Lab 4

transform_XML2POJO

Lab Goals

- Introduction to transform_XML2POJO in SOA 5
- Introduction to transform_XML2POJO in SOA 6
- Step-by-step migration using Windup rules
- Deploy and test application in SOA 6

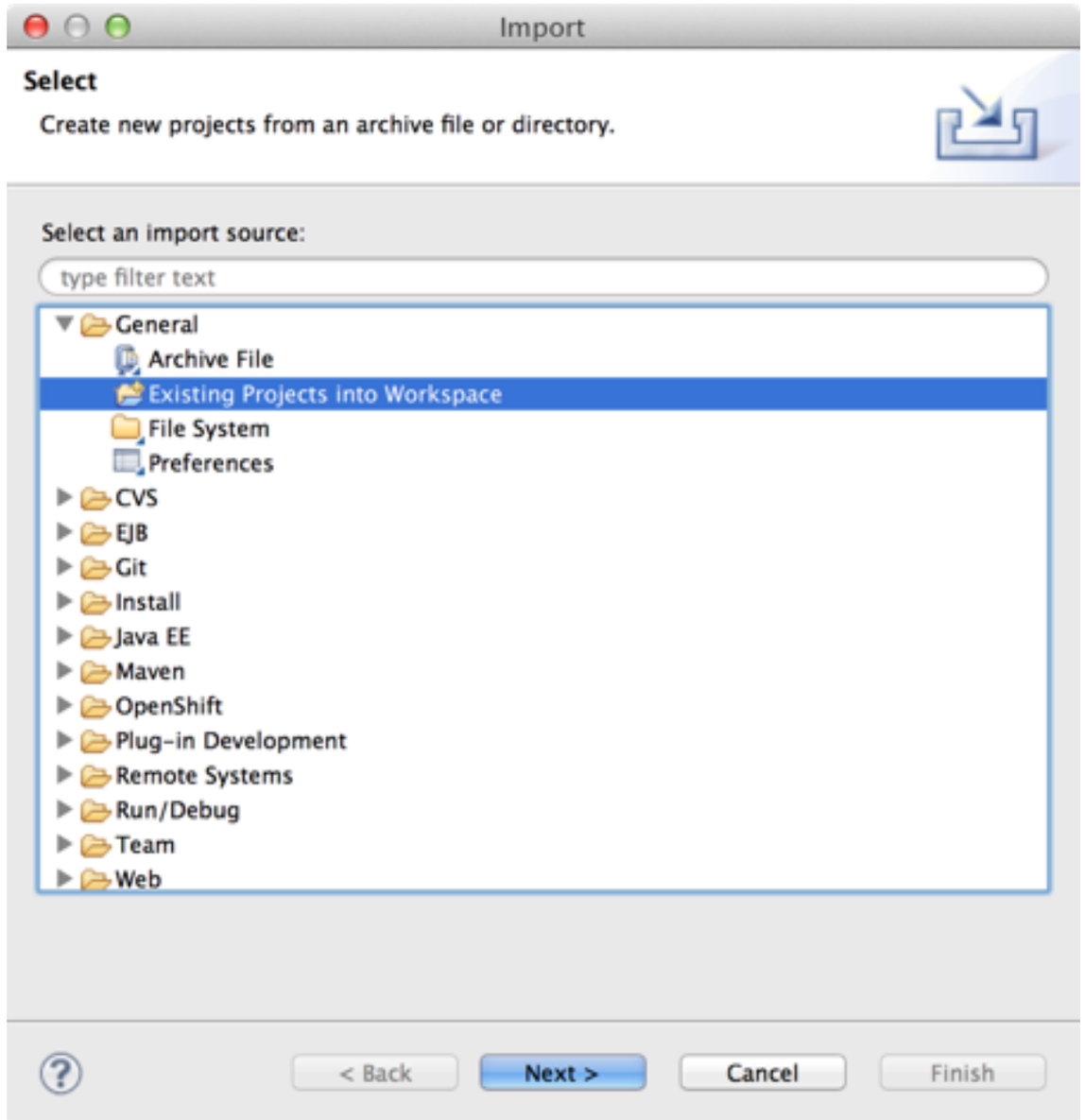
Importing SOA 5 Transform XML2POJO

TODO

1. File -> Import ... from the JBDS menu.

2. Select General -> Existing Projects into Workspace

3. Click Next



Importing SOA 5 Transform XML2POJO

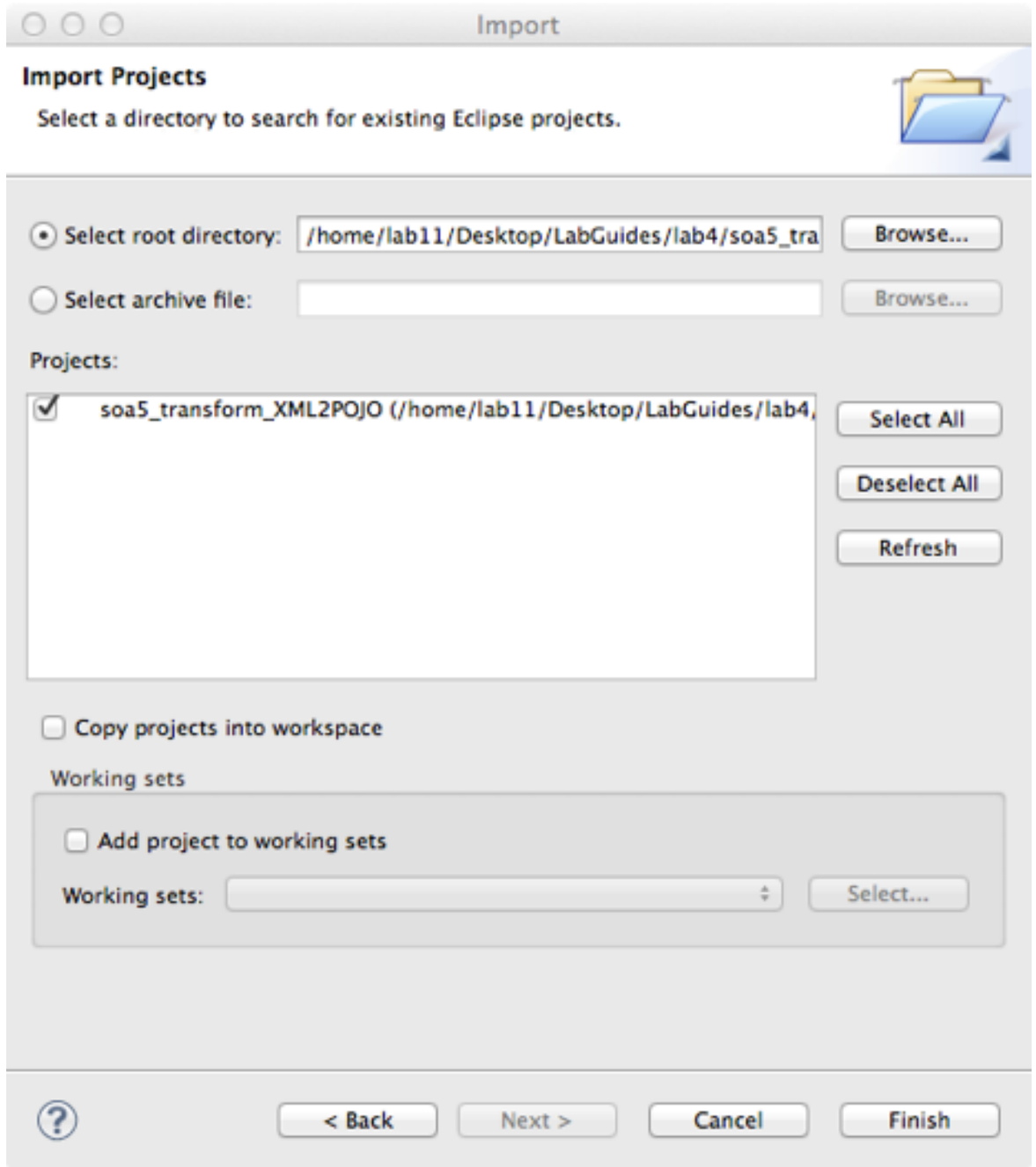
TODO

1. Click Browse ... and navigate to:

`/home/lab11/Desktop/LabGuides/lab1/soa5_transform_XML2POJO`

2. Make sure the soa5_transform_XML2POJO project is checked

3. Click Finish

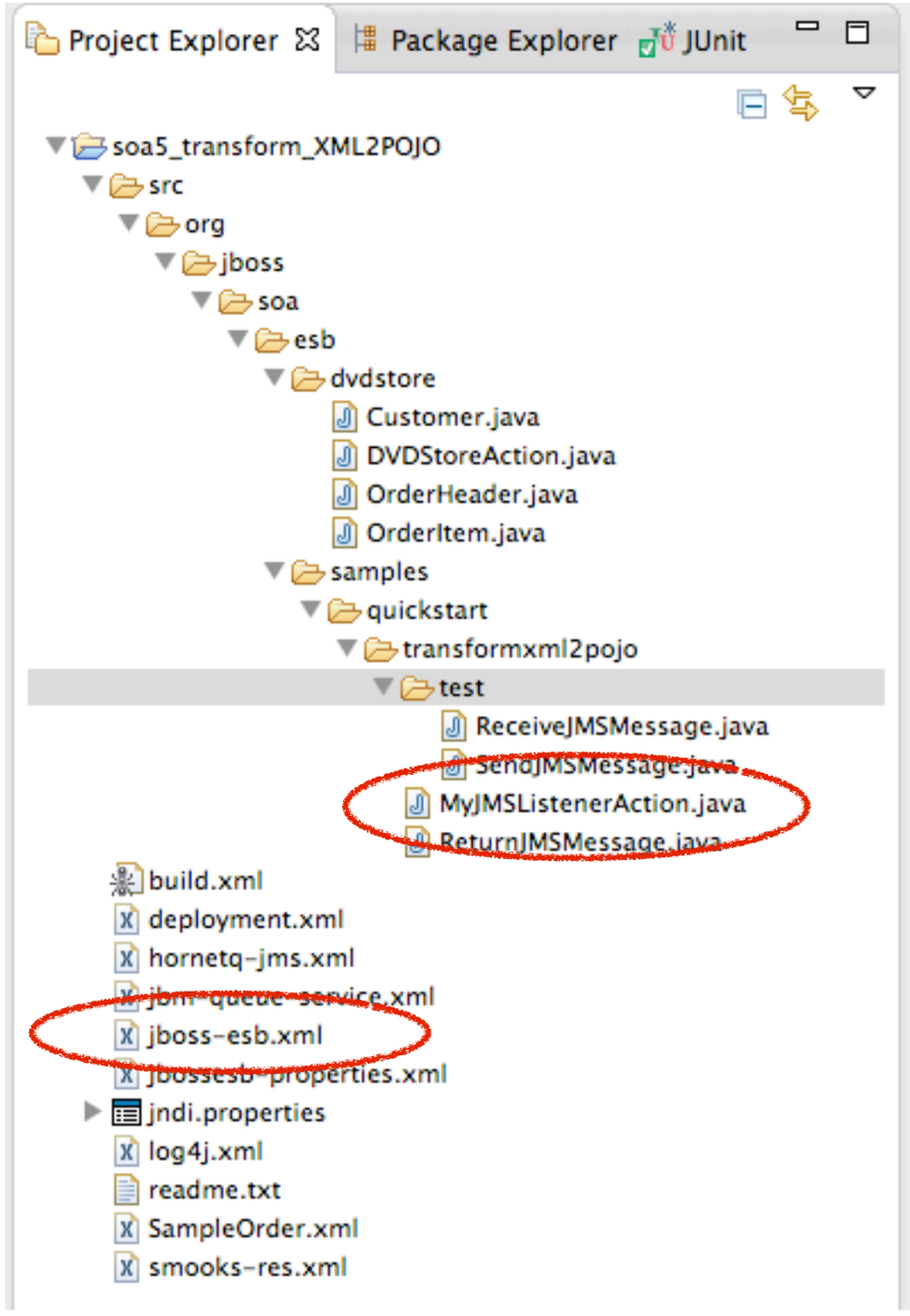


Files To Note

TODO

1. `jboss-esb.xml` contains the project's service definitions and configuration. Open the file by double-clicking on it in the Project Explorer.

2. `MyJMSListenerAction.java` contains the service logic for the application. Open the file by double-clicking on it in the Project Explorer.



jboss-esb.xml

jboss-esb.xml

```
<?xml version = "1.0" encoding = "UTF-8"?>
<jbossesb xmlns="http://anonsvn.labs.jboss.com/labs/jbossesb/trunk/product/etc/schemas/xml/jbosses
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://anonsvn.labs.jboss.com/labs/jbossesb/trunk/product/etc/schemas/xml/
    parameterReloadSecs="5">

    <providers>
          <jms-provider name="JBossMQ" connection-factory="ConnectionFactory">
              <jms-bus busid="quickstartGwChannel">
                  <jms-message-filter
                      dest-type="QUEUE"
                      dest-name="queue/quickstart_transform_pojo_gw"
                   />
              </jms-bus>
              <jms-bus busid="quickstartEsbChannel">
