Writing Rules on XML Schema

Applies to:

SAP NetWeaver Business Rules Management

Summary

This tutorial helps you get started with the rules composer. A business use case has been created for the purpose.

Given details such as connection provider, type of line/connection and connection destination, the long distance phone rate must be calculated.

This tutorial guides you to create rules to calculate the long distance phone rate given a set of criteria.

Author(s): Arti Gopalan and Rupa Rajagopalan

Company: SAP Labs India

Created on: 28th May 2008

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Prerequisites

Knowledge Required

- You have basic knowledge in rules modeling
- You are familiar with Business Rules Management System

Software Requirements

- You work in the SAP NetWeaver Developer Studio
- Your SAP NetWeaver Developer Studio version includes the Rules Composer perspective
- You should have a running instance of SAP AS, and should have configured the SAP NetWeaver Developer Studio with this instance

Note
In the SAP NetWeaver Developer Studio, choose *Window -> Open Perspective -> Other*. In the dialog box that appears, choose *Rules Composer* and choose OK.

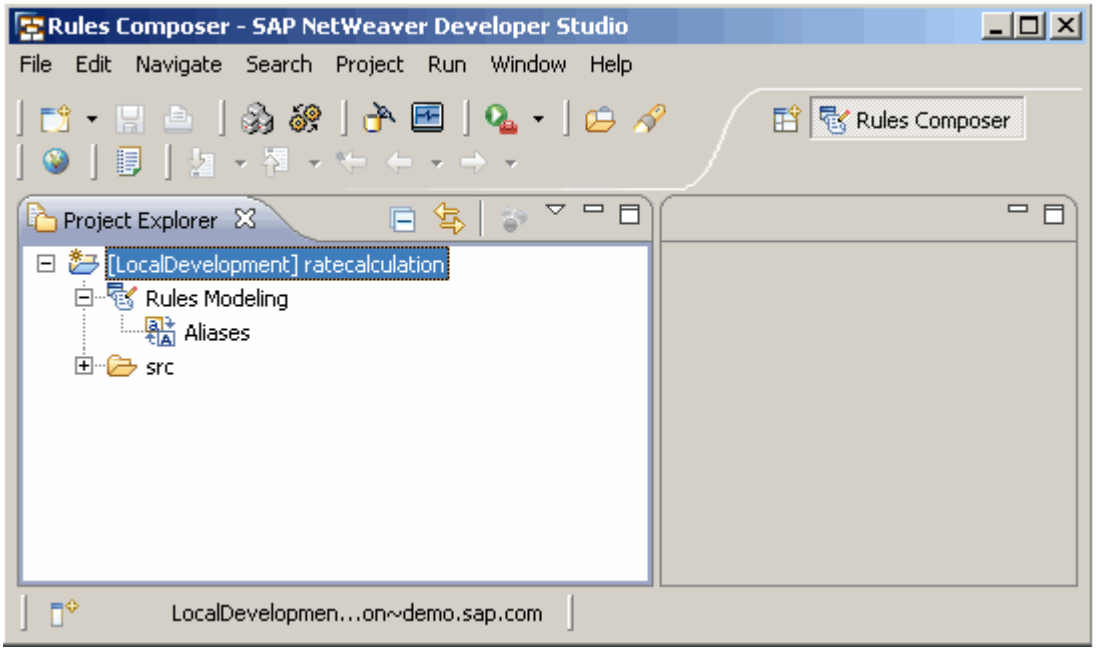
Procedure

Creating the Rules Composer DC

1. In the SAP NetWeaver Developer Studio, choose *File -> New -> Project*.
2. In the wizard that appears, expand the *Rules Composer* node and choose *Rules Composer Development Component*. Choose *Next*.
3. In the screen that appears, choose the software component where you want to create the DC.

   For example the software component could be *MyComponents [demo.sap.com]* under the Local *Development* node. Choose *Next*.
4. In the screen that appears, enter **ratecalculation** in the *Name* field and choose *Finish*.

You should see the Rules Composer DC: *ratecalculation* node in the *Project Explorer* view as shown below:



Creating the XML Schema

Procedure

1. In the *Project Explorer* view, expand the *src* node and in the context menu of the *wsdl* node, choose *New* > *Other*.
2. In the wizard that appears, expand the *XML* node and choose *XML Schema*. Choose *Next*.
3. In the screen that appears, enter *callcharges.xsd* in the *File Name* field. Choose *Finish*.

   In the *Project Explorer* view, you should see the *callcharges.xsd* under the *wsdl* node.

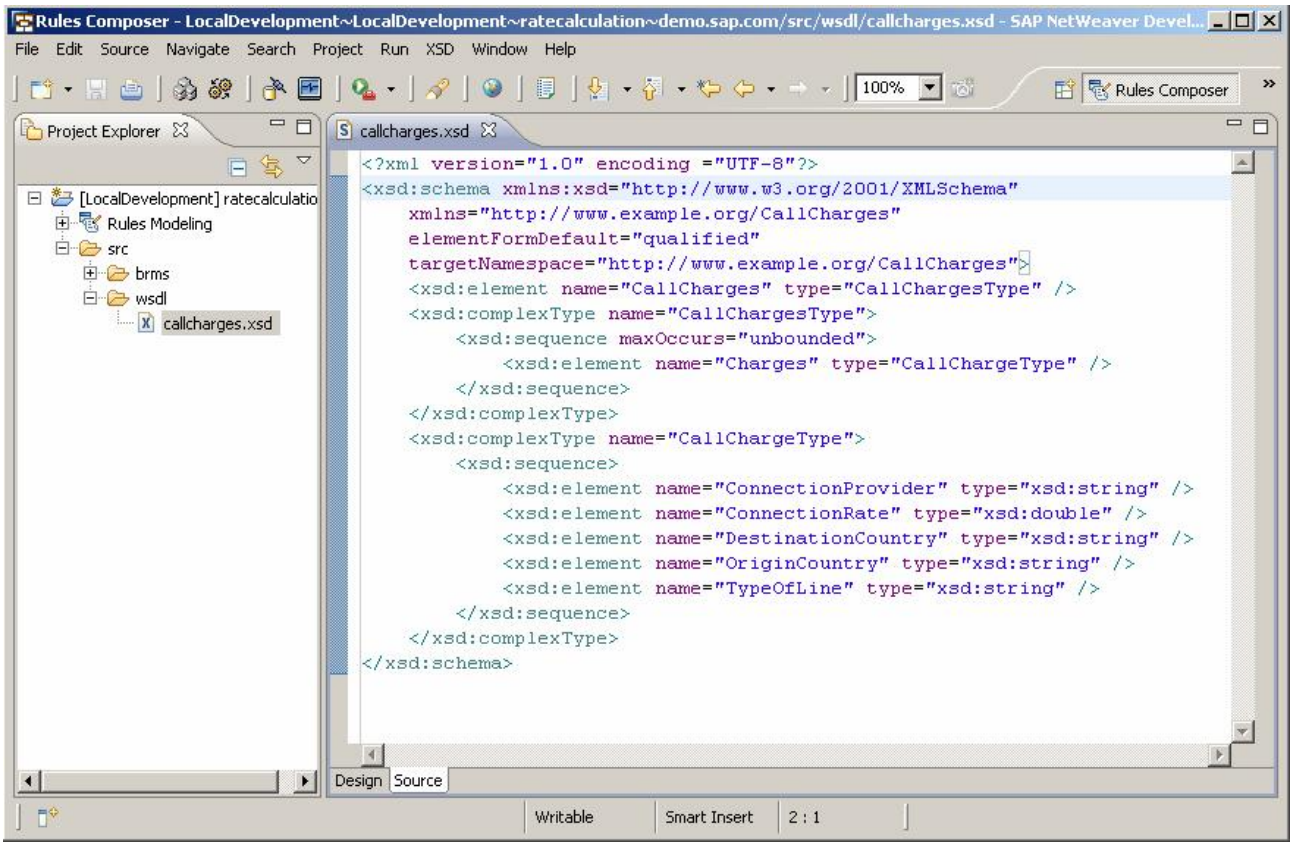
4. In the *callcharges.xsd* window that appears choose the *Source* tab at the bottom.
5. In the tab page that appears delete all existing content and copy the following in the *Source* tab page:

