



Red Hat Process Automation Manager 7.0

Building custom dashboard widgets

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Abstract

This document describes how to build custom pages including dashboards and reports in Red Hat Process Automation Manager 7.0.

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PREFACE

As a business analyst or business rules developer, use the **Page Editor** tool to design and define your page and specify the information to be displayed on it. You can decide which components are a part of your page. You can also customize the component properties of a page according to your requirements. Optionally, before creating a page, you can define a data set to feed the reporting components of the page.

Prerequisite

You must have sufficient permissions for creating pages.

CHAPTER 1. DATA SETS AUTHORIZING

A data set is a collection of related sets of information. It can be stored in many ways, such as in a database, in a Microsoft Excel file, in memory, and so on. A data set definition instructs Business Central how to access, read, and parse a data set. Business Central does not store data. It enables you to define access to a data set regardless of where the data is stored.

For example, if data is stored in a database, a valid data set could contain the entire database or a subset of the database as a result of an SQL query. In both cases, the data is used as input for the reporting components of Business Central which then displays the information.

To access a data set, you must create and register a data set definition, which will define where the data set is stored, how it can be accessed, read, and parsed, and what columns it contains.



NOTE

The **Data Sets** page is visible only to users with **admin** role.

1.1. ADDING DATA SETS

You can create a new data set to fetch data from an external data source and use that data for the reporting components.

Procedure

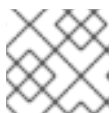
1. Log in to Business Central and click the gear icon.
2. Click **Data Sets** → **Data Set Explorer** → **New Data Set**.
3. Select one of the following the provider types:
 - **Bean:** Use to generate a data set from a Java class
 - **CSV:** Use to generate a data set from a remote or local CSV file
 - **SQL:** Use to generate a data set from an ANSI-SQL compliant database
 - **Elastic Search:** Use to generate a data set from Elastic Search nodes
 - **Execution Server:** Use to generate a data set using the custom query feature of an Execution Server



NOTE

KIE Server must be configured with this option.

4. Complete the **Data Set Creation Wizard** and click **Test**.



NOTE

Depending on the provider you chose, the configuration steps will differ.

5. Click **Save**.

1.2. EDITING DATA SETS

You can edit existing data sets to ensure that the data fetched to the reporting components is up-to-date.

Procedure

1. Log in to Business Central, click the gear icon, and then click **Data Sets**.
2. In the **Data Set Explorer** pane, search for the data set you want to edit and click **Edit**.
3. In the **Data Set Editor** pane, use the appropriate tab to edit the data as required. The tabs will differ based on the data set provider type you chose.
For example, the following changes are applicable for editing a **CSV** data provider.
 - **CSV Configuration:** Enables you to change the name of the data set definition, the source file, the separator, and other properties.
 - **Preview:** Enables you to preview the data. After you click **Test** in the **CSV Configuration** tab, the system executes the data set lookup call and if the data is available, a preview appears. Note that the **Preview** tab has two sub-tabs:
 - **Data columns:** Enables you to specify what columns are part of your data set definition.
 - **Filter:** Enables you to add a new filter.
 - **Advanced:** Enables you to manage:
 - **Caching:** See [Section 1.4, “Caching”](#) for more information.
 - **Cache life-cycle** See [Section 1.3, “Data refresh”](#) for more information.
4. After making the required changes, click **Validate**.
5. Click **Save**.

1.3. DATA REFRESH

The data refresh feature enables you to specify an interval of time after which a data set (or data) is refreshed. The **Refresh on stale data** feature refreshes the cached data when the back-end data changes.

1.4. CACHING

Business Central provides caching mechanisms for storing data sets and performing data operations using in-memory data. Caching data reduces network traffic, remote system payload, and processing time. To avoid performance issues, configure the cache settings in Business Central.

For any data lookup call that result in a data set, the caching technique will determine where the data lookup call is executed and where the resulting data set is stored. An example of a data lookup call would be all the mortgage applications whose locale parameter is set as "Urban".

Business Central data set functionality provides two cache levels:

- Client level
- Back end level

Client cache

When the cache is turned on, the data set is cached in a web browser during the lookup operation and further lookup operations do not perform requests to the back end. Data set operations like grouping, aggregations, filtering, and sorting are processed in the web browser. Enable client caching only if the data set size is small, for example, for data sets with less than 10 mb size. For large data sets, browser issues such as slow performance or intermittent freezing can occur. Client caching reduces the number of back end requests including requests to the storage system.

