Racing Camel with JBoss BPM & Red Hat JBoss Fuse: Lab Guide

	Information
Technology/Product	Red Hat JBoss BPM Suite 6.1 & Red Hat JBoss Fuse 6.1.1
Difficulty	3
Time	2 hrs
Prerequisites	Basic Java knowledge, ability to read English instructions.

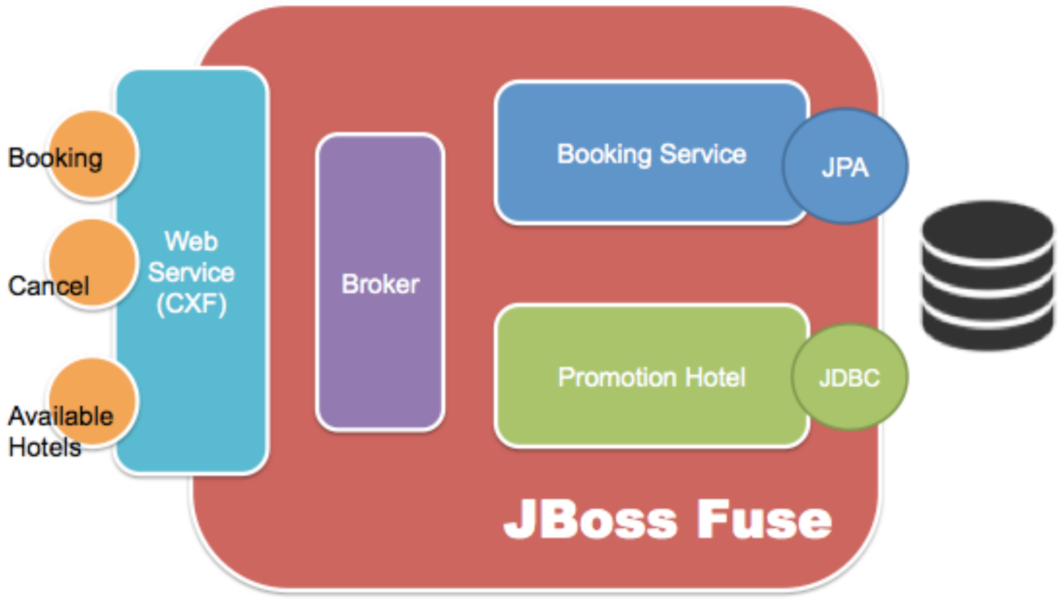
Before we begin,

Let's install and create the fuse fabric.

- To start up JBoss Fuse, go to [project-root-directory]/summit-racing-camel-with-jboss-bpm-fuse/target/jboss-fuse-6.1.1.redhat-412/bin and run
  - ./fuse
- In console create Fuse Fabric by typing
  - `fabric:create --wait-for-provisioning`
- Stop your fuse by typing `exit` in console

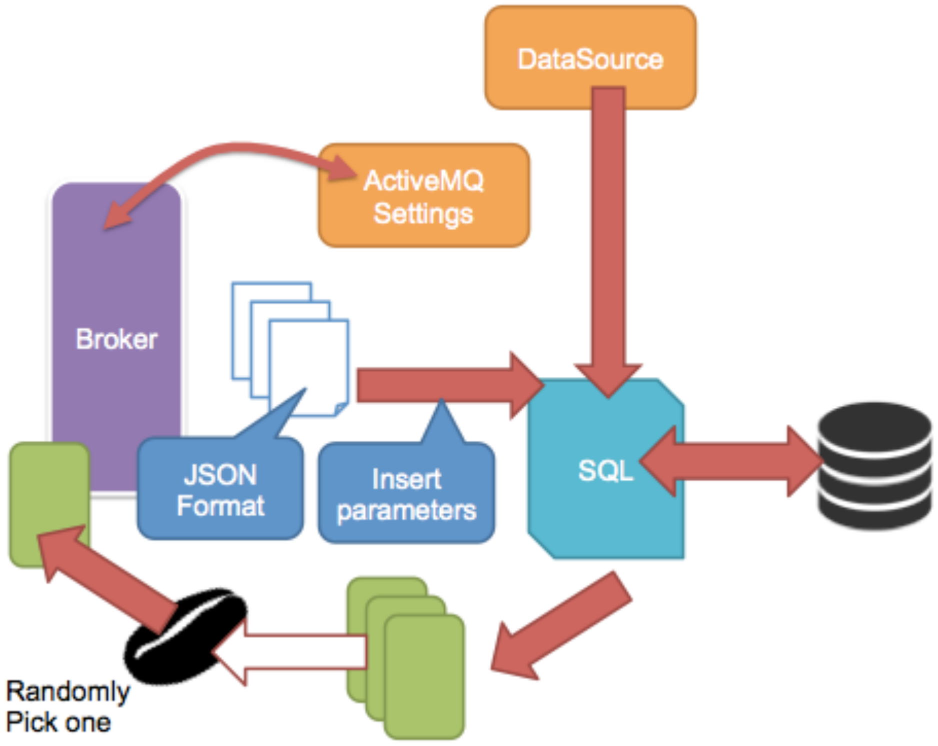
Situation

We are an operating travel agency, our company has been ask to create an web service for hotel enquiry and hotel bookings to allow other applications, such as a web client, mobile application and most importantly to provide service to a customer's employee online travel booking process service.



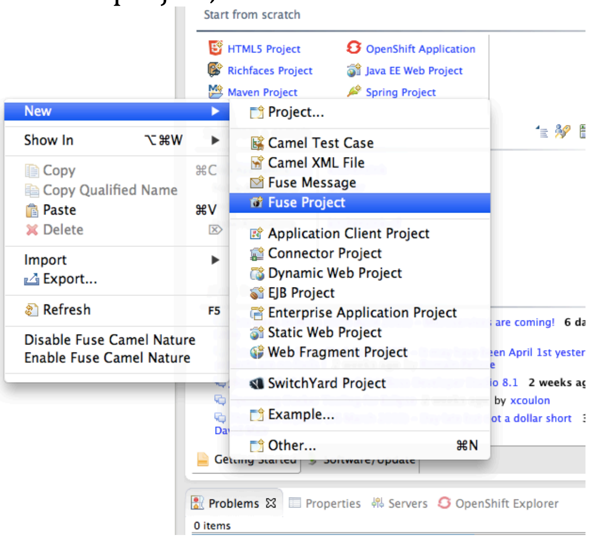
Promotion Hotels recommend - Retrieving Data from Database

This application lists all the available hotels to the client with condition like the location of the hotels. After retrieving all the possible hotel data from database, it'll either randomly pick one of them, or create a default hotel.

