JBoss ESB 4.0 CR2

Message Transformation Guide

JBESB-MTG-1/11/07

Software Version

JBoss ESB 4.0 CR2

Contents

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About This Guide

What This Guide Contains

A common obstacle encountered during Enterprise Integration is that of bridging the gaps created by the fact that business constructs from different application domains representing the same data are typically represented through different data formats. Bridging this gap is one of the key features of JBoss ESB, as well as the subject of this guide.

Audience

This guide is most relevant to engineers who are responsible for using JBoss ESB 4.0 CR2 installations and want to know how it relates to SOA and ESB principles.

Prerequisites

None.

Organization

This guide contains the following chapters:

1. **Chapter 1, Overview:** An overview of the message transformation solutions provided by JBoss ESB**.**.
2. **Chapter 2, Smooks:** Using the *Smooks Transformation Management Framework* to manage your message transformation logic.
3. **Chapter 3, XSL Transformations:** Performing message transformation XSLT.
4. **Chapter 4, Binary Format Transformations:** Performing binary format transformations.

Documentation Conventions

The following conventions are used in this guide:

Convention	Description
Italic	In paragraph text, italic identifies the titles of documents that are being referenced. When used in conjunction with the Code text described below, italics identify a variable that should be replaced by the user with an actual value.
Bold	Emphasizes items of particular importance.
`Code`	Text that represents programming code.
Function | Function	A path to a function or dialog box within an interface. For example, "Select File | Open." indicates that you should select the Open function from the File menu.
( ) and |	Parentheses enclose optional items in command syntax. The vertical bar separates syntax items in a list of choices. For example, any of the following three items can be entered in this syntax: `persistPolicy (Never | OnTimer | OnUpdate | NoMoreOftenThan)`
Note: **Caution**:	A note highlights important supplemental information. A caution highlights procedures or information that is necessary to avoid damage to equipment, damage to software, loss of data, or invalid test results.

Table 1 Formatting Conventions

Additional Documentation

In addition to this guide, the following guides are available in the JBoss ESB 4.0 CR2 documentation set:

1. **JBoss ESB 4.0 CR2** *Trailblazer Guide*: Provides guidance for using the trailblazer example.

2. ***JBoss ESB 4.0 CR2*** *Getting Started Guide*: Provides a quick start reference to configuring and using the ESB.

3. **JBoss ESB 4.0 CR2** *Configuring Hypersonic Guide*: This is necessary for setting up the Hypersonic database if you want to use it within the trailblazer.

Contacting Us

Questions or comments about JBoss ESB 4.0 CR2 should be directed to our support team.

Introduction

Overview

JBoss ESB supports message data transformation through a number of mechanisms:

1. **Smooks**: Milyn Smooks is a transformation management tool that allows you manage transformations across your entire message set using techniques such as message profiling. It also supports transformation logic implementation using multiple standard mechanisms including XSLT and raw Java.

2. **XSLT**: JBoss ESB supports message transformation through the standard XSLT usage model.

3. **ActionProcessor Data Transformation**: Transformations involving binary data formats are most easily performed through implementation of the *org.jboss.soa.esb.actions.ActionProcessor* Java interface. The *org.jboss.soa.esb.actions* package (in the "Listeners" module) has a number of out-of-the-box *ActionProcessor* based transformers.

Smooks

Introduction

Milyn Smooks is integrated into JBoss ESB as one of it's out-of-the-box data Transformation solutions. Some of the terms and concepts presented in this section of the document may require you to refer to the Smooks documentation.

As outlined on the Milyn Smooks website, Smooks is a framework for both “Implementing” and “Managing” a flexible XML (and non-XML) data Transformation solution across an enterprise message set.

From an “implementation” perspective, Smooks' goal is to provide a framework in which messages can be transformed using the transformation technology most appropriate to the transformation required e.g. it may be easier to transform one part of the message using XSLT and another part using raw Java code.

From a “management” perspective, Smooks' goal is to provide a framework in which an “enterprise message set” can be “profiled”, with transformations being applied based on these profiles. In this way, transformation resources can be more easily reused and transformation configuration can be reduced. More on message profiles later.

Smooks achieves its goals by applying a processing model different from that applied by the likes of XSLT.

The Smooks Transformation Model

With XSLT, message transformation is performed in batch and “targeted” at a “whole” document i.e. at the document level. In general, XSLT transformations are thought about, defined and applied with the whole message in mind.

Smooks applies (targets) transformation logic at the element level i.e. at the document fragment level. Smooks transforms the “whole” message through the application of multiple “mini” transformations that have been “targeted” at specific message fragments. Smooks uses a message's “profile set” to decide whether or not an individual “mini” transformation should be applied to a given message fragment. So what is a message “profile”?

Message Profiles

Central to how Smooks functions is the concept of a message “profile”. A message profile is simply a unique name applied to a group of messages to which common transformation resources[1] need to be targeted.

So how does the concept of a message profile map into the world of JBoss ESB Transformations? Within the context of JBoss ESB, message transformations are performed in order to make a messages "produced" by one entity "*A*", "consumable" by another entity "*B*". We refer to this interaction as a "Message Exchange", with entities "*A*" and "*B*" being the "Message Exchange Participants". Therefore, all JBoss ESB Transformations are defined in terms of a "Message Exchange". They are defined with respect to the two Participants involved in that Message Exchange, as well as the message typing information associated with the message being exchanged between the 2 participants[2]. Therefore, the 4 properties of all Message Exchanges are:

1. **from**: Message producer participant name,
2. **from-type**: Message producer message type (message type produced),
3. **to**: Message consumer participant name,
4. **to-type**: Message consumer message type (message type consumed),

It is these 4 properties that map JBoss ESB messages into the Smooks world of “Message Profiles”. Each one of these properties translates directly into a message profile.

As you can imagine, multiple messages can potentially share an intersecting subset of profiles. Using the 4 message exchange based message profiles above , JBoss ESB can specify and target all transformations that need to be applied to all messages “from” (produced by) a particular message exchange participant using a single set configurations. In this case, the details relating to the transformation requirements of the message consumer (where the message is going to “to”) can be handled by a separate set of configurations targeted at the “to” and/or “to-type” message exchange profiles.

[1] The definition of a “transformation resource” applies to anything that can be targeted at a message profile and used in the course of that message's transformation. Typically this will be units of transformation “logic” (XSLT, Java), but is not limited to that. They can also be things like profile-based parameters or configurations.

[2] Note that any message exchange participant can potentially produce or consume multiple message types

Integration

Smooks is integrated into JBoss ESB through an ActionProcessor class called *org.jboss.soa.esb.actions..convertersSmooksTransformer*.

SmooksTransformer Configuration

SmooksTransformer actions are configured into a listener action pipeline in the standard way as follows:

```
<action class="org.jboss.soa.esb.actions.converters.SmooksTransformer"
        from-type="Acme-Order-XML"
        from="Acme"
        to-type="PartnerX-Order-XML"
        to="PartnerX"
        />
```

From this you can see that the *SmooksTransformer* requires 4 properties, corresponding directly with the JBoss ESB message exchange profiles mentioned earlier. How to create these Transformation Resource Configurations is outlined in the following sections.

Smooks Resource Configurations

Smooks is configured (transformation resources are targets) using a set of XML configuration files listed in a file called "*smooks-cdr.lst*". The folder containing this file must be specified in the classpath i.e. this file must be in the root of the classpath.

The *smooks-cdr.lst* file simply specifies a set of Smooks resource configuration URIs to be loaded into the Smooks context. Each list entry URI can load a configuration set over the standard protocols supported by the *java.net.URL* class ("http", "file" etc), with the addition of support for loading resources from the classpath. The following is a simple example of the *smooks-cdr.lst* file:

```
# Load from the classpath – note "classpath" is the default protocol...
/com/acme/integr/smooks/messages_from_partnerx.cdrl
classpath:/com/acme/integr/smooks/messages_to___partnerx.cdrl

# Load over http – from the JBoss ESB Admin Console...
http://localhost:8080/jboss-esb-console/transform/smooks-config.jsp
```

The individual files should not be interpreted as being separate transformations; this is purely a configuration grouping scheme. Having them all in a single XML file might not be so easy to navigate or maintain. It is the combined contents of these files that matters. They constitute an effective Smooks Configuration "Database".

JBoss ESB offers 2 methods of creating Smooks Configurations:

1. Manual creation of the XML configurations and their listings in the *smooks-cdr.lst* file.
2. Through the **JBoss ESB Administration Console**.

Both these options are available to JBoss ESB at the same time i.e. you can have most of your configurations maintained through the **JBoss ESB Administration Console**, while at the same time having a small subset maintained manually. This is possible simply because Smooks (and therefore the *SmooksTransformer*) loads it's configurations as XML streams via the URI set listed in the *smooks-cdr.lst* file, with the **JBoss ESB Administration Console** making the configuration set under its control available over HTTP (`http://<host>:<port>/jboss-esb-console/transform/smooks-config.jsp`). As outlined above, HTTP is one of the protocols supported by the *smooks-cdr.lst* file.

