15

Securing Composite Applications and Invoking Secured Services

Objectives

After completing this lesson, you should be able to:

- Describe Web Service Security
- Describe Oracle Web Services Manager and its use in securing SOA composites
- Discuss security and identity propagation in SOA composites
- Attach security policies to endpoints at design time and run time

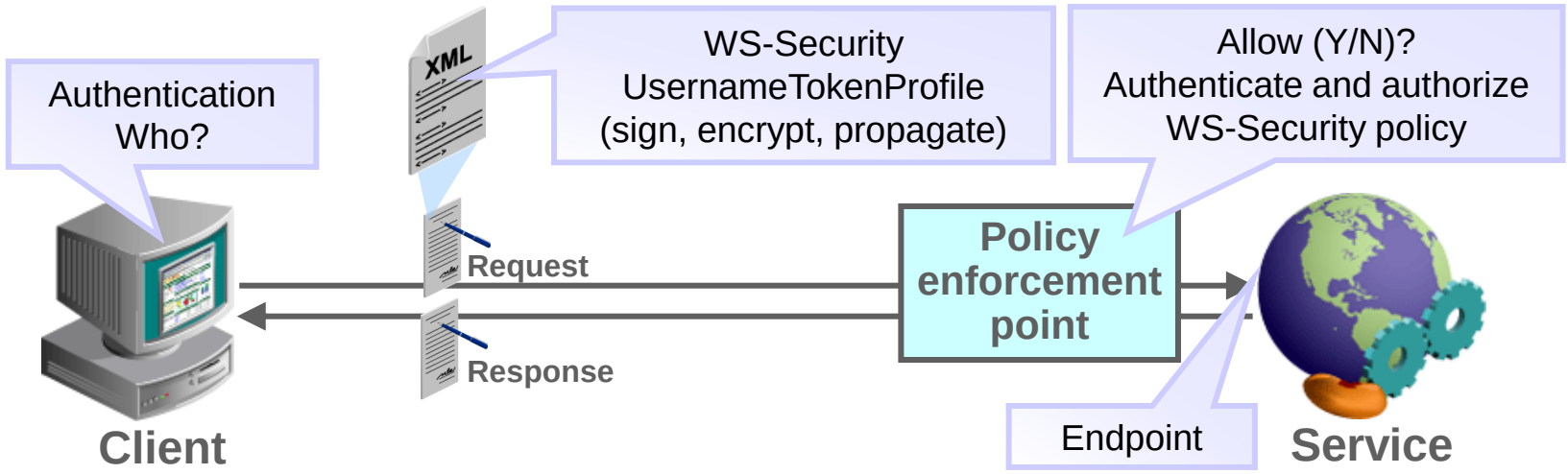
Agenda

- Web Service Security
- Oracle Web Services Manager
- Securing Composite Applications

Web Service Security: Introduction

Securing web services by using WS-Security standards:

- Supported by WS-Security policy standards, among others
- Applied to service endpoints to provide:
  - Authentication and authorization
  - Signing and encrypting the whole message or parts thereof
  - Integrity (reliable messaging), confidentiality, and propagation of credentials



Web Service Security: Introduction

WS-Security (WSS) 1.0 and 1.1 standards enable:

- Authenticating in multiple ways with security tokens
- Associating different identities with service requests
- Signing or encrypting the whole message body, or a single XML element of the body payload
- Adding credentials in the SOAP header, as in this example:

```
<soap:Envelope xmlns:soap="..." xmlns:wsse="...">
  <soap:Header> ...
    <wsse:Security>
      <wsse:UsernameToken>
        <wsse:Username>jcooper</wsse:Username>
        <wsse:Password>welcome1</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security> ...
  </soap:Header> ...
</soap:Envelope>
```

Security token

Securing Endpoints: Examples

```
<service name="receiveOrder" ui:wsdlLocation="receiveOrder.wsdl">
<interface.wsdl interface=".../receiveOrder#wsdl.interface(execute)"/>
 <binding.ws port=".../receiveOrder#wsdl.endpoint(receiveOrder/execute)">
   <wsp:PolicyReference URI="oracle/wss_username_token_service_policy"
      orawsp:category="security" orawsp:status="enabled"/>
 </binding.ws> </service
```

Policy name is used to enforce assertions.

In `composite.xml`, security policies are attached in the bindings of service endpoints.

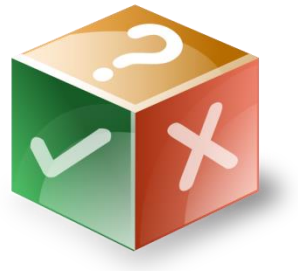
Security policies are also attached in the bindings of external reference endpoints.

```
<reference name="getCreditCardStatus" ... >
<interface.wsdl interface=".../getStatusByCC#wsdl.interface(execute)"/>
 <binding.ws
port=" ... /getStatusByCC#wsdl.endpoint(getStatusByCC/execute_pt)"
    location=" ... /validationForCC/getStatusByCC?WSDL">
   <wsp:PolicyReference URI="oracle/wss11_saml_token_client_policy"
     orawsp:category="security"  orawsp:status="enabled"/>
 </binding.ws> </reference>
```

Quiz

Authentication can be incorporated by using _____ .