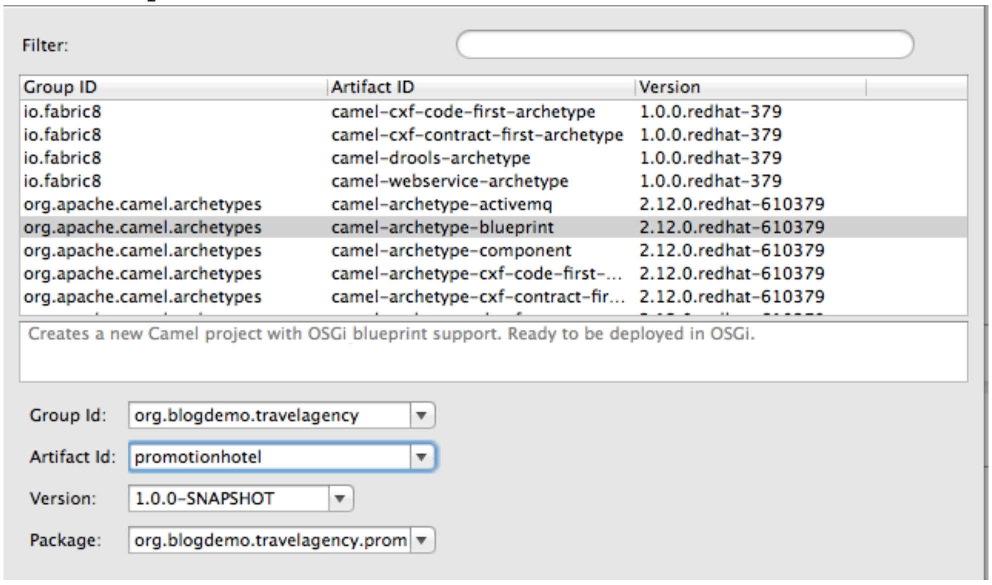


Instructions

Create a Fuse project,



Choose the **blueprint** archetype,
GroupID: `org.blogdemo.travelagency`
ArtifactID:`promotionhotel`

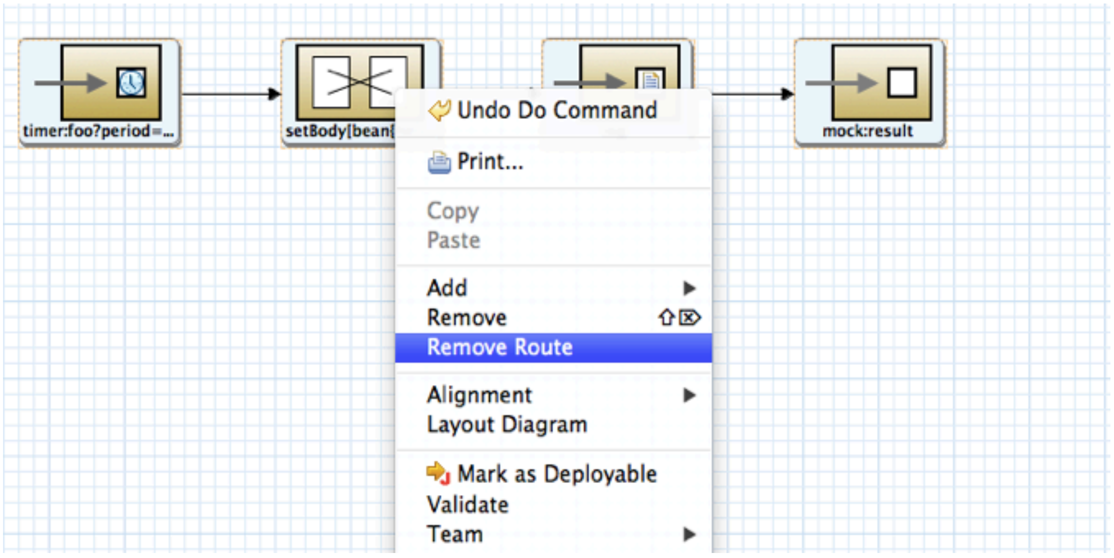

Filter:

Group ID	Artifact ID	Version
io.fabric8	camel-cxf-code-first-archetype	1.0.0.redhat-379
io.fabric8	camel-cxf-contract-first-archetype	1.0.0.redhat-379
io.fabric8	camel-drools-archetype	1.0.0.redhat-379
io.fabric8	camel-webservice-archetype	1.0.0.redhat-379
org.apache.camel.archetypes	camel-archetype-activemq	2.12.0.redhat-610379
org.apache.camel.archetypes	camel-archetype-blueprint	2.12.0.redhat-610379
org.apache.camel.archetypes	camel-archetype-component	2.12.0.redhat-610379
org.apache.camel.archetypes	camel-archetype-cxf-code-first-...	2.12.0.redhat-610379
org.apache.camel.archetypes	camel-archetype-cxf-contract-fir...	2.12.0.redhat-610379

Creates a new Camel project with OSGi blueprint support. Ready to be deployed in OSGi.

Group Id: org.blogdemo.travelagency
Artifact Id: promotionhotel
Version: 1.0.0-SNAPSHOT
Package: org.blogdemo.travelagency.prom

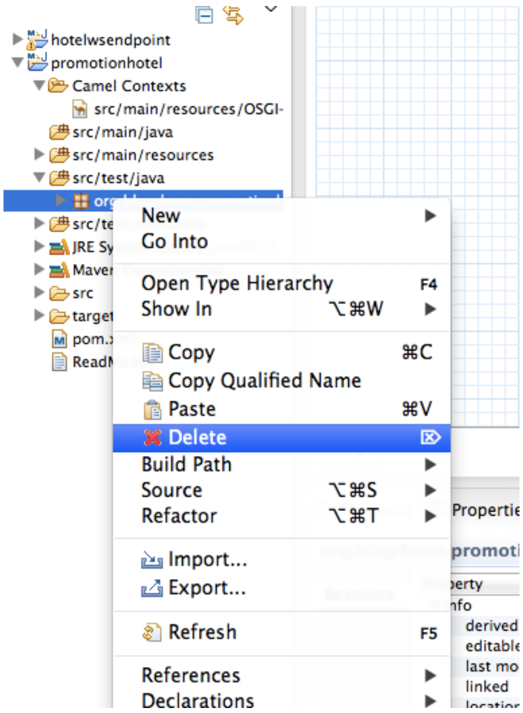
Under the project open up `src/main/resources/OSGI-INF/blueprint/blueprint.xml` and remove the route, so you are left with a blank canvas.

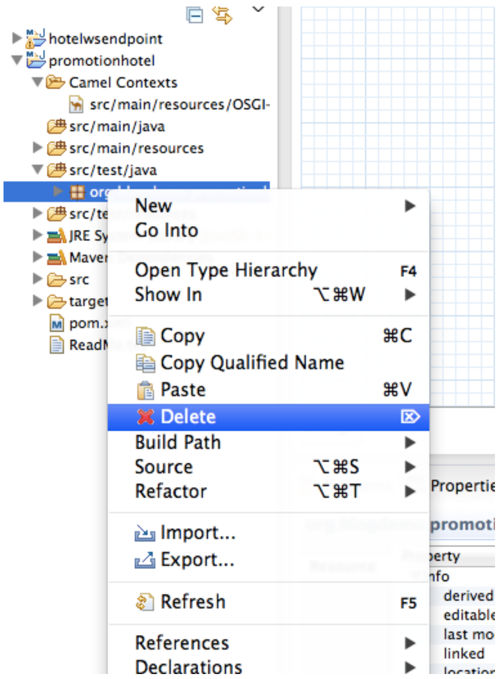


Remove the hellobean registry in the xml file. And delete all the java files.

