

## **IBM Integration Bus**

## Implementing Business Rules with IBM Operational Decision Management using the Employee Service scenario

Featuring:

Creating business rules in the ODM Rule Designer Deploying to the ODM Decision Center and Rule Execution Server Using the rule in the IIB Toolkit with a Decision Service node Testing the rule with IIB Updating the rule with the ODM Business Console

| 1. INT                            | RODUCTION TO DECISION SERVICES  | 3                                 |
|-----------------------------------|---|-----------------------------------|
| 1.1                               | SCENARIO SCHEMATIC  | 3                                 |
| 2. DEF                            | INE THE BUSINESS RULE IN ODM  | 4                                 |
| 2.1<br>2.2<br>2.3<br>2.3.<br>2.3. | CREATE THE RULE IN THE RULE DESIGNER<br>EXPORT THE RULEAPP ARCHIVE<br>ADD THE ODM RULE TO THE ODM DECISION CENTER REPOSITORY<br>Step 1 – Add the rule into the Decision Center repository<br>Step 2 – Deploy the rule from the Decision Center to the Rule Execution Server | 4<br>. 16<br>. 19<br>. 20<br>. 24 |
| 3. CO                             | NFIGURE THE INTEGRATION BUS APPLICATION WITH THE ODM RULE   | . 34                              |
| 3.1<br><i>3.1.</i>                | IMPORT THE RULE INTO THE INTEGRATION BUS TOOLKIT           1         Review the Integration Bus Configurable Services for Decision Services   | . 34<br>. <i>4</i> 5              |
| 4. TES                            | T THE SERVICE WITH THE DEPLOYED RULE  | . 48                              |
| 4.1<br>4.2                        | TEST THE SERVICE WITH THE IIB FLOW EXERCISER<br>TEST THE SERVICE WITH SOAPUI (OPTIONAL)   | . 48<br>. 52                      |
| 5. UPC                            | DATE THE BUSINESS RULE  | . 54                              |
| 5.1<br>5.2                        | UPDATE THE RULE IN THE BUSINESS CONSOLE<br>USE THE ODM ENTERPRISE CONSOLE TO DEPLOY THE UPDATED RULE  | . 54<br>. 60                      |
| 6. TES                            | T THE SERVICE AGAIN   | . 62                              |

## 1. Introduction to Decision Services

You can use the IBM Integration Bus Toolkit to write business rules by using natural language, so that they can be read easily by business users (for example, a business analyst). In the Integration Toolkit, you create a decision service, which is a collection of rules that are used to process a message.

A DecisionService node executes those business rules to provide operations like routing, validation, and transformation. You can either write rules in the Integration Toolkit, or import rules from IBM Operational Decision Manager. You can also retrieve rules from an external IBM Operational Decision Manager repository.

#### 1.1 Scenario Schematic

The following schematic shows the primary components of the Integration Bus environment when used in conjunction with IBM Operational Decision Management.

On the left side, (1), the embedded ODM components enable IBM Integration Bus to process rules defined in the Integration Bus Toolkit. No components from the IBM ODM product are required for this.

On the right side, (2), shows the primary ODM components that are needed to define rules within the ODM system, and to deploy and load those rules into the Integration Bus. The Integration Bus runtime loads rules directly from the ODM database. Updates to those rules can be automatically detected and loaded by the Integration Bus runtime.

This lab will focus primarily on this scenario (2), where the business rule is defined and managed in ODM.



## 2. Define the Business Rule in ODM

#### 2.1 Create the Rule in the Rule Designer

This section will show you how to define rules using the IBM Operational Decision Manager Rules Designer, how to store these in the ODM repository (Decision Center), how to update them with the Business Console, how to deploy them to the Rule Execution Server, and how to use these rules from an Integration Bus application.

1. Start the IBM Operational Decision Manager Rules Designer from the Start menu. This is an eclipse-based tool, and will start the eclipse Helios workbench. Accept the supplied workspace (c:\workspace\ODM).

Important: you must start the Rule Designer from the icon shown on the Windows Start menu. This shortcut has been configured to use the en\_US locale. This matches the configuration of the Decision Center system, which you will use later in the lab.

2. In the Rule perspective, create a new Rule Project.

| New        | Rule Project                   |        |
|------------|--------------------------------|--------|
| Copy       | <b>Ē</b> ∱Project              |        |
| Paste      | 式 Rule Package                 |        |
| 💥 Delete   | R BOM Entry                    |        |
| Refactor   | Action Rule                    |        |
| Import     | 🔆 Action Rule Template         |        |
| Export     | 🔛 Decision Table               |        |
| - Refresh  | 📸 Decision Table Template      |        |
| Q          | — 📲 Decision Tree              |        |
| Properties | 👔 Technical Rule               |        |
|            | Ruleflow                       |        |
|            | <i>f</i> <sup>2</sup> Function |        |
|            | ë Variable Set                 |        |
|            |                                |        |
|            | Folder                         |        |
|            | File                           |        |
|            | Example                        |        |
|            |                                |        |
|            | [ <sup>™</sup> ]Other          | Ctrl+N |

3. Select a Standard Rule Project, and click Next.

| 🖶 New Rule Project   |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
| Select a template Select a template from which to create a new rule project. |  |  |  |  |  |  |  |
| Available rule project templates   | <ul> <li>This template creates an empty standard rule project with the following options :</li> <li>Rule project references. Optional rule project dependencies.</li> <li>Java XOM settings. Path on java folders, jars or projects.</li> <li>Dynamic XOM settings. Path on XML schemas or dynamic XOM files.</li> </ul> |  |  |  |  |  |  |
| (?) <back< td=""><td>Next &gt; Finish Cancel</td></back<>                    | Next > Finish Cancel   |  |  |  |  |  |  |

4. Name the project EmployeeBonus, and click Finish.

Note that the project name EmployeeBonus is known as the "ruleset". The Integration Bus application will reference this ruleset, so the precise name and case of this project is important.

| 🖶 New Rule Project              |            |        |        |        |
|---------------------------------|------------|--------|--------|--------|
| Rule Project                    |            |        |        |        |
| Create a rule project.          |            |        |        | -      |
| Project name: EmployeeBonus     |            |        |        |        |
| ☑ Use default location          |            |        |        |        |
| Location: C:\workspaces\ODM\Emp | loyeeBonus |        |        | Browse |
|                                 |            |        |        |        |
|                                 |            |        |        |        |
| ?                               | < Back     | Next > | Finish | Cancel |

5. When the project has been created, the Rule Explorer (navigator) will be populated as normal, and a "wizard-style" set of tasks will be shown in the Rule Project Map view (when the EmployeeBonus project is highlighted in the navigator).

At this stage, the only item available for selection will be "Import XOM".



6. Click the "Import XOM" link, and then select "Dynamic execution object model (XSD)". Click OK.



 On the Dynamic Execution Object Model, click "Add External XSD", and navigate to c:\student10 \ BusinessRules \ resources \ EmployeeServiceInterface \ sample \ iibadmin \ SAMPLE\_EMPLOYEE.xsd.

Click OK.

| 🖶 Properties for EmployeeBonu  | s  |  |
|--------------------------------|--|--|
| type filter text               | Dynamic Execution Object Model   | $\leftarrow \bullet \bullet \bullet \bullet \bullet \bullet$ |
|                                |  |  |
| Builders                       | 🔄 Dynamic Bindings 🛛 🖧 Order   |  |
| ···· Business Object Model     | Required dynamic binding files:  | 1  |
| ···· Categories                |  | Add yop  |
| E. COBOL Management            | Em SAMPLE_EMPLOYEE.xsd - C:/student10/businesskules/n.sou              |  |
| Decision Service               |  | Add External XSD   |
| - Dynamic Execution Object     |  |  |
| ···· Java Execution Object Mor |  | Demon  |
| ⊕ PL/I Management              |  | Remove   |
| ···· Project Facets            |  | Edit   |
| ···· Project References        |  |  |
| ···· Rule Project Folders      |  |  |
| ···· Ruleset Build Mode        |  |  |
| ··· Ruleset Extractors         | Schemas to be included in Ruleset archive for enabling the Transparent | arent Decision Service                                       |
| Ruleset Parameters             | · Schemos to be included in real operating the real spe                |  |
| Ruleset Properties             |  |  |
| ···· Run/Debug Settings        |  |  |
| Server                         |  |  |
| Task Tans                      |  |  |
|                                |  |  |
| 2                              |  | OK Cancel  |
| $\odot$                        |  |  |

8. Back on the Rule Project Map, the "Create BOM" link is now active. Click this, and on the New BOM Entry window, set the name to **EmployeeBonus\_model**.

Click Next.

| 🗟 Rule Project Map 🙁 🔡 Problems  | 🗲 New BOM Entry                      | ×                    |        |
|--|--------------------------------------|----------------------|--------|
| EmployeeBonus ( & o warning<br>Design  | BOM Entry<br>Create a new BOM entry. |                      | 28     |
| Insert XOM (1)     O     Create BOM     O  | BOM folder:                          | /EmployeeBonus/bom   | Browse |
| Define parameters  | Folder:                              |                      | Browse |
| Image: Orgin and the second | Name:                                | EmployeeBonus_model  |        |
|  | Create a BOM entry from a XOM        |                      |        |
|  | C Create an empty BOM entry          |                      |        |
| IBM.   |                                      |                      |        |
|  | ?                                    | < Back Next > Finish | Cancel |

9. On the New BOM Entry window, click Browse XOM, and select the SAMPLE\_EMPLOYEE.xsd (XOM) that you just imported. Click OK, then Finish.

| Entry   | <u>_   ×</u> | Erowse XOM  |
|---|--------------|---|
| BOM Entry   | 0            | Choose a XOM Element                                  |
| Create a BOM entry from a XOM.  | 872          | file:C:/student10/BusinessRules/resources/EmployeeSer |
| Choose a XOM entry:   | Browse XOM   | Billi Jak   |
| J<br>Select dasses:   |              |   |
|   |              |   |
|   |              |   |
| Load getters and setters as attributes  |              | (?) OK Cancel   |
|   |              |   |
| Compared Report Principal Princ | ish Cancel   |   |

10. At the BOM Entry window, expand the sample.iibadmin class, and select the EMPLOYEEType.

Click Next.