a. Signature
b. Security tokens
c. Encryption



Agenda

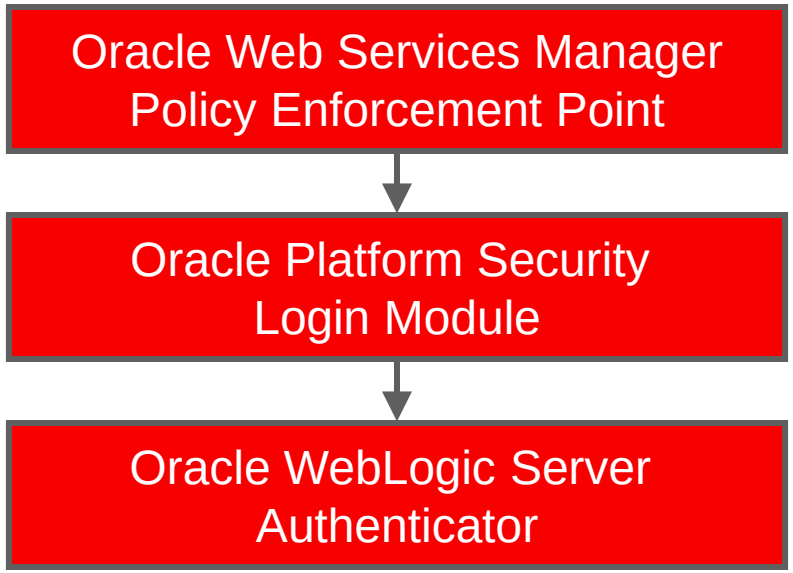
- Web Service Security
- Oracle Web Services Manager
- Securing Composite Applications

Oracle Web Services Manager

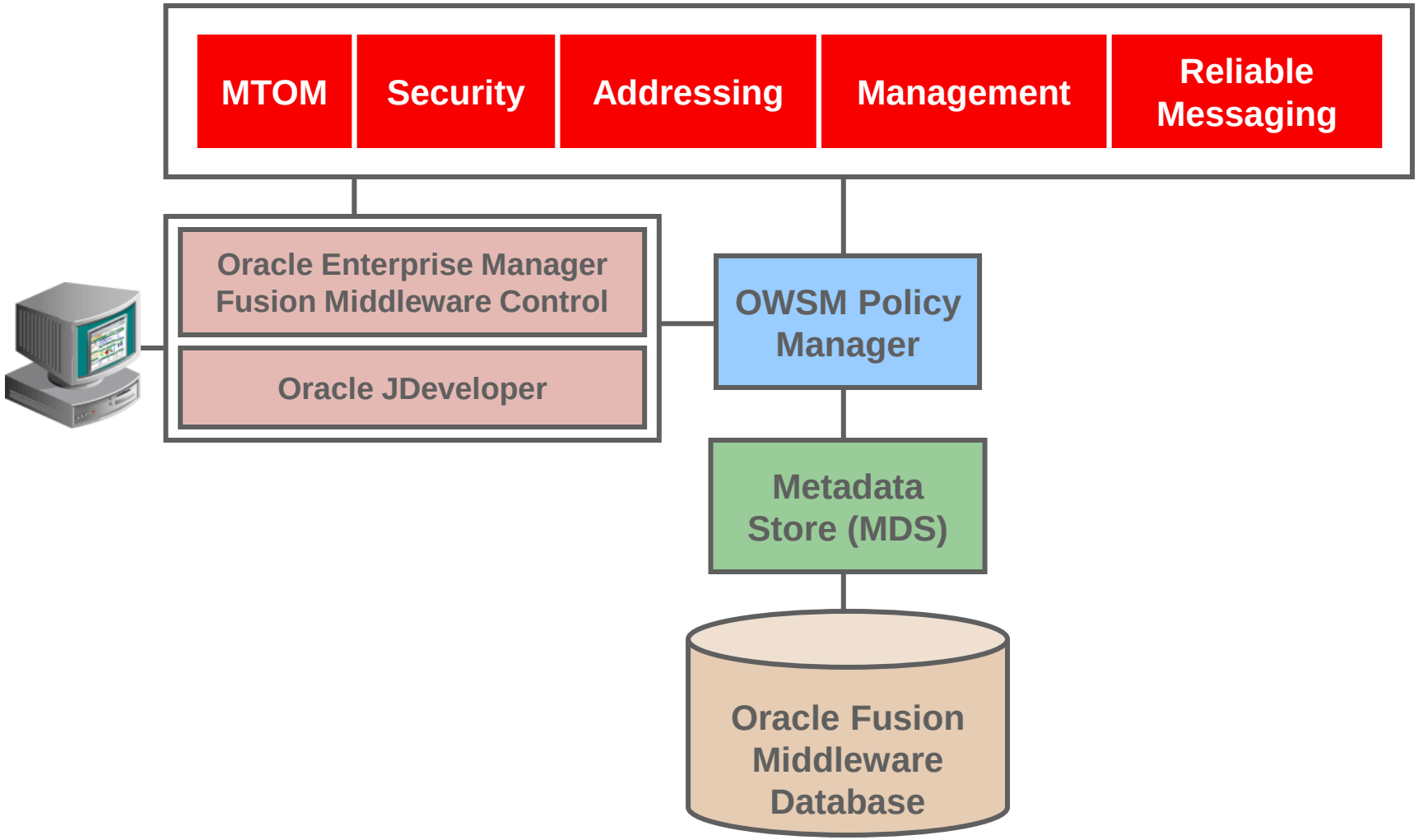
- Oracle Web Services Manger (OWSM) is a security and management system that provides a common security infrastructure for web services applications.
- OWSM is based on three main operations:
  - Define
  - Enforce
  - Monitor

OWSM Policy Framework

- Provides a policy framework to manage and secure web services consistently
- Is built by using the WS-Policy standard and leverages the OPSS Login Module and the Oracle WebLogic Server authenticator for authentication and authorization