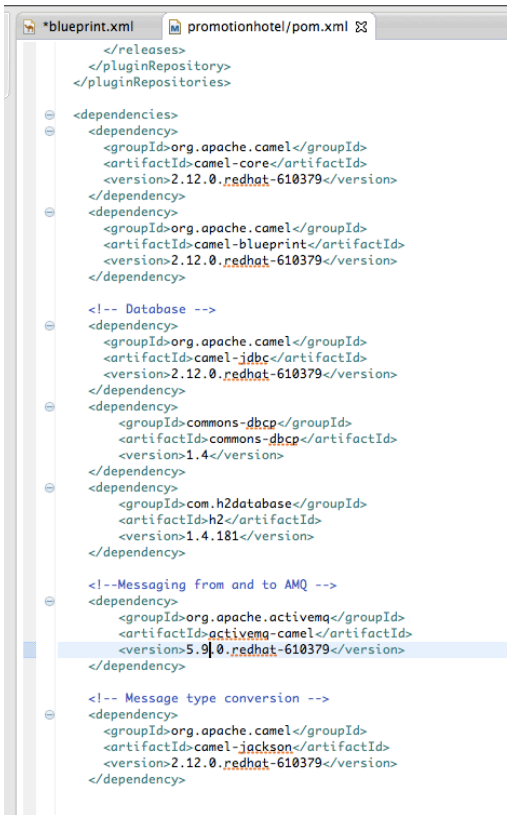
```
~~<bean id="helloBean" class="com.mycompany.camel.blueprint.HelloBean">~~
      ~~<property name="say" value="Hi from Camel"/>~~
~~</bean>~~
```

Remove everything under `src/java/*` and `src/test/*`





Now we have a brand new project to work with. First we want to make sure we have all the dependency needed in pom.xml. Add the following dependency in.


*blueprint.xml promotionhotel/pom.xml

```
      </releases>
    </pluginRepository>
  </pluginRepositories>

  <dependencies>
    <dependency>
      <groupId>org.apache.camel</groupId>
      <artifactId>camel-core</artifactId>
      <version>2.12.0.redhat-610379</version>
    </dependency>
    <dependency>
      <groupId>org.apache.camel</groupId>
      <artifactId>camel-blueprint</artifactId>
      <version>2.12.0.redhat-610379</version>
    </dependency>

    <!-- Database -->
    <dependency>
      <groupId>org.apache.camel</groupId>
      <artifactId>camel-jdbc</artifactId>
      <version>2.12.0.redhat-610379</version>
    </dependency>
    <dependency>
        <groupId>commons-dbcp</groupId>
        <artifactId>commons-dbcp</artifactId>
        <version>1.4</version>
    </dependency>
    <dependency>
        <groupId>com.h2database</groupId>
        <artifactId>h2</artifactId>
        <version>1.4.181</version>
    </dependency>

    <!--Messaging from and to AMQ -->
    <dependency>
        <groupId>org.apache.activemq</groupId>
        <artifactId>activemq-camel</artifactId>
        <version>5.9.0.redhat-610379</version>
    </dependency>

    <!-- Message type conversion -->
    <dependency>
      <groupId>org.apache.camel</groupId>
      <artifactId>camel-jackson</artifactId>
      <version>2.12.0.redhat-610379</version>
    </dependency>
```

```
<!-- Database -->
<dependency>
  <groupId>org.apache.camel</groupId>
  <artifactId>camel-jdbc</artifactId>
  <version>2.12.0.redhat-610379</version>
</dependency>
<dependency>
  <groupId>commons-dbcp</groupId>
  <artifactId>commons-dbcp</artifactId>
  <version>1.4</version>
</dependency>
<dependency>
  <groupId>com.h2database</groupId>
  <artifactId>h2</artifactId>
  <version>1.4.181</version>
</dependency>

<!--Messaging from and to AMQ -->
<dependency>
  <groupId>org.apache.activemq</groupId>
  <artifactId>activemq-camel</artifactId>
  <version>5.9.0.redhat-610379</version>
</dependency>

<!-- Message type conversion -->
<dependency>
  <groupId>org.apache.camel</groupId>
  <artifactId>camel-jackson</artifactId>
  <version>2.12.0.redhat-610379</version>
</dependency>
```

Go back Camel route file, `blueprint.xml`, add datasource setting

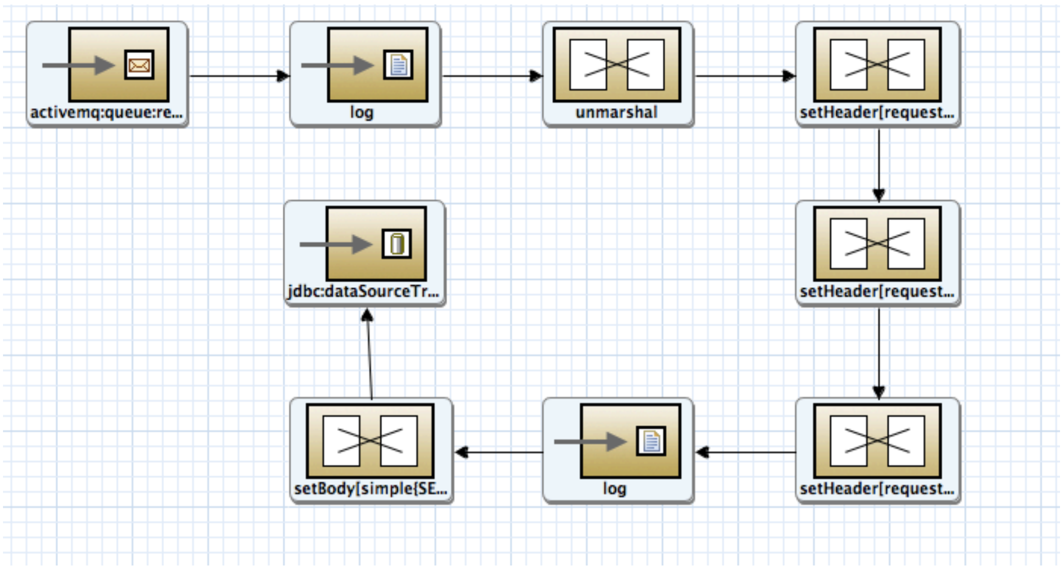
```
<bean id="dataSourceTravelAgency" class="org.apache.commons.dbcp.BasicDataSource">
  <property name="driverClassName" value="org.h2.Driver"/>
  <property name="url" value="jdbc:h2:file:~/h2/travelagency;AUTO_SERVER=TRUE" />
  <property name="username" value="sa"/>
  <property name="password" value=""/>
</bean>
```

Add activemq setting to connect to our messaging queue.

```
<bean id="activemq" class="org.apache.activemq.camel.component.ActiveMQComponent">
  <property name="brokerURL" value="tcp://localhost:61616"/>
  <property name="userName" value="admin"/>
  <property name="password" value="admin"/>
</bean>
```

Create route to

1. Read request data from queue
2. Convert data from Json to a Map object
3. Set data to header later will use these in JDBC query
4. Add SQL query and call JDBC endpoint to retrieve data.



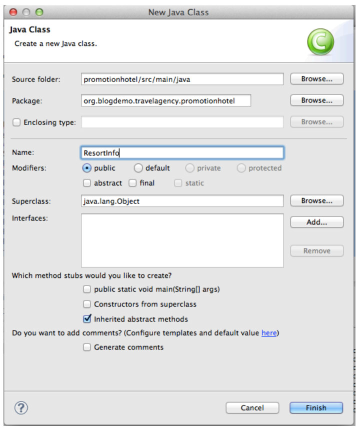
(When you save the route, it'll become a straight line)

- AMQ Endpoint
  - Uri: activemq:queue:requestHotel
- Log Endpoint
  - Uri: ${body}
- Unmarshal
  - Tab: json
  - Library: Jackson
  - Unmarshal Type Name: java.util.HashMap
- setHeader
  - HeaderName: requestCity
  - Language: simple
  - Expression: ${body[targetCity]}
- setHeader

    - HeaderName: requestStartDate
    - Language: simple
    - Expression ${body[startDate]}

- setHeader
    - HeaderName: requestEndDate
    - Language: simple
    - Expression: ${body[endDate]}
- setBody
    - Language: simple
    - Expression: SELECT * from avaliablehotels where hotelcity='${header.requestCity}
- Log Endpoint
    - Expression: requestCity ${headers.requestCity} requestStartDate ${headers.requestStartDate}
- JDBC Endpoint
    - Uri: jdbc:dataSourceTravelAgency

We have the data returned in a Hashmap format, but it's better to map them into a POJO, so create a custom bean to do this.
Create the POJO java class
Package: org.blogdemo.travelagency.promotionhotel
Class name: ResortInfo



Java Class
Create a new Java class.

