Red Hat Process Automation Manager 7.5

Managing and monitoring business processes in Business Central

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Abstract

This document describes how to manage and monitor your running business processes in Red Hat Process Automation Manager 7.5.

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PREFACE

As a process administrator, you can use Business Central in Red Hat Process Automation Manager to manage and monitor process instances and tasks running on a number of projects. From Business Central you can start a new process instance, verify the state of all process instances, and abort processes. You can view the list of jobs and tasks associated with your processes, as well as understand and communicate any process errors.

Prerequisites

- Red Hat JBoss Enterprise Application Platform 7.2 is installed. For more information, see *Red Hat JBoss Enterprise Application Platform 7.2 Installation Guide*.

- Red Hat Process Automation Manager is installed. For more information, see *Planning a Red Hat Process Automation Manager installation*.

- Red Hat Process Automation Manager is running and you can log in to Business Central with the **process-admin** role. For more information, see *Planning a Red Hat Process Automation Manager installation*.

CHAPTER 1. PROCESS MONITORING

Red Hat Process Automation Manager provides real-time monitoring for your business processes and includes the following capabilities:

- Business managers can monitor processes in real time.

- Customers can monitor the current status of their requests.

- Administrators can easily monitor any errors related to process execution.

CHAPTER 2. PROCESS DEFINITIONS AND PROCESS INSTANCES IN BUSINESS CENTRAL

A process definition is a Business Process Model and Notation (BPMN) 2.0 file that serves as a container for a process and its BPMN diagram. The process definition shows all of the available information about the business process, such as any associated subprocesses or the number of users and groups that are participating in the selected definition.

A process definition also defines the **import** entry for imported processes that the process definition uses, and the **relationship** entries.

BPMN2 source of a process definition

```
<definitions id="Definition"
        targetNamespace="http://www.jboss.org/drools"
        typeLanguage="http://www.java.com/javaTypes"
        expressionLanguage="http://www.mvel.org/2.0"
        xmlns="http://www.omg.org/spec/BPMN/20100524/MODEL"Rule Task
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://www.omg.org/spec/BPMN/20100524/MODEL BPMN20.xsd"
        xmlns:g="http://www.jboss.org/drools/flow/gpd"
        xmlns:bpmndi="http://www.omg.org/spec/BPMN/20100524/DI"
        xmlns:dc="http://www.omg.org/spec/DD/20100524/DC"
        xmlns:di="http://www.omg.org/spec/DD/20100524/DI"
        xmlns:tns="http://www.jboss.org/drools">

    <process>
      PROCESS
    </process>

    <bpmndi:BPMNDiagram>
     BPMN DIAGRAM DEFINITION
    </bpmndi:BPMNDiagram>

    </definitions>
```

After you have created, configured, and deployed your project that includes your business processes, you can view the list of all the process definitions in Business Central **Menu → Manage → Process Definitions**. You can refresh the list of deployed process definitions at any time by clicking the refresh button in the upper-right corner.

The process definition list shows all the available process definitions that are deployed into the platform. Click any of the process definitions listed to show the corresponding process definition details. This displays information about the process definition, such as if there is a sub-process associated with it, or how many users and groups exist in the process definition. The **Diagram** tab in the process definition details page contains the BPMN2-based diagram of the process definition.

Within each selected process definition, you can start a new process instance for the process definition by clicking the **New Process Instance** button in the upper-right corner. Process instances that you start from the available process definitions are listed in **Menu → Manage → Process Instances**.

You can also define the default pagination option for all users under the **Manage** drop-down menu (**Process Definition**, **Process Instances**, **Tasks**, **Execution Errors**, and **Jobs**) and in **Menu → Track → Task Inbox**.

2.1. STARTING A PROCESS INSTANCE FROM THE PROCESS DEFINITIONS PAGE

You can start a process instance in **Menu → Manage → Process Definitions**. This is useful for environments where you are working with several projects or process definitions at the same time.

Prerequisites

- A project with a process definition has been deployed in Business Central.

Procedure

1. In Business Central, go to **Menu → Manage → Process Definitions**.

2. Select the process definition for which you want to start a new process instance from the list. The details page of the definition opens.

3. Click the **New Process Instance** button in the upper-right corner to start a new process instance.

4. Provide any required information for the process instance.

5. Click **Submit** to create the process instance.

6. View the new process instance in **Menu → Manage → Process Instances**.

2.2. STARTING A PROCESS INSTANCE FROM THE PROCESS INSTANCES PAGE

You can create new process instances or view the list of all the running process instances in **Menu → Manage → Process Instances**.

Prerequisites

- A project with a process definition has been deployed in Business Central.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances**.

2. Click the **New Process Instance** button in the upper-right corner and select the process definition for which you want to start a new process instance from the drop-down list.

3. Provide any information required to start a new process instance.

4. Click **Start** to create the process instance.
   The new process instance appears in the **Manage Process Instances** list.

2.3. GENERATING PROCESS DOCUMENTATION IN BUSINESS CENTRAL

In the process designer in Business Central, you can view and print a report of the process definition. The process documentation summarizes the components, data, and visual flow of the process in a format (PDF) that you can print and share more easily.

Procedure

1. In Business Central, navigate to a project that contains a business process and select the process.

2. In the process designer, click the **Documentation** tab to view the summary of the process file, and click **Print** in the top-right corner of the window to print the PDF report.

Figure 2.1. Generate process documentation

CHAPTER 3. PROCESS INSTANCE MANAGEMENT

You can view all process instances under **Menu → Manage → Process Instances**. Each row in the **Manage Process Instances** list represents a process instance from a particular process definition. Each execution is differentiated from all the others by the internal state of the information that the process is manipulating

Figure 3.1. Features in the Manage Process Instances page
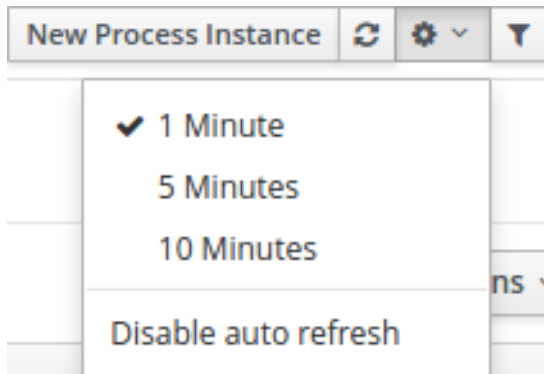
In order to view this information, you can click any one of the process instances and view the corresponding details.

The process instance page provides several tabs with runtime information related to the process:

- The **Instance Details** tab: This gives you a quick overview about what is going on inside the process. It displays the current state of the instance and the current activity that is being executed.

- The **Process Variables** tab: This displays all of the process variables that are being manipulated by the instance, with the exception of the variables that contain documents. Additionally, you can edit the process variable value and view its history.

