

Designing Oracle® Java CAPS Business Process Manager Projects

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Designing Oracle Java CAPS Business Process Manager Projects

The topics listed here provide links to task, conceptual and reference information for designing a Java CAPS Business Process.

Oracle Java CAPS Business Process Manager (BPM) provides graphical editors to help you design and configure the models that depict your Business Processes using simple drag and drop procedures. The topics listed here provide the background information and instructions you need to understand and create Business Process models.

- [“Business Process Model Overview” on page 5](#)
- [“Editing Business Processes” on page 7](#)
- [“Building a Business Process Model” on page 13](#)
- [“Incorporating Sub-Processes Into Business Models” on page 19](#)
- [“Using Predicates with Repeating Nodes” on page 21](#)
- [“Customizing the Business Process Display” on page 23](#)
- [“Generating Business Process Reports” on page 26](#)

Business Process Model Overview

A *Business Process* is a collection of actions that take place in your company, revolving around a specific business practice. These processes can involve a variety of participants and might include internal and external computer systems or personnel. In Oracle Java CAPS Business Process Manager (BPM), you create a graphical representation of the Business Process called a Business Process model. The model defines each component in the process and the flow of data through those components.

The Business Process model indicates the flow of data from start to end, and can include activities performed by the software, decision points, and any business logic used to transform and transfer the data. A Business Process can also contain activities that must be performed by a user, meaning that the flow of data is paused until the specified user performs the required activity.

Business Process Components

Business Process components, or *modeling elements*, include activities, branching activities (decision points), intermediate activities, and links, as well as the business rules that define the logic of how data is transformed and moved. You can create sub-processes that can then be incorporated into a main Business Process.

The modeling elements you add from the Business Process Designer are standard BPEL elements, and are described in detail in [“Business Process Activities” on page 8](#).

By default, the Start and End activities appear on the blank Business Process Designer as soon as you create a Business Process. There is only one starting point for any Business Process model. There can be multiple end points.

Java CAPS Components

In addition to the standard Business Process components, you can also drag and drop other Java CAPS component activities from the NetBeans Projects window directly into the Business Process Designer. Java CAPS component activities include the following:

- Adapter activities, such as **read** and **write**
- Object Type Definition (OTD) activities, such as **marshal** and **unmarshal**
- Java Collaboration Definition activities
- Java Message Service (JMS) activities
- Visual Page Designer page and page flows
- Master Index Java methods
- Business Activity Monitor activities
- Data Integrator activities

Java CAPS Component Activities

When you define certain Java CAPS components, one or more activity is added to that component in the NetBeans Projects window. You cannot drag and drop a Java CAPS component, such as a Collaboration or OTD, directly into a Business Process. Instead, you drag and drop an activity defined by the component into the Business Process. For example, when you create a Java Collaboration Definition or OTD, activities are added to the Collaboration node in NetBeans Projects window. Activities appear as yellow rectangles, similar to the Business Process Designer activity icons.

JMS Activities

When you publish messages from a Business Process using a JMS send operation, the default message type specified in the `JMSMessageType` field is a text message. To publish bytes, stream, or map messages, you need to explicitly define the type in the message type field by defining a Business Rule for the send operation link (see [“Incorporating Business Rules” on page 15](#) for more information about using business rules).

Editing Business Processes

Oracle Java CAPS Business Process Manager (BPM) provides several editors that you can use to design and configure your Business Process. The main editor, the Business Process Designer, is where most of the process is defined. Additional editors allow you to configure and fine-tune the Business Process.

The Business Process Designer

The Business Process Designer is the area in NetBeans where you view, create, and edit Business Process models. The Business Process Designer provides the necessary tools for developing Business Process models such as graphic editing tools for adjusting, sizing, and aligning model components as well as a palette of modeling elements for developing the logical flow of information and tasks of the Business Process.

The Business Process Designer is very similar to any of the other Java CAPS interfaces. When you create a new Business Process, the Business Process Designer appears. The toolbar contains additional activity icons, which are described in [“Business Process Activities” on page 8](#).

Note – You might need to expand the Business Process Designer window to view all toolbar options.

