

# KNIME Business Hub User Guide

KNIME AG, Zurich, Switzerland  
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# Introduction

KNIME Business Hub is a customer-managed KNIME Hub instance. Once you have a license for it and proceed with installation you will have access to Hub resources and will be able to customize specific features, as well as give access to these resources to your employees, organize them into Teams and give them the ability to manage specific resources.

Once you have access to a KNIME Business Hub instance available at your company, you can use KNIME Business Hub to perform a number of tasks such as:

- collaborate with your colleagues,
- test execution of workflows,
- create and share data apps, schedules, and API services
- keep track of changes with versioning.

This guide provides information on how to use KNIME Business Hub from a user perspective.

To install and administrate a KNIME Business Hub instance please refer instead to the following guides:

- [KNIME Business Hub Installation Guide](#)
- [KNIME Business Hub Administration Guide](#)

# Connect to KNIME Business Hub

You can use a standard web browser to connect to your KNIME Business Hub instance, once you are provided with the address (URL) and your access credentials - username and password.

After providing them you will be able to access to the home page of the KNIME Hub.

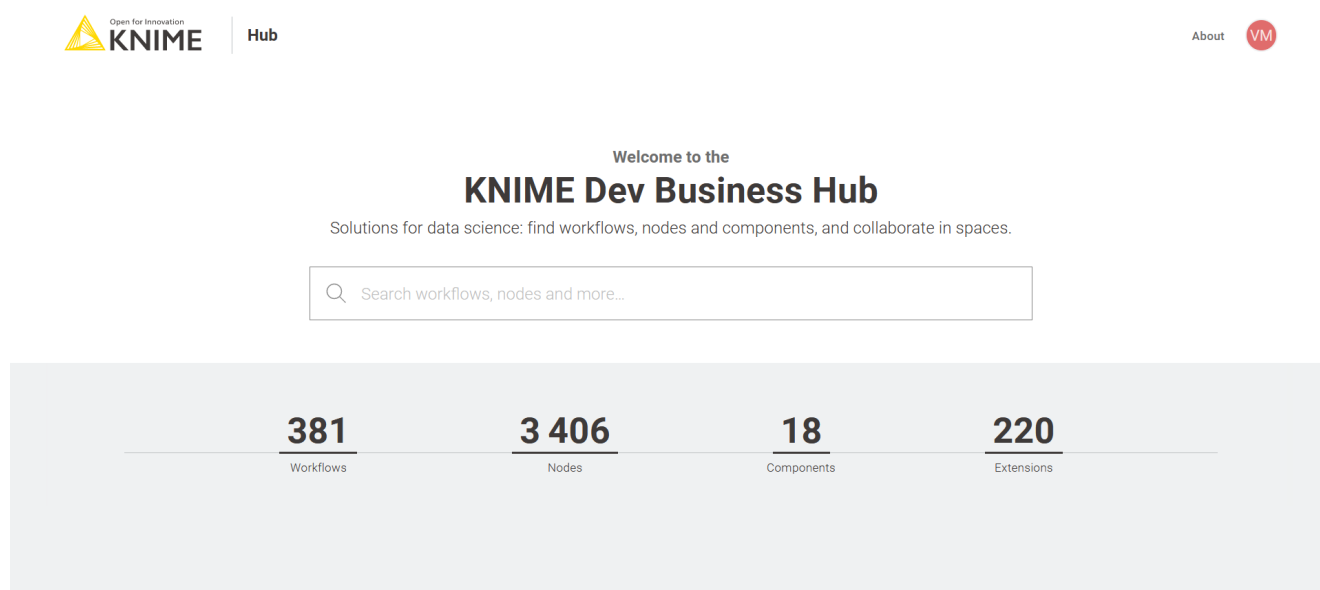


Figure 1. A KNIME Business Hub instance home page

Now you can use the search functionality by typing your search terms into the search bar. The search will show results among all the Hub items that are available to you, based on your role and the items permissions.

Your user will be assigned to one or more teams so that you will be able to work on projects together with your colleagues.

## Connect to KNIME Business Hub from KNIME Analytics Platform

To connect to KNIME Business Hub from KNIME Analytics Platform you have to first add its **mount point** to the **KNIME space explorer**.

### Space explorer

The space explorer on the left-hand side of KNIME Analytics Platform is where you can manage workflows, folders, components and files in a space, either local or remote on a KNIME Hub instance. A space can be:

- Your local workspace you selected at the start up of the KNIME Analytics Platform
- One of your **user's spaces** on KNIME Community Hub
- One of your **team's spaces** on KNIME Business Hub.

In the following, you will learn how to connect to the KNIME Business Hub.



Please be aware that in case you want to work with KNIME Server you need to **switch to the classic user interface**.

## Setup a mount point

Click the cog button in the top-right corner to open the *Preferences* dialog.

In the preferences window choose *KNIME* → *KNIME Explorer*. Click *New ...* to add the new Hub mount point as shown in **Figure 2**.

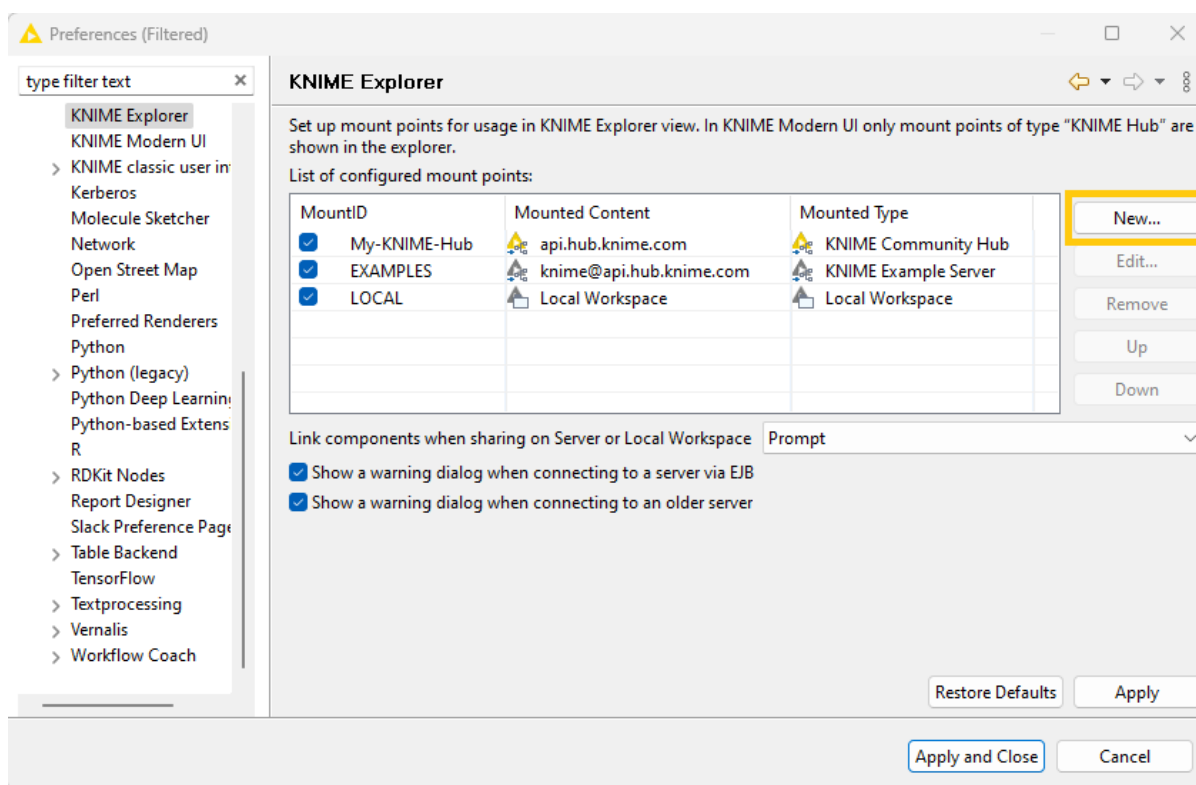


Figure 2. Add a new Hub mountpoint in the Preferences dialog

The *Select New Content* window opens as shown in **Figure 3**. Select *KNIME Hub* and insert the Hub address, the URL that connects the space in KNIME Analytics Platform to the KNIME Business Hub.

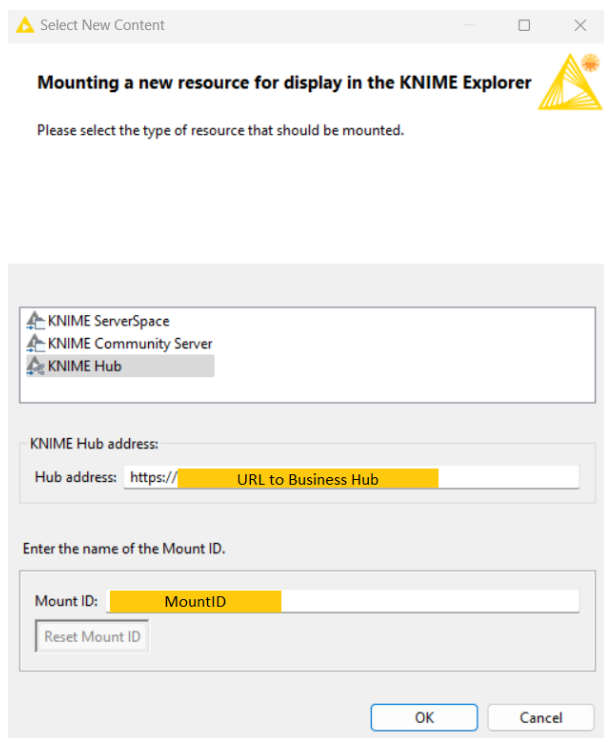


Figure 3. Select New Content window to add a new KNIME Hub mount point

In the *Mount ID* field the name of the mount point will be automatically filled. Finally click *OK* and *Apply and Close*.

## Access KNIME Hub

*Via the space explorer:*

On the top of the space explorer you can sign in to any of the Hub mount points and select a space. The MountID will be displayed along with the URL to the Business Hub, as shown in [Figure 4](#).

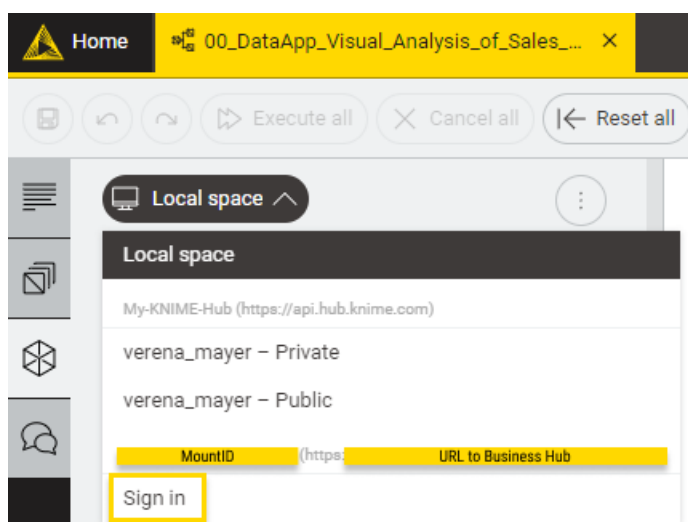


Figure 4. Connect to the Business Hub mount point in the space explorer

Here you can perform different types of operations on items:

- Delete or rename your items. To do so, right-click the desired item and select *Rename* or *Delete* from the context menu.
- Open workflows as local copy or on KNIME Hub. To do so right-click the desired item and select either *Download to local space* or *Open in Hub* from the context menu.
- Create folders to organize your items within the space. To do so, click the three dots in the upper-right corner of the space explorer and select *Create folder*.
- Create new workflows or import local workflows by clicking the three dots and selecting *Create workflow* or *Import workflow*.

*Via the entry page:*

Click on the *Home* tab. All your mount points are listed at the bottom of the entry page. The MountID will be displayed along with the URL to the Business Hub, as shown in [Figure 5](#). Click the yellow *Sign in* button to the right of the mount point. Now you will see all the spaces that you have access to. Click on the tile of the space you want to access. Within this space you can also import workflows, components or add data files from your local workspace to the KNIME Hub instance or create a folder.

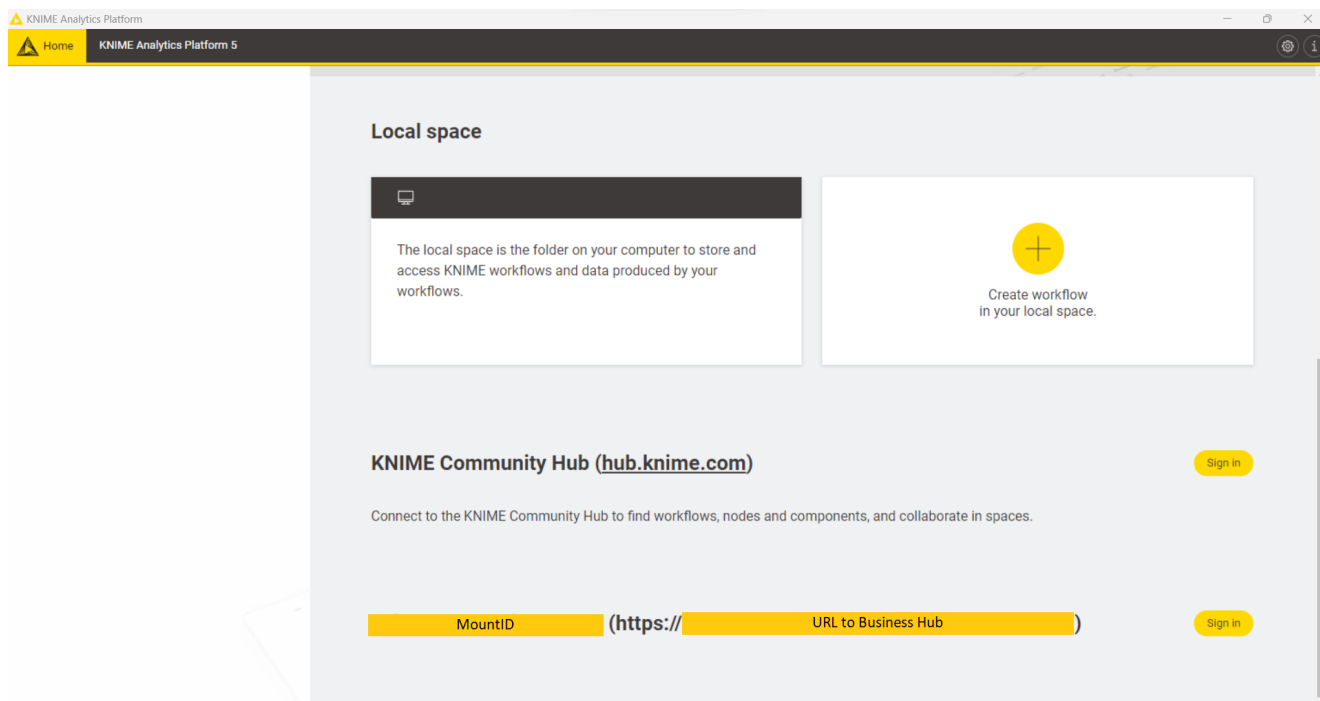


Figure 5. A KNIME Hub mount point on the entry page

Gain a more detailed insight about the [entry page](#) and the [space explorer](#) in the KNIME Analytics Platform User Guide.



# Search items in KNIME Hub

Insert a keyword in the search bar to search among the following items:

- Nodes
- Components
- Workflows
- Extensions

Press *Enter* to visualize the results.

You will see a list of all the search results in tiles, with:

- An icon indicating if they are nodes, components, workflows or extensions
- The title
- Tags, when available
- A preview of the description, when available
- The owner icon for workflows, and extensions
- The icon, for nodes and components

On top of the search results list, you can filter the results to list only nodes, components, workflows, and extensions, by clicking the respective tab, shown in [Figure 6](#).

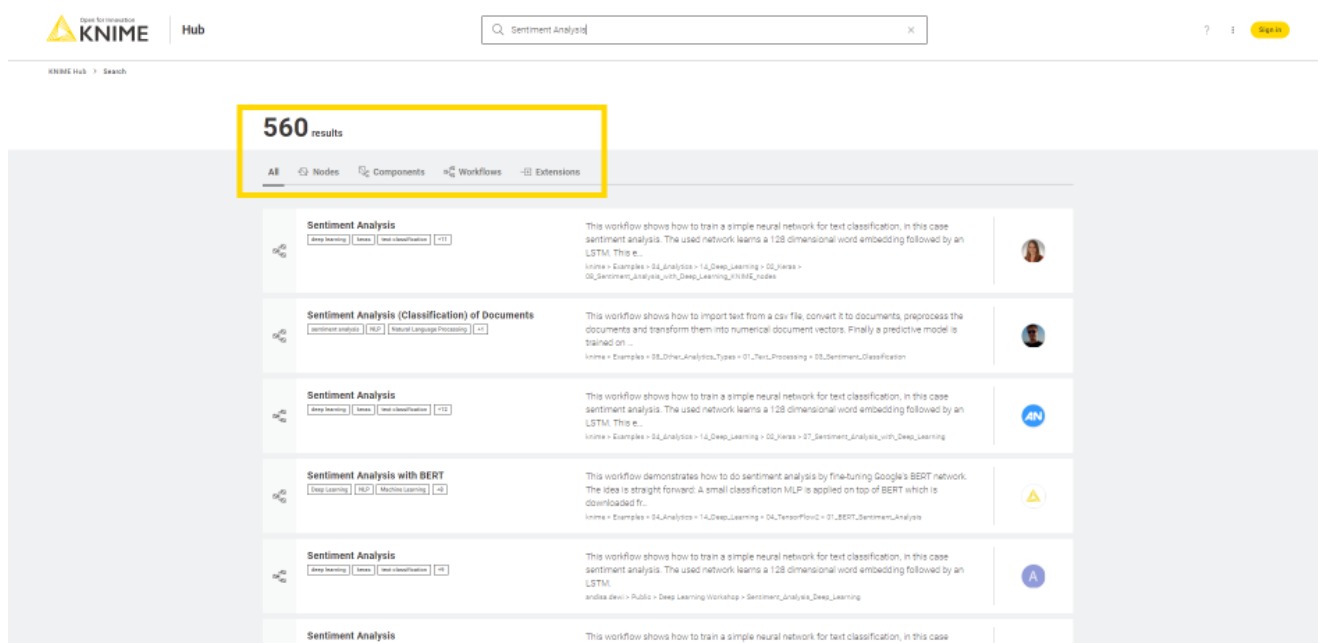


Figure 6. The KNIME Hub search results

Click on a search result to access the relative page.

## Nodes

On the node page you will find:

1. The node function, name, and tags
2. The node owner
3. The node drag & drop element: You can drag & drop the element into the Workflow Editor of KNIME Analytics Platform to use the node directly to build a workflow or a component. See the [Drag & drop section](#) for more details on this feature.
4. The node likes and a link icon to copy the node short link.

For each node you can also find:

- An *Overview* with a description of the node functionality
- *Node details* where you can see information about *Input* and *Output* node ports, a description of the additional *Options*, and, when available, the *Views* that the node is able to produce
- In the section *Extension*, you can see the node extension and the extension owner
- Finally, in the section *Related workflows & nodes* you are provided with:
  - *Workflows* that are available on KNIME Hub and that contain the node
  - When available, the *Outgoing nodes*, that are the most popular nodes to follow the node when building a workflow.

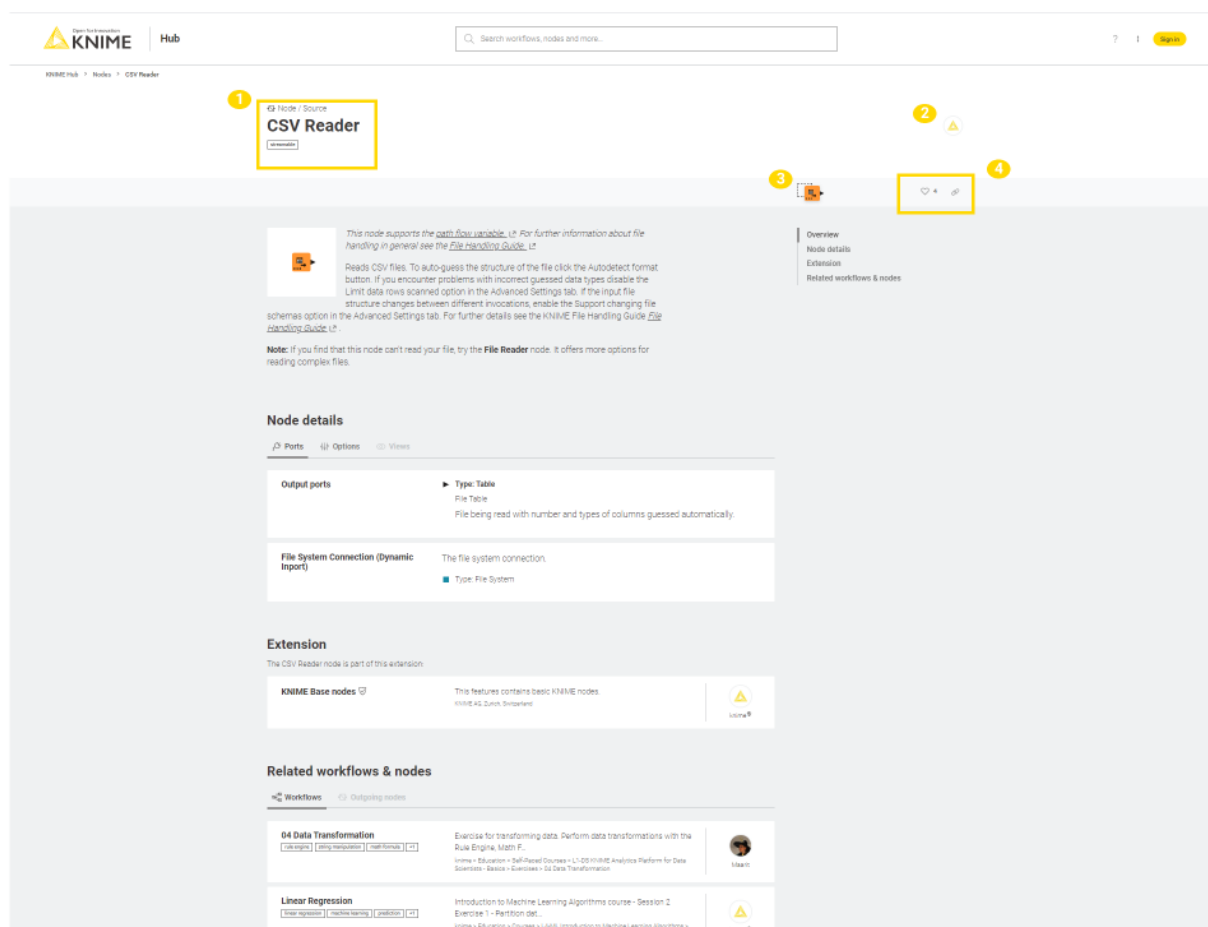


Figure 7. A node page on KNIME Hub

## Components

Since **components** really are KNIME nodes that you create which bundle functionality, have their own configuration dialog and their own composite views, also in the component page you will find similar information as for nodes.