- The **Documents** tab: This displays process documents if the process contains a variable of the type **org.jbpm.Document**. This enables easy access, download, and manipulation of the attached documents.

- The **Logs** tab: This displays process instance logs for the respective end users. For more information, see *Interacting with processes and tasks* .

- The **Diagram** tab: This tracks the progress of the process instance through the BPMN2 diagram. The node or nodes of the process flow that are in progress are highlighted in red.

For information on user credentials and conditions to be met to access Intelligent Process Server run time data, see *Planning a Red Hat Process Automation Manager installation* .

3.1. PROCESS INSTANCE FILTERING

For process instances in **Menu → Manage → Process Instances**, you can use the **Filters** and **Advanced Filters** panels to sort process instances as needed.

Figure 3.2. Filtering Process Instances - Default View

☆
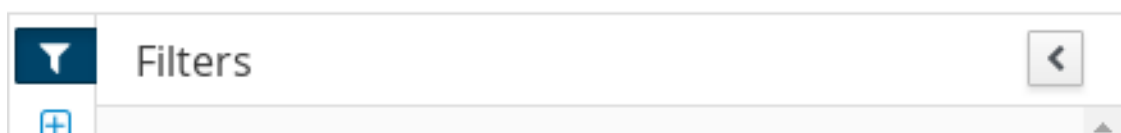
∨ State

☐ Active

☐ Aborted

☐ Completed

☐ Pending

☐ Suspended

∨ Errors

☐ With errors

☐ Without errors

Filter By

| Id | ∨ |

| Filter By Process Instance Id... | ⓘ |

Apply

Name

| Select | ∨ |

Definition Id

| Select | ∨ |

Start Date

| Start Date... | 🗓 |

You can filter process instances by the following attributes in the **Filters** panel:

Id

Filter by process instance ID.
Input: **Numeric**

Initiator

Filter by the user ID of the process instance initiator.
The user ID is a unique value, and depends on the ID management system.

Input: **String**

Correlation key

Filter by correlation key.
Input: **String**

Description

Filter by process instance description.
Input: **String**

State

Filter by different states. You can select more than one status to display results that meet any of the selected states. Removing the status filter displays all processes, regardless of status.
The following filter states are available:

- Active

- Aborted

- Completed

- Pending

- Suspended

Errors

Filter by process instances with or without errors.

Name

Filter by project name.

Date and time filtering

Start Date

When the process was started.

Last Update

When the process was updated or modified.

Each of these filters have the following quick filter options:

- Last Hour

- Today

- Last 24 Hours

- Last 7 Days

- Last 30 Days

- Custom
  Selecting **Custom** date and time filtering opens a calendar tool for selecting a date and time range.

Figure 3.3. Process Instances Search by Date Range

3.2. CREATING A CUSTOM PROCESS INSTANCE LIST

You can view the list of all the running process instances in **Menu → Manage → Process Instances** in Business Central. From this page, you can manage the instances during run time and monitor their execution. You can customize which columns are displayed, the number of rows displayed per page, and filter the results. You can also create a custom process instance list.

Prerequisites

- A project with a process definition has been deployed in Business Central.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances**.

2. In the **Manage Process Instances** page, click the advanced filters icon on the left to open the list of process instance **Advanced Filters** options.

3. In the **Advanced Filters** panel, enter the name and description of the filter that you want to use for your custom process instance list, and click **Add New**.

4. From the list of filter values, select the parameters and values to configure the custom process instance list, and click **Ok**.
   A new filter is created and immediately applied to the process instances list. The filter is also saved in the **Saved Filters** list. You can access saved filters by clicking the star icon on the left side of the **Manage Process Instances** page.
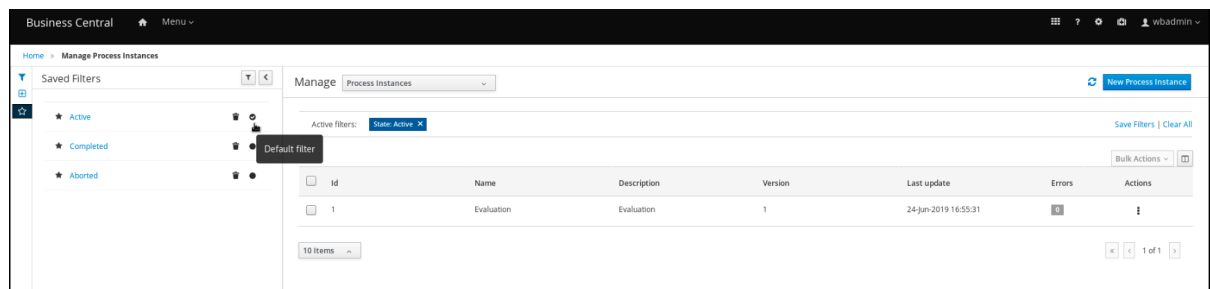
3.3. MANAGING PROCESS INSTANCES USING A DEFAULT FILTER

You can set a process instance filter as a default filter using the **Saved Filter** option in Business Central. A default filter will be executed every time when the page is open by the user.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances**.

2. On the **Manage Process Instances** page, click the star icon on the left of the page to expand the **Saved Filters** panel.
   In the **Saved Filters** panel, you can view the saved advanced filters.

   Default filter selection for Process Instances

3. In the **Saved Filters** panel, set a saved process instance filter as the default filter.

3.4. VIEWING PROCESS INSTANCE VARIABLES USING BASIC FILTERS

Business Central provides basic filters to view process instance variables. You can view the process instance variables of the process as columns using **Show/hide columns**.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances**.

2. On the **Manage Process Instances** page, click the filter icon on the left of the page to expand the **Filters** panel.

3. In the **Filters** panel, select the **Definition Id**.
   The filter is applied on the current process instance list.

4. Click **Show/hide columns** on the upper right of the process instances list and the process instance variables of the specified process id will be displayed.

5. Click the star icon to open the **Saved Filters** panel.
   In the **Saved Filters** panel, you can view all the saved advanced filters.

3.5. VIEWING PROCESS INSTANCE VARIABLES USING ADVANCED FILTERS

You can use the **Advanced Filters** option in Business Central to view process instance variables. When you create a filter over the column **processId**, you can view the process instance variables of the process as columns using **Show/hide columns**.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances**.

2. On the **Manage Process Instances** page, click the advanced filters icon to expand the **Advanced Filters** panel.

3. In the **Advanced Filters** panel, enter the name and description of the filter, and click **Add New**.

4. From the **Select column** list, select the **processId** attribute. The value will change to **processId != value1**.

5. From the **Select column** list, select **equals to** for the logical query.

6. In the text field, enter the name of the process id.

7. Click **Save** and the filter is applied on the current process instance list.

8. Click **Show/hide columns** on the upper right of the process instances list and the process instance variables of the specified process id will be displayed.

