Administration Guide

QAD Business Process Management

(QAD BPM)

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Contents

Chapter 1

Overview of BPM Portal

This guide is intended for administrators, who, through BPM portal, can interact with BPM applications.

Introduction to BPM Portal

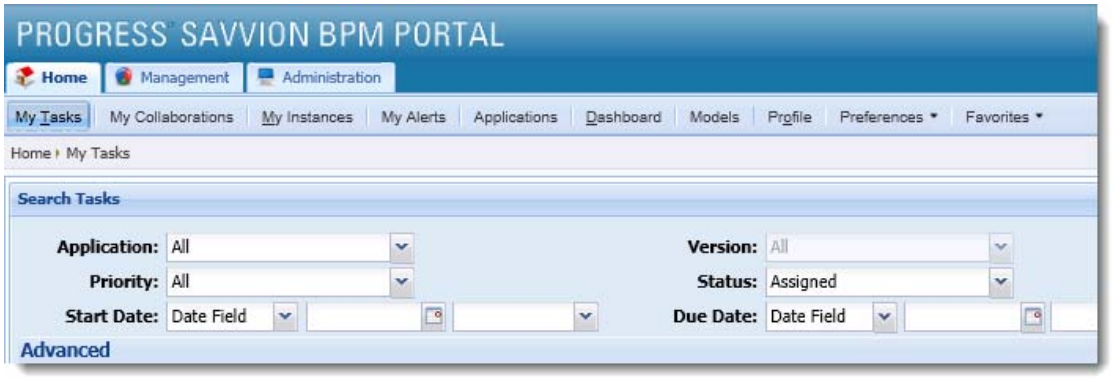
BPM Portal is a Web-based user interface through which you can interact with BPM applications.

When you log in to BPM Portal, it displays the Home tab for all users, irrespective of user type and user permissions. Task performers can display and modify tasks assigned to them, and manage their preferences.

The Management tab lets managers query, report, and control processes and resources.

The Administration tab is for administrators to modify configuration parameters controlling BPM operations, manage components, and install or uninstall applications.

Fig. 1.1
BPM Portal



Logging in to BPM Portal

To access BPM Portal:

1. Start the Login page.
2. Log in as an administrator.
   - For Username, enter: `ebms`
   - For Password, enter: `ebms`
   - For QAD Domain, choose one option from the drop-down list. If omitted, it defaults to the QAD (system) domain. The value only matters when accessing group (role) memberships in User Management of the portal, so you can typically ignore it.

Fig. 1.2
Logging in to BPM Portal

3 Click Login.

BPM Portal Keyboard Shortcuts

BPM Portal provides the following keyboard shortcuts to access various menus and menu options.

Table 1.1
BPM Portal Keyboard Shortcuts

Tab	Keys	Menu or Menu Option
Home	Ctrl+Shift+T	My Tasks
	Ctrl+Shift+M	My Instances
	Ctrl+Shift+S	Applications
	Ctrl+Shift+D	Dashboard
	Ctrl+Shift+O	Profile
	Ctrl+Shift+F	Preferences|Filters
Management	CTRL+SHIFT+I	Overview|Instances
	CTRL+SHIFT+A	Overview|Applications
	CTRL+SHIFT+R	Reports|My Resports
	CTRL+SHIFT+N	Instance Manager|Instances
	CTRL+SHIFT+K	Instance Manager|Tasks
	CTRL+SHIFT+W	Instance Manager|Worksteps
	CTRL+SHIFT+C	Balanced Scorecard|Console
Administration	CTRL+SHIFT+V	System|Log Viewer
	CTRL+SHIFT+U	User Management|Groups
	CTRL+SHIFT+G	User Management|Groups
	CTRL+SHIFT+Q	User Management|Queues
	CTRL+SHIFT+P	User Management|Permissions
	CTRL+SHIFT+E	User Management|Delegate Settings
	CTRL+SHIFT+L	Applications|BizLogic
	CTRL+SHIFT+Z	Applications|Bizsolo

Chapter 2

Using QAD BPM Portal

Working with My Instances on the Home Tab

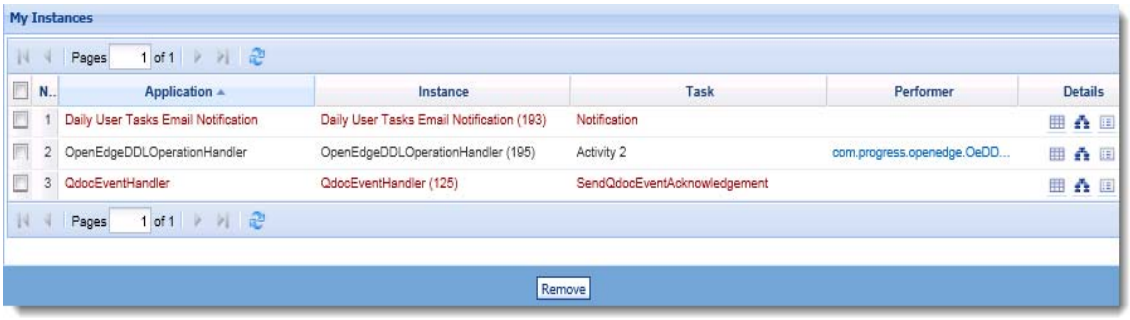
As an administrator, you can view, check status of, and remove system background processes by using My Instances on the Home tab.

Viewing System Background Processes

On the Home tab, click My Instances, and you can see that the My Instances page includes the following processes:

- Daily User Tasks Email Notification
- OpenEdgeDDLOperationHandler
- QdocEventHandler

Fig. 2.1
My Instances Page

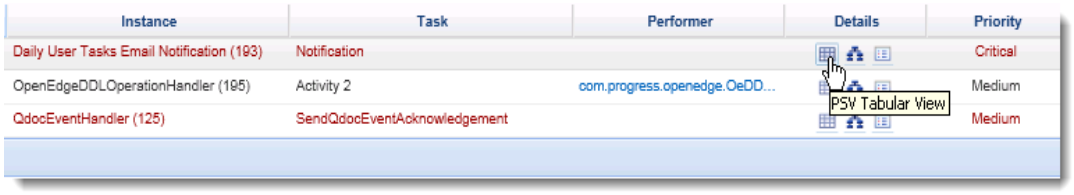


You can check the process status in two modes: either in a tabular view or in a flow view. Both these views represent the same data and allow you to perform the same operations.

Checking Status in Tabular View

To check status of process in tabular view, in the My Instances list page, click the PSV Tabular View icon.

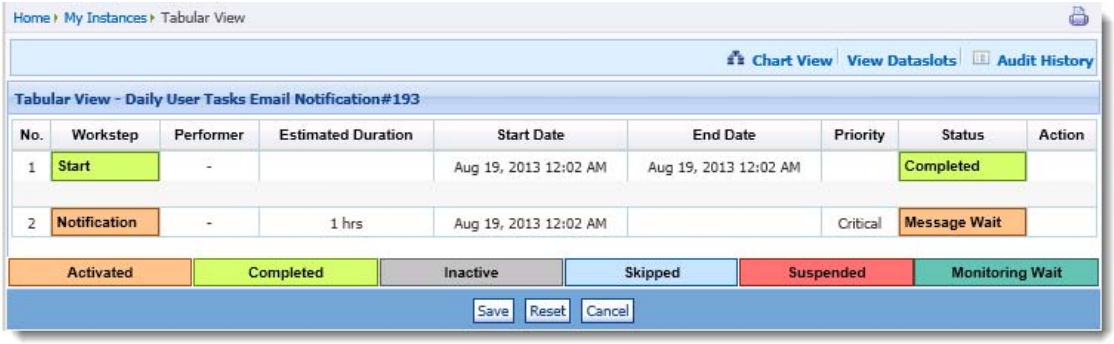
Fig. 2.2
Clicking Tabular View Icon



Alternatively, in the flow view of the Process Status Viewer page shown in Figure 2.5 on page 8, click the Tabular View link.

On the Process Status View page, you can see work steps in tabular format. The name of the process instance is displayed below the link trail.

Fig. 2.3
Process Status View-Tabular View



The Tabular View displays the Start work step as the first work step at the top of the list. Then the completed work steps in order of the completion time, the activated work steps, and suspended work steps sorted by activation time follow successively. The End work step is displayed as the last work step.

The work step status is marked in the table, using color coding. Each color indicates a different status of the work step, as explained in the following table.

Table 2.1
Work Step Color Coding

Work Step Color	Status
Orange	Activated work step
Green	Completed work step
Gray	Inactive work step
Blue	Skipped work step
Red	Suspended work step
Dark Green	Monitoring work step in wait state

Checking Status in Flow View

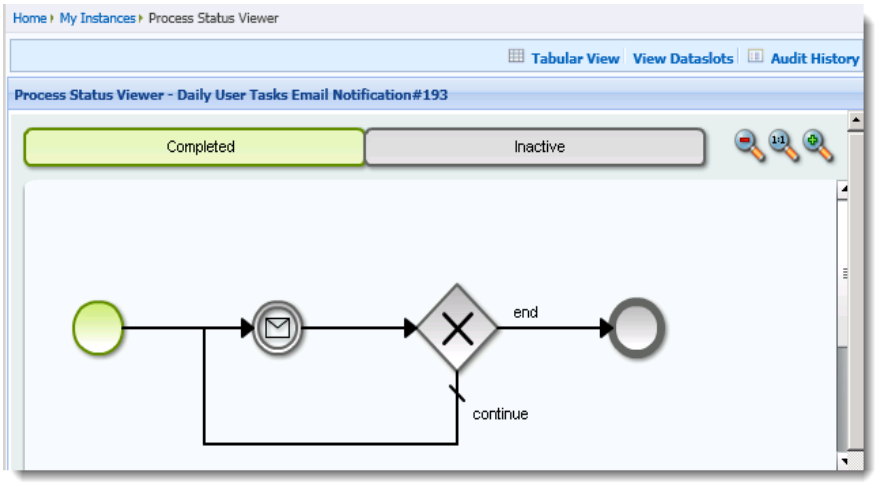
To check the status of a process in the flow view, in the My Instances List page, click the PSV Flow View icon.

Fig. 2.4
Clicking Flow View Icon

Alternatively, in the tabular view of the Process Status Viewer page shown in Figure 2.3 on page 7, click the Chart View link.

The following figure shows an example of the process flow view page. The process instance name is displayed below the link trail.

Fig. 2.5
Process Status View-Flow View



Fixing Issues by Running OpenEdgeDDLOperationHandler

OpenEdgeDDLOperationHandler is a BizLogic application in BPM that runs in the background all the time. It starts automatically on startup of the BPM server. It works around a limitation in the OpenEdge database that prevents tables from being dropped from the database using SQL connections while the database is online.

Sometimes, the instances you can see in the My Instances page or Processes browses in the .NET UI do not appear on the Instance Manager pages of BPM Portal. So when you select processes to delegate to another BPM user on the Delegate My Tasks screen in the .NET UI, you find that applications in the drop-down selection list are incomplete. A similar issue arises when you attempt to delegate processes to another BPM user from the Delegation Settings page of BPM Portal.

The root cause for these issues is that your business process with the application name OpenEdgeDDLOperationHandler is suspended or is not running. Whenever a process is uninstalled or reinstalled from BPM, BPM dynamically generates database table schemas to support the new process, and deletes the old tables associated with the process being uninstalled. Because the OpenEdge database does not allow the obsoleted tables to be dropped on the fly through SQL requests, the tables are not deleted immediately but only marked for deletion. The OpenEdgeDDLOperationHandler then deletes all the tables marked for deletion asynchronously, checking for pending deletions every few minutes. Because this process runs periodically in the background under normal conditions, there is a lag of several minutes.

If the OpenEdgeDDLOperationHandler process is stopped or suspended for some reason, then deletion of obsoleted database tables is not timely. This delay in turn causes two components within the BPM server, BizLogic and BizStore, to become out-of-sync. The result is that some of the SQL joins used to access BPM database records from some BPM portal pages cannot succeed. The failure leads to the omission of process instance or application records from various displays. The records not displayed depend on which database tables have been marked for deletion but not yet deleted, and the length of time the OpenEdgeDDLOperationHandler process has not been running.

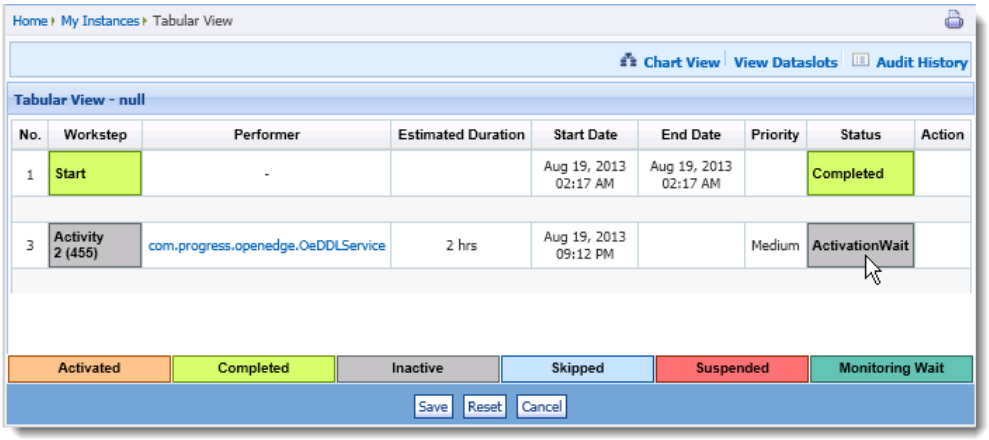
To resolve the issue, go through the following steps:

1 Log in to BPM Portal as the administrator user and go to Home|My Instances. Find the OpenEdgeDDLOperationHandler process.

2 If OpenEdgeDDLOperationHandler is not displayed, skip to step 5. Otherwise, select the PSV Tabular View icon in the Details column to display the Tabular view of the process.

3 If the Status column for work step Activity 2 is ActivationWait inside a gray box, skip to the end of this procedure, as the process is running normally.

Fig. 2.6
ActivationWait Status

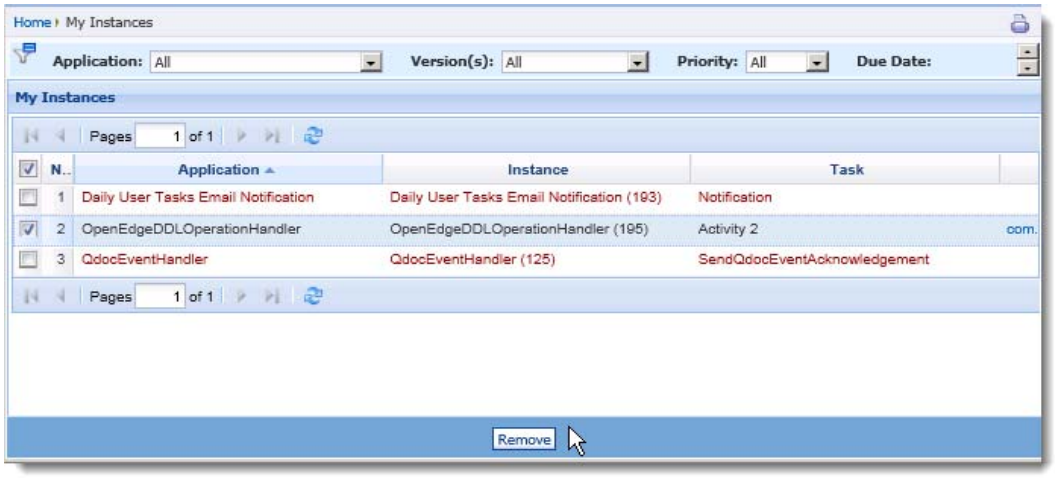


If the Status is Suspended inside a red box, go back to the My Instances page.

Fig. 2.7
ActivationWait Status

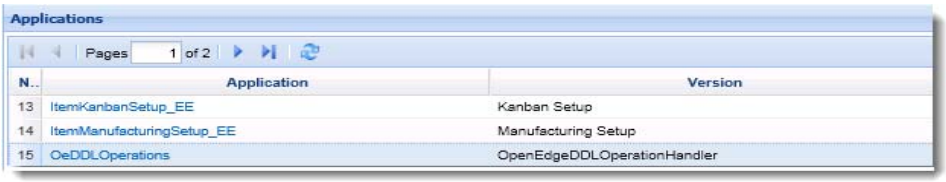
4 On the My Instances page, check the box in the first column of the OpenEdgeDDLOperationHandler row. Click Remove to delete the process.

Fig. 2.8
Remove the OpenEdgeDDLOperationHandler Process



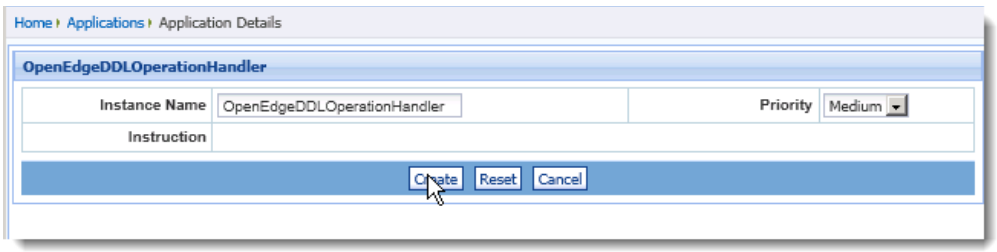
5 Go to Home|Applications, and locate the application OeDDLOperations in the list.

Fig. 2.9
Locating OeDDLOperations



6 Select the link in the Application column, and Click Create to launch an instance of OpenEdgeDDLOperationHandler.

Fig. 2.10
Create the OpenEdgeDDLOperationHandler Process Instance



7 Go back to Home|My Instances, and confirm that an instance of OpenEdgeDDLOperationHandler is now running.

8 Select the PSV Tabular View icon in the Details column to display the Tabular view of the process. Confirm that the Status column for work step Activity 2 is now ActivationWait inside a gray box, indicating that the process is running normally. See Figure 2.6 on page 9.