                  <jms-message-filter
                      dest-type="QUEUE"
                      dest-name="queue/quickstart_transform_pojo_esb"
                  />
              </jms-bus>

          </jms-provider>
    </providers>

    <services>
      <service
          category="MyTransformationServicesESB"
          name="MyFirstTransformationServiceESB"
          description="ESB: Takes XML in and produces a POJO">
          <listeners>
              <jms-listener name="JMS-Gateway"
                  busidref="quickstartGwChannel"
```

Design Source

MyJMSListenerAction.java

jboss-esb.xml | MyJMSListenerAction.java

```
 * JBoss, Home of Professional Open Source
package org.jboss.soa.esb.samples.quickstart.transformxml2pojo;

import org.jboss.soa.esb.actions.AbstractActionLifecycle;

public class MyJMSListenerAction extends AbstractActionLifecycle {

    protected ConfigTree _config;

    public MyJMSListenerAction(ConfigTree config) {
        _config = config;
    }

    public Message noOperation(Message message) {
        return message;
    }

    public Message displayMessage(Message message) throws Exception {
        logHeader();
        System.out.println(message.getBody().get());
        logFooter();
        return message;
    }

    public Message playWithMessage(Message message) throws Exception {
        Header msgHeader = message.getHeader();
        Body msgBody = message.getBody();
        Call theCall = msgHeader.getCall();
        EPR theEpr = theCall.getFrom();
        String contents = (String) msgBody.get();
        StringBuffer sb = new StringBuffer();
        sb.append("BEFORE\n");
        sb.append(contents);
        sb.append("\nAFTER");
```