9. Click the star icon to open the **Saved Filters** panel.
   In the **Saved Filters** panel, you can view all the saved advanced filters.

3.6. ABORTING A PROCESS INSTANCE USING BUSINESS CENTRAL

If a process instance becomes obsolete, you can abort the process instance in Business Central.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances** to view the list of available process instances.

2. Select the process instance you want to abort from the list.

3. In the process details page, click the **Abort** button in the upper-right corner.

3.7. SIGNALING PROCESS INSTANCES FROM BUSINESS CENTRAL

You can signal a process instance from Business Central.

Prerequisites

- A project with a process definition has been deployed in Business Central.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances**.

2. Locate the required process instance, click the ⋮ button and select **Signal** from the drop-down menu.

3. Fill the following fields:

- **Signal Name**: Corresponds to the **SignalRef** or **MessageRef** attributes of the signal. This field is required.

> **NOTE**
>
> You can also send a **Message** event to the process by adding the **Message-** prefix in front of the **MessageRef** value.

- **Signal Data**: Corresponds to data accompanying the signal. This field is optional.
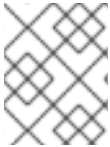
> **NOTE**
>
> When using the Business Central user interface, you can only signal Signal intermediate catch events.

3.8. ASYNCHRONOUS SIGNAL EVENTS

When several process instances from different process definitions are waiting for the same signal, they are executed sequentially in the same thread. But, if one of those process instances throws a runtime exception, all the other process instances are affected and usually result in a rolled back transaction. To avoid this situation, Red Hat Process Automation Manager supports using asynchronous signals events for:

- Throwing intermediate signal events

- End events

3.8.1. Configuring asynchronous signals for intermediate events

Intermediate events drive the flow of a business process. Intermediate events are used to either catch or throw an event during the execution of the business process. An intermediate event handles a particular situation that occurs during process execution. A throwing signal intermediate event produces a signal object based on the defined properties.

You can configure an asynchronous signal for intermediate events in Business Central.

Prerequisites

- You have created a project in Business Central and it contains at least one business process asset.

- A project with a process definition has been deployed in Business Central.

Procedure

1. Open a business process asset.

2. In the process designer canvas, drag and drop the **Intermediate Signal** from the left toolbar.

3. Click the **Properties** icon on the upper-right side of the screen to open the **Properties** panel.

4. Expand the **Data Assignments** section.

5. Click the box under the **Assignments** sub-section. The **Task Data I/O** dialog box opens.

6. Click **Add** next to **Data Inputs and Assignments**

7. Enter a name of the throw event as **async** in the **Name** field.

8. Leave the **Data Type** and **Source** fields blank.

9. Click **OK**.

It will automatically set the executor service on each session. This ensures that each process instance is signaled in a different transaction.

3.8.2. Configuring asynchronous signals for end events

End events indicate the completion of a business process. All end events, with the exception of the none and terminate end events, are throw events. A throwing signal end event is used to finish a process or subprocess flow. When the execution flow enters the element, the execution flow finishes and produces a signal identified by its **SignalRef** property.

You can configure an asynchronous signal for end events in Business Central.

Prerequisites

- You have created a project in Business Central and it contains at least one business process asset.

- A project with a process definition has been deployed in Business Central.

Procedure

1. Open a business process asset.

2. In the process designer canvas, drag and drop the **End Signal** from the left toolbar.

3. Click the **Properties** icon on the upper-right side of the screen to open the **Properties** panel.

4. Expand the **Data Assignments** section.

5. Click the box under the **Assignments** sub-section. The **Task Data I/O** dialog box opens.

6. Click **Add** next to **Data Inputs and Assignments**

7. Enter a name of the throw event as **async** in the **Name** field.

8. Leave the **Data Type** and **Source** fields blank.

9. Click **OK**.

It will automatically set the executor service on each session. This ensures that each process instance is signaled in a different transaction.

3.9. PROCESS INSTANCE ADMINISTRATION

Process instance administration provides operations for the process engine and the individual process instance.

The following process instance operations are available in Business Central:

- **get process nodes – by process instance id** Returns all nodes, including all embedded subprocesses that exist in the process instance. You must retrieve the nodes from the specified process instance to ensure that the node exists and includes a valid ID so that it can be used by other administration operations.

- **cancel node instance – by process instance id and node instance id** Cancels a node instance within a process instance using the process and node instance IDs.

- **retrigger node instance – by process instance id and node instance id** Re-triggers a node instance by canceling the active node instance and creates a new node instance of the same type using the process and node instance IDs.

- **update timer – by process instance id and timer id** Updates the timer expiration of an active timer based on the time elapsed since the timer was scheduled. For example, if a timer was initially created with delay of one hour and after thirty minutes you set it to update in two hours, it expires in one and a half hours from the time it was updated.

  - **delay**: The duration after the timer expires.

  - **period**: The interval between the timer expiration for cycle timers.

  - **repeat limit**: Limits the expiration for a specified number for cycle timers.

- **update timer relative to current time – by process instance id and timer id** Updates the timer expiration of an active timer based on the current time. For example, if a timer was initially created with delay of one hour and after thirty minutes you set it to update in two hours, it expires in two hours from the time it was updated.

- **list timer instances – by process instance id** Returns all active timers for a specified process instance.

- **trigger node – by process instance id and node id** Triggers any node in a process instance at any time.

CHAPTER 4. TASK MANAGEMENT

Tasks that are assigned to the current user appear in **Menu → Track → Task Inbox** in Business Central. You can click a task to open and begin working on it.

A user task can be assigned to a particular user, multiple users, or to a group. If assigned to multiple users or a group it appears in the task lists of all assigned users and any of the possible actors can claim the task. When a task is assigned to another user it no longer appears in your **Task Inbox**.

Task Inbox

Active filters: Save Filters | Clear All

Task	Process Definition Id	Status	▼ Created On	Actions
Self Evaluation	evaluation	Reserved	07-Jun-2018 08:08:49	⋮

10 Items   ˅   « ‹ 1 of 1 ›

Business administrators can view and manage all user tasks from the **Tasks** page in Business Central, located under **Menu → Manage → Tasks**. Users with the **admin** or **process-admin** role can access the **Tasks** page but do not have access rights to view and manage tasks by default.

To manage all the tasks, a user must be specified as a process administrator by defining any of the following conditions:

- User is specified as **task admin user**. The default value is **Administrator**.

- User belongs to the task administrators group. The default value is **Administrators**.

You can configure the user and user group assignment with the **org.jbpm.ht.admin.user** and **org.jbpm.ht.admin.group** system properties.