   Syntax

```
<?xml version="1.0" encoding ="UTF-8"?>
<xsd:schema xmlns:xsd ="http://www.w3.org/2001/XMLSchema"
xmlns="http://www.example.org/CallCharges"
elementFormDefault="qualified"
targetNamespace="http://www.example.org/CallCharges">
<xsd:element name="CallCharges" type="CallChargesType"/>
 <xsd:complexType name="CallChargesType">
<xsd:sequence maxOccurs="unbounded">
<xsd:element name="Charges" type="CallChargeType"/>
</xsd:sequence>
</xsd:complexType>
<xsd:complexType name="CallChargeType">
<xsd:sequence>
<xsd:element name="ConnectionProvider" type="xsd:string"/>
<xsd:element name="ConnectionRate" type="xsd:double"/>
<xsd:element name="DestinationCountry" type="xsd:string"/>
<xsd:element name="OriginCountry" type="xsd:string"/>
<xsd:element name="TypeOfLine" type="xsd:string"/>
</xsd:sequence>
</xsd:complexType>
</xsd:schema>
```

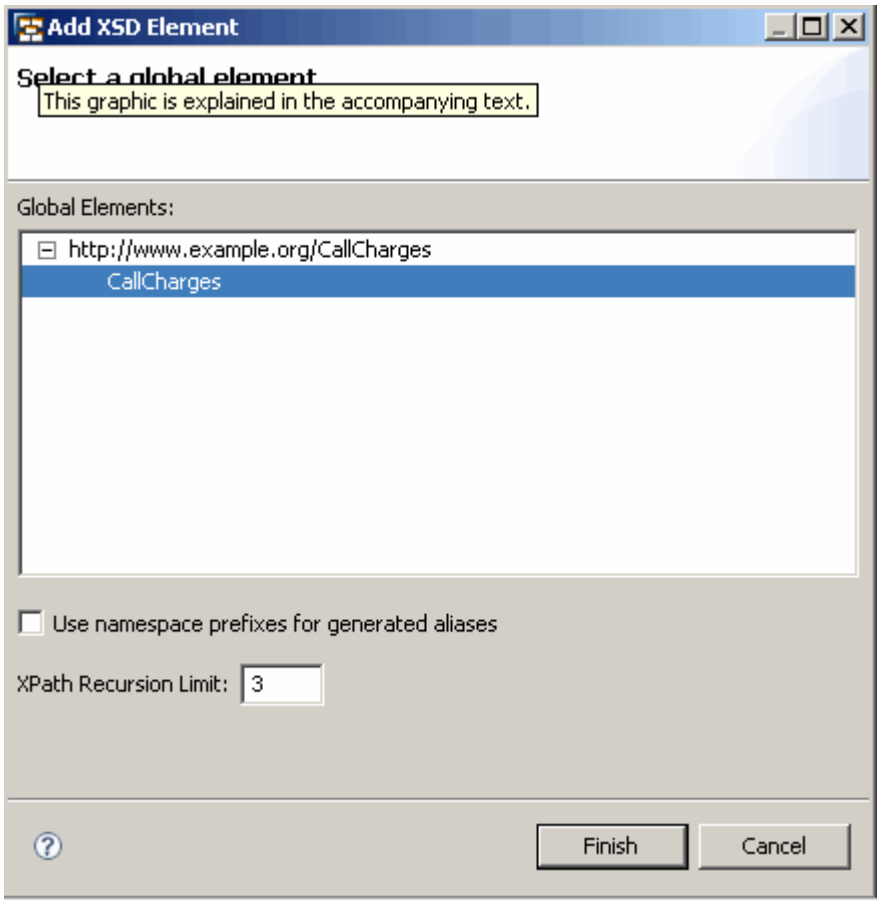
6. Press `Ctrl+Shift+F`.
7. Save the changes

   The result must be as shown below:

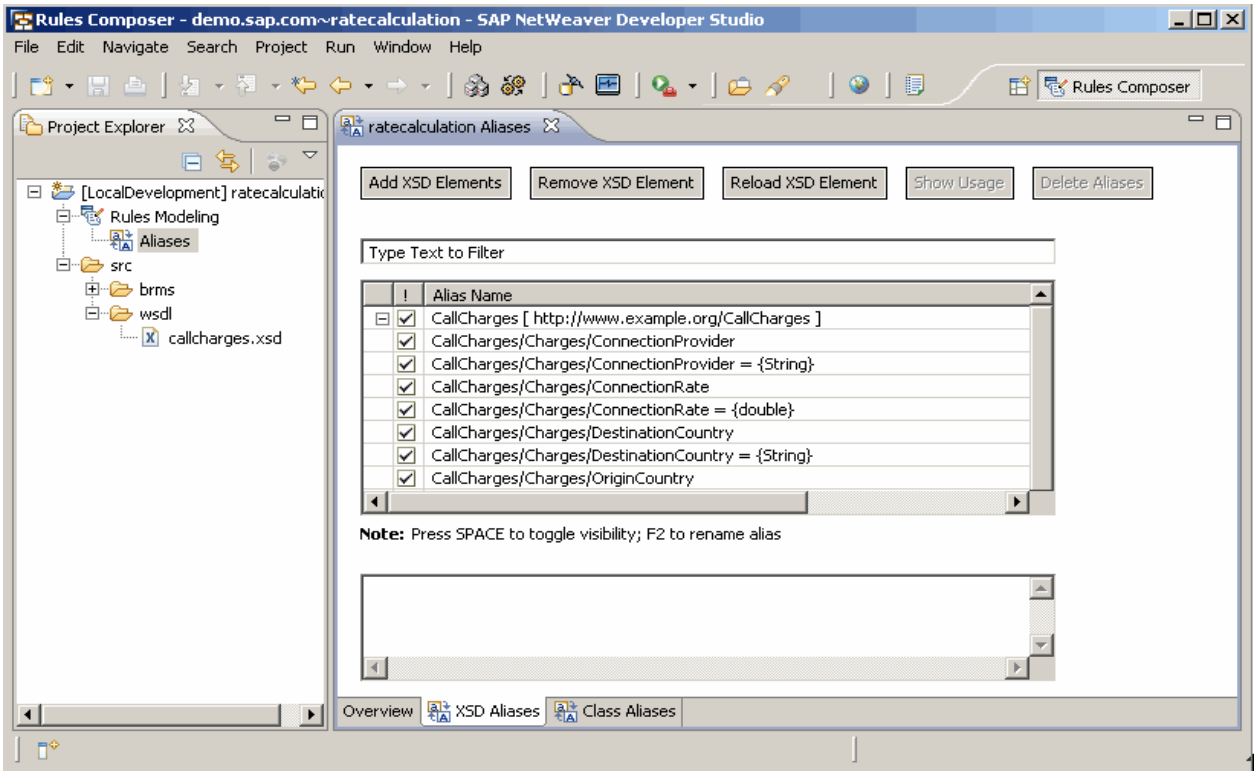


Adding XSD Elements

1. In the *Project Explorer* view, expand the *Rules Modeling* node and double-click the *Aliases* node.
2. In the Project Aliases Editor that appears, choose the *XSD Aliases* tab and in the tab page that appears, choose the *Add XSD Elements* tab.
3. In the dialog box that appears, expand the *http://www.example.org/CallCharges* node and select *CallCharges* as shown below:



4. Choose *Finish*.
5. In the *Alias Name* table select all the XML schema element checkboxes as shown below:



6. Save the changes.

Renaming the XSD Aliases (Optional)

1. In the *Alias Name* table, click each of the aliases. The aliases become editable. Enter an alternative name for the alias.

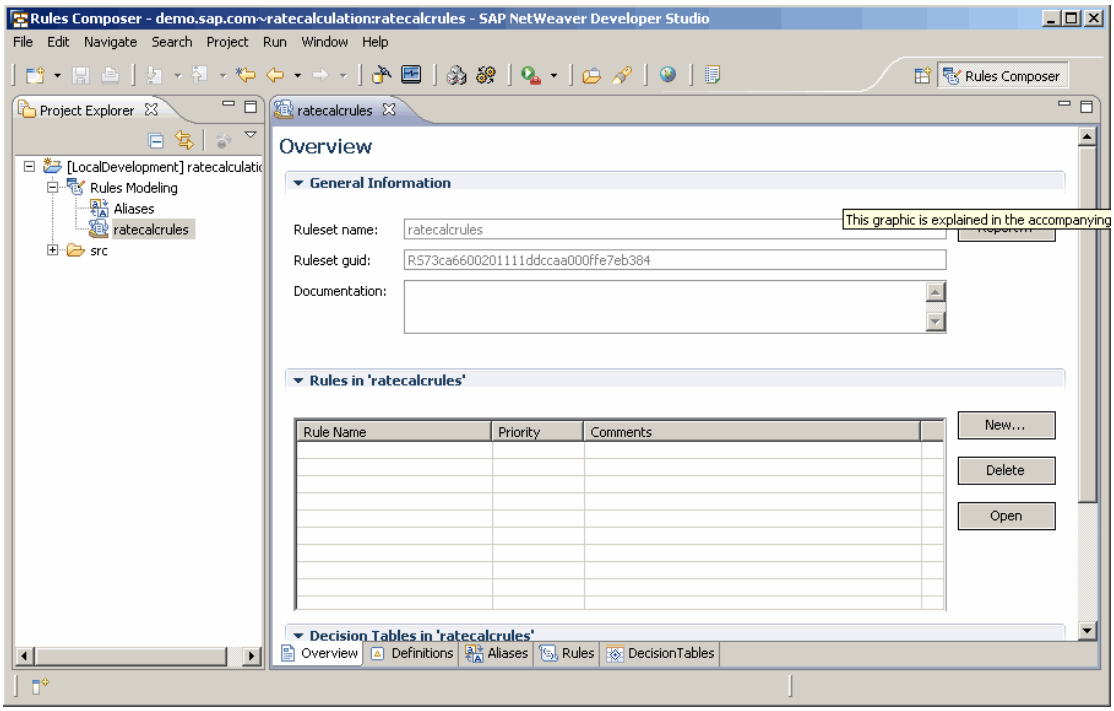
Alias Name	Rename as
CallCharges/Charges/ConnectionProvider	Connection Provider
CallCharges/Charges/ConnectionRate = {double}	Set Rate = {double}
CallCharges/Charges/DestinationCountry	Destination Country
CallCharges/Charges/TypeOfLine	Type Of Line

