# DB Gene 4.5.0 Migration Guide

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- Each section is structured as follows: Removed, Deprecated, New, Improved, and Updated.
- *Dependency updates are listed in Section **Dev Changes** > **3rd-Party Components**.*
- *Future removals are listed in Section **Deprecated Features and APIs Scheduled for Removal in the Next Release**.*
- *For more details, please refer to the* DB Gene Documentation and Release Notes.

# Application Changes

*This part lists all changes related to:*

- *the lifecycle, non-UI features, or APIs of views and dashboards, in Section **Views & Dashboards.***

## Views & Dashboards

*This section lists all changes related to the lifecycle, the non-UI features, or the APIs of views and dashboards.*

### Deprecated Attributes in GeneWidgetManifest

DBPF-7829

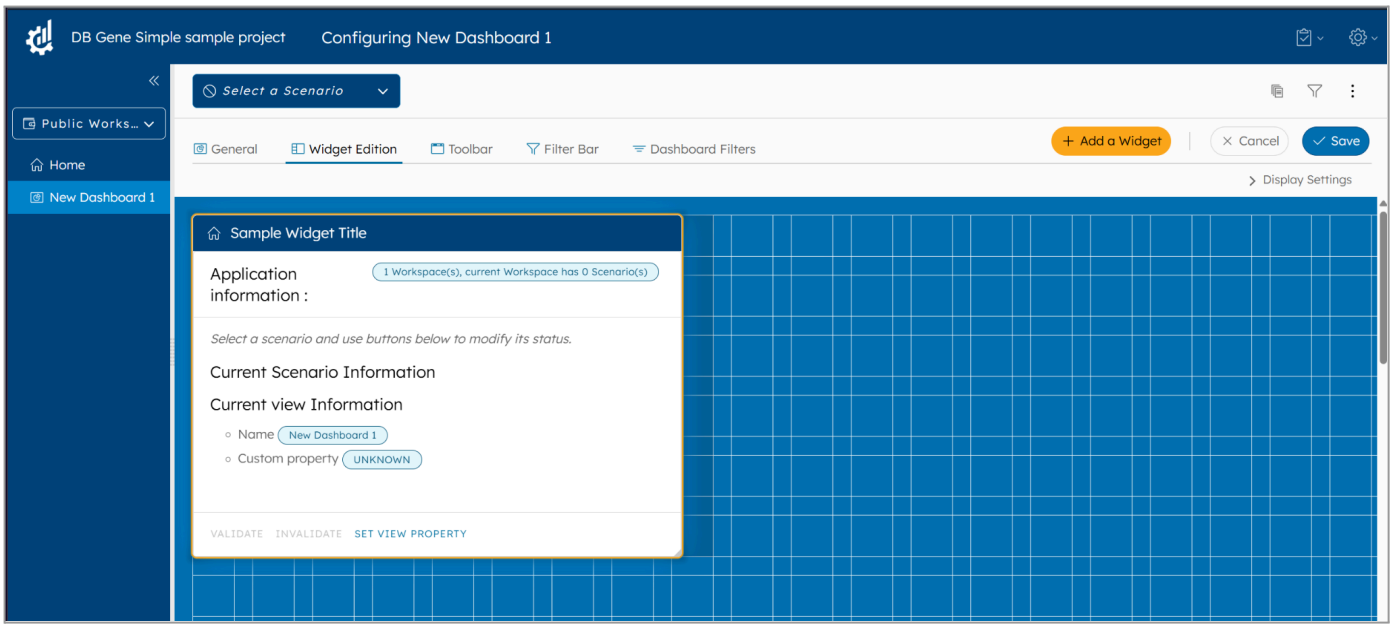
- `minItemCols` is now deprecated and will not be taken into account on a dashboard, all widgets can be resized to take up only one column.
- `minItemRows` is now deprecated and will not be taken into account on a dashboard, all widgets can be resized to take up only one row.

### Improved Dashboard/View Configuration

DBPF-7546 DBPF-7547 DBPF-7548 DBPF-7550 DBPF-7830 DBPF-7553 DOC-1027

The items "Configure Dashboard" and "Edit Layout", formerly available from the toolbar menu ⋮, are no longer available. Instead, the button "Edit" on the toolbar opens the dashboard configurator.

The "Widget Layout" can be configured in a dedicated tab with a new collapsible section to edit specific global settings. For instance, the outer margin checkbox has been removed (the same result can be achieved by setting the margin value to 0). The outer margins (top, right, bottom, left) have been combined into one input and will therefore always be the same, which allows for more uniformity across the dashboard.




