

# KNIME Analytics Platform User Guide

KNIME AG, Zurich, Switzerland Version 5.5 (last updated on )

## **Table of Contents**

Introduction
Workspaces
User interface
Entry page
Workflow editor & nodes6
Connect to KNIME Hub
Switch back to KNIME classic user interface16
Space explorer
Open workflows from KNIME Hub 20
Building workflows
Versioning workflows
Node repository
Node description
Workflow description
KNIME AI Assistant
Workflow monitor
Node monitor
Help
Managing workflow states and logs
Node reset and workflow execution
KNIME log and node operations
Configuring KNIME Analytics Platform
Preferences
Setting up knime.ini
KNIME runtime options
KNIME tables
Data table
Column types
Sorting
Column rendering
Table storage
Shortcuts
General actions
Execution

Selected node actions	64
Workflow annotations	65
Workflow editor modes	66
Workflow editor actions	67
Component and metanode building	68
Zooming, panning and navigating inside the canvas	69
Panel navigation	69
Others	70
Troubleshooting	71
Downloading or opening workflows from KNIME Community Hub is blocked by firev	vall. 71

## Introduction

This guide covers the basics of the KNIME Analytics Plaform usage, guiding you in the first steps with the platform but also providing more advanced information about the most important concepts together with indication on how to configure the platform.



Figure 1. KNIME Analytics Platform

## Workspaces

i

When you start KNIME Analytics Platform, the KNIME Analytics Platform launcher window appears and you are asked to define the KNIME workspace, as shown in Figure 2.

The KNIME workspace is a folder on the local computer to store KNIME workflows, node settings, and data produced by the workflow.

📐 KNIME Analytics Platform Launcher	Х
Select a directory as workspace	
KNIME Analytics Platform uses the workspace directory to store its preferences and development artifacts.	
Workspace CAUsers KNIME) knime workspace	
workspace: • • • • • • • • • • • • • • • • • • •	
Use this as the default and do not ask again	
Recent Workspaces	
Launch Cancel	

Figure 2. KNIME Analytics Platform launcher

The workflows, components and data stored in the workspace are available through the space explorer in the side panel navigation.

You can switch the workspace in a later moment under *Menu*, in the top right corner of the user interface, and select *Switch workspace*.

## User interface

After selecting a workspace for the current project, click *Launch*. The KNIME Analytics Platform user interface - the KNIME Workbench - opens.

The active workflow of the KNIME Analytics Platform will be displayed after switching from an opened workflow. If you have open multiple workflows before you switch the perspective, only the active workflow and all loaded workflow tabs of the current KNIME Analytics Platform will be displayed in the KNIME Modern UI. For each workflow you will see a workflow tab after switching. After clicking the first tab (with the KNIME logo) you end up at the entry page.



Figure 3. General user interface layout — application tabs, side panel, workflow editor and node monitor



Figure 4. User interface elements – workflow toolbar, node action bar, rename components and metanodes

In the next few sections we explain the functionality of these components of the user interface:

- Entry page
- Workflow editor & nodes
- Connect to KNIME Hub
- Space explorer
- Node repository
- Node description
- Workflow description
- Node monitor
- Help menu

ĺ

You can scale the interface by going to Menu > Interface scale.

## Entry page

The entry page is displayed by clicking the Home tab.



Figure 5. Entry page to create or open workflows

Here you will find:

- Recent, Local space, KNIME Community Hub. By default only the local workspace, and the link to connect to your personal KNIME Community Hub space are visible. To add a new mount point follow the instructions in the Connect to KNIME Hub section. Select:
  - · Recent to see your recently opened workflows and components
  - Local space to navigate the existing workflows in your local system
  - *KNIME Community Hub* (or one of the available mount points). Click *Sign in*, provide your credentials and start navigating the available spaces.
- Three example workflows to help you get started You can dismiss the examples by clicking the button on the top right. To restore the examples click *Help > Restore examples on home tab.*
- Create a new workflow by clicking the + button

Since KNIME Analytics Platform version 5.2 you can also add a KNIME Server mount point.

## Workflow editor & nodes

The workflow editor is where workflows are assembled. Workflows are made up of individual tasks, represented by nodes.

One way to create a new workflow is to go to the space explorer, click the three dots and select *Create workflow* from the menu. Give the workflow a name and click *Create*.



i

Once you have a workflow open you can always create a new workflow by clicking the + in the tabs bar at the top of the user interface.

In the new empty workflow editor, create a workflow by dragging nodes from the node repository to the workflow editor, then connecting, configuring, and executing them.

### Nodes

In KNIME Analytics Platform, individual tasks are represented by nodes. Nodes can perform all sorts of tasks, including reading/writing files, transforming data, training models, creating visualizations, and so on.

### Facts about nodes



Figure 6. A node in KNIME Analytics Platform

- Each node is displayed as a colored box with input and output ports, as well as a status, as shown in Figure 6
- The input port(s) hold the data that the node processes, and the output port(s) hold the resulting datasets of the operation

- The data is transferred over a connection from the output port of one to the input port of another node.
- i

For simplicity we refer to data when we refer to node input and output ports, but nodes can also have input and output ports that hold a model, a database query, or another type explained in Node Ports.

A node can be in different status as shown in the Figure 7.



#### Not configured

The node is waiting for configuration or incoming data.



#### Configured

The node has been configured correctly, and can be executed.



#### Executed

The node has been successfully executed. Results may be viewed and used in downstream nodes.



#### Error

The node has encountered an error during execution.

Figure 7. A node can exist in different status

Changing the status of a node

The status of a node can be changed, either configuring, executing, or resetting it.

All these options can be found:

• In the node action bar - click the different icons to configure, execute, cancel, reset and when available open the view.



Figure 8. Action bar of a node

• In the context menu of a node - open the context menu by right clicking a node.

🛆 KN	IME Analytics Plat	form								-	٥	×
	lome ඉද් <mark>ය</mark> Basic	Customer Segme	ntati 🔹 📲	KNIME_	project • +					( ) Help ( Prefere	nces	i Menu
	000			set	Create metanode	R Create component					l⊋ 1	00% ~
Info	Nodes > Re	esults	8	8								*
Nodes	Q excel reade	r	X									
Explorer	IO Read Mai	nipulation Colu	mn +33	^								
合 K-Al	Excel Reader	Model Reader	XML Reader	L								- 1
¶∃ Monitor	PMML Reader	DB Reader	CSV Reader	L								
	<u>"</u>	• • •	■_ ►	L			Excel R	teader				
	ORC Reader	File Reader	JSON Reader				•	Configure	F6			- 1
	-						Add col	Cut	Ctrl X			- 1
	ARFF Reader	Line Reader	Excel Writer					Сору	Ctrl C			
	-	-	Band Freed Chart	<				Delete	Delete			
	Table Reader	DB Query Reader	Names	L				Create metanode Create component	Ctrl G Ctrl J			
	Parquet Reader	Example Data Reader	Excel Cell Updater	L.								
	2	<b>60</b> ►	► " <del>X</del>		4							
	Value Lookup	Distance Matrix Reader	Google Sheets Reader		► 1: File Table	S Flow Variables						
		<u>₽</u> .►	• 😑 🕨									
	File Reader (Complex Format)	Fixed Width File Reader	FAISS Vector Store Reader									
	D	<b>-</b>	= <del>(K</del>									
	Cell Updater	Model to Cell	Model Writer							This output port has no data to display		
	, <mark>8-</mark> *	= 🖓 - ►	•									
	Cell to Model	Chroma Vector Store Reader	HEAD Request									
	- 77 -		Þ 🛶 Þ	*								

Figure 9. Context menu of a node

Identifying the node status

The traffic light below each node shows the status of the node. When a node is configured, the traffic light changes from red to yellow, i.e. from "not configured" to "configured".

When a new node is first added to the workflow editor, its status is "not configured" - shown

by the red traffic light below the node.

#### Configuring the node

The node can be configured by adjusting the settings in its configuration dialog.

Open the configuration dialog of a node by either:

- Double clicking the node
- Clicking the Configure button in the node action bar
- Right clicking a node and selecting *Configure* in the context menu
- Or, selecting the node and pressing F6

#### Executing the node

Some nodes have the status "configured" already when they are created. These nodes are executable without adjusting any of the default settings.

Execute a node by either:

- Clicking the Execute button in the node action bar
- Right clicking the node and selecting Execute
- Or, selecting the node and pressing F7

If execution is successful, the node status becomes "executed", which corresponds to a green traffic light. If the execution fails, an error sign will be shown on the traffic light, and the node settings and inputs will have to be adjusted as necessary.

#### Canceling execution of the node

To cancel the execution of a node click the *Cancel* button in the node action bar, or right click it and select *Cancel* or select it and press F9.

#### Resetting the node

To reset a node click the *Reset* button in the node action bar, or right click it and select *Reset* or select it and press F8.



Resetting a node also resets all of its subsequent nodes in the workflow. Now, the status of the node(s) turns from "executed" into "configured", the nodes' outputs are cleared.

#### Node ports

A node may have multiple input ports and multiple output ports. A collection of interconnected nodes, using the input ports on the left and output ports on the right, constitutes a workflow. The input ports consume the data from the output ports of the predecessor nodes, and the output ports provide data to the successor nodes in the workflow.

Besides data tables, input and output ports can provide other types of inputs and outputs. For each type the pair of input and output port looks different, as shown in Figure 10.

An output port can only be connected to an input port of the same type - data to data, model to model, and so on.

Some input ports can be empty, like the data input port of the Decision Tree View node in Figure 10. This means that the input is optional, and the node can be executed without the input. The mandatory inputs, shown by filled input ports, have to be provided to execute the node.



Figure 10. Common port types

A tooltip gives a short explanation of the input and output ports. If the node is executed, the dimensions of the outcoming data are shown in its data output port. A more detailed

explanation of the input and output ports is in the node description.

### Adding nodes to the canvas

Currently, there are three ways of adding nodes to your canvas to build your workflow:

- 1. Drag and drop a node from the node repository,
- 2. double-click on a node inside the node repository, or
- 3. via the quick nodes adding panel. Double click on the canvas or drag and drop a node port (input or output) into the canvas to open the quick node adding panel. This panel contains up to 12 recommended nodes or you can search in the panel for the desired node, then click the desired node to add it to the canvas.



Figure 11. Quick nodes adding with recommended nodes

To use quick nodes adding you need to allow us to receive anonymous usage data. This is possible at the startup of the KNIME Analytics Platform or after switching to a new workspace by selecting *Yes* in the "Help improve KNIME" dialog.



Figure 12. "Help improve KNIME" dialog

You can also activate it, via the *Open Preference* button that is displayed in the quick nodes adding panel.

Click here to find out what is being transmitted. If you don't want to do this anymore, you can deactivate it at any time in the KNIME Workflow Coach Preferences.

To open the preferences follow these steps:

- 1. Click Preferences in the top right corner of the user interface
- 2. Go to KNIME  $\rightarrow$  Workflow Coach
- 3. Deactivate the setting Node Recommendations by the Community



Figure 13. Workflow Coach Preferences

Finally, if you are logged in to the Hub to use the KNIME AI Assistant (K-AI), you will be able to use the Build mode of the AI Assistant directly in the quick nodes adding panel. Log into the KNIME AI Assistant with your KNIME Hub account and open the quick nodes adding panel. Here click *Build with K-AI* and you can add your prompt. K-AI will add nodes and relative comments to the canvas.



