IBM Software Group

Security in SOAP nodes in WebSphere Message Broker V6.1

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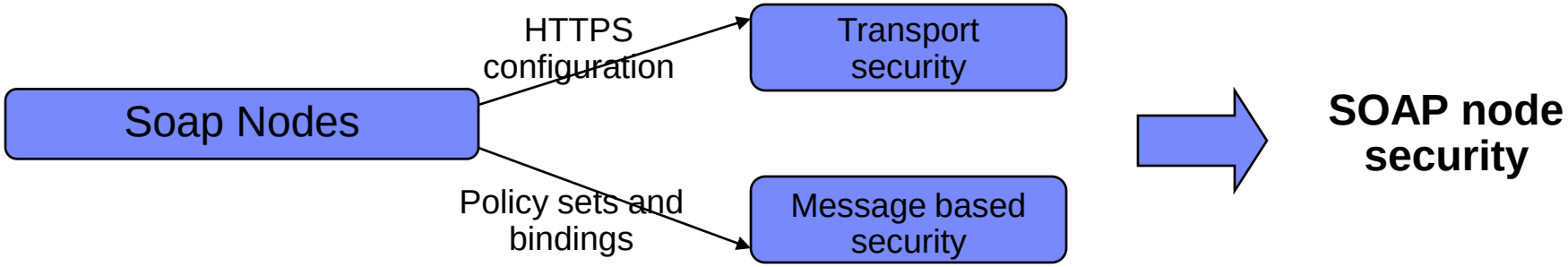
Agenda

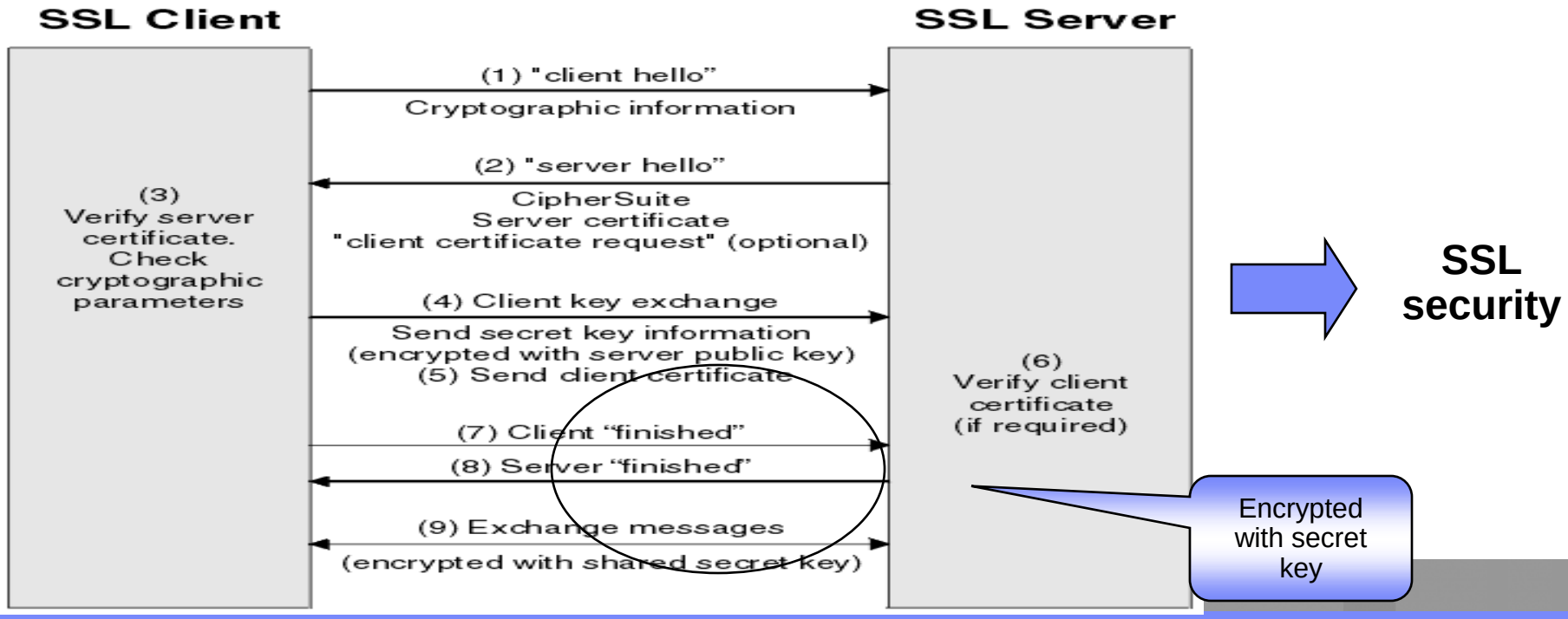
- **Introduction**
- **Transport Security Basics**
- **Transport Security Configuration**
  - Transport security
  - Configuration of SOAPRequest nodes
  - Configuration of SOAPInput nodes
- **Message security**
  - WS-security concepts
  - WS-security configuration

Introduction

- **Different types of message security**
  - Transport Security
    - SSL
    - TLS
  - Network Security
    - IPSec
  - Message based security
    - WS-Security
- **SOAP nodes can use Transport security and/or Message based security**

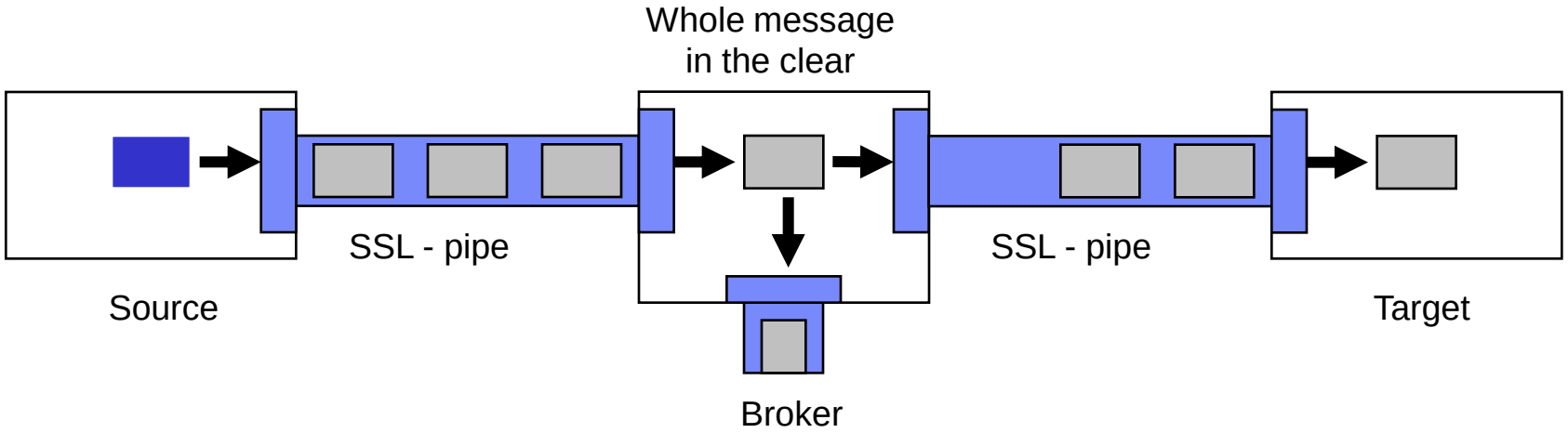
Introduction





Transport Security Basics

- Protects the stream of data being passed from one endpoint to another
- Typically ALL of the data is encrypted with same key
- Does not discriminate on a per message basis (everything is encrypted) with same key
- Only Point-to-point Security
  - When passing messages via another intermediary, if the intermediary needs to 'see' any part of the message, it can access all of it