(The DBResp schema was included in the list because it was included in the schema definition in the EmployeeService lab. However, it's not needed to invoke this business rule).

| 🖶 New BOM Entry  | <u>- 0 ×</u>      |
|--|-------------------|
| BOM Entry  | 0                 |
| Create a BOM entry from a XOM.   | 812               |
|  |                   |
| Choose a XOM entry:  | Browse XOM        |
| xom:/EmployeeBonus/C:/student10/Integration_service/service_interface/Em | ployeeServiceInte |
| Select dasses:   |                   |
|  |                   |
|  |                   |
| EmployeeResponseType   |                   |
|  |                   |
|  |                   |
|  |                   |
|  |                   |
| ✓ Load getters and setters as attributes                                 |                   |
|  |                   |
|  |                   |
| Sack Next > Finish   | Cancel            |
|  |                   |

Decision Services with IBM Operational Decision Manager

11. At the BOM Verbalization window, accept all defaults, and click Finish.

(You could remove some of these elements to make the verbalization simpler; however, we'll leave them in for now).

| New BOM Entry   | × |
|---|---|
| BOM Verbalization Select the business elements to verbalize and define the verbalization. |   |
| Va  |   |
| Select the elements to verbalize.   |   |
| Verbalize: 🔽 Getters 🔽 Setters 🔲 All Methods 🗹 Static References                          |   |
|   | 1 |
| ■ If the EMPLOYEEType, an EMPLOYEEType, the EMPLOYEETypes                                 |   |
|   | 1 |
| BONUS   |   |
| E COMM  |   |
|   |   |
|   |   |
|   |   |
|   | 1 |
|   |   |
|   |   |
|   |   |
| Select All Deselect All   |   |
|   |   |
|   |   |
|   |   |
|   |   |
|   |   |
|   | _ |

12. Back at the Rule Project Map wizard, the "Define parameters" link will now be active, so create the Ruleset Parameters by clicking Define Parameters. This will open the Properties for EmployeeBonus on the Ruleset Parameters tab.

| EmployeeBonus (A 1 War              | Properties for EmployeeBonu  | 5           |              |              |               |               |    | _ 🗆 🗙  |
|-------------------------------------|--|-------------|--------------|--------------|---------------|---------------|----|--|
| Design Participation (C             | type filter text   | Rulese      | t Parame     | ters         |               |               |    | $\leftarrow \star \Rightarrow \star \bullet$ |
| Jesign<br>Jimport XOM (1)           | Resource     Builders  | Define rule | set paramet  | ers.         |               |               |    |  |
| 800 <u>Accel 2001 (1)</u> 0 -       | Business Object Model  | Name        | Туре         | Direction    | Default Value | Verbalization |    | Add  |
| Define parameters                   | Categories   |             |              |              |               |               |    | Remove                                       |
| () <u>Charles and the sting</u> (?) | - Decision Service   |             |              |              |               |               |    | Lin  |
|                                     | Dynamic Execution Object   |             |              |              |               |               |    |  |
|                                     |  |             |              |              |               |               |    | Down   |
|                                     | Project Facets   |             |              |              |               |               |    | Refactor                                     |
| IHM.                                | - Project References - Rule Project Folders - Ruleset Build Mode - Ruleset Extractors - Ruleset Parameters - Ruleset Properties - Run/Debug Settings | Enable      | type check t | for COBOL XO | M or PL/I XOM |               |    |  |
|                                     | (?)  |             |              |              |               |               | OK | Cancel                                       |

13. Click the Add button. This will add a new parameter with default values.

| Ruleset Parameters 🗧 🔹 |                  |           |               |               |  |          |
|------------------------|------------------|-----------|---------------|---------------|--|----------|
| Define ruleset pa      | arameters.       |           |               |               |  |          |
| Name                   | Type             | Direction | Default Value | Verbalization |  | Add      |
| myParam                | java.lang.String | IN_OUT    |               | myParam       |  | Remove   |
|                        |                  |           |               |               |  | Up       |
|                        |                  |           |               |               |  | Down     |
|                        |                  |           |               |               |  | Refactor |

14. The three columns Name, Type and Verbalization need to be changed on this window, as follows:

First, change the Name to employee, and change Verbalization to "the employee".

| Ruleset Parameters $\diamond \star \Rightarrow$ |                  |           |               |               |  |        |  |  |
|---|------------------|-----------|---------------|---------------|--|--------|--|--|
| Define ruleset                                  | parameters.      |           |               |               |  |        |  |  |
| Name  | Туре             | Direction | Default Value | Verbalization |  | Add    |  |  |
| employee  | java.lang.String | IN_OUT    |               | the employee  |  |        |  |  |
|   |                  |           |               |               |  | Remove |  |  |
|   |                  |           |               |               |  | Up     |  |  |
|   |                  |           |               |               |  |        |  |  |
|   |                  |           |               |               |  | Down   |  |  |

15. Next, click the Type java.lang.String, and click the icon with three dots to invoke the Types Selection editor.

| Ruleset Parameters         |             |       |           |  |
|----------------------------|-------------|-------|-----------|--|
| Define ruleset parameters. |             |       |           |  |
| Name                       | Type        |       | Direction |  |
| bonus                      | java.lang.s | tring | IN_OUT    |  |
|                            |             |       |           |  |
|                            |             |       |           |  |

16. On the Types selection editor, type "em" into the filter field, then select EMPLOYEEType, then OK.

| 🖶 Types  | <u>- 🗆 ×</u> |
|--|--------------|
| Choose a type (? = any character, * = any string):             |              |
| em   |              |
| Matching types:  |              |
| EMPLOYEEType     EmptyStackException                           |              |
|  |              |
| Qualifiers:  |              |
| sample.iibadmin - (/EmployeeBonus/bom/EmployeeBonus_model.bom) |              |
| Array  |              |
| T Array Type   |              |
| Dimensions: 1  |              |
|  |              |
| ОК Са  | ncel         |

17. When you have finished with the RuleSet parameters, as shown here, click OK.

| Ruleset Parameters          (> + -) + |                |                              |           |               |               | ⇒ |        |
|---|----------------|------------------------------|-----------|---------------|---------------|---|--------|
| 1   | Define ruleset | parameters.                  |           |               |               |   |        |
|   | Name           | Туре                         | Direction | Default Value | Verbalization |   | Add    |
|   | employee       | sample.iibadmin.EMPLOYEEType | IN_OUT    |               | the employee  |   |        |
|   |                |                              |           |               |               |   | Remove |
|   |                |                              |           |               |               |   | Up     |
|   |                |                              |           |               |               |   |        |
|   |                |                              |           |               |               |   | Down   |

18. Back at the Rule Project Map, in the Orchestrate section, click "Add rule package".

Name the new package **bonus\_package.** 

Click Finish.

|   |                                 |                      | <br> | noromentation |        |
|---|---------------------------------|----------------------|------|---------------|--------|
|   | 른 New Rule Pa                   | ckage                |      |               |        |
| Orchestrate<br>Add rule package ⑦<br>Add ruleflow ⑦ | Rule Packag<br>Create a rule pa | <b>je</b><br>Ickage. |      |               | Ť.     |
|   | Source: /Emplo                  | veeBonus/rules       |      |               | Browse |
|   | Package: bonus                  | _package             |      |               |        |
|   | Type: RulePa                    | ickage               |      |               | •      |
|   |                                 |                      |      |               |        |
|   | ?                               |                      |      | Finish        | Cancel |

19. At the Rule Project Map, in the Author section, click "Add action rule".

Set the Package to **bonus\_package** (just created), and the name of the new rule to **new\_bonus**.

Click Finish.

|                           | 🚝 New Actio                 | n Rule               |   |
|---------------------------|-----------------------------|----------------------|---|
| Author<br>Add action rule | Action Rul<br>Create an act | e<br>tion rule.      |   |
| Add decision tree ?       | Source folder:              | /EmployeeBonus/rules | E |
|                           | Package:                    | bonus_package        | E |
|                           | Name:                       | new_bonus            | Ī |
| Review                    |                             |                      |   |
| Analyze rule project ?    | Template:                   |                      |   |
| 😵 Add query 🛛 🕐           | Type:                       | ActionRule           |   |
|                           |                             |                      |   |
|                           | ?                           | Finish               | • |

20. The rule editor will now open with new\_bonus, and you can edit this new rule using the rule editor.

| 🥺 new_bonus 🕱  |                       |                  |
|--|-----------------------|------------------|
| Action Rule: new_bonus   |                       |                  |
| ▼ General Information  | ▼ Category Filter     |                  |
| Name : new_bonus   | i Categories: Any.    | 🖉 Edit           |
| Documentation  |                       |                  |
| Content  |                       |                  |
|  |                       |                  |
|  |                       |                  |
|  |                       |                  |
|  |                       |                  |
| 1  |                       |                  |
| intellirule IRL new_bonus.brl  |                       |                  |
| 🚵 Rule Project Map 🛛 🔀 Problems 🧟 Tasks 🗟 BOM Update 🔠 DVS Project Valio | lation 🗖 🗖            | Properties 🛛     |
|  |                       | Property #       |
|  |                       | active tr        |
| Design   |                       | documentation    |
| Crchestrate  | Author                | evoiration date  |
|  | Add action rule (1) ⑦ | locale e         |
|  | Add decision table ⑦  | name n           |
| Define parameters (1) (2)  | Add decision tree (?) | overridden rules |
| Check project for testing (?)  |                       | priority         |
|  | T I                   | status n         |
|  | i i                   | taas             |

Decision Services with IBM Operational Decision Manager

Version 10.0.0.0

21. In the Content pane, using the rule editor and its Content Assist feature, construct the following rule:

If the SALARY of 'the employee' is less than 20000 and the BONUS of 'the employee' is less than 200 then set the BONUS of 'the employee' to 500;

The Content Assist feature uses a combination of the Return (to select a value) and the up/down cursor to move between possible values.

| 🧼 new_bonus 🛛   |  |
|---|--|
| Action Rule: new_bonus  |  |
| ▼ General Information   | ▼ Category Filter                          |
| Name : new_bonus  | i Categories: Any. ∥Edit                   |
| Documentation   |  |
| Content   |  |
| if the SALARY of 'the employee' is less than 20000 and th<br>then set the BONUS of 'the employee' to 500; | e BONUS of 'the employee' is less than 200 |
|   |  |

Save the rule.

22. Finally, you need to create a RuleApp project that can be used to export the rule, so that it can be imported into the Integration Bus Toolkit.

Back at the Rule Project Map, in the Deploy and Integrate section, click "Create RuleApp project".

|   | 🖶 New RuleApp Project            |                                |
|---|----------------------------------|--------------------------------|
|   | RuleApp Project                  |                                |
|   | Enter a project name.            |                                |
|   |                                  |                                |
|   | Project name:                    |                                |
| <u> </u>  | ☑ Use default location           |                                |
| tellirule IRL ODMBookRule.brl                                   | Location: C:\workspaces\ODMRules | Browse                         |
| , Rule Project Map 🗴 🔝 Pro                                      |                                  |                                |
| BookOrders (🙆 <u>O Warnir</u>                                   |                                  |                                |
| Design  |                                  | Deploy and Integrate           |
| Import XOM (1) ?  |                                  | Create RuleApp project (?)     |
| %∑ Create BOM (1) ⑦   |                                  | Create client project (?)      |
| Define parameters     (1)       0     Check project for testing |                                  | Package runtime for testing () |
|   | Reack Next > Finish              | Cancel                         |

23. Name the project **ODMEmployeeBonus** (case-sensitive); click Next.

Note that this RuleApp is the ODM container that holds the ruleset, and is the way that the Integration Bus application will reference the required ruleset. Later in this lab, you will create the corresponding deployment container for the RuleApp into the ODM runtime, which will also named ODMEmployeeBonus, enabling the ODM system to locate the requested ruleset.

| 🚝 New RuleApp Project   |        |
|---|--------|
| RuleApp Project<br>Enter a project name.  |        |
| Project name: ODMEmployeeBonus           Image: ODMEmployeeBonus           Image: ODM location           Location:         C:\workspaces\ODM\ODMEmployeeBonus | Browse |
| O < Back Next > Finish  | Cancel |

24. Ensure the Rule Projects tab is active, and select EmployeeBonus. Click Finish.

| 🖨 New RuleApp Project   |               |
|---|---------------|
| Add Ruleset Archives<br>Specify the ruleset archives and/or rule projects to add to the<br>RuleApp project.   |               |
| Rule Projects Ruleset Archives Add rule projects:   | Add<br>Remove |
| Control Con | Cancel        |

### 2.2 Export the RuleApp Archive

In this section, you will export the RuleApp so that it can be used by the Integration Bus EmployeeService. It is exported in the form of a jarfile.

