Altair Feko 2025.1

Installation Guide

Updated: 05/22/2025

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Visit Customer Support to learn more about our support offerings.

Contents

Introduction

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This installation guide provides instructions for the Altair Feko 2025.1 installation on supported platforms.

The Altair Feko 2025.1 installation includes the following Altair Simulation 2025.1 applications:

- Feko
- WinProp

where each application makes use of the Altair Units (AUs) licensing system.

The Altair Units licensing allows the Altair License Management (ALM) system to be used if ALM is installed and properly configured. The Altair License Management licensing allows the flexibility to use other Altair Simulation 2025.1 applications.

In order to run Altair Simulation 2025.1 applications, you need to connect the applications to the Altair License Management System 14.0 (or higher, using the latest version is recommended). Details of the installation and how to start the Altair License Manager can be found in the *Altair License Management System 14.0 Installation Guide*. The license packages are available on Altair Connect or Altair One Marketplace).

System Requirements

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Before you install Altair Feko (which includes Feko and WinProp), we recommend that you verify that your computer meets or exceeds the minimum system requirements.

This chapter covers the following:

2.1 Minimum Operating System Requirements

For more details regarding the minimum operating system requirements, view the Altair Simulation Quick Installation Guide with additional details in the Altair Simulation Advanced Installation Guide.

Determining Missing Linux System Dependencies

If CADFEKO or POSTFEKO fails to start up with a message referring to "xcb", the following commands can be run to determine if a system has missing dependencies:

- `ldd $FEKO_HOME/bin/platforms/libqxcb.so | grep "not found"`
- `ldd $FEKO_HOME/bin/xcbglintegrations/libqxcb-glx-integration.so | grep "not found"`

where $FEKO_HOME is set to the Feko installation path which contains the `bin` subdirectory.

> **Note:** Ignore `libQt*` dependencies, since these are resolved by the application at startup.

2.2 Hardware Requirements

For more details regarding the minimum hardware requirements, view the Altair Simulation Quick Installation Guide.

Altair Student Edition

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The Altair student edition provides full functionality to students currently enrolled at any educational institution, and to student teams participating in competitions.

This chapter covers the following:

3.1 Feko Student Edition

Important: The Feko student edition has no restrictions and provides full functionality.

3.2 WinProp Student Edition

Important: The WinProp student edition has no restrictions and provides full functionality.

3.3 WRAP Student Edition

Important: The WRAP student edition has no restrictions and provides full functionality.

Installation Modes

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Install Altair Feko 2025.1 on a machine using either graphical user interface (GUI) mode, console mode or silent mode.

The choice of installation modes allows for flexibility in selecting the installation mode that best suits your needs and environment.

GUI Mode

The graphical user interface (GUI) mode installation is in the form of a GUI wizard with step-by-step instructions.

Console Mode

A console mode installation process mimics the default GUI wizard steps, but uses only the standard input and output. Console mode allows for text to be output to the console.

Silent Mode

A silent mode installation installs Altair Feko 2025.1 without requiring any user interaction. The installer makes use of a response file that contains the installation options to run the installation from start to end without any user input.

See Also

GUI Mode (Windows Installation)

GUI Mode (Linux Installation)

Console Mode (Linux Installation)

Silent Mode (Windows Installation)

Silent Mode (Linux Installation)

Install Altair Feko

5

Install Altair Feko 2025.1 installation using the Altair Units licensing system.

This chapter covers the following:

5.1 Preparing to Install Altair Feko

What you need to install and successfully run Feko, newFASANT and WinProp using Altair Units:

- Altair Feko 2025.1 installer (which includes Feko and WinProp) for your platform.

`hwFeko2025.1_win64.exe`	Installer of Altair Feko
`hwFeko2025.1_linux64.bin`	
`hwFeko2025.1_edu_win64.exe`	Installer of Altair Feko Student Edition
`hwFeko2025.1_edu_linux64.bin`	

- If you are using a server-based license, you will need access to an activated license server that allows Altair Simulation applications to draw license units.
- A compatible machine that contains the minimum hardware/software requirements.
- Sufficient disk space for the installation.

The general procedure is:

- Install Altair Feko on the designated machine(s).

> **Note:** newFASANT can be added to the Feko installation. The process for this can be found in the Altair Community.

See Also

Minimum Operating System Requirements

Hardware Requirements

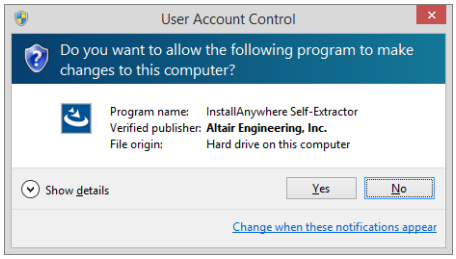
5.2 Installing on Microsoft Windows (Local)

5.2.1 GUI Mode

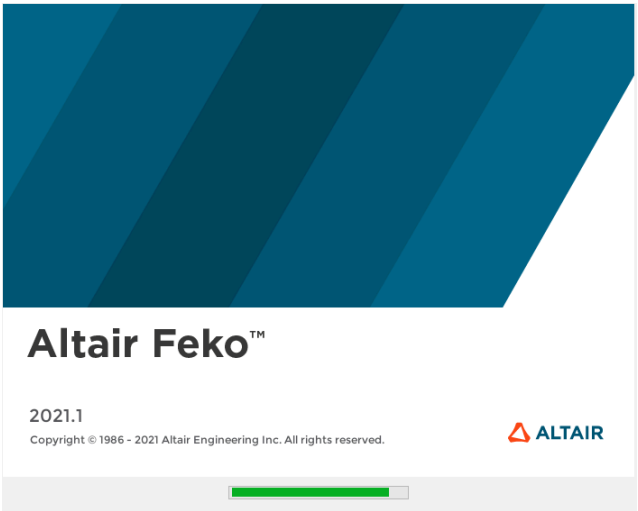
Starting the Installation Process

The installation process is started by extracting the software.

1. Complete the following steps to extract and install the software.
   a) Log in to the machine on which the software is to be installed.
   b) Place the downloaded installation file in a temporary directory.
   c) Start the installation process by double-clicking the installation file to start the installer.
   d) If user account control (UAC) is enabled and you are an administrator, a prompt displays showing the Altair Engineering, Inc. digital signature for elevated permissions. Click **Yes** to continue.



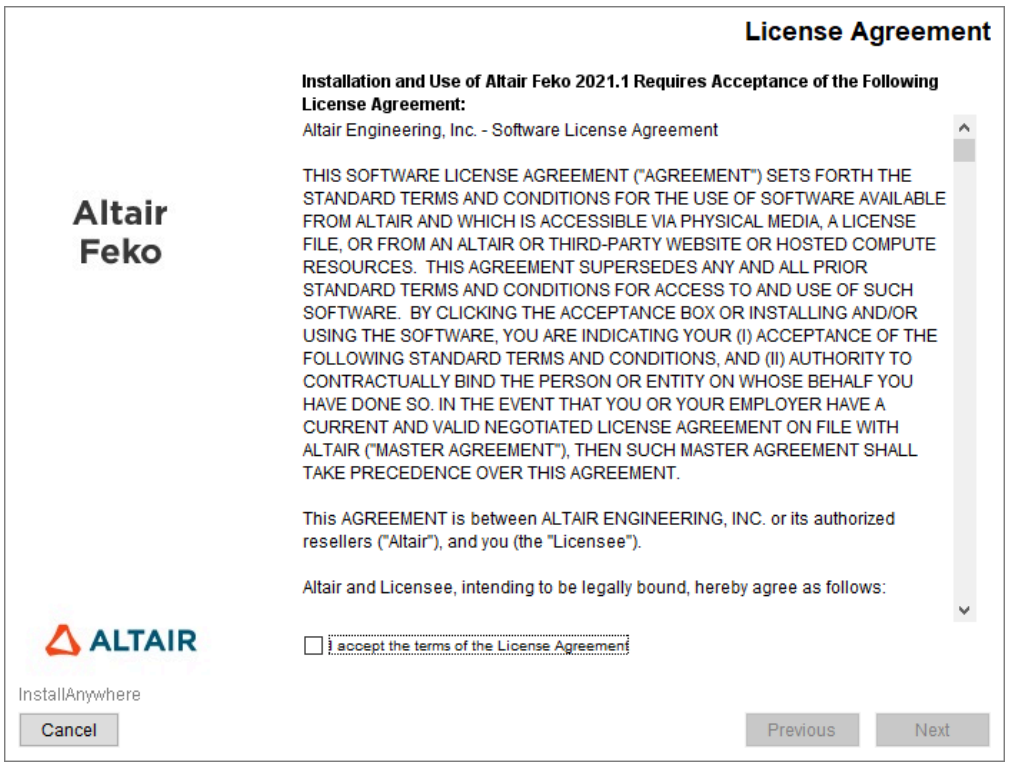
2. The Altair Feko installer (which includes Feko and WinProp) extracts the JVM (Java Virtual Machine) and installs the modules to the TMP location of the machine and launches the installer.
3. The Altair Feko 2025.1 splash screen is displayed while the installer is loaded.



Viewing the License Agreement

The **License Agreement** panel is displayed.

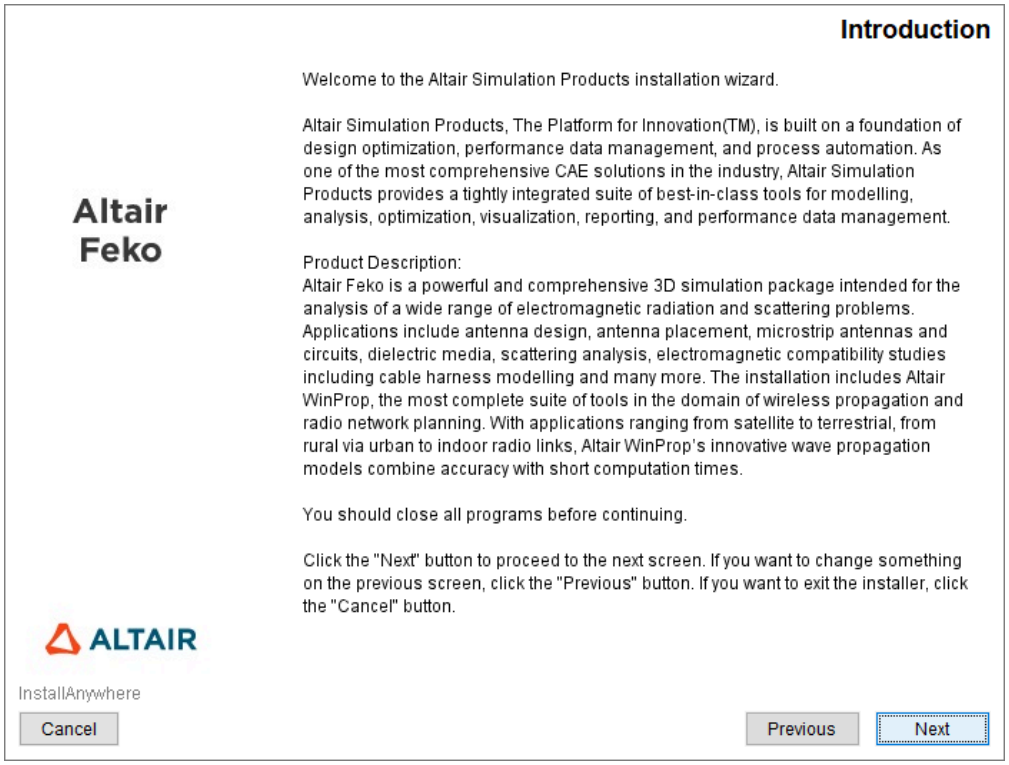
1. Read through the license agreement.
2. Click **I accept the terms of the License Agreement** to continue with the installation.
3. Click **Next** to continue.



Introducing the Installation Wizard

The **Introduction** panel is displayed.

1. Read the introduction.
2. Click **Next** to continue.



Choosing the Installation Type

The **Choose Installation Type** panel is displayed.

1. Select one of the following options:

   - ***Local***

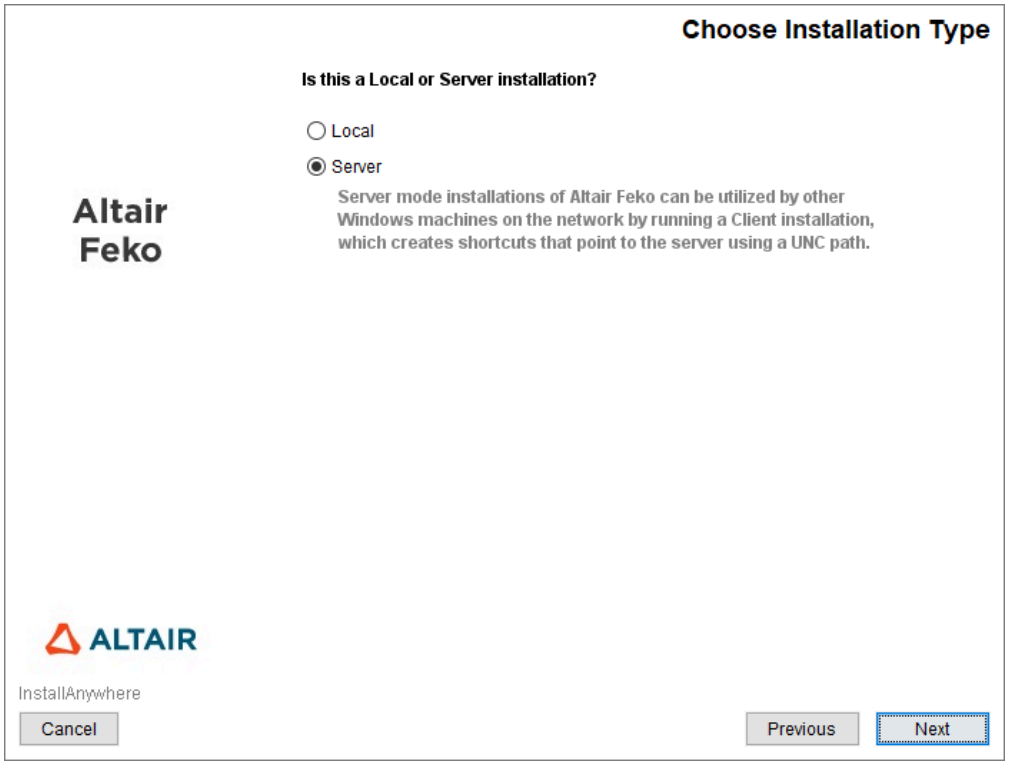
     Select this option if you want the installation to be performed on your local machine.

   Server

   Select this option if you want to perform a server mode installation. You can either use the local machine as server or install on a network share. Simulations are performed on the client machines, not on the server.

   > **Note:** PowerShell must be available should newFASANT be added to a Feko server installation.

2. Click **Next** to continue.



See Also

Continue with Server Installation

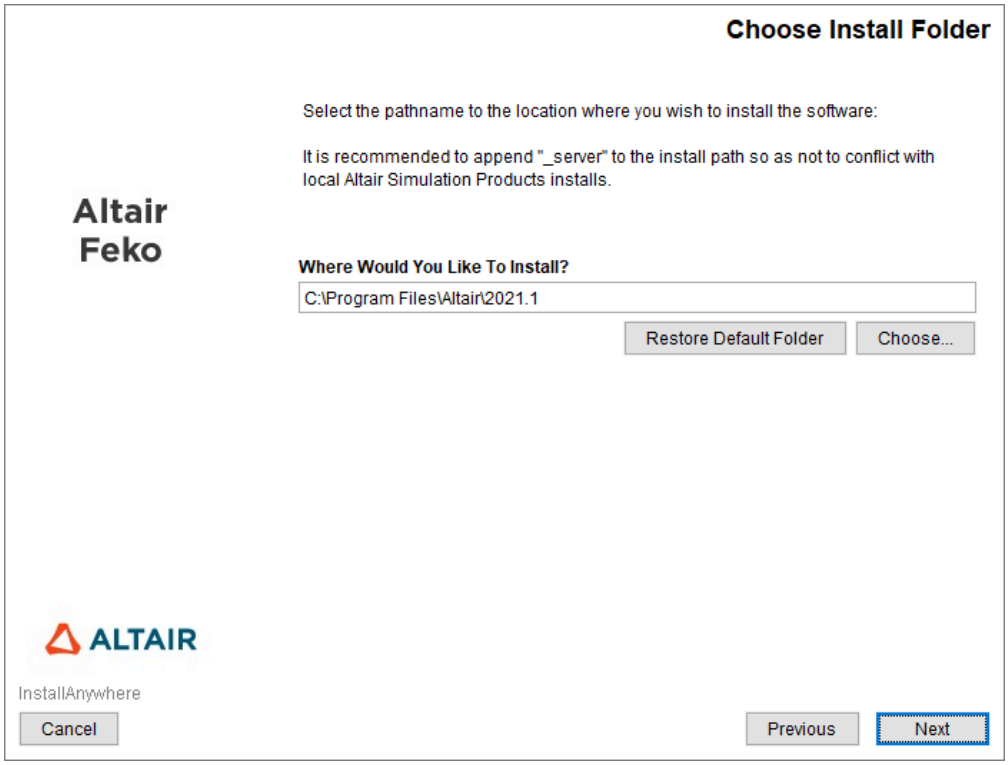
Choosing the Install Folder

The **Choose Install Folder** panel is displayed.

1. The default install folder is the Altair Simulation install folder and Feko and WinProp will be installed in a `feko` subfolder.

   Note:
   - The installer does not allow the use of characters "#" and ";".
   - Installing to a root drive is not permitted, for example C:\.

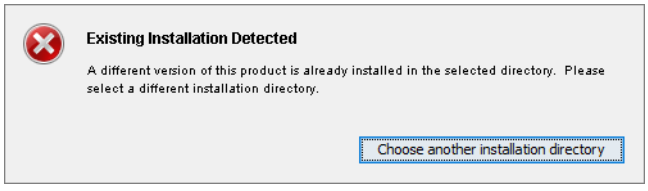
2. Click **Next** to continue.



Attention:

If an existing installation of Feko is detected in the install folder, a warning prompt will be displayed.

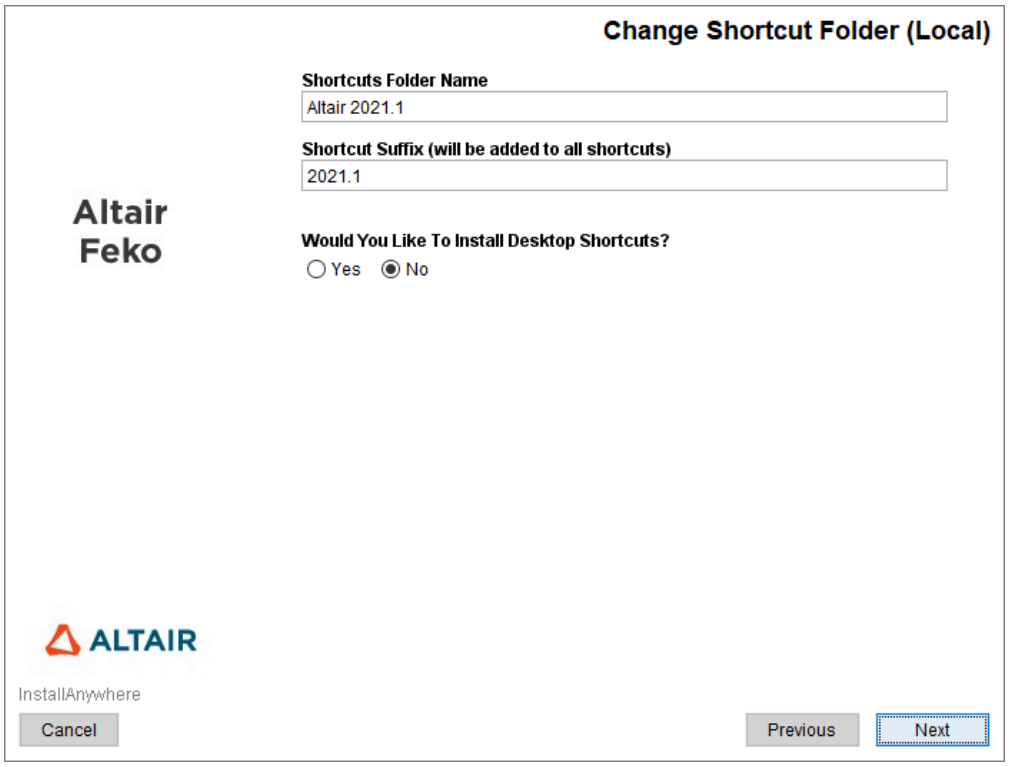
- Click **Continue** to overwrite all the files in the specified installation directory.
- Click **Cancel Installation** to abort the installation process.



Specifying the Location for Start Menu Shortcuts

The **Change Shortcut Folder (Local)** panel is displayed.

1. Specify the folder name that will contain the start menu shortcuts.
2. [Optional] Specify the suffix string to be added to the shortcuts.
3. Select one of the following options:
   - ***Yes***
     Select this option if you want Altair Feko icons on the desktop.
   - ***No***
     Select this option if you do not want Altair Feko icons on the desktop.
4. Click **Next** to continue.



Specifying Additional Installation Options

The **Other Installation Options** panel is displayed.

1. Select option if applicable:
   - ***Create file associations***

     Select this option if the installer should associate the file types used by Altair Feko applications with this version.

     If multiple Feko versions are installed then selecting this check box removes file associations with previous Altair Feko versions. Feko and WinProp file types will now be associated with *this* instance of Altair Feko.

   - ***Add Windows Firewall exceptions***

     Select this option if the installer should automatically add Windows Firewall rules for the parallel Feko executables and parallel services.

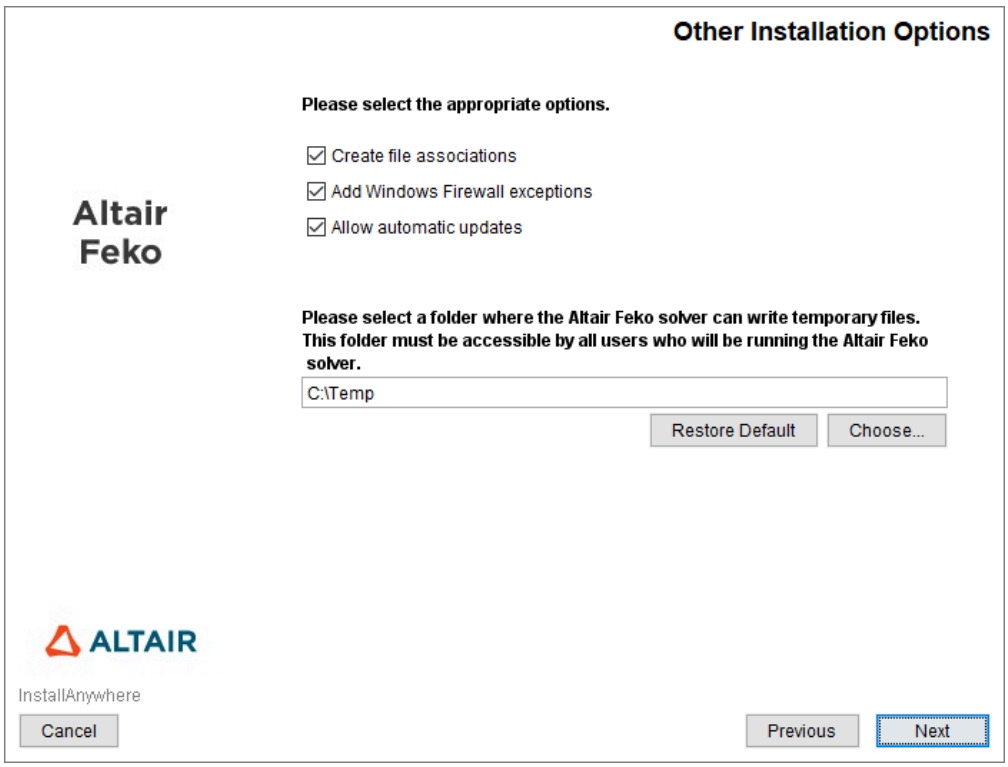
     The rules are created as follows for each of the executables: for TCP and UDP connections, allow incoming and outgoing connections on any local or remote port for any local or remote address from any computer on your private networks. You can make the rules more strict using Windows Firewall settings

     > **Note:** This option is only available when the user is installing Feko as an administrator.

   - ***Allow automatic updates***

     Select this option to enable the automated check for updates per machine.

2. Specify a temporary directory where the Feko solver can write temporary files.
3. Click **Next** to continue.



Warning:

When not using Windows Firewall, you need to add exceptions for all MPI related programs to your antivirus / firewall software to prevent interference with MPI communication (this may result in unexpected errors).

Add the following exceptions to your antivirus / firewall software:

- `%ALTAIR_HOME%\feko\bin\feko_mkl.csv.impi.exe`
- `%ALTAIR_HOME%\feko\bin\feko_mkl.csv.mpich.exe`
- `%ALTAIR_HOME%\feko\bin\feko_mkl.csv.msmpi.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\bin\hydra_service.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\bin\mpiexec.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\bin\mpiexec.hydra.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\em64t\bin\hydra_service.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\em64t\bin\mpiexec.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\em64t\bin\mpiexec.hydra.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\intel64\bin\hydra_service.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\intel64\bin\mpiexec.exe`
- `%ALTAIR_HOME%\mpi\win64\intel-mpi\intel64\bin\mpiexec.hydra.exe`
- `%ALTAIR_HOME%\mpi\win64\mpich\bin\mpiexec.exe`
- `%ALTAIR_HOME%\mpi\win64\mpich\bin\smpd.exe`

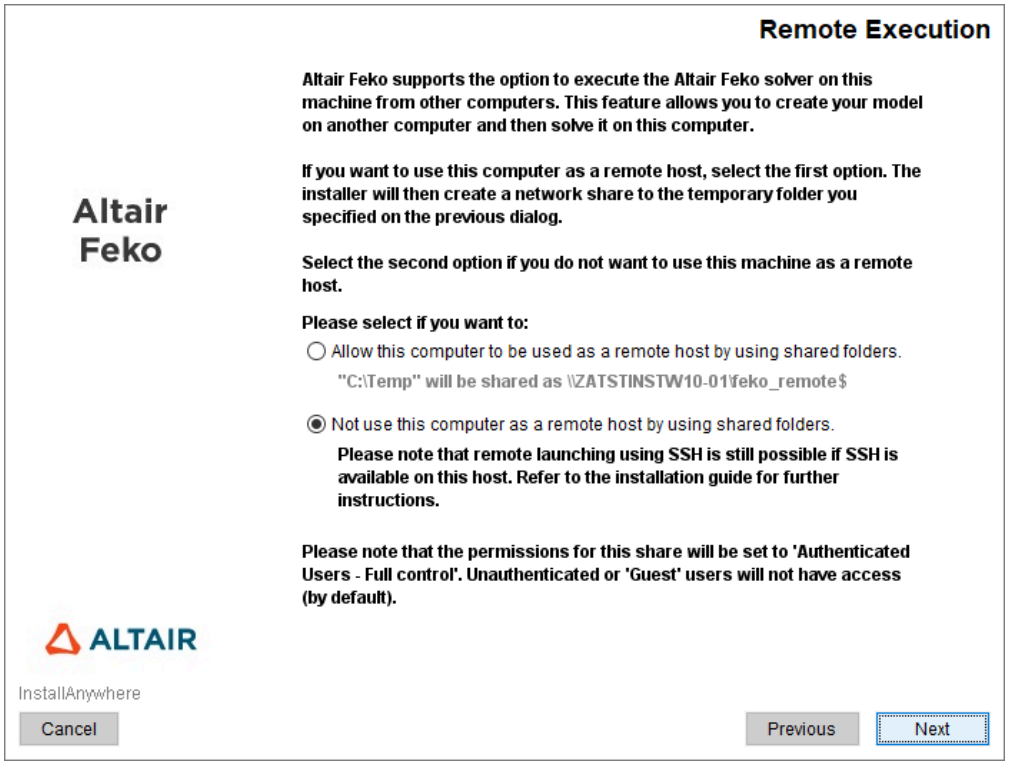
- `%ALTAIR_HOME%\mpi\win64\mpich\bin\wmpiexec.exe`

Allowing Computer to Be Used as a Remote Host

The **Remote Execution** panel is displayed. It allows you to specify if the Feko temporary directory (specified on the **Other Installation Options** panel) should be a shared directory or not.

1. Select one of the following options:
   - ***Allow this computer to be used as a remote host by using shared folders***
     This option will allow the current computer to be used as a remote host. It allows you to build your model on one computer and then run the Feko solver on another computer. The temporary folder will be shared as `\\%COMPUTERNAME%\feko_remote$` and have full permissions for "Authenticated Users". Guests or unauthenticated users will not have access by default.
   - ***Not use this computer as a remote host by using shared folders***
     This option is used when the current computer is not to be used as a remote host.

     Note: If you select this option, you can still use remote launching using SSH (if available on the computer).
2. Click **Next** to continue.