Components of Oracle Web Services Manager Architecture



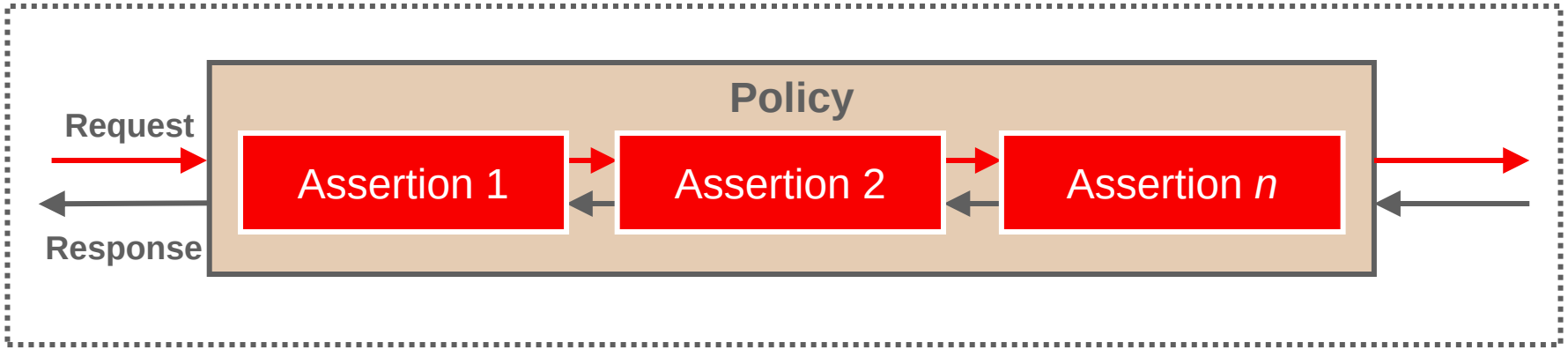
Policies: Introduction

Policies describe the capabilities and requirements of a web service. The different types of policies that are supported in Oracle Fusion Middleware 12*c* are:

- WS-ReliableMessaging
- Management
- WS-Addressing
- Security
- Message Transmission Optimization Mechanism (MTOM)

Policy Assertions

- OWSM policies contain one or more assertions that exhibit a particular behavior.
- Assertions are executed in the order in which they are listed in the policy.



Types of Security Tokens

Security tokens are used to convey credential information to services. The security tokens that are supported are:

- UsernameToken: With plain type and digest password
- BinarySecurityToken: For embedding certificates
- EncryptedData: For representing a SOAP node or attachment, which is encrypted

Note: SAML is used to exchange authentication and authorization data, such as sending security tokens between security domains.

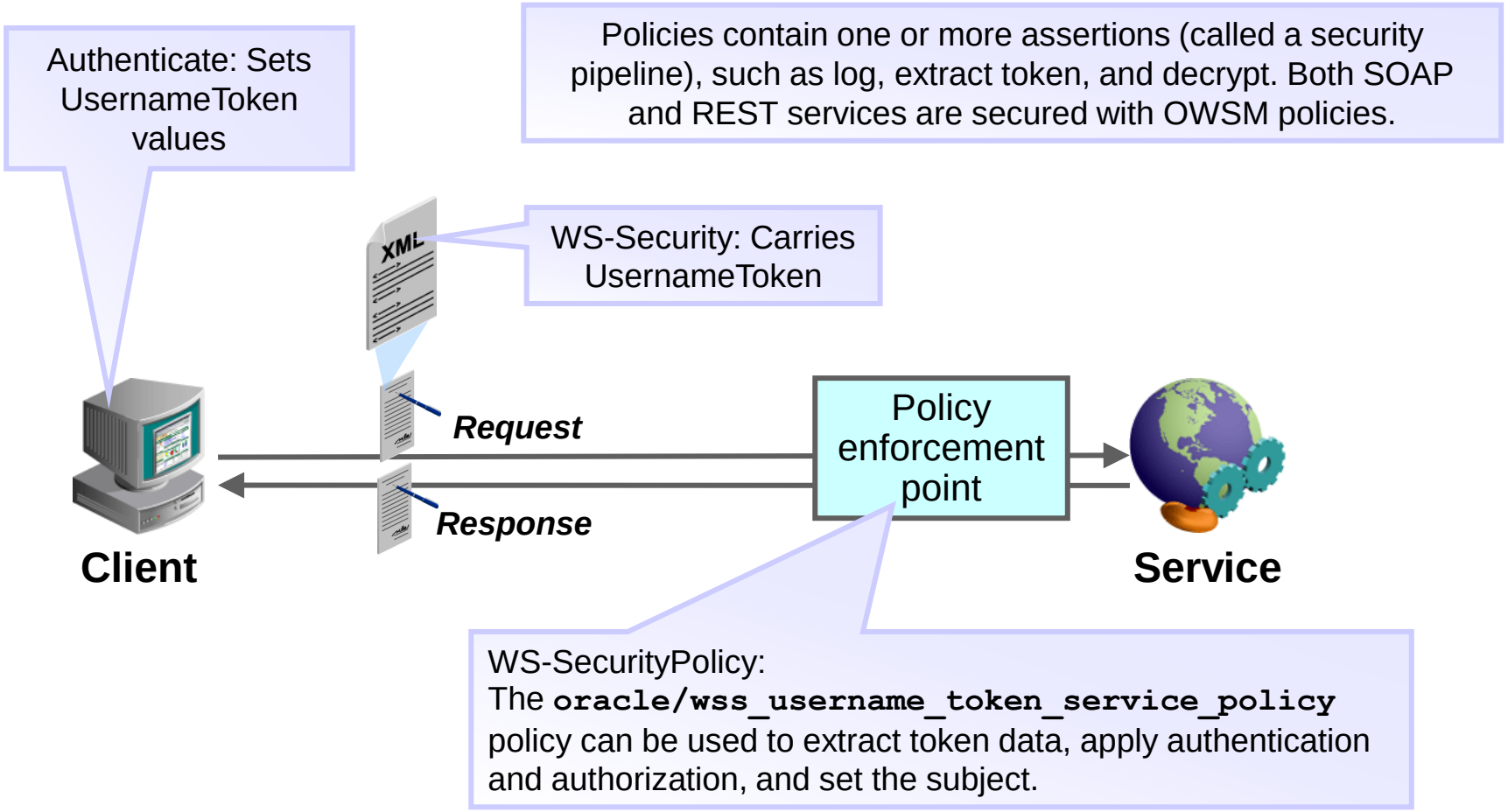
Example: UsernameToken in plain text (in a SOAP header):

```
<wsse:UsernameToken>
  <wsse:Username>jcooper</wsse:Username>
  <wsse:Password>welcome1</wsse:Password>
</wsse:UsernameToken>
```

