



Red Hat Decision Manager 7.0

Getting started with decision services

Red Hat Decision Manager 7.0 Getting started with decision services

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Abstract

In this tutorial, you will create and test a driver's license suspension scenario.

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PREFACE

As a business analyst or rules developer, you can use Decision Central in Red Hat Decision Manager to design a variety of decision services. In this tutorial, you will create and test a driver's license suspension scenario.

Prerequisites

- Installed Red Hat JBoss Enterprise Application Platform 7.1.0. See [Red Hat JBoss EAP 7.1.0 Installation Guide](#).
- Installed Red Hat Decision Manager. For more information, see the [Installing Red Hat Decision Manager on premise](#).
- Red Hat Decision Manager is running and you can log in to Decision Central with the **admin** role. For more information, see the [Installing Red Hat Decision Manager on premise](#).

CHAPTER 1. CREATING THE TRAFFIC VIOLATIONS PROJECT

A project is the container for assets, such as data objects, guided decision tables, and guided rules. In this chapter, you will create the **Driver department traffic violations** project.

Procedure

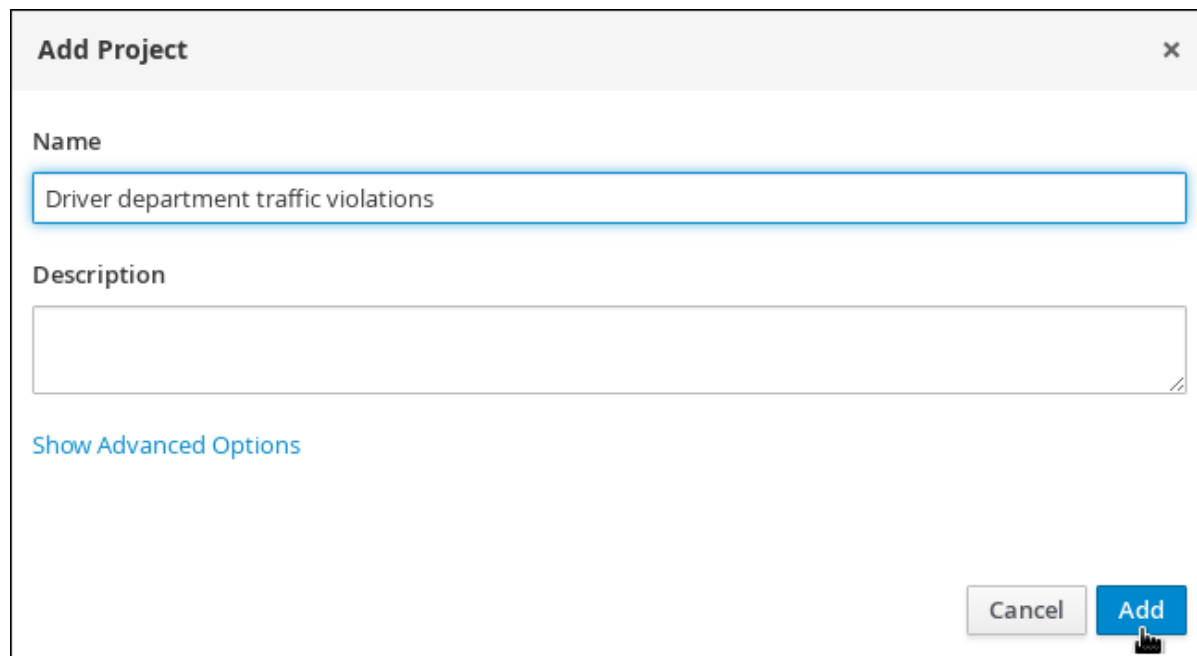
1. Log in to Decision Central.
2. Go to **Menu** → **Design** → **Projects**.
Tip: Red Hat Decision Manager provides a default space called **myteam**, as shown in the following image. You can use the default space to create and test example projects.

Figure 1.1. Default spaces



3. Click **Add Project**.
4. Enter **Driver department traffic violations** in the **Name** field.
5. Click **Add**.

Figure 1.2. Add Project window

The image shows a 'Add Project' dialog window. The title bar says 'Add Project' with a close button (X) on the right. Inside the dialog, there is a 'Name' label followed by a text input field containing 'Driver department traffic violations'. Below that is a 'Description' label followed by a larger text area. At the bottom left, there is a link that says 'Show Advanced Options'. At the bottom right, there are two buttons: 'Cancel' and 'Add'. A mouse cursor is pointing at the 'Add' button.

CHAPTER 2. DATA OBJECTS

Data objects are the building blocks for the rule assets that you create. Data objects are custom data types implemented as Java objects in specified packages of your project. For example, you might create a **Person** object with data fields **Name**, **Address**, and **Date of Birth** to specify personal details for loan application rules. These custom data types determine what data your assets and your decision service are based on.

The following illustration shows the **Violation** and **Driver** data objects that you will create in this tutorial.

Figure 2.1. Driver department traffic violations data objects

VIOLATION DATA OBJECT	DRIVER DATA OBJECT
ID: code LABEL: Code TYPE: String	ID: name LABEL: Full Name TYPE: String
ID: points LABEL: Points TYPE: Integer	ID: age LABEL: Age TYPE: Integer
ID: violationDate LABEL: Violation Date TYPE: Date	ID: state LABEL: State TYPE: String
ID: type LABEL: Type TYPE: String	ID: city LABEL: City TYPE: String
ID: fineAmount LABEL: Fine Amount TYPE: Double	ID: violations LABEL: Violations TYPE: Violation (org.jboss.example.traffic_violations.Violation)
ID: speedLimit LABEL: Speed Limit TYPE: Integer	<i>Note: The violations field is set to “List” to hold multiple items for the given type.</i>
ID: actualSpeed LABEL: Actual Speed TYPE: Integer	

LABEL: Actual Speed
TYPE: Integer

ID: fineAmount
LABEL: Fine Amount
TYPE: Double

ID: totalPoints
LABEL: Total Points
TYPE: Integer

ID: reason
LABEL: Reason
TYPE: String

2.1. CREATING THE VIOLATION DATA OBJECT

The **Violation** data object contains data fields based on violation details, such as **Violation Date**, **Fine Amount**, and **Speed Limit**.

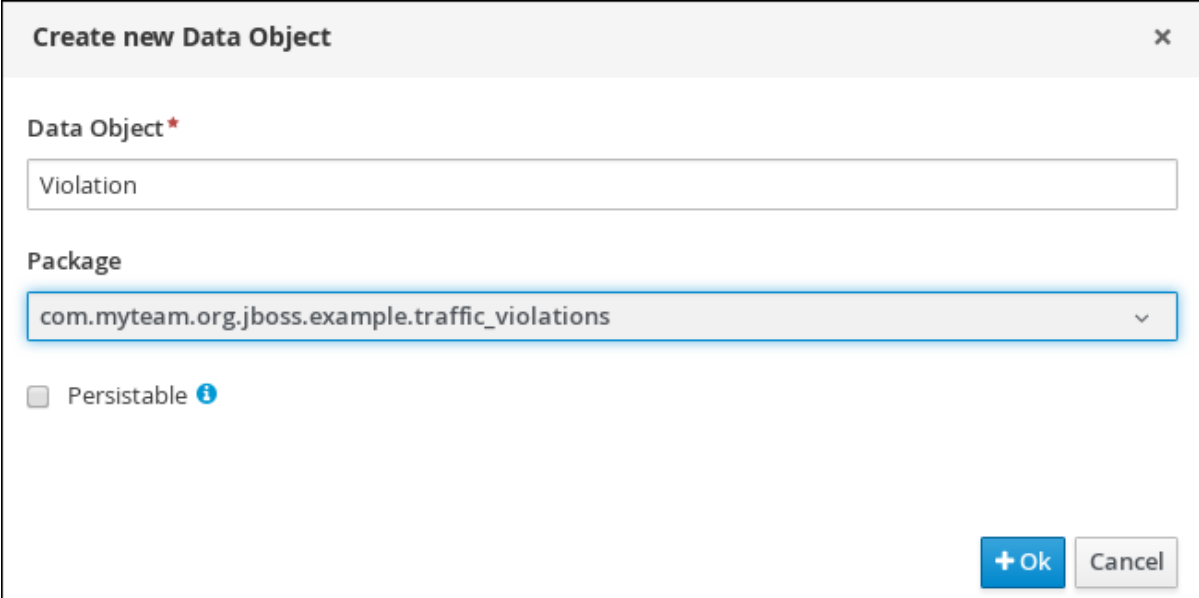
Prerequisites

You have created the **Driver department traffic violations** project.

