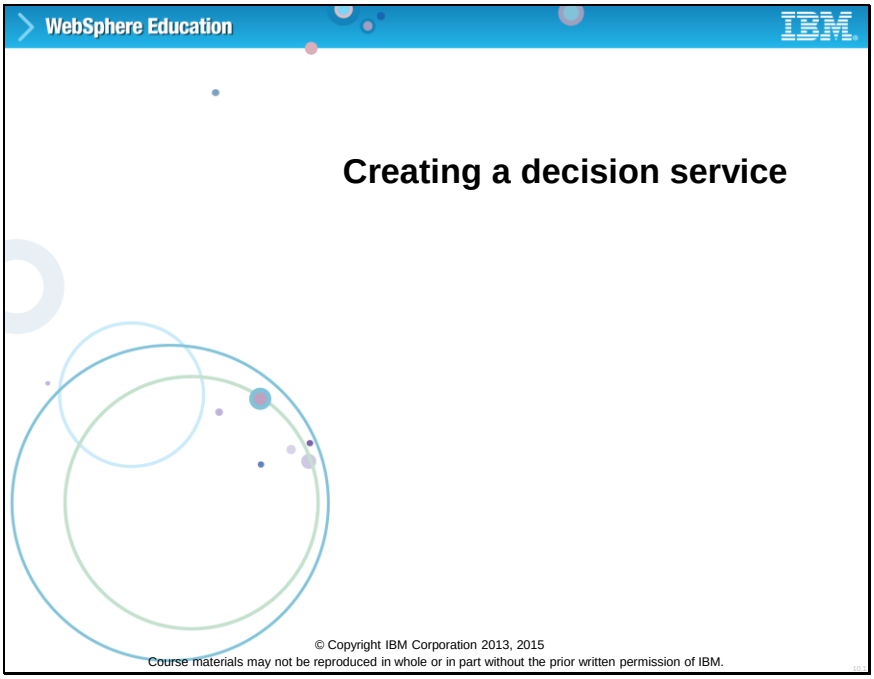
Slide 1


WebSphere Education
IBM
Creating a decision service
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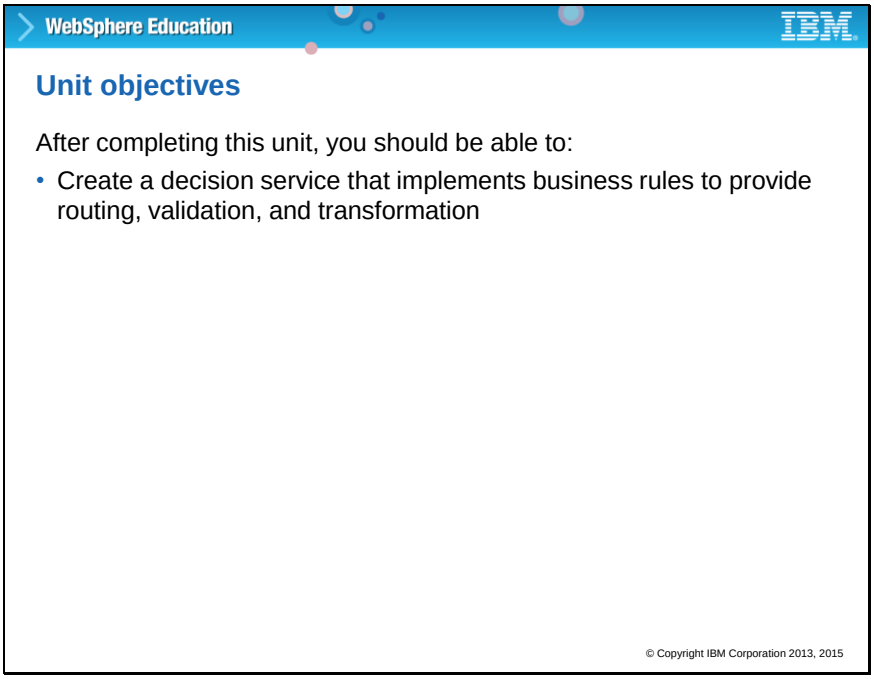
Slide 2

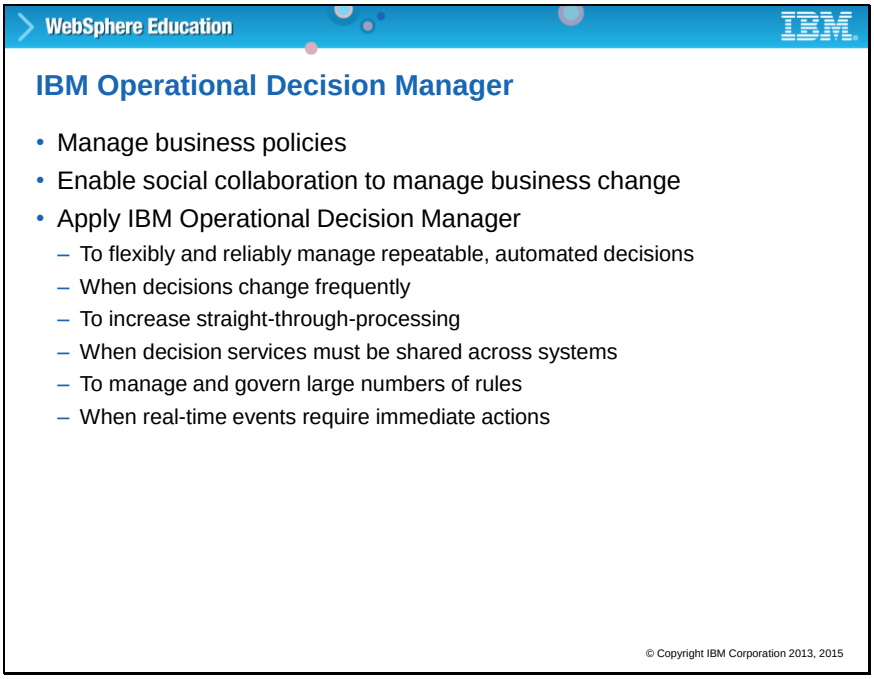


Unit objectives

A Decision Service message processing node runs business rules to provide routing, validation, and transformation operations. You can write rules in the IBM Integration Toolkit, or import rules from IBM Operational Decision Manager. In this unit, you learn how to create a decision service that implements business rules and then use the decision service in a message flow application to provide routing, validation, and transformation.

After completing this unit, you should be able to create a decision service that implements business rules to provide routing, validation, and transformation.