1. On the ODMEmployeeBonus project, click "Export" a RuleApp archive.

| 🥹 new_bonus 🛛 🌍 ODMEmplo         | yeeBonus 🗙  |        |
|----------------------------------|---|--------|
| RuleApp: ODMEmplo                | yeeBonus  |        |
| General Information              | Export RuleApp Archive  |        |
| Name: ODMEmployeeBo              | Specify RuleApp Project   | -      |
| Display name: ODMEmployeeBo      | Specify the ruleset archives to be packaged in the RuleApp archive. |        |
| Version: 1.0                     |   | 1      |
| Creation date: Friday, Decening  | Select the ruleset archives to export:                              |        |
| Description:                     | EnployeeBonus   |        |
|                                  |   |        |
|                                  |   |        |
|                                  |   |        |
|                                  | Select the export destination:                                      |        |
| Deployment                       | JAR file:   | Browse |
| You can:                         | Options:  |        |
| Export a Rule upp archive.       |   |        |
| Deploy a RuleApp to one or more  |   |        |
|                                  |   |        |
|                                  | Finish  | Cancel |
|                                  |   |        |
|                                  |   |        |
|                                  |   |        |
| Overview Ruleset Archives archiv | e.xml   |        |

2. The file has to be exported as a jar file, so use the Browse button to navigate to

```
c:\student10 \ BusinessRules \ exported RuleApp Projects
```

You will see that there is already a file called ODMEmployeeBonus.jar in this folder. Highlight this, and then click Open (you are going to overwrite this file with your new version).

| 🖨 JAR File  |                        |                                |                  | ×           |
|---|------------------------|--------------------------------|------------------|-------------|
| G O ⊽ 🖟 ▼ BusinessRules ▼ exported_F  | RuleApp_Projects 🔹 🗸 🌆 | Search exported_Rule           | App_Pr           | 2           |
| Organize 🔻 New folder   |                        |                                | •                | ?           |
| Program Files (x86) ProgramData student10   | Name *                 | Date modified 24/05/2013 15:25 | Type<br>JAR File |             |
| Analytics   | ODMEmployeeBonus.jar   | 30/)4/2015 16:46               | JAR File         |             |
| BusinessRules Configurable_services Exported_RuleApp_Projects Flow_exerciser_tests Flow_exer |                        |                                |                  |             |
| File name: ODMEmp   | loyeeBonus.jar         | *.jar<br>Open                  | Cancel           | •<br>•<br>• |

3. The fully-qualified file name will now be set correctly in the Export Archive window, so click Finish.

Answer YES when asked to overwrite the existing file.

| Export RuleApp Archive   |          |
|--|----------|
| Specify RuleApp Project<br>Specify the ruleset archives to be packaged in the RuleApp archive. | <b>,</b> |
| Select the ruleset archives to export:   |          |
| ODMEmployeeBonus<br>EmployeeBonus  |          |
| Select the export destination:   |          |
| JAR file: nt10\BusinessRules\exported_RuleApp_Projects\ODMEmployeeBonus jar                    | Browse   |
| Options:   |          |
| Overwrite existing file without warning  |          |
| ? Finish   | Cancel   |

4. Summary so far:

This has completed the definition of the rule and ruleset in the ODM Rule Designer.

You have also exported the ruleset, in the form of a RuleApp named ODMEmployeeBonus, and stored this as a jar file on the local filesystem. This ruleset will be imported into the IIB Toolkit in chapter 3.

You will now go on to store this ODM project in the ODM Decision Center. From here, it will be deployed into the Rule Execution Server.

### 2.3 Add the ODM Rule to the ODM Decision Center Repository

As a reminder, at runtime the ODM rules and rulesets are stored and loaded by the Integration Bus from the Rule Execution Server database, as shown in the following schematic.



When using ODM rules, the rule is developed initially in the eclipse Rule Designer. You can either load this rule into the Decision Center database (step 1), and then deploy the rule (contained within a RuleApp) from there into the Rule Execution Server (step 2). Or you can deploy the rule direct from the Rule Designer into the Rule Execution Server (step 3).

This lab will use steps 1 and 2. You can update the rule using the Enterprise Console web browser, and then deploy the rule using the same console, although this lab will not include that scenario.

In this lab, you will update the rule with the ODM Business Console, and deploy the rule using the web browser Enterprise Console.

#### 2.3.1 Step 1 – Add the rule into the Decision Center repository

The rule that you have created in the Rule Designer now needs to be stored in the ODM repository, which is owned by the Decision Center component of IBM Operational Decision Management. ODM runs as a WebSphere Application Server application, so WAS must be started on your system. (For WAS gurus, we have created a WAS profile named ODMSamples8510).

## If you are running this lab in a hosted workshop, we have already started WAS for you. If you are running it independently, start WAS by using the desktop icon.

1. First, login to the Decision Center Enterprise Console to see what projects are currently defined.

In the Firefox browser, use the Decision Center Enterprise Console (bookmark in the ODM bookmark folder).

Login with the user iibadmin/passw0rd. You will see that there are no projects currently defined in the ODM database.

Logout from the Enterprise Console.



The database does not contain any projects. Import a project from the Configure tab or contact your administrator.

Vork on a project
Project in use: None
Branch in use: None
Current action: None

2. In the eclipse Rule Designer, right-click the EmployeeBonus project and select Decision Center, Connect.

| 😰 Rule Explorer 🛛  |  |           |         |
|--|--|-----------|---------|
| EmployeeBonus  | New<br>Go Into   | ۲         |         |
| inev<br>inev<br>inev<br>inev<br>inev<br>inev<br>inev<br>inev | Copy<br>Paste<br>Selete<br>Refactor  | •         |         |
| templates     ODMEmployeeE                                   | import<br>Export<br>⊗Refresh<br>Close Project  | ۲         |         |
|  | Run As<br>Debug As<br>Profile As<br>Validate<br>Open Rule Analysis<br>Team<br>Compare With<br>Restore from Local History                                     | * * * * * |         |
|  | COBOL Generation Project Migration<br>Decision Center<br>Rule Execution Server<br>Decision Validation Services<br>Business Events<br>Configure<br>Properties |           | Connect |

3. Set the following connection properties (they may already be set by default as a result of our earlier testing).

#### NB: all these values are case-sensitive.

URL: <u>http://localhost:9080/teamserver</u> User name: iibadmin Password: passw0rd Data source: jdbc/ilogDataSource

Click Connect. Assuming the connection is successful, click Finish.

| <del>,</del>    |  |          |
|-----------------|--|----------|
| Decision Ce     | enter configuration  |          |
| Configure the p | project to be synchronized with a Decision Center project.       |          |
|                 |  |          |
| Connection -    |  |          |
| URL:            | http://localhost:9080/teamserver                                 | •        |
| User name:      | libadmin   | <b>_</b> |
| Password:       | *****  |          |
| Data source:    | jdbc/ilogDataSource  | 3        |
|                 |  | Connect  |
| Filter rule     | elements to be synchronized using the specified query<br>uration | <b></b>  |
| 💿 Create a r    | new project on Decision Center                                   |          |
| C Synchronia    | ze with the existing Decision Center project                     |          |
|                 |  | <b>_</b> |
|                 |  |          |
| ?               | Finish   | Cancel   |

4. When you are successfully connected, you will see the following (small) message:

|  | × |
|--|---|
| Decision Center configuration                    |   |
| (i) Connection with Decision Center established. |   |
| Connection URL: http://localhost:9080/teamserver |   |

5. You may see this window. If you do, ensure you create a new project (the default), and click Finish.

| Project configuration<br>© Create a new project on Decision Center<br>© Synchronize with the existing Decision Ce | enter project |        |        |
|---|---------------|--------|--------|
|   |               |        | -      |
|   |               |        |        |
|   |               |        |        |
| ?   |               | Einish | Cancel |

The Rules Designer will then connect to the Decision Center and synchronize the rule.

| 🖶 Configure project                   |         |
|---------------------------------------|---------|
| Publishing project in Decision Center |         |
|                                       |         |
|                                       |         |
|                                       |         |
| Always run in background              |         |
| Dup in Packground Cancel Data         | ا د ما  |
| Kurrin Background Cancel Deta         | IIS >>> |

A number of progress windows will appear, similar to this:

If this is successful, the final window should be as shown. Note that even though the message says that no changes have been found, the project should have been published to the Decision Center, so click OK.

| 🗲 Synchronize Complete - Rule Designer - Decision Center Synchroniza 🗙 |                                  |  |  |  |
|--|----------------------------------|--|--|--|
| 1  | Synchronizing: No changes found. |  |  |  |
|  | ОК                               |  |  |  |

You may see a warning about opening the Team Sync perspective. Answer Yes to this.

#### 2.3.2 Step 2 – Deploy the rule from the Decision Center to the Rule **Execution Server**

Login to the Decision Center Enterprise Console again (iibadmin/passw0rd). 1.

You will now see that the EmployeeBonus project has been checked into the ODM database.

As a general reference, the Decision Center Console usually places the name of the active project in the top right of the browser window (in this case EmployeeBonus).