Removing Process Instances

Compared with normal users who can remove their own process instances from the My Instances page, administrators can remove system background processes from the My Instances page.

To remove instances:

1 From the My Instances page, select the instances you want to remove.

2 Click Remove.

Note Even for managers who want to remove process instances, it is much easier to use My instances on the Home tab than to use Instance Manager on the Management tab.

Searching for Process Instances on the Management Tab

You can also search for process instances from the Management tab by completing the following steps:

1 On the Management tab, click Overview|Instances to display the Instances overview page.

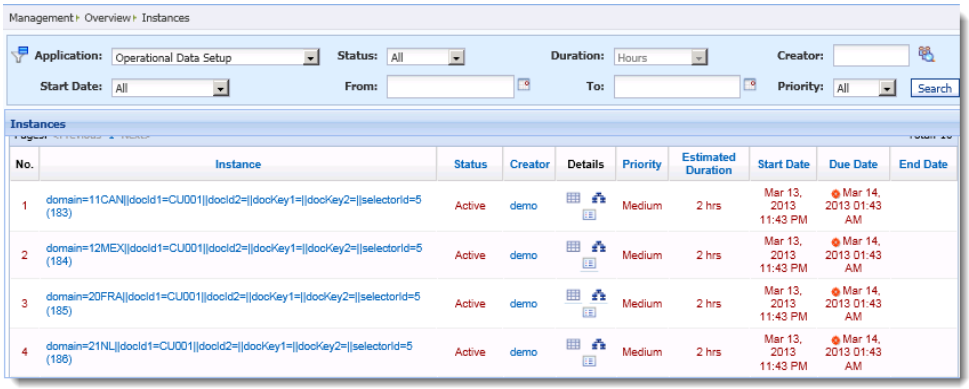
The Instances Overview page displays information about the application instances you are currently using. By default, it displays all instances and the following information about each instance:

Table 2.2
Instance Overview Information

Column	Description
Application	A unique identifier for the application instance.
Instance	The name of the process instance.
Status	The status of the filtered instance.
Creator	Click the PSV Tabular View icon in this column to display the tabular view of the process instance. Click the PSV Flow View icon in this column to display the process instance flowchart at the point of the active task. Click the Audit History icon in this column to display the audit history of the process instance.
Priority	Priority level that the user determines when initiating the process instance. It can be Low, Medium, High, or Critical.
Estimated Duration	Estimated duration to complete the process instance, as determined by the application developer.
Start Date	The date the process instance was initiated.
Due Date	The date by when the process instance ought to be completed that the application developer determines.
End Date	The date on which the process instance was completed.

2 Use the search features in the filter bar to specify the process instances you want to search.

Fig. 2.11
Searching for Process Instances



- Select a BPM application from the Application drop-down list in the upper left of the filter bar. Then you can see data on all instances for the selected application in the workspace.
- Select an option from the Status drop-down list. Options include: All, Active, Completed, Removed, and Suspended. Active indicates that the instance is active and can be run. Suspended indicates that the instance is temporarily stopped until the Resume option is selected.
- Select an option from the Duration drop-down list. Options include: Hours, Weeks, Days, and Business Days. Use this search criterion only for instances with a Completed status.
- Specify a Creator if applicable. Click the Select Creator icon to open the User List, from which you can select a valid Application user.
- Select an option from the Priority drop-down list. Options include: All, Critical, High, Medium, and Low.
- Select an option from the Start Date drop-down list. Options include: Today or Yesterday, This Week or Last Week, This Month or Last Month, and so on. To define a more specific time range, click the Select Date icon and choose a start date and end date from the pop-up calendars.

3 After you have finished entering filter criteria, click Search to locate the specified instances.

Note You can retrieve and check status of process instances from the Instances overview page, but you cannot remove instances from the page.

Working with My Reports on the Management Tab

BPM Portal allows you to define simple reports on-the-fly to retrieve process instance or task information with simple filtering. But those reports have the following limitations:

- Can only include process instance or task information.
- Single-table report only, with no SQL joins.
- No totals, counts, control breaks, or calculated fields.
- Simple fixed layout.

The BPM database contains detailed information on the state of all business process instances, their templates, and event-level details. When you use JasperReports, an open-source Java reporting framework, you can create detailed reports containing any data from the BPM database, and in custom layouts.

Note This manual covers only a little of the JasperReports functionality. For more information, refer to Jasper documentation.

Installing and Configuring JasperAssistant Plug-in in BPM Studio

You can use Jasper Assistant plug-in with BPM Studio to create your Jasper reports.

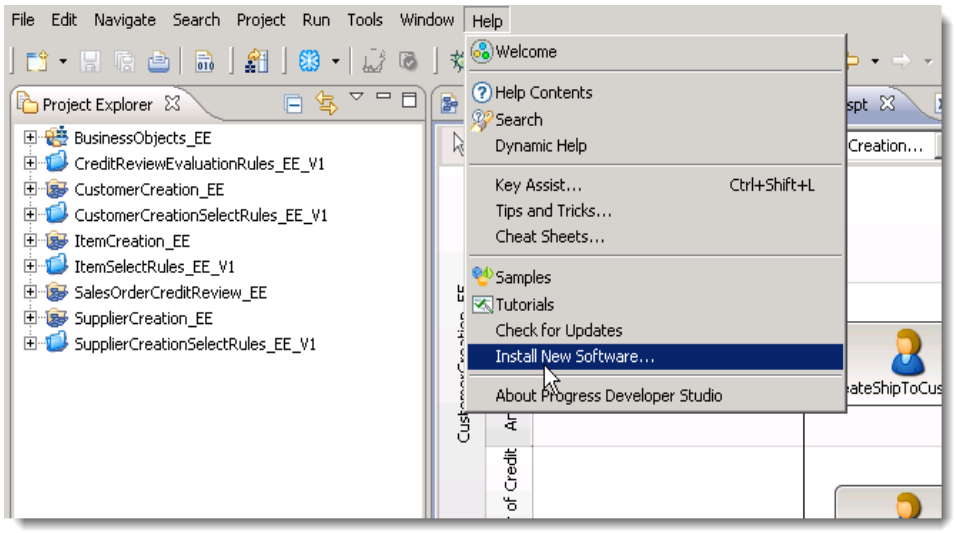
Note Although the JasperAssistant Eclipse plug-in is not free, you can use the stand-alone iReport tool from Jasper, which is free, to design the same reports. If you use iReport, the details of implementing reports are different from what is described here.

Complete the following steps to install JasperAssistant:

1 Launch BPM Studio.

2 Click Help and select Install New Software.

Fig. 2.12
Installing New Software



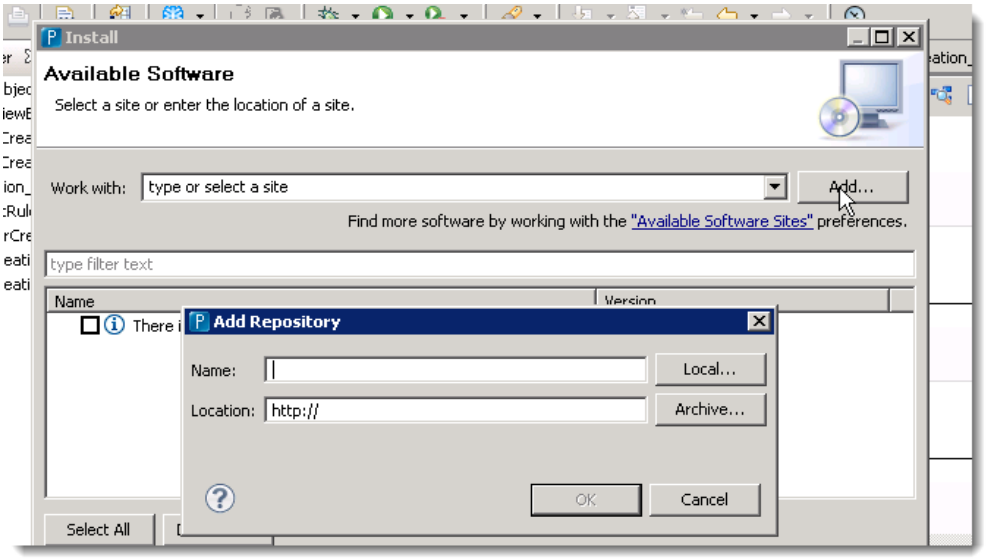
3 Click the Add button to display the Add Repository window.

In the Name box, enter the Jasper Assistant update site.

In the Location box, enter `http://www.jasperassistant.com/updates/3.x/`.

Click OK.

Fig. 2.13
Entering Data in Add Repository



4 Check the Jasper Assistant line item.

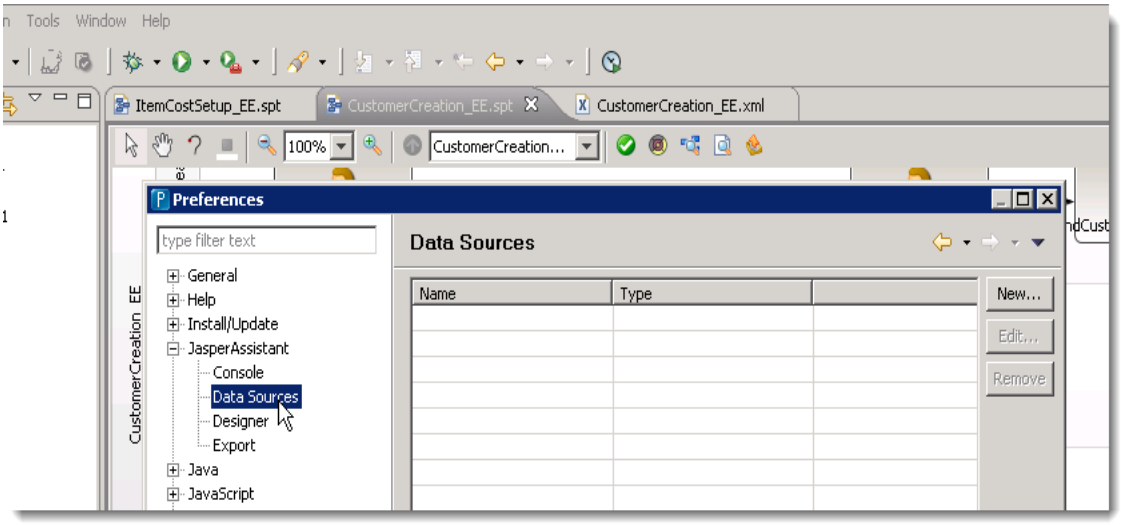
5 Click Next, accept the license, and Click Finish.

6 Restart BPM Studio.

After installing the Jasper Assistant plug-in, configure the preferences and data source:

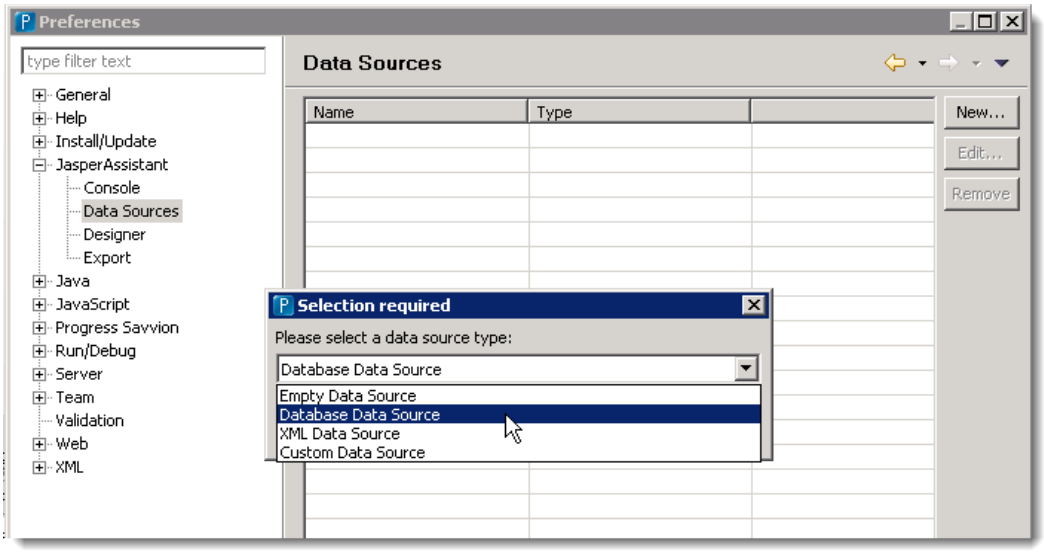
1 From the Window menu, select Preferences|JasperAssistant|Data Sources.

Fig. 2.14
Selecting Data Sources



2 Click New and select Database Data Source in the Data Source Type drop-down list.

Fig. 2.15
Selecting Database Data Source



3 Click OK to display the New Database Data Source window. Enter data in the text boxes. Make sure that you fill the corresponding text boxes with the following data.

- Driver: com.ddtek.jdbc.openedge.OpenEdgeDriver
- URL: jdbc:datadirect:openedge://<hostname>:<DB SQL port>; DatabaseName=<BPM DB name>
- Username-Password: BPM database DBA credentials set during BPM installation, often `sbm`
- JAR file 1: `<DLC home>/java/openedge.jar`

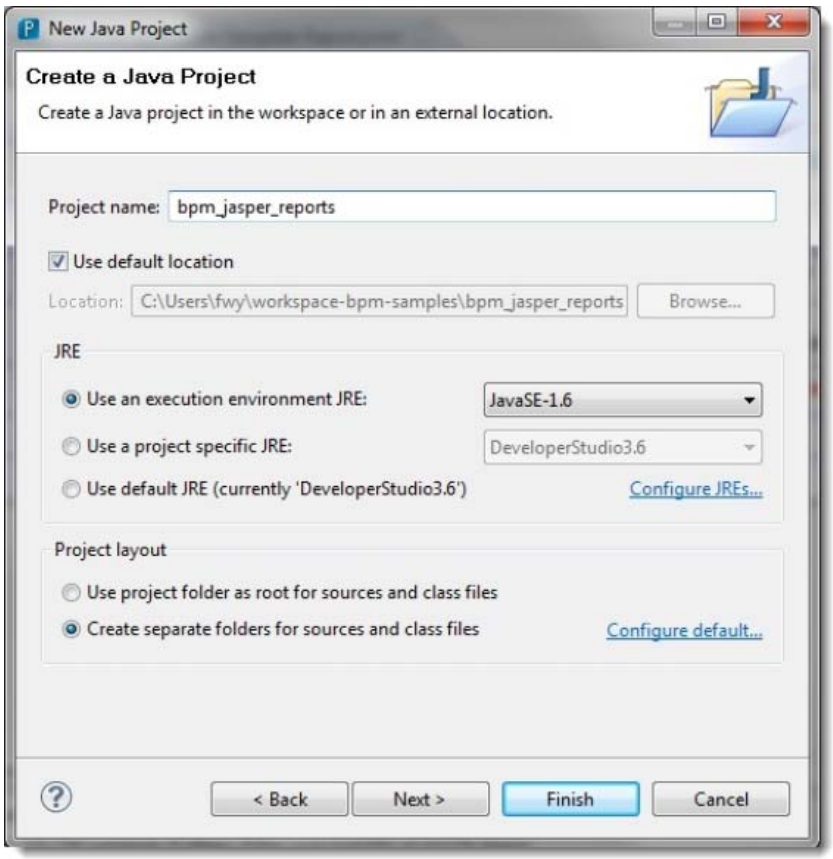
4 Click Test and confirm that the connection is successful.

5 From the Window menu, select Open Perspective|Other|JasperAssistant to switch Studio to JasperAssistant perspective.

Note This step is optional. It is for your convenience.

6 From the File menu, select New|Project to create a Java project to develop reports. Select Java Project wizard from the New Project dialog window and click Next. Then enter information in the New Java Project dialog window. The following figure shows an example of it.

Fig. 2.16
Selecting Database Data Source



Creating and Opening Reports

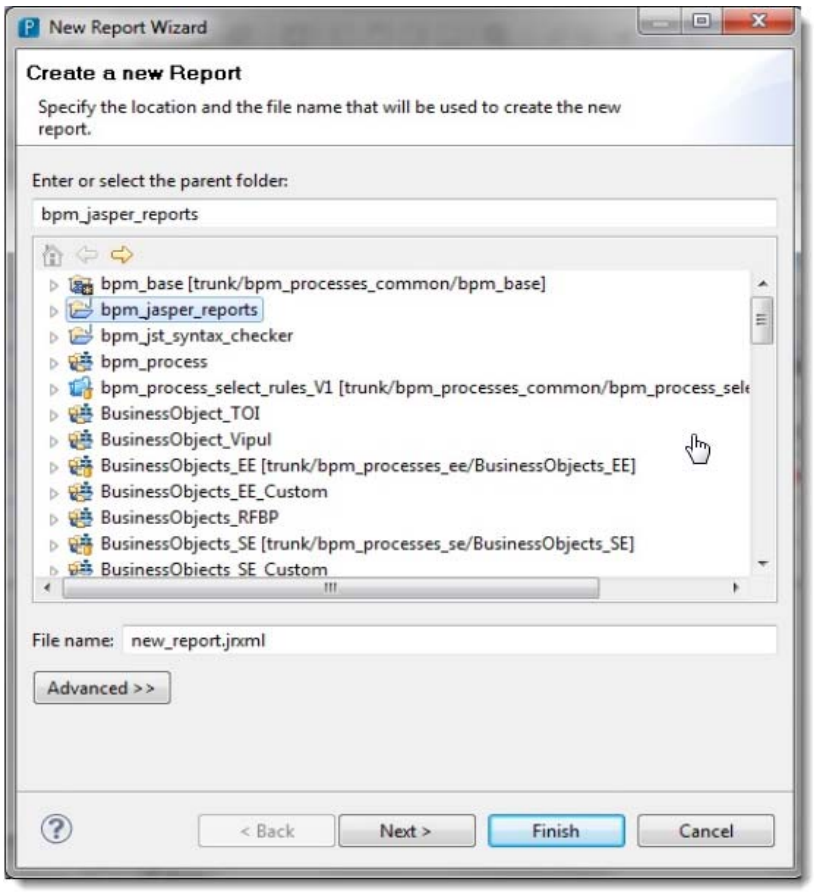
To create reports using New Report Wizard:

1 From the File menu, select New|Report.

The New Report Wizard dialog window appears.