TABLE 1 Business Process Designer Toolbar

Name	Description
Display Business Rule Designer	Reveals the Business Rule Designer in the lower portion of the Business Process Designer.
Show Business Process Code	Toggles between showing and hiding the corresponding Business Process Execution Language (BPEL) code, allowing you to view and edit the code.
Synchronize Graphical Model and Business Process Code	Updates the Business Process code on demand. The Business Process code is also synchronized when the model is saved.
Validate Business Process Model	Checks for any errors in the Business Process model.
Show/Hide Property Sheet	Shows or hides the Property Sheet for the selected modeling element.
Print	Prints the Business Process model. This option also allows you to control the scale of the printed model.
Do Auto Layout	Automatically lays out the Business Process model. The Auto Layout feature provides several options for customizing the model layout.

TABLE 1 Business Process Designer Toolbar (Continued)

Name	Description
Align or Distribute	Displays several options for aligning and distributing your Business Process model elements.
Zoom	Controls the view size of the Business Process model.

Business Process Activities

Activities are elements in a Business Process model that specify the logical flow of information. There are several different types of activities you can use in a Business Process, and each activity performs a different function within the process. Activities are categorized by the following types:

- “Activity Elements” on page 8
- “Branching Activities” on page 9
- “Intermediate Events” on page 10
- “Scope Element” on page 11
- “While Element” on page 11

Activity Elements

Activity elements include those activities that are common to most Business Processes, such as Start, End, Receive, Reply, and so on. Table 2 lists and describes the activity elements. These activities are all available from the Business Process Designer toolbar except the start and end nodes, which appear automatically on the Business Process Designer canvas when a Business Process is created.

TABLE 2 Activity Elements

Name	Description
Start	Indicates the start of the process. This element appears in the Business Process Designer by default when you create a new Business Process model; it does not have a corresponding icon on the Business Process Designer toolbar. A start node can only link to a receive activity, and cannot be deleted.
End	Indicates the completed state of a Business Process. This element appears in the Business Process Designer by default when you create a new Business Process model; it does not have a corresponding icon on the Business Process Designer toolbar. An end node cannot be deleted.
Receive Activity	Indicates the invocation of a Business Process, or indicates to wait for the arrival of an inbound message. The receive activity represents the actual method by which a Business Process is initiated.

TABLE 2 Activity Elements (Continued)

Name	Description
Activity	Invokes a web service or a Java CAPS component. Depending upon the configuration of the component, a response might be required.
Reply Activity	<p>Allows a Business Process to respond to the external system or user that originally invoked the Business Process. The receive activity at the beginning of the Business Process is paired with the reply activity at the end of the process. In cases where a message must be sent back to the caller of the Business Process, the reply activity uses information that correlates the message in the calling system.</p> <p>A reply activity is the last step in a Business Process in which the Business Process acts as a web service or sub-process. It correlates the outbound message back to the calling process; for example, it can reply to an external system as a web service.</p>
Business Rule Activity	Maps and manipulates data using the Business Rule Designer (see “The Business Rule Editor” on page 12). You can also add a Business Rule to some links for the same purpose.
Compensate	Invokes compensation on an inner scope that has already completed normally. This construct can be invoked only from within a fault handler or another compensation handler.
Empty Activity	Allows data to pass through without any changes.
Wait Activity	Delays processing for a set period of time.
User Activity	<p>Represents a step in a Business Process that requires human intervention. This activity must be configured by adding task assignments to the Worklist Manager.</p> <p>When a Business Process instance comes to a user activity, it creates a task and polls a table for the status of the task. In order for the user activity to complete, the user or the external application must update the status of the task.</p>
User Activity API	Represents and configures a step in a Business Process that requires human intervention from an external application. This activity must also be configured by adding task assignments to the Worklist Manager.

Branching Activities

Branching activities are elements in a Business Process model that specify the logical flow of information when there are two or more possible paths. BPM provides three different kinds of branching activities—decisions, event-based decisions, and flows.

TABLE 3 Branching Activities

Name	Description
Branching Activities	Exposes the commands described below. These commands allow you to define several possible paths to execute based on expression logic.

