

Deployment Guide

Installing Altair Data Analytics Products

Altair Knowledge Studio® 2022.3

Altair Knowledge Seeker® 2022.3

Altair Knowledge Studio® for Apache Spark™ 2022.3

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1. Introduction

This document provides instructions on deploying Altair Knowledge Studio and Knowledge Seeker products of version 2022.3 for all platforms and configurations.

If you are upgrading from an older version, see [Section 4: Release 2022.3 and Previous Versions](#).

The Architecture White Paper is available upon request.

2. Product Components (Overview)

This guide covers deployment procedures for the desktop and server-based configurations of the following products:

- Knowledge Studio
- Knowledge Seeker
- Knowledge Studio for Apache Spark

Knowledge Studio and Knowledge Seeker include R and Python language integration features. If the intended users are going to use these features, R and Python software must be installed first.

The product name and feature set activated for each product are defined by the license applied after the installation.

2.1 Knowledge Studio and Knowledge Seeker

The **Standalone configuration** of Knowledge Studio and Knowledge Seeker for Windows Desktop or Windows Server includes the following installation packages:

- KS Workstation
- KS Library for R
- Altair Analytics Workbench (WPS Workbench)

R and Python software are prerequisites. Installation instructions for the Standalone configuration are given in [Section 7](#).

The **Client/Server configuration for Windows Server** includes the following installation packages:

Client side:

- KS Workstation
- Altair Analytics Workbench (WPS Workbench)

Server side:

- KS Server
- KS Library for R
- Altair Analytics Workbench (WPS Workbench)

The **Client/Server configuration for Linux** includes KS Workstation, KS Server, and Altair Analytics Workbench (WPS Workbench). KS Libraries for R and Python are built in the KS Server package.

Prerequisite software: R and Python software must be installed on the server side if the end users require R or Python code integration features.

The installation procedure for the client/server configuration is described in [Section 8](#).

2.3 Knowledge Studio for Apache Spark

Knowledge Studio for Apache Spark™ is a data science platform integrated with Apache Spark technology to provide predictive analytics on large-scale distributed data structures - Hadoop HDFS, Amazon S3, and other storage types supported by Spark.

For the prerequisites concerning the Apache Spark server and the storage cluster, see “*Requirements for Knowledge Studio for Apache Spark*” in [Section 3.2](#).

The **Standalone configuration** of Knowledge Studio for Apache Spark includes KS Workstation. For installation instructions, see [Section 7](#).

The **Client/Server configuration for Windows or Linux** includes the following installation packages:

Client side:

- KS Workstation

Server side:

- KS Server

The installation procedure for the client/server configuration is described in [Section 8](#).

3. Supported Hardware and Software Platforms

3.1. Overview: Supported Operating Systems

Altair Data Analytics products version 2022.3 are available in the standalone and client/server configurations for the following operating systems:

KS Workstation (Standalone or Client)	KS Server
<u>Windows on x86-64 platform</u> <ul style="list-style-type: none"> • Windows 10 • Windows 11 • Windows Server 2016 • Windows Server 2019 • Windows Server 2022 	<u>Windows Server on x86-64 platform:</u> <ul style="list-style-type: none"> • Windows Server 2016 • Windows Server 2019 • Windows Server 2022 <u>Linux on x86-64 platform:</u> <ul style="list-style-type: none"> • Red Hat Enterprise Linux 7 and 8 • CentOS 7 and 8

- All products are supported only on 64-bit systems.
- Knowledge Studio for Apache Spark requires Apache Spark server. System requirements for this product are described at the end of Section 3.2 below.

3.2. System Requirements

- **Microsoft .NET Framework 4.6.2 (or higher) and 3.5 Service Pack 1** are required for KS Workstation. The KS Workstation installation package includes the web installer for Microsoft .NET Framework 4.6.2 and installs it unless the same or a higher version is already present. It also enables Microsoft .NET Framework 3.5 if it is not already enabled in Windows features.
- **Microsoft Visual C++ 2015-2022 Redistributable** package is required for KS Workstation and KS Server. Both KS Workstation and KS Server installers include the web installer for Microsoft Visual C++ 2015-2022 Redistributable and installs it unless the same or a higher version is already present.
- KS Workstation includes KS PDF Printer component, which enables the *Copy to PDF* functionality for exporting decision trees, charts, and reports to PDF. The printer uses Amyuni PDF Converter by [Amyuni Technologies, Inc.](http://www.amyuni.com)

The following are the minimum and recommended requirements for all configurations:

1. Standalone Configuration

KS Workstation 2022.3 – Standalone

Minimum	Recommended
Windows 10 or 11 (64-bit) x86-64 CPU, 2 GHz 4 GB RAM Disk space: <ul style="list-style-type: none"> • 4 GB for program files ** • 15+ GB for user's projects Monitor resolution: 1152x864	Windows 10 (64-bit) Quad-core x86-64 CPU, 2 GHz, or better 8 GB RAM or more * Disk space: <ul style="list-style-type: none"> • 4 GB for program files ** • 20+ GB for user's projects Monitor resolution: 1680x1050 or better

* The amount of RAM required for the Standalone configuration depends on the typical size of analytic datasets and the types of models to be built. If the users will be dealing with very large datasets and need help assessing the required amount of RAM, please email dasupport@altair.com.

** If R and Python integration features are required, R and Python program files and packages may take additional 3 GB or more.

2. Client/Server Configuration

KS Workstation 2022.3 – Client

Minimum	Recommended
Windows 10 or 11 (64-bit) x86-64 based CPU, 2 GHz 4 GB RAM Disk space: 4 GB for program files Monitor resolution: 1152x864	Windows 10 (64-bit) x86-64 based CPU, 2 GHz or higher 8 GB RAM or more Disk space: 4 GB for program files Monitor resolution: 1680x1050 or better

KS Server 2022.3

Minimum*	Recommended
Windows Server 2016, 2019, or 2022; Red Hat Enterprise Linux 7 or 8; CentOS 7 or 8 x86-64 based CPU, 2 GHz 8 GB RAM Disk space: <ul style="list-style-type: none"> • 3 GB for program files • 10+ GB per user for users' projects 	Windows Server 2016, 2019, or 2022; Red Hat Enterprise Linux 7 or 8; CentOS 7 or 8. A multi-core x86-64 based CPU(s) with at least 8 cores in total, 2.5 GHz, or better ** 16 GB RAM or more** Disk space: <ul style="list-style-type: none"> • 3 GB for program files • 15+ GB per user for users' projects**

**** Note:** System requirements for the server depend on the maximum number of users expected to be using KS Server concurrently. The KS Server performance also depends on the typical size of analytic datasets, on whether any other applications run on the same server, and other factors. To ensure that your product is compatible with your environment and delivers expected performance, please fill in the Installation Questionnaire. Contact your account representative or email dasupport@altair.com to request the questionnaire if necessary.

If Python integration features are required, the prerequisite Python program files and packages may take at least 3 GB of disk space on the KS Server host, depending on the Python distribution of your choice.

3. Requirements for Knowledge Studio for Apache Spark

Knowledge Studio for Apache Spark is an application for data mining and predictive analytics on large-scale distributed data structures (HDFS, Amazon S3, Cassandra, etc.) via [Apache Spark](#).

The types of distributed storage supported by Knowledge Studio for Apache Spark are the same as those supported by Apache Spark. The product is supported for any Hadoop distribution satisfying the **Apache Spark server requirements** listed below.

Examples of supported Hadoop distributions:

- **Cloudera CDH.** All CDH versions compatible with Apache Spark 2.4: CDH 6.2 and higher; See “*CDS Powered By Apache Spark Requirements*” https://www.cloudera.com/documentation/spark2/latest/topics/spark2_requirements.html.
- **Databricks Platform** on Azure and AWS clouds with Apache Spark 2.4. See [Apache Spark on Databricks](#). See also the Databricks documentation for Azure and AWS at <https://databricks.com/documentation>.

Note: Spark cluster configurations with dynamic allocation are not supported.

System requirements for the Knowledge Studio software components are described at the beginning of Section 3.2 (see above). The following are the requirements for Apache Spark Server.

Apache Spark server requirements

- Apache Spark version 2.4
 - Cluster management system options: Standalone (native Spark cluster) or [Hadoop YARN](#) or [Apache Mesos](#)
- [Python](#) version **3.6 or higher**, 64-bit (Python programming language)
- The following Python packages:
 - *Pandas*: the [Python Data Analysis Library](#) provides data structures and analysis tools for Python.
 - [NumPy](#): the package for scientific computing with Python
 - [SciPy](#): the fundamental library for scientific computing (version 0.19.1 or higher)
 - [Scikit-learn](#): tools for data mining and data analysis (version 0.19.0 or higher)
 - [PyArrow](#): Python API of Apache Arrow (version 0.9.0 or higher)
- [Jupyter Notebook](#) version **4 or higher**
- [JupyterHub](#) version **1.0 or higher**

For **Jupyter Notebook** prerequisites and installation instructions, see <https://jupyter.readthedocs.io/en/latest/install.html>

For **JupyterHub** prerequisites and installation instructions, see <http://jupyterhub.readthedocs.io/en/latest/>

Note: The use of JupyterHub as a multi-user Jupyter notebook server is strongly recommended. If you prefer not to use JupyterHub, you can use basic authentication implemented by other mechanisms and configure them according to your security, authentication, and file system access requirements.

Examples of supported types of distributed storage clusters:

- [Amazon EMR](#)
- [Microsoft Azure HDInsight](#)
 - Note: The Apache Spark environment on Azure HDInsight has Jupyter but does not include JupyterHub by default.
- Custom clusters satisfying the above requirements for Apache Spark, Python, and Jupyter Notebook.

For your convenience, our Customer Support can provide a script for installing the necessary prerequisites, including the required Python packages. The script is provided upon request. You can modify it as you see fit to install the components that you need. Please contact Data Analytics Customer Support at dasupport@altair.com to request the script.

For the client/server configuration of Knowledge Studio for Apache Spark, the range of TCP ports 6060 – 6090 on the server must be open for inbound connections from the client machines. In the standalone (desktop) configuration, Knowledge Studio for Apache Spark also uses ports in this range, but this is confined to localhost.

For more information on the security configuration settings:

- for KS Server on Windows, see [Section 8.1.3](#): “Configuring KS Service”.
- for KS Server on Linux, see subsection “Configuring Server Security (Network and Firewall Settings)” in [Section 8.2.4](#): “Configuring KS Server on Linux”

4. Release 2022.3 and Previous Versions

- Version 2022.3 can be installed and run side by side with any previous version.
- Uninstalling Altair Data Analytics products does **not** remove the users' data, project files, working directories or licenses.
- If you run version 2022.3 side by side with 2022.2 or an older version for a period of evaluation or testing during the upgrade, use a separate working directory for each version, since older projects modified in version 2022.3 may no longer be compatible with their original version. See [Section 5](#) for details about the Working Directory.

- Project compatibility:

- Altair projects created in versions 9.3 – 2022.2 can be opened and modified in version 2022.3 without any conversion.

It is recommended to make a backup copy of your old projects before opening them in version 2022.3.

- **Forward compatibility is not supported:** models and other objects in projects created or modified in version 2022.3 may not be loaded correctly when opened in 2022.2 or older versions.

- KS PDF Printer compatibility:

When using KS Workstation 2022.3 side by side with an older version, the error “*Printer not activated, error code - 41*” may occur when using the **Copy to PDF** command under the File menu. The solution is to reinstall both versions of KS PDF Printer by executing the following commands in Command Prompt started as administrator (here, version 2021.1 is used as an example):

```
cd "C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\bin"
Install -s -u "KS PDF Printer"
Install -s "KS PDF Printer"
cd "C:\Program Files\Altair Data Analytics\KS Workstation 2021.1.0\bin"
Install -s -u "KS PDF Printer"
Install -s "KS PDF Printer"
```

- **Note:** In case KS PDF Printer is removed from the system, it can be restored by running `AngossPDFInstall.cmd` from `C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\bin`.

5. Prerequisites

This section describes installation prerequisites for all configurations and platforms.

5.1. Overview

- Ensure that your systems meet the [hardware and software requirements](#). Note that the required hardware resources (CPU, memory) depend on the typical size of analytic datasets, the type of data mining tasks to be performed by the users, the expected number of concurrent users in the case of a server-based configuration.
- Knowledge Studio and Knowledge Seeker features include integration with Tableau® and Qlik® - business intelligence software for interactive data visualization. Tableau integration features in Knowledge Studio and Knowledge Seeker require Tableau Desktop or any Tableau workbook viewer on the user's workstation and, optionally, web access to a Tableau Server from the user's workstation. Tableau components can be installed independently of Altair Data Analytics products. Supported Tableau versions are 2019.1 and higher. Altair does not distribute Tableau software or licenses for it. If you do not use Tableau but would like to know more about it, please visit <http://www.tableau.com/>.
- R and Python language integration features require R Software for statistical computing and Python software. Install them if the end users need these features. The instructions are given below in [Sections 5.2](#) and [5.3](#).
- For configurations with multi-user access (client/server or shared standalone software on a server):

- **For the client/server configuration, TCP port 5470 must be open on the KS Server host for inbound connections from the client machines. Knowledge Studio for Apache Spark also uses TCP port range 6060-6090. See [Section 8.1.4](#) for details.**

You may also need to add KS Server and KS Workstation to the list of authorized applications if such a list is maintained for your antivirus or other security systems.

- Each user must have a user account recognized by the host machine where KS Server is installed.
- For each user, a working directory with sufficient space must be allocated for their projects. For example, server administrators can create a directory `KS_Projects` with subdirectories `KS_Projects/<user_name>` for each user. A single shared directory may be used for all users, but it is a less organized way.

The Working Directory does not have to be on the application server that hosts KS Server. It may be on a network drive, as long as it is on a file system accessible from the application server and the read & write access to this storage is fast enough. In the case of a Windows Server, users can specify a UNC path for the Working Directory. Note that KS Server cannot access mapped drives in the client/server mode on Windows.

The necessary space to allocate can be calculated based on the average size of analytic datasets (number of rows and columns), the number of datasets in each project, and the number of projects. Assign the appropriate Read & Write permissions for the created directories as required by your security policies. *Note: Any user can change their working directory at any time after the installation using the **Connect** or **Set Working Directory** commands in the **File** menu of KS Workstation.*

- If users will be importing data from databases, ODBC drivers for the source databases must be installed on the server, and the users must have sufficient permissions on the server to load the drivers.
- Depending on the [type of your license](#), prepare the following:
 - If you purchased your product with Altair Units License, you will receive either a license file and an installation guide for Altair License Manager or instructions to configure your machine for a Managed Altair Units license. See [Section 14.2](#) for details.
 - If you were provided with a registration key, the end users should use it to activate the product after it has been installed. See [Section 14.3](#) for details.

5.2. R Software for Statistical Computing

Knowledge Studio and Knowledge Seeker support integration with [the R language](#). R software must be installed as a prerequisite if the end users require the R integration feature.

R versions 3.5.0 and higher are supported. Version 4.1.2 is the latest version of R that has been tested with Knowledge Studio and Knowledge Seeker 2022.3.

Note: For the Client/Server configuration of Knowledge Studio and Knowledge Seeker, R is only required on the server side.

5.2.1 R for Standalone and Client/Server Configuration on Windows

R software is available at the R Project website <http://www.r-project.org/>.



[\[Home\]](#)

[Download](#)

[CRAN](#)

The R Project for Statistical Computing

Getting Started

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. To [download R](#), please choose your preferred CRAN mirror.

On the R Project page, click “download R” and select the preferred mirror site of the [R Archive Network](#). On the next page click “Download R for Windows”

The Comprehensive R Archive Network


Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux](#)
- [Download R for \(Mac\) OS X](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

On the next page, click “Install R for the first time”:



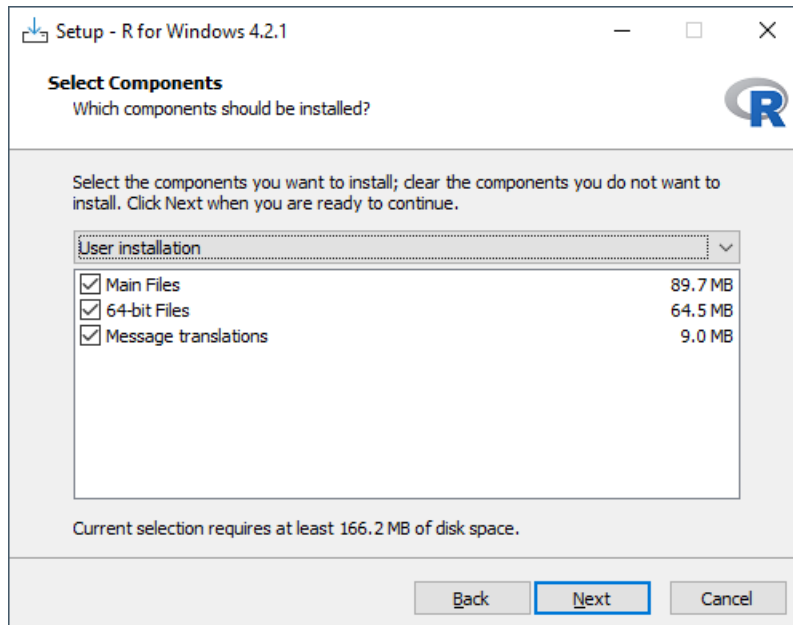
R for Windows

Subdirectories:

- [base](#) Binaries for base distribution. This is what you want to [install R for the first time](#).
- Binaries of contributed CRAN packages (for R >= 2.13.x; managed by Uwe Ligges).

On the next page, click the download link to download the latest version of R software. If you need an older version of R, click on the “Previous releases” link on the same page.

Run the downloaded R installation executable. In the third page of the installation wizard, make sure to select at least the **Main Files** and **64-bit Files** components.



Choose the remaining options as desired and finish the installation.

5.2.2. R for Client/Server Configuration on Linux

To install R on Linux, use the following examples of R installation steps.

On RHEL 7 and CentOS 7:

```
sudo yum update
sudo yum install epel-release
sudo yum install R
```

On RHEL 8 and CentOS 8:

```
sudo dnf install epel-release
sudo dnf config-manager --set-enabled powertools
sudo yum install R
```

The default R installation directory is `/usr/lib64/R`. To verify the installation, use the command

```
R --version
```

For more information on installing R on Linux, see the R project website <https://www.r-project.org/> and <https://fedoraproject.org/wiki/EPEL>

5.2.3. Rserve Package for R

The **Rserve** package ([Binary R server](#)) is required. It must be installed in the *R* library folder used by the **R Code** node in Knowledge Studio and Knowledge Seeker. By default, it is the common library location for *R*. On Windows, it is usually `C:\Program Files\R\R-N.N.N\library`, where N.N.N is the R version. On Linux, it is usually `/usr/lib64/R/library`.

Make sure the common library location for R has **Read** and **Write** permissions for the intended user(s) or group. For example, for R version 4.0.3, it is `C:/Program Files/R/R-4.0.3/library`. For the client/server configuration, you may want to create a user group for KS Server users and assign the permission to the group.

Windows:

Run the R console and install the Rserve package into the common R library location. The following example assumes that the R version is 4.0.3:

```
install.packages("Rserve", "C:/Program Files/R/R-4.0.3/library")
```

Linux:

- If you are using Amazon Linux AMI, install or update openssl-devel using the command `yum install openssl-devel`

- Run *R* and install the Rserve package version 1.8-0 or higher. For example, to install Rserve from the repository <https://rforge.net>, use the following command from the *R* command line:

```
install.packages("Rserve",, "https://rforge.net")
```

The library location can be specified explicitly as follows:

```
install.packages("Rserve", "/usr/lib64/R/library", "https://rforge.net")
```

Refer to the *R* documentation for the `install.packages` and `.libPaths` commands, if necessary.

5.3. Python

The **Python Language Integration** enables embedding [Python programs](#) into the visual workflows of Knowledge Studio and Knowledge Seeker projects. For more information on Python, see the Python project website <https://www.python.org/>.

Prerequisites

- The **Python Code** node feature requires Python version 3.7 or higher, Python Data Analysis Library ([pandas](#)), [SciPy](#) and [NumPy](#) libraries, and the [reports](#) package. Python 3.10 is the latest version of Python that has been tested with this feature.

For the Client/Server configuration, Python is only required on the server side. On Linux, Python libraries should be installed for all users rather than in a local user directory.

To enable Jupyter Notebook integration in the Client/Server configuration on Windows:

- Set the following system environment variables on the server. Their values must be set to folders that have Read & Write permissions for all users of the application.
 - JUPYTER_CONFIG_DIR
 - JUPYTER_DATA_DIR
 - JUPYTER_RUNTIME_DIR
- In the Windows Firewall on the server, open a range of TCP ports for Jupyter Notebook users (for example, 8800-8900) and inform each user of the port assigned to them for Jupyter Notebook use.

5.4. unixODBC and openssl for Linux

The following prerequisites are required for KS Server on Linux:

- [unixODBC](#) driver manager

To install unixODBC, use the command

```
sudo yum install unixODBC
```

To check the version of the installed unixODBC:

```
rpm -qa unixODBC
```

- **openssl** and **openssl-libs** version 1.0.2 or higher

To install the latest version, use the command

```
sudo yum install openssl openssl-libs
```

6. Supported Installation Modes on Windows

- To install an Altair Data Analytics product on a small number of workstations, run the downloaded MSI package on each workstation. This process is described below in the sections on deploying the standalone and client/server configurations.
- To install the software in the silent mode from the command line without user interaction via the wizard, see [Section 9.1, “Silent Install”](#).
- The Altair Data Analytics software installer supports mass deployment on many workstations using automated installation tools. For example, macros can be specified in the installation wizard to customize the Working Directory location for individual users. See [Section 9.2, “Customizations to Assist in Repackaging KS Workstation for Deployment”](#).
- To deploy the product in a Citrix environment or use it with Remote Desktop Services, see [Section 10](#).

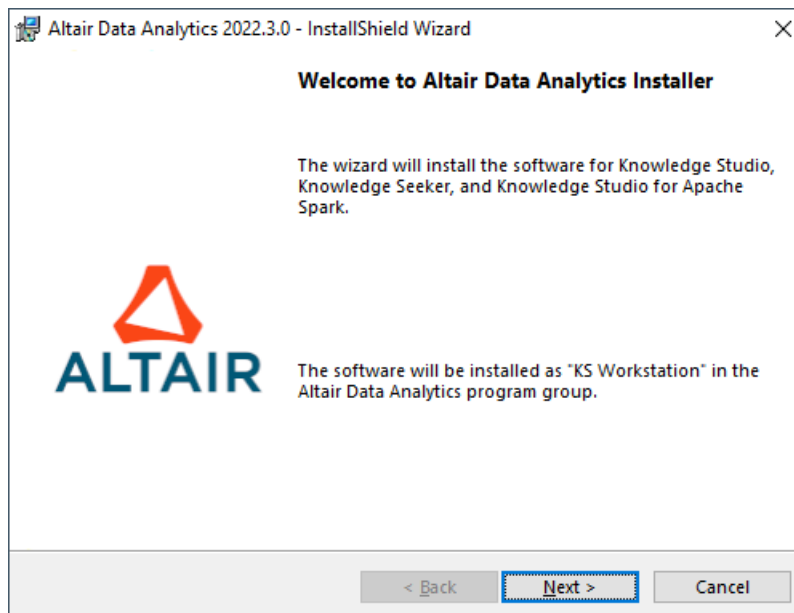
7. Deploying the Standalone Configuration

This section describes the process of installing the Standalone configuration of Altair Data Analytics products on Windows.

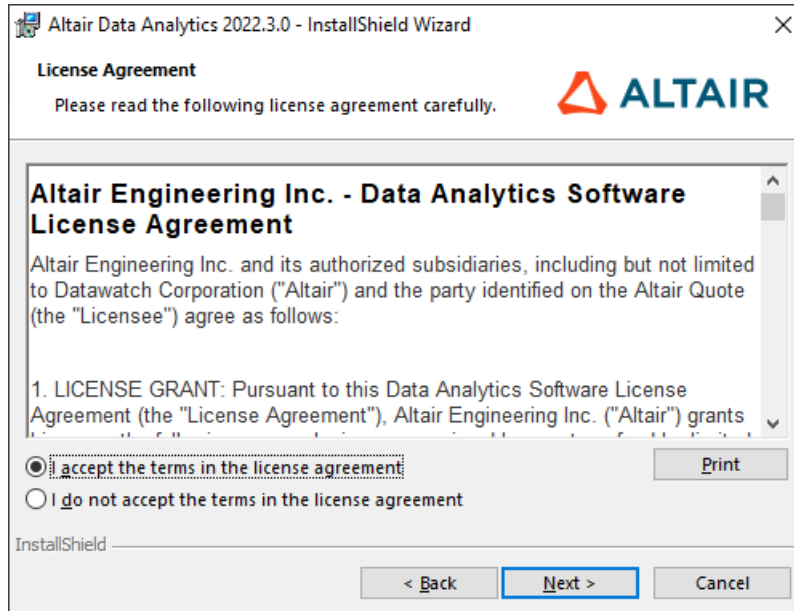
- The Standalone configuration of Knowledge Studio and Knowledge Seeker for Windows Desktop or Windows Server includes KS Workstation and KS Library for R. For prerequisites related to R software, see [Section 5.2.1](#).
- The standalone configuration of Knowledge Studio for Apache Spark includes KS Workstation. For the Spark server requirements, see [Section 3](#), Subsection: “Requirements for Knowledge Studio for Apache Spark”.

7.1. Deploying KS Workstation (Standalone)

1. Log in to the computer as a user with sufficient rights to install software.
2. Double-click the downloaded MSI package *KS-Workstation-2022.3-64bit.msi* to start the installation.
3. The installer prepares the InstallShield Wizard, and the Welcome window opens. Click **Next >**.

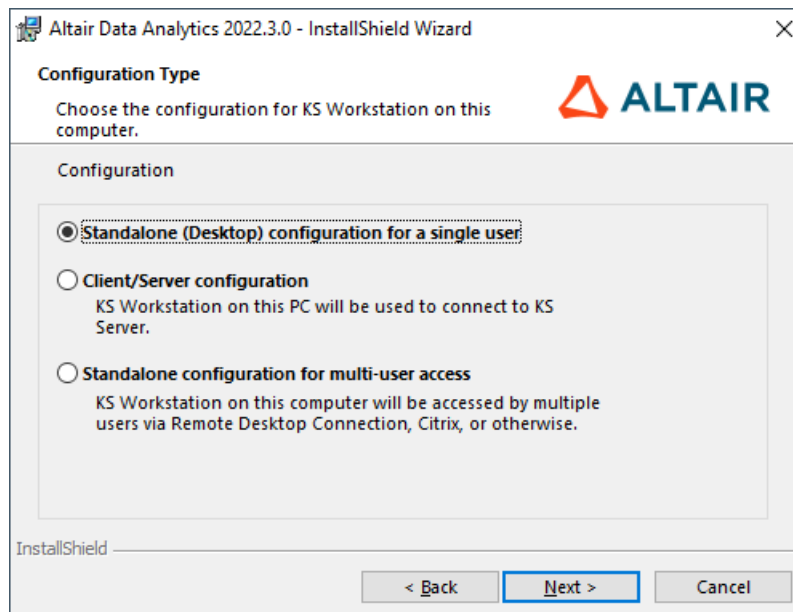


4. The License Agreement window opens. If you accept the terms, select “I accept” and click **Next >**.

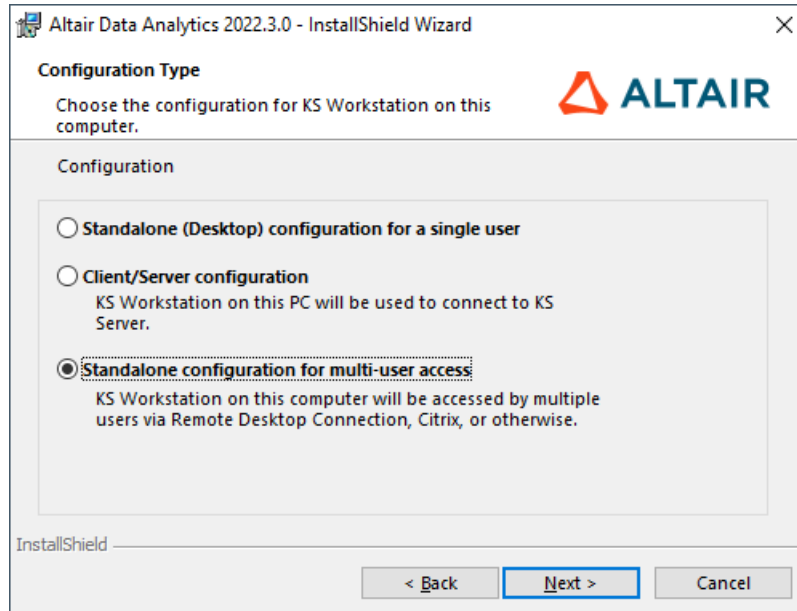


5. The Configuration Type window opens.

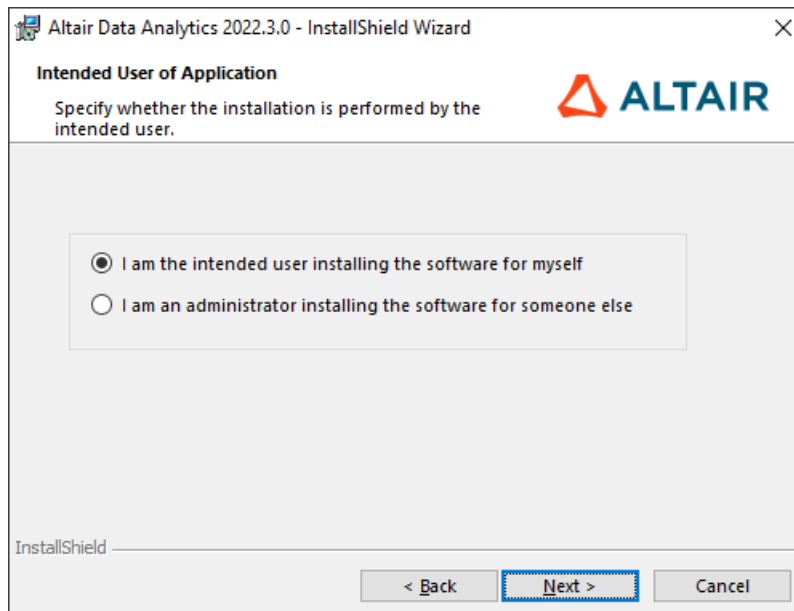
- If the software will be used by a single user on this computer, select the option “*Standalone (Desktop) configuration for a single user*”.



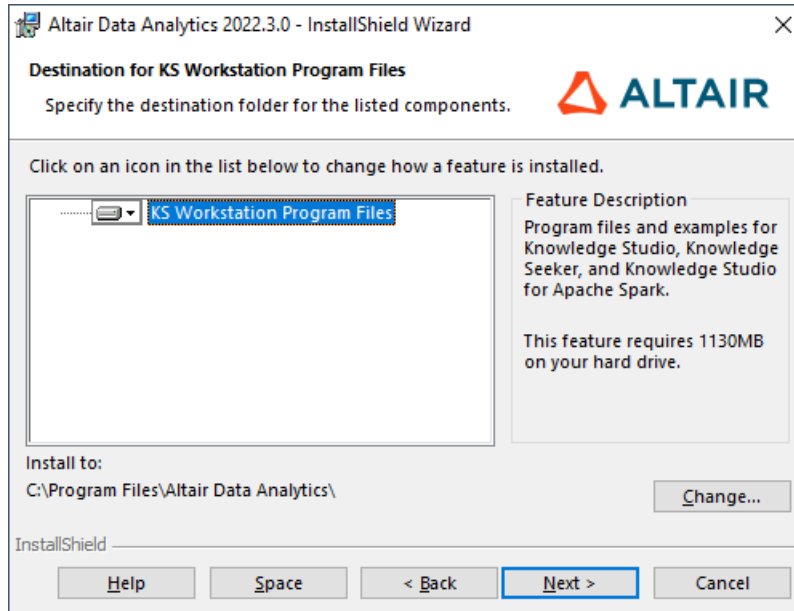
- If you are installing the software on this computer for multi-user access via Remote Desktop Connection, Citrix, or otherwise, select “*Standalone configuration for multi-user access*”. Click **Next >**. Skip to **Step 8**.