Manual Resource Configuration

The best reference on manual creation of Smooks Resource Configurations can be found on the Milyn Smooks website.

JBoss ESB Administration Console

The **JBoss ESB Administration Console** is the easiest way to create Smooks Resource Configurations. This application is a J2EE Web Application. This application persists all configurations to a database using the Hibernate persistence framework. The application currently **runs on JBoss Application Server ONLY**.

In order to use the ESB Administration Console, it needs to be packaged (from the release distribution) for your local environment. Here are the steps to packaging, deploying and configuring the console application[3]:

1. Open a command terminal.
2. Change directory to the "tools" folder of your expanded JBoss ESB distribution.
3. run "**ant**"[4].
4. Answer the environment specific questions presented by the script.
5. On completion of the script execution, copy **"jboss-esb-console.war"** from the root of the distribution "tools" folder to your JBoss App Server "deploy" folder. If this script produces a "**jboss-esb-console-ds.xml**" Datasource descriptor file, be sure to also copy this file to the JBoss App Server "deploy" folder[5].
6. Once the application is deployed and running, the required database tables will be automatically created in the target Database (by Hibernate). Populate these database tables by running the tools/*CONSOLE-import.sql* script.
7. That's it!

Direct your browser to the following URL:

```
http://<host>:<port>/jboss-esb-console/
```

Smooks Configurations maintained by the Administration Console can be loaded by the *SmooksTransformer* by specifying the following URL in the *smooks-cdr.lst* file:

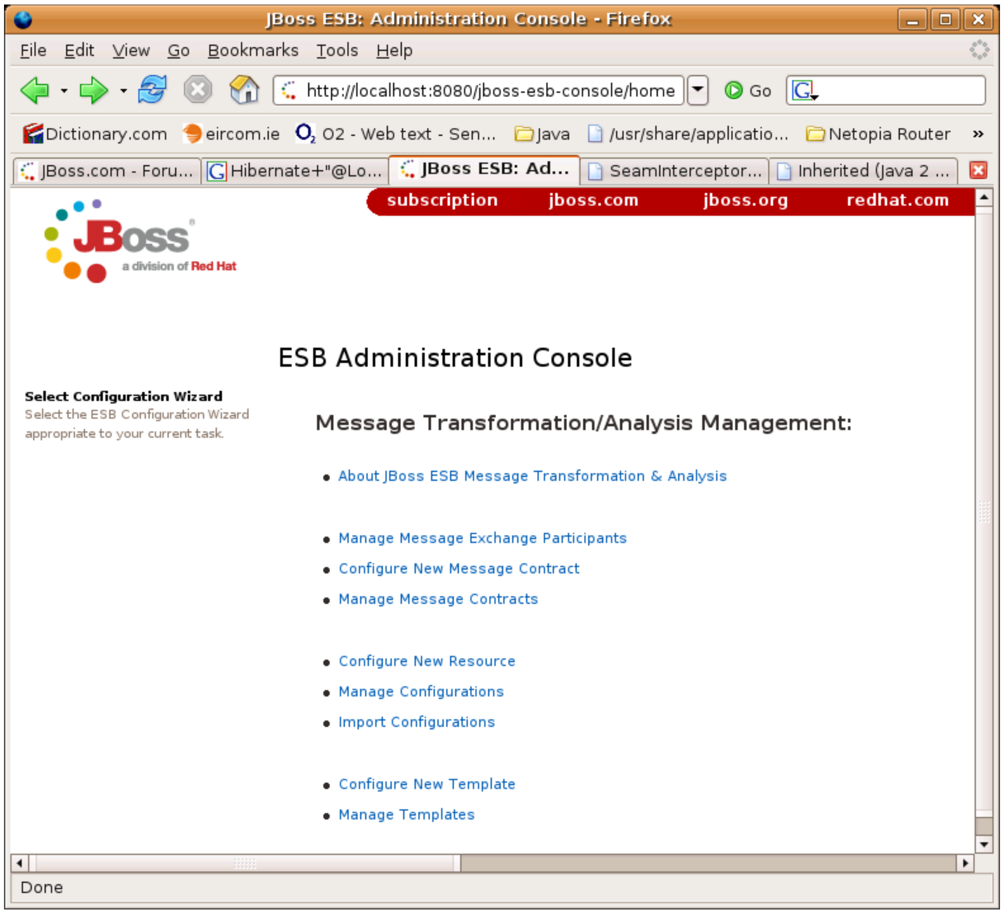
```
http://<host>:<port>/jboss-esb-console/transform/smooks-config.jsp
```

[3]Note that these instructions are specific to building the console deployment from a release distribution i.e. not from source.
[4]Before running the "ant" command to package the console application for your environment, be sure to set the JAVA_HOME (JDK5) and ANT_HOME (v1.6.5) settings in your environment.
[5]The ant script offers an option to perform a Hypersonic (HSQLDB) deployment. There is a known issue with this deployment option however. The import.sql script does not complete properly.

The following sections illustrate how to create Smooks Resource Configurations through the Administration Console.

Console Home Page

The Console Home appears as follows:



ESB Administration Console

Select Configuration Wizard
Select the ESB Configuration Wizard appropriate to your current task.

Message Transformation/Analysis Management:

- About JBoss ESB Message Transformation & Analysis

- Manage Message Exchange Participants
- Configure New Message Contract
- Manage Message Contracts

- Configure New Resource
- Manage Configurations
- Import Configurations

- Configure New Template
- Manage Templates

The basic steps involved in **defining** and **targeting** any Smooks Configuration through the Admin Console are the same:

1. **Create the Message Exchange Participants**. This is done through the "Manage Message Exchange Participants" wizard off the console main menu. Obviously, this only needs to be done once for the lifetime of each participant. If the participant is a Service, use the Service Logical Name. Otherwise, simply make up a meaningful unique name for the Participant (e.g. the component name).
2. **Configure the Message Contracts** associated with each Message Exchange Participant . This is done through the "Configure New Message Contract" wizard off the console main menu. This is basically a process of defining the types of messages that a Participant can produce or consume[6].

[6] Note that a Participant can potentially produce or consume more than 1 message type.

3. **Set the active Message Exchange** for the browser session. This sets the Message Exchange to be associated with all future transformation configurations made on this browser session. If not already set, the console will automatically redirect the user to set the active Message Exchange.
4. **Configure and target the new Resource**. This is a 4 step process:
   - Select "Configure New Resource" from the console main menu.
   - Select a template upon which to base the new configuration. For example, if you simply wish to specify an XSLT transformation, select one of the XSLT Resource templates from the list.
   - Fill in the template. This may include setting execution parameters for the resource.
   - Target the new resource configuration at a Message Exchange (and Fragment within the message). The Message Exchange details will be pre-populated based on the active Message Exchange selection, but can be manually tweaked in order to widen or narrow the selection.

Obviously, steps 1 and 2 do not have to be repeated for every configuration, as well as the fact that the Message Exchange is set on the browser session. Therefore, the typical usage scenario, for the most part, would involve multiple iterations of step 4.

<u>Use Case 1</u>: Defining an XSLT Fragment Transformation

This usage example will outline how to define an XSL Transform for an XML message fragment and target the transform at the message fragment for a specific “Message Exchange”.

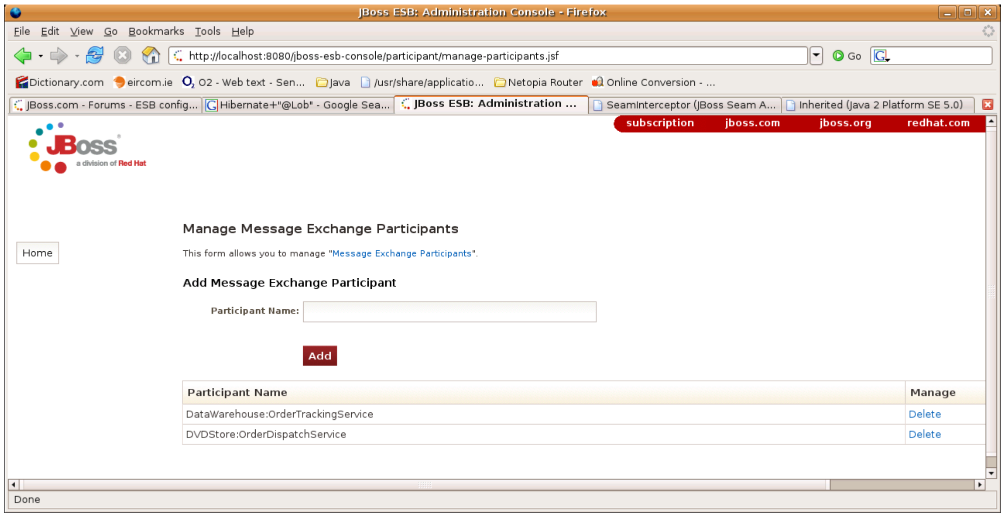
So in this example, the message exchange properties are as follow:

> **from-type**="text/csv:fullFillOrder"
> **from**="DVDStore:OrderDispatchService"
> **to-type**="text/xml:recordOrder"
> **to**="DataWarehouse:OrderTrackingService"

We have a Coma Separated Value (“<u>text/csv:fullFillOrder</u>”) message produced by “<u>DVDStore:OrderDispatchService</u>” which needs to be transformed into a “<u>text/xml:recordOrder</u>” message for consumption by “<u>DataWarehouse:OrderTrackingService</u>”.

