



Red Hat Process Automation Manager 7.3

Managing and monitoring business processes
in Business Central

Red Hat Process Automation Manager 7.3 Managing and monitoring business processes in Business Central

Red Hat Customer Content Services
brms-docs@redhat.com

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Abstract

This document describes how to manage and monitor your running business processes in Red Hat Process Automation Manager 7.3.

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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

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 **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 on 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. PROCESS INSTANCE DETAILS

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 2.1. Features in the Manage Process Instances page

Id	Name	Description	Version	Last update	Errors	Actions
4	Evaluation	Evaluation	1	30-May-2018 15:0...	0	⋮
3	Evaluation	Evaluation	1	30-May-2018 15:0...	0	⋮
2	MortgageApprova...	MortgageApprova...	1.0	30-May-2018 13:5...	0	⋮
1	MortgageApprova...	MortgageApprova...	1.0	30-May-2018 13:4...	0	⋮

In order to view this information, you can click on 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:

4 - MortgageApprovalProcess Signal Abort X

Instance Details Process Variables Documents Logs Diagram

Definition Id	Mortgage_Process.MortgageApprovalProcess
Instance State	Active
Deployment	mortgage-process_1.0.0-SNAPSHOT
Definition Version	1.0
SLA Compliance	N/A
Correlation key	4
Parent Process Instance	No Parent Process Instance
Active user tasks	Qualify (Ready) owner: ---
Current Activities	Fri Jun 01 12:18:20 AEST 2018: 5 - Qualify (HumanTaskNode)

- 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](#).


2.4. GENERATING PROCESS DOCUMENTATION IN BUSINESS CENTRAL

In the process designer in Business Central, you can view and print a report of a given 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 2.2. Generate process documentation

Model Overview **Documentation** Print 

Process Documentation

1.0 Process Overview

1.1 General

ID	Mortgage_Process.MortgageApprovalProcess
Package	com.myspace.mortgage_app
Name	MortgageApprovalProcess
Is executable	true
Is AdHoc	false
Version	1.0

Documentation

Description

1.2 Data Totals





Variables 3

1.3 Variables

#	Name	Type
	application	com.myspace.mortgage_app.Application
	inlimit	Boolean
	incdownpayment	Boolean

2.0 Element Details

2.1 Totals

-  Activities 7
-  End Events 2
-  Gateways 4
-  Start Events 1

2.2 Elements

Activities

Name: Validation		Type: Business Rule
Property Name	Property Value	
Ad-Hoc Autostart	false	
Assignments	[din]application->application [dout]application->application	
Documentation		
Is Async	false	
Name	Validation	
On Entry Action		
On Exit Action	java : System.out.println(application.getProperty());	
Rule Flow Group	validation	
Rule Language	http://www.jboss.org/drools/rule	
Task Type	BUSINESS_RULE	

CHAPTER 3. 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 3.1. Filtering Process Instances - Default View

The screenshot shows a 'Filters' panel with the following sections:

- State**: A list of checkboxes for process states: Active, Aborted, Completed, Pending, and Suspended.
- Errors**: A list of checkboxes for error status: With errors and Without errors.
- Filter By**: A dropdown menu currently set to 'Id'. Below it is a text input field containing the text 'Filter By Process Instance Id...' and an information icon (i).
- Apply**: A button to apply the selected filters.
- Name**: A dropdown menu currently set to 'Select'.
- Definition Id**: A dropdown menu currently set to 'Select'.



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 3.2. Process Instances Search by Date Range

The screenshot shows a date range selection interface. On the left, there are buttons for 'Last Hour', 'Today' (highlighted in blue), 'Last 24 hours', 'Last 7 days', 'Last 30 days', and 'Custom'. Below these are 'Apply' and 'Cancel' buttons. The main area shows a date range from 'Aug 17, 2017 12:00 AM' to 'Aug 17, 2017 11:59 PM'. Below the date range are two time selection dropdowns: '12 : 00 AM' and '11 : 00 PM'. Below the time selection are two calendar views for 'July 2017' and 'August 2017'. The date '17' is highlighted in the August calendar.