Transport Security Basics

- In v6.1 there is a hierarchy for defining the keystores and truststores that SOAP nodes in an execution group will use
- Keystores can be defined at the:
  - Broker registry level - applies to all users of keystores in all execution groups, eg. SOAPInput, SOAPRequest/AsyncRequest (for client Auth), AsyncResponse
  - Execution group JVM Manager level - applies to all users of keystores in specified execution groups, eg. SOAPInput, SOAPRequest/AsyncRequest (for clientAuth), AsyncResponse
  - httpsConnector level - applies to httpsConnector users in the specified execution group, eg. SOAPInput, AsyncResponse
- Settings at httpsConnector level override those at the execution group jvm manager level which in turn override those at the broker registry level

Transport Security Basics

- Truststores can be defined at the:
  - Broker registry level - applies to all users of truststores in all execution groups, eg. SOAPInput (for client Auth), SOAPRequest/AsyncRequest nodes
  - Execution group JVM Manager level - applies to all users of truststores in the specified execution groups, eg SOAPInput (for client Auth), SOAPRequest/AsyncRequest nodes
- To enable clientAuth for SOAPInput nodes set clientAuth = true at the HTTPSConnector level
- Settings at the Execution group JVM Manager level override those at the broker registry level
- Certificate Management Tools are available with IBM JRE
  - Command line tool – keytool (<WMB install directory>/jre/bin)
  - GUI-based tool – Ikeyman (<WMB install directory>/jre/bin)

Transport Security Configuration - SOAPRequest

Configuration of SOAPRequest & SOAPAsyncRequest nodes

- Create the required keystores and truststores and exchange & add certificates
- Configure the broker registry

OR

- Configure the JVM Manager for Execution Group containing the message flow with these nodes
- Configure the message flow node and bar file
- Deploy the bar file to the broker

Transport Security Configuration - SOAPRequest

One-way SSL

1. Import the certificate provided by Provider into truststore

keytool -import -alias mykey -file <name of certificate file> -keystore <fully qualified path to truststore file> -storepass <password>

2. Set the broker to use the truststore

mqsichangeproperties <broker name> -o BrokerRegistry -n brokerTruststoreFile -v <fully qualified truststore file>

3. Set the truststore password entry

mqsichangeproperties <broker name> -o BrokerRegistry -n brokerTruststorePass -v brokerTruststore::password

4. Set the truststore password in the broker registry

mqsisetdbparms <broker name> -n brokerTruststore::password -u temp -p <password>

Transport Security Configuration - SOAPRequest

Two-way SSL

1. Import the certificate provided by Provider into truststore

keytool -import -alias mykey -file <name of certificate file> -keystore <fully qualified path to truststore file> -storepass <password>

2. Create a keystore with a new self-signed certificate

keytool -genkey -storepass <password > -keystore <keystore file> -alias <self-signed certificate>

3. Extract the certificate from the keystore file for Provider

keytool -export -alias tomcat -file <name of certificate file> -keystore <keystore file> -storepass <password>

Configure the broker registry

4. Point the broker to the new keystore file

mqsichangeproperties <broker name> -o BrokerRegistry -n brokerKeystoreFile -v <fully qualified keystore file>

5. Point the broker to truststore file

mqsichangeproperties <broker name> -o BrokerRegistry -n brokerTruststoreFile -v <fully qualified truststore file>

Transport Security Configuration - SOAPRequest

6. Set the broker keystore password

mqsichangeproperties <broker name> -o BrokerRegistry –n brokerKeystorePass -v brokerKeystore::password

7. Set the broker truststore password

mqsichangeproperties <broker name> -o BrokerRegistry -n brokerTruststorePass -v brokerTruststore::password

8. Set the keystore password in registry

mqsisetdbparms <broker name> -n brokerKeystore::password -u temp –p <password>

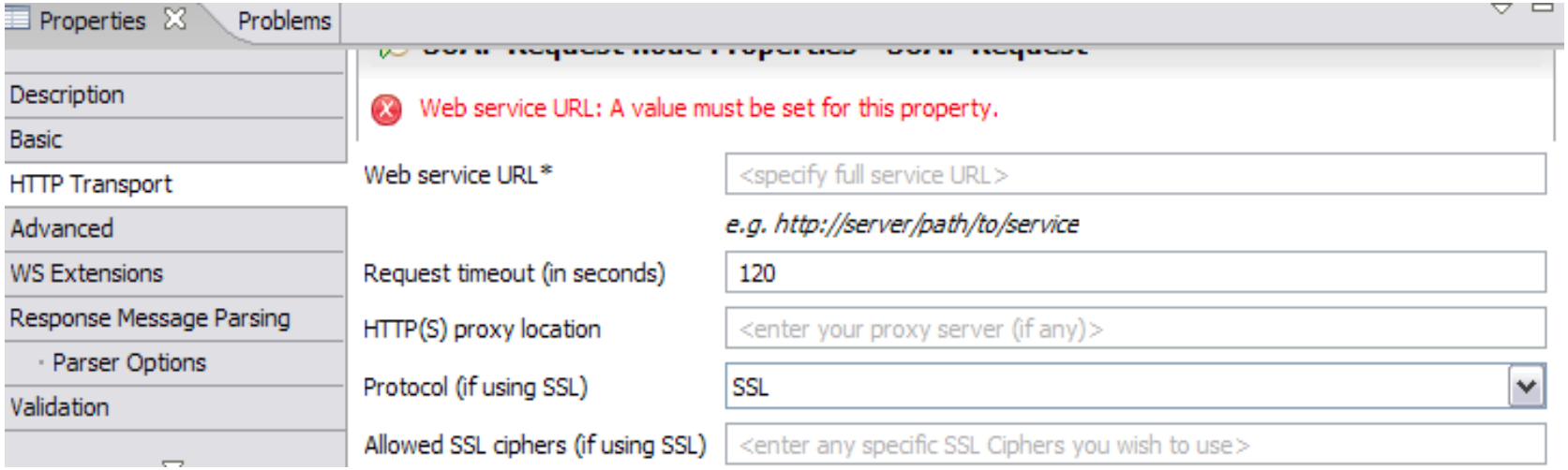
9. Set the truststore password in registry

mqsisetdbparms <broker name> -n brokerTruststore::password -u temp –p <password>

10. Restart the broker for changes to take effect

Transport security Configuration - SOAPRequest

- SOAPRequest node configuration



- Select Protocol
  - SSL (default until V6.1.0.3)
  - SSLV3
  - TLS (default after V6.1.0.4)
- Optional - HTTPS proxy location and allowed SSL ciphers

Transport Security Configuration - SOAPInput

Configuration of SOAPInput nodes

- Create the required keystores and truststores
- Exchange and add certificates
- Configure the httpsconnector at ExecutionGroup level

OR

- Configure the JVM Manager for Execution Group containing the message flow with these nodes

OR

- Configure the broker registry
- Configure the message flow SOAPInput node
- Deploy the message flow

Transport Security Configuration - SOAPInput

One-way SSL

1. Create a keystore with a new self-signed certificate

keytool -genkey -storepass <password > -keystore <keystore file> -alias <self-signed certificate>

2. Extract the certificate from the keystore file for Requestor

keytool -export -alias tomcat -file <name of certificate file> -keystore <keystore file> -storepass <password>

Two-way SSL – In addition to the above

3. Enable ClientAuth to true

mqsichangeproperties <broker name> -e <eg name> -o HTTPSConnector -n clientAuth -v true