1. The component name and last edit date
2. The component owner
3. The component drag & drop element: You can drag & drop the element into the Workflow Editor of KNIME Analytics Platform to use the component directly to build a workflow. See the **Drag & drop section** for more details on this feature.
4. The component likes, the count of downloads, and a link icon to copy the component short link.

For each component you can also find:

- An *Overview* with a description of the component functionality, when provided by the component owner
- *Component details* where you can see information about *Input* and *Output* component ports, a description of the additional *Options*, and, when available, the *Views* that the component is able to produce
- In the section *Used extensions & nodes* you can see the component extensions and nodes.
- Finally, in the section *Related workflows* you are provided with *Workflows* that are available on KNIME Hub and that contain the component.

The screenshot shows the KNIME Hub interface for the 'Twitter URLs Extractor' component. The page layout includes a header with the KNIME logo and a search bar. The main content area is divided into several sections:

- Component Overview:** A box at the top left (labeled 1) containing the component name 'Twitter URLs Extractor' and its last edit date '16 Aug 2021'.
- Description:** A text block explaining the component's purpose: 'This component extracts the links tweeted for better keyword search analysis, mainly for SEO purposes. Its usage is fairly simple, add in the twitter authentication tokens obtained from dev.twitter.com, search query with necessary filters and number of tweets for search results. By default all filters are disabled, please specify any necessary search filter you want in your search query and this component will do the rest for you. List of all possible search filters can be found at: https://developer.twitter.com/en/docs/twitter-api/v1/rules-and-filtering/search-operators'.
- Component details:** A section with tabs for 'Ports', 'Options', and 'Views'. The 'Ports' tab is active, showing 'Output ports' with a 'Type: Table' and a description: 'A column containing tweeted web addresses and corresponding tweet details.'
- Used extensions & nodes:** A section with tabs for 'Extensions' and 'Nodes'. The 'Extensions' tab is active, showing a list of required extensions: 'KNIME Base nodes', 'KNIME Expressions', 'KNIME Javasnippet', 'KNIME Quick Forms', and 'KNIME Twitter Connectors', each with a version number and a download button.
- Legal:** A section at the bottom with a 'Legal' heading and a link to the 'Terms and conditions'.

Numbered annotations on the screenshot:

- 1: Points to the component title and last edit date.
- 2: Points to the component description.
- 3: Points to the 'Component details' section.
- 4: Points to the 'Used extensions & nodes' section.

## Workflows

A workflow page typically has multiple useful information about the workflow such as:

1. The workflow title, tags and last edit date
2. The space owner where the workflow is contained and, if different from the space

owner, the workflow developer

3. The workflow drag & drop element: You can drag & drop the element into a selected mount point in the KNIME Explorer of KNIME Analytics Platform. This will prompt an *Import* window which allows you to import the workflow into the mount point. See the [Drag & drop section](#) for more details on this feature.
4. The workflow likes, the count of downloads, and a link icon to copy the workflow short link.

For each workflow you can also find:

- An *Overview* with a description of the workflow when provided by the workflow developer
- *External resources* links to external resources such as KNIME blog posts, KNIME documentation, or any other interesting link that the workflow developer might want to provide
- In the section *Used extensions & nodes* you can see the workflow extensions and nodes, and the KNIME Analytics Platform that has been used to create the workflow

**Visual Analysis of Sales Data**

This workflow is built according to the instructions on the 'Build a workflow' page and in the KNIME Quickstart Guide. For more information see the workflow metadata. Find it here: [View -> Description](#)

Workflow that is built according to the instructions on the 'Build a workflow' page and in the KNIME Quickstart Guide

Shows possible steps in analyzing (sales) data

1. Data access - Reading a csv file
2. Data preprocessing - Filtering columns and rows
3. Data visualization - Assigning colors to groups in the data. Building graphs.

How-to:

- Configure a node
  - Right click a node and select 'Configure...'
  - Or, double click a node
- Execute a node
  - Right click a node and select 'Execute'
- Inspect data output
  - Right click a node and select the last option called 'File Table', 'Filtered Table', etc.
- Open an interactive view
  - Right click a node and select 'Interactive View...'

**External resources**

-> KNIME Getting Started Guide

**Used extensions & nodes**

Extensions Nodes

Created with KNIME Analytics Platform version 4.2.1

KNIME Base nodes	KNIME JavaScript Views
KNIME JavaScript Views	KNIME JavaScript Views

## Extensions

**Extensions** are collection of nodes that provide additional functionality such as access to and processing of complex data types, the use of advanced algorithms, as well as the use of scripting nodes, and so on.

KNIME Extensions are developed and maintained by KNIME, allowing you to access open source projects and add their functionality to your KNIME workflows. Community Extensions instead include functionality specific to various industries and domains. Some of these community extensions are classified as Trusted Community Extensions, which have been tested for backward compatibility and compliance with the KNIME usage model and quality standards, and Experimental Community Extensions, which come directly from the labs of our community developers. Finally, also Partner Extensions are available which provide additional capabilities offered and maintained by our partners.

All these Extensions are available on KNIME Hub.

An extension page typically has multiple useful information about the extension such as:

1. The extension name and owner, version of the extension
2. The extension drag & drop element: You can drag & drop the element into the Workflow Editor of KNIME Analytics Platform. If the extension is not already installed this will prompt an *Install Extension* window which allows you to install the extension. See the [Drag & drop section](#) for more details on this feature.
3. The extension likes, and a link icon to copy the extension short link.

For each extension you can also find:

- An *Overview* with a description of the extension when provided
- *Included nodes* with a list of all the nodes that are part of the extension and that will be available once the extension is installed
- In the section *Related workflows*, you are provided with *Workflows* that are available on KNIME Hub and that contain the nodes that are part of the extension
- Finally, in the section *Legal & update site*, you can have legal information about the copyright and the update site information, with the type of the extension, version number, and the link to the [update site](#).

## Collections

KNIME Collections on KNIME Hub allow upskilling users by providing selected workflows, nodes, and links about a specific, common topic.

One example of a collection can be found on KNIME Community Hub [here](#).

This collection, for example, contains:

- Workflow examples:

The screenshot shows the KNIME Hub interface. At the top, there's a search bar and navigation links like 'Pricing', 'About', and 'Sign in'. The main content area displays a collection titled 'KNIME Analytics Platform Version 5 Starter Perspective Collection'. Below the title, there are tabs for 'Spreadsheets', 'Excel', 'CSV', and 'Beginners'. A description states: 'Browse working examples, node explanations and further resources for testing out early access to KNIME Analytics Platform Version 5.' A 'Download' button is visible. On the right, a 'New to KNIME?' box provides information about the Early Access Release of Version 5. Below the collection title, there's a section for 'Workflow examples' with a list of resources: 'Nodes for data access', 'Nodes for visualizing', 'Nodes for data transformation', and a 'Cheat sheet: KNIME for spreadsheet users'.

Figure 8. Example workflows in a collection on KNIME Hub

- Nodes:

The screenshot shows the 'Nodes for data access' section on the KNIME Hub. It features a grid of nodes categorized under 'Reading', 'Writing', and 'Connecting to services'. 
 

- Reading:** Includes 'Excel Reader' (reads Excel files) and 'Google Sheets Reader' (reads a tab of a Google spreadsheet).
- Writing:** Includes 'Excel Writer' (writes input data to an Excel file) and 'Google Sheets Writer' (writes input data to a new Google Sheets spreadsheet).
- Connecting to services:** Includes 'Microsoft Authenticator' (provides authentication to Microsoft Azure and Office 365), 'SharePoint Online Connector' (connects to a SharePoint Online site), and 'Google Sheets Connector' (creates a connection to Google Sheets).

 Each node has a brief description of its function. On the right side, there's a sidebar with 'Workflow examples' and a list of resources: 'Nodes for data access', 'Nodes for visualizing', 'Nodes for data transformation', and a 'Cheat sheet: KNIME for spreadsheet users'.

Figure 9. Nodes in a collection on KNIME Hub

- Links:



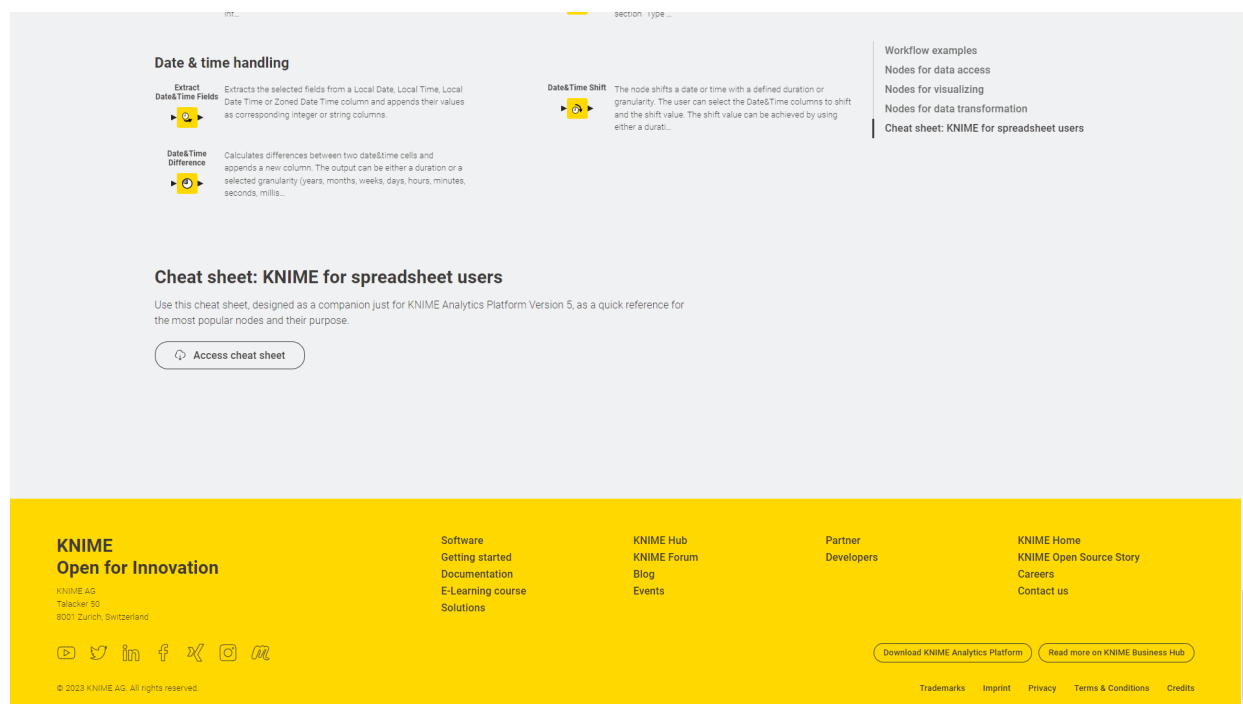


Figure 10. Additional links in a collection on KNIME Hub

## Drag & drop

You can drag & drop nodes, components, extensions, and workflows from KNIME Hub to import them into KNIME Analytics Platform and use them right away to build your own workflow, install KNIME Extensions, and execute uploaded workflow into your local installation.

- **Node and components:** You can drag & drop a node or a component from KNIME Hub into your Workflow Editor in KNIME Analytics Platform. In case the node is part of an Extension that is not yet installed into your local installation of KNIME Analytics Platform or in case nodes that are part of extensions that are not yet installed are contained in the component, you will be asked if you want KNIME Analytics Platform to search and install the missing extension(s), as shown in [Figure 11](#).

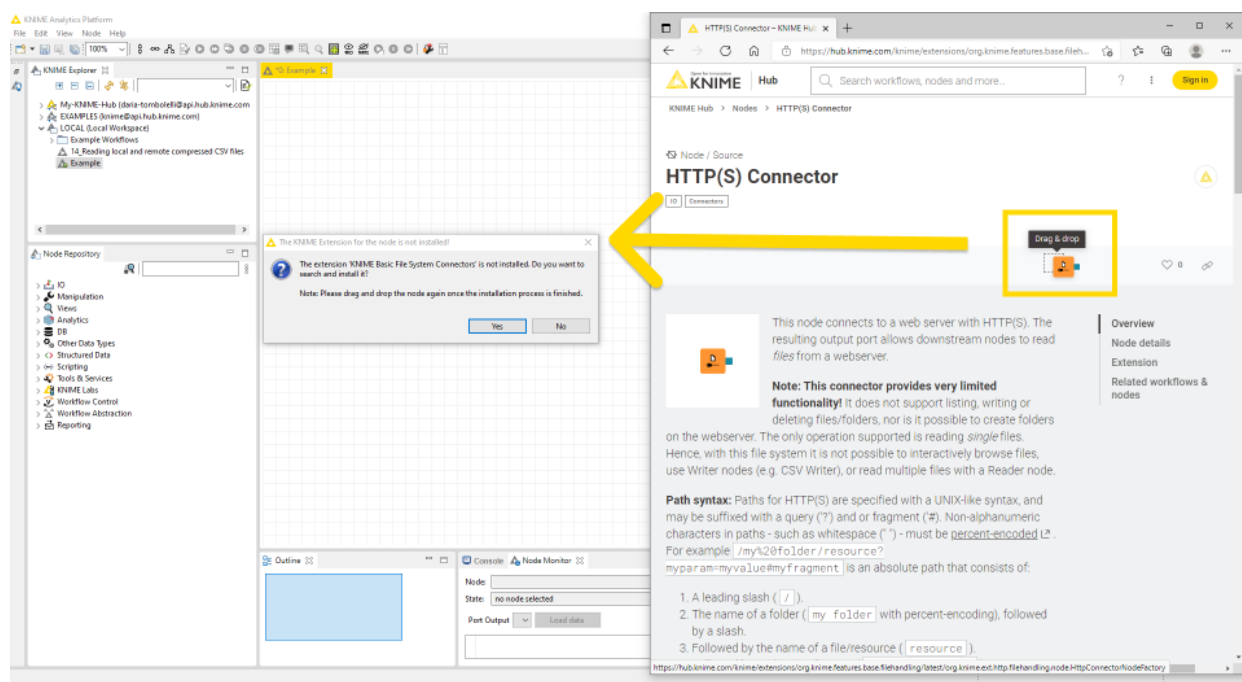


Figure 11. Drag & drop a node from KNIME Hub to KNIME Analytics Platform and install missing extension

- **Extensions:** You can drag & drop a specific extension into the Workflow Editor. KNIME Analytics Platform will search and install it. In order to be able to install the extension the extension's **update site** that is indicated at the end of the extension page in the section *Legal & update site* must be activated in KNIME Analytics Platform.

# Teams

A team is a group of users on KNIME Hub that work together on shared projects. Specific Hub resources can be owned by a team (e.g. spaces and the contained workflows, files, or components) so that the team members will have access to these resources.

The team can own public or private spaces. For more details see the section [Team owned spaces](#).

The items that are stored in a team's public space will be accessible by everyone with access to the Business Hub instance and be presented as search results when searching on KNIME Hub. Only team members will have upload rights to the public spaces of the team. Only the team members instead have read access to the items that are stored in a team's private space. This will then allow KNIME Hub users that are part of a team to collaborate privately on a project.

## Create a team

Teams are firstly created by the [KNIME Hub Global Administrator](#). The global admin will assign a user the role of team admin as well allocate resources to that team. The team admin will be able to start adding team members and create [execution contexts](#) that can be used by the team.

There are two types of roles a user can be assigned when part of a team:

- Administrator. A team administrator can:
  - [Add/remove users from the team](#)
  - [Promote team members to admins](#)
  - [Create execution contexts](#)
- Member. A team member can:
  - View the team page, with members list and spaces
  - [Create, modify, and delete public and private spaces](#)
  - [Upload/download items to/from public and private spaces](#)
  - [Delete items from public and private spaces](#)

The team creator is automatically assigned administrator role and can promote any of the team members to administrators. In order to do so please follow the instructions in the section [Manage team members](#).

## Team owned spaces

A team can own an unlimited number of both public and private spaces.

- Team owned **public** spaces: The items that are stored in a team's public space will be accessible by everyone and be presented as search results when searching on KNIME Hub. Only team members will have upload rights to the public spaces of the team.
- Team owned **private** spaces: Only the team members instead have read access to the items that are stored in a team's private space. This will then allow KNIME Hub users that are part of a team to collaborate privately on a project.

You can create a new space by going to the team's profile. To do so click your profile icon on the top right corner of KNIME Hub. In the tile *Create new space* click *Private space* to create a private space for your team, or *Public space* to create a public space. You can then change the name of the space, or add a description. You can change or add these also later by going to the relative space page and clicking the space name or *Add description* button to add a description for the space.

You can also change the visibility of the space from private to public and vice-versa, if you are a team admin, or delete the space. To do so, from the space page click the three vertical dots as shown in the image below.

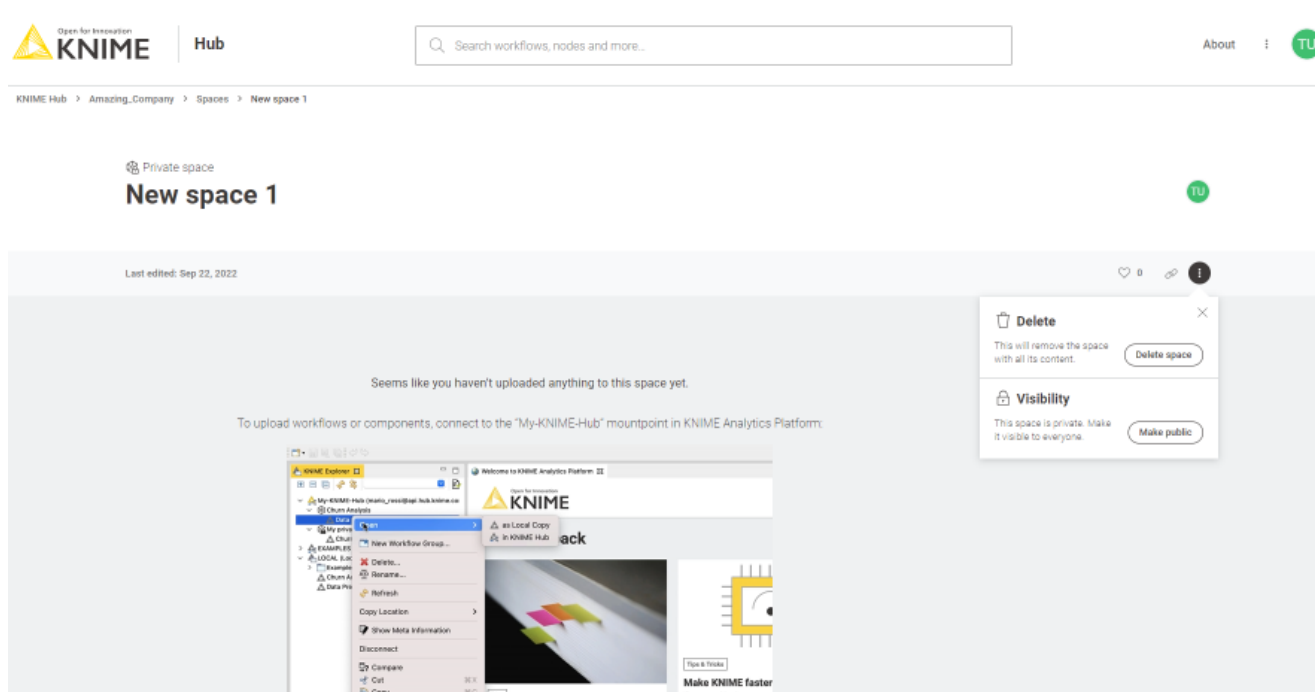


Figure 12. Change visibility or delete an existing team owned space

## Manage space access

You can also manage the access to a specific space. To do so navigate to the space and click the pencil icon.