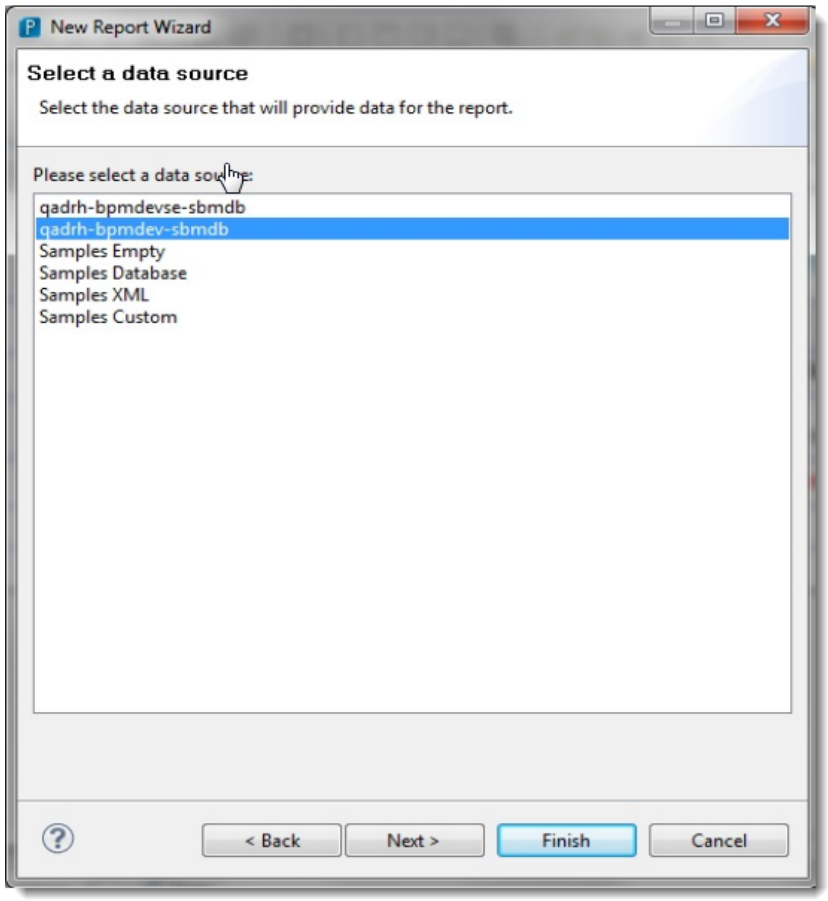
2 Select the parent project folder and then enter the report name in the File Name text box and click Next.

Fig. 2.17
Creating a New Report



3 Select a BPM database as the data source and click Next.

Fig. 2.18
Selecting a Data Source

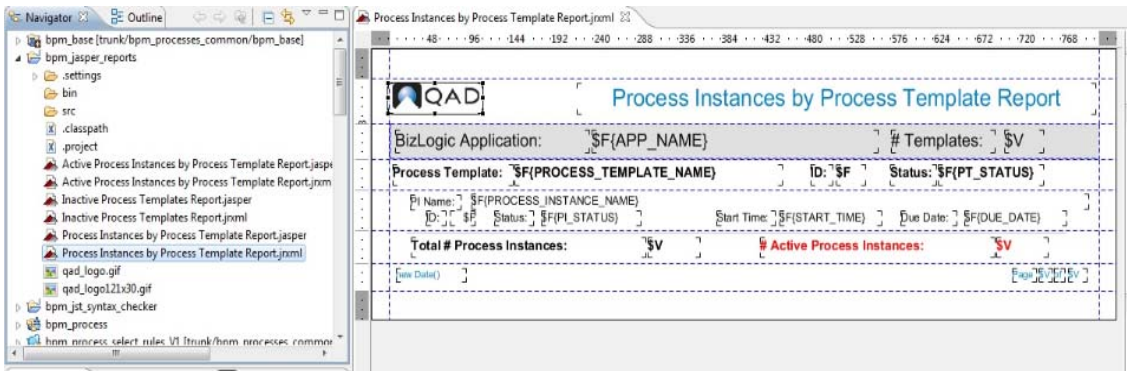


4 Skip the SQL entry for now and click Finish.

Note JasperReports allows creating reports from templates, but this guide does not cover the feature.

5 Double-click the report source file (with `.jrxml` extension) to open the existing report.

Fig. 2.19
Opening Existing Report



Designing Jasper Reports

Report Layout

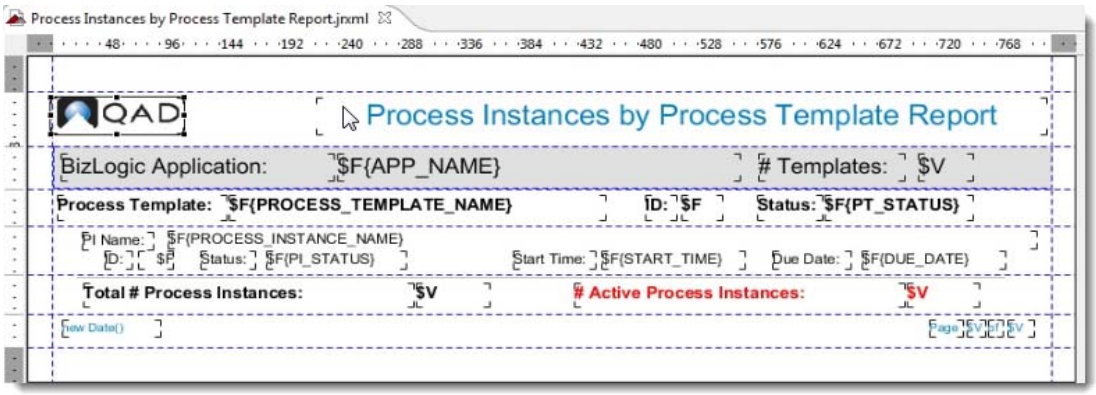
Reports are structured visually as horizontal bands containing data in a fixed vertical stack. Designers can decide the content and visual layout of each band with a specific level of details. All bands are optional and designers can have their discretionary choices according to the target report.

Here is a list of the bands typically used for most reports, in the order they are stacked vertically in the report layout.

- Title: Appears once at the beginning of the report.
- Page Header: Appears at the beginning of each page.
- Column Header: Appears at the beginning of each column, for multi-column reports.
- Group Header: Printed above the detail section each time the associated group's grouping expression changes in value. If multiple groups are defined, their headers appear in the order in which the groups are defined.
- Detail: Printed for each line of data retrieved from the report's data source.
- Group Footer: Printed below the detail section just before the associated group's grouping expression changes in value. If multiple groups are defined, their footers appear in the order in which the groups are defined. Always printed after the last detail line.
- Column Footer: Appears at the bottom of each column, for multi-column reports.
- Page Footer: Appears at the bottom of each page.
- Last Page Footer: Replaces the regular page footer on the last page of the report.
- Summary: Appears once at the end of the report.

The following figure shows an example of the report layout.

Fig. 2.20
Report Layout



Expression Syntax

Expressions are critical in JasperReports, as they are used to calculate variables as well as define how to categorize and partition the reported data by group. Expression syntax is based on standard Java, enhanced with Jasper-specific characters and functions.

Jasper-specific functions are as follows.

- $F{<field name>}: Reference a field by name.
- $V{<variable name>}: Reference a variable by name.
- $P{<parameter name>}: Reference a parameter by name; not supported with BPM.
- $P!{<parameter name>}: Reference a parameter by name within an SQL query string only; not supported with BPM.
- $R{<resource key name>}: Reference a string literal by key name within the resource bundle associated with the report; useful for language translation.

Example

- new Integer(Math.max($V{Price1}, $V{Price2}))
- (new SimpleDateFormat(“dd/MM/yyyy”)).format($F{OrderDate})
- $F{SpecialOffer}.booleanValue()? $F{SpecialPrice}: $F{Price}

Fields, Variables and Parameters

The data elements making up the contents of a report are fields, variables, or parameters, in addition to literal text and graphical elements.

- Fields: Data elements retrieved directly from the data source, typically from database tables.
- Variables: Values calculated using expressions and built-in calculation functions, typically based on the fields retrieved from the data source or parameter values.

  Variables have the following properties that specify how they are calculated.

  - Calculation: Can be Count, Distinct Count, Sum, Average, Lowest, Highest, Standard Deviation, Variance, First, System, or Nothing.
  - Expression: Specifies a calculation formula referencing fields, parameters, and other variables as appropriate.
  - Reset Group and Type: If Reset Type is Group, then Reset Group references the group whose breaks specify when the variable’s value is reset.
  - Value Type: Java class defining the data type (Example: java.lang.Integer, java.lang.String, java.lang.Long)
- Parameters: Values that the requester of the report specifies at run time, just before the report is generated. However, the BPM-JasperReports integration does not support parameters, so they are not covered further in this document.

Groups

A group specifies how designers ought to group or partition the detailed report contents based on common values. It is the same as what is called Control Break in many other report writers. The most typical use case is the grouping of data based on the values of some non-key fields in the database. A report can and typically does include multiple groups, used to provide several levels of detail with counts or other calculated summaries for each group.

Example If you want to group process instances on the report by their process creator within the application name, define both Application Name and Process Creator as groups.

To define a group, use a grouping expression based on fields retrieved from the data source using the same syntax described in “Expression Syntax” on page 19. Typically, it is a field or variable name that is used to partition the report details into useful sections.

Example To group the BPM process instances by the Application Name field called APP_NAME, the grouping expression is $F{APP_NAME}.

Defining BPM Database Query and Fields

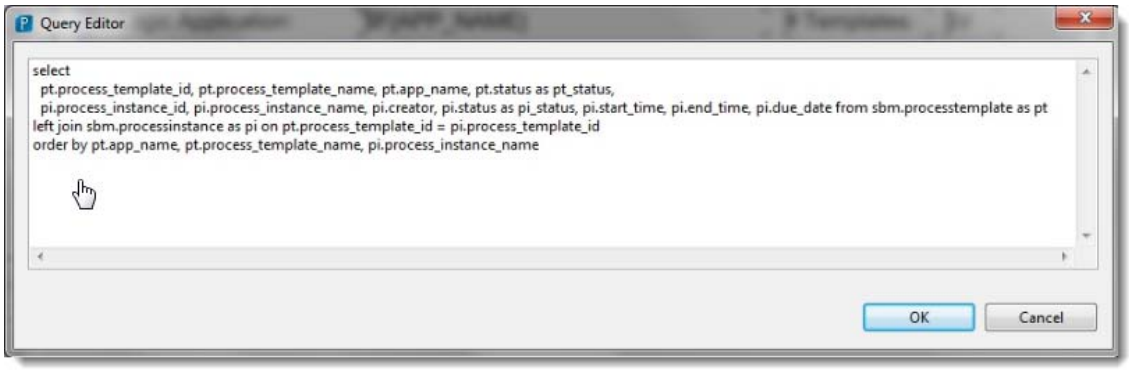
The first step in designing a report is typically defining an SQL query that retrieves the data displayed on the report or used in its calculations.

- Analyze the BPM database schema using an SQL-based query tool (Example: DbVisualizer or SQuirrel SQL) to find the location of the required data and relevant keys.
- Write the SELECT statement, including JOIN, WHERE, and ORDER BY clauses.

To specify the query:

1. Open the report and go to the Outline view in Studio.
2. Select the top-level report node.
3. In the Properties view, select the drill-down button for the Query property.
4. Enter the SQL statement into the dialog box and Click OK.

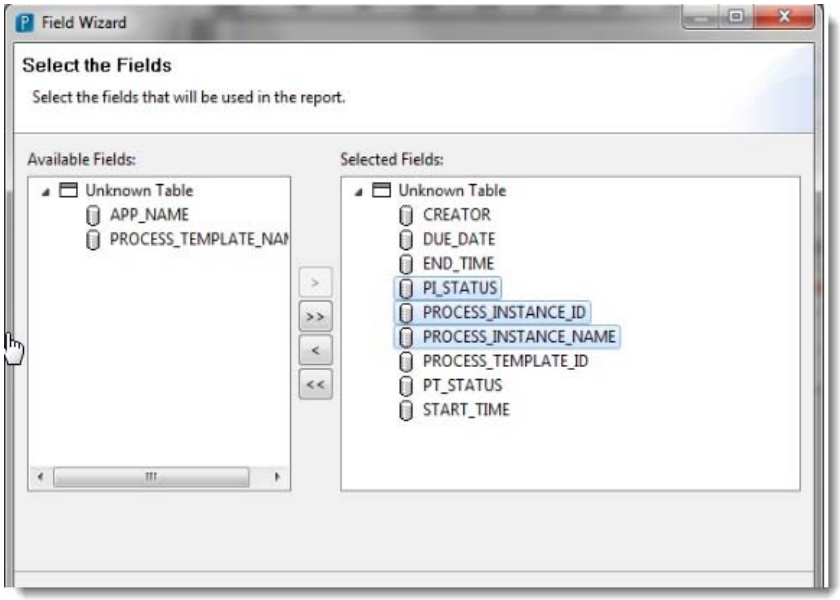
Fig. 2.21
Specifying the Query



To specify the database fields retrieved from the query in the report:

1. Open the report and go to the Outline view in Studio.
2. Select the top-level report node.
3. Right-click to the Field Wizard, and select the data source.
4. Alter the SQL query, if necessary.
5. Select the desired fields using the dialog box and Click Finish.

Fig. 2.22
Selecting the Fields



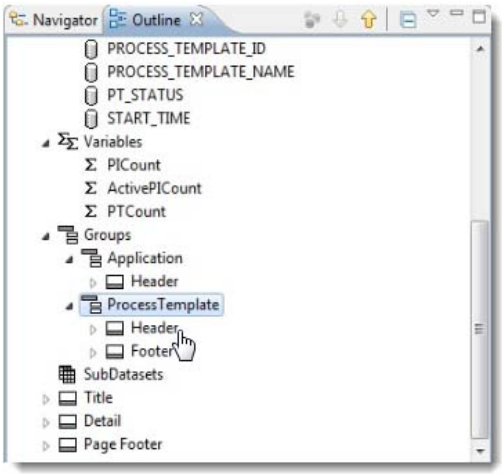
Defining Groups and Variables

Besides the fields making up most of the detailed line items of the report, you are also required to define variables and groups. Variables include all counts, totals, and other statistics calculated at the group or report level, in addition to calculated fields. Typically you define the variables and groups together, because many variables are designed to summarize data at the group level for display in group headers or footers.

To define a group:

1. Open the report and go to the Outline view in BPM Studio.
2. Expand the top-level report node and select the Groups node.

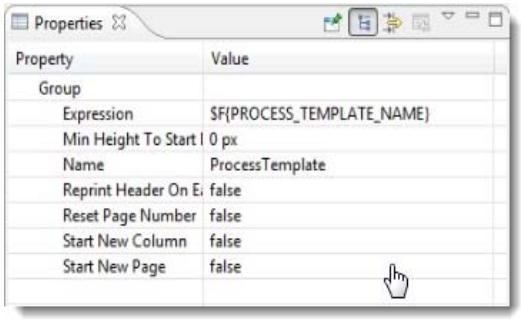
Fig. 2.23
Selecting the Groups Node



3 Right-click to the Add Group command.

4 Fill in the Name, Expression, and other properties in the Properties view.

Fig. 2.24
Filling in Properties



To define each variable:

1 Open the report and go to the Outline view in Studio.

2 Expand the top-level report node and select the Variables node.

3 Right-click to the Add Variable command.

4 Fill in the Name, Expression, Initial Value Expression, and Value Type in the Properties view.

5 Select the Reset Type and, if relevant, the Reset Group value to associate the variable with a group level.

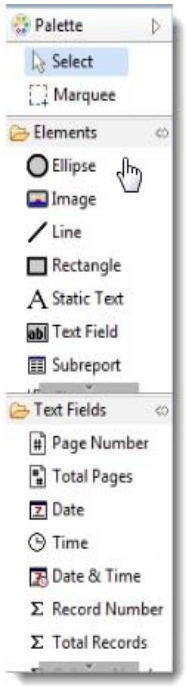
Laying Out Reports and Preview

To lay out a report:

1 Design each band that is to appear on the report, including headers, footers, and details.

2 Drag desired report display objects from the Palette into the desired bands.

Fig. 2.25
Dragging Report Display Objects from the Palette



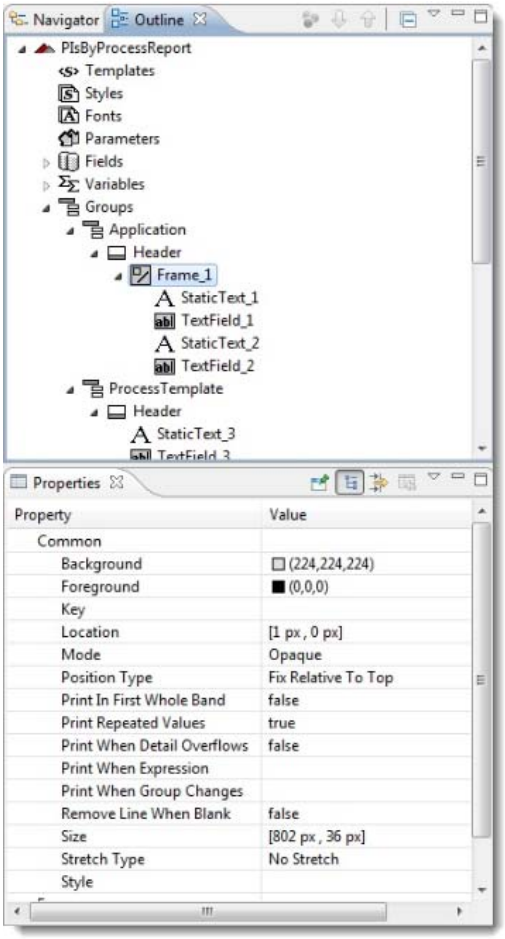
- Use text fields for most data elements, with Expression property referencing fields or variables and any calculations.
- Set Evaluation Group and Evaluation Time properties to correct values reflecting timing of calculations.
- Use text fields with literal values to define field labels.