July 2017							August 2017						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
25	26	27	28	29	30	1	30	31	1	2	3	4	5
2	3	4	5	6	7	8	6	7	8	9	10	11	12
9	10	11	12	13	14	15	13	14	15	16	17	18	19
16	17	18	19	20	21	22	20	21	22	23	24	25	26
23	24	25	26	27	28	29	27	28	29	30	31	1	2
30	31	1	2	3	4	5	3	4	5	6	7	8	9

3.1. FILTERING PROCESS INSTANCES BASED ON BUSINESS DATA

You can add process variables as columns in the process instance list in order to enable flexible filtering of process instances based on business data.

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, and click **Add New**.
4. From the list of filter values, select **processId** and **equalsTo**.

5. Provide a valid **processId** value 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.

3.2. 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. 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.


3.4. SIGNALING PROCESS INSTANCES FROM BUSINESS CENTRAL

You can signal a process instance from Business Central.

Prerequisite

- 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.

3.5. 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

3.5.1. 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.

3.5.2. 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.

CHAPTER 4. TASK MANAGEMENT

Tasks that are assigned to the current user appear in **Menu** → **Track** → **Task Inbox** in Business Central. You can click on 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.
- **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).

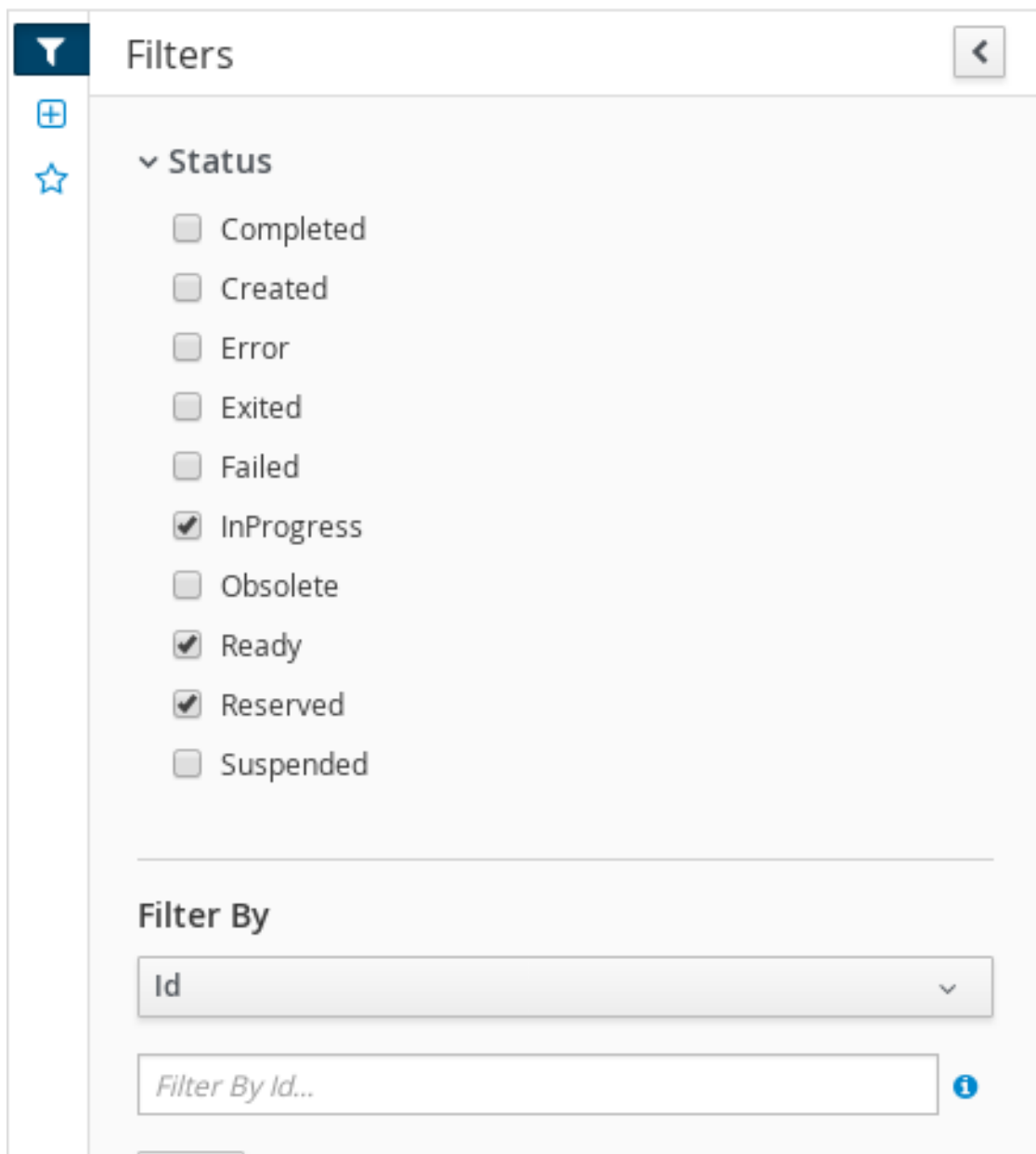
You can filter the tasks based on the filter parameters available by clicking the filters icon on the left side of the page. For more information about filtering, see [Section 4.1, "Task filtering"](#).