Procedure

1. Log in to Decision Central. Click **Menu** → **Design** → **Projects**, then **Driver department traffic violations**.
2. Click **Create New Asset** → **Data Object**.
3. In the **Create new Data Object** wizard, enter the following values:
 - **Data Object:** **Violation**.
 - **Package:** select **com.myteam.driverdepartmenttrafficviolations**.
4. Click **Ok**.

Figure 2.2. Create new Data Object window



The 'Create new Data Object' window has a title bar with a close button. It contains a 'Data Object' field with a red asterisk, containing the text 'Violation'. Below it is a 'Package' dropdown menu showing 'com.myteam.org.jboss.example.traffic_violations'. There is an unchecked 'Persistable' checkbox with an information icon. At the bottom right are '+ Ok' and 'Cancel' buttons.

2.1.1. Adding the Violation data object data fields

Prerequisites

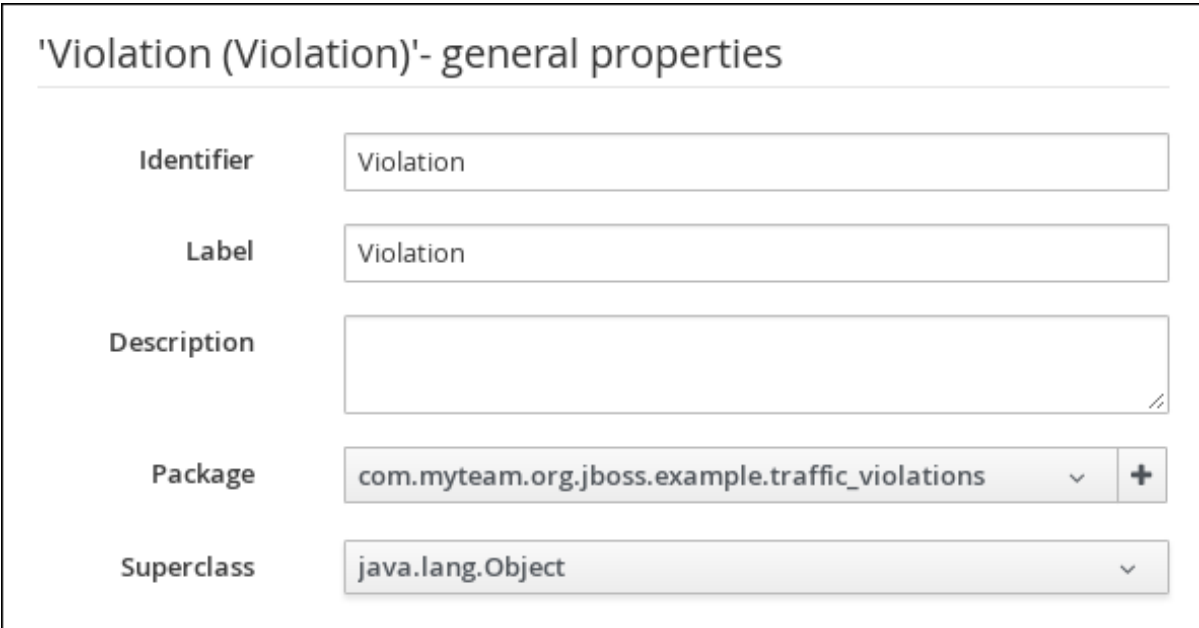
You have created the **Violation** data object.

Procedure

The data fields in the **Violation** data object define the available constraints that you can select from when you define your violation rules later.

1. In the **Violation-general properties** section, locate the **Label** property and enter: **Violation**.

Figure 2.3. General properties



The 'Violation (Violation)- general properties' window shows several fields: 'Identifier' with value 'Violation', 'Label' with value 'Violation', an empty 'Description' text area, 'Package' with value 'com.myteam.org.jboss.example.traffic_violations' and a '+' button, and 'Superclass' with value 'java.lang.Object'.

2. Click **+ add field**.
3. Enter the following values:

- **Id:** code
 - **Label:** Code
 - **Type:** String
4. Click **Create and continue**, then enter the following values:
- **Id:** points
 - **Label:** Points
 - **Type:** Integer
5. Click **Create and continue**, then enter the following values:
- **Id:** violationDate
 - **Label:** Violation Date
 - **Type:** Date
6. Click **Create and continue**, then enter the following values:
- **Id:** type
 - **Label:** Type
 - **Type:** String
7. Click **Create and continue**, then enter the following values:
- **Id:** fineAmount
 - **Label:** Fine Amount
 - **Type:** Double
8. Click **Create and continue**, then enter the following values:
- **Id:** speedLimit
 - **Label:** Speed Limit
 - **Type:** Integer
9. Click **Create and continue**, then enter the following values:
- **Id:** actualSpeed
 - **Label:** Actual Speed
 - **Type:** Integer
10. Click **Create**.
11. Click **Save**, then click **Save** to confirm your changes.

- Click the **Driver department traffic violations** label to return to the **Assets** view of the project.

Figure 2.4. Violation data object fields

The screenshot shows the 'Violation.java - Data Objects' editor. It has tabs for 'Editor', 'Overview', and 'Source'. The 'Editor' tab is active, showing a table of fields for the 'Violation (Violation)' data object. There is a '+ add field' button in the top right corner of the table area.

Identifier	Label	Type	
code	Code	String	Delete
points	Points	Integer	Delete
violationDate	Violation Date	Date	Delete
type	Type	String	Delete
fineAmount	Fine Amount	Double	Delete
speedLimit	Speed Limit	Integer	Delete
actualSpeed	Actual Speed	Integer	Delete

2.2. CREATING THE DRIVER DATA OBJECT

The **Driver** data object contains data fields based on driver details, such as **Name**, **Age**, and **Total Points**.

Prerequisites

You have created the **Driver department traffic violations** project.

Procedure

- Log in to Decision Central. Click **Menu** → **Design** → **Projects**, then **Driver department traffic violations**.
- Click **Create New Asset** → **Data Object**.
- In the **Create new Data Object** wizard, enter the following values:
 - Data Object:** **Driver**.
 - Package:** select `com.myteam.driverdepartmenttrafficviolations`.
- Click **Ok**.

Figure 2.5. Create new Data Object window

Create new Data Object [X]

Data Object*

Driver

Package

com.myteam.org.jboss.example.traffic_violations

☐ Persistable ⓘ

+ Ok Cancel

2.2.1. Adding the Driver data object data fields

Prerequisites

You have created the **Driver** data object.

Procedure

The data fields in the **Driver** data object define the driver details that you can select from when you define your violation rules later.

1. In the '**Driver**' - **general properties** section, locate the **Label** property and enter: **Driver**.
2. Click **+ add field**.
3. Enter the following values:
 - **Id:** name
 - **Label:** Full Name
 - **Type:** String
4. Click **Create and continue**, then enter the following values:
 - **Id:** age
 - **Label:** Age
 - **Type:** Integer
5. Click **Create and continue**, then enter the following values:
 - **Id:** state
 - **Label:** State

- **Type:** String
6. Click **Create and continue**, then enter the following values:
 - **Id:** city
 - **Label:** City
 - **Type:** String
 7. Click **Create and continue**, then enter the following values:
 - **Id:** violations
 - **Label:** Violations
 - **Type:**
`Violation(com.myteam.driverdepartmenttrafficviolations.Violation)`
 - **List:** Select this check box to enable the field to hold multiple items for the specified type.
 8. Click **Create and continue**, then enter the following values:
 - **Id:** fineAmount
 - **Label:** Fine Amount
 - **Type:** Double
 9. Click **Create and continue**, then enter the following values:
 - **Id:** totalPoints
 - **Label:** Total Points
 - **Type:** Integer
 10. Click **Create and continue**, then enter the following values:
 - **Id:** reason
 - **Label:** Reason
 - **Type:** String
 11. Click **Create**.
 12. Click **Save**, then click **Save** to confirm your changes.
 13. Click the **Driver department traffic violations** label to return to the **Assets** view of the project.