In addition:

- In the tab "*Toolbar*", a new option allows showing or hiding the toolbar on the dashboard.
- In the tab "*Filter Bar*", a new option allows setting the default visibility of the Filter Bar to:
  - "*Expanded*"
  - "*Collapsed*"
  - "*Use Preferences Settings*", which is controlled by the Application Preferences setting, *DEFAULT_FILTER_BAR_STATE*. By default, it is set to open. When this setting is closed, the Filter Bar of all views/dashboards with the default visibility set to "*Use Preferences Settings*" will be collapsed by default.

# Dev Changes

*This part lists all changes related to:*

- *concepts or the meta-model representation, in Section **Model**.*
- *generated code, either SQL, Java, Python, or else, in Section **Generation**.*
- *the database schema, storage, or queries, in Section **Database**.*
- *the import or export mechanism provided by the product, in Section **Built-in Import/Export**.*

## Model

*This section lists all changes related to concepts or the meta-model representation.*

### Improved Python DOM API

**DBPF-5626 DBPF-7639**

There was only an API for deleting one row. To delete all the rows of a given type, it was necessary to use the following code:

```
Unset
for issue in [it for it in input_collector.get_all_gene_issues()]:
       input_collector.remove(issue)
```

Now, a new `remove_all_xxx()` API allows it, as in:

```
Unset
 input_collector.remove_all_gene_issues().
```

## Database

*This section lists all changes related to the database schema, storage, or queries.*

### Updated Data API

**DBPF-7842**

Data API no longer exposes internal IDs of relations in Python dataframes.

---

## JDL

*This section lists all changes related to the language definition and parsing.*

### Improved JDL validation

**DBPF-7745**

JDL validation now returns all syntax errors at once.

---

## Built-in Import/Export

*This section lists all changes related to the import or export mechanism provided by the product.*

### Removed Export Task

**DBPF-7563**

`SimpleExcelExportTask` task has been removed.

### Updated Export Permissions

**DBPF-7564 DOC-1047**

Users with ACCESS-only permission can now export scenarios.

### Updated Python Data API

**DBPF-7755**

Internal IDs are now optional in Dataframes scenario data.

---

# Data Service

*This section lists all changes related to the Data Service API.*

### Removed Endpoints

**DBPF-7563**

In the Data Service, the endpoints `api/data/simple-excel-export` and `api/data/simple-excel-import` have been removed.

# DBOS Changes

*This part lists all changes related to:*

- *the DBOS worker registration, job scheduling & monitoring, and communication with Gene, in Section **Master**.*
- *the ability for customers to define other DBOS master clients than the Web Console, in **Section Clients**.*

## Master

*This section lists all changes related to the DBOS worker registration, job scheduling & monitoring, and communication with Gene.*

### New Configurable CRON Through Properties

**DBPF-5531**

All the CRONs in the DBOS scheduler are now configurable via properties or environment variables.

## Clients

*This section lists all changes related to the ability, for customers, to define other DBOS master clients than the Web Console.*

### Improved KpiDTO Object

**DBPF-7863**

DBOS worker KPIs are now displayed in the DBOS console. You may use the `KpiDTO<T>` in Java clients (especially the `stomp` client), its generic type has been removed.

# Dev Changes

*This part lists all changes related to:*

- *the DB Gene external dependencies and libraries, such as Spring, Angular, or Keycloak, in Section **3rd-Party Components**.*
- *the DB Gene Scaffolding and Gradle scripts, in Section **Build**.*
- *any DB Gene security issues, in Section **Security**.*
- *Gene Online feature, in Section **Gene Online**.*
- *the DB Gene integration with Docker or Helm, in Section **Deployment**.*
- *the Python integration with DB Gene, except for Workers (Python) and Routines, in Section **Python**.*

## 3rd-Party Components

*This section lists all changes related to the DB Gene external dependencies and libraries, such as Spring, Angular, or Keycloak.*