Slide 3

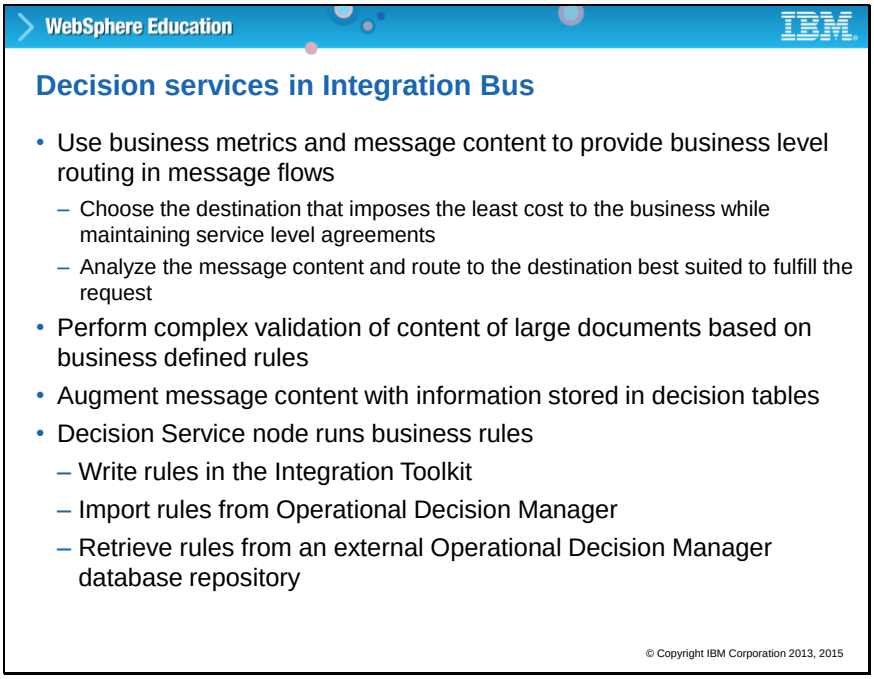


IBM Operational Decision Manager

IBM Operational Decision Manager is a full-featured platform for capturing, automating, and governing frequent, repeatable business decisions. It improves the quality of transaction and process-related decisions. It helps determine the appropriate course of action for customers, partners, and internal interactions.

Operational Decision Manager improves business insight and outcomes and helps you detect opportunities and risks. You can also implement, test, and deploy decision changes and understand how decisions are made and apply them consistently across processes and applications.

Slide 4



Decision services in Integration Bus

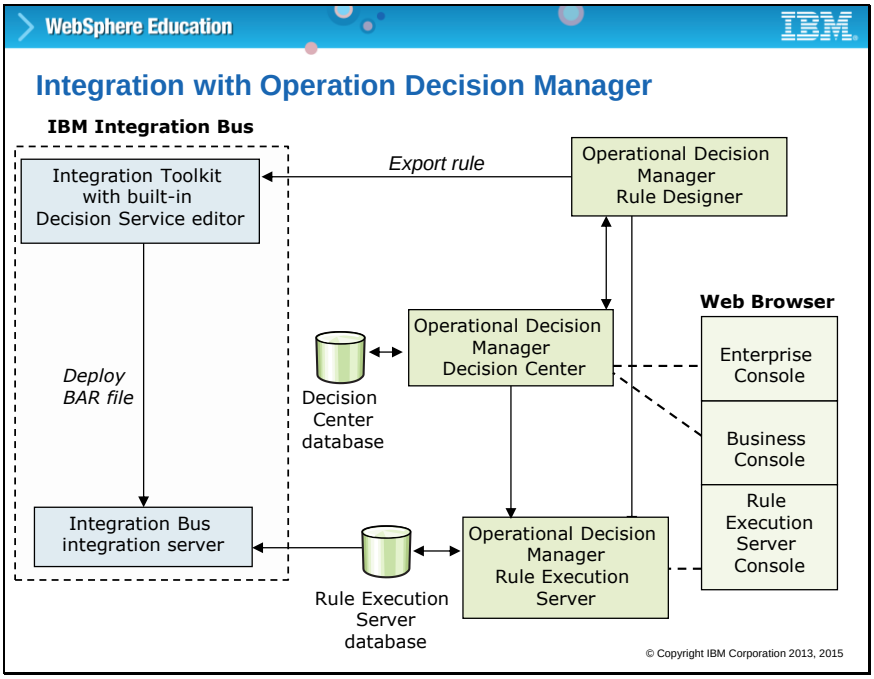
Operational Decision Manager consists of two main components, IBM Decision Center and IBM Decision Server. These components form the platform for managing and running business rules and business events to help you make decisions faster, improve responsiveness, minimize risks, and seize opportunities.

The Integration Toolkit contains a Decision Service node. When you add the Decision Service node to a message flow application, you can use business metrics and message content to provide business level routing in message flows. For example, you can choose the destination that imposes the least cost to the business while maintaining service level agreements. You can also analyze the message content and route to the destination best suited to fulfill the request, complete complex validation of content of large documents based on business defined rules, and augment message content with information stored in decision tables.

With the Decision Service node, you can write rules in the Integration Toolkit, import rules from Operational Decision Manager, or retrieve rules from an external Operational Decision Manager database repository.

The Integration Bus license entitles you to use the Decision Server only through the Decision Service node in a message flow and only for development and functional test. To use the Decision Server beyond development and functional test, you must purchase a separate license for either IBM Decision Server or IBM Decision Server Rules Edition for Integration Bus.

Slide 5



Integration with Operation Decision Manager

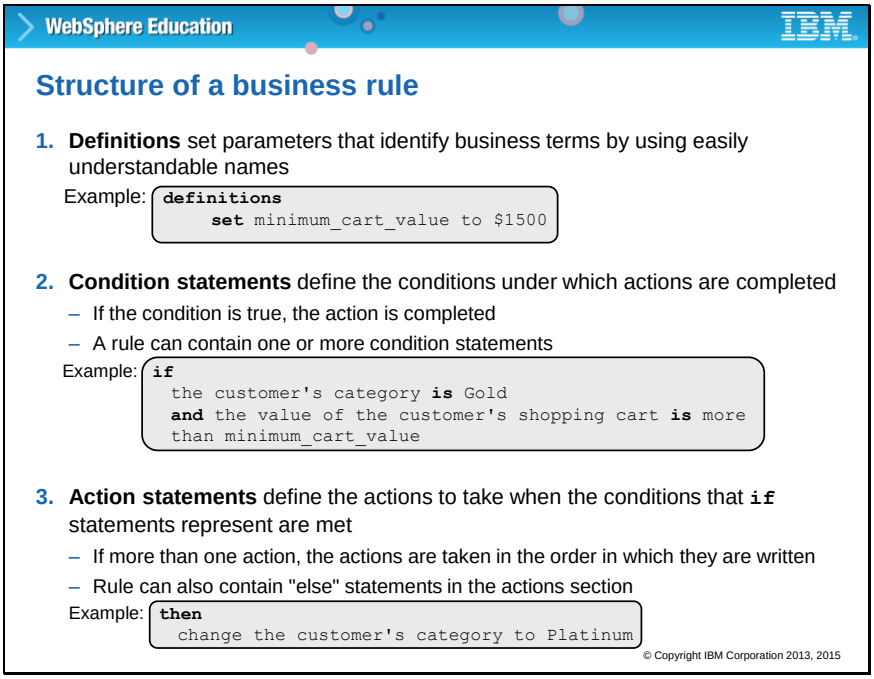
This slide shows the primary Operational Decision Manager components that you need to define rules within the Operational Decision Manager system, and to deploy and load those rules into Integration Bus.

The Decision Center provides an integrated repository and management components. It allows subject matter experts to maintain and govern their business decisions.

The Decision Server provides the runtime components to automate decision logic. It enables the detection of business situations and precise response based on the context of the interaction.

As an option, the Integration Bus integration server can load rules directly from the Operational Decision Manager database. Updates to those rules can be automatically detected and loaded.

Slide 6



Structure of a business rule

The core component of the Decision Service is the business rule.