2. To deploy the rule to the Rule Execution Server, you first have to create a RuleApp to contain the rule.

Click the Configure tab, and then click "Manage RuleApps".

| I登解。Decision Center  |   |
|--|---|
| Home Explore Compose Query Analyze Project Configure   | 1 |
| Configure  | - |
| Deployment   |   |
| Edit Ruleset Extractors<br>View and edit the list of extractors used to generate rulesets<br>Manage RuleApps<br>Manage RuleApps, generate a RuleApp archive, deploy a RuleApp on a Rule Execution Server<br>Manage Servers<br>Create, delete, and edit the servers on which you deploy your projects |   |

3. No RuleApps are defined at the moment, so click New to create a new one.



- 4. Set the following values:
  - Name: ODMEmployeeBonus (This has to match the RuleApp Project we created earlier in the Rule designer, so precise text and case is important)
  - > Display Name: Employee Bonus Rule App
  - > Major: 1

The new RuleApp needs to contain a Ruleset. However, we do not have any Rulesets at this point, so you need to create one. Click New under the Rulesets paragraph.

| 卫新。Decisio         | n Center                               | 0    |
|--------------------|--|------|
| Home E             | xplore Compose Query Analyze Project C | onfi |
| Configure > Manage | RuleApps > Edit RuleApp                |      |
| New RuleApp        | þ                                      |      |
| 🔚 Save   📕 Canc    | el                                     |      |
| Properties         |  |      |
| Name*              | ODMEmployeeBonus                       |      |
| Display Name       | Employee Bonus Rule App                |      |
| Major              | 1                                      |      |
| Minor              | 0                                      |      |
| Description        | RuleApp for Employee Bonus             |      |
| 🙆 Rulesets         |  |      |
| No ruleset found   |  |      |
| New E              | Edit Delete                            |      |

- 5. Specify the following values for the Ruleset:
  - Name: EmployeeBonus (name and case are important)
  - Display name: Employee bonus ruleset
  - Project: EmployeeBonus
  - Major: 1

Click the Save link.

| IIM。Decision Cer                 | iter                   |        |           |
|----------------------------------|------------------------|--------|-----------|
| Home Explor                      | e Compose Query        | Analyz | e Project |
|                                  | onus                   |        |           |
| Properties                       |                        |        |           |
| Name*<br>Display Name            | EmployeeBonus          | ]      |           |
| Description                      | Employee bonus ruleset | ]      |           |
| Project*                         | EmploveeBonus 🔻        |        |           |
| Baseline or Branch*<br>Extractor | main                   |        |           |
| Major                            | 1                      | 1      |           |
| Minor                            | 0                      |        |           |
| Enabled                          |                        |        |           |
| Debug                            |                        |        |           |
| Ruleset Propert                  | ies                    |        |           |
| No element of type 'Rul          | eset Property' found   |        |           |
| New Edit                         | Delete                 |        |           |

6. This will return you to the New RuleApp dialogue. Click the Save link.

| IBM. Decisio      | on Center   | 0      |
|-------------------|---|--------|
| Home              | Explore Compose Query Analyze Project                         | Config |
| Configure > Manag | e RuleApps > Edit RuleApp                                     |        |
| New RuleAp        | q   |        |
| 🔚 Save   📘 Can    | cel   |        |
|                   |   |        |
| 🛆 Changes hav     | e been made to the RuleApp. Click 'Save' to save your changes |        |
| Properties        |   |        |
| Name*             | ODMEmployeeBonus  |        |
| Display Name      | Employee Bonus Rule App                                       |        |
| Major             | 1   |        |
| Minor             | 0   |        |
| Description       | RuleApp for Employee Bonus                                    |        |
| @ Dulassia        |   |        |

#### Rulesets

| Name          | Display Name           | Major | Minor | Project or Decision Service | Base |
|---------------|------------------------|-------|-------|-----------------------------|------|
| EmployeeBonus | Employee bonus ruleset | 1     | 0     | EmployeeBonus               | main |

7. The new RuleApp ODMEmployeeBonus will have been defined.

| IBM. Decisi        | on Center                |                             |               | Optio             | ns   About   Prir |  |  |
|--------------------|--------------------------|-----------------------------|---------------|-------------------|-------------------|--|--|
| Home               | Explore Compos           | se Query Analy              | ze Pro        | oject Configure   |                   |  |  |
| Configure > Manag  | ge RuleApps              |                             |               |                   |                   |  |  |
| Available RuleApps |                          |                             |               |                   |                   |  |  |
| 🕢 New   🔍 Deta     | ails   🔨 Edit   💥 Delete | 🖓 Deploy   🐊 Redeploy   🔗 F | Refresh   🥐 H | elp               |                   |  |  |
| Display by 10      | •                        |                             |               |                   |                   |  |  |
|                    | Name                     | Display Name                | Major Mino    | r Created On      | Created By L      |  |  |
|                    | ODMEmployeeBonus         | Employee Bonus Rule App     | 1 0           | 12/12/14, 8:38 AM | iibadmin 1        |  |  |

8. If you want, you can click ODMEmployeeBonus, and this will show you the Ruleset that it contains.

| IBM. Decision        | Center                      |                |                               | Options   About    |
|----------------------|-----------------------------|----------------|-------------------------------|--------------------|
| Home Ex              | plore Compose               | Query          | Analyze Project               | Configure          |
| Configure > Manage F | RuleApps > RuleApp Details  |                |                               |                    |
|                      | Bonus                       |                |                               |                    |
| 🔄 New   📏 Edit   🕽   | 🕻 Delete   🦓 Deploy   🐊 Red | eploy   🥐 Heli | Þ                             |                    |
| Properties           |                             |                |                               |                    |
| Name                 |                             |                | ODMEmployeeBonus              |                    |
| Display Name         |                             |                | Employee Bonus Rule App       |                    |
| Major                |                             |                | 1                             |                    |
| Minor                |                             |                | 0                             |                    |
| Description          |                             |                | RuleApp for Employee Bonus    |                    |
| Created By           |                             |                | iibadmin                      |                    |
| Created On           |                             |                | Dec 12, 2014, 8:38:15 AM EST  | -                  |
| Last Changed By      |                             |                | iibadmin                      |                    |
| Last Changed On      |                             |                | Dec 12, 2014, 8:38:15 AM EST  | -                  |
| 🙆 Rulesets           |                             |                |                               |                    |
| Name                 | Display Name                | Major Mino     | r Project or Decision Service | Baseline or Branch |
| EmployeeBonus        | Employee bonus ruleset      | 1 0            | EmployeeBonus                 | main               |

9. Return to the RuleApp display (click "Manage RuleApps" on the breadcrumb trail if you have lost position).

Select ODMEmployeeBonus and click Deploy.

|   | IBM.    | Decision Cent        | er             |                  |               |        |       |           | c      |
|---|---------|----------------------|----------------|------------------|---------------|--------|-------|-----------|--------|
|   | Hon     | ne Evolore           | Compo          | ose Query        | Analyz        | e      | Proj  | ject      | Confi  |
|   | Avail   | able RuleAp          | ps             |                  |               |        |       |           |        |
| [ | 🔄 New   | r   🔍 Details   📏 Eo | dit   💢 Delete | 🍋 Deploy   🍃 Red | deploy   👩 Re | efresh | ? He  | lp        |        |
|   | Display | by 10 💌              |                |                  |               |        |       |           |        |
|   |         | Name                 |                | Display Name     |               | Major  | Minor | Created 0 | Dn     |
| ( |         | ODMEn                | nployeeBonus   | Employee Bonus   | s Rule App    | 1      | 0     | 12/12/14  | , 8:38 |
|   |         |                      |                |                  |               |        |       |           |        |

10. Deselect the baseline selection, click Next.

| (  | Query Analyze Project Configure |
|----|---------------------------------|
| ne |                                 |
|    | Deployment Baseline             |
|    | Cancel Previous Next            |

11. Select "Deploy on a Rule Execution Server", click Next.



12. Select "Increment RuleApp major version", click Next.

|       | Query  | Analyze  | Project   | Configure |  |
|-------|--|--|---|-----------|--|
| eline | > RuleApp t  | arget > Version  | ing Policy  |           |  |
|       |  |  |   |           |  |
|       | Versi  | oning Pol  | icy   |           |  |
|       | <ul> <li>Increr</li> <li>Increr</li> <li>Repla</li> <li>Increr</li> <li>Increr</li> <li>Repla</li> </ul> | ment RuleApp i<br>ment RuleApp i<br>ce RuleApp vei<br>ment ruleset(s<br>ment ruleset(s)<br>ce ruleset(s) v | major version<br>minor version<br>rsion<br>) major version<br>) minor version<br>ersion | 1         |  |
|       | Cance  | Previou  | s Next  | ]         |  |

13. Select the RES\_IIB server (this has already been created for you). Click Deploy.

| on  | npose Query Analyze Project                               | Configure   |
|-----|---|-------------|
| loy | ment Baseline > RuleApp target > Versioning Policy > Sele | ct Server   |
|     |   |             |
|     | Select Server   |             |
|     | Select the server where you want to deploy the Rule       | App RES_IIB |
|     | Cancel Previous Deploy                                    |             |

14. After a few seconds, the deployment should have completed. You should see something like this:

| Deployment Succeeded   |   |  |  |  |  |  |
|--|---|--|--|--|--|--|
| RuleApp archive deployed<br>Versioning Policy<br>Rule Execution Server | J ODMEmployeeBonus<br>Increment RuleApp major version<br>http://localhost:9080/res  |  |  |  |  |  |
| Archive content  | Operation Result  |  |  |  |  |  |
| /ODMEmployeeBonus/1.0 /EmployeeBonus/1.0                               | <ul> <li>* Element added </li> <li>✓ /ODMEmployeeBonus/1.0</li> <li>* Element added </li> <li>✓ /EmployeeBonus/1.0</li> </ul> |  |  |  |  |  |

15. To check it has deployed successfully, login to Rule Execution Server Console (open a new tab on the Firefox browser; and use the supplied bookmark in the ODM folder).

Login with the user resAdmin, password resAdmin.

Click Explorer.

| IDA  | Rule Executio      | on Server  | Skip to main content |
|------|--------------------|--|----------------------|
|      | Home Ex            | plorer Decision Warehouse Diagnostics Server Info  | REST API             |
| Home |                    |  |                      |
| v    | elcome to th       | e Rule Execution Server console  |                      |
|      | Explorer           | Use the Explorer to deploy, browse, and modify RuleApps.   |                      |
|      | Decision Warehouse | Search and view decision traces.   |                      |
|      | Diagnostics        | Run the server diagnostics to verify installation.   |                      |
|      | Server Info        | View server configuration information and logged events.   |                      |
|      | REST API           | Access the test tool for the resource management REST API. Use this tool to format and send requests, and to | view responses.      |

16. You will see the new RuleApp.

| TB新。Rule Exec   | ion Server  |            |
|---|---|------------|
| Home  | plorer Decision Warehouse Diagnostics Server Info REST  | API        |
| Explorer >RuleApps  |   |            |
| Navigator     RuleApps (1)     Resources     Libraries     Services | RuleApps View         Market Add RuleApp         Deploy RuleApp Archive         RuleApps         Total Number of RuleApps |            |
|   |   |            |
|   | 1 RuleApp(s) Name: View only  | : 🗌 Latest |
|   | Select All Name Version Creation Date Number of ru  | lesets     |
|   | DDMEmployeeBonus 1.0 Dec 12, 2014 8:47:02 AM GMT-05:00 1  |            |
|   | RuleApp 1 - 1 of 1 prev 10 next 10  |            |

The rule has now been fully deployed to the Rule Execution Server, and is ready for runtime use.

You are now ready to configure the Integration Bus components of this scenario.