  Note Arrangement of data elements and literals within each band is entirely flexible and user-defined.

3 Design and refine layout details.

  Note Use frames to define areas with special colors or other attributes to contain related fields with the same display characteristics.

Fig. 2.26
Using the Frame



To preview report:

1 Select Preview tab.

2 Select data source, normally BPM database.

3 Fix errors and rework implementation as required.

Deploying Reports

When a report is correct and complete, make sure that you deploy it manually to the BPM server and portal.

Note JasperReports libraries used at report generation time are standard with BPM.

1 Decide whether the report is common or application-specific.

Common reports can access all BPM data, but application reports retrieve only data for a single BPM application.

2 To deploy your JasperReports as a Common Report in BPM, copy your report source file (`*.jrxml`) to `BM8.0/webapps/deploy/sbm.war/ebmsapps/common/reports/`.

To deploy your JasperReports as an application-specific report in BPM, copy your report source file (`*.jrxml`) to `BM8.0/webapps/deploy/sbm.war/ebmsapps/<application name>/reports/.`

Note Create the `reports/` directory within the application directory if not already present.

3 Copy all images, icons, and other graphical files used on the report to `BM8.0/webapps/deploy/sbm.war/WEB-INF/classes/`

4 Add `BM8.0/webapps/deploy/sbm.war/WEB-INF/classes/` to the BPM portal classpath.

Note Make sure that you accomplish this step, so that JasperReports can retrieve the resource files placed in this location at run time.

5 Ensure that all users who are to run the report have correct permissions specified in BPM Portal. Take the following steps:

- **a** Log in as an administrator user.
- **b** Go to the Administration|User Management|Users page.
- **c** Enter the userid who is to run reports into the User Name field and Click Go.
- **d** Select the userid displayed in the user line to display the user page.
- **e** Enter the administrator password in the Admin Password field.
- **f** Go to the Permissions tab and check the Default Report permission box.
- **g** Go to the Portal Configuration tab, and select the Report check box, and click Save.

6 Configure settings for temporary file cleanup in the `bpmportal.conf` file.

```
bpmportal.jasper.schedule.cleanup.start
bpmportal.jasper.schedule.cleanup.interval
bpmportal.jasper.schedule.cleanup.startdelay
bpmportal.jasper.schedule.cleanup.cutoff
bpmportal.jasper.schedule.cleanup.timeout
bpmportal.jasper.schedule.cleanup.maxfilesize
```

Running Reports

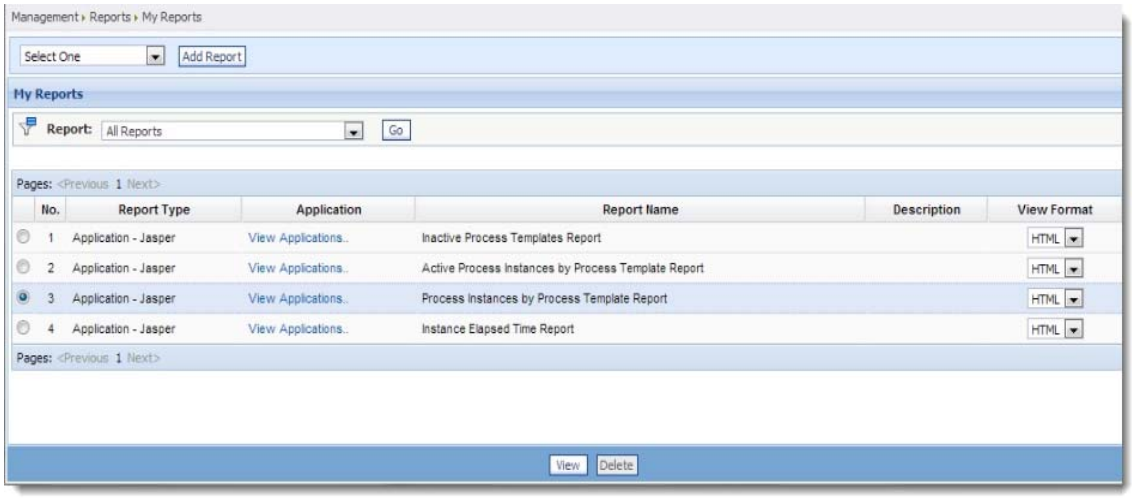
After you deploy the report, you can run it from and display it in BPM Portal. Complete the following steps:

1 Log in to BPM Portal.

2 Go to the Management|Reports|My Reports page.

3 Select a desired report and view format, defaulting to HTML.

Fig. 2.27
Running the Report



4 Click View to display the report.

Fig. 2.28
Viewing the Report Page 1

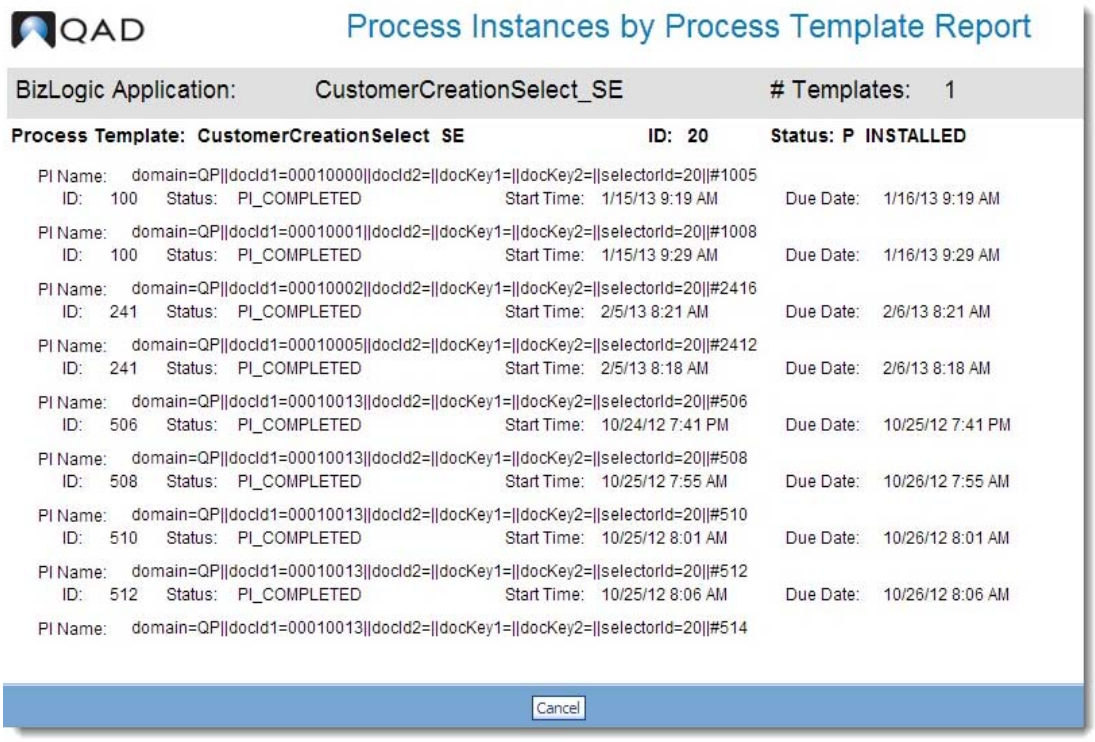
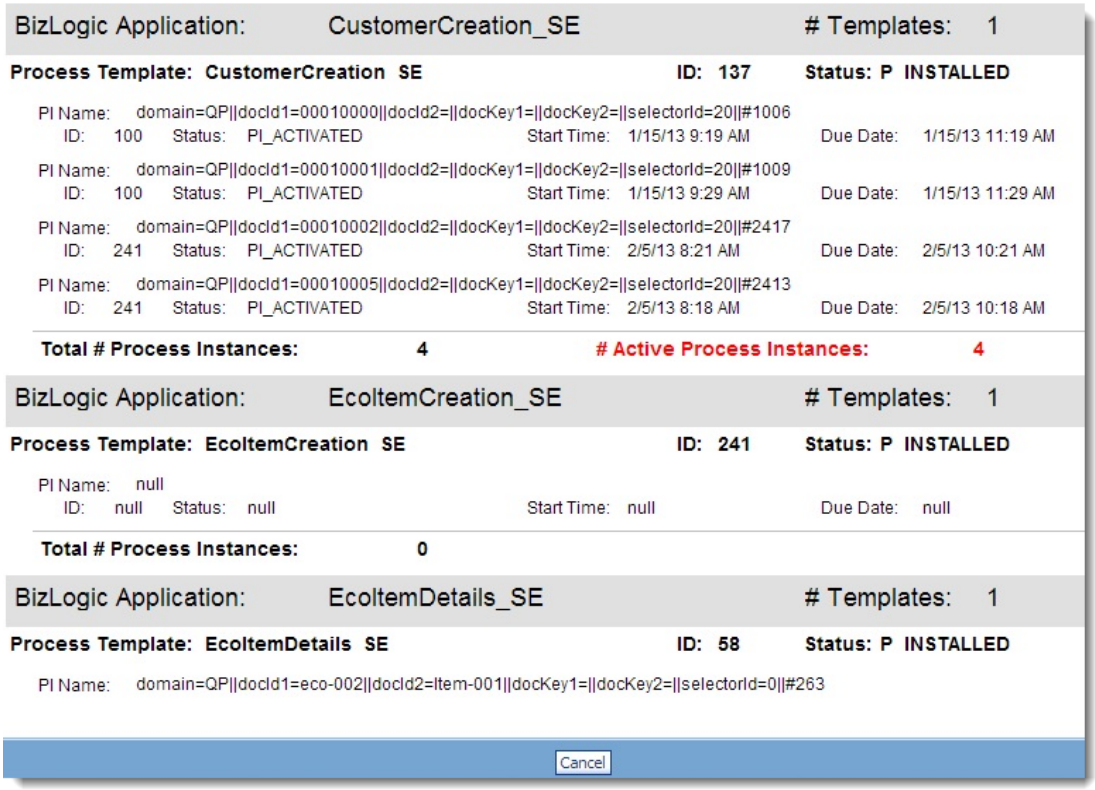


Fig. 2.29
Viewing the Report Page 2



Working with Instances on the Management Tab

On the Management tab, Instance Manager|Instances also enables you to search for and view a list of process instances, and change process instance properties for the selected application.

Searching for Process Instances

From the Instances page, you can search for all process instances for a particular BizLogic application label. But you cannot search for instances for more than one application at a time, because this page does not provide any other filter criteria except Application.

To search process instances under a particular BizLogic application:

1. On the Management tab, click Instance Manager|Instances to display the Search Instances page.
2. Select an application from the Application drop-down list at the top of the Search Instances page. To further define your search on a specific attribute, select the Attributes option, and click Go.

3 Click the Search Criteria tab, and enter relevant data in the Instance Name, Creator, Priority, Start Date, and Due Date boxes.

   a In the Instance Name box, enter the name of the Instance that you want to retrieve.

      The search engine is case-sensitive. By default, an asterisk (*) is entered for you to view all instances.

   b In the Creator box, enter the name of the Creator that you want to retrieve in the text box. Alternatively, click the Edit Creator icon to open the Search Users page.

      The search engine is case-sensitive. By default, an asterisk (*) is entered for you to view all creators.

   c In the Priority box, select an option from the drop-down list.

      The option “All” is selected by default.

   d In the Start Date and Due Date boxes, specify a time period from the options in the corresponding drop-down list. Alternatively, click the Select Date icon to set the respective start date or due date.

      By default, all dates are specified.

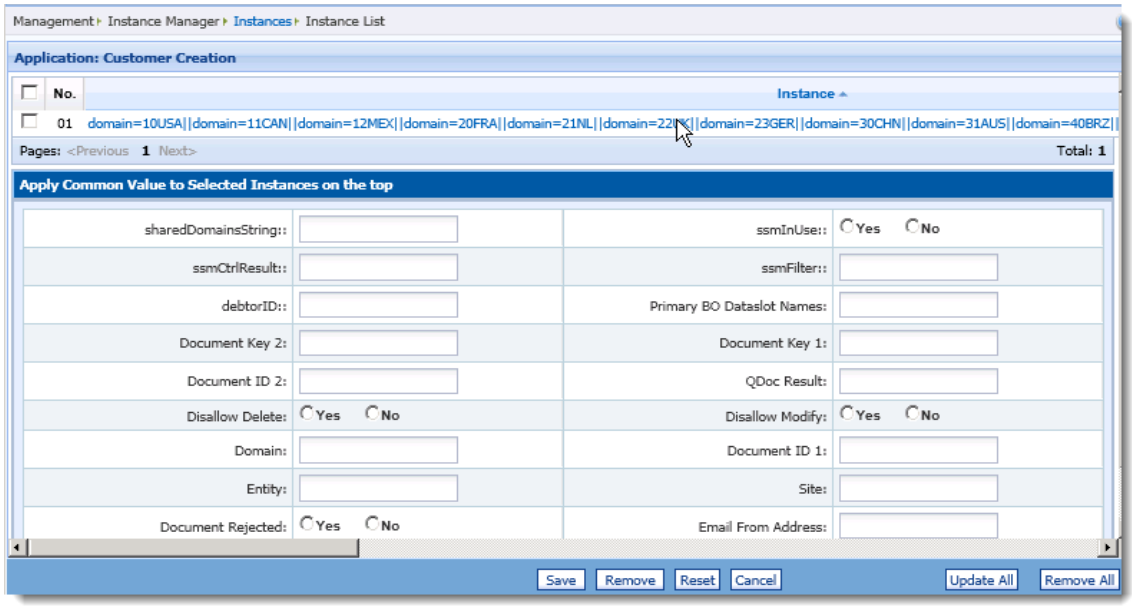
4 Click the Display Attributes tab and you can see a list of dataslots. Select the check boxes for the dataslots that you want to change.

   Note Dataslots of type Document, Object, and XML are not displayed in the Display Attributes tab.

5 Click Search to retrieve all instances that meet the search criteria you have specified.

The search results are presented in the Instance List page as shown in the following figure.

Fig. 2.30
Instance List Page



You can see two frames on this page. The top frame displays all instances you have selected in step 3 and dataslots you have selected in step 4. The bottom frame allows you to apply common values to selected dataslots. As seen in the top frame, instances are presented in a tabular format, with each row representing an instance. Instance name and dataslots are displayed in columns.

If you select no attributes in step 4, you cannot see any dataslots on the Instance List page. It displays only the Remove, Remove All, and Cancel options.

Viewing Dataslot Values

After you get the search results of specific process instances, you can view the values of selected dataslots. You can view them directly from the dataslot columns in the top frame. Or you can click the link in the Instance column to display the selected dataslots in the bottom frame. To view all the dataslots of a specific instance, make sure that you have selected all the dataslot types on the Display Attributes tab.

Removing Process Instances

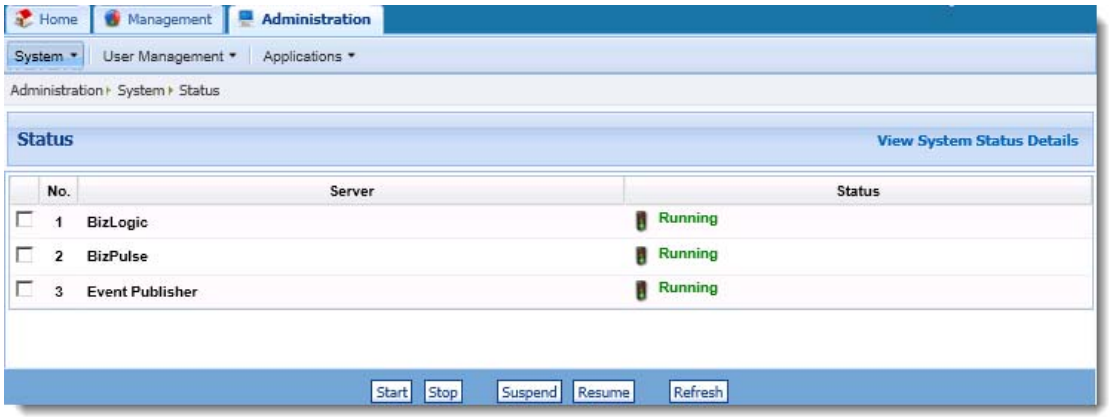
After you get the search results of specific process instances, you can remove the instances by first selecting them and then clicking Remove.

Note This method is the best way to remove process instances whose owner is not the current user.

Restarting BizLogic or BizPulse

You can start or stop BPM servers from the Administration tab. Click Administration to open the System Status page and you can see server statuses, as shown in the following figure.

Fig. 2.31
System Status Page



- To stop the BizLogic and BizPulse servers if they are running or suspended, select them and then click Stop.
- To start the BizPulse and BizLogic servers, if they are not running, select the corresponding check boxes and then click Start. BPM Portal starts the selected servers and updates the System Status page.

