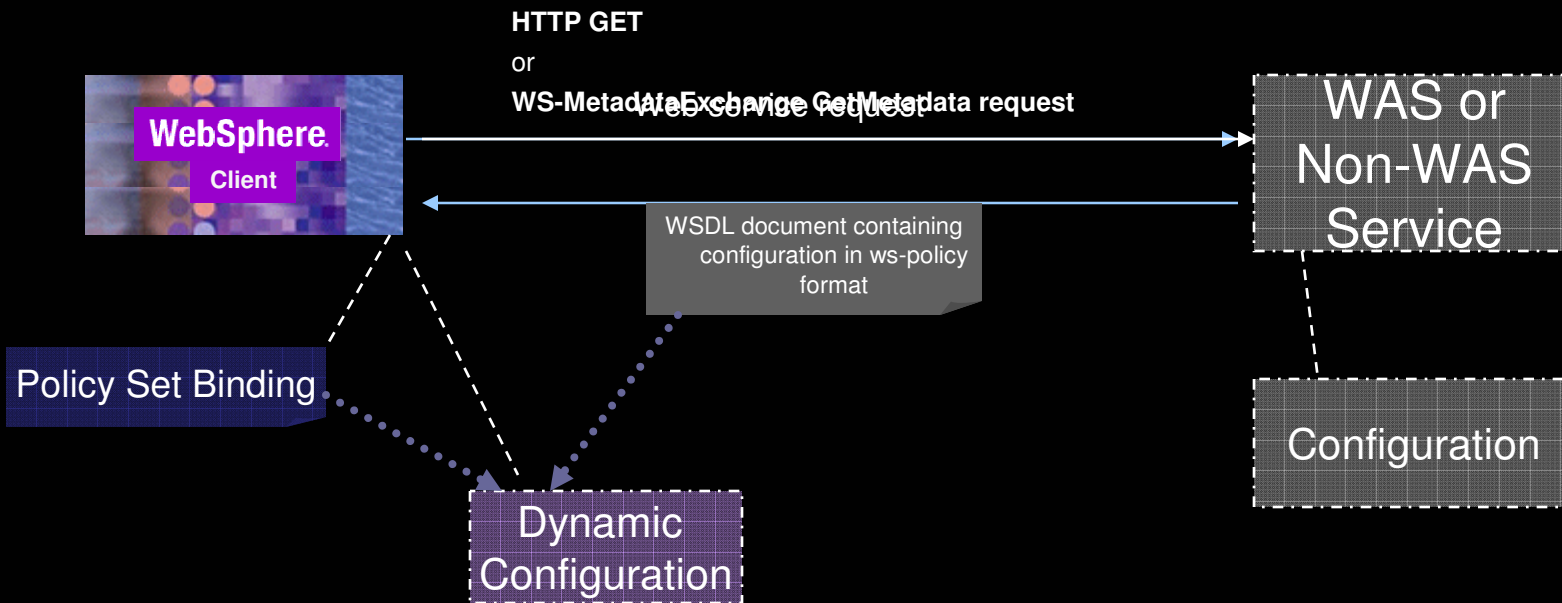
⊕ Preferences

Attach Client Policy Set ▾ Detach Client Policy Set Assign Binding ▾

Select	Service/Endpoint/Operation	Attached Client Policy Set	Policies Applied	Binding
You can administer the following resources:				
<input type="checkbox"/>	EchoService	None	Provider only	Default
<input type="checkbox"/>	EchoServicePort	None	Provider only (inherited)	Default (inherited)
<input type="checkbox"/>	echoOperation	None	Provider only (inherited)	Default (inherited)
Total 3				