# 3. Configure the Integration Bus Application with the ODM Rule

#### 3.1 Import the Rule into the Integration Bus Toolkit

The business rule that you have defined in ODM will be invoked from the EmployeeService integration service that is defined in Integration Bus. To do this, you will extend the service to add a new operation, checkBonus. This new operation will incorporate a Decision Service node which will invoke the rule from the ODM Rule Execution Server.

1. First, to ensure there are no conflicts with other components, create a new IIB workspace in the IIB Toolkit, for example name it c:\workspace\IIB\_ODM.

In the IIB Toolkit, import the Project Interchange files:

- c:\student10\Integration\_service\solution\EmployeeServiceInterface.V10.zip
- c:\student10\Integration\_service\solution\EmployeeService.V10.zip

Import all available projects in these PI files.

2. Right-click the EmployeeService project and click Import, and expand Decision Services.

Select Rule Application archive file. Click Next.

| Application Development  | ) Import   |
|--|--|
| <ul> <li>EmployeeService</li> <li>Service Interface Location</li> <li>Resources</li> <li>EmployeeServiceInterface</li> <li>BARs</li> <li>Independent Resources</li> <li>GeneratedBarFiles</li> </ul> | Select<br>Import an IBM Operational Decision Manager (ODM) Rule Appliation<br>select an import source:<br>type filter text |

3. Select "File from outside workspace", and navigate to:

 $c: \tabulartic to the the tabular the tabular the tabular the tabular the tabular the tabular tabula$ 

(This is the rule that you created earlier in the ODM Rule Designer).

Click Next.

| 🌐 Import Rule A                               | pplication archive file                                       |                  |                  |                 |        |
|---|---|------------------|------------------|-----------------|--------|
| Import Rule Ap<br>Import an IBM Op            | plication archive file<br>erational Decision Manager (ODM)    | Rule Application | archive into a d | ecision service | ← →    |
| Container:<br>Decision Service:               | EmployeeService ODMEmployeeBonus.rules                        |                  |                  |                 | New    |
| C Select file from                            | workspace:  |                  |                  |                 |        |
| E S Emplo<br>E M Emplo<br>E BARs<br>E C Indep | oyeeService<br>oyeeServiceInterface<br>s<br>pendent Resources |                  |                  |                 |        |
| Select file from                              | outside workspace:  |                  |                  |                 | -      |
| Location C:\\$                                | student10\BusinessRules\exported                              | d_RuleApp_Proje  | cts\ODMEmploy    | eeBonus.jar 💌   | Browse |
| C Overwrite exi                               | sting Decision Service in specified                           | container        |                  |                 |        |
| ?   |   | < Back           | Next >           | Finish          | Cancel |

4. At the summary window, click Finish.

| Import Rule Application archive file  |   |   |   | <u>- 0 ×</u>    |
|---|---|---|---|-----------------|
| Import Rule Application archive file  | 2   |   |   | $ \rightarrow $ |
| View a summary of the contents of the Rule  | Application arc                                       | hive  |   |                 |
| Rulesets that will be imported:   |   |   |   |                 |
| /ODMEmployeeBonus/EmployeeBonus   |   |   |   |                 |
| Rulesets that will not be imported (select a<br>The rulesets that will be imported contain o<br>been created, you can extract these XML S | ruleset to view<br>ne or more XML<br>Schema files for | the reason):<br>Schema files. Af<br>use with a Decisi | ter this Decision :<br>on Service node, | Service has     |
| ?   | < Back  | Next >  | Finish                                  | Cancel          |

5. When the rule archive has been imported, it will appear in the EmployeeService project.

Note that the rule cannot be edited in the Integration Bus Toolkit, and the verbalization will not be shown, since it was created by the ODM Rule Designer.

| Replication Devel 🔀 📴 Patterns Explorer 🗖 🗖   | EmployeeService                   | EmployeeService.bar                          | ployeeBonus.rules 🛛  | 3               |  |  |
|---|-----------------------------------|--|----------------------|-----------------|--|--|
| Application Development New   | The editor is in read-on          | y mode because this decision service was not | authored in IBM Inte | gration Studio. |  |  |
| EmployeeService     Service Integration Service Description     Service Interface Location  |                                   |  |                      |                 |  |  |
|   | Name Type Direction Verbalization |  |                      |                 |  |  |
| Subflows  Subfl | jemployee                         | EMPLOYEEType {http://sample/iibadmin}        |                      |                 |  |  |
| E GeneratedBarFiles   |                                   |  |                      |                 |  |  |

6. Return to the EmployeeService integration service (if it's not currently open, reopen by double-clicking the Integration Service Description in the navigator).

Select the Interface tab. This will show the getEmp and updEmp operations.

|   | 🗹 Employe   | eService 🛛 🗌   |                                  |                  |  |  |  |
|---|---|----------------|----------------------------------|------------------|--|--|--|
|   | ▼Interface  |                |                                  |                  |  |  |  |
| ( | Configuration   |                |                                  |                  |  |  |  |
|   | Name  | EmployeeServio | e                                |                  |  |  |  |
|   | Namespace   | http://Employe | eService                         |                  |  |  |  |
|   | Location  | /EmployeeServi | ceInterface/EmployeeService.wsdl |                  |  |  |  |
|   | ▼Operations 🐉 🦆 📄 🕼 🖗 🐺 🛱                               |                |                                  |                  |  |  |  |
|   | Message Typ   | e              | Name                             | Туре             |  |  |  |
|   | 🔻 👹 getEm   | ployee         |                                  |                  |  |  |  |
|   | I getEmplo  | yee            | EMPLOYEE                         | EMPLOYEE         |  |  |  |
|   | 🕼 getEmplo  | yeeResponse    | EmployeeResponse                 | EmployeeResponse |  |  |  |
|   | ▼ <sup>1</sup> / <sub>2</sub> updEmployee               |                |                                  |                  |  |  |  |
|   | Di updEmployee EMPLOYEE EMPLOYEE                        |                |                                  |                  |  |  |  |
|   | I updEmployeeResponse EmployeeResponse EmployeeResponse |                |                                  |                  |  |  |  |
| 5 | Service 💷   | Interface      |                                  |                  |  |  |  |

7. Click the Add Operation button which will create a new operation called "operation1". Overtype this to name the new operation "checkBonus".

Press return, which will automatically change the names of the input and output message types (checkBonus and checkBonusResponse).

| Message Type Name Type |  |   |  |  |  |  |  |  |
|------------------------|--|---|--|--|--|--|--|--|
| ▶ 👹 getEmployee        |  |   |  |  |  |  |  |  |
| updEmployee            |  |   |  |  |  |  |  |  |
| ▼ 👹 checkBonus         |  |   |  |  |  |  |  |  |
| neckBonus              | input1 string  |   |  |  |  |  |  |  |
| neckBonusResponse      | output1 string   |   |  |  |  |  |  |  |
|                        | ations and their parameter age Type age Employee age Employee and the formation of the form | Pations     Parameters       ions and the parameters       age Type       Name       getEmployee       getEmployee       dheckBonus       input1       string       heckBonusResponse       output1 |  |  |  |  |  |  |

8. Click the word "string" to change the type of both the input and output messages to EMPLOYEE. Use the Browse button when the dialogue window opens, and type "e" to show all available types that beginning with "e".

Save the changes to the service.

| 📝 Employe                    | eService 🛛  |                                  |                  |  |  |  |  |
|------------------------------|---|----------------------------------|------------------|--|--|--|--|
| <b>▼Interface</b>            | ▼Interface  |                                  |                  |  |  |  |  |
| Configuration                |   |                                  |                  |  |  |  |  |
| Name                         | Name EmployeeService                                    |                                  |                  |  |  |  |  |
| Namespace                    | http://Employe  | eService                         |                  |  |  |  |  |
| Location                     | /EmployeeServi  | ceInterface/EmployeeService.wsdl |                  |  |  |  |  |
| •Operations<br>Operations an | ▼Operations 🛛 🐉 🔄   🔊 🕮 🐺   💬                           |                                  |                  |  |  |  |  |
| Message Typ                  | )e  | Name                             | Туре             |  |  |  |  |
| 🔻 👹 getEm                    | ployee  |                                  |                  |  |  |  |  |
| getEmplo                     | yee   | EMPLOYEE                         | EMPLOYEE         |  |  |  |  |
| 🕽 getEmplo                   | oyeeResponse  | EmployeeResponse                 | EmployeeResponse |  |  |  |  |
| 🔻 👹 updEm                    | ployee  |                                  |                  |  |  |  |  |
| D updEmplo                   | oyee  | EMPLOYEE                         | EMPLOYEE         |  |  |  |  |
| 🕼 updEmple                   | I updEmployeeResponse EmployeeResponse EmployeeResponse |                                  |                  |  |  |  |  |
| 🔻 👹 checkE                   | Bonus   |                                  | $\frown$         |  |  |  |  |
| CheckBor                     | nus   | EMPLOYEE                         | EMPLOYEE         |  |  |  |  |
| 🕼 checkBor                   | nusResponse   | EMPLOYEE                         | EMPLOYEE         |  |  |  |  |

9. Click the Service tab to show the implementation. Note that checkBonus is greyed out, since it has not yet been implemented.

| EmployeeService 🔀     |                               |
|-----------------------|-------------------------------|
| S EmployeeService >   |                               |
|                       |                               |
| S EmployeeService     | (I) EmployeeService           |
| SOAP/HTTP Binding     | getEmployee                   |
| JavaScript Client API | deckBonus                     |
|                       |                               |
|                       | K Error Handlers              |
|                       | 🗉 🗉 Failure                   |
|                       | □ <sub>□</sub> <u>Catch</u>   |
|                       | □ <sub>□</sub> <u>Timeout</u> |
|                       |                               |
| Service 🚺 Interface   |                               |

10. Click checkBonus, which will open the subflow editor.



11. Drop the ODMEmployeeBonus.rules decision service onto the flow editor.



12. Note that the properties of the Decision Service node will show an error. You must specify the ruleset parameters (ie. the data location) in the input message tree, to allow the decision service node to locate the data that it will operate on.

| 🔲 Properties 🛛 🔝 Problems 🗄 Outline 🖉 Tasks 🖽 Deployment Log        |  |                  |                                  |           |               |               |    |        | , 🗆 |
|---|--|------------------|----------------------------------|-----------|---------------|---------------|----|--------|-----|
| ♦ Pecision Service Node Properties - Decision Service               |  |                  |                                  |           |               |               |    |        |     |
| Description Ø Data location: A value must be set for this property. |  |                  |                                  |           |               |               |    |        |     |
| Basic   | Use of this node is subject to specific licensing requirements, click here for details |                  |                                  |           |               |               |    |        |     |
| Monitoring  |  |                  |                                  |           |               |               |    |        |     |
|   | Decision Service Name* ODMEmployeeBonus.rules Browse                                   |                  |                                  |           |               |               |    |        | e   |
|   | Ruleset* /ODMEmployeeBonus/EmployeeBonus   |                  |                                  |           |               |               |    | •      |     |
|   | Parar  | neters*          |                                  |           |               |               |    |        |     |
|   |  | Name             | Туре                             | Direction | Verbalization | Data location |    | Add    |     |
|   |  | employee         | EMPLOYEEType{http://sa           | INOUT     |               |               |    | Edit   |     |
|   |  |                  |                                  |           |               |               |    | EUK    |     |
|   |  |                  |                                  |           |               |               | -1 | Delete |     |
|   |  |                  |                                  |           |               |               | —  |        |     |
|   |  | l                |                                  |           |               |               |    | A 7    | 5   |
|   |  | DecisionService  | ) operitory configurable convice |           |               |               |    |        |     |
|   |  | DecisionServicer | repository configurable service  |           |               |               |    |        |     |

13. Highlight the "employee" parameter and click the Edit button to open the XPath Expression builder.

Click Edit in the pop-up window.