Creating the Ruleset

Procedure

1. In the *Project Explorer* view, expand the *ratecalculation* node and in the context menu of the *Rules Modeling* node, choose *New Ruleset*.
2. In the dialog box that appears, enter *ratecalcrules* in the field. Choose *OK*.

In the *Project Explorer* view you should see the *ratecalcrules* node under the *Rules Modeling* node.



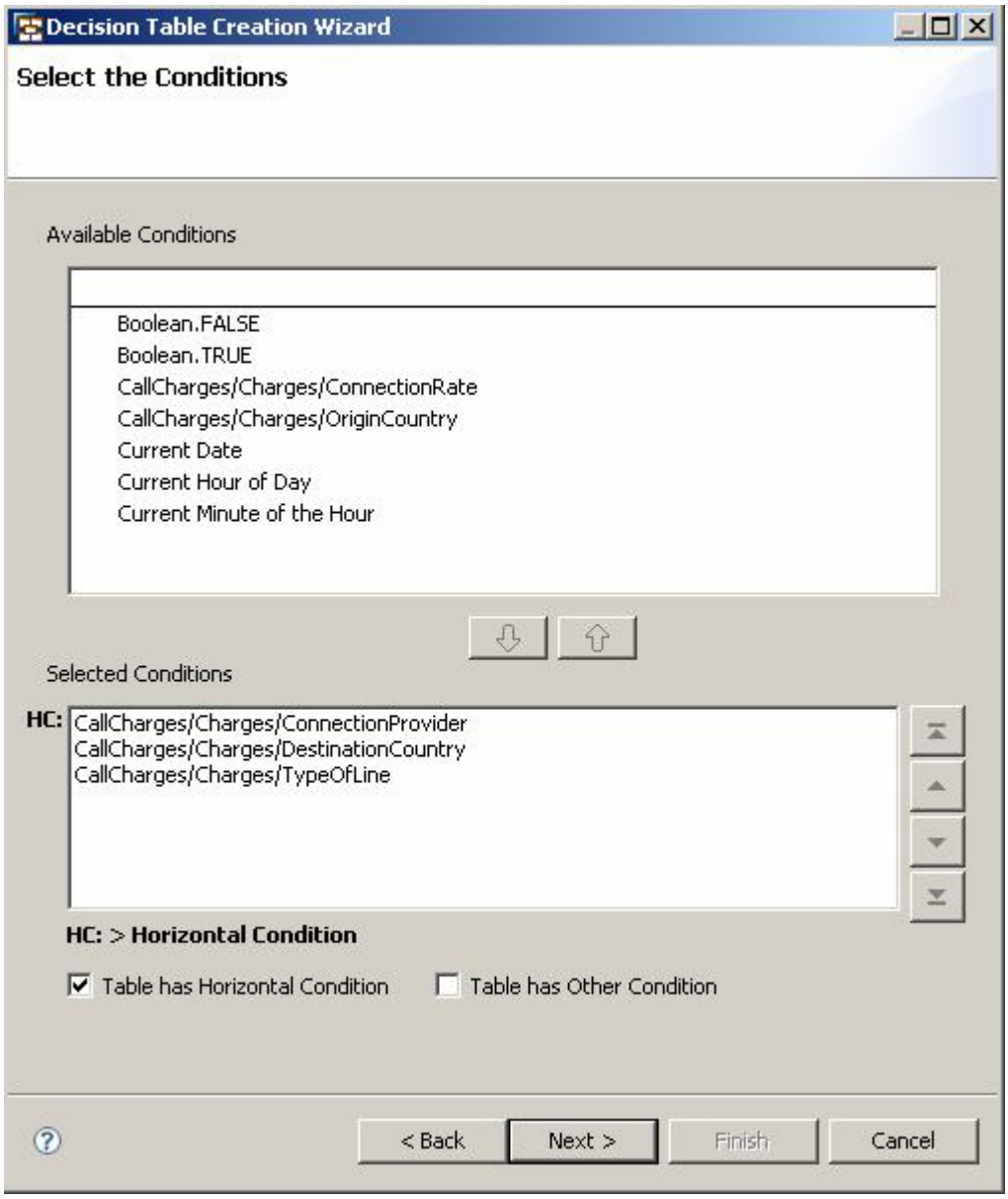
Creating the Decision Table

You can capture the criteria and the corresponding rates for long distance phone calls in a single table.

Procedure

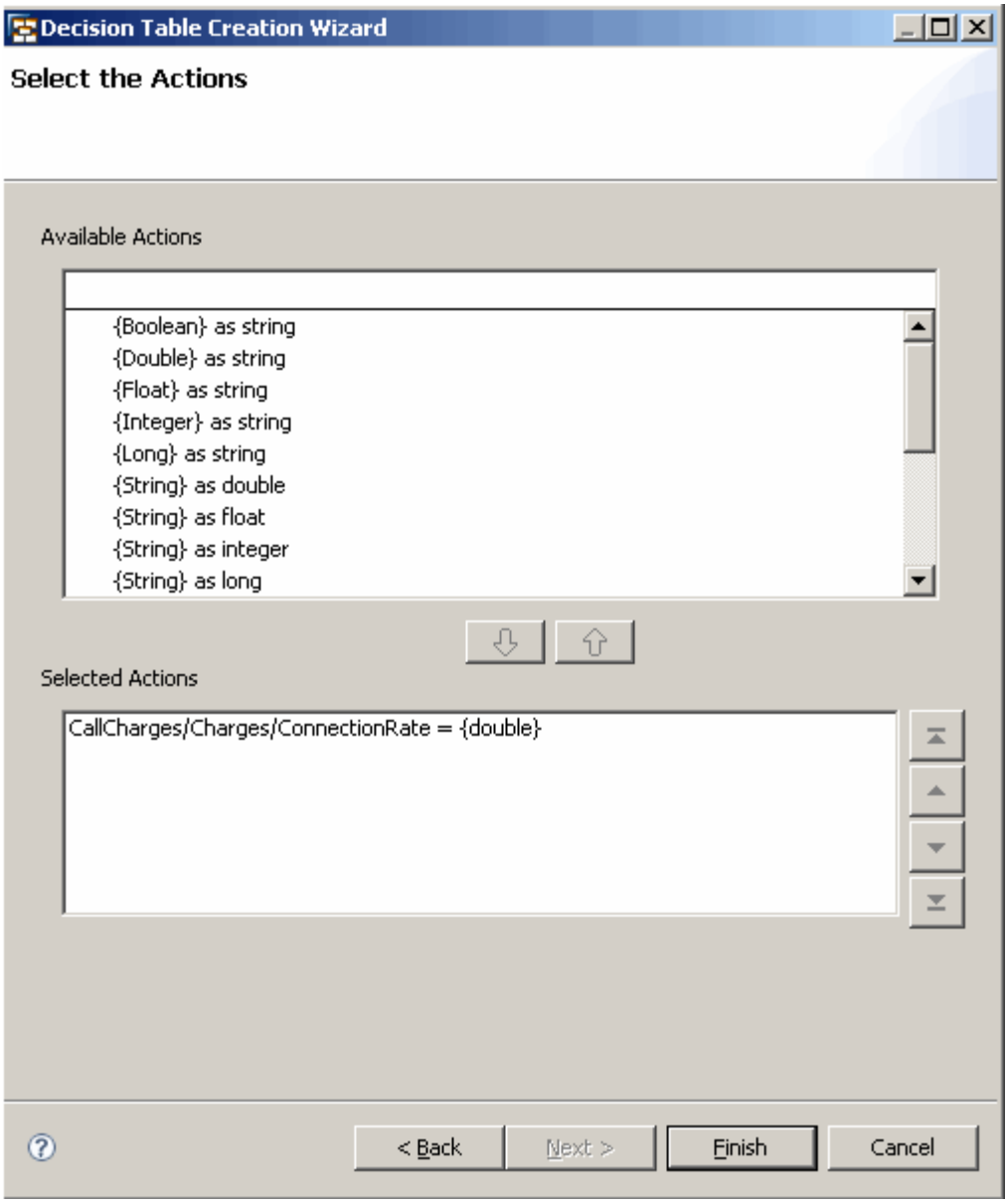
1. In the *Project Explorer* view, expand the *ratecalculation* node, the *Rules Modeling* node and in the context menu of the *ratecalcrules* node, choose *New Decision Table*.
2. In the *Decision Table Creation Wizard* that appears, enter *ratestable* in the *Decision Table Name* field and choose *Next*.
3. On the *Select the Conditions* screen, double-click the following aliases in the *Available Conditions* section:
   - *CallCharges/Charges/ConnectionProvider*
   - *CallCharges/Charges/DestinationCountry*
   - *CallCharges/Charges/TypeOfLine*