A business rule is a required operation that applies to a specific set of business conditions. For example, you can create a business rule that offers a discount to customers who spend more than a certain amount. If the business climate changes and the amount of discount must change, the business rule can be modified in the future.

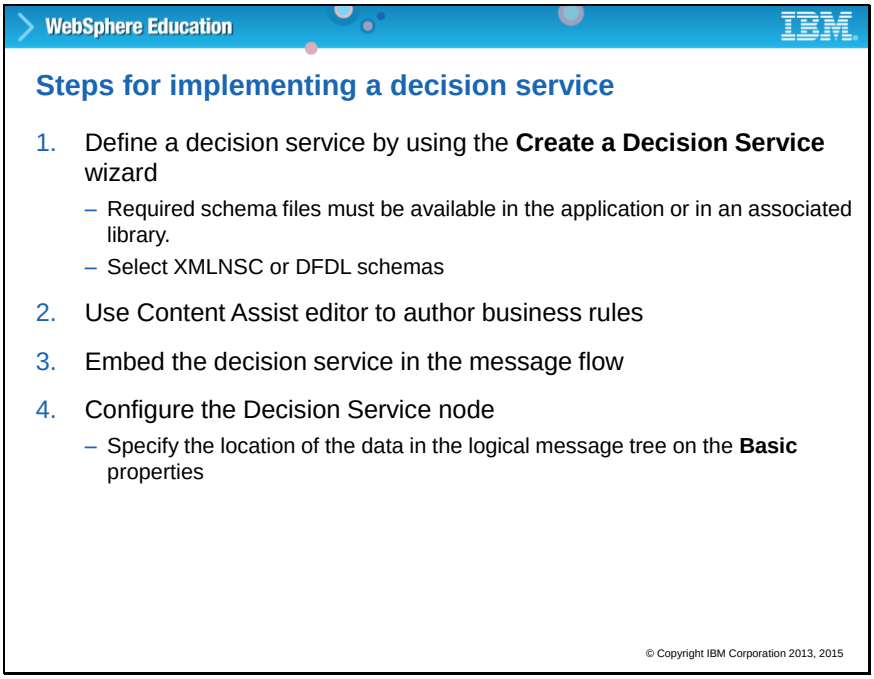
A business rule typically consists of the following information, in the specified order:

1. Definitions: At the beginning of the rule, you can set parameters that identify business terms by using easily understandable names.

2. Conditions: The conditions section of the rule contains the “if” statements. These statements define the conditions under which actions are completed. If the condition is true, the action is completed. A rule can contain one or more condition statements.

3. Actions: The actions section of the rule contains the “then” statements. These statements define the actions that are taken when the conditions that the “if” statements represent are met. If the actions section contains more than one action, the actions are taken in the order in which they are written. You can also include “else” statements in the actions section. These statements define what actions to take when the conditions are not met.

Slide 7



Steps for implementing a decision service

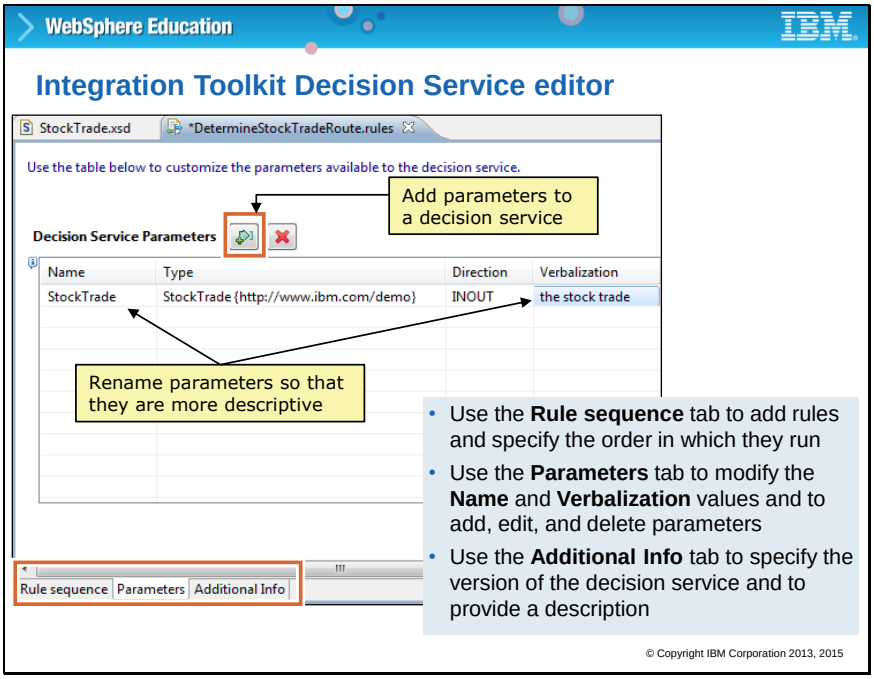
As mentioned previously, when you use a Decision Service node you can either write rules in the Integration Toolkit, or import rules from Operational Decision Manager.

This slide lists the steps for implementing a Decision Service by using the Rules editor in the Integration Toolkit.

1. Define a decision service by using the Create a Decision Service wizard. Ensure that any XML or DFDL schema files that describe the data are available in the application where you create this service or in an associated library.
2. Use the Content Assist editor in the Integration Toolkit to author business rules.
3. Embed the decision service in the message flow.
4. Configure the Decision Service node by specifying the location of the data in the logical message tree.

Each of these steps is described in more detail and in an example in this unit.

Slide 8



Integration Toolkit Decision Service editor

The order in which you create your decision service and your Decision Service node is flexible.

- If you open the New Decision Service editor from a Decision Service node, the decision service that you create is associated with that node. You can then use the node in a message flow to control operations like routing, validation, and transformation.
- If you create the decision service from a menu option, or you import a rule application archive from Operational Decision Manager, drag the decision service file onto a Decision Service node to configure the node. By creating the decision service first, you can then use it with multiple message flows. You can also associate an existing decision service with a node by using the Decision Service property of the node.

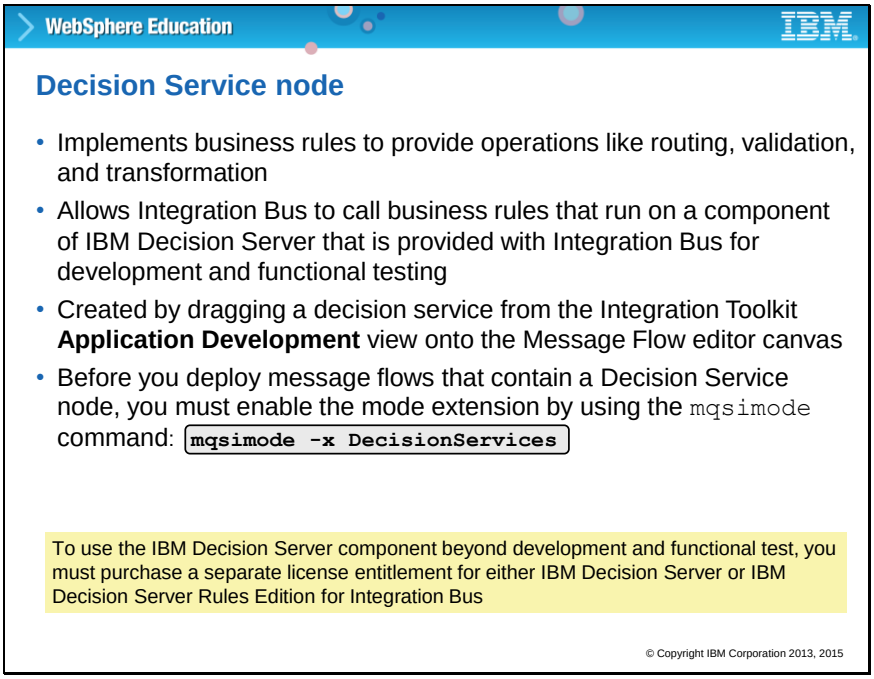
When you create a decision service in the Integration Toolkit, it contains a list of the parameters that identify the data that you want to use in your business rules. The direction of the parameters can be IN, OUT, or INOUT. For decision services that are created in the Integration Toolkit, only INOUT parameters are supported. Use the **Parameters** tab to add, edit, and delete parameters.