Security Assertion Markup Language (SAML)

- Exchanges security information between different parties
- Conveys information about subjects, human users, or any entities with the following types of “assertions”:
  - An authentication assertion
  - An authorization assertion
  - An attribute assertion

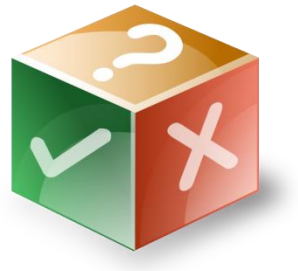
Security Policies: Introduction



Quiz

Policies are made up of one or more _____ .

a. Tokens
b. Protocols
c. Assertions



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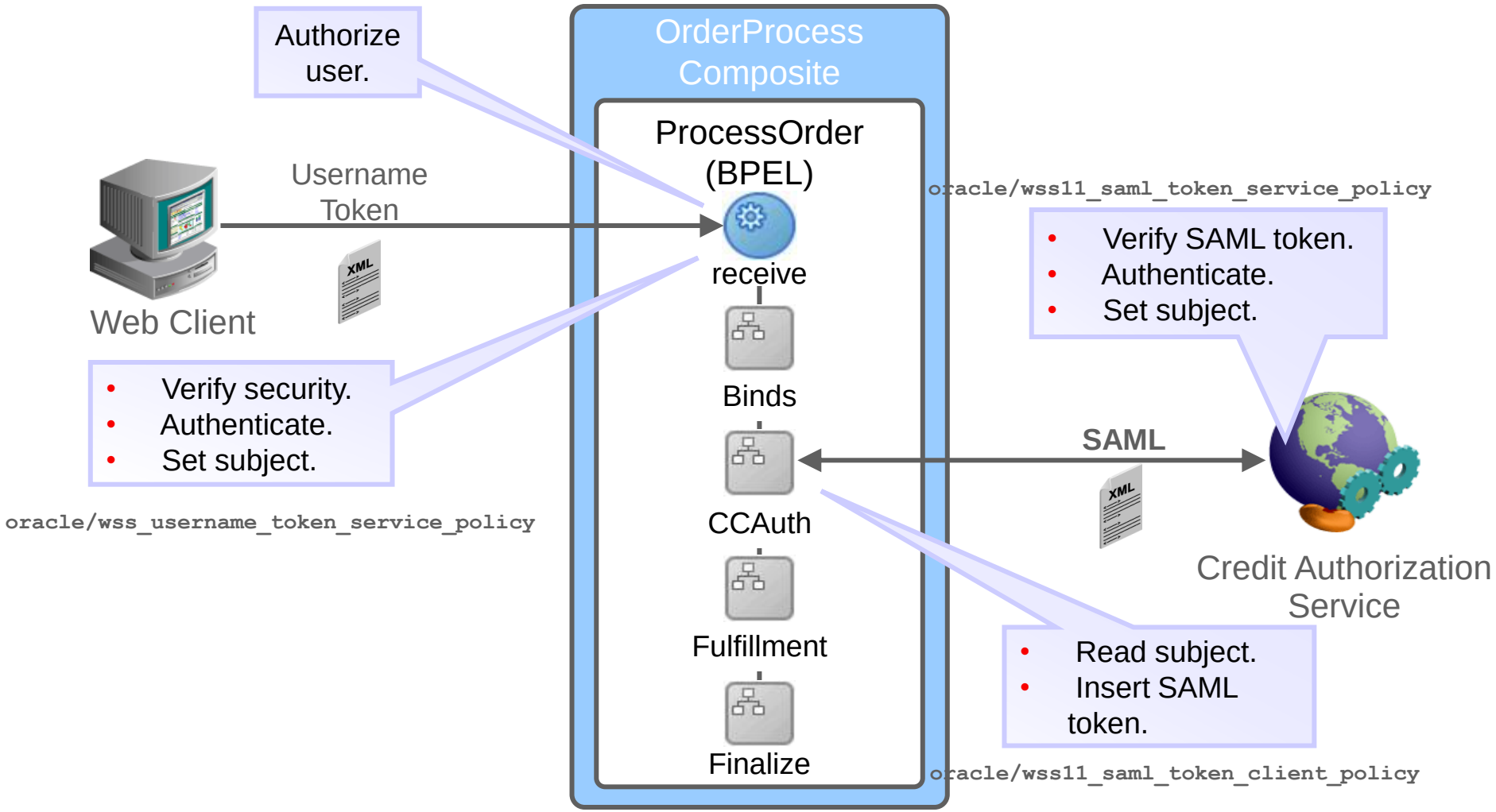
Securing SOA and Identity Propagation