This means we need to define 2 Message Exchange Participants (“<u>DVDStore:OrderDispatchService</u>” and “DataWarehouse:OrderTrackingService”) and 2 Message Contracts associated with each of these Participants.

The Message Exchange Participants are created and maintained through the “Manage Message Exchange Participants” wizard:


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/participant/manage-participants.jsf
Dictionary.com eircom.ie O2 - Web text - Sen... Java /usr/share/applicatio... Netopia Router Online Conversion - ...
JBoss.com - Forums - ESB config... Hibernate+"@Lob" - Google Sea... JBoss ESB: Administration ... SeamInterceptor (JBoss Seam A... Inherited (Java 2 Platform SE 5.0)
subscription jboss.com jboss.org redhat.com
Home
Add
Done

Manage Message Exchange Participants

This form allows you to manage "Message Exchange Participants".

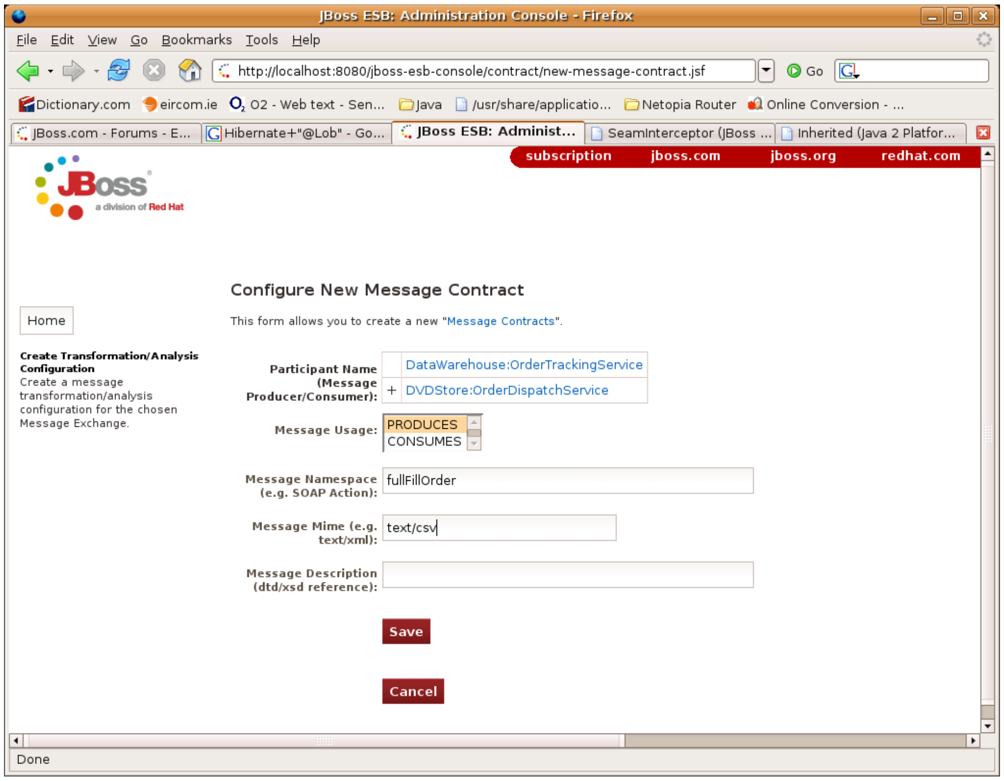
Add Message Exchange Participant

Participant Name:

Participant Name	Manage
DataWarehouse:OrderTrackingService	Delete
DVDStore:OrderDispatchService	Delete

Once the Message Exchange Participants are defined, the Message Contracts associated with these Participants can be defined through the “Configure New Message Contract” wizard.

Configure the contract for the “text/csv:fullFillOrder“ message “PRODUCED” by “DVDStore:OrderDispatchService”:


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/contract/new-message-contract.jsf
subscription jboss.com jboss.org redhat.com
Home
Done

Configure New Message Contract

This form allows you to create a new "Message Contracts".

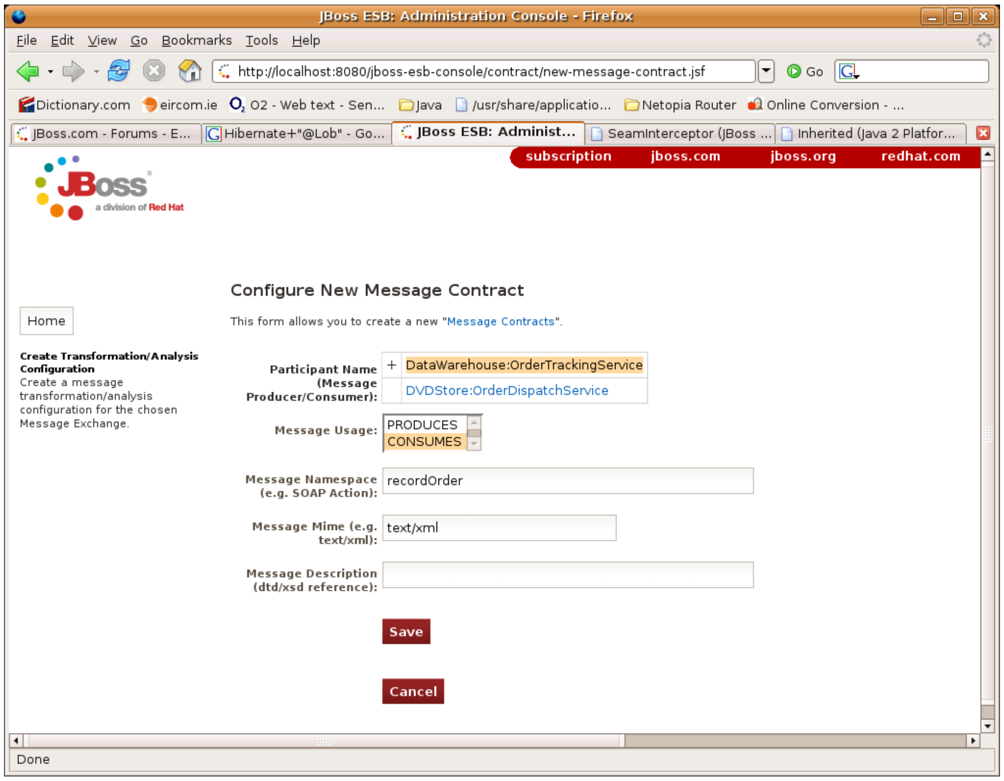
Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Exchange.

Participant Name (Message Producer/Consumer):	DataWarehouse:OrderTrackingService + DVDStore:OrderDispatchService
Message Usage:	[✓ PRODUCES] CONSUMES
Message Namespace (e.g. SOAP Action):	fullFillOrder
Message Mime (e.g. text/xml):	text/csv
Message Description (dtd/xsd reference):	

Save

Cancel

Configure the contract for the “text/xml:recordOrder“ message “CONSUMED” by “DataWarehouse:OrderTrackingService”:



JBoss ESB: Administration Console - Firefox

http://localhost:8080/jboss-esb-console/contract/new-message-contract.jsf

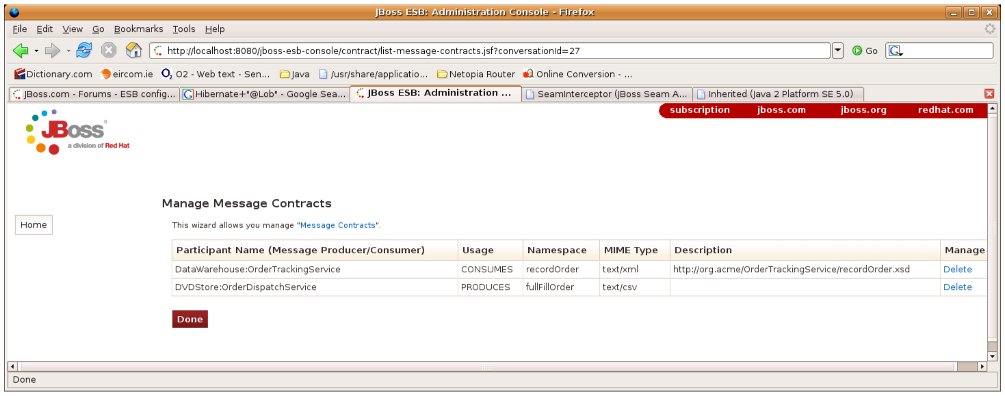
Configure New Message Contract

This form allows you to create a new "Message Contracts".