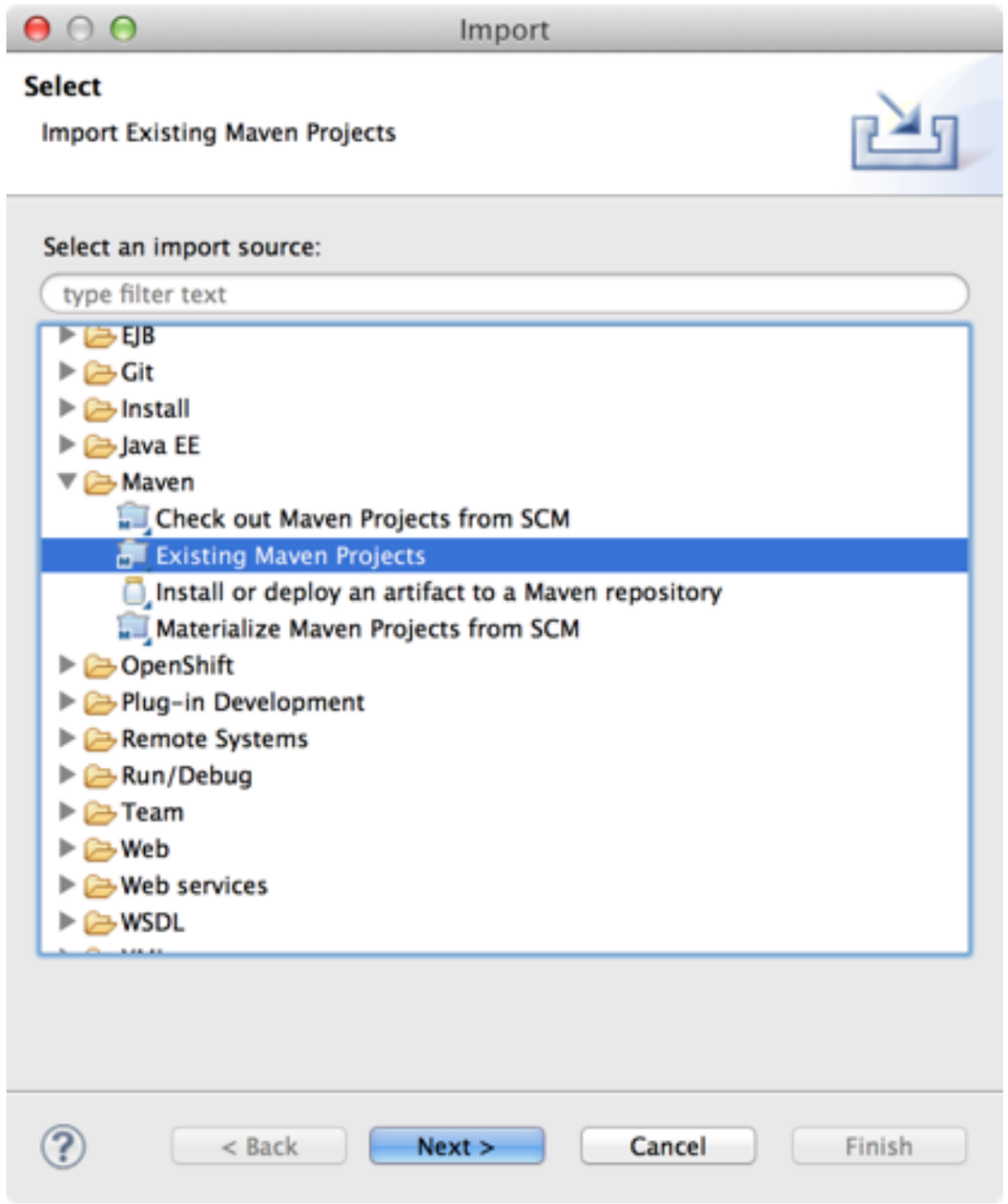
Importing SOA 6 Transform XML2POJO

TODO

1. File -> Import ... from the JBDS menu.

2. Select Maven -> Existing Maven Projects

3. Click Next



Importing SOA 6 Transform XML2POJO

TODO

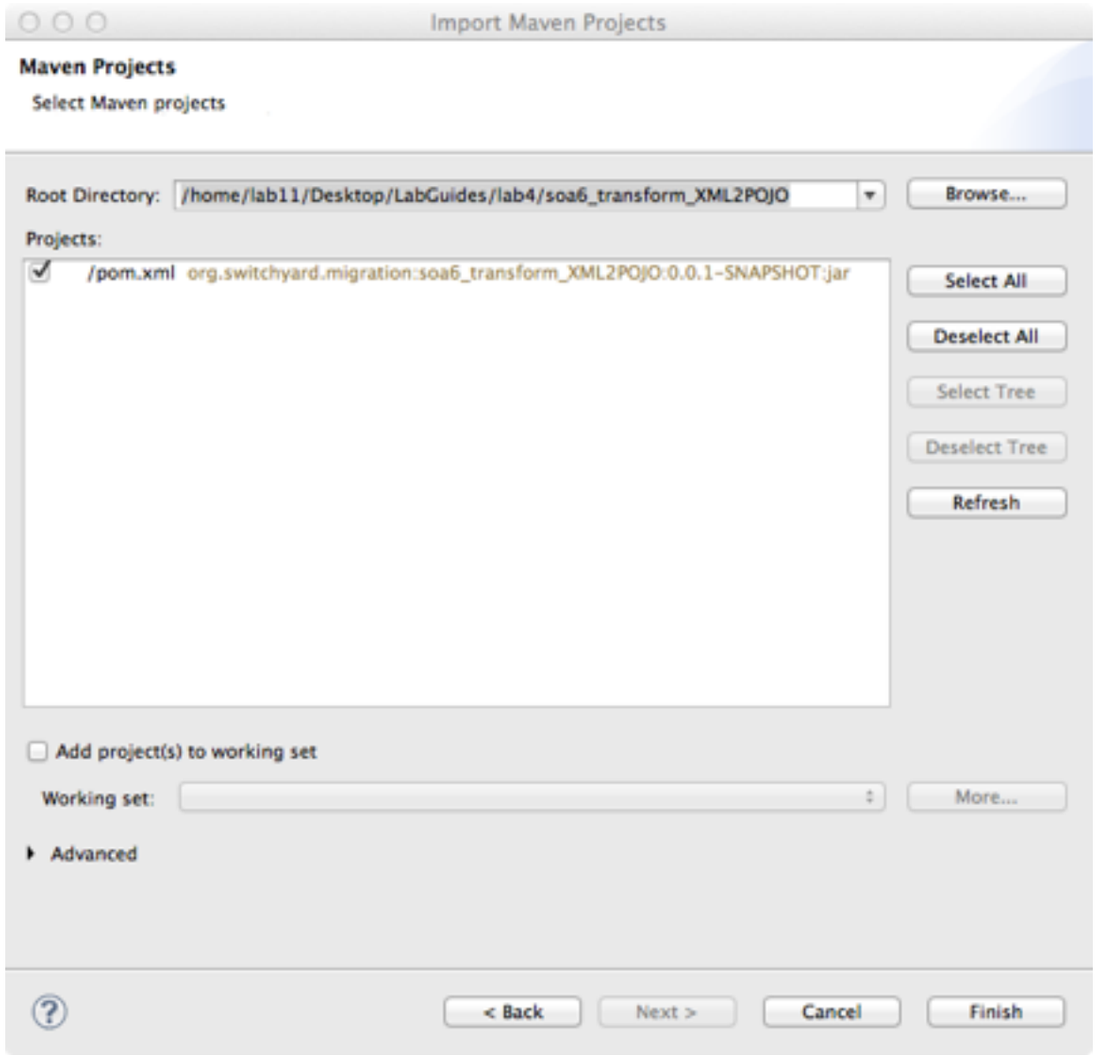
1. Click Browse ... and navigate to:

`/home/lab11/Desktop/LabGuides/lab1/soa6_transform_XML2POJO`

2. Make sure the pom.xml is checked for:

`org.switchyard.migration:soa6_transform_XML2POJO`

3. Click Finish



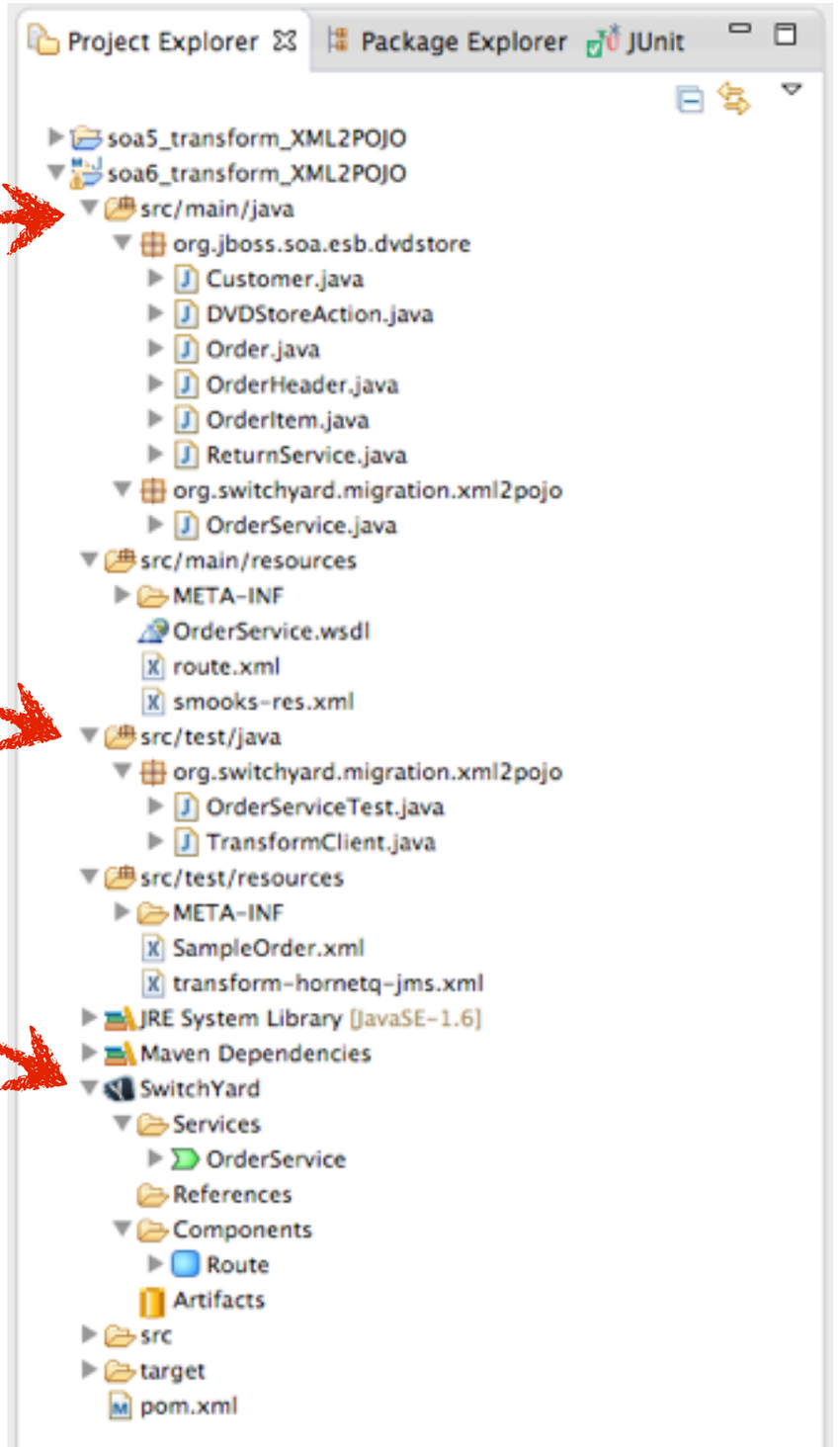
Files To Note

1. Java implementation classes for your application are stored in src/main/java

2. Test classes are stored in src/test/java

3. The SwitchYard node in the Project Explorer can be used to open the visual editor for the SwitchYard Project. Try double-clicking the SwitchYard node to open the editor.

Open these files and familiarize yourself with the content



Migrating `transform_XML2POJO`

- A step-by-step migration walkthrough follows
- Each step is driven by a notification in the windup report
- Read the notification and microsite details for each step
- Study the before and after for each step using the applications you've imported into JBDS

Step 1

Converting Action Class to Camel Service

Notification

- Action : service binding configuration in jms-bus: busid="quickstartGwChannel"
- Action : service binding configuration in jms-bus: busid="quickstartEsbChannel"
- Action : composite service required for service: name="MyFirstTransformationServiceESB"
- Action : composite service binding required for listener: name="JMS-Gateway"
- Action : create component service for action processing pipeline
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert action class: class="org.jboss.soa.esb.smooks.SmooksAction"
- Action : convert SmooksAction to Transform: class="org.jboss.soa.esb.smooks.SmooksAction"
- Action : convert action class: class="org.jboss.soa.esb.dvdstore.DVDStoreAction"
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert SystemPrintln: class="org.jboss.soa.esb.actions.SystemPrintln"

Notification

`jboss-esb.xml`

FYI

This is the notification from jboss-esb.xml, noting that a custom action class is referenced in the action processing pipeline that needs to be migrated.

```
40.          <action name="action1"
41.             class="org.jboss.soa.esb.samples.quickstart.helloworld.MyJMSListenerAction"
42.             process="displayMessage"
43.          />
```

Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.helloworld.MyJMSListenerAction"

Custom action classes should be migrated to CDI Beans in SOA 6. These beans can be defined as services or called directly from a Camel route.

For additional information and tips, see the action class microsite.

Notification

`MyJMSListenerAction.java`

FYI

This is the notification from MyJMSListenerAction.java providing API level details on what needs to change in the action class implementation.

27. **public class** MyJMSListenerAction **extends** AbstractActionLifecycle

Extending class 'org.jboss.soa.esb.actions.AbstractActionLifecycle' at line 27

Action classes in SOA 5 are simply CDI Beans in SOA 6. The extension of AbstractionActionLifecycle is no longer necessary. An action class can become a standalone service in SOA 6 or it can be invoked as a bean from a Camel route.