In the Decision Service editor, use the **Rule sequence** tab to add rules and specify the order in which they are run.

Use the **Additional Info** tab to specify the version of the decision service and to provide a description.

If your decision service is created from a rule application archive that is imported from Operational Decision Manager, you cannot add, edit, or delete parameters. You also cannot view or edit the rules that are contained in the rule set. When you open an imported decision service in the Decision Service editor, you see only the **Parameters** and **Additional Info** tabs, and you cannot edit the information that is on these tabs.

Slide 9



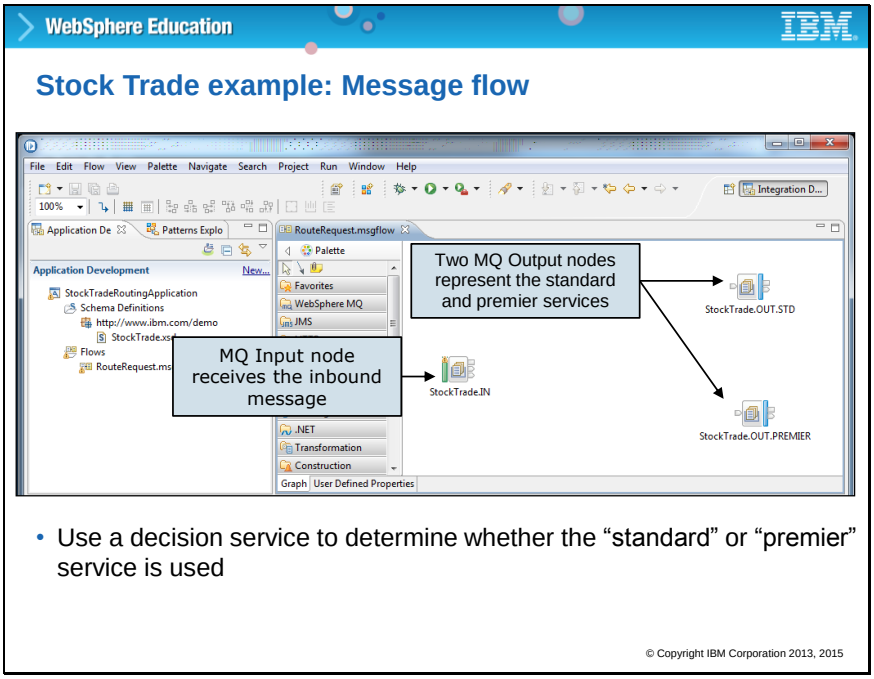
Decision Service node

A Decision Service message processing node implements business rules to provide operations like routing, validation, and transformation. These business rules are organized in a decision service file (.rules). When you deploy the BAR file that contains your decision service, the decision service is compiled into a rule set (.ruleset). You can store a decision service in an application, library, or integration project.

If you create the decision service, you can drag the decision service onto a Decision Service node in the Message Flow editor to configure the node. You can also associate an existing decision service with a node by using the Decision Service property of the node.

Before you deploy a message flow that contains a decision service, confirm that you comply with the terms of the license. Then, enable the decision services mode extension by using the mqsimode command.

Slide 10



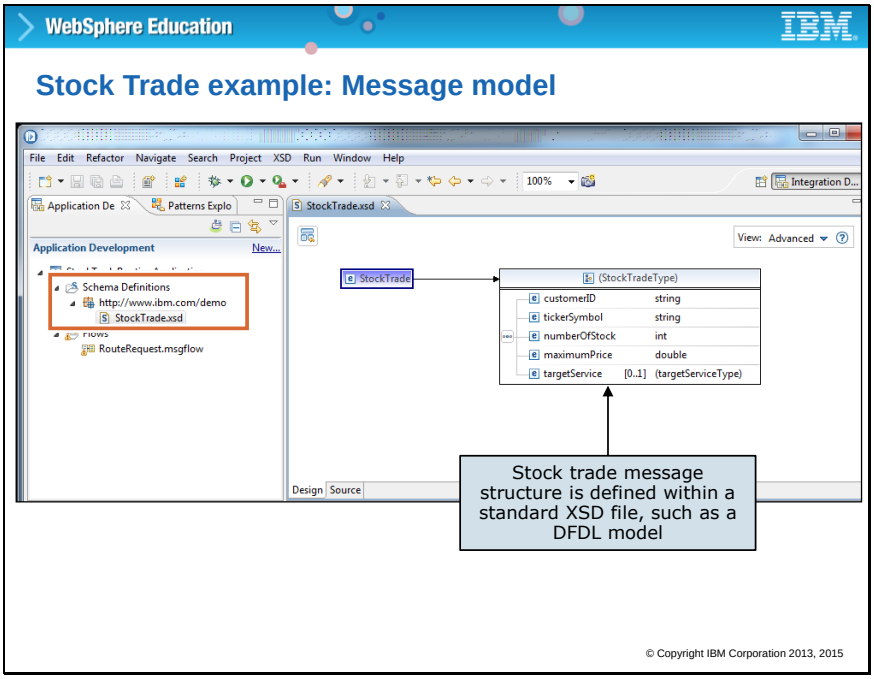
Stock Trade example: Message flow

This slide and the next slides provide an example of how to create and implement a decision service.

In this example, the decision service is added to a message flow that gets a message off an MQ queue and puts a message to one of two output queues. The destination output queue is determined from the business rule that determines whether the “standard” or “premier” service is used for the message.

The example uses the Integration Toolkit Rules editor to create the business rule.