**Updated Dependencies**

- DBPF-7674 Updated Spring Boot from 3.3.5 to 3.4.3
- DBPF-7674 Updated Spring Cloud from 2023.0.3 to 2024.0.0
- DBPF-7674 Updated Spring Framework from 6.1.14 to 6.2.3
- DBPF-7674 Updated graphql-java-extended-scalarsto version 22.0
- DBPF-7674 Updated Apache Commons Compress from 1.26.1 to 1.27.1
- DBPF-7674 Updated Apache Commons IO for 2.16.1
- DBPF-7674 Updated Open API Generator from 7.9.0 to 7.12.0
- DBPF-7678 Updated Angular from 18.2.10 to 19.1.7
- DBPF-7681 Updated ag-grid-angular from version 31.2.0 to version 33.1.1
- DBPF-7681 Updated ag-grid-community from version 31.2.0 to version 33.1.1
- DBPF-7681 Updated ag-grid-enterprise from version 31.2.0 to version
- DBPF-7263 Updated Keycloak from 26.0.5 to 26.1.3
- DBPF-7676 Updated MongoDB from 6.0.5 to 8.0.5
- DBPF-7182 DBPF-7519 Updated PostgreSQL to version 15.10 (Alpine version)
- DBPF-7677 Updated RabbitMQ from 4.0.2 to version4.0.7
- DBPF-7188 Updated Java service to version JDK 17
- DBPF-7197 Updated Bouncy Castle libraries from 1.70 to version 1.78.1
- DBPF-7193 DBOS - Updated Tools to python:3.12.8-alpine3.21

- DBPF-7195 DBOS - Updated Java-WebSocket to version 1.6.0
- DBPF-7190 DBPF-7520 DBPF-7683 DBOS - Updated NGINX to version 1.27.3 in the DB Gene Web base image in UI and documentation
- DBPF-7191 DBOS - Updated Master to latest Ubuntu Noble base image to version noble-20240904.1
- DBPF-7198 DBOS - Updated `springdoc-openapi-starter-webmvc-ui` to version 2.0.3
- DBPF-7199 DBOS - Updated Kubernetes `client-java` to version 20.0.0
- DBPF-7203 DBOS - Updated `jszip` from version 3.7.0 to version 3.10.1.
- DBPF-7204 DBOS - Updated `luxon` from version 2.3.2 to version 3.5.0.
- DBPF-7205 DBOS - Updated `groovy-all` to version 4.0.24
- DBPF-7205 DBOS - Updated `springdoc-openapi-starter-webmvc-ui` to 2.6.0
- DBPF-7205 DBOS - Updated `springdoc-openapi-starter-common` to 2.6.0
- DBPF-7205 DBOS - Updated `mongock` has been updated to 5.5.0
- DBPF-7205 DBOS - Updated `swagger-ui` webjar to >= v4.18.2
- DBPF-7206 DBOS - Removed `testng`
- DBPF-7681 DBOS - Updated `ag-grid-angular` from version 31.2.0 to version 32.3.3
- DBPF-7681 DBOS - Updated `ag-grid-community` from version 31.2.0 to version 32.3.3
- DBPF-7681 DBOS - Updated `ag-grid-enterprise` from version 31.2.0 to version 32.3.3
- DBPF-7201 Java workers - Updated `aws-java-sdk-s3` to 1.12.780
- DBPF-7232 Generator (Scaffolder) - Updated base Docker image to nodejs-20-minimal:1-1736729465.

### Updated Angular Dependencies

**DBPF-7678 / DBPF-7679 DBPF-7680 DBPF-7682**

Angular has been upgraded to 19.1.7.

Angular 19 introduces a breaking change in the configuration of Directives, Components, and Pipes.

They are now standalone by default. For any existing non-standalone Directive, Component, or Pipe present in your project:

- have the `standalone:false` setting added to their configuration, or
- remove the `standalone:true` setting of any element that was already standalone.

Angular has a migration script that can handle this for you. It is highly recommended to run the Angular migration script after migrating your project.

You can do so with the following commands:

```
Unset
ng update @angular/cli --from 18 --to 19 --migrate-only --allow-dirty
ng update @angular/core --from 18 --to 19 --migrate-only --allow-dirty
```