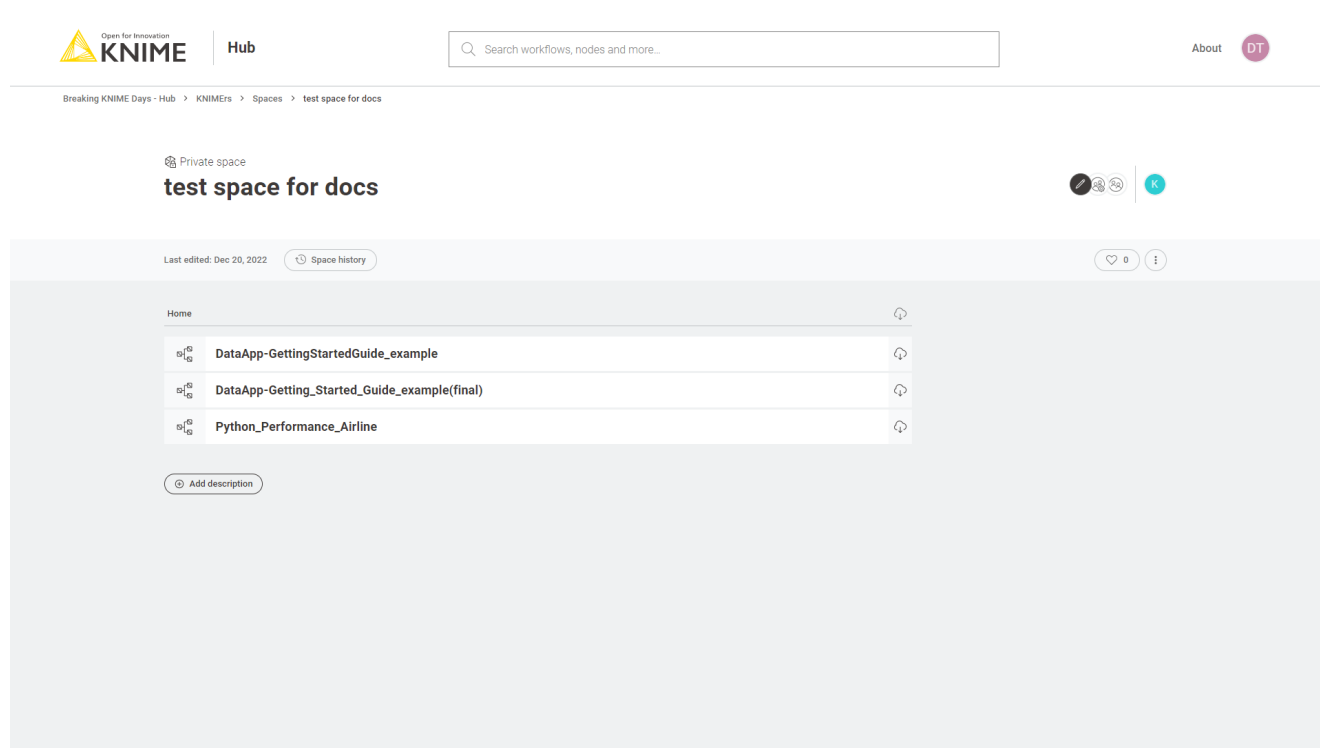


Figure 13. Open the Manage space access side panel

In the *Manage space access* side panel that opens you can change the rights the other team members have on the items in the space - e.g. you can grant them *Edit* rights or *View* rights.

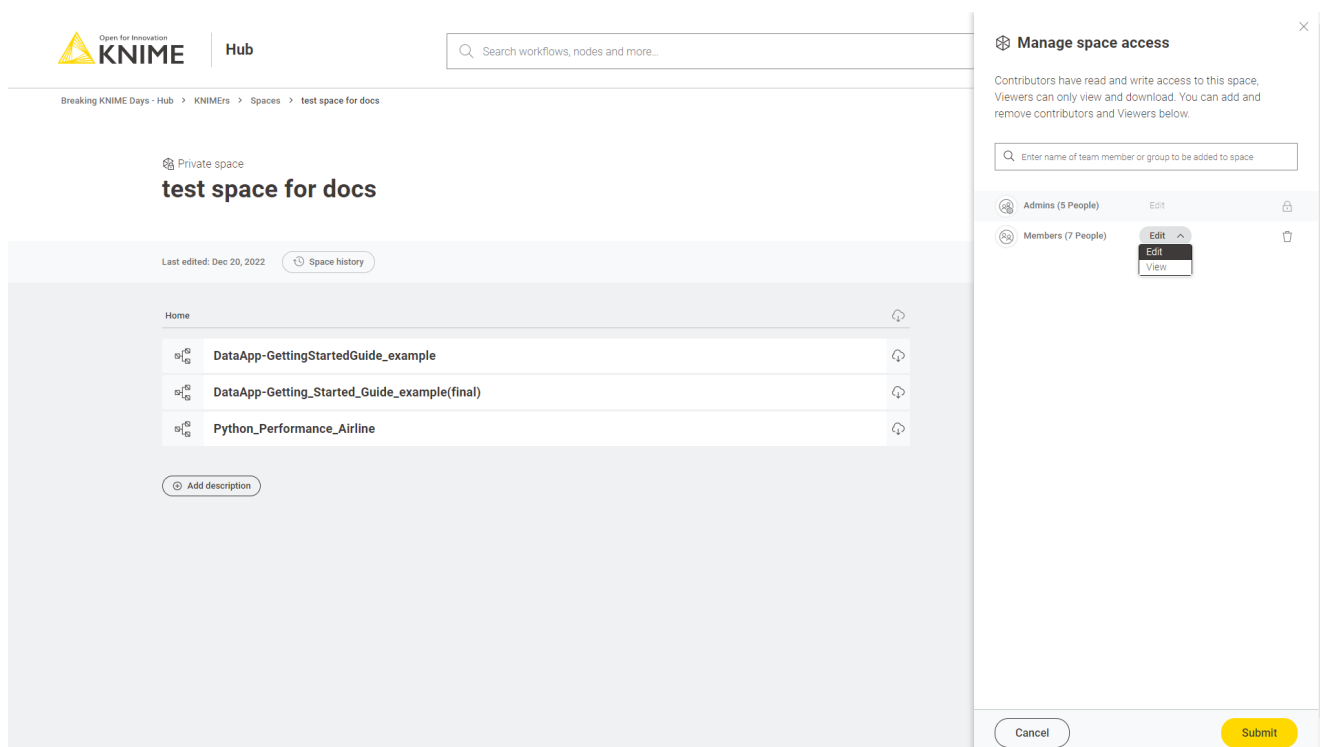


Figure 14. Manage the access to a space

## Manage team members

You can manage your team by going to the team's profile. To do so click your profile icon on the top right corner of KNIME Hub.

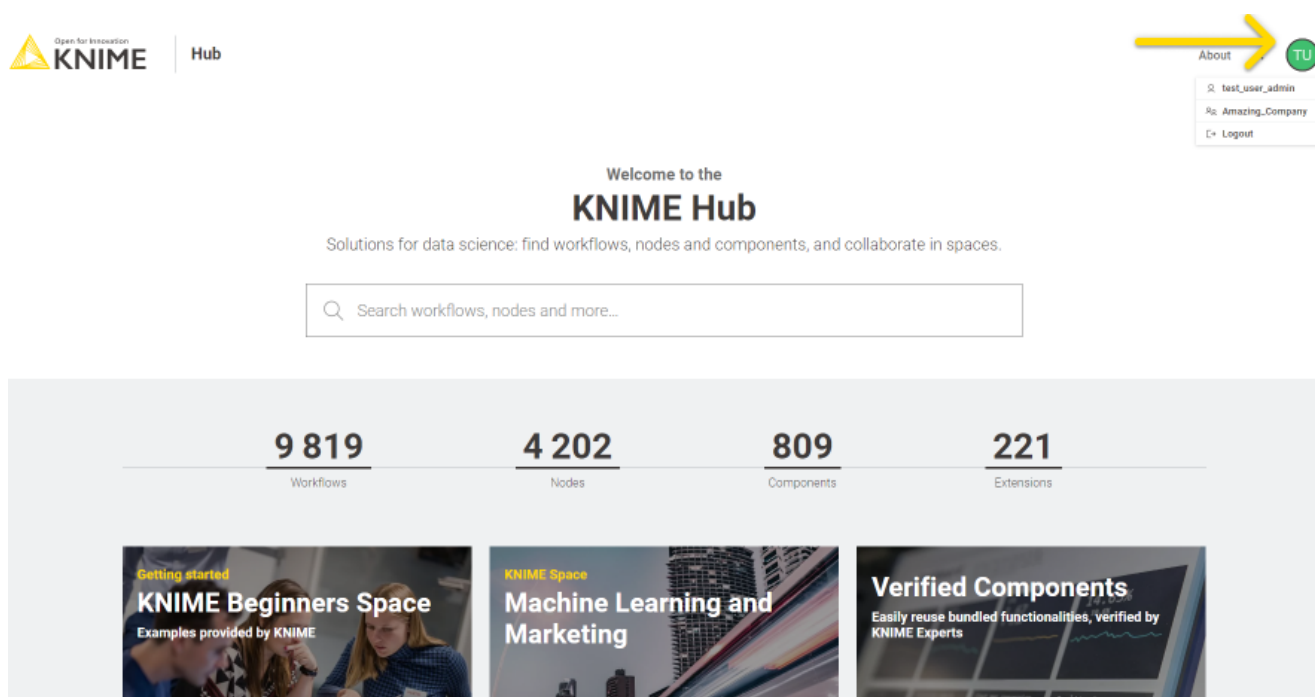


Figure 15. Select a team to go to the team's profile page

In the dropdown menu that opens you will see your teams. Select the team you want to

manage to go to the corresponding team's profile page.

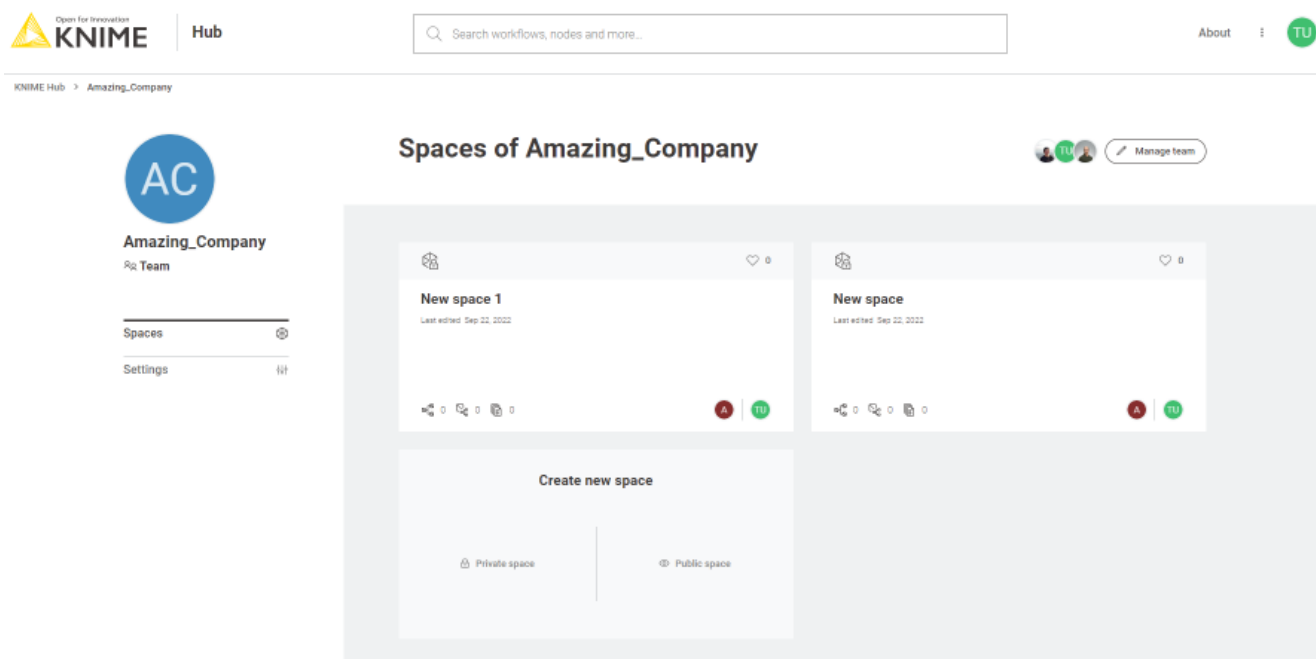


Figure 16. The team's profile page

Here you can click *Manage team* button to open the *Manage Team Members* side panel, as shown in the image below.

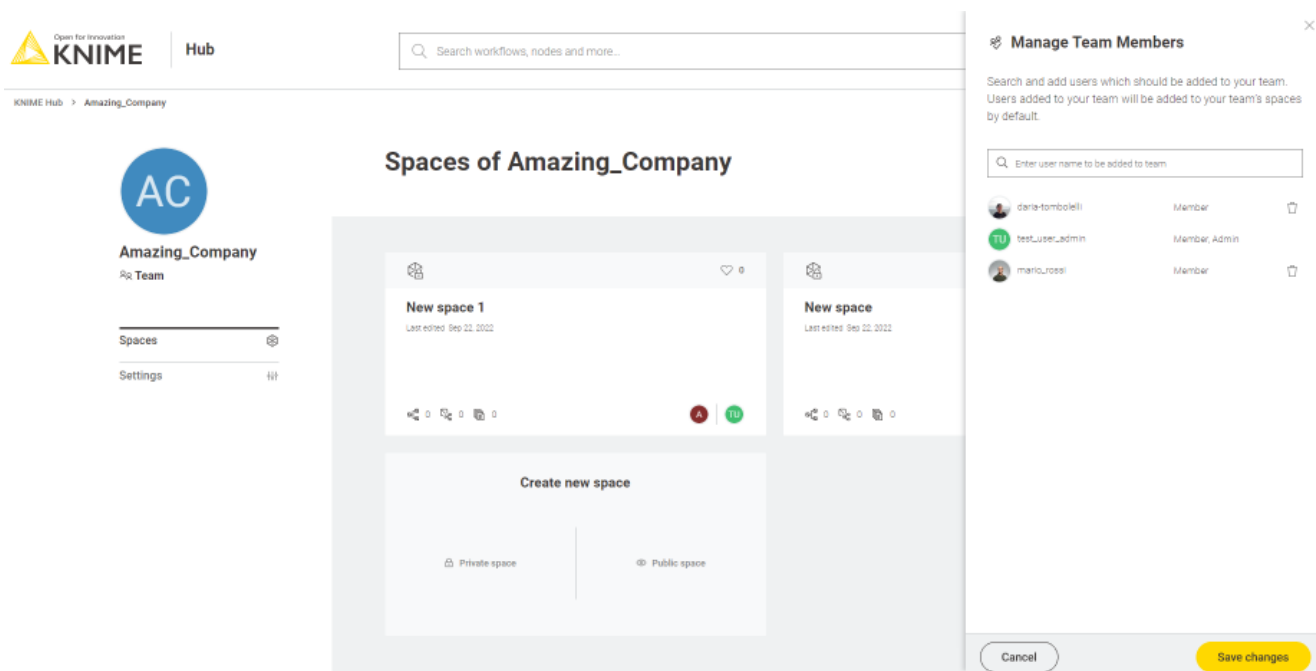


Figure 17. Manage team members

You will see here a list of the team members and their assigned role.

From here a team admin can change the role of the team members. To do so click the drop down arrow close to the name and select the roles you want to assign to each user.

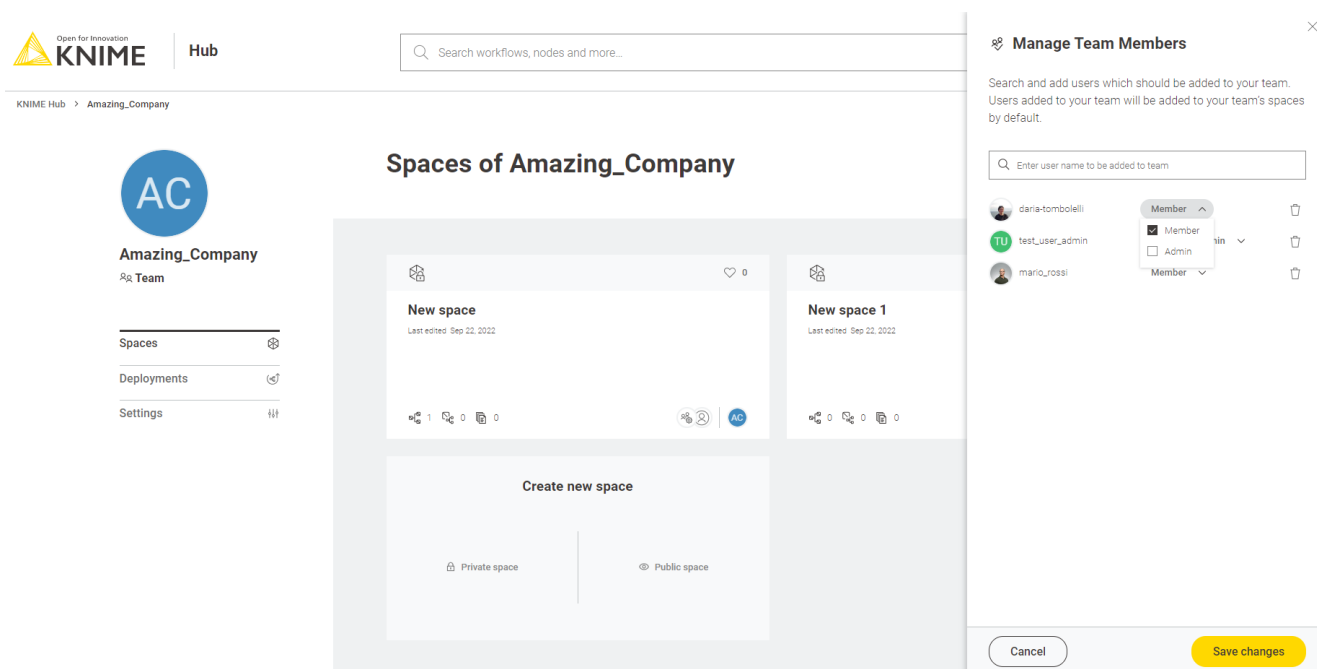


Figure 18. Manage team members roles

Then click *Save changes* button to apply your changes.

## Add members to a team

To add a new member enter the user name of the users that you want to add to the team in the corresponding field in the *Manage Team Members* panel then click *Save changes* button to apply your changes.

In case you added more users than allowed by your license you will be notified with a message. Please **remove the exceeding users** or purchase more users.

## Delete members from a team

To delete a member go to the *Manage Team Members* panel and click the bin icon for the user you want to delete. Then click the *Save changes* button to apply your changes.

# Customization profiles

Customization profiles are used to deliver KNIME Analytics Platform configurations from KNIME Hub to KNIME Analytics Platform clients and KNIME Hub executors.

This allows to define centrally managed:



- Update sites
- Preference profiles (such as Database drivers, Python/R settings)

A profile consists of a set of files that can:

- Be applied to the client during startup once the **KNIME Analytics Platform client is configured**. The files are copied into the user's workspace.
- Be applied to the **KNIME Hub executors** of the execution contexts.

Customization profiles can be:

- Global customization profiles that need to be uploaded and managed by the **Global Admin**
- Team's customization profiles that need to be uploaded and managed by a team admin

Every user of the KNIME Business Hub instance can then download and use customization profiles.



For the time being, customization profiles have to be managed on KNIME Hub via REST. An upcoming release will add the capability to go via KNIME Hub UI as well.

## Create a customization profile

A customization profile is a file with the `.epf` extension, that contains the needed profile information. So the first step is to create such a file.

1. Create an `.epf` file that contains the needed profile information:
  - a. Build the file from a local KNIME Analytics Platform installation. Set up the needed configuration in a local KNIME Analytics Platform installation, then go to *File* → *Export Preferences*. Open the created `.epf` file, and look for the entries related to your needed settings. Remove all other settings (as some contain e.g. local paths on your machine, which will inevitably cause issues when applying to another installation).
  - b. Place the `.epf` file in a folder, together with any additional files that need to be distributed along the profile (e.g. database drivers)
  - c. Create a `.zip` from that folder



When creating a zip file on macOS using the built in functionality, two files are automatically added that cause the next steps (i.e. applying the profile in Analytics Platform) to fail. There is a way to prevent creation of these files if creating the .zip via command line, see [here](#). If in doubt, use a Windows or Linux machine to create the .zip file.



The customization profiles on the KNIME Hub instance are going to be accessible without user authentication therefore they shouldn't contain any confidential data such as passwords.

For further details and an example on how to distribute JDBC driver files go to the Hub-managed customization profiles section of the [KNIME Database Extension Guide](#).

## Variable replacement

It is possible to use variables inside the preferences files (only those files ending in .epf) which are replaced on the client right before they are applied. This makes the Hub-managed customizations even more powerful. These variables have the following format:

`${prefix:variable-name}`. The following prefixes are available:

- **env**: the variable is replaced with the value of an environment value. For example, `${env:TEMP}` will be replaced with `/tmp` under most Linux systems.
- **sysprop**: the variable is replaced with a Java system property. For example, `${sysprop:user.name}` will be replaced with the current user's name. For a list of standard Java system properties see [the JavaDoc](#). Additional system properties can be defined via `-vmargs` in the `knime.ini`.
- **profile**: the variable will be replaced with a property of the profile in which the current preference file is contained in. Currently "location" and "name" are supported as variable names. For example, `${profile:location}` will be replaced by the file system location of the profile on the client. This can be used to reference other files that are part of the profile, such as database drivers:  
`org.knime.workbench.core/database_drivers=${profile:location}/db-driver.jar`

In case you want to have a literal in a preference value that looks like a variable, you have to use two dollar signs to prevent replacement. For example ``${env:HOME}` will be replaced with the plain text ``${env:HOME}`. If you want to have two dollars in plain text, you have to write three dollars (``${env:HOME}`) in the preference file.