Figure 2.6. Driver data object fields

Spaces » myteam » [Driver department traffic violations](#) » Driver

>

Driver.java - Data Objects ▾

Editor

Overview

Source

Driver (Driver)

+ add field

Identifier	Label	Type	
name	Full Name	String	<div> Delete</div>
age	Age	String	<div> Delete</div>
state	State	String	<div> Delete</div>
city	City	String	<div> Delete</div>
violations	Violations	Violation [List]	<div> Delete</div>
fineAmount	Fine Amount	Double	<div> Delete</div>
totalPoints	Total Points	Integer	<div> Delete</div>
reason	Reason	String	<div> Delete</div>

CHAPTER 3. GUIDED RULES

Guided Rules are business rules that you can create in a UI-based Guided Rules designer that leads you through the rule creation process. The rule designer provides fields and options for acceptable input based on the object model of the rule being edited. All data objects related to the rule must be in the same project package as the rule. Assets in the same package are imported by default. You can use the **Data Objects** tab of the rule designer to verify that all required data objects are listed or to import any other needed data objects.

Figure 3.1. The Guided Rule designer

The screenshot shows the Guided Rule designer interface with the **Editor** tab selected. The interface is divided into two main sections: **WHEN** and **THEN**.

WHEN Section:

- EXTENDS:** A dropdown menu showing "- None -".
- 1. There is a Driver [driver] with:**
 - [previousPts] totalPoints:** A dropdown menu showing "--- please choose ---".
- 2. There is a Number with:**
 - [totalNewPoints] intValue():** A dropdown menu showing "Choose...".
 - greater than or equal to:** A dropdown menu showing "20-previousPts".
- From Accumulate All Violation with:**
 - [vPoints] points:** A dropdown menu showing "greater than".
 - 0:** A text input field.
- Custom Code:** A tab labeled **Function**.
- Function:** A text input field containing "sum(vPoints)".

THEN Section:

- 1. Set value of Driver [driver]:**
 - state:** A dropdown menu showing "suspend".
- (options) Attributes:**
 - dialect:** A dropdown menu showing "mvel".
 - ruleflow-group:** A text input field containing "trafficViolation".

3.1. CREATING THE DRIVER LICENSE SUSPENSION RULE

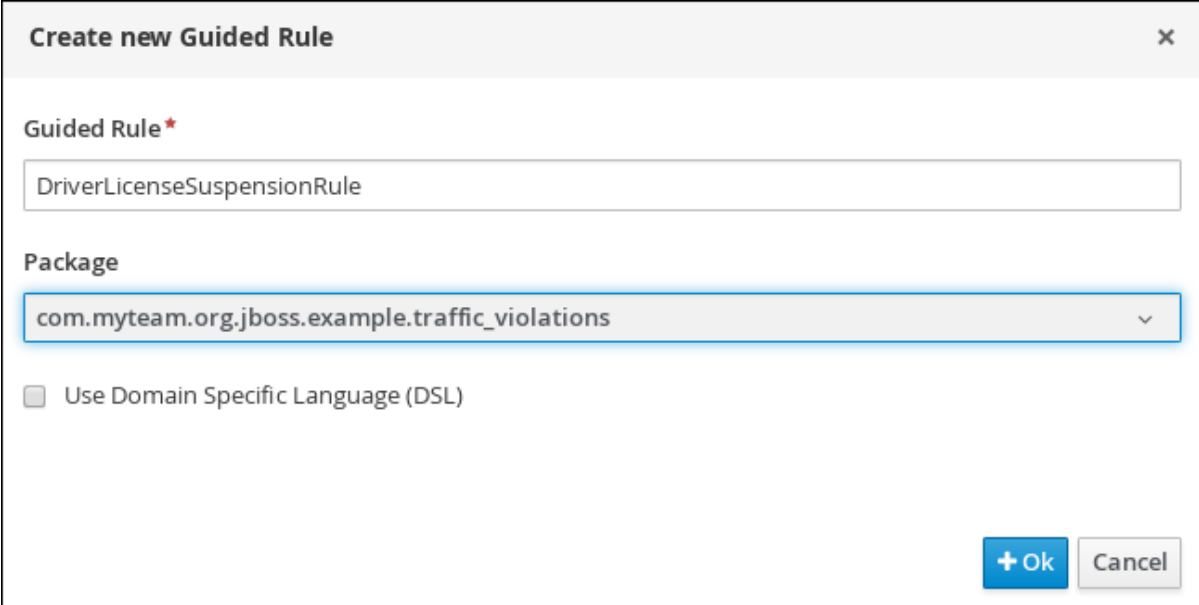
The **Driver license suspension** rule is created using the Guided Rule wizard and is comprised of various conditions and their resulting actions.

Prerequisite

Created both the **Violation** and **Driver** data objects.

Procedure

1. Log in to Decision Central. Click **Menu** → **Design** → **Projects**, then **Driver department traffic violations**.
2. Click **Create New Asset** → **Guided Rule**, then enter:
 - **Guided Rule: DriverLicenseSuspensionRule**
 - **Package: com.myteam.driverdepartmenttrafficviolations**
3. Click **Ok** to open the **Guided Rule designer**.

Figure 3.2. Create new Guided Rule window

Create new Guided Rule [X]

Guided Rule*

DriverLicenseSuspensionRule

Package

com.myteam.org.jboss.example.traffic_violations

☐ Use Domain Specific Language (DSL)

+ Ok Cancel

3.2. SETTING THE SUSPENSION RULE CONDITIONS

The **Suspension** rule contains conditions that are used to determine the driver's violation.

Prerequisite

You have created the Driver License Suspension rule

Procedure


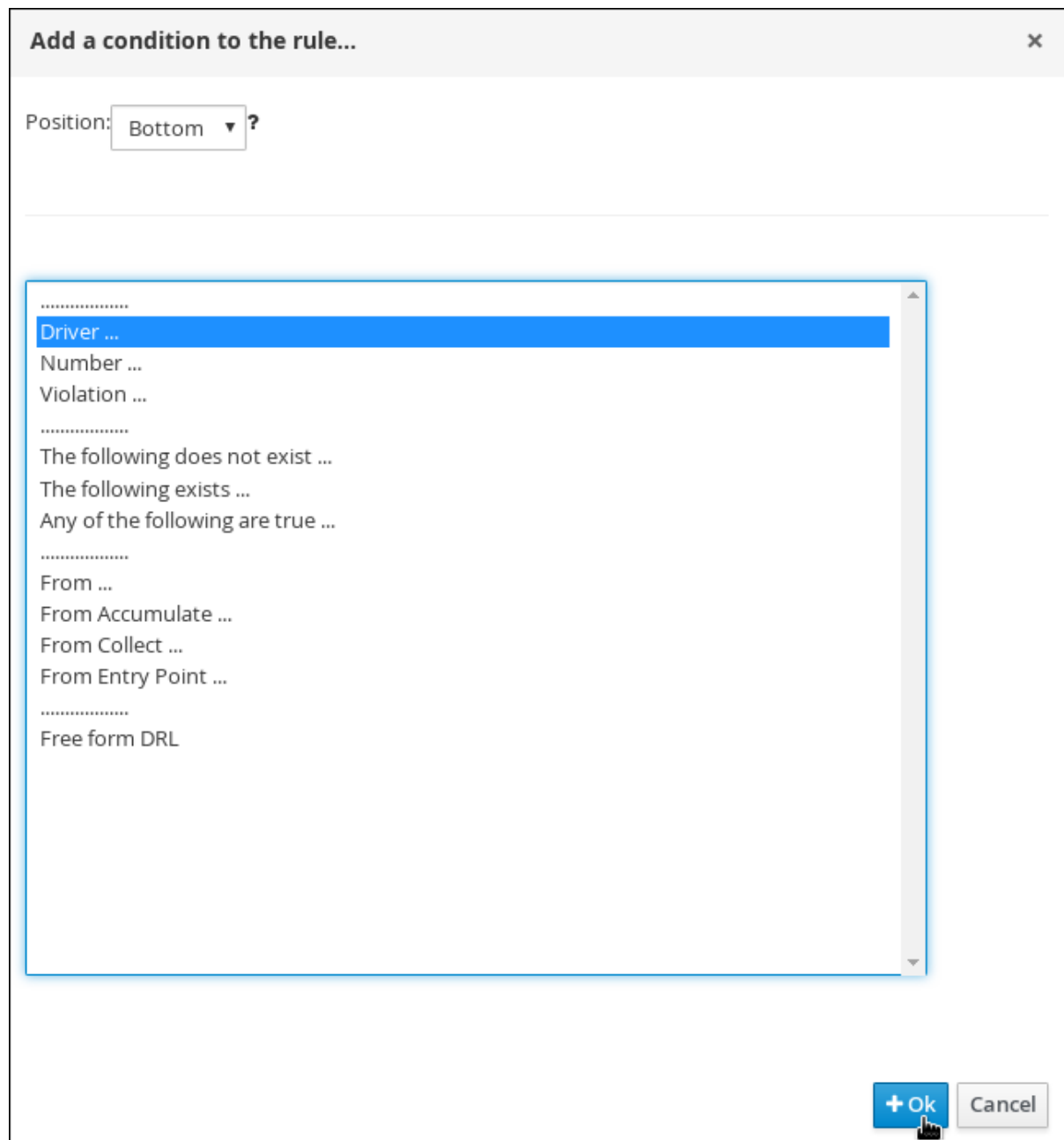
1. Click  next to the **WHEN** label to open the **Add a condition to the rule** window. . . Select **Driver** and click **Ok**.