4. Import the certificate provided by requester into truststore

keytool -import -alias mykey -file <name of certificate file> -keystore <fully qualified path to truststore file> -storepass <password>

Transport Security Configuration - SOAPInput

Configure the JVM Manager for Execution Group

1. Set the keystore file to the Execution Group

mqsichangeproperties <broker name> -e <eg name> -o ComIbmJVMManager -n keystoreFile -v <keystore file name>

2. Set the keystore password

mqsichangeproperties <broker name> -e <eg name> -o ComIbmJVMManager -n keystorePass -v brokerKeystore::password

3. Set the truststore file to the Execution Group

mqsichangeproperties <broker name> -e <eg name> -o ComIbmJVMManager -n truststoreFile -v <keystore file name>

4. Set the truststore password

mqsichangeproperties <broker name> -e <eg name> -o ComIbmJVMManager -n truststorePass -v brokerTruststore::password

Transport Security Configuration - SOAPInput

5. Set the broker keystore password in registry

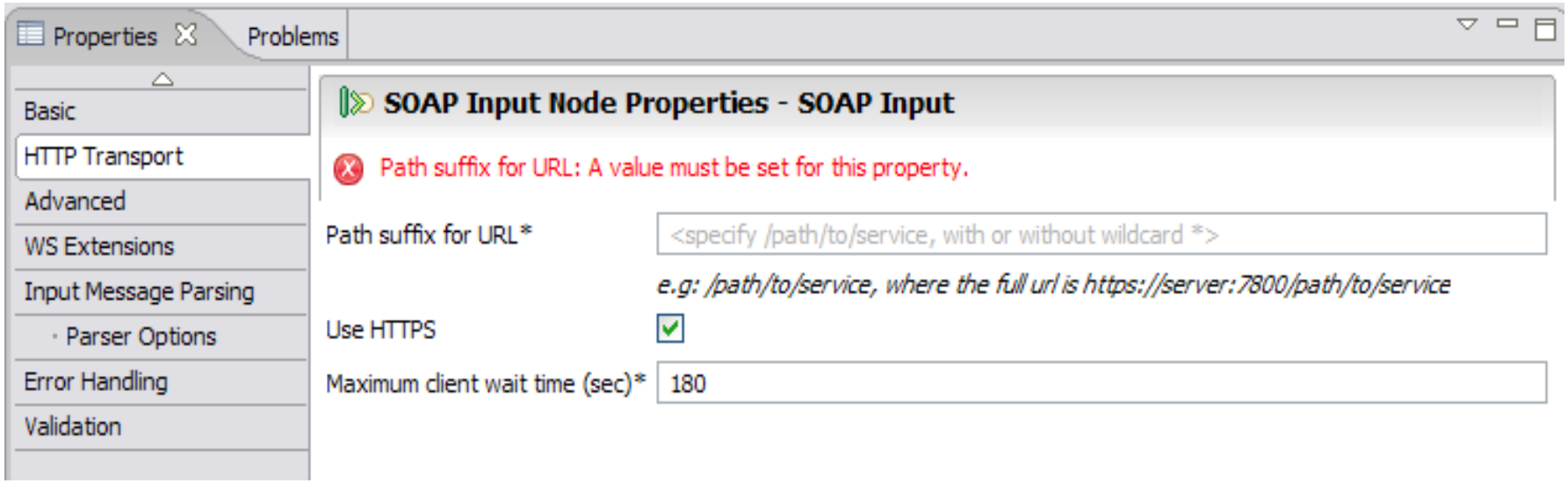
mqsisetdbparms <broker name> -n brokerKeystore::password -u temp -p <password>

6. Set the broker truststore password in registry

mqsisetdbparms <broker name> -n brokerTruststore::password -u temp -p <password>

Transport security Configuration - SOAPInput

- SOAPInput node configuration



- Check Use HTTPS box in SOAPInput node properties
- If the address contains an https URL, the check box is automatically selected
- User can manually override this property value

Known Problems

- Known problems with default protocols – fixed in Fixpack 04

SOAPRequest node defaults to SSL but SOAPInput node defaults to TLS

- Modify the SOAPRequest node to use TLS under Protocol setting in the "HTTP Transport" tab in the toolkit

Or

- Change the protocol on the execution group HTTPListener via command mqsichangeproperties <Broker name> -e <EG Name> -o HTTPSConnector -n sslProtocol -v SSLv3

- SOAPInput node ignores value set for keystoreFile at execution group HTTPSConnector level – fixed in Fixpack03

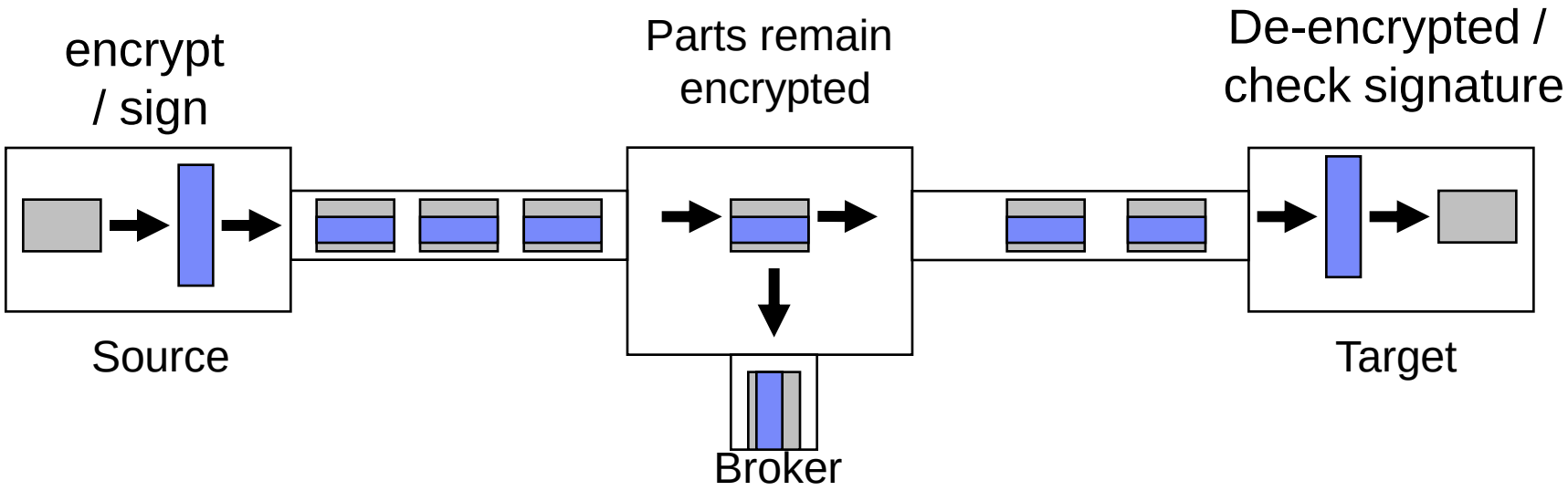
WS-Security

Agenda

- **Introduction to WS-Security**
- **WS-Security Configuration**
  - The Policy Set Editor
  - Policy Set Assignment