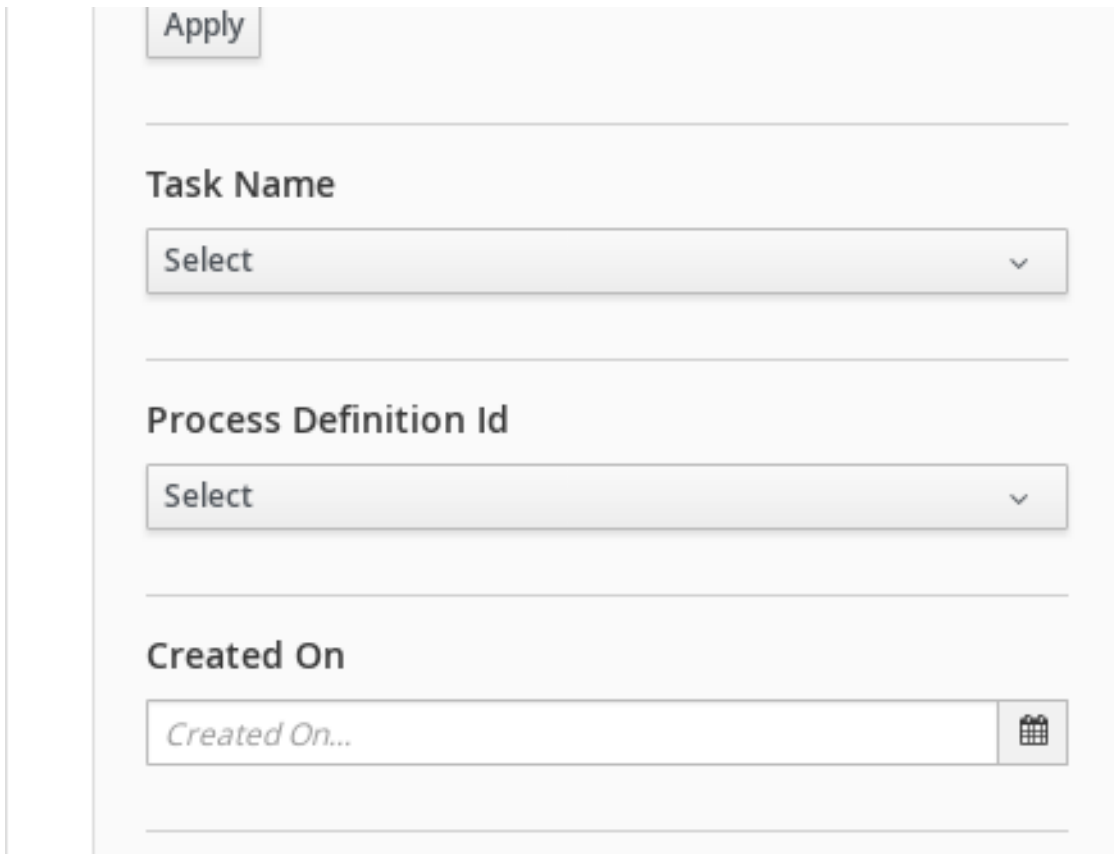
In addition to these, you can create custom filters to filter tasks based on the query parameters you define. For more information about custom tasks filters, see [Section 4.2, "Creating custom task filters"](#).