Slide 11

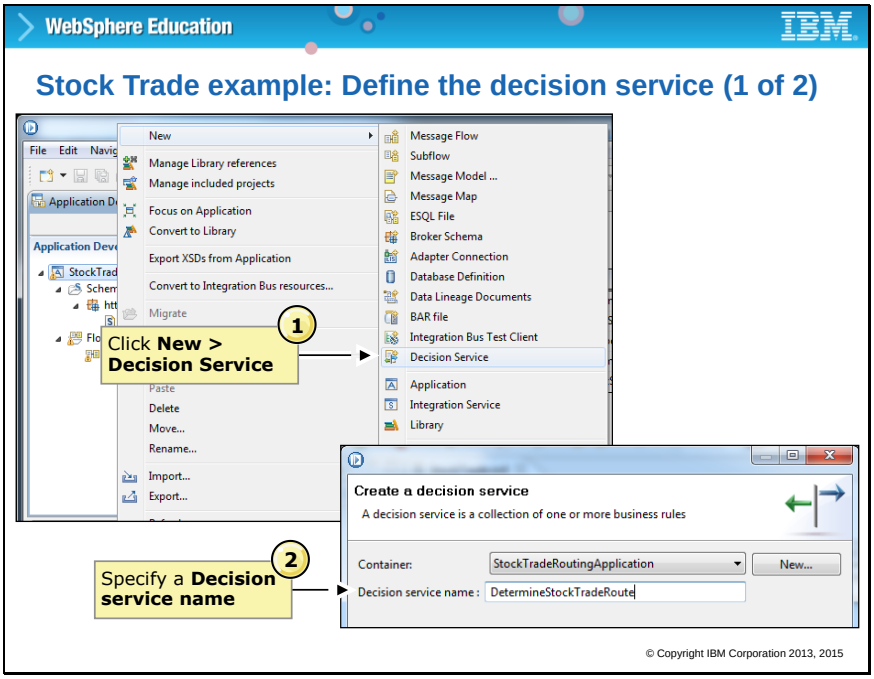


Stock Trade example: Message model

A decision service requires a schema that describes the message data. The schema files can be imported into the message flow application or referenced in a library. You can use XMLNSC or DFDL schemas.

The schema in the figure describes a stock trade message. The stock trade message contains a customer ID, ticker symbol, number of shares of stock, maximum stock price, and target service.

Slide 12



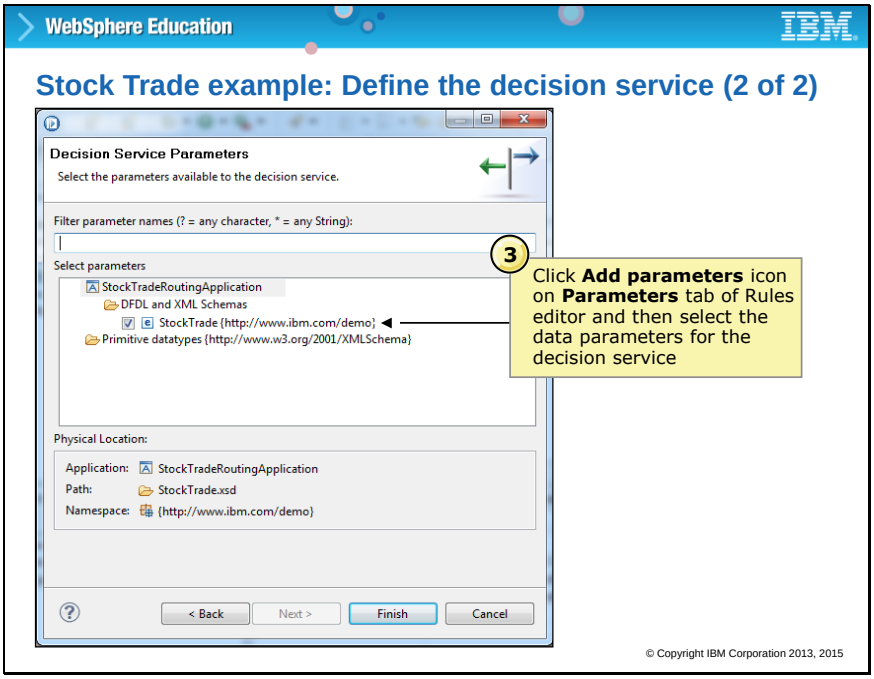
Stock Trade example: Define the decision service (1 of 2)

You can create a decision service in the Integration Toolkit by clicking **New > Decision Service**.

On the **Create a new decision service** window, select an existing container or create a new one. You can create a decision service in an application, library, or integration project. You also specify a name for the decision service on this window. The decision service name cannot contain spaces.

In this example, the decision service is created in an application that is named StockTradeRoutingApplication. The decision service is named DetermineStockTradeRoute.

Slide 13

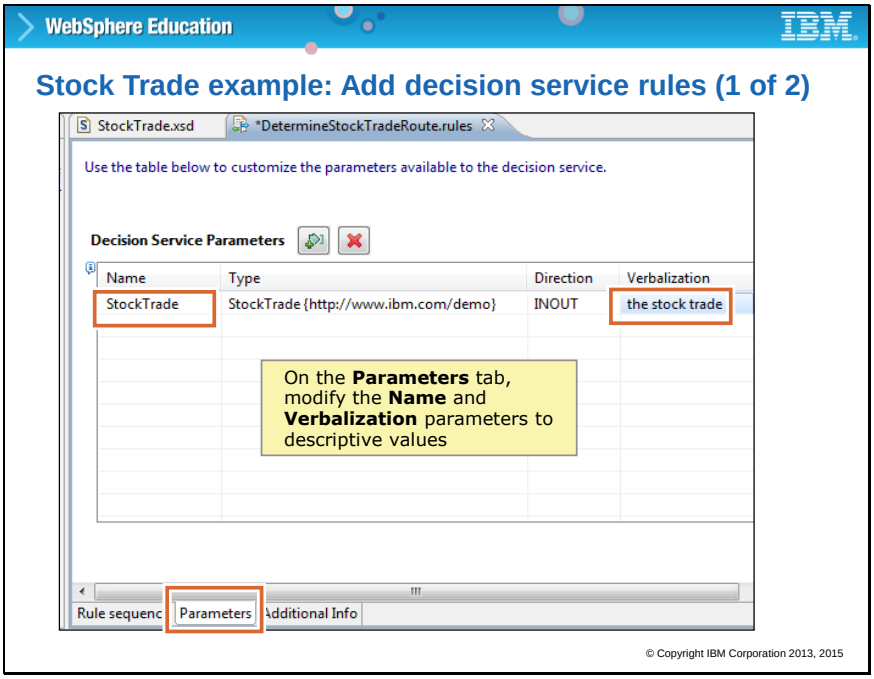


Stock Trade example: Define the decision service (2 of 2)

A decision service rule set can contain one or more data parameters.

The next step for defining a decision service is to select data parameters from a list of types from schema files that are included in the application or referenced in a library.

Slide 14



Stock Trade example: Add decision service rules (1 of 2)

Clicking **Finish** on the **Create Decision Service** wizard, opens the Decision Service editor in the Integration Toolkit.

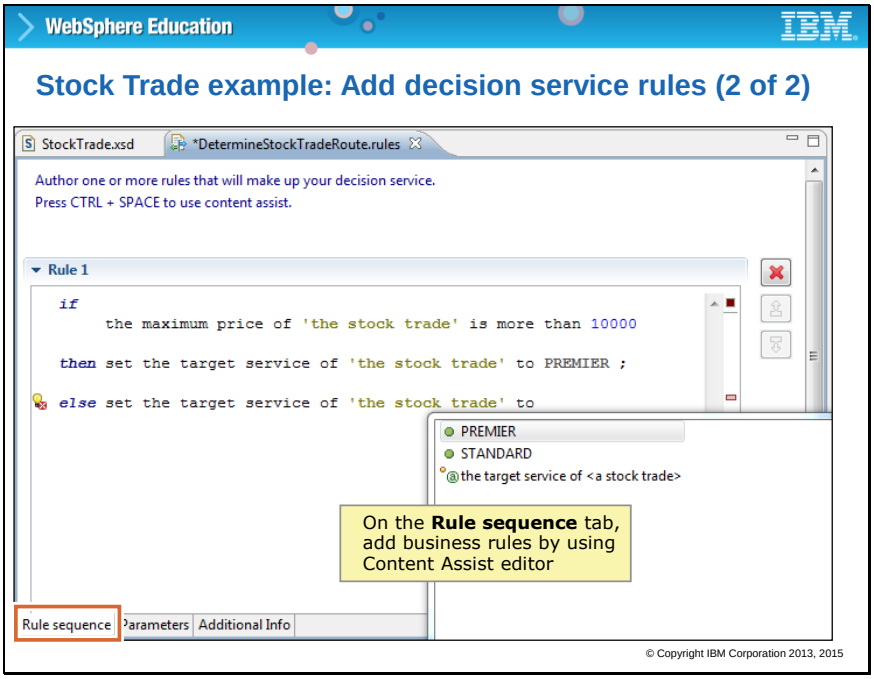
The first step in the Decision Service editor is to customize the parameters on the **Parameters** tab.