Introduction to WS-Security

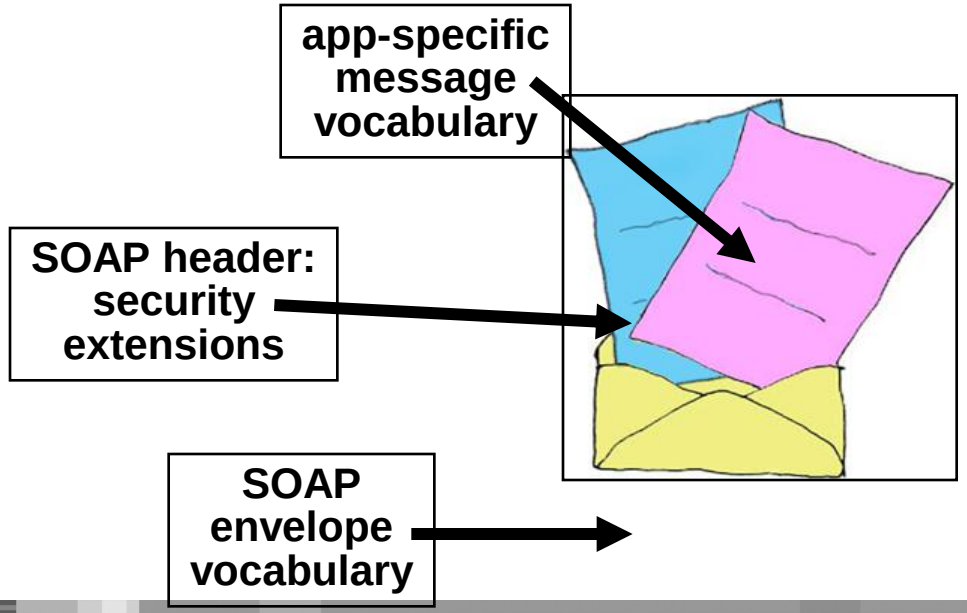
- Finer granularity
- Parts of the message may be encrypted in different ways with different keys
- Parts of a message may be (multiply) encrypted and signed
- WS-Security can be used in insecure transports



Introduction to WS-Security

Soap Message Structure

- The SOAP specification defines the “envelope” vocabulary
  - The "envelope" wraps the message itself
- WS-Security defines the <Security> element, which allows security extensions to be placed in <soapenv:header>
  - Username/password
  - X.509 certificate
  - Encryption details
  - XML Signature



Introduction to WS-Security

Mechanisms of securing web-services

- **Confidentiality**
  - Keep secrets
  - uses **message encryption** to ensure that no party or process can access the message
- **Integrity**
  - Prevent tampering
  - uses message signing to ensure that information is not changed, altered, or lost
  - XML **digital signature** is generated
  - signature is not validated if the data changes
- **Authentication**
  - verify that the identity is valid
  - Accessible and useable by an **authorized** entity
  - uses a security token to validate the user and determine whether a client is valid

Introduction to WS-Security

The WS-Security specification defines a vocabulary that can be used inside the SOAP envelope

<wsse:Security> is the wrapper for security-related information

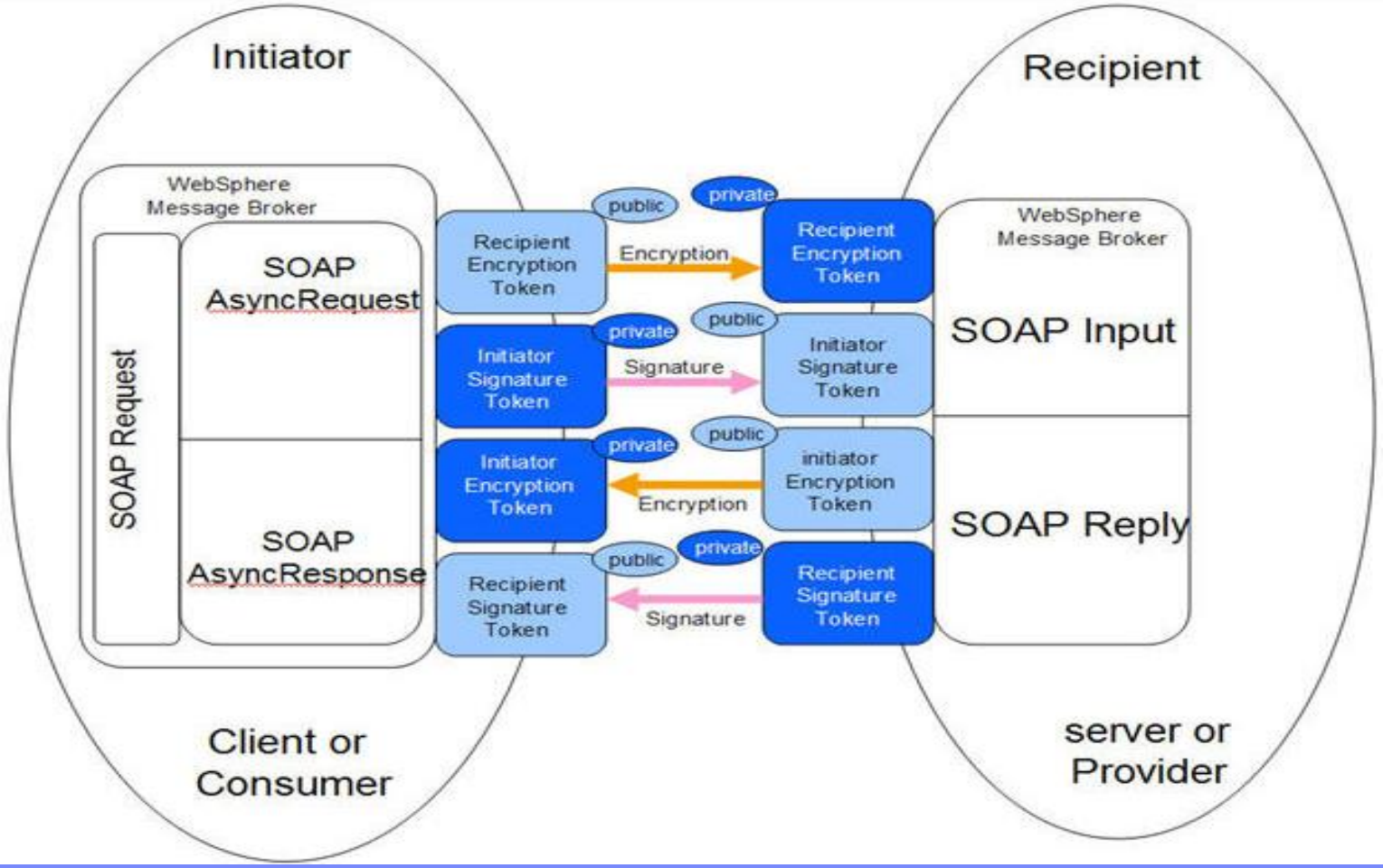
Soap message with ws-security:

```
<Envelope
  xmlns="http://schemas.xmlsoap.org/soap/envelope/">
  <Header>
    <wsse:Security
                    <!.. ws-security namespace  ..!>
      xmlns:wsse="http://schemas.xmlsoap.org/ws/2003/07/secext">
        <!.. Security Information for Authentication or
             XML Signature or XML Encryption is included here
    ..!>
        <!.. Username token for Authentication looks like this..!>
                    <wsse:UsernameToken wsu:ID="myToken">
        <wsse:Username>IBM</wsse:Username>
        <wsse:Password>p@$$w0rd</wsse:Password>
                    </wsse:UsernameToken>
              <!...XML Digital Signature entries looks…!>
                    <wsse:BinarySecurityToken EncodingType="wsse:Base64Binary">
                      AIIGQtCC7ZxO5tIgerPcid1z ... [truncated]
                    </wsse:BinarySecurityToken>
                    <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
                     ....signature data....
                    </ds:Signature>
              <!.....XML Encryption entries looks like….!>
            <xenc:EncryptedData xmlns:dsig="http://www.w3.org/2000/09/xmldsig#">
              <xenc:EncryptValue>akdfaknqerandfauydfrajndfh3k973...(Truncated)</xenc:EncryptValue>
            </xenc:EncryptData>
    </wsse:Security>
  </Header>
  <Body>      ............      </Body>
</Envelope>
```