Figure 14. Build with K-AI at the quick nodes adding panel

You can go back to the quick nodes adding panel default mode by clicking the  $\leftarrow$  icon.

How to select, move, copy, and replace nodes in a workflow

Nodes can be moved into the workflow editor by dragging and dropping them. To copy nodes between workflows, select the chosen nodes, right click the selection, and select *Copy* in the menu. In the destination workflow, right click the workflow editor, and select *Paste* in the menu.

To select a node in the workflow editor, click it once, and it will be surrounded by a border. To select multiple nodes, draw a rectangle over the nodes with the mouse.

Replace a node by dragging a new node onto an existing node. Now the existing node will be covered with a colored box with an arrow and boxes inside as shown in Figure 15. Releasing the mouse replaces the node.

Nodes		8	3		
Q Search all nod	85				
0		Mirmanit	-		
Excel Reader	Easel Writer	Authenticator		Breg & drop	
Google Authenticator	Google Sheets Reader	Google Sheets Writer	h .		Excel Reader
CSV Reader	CSV Writer	Show all		-	Add comment
Aanipulation		Ŭ			
Row Filter	Column Filter	Concatenate			

Figure 15. Replacing a node in a workflow

### Comments and annotations

You have two options in the workflow editor to document a workflow:

• Node label - Add a comment to an individual node by double clicking the text field below the node and editing the text



### Figure 16. Writing a node comment

• Workflow annotation - Add a general comment to the workflow, right click the workflow editor and select *New workflow annotation* in the menu. Now a text box will appear in the workflow editor.



To add a new annotation you can also change the mode to annotation by clicking the  $\gtrsim$  icon in the top right corner of the user interface and select *Annotation mode*, or press T to enter annotation mode.



Double click the workflow annotation to add text and format the text and change the color of the annotation outline. To change the format you can use the annotation bar or use the following syntax:

- To create a heading, add number signs (#), followed by a space, in front of a word or phrase. The number of number signs you use should correspond to the heading level (<h1> to <h6>).
- To create a bullet list, add a star sign (\*) followed by a space.
- To create a numbered list, add a number followed by a point (1.), followed by a space.
- To make a text bold, italic, or underlined, select the text and press CTRL+b, CTRL+i, CTRL+u.

Finally you can click outside the annotation and click the annotation once again to move it around the canvas or to change its dimensions.

## Connect to KNIME Hub

By default you can connect to your account on KNIME Community Hub from the Home tab.

It is possible to add a new KNIME Hub instance by clicking *Preferences*, in the top right corner of the user interface.

Go to *KNIME Explorer* section and click *New...*. In the window that opens select *KNIME Hub* and add your Hub URL. Then click *Apply*.

Now the new KNIME Hub will show up in the Home tab.

Sign in and select the space you want to work on. The content of the space and the related operations you can do on the items are visible in the space explorer.

## Switch back to KNIME classic user interface

You can switch back to the classic KNIME Analytics Platform user interface under *Menu*, in the top right corner of the user interface, and select *Switch to classic user interface*.

You can switch back to KNIME Modern UI at any time by pressing the button *Open KNIME Modern UI* in the classic user interface, at the top right corner.

Really, really, really important disclaimer

Workflow elements such as connectors or annotations are visualized in a new way and may not look exactly like in the current KNIME Analytics Platform. Changes will therefore not look 100% the same.

## Space explorer

The space explorer 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

You can switch to other spaces by:

• Going to the *Home* tab and selecting one of the available spaces. Here you can filter the space by clicking the *Q* icon:

📩 KNIME Analytics Platform				– a x
(2 Home) 📲 Combine Clean and Summarize Spread × 📑	+			(     Help     Preferences     I Men
© Recent ഈ Local space ↓ @ KNIME Community Hub [-+	© FINIME Community Hub > Rg. KNIME Workflow Applic	vations S		
R daria-tombolelli			Work	
Re KNIME Workflow Applications				
<image/> <image/> <image/> <image/> <image/> <section-header></section-header>	Korkflow Application     Components     In this repository are     used in Workflow Applications, for     used in the KWIME Business Hub.     Armin Resources (1). This repository     ###############################	<b>Urchflow Applications Tests</b> Assisted as supposed to run on the     community Hue.     Instance and supposed to run on the     community Hue		

Figure 17. Filter the spaces

• On the top of the space explorer you can sign in to any of the Hub or Server mount points and select a space. You will see the spaces grouped by owner when on KNIME Hub.

▲ KNIME Analytics Platform					- a ×
에 Home 예 Combine Clean and Summar	× ∞l <sup>e</sup> s KNIME_project1 • +				(1) Help (1) Preferences I Menu
🕞 🕶 🔄 🖓 Execute all 🗙 Car	ncel all I ( Reset all				≳ 100% ~
Image: Second		Column Filter	Construite CONS DOIN Bring the tens in the Yithdow in core table	Value Losiup	Bir Chart
Q, simons > Q: toblas.koetter > A; KNiME Workflow Applications >	of the sound sits file      Control (Control (Contro) (Contro) (Contro) (Contro) (Contro	from the "Living Recent" table Column Marger Column Marger Colu	Shing to Number	Append the volumes of the lister littles based on their Ds	Logon Lot output park solutions of the loted them. 2nd output park Solution for grand total volume of all thems.
		To show the	node output, please select a configured or exec	uted node.	, * , *

Figure 18. Select a space to explore

 $\bigcirc$ 

If you have a workflow open right-click the workflow tab at the top and select *Reveal in space explorer* to locate the workflow in the space explorer.

In the space explorer you can see:

- Workflows
- Folders
- Data files
- Components
- Metanodes

Double click a workflow to open it in the workflow canvas and start adding nodes to the canvas from the node repository.

- 1
- An overview on components and metanodes is available in the KNIME Components Guide.

Here you can click the three dots to select one of the following actions within the current space:

- · Create a new folder or a new workflow
- Import a workflow
- Add a file

	M      Execute all	X Cancel all (← Reset all)
Info	📓 Local space 🗸	Q Ø 🕕
Nodes	合 > Example Workflows	+ Create workflow
\$	<ul> <li>←</li> </ul>	C Import workflow
Explorer	Basic Examples	Add files
K-AI	Customer Intelligence	↔ Upload
t 1∃ Monitor	C Retail	
	Social Media	
	🗂 TheData	

Figure 19. Space context menu

You can also drop files to the canvas. KNIME will create the appropriate file reading node automatically and preconfigure it. Finally you can drop a component to the canvas to use the component in the current workflow.

Select an item from the current space and right click on it to access the item context menu.

- If your in your local space, you will have the following options:
  - Rename
  - Delete
  - Duplicate
  - Export (only available for workflows)
  - Upload (if you are already connected to one of the available Hub mount points)
  - Connect (to connect to the available Hub mount points without leaving the current view)
- If you are navigating through a space in your KNIME Hub, you will have the following options:

- Rename
- Delete
- Duplicate
- Download
- Move to...
- Copy to... (only available for workflows and components)
- Open in Hub.. (only available for workflows and components)

## Open workflows from KNIME Hub

Another possibility you have to open a workflow that exists on you KNIME Hub in the Analytics Platform is to drag and drop the workflow from the Hub in the browser.

To do so go to the Hub instance (e.g. your KNIME Business Hub instance or KNIME Community Hub) sign in with your account and navigate to the workflow you want to open.

Here you can drag and drop the workflow drag & drop element or the URL to the Analytics Platform and the workflow will open.

i

You can select a specific version of your workflow to view and interact with it in the Analytics Platform. If you do not select a specific version you will view and interact with the workflow in the current state.

## Building workflows

When you create a new workflow, the canvas will be empty.

To build the workflow you will need to add nodes to it by dragging them from the node repository and connecting them. Alternatively you can drag an output port of a node to show the workflow coach which will suggest you the compatible nodes and directly connect them.

Once two nodes are added to the workflow editor, they can be connected by clicking the output port of the first node and release the mouse at the input port of the second node. Now, the nodes are connected. For some nodes you might have the ability to add specific ports. When hovering over these nodes you will see a + sign appearing. Click it to add a port. If the nodes supports different types of these dynamic ports a list will appear for you to scroll down to select the type of port you want to add.

You can also add a node between two nodes in a workflow. To do so drag the node from the node repository, and release it at its place in the workflow.

## Versioning workflows

When uploading workflows to a space on KNIME Hub, you will be able to keep track of their changes. Your workflow will be saved as a draft until a version is created.

When you create versions of the workflow, you can then go back to a specific saved version at any point in time in the future to work with the workflow in that specific version.

Once a version is created, new changes will show up as draft.

## Create a version

To create a version of the workflow:

- 1. Open the workflow you want to create a version of.
- 2. Click the  $\sim$  icon beside the name of the workflow in the top of the interface.
- 3. Select Version history from the dropdown menu.

A Hone Q Contribuction and Summer.     +	( Help ) Preferences ( I Menu ) & daria-tomboleli
🔲 V V V V V V V V V V V V V V V V V V V	
to the content of an and summarize spreasment on a	(ar Deploy De 100% ~
A constraint of the state of	Appear Appear The second cost of an and appear and ap

Figure 20. Version history menu

- 4. In the Version history dialog, click the Create version button.
- 5. In the Create version dialog, enter a name and a description for the version.
- 6. Click the Create button to create the version.

△ KNIME Analytics Platform           △ Home         Q Combine Clean and Summar × +		() Help () Preferences	- 8 X I Menu & daria-tomboleti
Close version history	Q Hub − Combine Clean and Summarize Spreadsheet Data		(or Deploy on Hub
E Lest update: Jul 4, 2025		🕓 Version history	×
in this exercise, you'll learn how to read, combine, clean, and summarize data from multiple Excel sheets. You'll content and content the fail value of a cargo that carries furniture from one house to another.		Poraft     Latest edits on Jul 4 2025 444 PM	Create version
RA TE Mantar External resources		<ul> <li>No version created yet</li> </ul>	
No links have been added yet Tags	Carl Realist Constraints Bar Clast		
Spreadsheet Beginners Driboarding	Starts for case (Cases) Starts for case (Cases) Starts for cases club in Starts for cases clu		
	Exer Denker Denker Calan Titler Denker Calan Titl		
	In factor : Ship from the focus as connexts =		
1	test in the Go d al lines.     Control the Go d al lines.		
	u a manazana an analah shi keng Calana Analah shi keng Calana		
	Select a configured or executed node to show the node output.		

Figure 21. Create version dialog

## View version history

In the *Version history* dialog you can see all the versions of the workflow, including the draft version. You can see the name, description, creation date of each version and the user who created it.



Figure 22. Version history dialog

### Show a version

To show a specific version of the workflow you can

- Click the : icon beside the version you want to show and select *Show this version* from the dropdown menu.
- Click the version tile in the version history dialog.



Figure 23. Show version menu

The workflow in this version will be opened in the workflow canvas and you can work with it as usual.

In the version history dialog the version you are currently viewing will be selected and shown in blu.

To select or deselect the version you can:

- Click the : icon beside the version you want to deselect and select *Deselect this version* from the dropdown menu.
- Click the selected version tile in the version history dialog.

