# TABLE OF CONTENTS

General Introduction to KNIME Server Preview Functionality .................................................. 4
Distributed Executors: Introduction .......................................................................................... 5
Distributed Executors: Installation instructions ........................................................................... 6
  Installing RabbitMQ .................................................................................................................. 6
  Connecting server and executor ............................................................................................... 6
Social Workflow Repository: Introduction ............................................................................... 8
What is the Social Workflow Repository .................................................................................. 8
Accessing the Social Workflow Repository .............................................................................. 8
Workflows .................................................................................................................................. 8
  Workflow Versioning ............................................................................................................... 9
  Social Features ........................................................................................................................ 9
  Tags ............................................................................................................................................ 9
  Ratings ..................................................................................................................................... 9
  Comments ............................................................................................................................... 10
Workflow Search ....................................................................................................................... 10
Customization ............................................................................................................................ 11
Markdown ................................................................................................................................... 12
KNIME Job View: Introduction ................................................................................................. 13
What is the Job View .................................................................................................................. 13
Installing the Job View .............................................................................................................. 13
  KNIME Server Executor ......................................................................................................... 14
  KNIME Analytics Platform Client ............................................................................................ 14
Usage ....................................................................................................................................... 14
GENERAL INTRODUCTION TO KNIME SERVER PREVIEW FUNCTIONALITY

With the release of KNIME Server 4.6 we have included three new functionalities that are available as previews. That means that the functionality is not always feature complete, or subject to change. The previews are provided to allow you to test the functionality and provide feedback that will help to shape the final product.

In case you have questions about any of the functionality in the previews please contact support@knime.com.
DISTRIBUTED EXECUTORS PREVIEW

INSTALLATION GUIDE

DISTRIBUTED EXECUTOR S: INTRODUCTION

The next major version of KNIME Server will allow you to distribute the workflow execution over several executors that can sit on separate hardware resources. This allows the KNIME Server to scale much better with increasing load because it is no longer bound to a single computer. The changes required to distribute workflow execution to remote executors are quite large and time-consuming, so we decided to release new features incrementally as part of the regular releases even though some existing functionality is not available yet. The table below shows you what is already available.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Available?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workflow repository (complete functionality)</td>
<td>X</td>
</tr>
<tr>
<td>License server</td>
<td>X</td>
</tr>
<tr>
<td>Local user management (via admin pages)</td>
<td>X</td>
</tr>
<tr>
<td>Executing workflows via KNIME Analytics Platform</td>
<td>X</td>
</tr>
<tr>
<td>Executing workflows via REST</td>
<td>X</td>
</tr>
<tr>
<td>Scheduled execution</td>
<td>X</td>
</tr>
<tr>
<td>Report generation</td>
<td>X</td>
</tr>
<tr>
<td>Job swapping</td>
<td></td>
</tr>
<tr>
<td>Saving jobs as workflows</td>
<td>X</td>
</tr>
<tr>
<td>Passing inline parameters/results for jobs via REST</td>
<td>X</td>
</tr>
<tr>
<td>Passing files for jobs via REST</td>
<td>X</td>
</tr>
<tr>
<td>WebPortal execution</td>
<td></td>
</tr>
<tr>
<td>Easy installation (in AWS)</td>
<td></td>
</tr>
<tr>
<td>Dynamic executor scaling</td>
<td></td>
</tr>
</tbody>
</table>

All changes for enabling distributed executors are part of the standard release, only the configuration is slightly different. Nevertheless we discourage using distributed executors in production environments until the implementation is feature complete.

Installation, configuration, and operation is very similar to the single executor setup. The server communicates with the executors via a message queueing system (and HTTP). We use RabbitMQ for this purpose. It can be installed on the same computer as the KNIME Server or on a different computer. In principle, the executor can also run on the same computer as the server but that is obviously only useful for testing purposes.
DISTRIBUTED EXECUTORS: INSTALLATION INSTRUCTIONS

Enabling distributed executors consists of the following steps:

- Install a new KNIME Server following the KNIME Server Administration guide.
- Shut down the server if it has been started by the installer.
- Install RabbitMQ following the instruction below.
- Adjust configuration files for the server and executor following the instructions below.
- Start the server and one or more executors.