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Exchange.

Participant Name (Message Producer/Consumer):	[✓ DataWarehouse:OrderTrackingService] / DVDStore:OrderDispatchService
Message Usage:	PRODUCES / [✓ CONSUMES]
Message Namespace (e.g. SOAP Action):	recordOrder
Message Mime (e.g. text/xml):	text/xml
Message Description (dtd/xsd reference):	

The new Message Contracts can then be reviewed from the “Manage Message Contracts” view:


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/contract/list-message-contracts.jsf?conversationId=27
subscription jboss.com jboss.org redhat.com
Home

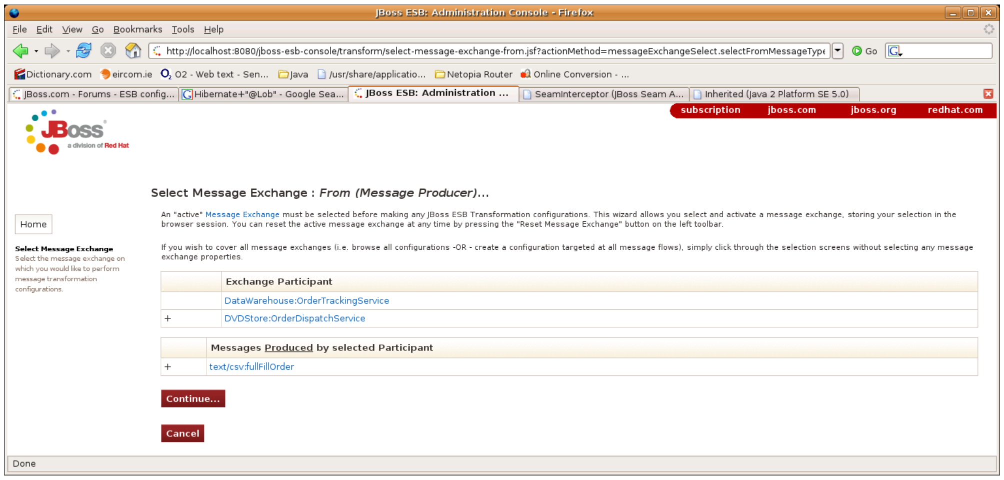
Manage Message Contracts

This wizard allows you manage "Message Contracts".

Participant Name (Message Producer/Consumer)	Usage	Namespace	MIME Type	Description	Manage
DataWarehouse:OrderTrackingService	CONSUMES	recordOrder	text/xml	http://org.acme/OrderTrackingService/recordOrder.xsd	Delete
DVDStore:OrderDispatchService	PRODUCES	fullFillOrder	text/csv		Delete

We are now ready to add the XSLT Transform and target it at the message fragment on the Message Exchange. We do this through the “Configure New Resource” wizard. At this point however, we haven't set the active Message Exchange for the browser session. To do this simply click on the link to access the “Configure New Resource” wizard. You'll notice that instead of this wizard being shown, you will be redirected to set the Message Exchange for the browser session. Just click your way through the screens to select the message exchange we wish to target (click the links and then press the “Continue..” button):

Select the “from” message exchange properties (the from contract):


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/transform/select-message-exchange-from.jsf?actionMethod=messageExchangeSelect.selectFromMessageType
subscription jboss.com jboss.org redhat.com
Home

Select Message Exchange : *From (Message Producer)*...

An "active" Message Exchange must be selected before making any JBoss ESB Transformation configurations. This wizard allows you select and activate a message exchange, storing your selection in the browser session. You can reset the active message exchange at any time by pressing the "Reset Message Exchange" button on the left toolbar.

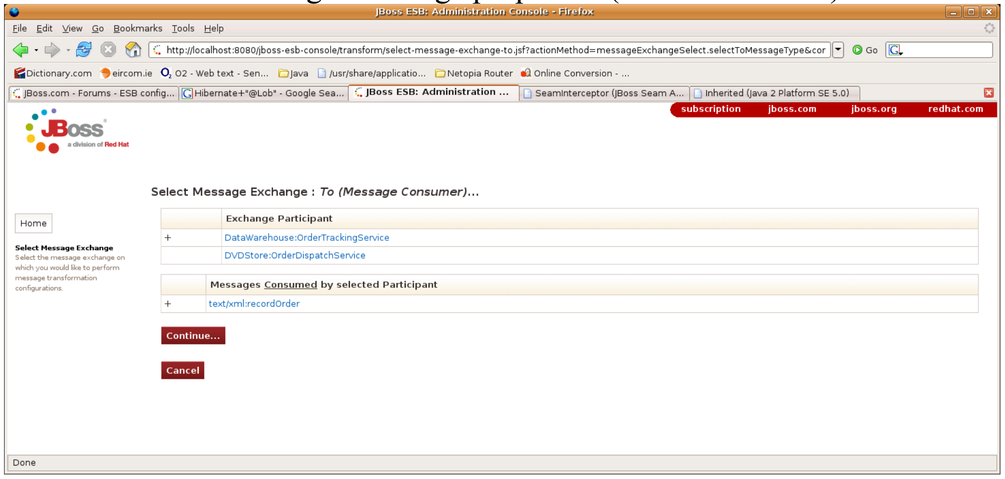
If you wish to cover all message exchanges (i.e. browse all configurations -OR - create a configuration targeted at all message flows), simply click through the selection screens without selecting any message exchange properties.

Select Message Exchange
Select the message exchange on which you would like to perform message transformation configurations.

	Exchange Participant
	DataWarehouse:OrderTrackingService
+	DVDStore:OrderDispatchService

	Messages Produced by selected Participant
+	text/csv:fullFillOrder

Select the “to” message exchange properties (the “to” contract):


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
Go
Dictionary.com
eircom.ie
O2 - Web text - Sen...
Java
/usr/share/applicatio...
Netopia Router
Online Conversion - ...
JBoss.com - Forums - ESB config...
Hibernate+"@Lob" - Google Sea...
JBoss ESB: Administration ...
SeamInterceptor (JBoss Seam A...
Inherited (Java 2 Platform SE 5.0)
subscription
jboss.com
jboss.org
redhat.com
Home
Done

http://localhost:8080/jboss-esb-console/transform/select-message-exchange-to.jsf?actionMethod=messageExchangeSelect.selectToMessageType&cor

Select Message Exchange : *To (Message Consumer)*...

	Exchange Participant
+	DataWarehouse:OrderTrackingService
	DVDStore:OrderDispatchService

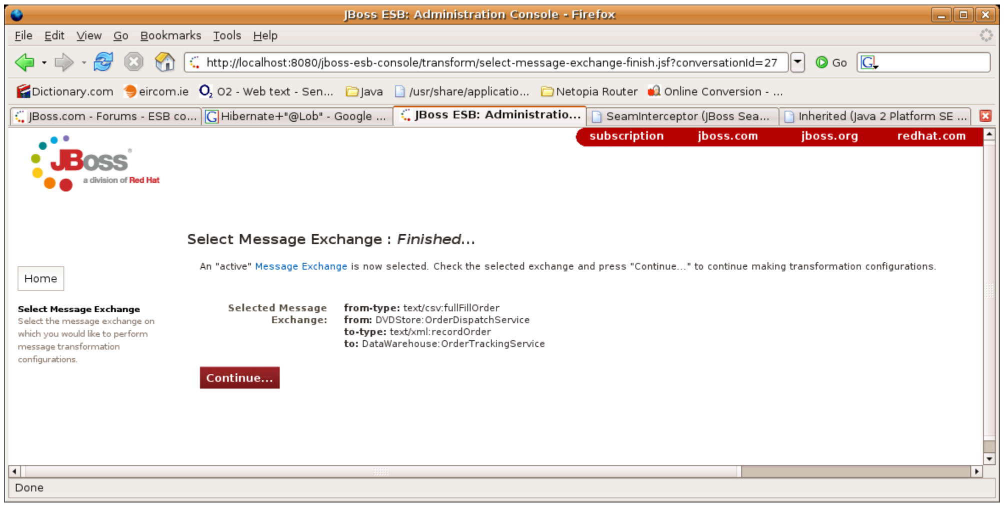
	Messages Consumed by selected Participant
+	text/xml:recordOrder

Continue...

Cancel

Select Message Exchange
Select the message exchange on which you would like to perform message transformation configurations.