TABLE 3 Branching Activities (Continued)

Name	Description
Decision	Allows you to define complex expressions that are evaluated to determine the proper Business Process flow. This element also contains the expression and connection names. Expressions are built using the Business Rule Designer and Business Process attributes.
Event Based Decision	Allows multiple inbound messages to be juxtaposed against one or more message or timeout conditions, so the type of message received determines the appropriate Business Process path.
Flow	Allows you to specify one or more Business Process paths to be performed concurrently.

Intermediate Events

Intermediate events are those activities that can receive a Business Process. Some intermediate events handle exceptions or compensate for exceptions. The intermediate events are available from the **Intermediate Events** menu on the Business Process Designer toolbar except **Throw** and **Terminate Process**, which are both available directly from the toolbar.

TABLE 4 Intermediate Events

Name	Description
Throw	Allows you to create an error along a specific Business Process path.
Terminate Process	Allows you to terminate an entire Business Process before it reaches an end node.
Intermediate Events	Provides a drop-down menu that lists the following elements. These elements handle exceptions that might occur during a Business Process or that compensate for exceptions that do occur.
Timer Event	Specifies either a duration-based or deadline-based condition that determines which branch a Business Process takes. A duration-based condition is satisfied after a specified elapsed time. A deadline-based condition is satisfied at a specified time. A timer event is used in conjunction with an event-based decision.
Message Event	Similar to a receive activity, but occurring only in the middle of a process and only with event-based decisions. Each message event can be a different message.
Catch Named Exception	Handles named exceptions. Each automated (backend) system or web service can publish their possible error codes (for instance, fault 15 is "bad data"), and those codes can be mapped to exception handlers. Each exception handler is connected to the Scope that surrounds one or more steps in a Business Process. The components within that Scope throw the exceptions when errors occur. The exception handler automatically initiates the appropriate process to handle the problem.
Catch All Exceptions	Handles unnamed exceptions that occur in a Scope or across a Business Process.

TABLE 4 Intermediate Events (Continued)

Name	Description
Compensation Handler	Allows you to design the process and circumstances in which compensation takes place. This used when a part of a Business Process fails and requires a rollback of upstream activities (such as money has to be returned to the customer account). Automatically, upstream steps in the Business Process are notified that the failure has occurred and certain transactions need to be reversed, sometimes in a sequential order.

Scope Element

A *Scope* element defines the behavior for one or more activities. A scope can provide exception handlers, event handlers, and a compensation handler. The exception handlers for the scope can be used to catch the faults caused by the possible exception responses.

TABLE 5 Scope Element

Name	Function
Scope	Allows you to apply exception handling to a set of sequential or simultaneous steps in a Business Process.

While Element

A *While* element makes it possible to have repeating or looping logic inside a Business Process.

TABLE 6 While Element

Command	Function
While	Allows you to create a looping process within a Business Process (for instance, a negotiation process might take several weeks, but the manager wants to review the daily status). The loop continues until the process is complete, and then the Business Process continues.

The Business Rule Designer

The Business Rule Designer allows you to configure relationships between input and output attributes using direct links between the input or using methods from the Method Palette. The area where you map attributes in the Business Rule Designer is called the *Mapper*.

Some attributes are automatically created for each activity when you drag and drop a component on the Business Process Designer. You can also manually create attributes in the Business Process Properties.

The Business Rule Designer has a *Method Palette* from which you can select methods to manipulate data. Use these methods to configure data passed between input and output nodes.

The Business Rule Designer toolbar is shown in [Figure 1](#); the icons are described in [Table 7](#).

FIGURE 1 Business Rule Designer Toolbar



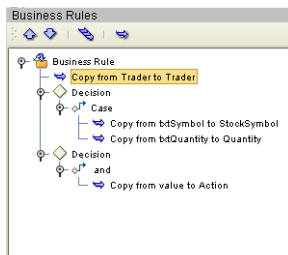
TABLE 7 Business Rule Designer Toolbar

Name	Description
<i>Auto Layout</i>	Automatically arranges the visible method boxes for clarity.
<i>Expand All Methods</i>	Expands all method boxes so parameters and return values are all visible.
<i>Collapse All Methods</i>	Collapses all method boxes so parameters and return values are not visible.
<i>Delete Selection</i>	Deletes the selected method boxes.