Figure 3.3. Create new Guided Rule window



2. Click the **There is a Driver** label to open the **Modify constraints for Driver** window.
3. Enter **driver** in the **Variable name** field and click **Set**.
4. Click the **There is a Driver[driver]** and click **Expression editor**.
5. Click **[not bound]** to open the **Expression editor**.
6. In the **Bind the Expression to a new variable** field, enter: **previousPts** and click **Set**.
7. From the **Choose** menu, select **totalPoints**.
8. Click **+** next to line 1 (the **previousPts** label) to open the **Add a condition to the rule** window.
9. Select **From Accumulate** and click **Ok**.
10. Click **click to add pattern** above the **From Accumulate** label and select **Number** from the **choose fact type** pull-down menu.



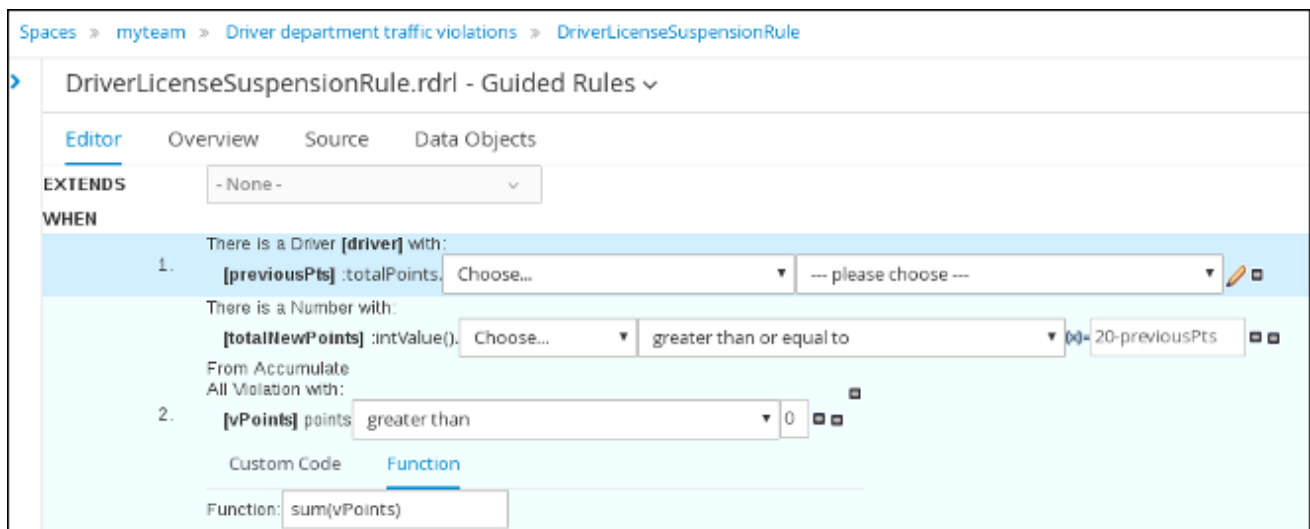
11. Click **There is a number** label to open the **Modify constraints for Driver** window.
12. Click **Expression editor** and select **intValue()** from the **[not bound]: Choose** menu.
13. Click **[not bound]** to open the **Expression editor**.
14. In the **Bind the Expression to a new variable** field, enter: **totalNewPoints** and click **Set**.
15. Click **click to add pattern** and select **Violation** from the **choose fact type** pull-down menu.
16. Click **All Violation with:** to open the **Modify constraints for Violation** window and select **points** from the **Add a restriction on a field** pull-down menu.
17. Click **please choose** next to the **points** label and select **greater than**.
18. Click  , then click **Literal value**.
19. Click the **points** label to open the **Add a field** window and enter **vPoints** and click **Set**.
20. In the **Function** field, enter **sum(vPoints)**.
21. Select **greater than or equal to** from the **totalNewPoints** → **please choose** pull-down menu.
22. Click  , click **New formula**, and enter **20-previousPts** in the new field.
23. Click **Save**, then click **Save** to confirm your changes.

Figure 3.4. Suspension Rule conditions




Spaces > myteam > Driver department traffic violations > DriverLicenseSuspensionRule



DriverLicenseSuspensionRule.rdr1 - Guided Rules ▾


Editor Overview Source Data Objects

EXTENDS - None - ▾

WHEN

1. There is a Driver [driver] with:
 [previousPts] :totalPoints. Choose... ▾ --- please choose --- 

There is a Number with:
 [totalNewPoints] :intValue(). Choose... ▾ greater than or equal to  20-previousPts 

From Accumulate
 All Violation with:
 2. [vPoints] points greater than ▾ 0 

Custom Code Function

Function: sum(vPoints)

3.3. SETTING THE SUSPENSION RULE ACTIONS

The **Suspension** rule actions determine a driver's resulting penalties including points and fine amounts based on the **Suspension** rule conditions.

Prerequisite

You have created set the Suspension rule conditions

Procedure

1. Click **(show options...)**.

Figure 3.5. show options selection





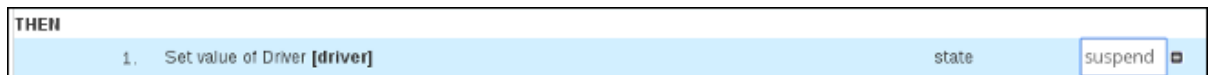
2. Click  next to the **THEN** label and select **Change field values of driver**, then click **Ok**.
3. Click the **Set value of Driver [driver]** field and select **state** from the **Add field** pull-down menu.
4. Click  next to **state** in the **Set value of Driver [driver]** section to open the **Field value** window.
5. Click **Literal value** and enter **suspend** in the new field.

Figure 3.6. New field




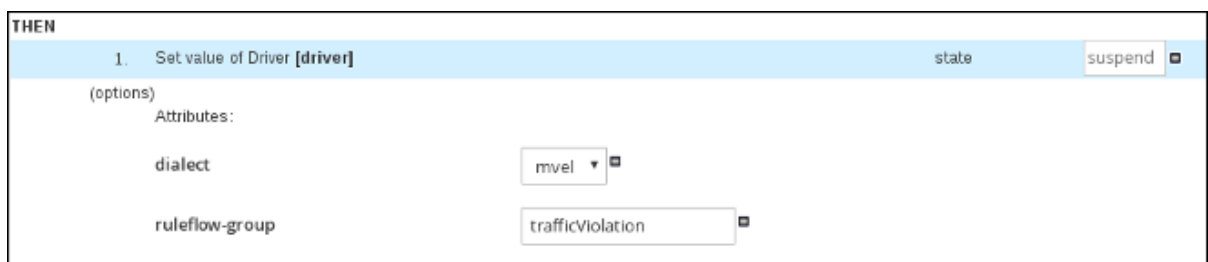
6. Click  next to the **(options)** label below the **Set value of Driver [driver]** section.
7. From the **Add an option to the rule** window, select the **ruleflow-group** option from the **Attribute** pull-down menu.
8. Enter **trafficViolation** in to the **ruleflow-group** field.
9. Click **Save**, then click **Save** to confirm your changes.