Introduction to WS-Security

WS-Security concepts

Common terms used for all the SOAP nodes



WS-Security Configuration

WMB WS-Security Configuration Steps

- Set up the keystores and truststores
  - Use keytool / Ikeyman as explained in previous charts
- Create the policies
  - Use Policy Set Editor
  - Define any combination of Confidentiality, Authentication and Integrity
  - Define message parts
- Create provider and consumer policy set bindings
  - Define public and private keys for encrypting and decrypting data
- Configure and deploy the bar files

WS-Security Configuration - Keystores

- View the contents of consumer's keystore

keytool -list -keystore client.keystore -storepass client –v

```
Keystore type: jks
Keystore provider: IBMJCE

Your keystore contains 2 entries

Alias name: servercert
Creation date: May 14, 2009
Entry type: trustedCertEntry

Owner: CN=server, O=Web Services Guided Tour, C=GB
Issuer: CN=server, O=Web Services Guided Tou
Serial number: 478b3c55
Valid from: 5/14/09 9:41 AM until: 9/31/36 9:41 A
Certificate fingerprints:
        MD5:  7E:5B:FD:31:DA:D1:81:44:74:28:56
        SHA1: B8:4D:85:79:9D:51:62:0F:3F:CC:9
*******************************************
```

```
Alias name: clientcert
Creation date: May 14, 2009
Entry type: keyEntry
Certificate chain length: 1
Certificate[1]:
Owner: CN=client, O=Web Services Guided Tour, C=GB
Issuer: CN=client, O=Web Services Guided Tour, C=GB
Serial number: 478b3c49
Valid from: 5/14/09 9:41 AM until: 9/31/36 9:41 AM
Certificate fingerprints:
        MD5:  63:49:B3:73:68:78:A7:44:54:94:61:25:7C:3F:7C:3C
        SHA1: F9:0D:52:B4:9A:20:C9:2C:61:74:F5:CB:DE:7F:FF:3E:32:82:7F:17
*******************************************
```

WS-Security Configuration - Keystores

- View the contents of Provider's keystore

keytool -list -keystore server.keystore -storepass server –v

```
Keystore type: jks
Keystore provider: IBMJCE

Your keystore contains 2 entries

Alias name: servercert
Creation date: May 14, 2009
Entry type: keyEntry
Certificate chain length: 1
Certificate[1]:
Owner: CN=server, O=Web Services Guided Tour, C=GB
Issuer: CN=server, O=Web Services Guided Tour, C=GB
Serial number: 478b3c55
Valid from: 5/14/09 9:41 AM until: 9/31/36 9:41 A
Certificate fingerprints:
        MD5: 7E:5B:FD:31:DA:D1:81:44:74:28:56
        SHA1:B8:4D:85:79:9D:51:62:0F:3F:CC:9
*******************************************
```

```
Alias name: clientcert
Creation date: May 14, 2009
Entry type: trustedCertEntry

Owner: CN=client, O=Web Services Guided Tour, C=GB
Issuer: CN=client, O=Web Services Guided Tour, C=GB
Serial number: 478b3c49
Valid from: 5/14/09 9:41 AM until: 9/31/36 9:41 AM
Certificate fingerprints:
        MD5:  63:49:B3:73:68:78:A7:44:54:94:61:25:7C:3F:7C:3C
        SHA1: F9:0D:52:B4:9A:20:C9:2C:61:74:F5:CB:DE:7F:FF:3E:32:82:7F:17
*******************************************
```

WS-Security Configuration – Policy sets

Create the Policies – To configure Encryption, Signing and Authorization

WS-Security Configuration – Policy sets

Policy Sets for "BK61"

Set up Policy Sets and Policy Set Bindings for this broker

Use these panels to define encryption and signing asymmetric tokens to apply to your message.

- Policy Sets
  - WSS10Default
  - WSSecurity
    - WS-Security
      - Authentication Tokens
      - Message Level Protection
- Policy Set Bindings
  - WSS10Default

Select message level protection to enable encryption and signing in this policy

- [x] Message level protection
  - [ ] Require signature confirmation
  - [ ] Include timestamp in security header

Security header layout:

- (•) Strict - declarations must precede use
- ( ) Lax - order of content can vary
- ( ) Lax but timestamp required first in header
- ( ) Lax but timestamp required last in header

Add Delete

Finish Cancel

2. Enable Message Part Protection

Policy Sets for "BK61"

Set up Policy Sets and Policy Set Bindings for this broker

Use this panel to define asymmetric tokens which represents the public and private keys used for both signature and encryption.

- Policy Sets
  - WSS10Default
  - WSSecurity
    - WS-Security
      - Authentication Tokens
      - Message Level Protection
        - Tokens
        - Algorithms
      - Message Part Protection
- Policy Set Bindings
  - WSS10Default

Message Integrity/ Confidentiality Policies

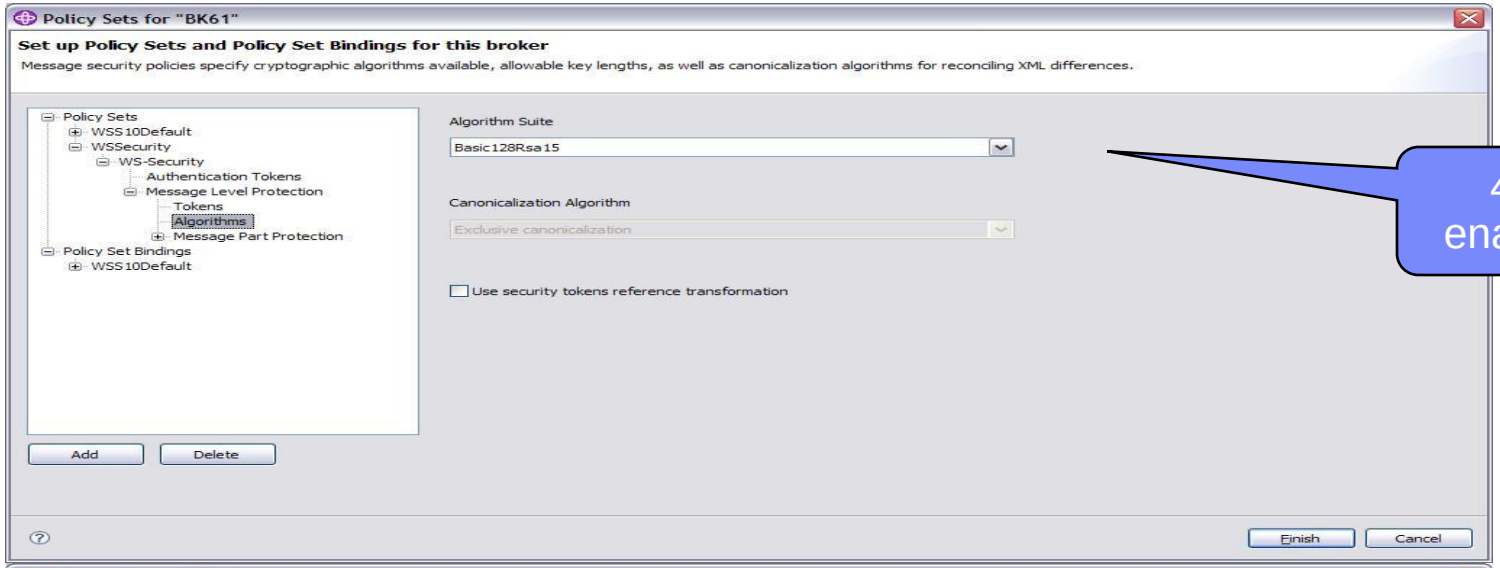
Token Name	Token Type	WS-Security Version	X.509 Type
InitiatorToken	Initiator	1.0	X.509 Version 3
RecipientToken	Recipient	1.0	X.509 Version 3