You may need to add a new Data Type (EMPLOYEE), under \$Root. Do this by expanding \$Root, clicking (Add Data Type...), and choose EMPLOYEE. Make sure this is added with the XMLNSC Domain.

Drag/drop the resulting EMPLOYEE data type onto the XPath Expression.

#### The final XPath expression should be **\$Root/XMLNSC/sam:EMPLOYEE**

Click Finish, then OK to close the XPath wizards.

| Ata Types Viewer         →LE       Data Types         →C       \$Root         →C       (Add Data Type)         □       Sam:EMPLOYEE : EMPLOYEETyp         →C       \$SourceEnv onment         →C       \$SourceEnv onment         →C       \$SecalEnv onment         →C       \$SecalEnv onment         →C       \$SecareInviolist         →C       \$SecretionList         →C       \$Environment         →C       \$Environment         →C       \$Show XML Schern a groups | XPath Functions         Image: Constraint of the second s | Operators |
|---|---|-----------|
| Root/XMLNSC/sam:EMPLOYEE  |   |           |
|   |   |           |
|   |   |           |

#### 14. Don't forget this next bit - it's important !

Select the option to use the DecisionServiceRepository configurable service. This will be used by the Integration Bus node to locate and load the EmployeeBonus ruleset from the Rule Execution Server database. If you don't do this, Integration Bus will attempt to locate a locally-defined rule in IIB, not a rule located in the external ODM database.

| Properties ≥            | ४ 🚠 Pro  | oblems   ⊒≌ Outlin | ne 🛛 🕗 Tasks 🛛 🏥 Deployment Lo      | g             |                 |                            |  |  |
|-------------------------|--|--------------------|-------------------------------------|---------------|-----------------|----------------------------|--|--|
| ♦ <sup>I</sup> Decision | Service  | Node Propert       | ties - Decision Service             |               |                 |                            |  |  |
| Description             | A decisi   | on service node e  | xecutes a collection of business re | ules that use | defined paramet | ters.                      |  |  |
| Basic                   | Use of this node is subject to specific licensing requirements, click here for details |                    |                                     |               |                 |                            |  |  |
| Monitoring              |  |                    |                                     |               |                 |                            |  |  |
|                         | Decision Service Name* ODMEmployeeBonus.rules  |                    |                                     |               |                 |                            |  |  |
|                         | Ruleset*   |                    | /ODMEmployeeBonus/EmployeeB         | Bonus         |                 |                            |  |  |
|                         | □Parame  | ters*              | ,                                   |               |                 |                            |  |  |
|                         |  | 1                  | 1-                                  |               |                 |                            |  |  |
|                         |  | Name               | Туре                                | Direction     | Verbalization   | Data location              |  |  |
|                         |  | employee           | EMPLOYEEType{http://sa              | INOUT         |                 | \$Root/XMLNSC/sam:EMPLOYEE |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |
|                         | -  |                    |                                     |               |                 |                            |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |
|                         | PI⊻ Use L  | ecisionServiceRe   | pository configurable service       |               |                 |                            |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |
|                         |  |                    |                                     |               |                 |                            |  |  |

15. The new operation must make sure that the data that is sent to the Decision Service is in the correct format. The rule was defined to operate on the EMPLOYEE schema, so the checkBonus operation must send the data in this format.

To do this, a Mapping node will be added to transform the incoming message from the checkBonus SOAP message format to the EMPLOYEE XML schema format. A second Mapping node will be added to perform the reverse transformation.

In the checkBonus operation, add two mapping nodes, and connect them as shown.



Save the flow at this point (ctrl-S).

16. Open the first mapping node, and click Next on the first dialogue window.

At the map inputs and outputs window:

- Select the input message = checkBonus
- Select the output message = EMPLOYEE

(If you don't see checkBonus in the available schemas for the map, it may be because you haven't saved the integration service - quit this map, save the service, and reopen the map).

Click Finish.

| 🌐 New Message Map  |  |
|--|--|
| Select map inputs and outputs<br>Creates a map that can contain message inputs and outputs with the Pr<br>message headers, and LocalEnvironment can be added to the map after  | roperties folder. Optionally, database operations,           |
| Filter map input names (? = any character, * = any String):  | Filter map output names (? = any character, * = any String): |
| Select map inputs  Select map in | Select map outputs   |
| Namespace: 🛱 {http://sample/iibadmin}  |  |
| •  | < Back Next > Finish Cancel                                  |

17. Expand checkBonus, and map the input EMPLOYEE to the output EMPLOYEE.

A Move transform will be created; change the transform type to "Local map".

| *checkBonus_Request_Response_M   | lapping 🥼 🧍 | N 🕆 🏓 🏓 | jda juda 🔰    | 【  ₽ ₽      | III 🖥   | 🗄 🏭 📕        |
|--|-------------|---------|---------------|-------------|---|--------------|
| 🖃 🚰 Message Assembly chee  | ckBonus     |         |               |             | 🖃 🔡 Messa   | age Assembly |
| $\rightarrow 1$ <click filter="" to=""></click>  |             |         |               |             | ⇒i<br>⇒i> <click th="" to<=""><th>o filter&gt;</th></click> | o filter>    |
|  | -           |         | Overrides     |             | 🕀 📌 Pro   | perties      |
| Properties     [01] Prop   | pertiesType |         |               |             | 🕀 📌 EMI   | PLOYEE       |
|  |             |         |               | J           |   |              |
| 🖃 📌 checkBonus 🛛 [11] <an< th=""><th>nonymous&gt;</th><th></th><th><math>\frown</math></th><th></th><th></th><th></th></an<> | nonymous>   |         | $\frown$      |             |   |              |
| EMPLOYEE [11] EMP  | LOYEEType   |         | Move -        | <b>=</b>    |   | _            |
|  |             |         | <u> </u>      |             |   | -            |
|  |             |         | <b>P</b> ···( | 😕 Core Tran | sforms  |              |
|  |             |         |               |             | map   |              |
|  |             |         |               |             |   |              |

Then click "Local Map" to specify the individual element mappings. Use the AutoMap button to map each element (since the element names are all the same, just accept the default mappings).

Save and close the first map.

18. Open the second map, and click Next on the first dialogue window.

At the map inputs and outputs window:

- Select the input message = EMPLOYEE
- Select the output message = checkBonusResponse

Click Finish.

| 🌐 New Message Map   |  |
|---|--|
| Select map inputs and outputs<br>Creates a map that can contain message inputs and outputs with the Properties for<br>LocalEnvironment can be added to the map after creation.  | older. Optionally, database operations, message headers, and   |
| Filter map input names (? = any character, * = any String):   | Filter map output names (? = any character, * = any String):   |
|   |  |
| Select map inputs   | Select map outputs   |
| DFDL and XML Schemas      Get Body {http://schemas.xmlsoap.org/soap/envelope/}      Get Body {http://schemas.xmlsoap.org/soap/envelope/}      Get Bodsesp {}      Get Bodsesp {}      Get BMPLOYEE {http://sample/libadmin}      Get Envelope {http://schemas.xmlsoap.org/soap/envelope/}      Get Bodsesp {}      Get Bodsesp {} | DFDL and XML Schemas     Gody {http://schemas.xmlsoap.org/soap/envelope/}     Gody {http://schemas.xmlsoap.org/soap/envelope/}     Gody {http://schemas.xmlsoap.org/soap/envelope/}     Gody BResp {}     Gody BResp {}     Gody BRUCYEE {http://schemas.xmlsoap.org/soap/envelope/}     Gody Gody BREsp {}     Gody Gody Gody Gody Gody Gody Gody G |
|   |  |
| Path: EmployeeService_InlineSchema1.xsd   |  |

19. In the output message assembly, expand checkBonusResponse, and map the input EMPLOYEE to the output EMPLOYEE.

Change the transform type to "Local map".

| TemployeeService                      |                     |                                |                                  |                              |  |  |  |  |
|---------------------------------------|---------------------|--------------------------------|----------------------------------|------------------------------|--|--|--|--|
| checkBonus_Request_Res                | sponse_Mapping1     |                                |                                  |                              |  |  |  |  |
| ★checkBonus_Request_I                 | Response_Mapping1   | : 국   X   에 데   《 <b>《</b> 역 역 | 🕄   🎟 🏪 🏪 🏭 📳                    |                              |  |  |  |  |
| 🖃 🚵 Message Assembly                  | EMPLOYEE            |                                | 🖃 🚰 Message Assembly             | checkBonusResponse           |  |  |  |  |
| $\Rightarrow l \\ < Click to filter>$ |                     |                                | $\Rightarrow < Click to filter>$ |                              |  |  |  |  |
|                                       |                     | Overrides                      | 🗄 📌 Properties                   | [01] PropertiesType          |  |  |  |  |
| 🕀 🖈 Properties                        | [01] PropertiesType |                                | 🖃 📌 checkBonusResponse           | [11] <anonymous></anonymous> |  |  |  |  |
|                                       |                     |                                | 🗉 🛃 EMPLOYEE                     | [11] EMPLOYEEType            |  |  |  |  |
| EMPLOYEE                              | [11] EMPLOYEEType   | Local map - M                  |                                  |                              |  |  |  |  |
|                                       | [11] EMPLOYEEType   |                                | EMPLOYEE                         | [11] EMPLOYEEType            |  |  |  |  |

20. Click "Local map" to specify the individual mappings.

Use the Automap button to map each input element to the same output element.