Figure 3.7. Suspension rule actions



CHAPTER 4. GUIDED DECISION TABLES

Guided decision tables are a wizard-led alternative to uploaded decision table spreadsheets for defining business rules in a tabular format. With guided decision tables, you are led by a UI-based wizard in Decision Central that helps you define rule attributes, metadata, conditions, and actions based on specified data objects in your project. After you create your guided decision tables, the rules you defined are compiled into Drools Rule Language (DRL) rules as with all other rule assets.

All data objects related to a guided decision table must be in the same project package as the guided decision table. Assets in the same package are imported by default. After the necessary data objects and the guided decision table are created, you can use the **Data Objects** tab of the guided decision tables designer to verify that all required data objects are listed or to import other existing data objects by adding a **New item**.

4.1. CREATING A TRAFFIC VIOLATION GUIDED DECISION TABLE

Use the Guided Decision Table designer to create the traffic violation guided decision table, which specifies the driver's specific violation and the resulting fine and points.

Prerequisite

Created both the **Violation** and **Driver** data objects.

Procedure

1. Log in to Decision Central. Click **Menu** → **Design** → **Projects**, then **Driver department traffic violations**.
2. Click **Create New Asset** → **Guided Decision Table**, then enter:
 - **Guided Decision Table:** `SpeedViolationRule`
 - **Package:** `com.myteam.driverdepartmenttrafficviolations`
3. Select **Unique Hit** from the **Hit Policy** pull-down menu.
4. Select **Extended entry, values defined in table body** in the **Table format** section.
5. Click **Ok** to open the **Guided Decision Tables** designer.

Figure 4.1. Guided Decision Tables designer

Create new Guided Decision Table [X]

Guided Decision Table*

SpeedViolationRule

Package

com.myteam.org.jboss.example.traffic_violations

☐ Use Wizard

Hit Policy:

Unique Hit

Unique Hit

With unique hit policy each row has to be unique meaning there can be no overlap. There can never be a situation where two rows can fire, if there is the Verification feature warns about this on development time.

Table Format:

☒ Extended entry, values defined in table body

☐ Limited entry, values defined in columns

[+ Ok] [Cancel]

4.1.1. Inserting Violation Type columns

The **Violation Type** column contains the violation details such as the the driver's speed and if the driver was under the influence of drugs or alcohol.

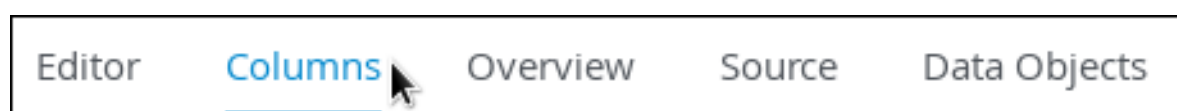
Prerequisite

Created the traffic violation guided decision table.

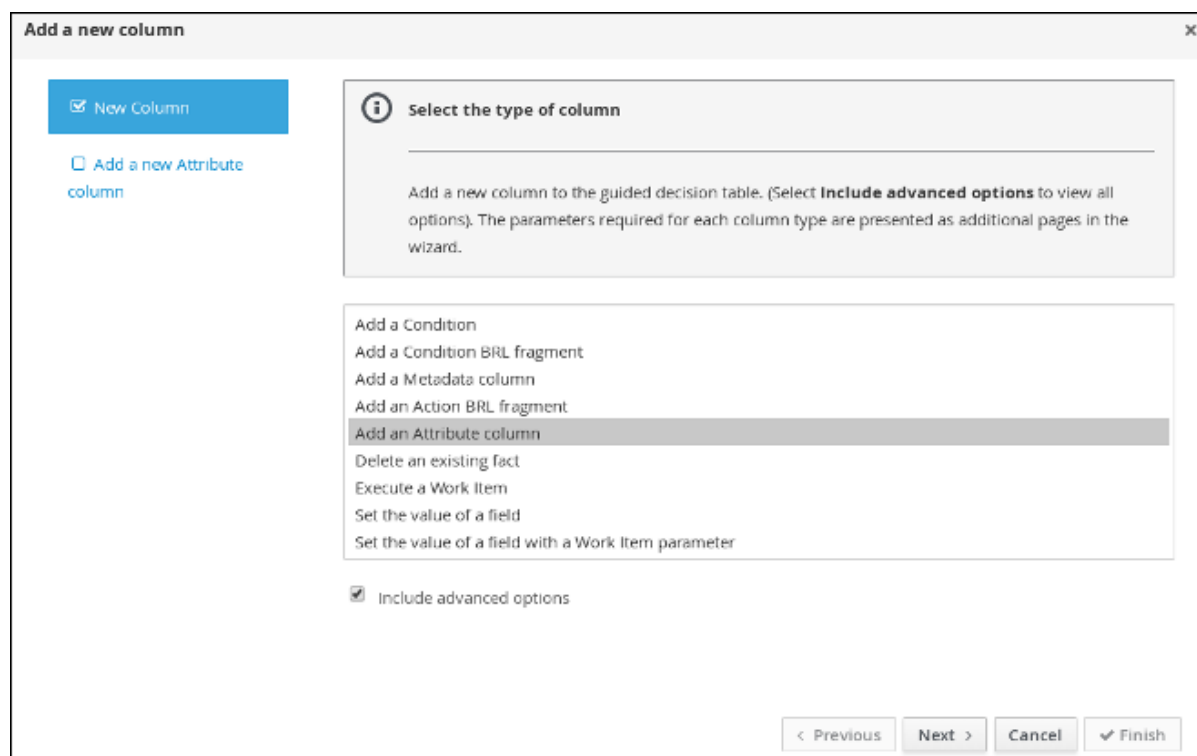
Procedure

1. Click **Columns** → **Insert Column** and select **Include advanced options**.

Figure 4.2. Column tab



2. Select **Add an Attribute column** and click **Next**.

Figure 4.3. Add a new column window

3. Select **Ruleflow-group** and click **Finish**.
4. Expand **Attribute columns** and enter **trafficViolation** in the **Default value** field.

Figure 4.4. Attribute columns window

5. Click **Insert Column**, select **Add a Condition** → **Pattern** → **+Create a new Fact Pattern**.
6. Select **Violation** from the **Fact type** pull-down menu, enter **v** in the **Binding** field, and click **OK**.

Figure 4.5. Create a new fact pattern window

Create a new fact pattern

Fact type: Violation

Binding: v|

Negate pattern match: ☐

Cancel + OK

7. Select **Calculation type** → **Literal value**.

Figure 4.6. Calculation type options

Add a new column

☒ New Column
☒ Pattern
☒ **Calculation type**
☐ Field
☐ Operator
☐ Value options
☐ Additional info

Select the Calculation type

Select one of the following calculation types:

- **Literal value:** The value in the cell will be compared with the field using the operator.
- **Formula:** The expression in the cell will be evaluated and then compared with the field.
- **Predicate:** No field is needed; the expression will be evaluated to **true** or **false**.

Calculation type: ☒ Literal value ☐ Formula ☐ Predicate

< Previous Next > Cancel Finish

8. Select **Field** and then select **type** from the **Field** pull-down menu.
9. Select **Operator** and then **equal to** from the **Operator** pull-down menu.
10. Select **Value options** and enter **Speed, Driving while intoxicated, DWI=Driving while under the influence of drugs** in the **Value list (optional)** field.
11. Select **Additional info**, enter **Violation Type** in the **Header (description)** field, and click **Finish**.