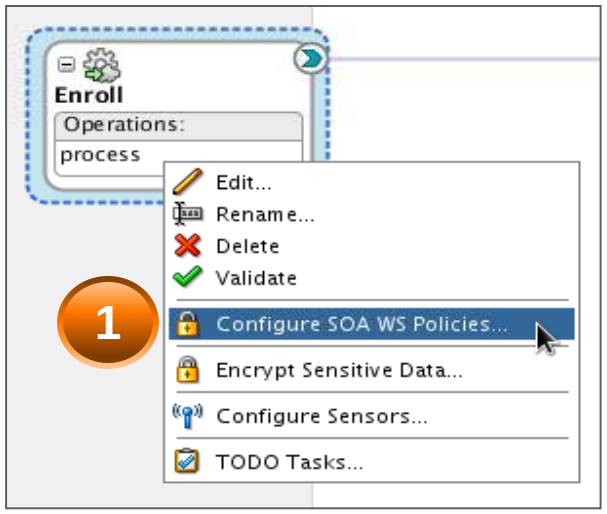
Attaching a Policy to an Inbound Request

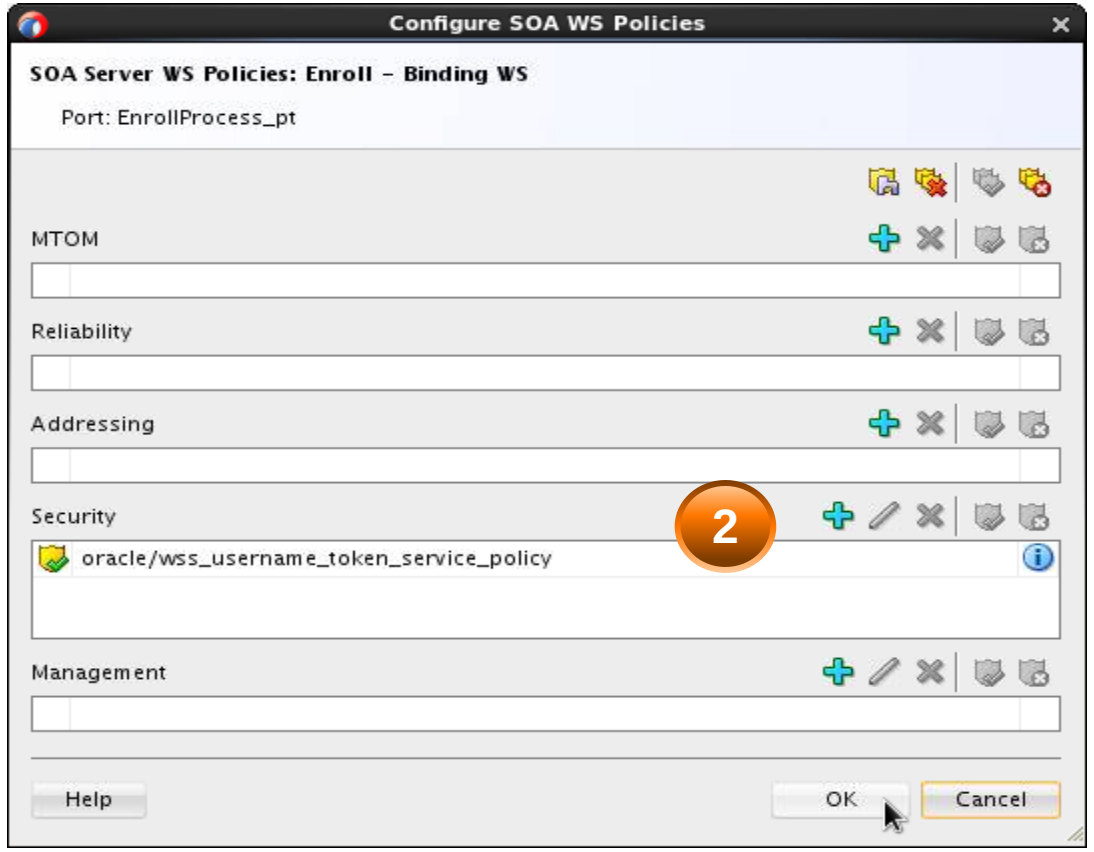
Scenario: UsernameToken-based identity authentication
Policy: `oracle/wss_username_token_service_policy`

```
<service name="Enroll" ui:wsdlLocation="Enroll.wsdl">
    <interface.wsdl interface="…/Enroll#wsdl.interface(execute_ptt)"/>
    <binding.ws port="…/Enroll#wsdl.endpoint(Enroll/execute_pt)">
      <wsp:PolicyReference URI="oracle/wss_username_token_service_policy"
                           orawsp:category="security" orawsp:status="enabled"/>
</binding.ws>
  </service>
```

The attachment is added to the service (entry point) in **`composite.xml`**.
Result: The user is authenticated, and the subject is associated with the current thread.