Note Restart BizLogic whenever a managed adapter is modified or removed, or a configuration setting is changed.

Note It is much easier to restart the servers than to restart the entire JBoss environment.

Using the Configuration Interface

You can use the Configuration interface to change log levels for BPM components, and configure BizLogic and the email server.

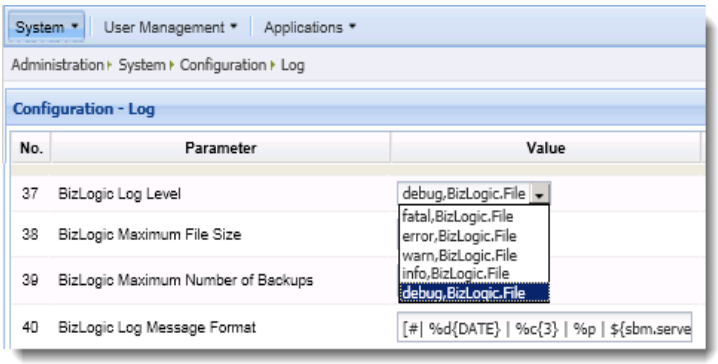
Changing Log Levels

To change log levels for BPM components, complete the following steps:

1. On the Administration tab, click System|Configuration|Log to display the Log Configuration page.
2. Scroll through the listed parameters and modify values as required.
3. Click Save.

Note It is useful to set BizLogic Log Level to debug.

Fig. 2.32
Setting BizLogic Log Level to Debug



Configuring BizLogic

You can view configuration parameters for BizLogic in the `bizlogic.conf` file. This file is in the `BM 8.0\conf` directory. To adjust any of these parameters, either access the `bizlogic.conf` file, or use the configuration interface in BPM Portal. The configuration interface does not display all the parameters. To see additional parameters that are not visible in the interface, refer to the `bizlogic.conf` file.

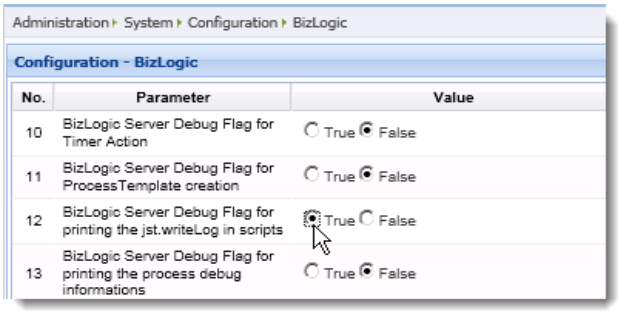
Using the Configuration interface in BPM Portal to configure the parameters, complete the following steps:

1. On the Administration tab, click System|Configuration|BizLogic to display the BizLogic Configuration page.
2. Scroll through the listed parameters and modify values that you want to modify.

3 Click Save.

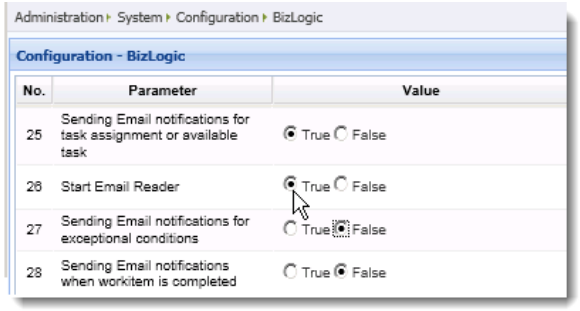
Note It is useful to enable BizLogic Server Debug Flag for printing the jst.writeLog in scripts that support logging in work step pre-processing or post-processing code. To accomplish it, set BizLogic Server Debug Flag for printing the jst.writeLog in scripts to true.

Fig. 2.33
Enabling BizLogic Server Debug Flag for Printing the jst.writeLog in Scripts



Note If tasks are assigned using email notifications and completed using email reply, make sure that you have enabled the email reader. To accomplish it, set Start Email Reader to true.

Fig. 2.34
Enabling Email Reader and Task Notifications



Alternatively, set property bizlogic.email.reader.start to true in the `bizlogic.conf` file to automatically start the email reader when the portal server is started.

You can also use the `StartBizLogicAdmin.sh` tool in the *`BM8.0 /bin`* directory to start or stop the email reader immediately, regardless of whether bizlogic.email.reader.start has been set to true.

To stop the email reader, enter the following code:

```
cd BM8.0/bin
./startBizLogicAdmin.sh
connect ebms ebms
stopEmaillistener
disconnect
exit
```

To start the email reader, enter the following code:

```
cd BM8.0/bin
./startBizLogicAdmin.sh
connect ebms ebms
startEmailListener
disconnect
exit
```

Configuring Email Server

You can view email account information in the `sbmemail.properties` file. The file is in the `BM8.0\conf` directory. You can access it to adjust any of the parameters.

The following table describes the configuration parameters for the email server, including default values if applicable.

Table 2.3
Email Server Configuration Parameters

Parameter Name	Description
`bizlogic.email.incoming.server`	Name of mail server where the mailbox of `bizlogic.email.id` is located (for example,mail.qad.com). It is normally different than the outgoing mail server.
`bizlogic.email.incoming.server.protocol`	Protocol used to receive the mails from mail server. Its values could be IMAP|IMAPS|POP3|POP3S. This property is optional and if not specified, default value is IMAP.
`bizlogic.email.incoming.server.port`	The default value for this port for protocols: [IMAP-143,IMAPS-993,POP3-110,POP3S-995]
`bizlogic.email.id`	Email address for BizLogic to send email notifications to users
`bizlogic.email.incoming.server.user`	User name to access the mailbox of `bizlogic.email.id` on mail server.
`bizlogic.email.incoming.server.password`	Password used to access the mailbox of `bizlogic.email.id` on mail server. The password is not clear text; encrypt the password by using the command-line utility `BM8.0/bin/encrypt.sh`.
`bizlogic.email.backup.folder`	Folder on EMail Server to hold the emails after processing. Optional.
`bizlogic.email.subject.pattern`	A prefix to the subject line in email. You can use it to make the email subject pattern more meaningful.
`bizlogic.email.preferred.template.type`	Specifies preferred email template type. Email template type can be either plain text (etl) or HTML (htl). This property defaults to etl.
`bizlogic.email.check.interval`	E-mail check frequency in milliseconds. Default is 60000 (60 seconds).

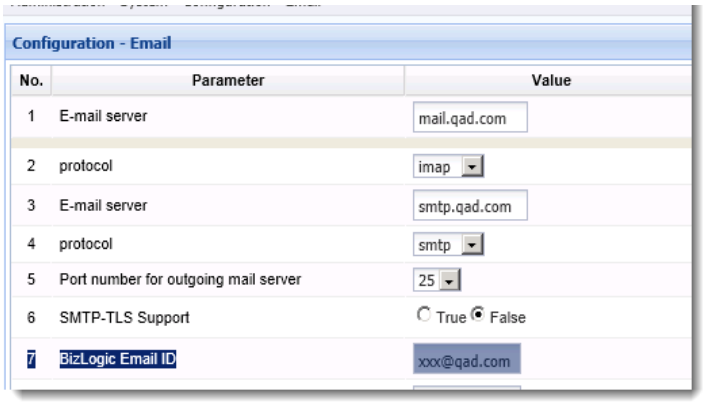
For information about how to create work step-specific email template, see *BizLogic Developer Guide*.

Alternatively, you can configure email server by using BPM Portal. To accomplish it, take the following steps:

1. On the Administration tab, click System|Configuration|Email to display the Email Server Configuration page.
2. Scroll through the listed parameters and modify values as required.

   Note If tasks are assigned with email notifications and completed using email reply, make sure that you have specified BizLogic Email ID.

Fig. 2.35
Setting BizLogic Email ID



3 Click Save.

Viewing Log Files on the Administration Tab

You can use the Log Viewer to track the status and error messages for each component. With the Log Viewer, you can see log files for the following:

- BPM Portal
- BizSolo
- BizLogic
- BizPulse
- BizStore
- Archiver
- Event Publisher
- BizRules

Note These options are available to you only if you have a valid license for the BizRules component.

Note You can adjust the log level for these and other categories on the Log Configuration page.

To access and view log files in the Log Viewer:

1 On the Administration tab, click System|Log Viewer.

2 To view log files for a specific component, select an option from the Log File drop-down list. To specify the number of lines that each page contains, enter a number in the Number of Lines box.

3 Click Go.

Note Typically, you view log files after work steps are suspended to troubleshoot issues.

Note The BizLogic log is the most useful log.

Defining Business Calendars

Administrators can define business calendars using Business Calendar and assign them to specific users or groups.

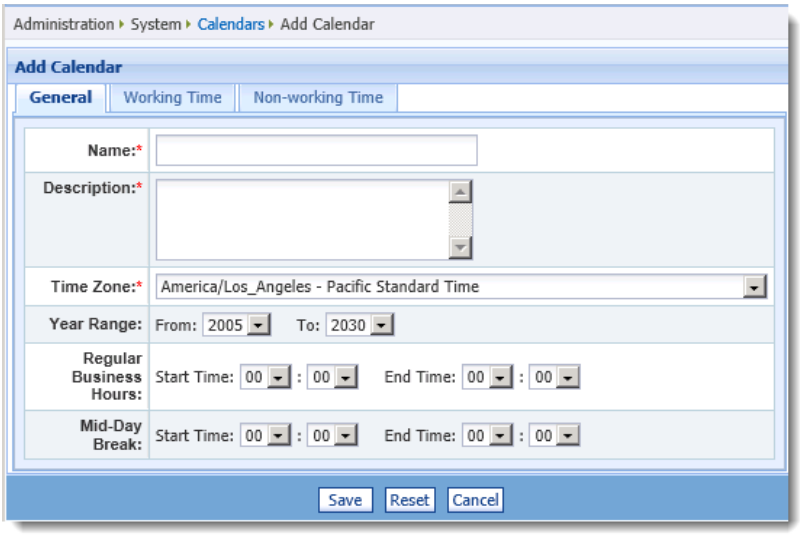
To define a business calendar, complete the following steps:

1 On the Administration tab, click System|Calendars to display the Calendar list page, which lists all the information about each of the existing business calendars.

2 Click Add Calendar in the Calendar list page.

The Add Calendar page, which contains General, Working Time, and Non-working Time sections, is displayed, enabling you to enter the new business calendar information. An example of this page is shown in the following figure.

Fig. 2.36
Add Calendar Page



3 In the General section, enter relevant data, according to the following explanations:

a Specify a name and description for the business calendar in the Name and Description boxes.

Note You cannot use the following special characters in the name or description while defining a calendar: < >‘%;+ \|“

b From the Time Zone drop-down list, select the geographical time zone for the business calendar.

c Define the Year Range for the business calendar by selecting the start and end years from the From and To drop-down lists.

d Define the Regular Business Hours by specifying the start and end times using the Start Time and End Time drop-down lists.

e Define the Mid-Day Break by specifying the start and end times using the Start Time and End Time drop-down lists.

Note Name, Description, and Time Zone are the required fields.

4 Open the Working Time section to define Working Time.

You can define working time if you want to specify business hours different than the regular business hours defined in the General section.

5 Open the Non-working Time section to define non-working time.

If you want to specify a holiday or weekend, you can define it in the Non-working Time section.

6 Click Save and go back to the previous page.

To reset the form and remove the information you just entered, click Reset.To cancel the action and exit the current page, click Cancel.

Setting or Unsetting a Default Calendar

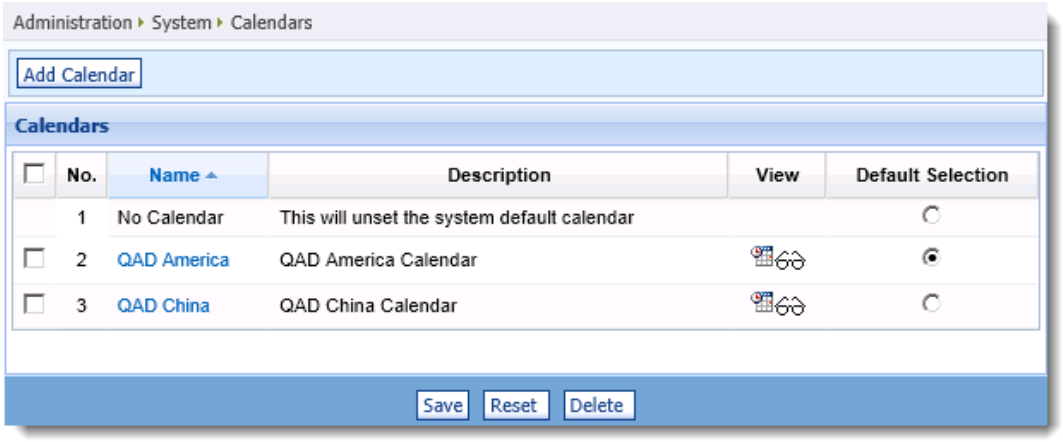
Once you have defined a business calendar or different business calendars, you can specify a particular business calendar as the default calendar. BPM uses the default calendar for due date calculations when no business calendar is assigned to the user or the group.

To set a default calendar:

1 On the Administration tab, click System|Calendars to display the Calendar list page.

2 Click the option in the Default Selection column for the calendar that you want to set as a default calendar.

Fig. 2.37
Setting a Default Calendar



3 Click Save.

Note Task notification email service requires a calendar of each subscriber. If the default calendar is not set and the subscriber has not been explicitly assigned a calendar, then an error will be encountered.

Once you select a default calendar, if needed, you can deselect it so that you have no default calendar.

To unset a default calendar:

1 On the Administration tab, click System|Calendars to display the Calendar list page.

2 Click the No Calendar option in the Default Selection column.

3 Click Save.

Managing Users on the Administration Tab

You can search for all users and maintain user properties specific to BPM from Users on the administration tab. Also you can use the tab to grant BPM data access permissions and portal usage permissions to selected QAD users.

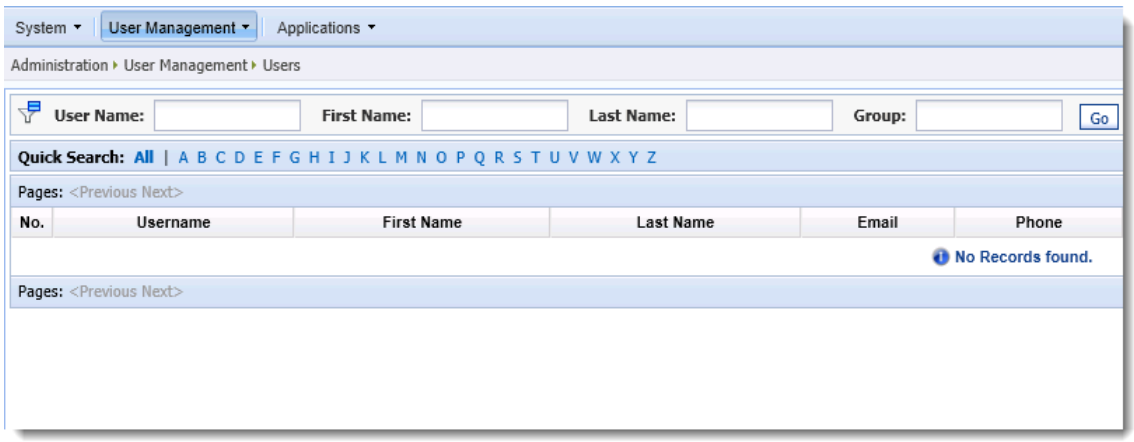
Searching for Users

To search for users:

1 Click Administration|User Management|Users to display the Users list page.

By default, the Users list page does not display any users. See Figure 2.38.

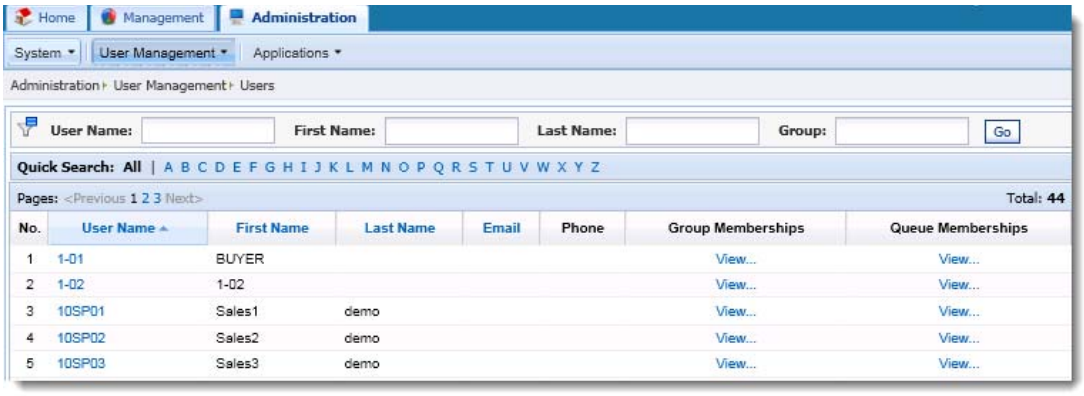
Fig. 2.38
Users List Page



2 To display the list of users, do one of the following:

- If you want to view the list of all users, click All in the Quick Search.
- If you want to display specified users, specify the user name in the User Name box. If you specify the group name, it searches for the users in that group, otherwise it searches in all groups. Then click Go.

Fig. 2.39
Searching for Users



3 You can view the details, group memberships, and the queue memberships of a specific user.

- To view the user details, click the user name hyperlink in the User Name column to display the User Detail page.
- To view the group memberships of the user, click the View hyperlink in the Group Memberships column. You can see a list of QAD groups in which the user is a member with respect to the login domain on the Memberships Details page.