### Restore a version

To restore a version of the workflow you can:

- Click the : icon beside the version you want to restore and select *Restore this version* from the dropdown menu.
- Click the *Restore this version* button beside the name of the workflow in the top of the interface.



Figure 24. Restore version menu

Since restoring a version will overwrite the current workflow and unversioned changes will be lost, you will be asked to confirm the action in the *Confirm version restor* dialog.

Once you *Confirm* the version will be restored as a draft.

## Delete a version

To delete a version of the workflow you can click the  $\pm$  icon beside the version you want to delete and select *Delete this version* from the dropdown menu.



Figure 25. Delete version menu

## Node repository

Currently installed nodes are available in the node repository. You can add a node from the node repository into the workflow editor by drag and drop it into the workflow canvas, as explained in the section Building Workflows.

Search for a node by typing a search term in the search field on top of the node repository.

As shown in Figure 26, you can view your node repository as grid, list or tree view. To switch between the views click  $\square$  (grid view),  $\equiv$  (list view), or  $\square$  (tree view).



Figure 26. Node repository with three view modes

## Node description

You can access the node description, with information about the node function, the node configuration and the different ports available for the node in the following ways:

- Select a node you added in the canvas, go to the side panel navigation and select the first option
- Hover over a node in the node repository and click the info icon that appears. This will open the node description panel.

## Workflow description

The description panel on the left of the KNIME Analytics Platform provides a description of the currently active workflow, or a selected component.

Click the pen icon to change the workflow description, add links to external resources and add tags.

Double click the workflow annotation to add text and format the text and change the color of the annotation outline. To change the format of the description you can use the formatting bar or use the following syntax:

- To create a bullet list, add a star sign (\*) followed by a space.
- To create a numbered list, add a number followed by a point (1.), followed by a space.
- To make a text bold, italic, or underlined, select the text and press CTRL+b, CTRL+i, CTRL+u.

To change a component description you need to first open the component. To do so, select the component, right-click and select *Component > Open component* from the context menu.

## **KNIME AI Assistant**

KNIME features an AI assistant designed to efficiently answer your queries about the KNIME platform and assist in constructing customized workflows, simplifying your data analysis tasks.

## 1

If you can not find the AI Assistant side panel, the AI Assistant might be deactivated by your administrator.

## Usage

To access the AI assistant, please log in to KNIME Hub.



Figure 27. Login

If you have access to a KNIME Business Hub instance that is equipped with AI assistant support, you can select the specific instance to use via the AI Assistant preferences page and then log in via the AI assistant side panel.



Figure 28. AI Assistant preferences page

To use the AI assistant, it is mandatory to first accept the terms outlined in the disclaimer. Please note that to deliver our services, KNIME shares data with OpenAI or Microsoft Azure. This includes all user queries, and for the **Build** mode, it includes the table specifications of selected nodes, such as column names and data types, but **not the data itself**.

The KNIME AI Assistant offers two modes:

- A Q&A mode, and
- A Build mode.

These can be selected using the toggle button located at the top of the side panel.

### Q&A mode

🛕 KNIME Analytics Platform				- o ×
G Home R RNIME_pro	ject × +			
	ecute all) 🔀 Cancel all) (K- Reset all)			
KNIME AI Assist	ant (Real Build) I Additional Resources	× • - •		
Image: Second	ME Q&A Assistant. What would all a new extension. How do I do all a new extension. How do I do rectension in I/OUME, follow tos Platform. he top right corner and select	2	Start building your workflow by dropping your data or nodes here.	
<ol> <li>In the datage that or available extensions.</li> <li>Select the extension Nact.</li> <li>Follow the instruct</li> <li>Restart RNIME And installation.</li> <li>Alternatively, you can dragging and droppin KNIME Hub directly in exploring the new fea</li> </ol>	pans, you will see a list of n you want to install and click ions to complete the installation. lytics Plutform to finalize the also install extensions by the estamisch ioon from the to your workflow. Enjoy turest			
Additional Resou A 모	rces 💿		To show the node output, please select a configured or executed node.	

Figure 29. Q&A mode

In the Q&A mode, you can inquire about KNIME functionalities, including how to execute specific tasks, and receive informative answers.

These answers may feature recommendations for nodes effective in achieving the tasks at hand. If the suggested nodes are already installed, they can be directly dragged into the workflow. For nodes not yet installed, a link to the KNIME Hub is provided. You can then install these nodes via drag-and-drop from KNIME Hub.

By clicking the question mark located at the top of the answer, you will be provided with links to the sources that were used to generate the response.

Click the  $\gg$  icon to check Additional Resources like workflows, forum posts, and KNIME Documentation.



You can leave a feedback if the answer was useful to you by hovering over the answer and clicking the thumbs up or thumbs down icons that appear.



Figure 30. Q&A mode

## Build mode

The Build mode is engineered to extend workflows in response to a query. The set of nodes available to the Build mode is currently limited, but many more nodes will be added in the future. It is important to note that in Build mode, workflows cannot currently be initiated from scratch. You are required to select pre-existing nodes that already supply data, and from there, the workflow is dynamically expanded according to your query.

KNIME Analytics Platform		-	0 X
The Home A RNIME_project	٥	Help @ Preferences	
🕞 🗢 🝙 🕲 Execute 🖄 Cancel 🛅 Res	att 🕀 Create metanode 🛛 🗞 Create component	12	100% ~
KNIME AI Assistant CLA COM 1      KNIME AI Assistant AI ASSISTANT ASSISTANT ASSISTANT ASSISTANT ASSISTANT ASSISTANT ASSISTANT ASSISTA	CY Rushr CY Rushr CO W CO W		
Visualizing data to uncover trends.      Visualizing data to group my data based on the column     'Cluster Membership' and aggregade by court.	Appropriate by court		
I extended your workflow.	•		÷.
	I. Group table G Flow Variables  Rows: 4   Columns: 2      Table (@ Statistics @)		Q. H
	RowID Cluster Membership     Shirp     Count(Cluster Membership)     Number (Imper)		~ 7
	1         Row0         Cluster_0         1850           2         Row1         Cluster_1         1850		
	8 Rov2 Chatter_2 1550		
	4 Row3 Chuster_3 1350		

Figure 31. Build mode

You can also use the Build mode of the KNIME AI Assistant directly in the workflow canvas. To do so open the quick nodes adding panel by dragging and dropping into the canvas the port of the node you want to use as starting point to extend your workflow. Select *Build with K-AI* and insert your prompt.

## Deactivation

If you want to deactivate the AI assistant and hide it from the side panel, follow these steps:

- Using Preferences:
  - 1. Go to Preferences > KNIME Modern UI > AI Assistant.
  - 2. Uncheck the option Enable the KNIME AI Assistant.
- Using the knime.ini file:
  - 1. Open the knime.ini file.
  - 2. Add the following entry:

-Dorg.knime.ui.feature.ai\_assistant=false

1

The setting in the knime.ini file will always override the setting in the *Preferences*.
#### Additional Information:

The AI Assistant might also be deactivated via customization profiles. However, the setting in the knime.ini file will always take precedence over the customization profile.

The AI Assistant status setting will have the following prioritization:

- 1. knime.ini file
- 2. Customization profile
- 3. Preferences

## Workflow monitor

Access the workflow monitor tab from the side panel navigation of the user interface, shown in Figure 32. Here, you can find errors and warnings that might arise from the execution of your workflow.



Figure 32. Workflow monitor

When a node error or a node warning occurs you can click the  $\rightarrow$  icon to select the node that is causing the issue in the workflow.



If the node is in a component or a metanode this will automatically navigate to the level where the node that is causing the issue is present.

# Node monitor

The node monitor tab is located on the bottom part of the user interface shown in Figure 33. It is especially useful to inspect intermediate output tables in the workflow.



Figure 33. Node monitor

Here you can choose to show the flow variables or a preview of the output data at any port of a selected node in the active workflow.

Switch to Statistics in order to see some basic statistics of the data.

You can also detach the table or the statistics view and open it in a new window. To do so click the  $\Box$  icon in the respective view (*Table* or *Statistics*). This allows you to open multiple table or statistics for multiple nodes in your workflow.

Read more about the data table shown in the node monitor in the KNIME tables section.

## Help

By clicking the *Help* button in the top right corner of the user interface you can see multiple useful links like:

- Keyboard shortcuts to speed up your workflow building process without relying on a computer mouse.
- Some learning resources like cheat sheets, getting started guide and documentation
- The KNIME Forum to ask the community about workflow building, tips and tricks
- About page for KNIME Analytics Platform also with currently installed version and access to *Installation Details*
- Additional credits about open source software components

# Managing workflow states and logs

## Node reset and workflow execution

When a node is reset, the node status changes from "executed" to "configured," and the output of the node is no longer available. When saving a workflow in an executed state, the data used in the workflow is saved as well. This means that larger datasets result in larger file sizes. Therefore, it is recommended to reset workflows before saving them if the dataset can be accessed without any restrictions. A reset workflow only saves the node configurations, not the results.

## KNIME log and node operations

Resetting a node does not undo the operation executed before. All operations done during creation, configuration, and execution of a workflow are reported in the knime.log file.

Click *Menu* > *Show KNIME log in File Explorer* in the top right corner of the user interface to see the knime.log location folder. The knime.log file has a limited size, and after reaching it the rows will be overwritten from the top.

# **Configuring KNIME Analytics Platform**

## Preferences

Preferences can be open by clicking *Preferences* in the top right corner of the Analytics Platform.

Here, a list of subcategories is displayed in the dialog that opens. Each category contains a separate dialog for specific settings like database drivers, available update sites, and appearance.



Figure 34. Open KNIME Preferences window from KNIME Analytics Platform

#### Network connections

Selecting *General > Network Connections* in the list of subcategories, allows you to define the networking and proxy setup of KNIME Analytics Platform.

ype filter text	Net	work Con	nections							← → ⇒ →
General     Network Connections     Install/Update     KNIME	Acti Prov	ve Provide ky entries	r: Manual V Direct Manual							
		Sche	Native Host	Port	Provider	Auth	User	Password		Edit
		НТТР	localhost	3128	Manual	No				Cle
		HTTPS	localhost	3128	Manual	No				
		SOCKS			Manual	No				
	Prov	ky bypass Host			Pro	ovider				Add Hos
		*.knime	.com		Ma	inual				Edit
		l localho	it .		Ma	inual				Remov
		127.0.0.			Ma	inual				Kentov
		1								
									Restore Defa	aults Apply

Figure 35. The Network Connections preferences page

As show in Figure 35, the Active Provider can be set to three options:

- The Direct provider bypasses all proxies.
- The Manual provider uses the proxy configuration you see on the page.
- The *Native* provider checks for proxy settings on the OS and loads them into preferences.

Manual proxy entries are distinguished by protocol, being HTTP, HTTPS, or SOCKS. For example, the HTTPS entry only affects requests to hosts which use that protocol, such as <a href="https://www.knime.com">https://www.knime.com</a>.

You can use the Proxy Diagnostics workflow on your local Analytics Platform to investigate the settings on your machine and potential connection issues. To do so, download the workflow, execute it locally, and open the view of the Proxy Diagnostics Viewer.