Attaching a Policy to an Inbound Request by Using Oracle JDeveloper 12*c*





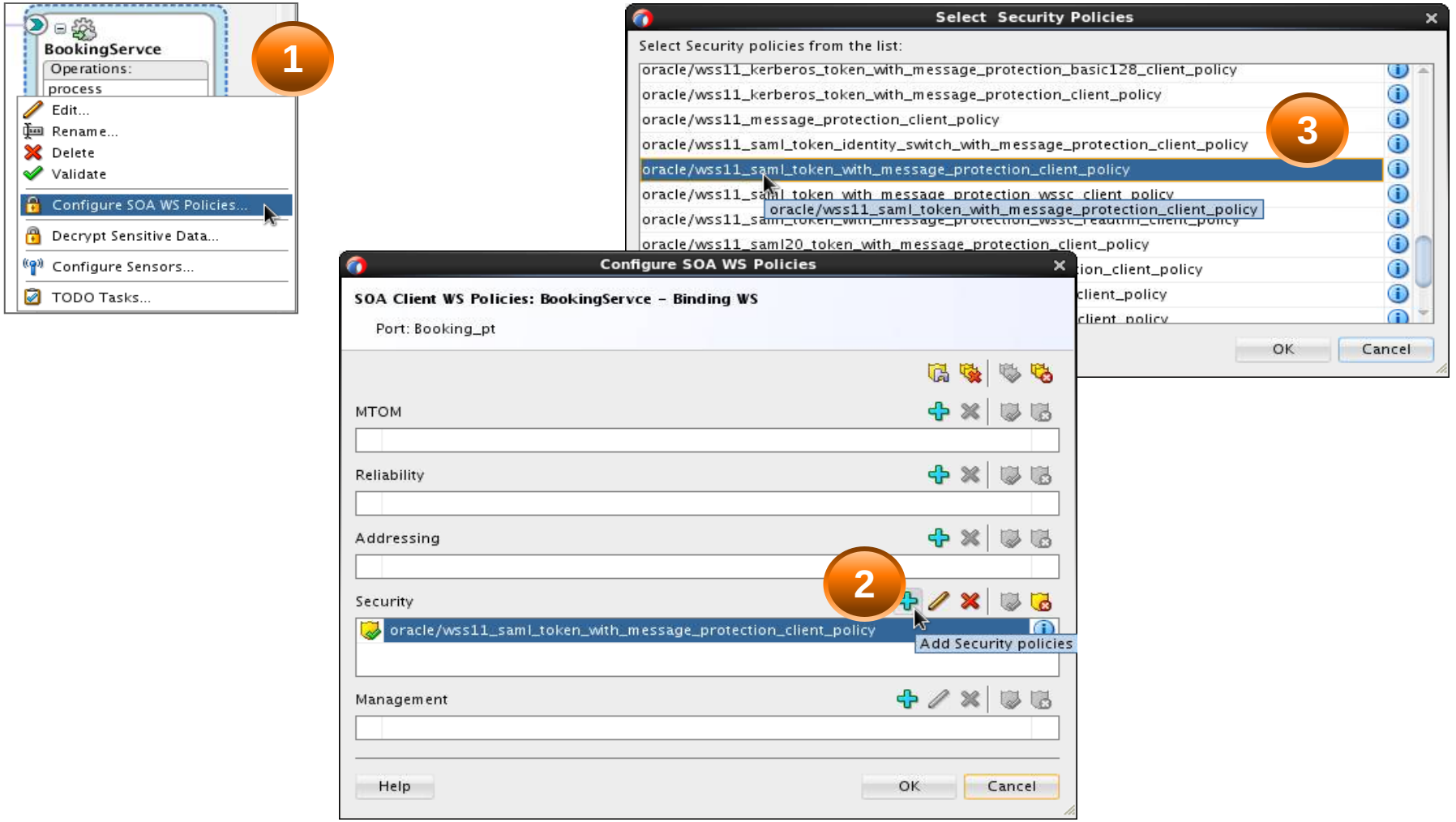
Attaching a Policy to an Outbound Request

Scenario: SAML-based identity assertion
Policy: `oracle/wss10_saml_token_client_policy`