Figure 4.7. Violation Type header

The screenshot shows the 'Add a new column' dialog box. On the left, a list of options is checked: New Column, Pattern, Calculation type, Field, Operator, Value options, and Additional info. The 'Additional info' option is highlighted with a blue button. On the right, a section titled 'Insert additional information about the column' contains a text area for 'Header (description):' with the value 'Violation Type'. Below it, the 'Hide column:' checkbox is unchecked. At the bottom right, there are buttons for '< Previous', 'Next >', 'Cancel', and a blue 'Finish' button.

12. Click **Insert Column**, select **Add a Condition** → **Pattern**, and select **Violation[v]** from the **Pattern** pull-down menu.
13. Select **Calculation type** → **Predicate** → **Field** and enter **actualSpeed-speedLimit > \$param**.
14. Select **Value options**, then select **Additional info** and enter **Speed Limit (MPH) >** in the **Header (description)** field.
15. Click **Finish**.

Figure 4.8. Speed Limit (MPH) > header

The screenshot shows the 'Add a new column' dialog box. On the left, the same list of options is checked as in Figure 4.7. The 'Additional info' option is highlighted with a blue button. On the right, the 'Header (description):' text area now contains the value 'Speed Limit (MPH) >'. The 'Hide column:' checkbox remains unchecked. At the bottom right, the buttons are the same as in Figure 4.7.

16. Click **Insert Column**, select **Add a Condition** → **Pattern**, and select **Violation[v]** from the **Pattern** pull-down menu.
17. Select **Calculation type** → **Predicate**.
18. Select **Field** and enter **actualSpeed-speedLimit < \$param** in the **Field** field.

19. Select **Operator**, select **Value options**, then select **Additional info**.
20. Enter **Speed Limit (MPH) <** in the **Header (description)** field and click **Finish**.

Figure 4.9. Condition columns

The screenshot shows the 'SpeedViolationRule.gdst - Guided Decision Tables' interface. The 'Columns' tab is selected, showing a list of columns under the 'Condition columns' section. The columns are 'Violation [v]', 'Violation Type', 'Speed Limit (MPH) >', and 'Speed Limit (MPH) <'. Each column has 'Edit' and 'Delete' links next to it. The 'All the rules inherit:' dropdown is set to '- None -'.

SpeedViolationRule.gdst - Guided Decision Tables							
Editor	Columns Overview Source Data Objects						
<div>Insert Column</div> <div> > Attribute columns </div> <div> > Metadata columns </div> <div> ✓ Condition columns </div> <div> Violation [v] <table border="1"> <tbody> <tr> <td>Violation Type</td> <td>Edit Delete</td> </tr> <tr> <td>Speed Limit (MPH) ></td> <td>Edit Delete</td> </tr> <tr> <td>Speed Limit (MPH) <</td> <td>Edit Delete</td> </tr> </tbody> </table> </div> <div> > Action columns </div> <div> All the rules inherit: - None - </div>		Violation Type	Edit Delete	Speed Limit (MPH) >	Edit Delete	Speed Limit (MPH) <	Edit Delete
Violation Type	Edit Delete						
Speed Limit (MPH) >	Edit Delete						
Speed Limit (MPH) <	Edit Delete						

4.1.2. Inserting Fine Amount and Points columns

The **Fine Amount** and **Points** columns contain the fines and points based on the corresponding **Violation Type** field values.

Prerequisite

Inserted the **Violation Type** column.

Procedure

1. Click **Insert Column**, select **Set the value of a field** → **Pattern**, and select **Violation[v]** from the **Pattern** pull-down menu.
2. Select **Field** and then **fineAmount** from the **Field** pull-down menu.
3. Select **Value options**, then select **Additional info** and enter **Fine Amount** in the **Header (description)** field.

4. Select the **Update engine with changes** option and click **Finish**.

Figure 4.10. Fine Amount header

The screenshot shows a dialog box titled "Add a new column". On the left, there are five tabs: "New Column", "Pattern", "Field", "Value options", and "Additional info". The "Additional info" tab is selected and highlighted in blue. In the center, there is a section titled "Insert additional information about the column" with a subtext "Add header text for the column and other supplementary parameters." Below this, there are three fields: "Header (description):" with the value "Fine Amount", "Hide column:" with an unchecked checkbox, and "Update engine with changes:" with a checked checkbox. At the bottom right, there are four buttons: "< Previous", "Next >", "Cancel", and "✓ Finish". The "Finish" button is highlighted in blue.

5. Click **Insert Column**, select **Set the value of a field** → **Pattern**, and select **Violation[v]** from the **Pattern** pull-down menu.
6. Select **Field** and then **points** from the **Field** pull-down menu.
7. Select **Value options**, then select **Additional info** and enter **Points** in the **Header (description)** field.
8. Select the **Update engine with changes** option and click **Finish**.

Figure 4.11. Action columns

The screenshot shows a section titled "Action columns" with a dropdown arrow. Below the title, there is a list of columns. The first column is "[v]". The second column is "Fine Amount" with "Edit" and "Delete" links. The third column is "Points" with "Edit" and "Delete" links. At the bottom, there is a section titled "All the rules inherit:" with a dropdown menu showing "- None -".

9. Click **Columns**, expand **Attribute columns**, and select the **Hide column** option.

Figure 4.12. Column attributes

The screenshot shows a section titled "Attribute columns" with a dropdown arrow. Below the title, there is a table with the following columns: "ruleflow-group", "Default value:", and "Hide column:". The "ruleflow-group" column has the value "trafficViolation". The "Default value:" column has the value "trafficViolation". The "Hide column:" column has a checked checkbox and a "Delete" link.

4.1.3. Inserting guided decision table rows

After you have created your columns in the guided decision table, you can add rows and define rules within the decision table designer.

Prerequisite

You have created the **Violation Type**, **Fine Amount**, and **Points** columns.

Procedure

1. Click **Editor** → **Insert** → **Append row**. Repeat this step to add a total of five table rows.

Figure 4.13. Appending rows

SpeedViolationRule					
#	Description	Violation Type	Speed Limit (MPH)	Fine Amount	Points

2. Fill out the table as shown in the following example.

Figure 4.14. Populated data fields

SpeedViolationRule							
U	Description	ruleflow-group	v: Violation			v	
			Violation Type	Speed Limit (MPH) >	Speed Limit (MPH) <	Fine Amount	Points
1		trafficViolation	Speed	10	20	100	1
2		trafficViolation	Speed	20	30	200	2
3		trafficViolation	Speed	30	40	300	3
4		trafficViolation	Driving while intoxicated			500	4
5		trafficViolation	Driving while under the influence of drugs			500	4

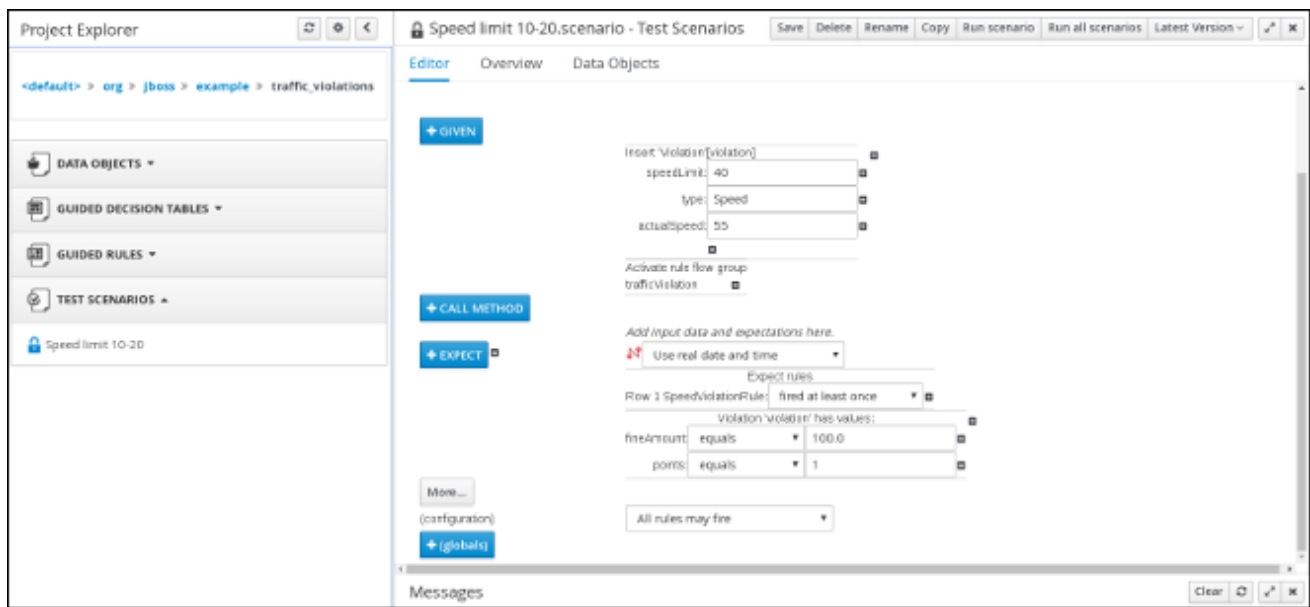
3. Click **Save**, then click **Save** to confirm your changes.