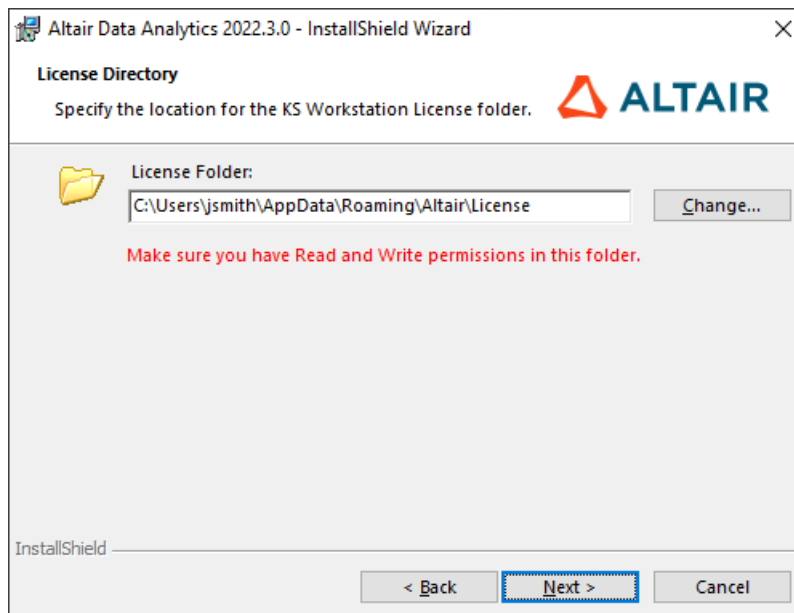
6. If you selected the option “*Standalone (Desktop) configuration for a single user*” at the previous step, select the appropriate option, depending on whether you are the intended user. Click **Next >**.



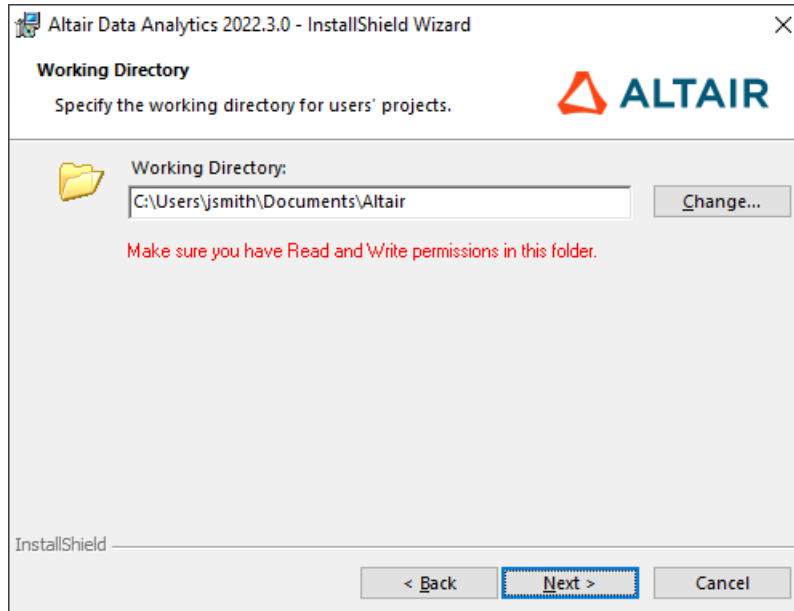
7. If necessary, change the destination folder for the application program files by clicking the **Change** button and specifying the desired location. The default is C:\Program Files\Altair Data Analytics. Click **Next >**.



8. The License Directory window opens. Specify a folder that has Read & Write permissions for the intended user. If necessary, click **Change** and create a new folder. Click **Next >**.



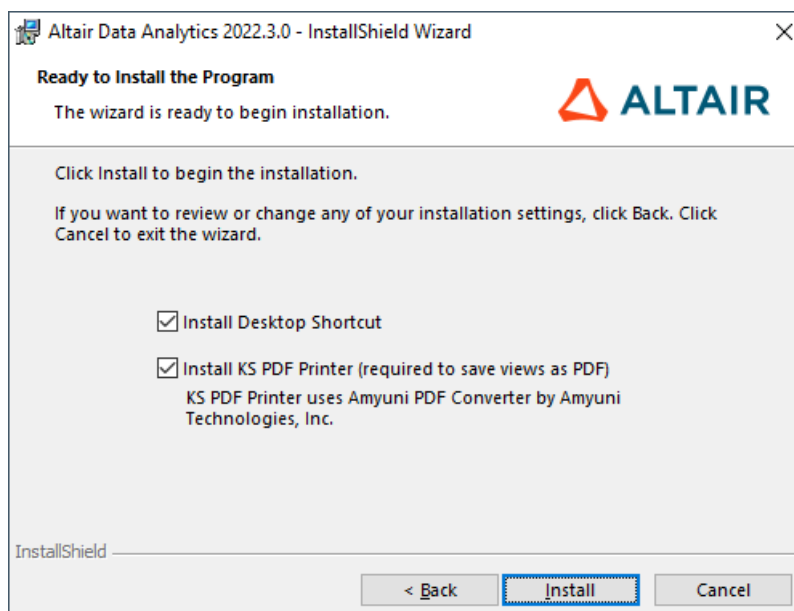
9. The Working Directory window opens. Enter a Working Directory for Altair project files that has Read and Write permissions for the intended user(s). If necessary, click **Change** and create a new folder. *Note: The Working Directory can be changed after the installation at any time using the Set Working Directory command or the Connect command in the File menu.* Click **Next >**.



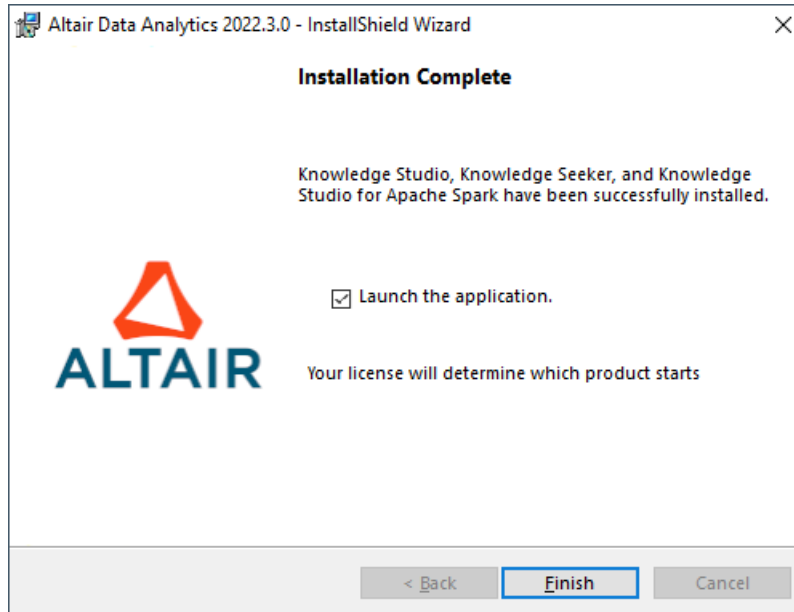
10. At the final step:

- Choose whether to install the desktop shortcut.
- The option to install KS PDF Printer is selected by default. It enables the function of saving decision trees, tables, charts and reports as PDF. Leave it selected unless you are already using a PDF printer driver or converter of the same brand.

Click **Install** to start the installation.



11. The Setup Status window shows the installation progress. When the installation is complete, choose whether to launch the software now and click **Finish**.



The installed software is now available in the Windows Start menu. Launch the application by double-clicking the desktop shortcut **KS Workstation 2022.3.0** or selecting **Start | All Programs | Altair Data Analytics | KS Workstation 2022.3**.

To activate the product, follow the instructions in [Chapter 14: “License Administration”](#).

NOTE: The KS Workstation installer enables Microsoft .NET Framework 3.5 if it is not already enabled in Windows features. If the installer fails to enable it, download the offline installer from the Microsoft website <https://docs.microsoft.com/en-us/dotnet/framework/install/dotnet-35-windows-10>.

7.2. Installing KS Library for R Integration

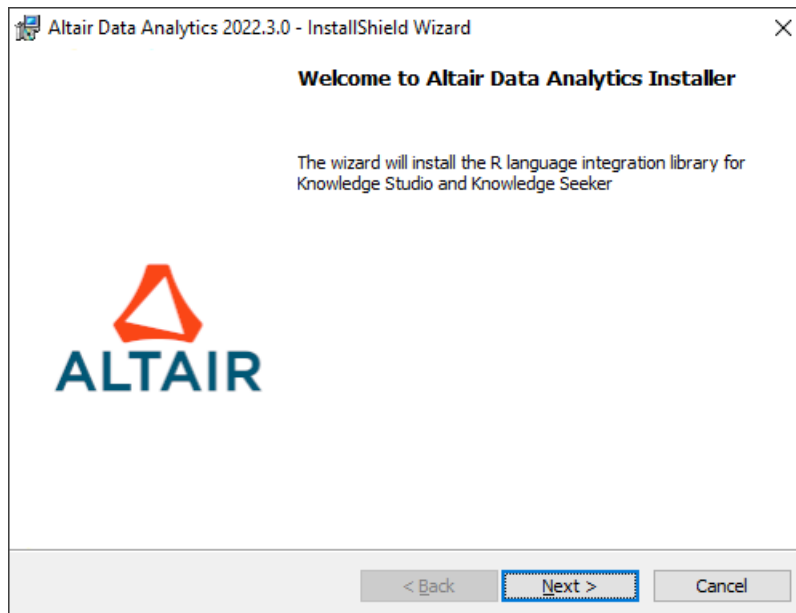
Knowledge Studio and Knowledge Seeker support integration with [R software environment for statistical computing](#). If the end users require this feature, install KS Library for R as described below.

Prerequisites: R software and KS Workstation. In the Prerequisites section above, see [Section 5.2: “R Software for Statistical Computing”](#). The [Rserve](#) package is required (see [Section 5.2.3: “Rserve Package for R”](#)).

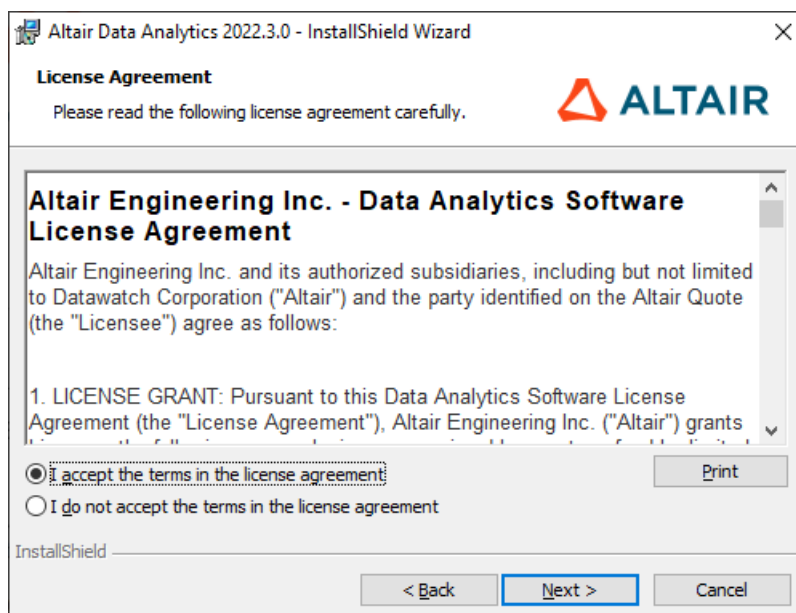
1. Make sure R software and KS Workstation 2022.3 are installed.
2. For R version **4.0.0** or higher, download **KS Library 2022.3 for R 4.0 or higher** from the Altair software download site.

For R version **3.5.0 - 3.6.3**, download **KS Library 2022.3 for R 3.5.0 - 3.6.3** from the Altair software download site.

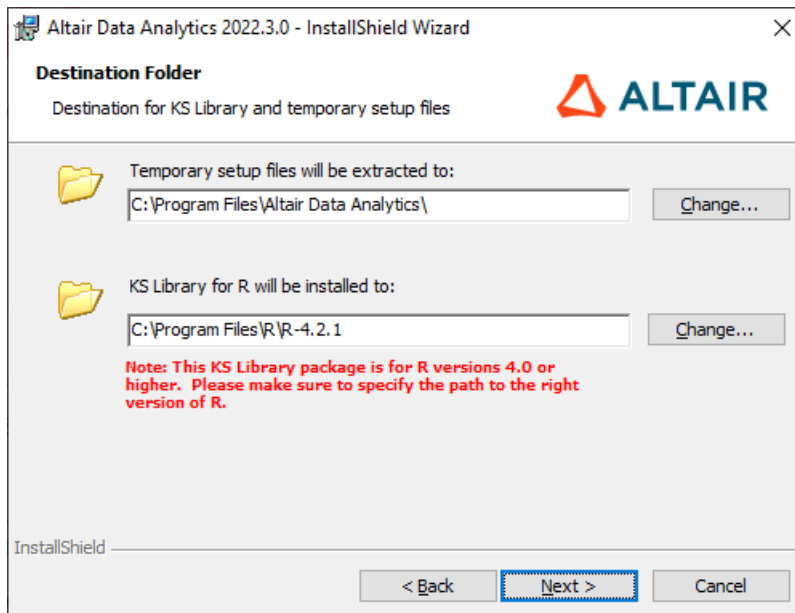
3. Uninstall any previous version of *KS Library for R* from the Programs and Features list in the Windows Control Panel.
4. Double-click the downloaded installer file. Click **Next >** in the Welcome screen.



5. In the License Agreement window, select **"I accept"** if you accept the terms. Click **Next >**.

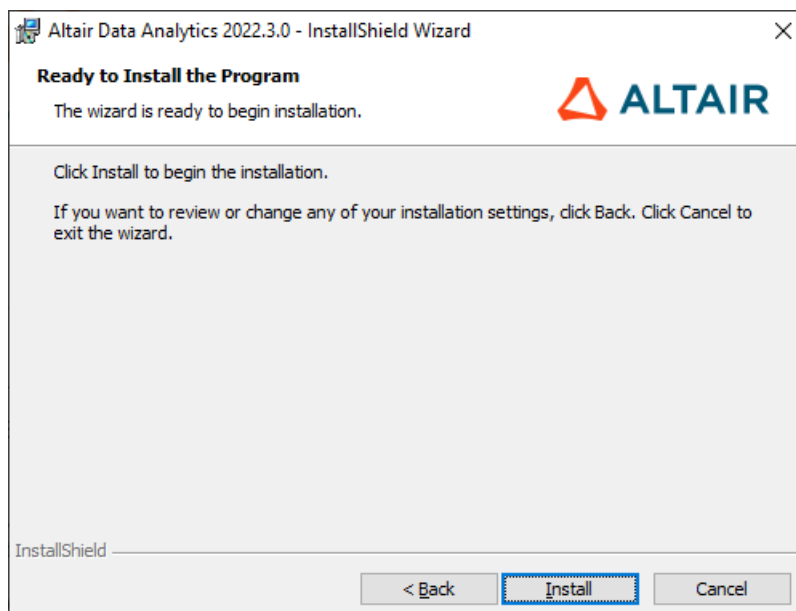


- The Destination Folder window opens. KS library for R will be installed into <R program folder>\R-X.X\library\, where R-X.X is the most recent version of R on the system, and <R program folder> is the R root folder (such as C:\Program Files\R). To change the destination folder to extract the *temporary setup files* needed to install the library, click the **Change** button. The default folder to extract the temporary setup files is C:\Program Files\Altair Data Analytics.

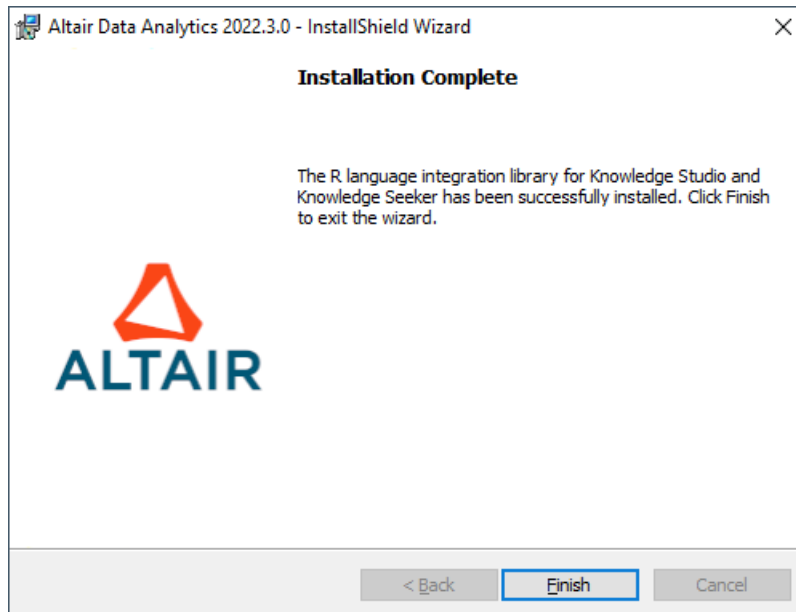


Click **Next >**.

- Click **Install**.



8. The Setup Status window shows the installation progress. When the installation is complete, click **Finish**.



As a result, three subfolders representing the required *R* integration libraries are created under `<R program folder>\R-X.X\library\`:

- `angoss`
- `KnowledgeSurvival`
- `xtable`

If you are going to use a different *R* library path, copy the folders `angoss`, `xtable`, and `KnowledgeSurvival` from `<R program folder>\R-X.X\library\` to the desired *R* library location.

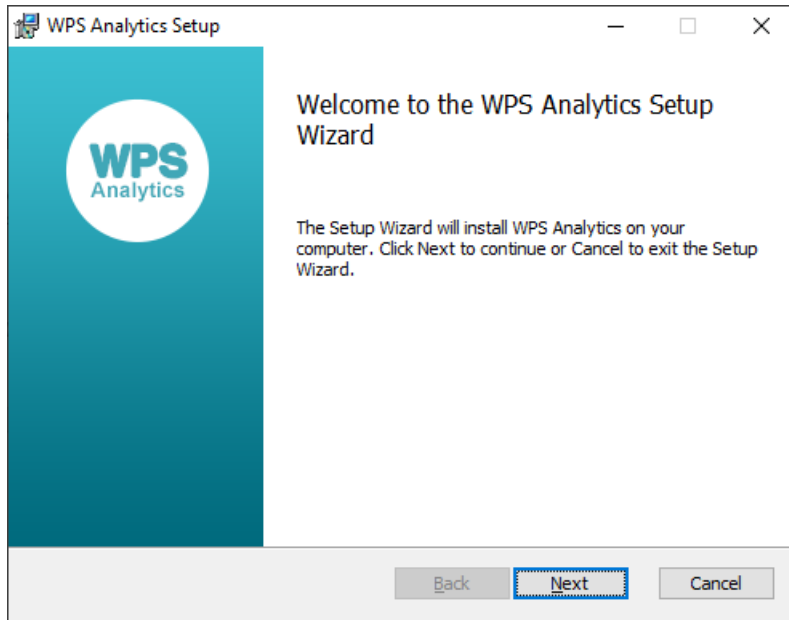
Note: The [Rserve](#) package, whose installation was described in [Section 5.2.3](#), must be present in the same *R* library location.

7.3. Installing Altair Analytics Workbench (WPS Workbench)

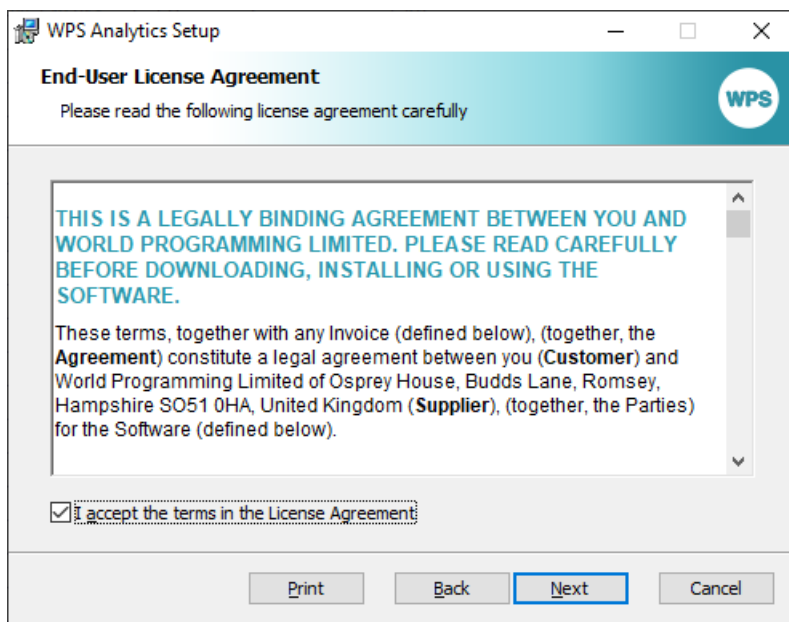
Knowledge Studio supports integration using SAS Language. This functionality is powered by Altair Analytics Workbench (formerly known as WPS Workbench).

1. Download the 64-bit version of Altair Analytics Workbench from the [AltairOne](#) website. If you don't have an account at AltairOne.com, please reach out to the person managing Altair software licenses at your organization.

- Run the downloaded installation package. Click **Next >** in the Welcome screen.

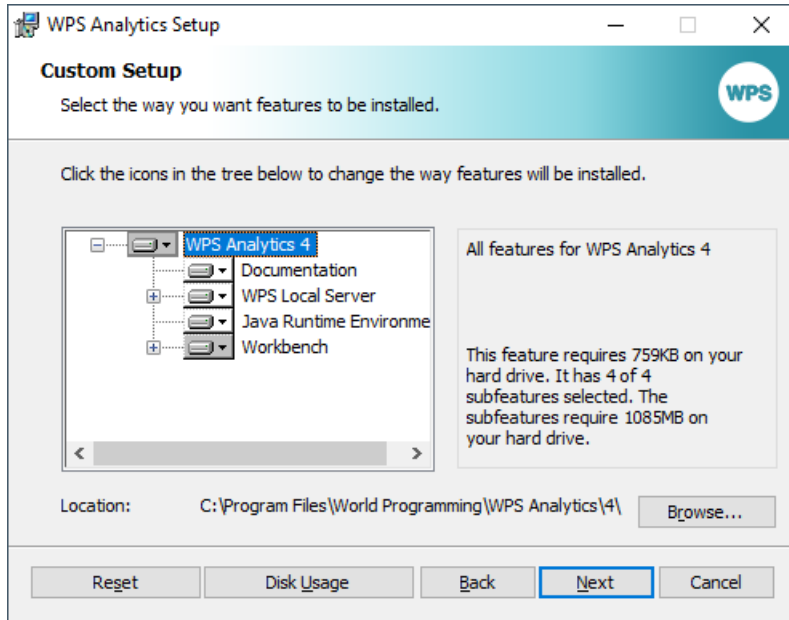


- In the End-User License Agreement window, select “**I accept the terms in the License Agreement**” if you accept the terms. Click **Next >**.

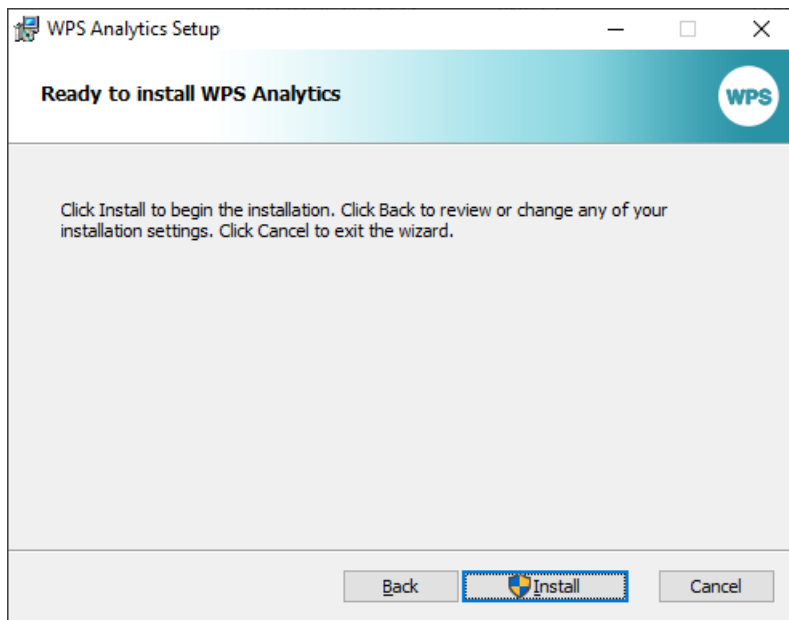


- In the Custom Setup page, select all WPS program features, as shown below. To change the destination folder for the application program files, click the **Change** button and

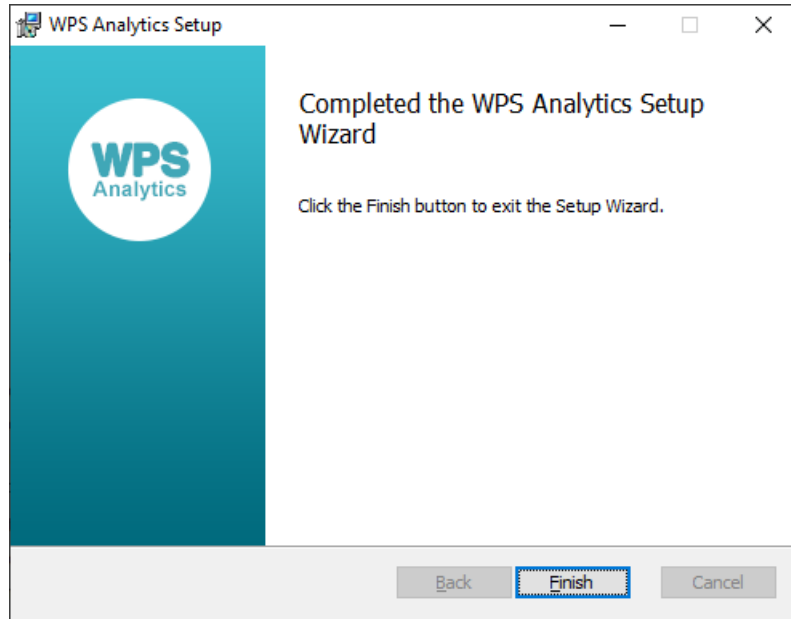
specify the desired location. The default is C:\Program Files\World Programming\WPS Analytics\4\. Click **Next >**.



5. Click **Install** to start the installation.



6. The Setup Status window shows the installation progress. When the installation is complete, click **Finish**.



7. When the installation has finished, the new folder *WPS Analytics* with the item *WPS Workbench* appears in the programs list of the Windows Start menu, and the *WPS Workbench* shortcut is created on the desktop.

WPS Analytics uses the same license as Knowledge Studio. Activating Knowledge Studio with an [Altair Units License](#) automatically activates WPS Analytics on the same machine.

8. Deploying Client/Server Configuration

The client/server configuration of Knowledge Studio and Knowledge Seeker includes KS Workstation and KS Server. KS Workstation must be installed on each client machine, and KS Server must be installed on the server. [R Statistical Software](#), [Python software](#), and KS Library 2022.3 for R must be installed on the server if users need R and Python integration features.

Note: If the users will be accessing KS Server on the server through a firewall and/or via VPN, TCP port 5470 must be open for inbound connections. KS Server and Workstation can be configured to use a different port if necessary. Additional ports need to be open for Knowledge Studio for Apache Spark. The details are provided in the sections below.

Security protocols: In the client/server mode, **TLS1.2** is used by default. If desired, you can configure KS Server to use TLS version 1.1 (see Section 8.1.2 “*Configuring the KS Service for Windows*” or [Section 8.2.4](#) “*Configuring KS Server on Linux*”). The older versions TLS1.0, SSLv3, and SSLv2 are never used.

Make sure all the installation prerequisites listed in [Section 5](#) are met. Allocate the necessary disk space on the server and create Working Directories for the users following the guidelines in [Section 5](#).

Prior to installing KS Server on a machine that has a previous version of KS Server running, notify the users that they should exit the application to avoid the termination of their sessions, as the installer will shut down all KS server processes that may be running on the server at the time of installation.

For deploying KS Server on Windows, follow the instructions in [Section 8.1](#). For deploying KS Server on Linux, follow the instructions in [Section 8.2](#).

After installing KS Server, proceed to [Section 8.3](#), which describes the process of deploying KS Workstation as part of the client/server configuration.

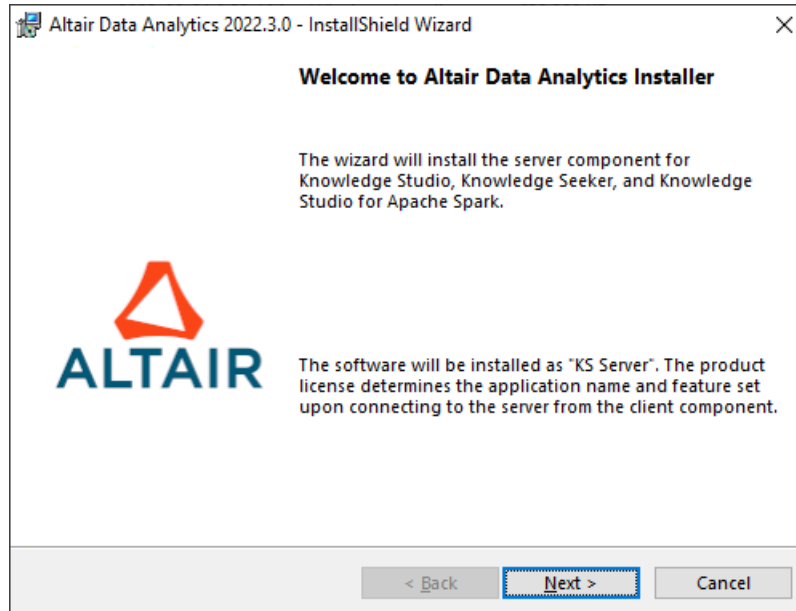
Note: *In the client/server configuration, both KS Workstation and KS Server must be of the same major version. For example, KS Workstation 2022.3 does not work with KS Server 2021.3. When upgrading, you must upgrade the clients and the server to the new version.*

8.1. Deploying KS Server and Dependent Components on Windows Server

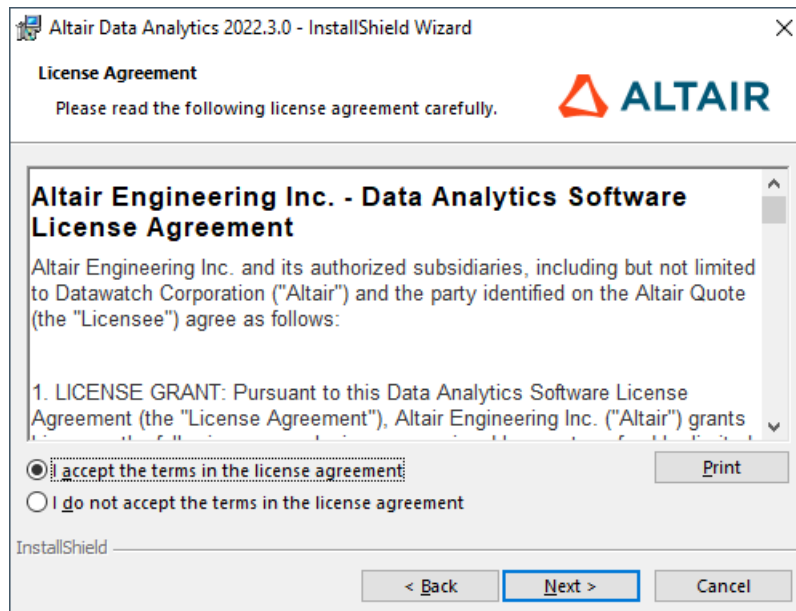
This section describes the process of installing and configuring KS Server and dependent components on Windows Server platforms.

8.1.1. Install KS Server on Windows

1. Log in as an administrator to the machine that will host KS Server.
2. It is assumed you have downloaded the KS Server package following the instructions in the email from the License Administrator. Double-click the downloaded MSI package *KS-Server-2022.3-64bit.msi*.
3. The setup prepares the InstallShield Wizard, and the Welcome window opens. Click **Next >**.



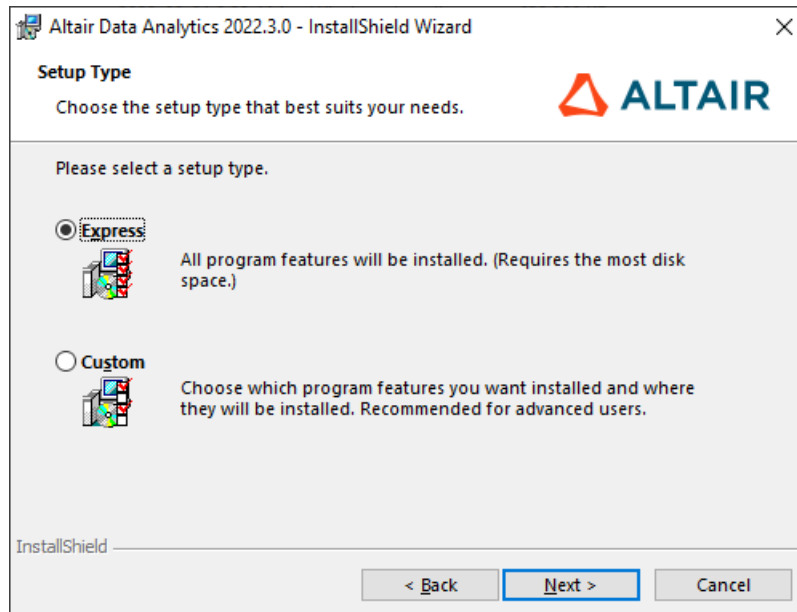
4. The License Agreement window opens. If you accept the terms, select "I accept".