Once you use variables in your preference files they are not standard Eclipse preference files anymore and cannot be imported as they are.

## Client customization

Besides the preferences that are exportable by KNIME Analytics Platform there are additional settings that can be added to the preference files to customize clients:

```
/instance/org.knime.workbench.explorer.view/defaultMountpoint/defaultMountpoints
=<mount id1>,<mount id2>,...
```

A comma separated list of default mountpoints that should be loaded, e.g. LOCAL, EXAMPLES, My-KNIME-Hub. Changes to this list only affects new workspaces, i.e. workspaces which already contain default mountpoints will still contain them even though they haven't been defined here. If this option is absent and defaultMountpoint/enforceExclusion isn't set to true then all default mountpoints will be added. The current default mountpoints are LOCAL, EXAMPLES, and My-KNIME-Hub.

```
/instance/org.knime.workbench.explorer.view/defaultMountpoint/enforceExclusion=<
true|false>
```

If set to true then all default mountpoint not defined by /instance/org.knime.workbench.explorer.view/defaultMountpoint/defaultMountpoints will be removed on start up. Please note that if you want to use this option, the default mountpoints you want to include should **only** be listed in /instance/org.knime.workbench.explorer.view/defaultMountpoint/defaultMountpoints, and **not** in their full definition like when exporting the preferences.epf file from a KNIME Analytics Platform.

```
/instance/com.knime.customizations/helpContact.buttonText=<label, e.g. Contact
Support>
```

If set together with /instance/com.knime.customizations/helpContact.address a button with the provided label will occur under Help in KNIME Analytics Platform. Clicking on the button will, depending on the helpContact.address, either open the default mail client or the default browser with the provided address.

```
/instance/com.knime.customizations/helpContact.address=<uri, e.g.  
mailto:support@company or https://company/support>
```

Sets the address of the support contact.

This option only takes effect in combination with

```
/instance/com.knime.customizations/helpContact.buttonText.
```

```
/instance/com.knime.customizations/documentation.buttonText=<label, e.g.  
Documentation>
```

Sets the label of the documentation button that can be found under Help in KNIME Analytics Platform. Clicking on the button will open the default browser and navigate to the documentation. If set to - the button will be hidden.

```
/instance/com.knime.customizations/documentation.address=<uri, e.g.  
https://company/documentation or file:///sharedSpace/documentation>
```

Sets the address of the documentation.

By default the documentation address points to the KNIME documentation.

```
/instance/com.knime.customizations/windowTitle.appendix=<appendix, e.g.  
sponsored by company>
```

Adds the appendix to the window title of KNIME Analytics Platform.

-

```
/instance/com.knime.customizations/updateSite.uris=<uri>,<uri>,...
```

Adds the provided addresses to the update sites.

-

```
/instance/com.knime.customizations/updateSite.names=<name>,<name>,...
```

The names that are shown under Available Software Sites for the provided update sites. Note that the number of names must match the number of provided URIs.

```
/instance/com.knime.customizations/updateSite.default.disable=<true|false>
```

Disables the default update sites added by KNIME after a fresh installation or update. If a user enables these update sites again they will remain enabled.

```
/instance/com.knime.customizations/updateSite.default.forceDisable=<true|false>
```

Disables the default update sites added by KNIME after a fresh installation or update. If a user enables these update sites again they will be disabled with the restart of their client.

## Upload a customization profile

After creation of the .zip file, it needs to be uploaded to KNIME Business Hub via API.

The following steps are executed using Postman.

1. If you have not done so already, on KNIME Business Hub create an **application password** for the user uploading the profile
  - a. For global customization profiles, use a global admin user
  - b. For team's customization profiles, the user can be either a global admin user or a team admin user
2. Send a POST request to `https://api.<base-url>/execution/customization-profiles` with the following set up:
  - a. Authorization: select Basic Auth, using username and password from the created application password
  - b. Body: select form-data as request body type and add the following entries:
    - i. Add a new key, set content to "File". Name of the key needs to be "content". The value of the key is the .zip file containing the profile, and the content type is application/zip.
    - ii. Add a new key, set content to "Text". Name of the key needs to be "metadata".

A. The value of the key is:

For global customization profiles enter:

```
{
  "name": "<profile_name>",
  "scope": "hub:global"
}
```

For team's customization profiles you first need to obtain the `<team_ID>` of the team you want to upload the customization profile to.

To do so you can use the following GET request:

```
GET api.<base-url>/accounts/identity
```

You will find the <team\_ID> in the body response under teams:

```
...
  "teams": [
    {
      "id": "account:team:<team_ID>",
      "name": "<team_name>",
      ...
    }
  ]
...
```

Then the value of the key is:

```
{
  "name": "<profile_name>",
  "scope": "account:team:<team_ID>"
}
```

B. Set the content type for the second key to application/json

c. When using Postman there is no need to manually adjust the headers

3. Send the request

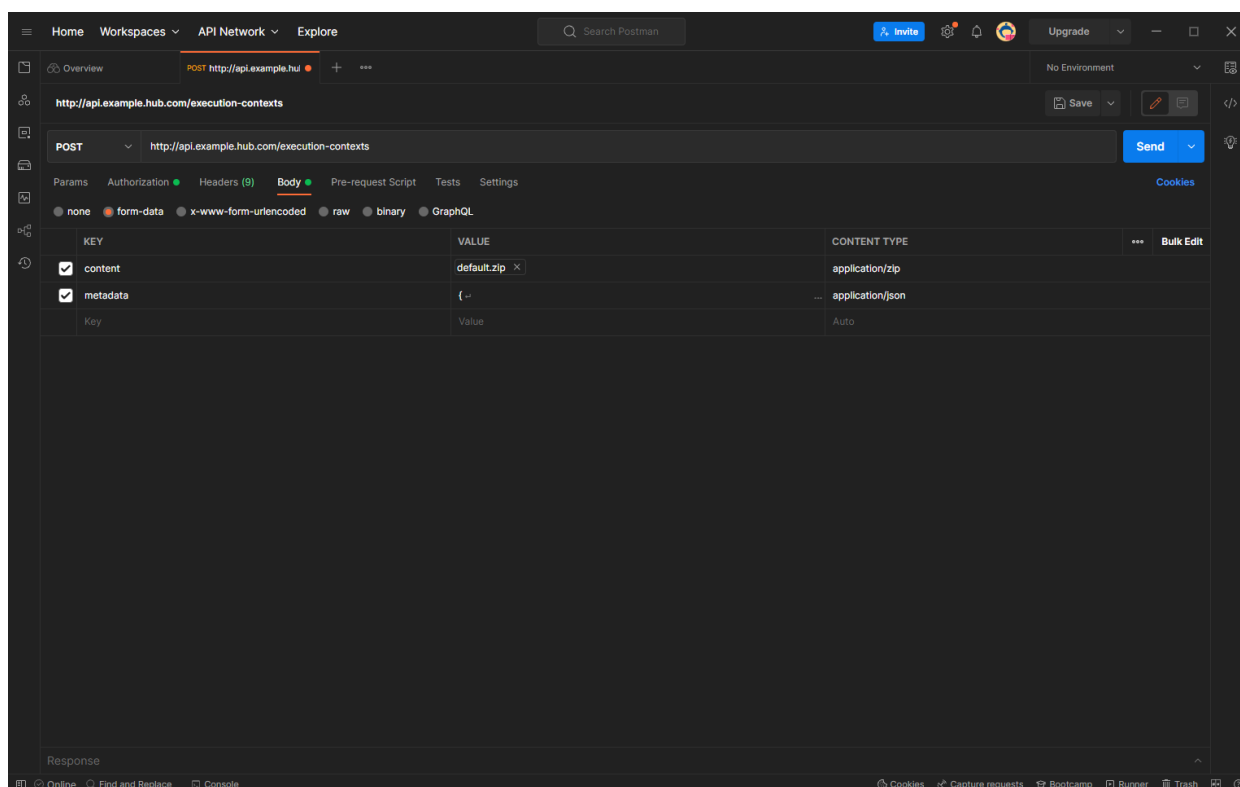


Figure 19. Set up Postman for a REST call to upload a customization profile to a KNIME Hub instance

- If successful, you will receive a 201 status response. Make note of the created `<profile_ID>`, as this will be used to refer to the profile when requesting it.



You can refer to the API documentation at the following URL for more details about the different calls you can make to the Customization Profiles endpoint.

```
http://api.<base-url>/api-doc/execution/#!/Customization%20Profiles
```

## Apply a customization profile to KNIME Analytics Platform client

In order to apply a customization profile in a local KNIME Analytics Platform installation, you need to add it to the installation's `knime.ini` file.

If you have already changed your default settings in the KNIME Analytics Platform installation these will not be overwritten. However, you can choose to "Restore all preferences to defaults" via the preference page in the KNIME Analytics Platform, before the restart.

Add the following lines to the `knime.ini`, right **before** the `-vmargs` line. Please note the line breaks. I.e., these need to be four individual lines in your `knime.ini`.

```
-profileLocation  
https://api.<base-url>/execution/customization-profiles/contents  
-profileList  
<profile_ID>
```

You can obtain the <profile\_ID> using the following GET request:

For global customization profiles:

```
GET api.<base-url>/execution/customization-profiles/hub:global
```

For team's customization profiles:

```
GET api.<base-url>/execution/customization-profiles/account:team:<team_ID>
```



Refer to the [above section](#) to find out how to get the <team\_ID>.

Upon the next startup of KNIME Analytics Platform, the customization profile will be retrieved from KNIME Business Hub, and its settings will be applied.



It is currently not possible to select the customization profiles of a KNIME Business Hub instance via *File* → *Preferences* → *KNIME* → *Customization profiles* option in KNIME Analytics Platform. A future KNIME Analytics Platform release will support this feature.

## Apply a customization profile to KNIME Hub executor

In order to apply a customization profile to all executors running in a KNIME Business Hub [execution context](#), you will need to send a request to the execution context endpoint.

First you need to get the execution context ID. To do so you can use the following GET request to get a list of all the execution contexts that are owned by a specific team:

```
GET api.<base-url>/execution-contexts/account:team:<team_ID>
```



If you are a global admin you can also GET a list of all the execution contexts available on the Hub instance with the call `GET api.<base-url>/execution-contexts/`.

Now you can apply the new customization profile to the selected execution context. To do so



you need to update the execution context by using the following PUT request:

```
PUT api.<base-url>/execution-contexts/<execution-context_ID>
```

You need to select Body > raw > JSON and add the following to the request body:

```
{
  "customizationProfiles": [
    "<profile_ID>"
  ]
}
```



Refer to the [above section](#) to find out how to get the <profile\_ID>.

This will cause a restart of all executor pods of this execution context, after which the profile will be applied.



At present, this will also terminate all jobs currently running on the executor.

# Upload items to KNIME Hub

Once you have added the **KNIME Business Hub mount point** and you are connected to your KNIME Hub account from KNIME Analytics Platform you can upload the desired items to your KNIME Hub spaces.

You can upload workflows, components or files to any of your team owned spaces by:

- Dragging & dropping the item from your local mount point to the desired location in the KNIME Hub mount point, or by
- Right-clicking the item from KNIME Explorer and selecting *Upload to Server or Hub* from the context menu. A window will open where you will be able to select the location where you want to upload your workflow or component.

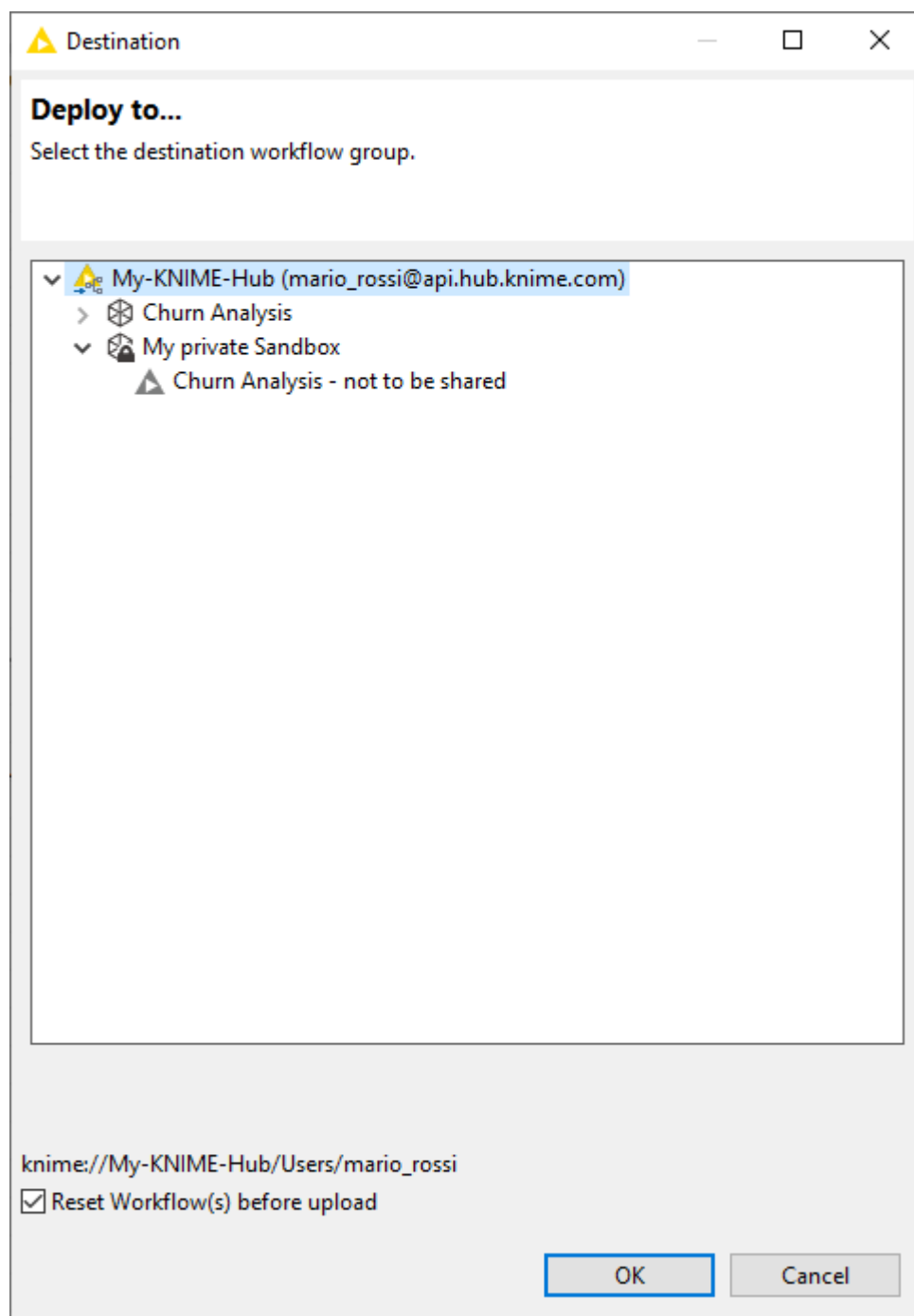


Figure 20. Upload a local item to your KNIME Hub mount point

Please notice that if the items are uploaded to a public space they will be available to everyone, hence be very careful with the data and information (e.g. credentials) you share.

## Move items within KNIME Hub

You can move items that you uploaded to KNIME Hub to a new location within the space that contains the item or to a different space that you have access to. To do this you need to be connected to the KNIME Hub mount point on KNIME Analytics Platform. You can then move

the items within KNIME Hub just by dragging the item in the KNIME Explorer.

## Delete items from KNIME Hub

You can also delete items that you uploaded to KNIME Hub.

To do so you can:

- Connect to KNIME Hub mount point on KNIME Analytics Platform. Right-click the item you want to delete and select *Delete...* from the context menu
- From KNIME Hub, sign in with your account and go to the item you want to delete. Click the three dots on the top right of the page and select *Delete workflow*.

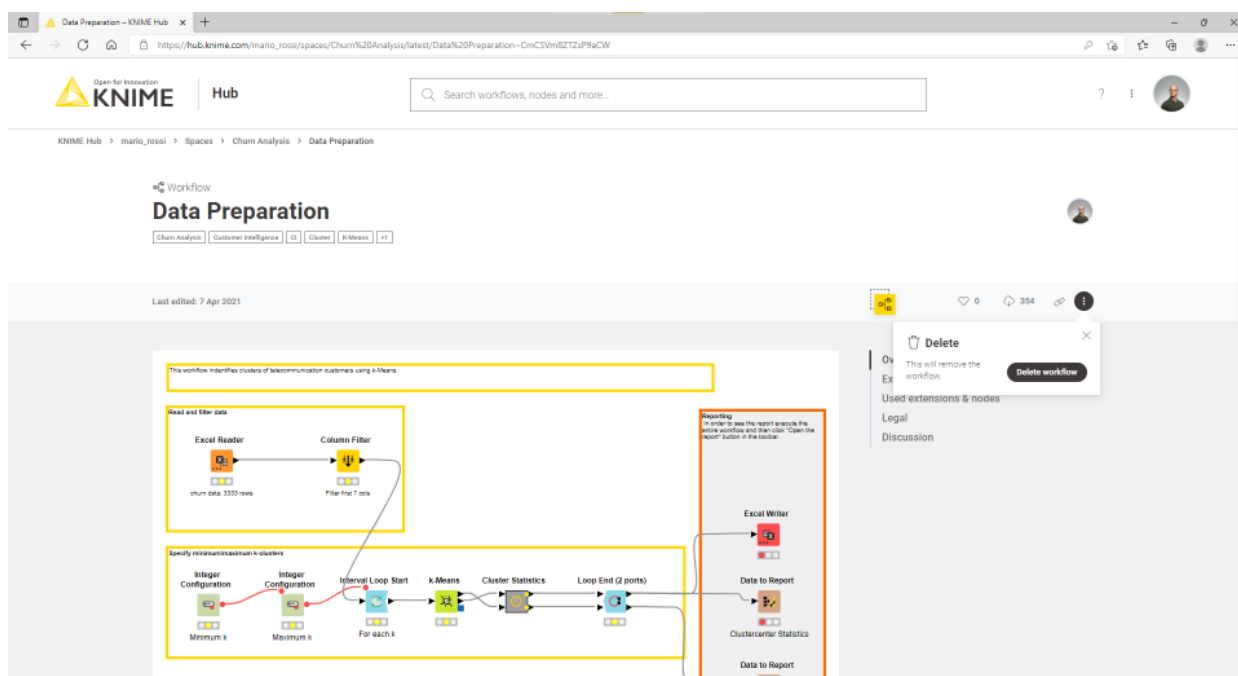



Figure 21. Delete a workflow from KNIME Hub

## Download items from KNIME Hub

You can of course also download items from KNIME Hub to use them in your local KNIME Analytics Platform installation. You can do this either from the KNIME Explorer by drag&drop or copy paste the workflow from the KNIME Hub mount point to your LOCAL mount point or you can also download the workflow from KNIME Hub in the browser. To do so go to the specific workflow or component you want to download on KNIME Hub and click the download button .

The file will be saved on your local machine and then you can import it to your KNIME Analytics Platform, by going to *File* → *Import KNIME Workflow...* and selecting the file you

want to import.

# Versioning

When **uploading items to a space on KNIME Hub** you will be able to keep track of their changes.

You can also create versions of the items so that you can go back to a specific saved version at any point in time in the future to download the item in that specific version.

Once a version of the item is created new changes to the item will show up as unversioned changes.

## Create a version of an item

Go to the item you want to create a version of by navigating through the KNIME Business Hub instance or via the KNIME Analytics Platform and click *History*.

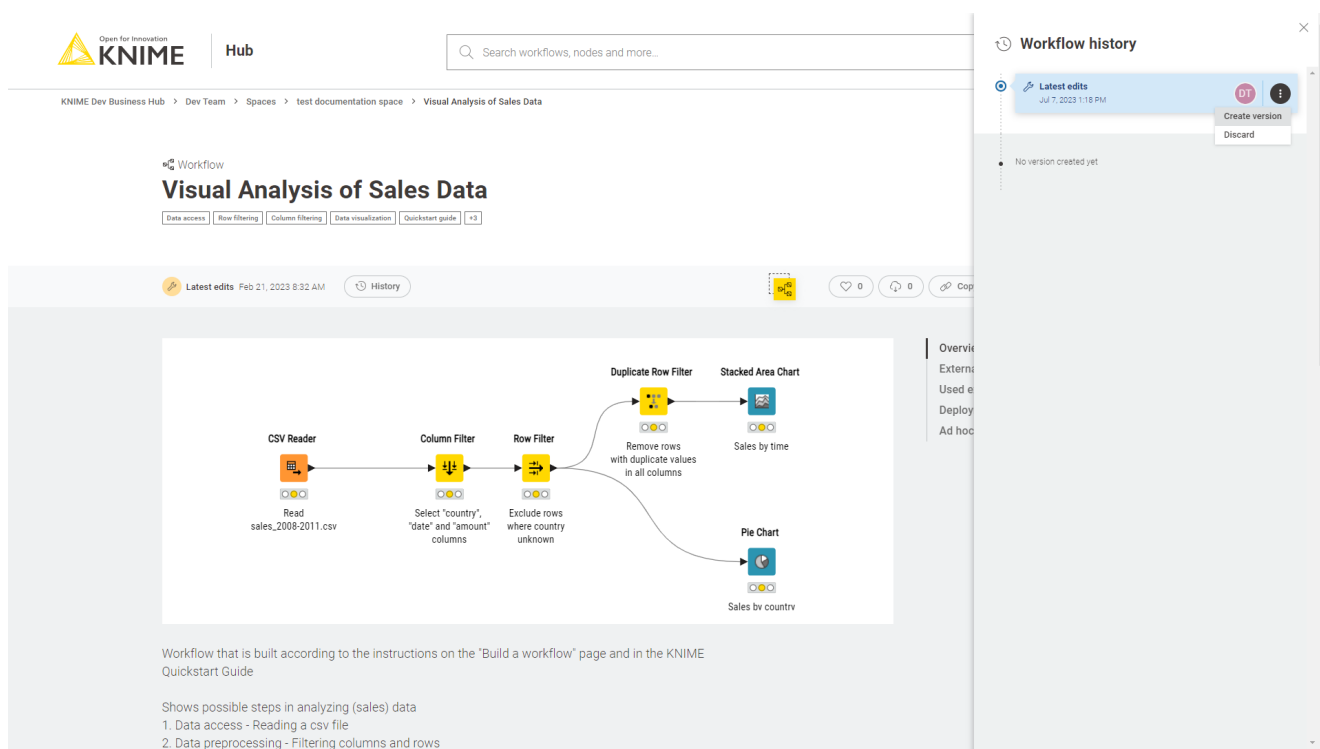


Figure 22. Versioning of a workflow

A panel on the right opens where you can see all the versions already created and all the unversioned changes of the item since the last version was created.