Source folder: promotionhotel/src/main/java
Package: org.blogdemo.travelagency.promotionhotel
☐ Enclosing type:
Name: ResortInfo
Modifiers: [✓ public] default private protected
☐ abstract ☐ final ☐ static
Superclass: java.lang.Object
Interfaces:
Which method stubs would you like to create?
☐ public static void main(String[] args)
☐ Constructors from superclass
☑ Inherited abstract methods
Do you want to add comments? (Configure templates and default value here)
☐ Generate comments

```
package org.blogdemo.travelagency.promotionhotel;

import java.io.Serializable;
import java.math.BigDecimal;

public class ResortInfo implements Serializable{

  private static final long serialVersionUID =
   6313854994010205L;
  int hotelId;
  String hotelName;
  BigDecimal ratePerPerson;
  String hotelCity;
  String availableFrom;
  String availableTo;
  public int getHotelId() {return hotelId; }
  public void setHotelId(int hotelId) {
    this.hotelId = hotelId;
  }
  public String getHotelName() {return hotelName;}
  public void setHotelName(String hotelName) {
    this.hotelName = hotelName;
  }
  public BigDecimal getRatePerPerson() {
    return   ratePerPerson;
  }
  public void setRatePerPerson(BigDecimal ratePerPerson){
    this.ratePerPerson = ratePerPerson;
  }
  public String getHotelCity() {return hotelCity;}
  public void setHotelCity(String hotelCity) {
    this.hotelCity = hotelCity;
  }
  public String getAvailableFrom() {return availableFrom;}
  public void setAvailableFrom(String availableFrom){
    this.availableFrom = availableFrom;
  }
  public String getAvailableTo() {return availableTo;}
  public void setAvailableTo(String availableTo){
    this.availableTo = availableTo;
  }
}
```

Create a java class
Package: org.blogdemo.travelagency.promotionhotel
Class name: ResortDataConvertor

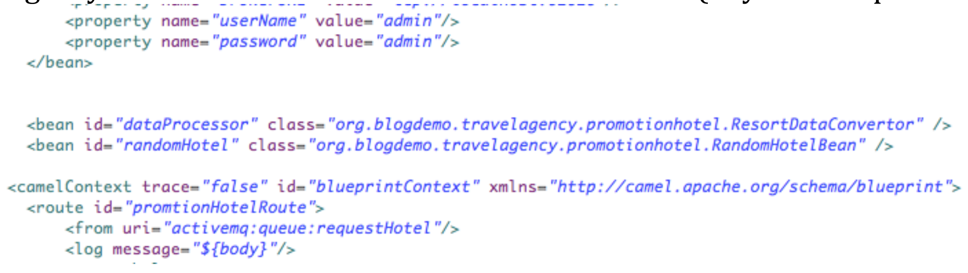
```
package org.blogdemo.travelagency.promotionhotel;

import java.math.BigDecimal;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.List;
import java.util.Map;

public class ResortDataConvertor {

  public List<ResortInfo> processResultSet(List<Map<String, Object>> resultset){
              List<ResortInfo> avaliableResorts = new ArrayList<ResortInfo>();
              System.out.println("resultset:["+resultset.size()+"]");
    for(Map<String, Object> obj:resultset){
      ResortInfo resortInfo = new ResortInfo();
      resortInfo.setHotelId((Integer)obj.get("HOTELID"));
      resortInfo.setHotelName((String)obj.get("HOTELNAME"));
      resortInfo.setHotelCity((String)obj.get("HOTELCITY"));
      resortInfo.setAvailableFrom(new SimpleDateFormat("MM-dd-yyyy
HH:mm:ss").format(obj.get("AVAILABLEFROM")));
      resortInfo.setAvailableTo(new SimpleDateFormat("MM-dd-yyyy
HH:mm:ss").format(obj.get("AVAILABLETO")));
      resortInfo.setRatePerPerson((BigDecimal)obj.get("RATEPERPERSON"));
      avaliableResorts.add(resortInfo);
    }
   return avaliableResorts;
  }
}
```

Because of the restriction of other systems, we can only return one hotel at a time, create the java class that randomly choose one hotel, and also create a default one if no criteria is matched in database.

Package: org.blogdemo.travelagency.promotionhotel
Class name: RandomHotelBean

```
package org.blogdemo.travelagency.promotionhotel;

import java.math.BigDecimal;
import java.util.List;
import java.util.Random;
import org.apache.camel.Exchange;
import org.apache.camel.Processor;

public class RandomHotelBean implements Processor{
  @Override
  public void process(Exchange exchange) throws Exception {
    List<ResortInfo> resorts = (List<ResortInfo>)exchange.getIn().getBody();
    ResortInfo resort;
    if(resorts == null || resorts.size() == 0){
      resort = new ResortInfo();
      resort.setHotelId(201);
      resort.setHotelName("The Grand Default Hotel");
      resort.setHotelCity((String)exchange.getIn().getHeader("requestCity"));
      resort.setAvailableFrom((String)exchange.getIn().getHeader("requestStartDate"));
      resort.setAvailableTo((String)exchange.getIn().getHeader("requestEndDate"));
      resort.setRatePerPerson(new BigDecimal("109.99"));
    }else{
      Random rand = new Random();
      int  n = rand.nextInt(resorts.size());
      resort = resorts.get(n);
    }
    exchange.getOut().setBody(resort);
  }

}
```

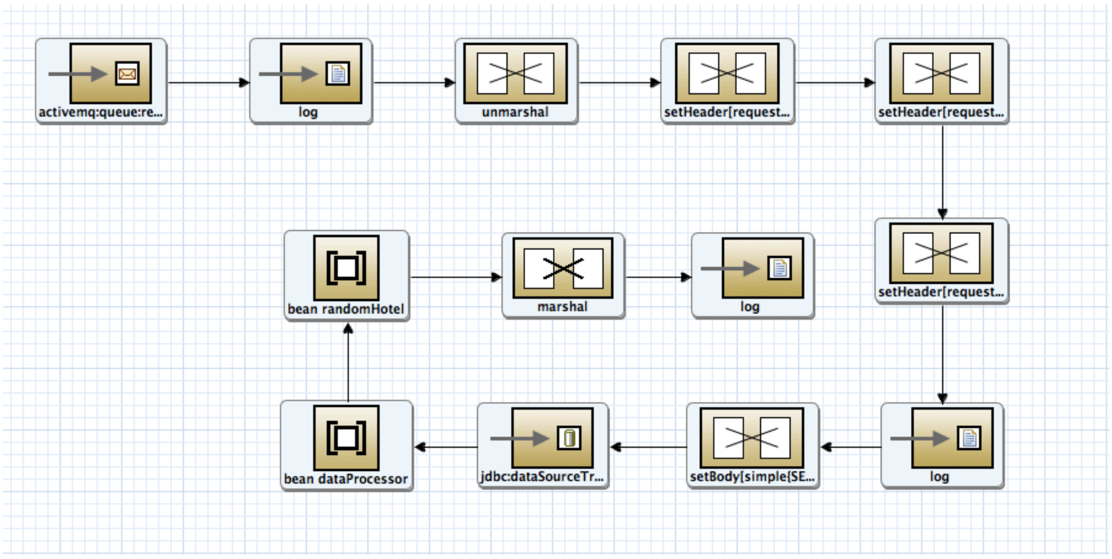
Registry the two beans we created in camel context (in your blueprint file)



```
        <property name="userName" value="admin"/>
        <property name="password" value="admin"/>
    </bean>


    <bean id="dataProcessor" class="org.blogdemo.travelagency.promotionhotel.ResortDataConvertor" />
    <bean id="randomHotel" class="org.blogdemo.travelagency.promotionhotel.RandomHotelBean" />

  <camelContext trace="false" id="blueprintContext" xmlns="http://camel.apache.org/schema/blueprint">
    <route id="promtionHotelRoute">
        <from uri="activemq:queue:requestHotel"/>
        <log message="${body}"/>
```

```
<bean id="dataProcessor"
class="org.blogdemo.travelagency.promotionhotel.ResortDataConvertor" />
<bean id="randomHotel"
class="org.blogdemo.travelagency.promotionhotel.RandomHotelBean" />
```

And we can start adding the processes that deal with the JDBC result returned. Add the last three steps in the end of your route.