#### Native proxies

Native proxies come from OS-specific, static or dynamic sources. A static proxy

configuration is a hard-coded setting including the proxy host and its corresponding port. Dynamic proxy configuration is based on proxy auto-config (PAC) scripts. Proxies from this source will be labeled as *Dynamic* in the preferences.

Below you find an overview of which sources are supported in the different OSs.

Table 1	. Native	proxies	support	per	OS
---------	----------	---------	---------	-----	----

	Static source	Dynamic source
Windows	Proxies from the Windows system settings at Network & Internet > Proxy > Manual proxy setup > Use a proxy server.	PAC proxies defined at Network & Internet > Proxy > Automatic proxy setup > Use setup script. Note that this source does not work for all services. See below for more information.
macOS	Proxies are coming from the macOS system proxy settings.	Not supported.
Linux	First, the environment variables http_proxy, https_proxy, no_proxy are checked for proxies, then GNOME system settings at <i>Network &gt; Network Proxy</i> are.	Not supported.

As mentioned above, the native proxy support on Linux is limited to GNOME systems. Additionally, loading proxies from GNOME settings requires adding this entry to the knime.ini file.

-Dorg.eclipse.core.net.enableGnome=true



Dynamic proxies work well for core functionality of the KNIME Analytics Platform, such as fetching updates, reloading update sites, or installing extensions. However, they are not supported for node execution in general, with some exceptions. For example, the *KNIME REST Client Extension* does support dynamic proxy sources.

#### Proxy authentication

KNIME supports basic authentication at proxies, i.e. using a username and a password. You can set the proxy credentials on the same preferences page by enabling the *Requires Authentication* checkbox. The credentials are stored in the Eclipse secure storage.

If credentials are not found, the corresponding service in the KNIME Analytics Platform will receive the HTTP response 407.

To resolve missing proxy credentials, follow these steps:

- 1. First, check that you correctly entered the credentials for the relevant protocol entry.
- 2. If you are still seeing node or log messages like Unable to tunnel through proxy. Proxy returns "HTTP/1.1 407 Proxy Authentication Required", it is likely that you are missing a property in the knime.ini file. See this FAQ entry for more information.

#### Proxy exclusion

On the preferences page, you can also exclude individual hosts from using the proxy. This makes sense for local or internal hosts, for example localhost or 127.0.0.1. Next to exact matching hostnames, using wildcards \* allows you to exclude a range of hosts. It is important not to include the protocol of the URL, for example \https://.

Be aware that the exclusion pattern is matched to every HTTP-redirect. For example, excluding only the host knime.com will result in your request still using a proxy, since knime.com redirects to www.knime.com which was not excluded. For these cases, you can use the wildcard patterns, such as the pattern \*knime.com.

#### KNIME

Selecting *KNIME* in the list of subcategories, allows you to define the log file log level. By default it is set to *DEBUG*. This log level helps developers to find reasons for any unexpected behavior.

Directly below, you can define the maximum number of threads for all nodes. Separate branches of the workflow are distributed to several threads to optimize the overall execution time. By default the number of threads is set to twice the number of CPUs on the running machine.

In the same dialog, you can also define the folder for temporary files.

Check the last option Yes, help improve KNIME. to agree to sending us anonymous usage

data. This agreement activates the node recommendations in the quick node adding panel.

#### KNIME Modern UI

In the KNIME Modern UI category you can select:

- Which nodes to include in the node repository and node recommendations
- Which action is associated with the mouse wheel.
- If you want to be asked to close the open projects when switching between Modern and Classic UI
- If you want to confirm node configuration changes in order for them to be applied
- How you want the node configuration dialogs to show up in the UI:
  - Open in new window: The default option is to open them into a new window
  - Embedded inside application (experimental): With the release of KNIME Analytics Platform 5.4 we have introduced the possibility to see the node configuration dialogs embedded inside the application. Please notice that this option is still experimental.
- Under *Al Assistant* you can also, which KNIME Hub the Al assistant connects to. Here you can also disable the KNIME Al Assistant. The KNIME Al Assistant is enabled by default.

#### KNIME classic user interface

The *KNIME* category, contains a subcategory *KNIME* classic user interface. In this dialog, you can define the console view log level. By default it is set to "WARN", because more detailed information is only useful for diagnosis purposes.

Further below, you can select which confirmation dialogs are shown when using KNIME Analytics Platform. Choose from the following:

- Confirmation after resetting a node
- Deleting a node or connection
- Replacing a connection
- · Saving and executing workflow
- Loading workflows created with a nightly build

In the same dialog, you can define what happens if an operation requires executing the previous nodes in the workflow. You have these three options:

- · Execute the nodes automatically
- · Always reject the node execution
- · Show a dialog to execute or not

The following options allow you to define whether workflows should be saved automatically and after what time interval, also whether linked components and metanodes should be automatically updated. You can also define visual properties such as the border width of workflow annotations.

#### Table backend

Starting with KNIME Analytics Platform version 4.3 a new Columnar Backend is introduced, in order to optimize the use of main memory in KNIME Analytics Platform, where cell elements in a table are represented by Java objects by reviewing the underlying data representation.

The KNIME Columnar Table Backend extension addresses these issues by using a different underlying data layer (backed by Apache Arrow), which is based on a columnar representation.

The type of table backend used can be defined:

 At the workflow level. Open a workflow and select the Description tab from the side panel navigation. Click the 
 icon in the top right corner of the description panel. A workflow configuration dialog will open. Here, in the tab *Table Backend* you can select the desired backend for this specific workflow from the menu.



Figure 36. Configure a workflow to use Columnar Backend

• As default for all new workflows created. Open the *KNIME Preferences* and select *Table Backend* under KNIME in the left pane of the preferences window. Here you can select *Columnar Backend* as *Table backend* for new workflows, as shown in Figure 37.

type filter text       Table Backend         > General       This subsection contains preferences for KNIME table backends. Select the table backend which should be use         > Install/Update       Table backend for new workflows         < KNIME       Row-based Backend         Databases       Columnar Backend         JavaScript Views       The Columnar Table Backend extension uses a different underlying data layer based on a columnar representation speed-ups over the row-based format. Please also review the settings in the KNIME preferences (File -> Preferences)	
<ul> <li>&gt; General</li> <li>&gt; Install/Update</li> <li>&gt; KNIME</li> <li>Customization Profiles</li> <li>Databases</li> <li>JavaScript Views</li> <li>KNIME Explorer</li> </ul> This subsection contains preferences for KNIME table backends. Select the table backend which should be use Table backend for new workflows <ul> <li>Customization Profiles</li> <li>Detabases</li> <li>JavaScript Views</li> <li>KNIME Explorer</li> </ul> The Columnar Table Backend extension uses a different underlying data layer based on a columnar representation speed-ups over the row-based format. Please also review the settings in the KNIME preferences (File -> P	← ▼ □> ▼ 8
KNIME Modern UI SkNIME classic user interf Kerberos Master Key Molecule Sketcher Preferred Renderers Table Backend Columnar Backend Row-based Backend S Workflow Coach	ed for new workflows here. stion, which gives noticable ences -> KNIME -> Table

Figure 37. The Table Backend preferences page

The parameters relative to memory usage of the Columnar Backend can also be configured. Go to *File*  $\rightarrow$  *Preferences* and select *Table Backend*  $\rightarrow$  *Columnar Backend* under KNIME in the left pane of the preferences window, as shown in Figure 38.

A Preferences				×
type filter text	Columnar Backend	¢	• 🔿	<b>▼</b> 00
<ul> <li>&gt; General</li> <li>&gt; Install/Update</li> <li>&gt; KNIME</li> <li>Customization Profiles</li> <li>Databases</li> <li>JavaScript Views</li> <li>KNIME Explorer</li> <li>KNIME Kalorer</li> <li>KNIME classic user interf</li> <li>Kerberos</li> <li>Master Key</li> <li>Molecule Sketcher</li> <li>Preferred Renderers</li> <li>&gt; Table Backend</li> <li>Columnar Backend</li> <li>&gt; Workflow Coach</li> </ul>	Advanced configuration options for storing data of workflows that are configured to use the columnar table backend: Off-Heap Memory Limit (in MB) 2047			
	Restore <u>D</u> efaul	ts	<u>A</u> ppl	у
	Apply and Close		Cancel	

Figure 38. The Columnar Backend preferences page

Note that the caches of the Columnar Backend that reside in the off-heap memory region require an amount of memory in addition to whatever memory you have allotted to the heap

space of your KNIME's Java Virtual Machine via the -Xmx parameter in the knime.ini. When altering the sizes of these cache via the preferences page, make sure not to exceed your system's physical memory size as otherwise you might encounter system instability or even crashes.

1

i

For a more detailed explanation of the Columnar Backend technical background please refer to this post on KNIME Blog.

**High memory usage on Linux:** On some Linux systems KNIME Analytics Platform can allocate more system memory than expected when using the Columnar Backend. This is caused by an unfavorable interaction between the JVM and the glibc native memory allocator.

To work around this issue, you can reduce the number of allowed malloc areas by running KNIME Anayltics Patform with the environment variable MALLOC\_ARENA\_MAX set to 1.

## Setting up knime.ini

When installing KNIME Analytics Platform, configuration options are set to their defaults. The configuration options, i.e. options used by KNIME Analytics Platform, range from memory settings to system properties required by some extensions.

You can change the default settings in the knime.ini file. The knime.ini file is located in the installation folder of KNIME Analytics Platform.

To locate the knime.ini file on macOS, open Finder and navigate to the

installed Applications.

Next, right click the KNIME application, select Show Package Contents in the menu, and navigate to Contents, and open Eclipse.

Edit the knime.ini file with any plaintext editor, such as Notepad (Windows), TextEdit (macOS) or gedit (Linux).

The entry -Xmx1024m in the knime.ini file specifies how much memory KNIME Analytics Platform is allowed to use. The setting for this value will depend on how much memory is available in the running machine. We recommend setting it to approximately one half of the available memory, but this value can be modified and personalized. For example, if the computer has 16GB of memory, the entry might be set to -Xmx8G. Besides the memory available, you can define many other settings in the knime.ini file. Find an overview of some of the most common settings in Table 2 or in this complete list of the configuration options.

Setting	Explanation
-Xmx • default value: 1024m • example: -Xmx16G	Sets the maximum amount of memory available for KNIME Analytics Platform.
<ul> <li>-Dknime.compress.io</li> <li>default value: SNAPPY</li> <li>possible values: [SNAPPY GZIP NONE]</li> <li>example: -Dknime.compress.io=SNAPPY</li> </ul>	Determines which compression algorithm (if any) to use when writing temporary tables to disk.
<ul> <li>-Dorg.knime.container.cellsinmemory</li> <li>default value: 5,000</li> <li>possible values: any value between 0 and 2,147,483,647</li> <li>example: -Dorg.knime.container.cellsinmemor y=100,000</li> </ul>	This setting defines the size of a "small table". Small tables are attempted to be kept in memory, independent of the Table Caching strategy. By increasing the size of a small table, the number of swaps to the disk can be limited, which comes at the cost of reducing memory space available for other operations.
<ul> <li>-Dknime.layout_editor.browser</li> <li>default value version 4.7.2: swt</li> <li>possible values: [cef swt]</li> <li>example: -Dknime.layout_editor.browser=cef</li> </ul>	This setting defines which browser should be used to display the layout editor.