The following dependencies have been updated

```
Unset
@angular/animations                    from 18.2.10 to 19.1.7
@angular/cdk                           from 18.2.2  to 19.1.5
@angular/common                        from 18.2.10 to 19.1.7
@angular/compiler                      from 18.2.10 to 19.1.7
@angular/core                          from 18.2.10 to 19.1.7
@angular/forms                         from 18.2.10 to 19.1.7
@angular/google-maps                   from 17.2.1  to 19.1.5
@angular/localize                      from 18.2.10 to 19.1.7
@angular/platform-browser              from 18.2.10 to 19.1.7
@angular/platform-browser-dynamic      from 18.2.10 to 19.1.7
@angular/router                        from 18.2.10 to 19.1.7
@bluehalo/ngx-leaflet                  from 18.0.2  to 19.0.0
@bluehalo/ngx-leaflet-markercluster    from 18.0.1  to 19.0.0
@clr/angular                           from 17.0.1  to 17.6.0
@danielmoncada/angular-datetime-picker from 18.1.0  to 19.1.0
@fullcalendar/angular                  from 6.1.15  to 6.1.16
@fullcalendar/daygrid                  from 6.1.10  to 6.1.15
@fullcalendar/interaction              from 6.1.10  to 6.1.15
@fullcalendar/list                     from 6.1.10  to 6.1.15
@fullcalendar/timegrid                 from 6.1.10  to 6.1.15
@ng-select/ng-select                   from 13.7.0  to 14.2.2
ag-grid-angular                        from 32.3.1  to 33.1.1
ag-grid-community                      from 32.3.1  to 33.1.1
ag-grid-enterprise                     from 32.3.1  to 33.1.1
angular-gridster2                      from 18.0.1  to 19.0.0
echarts                                from 5.4.3   to 5.6.0
keycloak-angular                       from 16.1.0  to 19.0.2
keycloak-js                            from 26.1.3  to 26.0.5
monaco-editor                          from 0.49.0  to 0.52.2
ngx-echarts                            from 17.1.0  to 19.0.0
ngx-monaco-editor-v2                   from 18.0.1  to 19.0.2
ngx-quill                              from 26.0.8  to 27.0.1
zone.js                                from 0.14.10 to 0.15.0
@angular-devkit/build-angular          from 19.1.8  to 19.1.8
@angular/cli                           from 19.1.8  to 19.1.8
@angular/compiler-cli                  from 19.1.7  to 19.1.7
@angular/language-service              from 19.1.7  to 19.1.7
```

### Updated MongoDB Dependencies

**DBPF-7676**

The Platform now relies on MongoDB 8. MongoDB 8 will fail to start if there is data written by MongoDB 6.0.5 in the deployment volume.

To keep existing data, an upgrade procedure must be performed. See the Release Notes for MongoDB 8.0 for detailed information.

***Before any migration, to avoid data loss, it's mandatory to back up your data.***

Mongo database must be upgraded step by step:

- 6.0.5 to 7.0
- 7.0 to 8.0.5

*Note that the current database can be in any 6.x database version.*

**Validate the current database version**

In the Mongo container, the following command must be run:

```
Unset
mongosh -u adminUser -p adminPassord
> db.adminCommand( { getParameter: 1, featureCompatibilityVersion: 1 } )
```

This command should print something like:

```
Unset
{ featureCompatibilityVersion: { version: 'X.Y' }, ok: 1 }
```

Where 'X.Y' is the current database version. At this stage, if the version is lower than '6.0', the database must be updated to version '6.0':

```
Unset
> db.adminCommand( { setFeatureCompatibilityVersion: "6.0" } )
```

The command will ask you to confirm your choice, You can do that with the following command:

```
Unset
db.adminCommand( { setFeatureCompatibilityVersion: "6.0", confirm: true } )
```

***Migrate to 7.0***

Once the database is in version '6.0+', the migration to '7.0' can be achieved. To do so, an intermediate MongoDB server in version 7.0.x must be started with the current data.

Then, to migrate the database, the following commands should be run in the terminal in the mongo container:

```
Unset
mongosh -u adminUser -p adminPassord

> db.adminCommand( { setFeatureCompatibilityVersion: "7.0" } )
```

The command will ask you to confirm your choice, You can do that with the following command:

```
Unset
db.adminCommand( { setFeatureCompatibilityVersion: "7.0", confirm: true } )
```

***Migrate to 8.0***

Finally, the operation must be reproduced to migrate to version '8.0'.

The provided Mongo in version 8.0.5 should be started with the current data (in version 7.0) and the following command to complete the migration:

```
Unset
mongosh -u adminUser -p adminPassord
> db.adminCommand( { setFeatureCompatibilityVersion: "8.0" } )
```

The command will ask you to confirm your choice, You can do that with the following command:

```
Unset
db.adminCommand( { setFeatureCompatibilityVersion: "8.0", confirm: true } )
```

# Build

*This section lists all changes related to the DB Gene Scaffolding and Gradle scripts.*

### Updated JupyterLab Processing Files

**DBPF-7941**

The implementation of JupyterLab has been changed. Almost all files in `processing/jupyterlab/*` have been reworked. Pay attention to the change of the default kernel name of the scaffolded Python notebooks. You'll have to update the following section in your existing Python notebooks:

```
Unset
 "kernelspec": {
  "display_name": "Python (default-virtualenv)",
  "language": "python",
  "name": "default-virtualenv"
 }
```