- Bean
  - Bean Name: dataProcessor
  - Method: processResultSet
- Bean:
  - Bean Name: randomHotel
- Marshal
  - Tab: json
  - Library: Jackson
- Log Endpoint
  - Message: ${body}

Deploy project

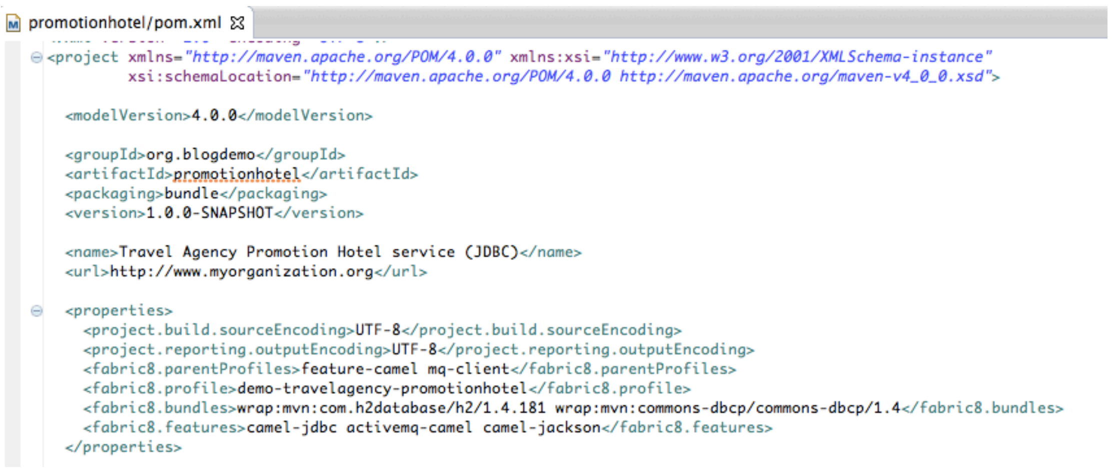
Start up JBoss Fuse by going to [project-root-directory]/summit-racing-camel-with-jboss-bpm-fuse/target/jboss-fuse-6.1.1.redhat-412/bin and run,
./fuse

Go back to your JBDS. Add the fabric8 plugin in pom.xml

```
<!-- For Fabric8 deployment -->
  <plugin>
    <groupId>io.fabric8</groupId>
    <artifactId>fabric8-maven-plugin</artifactId>
    <version>1.0.0.redhat-412</version>
  </plugin>
```

Also the deployment configurations in pom.xml

```
<fabric8.parentProfiles>feature-camel mq-client</fabric8.parentProfiles>
<fabric8.profile>demo-travelagency-promotionhotel</fabric8.profile>
<fabric8.bundles>wrap:mvn:com.h2database/h2/1.4.181 wrap:mvn:commons-dbcp/commons-
dbcp/1.4</fabric8.bundles>
<fabric8.features>camel-jdbc activemq-camel camel-jackson</fabric8.features>
```

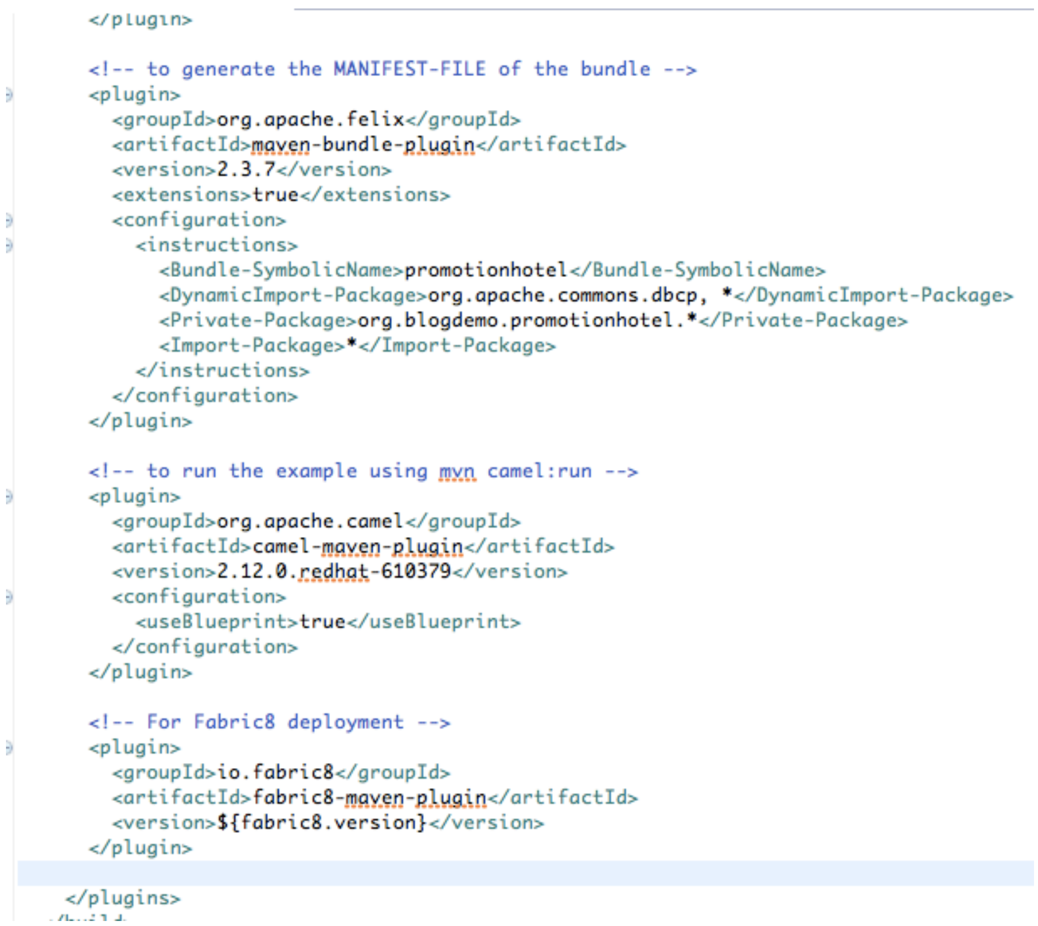


promotionhotel/pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4_0_0.xsd">

  <modelVersion>4.0.0</modelVersion>

  <groupId>org.blogdemo</groupId>
  <artifactId>promotionhotel</artifactId>
  <packaging>bundle</packaging>
  <version>1.0.0-SNAPSHOT</version>

  <name>Travel Agency Promotion Hotel service (JDBC)</name>
  <url>http://www.myorganization.org</url>