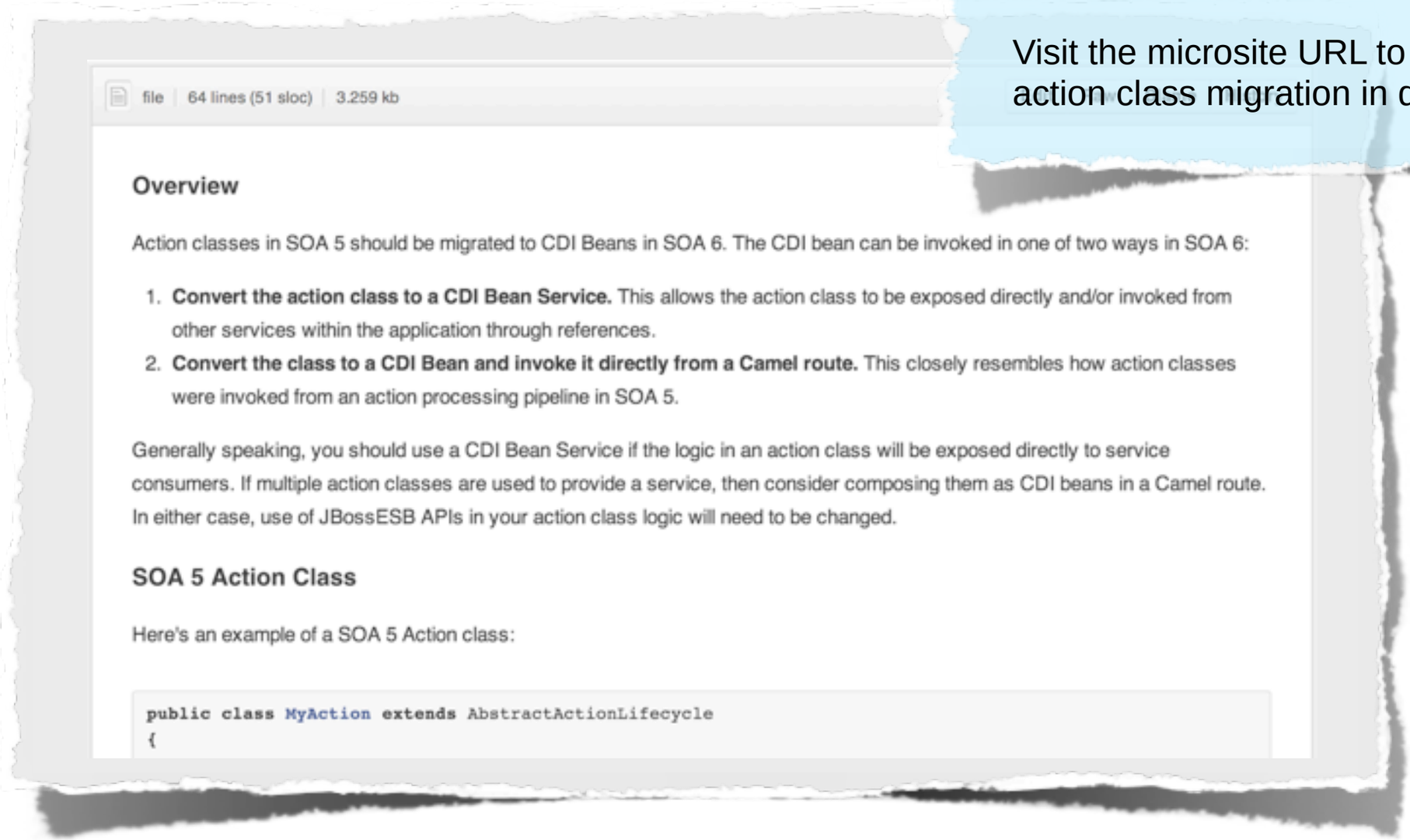
For additional information and tips, see the action class microsite.

Microsite

action class

TODO

Visit the microsite URL to learn about action class migration in detail.


file | 64 lines (51 sloc) | 3.259 kb

Overview

Action classes in SOA 5 should be migrated to CDI Beans in SOA 6. The CDI bean can be invoked in one of two ways in SOA 6:

1. **Convert the action class to a CDI Bean Service.** This allows the action class to be exposed directly and/or invoked from other services within the application through references.
2. **Convert the class to a CDI Bean and invoke it directly from a Camel route.** This closely resembles how action classes were invoked from an action processing pipeline in SOA 5.

Generally speaking, you should use a CDI Bean Service if the logic in an action class will be exposed directly to service consumers. If multiple action classes are used to provide a service, then consider composing them as CDI beans in a Camel route. In either case, use of JBossESB APIs in your action class logic will need to be changed.

SOA 5 Action Class

Here's an example of a SOA 5 Action class:

```
public class MyAction extends AbstractActionLifecycle
{
```

https://github.com/windup/soa-migration/blob/master/advice/action-class-migration.md

Service Contract

FYI

This is the service contract for OrderService in SOA 6. All services in SOA 6 have a contract.

OrderService.java

```
package org.switchyard.migration.xml2pojo;

import org.jboss.soa.esb.dvdstore.Order;

public interface OrderService {

    Order process(Order order);
}
```

Step 2

Converting the Action Processing Pipeline

Notification

- Action : service binding configuration in jms-bus: busid="quickstartGwChannel"
- Action : service binding configuration in jms-bus: busid="quickstartEsbChannel"
- Action : composite service required for service: name="SimpleListener"
- Action : composite service binding required for listener: name="JMS-Gateway"
- Action : create component service for action processing pipeline
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.helloworld.MyJMSListenerAction"

Action Processing Pipeline

```
<actions mep="OneWay">
    <action name="displayBeforeTransformer"
        class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
        process="displayMessage"
    />
    <action name="transform" class="org.jboss.soa.esb.smooks.SmooksAction">
        <property name="smooksConfig" value="/smooks-res.xml" />
        <property name="resultType" value="JAVA" />
        <!-- property name="reportPath" value="/zap/smooks-report.html" / -->
    </action>
    <action name="convertPOJO2Message" class="org.jboss.soa.esb.dvdstore.DVDStoreAction"    />
    <action name="displayAfterTransformer"
        class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
        process="displayMessage" />
    <action name="returnToSender"
        class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
        process="sendResponse" />
    <action name="println-xml2pojo" class="org.jboss.soa.esb.actions.SystemPrintln">
        <property name="message" value=">>>> Message after Smooks intermediate xml -> target pojos
    </action>
    <!-- The next action is for Continuous Integration testing -->
    <action name="testStore" class="org.jboss.soa.esb.actions.TestMessageStore"/>
</actions>
```

Notification

`jboss-esb.xml`

39. `<actions mep="OneWay">`

Action : create component service for action processing pipeline

The logic and execution flow of a service in SOA 5 is defined in an action processing pipeline. In SOA 6, this logic is contained within a service component definition and expressed using any of the available implementation types in SwitchYard.

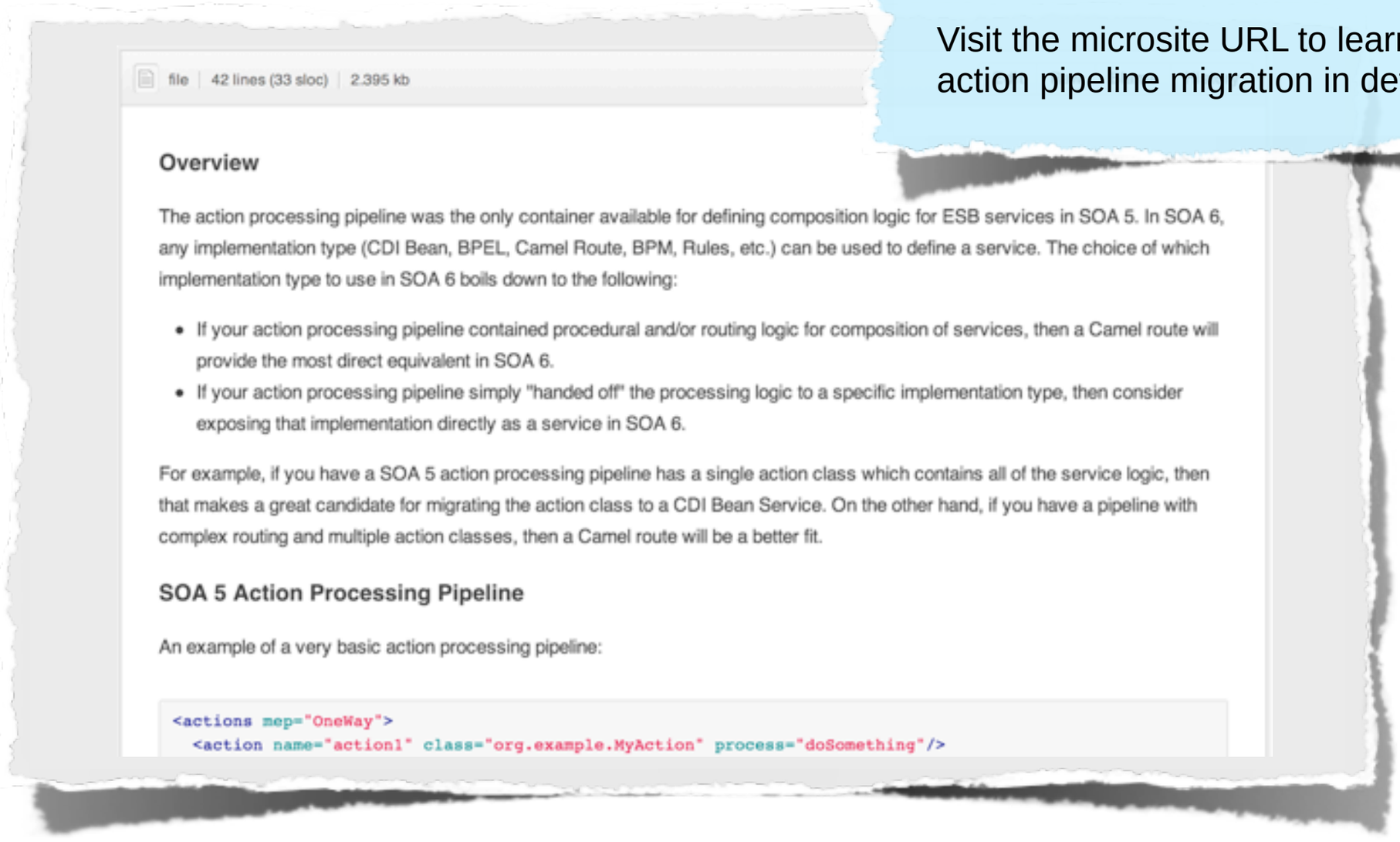
For additional information and tips, see the action pipline microsite.

Microsite

action pipeline

TODO

Visit the microsite URL to learn about action pipeline migration in detail.


file | 42 lines (33 sloc) | 2.395 kb

Overview

The action processing pipeline was the only container available for defining composition logic for ESB services in SOA 5. In SOA 6, any implementation type (CDI Bean, BPEL, Camel Route, BPM, Rules, etc.) can be used to define a service. The choice of which implementation type to use in SOA 6 boils down to the following:

- If your action processing pipeline contained procedural and/or routing logic for composition of services, then a Camel route will provide the most direct equivalent in SOA 6.
- If your action processing pipeline simply "handed off" the processing logic to a specific implementation type, then consider exposing that implementation directly as a service in SOA 6.

For example, if you have a SOA 5 action processing pipeline has a single action class which contains all of the service logic, then that makes a great candidate for migrating the action class to a CDI Bean Service. On the other hand, if you have a pipeline with complex routing and multiple action classes, then a Camel route will be a better fit.