Add Delete

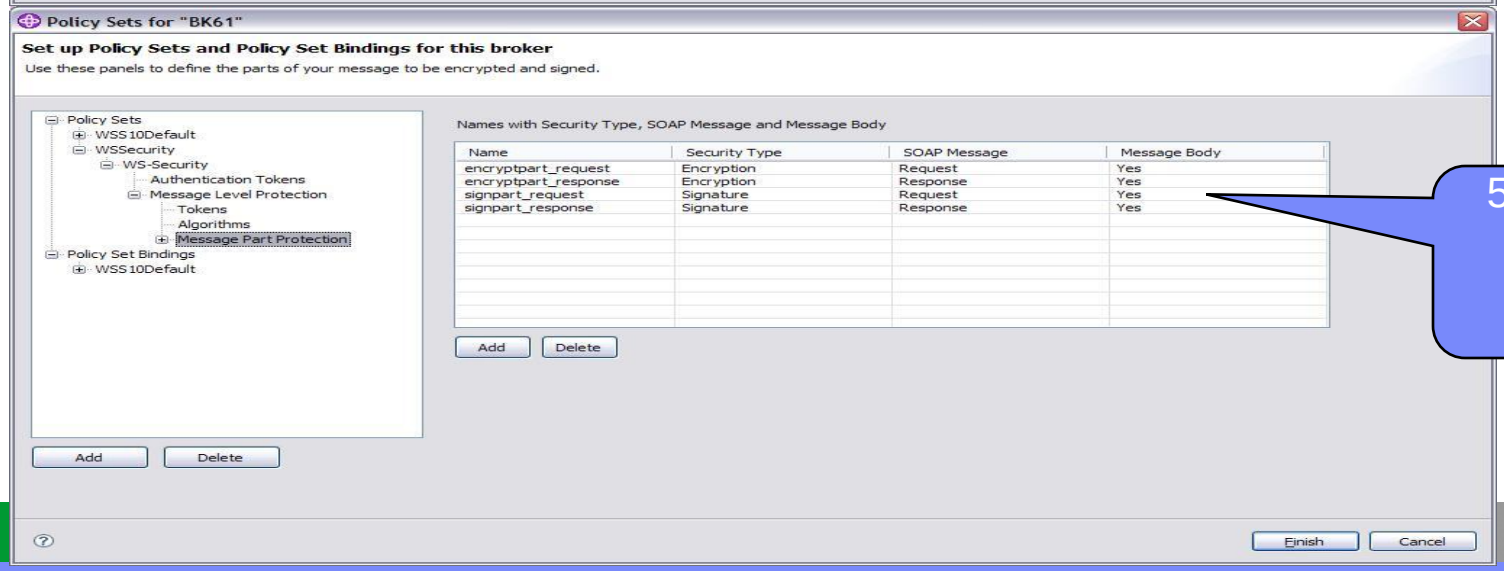
Finish Cancel

3. Define Encryption and signing Tokens

WS-Security Configuration – Policy sets



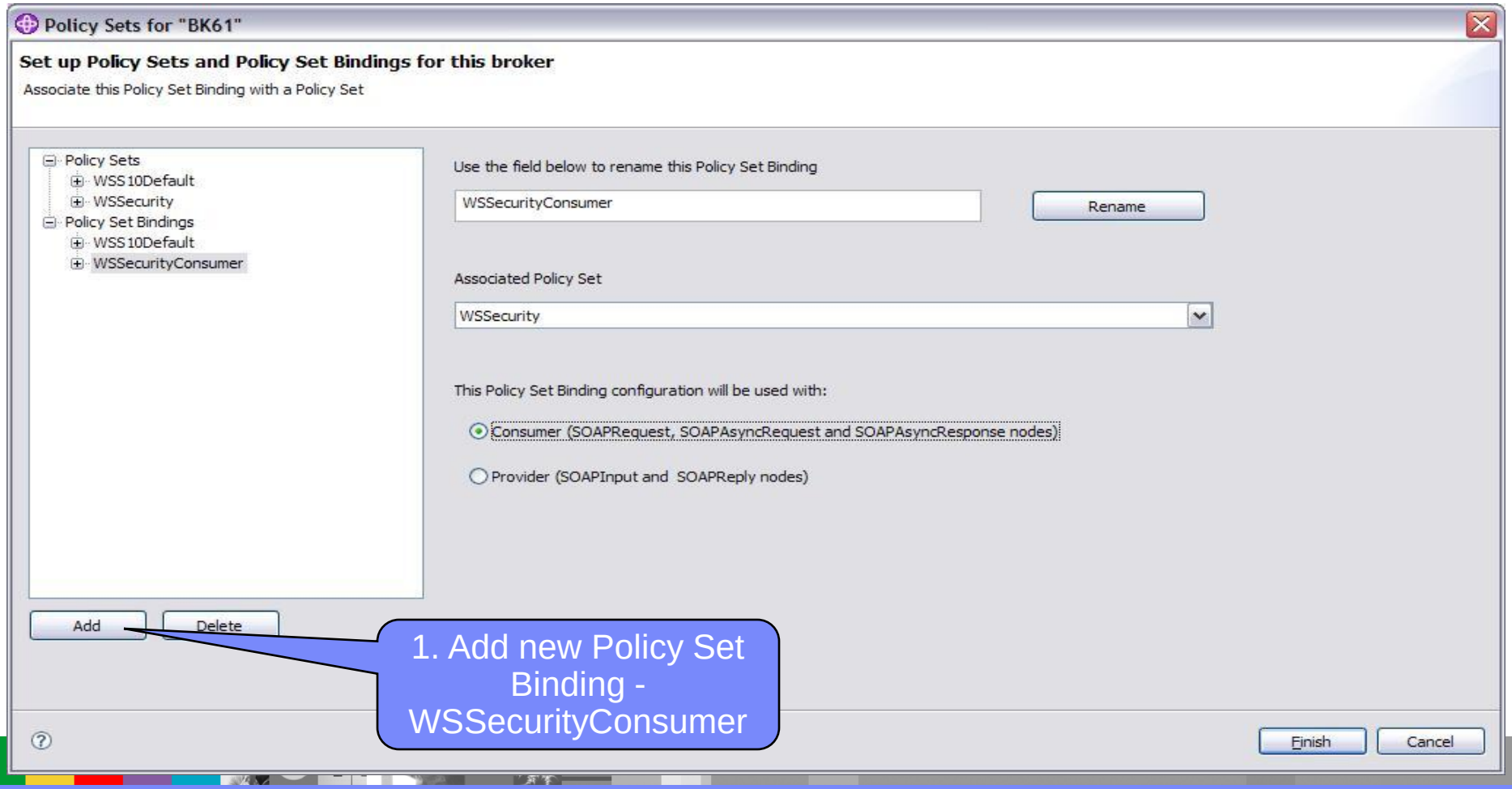
4. Require or enable Algorithms



5. Define parts of message to be encrypted and signed

WS-Security Configuration – Policy set Bindings

Create Policy Set Bindings associated with the above created Policies



1. Add new Policy Set Binding - WSSecurityConsumer

WS-Security Configuration – Consumer Bindings

Message Part Policy / Associate message part with signing and encryption token

Key Information / Define key and trust information

Policy Sets for "BK61"

Set up Policy Sets and Policy Set Bindings for this broker

Use this panel to associate any message part protection tokens with asymmetric encryption or signing tokens defined in the associated policy set.