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 screenshot shows a filter panel with the following elements:

- An **Apply** button at the top left.
- A horizontal separator line.
- The label **Task Name** above a dropdown menu with the text "Select" and a downward arrow.
- A horizontal separator line.
- The label **Process Definition Id** above a dropdown menu with the text "Select" and a downward arrow.
- A horizontal separator line.
- The label **Created On** above a date input field with the placeholder text "Created On..." and a calendar icon on the right.
- A horizontal separator line at the bottom.

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

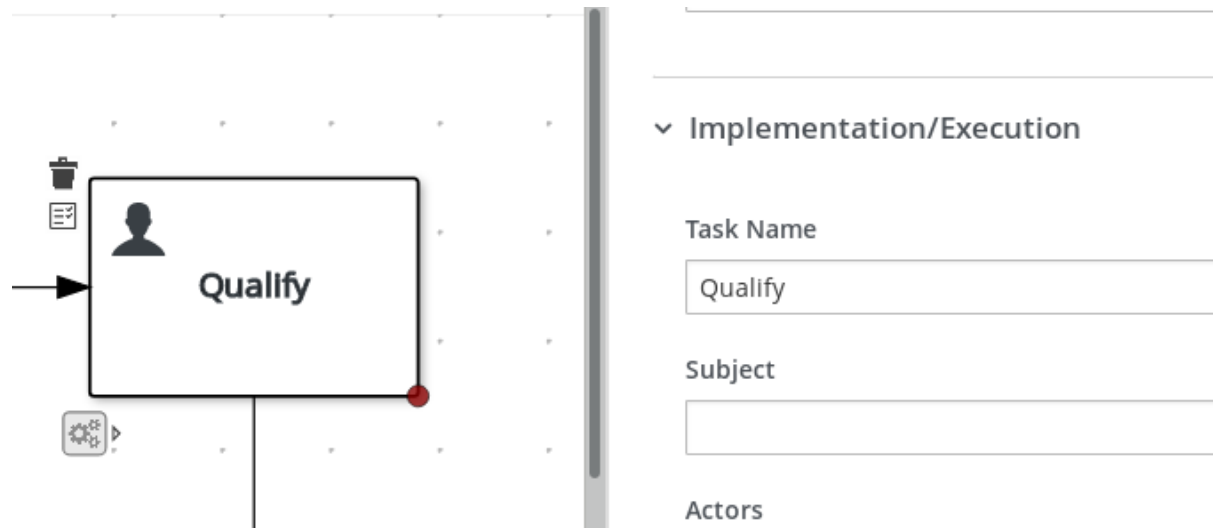
The screenshot displays the 'Search by Date' interface. On the left, there is a sidebar with the following options: 'Last Hour', 'Today' (highlighted in blue), 'Last 24 hours', 'Last 7 days', 'Last 30 days', 'Custom', 'Apply', and 'Cancel'. The main area features two date pickers. The first is set to 'Aug 17, 2017 12:00 AM' and the second to 'Aug 17, 2017 11:59 PM'. Below each date picker are time selection controls: the first has '12' and '00' dropdowns with an 'AM' button, and the second has '11' and '00' dropdowns with a 'PM' button. At the bottom, there is a calendar view for July and August 2017. The days of the week are labeled 'Su', 'Mo', 'Tu', 'We', 'Th', 'Fr', 'Sa'. The date '17' in August is highlighted in blue.