Click **Next >**.

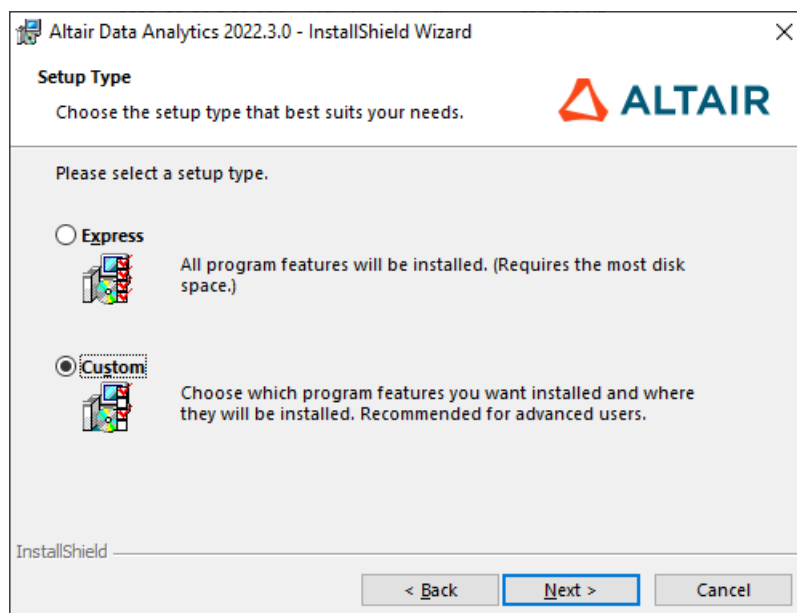
5. The Setup Type window opens:
 - To install all KS Server features with default settings, select the **Express** option.

- The application program files will be installed in the default location
C:\Program Files\Altair Data Analytics.
- A Windows Service called *KSWinLoginService2022.3_64* will be installed and started automatically.



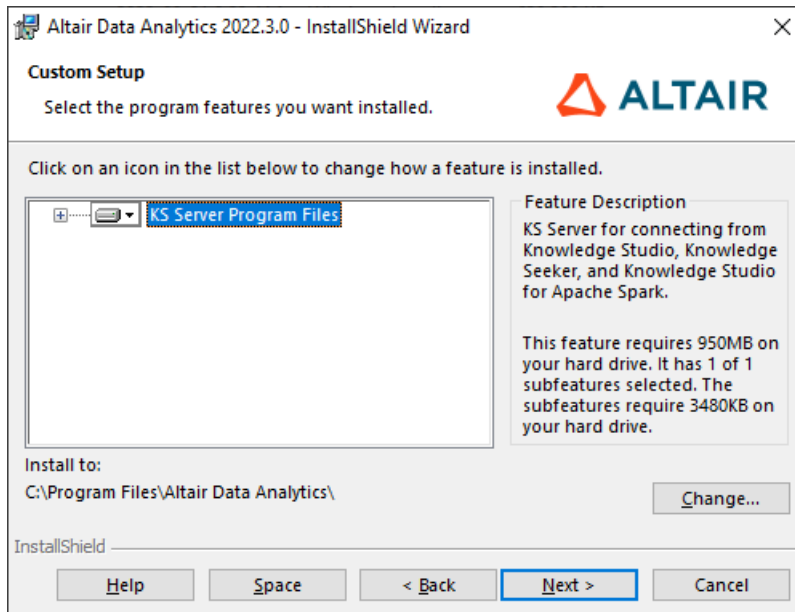
Click **Next >** and then **Install** to start the installation. Proceed to Step 10 below.

- To change the destination for KS Server program files or the KS service options such as the TCP port for the service to listen on, select the **Custom** option.



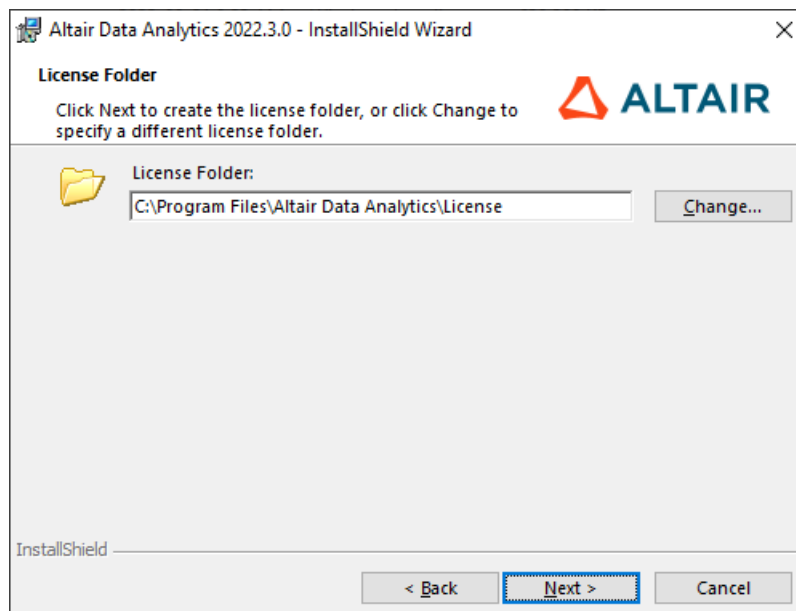
Click **Next >**.

6. If you selected the *Custom* option, the Custom Setup window opens. To change the destination folder for the program, click the **Change** button and specify the desired location. The default is `C:\Program Files\Altair Data Analytics`.



Click **Next >**.

7. The License Folder window opens. Specify a folder that has Read and Write permissions for all intended users of KS Server. The default is `C:\Program Files\Altair Data Analytics\License`.

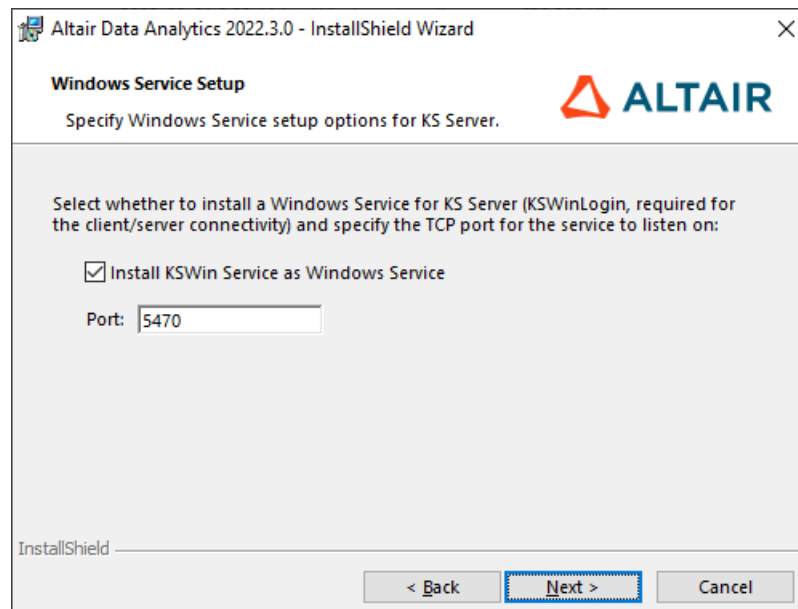


Click **Next >**.

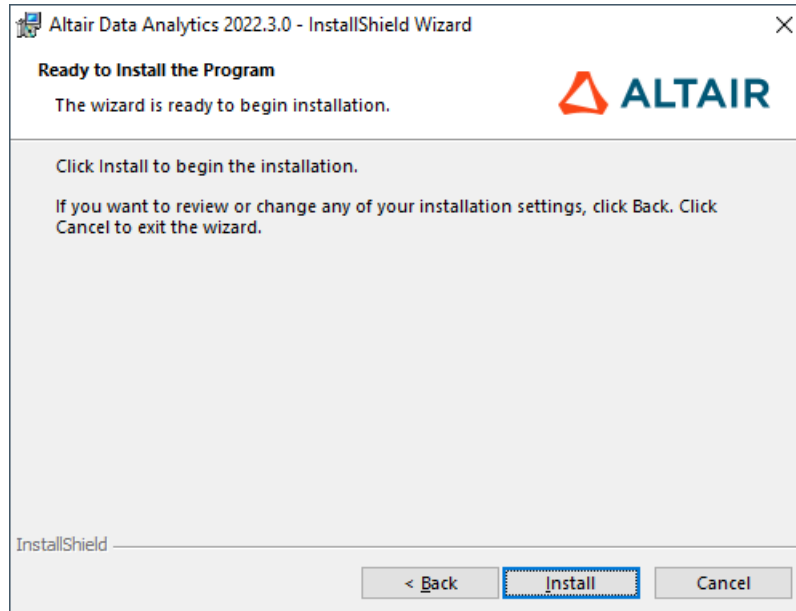
8. The Windows Service Setup window opens.

The option ***Install and start KSWinLogin Service as Windows Service*** is selected by default. Leave it selected unless you are installing KS Server for Real-Time Scoring Web API only. If you deselect it, you will have to start KS Server manually from the command line, and it will not be restarted automatically if the server is rebooted.

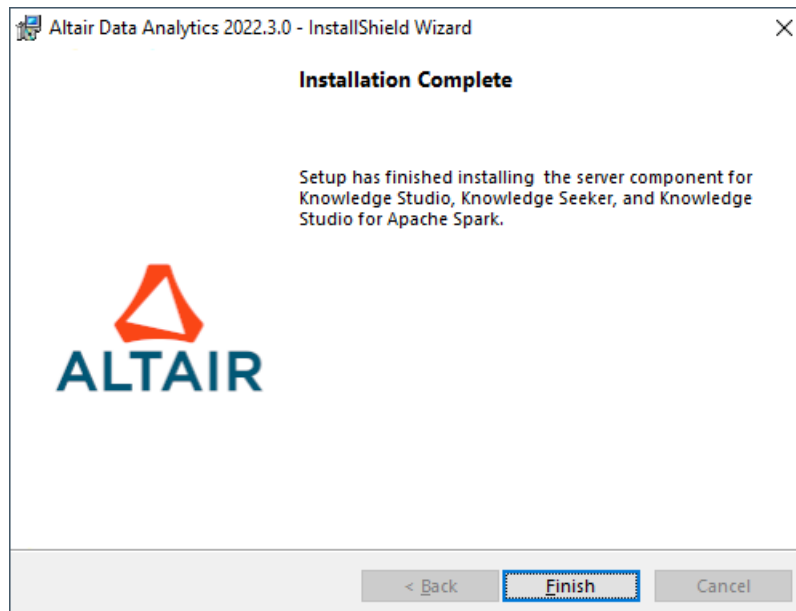
Specify the TCP port for the KSWinLogin service. The default is **5470**. The port must be open for inbound connections on the server, as described in [Section 8.1.4, "Configuring KS Service"](#).



Click **Next >** and then **Install** to start the installation.



9. The Setup Status window opens. It shows the installation progress. When the installation is complete, click **Finish**.

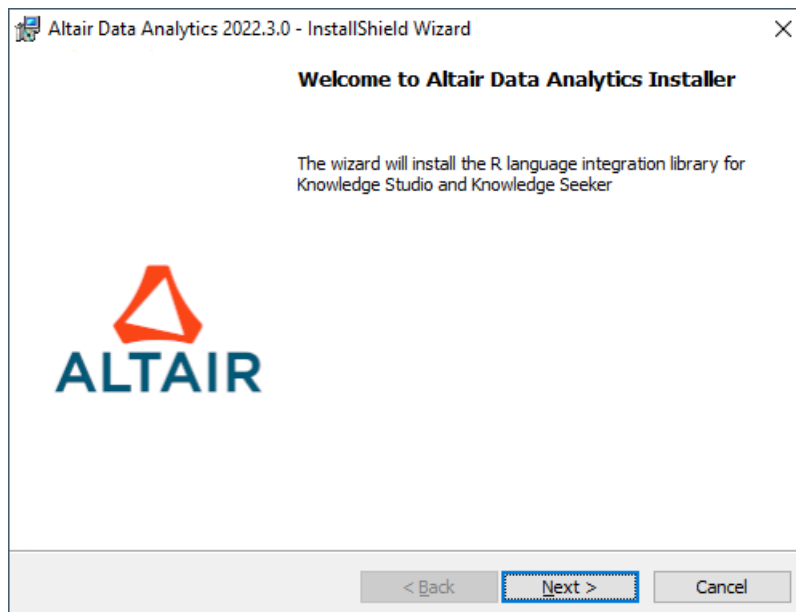


8.1.2. Install KS Library for R Integration on Windows Server

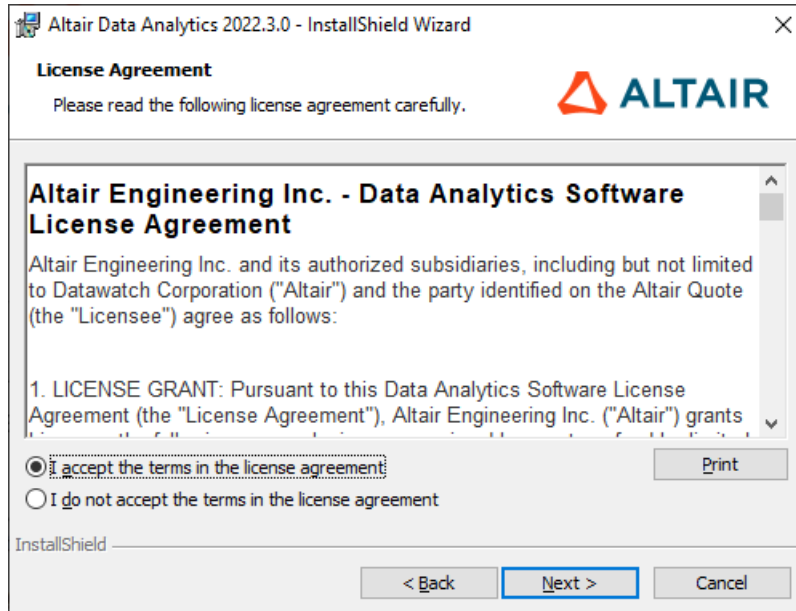
Knowledge Studio and Knowledge Seeker support integration with [R software environment for statistical computing](#). If the intended users are going to use this feature, install KS Library for R on the server as described below.

Prerequisites: R software and KS Server. R is only required on the server side. In the Prerequisites section above, see [Subsection 5.2: "R Software for Statistical Computing"](#).

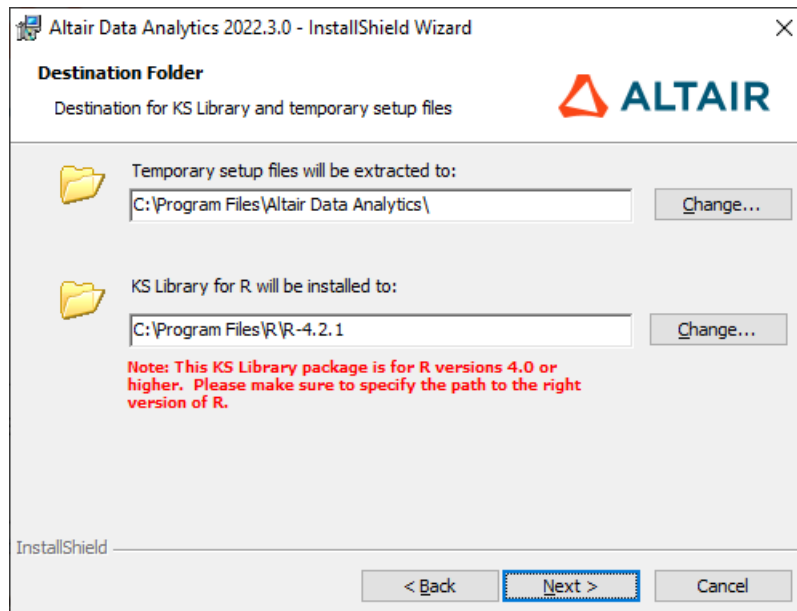
1. Make sure R software and KS Server 2022.3 are installed.
2. For R version **4.0.0** or higher, download *KS Library 2022.3 for R 4.0 or higher* from the Altair software download site.
For R version **3.5.0 - 3.6.3**, download *KS Library 2022.3 for R 3.5.0 – 3.6.3* from the Altair software download site.
3. Uninstall any previous version of KS Library for R from the Programs and Features list in the Windows Control Panel
4. Double-click the downloaded package for KS Library for R. Click **Next >** in the Welcome screen.



5. In the License Agreement window, select "I **accept**" if you accept the terms and click **Next >**.

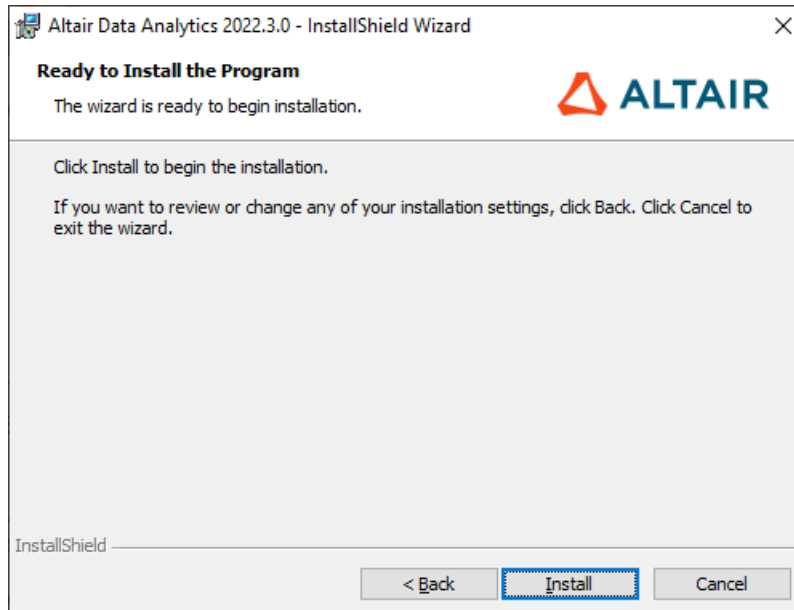


6. The Destination Folder window opens. KS library for R will be installed into `<R program folder>\R-X.X\library\`, where R-X.X is the most recent version of R installed on the system, and `<R program folder>` is R program files root folder (usually `C:\Program Files\R`). If necessary, change the destination folder to extract the *temporary setup files* needed to install the library by clicking the **Change** button. The default folder to extract the temporary setup files is `C:\Program Files\Altair Data Analytics`.

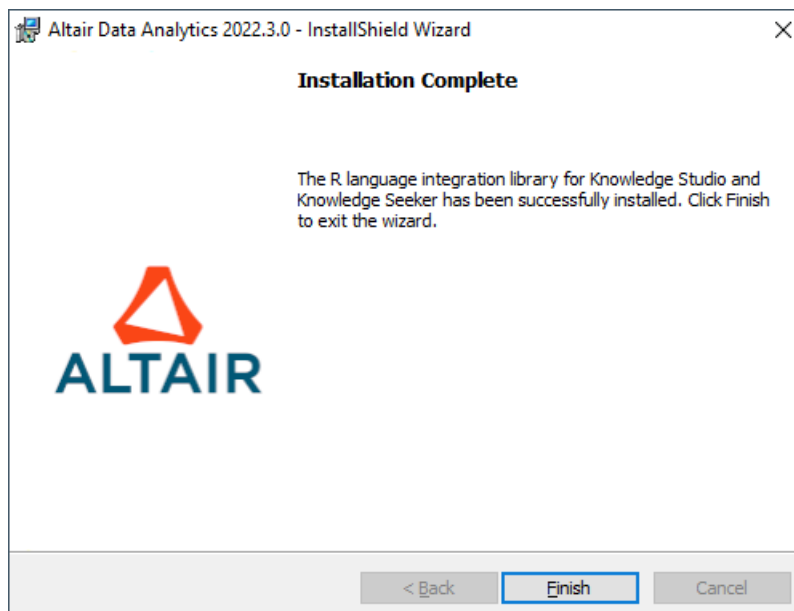


Click **Next >**.

7. Click **Install**.



8. The Setup Status window shows the installation progress. When the installation is complete, click **Finish**.



As a result, three subfolders representing the required *R* integration libraries are created under `<R program folder>\R-X.X\library\`:

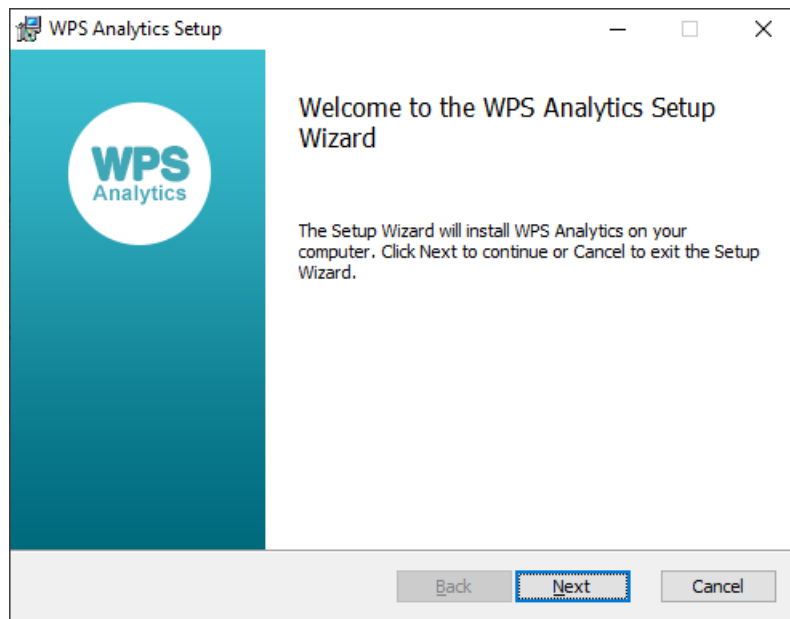
- `angoss`
- `KnowledgeSurvival`
- `xtable`

If users are required to use a different *R* library path, copy the folders `angoss`, `xtable`, and `KnowledgeSurvival` to the desired *R* library location.

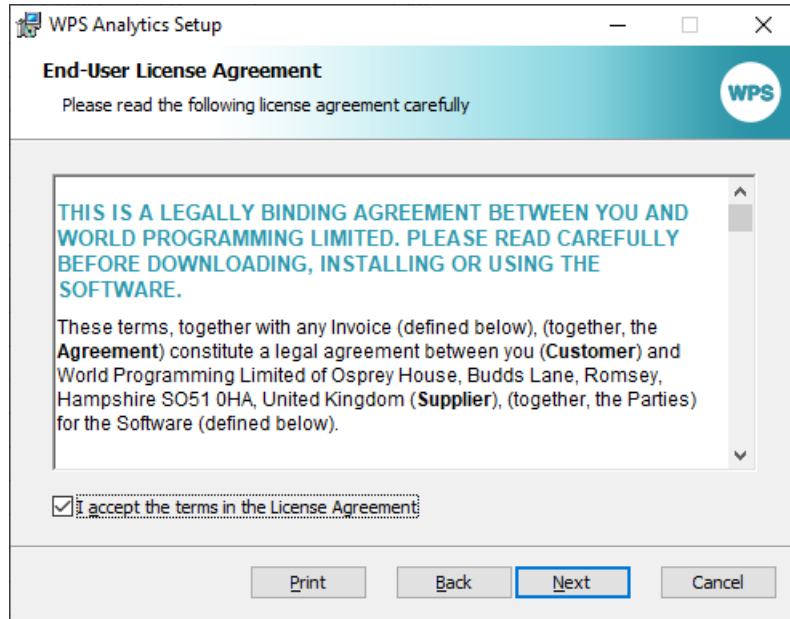
Note: The [Rserve](#) package, whose installation was described in [Section 5.2.3](#), must be present in the same *R* library location.

8.1.3. Installing Altair Analytics Workbench (WPS Workbench)

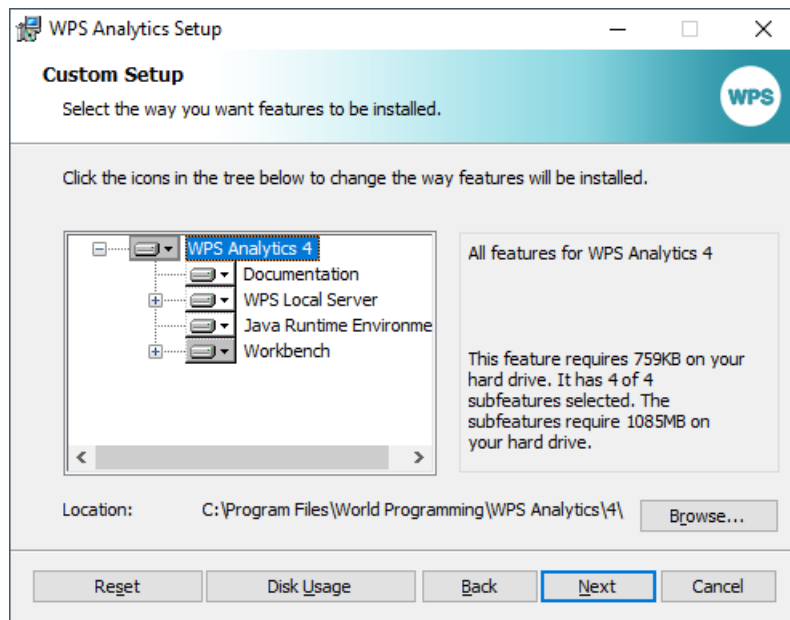
1. Download the 64-bit version of Altair Analytics Workbench from the [AltairOne](#) website. If you don't have an account at AltairOne.com, please reach out to the person managing Altair software licenses at your organization.
2. Run the downloaded installation package. Click **Next >** in the Welcome screen.



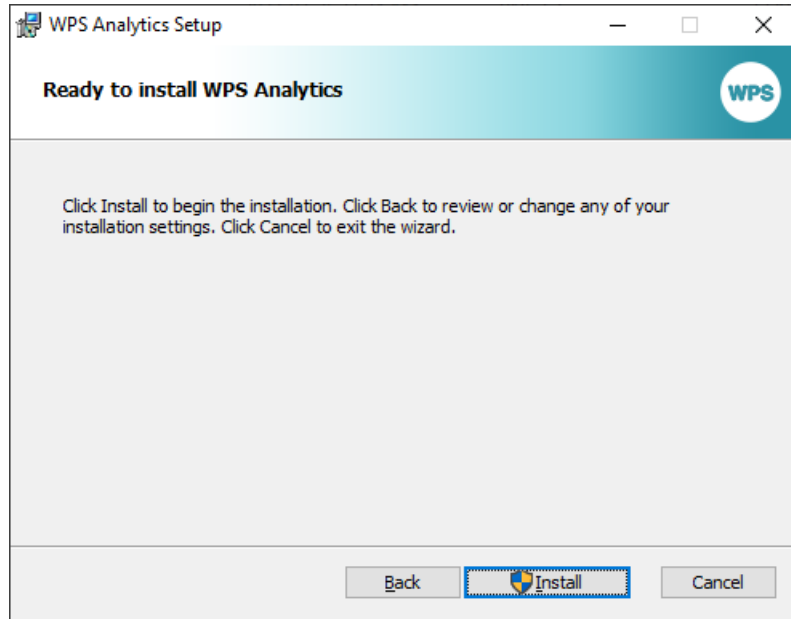
3. In the End-User License Agreement window, select “I accept the terms in the License Agreement” if you accept the terms. Click **Next >**.



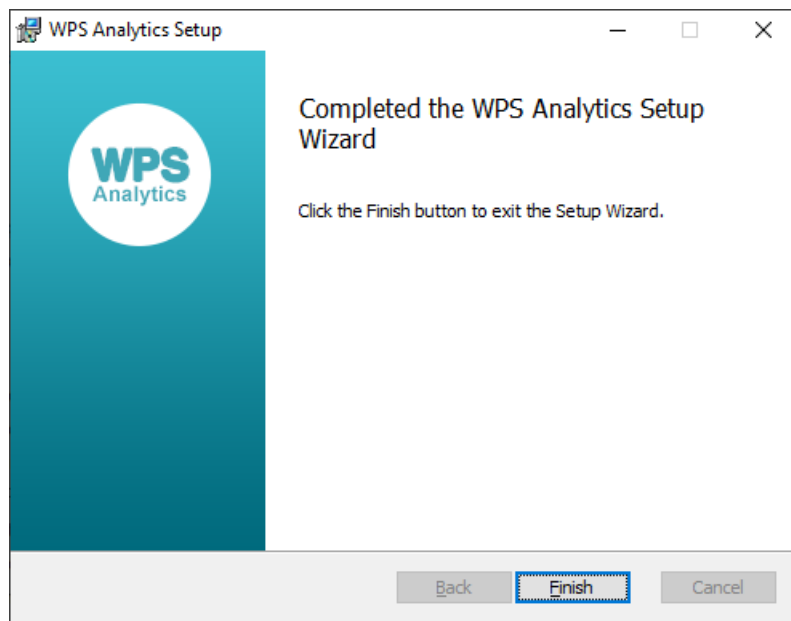
4. In the Custom Setup page, select all WPS program features, as shown below. To change the destination folder for the application program files, click the **Change** button and specify the desired location. The default is C:\Program Files\World Programming\WPS Analytics\4\. Click **Next >**.



5. Click **Install** to start the installation.



6. The Setup Status window shows the installation progress. When the installation is complete, click **Finish**.



7. When the installation has finished, the new folder *WPS Analytics* with the item *WPS Workbench* appears in the programs list of the Windows Start menu, and the *WPS Workbench* shortcut is created on the desktop.

WPS Analytics uses the same license as Knowledge Studio Server. Activating KS Server with an [Altair Units License](#) automatically activates WPS Analytics on the same machine.

8.1.4. Configure KS Service (KSWinLogin Service)

The Windows service **KSWinLoginService2022.3_64** is installed and started automatically if you chose the default Windows Service Setup option in the KS Server installation wizard.

The service is listening on the port that was specified in the wizard. The default is **5470**. If you want to change the default port for KSWinLogin Service, specify the desired port number in the KS Server configuration file **KSWinLogin.conf**, whose default location is `C:\Program Files\Altair Data Analytics\KS Server 2022.3.0\bin`.

For example, to change the default port to 5480, open the file `KSWinLogin.conf` in a text editor and add the following line:

```
port 5480
```

Then open *Services* from the Windows Control Panel | Administrative Tools and restart `KSWinLoginService2022.3_64`.

Upon each client connection from KS Workstation, KS Server creates a process called **KSWinLogin.exe**. Server administrators can monitor these processes in the Task Manager. Connection attempts are logged in the Windows Server Event Viewer in the *Application* and *Security* logs in the *Windows Logs* folder.

Cryptographic Protocols:

TLS1.2 is used by default. If desired, you can configure KS Server to use TLS version 1.1. In that case, add the following line in the KS service configuration file `KSWinLogin.conf` in `C:\Program Files\Altair Data Analytics\KS Server 2022.3\bin`:

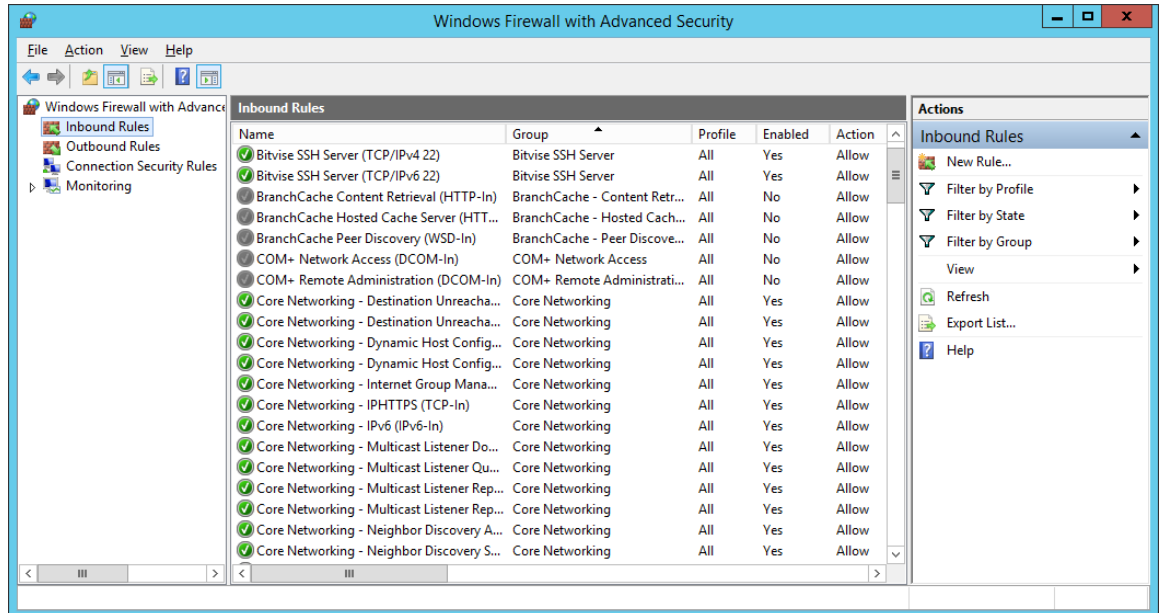
```
ssl_options tls1.1
```

The older versions TLS1.0, SSLv3 and SSLv2 are never used.