Click *Create version* to create a new version. You can then give the version a name and add a description.

## Show a version

In the *Workflow history* or *Component history* panel click the version you want to see or click the three dots and select *Show this version*. You will be redirected to the item in that specific version.

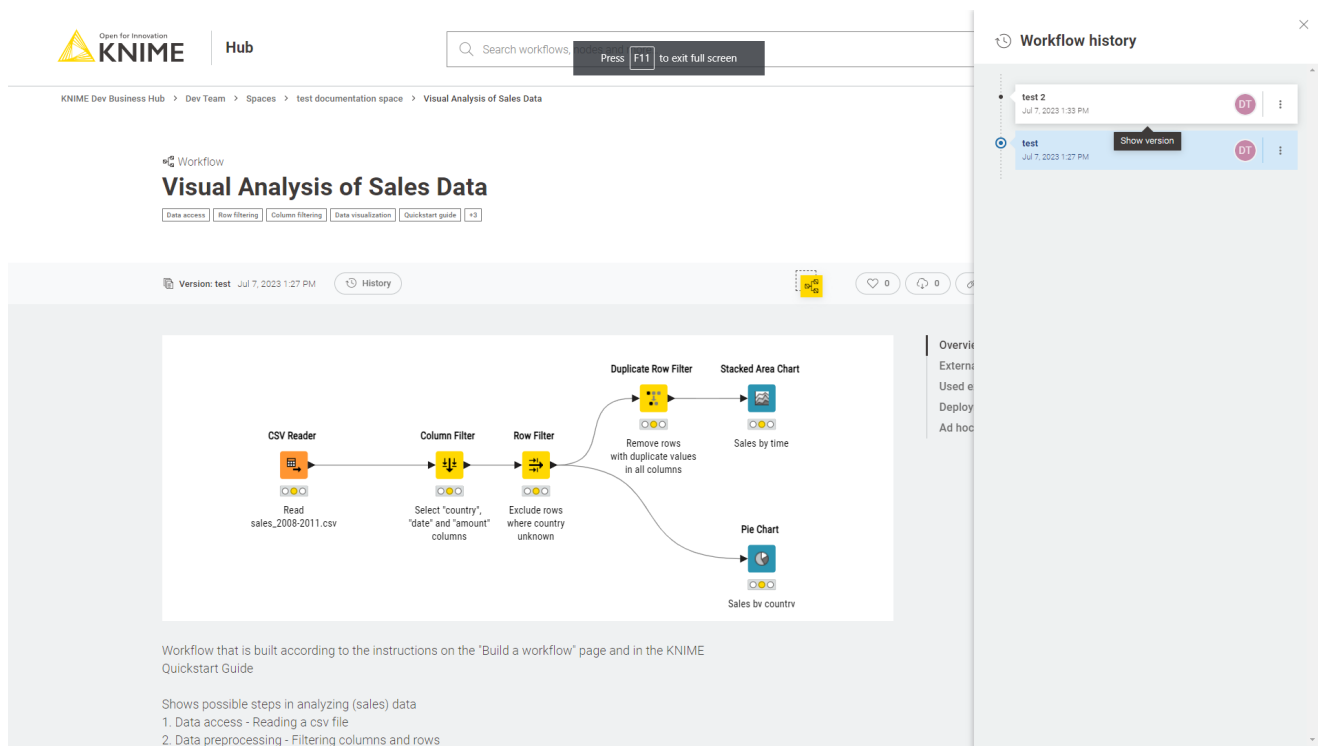


Figure 23. Show the versions of a workflow

To go back to the latest state of the item click the selected version to unselect it.

## Restore a version

To restore a version that you created click the three dots in the version tile from the item history and select *Restore this version*.

The latest state contains now the corresponding changes as unversioned edits.

## Delete a version

In the *History* panel click the three dots for the version you want to navigate to and click *Delete*. Only Team administrators can delete a version.

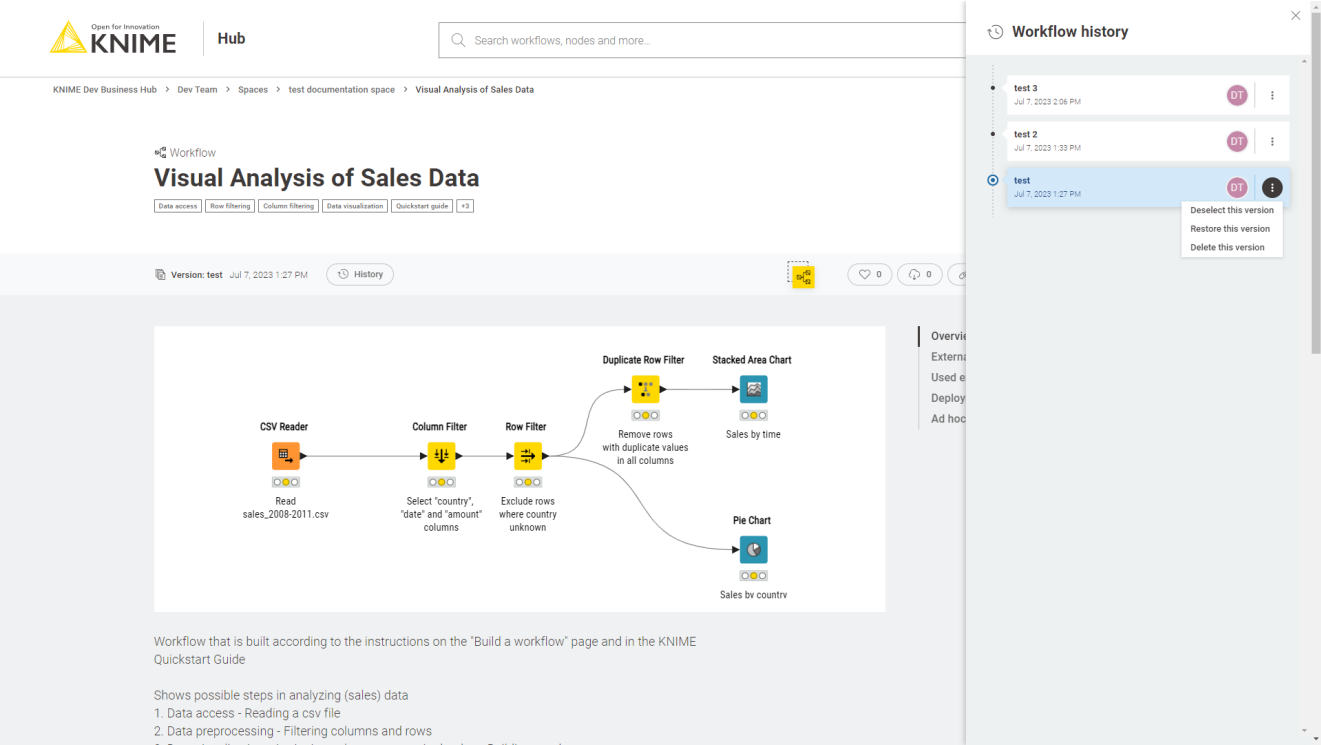


Figure 24. Delete a version



# Execution of workflows on KNIME Hub

You can execute workflows on KNIME Hub. In order to do so the team you are a member of needs to have an execution context assigned to.

A team can own multiple execution contexts which are dedicated execution resources with configured execution settings.

## Execution contexts

An execution context provides dedicated execution resources with configured execution settings for the execution and deployment of workflows on KNIME Hub.

They operate using a selected custom executor image, which defines custom hardware and KNIME Analytics Platform configuration for the deployments.

Execution contexts are owned and managed by the teams.

A default execution context can be assigned to a space. It is possible to create as many execution contexts as necessary. They can be used for specific deployments, for example in a development, testing, production configuration.


Execution contexts can be created by the team admin once the Docker image of the executor is available. The latter is maintained by the [global Hub admin](#). [Shared execution contexts](#) can instead be created by a Hub admin and shared with your team.

## Create a new execution context

The team admin can create a new execution context.

To do so go to the team profile page and click *Settings* in the menu on the left.

Here you will see all the available *Execution resources* of your team, you can see how many vCores are available and in use for each execution context, the version of the executor, its memory usage and CPU load.

To create a new execution context for your team click the  button.

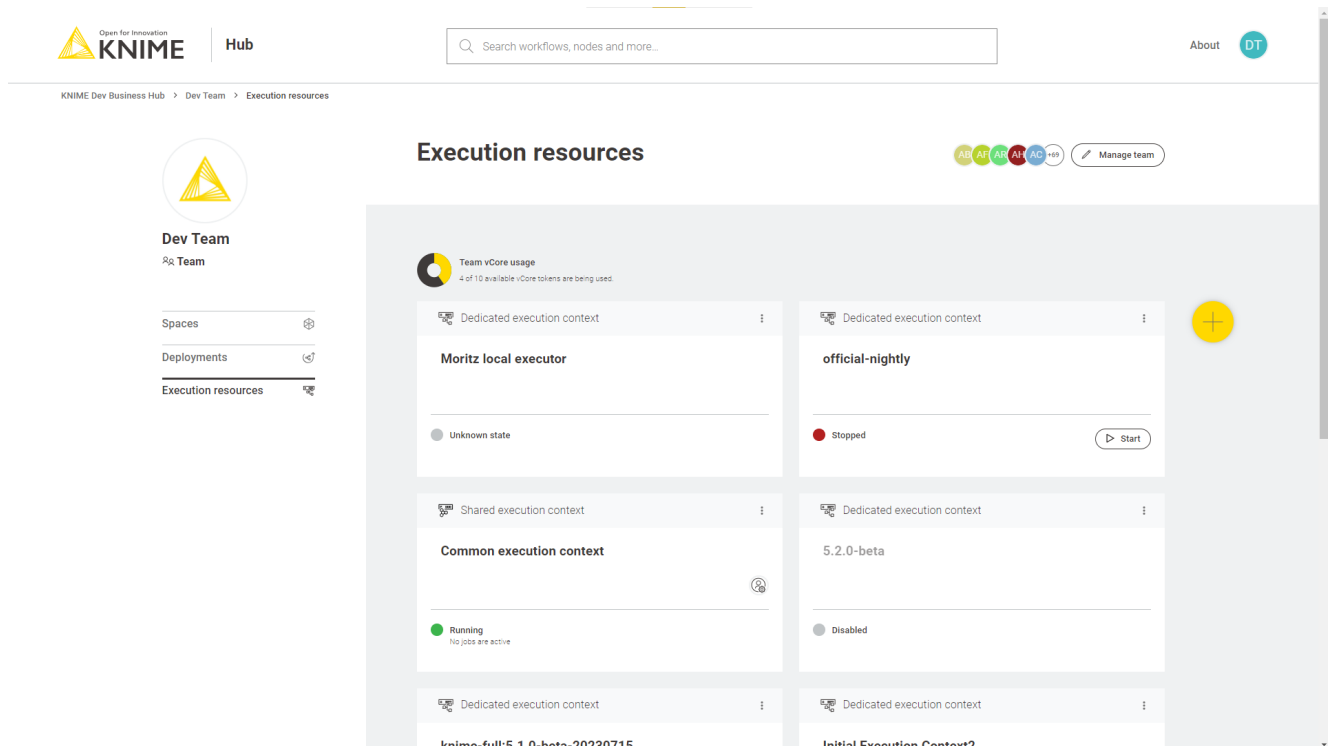


Figure 25. An overview of the execution resources available to your team

In the side panel that opens you can define your execution context.

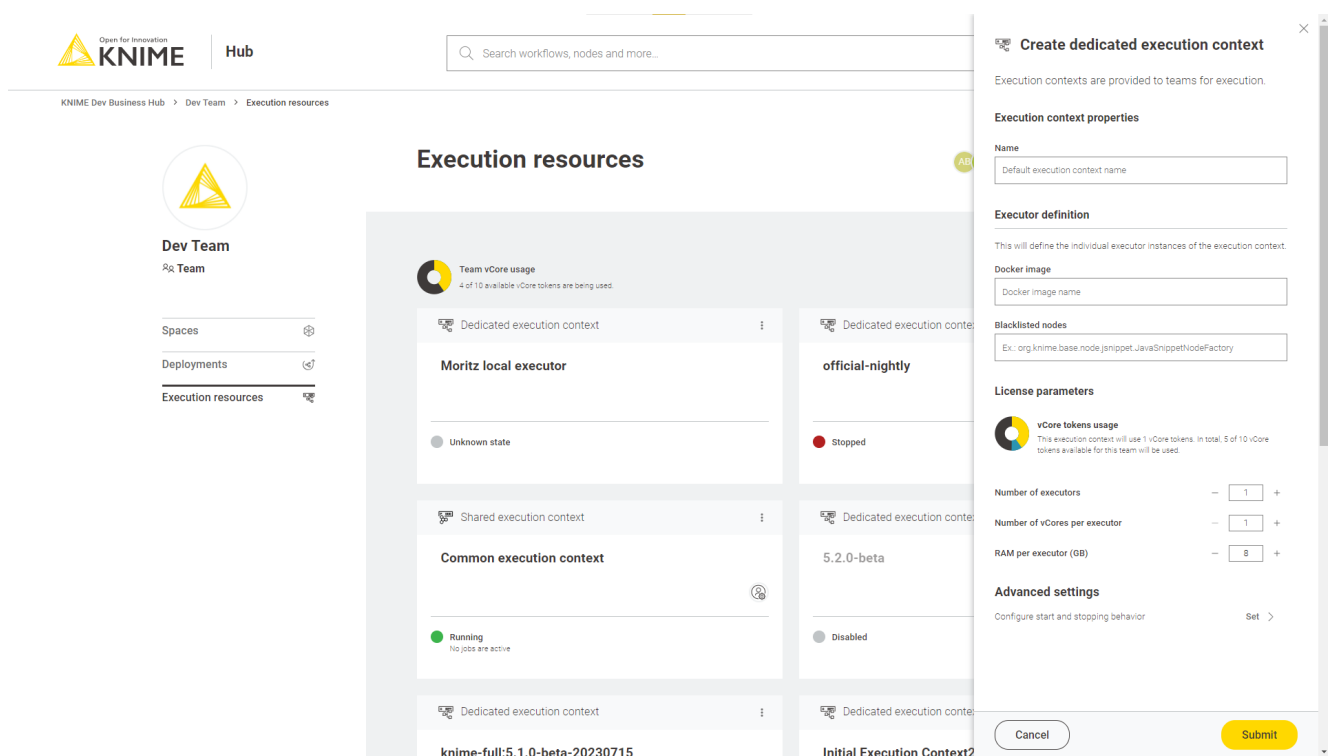


Figure 26. Create a new execution context

Here you can specify:

- **Name:** is the name of the execution context

- **Docker image:** is the name of the Docker image of the executor that you can obtain from your **KNIME Hub Global Administrator**.



Public Docker executor images are made available by KNIME which correspond to the full builds of KNIME Executor versions 4.7.0 and higher.

The currently available executor images have the following docker image name:

- registry.hub.knime.com/knime/knime-full:r-4.7.4-179
- registry.hub.knime.com/knime/knime-full:r-4.7.5-199
- registry.hub.knime.com/knime/knime-full:r-4.7.6-209
- registry.hub.knime.com/knime/knime-full:r-4.7.7-221
- registry.hub.knime.com/knime/knime-full:r-4.7.8-231
- registry.hub.knime.com/knime/knime-full:r-5.1.0-251
- registry.hub.knime.com/knime/knime-full:r-5.1.1-379
- registry.hub.knime.com/knime/knime-full:r-5.1.2-433
- registry.hub.knime.com/knime/knime-full:r-5.1.3-594
- registry.hub.knime.com/knime/knime-full:r-5.2.0-271
- registry.hub.knime.com/knime/knime-full:r-5.2.1-369
- registry.hub.knime.com/knime/knime-full:r-5.2.2-445
- registry.hub.knime.com/knime/knime-full:r-5.2.3-477
- registry.hub.knime.com/knime/knime-full:r-5.2.4-564
- registry.hub.knime.com/knime/knime-full:r-5.2.5-592

- **Blacklisted nodes:** is a list of nodes that should be blocked by the executor. You need to provide the full name of the node factory. You can get the factory name from the Hub itself by looking for the node. The last part of the URL is the node factory name. For example the Java Snippet node can be found at the following URL: <https://hub.knime.com/knime/extensions/org.knime.features.javasnapshot/latest/org.knime.base.node.jsnippet.JavaSnippetNodeFactory> and org.knime.base.node.jsnippet.JavaSnippetNodeFactory is its factory name. Another way to determine the factory names of the nodes you want to block is to create a workflow with all nodes that should be blacklisted. After saving the workflow you are able to access the settings.xml of each node under <knime-workspace>/<workflow>/<node>/settings.xml. The factory name can be found in the

entry with key "factory".

- Number of executors: is the number of executors that the execution context has assigned
- Number of vCores per executor: is the number of vCPUs per executor
- RAM per executor (GB): is the amount of RAM per executor in GB

You can assign an execution context as the default for a specific space. To do so you will need to perform a PUT request to the `api.<base-url>/execution-contexts/{uuid}` where `{uuid}` is the execution context id, adding the following to the request body:

**i**

```
{,
  "defaultForSpaces": [
    "*space1",
    "*space2"
  ]
}
```

where `["*space1", "*space2"]` is the list of spaces for which the execution context is the default execution context.

- Advanced settings: Finally, you can configure whether you want the execution context to automatically start and stop. To do so click *Set* under *Configure start and stop behavior* and select *On* (the setting is *Off* by default) from the toggle on top. Then you can indicate the desired inactivity time (in minutes) for the execution context to stop. The execution context will start automatically when a queued workflow needs to run and stop automatically when there are no more active or queued workflows.

## Advanced configuration of execution contexts

Execution contexts can be created and edited also via the Business Hub API. Here more advanced configuration are possible.

- `"defaultCpuRequirement": 0.0`,: Specifies the default CPU requirement in number of cores of jobs without a specific requirement set. The default is `0.0`.
- `"blacklistedNodes": ""`,: Add here if necessary a list of nodes that should be blocked by the executor. See the section about the [blacklisted nodes](#) for more information on the format.
- `"defaultSwapTimeout": "PT1M"`,: Specifies how long to wait for a job to be swapped to disk. If the job is not swapped within the timeout, the operation is canceled. The default


is PT1M equal 1 minute. This timeout is only applied if no explicit timeout has been passed with the call (e.g. during execution context shutdown).

- "perJobLogging": true, : Enables a job trace log which records important operations on any job (loading, execution, discarding). The job trace log is enabled by default.
- "updateLinkedComponents": false, : Specifies whether component links in workflows should be updated right after a deployment of the workflow has been created to use the execution context. Default is to not update component links.
- "defaultRamRequirement": 0, : Specifies the default RAM requirement of jobs without a specific requirement set. In case no unit is provided it is automatically assumed to be provided in megabytes. The default is 0MB.
- "defaultReportTimeout": "PT5M", : Specifies how long to wait for a report to be created by an executor. If the report is not created within the timeout, the operation is canceled. The default is PT5M equal 5 minutes. This timeout is only applied if no explicit timeout has been passed with the call.
- "defaultExecutionTimeout": "PT5M", : Specifies the default timeout when executing a job synchronously. If the executor does not respond within the provided time it will cancel the execution and throw an error. The default is PT5M equal 5 minutes.
- "maxJobTimeInMemory": "PT1H", : Specifies the time of inactivity before a job gets swapped out from the executor. The default is PT1H equal 1 hour. Negative numbers disable swapping.
- "startExecutionTimeout": "PT1M", : Specifies the timeout the service will wait until execution has been started by the executor. If the executor does not respond within the provided time it will cancel the execution and throw an error. The default is PT1M equal 1 minute.
- "maxLoadedJobsPerExecutor": 2147483647, : Specifies the maximum number of jobs that can be loaded at the same time into a single executor. The executor will not accept any additional jobs if this number has been reached until an existing job gets unloaded. The default is unlimited.
- "maxJobLifeTime": "PT168H", : Specifies the time of inactivity, before a job gets deleted. The default is PT168H equal 7 days. Negative numbers disable forced auto-discard.
- "maxSwapFailures": 1, : Specifies the number of times a job is attempted to be swapped if swapping fails initially.
- "maxJobInOutSize": 10, : Specifies the maximum amount of data to be passed into and out of jobs using Container Input/Output nodes. Defaults to 10 MB. If larger values are needed, the amount of memory allocated to the rest-interface service should be

increased as well to avoid stability issues.