Save and close the map.

|    | 🖅 *EmployeeService 🔓 *checkBonus_Request_Response_Mapping1 🔀       |                           |                                       |             |  |  |
|----|--|---------------------------|---------------------------------------|-------------|--|--|
| Ð  | 🔓 checkBonus_Request_Response_Mapping1 👌 🔊 EMPLOYEE                |                           |                                       |             |  |  |
| ₹¢ | 🕶 checkBonus_Request_Response_Mapping1 🖉 🔑 🕼 🐉 🕼 🕼 🕼 🕼 🕼 🗱 🖀 🚟 🗱 🗱 |                           |                                       |             |  |  |
|    |  |                           | 全                                     |             |  |  |
| E  | B EMPLOYEE   | EMPLOYEEType              | EMPLOYEE E                            | MPLOYEEType |  |  |
|    | <click filter="" to=""></click>                                    |                           | →L→ <click filter="" to=""></click>   |             |  |  |
|    | C EMPNO  | [11] <string></string>    | Move - EMPNO [11] <                   | (string>    |  |  |
|    | P ETD STNME  | [1 1] catring >           | Move      FIRSTNME [11]               | (string>    |  |  |
|    | E FIRSTNME   | [11] <sung></sung>        |                                       | (string>    |  |  |
|    | e MIDINIT  | [01] <string></string>    | • TEMOVE • ELASTNAME [11] <           | (string>    |  |  |
|    | e LASTNAME   | [11] <string></string>    | • • • • • • • • • • • • • • • • • • • | (string>    |  |  |
|    | e WORKDEPT   | [0., 1] <string></string> | Move      PHONENO [01]                | (string>    |  |  |
|    |  | found seconds             | e HIREDATE [01] d                     | ate         |  |  |
|    | PHONENO  | [01] <string></string>    |                                       | (string >   |  |  |

## 3.1.1 Review the Integration Bus Configurable Services for Decision Services

To enable connectivity to the desired ODM Rule Execution Server, two configurable services have to be defined.

The first one defines a JDBC connection to the underlying DB2 database for ODM. The second one is the DecisionServices configurable service, which references the JDBC configurable service.

These configurable services have already been defined for the IB10NODE Integration Bus workshop environment, using a set of supplied scripts. We will review these definitions using the web browser administration tools for IIB.

1. In the Firefox browser, use the supplied bookmark in the IIB folder to connect to IB10NODE, port 4421 (https).

Expand IB10NODE, Operational Policy, Configurable Services, JDBC Providers.

Select the **ODMDS** JDBC Provider configurable service.

Note the following properties have been changed from the default values:

- portNumber = 50000
- serverName = localhost
- jarsURL = c:\IBM\SQLLIB\java
- databaseName = ODMDS
- databaseVersion = 10.1
- securityIdentity = ODMRESSecurityId

This configurable service can be defined or changed through the web admin interface if required. However, do not make any changes to this definition.

| A http://localhost:4421/#configurableService/0/policy/configurableservices/JDBCProviders/ODMDS  |   |   |  |  |
|---|---|---|--|--|
| ODM JIB WAS Nodejs  |   |   |  |  |
| IBM Integration   |   |   |  |  |
| Aggregation     CDServer     ClCSConnection     CORBA     Collector     ConnectorProviders  | MDS - JDBCProviders C   | Configurable Service  |  |  |
| <ul> <li>DataCaptureSource</li> <li>DataCaptureStore</li> <li>DataDestination</li> <li>DecisionServiceRepository</li> <li>Default</li> <li>DotNetAppDomain</li> <li>EISProviders</li> <li>EmailServer</li> <li>DB2</li> <li>Informix</li> </ul> | type4DatasourceClassName<br>type4DriverClassName<br>databaseType<br>jdbcProviderXASupport<br>portNumber<br>connectionUrlFormatAttr5<br>connectionUrlFormatAttr4<br>serverName<br>connectionUrlFormatAttr3<br>connectionUrlFormatAttr2<br>connectionUrlFormatAttr1 | com.ibm.db2.jcc.DB2XADataSource<br>com.ibm.db2.jcc.DB2Driver<br>DB2 Universal Database<br>true<br>50000<br>localhost      |  |  |
| <ul> <li>Informix_With_Date_Format</li> <li>Microsoft_SQL_Server</li> <li>ODMDS ▼</li> <li>Oracle</li> <li>SAMPLE ▼</li> <li>Sybase_JConnect6_05</li> <li>Teradata</li> <li>solidDB</li> </ul>  | environmentParms<br>maxConnectionPoolSize<br>description<br>jarsURL<br>databaseName<br>databaseVersion<br>securityIdentity<br>connectionUrlFormat   | default_none 0 0 default_Description C.\IBM\SQLLIB\java 0DMDS 10.1 0DMRESSecurityId jdbc:db2://[serverName]:[portNumber]/ |  |  |

2. Switch to the DecisionServiceRepository configurable service category.

Select the Default configurable service.

The following values have been set:

- resManagementPort = 1883 (matches the Management Port in the ODM Rule Execution Server configuration. Additionally, the ODM Rule Execution Server must be configured to publish rule changes over TCP/IP. The default protocol is JMX, so this must be changed to "tcpip" in the Rule Execution Server. This has been done for you on the pre-built VMWare image.
- JDBCProviderName = ODMDS (matches the JDBC definition shown above)
- resManagementHost = BETAWORKS-ESB10 (hostname of the ODM Rule Execution Server)

Do not make any changes to these definitions.

| ODM 📑 IIB 📑 WAS 📑 Nodejs   |                          |               |                                |
|--|--------------------------|---------------|--------------------------------|
| IBM Integration  |                          |               |                                |
| <ul> <li>ActivityLog</li> <li>Aggregation</li> <li>CDServer</li> <li>ClCSConnection</li> <li>CORBA</li> <li>Collector</li> <li>ConnectorProviders</li> </ul> | Verview Overview Verview | isionServiceF | epository Configurable Service |
| DataCaptureSource  | resManager               | mentProfiling | false                          |
|  | resManager               | mentPort      | 1883                           |
|  | JDBCProvid               | erName        | ODMDS                          |
| Default  | resManager               | mentHost      | BETAWORKS-ESB10                |
| DotNetAppDomain     SelSProviders     SensilServer   |                          |               |                                |

## 4. Test the service with the deployed rule

#### 4.1 Test the service with the IIB Flow Exerciser

 Because you built this new checkBonus operation on an existing EmployeeService, you will already have a pre-built version of some Flow Exerciser tests. These are contained in a file called EmployeeService\_inputMessage.xml. This is located under the "Other Resources / gen" folder.

This lab provides a set of prebuilt tests for the checkBonus operation. Copy the file c:\student10\BusinessRules\flow\_exerciser\_tests\EmployeeService\_inputMessage.xml onto the "Other resources/gen" folder.

Confirm the file over-write.

| 🕀 🛐 EmployeeService   |  |  |  |  |
|---|--|--|--|--|
| Integration Service Description   | Ilow_exerciser_tests   |  |  |  |
| B Resources<br>B B Flows<br>B Subflows  | GOO       J <ul> <li>Computer</li> <li>Local Disk (C:)</li> <li>student10</li> <li>BusinessRules</li> <li>flow_exponentiation</li> <li>Organize</li> <li>Open</li> <li>New folder</li> </ul> |  |  |  |
| Maps     BARs     BARs     Decision Service.V10.bar     OMEmployeeService.V10.bar     Odder Resources     Geferenced Libraries     Other Resources     Geferenced Libraries     Odder Resources     Odder | IIBADMIN IIBADMIN META-INF Perf.ogs Program Files Program Files (x86) Program Data student10 Analytics BusinessRules configurable_services   |  |  |  |

2. In the checkBonus operation, click the red Flow Exerciser button.

This will deploy the updated EmployeeService and the EmployeeServiceInterface library, and place the flow in test mode.

| checkBonus 🕨 🖳 Request_Response                     | о ў V. |
|---|--------|
| Input<br>CheckBonus_to_EMPLOYEE<br>Decision Service |        |

3. When the flow editor has turned grey, click the Send Message icon.



4. A number of test cases are provided.

The test cases have been provided to test all three SOAP operations, and the operation value has been set to match the test case.

For this "Check Bonus" scenario, several combinations of values for Salary and Bonus are provided. Depending on the combination of these values sent to the checkBonus operation, it will either change the bonus (to 500), or leave the value unchanged.

| 🌐 Send Message  |   |  |  |  |
|---|---|--|--|--|
| Send Message<br>Create or select a message to send to the flow. Click the message categor   | y header (e.g. Input Messages) for more information.  |  |  |  |
| Imput Messages         Get employee 000012 (not in DB)         Get employee 0000123 (key too long, gives SQL error)         Get employee 000010         Check bonus Salary=80000, Bonus=800         Check bonus Salary=2000, Bonus=350         Check bonus Salary=215000, Bonus=1250         Check bonus Salary=32000, Bonus=250         Check bonus Salary=32000, Bonus=100         Check bonus Salary=18000, Bonus=150         Update employee 000020 | Manage your messages:<br>Click 'New' to create an input message.<br>Click 'Duplicate' to copy the selected input message.<br>Click 'Delete' to remove the selected messages.<br>Click a message to view or edit it. |  |  |  |

5. Click the test case Salary=80000, Bonus=800.

You will see the two values specified in the body of the message. Also note that the SOAP operation is set to checkBonus.

| Name Check bonus Salary=80000, Bonus=800   |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
| Main   |  |  |  |  |
|  |  |  |  |  |
| Input Location: SOAP Input   |  |  |  |  |
|  |  |  |  |  |
| Soap operation checkBonus  |  |  |  |  |
|  |  |  |  |  |
| Message Details  |  |  |  |  |
| Edit, type, or import a message.   |  |  |  |  |
| Import from file   |  |  |  |  |
|  |  |  |  |  |
| <pre><?xml version = "1.0" encoding = UTF-8?><tns0:envelope "http:="" pre="" schemas.xmlsoz<="" xmlns:tns0=""></tns0:envelope></pre> |  |  |  |  |
| <trs0:header></trs0:header>  |  |  |  |  |
| <pre><trs0:body></trs0:body></pre>   |  |  |  |  |
| theta  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| <pre>&gt;particle &gt; 2002-01-91</pre>  |  |  |  |  |
| <salary>80000</salary>   |  |  |  |  |
| BONUS>800  |  |  |  |  |
| <comm>0</comm>   |  |  |  |  |
|  |  |  |  |  |
| /tns1:checkBonus>  |  |  |  |  |
| /trs0:Body>  |  |  |  |  |
| (here) Envelopes   |  |  |  |  |

6. Click Send.

The operation will execute, and pass the data to the ODM service. The defined rule will mean that the bonus will not be changed.

| Drogress Information   |       |
|--|-------|
|  |       |
| <ul> <li>Invoke Message Flow(Check bonus Salary=80000, Bonus=800)</li> <li>Message flows deployment successfully completed</li> <li>Starting</li> <li>Sending Message to "SOAP Input"</li> <li>Received HTTP reply message for "SOAP Input"</li> <li>Stopped</li> </ul>  |       |
| <pre><?xml version="1.0" encoding="UTF-8"?><soapenv:envelope<br>xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"&gt;<br/><soapenv:body><br/><out:checkbonusresponse <br="" xmlns:io="http://sample/iibadmin">xmlns:out="http://EmployeeService"&gt;<br/><io:employee><br/><empno>000050</empno><br/><firstnme>FIRSTNME</firstnme><br/><midinit>MIDINIT</midinit><br/><lastname>LASTNAME</lastname><br/><workdept>B01</workdept><br/><phoneno>1234</phoneno><br/><hiredate>2002-01-01</hiredate><br/><job>JOB</job><br/><edlevel>9</edlevel><br/><sex>M</sex><br/><birthdate>2002-01-01</birthdate><br/><sal apx=""> 80000 </sal><br/><bonus>800</bonus></io:employee></out:checkbonusresponse></soapenv:body></soapenv:envelope<br></pre> |       |
|  | Close |

7. Run other tests from the CheckBonus set of tests. You will need to reopen the Send Message dialogue window to select further tests.