The Business Rule Editor

The Business Rule Editor is linked to the Business Rule Designer, and provides an advanced view of the business rules where you can further edit defined rules. You can delete a rule or set of rules, reset the destination for a rule, and change the order of rules. In the Business Rule Editor, you see the business rules in a tree-view in the order in which they are carried out, allowing you to see how data will be processed by the displayed rule set from start to finish, as shown in [Figure 2](#).

FIGURE 2 Business Rule Editor



Reset Destination

The Reset Destination feature can be applied to business rules, and resets a Business Process attribute to an empty state before performing a mapping. The purpose of the Reset Destination option is to create an output container. Since this can create performance overhead, the default setting is off.

The Reset Destination option is useful when creating a Business Process that includes a user activity inside a while loop. When a Business Process attribute with repeating nodes is continually reused, such as in a loop activity, it might be necessary to reset the attribute value to an empty state. When BPM populates these nodes during the looping process, it overwrites the data in the Business Process attribute. If the attribute contains more information than will be overwritten, there is leftover data in the node. In this case, extraneous information appears that does not reflect the current intended value of the attribute. The Reset Destination feature prevents this.

It is important to activate the Reset Destination option on the first rule to ensure that the first action in the mapping process resets the attribute to an empty state. The Reset Destination feature is set in the Business Rules Editor (for more information, see [“Editing Business Rules” on page 17](#)).

Building a Business Process Model

When developing a Business Process, you first create and name a new Business Process in a Java CAPS Project, and then add modeling elements and other Java CAPS component operations to the Business Process canvas to develop a logical process flow. Like other objects, Business Processes appear in the NetBeans Projects window. Perform the following steps to create a Business Process model.

- [“Adding a Business Process to a Project” on page 13](#)
- [“Creating the Business Process Components” on page 14](#)
- [“Incorporating Business Rules” on page 15](#)
- [“Validating a Business Process Model” on page 18](#)
- [“Saving a Business Process Model” on page 19](#)

Once you create the Business Process, you need to might configure the properties. Once you have finalized the Business Process, you need to create a Connectivity Map, Environment, and Deployment Profile. You can then deploy the Project to the server.

Adding a Business Process to a Project

The first step in creating a Business Process is to add a new Business Process to a Java CAPS Project.

▼ To Add a Business Process to a Project

- 1 From the NetBeans Projects window, right-click a CAPS Repository-based Project.
- 2 Point to New, and then select Business Process from the context menu.
- 3 Enter a new name for the Business Process.

- 4 Click Save.

Creating the Business Process Components

You create Business Process components by dragging, dropping, and linking the available modeling elements in the Business Process Designer.

Perform the following steps to create the components of a Business Process.

- [“Adding Activities” on page 14](#)
- [“Adding Components from the Project Tree” on page 14](#)
- [“Linking Modeling Elements” on page 15](#)

Adding Activities

There are several different kinds of activities you can include in a Business Process model. For more information about each of the different kinds of activities you can use and an illustration of their toolbar icons, see [“Business Process Activities” on page 8](#).

▼ To Add Activities

- 1 Do one of the following:

- On the Business Process Designer toolbar, click the activity icon and drag it to the canvas.
- For intermediate or branching activities, click Intermediate Events or Branching Activities on the Business Process Designer toolbar, click the activity you want to use, and then drag it to the canvas.

- 2 Click the activity name and type a new name for the activity. This is optional. You can accept the default name.

Note – The activity name must contain at least one character (A-Z, a-z, or 0-9), it must start with a letter or an underscore (_), and it can contain spaces.

- 3 Add Java CAPS components from the NetBeans Projects window as described in [“Adding Components from the Project Tree” on page 14](#) (optional).
- 4 Link the activities as described in [“Linking Modeling Elements” on page 15](#).

Adding Components from the Project Tree

Elements from the Project tree can either be dropped directly onto the canvas or onto an activity. Many elements provide custom settings so you can model every detail of your process.

▼ To Add Project Tree Components

- 1 In the NetBeans Projects window, expand the project tree until the element you want to add is visible.