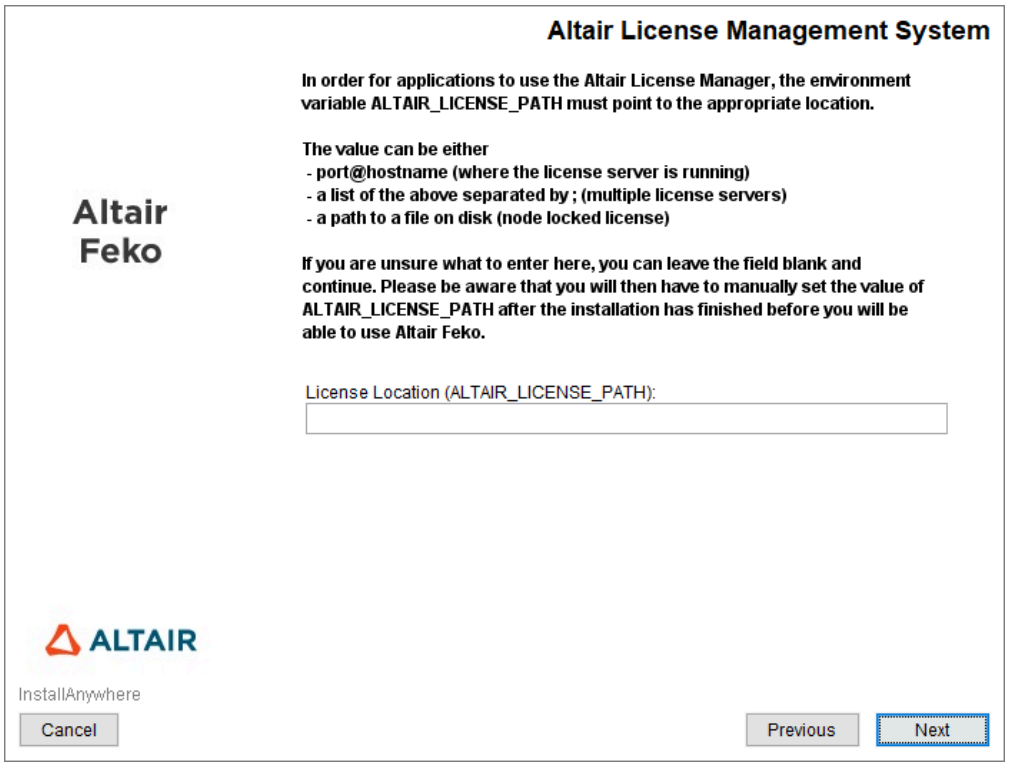


Specifying the License Location

The **Altair Licence Management System** panel is displayed.

> **Note:** This dialog is only displayed if *ALTAIR_LICENSE_PATH* has not been set.

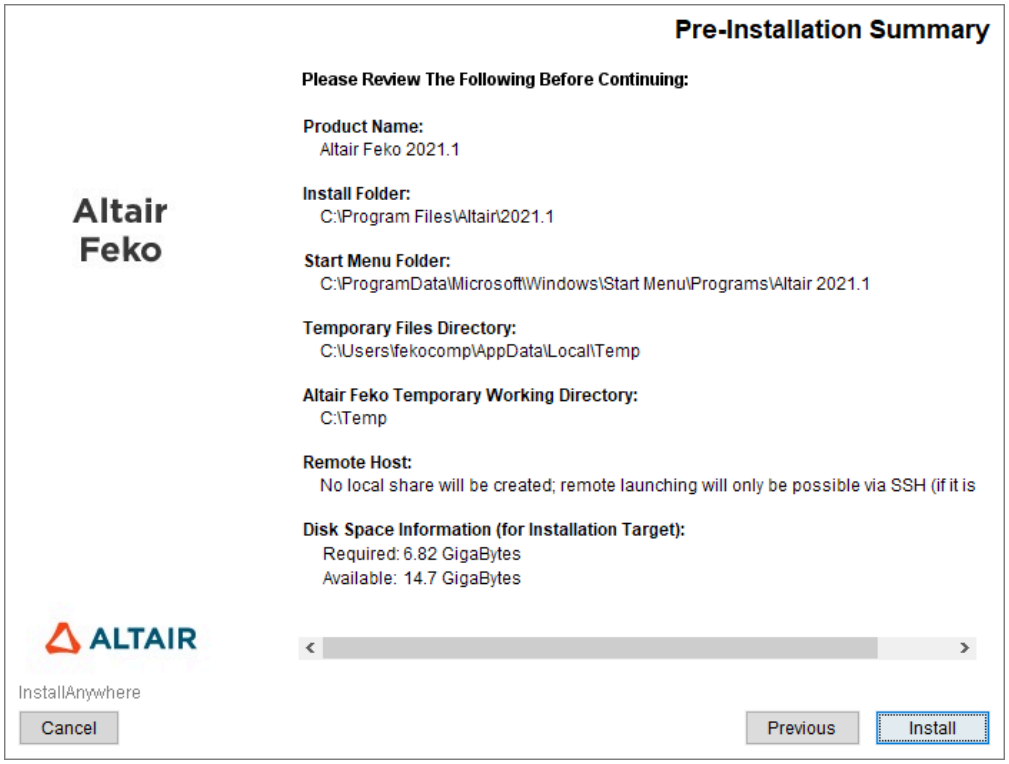
1. Select the location for the environment variable *ALTAIR_LICENSE_PATH*. If uncertain about the location, leave the field empty, but you will need to manually set the value of *ALTAIR_LICENSE_PATH* after the installation is complete.
2. Click **Next** to continue.



Verifying the Pre-Installation Options

The **Pre-Installation Summary** panel is displayed. The summary contains details about the pending installation.

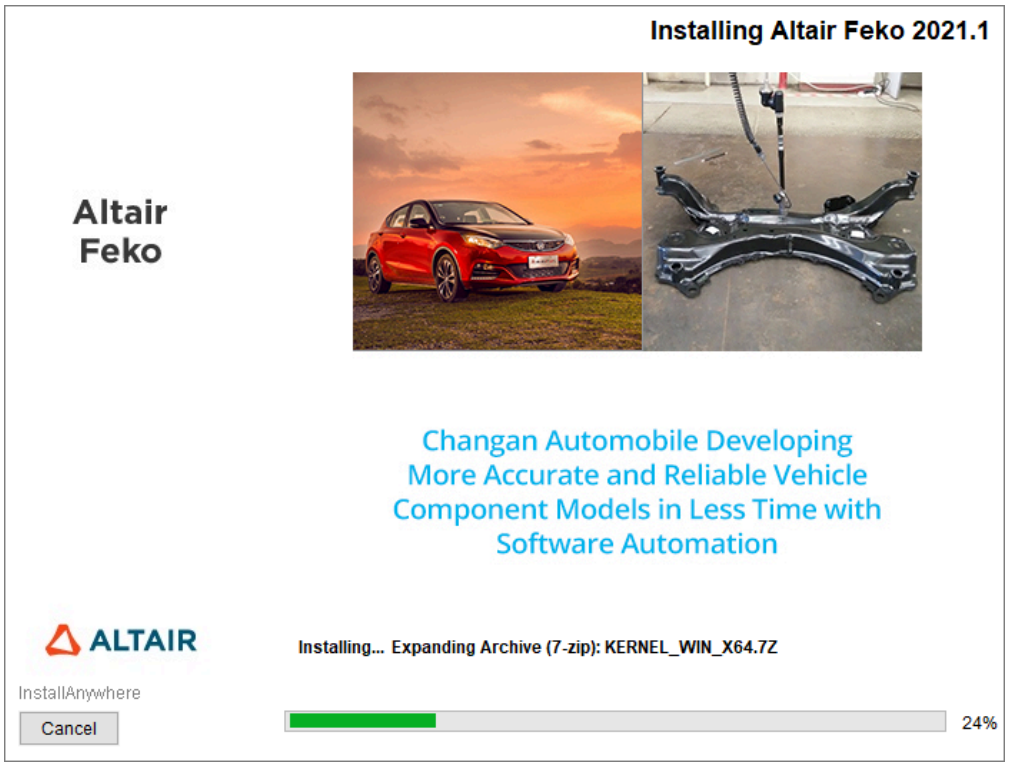
1. Review the installation details.
2. Click **Next** to continue.



Viewing the Installation Progress

The **Installing Altair Feko 2025.1** panel is displayed.

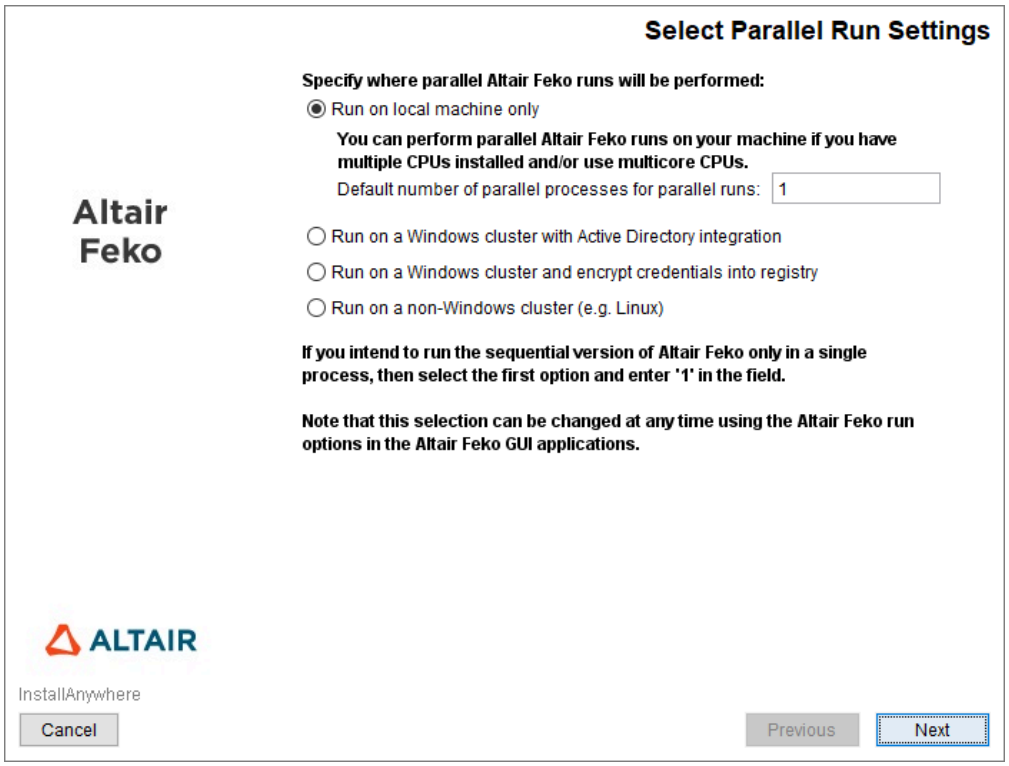
View the installation progress.



Specifying the Parallel Run Settings

The **Select Parallel Run Settings** panel is displayed.

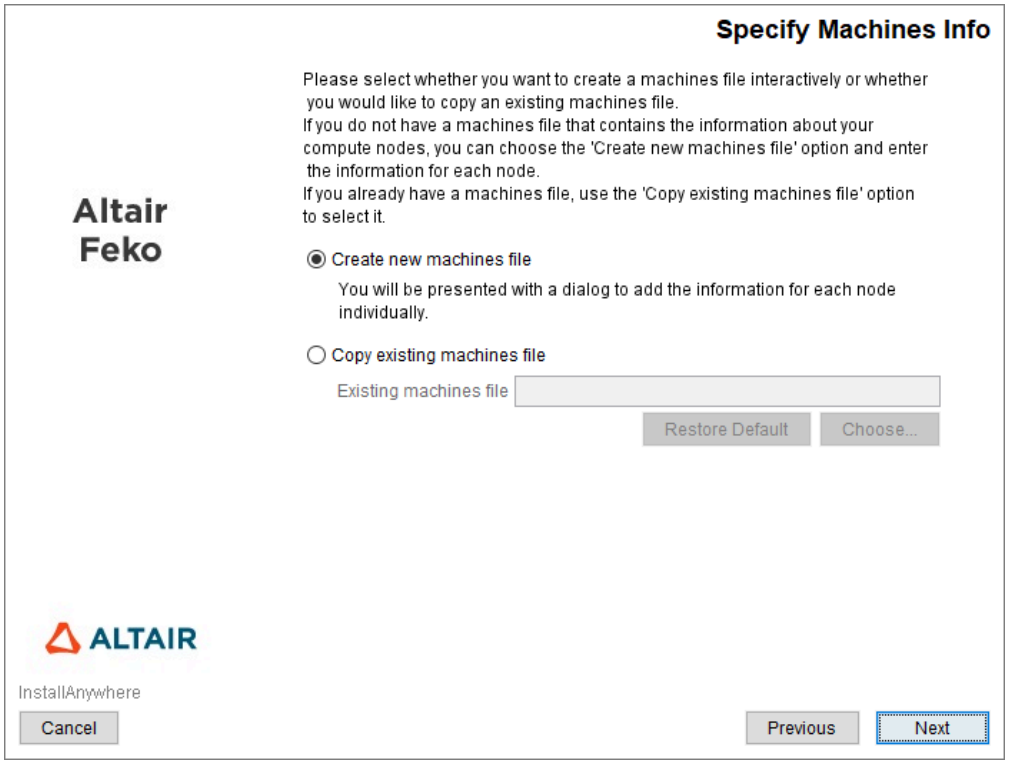
1. Select one of the following options:
   - ***Run on local machine only***
     This option allows you to perform parallel runs on one or more local, multi-core CPU. The installer automatically inserts the detected number of cores/CPUs as a default number, but it may be changed if you wish to run a different number of parallel processes.
   - ***Run on a Windows cluster with Active Directory integration***
     This option is applicable if you have installed Altair Feko on a Windows cluster that is part of a Windows domain and you intend to perform parallel runs on the cluster.
   - ***Run on a Windows cluster and encrypt credentials into registry***
     This option is applicable if you have installed Altair Feko on a Windows cluster that is not part of a Windows domain and you intend to perform parallel runs on the cluster.
   - ***Run on a non-Windows cluster (e.g. Linux)***
     This option is applicable if you have installed Altair Feko on a non-Windows cluster and you wish to perform parallel runs on the cluster.
2. Click **Next** to continue.



Specifying the Machines Info

The **Specify Machines Info** panel is displayed when the **Run on a Unix/Linux cluster** option was selected.

1. Select one of the following options:
   - ***Create new machines file***
     This option allows you to create a new machines file which specifies the list of machines used to perform parallel runs.
   - ***Copy existing machines file***
     This option allows you to use an existing machines file. The selected machines file will be copied to the new Altair Feko installation directory.
2. Click **Next** to continue.



See Also

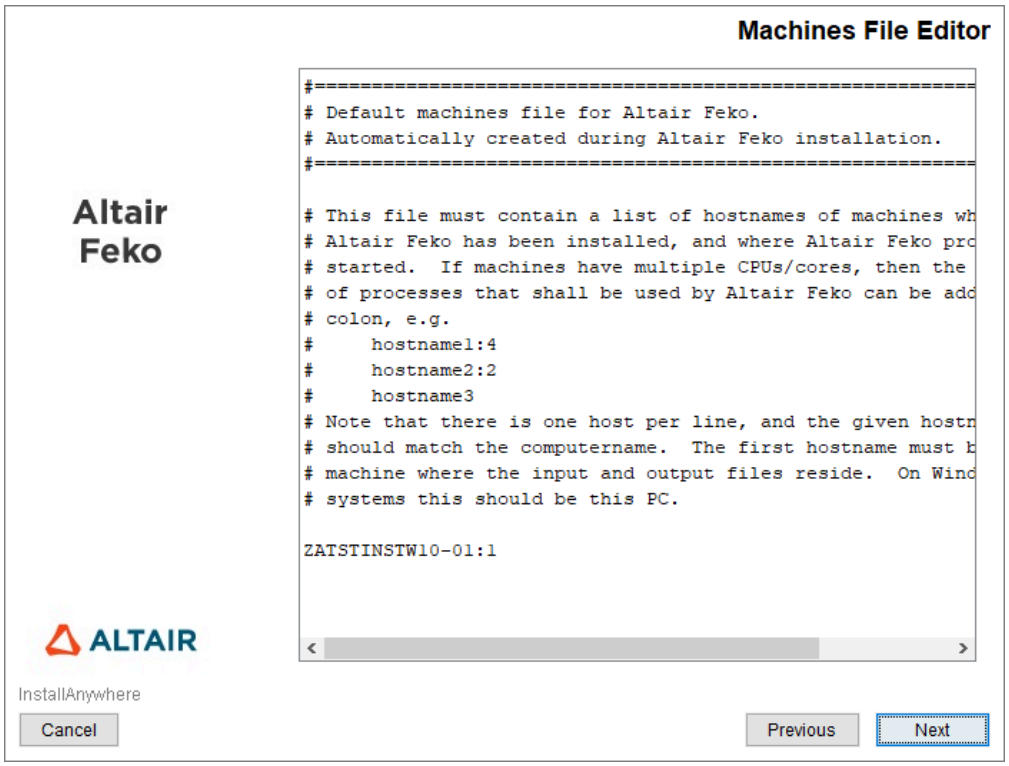
Create New Machines File

Copy Existing Machines File

Defining the Machines File

The **Machines File Editor** panel is displayed.

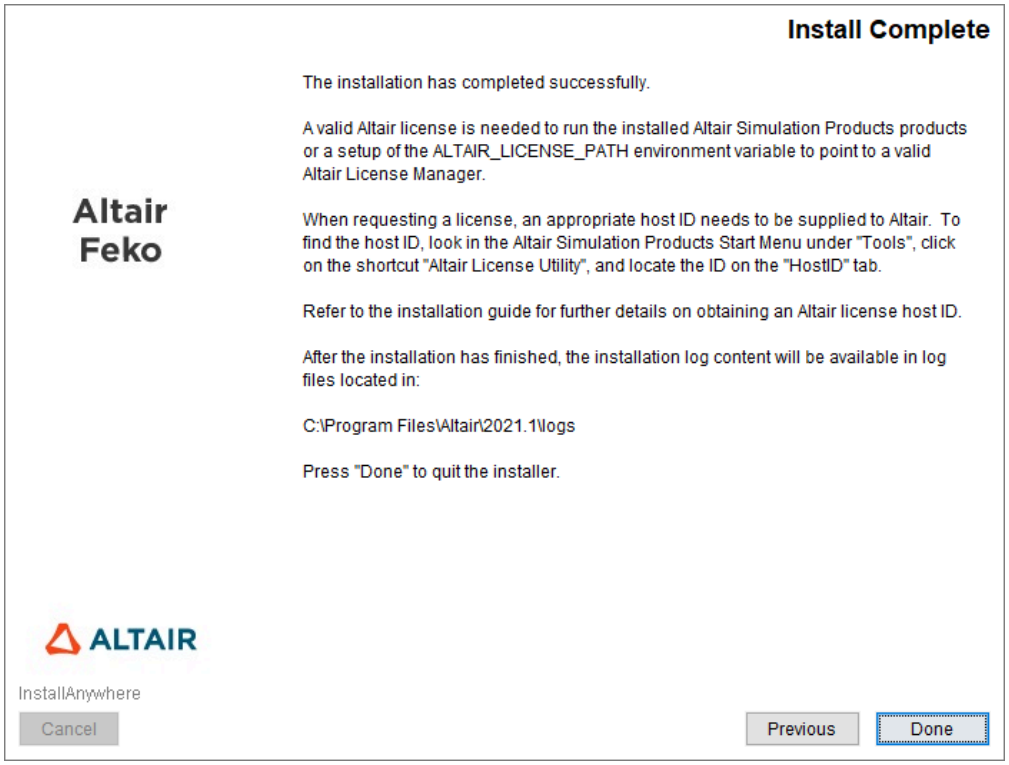
1. If the **Create new machines file option** was selected, for each machine specify its name and number of parallel processes. Use the format, `hostname:number_of_processes`, for example: `clustermachine.mydomain:4`.
2. Click **Next** to continue.



Exiting the Installation Wizard

The **Install Complete** panel is displayed.

1. Once the installation is complete, the **Install Complete** panel is displayed.
2. Click **Done** to exit the installer.



5.2.2 Silent Mode

A silent mode installation installs Altair Feko 2025.1 without requiring any user interaction. The installer makes use of a response file that contains the installation options to run the installation from start to end without any user input.

1. Create a response file. Run the installer in interactive mode with the `r` option to save the installation properties to a response file.

   ```
   [INSTALLER_NAME] -r "[RESPONSE_PATH]\installer.properties"
   ```

2. Trigger a silent mode installation from the command line using one of the following options:
   - Use the default property values as provided by the installer package.

     ```
     [INSTALLER_NAME] -i silent
     ```

   - Specify properties.

     ```
     [INSTALLER_NAME] -i silent -D[Property]=[VALUE]
     ```

     - For example:

       ```
       -DACCEPT_EULA=YES -DUSER_INSTALL_DIR=C:\\Program Files\\Altair\\2025.1
       ```

   - Use a response file containing properties.

     ```
     [INSTALLER_NAME] -i silent -f "[RESPONSE_PATH]\installer.properties"
     ```

Note:

- `[INSTALLER_NAME]` is the installer binary.
- `[RESPONSE_PATH]` is the path where the response file resides.
- Use quotes around directory and pathnames that contain spaces.
- Do not use spaces between *VARIABLE=VALUE* statements in the response file.
- Specify *ACCEPT_EULA=YES* to agree with the end user license agreement (EULA) and continue with the installation.

Response Files

A response file is an installer properties file used to provide properties for an installer running in silent mode. The files contain text in a simple *VARIABLE=VALUE* format.

The properties in the response files are captured by executing the installer and the captured variables are then used as default values for future silent installs. The installer automatically checks the same directory as the installer for a file called `installer.properties` to use as input to the installer.

An example of a response file containing properties:

```
#Accept End User License Agreement (EULA) and Continue with the Installation
#------------------------
ACCEPT_EULA=YES
#Choose Installation Type
#------------------------
LOCAL_INSTALLATION=0
SERVER_INSTALLATION=1
#Choose Install Folder
#---------------------
USER_INSTALL_DIR=Program Files\Altair\2025.1\feko
#Change Shortcut Folder (Local)
#------------------------------
SET_START_MENU_FOLDER=Altair 2025.1
INSTALL_DESKTOP_SHORTCUTS=0
#UNC Mount Path
#--------------
UNC_MOUNT_POINT_PANEL=\\\\MachineName\\SharedFolder\\InstallFolder
#Other Installation Options
#--------------------------
CREATE_FILE_ASSOCIATION=1
FEKO_CREATE_FIREWALL_ENTRIES=1
FEKO_TMPDIR=C:\\Temp
#Remote Execution
#----------------
FEKO_REMOTE_CREATE_SHARE=0
#Enter Licence Path Location
#---------------------------
FEKO_ALTAIR_LICENSE_PATH=6200@server.domain
#Select Parallel Runs Settings
#-----------------------------
FEKO_RUN_LOCALONLY=1
FEKO_NUMBER_OF_CORES_TO_USE=2
FEKO_RUN_WIN_CLUSTER_AD=0
FEKO_RUN_WIN_CLUSTER_MPIREGISTER=0
FEKO_RUN_ON_LINUX_CLUSTER=0
#Choose Log File Location
#------------------------
INSTALL_LOG_NAME=InstallLogFile
INSTALL_LOG_DESTINATION=C:\\InstallerLogFile
#Choose Log File Location
#------------------------
INSTALL_LOG_NAME=InstallLogFile
INSTALL_LOG_DESTINATION=C:\\InstallerLogFile
```

Note: Spaces should not be used between the *VARIABLE=VALUE* statements in the response files.

Response File Properties

General Properties

ACCEPT_EULA
YES: You have read and accepted the end user license agreement (EULA).

USER_INSTALL_DIR
The default install folder is `Program Files\Altair\2025.1\feko`.

LOCAL_INSTALLATION
0: The installation is performed on a server (can be either a local machine or on a network share).
1: The installation is performed on your local machine.

SERVER_INSTALLATION
0: The installation is performed on your local machine.
1: The installation is performed on a server (can be either a local machine or on a network share).

SET_START_MENU_FOLDER
Specify the name of the start menu folder.

INSTALL_DESKTOP_SHORTCUTS
0: No shortcuts are created.
1: Shortcuts are created.

CREATE_FILE_ASSOCIATION
0: Do not create file associations.
1: Create file associations.

FEKO_CREATE_FIREWALL_ENTRIES
0: Do not add Windows Firewall exceptions.
1: Add Windows Firewall exceptions.

FEKO_TMPDIR
Specify the location of a folder where Feko can write temporary files. This folder must be accessible by all users that will be running the Solver.

FEKO_REMOTE_CREATE_SHARE
0: Do not allow this computer to be used as a remote host by using shared folders.
1: Allow this computer to be used as a remote host by using shared folders.

INSTALL_LOG_NAME
Specify the name of the installer log file. The default installer log file name consists of the product name, version and date.

INSTALL_LOG_DESTINATION
Specify the folder for the installer log file. The default log file folder is the ALTAIR_HOME/logs folder.

Local Machine Properties

When Feko is to be run only on a local machine, specify *FEKO_RUN_LOCALONLY*=1 and the number of parallel processes with *FEKO_NUMBER_OF_CORES_TO_USE*.

Cluster Properties

When Feko is to be run on a cluster, set one of the following three properties equal to 1, *FEKO_RUN_LOCALONLY*=0 and the remaining two properties in the group to 0:

FEKO_RUN_WIN_CLUSTER_AD

0: Parallel runs are not performed on a Windows cluster with Active directory integration.
1: Parallel runs are performed on a Windows cluster with Active directory integration.

FEKO_RUN_WIN_CLUSTER_MPIREGISTER

0: Parallel runs are not performed on a Windows cluster and encrypted into registry.
1: Parallel runs are performed on a Windows cluster and encrypted into registry.

FEKO_RUN_ON_LINUX_CLUSTER

0: Parallel runs are not performed on a Linux cluster.
1: Parallel runs are performed on a Linux cluster.

CREATE_NEW_MACHINESFILE

0: Do not create a new machines file which specifies the list of machines used to perform parallel runs.
1: Create a new machines file which specifies the list of machines used to perform parallel runs.

USE_EXISTING_MACHINESFILE

0: Do no use existing machine file.
1: Copy existing machines file.

EXISTING_MACHINESFILE

Path to the existing machines file (use with *USE_EXISTING_MACHINESFILE*=1)

Server (Client / Server) Properties

UNC_MOUNT_POINT_PANEL

UNC mount path to the server machine (for example, `\\MachineName\SharedFolder\InstallFolder`).

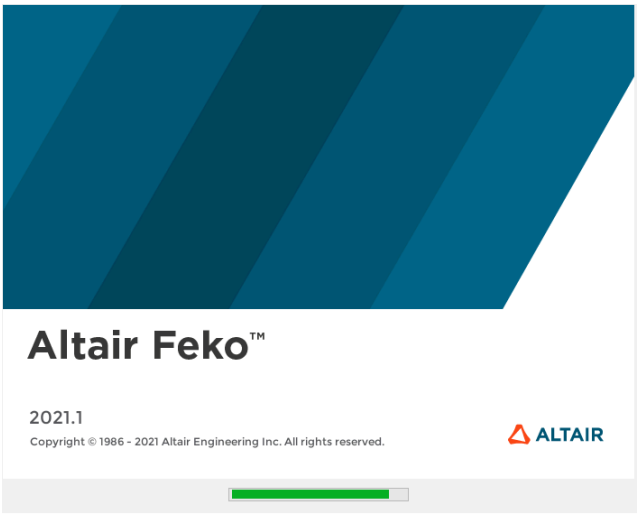
5.3 Installing on Linux (Local)

5.3.1 GUI Mode

Starting the Installation Process

The installation process is started by extracting the software.

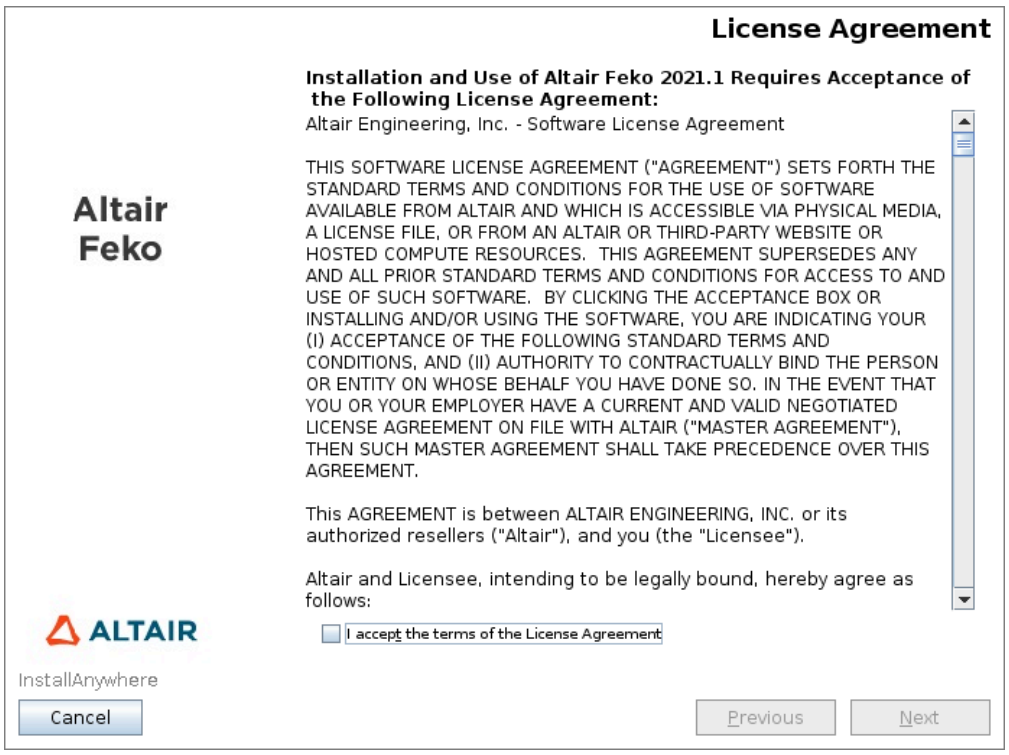
1. Open a command terminal.
   a) "`cd`" - change directory - to the location where the installer executable resides.
   b) Execute "`sh hwFeko2025.1_linux64.bin`"
2. The Altair Feko installer (which includes Feko and WinProp) extracts the JVM (Java Virtual Machine) and installs the modules to the TMP location of the machine and launches the installer.
3. The Altair Feko 2025.1 splash screen is displayed while the installer is loaded.



Viewing the License Agreement

The **License Agreement** panel is displayed.