---

# Gene Online

*This section lists all changes related to the Gene Online feature*

### Updated Default Configuration

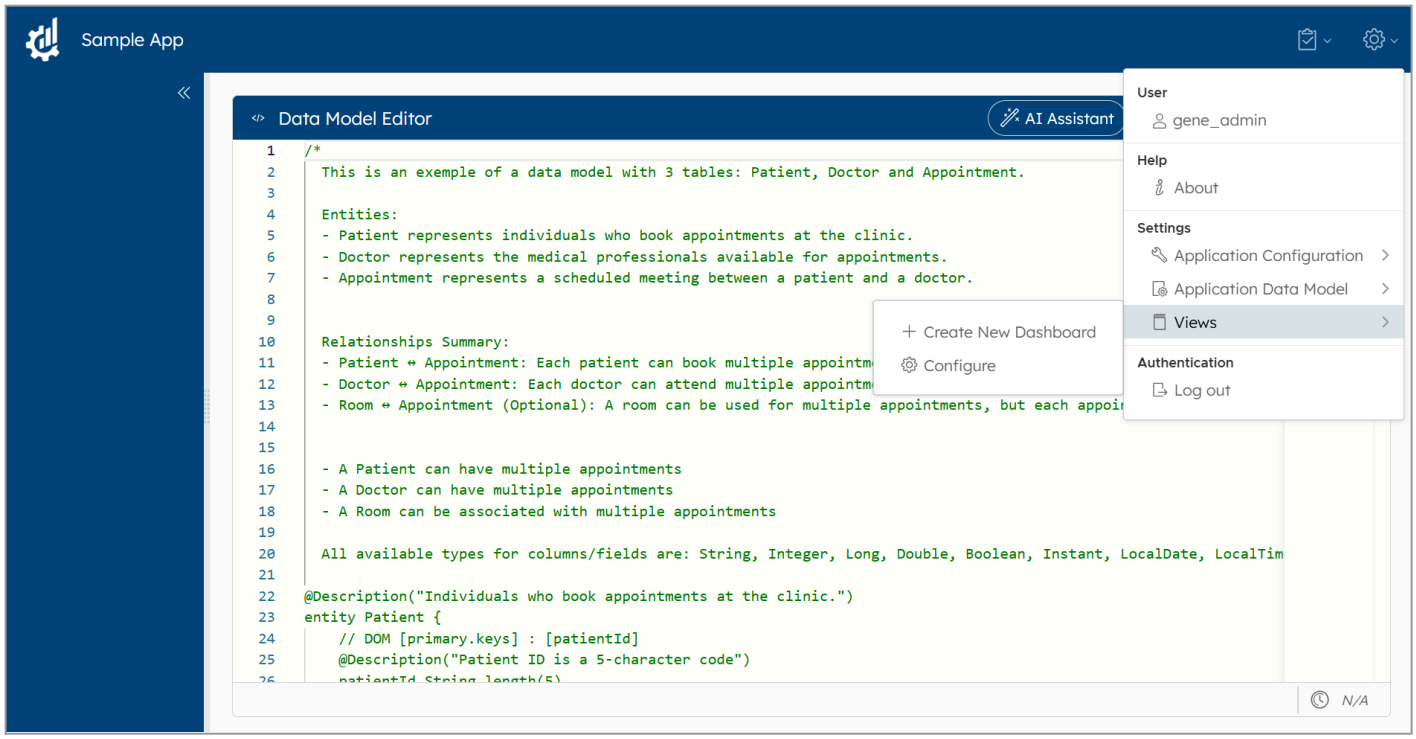
**DBPF-7534, DBPF-7536 DOC-382, DOC-1098 DBPF-7528 DBPF-7531**

**DBPF-7538 DBPF-7489 DBPF-7643**

By default in Gene Online:

- The notions of "Views" and "Workspaces" are now disabled.
  Therefore, the Workspace Selector and the "Views" separator have been removed from the Sidenav.

- Also in the Sidenav,
    - The button “Home” is now hidden by default and can be restored by setting SIDEBAR_SHOW_HOME to true in the Application Preferences.
      The Home view is still available by clicking the application name next to the logo.
    - A button “+ New Dashboard” is available.
- The default Filter Scope is now set to “VIEW”.
- A blank JDL Data Model Editor now shows a commented example with no `application` block, which is now optional.




### New JDL AI Assistant

[DBPF-7708]

An AI Assistant, available in the JDL Data Model Editor toolbar, has been integrated.
It allows the generation of a data model from different types of files, such as Excel, text, image, or audio files.