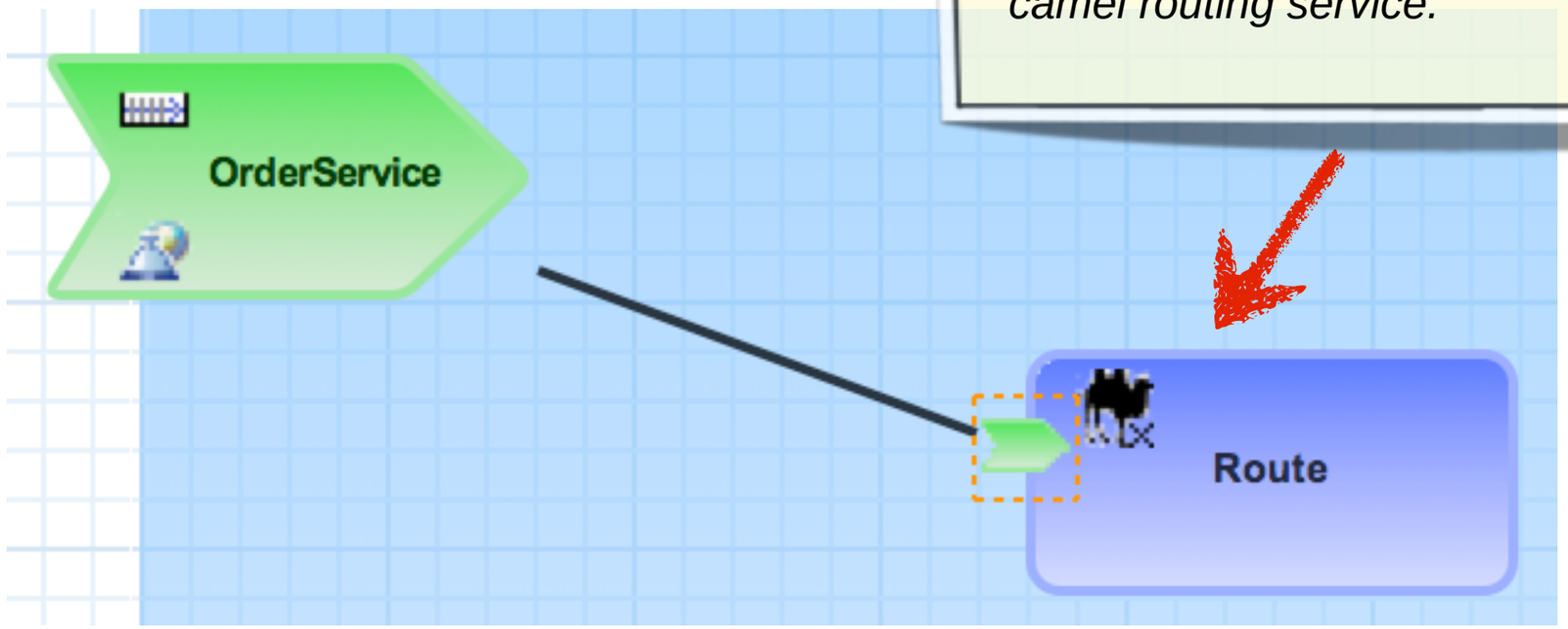
SOA 5 Action Processing Pipeline

An example of a very basic action processing pipeline:

```
<actions mep="OneWay">
  <action name="action1" class="org.example.MyAction" process="doSomething"/>
```

https://github.com/windup/soa-migration/blob/master/advice/action-pipeline-migration.md

Component Service



Step 3

Creating Composite Service For ESB Services

Notification

- Action : service binding configuration in jms-bus: busid="quickstartGwChannel"
- Action : service binding configuration in jms-bus: busid="quickstartEsbChannel"
- Action : composite service required for service: name="MyFirstTransformationServiceESB"
- Action : composite service binding required for listener: name="JMS-Gateway"
- Action : create component service for action processing pipeline
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert action class: class="org.jboss.soa.esb.smooks.SmooksAction"
- Action : convert SmooksAction to Transform: class="org.jboss.soa.esb.smooks.SmooksAction"
- Action : convert action class: class="org.jboss.soa.esb.dvdstore.DVDStoreAction"
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert SystemPrintln: class="org.jboss.soa.esb.actions.SystemPrintln"

Service Definition

```
25.         <services>
26.          <service
27.              category="FirstServiceESB"
28.              name="SimpleListener"
29.              description="Hello World">
```

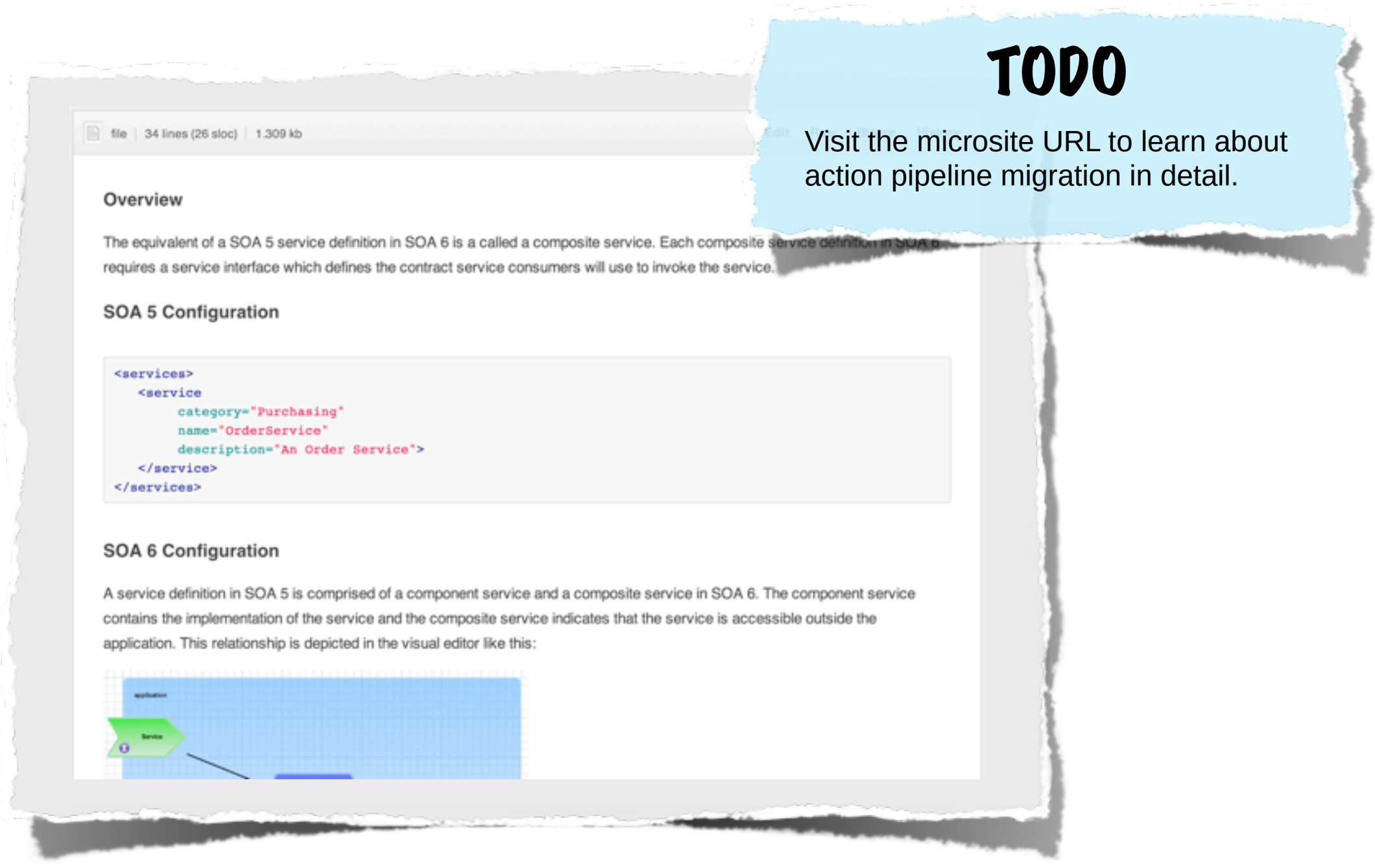
Action : composite service required for service: name="SimpleListener"

Each definition in SOA 5 represents a service which can be called from outside the application through an ESB listner. The equivalent definition in SOA 6 is a composite service.

For additional information and tips, see the service migration microsite.

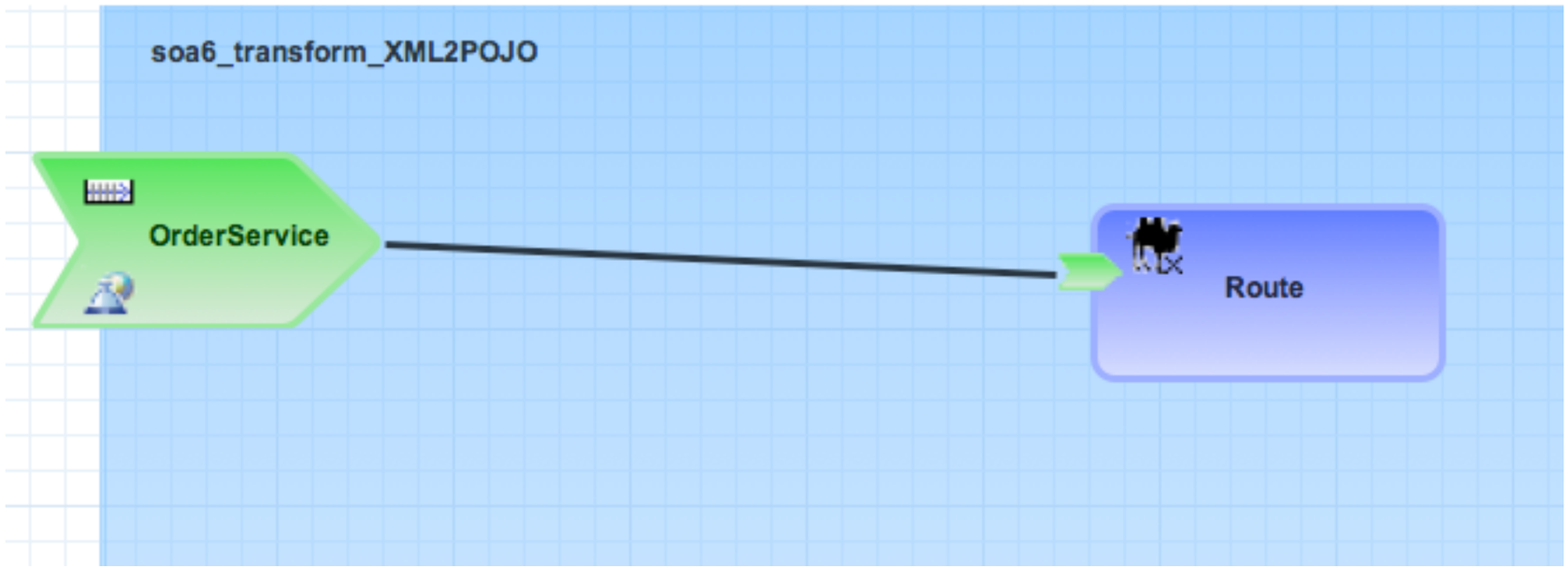
Microsite

service migration



https://github.com/windup/soa-migration/blob/master/advice/service-migration.md

Composite Service



Step 4

Migrating SmooksAction to Transform

Notification

- Action : service binding configuration in jms-bus: busid="quickstartGwChannel"
- Action : service binding configuration in jms-bus: busid="quickstartEsbChannel"
- Action : composite service required for service: name="MyFirstTransformationServiceESB"
- Action : composite service binding required for listener: name="JMS-Gateway"
- Action : create component service for action processing pipeline
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert action class: class="org.jboss.soa.esb.smooks.SmooksAction"
- Action : convert SmooksAction to Transform: class="org.jboss.soa.esb.smooks.SmooksAction"
- Action : convert action class: class="org.jboss.soa.esb.dvdstore.DVDStoreAction"
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert action class: class="org.jboss.soa.esb.samples.quickstart.transformxml2pojo.MyJMSListenerAction"
- Action : convert SystemPrintln: class="org.jboss.soa.esb.actions.SystemPrintln"