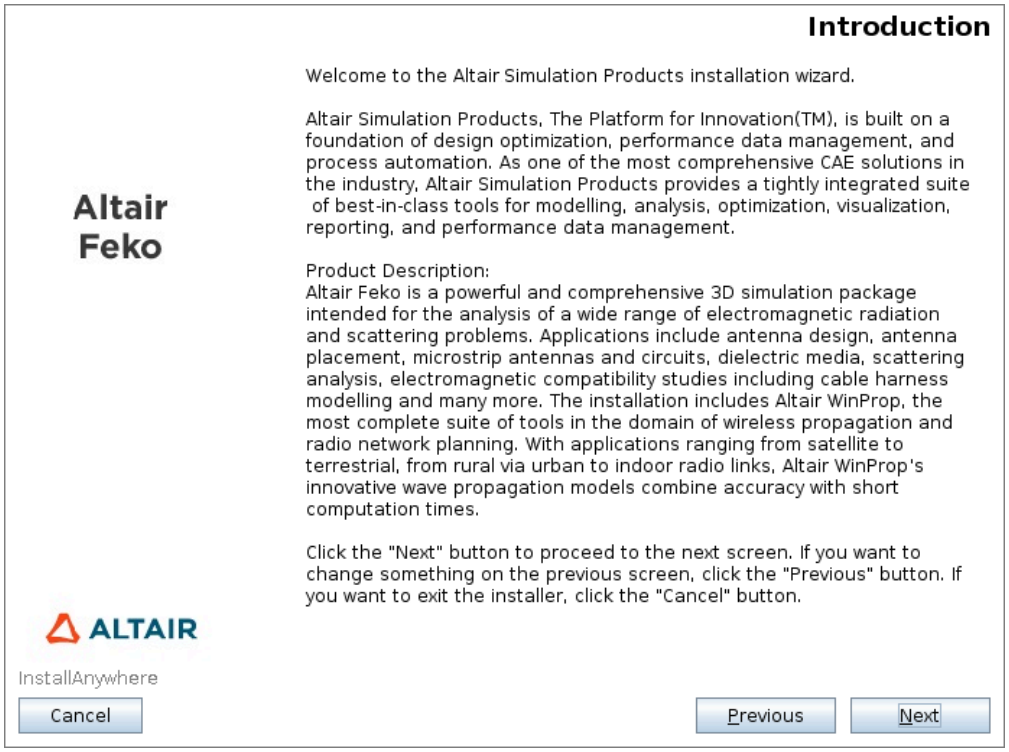
1. Read through the license agreement.
2. Click **I accept the terms of the License Agreement** to continue with the installation.
3. Click **Next** to continue.



Introducing the Installation Wizard

The **Introduction** panel is displayed.

1. Read the introduction.
2. Click **Next** to continue.



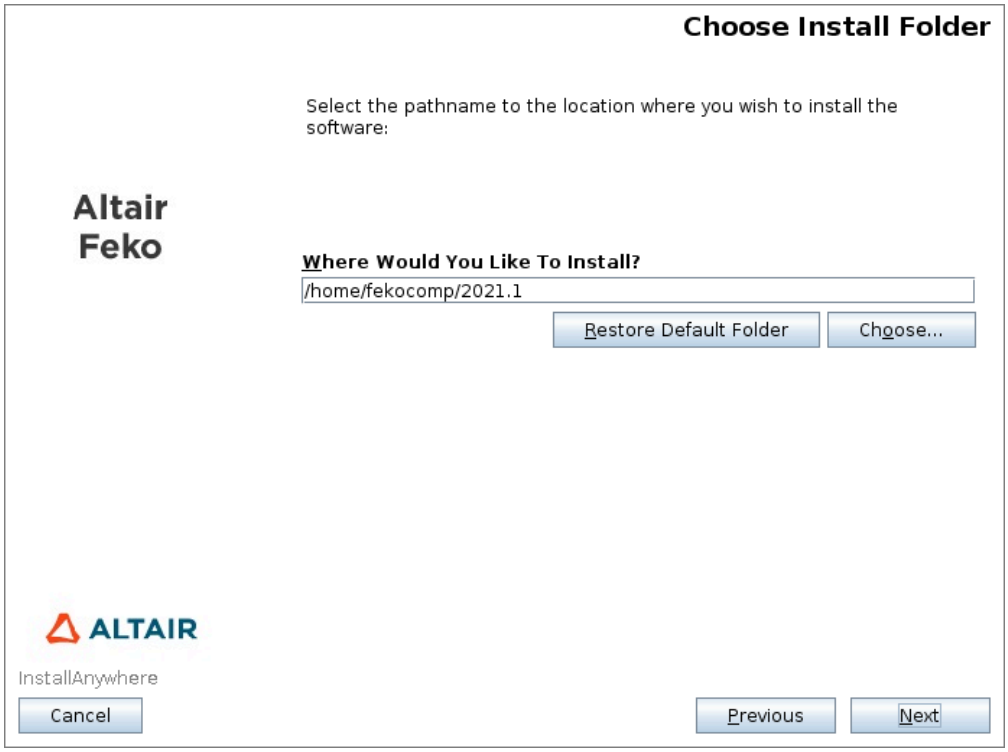
Choosing the Install Folder

The **Choose Install Folder** panel is displayed.

1. The default install folder is the Altair Simulation install folder and Feko and WinProp will be installed in a `feko` subfolder.

   Note:
   - The installer does not allow the use of characters "#" and ";".
   - Installing to a root drive is not permitted, for example /.

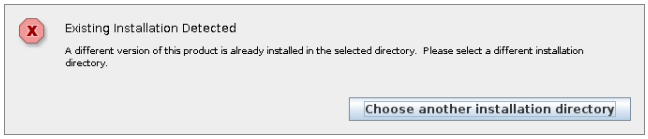
2. Click **Next** to continue.



Attention:

If an existing installation of Feko is detected in the install folder, a warning prompt will be displayed.

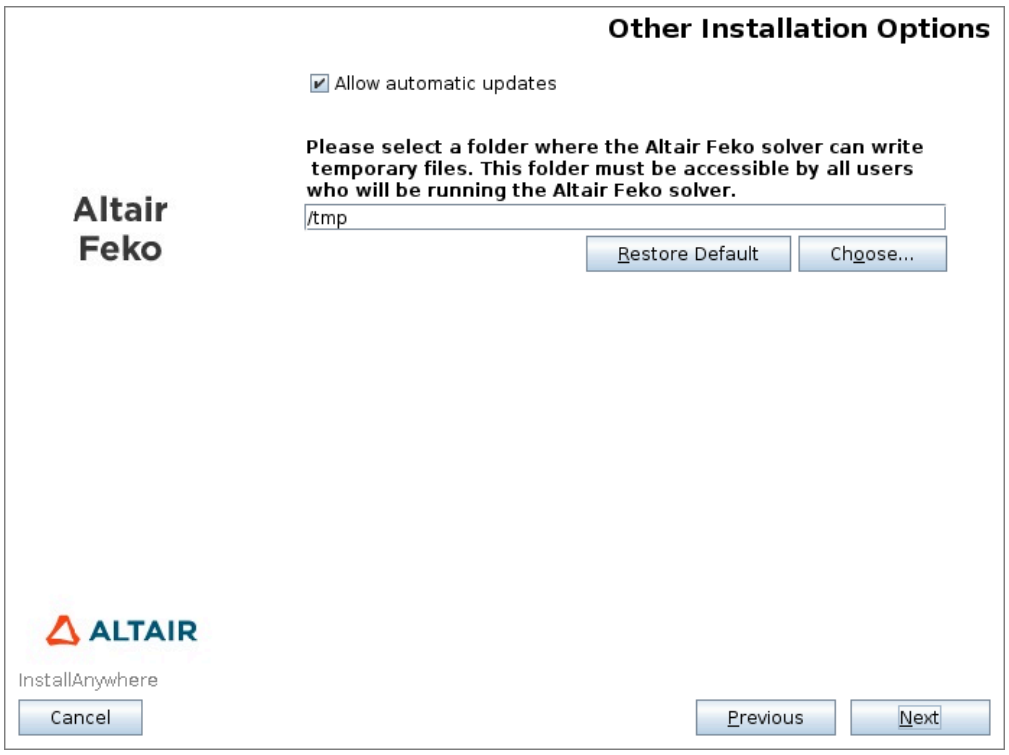
- Click **Continue** to overwrite all the files in the specified installation directory.
- Click **Cancel Installation** to abort the installation process.



Specifying Additional Installation Options

The **Other Installation Options** panel is displayed.

1. Select option if applicable:
   - ***Allow automatic updates***
     Select this option to enable the automated check for updates per machine.
2. Specify a temporary directory where the Feko solver can write temporary files.
3. Click **Next** to continue.



Select MPI Implementation To Use

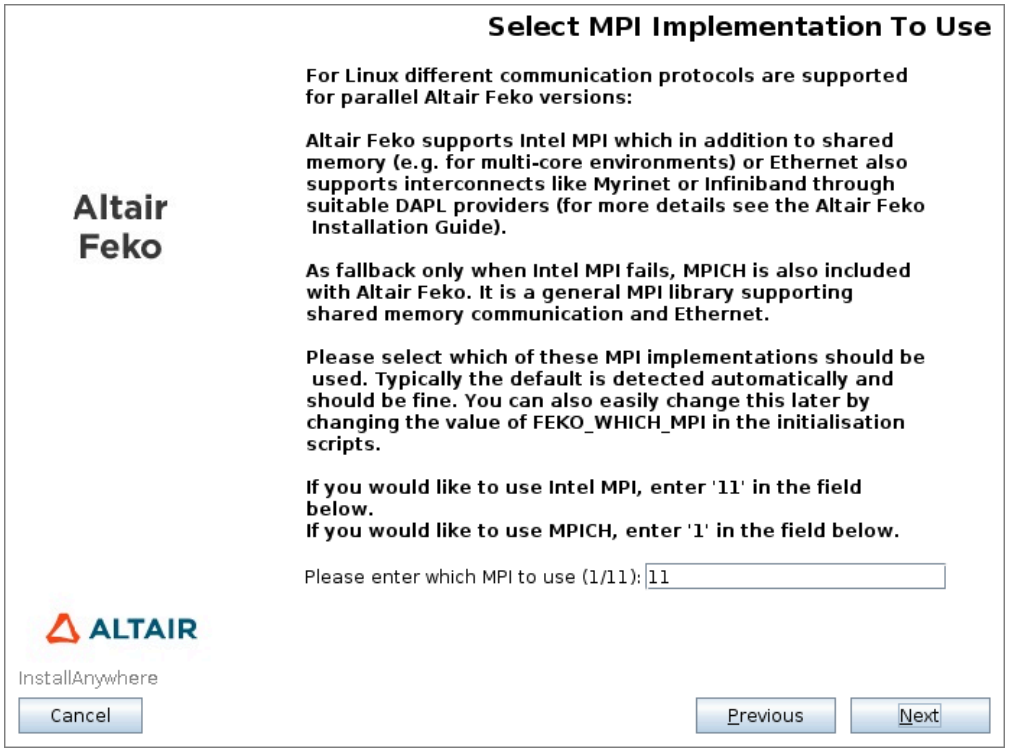
The **Select MPI Implementation To Use** panel is displayed.

1. Select one of the following options[1]:
   - *Intel MPI [11]*
     Intel MPI is the default and recommended MPI implementation for most platforms. It supports SMP (symmetrical multi-processing) and communication protocols like Ethernet, GigaBit Ethernet and Myrinet or Infiniband through suitable DAPL providers. To use Intel MPI, enter "11" in the field below.
   - *MS MPI [13]*
     MS MPI is the MPI implementation provided by Microsoft. It provides tighter integration with the Windows HPC (high-performance computing) job scheduler. It is unavailable in general on Windows systems, as it is a part of the Microsoft HPC Server 2008, Microsoft HPC Server 2008 R2, Microsoft HPC Server 2012, Microsoft HPC Server 2012 R2, Microsoft HPC pack and Microsoft Windows Compute Cluster Server 2003.
   - *MPICH [1]*
     The MPICH is the high-performance and portable MPI implementation. MPICH is not recommended for general use and is provided as a fall-back should a problem with Intel MPI be observed.To use MPICH, enter "1" in the field below.

     Note: This library is included with the Altair Feko installation.
   - *SGI MPT [4]*
     SGI MPT (message passing toolkit) is a message passing toolkit containing user and system tools and libraries. The toolkit provides optimised MPI functionality for SGI systems such as the SGI UV and SGI ICE.To use SGI MPT, enter "4" in the field below.

     Note: The SGI MPT library is not included with the Altair Feko installation and must be available on the system.
2. Enter either `1`, `4`, `11` or `13` and click **Next** to continue

1. View the MPI documentation in the `$ALTAIR_HOME\mpi\win64` folder.

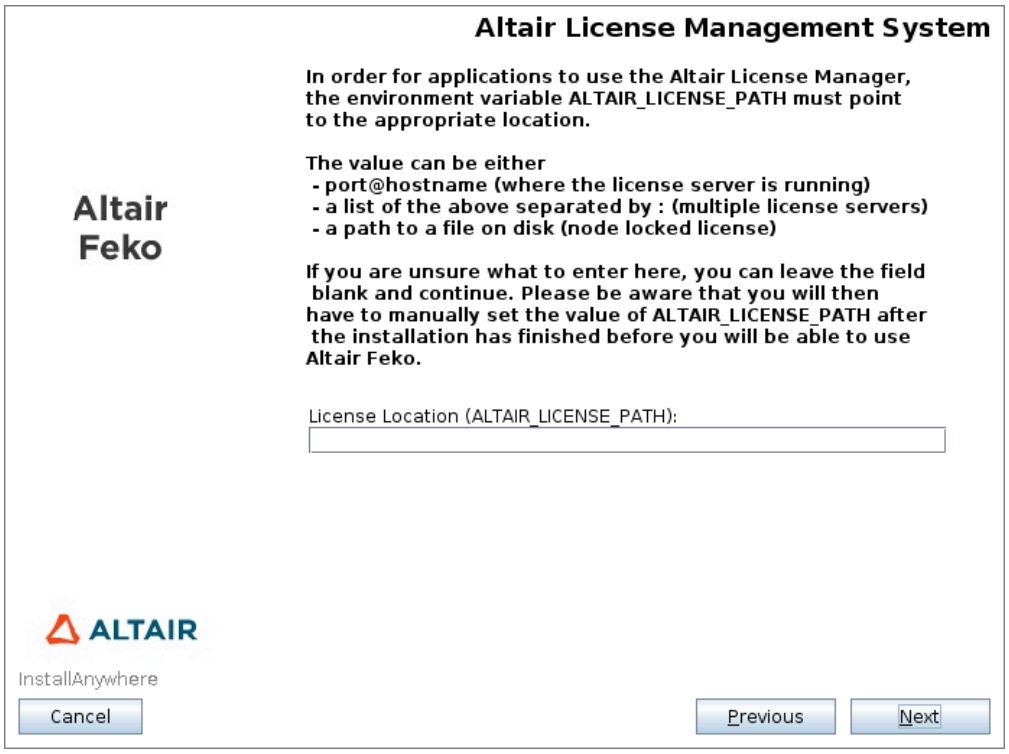

Select MPI Implementation To Use
Altair
Feko
For Linux different communication protocols are supported for parallel Altair Feko versions:
Altair Feko supports Intel MPI which in addition to shared memory (e.g. for multi-core environments) or Ethernet also supports interconnects like Myrinet or Infiniband through suitable DAPL providers (for more details see the Altair Feko Installation Guide).
As fallback only when Intel MPI fails, MPICH is also included with Altair Feko. It is a general MPI library supporting shared memory communication and Ethernet.
Please select which of these MPI implementations should be used. Typically the default is detected automatically and should be fine. You can also easily change this later by changing the value of FEKO_WHICH_MPI in the initialisation scripts.
If you would like to use Intel MPI, enter '11' in the field below.
If you would like to use MPICH, enter '1' in the field below.
Please enter which MPI to use (1/11): 11
ALTAIR
InstallAnywhere
Cancel
Previous
Next

Specifying the License Location

The **Altair Licence Management System** panel is displayed.

> **Note:** This dialog is only displayed if *ALTAIR_LICENSE_PATH* has not been set.

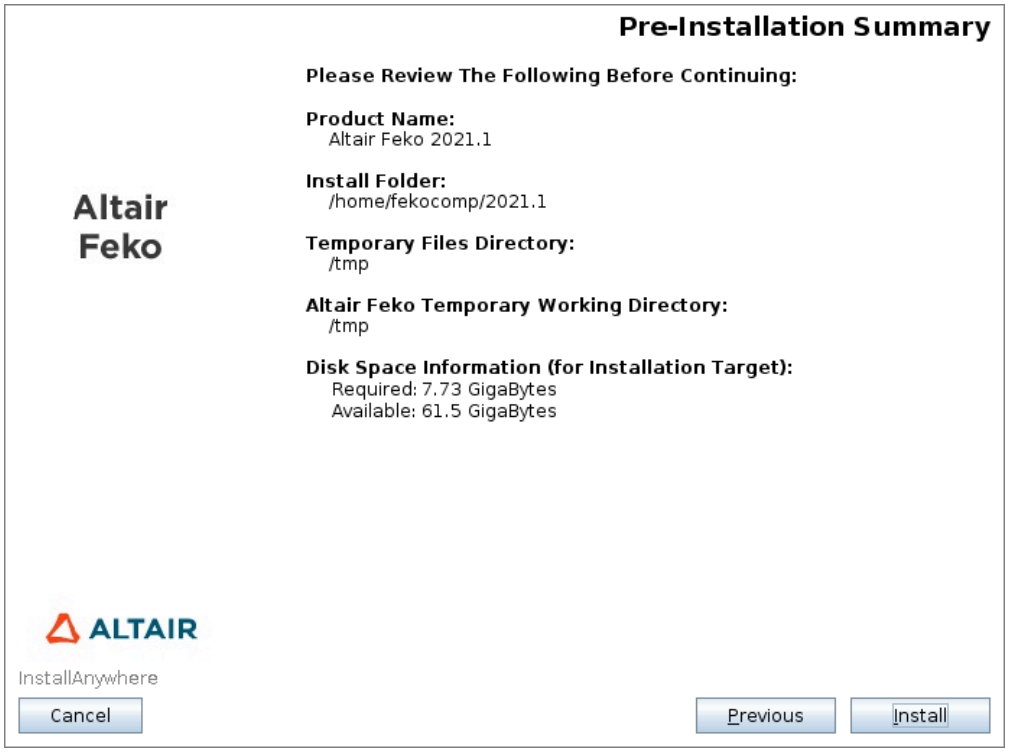
1. Select the location for the environment variable *ALTAIR_LICENSE_PATH*. If uncertain about the location, leave the field empty, but you will need to manually set the value of *ALTAIR_LICENSE_PATH* after the installation is complete.
2. Click **Next** to continue.



Verifying the Pre-Installation Options

The **Pre-Installation Summary** panel is displayed. The summary contains details about the pending installation.

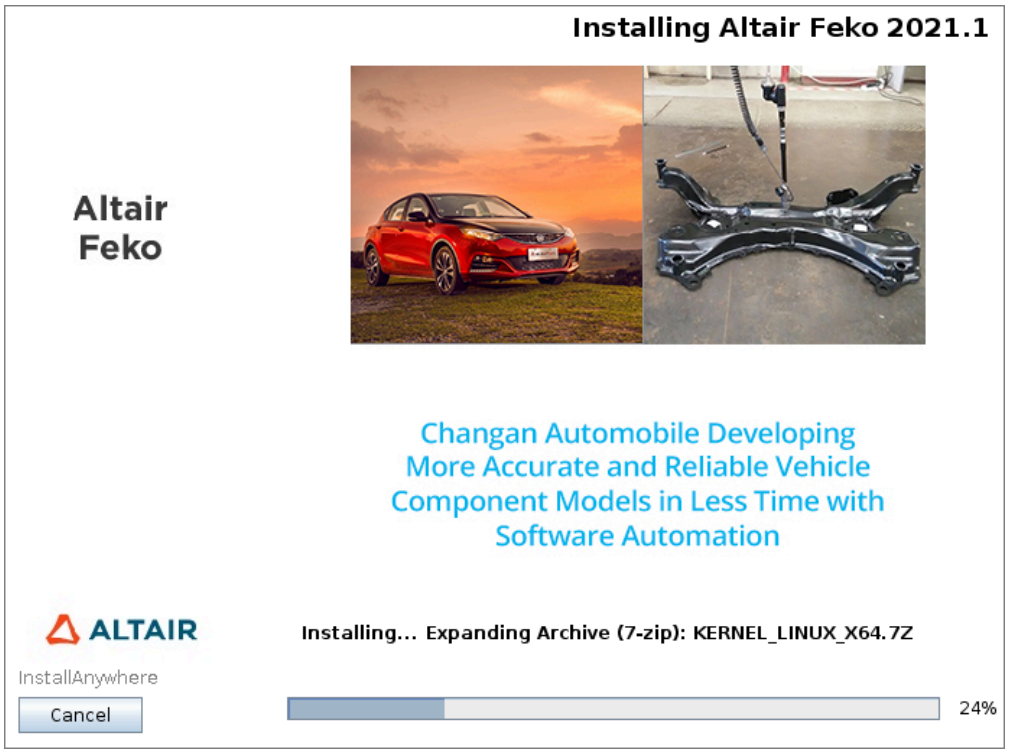
1. Review the installation details.
2. Click **Next** to continue.



Viewing the Installation Progress

The **Installing Altair Feko 2025.1** panel is displayed.

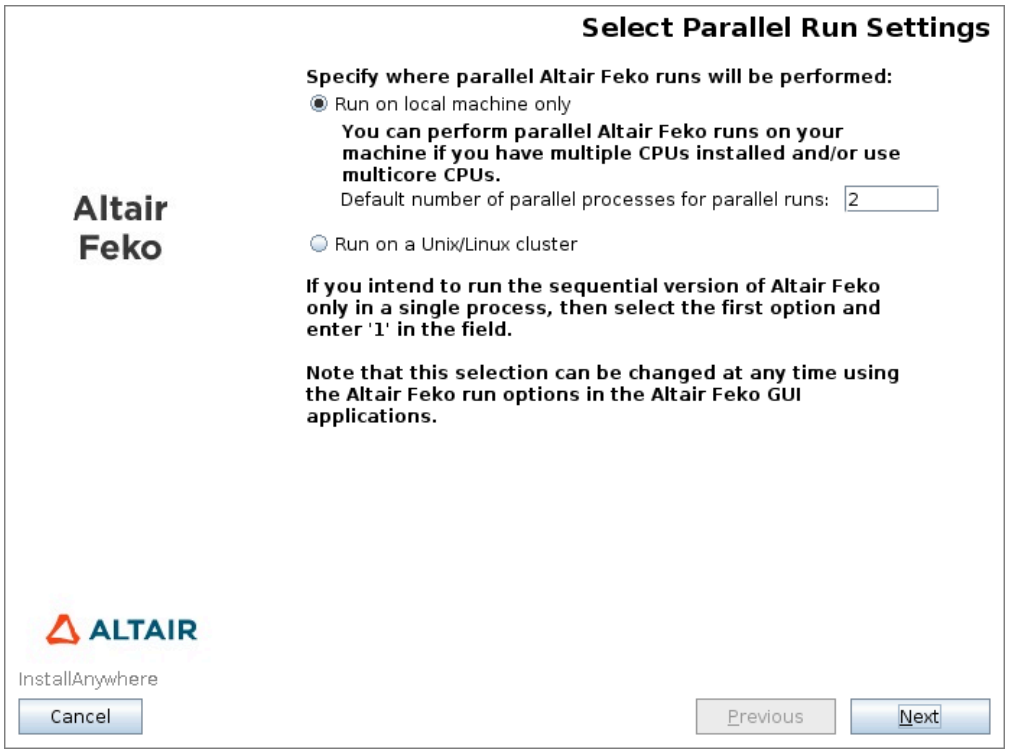
View the installation progress.



Specifying the Parallel Run Settings

The **Select Parallel Run Settings** panel is displayed.

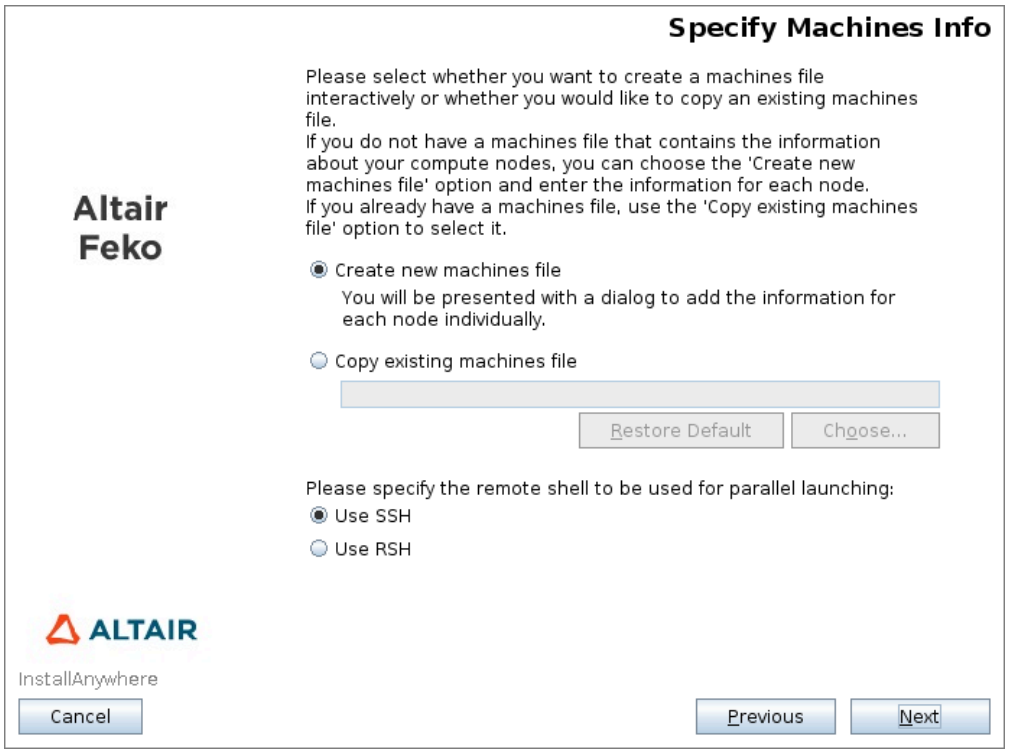
1. Select one of the following options:
   - ***Run on local machine only***
     This option allows you to perform parallel runs on one or more local, multi-core CPU. The installer automatically inserts the detected number of cores/CPUs as a default number, but it may be changed if you wish to run a different number of parallel processes.
   - ***Run on a Unix/Linux cluster***
     This option is applicable if you have installed Altair Feko on a non-Windows cluster and you wish to perform parallel runs on the cluster.
2. Click **Next** to continue.



Specifying the Machines Info

The **Specify Machines Info** panel is displayed when the **Run on a Unix/Linux cluster** option was selected.

1. Select one of the following options:
   - ***Create new machines file***
     This option allows you to create a new machines file which specifies the list of machines used to perform parallel runs.
   - ***Copy existing machines file***
     This option allows you to use an existing machines file. The selected machines file will be copied to the new Altair Feko installation directory.
2. Select one of the following options:
   - *Use SSH*
     This option allows you to make use of the ssh (secure shell) method to remotely log in to a computer. This method makes use of encryption.
   - *Use RSH*
     This option allows you to make use of the rsh (remote shell) method to remotely log in to a computer.
3. Click **Next** to continue.



See Also

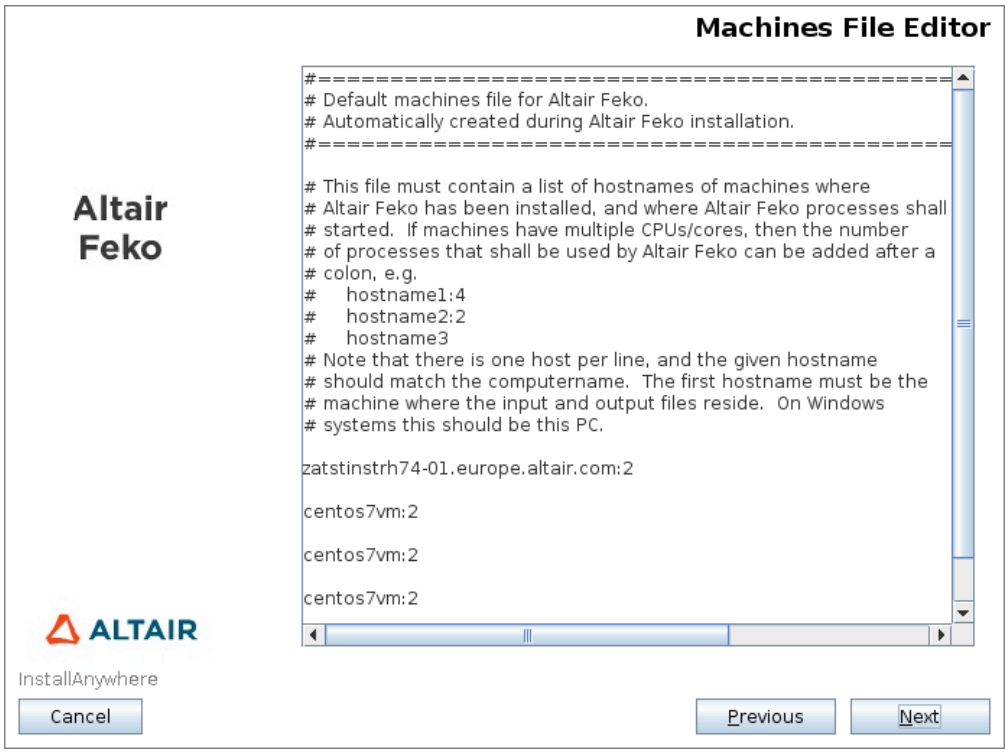
Create New Machines File

Copy Existing Machines File

Defining the Machines File

The **Machines File Editor** panel is displayed.