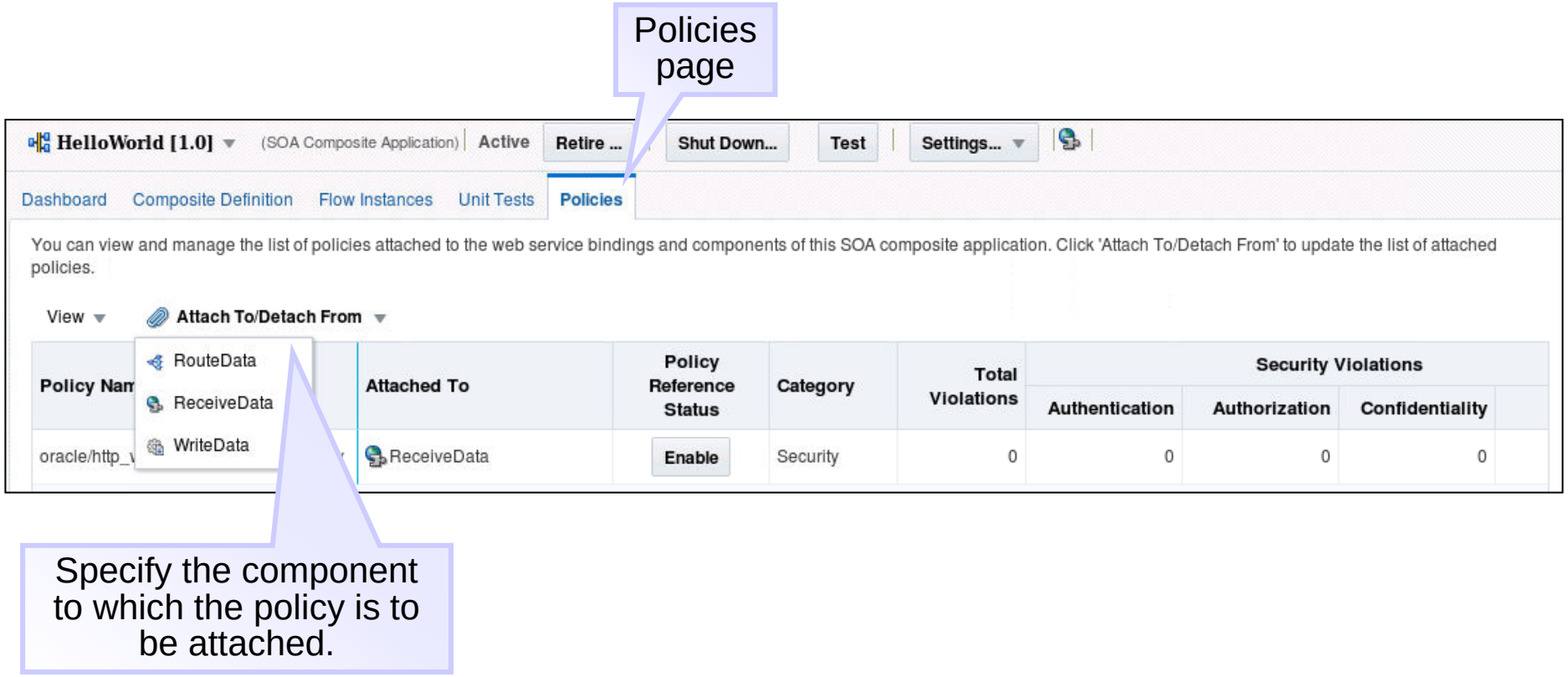
```
<reference name="BookingService"
                                          ui:wsdlLocation=".../Booking.wsdl">
        <interface.wsdl interface=".../Booking#wsdl.interface(Booking)"/>
        <binding.ws port=".../Booking#wsdl.endpoint(booking_client_ep/Booking_pt)"

        location=".../BookingSystem/booking_client_ep?WSDL"
                                                  soapVersion="1.1">
                <wsp:PolicyReference URI="oracle/wss10_saml_token_client_policy"

                 orawsp:category="security" orawsp:status="enabled"/>
        </binding.ws>
</reference>
```

The attachment is added to an external reference in **`composite.xml`**.
Result: Identity is propagated, and the payload is encrypted.

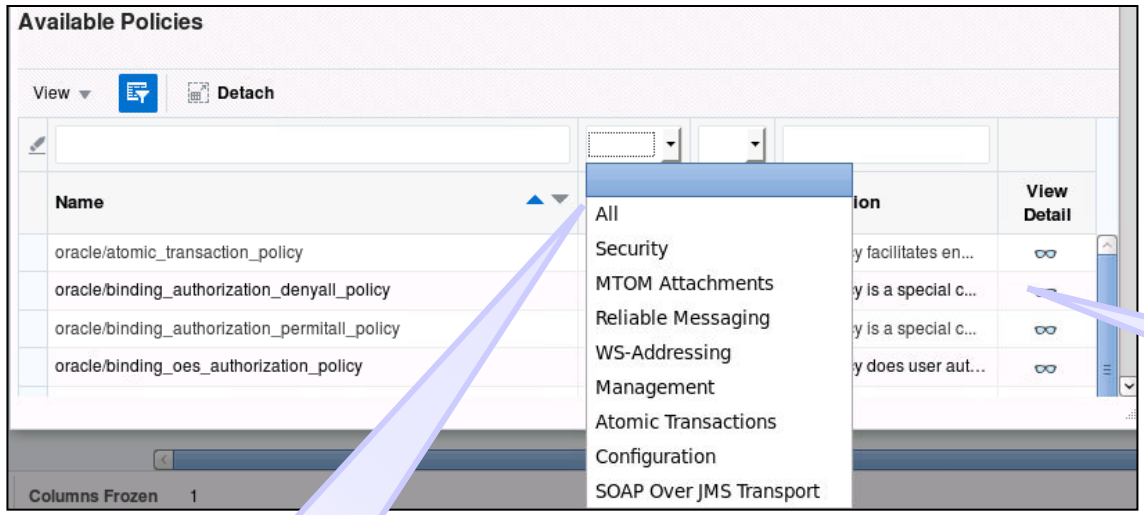
Attaching a Policy to an Outbound Request by Using Oracle JDeveloper 12*c*