Table 2. Common configuration settings in knime.ini file

Setting	Explanation
<ul> <li>-Dknime.table.cache</li> <li>default value: LRU</li> <li>possible values: [LRU SMALL]</li> <li>example: -Dknime.table.cache=SMALL</li> </ul>	Determines whether to attempt to cache large tables (i.e., tables that are not considered to be "small"; see setting -Dorg.knime.container.cellsinmemory) in memory. If set to LRU, large tables are evicted from memory in least-recently used (LRU) order or when memory becomes scarce. If set to SMALL, large tables are always flushed to disk.
<ul> <li>-Dknime.url.timeout</li> <li>default value: 1,000 ms</li> <li>example: -Dknime.url.timeout=100</li> </ul>	This property is now discouraged, use the properties knime.url.connectTimeout and knime.url.readTimeout for setting separate URL timeouts instead. This property sets both timeouts to the same value.
<ul> <li>-Dknime.url.connectTimeout</li> <li>default value: 5,000 ms</li> <li>example:     <ul> <li>-Dknime.url.connectTimeout=8000</li> </ul> </li> </ul>	When trying to connect to a web host via a URL, this value defines a timeout for the request. Increase the value if you see error messages from nodes or in the KNIME logs regarding connection timeout issues.
-Dknime.url.readTimeout • default value: 20,000 ms • example: -Dknime.url.readTimeout=32000	When trying to read data from a URL, this value defines a timeout for the request. Increase the value if a reader node fails. A too high timeout value may lead to slow websites blocking dialogs in KNIME Analytics Platform.
<ul> <li>-Dchromium.block_all_external_requests</li> <li>• default value: false</li> <li>• example:     <ul> <li>-Dchromium.block_all_external_requests=true</li> </ul> </li> </ul>	This configuration setting when set to true blocks all the external requests made by Chromium Embedded Framework.

Setting	Explanation
<ul> <li>-Dknime.python.cacerts</li> <li>default value: ENV</li> <li>example: -Dknime.python.cacerts=ENV</li> </ul>	This configuration setting controls which certificate authorities Python processes trust. If set to ENV, the Python process trusts the certificate authorities that are set in the Python environment. If set to AP, the Python process trusts the certificate authorities that the Analytics Platform trusts.

## KNIME runtime options

KNIME's runtime behavior can be configured in various ways by passing options on the command line during startup. Since KNIME is based on Eclipse, all Eclipse runtime options also apply to KNIME.

KNIME also adds additional options, which are described below.

#### Command line arguments

Listed below are the command line arguments processed by KNIME. They can either be specified permanently in the knime.ini in the root of the KNIME installation, or be passed to the KNIME executable. Please note that command line arguments must be specified *before* the system properties (see below) i.e. before the -vmargs parameter. Note that headless KNIME applications, such as the batch executor, offer quite a few command line arguments. They are not described here but are printed if you call the application without any arguments.

#### -checkForUpdates

If this arguments is used, KNIME automatically checks for updates during startup. If new versions of installed features are found, the user will be prompted to install them. A restart is required after updates have been installed.

### Java system properties

Listed below are the Java system properties with which KNIME's behavior can be changed. They can either be specified permanently in the knime.ini in the root of the KNIME installation, or be passed to the KNIME executable. Please note that system properties must be specified after the -vmargs parameter. The required format is -DpropName=propValue.

#### General properties

org.knime.core.maxThreads=<number>

Sets the maximum number of threads that KNIME is using for executing nodes. By default this number is 1.5 times the number of cores. This property overrides the value from the KNIME preferences page.

knime.tmpdir=<directory>

Sets the default directory for temporary files KNIME files (such as data files). This property overrides the value from the preferences pages and is by default the same as the java.io.tmpdir.

knime.synchronous.io=(true|false)

Can be used to enforce the sequential processing of rows for KNIME tables. By default, each table container processes its rows asynchronously in a number of (potentially re-used) threads. The default value is false. Setting this field to true will instruct KNIME to always handle rows sequentially and synchronously, which in some cases may be slower.

knime.async.io.cachesize=<number>

Sets the batch size for non-sequential and asynchronous handling of rows (see knime.synchronous.io). It specifies the amount of data rows that are handled by a single container thread. The larger the buffer, the smaller the synchronization overhead but the larger the memory requirements. This property has no effect if rows are handled sequentially. The default value is 10.

knime.domain.valuecount=<number>

The number of nominal values kept in the domain when adding rows to a table. This is only the default and may be overruled by individual node implementations. If no value is specified a default of 60 will be used.

org.knime.container.threads.total=<number>

Sets the maximum number of threads that can be used to write KNIME native output tables. By default this number equals the number of processors available to the JVM. *Note*: This value has to be greater than 0.

org.knime.container.threads.instance=<number>

Sets the maximum number of threads that can be used to write a *single* KNIME native output table. By default this number equals the number of processors available to the JVM. *Note*: This value has to be greater than 0 and cannot be larger than org.knime.container.threads.total.

knime.discourage.gc=(true|false)

If set to true, discourages KNIME from triggering a full stop-the-world garbage collection. Note that (a) individual nodes are allowed to disregard this setting and (b) the garbage collector may independently decide that a full stop-the-world garbage collection is warranted. Set to true by default.

org.knime.container.minspace.temp=<number>

Java property to specify the minimum free disc space in MB that needs to be available.

If less is available, no further table files & blobs will be created (resulting in an exception).

knime.columnar.chunksize=<number>

The columnar table backend horizontally divides tables into batches and vertically divides these batches into column chunks. This property controls the initial size of these chunks and thereby the number of rows per batch. A chunk is the smallest unit that must be materialized to access a single value. Changing this value can therefore impact memory footprint and overall performance. Do not change this value unless you have good reasons. The default value is 28,000.

knime.columnar.reservedmemorymb=<number>

The columnar table backend caches table data off-heap. To this end, it requires memory in addition to the JVM's heap memory, whose size is controlled via the -Xmx parameter. If no explicit cache sizes are set in the preferences, the default memory available for caching is computed as follows: Total physical memory minus reserved memory minus 1.25 times heap memory. The reserved memory size in this equation (in MB) can be configured via this property. The default is 4,096.

knime.columnar.verbose=(true|false)

Setting this property to true activates verbose debug logging in the columnar table backend.

knime.disable.rowid.duplicatecheck=(true|false)

Enables/disables row ID duplicate checks on tables. Tables in KNIME are supposed to have unique IDs, whereby the uniqueness is asserted using a duplicate checker. This property will disable this check.

Warning: This property should not be changed by the user.

knime.disable.vmfilelock=(true|false)

Enables/disables workflow locks. As of KNIME 2.4 workflows will be locked when opened; this property will disable the locking (allowing multiple instances to have the same workflow open).

Warning: This property should not be changed by the user.

knime.database.timeout=<number>

Sets the timeout in seconds trying to establish a connection to a database. The default value is 15 seconds.

knime.database.fetchsize=<number>

Sets the fetch size for retrieving data from a database. The default value depends on the used JDBC driver. knime.database.batch\_write\_size=<number>

Sets the batch write size for writing data rows into a database. The default value is 1, that is one row at a time.

knime.database.enable.concurrency=(true|false)

Used to switch on/off the database connection access (applies only for the same database connection).

Default is true, that is all database accesses are synchronized based on single connection; false means off, that is, the access is not synchronized and may lead to database errors.

knime.logfile.maxsize=<number>[mk]

Allows one to change the maximum log file size (default is 10 MB). Values must be integer, possibly succeeded by "m" or "k" to denote that the given value is in mega or kilo byte.

knime.settings.passwords.forbidden=(true|false)

If *true*, nodes using passwords as part of their configuration (e.g. DB connection or SendEmail) will not store the password as part of the workflow on disc. Instead a null value is stored, which will cause the node's configuration to be incorrect (but valid) after the workflow is restored from disc. Default is *false*.

knime.repository.non-instant-search=(true|false)

Allows to disable the live update in the node repository search.

knime.macosx.dialogworkaround=(true|false)

Allows to disable the workaround for freezes when opening node dialogs under macOS.

knime.data.bitvector.maxDisplayBits=<number>

Sets the maximum number of bits that are display in string representations of Bit Vectors.

knime.xml.disable\_external\_entities=(true|false)

If set to true, all nodes that parse XML files will not read external entities defined via a DTD.

This is usually only useful when running as an executor on the server and you want prevent XXE attacks.

### Plug-in dependent properties

These properties only affect some plug-ins and are only applicable if they are installed.

```
org.knime.cmlminblobsize=<number>[mMkK]
```

Allows to change the minimum size in bytes (or kilobyte or megabytes) a CML molecule must have before it is stored in a blob cell. Otherwise it is stored inline. The latter is a bit faster but needs more memory. The default is 8kB.

org.knime.ctabminblobsize=<number>[mMkK]

Allows to change the minimum size in bytes (or kilobyte or megabytes) a Ctab molecule must have before it is stored in a blob cell. Otherwise it is stored inline. The latter is a bit faster but needs more memory. The default is 8kB.

org.knime.mol2minblobsize=<number>[mMkK]

Allows to change the minimum size in bytes (or kilobyte or megabytes) a Mol2 molecule must have before it is stored in a blob cell. Otherwise it is stored inline. The latter is a bit faster but needs more memory. The default is 8kB.

```
org.knime.molminblobsize=<number>[mMkK]
```

Allows to change the minimum size in bytes (or kilobyte or megabytes) a Mol molecule must have before it is stored in a blob cell. Otherwise it is stored inline. The latter is a bit faster but needs more memory. The default is 8kB.

```
org.knime.rxnminblobsize=<number>[mMkK]
```

Allows to change the minimum size in bytes (or kilobyte or megabytes) a Rxn molecule must have before it is stored in a blob cell. Otherwise it is stored inline. The latter is a bit faster but needs more memory. The default is 8kB.

#### org.knime.sdfminblobsize=<number>[mMkK]

Allows to change the minimum size in bytes (or kilobyte or megabytes) a SDF molecule must have before it is stored in a blob cell. Otherwise it is stored inline. The latter is a bit faster but needs more memory. The default is 8kB.

# KNIME tables

## Data table

Very common input and output ports of nodes are data input ports and data output ports, which correspond to the black triangles in Figure 39.



Figure 39. Data input and output port

A data table is organized by columns and rows, and it contains a number of equal-length rows. Elements in each column must have the same data type.

The data table shown in Figure 40 is produced by a CSV Reader node, which is one of the many nodes with a black triangle output port for data output. To open the table, click the node. Execute the node if it is not yet execute. The table will show up in the node monitor.

The output table has row numbers, unique RowIDs and column headers. The RowIDs are automatically created by the reader node, but they can also be defined manually. The RowIDs and the column headers can therefore be used to identify each data cell in the table. Missing values in the data are shown by a red question mark in a circle.

At the top of the node monitor you can select which output port you want to view via the tabs and the flow variable tab, which shows the available flow variables in the node output and their current values. Next row will indicate the table dimensions, meaning how many rows and how many columns there are in the table at that specific output port. Here you can also use the toggle to switch to *Statistics*. This tab shows the meta information of the table, like the columns names, columns types and some other statistics data.