  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
    <fabric8.parentProfiles>feature-camel mq-client</fabric8.parentProfiles>
    <fabric8.profile>demo-travelagency-promotionhotel</fabric8.profile>
    <fabric8.bundles>wrap:mvn:com.h2database/h2/1.4.181 wrap:mvn:commons-dbcp/commons-dbcp/1.4</fabric8.bundles>
    <fabric8.features>camel-jdbc activemq-camel camel-jackson</fabric8.features>
  </properties>
```

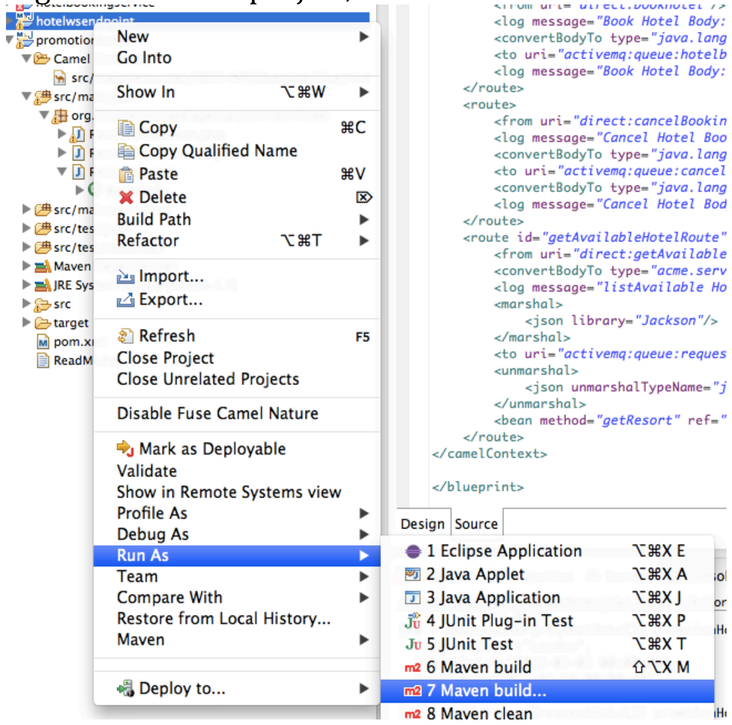
Add **dynamic import** to bundle maven configuration

```
<DynamicImport-Package>
      org.apache.commons.dbcp, *
</DynamicImport-Package>
```



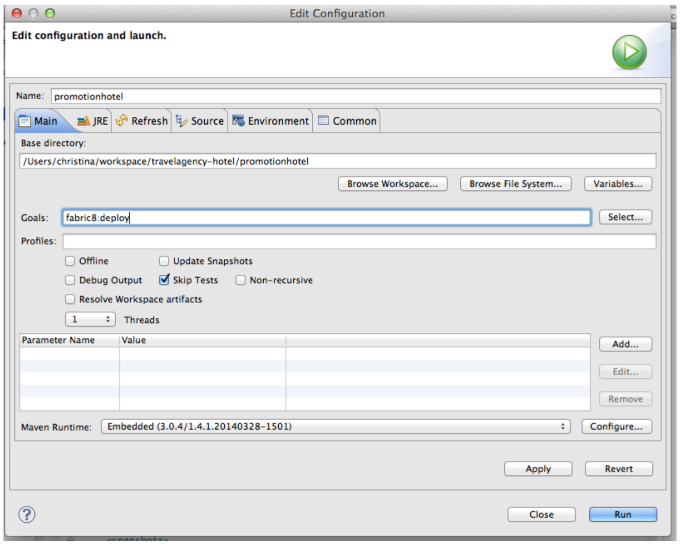
```
    </plugin>

    <!-- to generate the MANIFEST-FILE of the bundle -->
    <plugin>
      <groupId>org.apache.felix</groupId>
      <artifactId>maven-bundle-plugin</artifactId>
      <version>2.3.7</version>
      <extensions>true</extensions>
      <configuration>
        <instructions>
          <Bundle-SymbolicName>promotionhotel</Bundle-SymbolicName>
          <DynamicImport-Package>org.apache.commons.dbcp, *</DynamicImport-Package>
          <Private-Package>org.blogdemo.promotionhotel.*</Private-Package>
          <Import-Package>*</Import-Package>
        </instructions>
      </configuration>
    </plugin>

    <!-- to run the example using mvn camel:run -->
    <plugin>
      <groupId>org.apache.camel</groupId>
      <artifactId>camel-maven-plugin</artifactId>
      <version>2.12.0.redhat-610379</version>
      <configuration>
        <useBlueprint>true</useBlueprint>
      </configuration>
    </plugin>

    <!-- For Fabric8 deployment -->
    <plugin>
      <groupId>io.fabric8</groupId>
      <artifactId>fabric8-maven-plugin</artifactId>
      <version>${fabric8.version}</version>
    </plugin>

  </plugins>
```

Right click on the project,



```
        <log message="Book Hotel Body:
        <convertBodyTo type="java.lang
        <to uri="activemq:queue:hotelb
        <log message="Book Hotel Body:
    </route>
    <route>
        <from uri="direct:cancelBookin
        <log message="Cancel Hotel Boo
        <convertBodyTo type="java.lang
        <to uri="activemq:queue:cancel
        <convertBodyTo type="java.lang
        <log message="Cancel Hotel Bod
    </route>
    <route id="getAvailableHotelRoute"
        <from uri="direct:getAvailable
        <convertBodyTo type="acme.serv
        <log message="listAvailable Ho
        <marshal>
            <json library="Jackson"/>
        </marshal>
        <to uri="activemq:queue:reques
        <unmarshal>
            <json unmarshalTypeName="j
        </unmarshal>
        <bean method="getResort" ref="
    </route>
</camelContext>