You can open, view, and modify the details of a task, such as the due date, the priority, or the task description, by clicking a task in the list. The following tabs are available in the task page:

3 - Self Evaluation   ↻   ✕

| **Work** | Details | Assignments | Comments | Admin | Logs |

Reason

test

Performance *

100

Claim

- **Work**: Displays basic details about the task and the task owner. You can click the **Claim** button to claim the task. To undo the claim process, click the **Release** button.

- **Details**: Displays information such as task description, status, and due date.

- **Assignments**: Displays the current owner of the task and enables you to delegate the task to another person or group.

- **Comments**: Displays comments added by task user(s). You can delete an existing comment and add a new comment.

- **Admin**: Displays the potential owner of the task and enables you to to forward the task to another person or group. It also displays the actual owner of the task and you can send a reminder to the actual owner of the task.

- **Logs**: Displays task logs containing task life cycle events (such as task started, claimed, completed), updates made to task fields (such as task due date and priority).

You can filter the tasks based on the filter parameters available by clicking the filters icon on the left side of the page. For more information about filtering, see Section 4.1, "Task filtering".

In addition to these, you can create custom filters to filter tasks based on the query parameters you define. For more information about custom tasks filters, see Section 4.2, "Creating custom task filters".

4.1. TASK FILTERING

For tasks in **Menu → Manage → Tasks** and in **Menu → Track → Task Inbox**, you can use the **Filters** and **Advanced Filters** panels to sort tasks as needed.

Figure 4.1. Filtering Tasks - Default View
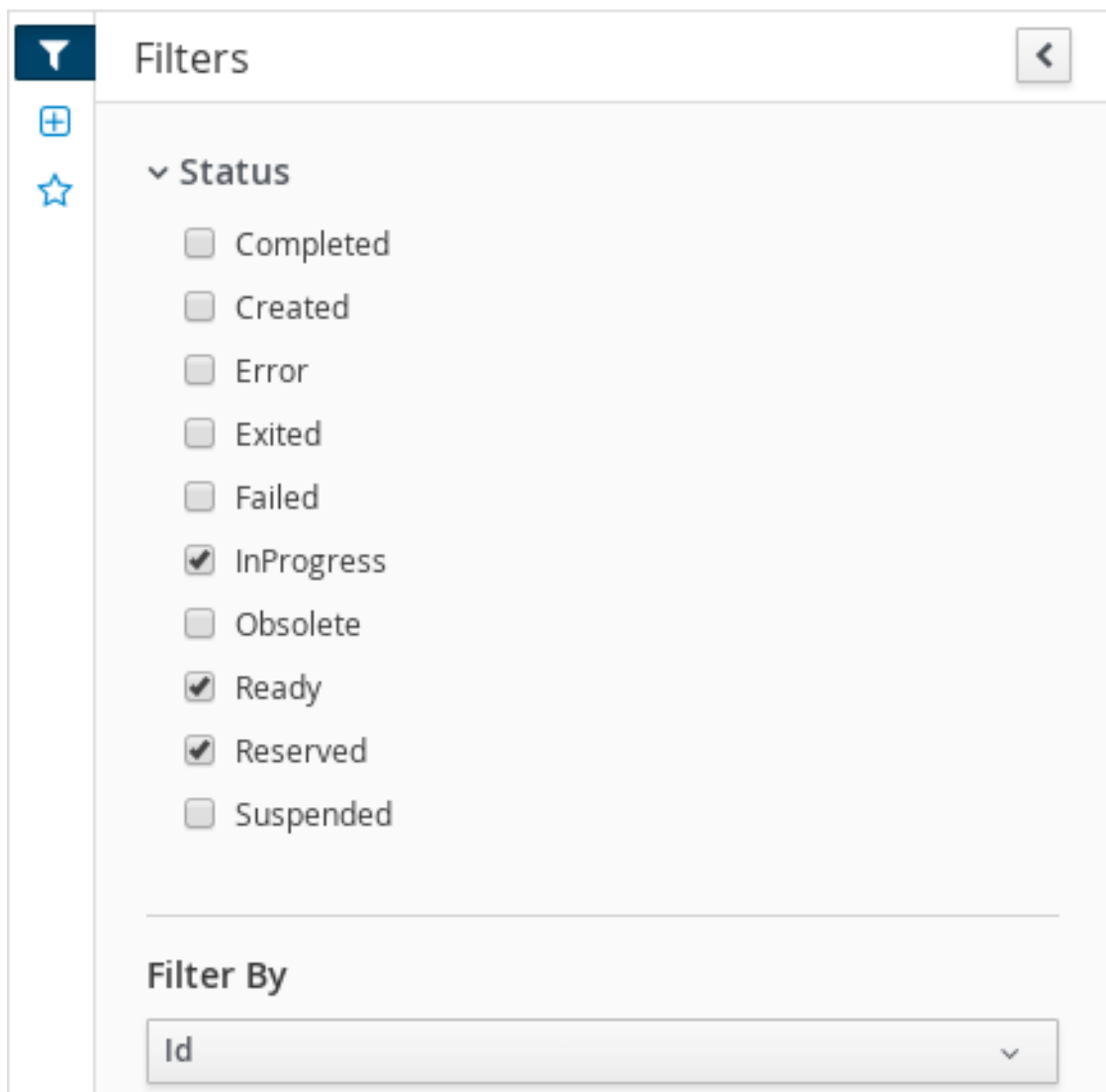
The **Manage Tasks** page is only available to administrators and process administrators.

You can filter tasks by the following attributes in the **Filters** panel:

Id

> Filter by process instance ID.
> Input: **Numeric**

Task

> Filter by task name.
> Input: **String**

Correlation key

> Filter by correlation key.
> Input: **String**

Actual Owner

> Filter by the task owner.
> The actual owner refers to the user responsible for executing the task. The search is based on user ID, which is a unique value and depends on the ID management system.
>
> Input: **String**

Process Instance Description

Filter by process instance description.
Input: **String**

Status

Filter by task status. You can select more than one status to display results that meet any of the selected states. Removing the status filter displays all processes, regardless of status.
The following filter states are available:

- Completed

- Created

- Error

- Exited

- Failed

- InProgress

- Obsolete

- Ready

- Reserved

- Suspended

Process Name

Filter by process name.

Created On

Filtering by date or time.
This filter has the following quick filter options:

- Last Hour

- Today

- Last 24 Hours

- Last 7 Days

- Last 30 Days

- Custom
  Selecting **Custom** date and time filtering opens a calendar tool for selecting a date and time range.

Figure 4.2. Search by Date

4.2. CREATING CUSTOM TASK FILTERS

You can create a custom task filter based on a provided query in **Menu → Manage → Tasks**, or in **Menu → Track → Task Inbox** for tasks assigned to the current user.

Procedure

1. In Business Central, go to **Menu → Manage → Tasks**

2. In the **Manage Tasks** page, click the advanced filters icon on the left to open the list of **Advanced Filters** options.