Depending on the combination of salary and bonus, the bonus value may or may not be updated with a new value. The test "Salary=18000, Bonus=150" will update the bonus to 500.

Note that you can also type new values into the flow test editor. And you can create new tests (right-click an existing test, and select Duplicate).

#### 4.2 Test the service with SOAPUI (optional)

A similar set of tests are provided for use with SOAPUI. You can run these in combination with the Flow Exerciser (to see the path of execution), or without, to simply see the result.

1. From the Start menu, open SOAPUI.

Open the SOAPUI workspace EmployeeService\_PrebuiltWorkspace.

Expand the project EmployeeService\_checkBonus, then the checkBonus operation. You will see several input messages have been defined with various combinations of salary and current bonus.

| SoapUI 5.0.0  |                                  |
|---|----------------------------------|
| <u>File T</u> ools <u>D</u> esktop <u>H</u> elp   |                                  |
| 🖲 🕲 🗟 🔷 💥 🐻   |                                  |
| Final State Sta | <pre>Salary=1800,Bonus=350</pre> |

2. Perform various tests with these input messages.

For example, the message with Salary=1800,Bonus=350 should not result in any change in the bonus value.

Click the green arrow to execute the checkBonus operation. You should see that the bonus is returned unchanged.



3. Use the input message with Salary=2750,Bonus=100. You should see that the bonus has been updated to 500.

## 5. Update the Business Rule

In this chapter you will:

- Update the new\_bonus rule using the Business Console
- Deploy the updated rule to the Rule Execution Server with the Decision Centre Enterprise Console

#### 5.1 Update the Rule in the Business Console

The Decision Center Business Console is a browser-based tool that allows a business user to update and activate decision services (rules), subject to defined access controls.

You will now login to the Business Console as a business user, and update the rule that was defined earlier. You will then retest the service to see that the new version of the rule has been used by the Integration Bus service.

1. Open a Chrome browser (to avoid confusion with other windows and users in Firefox), open the Decision Center Business Console using the provided bookmark (ODM Business Console).

|  | <u> </u>   |
|--|------------|
|  | <u> </u>   |
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| Desision Contex   Dusiness Concels   |            |
|  |            |
|  |            |
| Username:  |            |
|  |            |
| Password:  |            |
|  |            |
| Keep me logged in  |            |
|  |            |
| Log in   |            |
|  |            |
| Licensed Materials - Property of IBM @ Convitent IBM Corporation 2000, 2013      |            |
| Election materials - 1 topolity of home & copyright home of portation 2000, 2013 |            |

Login as user "smithj" (password passw0rd).

2. Initially, this user does not have any projects that he is following.



#### 3. Click Library.

You will see that there is a project called EmployeeBonus, which is denoted as "New", showing the date that this was last updated.



4. Hover the mouse over the EmployeeBonus project. This will show additional details of the new project.



5. Now click the EmployeeBonus project.



6. Click the new\_bonus rule.

This will show the latest version of the rule, with the values that you originally entered with the Rule Designer.

Click Edit Rule.



7. Change the value of the new bonus to a new value.

#### Click End Edit.

| Decision Center   Business C ×   |        |         |  |
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| Apps 🕀 ODM Business Console  |        |         |  |
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| 🥳 new_bonus (v1.0) 🖞 🛛   | Detals | s End E |  |
|  | L      |         |  |
| <i>if</i> the SALARY of <b>'the employee'</b> is less than 20000 <i>and</i> the BONUS of <b>'the employee'</b> is less than 200 <i>then</i> set the BONUS of <b>'the employee'</b> to 600; |        |         |  |
|  |        |         |  |

8. This will create a new version of the rule. Provide a suitable comment, and click Create New Version.



Note that a new version (v1.1) has been created, and change data descriptions have been recorded.



9. Click the Home tab.

Note that the new\_bonus rule has now become a "Followed Rule", and it has also been added to the Recently Worked rules.

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| Apps 🚯 ODM Business Console                             |                       |
| Decision Center 🔒 номе 📰 Library                        | smithj*               |
| What's New Stream                                       | Followed Rules 😪      |
| * New Rules   | 🗟 new_bonus 🄺         |
| No new rules have been created.                         |                       |
| * New Updates on Followed Rules                         | Rules Recently Worked |
| There have been no new updates on followed rules.       | On<br>i new_bonus ★   |
| * New Comments in Activity Stream                       |                       |
| There have been no new comments in the activity stream. |                       |

## 5.2 Use the ODM Enterprise Console to deploy the updated rule

Updated rules are deployed to the Rule Execution Server using the Decision Centre Enterprise Console.

1. Switch back to the Firefox browser. You may still be logged into the Enterprise Console, but if not, login now.

To redeploy the updated rule, click Configure, then click Manage RuleApps.

Select the ODMEmployeeBonus, and click Deploy.

| IBM.      | Decision Center               |                             |            |         | с                 | ptions   About | Print View   Help | 🔒 iibadmin    | Sign O   |
|-----------|-------------------------------|-----------------------------|------------|---------|-------------------|----------------|-------------------|---------------|----------|
| Hom       | e Explore Compos              | se Query Analyz             | e          | Projec  | t Configure       |                |                   |               |          |
| Configure | > Manage RuleApps             |                             |            |         |                   |                | Pr                | oject: Employ | reeBonus |
| Avail     | able RuleApps                 |                             |            |         |                   |                |                   |               |          |
| 😓 New     | 🔍 Details   📏 Edit   💥 Delete | 🖏 Deploy   🐊 Redeploy   🔗 R | efresh   ( | ?) Help |                   |                |                   |               |          |
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|           | Name                          | Display Name                | Major      | Minor   | Created On        | Created By     | Last Changed On   | Last Chan     | ged By   |
|           | ODMEmployeeBonus              | Employee Bonus Rule App     | 1          | 0       | 12/12/14, 8:38 AM | iibadmin       | 12/12/14, 8:38 AM | iibadmin      |          |
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|           |                               |                             |            |         |                   |                |                   |               |          |
|           |                               |                             |            |         |                   |                |                   |               |          |
|           |                               |                             |            |         |                   |                |                   |               |          |

2. Follow the same dialogue as the earlier deploy, but choose a RuleApp minor version upgrade when presented with the versioning policy.

Otherwise, click Next on all windows, and Deploy on the final one.

| Versioning Policy   |
|---|
| <ul> <li>O Increment RuleApp major version</li> <li>Increment RuleApp minor version</li> <li>O Replace RuleApp version</li> <li>O Increment ruleset(s) major version</li> <li>O Increment ruleset(s) minor version</li> <li>O Replace ruleset(s) version</li> </ul> |
| Cancel Previous Next  |

3. When complete, you will see that the version of ODMEmployeeBonus has been updated to version 1.1.

| RuleApp archive deployed<br>Versioning Policy<br>Rule Execution Server | ODMEmployeeBonus<br>Increment RuleApp minor version<br>http://localhost:9080/res                 |  |
|--|--|--|
| Archive content  | Operation  | Result                                   |
| /ODMEmployeeBonus/1.0<br>Ø /EmployeeBonus/1.0                          | <ul> <li>Version changed and element added</li> <li>Version changed and element added</li> </ul> | /ODMEmployeeBonus/1.1 /EmployeeBonus/1.0 |
| Back   |  |  |

4. A quick check in the Rule Execution Server Console will show you the new version of the deployed rule (click RuleApps in the navigator to refresh the display).

| Rule Executio   | n Server      |                      |            |                                   |                    | 🔋 iibadmin Sign O               |
|---|---------------|----------------------|------------|-----------------------------------|--------------------|---------------------------------|
| Home Exp  | lorer         | ecision Warehouse)   | Di         | iagnostics Server Info            | REST API           | About   Print View   Help       |
| Explorer > RuleApps                                   |               |                      |            |                                   |                    |                                 |
| Navigator   |               |                      | e 🕼 Indata | s Puleánne                        |                    | Help 🚷                          |
|   |               |                      | c populati | - Kurchippo                       |                    |                                 |
| 🕀 🍘 RuleApps (2)                                      |               |                      |            |                                   |                    |                                 |
| - I Resources   | 👔 Rule        | Apps                 |            |                                   |                    |                                 |
| Decision Services                                     | Total Num     | her of Duletings - 0 |            |                                   |                    |                                 |
| Construction Services     I otal Number of RuleApps 2 |               |                      |            |                                   |                    |                                 |
|   | 2 RuleApp(s)  |                      |            | Name:                             | View only:         | Latest version Display by: 10 - |
|   | Select A      | ll Name              | Version    | Creation Date                     | Number of rulesets | ;                               |
|   |               | ODMEmployeeBonus     | 1.0        | Dec 12, 2014 8:47:02 AM GMT-05:00 | 1                  | 📽 Download Archive              |
|   |               | ODMEmployeeBonus     | 1.1        | Dec 15, 2014 4:39:05 AM GMT-05:00 | 1                  | 📽 Download Archive              |
|   | RuleApp 1 - 2 | of 2                 |            |                                   |                    | Remove                          |
|   |               |                      |            |                                   |                    |                                 |

### 6. Test the service again

1. As before, open the Flow Exerciser with the red button.



2. Select an appropriate test, and click Send. The bonus will be updated to 600.

| rigress information  | >        |
|--|----------|
|  |          |
| E Invoke Message Flow(Check bonus Salary=18000, Bonus=150)   |          |
| Message flows deployment successfully completed  |          |
| 🖮 🌇 Starting   |          |
| Sending Message to "SOAP Input"  |          |
| Descrived HTTP confurmescape for "SOAD Ioput"  |          |
| Received HTTP reply message for SOAP input   |          |
| Stopped  |          |
|  |          |
| xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">   |          |
| <outrcheckbonusdesnonse <="" td="" vmlosvio="http://sample/iihadmin"><td></td></outrcheckbonusdesnonse>  |          |
| vmlns;out="http://EmployeeService">  |          |
| <io:employee></io:employee>  |          |
| <empno>000050</empno>  |          |
| <firstnme>FIRSTNME</firstnme>  |          |
| <midinit>MIDINIT</midinit>   |          |
| <lastname>LASTNAME</lastname>  |          |
| <workdept>B01</workdept>   |          |
| <phoneno>1234</phoneno>  |          |
| <hiredate>2002-01-01</hiredate>  |          |
| <job>JOB</job>   |          |
| <edlevel>9</edlevel>   |          |
| <sex>M</sex>   |          |
| <birthdate>2002-01-01</birthdate>  |          |
| <salary>18000</salary>   |          |
| <bonus>600</bonus>   |          |
| <comm>0</comm>   |          |
|  |          |
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End of Decision Services lab.