CHAPTER 5. TEST SCENARIOS

Test Scenarios in Red Hat Decision Manager enable you to validate the functionality of rules, models, and events before deploying them into production. A test scenario uses data for conditions that resemble an instance of your fact or project model. This data is matched against a given set of rules and if the expected results match the actual results, the test is successful. If the expected results do not match the actual results, then the test fails.

After you run all test scenarios, the status of the scenarios is reported in a **Reporting** panel.

Figure 5.1. Speed test scenario screen



Test scenarios can be executed one at a time or as a group. The group execution contains all the scenarios from one package. Test scenarios are independent, so that one scenario cannot affect or modify the other.

5.1. TESTING THE SPEED LIMIT SCENARIO




Test the speed limit scenario using the data that you specified when you created the speed violation guided decision table.

Prerequisites

- Created the **Driver department traffic violations** project
- Created the **Violation** and **Driver** data objects
- Created the speed violation guided decision table

Procedure

1. Log in to Decision Central. Click **Menu** → **Design** → **Projects**, then **Driver department traffic violations**.
2. Click **Projects** → **Create New Asset** → **Test Scenario**.
3. In the **Create new Test Scenario window** wizard, enter the following values:

- a. **Test Scenario: Speed limit 10-20.**
- b. **Package:** select `com.myteam.driverdepartmenttrafficviolations`.
4. Click **Ok**.
5. Click **+GIVEN** to open the **New input** window.
6. Select **Violation** from the **Insert a new fact** pull-down menu.
7. Enter **violation** in the **Fact name** field and click **Add**.
8. Click **Add a field** located under **Insert 'Violation'[violation]** to open the **Choose a field to add** window.
9. Select **speedLimit** from the **Choose a field to add** pull-down menu and click **OK**.
10. Click , then click **Literal value** next to **speedLimit**.
11. Click **Literal value** in the **Field value** window, then enter **40** in the **speedLimit** field.
12. Click **Insert 'Violation'[violation]** and select **type** from the **Choose a field to add** pull-down menu in the **Choose a field to add** window, and click **OK**.
13. Click , then click **Literal value** next to **Literal value**.
14. Enter **Speed** in the **type** field.
15. Click **Insert 'Violation'[violation]**, and select **actualSpeed** from the **Choose a field to add** pull-down menu, and click **OK**.
16. Click , then click **Literal value** next to **Literal value**.
17. Enter **55** in the **actualSpeed** field.
18. Click **+Expect** to open the **New expectation** window.
19. Expand the **Rule** pull-down menu, select **Row 1 SpeedViolationRule**, and click **OK**.
20. Click **+GIVEN** to open the **New input** window, enter **trafficViolation** in the **Activate rule flow group** field, and click **Add**.
21. Click **+Expect** to open the **New expectation** window and click **Add** next to **Fact value: violation**.
22. Click **Violation 'violation' has values:** to open the **Choose a field to add** window.
23. Select **fineAmount** from the **Choose a field to add** pull-down menu and click **OK**.
24. Enter **100.0** in the **fineAmount: equals** field.
25. Click **Violation 'violation' has values:** to open the **Choose a field to add** window.
26. Select **points** from the **Choose a field to add** pull-down menu and click **OK**.
27. Enter **1** in the **points: equals** field.

28. Click **Save**, then click **Save** to confirm your changes.

29. Click **Run scenario**.

Figure 5.2. Speed test results screen

Speed limit 10-20.scenario - Test Scenarios

Save Delete Rename Copy Run scenario Run all scenarios Latest Version

Editor Overview Data Objects

Audit log:

Knowledge base: defaultKieBase

Knowledge session: defaultKieSession

+ GIVEN

Insert 'Violation' (violation)

speedLimit: 40

type: Speed

actualSpeed: 55

Activate rule flow group: trafficViolation

+ CALL METHOD

+ EXPECT

Add input data and expectations here.

> Show fired rules

Use real date and time

Expect rules

Row 1 SpeedViolationRule: fired at least once

Violation 'violation' has values:

fineAmount	equals	100.0
points	equals	1

More... (configuration)

+ (globals)

All rules may fire

Reporting

Success

1 test(s) ran in 0 minutes 0 seconds.

Messages

Clear

5.2. TESTING THE DRIVER LICENSE SUSPENSION SCENARIO



Test the driver license suspension scenario using the data that you specified when you set the Driver License Suspension rules and actions.

Prerequisites

- Created the **Driver department traffic violations** project
- Created the **Violation** and **Driver** data objects
- Set the Driver License Suspension rules and actions

Procedure

- Log in to Decision Central. Click **Menu** → **Design** → **Projects**, then **Driver department traffic violations**.
- Click **Create New Asset** → **Test Scenario**.
- In the **Create new Test Scenario window** wizard, enter the following values:
 - Test Scenario:** Suspend due to total points.
 - Package:** select `com.myteam.driverdepartmenttrafficviolations`.
- Click **Ok**.

5. Click **+GIVEN** to open the **New input** window.
6. Select **Driver** from the **Insert a new fact** pull-down menu.
7. Enter **driver** in the **Fact name** field and click **Add**.
8. Click **Add a field** located under **'Driver'[driver]** to open the **Choose a field to add** window.
9. Select **totalPoints** from the **Choose a field to add** pull-down menu and click **OK**.
10. Click  next to **totalPoints**, click **Literal value**, then enter **10** in the **totalPoints** field.
11. Click **+GIVEN** to open the **New input** window.
12. Select **Violation** from the **Insert a new fact** pull-down menu.
13. Enter **violation** in the **Fact name** field and click **Add**.
14. Click **Add a field** located under **Insert 'Violation'[violation]** to open the **Choose a field to add** window.
15. Select **points** from the **Choose a field to add** pull-down menu and click **OK**.
16. Click , then click **Literal value** next to **Literal value**.
17. Enter **10** in the **points** field.
18. Click **+Expect** to open the **New expectation** window.
19. Expand the **Rule** pull-down menu, select **DriverLicenseSuspensionRule**, and click **OK**.
20. Click **+GIVEN** to open the **New input** window, enter **trafficViolation** in the **Activate rule flow group** field, and click **Add**.
21. Click **+Expect** to open the **New expectation** window and click **Add** next to **Fact value: driver**.
22. Click **Driver 'driver' has values:** to open the **Choose a field to add** window.
23. Select **state** from the **Choose a field to add** pull-down menu and click **OK**.
24. Enter **suspend** in the **state: equals** field.
25. Click **Save**, then click **Save** to confirm your changes.
26. Click **Run scenario**.

Result

The rule is fired and the driver's license is suspended because the total number of points is ≥ 20 .

Figure 5.3. Suspension test results screen

Suspend due to total points.scenario - Test Scenarios

Save Delete Rename Copy Run scenario Run all scenarios Latest Version

Editor Overview Data Objects

Audit log:

Knowledge base: defaultKieBase

Knowledge session: defaultKieSession

+ GIVEN

Insert 'Driver'(driver)

totalPoints: 10

Insert 'Violation'(violation)

points: 10

Activate rule flow group: trafficViolation

+ CALL METHOD

+ EXPECT

More... (configuration)

+ (global)

Add input data and expectations here.