All the parameters of the decision service are listed in the Decision Service **Parameters** table. To edit a value in the table, click the table cell and then edit the value in the cell.

- The **Name** cell specifies a unique name for the parameter. You can override the value in the Name field with more descriptive names. In the example, the parameter name is Stock Trade.
- The **Type** cell identifies the selected item type.
- The **Direction** cell indicates the direction of the parameter (IN, OUT, INOUT). Currently, only INOUT is supported for decision services that are authored in the Integration Toolkit.
- The **Verbalization** cell specifies a natural language alias for the parameter. In the example, the **Verbalization** cell for the **Stock Trade** type is “the stock trade”. This value is used to refer to the parameter when writing a rule.

You can add one or more parameters by clicking the **Add parameters** icon.

Slide 15



Stock Trade example: Add decision service rules (2 of 2)

In the Decision Service editor, use the **Rule sequence** tab to add rules and specify the order in which they are run.

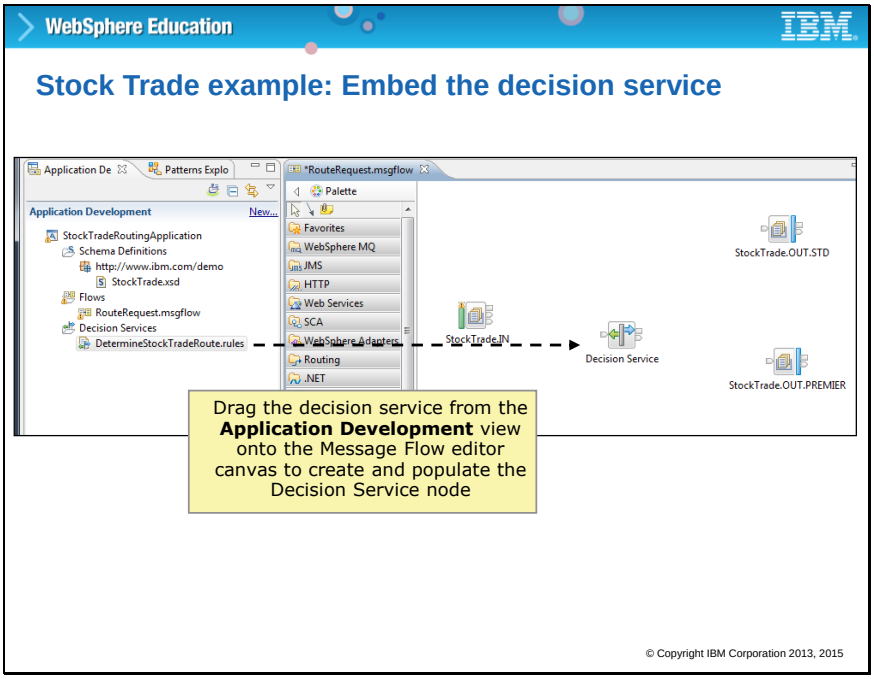
You use the vocabulary that you created on the **Parameters** tab to write your rules. Initially, one empty rule is provided for you to populate.

A business rule typically consists of definitions, conditions, and actions. Use content assist to help construct your rules. To access content assist, press Ctrl+Space to display a list of available options.

Content assist also opens automatically when you type a Space character in the rule. The options that you see are based on the schema parameters that you selected.

The business rule in this example determines the route that the message takes through the message flow.

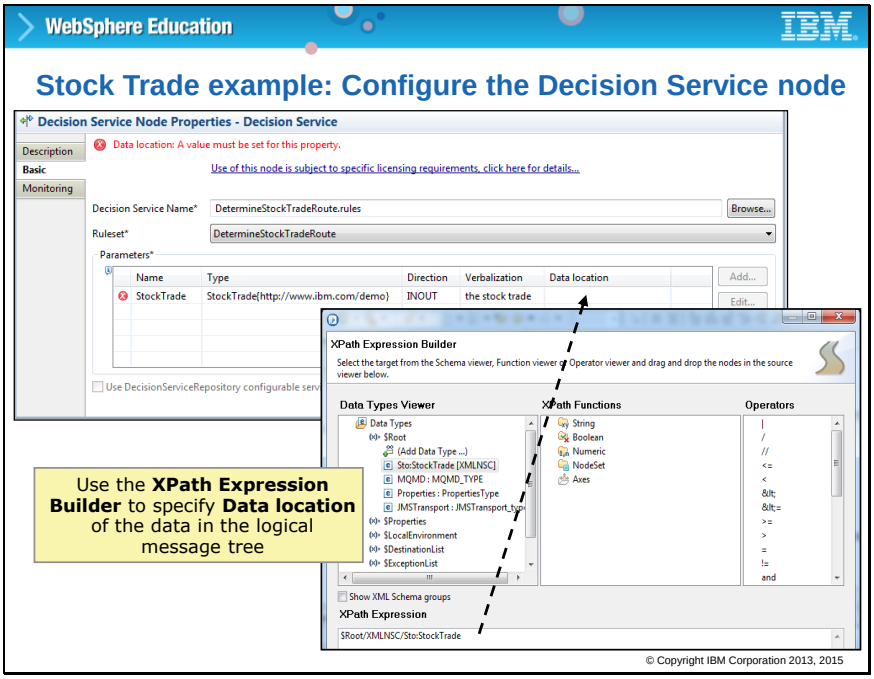
Slide 16



Stock Trade example: Embed the decision service

After you complete and save all the business rules on in the Decision Service editor, drag the decision service from the **Application Development** view onto the Message Flow editor canvas to create and populate the Decision Service node based on the decision service configuration.