Verify the selected message exchange and press “Continue” to start creating the resource configurations:


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
Go
Dictionary.com
eircom.ie
O2 - Web text - Sen...
Java
/usr/share/applicatio...
Netopia Router
Online Conversion - ...
JBoss.com - Forums - ESB co...
Hibernate+"@Lob" - Google ...
JBoss ESB: Administratio...
SeamInterceptor (JBoss Sea...
Inherited (Java 2 Platform SE ...
subscription
jboss.com
jboss.org
redhat.com
Home
Done

http://localhost:8080/jboss-esb-console/transform/select-message-exchange-finish.jsf?conversationId=27

Select Message Exchange : *Finished*...

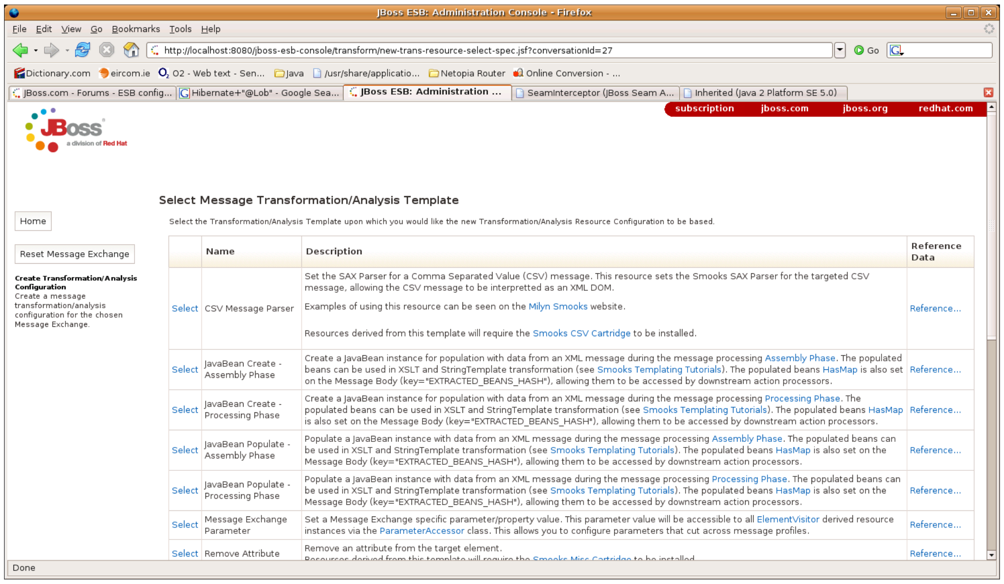
An "active" Message Exchange is now selected. Check the selected exchange and press "Continue..." to continue making transformation configurations.

Selected Message Exchange:
from-type: text/csv:fullFillOrder
from: DVDStore:OrderDispatchService
to-type: text/xml:recordOrder
to: DataWarehouse:OrderTrackingService

Continue...

Select Message Exchange
Select the message exchange on which you would like to perform message transformation configurations.

After verifying the active message exchange and pressing “Continue”, you'll be brought to the “Select Message Transformation/Analysis Template” page.



Select Message Transformation/Analysis Template

Select the Transformation/Analysis Template upon which you would like the new Transformation/Analysis Resource Configuration to be based.

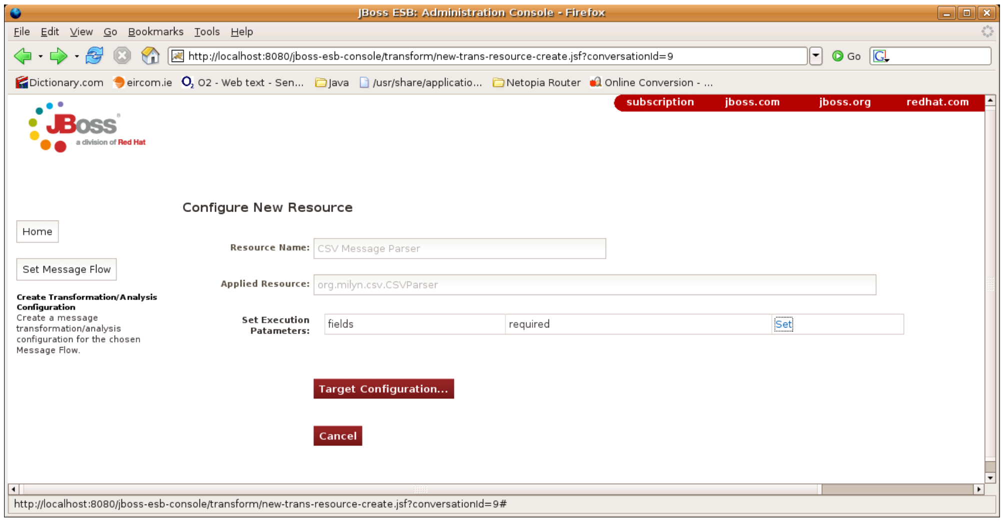
Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Exchange.

	Name	Description	Reference Data
Select	CSV Message Parser	Set the SAX Parser for a Comma Separated Value (CSV) message. This resource sets the Smooks SAX Parser for the targeted CSV message, allowing the CSV message to be interpretted as an XML DOM. Examples of using this resource can be seen on the Milyn Smooks website. Resources derived from this template will require the Smooks CSV Cartridge to be installed.	Reference...
Select	JavaBean Create - Assembly Phase	Create a JavaBean instance for population with data from an XML message during the message processing Assembly Phase. The populated beans can be used in XSLT and StringTemplate transformation (see Smooks Templating Tutorials). The populated beans HasMap is also set on the Message Body (key="EXTRACTED_BEANS_HASH"), allowing them to be accessed by downstream action processors.	Reference...
Select	JavaBean Create - Processing Phase	Create a JavaBean instance for population with data from an XML message during the message processing Processing Phase. The populated beans can be used in XSLT and StringTemplate transformation (see Smooks Templating Tutorials). The populated beans HasMap is also set on the Message Body (key="EXTRACTED_BEANS_HASH"), allowing them to be accessed by downstream action processors.	Reference...
Select	JavaBean Populate - Assembly Phase	Populate a JavaBean instance with data from an XML message during the message processing Assembly Phase. The populated beans can be used in XSLT and StringTemplate transformation (see Smooks Templating Tutorials). The populated beans HasMap is also set on the Message Body (key="EXTRACTED_BEANS_HASH"), allowing them to be accessed by downstream action processors.	Reference...
Select	JavaBean Populate - Processing Phase	Populate a JavaBean instance with data from an XML message during the message processing Processing Phase. The populated beans can be used in XSLT and StringTemplate transformation (see Smooks Templating Tutorials). The populated beans HasMap is also set on the Message Body (key="EXTRACTED_BEANS_HASH"), allowing them to be accessed by downstream action processors.	Reference...
Select	Message Exchange Parameter	Set a Message Exchange specific parameter/property value. This parameter value will be accessible to all ElementVisitor derived resource instances via the ParameterAccessor class. This allows you to configure parameters that cut across message profiles.	Reference...
Select	Remove Attribute	Remove an attribute from the target element. Resources derived from this template will require the Smooks Misc Cartridge to be installed.	Reference...

As outlined above, the first step in creating a transformation configuration is always that of selecting a configuration template upon which to base the configuration.   However, before continuing, we need to decide on how to handle this message to get it from the CSV format produced by “DVDStore:OrderDispatchService”, to the XML format consumed by the “DataWarehouse:OrderTrackingService”. To do this we will need to configure 2 resources and target them at the Message Exchange:

1. **A CSV SAX Parser Configuration**: This will “suck” the CSV record(s) into a W3C DOM, allowing the records to be transformed into the “DataWarehouse:OrderTrackingService” XML format using XSLT.
2. **An XSLT Configuration**: This will perform the transformation on the DOM produced by the CSV Parser to produce the “DataWarehouse:OrderTrackingService” XML. In this case, the “fragment” we will target will be the whole message, simply by targeting the root of the DOM.