# Deployment

*This section lists all changes related to DB Gene integration with Docker and Helm.*

### Updated Environment Variables
**DOC-1044**

In Keycloak deployments (Helm and docker-compose), the following deprecated environment variables have been migrated to the new ones:

- Updated `KEYCLOAK_ADMIN` for `KC_BOOTSTRAP_ADMIN_USERNAME`.
- Updated `KEYCLOAK_ADMIN_PASSWORD` for `KC_BOOTSTRAP_ADMIN_PASSWORD`.

According to the Keycloak Upgrading Guide, the following two environment variables have been removed:

- `KC_HOSTNAME_STRICT_HTTPS=false`
- `KC_PROXY=edge`

And the following one is introduced

- `KC_HTTP_ENABLED=true`

---

# JupyterLab

*This section lists all changes related to the JupyterLab integration with DB Gene.*

### Improved Jupyter Notebook Compatibility
**DBPF-7648**

Jupyter Notebook can now use 3rd party libraries.

### Improved Jupyter Notebook Samples
**DBPF-7409 DBPF-7709**

Improved Jupyter Notebook samples are now available

### Improved JupyterLab Helper
**DBPF-7636 DBPF-7710**

Jupyter Notebook Gene Helper has been improved and now uses XCSV instead of CSV API.

### New Jupyter Notebook Task and Statement
**DBPF-7475**

A JupyterLab notebook can now be executed from the application using a new "*Execute a Jupyter Notebook*" task and a new `ExecuteJupyterNotebookStatement` statement.

---

# Python

*This section lists all changes related to the Python integration with DB Gene, except for Workers (Python) and Routines.*

### Deprecated Methods

**DBPF-7710**

The `show_api_key_input(api_key)` has been deprecated in favor of `set_api_key(api_key)`.

The `show_scenario_picker(parameter_name)` has been deprecated in favor of `select_scenario(collector_class, parameter_name)`.

### Improved Python DOM API

**DBPF-7638 DBPF-7639 DBPF-5626**

The Python DOM API has been improved to implement `__str__()` and `display(entity)` methods.

There was only an API for deleting one row. To delete all the rows of a given type, it was necessary to use the following code:

```
Unset
for issue in [it for it in input_collector.get_all_gene_issues()]:
        input_collector.remove(issue)
```

Now, a new `remove_all_xxx()`API allows it, as in:

```
Unset
input_collector.remove_all_gene_issues()
```

### Improved CSV Parsing in Python

**DBPF-5454 DBPF-7271**

When reading a CSV from Python, `null` values are now kept as null instead of an empty string.

# Scripted Tasks Changes

*This part lists all changes related to:*

- *the task definition and script language, in Section **Definition**.*
- *job triggering, execution, and monitoring, in Section **Jobs**.*
- *routines in Java & Python, in Section **Routines**.*

## Definition

*This section lists all changes related to the task definition and script language.*

### Improved Exit Script in Tasks

**DBPF-7804 DOC-1086**

The exit script of a scripted task now has access to the variable named `com.decisionbrain.gene.latestStepLabel`, similar to the variables that contain the job status and error message from the main script, if any. This new variable will be `null` if the main script completes normally. Otherwise, it will be the label of the step that was interrupted, as seen in the Job Details widget.

### New Statement to Execute a JupyterLab Notebook

**DBPF-7487**

Statement `ExecuteJupyterNotebookStatement` has been introduced and documented. It executes the cells of a JupyterLab notebook on a given scenario.

Scripted task `ExecuteJupyterNotebookTask` has also been introduced. It is activated with the `@AddJupyterLabTask` annotation. It calls the above statement and can typically be executed from a UI Action set on a button of the toolbar of the application.
The `ExecuteJupyterNotebookTask` uses an API key instead of a JWT token to load and save scenarios.

## Jobs

*This section lists all changes related to job triggering, execution, and monitoring.*

### Updated Memory Usage
**DBPF-7595**

The memory needed to save the task outputs for a list of files is now reduced.

---

## Routines

*This section lists all changes related to routines in Python or Java.*

### Updated Method in Composite Data Model Routines
**DBPF-7127**

When using routines in a Composite Data Model application, the `markModified` method now applies to all visible reference scenarios

### New Built-in Routine for Rule Execution
**DBPF-7127**

The routine `ExecuteRulesetOnScenario` has been introduced and documented. It compiles and executes a set of rules written in Drools Rule Language on the data of a scenario. It is activated by adding the `@AddExecuteRulesetOnScenarioRoutine` annotation to the configuration of the Backend service.

Scripted task `ExecuteRulesetOnScenarioTask` has also been introduced. It is activated with the `@AddExecuteRulesetOnScenarioTask` annotation. It calls the above routine and can typically be executed from a UI Action set on a button of the toolbar of a Code Editor widget. It is used by the Rules Script Editor widget.