1. If the **Create new machines file option** was selected, for each machine specify its name and number of parallel processes. Use the format, `hostname:number_of_processes`, for example: `clustermachine.mydomain:4`.
2. Click **Next** to continue.

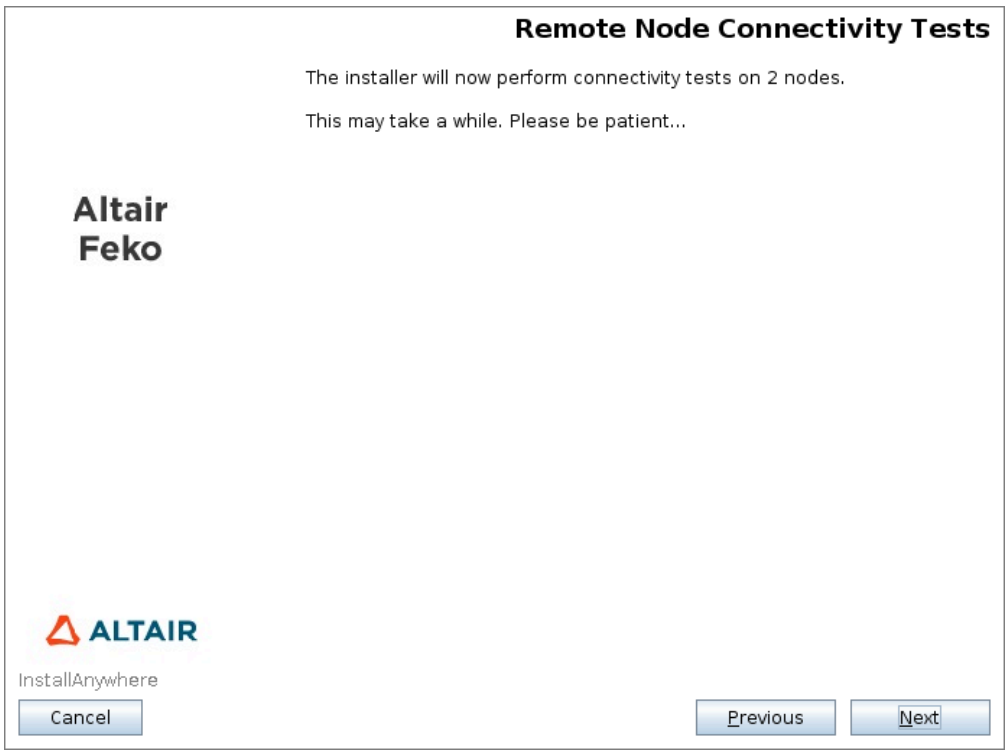


Performing Connectivity Tests

The **Remote Node Connectivity Tests** panel is displayed.

The installer will attempt to perform connectivity tests on the nodes specified in the machines file. Be advised that the remote connectivity tests could take some time.

Click **Next** to continue with the connectivity tests.



See Also

Connectivity Tests are Unsuccessful

Connectivity Tests are Successful

See Also

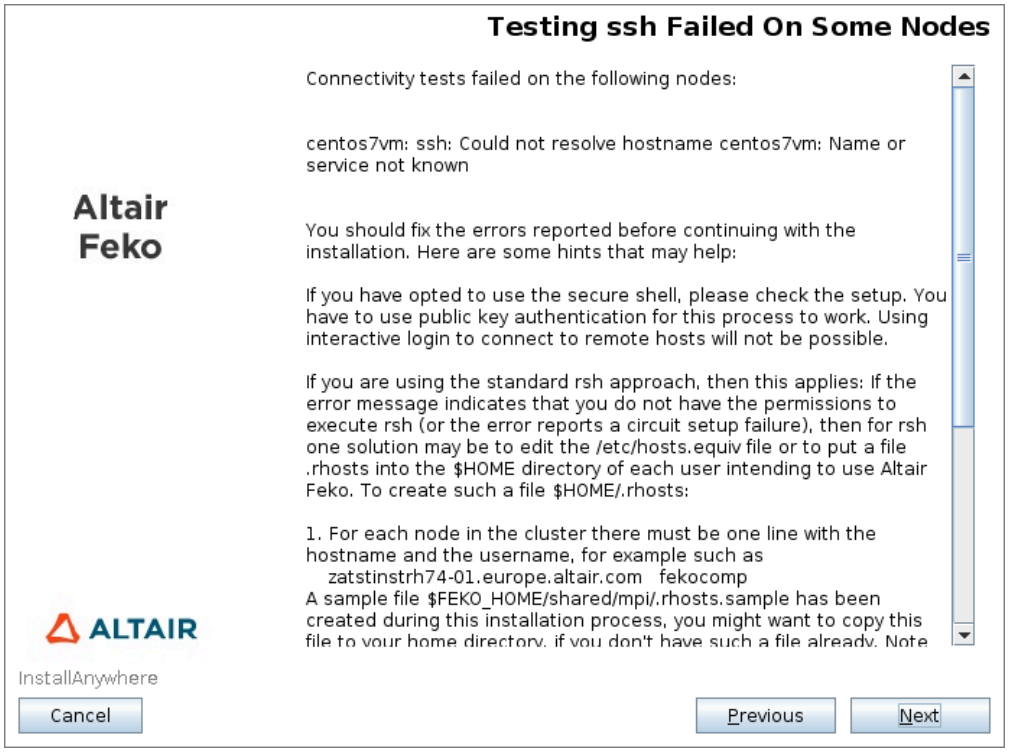
Unsuccessfully Completing the Connectivity Tests

Successfully Completing the Connectivity Tests

Failing the Connectivity Tests on the Nodes

The **Testing ssh Failed On Some Nodes** panel is displayed if any of the connectivity tests failed on the nodes. It also lists potential problems and their solutions.

1. Fix any errors before continuing.
2. Click **Next** to continue.



Retrying the Connectivity Tests

The **Retry the connectivity tests?** dialog is displayed.

If you want to retry the connectivity tests, click **Yes**. If you want to continue with the installation regardless of the failed connectivity tests, click **No**.

Determining the Remote Node Feko Versions

The **Remote Node** Feko **Versions** panel is displayed.

1. The installer will attempt to determine the Feko versions installed on the nodes. Be advised that determining the Feko versions could take some time.
2. Click **Next** to continue.

See Also

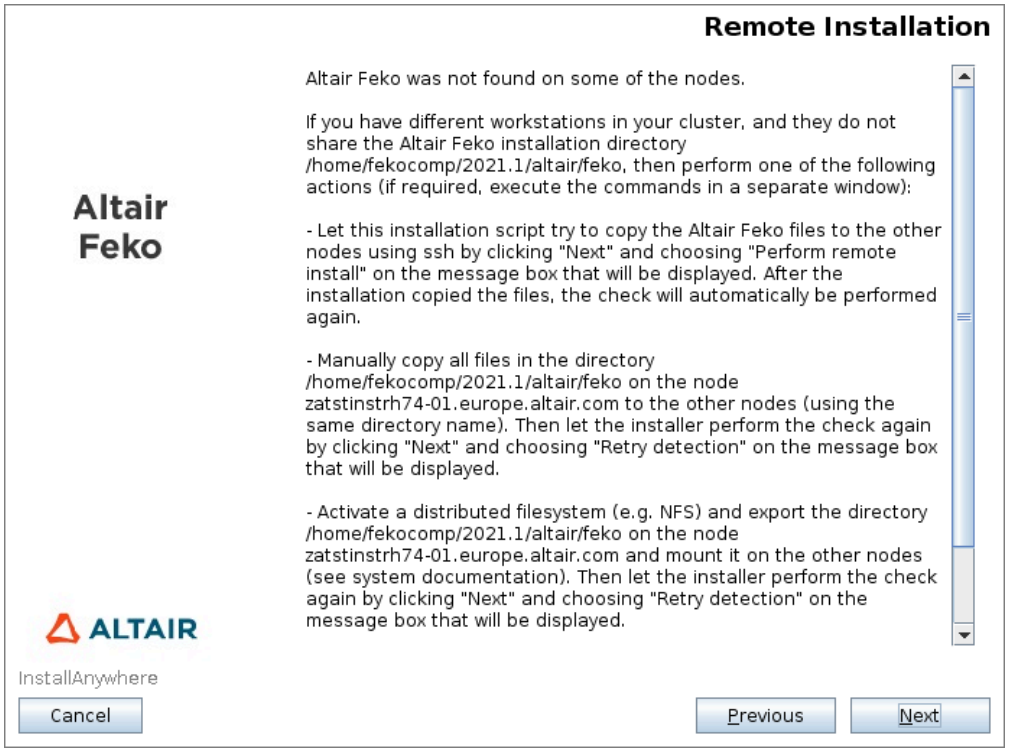
Unsuccessfully Determining the Feko Versions

Successfully Determining the Feko Versions

Allowing Remote Installation on the Nodes

The **Remote Installation** panel is displayed.

1. The **Remote Installation** panel is displayed if the installer did not find Feko on all the nodes. You now have the option to let the Altair Feko installer copy Feko to all the specified nodes, or you can copy the files to each node manually. You can also export the installation directory via a distributed file system like NFS, and then no copying will be necessary.
2. Click **Next** to continue.



Retrying the Detection of Feko on the Nodes

The **Retry the detection of Feko on the nodes** dialog is displayed.

Click one of the following options:

- ***Continue without installing***
  This option is applicable if you want to perform the installation on the node independently of the current server installation.

- ***Perform remote install***
  This option is applicable if you want the installer to perform the remote node installation.

- ***Retry detection***
  This option is applicable if you want to retry the detection of Feko on the remote nodes.

See Also

Retry Detection

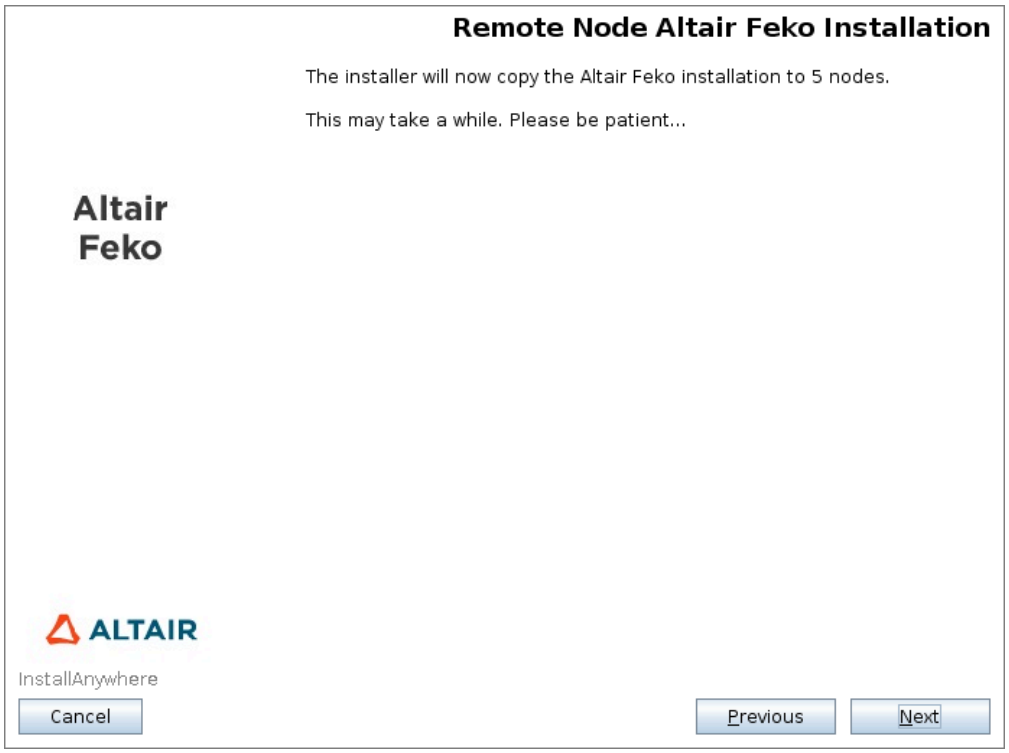
Perform Remote Install

Continue Without Installing

Copying the Feko Files to the Nodes

The **Remote Node Altair Feko Installation** is displayed,

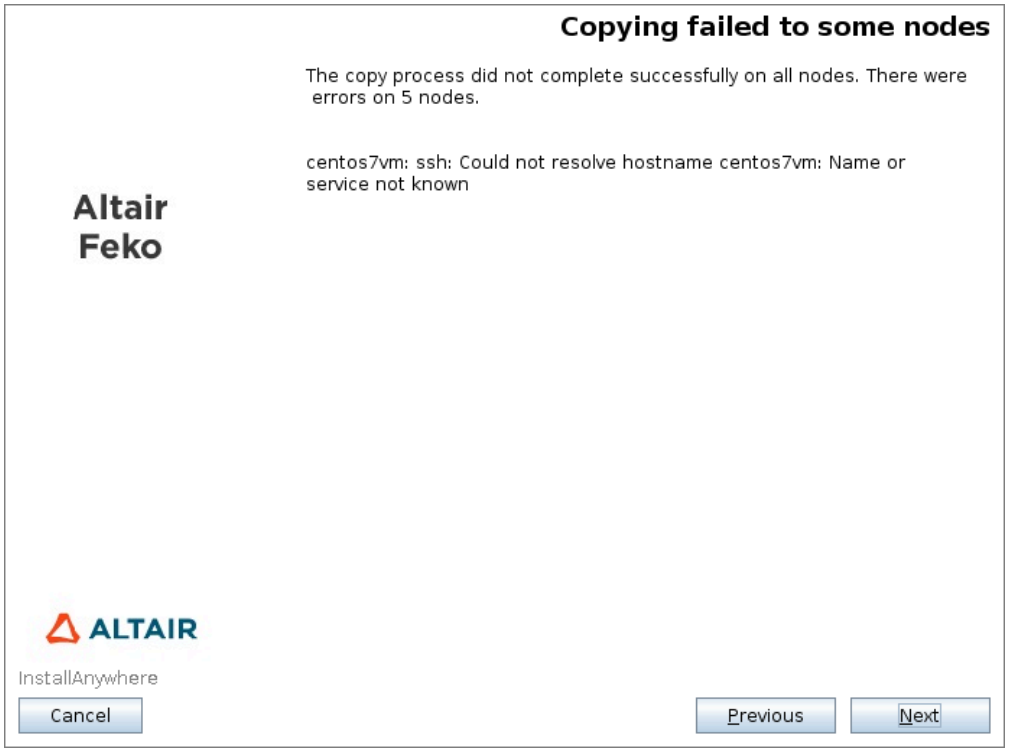
1. If the **Perform remote install** option was selected on the **Retry the detection of Feko on the node** dialog, the **Remote Node** Feko panel is displayed. Be advised that installing Feko on the remote node(s) could take some time.
2. Click **Next** to continue.



Copying Failed to Some Node

The **Copying failed to some nodes** panel is displayed,

The **Copying failed to some nodes** panel is displayed if Feko was not successfully installed on the remote node(s).



See Also

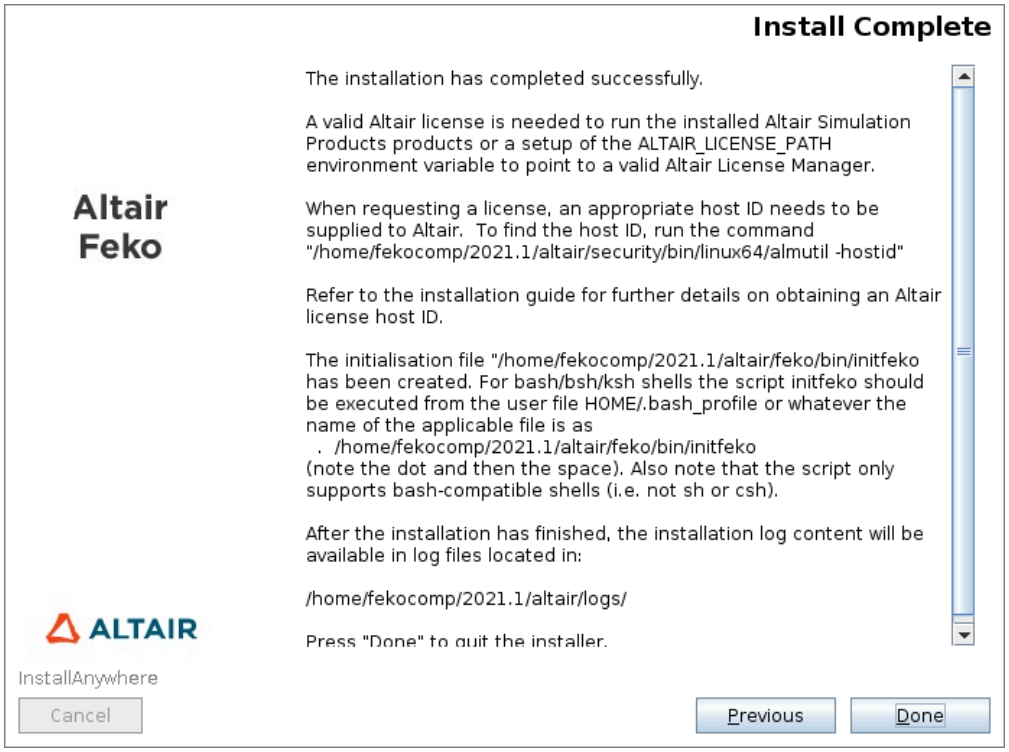
Next Step

Previous Step

Exiting the Installation Wizard

The **Install Complete** panel is displayed.

1. Once the installation is complete, the **Install Complete** panel is displayed.
2. Click **Done** to exit the installer.



5.3.2 Console Mode

A console mode installation process mimics the default GUI wizard steps, but uses only the standard input and output. Console mode allows for text to be output to the console.

Note:

- Installing Altair Feko using console mode is only supported on Linux.
- If the terminal does not have any GUI/X capabilities (such as a pure SSH terminal session), launching the installer without any additional options will automatically start the console mode.

Trigger a console mode installer from the command line by appending the following command parameter to the installer:

```
-i console
```

1. Open a command terminal.
   a) Change directory to the location where the installer resides.
   b) Execute the "`sh`" command on the installer binary where [INSTALLER_NAME] is the installer binary with the additional command parameter:

      ```
      sh [INSTALLER_NAME] -i console
      ```
2. The Altair Feko installer extracts the Java Virtual Machine (JVM) and the install modules to the TMP location of the machine and launches the installer.
3. Follow the console prompt to complete the installation.

5.3.3 Silent Mode

A silent mode installation installs Altair Feko 2025.1 without requiring any user interaction. The installer makes use of a response file that contains the installation options to run the installation from start to end without any user input.

1. Create a response file. Run the installer in interactive mode with the `r` option to save the installation properties to a response file.

   ```
   [INSTALLER_NAME] -r "[RESPONSE_PATH]\installer.properties"
   ```

2. Trigger a silent mode installation from the command line using one of the following options:
   - Use the default property values as provided by the installer package.

     ```
     [INSTALLER_NAME] -i silent
     ```

   - Specify properties.

     ```
     [INSTALLER_NAME] -i silent -D[Property]=[VALUE]
     ```

     - For example:

       ```
       -DACCEPT_EULA=YES -DUSER_INSTALL_DIR=C:\\Program Files\\Altair\\2025.1
       ```

   - Use a response file containing properties.

     ```
     [INSTALLER_NAME] -i silent -f "[RESPONSE_PATH]\installer.properties"
     ```

   Note:
   - `[INSTALLER_NAME]` is the installer binary.
   - `[RESPONSE_PATH]` is the path where the response file resides.
   - Use quotes around directory and pathnames that contain spaces.
   - Do not use spaces between *VARIABLE=VALUE* statements in the response file.
   - Specify *ACCEPT_EULA=YES* to agree with the end user license agreement (EULA) and continue with the installation.

Response Files

A response file is an installer properties file used to provide properties for an installer running in silent mode. The files contain text in a simple *VARIABLE=VALUE* format.

The properties in the response files are captured by executing the installer and the captured variables are then used as default values for future silent installs. The installer automatically checks the same directory as the installer for a file called `installer.properties` to use as input to the installer.

An example of a response file containing properties:

```
#Accept End User License Agreement (EULA) and Continue with the Installation
#------------------------
ACCEPT_EULA=YES
#Choose Install Folder
#---------------------
USER_INSTALL_DIR=/home/user/2025.1/Altair/feko
#Change Shortcut Folder (Local)
#------------------------------
SET_START_MENU_FOLDER=Altair 2025.1
INSTALL_DESKTOP_SHORTCUTS=0
#Other Installation Options
#--------------------------
CREATE_FILE_ASSOCIATION=1
FEKO_CREATE_FIREWALL_ENTRIES=1
FEKO_TMPDIR=C:\\Temp
#Remote Execution
#----------------
FEKO_REMOTE_CREATE_SHARE=0
#Enter Licence Path Location
#---------------------------
FEKO_ALTAIR_LICENSE_PATH=6200@server.domain
#Select Parallel Runs Settings
#-----------------------------
FEKO_RUN_LOCALONLY=1
FEKO_NUMBER_OF_CORES_TO_USE=2
FEKO_RUN_WIN_CLUSTER_AD=0
FEKO_RUN_WIN_CLUSTER_MPIREGISTER=0
FEKO_RUN_ON_LINUX_CLUSTER=0
#Choose Log File Location
#------------------------
INSTALL_LOG_NAME=InstallLogFile
INSTALL_LOG_DESTINATION=C:\\InstallerLogFile
#Choose Log File Location
#------------------------
INSTALL_LOG_NAME=InstallLogFile
INSTALL_LOG_DESTINATION=C:\\InstallerLogFile
```

Note: Spaces should not be used between the *VARIABLE=VALUE* statements in the response files.

Response File Properties

General Properties

ACCEPT_EULA
YES: You have read and accepted the end user license agreement (EULA).

USER_INSTALL_DIR
The default install folder is `/home/user/2025.1/Altair/feko`.

SET_START_MENU_FOLDER
Specify the name of the start menu folder.

INSTALL_DESKTOP_SHORTCUTS
0: No shortcuts are created.
1: Shortcuts are created.

CREATE_FILE_ASSOCIATION
0: Do not create file associations.
1: Create file associations.

FEKO_CREATE_FIREWALL_ENTRIES
0: Do not add Windows Firewall exceptions.
1: Add Windows Firewall exceptions.

FEKO_TMPDIR
Specify the location of a folder where Feko can write temporary files. This folder must be accessible by all users that will be running the Solver.

FEKO_REMOTE_CREATE_SHARE
0: Do not allow this computer to be used as a remote host by using shared folders.
1: Allow this computer to be used as a remote host by using shared folders.

INSTALL_LOG_NAME
Specify the name of the installer log file. The default installer log file name consists of the product name, version and date.

INSTALL_LOG_DESTINATION
Specify the folder for the installer log file. The default log file folder is the ALTAIR_HOME/logs folder.

Local Machine Properties

When Feko is to be run only on a local machine, specify *FEKO_RUN_LOCALONLY*=1 and the number of parallel processes with *FEKO_NUMBER_OF_CORES_TO_USE*.

Cluster Properties

When Feko is to be run on a cluster, set one of the following three properties equal to 1, *FEKO_RUN_LOCALONLY*=0 and the remaining two properties in the group to 0:

FEKO_RUN_WIN_CLUSTER_AD
0: Parallel runs are not performed on a Windows cluster with Active directory integration.
1: Parallel runs are performed on a Windows cluster with Active directory integration.

FEKO_RUN_WIN_CLUSTER_MPIREGISTER

0: Parallel runs are not performed on a Windows cluster and encrypted into registry.

1: Parallel runs are performed on a Windows cluster and encrypted into registry.

FEKO_RUN_ON_LINUX_CLUSTER

0: Parallel runs are not performed on a Linux cluster.

1: Parallel runs are performed on a Linux cluster.

CREATE_NEW_MACHINESFILE

0: Do not create a new machines file which specifies the list of machines used to perform parallel runs.

1: Create a new machines file which specifies the list of machines used to perform parallel runs.

USE_EXISTING_MACHINESFILE

0: Do no use existing machine file.

1: Copy existing machines file.

EXISTING_MACHINESFILE

Path to the existing machines file (use with *USE_EXISTING_MACHINESFILE*=1)

5.4 Installing on Microsoft Windows (Server / Client)

Perform a Server / Client installation on Microsoft Windows platform.

A typical use case for a Server / Client installation is in a large company where the server installation is performed and maintained (updates / upgrades) by the system administrator. Users of Altair Feko inside the company (clients) then only have to perform a Client installation[2] (`NETSETUP.bat`) on their local machine.

A client installation creates shortcuts on the user's machine that point to the server machine. When the system administrator installs updates / upgrades on the server machine, all clients will automatically have the updated version.

5.4.1 Server

A server installation can be performed on either a local machine or on a network share.

Starting the Server Installation

The Server installation process is similar to installing the Local Altair Feko installation.

Follow the instructions from Starting the Installation Process to Choosing the Installation Type.

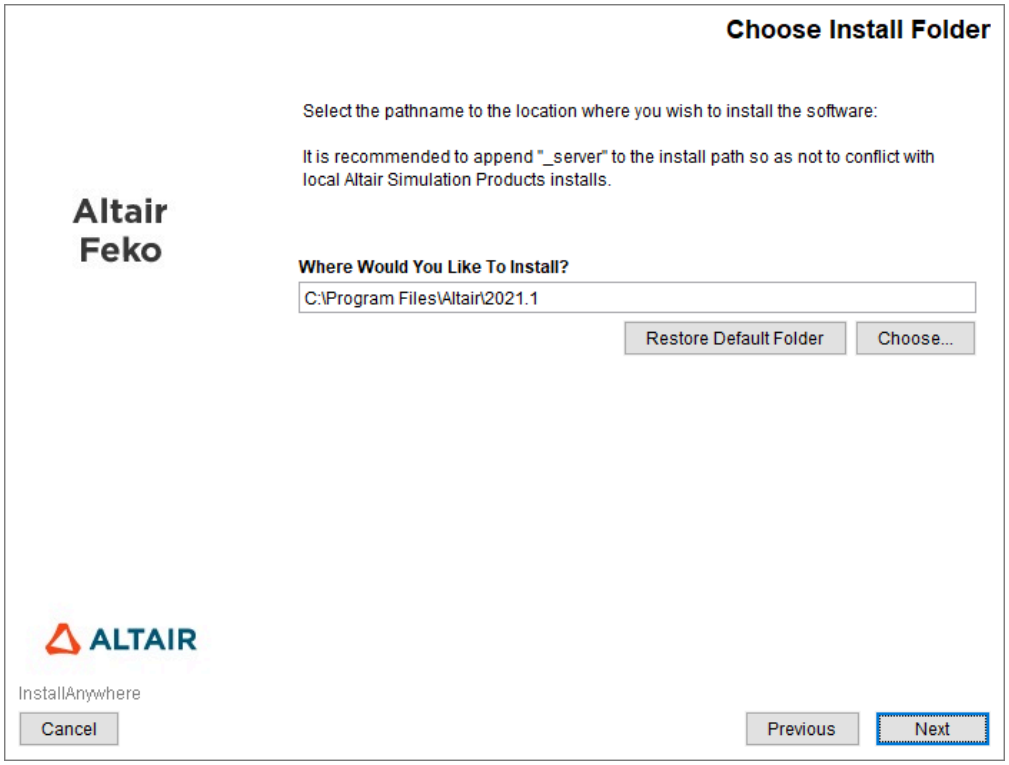
2. Client installations are small in size in comparison with a Local installation.

Choosing the Install Folder

The **Choose Install Folder** panel is displayed.

1. Specify the pathname where you want to install the software.

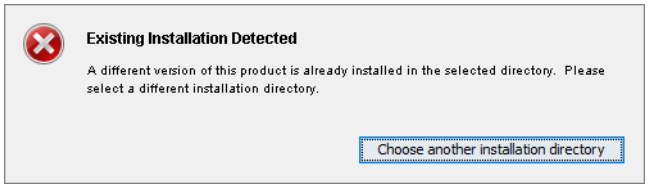
   Note:
   - Append "_server" to the install path so as not to conflict with local Altair Simulation installs.
   - The installer does not allow the use of characters "#" and ";".
   - Installing to a root drive is not permitted, for example C:\.



2. Click **Next** to continue.

   Attention:

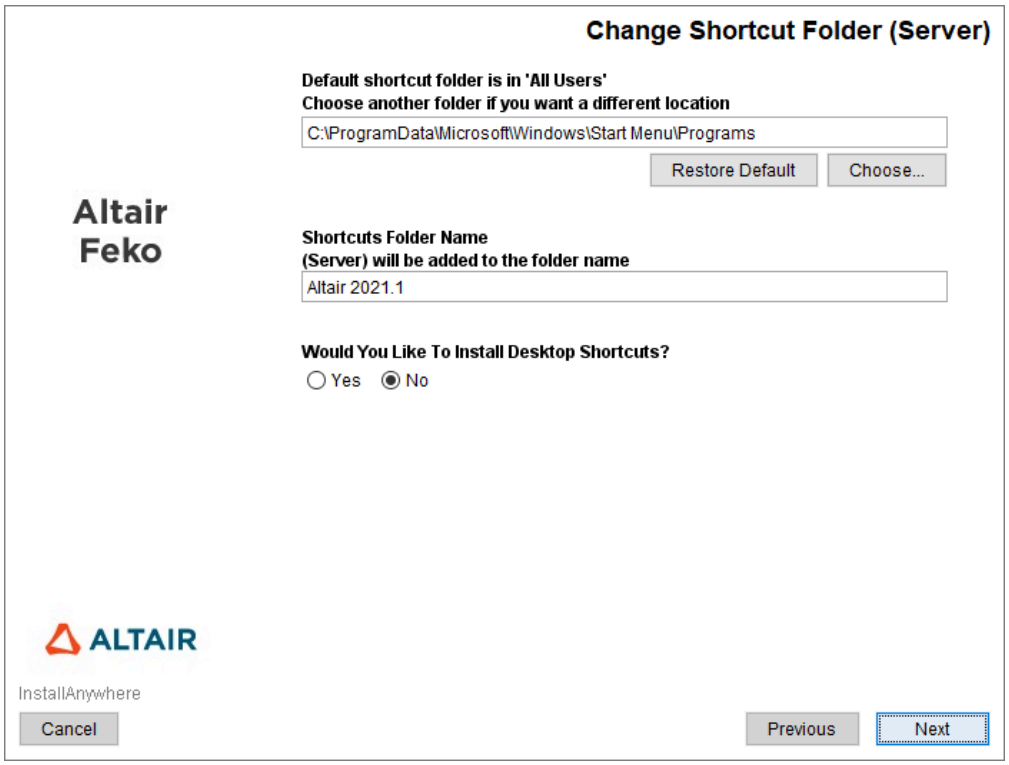
   If an existing installation of Feko is detected in the install folder, a warning prompt will be displayed.
   - Click **Continue** to overwrite all the files in the specified installation directory.
   - Click **Cancel Installation** to abort the installation process.