To configure a CSV Parser for this message, select the “CSV Message Parser” template (1st in list). This will bring you to the “Configure New Resource” form, from where you can configure the CSV fields, and target the Parser Configuration at the Message Exchange as follows:

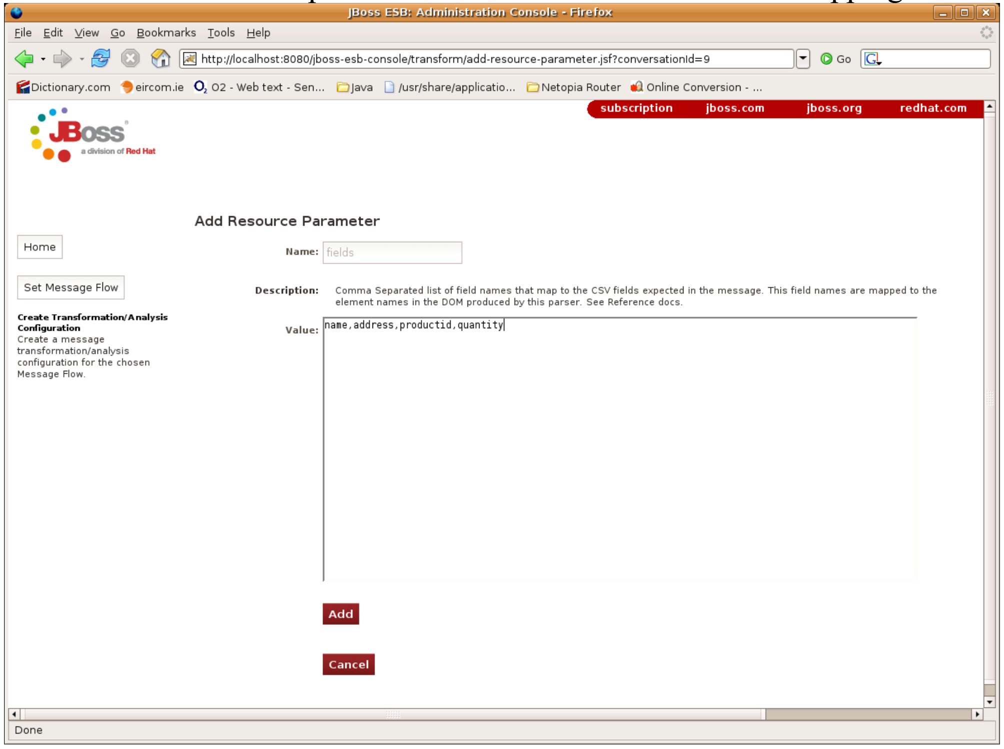

JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/transform/new-trans-resource-create.jsf?conversationId=9
subscription jboss.com jboss.org redhat.com
Home
Set Message Flow
Target Configuration...
Cancel

Configure New Resource

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Flow.

Resource Name:	CSV Message Parser	
Applied Resource:	org.milyn.csv.CSVParser	
Set Execution Patameters:	fields	required	Set

Click “Set” on the “fields” execution parameter and enter the “DVDStore:OrderDispatchService” Order CVS field name mappings:

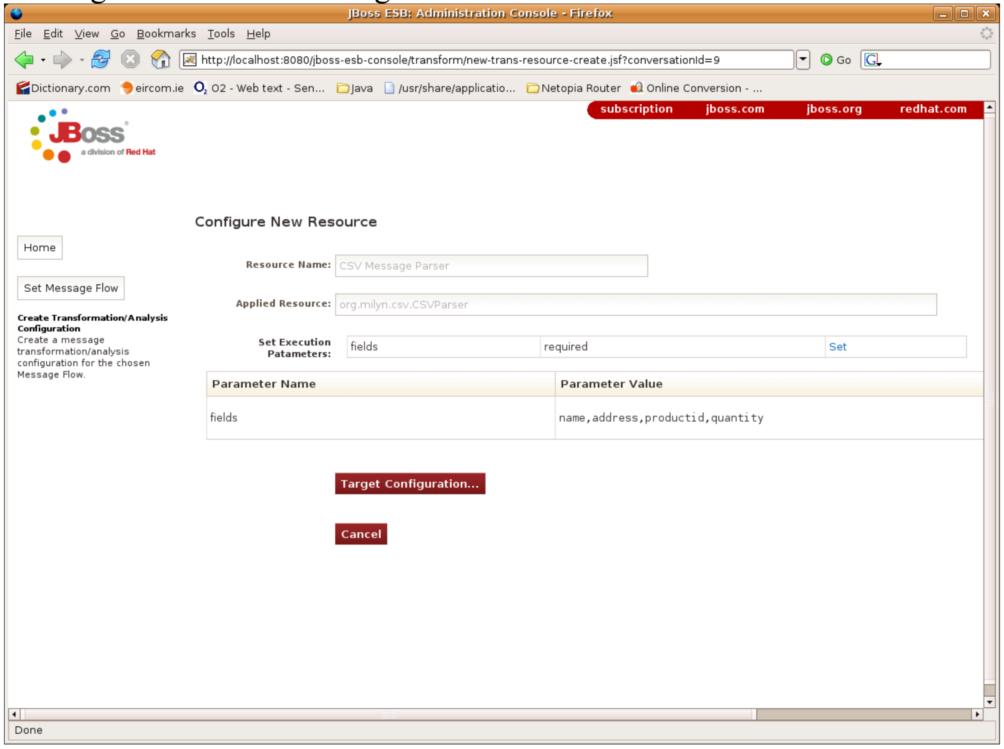

JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/transform/add-resource-parameter.jsf?conversationId=9
subscription jboss.com jboss.org redhat.com
Home
Set Message Flow
Add
Cancel
Done

Add Resource Parameter

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Flow.

Name:	fields
Description:	Comma Separated list of field names that map to the CSV fields expected in the message. This field names are mapped to the element names in the DOM produced by this parser. See Reference docs.
Value:	name,address,productid,quantity

Once the "fields" parameter has been added to the configuration you will be brought back to the "Configure New Resource" form:


JBoss ESB: Administration Console - Firefox
http://localhost:8080/jboss-esb-console/transform/new-trans-resource-create.jsf?conversationId=9
Home
Set Message Flow
Target Configuration...
Cancel

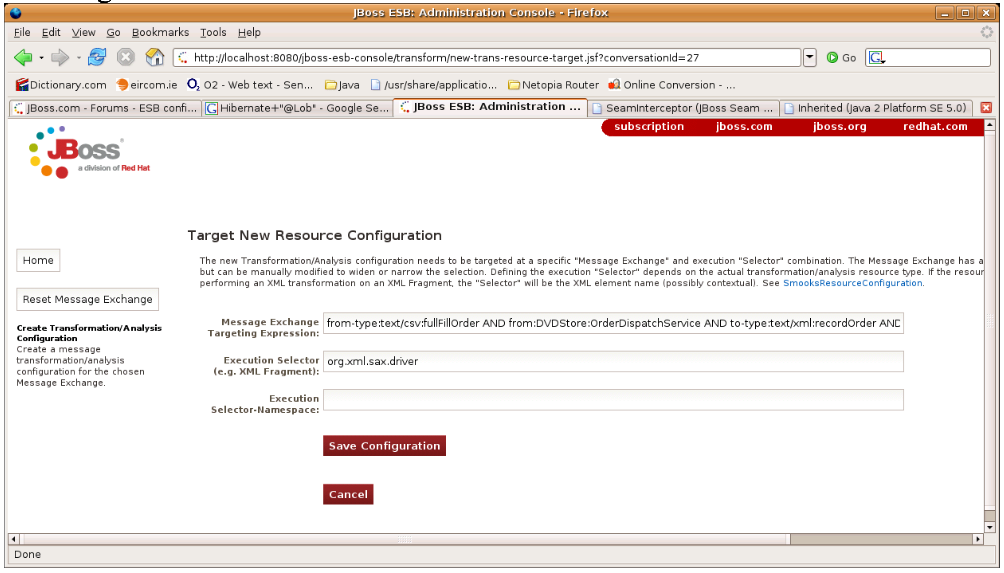
Configure New Resource

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Flow.

Resource Name:	CSV Message Parser	
Applied Resource:	org.milyn.csv.CSVParser	
Set Execution Patameters:	fields	required

Parameter Name	Parameter Value
fields	name,address,productid,quantity

Press "Target Configuration..." to move on to the "Target New Configuration" form:


JBoss ESB: Administration Console - Firefox
http://localhost:8080/jboss-esb-console/transform/new-trans-resource-target.jsf?conversationId=27
Home
Reset Message Exchange
Save Configuration
Cancel

Target New Resource Configuration

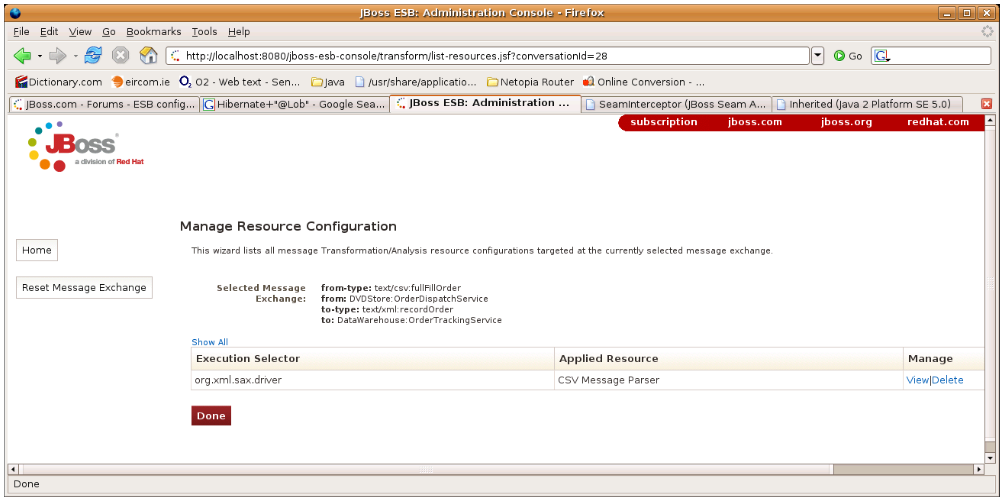
The new Transformation/Analysis configuration needs to be targeted at a specific "Message Exchange" and execution "Selector" combination. The Message Exchange has a
but can be manually modified to widen or narrow the selection. Defining the execution "Selector" depends on the actual transformation/analysis resource type. If the resour
performing an XML transformation on an XML Fragment, the "Selector" will be the XML element name (possibly contextual). See SmooksResourceConfiguration.