Windows Firewall configuration

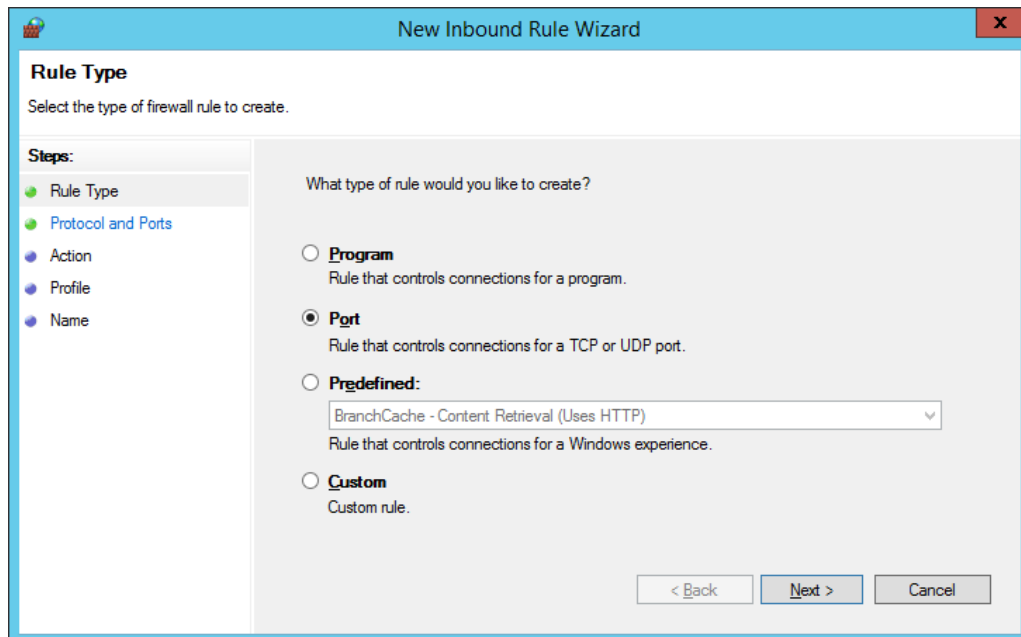
Create a new inbound rule for the KS Server TCP port.

In your Windows Server Control Panel, open *System and Security* → *Administrative Tools* → ***Windows Firewall with Advanced Security***



Expand the top item in the left panel and open **Inbound Rules**. In the Actions panel on the right, click **New Rule...**

In the New Inbound Rule Wizard, select the **Port** option.

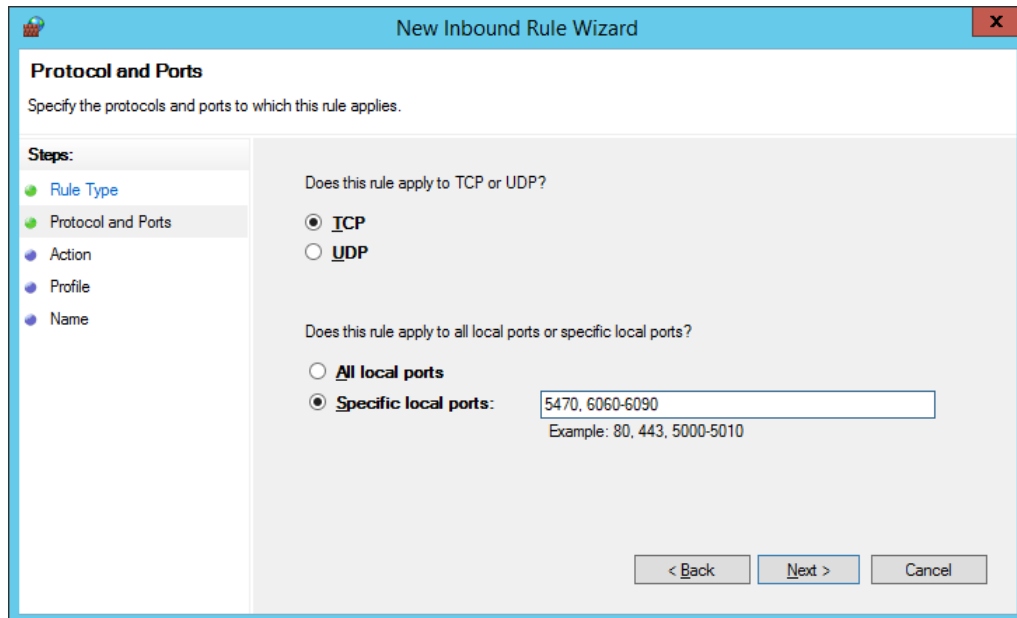


At the next step, select the **TCP** option and choose "**Specific local ports**". Then specify the port(s) to open for inbound connection from the client machines. *Note: If you*

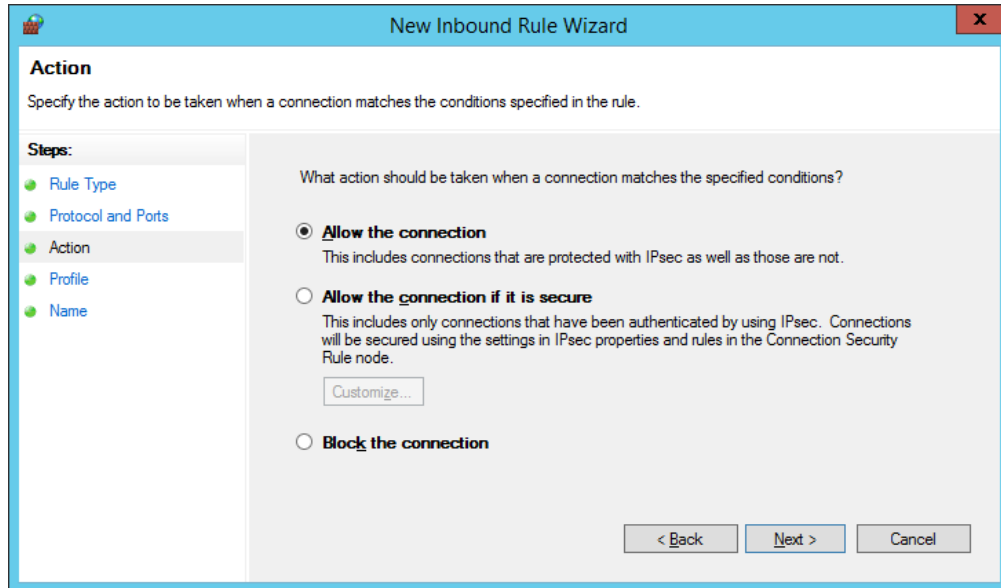
configured KS Server to run on a non-default port, replace “5470” below with the port number you specified in KSWinLogin.conf.

- For Knowledge Seeker or Knowledge Studio:
 - enter port number **5470**
 - if users require the Jupyter Notebook integration feature, in addition to 5470, specify the range of TCP ports to be used by Jupyter Notebook users (for example, 8800-8900)
- For Knowledge Studio for Apache Spark, open port **5470** and the port range **6060–6090**.

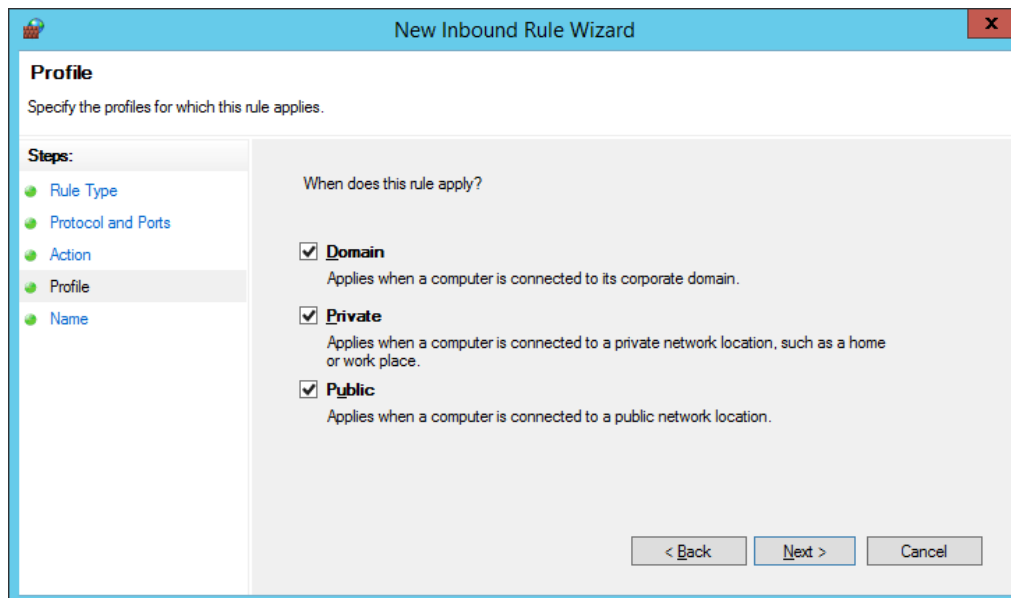
See the example screenshot below.



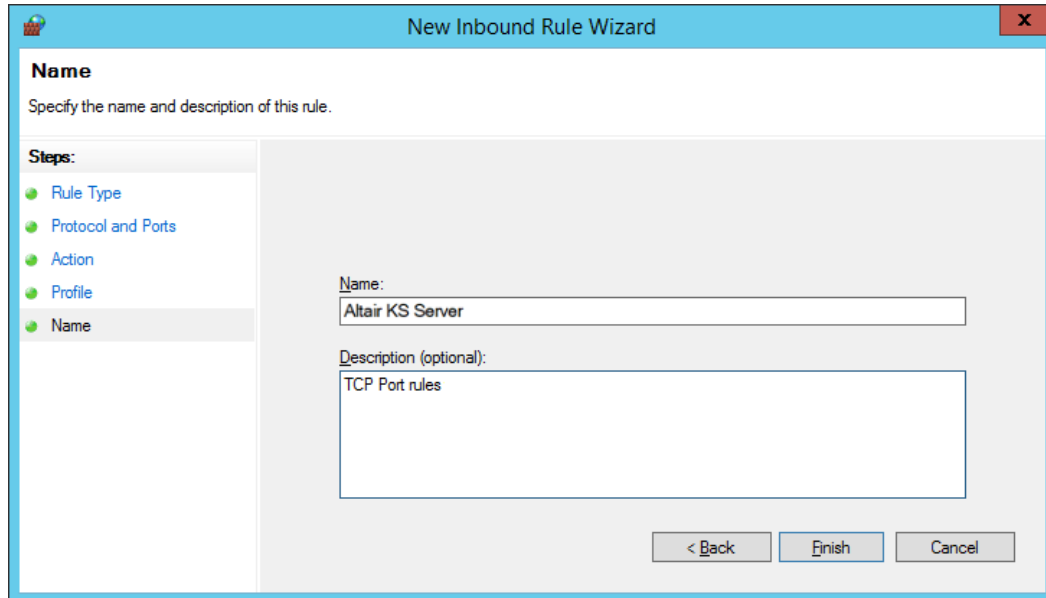
At the next step, select the option “Allow the connection” or “Allow the connection if it is secure”, depending on your security requirements.



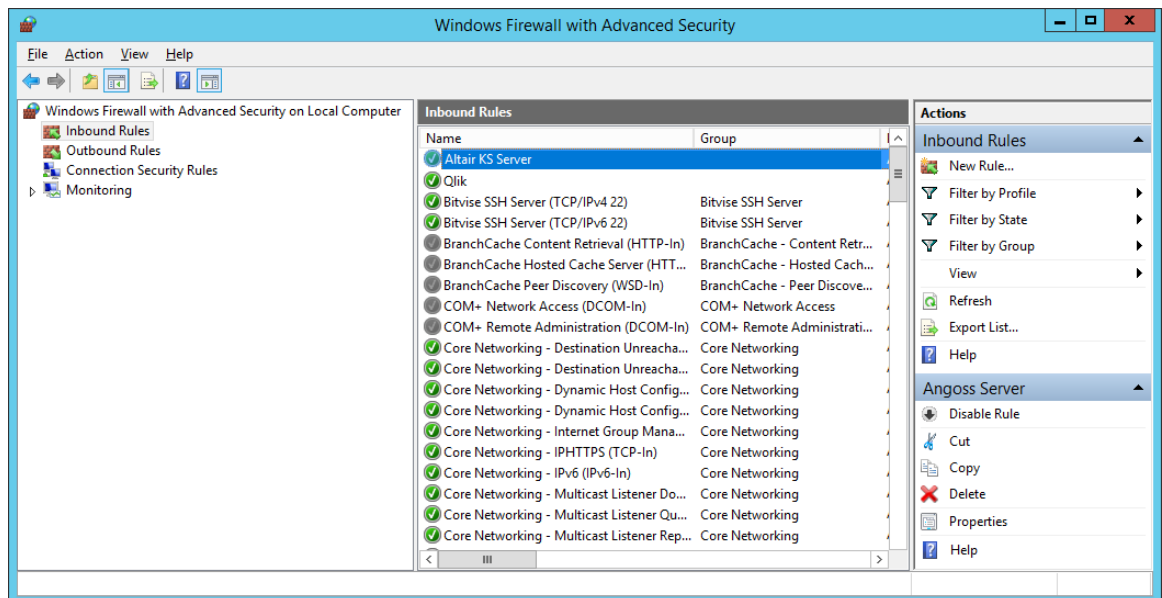
At the next step, select the desired profiles depending on your security requirements. At least the **Domain** profile is usually required.



At the next step, enter the name for the new rule (for example, "Altair KS Server") and optional description.



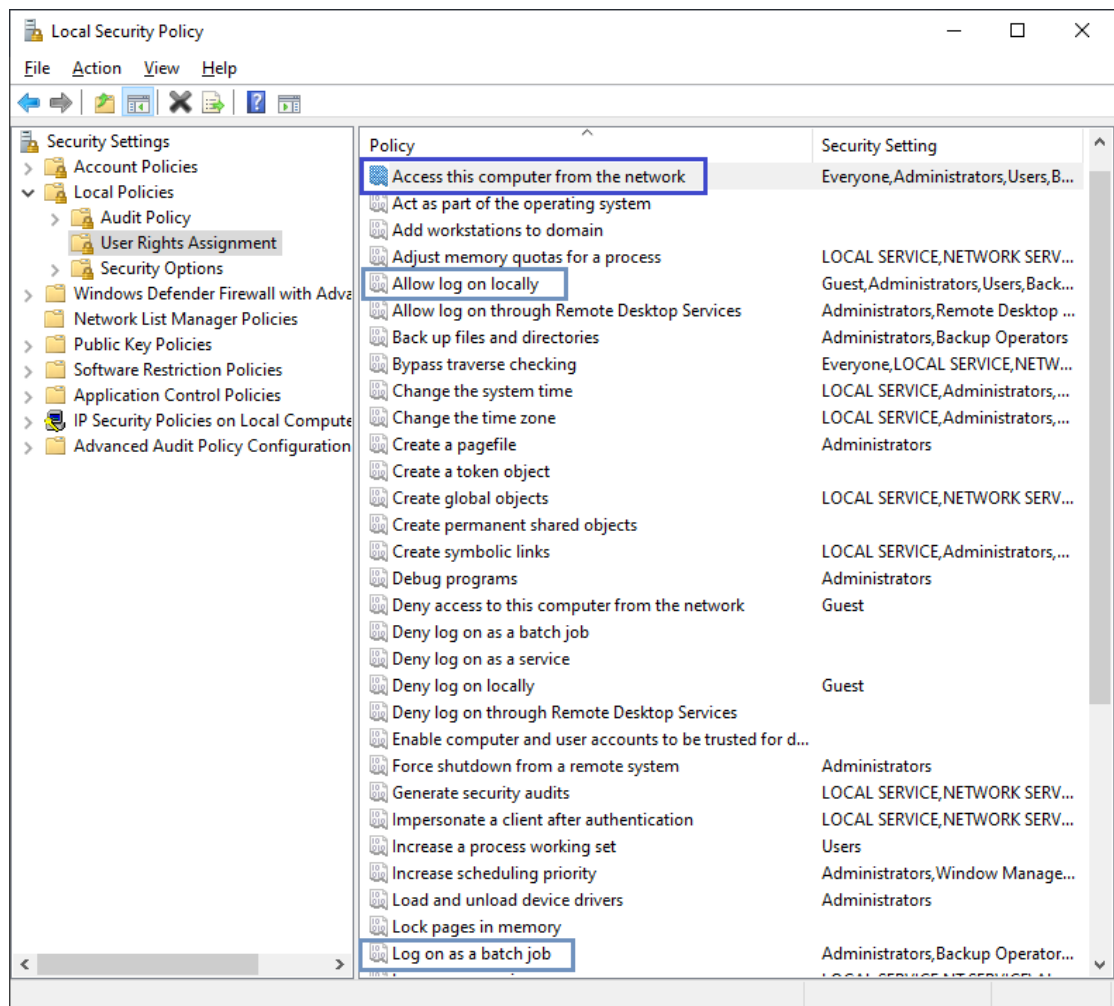
Click **Finish**. The new rule will be created in the Windows Firewall with Advanced Security configuration.



8.1.5. Configure User Rights on the Server

Create a user group that includes all intended users of KS Server in the client/server mode. For example, call it **KS_Users**. Note: Creating the group is optional. You may choose to add permissions to an existing user group that includes all potential KS Server users, or to individual users instead.

- Open the **Local Security Policy** or Local Security Settings item of the Server Administrative Tools. Open **Local Policies** and select **User Rights Assignment**.
- Edit the following policies to add the KS user group or individual users:
 - **Access this computer from the network**
 - Either **Allow Log on locally** OR **Log on as a batch job**, depending on the security requirements in your network.



- If you choose the option **Log on as a batch job**, update the KS Server configuration file **KSWinLogin.conf**. Its default location is `C:\Program Files\Altair Data Analytics\KS Server 2022.3.0\bin`. Open the file `KSWinLogin.conf` in a text editor and add the line


```
logon_type batch
```
- Restart the service `KSWinLoginService2022.3_64`

- If the product will be used with a [Registration-Key](#) license, make sure that the KS Server license folder has Read & Write permissions for all KS Server users. The default location is C:\Program Files\Altair Data Analytics\License.

8.1.6. Configure WPS Analytics and SSH Server

Configure WPS Analytics

1. Create a new parent folder on the server for the WPS standard libraries SASUSER and WORK. The WORK library is for temporary WPS files. It is recommended to use the same drive where the Knowledge Studio users' working directories are set up. For example, create a new folder called **E:\WPS_HOME**. This folder must have Read & Write permissions for all KS Server users.
2. Edit the WPS configuration file **wps.cfg** located in the WPS root folder C:\Program Files\World Programming\WPS Analytics\<version_number>. Change the values of the SASUSER and WORK parameters in wps.cfg. For example, if the folder you created is E:\WPS_HOME, then specify:

```
-SASUSER 'E:\WPS_HOME\!USERNAME\My WPS Files'  
-WORK 'E:\WPS_HOME\!USERNAME\TEMP'
```

Save the changes in wps.cfg.

Note: In case of any issues with user-specific subfolders, you may omit the !USERNAME variable referring to user-specific locations and define common SASUSER and WORK locations as follows (*generally not recommended, as this is a less organized way*):

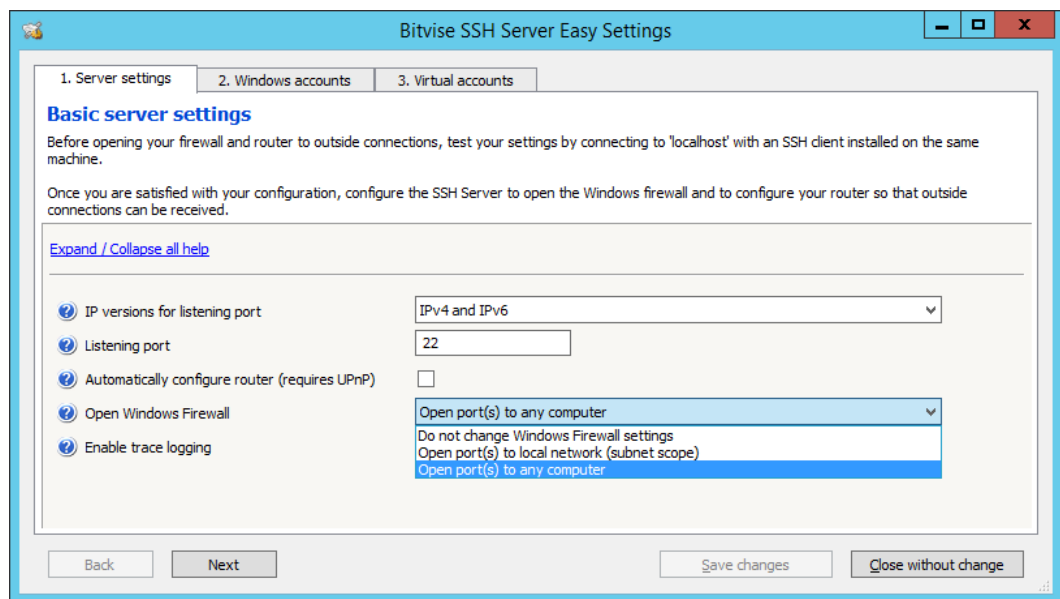
```
-SASUSER 'E:\WPS_HOME'  
-WORK 'E:\WPS_HOME\TEMP'
```

3. Set the environment variables for the WPS integration: From the Windows Server Control Panel, open System → Advanced System Settings, go to the Advanced tab and click Environment Variables.
 - a) In the System Variables section, click New and add an environment variable **ANGOSS_DLL** with the value **AngossData64-2022.3.dll**
 - b) In the System Variables section, select the PATH variable, click Edit, and add the path to the KS Server bin folder at the end. For example, if KS Server is installed in the default location, this is C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\bin

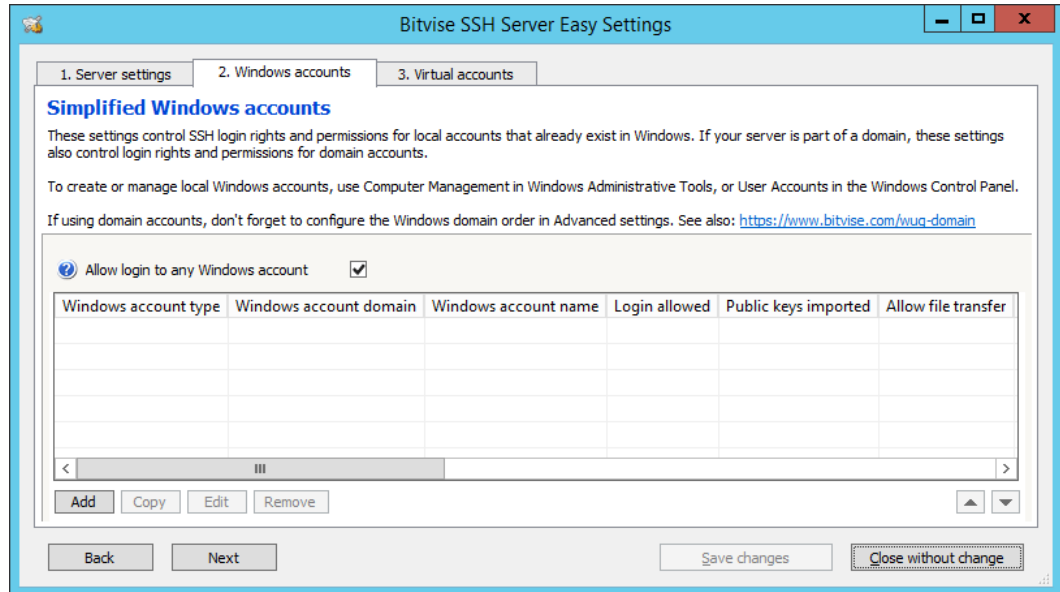
Install and Configure Bitvise SSH Server

[Bitvise SSH server](#) is required for WPS integration for Knowledge Studio in the client/server mode. It can be downloaded from <https://www.bitvise.com/ssh-server-download>. Install and configure the standard, fully functional Bitvise SSH server edition. The detailed configuration instructions are available here: <https://www.bitvise.com/configuring-ssh-server-for-sftp>. Below is a brief description of the installation and configuration steps suitable for most cases:

1. Download the file **BvSshServer-Inst.exe** and run the downloaded executable. In the installation wizard, make sure you select the standard, fully functional Bitvise SSH server edition that supports domain accounts.
2. When the installation is complete, the Bitvise SSH Server Easy Settings window appears. In the **Server Settings** tab, select the desired option for “*Open Windows Firewall*”. If you choose any option other than “Open port(s) to any computer”, make sure the listening port is accessible to the computers of all KS Server users.

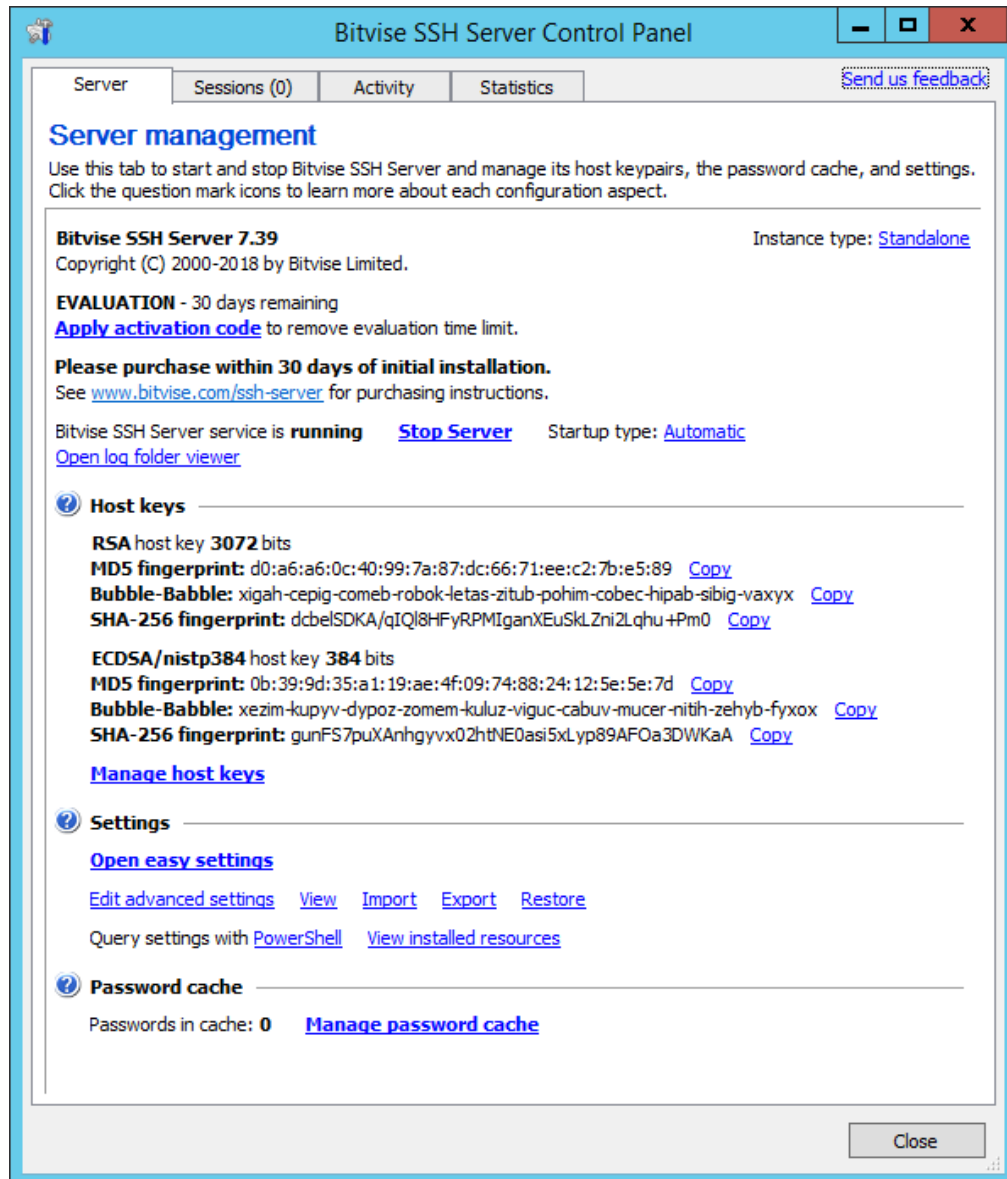


Check *the* settings in the Windows accounts tab and modify them if necessary (see the next screenshot). Make sure that logging in to Windows domain accounts of KS Server users is allowed.

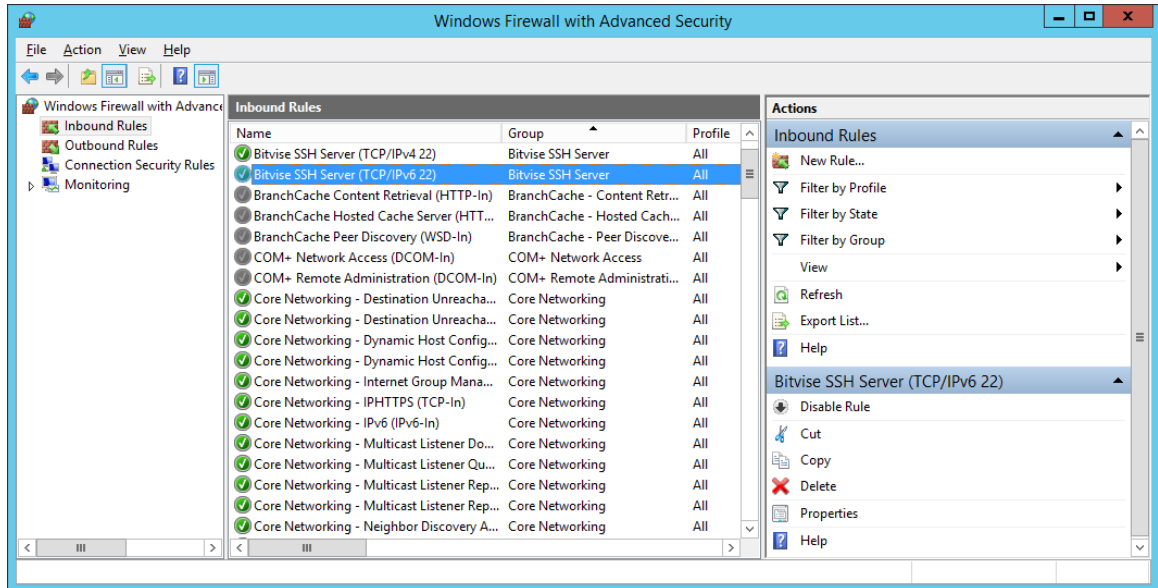


If required, configure access for the Virtual accounts in the third tab.