Slide 17

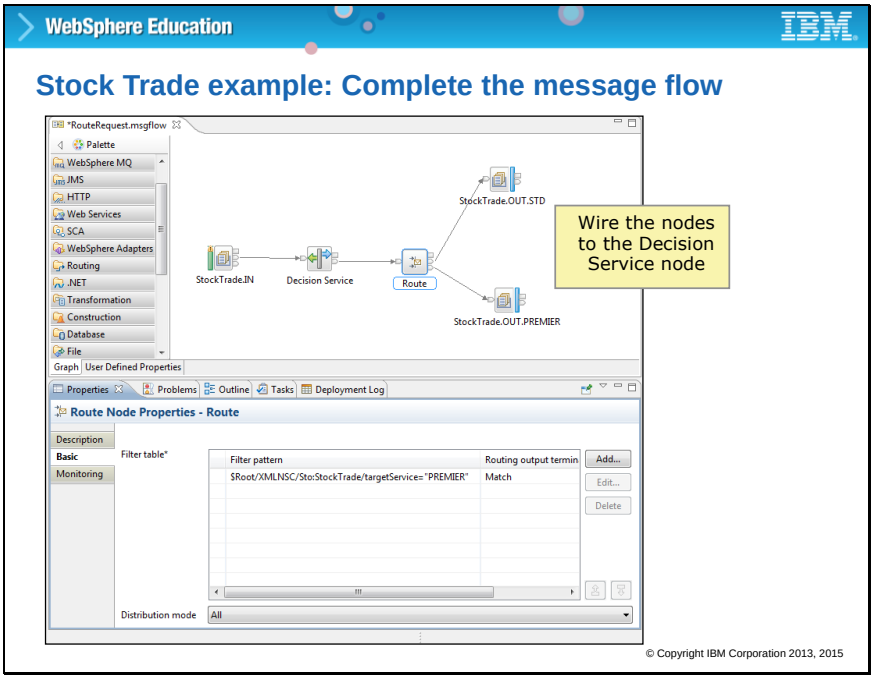


Stock Trade example: Configure the Decision Service node

Before you can deploy a message flow that contains a Decision Service node, you must specify the logical message tree location of the data that the parameter represents in the Decision Service node **Properties**.

In the example, a data location is added by clicking the **StockTrade** parameter and then clicking **Edit**. You can type the data location or click **Edit** again to access the XPath Expression Builder.

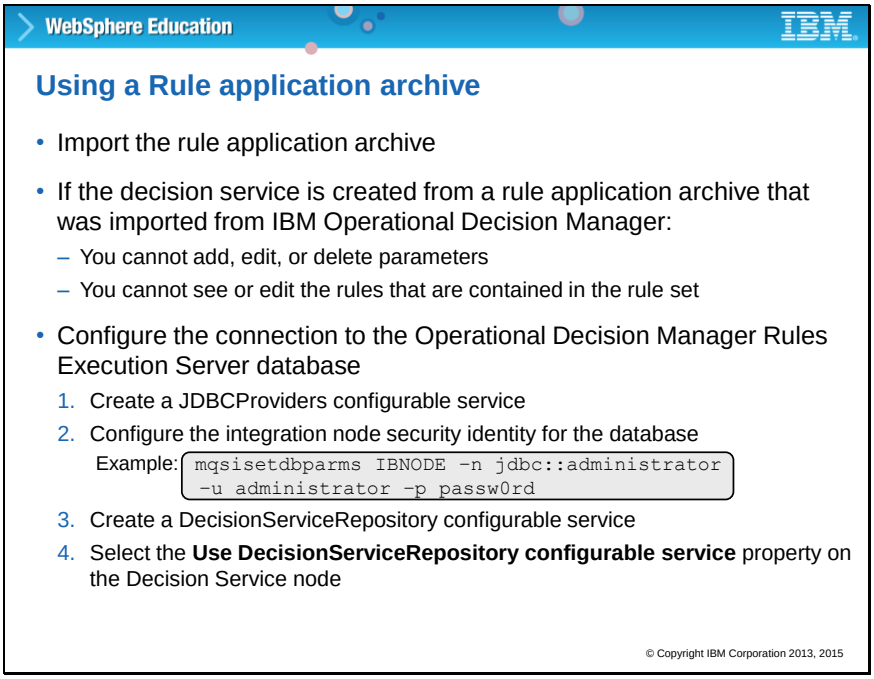
Slide 18



Stock Trade example: Complete the message flow

The final step in this example is to wire the Decision Service node. In the example, the Decision Service node is wired to a Route node. The Route node routes the message based on the TargetService that the Decision Service node sets.

Slide 19



Using a Rule application archive

Instead of creating the business rules in the Integration Toolkit, you can import business rules directly from an external Operational Decision Manager repository. For example, you might use the local copy of the business rules for testing and then later switch to use the external repository copy.

To use rules that are written in Operational Decision Manager to process messages in Integration Bus, import a rule application archive into the Integration Toolkit.

If the decision service is created from an imported rule application archive, you cannot use the Integration Toolkit to add, edit, or delete parameters. Also, you cannot use the Integration Toolkit to view or edit the rules that are contained in the rule set.

If you are using a rule application archive, you must define a JDBCProviders configurable service that defines the connection details to the Operational Decision Manager database.

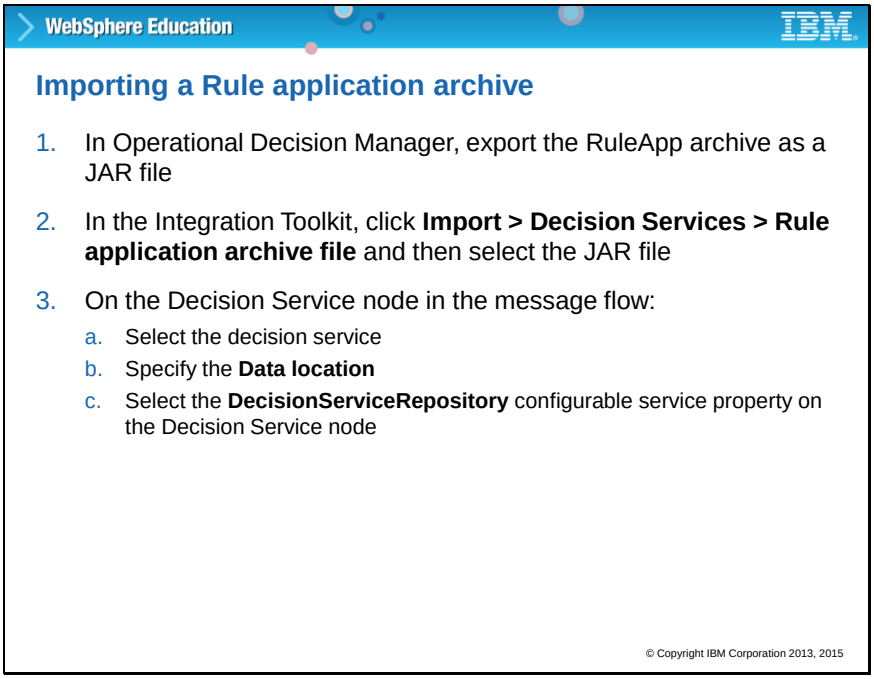
You must also use the mqsisetdbparms command to configure a secure sign-on for the integration node to use when it connects to the database.

Then, update the DecisionServiceRepository configurable service on the integration node to identify the connection to an external repository at run time. This configurable service

references the JDBCProviders configurable service that defines the connection to the database repository.

Finally, you must select the **Use DecisionServiceRepository configurable service** property on the Decision Service node in the message flow.