- Policy Sets
  - WSS10Default
  - WSSecurity
- Policy Set Bindings
  - WSS10Default
  - WSSecurityConsumer
    - WS-Security
      - Authentication Tokens
      - Message Part Policy
        - Key Information
      - Message Expiration
  - WSSecurityProvider

Add Delete

Message Part encryption policies

Encryption Protection	Timestamp	Nonce	Encryption	Token	Token Type	Order
request:encryptpart_request	Yes	Yes	Data	RecipientToken	KEYID	2
response:encryptpart_response	Yes	Yes	Data	InitiatorToken	N/A	N/A

Message Part signature policies

Signature Protection	Token	Token Type	Order
response:signpart_response	RecipientToken	N/A	N/A
request:signpart_request	InitiatorToken	STRREF	1

Finish Cancel

- Policy Sets
  - WSS10Default
  - WSSecurity
- Policy Set Bindings
  - WSS10Default
  - WSSecurityConsumer
    - WS-Security
      - Authentication Tokens
      - Message Part Policy
        - Key Information
      - Message Expiration
  - WSSecurityProvider

Add Delete

Key Information

Token	Key Name	Key Alias	Trust
InitiatorToken	CN=client, O=Web Services Guided Tour, C=GB	clientcert	N/A
RecipientToken	CN=server, O=Web Services Guided Tour, C=GB	servercert	TrustStore

Finish Cancel

WS-Security Configuration – Consumer Bindings

- Match Policy Set tokens to message parts
- Define the order in which signatures are applied
- Define necessary key information for signing messages

Message Part signature policies

Signature Protection	Token	Token Type	Order
response:signpart_response	RecipientToken	N/A	N/A
request:signpart_request	InitiatorToken	STRREF	1

Tokens defined in message set

Key Information

Token	Key Name	Key Alias	Trust
InitiatorToken	CN=client, O=Web Services Guided Tour, C=GB	clientcert	N/A
RecipientToken	CN=server, O=Web Services Guided Tour, C=GB	servercert	TrustStore

Key information defined in keystore / truststore
Refer to page 27
(client.keystore)

WS-Security Configuration – Consumer Bindings

- Match Policy Set tokens to message parts
- Define ordering and key locations
- May be combined with Integrity settings if defined in the Policy Set

Message Part encryption policies

Encryption Protection	Timestamp	Nonce	Encryption	Token	Token Type	Order
request:encryptpart_request	Yes	Yes	Data	RecipientToken	KEYID	2
response:encryptpart_response	Yes	Yes	Data	InitiatorToken	N/A	N/A

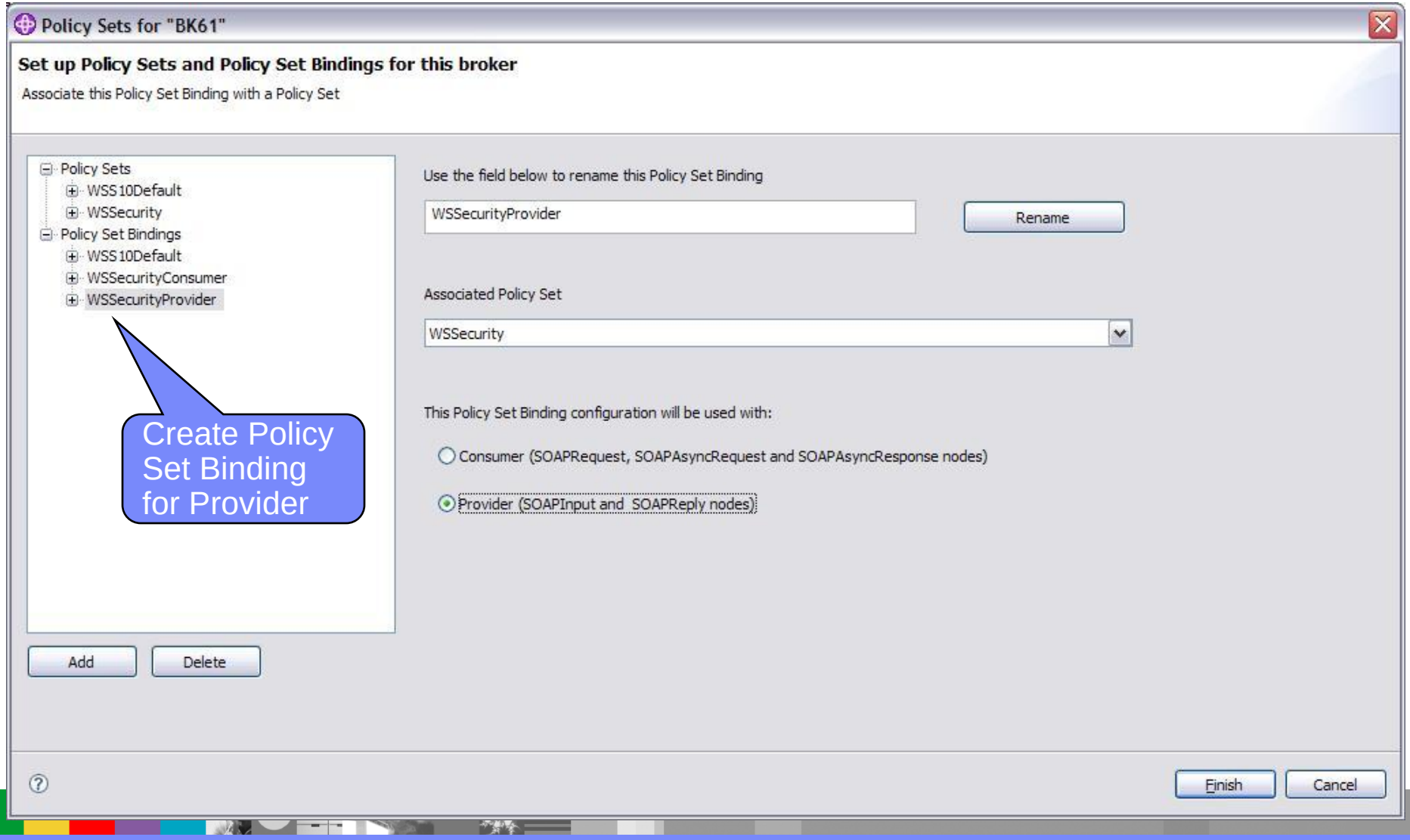
Tokens defined in message set

Key Information

Token	Key Name	Key Alias	Trust
InitiatorToken	CN=client, O=Web Services Guided Tour, C=GB	clientcert	N/A
RecipientToken	CN=server, O=Web Services Guided Tour, C=GB	servercert	TrustStore

Key information defined in keystore / truststore
Refer to page 27
(client.keystore)

WS-Security Configuration – Policy set Bindings



WS-Security Configuration – Provider Bindings

Message Part Policy / Associate message part with signing and encryption token

Key Information / Define key and trust information

Policy Sets for "BK61"

Set up Policy Sets and Policy Set Bindings for this broker

Use this panel to associate any message part protection tokens with asymmetric encryption or signing tokens defined in the associated policy set.