- `"defaultLoadTimeout": "PT5M",` : Specifies the default timeout when loading a job. If the job does not get loaded within the timeout, the operation is canceled. The default is PT5M equal 5 minutes. This timeout is only applied if no explicit timeout has been passed with the call.
- `"maxJobExecutionTime": "PT24000H",` : Specifies a maximum execution time for jobs. If a job is executing longer than this value it will be canceled and eventually discarded (see `discardAfterMaxExecutionTime` option).
- `"discardAfterMaxExecutionTime": false,` : Specifies whether jobs that exceeded the maximum execution time should be canceled and discarded (`true`) or only canceled (`false`). May be used in conjunction with `maxJobExecutionTime` option. The default (`false`) is to only cancel those jobs.
- `"customizationProfiles": [],` : Specifies **customization profiles** to apply to the executors running in the execution context.
- `"saveWorkflowSummary": false,` : Specifies if the workflow summary should be stored with the job upon swapping. Default value is `false`.
- `"rejectFutureWorkflows": true,` : Specifies whether the executor should reject loading workflows that have been create with future versions of KNIME Analytics Platform client. For new installations the value is set to `true`. If no value is specified the executor will always try to load and execute any workflow by default.
- `"defaultAsyncLoadTimeout": "PT5M",` : Specifies the default timeout when loading a job asynchronously. The default is PT5M equal 5 minutes.

## Manage shared execution contexts

Also from the *Execution resources* page you can have an overview about the current status of an execution context, which teams have access to it, how many jobs are running and also manage the execution context. You can also see more details about your team's execution context by clicking the  icon of the execution context and selecting *Show details*. Selecting this option will open a new page with a list of all the jobs that are running on that execution context, the usage of the execution context (e.g. how many vCores are in use) and other information. You can also switch to the specific *Executor* tab to see more details about the executor.

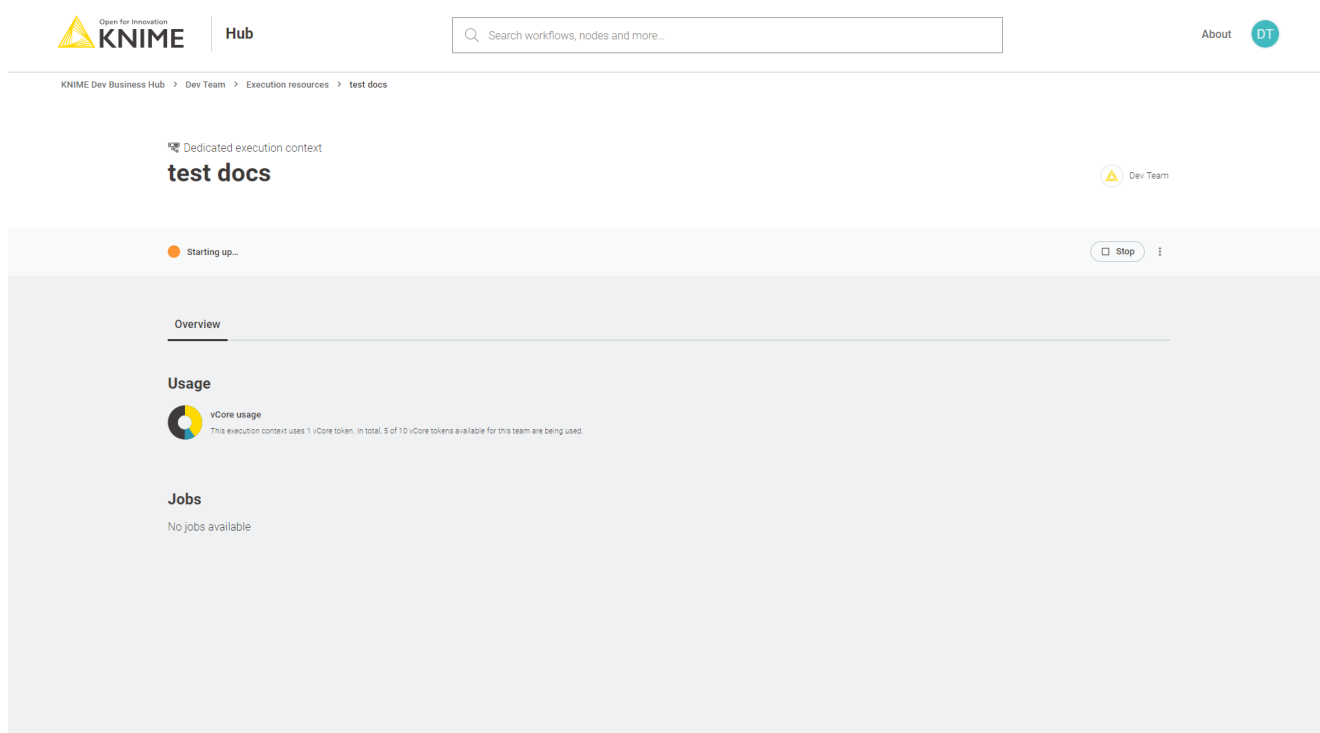



Figure 27. Additional executor information page

## Edit an existing execution context


As a team admin you can also edit an existing execution context.

From the *Execution resources* overview page you can click the  icon of the execution context you want to modify and select *Edit* from the menu that opens.

You can change the parameters and configurations in the right side panel that opens.

## Disable an execution context


As a team administrator you can disable an existing execution context.

You will need first to delete the jobs associated to the execution context then proceed with disabling it. From the *Execution resources* overview page you can click the  icon of the execution context you want to disable and select *Disable* from the menu that opens.

## Delete an execution context

As a team administrator you can delete an existing execution context.

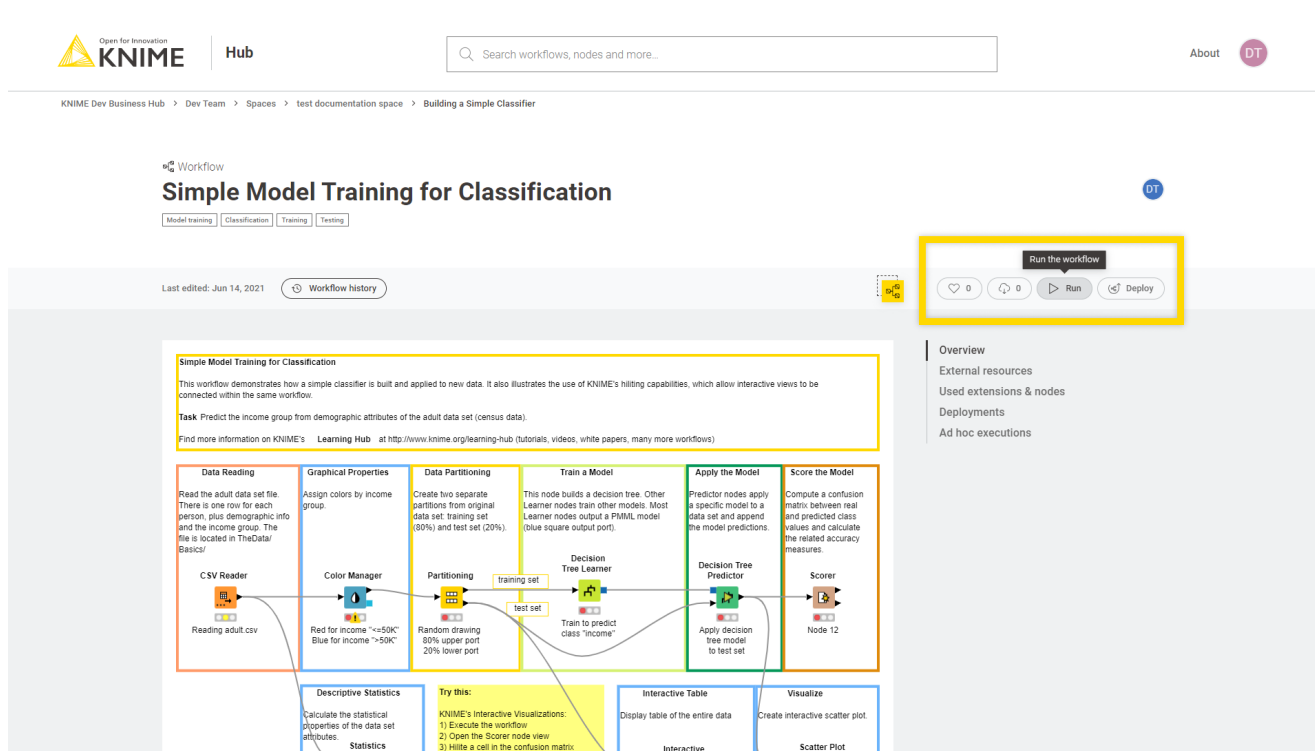
You will need to first **disable** the execution context you want to delete. First, delete the jobs associated to the execution context then proceed with disabling it.

Now you are ready to delete the execution context. From the *Execution resources* overview page you can click the  icon of the execution context you want to delete and select *Delete* from the menu that opens.

## Ad hoc execution

When a team owned space is provided with an execution context it is possible to execute the workflows that are uploaded to that space.

If you want to have a one time execution of a workflow you uploaded to a space, for example to test it, you can go to the workflow page on KNIME Hub and click *Run*.



The screenshot shows the KNIME Hub interface for a workflow titled "Simple Model Training for Classification". The workflow is a decision tree model training process. A yellow box highlights the "Run the workflow" button in the top right corner. A side panel on the right shows the "Overview" section with links to "External resources", "Used extensions & nodes", "Deployments", and "Ad hoc executions".

**Simple Model Training for Classification**

This workflow demonstrates how a simple classifier is built and applied to new data. It also illustrates the use of KNIME's hilling capabilities, which allow interactive views to be connected within the same workflow.

**Task:** Predict the income group from demographic attributes of the adult data set (census data).

Find more information on KNIME's [Learning Hub](http://www.knime.org/learning-hub) at <http://www.knime.org/learning-hub> (tutorials, videos, white papers, many more workflows)

**Workflow Steps:**

- Data Reading:** CSV Reader (Reading adult.csv)
- Graphical Properties:** Color Manager (Assign colors by income group)
- Data Partitioning:** Partitioning (Create two separate partitions from original data set: training set (80%) and test set (20%))
- Train a Model:** Decision Tree Learner (This node builds a decision tree. Other Learner nodes train other models. Most Learner nodes output a PMML model (blue square output port). Train to predict class "income")
- Apply the Model:** Decision Tree Predictor (Predictor nodes apply a specific model to a data set and append the model predictions. Apply decision tree model to test set)
- Score the Model:** Scorer (Compute a confusion matrix between real and predicted class values and calculate the related accuracy measures. Node 12)

**Try this:**

- KNIME's Interactive Visualizations:
- 1) Execute the workflow
- 2) Open the Scorer node view
- 3) Hide a cell in the confusion matrix
- 4) Change the Interactive Table view

**Interactive Table:** Display table of the entire data

**Visualize:** Create interactive scatter plot

Figure 28. Ad hoc execution of a workflow on KNIME Hub

A side panel opens where you can:

- If multiple execution contexts for the current space are available, select the execution context you want to use - otherwise the default execution context associated to that space will be used
- Enable workflow actions: You can choose if a notification via e-mail will be sent *On failure* or *On success*. You can also *Add more* actions and notify multiple e-mails on different conditions.



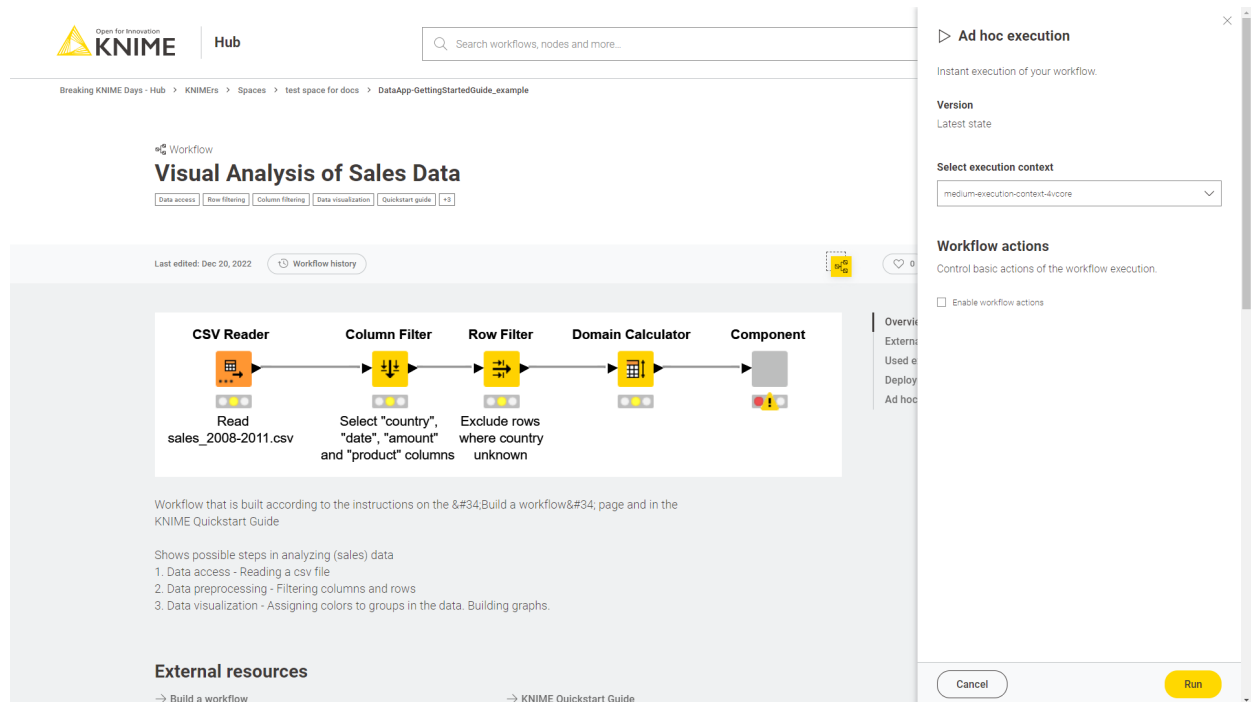


Figure 29. Ad hoc execution configuration panel

Then click *Run* and the workflow will be executed.

Please notice that an ad hoc execution will always be performed on the current version of the workflow from which the *Run* is initiated. This means that if you run a workflow from a state that contains unversioned changes the execution will be performed on the latest state. To run an ad hoc execution of a different version of the workflow go to the desired version and click *Run*.

The screenshot displays the KNIME Business Hub interface. The main content area shows a workflow titled "Visual Analysis of Sales Data" with the following steps: CSV Reader (Read sales\_2008-2011.csv), Column Filter (Select "country", "date", "amount" and "product" columns), Row Filter (Exclude rows where country unknown), Domain Calculator, and Component. The workflow is in version "test2" from Dec 20, 2022. The right sidebar is open to the "Ad hoc execution" panel, which includes a "Version" dropdown set to "test2 - Dec 20, 2022 3:40 PM", a "Select execution context" dropdown set to "medium-execution-context-4ivcore", and a "Workflow actions" section with a checkbox for "Enable workflow actions". At the bottom of the sidebar are "Cancel" and "Run" buttons.

Figure 30. Ad hoc execution of a workflow in a specific version

Finally, you can see an overview of all the ad hoc execution jobs that have been performed on a specific workflow by selecting *Ad hoc executions* from the menu on the right in the workflow page.

# Deployments

After a workflow is uploaded to KNIME Hub different type of deployments can be created.

You can create:

- **Data Apps:** **Data Apps** provide a user interface to perform scalable and shareable data operations, such as visualization, data import, export, and preview.
- **Schedules:** A workflow can be scheduled to run at specific times and perform specific actions based on the result of each execution.
- **API services:** A workflow can be deployed as a REST endpoint and therefore called by external services.
- **Triggers:** A workflow can be deployed as trigger deployment meaning that the workflow will be executed every time a specific selected event happens (e.g. a file is added to a space or a new version of a workflow is created).

To create a new deployment of a workflow that you uploaded to one of your team's spaces you first need to have created at least one version of the workflow. After you **create a version** of the workflow click *Deploy*.

The screenshot displays the KNIME Hub interface for a workflow titled "Data App: Visual Analysis of Sales Data". The workflow is categorized under "Data visualization", "Getting started", and "Data App". The workflow diagram shows a sequence of nodes: CSV Reader (Read sales\_2008-2011.csv), Column Filter (Select "country", "date", "amount" and "product" columns), Row Filter (Exclude rows where country unknown), Domain Calculator (Remove 'Unknown' from data domain), and a final Component node. A sidebar menu on the right offers four deployment options: "Data app" (Create a data app to interact with the workflow via a user interface), "Schedule" (Schedule your workflow to run automatically at selected times), "Service" (Create a service to use the workflow as an API endpoint), and "Trigger" (Create a trigger to execute the workflow when a specified event occurs). Each option has a corresponding "Create" button.

Figure 31. Create a new deployment for a workflow on KNIME Hub

In the menu that opens you can select which kind of deployment you want to create.

## Data apps

Select *Create data app* if you want to create a data app to interact with the workflow via a user interface.

In the right panel that opens you will be able to choose a *Deployment name*, select the version you want to deploy, select the execution context you want to use, and check *Enable workflow actions* if you want to enable sending an e-mail upon success or failure of the execution of the deployment you will create.

You will also be able to select a *Category* and a *Description*. Categories added here will be used to group the data apps in the [Data Apps Portal](#). Also descriptions added here will be visible in the corresponding deployment's tile in the [Data Apps Portal](#).

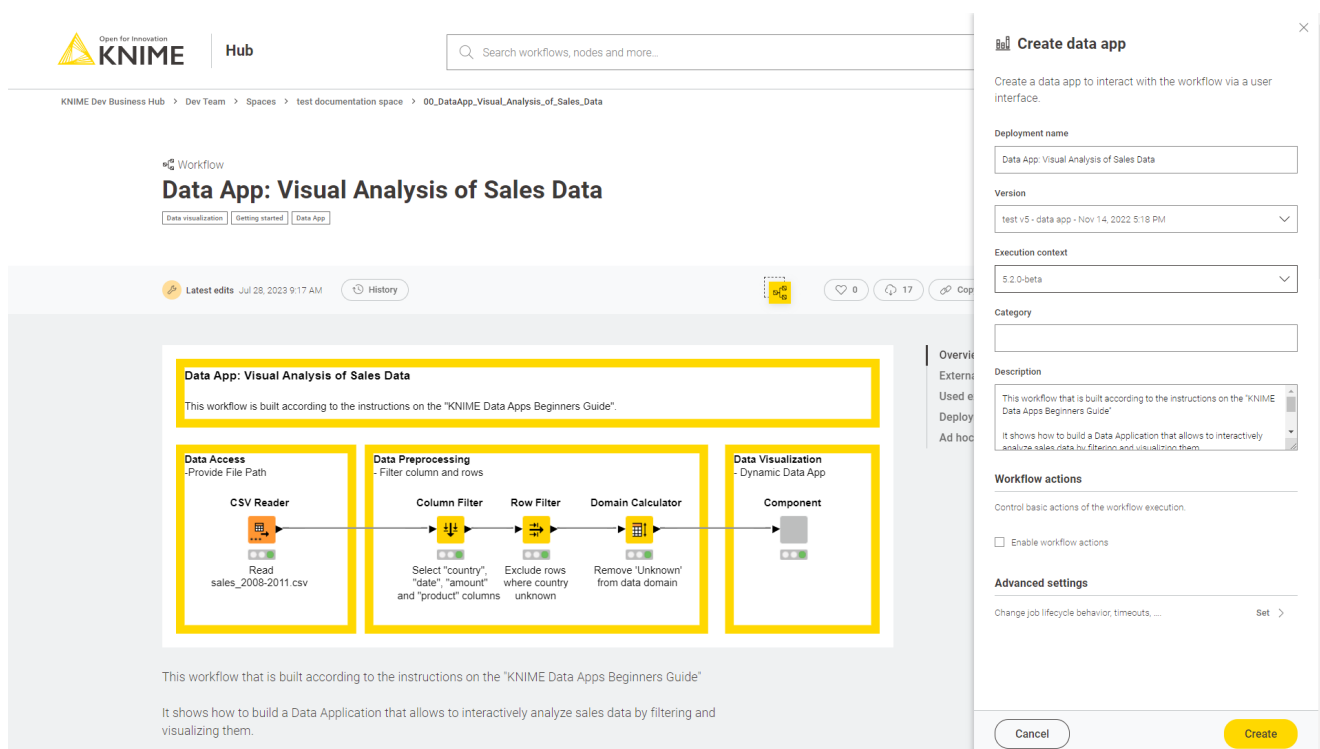


Figure 32. Create a data app deployment for a workflow on KNIME Hub

Under *Advanced settings* click **Set** to change the advanced settings of the deployment. Here you can configure the options regarding:

- *Job lifecycle*: such as deciding when to discard a job, the maximum time a job will stay in memory, the job life time, or the options for timeout
- *Additional settings* such as report timeouts, CPU and RAM requirements and so on

Notice that you can get additional information on the different fields by hovering over it with the cursor.

The values in the fields related to time need the format:

- PT, which stands for Period of Time
- the amount of time, made of a number and a letter D, H, M and S for days, hours, minutes and seconds.

For example, PT1H means a period of time of 1 hour, PT168H means a period of time of 168 hours (which is equivalent of 7 days).

## Schedule

Select *Create schedule* if you want to create a scheduled execution that will run your workflow automatically at selected times.

In the right panel that opens you will be able to choose a *Deployment name*, the version you want to deploy, and select the execution context you want to use.

## Schedule options

Here, you can define when the workflow should be executed.

The screenshot displays the KNIME Hub interface. The main panel shows a workflow titled "Data App: Visual Analysis of Sales Data" with a visual representation of its components: Data Access (CSV Reader), Data Preprocessing (Column Filter, Row Filter, Domain Calculator), and Data Visualization (Component). The workflow is described as being built according to the "KNIME Data Apps Beginners Guide".