Note – Elements that can be added to a Business Process appear in the NetBeans Projects window with a yellow rectangular icon, like the FileClient **receive** and **write** activities or Visual Page Designer **show** operations.

- 2 Click the element and drag it to the Business Process Designer canvas.
- 3 Link the modeling elements as described in [“Linking Modeling Elements” on page 15](#).

Linking Modeling Elements

Links indicate the flow of the Business Process by connecting activities together. BPM does not allow invalid links, ensuring the model is properly linked. Links can also accept business rules. A link with a business rule is marked with a blue icon.

▼ To Link a Modeling Element

- 1 Move your cursor over the connector portion of a modeling element.
- 2 Hold the cursor over the outside edge of the modeling element until it changes from the arrow pointer to a hand.
- 3 Drag a line from the first activity to the connector of the second activity, and then release the mouse.
- 4 To change the link style, right-click the Business Process in the NetBeans Projects window, and then click Toggle Link Style.
- 5 Click Save.
- 6 Add business rules to the links, as described in [“Incorporating Business Rules” on page 15](#) below (optional).

Incorporating Business Rules

You can configure logic in a business rule activity or add a business rule to a link. Business rules are defined using the Business Rule Designer, which appears when you click the Display Business Rule Designer icon or double-click a business rule activity or a business rule icon on a

link. It is active when you add or select a link with a business rule and when you add or select a business rule activity. The Business Rules Editor, available from the Business Rule Designer, allows you to further modify business rules.

Adding Business Rules Activities

A business rule activity allows you to map and manipulate data in an activity in the Business Rule Designer.

▼ To Add a Business Rule Activity

- 1 From the Business Process Designer toolbar, click Business Rule Activity and drag it to the Business Process Designer canvas.**
- 2 On the Business Process Designer toolbar, click Display Business Rule Designer.**
The Business Rule Designer appears in the lower part of the Business Process Designer.
- 3 Define the business rules for the activity as described in [“Defining Business Rules” on page 16](#).**

Adding a Business Rule to a Link

You can add a business rule to a link in order to map and manipulate data between activities using the Business Rule Designer.

▼ To Add a Business Rule to a Link

- 1 Right-click a link in the Business Process, and then click Add Business Rule.**
- 2 On the toolbar, click Display Business Rule Designer.**
The Business Rule Designer appears in the lower part of the Business Process Designer.
- 3 Define the business rules for the activity as described in [“Defining Business Rules” on page 16](#).**

Defining Business Rules

A business rule can be a direct mapping of data, or can include multiple methods to manipulate data during the mapping.

▼ To Define a Business Rule

- 1 In the Business Process Designer, double-click the business rule activity or link you want to edit.**
The Business Rule Designer appears.
- 2 Expand the trees in the right and left panels until the nodes you want to map are visible.**

3 Do any of the following:

- Drag a direct link between nodes in the right and left panels.
- Select a method from the Method Palette. You can populate the method parameters and return values by linking them to nodes in the left and right panels, by linking them with additional methods, or by creating literal values.

Note – See Using the Method Palette for more information about each method available in the Method Palette.

4 When you are done creating business rules, click Save in the NetBeans toolbar.**Editing Business Rules**

Once you create business rules, you can modify them in the Business Rule Designer. You can also use the Business Rules Editor, provided with the Business Rule Designer. The editor provides an advanced view of the business rules for your Business Process

▼ To Edit Business Rules

- 1 In the Business Process, double-click the business rule activity or business rule you want to modify.**
- 2 Do any of the following:**
 - **Add new mappings.**
 - **Incorporate new methods into the rules.**
 - **Delete an existing link by clicking the link and then pressing the Delete key (this cannot be undone).**
- 3 To modify rules in the Business Rules Editor, click the bottom gray triangle to the left of the Business Rule Designer title bar.**

The Business Rules Editor appears.
- 4 By default, the rules are in read-only mode. Click Show Single Mapping to place the editor in edit mode.**
- 5 Do any of the following in the Business Rules Editor.**
 - **To delete a rule or set of rules, right-click the node and then click Delete. Use caution when deleting rules. This can result in modeling elements being removed from the Business Process and cannot be undone.**