3. In the **Advanced Filters** panel, enter the name and description of the filter, and click **Add New**.

4. In the **Select column** drop-down menu, choose **name**.
   The content of the drop-down menu changes to **name != value1**.

5. Click the drop-down menu again and choose **equals to**.

6. Rewrite the value of the text field to the name of the task you want to filter. Note that the name must match the value defined in the associated business process:

7. Click **Ok** to save the custom task filter.

After you apply the filter with a specified restriction, the set of configurable columns is based on the specific custom task filter and contains the following column options:
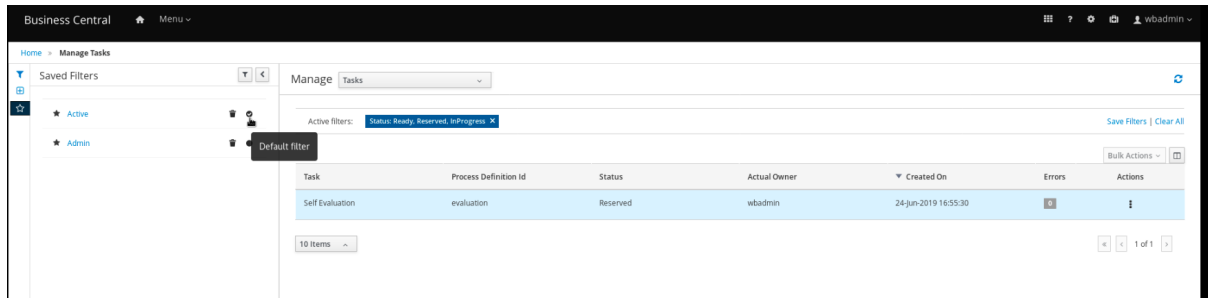
4.3. MANAGING TASKS USING A DEFAULT FILTER

You can set a task filter as a default filter using the **Saved Filter** option in Business Central. A default filter will be executed every time when the page is open by the user.

Procedure

1. In Business Central, go to **Menu → Track → Task Inbox** or go to **Menu → Manage → Tasks**

2. On the **Task Inbox** page or the **Manage Tasks** page, click the star icon on the left of the page to expand the **Saved Filters** panel.
   In the **Saved Filters** panel, you can view the saved advanced filters.

   Default filter selection for Tasks or Task Inbox

3. In the **Saved Filters** panel, set a saved task filter as the default filter.

4.4. VIEWING TASK VARIABLES USING BASIC FILTERS

Business Central provides basic filters to view task variables in **Manage Tasks** and **Task Inbox**. You can view the task variables of the task as columns using **Show/hide columns**.

Procedure

1. In Business Central, go to **Menu → Manage → Tasks** or go to **Menu → Track → Task Inbox**.

2. On the **Task Inbox** page, click the filter icon on the left of the page to expand the **Filters** panel

3. In the **Filters** panel, select the **Task Name**.
   The filter is applied on the current task list.

4. Click **Show/hide columns** on the upper right of the tasks list and the task variables of the specified task id will be displayed.

5. Click the star icon to open the **Saved Filters** panel.
   In the **Saved Filters** panel, you can view all the saved advanced filters.

4.5. VIEWING TASK VARIABLES USING ADVANCED FILTERS

You can use the **Advanced Filters** option in Business Central to view task variables in **Manage Tasks** and **Task Inbox**. When you create a filter with the task defined, you can view the task variables of the task as columns using **Show/hide columns**.

Procedure

1. In Business Central, go to **Menu → Manage → Tasks** or go to **Menu → Track → Task Inbox**.

2. On the **Manage Tasks** page or the **Task Inbox** page, click the advanced filters icon to expand the **Advanced Filters** panel.

3. In the **Advanced Filters** panel, enter the name and description of the filter, and click **Add New**.

4. From the **Select column** list, select the **name** attribute. The value will change to **name != value1**.

5. From the **Select column** list, select **equals to** for the logical query.

6. In the text field, enter the name of the task.

7. Click **Save** and the filter is applied on the current task list.

8. Click **Show/hide columns** on the upper right of the tasks list and the task variables of the specified task id will be displayed.

9. Click the star icon to open the **Saved Filters** panel.
   In the **Saved Filters** panel, you can view all the saved advanced filters.

4.6. MANAGING SERVICE TASKS IN BUSINESS CENTRAL

Service tasks (work items) are tasks that you can customize and reuse across multiple business processes or across all projects in Business Central. Red Hat Process Automation Manager provides a set of service tasks within the service task repository in Business Central. You can enable or disable the default service tasks and upload custom service tasks into Business Central to implement the tasks in the relevant processes.

> **NOTE**
>
> Red Hat Process Automation Manager includes a limited set of supported custom tasks. Custom tasks that are not included in Red Hat Process Automation Manager are not supported.

Procedure

1. In Business Central, select the **Admin** icon in the top-right corner of the screen and select **Service Tasks Administration**.
   This page lists the service task installation settings and available service tasks for processes in projects throughout Business Central. The service tasks that you enable on this page become available in the project-level settings where you can then install each service task to be used in processes. The way in which the service tasks are installed in a project is determined by the global settings that you enable or disable under **Settings** on this **Service Tasks Administration** page.

2. Under **Settings**, enable or disable each setting to determine how the available service tasks will be implemented when a user installs them at the project level.
   The following service task settings are available:

   - **Install as Maven artifact** Uploads the service task JAR file to the Maven repository that is configured with Business Central, if the file is not already present.

   - **Install service task dependencies into project** Adds any service task dependencies to the **pom.xml** file of the project where the task is installed.

   - **Use version range when installing service task into project** Uses a version range instead of a fixed version of a service task that is added as a project dependency. Example: **[7.16,)** instead of **7.16.0.Final**

3. Enable or disable (set to **ON** or **OFF**) any available service tasks as needed. Service tasks that you enable will be displayed in project-level settings for all projects in Business Central.

Figure 4.3. Enable service tasks and service task settings

4. To add a custom service task, click **Add Service Task**, browse to the relevant JAR file, and click the **Upload** icon. The JAR file must contain work item handler implementations annotated with **@Wid**.

5. After you configure all required service tasks, navigate to a project in Business Central and go to the project **Settings → Service Tasks** page to view the available service tasks that you enabled.

6. For each service task, click **Install** to make the task available to the processes in that project or click **Uninstall** to exclude the task from the processes in the project.

7. If you are prompted for additional information when you install a service task, enter the required information and click **Install** again.
   The required parameters for the service task depend on the type of task. For example, rule and decision tasks require artifact GAV information (Group ID, Artifact ID, Version), email tasks require host and port access information, and REST tasks require API credentials. Other service tasks might not require any additional parameters.