> Show fired rules

Use real date and time

Expect rules

DriverLicenseSuspensionRule: fired at least once

Driver 'driver' has values:

state: equals suspend

All rules may fire

Reporting

Success

1 test(s) ran in 0 minutes 0 seconds.

Messages

Clear

5.3. TESTING THE MULTIPLE VIOLATIONS SCENARIO

Copy the **Suspend due to total points** asset and modify it to create the driver license suspension scenario for drivers with multiple violations using the data that you specified when you set the Driver License Suspension rules and actions.

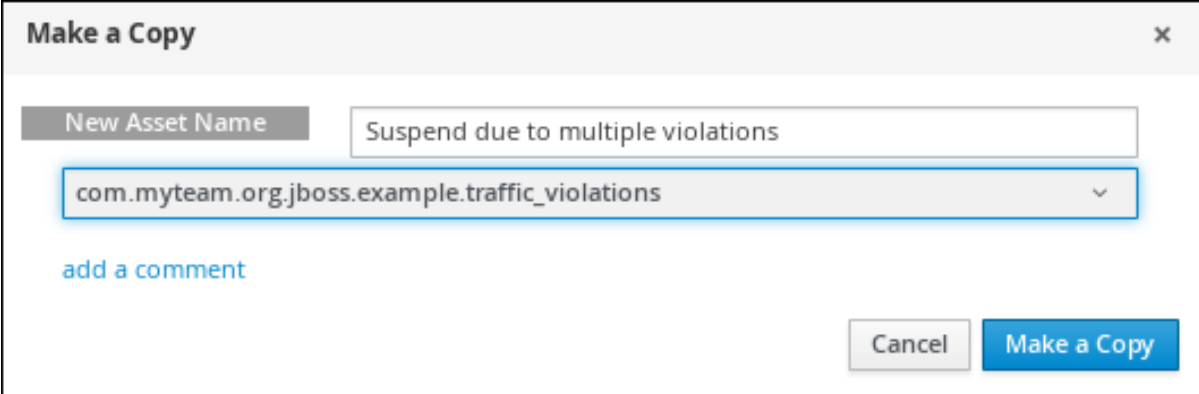
Prerequisites

- Created the **Driver department traffic violations** project
- Created the **Violation** and **Driver** data objects
- Set the driver license suspension rules and actions

Procedure

1. Log in to Decision Central. Click **Menu** → **Design** → **Projects**, then **Driver department traffic violations**.
2. Click **Suspend due to total points** → **Copy**, enter **Suspend due to multiple violations** in the **New Asset Name** field, and click **Make a Copy**.

Figure 5.4. Make a copy window



The 'Make a Copy' dialog box has a title bar with a close button (X). It contains a 'New Asset Name' label, a text input field with the value 'Suspend due to multiple violations', and a dropdown menu showing 'com.myteam.org.jboss.example.traffic_violations'. Below the dropdown is a blue link 'add a comment'. At the bottom right are 'Cancel' and 'Make a Copy' buttons.


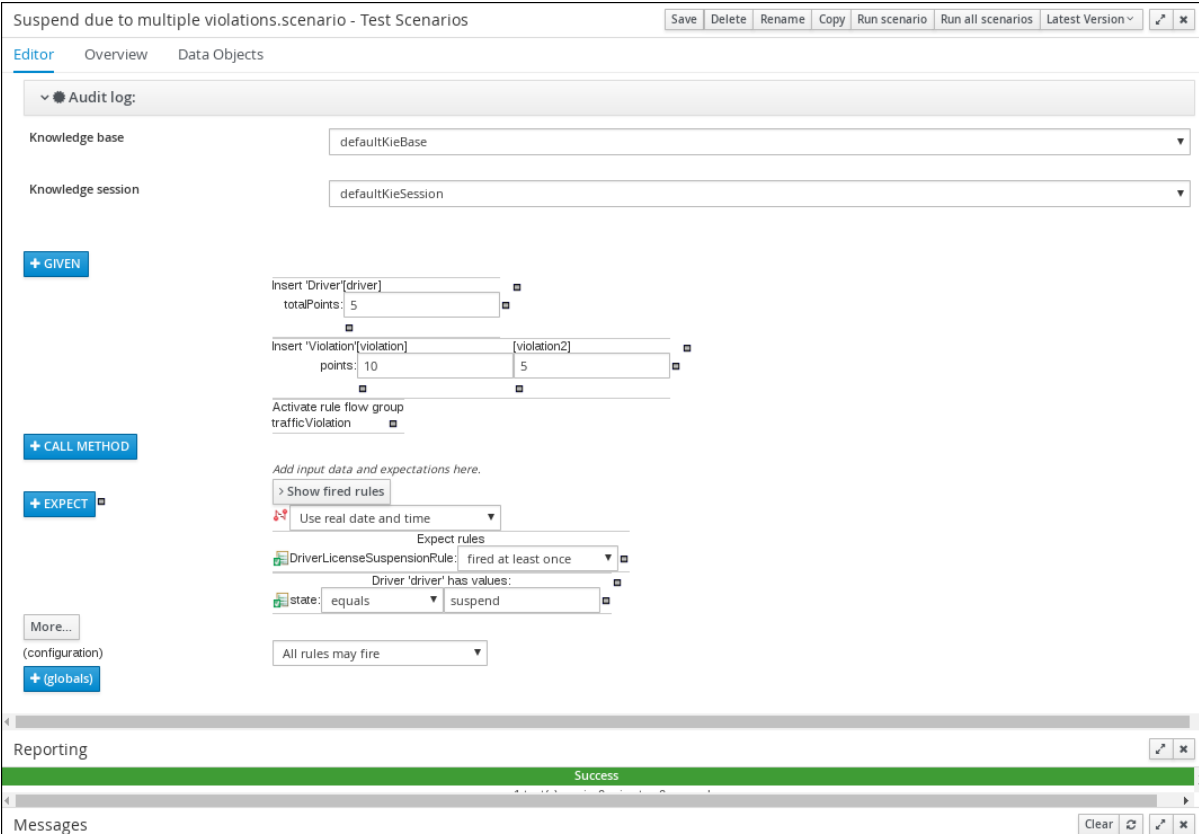
3. Click **Space** → **myteam** → **Driver department traffic violations**, and then select the **Suspend due to multiple violations** Asset.
4. Click **+GIVEN** to open the **New input** window.
5. Select **Violation** from the **Insert a new fact** pull-down menu.
6. Enter **violation2** in the **Fact name** field and click **Add**.
7. Click  next to **points**, click **Literal value**, then enter **5** in the **points** → **violation2** field.
8. In the **totalPoints** field, change the value from **10** to **5**.
9. Click **Save**, then click **Save** to confirm your changes.
10. Click **Run scenario**.

Figure 5.5. Suspension test results screen



The 'Suspension test results screen' shows a test scenario editor. The title bar includes 'Save', 'Delete', 'Rename', 'Copy', 'Run scenario', 'Run all scenarios', and 'Latest Version'. The 'Editor' tab is active, showing 'Overview' and 'Data Objects' sub-tabs. The 'Audit log' is expanded, showing 'Knowledge base' as 'defaultKieBase' and 'Knowledge session' as 'defaultKieSession'. On the left, there are buttons for '+ GIVEN', '+ CALL METHOD', '+ EXPECT', and 'More... (configuration)'. The main area shows the test scenario configuration: 'Insert Driver[driver]' with 'totalPoints: 5', 'Insert Violation[violation]' with 'points: 10' and 'violation2: 5', and 'Activate rule flow group trafficViolation'. Below this, there's a section for 'Add input data and expectations here.' with a 'Show fired rules' button, 'Use real date and time' checkbox, and 'Expect rules' section showing 'DriverLicenseSuspensionRule: fired at least once' and 'Driver 'driver' has values: state: equals suspend'. At the bottom, there's a 'Reporting' section with a green bar indicating 'Success' and a 'Messages' section with a 'Clear' button.

APPENDIX A. VERSIONING INFORMATION

Documentation last updated on: Monday, October 1, 2018.