Smooks Action

```
45.          <action name="transform" class="org.jboss.soa.esb.smooks.SmooksAction">
```

Action : convert action class: class="org.jboss.soa.esb.smooks.SmooksAction"

Custom action classes should be migrated to CDI Beans in SOA 6. These beans can be defined as services or called directly from a Camel route.

For additional information and tips, see the action class microsite.

Action : convert SmooksAction to Transform: class="org.jboss.soa.esb.smooks.SmooksAction"

SwitchYard uses a to replace the invocation of as SmooksAction to transform message content. You most likely will want to use a Smooks transform to specify your Smooks configuration and from/to types.

For additional information and tips, see the transformation microsite.

```
46.              <property name="smooksConfig" value="/smooks-res.xml" />
47.              <property name="resultType" value="JAVA" />
48.              <!-- property name="reportPath" value="/zap/smooks-report.html" / -->
49.          </action>
50.
```

Microsite

transformer migration

Overview

The SmooksAction action provides a means for invoking a Smooks transformation. The configuration definition can be converted into a transformation in SwitchYard:

SOA 5 Configuration

```
<action name="transform" class="org.jboss.soa.esb.smooks.SmooksAction">
    <property name="smooksConfig" value="/smooks-res.xml" />
    <property name="resultType" value="JAVA" />
</action>
```

SOA 6

Converting SOAPACtions to Transforms

You will need the following pieces of information to migrate a SOAPAction to a SwitchYard transform:

- Smooks Configuration
- transformation from/to types

The relevant bits of the application descriptor are included for reference:

```
   <transform.java bean="MyTransformerBean"
                   from="{urn:switchyard-quickstart-demo:orders:1.0}submitOrder"
                   to="java:org.switchyard.quickstarts.demos.orders.Order"/>
```

TODO

Visit the microsite URL to learn about listener migration in detail.

https://github.com/windup/soa-migration/blob/master/advice/gateway-listener-migration.md

Gateway Listener Config

09. `<jms-bus busid="quickstartGwChannel">`

Action : service binding configuration in jms-bus: busid="quickstartGwChannel"

A jms-bus definition can be converted to a JMS or JCA gateway binding on a composite service in SwitchYard. If the jms-bus configuration is used for a non-gateway listener, it does not need to be migrated to SOA 6.

For additional information and tips, see the jms-bus migration microsite.

```
10.             <jms-message-filter
11.                dest-type="QUEUE"
12.                dest-name="queue/quickstart_transform_pojo_gw"
13.              />
14.          </jms-bus>
```

Microsite

jms-bus migration

https://github.com/windup/soa-migration/blob/master/advice/jms-bus-migration.md

Service Bindings

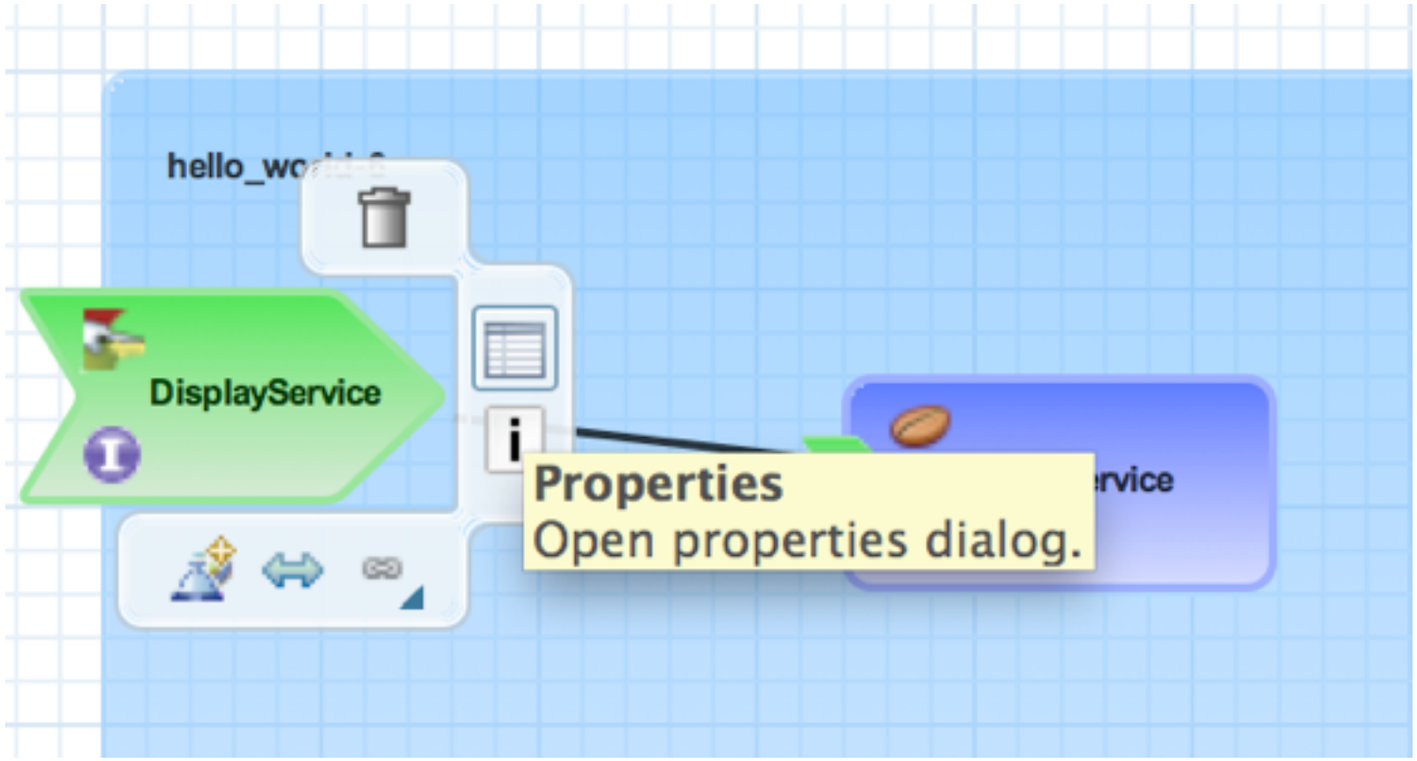
TODO

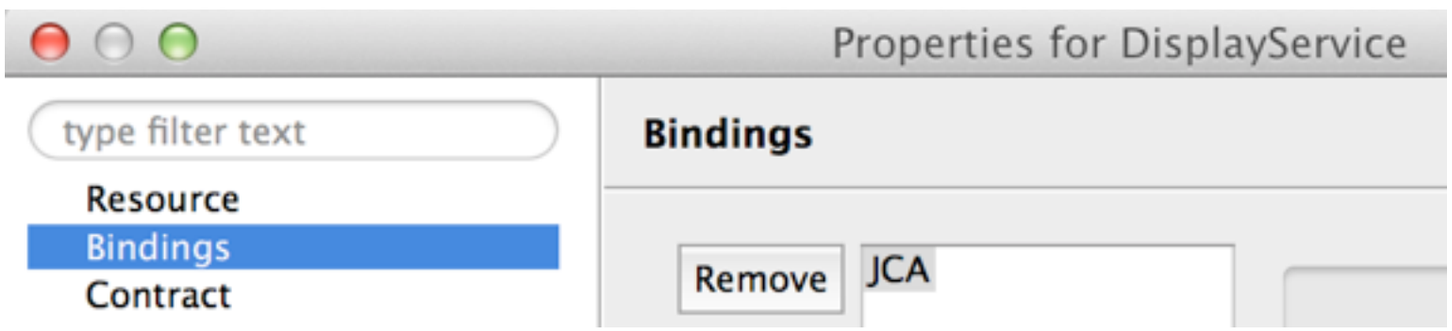
1. Bring up the button bar for the composite service ‘DisplayService’ by hovering over the large green service icon on the left of the composite.