► 1: Fi	le Table	🖞 Flow Variables						
Rows: 4	7   Colu	mns: 7			Table Statistics			Q
#	Row	product ~	country <sub>String</sub>	date v	quantity Number (integer)	amount v Number (integer)	card <sub>String</sub>	Cust_ID v V
1	Row0	prod_4	unknown	2008-12-12	1	3	0	Cust_8
2	Row1	prod_3	China	2009-04-10	2	160	Ν	Cust_2
3	Row2	prod_3	China	2009-04-10	2	160	Y	Cust_5
4	Row3	prod_3	China	2009-05-10	2	160	0	Cust_2
5	Row4	prod_3	USA	2009-05-20	20	1600	0	Cust_3
б	Row5	prod_3	Brazil	2009-06-08	15	1200	0	Cust_7
7	Row6	prod_1	USA	2009-07-04	2	70	Y	Cust_3
8	Row7	prod_1	USA	2009-07-14	2	70	0	Cust_6
9	Row8	prod_3	USA	2009-08-20	20	1600	0	Cust_3
10	Row9	prod_2	Germany	2009-11-02	15	600	0	Cust_1
11	Row10	prod_2	Germany	2009-11-22	15	600	Ν	Cust_1
12	Row11	prod_1	Germany	2009-12-02	1	35	Y	Cust_1
13	Row12	prod_1	China	2009-12-12	1	35	Υ	Cust_2
14	Row13	prod_3	USA	2010-01-03	20	1600	0	Cust_3
15	Row14	prod_1	Germany	2010-01-10	1	35	Ν	Cust_1
16	Row15	prod_3	Germany	2010-01-13	1	80	0	Cust_4
17	Row16	prod_2	Germany	2010-01-15	25	1000	0	Cust_1
18	Row17	prod_2	USA	2010-01-20	2	80	0	Cust_6
19	Row18	prod_2	USA	2010-02-12	6	240	Υ	Cust_6
20	Row19	prod_2	USA	2010-02-22	6	240	0	Cust_6
21	Row20	prod_2	Brazil	2010-03-11	6	240	Ν	Cust_7
22	Row21	prod_3	China	2010-03-12	1	80	0	Cust_5

Figure 40. Data output in KNIME Analytics Platform

### Column types

The basic data types in KNIME Analytics Platform are:

- Number (Integer)
- Number (Long Integer)
- Number (Float)
- String
- Boolean
- Collection (List) and Collection (Set)
- HTML
- JSON
- XML
- URI
- Path
- Document
- Date
- Time
- Date&time (Local) and Date&time (Zoned)
- Duration (Time-based) and Duration (Date-based)

- Bit Vector and Bit Vector (Sparse)
- Byte Vector
- Image (PNG) and Image (SVG)
- Model (PMML)

Some Extensions provide additional data types. For example, the chemistry extensions provide data types for chemical structures, such as:

- CDXML
- InChl
- SMARTS
- SMILES

Switch to the *Statistics* view in an output table, to see the data types of the columns in the data table, as shown in Figure 41. For numerical values, only the range of the values in the data is shown. For string values, the different values appearing in the data are shown.

Rows: 14	Columns: 14		Table	E C Statistics					
Name	Туре	# Missing val	# Unique valu	Minimum	Maximum	25% Quantile	50% Quantile	75% Quantile	Mean
RuleId	String	0	88167	0	0	0	0	0	0
Antecede	Number (Float)	0	950	0.234	107.671	5.497	21.088	31.325	22.32
Antecede	String	0	940	0	3	0	0	0	0
RuleSupp	Number (Integer)	0	169	8	919	12	16	24	21.287
RelativeR	Number (Float)	0	169	0.279	32.032	0.418	0.558	0.837	0.742
Antecede	Collection (Set) (Collection of: String)	0	950	0	0	0	0	0	0
Recomme	String	0	208	0	0	0	0	0	0
RuleConfi	Number (Float)	0	552	10	100	12.3	14.9	18.5	16.867
RuleLift%	Number (Float)	0	15424	48.876	956.33	132.26	152.77	181.2	161.072
RuleLift	Number (Float)	0	15656	0.489	9.563	1.323	1.528	1.812	1.611

Figure 41. Data types and data domain in statistics tab

The reader nodes in KNIME Analytics Platform assign a data type to each column based on their interpretation of the content. If the correct data type of a column is not recognized by the reader node, the data type can be corrected afterwards. There are nodes available to convert data types. For example: String to Number, Number to String, Double to Int, String to Date&Time, String to JSON, and String to URI.

Many of the special data types are recognized as String by the reader nodes. To convert these String columns to their correct data types, use the Column Type Auto Cast node.

When you use the File Reader node to read a file you can convert the column types directly via the node configuration dialog. To do so go to the Transformation tab in the configuration dialog and change the type of the desired column, as shown in Figure 42.