INSTALLING RABBITMQ

The server talks to the executors via a message queueing system called RabbitMQ. This is a standalone service that needs to be installed in addition to the KNIME Server and the executors. You can install it on the same computer as the KNIME Server or on any other computer directly reachable by both the KNIME Server and the executors.

The KNIME Server requires RabbitMQ 3.6+ which you have to install according to the Get Started documentation on their web page:

https://www.rabbitmq.com/download.html

Make sure RabbitMQ is running, then perform the following steps:

- Enable the RabbitMQ management plug-in by following the online documentation: https://www.rabbitmq.com/management.html
- Log into the RabbitMQ Management which is available at http://localhost:15672/ (with user guest and password guest if this is a standard installation)
- Got to the Admin tab and add a new user, e.g. knime.
- Also in the Admin tab add a new virtual host (select the virtual hosts section on the right), e.g. using the hostname on which the KNIME Server is running or simply knime-server.
- Click on the newly created virtual host, go to the Permissions section and set permission for the new knime user (all to ".*" which is the default).

CONNECTING SERVER AND EXECUTOR

The KNIME Server and the executors now need to be configured to connect to the message queue.

For the KNIME Server you must specify the address of RabbitMQ instead of the path to the local executor installation in the knime-server.config. I.e. comment out the com.knime.server.executor.knime_exe option (with a hash sign) and add the option com.knime.enterprise.executor.msgq. The latter takes a URL to the RabbitMQ virtual host: amqp://<user>:<password>@<rabbit-mq-host>/<virtual host>, e.g.

    com.knime.enterprise.executor.msgq=amqp://knime:pass4knime@rabbitmq-host/knime-server

Note that any special characters in the password must be URL encoded.

The same URL must also be provided to the executor as system property via the knime.ini:

    -Dcom.knime.enterprise.executor.msgq=amqp://knime:pass4knime@rabbitmq-host/knime-server
While commands between the server and executors are exchanged via the message queue, actual data (e.g. workflows to be loaded) are exchanged via HTTP(S). Therefore, the executors must know where to reach the server. The server tries to auto-detect its own address however in certain cases this address is not reachable by the executors or – in case of https connections – the hostname doesn’t match the certificate’s hostname. In such cases you have to specify the correct public address in the `knime-server.config` with the option `com.knime.server.canonical-address`, e.g.

    com.knime.server.canonical-address=https://knime-server:8443/

You don’t have to specify the context path as this is reliably auto-detected.

Now you can start the server.

Currently the executors must be started manually, the server does **not** start them. In order to start an executor (on any machine) launch the knime application (that has been created by the installer) with three arguments:

    ./knime -nosplash -consolelog -application com.knime.enterprise.slave.KNIME_REMOTE_APPLICATION

You can also add these arguments at the top of the knime.ini if the installation is only used as an executor. You can start as many executors as you like and they can run on different hosts. They will all connect to RabbitMQ (you can see them in the RabbitMQ Management in the **Connections** tab).

When you start the executor in a shell, a very simple command line interface is available to control the executor. Enter `help` at the "Executor>" prompt to get a list of available commands.
KNIME SERVER SOCIAL WORKFLOW REPOSITORY

USAGE AND ADMINISTRATION GUIDE

SOCIAL WORKFLOW REPOSITORY: INTRODUCTION

The KNIME Social Workflow Repository Usage and Administration guide covers in detail the options for the configuration and usage of the KNIME Social Workflow Repository. If you are looking to install the KNIME Server you should first consult the KNIME Server Installation Quickstart Guide. For guides on connecting to the KNIME Server from the KNIME Analytics Platform, or using the KNIME WebPortal please refer to the guides: KNIME Explorer User Guide, KNIME WebPortal User Guide. Since the Social Workflow Repository builds on top of the KNIME Server, please consult the KNIME Server Administration guide for help setting up and configuring the KNIME Server.