Existing Installation Detected
A different version of this product is already installed in the selected directory. Please select a different installation directory.
Choose another installation directory

Specifying the Location for Start Menu Shortcuts

The **Change Shortcut Folder (Server)** panel is displayed.

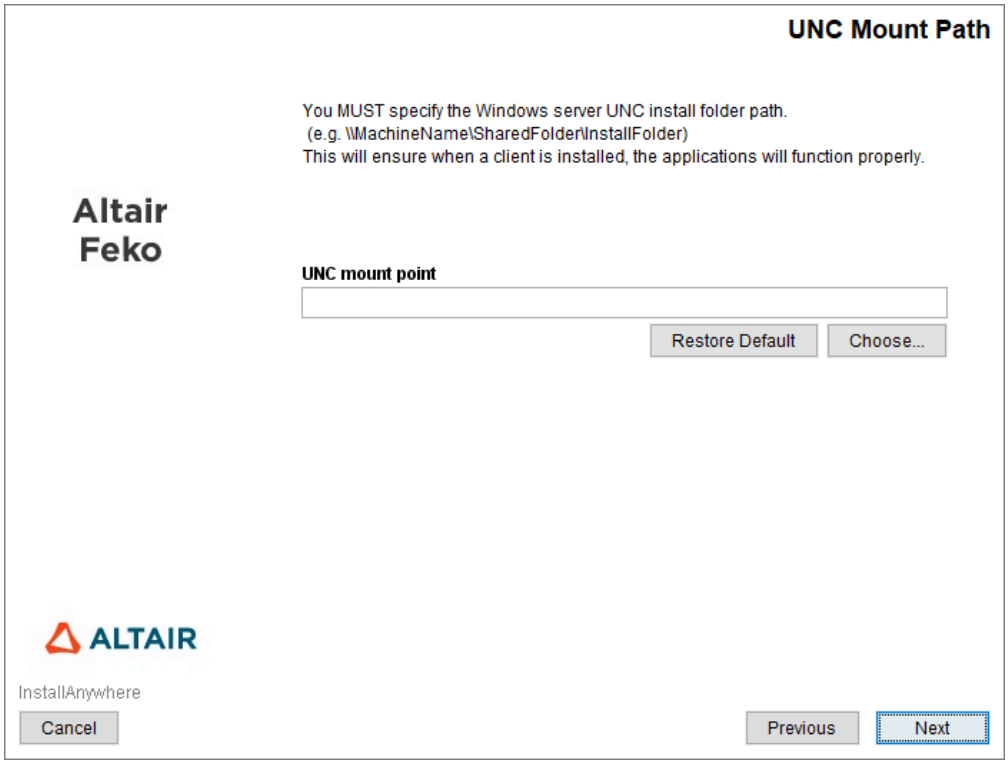
1. Specify the folder location that will contain the start menu shortcuts that point to the server installation.
2. Specify the folder name that will contain the start menu shortcuts.
3. Select one of the following options:
   - ***Yes***
     Select this option if you want Feko icons on the desktop.
   - ***No***
     Select this option if you do not want Feko icons on the desktop.
4. Click **Next** to continue.



Specifying the UNC Mount Path

The **UNC Mount Path** panel is displayed.

1. Specify the UNC mount path to the server machine. This will ensure when the client machine is installed later, the shortcut links on the client machine points correctly to the server installation.
2. Click **Next** to continue.



Completing the Server Installation

The remaining steps for completing the Server / Client installation is similar to the Local installation.

Follow the instructions from Specifying Additional Installation Options to Exiting the Installation Wizard to complete the Server installation.

5.4.2 Client

A client installation (`NETSETUP.bat`) is performed on a client machine. Simulations are performed on the client machine, not on the server machine.

Starting the Client Installation

Requirements for a NETSETUP client install include:

- The existence of a Feko server installation on either a local machine or a server machine.
- The UNC path to the Feko server installation.

1. Locate the server machine on the network and find the install folder for the server installation.
2. Go to the `NETSETUP\win64` folder and locate `NETSETUP.bat`.
3. Click on `NETSETUP.bat` to launch the installer.
4. A command prompt terminal window is displayed showing that the installer is unpacking on the client machine.

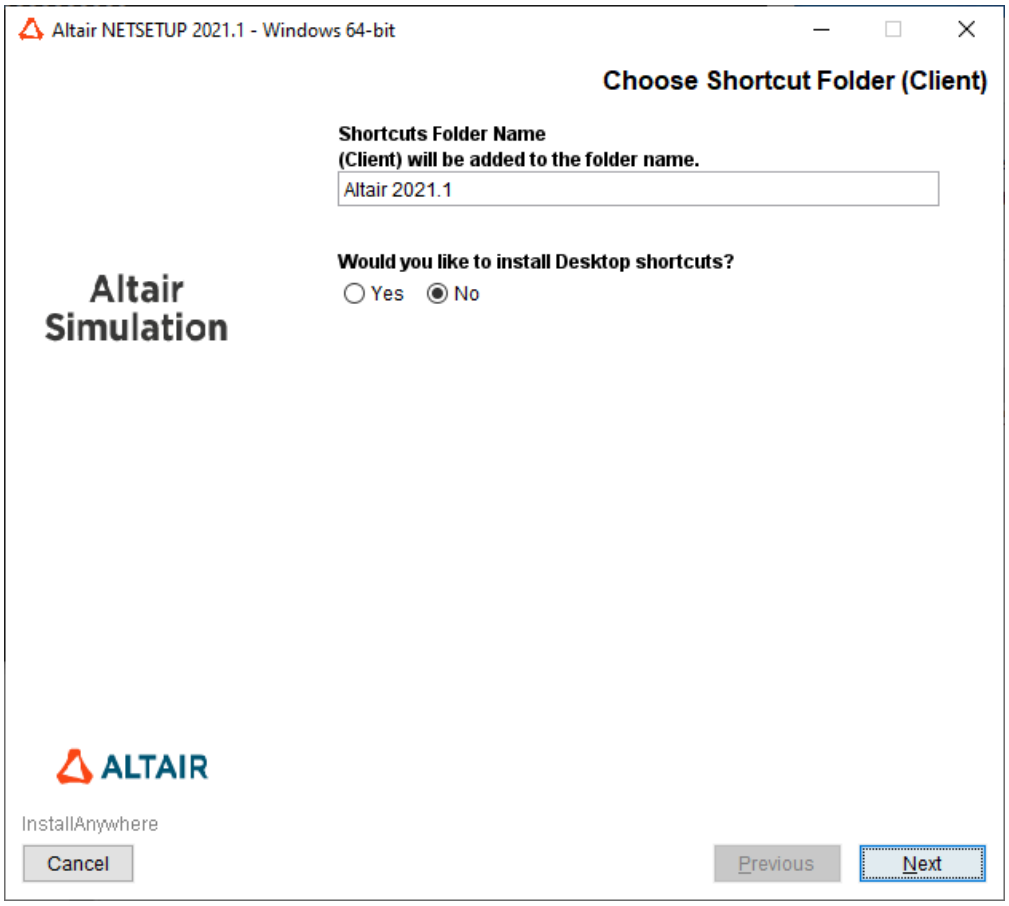
   ```
   ************************************************************************

   Unpacking and running Altair NETSETUP Client installer, please wait...

   ************************************************************************
   ```

   The locale language selection prompt is then displayed.
5. Select the locale language and click **OK** to continue.

Specifying the Location for Start Menu Shortcuts

The **Install Desktop Shortcuts** panel is displayed.

1. Specify the folder name that will contain the start menu shortcuts (that points to the location of the server machine).
2. Select one of the following options:
   - ***Yes***
     Select this option if you want Feko icons on the desktop.
   - ***No***
     Select this option if you do not want Feko icons on the desktop.



Set Up Licensing

The **Set up Licensing** panel is displayed.

Select one of the following options:

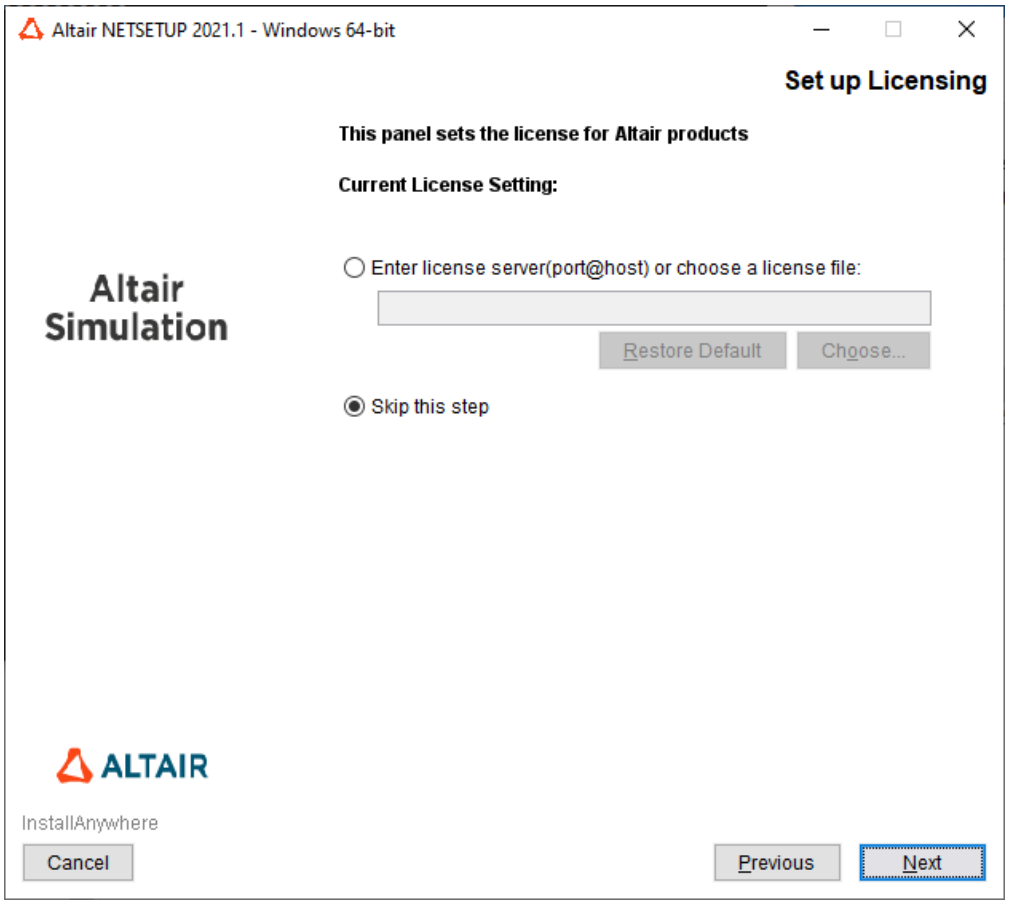
- ***Enter license server(port@host) or choose a license file***

  If you are using a license file located on a network, use the format:port@hostname.

  If you are using a local license file, set the value to the full pathname of the file.

- ***Skip this step***

  If you are uncertain about the location, you will need to manually set the value of ALTAIR_LICENSE_PATH after the installation is complete.



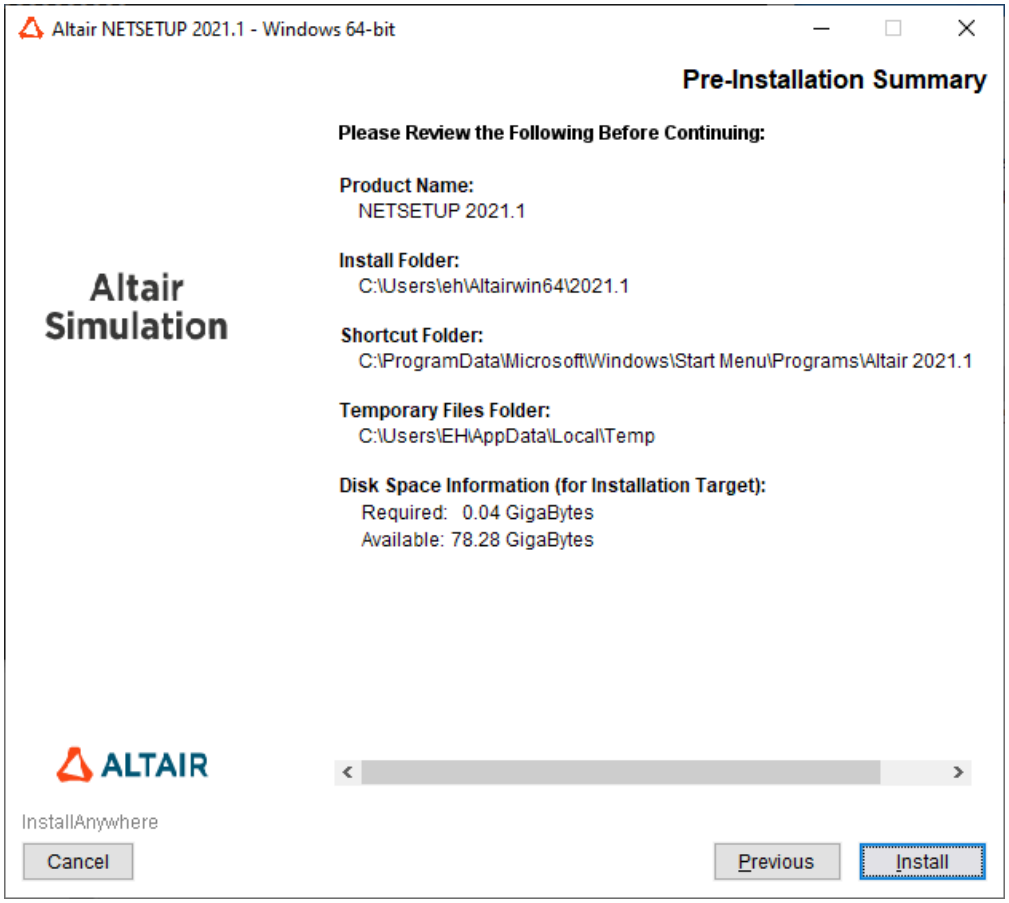
See Also

Connecting to Altair License Server

Verifying the Pre-Installation Summary

The **Pre-Installation Summary** panel is displayed. The summary contains details about the pending installation.

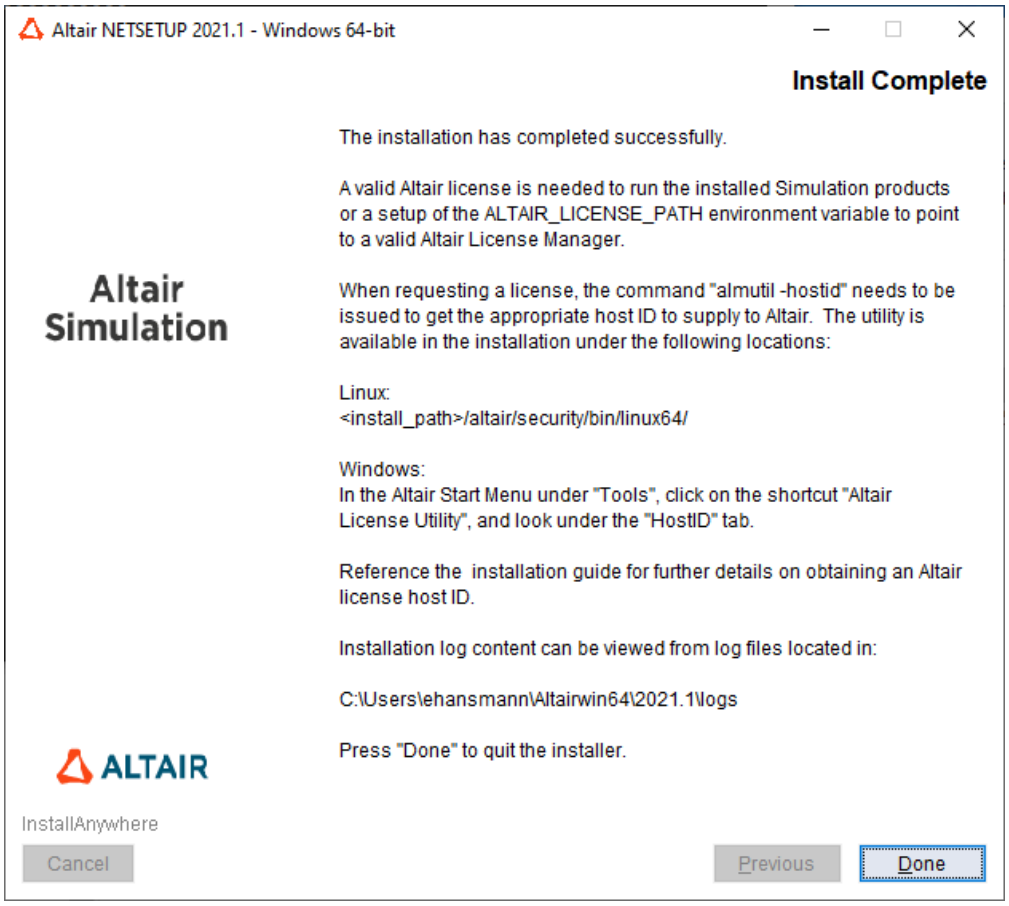
1. Review the installation details.
2. Click **Next** to continue.



Exiting the Installation Wizard

The **Install Complete** panel is displayed once the installation is complete.

Click **Done** to exit the installer.



5.5 Installing on Microsoft Windows (Cluster)

Install Feko on a Windows high performance computing (HPC) cluster.

5.5.1 Installing on Windows HPC Server

Install Altair Feko on a Microsoft Windows high performance computing (HPC) server.

1. Log in to a node. The node should be either a **test machine or the head node** which will not be used as a compute node.
2. Place the downloaded installation file in a temporary directory.
3. Install Feko on the head node and record the installation properties in a response file.

   Note: A response file can also be recorded by launching the installer in GUI mode from a command terminal window. See Silent Mode for details on the process.

4. Copy the installation file and response file (`installer.properties`) to the same shared network location reachable by all cluster nodes.

   ```
   [INSTALLER_NAME] -r "[RESPONSE_PATH]\installer.properties"
   ```

5. Start the silent mode installation **on all the cluster nodes** from the head node where [NETWORK_PATH] is the full UNC path to the shared network location where the installation file and response file reside[3]:

   ```
   clusrun start /wait "[NETWORK_PATH]\[INSTALLER_NAME]" -i silent -f
    "[NETWORK_PATH]\installer.properties"
   ```

   Note: The installation of each node could be a lengthy process and no output is given during the installation process.

   A return value of 0 for each node will indicate a successful installation.

General Notes

There are many ways to submit a job to the HPC system. Company policies may enforce a specific way of submitting a job to a HPC system, as a result the information provided here is to be seen as examples of how it can be done.

- A job can be submitted from either the head node or from any machine that:
  - has access to the cluster

3. The clusrun tool is part of the Windows HPC pack toolset and is available on the head node. The clusrun command will install Feko on all cluster nodes that are configured and approved by the Windows Compute Cluster Administrator Management Console SnapIn. See the documentation for the clusrun tool for additional commandline options when installing on a subset of the nodes.

- has the Windows HPC Pack installed

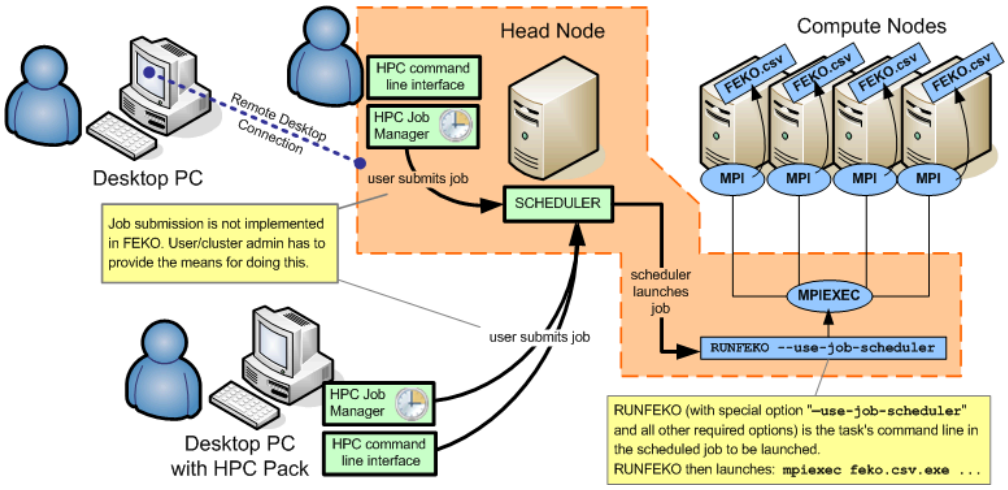


Figure 1: Three methods to submit a job to a Microsoft Windows HPC server.

- You must have direct access to the head node and submit the job from the head node using the command line interface or the HPC Job Manager.
- You connect to the head node using Remote Desktop Connection and then submit the job as you have direct access.
- You have the HPC Pack installed on your desktop machine and directly submits the job to the job scheduler using for example, the command line interface or the HPC Job Manager.
- The machine from where a job is being submitted does not necessarily need to have Feko installed (but mostly it will be there because of pre- and post-processing).
- The model files must be accessible via network from all the cluster nodes.
- The *real command* in the submitted job / task is then:

```
"C:\Program Files\Altair\2025.1\feko\bin\runfeko.exe" "<modelname>" --use-job-scheduler
```

- The working directory for the job must be set to the network location where the model files are located.
- All options (for example, regarding which machines to use and how many nodes will participate in this run) have to be specified when submitting / creating this HPC job or task. This can be done in many ways and has to be specified by the cluster administrator.
- The jobs are submitted to the job queue of the HPC cluster and are then run automatically whenever the requested resources are available.

5.5.2 Submitting a Job to the HPC Cluster Manager (GUI)

Define a basic task that runs a single instance of a message passing interface (MPI) application on a high performance cluster using a graphical user interface (GUI).

1. Click **Start** and navigate to **HPC Pack**, and then click **HPC Cluster Manager** to launch HPC Cluster Manager.

2. To create an MPI task, in the **Actions** panel (panel to the right of the window), click **New Job**.

   > **Note:** An alternative option is to click **New Single Task Job**.
   >
   > This option provides a quick way to submit an MPI task using the default job property values as defined by the job template that you use.

   The **New Job** dialog is displayed.
3. In the left pane of the **New Job** dialog, click **Edit Tasks**[4].
4. To the right of the **New Job** dialog, click the **Add** drop-down list and select **Basic Task**.
   A **Task Details and I/O Redirection** dialog is displayed.
5. In the **Task name** field, type a name for your task.
6. In the **Command line** field, type the task command, for example:

   ```
   "C:\Program Files\Altair\2025.1\feko\bin\runfeko.exe" example_01 --use-job-scheduler
   ```
7. In the **Working directory** field, specify the directory for your task.

   > **Note:** A working directory should be indicated with a universal naming convention (UNC) path, not a relative or a local path.
8. In the **Standard input**, **Standard output** and **Standard error** fields, specify the names relative to the working directory.
9. In the **Minimum** field, type the minimum number of cores to be used.
10. In the **Maximum** field, type the maximum number of cores to be used.
11. Click **Save** to add the task to your job and to return to the **New Job** dialog.

5.5.3 Submitting a Job From the Command Line

Define a basic task that runs a single instance of a message passing interface (MPI) application on a high performance cluster using the command line.

Assume you have the example:

- A model with file name `example_01.pre`.
- The model is located on a shared network location at `\\server\share`.
- There will be four nodes participating in this parallel run.

Launch the job using the following command in a single line:

```
job submit /numprocessors:4-4
           /jobname:Altair_Feko_job_1
           /workdir:\\server\share
           /stdout:\\server\share\example_01.stdout
           /stdErr:\\server\share\example_01.stderr
```

4. In older versions this could be **Task List**.

```
            "C:\Program Files\Altair\2025.1\feko\bin\runfeko.exe" example_01 --use-
job-scheduler
```

A task is created with a single job. The task is run immediately if the resources are available on the cluster.

All information is read from and written to the directory where the model is located. Normal output (STDOUT) and the error messages (STDERR) are redirected into files and will be available after the computation is finished.

You can extend this command by specifying additional parameters[5] for the job command.

5. https://docs.microsoft.com/en-us/powershell/high-performance-computing/job-submit?view=hpc16-ps

5.6 Altair License Management

The Altair License Management (ALM) provides a common units-based licensing model for Altair software related to CAE, on-demand computing, and business intelligence.

One of the components of the Altair License Management System is the License Server.

5.6.1 Connecting to Altair License Server

The Altair License Server is an application that runs on supported platforms and serves licenses to Altair Licensing System enabled clients. Altair Simulation provides value and flexibility through a patented, units-based licensing system. Altair Units allow metered usage of the entire suite of products as well as an expanding library of Altair Partner Alliance solutions.

In order to use the Altair License Server, point the environment variable, `ALTAIR_LICENSE_PATH`, to the appropriate location.

Note:

- If you are using a local license file, simply set the value to the full pathname of the file.
- If you are using a license file located on a network, use the format: port@hostname.
- Separate multiple license paths using a semicolon (;) on Windows and a colon (:) on Linux.
- For High Availability License (HAL) System and / or Multiple Servers setups, list the three servers in the order: primary; secondary; tertiary.

Note: When the hostname is specified without the Fully Qualified Domain Name (FQDN) and there are multiple Forward Lookup Zones, some time is spent on the DNS query, delaying the license check-out time. This delay is significant when multiple license check-outs are required over a short period of time.

Tip: To minimize the delay, use the FQDN on the hostname. For example, instead of using 6200@hostname use 6200@hostname.somecollege.com or even the IP address, for example 6200@192.168.0.1

Examples of license paths on Windows:

```
ALTAIR_LICENSE_PATH=c:\Program Files\Altair\Licensing12.0\altair_lic.dat
ALTAI_LICENSE_PATH=6200@server.foo.bar.com
ALTAIR_LICENSE_PATH=6200@srv1;6200@srv2;6200@srv3
```

Examples of license paths on Linux:

```
ALTAIR_LICENSE_PATH=/usr/local/altair/licensing121.0/altair_lic.dat
ALTAIR_LICENSE_PATH=6200@server.foo.bar.com
```

```
ALTAIR_LICENSE_PATH=6200@srv1:6200@srv2:6200@srv3
```

5.6.2 Reconnecting to Altair License Server

When the connection to the Altair License Server fails, use the retry button provided by the graphical user interface.

When the licence error dialog appears, click the **Retry** button.

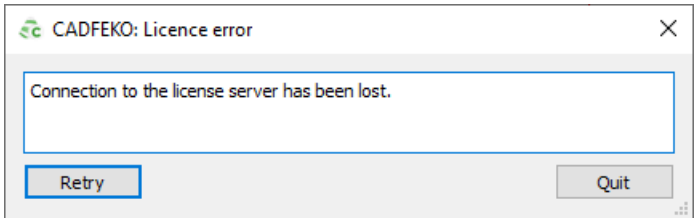


*Figure 2: The **CADFEKO: Licence error** dialog.*

Install Altair WRAP

6

Install Altair WRAP in an existing Altair Feko 2025.1 installation using the Altair Units licensing system.

This chapter covers the following:

Note: Altair WRAP is only supported on Microsoft Windows

6.1 Preparing to Install Altair WRAP

What you need to install and successfully run WRAP:

- Altair WRAP 2025.1 installer for Microsoft Windows.

`hwWrap2025.1_win64.exe`	Installer of Altair WRAP

- An existing Altair Feko 2025.1 installation.
- ITS HF Propagation (version 2016.12.07) installer (required for HF functionality within WRAP).

The general procedure is:

- Install Altair Feko on the designated machine(s).
- Install Altair WRAP inside the existing Altair Feko installation.
- [Optional] Install ITS HF Propagation (version 2016.12.07) if HF functionality is required.

6.2 Installing on Microsoft Windows

6.2.1 Make Backup of Database Settings

If you have an existing installation of Altair WRAP, first make a backup of your writeable databases.

> **Important:** This step is only applicable if you have an existing installation of Altair WRAP and have made changes to the database settings that you would like to keep.

1. Make a backup of your writeable databases in `%FEKO_SHARED_HOME%\wrap\Databases`[6].
2. Make a backup[7] of your Geo class settings file: `%FEKO_USER_HOME%\wrap\WrapGeo.wgc`[8].

See Also
Restore Backup of Database Settings

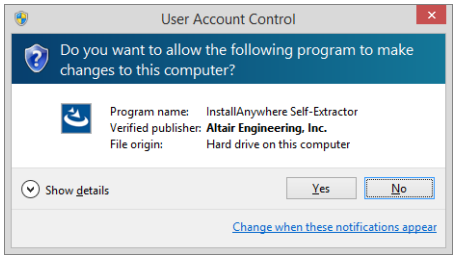
6.2.2 Starting the Installation Process

The installation process is started by extracting the software.