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 on 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:



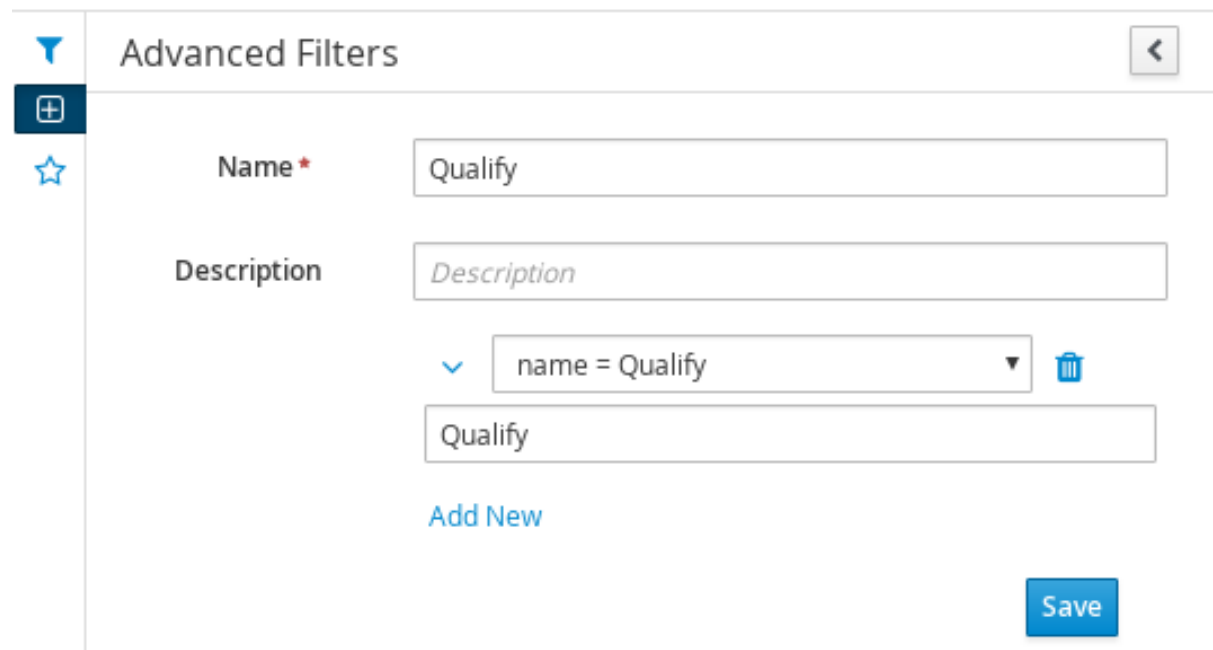
Implementation/Execution

Task Name
Qualify

Subject

Actors

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



Advanced Filters

Name * Qualify

Description Description

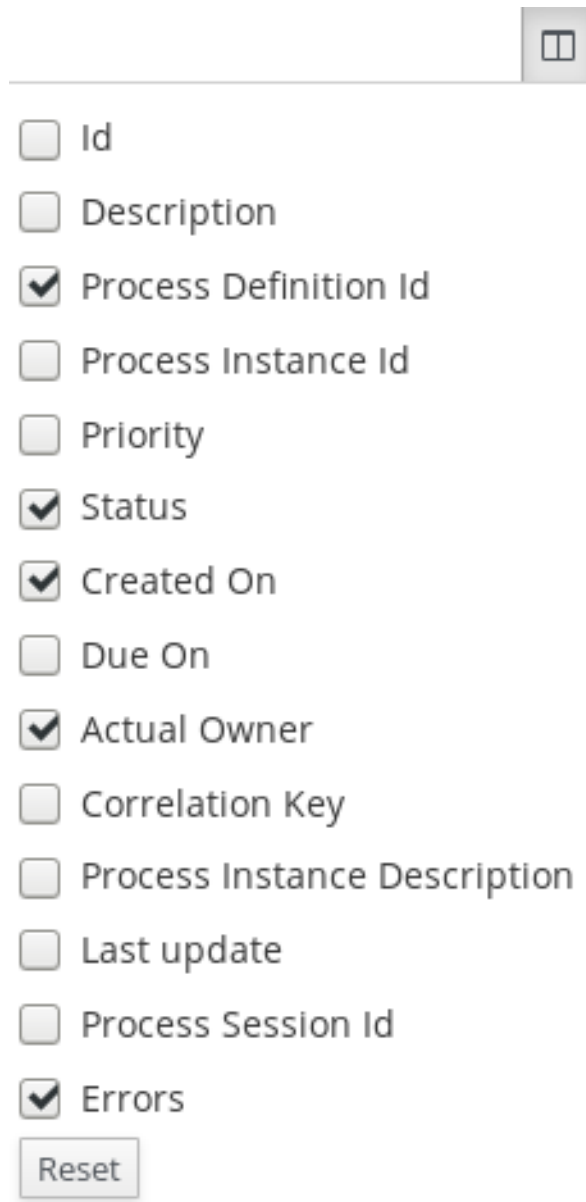
name = Qualify

Qualify

Add New

Save

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:



Id
 Description
 Process Definition Id
 Process Instance Id
 Priority
 Status
 Created On
 Due On
 Actual Owner
 Correlation Key
 Process Instance Description
 Last update
 Process Session Id
 Errors

4.3. 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.


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

Service Tasks Administration 
















Settings

Install as Maven artifact ON
Instructs if enabled service tasks should be installed into Maven repository

Install service task dependencies into project ON
Instructs that service task dependencies are added as project dependencies upon installation

Use version range when installing service task into a project OFF
Instructs that a version range will be used when installing service task in projects

[Add Service Task](#)

	BusinessRuleTask	Execute business rule or service tasks Execute a business rule task	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelCXFConnector	Use Apache Camel connectors in your processes Connect to a JAX-WS service hosted in CXF	<input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelFTPConnector	Use Apache Camel connectors in your processes Access remote file system over FTP	<input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelFTPSConnector	Use Apache Camel connectors in your processes Access remote file system over FTPS	<input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelFileConnector	Use Apache Camel connectors in your processes Access file systems and process files	<input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelGenericConnector	Use Apache Camel connectors in your processes Send payload to a Camel endpoint	<input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelJMSConnector	Use Apache Camel connectors in your processes Send message to a JMS Queue or Topic	<input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelSQLConnector	Use Apache Camel connectors in your processes Execute SQL query at a Camel endpoint and retrieve results	<input type="checkbox"/> OFF <input type="button" value="0"/>
	CamelXSLTConnector	Use Apache Camel connectors in your processes Process a message using an XSLT template	<input type="checkbox"/> OFF <input type="button" value="0"/>
	DecisionTask	Execute business rule or service tasks Execute a DMN decision task	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF <input type="button" value="0"/>
	Email	Send an email Send email	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF <input type="button" value="0"/>
	JMSSendTask	Send JSM messages Send JMS Message	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF <input type="button" value="0"/>
	Rest	Perform REST calls Perform a Rest call	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF <input type="button" value="0"/>
	ServiceTask	Execute business rule or service tasks Execute a service task	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF <input type="button" value="0"/>
	WebService	Perform Webservice operations Perform a Webservice call	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF <input type="button" value="0"/>

- 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**.
- After you configure all required service tasks, navigate to a project in Business Central and go to project **Settings** → **Service Tasks** to view the available service tasks that you enabled.
- 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.
- If you are prompted for additional information when you install a service task, enter also the required parameters for the service task 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.