On the right, the "Create schedule" dialog box is open. It contains the following sections:

- Deployment name:** A text input field containing "Schedule - Data App Visual Analysis of Sales Data".
- Version:** A dropdown menu showing "test 8 - Jan 11, 2023 4:42 PM".
- Execution context:** A dropdown menu showing "Initial Execution Context".
- Schedule options:**
  - Initial execution:** A date and time picker set to "2023-03-24" at "16:23:00".
  - Repeat execution:** A checkbox labeled "Repeat execution" which is currently unchecked.
- Workflow actions:** A section with a checkbox labeled "Enable workflow actions" which is currently unchecked.
- Advanced settings:** A section with a text input field for "Change job lifecycle behaviour, timeouts, ..." and a "Set" button.

At the bottom of the dialog box are "Cancel" and "Create" buttons.

Figure 33. Create a schedule deployment for a workflow on KNIME Hub

In the *Schedule options* section you can set up date and time of the *Initial execution*.

When selecting the check box *Repeat execution* you can select:

- *Every*: Decide when the execution will be repeated, such as every minute, or every 2 hours and so on.
- *Start times*: Set up one or more start times at which your workflow will be executed.
- *Schedule ends date*: Set up if you want your repeated scheduled job to end and when.

## Schedule details

If you check the option *Repeat execution*, under *Set schedule details* you can click *Set* to set up recurring executions, retries, and advanced schedule details. If you do not check the option *Repeat execution*, you will only find the set up options for retries and the advanced schedule details.

The screenshot displays the KNIME Business Hub interface. The main workflow, 'Data App: Visual Analysis of Sales Data', is shown with a yellow border. It consists of three main sections: 'Data Access' (CSV Reader), 'Data Preprocessing' (Column Filter, Row Filter, Domain Calculator), and 'Data Visualization' (Component). The workflow is described as being built according to the instructions on the 'KNIME Data Apps Beginners Guide'.

On the right side, the 'Set schedule' panel is visible. It includes the following options:

- Recurring on**: Days of the week (M, T, W, T, F, S, S) and a checkbox for 'Invert selection of days of the week'.
- Days**: A calendar grid showing days 1 through 31, with a 'Last day of the month' option.
- Months**: A list of months (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec) with a 'Dec' button.
- Execution retries**: A dropdown menu set to '2'.
- Advanced schedule details**: Checkboxes for 'Reset before execution', 'Skip execution if previous job is still running', and 'Disable schedule'.

Figure 34. Set the details for a schedule

The workflow will run when all the selected conditions are met. In the above example the workflow will run from Monday to Friday, every day of the month, except for the month of December.

Finally, in the section execution retries and advanced schedule details you can set up the number of execution retries, and check the following options for the advanced schedule details:

- *Reset before execution*: the workflow will be reset before each scheduled execution retries occur.

- *Skip execution if previous job is still running*: the scheduled execution will not take place if the previous scheduled execution is still running.
- *Disable schedule*: Check this option to disable the schedule. The scheduled execution will start run accordingly to the set ups when it is re-enabled again. To do so

## Workflow actions

If you check the option *Enable workflow actions* you can enable sending an e-mail upon success or failure of the execution of the deployment you will create.

Add the email and select the condition, and click *Add more* to add more actions.

## Advanced settings

Finally, in the section *Advanced settings* you can configure additional set ups:

- *Job lifecycle*: such as deciding in which case to discard a job, the maximum time a job will stay in memory, the job life time, or the options for timeout
- *Additional settings*: such as report timeouts, CPU and RAM requirements, check the option to update the linked components when executing the scheduled job and so on

The values in the fields related to time need the format:

- PT, which stands for *Period of Time*
- the amount of time, made of a number and a letter D, H, M and S for days, hours, minutes and seconds.

For example, PT1H means a period of time of 1 hour, PT168H means a period of time of 168 hours (which is equivalent of 7 days).

## Service

Select *Create service* if you want to create a service to use the workflow as an API endpoint.

In the right panel that opens you will be able to choose a *Deployment name*, select the version you want to deploy, select the execution context you want to use, and check *Enable workflow actions* if you want to enable sending an e-mail upon success or failure of the execution of the deployment you will create.

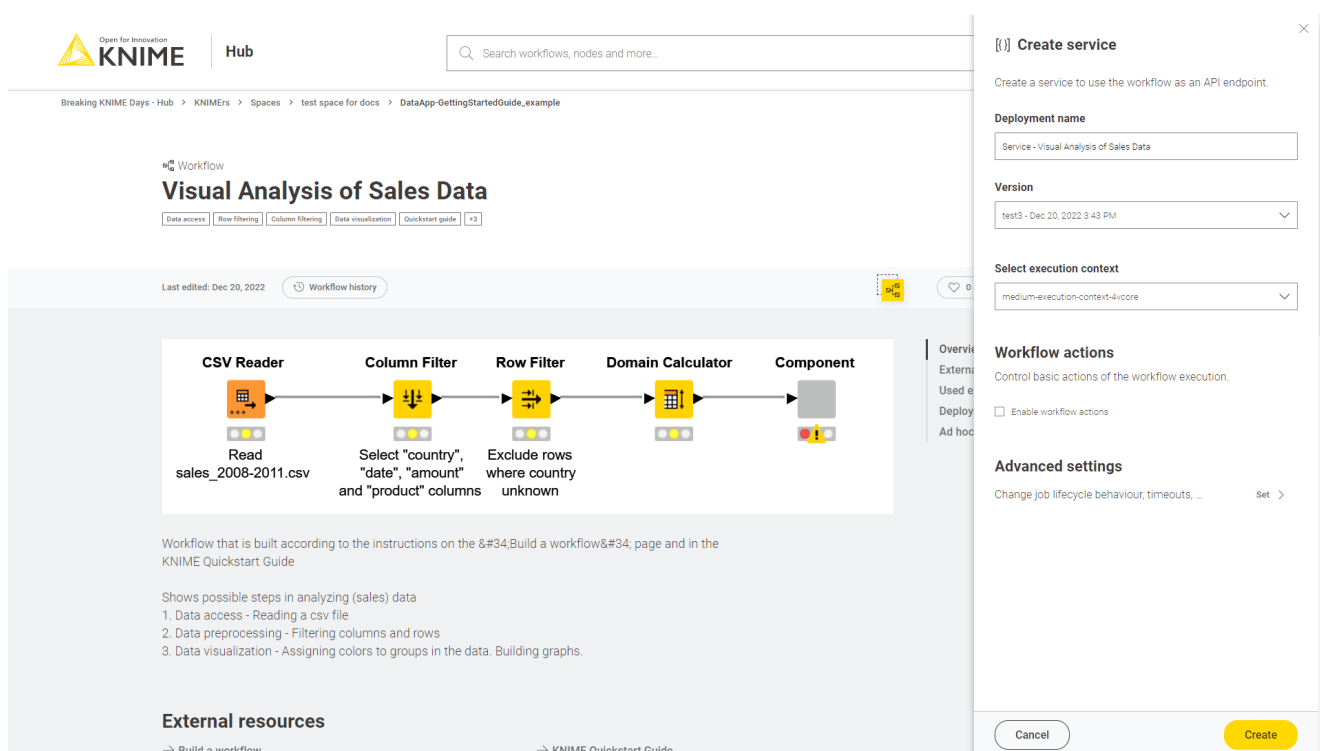


Figure 35. Create a service deployment for a workflow on KNIME Hub

Under *Advanced settings* click **Set** to change the advanced settings of the deployment. Here you can configure the options regarding:

- *Job lifecycle*: such as deciding when to discard a job, the maximum time a job will stay in memory, the job life time, or the options for timeout
- *Additional settings* such as report timeouts, CPU and RAM requirements and so on

Notice that you can get additional information on the different fields by hovering over it with the cursor.

The values in the fields related to time need the format:

- PT, which stands for Period of Time
- the amount of time, made of a number and a letter D, H, M and S for days, hours, minutes and seconds.

For example, PT1H means a period of time of 1 hour, PT168H means a period of time of 168 hours (which is equivalent of 7 days).

## Application passwords

Application passwords can be used to provide authentication when using the KNIME Hub REST API, for example when executing deployed REST services. To create a new application



password you can go to your profile page and select *Settings* → *Application passwords* from the menu on the left.

Click *+ Create application password* and a side panel will show.

Here you can give a name in order to keep track of the application password purpose. Then click *Apply*. The ID and the password will be shown only once. You can copy them and use it as username and password in the base authentication when you want to execute a deployed REST service.

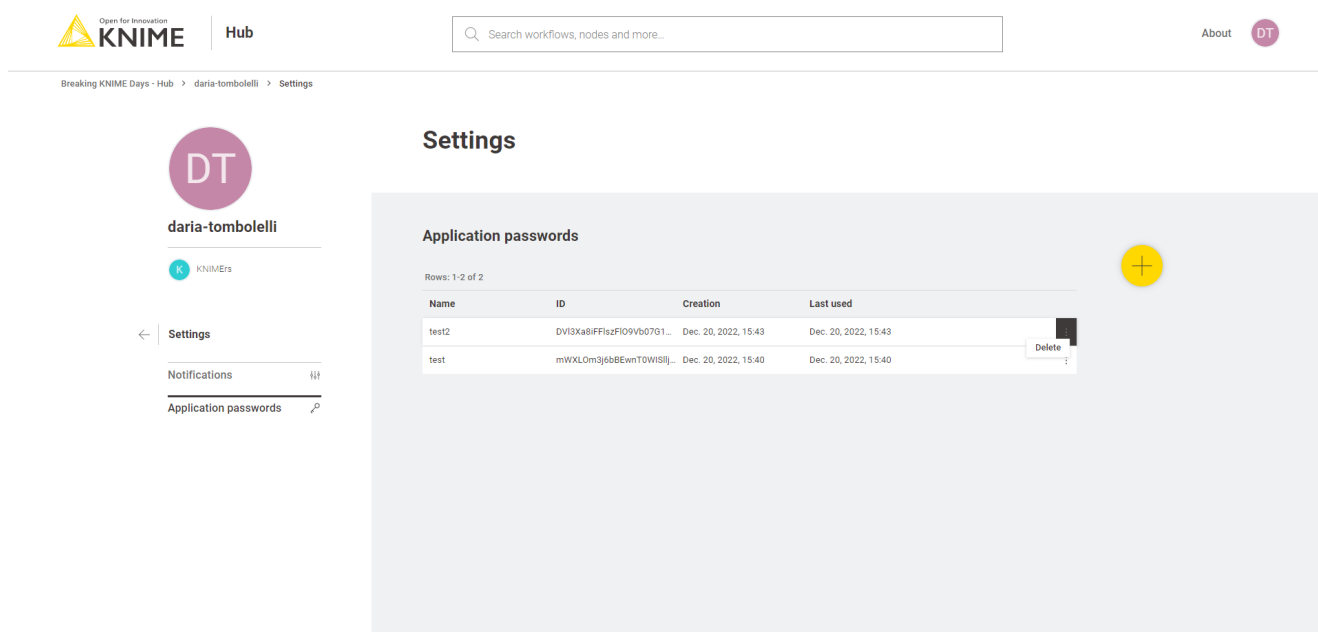


Figure 36. Application passwords

From this page you can also click the three dots button and click *Delete* from the menu that opens, in order to delete a specific application password.

## Trigger

Select *Create trigger* if you want to create a trigger to execute the workflow when a specified event occurs.

In the right panel that opens you will be able to choose a *Deployment name*, the version you want to deploy, and select the execution context you want to use.

## Trigger options

In the *Trigger options* section you define the events that will trigger the execution of the workflow you are deploying.

The trigger listens to a specific event and when all the conditions set here are met, the workflow is executed.

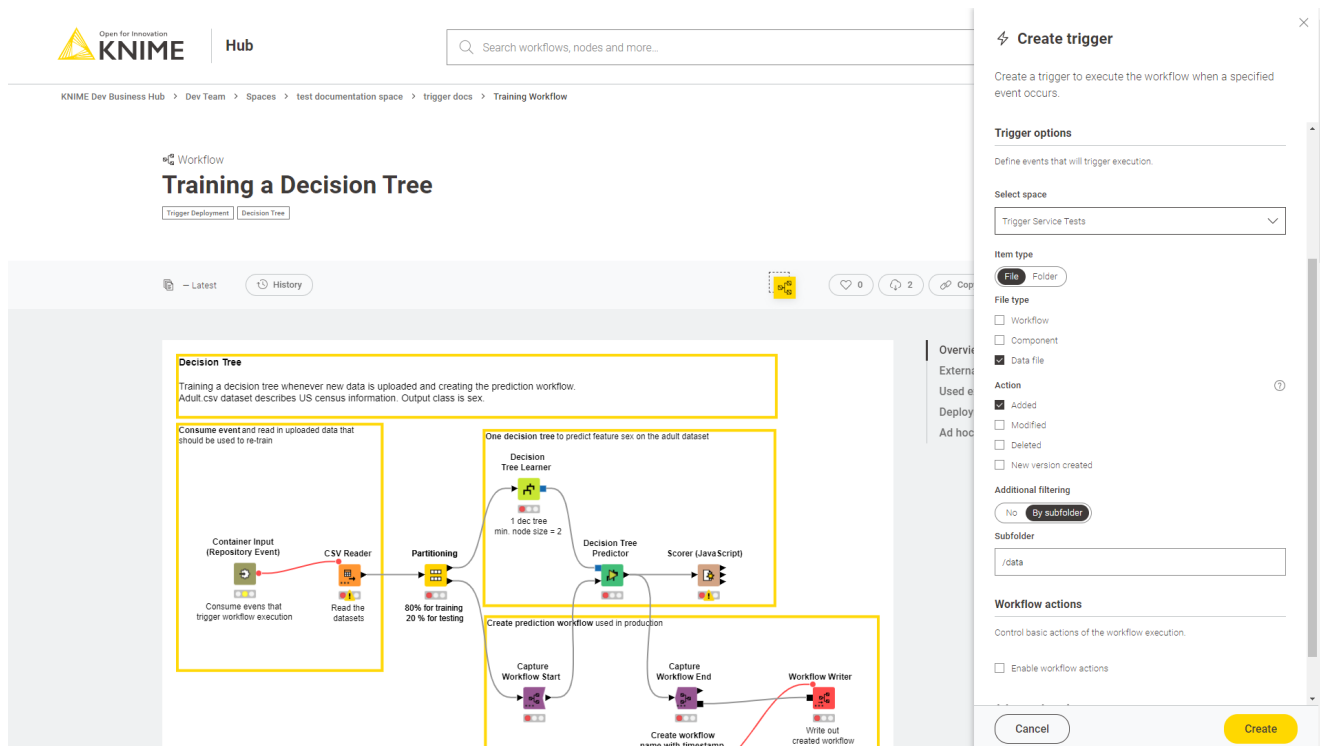


Figure 37. Create a trigger deployment for a workflow on KNIME Hub

- First select a space on the KNIME Hub in which the trigger is listening for events. You can select any space that is owned by the same team that owns the workflow you are deploying.
- Then select the item type between:
  - *File*
  - *Folder*
- If you select *File* as item type you can further filter by file type, choosing between *Workflow*, *Component* or *Data file*. You can select one or more of these file types.
- Then select the action that is going to occur in order for the workflow to be executed. You can select multiple actions, but only one needs to happen to trigger the execution.
  - If you select *File* as item type you can select that the file is added, modified, deleted, and/or a new **version** is created.
  - If you select *Folder* as item type you can select that the folder is added and/or deleted.

- Finally, you can set up an additional filtering selecting *By subfolder*. Add the relative path (e.g. `/example/folder`) to the space the trigger deployment is listening for the event. The event will then need to happen in the space you selected, in the subfolder `/example/folder`. For example, if you selected that the trigger will execute when a *File* of the type *Data file* is added to the space *Space1* in the subfolder `/example/folder`, the workflow execution will be triggered when the data file is added to `Space1/example/folder`.



It is important to note that, under special circumstances, job creation might fail (e.g. if the execution context can not accept new jobs), or the job itself fails. In these cases, the job creation or execution will not be retried and the event would not be recorded. This makes trigger deployments unsuitable for use cases that require 100% reliability.

## Workflow actions

If you check the option *Enable workflow actions* you can enable sending an e-mail upon success or failure of the execution of the deployment you will create.

Add the email and select the condition, and click *Add more* to add more actions.

## Advanced settings

Finally, in the section *Advanced settings* you can configure additional set ups:

- *Job lifecycle*: such as deciding in which case to discard a job, the maximum time a job will stay in memory, the job life time, or the options for timeout
- *Additional settings*: such as report timeouts, CPU and RAM requirements, check the option to update the linked components when executing the scheduled job and so on

The values in the fields related to time need the format:

- PT, which stands for *Period of Time*
- the amount of time, made of a number and a letter D, H, M and S for days, hours, minutes and seconds.

For example, PT1H means a period of time of 1 hour, PT168H means a period of time of 168 hours (which is equivalent of 7 days).

## Node to get information about a trigger deployment

With KNIME Analytics Platform version 4.7.2 the Container Input (Repository Event) node is added to the **KNIME Hub Connectivity** extension.

If you want to receive information about the event that triggered the execution of a workflow on KNIME Hub, you can add this node to the workflow. Upload the workflow to your KNIME Hub instance and create a trigger deployment for the workflow. When the conditions set for the trigger are met and the workflow is executed the node will receive information about the event that triggered the execution and output them as flow variables. The different flow variables are listed in the node description.

The event information comprises:

- What kind of item, e.g., a workflow, component, or file;
- Where did the event happened, e.g., in a particular directory within a space;
- What type of action was performed on the item, e.g., modified, added, or deleted.

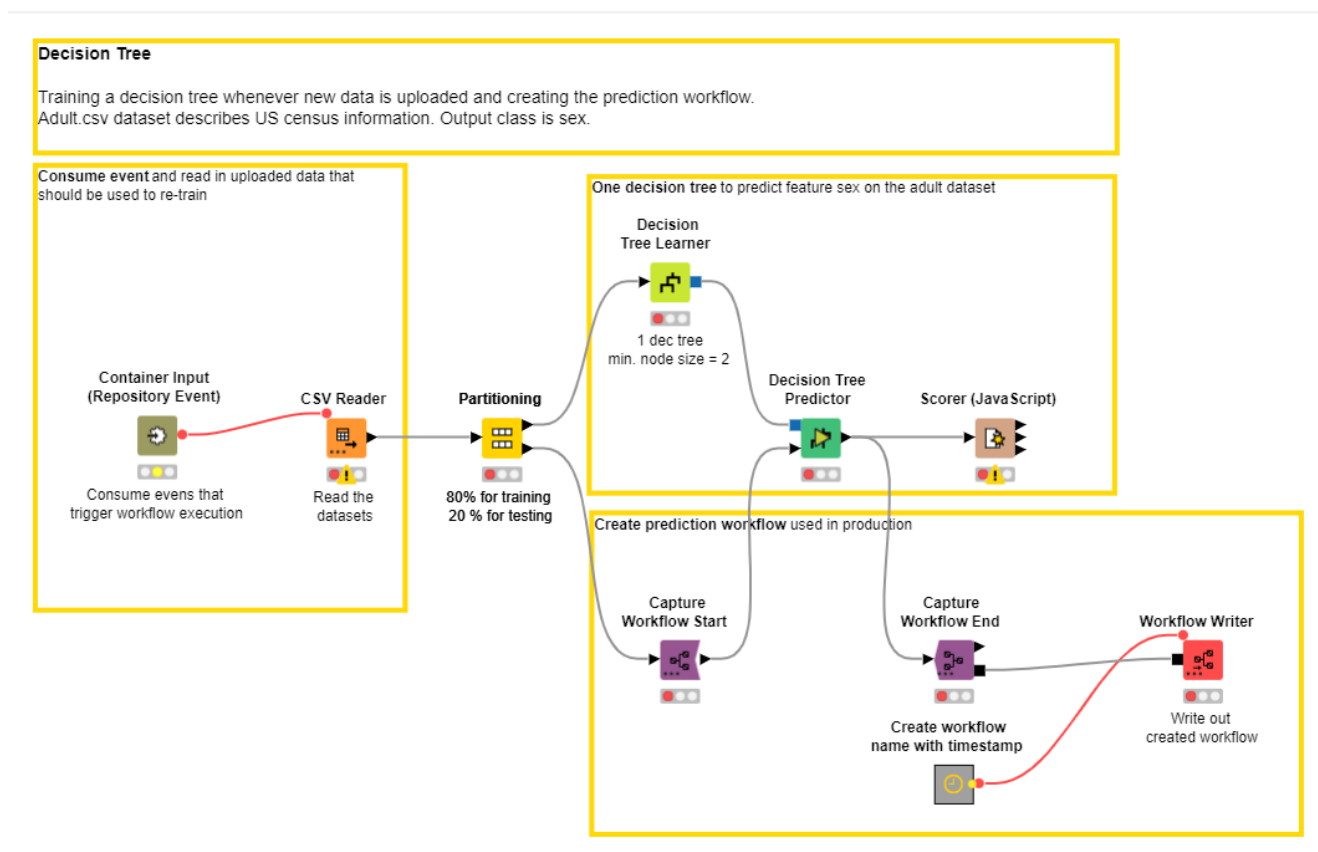


Figure 38. Example workflow using the Container Input (Repository Event) node

## Managing deployments

Select *Deployments* from the menu on the right in the workflow page to see a list of the

deployments that have been created for a specific workflow.