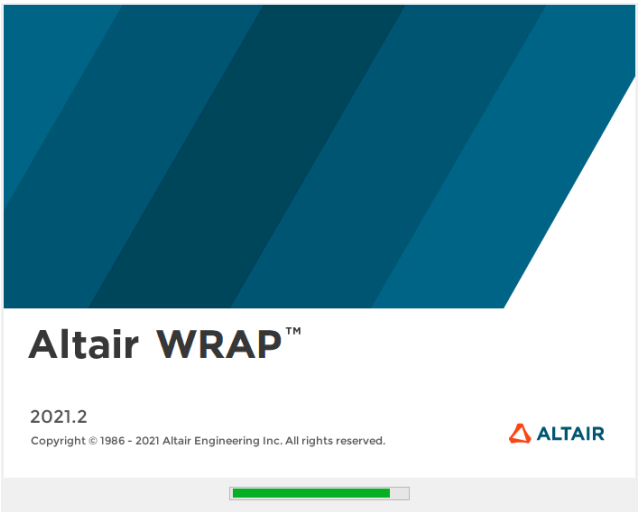
> **Important:** Running this installer requires administrative privileges.

1. Complete the following steps to extract and install the software.
   a) Log in to the machine on which the software is to be installed.
   b) Insert the USB/DVD, or place the downloaded installation file in a temporary directory.
   c) Start the installation process by double-clicking the installation file to start the installer.
   d) If user account control (UAC) is enabled and you are an administrator, a prompt displays showing the Altair Engineering, Inc. digital signature for elevated permissions. Click **Yes** to continue.

6. The `%FEKO_SHARED_HOME%` variable is set to the directory that is used to write files shared between Altair Feko users on the same machine. For Microsoft Windows systems, this is by default set to `C:\ProgramData\altair\feko\xx.yy`. Here xx.yy represent the major and minor version numbers.
7. The map settings `.wgc` file can also be backed up using the **Settings** > **Geographical** > **Save All/ Backup** menu option.
8. The `%FEKO_USER_HOME%` variable is set to the directory used to write user specific initialisation files. It is provided to allow different users to save unique configurations, and for situations where the user does not have write access to the Feko directory. For Microsoft Windows systems this is typically `%APPDATA%\feko\xx.yy`. Here xx.yy represent the major and minor version numbers.



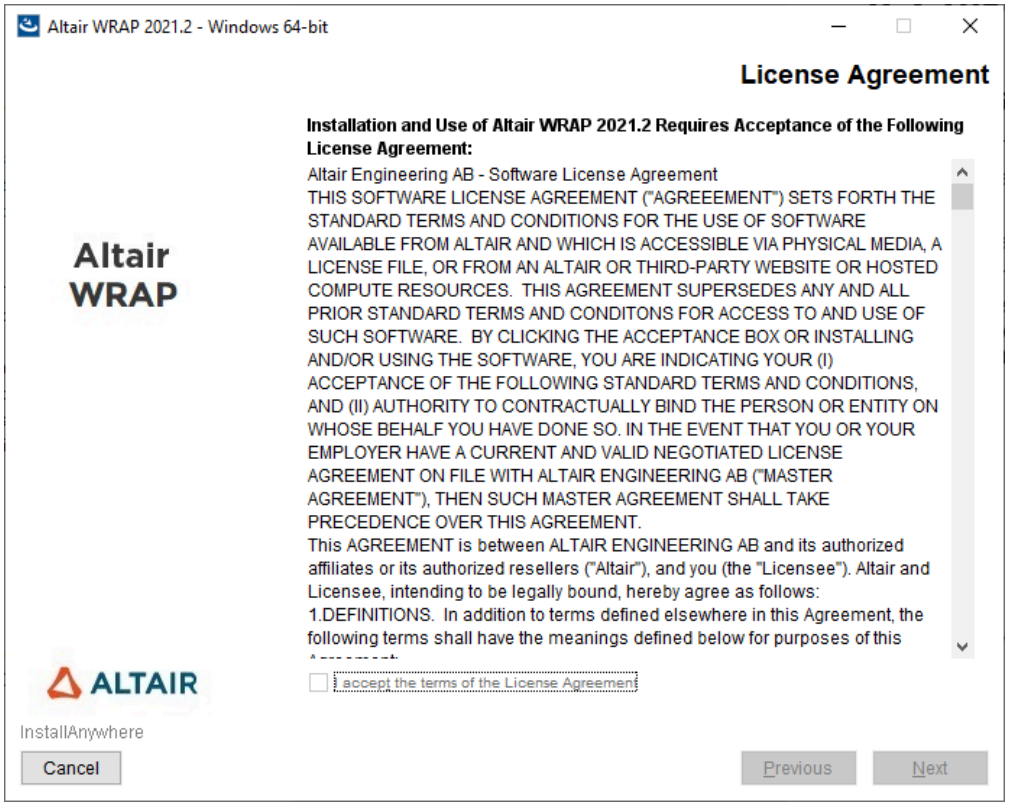
2. The Altair WRAP installer extracts the JVM (Java Virtual Machine) and installs the modules to the TMP location of the machine and launches the installer.
3. The Altair WRAP 2025.1 splash screen is displayed while the installer is loaded.



6.2.3 Viewing the License Agreement

The **License Agreement** panel is displayed.

1. Read through the license agreement.
2. Scroll down to the end of the license agreement and click **I accept the terms of the License Agreement** to continue with the installation.
3. Click **Next** to continue.



6.2.4 Choosing the Install Folder

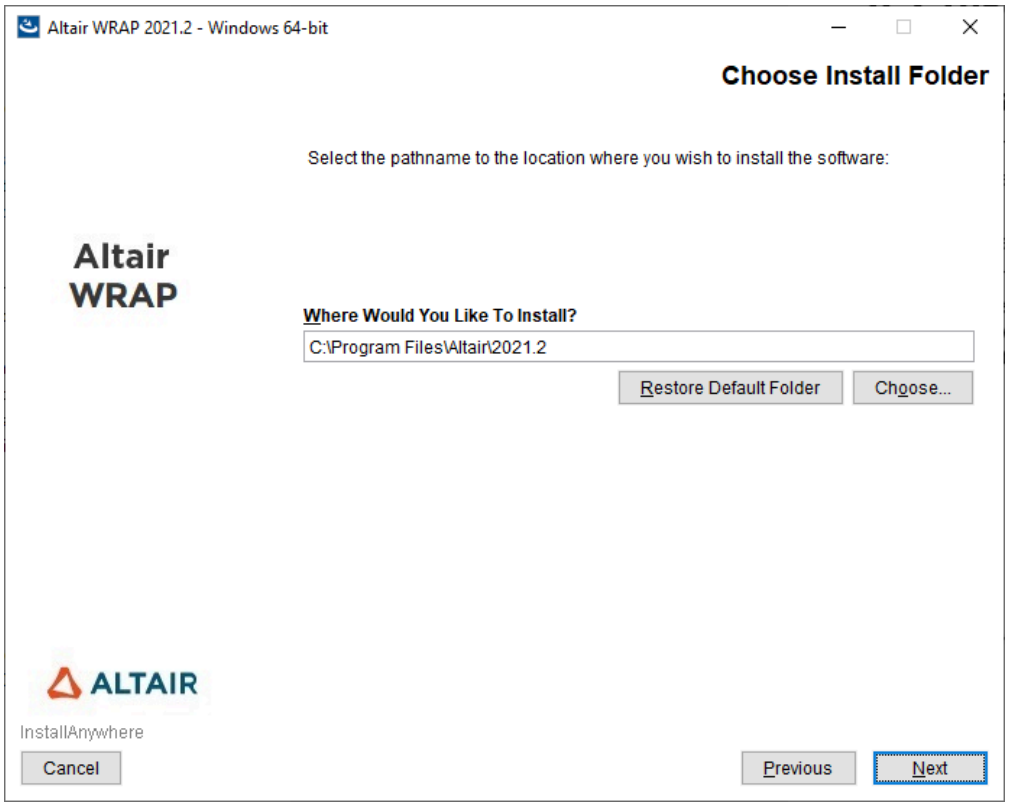
The **Choose Install Folder** panel is displayed.

1. The default install folder is the Altair Simulation install folder.

   Attention: An existing Altair Feko installation is required to install WRAP.

   Note:
   - The installer does not allow the use of characters "#" and ";".
   - Installing to a root drive is not permitted, for example C:\.

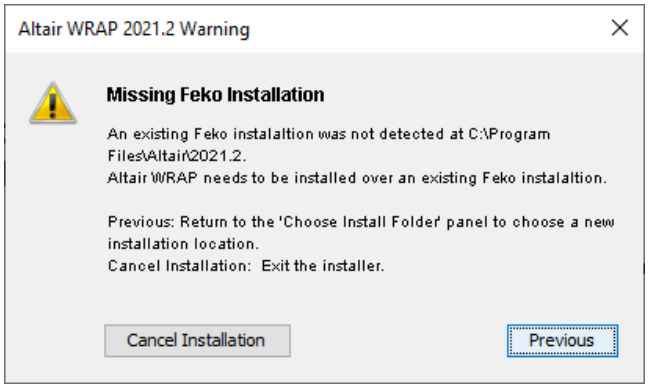
2. Click **Next** to continue.



Attention:

If an existing installation of Feko was not detected in the install folder, a warning prompt will be displayed.

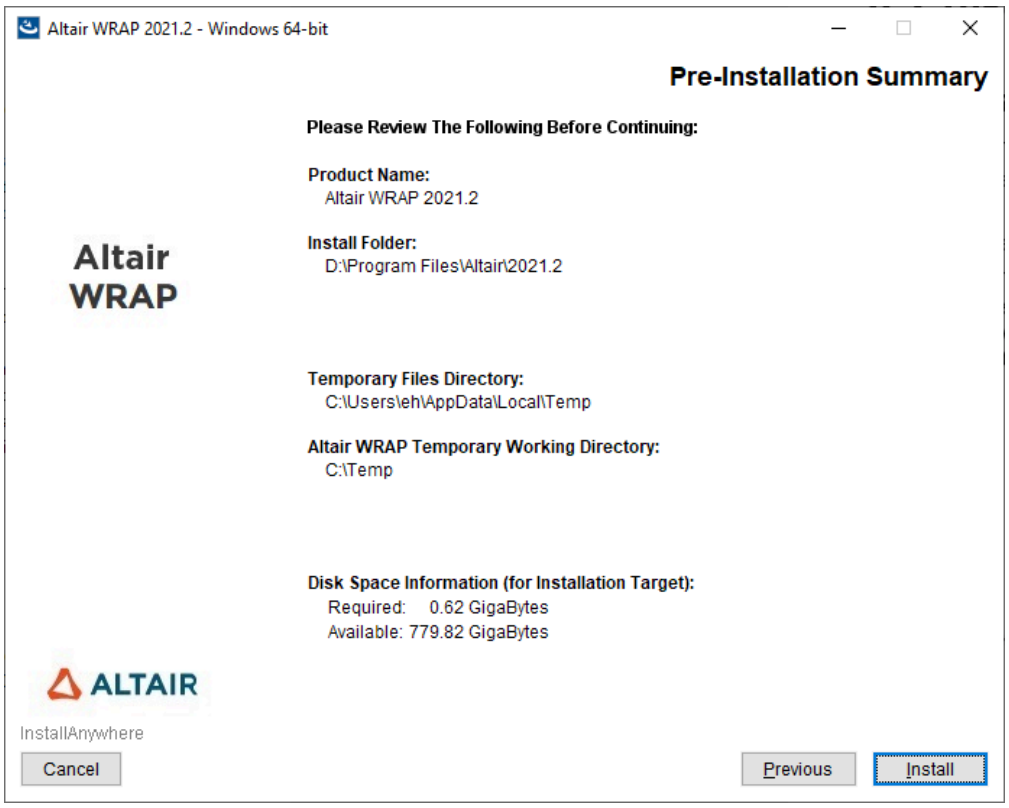
- Click **Cancel Installation** to abort the installation process.
- Click **Previous** to return to the previous installation panel.


Altair WRAP 2021.2 Warning
Missing Feko Installation
An existing Feko instalaltion was not detected at C:\Program Files\Altair\2021.2.
Altair WRAP needs to be installed over an existing Feko instalaltion.
Previous: Return to the 'Choose Install Folder' panel to choose a new installation location.
Cancel Installation: Exit the installer.
Cancel Installation
Previous

6.2.5 Verifying the Pre-Installation Options

The **Pre-Installation Summary** panel is displayed. The summary contains details about the pending installation.

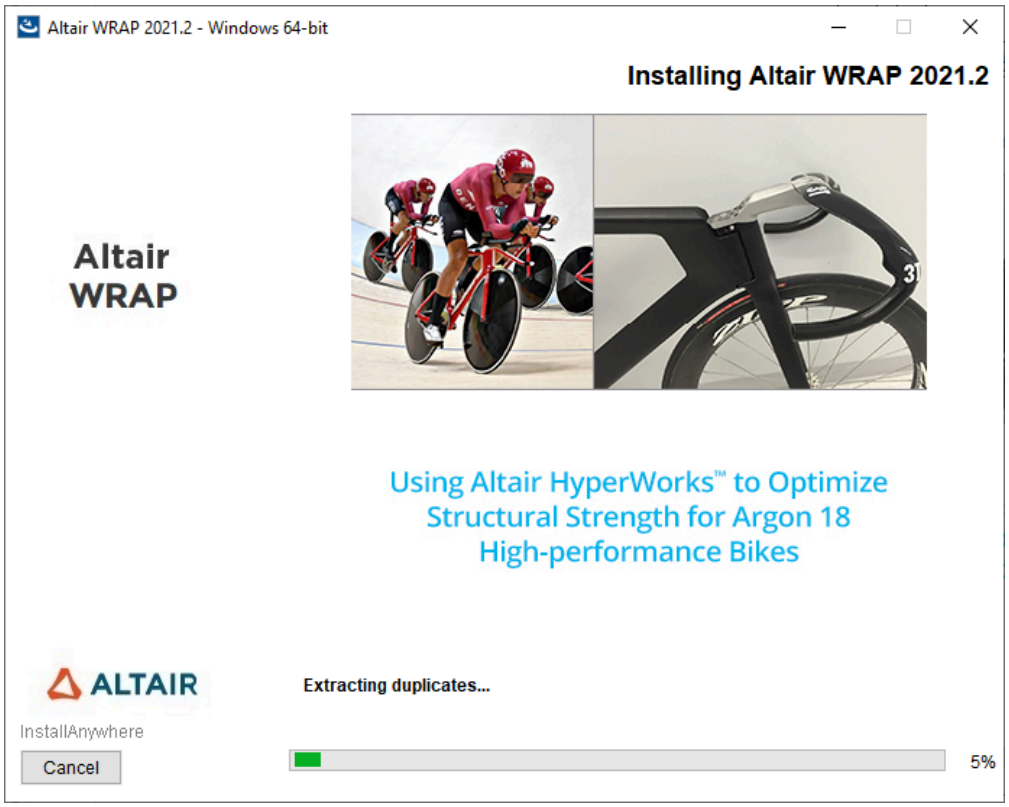
1. Review the installation details.
2. Click **Next** to continue.



6.2.6 Viewing the Installation Progress

The **Installing Altair Wrap 2025.1** panel is displayed.

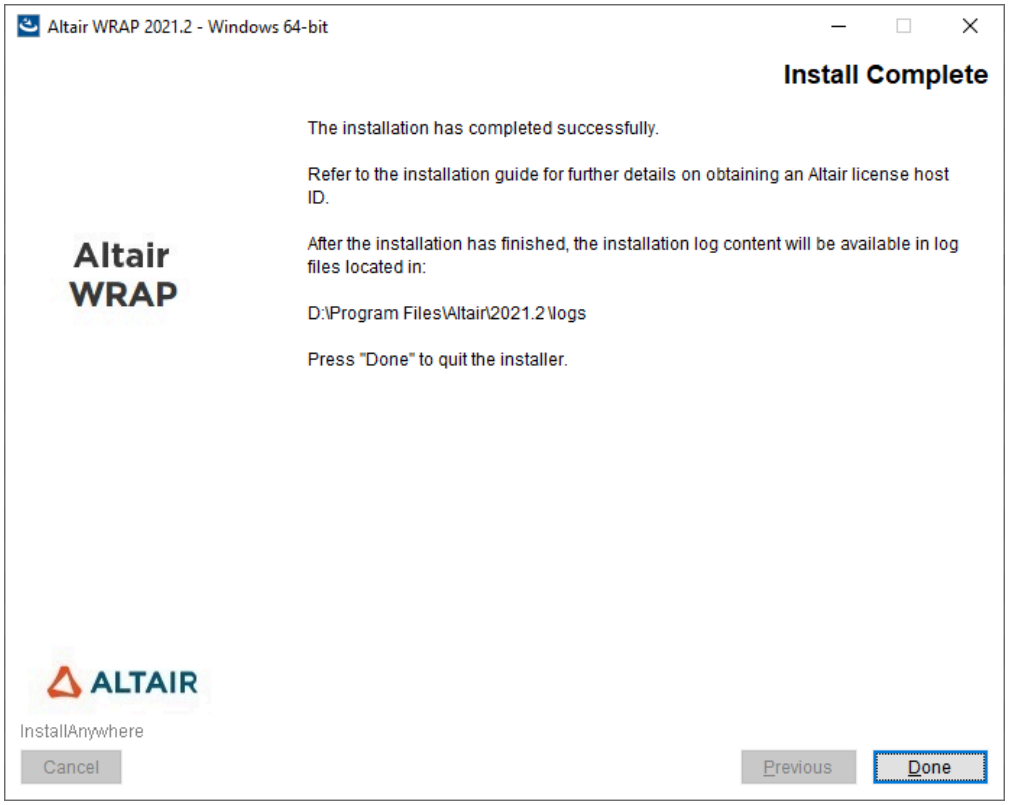
View the installation progress.



6.2.7 Exiting the Installation Wizard

The **Install Complete** panel is displayed.

1. Once the installation is complete, the **Install Complete** panel is displayed.
2. Click **Done** to exit the installer.



Note: When WRAP is installed in an existing Altair Feko installation, WRAP is enabled on the Launcher utility.

6.2.8 Restore Backup of Database Settings

If you have made a backup of your writeable databases of a previous installation, restore your backup.

> **Important:** This step is only applicable if you had an existing installation of Altair WRAP and made a backup of your database settings.

1. Copy back the databases into a suitable location or in the new default location `%FEKO_SHARED_HOME%\wrap\Databases`.
2. Connect the databases using ChangeDB.
3. Copy back your `.wgc` file into `%FEKO_USER_HOME%\wrap`[9].

The updated version of WRAP is now ready to be used with the existing writeable database and Geo class settings.

See Also
Make Backup of Database Settings

9. The `%FEKO_USER_HOME%` variable is set to the directory used to write user specific initialisation files. It is provided to allow different users to save unique configurations, and for situations where the user does not have write access to the Feko directory. For Microsoft Windows systems this is typically `%APPDATA%\feko\xx.yy`. Here xx.yy represent the major and minor version numbers.

6.3 Altair WRAP Third-Party Installation

WRAP should be installed by an admin user. By default, a WRAP installation will install all required third-parties. If a user does not have admin rights or WRAP could not install the required third-parties, then the following third-party software can be downloaded and installed by an admin user.

- Microsoft® SQL Server® 2012 Native Client
- SQL Server 2019 Express LocalDB
- ITSHFBC
- SQLite ODBC

6.3.1 Installing ITS HF Propagation

WRAP has a dependency on ITS HF Propagation version 2016.12.07 (third-party software) that must be installed to make use of HF functionality within WRAP. ITS HF Propagation only needs to be installed if HF functionality is to be used within WRAP. It handles propagation calculations in the 2 MHz to 30 MHz band with inclusion of ionospheric reflection.

If you start an HF calculation and ITS HF Propagation is not installed, the following informational dialogs are displayed:

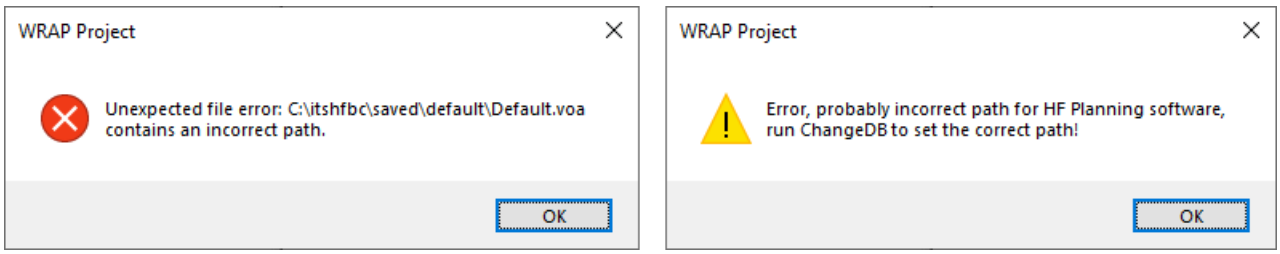


Figure 3: WRAP informational dialogs that are displayed when you start an HF calculation and ITS HF Propagation is not installed.

1. Locate `itshfbc_180417a.exe` in the `ITSHF` folder in the WRAP installation package.

   > **Attention:** Version 2016.12.07 is required.

2. Double-click `itshfbc_180417a.exe` to start the installation.

The **ITS HF Propagation 2016.12.07** panel is displayed.

3. Click **Next** to start the installation process.

*Figure 4: The **ITS HF Propagation 2016.12.07** dialog.*

The **Important information** panel is displayed.

4. Click **Next** to continue the installation process.

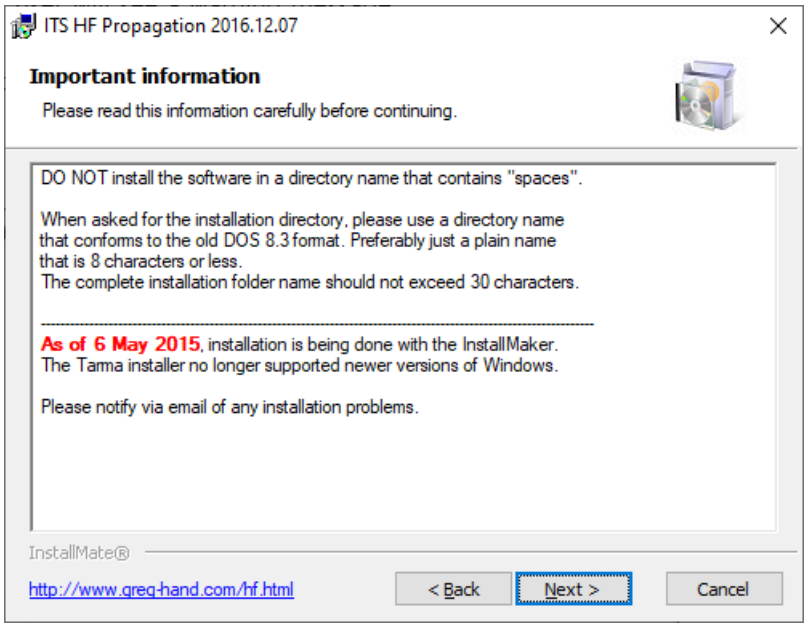


*Figure 5: The **Important information** dialog.*

The **License agreement** panel is displayed.

5. Click **I agree to these terms and conditions** to continue with the installation and click **Next**.

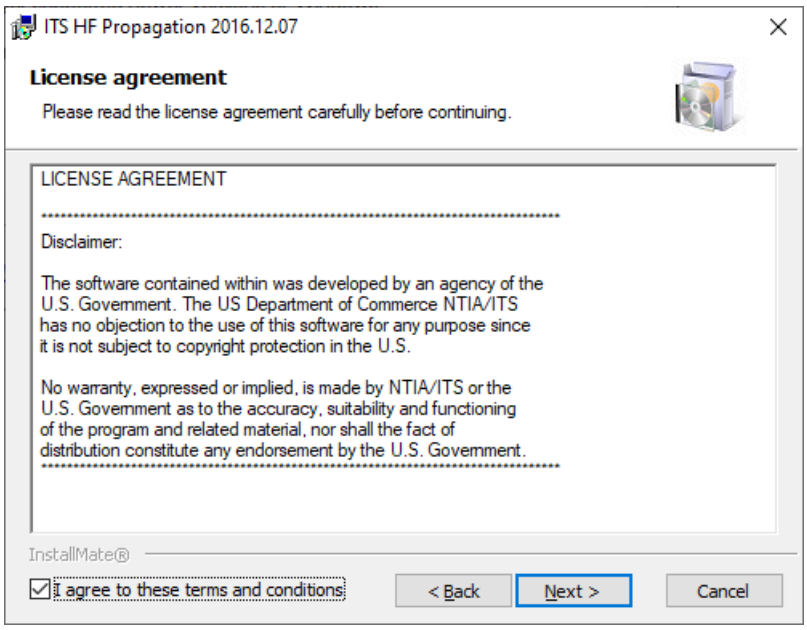


*Figure 6: The **License agreement** dialog.*

The **Installation options** panel is displayed.

6. Use the default installation folder and click **Install** to complete the installation process.

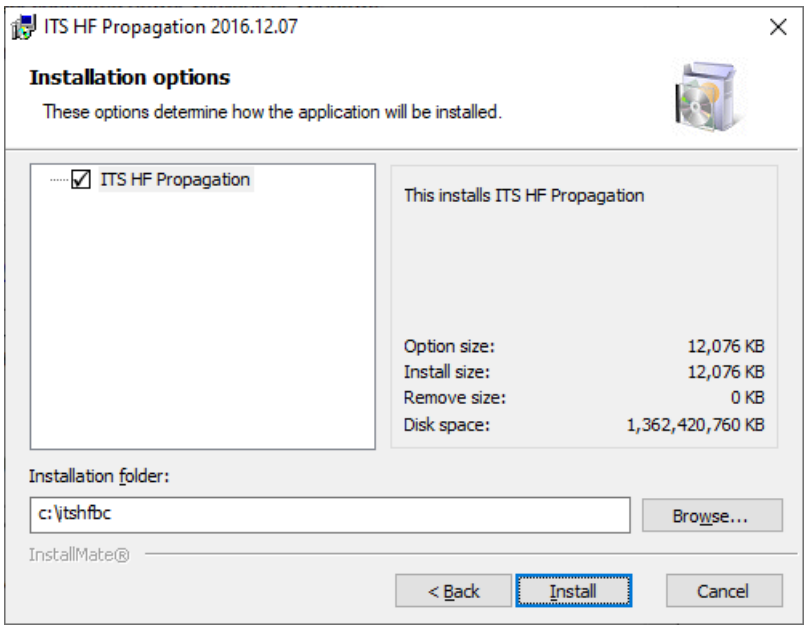


*Figure 7: The **Installation options** dialog.*

Note: If you are not using the default installation folder, set the same path in WRAP on the **Change WRAP Win settings** dialog (**Other Paths** tab).

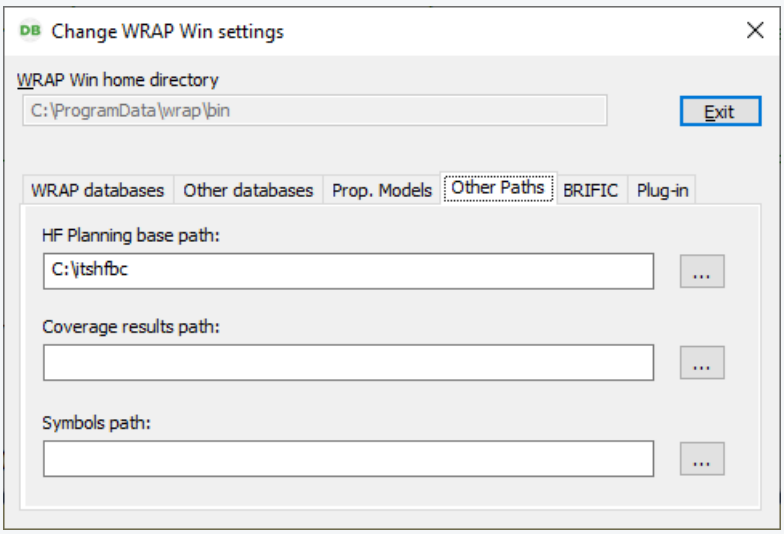


*Figure 8: The **Change WRAP Win settings** dialog.*

The **Installation completed** panel is displayed.

7. Click **Finish** to complete the installation process.

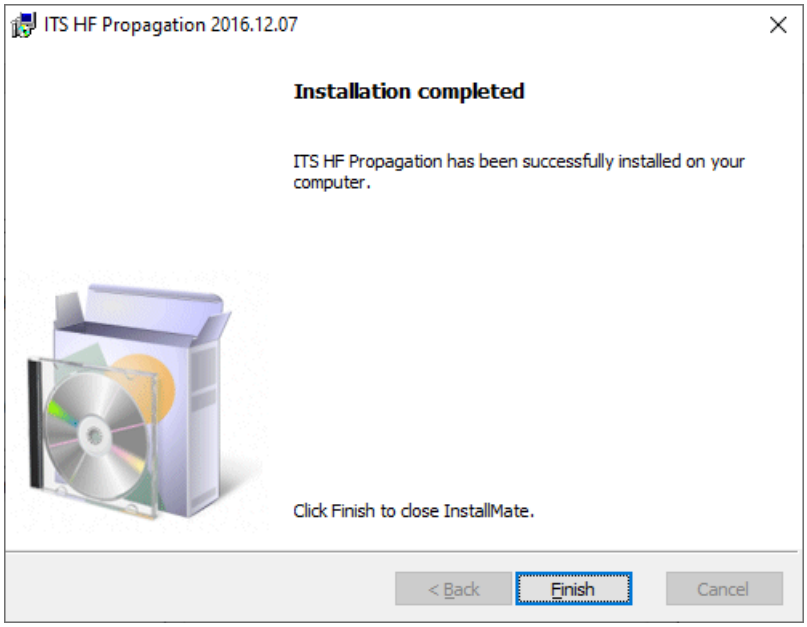


*Figure 9: The **Installation completed** dialog.*

Modifying the Altair Feko Installation

7

After the installation process is complete, any installation option can be modified by performing a re-installation.