- To activate the reset destination feature for a rule, right-click the rule, and then click Reset Destination (for more information about this feature, see [“Reset Destination” on page 12](#)). When you right-click the node again, Reset Destination appears with a check mark.
 - To deactivate the reset destination feature for a rule, right-click the rule, and then click Reset Destination. When you right-click the node again, Reset Destination no longer appears with the check mark.
 - To expand the tree nodes, right-click a node, and then click Expand, or click Expand All to expand all nodes.
 - To collapse a tree node, right-click the node, and then click Collapse.
 - To change the order of the rules, select the rule you want to move and then click either the down or up arrows in the toolbar until the rule is where you want it. You can only move a node if there are multiple nodes at the same level.
- 6 To close the Business Rules Editor, click the top gray triangle to the left of the Business Rule Designer title bar.
 - 7 When you are done making changes, click Save in the NetBeans toolbar.

Validating a Business Process Model

After creating a Business Process model, you can check to see if there are any errors or warnings in the processing code. Errors are critical issues and will stop the Business Process. For example, activities that are not connected or an incorrect number of output links from an activity will cause an error. Warnings appear when there is a problem, but it is not critical enough to stop the Business Process. For example, unused containers in a Business Process cause warnings, you can still build, deploy, and run the process.

▼ To Check the Business Process for Errors or Warnings

- 1 On the Business Process Designer toolbar, click Validate Business Process Model. The Business Process Validation dialog box appears.
- 2 If an error or warning is encountered, the dialog box displays information about the error or warning.
- 3 If there are multiple errors or warnings, the Next button is enabled, allowing you to view information for each additional error or warning.
- 4 If there are no errors or warnings, a message appears stating so.

- 5 After you have reviewed any error messages, click Close.

Saving a Business Process Model

Even if a Business Process model is not complete or contains errors, you can save it as a “work in progress” and return to it later.

▼ To Save a Business Process Model

- Do one of the following:
 - Press Ctrl+s on the Keyboard
 - On the NetBeans main menu, click File, and then click Save
 - On the NetBeans toolbar, click Save.

Incorporating Sub-Processes Into Business Models

Sub-processes are Business Processes called within the main Business Process of a Project, and are invoked within the same application server. Use the Business Rule Designer to configure the input and output attributes for the sub-process.

Sub-processes are required when a Business Process contains a user activity; the sub-process defines the flow of data through the user activity. A sub-process exists within a main process, so incorporating a sub-process into a Business Process involves two steps:

- [“Creating a Sub-Process” on page 19](#)
- [“Adding the Sub-Process to the Main Business Process” on page 20](#)

Creating a Sub-Process

In the following procedure, you create a WSD object to use in the sub-process. The WSD object functions as the interface to the sub-process or, in the case of a user activity, to the Visual Page Designer pageflow.

▼ To Create a Sub-Process

- 1 Right-click in the NetBeans Projects window and click New Project.
The New Project Wizard appears.
- 2 Under Categories, expand CAPS and select ESB.

- 3 Under Projects, select CAPS Repository-based Project, and then click Next.
- 4 Enter a name for the Project and then click Finish.
The new Project appears in the Projects window.
- 5 Right-click the Project, point to New, and then click Web Service Definition.
- 6 Enter a name for the WSDL file and click OK. Edit the WSDL file as needed.
- 7 Right-click the Project, point to New, and then click Business Process.
- 8 Add a receive activity to the Business Process, and then link it to the Start element.
- 9 In the NetBeans Projects window, expand the WSDL file, expand PortTypes, and then expand PortType.
- 10 Click the PortType operation and drag it onto the empty receive activity.
If the operation includes an output message, a reply activity appears.
- 11 Add one or more empty activities to the canvas between the implement and reply activities.
- 12 Add links between the modeling elements in the sub-process, and then add business rules if needed.
- 13 Click Save.

Adding the Sub-Process to the Main Business Process

Once you create the sub-process, you can add it to the main Business Process in the Project.