   The aliases appear in the *Selected Conditions* section as follows:



4. Select the *Table has Horizontal Condition* checkbox. Choose *Next*.
5. On the Select the Actions screen, double-click *CallCharges/Charges/ConnectionRate = {double}* in the *Available Actions* section.

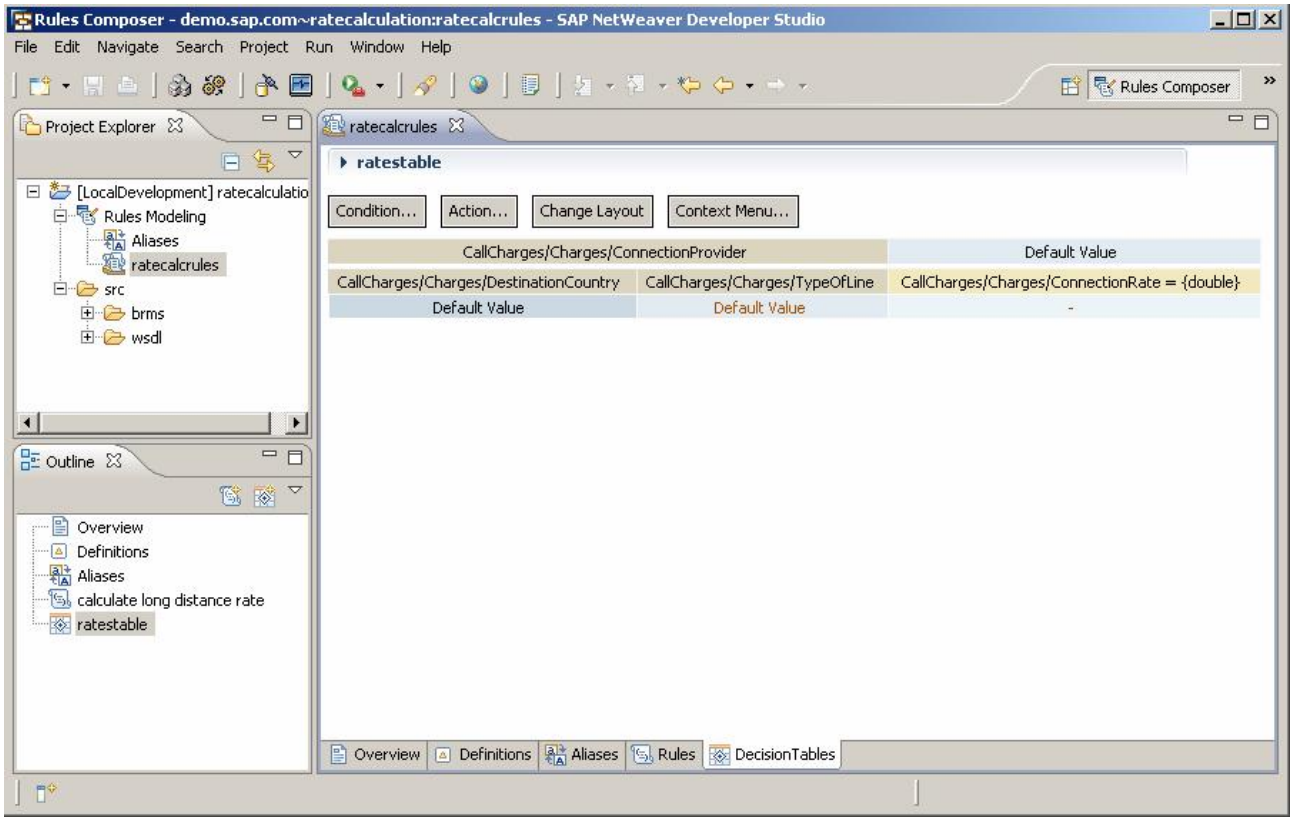
The alias appears in the *Selected Actions* section as follows:



6. Choose *Finish*.
7. Save the changes.

In the *Outline* view, the *ratestable* node appears.

The Decision Tables Editor appears as shown below:



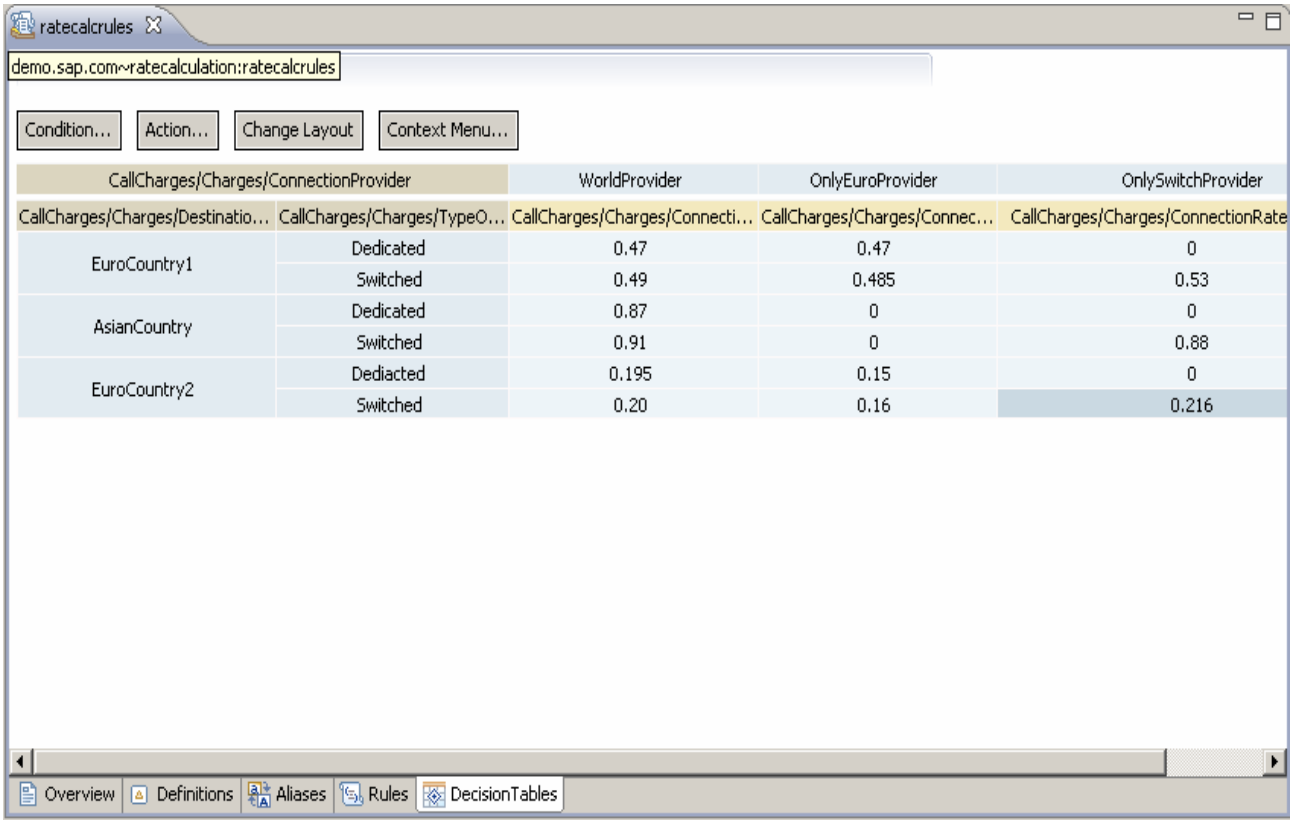
Adding Condition and Action Values

1. In the Decision Table Editor that appears, double-click each of the cells under the condition headers (*CallCharges/Charges/Connection Provider*, *CallCharges/Charges/Destination Country*, and *CallCharges/Charges/Type Of Line*) and enter the values.