1. Start the installation process.
2. Click **Continue** when the Altair Feko 2025.1 **Warning** prompt is displayed to overwrite the files in the specified installation directory.
3. Continue with the installation.

Uninstall Altair Feko

8

The uninstaller removes all files from the Altair Feko installation (which includes Feko and WinProp). Backup all files you wish to save prior to running the uninstaller. There is no partial uninstaller available.

This chapter covers the following:

Note: If Altair WRAP was installed into the Altair Feko installation, uninstalling Altair Feko also removes Altair WRAP.

8.1 Uninstalling on Microsoft Windows (Local)

8.1.1 Uninstalling in GUI Mode

1. Start the uninstalling process by selecting one of the following workflows:
   - Select the start menu for Feko and run **Uninstall Altair Feko 2025.1**.
   - Open **Control Panel** > **Programs** > **Programs and features** > **Uninstall or change a program** to launch the Feko uninstaller.
2. If user account control (UAC) is enabled and you are an administrator, a prompt displays showing the Altair Engineering, Inc. digital signature for elevated permissions. Click to continue.

The **Uninstall Altair Feko 2025.1** panel is displayed

3. Click **Uninstall** to continue.

The **Uninstall Complete** panel is displayed once the installation is removed.

4. Click **Done** to exit.

8.1.2 Uninstalling Using a Response File

Silent uninstalls for Altair Feko removes all folders, directories and files of the Altair Feko install.

A response file is required for using the silent uninstall capabilities.

1. Create a `response` file by adding the following three variables to a text file.

```
INSTALLER_UI=silent
FEATURE_UNINSTALL=COMPLETE
INSTALL_CLEANUP_ALL=1
```

2. Save the response file as `uninstaller.properties`.
3. Open a command prompt.

> **Tip:** Use administrative elevation to bypass User Account Control prompts.

4. Run the Feko uninstaller executable using the response file, `uninstaller.properties`.

```
"<INSTALL_PATH>\2025.1\uninstalls\Uninstall_FEKO2025.1\Uninstall Altair
 Feko 2025.1.exe" -i silent -f
<RESPONSE_PATH>\hwfeko2025.1_silent_uninstaller.properties
```

where the parameters are defined as follows:

INSTALL_PATH
: Specify the location of the Altair Feko install directory.

-i
: Sets the uninstalled interface mode to silent.

-f
The location of the response file is specified.

RESPONSE_PATH
Specify the location where the response file resides.

8.2 Uninstalling on Linux (Local)

8.2.1 Uninstalling Using the Command Line

Use the command line to remove the files and folders.

Run the following command to uninstall the product, where [INSTALL_DIRECTORY] is where the Altair Feko installation you would like to remove resides:

```
rm -Rf [INSTALL_DIRECTORY]
```

8.3 Uninstalling the Server (Server / Client)

Remove the Server part of the Server / Client installation. Removing the Server installation is similar to removing the Local Altair Feko installation.

Follow the instructions from Uninstalling in GUI Mode to remove the Server installation.

8.4 Uninstalling the Client (Server / Client)

Uninstall the Client part of the Server / Client installation.

1. Locate the folder where the start menu shortcuts were installed during the Client installation, for example, `C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Altair 2025.1 (Client)\Tools\Uninstall_NETSETUP2025.1`.
2. Click `Uninstall_NETSETUP2025.1` to uninstall the Client.
3. On the **Uninstall_NETSETUP** 2025.1 panel, click **Next** to uninstall the Client.
4. On the **Select Uninstall Type** panel, click **Uninstall** to remove all files and folders in the Client installation.
5. Click **Done** to exit.

8.5 Uninstalling on Microsoft Windows HPC Server

Remove the Altair Feko installation from nodes in a cluster.

1. Start the uninstallation on a node (preferably the head node) by recording to a response file.
2. Repeat the uninstallation process on the other nodes using the response file.

See Also
Response Files

8.6 Log Files

During uninstallation, a log file is generated that can be used to troubleshoot issues with the installer.

Note: The uninstall log file can be viewed at the following locations:

- *Windows*

  ```
  %TEMP%\feko_uninstall_logs
  \Altair_Feko_2025.1_Install_<MM_DD_YYYY_HH_MM_SS>.log
  ```

- *Linux*

  ```
  $TEMP/feko_uninstall_logs/
  Altair_Feko_2025.1_Install_<MM_DD_YYYY_HH_MM_SS>.log
  ```

Uninstall Altair WRAP

To uninstall Altair WRAP that was installed in an existing Altair Feko installation, run the Altair Feko uninstaller.

Note: When uninstalling WRAP; do not delete the following folders if you want to keep your existing writeable databases:

- `%FEKO_SHARED_HOME%`[10]
- `%FEKO_SHARED_HOME%\shared`

See Also
Uninstall Altair Feko
See Also
Make Backup of Database Settings
Restore Backup of Database Settings

10. The `%FEKO_SHARED_HOME%` variable is set to the directory that is used to write files shared between Altair Feko users on the same machine. For Microsoft Windows systems, this is by default set to `C:\ProgramData\altair\feko\xx.yy`. Here xx.yy represent the major and minor version numbers.

Parallel / Distributed Processing

10

Feko makes use of the MPI (message passing interface) communication system for parallel /distributed solver runs.

This chapter covers the following:

10.1 Parallel / Distributed Processing Requirements

Compute nodes requirements to use the parallel processing capabilities of Feko.

Compute nodes must meet the following requirements:

- An identical operating environment for all users.
  - The file structure of a compute node must be identical to other compute nodes (except for files that specify unique node or sub cluster identification or configuration).
  - All compute nodes must run the same software image (kernel, libraries and commands).
  - The provided system-wide software must be properly configured and have a consistent runtime environment.

10.2 MPI Overview

Message passing interface (MPI) implementations are platform and system dependent. Feko supports the Intel MPI, MS-MPI, MPICH and SGI MPT implementations for parallel solver runs.

Tip: View the MPI documentation in the `$ALTAIR_HOME\mpi\win64` folder.

The following MPI implementations are supported by Feko:

- *Intel MPI*

  Intel MPI is the default and recommended MPI implementation for most platforms. It supports SMP (symmetrical multi-processing) and communication protocols like Ethernet, GigaBit Ethernet and Myrinet or Infiniband through suitable DAPL providers.

  The Intel MPI library supports the following job schedulers:

  Microsoft Windows

  - Altair PBS Professional
  - Microsoft HPC Pack

  Linux

  - Altair PBS Professional
  - Torque
  - OpenPBS
  - IBM Platform LSF
  - Parallelnavi NQS
  - SLURM
  - Univa Grid Engine

  Note: Intel MPI is the default on all systems (except for Windows HPC).

- *MS MPI*

  MS MPI is the MPI implementation provided by Microsoft. It provides tighter integration with the Windows HPC (high-performance computing) job scheduler. It is unavailable in general on Windows systems, as it is a part of the Microsoft HPC Server 2008, Microsoft HPC Server 2008 R2, Microsoft HPC Server 2012, Microsoft HPC Server 2012 R2, Microsoft HPC pack and Microsoft Windows Compute Cluster Server 2003.

  Note: MS MPI is the default on Windows HPC.

- *MPICH*

  The MPICH is the high-performance and portable MPI implementation. MPICH is not recommended for general use and is provided as a fall-back should a problem with Intel MPI be observed.

- *SGI MPT*

  SGI MPT (message passing toolkit) is a message passing toolkit containing user and system tools and libraries. The toolkit provides optimised MPI functionality for SGI systems such as the SGI UV and SGI ICE.

10.3 Modifying the Default MPI Used

Modify the default message passing interface (MPI) implementation used by Feko.

Modify the default MPI implementation using one of the following workflows:

- Set the environment variable *FEKO_WHICH_MPI*.
- Modify the value of the variable *FEKO_WHICH_MPI_SETUP* in the file `FEKOenvironmentFromSetup.lua` located in the `%FEKO_HOME%` directory or any user-specific file.

Intel MPI	*FEKO_WHICH_MPI* = 11
MS-MPI	*FEKO_WHICH_MPI* = 13
MPICH	*FEKO_WHICH_MPI* = 1
SGI MPT	*FEKO_WHICH_MPI* = 4

Note: It is not recommended in a normal workflow to change the default MPI implementation used.

10.4 How to Set Up Microsoft MPI (MS-MPI)

Set up and configure Microsoft MPI (MS-MPI) on the Windows platform.

Feko supports a number of message passing interface (MPI) implementations which are platform and system dependent. If the MS-MPI implementation is required and it is not the default for the specific platform, it will need to be configured.

MS-MPI is shipped as part of the Feko installation but it is not installed.

How to Set Up MS-MPI:

1. Browse to `<ALTAIR_HOME>/mpi/win64/ms-mpi` where `<ALTAIR_HOME>` points to the Altair installation folder.

   > **Note:** MS-MPI was located at `<ALTAIR_HOME>/feko/mpi/ms-mpi` for some Feko versions.

2. Run `MSMpiSetup.exe`.
3. Set the following environment variables:
   - `FEKO_WHICH_MPI` = 13
   - `MSMPI_BIN` should normally be set automatically by the MS-MPI installer and point to the installed `Microsoft MPI/Bin` folder (for example: `C:\Program Files\Microsoft\MPI\Bin`).

10.5 Parallel Authentication Methods

When running the Solver in parallel, involving multiple machines, the processes must be authenticated.

Use encrypted credentials in registry (Windows only)

This option uses a previously stored encrypted user name and password from the Windows registry. Save the login credentials before starting a parallel computation. The credential is a per-user setting and must be updated on each change of your user password. If using remote-parallel launching, the credentials must also be saved on the remote host where the Solver is run in parallel.

Save or update your credentials by using the **Update parallel credentials** provided on the Launcher utility (**Utilities** tab).

Use SSPI (Active Directory) integration (Windows only, requires domain)

> **Note:**
> - Machines must be a member of a Microsoft Windows (Active Directory) domain.
> - User accounts must be domain accounts.

This option uses internal Windows functions to carry-out authentication without the need to encrypt login credentials into the registry.

Once-off configuration settings might be required to set up by the domain administrator to prepare the Windows domain for the authentication[11].

Local run only (no authentication required)

This option allows you to perform parallel runs on a single or local, multi-core CPU. The installer automatically inserts the default number equal to the detected number of cores/CPUs. Change the default number of cores if you wish to run a different number of parallel processes processes.

Default (rsh/ssh for UNIX, registry for Windows)

This option uses the default authentication method for the target operating platform.

- For UNIX systems, the public key authentication of rsh/ssh is used.
- For Windows systems, the registry method is used.

11. View the MPI documentation in the `$ALTAIR_HOME\mpi\win64` folder.

Remote Launching / Farming Overview

11

Prepare a system to support the remote launching and/or optimisation farming capabilities of Feko.

This chapter covers the following:

11.1 Remote Launching and Farming Requirements

General requirements to use the remote launching and farming capabilities of Feko.

General Requirements

The following requirements are applicable to both remote launching and farming:

- Altair Feko installed on both the local client and the remote host.
- The remote host must have been configured during installation to be used as a remote host. If the remote host was not configured as a remote host, either:
  - Modify the installation.
  - Create the network share manually and add the Feko `bin` directory to the *PATH* environment variable.
- The user starting the job must have access to the remote machine using a Windows account (same account must be created on both machines or domain-based security must be used).
- Ensure there are sufficient Altair Units to grant the license check out.

Remote Launching Requirements

Compute nodes must meet the following requirements for remote launching:

- An identical operating environment for all users.
  - The file structure of a compute node must be identical to other compute nodes (except for files that specify unique node or subcluster identification or configuration).
  - All compute nodes must run the same software image (kernel, libraries and commands).
  - The provided system-wide software must be properly configured and have a consistent runtime environment.

> **Note:** It is not required for the file systems to be shared. File copy operations are performed automatically.

Farming Requirements

A single multi-core machine must meet the following requirement for farming:

- Both the client and server setup for remote launching must be available on the machine.

11.2 Remote Launching / Farming Methods

Set up support for remote launching/farming by using either the MPI (message passing interface) method or SSH (secure shell) method.

Feko provides cross platform remote launching. For example, you can launch a remote job from a Windows PC on a Linux cluster, and from Linux to Linux.

MPI Method

Use this method when only Windows hosts are participating in the remote launching process or farming. This method uses the normal copy commands and the created network share on the remote host for transferring the files to and from the remote host.

> **Note:** This is the recommended method to set up support for remote launching or farming.

SSH Method

This method works from / to all platforms, but requires additional steps to configure.

11.3 MPI Method

Set up the remote machine (server) to support the remote launching and farming capabilities of Feko using the MPI method. No additional steps are required to set up the client machine.

11.3.1 Setting Up the Remote Machine

Setting Up Network Share

Set up the network share on the remote host if remote launching was not selected during installation or more advanced network share settings are required.

The installer creates the following default network share settings:

Path
: `%FEKO_TMPDIR%`

Share
: feko_remote$

Security
: Full access for authenticated users

Edit the file `%FEKO_HOME%\bin\feko_remote_mpi.bat` if the location or share name is different from the above defaults.

Edit the lines:

```
set FEKO_REMOTE_DIR_LOCAL=!FEKO_TMPDIR!
```

```
set FEKO_REMOTE_DIR_SHARE=feko_remote$
```

Note: If sharing `FEKO_TMPDIR` as feko_remote$ with full access for authenticated users is unsuitable, you can change the location and/or security settings, provided the network share name feko_remote$ is kept. Ensure that all accounts used for computations get access to this share on the remote machine(s).

11.3.2 Configuring the Environment Setup

Set up the User Environment Setup.

1. Add the *PATH* environment variable per user if it is not set globally.
2. Ensure the account(s) used to start / launch the Feko remote computations must:
   - exist on both the local and remote machine
   - have sufficient rights to copy from and to the remote machine

- have the same password / credentials such that no additional authentication dialog will open upon the copy and remote launching operations

Note:

- If the machines are part of domain, this should be accomplished automatically by the domain membership and group policies or ask your domain administrator.
- If the machines are standalone machines, ensure to create the same accounts (same account and passwords) on both machines.

11.4 SSH Method

Set up the system to support the remote launching and farming capabilities of Feko using the SSH method. An SSH client must be installed on the local machine (client) and an SSH server must be installed on the remote machine (server).

11.4.1 Setting Up the Client Machine

Setting Up the Client Machine on Windows

Set up an SSH client on the local machine with a Windows operating system. Additional software is required to add the functionality to Windows.

Windows operating systems do not ship with any SSH client application by default.

Set up the client machine setup using one of the following software:

- PuTTY
- SSH from Cygwin
- OpenSSH for Windows

See Also
Configuring PuTTY

Setting Up the Client Machine on Linux

Set up an SSH client on the local machine with a Linux operating system.

Since SSH is readily available by default in most distributions, normally no additional steps are required. If this is not the case, then either query the package manager for a suitable SSH package or obtain OpenSSH.

Ensure that "ssh" is in your *PATH* to be able to launch it without having to supply the full path to the directory where "ssh" is located.

> **Note:** Help might also be available from "man ssh".

Configuring the Environment Setup

Set up the User Environment Setup.

1. Set up the private and public key authentication. This step needs only to be done if no such keys are yet available.

- Under Linux and Cygwin: Use the command “ssh-keygen -t dsa -N """ to create the keys. You will find a “.ssh” directory inside your HOME directory which contains the private key (dquoteid_dsa) and your public key (id_dsa.pub).
- When using PuTTY: Convert this public key into PuTTY syntax by using “puttygen”. (Use **Conversions** > **Import Key**, select your private key file created before, select **Save private key** and save it to a `.ppk` file at a location where you can reach it later.) You can also use “puttygen” to completely create the key pair, but then you also have to copy the keys in OpenSSH syntax to the remote machine’s directory.

  The public key must then be added to the file “authorized_keys” on the remote host. The private key must be used on the client while attempting to connect to the remote host.

2. Set up the profile scripts.
   - Linux: Add the `initfeko` script to the `.bashrc` file in the HOME directory of each user to get the correct environment loaded. Simply add the following line to that file (note the dot followed by a space followed by the full path to the script):

     ```
     . <installation directory>/altair/feko/bin/initfeko
     ```

   - Windows: No special step is required since the relevant information is saved in the registry. Just ensure that the Feko bin directory is added to the PATH environment variable.

11.4.2 Setting Up the Remote Machine

Setting Up the Remote Machine on Linux

Set up an SSH client on the remote machine with a Linux operating system.

Since SSH is readily available by default in most distributions, normally no additional steps are required. If this is not the case, then either query the package manager for a suitable SSH package or obtain OpenSSH.

Ensure the SSH daemon (“sshd)” is configured and running, as this is part of the initial system installation. If this is not the case, please refer to your distribution’s documentation on how to setup the SSH daemon to start automatically and allow users to connect.

> **Note:** Help might also be available from “man sshd” or “man sshd_config”.

Setting Up the Remote Machine on Windows

Set up an SSH server on the machine with a Windows operating system. Additional software is required to add the functionality to Windows.

Windows operating systems do not ship with any SSH component by default.

Set up the client machine setup using one of the following software;

- SSHd from Cygwin

- OpenSSH for Windows
- CopSSH - OpenSSH for Windows

Note: Nearly all implementations are based on the OpenSSH implementation and might vary only on the installation/configuration steps (effort) and the included versions, since all use precompiled binaries. The implementations are mainly some kind of “wrapper” around a slimlined installation of the Cygwin part (they install and maintain some minimalistic Cygwin environment only for the SSH functionality.)

Updater

12

The `feko_update_gui` utility and the `feko_update` utility allows you the flexibility to install an update containing features, minor software enhancements and bug fixes on top of an existing base installation for Altair Feko (which includes Feko and WinProp).

This chapter covers the following:

12.1 Version Numbers

Each major release, upgrade or update is assigned a version number. A version number contains a unique set of numbers assigned to a specific software release for identification purposes. You can determine from the version number if its an initial release, update or upgrade.

The following terminology is used to define a version number:

```
Feko <Major>.<Minor>.<Patch>
```

for example:

```
Feko 2019.1.2
```

2019

Indicates the major release version. A major release is made available roughly once a year and has a minor and patch version of "0".

> **Note:**
> - The update utility does not support upgrades between major versions.
> - A major release requires a new installer.

1

Indicates the minor release version and is referred to as an upgrade. Large feature enhancements and bug fixes are included in the upgrade. Minor upgrades are released quarterly, for example "1" indicates the first minor upgrade after the initial release. Use the update utility to upgrade to a newer minor version (when available).

2

Indicates the patch version and is referred to as an update or "hot fix". Minor feature enhancements and bug fixes are included in the update. Patch updates are released between minor upgrades, for example "2" indicates the second patch update after an upgrade.

12.2 GUI Update Utility

Use the `feko_update_gui` to check for new versions of the software and install an update using a graphical user interface (GUI).

Click on **Application menu** > **Check for updates** to do a forced check for updates[12].

When either CADFEKO, EDITFEKO or POSTFEKO is launched and the scheduled interval time has elapsed, the update utility (GUI mode) automatically checks for updates. By default the schedule is set to check for updates once a week. If updates are available, the update utility displays a notification alert as well as giving you the option to select and install updates.

The GUI update utility can be started from the command line using:

```
feko_update_gui
```

Updates can be installed from a web repository[13] or a local repository. During an update a list containing the latest software is retrieved and compared to installed components.

Note: No information is collected during an update.

12.2.1 Viewing the Installed Component Versions

View the version numbers of the installed Feko components.

1. Open the Updater using the Launcher utility.
2. On the **Altair Feko update** dialog, click the **Installed versions** tab.
3. View the **Component**, **Version** and **Date** information for the current installation.

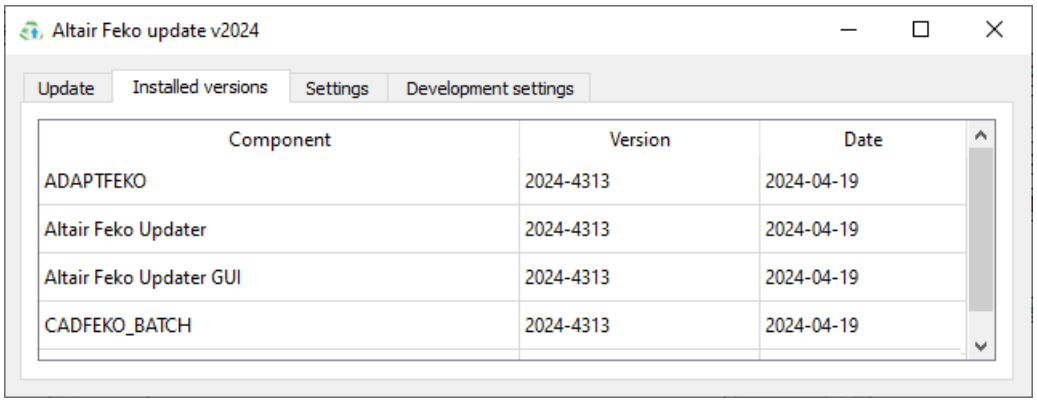


*Figure 10: The **Altair Feko update** dialog - **Installed versions** tab.*

12. A forced update can also be done from the application menu in CADFEKO, POSTFEKO and EDITFEKO.
13. Requires internet access.

4. Click the **Update** tab and click **Close** to exit the **Altair Feko update** dialog.

12.2.2 Updating or Upgrading to a New Version

Updating and upgrading refers to the process of installing a new version containing features, minor software enhancements and bug fixes on top of an existing base installation.

1. Open the Updater using the Launcher utility.
2. On the **Altair Feko update** dialog, click the **Update** tab.
3. Click the **Refresh** button to view the available Feko versions for download.
4. Select a version to view the available components and their individual file size in the table.

> **Tip:** Click **Details** to view the release notes in the message window.

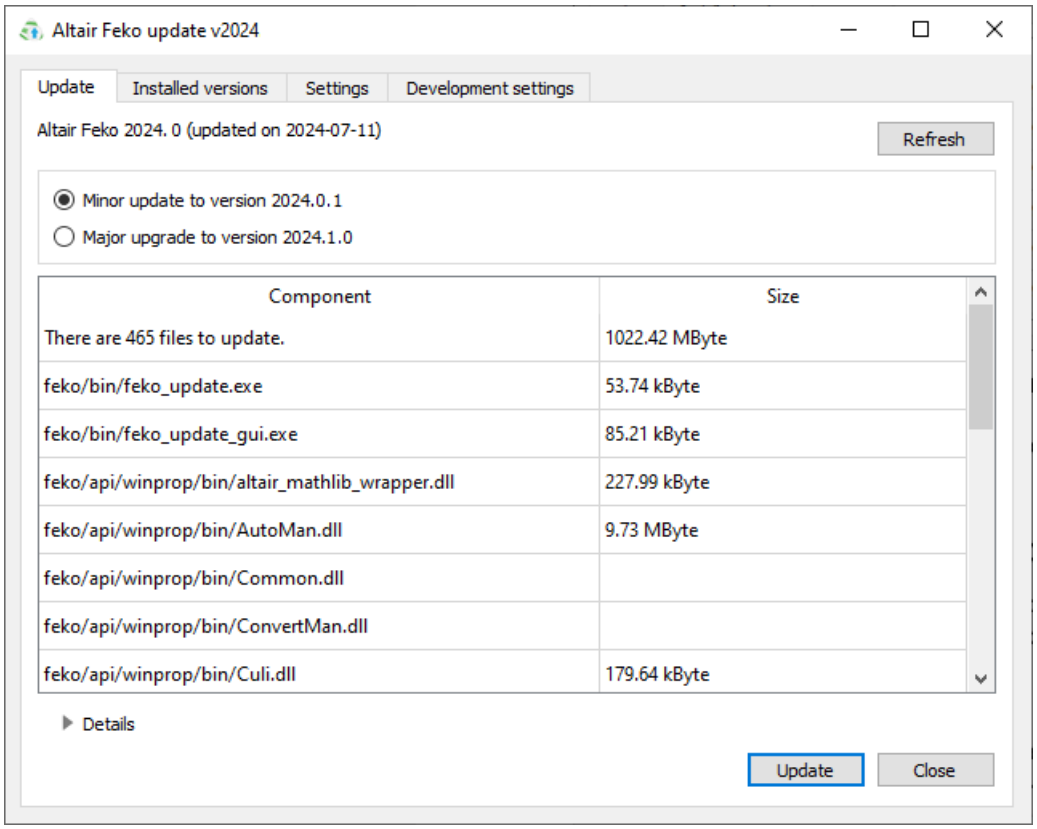


*Figure 11: The **Altair Feko update** dialog - **Update** tab.*

5. Click **Update** to update or upgrade to the selected version.
   a) Before an upgrade is started, you will be asked to confirm the upgrade from the current version to the selected version. Click **Continue with upgrade** to allow the update/upgrade process to proceed.
   b) During the update process, click **Details** to expand the message window and view detailed information regarding the update process.

6. When the update or upgrade is complete, click **Close**.

12.2.3 Updating From a Local Repository (GUI)

Update (or upgrade) from a local repository using the graphical user interface.

1. Open the Updater using the Launcher utility.
2. On the **Altair Feko update** dialog, click the **Settings** tab.
3. Under **Update from**, click **Local repository** to update from a local repository.

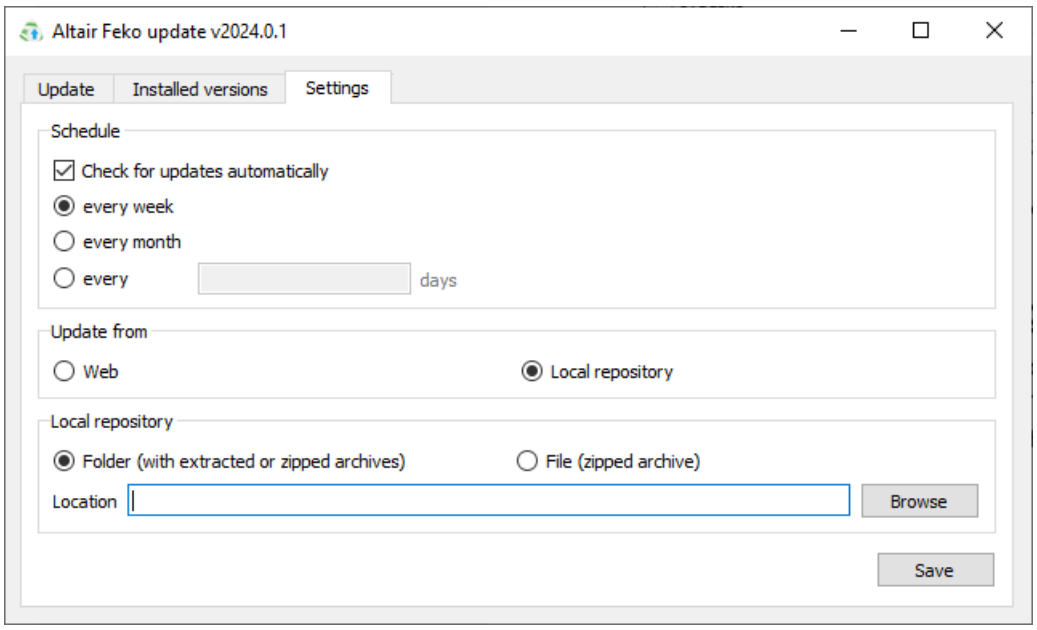


*Figure 12: The **Altair Feko update** dialog - **Settings** tab.*

4. Under **Local repository**, select one of the following:
   - If the local repository contains extracted archives or multiple zipped archives, select **Folder (with extracted or zipped archives)** and specify the folder.

     The path for the local Feko update repository must be an absolute file path which can point to an unmapped network share (Windows), mapped (mounted) network share or a directory on a local drive.

     Warning: Point the local repository path to the root folder of the updates.

     Example: The Feko updates for the Windows and Linux platforms were extracted and merged to `C:\Updates`. The path to the local repository points to `C:\Updates`.

```
C:\Updates
    └─FEKO_2025.1.x
            └─WIN64_X86_64
            └─LINUX_X86_64
```

- If the local repository contains a single zipped archive, select **File (zipped archive)** and specify the zip file.

5. Click **Save** to save the local repository settings.
6. Update or upgrade to a new version.

> **Troubleshooting:** `Error 16700: Unable to find the file 'XX/YY/manifest.xml.gz' in the local repository.`
>
> Error 16700 indicates that the path to the local repository is incorrect. The path must point to the root folder of the local update repository and the folders should not be modified.

Related concepts
Creating a Local Update Repository
Related tasks
Using Extracted or Zipped Archives for Repo
Using a Single Zip Archive for Repo

12.2.4 Scheduling Automatic Updates

Schedule and configure an automatic Feko update.