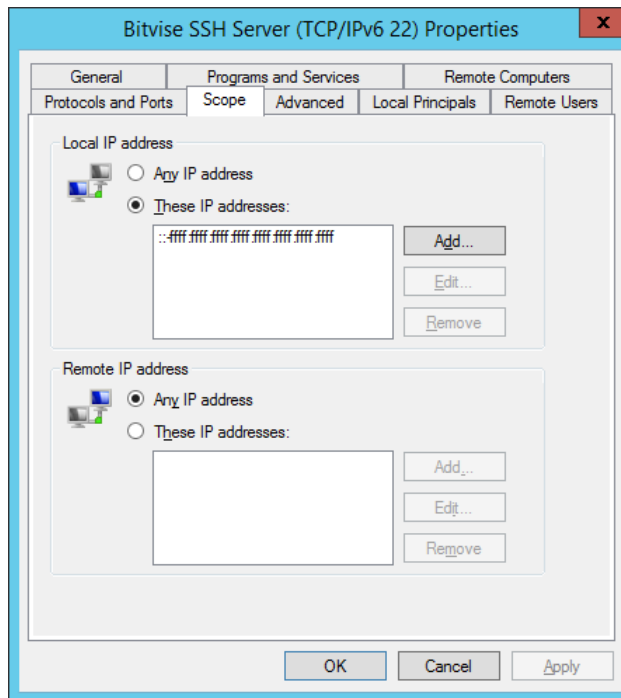
3. If you choose not to start the server upon closing the Easy Settings dialog, start it from the Bitvise SSH Server Control Panel, as shown below. Easy Settings and Advanced Settings are also available in the same Control Panel dialog. For detailed description of advanced settings, see <https://www.bitvise.com/configuring-ssh-server-for-sftp>



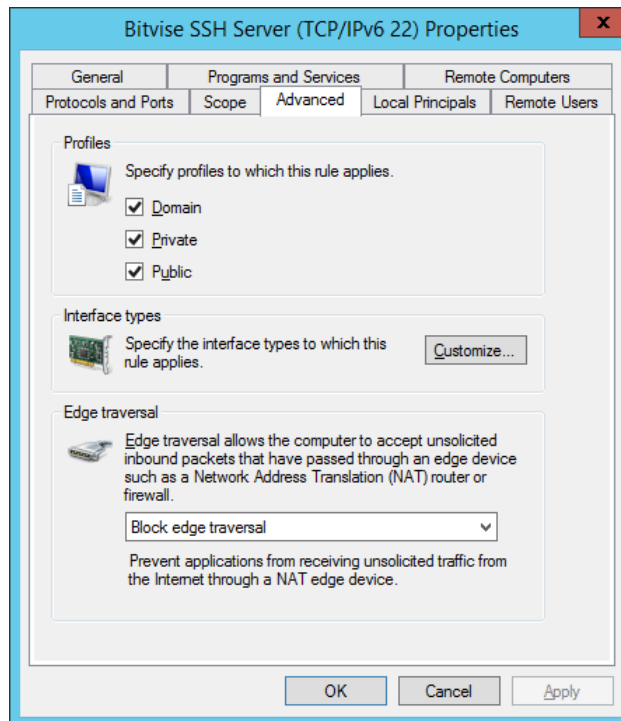
4. Windows Firewall configuration for Bitvise SSH Server: Depending on your Windows Firewall configuration and security rules, you may need to edit the default Inbound rules for Bitvise SSH Server. In your Windows Server Control Panel, open *System and Security* → *Administrative Tools* → **Windows Firewall with Advanced Security**



- Expand the top item in the left panel and open **Inbound Rules**. Double-click the rule “*Bitvise SSH Server (TCP/IPv6 22)*” to open its properties. Go to the Scope tab of the Properties dialog and specify the desired Remote IP address range for computers allowed to access the SSH server. Make sure the computers of the Angoss software users are within this range.



- Go to the Advanced tab of the Properties dialog and specify the desired profiles to which the rule applies. Make sure the computers of the KS Server users fit at least one of these profiles.



- Set the same properties for the rule “*Bitvise SSH Server (TCP/IPv4 22)*”.

8.2. KS Server Installation and Configuration on Linux

This section describes the process of installing and configuring KS Server and dependent components on Linux. For system requirements and prerequisites, see [Section 3](#) and [Section 5](#). Follow the steps below.

8.2.1. Configure Pluggable Authentication Modules (PAM) for KS Service

Define the authentication rules for KS Server by creating the KS Service configuration file **kslogin** in `/etc/pam.d/`. Since these rules should normally be the same as those for the standard **login** service, create **kslogin** by copying the **login** configuration file:

```
cp /etc/pam.d/login /etc/pam.d/kslogin
```

For more information about PAM modules and options, see the system-level administration guide in your Linux OS documentation and <http://www.linux-pam.org/>.

8.2.2. Install KS Server on Linux

1. Download the KS Server installation package for your Linux system from the Altair software download site. For example, for Red Hat enterprise Linux 7, the file name is *KS-Server-2022.3-rhel7_x64.rpm*. Copy the downloaded file to a directory on the server.
2. Log in to the server as **root**.
3. If you are upgrading from a previous version of KS Server, note that the installer will shut down all current KS Server processes. Notify the users if necessary. To check if any KS user processes are running, use the command

```
ps -ef | grep kslogin
```

4. Run the installer. For example, on Red Hat Enterprise Linux 7, run the command

```
rpm -ivh KS-Server-2022.3-rhel7_x64.rpm
```

This installs KS Server to `/opt/Altair-Data-Analytics` and starts the KS service *kslogin*.

To install to a different directory, specify the desired path after the `--prefix` switch. For example, this command installs KS Server to `/apps/Altair-Data-Analytics` on Red Hat Enterprise Linux 7:

```
rpm -ivh --prefix=/apps KS-Server-2022.3-rhel7_x64.rpm
```

5. Verify that the KS service has started successfully. The following messages indicate the successful start:

```
/opt/Altair-Data-Analytics/KS-Server-2022.3/lib/kslogin(service_pid=2951,server_pid=2952) 2018-12-08 23:33:06 server start: port 5470
```

```
/opt/Altair-Data-Analytics/KS-Server-2022.3/lib/kslogin: logging to kslogin.log
```

6. The license directory is `/opt/Altair-Data-Analytics/license`. If KS Server will be used with a [registration-key license](#), set Read & Write permissions to the license directory for all KS Server users. For the [Altair Units license](#), the Read permission is sufficient.

8.2.3. KS Libraries for R and Python

This section describes the steps to install and configure R and Python integration libraries.

Install and configure KS Library for R

If the R integration features are required, make sure that R software is installed as described in [Section 5.2](#).

By default, KS Server for RHEL 7 and CentOS 7 is configured to support R 3.5.0 – 3.6.3, while KS Server for RHEL 8 and CentOS 8 is configured to support R 4.0

and higher. If you require integration with a different version of R on your server, please contact Customer Support at dasupport@altair.com to request KS Library for your version of R.

In the examples below, it is assumed that R is installed under `/usr/lib64/R`.

1. Edit the KS Server startup script `ks_start`, whose default location is `/opt/Altair-Data-Analytics/KS-Server-2022.3`. In the R environment section, specify the value for the `R_HOME` environment variable if the R home directory on your server is different from the default specified here:

```
R_HOME=/usr/lib64/R
export R_HOME
```

2. Uninstall any previous version of KS Library for R as follows:

```
R CMD REMOVE angoss
R CMD REMOVE KnowledgeSurvival
```

3. Install KS Library for R:

```
cd /opt/Altair-Data-Analytics/KS-Server-2022.3/R
Rscript angossSetupR.R
```

This will create three directories under the R library location `/usr/lib64/R/library/`:

- `angoss`
- `KnowledgeSurvival`
- `xtable`

If any users need to use a different R library path, copy the directories `angoss`, `KnowledgeSurvival`, and `xtable` to the desired R library location. Note that the [Rserve](#) library must exist in the same R library location (see [Section 5.2.3](#)).

Configure KS Library for Python

If Python integration features are required, make sure that Python or one of its distribution packages has been installed as described in [Section 5.3](#).

Edit the KS Server startup script `ks_start` in `/opt/Altair-Data-Analytics/KS-Server-2022.3`. In the Python environment section, specify the value for the `PYTHON_HOME` environment variable. It must point to the parent of the bin directory with the Python executable. For example, if the Python executable is `/usr/bin/python`, then `PYTHON_HOME` must be set as follows:

```
PYTHON_HOME=/usr
export PYTHON_HOME
```

8.2.4. Install and Configure Altair Analytics Workbench (WPS Workbench)

1. Download the installation package for WPS Analytics for Linux (**WPS Analytics Linux x64 RPM**) from the [AltairOne](#) website and copy it to the server where KS Server is installed. If you don't have an account at AltairOne.com, please reach out to the person managing Altair software licenses at your organization.

2. Install WPS Analytics for Linux by running the command

```
rpm --install <wps-installation-file>.rpm
```

The default installation location is `/opt/worldprogramming/wps-<version>`.

3. Create a symbolic link `/opt/wps` pointing to the WPS Analytics root directory. For example, if WPS Analytics is installed in `/opt/worldprogramming/wps-4`, then link it as follows:

```
ln -s /opt/worldprogramming/wps-4 /opt/wps
```

4. Make sure that the OpenSSH server process (`sshd`) is running. Refer to the Linux documentation for the information on the `openssh-server` and `openssh` packages and starting the `sshd` daemon. For example, for RHEL 7, see [OpenSSH for RHEL 7](#).
5. Create the `wpsenv.sh` shell script for WPS environment in the WPS root directory `/opt/worldprogramming/wps-<version>` and define the following environment variables in this script (in this example, KS Server is assumed to be installed in `/opt`):

```
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/Altair-Data-Analytics/KS-Server-2022.3/lib
export ANGOSS_DLL="libAngossData.so"
```

For a [self-hosted Altair License Server](#), define the `ALTAIR_LICENSE_PATH` variable (for `altair_license_server`, substitute the name or IP address of the Altair License Server host machine):

```
export ALTAIR_LICENSE_PATH=6200@altair_license_server
```

For a [Managed Altair Units license](#) hosted in the Altair cloud, define `ALM_HHWU`:

```
export ALM_HHWU=true
```

8.2.5. Configure KS Service and Security

This section describes the steps to configure KS service, the firewall for KS Server security, set KS service runtime parameters, and configure database connections. KS Server must be restarted as described in the next section for any configuration change to take effect.

Configure KS Service

The KS Server configuration file `kslogin.conf` defines the runtime parameters of the service such as the port number for the KS service to listen on, the log file name and location, etc. The default location of the service configuration file is

```
/opt/Altair-Data-Analytics/KS-Server-2022.3/lib
```

Example configuration file kslogin.conf:

```
port          5470
backlog       10
log           kslogin.log
ssl_cert      ssl_cert.pem
ssl_key       ssl_key.pem
```

- The default port number for KS service is **5470**. The port number is defined by the **port** parameter. Specify a different port if necessary.
- The **backlog** parameter is related to the socket configuration. It defines the maximum length that the queue of pending connections may grow to. The default value (10) is suitable in most cases.
- The **log** parameter defines the name of the KS service authentication log file. When its name is specified without the full path, it is located in `<install_dir>/Altair-Data-Analytics/KS-Server-2022.3`. To keep the log in a different location, specify the full path, for example:
`/opt/Altair-Data-Analytics/logs/kslogin.auth.log`

- The **ssl_options** parameter determines the cryptographic protocol to be used by KS Server. TLS1.2 is used by default. If desired, configure KS Server to use a different version such as TLS 1.1 by setting

```
ssl_options  tls1.1
```

Deprecated protocol versions TLS1.0, SSLv3 and SSLv2 are never used.

- The **ssl_cert** and **ssl_key** parameters name the files containing the SSL certificate and key, respectively. Their default values are `ssl_cert.pem` and `ssl_key.pem`, and the designated location for these files is the KS Server **lib** directory, which also contains `kslogin.conf`. These files must exist, and the OpenSSL library must approve of them, otherwise any connection attempt will fail. If necessary, generate your own certificate/key pair and copy it to the KS Server **lib** directory. An example command to generate the SSL certificate and key:

```
openssl req -x509 -nodes -days 10000 -subj '/' -newkey
rsa:2048 -keyout ssl_key.pem -out ssl_cert.pem
```

- The **authenticator** parameter defines the authentication mechanism. The default authenticator is **PAM**. If you are using other authentication methods where users do not necessarily have entries in `/etc/passwd`, specify an alternative authentication mechanism, for example:

```
authenticator pw
```

For setting optional advanced runtime parameters, see [Chapter 12](#).

Configure Firewall for TCP Port Connections

Create inbound rules in the Linux firewall for the TCP ports used by KS Server. Inbound connections to the KS Server host must be allowed on these ports from the KS Workstation client machines.

- For Knowledge Studio or Knowledge Seeker, open the port specified in `kslogin.conf` (the default is **5470**)
- For Knowledge Studio for Apache Spark, open the port specified in `kslogin.conf` (the default is **5470**) and the port range **6060–6090**. Ensure the network connectivity between the KS Server host and the Apache Spark Server.

8.2.6. Environment for Database Connectivity

This step is necessary only if the users need to import data from databases. See [Section 5.5](#) for prerequisites.

1. Install the ODBC drivers for the required databases. Native ODBC drivers are recommended. For example, for Apache Hadoop, use the Hortonworks or Cloudera ODBC drivers available for free from the respective vendors.
2. Edit the file `ks_odbc` in the KS Server home directory to set the ODBC environment if necessary. The example below assumes that your unixODBC libraries are in `/usr/lib64` and `odbc.ini` is in `/etc`. If you do not define `ODBCINI` and `ODBCSYSINI` in `ks_odbc`, the unixODBC defaults will be used.

```
export ODBCINI=/etc/odbc.ini
export ODBCSYSINI=/etc
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/lib64
```

3. You may need to add other environment variables depending on the requirements for the ODBC driver and the source databases. Please refer to the ODBC driver documentation. For example, for the Cloudera native ODBC driver for Apache Hive, define the `CLOUDERAHIVEINI` variable.
4. Edit the `odbc.ini` file of unixODBC to configure the Data Source Names (DSN) for the desired databases. You may need the help of the database administrator to get the host name for the database server, the database name, port number, or other connection parameters. An example `odbc.ini` is provided below. For the detailed guide to configuring `odbc.ini` for data access, refer to <http://www.unixodbc.org/> and your ODBC driver documentation.

DSN Configuration Example:

The following `odbc.ini` example file defines Data Source Names (DSN) for Teradata, Oracle, MySQL, SQL Server, and Apache Hive databases.

```
[ODBC Data Sources]
TeradataDB=Teradata ODBC Driver
OracleDB=Oracle Native ODBC driver
SQL_Server=Microsoft ODBC Driver 13 for SQL Server
```

```
MySQL=MyODBC 5.3.10 Driver DSN
HortonWorksHive64=Hortonworks Hive ODBC Driver 64-bit

[ODBC]
# Specify any global ODBC config here such as ODBC tracing.

[TeradataDB]
Driver = /opt/teradata/client/ODBC_64/lib/tdataodbc_sb64.so
DBCName = tddb.us.cloudapp.azure.com

[OracleDB]
Driver = /usr/lib/oracle/12.2/client64/lib/libsqora.so.12.1
ServerName = db_server_name
Database   = SAMPLE
SID        = orcldb.company.com

[SQL_Server_1]
Description=Microsoft ODBC Driver 13 for SQL Server
Driver=/opt/microsoft/msodbcsql/lib64/libmsodbcsql-
13.1.so.9.2
Database=sample_db
Server=db_server_name,1433
UID=
PWD=

[MySQL]
Driver      = /usr/lib64/libmyodbc5a.so
Description = Connector/ODBC 5.3.10 Driver DSN
SERVER     = mysqldb_server_name
PORT       = 3306
USER       = dbuser1
Password   =
Database   = db_name
OPTION     = 3
SOCKET     =

[HortonworksHive64]
Description=Hortonworks Hive ODBC Driver (64-bit) DSN
Driver=/usr/lib/hive/lib/native/Linux-amd64-
64/libhortonworkshiveodbc64.so
HOST=hdp_server_name
PORT=10000
Schema=default
ServiceDiscoveryMode=0
ZKNamespace=
HiveServerType=2
AuthMech=2
ThriftTransport=1
UseNativeQuery=0
UID=
KrbHostFQDN=_HOST
```

```
KrbServiceName=hive
KrbRealm=
SSL=0
TwoWaySSL=0
ClientCert=
ClientPrivateKey=
ClientPrivateKeyPassword=
```

8.2.7. Starting and Stopping KS Service

The KS service *kslogin* starts automatically upon the KS Server installation and listens to KS client connections. This section describes the use of KS Server scripts for starting and stopping the KS service.

Starting KS service using *ks_start*:

1. Log in as **root**.

2. Change to the KS Server home directory. For example:

```
cd /opt/Altair-Data-Analytics/KS-Server-2022.3
```

3. Run *ks_start*:

```
./ks_start
```

The following messages confirm that the KS service started successfully:

```
/opt/Altair-Data-Analytics/KS-Server-
2022.3/lib/kslogin(service_pid=2951,server_pid=2952) 2018-
12-08 23:33:06 server start: port 5470
```

```
/opt/Altair-Data-Analytics/KS-Server-2022.3/lib/kslogin:
logging to kslogin.log
```

The service is now ready to accept connections from KS Workstation clients. You will be able to test the client/server connection and install the license after deploying KS Workstation on Windows (see [Section 8.3](#)).

If any errors are reported, see [Section 8.2.8, “Troubleshooting”](#).

Stopping the service using *ks_shutdown*:

To stop the KS service and all KS users' *kslogin* processes on the server, use the **ks_shutdown** command in the KS Server home directory:

```
cd /opt/Altair-Data-Analytics/KS-Server-2022.3
./ks_shutdown
```

To restart the KS service, use *ks_shutdown* first and then run *ks_start*.

To stop only a particular user's process rather than the entire KS service, list all *kslogin* processes first, then kill the process running under this specific user ID:

```
ps -ef | grep kslogin
```

get the process ID of the user

```
kill -9 <process ID>
```

8.2.8. Automating KS Server Startup with Linux Service Management Tools

This section describes how to make the KS Server service start automatically at boot time and use service management commands to start and stop KS Server.

KS service can be managed using **systemd** and **systemctl**. The examples below assume that KS Server is installed in the default location under `/opt`.

1. Make sure that KS service can be started successfully using `ks_start` as described in the preceding section.

2. Copy the file `ks.service` from the KS Server home directory to `/etc/systemd/system`

```
cd /opt/Altair-Data-Analytics/KS-Server-2022.3
cp ks.service /etc/systemd/system
```

3. Create a symbolic link "KS-Server" to the KS-Server-2022.3.0 directory in the Altair-Data-Analytics directory:

```
cd /opt/Altair-Data-Analytics
ln -s KS-Server-2022.3.0 KS-Server
```

4. Enable the **ks** service by running the command:

```
systemctl enable ks
```

This will make KS Server start at boot time.

- To start KS Service, run the command

```
systemctl start ks
```

- To stop KS Service at any time, run the command

```
systemctl stop ks
```

- To check if KS Server is running, run the command

```
ps -ef | grep kslogin
```

For more information on `systemd` and `systemctl`, see your Linux System Administrator documentation. For example, <https://access.redhat.com/articles/754933>.

8.2.7. Troubleshooting

Errors at service startup

If starting the KS Server service results in error messages, this may indicate that the environment is not set properly, or the system is not at the sufficient maintenance level, and certain patches need to be installed.

Connectivity issues

- **Connection loss:** If an end user working in client/server mode with server on Linux gets an exception resulting in the loss of connection with the server, in most cases, the problem is resolved on the client side by simply reconnecting to the server using the command **File | Connect** from the application menu. The KS Server service on the Linux server does not need to be restarted.

If you have to restart KS Service, notify the users that it is about to be shut down. Then shut down and start KS Service using any of the ways described in [Sections 8.2.5 and 8.2.6](#).

- **Authentication issues:** If users get the error message "Authentication failure" or similar errors when trying to connect, the most likely cause is incorrect settings in the configuration file `kslogin.conf`. Verify that the parameters in `kslogin.conf` are set properly according to [Section 8.2.4](#), depending on your operating system.
- **Failure to connect:** If a user gets the error, "No connection could be made because the target machine actively refused it", there are two possible causes:
 - a) KS service is not running
 - b) The user specified the wrong port number or host name when connecting to KS Server

To fix this problem, make sure the `kslogin` service is running on the server using the command `ps -ef | grep kslogin`. The process "`kslogin kslogin.conf`" owned by root must be running.

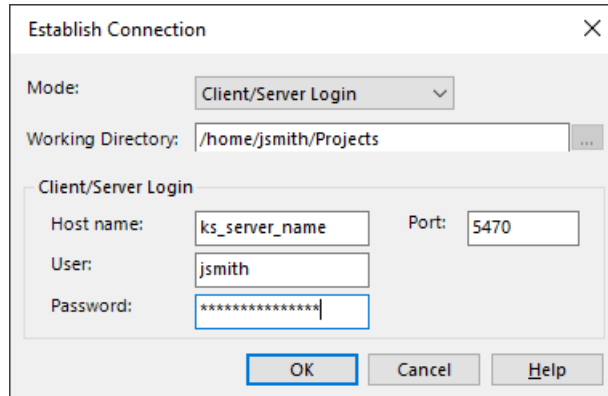
Make sure the user specifies the correct port number and host name in the connection dialog. The port number must be the one indicated in the `kslogin.conf` configuration file.

- **Abnormal termination of the client/server connection:** If the network connection between the client machine and the server is lost, the corresponding KS server process on the server (`KSWinLogin.exe`) is automatically terminated several minutes after the connection loss.

Testing the ODBC Connection

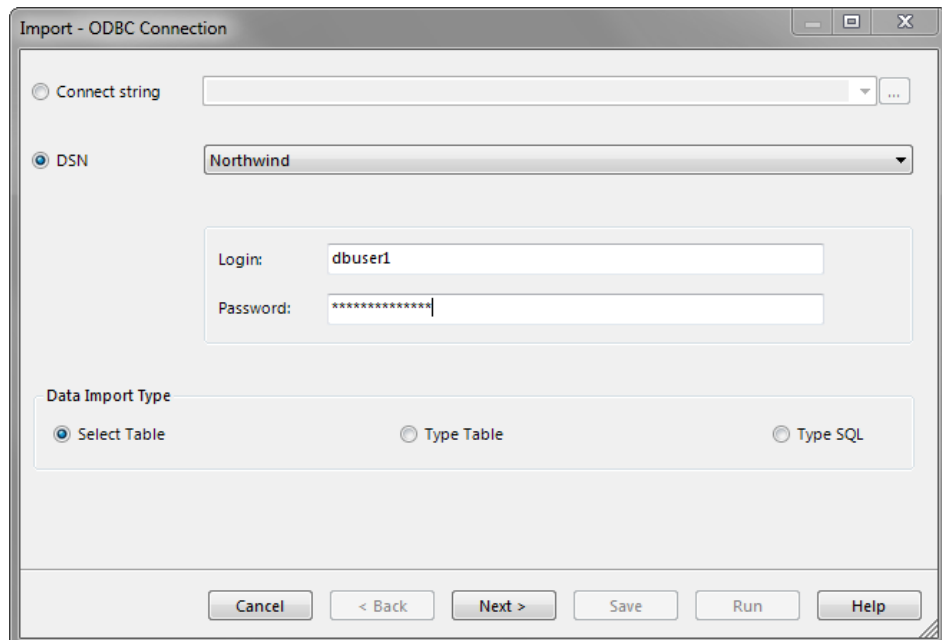
After installing KS Workstation ([Section 8.3](#)) and activating the license, test the database connectivity as follows.

1. Run KS Workstation 2022.3 on a Windows client machine and connect to KS Server. If necessary, use the **Connect** command from the **File** menu and specify the KS connection information.



2. When connected, install the license if it is not already installed. See [Chapter 14](#) of this document for the license installation instructions.
3. Create a new project by selecting **Create Project** from the **File** menu.
4. Right-click anywhere on the Workflow Canvas and select **Connect** → **ODBC Import** from the context menu. The ODBC Import Wizard will open.
5. In the ODBC Connection page (see the screenshot below), select the DSN option, select the DSN you configured, specify the database user ID and password and click **Next >**.

NOTE: If you are connecting to DB2, the very first connection must be performed with the user ID that has sufficient privileges to create packages.



If your DSN is not in the list, this means it is not in the [ODBC Data Sources] section of `odbc.ini`, or the ODBC environment was not configured correctly.

6. Click Next. The list of your database tables will be displayed in the next page of the wizard. Select a table and import data from it.

If you fail to connect to the database or import any table, check your DSN parameters in `odbc.ini` or consult with your database administrator.

Troubleshooting Database Connectivity Issues:

- If no tables are displayed after connecting to a database, check the `UseCurrentSchema` parameter (if available) in the DSN description for your database in `odbc.ini`. If `UseCurrentSchema=1`, the database driver looks for tables only in the default schema (the schema with the same name as the database user name specified in the wizard). Change it to `UseCurrentSchema=0` so that the driver could look for tables in all accessible schemas and try connecting again.

License Errors

- If you are using an [Altair Units](#) license for KS Server on Linux and are getting an error message that `textrel_shlib_t` failed to run, make sure there is an `exec` permission on the `/tmp` partition. Remount the `/tmp` partition to run `exec` as follows:

```
mount -o remount,exec /tmp
```

System Configuration for Large File Support

Some operations in KS Server, such as importing a large file, may take a lot of memory. It may be necessary to adjust the resource limits of your operating system.

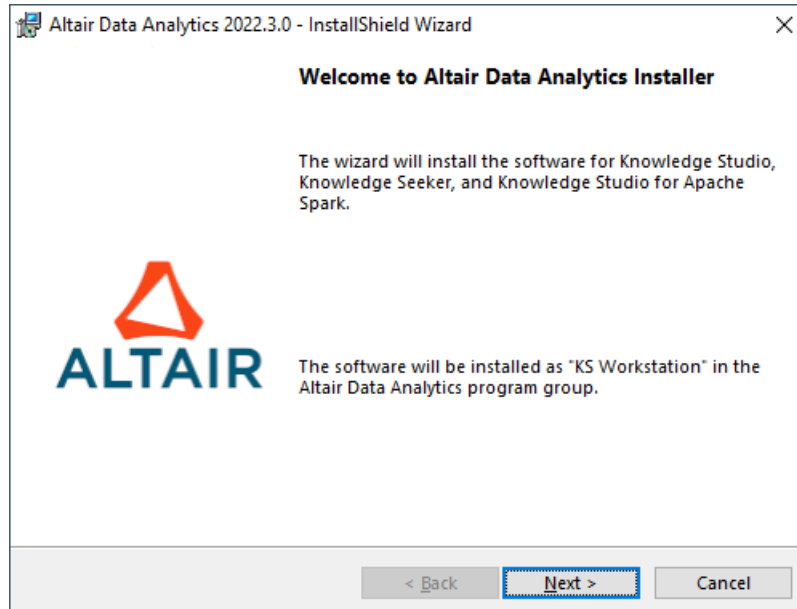
Edit the file `/etc/security/limits.conf` to view or set the desired `ulimit` values to increase file size limits and process memory size limit if necessary. See the manual pages for `ulimit` and your Linux System Administrator documentation for details.

8.3. Deploying KS Workstation and Dependent Components for Client/Server Configuration

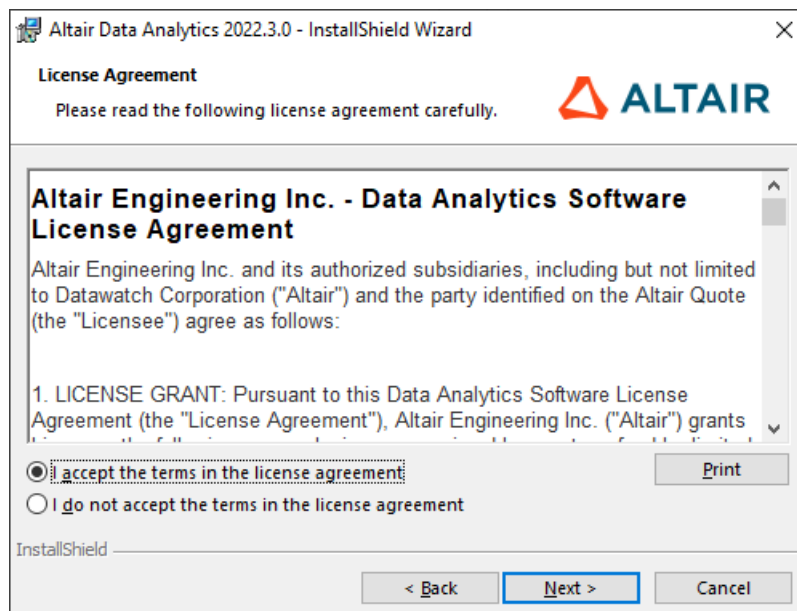
This section describes the interactive installation of KS Workstation (desktop client) and dependent components on the client machines as part of the deployment procedure for the client/server configuration. It is assumed that KS Server is already installed on the server. For non-interactive installation modes such as silent install, see [Section 9](#).

8.3.1. Installing KS Workstation

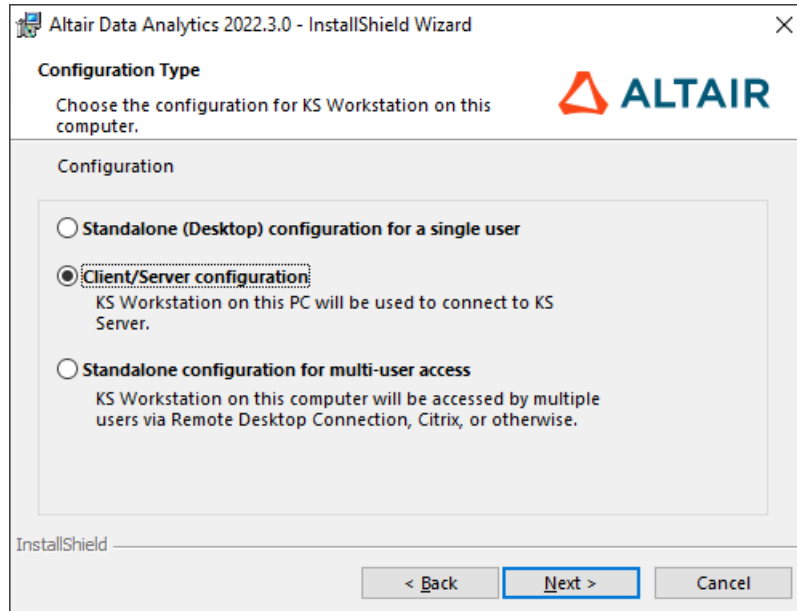
1. Log in to the client machine as a user with sufficient rights to install software.
2. Double-click the downloaded MSI package `KS-Workstation-2022.3-64bit.msi`.
3. The setup prepares the InstallShield Wizard, and the Welcome window opens. Click **Next >**.



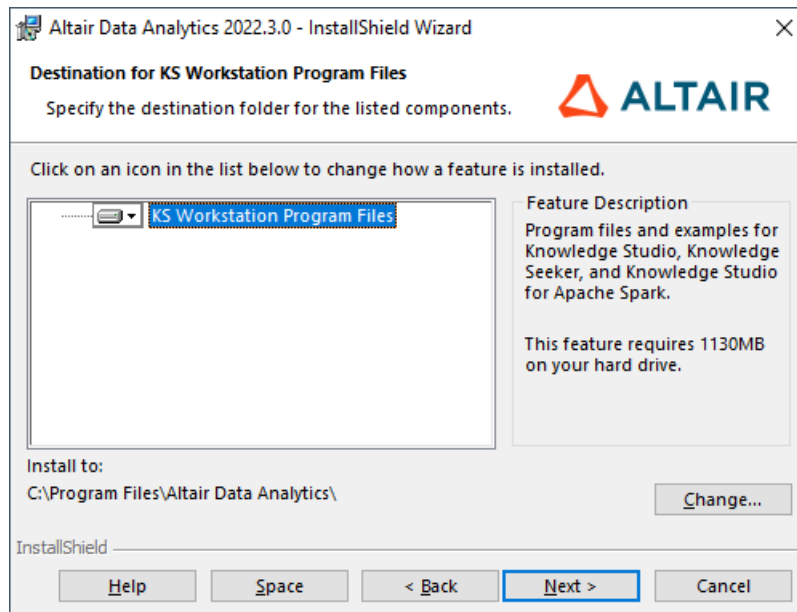
4. The License Agreement window opens. If you accept the terms, select "I accept" and click **Next >**



5. The Configuration Type window opens. Select the **Client/Server configuration** option and click **Next >**.



6. Make sure all features are selected. If necessary, change the destination folder for the application program files on the client machine by clicking the **Change** button and specifying the desired location. The default is C:\Program Files\Altair Data Analytics. Click **Next >**.