Back end cache

When the cache is enabled, Business Central engine caches the data set. This reduces the number of requests to the remote storage system. All data set operations are performed in the Business Central engine using in-memory data. Enable back-end caching only if the data set size is not updated frequently and it can be stored and processed in memory. Using back-end caching is also useful in cases with low latency connectivity issues with the remote storage.



NOTE

Back end cache settings are not always visible in the **Advanced** tab of the **Data Set Editor** because Java and CSV data providers rely on back end caching (data set must be in the memory) in order to resolve any data lookup operation using the in-memory engine.

CHAPTER 2. PAGE AUTHORIZING

Pages, also known as perspectives, are collections of following components:

- Core components
- Navigational components
- Reporting components

Also, a page can have none or any number of components. The **Page Editor** tool is used to edit the pages.

A page has either the **Fluid** style or the **Page** style. The **Fluid** style is a classical web page with a vertical scroll bar, when the page exceeds the available height. The **Page** style is a web page that will always fit to the windows height.

2.1. CREATING PAGES

You can use the Pages perspective to create a page that consists of different types of components. After a page has been created and all the components in it defined, use the **Page Editor** to save, delete, rename, or copy pages as required.

The following procedure describes how to create a page and add the required components to it:

Procedure

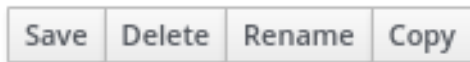
1. Go to **Menu** → **Design** → **Pages**.
2. In the **Pages** panel, click **New**. Alternatively, click **New Page** on the **Page Editor** pane.
3. In the **New Page** dialog box, enter a value in the **Name** field and select the required style.
4. Click **Ok**. The new page opens in the **Page Editor**.
5. In the **Components** pane, expand the components and drag the required component types to the editor canvass.
6. After placing the components on the page, edit its properties from the **Properties** pane.
7. Click **Save** and then click **Save** again.

2.2. SAVING, DELETING, RENAMING, OR COPYING PAGES

After you have created and defined a page, use the **Page Editor** to save, delete, rename, or copy pages as required.

Procedure

1. Go to **Menu** → **Design** → **Pages**.
2. Select a page from the **Pages** panel. The page opens in the **Page Editor**.
3. Perform the desired operation and select **Save**, **Delete**, **Rename**, or **Copy** from the upper right corner of the **Page Editor**.

Figure 2.1. Save, delete, rename, or copy pages

2.3. NAVIGATION TREE

The **Workbench** navigation tree contains the entries that are displayed in Business Central's **Main** menu. Changes to this navigation tree structure will be reflected in the **Main** menu on the Home page. Such mechanism can be used, for example, to publish new pages.

Also, additional navigation trees can be created. These custom trees can be used to configure the navigation components within a page. You cannot delete the **Workbench** tree from the **Navigation** panel but you can edit the **Workbench** tree hierarchy to suit your requirements. This feature helps users customize the **Main** menu of Business Central with new pages.



NOTE

The **Workbench** tree, which appears by default in the **Navigation** panel, is the main **Menu** of Business Central.

2.3.1. Creating a navigation tree

You can create as many custom navigation trees as required. A custom navigation tree differs from the default **Workbench** navigation tree in one aspect. The custom navigation trees can be deleted but the default tree can not be removed from Business Central. They can contain the default groups and entries from the **Workbench** tree as well as user created groups and trees.

Prerequisites

- Ensure your role has adequate permissions for creating a navigation tree.

Procedure

1. Log in to Business Central and go to **Menu** → **Design** → **Pages**.
2. Select the **Navigation** panel and then click **New**.
3. Enter the name of the new navigation tree and click the check mark icon or, press Enter.
4. Click **Save**.

2.3.2. Editing a navigation tree

You can use the **Navigation** panel from the Pages perspective to edit the custom navigation trees. You can further customize the trees by adding groups, dividers, and page entries, deleting the specific entries of the tree, and reordering, renaming, or deleting them.

Prerequisites

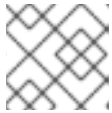
- Ensure your role has adequate permissions for editing a navigation tree.

2.3.3. Adding groups, dividers, and page entries to a navigation tree

You can add groups, dividers, and page entries to a navigation tree.

Procedure

1. Go to **Menu** → **Design** → **Pages**.
2. Click the **Navigation** panel and then select the navigation tree you want to add the entries to.
3. Click the gear icon of the tree and then select **New Group**, **New Divider**, or **New Page**.
4. Enter the name of the new group or page and click the check mark icon or press Enter.



NOTE

Divider entries do not have a name property.