</blueprint>
```

Type in "fabric8:deploy" as goal,



Name: promotionhotel

Base directory: /Users/christina/workspace/travelagency-hotel/promotionhotel

Goals: fabric8:deploy

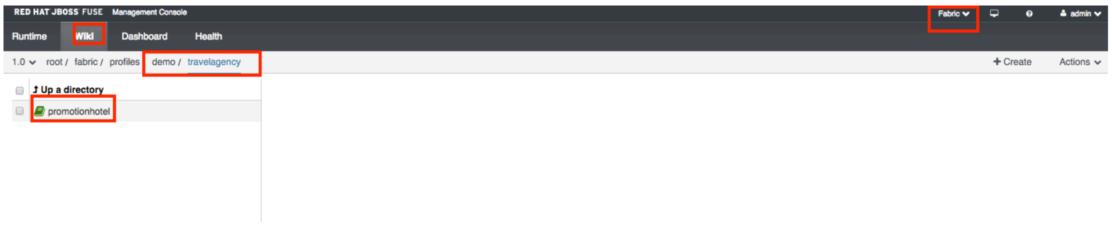
Profiles:

[ ] Offline [ ] Update Snapshots
[ ] Debug Output [✓ Skip Tests] [ ] Non-recursive
[ ] Resolve Workspace artifacts
1 Threads

Parameter Name	Value

Maven Runtime: Embedded (3.0.4/1.4.1.20140328-1501)

Wait a few seconds. You will be able to see it in your fabric console.

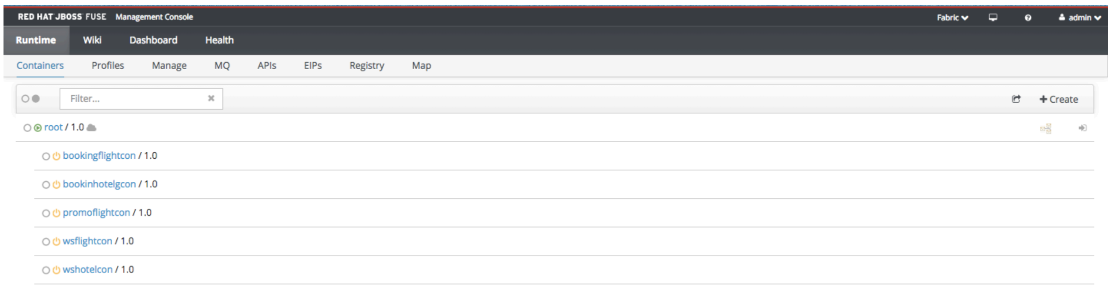

RED HAT JBOSS FUSE Management Console
Fabric
admin
Runtime
Wiki
Dashboard
Health
1.0
root / fabric / profiles / demo / travelagency
+ Create
Actions
Up a directory
promotionhotel

Running Application in Fuse Fabric

To install and start up the rest of the microservices run

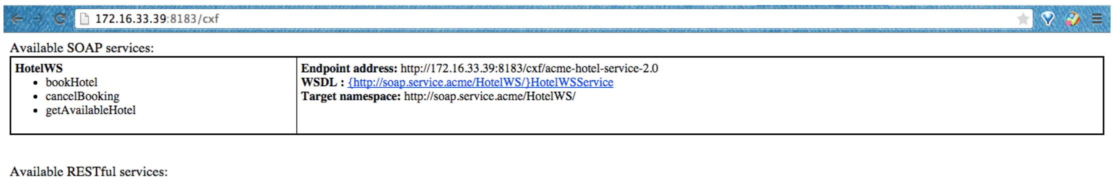
./fusemicroservices.sh

under [project-root-directory]/summit-racing-camel-with-jboss-bpm-fuse directory. It'll take a few minute to start,



```
root / 1.0
    bookingflightcon / 1.0
    bookinhotelgcon / 1.0
    promoflightcon / 1.0
    wsflightcon / 1.0
    wshotelcon / 1.0
```

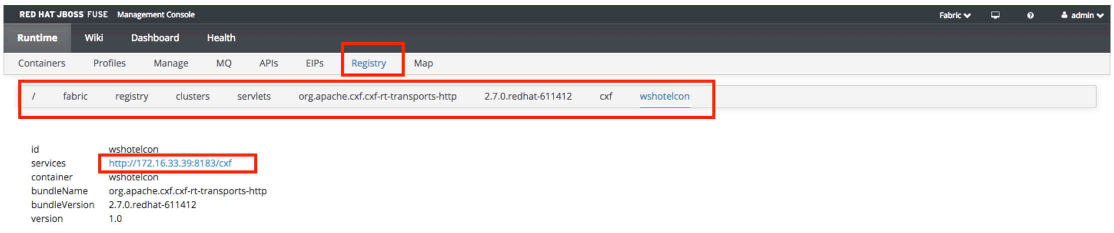
To see where the web service is registered, go to "Registry", and drill down the links `servlets/org.apache.cxf.cxf-rt-transports-http/2.7.0.redhat-611412/cxf/hotelwscon`



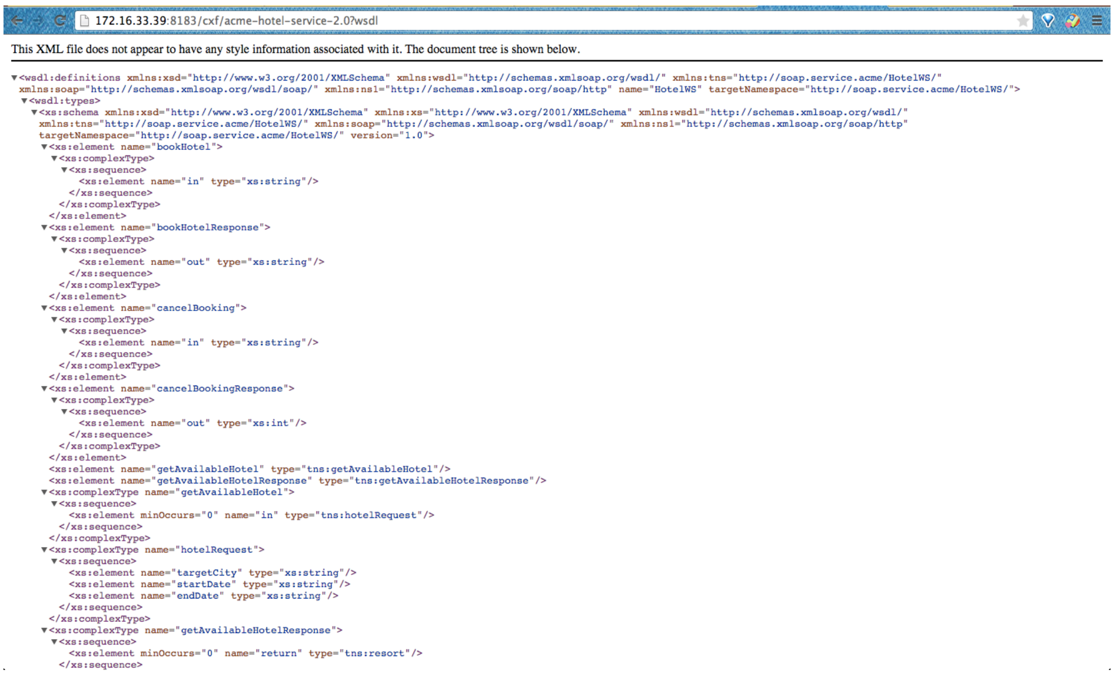
Available SOAP services:

HotelWS • bookHotel • cancelBooking • getAvailableHotel	**Endpoint address:** http://172.16.33.39:8183/cxf/acme-hotel-service-2.0 **WSDL :** {http://soap.service.acme/HotelWS/}HotelWSService **Target namespace:** http://soap.service.acme/HotelWS/

Available RESTful services:



id	wshotelcon
services	http://172.16.33.39:8183/cxf
container	wshotelcon
bundleName	org.apache.cxf.cxf-rt-transports-http
bundleVersion	2.7.0.redhat-611412
version	1.0

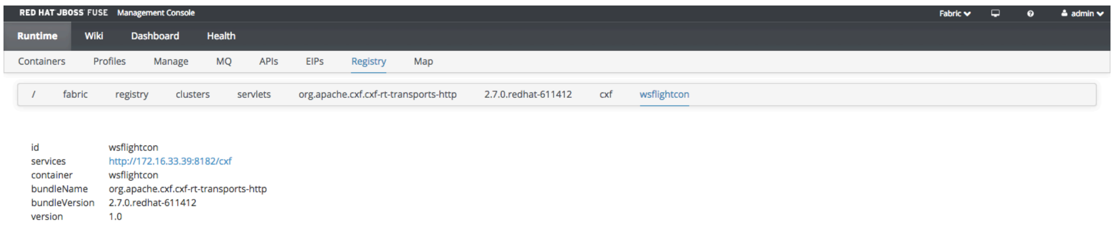


172.16.33.39:8183/cxf/acme-hotel-service-2.0?wsdl

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
▼<wsdl:definitions xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:tns="http://soap.service.acme/HotelWS/"
 xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:ns1="http://schemas.xmlsoap.org/soap/http" name="HotelWS" targetNamespace="http://soap.service.acme/HotelWS/">
 ▼<wsdl:types>
  ▼<xs:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
   xmlns:tns="http://soap.service.acme/HotelWS/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:ns1="http://schemas.xmlsoap.org/soap/http"
   targetNamespace="http://soap.service.acme/HotelWS/" version="1.0">
   ▼<xs:element name="bookHotel">
    ▼<xs:complexType>
     ▼<xs:sequence>
        <xs:element name="in" type="xs:string"/>
      </xs:sequence>
     </xs:complexType>
    </xs:element>
   ▼<xs:element name="bookHotelResponse">
    ▼<xs:complexType>
     ▼<xs:sequence>
        <xs:element name="out" type="xs:string"/>
      </xs:sequence>
     </xs:complexType>
    </xs:element>
   ▼<xs:element name="cancelBooking">
    ▼<xs:complexType>
     ▼<xs:sequence>
        <xs:element name="in" type="xs:string"/>
      </xs:sequence>
     </xs:complexType>
    </xs:element>
   ▼<xs:element name="cancelBookingResponse">
    ▼<xs:complexType>
     ▼<xs:sequence>
        <xs:element name="out" type="xs:int"/>
      </xs:sequence>
     </xs:complexType>
    </xs:element>
    <xs:element name="getAvailableHotel" type="tns:getAvailableHotel"/>
    <xs:element name="getAvailableHotelResponse" type="tns:getAvailableHotelResponse"/>
   ▼<xs:complexType name="getAvailableHotel">
    ▼<xs:sequence>
       <xs:element minOccurs="0" name="in" type="tns:hotelRequest"/>
     </xs:sequence>
    </xs:complexType>
   ▼<xs:complexType name="hotelRequest">
    ▼<xs:sequence>
       <xs:element name="targetCity" type="xs:string"/>
       <xs:element name="startDate" type="xs:string"/>
       <xs:element name="endDate" type="xs:string"/>
     </xs:sequence>
    </xs:complexType>
   ▼<xs:complexType name="getAvailableHotelResponse">
    ▼<xs:sequence>
       <xs:element minOccurs="0" name="return" type="tns:resort"/>
     </xs:sequence>
```