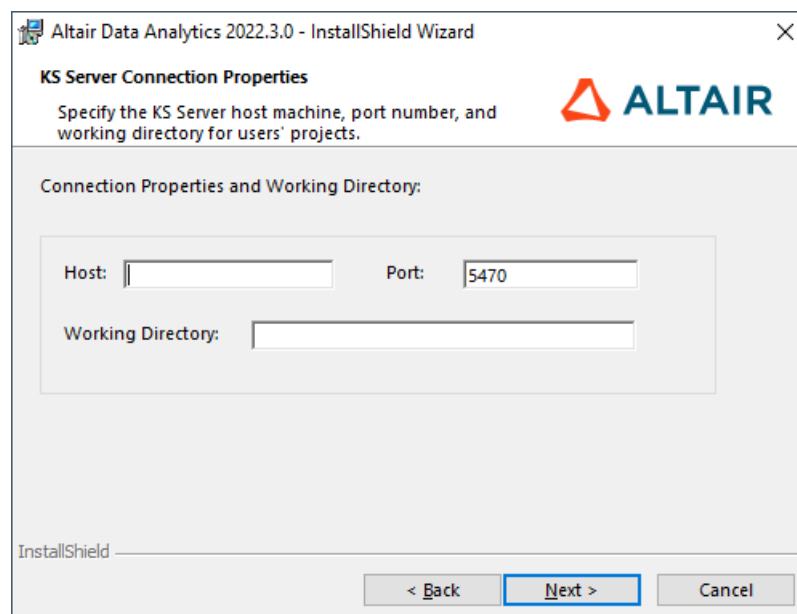


7. The KS Server Connection Properties window opens.

- In the **Host** field, enter the name or the IP address of the server where KS Server is installed.
- In the **Port** field, enter the port number to be used by the client to connect to KS Server. The default port number is **5470**. If you change it, make sure it is the same as the one specified in the KS Server configuration ([see Section 8.1.4. “Configuring the KS Service”](#)).
- In the **Working Directory** field, enter the working directory for the users’ project files.

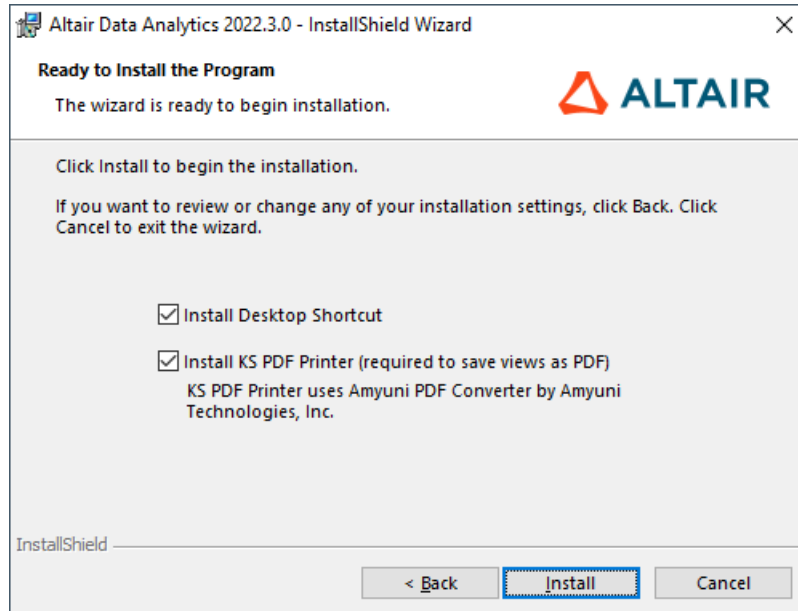
Note 1: *This directory path must be a local path with respect to the server (for example, E:\Altair KS Projects\ for Windows Server, or /apps/ks_projects/ for Linux). You can use a network path such as \\server1\ks_projects if the Working directory is on a network drive. The Working Directory must have Read & Write permissions for the intended users.*

Note 2: *The end users can change their Working Directories at any time after the installation using the **Set Working Directory** command in the **File** menu. For example, if you created subdirectories user1, user2, ... userN under E:\Altair KSProjects, instruct the users to set their Working Directories to the respective folders E:\Altair KS Projects\userN.*

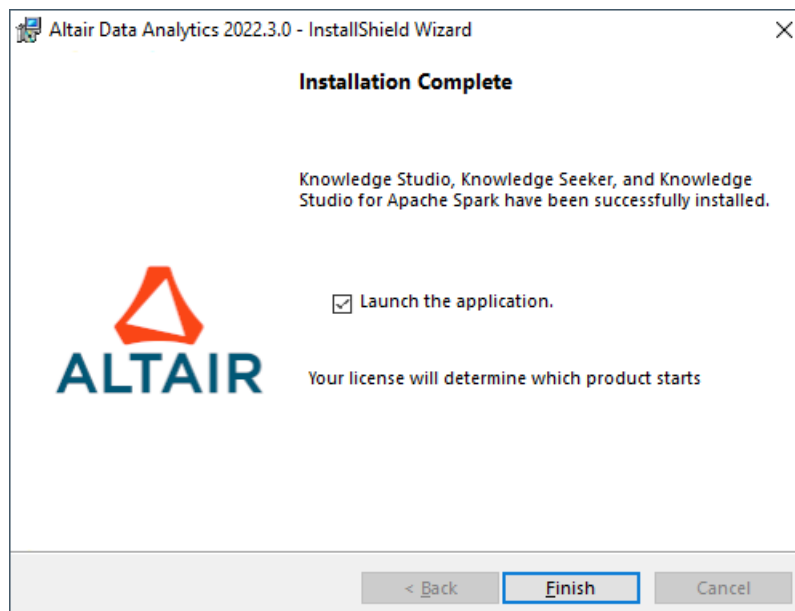


Click **Next >**.

8. At the final step, choose whether to install a desktop shortcut for KS Workstation. Click **Install** to start the installation.



9. The Setup Status window opens. It shows the installation progress. When the installation is complete, click **Finish**.

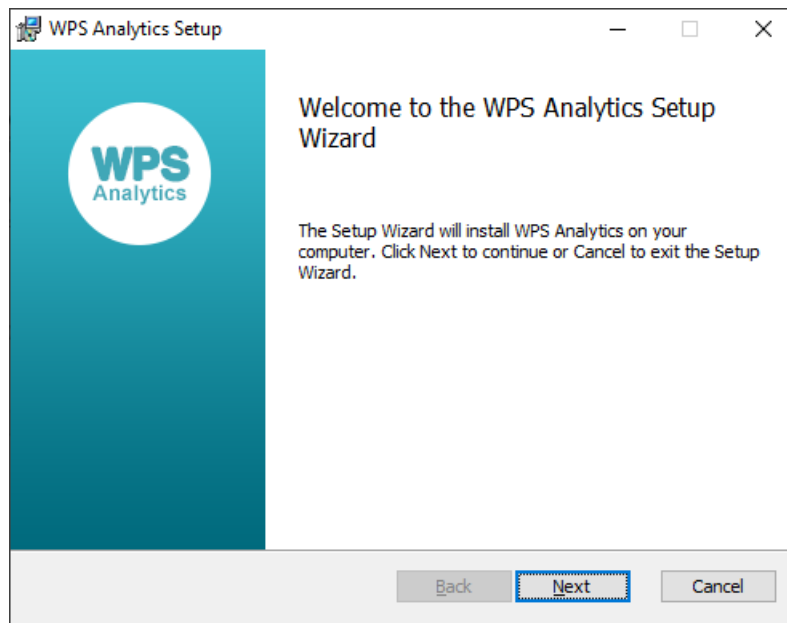


10. The installed software is now available in the program group **Start | Programs | Altair Data Analytics**.

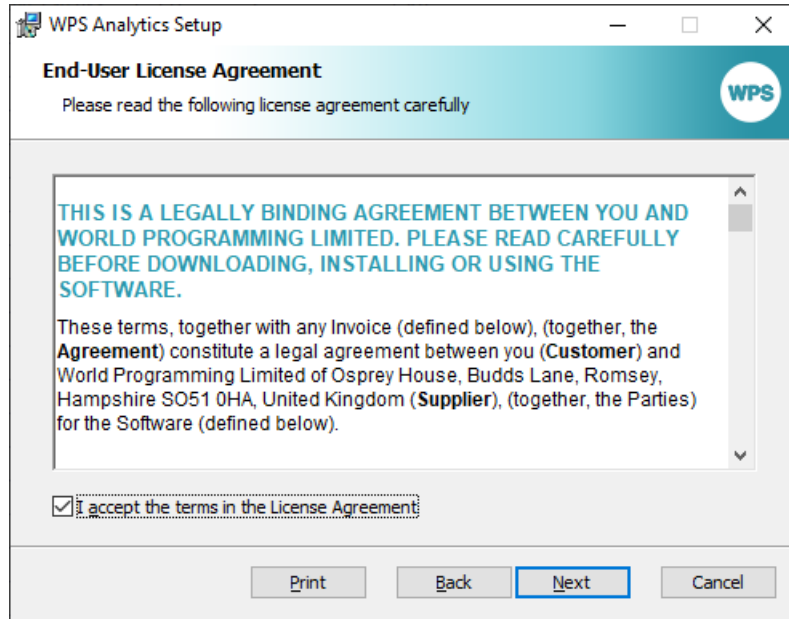
To activate the product, follow the instructions in [Chapter 14: "License Administration"](#).

8.3.2. Installing Altair Analytics Workbench (WPS Workbench)

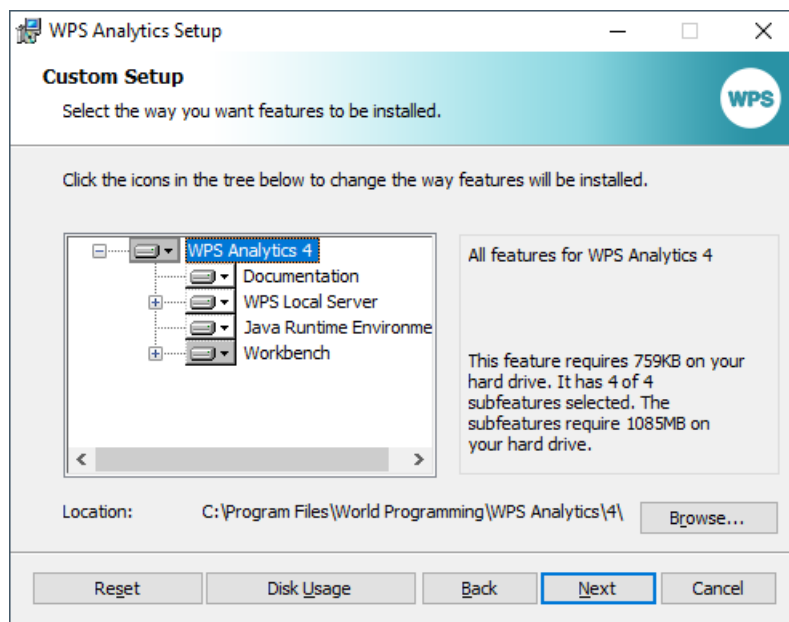
1. Download the 64-bit version of Altair Analytics Workbench from the [AltairOne](https://www.altair.com/AltairOne) website. If you don't have an account at AltairOne.com, please reach out to the person managing Altair software licenses at your organization.
2. Run the downloaded installation package. Click **Next >** in the Welcome screen.



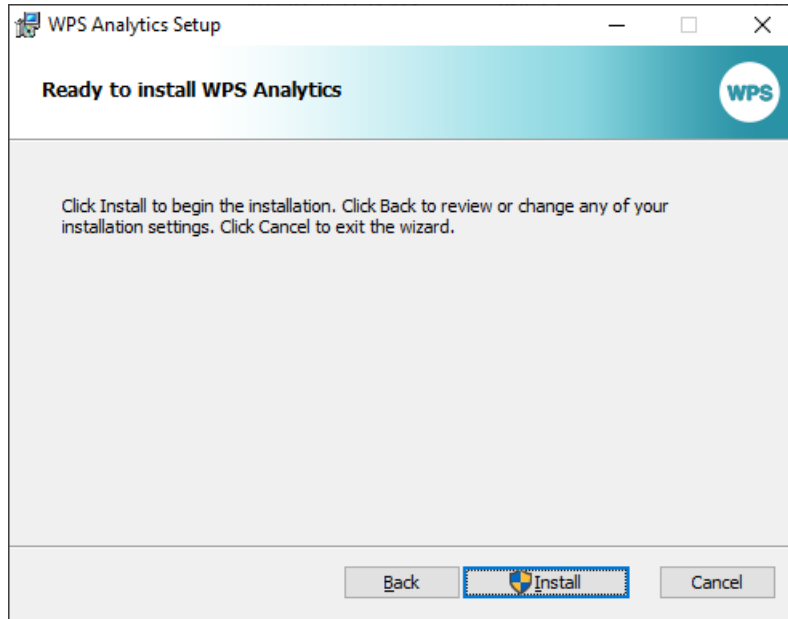
3. In the End-User License Agreement window, select **"I accept the terms in the License Agreement"** if you accept the terms. Click **Next >**.



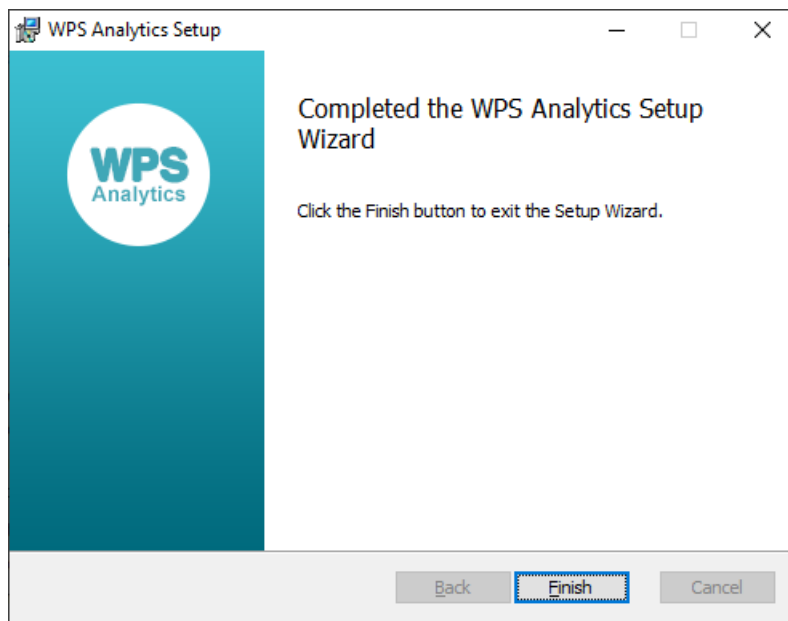
4. In the Custom Setup page, select all WPS program features, as shown below. To change the destination folder for the application program files, click the **Change** button and specify the desired location. The default is C:\Program Files\World Programming\WPS Analytics\4. Click **Next >**.



5. Click **Install** to start the installation.



6. The Setup Status window shows the installation progress. When the installation is complete, click **Finish**.



7. When the installation has finished, the new folder *WPS Analytics* with the item *WPS Workbench* appears in the programs list of the Windows Start menu, and the *WPS Workbench* shortcut is created on the desktop.
8. Apply your license on the client machine as described in Section [14.2. Configuring Altair Units Licensing](#).

9. Alternative Installation Modes on Windows

9.1. Silent Install

To install KS Workstation in the silent mode from the command line without user interaction, follow these steps:

1. Copy the downloaded installation package `KS-Workstation-2022.3-64bit.msi` to a folder on the intended host machine.
2. Run Command Prompt as administrator. For example, on Windows 10, select Start | Windows System, right-click on **Command Prompt**, and select *More* → *Run as administrator*.
3. Type **msiexec.exe** in the command prompt and press Enter. The Windows Installer window displays its version and usage options. The syntax of the commands depends on the version of Windows Installer on your system. For more information, see the [Windows Installer Portal](#) and the information on the [Command Line Options](#).
4. The following examples show how to install KS Workstation in several typical cases.

- **NEW INSTALLATION:** To install KS Workstation 2022.3 with default settings to the default destination folder `C:\Program Files\Altair Data Analytics` and save the installation log in the file `ks_install.log`, execute the following command as a single line:

```
msiexec.exe /package "C:\temp\KS-Workstation-2022.3-64bit.msi" /quiet /log ks_install.log
```

- **UPGRADE:** To install KS Workstation 2022.3 and apply the preferences of the previous version, specify the preferences file of the previous version as an argument in the silent install command line. For example:

```
msiexec /i "KS-Workstation-2022.3-64bit.msi" /l*v  
"install.log" CWDGROUP="C:\Work\Altair KS Projects"  
PREFERENCES="C:\Users\jsmith\AppData\Roaming\Altair\KSMaint64-2022.0.xml" /quiet
```

As a result, all applicable parameters in the specified XML file that correspond to the preference values will be set as the default preference settings in **Tools | Preferences** of the installed application. Note that the Working Directory is specified separately using the options `CWDGROUP` or `SCWD` (see the table below).

- **UNINSTALL:** To uninstall KS Workstation 2022.3, use the following command as a single line:

```
msiexec.exe /uninstall "C:\temp\KS-Workstation-2022.3-64bit.msi" /quiet /log ks_install.log
```

The complete list of options that can be specified to customize the installation is given below. The values must be specified in double quotes, except `ALMSERVER`. Examples are given below.

LICENSEDIR	License directory location. The default is %APPDATA%\Altair\license. Note: this is only applicable to the standalone configuration using Registration-Key Licensing . It is ignored by the application in the client/server mode.
ALMSERVER	Altair License Server to be contacted for Altair License Units. Example: ALMSERVER=6200@alm_server_name
PREFERENCES	The preferences file that contains the application preferences to be applied. Example syntax: PREFERENCES="C:\TEMP\KSMMainNet64-2021.1.xml"
CWDGROUP	Working Directory location <u>in the Standalone mode</u> . The default is the "Altair" folder under the current user's <i>My Documents</i> folder. Not applicable to the client/server mode. When deploying the client for the client/server configuration (KSSERVERTYPE=2) use the keyword SCWD to set the Working Directory on the server.
SCWD	The Working Directory location on the server (in the case of the client/server configuration). This is used in combination with KSSERVERTYPE=2 (see below).
INSTALLDIR	Installation directory. The default is "C:\Program Files\Altair Data Analytics"
KSREGKEY	Registration Key (applicable for Registration-Key Licensing only).
DSKTOPSTCUT	Desktop shortcut option ("1" if required to create; "0" otherwise)
PDFPRINTER	Install Amyuni PDF Printer. ("1" if required to install; "0" otherwise). The printer driver is required for users to be able to save trees, tables, charts, and reports as PDF. The default is "1".
KSSERVERTYPE	Determines whether the mode is Standalone or Client/Server. "1" - the standalone mode. This is the default option. "2" - the client/server mode (KS Workstation serves as a client to connect to KS Server)
KSHOSTNAME	The name of the KS Server host to connect to. (Applicable to the client/server configuration, when KSSERVERTYPE="2")
KSPORT	The TCP port number for the KS Workstation (client) to connect to KS Server. The default is "5470". Applicable only to the client/server configuration, when KSSERVERTYPE="2" and KSHOSTNAME is specified.

Here is an example command (must be specified as a single line in the command prompt or script):

```
msiexec.exe /package "C:\Temp\KS-Workstation-2022.3-64bit.msi"  
/quiet /log ks_install.log INSTALLDIR="D:\Program Files\Altair  
Data Analytics"  
LICENSEDIR="C:\Users\jsmith\AppData\Roaming\Altair\license"  
ALMSERVER="6200@server1.domain1.com"  
CWDGROUP="C:\Users\jsmith\Documents\Altair" DSKTOPSTCUT="1"  
PDFPRINTER="1"
```

If you are performing silent install on multiple PCs at the same time, after the installation you can set the default configuration (client/server or standalone mode, server name to connect, port number, and default Working Directory) on the client side by replacing an INI file in the KS Workstation program folder on every client PC. The configuration file is C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\bin\KDSCONNECTION.INI

For example, if you want KS Workstation to connect by default to a specific server and set the working directory to D:\KS_Projects, the contents of **KDSCONNECTION.INI** should be as follows:

```
<Config>  
<Mode>1</Mode>  
<Location>D:\KS_Projects</Location>  
<Service></Service>  
<User></User>  
<Host>server_name_or_ip_address</Host>  
<Port>5470</Port>  
<Secure>True</Secure>  
</Config>
```

9.2. Customizations to Assist in Repackaging for Deployment

The KS Workstation installer and software support the capability of deploying on a large number of workstations using automated installation tools. This section provides guidelines on how to prepare the software for this type of deployment.

1. Run the installation package file KS-Workstation-2022.3-64bit.msi.
2. The InstallShield Wizard automatically begins extracting the files needed to install the software. When it is ready, the Welcome window opens. Click **Next >**.
3. The License Agreement window opens. Read the license agreement carefully. You can print the agreement, if necessary, by clicking the **Print** button. If you don't accept the terms, click **Cancel** to exit the installation. If you accept the terms, select "I **accept**" and click **Next >**.
4. The Customer Information window opens. Enter your User Name and Organization information. Click **Next >**.
5. The Setup Type window opens. Select the **Custom** option and click **Next >**.

6. The Custom Setup window opens.

- If your purpose is to deploy the Standalone configuration, proceed as follows:

6.1. In the Custom Setup window:

- If necessary, change the destination folder for the program files by clicking the Change button and specifying the desired location. The default is C:\Program Files\Altair Data Analytics.

Click **Next >**.

6.2. The Destination for KS Workstation Program Files window opens.

- Make sure the Standalone option is selected.
- The Working Directory can be parameterized to point to each end user's default folder My Documents\Altair or another folder specific for each user. For example, specify the following path in the Working Directory field ensuring to maintain the spaces and the case of the letters:

%USERPROFILE%\Documents\Altair

Note: Each user will be able to change the Working Directory at any time after the installation using the **Set Working Directory** command in the **File** menu.

- If necessary, specify the custom location for the license files in the License Location field. The default is **%APPDATA%\Altair\license**. Usually it is C:\Users\\AppData\Roaming\Altair\license.

Click **Next >** and then click **Install** in the next page to start the installation. Proceed to Step 7.

- If your purpose is to deploy the Client/Server configuration, proceed as follows (Note: *it is assumed that KS Server is already installed on a server*):

6.1. In the Custom Setup window:

- If necessary, change the destination folder for the program files by clicking the **Change** button and specifying the desired location. The default is C:\Program Files\Altair Data Analytics.

Click **Next >**.

6.2. The KS Server Connection Properties window opens.

- Select the **Client/Server** option.
- In the **Host** field, enter the name or the IP address of the server where KS Server is installed.
- In the **Port** field, enter the port number to be used by the client to connect to KS Server. The default port number is **5470**. If you change it, make sure the port number entered here is the same as the one specified in the KS Server configuration.
- In the **Working Directory** field, enter the directory for users' projects.

Note 1: *This directory path must be a **local path with respect to the server machine** (for example, C:\UserProjects\ for Windows Server or /home/userprojects/ for Linux). You can use a network path such as \\server1\projects if the Working directory will be on a server different from the one that hosts KS Server. The Working Directory should have Write permissions for the intended user(s);*

Note 2: *The end users can change their Working Directories at any time after the installation by using the **Set Working Directory** command in the **File** menu.*

If each user is supposed to have a separate working directory on the server, the Working Directory entry can be parameterized to point to end users' individual folders (e.g., C:\UserProjects\

```
C:\UserProjects\%USERNAME%
```

- If necessary, specify a location for the license files in the **License Location** field. This must be a local path with respect to the server. The default is C:\Program Files\Altair Data Analytics\License.

Click **Next >** and then click **Install** to start the installation.

7. The Setup Status window opens. It shows the installation progress. When the installation is complete, click **Finish**.

If the custom settings you programmed during the installation don't take effect, the workaround is to set the custom configuration after deploying the product with default settings. You can set the mode (client/server or standalone), server name to connect, port number, and the Working Directory by replacing an INI file in the KS Workstation program folder on every client PC. The configuration file is C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\bin\KDSConnection.ini

For example, if you want KS Workstation to connect by default to a specific server and set the working directory to D:\KS_Projects, the contents of KDSConnection.ini should be as follows:

```
<Config>
<Mode>1</Mode>
<Location>D:\KS_Projects</Location>
<Service></Service>
<User></User>
<Host>server_name_or_ip_address</Host>
<Port>5470</Port>
<Secure>True</Secure>
</Config>
```

In this case, however, the Working Directory will be the same for all users, and they will need to change it using the File | Set Working Directory command if they need separate working directories.

10. Deploying in Citrix and Remote Desktop Services Environments

10.1. Citrix

In a Citrix environment, you will need to deploy the Client/Server configuration of the product. KS Workstation can be replicated across as many computers of the Citrix farm as desired, while KS Server must be installed on a **single server**, which may be outside of the farm.

Here are the steps required to deploy the product in a Citrix environment:

- Make sure all the installation prerequisites listed in [Section 5](#) are met. Allocate the necessary disk space on the server and create Working Directories for the users following the guidelines in [Section 5](#).
- Follow the instructions in [Section 8: Deploying Client/Server Configuration](#). See also [Section 9](#) if you plan to package the Workstation for mass deployment on your Citrix farm computers.

Note: The installation wizard for KS Workstation lets you specify a location for the Working Directory. The users will still be able to change their Working Directories at any time using the **File | Set Working Directory** menu command (or the **File | Connect** command). If you want the users to use separate working directories (recommended) rather than a shared one, you will need to either parameterize the Working Directory in the installation wizard as described at the end of [Section 9.2](#), or notify the users after you finish the installation that they should set Working Directory to the appropriate locations.

- The license is installed after completing the installation of both the server and Workstation. This can be done from any KS Workstation application. Proceed to [Chapter 14, "License Administration"](#), for the license installation guidelines.

10.2. Remote Desktop Services

If you intend to use the product in a multi-user environment where users access the software via Windows Remote Desktop Services, you will need to deploy the **standalone** configuration of the product, but you must purchase the [server-level license](#) (even if the operating system on the host machine is of Windows Workstation type).

The installation procedures are the same as those described in [Section 7, "Deploying Standalone Configuration"](#). Follow these steps:

- Make sure all the installation prerequisites listed in [Section 5](#) are met.
- Determine whether a separate Working Directory is required for each user or one shared Working Directory is required for all users.

If the users require separate Working Directories, create one for each user and assign appropriate read/write permissions for the created directories. After you finish the installation, notify the users that they should set Working Directory to the appropriate locations. Any user can change his/her working directory at any time after the installation by selecting menu commands **File | Connect** or **File | Set Working Directory...** in the client application.

- Proceed to [Section 7, “Deploying Standalone Configuration”](#). Follow the instructions therein, taking into account the following details:
 - If each user requires a separate Working Directory for their projects (recommended in most cases), then
 - If necessary, create a new folder for each user of the application. For example, create a folder called Altair under the My Documents folder of each user profile. Make sure it has read and write permissions for the respective users. *The Working Directory does not have to be on the server that hosts KS Server. It can be a network folder, and users can refer to it using a UNC path. Note that KS Server cannot access mapped drives in the client/server mode on Windows.*
 - In the installation wizard, choose the Custom option (see the Custom setup option in Step 7 of [Section 7](#)). For the Working Directory, specify any folder that has *Read* permissions for all users.
 - After the installation and license activation is done, instruct the users to run KS Workstation and set their Working Directories to their respective working folders for projects using the **File | Set Working Directory** menu command (or **File | Connect** command)
 - If all users require a single shared Working Directory for their projects, then
 - Create a folder with Read and Write permissions for all users. The Working Directory does not have to be on the server that hosts KS Server. It can be a network folder, and users can refer to it using a UNC path. Note that KS Server cannot access mapped drives in the client/server mode on Windows.
 - Specify this folder as the Working Directory in the installation wizard (see the Custom setup option in Step 7 of [Section 7](#)).
 - Proceed to [Chapter 14, “License Administration”](#), for license installation guidelines.

12. Advanced Configuration: Optional Runtime Parameters

Optional runtime parameters for the application can be specified in a special configuration file. To set any of the parameters described below, use any text editor to create a new file called **KDSProvider.conf** in the directory that contains the application binaries. The default location for the configuration file is:

- For the standalone configuration of KS Workstation on Windows:
`C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\bin`
- For the client/server configuration on Windows Server:
`C:\Program Files\Altair Data Analytics\KS Server 2022.3.0\bin`
- For KS Server on Linux:
`/opt/Altair-Data-Analytics/KS-Server-2022.3/lib`
Since file names on Linux are case-sensitive, make sure that you name the file exactly as specified: `KDSProvider.conf`.

In the client/server configuration, after modifying KDSProvider.conf, KS Server must be restarted for the changes to take effect.

The following runtime parameters can be specified in `KDSProvider.conf`:

- `proc` – maximum number of threads created by the engine processes (the default is “unlimited”).
- `cores` – maximum number of CPU cores used (the default is “unlimited”).
- `index_max` – maximum size of the temporary index file during data import. Determined dynamically by the engine unless the value is set. **0** means “unlimited”.
- `pivot_max` – maximum size of the temporary pivot file during data import. **0** means “unlimited”.
- `window_max` – maximum size of memory window during data import. If the value is not set, this does not exceed 3 GB. **0** means “unlimited”.
- `y2k_future` – together with `y2k_window`, defines the default century for Date variables. This is ignored if `y2k_window` has been assigned a value.
- `y2k_window` – together with `y2k_future`, defines the default century for Date variables. If no value is assigned, then it is computed from `y2k_future` as follows:
`y2k_window = current_year + y2k_future - 100`
- `wamp.enabled` – enables the WAMP service (required for Knowledge Studio for Apache Spark)
- `wamp.no_tls1.1` – explicitly disables the use of TLS version 1.1 for WAMP. The default value is 1, which means that only TLS 1.2 or higher is used, and TLS 1.1 is not used.
- `jupyter_path` – full path to the jupyter executable (enclosed in double quotes).

Example configuration in KDSProvider.conf:

```
jupyter_path "C:\ProgramData\miniforge3\Scripts\jupyter.exe"  
proc 4  
cores 2  
index_max 0  
pivot_max 0  
window_max 0  
y2k_future 10  
y2k_window  
wamp.enabled 0  
wamp.no_tls1.1 1
```

In this example, since `index_max`, `pivot_max`, and `window_max` are set to 0, data import operations will use as much memory as available on the host system. Be careful with these settings if you must limit the resource usage in multi-user environments.

After setting or changing any parameters in `KDSProvider.conf`, restart KS Server in the case of the client/server configuration or KS Workstation in the standalone configuration.

13. Uninstalling Altair Data Analytics Products

This section describes the procedure of uninstalling, modifying, or repairing the products featured in this guide.

13.1. Modifying, Repairing, and Removing KS Workstation

To uninstall KS Workstation, repair the installation, or to add or remove components of the software, follow the steps below.

Note: *Uninstalling, modifying, or repairing the software will not delete the users' projects or license files.*

In the Programs and Features list in the Windows Control Panel, select **KS Workstation 2022.3.0**.

- To uninstall the software, click [Remove](#) or [Uninstall](#).
 - To change or modify the installation, click the **Change** button.
1. The Welcome window opens. Click **Next >**.
 2. The Program Maintenance window opens. The description beside each explains in detail what it does. Select the appropriate radio button and click **Next >** to continue.
 - If you selected **Modify**, the Custom Setup window opens. A list shows you the components that are available, and the components that are already installed. See the appropriate installation instructions above for the description of the options in

this window. Select or deselect the components to install or uninstall. Click **Next >**.

- The Data Mining Engine Setup Window opens. Change the entries as required. See the appropriate installation instructions above for the description of the options in this window. Click **Next >** to continue, then click **Install**.
- The Setup Status window opens. It shows the installation progress. When the maintenance is complete, click **Finish**.

OR

- If you selected **Repair**, the *Ready To Repair the Program* window opens. Click **Install**.
- The Setup Status window opens. The Repair option automatically fixes any damaged files or replaces lost files. It begins installing the software to the same specifications you selected last time you installed. When this process is complete, click **Finish**.

OR

- If you selected **Remove**, the Remove the Program window opens. Clicking the Remove button will uninstall the program. When this process is complete, click **Finish**.

13.2. Modifying, Repairing, or Removing KS Server for Windows

To uninstall KS Server, repair or change the installation, follow the steps below.

Note: *Uninstalling, modifying, or repairing the software will not delete the users' projects or license files.*

Open the list of Programs and Features on Windows Server and select **KS Server 2022.3.0**.

- To uninstall the software, click **Remove** or **Uninstall**.
- If you want to change or modify the software, click the **Change** button.
 1. The Welcome window opens. Click **Next>**.
 2. The Program Maintenance window opens. The description beside each explains in detail what it does. Select the appropriate radio button and click **Next>**.
 - If you selected **Modify**, the Custom Setup window opens. A list shows you the components that are available, and the components that are already installed. See the appropriate installation instructions above for the description of the options in this window. Select or deselect the components to install or uninstall. Click **Next>**.
 - The Windows Service Setup Window opens. Choose the desired options. See the appropriate installation instructions above for the description of the options in this window. Click **Next>** to continue, then click **Install**.

- The Setup Status window opens. It shows the installation progress. When the maintenance is complete, click **Finish**.

OR

- If you selected **Repair**, the Ready To Repair the Program window opens. Click **Install**.
- The Setup Status window opens. The Repair option automatically fixes any damaged files or replaces lost files. It begins installing the software to the same specifications you selected last time you installed. When this process is complete, click **Finish**.

OR

- If you selected **Remove**, the Remove the Program window opens. Clicking the Remove button will uninstall the program. When this process is complete, click **Finish**.