  Note This screen is one of the only BPM portal screens that currently uses the logged-in QAD domain value.
- To view the queue memberships of the user, click the View hyperlink in the Queue Memberships column. You can see the queue name and queue description of queues of which the current user is a member.

Note Searching for all groups is required when you load user data to BPM Studio.

Maintaining User Properties Specific to BPM

You can use the User Details page to maintain user properties specific to BPM.

Note Properties maintained in QAD EA are read-only in the User Details page.

To update BPM user information:

1 Enter the administrator password in the Admin Password text box.

If you want to change the user password, enter this password again.

2 In the User Details section, enter or modify the relevant data as necessary.

Note You can select a business calendar for the user here.

3 Click Save to save the changes and go back to the previous page.

Click Reset to reset the form and remove the information you just entered.

Click Cancel to cancel the action and exit the current page.

Managing User Permissions

As an administrator, you can grant or revoke permissions to specific BPM data in BPM Portal to selected QAD users.

To manage permissions for a user:

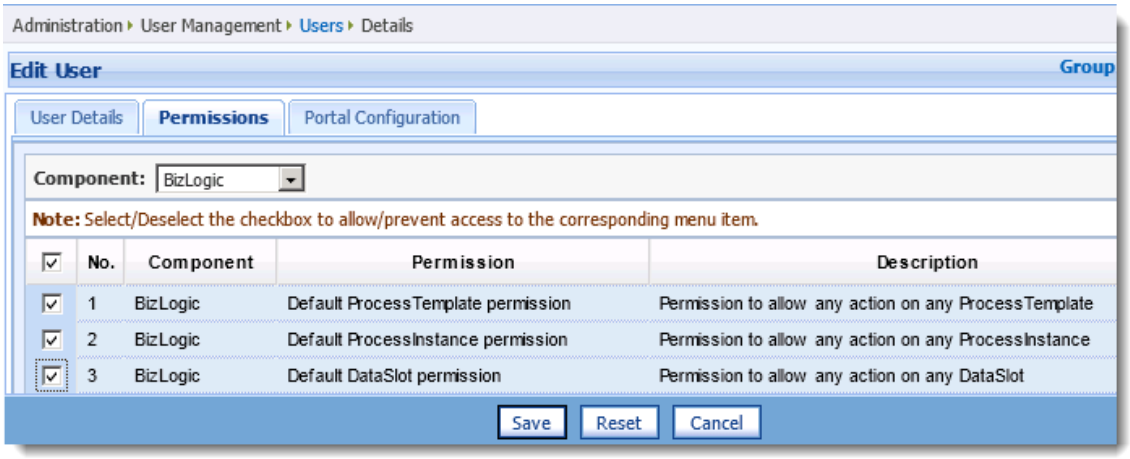
1. In the Users list page, click the user name hyperlink in the User Name column for the users you want to update.
2. Click Permissions to go to the Permissions section.
3. Select a component in the Component drop-down list, which includes BizLogic, BizPulse, Management, Administration, and dashboard.
4. Select or clear the check box to grant or revoke permission for the selected component.
5. Click Save to save the changes and go back to the previous page.

   To reset the form and remove the information you just entered, click Reset.

   To cancel the action and exit the current page, click Cancel.

Note It is important to grant BizLogic permissions for process templates, process instances, and dataslots as shown in Figure 2.40 on page 39. For example, the user can modify dataslot values only after you grant Default DataSlot permission.

Fig. 2.40
Granting BizLogic Permissions for Process Templates, Process Instance, and Dataslots



Managing Portal Configuration

As an administrator, you can grant or revoke BPM portal usage permissions to selected QAD users.

To manage portal configuration for a user:

1. In the Users list page, click the user name hyperlink in the User Name column.
2. Click Portal Configuration to go to the Portal Configuration section.
3. Select or clear the check box to grant or revoke BPM portal usage permissions.

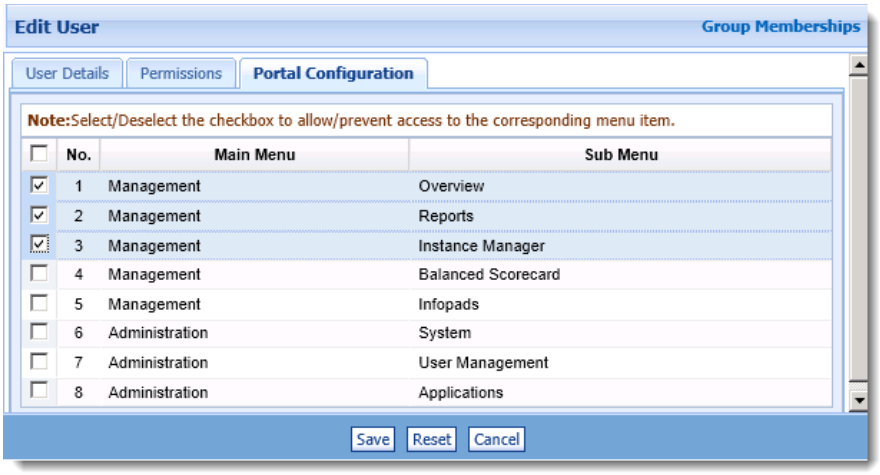
4 Click Save to save the changes and go back to the previous page.

To reset the form and remove the information you just entered, click Reset.

To cancel the action and exit the current page, click Cancel.

Note It is important to grant management permissions for Overview, Reports, and Instance Manager functions as shown in Figure 2.41. Only after you grant management permission for Instance Manager to the user, can the user modify the status of task or process instance.

Fig. 2.41
Granting Permissions for Overview, Reports, and Instance Manager



Managing Groups on the Administration Tab

You can search for all groups and maintain group properties specific to BPM from Groups on the administration tab. Also you can use the tab to grant BPM data access permissions and portal usage permissions to selected QAD groups.

Searching for Groups

Searching for a group is similar to searching for a user. To search for a group, complete the following steps:

1 On the Administration tab, click User Management|Groups to display the Groups list page.

By default, it does not display any groups.

2 To display the list of groups, do one of the following:

- Click All in the Quick Search bar to view the list of all groups.
- Specify the group name by typing it in the Group Name box, and click Go to display the specified group.

3 You can view the details, members, and group memberships of a specific group.

- To view the group details, click the group name hyperlink in the Group Name column to display the Group Details page.
- To view the members of the group, click the icon in the Member column.

- To view the group memberships of the user, click the View hyperlink in the Group Memberships column. You can see a list of QAD groups of which the current group is a member with respect to the login domain.

  Note This screen is one of the only BPM portal screens that currently uses the logged-in QAD domain value.

Note In order to load user data into Studio, searching for all groups is a required installation or setup step.

Maintaining Group Properties Specific to BPM

You can use the Group Details page to maintain user properties specific to BPM.

Note Properties maintained in QAD EA are read-only in the Group Details page.

To update group information:

1. In the Group Details section, enter or modify the relevant data as necessary.

   Note The group name contains only alphanumeric characters and underscores (_), and it starts with an alphabet.

   Note Administrators can select business calendars in this page.

2. Click Save to save the changes and go back to the previous page.

   To reset the form and remove the information you just entered, click Reset.

   To cancel the action and exit the current page, click Cancel.

Managing Group Permissions

As an administrator, you can grant or revoke permissions to specific BPM data in BPM Portal to selected QAD groups.

To manage permissions for a group:

1. In the Groups list page, click the group name hyperlink in the Group Name column for the group you want to update.
2. Click Permissions to go to the Permissions section.
3. Select a component in the Component drop-down list, which includes BizLogic, BizPulse, Management, Administration, and dashboard.
4. Select or clear the check box to grant or revoke permission for the selected component.
5. Click Save to save the changes and go back to the previous page.

   To reset the form and remove the information you just entered, click Reset.

   To cancel the action and exit the current page, click Cancel.

Note It is important to grant BizLogic permissions for process templates, process instances, and dataslots.

Managing Portal Configuration

As an administrator, you can grant or revoke BPM portal usage permissions to selected QAD groups.

To manage the portal configuration for a group:

1. In the Groups list page, click the group name hyperlink in the User Name column.
2. Click Portal Configuration to go to the Portal Configuration section.
3. Select or clear the check box to grant or revoke BPM portal usage permissions.
4. Click Save to save the changes and go back to the previous page.

   To reset the form and remove the information you just entered, click Reset.

   To cancel the action and exit the current page, click Cancel.

Note It is important to grant management permissions for Overview, Reports, and Instance Manager functions.

Chapter 3

Other Administration Tasks

Launching Processes from Custom Forms (for Authorized Users)

The system allows users to create a launch screen in QAD .NET UI to launch a process from custom forms. To implement this, the application developer defines the process in BPM Studio and the administrator adds a menu entry to the `plugin-menu.xml` file.

After the application developer has defined a process in BPM Studio, the administrator adds a menu entry for the application menu to show up in .NET UI:

1. Open the `plugin-menu.xml` file under the `Tomcat/webapps/qadhome/configurations/<SysEnvName>/menus` directory.
2. In the `plugin-menu.xml` file, add a ShellMenuItem entry; specify the menu label in the `label` field and the process name in the `value` field.

Example The administrator adds the following code to the `plugin-menu.xml` file. The menu name is Launch Process and the process name is Test Process.

```
<ShellMenuItem image="browse" key="test" label="Launch Process">
   <Command type="QAD.Plugin.Bpm.Command.LaunchProcessCommand,QAD.Plugin.Bpm">
      <Parameter type="System.String,mscorlib" name="processTemplateName" value="Test
Process"/>
   </Command>
</ShellMenuItem>
```

3. Place the modified `plugin-menu.xml` file under `Tomcat/webapps/qadhome/configurations/<SysEnvName>/menus`, where `<SysEnvName>` is the environment name for the QAD .NET UI login; for example, `qadui`.

After these actions, users can see the Launch Process menu in QAD .NET UI and use it to launch the customized process.

Note Only authorized users can see the Launch Process menu and use it. The authorization is defined by Security settings in the `plugin-menu.xml` file.

In the `plugin-menu.xml` file, if Security for the Launch Process menu entry is set to `bpmadmin`, then only the administrator can see and use the Launch Process menu.

If the Security setting is blank, then the menu is not restricted to any user.

Changing BizLogic Application Status

Once a user or application developer defines a process template in BPM Studio, you can deploy and install the process template in the BizLogic server and load any associated rules into BizPulse.

When you uninstall an application, BPM removes the process template from the BizLogic server and unloads the rules from BizPulse.

The Refresh option in the BizLogic applications page helps to refresh the list of installed applications. The rest of the options in the page are explained in detail in the following sections.

Note When deployed directories for uninstalled applications are deleted from the `BM8.0/ebmsapps/`directory, you can no longer see them after you refresh the BizLogic page.

Installing BizLogic Applications

To install BizLogic applications that are currently uninstalled:

1. On the Administration tab, click Applications|BizLogic to view the BizLogic Applications page, which displays all current BizLogic applications.
2. Select Uninstalled from the Status drop-down list and click Go to display only the uninstalled applications.

   The BizLogic Applications–Uninstalled page contains information on:

   - Status. The application status can be: All, Installed, Uninstalled, Suspended, Resumed, Published, Unpublished, or Deprecated.
   - Process template name, or the name that the developer assigns when defining the process template in BPM Studio.
   - Label, or the name users see in BPM Portal. The developer defines this name as the Label when designing the process template in BPM Studio.
   - Rule, indicating whether the application contains rules (Yes) or has none (No). If BizPulse is not running, BPM allows you to install or uninstall applications without rules. But if you want to install or uninstall applications that contain rules, make sure that BizPulse is running.
   - Application Name, the name of the application. BPM supports versioning for applications, where a new version can be installed on an existing application. For a versioned application, this column displays the name of the application of which the current process template is a version.
   - Description, providing a brief description of the application. If necessary, you can define the description as a text link to a longer, more detailed description.
   - Migrate ACL. Select this check box if you want to migrate permissions of another application with same application name to current application.
3. Select the BizLogic application you want to install from the list by selecting it, and click Install.

   You select a parent name when you install a new version over an existing version. For example, you might install a new template, Hiring-2, over an existing template, Hiring-1.

Note You cannot install deprecated versions, except by uninstalling them first.

Uninstalling BizLogic Applications

To uninstall BizLogic applications that are currently installed or deprecated:

1. On the Administration tab, click Applications|BizLogic to view the BizLogic Applications page, which displays all current BizLogic applications.
2. Select Installed or Deprecated from the Status drop-down list and click Go to display only the installed applications or the deprecated applications.
3. Select the BizLogic application you want to uninstall from the list by selecting it, and click Uninstall.

If you want to remove active process instances before removing the application, select the Force Uninstall check box.

Note Before unistalling, remove or complete all the process instances.

Suspending Applications

You can suspend an application if, for example, you are phasing out an outdated application, Hiring1, and installing a new application, Hiring2. By suspending Hiring1, you enable its existing process instances to remain for users to complete uninterrupted, while only new process instances can be started in Hiring2.

To suspend BizLogic applications that are currently installed:

1. On the Administration tab, click Applications|BizLogic to view the BizLogic Applications page, which displays all current BizLogic applications.
2. Select Installed from the Status drop-down list and click Go to display only the installed applications.
3. Select the BizLogic application you want to suspend from the list by selecting it, and click Suspend.

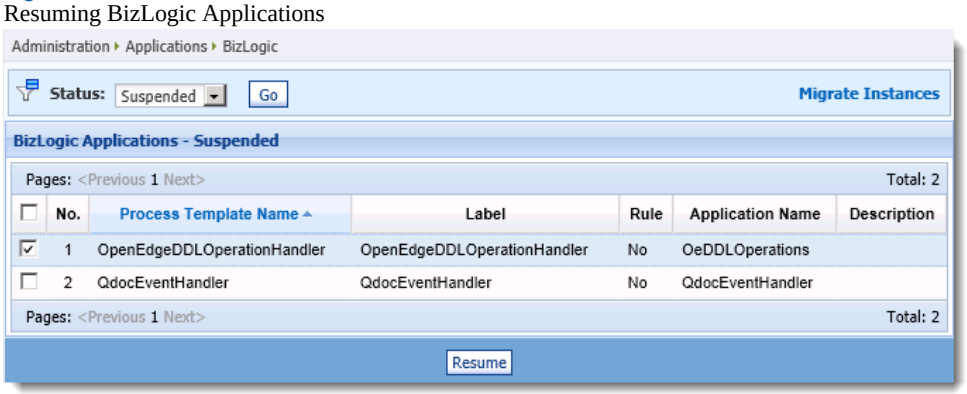
Resuming Applications

You can resume a suspended application after, for example, you have changed the template of the application.

To resume one or more BizLogic applications that are currently suspended:

1. On the Administration tab, click Applications|BizLogic to view the BizLogic Applications page, which displays all current BizLogic applications.
2. Select Suspended from the Status drop-down list and click Go to display only the suspended applications.
3. Select the BizLogic application you want to resume from the list by selecting it, and click Resume.

Fig. 3.1
Resuming BizLogic Applications



Migrating BPM Artifacts with Migration Tools

Sometimes you are prompted to migrate BPM artifacts—business processes, business object classes, BizRules decision tables, and other common components—from one QAD BPM environment to another. The most important migration scenario is the promotion of new or modified business processes from a development environment to a common test environment, or from a test to a production environment.

Although you can migrate all BPM artifacts across environments from BPM Studio, it is not recommended for the following reasons:

- BPM implementers who have direct access to production environments from their BPM Studio installations can easily publish untested or unstable artifacts into production by mistake. By using separate administration tools available only to administrators, such errors are less likely to occur.
- The responsibilities of software development and system administration ought to be separated to provide tighter change management across the IT organization and increase the security of the production environment.

Therefore, special migration tools are suggested to migrate BPM artifacts across environments.

Migrating Business Processes and Java Classes

Before walking through the migration process, it is important to understand the following two aspects:

- How do you replace one version of a business process with another version of the same process?
- How do the new and old versions coexist within the same BPM environment?

When a business process is published from the BPM Studio to a BPM server, the server uses several attributes to identify the process and denote its version.

- **Application Name**, sometimes called Model Name. It identifies the business process across all of its versions. In other words, if multiple business processes are published with the same Application Name, they are managed as different versions of a single process, rather than separate processes.
- **Process Template Name**. It denotes the version of the business process, distinguishing one version of the business process (that is, the BizLogic Application) from others. For new business processes, the Process Template Name and Application Name are assigned the same value by default in BPM Studio. When new versions of an existing process are created in BPM Studio, the Process Template Name defaults to the Application Name with a version suffix.

You can view the versions of a specific application by going to Administration|Application|BizLogic. Typically, only a single version of each application has the status of Installed, while other versions can be Deprecated, Suspended, or Uninstalled. New process instances are always created using the installed version, although existing instances that use deprecated or suspended versions are still processed normally. The BPM administrator can change the status by installing, uninstalling, suspending, or resuming particular versions from the BPM portal.

When you migrate a new version of a business process to an environment that contains an older version, typically you deprecate the existing version and use the new version. In this case, the status of the existing version is changed to Deprecated in the target environment, while the new version is moved to the status of Installed.

QAD BPM provides two command-line utilities, namely appPackager and appDeployer, to help migrate business processes and Java classes across server environments. These utilities are scripts written using the Apache Ant tool. Unlike the BizRulesAdmin tool, which accesses the BPM repository to export and load projects, appPackager and appDeployer access most of the artifacts directly from the BPM directories in the filesystem.