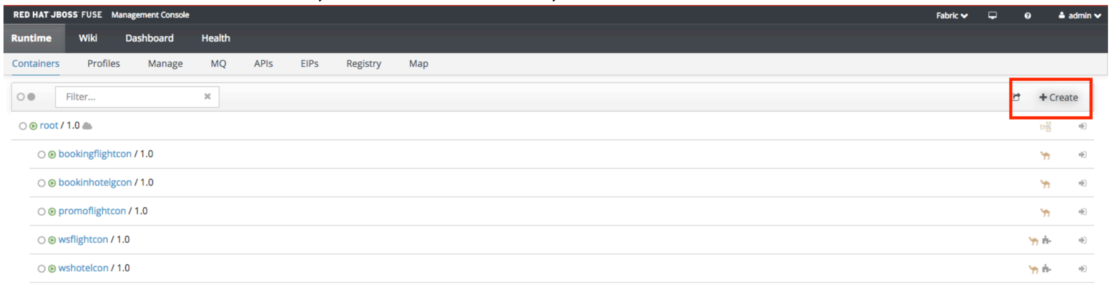
Also under Registry, you will see the port for flight web service.


RED HAT JBOSS FUSE Management Console
Fabric
admin
Runtime
Wiki
Dashboard
Health
Containers
Profiles
Manage
MQ
APIs
EIPs
Registry
Map
/ fabric registry clusters servlets org.apache.cxf.cxf-rt-transports-http 2.7.0.redhat-611412 cxf wsflightcon

```
id             wsflightcon
services       http://172.16.33.39:8182/cxf
container      wsflightcon
bundleName     org.apache.cxf.cxf-rt-transports-http
bundleVersion  2.7.0.redhat-611412
version        1.0
```

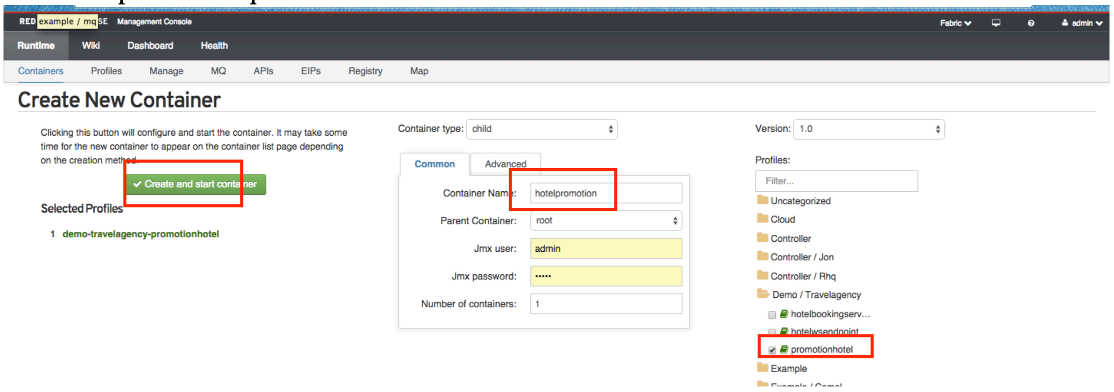
Now, let's deploy the application we create to a new container,

Create a new container, under container, click on create



root / 1.0
bookingflightcon / 1.0
bookinhotelgcon / 1.0
promoflightcon / 1.0
wsflightcon / 1.0
wshotelcon / 1.0

Add the profile of promotion hotel service to the container.



Create New Container

Clicking this button will configure and start the container. It may take some time for the new container to appear on the container list page depending on the creation method.

✓ Create and start container

Selected Profiles

1 demo-travelagency-promotionhotel

Container type: child

Common | Advanced

Container Name:	hotelpromotion
Parent Container:	root
Jmx user:	admin
Jmx password:	•••••
Number of containers:	1

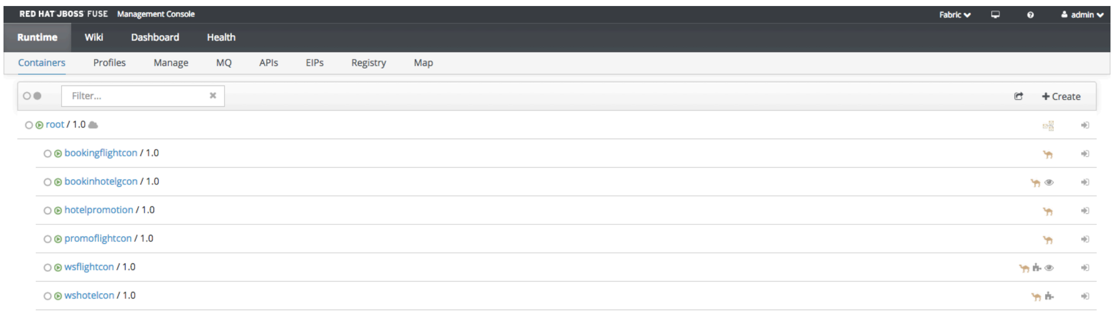
Version: 1.0

Profiles:

Filter...

- Uncategorized
- Cloud
- Controller
- Controller / Jon
- Controller / Rhq
- Demo / Travelagency
  - hotelbookingserv...
  - hotelwsendpoint
  - ✓ promotionhotel
- Example
- Example / Camel

Go back to Runtime->container, you will see all containers running.



- root / 1.0
  - bookingflightcon / 1.0
  - bookinhotelgcon / 1.0
  - hotelpromotion / 1.0
  - promoflightcon / 1.0
  - wsflightcon / 1.0
  - wshotelcon / 1.0

That's all ☺ . All services are ready!
Please continue to next lab, where you will see it all working together.