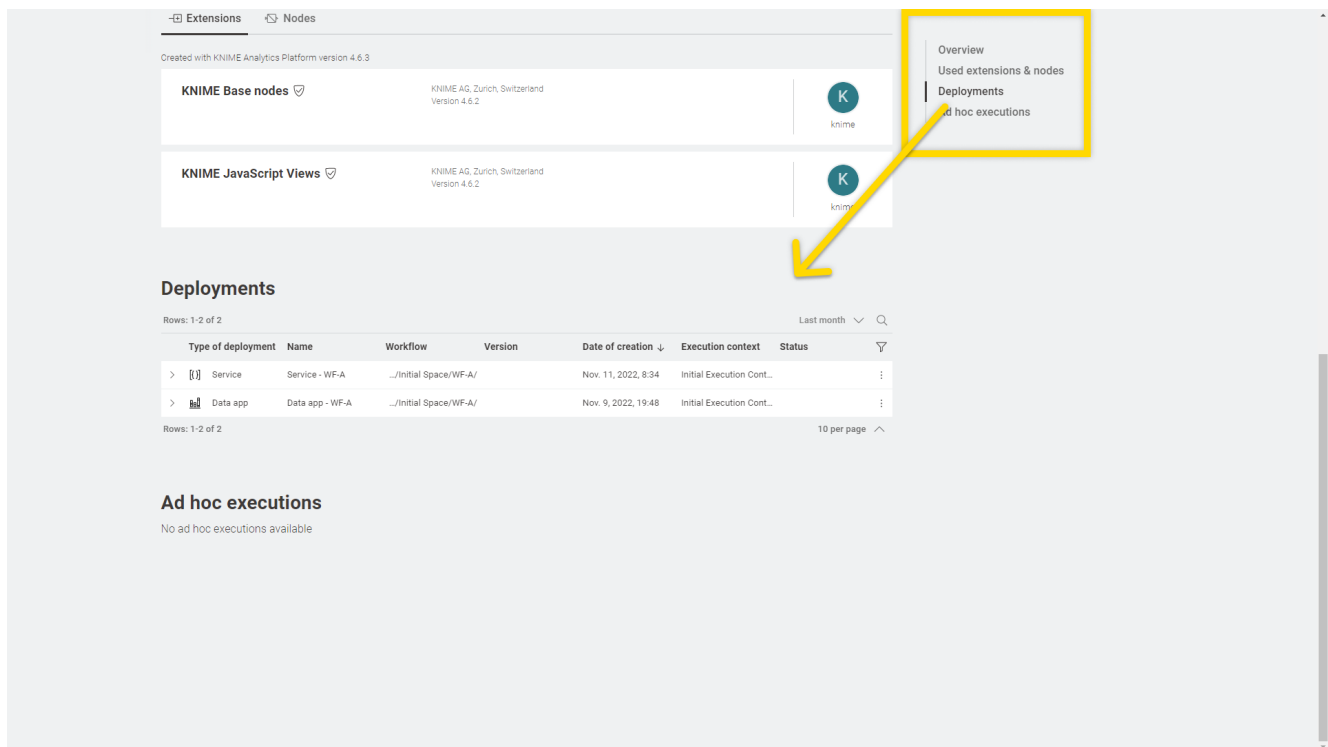


Figure 39. A list of all the deployments created for a specific workflow

To see all the deployments that were created under a specific team go to that team page and select *Deployments* from the menu on the left.

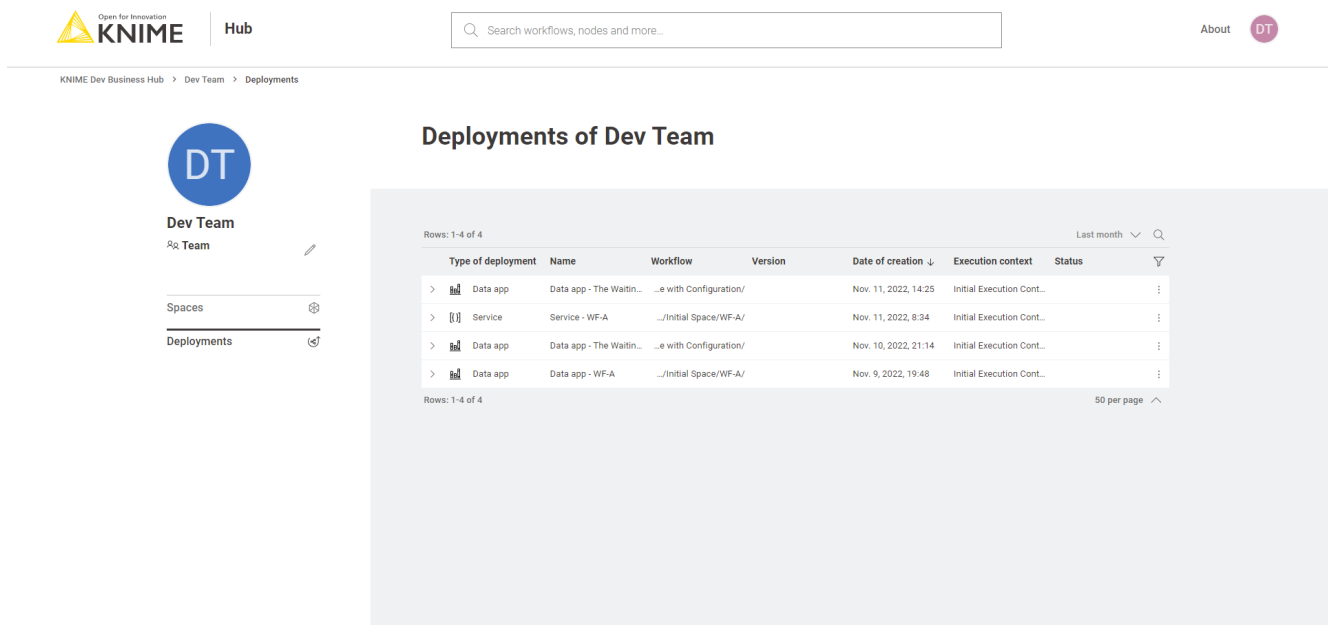


Figure 40. A list of all the deployments created by a team

By clicking the three points menu at the end of the corresponding deployment row you can

perform the following actions. Notice that depending on the type of deployment some actions might not be available.

- *Run*: data apps, schedules and triggers
- *Open*: services
- *Edit*: all types of deployments
- *Manage access*: data apps and services
- *Delete*: all types of deployments

## Run a Data App deployment

Once you have create a Data App deployment you can go to see the list of *Deployments* for the specific workflow, click the three dots on the row corresponding to the deployment you want to execute, and click *Run/Open*.

The screenshot displays the KNIME Business Hub interface. At the top, there are sections for 'KNIME Base nodes', 'KNIME JavaScript Views', and 'KNIME Quick Forms', each with a version 4.6.0 and a 'Press F11 to exit full screen' button. On the right, a sidebar shows navigation links: Overview, External resources, Used extensions & nodes, Deployments (selected), and Ad hoc executions.

The main section is titled 'Deployments' and shows a table with 6 rows. The table columns are: Type of deployment, Name, Workflow, Version, Date of creation, Execution context, and Status. The 'Data app' row is selected, and a context menu is open, showing options: Run, Edit, Manage access, and Delete. The 'Run' option is highlighted.

Type of deployment	Name	Workflow	Version	Date of creation	Execution context	Status
Trigger	Data App: Visual Ana...	..lysis_of_Sales_Data/	trigger_test_version_2	June 22, 2023, 13:47	Initial Execution Cont...	<input type="checkbox"/>
Schedule	Data App: Visual Ana...	..lysis_of_Sales_Data/	trigger_test_version_2	June 22, 2023, 13:46	Initial Execution Cont...	<input type="checkbox"/>
Data app	Data App: Visual Ana...	..lysis_of_Sales_Data/	trigger_test_version_2	May 26, 2023, 12:30	Nightly-4.7.3	<input checked="" type="checkbox"/>
Data app	test	..lysis_of_Sales_Data/	trigger_test_version_2	May 16, 2023, 15:04	Nightly-4.7.3	<input type="checkbox"/>
Service	Service - 00_DataAp...	..lysis_of_Sales_Data/	test 7	Jan. 11, 2023, 15:38	Initial Execution Cont...	<input type="checkbox"/>
Data app	test share 43243	..lysis_of_Sales_Data/	test v5 - data app	Dec. 16, 2022, 13:29	Initial Execution Cont...	<input type="checkbox"/>

Below the table, there is a section for 'Ad hoc executions' which states 'No ad hoc executions available'.

Figure 41. Run a deployed data app

## Change status of a schedule deployment

Also from the list of deployments available for a workflow or for the team, you can activate or deactivate a schedule. To do so click the toggle in the *Status* column.

## Open a service deployment

When a service deployment is created a REST API endpoint is created. By selecting *Open* the definition of the endpoint opens.

## Edit a deployment

You can edit a deployment from the deployments list by clicking the three dots in the corresponding row and selecting *Edit* from the menu.

The side panel for the deployment will open and you will be able to make changes to the deployment, then click *Apply*.

## Manage access to data apps and services

For data apps and service deployments, you can select *Manage access* from the menu that opens when clicking on the three dots. This opens a side panel where you can type the name of the user or **externally managed group** you want to share the deployment with.

It is also possible to share the deployment with users that are not members of your team. When sharing a deployment, this will be available in the user profile in the *Data Apps Portal* section.

When managing the access of data apps and services, you can also select the option to share the deployment with all signed in users. This will allow every user who has access to the KNIME Business Hub instance to execute the deployment.



Deployments shared this way will also be available to all future users who don't have a Business Hub account yet.

To do so select the *Any signed in user* option in the *Manage deployment access* panel.

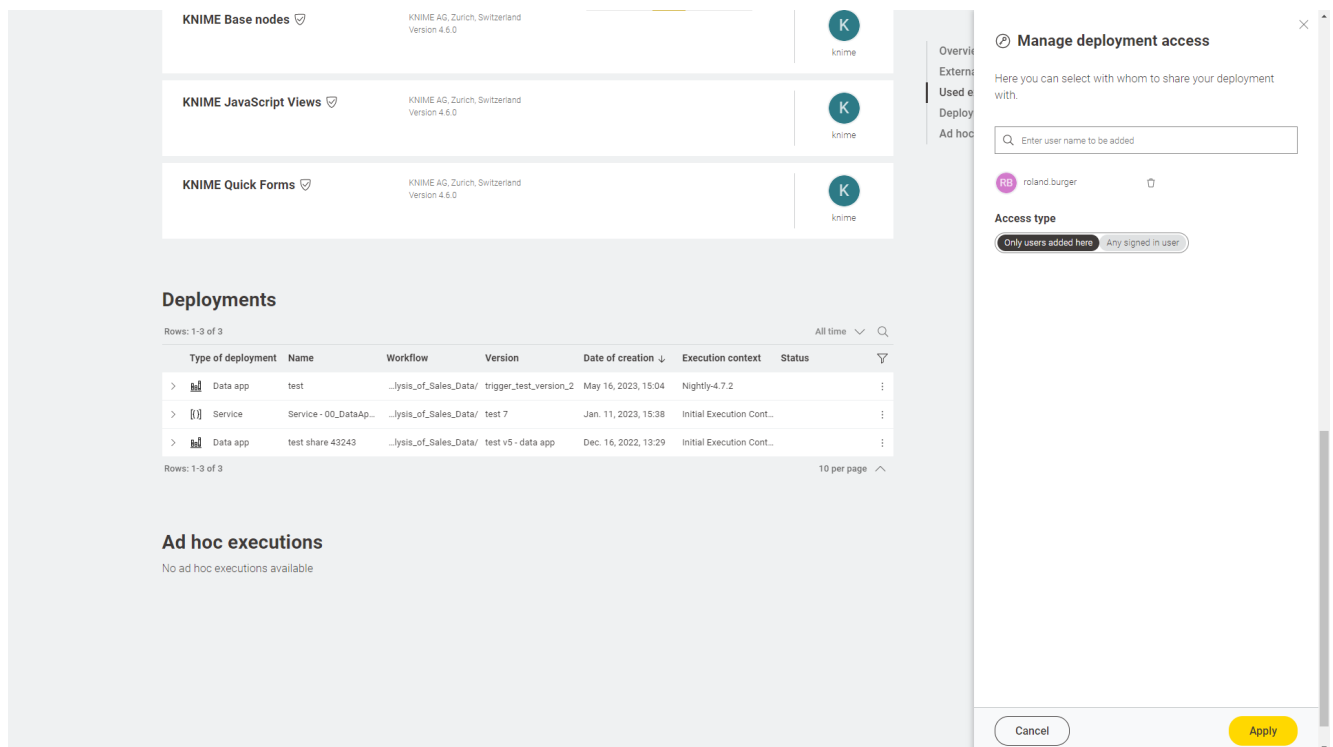


Figure 42. Manage access to a deployment of the type data app or service

The added user will still be available in case you change back to the default access type *Only users added here*.

## Delete a deployment

You can delete a deployment from the deployments list by clicking the three dots in the corresponding row and selecting *Delete* from the menu.



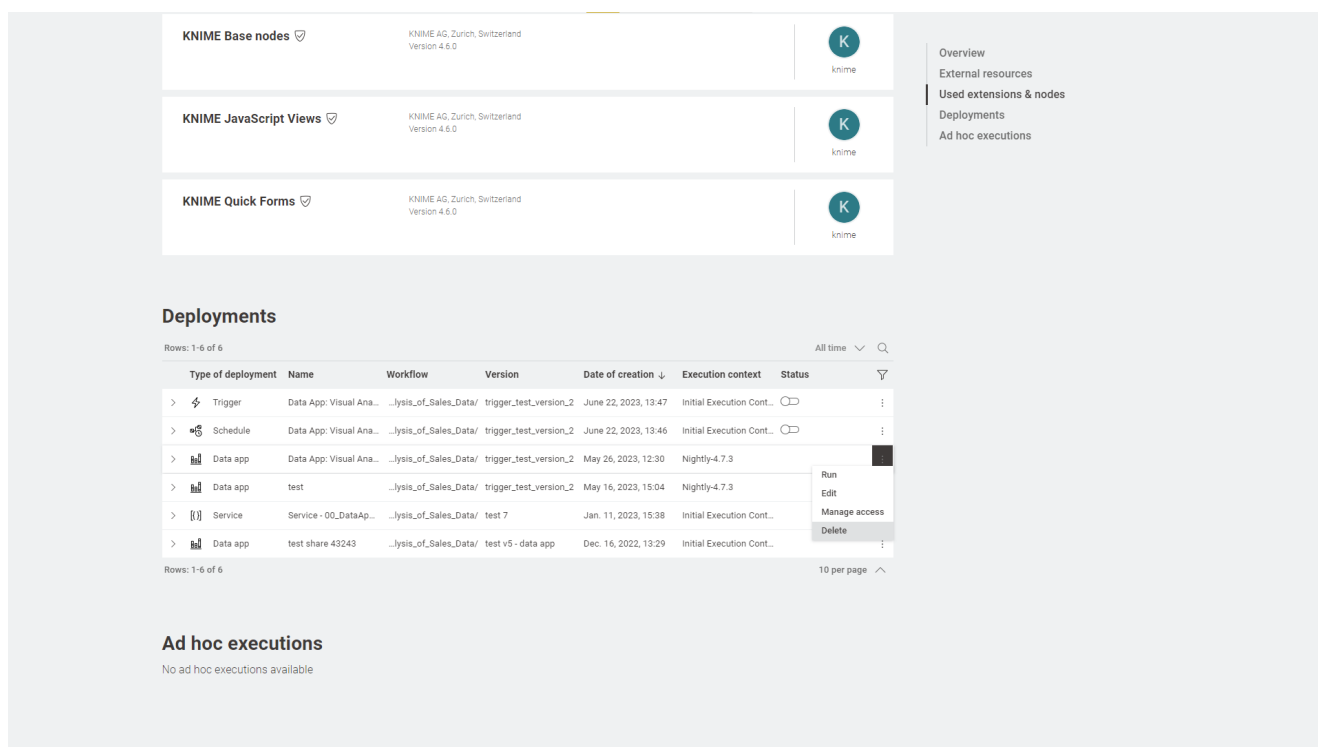


Figure 43. Delete a created deployment

## Jobs

Every time a workflow is executed ad hoc or a deployment is executed a job is created on KNIME Business Hub.

To see the list of all the jobs that are saved in memory for the ad hoc execution of a specific workflow go to the workflow page and on the right side menu click *Ad hoc jobs*.

To see the list of all the jobs that are saved in memory for each of the deployments created for a specific workflow, go to the workflow page and on the right side menu click *Deployments*. You can expand each deployment with the > icon on the left of the deployment.

Also you can go to your team page and find a list of all deployments created within your team. Also here you can click the > icon corresponding to a specific deployment to see all its jobs.

On each job you can click the ⋮ icon on the right of the corresponding job line in the list and perform the following operations (their availability depends on the type of **deployment** or the **job state**):

- Open: For example you can open the job from a data app and look at the results in a new tab

- **Save as workflow:** You can save the job as a workflow in a space
- **Delete:** You can delete the job
- **Download logs:** You can download the log files of a job - this feature allows for debugging in case the execution of a workflow did not work as expected. To be able to download job logs you need an executor based on KNIME Analytics Platform version > 5.1.

## Job states

Jobs exist in a variety of different states.

The possible states are:

- **Loading** - Jobs being loaded by an executor or waiting to be accepted by an Executor.
- **Executing** - Job is currently executing.
- **Execution finished** - Job has been executed successfully
- **Execution failed** - Job has been executed, but failed
- **Execution cancelled** - Job has been cancelled manually during execution
- **Interaction required** - Job is currently executing and is awaiting user input
- **Not executable** - Job contains individual, unconnected nodes
- **Discarded** - Job has been executed and discarded
- **Undefined** - This is the first state of a job, and may be seen in the case where the Executor cannot communicate with the Hub due to network issues, or the executor not having enough free CPU/RAM resources.
- **Vanished** - Job was in memory on an executor that has crashed, and is therefore lost.

# Data Apps Portal

You can access the Data Apps Portal by going to the address:

```
https://apps.<base-url>
```

where `<base-url>` is the usual address of the KNIME Business Hub instance.

This page is available to every registered user. Consumers, for example, can access to this page to see all the data apps that have been shared with them, execute them at any time, interact with the workflow via a user interface, without the need to build a workflow or even know what happens under the hood.

To execute a data app click the corresponding tile. A new page will open in the browser showing the user interface of the data app.

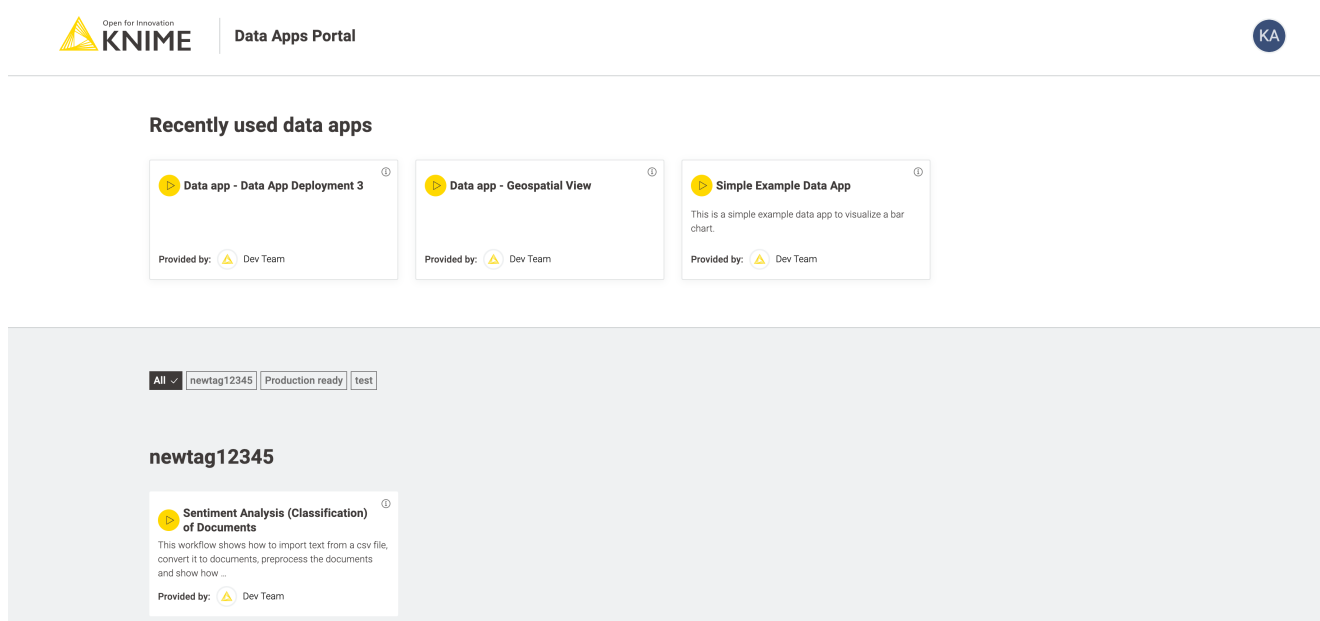


Figure 44. The Data Apps Portal

To share a data app deployment with someone follow the instructions in the [Manage access to a deployment](#) section.

## Known issues and compatibility

Please be aware that the compatibility of the following nodes and functionalities with KNIME Business Hub is still under development and it will full compatibility will be available soon.

- Molecule Sketcher Widget node does not support custom widgets such as MarvinJS
- Setting job lifecycle defaults for execution contexts is only possible right now via REST API

KNIME AG  
Talacker 50  
8001 Zurich, Switzerland  
[www.knime.com](http://www.knime.com)  
[info@knime.com](mailto:info@knime.com)