▼ To Add the Sub-Process to the Main Business Process

- 1 Create a new Business Process and add a receive activity, an empty activity, a reply activity, and any other activities required for the Business Process.
- 2 In the Project tree, expand the sub-process you created above, and drag its operation onto the empty receive activity.
- 3 Add links between the modeling elements in the main process and add business rules as needed.
- 4 Click Save.

Note – If the sub-process is to be invoked as a synchronous request/reply web service, the Receive and Reply must be associated with the same partner, port type, and operation. These properties can all be configured in the property sheet for the user activity.

Using Predicates with Repeating Nodes

For web services or components that contain repeating nodes, the Business Rule Designer displays the repeating nodes in the input and output attributes for each activity, designated by the repeating icon. For direct node mapping, repeating nodes are used to dynamically populate 1-n values based on the runtime data.

XPath predicates are only used with repeating nodes and allow you to isolate particular elements in repeating nodes at runtime. Predicates allow you to define conditional mappings in a business rule when using Business Process attributes that contain repeating values.

The Predicate Editor allows you to define the conditions for the mapping. Once you define the conditions, you can map the associated repeating node values using the Business Rule Designer (at that point, the condition is in effect for that mapping). An indication of the condition appears to the right of the repeating node or element for which the condition was defined. At runtime, the condition is used to select the correct element and perform the mapping as designed.

Creating a New Predicate

You can create a predicate for a repeating node while you are defining business rules in the Business Rule Designer.

▼ To Create a New Predicate

- 1 From the Business Rule Designer, right-click a repeating node.
- 2 Click **New Predicate**.
The Predicate Editor appears.
- 3 In the Predicate Editor, define the conditions for the predicate.
- 4 Click **OK**.
- 5 On the NetBeans toolbar, click **Save**.

Editing a Predicate

Once you create a predicate, you can modify the conditions as needed.

▼ To Edit a Predicate

- 1 From the Business Rule Designer, right-click the existing predicate
- 2 Click **Edit Predicate**.
The Predicate Editor appears.
- 3 In the Predicate Editor, modify the conditions for the predicate.
- 4 Click **OK**.
- 5 On the NetBeans toolbar, click **Save**.

Deleting a Predicate

Once you create a predicate, you can delete the predicate if needed.

▼ To Delete a Predicate

- 1 From the Business Rule Designer, right-click the existing predicate.
- 2 Click **Delete Predicate**.
- 3 On the dialog box that appears, click **Yes**.
The Predicate condition is removed.
- 4 On the NetBeans toolbar, click **Save**.

Predicate Example

The most common use of predicates is to create a condition using either runtime Business Process attribute values or fixed values in an expression, and then create an appropriate mapping for when that condition is found to be true.

In certain instances, the names in one Business Process attribute must match **name** in the JMS Message User property. When the condition is found to be true, the appropriate mapping for **value** then takes place. In addition, only the appropriate value for **value** is mapped from the series of name and value pairs.

Customizing the Business Process Display

The Business Process Designer provides standard tools to automatically align the modeling elements you select. You can also change the style of the lines that link modeling components together and specify grid options.

Changing Link Styles

You can choose two different styles for the links in a Business Process, direct linking (diagonal) or indirect linking (orthogonal). The style you choose applies to all links in a model and the style is applied automatically.

The default setting is direct linking, which links modeling elements using the most direct line between two modeling elements and using diagonal lines when connecting elements that are not precisely aligned. Indirect linking uses only horizontal and vertical lines with right angles for elements that are not aligned.

▼ To Change Link Styles

- 1 **Open the Business Process in the Business Process Designer.**
- 2 **In the Projects window, right-click the Business Process name, and then click Toggle Link Style.**
The link style changes from diagonal to orthogonal or from orthogonal to diagonal.
- 3 **On the NetBeans toolbar, click Save.**

Changing Grid Properties

You can change grid properties in the Properties dialog box of the Business Process or you can right-click in the Business Process Designer, which displays the grid options context menu. This section describes how to change grid options from the Business Process Designer.

▼ To Change Grid Properties for a Business Process

- 1 **Right-click in the Business Process Designer canvas.**
A context menu appears.
- 2 **To display grid lines, select Show Grid.**
- 3 **To force modeling elements to align to the grid, select Snap to Grid.**

4 To edit additional grid properties, click Grid Properties.

The Edit Grid Properties dialog box appears.