Note: You can also choose *Add Condition Value* in the context menu of the cells under the condition headers and in the dialog box that appears enter all the values in the available rows.

2. Double-click each cell under the action header (*CallCharges/Charges/ConnectionRate = {double}*) in the Decision Table, enter a value and press `Enter` key.

Refer to the Decision Table below for the condition and action values you need to enter:



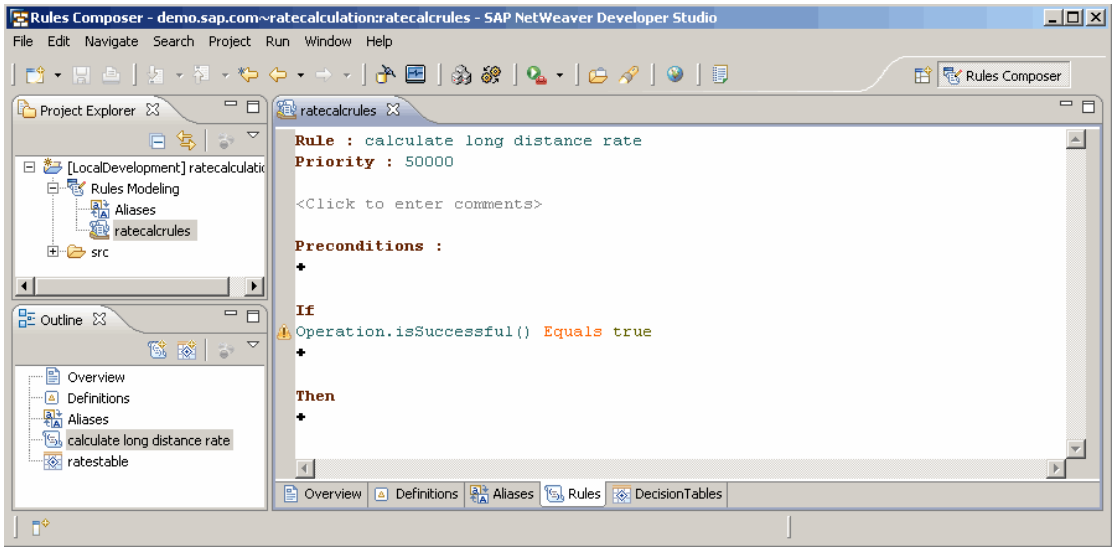
Creating the Rule

You need to create a rule called calculate long distance rate that evaluates the *ratestable*.

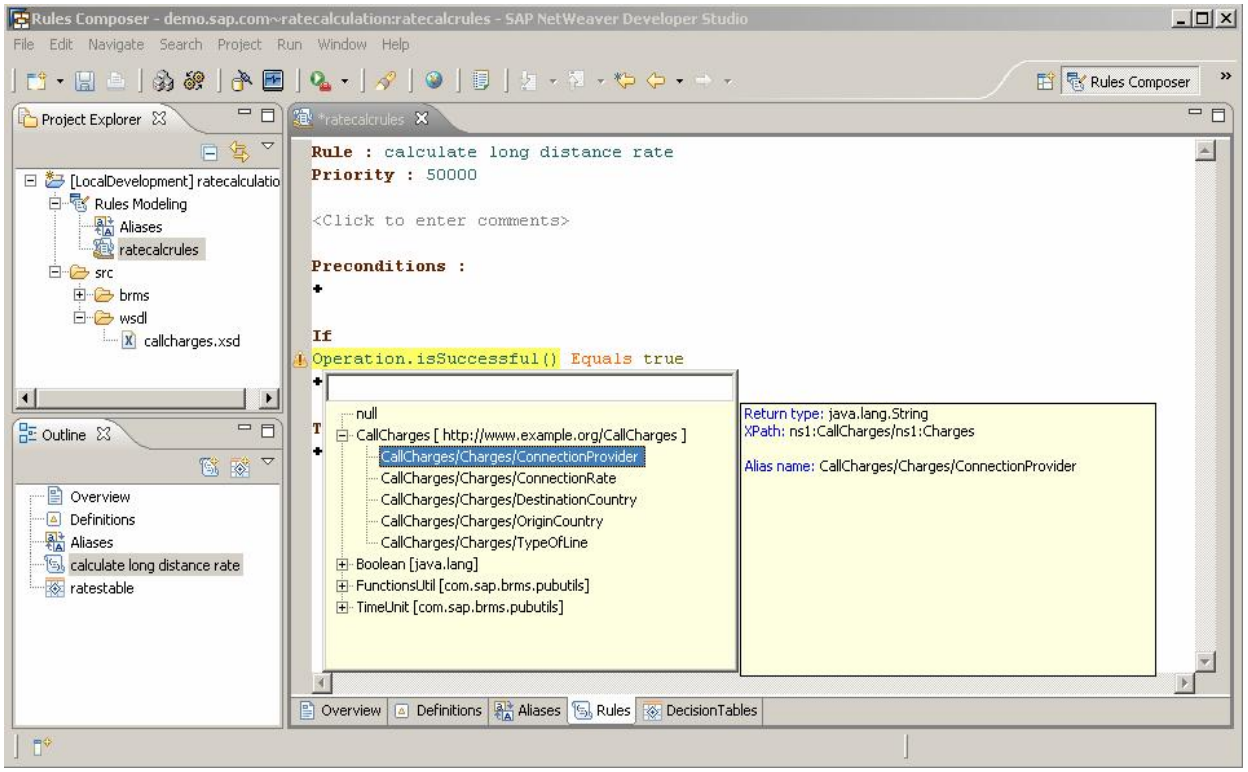
Procedure

1. In the *Project Explorer* view, expand the *ratecalculation* node, the *Rules Modeling* node and in the context menu of the *ratecalcrules* node, choose *New Rule*.
2. In the dialog box that appears, enter *calculate long distance rate* in the field and choose *OK*.
3. In the Rule Editor that appears, under *If* section, choose the *Add* icon.

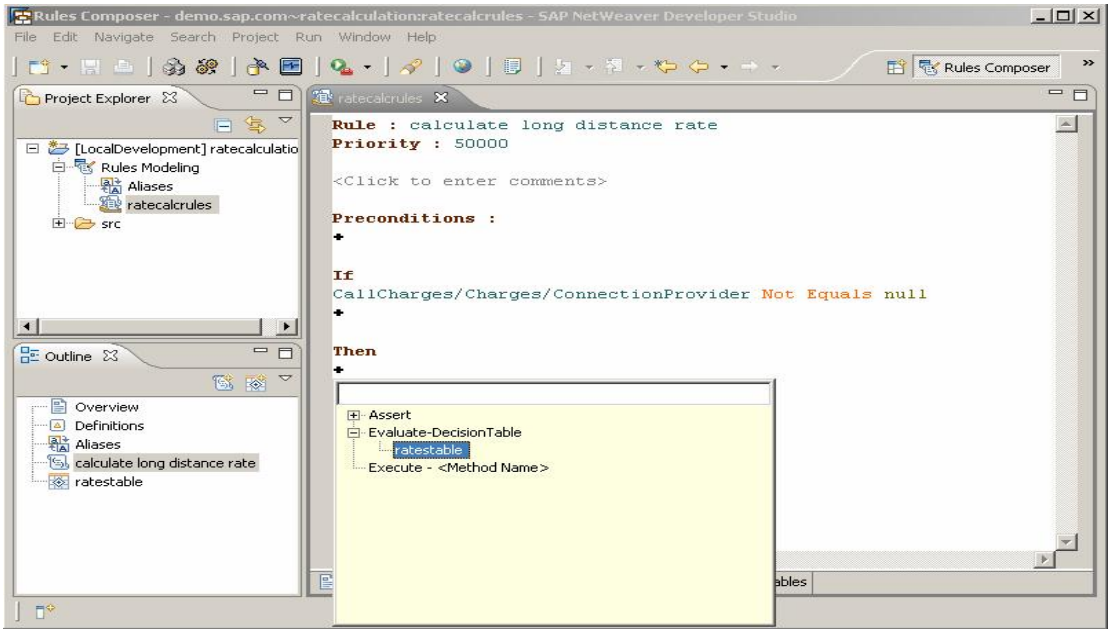
   The default condition: *Operation.isSuccessful Equals true* appears as shown below:



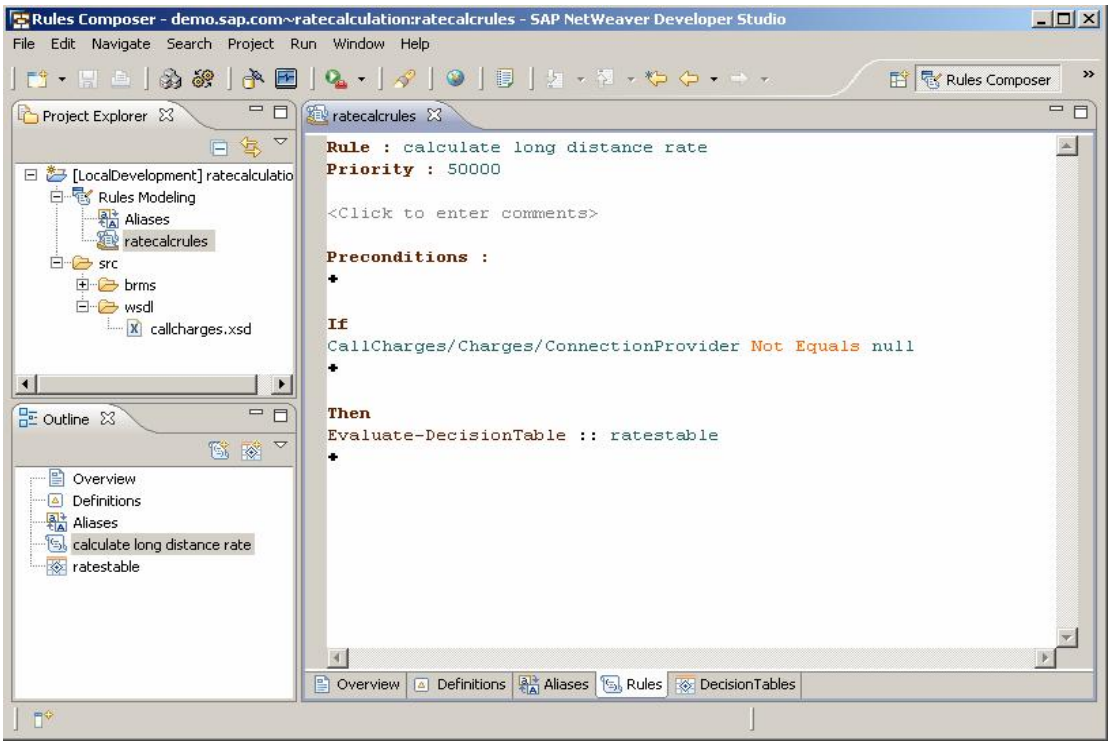
4. Edit the default condition as follows:
    1. Choose the LHS value: *Operation.isSuccessful* and in the drop down menu choose *CallCharges/Charges/Connection Provider* as shown below:



    2. Choose the comparator: *Equals* and in the drop down menu choose *Not Equals*.
    3. Choose the RHS value: *Default Value* and in the inline textbox enter *null*.
5. Under *Then* section, choose the icon that looks like a plus sign and in the drop down menu that appears, expand the *Evaluate Decision Table* node and choose *ratestable* as shown below:



The result must be as shown below:



6. Save the changes.

Deploying the Rules

Prerequisites

You should have a running instance of SAP AS, and should have configured the SAP NetWeaver Developer Studio with this instance.

Procedure

1. In the *Project Explorer* view, in the context menu of the *ratecalculation* node, choose *Development Component > Build*.
2. In the dialog box that appears, make sure the *ratecalculation* checkbox is selected and choose *OK*.

   To check if the build has happened successfully, check the *Infrastructure Console*.

Note: If the *Infrastructure Console* is not open, choose *Window > Show View > Other* and in the dialog box that appears, expand the *Development Infrastructure* node and choose *Infrastructure Console* and then choose *OK*.

3. In the context menu of the *ratecalculation* node, choose *Development Component > Deploy*.
4. In *the Deploy DCs* dialog box that appears, select the *ratecalculation* checkbox and choose OK.

Note: Open the *Infrastructure Console*, to check if the deploy has happened successfully.

A dialog box saying *Deploy finished successfully* appears.

Executing the Rules

Procedure

Creating the Web Module

1. In the SAP NetWeaver Developer Studio, choose *File > New > Project*.
2. In the wizard that appears, expand the *Development Infrastructure* node and choose *Development Component*. Choose *Next*.
3. In the screen that appears, expand the *J2EE* node and choose *Web Module*. Choose *Next*.
4. In the screen that appears, choose the software component where you want to create the DCs. For example expand the *'Local Development'* node and choose *MyComponents [demo.sap.com]*. Choose *Next*.
5. In the screen that appears, enter `rates` in the *Name* field. Choose *Finish*.

The *Java EE* perspective opens and in the *Project Explorer* view, you should see the *rates* node.

Note

- If the *Project Explorer* view does not open, choose *Window > Show View > Other*.
- In the dialog box that appears, expand the *General* node and choose *Project Explorer*.

Adding Dependency to the Web Module

1. Choose *Window > Open Perspective > Other*.
2. In the dialog box that appears, choose *Development Infrastructure*. Choose *OK*.

Note

- If the *Component Browser* view does not open, choose *Window > Show View > Other*.
- In the dialog box that appears, expand the *Development Infrastructure* node and choose *Component Browser*. Choose *OK*.

3. In the *Component Browser* view, expand the *MyComponents[demo.sap.com]* node and choose the *rates* node.

Note: If the *Component Properties* view does not open, choose *Window -> Show View -> Other*. In the dialog box that appears, expand the *Development Infrastructure* node and choose *Component Properties*. Choose *OK*.

4. In the *Component Properties* view, choose the *Dependencies* tab.
5. Choose the *Add* button and in the wizard that appears, expand the *BRMS-FACADE[sap.com]* node and select the *tc/brms/facade* checkbox. Choose *Next*.
6. In the screen that appears, select the *Design Time*, *Deploy Time*, *Run Time* checkboxes. Choose *Finish*.

Note

- In the context menu of the *rates* node, choose *Sync/Create Project > Sync Used DCs*
- In the dialog box that appears, choose *OK*.

Creating EngineInvoker.java

Make sure that you are in the *Java EE* perspective.

1. Expand the web module: *rates* node and in the context menu of the *Java Resources: source* node, choose *New > Other*
2. In the wizard that appears, expand the *Java* node and choose *Package*. Choose *Next*.
3. In the screen that appears, enter `com.sap.helper` in the *Name* field.
4. Choose *Finish*.
5. In the context menu of *com.sap.helper*, choose *New > Other*
6. In the wizard that appears, choose *Class*. Choose *Next*.
7. In the screen that appears, enter `EngineInvoker` in the *Name* field.

   You should see the *EngineInvoker.java* window.

8. Delete all existing lines and copy the following lines into the window:

   Syntax

```
package com.sap.helper;
import com.sap.brms.qrules.ejb.RuleEngineHome;
import com.sap.brms.qrules.engine.RuleEngine;
import com.sap.brms.qrules.xml.XMLObject;
import com.sap.brms.qrules.xml.XMLObjectFactory;
import java.io.BufferedReader;
import java.io.PrintWriter;
import java.io.StringReader;
import java.io.StringWriter;
import java.util.*;
import javax.naming.InitialContext;
```

```
import javax.rmi.PortableRemoteObject;
public class EngineInvoker
{
    private static String jndiName = "com.sap.brms.RuleEngine";
    private static String payloadSeparator;
    private static String ret_payloadSeparator;
    private static final String PROPS_FILE = "engine.properties";
    public EngineInvoker()
    {
    }
    public static RuleEngine getRuleEngine()
        throws Exception
    {
        InitialContext context = new InitialContext();
        Object obj = context.lookup(jndiName);
        RuleEngineHome home =
(RuleEngineHome)PortableRemoteObject.narrow(obj, RuleEngineHome.class);
        return (RuleEngine)home.create();
    }
    public static String invokeRuleset(String projectName, String
rsName, String inputXML, RuleEngine ruleEngine)
    {
        String output = null;
        if(projectName == null || rsName == null || inputXML == null)
        {
            output = "Project Name or Ruleset Name or Payload should
not be NULL";
        }
        try
        {
            if(ruleEngine == null)
            {
                ruleEngine = getRuleEngine();
            }
            List xmlObjList = processPayload(inputXML);
            List opXMLObjects = ruleEngine.invokeRuleset(projectName,
rsName, xmlObjList);
            output = processReturnPayload(opXMLObjects);
        }
        catch(Exception e)
```

```
            {
                output = e.getMessage();
            }
            return output;
        }
        private static String processReturnPayload(List opXMLObjects)
        {
            StringBuffer op = new StringBuffer();
            int size = opXMLObjects.size();
            for(int i = 0; i < size; i++)
            {
                XMLObject obj = (XMLObject)opXMLObjects.get(i);
                String opS = obj.getXmlString();
                op.append(opS);
                if(size != 1 && i != size - 1)
                {
                    op.append(ret_payloadSeparator);
                    op.append(System.getProperty("line.separator"));
                }
            }
            return op.toString();
        }
        private static List processPayload(String inputXML)
            throws Exception
        {
            List inputList = new ArrayList();
            StringReader strReader = new StringReader(inputXML);
            BufferedReader in = new BufferedReader(strReader);
            String line = null;
            StringBuffer sb = new StringBuffer();
            XMLObject xmlObj = null;
            while((line = in.readLine()) != null)
            {
                String trimmedLine = line.trim();
                if(trimmedLine.startsWith(payloadSeparator))
                {
                    xmlObj =
XMLObjectFactory.createXMLObject(sb.toString());
                    inputList.add(xmlObj);
```

```
                    sb.setLength(0);
                    ret_payloadSeparator = trimmedLine;
                } else
                {
                    sb.append(line);
                }
            }
            if(sb.length() != 0)
            {
                xmlObj = XMLObjectFactory.createXMLObject(sb.toString());
                inputList.add(xmlObj);
            }
            return inputList;
        }
        public static void main(String args[])
        {
            try
            {
                processPayload(null);
            }
            catch(Exception e)
            {
                e.printStackTrace();
            }
        }
        static
        {
            payloadSeparator = "#";
            ret_payloadSeparator = payloadSeparator;
        }
    }
```