Dynamically configure the client at runtime based on the provider's policy

Interoperability: Client using Provider-Only Policy



Specifying Client and Provider Policy

Policy Set Attachments

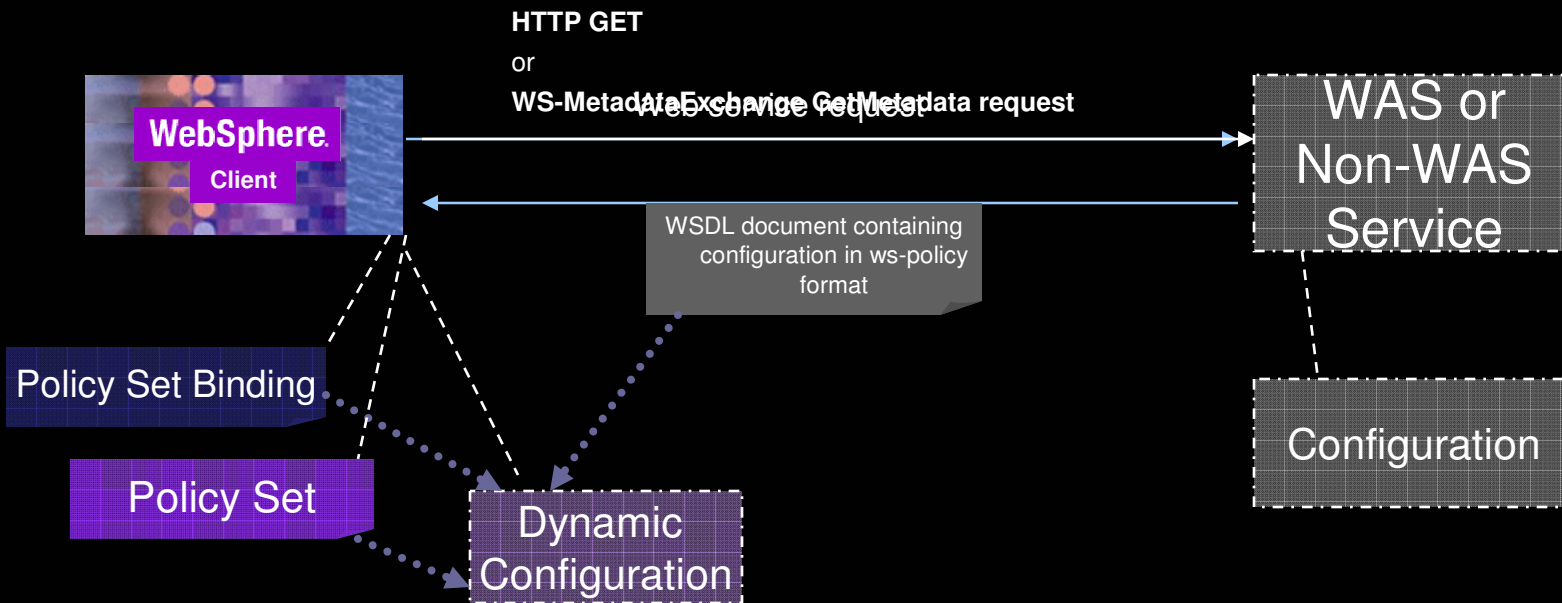
Define policy and binding configuration for the service reference, endpoints, or operations. Access the Policies Applied link to indicate whether to use and how to acquire policy from the service provider. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

Preferences

Select	Service/Endpoint/Operation	Attached Client Policy Set	Policies Applied	Binding
You can administer the following resources:				
<input type="checkbox"/>	EchoService	WS-I RSP	Client and provider	Default
<input type="checkbox"/>	EchoServicePort	WS-I RSP (inherited)	Client and provider (inherited)	Default (inherited)
<input type="checkbox"/>	echoOperation	WS-I RSP (inherited)	Client and provider (inherited)	Default (inherited)
Total 3				

Dynamically configure the client at runtime based on the provider's policy restricted by the client side (static) policy set

Interoperability: Client using Provider-Only Policy



What if WAS 7Client has choice of policy alternatives?

- WAS client will choose to use policy that it supports
- *If client supports >1 option, WAS client may have a preference (in particular: the client has a preference for later spec levels where more than one is supported)*

For example, 2 levels of transactions supported by service:

```
<wsp:ExactlyOne>
```

```
  <wsp>All> <atassertion:ATAssertion xmlns:atassertion=  
    "http://schemas.xmlsoap.org/ws/2004/10/wsat"/>
```

```
  </wsp>All>
```

```
  <wsp>All> <atassertion:ATAssertion xmlns:atassertion=  
    "http://docs.oasis-open.org/ws-tx/wsat/2006/06"/>
```

```
  </wsp>All>
```

```
</wsp:ExactlyOne>
```

WAS client choice

Policy Acquisition mechanisms

Service clients

[Service clients](#) > [EchoService](#) > **Policies Applied**

Use this page to specify which policies to apply to the application or service client. If you choose to use the provider policy, you can also specify the method by which the client should acquire this policy.

Client WS-Policy Control Properties

Apply the following policies:

Provider policy only

Method to obtain provider policy:

HTTP GET request (secured with the application transport policy if defined)

- Use the default request target
- Specify request target

WS-MetadataExchange request (secured with the application transport policy if defined)

- Attach a system policy set to the WS-MetadataExchange

Policy set:

SystemWSSecurityDefault

Binding:

Default

Apply OK Reset Cancel

Policy held in a central Repository

Service clients

Service clients > EchoService > Policies Applied

Use this page to specify which policies to apply to the application or service client. If you choose to use the provider policy, you can also specify the method by which the client should acquire this policy.

Client WS-Policy Control Properties

Apply the following policies:
Provider policy only

Method to obtain provider policy:

- HTTP GET request (secured with the application transport policy if defined)
 - Use the default request target
 - Specify request target
- WS-MetadataExchange request (secured with the application transport policy if defined)
 - Attach a system policy set to the WS-MetadataExchange
 - Policy set:
SystemWSSecurityDefault
 - Binding:
Default

Apply OK Reset Cancel

Ability to acquire policy from provider held in central repository

Contents

- SOA and Policy: What and Why?
- Policy Sets in WAS for *Standards Enforcement and Re-usable configurations*
- WS-Policy: What and Why?
- WS-Policy in WAS for *Dynamic, Interoperable Configurations*
 - **Service support**
 - **Client support**
- **Summary and Crystal Ball**

Summary

- **WS-Policy is an *emerging* standard**
- **WS-Policy provides Flexible, Interoperable solution for SOA governance**

Summary

- **WS-Policy is a new and emerging standard**
- **WS-Policy provides Flexible, Interoperable solution for SOA governance**
- **Industry next steps?**
 - Standardisation of WS-MetadataExchange Specification for interoperable policy exchange
 - WS-Policy prevalence in Governance scenarios
 - Emergence of policy new domains