5 Edit any grid properties, and then click OK.

Aligning and Distributing Modeling Elements

In order to clarify the display of Business Process modeling elements, you can automatically align and distribute the elements by selecting Align or Distribute from the toolbar.

▼ To Automatically Align or Distribute Modeling Elements

1 Do one of the following:

- Click and drag over a portion of the Business Process model to select the items you want to align or distribute.
- Press the Control key and click the items you want to align or distribute.

2 In the Business Process Designer toolbar, click Align or Distribute.**3 From the menu that appears, select the type of automatic alignment or distribution you want to use.**

The options are described in [“Aligning and Distributing Modeling Elements”](#) on page 24.

4 In the NetBeans toolbar, click Save to save the new element placement.

Menu Item	Description
Align Left	Aligns elements vertically along their left edges.
Align Center	Aligns elements vertically through their centers.
Align Right	Aligns elements vertically along their right edges.
Align Top	Aligns elements horizontally along their top edges.
Align Middle	Aligns elements horizontally through their centers.
Align Bottom	Aligns elements horizontally along their bottom edges.
Distribute Horizontally	Distributes elements horizontally.
Distribute Vertically	Distributes elements vertically.

Automatically Arranging Modeling Elements

In order to save time and effort, you can automatically arrange the modeling elements on the Business Process Designer canvas. The Auto Layout feature provides several options for arranging modeling elements for clear display.

▼ To Automatically Arrange Modeling Elements

- 1 In the Business Process Designer toolbar, click **Auto Layout**.

The Auto Layout dialog box appears.

- 2 Select the display options.

- 3 When you are done, click **OK**.

Auto Layout Options

The following tables describe the different options available for arranging modeling elements. Default values are indicated with bold text.

TABLE 8 Cycle Remove Options

Option	Description
Greedy	Optimizes cycle removal.
Depth First Search	Performs cycle removal by searching depth first.

TABLE 9 Layering Options

Option	Description
Longest Path Sink	Layers elements according to the longest path sink.
Longest Path Source	Layers elements according to the longest path source.
Optimal Link Length	Optimizes link length.

TABLE 10 Initialize Options

Option	Description
Naive	Initializes layout without searching depth.
Depth First Search Outward	Initializes layout by searching depth first outwardly.
Depth First Search Inward	Initializes layout by searching depth first inwardly.

TABLE 11 Crossing Reduction Options

Option	Description
Iterations	Specifies the number of iterations for crossing reduction. Click the up or down arrow to change the number.
Aggressive	Performs aggressive crossing reduction when selected.

TABLE 12 Layout Options

Option	Description
Layer Spacing	Specifies the number of pixels for layer spacing. Click the up or down arrow to change the number.
Column Spacing	Specifies the number pixels for column spacing. Click the up or down arrow to change the number.
Left to Right	Performs a horizontal layout from left to right.
Top to Bottom	Performs a vertical layout from top to bottom.

Generating Business Process Reports

From the NetBeans Projects window, you can generate a custom HTML report of your Business Process model. This report displays information about the configuration of the Business Process, including activities, attributes, trading partners, correlation sets, and so on. The report can be as detailed or as high-level as you want it to be. You can specify the objects, details, and properties to include on the report. Use this report to evaluate the Business Process prior to finalizing the configuration.

▼ To Generate a Business Process Report

- 1 In the NetBeans Projects window, right-click a Business Process and click Generate Report.**
The Custom Documentation dialog box appears.
- 2 In the Report filename field, enter the directory path and name for the report. To browse to a file path, click the Browse button.**
- 3 Click the Objects tab.**
- 4 In the Selected objects panel, select any objects that you want to exclude from the report and then click Remove.**
- 5 Click the Details tab.**

- 6 In the Selected details panel, select any details that you want to exclude from the report and then click Remove.**
- 7 Click the Properties tab.**
- 8 In the Selected categories panel, select and properties that you want to exclude from the report and click Remove.**
- 9 Click OK.**

Oracle Java CAPS Business Process Manager generates the report and saves the file to the location you specified. The report appears in your default web browser.