Figure 4.4. Install service tasks for use in processes

8. Click **Save**.

9. Return to the project page, select or add a business process in the project, and in the process designer palette, select the **Service Tasks** option to view the available service tasks that you enabled and installed:

Figure 4.5. Access installed service tasks in process designer
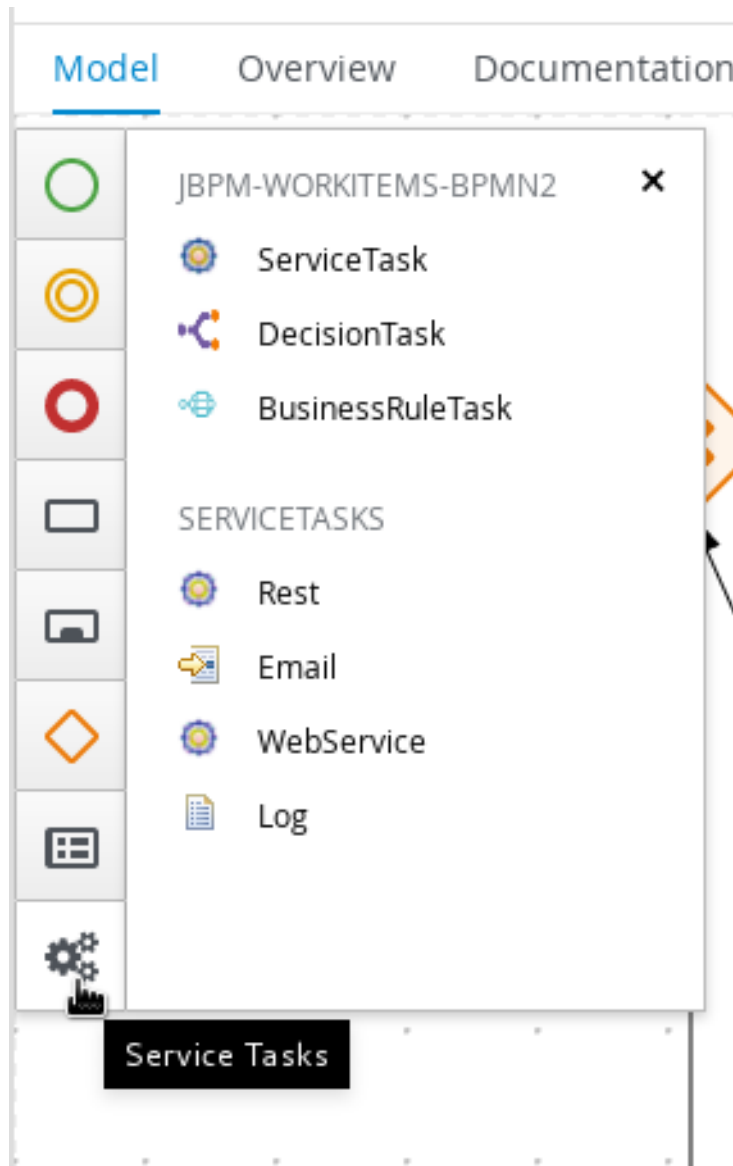
4.7. USER TASK ADMINISTRATION

User tasks enable you to include human actions as input to the business processes that you create. User task administration provides methods to manipulate user and group task assignments, data handling, time-based automatic notifications, and reassignments.

The following user task operations are available in Business Central:

- **add/remove potential owners – by task id** Adds or removes users and groups using the task ID.

- **add/remove excluded owners – by task id** Adds or removes excluded owners using the task ID.

- **add/remove business administrators – by task id** Adds or removes business administrators using the task ID.

- **add task inputs – by task id** Provides a way to modify task input content after a task is created using the task ID.

- **remove task inputs – by task id** Removes task input variables using the task ID.

- **remove task output – by task id** Removes task output variables using the task ID.

- **schedules new reassignment to given users/groups after given time elapses – by task id** Schedules automatic reassignment based on the time expression and the state of the task:

  - **reassign if not started**: Used if the task was not moved to the **InProgress** state.

  - **reassign if not completed**: Used if the task was not moved to the **Completed** state.

- **schedules new email notification to given users/groups after given time elapses – by task id** Schedules automatic email notification based on the time expression and the state of the task:

  - **notify if not started**: Used if the task was not moved to the **InProgress** state.

  - **notify if not completed**: Used if the task was not moved to the **Completed** state.

- **list scheduled task notifications – by task id** Returns all active task notifications using the task ID.

- **list scheduled task reassignments – by task id** Returns all active tasks reassignments using the task ID.

- **cancel task notification – by task id and notification id** Cancels and unschedules task notification using the task ID.

- **cancel task reassignment – by task id and reassignment id** Cancels and unschedules task reassignment using the task ID.

4.8. BULK ACTIONS ON TASKS

In the **Tasks** and **Task Inbox** pages in Business Central, you can perform bulk actions over multiple tasks in a single operation.

> **NOTE**
>
> If a specified bulk action is not permitted based on the task status, a notification is displayed and the operation is not executed on that particular task.

4.8.1. Claiming tasks in bulk

After you create tasks in Business Central, you can claim the available tasks in bulk.

Procedure

1. In Business Central, complete one of the following steps:

   - To view the **Task Inbox** page, select **Menu → Track → Task Inbox**.

   - To view the **Tasks** page, select **Menu → Manage → Tasks**.

2. To claim the tasks in bulk, on the **Task Inbox** page or the **Manage Tasks** page, select two or more tasks from the **Task** table.

3. From the **Bulk Actions** drop-down list, select **Bulk Claim**.

4. To confirm, click **Claim** on the **Claim selected tasks** window.

For each task selected, a notification is displayed showing the result.

4.8.2. Releasing tasks in bulk

You can release your owned tasks in bulk for others to claim.

Procedure

1. In Business Central, complete one of the following steps:

   - To view the **Task Inbox** page, select **Menu → Track → Task Inbox**.

   - To view the **Tasks** page, select **Menu → Manage → Tasks**.

2. To release the tasks in bulk, on the **Task Inbox** page or the **Manage Tasks** page, select two or more tasks from the **Task** table.

3. From the **Bulk Actions** drop-down list, select **Bulk Release**.

4. To confirm, click **Release** on the **Release selected tasks** window .

For each task selected, a notification is displayed showing the result.

4.8.3. Resuming tasks in bulk

If there are suspended tasks in Business Central, you can resume them in bulk.

Procedure

1. In Business Central, complete one of the following steps:

   - To view the **Task Inbox** page, select **Menu → Track → Task Inbox**.

   - To view the **Tasks** page, select **Menu → Manage → Tasks**.

2. To resume the tasks in bulk, on the **Task Inbox** page or the **Manage Tasks** page, select two or more tasks from the **Task** table.