- Policy Sets
  - WSS10Default
  - WSSecurity
- Policy Set Bindings
  - WSS10Default
  - WSSecurityConsumer
  - WSSecurityProvider
    - WS-Security
      - Authentication Tokens
      - Message Part Policy
        - Key Information
      - Message Expiration

Add Delete

Message Part encryption policies

Encryption Protection	Timestamp	Nonce	Encryption	Token	Token Type	Order
request:encryptpart_request	Yes	Yes	Data	RecipientToken	N/A	N/A
response:encryptpart_response	Yes	Yes	Data	InitiatorToken	KEYID	2

Message Part signature policies

Signature Protection	Token	Token Type	Order
response:signpart_response	RecipientToken	STRREF	1
request:signpart_request	InitiatorToken	N/A	N/A

Finish Cancel

- Policy Sets
  - WSS10Default
  - WSSecurity
- Policy Set Bindings
  - WSS10Default
  - WSSecurityConsumer
  - WSSecurityProvider
    - WS-Security
      - Authentication Tokens
      - Message Part Policy
        - Key Information
      - Message Expiration

Add Delete

Key Information

Token	Key Name	Key Alias	Trust
RecipientToken	CN=server, O=Web Services Guided Tour, C=GB	servercert	N/A
InitiatorToken	CN=client, O=Web Services Guided Tour, C=GB	clientcert	TrustStore

Finish Cancel

WS-Security Configuration – Provider Bindings

- Match Policy Set tokens to message parts
- Define the order in which signatures are applied
- Define necessary key information for signing messages

Message Part signature policies

Signature Protection	Token	Token Type	Order
response:signpart_response	RecipientToken	STRREF	1
request:signpart_request	InitiatorToken	N/A	N/A

Tokens defined in message set

Key Information

Token	Key Name	Key Alias	Trust
RecipientToken	CN=server, O=Web Services Guided Tour, C=GB	servercert	N/A
InitiatorToken	CN=client, O=Web Services Guided Tour, C=GB	clientcert	TrustStore

Key information defined in keystore / truststore
Refer to page 28
(server.keystore)

WS-Security Configuration – Provider Bindings

- Match Policy Set tokens to message parts
- Define ordering and key locations
- May be combined with Integrity settings if defined in Policy Set

Message Part encryption policies

Encryption Protection	Timestamp	Nonce	Encryption	Token	Token Type	Order
request:encryptpart_request	Yes	Yes	Data	RecipientToken	N/A	N/A
response:encryptpart_response	Yes	Yes	Data	InitiatorToken	KEYID	2

Tokens defined in message set

Key Information

Token	Key Name	Key Alias	Trust
RecipientToken	CN=server, O=Web Services Guided Tour, C=GB	servercert	N/A
InitiatorToken	CN=client, O=Web Services Guided Tour, C=GB	clientcert	TrustStore

Key information defined in keystore / truststore
Refer to page 28
(server.keystore)

WS-Security Configuration - Runtime

- Runtime Configuration

Use the following commands to set up the provider keystore and truststore:

- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n keystoreFile -v [Location of server keystore]
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n keystoreType -v JKS
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n keystorePass -v Provider::password
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n truststoreFile -v [Location of server keystore]
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n truststoreType -v JKS
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n truststorePass -v Provider::password
- mqsisetdbparms <broker> -n Provider::password -u temp -p server

Use the following commands to set up the consumer keystore and truststore:

- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n keystoreFile -v [Location of server keystore]
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n keystoreType -v JKS
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n keystorePass -v Consumer::password
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n truststoreFile -v [Location of server keystore]
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n truststoreType -v JKS
- mqsichangeproperties <broker> -e <EG> -o ComIbmJVMManager -n truststorePass -v Consumer::password
- mqsisetdbparms <broker> -n Consumer::password -u temp -p client

WS-Security Configuration - Deploy

- Selection of Policy Set and Binding made in the .bar file

Configure properties of selected built resource.

Additional Instances	0	
Commit Count	1	
Commit Interval	0	
Consumer Policy Set	WSSecurity	Edit...
Consumer Policy Set Bindings	WSSecurityConsumer	Edit...
Coordinated Transaction	☐	
Monitoring Profile Name		
Provider Policy Set		Edit...
Provider Policy Set Bindings		Edit...
Security Profile Name		

Configure properties of selected built resource.

Additional Instances	0	
Commit Count	1	
Commit Interval	0	
Consumer Policy Set		Edit...
Consumer Policy Set Bindings		Edit...
Coordinated Transaction	☐	
Monitoring Profile Name		
Provider Policy Set	WSSecurity	Edit...
Provider Policy Set Bindings	WSSecurityProvider	Edit...
Security Profile Name		

WS-Security Configuration

- Validate the configuration
  - Which WS-Security capabilities are used
    - Integrity Inbound/Outbound
    - Confidentiality Inbound/Outbound
  - Which certificates are used and where must they be kept
    - The same key may be used for multiple scenarios and specified in different places in the Policy Set Binding
    - Encrypt a message on output of the request node
    - Encrypt a message on response to a Soap Input node
- Deploy the bar file

Additional Resources

- WebSphere Message Broker V6.1 Information Center
http://publib.boulder.ibm.com/infocenter/wmbhelp/v6r1m0/index.jsp

- Implementation of new security features in WMB V6.1
http://www-01.ibm.com/support/docview.wss?uid=swg27015336&aid=1

- Implementating SSL with HTTP nodes in WMB V6.x
http://www-01.ibm.com/support/docview.wss?uid=swg27012172&aid=1

- Using new features in WebSphere Message Broker V6.1
http://www.redbooks.ibm.com/redpapers/abstracts/redp4458.html?Open

- Session Q31 at WSTC 2008 by Stephen Cox & Peter Crocker

- Implementing WS-Security
http://www.ibm.com/developerworks/webservices/library/ws-security.html

- Signing flows for WS-Security
http://www.ibm.com/developerworks/webservices/library/ws-security/index.html

Additional WebSphere Product Resources

- Discover the latest trends in WebSphere Technology and implementation, participate in technically-focused briefings, webcasts and podcasts at: http://www.ibm.com/developerworks/websphere/community/
- Learn about other upcoming webcasts, conferences and events: http://www.ibm.com/software/websphere/events_1.html
- Join the Global WebSphere User Group Community: http://www.websphere.org
- Access key product show-me demos and tutorials by visiting IBM® Education Assistant: http://www.ibm.com/software/info/education/assistant
- View a Flash replay with step-by-step instructions for using the Electronic Service Request (ESR) tool for submitting problems electronically: http://www.ibm.com/software/websphere/support/d2w.html
- Sign up to receive weekly technical My Notifications emails: http://www.ibm.com/software/support/einfo.html

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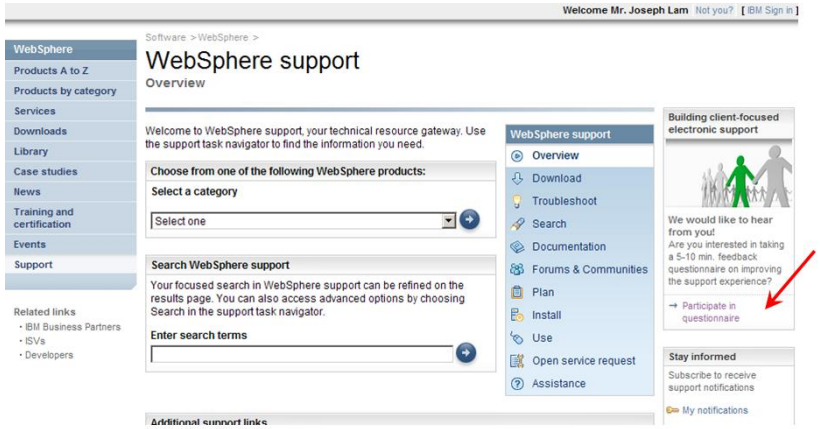

Or go to https://www.ibm.com/survey/oid/wsb.dll/s/ag21f?wsb34=swg_user

Questions and Answers