2. When the button bar appears, click on the table icon which brings up the service properties.

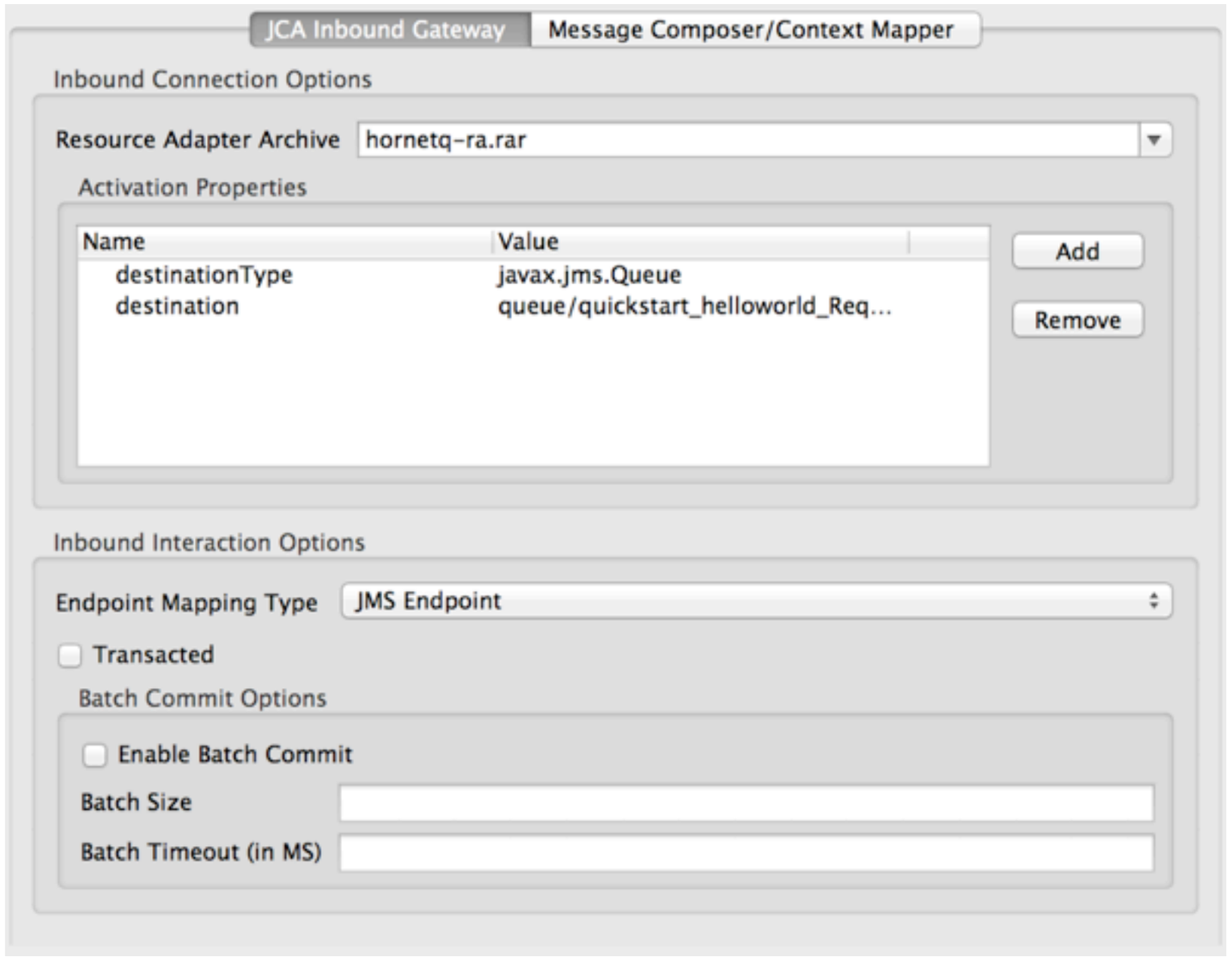
3. On the resulting property page, select the Bindings page in the left frame.

4. View the configuration details of the JCA binding definition in SOA 6.





Binding Configuration

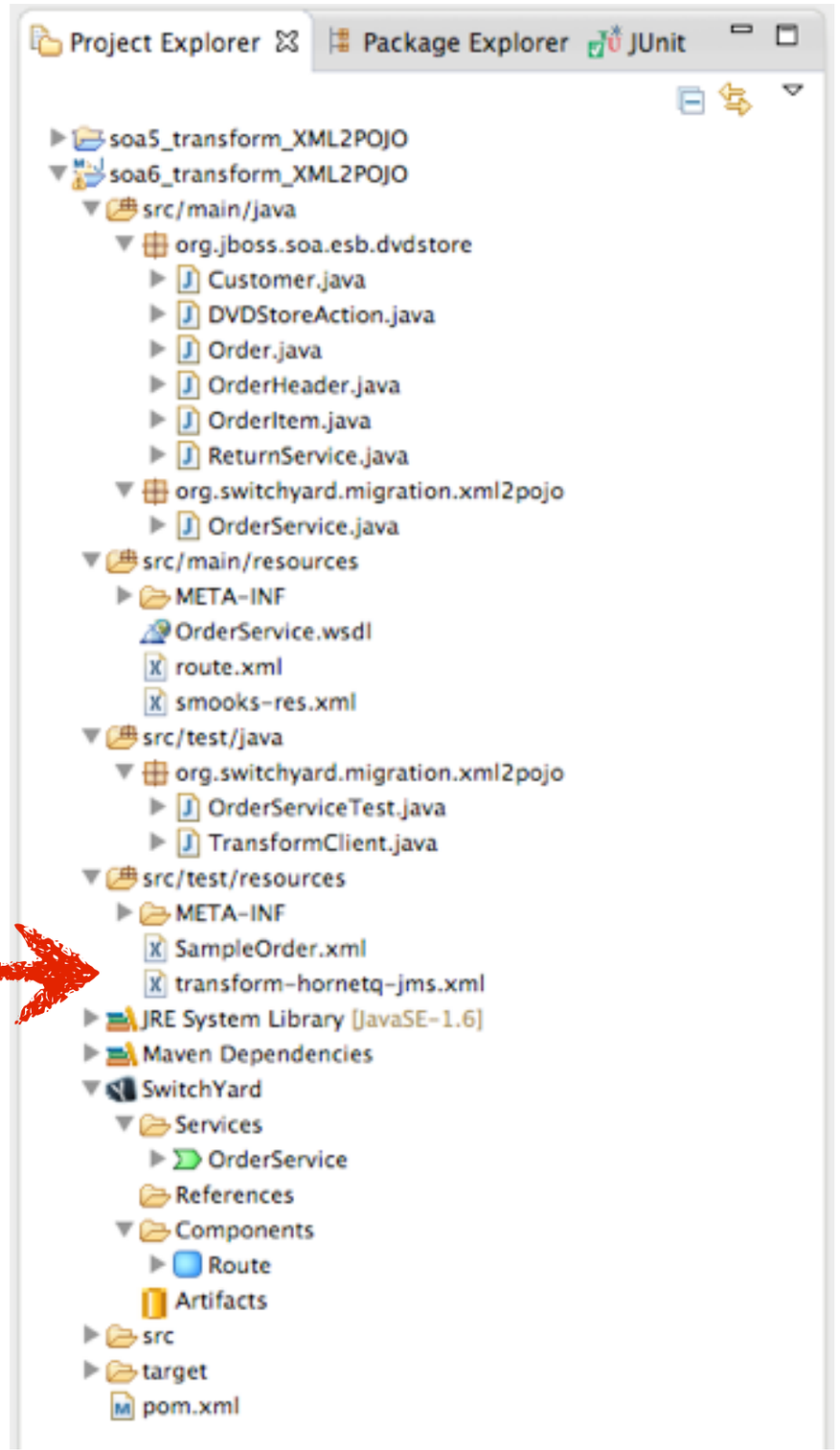


Deploy Queue

TODO

1. Right-click on transform-hornetq-jms.xml and select ‘Mark as Deployable’.

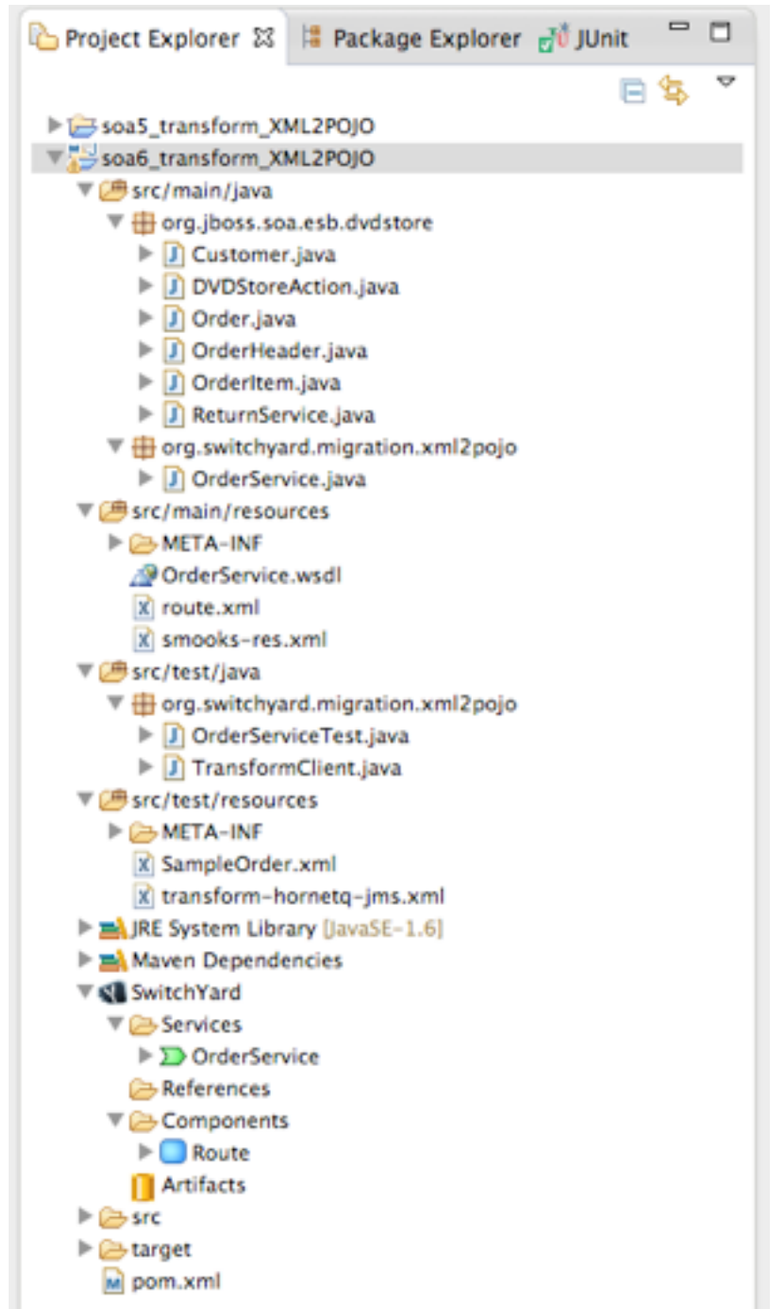
2. When prompted with “Really mark these as deployable?”, click OK.