### New Built-in Routine for ChatGPT Interaction
**DBPF-7127**

The Routine `ProcessChatGptConversationRoutine` has been introduced and documented. It processes and extends a conversation with OpenAI's GPT large language models. It is activated by adding the `@AddChatGptConversationRoutine` annotation to a configuration of the Backend service.

Scripted task `ProcessChatGptConversationTask` has also been introduced. It is activated with the `@AddChatGptConversationTask` annotation. It calls the above routine and can typically be executed from a UI Action set on a button of the toolbar of a Code Editor widget.

---

# UI Changes

*This part lists all changes related to:*

- *the Application Preferences, not its Configuration, in Section **Application Preferences**.*
- *specific UI widgets, in Section **Data Grid/Explorer**, **Scenario**, **Issue, Job, Navigation Button, Chart, Gantt, KPI, Filter, Composite, Map, Calendar, Rich Text**, or **Pivot Table Widget** — if a change impacts more than one widget, it is listed in the most relevant section and referred to in the others.*

## General UI Changes

*This section lists all changes related to all widgets, regardless of their type, or non-widget elements of the UI, such as the Sidenav, menus, scenario selector, or views and dashboards, except for the Access Control elements, such as permissions and API keys.*

### Improved Application Name Display

**DBPF-7530 DBPF-7531**

The application name in the header is now clickable and redirects to the Home view, the same way as the logo does.

### Improved Sidenav Display

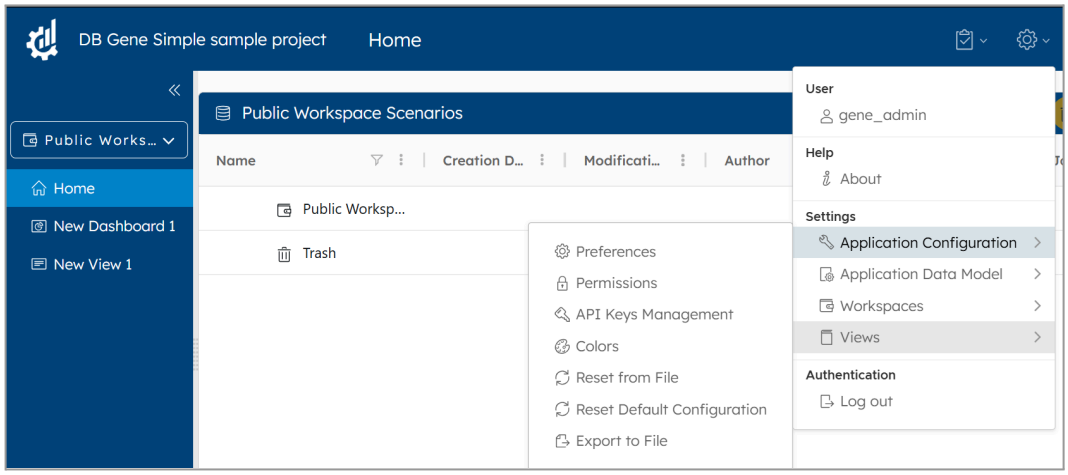
**DBPF-7538**

The colors of the Sidenav bar now reflect the application colors. To use the old colors, the application preference *USE_LEGACY_SIDEBAR_COLORS* is available and can be set to true.

### Improved Sidenav and Topbar Menus

The colors of the Sidenav bar now reflect the application colors. The legacy Sidenav colors can be restored by setting *USE_LEGACY_SIDEBAR_COLORS* to true in the Application Preferences.

Also, as the notion of "views" and "dashboards" is being reworked, the Views separator has been removed from the Sidenav.




In the Topbar Settings menu:

- *"Views and Dashboards"* has been renamed *"Views"*.
- *"Application Preferences"* is now named *"Preferences"*, and it has been moved under *"Application Configuration"*.

Finally, on the left side of the Topbar:

- Clicking the application name now redirects to the Home view, and
- The name of the view or dashboard is not underlined when hovered anymore, as it could be confused for a link.

### Improved Boolean Filter Display

**DBPF-7337**

The outside area of the buttons is now visible when the button is not selected or hovered.

### Improved Widget Configuration

**DBPF-7555 DBPF-7556**

The widget type and description are now displayed in the widget configurator.

# Application Preferences

*This section lists all changes related to the Application Preferences, not the Application Configuration.*

### Updated Application Preferences Configuration

**DBPF-7535**

In the Settings menu, the item "Application Preferences" is now named "Preferences" and has been moved under Application Configuration.