ans	forma											
Re	set ac	tions	1 Move	up 🧄 M	love down	Enforce type	s Take column	is from: 💿 U	nion 🔘 Intersect	ion		
		Colum	n		Ne	w name		Т	ype			
		product	t					S	String			
		country	/					s	String			1
8		date						5	String		~	1
		quantity	y					{): 0	5 JSON		^	1
		amount	:					31	Local Date			
		card	-					£	Local Date Time			
									PMML			
		Cust_ID	)						Period			L
		<any td="" u<=""><td>nknown new co</td><td>lumn&gt;</td><td></td><td></td><td></td><td>00 80</td><td>à SVG image</td><td></td><td></td><td>L</td></any>	nknown new co	lumn>				00 80	à SVG image			L
evie	ew	<any th="" u<=""><th>nknown new co</th><th>are based on the</th><th>e first 10000 ro</th><th>ows only. See 'Ad</th><th>vanced Setting:</th><th>s' tab.</th><th>त्वे SVG image String</th><th></th><th>×</th><th></th></any>	nknown new co	are based on the	e first 10000 ro	ows only. See 'Ad	vanced Setting:	s' tab.	त्वे SVG image String		×	
evie	ew The su	<any td="" u<=""><td>column types a</td><td>are based on the</td><td>e first 10000 ro</td><td>ows only. See 'Ad</td><td>vanced Setting</td><td>s' tab.</td><td>SVG image</td><td></td><td>~</td><td></td></any>	column types a	are based on the	e first 10000 ro	ows only. See 'Ad	vanced Setting	s' tab.	SVG image		~	
evie T	ew The su Row ow0	<any ui<br="">ggested ID</any>	column types a	are based on the	e first 10000 m	ows only. See 'Ad	vanced Setting	s' tab.	SVG image String Cust_ID Cust 8		~	
evie T	ew The su Row ow0 ow1	<any ui<br="">ggested ID</any>	column types a	are based on the	e first 10000 m S date 2008-12-12 2009-04-10	ows only. See 'Ad	vanced Settings	s' tab.	SVG image		~	
evie T Ra Ra	ew The su Row ow0 ow1 ow2	<any td="" ut<=""><td>column types a S product prod_4 prod_3 prod_3</td><td>are based on the S country unknown China China</td><td>e first 10000 m S date 2008-12-12 2009-04-10 2009-04-10</td><td>ows only. See 'Ad</td><td>vanced Settings</td><td>s' tab.</td><td>SVG image</td><td></td><td>-</td><td></td></any>	column types a S product prod_4 prod_3 prod_3	are based on the S country unknown China China	e first 10000 m S date 2008-12-12 2009-04-10 2009-04-10	ows only. See 'Ad	vanced Settings	s' tab.	SVG image		-	
evie T R R R R	ew The su Row ow0 ow1 ow2 ow3	<any td="" ut<=""><td>column types a</td><td>are based on the S country unknown China China</td><td>e first 10000 m S date 2008-12-12 2009-04-10 2009-05-10 2009-05-10</td><td>ows only. See 'Ad</td><td>vanced Settings</td><td>s' tab. N Y ?</td><td>SVG image</td><td></td><td>-</td><td></td></any>	column types a	are based on the S country unknown China China	e first 10000 m S date 2008-12-12 2009-04-10 2009-05-10 2009-05-10	ows only. See 'Ad	vanced Settings	s' tab. N Y ?	SVG image		-	
	ew The su Row ow0 ow1 ow2 ow3 ow4 ow4 ow5	<any td="" ut<=""><td>column types a S product prod_4 prod_3 prod_3 prod_3 prod_2 pro</td><td>are based on the S country unknown China China China USA USA</td><td>e first 10000 m S date 2008-12-12 2009-04-10 2009-04-10 2009-05-20 2009-05-20 2009-05-20</td><td>ows only. See 'Ad quantity 1 2 2 2 20 15</td><td>vanced Settings           I         amount           3         160           160         160           160         160           1600         1200</td><td>s' tab. S card ? N Y ? ? ?</td><td>SVG image</td><td></td><td>-</td><td></td></any>	column types a S product prod_4 prod_3 prod_3 prod_3 prod_2 pro	are based on the S country unknown China China China USA USA	e first 10000 m S date 2008-12-12 2009-04-10 2009-04-10 2009-05-20 2009-05-20 2009-05-20	ows only. See 'Ad quantity 1 2 2 2 20 15	vanced Settings           I         amount           3         160           160         160           160         160           1600         1200	s' tab. S card ? N Y ? ? ?	SVG image		-	
evie Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro	ew The su Row ow0 ow1 ow2 ow3 ow4 ow5 ow6	<any td="" ut<=""><td>column types a s product prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1</td><td>are based on the S country unknown China China China USA Brazil USA</td><td>e first 10000 rd 2008-12-12 2009-04-10 2009-04-10 2009-05-10 2009-05-20 2009-06-08 2009-07-04</td><td>ows only. See 'Ad quantity 1 2 2 2 20 15 2</td><td>vanced Settings           I         amount           3         160           160         160           160         1200           70         70</td><td>s' tab. S card ? N Y ? ? ? ? ?</td><td>SVG image</td><td></td><td>-</td><td></td></any>	column types a s product prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1	are based on the S country unknown China China China USA Brazil USA	e first 10000 rd 2008-12-12 2009-04-10 2009-04-10 2009-05-10 2009-05-20 2009-06-08 2009-07-04	ows only. See 'Ad quantity 1 2 2 2 20 15 2	vanced Settings           I         amount           3         160           160         160           160         1200           70         70	s' tab. S card ? N Y ? ? ? ? ?	SVG image		-	
	ew The su Row ow0 ow1 ow2 ow3 ow4 ow5 ow6 ow7	<any td="" ur<=""><td>column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1</td><td>are based on the S country unknown China China USA USA USA</td><td>e first 10000 rd 2008-12-12 2009-04-10 2009-04-10 2009-05-10 2009-05-20 2009-06-08 2009-07-04 2009-07-04</td><td>ows only. See 'Ad u quantity 1 2 2 2 20 15 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>vanced Setting: 3 160 160 160 1200 70 70 70</td><td>s' tab. S card ? N Y ? ? ? ? Y ? ? ? ?</td><td>SVG image</td><td></td><td></td><td></td></any>	column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1	are based on the S country unknown China China USA USA USA	e first 10000 rd 2008-12-12 2009-04-10 2009-04-10 2009-05-10 2009-05-20 2009-06-08 2009-07-04 2009-07-04	ows only. See 'Ad u quantity 1 2 2 2 20 15 2 2 2 2 2 2 2 2 2 2 2 2 2	vanced Setting: 3 160 160 160 1200 70 70 70	s' tab. S card ? N Y ? ? ? ? Y ? ? ? ?	SVG image			
	ew The su Row ow0 ow1 ow2 ow3 ow4 ow5 ow6 ow7 ow8	cany ur	column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_3	are based on the S country unknown China China USA USA USA USA	e first 10000 rd 2008-12-12 2009-04-10 2009-04-10 2009-05-10 2009-05-20 2009-05-20 2009-07-04 2009-07-04 2009-07-14	ows only. See 'Ad u quantity 1 2 2 2 2 20 15 2 2 2 2 2 2 2 2 2 2 2 2 2	vanced Settings 3 160 160 160 160 1200 70 70 1600	s' tab. S card ? N Y ? ? ? ? ? ? ? ? ? ? ? ? ?	SVG image String String Ust_ID Cust_S Cust_2 Cust_5 Cust_2 Cust_5 Cust_2 Cust_3 Cust_7 Cust_3 Cust_3 Cust_6 Cust_3			
evie T Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro Ro	ew The su Row ow0 ow1 ow2 ow3 ow4 ow5 ow6 ow7 ow8 ow9	<any td="" ur<=""><td>column types a column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_3 prod_2</td><td>are based on the S country unknown China China China USA Brazil USA USA USA USA USA USA</td><td>e first 10000 rd 2008-12-12 2009-04-10 2009-05-10 2009-05-10 2009-05-20 2009-06-08 2009-07-04 2009-07-14 2009-08-20 2009-11-02</td><td>ows only. See 'Ad u quantity 1 2 2 20 15 2 2 20 15 2 2 20 15 2 2 2 20 15 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>vanced Settings           I         amount           3         160           160         160           1200         70           70         1600           600         600</td><td>S card ? N Y ? ? ? ? ? ? ? ? ? ? ? ? ?</td><td>SVG image</td><td></td><td></td><td></td></any>	column types a column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_3 prod_2	are based on the S country unknown China China China USA Brazil USA USA USA USA USA USA	e first 10000 rd 2008-12-12 2009-04-10 2009-05-10 2009-05-10 2009-05-20 2009-06-08 2009-07-04 2009-07-14 2009-08-20 2009-11-02	ows only. See 'Ad u quantity 1 2 2 20 15 2 2 20 15 2 2 20 15 2 2 2 20 15 2 2 2 2 2 2 2 2 2 2 2 2 2	vanced Settings           I         amount           3         160           160         160           1200         70           70         1600           600         600	S card ? N Y ? ? ? ? ? ? ? ? ? ? ? ? ?	SVG image			
	ew	cany ur	column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_2 prod_2 prod_2 prod_2	are based on the S country unknown China China China USA Brazil USA USA USA USA USA Germany Germany	e first 10000 m 2008-12-12 2009-04-10 2009-05-10 2009-05-20 2009-05-20 2009-06-08 2009-07-04 2009-07-04 2009-07-14 2009-07-14 2009-11-02 2009-11-02 2009-12-22	ows only. See 'Ad 1 2 2 2 20 15 2 20 15 5 5 5	vanced Settings           I         amount           3         160           160         160           1200         70           70         1600           600         600           625         25	S card ? N ? ? ? ? ? ? ? ? ? ? ? ? ?	SVG image String String String Cust_ID Cust_8 Cust_2 Cust_5 Cust_2 Cust_3 Cust_7 Cust_3 Cust_7 Cust_3 Cust_6 Cust_1 Cust_1 Cust_1			
	ew	<any td="" ur<=""><td>column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_2 prod_2 prod_2 prod_2 prod_2 prod_2 prod_1 prod_1 prod_1 prod_2 prod_2 prod_2 prod_2 prod_1 prod_2 prod_2 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_2 prod_1 prod_1 prod_1 prod_2 prod_2 prod_1</td><td>are based on the S country Unknown China China China China USA USA USA USA USA USA USA Germany Germany Germany China</td><td>e first 10000 m 2008-12-12 2009-04-10 2009-05-10 2009-05-10 2009-05-20 2009-05-20 2009-07-04 2009-07-04 2009-07-14 2009-07-14 2009-11-02 2009-11-02 2009-12-12</td><td>ows only. See 'Ad 1 2 2 2 20 15 2 20 15 15 15 15 1 1</td><td>vanced Settings           I         amount           3         160           160         160           160         160           1600         600           600         600           35         35</td><td>Image: Second second</td><td>SVG image         String         String         Cust_s         Cust_s         Cust_2         Cust_3         Cust_3         Cust_6         Cust_3         Cust_6         Cust_1         Cust_1         Cust_1         Cust_1         Cust_1         Cust_1         Cust_1</td><td></td><td></td><td></td></any>	column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_2 prod_2 prod_2 prod_2 prod_2 prod_2 prod_1 prod_1 prod_1 prod_2 prod_2 prod_2 prod_2 prod_1 prod_2 prod_2 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_2 prod_1 prod_1 prod_1 prod_2 prod_2 prod_1	are based on the S country Unknown China China China China USA USA USA USA USA USA USA Germany Germany Germany China	e first 10000 m 2008-12-12 2009-04-10 2009-05-10 2009-05-10 2009-05-20 2009-05-20 2009-07-04 2009-07-04 2009-07-14 2009-07-14 2009-11-02 2009-11-02 2009-12-12	ows only. See 'Ad 1 2 2 2 20 15 2 20 15 15 15 15 1 1	vanced Settings           I         amount           3         160           160         160           160         160           1600         600           600         600           35         35	Image: Second	SVG image         String         String         Cust_s         Cust_s         Cust_2         Cust_3         Cust_3         Cust_6         Cust_3         Cust_6         Cust_1         Cust_1         Cust_1         Cust_1         Cust_1         Cust_1         Cust_1			
evie	ew	cany ur	column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_2 prod_2 prod_2 prod_1 prod_1 prod_2 prod_2 prod_1 prod_3 prod_1 prod_3	are based on the S country unknown China China China China USA USA USA USA USA USA Germany Germany Germany China USA	e first 10000 m 2008-12-12 2009-04-10 2009-04-10 2009-05-10 2009-05-20 2009-05-20 2009-07-04 2009-07-04 2009-07-14 2009-07-14 2009-11-02 2009-11-02 2009-12-02 2009-12-02 2009-12-02	ows only. See 'Ad 1 2 2 2 20 15 2 20 15 15 1 1 1 2 2 20 15 15 15 1 1 2 2 20 15 15 15 15 1 2 2 2 2 2 2 2 2 2 2 2 2 2	vanced Settings           I         amount           3         160           160         160           160         160           1600         600           600         600           35         35           1600         1600	S         card           S         card           ?         ?           Y         ?           ?         ?      ?         ?     <	SVG image         String         String         Cust_s         Cust_2         Cust_3         Cust_3         Cust_6         Cust_3         Cust_1         Cust_1         Cust_1         Cust_3         Cust_1         Cust_1         Cust_1         Cust_1         Cust_2         Cust_3         Cust_3         Cust_3         Cust_3         Cust_3         Cust_3         Cust_3			
	ew	cany ur	column types a column types a prod_4 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_1 prod_1 prod_2 prod_2 prod_2 prod_1 prod_1 prod_1 prod_3 prod_2 prod_2 prod_2 prod_1 prod_1 prod_3 prod_2 prod_2 prod_2 prod_1 prod_1 prod_2 prod_2 prod_2 prod_1 prod_1 prod_2 prod_2 prod_2 prod_1 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_3 prod_1 prod_3 prod_3 prod_3 prod_3 prod_1 prod_3 prod_1	Aumn> Aumn> Aumn> Aumn> Aumn> Aumnown	e first 10000 m 2008-12-12 2009-04-10 2009-04-10 2009-05-10 2009-05-20 2009-05-20 2009-07-04 2009-07-04 2009-07-14 2009-07-14 2009-01-102 2009-12-02 2009-12-02 2009-12-02 2009-12-02 2010-01-03 2010-01-10	ows only. See 'Ad 1 2 2 2 20 15 2 20 15 15 15 1 1 1 20 1 1	vanced Settings           I         amount           3         160           160         160           160         160           160         600           600         600           35         35           1600         35	S         Card         S           s' tab.         S         card         2           N         Y         2         2           ?         Y         2         2           ?         Y         2         2           ?         Y         2         2           ?         Y         2         2           Y         Y         2         2           N         Y         Y         2           Y         Y         Y         Y           Y         Y         Y         Y           Y         N         Y         Y	SVG image         String         String         Cust_s         Cust_2         Cust_3         Cust_3         Cust_6         Cust_1         Cust_2         Cust_3         Cust_1         Cust_3         Cust_3         Cust_3         Cust_1         Cust_1         Cust_3         Cust_3         Cust_3         Cust_3         Cust_3         Cust_3         Cust_1			

Figure 42. Change column type in File Reader node

## Sorting

Rows in the table view output can be sorted by values in one column by clicking the up (ascending) and down (descending) arrow that appears hovering over the column name in the header. Note that this sorting only affects the current output view and has no effect on the node output.

To sort rows in an output table permanently, use the Sorter node. Use the Column Resorter node to reorder columns.

## Column rendering

In a table view output, you can also change the way in which numeric values are displayed in a data table. For example, it is possible to display numeric values as percentages, with full precision, or replace digits by a grey scale or bars. To see these and other rendering options for a column, click the carat icon in the column header, and select the desired available renderer, as shown in Figure 43. Note that these changes are temporary and have no effect on the node output.

► 1: Fi	le Table	😼 Flow Variables						
Rows: 4	7   Colu	mns: 7			Table Statistics			Q
#	Row	$\underset{_{String}}{\text{product}} \uparrow \qquad \lor$	country <sub>String</sub>	date v	quantity Number (integer)	amount Number (integer)	String	Cust_ID V
7	Row6	prod_1	USA	2009-07-04	2	70	Data renderer	Cust_3
8	Row7	prod_1	USA	2009-07-14	2	70	Integer	Cust_6
12	Row11	prod_1	Germany	2009-12-02	1	35	Standard Double	Cust_1
13	Row12	prod_1	China	2009-12-12	1	35		Cust_2
15	Row14	prod_1	Germany	2010-01-10	1	35	Percentage	Cust_1
28	Row27	prod_1	USA	2010-05-17	5	175	Full Precision	Cust_6
30	Row29	prod_1	China	2010-06-28	10	350	Gray Scale	Cust_5
32	Row31	prod_1	Brazil	2010-07-17	5	175	Bars	Cust_7
33	Row32	prod_1	China	2010-08-28	10	350	Default	Cust_2
36	Row35	prod_1	China	2010-10-01	2	70	V	Cust_5
37	Row36	prod_1	USA	2010-10-11	2	70	Y	Cust_6
40	Row39	prod_1	USA	2011-01-10	10	350	Y	Cust_3
44	Row43	prod_1	Germany	2011-03-06	10	350	0	Cust_4
45	Row44	prod_1	Germany	2011-03-18	1	35	Y	Cust_4
46	Row45	prod_1	Germany	2011-03-20	11	385	Ν	Cust_4
47	Row46	prod_1	Brazil	2011-04-06	1	35	0	Cust_7
10	Row9	prod_2	Germany	2009-11-02	15	600	0	Cust_1
11	Row10	prod_2	Germany	2009-11-22	15	600	Ν	Cust_1
17	Row16	prod_2	Germany	2010-01-15	25	1000	0	Cust_1
18	Row17	prod_2	USA	2010-01-20	2	80	0	Cust_6
19	Row18	prod_2	USA	2010-02-12	6	240	Υ	Cust_6
20	Row19	prod_2	USA	2010-02-22	б	240	0	Cust_6

Figure 43. Rendering data in table view

If you hover over table cells containing data of type JSON, XML, or images (svg or png) and click the 🖪 a content preview will be shown, rendered in a readable format.