Managing SOA Composite Application Policies

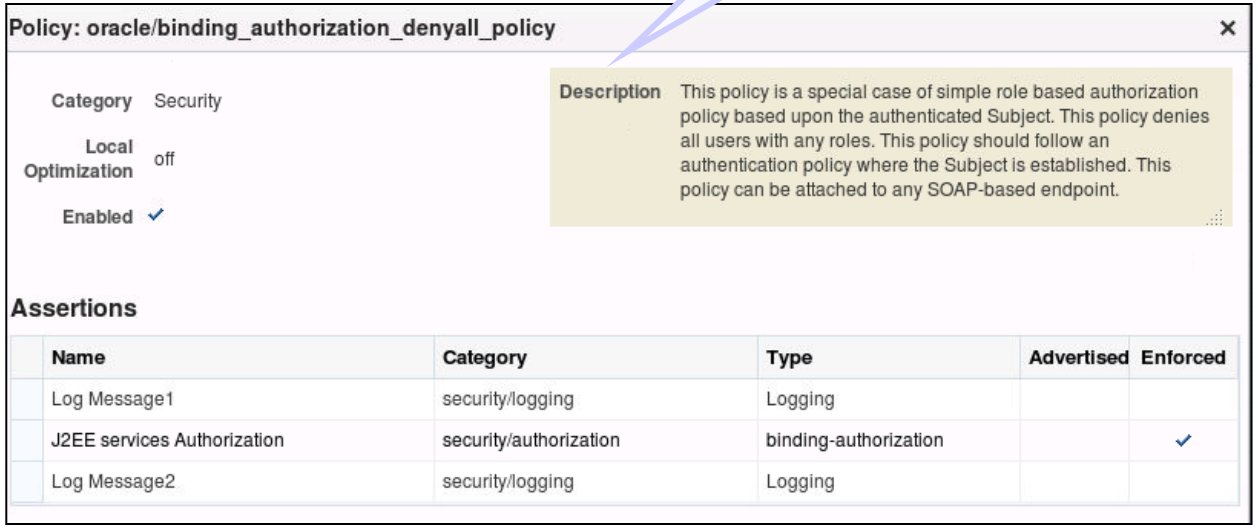


Choose From Available Policies

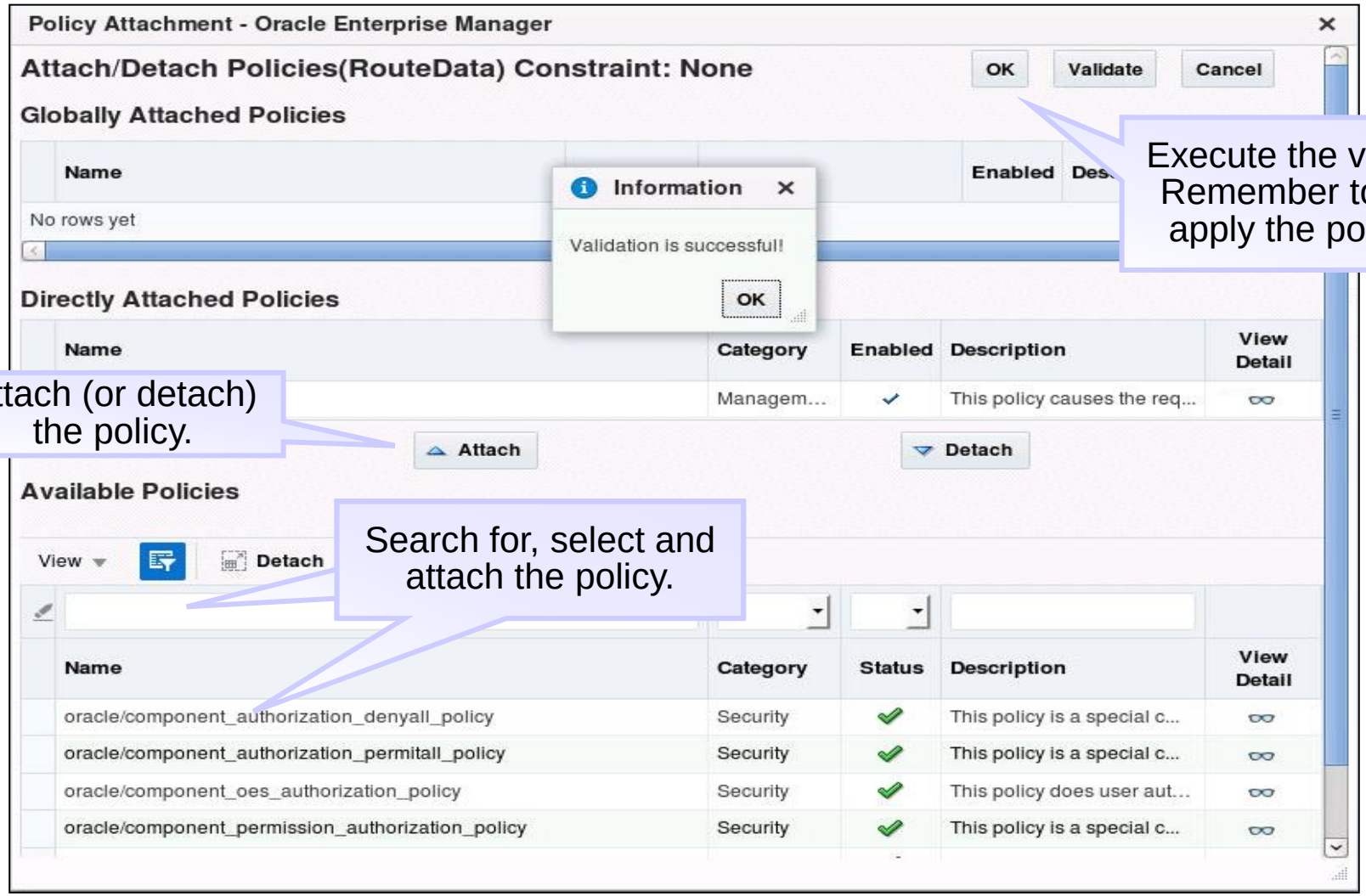


View available policy categories

Click View Detail icon to see details about the policy.



Managing SOA Composite Application Policies



Summary

In this lesson, you should have learned how to:

- Describe Web Service Security
- Describe Oracle Web Services Manager and its use in securing SOA composites
- Discuss security and identity propagation in SOA composites
- Attach security policies to endpoints at design time and run time

Practice 15 Overview