### New Application Preferences Settings

**DBPF-7550**

New Application Preferences settings are available:

- The new preference *SHOW_GENE_DASHBOARD_LAYER_BUTTON* under the Component DASHBOARD will show the previously perpetually present menu to order the widget layers in edition mode when set to true. The default is false.
- To use the old colors for the Sidenav, the application preference *USE_LEGACY_SIDEBAR_COLORS* is available and can be set to true.
- *TASK_MENU_SHOW_JUPYTERLAB* under component *TASK_MENU* allows displaying the menu entry that opens JupyterLab in the Task menu. The default is true.

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# Chart Widgets

*This section lists all changes related to the Chart widget.*

### Improved Y-Axis Labels

**DBPF-7505 DOC-809**

Y-axis labels are now left-aligned with the axis

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## Gantt Chart Widget

*This section lists all changes related to the Gantt Chart widget.*

### Improved Edition

**DBPF-7240 DBPF-7245 DBPF-7246 DBPF-7631 DBPF-7574 DBPF-7612**

Version 4.5.0 introduces several improvements in the Gantt Chart widget:

- Data edition now supports snap to grid, drag and drop scrolling, and deleting events.
- The Custom Controller API now supports controlling editions.
- The Gantt Chart API now supports rendering images

Finally, the `readUpdates` method of the `GanttDataSource` interface now returns a boolean to indicate if updates have been applied.

This method should return `true` and request a refresh on the Gantt chart itself in this case. If it returns `false`, the Gantt component may refresh after calling `readUpdates`.

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## Filter Widget

*This section lists all changes related to the Filter widget.*

### Improved "Applies to" Setting

**DBPF-7219**

"Applies to" can be edited when a "Filter field" is selected.

### New Key Descriptions Display

**DBPF-7649 DOC-948**

The Filter widget now displays descriptive values alongside keys.

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# Pivot Table Widget

*This section lists all changes related to the Pivot Table widget.*

### New Pivot Table Options

**DBPF-7423 DOC-940 DBPF-7328**

The Pivot Table widget configurator now provides users with new options:

- Pin row groups
- Autoexpand on scroll
- Aggregated Rows Views
    - Double-clicking on a cell opens a table with all the aggregation lines.
    - If the column is editable, you can edit the value
    - When you save, the pivot table is refreshed

Also, the data edition pop-up table can now be displayed next to the pivot table.

Finally, the Server Pivot Table requires functionality to allow users to freeze the columns enabled in the "Row Groups" section. This feature will ensure these columns remain visible while the user scrolls horizontally.

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# Code Editor Widget

*This section lists all changes related to the Code Editor widget.*

### New Auto-Scroll-to-Bottom Setting

**DBPF-7495 DOC-1017**

A new "Auto scroll to bottom on update" option in the Code Editor widget configurator is enabled by default.

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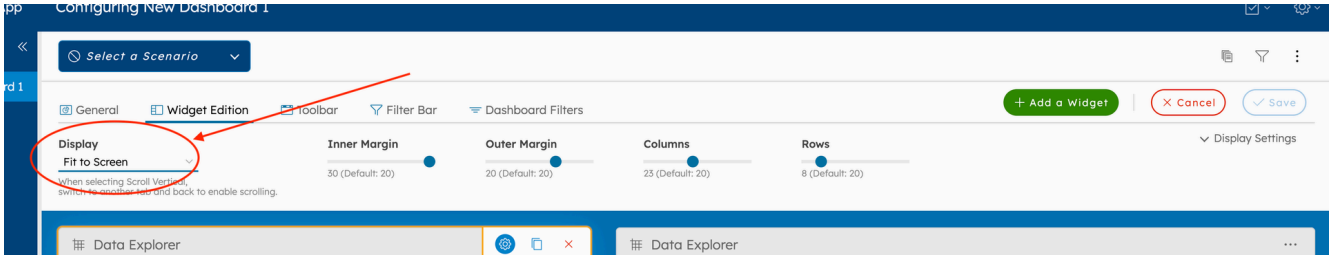
# Deprecated Features and APIs Scheduled for Removal in the Next Release

*This section lists all removals that are planned to come in <Next-Release>.*

### Deprecated Custom Views

Starting with the 4.5.0 the Custom Dashboards layout can be configured with a "fit to screen" option which allows the positioning of a single widget to fit the whole screen just like in a Custom View. Therefore Custom Views are now deprecated and will be removed in the next release.




### Deprecated ExcelExportRoutine

This routine `ExcelExportRoutine` has been deprecated in 4.0.1-fp2 and will be removed in the next release.