Creating the XMLHelper.java

1. In the context menu of *com.sap.helper*, choose *New > Other*
2. In the wizard that appears, choose *Class*. Choose *Next*.
3. In the screen that appears, enter `XMLHelper` in the *Name* field. Choose *Finish*.

   You should see the *XMLHelper.java* window.

4. Delete all existing lines and copy the following lines into the window:

Syntax

```
package com.sap.helper;
import java.io.ByteArrayInputStream;
import javax.xml.parsers.DocumentBuilder;
import javax.xml.parsers.DocumentBuilderFactory;
import org.w3c.dom.Document;
public class XMLHelper {
public static String ConstructXML(String connProvider, String
destCountry, String originCountry, String typeOfLine){
        String xmlString = "<?xml version='1.0' encoding='UTF-8'?> "
        + "<CallCharges>"
        +  "<Charges>" +
     "<ConnectionProvider>" + connProvider + "</ConnectionProvider>" +
       "<ConnectionRate>0.0</ConnectionRate>" +
       "<DestinationCountry>" + destCountry + "</DestinationCountry>" +
       "<OriginCountry>" + originCountry + "</OriginCountry> " +
       "<TypeOfLine>" + typeOfLine + "</TypeOfLine>" +
     "</Charges>" +
         "</CallCharges>";
return xmlString;
 }

 public static String GetConnectionrate(String output)throws Exception
 {
   try {
         DocumentBuilderFactory factory = DocumentBuilderFactory
                     .newInstance();
         // Use the factory to create a builder
         DocumentBuilder builder = factory.newDocumentBuilder();
         ByteArrayInputStream stream = new ByteArrayInputStream(output
                     .getBytes());
         Document doc = builder.parse(stream);
         // Get a list of all elements in the document.
         // Get the value of the 3rd attribute which is the connection
charge.
         String attValue = doc.getElementsByTagName("*").item(3)
                     .getTextContent();
         return attValue;
   } catch (Exception e) {
```

```
            String error = "Unable to get connection rate. Failed
Parsing"+"\n"+output+"\n";
            error += e.getMessage();
            throw new Exception(error,e);
      }
   }


}
```

Creating the CallCharges.jsp

1. Expand the web module: *rates* node and in the context menu of the *Web Content* node, choose *New > Other*
2. In the dialog box that appears, expand the *Web* node and choose *JSP*. Choose *Next*
3. In the screen that appears, enter `CallCharges` in the *File name* field.
4. Choose *Finish*.

   You should see the *CallCharges.jsp* window with the following lines:

   Syntax

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Insert title here</title>
<head>
<body>
</body>
</html>
```

5. Replace *<title>Insert title here </title>* with `<title>Call Charge Calculator </title>`.
6. Copy the following lines after *<body>*

   Syntax

```
<form name="ui" method="POST" action="invoker.jsp">
<h3>BRMS Invocation Client</h3>
<%
 String connProvider = (String) request.getAttribute("CONN_PROVIDER");
 String destCountry = (String) request.getAttribute("DEST_COUNTRY");
 String originCountry = (String)
request.getAttribute("ORIGIN_COUNTRY");
```

```
 String typeOfLine = (String) request.getAttribute("TYPE_OF_LINE");
 String callCharge = (String) request.getAttribute("CALL_CHARGE");

 if(connProvider == null){
  connProvider = "";
 }
 if(destCountry == null){
  destCountry = "";
 }
 if(originCountry == null){
  originCountry = "";
 }
 if(typeOfLine == null){
  typeOfLine = "";
 }
 if(callCharge == null)
 {
  callCharge = "";
 }
%>
<table cellpadding="0" cellspacing="0" border="0">

<tr>
<td>Connection Provider: </td>
<td><input type="text" name="CONN_PROVIDER"
         value="<%=connProvider %>"></input></td>
</tr>
<tr>
<td>Destination Country:</td>
<td><input name="DEST_COUNTRY" type="text"
         value="<%=destCountry %>"></input></td>
</tr>
<tr>
<td>Origin Country:</td>
<td><input name="ORIGIN_COUNTRY" type="text"
         value="<%=originCountry %>"></input></td> </tr>
<tr>
<td>Type Of Line:</td>
<td><input name="TYPE_OF_LINE" type="text"
```

```
          value="<%=typeOfLine %>"></input></td>
        </tr>
<tr>
<td> </td>
<td> </td>
</tr>
<tr>
<td> </td>
<td><input name="INVOKE" type="submit" value="Submit"/></td>
</tr>
</table>
<br/>
<strong>Call Charges:</strong><br/>
<textarea id="CallCharge" name="CALL_CHARGE"
 style="width: 503px; height: 50px;"><%=callCharge %></textarea>
</form>
```

7. Save the changes.

Creating the index.jsp

1. Expand the web module: *rates* node and in the context menu of the *Web Content* node, choose *New > Other*
2. In the dialog box that appears, expand the *Web* node and choose *JSP*. Choose *Next*
3. In the screen that appears, enter `index` in the *File name* field. Choose *Next*.
4. Choose *Finish*.

   You should see the *index.jsp* window with the following lines:

   Syntax

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
<title>Insert the title here</title>
<head>
<body>
</body>
</html>
```

5. Replace *<title>Insert title here </title>* with `<title>Call Charge Calculator </title>`.
6. Copy the following line after *<body>*:

   Syntax

   ```
   <jsp:forward page="CallCharges.jsp"/>
   ```

7. Save the changes.

Creating the invoker.jsp

1. Expand the web module: *rates* node and in the context menu of the *Web Content* node, choose *New > Other*
2. In the dialog box that appears, expand the *Web* node and choose *JSP*. Choose *Next*
3. In the screen that appears, enter `invoker` in the *File name* field. Choose *Next*.
4. Choose *Finish*.