Figure 44. Rendering data in table cells for JSON, XML and images

## Table storage

When executed, many KNIME nodes generate and provide access to tabular data at their output ports. These tables might be small or large and, therefore, might fit into the main memory of the executing machine or not. Several options are available for configuring which tables to hold in memory as well as when and how to write tables to disk. These options are outlined in this section.

#### In-memory caching

KNIME Analytics Platform differentiates between small and large tables. Tables are considered to be small (large) when they are composed of up to (more than) 5000 cells. This threshold of 5000 cells can be adjusted via the -Dorg.knime.container.cellsinmemory parameter in the knime.ini file. KNIME Analytics Platform always attempts to hold small tables in memory, flushing them to disk only when memory becomes scarce.

In addition, KNIME Analytics Platform attempts to keep recently used large tables in memory while sufficient memory is available. However, it writes these tables asynchronously to disk in the background, such that they can be dropped from memory when they have not been accessed for some time or when memory becomes scarce. You can configure the memory consumption of a specific node to never attempt to hold its tables in memory and, instead, write them to disk on execution. This is helpful if you know that a node will generate a table that cannot be held in memory or if you want to reduce the memory footprint of a node.



Figure 45. Configuring a node's memory policy

Alternatively, by putting the line -Dknime.table.cache=SMALL into the knime.ini file, KNIME Analytics Platform can be globally configured to use a less memory-consuming, albeit much slower caching strategy. This strategy only ever keeps small tables in memory.

#### Disk storage

KNIME Analytics Platform compresses tables written to disk to reduce the amount of occupied disk space. By default, KNIME Analytics Platform uses the Snappy compression algorithm to compress its tables. However, you can configure KNIME Analytics Platform to use GZIP compression or no compression scheme at all via the -Dknime.compress.io parameter in the knime.ini file.

### Columnar Backend

Starting with KNIME Analytics Platform version 4.3 a new Columnar Backend is introduced. This extension addresses these issues by using a different underlying data layer (backed by Apache Arrow), which is based on a columnar representation.

For information on how to set up this type of backend please refer to the Table backend section.

# Shortcuts

Shortcuts in KNIME Analytics Platform allow you to speed up your workflow building process. Navigate to the *Help* button in the top right corner of the user interface. Select *Show keyboard shortcuts*. In the shortcuts window, the shortcut name is displayed on the left and the respective key sequence on the right. You can filter shortcuts according to their name and key.



The listed shortcuts are available for the KNIME Modern UI. They cannot be changed at the moment. Eclipse preferences have no impact on them.

## **General actions**

#### Table 3. The supported shortcuts

Action	Мас	Windows & Linux
Close workflow	$\boxtimes \mathbf{W}$	Ctrl + W
Create workflow	⊠ N	Ctrl + N
Switch to next opened workflow	$\boxtimes$	Ctrl + Tab
Switch to previous opened workflow	$\boxtimes$ $\boxtimes$	Ctrl + Shift + Tab
Save	⊠S	Ctrl + S
Undo	⊠Z	Ctrl + Z
Redo	$\boxtimes \boxtimes \mathbf{Z}$	Ctrl + Shift + Z
Delete		Delete

Action	Мас	Windows & Linux
Сору	⊠C	Ctrl + C
Cut	×	Ctrl + X
Paste	$\boxtimes \mathbf{V}$	Ctrl + V
Export	ØE	Ctrl + E
Select all objects	$\square$ A	Ctrl + A
Deselect all objects	$\boxtimes \boxtimes \mathbf{A}$	Ctrl + Shift + A
Copy selected table cells	⊠C	Ctrl + C
Activate the filter input field	ØØF	Ctrl + Shift + F
Copy selected table cells and corresponding header	$\square \square \mathbf{C}$	Ctrl + Shift + C
Close any dialog unsaved	Esc	Esc

## Execution

Table 4. The supported shortcuts for execute nodes, reset and cancel node execution

Action	Мас	Windows & Linux
Configure	F6	F6
Configure flow variables	⊠ F6	Shift + F6
Execute all	⊠ F7	Shift + F7

Action	Мас	Windows & Linux
Cancel all	⊠ F9	Shift + F9
Reset all	⊠ F8	Shift + F8
Execute	F7	F7
Open view	F10	F10
Cancel	F9	F9
Reset	F8	F8
Resume loop*	⊠	Ctrl + Alt + F8
Pause loop*	⊠ ⊠ F7	Ctrl + Alt + F7
Step loop*	⊠	Ctrl + Alt + F6
Close dialog and execute node		Ctrl + ⊠

\* Find out more about loop commands in the KNIME Analytics Platform Flow Control Guide.

## Selected node actions

#### Table 5. The supported shortcuts related selected node actions

Action	Мас	Windows & Linux
Activate the n-th output port view	⊠ 1-9	Shift + 1-9
Activate flow variable view	ΔΟ	Shift + 0

Action	Мас	Windows & Linux
Detach the n-th output port view	⊠ ⊠ 1-9	Shift + Alt + 1-9
Detach flow variable view	$\square \square \mathbf{O}$	Shift + Alt + 0
Detach active output port view	$\boxtimes$ $\boxtimes$	Shift + Alt + ⊠
Edit node comment	F2	F2
Select (next) port	ØP	Alt + P
Move port selection	$\leftarrow \rightarrow \uparrow \downarrow$	$\leftarrow \rightarrow \uparrow \downarrow$
Apply label changes and leave edit mode		Ctrl + ⊠

## Workflow annotations

Table 6. The supported shortcuts related to add workflow documentation via formatted workflow annotations

Action	Мас	Windows & Linux
Edit annotation	F2	F2
Bring to front		Ctrl + Shift + PageUp
Bring forward	🛛 PageUp	Ctrl + PageUp
Send backward	🛛 PageDown	Ctrl + PageDown
Send to back	🛛 🖗 PageDown	Ctrl + Shift + PageDown

Action	Мас	Windows & Linux
Normal text	ΔΟ	Ctrl + Alt + 0
Headline 1 - 6	🛛 ALT 1 - 6	Ctrl + Alt + 1-6
Bold	⊠B	Ctrl + B
Italic		Ctrl + I
Underline	⊠U	Ctrl + U
Strikethrough	$\boxtimes$ $\boxtimes$ $\mathbb{S}$	Ctrl + Shift + S
Ordered list		Ctrl + Shift + 7
Bullet list	⊠ ⊠ 8	Ctrl + Shift + 8
Add or edit link	ΣK	Ctrl + K
Increase height	$\bowtie 1$	Alt + ↓
Decrease height	⊠↑	Alt + ↑
Increase width	$\square \leftarrow$	Alt + ←
Decrease width	$\square \rightarrow$	Alt + →

# Workflow editor modes

#### Table 7. The supported shortucts for different modes of the workflow editor

Action	Мас	Windows & Linux
Selection mode (default)	V	V
Pan mode	Ρ	Р
Annotation mode	Т	Т
Leave Pan or Annotation mode	ESC	ESC

# Workflow editor actions

#### Table 8. The supported shortcuts for workflow editor actions

Action	Мас	Windows & Linux
Quick add node	⊠ .	Ctrl + .
Connect nodes	⊠L	Ctrl + L
Connect nodes by flow variable port	⊠K	Ctrl + K
Disconnect nodes	$\boxtimes$ $\square$ L	Ctrl + Shift + L
Disconnect nodes' flow variable ports	$\square$ $\square$ $K$	Ctrl + Shift + K
Select node inside the quick nodes panel	$\leftarrow \rightarrow \uparrow \downarrow$	$\leftarrow \rightarrow \uparrow \downarrow$
Add node from quick nodes panel		

Action	Мас	Windows & Linux
Moving the selection rectangle to the next element	$\leftarrow \rightarrow \uparrow \downarrow$	$\leftarrow \rightarrow \uparrow \downarrow$
Select multiple elements	hold $\square$ and press $\leftarrow / \rightarrow / \uparrow / \downarrow$ then select via $\square$	hold Shift and press $\leftarrow / \rightarrow /$ $\uparrow / \downarrow$ then select via $\blacksquare$
Move selected elements up	$\boxtimes \boxtimes \uparrow$	Ctrl + Shift + ↑
Move selected elements down	$\boxtimes \boxtimes \mathbf{\uparrow}$	Ctrl + Shift + ↓
Move selected elements right	$\boxtimes \boxtimes \to$	Ctrl + Shift + →
Move selected elements left	$\boxtimes \boxtimes \leftarrow$	Ctrl + Shift + ←

# Component and metanode building

Table 9. The supported shortcuts related to build components and metanod	etanodes
--	----------

Action	Мас	Windows & Linux
Create metanode	₿G	Ctrl + G
Create component	⊠J	Ctrl + J
Open component or metanode	$\boxtimes$ $\boxtimes$	Ctrl + Alt + ⊠
Open parent workflow	$\boxtimes \boxtimes \boxtimes \boxtimes$	Ctrl + Alt + Shift + 🛛
Expand metanode	ØØG	Ctrl + Shift + G

Action	Мас	Windows & Linux
Expand component	$\square \square \mathbf{J}$	Ctrl + Shift + J
Rename component or metanode	⊠ F2	Shift + F2
Open layout editor	⊠ D	Ctrl + D
Open layout editor of selected component	$\square \square \mathbf{D}$	Ctrl + Shift + D

## Zooming, panning and navigating inside the canvas

Table 10. The supported shortcuts related to zooming and panning

Action	Мас	Windows & Linux
Fit to screen	⊠ 2	Ctrl + 2
Fill entire screen	⊠ 1	Ctrl + 1
Zoom in		Ctrl + +
Zoom out	⊠ -	Ctrl + -
Zoom to 100%	ΔΟ	Ctrl + 0
Pan	hold "SPACE" and drag	hold "SPACE" and drag

## Panel navigation

#### Table 11. The supported shortcut related to panel navigation
Action	Мас	Windows & Linux
Hide or show side panel		Ctrl + P

## Others

## Table 12. Other supported shortcuts

Action	Мас	Windows & Linux
Reset interface scale	$\boxtimes \boxtimes \mathbf{O}$	Ctrl + Alt + 0

## Troubleshooting

Find here a list of common problems with resolutions regarding KNIME Analytics Platform.

Downloading or opening workflows from KNIME Community Hub is blocked by firewall

To solve this issue whitelist the following in your firewall:

https://\*.amazonaws.com/
https://\*.hub.knime.com





KNIME AG Talacker 50 8001 Zurich, Switzerland www.knime.com info@knime.com

The KNIME® trademark and logo and OPEN FOR INNOVATION® trademark are used by KNIME AG under license from KNIME GmbH, and are registered in the United States. KNIME® is also registered in Germany.