5. Click **Save**.

2.3.4. Reordering a navigation tree

In the **Navigation** panel you can reorder the navigation trees as well as its entries.



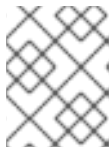
NOTE

The reordering options of tree entries will differ according to their position in the tree hierarchy.

Reordering navigation trees

Procedure

1. Go to **Menu** → **Design** → **Pages**.
2. Click the **Navigation** panel and then select the navigation tree you want to reorder.
3. Click the gear icon of the tree and then move up or down as required.



NOTE

First and last entries of a navigation tree have only two reordering options available.

4. Click **Save**.

Reordering the entries of a navigation tree

Procedure

1. Go to **Menu** → **Design** → **Pages**.
2. Click the **Navigation** panel and then expand the navigation tree.
3. Click the gear icon of the entry you want to reorder and then move up or down as required.

4. If desired, click **Goto Page** to view the selected page.
5. Click **Save**.

2.3.5. Renaming a navigation tree

You can rename all navigation trees except the Workbench tree.

Procedure

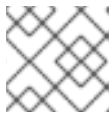
1. Go to **Menu** → **Design** → **Pages**.
2. Click the **Navigation** panel and then select the custom navigation tree you want to rename.



NOTE

To rename an entry of a tree, expand the tree and select the entry that you want to rename.

3. Click the edit icon of the tree or the tree entry.
4. Enter the new name of the tree and click the check mark icon.



NOTE

You cannot rename divider entries.

5. Click **Save**.

2.3.6. Deleting a navigation tree

You can delete any navigation tree except the **Workbench** tree from the **Navigation** panel of the Pages perspective.

Procedure

1. Go to **Menu** → **Design** → **Pages**.
2. In the **Navigation** panel, select the navigation tree that you want to delete, then click the delete icon.
3. Click **Save**.

2.3.7. Deleting the entries of a navigation tree

You can delete the entries of a navigation tree.

Procedure

1. Go to **Menu** → **Design** → **Pages**.
2. Click the **Navigation** panel.

3. Expand the tree that contains the entries you want delete.
4. Click the delete icon of the entry.
5. Click **Save**.

2.4. COMPONENTS

A page contains different types of components. You can use the following component types in a page:

- **Core** components: Used to specify custom HTML information or display existing pages. There are two types of core components.

Table 2.1. Core component sub-types

Core component sub-types	Description
HTML	This component opens a HTML editor widget. This can be used to create HTML pages using text, images, tables, links, colors, and so on. You can customize the page as per your requirements.
Page	This component allows you to add previously created pages to a new dashboard. You can use this component to nest custom pages you have already created in your dashboard.



NOTE

Core components are not mandatory.

- **Navigation** components: Used for navigating between pages. There are six types of navigation components.

Table 2.2. Navigation component sub-types

Navigation component sub-types	Description
Target Div	This component is used by the Tab list, Menu bar, and the Tree navigator components to display their entries and keep track of the last item clicked.
Menu Bar	This component displays the entries of a navigation tree in the form of a menu bar. There is no limit to the number of levels supported by Business Central.
Tile Navigator	This component displays the navigation group in the form of tiles. Groups are displayed as folders but for single entries, its content is displayed instead when selected.

Navigation component sub-types	Description
Tree	This component displays the entries in a vertical tree structure format.
Carousel	This component displays or cycles through the selected pages like a carousel or a slide show.
Tab List	This component displays selected menu pages as tabs at the top of the component.



NOTE

The target div setting is **not** needed for non-target div components such as Carousel or Tile navigator.

- **Reporting** components: Used for displaying data from data sets (see [Data sets authoring](#) section) in the form of graphs, tables, maps, and so on. There are ten types of reporting components. The reporting components can be configured using the **New Displayer** widget, which has the following three tabs:
 - **Type**: Choose how to display custom data graphically.
 - **Data**: Choose a data set from the list of custom data sets that you had created from the **Data Sets** section available in the **Settings** menu.
 - **Display**: Edit and customize how the content is displayed by adding titles, changing colors, size, and so on.

2.4.1. Placing components on the page editor to create a page

To create pages, you must drag the components to the **Editor** canvas of the Pages perspective. After placing all of the required components on the page, click **Save**.

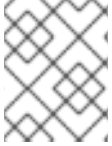
2.4.2. Using the Preview tab to preview pages

While creating or editing pages, click the **Preview** tab on the **Page Editor** to preview a page before saving it.