Slide 20



Importing a Rule application archive

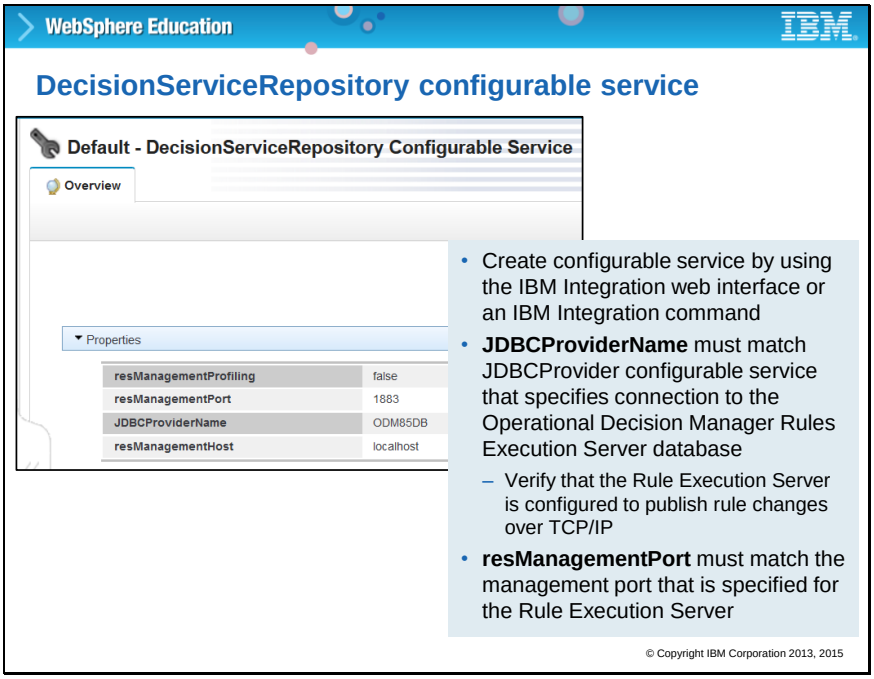
The first step for importing a rule application archive is to export the rule application archive from the Operational Decision Manager rule designer by using the Rule Designer menu or the RuleApp editor. You can also download a rule application archive from an Operational Decision Manager rule execution server console.

Next, in the Integration Toolkit click **Import > Decision Services > Rule application archive file** and select the JAR file.

Finally, select the decision service on the Decision Service node in the message flow.

As mentioned previously, when you use this method you must have a DecisionServiceRepository and a JDBCProviders configurable service.

Slide 21



DecisionServiceRepository configurable service

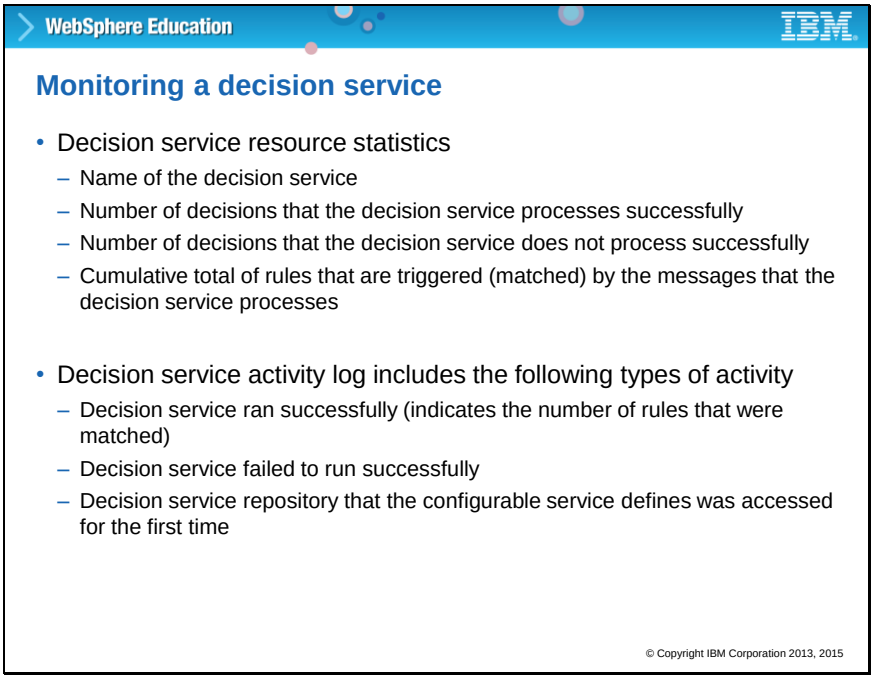
A DecisionServiceRepository configurable service is provided on every integration node.

You can modify the DecisionServiceRepository configurable services by using the Integration web user interface or by using the mqsicreateconfigurableservice command.

Changes to the property values of this configurable service or the associated JDBCProviders configurable service take effect immediately. You do not need to restart the integration server.

An integration node can have one DecisionServiceRepository configurable service only; you cannot create multiple DecisionServiceRepository configurable services.

Slide 22



Monitoring a decision service

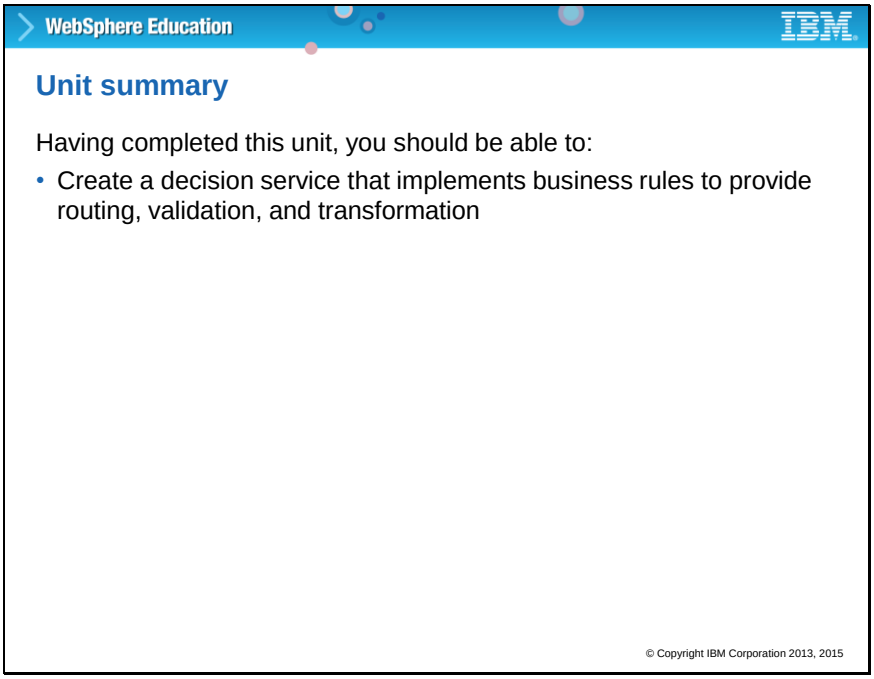
You can monitor a decision service by using the Integration Bus resource statistics and the activity log.

The slide lists the monitoring information that is available for decision services.

For resource statistics, you get the number of decisions that the decision service processes successfully, the number of decisions that do not process successfully, and the cumulative total of rules that are matched by the messages that the decision service processes.

The Decision service activity log indicates whether the decision service ran successfully and when the DecisionServiceRepository configurable service is accessed for the first time.

Slide 23



Unit summary

A Decision Service message processing node runs business rules to provide routing, validation, and transformation operations. You can write rules in the IBM Integration Toolkit, or import rules from IBM Operational Decision Manager. In this unit, you learned how to create a decision service that implements business rules and then used the decision service in a message flow application to provide routing, validation, and transformation.

Having completed this unit, you should be able to create a decision service that implements business rules to provide routing, validation, and transformation.