Deploy Application

TODO

1. Right-click on the soa6_transform_XML2POJO project and select Run As ... Run on Server

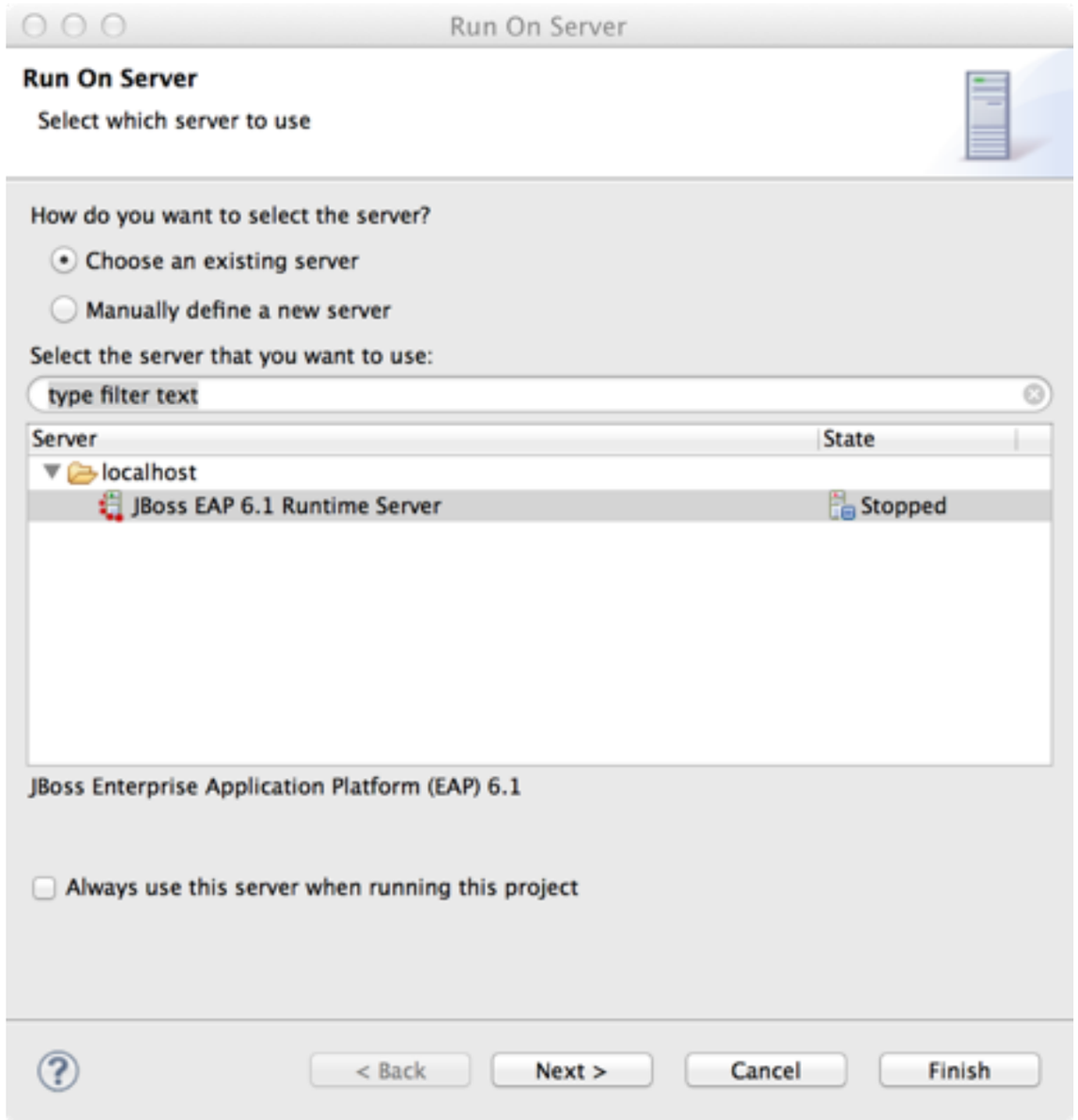


Select Server

TODO

1. Select the JBoss EAP 6.1 Runtime Server

2. Click Finish

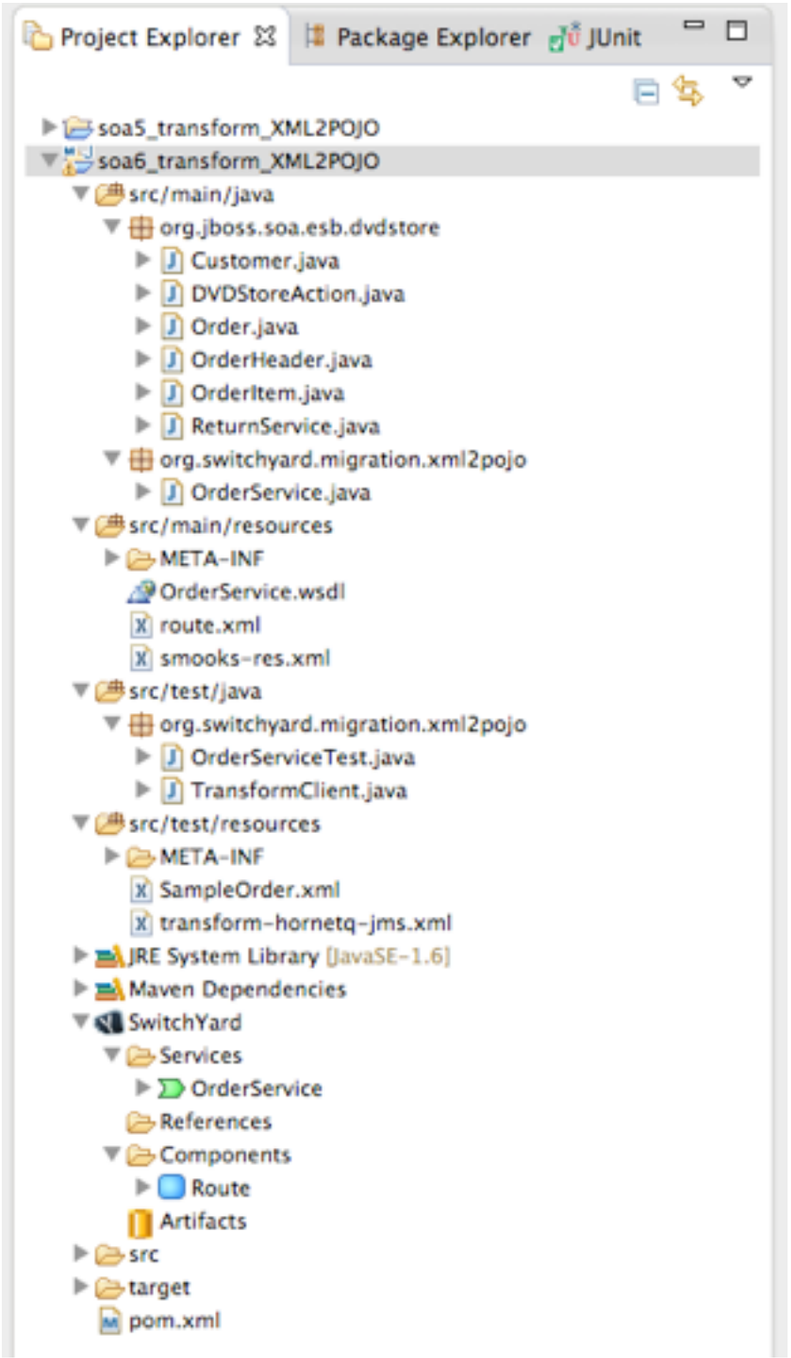


Run Test Client

TODO

1. Open TransformClient.java from the Project Explorer view.

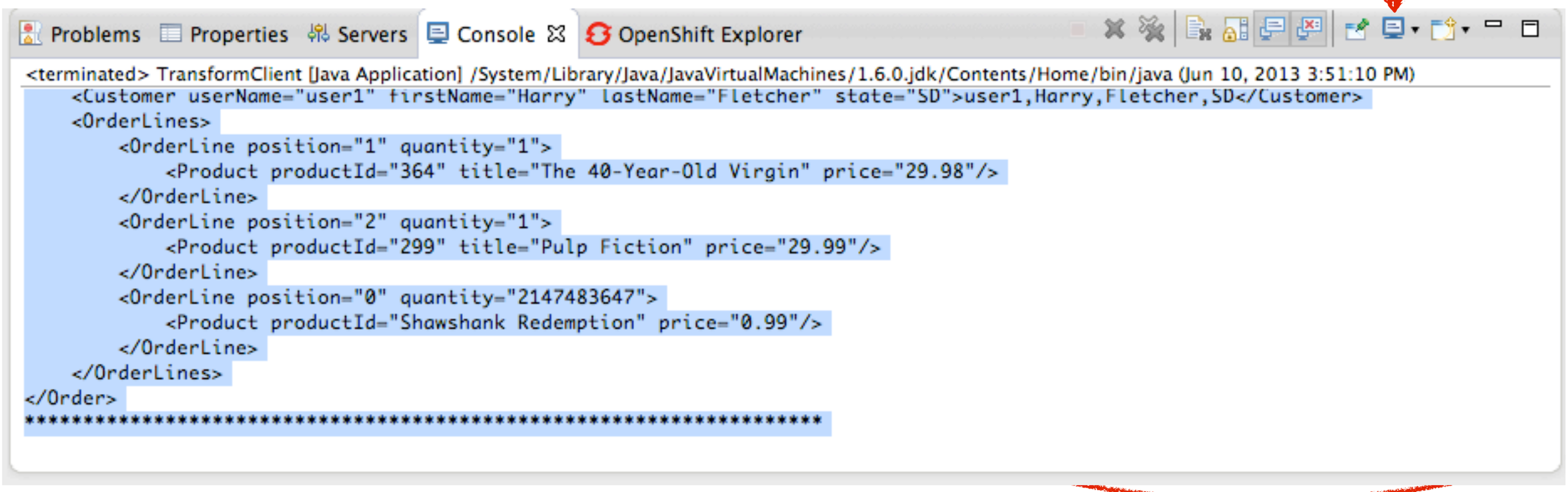
2. Go to the Run menu in the main menu bar and select ‘Run As -> Java Application’



Verify Output

TODO

1. Click here to swap between application output and server output.



Lab 4 Complete!