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Exchange.

Message Exchange Targeting Expression:	from-type:text/csv:fullFillOrder AND from:DVDStore:OrderDispatchService AND to-type:text/xml:recordOrder ANE
Execution Selector (e.g. XML Fragment):	org.xml.sax.driver
Execution Selector-Namespace:	

Note how the "Message Exchange Useragent Expression" is pre-populated with the details of the selected message exchange[7]. Just press "Save Configuration" to complete the process of creating the CSV Parser Smooks Configuration. You will return to the Console Home Page.

Select "Manage Configurations" and you will be able to see the new configuration:


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
Go
Dictionary.com eircom.ie O2 - Web text - Sen... Java /usr/share/applicatio... Netopia Router Online Conversion - ...
JBoss.com - Forums - ESB config... Hibernate+"@Lob" - Google Sea... JBoss ESB: Administration ... SeamInterceptor (JBoss Seam A... Inherited (Java 2 Platform SE 5.0)
subscription jboss.com jboss.org redhat.com
Home
Reset Message Exchange
Show All
Done
Done

http://localhost:8080/jboss-esb-console/transform/list-resources.jsf?conversationId=28

Manage Resource Configuration

This wizard lists all message Transformation/Analysis resource configurations targeted at the currently selected message exchange.

Selected Message Exchange: **from-type:** text/csv:fullFillOrder
from: DVDStore:OrderDispatchService
to-type: text/xml:recordOrder
to: DataWarehouse:OrderTrackingService

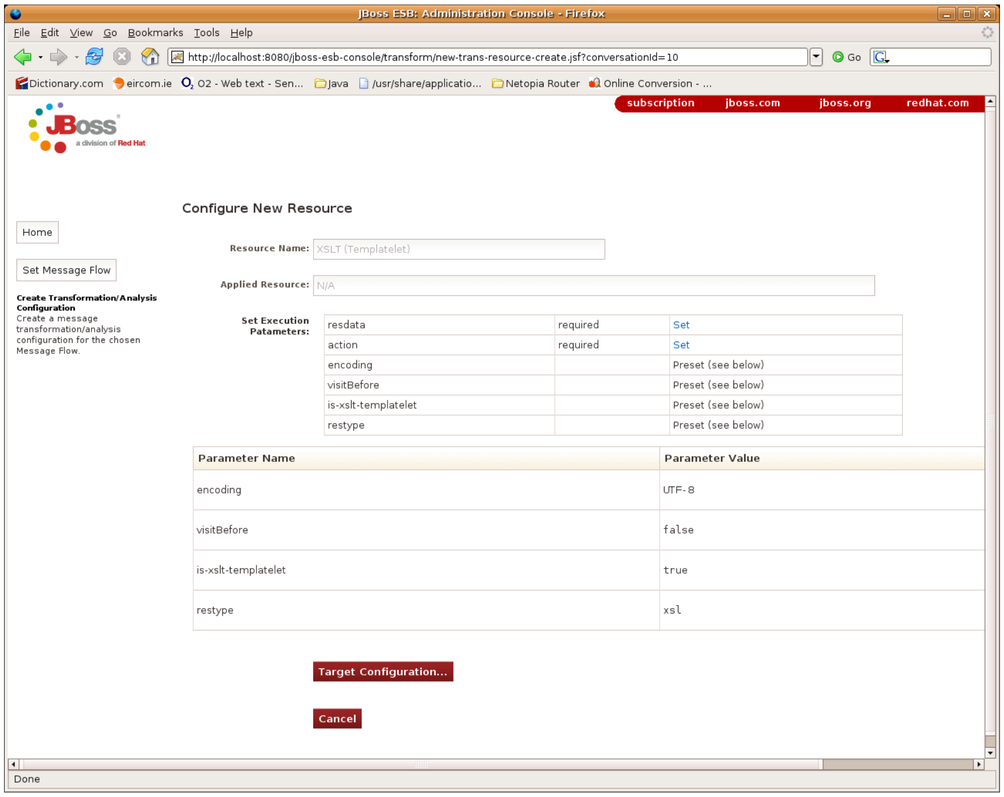
Execution Selector	Applied Resource	Manage
org.xml.sax.driver	CSV Message Parser	View|Delete

Next we need to create the XSLT configuration and target it at the same Message Exchange. Note that when this resource is applied by Smooks, the CSV message will be in a W3C DOM. The XML representation of this DOM will be of the following form (see Smooks CSVParser Docs):

```
<cvs-set>
        <cvs-record>
                <name>Tom Fennelly</name>
                <address>Ireland</address>
                <productid>V1234</productid>
                <quantity>3</quantity>
        <cvs-record>
        <cvs-record>
                <name>Joe Bloggs</name>
                <address>England</address>
                <productid>D9123</productid>
                <quantity>7</quantity>
        <cvs-record>
</cvs-set>
```

[7]Note that we could target the CSV Parser configuration at just the 1st half of the message exchange i.e. to cover all message exchanges where the source message is a "text/csv:fullFillOrder" message produced by "DVDStore:OrderDispatchService".

To configure an XSLT Transform Configuration to transform this message on the selected message exchange, click to access the “Configure New Resource” wizard again (screen shot above). This time select the “XSLT (Templatelet)” template (towards the end of the list). Once you select the template you'll be brought to the “Configure New Resource” wizard, from where you can fil in the template:


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/transform/new-trans-resource-create.jsf?conversationId=10
Go
Dictionary.com eircom.ie O2 - Web text - Sen... Java /usr/share/applicatio... Netopia Router Online Conversion - ...
subscription jboss.com jboss.org redhat.com
JBoss a division of Red Hat
Home
Set Message Flow
Target Configuration...
Cancel
Done

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Flow.

Configure New Resource

Resource Name: XSLT (Templatelet)

Applied Resource: N/A

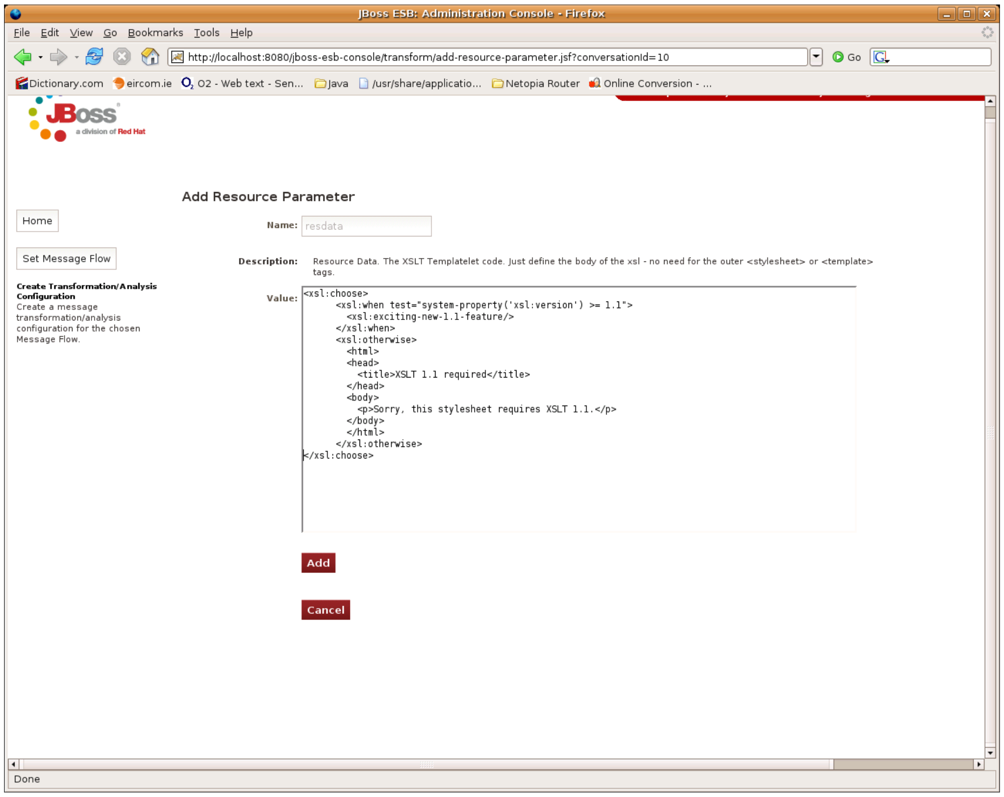
Set Execution Patameters:

resdata	required	Set
action	required	Set
encoding		Preset (see below)
visitBefore		Preset (see below)
is-xslt-templatelet		Preset (see below)
restype		Preset (see below)

Parameter Name	Parameter Value
encoding	UTF-8
visitBefore	false
is-xslt-templatelet	true
restype	xsl

On this resource you need to set 2 Execution Parameters: “resdata” and “action”.