WHAT IS THE SOCIAL WORKFLOW REPOSITORY

The KNIME Social Workflow Repository is a feature of the KNIME Server, providing users an overview over the workflows stored on the server as well as more in depth workflow information, such as a workflow image, meta information and required plugins. Additionally, the Social Workflow Repository allows users to give a rating, assign tags and comment on a workflow. With the integrated workflow search users can find workflows by title, author and assigned tags.

ACCESSING THE SOCIAL WORKFLOW REPOSITORY

The Social Workflow Repositories’ path depends on the root path of the KNIME Server installation. With <root> being the root path as selected during the installation of the KNIME Server, the index page of the Social Workflow Repository can be accessed under: http://server-address/knime/socialworkflows/index.

The individual workflows are available under: http://server-address/knime/socialworkflows/workflows/<workflow_path>, where <workflow_path> is the URL encoded path of the workflow in the server’s workflow repository, replacing forward slashes (“/”) with colons (“:”). The detail page of a workflow named “Data Analysis” in the workflow group “My Workflows” would be available under: http://server-address/knime/socialworkflows/workflows/My%20Workflows:Data%20Analysis.

WORKFLOWS

Since the Social Workflow Repository is integrated into the KNIME Server, it shows all workflows which are also visible in the web portal, taking into account user and group permissions. As soon as a workflow is uploaded to the KNIME Server instance running the Social Workflow Repository, the workflow is available there as well. The workflow metadata, such as the description, can be edited in the KNIME Analytics platform. The workflow description is interpreted as Markdown, a text formatting language designed to be readable in parsed and non-parsed form. Please refer to the section “Markdown” for a brief introduction.
WORKFLOW VERSIONING

The Social Workflow Repository lists snapshots of a workflow as versions on its details page. Once a user creates a snapshot, the workflow’s detail page shows a list of snapshots at the bottom of the right column, with version numbers and commit messages. Each snapshot can be accessed with an individual URL similar to the workflow details URL under: `http://server-address/knime/socialworkflows/workflows/<workflow_path>/v<timestamp>`, where `<workflow_path>` is the URL encoded path of the workflow and `<timestamp>` is the creation time of the snapshot as Unix timestamp, i.e. the number of seconds that passed since 1st of January 1970. The URL `http://server-address/knime/socialworkflows/workflows/My%20Workflows:Data%20Analysis/v1498651200` therefore points to a snapshot of the workflow “Data Analysis” in the workflow group “My Workflows” when the snapshot was created at the 28th of June 2017 at 12pm.

SOCIAL FEATURES

Using the KNIME Social Workflow Repository, users can assign tags to workflows, rate workflows and write comments. All of those features are available on the workflow details page.

TAGS

Tags allow a flat categorization of workflows independently of the workflow group they are stored in. They can be assigned on a workflow’s details page in the right column. To change the tags, click on the blue pencil symbol and enter the tags in the text box. Multiple tags are separated by commas. A list of all assigned tags is shown on the index page, providing users quick access to workflows of interest.

![Tags Example](image)

RATINGS

Workflow ratings allow users to give feedback regarding the quality of a workflow on the KNIME Server. A rating can be given on a workflow’s details page using the star symbols on the right side. Every user is allowed to rate a workflow only once. Subsequent ratings of the same user only change this user’s rating.
COMMENTS

Workflow comments are displayed below the workflow image on the workflow details page. The newest comment always appears on top of the list and new comments can be written in the text box above. Just like the workflow description, comments can be formatted in Markdown (see section “Markdown” for a brief introduction). Once a comment is submitted, it can be edited and deleted by the original author and any user with administrator privileges.