13.3. Uninstalling KS Server on Linux

To uninstall KS Server on Linux, follow these steps:

1. To prevent the interruption of any user's work by shutting down the service, identify the user processes using the command `ps -ef | grep kslogin` and make sure there are no active client sessions.
2. Shut down the kslogin service and terminate all users' kslogin processes on the server by running the script `ks_shutdown` from the Altair Data Analytics home directory.
3. If you used R language integration features on Linux and would like to uninstall the KS Library for R and Survival Analysis package, use the commands:

```
R CMD REMOVE angoss
```

```
R CMD REMOVE KnowledgeSurvival
```

4. If you are planning to reinstall the product or upgrade to a new version, make a backup copy of the KS Server licenses. For example, if the product is installed under `/opt/Altair-Data-Analytics`, copy the directory `/opt/Altair-Data-Analytics/license/` to a backup location. Also, back up the environment and startup scripts and `odbc.ini` in `/opt/Altair-Data-Analytics/KS-Server-NN.N`, where `NN.N` is your current version.

5. Check the KS Server 2022.3 package name using any of the commands

```
rpm -qa KS-Server
```

```
rpm -qaiv KS-Server
```

The latter provides a detailed description of the package.

To uninstall KS Server 2022.3, use the command

```
rpm -e <package_name>
```

where `<package_name>` is the exact name reported by the command `rpm -q KS-Server`, for example, `KS-Server-2022.3-18151_centos7.x86_64`.

If there are any errors during the uninstall, you may use the command

```
rpm -e package_name --noscripts
```

After that you can delete the KS Server home directory. For example,

```
rm -rf /opt/Altair-Data-Analytics/KS-Server-2022.3.0
```

where X.X is the KS-Server version. You can also delete the parent directory /opt/Altair-Data-Analytics after backing up the license folder and any configuration files, if necessary.

6. If you enabled the automatic startup of KS Server as described in [Section 8.2.9, "Enabling automatic startup"](#), delete the startup script and the related link (if any) from the corresponding system directories. The location of the startup scripts depends on your operating system (refer to [Section 8.2.9](#) for details).

14. License Administration

14.1. Licensing System Overview

Two licensing systems are supported for Altair Data Analytics applications:

- Altair Units licensing
- Registration-key licensing

The system that your product is using depends on the terms of your contract.

Altair Units Licensing

Altair Units is a value-based license management system enabling metered usage of an entire suite of products. All Altair Data Analytics products have a capability to use a single pool of recyclable Altair Units.

If you purchased an Altair Data Analytics product with an Altair Units license, you will receive a license file and Altair Licensing Quick Installation Guide, which describes the installation and configuration of Altair License Manager with the License Server.

The process of configuring the end users' machines with Altair Data Analytics applications to connect to Altair License Server is described in [Section 14.2: "Configuring Altair Units Licensing"](#) of the present document.

Registration-Key Licensing

Registration keys issued by Altair License Administrator are used by the end users to acquire licenses online from the Altair License Fulfillment Server (ALFS) – a secure self-service license generation website.

Licenses are acquired from ALFS using the License Manager command in the Help menu of Altair Data Analytics applications. This process is described in [Section 14.3](#) below. Registration-key licenses can also be acquired by email when network access to ALFS is not available.

14.2. Configuring Altair Units Licensing

If you purchased an Altair Data Analytics product with an **Altair Units** license, the application must be configured to connect to an Altair License Server.

The installation of the Altair License Manager software is described in the *Altair License Quick Installation Guide* that you received from Altair together with the license file.

If you purchased the software with **Managed Altair Units**, the License Server is hosted by Altair in the Altair cloud. In this case you will receive instructions on how to authorize the users' machines for Managed Licenses.

This section describes the process of configuring Altair Data Analytics applications to use Altair license system in each of the following cases:

- Connecting to Altair License Server
- Using Managed Altair Units

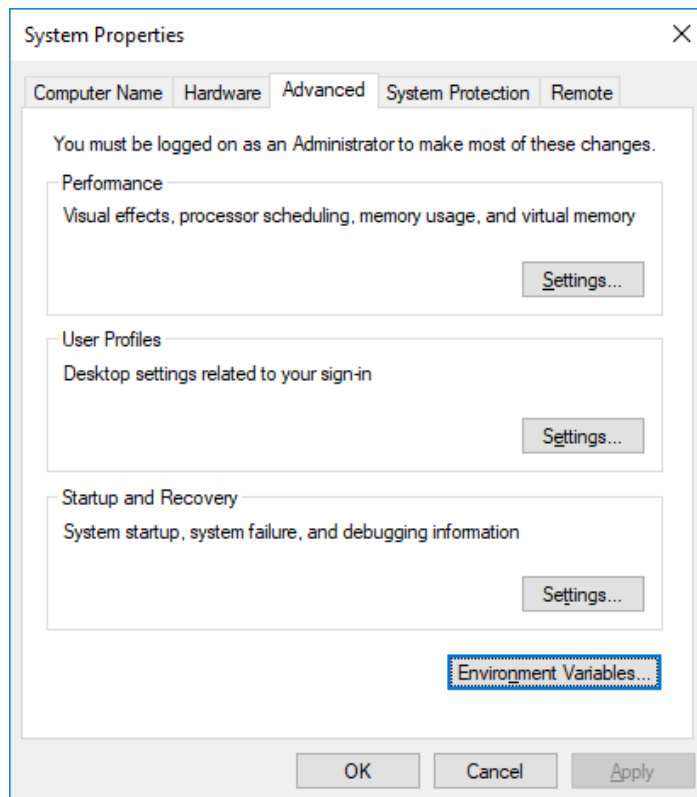
It is assumed that Altair License Server is up and running.

There are three configurations of Altair Data Analytics applications:

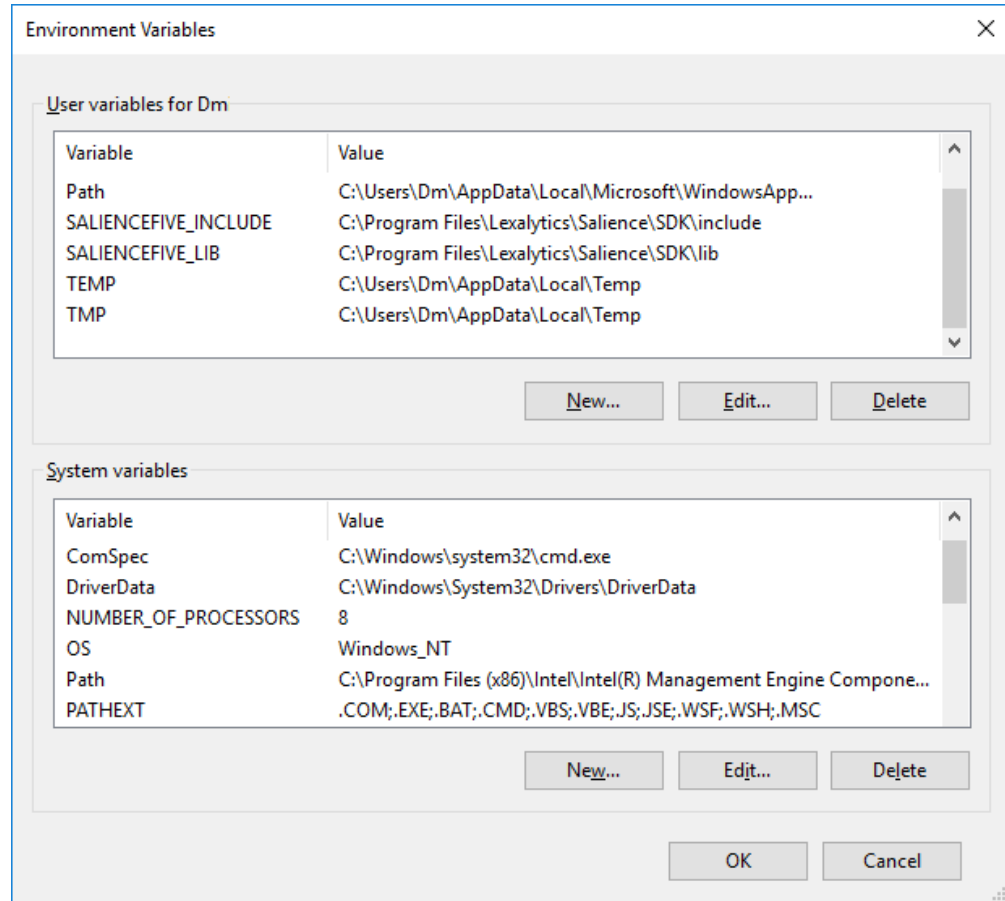
1. Standalone
2. Client/Server for Windows Server
3. Client/Server for Linux

14.2.1. Environment Variables in the Standalone Configuration

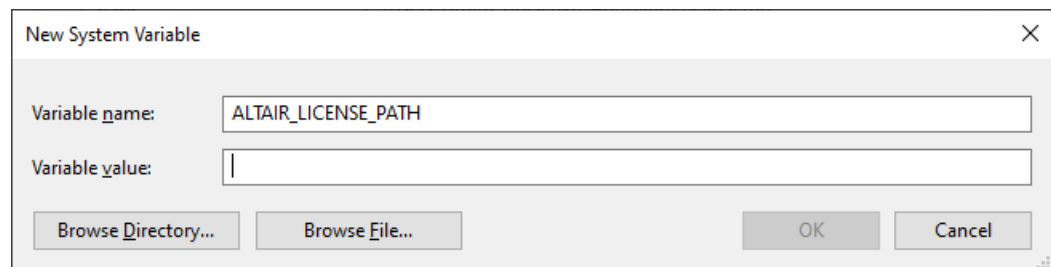
From the Windows Control Panel, select **System** and click **Advanced System Properties**.



In the Advanced tab of the System Properties dialog, click the **Environment Variables** button.



Click the **New** button in the *System variables* section or in the *User variables* section, depending on whether the Altair license server connection is required for all users on this machine or only the user ID currently logged in.



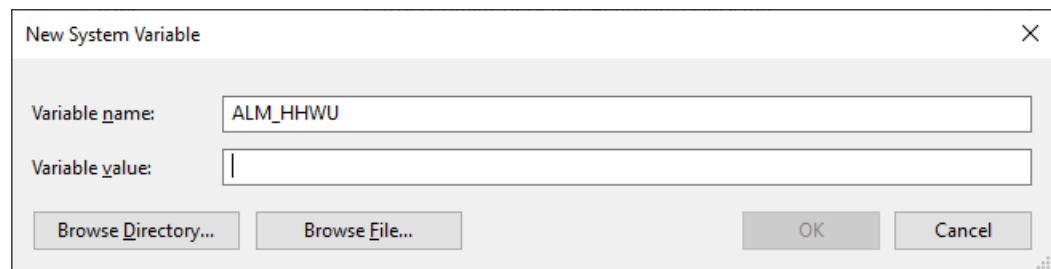
- Set *Variable name* to **ALTAIR_LICENSE_PATH**
- For the *Variable value* field:
 - If you are using Altair License Server, enter its address and port number. The format is: **NNNN@<server-name>**, where **NNNN** is

the port number (**6200** by default), and **<server-name>** is the Altair License Server host name. For example: 6200@server.domain.com

- If you are using Managed Altair Units, set the value to **false**

Click **OK** to create the variable.

Click the **New** button in the same section as ALTAIR_LICENSE_PATH.

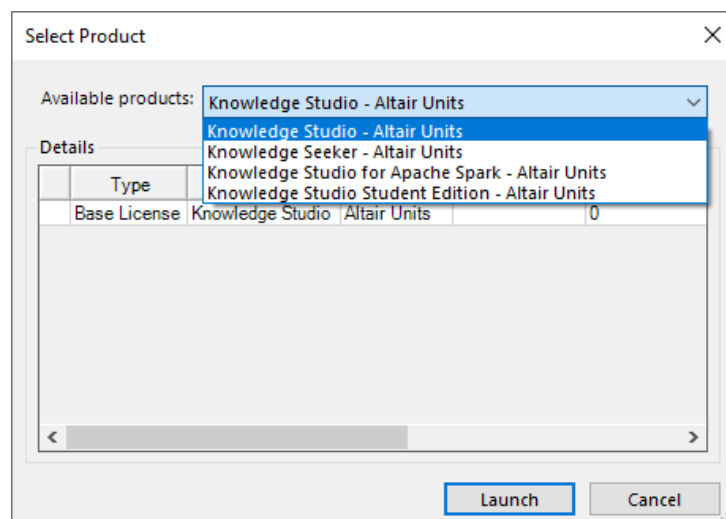


- Set *Variable name* to **ALM_HHWU**
- To use Managed Altair Units, set the value of ALM_HHWU to **true**. Otherwise, set it to **false**.

Click **OK** in all dialogs to save the changes and exit the Advanced System Properties dialog.

Start the KS Workstation application.

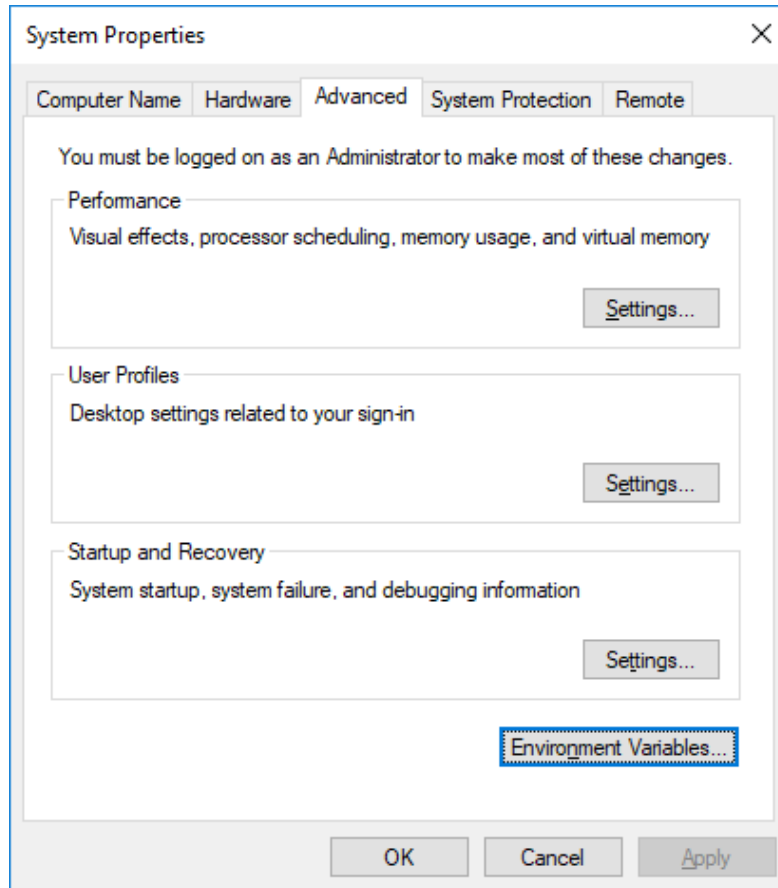
The Select Product window will prompt you to select one of the four products: Knowledge Seeker, Knowledge Studio, Knowledge Studio for Apache Spark, or Knowledge Studio Student Edition.



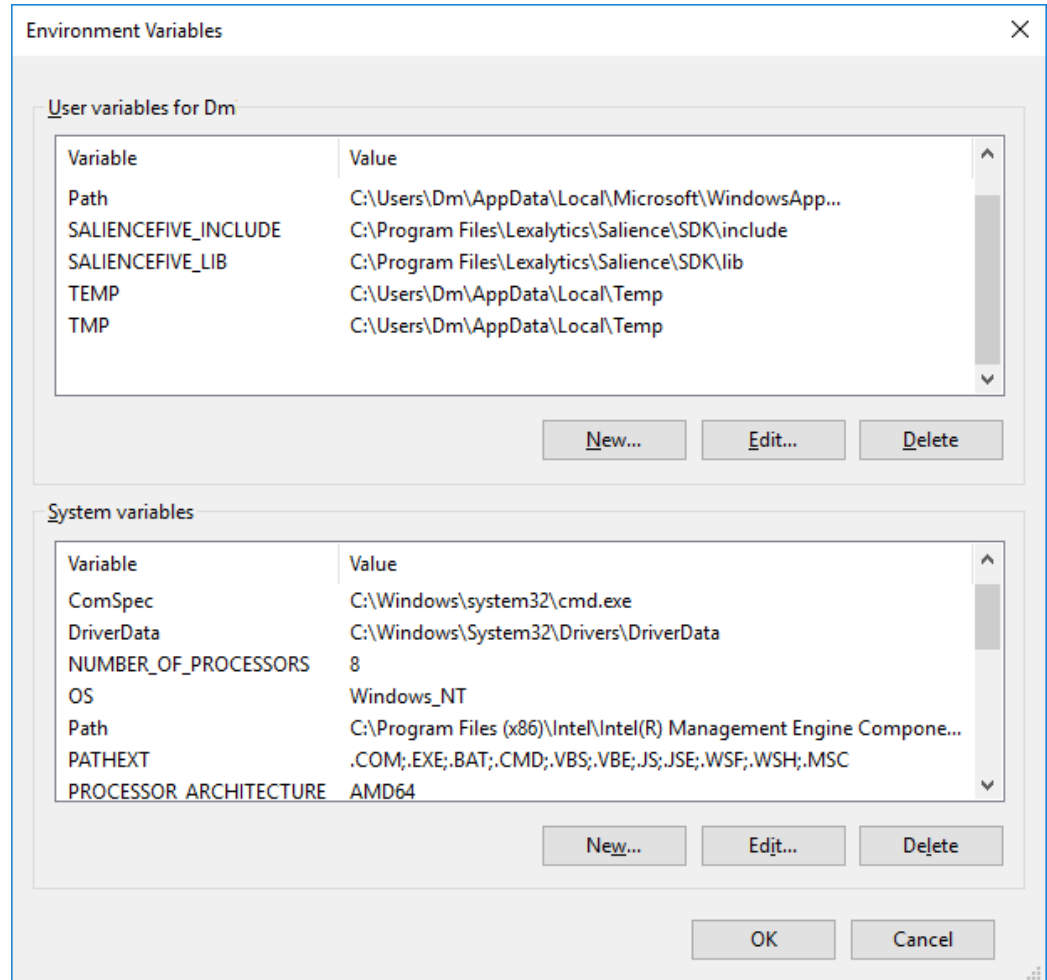
Select the desired product and click **Launch**.

14.2.2. Environment Variables for KS Server on Windows

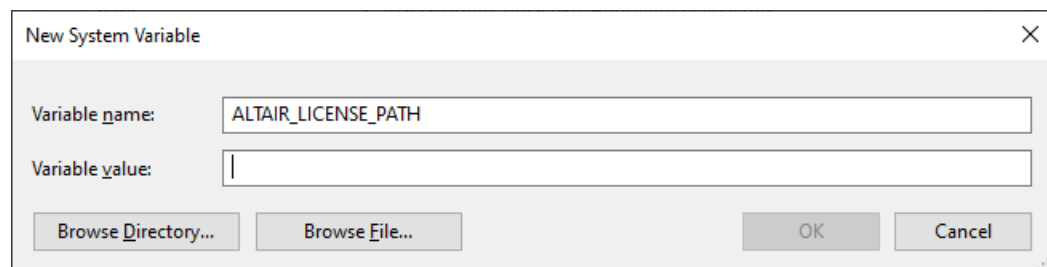
From the Windows Server Control Panel, select **System** and click **Advanced System Properties**.



In the Advanced tab of the System Properties dialog, click the **Environment Variables** button.



Click the **New** button in the *System variables* section.



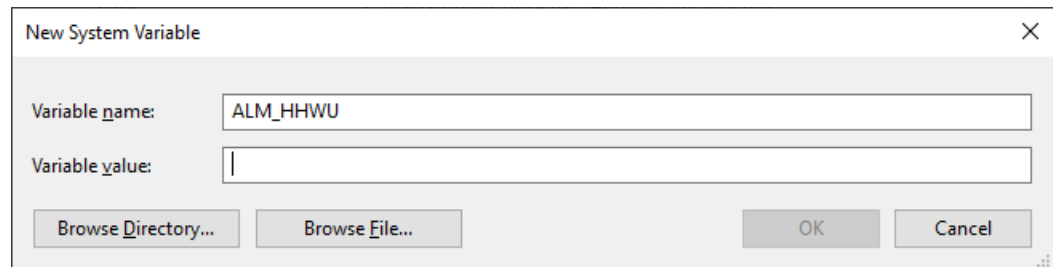
- Set *Variable name* to **ALTAIR_LICENSE_PATH**
- For the *Variable value* field:
 - If you are using Altair License Server, enter its address and port number. The format is **NNNN@<server-name>**, where **NNNN** is the

port number (**6200** by default), and **<server-name>** is the Altair License Server host name.

- o If you are using Managed Altair Units, set the value to **false**

Click **OK** to create the variable.

Click the **New** button in the *System variables* section.

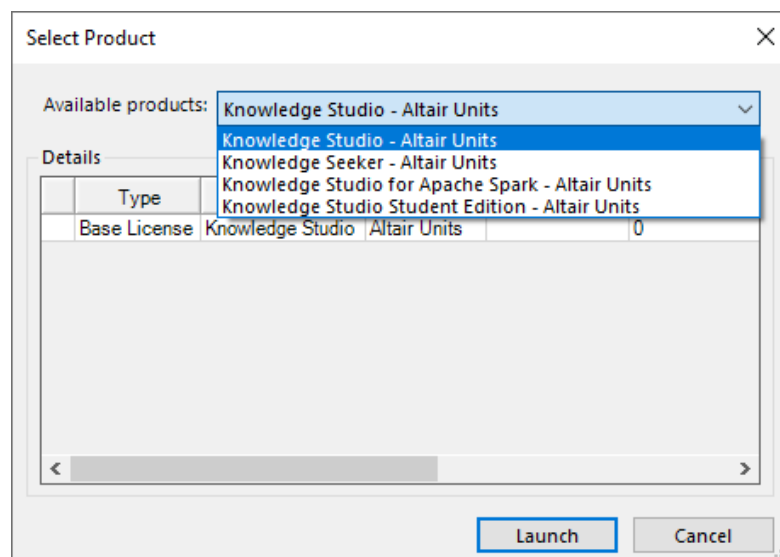


- Set *Variable name* to **ALM_HHWU**
- To use Managed Altair Units, set the value of ALM_HHWU to **true**. Otherwise, set it to **false**.

Click **OK** in all dialogs to save the changes and exit the Advanced System Properties dialog.

Start the KS Workstation application on any client machine.

Connect to KS Server. The Product Selection window will prompt you to select one of the four products: Knowledge Seeker, Knowledge Studio, Knowledge Studio for Apache Spark, or Knowledge Studio Student Edition.



Select the desired product and click **Launch**.

14.2.3. Environment Variables for KS Server on Linux

Define the environment variables `ALTAIR_LICENSE_PATH` and `ALM_HHWU` in the KS Server startup script `ks_start` as described below. For information about `ks_start`, see [Section 8.2.4: “Configuring KS Server on Linux”](#)

1. If you are using Altair License Server:

- Set the value of `ALTAIR_LICENSE_PATH` to the address of the Altair License Server. The format is: **NNNN@<server-name>**, where NNNN is the port number (**6200** by default), and <server-name> is the Altair License Server host name. For example:

```
export ALTAIR_LICENSE_PATH=6200@server1.domain1.com
```

- Set the value of `ALM_HHWU` to **false**:

```
export ALM_HHWU=false
```

2. To use Managed Altair Units:

- Set the value of `ALM_HHWU` to **true**

```
export ALM_HHWU=true
```

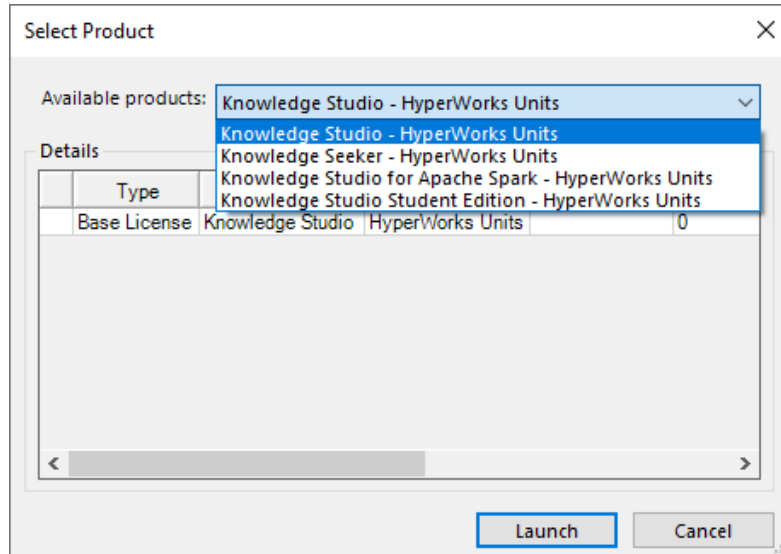
- Set the value of `ALTAIR_LICENSE_PATH` to false:

```
export ALTAIR_LICENSE_PATH=false
```

Save the changes in `ks_start` and restart KS Server using any of the methods described in [Sections 8.2.5 and 8.2.6](#).

Define `ALTAIR_LICENSE_PATH` the same way in the script `ksenv.sh` used for troubleshooting purposes. This script is in the same directory as `ks_start`.

Start KS Workstation on any client machine and connect to KS Server. The Product Selection window will prompt you to select one of the three products: Knowledge Seeker, Knowledge Studio, or Knowledge Studio for Apache Spark.



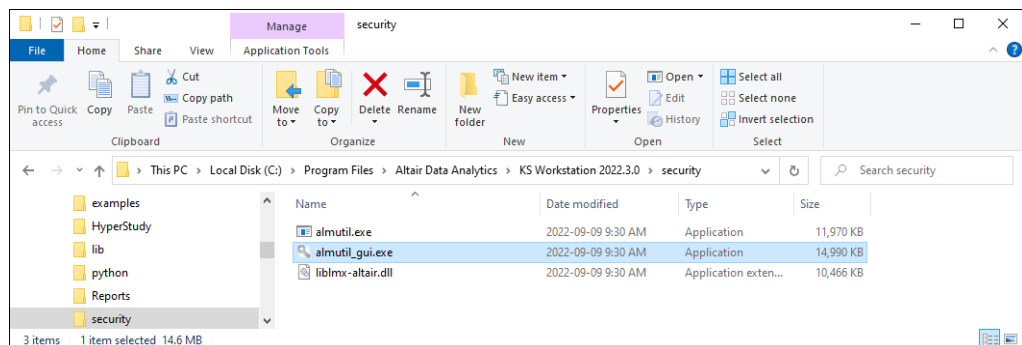
Select the desired product and click **Launch**.

14.2.4. Authorize Machine for Managed Altair Units License

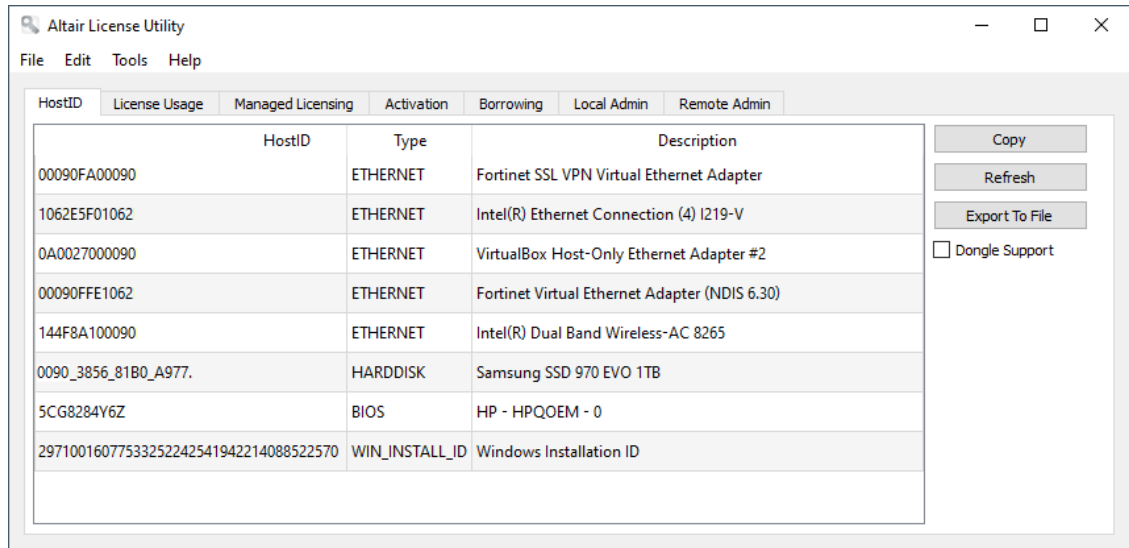
This section describes how to authorize the application host machine(s) for a **Managed Altair Units** license, where the Altair License Server is hosted in the Altair cloud. This step is **not** required if you are using Altair License Server on premises or in a cloud managed by your company.

Standalone configuration for a single user:

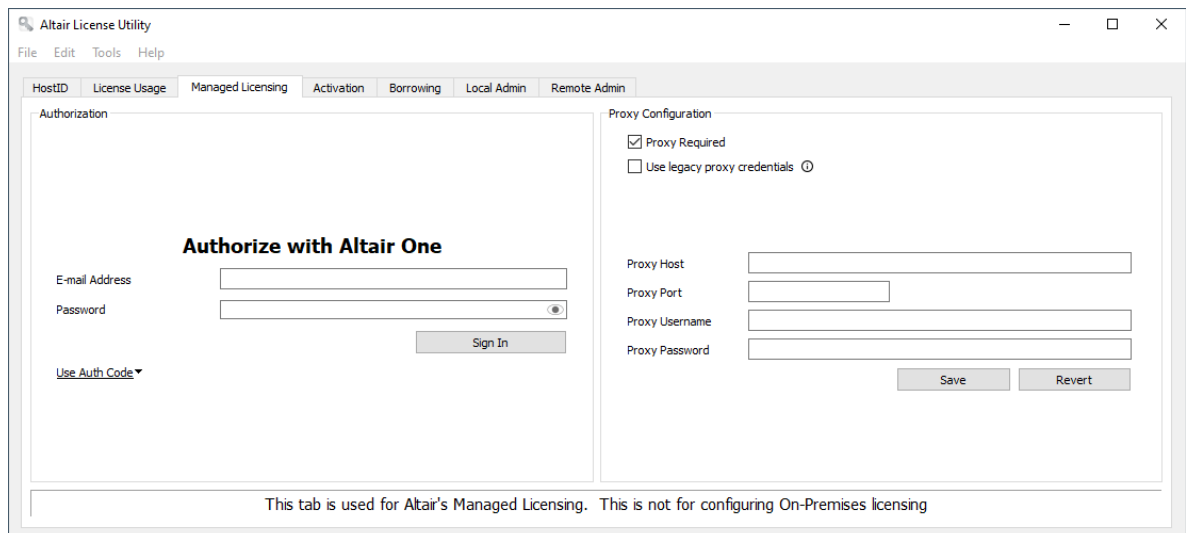
1. If you have not registered on the AltairOne portal yet, ask a user with Altair license admin role at your company to add you as a user at <https://AltairOne.com>. You will receive an email from Altair with a link to activate your AltairOne account. Click the activation link in your email and register on the AltairOne portal.
2. Open the file browser and navigate to the folder `C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\security`



3. Double-click on the **almutil_gui**. The Altair License Utility window opens:



4. Go to the **Managed Licensing** tab of Altair License Utility window:



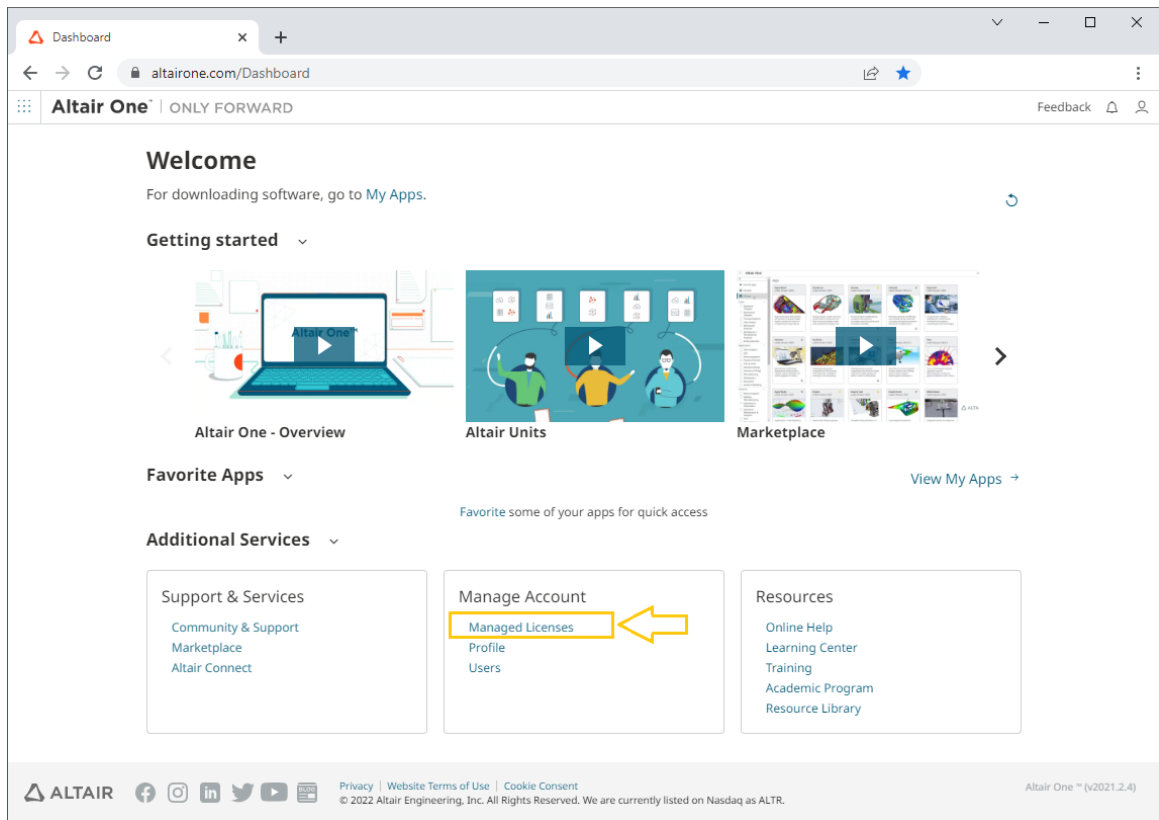
5. Specify your AltairOne credentials: your email address and password that you used to register at the [AltairOne](#) portal. Click **Sign In**.