   You should see the *invoker.jsp* window with the following lines:

   Syntax

   ```
   <%@ page language="java" contentType="text/html; charset=UTF-8"
   pageEncoding="UTF-8"%>
   <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
   "http://www.w3.org/TR/html4/loose.dtd">
   <html>
   <head>
   <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
   <title>Insert the title here</title>
   <head>
   <body>
   </body>
   </html>
   ```

5. Replace *<title>Insert title here </title>* with `<title>Call Charge Calculator </title>`.
6. Copy the following lines before *<html>*

   Syntax

   ```
   <%@page import="com.sap.helper.*"%>
   <%@page import="javax.xml.parsers.*" %>
   <%@page import="org.w3c.dom.*"%>
   <%@page import="java.io.ByteArrayInputStream"%>
   ```

7. Copy the following line after *<body>*:

   Syntax

```
<%
String connProvider = (String) request.getParameter("CONN_PROVIDER");
 String destCountry = (String) request.getParameter("DEST_COUNTRY");
 String originCountry = (String)
request.getParameter("ORIGIN_COUNTRY");
 String typeOfLine = (String) request.getParameter("TYPE_OF_LINE");
   // create a xml string by making use of the values inputted by the
user.
 String xmlString =
XMLHelper.ConstructXML(connProvider,destCountry,originCountry,typeOfLin
e);
   System.out.println(connProvider + "@@ "+ destCountry+"
@@"+originCountry + " @@" + typeOfLine);
        // set project name and ruleset name.
    String projectName = "demo.sap.com~ratecalculation";
    //String rulesetName = "CalculateRates";
   String rulesetName = "ratecalcrules";
        //invoking the rule engine
    String output = EngineInvoker.invokeRuleset(projectName,
rulesetName, xmlString, null);
    // Create a factory
    //DocumentBuilderFactory factory =
DocumentBuilderFactory.newInstance();
    // Use the factory to create a builder
    //DocumentBuilder builder = factory.newDocumentBuilder();
    //ByteArrayInputStream stream = new
ByteArrayInputStream(output.getBytes());
    //Document doc = builder.parse(stream);
    // Get a list of all elements in the document.
    // Get the value of the 3rd attribute which is the connection
charge.
    String attValue = XMLHelper.GetConnectionrate(output);
         System.out.println("@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ "+ output);
    request.setAttribute("CONN_PROVIDER", connProvider);
    request.setAttribute("DEST_COUNTRY", destCountry);
    request.setAttribute("ORIGIN_COUNTRY", originCountry);
    request.setAttribute("TYPE_OF_LINE", typeOfLine);
    request.setAttribute("CALL_CHARGE", attValue);
%>
<jsp:forward page="CallCharges.jsp"/>
```

8. Save the changes.

Creating the Enterprise Application

Make sure that you are in the *Java EE* perspective.

1. In the SAP NetWeaver Developer Studio, choose *File > New > Project*.
2. In the wizard that appears, expand the *Development Infrastructure* node and choose *Development Component*. Choose *Next*.
3. In the screen that appears, expand the *J2EE* node and choose *Enterprise Application*. Choose *Next*.
4. In the screen that appears, choose the software component where you want to create the DCs. For example expand the *'Local Development'* node and choose *MyComponents [demo.sap.com]*. Choose *Next*.
5. In the screen that appears, enter `ratesear` in the *Name* field. Choose *Next*.
6. Choose *Next*.
7. In the *New EAR Project* screen select the *LocalDevelopment~LocalDevelopment~ rates ~demo.sap.com* checkbox. Choose *Finish.*

In the *Project Explorer* view, you should see the *ratesear* node.

Adding Dependency to the Enterprise Application

Make sure that you are in the *Development Infrastructure* perspective.

1. In the *Component Browser* view, expand the *MyComponents[demo.sap.com]* node and choose the *ratesear* node.
2. In the *Component Properties* view, choose the *Dependencies* tab.
3. Choose the *Add* button and in the wizard that appears, expand the *BRMS-FACADE[sap.com]* node and select the *tc/brms/facade* checkbox. Choose *Next*.
4. In the screen that appears, select the *Design Time*, *Deploy Time*, *Run Time* checkboxes. Choose *Finish*.

 Note

- In the context menu of the *rates* and *ratesear* nodes, choose *Sync/Create Project > Sync Used DCs*
- In the dialog box that appears, choose *OK*.

Creating application.xml

Make sure that you are in the *Java EE* perspective.

1. Expand the enterprise application: *ratesear* node and in the context menu of the *Deployment Descriptor: LocalDevelopment~LocalDevelopment~ratesear~demo.sap.com* node, choose *create application.xml.* Press `Ctrl+Shift+F`

   and save the changes.

Note
Expand the enterprise application: *ratesear* node, *META-INF* node double click the *application.xml* node.

You should see the *application.xml* window with the following lines:

 Syntax

```
<?xml version = "1.0" encoding = "ASCII"?>
<application xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xmlns="http://java.sun.com/xml/ns/javaee"

xmlns:application="http://java.sun.com/xml/ns/javaee/application_5.xsd"
             xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/n              s/javaee/application_5.xsd"
version="5">
<display-
name>LocalDevelopment~LocalDevelopment~ratesear~demo.sap.com</display-
name>
<module>
     <web>
        <web-uri>demo.sap.com~rates.war</web-uri>
        <context-
root>LocalDevelopment~LocalDevelopment~rates~demo.sap.com</context-
root>
     </web>
</module>
</application>
```

2. Replace *<context-root>LocalDevelopment~LocalDevelopment~buyer~demo.sap.com</context-root>* with `<context-root>CallCharges</context-root>`.

Note: Instead of *LocalDevelopment~LocalDevelopment~ buyer_wm ~demo.sap.com*, you need to enter the customized application name i.e in this tutorial, the name of the application is *CallCharges*.

Building and Deploying

Make sure you are in the *Development Infrastructure* perspective.

1. In the *Component Browser* view, expand the *Local Development*, *MyComponents[demo.sap.com]* nodes and in the context menu of the *rates* and *ratesear* nodes, choose *Build.* .
2. In the dialog box that appears, choose *OK*.
3. In the context menu of the *ratesear* node, choose *Deploy*.
4. In the dialog box that appears, choose *OK*.
5. Open the *Infrastructure Console*, to check if the build and deploy actions have happened successfully.

Note
You can also build and deploy *rates* and *ratesear* in the Java EE perspective.

1. In the *Project Explorer* view, in the context menu of the *rates* and *ratesear* nodes, choose *Development Component* > *Build*.
2. In the dialog box that appears, choose OK.
3. In the context menu of the *ratesear* node, choose *Development Component* > *Build*.
4. In the dialog box that appears, choose OK.

Running the Web Module

1. Open the browser and enter the Application Server Address followed by the port number and the application name: `CallCharges`.
2. Enter relevant data in all available fields and choose *Submit*.

   The rules gest executed and you should the see the call charges based on the data you entered.

Example

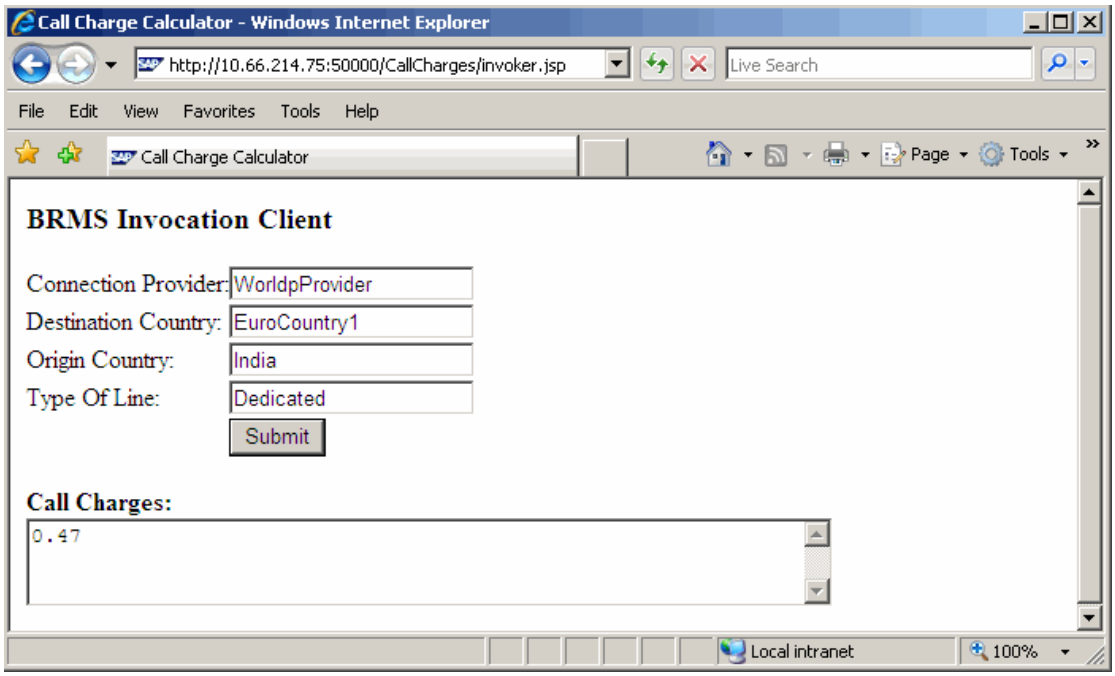
1. Enter the following data in the respective fields:

Field	*User Entry*
Connection Provider	WorldpProvider
Destination Country	EuroCountry1
Origin Country	India
Type Of Line	Dedicated

2. Choose *Submit.*

You should get the Call Charges as 0.47 because in the ratestable decision table, if the *Connection Provider* is WorldpProvider, *Destination Country* is EuroCountry1 and *Type Of Line* is Dedicated then the call charge is 0.47.

Here is the snapshot of the web module:



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