WORKFLOW SEARCH

The workflow search allows the searching the workflow repository by title, tags and author. The results depend on the read permissions the user has for the individual workflows or their workflow groups. To search for terms in the workflow title, the query can be entered verbatim in the search field. To search for a tag, the prefix “tag:” can be prepended to the query and to search for workflows of a certain author, the prefix “author:” can be used. When searching for a tag or author that contains spaces, the tag or author name can be put in double quotes. When providing multiple queries at once, all workflows that match all of the queries are returned. The following table lists and explains some queries.

<table>
<thead>
<tr>
<th>Query</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMML</td>
<td>All workflows containing “PMML” in their name or the author’s name</td>
</tr>
<tr>
<td>author:testuser</td>
<td>All workflows uploaded by user “testuser”</td>
</tr>
<tr>
<td>tag:analysis</td>
<td>All workflows having the tag “analysis”</td>
</tr>
<tr>
<td>author:”Test User” tag:“Data Analysis”</td>
<td>All workflows uploaded by user “Test User” and having the tag “Data Analysis”</td>
</tr>
<tr>
<td>PMML author:“Test User”</td>
<td>All workflows containing the text “PMML” in the title and were uploaded by user “Test User”</td>
</tr>
</tbody>
</table>
CUSTOMIZATION

The index page, the workflow details page and the pages containing legal information can be customized with HTML pages placed in the subdirectory “socialworkflows” in the extension directory of the KNIME Server installation, i.e. `<server repository>/extensions/socialworkflows/<file>`. The “socialworkflows” directory is watched by the server process and changes to the files are usually applied within a few seconds. Deletion of the files “terms.html”, “copyright.html” and “imprint.html” removes those entries also from the “Legal” section in the page footer. When all three files are deleted, the legal section of the footer is completely hidden. When the file “terms.html” is present, a note is displayed under the workflow download button, advising the user that by downloading the workflow they agree to the terms and conditions.

The HTML files are embedded in the Social Workflow Repository pages and have access to the website’s stylesheets. The CSS framework used for styling is Bootstrap 3.

The following table lists and explains the customization options. Please note that the custom content must be placed in files with the names as given in the table.

<table>
<thead>
<tr>
<th>Lead Text – lead.html</th>
<th>This content is displayed at the top of the index page and can be a general welcome text.</th>
</tr>
</thead>
<tbody>
<tr>
<td>News Text – news.html</td>
<td>This content is displayed as the first tile of the index page, next to the most recent workflows.</td>
</tr>
<tr>
<td>Workflow Details – extrawfinfo.html</td>
<td>This content is displayed at the bottom of the right column of the workflow details page.</td>
</tr>
<tr>
<td>Help – help.html</td>
<td>This content is shown on the help page.</td>
</tr>
<tr>
<td>Terms and Conditions – terms.html</td>
<td>This content is shown on the terms and conditions page.</td>
</tr>
<tr>
<td>Copyright – copyright.html</td>
<td>This content is shown on the copyright page.</td>
</tr>
<tr>
<td>Imprint – imprint.html</td>
<td>This content is shown on the imprint page.</td>
</tr>
</tbody>
</table>
MARKDOWN

For formatting text in the workflow description and the comments the Social Workflow Repository uses Markdown. This language allows users to make text cursive or bold, add headers and lists or embed images from URLs.

The following table explains some formatting options for Markdown.