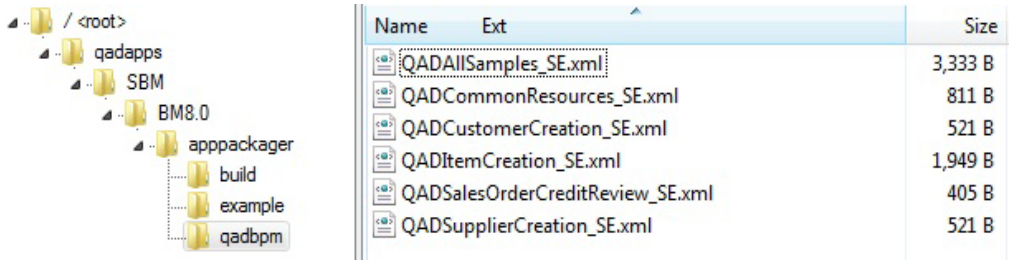
- **appPackager** packages the specified business processes and other artifacts from the source BPM server environment into a ZIP archive.
- **appDeployer** unpacks and deploys the contents of an archive that appPackager has created into a target BPM server environment.

This approach allows BPM artifacts to be migrated server-to-server by system administration personnel, avoiding the need for BPM developers to connect their BPM Studio workspaces directly to production environments. Thus, it promotes better segregation of duties between developers and system administrators.

Configuring a Packaging File

The appPackager requires a package configuration file, identifying the BPM artifacts to package and migrate. QAD provides a set of sample configuration files that you can use to deploy the QAD BPM sample processes across environments, but in general the configuration is specific to every BPM implementation.

Fig. 3.2
Sample Configuration Files



The following example shows the elements that each XML configuration file contains.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE Application SYSTEM
"file:///${sbm.home}/conf/resources/common/ProcessPackage.dtd">

<Application name="QADAllSamples_SE" filename=
"${sbm.home}/apppackager/QADAllSamples_SE.zip">
  <!-- Item Creation -->
  <Process name ="ItemCreation_SE" parentpt="ItemCreation_SE" type="BizLogic" operation=
"InstallAsVersion">
  </Process>
  <Process name ="ItemCostApproval_SE" parentpt="ItemCostApproval_SE" type="BizLogic"
operation="InstallAsVersion">
  </Process>
  <Process name ="ItemCostSetup_SE" parentpt="ItemCostSetup_SE" type="BizLogic" operation=
"InstallAsVersion">
  </Process>
  <Process name ="ItemCustomerInfoSetup_SE" parentpt="ItemCustomerInfoSetup_SE" type=
```

```
"BizLogic" operation="InstallAsVersion">
  </Process>
  <Process name ="ItemDefinition_SE" parentpt="ItemDefinition_SE" type="BizLogic"
operation="InstallAsVersion">
  </Process>

<!-- Common Resources -->
  <Resources>
    <Resource src="../ebmsapps/common/bo/classes/com/qad/bpm/bo" type="dir" target=
"../ebmsapps/common/bo/classes/com/qad/bpm/bo"/>
    <Resource src="../webapps/deploy/sbm.war/WEB-INF/classes/com/qad/bpm/bo" type="dir"
target="../webapps/deploy/sbm.war/WEB-INF/classes/com/qad/bpm/bo"/>
    <Resource src="../ebmsapps/common/lib/QdocAdapters_SE.jar" type="file" target=
"../ebmsapps/common/lib"/>
    <Resource src="../webapps/deploy/sbm.war/WEB-INF/qadmetadata" type="dir" target=
"../webapps/deploy/sbm.war/WEB-INF/qadmetadata"/>
  </Resources>
</Application>
```

- **Application**: The Application element is the top-level element, defining the overall name of the package (`name`) and the location of the ZIP file that it creates (`filename`).
- **Process**: There is a Process element for each process template included in the package, defining its Process Template Name (`name`) and Application Name (`parentpt`). The `type` is always `BizLogic`, and the `operation` attribute is normally set to `InstallAsVersion`. When a process that exists in the target BPM environment is deployed with operation `InstallAsVersion`, the new process template is installed as the current version, and the previously installed version is deprecated. When `InstallAsVersion` is used for a process that does not yet exist in the target BPM environment, the new process is deployed but its status is Uninstalled. In this case, make sure to promote the process to the Installed status from the BPM portal. Alternatively, for new processes the operation `Reinstall` can be used. In this case, the process is automatically promoted to Installed status when deployed. Other operations less frequently used are `RefreshPt`.
- **Resources**: Common resources that are not business processes are specified as individual Resource elements under a single Resources element. Resources include the following kinds of BPM artifacts:
  - Business object classes. Unlike other artifacts, business object classes are deployed into two locations, one for the JBoss EJB server and the other for the Portal server.
  - QDoc-managed adapter classes, typically packaged in a JAR.
  - QAD metadata files that .NET UI uses to support the BPM browses.

  Each Resource element specifies the source location of the artifact in the file system, relative to the `BM 8.0/appPackager/` directory (`src`), and the target location (`target`). Typically, the values of these attributes are the same. With the `type` attribute, it is possible to specify either a single file (`type="file"`), or a directory containing multiple files (`type="dir"`).

Make sure to place the configuration file in the directory `BM8.0/appPackager/` in the source BPM environment.

Running AppPackager

Once you have created the packaging configuration file, create an archive file for it as follows.

1. Go to the `BM8.0/apppackager/` directory.
2. Run the command:

```
../bin/appPackager.sh <path to package config file>
```

There is no need to provide the name of the archive to write, because it is specified in the configuration file.

After the archive has been created in the `BM8.0/apppackager/` directory, copy or transfer it to the `BM8.0/apppackager/` directory in the target BPM environment.

Running AppDeployer

In the target BPM environment, complete the following steps:

1. Make sure that the JBoss EJB and Portal servers in the target BPM environment are running, because the appDeployer tool communicates with the Portal server to deploy some of the artifacts.
2. Open `BM8.0/ant/ant.properties` in a text editor, and check the value of the sbmUrl property. If it does not reference the correct URL for the BPM portal, modify it and save the file.
3. Save the package archive copied from the source environment into the `BM8.0/apppackager/` directory.
4. Go to the `BM8.0/apppackager/` directory.
5. Run the command:

```
../bin/appDeployer.sh <path to package archive>
```

Do not reference the package configuration file, because it is contained inside the archive.

6. Verify that the contents of the archive were copied into the designated locations.
7. If the deployed artifacts include Java classes such as business objects or QDoc adapters, restart the JBoss servers. If no Java classes were included, a restart is not necessary.
8. Log in to the BPM portal as a BPM Administrator.
9. Go to Administration|Applications|BizLogic. Verify that the process templates from the archive were installed.

Any process template from the packaging archive that has the following characteristics is deployed with the Uninstalled status:

- It was configured for deployment in the packaging configuration file with operation `InstallAsVersion`.
- It is associated with a new BizLogic application that has no versions deployed on the target BPM server. In other words, the value of its `parentPt` attribute (Application Name) is different from the Application Names of all other deployed processes.

To promote a process template that was deployed in Uninstalled status to the Installed status, check the box on its line and click Install at the bottom of the page.

Migrating BizRules Projects and Decision Tables

Before going through the migration process, it is important to understand the versioning of BizRules Decision Table.

The versioning of business rules and decision tables implemented in BizRules projects are different from the versioning of business processes and other BPM artifacts. Unlike business processes, which are launched and can be updated from business events that originate outside of BPM, BizRules decision tables are referenced only from within business processes. When a BizRules decision table is used inside a business process work step, the name and version of its BizRules project are referenced only within that work step. In short, the business process version being used completely determines the BizRules decision table version that is used. Decision table versions are easier to control than process versions. The reason is that even if an incorrect BizRules project version is deployed into a BPM environment, its decision table can never be used until some business process references it directly. Therefore, the versions of business rules and decision tables are determined at the project level, rather than by individual decision table.

The system accesses BizRules objects during run time through the built-in BPM repository in BPM Portal. So, to make a BizRule project accessible inside an environment or even referenced from a business process work step, the first step is to deploy a BizRules project to the BPM repository. For this reason, the packaging and deployment utilities used for business process migration are not suitable for BizRules. A separate BizRulesAdmin tool (`bradmin.sh`) is available to export and import BizRules project contents from and to the BPM repository.

Exporting a BizRules Project

To export a BizRules project from a source BPM environment using `bradmin.sh`, use the following procedures:

1. Go to the `BM8.0/bin/` directory.
2. Run `bradmin.sh` from the command line, logging in as a BPM administrator.
3. From the BizRules Admin menu displayed on the console, select `1) Project Admin`.
4. From the Project Admin menu, select `1) List All Projects`. The output shows the ID numbers and names of all BizRules projects in the BPM environment, one of which is referenced in the next step.
5. From the Project Admin menu, select `4) Enter Project Mode`. When prompted, enter the ID or name of the project to export from the list displayed in Step 4.
6. From the Project Mode: <project name> menu, select `4) Checkout Project`. `bradmin.sh` displays messages that the project folders have been placed into the `BM8.0/ruleapps/` directory.
7. Select `9) Exit from the menu`, then select the Exit option from all the higher-level `bradmin.sh` menus until the session terminates.
8. Go to the `BM8.0/ruleapps/` directory, confirming that the exported BizRules project is stored there.

After you have exported the BizRules project, copy the directory in `BM8.0/ruleapps/` containing the BizRules project to the `BM8.0/ruleapps/` directory in the target environment.

Figure 3.3 on page 52 is a sample `bradmin.sh` session illustrating the exporting procedures.

Fig. 3.3
Sample `bradmin.sh` Session–Exporting a BizRules Project

```
$ cd $SBM/bin
$ ./bradmin.sh
>> rules root: /qadapps/SBM/BM8.0/ruleapps
[Login] user name, password: ebms,ebms
>> user: ebms, password: ebms
ServiceLocator.init()
login by ebms
============ BizRules Admin ============
0) Back
1) Project Admin
2) ExecSet Admin
3) Exit

Enter your selection ( 0 - 3 ) : 1
============ Project Admin ============
0) Back
1) List All Projects
2) Create Project
3) Delete Project
4) Enter Project Mode
5) Exit

Enter your selection ( 0 - 5 ) : 1
id     | fullname                        | modified date
-------------------------------------------------------------------------------
---
4      | CustomerCreationSelectRules_SE_V1 | Sun Sep 16 15:49:58 PDT 2012
5      | SupplierCreationSelectRules_SE_V1 | Mon Sep 17 21:50:26 PDT 2012
7      | ItemSelectRules_SE_V1           | Mon Sep 17 21:52:53 PDT 2012
24     | CreditReviewEvaluationRules_SE_V1 | Wed Jan 16 08:08:04 PST 2013
============ Project Admin ============
0) Back
1) List All Projects
2) Create Project
3) Delete Project
4) Enter Project Mode
5) Exit

Enter your selection ( 0 - 5 ) : 4
[Enter Project Mode] fullProjectName(or projId): ItemSelectRules_SE_V1
============ Project Mode: ItemSelectRules_SE_V1[7] ============
0) Back
1) Show Project Info
2) List All Rulesets
3) Update Project
4) Checkout Project
5) Create Ruleset
6) Delete Ruleset
7) Enter Ruleset Mode
8) Enter RuleMonitor Mode
9) Exit

Enter your selection ( 0 - 9 ) : 4
>> copy rulefile: /qadapps/SBM/BM8.0/ruleapps/ItemSelectRules_SE_V1/rules/rule.p
ackage
>> copy rulefile: /qadapps/SBM/BM8.0/ruleapps/ItemSelectRules_SE_V1/rules/Select
Process.gdst
```

Importing a BizRules Project

To import a BizRules project into a target BPM environment using `bradmin.sh` after you have exported it from the source BPM environment, complete the following procedure:

1. Verify that the BizRules project folder has been exported from a source BPM environment and copied into the `BPM8.0/ruleapps/` directory.
2. Go to the `BM8.0/bin/` directory.
3. Run `bradmin.sh` from the command line, logging in as a BPM administrator.
4. From the BizRules Admin menu displayed on the console, select `1) Project Admin`.
5. From the Project Admin menu, select `1) List All Projects`. The output shows the names of all BizRules projects currently in the BPM environment.
   - If the project being imported does not exist in the BPM environment, you are required to create it first. In this case, select `2) Create Project` from the Project Admin menu. Enter the name of the BizRules project to import. Make sure that the name is the same as the name of the top-level folder inside `BM8.0/ruleapps/` where the project files are stored.
   - If the project exists in the BPM environment, select `4) Enter Project Mode` from the Project Admin menu. Enter the ID or name of the BizRules project. Select `3) Update Project` from the Project Mode: <project name> menu to update the decision tables within the project.
6. After you have either created or updated a BizRules project, `bradmin.sh` displays a message confirming that the decision tables contained in the project have been loaded.
7. Select `9) Exit` from the menu. Select the Exit option from all the higher-level `bradmin.sh` menus until the `bradmin.sh` session terminates.

Figure 3.4 on page 54 is a sample `bradmin.sh` session illustrating the importing procedures to update an existing BizRules project ItemSelectRules_SE_V1.

Fig. 3.4
Sample `bradmin.sh` Session–Importing a BizRules Project

```
$ cd $SBM/bin
$ ./bradmin.sh
>> rules root: /qadapps/SBM/BM8.0/ruleapps
[Login] user name, password: ebms,ebms
>> user: ebms, password: ebms
ServiceLocator.init()
login by ebms
============ BizRules Admin ============
0) Back
1) Project Admin
2) ExecSet Admin
3) Exit

Enter your selection ( 0 - 3 ) : 1
============ Project Admin ============
0) Back
1) List All Projects
2) Create Project
3) Delete Project
4) Enter Project Mode
5) Exit

Enter your selection ( 0 - 5 ) : 4
[Enter Project Mode] fullProjectName(or projId): ItemSelectRules_SE_V1
============ Project Mode: ItemSelectRules_SE_V1[7] ============
0) Back
1) Show Project Info
2) List All Rulesets
3) Update Project
4) Checkout Project
5) Create Ruleset
6) Delete Ruleset
7) Enter Ruleset Mode
8) Enter RuleMonitor Mode
9) Exit

Enter your selection ( 0 - 9 ) : 3
>> project updated: ItemSelectRules_SE_V1[7]
ruleset name                    | operation
-------------------------------------------------
rule.package                    | U
SelectProcess.gdst              | U
============ Project Mode: ItemSelectRules_SE_V1[7] ============
0) Back
1) Show Project Info
2) List All Rulesets
3) Update Project
4) Checkout Project
5) Create Ruleset
6) Delete Ruleset
7) Enter Ruleset Mode
8) Enter RuleMonitor Mode
9) Exit

Enter your selection ( 0 - 9 ) :
```

Deleting an Existing Decision Table

To delete a decision table from a BizRules project in the target BPM environment, no import is required. Instead, the obsoleted decision table is deleted directly from the environment while inside a `bradmin.sh` session.

1. Go to the `BM8.0/bin/` directory.
2. Run `bradmin.sh` from the command line, logging in as a BPM administrator.
3. From the BizRules Admin menu displayed on the console, select `1) Project Admin`.
4. From the Project Admin menu, select `1) List All Projects`. The output shows the names of all BizRules projects currently in the BPM environment.
5. From the Project Admin menu, select `4) Enter Project Mode`. Enter the name of the BizRules project containing the decision table that you want to delete taken from the list in step 4.
6. From the Project Mode: <project name> menu, select `2) List All Rulesets` to obtain a list of the decision tables in the project.
7. From the Project Mode: <project name> menu, select `6) Delete Ruleset`. Enter the ID or name of the decision table or ruleset that you want to delete when prompted, using the information from the ruleset list. `bradmin.sh` displays a message confirming the deletion.
8. Select `9) Exit` from the menu, and then select the Exit option from all the higher-level `bradmin.sh` menus until the `bradmin.sh` session terminates.

Checking Decision Tables Using the BPM Portal

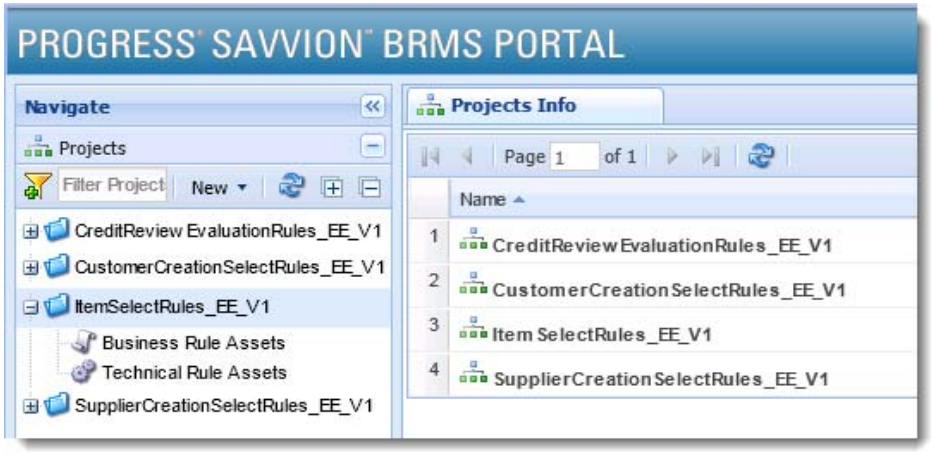
After you have imported BizRules projects and decision tables into a target BPM environment, you cannot validate the results by reviewing the contents of the BPM directories in the file system. Rather, you are required to review the contents of the BizRules repository under the support of the BPM portal on-line. The procedure for reviewing the contents is as follows.

1. Log in to the BPM portal as a BPM administrator.
2. Click the BRMS Portal link in the upper-right corner of the page to go to BRMS Portal.

Fig. 3.5
Clicking BRMS Portal

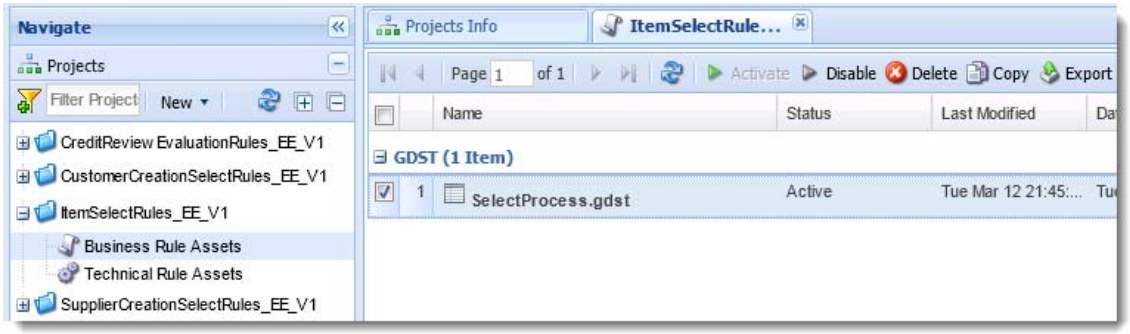
3. You can see all the BizRules projects currently in the BPM environment on the Projects Info tab. In the Navigate pane on the left, select and expand the node for the BizRules project previously imported.

Fig. 3.6
Viewing BizRules Projects



4 Double-click the Business Rules Assets node under the selected project to open a tab that lists all decision tables inside the project.

Fig. 3.7
Viewing BizRules Projects



5 Double-click the decision table that you want to review to inspect its contents and confirm that expected changes were successfully migrated.

6 After you finish the review, log out of the BPM portal.

Scripting BPM Artifact Migration

A common question asked during QAD BPM implementations is how to script the migration of business processes and other BPM artifacts across BPM environments. The most common scripted scenario is the scheduled promotion of artifacts from a development to a common test environment, and from a test to a production environment. The use of scripts allows migration to be executed regularly with reduced manual effort and less opportunity for error. Because both sets of migration tools, appPackager and appDeployer, and BizRulesAdmin, are command-line utilities, invoking them from shell scripts is feasible.

Scripting appPackager and appDeployer

As long as the packaging configuration files that appPackager and appDeployer use can be prepared before each migration, the scripts necessary to run the appPackager and appDeployer tools are straightforward. These utilities are non-interactive, and can be run with run-time arguments directly referencing the prepared configuration files. To make the creation of packaging configuration files easier, it is recommended that one or more templates for the configuration files be created in advance. Then a designated BPM developer or administrator can clone the templates to reference the correct processes and versions for each specific migration, before running the script.

Scripting BizRulesAdmin

Scripting for BizRulesAdmin is more complex, as `bradmin.sh` is interactive, prompting the user for input at each step. Nevertheless, standard responses to the prompts to match particular migration scenarios can be placed into input files and validated through careful `bradmin.sh` testing. The `bradmin.sh` migration scripts use different input sequences for exporting and importing different kinds of changes. Although some manual decisions are required to determine which predefined inputs are appropriate for each case, this approach can at least reduce the manual input required to migrate BizRules decision tables.

Using BPM Packaging and Deploying Tool

The appPackager utility only packages artifacts that are deployed physically to the BPM environment. Projects and metadata that are exported to the BPM repository are not packaged. To package these artifacts in the BPM repository, you need the tool `bpm_package.sh.`

Administrators can use `bpm_package.sh` to package deployed processes and its dependent components (like business objects, adapters, dataslots, and messages) in one BPM environment and deploy them to another BPM environment.

About Package Descriptor

In order to use `bpm_package.sh`, you are required to create a package descriptor, which is an XML file containing the details of what artifacts to package, install, and deploy. The file is packaged along with the actual package content.

Here is an example of the BPM package descriptor:

```
<?xml version="1.0" encoding="UTF-8" ?>
<QAD>
  <QADVersion>QADEE</QADVersion>
  <Application>Customer_EE</Application>
  <BPM>
    <Projects>
      <Project name="CustomerCreation_EE" type="BizLogic">
        <Processes>
           <Process applicationName="CustomerCreation_EE"
            templateName= "CustomerCreation_EE"/>
           <Process applicationName="CustomerCreationSelect_EE" templateName=
           "CustomerCreationSelect_EE"  />
           <Process applicationName="CustomerEndUserSetup_EE" templateName=
           "CustomerEndUserSetup_EE" />
           <Process applicationName="CustomerOperationalSetup_EE" templateName=
           "CustomerOperationalSetup_EE" />
           <Process applicationName="EndUserOperationalSetup_EE" templateName=
```

```
            "EndUserOperationalSetup_EE" />
          </Processes>
        </Project>
        <Project name="CustomerSelectRules_EE_V1" type="BizRules">
        </Project>
        <Project name="BusinessObjects_EE" type="CommonResources">
          <BusinessObjects>
            <Category name="qadbpm" package="com.qad.bpm.bo">
              <BusinessObject name="Debtor_EE_1" />
            </Category>
          </BusinessObjects>
        </Project>
        <Project name="QdocAdapters_EE" type="CommonResources">
          <Adapters>
            <Category name="QdocAdapters">
             <Adapter name="MaintainDebtorCreditHoldAdapter" class=
             "com.qad.bpm.adapters.qdocadapters_ee.MaintainDebtorCreditHoldAdapter"/>
            </Category>
          </Adapters>
        </Project>
      </Projects>
      <Messages>
        <Message name="QdocEventAcknowledgement" />
        <Message name="QdocEventAcknowledgements" />
        <Message name="SendTasksNotificationEmails" />
      </Messages>
      <Dataslots>
         <Category name="User">
           <Dataslot name="baseApprovalSubprocessCount" />
           <Dataslot name="disallowDelete" />
           <Dataslot name="disallowUpdate" />
           <Dataslot name="documentId1" />
           <Dataslot name="documentId2" />
           <Dataslot name="documentRejected" />
           <Dataslot name="domain" />
           <Dataslot name="emailFromAddress" />
           <Dataslot name="entity" />
           <Dataslot name="oidFields" />
           <Dataslot name="primaryBoDataslotNames" />
           <Dataslot name="qadNSMap" />
           <Dataslot name="qdocExceptions" />
           <Dataslot name="qdocResult" />
           <Dataslot name="sharedDomains" />
           <Dataslot name="site" />
           <Dataslot name="sourceApplication" />
           <Dataslot name="stakeholderEmails" />
           <Dataslot name="stakeholderUsersOrEmails" />
           <Dataslot name="subProcessInstanceName" />
           <Dataslot name="subProcessTemplateName" />
         </Category>
      </Dataslots>
    </BPM>
  </QAD>
```

Creating BPM Package

The `bpm_package.sh` tool is under `/qadapps/SBM/scripts`. Its general syntax is as follows:

```
bpm_package.sh ACTION [OPTIONS]
```

Before you create the package, first manually export projects and all metadata to the BPM repository. Repository locations for BPM artifacts are as follows:

- Process Project (BizLogic): `Repository/Projects/BPM/<Project Name>`
- BizRules Project: `Repository/Projects/BizRules/<Project Name>`
- CommonResources Project: `Repository/Projects/Common Resources /<Project Name>`

- Adapter: `Repository/Managed Adapters/<Category>/<Adapter Name>`
- Business Object: `Repository/Business Objects/<Category>/<Business Object Name>`
- Message: in database; you can see it from the Studio
- Dataslots: `Repository/Dataslots/<Category>/<Dataslot Name>`

1 Use the following command to generate a package descriptor template:

```
bpm_package.sh -generate-descriptor [-descriptor <BPM Package Descriptor XML>] [-application <Application Name>]
```

The following table shows the use of parameters for generating the descriptor.

Table 3.1
`bpm_package.sh` Parameters for Generating the Descriptor

Parameter	Use
`-descriptor <BPM Package Descriptor XML>`	You can specify the name of the package descriptor template that you want to generate.
`-application <Application Name>`	You can specify the name of the application that you want to package.

Example `bpm_package.sh -generate-descriptor -descriptor <MyPackageDescriptor.xml>`

Example `bpm_package.sh -generate-descriptor -application <CustomerCreation>`

The name of the generated descriptor file name is determined in the following order:

- Descriptor file name specified in command-line argument
- Application Name specified in command-line argument
- `bpm_package.xml`
- If the file name is relative path, starting from current working directory

The output directory of the generated descriptor is determined in the following order:

- The path in the specified descriptor command-line argument
- Current working directory

Note Although the generated descriptor includes QXtend artifacts, QXtend artifacts are not supported in the BPM 1.3 release. Ignore or remove them from the descriptor.

2 Modify the package descriptor template generated in step 1 to include the artifacts you want for the package.

3 (Optional) Use the following command to validate the package descriptor:

```
bpm_package.sh -validate-descriptor [-descriptor <BPM Package Descriptor XML>]
```

Example `bpm_package.sh -validate-descriptor -descriptor <MyPackageDescriptor.xml>`

Example `bpm_package.sh -validate-descriptor -descriptor <CustomerCreation.xml>`

4 Use the following command to create the package:

```
bpm_package.sh -export -descriptor <BPM Package Descriptor XML> [-output-dir <Output Directory>]
```

The following table shows the use of parameters for creating the package.

Table 3.2
`bpm_package.sh` Parameters for Creating the Package

Parameter	Use
`-descriptor <BPM Package Descriptor XML>`	You can specify the name of the package descriptor template that you want to generate
`-output-dir <Output Directory>`	You can specify the directory for the output of the result package file

The name of the resulting package file is `<Application_Name>.zip`, where Application_Name is extracted from element Application in the package descriptor. The output directory is where the result package is created. The default value is the current working directory.

Note If the specified artifact does not exist, an error message is displayed.

Installing or Deploying BPM Package

After you have created the package, you can install or deploy processes from it to another environment, so that you can make them available for customization or for production.

- Install: Import everything in the package to the BPM repository to make it available for customization. In this case,
  - All projects are exported as projects to the repository, including BizLogic (BPM) projects, BizRules projects, and Common Resources projects.
  - All metadata is exported to the repository, including Process Template Model, Business Object, Adapter, Dataslot.
- Deploy: Deploy everything to the BPM server to make it ready for launching. In this case, the following artifacts are deployed to the BPM server:
  - Process Template
  - BizRules
  - Business Object
  - Adapter
  - Message

To install the package, run the following command line on the target BPM host:
`bpm_package.sh -import install -package <BPM Package Zip>`

To deploy the package, run the following command line on the target BPM host:
`bpm_package.sh -import deploy -package <BPM Package Zip>`

Note If `install` or `deploy` is not specified, the package is installed and deployed. If `install` is specified, the package is only installed. If `deploy` is specified, the package is only deployed.

The system deploys the process templates according to the operation specified in the package descriptor. There are three operation options:

- Reinstall: Existing process instances are removed, and the process template is updated.
- RefreshPt: The template is refreshed in memory. Existing and new process instances are affected, and Chart View uses a new diagram.

- InstallAsVersion: If the application is the same, a new version is created, but the template name is different. New process instances are created based on the new version. If application and template name are the same, it affects neither existing instances nor new instances, but Chart View uses a new diagram.

For a production environment where existing process instances cannot be affected, apply InstallAsVersion to have a new Process Template version for the same application. The new Process Template version has the same application name but a different process template name.

For development environment, you can use Reinstall to clean up all existing instances.

Note Make sure that the deploy script specifies operations for deploying. If operation is not specified in the descriptor, by default, InstallAsVersion is applied.

The deployment locations for BPM artifacts are as follows:

- BizRules: `BM8.0/ruleapps/<BizRules Name>` and in database
- Adapter jar: `BM8.0/ebmsapps/common/lib/<Project Name>.jar`
- Business Object class:
  - `BM8.0/ebmsapps/common/bo/classes/<BO Package Path>/<BO Name>.class`
  - `BM8.0/webapps/deploy/sbm.war/WEB-INF/classes/<BO Package Path>/<BO Name>.class`
- Other common resource files: location defined in the descriptor

Note The installation process only checks the availability of the top level business object. If child business objects are not specified in the descriptor, the installation process does not check them. So for child business objects, it is necessary for you to check all business objects manually to include all child business objects if there are any. For example, Business Object SaleOrderDetails_EE_1 is a child business object for SalesOrder_EE_1 in SalesOrder process; in this case, make sure to include Business Object SaleOrderDetails_EE_1 in the descriptor.

Example: Packaging, Installing, and Deploying BPM Processes

You want to package some business processes from one BPM environment, and install and deploy them to another BPM environment. You want the package to include processes of CustomerCreation_EE, CustomerCreationSelect_EE, CustomerEndUserSetup_EE, CustomerOperationalSetup_EE, and EndUserOperationalSetup_EE.

To complete the packaging, installation, and deployment, use the following procedures:

1 Manually export the following projects and metadata to the BPM repository:

- Process projects, including CustomerCreation_EE, CustomerCreationSelect_EE, CustomerEndUserSetup_EE, CustomerOperationalSetup_EE, and EndUserOperationalSetup_EE
- BizRules project: CustomerSelectRules_EE_V1
- Business Objects
- QDoc Adapters
- Messages
- Dataslots

2 On the BPM host, run the following command to generate the package descriptor template:
`bpm_package.sh -generate-descriptor -descriptor Customer_EE.xml`

3 Modify the `Customer_EE.xml` descriptor to include the business processes that you want for the package:

```
<?xml version="1.0" encoding="UTF-8" ?>
<QAD>
  <QADVersion>QADEE</QADVersion>
  <Application>Customer_EE</Application>
  <BPM>
    <Projects>
      <Project name="CustomerCreation_EE" type="BizLogic">
        <Processes>
           <Process applicationName="CustomerCreation_EE"
            templateName= "CustomerCreation_EE"/>
           <Process applicationName="CustomerCreationSelect_EE" templateName=
           "CustomerCreationSelect_EE"  />
           <Process applicationName="CustomerEndUserSetup_EE" templateName=
           "CustomerEndUserSetup_EE" />
           <Process applicationName="CustomerOperationalSetup_EE" templateName=
           "CustomerOperationalSetup_EE" />
           <Process applicationName="EndUserOperationalSetup_EE" templateName=
           "EndUserOperationalSetup_EE" />
        </Processes>
      </Project>
      <Project name="CustomerSelectRules_EE_V1" type="BizRules">
      </Project>
      <Project name="BusinessObjects_EE" type="CommonResources">
        <BusinessObjects>
          <Category name="qadbpm" package="com.qad.bpm.bo">
            <BusinessObject name="Debtor_EE_1" />
          </Category>
        </BusinessObjects>
      </Project>
      <Project name="QdocAdapters_EE" type="CommonResources">
        <Adapters>
          <Category name="QdocAdapters">
           <Adapter name="MaintainDebtorCreditHoldAdapter" class=
           "com.qad.bpm.adapters.qdocadapters_ee.MaintainDebtorCreditHoldAdapter"/>
          </Category>
        </Adapters>
      </Project>
    </Projects>
    <Messages>
      <Message name="QdocEventAcknowledgement" />
      <Message name="QdocEventAcknowledgements" />
      <Message name="SendTasksNotificationEmails" />
    </Messages>
    <Dataslots>
       <Category name="User">
         <Dataslot name="baseApprovalSubprocessCount" />
         <Dataslot name="disallowDelete" />
         <Dataslot name="disallowUpdate" />
         <Dataslot name="documentId1" />
         <Dataslot name="documentId2" />
         <Dataslot name="documentRejected" />
         <Dataslot name="domain" />
         <Dataslot name="emailFromAddress" />
         <Dataslot name="entity" />
         <Dataslot name="oidFields" />
         <Dataslot name="primaryBoDataslotNames" />
         <Dataslot name="qadNSMap" />
         <Dataslot name="qdocExceptions" />
         <Dataslot name="qdocResult" />
         <Dataslot name="sharedDomains" />
         <Dataslot name="site" />
         <Dataslot name="sourceApplication" />
         <Dataslot name="stakeholderEmails" />
         <Dataslot name="stakeholderUsersOrEmails" />
         <Dataslot name="subProcessInstanceName" />
```

```
        <Dataslot name="subProcessTemplateName" />
      </Category>
    </Dataslots>
  </BPM>
</QAD>
```

Note Make sure that you have exported all artifacts defined in the descriptor to the BPM repository.

4. (Optional) Use the command to validate the `Customer_EE.xml` descriptor:
   ```
   bpm_package.sh -validate-descriptor -descriptor Customer_EE.xml
   ```

5. Use the command to create the package:
   ```
   bpm_package.sh -export -descriptor Customer_EE.xml
   ```
   The resulting package file name is `Customer_EE.zip`. The output directory is the current working directory.

6. On the target BPM host, use the command to deploy the package:
   ```
   bpm_package.sh -import -package Customer_EE.zip
   ```
   Then you can see the BPM artifacts in the deployment locations:
   - Process Template:
     - `BM8.0/ebmsapps/CustomerCreation_EE`
     - `BM8.0/ebmsapps/CustomerCreationSelect_EE`
     - `BM8.0/ebmsapps/CustomerEndUserSetup_EE`
     - `BM8.0/ebmsapps/CustomerOperationalSetup_EE`
     - `BM8.0/ebmsapps/EndUserOperationalSetup_EE`
   - BizRules: `BM8.0/ruleapps/CustomerSelectRules_EE_V1` and in database
   - Adapter jar: `BM8.0/ebmsapps/common/lib/QdocAdapters_EE.jar`
   - Business Object class:
     - `BM8.0/ebmsapps/common/bo/classes/com/Debtor_EE_1.class`
     - `BM8.0/webapps/deploy/sbm.war/WEB-INF/classes/com/Debtor_EE_1.class`

   You can also see the BPM artifacts in the repository:
   - Process projects (BizLogic) in `Repository/Projects/BPM/Customer_EE`
   - BizRules project in `Repository/Projects/BizRules`
   - Adapters in `Repository/QdocAdapters_EE/Adapters/QdocAdapters`
   - Business Object in `Repository/BusinessObjects_EE/Business Objects/User`
   - Messages in database; you can see them from the Studio
   - Dataslots in `Repository/Dataslots/User`

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