Alternatively, if you are not registered at the [AltairOne](#) portal and received an authorization code an Altair license admin user at your company, click Use Auth Code, specify the authorization code received from this user and click **Authorize**.

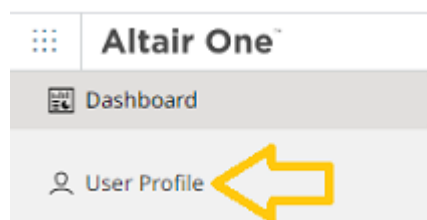
You will get the message: "Successfully authorized this machine with the Hosted HWU system". Click **OK**.

Client/Server configuration or Standalone configuration for multiuser access:

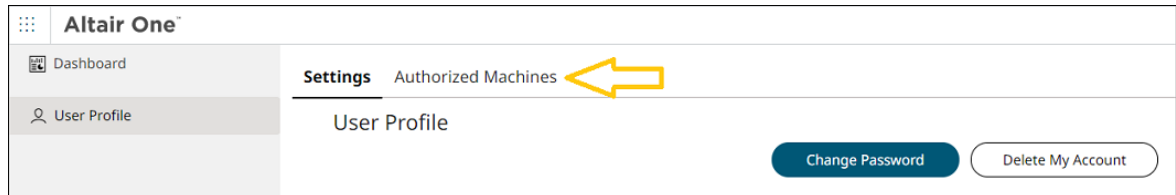
1. If you have not registered yet on the AltairOne portal, ask a user with Altair license admin role at your company to add you as a user at <https://AltairOne.com>. You will receive an email from Altair with a link to activate your Altair One account. Click the activation link in your email and register on the Altair One portal.
2. Log on to <https://altairone.com/Dashboard>. In the Manage Account section of the Altair One Dashboard page, click **Managed Licenses**, as shown below.



3. In the left pane, click **User Profile**:



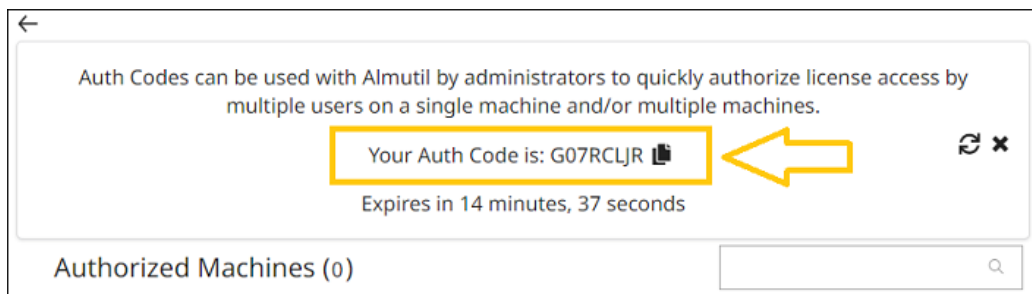
4. Click **Authorized Machines** in the User Profile page:



5. In the Authorized Machines page, click **Generate Auth Code** at the top right corner:



6. This will generate an authorization code to authorize a machine for the Altair license. Copy the code to the clipboard. Note: The code is valid for 15 minutes, so you must perform the next 7 steps within 15 minutes of generating the code.



7. After copying the code:

- For the Standalone configuration on Windows: run Command Prompt as administrator and change to the folder `C:\Program Files\Altair Data Analytics\KS Workstation 2022.3.0\security`
- For the Client/Server configuration on Windows: run Command Prompt as administrator and change to the folder `C:\Program Files\Altair Data Analytics\KS Server 2022.3.0\security`
- For the client/server configuration on Linux: Change to `/usr/local/altair/licensing15.1/bin/` or to a directory that contains **almutil**. If you cannot find **almutil** on your system, please contact [Altair Customer Support](#).

8. Run the following command as administrator, where *NNNN* is the authorization code generated at the previous step:

```
almutil -alauth -system -code NNNNN
```

The `almutil` tool can also be used to test the connectivity with AltairOne servers and configure proxy settings for use with AltairOne. Run `almutil` to view the detailed help information on the usage of the utility.

9. Once you get the message that the machine was successfully authorized, restart the KS Server service (in the client/server configuration) or KS Workstation (in the Standalone configuration).

14.3. Registration-Key Licensing

14.3.1. Altair License Fulfillment Server (ALFS)

ALFS is a secure self-service website used to acquire licenses and view license usage information. A registration key is required to log in to ALFS. Knowledge Studio and Knowledge Seeker access ALFS through the [License Manager](#) feature available from the Help menu. ALFS can also be accessed directly from a Web browser at <https://license.angoss.com>.

ALFS keeps a copy of all acquired licenses. In the event of a system failure or accidental deletion of the license on your computer, the license can be retrieved from ALFS and reinstalled.

14.3.2. Registration Keys

Licenses based on registration keys are legacy licenses that are not available to new customers. A registration key is a string about 30 characters long that provides access to licenses at the [ALFS](#) portal.

Registration-Key licenses are user-based node-locked licenses available for both the standalone and client/server configurations. A named-user registration-key license will only operate on a specific machine for a specific user ID.

14.3.3. Prerequisites for Installing Registration-Key Licenses

Administrative rights are not required to install licenses. The end users must have Read & Write permissions for the license directory.

If an IT administrator assists the intended user in activating the license, the administrator should log in with the user ID of the intended user.

The path to the license directory is displayed in the [License Manager](#) window, which can be accessed from the Help menu.

Standalone configuration

Start KS Workstation. The License Manager window opens. Proceed to the next section for the License Manager instructions.

Client/Server configuration

In the client/server configuration, the license resides on the server. Before installing the license, make sure that KS Workstation is configured to connect to the server.

1. Start KS Workstation using the desktop icon or the Altair Data Analytics program folder in the Windows Start menu.
2. You will be prompted for your password to log in to KS Server. Enter your password (your Windows or Linux user password, depending on the server OS).

If you are not prompted for your password:

- Select the **Connect** command from the **File** menu.
- In the *Establish Connection* dialog:
 - Set the Mode to *Client/Server Login*.
 - Enter the server name or IP address and the port number. The default port is 5470.
 - Specify the working directory if known; otherwise, leave the field blank. When the connection is established, the file browser will let you browse the server and select a directory if it was not specified correctly.
 - Enter the user ID and password (your Windows or Linux user credentials, depending on the server OS).

Click **OK** to connect. After the connection has been established, the License Manager window will open. The License Manager window can also be accessed from the Help menu.

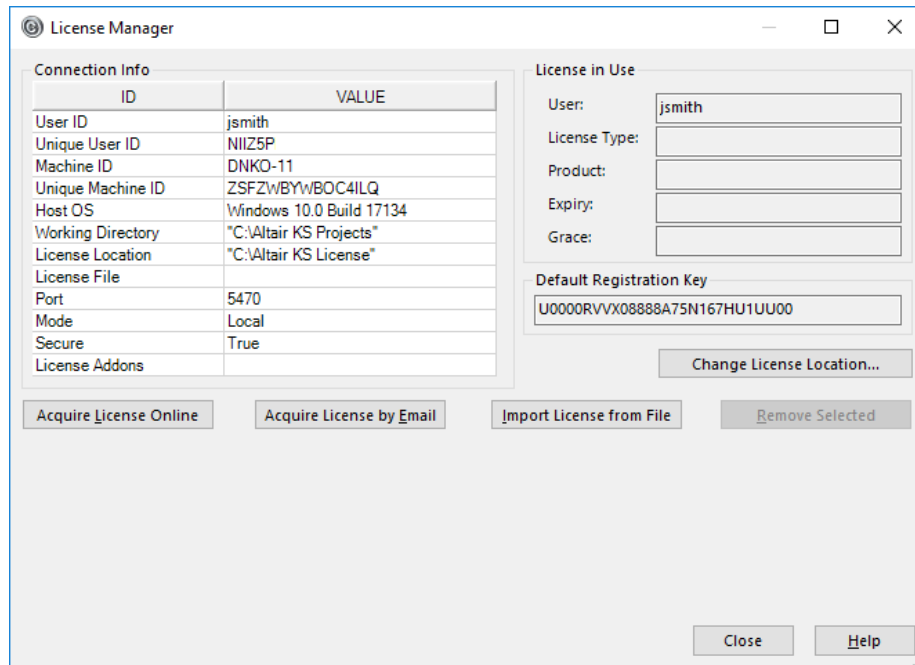
14.3.4. License Manager for Registration-Key Licenses

The License Manager window for Registration-Key Licenses has the following functions:

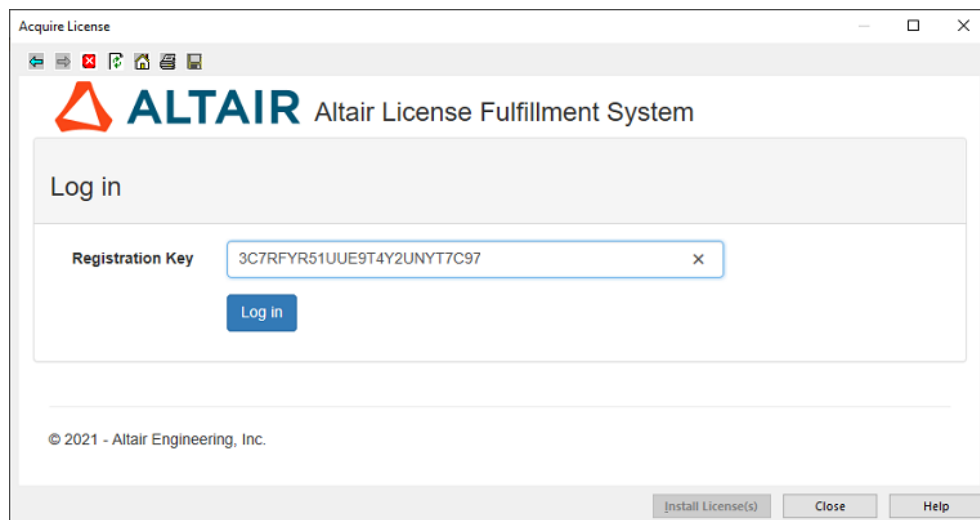
- Acquire and install licenses using one of three options: online through ALFS, by email, or import from file.
- Remove license(s).
- View the currently installed licenses on the current machine.
- View all active licenses on ALFS for the specified registration key.

Acquire License Online

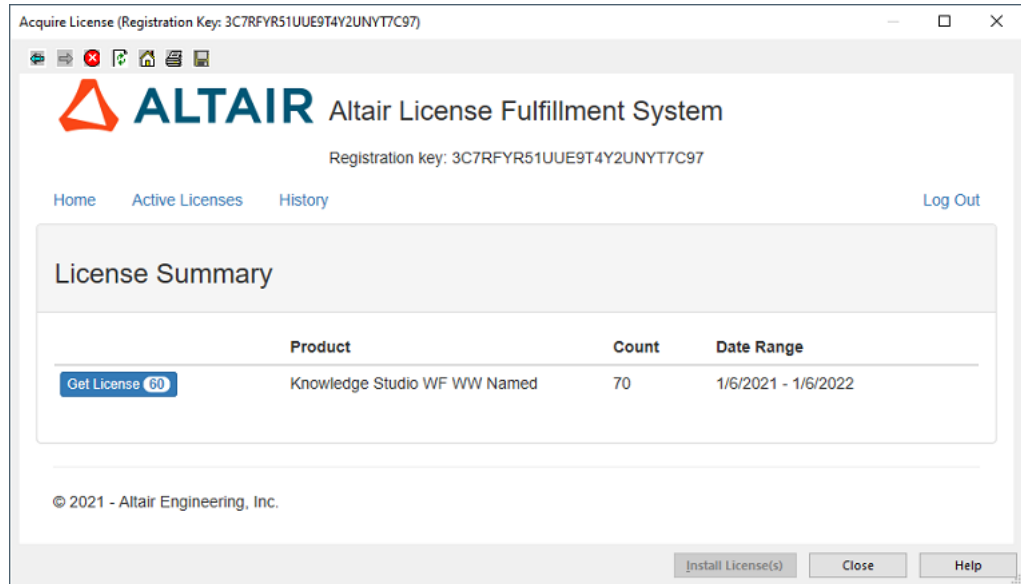
To acquire a license online from ALFS, click **Acquire License Online**.



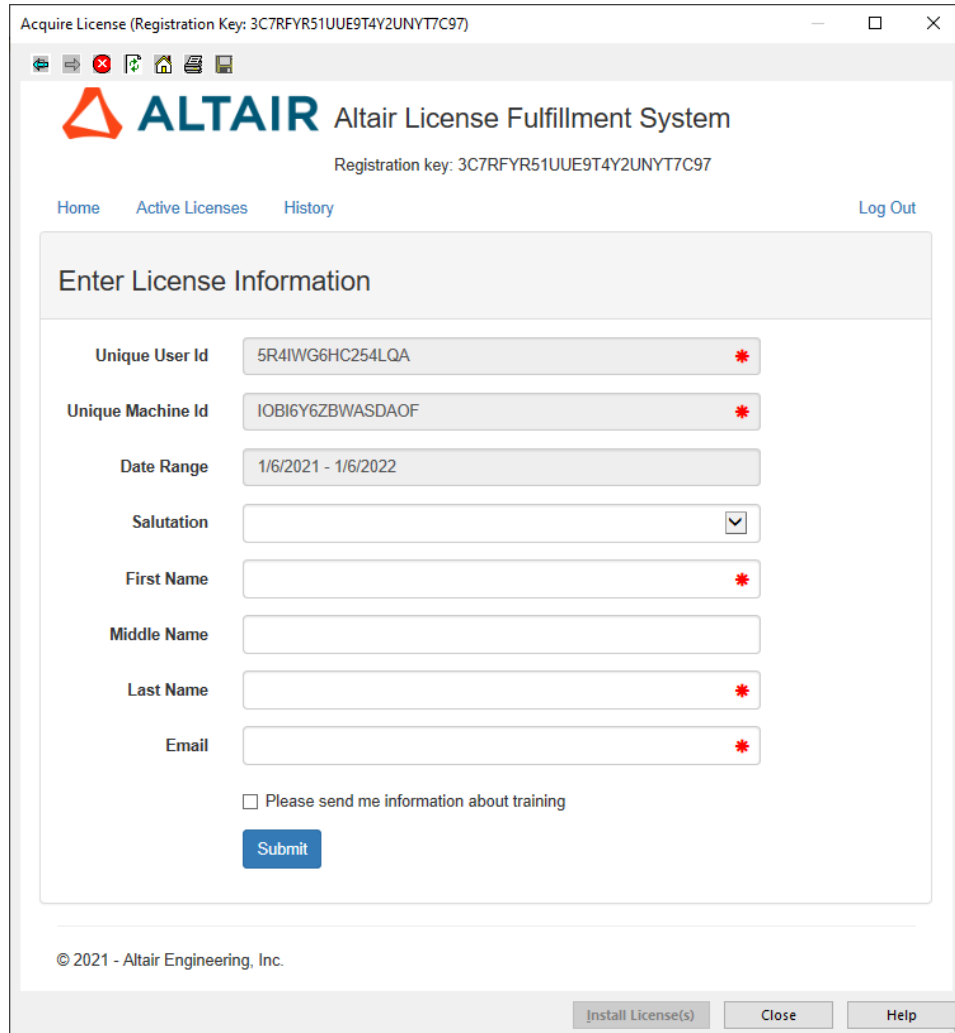
This opens the ALFS website <https://license.angoss.com>:




Enter your registration key and click **Log In**.



This screen indicates the product name associated with the registration key, the license term (Date Range), the total number of licenses under this key (Count), and the number of remaining licenses (shown on the Get License button). Click the **Get License** button.



Acquire License (Registration Key: 3C7RFYR51UUE9T4Y2UNYT7C97)

 **ALTAIR** Altair License Fulfillment System
Registration key: 3C7RFYR51UUE9T4Y2UNYT7C97

[Home](#) [Active Licenses](#) [History](#) [Log Out](#)

Enter License Information

Unique User Id: 5R4IWG6HC254LQA *

Unique Machine Id: IOBI6Y6ZBWASDAOF *

Date Range: 1/6/2021 - 1/6/2022

Salutation: [dropdown]

First Name: *

Middle Name:

Last Name: *

Email: *

Please send me information about training

Submit

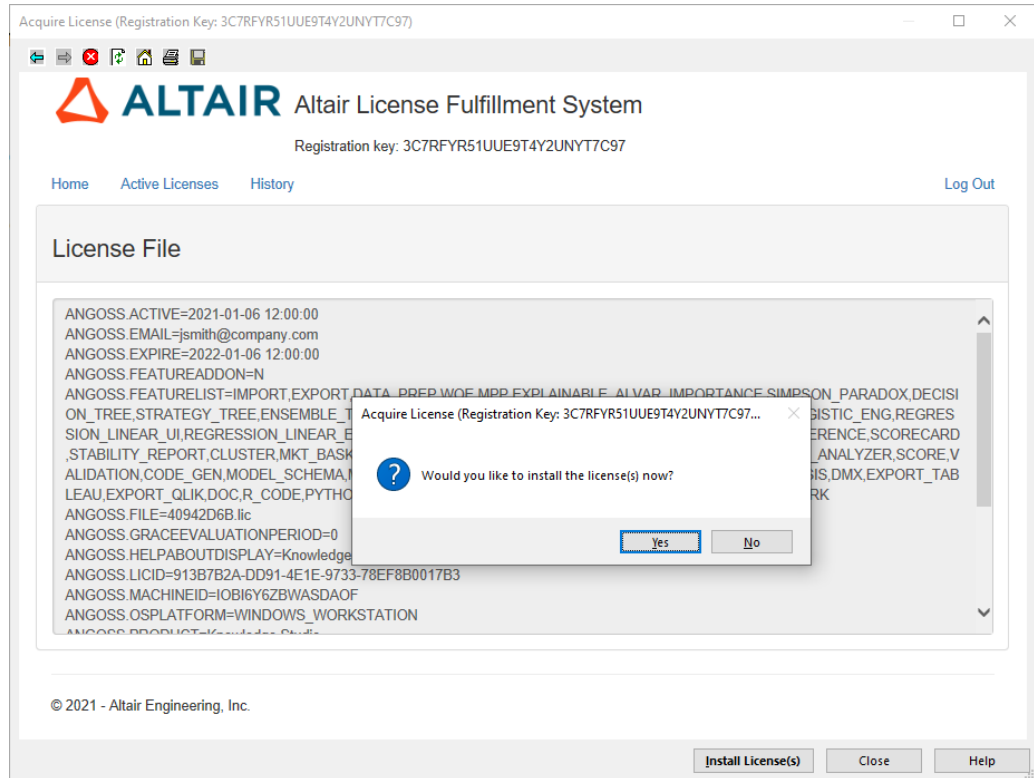
© 2021 - Altair Engineering, Inc.

[Install License\(s\)](#) [Close](#) [Help](#)

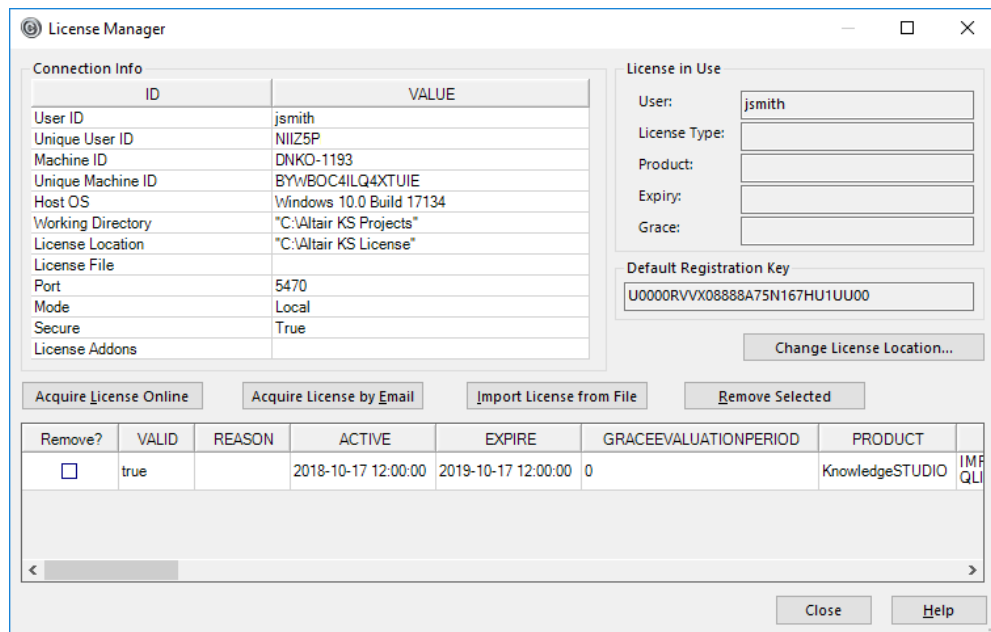
Enter the required information. First name, last name, and email are mandatory.

Click **Submit**.

The next screen displays the license content and prompts you to install the license. Click **Yes** to install the license. If there is no prompt, click the Install License(s) button at the bottom-right corner.



The newly installed license will be displayed in the lower frame of the License Manager dialog.

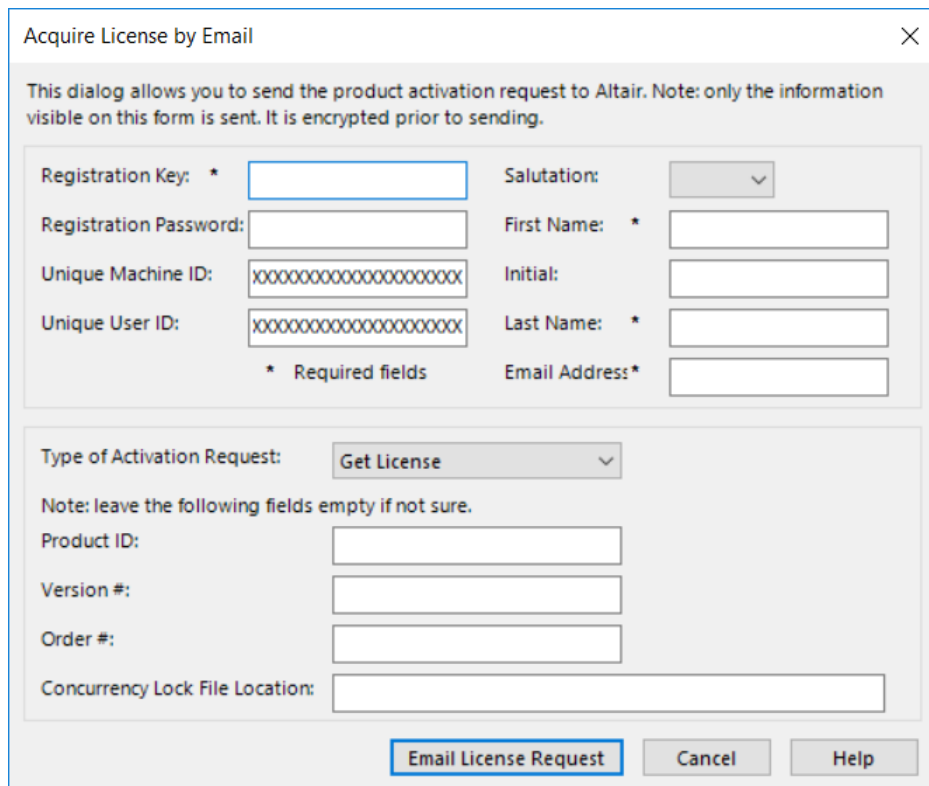


Close the License Manager window.

Acquire License by Email

Use this option if the client machine has no access to the ALFS website <https://license.angoss.com>. This option requires an email client.

Click the button **Acquire License by Email**.



- Enter your registration key, first name, last name, and email address.
- Make sure the Type of Activation Request is “Get License”.
- *For concurrent licenses only:* Specify the path to the Altair license folder on the server.
- Click *Email License Request*. The license request will be sent to the email address productactivation@datawatch.com.
- Once the request is received, Altair Customer Support will generate and email you the license file along with the license installation instructions.

Import License from File

Use this option if you received a license file as attachment in a license email from Altair.

- Open the license file attached to the license email message. It is a text file with extension *.lic that can be opened in Notepad or another text editor.
- Select all contents of the license file and copy it to the clipboard.
- Click **Import License from File**.
- Paste the copied text to the *Specify License Content* window. Click **OK**.
- Close the License Manager

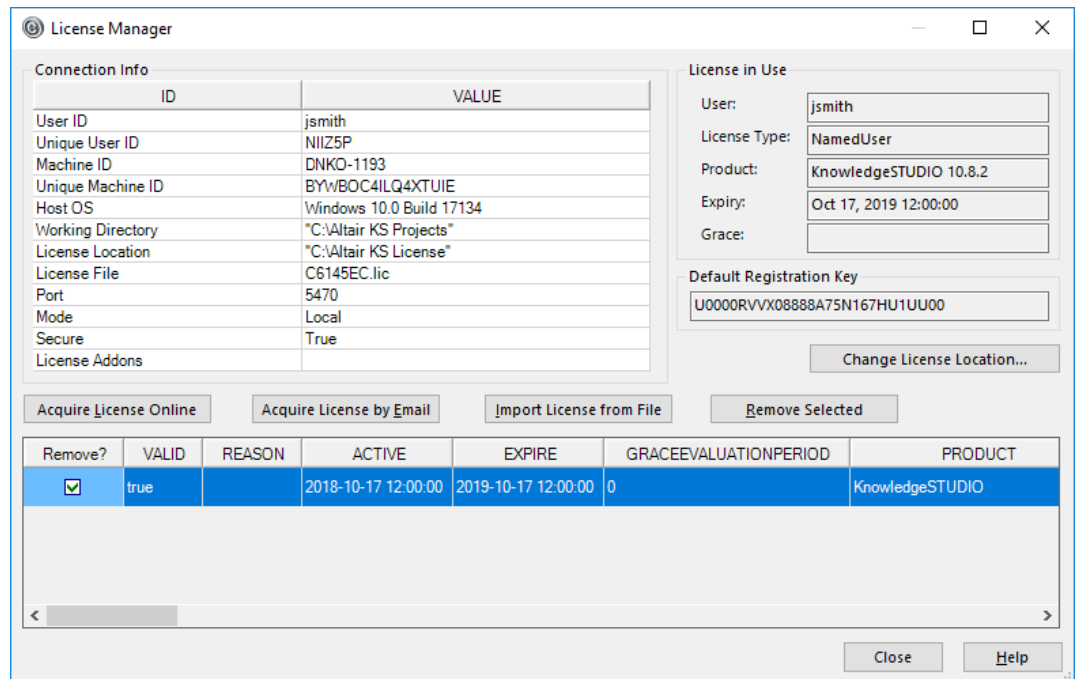
Removing Licenses

Licenses can be removed using the *Remove Selected* button in the License Manager.

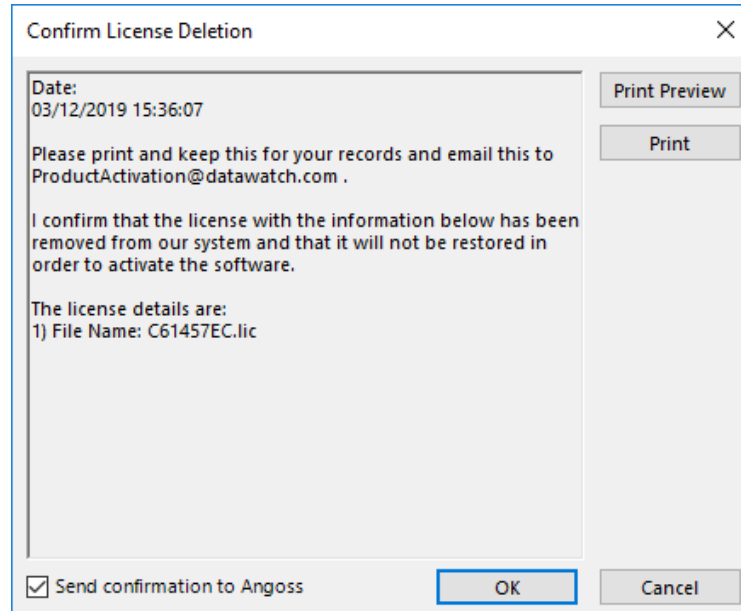
A confirmation email will be sent to Customer Support at dasupport@altair.com.

Note: If you are removing a valid license with the purpose of transferring it to another user or to a new machine, please email Customer Support to request the release of the license on ALFS.

- Use the *Remove* column to select the licenses you want to remove.



- Click the *Remove Selected* button.
- The Confirm License Deletion dialog will open. Review the licenses selected for removal.



- Select the option to send a confirmation email to Customer Support if an email client is present on the current machine.
- Click **OK** to remove the selected licenses.
- Close the License Manager.

14.3.5. Viewing Active Licenses on ALFS

To view the list of all active licenses under a specific registration key, log on to the ALFS website <https://license.angoss.com> using the registration key in question.

Click the link '**Active Licenses**' in the Get License window. The Active Licenses list shows the user's name, email, and the date of license acquisition for each license. Click View for the desired license to view its contents. Click Download for the desired license to download the license file. Downloaded licenses can be applied using the option "Import License from File" in the License Manager. See the previous section for instructions.

If you access ALFS from the License Manager window, upon clicking View you will be prompted to reinstall the license. Click **Yes** if you want to reinstall it.

14.3.6. Changing Users and Machines

If a license needs to be transferred to another user or if the end user's computer is replaced or reimaged, the current license needs to be retired so that it could be acquired by a new user or on a new machine. Please send the license transfer request to [Customer Support](#).

14.3.7. Privacy and Security

The following are the features of the registration-key based license system that protect end users' privacy and security:

- ALFS uses HTTPS for secure communication between the server and users.
- The users' profiles and computer names are not transmitted. Instead, an encrypted form of this information is transmitted (i.e., Unique User ID and Unique Machine ID). This is on top of the HTTPS encryption.
- All information sent to ALFS is displayed in the submission form, so it is always visible exactly what is and what is not transmitted to Altair.
- ALFS is only contacted during product activation when using the function "Acquire License Online" in the License Manager window.

15. Contacting Customer Support

Altair Customer Support website for Data Analytics products:

<https://www.altair.com/data-analytics-support/>

To report issues with the software or ask questions regarding the product features, please contact Customer Support via email or telephone:

- Telephone: 1-888-715-7391 (toll-free within North America) or 1-416-593-2417
- Data Analytics Customer Support e-mail: dasupport@altair.com

We welcome your suggestions on how to make our application easier to use and understand. Please send your comments and suggestions to dasupport@altair.com.

Join our online community of experts and users to share insights, collaborate with colleagues and find more ways to take full advantage of your product: <https://altair.com/knowledge-studio-user-group>

About Altair | Altair Data Analytics

Altair is a global leader in delivering advanced analytics to businesses looking to improve performance across risk, marketing and sales.

Altair removes the complexity inherent with predictive analytics and machine learning with a platform that is intuitive to use and rich in features. It is designed so that Data Scientists and Data Citizens alike can build models used to help solve business problems.

<https://www.altair.com/>

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