Set the “resdata” parameter. Note, with the XSLT Templatelet, there's no need to define all the stylesheet – see Smooks docs:


JBoss ESB: Administration Console - Firefox
File Edit View Go Bookmarks Tools Help
http://localhost:8080/jboss-esb-console/transform/add-resource-parameter.jsf?conversationId=10
Home
Set Message Flow
Add
Cancel
Done

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Flow.

Add Resource Parameter

Name: resdata

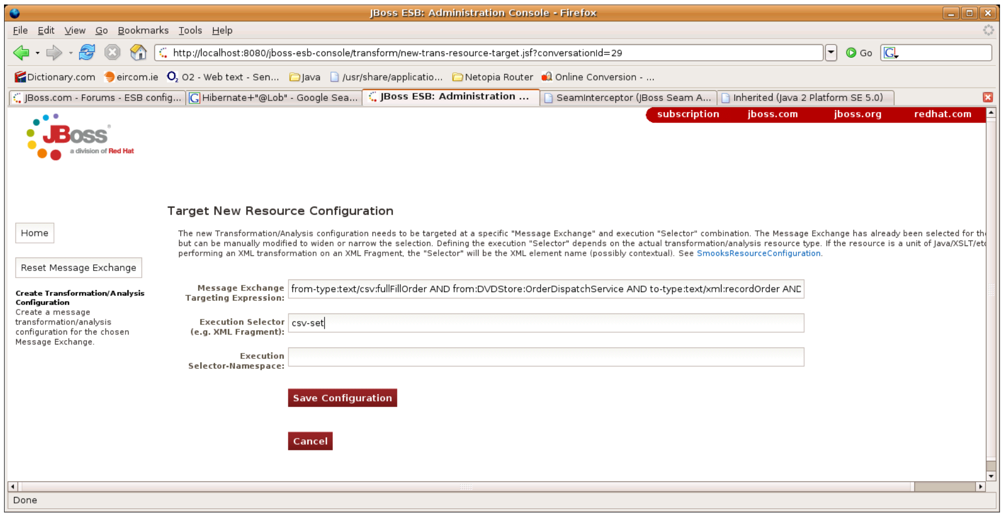
Description: Resource Data. The XSLT Templatelet code. Just define the body of the xsl - no need for the outer <stylesheet> or <template> tags.

Value:

```
<xsl:choose>
      <xsl:when test="system-property('xsl:version') >= 1.1">
        <xsl:exciting-new-1.1-feature/>
      </xsl:when>
      <xsl:otherwise>
        <html>
        <head>
          <title>XSLT 1.1 required</title>
        </head>
        <body>
          <p>Sorry, this stylesheet requires XSLT 1.1.</p>
        </body>
        </html>
      </xsl:otherwise>
</xsl:choose>
```

Set the “action” parameter to “replace” (see Smooks docs).

After adding both Execution Parameters, press the “Target Configuration...” button and move on to the “Target New Resource Configuration” form. This time you'll notice that the “Execution Selector” field is empty and needs to be populated. We want to target this XSL Transformation resource at the root the CSV Order DOM i.e. the “csv-set” element:


JBoss ESB: Administration Console - Firefox
http://localhost:8080/jboss-esb-console/transform/new-trans-resource-target.jsf?conversationId=29
subscription
jboss.com
jboss.org
redhat.com
Home
Reset Message Exchange
Save Configuration
Cancel
Done

Target New Resource Configuration

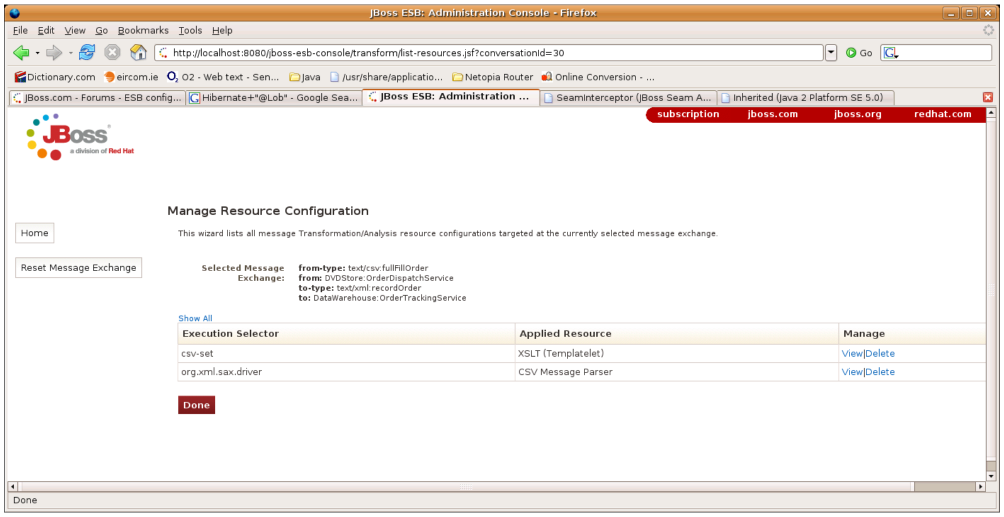
The new Transformation/Analysis configuration needs to be targeted at a specific "Message Exchange" and execution "Selector" combination. The Message Exchange has already been selected for th
but can be manually modified to widen or narrow the selection. Defining the execution "Selector" depends on the actual transformation/analysis resource type. If the resource is a unit of Java/XSLT/etc
performing an XML transformation on an XML Fragment, the "Selector" will be the XML element name (possibly contextual). See SmooksResourceConfiguration.

Create Transformation/Analysis Configuration
Create a message transformation/analysis configuration for the chosen Message Exchange.

Message Exchange Targeting Expression:	from-type:text/csv:fullFillOrder AND from:DVDStore:OrderDispatchService AND to-type:text/xml:recordOrder AND
Execution Selector (e.g. XML Fragment):	csv-set
Execution Selector-Namespace:	

Note again that the “Message Exchange Useragent Expression” is pre-populated for the current Message Exchange.

Press “Save Configuration” to complete the process. At this point you can return to the “Manage Configurations” form to review the configurations you just added:


JBoss ESB: Administration Console - Firefox
http://localhost:8080/jboss-esb-console/transform/list-resources.jsf?conversationId=30
subscription
jboss.com
jboss.org
redhat.com
Home
Reset Message Exchange
Show All
Done
Done

Manage Resource Configuration

This wizard lists all message Transformation/Analysis resource configurations targeted at the currently selected message exchange.

Selected Message Exchange:
from-type: text/csv:fullFillOrder
from: DVDStore:OrderDispatchService
to-type: text/xml:recordOrder
to: DataWarehouse:OrderTrackingService

Execution Selector	Applied Resource	Manage
csv-set	XSLT (Templatelet)	View|Delete
org.xml.sax.driver	CSV Message Parser	View|Delete

In order to allow the *SmooksTransformer* JBoss ESB ActionProcessor to leverage these configurations, simply make sure the *smooks-cdr.lst* file (in the root of the classpath) contains a list entry of **http://<host>:<port>/jboss-esb-console/transform/smooks-config.jsp**. where host and port refer to the address of the running Admin Conosle application.

An *SmooksTransformer* action configuration to execute these resources on this message flow would appear in your ESB Listener Configuration as follows:

```
<action class="org.jboss.soa.esb.actions.converters.SmooksTransformer"
        from-type="text/csv:fullFillOrder"
        from="DVDStore:OrderDispatchService"
        to-type="text/xml:recordOrder"
        to="DataWarehouse:OrderTrackingService"
        />
```

XSL Transformations

following sections illustrate how to create Smooks Resource

Introduction

In this release of JBossESB, XSL Transformations are supported through Smooks. In later releases we will be supporting XSLT natively. Support for XSLT can be provided by creating a custom *org.jboss.soa.esb.actions.ActionProcessor* implementation.

Binary Format Transformations

Introduction

Binary Transformations are currently supported through custom implementation of the *org.jboss.soa.esb.actions.ActionProcessor* interface.

JBossESB is shipped with a number of out-of-the-box binary transformers e.g. *org.jboss.soa.esb.actions.ObjectToXStream* and *org.jboss.soa.esb.actions.ObjectToCSVString*.