<table>
<thead>
<tr>
<th>Format</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heading</td>
<td># My Workflow</td>
</tr>
<tr>
<td>Sub-Heading</td>
<td>## My Workflow</td>
</tr>
<tr>
<td>Sub-Sub-Heading</td>
<td>### My Workflow</td>
</tr>
<tr>
<td>Italic text</td>
<td><em>italic</em>, <em>italic</em></td>
</tr>
<tr>
<td>Bold text</td>
<td><strong>bold</strong>, <strong>bold</strong></td>
</tr>
<tr>
<td>Monospace text</td>
<td><code>monospace</code></td>
</tr>
<tr>
<td>Horizontal rule</td>
<td>---</td>
</tr>
<tr>
<td>Bullet list</td>
<td>* Item 1</td>
</tr>
<tr>
<td></td>
<td>* Item 2</td>
</tr>
<tr>
<td></td>
<td>* Item 3</td>
</tr>
<tr>
<td>Numbered list</td>
<td>1. Item 1</td>
</tr>
<tr>
<td></td>
<td>2. Item 2</td>
</tr>
<tr>
<td></td>
<td>3. Item 3</td>
</tr>
<tr>
<td>Link to a website</td>
<td><a href="http://knime.com">KNIME</a></td>
</tr>
</tbody>
</table>

Additionally, paragraphs can be separated by a blank line and line breaks can be inserted by appending two spaces to a line.
KNIME SERVER: JOB VIEW

USAGE AND INSTALLATION GUIDE

KNIME JOB VIEW: INTRODUCTION

The KNIME Job View enables users to investigate the status of jobs on the server. Whenever a workflow is executed on the KNIME Server, it is represented as a job on the server. This instance of your workflow will be executed on the KNIME Server. By viewing the job it’s possible to see the current job status. That can also be helpful if there are problems with the workflow that need to be debugged.

WHAT IS THE JOB VIEW

The KNIME Job View can be used to inspect a job on the KNIME Server. With this first preview release it will enable you to see a snapshot of the workflow. You can see nodes currently executing, errors and warnings on the nodes as well as the configuration of the nodes. It is not possible to change the configuration of nodes, or to view the data.

INSTALLING THE JOB VIEW

For the usage of the job view you need to install a package onto your KNIME Server Executor and into the local KNIME client of the end-users. Both packages can be found in the KNIME Analytics Platform Update Site. You must uncheck the option “Group items by category” to find it.
KNIME SERVER EXECUTOR

In the Server Executor please install the package “KNIME Job View for executor (experimental)”. It is contained in the KNIME Update Site. If you have a ‘headless’ KNIME Server installation it may be installed with the following command line option:

```
./knime -application org.eclipse.equinox.p2.director -nosplash -consolelog -r http://update.knime.com/analytics-platform/3.5 -i com.knime.features.gateway.remote.feature.groupp -d $PWD
```

KNIME ANALYTICS PLATFORM CLIENT

In the KNIME client of your end-users please install the package “KNIME Job View (experimental)”. It is contained in the KNIME Update Site.

Only users who have this package installed can use the KNIME Job View.

USAGE

To use the job view, you must first execute a job on your KNIME Server. This can be done via the KNIME client or by executing a workflow on the WebPortal.

This job can be visualized with a KNIME Analytics Platform using the KNIME Job View. To do so, first login to the KNIME Server instance. Select the Job and open the context menu on it via right click. You now have the option “View Job” available in the context menu.

The KNIME Job View is a static snapshot of the workflow job. Hence it will not be updated automatically along with the status of the corresponding job. It can also not be saved or edited.

The KNIME Job View enables you to see which nodes are currently executing inside your running jobs.

You will be able to see which nodes are currently executing, which are already executed, and which are queued to be the next in execution. You can see errors and warning in the workflow by mouse-over on the respective sign. The data is not provided with the view.
Inside a failing job you can see the error and warning messages by mouse-over the respective sign.

It is also possible to see the configuration of the nodes. For this you can use the KNIME Node Monitor. In case you do not see it, you can add it via View -> Other -> KNIME Views -> KNIME Node Monitor. In the Node Monitor, select the Option “View Configuration”. Afterwards it will show you the configuration of the currently selected node.

With all future KNIME Releases we will continue adding functionality to the KNIME Job View. If you have any ideas or thoughts, we appreciate your input via support@knime.com.