3. From the **Bulk Actions** drop-down list, select **Bulk Resume**.

4. To confirm, click **Resume** on the **Resume selected tasks** window.

For each task selected, a notification is displayed showing the result.

4.8.4. Suspending tasks in bulk

After you create tasks in Business Central, you can suspend the tasks in bulk.

Procedure

1. In Business Central, complete one of the following steps:

   - To view the **Task Inbox** page, select **Menu → Track → Task Inbox**.

   - To view the **Tasks** page, select **Menu → Manage → Tasks**.

2. To suspend the tasks in bulk, on the **Task Inbox** page or the **Manage Tasks** page, select two or more tasks from the **Task** table.

3. From the **Bulk Actions** drop-down list, select **Bulk Suspend**.

4. To confirm, click **Suspend** on the **Suspend selected tasks** window .

For each task selected, a notification is displayed showing the result.

4.8.5. Reassigning tasks in bulk

After you create tasks in Business Central, you can reassign your tasks in bulk and delegate them to others.

Procedure

1. In Business Central, complete one of the following steps:

   - To view the **Task Inbox** page, select **Menu → Track → Task Inbox**.

   - To view the **Tasks** page, select **Menu → Manage → Tasks**.

2. To reassign the tasks in bulk, on the **Task Inbox** page or the **Manage Tasks** page, select two or more tasks from the **Task** table.

3. From the **Bulk Actions** drop-down list, select **Bulk Reassign**.

4. In the **Tasks reassignment** window, enter the user ID of the user to whom you want to reassign the tasks.

5. Click **Delegate**.

For each task selected, a notification is displayed showing the result.

CHAPTER 5. EXECUTION ERROR MANAGEMENT

When an execution error occurs for a business process, the process stops and reverts to the most recent stable state (the closest safe point) and continues its execution. If an error of any kind is not handled by the process the entire transaction rolls back, leaving the process instance in the previous wait state. Any trace of this is only visible in the logs, and usually displayed to the caller who sent the request to the process engine.

Users with process administrator (**process-admin**) or administrator (**admin**) roles are able to access error messages in Business Central. Execution error messaging provides the following primary benefits:

- Better traceability

- Visibility in case of critical processes

- Reporting and analytics based on error situations

- External system error handling and compensation

Configurable error handling is responsible for receiving any technical errors thrown throughout the process engine execution (including task service). The following technical exceptions apply:

- Anything that extends **java.lang.Throwable**

- Process level error handling and any other exceptions not previously handled

There are several components that make up the error handling mechanism and allow a pluggable approach to extend its capabilities.

The process engine entry point for error handling is the **ExecutionErrorManager**. This is integrated with **RuntimeManager**, which is then responsible for providing it to the underlying **KieSession** and **TaskService**.

From an API point of view, **ExecutionErrorManager** provides access to the following components:

- **ExecutionErrorHandler**: The primary mechanism for error handling

- **ExecutionErrorStorage**: Pluggable storage for execution error information

5.1. VIEWING PROCESS EXECUTION ERRORS IN BUSINESS CENTRAL

You can view process errors in two locations in Business Central:

- Menu → Manage → Process Instances

- Menu → Manage → Execution Errors

In the **Manage Process Instances** page, the **Errors** column displays the number of errors, if any, for the current process instance.

Prerequisites

- An error has occurred while running a process in Business Central.

Procedure

1. In Business Central, go to **Menu → Manage → Process Instances** and hover over the number shown in the **Errors** column.

2. Click the number of errors shown in the **Errors** column to navigate to the **Manage Execution Errors** page.
   The **Manage Execution Errors** page shows a list of errors for all process instances.

5.2. MANAGING EXECUTION ERRORS

By definition, every process error that is detected and stored is unacknowledged and must be handled by someone or something (in case of automatic error recovery). Errors are filtered on the basis of whether or not they have been acknowledged. Acknowledging an error saves the user information and time stamp for traceability. You can access the **Error Management** view at any time.

Procedure

1. In Business Central, go to **Menu → Manage → Execution Errors**.

2. Select an error from the list to open the **Details** tab. This displays information about the error or errors.

3. Click the **Acknowledge** button to acknowledge and clear the error. You can view the error later by selecting **Yes** on the **Acknowledged** filter in the **Manage Execution Errors** page.
   If the error was related to a task, a **Go to Task** button is displayed.

4. Click the **Go to Task** button, if applicable, to view the associated job information in the **Manage Tasks** page.
   In the **Manage Tasks** page, you can restart, reschedule, or retry the corresponding task.

5.3. ERROR FILTERING

For execution errors in **Menu → Manage → Execution Errors**, you can use the **Filters** and **Advanced Filters** panels to sort errors as needed.

Figure 5.1. Filtering Errors – Default View

You can filter execution errors by the following attributes in the **Filters** panel:

Type

Filter by errors by type. You can select multiple type filters. Removing the status filter displays all processes, regardless of status.
The following filter states are available:

- DB

- Task

- Process

- Job

Process Instance Id

Filter by process instance ID.
Input: **Numeric**

Job Id

Filter by job ID. The job id is created automatically when the job is created.
Input: **Numeric**

Id

Filter by process instance ID.
Input: **Numeric**

Acknowledged

Filter errors that have been or have not been acknowledged.

Error Date

Filtering by the date or time that the error occurred.
This filter has the following quick filter options:

- Last Hour

- Today

- Last 24 Hours

- Last 7 Days

- Last 30 Days

- Custom
  Selecting **Custom** date and time filtering opens a calendar tool for selecting a date and time range.

Figure 5.2. Search by Date

CHAPTER 6. PROCESS INSTANCE MIGRATION

Process instance migration (PIM) service is a Technology Preview standalone service containing a user interface and a back-end, and packaged as a Thorntail uber-JAR. You can use the PIM service to define the migration between two different process definitions, known as a migration plan. The user can then apply the migration plan to the running process instance in a specific process server.

For more information about the PIM service, see Process Instance Migration Service in *KIE (Drools, OptaPlanner and jBPM)*.

6.1. INSTALLING THE PROCESS INSTANCE MIGRATION SERVICE

You can use the process instance migration (PIM) service to create, export and execute migration plans. The PIM service is provided through a GitHub repository. To install the PIM service, clone the GitHub repository, then run the service and access it in a web browser.

Prerequisites

- You have defined processes in a backup-ed Red Hat Process Automation Manager development environment.

Procedure

1. Download the **rhpam-7.5.1-add-ons.zip** file from the Software Downloads page for Red Hat Process Automation Manager 7.5.

2. Unzip the downloaded archive.

3. Move the **rhpam-7.5.1-process-migration-service-standalone.jar** file from the add-ons archive to a desired location.