2.4.3. Component properties

The components used in a page have different properties associated with them. The **Properties** panel enables you to customize a component by editing the following properties:

- **Panel** properties: Used to customize component panel properties such as **Width**, **Height**, and **Background Color**.
- **Margin** properties: Used to customize component margin properties such as **Top**, **Bottom**, **Left**, and **Right**.
- **Padding** properties: Used to customize component padding properties such as **Top**, **Bottom**, **Left**, and **Right**.

**NOTE**

HTML components also have additional text properties to customize component **Alignment**, **Decoration**, **Color**, **Size**, and **Weight** properties.

CHAPTER 3. SECURITY MANAGEMENT

You can perform security and permission management tasks from the Security page. To access the Security page, click **Roles**, **Groups**, or **Users** on the Settings page. Depending on which icon you click, the Security page opens on the respective tab. Use roles and groups to manage privileges and settings for users. Any changes apply to all users with the affected role or group.

3.1. CREATING USERS

You can create as many Business Central users as you require. User privileges and settings are controlled by the roles assigned to a user and the groups that a user belongs to.

Procedure

1. Click the gear icon, and then click **Users**.
2. Click **New user**, enter a user name, and then click **Next**.
3. If desired, click the **Groups** tab, click **Add to groups**, and then select the groups that you want this user to belong to. Then click **Add to selected groups**.
4. Click the **Roles** tab, click **Add roles**, and then select the roles that you want to give this user. Then click **Add to selected roles**.
5. Click **Create**.
6. Click **Yes** to set a password for the user and click **Change**.



NOTE

The user must have at least one role to access Business Central.

3.2. CREATING GROUPS

Groups enable you to control privileges and settings for a collection of users. You can create as many groups as you require.

Procedure

1. Click the gear icon, and then click **Groups**.
2. Click **New group**, enter a group name, and then click **Next**.
3. Select the users that you want to belong to this group, and then click **Add selected users**.

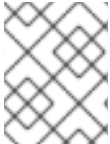
3.3. CHANGING PERMISSIONS FOR GROUPS AND ROLES

You cannot change permissions for an individual user. However, you can change permissions for groups and roles. The changed permissions apply to users that have the role or belong to the group that you changed.

Procedure

1. Click the gear icon, and then click **Roles** or **Groups**.

2. Select a role or group.
3. In the Permissions section, click the arrow next to the item that you want to change. The list of current permissions appears.
4. Make any desired changes.
5. Click **Add Exception** to add an item not listed, and then set the permissions as required.
6. Click **Save**.

**NOTE**

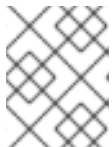
Any changes you make to roles or groups affect all of the users associated with that role or group.

3.4. CHANGING THE HOME PAGE

The home page is the page that appears after you log on to Business Central. By default, the home page is set to Home. You can change the home page for roles and groups.

Procedure

1. Click the gear icon, and then click **Roles** or **Groups**.
2. Select a role or group.
3. Select a page from the **Home Page** list.
4. Click **Save**.

**NOTE**

The role or group must have read access to a page before you can make it the home page.

3.5. SETTING PRIORITIES

A user can have multiple roles and belong to multiple groups. The Priority setting determines the order of precedence of a role or group.

Procedure

1. Click the gear icon, and then click **Roles** or **Groups**.
2. Select a role or group.
3. Select a priority from the Priority menu, and then click **Save**.

**NOTE**

If a user has a role or belongs to a group that has conflicting settings, the settings of the role or group with the highest priority applies.

CHAPTER 4. CREATING A CUSTOM DASHBOARD WIDGET

In order to create custom dashboards, users must combine some of the features of the Business Central (like data sets, pages, navigation trees, and permissions) together and publish them. Dashboards are pages containing at least one reporting component.

There are four stages in the creation of a custom dashboard:

- Data set authoring - In this stage, you define a data set for accessing the data and displaying it through the pages. For more information, see [Adding data sets](#).
- Page authoring - In this stage, you create the pages which are used to display the data from the data sets, among other things. For more information, see [Creating pages](#).
- Publication - In this stage, navigation between pages are defined when you create the custom navigation trees or modify the existing default one (**Workbench** tree). For more information, see [Creating a navigation tree](#) or [Editing a navigation tree](#).
- Security management - In this stage, role and group permissions are set which defines the privileges a user enjoys when working on Business Central. For more information, see [Security settings](#).



NOTE

You will have to follow the stages listed above if you plan on migrating your dashboards from previous versions of Business Central to the latest one. Note that there is no automatic migration path or tooling to assist you in that regard. You must recreate all your dashboards from scratch.

APPENDIX A. VERSIONING INFORMATION

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