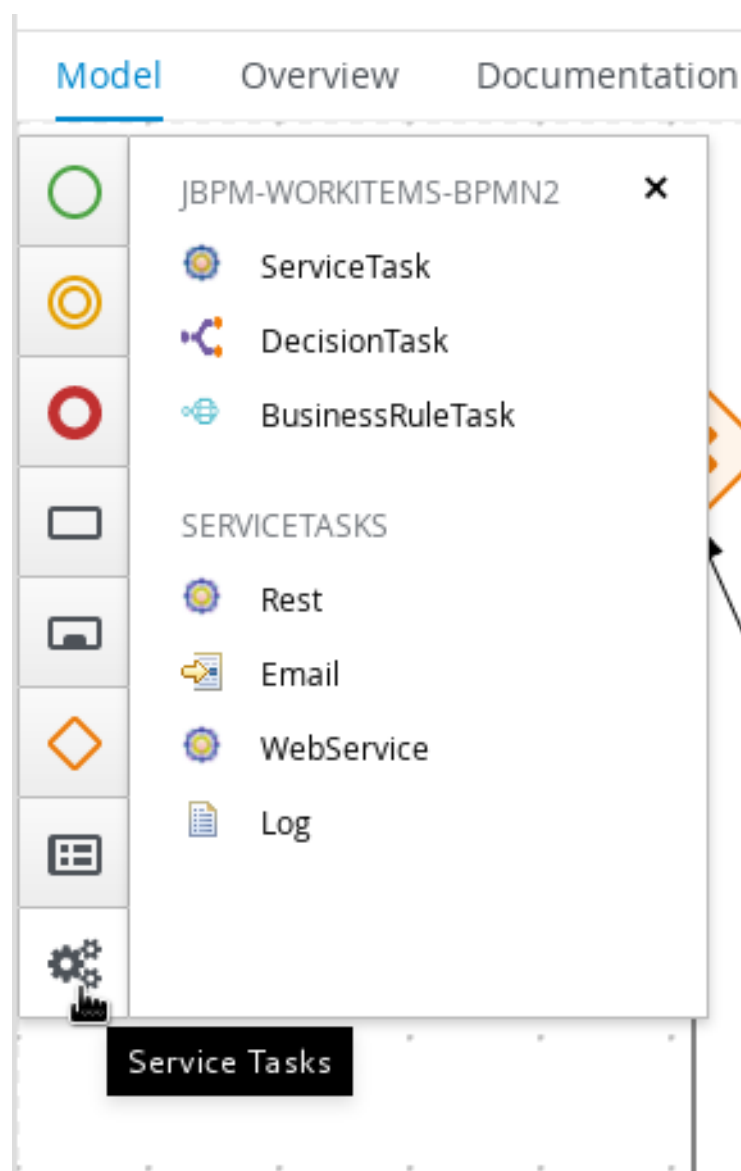
Figure 4.4. Install service tasks for use in processes

The screenshot shows the 'Mortgage_Process' settings page. The top right has buttons for 'Build', 'Deploy', and 'View Alerts'. Below the title, there are tabs for 'Assets (26)', 'Contributors (1)', 'Metrics', and 'Settings'. A left sidebar contains a menu with 'Service Tasks' highlighted. The main content area shows a list of service tasks with their descriptions and 'Install' or 'Uninstall' buttons.

Task Name	Description	Action
BusinessRuleTask	Execute a business rule task	Uninstall
DecisionTask	Execute a DMN decision task	Uninstall
Email	Send email	Install
JMSSTask	Send JMS Message	Install
Rest	Perform a Rest call	Install
ServiceTask	Execute a service task	Uninstall
WebService	Perform a Webservice call	Uninstall

- 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



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

The screenshot shows a 'Filters' panel with the following components:

- Type:** A section with a dropdown arrow and four checkboxes: DB, Task, Process, and Job.
- Filter By:** A dropdown menu currently showing 'Process Instance ID', followed by a text input field containing the placeholder text 'Filter By Process Instance Id...' and an information icon.
- Apply:** A button located below the 'Filter By' section.
- Acknowledged:** A dropdown menu currently showing 'Select'.
- Error Date:** A text input field containing the placeholder text 'Error Date...' and a calendar icon.

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

The screenshot shows a date range selection interface. On the left, there are buttons for 'Last Hour', 'Today', 'Last 24 hours', 'Last 7 days', 'Last 30 days', and 'Custom'. The 'Today' button is selected. Below these buttons are 'Apply' and 'Cancel' buttons. The main area shows two date pickers: 'Aug 17, 2017 12:00 AM' and 'Aug 17, 2017 11:59 PM'. Below the date pickers are time selection controls: '12 : 00 AM' and '11 : 00 PM'. At the bottom, there is a calendar view for July and August 2017. The calendar shows days of the week (Su, Mo, Tu, We, Th, Fr, Sa) and dates. The date '17' in August is highlighted in blue.

July 2017							August 2017						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
25	26	27	28	29	30	1	30	31	1	2	3	4	5
2	3	4	5	6	7	8	6	7	8	9	10	11	12
9	10	11	12	13	14	15	13	14	15	16	17	18	19
16	17	18	19	20	21	22	20	21	22	23	24	25	26
23	24	25	26	27	28	29	27	28	29	30	31	1	2
30	31	1	2	3	4	5	3	4	5	6	7	8	9

APPENDIX A. VERSIONING INFORMATION

Documentation last updated on Wednesday, May 8, 2019.