1. Open the Updater using the Launcher utility.
2. On the **Altair Feko update** dialog, click the **Settings** tab.

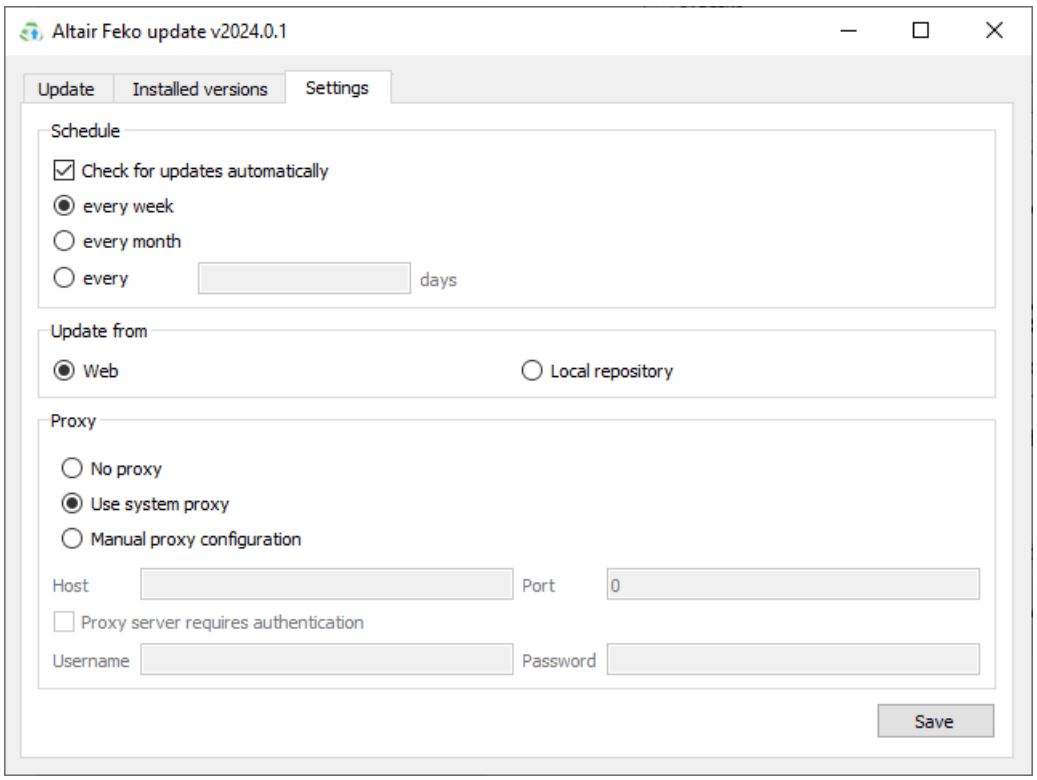


*Figure 13: The **Altair Feko update** dialog - **Settings** tab.*

3. Select the **Check for updates automatically** check box to automatically check for updates. Select one of the following options:
   - every week
   - every month
   - every N days
4. Select the download location under **Update from** group box.

   Web
   The updates are downloaded from the web repository.

   Local repository
   This option is recommended when the computer network or cluster has no internet access due to security reasons or only limited available bandwidth. The updates may be downloaded from the Connect website by the system administrator and placed at a location accessible for the computer network or cluster.

5. Optional: Specify the proxy server and authentication when the web is specified as the repository under **Proxy** group box.
6. Click **Save** to save the new settings.

Related concepts
Proxy Settings Overview

12.3 Command Line Update Utility

Use the `feko_update` utility for scripted updates or updates from a Feko terminal.

The command line update utility is called from the command line using:

```
feko_update
```

-h,--help
: Displays the help message.

--version
: Output only the version information to the command line and terminate.

UPGRADE_OPTION
: Argument that allows a specific major patch version to be specified. This option is used to view the Feko component changes for a specific major patch version, their respective download size and the release notes. *UPGRADE_OPTION* can be any of the following:

  1-9
  : Indicates the major patch version.

  latest
  : This option selects the largest valid major patch version that has a repository.

--check [UPGRADE_OPTION] [[USER:PASSWORD@]PROXY[:PORT]]
: The update utility checks if new versions are available. If *UPGRADE_OPTION* was not specified and new versions are available, it will list the version and its associated *UPGRADE_OPTION* value. For example:

  ```
  Update/upgrade options are available (UPGRADE_OPTION):
  0: Minor update to version 2025.1.0.1
  ```

  If the computer is behind a proxy server, the proxy server address and the login details can be supplied as required.

--check-from LOCATION [UPGRADE_OPTION]
: The update utility checks if new versions are available. Here the update source is the local repository specified by *LOCATION*. If *UPGRADE_OPTION* was not specified and new versions are available, it will list the version and its associated *UPGRADE_OPTION* value.

--update [USER:PASSWORD@]PROXY[:PORT]]
: The update utility checks if new versions are available within the current patch major version from the web repository. If an update is available, download and install the new version. If the computer is behind a proxy server, the proxy server address and the login details can be supplied as required. If updates are available, the following information is printed to the screen:

  - Print each file which is being downloaded (only available when the update does not contain many files).
  - Print each file which is being updated (only available when the update does not contain many files).
  - Print a message stating that the update was successful and exit.

--update-from LOCATION
The update utility checks if new versions are available within the current patch major version and installs the new version. Here the update source is the local repository specified by *LOCATION*. The path must be an absolute file path which can point to an unmapped network share (Windows), mapped (mounted) network share or a directory on a local drive that can contain either extracted archives, multiple zipped archives or a single zipped archive.

--upgrade UPGRADE_OPTION [[USER:PASSWORD@]PROXY[:PORT]]
The update utility checks if new patch major versions are available from the web repository. If an upgrade is available, download and install the new version.

--upgrade-from LOCATION UPGRADE_OPTION
The update utility checks if new patch major versions are available from the web repository. If an upgrade is available, it will download and install the new version. Here the update source is the local repository specified by *LOCATION*. The path must be an absolute file path which can point to an unmapped network share (Windows), mapped (mounted) network share or a directory on a local drive that can contain either extracted archives, multiple zipped archives or a single zipped archive.

--no-progress
Suppress the download progress when updating from a web repository.

--no-proxy
Suppress the use of a proxy (including the system proxy).

12.3.1 Updating From a Local Repository (Command Line)

Download a new software update (or upgrade) from a local repository using the command line utility.

1. Open a Feko terminal using the Launcher utility.

   Note: If a script is used to call the Feko updater, do one of the following:
   - Run the script from a Feko terminal.
   - Include `%FEKO_HOME%\bin` in the `PATH` environment variable.
   - Call the Feko updater using the full path, for example: `C:\Program Files\Altair\2025.1\feko\bin\feko_update.exe`.

2. Download the latest version using one of the following workflows:
   - To update (if an update is available) within the current minor version, type:

     ```
     feko_update --update-from LOCATION
     ```

   - To upgrade to a new minor version, type:

     ```
     feko_update --upgrade-from LOCATION VERSION
     ```

   where `LOCATION` is either an absolute file path which can point to an unmapped network share (Windows), mapped (mounted) network share or a directory on a local drive that can contain either extracted archives, multiple zipped archives or a single zipped archive.

The `version` is the minor version that you would like to upgrade to and would usually be `1`, `2` or `3`, but it is possible to use `latest` to upgrade to the latest version.

The command line updater has many options to check for updates without updating or update to the latest version. Use the following command to see a list of options:

```
feko_update --help
```

12.4 Proxy Settings Overview

The `feko_update_gui` utility and `feko_update` utility (GUI and command line) use the system proxy by default, although it may be changed or the use of a proxy suppressed.

Windows

The proxy used is the same as is used by Internet Explorer. The proxy can be specified or by using a proxy auto-config (PAC) file.

Linux

The system proxy is defined by the environment variable *http_proxy*. If the environment variable *http_proxy* is not defined, then no proxy will be used.

Suppressing the Use of a Proxy

The parameter *--no-proxy* bypasses the system settings and use a direct connection.

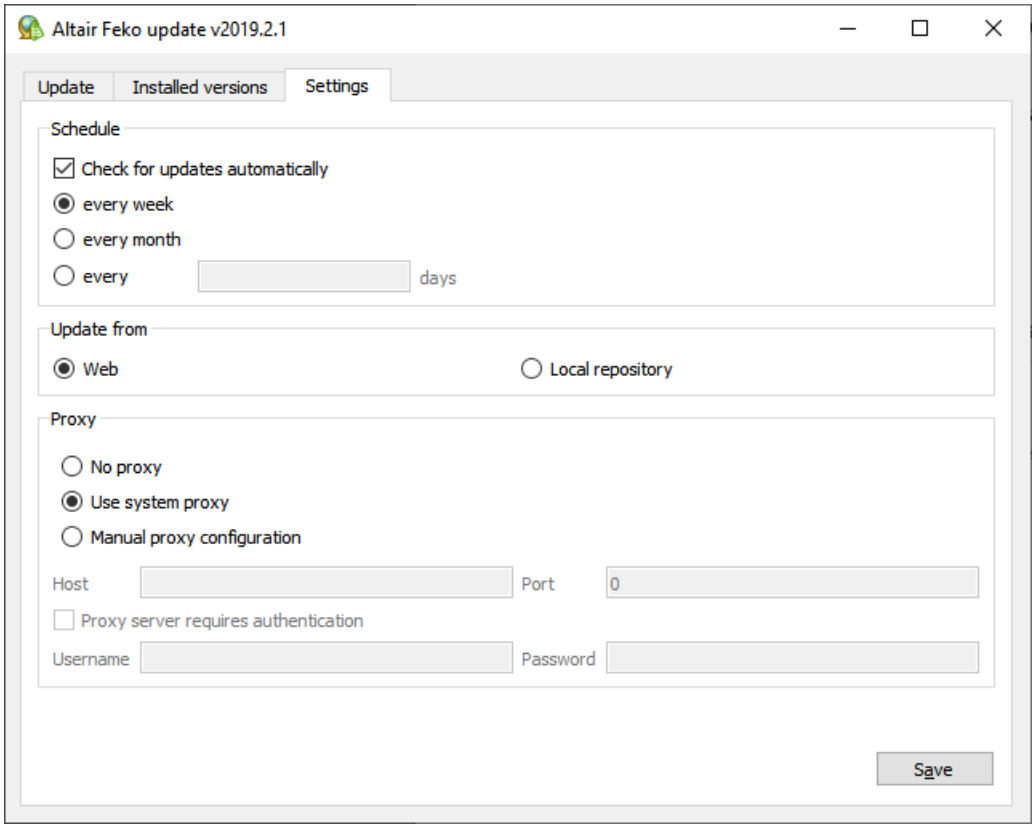


*Figure 14: The **Altair Feko update** dialog - **Settings** tab.*

12.5 Creating a Local Update Repository

Create a local Feko update repository to allow users to update without internet access or to limit the list of update versions that users can use. Local update repositories can also be used to reduce the amount of data being downloaded by downloading a repository once and making it available to many local machines or compute clusters.

A local repository folder can be set up using:

1. downloaded and extracted archives
2. downloaded, zipped archives

Related tasks

Updating From a Local Repository (GUI)

Updating From a Local Repository (Command Line)

12.5.1 Using Extracted or Zipped Archives for Repo

Create a local Feko update repository using extracted or multiple archives.

1. Create the local repository folder, for example, `C:\Updates`.

   Note: If you already have an update repository for the same version, delete previous updates located in this folder.

2. Download the updates for the required platforms from Altair Connect.

   For example, if both the Windows and Linux platforms are required, download the following:

   - `FEKO_2025.1_WIN64_X86_64.zip`
   - `FEKO_2025.1_LINUX_X86_64.zip`

3. Unzip the downloaded archive(s) to the local repository folder.

   Important: Keep the structure of the `.zip` file intact.

   Important: If multiple platforms are downloaded, the platform updates must be located at the same folder (grouped by version) and "merged" (see example below).

Example: Extracting platform zip files with structure:

```
FEKO_2025.1_WIN64_X86_64.zip
    └─FEKO_2025.1.x
        └─WIN64_X86_64
            └─...
```

to `C:\Updates`:

```
C:\Updates
    └─FEKO_2025.1.x
        └─WIN64_X86_64
            └─...
        └─LINUX_X86_64
            └─...
```

Related tasks

Updating From a Local Repository (GUI)

Updating From a Local Repository (Command Line)

12.5.2 Using a Single Zip Archive for Repo

Create a local Feko update repository using a single zip archive.

1. Create the local repository folder, for example, `C:\Updates`.

   > **Note:** If you already have an update repository for the same version, delete previous updates located in this folder.

2. Download the updates for the required platforms from Altair Connect.

   For example, if both the Windows and Linux platforms are required, download the following:

   - `FEKO_2025.1_WIN64_X86_64.zip`
   - `FEKO_2025.1_LINUX_X86_64.zip`

3. Copy the zipped archives to the local repository without extracting the files.

Related tasks

Updating From a Local Repository (GUI)

Updating From a Local Repository (Command Line)

Appendices

This chapter covers the following:

Feko Environment Overview

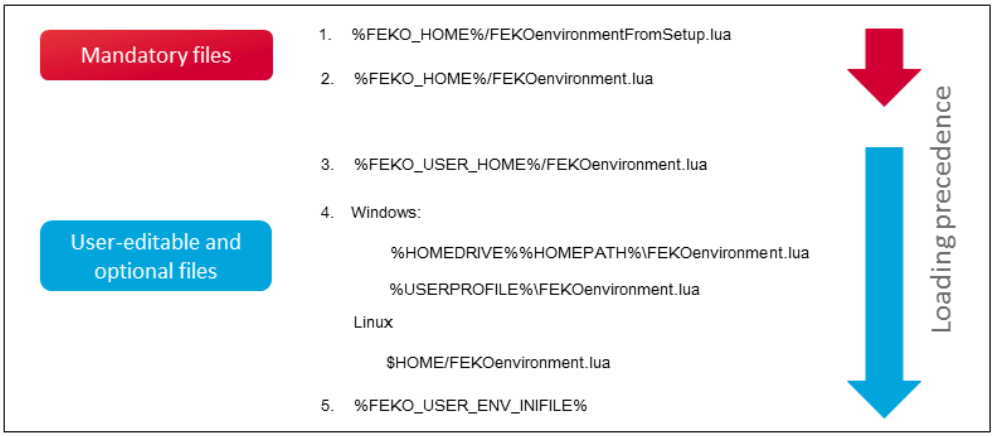
The Feko environment is setup using the Lua scripting language and internal functions. The environment setup is uniform across the different platforms.

A-1.1 Environment Settings Overview

The Feko environment is set up internally by means of Lua applications and internal functions

Each application is “self-aware”. It will detect and set up the environment based on its location. The default environment for the current installation will be loaded from a set of mandatory files. Any user-specific environment variables can then be added/changed in optional files loaded after the mandatory files. It allows for the user-specific environment variables to overwrite the global environment variables, rather than editing the file containing the global default environment variables

The Lua scripts are loaded in the following order:



1. *FEKO_HOME/FEKOenvironmentFromSetup.lua*
   This mandatory file is created at installation time. It contains the global default settings for the current installation. It is not advised to edit this file, unless a different setting is required than specified during installation.

2. *FEKO_HOME/FEKOenvironment.lua*
   This mandatory file is provided and managed by Feko to ensure correct functionality. This file may be updated by the update utility, so any changes to it may be lost.

3. *FEKO_USER_HOME/FEKOenvironment.lua*
   This is an optional file. It must be created by the user if and when required.

4. Windows:

   %HOMEDRIVE%%HOMEPATH%\FEKOenvironment.lua
   It must be created by the user if and when required. If it is not found, it will be silently ignored and operation continues.

   %HOMEDRIVE%%HOMEPATH%\FEKOenvironment.lua
   It must be created by the user if and when required. If it is not found, it will be silently ignored and operation continues.

   %USERPROFILE%\FEKOenvironment.lua
   It must be created by the user if and when required. If it is not found, it will be silently ignored and operation continues.

Linux:

$HOME/FEKOenvironment.lua
It must be created by the user if and when required. If it is not found, it will be silently ignored and operation continues.

5. *FEKO_USER_ENV_INIFILE*
It must be created by the user if and when required. If it is not found, it will be silently ignored and operation continues.

A-1.2 Functions for Environment-Related Tasks

- `getEnv(variable name, getExpanded)`

  Returns the value of the environment variable name.

Name	Description
variable name	Name of environment variable. *(String)*
getExpanded (optional)	*true*: If the value contains reference to other variables, get the expanded value. (default) *false*: Get the value as is with no extra expansion applied. *(Boolean)*
return value	Value of the environment variable (might be nil, if not set) *(String)*

- `setEnv(variable name, value, forceOverwrite)`

  Modifies the environment variable variable name to the specified value.

Name	Description
variable name	Name of environment variable. *(String)*
value	Value to be prepended. *(String)*
forceOverWrite (optional)	*parname*: Always set the value. Overwrite if variable already exists. *false:* Only set the value if variable does not exist. (default) *(Boolean)*

Name	Description
return value	-

- `prependEnv(variable name, value, delimReq)`

  Prepends (or sets, if not exists) the environment variable variable name with the specified value.

Name	Description
variable name	Name of environment variable. *(String)*
value	Value to be prepended. *(String)*
delimReq (optional)	Delimiter character/string to be used to separate values when concatenating (operating system default will be used, if not exists) *(String)*
return value	-

- `appendEnv(variable name, value, delimReq)`

  Appends (or sets, if not exists) the environment variable variable name with the specified value .

Name	Description
variable name	Name of environment variable. *(String)*
value	Value to be appended. *(String)*
delimReq (optional)	Delimiter character/string to be used to separate values when concatenating (operating system default will be used, if not exists) *(String)*
return value	-

Terminal Script Files

The files `initfeko.bat` (batch file on Windows) and `initfeko` (bash shell script on Unix/Linux) are run from a terminal to configure the Feko environment. From this environment, the Feko applications can be run.

Apply the settings to the current environment context:

- Windows: Call the batch file
- Linux: Source the shell script

The terminal script files are located in the `FEKO_HOME/bin` directory.

```
INITFEKO Environment Loader Script for Feko Terminal
Syntax: initfeko [-h | --help | /?] | [-v] [-d] [-terminal]
Options:
-h | --help | /?
Shows help (this screen)
-v Verbose mode (prints some informational output)
-d Shows extended debug output while setting the environment
-terminal
Mode to setup a complete standalone Feko Terminal
Windows: (used by the Start Menu shortcut)
Linux: (experimental)
```

Remote Launching / Farming Setup

A-3

View the steps for configuring either PuTTY or Cygwin to support the remote launching and farming capabilities of Feko.

A-3.1 Configuring PuTTY

PuTTY is an SSH and telnet client for Windows and UNIX platforms.

PuTTY[14] requires no installation since it comes in a ZIP archive that is extracted into a directory.

1. Select one of the following workflows to prevent having to provide the full path:
   - Place directory of your PuTTY installation in the system *PATH* environment variable.
   - Extract PuTTY to the Feko `bin` directory.
2. Create a backup copy of `feko_remote_ssh.bat` before editing the file.
3. Modify the Feko remote launching file, `feko_remote_ssh.bat`.
   a) Locate the line "`set SSH=ssh`" and change to "`set SSH=plink`".
   b) Locate the line "`set SSH_OPTIONS=`" and change to "`set SSH_OPTIONS=-ssh -batch -l <username> -i <path\to\privateKeyFile.ppk>`"
   c) Locate the line `set SCP=scp` and change to "`set SCP=pscp`"
   d) Locate the line "`set SCP_OPTIONS=-p -B`" and change to "`set SCP_OPTIONS=-scp -p -batch -l <username> -i <path\to\privateKeyFile.ppk> -unsafe`"
   e) Locate the line "`set SCP_OPTIONS=-p -B -q`" and change to "`set SCP_OPTIONS=-scp -p -batch -l <username> -i <path\to\privateKeyFile.ppk> -unsafe -q`" where in the above "`<username>`" must be replaced by the real username to be used on the remote system and "`<path\to\privateKeyFile.ppk>`" must be the absolute path to the private key file.
4. Convert the public key file from OpenSSH syntax to PuTTY syntax. This file has to be used in the above commands.
5. Log into the remote machine once using an interactive PuTTY session.
6. Save the fingerprint to the registry to prevent the following error: "`The server's host key is not cached in the registry.`"

For additional options and configuration settings regarding the PuTTY suite, refer to the help screens of PuTTY and the individual components.

14. http://www.chiark.greenend.org.uk/~sgtatham/putty/

A-3.2 Cygwin SSH Installation

Cygwin SSH server is an emulation of the Linux environment and OpenSSH for Windows. Install the SSH client on the client machine and server. Install the SSHd daemon on the server machine.

Setting Up SSH Client on Client and Server

Set up the SSH client on both the client machine and server.

1. Download `setup.exe` from www.cygwin.com.
2. Optional: Save the file to a shared location if it is to be used as a local repository.
3. Run `setup.exe`.
4. Select **Install from Internet**. If you are installing a second machine and use the same location, you can select **Install from Local Directory**.
5. Use the default options when selecting the root install directory and installation parameters or change according to your requirements.

   Note:
   - Do not use spaces in the directory name.
   - The default settings are recommended.
6. Select a location to store the downloaded installation packages. If the file is to be re-used, save it to the same location as `setup.exe` above.
7. Select the type of internet connection. Specify the **Proxy host** and **Port**.
8. Select a mirror close to you for maximum download speed.
9. Click **View** to change to **Full**.
   a) Scroll down to **openssh**.
   b) Click on the left-most icon to select `openssh` as well as `openssl` and their dependencies.
10. Wait while the packages download and install.
11. Optional: Choose if you want shortcuts to be created (recommended).
12. Click **Finish** to exit the installer.

Set the *PATH* environment variable to launch Cygwin without having to provide the full path.

13. Place the bin directory of your Cygwin installation in the system *PATH* environment variable.
14. Reboot the system.

Setting Up the SSH Server

Configure the SSHd deamon on the server (remote machine) to allow the client to connect to the server.

1. Open a Bash Shell found under **Start** > **All Programs** > **Cygwin**.
2. Ensure the files "`/etc/passwd`" and "`/etc/group`" are up to date (showing the correct entries as to what is configured in Windows). Otherwise create them by:

```
mkpasswd -l > /etc/passwd
```

```
mkgroup -l > /etc/grou
```

3. Now configure the SSHd daemon/service by running "`ssh-host-config`". Answer **Yes** to all questions. When asked for the value of the CYGWIN variable, enter "`ntsec tty`".
4. Start the service by "`net start sshd`" or "`cygrunserv -start sshd`".
   - To correct permission errors:
     - Run the following commands to correct the permissions:

       ```
       chmod +r /etc/passwd
       chmod u+w /etc/passwd
       chmod +r /etc/group
       chmod u+w /etc/group
       chmod 755 /var
       chmod 664 /var/log/sshd.log
       ```
   - To correct memory errors, the Cygwin DLLs have to be rebased by the following procedure:
     1. Exit all Cygwin processes (close all windows of Cygwin and also stop all running services of Cygwin).
     2. Start a Microsoft Windows (!) command prompt (**Start** > **Run** > `cmd.exe`) with administrative privileges.
     3. Go to the Cygwin installation bin directory ("`cd C:\Cygwin\bin`").
     4. Inside ash then run "`/usr/bin/rebaseall`" and then close again.

Troubleshooting

Common problems that you may encounter are discussed as well as their solutions.

A-4.1 Crash When Using CADFEKO Over Remote Desktop

Problem

Clicking on **New Project** when using CADFEKO over a remote desktop connection, results in a crash.

Cause

3D support for remote desktop is disabled for the host machine's graphics card.

Solution

1. Enable 3D support on host machine for remote desktop.
   a) Open the Microsoft Windows **Start** menu.
   b) Type **Local Group Policy** and click **Edit group policy**.
   c) On the **Local Group Policy Editor** dialog, click **Computer Configuration** > **Administrative Templates** > **Windows Components** > **Remote Desktop Services** > **Remote Desktop Session Host** > **Remote Session Environment**.
   d) Enable the following:
      - Use the hardware default graphics adapters for all Remote Desktop Services sessions
      - Prioritize H.264/AVC 444 graphics mode for Remote Desktop Connections
      - Configure H.264/AVC hardware encoding for Remote Desktop Connections
      - Configure compression for RemoteFX data
      - Configure image quality for RemoteFX Adaptive Graphics
      - Enable RemoteFX encoding for RemoteFX clients designed for Windows Server 2008 R2 SP1
      - Configure RemoteFX Adaptive Graphics

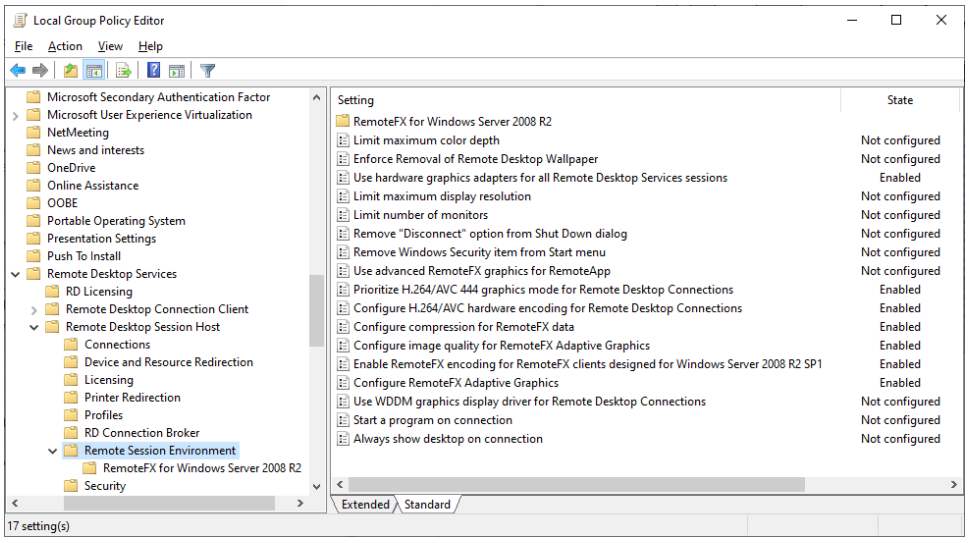


*Figure 15: The **Local Group Policy Editor** dialog in Microsoft Windows.*

2. Download a special patch for NVIDIA graphics card drivers from https://community.altair.com/.

How-Tos

A collection of how-tos are included that covers advanced concepts.

A-5.1 How to Install CADFEKO [LEGACY] Using the Standalone Installer

This How-To provides background on the standalone legacy CADFEKO installer as well as the installation process.

Background

From Feko 2023.1 and onward, legacy CADFEKO is not included in the Feko installer.

For some Feko users, however, there are models and workflows where the legacy CADFEKO interface may be required. To enable these Feko users to continue using the legacy CADFEKO interface for a period, a separate or "standalone " installation has been prepared. This installation will install only the files and environment needed to run the legacy CADFEKO interface.

As the standalone legacy CADFEKO installer does not install any other Feko components, a separate installation of Feko is required for any workflows requiring other Feko components (for example, the Solver or POSTFEKO).

Environment variables can be used to configure which Feko components should be used with legacy CADFEKO (for example, if multiple concurrent installations of Feko are installed).

How to Install Standalone Legacy CADFEKO

1. Install the full 2023.1 Feko installation or a Feko version newer than Feko 2023.1.

   > **Note:** If Feko 2023.1 or newer installation is already in place, or if only the legacy CADFEKO interface is needed, this step can be skipped.

2. Download the legacy CADFEKO installer (download link available in Altair Community article).
3. Install legacy CADFEKO.
   - Specify the path to the Feko installation on the **Choose Existing Feko Installation** installer panel (for example, `C:\Program Files\Altair\2023.1`).

If a 2023.1 or later Feko installation does not exist when installing legacy CADFEKO or legacy CADFEKO does not point to the correct version, complete the following steps:

1. Modify the `FEKOenvironmentFromSetup.lua` file located in the `%FEKO_HOME%` directory, where `%FEKO_HOME%` points to the Feko installation path (for example: `C:\Program Files\Altair\2023.1_Legacy_CADFEKO`).
2. Enter the path the full Feko installation to be used by legacy CADFEKO (as an example, using the default 2023.1 installation path):
   - Microsoft Windows
     - `setEnv([[FEKO_LEGACY_CADFEKO_FEKO_HOME]], [[C:\Program Files\Altair\2023.1\feko]], true);`
   - Linux
     - `setEnv([[FEKO_LEGACY_CADFEKO_FEKO_HOME]], [[/opt/feko/2023.1/altair/feko]], true);`

3. Add the line to specify the path to the legacy CADFEKO installation for the case where CADFEKO_BATCH needs to be called from RUNFEKO:
   - Microsoft Windows
     - `setEnv([[FEKO_LEGACY_CADFEKO_BINARY_PATH]], [[C:\Program Files\Altair\2023.1_Legacy_CADFEKO\feko\bin]], true);`
   - Linux
     - `setEnv([[FEKO_LEGACY_CADFEKO_BINARY_PATH]], [[/opt/feko/2023.1_Legacy_CADFEKO/altair/feko/bin]], true);`

How to Run the Solver Using Legacy CADFEKO

To run the Solver using legacy CADFEKO (locally or on a cluster), do the following:

1. See How to Install Standalone Legacy CADFEKO on how to install legacy CADFEKO.
2. Start legacy CADFEKO using one of the following workflows:
   - Start legacy CADFEKO, load a model and run the Solver.
   - Start legacy CADFEKO, open the (**Home** tab) and call the Solver using the command line.

How to Run the Solver Using Legacy CADFEKO_BATCH

To run the Solver using legacy CADFEKO_BATCH (locally or on a cluster), do the following:

1. See How to Install Standalone Legacy CADFEKO on how to install legacy CADFEKO.
2. Open a command prompt and specify the following environment variables:
   - FEKO_LEGACY_CADFEKO_FEKO_HOME = C:\Program Files\Altair\2023.1\feko (point to the full Feko installation)
   - `FEKO_LEGACY_CADFEKO_BINARY_PATH = C:\Program Files\Altair\2023.1_Legacy_CADFEKO\feko\bin` (point to the legacy CADFEKO installation)
   - `FEKO_LEGACY_CADFEKO=1` (to indicate that the legacy CADFEKO_BATCH should be used when RUNFEKO attempts to run CADFEKO_BATCH)
   - Run the Solver.

> **Note:** The following environment variables are set automatically when opening the Feko Terminal from legacy CADFEKO:
>
> - `FEKO_LEGACY_CADFEKO_FEKO_HOME = C:\Program Files\Altair\2023.1\feko`
> - `FEKO_LEGACY_CADFEKO_BINARY_PATH = C:\Program Files\Altair\2023.1_Legacy_CADFEKO\feko\bin`
> - `FEKO_LEGACY_CADFEKO=1`

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