4. In the location, create a YAML file containing the kieserver and Thorntail configuration, for example:

```
thorntail:
  deployment:
    process-migration.war:
      jaxrs:
        application-path: /rest
      web:
        login-config:
          auth-method: BASIC
          security-domain: pim
        security-constraints:
          - url-pattern: /*
            roles: [ admin ]
          - url-pattern: /health/*
  datasources:
    data-sources:
      pimDS:
        driver-name: h2
        connection-url: jdbc:h2:mem:test;DB_CLOSE_DELAY=-1;DB_CLOSE_ON_EXIT=FALSE
        user-name: DS_USERNAME
        password: DS_PASSWORD
```

```
    security:
      security-domains:
        pim:
          classic-authentication:
            login-modules:
              UsersRoles:
                code: UsersRoles
                flag: required
                module-options:
                  usersProperties: application-users.properties
                  rolesProperties: application-roles.properties
kieservers:
  - host: http://localhost:8080/kie-server/services/rest/server
    username: KIESERVER_USERNAME
    password: KIESERVER_PASSWORD
  - host: http://localhost:8280/kie-server/services/rest/server
    username: KIESERVER_USERNAME
    password: KIESERVER_PASSWORD1
```

5. Start the PIM service:

   ```
   $ java -jar rhpam-7.5.1-process-migration-service-standalone.jar -s ./config.yml
   ```

6. To enable auto-detection of a JDBC driver by Thorntail, add the **JAR** file of the JDBC driver name to the **thorntail.classpath** system property. For example:

   ```
   $ java -Dthorntail.classpath=./h2-1.4.200.jar -jar rhpam-7.5.1-process-migration-service-standalone.jar -s ./config.yml
   ```

   > **NOTE**
   >
   > The **h2** JDBC driver is included by default. You can use different JDBC drivers to connect to different external databases.

7. After the PIM service is up and running, enter **http://localhost:8080** in a web browser.

6.2. CREATING A MIGRATION PLAN

You can define the migration between two different process definitions, known as a migration plan, in the process instance migration (PIM) service web UI.

Prerequisites

- You have defined processes in a backup-ed Red Hat Process Automation Manager development environment.

- The process instance migration service is running.

Procedure

1. Enter **http://localhost:8080** in a web browser.

2. Log in to the PIM service.

3. In the upper right corner of the **Process Instance Migration** page, from the KIE Service list select the KIE Service you want to add a migration plan for.

4. Click **Add Plan**. The **Add Migration Plan Wizard** window opens.

5. In the **Name** field, enter a name for the migration plan.

6. Optional: In the **Description** field, enter a description for the migration plan.

7. Click **Next**.

8. In the **Source ContainerID** field, enter the source container ID.

9. In the **Source ProcessId** field, enter the source process ID.

10. Click **Copy Source To Target**

11. In the **Target ContainerID** field, update the target container ID.

12. Click **Retrieve Definition from backend** and click **Next**.

13. From the **Source Nodes** list, select the source node you want to map.

14. From the **Target Nodes** list, select the target node you want to map.

15. If the **Source Process Definition Diagram** pane is not displayed, click **Show Source Diagram**.

16. If the **Target Process Definition Diagram** pane is not displayed, click **Show Target Diagram**.

17. Optional: To modify the view in the diagram panes, perform any of the following tasks:

    - To select text, select the icon.

    - To pan, select the icon.

    - To zoom in, select the icon.

    - To zoom out, select the icon.

    - To fit to viewer, select the icon.

18. Click **Map these two nodes**.

19. Click **Next**.

20. Optional: To export as a **JSON** file, click **Export**.

21. In the **Review & Submit** tab, review the plan and click **Submit Plan**.

22. Optional: To export as a **JSON** file, click **Export**.

23. Review the response and click **Close**.

6.3. EDITING A MIGRATION PLAN

You can edit a migration plan in the process instance migration (PIM) service web UI. You can modify the migration plan name, description, specified nodes, and process instances.

Prerequisites

- You have defined processes in a backup-ed Red Hat Process Automation Manager development environment.

- The PIM service is running.

Procedure

1. Enter **http://localhost:8080** in a web browser.

2. Log in to the PIM service.

3. On the **Process Instance Migration** page, select the **Edit Migration Plan** icon on the row of the migration plan you want to edit. The **Edit Migration Plan** window opens.

4. On each tab, modify the details you want to change.

5. Click **Next**.

6. Optional: To export as a **JSON** file, click **Export**.

7. In the **Review & Submit** tab, review the plan and click **Submit Plan**.

8. Optional: To export as a **JSON** file, click **Export**.

9. Review the response and click **Close**.
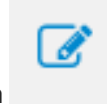
6.4. EXPORTING A MIGRATION PLAN

You can export migration plans as a JSON file using the process instance migration (PIM) service web UI.

Prerequisites

- You have defined processes in a backup-ed Red Hat Process Automation Manager development environment.

- The PIM service is running.

Procedure

1. Enter **http://localhost:8080** in a web browser.

2. Log in to the PIM service.

3. On the **Process Instance Migration** page, select the **Export Migration Plan** icon on the row of the migration plan you want to execute. The **Export Migration Plan** window opens.

4. Review and click **Export**.

6.5. EXECUTING A MIGRATION PLAN

You can execute the migration plan in the process instance migration (PIM) service web UI.

Prerequisites

- You have defined processes in a backup-ed Red Hat Process Automation Manager development environment.

- The PIM service is running.

Procedure

1. Enter **http://localhost:8080** in a web browser.

2. Log in to the PIM service.

3. On the **Process Instance Migration** page, select the **Execute Migration Plan** icon on the row of the migration plan you want to execute. The **Execute Migration Plan Wizard** window opens.

4. From the migration plan table, select the check box on the row of each running process instance you want to migrate, and click **Next**.

5. In the **Callback URL** field, enter the callback URL.

6. To the right of **Run migration**, perform one of the following tasks:

   - To execute the migration immediately, select **Now**.

   - To schedule the migration, select **Schedule** and in the text field, enter the date and time, for example **06/20/2019 10:00 PM**.

7. Click **Next**.

8. Optional: To export as a **JSON** file, click **Export**.

9. Click **Execute Plan**.

10. Optional: To export as a **JSON** file, click **Export**.

11. Check the response and click **Close**.

6.6. DELETING A MIGRATION PLAN

You can delete a migration plan in the process instance migration (PIM) service web UI.

Prerequisites

- You have defined processes in a backup-ed Red Hat Process Automation Manager development environment.

- The PIM service is running.

Procedure

1. Enter **http://localhost:8080** in a web browser.

2. Log in to the PIM service.

3. On the **Process Instance Migration** page, select the **Delete** icon on the row of the migration plan you want to delete. The **Delete Migration Plan** window opens.

4. Click **Delete** to confirm deletion.

APPENDIX A. VERSIONING INFORMATION

Documentation last updated on Friday, April 16, 2021.